



| <b>FCC TEST REPORT</b><br><b>FCC 47 CFR Part 15C</b><br><b>Industry Canada RSS-210</b><br><b>Digital transmission systems operating within the 2400 – 2483.5 MHz band</b> |   |
|---|---|
| <b>Report Reference No.</b> .....   | G0M-1208-2160-TFC247W-V01   |
| <b>Testing Laboratory</b> .....   | Eurofins Product Service GmbH   |
| Address .....   | Storkower Str. 38c<br>15526 Reichenwalde<br>Germany   |
| Accreditation .....   | <div style="text-align: center;">   </div> <p>A2LA Accredited Testing Laboratory, Certificate No.: 1983.01<br/>           FCC Filed Test Laboratory, Reg.-No.: 96970<br/>           IC OATS Filing assigned code: 3470A</p> |
| <b>Applicant's name</b> .....   | Panasonic Industrial Devices Europe GmbH  |
| Address .....   | Zeppelinstr. 19<br>21337 Lüneburg<br>GERMANY  |
| <b>Test specification:</b>  |   |
| Standard.....   | 47 CFR Part 15C<br>KDB Publication No. 558074<br>RSS-210, Issue 8, 2010-12<br>RSS-Gen, Issue 3, 2010-12<br>ANSI C63.4:2009  |
| <b>Equipment under test (EUT):</b>  |   |
| Product description   | Class 2 Bluetooth Low Energy Module   |
| Model No.   | ENW89837AxKF  |
| Hardware version  | 0x  |
| Firmware / Software version   | 0x  |
|   | FCC-ID: T7VPAN10                      IC: 216Q-PAN10  |
| <b>Test result</b>  | <b>Passed</b>   |

**Possible test case verdicts:**


- neither assessed nor tested .....: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object .....: N/R
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)


**Testing:**

Date of receipt of test item .....: 2013-09-03

Date (s) of performance of tests .....: 2013-09-04 – 2013-09-06

Compiled by ..... : Antje Bartusch

Tested by (+ signature)..... : Wilfried Treffke 
  
.....

Approved by (+ signature) ..... : Jens Zimmermann 
  
.....

Date of issue ..... : 2013-10-25

Total number of pages..... : 90

**General remarks:**

**The test results presented in this report relate only to the object tested.**

**The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.**

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

**Additional comments:**

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## Version History

| Version | Issue Date | Remarks         | Revised by |
|---------|------------|-----------------|------------|
| 01      | 2013-10-25 | Initial Release |            |

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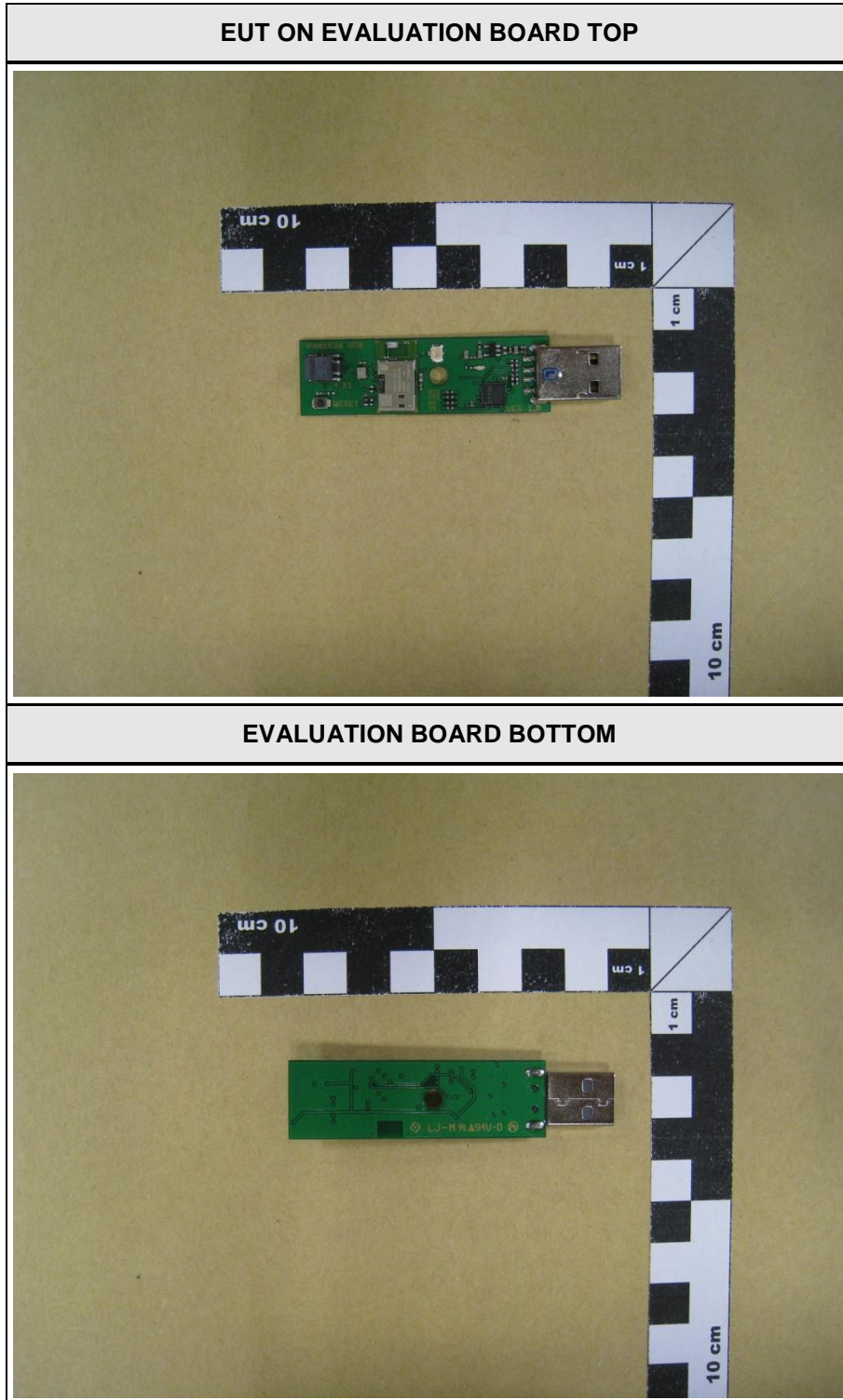
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**1 Equipment (Test item) Description:**

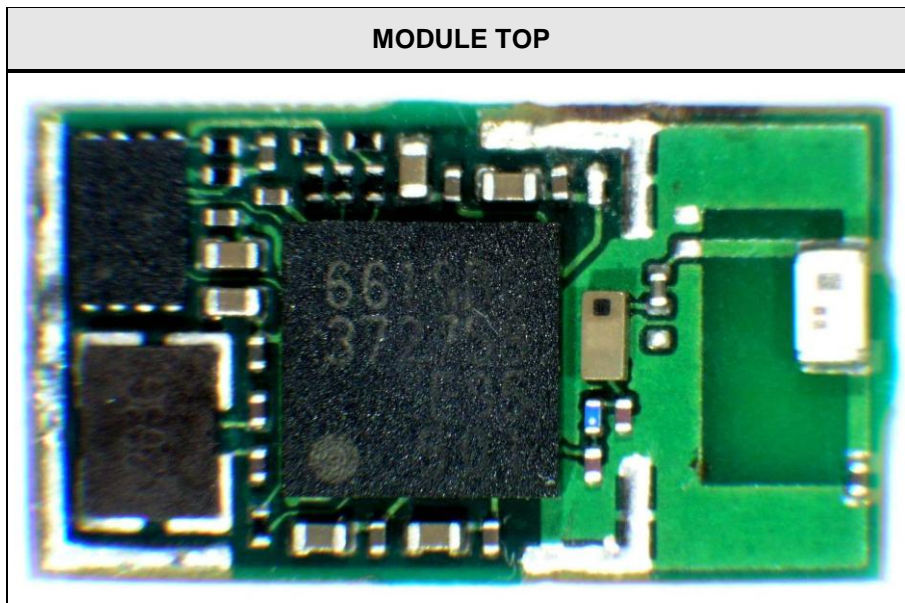
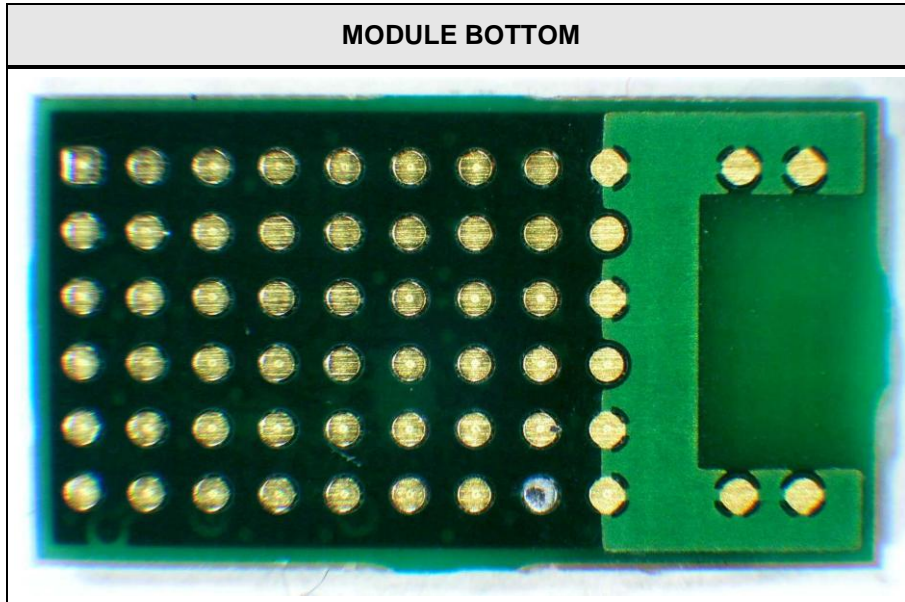
|                                    |  |                                     |
|------------------------------------|--|-------------------------------------|
| <b>Description</b>                 | Class 2 Bluetooth Low Energy Module  |                                     |
| <b>Model</b>                       | ENW89837AxKF   |                                     |
| <b>Serial number</b>               | None   |                                     |
| <b>Hardware version</b>            | 0x   |                                     |
| <b>Software / Firmware version</b> | 0x   |                                     |
| <b>FCC-ID</b>                      | T7VPAN10   |                                     |
| <b>IC</b>                          | 216Q-PAN10   |                                     |
| <b>Equipment type</b>              | Radio module   |                                     |
| <b>Radio type</b>                  | Transceiver  |                                     |
| <b>Radio technology</b>            | Bluetooth 4.0 Low Energy   |                                     |
| <b>Operating frequency range</b>   | 2402 - 2480 MHz  |                                     |
| <b>Assigned frequency band</b>     | 2400 - 2483.5 MHz  |                                     |
| <b>Main test frequencies</b>       | F <sub>LOW</sub>   | 2402 MHz                            |
|                                    | F <sub>MID</sub>   | 2440 MHz                            |
|                                    | F <sub>HIGH</sub>  | 2480 MHz                            |
| <b>Spreading</b>                   | None   |                                     |
| <b>Modulations</b>                 | GFSK   |                                     |
| <b>Number of channels</b>          | 40   |                                     |
| <b>Channel spacing</b>             | 2MHz   |                                     |
| <b>Number of antennas</b>          | 1  |                                     |
| <b>Antenna</b>                     | Type   | integrated                          |
|                                    | Model  | LDA21K 7488930245                   |
|                                    | Manufacturer   | Murata                              |
|                                    | Gain   | +0.9 dBi (manufacturer declaration) |
| <b>Manufacturer</b>                | Panasonic Industrial Devices Europe GmbH<br>Zeppelinstr. 19<br>21337 Lüneburg<br>GERMANY |                                     |
| <b>Power supply</b>                | V <sub>NOM</sub>   | 3.3VDC                              |
|                                    | V <sub>MIN</sub>   | 2.0VDC                              |
|                                    | V <sub>MAX</sub>   | 3.6VDC                              |
| <b>AC/DC-Adaptor</b>               | none   |                                     |

1.1 Photos – Equipment External

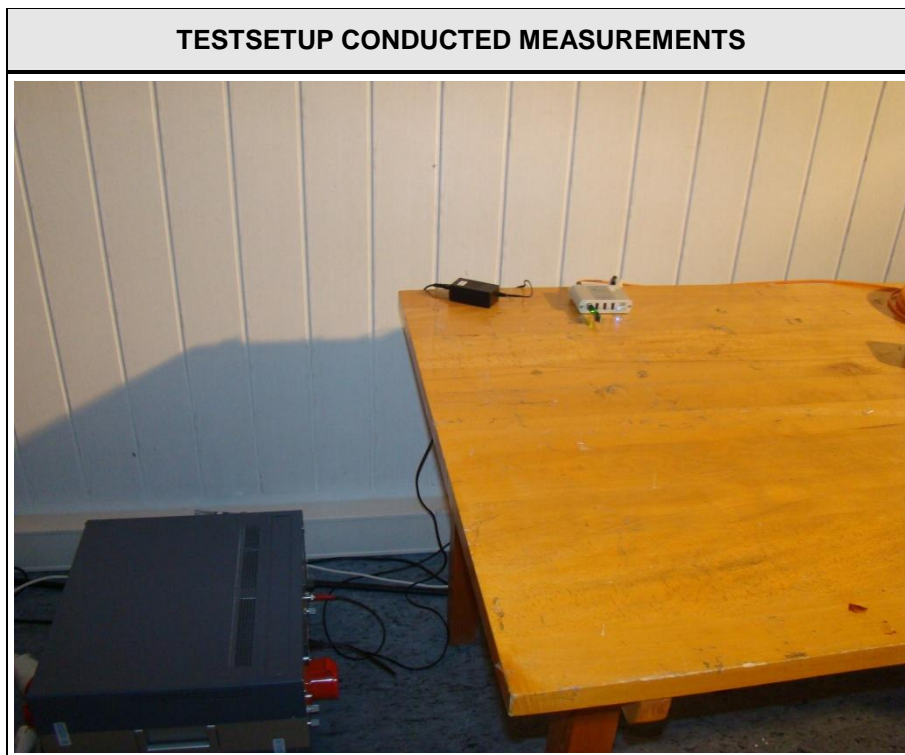
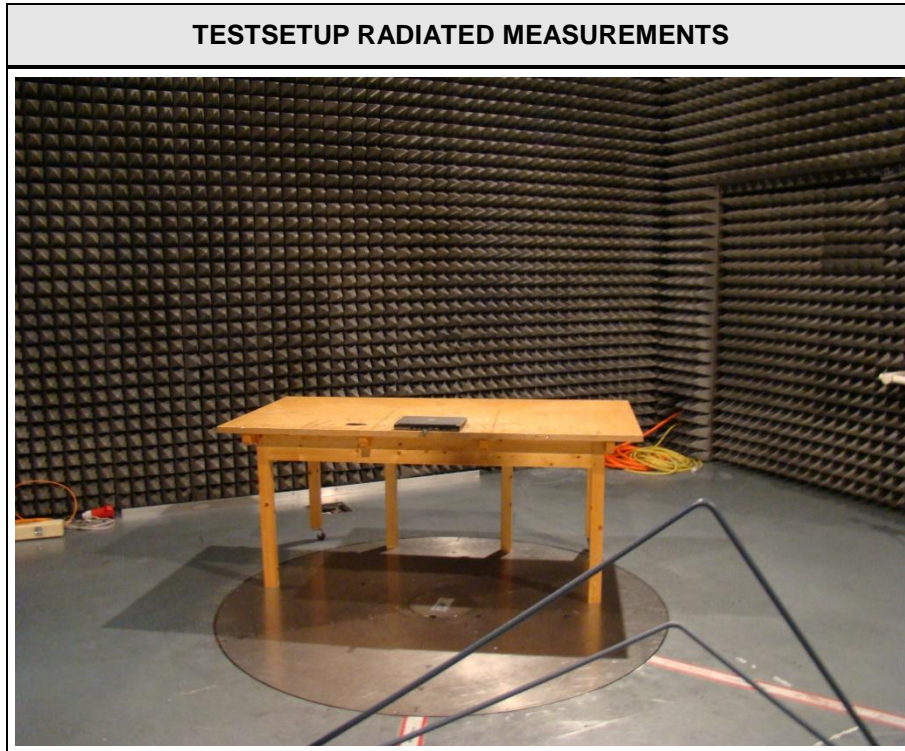




1.2 Photos – Equipment internal



1.3 Photos – Test setup





#### 1.4 Supporting Equipment Used During Testing

| Product Type* | Device  | Manufacturer | Model No.       | Comments |
|---------------|---------|--------------|-----------------|----------|
| AE            | USB LWL | ICRON        | USB Ranger 2224 |          |
| AE            | Laptop  | DELL         | Latitude D430   |          |

**\*Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

**1.5 Test Modes**

| Mode #       | Description         |   |
|--------------|---------------------|---|
| Transmit     | General conditions: | EUT powered by laboratory power supply.   |
|              | Radio conditions:   | Mode = standalone transmit<br>Spreading = None<br>Modulation = GFSK<br>Data rate = 1 Mbps<br>Bandwidth = 2 MHz<br>Duty cycle = 100 %<br>Power level = Maximum |
| Receive      | General conditions: | EUT powered by laboratory power supply.   |
|              | Radio conditions:   | Mode = standalone receive (scan mode)<br>Spreading = None<br>Modulation = GFSK  |
| AC-Powerline | General conditions: | EUT powered by commercial Laptop  |
|              | Radio conditions:   | Mode = Transmit<br>Spreading = None   |

**1.6 Test Equipment Used During Testing**

| <b>Occupied Bandwidth</b> |              |        |            |           |          |
|---------------------------|--------------|--------|------------|-----------|----------|
| Description               | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer         | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>6dB Bandwidth</b> |              |        |            |           |          |
|----------------------|--------------|--------|------------|-----------|----------|
| Description          | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer    | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>Maximum peak conducted power</b> |              |        |            |           |          |
|-------------------------------------|--------------|--------|------------|-----------|----------|
| Description                         | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer                   | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>Power spectral density</b> |              |        |            |           |          |
|-------------------------------|--------------|--------|------------|-----------|----------|
| Description                   | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer             | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>Band edge compliance</b> |              |        |            |           |          |
|-----------------------------|--------------|--------|------------|-----------|----------|
| Description                 | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer           | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>Conducted spurious emissions</b> |              |        |            |           |          |
|-------------------------------------|--------------|--------|------------|-----------|----------|
| Description                         | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Spectrum Analyzer                   | R&S          | FSP 30 | EF00312    | 2011-12   | 2012-12  |

| <b>Radiated spurious emissions</b> |              |        |            |           |          |
|------------------------------------|--------------|--------|------------|-----------|----------|
| Description                        | Manufacturer | Model  | Identifier | Cal. Date | Cal. Due |
| Semi-anechoic chamber              | Frankonia    | AC 5   | EF00395    | -         | -        |
| Spectrum Analyzer                  | R&S          | FSIQ26 | EF00242    | 2012-05   | 2013-05  |
| Biconical Antenna                  | R&S          | HK 116 | EF00012    | 2010-01   | 2013-01  |
| LPD Antenna                        | R&S          | HL 223 | EF00187    | 2011-02   | 2014-02  |
| LPD Antenna                        | R&S          | HL 025 | EF00327    | 2010-02   | 2013-02  |

| <b>AC powerline conducted emissions</b> |              |         |            |           |          |
|---|--------------|---------|------------|-----------|----------|
| Description                             | Manufacturer | Model   | Identifier | Cal. Date | Cal. Due |
| AMN                                     | R&S          | ESH2-Z5 | EF00182    | 2010-09   | 2012-09  |
| AMN                                     | R&S          | ESH3-Z5 | EF00036    | 2010-11   | 2012-11  |
| EMI Test Receiver                       | R&S          | ESCS 30 | EF00295    | 2011-06   | 2012-06  |

## 1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB $\mu$ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dB $\mu$ V/m). The FCC limits are given in units of  $\mu$ V/m. The following formula is used to convert the units of  $\mu$ V/m to dB $\mu$ V/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$


## 2 Result Summary

| FCC 47 CFR Part 15C, IC RSS-210  |   |  |        |                    |
|--|---|--|--------|--------------------|
| Product Specific Standard Section  | Requirement – Test                      | Reference Method                         | Result | Remarks            |
| RSS-Gen 4.6.1  | Occupied Bandwidth                      | RSS-Gen 4.6.1                            | N/R    | Informational only |
| FCC § 15.247(a)(2)<br>IC RSS-210 § A8.2  | 6dB Bandwidth                           | KDB Publication No. 558074               | PASS   |                    |
| FCC § 15.247(b)(3)<br>IC RSS-210 § A8.4  | Maximum peak conducted power            | KDB Publication No. 558074               | PASS   |                    |
| FCC § 15.247(e)<br>IC RSS-210 § A8.2   | Power spectral density                  | KDB Publication No. 558074               | PASS   |                    |
| 47 CFR 15.207<br>RSS-Gen 7.2.4   | AC power line conducted emissions       | KDB Publication No. 558074 / ANSI C63.4  | PASS   |                    |
| FCC § 15.247(d)<br>IC RSS-210 § A8.5   | Band edge compliance                    | KDB Publication No. 558074               | PASS   |                    |
| FCC § 15.247(d)<br>IC RSS-210 § A8.5   | Conducted spurious emissions            | KDB Publication No. 558074               | PASS   |                    |
| FCC § 15.247(d)<br>FCC § 15.209<br>IC RSS-210 A8.5<br>IC RSS-Gen 4.9<br>IC RSS-Gen 7.2.5 | Transmitter radiated spurious emissions | KDB Publication No. 558074 / ANSI C 63.4 | PASS   |                    |
| IC RSS-Gen 4.10<br>IC RSS-Gen 6.1  | Receiver radiated spurious emissions    | ANSI C 63.4                              | PASS   |                    |
| <b>Remarks:</b>  |   |  |        |                    |



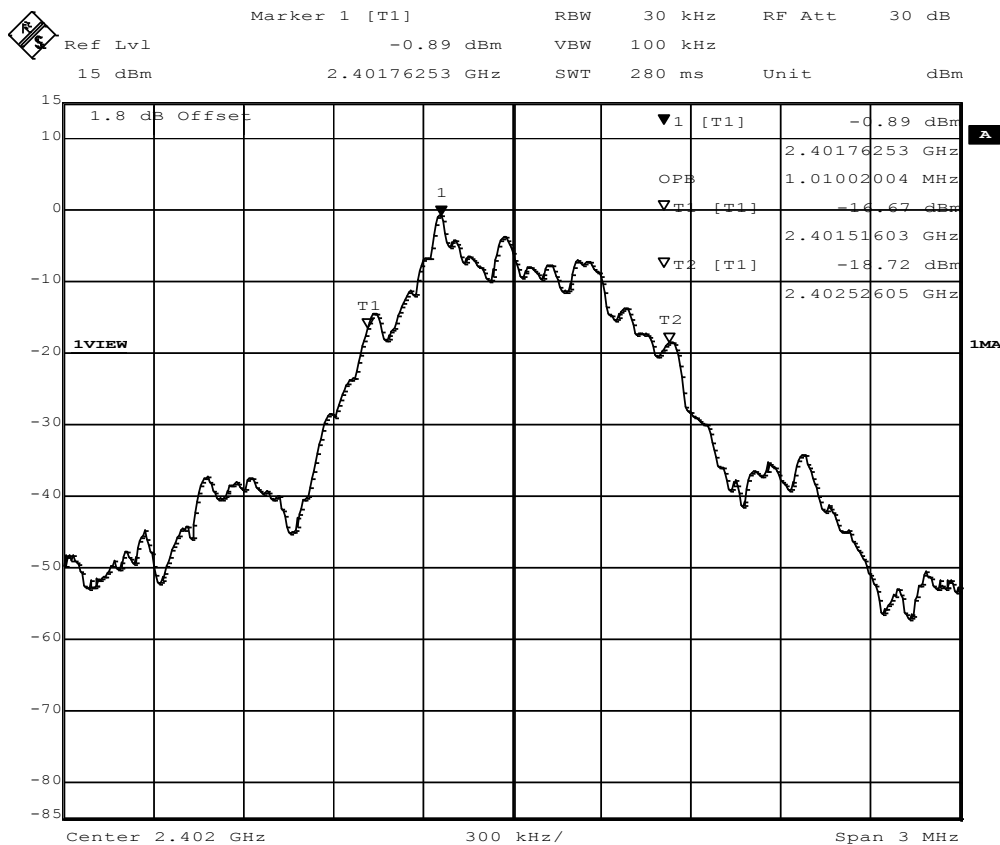
### 3 Test Conditions and Results

#### 3.1 Test Conditions and Results – Occupied Bandwidth

| Occupied Bandwidth acc. IC RSS-Gen   |                                | Verdict: PASS |                          |
|--|--------------------------------|---------------|--------------------------|
| Test according to measurement reference  | Reference Method               |               |                          |
|  | RSS-Gen 4.6.1                  |               |                          |
| Test frequency range   | Tested frequencies             |               |                          |
|  | $F_{LOW} / F_{MID} / F_{HIGH}$ |               |                          |
| <b>Limits</b>  |                                |               |                          |
| None (Informational only)  |                                |               |                          |
| <b>Test setup</b>  |                                |               |                          |
|    |                                |               |                          |
| <b>Test procedure</b>  |                                |               |                          |
| <ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Resolution bandwidth set to 1 % of span</li> <li>4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function</li> </ol> |                                |               |                          |
| <b>Test results</b>  |                                |               |                          |
| Channel  | Frequency [MHz]                | Mode          | Occupied Bandwidth [kHz] |
| $F_{LOW}$  | 2402                           | Transmit      | 1010                     |
| $F_{MID}$  | 2440                           | Transmit      | 1010                     |
| $F_{HIGH}$   | 2480                           | Transmit      | 1010                     |
| Comments:  |                                |               |                          |

**Occupied Bandwidth – F<sub>Low</sub>**
**RSS Gen  
Occupied Bandwidth**

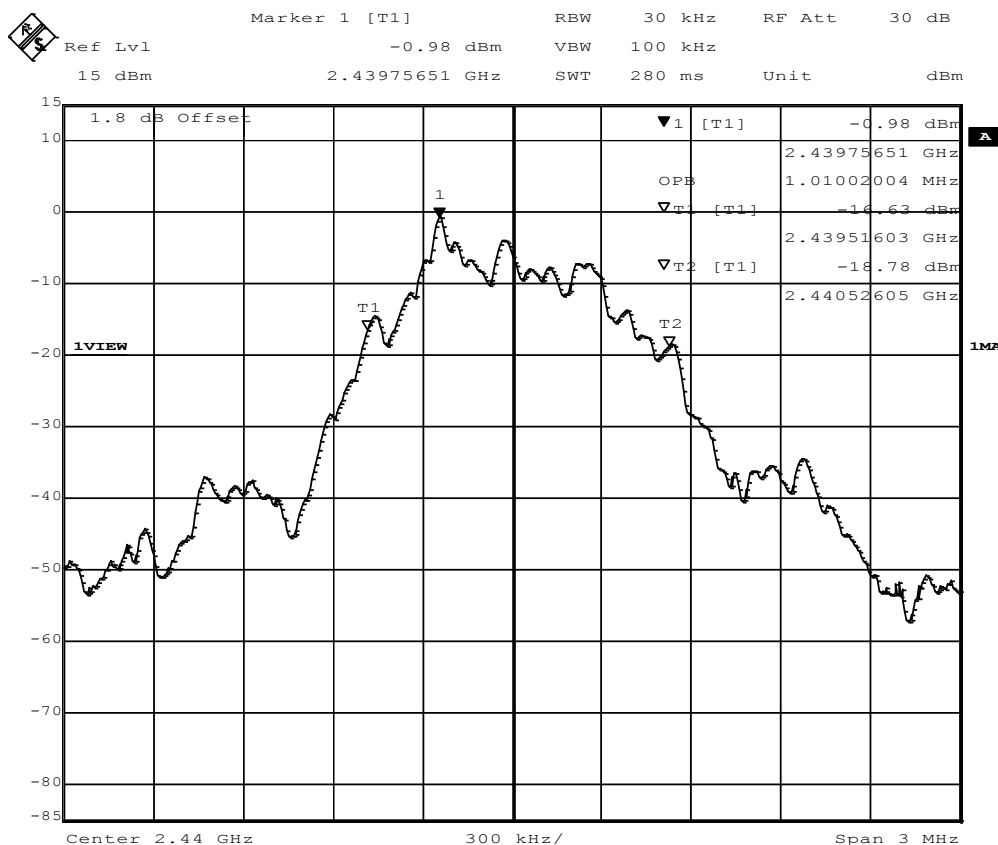
|                       |   |
|-----------------------|---|
| EUT                   | Class 2 Bluetooth Low Energy Module   |
| Model                 | ENW89837AXKF  |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160                     |
| Temperature / Voltage | 24°C / Unom: 3.3 V DC   |
| Test Site / Operator  | Eurofins Product Service GmbH / Mr. Pudell                                  |
| Test Specification    | 4.4.1 Occupied Bandwidth  |
| Comment 1             | Channel: 0 ( 2402 MHz)  |
| Comment 2             | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Comment 3             | Bluetooth LE / GFSK   |



Comment A: Occupied\_Bandwidth\_:\_1.01002004\_MHz  
Date: 5.SEP.2013 07:49:58

**Occupied Bandwidth – F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

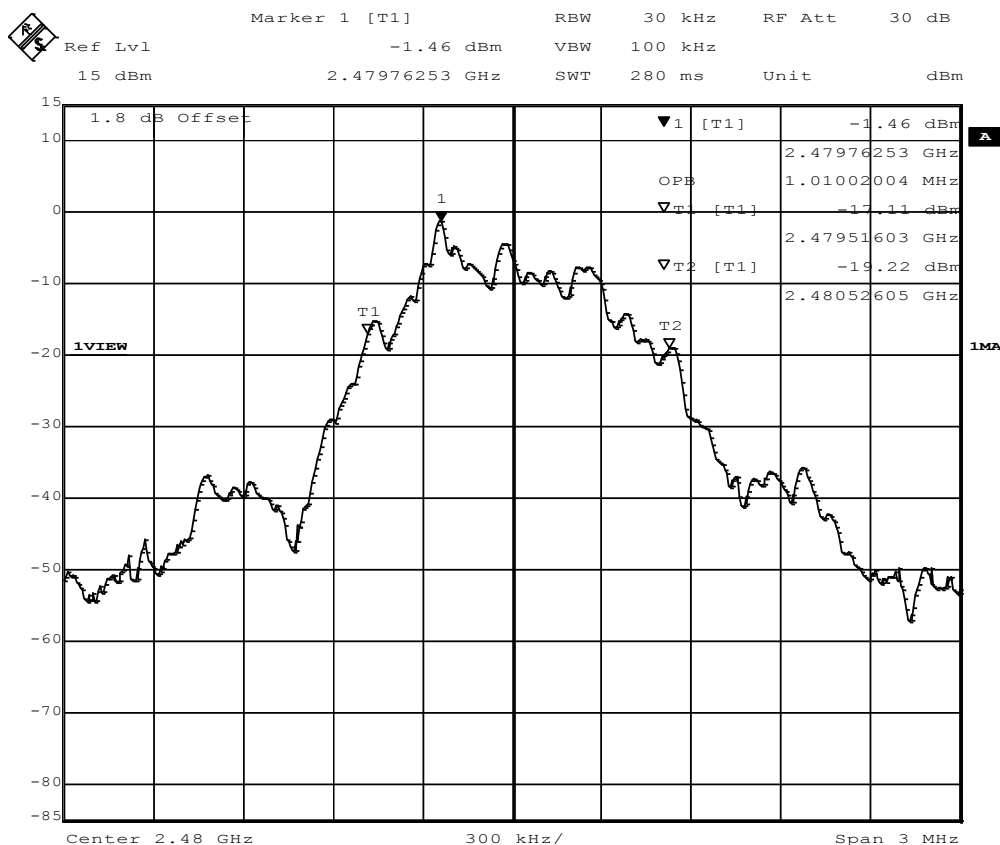
|                       |   |
|-----------------------|---|
| EUT                   | Class 2 Bluetooth Low Energy Module   |
| Model                 | ENW89837AXKF  |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160                     |
| Temperature / Voltage | 24°C / Unom: 3.3 V DC   |
| Test Site / Operator  | Eurofins Product Service GmbH / Mr. Pudell                                  |
| Test Specification    | 4.4.1 Occupied Bandwidth  |
| Comment 1             | Channel: 19 ( 2440 MHz )  |
| Comment 2             | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Comment 3             | Bluetooth LE / GFSK   |



