



FCC TEST REPORT FCC 47 CFR Part 15C Industry Canada RSS-210 Frequency hopping systems operating within the 2400 – 2483.5 MHz band	
Report Reference No.	G0M-1208-2160-TFC247B-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	<div style="text-align: center;">   </div> <p>A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A</p>
Applicant's name	Panasonic Industrial Devices Europe GmbH
Address	Zeppelinstr. 19 21337 Lüneburg GERMANY
Test specification:	
Standard.....	47 CFR Part 15C RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009
Equipment under test (EUT):	
Product description	Class 2 Bluetooth Low Energy Module
Model No.	ENW89837AxKF
Hardware version	0x
Firmware / Software version	0x
	FCC-ID: T7VPAN10 IC: 216Q-PAN10
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: 2013-09-03

Date (s) of performance of tests: 2013-09-03 - 2013-09-05

Compiled by : Antje Bartusch

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

Approved by (+ signature) : Jens Zimmermann 
 (Test Lab Manager)

Date of issue : 2013-10-25

Total number of pages..... : 101

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	2013-10-25	Initial Release	

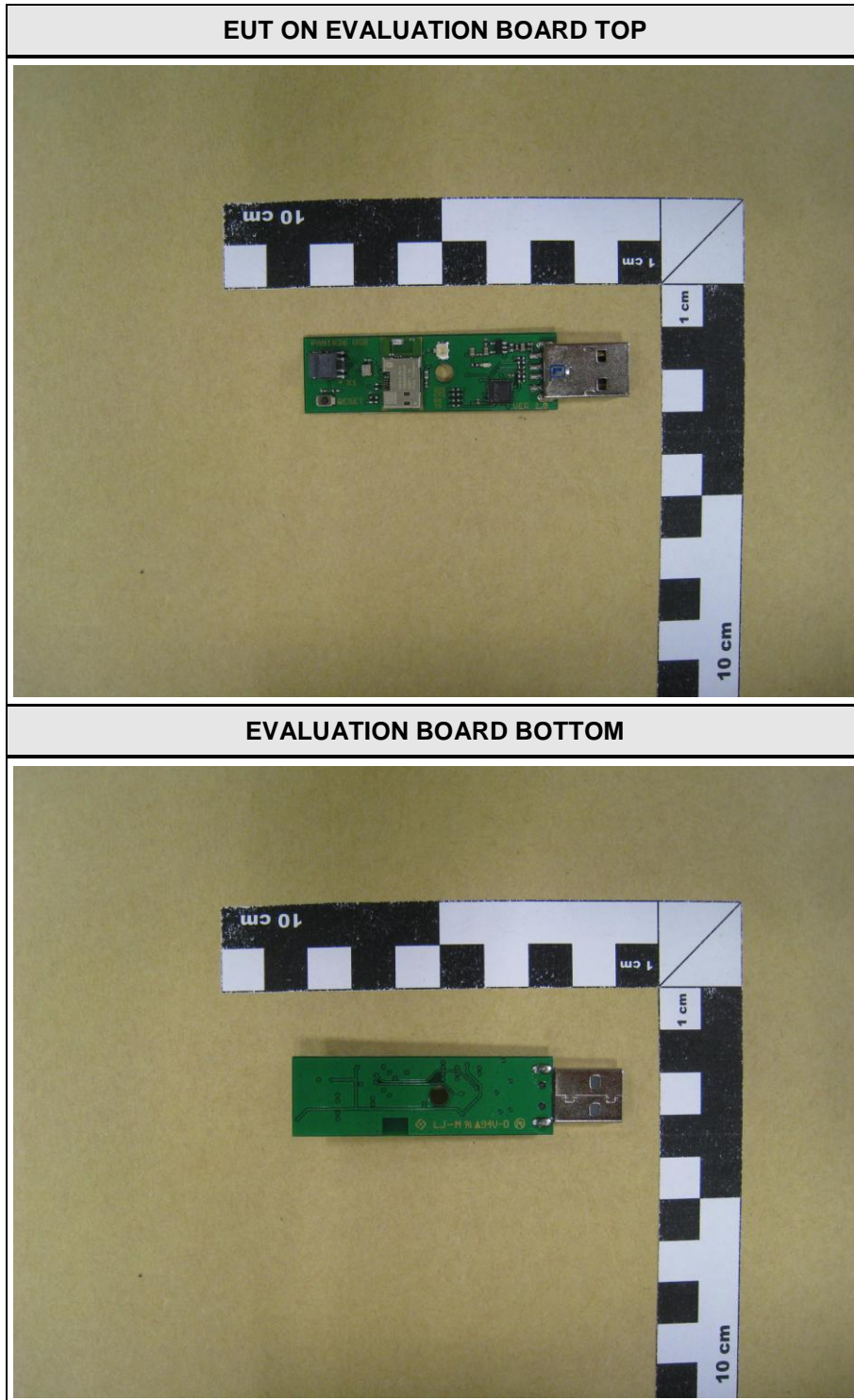
REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION:	5
1.1	Photos – Equipment External	6
1.2	Photos – Equipment internal	7
1.3	Photos – Test setup	8
1.4	Supporting Equipment Used During Testing	9
1.5	Test Modes	10
1.6	Test Equipment Used During Testing	11
1.7	Sample emission level calculation	12
2	RESULT SUMMARY	13
3	TEST CONDITIONS AND RESULTS	14
3.1	Test Conditions and Results – Occupied Bandwidth	14
3.2	Test Conditions and Results – 20 dB Bandwidth	18
3.3	Test Conditions and Results – Number of hopping frequencies	22
3.4	Test Conditions and Results – Frequency hopping channel separation	27
3.5	Test Conditions and Results – Time of occupancy (Dwell Time)	29
3.6	Test Conditions and Results – Maximum peak conducted power	31
3.7	Test Conditions and Results – AC power line conducted emissions	33
3.8	Test Conditions and Results – Band edge compliance	36
3.9	Test Conditions and Results – Conducted spurious emissions	41
3.10	Test Conditions and Results – Transmitter radiated emissions	48
3.11	Test Conditions and Results – Receiver radiated emissions	50
ANNEX A	Transmitter radiated spurious emissions	52
ANNEX B	Receiver radiated spurious emissions	92

