

FCC TEST REPORT FCC 47 CFR Part 15C Industry Canada RSS-210 Digital transmission systems operating within the 2400 – 2483.5 MHz band	
Report Reference No.	G0M-1303-2693-TFC247W-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	  A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name	Panasonic Industrial Devices Europe GmbH
Address	Zeppelinstr. 19 21337 Lüneburg GERMANY
Test specification: Standard..... : 47 CFR Part 15C KDB Publication No. 558074 RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009	
Equipment under test (EUT): Product description : Bluetooth Module Model No. : ENW89823C2KF/ENW89823A2KF Hardware version : 4x Firmware / Software version : 0x FCC-ID: T7V1316 IC: 216Q-1316 Test result : Passed	

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: 2013-04-02

Date (s) of performance of tests: 2013-04-02 – 2013-05-04

Compiled by: Antje Bartusch

Tested by (+ signature).....: Burkhard Pudell 

(Testing Manager)

Approved by (+ signature): Jens Zimmermann 

(Test Lab Manager)

Date of issue: 2013-04-15

Total number of pages: 92

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:

Version History

Version	Issue Date	Remarks	Revised by
01	2013-04-15	Initial Release	

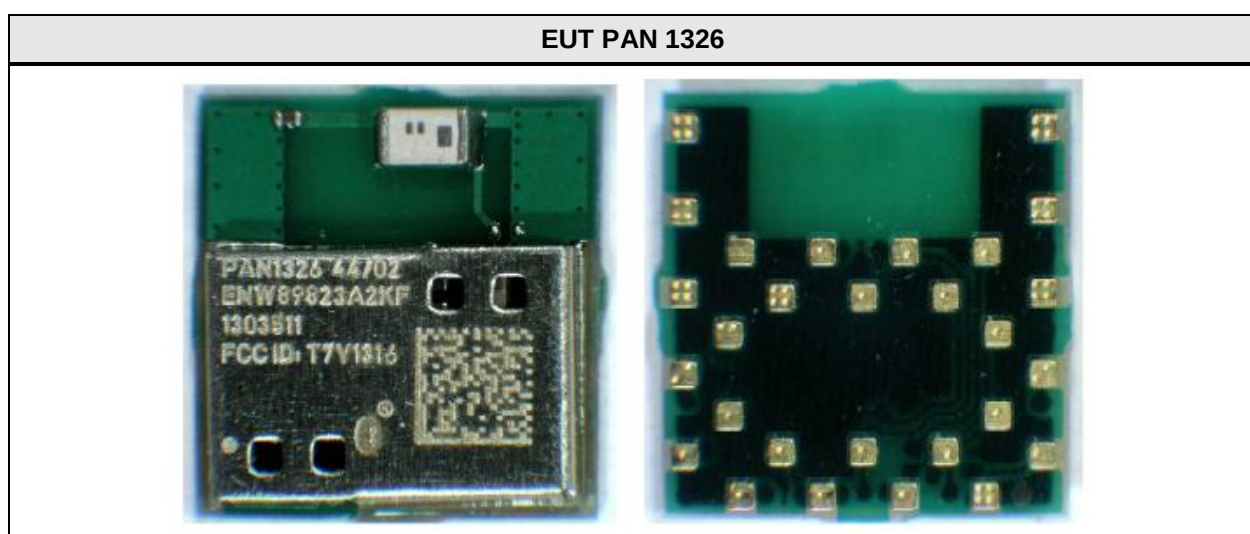
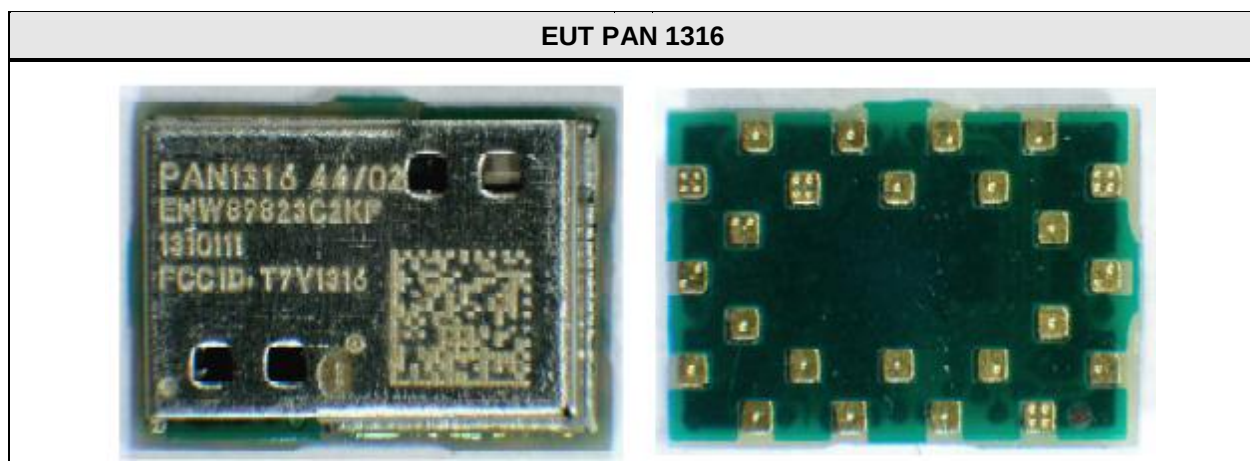
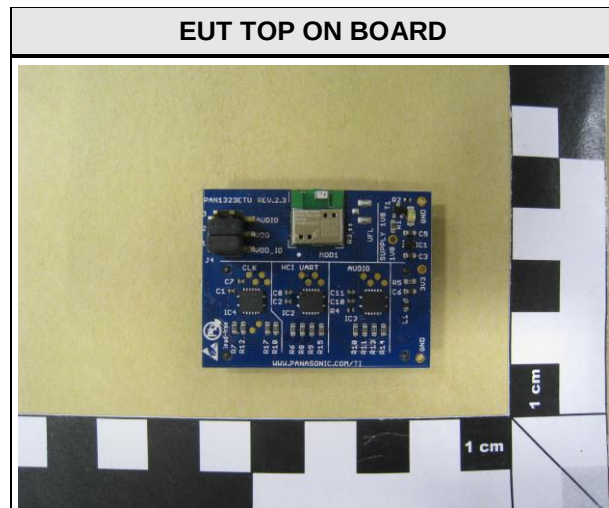
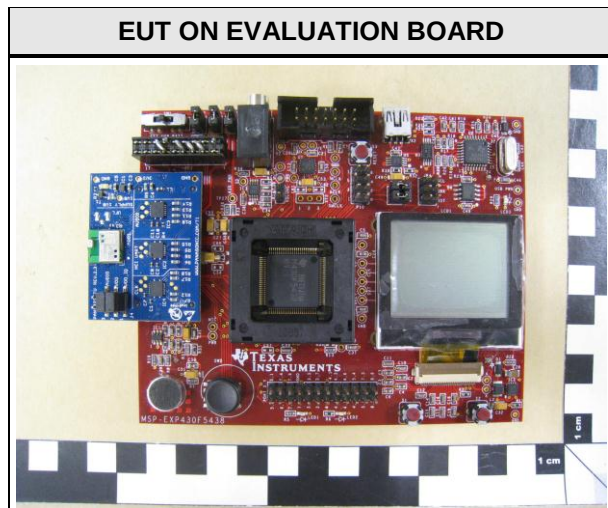
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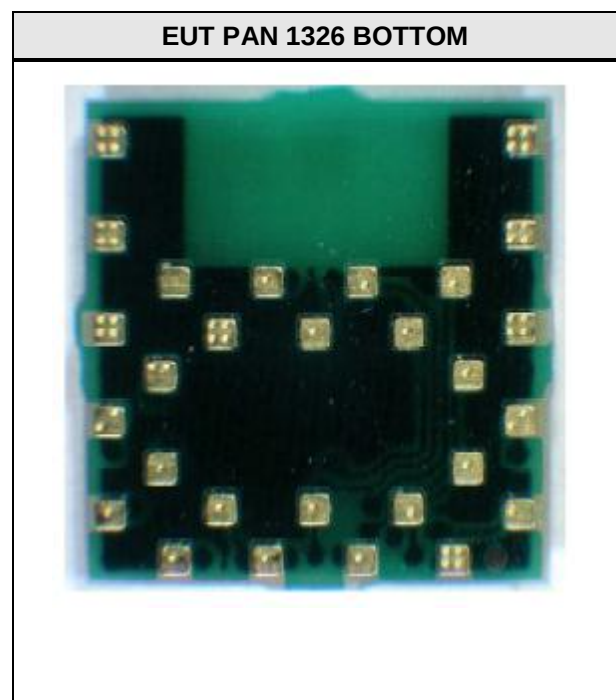
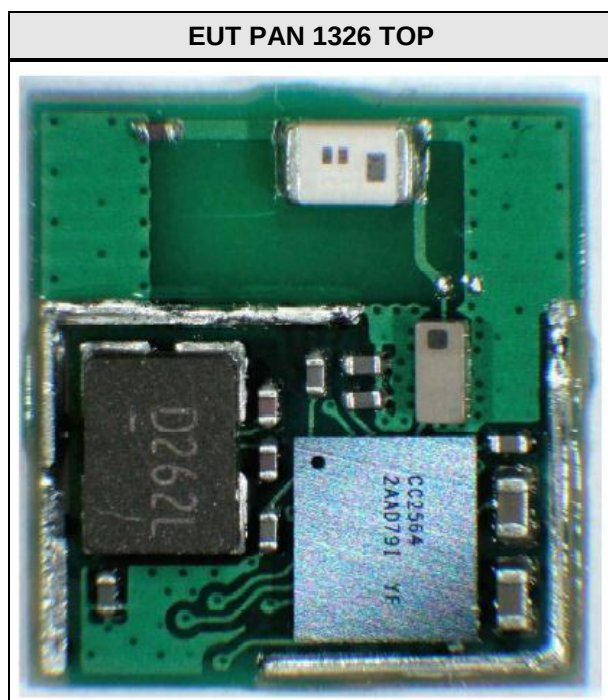
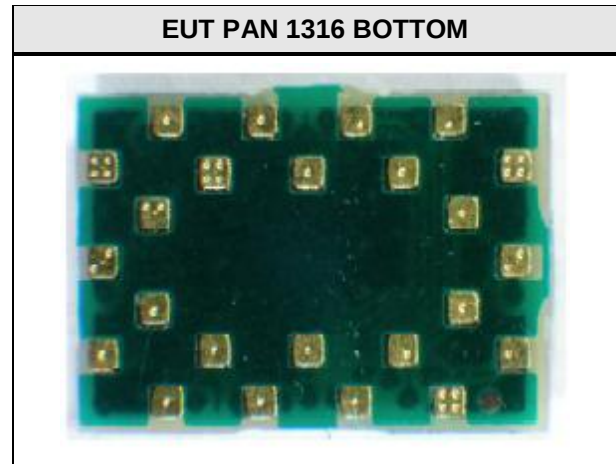
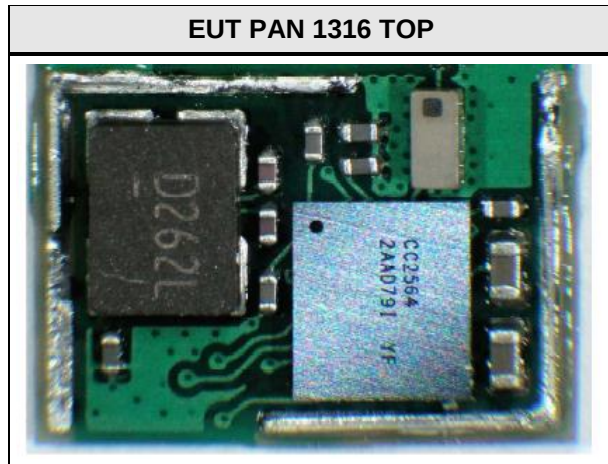
1 Equipment (Test item) Description:

Description	Bluetooth Module	
Model	ENW89823C2KF/ENW89823A2KF	
Serial number	None	
Hardware version	4x	
Software / Firmware version	0x	
FCC-ID	T7V1316	
IC	216Q-1316	
Equipment type	Radio module	
Radio type	Transceiver	
Radio technology	Bluetooth 4.0 Low Energy	
Operating frequency range	2402 - 2480 MHz	
Assigned frequency band	2400 - 2483.5 MHz	
Main test frequencies	F _{LOW}	2402 MHz
	F _{MID}	2440 MHz
	F _{HIGH}	2480 MHz
Spreading	Frequency Hopping	
Modulations	GFSK	
Number of channels	40	
Channel spacing	2MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	LDA21K 7488930245
	Manufacturer	Murata
	Gain	+0.9 dBi (manufacturer declaration)
Manufacturer	Panasonic Industrial Devices Europe GmbH Zeppelinstr. 19 21337 Lüneburg GERMANY	
Power supply	V _{NOM}	3.3VDC
	V _{MIN}	2.0VDC
	V _{MAX}	3.6VDC
AC/DC-Adaptor	none	

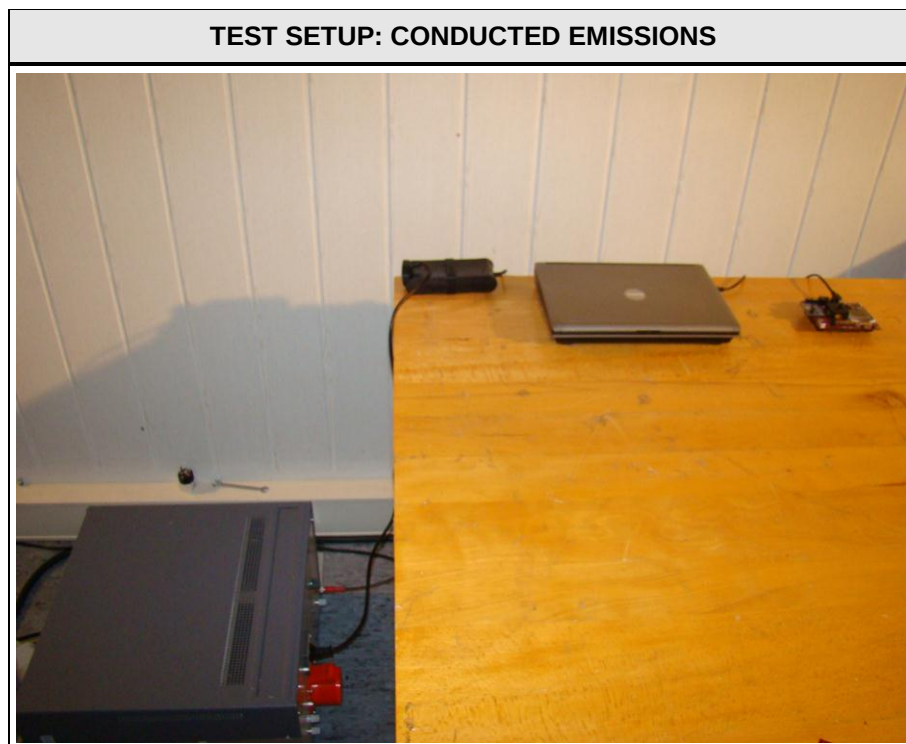
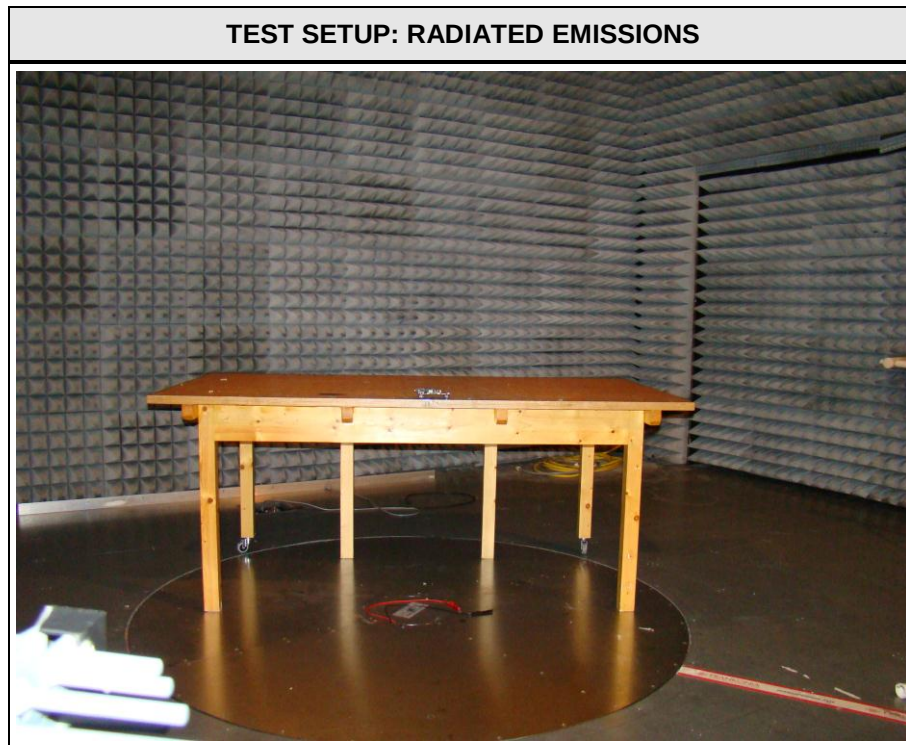
1.1 Photos – Equipment External



1.2 Photos – Equipment internal



1.3 Photos – Test setup



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				
*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 Modulation = GFSK Data rate = 1 Mbps Bandwidth = 2 MHz Duty cycle = 100 % Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive (scan mode) Modulation = GFSK
AC-Powerline	General conditions:	EUT powered by commercial Laptop
	Radio conditions:	Mode = Transmit

1.6 Test Equipment Used During Testing

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

6dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Power spectral density					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Radiated spurious emissions					
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	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2011-02	2014-02
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2012-10	2014-10
AMN	R&S	ESH3-Z5	EF00036	2012-11	2014-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2012-08	2013-08

Test Report No.: G0M-1303-2693-TFC247W-V01

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

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 dBμV. 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 dBμV/m). The FCC limits are given in units of μV/m. The following formula is used to convert the units of μV/m to dBμV/m:

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

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:

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

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) IC RSS-210 § A8.2	6dB Bandwidth	KDB Publication No. 558074	PASS	
FCC § 15.247(b)(3) IC RSS-210 § A8.4	Maximum peak conducted power	KDB Publication No. 558074	PASS	
FCC § 15.247(e) IC RSS-210 § A8.2	Power spectral density	KDB Publication No. 558074	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	KDB Publication No. 558074 / ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	KDB Publication No. 558074	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	KDB Publication No. 558074	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 4.9 IC RSS-Gen 7.2.5	Transmitter radiated spurious emissions	KDB Publication No. 558074 / ANSI C 63.4	PASS	
IC RSS-Gen 4.10 IC RSS-Gen 6.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
Remarks:				

3 Test Conditions and Results

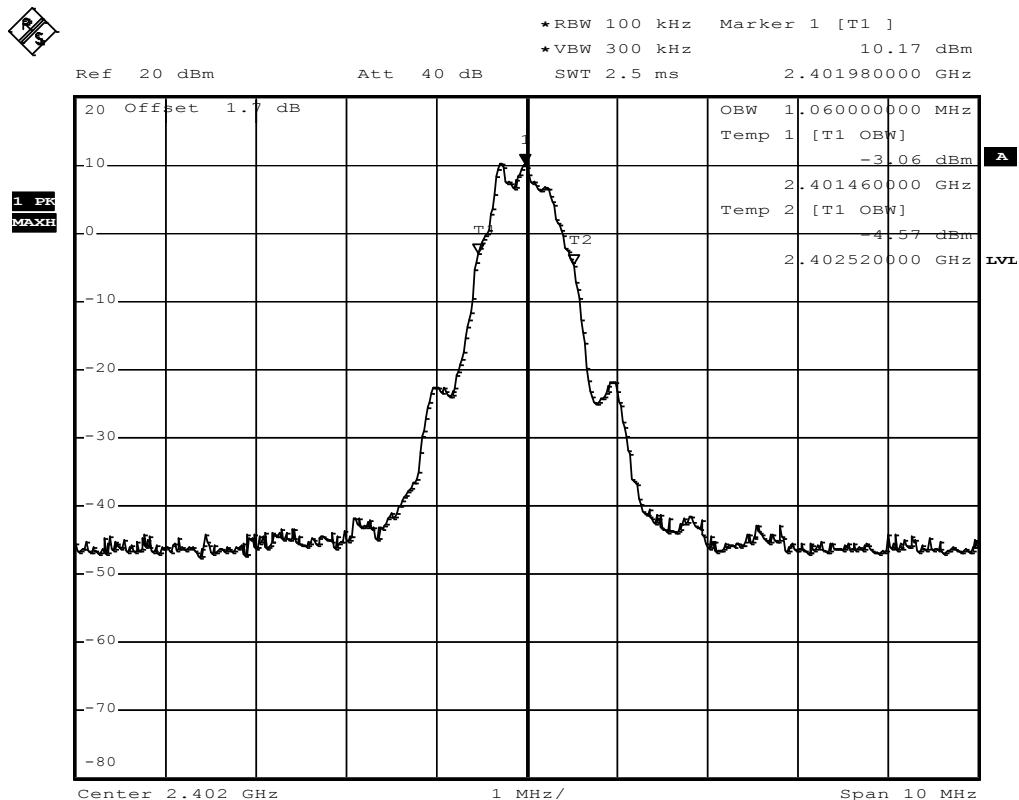
3.1 Test Conditions and Results – Occupied Bandwidth

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}		
Limits			
None (Informational only)			
Test setup			
Spectrum Analyzer EUT			
Test procedure			
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Resolution bandwidth set to 1 % of span 4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function			
Test results			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [kHz]
F _{LOW}	2402	Transmit	1060
F _{MID}	2440	Transmit	1060
F _{HIGH}	2480	Transmit	1060
Comments:			

Occupied Bandwidth – F_{Low}

RSS Gen Occupied Bandwidth

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode, power level 15

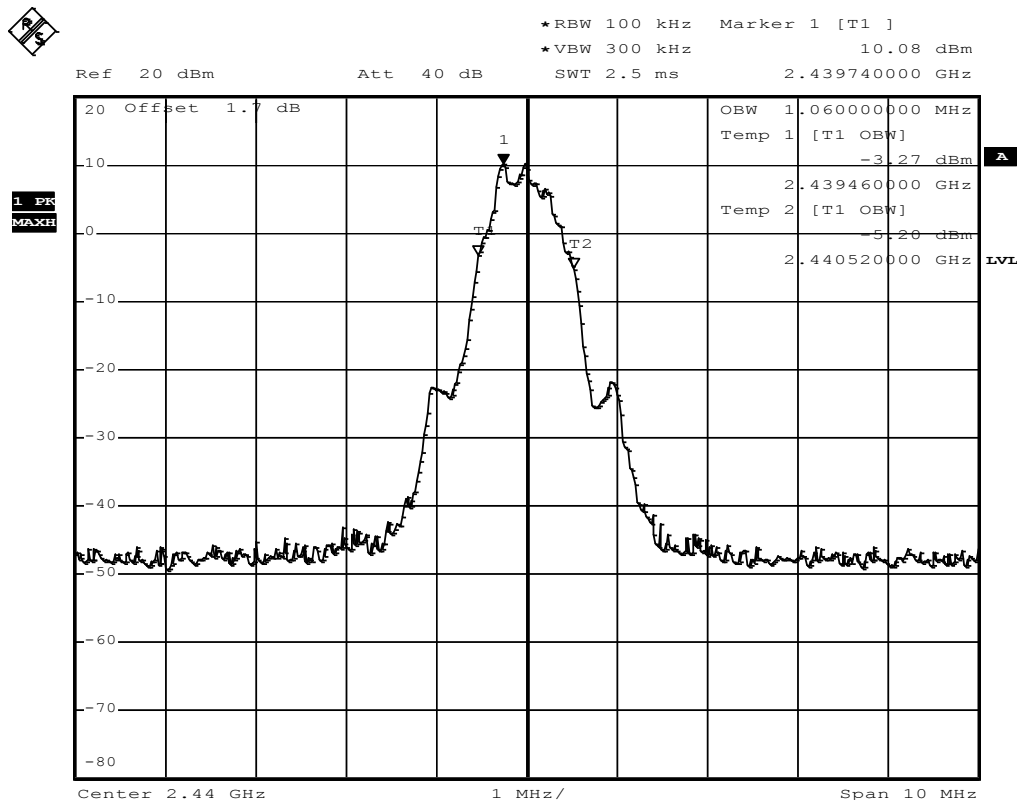


Comment: Occupied_Bandwidth_:__1060_kHz
 Date: 4.APR.2013 12:31:57

Occupied Bandwidth – F_{MID}

RSS Gen Occupied Bandwidth

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode, power level 15

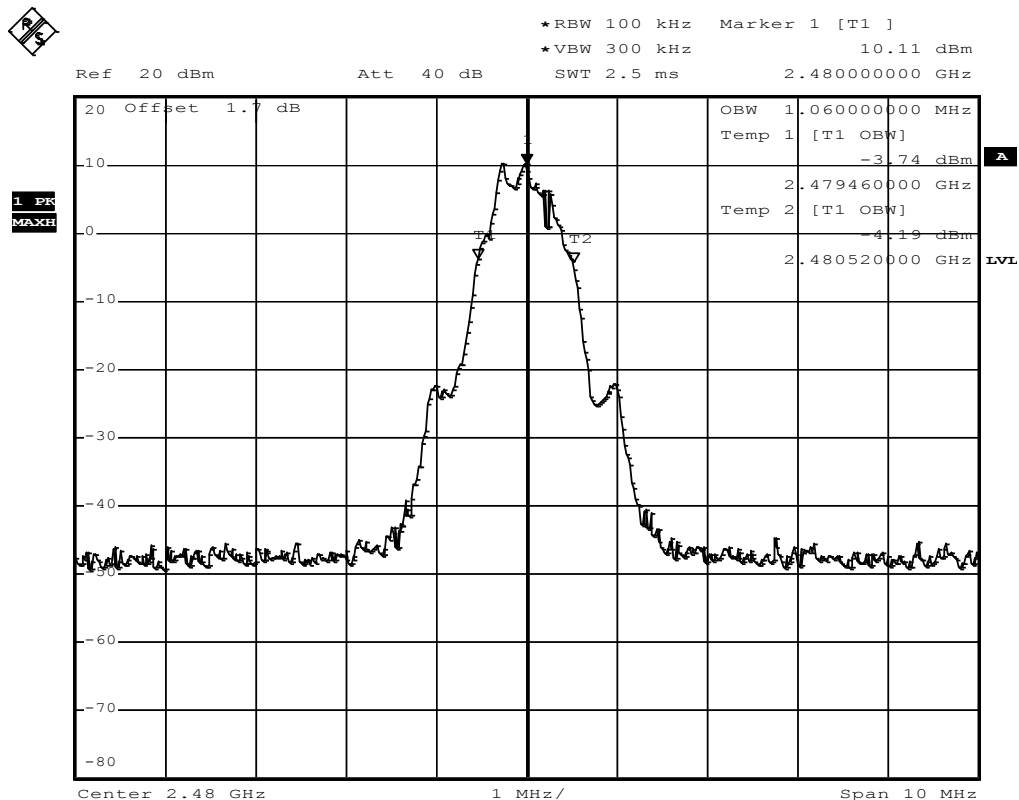


Comment: Occupied_Bandwidth: __1060_kHz
 Date: 4.APR.2013 12:39:34

Occupied Bandwidth – F_{HIGH}

RSS Gen Occupied Bandwidth

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode, power level 15



Comment: Occupied_Bandwidth_:__1060_kHz
Date: 4.APR.2013 12:45:17

3.2 Test Conditions and Results – 6 dB Bandwidth

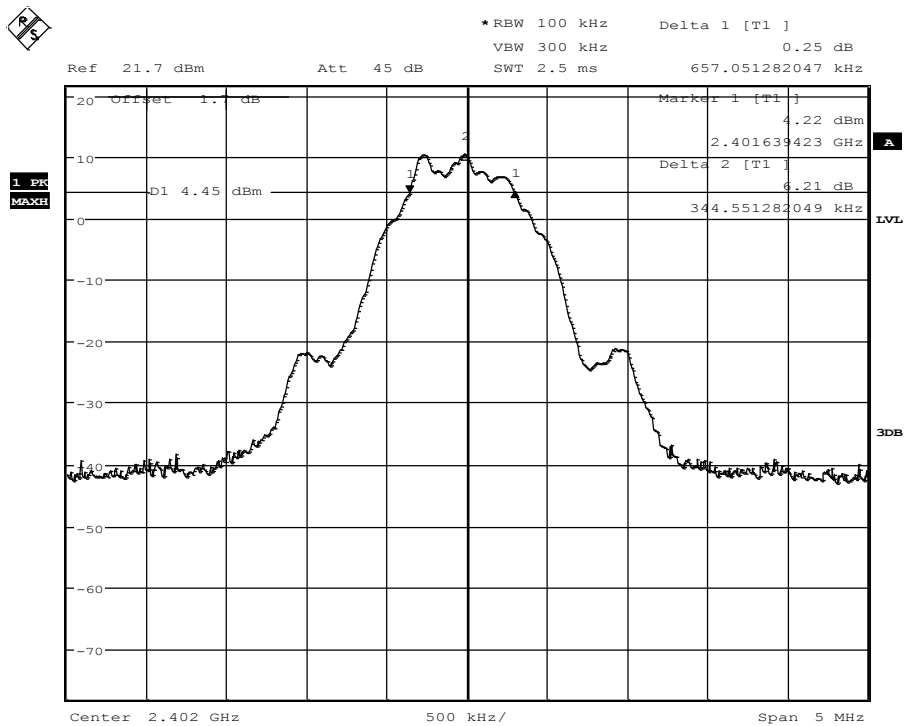
6dB Bandwidth acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause		Reference			
		FCC 15.247(a)(2) / IC RSS-210 A8.2			
Test according to measurement reference		Reference Method			
		FCC KDB Publication No. 558074			
Test frequency range		Tested frequencies			
		F _{LOW} / F _{MID} / F _{HIGH}			
Limits					
Limit					
≥ 500kHz					
Test setup					
Spectrum Analyzer EUT					
Test procedure					
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and RBW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak 7. 6 dB Bandwidth is determined by marker frequency separation					
Test results					
Channel	Frequency [MHz]	Mode	6 dB Bandwidth [kHz]	Limit [kHz]	Result
F _{LOW}	2402	Transmit	657.051	500	PASS
F _{MID}	2440	Transmit	651.738	500	PASS
F _{HIGH}	2480	Transmit	660.000	500	PASS
Comments:					