Comment A: Occupied\_Bandwidth\_-\_1.01002004\_MHz  
Date: 5.SEP.2013 07:43:57


**Occupied Bandwidth – F<sub>HIGH</sub>**
**RSS Gen  
Occupied Bandwidth**

|                       |   |
|-----------------------|---|
| EUT                   | Class 2 Bluetooth Low Energy Module   |
| Model                 | ENW89837AXKF  |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160                     |
| Temperature / Voltage | 24°C / Unom: 3.3 V DC   |
| Test Site / Operator  | Eurofins Product Service GmbH / Mr. Pudell                                  |
| Test Specification    | 4.4.1 Occupied Bandwidth  |
| Comment 1             | Channel: 39 ( 2480 MHz )  |
| Comment 2             | A spectrum analyzer with an integrated 99% power bandwidth function is used |
| Comment 3             | Bluetooth LE / GFSK   |



Comment A: Occupied\_Bandwidth\_-\_1.01002004\_MHz  
Date: 5.SEP.2013 07:52:07

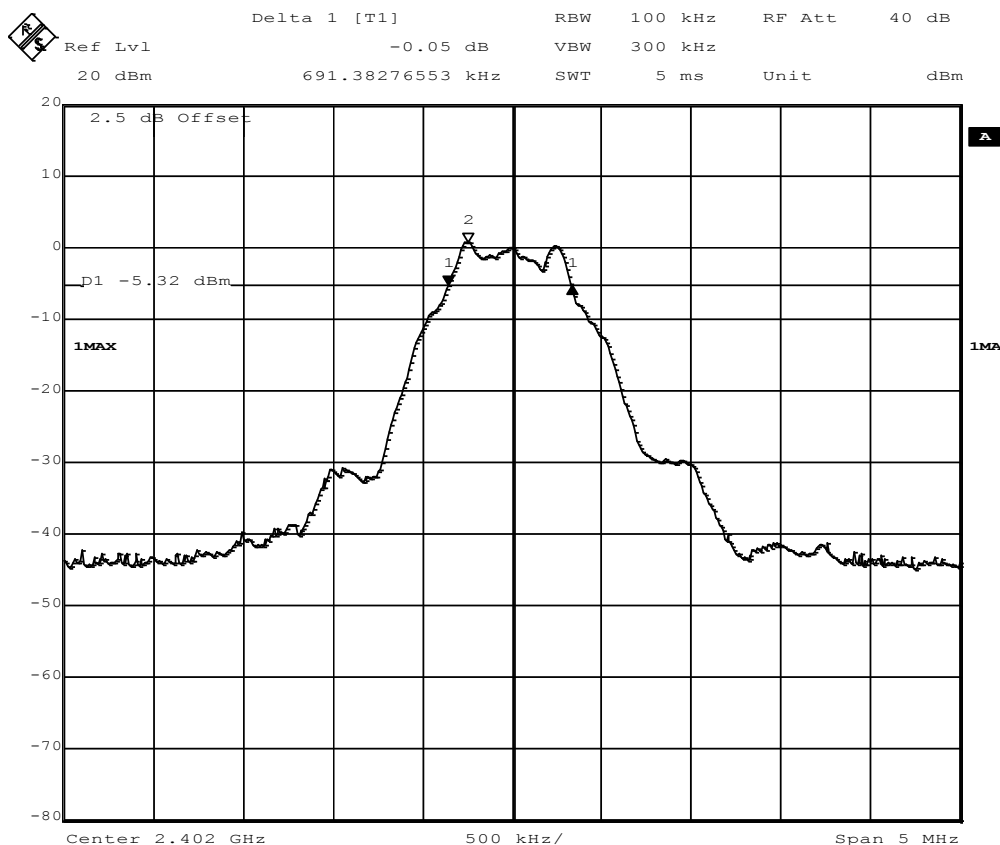
**3.2 Test Conditions and Results – 6 dB Bandwidth**

| <b>6dB Bandwidth acc. FCC 15.247 / IC RSS-210</b>  |                                    |          |                      | <b>Verdict: PASS</b> |        |
|--|------------------------------------|----------|----------------------|----------------------|--------|
| EUT requirement<br>rule parts and clause   | Reference                          |          |                      |                      |        |
|  | FCC 15.247(a)(2) / IC RSS-210 A8.2 |          |                      |                      |        |
| Test according to<br>measurement reference   | Reference Method                   |          |                      |                      |        |
|  | FCC KDB Publication No. 558074     |          |                      |                      |        |
| Test frequency range   | Tested frequencies                 |          |                      |                      |        |
|  | $F_{LOW} / F_{MID} / F_{HIGH}$     |          |                      |                      |        |
| <b>Limits</b>  |                                    |          |                      |                      |        |
| Limit  |                                    |          |                      |                      |        |
| ≥ 500kHz   |                                    |          |                      |                      |        |
| <b>Test setup</b>  |                                    |          |                      |                      |        |
|   |                                    |          |                      |                      |        |
| <b>Test procedure</b>  |                                    |          |                      |                      |        |
| <ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Detector set to peak and max hold and RBW is set to 100 kHz</li> <li>4. Envelope peak value of emission spectrum is selected</li> <li>5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak</li> <li>6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak</li> <li>7. 6 dB Bandwidth is determined by marker frequency separation</li> </ol> |                                    |          |                      |                      |        |
| <b>Test results</b>  |                                    |          |                      |                      |        |
| Channel  | Frequency [MHz]                    | Mode     | 6 dB Bandwidth [kHz] | Limit [kHz]          | Result |
| $F_{LOW}$  | 2402                               | Transmit | 691.3827             | 500                  | PASS   |
| $F_{MID}$  | 2440                               | Transmit | 691.3827             | 500                  | PASS   |
| $F_{HIGH}$   | 2480                               | Transmit | 691.3827             | 500                  | PASS   |
| Comments:  |                                    |          |                      |                      |        |



**6 dB Bandwidth – F<sub>Low</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

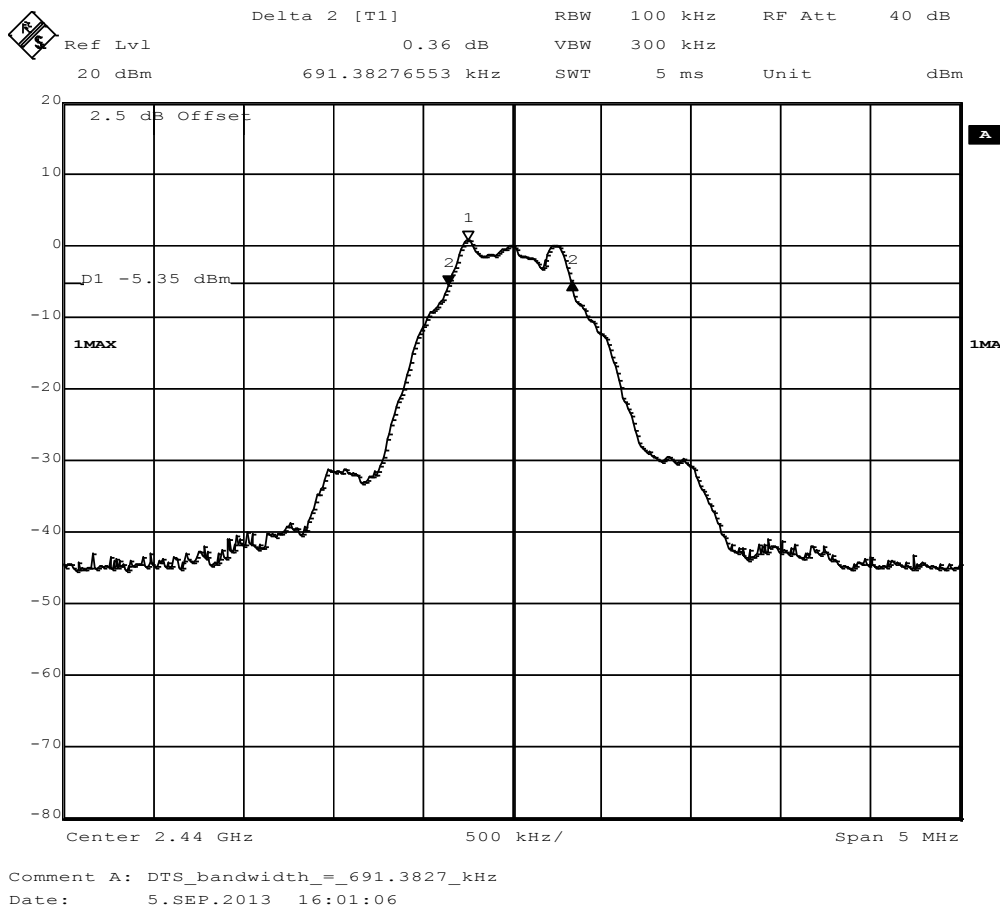
|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (a)2                                    |
| Comment 1             | Minimum 6 dB Bandwidth                                  |
| Comment 2             | Channel : 0 / 2402 MHz                                  |
| Comment 3             | Bluetooth LE / GFSK / TX-Testmode                       |



Comment A: DTS\_bandwidth=\_691.3827\_kHz  
Date: 5.SEP.2013 15:52:16

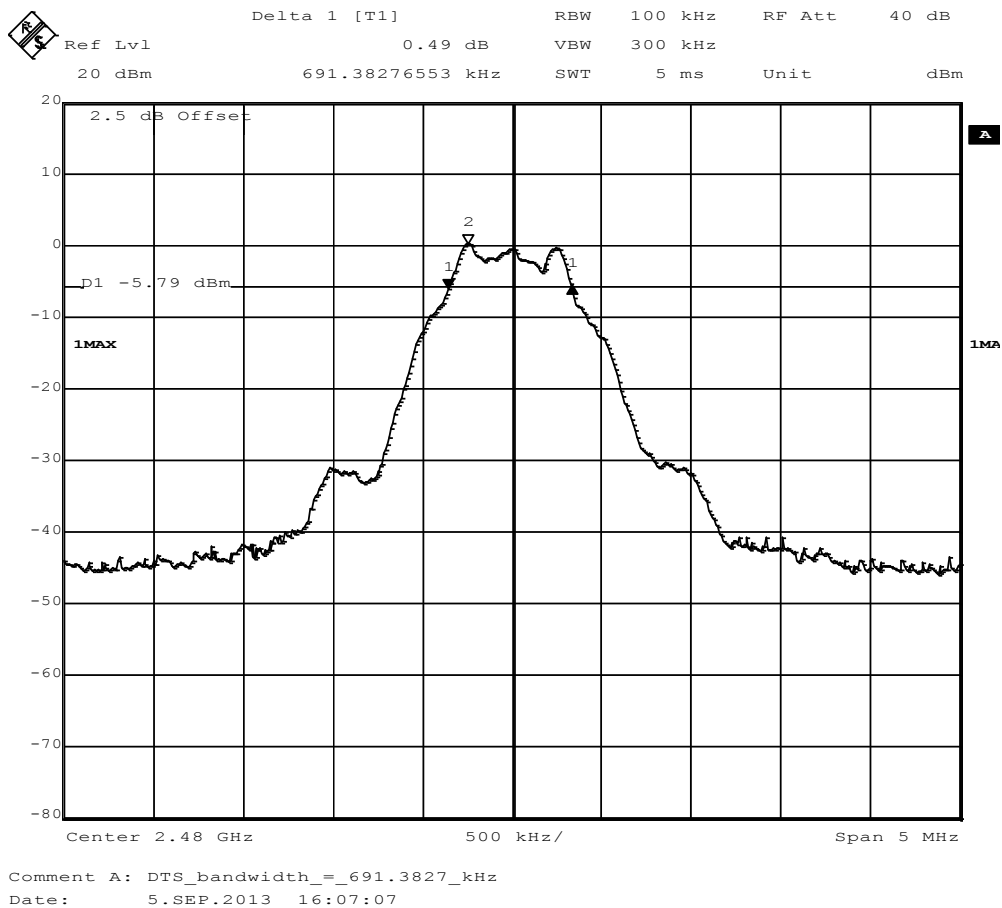
**6 dB Bandwidth – F<sub>MD</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (a)2                                    |
| Comment 1             | Minimum 6 dB Bandwidth                                  |
| Comment 2             | Channel : 19 / 2440 MHz                                 |
| Comment 3             | Bluetooth LE / GFSK / TX-Testmode                       |




**6 dB Bandwidth – F<sub>HIGH</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**


|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (a)2                                    |
| Comment 1             | Minimum 6 dB Bandwidth                                  |
| Comment 2             | Channel : 39 / 2480 MHz                                 |
| Comment 3             | Bluetooth LE / GFSK / TX-Testmode                       |



### 3.3 Test Conditions and Results – Maximum peak conducted power

| Maximum peak conducted power acc. FCC 15.247 / IC RSS-210  |                 |   |          | Verdict: PASS    |                |             |             |
|--|-----------------|---|----------|------------------|----------------|-------------|-------------|
| EUT requirement rule parts and clause  |                 | Reference                                     |          |                  |                |             |             |
|  |                 | FCC 15.247(b)(3) / IC RSS-210 A8.4            |          |                  |                |             |             |
| Test according to measurement reference  |                 | Reference Method                              |          |                  |                |             |             |
|  |                 | FCC KDB Publication No. 558074                |          |                  |                |             |             |
| Test frequency range   |                 | Tested frequencies                            |          |                  |                |             |             |
|  |                 | $F_{LOW} / F_{MID} / F_{HIGH}$                |          |                  |                |             |             |
| Measurement mode   |                 | Peak  |          |                  |                |             |             |
| Maximum antenna gain   |                 | 0.9 dBi $\Rightarrow$ Limit correction = 0 dB |          |                  |                |             |             |
| <b>Limits</b>  |                 |   |          |                  |                |             |             |
| 1 W (30 dBm)   |                 |   |          |                  |                |             |             |
| <p>The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p> |                 |   |          |                  |                |             |             |
| <b>Test setup</b>  |                 |   |          |                  |                |             |             |
|  <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>  |                 |   |          |                  |                |             |             |
| <b>Test procedure</b>  |                 |   |          |                  |                |             |             |
| <ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span set to twice the 20 dB bandwidth and detector to peak and max hold</li> <li>4. Resolution bandwidth is set to 3 MHz</li> <li>5. Peak conducted power is determined from peak of spectrum envelope</li> </ol>                        |                 |   |          |                  |                |             |             |
| <b>Test results</b>  |                 |   |          |                  |                |             |             |
| Channel  | Frequency [MHz] | Voltage                                       | Mode     | Peak power [dbm] | Peak power [W] | Limit [dBm] | Margin [dB] |
| $F_{LOW}$  | 2402            | $V_{nom} = 3.3V$                              | Transmit | 0.79             | 0.001          | 30          | -29.21      |
| $F_{MID}$  | 2440            | $V_{nom} = 3.3V$                              | Transmit | 0.82             | 0.001          | 30          | -29.18      |
| $F_{HIGH}$   | 2480            | $V_{nom} = 3.3V$                              | Transmit | 0.40             | 0.001          | 30          | -29.60      |
| Comment:   |                 |   |          |                  |                |             |             |

**3.4 Test Conditions and Results – Power spectral density**

| Power spectral density acc. FCC 15.247 / IC RSS-210  |   |           |                      | Verdict: PASS            |                  |             |
|--|---|-----------|----------------------|--------------------------|------------------|-------------|
| EUT requirement<br>rule parts and clause   | Reference   |           |                      |                          |                  |             |
|  | FCC 15.247(e) / IC RSS-210 A8.2                     |           |                      |                          |                  |             |
| Test according to<br>measurement reference   | Reference Method                                    |           |                      |                          |                  |             |
|  | FCC KDB Publication No. 558074                      |           |                      |                          |                  |             |
| Test frequency range   | Tested frequencies                                  |           |                      |                          |                  |             |
|  | $F_{\text{LOW}} / F_{\text{MID}} / F_{\text{HIGH}}$ |           |                      |                          |                  |             |
| Measurement mode   | Peak  |           |                      |                          |                  |             |
| <b>Limits</b>  |   |           |                      |                          |                  |             |
| 8 dBm / 3 kHz  |   |           |                      |                          |                  |             |
| <b>Test setup</b>  |   |           |                      |                          |                  |             |
|   |   |           |                      |                          |                  |             |
| <b>Test procedure</b>  |   |           |                      |                          |                  |             |
| <ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3kHz</li> <li>4. Peak power density is determined from peak emission of envelope</li> </ol> |   |           |                      |                          |                  |             |
| <b>Test results</b>  |   |           |                      |                          |                  |             |
| Channel  | Frequency [MHz]                                     | Test mode | Peak frequency [MHz] | Peak power density [dBm] | Limit [dBm/3kHz] | Margin [dB] |
| $F_{\text{LOW}}$   | 2402  | Transmit  | 2401.8               | 13.60                    | 8.0              | -05.60      |
| $F_{\text{MID}}$   | 2440  | Transmit  | 2439.7               | 13.66                    | 8.0              | -05.66      |
| $F_{\text{HIGH}}$  | 2480  | Transmit  | 2479.8               | 14.03                    | 8.0              | -06.03      |
| Comments:  |   |           |                      |                          |                  |             |



**3.5 Test Conditions and Results – AC power line conducted emissions**

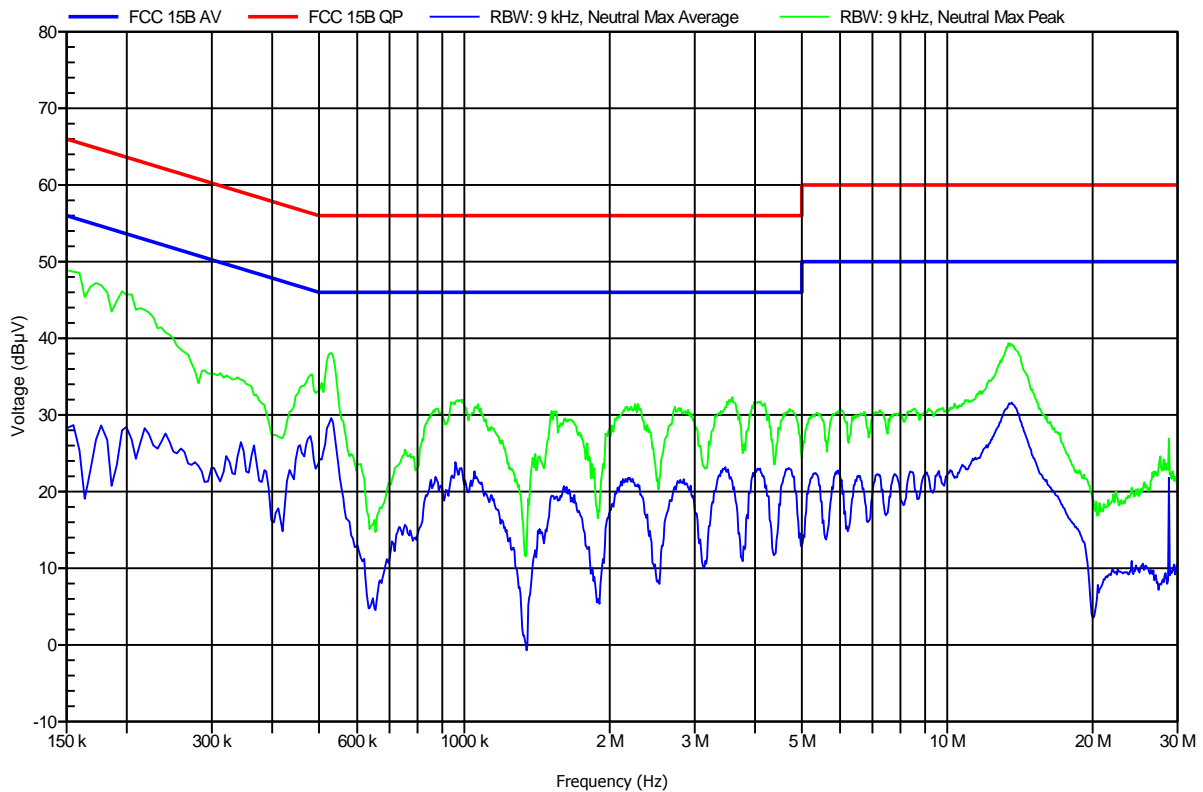
| <b>Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen</b>    |                         | <b>Verdict: PASS</b> |                      |        |
|--|-------------------------|----------------------|----------------------|--------|
| Test according referenced standards  | Reference Method        |                      |                      |        |
|  | ANSI C63.4              |                      |                      |        |
| Fully configured sample scanned over the following frequency range           | Frequency range         |                      |                      |        |
|  | 0.15 MHz to 30 MHz      |                      |                      |        |
| Points of Application  | Application Interface   |                      |                      |        |
| AC Mains   | LISN                    |                      |                      |        |
| EUT test mode  | AC power line           |                      |                      |        |
| <b>Limits and results</b>  |                         |                      |                      |        |
| Frequency [MHz]  | Quasi-Peak [dB $\mu$ V] | Result               | Average [dB $\mu$ V] | Result |
| 0.15 to 5  | 66 to 56*               | PASS                 | 56 to 46*            | PASS   |
| 0.5 to 5   | 56                      | PASS                 | 46                   | PASS   |
| 5 to 30  | 60                      | PASS                 | 50                   | PASS   |
| Comments:<br>* Limit decreases linearly with the logarithm of the frequency. |                         |                      |                      |        |

**Conducted Emissions**
**EMI voltage test in the ac-mains according to FCC 15B**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial Devices Europe GmbH  
 EUT Name: Class 2 Bluetooth Low Energy Module  
 Model: PAN1026 / ENW89837AxKF  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Handrik  
 Test Conditions: Tnom: 22°C, Unom: 5 V DC USB  
 LISN: ESH2-Z5 N  
 Mode: active  
 Test Date: 2013-08-28  
 Note:

Index 1

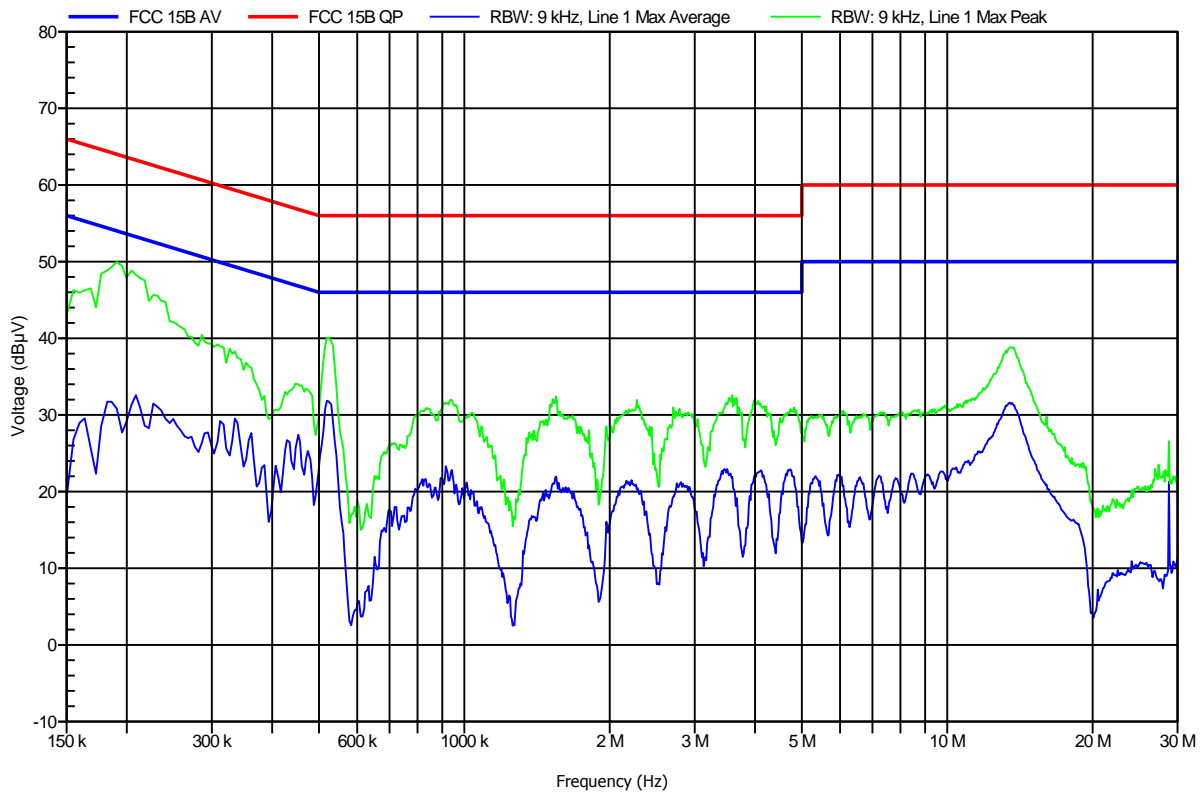


**Conducted Emissions**
**EMI voltage test in the ac-mains according to FCC 15B**


Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial Devices Europe GmbH  
 EUT Name: Class 2 Bluetooth Low Energy Module  
 Model: PAN1026 / ENW89837AxKF  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Handrik  
 Test Conditions: Tnom: 22°C, Unom: 5 V DC USB  
 LISN: ESH2-Z5 L  
 Mode: active  
 Test Date: 2013-08-28  
 Note:

Index 2



**3.6 Test Conditions and Results – Band edge compliance**

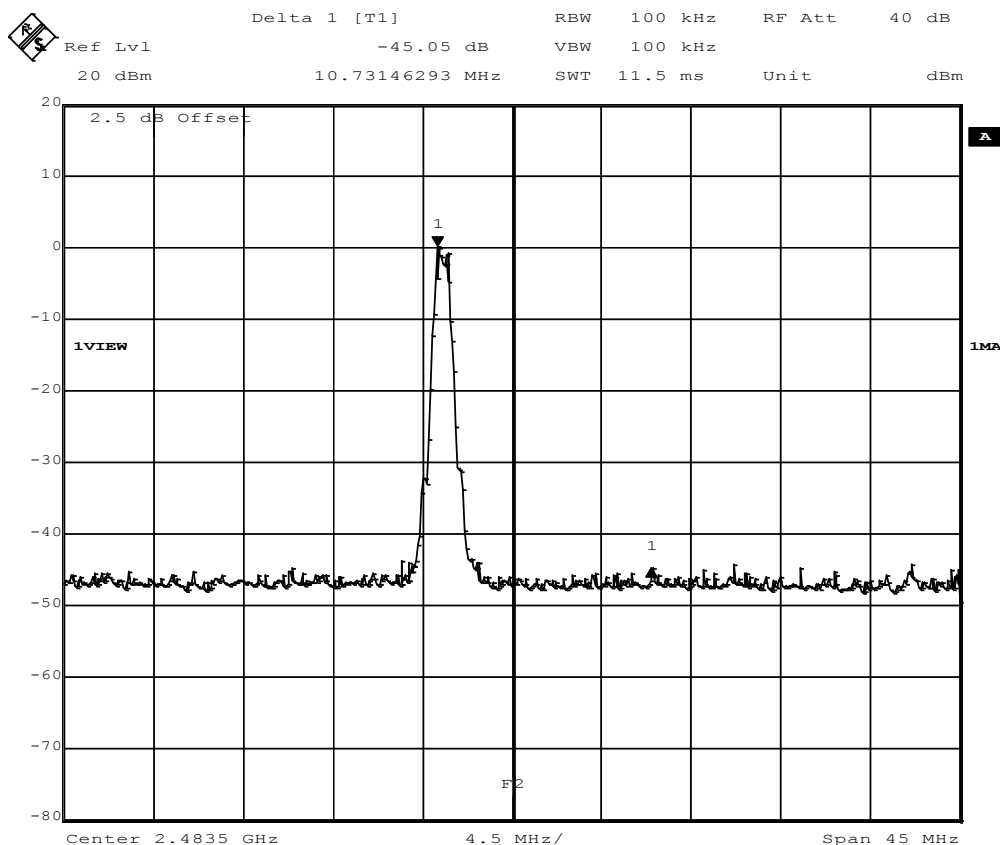
| <b>Band-edge compliance acc. FCC 15.247 / IC RSS-210</b>   |                 |                                 |  | <b>Verdict: PASS</b> |             |
|--|-----------------|---------------------------------|--|----------------------|-------------|
| EUT requirement rule parts and clause  |                 | Reference                       |  |                      |             |
|  |                 | FCC 15.247(d) / IC RSS-210 A8.5 |  |                      |             |
| Test according to measurement reference  |                 | Reference Method                |  |                      |             |
|  |                 | FCC KDB Publication No. 558074  |  |                      |             |
| Test frequency range   |                 | Tested frequencies              |  |                      |             |
|  |                 | $F_{LOW} / F_{HIGH}$            |  |                      |             |
| Measurement mode   |                 | Peak                            |  |                      |             |
| <b>Limits</b>  |                 |                                 |  |                      |             |
| Limit  |                 |                                 | Condition                              |                      |             |
| $\leq -20$ dB / 100 kHz  |                 |                                 | Peak power measurement detector = Peak |                      |             |
| $\leq -30$ dB / 100 kHz  |                 |                                 | Peak power measurement detector = RMS  |                      |             |
| <b>Test setup</b>  |                 |                                 |  |                      |             |
|  <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>  |                 |                                 |  |                      |             |
| <b>Test procedure</b>  |                 |                                 |  |                      |             |
| <ol style="list-style-type: none"> <li>EUT set to test mode (Communication tester is used if needed)</li> <li>Span set around lower band edge and detector is set to peak and max hold</li> <li>Resolution bandwidth is set to 100 kHz</li> <li>Markers are set to peak emission levels within frequency band and outside frequency band</li> <li>Band edge attenuation is determined from level difference</li> </ol> |                 |                                 |  |                      |             |
| <b>Test results</b>  |                 |                                 |  |                      |             |
| Channel  | Frequency [MHz] | Mode                            | Level [dBc]                            | Limit [dBc]          | Margin [dB] |
| $F_{LOW}$  | 2402            | Transmit                        | -45.02                                 | -20                  | -25.02      |
| $F_{HIGH}$   | 2480            | Transmit                        | -45.05                                 | -20                  | -25.05      |
| Comments:  |                 |                                 |  |                      |             |