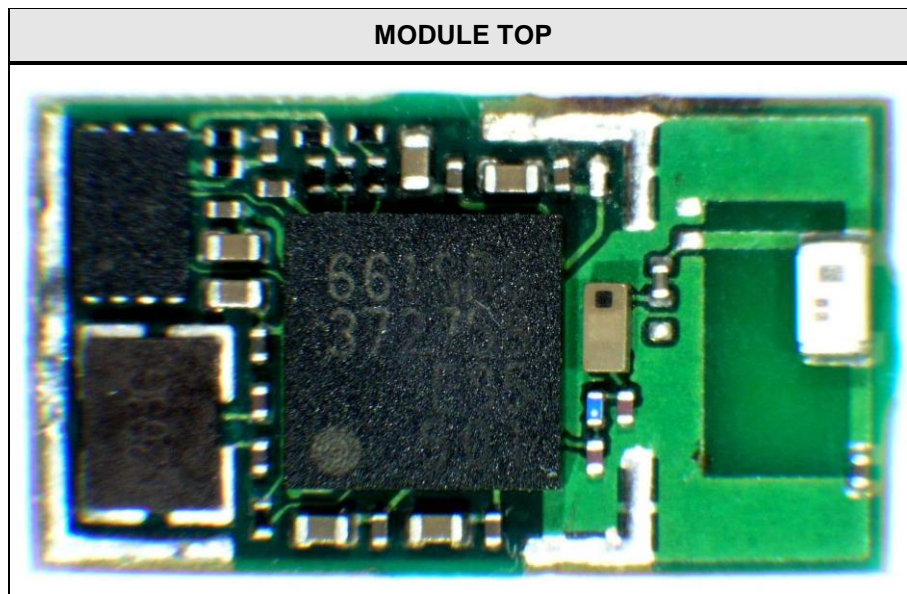
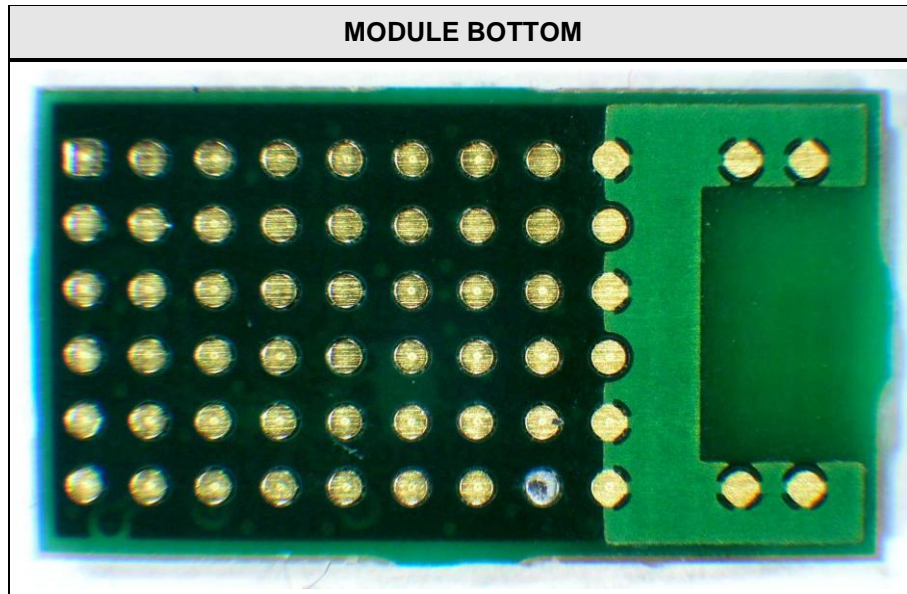
1 Equipment (Test item) Description:

Description	Class 2 Bluetooth Low Energy Module	
Model	ENW89837AxKF	
Serial number	None	
Hardware version	0x	
Software / Firmware version	0x	
FCC-ID	T7VPAN10	
IC	216Q-PAN10	
Equipment type	Radio module	
Radio type	Transceiver	
Radio technology	Bluetooth 2.1	
Operating frequency range	2402 - 2480 MHz	
Assigned frequency band	2400 - 2483.5 MHz	
Main test frequencies	F _{LOW}	2402 MHz
	F _{MID}	2441 MHz
	F _{HIGH}	2480 MHz
Spreading	FHSS	
Modulations	GFSK	
Number of channels	79 hopping channels at all	
Channel spacing	1 MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	LDA212G3110K
	Manufacturer	Murata
	Gain	+0.9
Manufacturer	Panasonic Industrial Devices Europe GmbH Zeppelinstr. 19 21337 Lüneburg GERMANY	
Power supply	V _{NOM}	3.7 VDC
	V _{MIN}	2.0 VDC
	V _{MIN}	3.6 VDC
AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