6 dB Bandwidth – F_{Low}

FCC part 15.247 (a)2

Minimum 6 dB Bandwidth

EUT Bluetooth Module
Model PAN1316 / PAN1326 G0M-1303-2693
Approval Holder Panasonic Industrial Device Europe GmbH
Temperature / Voltage Tnom / Vnom
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 BLE Testmode, power level 15



6_dB_Bandwidth : 657.0513_kHz > 500_kHz Verdict: Pass

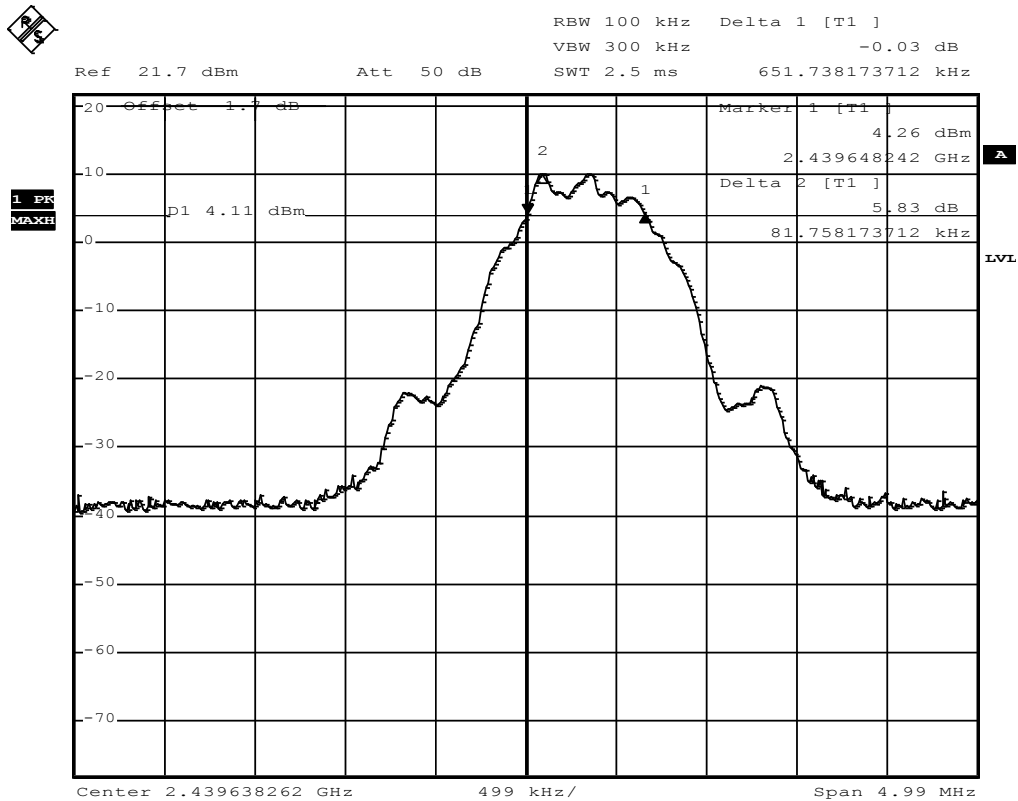
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6 dB Bandwidth – F_{MD}

FCC part 15.247 (a)2

Minimum 6 dB Bandwidth

EUT Bluetooth Module
 Model PAN1316 / PAN1326 G0M-1303-2693
 Approval Holder Panasonic Industrial Device Europe GmbH
 Temperature / Voltage Tnom / Vnom
 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 BLE Testmode / power level 15



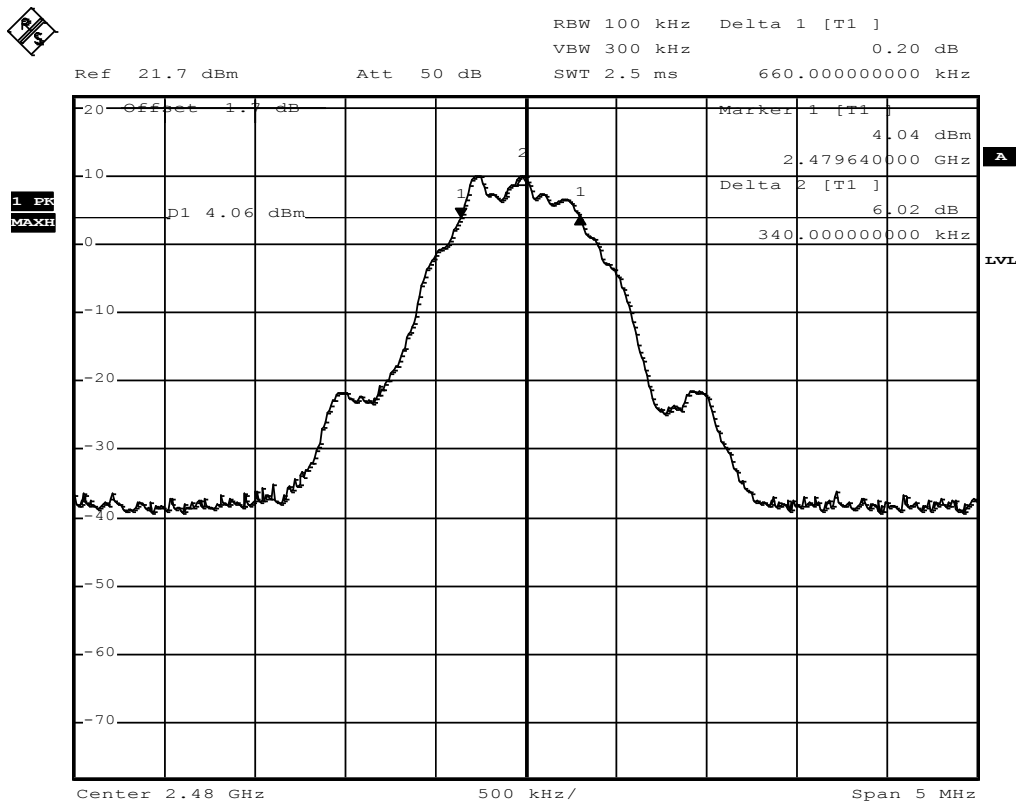
Comment: 6_dB_Bandwidth_: 651.7382_kHz_>_500_kHz_____Verdict: __Pass
 Date: 4.APR.2013 13:27:20

6 dB Bandwidth – F_{HIGH}

FCC part 15.247 (a)2

Minimum 6 dB Bandwidth

EUT Bluetooth Module
Model PAN1316 / PAN1326 G0M-1303-2693
Approval Holder Panasonic Industrial Device Europe GmbH
Temperature / Voltage Tnom / Vnom
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 BLE Testmode / power level 15



Comment: 6_dB_Bandwidth_: 660.0000_kHz_>_500_kHz_____Verdict: __Pass
Date: 4.APR.2013 13:15:51

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 ⇒ Limit correction = 0 dB	
Limits		
1 W (30 dBm)		
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.		
Test setup		
Spectrum Analyzer EUT		
Test procedure		
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span set to twice the 20 dB bandwidth and detector to peak and max hold 4. Resolution bandwidth is set to 3 MHz 5. Peak conducted power is determined from peak of spectrum envelope		

Test results							
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]
F _{LOW}	2402	V _{nom} = 3.3V	Transmit	10.44	0.011	30	-19.56
F _{MID}	2440	V _{nom} = 3.3V	Transmit	10.52	0.011	30	-19.48
F _{HIGH}	2480	V _{nom} = 3.3V	Transmit	10.26	0.011	30	-19.74
F _{LOW}	2402	V _{min} = 2.0V	Transmit	10.00	0.010	30	-20.00
F _{MID}	2440	V _{min} = 2.0V	Transmit	10.11	0.010	30	-19.89
F _{HIGH}	2480	V _{min} = 2.0V	Transmit	8.99	0.008	30	-21.01
F _{LOW}	2402	V _{max} = 3.6V	Transmit	9.97	0.010	30	-20.03
F _{MID}	2440	V _{max} = 3.6V	Transmit	10.06	0.010	30	-19.94
F _{HIGH}	2480	V _{max} = 3.6V	Transmit	7.78	0.006	30	-22.22
Comment:							

3.4 Test Conditions and Results – Power spectral density

Power spectral density acc. FCC 15.247 / IC RSS-210						Verdict: PASS
EUT requirement rule parts and clause			Reference			
			FCC 15.247(e) / IC RSS-210 A8.2			
Test according to 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			
Limits						
8 dBm / 3 kHz						
Test setup						
Spectrum Analyzer EUT						
Test procedure						
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3kHz 4. Peak power density is determined from peak emission of envelope						
Test results						
Channel	Frequency [MHz]	Test mode	Peak frequency [MHz]	Peak power density [dBm]	Limit [dBm/3kHz]	Margin [dB]
F_{LOW}	2402	Transmit	2401.978	-4.85	8.0	-12.85
F_{MID}	2440	Transmit	2439.973	-5.42	8.0	-13.42
F_{HIGH}	2480	Transmit	2479.979	-5.28	8.0	-13.28
Comments:						

3.5 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen				Verdict: PASS	
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			
Limits and results					
Frequency [MHz]	Quasi-Peak [dBμV]	Result	Average [dBμV]	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:					
* Limit decreases linearly with the logarithm of the frequency.					

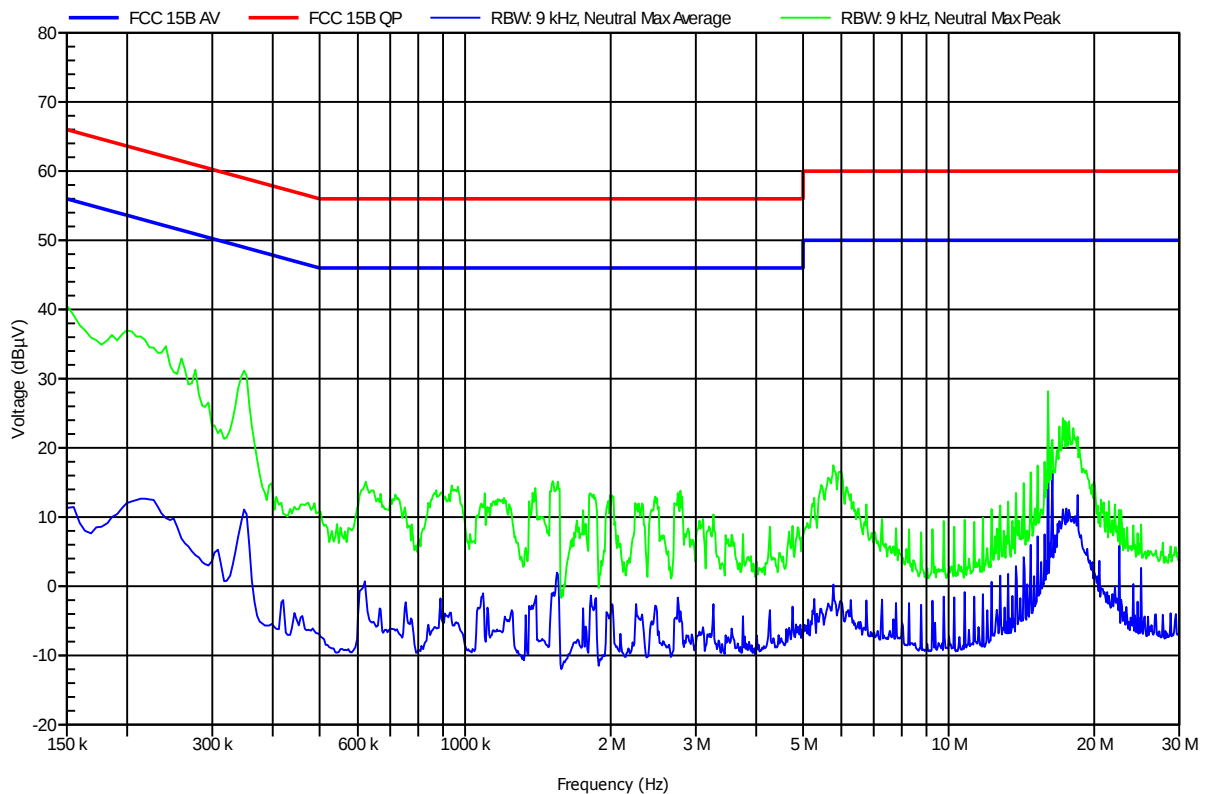
Conducted Emissions

EMI voltage test in the ac-mains according to FCC part 15b

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
EUT Name: Bluetooth module
Model: ENW89823C2KF/ENW89823A2KF
Test Site: Eurofins Product Service GmbH
Operator: Mr. Eichhorn
Test Conditions: Tnom: 22°C, Unom: 120 V AC; 60 Hz
LISN: ESH2-Z5 N
Mode: USB at Notebook
Test Date: 2013-04-12
Note: PAN1326

Index 1



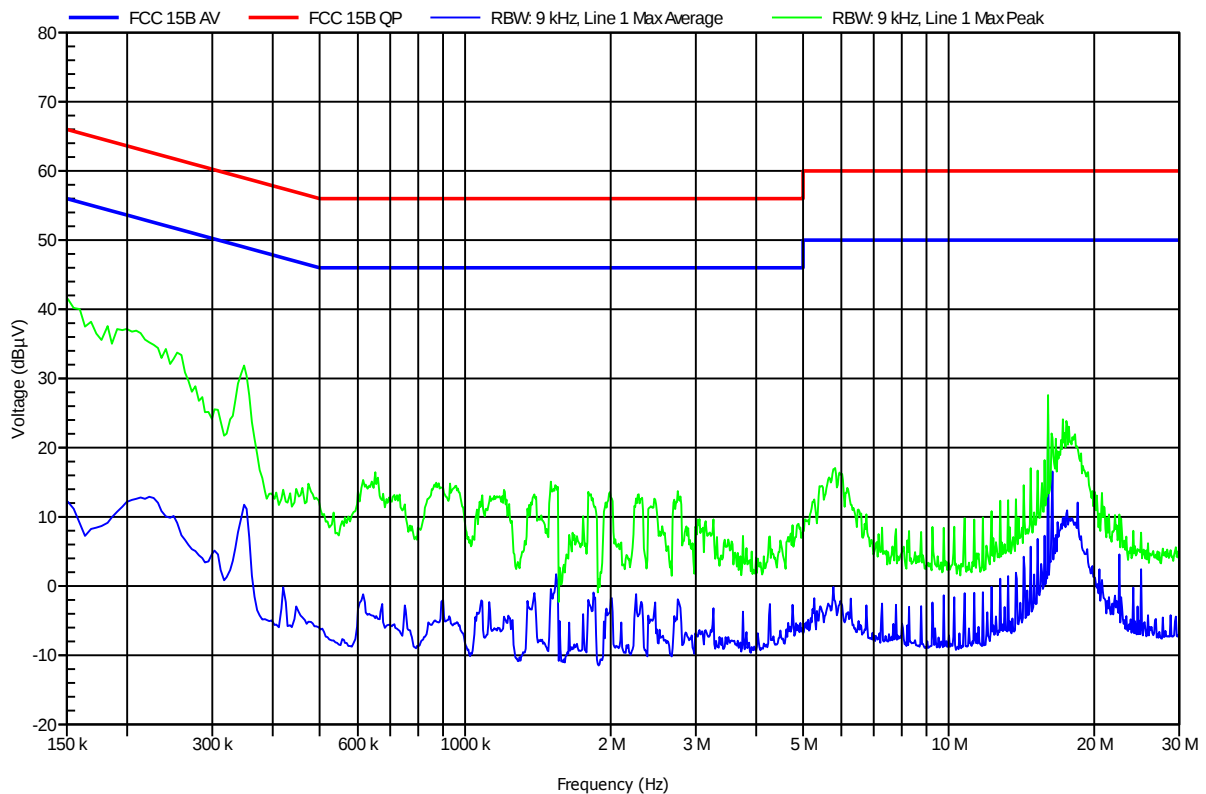
Conducted Emissions

EMI voltage test in the ac-mains according to FCC part 15b

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth module
 Model: ENW89823C2KF/ENW89823A2KF
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Eichhorn
 Test Conditions: Tnom: 22°C, Unom: 120 V AC; 60 Hz
 LISN: ESH2-Z5 L
 Mode: USB at Notebook
 Test Date: 2013-04-12
 Note: PAN1326

Index 2



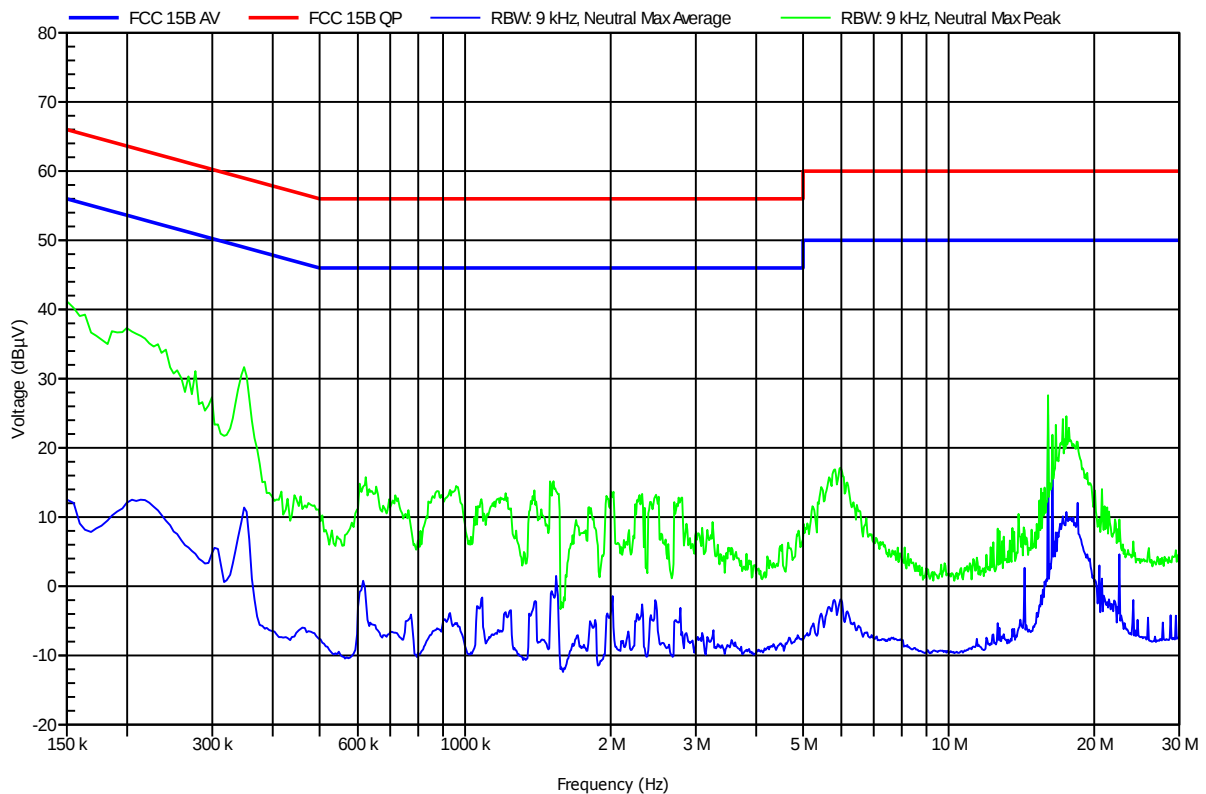
Conducted Emissions

EMI voltage test in the ac-mains according to FCC part 15b

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
EUT Name: Bluetooth module
Model: ENW89823C2KF/ENW89823A2KF
Test Site: Eurofins Product Service GmbH
Operator: Mr. Eichhorn
Test Conditions: Tnom: 22°C, Unom: 120 V AC; 60 Hz
LISN: ESH2-Z5 N
Mode: USB at Notebook
Test Date: 2013-04-12
Note: PAN1316

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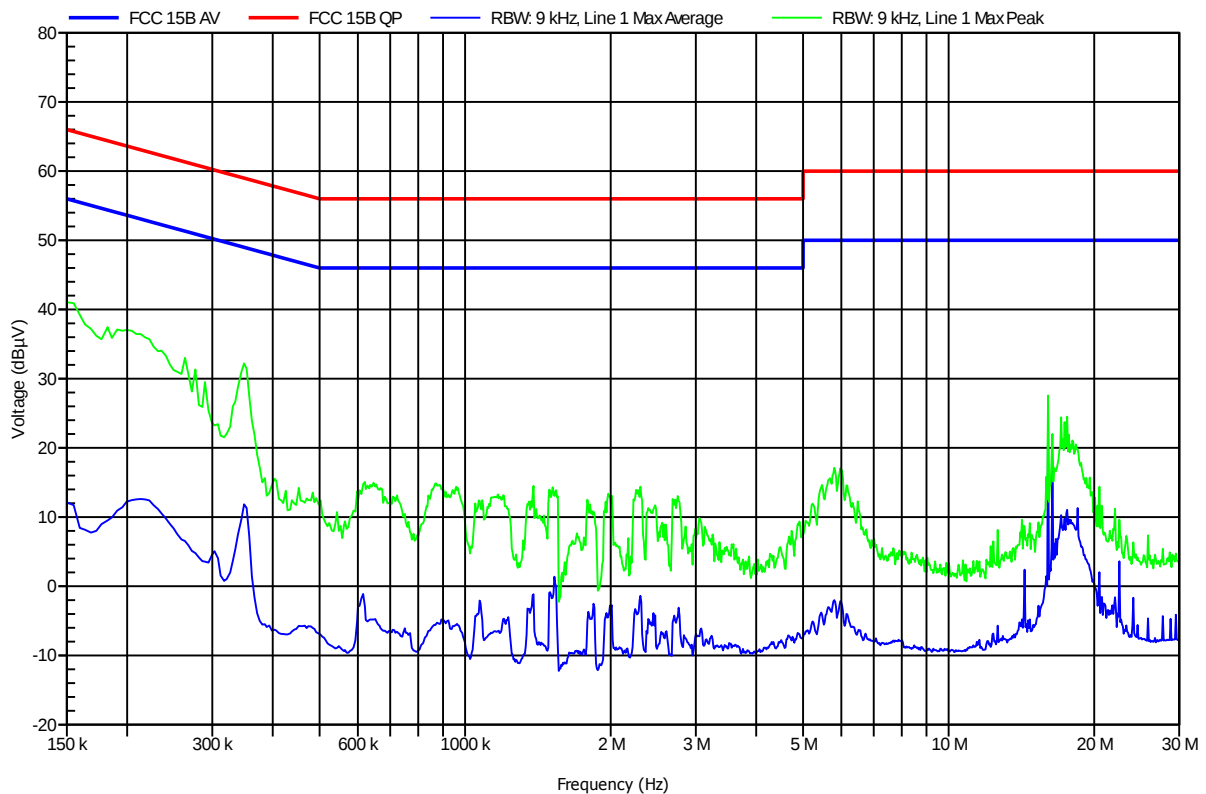
Conducted Emissions

EMI voltage test in the ac-mains according to FCC part 15b

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
EUT Name: Bluetooth module
Model: ENW89823C2KF/ENW89823A2KF
Test Site: Eurofins Product Service GmbH
Operator: Mr. Eichhorn
Test Conditions: Tnom: 22°C, Unom: 120 V AC; 60 Hz
LISN: ESH2-Z5 L
Mode: USB at Notebook
Test Date: 2013-04-12
Note: PAN1316

Index 3

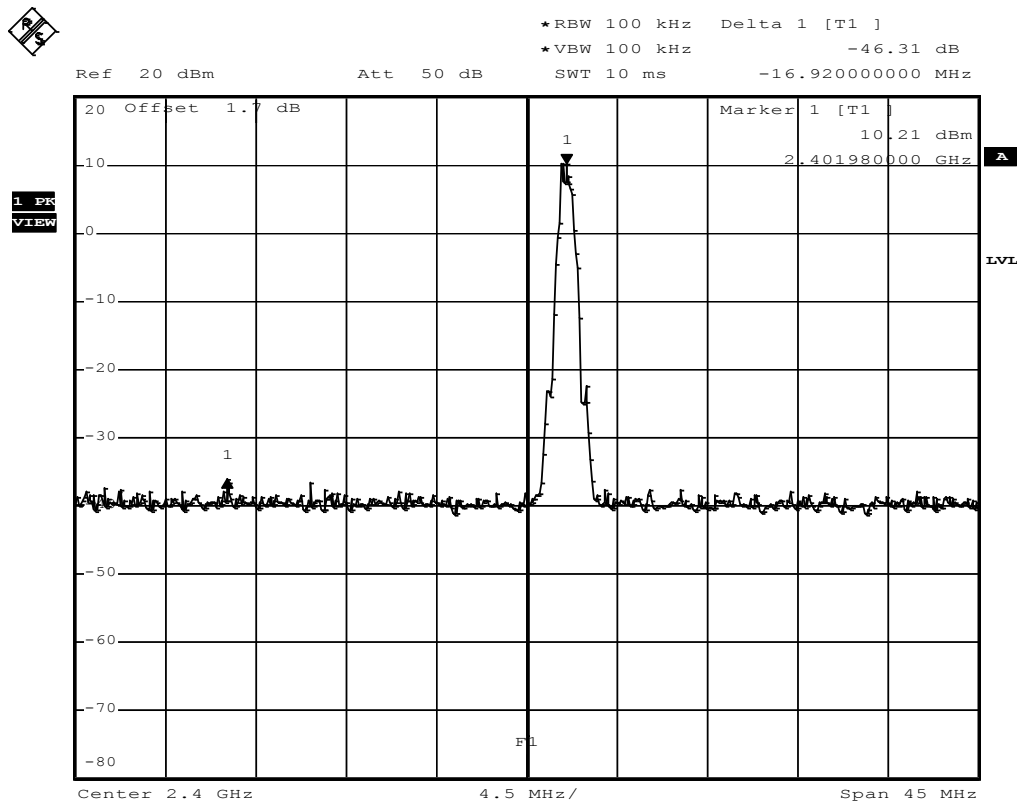


3.6 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. FCC 15.247 / IC RSS-210					Verdict: PASS
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			
Limits					
Limit			Condition		
≤ -20 dB / 100 kHz			Peak power measurement detector = Peak		
≤ -30 dB / 100 kHz			Peak power measurement detector = RMS		
Test setup					
Spectrum Analyzer EUT					
Test procedure					
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference					
Test results					
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]
F _{LOW}	2402	Transmit	-46.31	-20	-26.31
F _{HIGH}	2480	Transmit	-47.85	-20	-27.85
Comments:					

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

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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. 0: 2402 MHz
Comment 3	BLE Testmode, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS

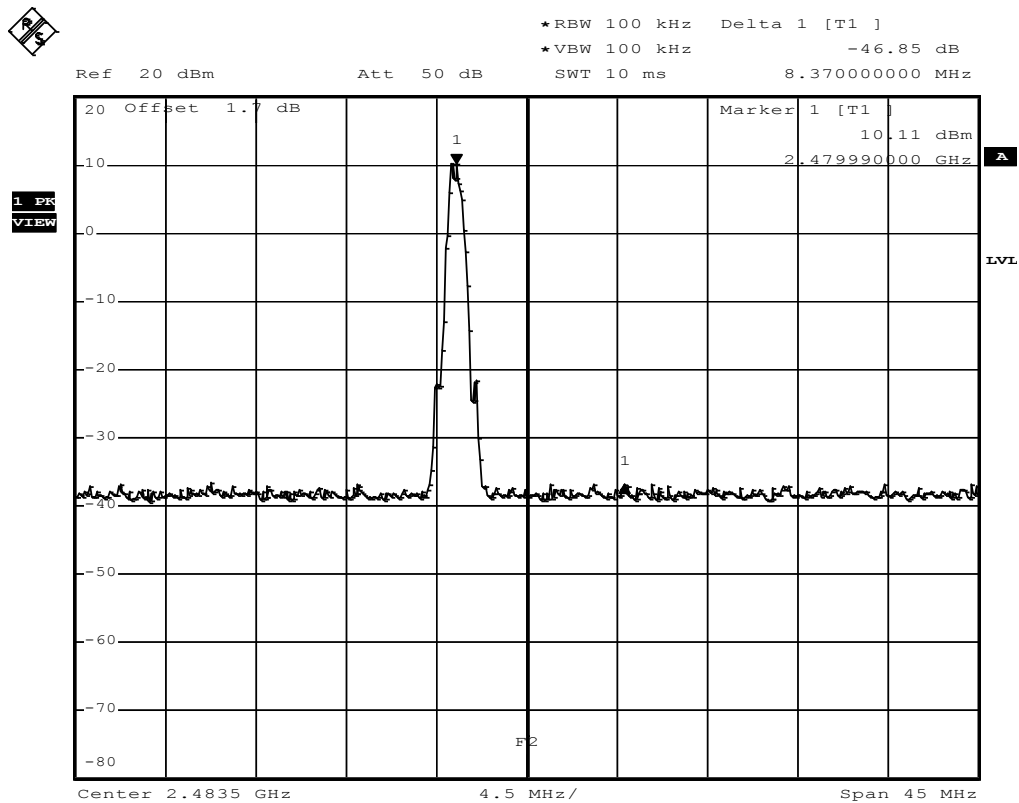
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Band-edge compliance

FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS

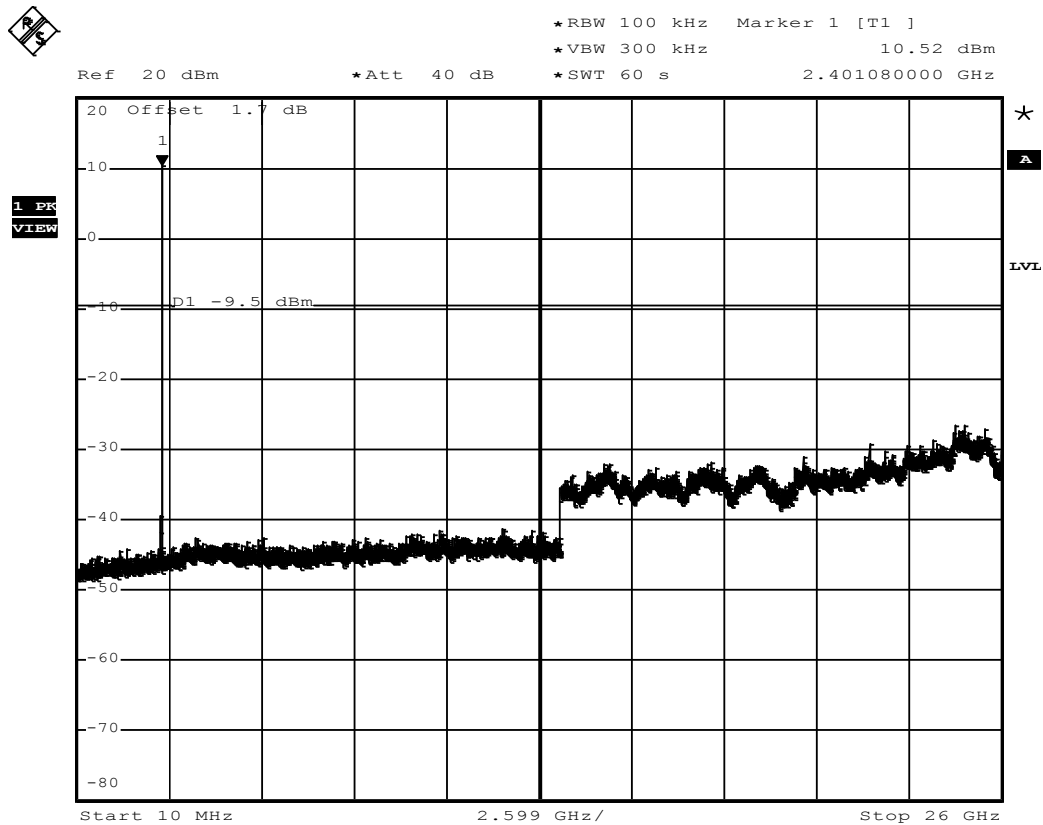
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3.7 Test Conditions and Results – Conducted spurious emissions

Conducted spurious emissions acc. FCC 15.247 / IC RSS-210						Verdict: PASS	
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 th Harmonic				
Measurement mode			Peak				
Limits							
Limit				Condition			
≤ -20 dB / 100 kHz				Peak power measurement detector = Peak			
≤ -30 dB /100 kHz				Peak power measurement detector = RMS			
Test setup							
Spectrum Analyzer EUT							
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 is set to 100 kHz and detector to peak and max hold 4. Markers are set to peak emission levels within frequency band 5. Emission level is determined by second marker on emission peak 6. Attenuation is determined from level difference							
Test results							
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]
F _{LOW}	2402	no significant spurious emissions					
F _{MID}	2440	no significant spurious emissions					
F _{HIGH}	2480	no significant spurious emissions					
Comments:							

Conducted spurious emissions – F_{Low}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2402 MHz
Comment 3	BLE Testmode / power level 15

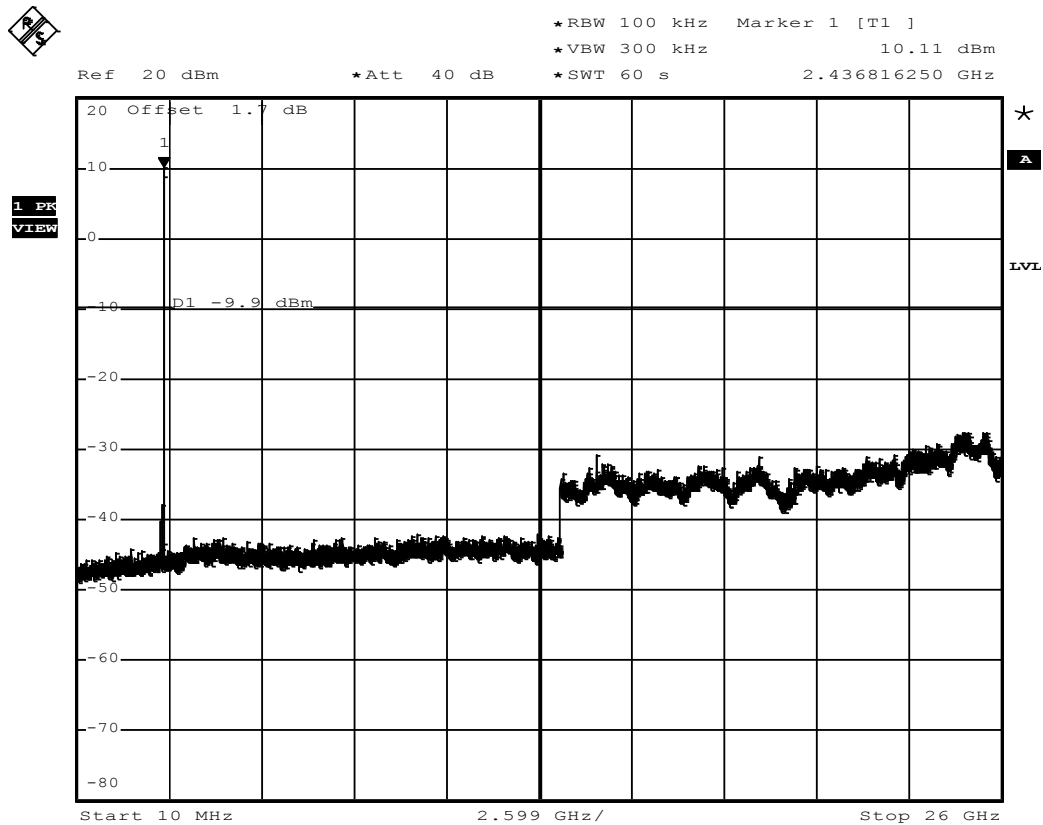


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Conducted spurious emissions – F_{MID}

FCC part 15.247 (d)
Spurious Emissions

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode / power level 15

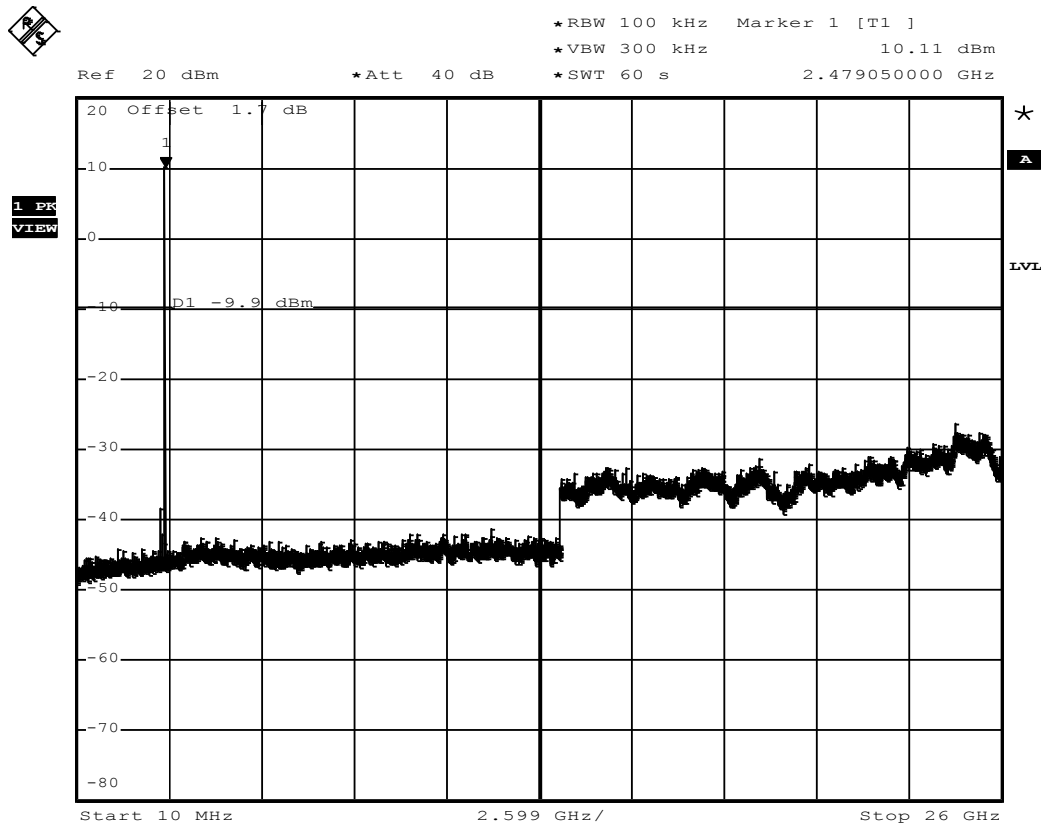


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Conducted spurious emissions – F_{HIGH}

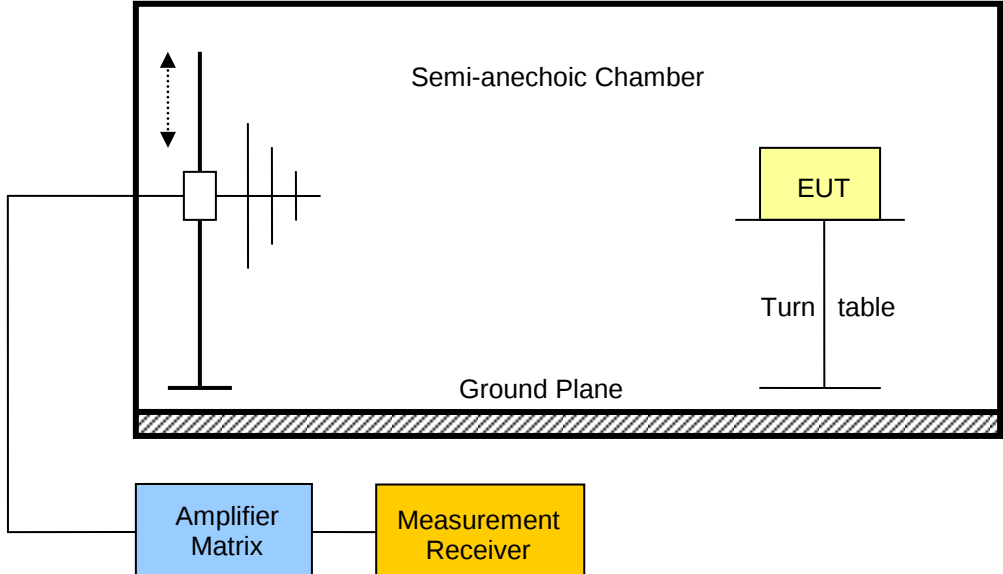
FCC part 15.247 (d)
Spurious Emissions

EUT	Bluetooth Module
Model	PAN1316 / PAN1326 G0M-1303-2693
Approval Holder	Panasonic Industrial Device Europe GmbH
Temperature / Voltage	Tnom / Vnom
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	BLE Testmode / power level 15



Date: 4.APR.2013 12:56:58

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 th Harmonic			
Limits				
Frequency range [MHz]	Detector	Limit [μV/m]	Limit [dBμV/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
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)). 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.				
Test setup				
				

Test procedure									
- EUT set to test mode (Communication tester is used if needed) - Span it set according to measurement range - 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 - Markers are set to peak emission levels within restricted bands									
Test results									
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Limit dist. [m]*	Margin [dB]
F _{LOW}	2402	Transmit	2325	55.20	pk	hor	74.00	3	-18.80
F _{LOW}	2402	Transmit	2325	26.01	avg	hor	54.00	3	-27.99
F _{LOW}	2402	Transmit	2377	57.33	pk	hor	74.00	3	-16.67
F _{LOW}	2402	Transmit	2377	25.72	avg	hor	54.00	3	-28.28
F _{LOW}	2402	Transmit	2389	54.95	pk	hor	74.00	3	-19.05
F _{LOW}	2402	Transmit	2389	27.70	avg	hor	54.00	3	-26.30
F _{LOW}	2402	Transmit	4804	55.93	pk	ver	74.00	3	-18.07
F _{LOW}	2402	Transmit	4804	42.04	avg	ver	54.00	3	-11.96
F _{LOW}	2402	Transmit	4804	55.05	pk	hor	74.00	3	-18.95
F _{LOW}	2402	Transmit	4804	39.43	avg	hor	54.00	3	-14.57
F _{LOW}	2402	Transmit	14400	67.11	pk	ver	95.00	3	-27.89
F _{MID}	2440	Transmit	2325	54.66	pk	hor	74.00	3	-19.34
F _{MID}	2440	Transmit	2325	25.86	avg	hor	54.00	3	-28.14
F _{MID}	2440	Transmit	2389	54.43	pk	hor	74.00	3	-19.57
F _{MID}	2440	Transmit	2389	27.65	avg	hor	54.00	3	-26.35
F _{MID}	2440	Transmit	2490.7	54.98	pk	hor	74.00	3	-19.02
F _{MID}	2440	Transmit	2490.7	27.05	avg	hor	54.00	3	-26.95
F _{MID}	2440	Transmit	4880	54.85	pk	ver	74.00	3	-19.15
F _{MID}	2440	Transmit	4880	40.71	avg	ver	54.00	3	-13.29
F _{MID}	2440	Transmit	4880	57.21	pk	hor	74.00	3	-16.79
F _{MID}	2440	Transmit	4880	41.56	avg	hor	54.00	3	-12.44
F _{MID}	2440	Transmit	7320	57.78	pk	hor	74.00	3	-16.22
F _{MID}	2440	Transmit	7320	42.57	avg	hor	54.00	3	-11.43
F _{MID}	2440	Transmit	7321	65.45	pk	ver	74.00	3	-08.55
F _{MID}	2440	Transmit	7321	46.81	avg	ver	54.00	3	-07.19
F _{MID}	2440	Transmit	14640	70.53	pk	ver	95.00	3	-24.47
F _{HIGH}	2480	Transmit	2500	40.40	pk	hor	95.00	3	-54.60
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 th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [μV/m]	Limit [dBμV/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				

Test procedure							
1. EUT set to receive 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							
Test results							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [db μ V/m]	Emission Level [μ V/m]	Det.	Limit [μ V/m]	Margin [μ V/m]
F _{MID}	2440	885.167	35.38	58.7	pk	200	-141.30
F _{MID}	2440	4880	49.00	281.8	pk	500	-218.20
F _{MID}	2440	4880	50.97	353.6	pk	500	-146.40
Comments: * Physical distance between EUT and measurement antenna. ** Emission level corresponds to ambient noise floor							

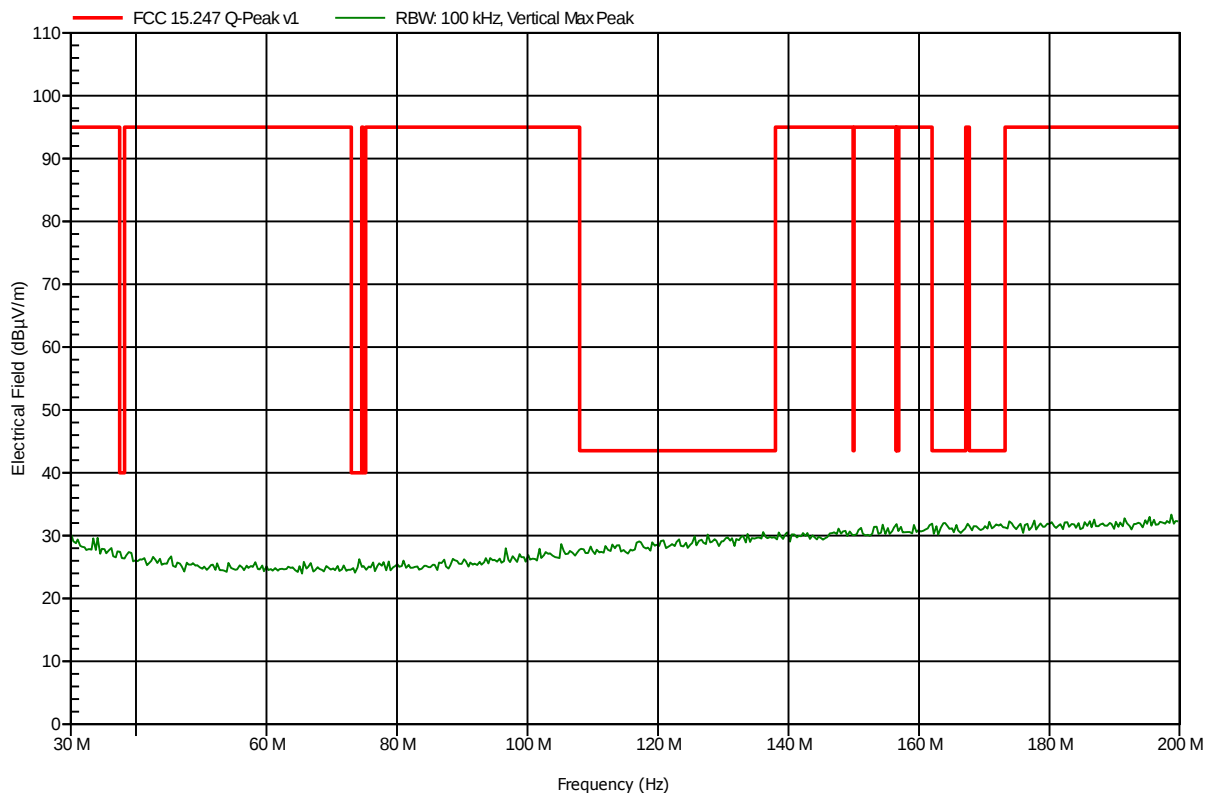
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	worst case

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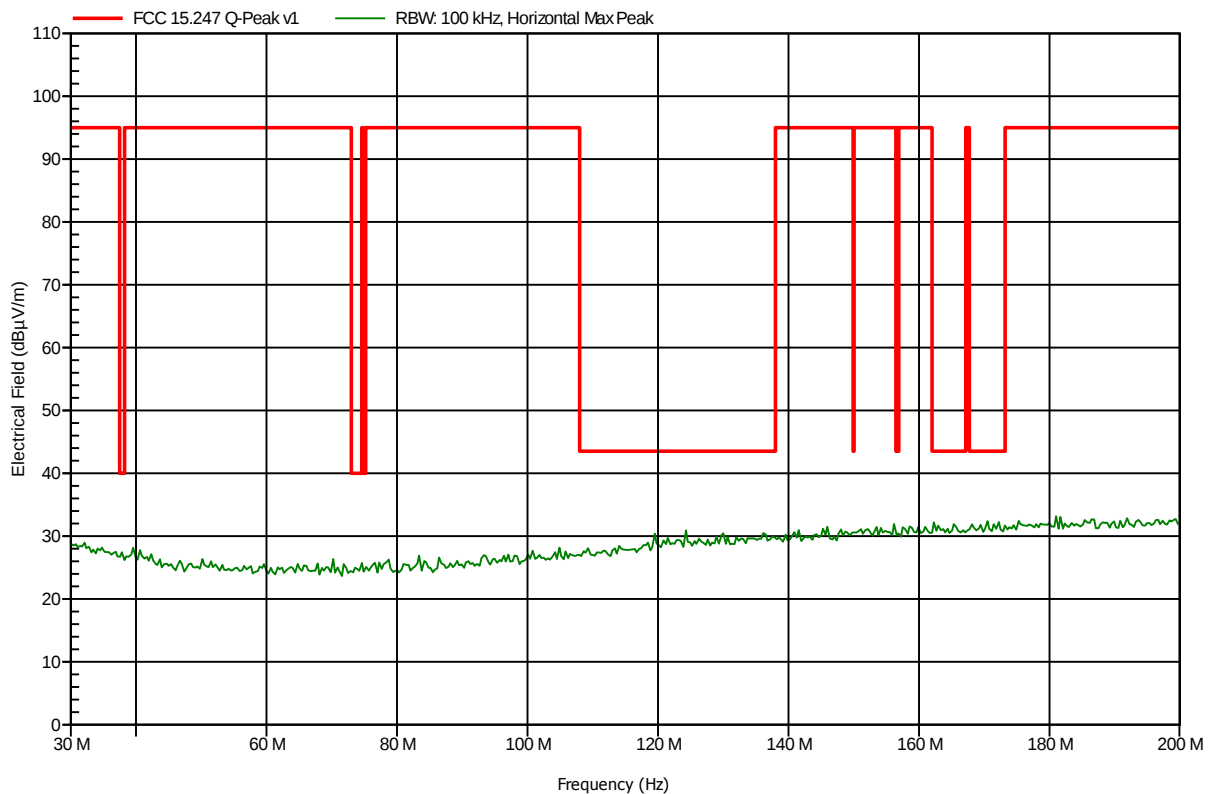


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	worst case

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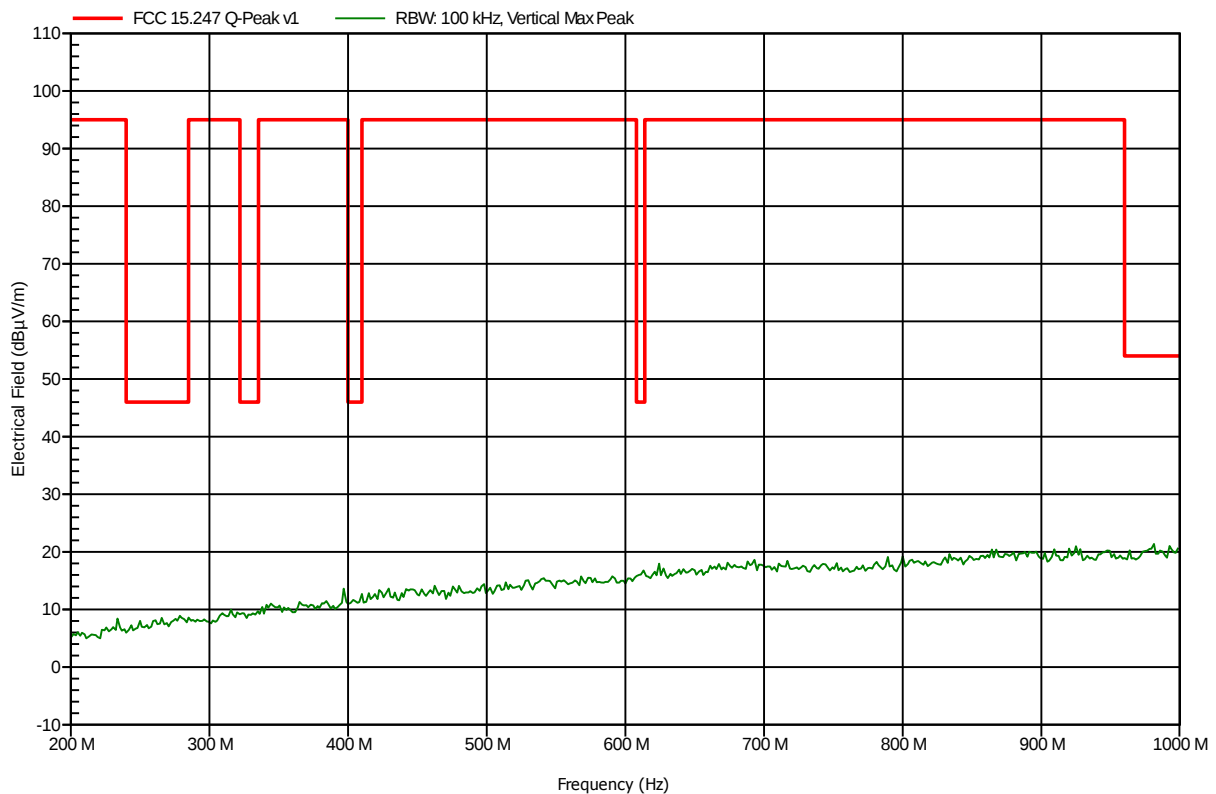


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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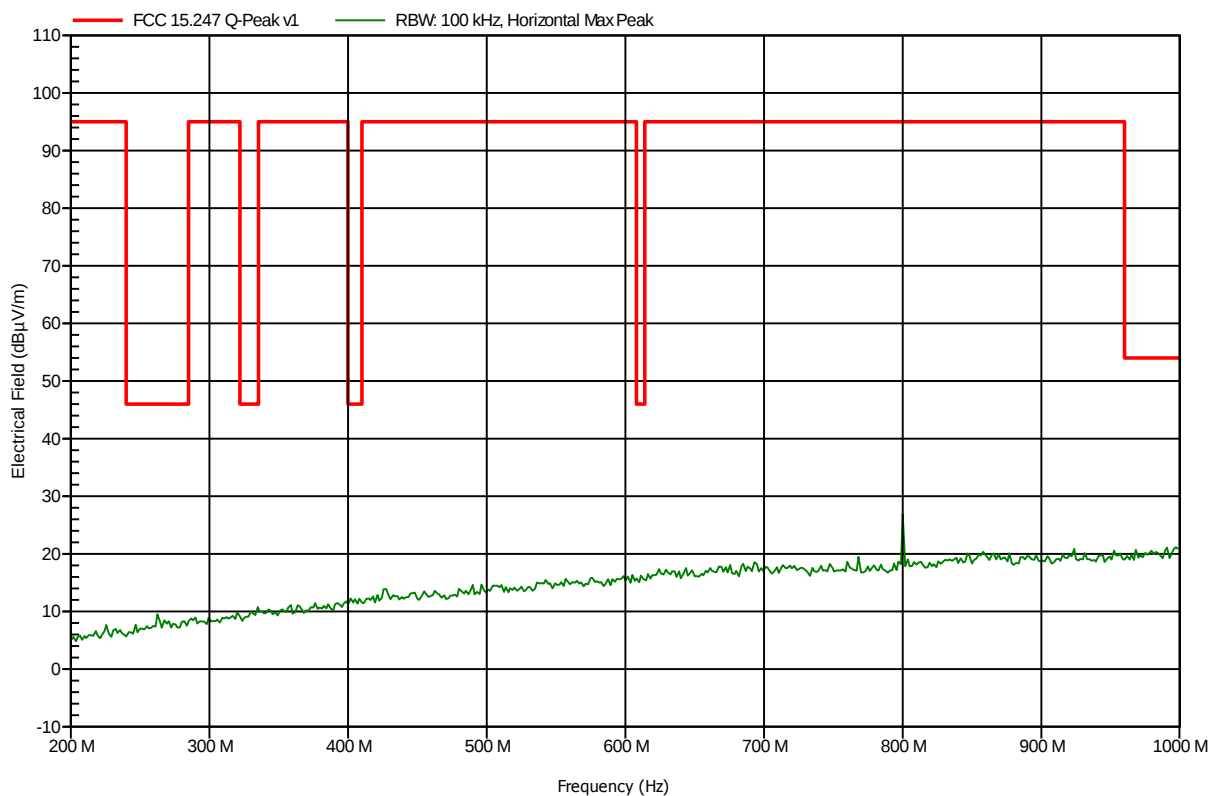


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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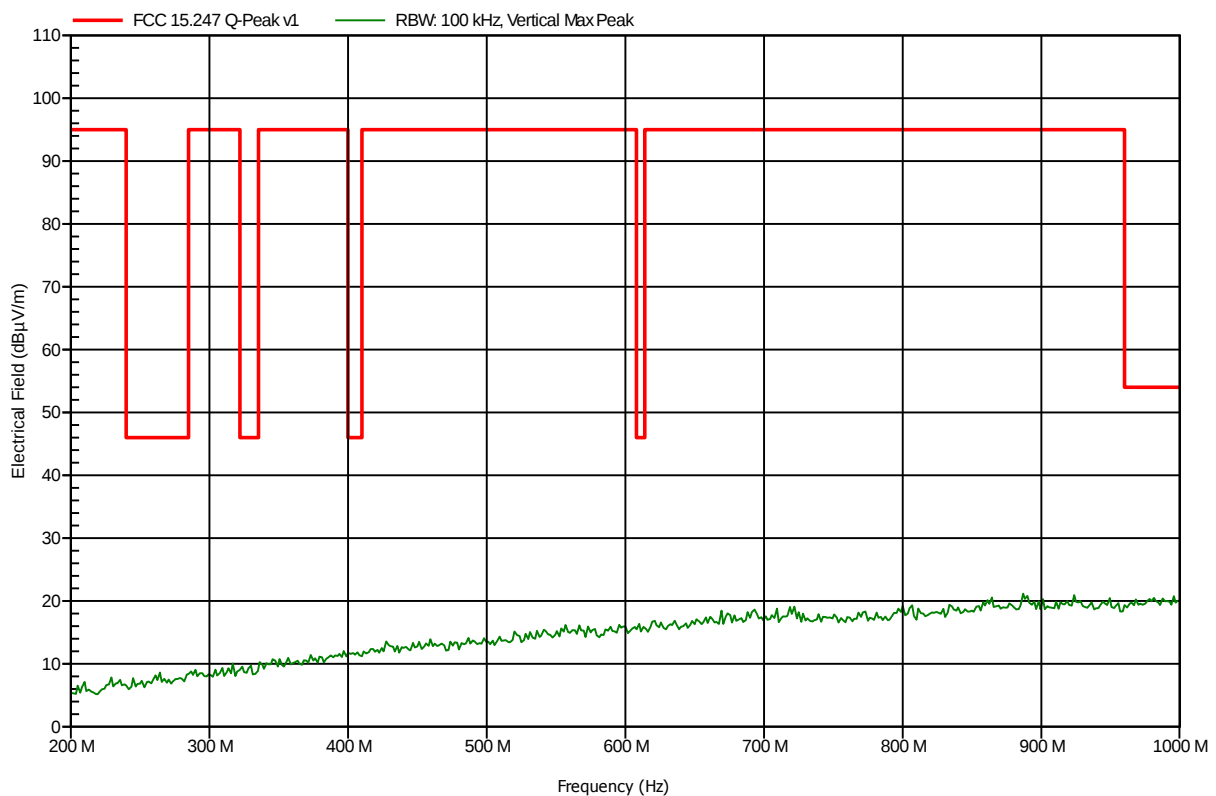