**Band-edge compliance**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15 section 247(c)                              |
| Comment 1             | Band-edge compliance                                    |
| Comment 2             | Channel.: 39 (2480 MHz)                                 |
| Comment 3             | Bluetooth LE / GFSK / TX-Testmode                       |



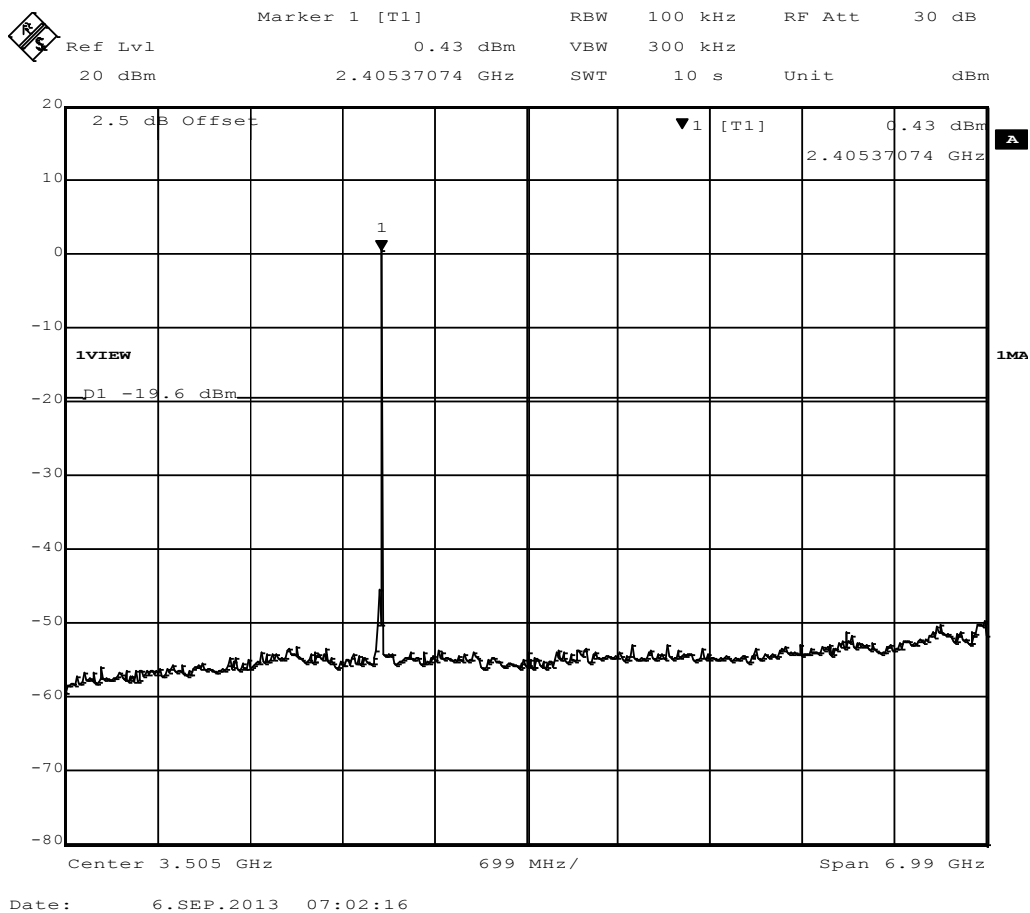
Comment A: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 6.SEP.2013 07:12:23

**3.7 Test Conditions and Results – Conducted spurious emissions**

| <b>Conducted spurious emissions acc. FCC 15.247 / IC RSS-210</b>  |                 |                                    |                                   | <b>Verdict: PASS</b>                   |                  |             |             |
|---|-----------------|------------------------------------|-----------------------------------|--|------------------|-------------|-------------|
| EUT requirement rule parts and clause   |                 | Reference                          |                                   |  |                  |             |             |
|   |                 | FCC 15.247(d) / IC RSS-210 A8.5    |                                   |  |                  |             |             |
| Test according to measurement reference   |                 | Reference Method                   |                                   |  |                  |             |             |
|   |                 | FCC KDB Publication No. 558074     |                                   |  |                  |             |             |
| Test frequency range  |                 | Tested frequencies                 |                                   |  |                  |             |             |
|   |                 | 10 MHz – 10 <sup>th</sup> Harmonic |                                   |  |                  |             |             |
| Measurement mode  |                 | Peak                               |                                   |  |                  |             |             |
| <b>Limits</b>   |                 |                                    |                                   |  |                  |             |             |
| Limit   |                 |                                    |                                   | Condition                              |                  |             |             |
| ≤ -20 dB / 100 kHz  |                 |                                    |                                   | Peak power measurement detector = Peak |                  |             |             |
| ≤ -30 dB /100 kHz   |                 |                                    |                                   | Peak power measurement detector = RMS  |                  |             |             |
| <b>Test setup</b>   |                 |                                    |                                   |  |                  |             |             |
|   |                 |                                    |                                   |  |                  |             |             |
| <b>Test procedure</b>   |                 |                                    |                                   |  |                  |             |             |
| <ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span it set according to measurement range</li> <li>3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold</li> <li>4. Markers are set to peak emission levels within frequency band</li> <li>5. Emission level is determined by second marker on emission peak</li> <li>6. Attenuation is determined from level difference</li> </ol> |                 |                                    |                                   |  |                  |             |             |
| <b>Test results</b>   |                 |                                    |                                   |  |                  |             |             |
| Channel   | Frequency [MHz] | Mode                               | Emission [MHz]                    | Emission Level [dbm]                   | Peak power [dBm] | Limit [dBm] | Margin [dB] |
| F <sub>LOW</sub>  | 2402            |                                    | no significant spurious emissions |  |                  |             |             |
| F <sub>MID</sub>  | 2440            |                                    | no significant spurious emissions |  |                  |             |             |
| F <sub>HIGH</sub>   | 2480            |                                    | no significant spurious emissions |  |                  |             |             |
| Comments:   |                 |                                    |                                   |  |                  |             |             |

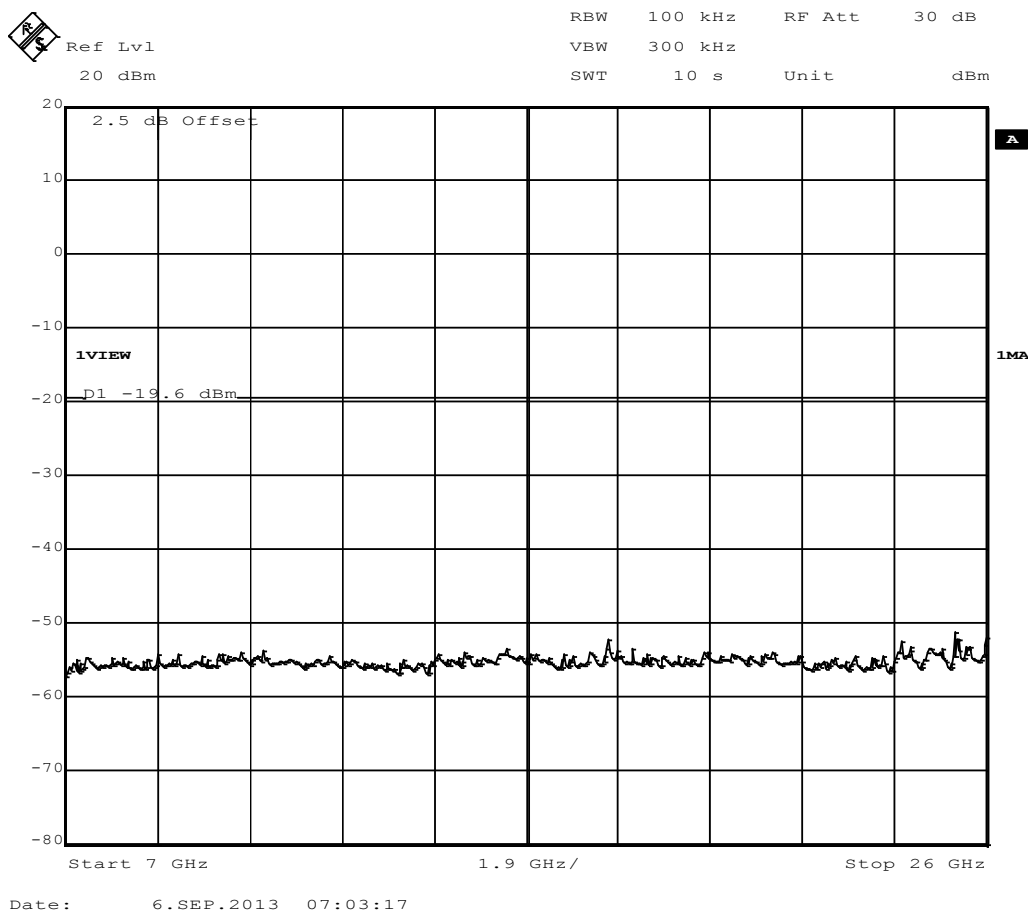
**Conducted spurious emissions – F<sub>Low</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / GOM-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 0 (2402 MHz)                                  |
| Comment 3             | Bluetooth LE / GFSK                                     |



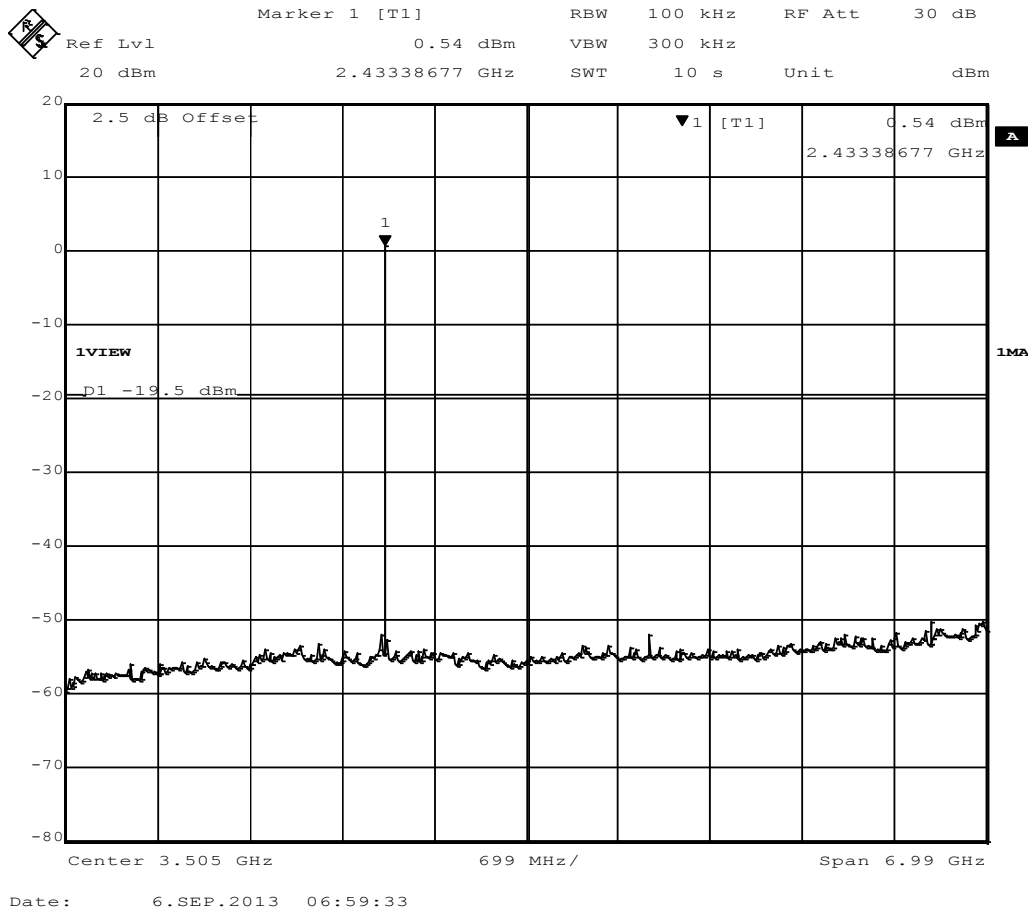
**Conducted spurious emissions – F<sub>Low</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 0 (2402 MHz)                                  |
| Comment 3             | Bluetooth LE / GFSK                                     |



**Conducted spurious emissions – F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 19 (2440 MHz)                                 |
| Comment 3             | Bluetooth LE / GFSK                                     |

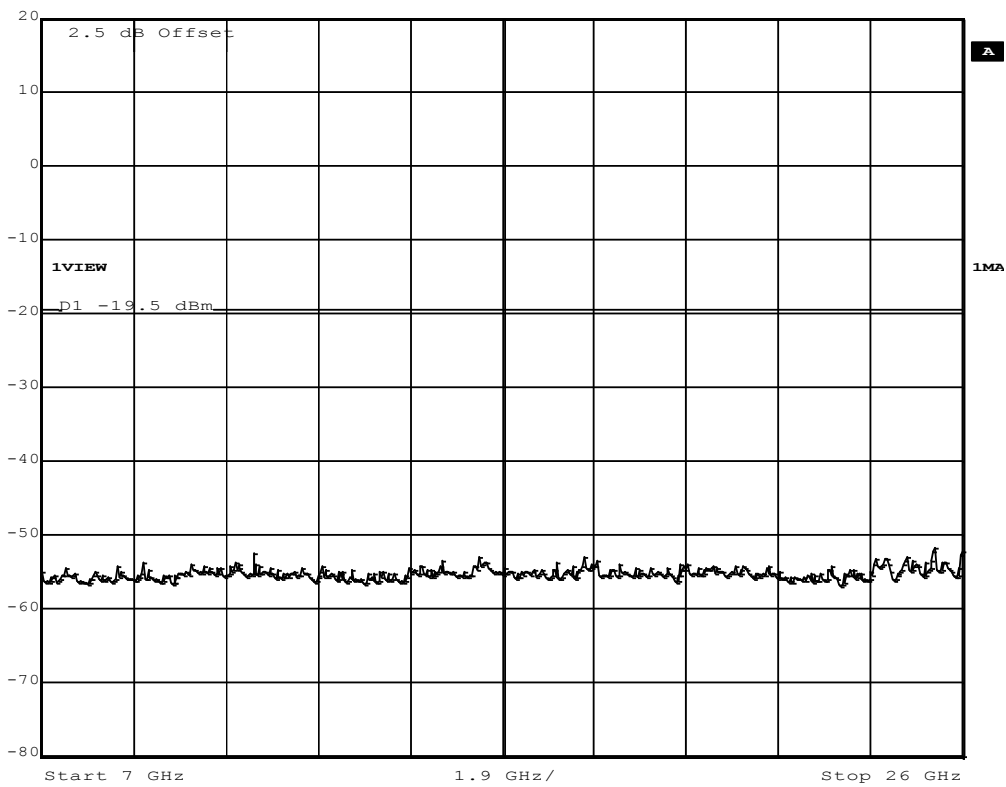


**Conducted spurious emissions – F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 19 (2440 MHz)                                 |
| Comment 3             | Bluetooth LE / GFSK                                     |


 Ref Lvl  
20 dBm

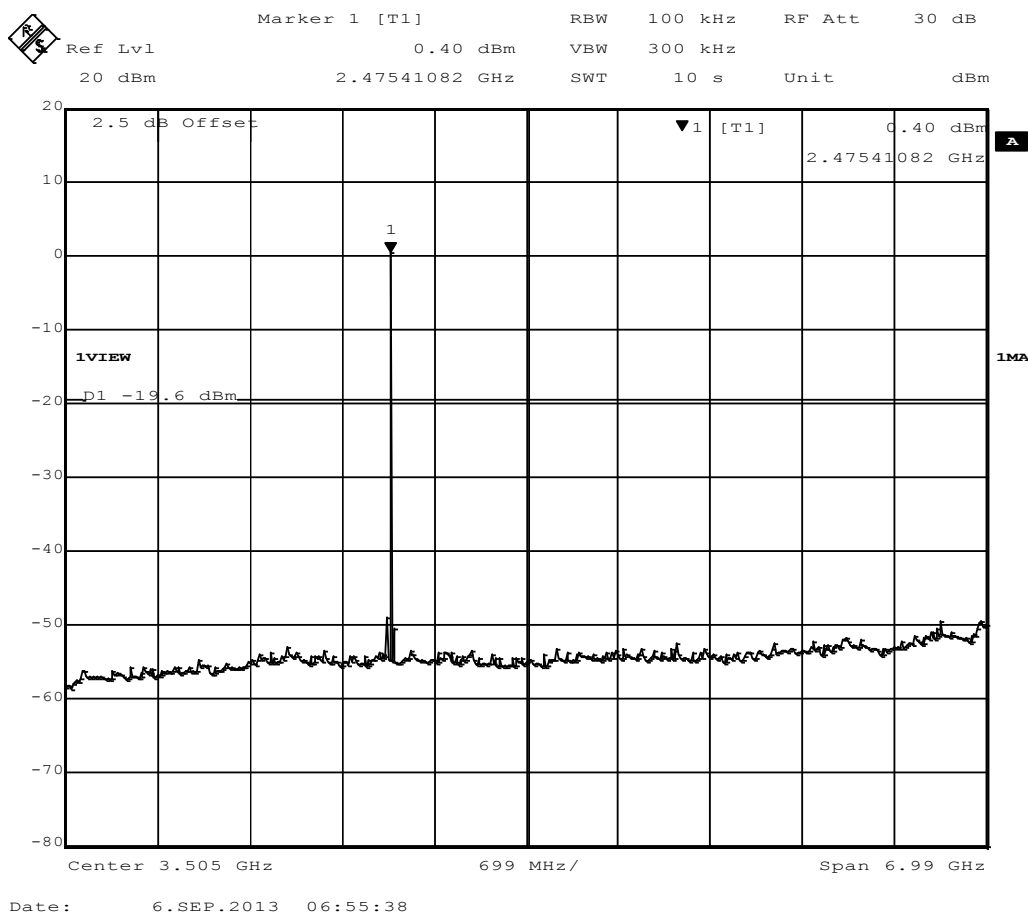
|     |         |        |       |
|-----|---------|--------|-------|
| RBW | 100 kHz | RF Att | 30 dB |
| VBW | 300 kHz |        |       |
| SWT | 10 s    | Unit   | dBm   |



Date: 6.SEP.2013 07:00:29

**Conducted spurious emissions – F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 39 (2480 MHz)                                 |
| Comment 3             | Bluetooth LE / GFSK                                     |



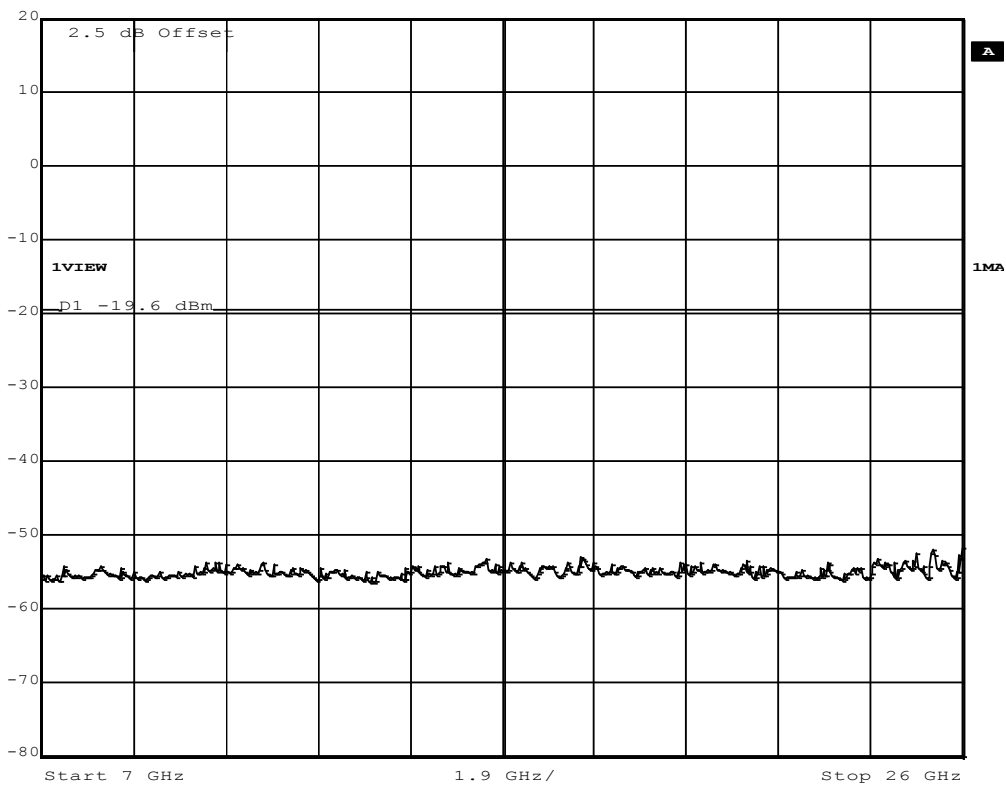


**Conducted spurious emissions – F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

|                       |   |
|-----------------------|---|
| EUT                   | Bluetooth module with UFL-connector and 1 antenna       |
| Model                 | ENW89837AXKF / BT1026                                   |
| Approval Holder       | Panasonic Industrial device Europe GmbH / G0M-1208-2160 |
| Temperature / Voltage | Tnom: 24°C / Unom: 3.3 VDC                              |
| Test Site / Operator  | Eurofins Product Service GmbH, Mr. Pudell               |
| Test Specification    | FCC part 15.247 (d)                                     |
| Comment 1             | Spurious Emissions conducted                            |
| Comment 2             | Channel : 39 (2480 MHz)                                 |
| Comment 3             | Bluetooth LE / GFSK                                     |

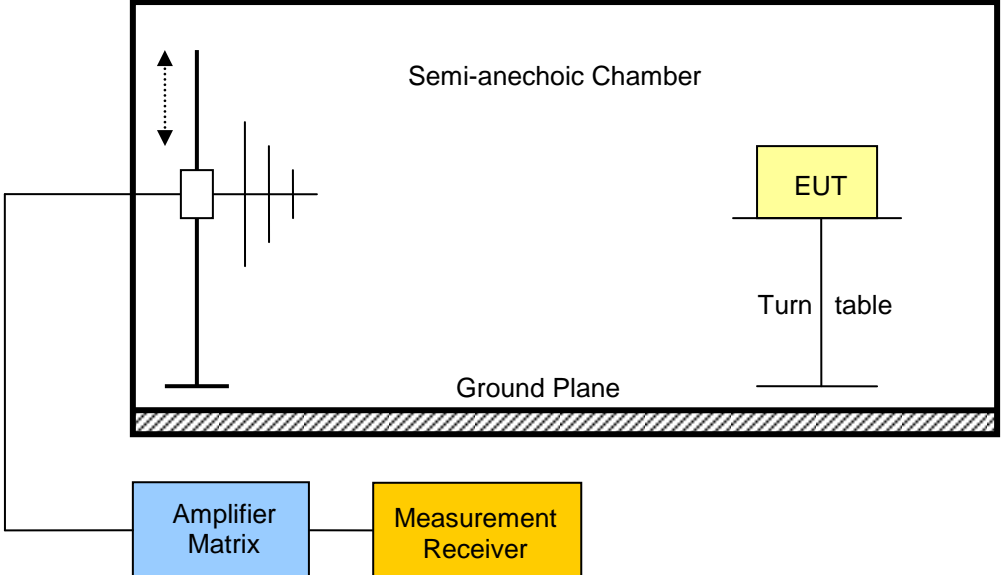

 Ref Lvl  
20 dBm

|     |         |        |       |
|-----|---------|--------|-------|
| RBW | 100 kHz | RF Att | 30 dB |
| VBW | 300 kHz |        |       |
| SWT | 10 s    | Unit   | dBm   |



Date: 6.SEP.2013 06:57:12

3.8 Test Conditions and Results – Transmitter radiated emissions

| Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210  |            |   |                      | Verdict: PASS      |  |
|---|------------|---|----------------------|--------------------|--|
| Test according referenced standards   |            | Reference Method                            |                      |                    |  |
|   |            | FCC 15.247(d) / IC RSS-210 A8.5             |                      |                    |  |
| Test according to measurement reference   |            | Reference Method                            |                      |                    |  |
|   |            | FCC KDB Publication No. 558074 / ANSI C63.4 |                      |                    |  |
| Test frequency range  |            | Tested frequencies                          |                      |                    |  |
|   |            | 30 MHz – 10 <sup>th</sup> Harmonic          |                      |                    |  |
| Limits  |            |   |                      |                    |  |
| Frequency range [MHz]   | Detector   | Limit [ $\mu$ V/m]                          | Limit [dB $\mu$ V/m] | Limit Distance [m] |  |
| 30 – 88   | Quasi-Peak | 100   | 40                   | 3                  |  |
| 88 – 216  | Quasi-Peak | 150   | 43.5                 | 3                  |  |
| 216 – 960   | Quasi-Peak | 200   | 46                   | 3                  |  |
| 960 – 1000  | Quasi-Peak | 500   | 54                   | 3                  |  |
| > 1000  | Average    | 500   | 54                   | 3                  |  |
| <p>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 15.205(c)).</p> <p>When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.</p> |            |   |                      |                    |  |
| Test setup  |            |   |                      |                    |  |
|  <p>The diagram illustrates the test setup within a Semi-anechoic Chamber. A Ground Plane is located at the bottom. An Amplifier Matrix is connected to a Measurement Receiver. The Equipment Under Test (EUT) is placed on a Turn table. The chamber is designed to minimize reflections, ensuring accurate measurement of radiated emissions.</p>   |            |   |                      |                    |  |

**Test procedure**

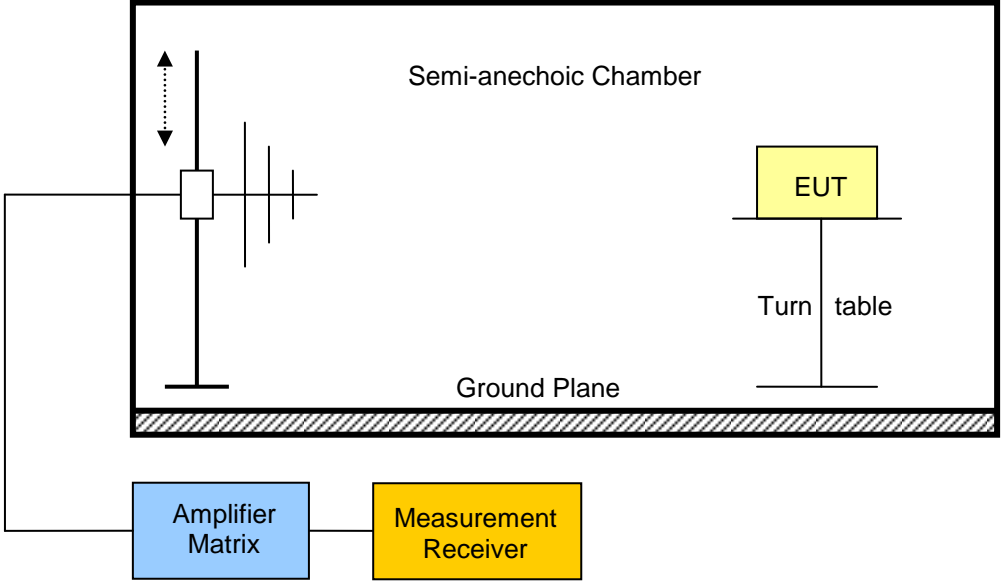
1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4. Markers are set to peak emission levels within restricted bands

**Test results**

| Channel           | Frequency [MHz] | Mode     | Emission [MHz]                    | Level [dB $\mu$ V/m] | Det. | Pol. | Limit [dB $\mu$ V/m] | Limit dist. [m]* | Margin [dB] |
|-------------------|-----------------|----------|-----------------------------------|----------------------|------|------|----------------------|------------------|-------------|
| F <sub>LOW</sub>  | 2402            |          | No significant spurious emissions |                      |      |      |                      |                  |             |
| F <sub>MID</sub>  | 2440            |          | No significant spurious emissions |                      |      |      |                      |                  |             |
| F <sub>HIGH</sub> | 2480            | Transmit | 2483.6                            | 52.48                | pk   | hor  | 74.00                | 3                | -21.52      |
| F <sub>HIGH</sub> | 2480            | Transmit | 2483.6                            | 32.67                | avg  | hor  | 54.00                | 3                | -21.33      |

Comments: \* Physical distance between EUT and measurement antenna.