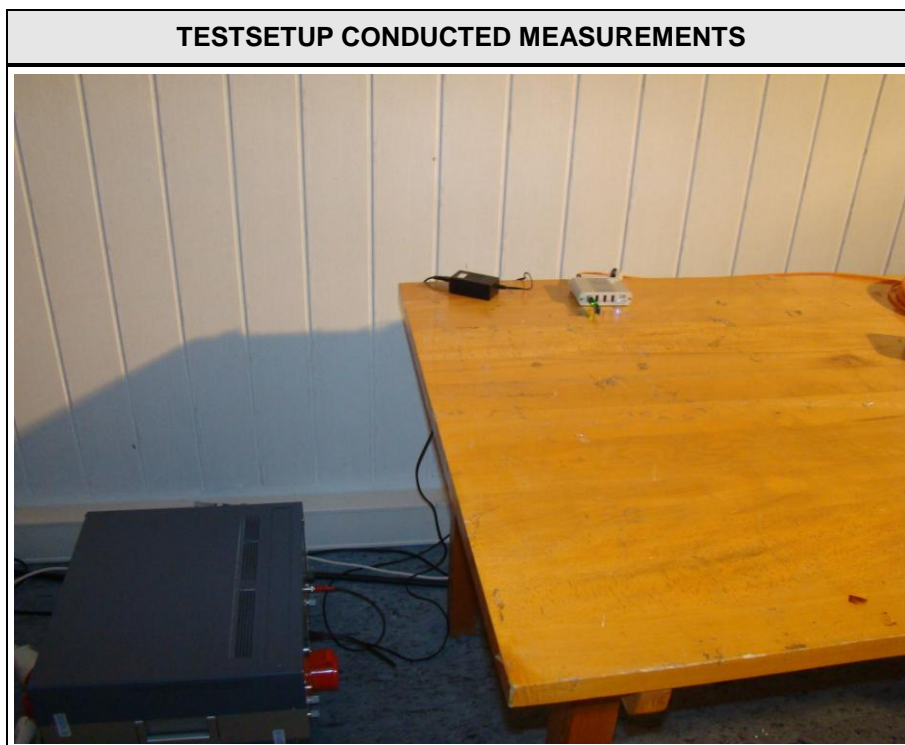
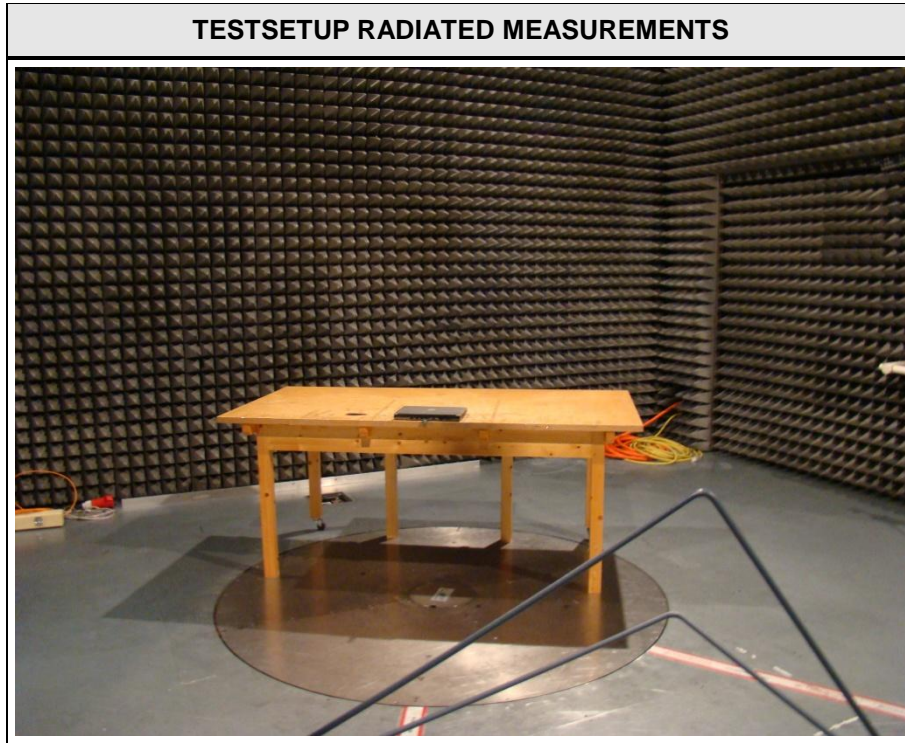
1.1 Photos – Equipment External



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	
DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 78 % Power level = Maximum
DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 78 % Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = Hopping
AC-Powerline	General conditions:	EUT powered by commercial AC/DC-Adapter via Laptop.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Power level = Maximum

1.6 Test Equipment Used During Testing

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Time of occupancy					
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

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	calibration	calibration
Spectrum Analyzer	R&S	FSIQ26	EF00242	2013-06	2014-06
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	2013-09	2014-09

 Test Report No.: G0M-1208-2160-TFC247B-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 dB μ 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 μ V/m). The FCC limits are given in units of μ V/m. The following formula is used to convert the units of μ V/m to dB μ 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)(1) IC RSS-210 § A8.1	20 dB Bandwidth	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Number of hopping frequencies	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1) IC RSS-210 § A8.1	Frequency hopping channel separation	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Time of occupancy (Dwell time)	Public notice DA 00-705	PASS	
FCC § 15.247(b)(1) IC RSS-210 § A8.4	Maximum peak conducted power	Public notice DA 00-705	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	Public notice DA 00-705	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	Public notice DA 00-705	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	Public notice DA 00-705 / 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:				

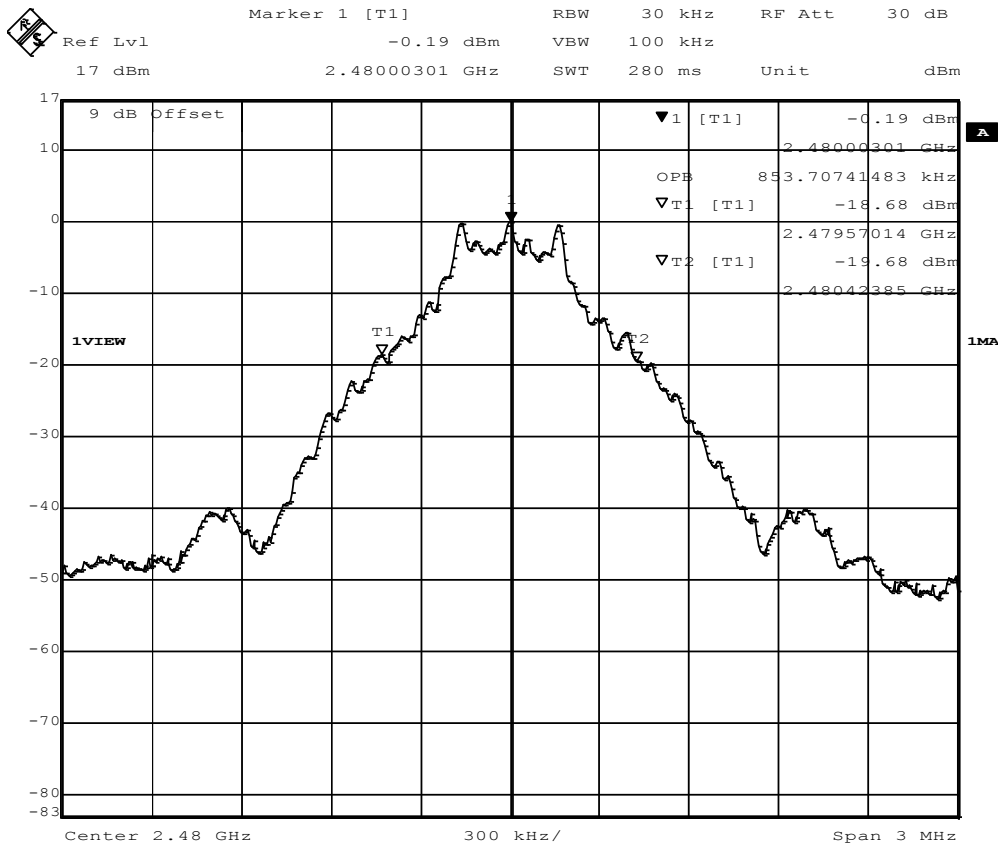
3 Test Conditions and Results

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			
			
Test procedure			
<ol style="list-style-type: none"> 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	DH5-Sngl	853.707
F_{MID}	2441	DH5-Sngl	853.707
F_{HIGH}	2480	DH5-Sngl	853.707
Comments:			