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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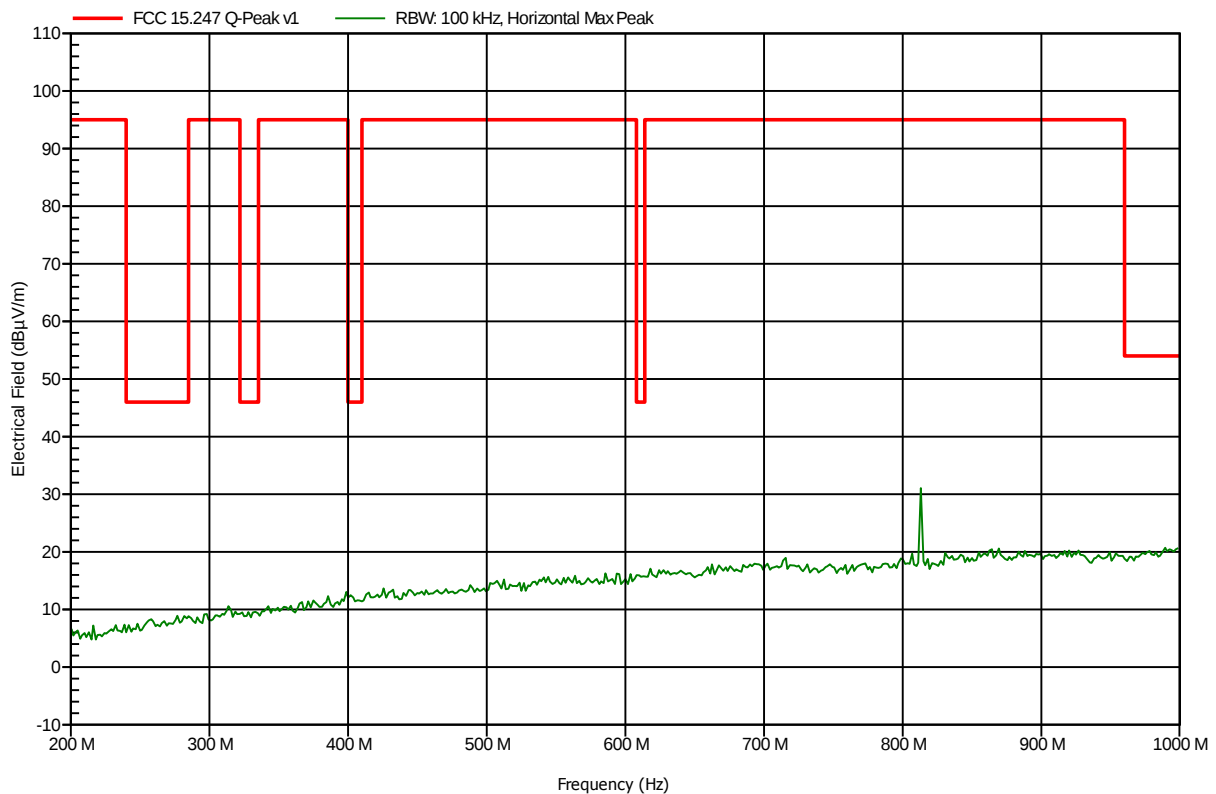


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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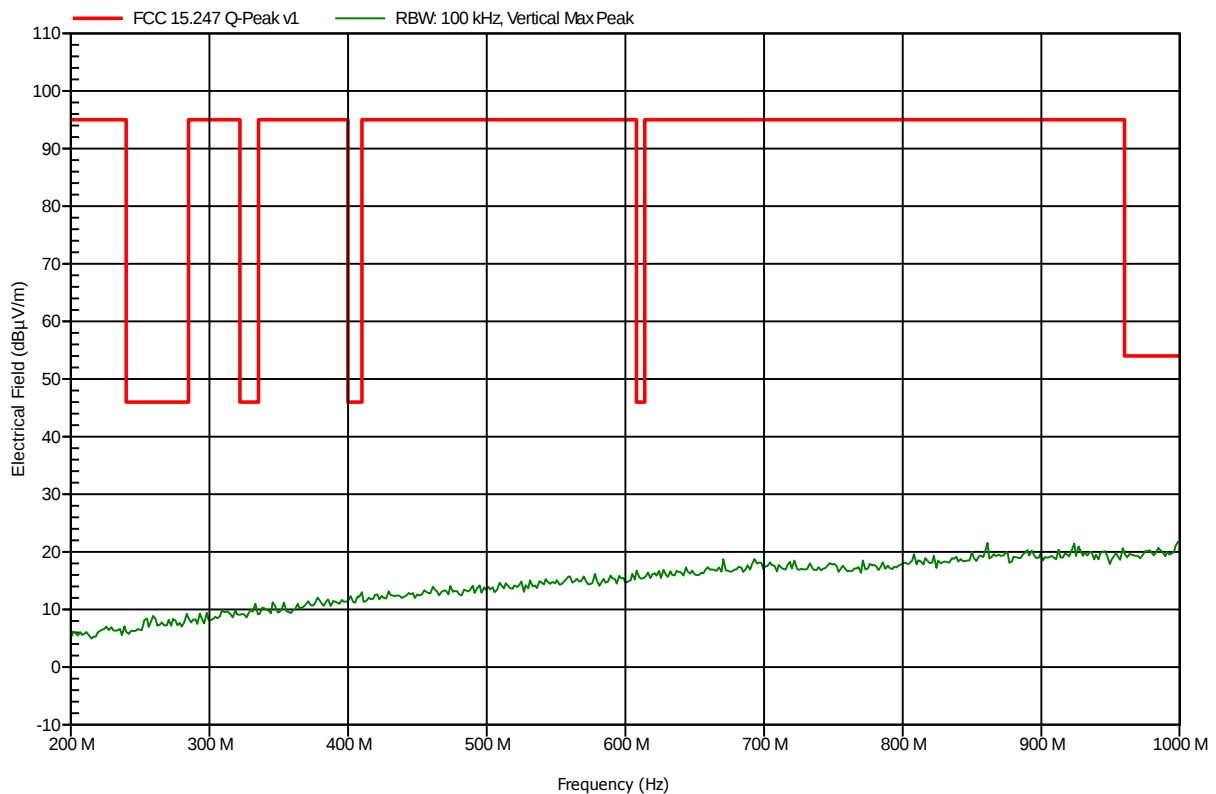


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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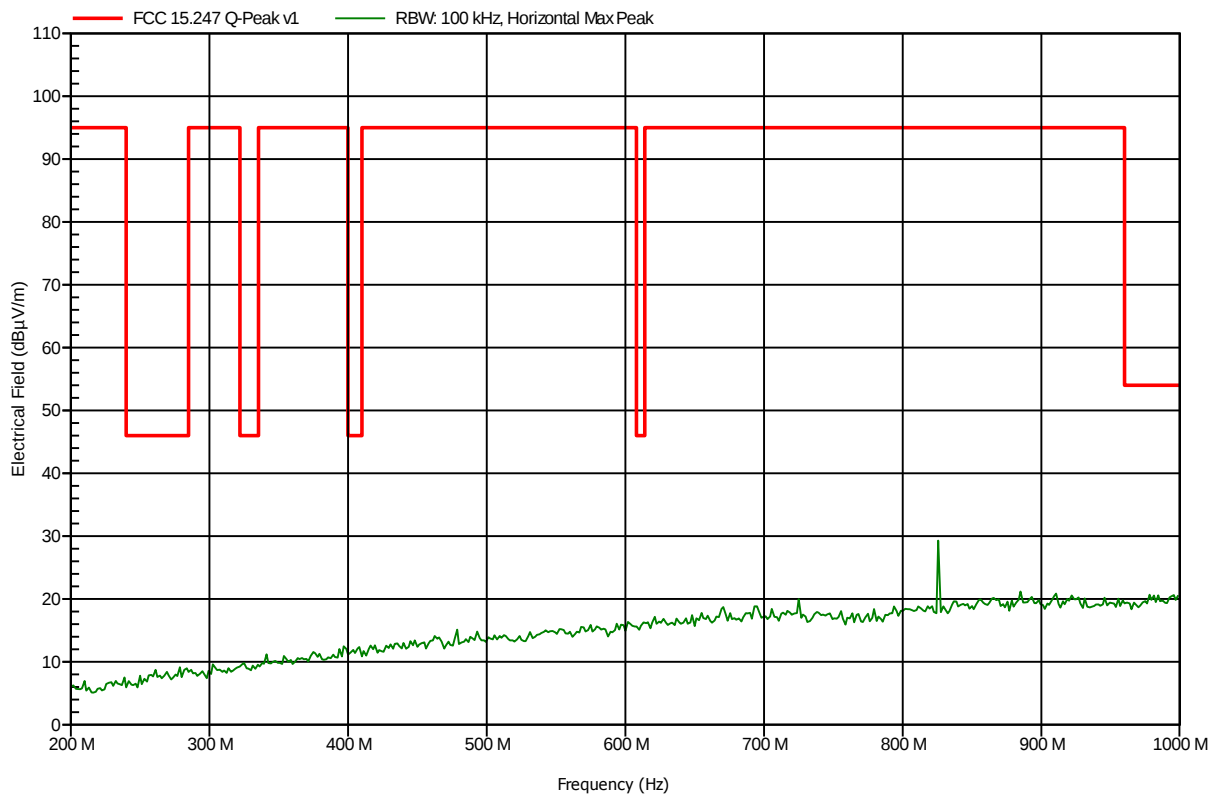


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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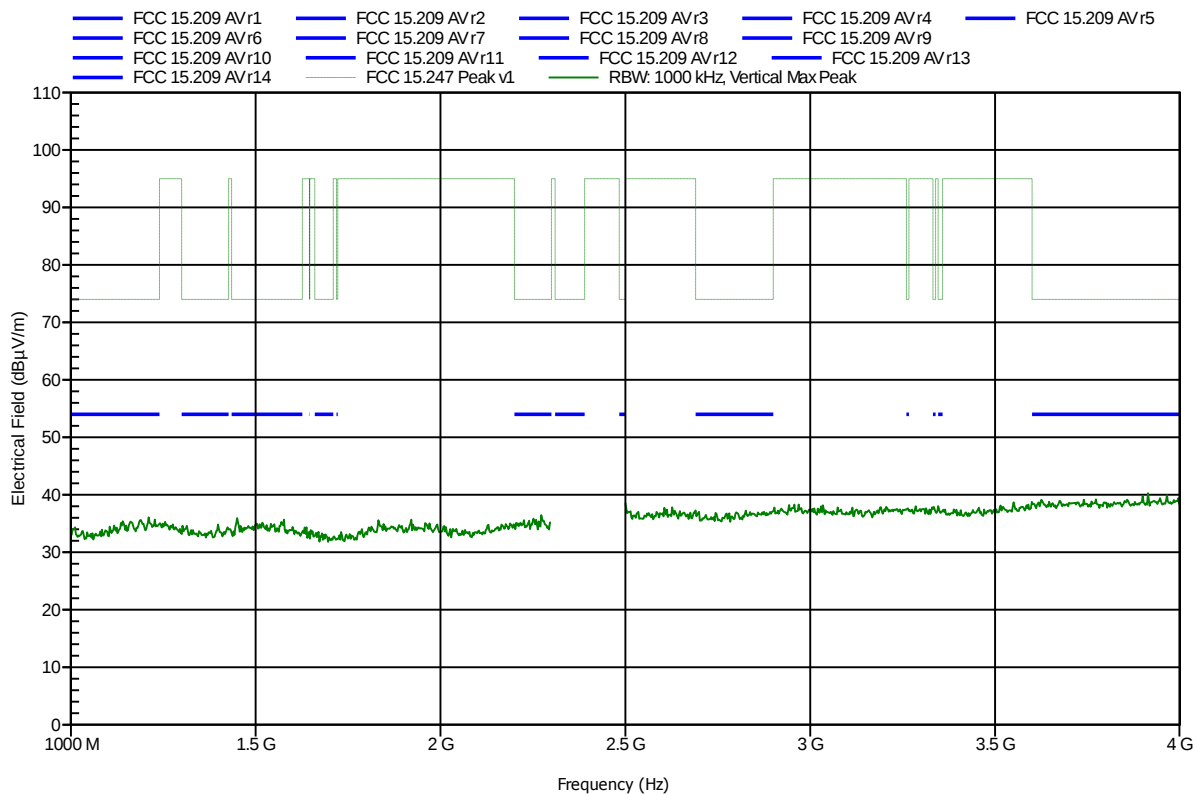


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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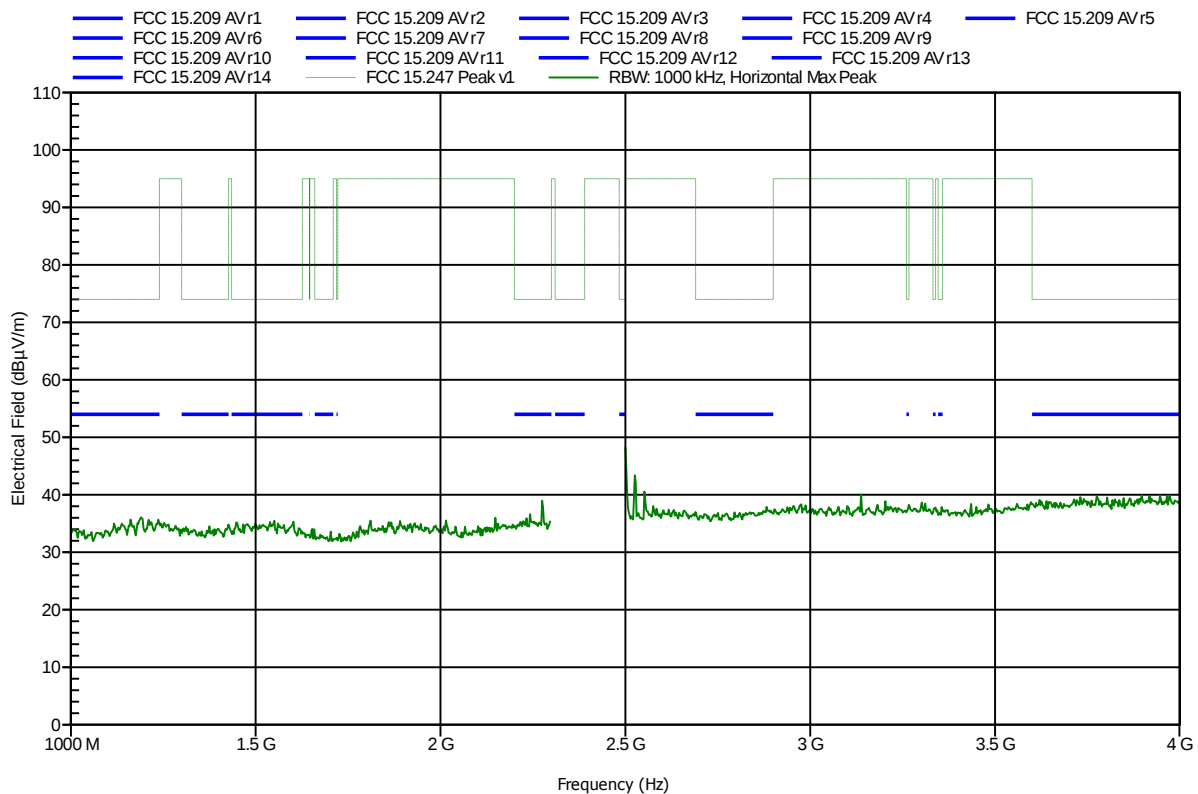


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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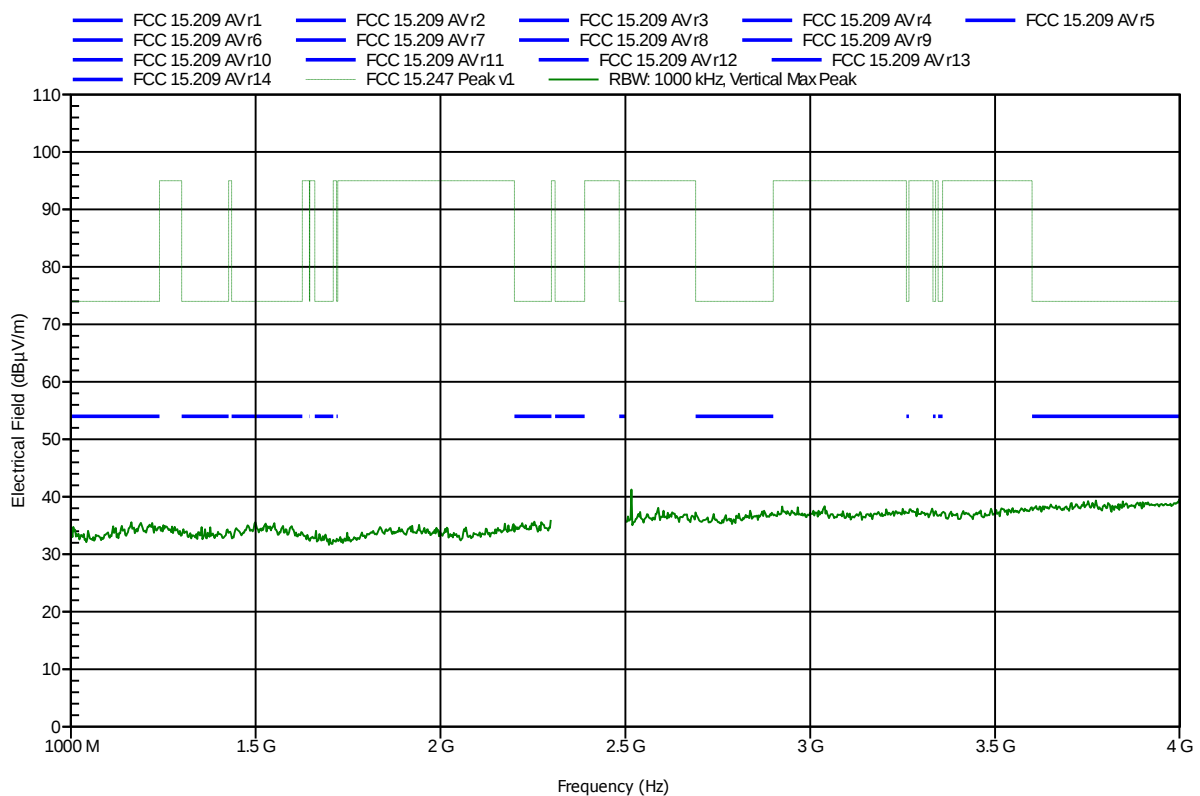


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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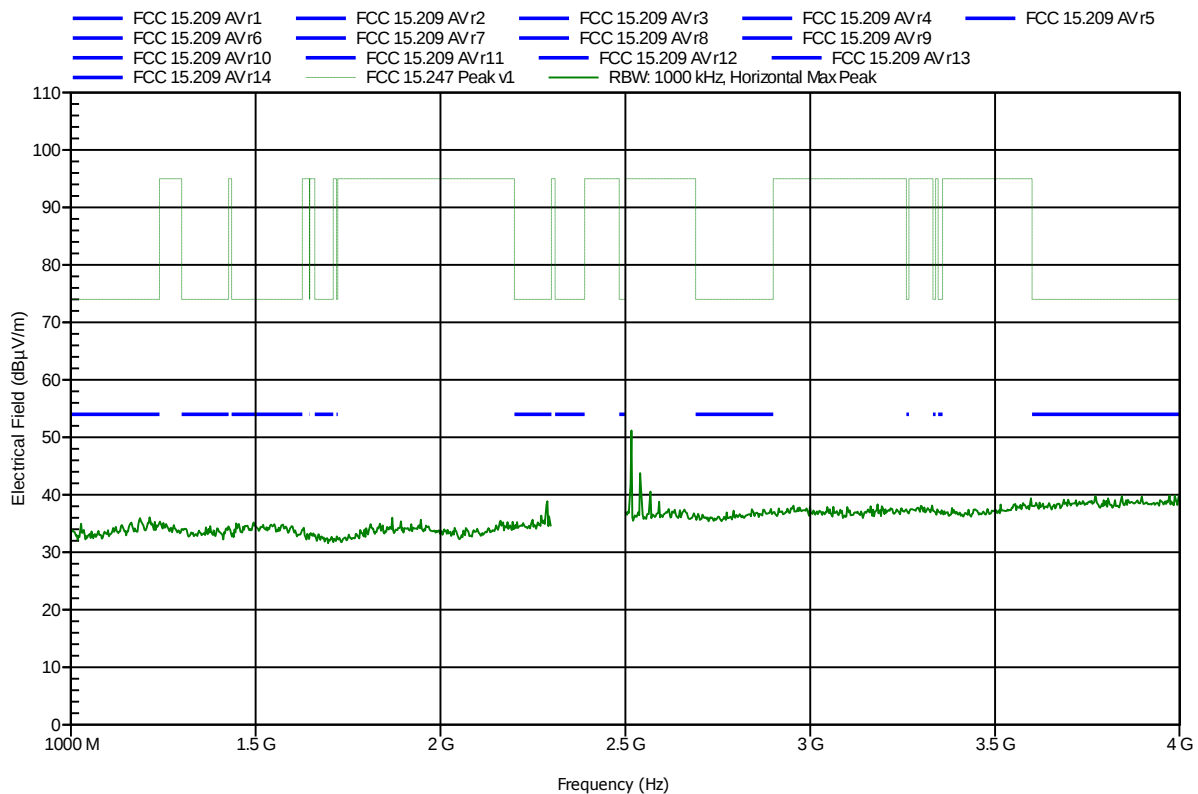


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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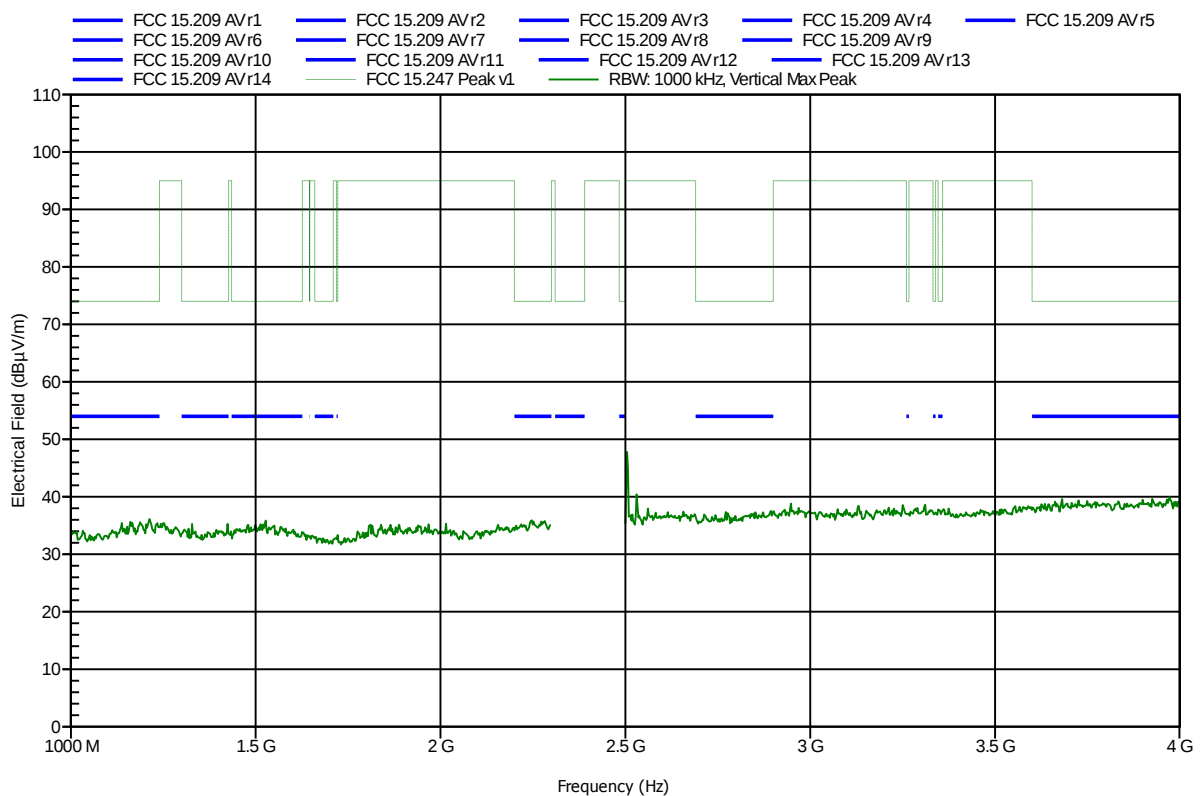


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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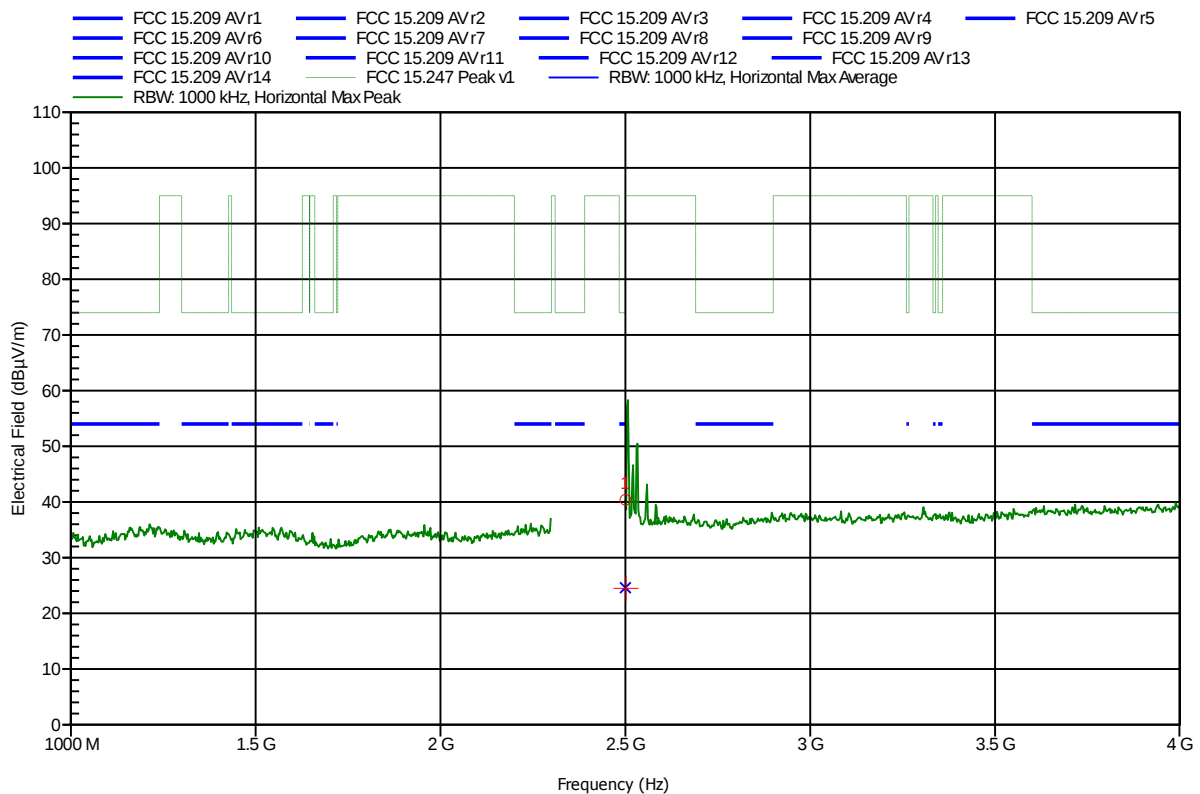


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.5 GHz	40.4 dBµV/m	95 dBµV/m	-54.6 dB	Pass