3.9 Test Conditions and Results – Receiver radiated emissions

| Receiver radiated emissions acc. IC RSS-210  |                                   |                    | Verdict: PASS        |                    |
|--|-----------------------------------|--------------------|----------------------|--------------------|
| Test according referenced standards  | Reference Method                  |                    |                      |                    |
|  | IC RSS-210 A8.5                   |                    |                      |                    |
| Test according to measurement reference  | Reference Method                  |                    |                      |                    |
|  | ANSI C63.4                        |                    |                      |                    |
| Test frequency range   | Tested frequencies                |                    |                      |                    |
|  | 30 MHz – 3 <sup>th</sup> Harmonic |                    |                      |                    |
| EUT test mode  | Receive                           |                    |                      |                    |
| Limits   |                                   |                    |                      |                    |
| Frequency range [MHz]  | Detector                          | Limit [ $\mu$ V/m] | Limit [dB $\mu$ V/m] | Limit Distance [m] |
| 30 – 88  | Quasi-Peak                        | 100                | 40                   | 3                  |
| 88 – 216   | Quasi-Peak                        | 150                | 43.5                 | 3                  |
| 216 – 960  | Quasi-Peak                        | 200                | 46                   | 3                  |
| 960 – 1000   | Quasi-Peak                        | 500                | 54                   | 3                  |
| > 1000   | Average                           | 500                | 54                   | 3                  |
| Test setup   |                                   |                    |                      |                    |
|  <p>The diagram illustrates the test setup within a Semi-anechoic Chamber. A Ground Plane is located at the bottom. An Amplifier Matrix (blue box) is connected to a Measurement Receiver (yellow box) outside the chamber. Inside the chamber, the EUT (yellow box) is placed on a Turn table. A vertical antenna is positioned to the left of the EUT, with a vertical double-headed arrow indicating its height. The chamber walls are shown with a hatched pattern representing absorbers.</p> |                                   |                    |                      |                    |

| Test procedure   |                 |                                   |                               |                             |      |                    |                     |
|--|-----------------|-----------------------------------|-------------------------------|-----------------------------|------|--------------------|---------------------|
| <ol style="list-style-type: none"> <li>1. EUT set to receive mode (Communication tester is used if needed)</li> <li>2. Span it set according to measurement range</li> <li>3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz</li> <li>4. Markers are set to peak emission levels</li> </ol> |                 |                                   |                               |                             |      |                    |                     |
| Test results   |                 |                                   |                               |                             |      |                    |                     |
| Channel  | Frequency [MHz] | Emission [MHz]                    | Emission Level [dB $\mu$ V/m] | Emission Level [ $\mu$ V/m] | Det. | Limit [ $\mu$ V/m] | Margin [ $\mu$ V/m] |
| F <sub>MID</sub>   | 2442            | No significant spurious emissions |                               |                             |      |                    |                     |
| Comments:<br>* Physical distance between EUT and measurement antenna.<br>** Emission level corresponds to ambient noise floor  |                 |                                   |                               |                             |      |                    |                     |

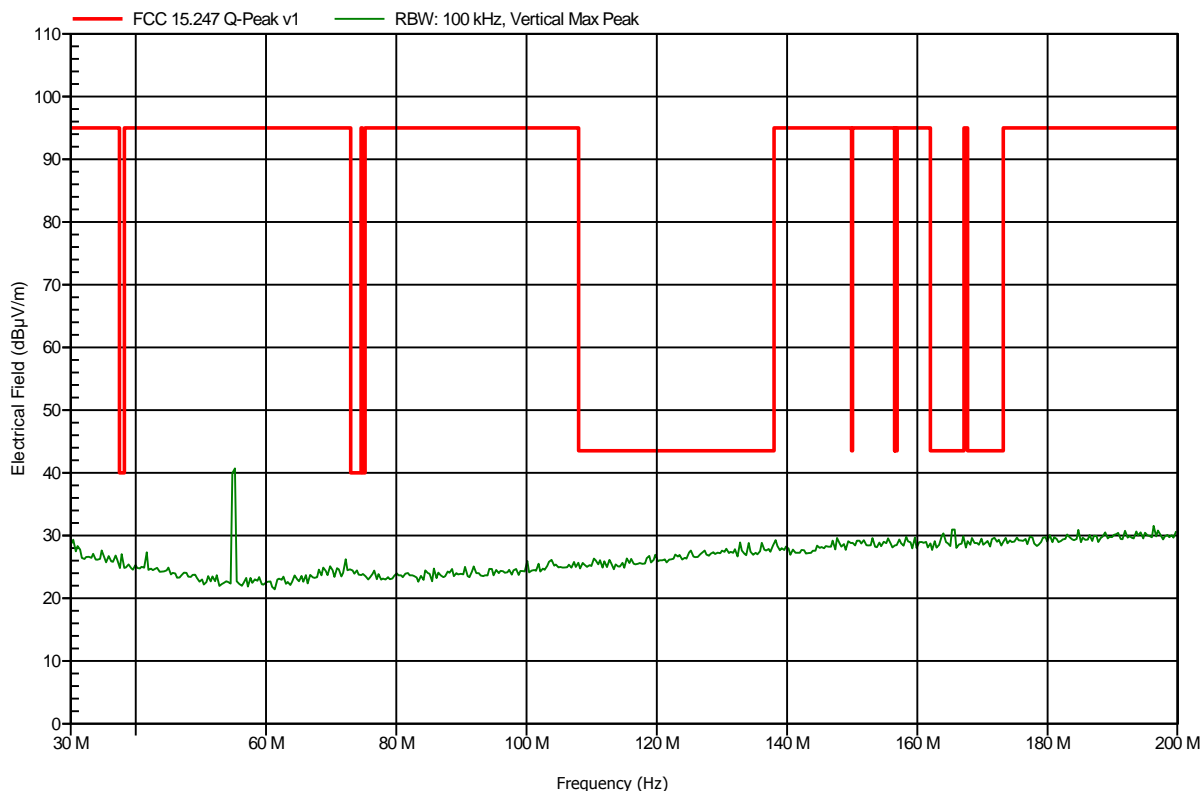
## ANNEX A Transmitter radiated spurious emissions

### Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HK 116, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX Mode; worst case               |

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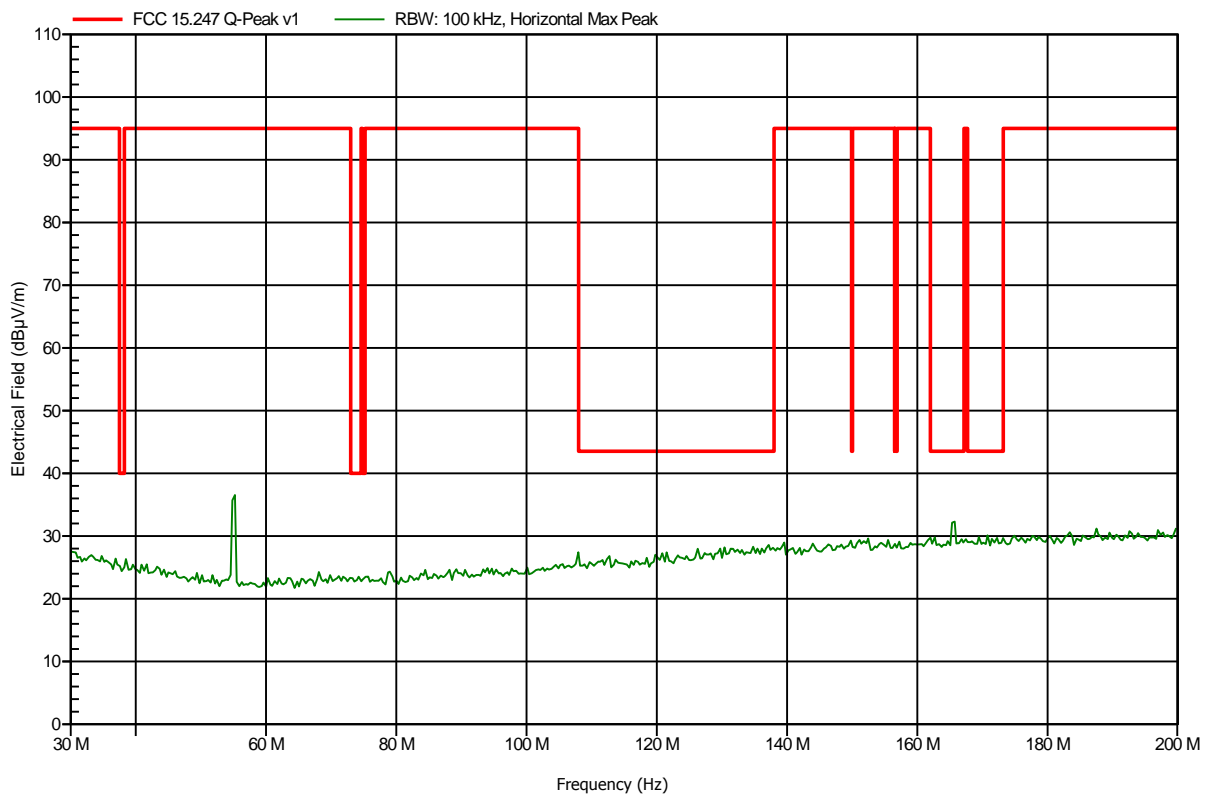


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HK 116, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX Mode; worst case               |

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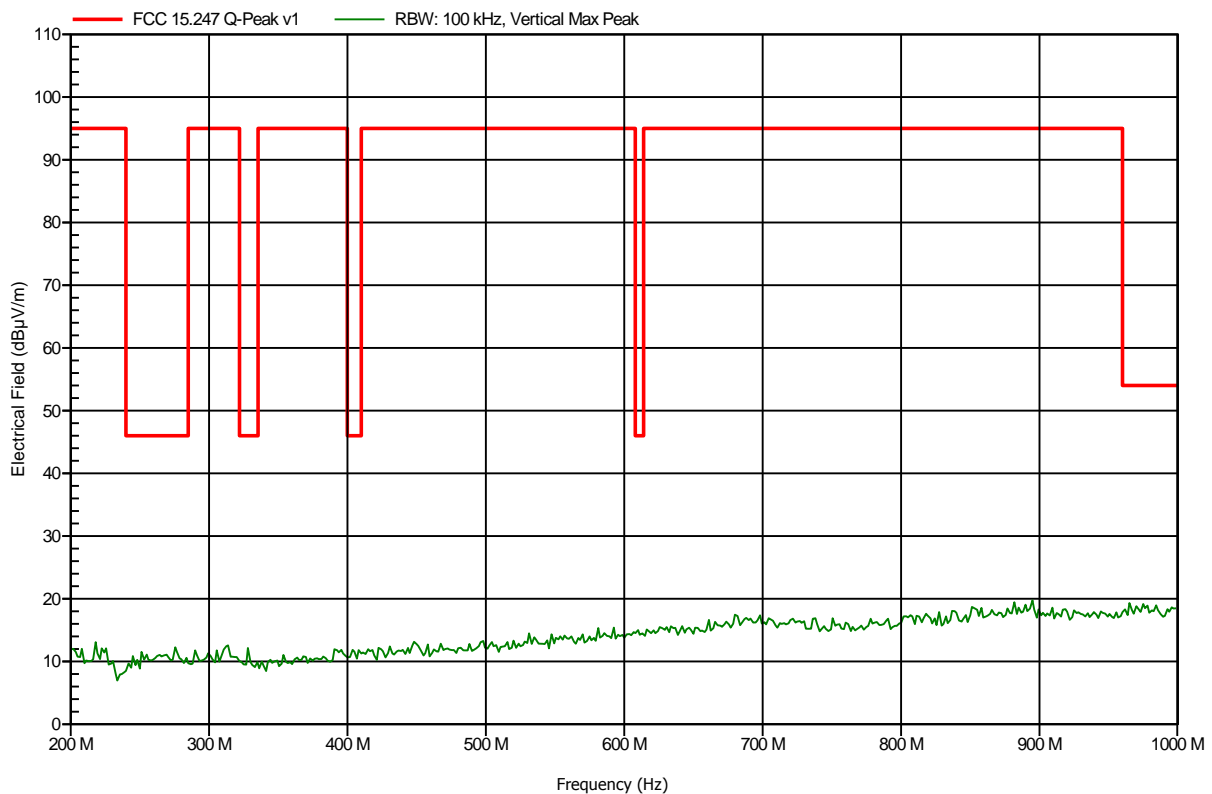


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 223, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX Mode; worst case               |

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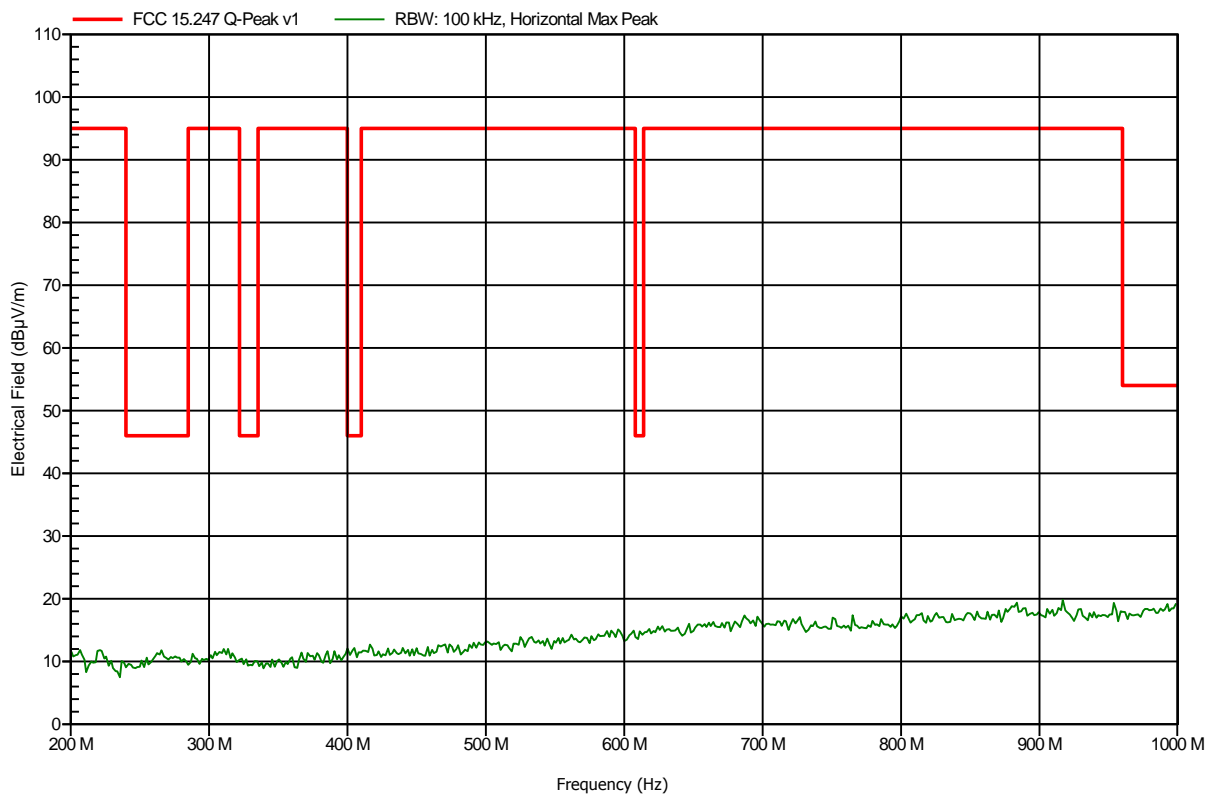


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 223, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX Mode; worst case               |

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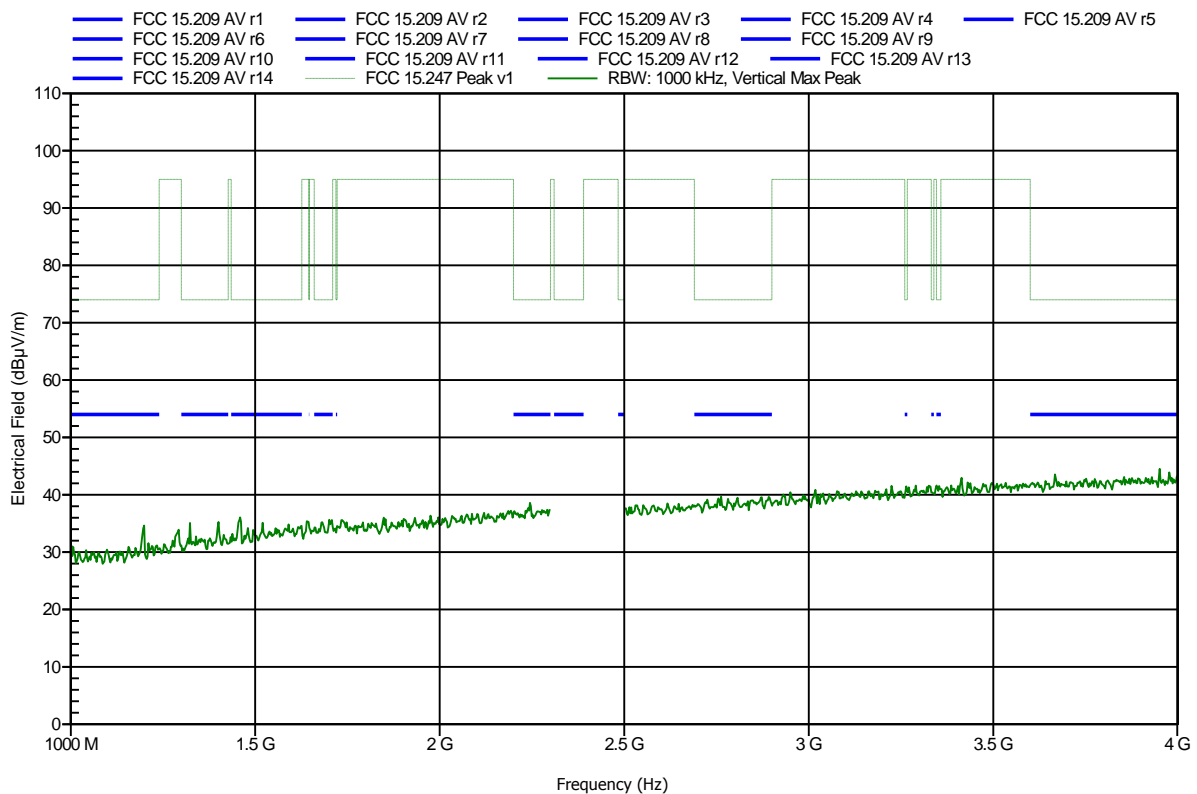


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: EUT horizontal; TX mode

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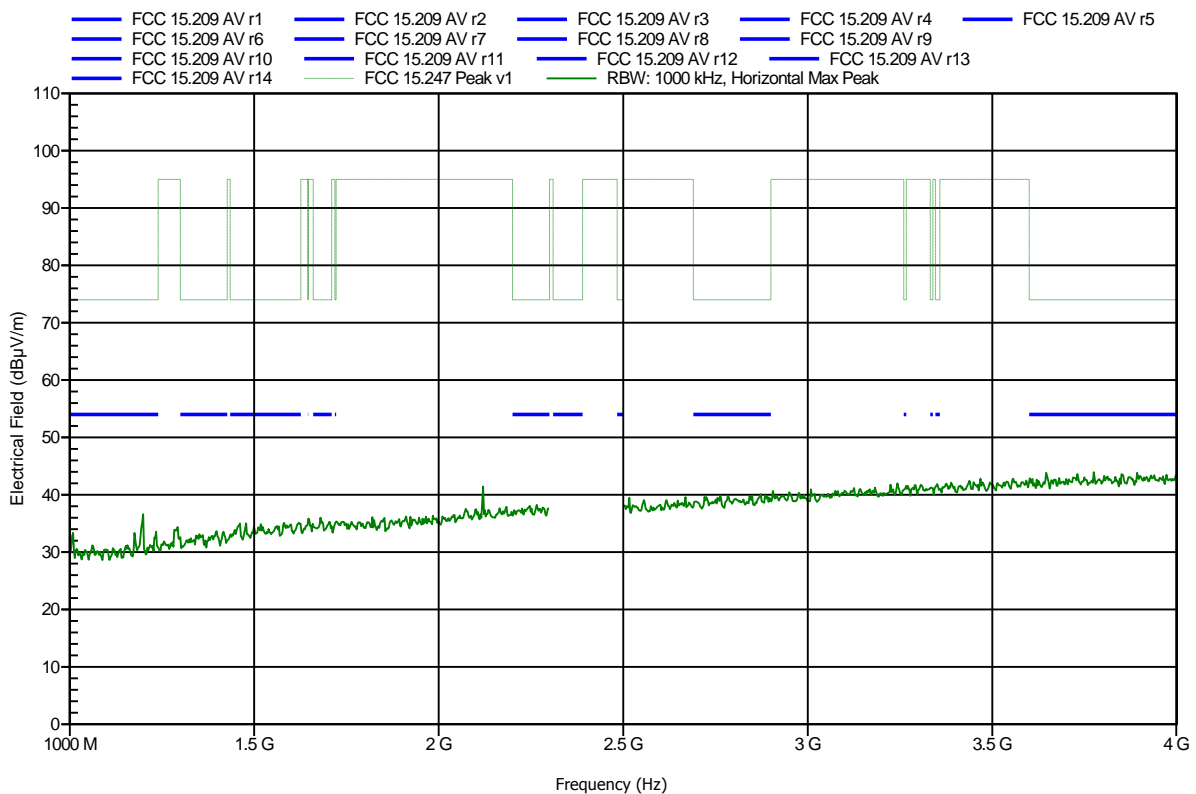


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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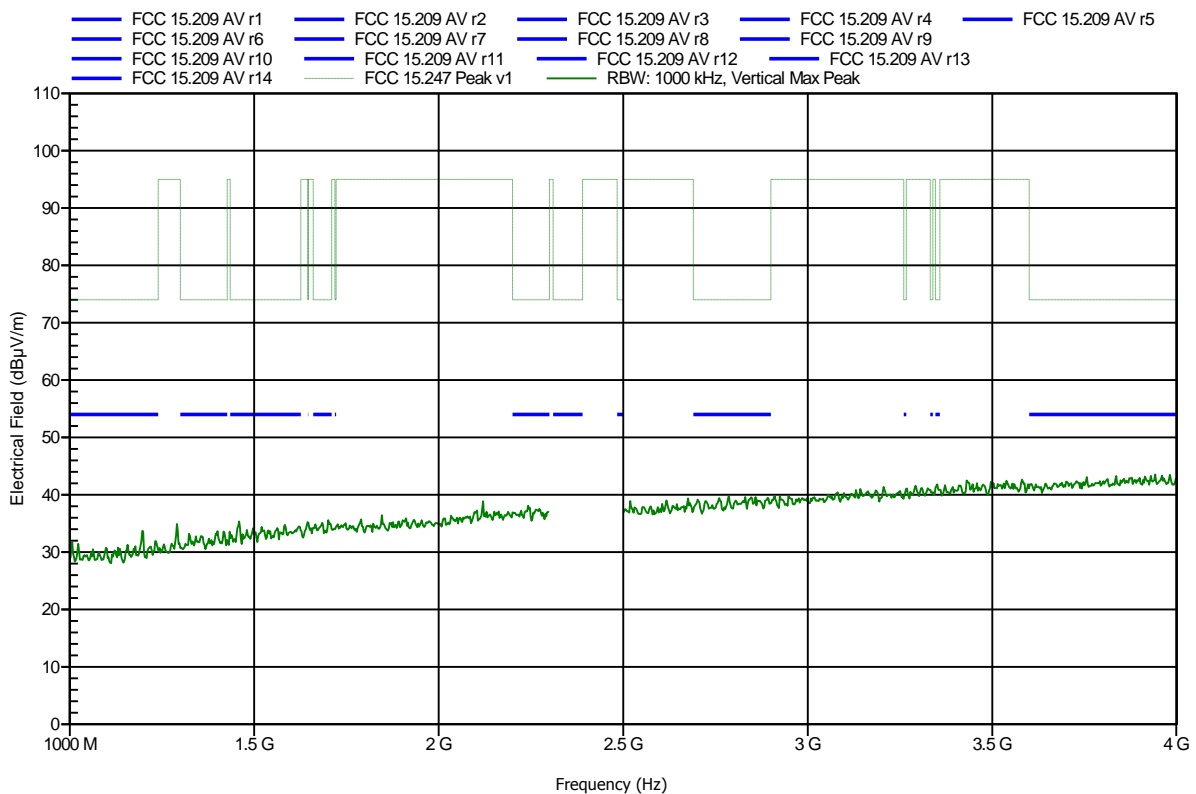


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: EUT horizontal; TX mode

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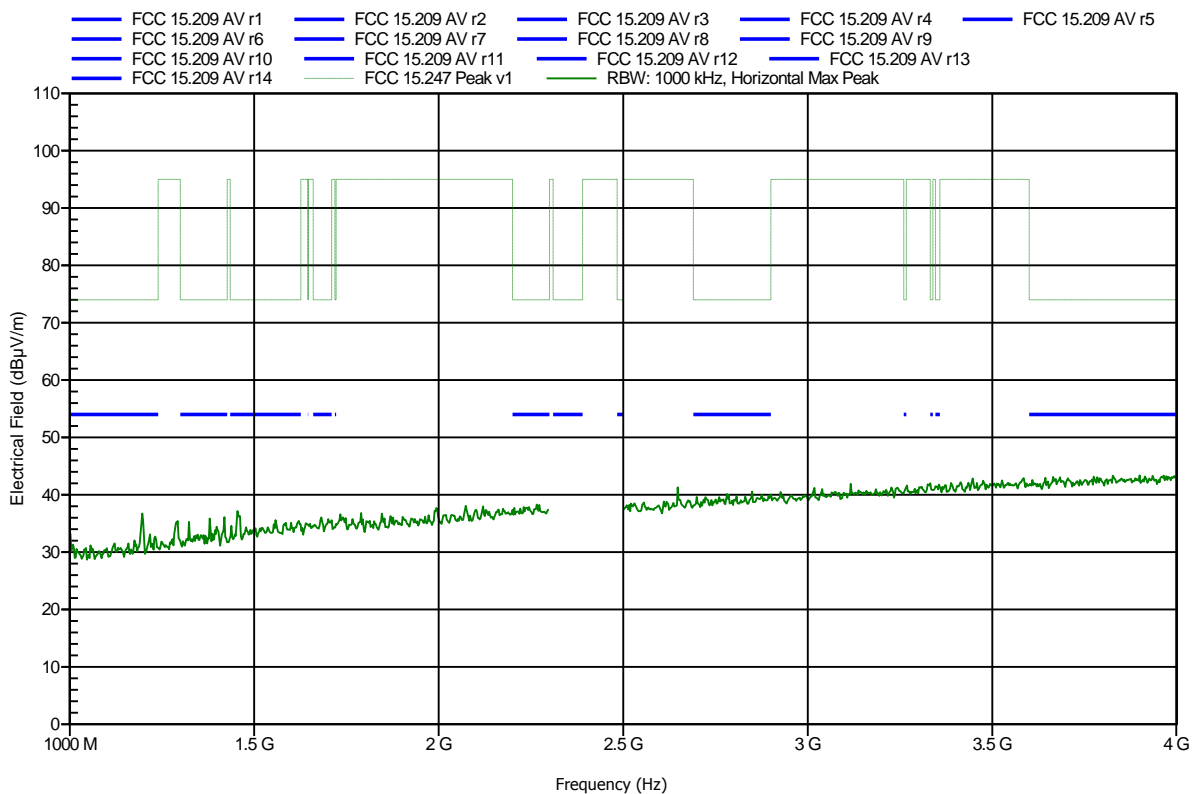


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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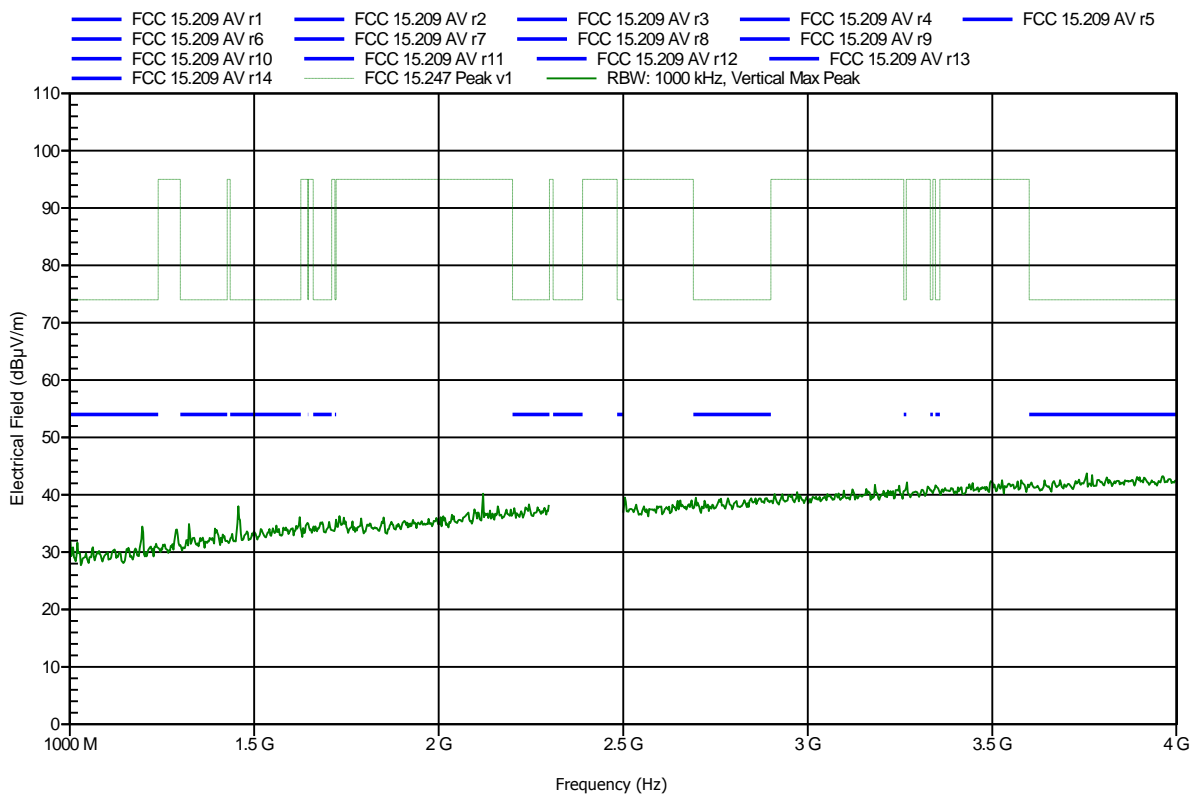


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: EUT horizontal; TX mode

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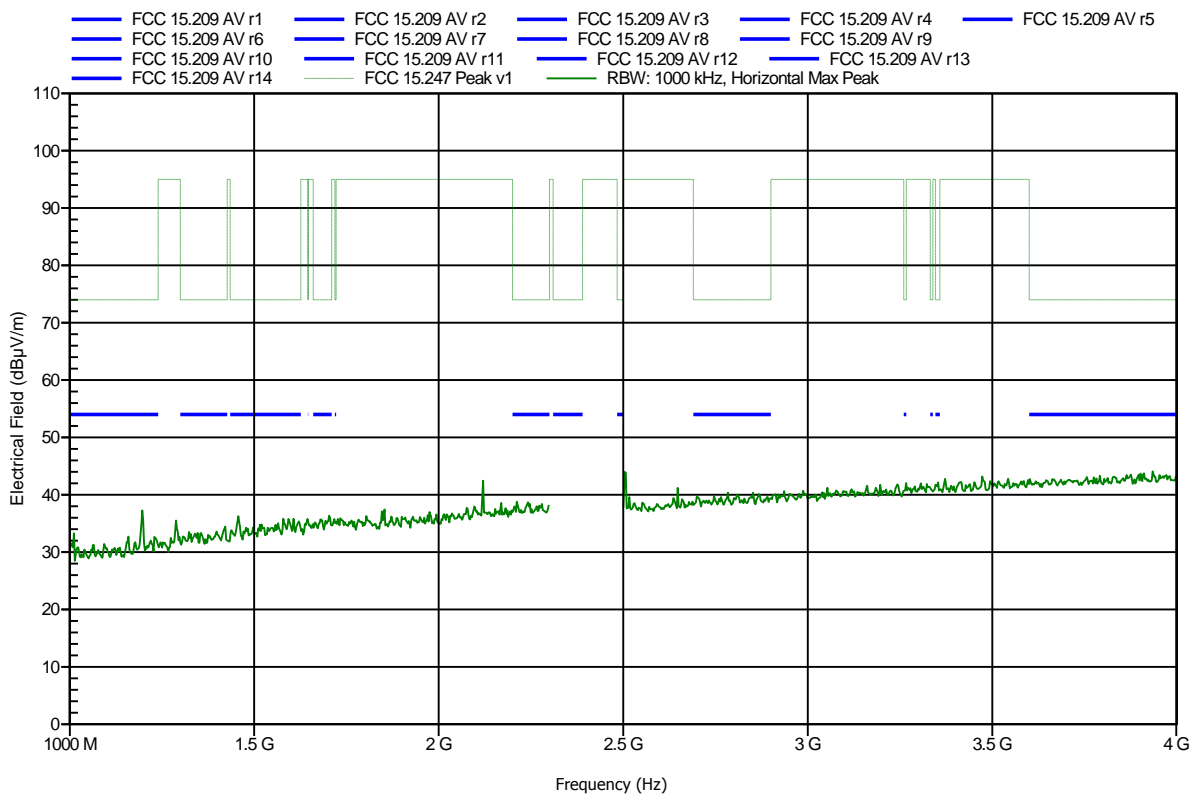