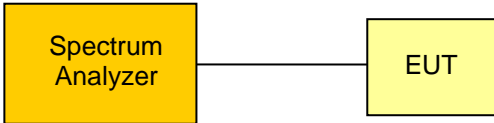
Occupied Bandwidth – DH5-Sngl F_{HIGH}
**RSS Gen
Occupied Bandwidth**

EUT Class 2 Bluetooth Low Energy Module
Model ENW89837AXKF / BT1026
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: 78 (2480 MHz)
Comment 2 A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3 Bluetooth Basic Data Rate / GFSK / DH5



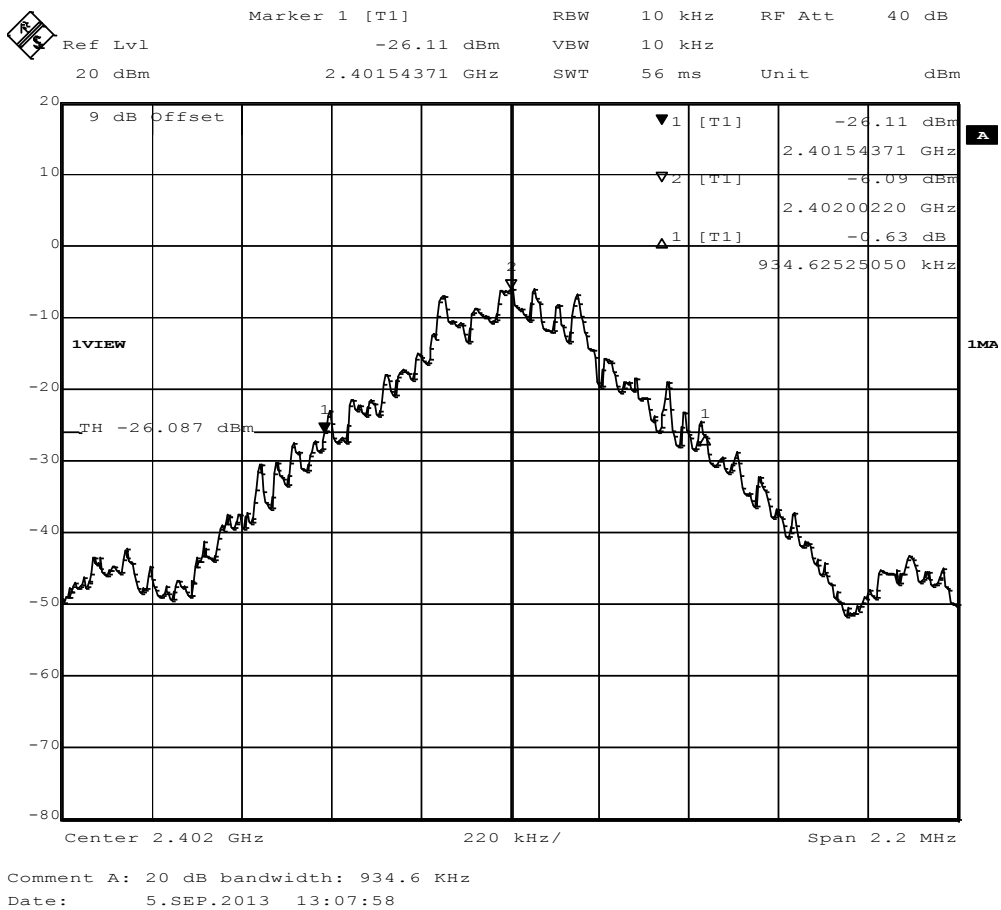
Comment A: Occupied_Bandwidth_:_853.70741483_kHz
 Date: 5.SEP.2013 11:37:22

3.2 Test Conditions and Results – 20 dB Bandwidth

20 dB Bandwidth acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause	Reference				
	FCC 15.247(a)(1) / IC RSS-210 A8.1				
Test according to measurement reference	Reference Method				
	FCC Public Notice DA 00-705				
Test frequency range	Tested frequencies				
	$F_{LOW} / F_{MID} / F_{HIGH}$				
Limits					
Limit			Condition		
1.5 · Carrier spacing			Output power ≤ 125 mW / 21 dBm		
1.0 · Carrier spacing			125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm		
Test setup					
 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] </pre>					
Test procedure					
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -20 dB to the right of the peak 7. 20dB Bandwidth is determined by marker frequency separation 					
Test results					
Channel	Frequency [MHz]	Mode	20 dB Bandwidth [MHz]	Limit [MHz]	Result
F_{LOW}	2402	DH5-Sngl	934.625	1.5	PASS
F_{MID}	2441	DH5-Sngl	934.625	1.5	PASS
F_{HIGH}	2480	DH5-Sngl	934.625	1.5	PASS
Comments:					