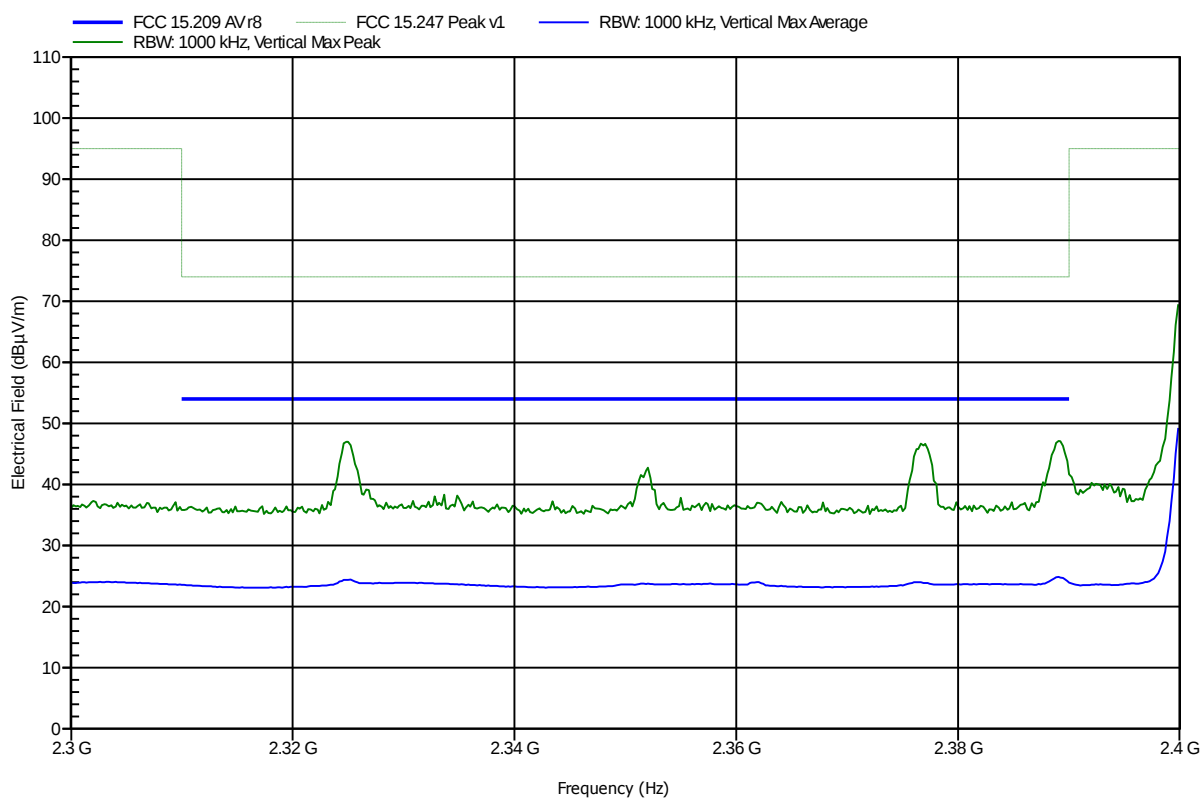
Frequency	Average
2.5 GHz	24.61 dBµV/m

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	lower bandedge

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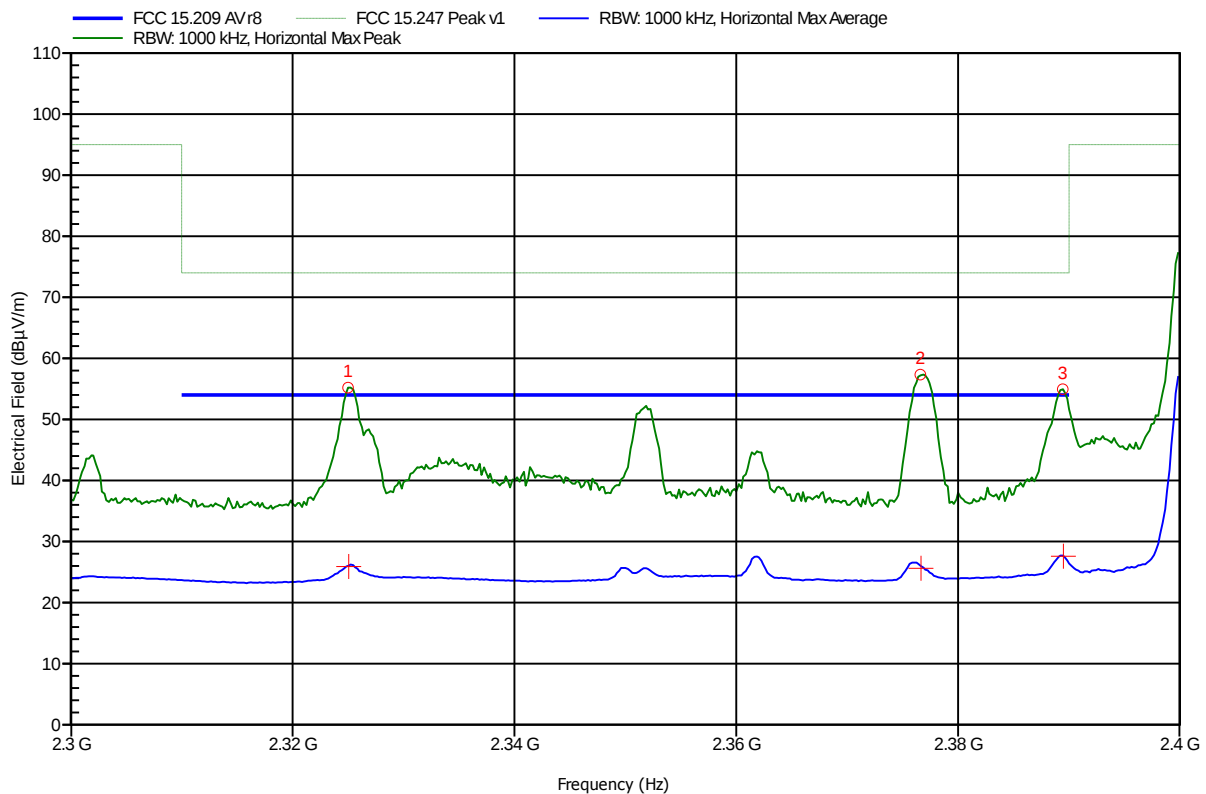


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: lower bandedge

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.325 GHz	55.2 dBµV/m	74 dBµV/m	-18.8 dB	Pass
2.377 GHz	57.33 dBµV/m	74 dBµV/m	-16.67 dB	Pass
2.389 GHz	54.95 dBµV/m	74 dBµV/m	-19.05 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.325 GHz	26.01 dBµV/m	54 dBµV/m	-27.99 dB	Pass
2.377 GHz	25.72 dBµV/m	54 dBµV/m	-28.28 dB	Pass
2.389 GHz	27.7 dBµV/m	54 dBµV/m	-26.3 dB	Pass

Test Report No.: G0M-1303-2693-TFC247W-V01

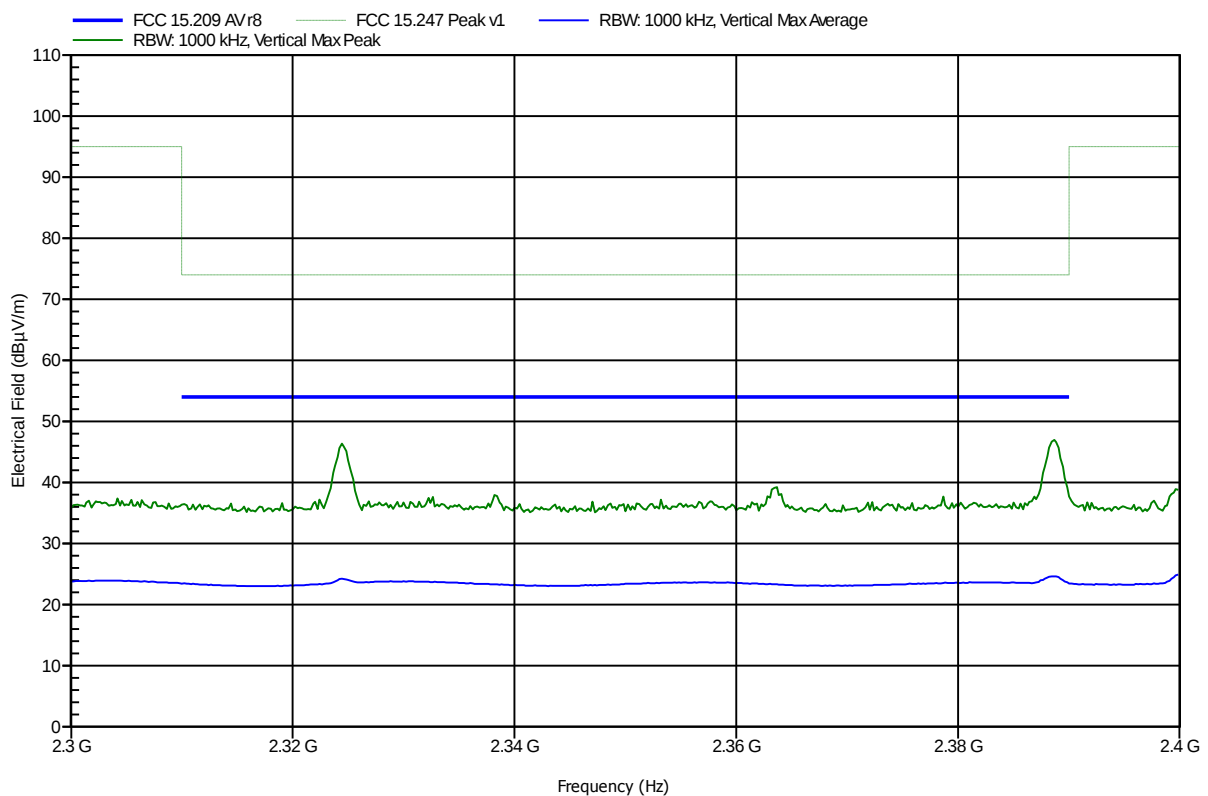
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	lower bandedge

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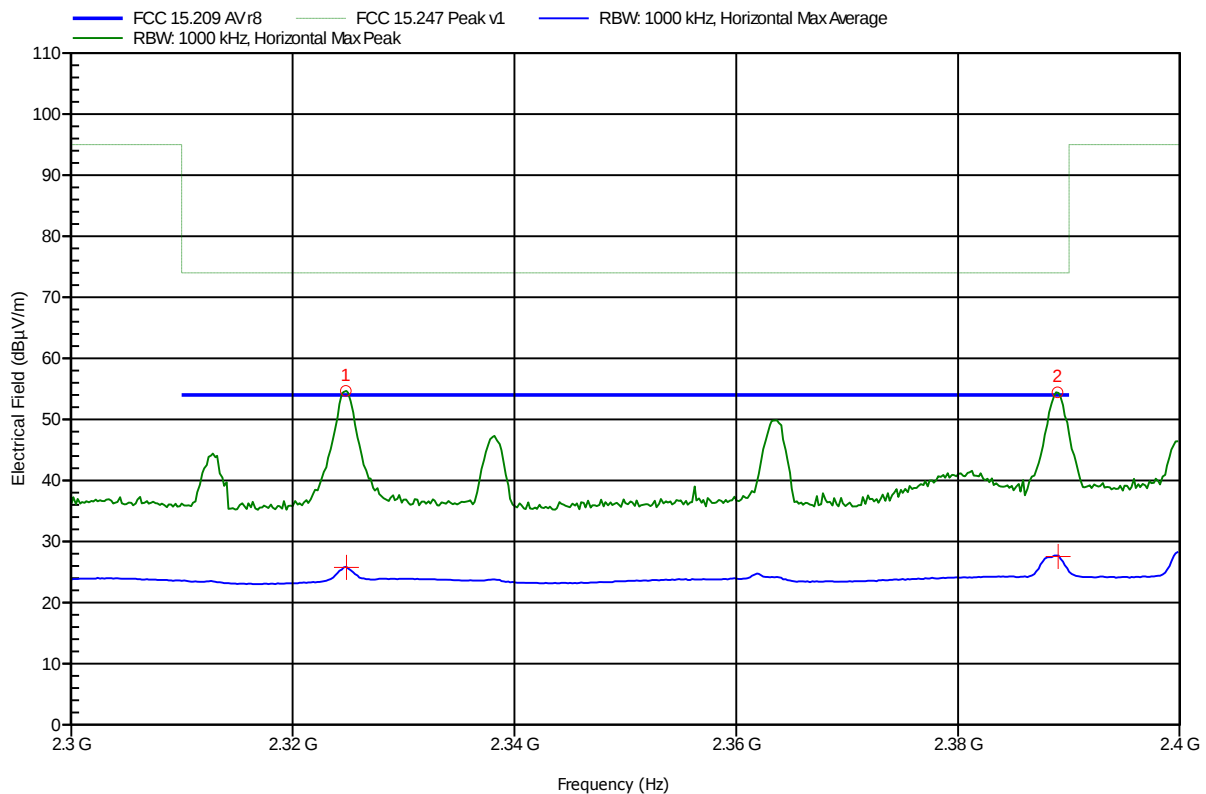


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: lower bandedge

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.325 GHz	54.66 dBµV/m	74 dBµV/m	-19.34 dB	Pass
2.389 GHz	54.43 dBµV/m	74 dBµV/m	-19.57 dB	Pass

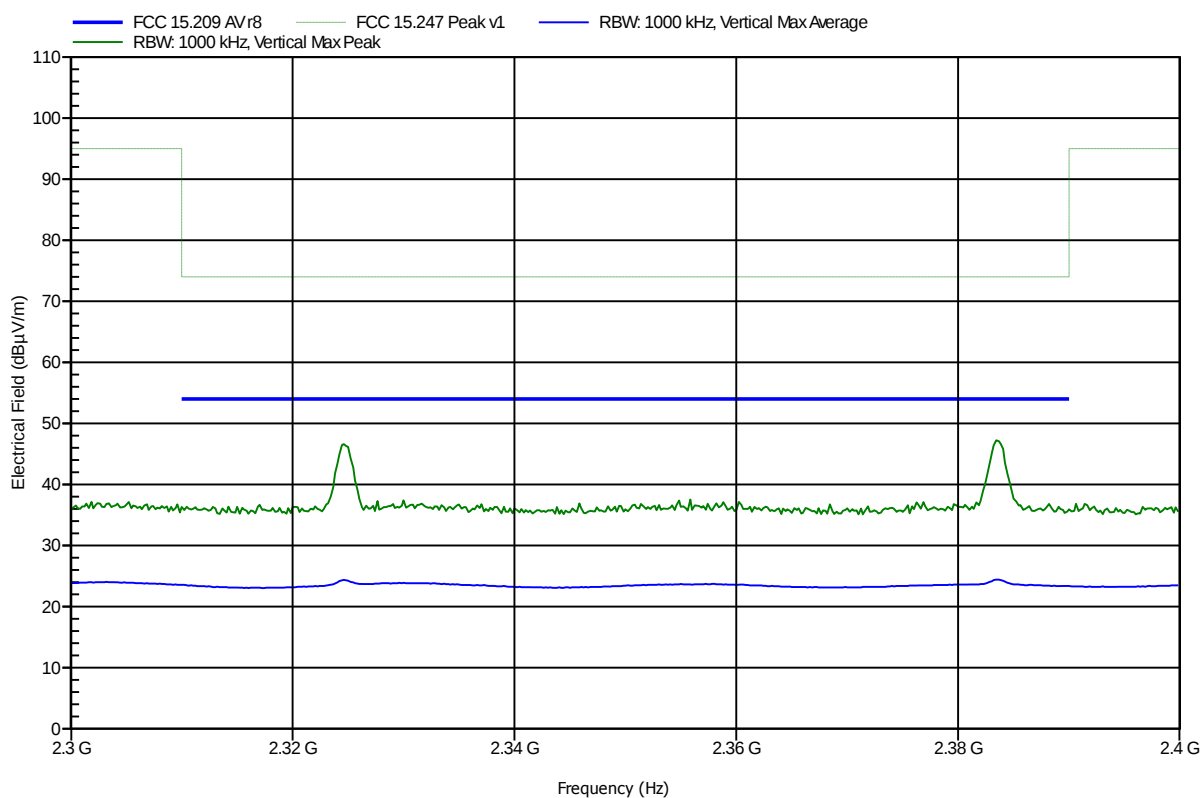
Frequency	Average	Average Limit	Average Difference	Average Status
2.325 GHz	25.86 dBµV/m	54 dBµV/m	-28.14 dB	Pass
2.389 GHz	27.65 dBµV/m	54 dBµV/m	-26.35 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	lower bandedge

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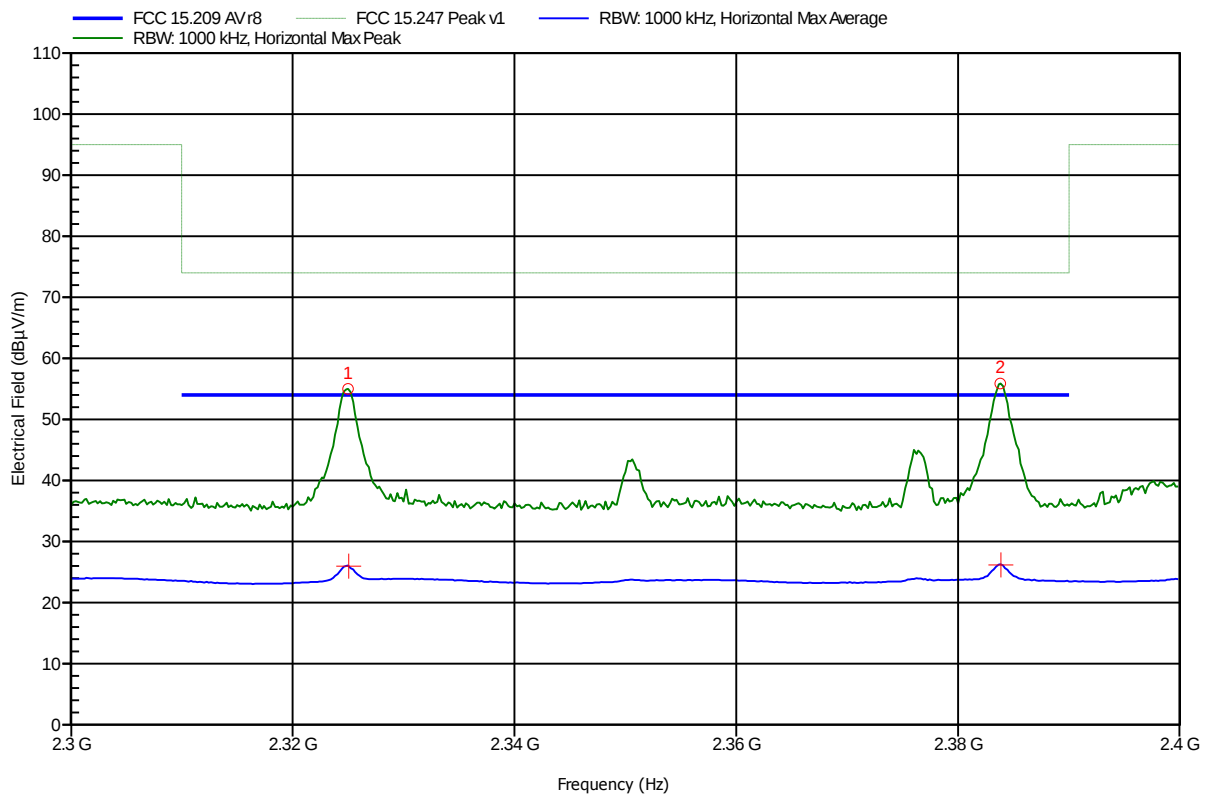


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: lower bandedge

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.325 GHz	55 dBµV/m	74 dBµV/m	-19 dB	Pass
2.384 GHz	55.87 dBµV/m	74 dBµV/m	-18.13 dB	Pass

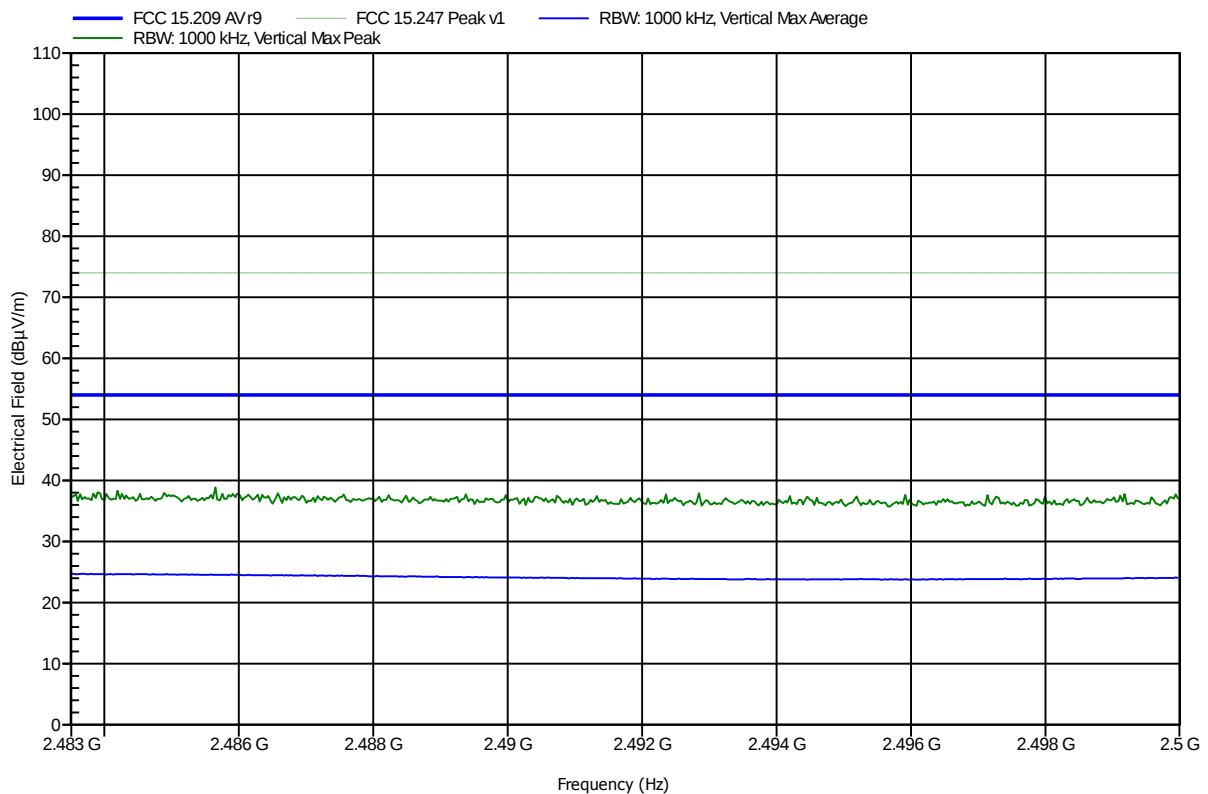
Frequency	Average	Average Limit	Average Difference	Average Status
2.325 GHz	26.07 dBµV/m	54 dBµV/m	-27.93 dB	Pass
2.384 GHz	26.27 dBµV/m	54 dBµV/m	-27.73 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	upper bandedge

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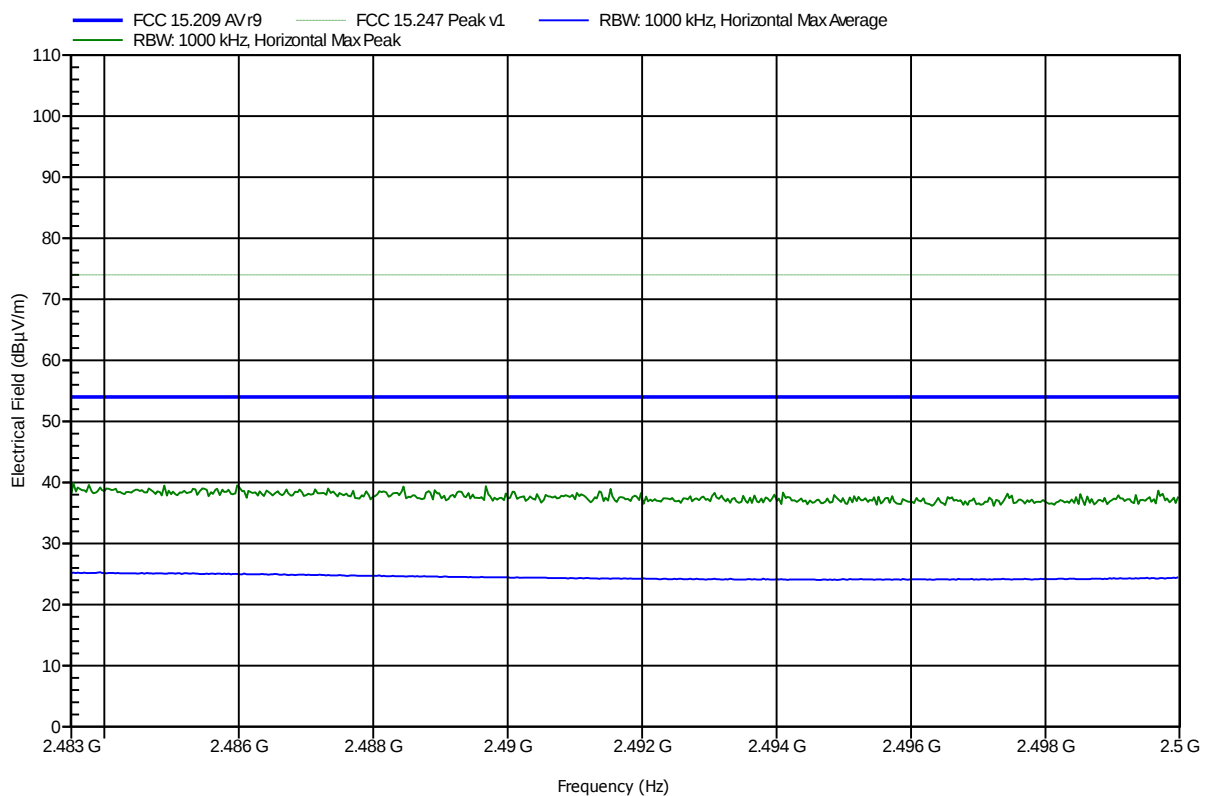


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: upper bandedge

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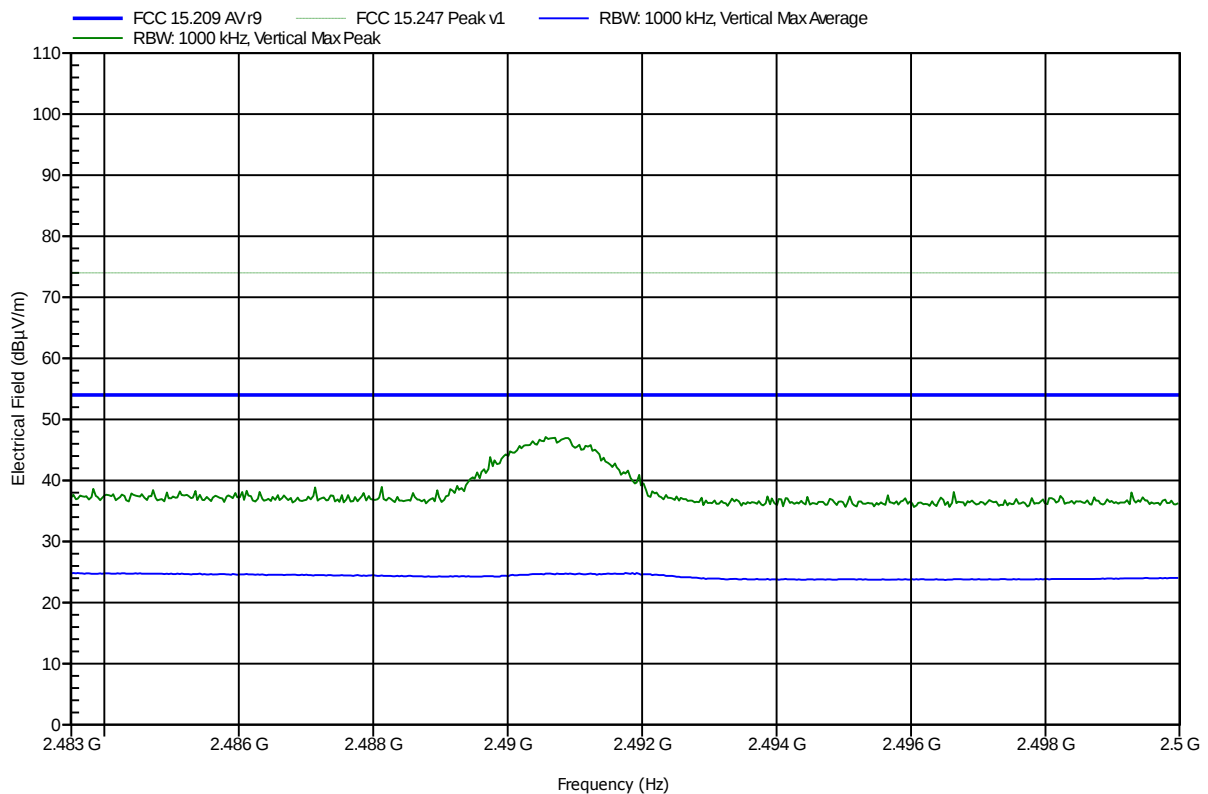


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	upper bandedge

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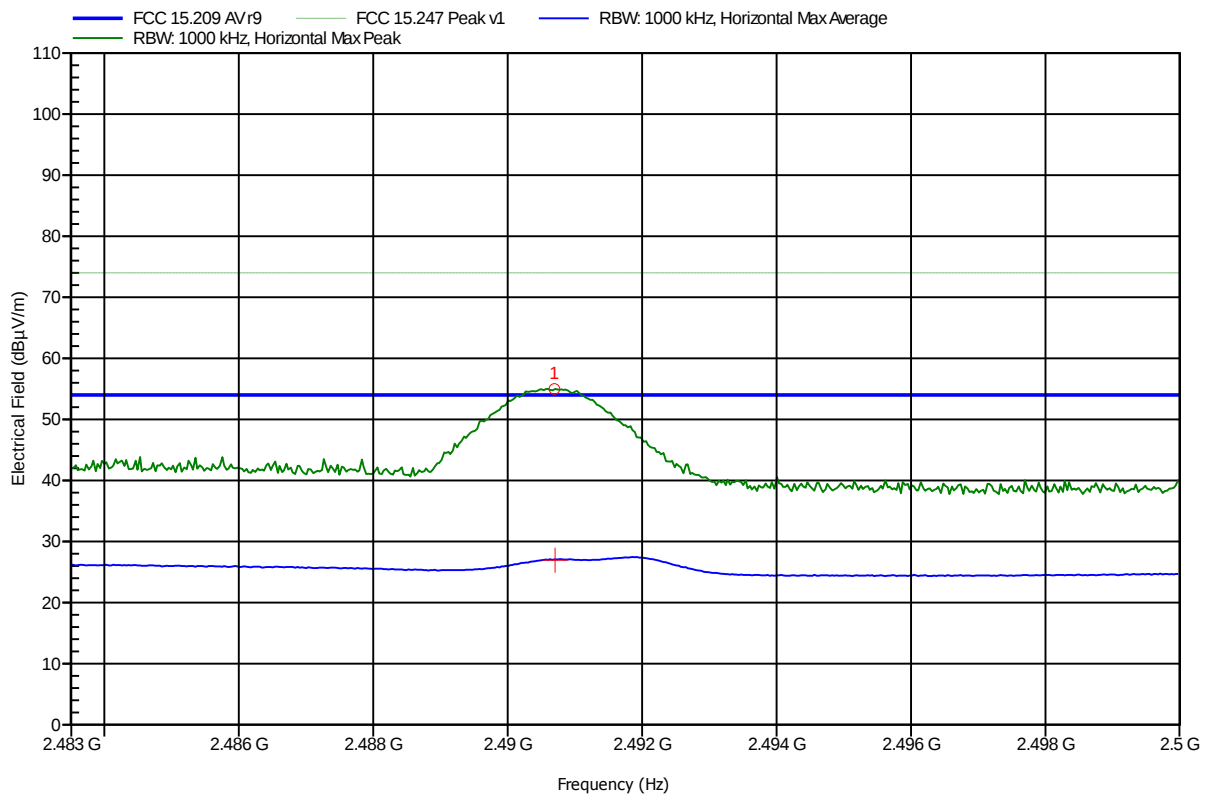