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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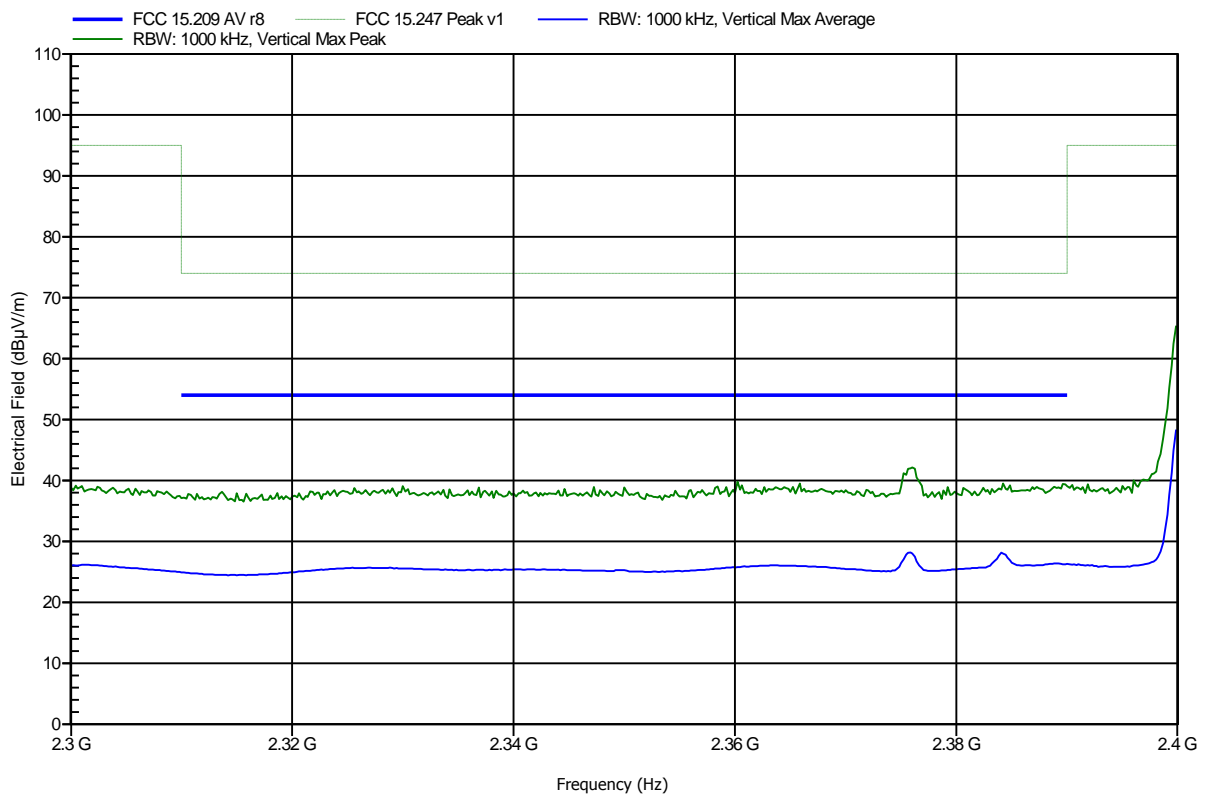


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-03  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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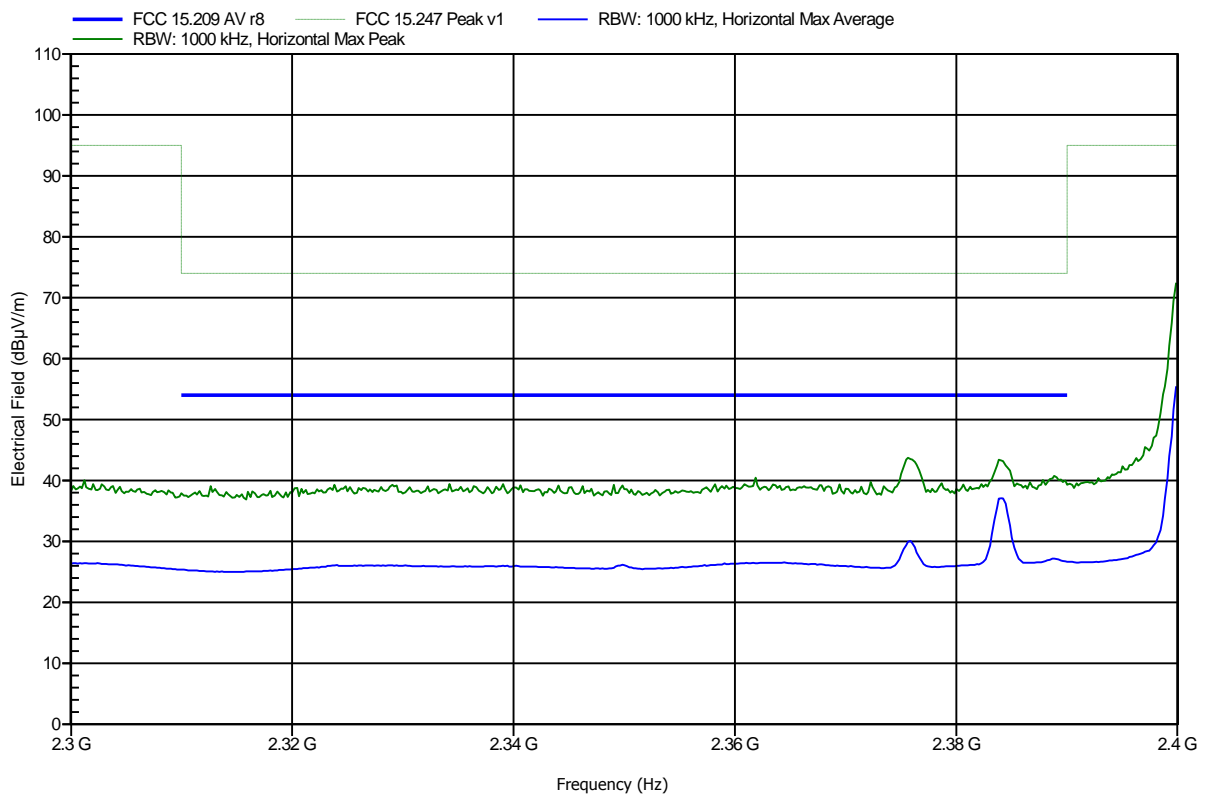


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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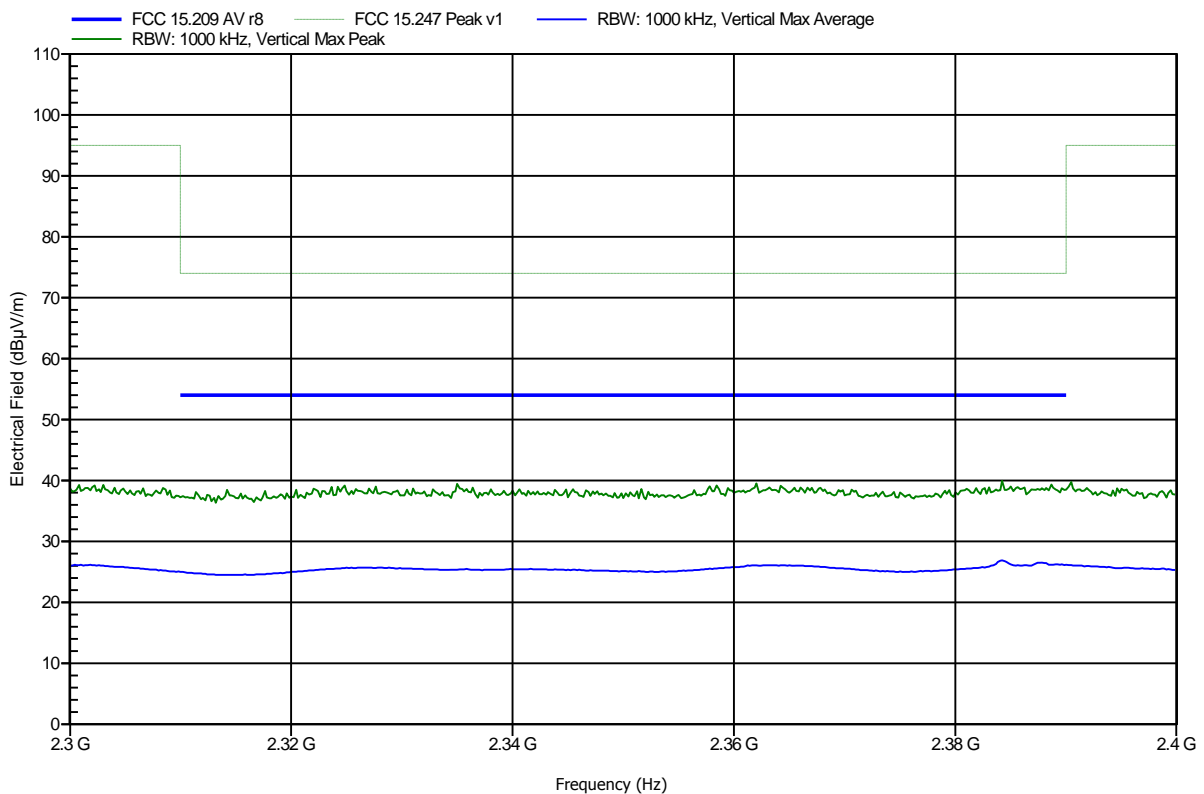


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 19; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-03  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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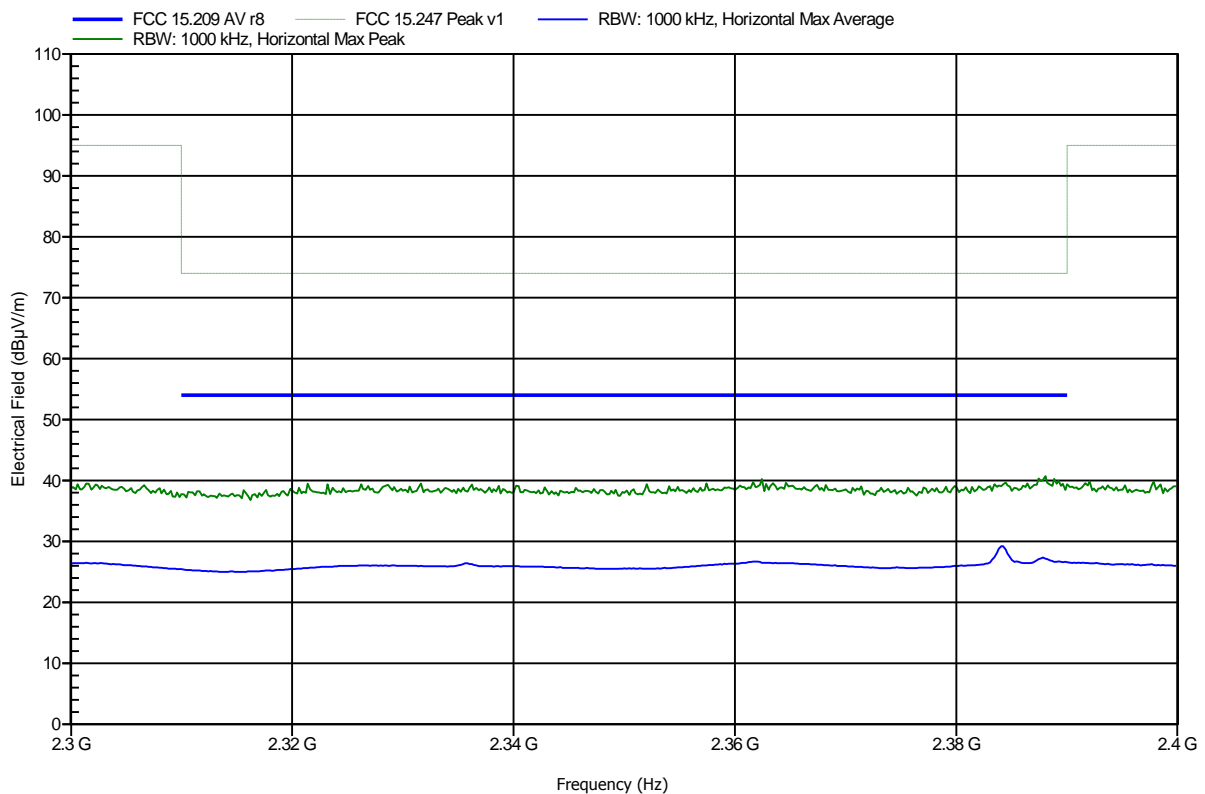


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 19; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-04  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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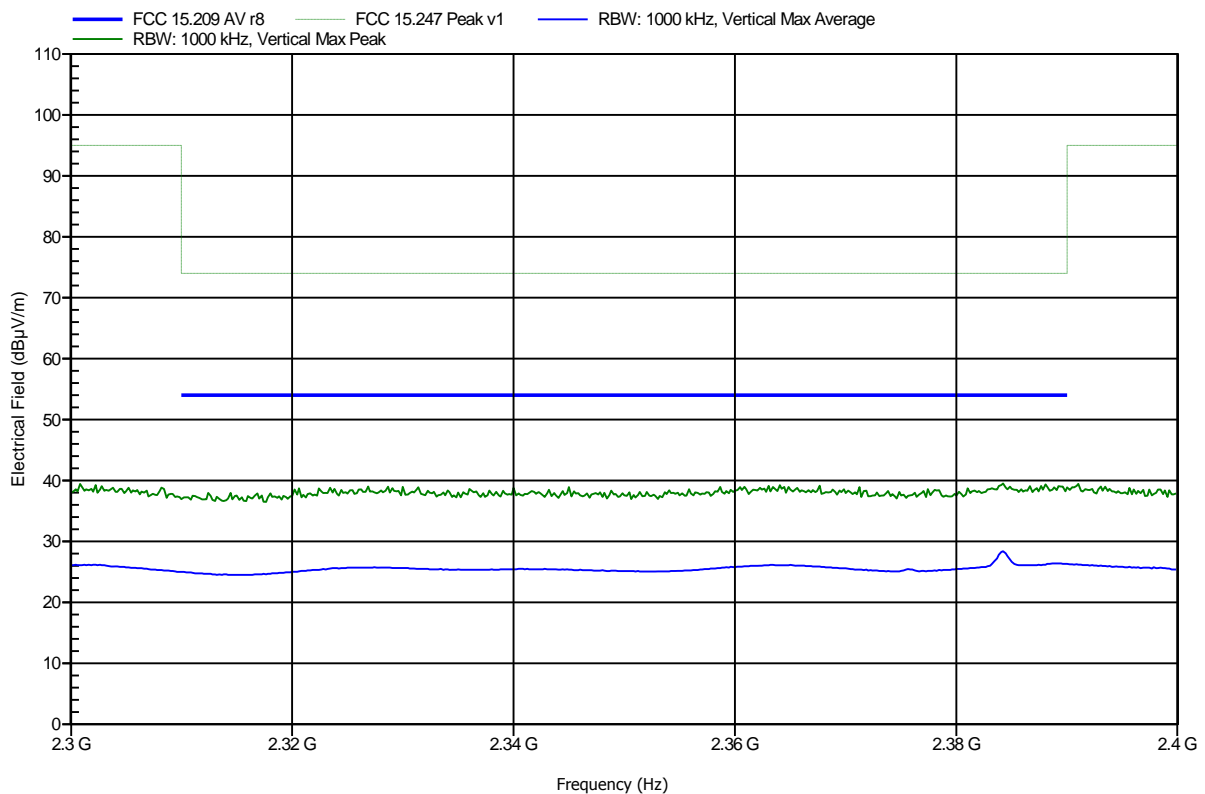


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 39; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-03  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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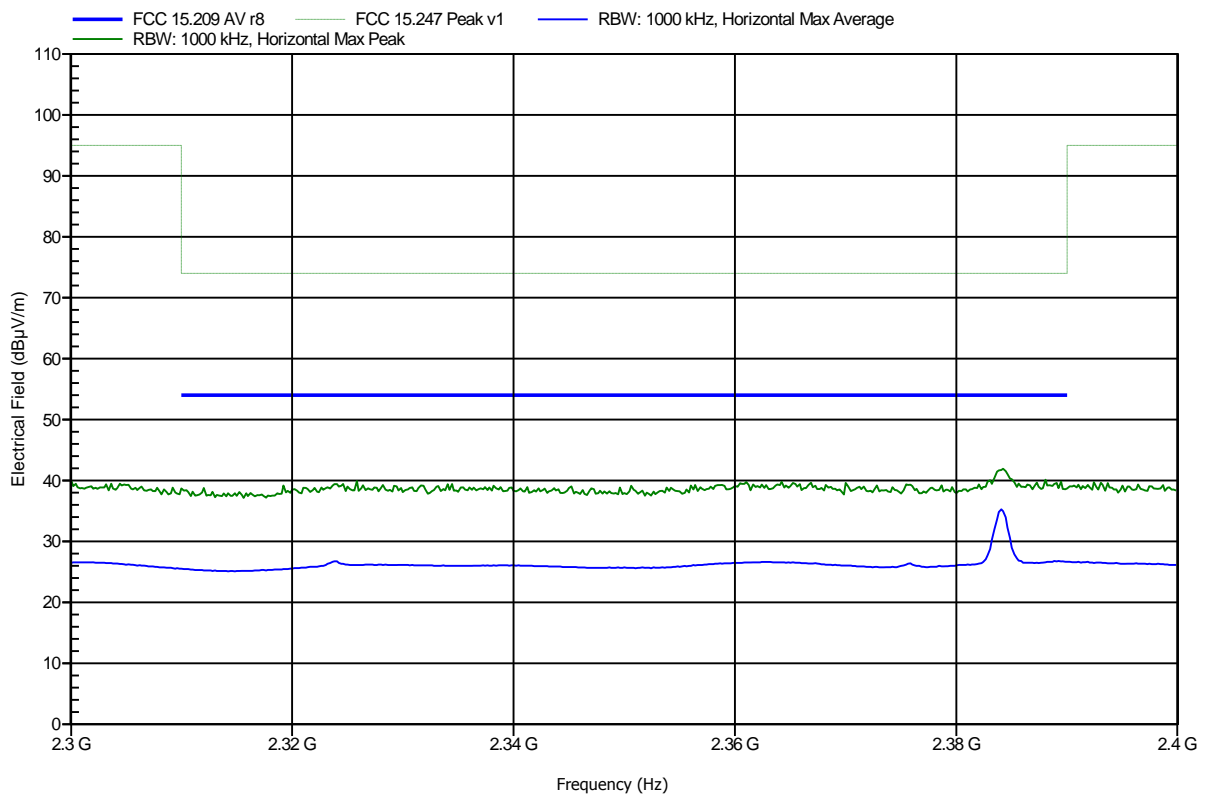


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | TX; BT-LE; CH 39; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-04  |
| Note:                 | Lower Band Edge; EUT horizontal; TX mode          |

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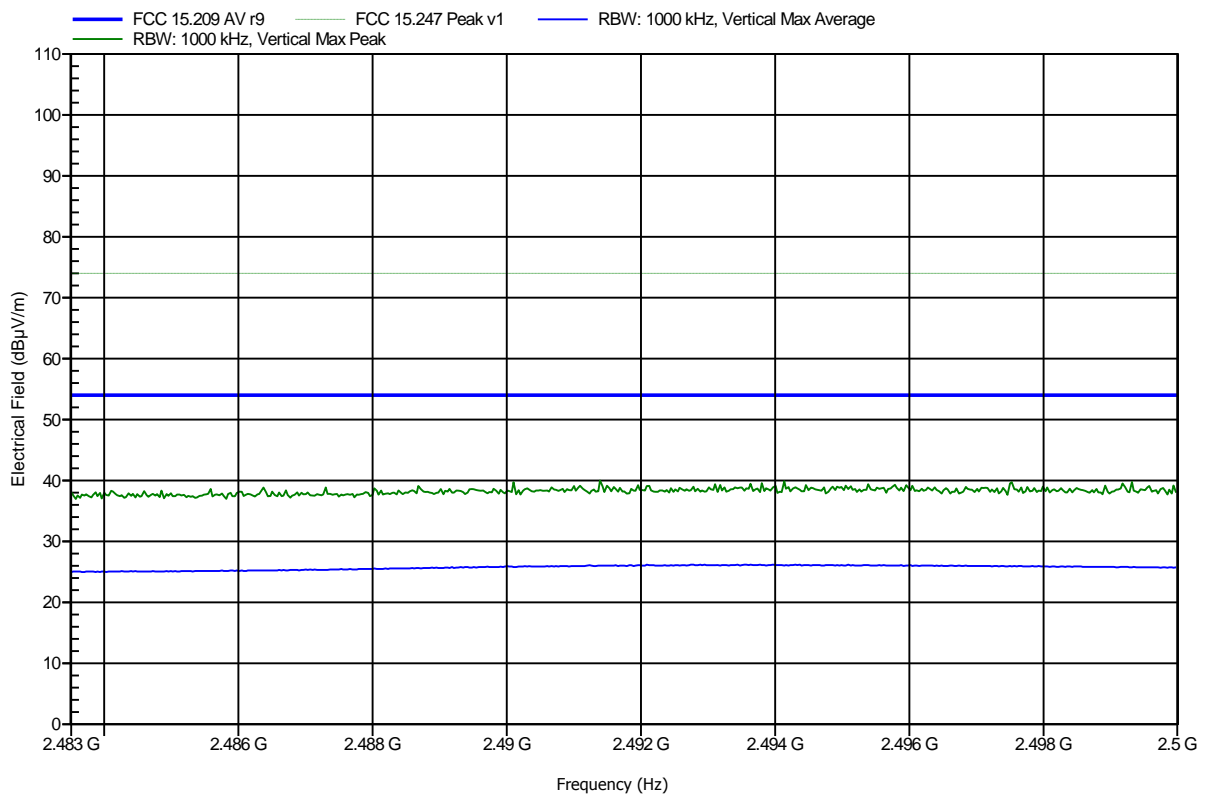


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: Upper Band Edge; EUT horizontal; TX mode

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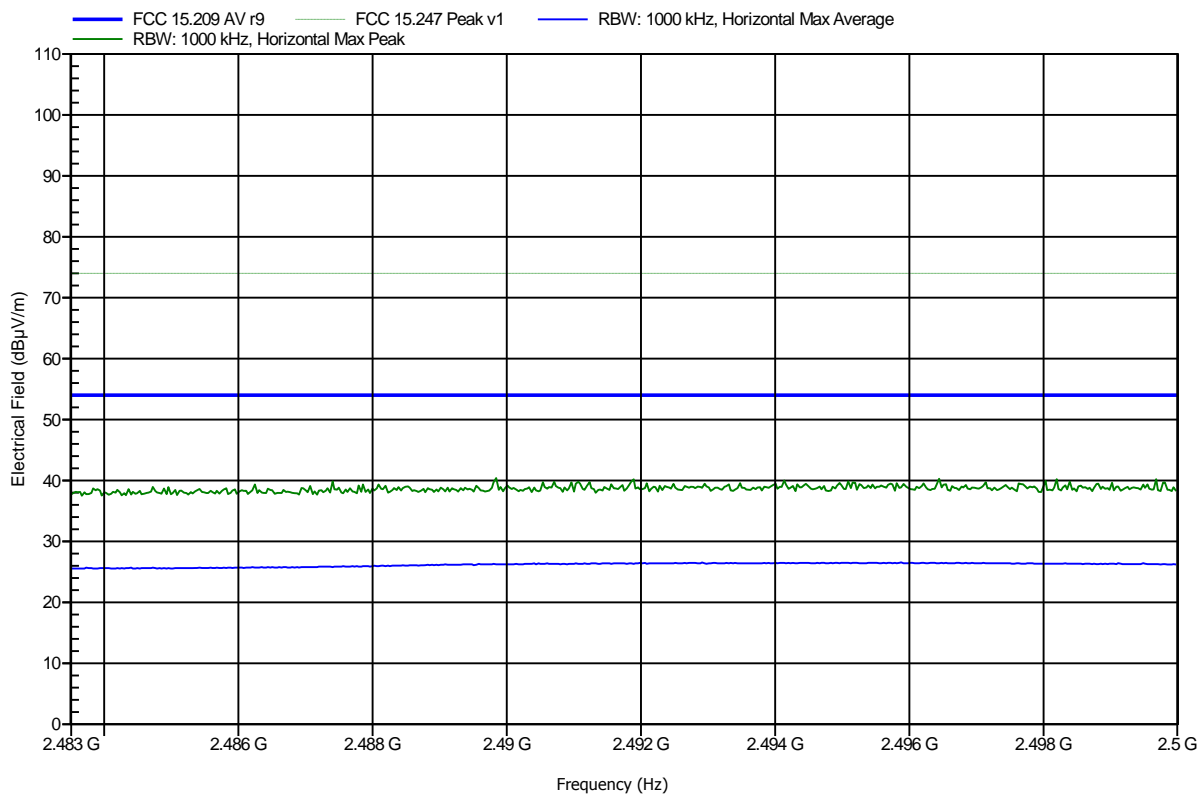


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: Upper Band Edge; EUT horizontal; TX mode

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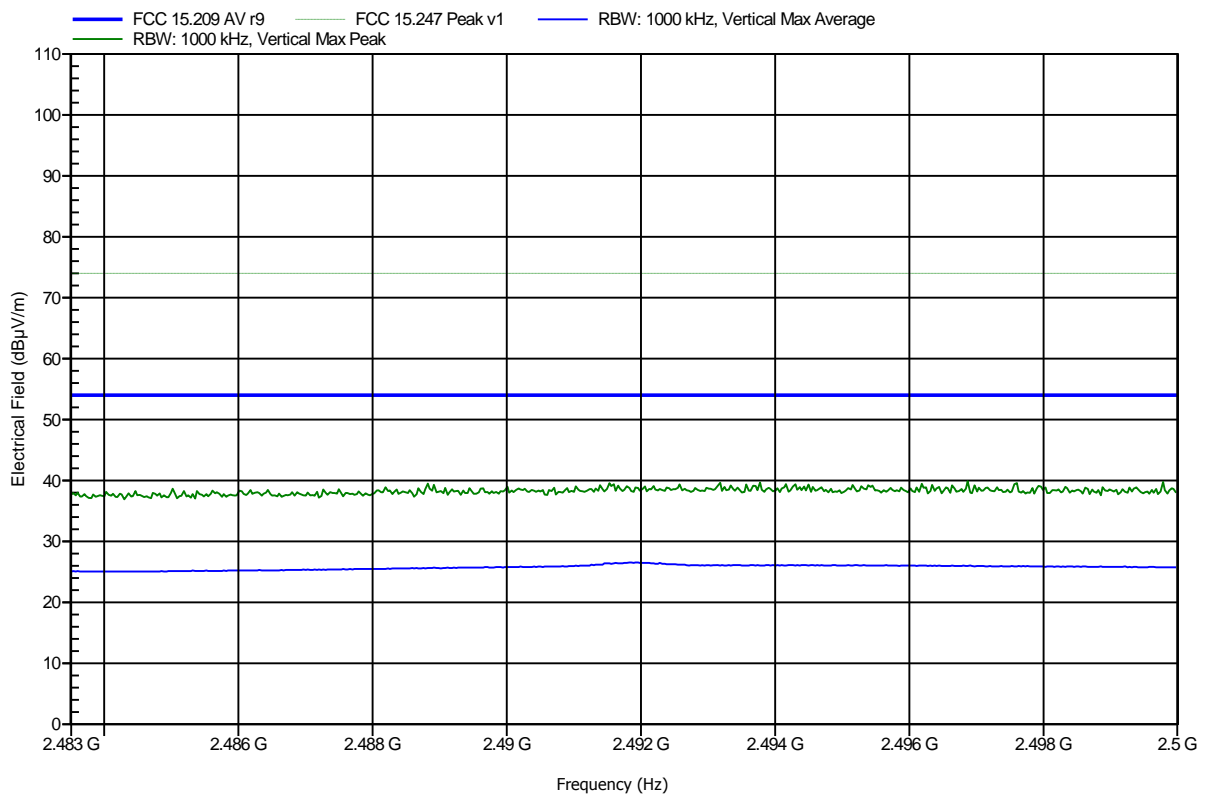


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: Upper Band Edge; EUT horizontal; TX mode

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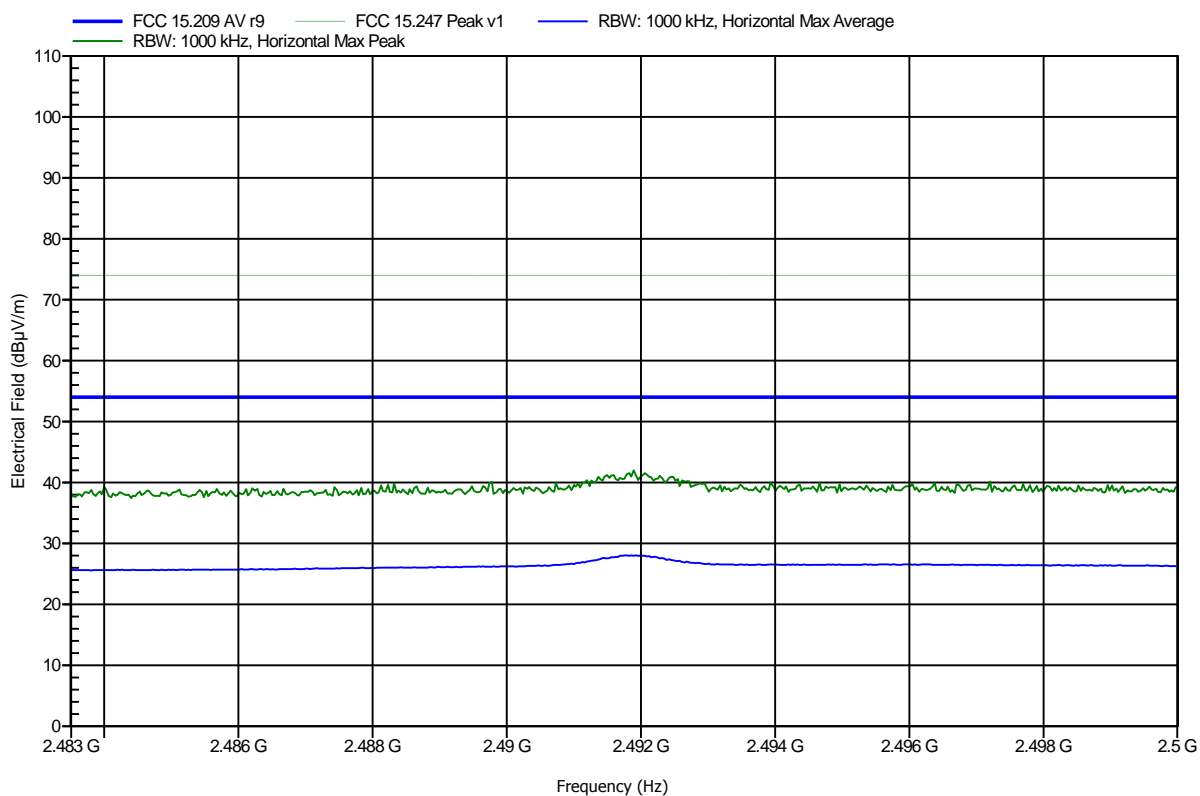