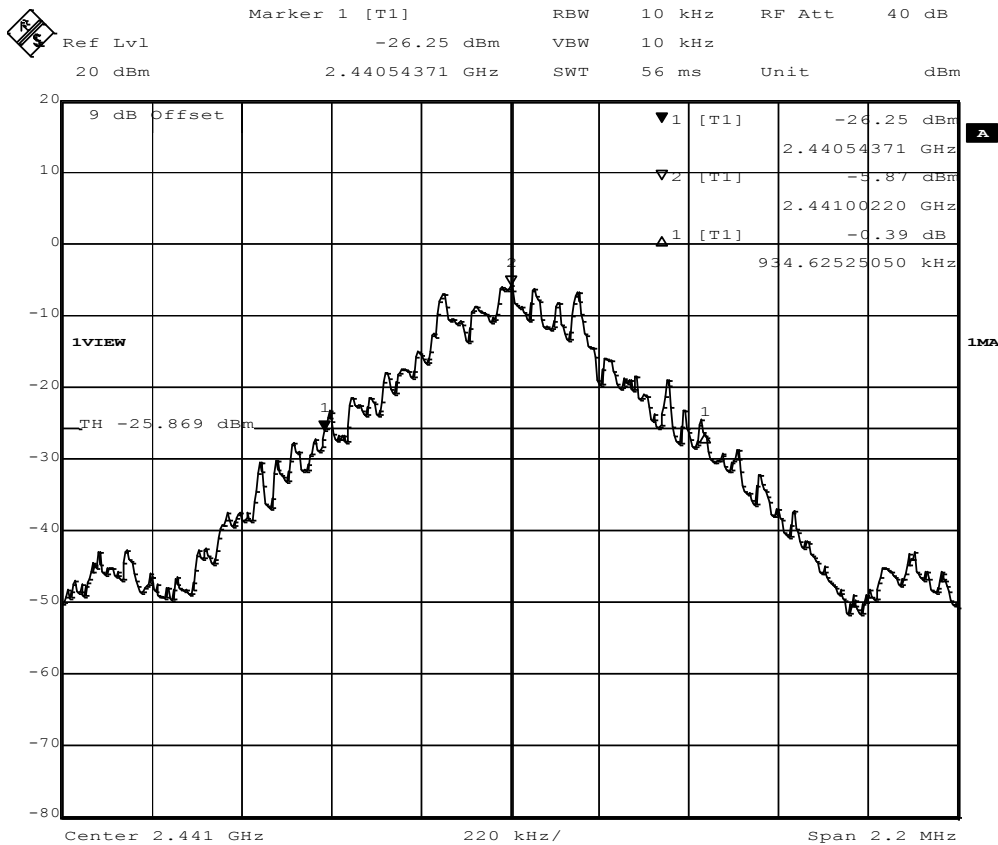
20 dB Bandwidth – DH5-Sngl F_{LOW}
FCC part 15.247
20 dB bandwidth

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 0 / 2402 MHz / DH5 / GFSK
Comment 3	Pass



20 dB Bandwidth – DH5-Sngl F_{MID}
**FCC part 15.247
20 dB bandwidth**

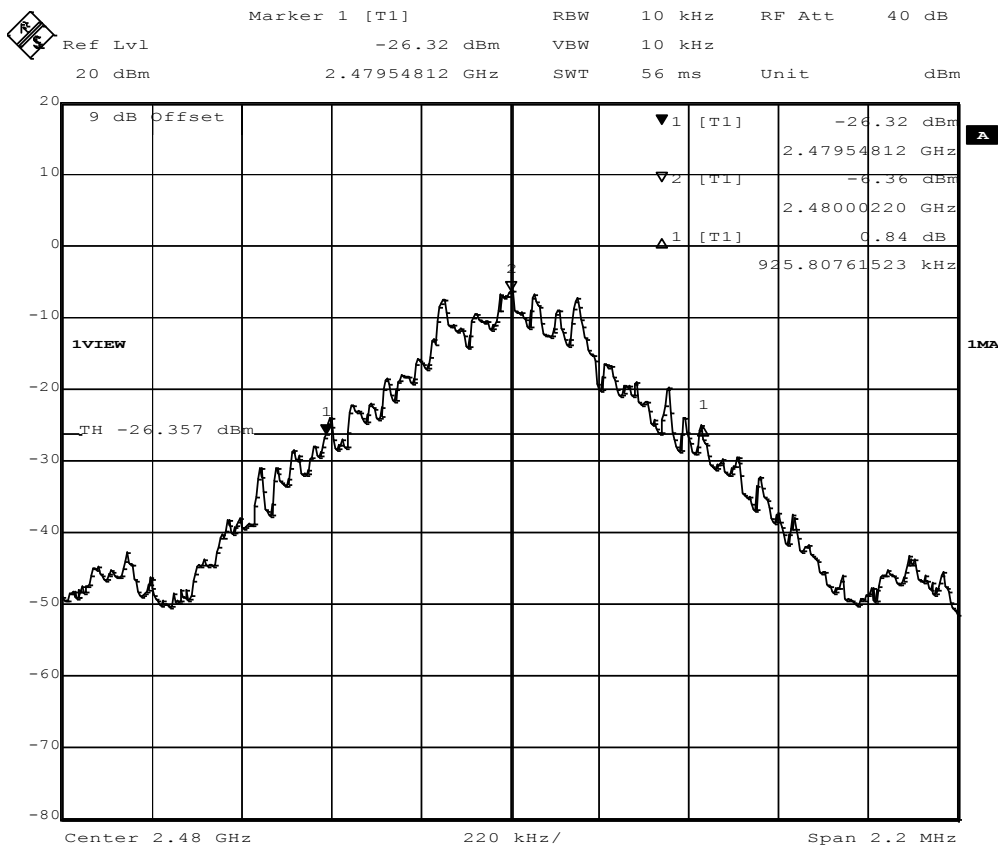
EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / DH5 / GFSK
Comment 3	Pass



Comment A: 20 dB bandwidth: 934.6 KHz
Date: 5.SEP.2013 13:00:07


20 dB Bandwidth – DH5-Sngl F_{HIGH}
FCC part 15.247
20 dB bandwidth

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 78 / 2480 MHz / DH5 / GFSK
Comment 3	Pass