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: upper bandedge

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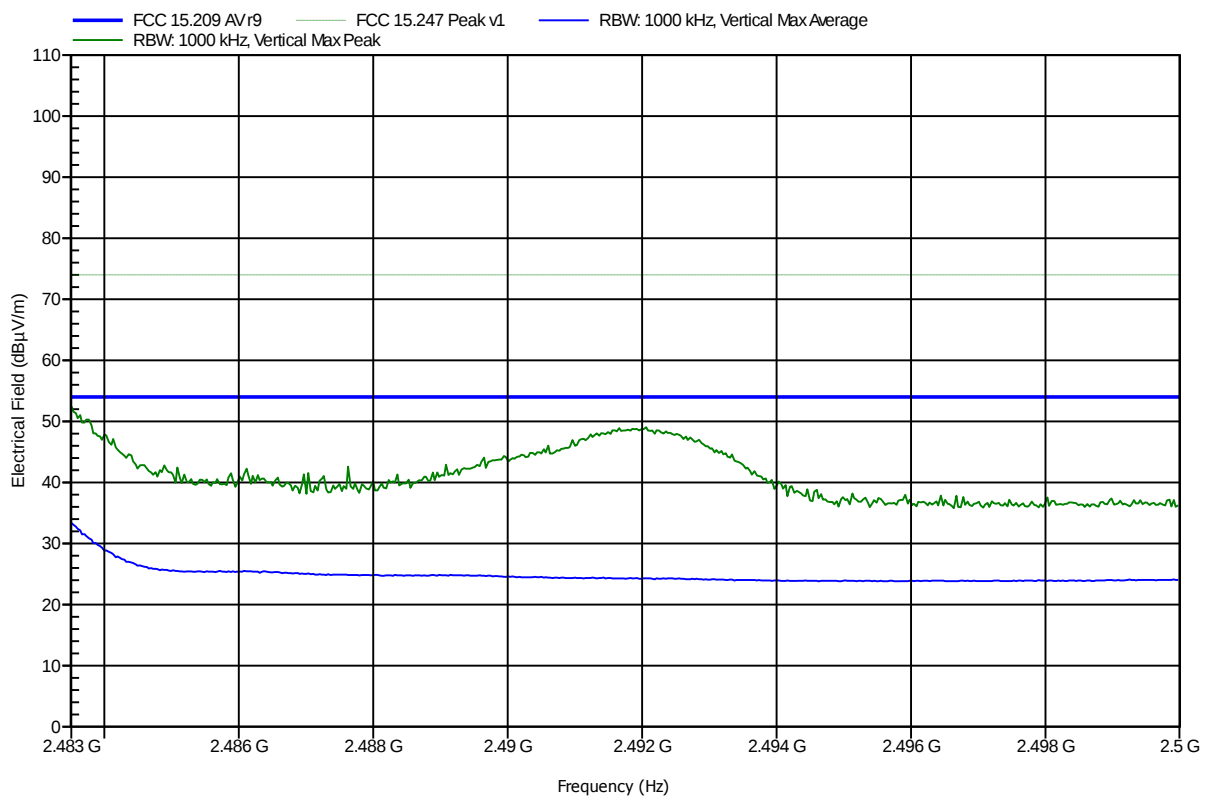
Frequency 2.4907 GHz	Peak 54.98 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -19.02 dB	Peak Status Pass
Frequency 2.4907 GHz	Average 27.05 dBµV/m	Average Limit 54 dBµV/m	Average Difference -26.95 dB	Average Status Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: upper bandedge

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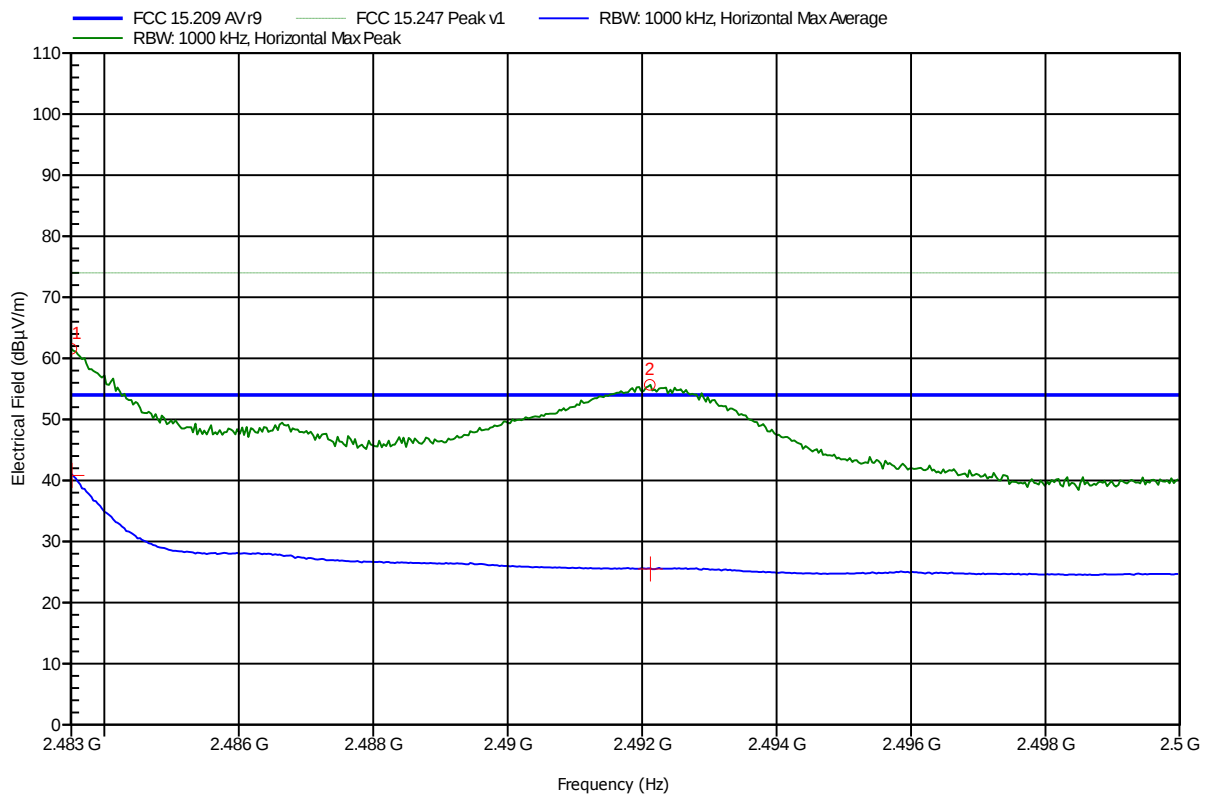


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note: upper bandedge

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4835 GHz	61.55 dBµV/m	74 dBµV/m	-12.45 dB	Pass
2.4921 GHz	55.66 dBµV/m	74 dBµV/m	-18.34 dB	Pass

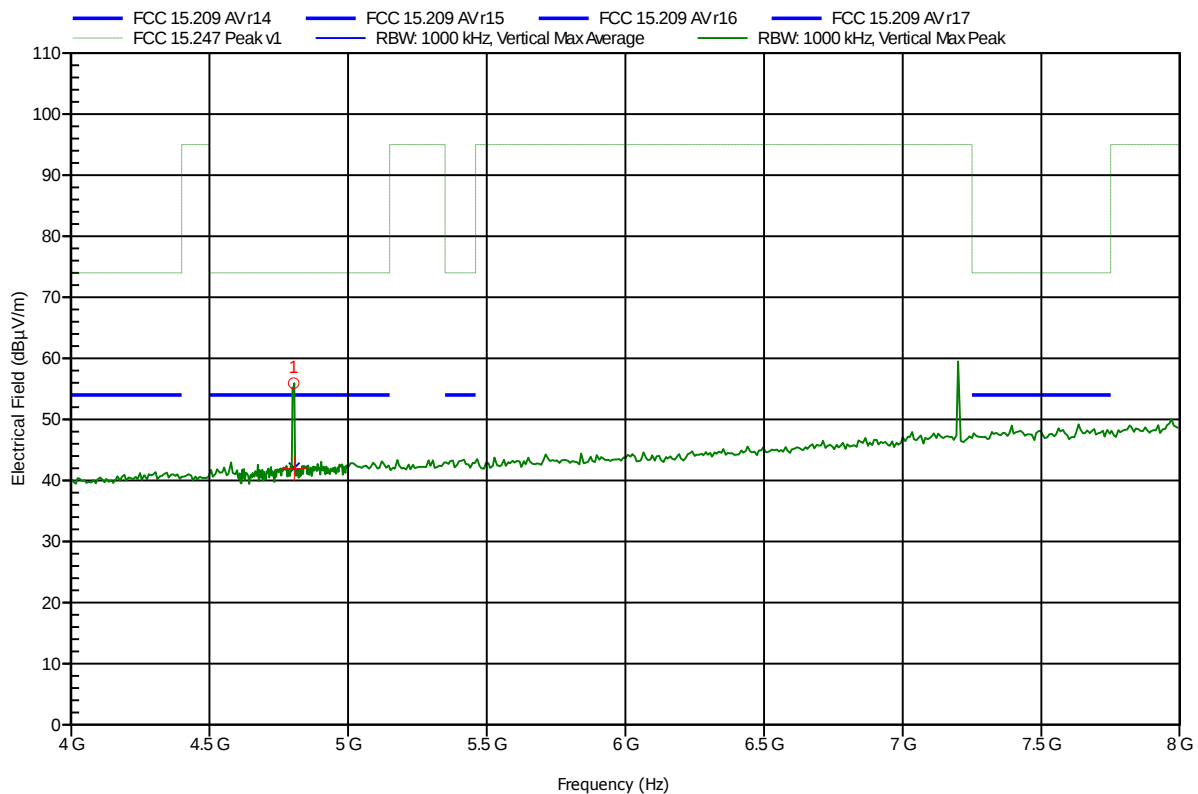
Frequency	Average	Average Limit	Average Difference	Average Status
2.4835 GHz	40.93 dBµV/m	54 dBµV/m	-13.07 dB	Pass
2.4921 GHz	25.61 dBµV/m	54 dBµV/m	-28.39 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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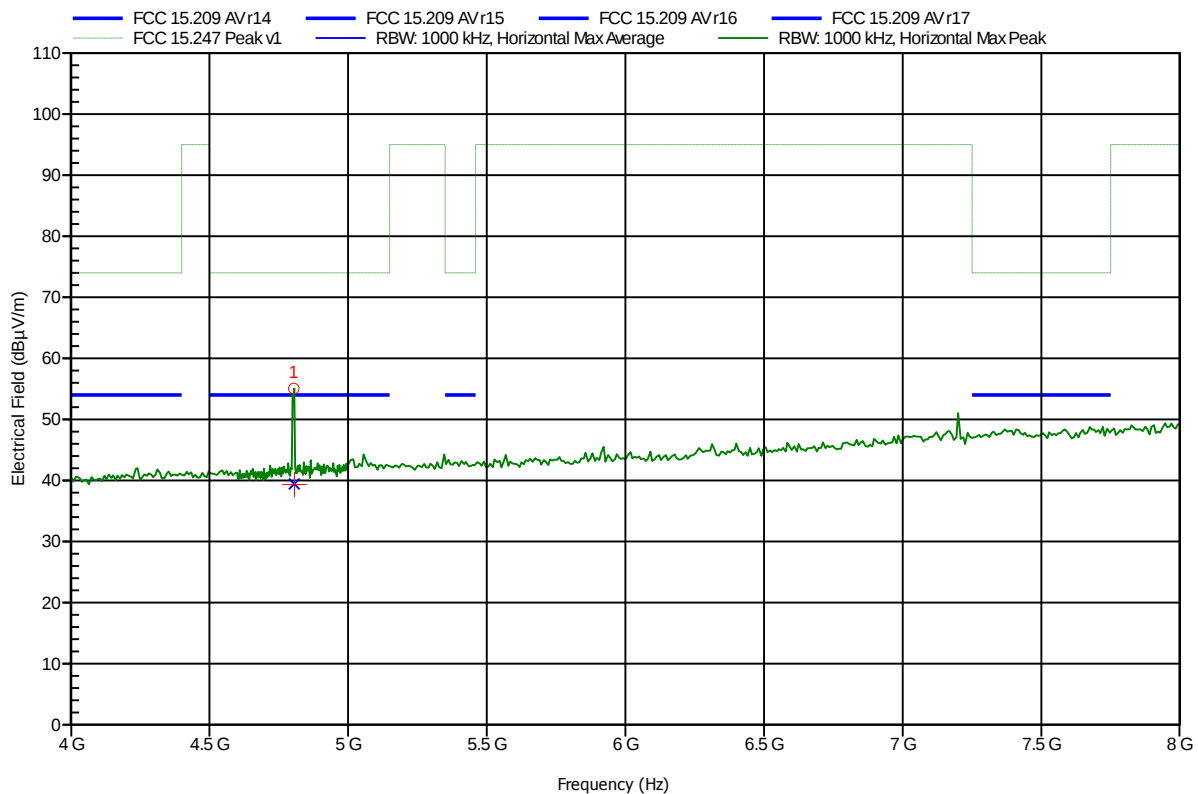
Frequency 4.804 GHz	Peak 55.93 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -18.07 dB	Peak Status Pass
Frequency 4.804 GHz	Average 42.04 dBμV/m	Average Limit 54 dBμV/m	Average Difference -11.96 dB	Average Status Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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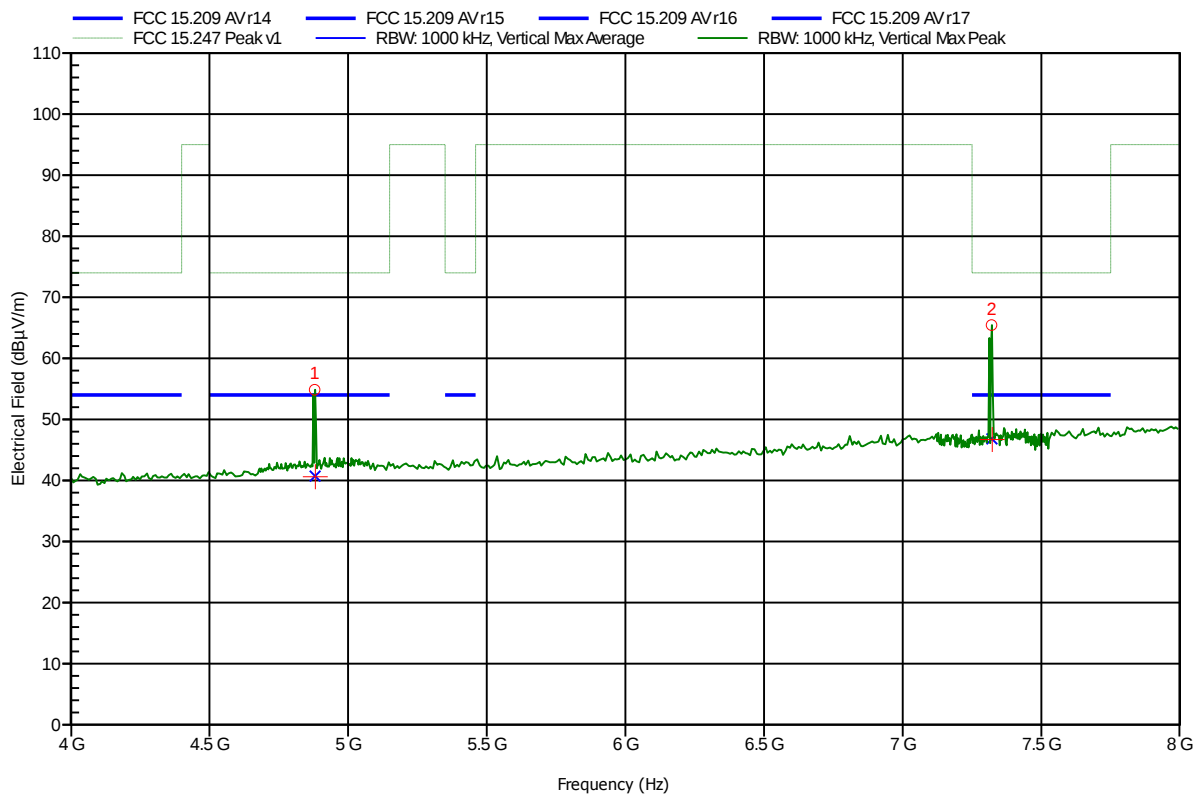
Frequency 4.804 GHz	Peak 55.05 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -18.95 dB	Peak Status Pass
Frequency 4.804 GHz	Average 39.43 dBµV/m	Average Limit 54 dBµV/m	Average Difference -14.57 dB	Average Status Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.88 GHz	54.85 dBµV/m	74 dBµV/m	-19.15 dB	Pass
7.321 GHz	65.45 dBµV/m	74 dBµV/m	-8.55 dB	Pass

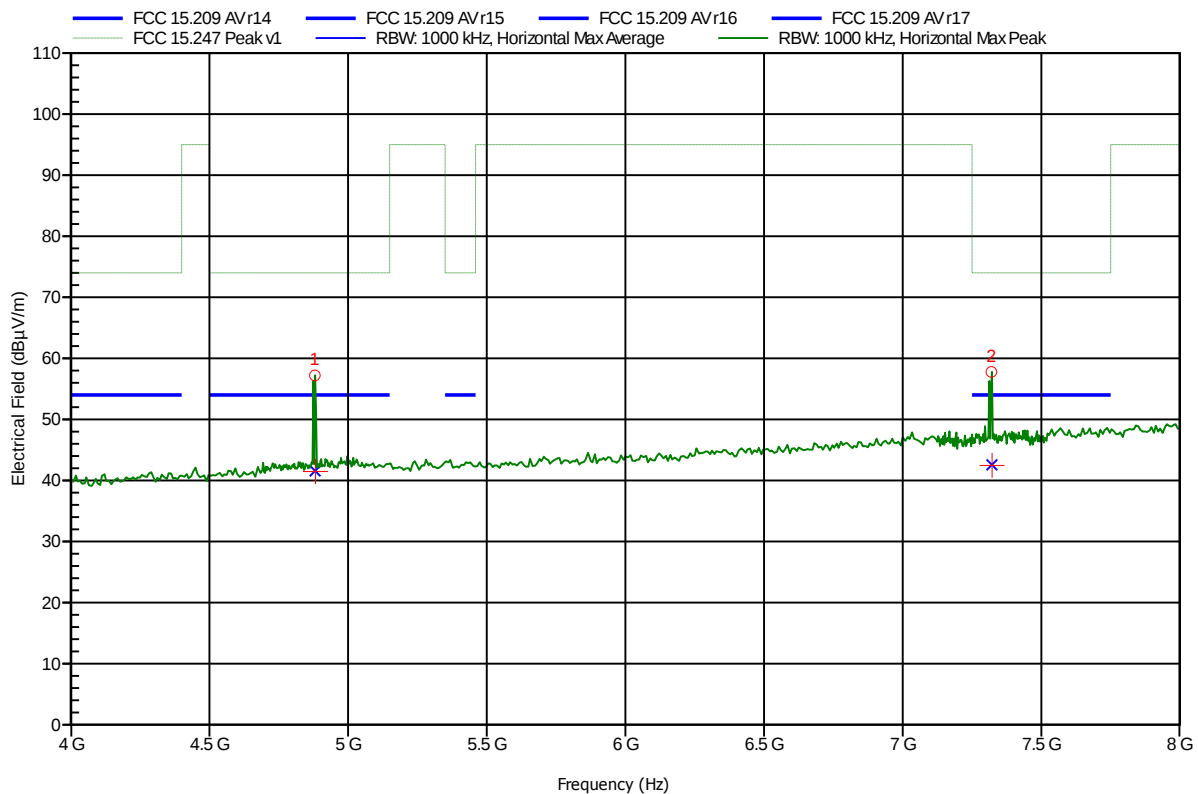
Frequency	Average	Average Limit	Average Difference	Average Status
4.88 GHz	40.71 dBµV/m	54 dBµV/m	-13.29 dB	Pass
7.321 GHz	46.81 dBµV/m	54 dBµV/m	-7.19 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.88 GHz	57.21 dBµV/m	74 dBµV/m	-16.79 dB	Pass
7.32 GHz	57.78 dBµV/m	74 dBµV/m	-16.22 dB	Pass

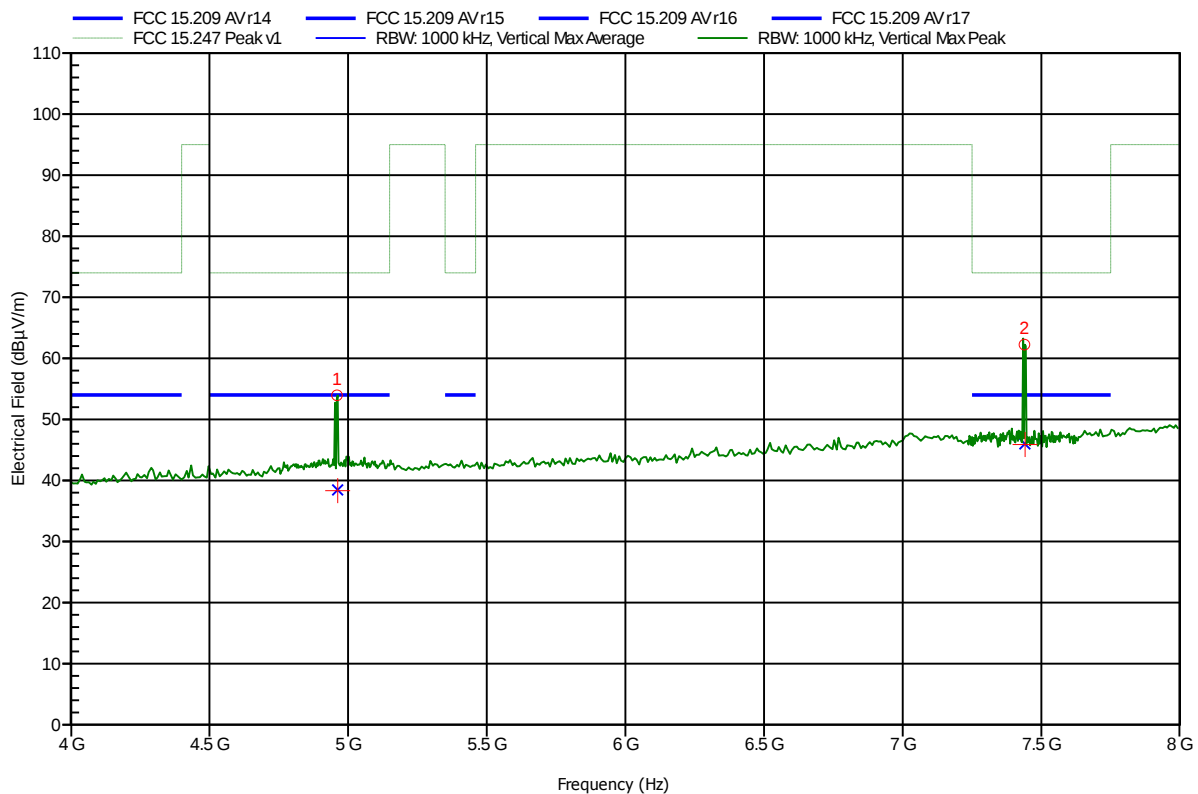
Frequency	Average	Average Limit	Average Difference	Average Status
4.88 GHz	41.56 dBµV/m	54 dBµV/m	-12.44 dB	Pass
7.32 GHz	42.57 dBµV/m	54 dBµV/m	-11.43 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.96 GHz	53.94 dBµV/m	74 dBµV/m	-20.06 dB	Pass
7.439 GHz	62.24 dBµV/m	74 dBµV/m	-11.76 dB	Pass

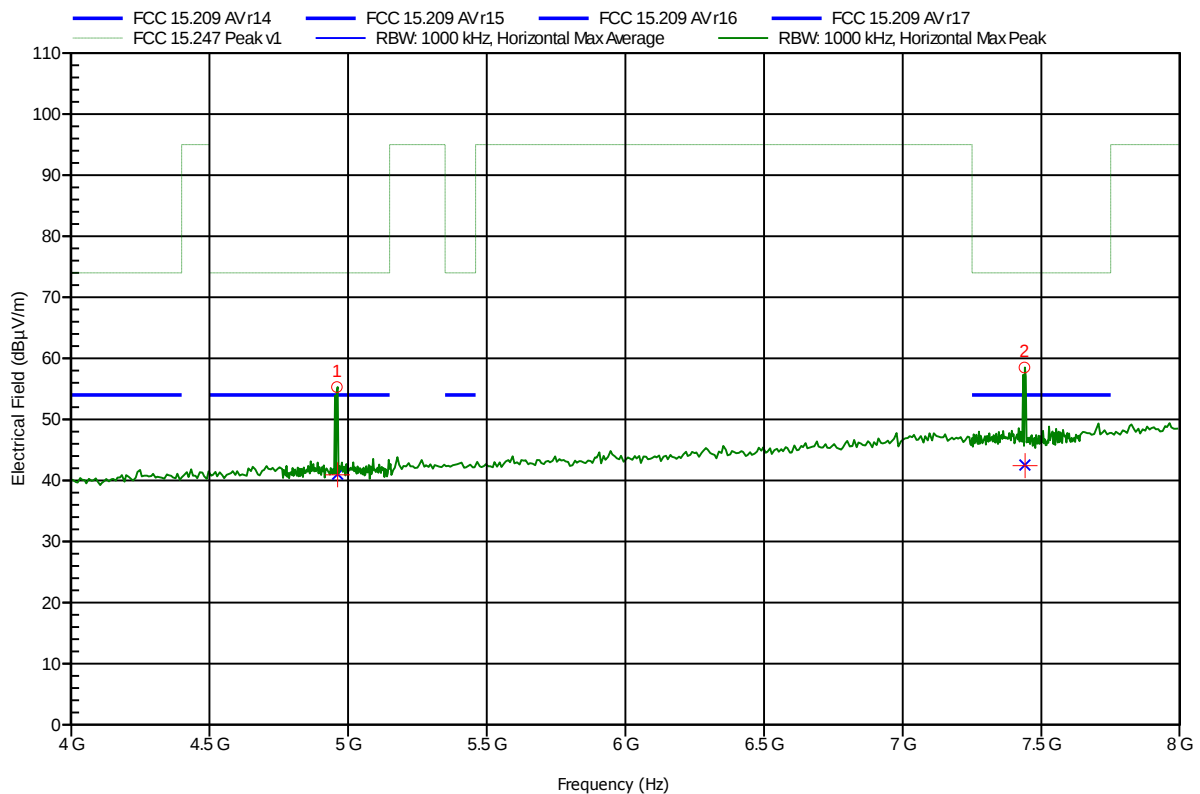
Frequency	Average	Average Limit	Average Difference	Average Status
4.96 GHz	38.44 dBµV/m	54 dBµV/m	-15.56 dB	Pass
7.439 GHz	45.99 dBµV/m	54 dBµV/m	-8.01 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.96 GHz	55.3 dBμV/m	74 dBμV/m	-18.7 dB	Pass
7.439 GHz	58.5 dBμV/m	74 dBμV/m	-15.5 dB	Pass