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: Upper Band Edge; EUT horizontal; TX mode

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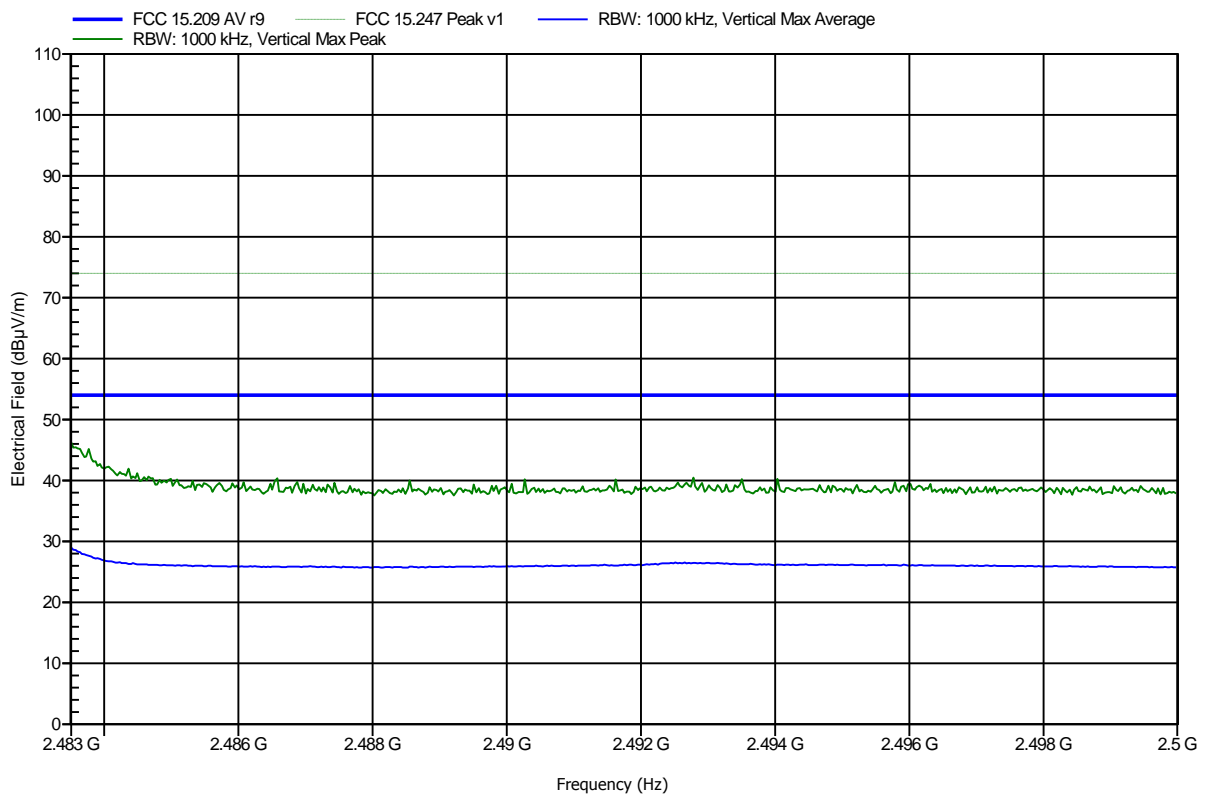


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-03  
 Note: Upper Band Edge; EUT horizontal; TX mode

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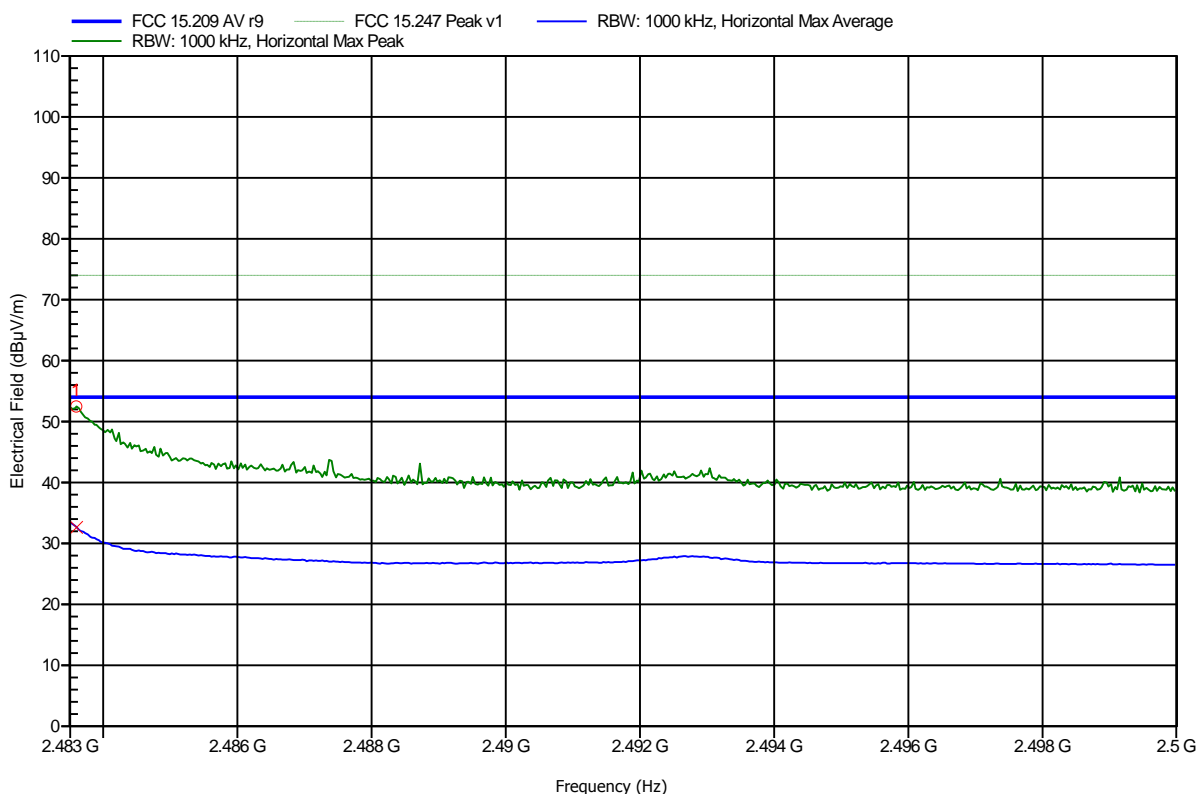


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
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 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: Upper Band Edge; EUT horizontal; TX mode

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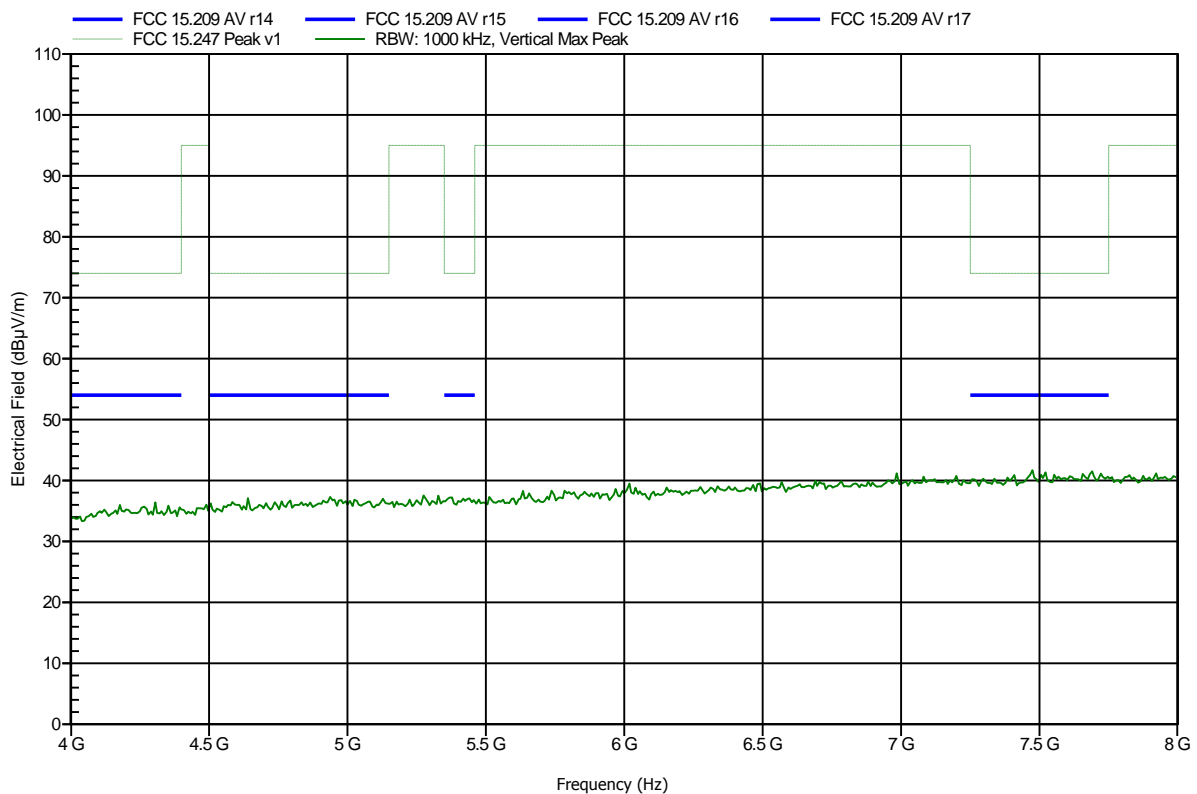
|            |              |               |                    |                |
|------------|--------------|---------------|--------------------|----------------|
| Frequency  | Peak         | Peak Limit    | Peak Difference    | Peak Status    |
| 2.4836 GHz | 52.48 dBµV/m | 74 dBµV/m     | -21.52 dB          | Pass           |
| Frequency  | Average      | Average Limit | Average Difference | Average Status |
| 2.4836 GHz | 32.67 dBµV/m | 54 dBµV/m     | -21.33 dB          | Pass           |

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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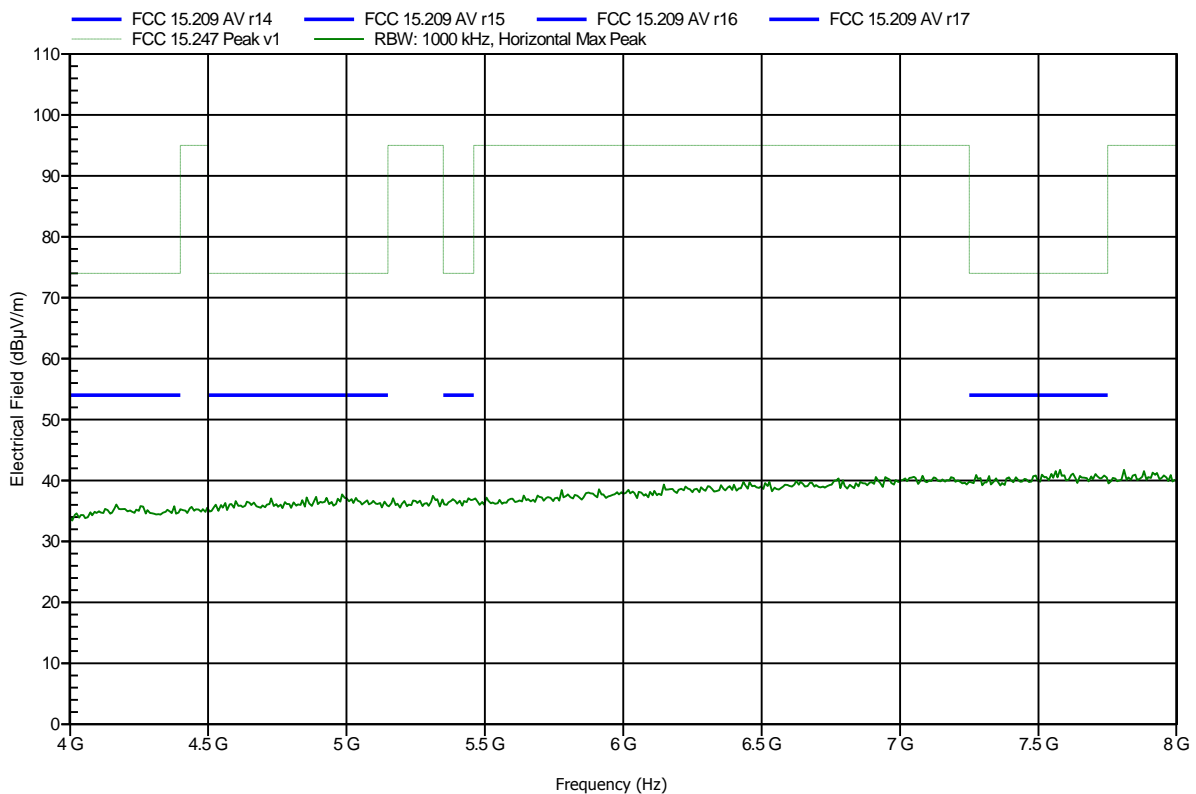


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 100 cm converted to 3m                            |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX mode                           |

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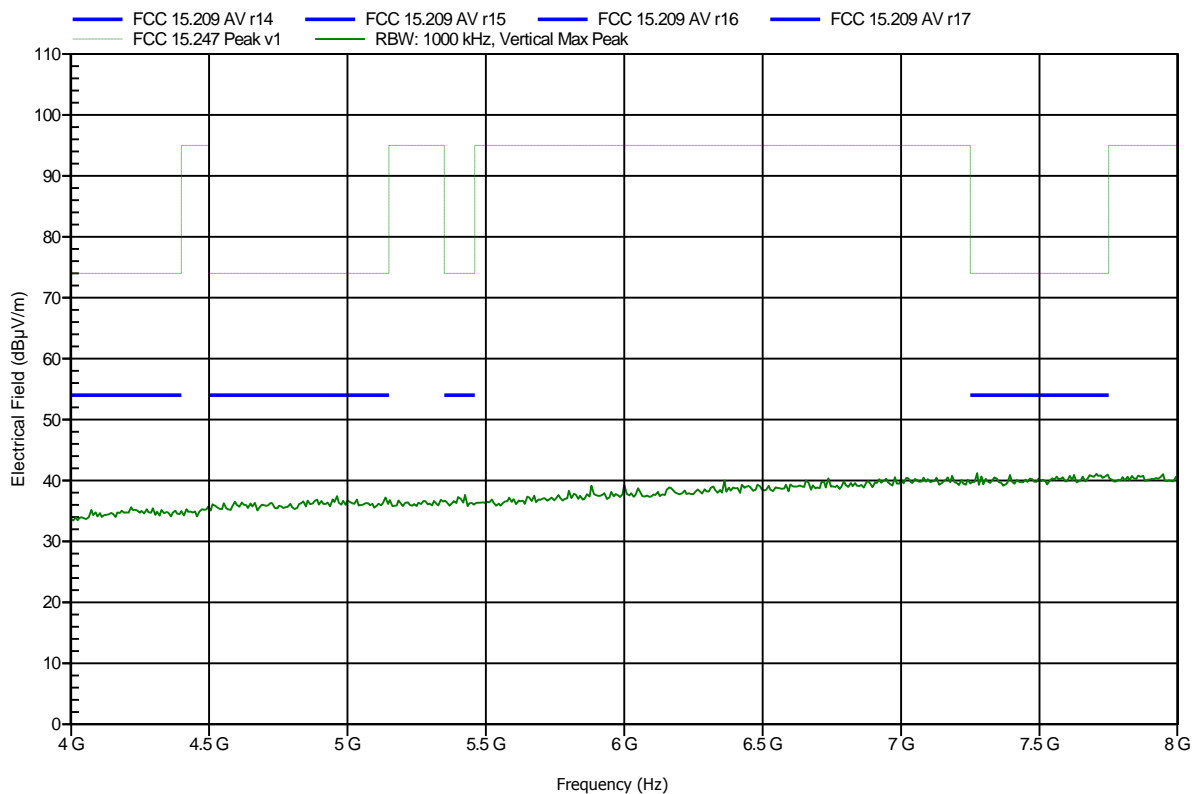


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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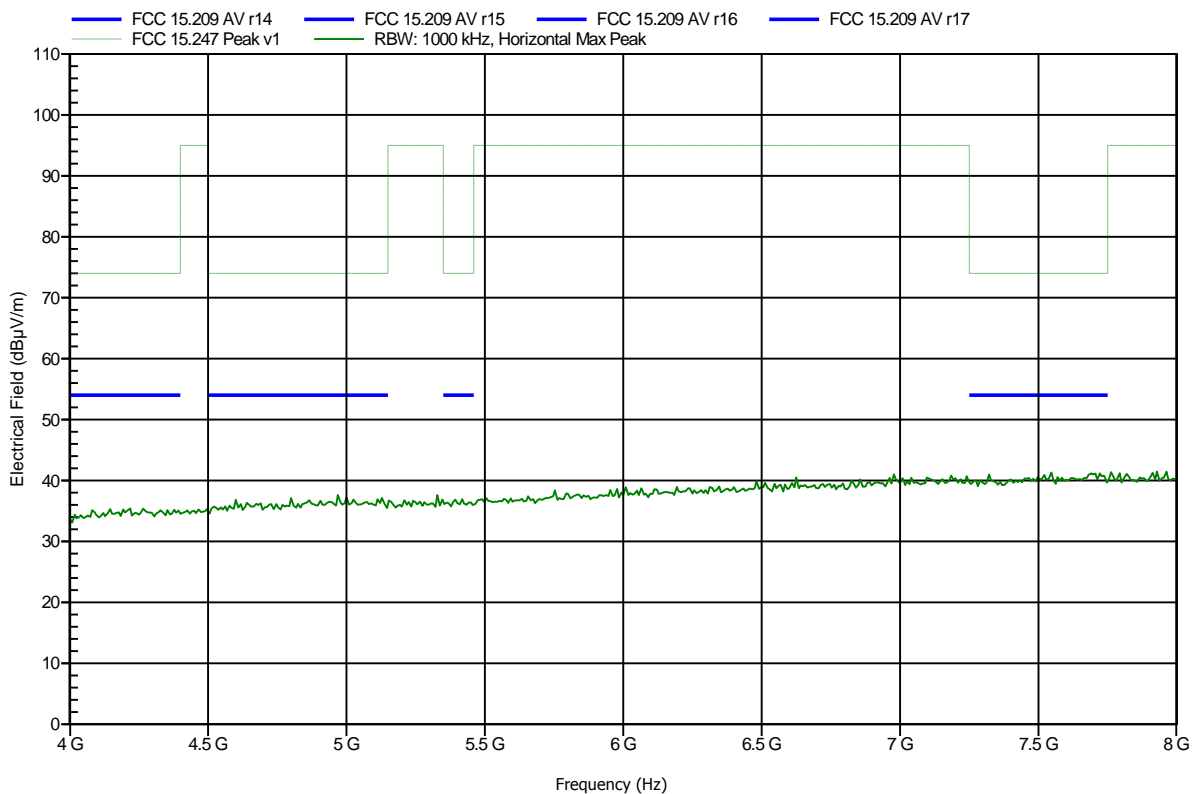


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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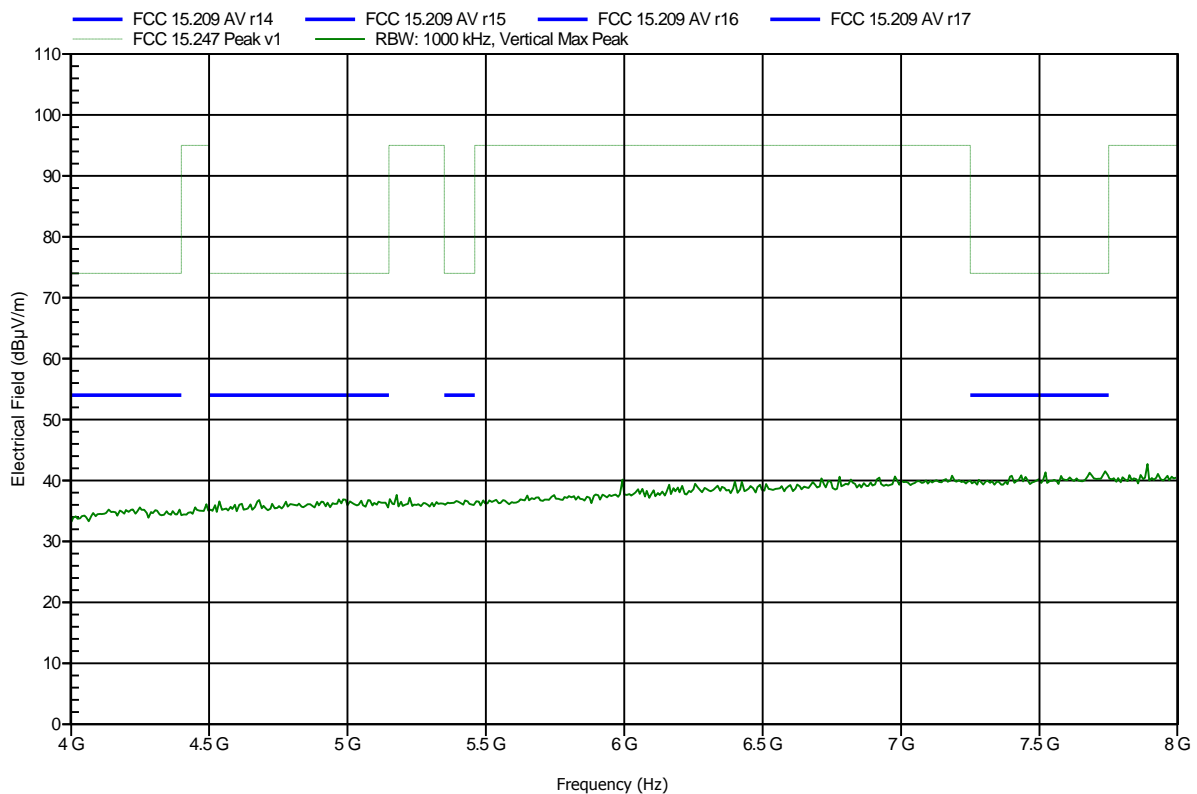


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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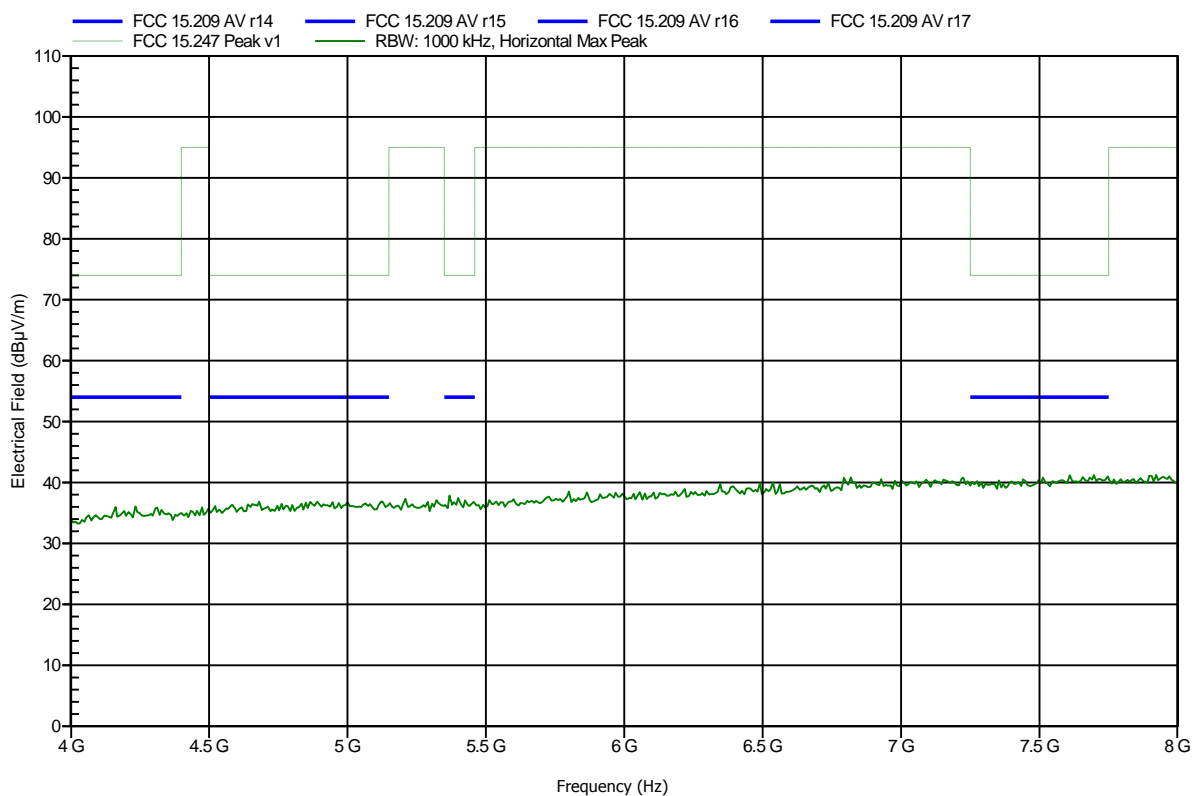


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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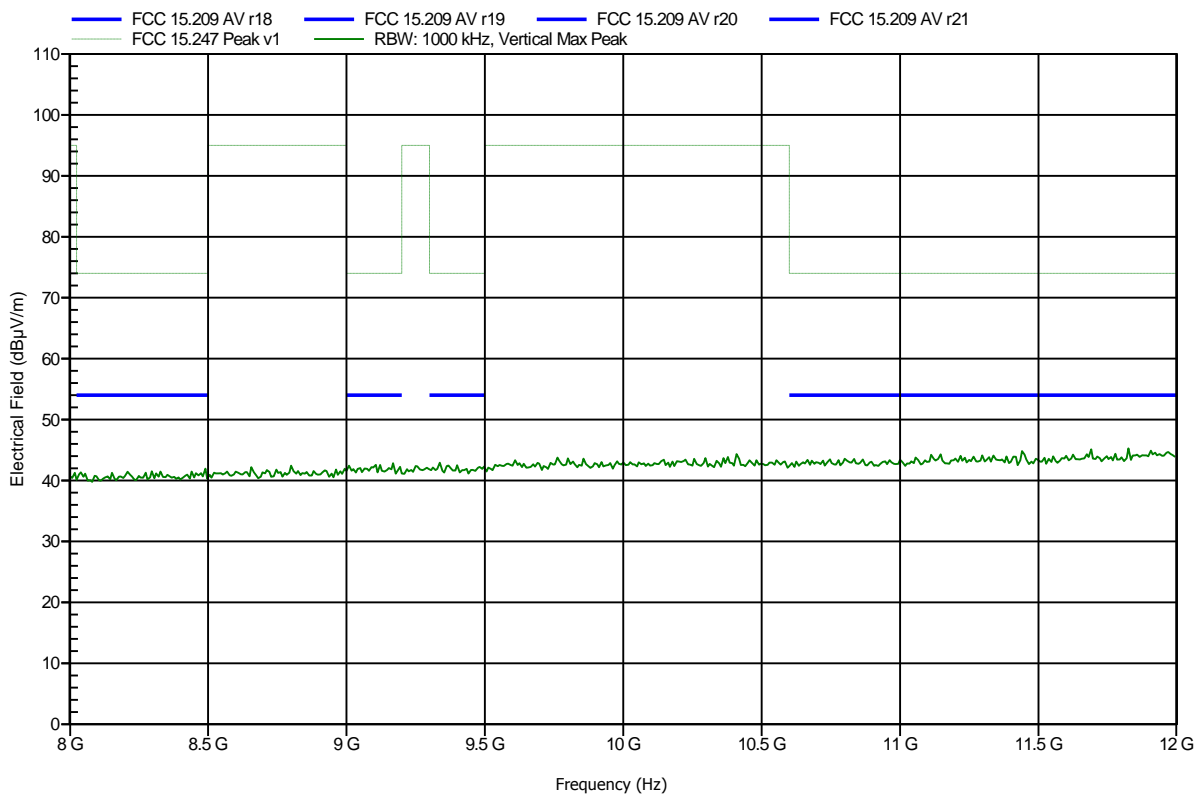