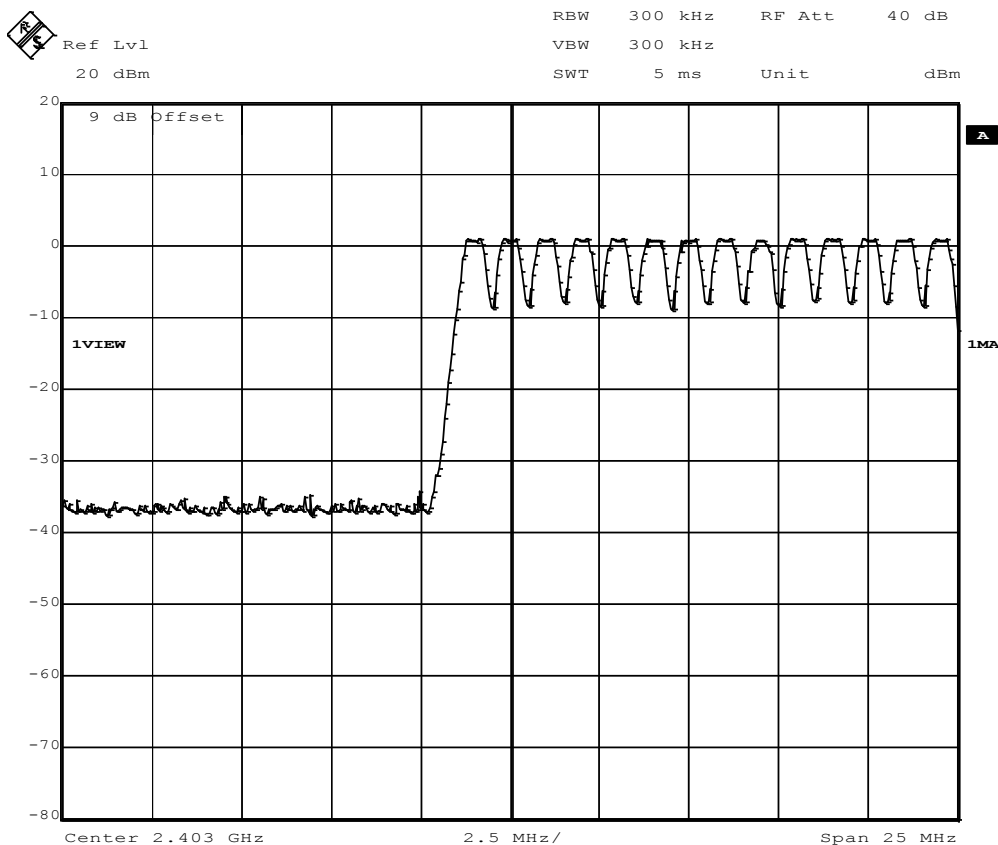
Comment A: 20 dB bandwidth: 925.8 KHz
 Date: 5.SEP.2013 12:52:25

3.3 Test Conditions and Results – Number of hopping frequencies

Number of hopping frequencies acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	$F_{LOW} - F_{HIGH}$	
EUT test mode	DH5-Hop	
Limits		
Limit	Condition	
Number of hopping channels ≥ 15	Output power ≤ 125 mW / 21 dBm	
Number of hopping channels ≥ 75	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm	
Test setup		
 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] </pre>		
Test procedure		
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The number of peaks is counted to determine number of hopping frequencies 		
Test results		
Number of hopping frequencies	Limit	Result
79	≥ 15	PASS
Comments:		

Number of hopping frequencies - Range A
FCC part 15.247
Number of hopping frequencies

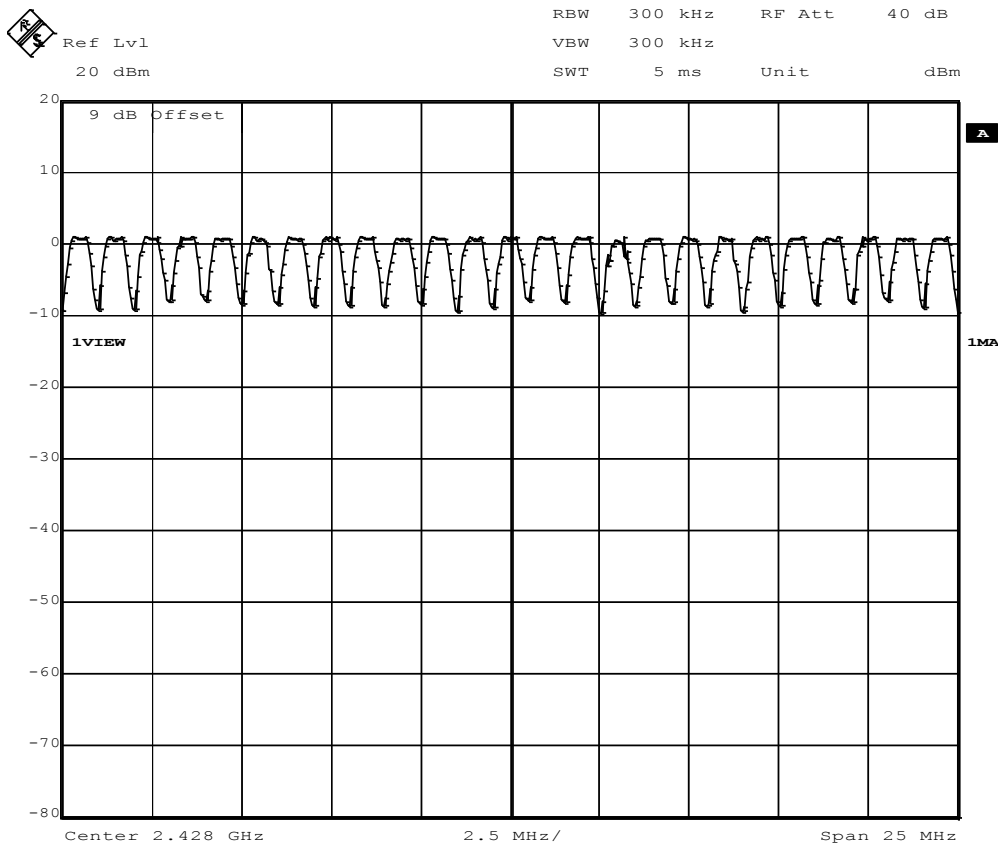
EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 0-13
Comment 3	Pass



Comment A: Number of hopping frequencies
 Date: 5.SEP.2013 13:35:11

Number of hopping frequencies - Range B
FCC part 15.247
Number of hopping frequencies