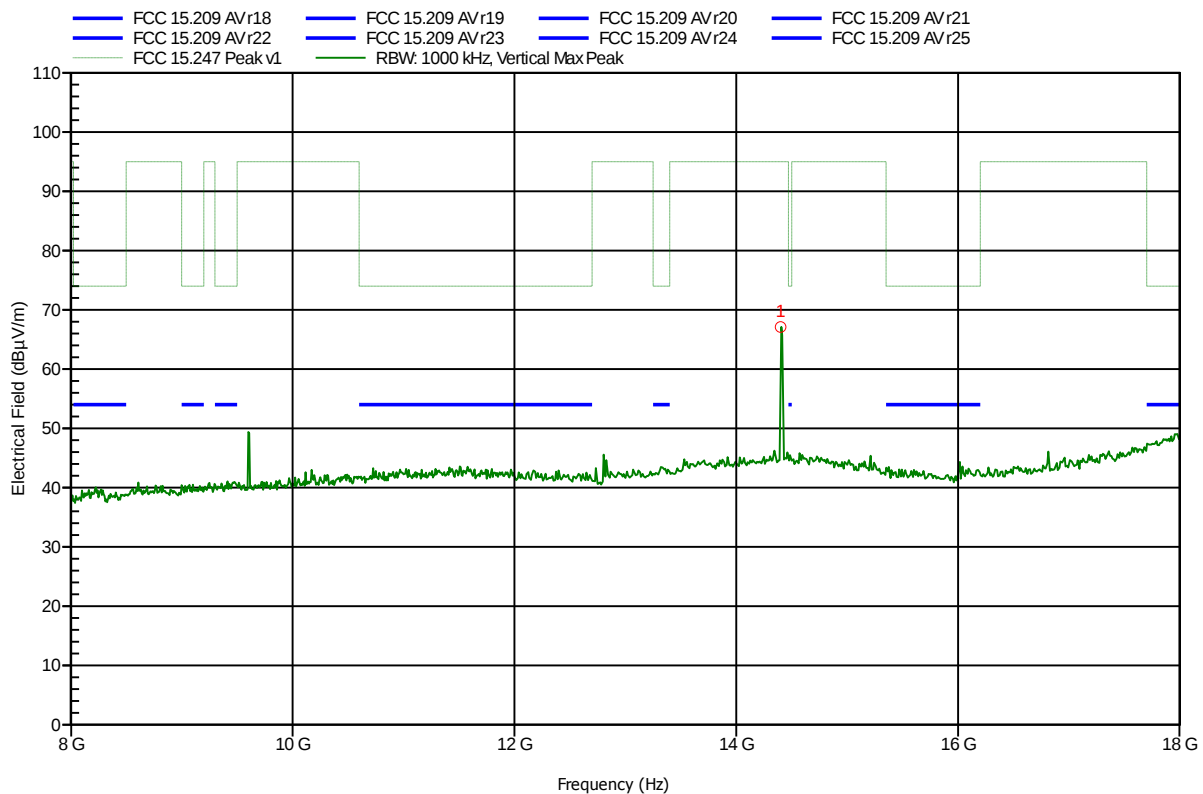
Frequency	Average	Average Limit	Average Difference	Average Status
4.96 GHz	41.03 dBμV/m	54 dBμV/m	-12.97 dB	Pass
7.439 GHz	42.53 dBμV/m	54 dBμV/m	-11.47 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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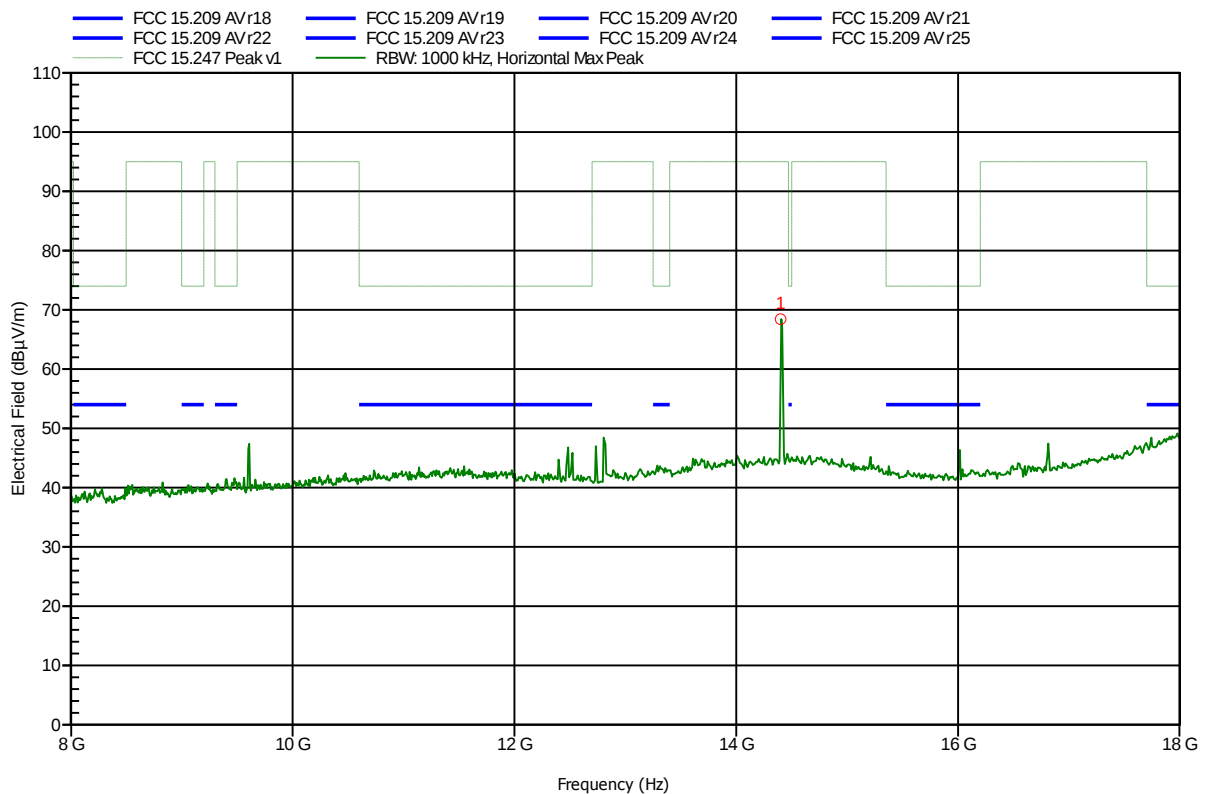
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.4 GHz	67.11 dBµV/m	95 dBµV/m	-27.89 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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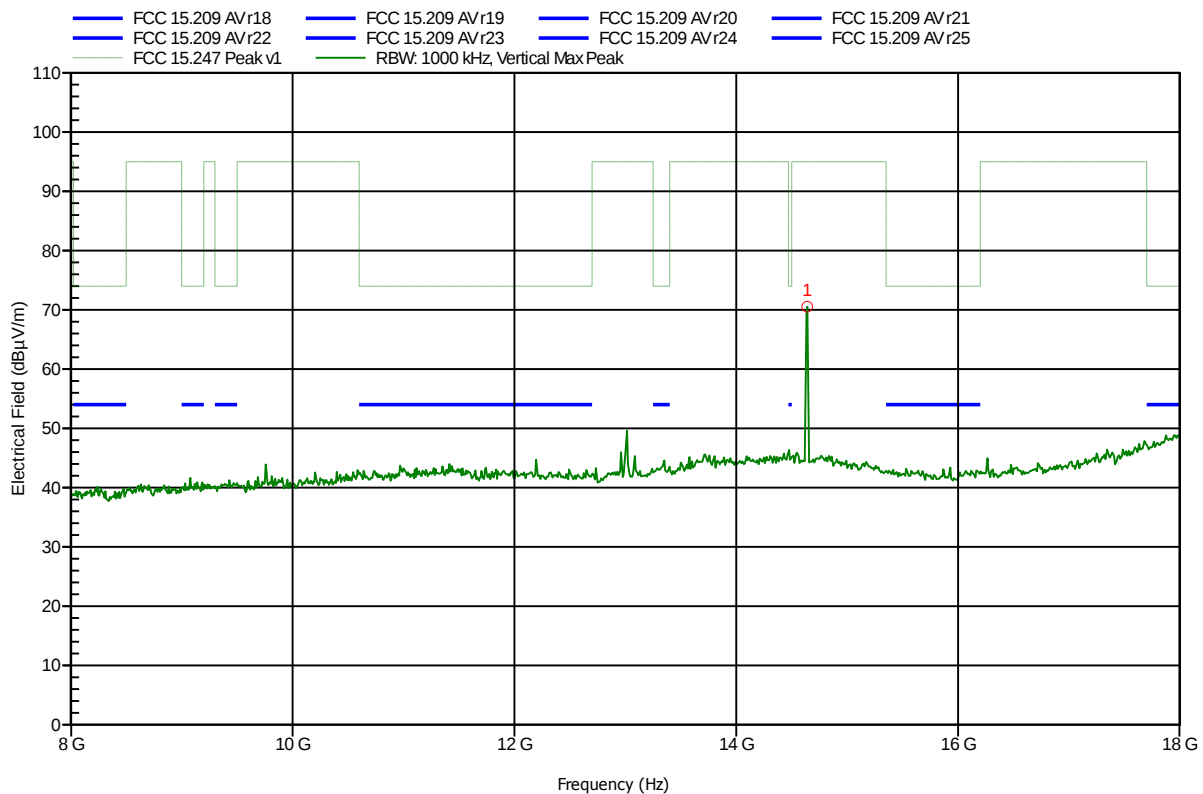
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.4 GHz	68.43 dBµV/m	95 dBµV/m	-26.57 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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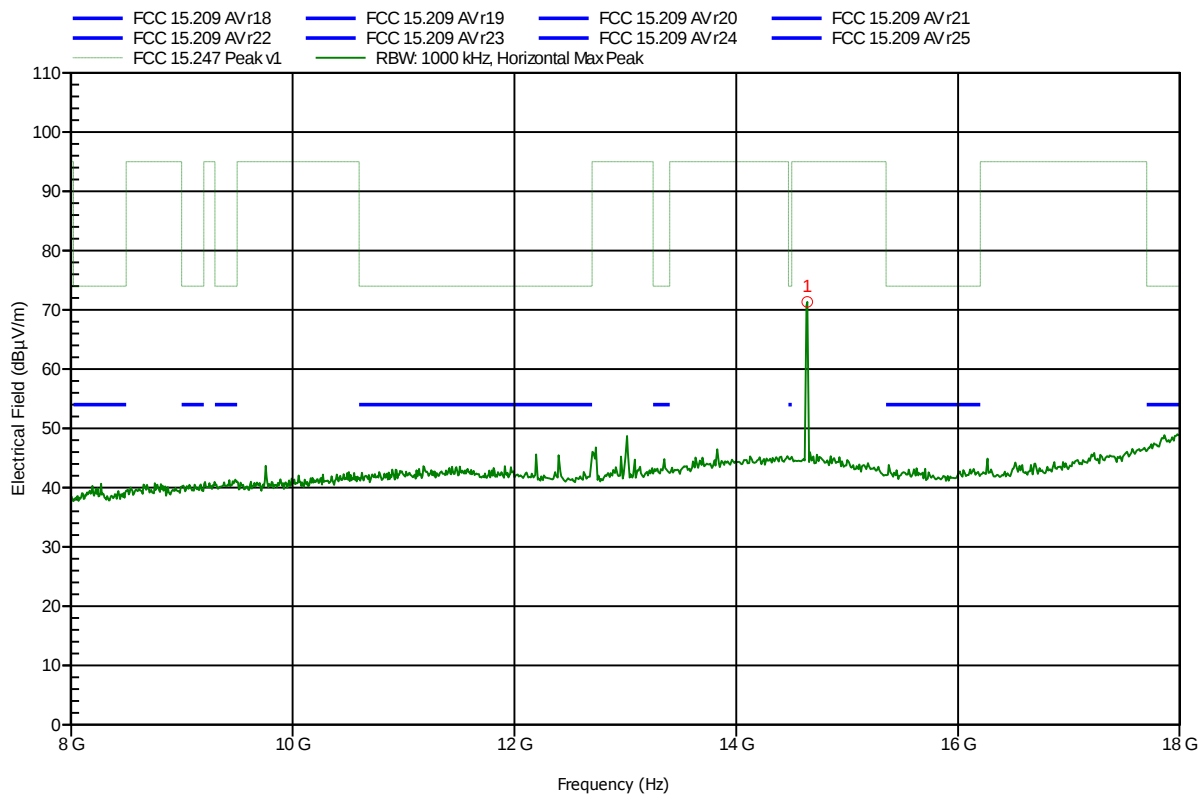
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.64 GHz	70.53 dBµV/m	95 dBµV/m	-24.47 dB	Pass

Spurious emissions according to FCC 15.247

Project number: GOM-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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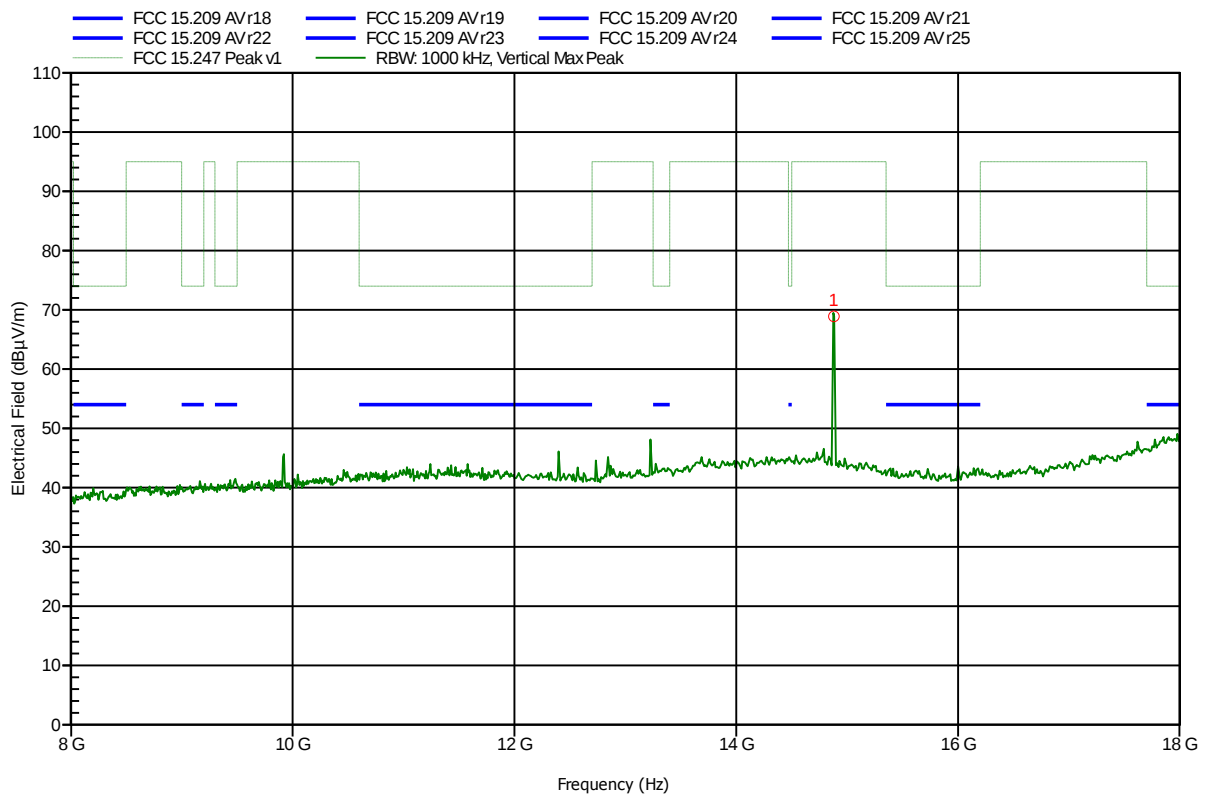
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.64 GHz	71.34 dBµV/m	95 dBµV/m	-23.66 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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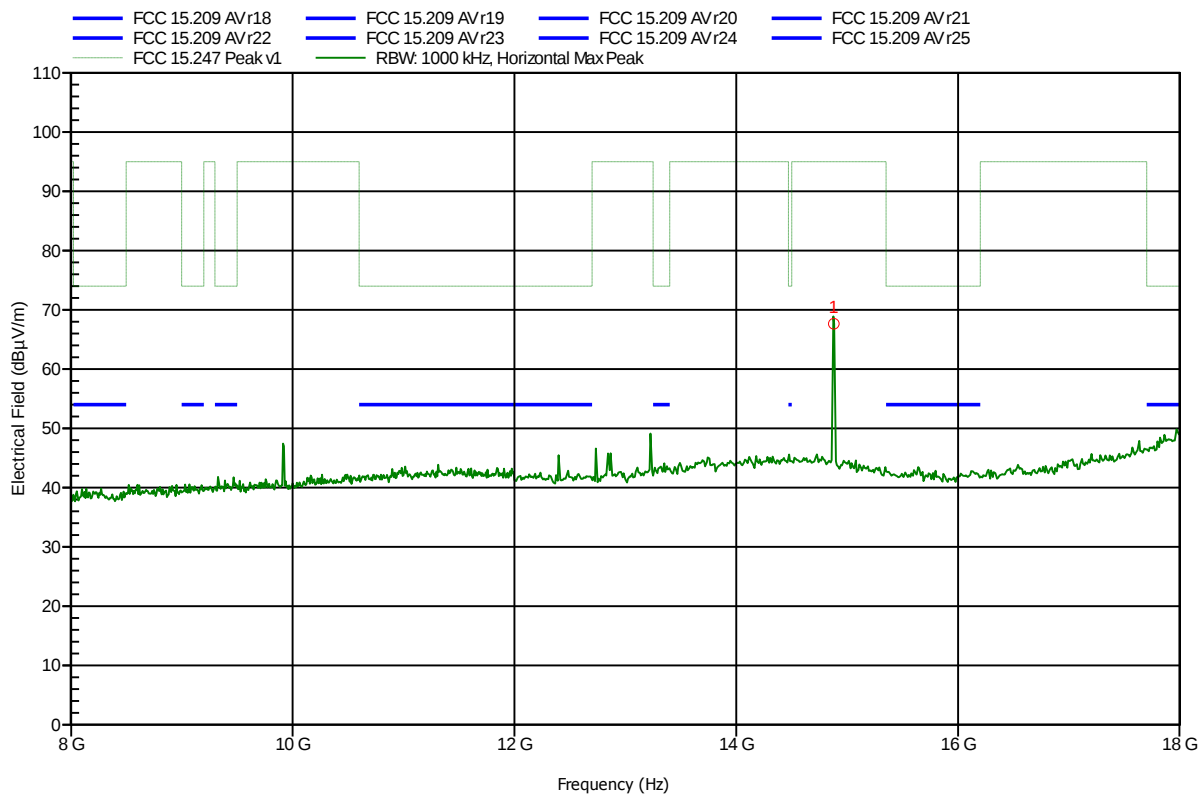
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.88 GHz	68.91 dBµV/m	95 dBµV/m	-26.09 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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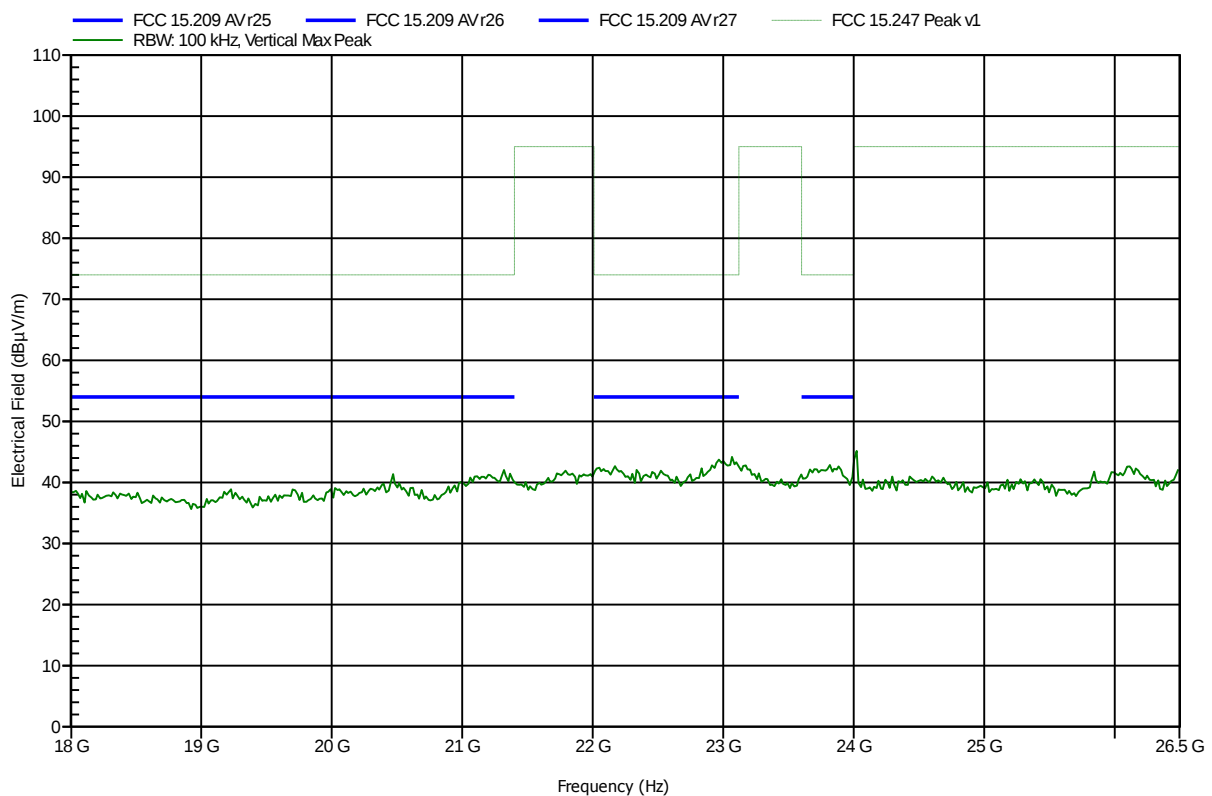
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
14.88 GHz	67.66 dBµV/m	95 dBµV/m	-27.34 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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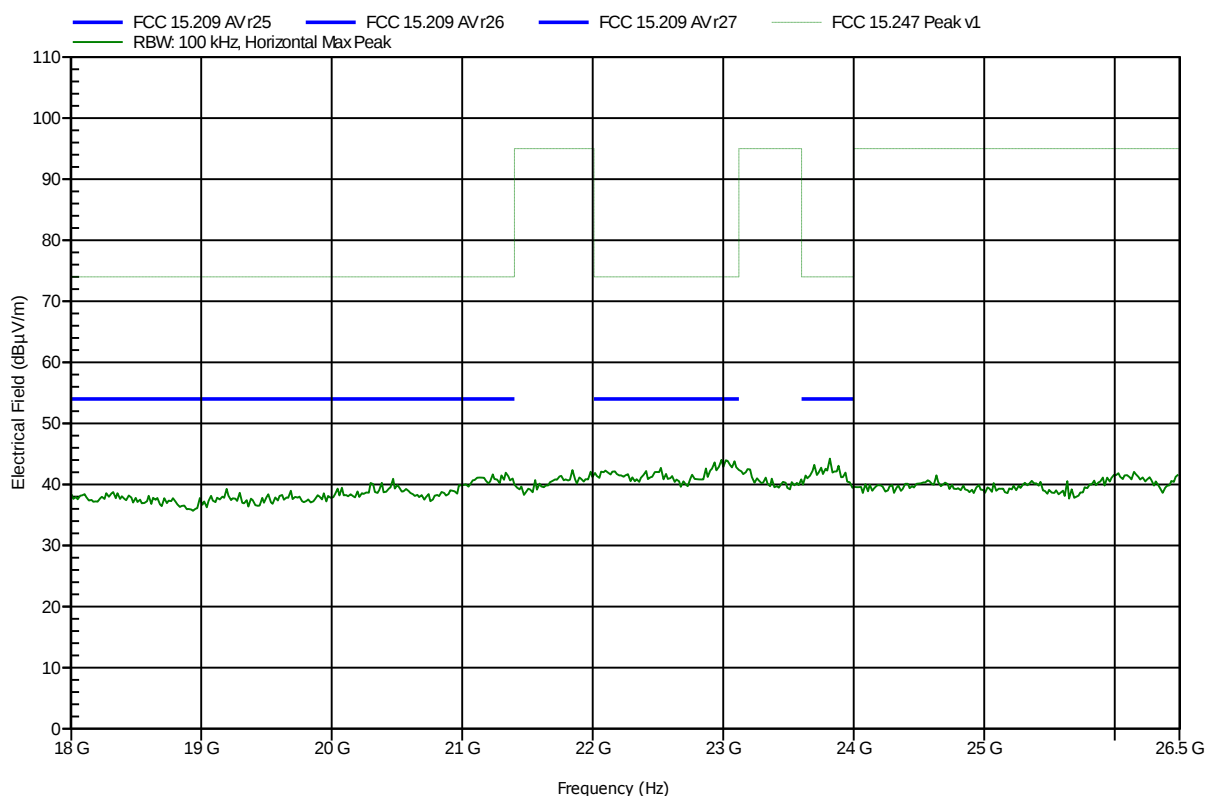


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2402 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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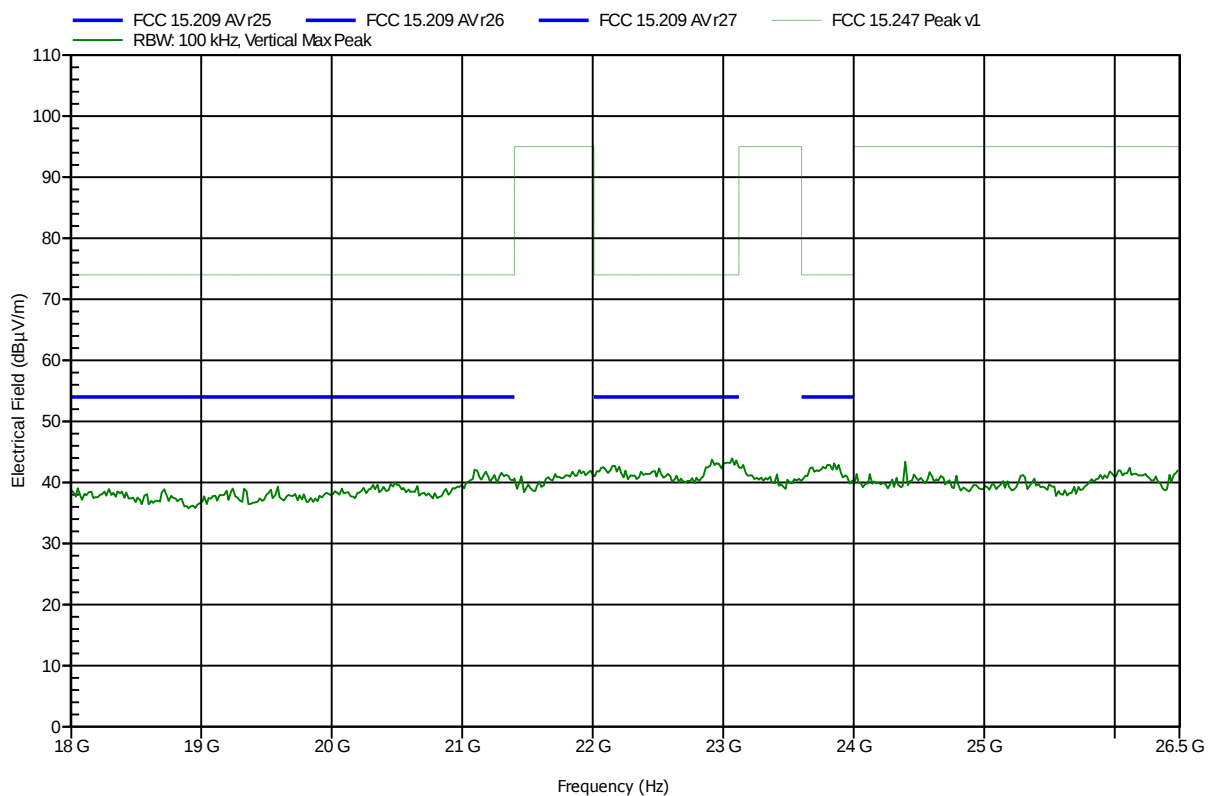


Spurious emissions according to FCC 15.247

Project number: GOM-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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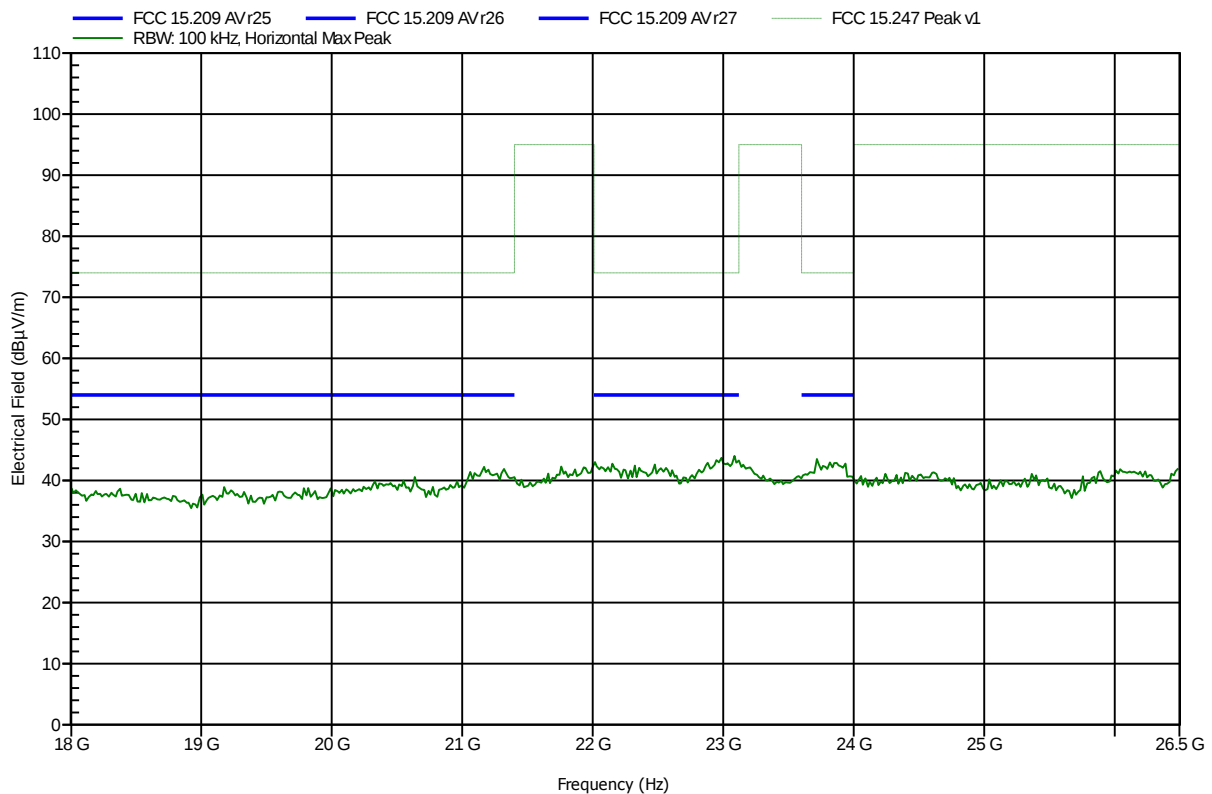


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2440 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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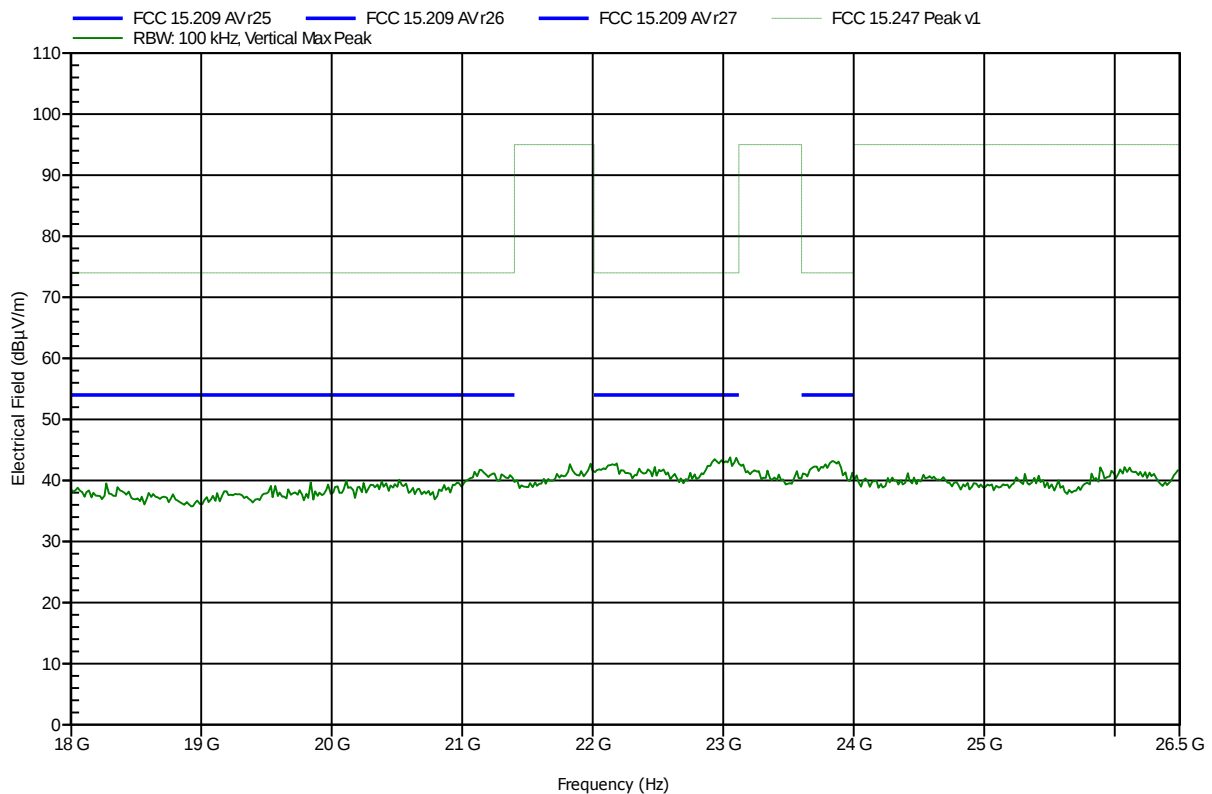