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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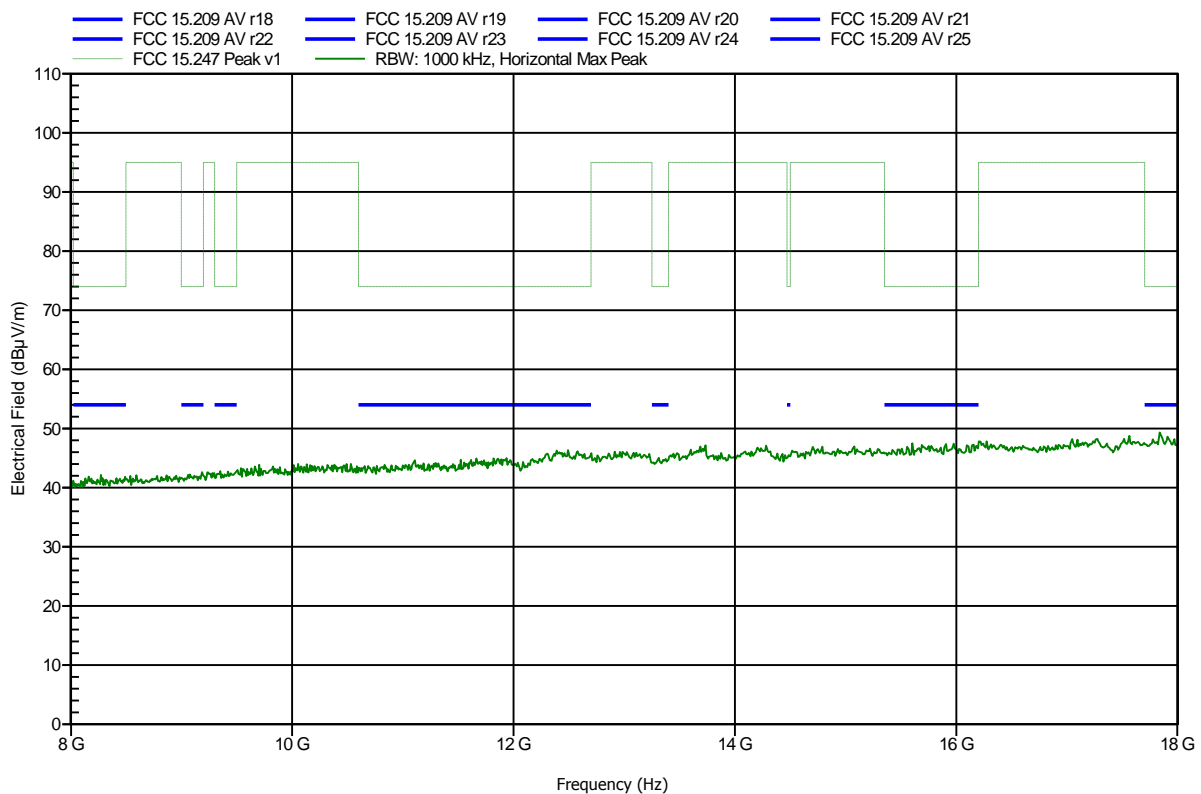


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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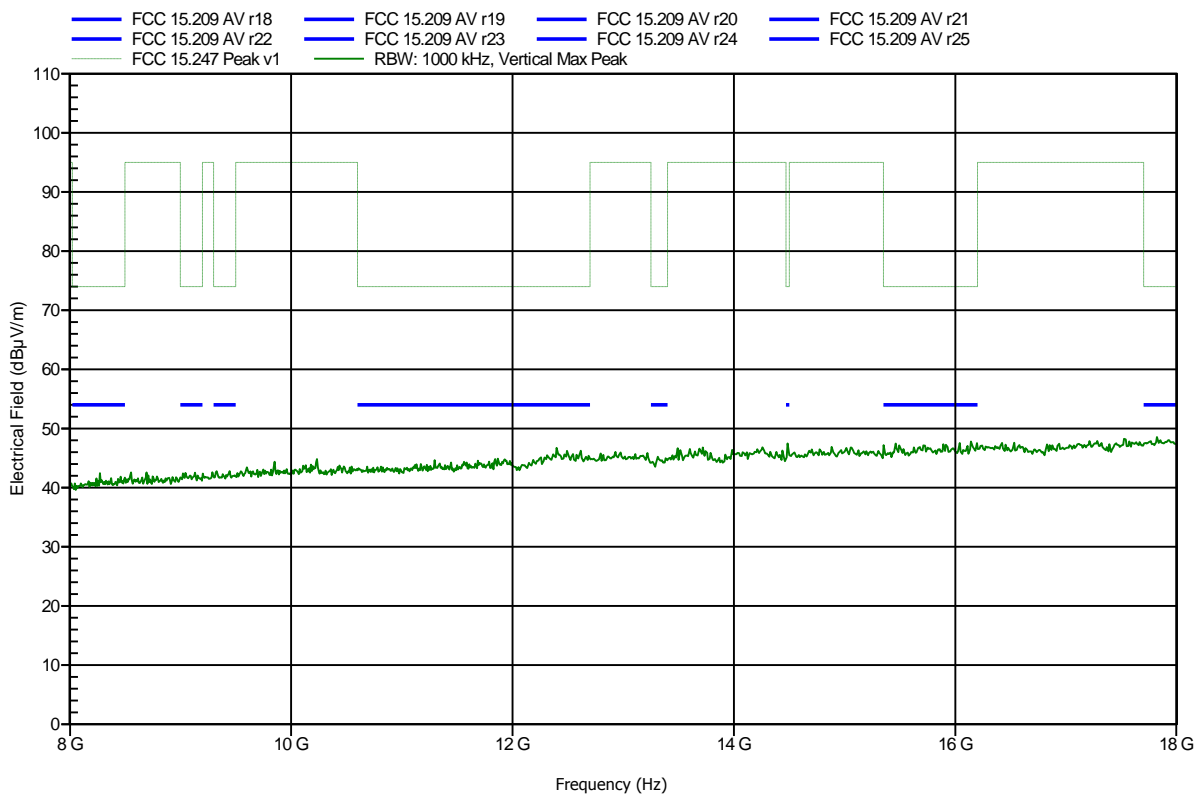


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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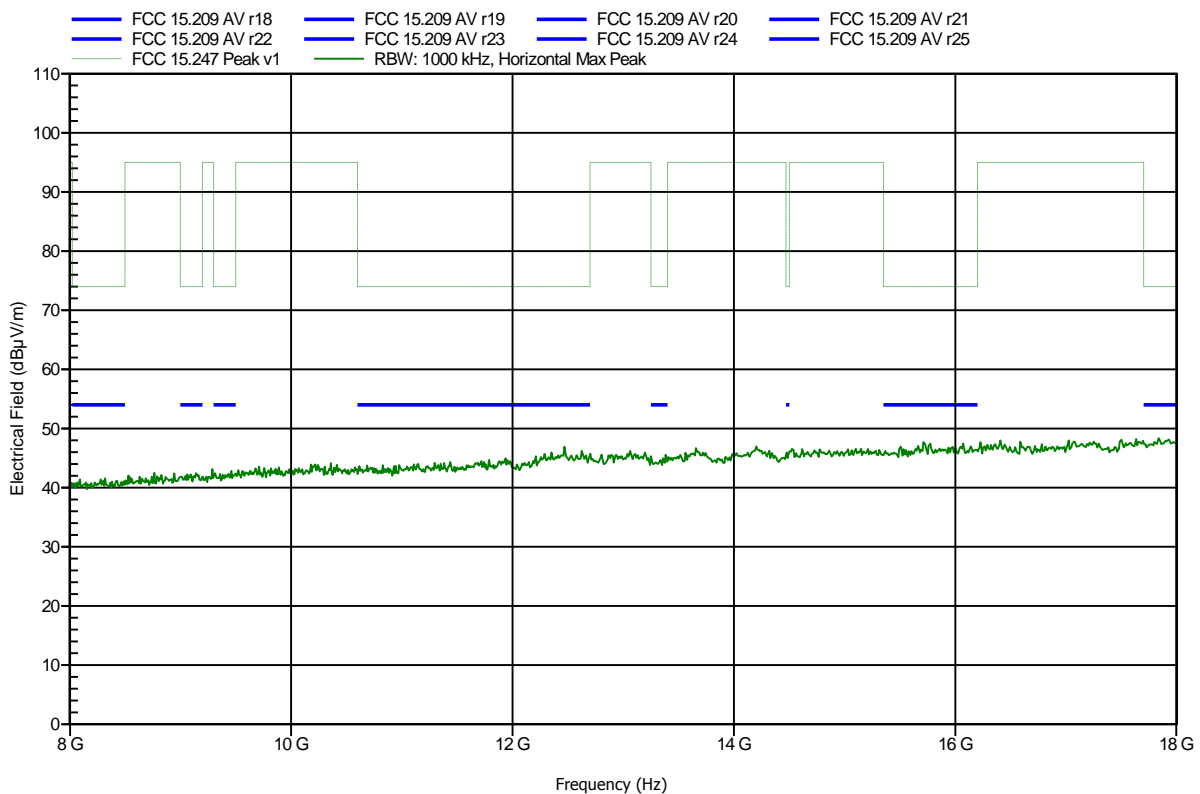


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 19; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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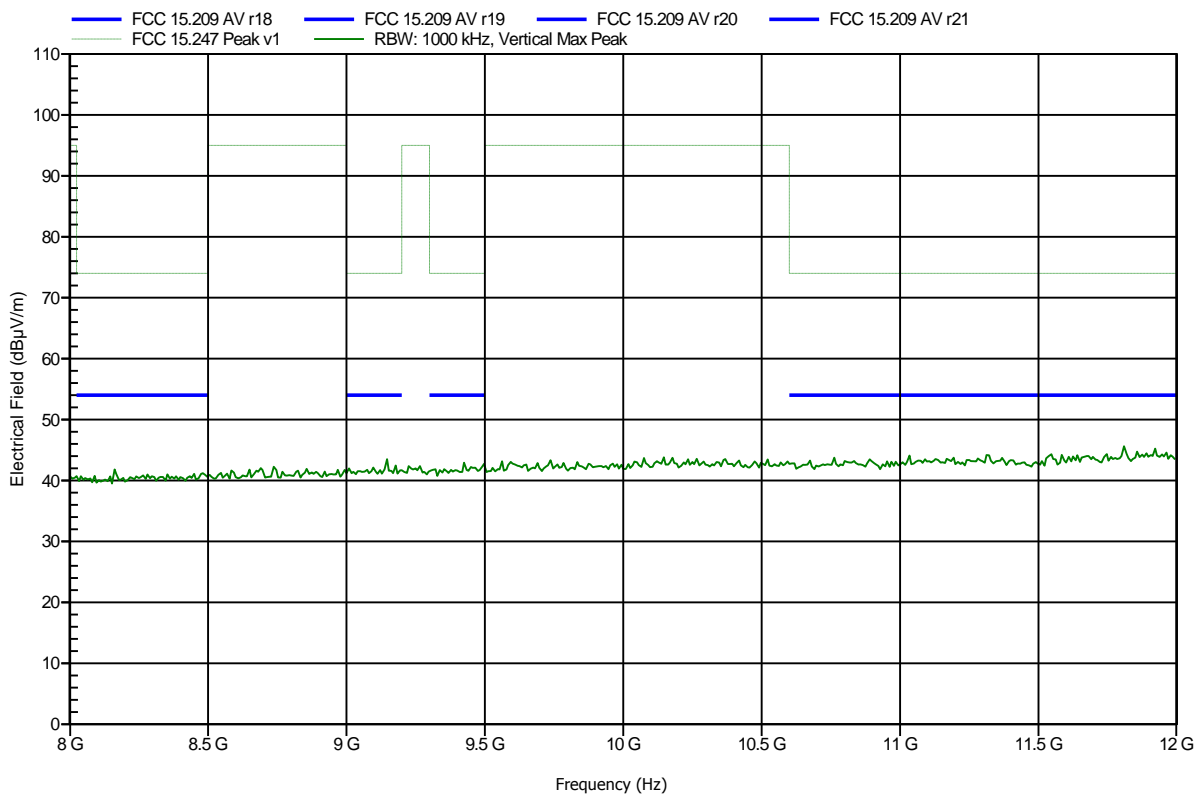


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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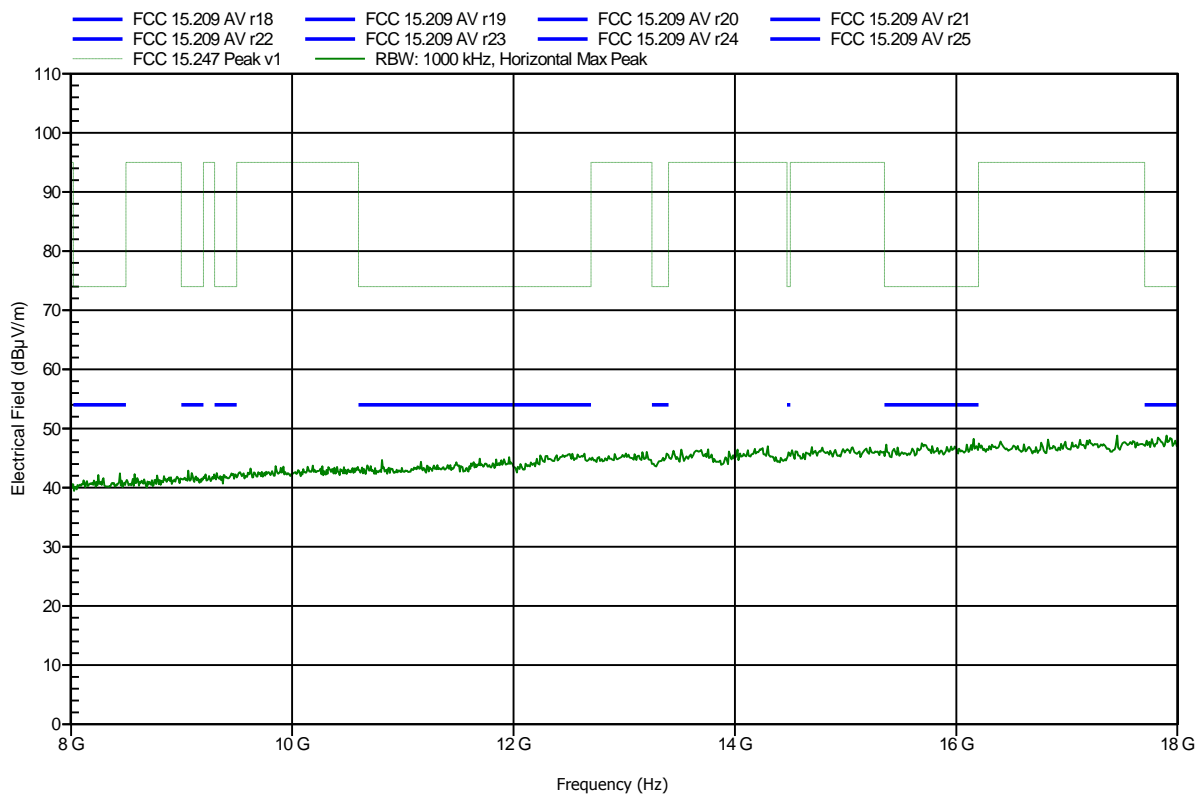


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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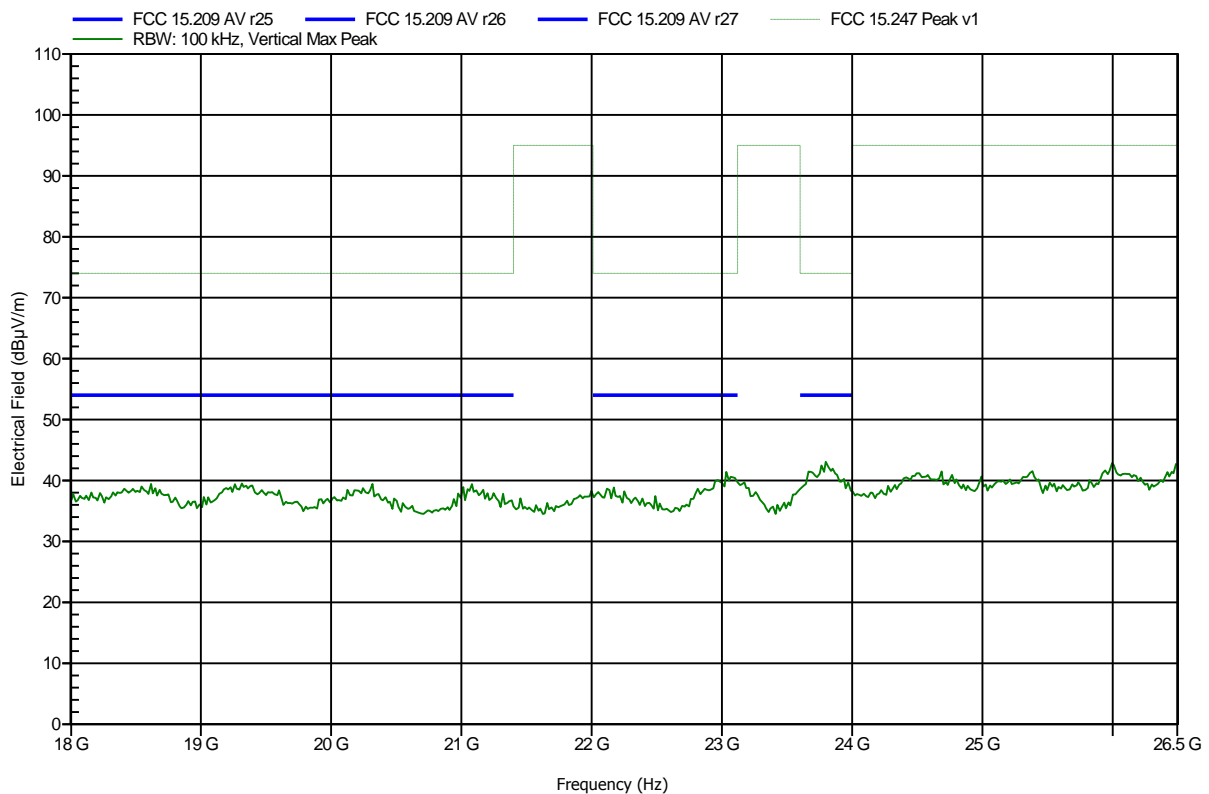


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 0; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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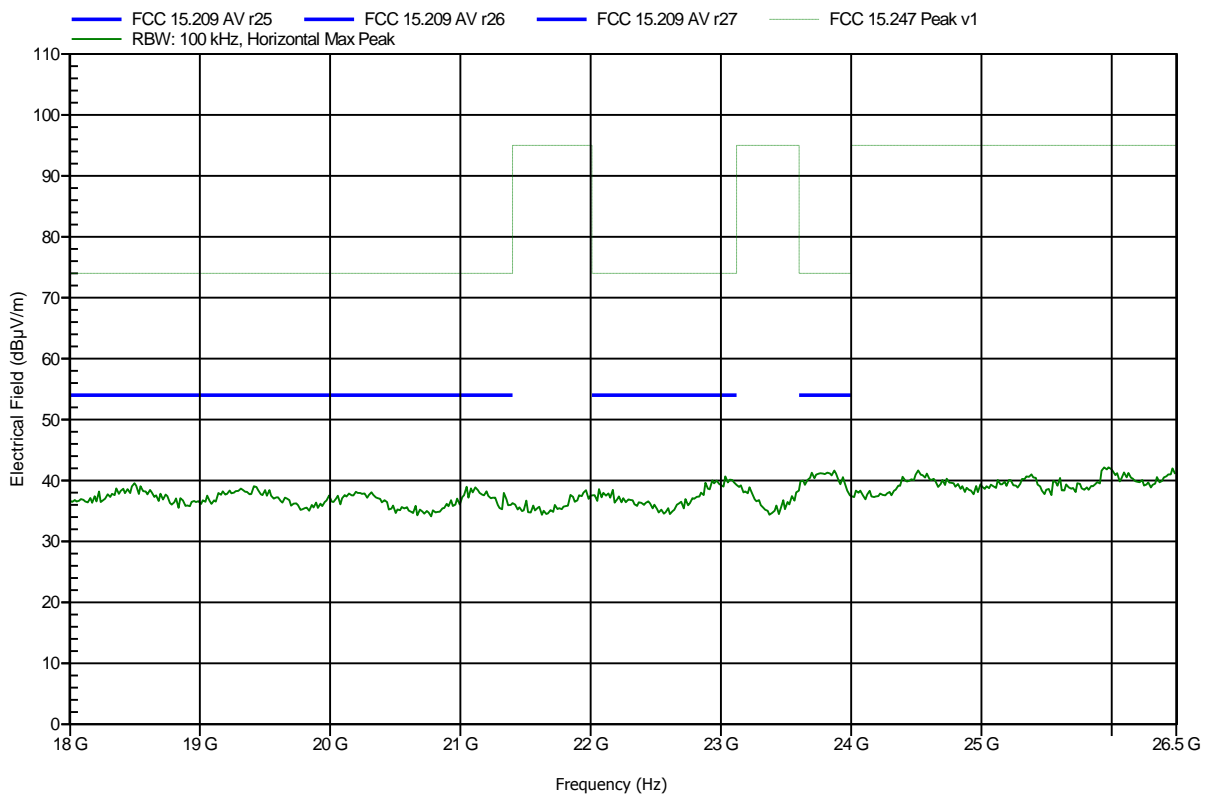


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 100 cm converted to 3m                            |
| Mode:                 | TX; BT-LE; CH 0; GFSK; Pmax; Ant integral         |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX mode                           |

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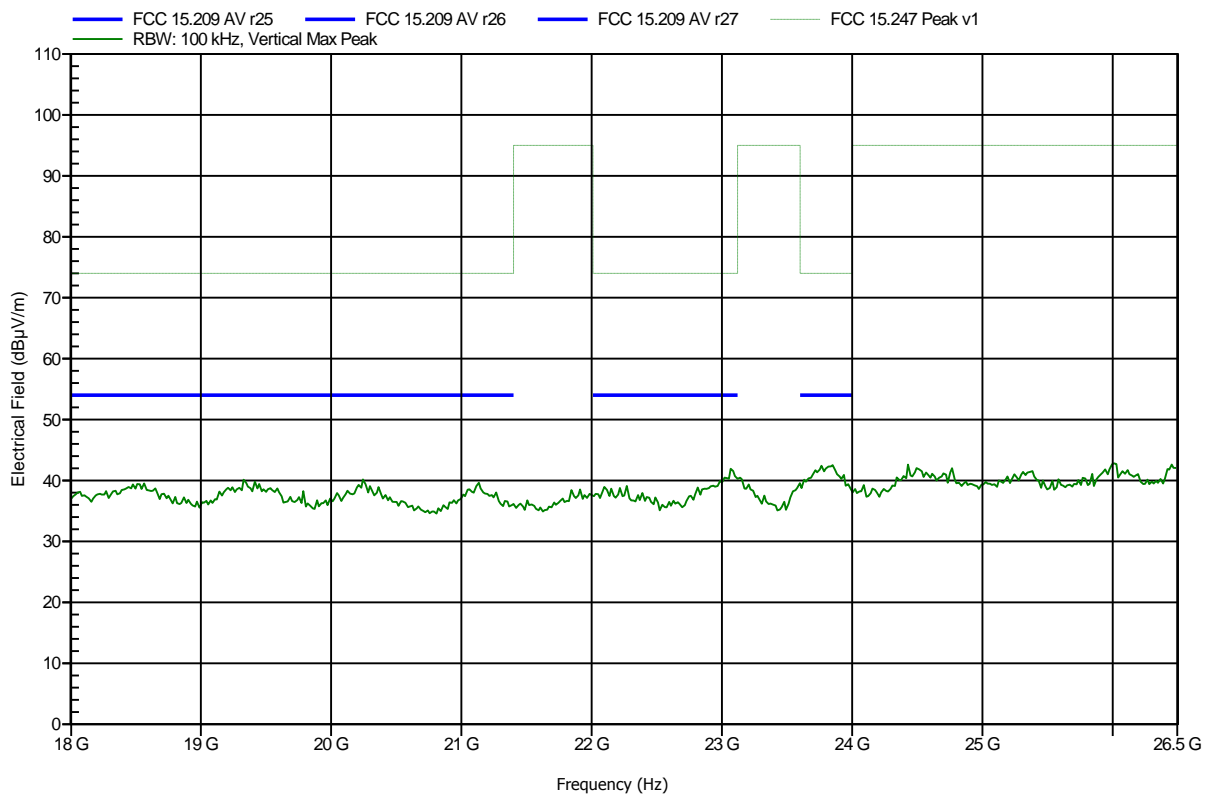


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 100 cm converted to 3m                            |
| Mode:                 | TX; BT-LE; CH 19; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX mode                           |

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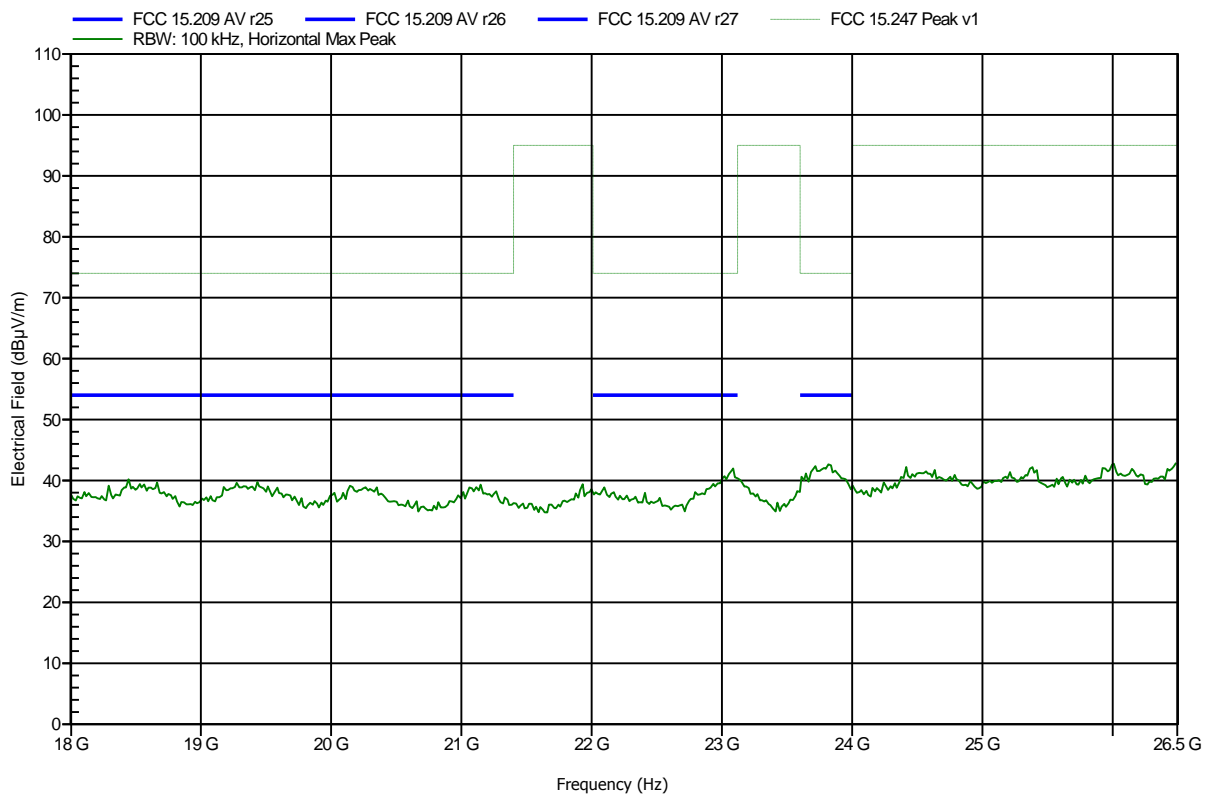


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 100 cm converted to 3m                            |
| Mode:                 | TX; BT-LE; CH 19; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX mode                           |

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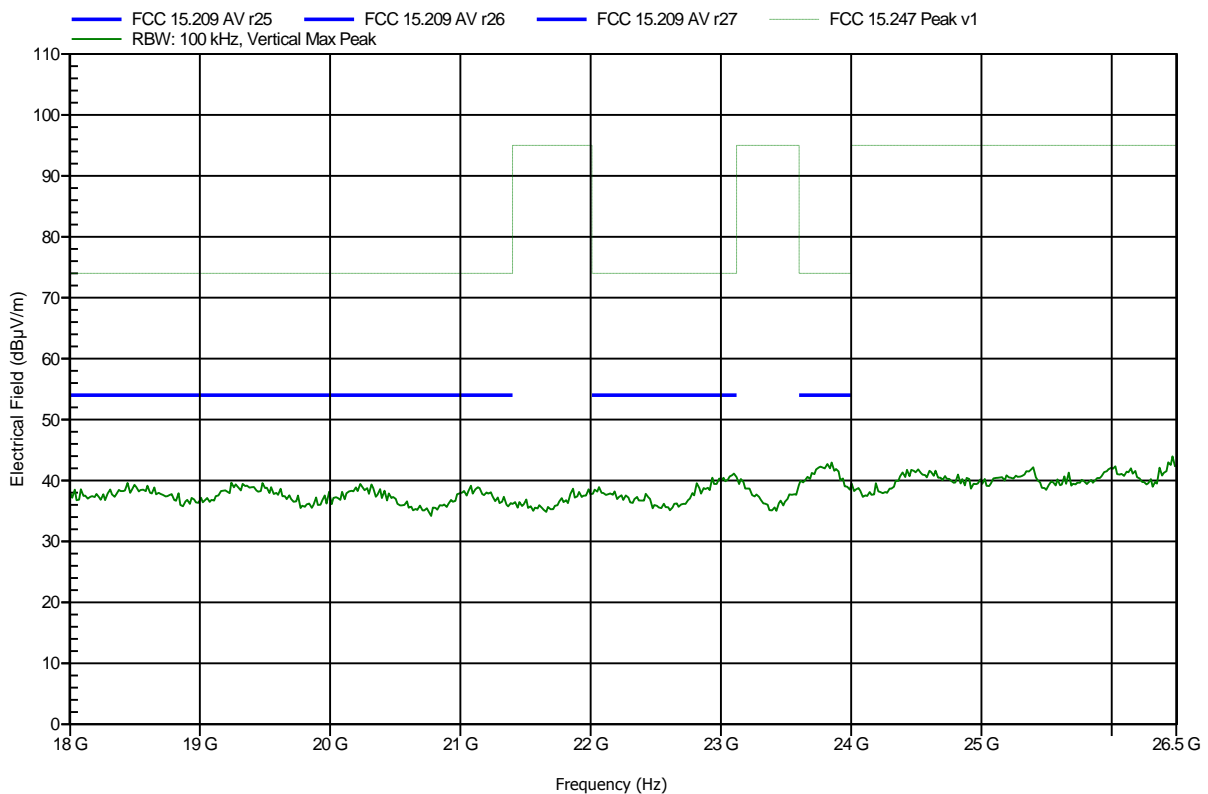


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 100 cm converted to 3m                            |
| Mode:                 | TX; BT-LE; CH 39; GFSK; Pmax; Ant integral        |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal; TX mode                           |