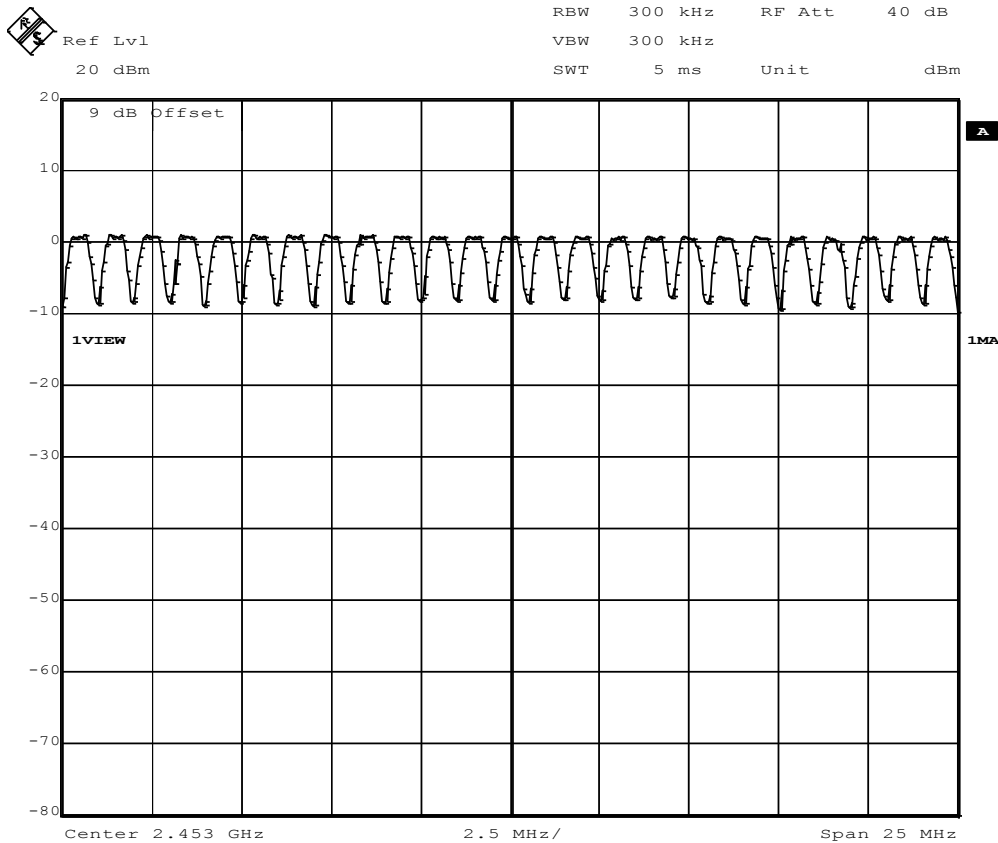
EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 14-38
Comment 3	Pass



Comment A: Number of hopping frequencies
 Date: 5.SEP.2013 13:37:01

Number of hopping frequencies - Range C
FCC part 15.247
Number of hopping frequencies

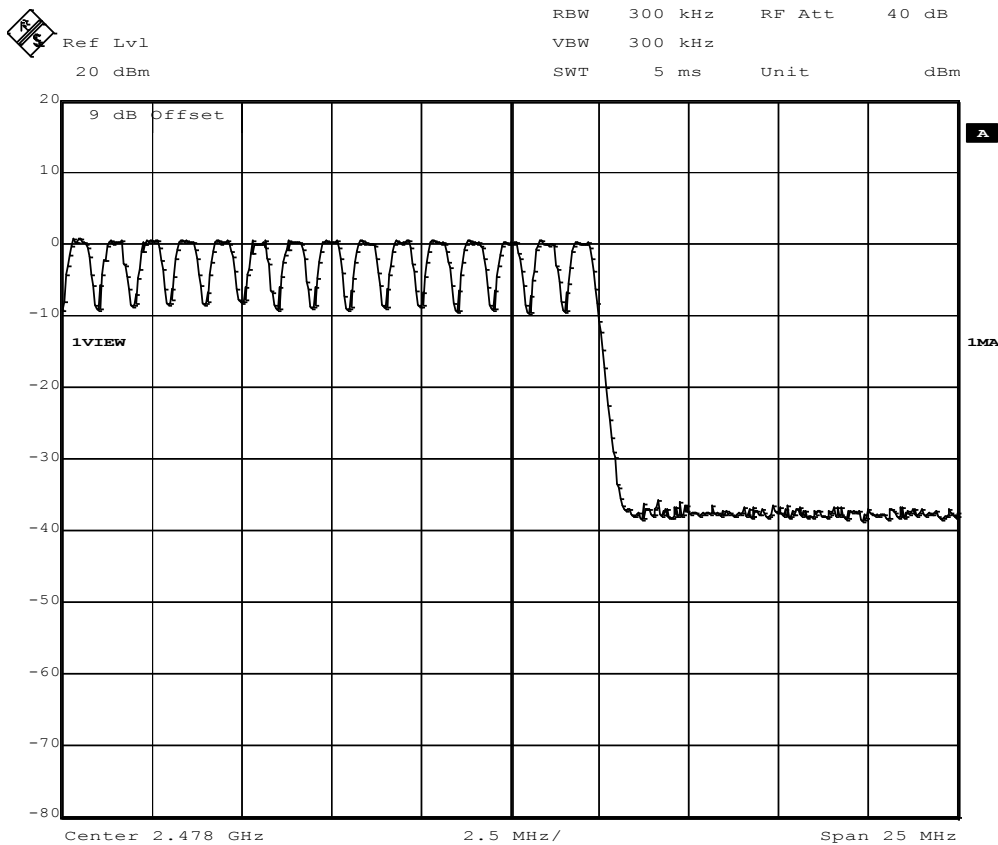
EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.:39-63
Comment 3	Pass



Comment A: Number of hopping frequencies
 Date: 5.SEP.2013 13:38:24

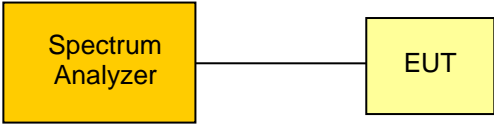
Number of hopping frequencies - Range D
FCC part 15.247
Number of hopping frequencies