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
 Test Date: 2013-04-05
 Note:

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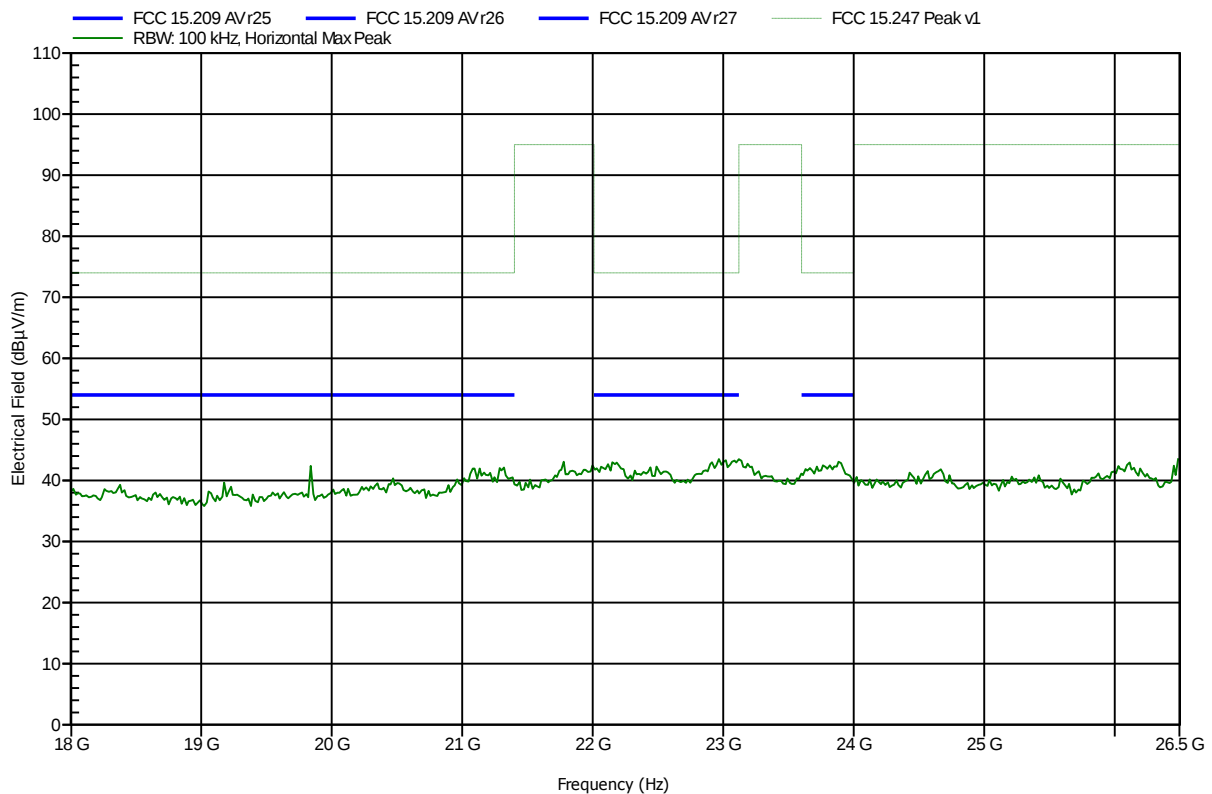


Spurious emissions according to FCC 15.247

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	100 cm converted to 3m
Mode:	TX; 2480 MHz; GFSK; BLE TX Testmode; power 15
Test Date:	2013-04-05
Note:	

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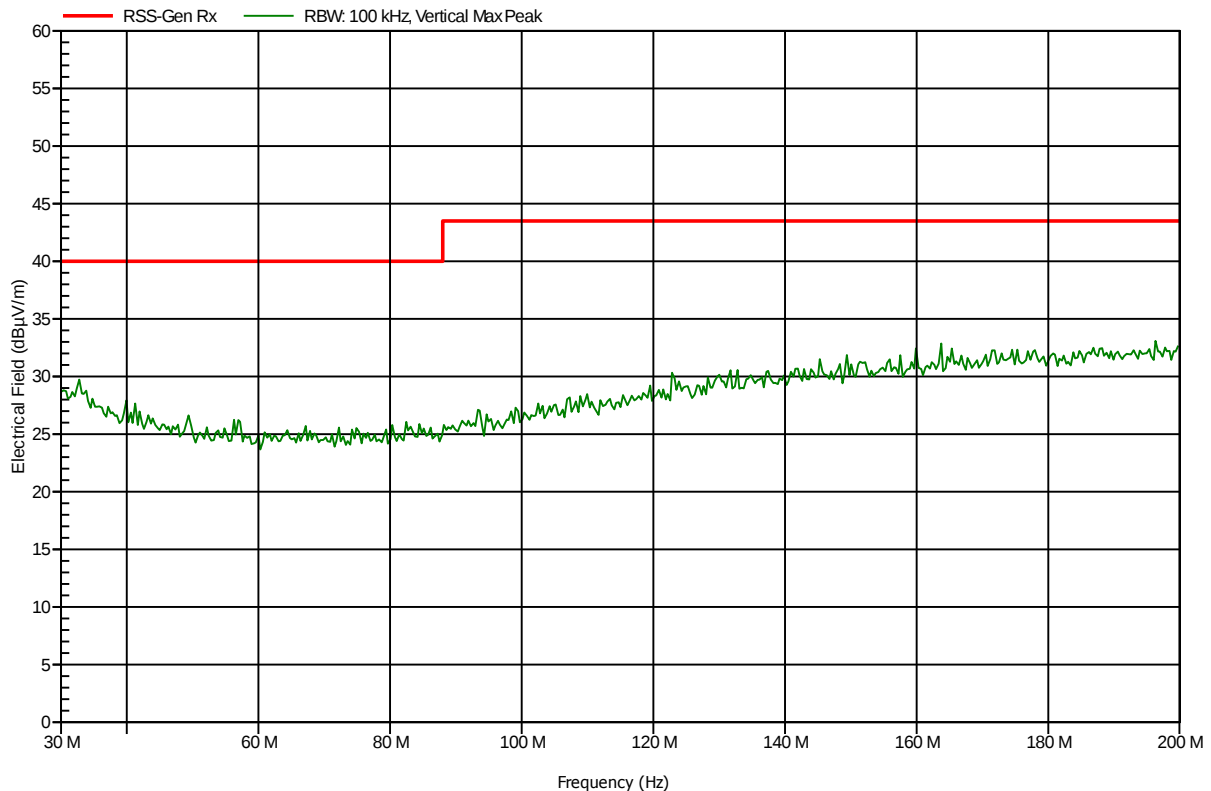
ANNEX B Receiver radiated spurious emissions

Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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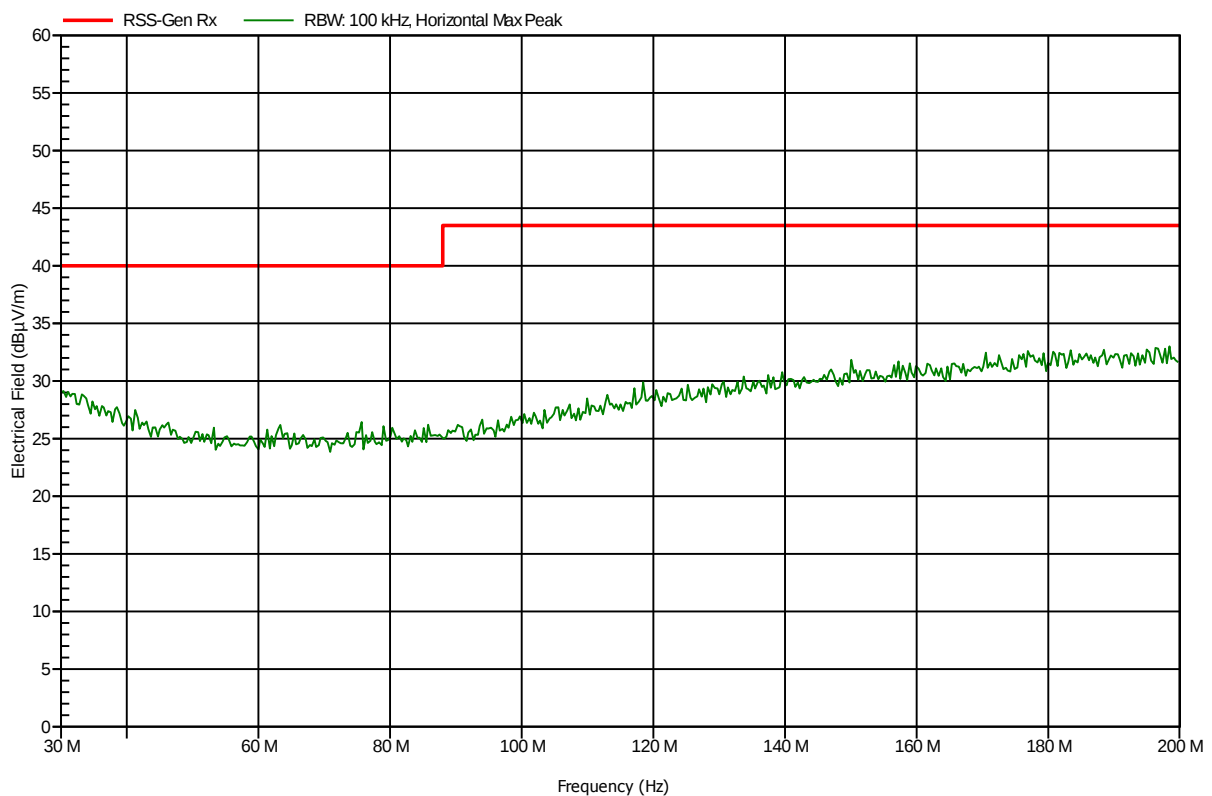


Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer:	Panasonic Industrial Devices Europe GmbH
EUT Name:	Bluetooth Module
Model:	PAN1316 / PAN1326
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; 2440 MHz; GFSK; BLE RX Testmode
Test Date:	2013-04-05
Note:	

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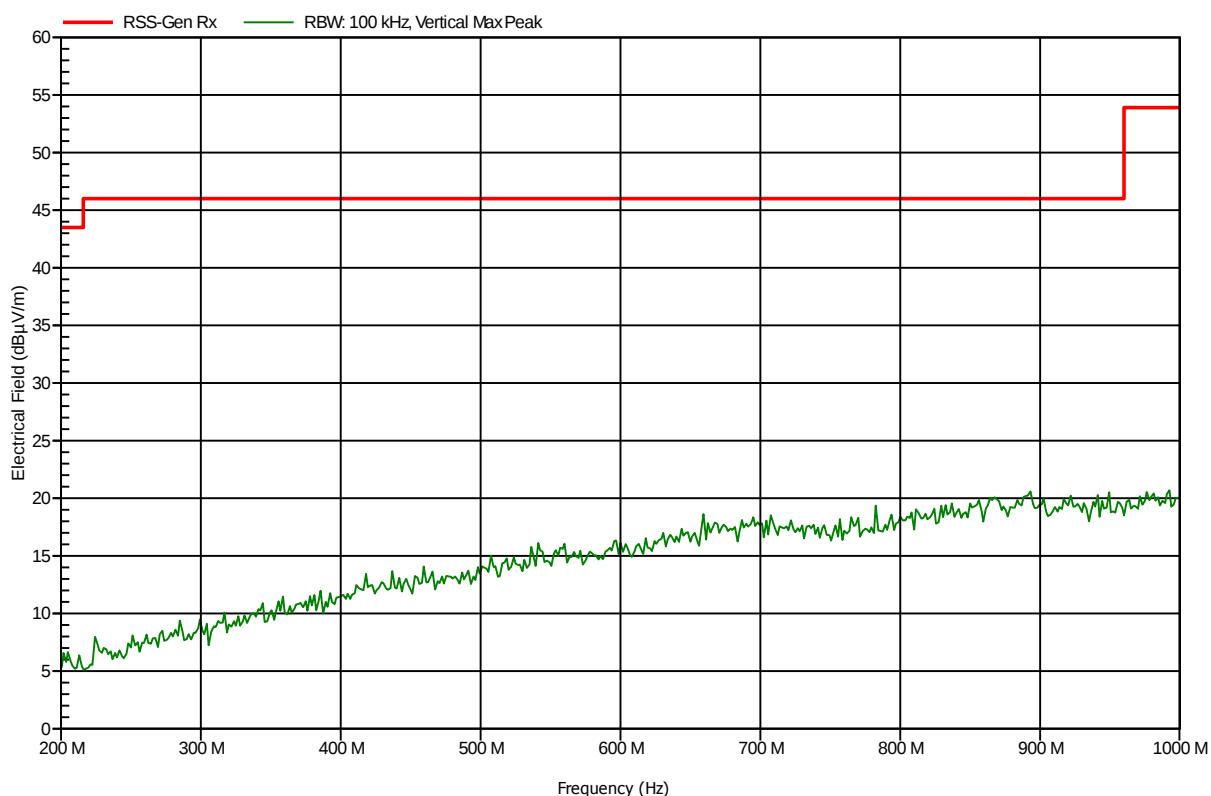


Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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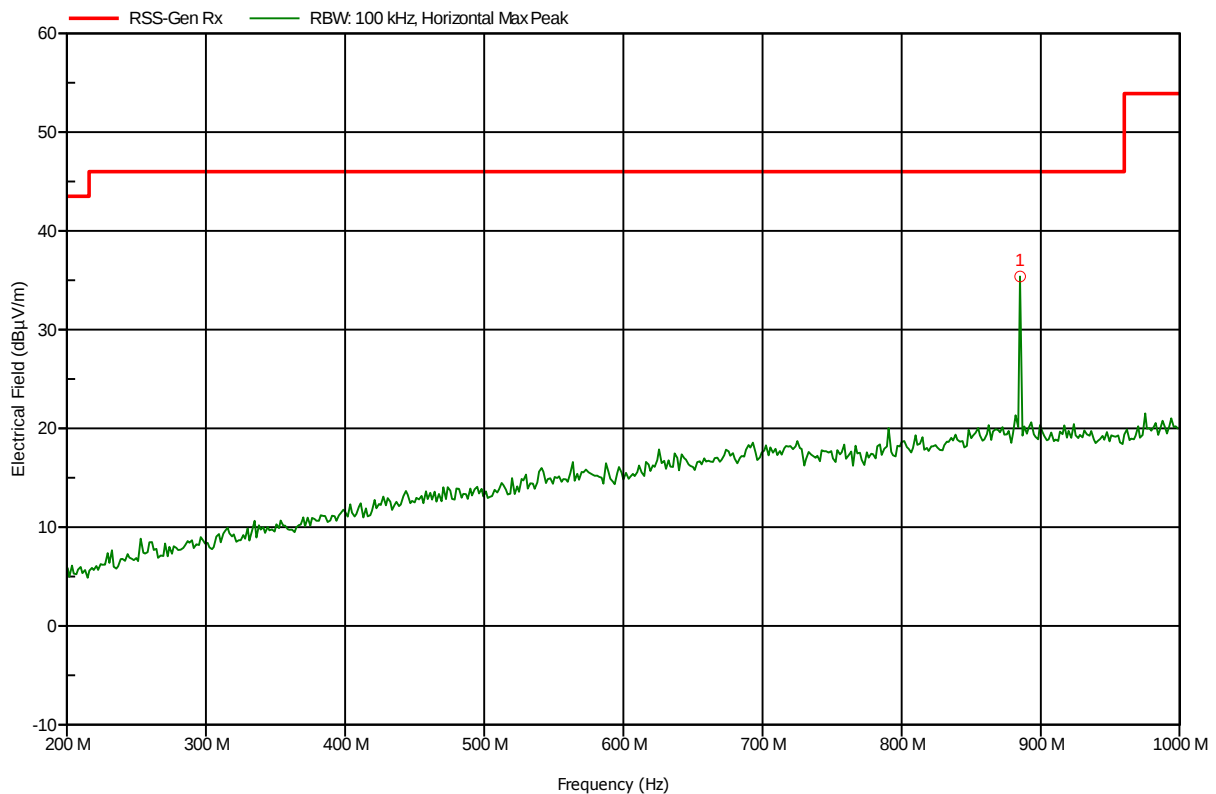


Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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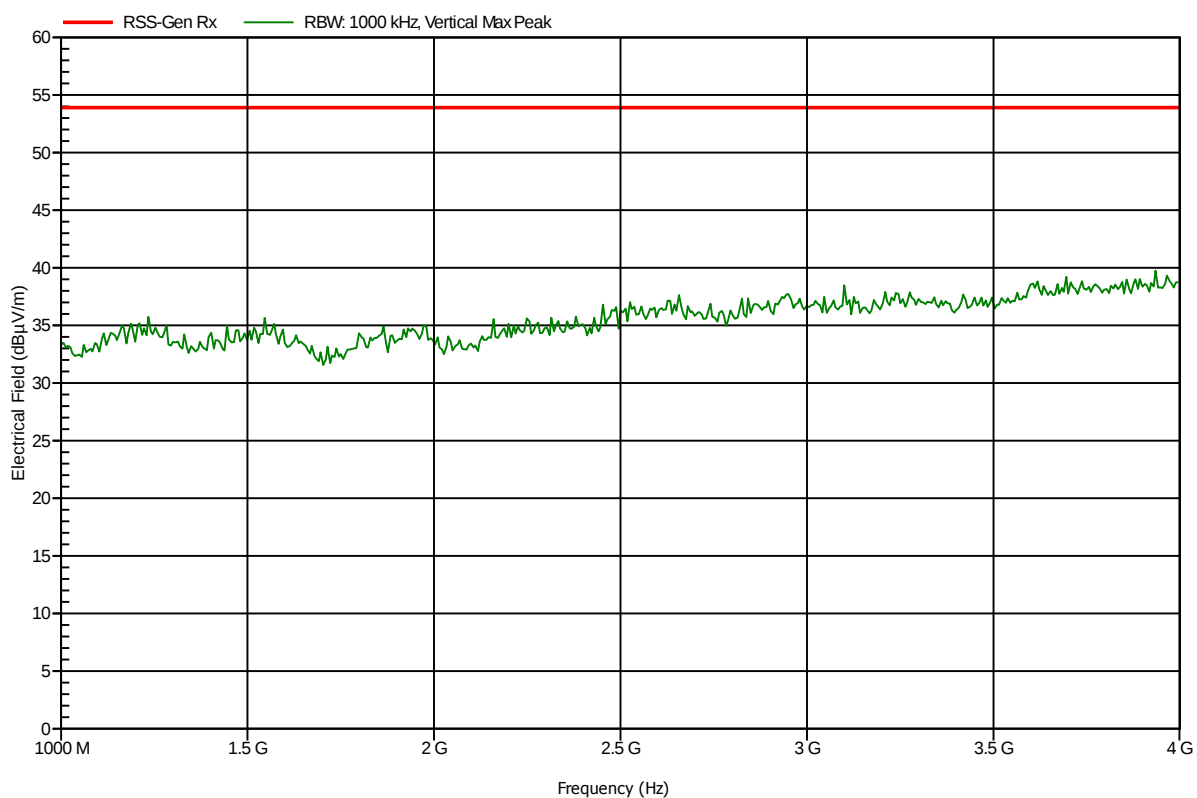
Frequency	Peak	Peak Limit	Peak Difference	Status
885.167 MHz	35.38 dBµV/m	46 dBµV/m	-10.62 dB	Pass

Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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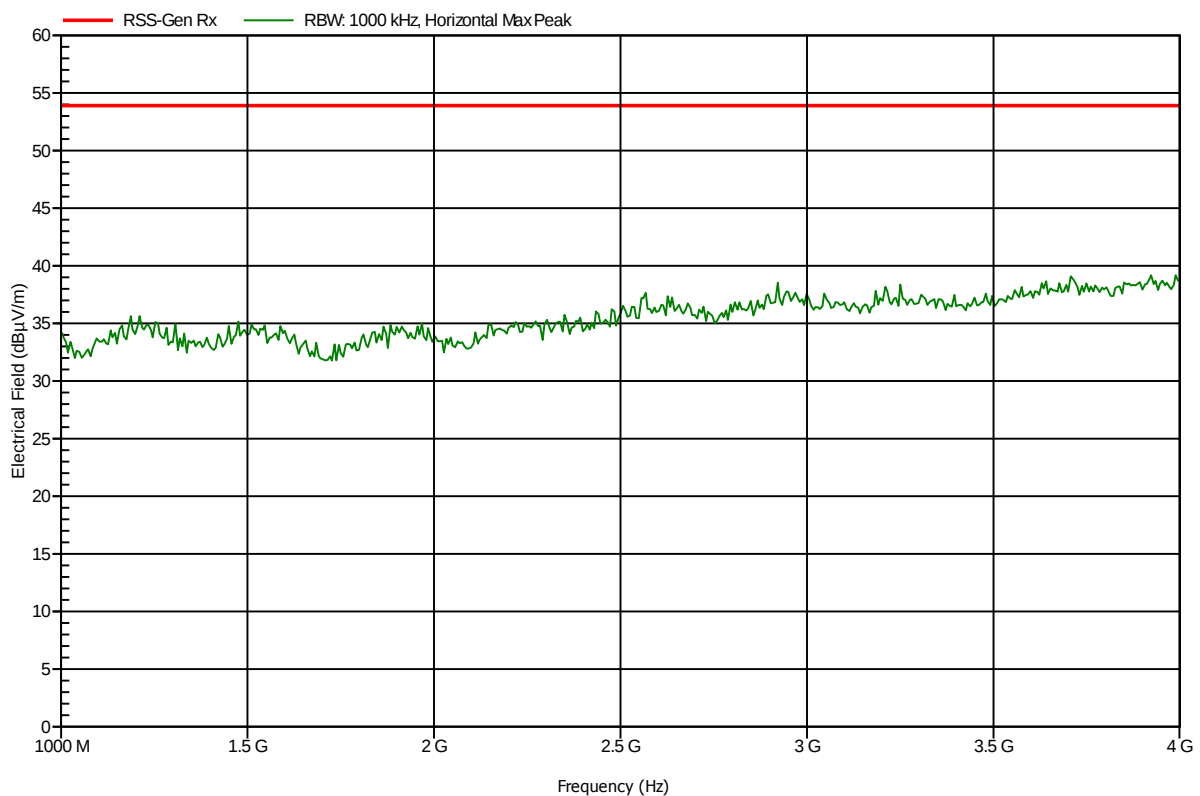


Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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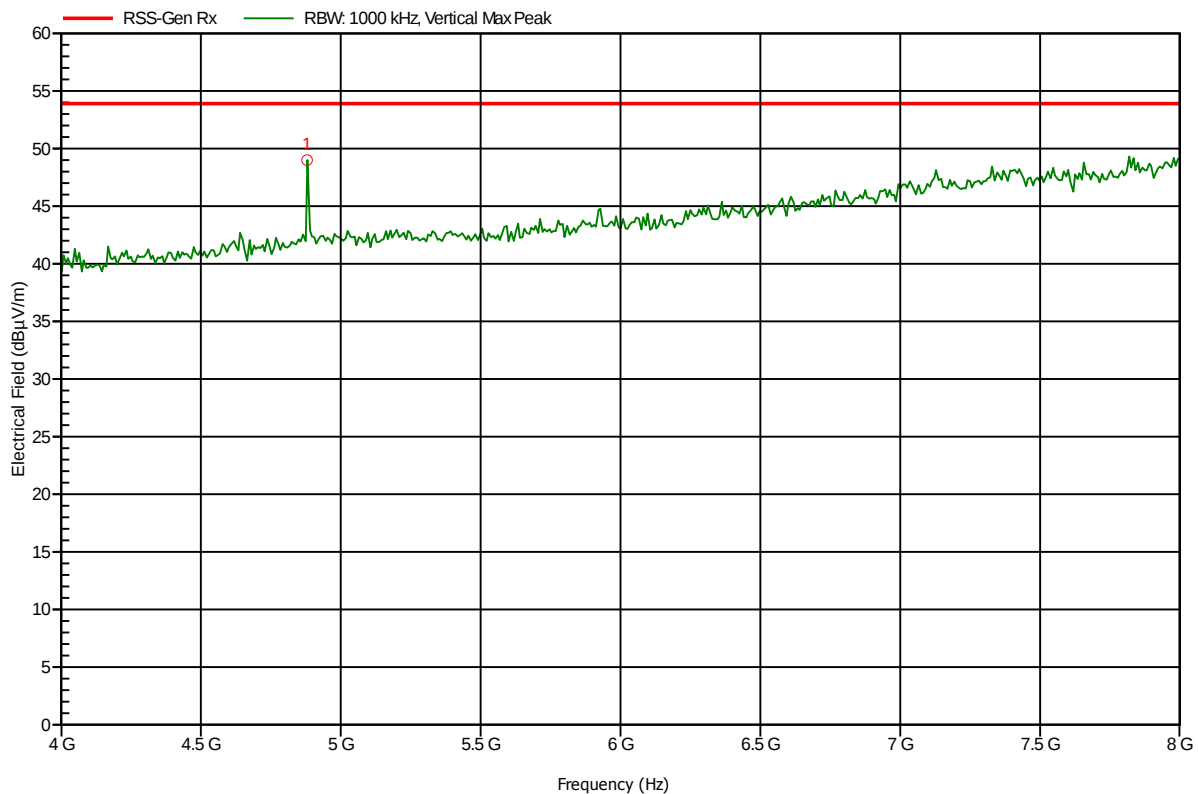


Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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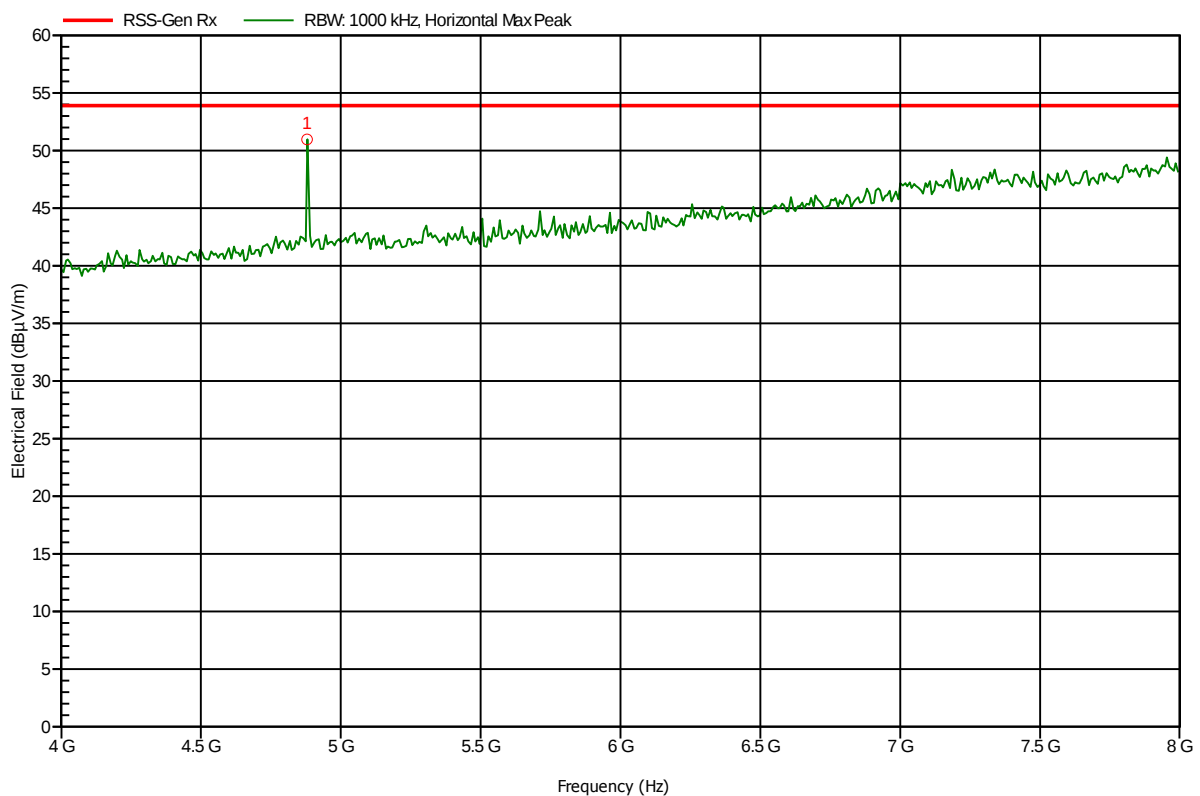
Frequency	Peak	Peak Limit	Peak Difference	Status
4.88 GHz	49 dBµV/m	53.9 dBµV/m	-4.9 dB	Pass

Spurious emissions according to RSS-GEN

Project number: G0M-1303-2693

Manufacturer: Panasonic Industrial Devices Europe GmbH
 EUT Name: Bluetooth Module
 Model: PAN1316 / PAN1326
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.0V (2x 1.5V Batt AA)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; 2440 MHz; GFSK; BLE RX Testmode
 Test Date: 2013-04-05
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Status
4.88 GHz	50.97 dBμV/m	53.9 dBμV/m	-2.93 dB	Pass