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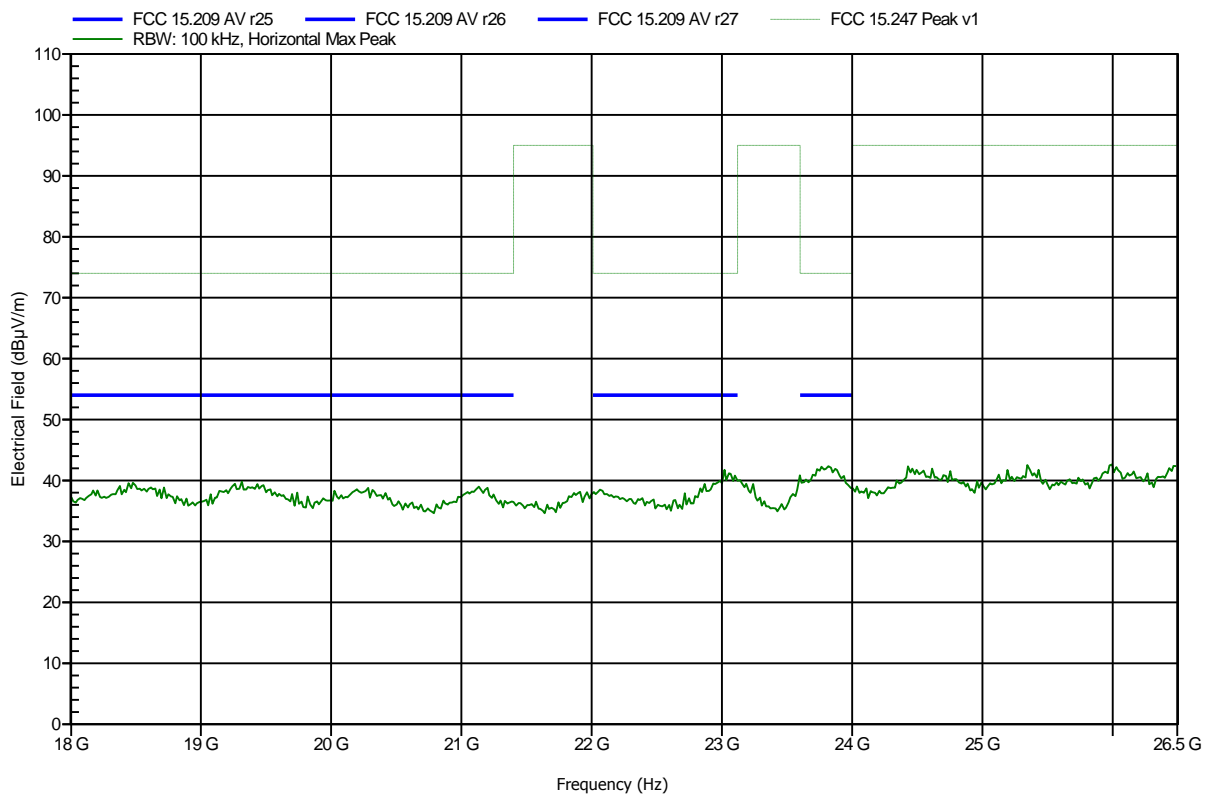


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH  
 EUT Name: Bluetooth module with UFL-connector and 1 antenna  
 Model: ENW89837AXKF / BT1026  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Pudell  
 Test Conditions: Tnom: 24°C, Vnom: 5.0 V DC (USB power)  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 100 cm converted to 3m  
 Mode: TX; BT-LE; CH 39; GFSK; Pmax; Ant integral  
 Test Date: 2013-09-04  
 Note: EUT horizontal; TX mode

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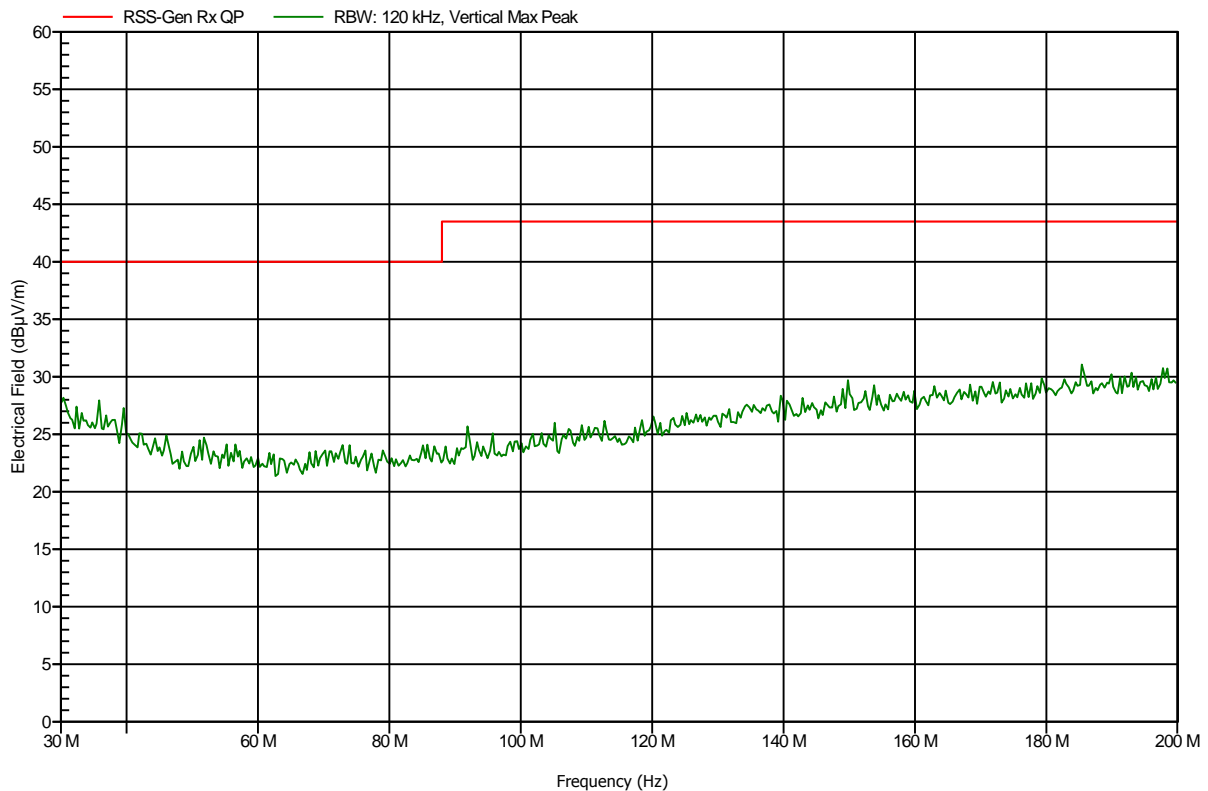
## ANNEX B Receiver radiated spurious emissions

### Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HK 116, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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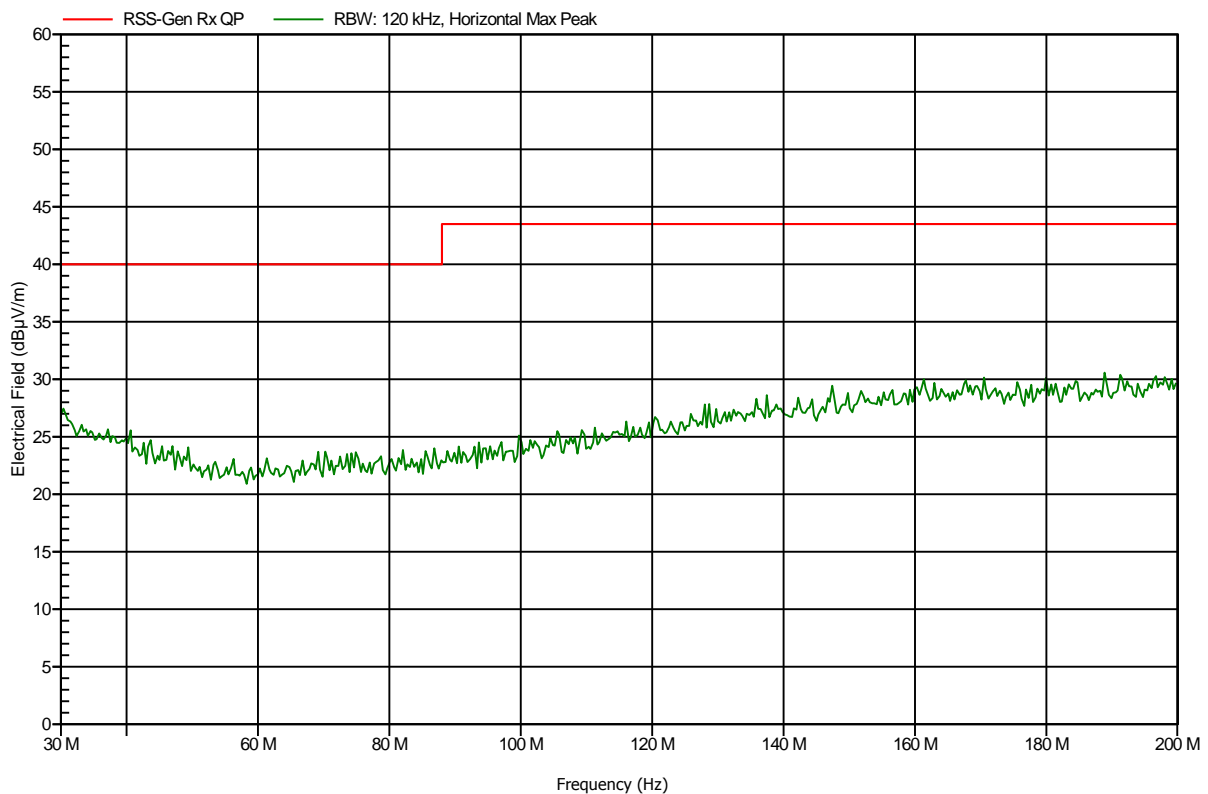


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HK 116, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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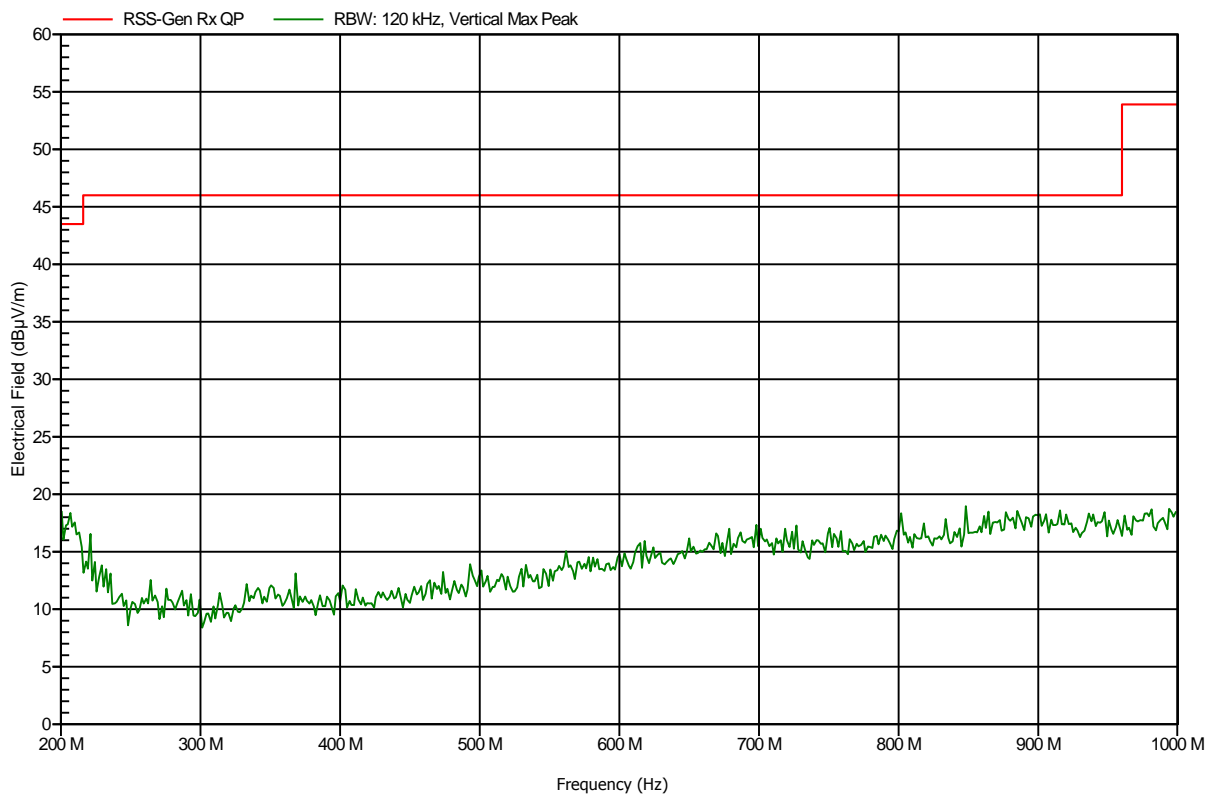


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 223, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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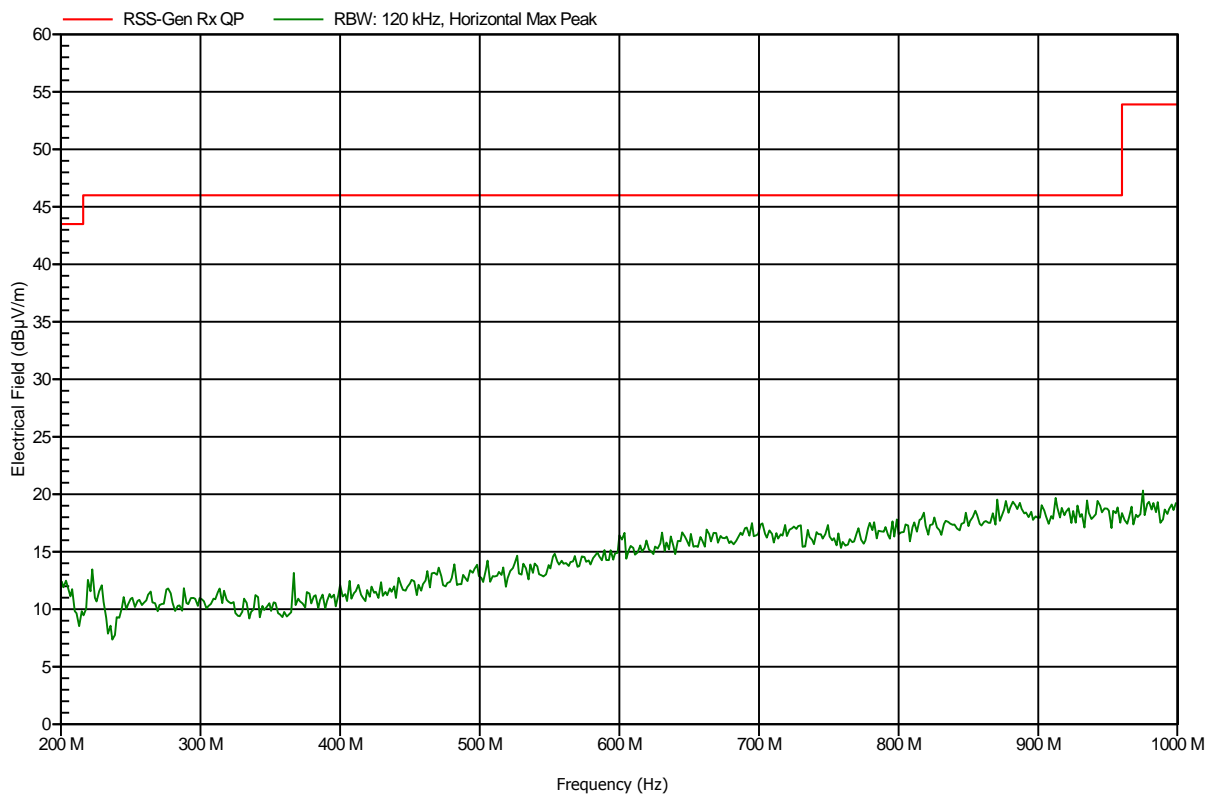


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 223, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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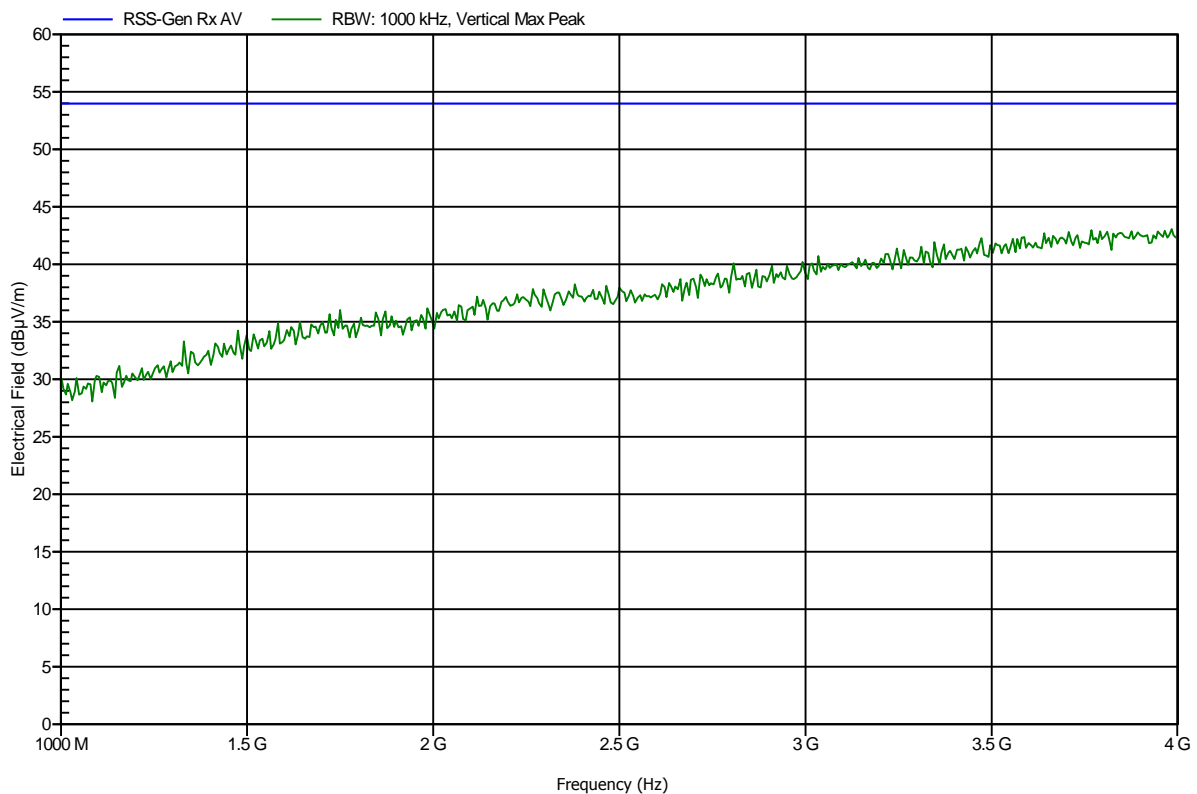


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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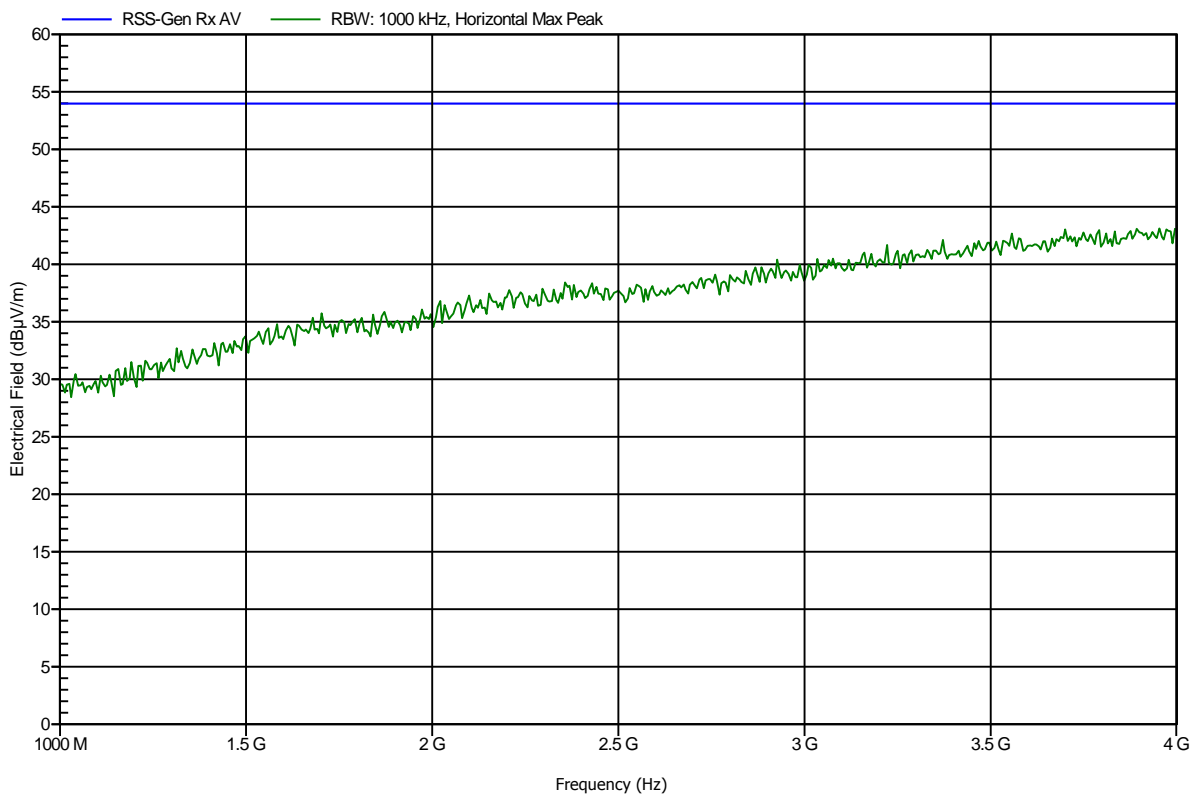


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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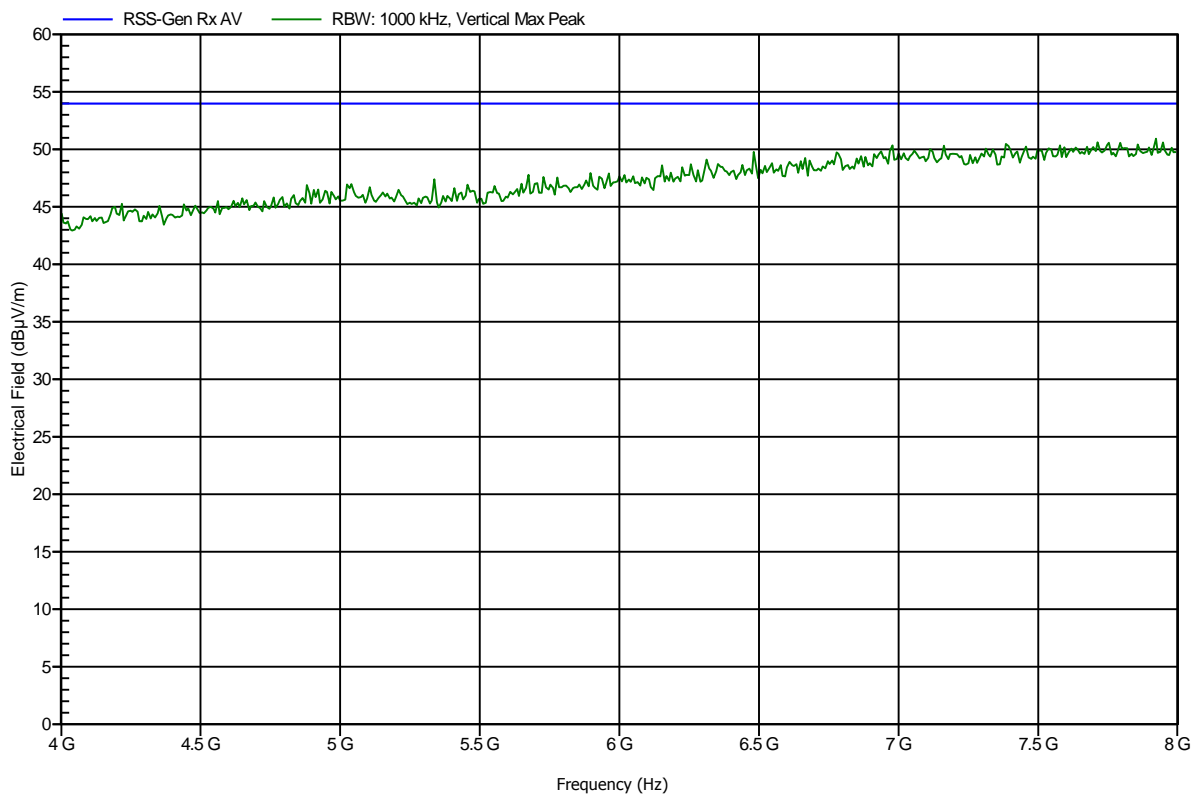


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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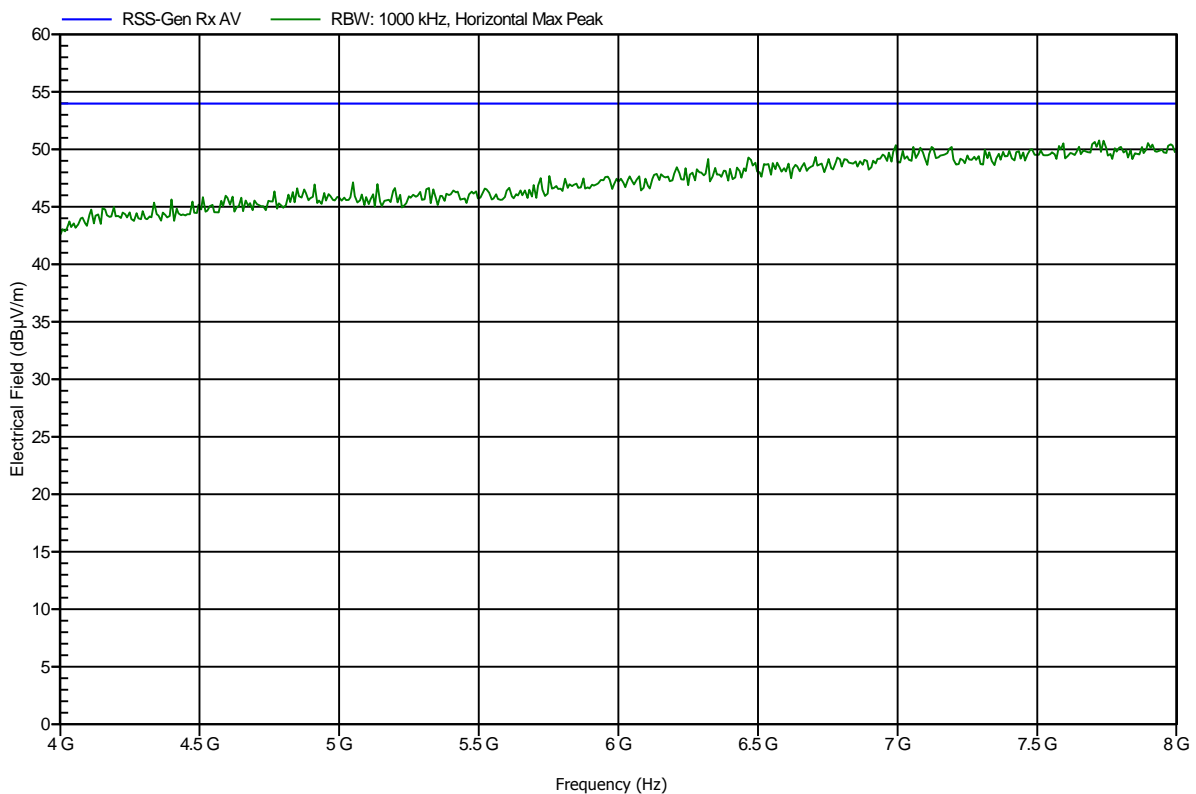


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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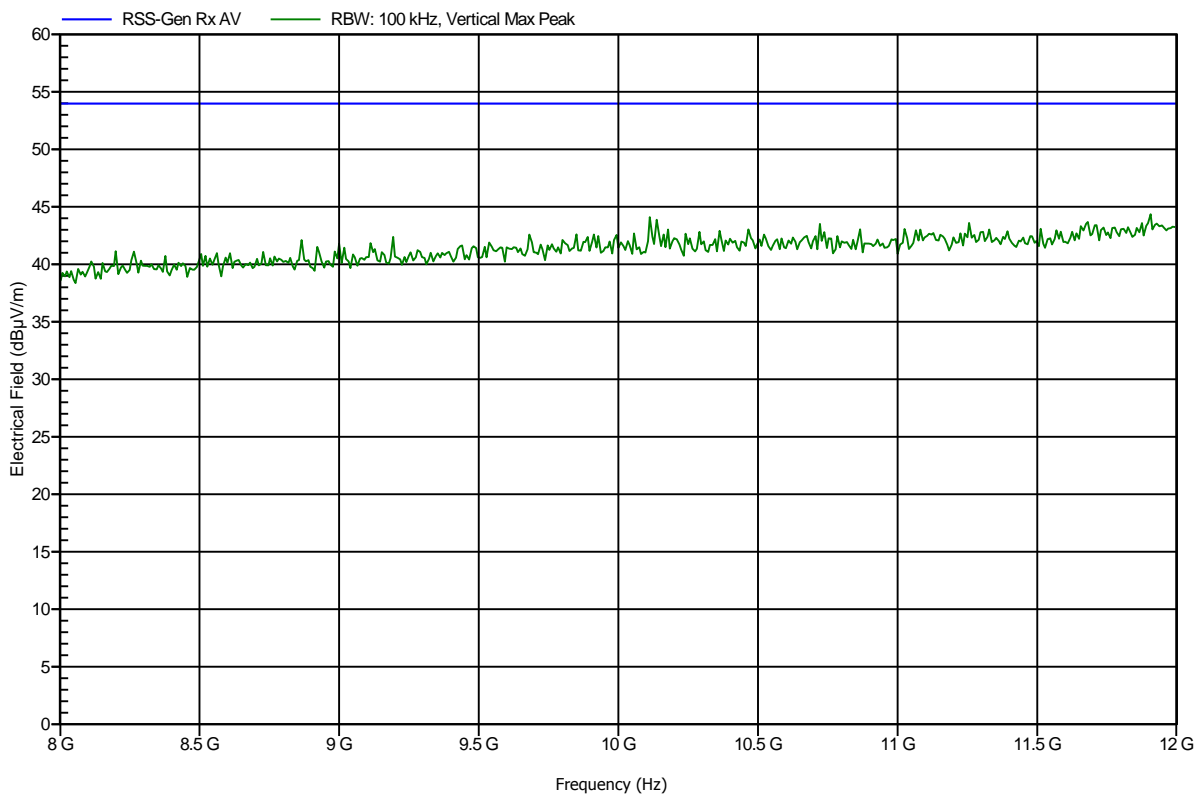


**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Vertical                  |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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**Spurious emissions according to IC RSS-210**

Project number: G0M-1208-2160

|                       |   |
|-----------------------|---|
| Manufacturer:         | Panasonic Industrial device Europe GmbH           |
| EUT Name:             | Bluetooth module with UFL-connector and 1 antenna |
| Model:                | ENW89837AXKF / BT1026                             |
| Test Site:            | Eurofins Product Service GmbH                     |
| Operator:             | Mr. Pudell  |
| Test Conditions:      | Tnom: 24°C, Vnom: 5.0 V DC (USB power)            |
| Antenna:              | Rohde & Schwarz HL 025, Horizontal                |
| Measurement distance: | 3 m   |
| Mode:                 | RX; BT-LE; CH 19; GFSK; RX mode; Ant integral     |
| Test Date:            | 2013-09-04  |
| Note:                 | EUT horizontal                                    |

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