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 64-78
Comment 3	Pass



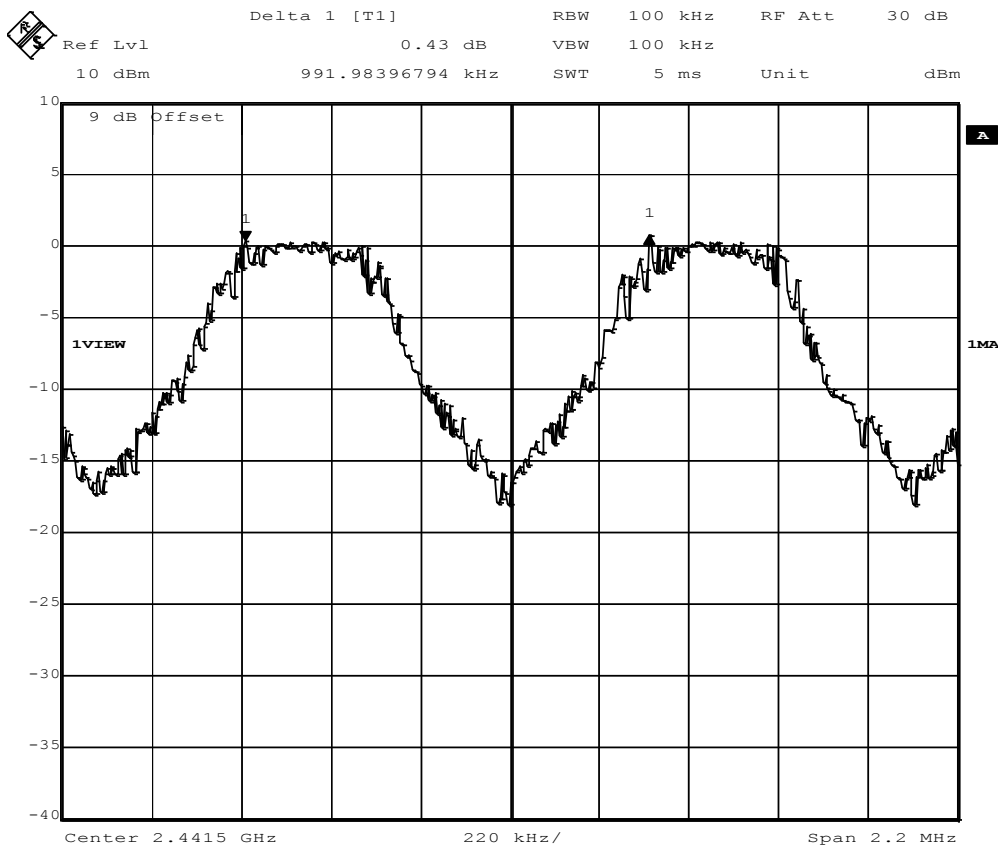
Comment A: Number of hopping frequencies
 Date: 5.SEP.2013 13:39:39

3.4 Test Conditions and Results – Frequency hopping channel separation

Frequency hopping channel separation acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(a)(1) / IC RSS-210 A8.1	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	2441 & 2442 MHz	
EUT test mode	DH5-Hop	
Limits		
Limit	Condition	
≥ 25 kHz or $\frac{2}{3}$ of 20 dB bandwidth	Output power ≤ 125 mW / 21 dBm	
≥ 25 kHz or 20 dB bandwidth	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm	
Test setup		
		
Test procedure		
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The two adjacent channel peaks are marked 6. Channel separation is determined from frequency separation of markers 		
Test results		
Channel separation [kHz]	Limit [kHz]	Result
991.983	$\geq \frac{2}{3} \cdot 934.625 = 623.08$	PASS
Comments:		


Frequency hopping channel separation
FCC part 15.247
Carrier frequency separation

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)(1)
Comment 1	Carrier frequency separation
Comment 2	Channel.: 39/40 / 2441/2442 MHz / GFSK
Comment 3	Hopping mode



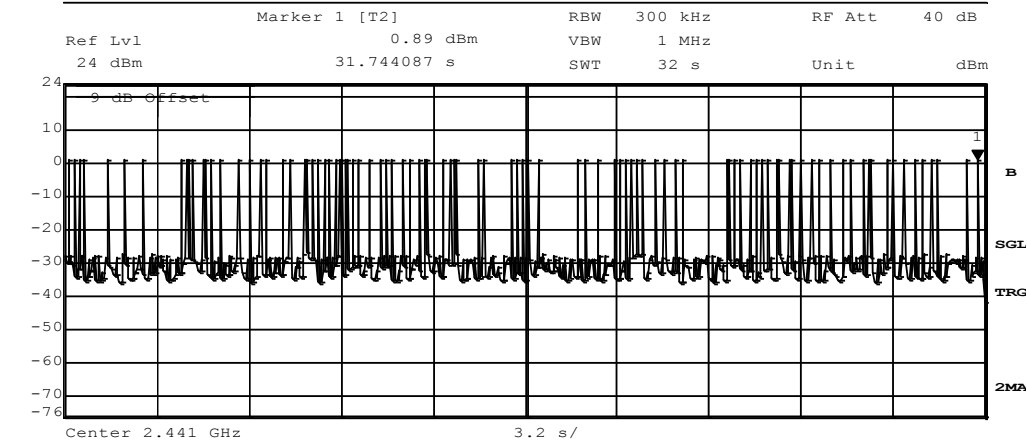
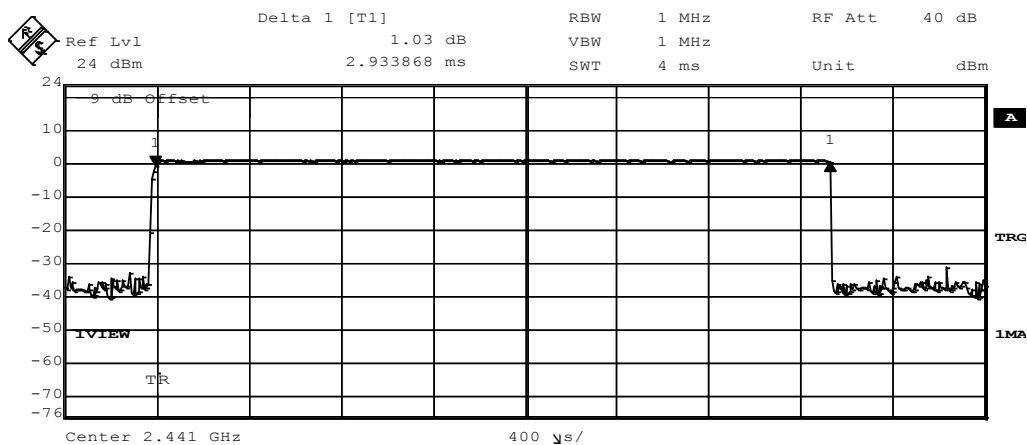
Comment A: Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass
 Date: 5.SEP.2013 13:30:25

3.5 Test Conditions and Results – Time of occupancy (Dwell Time)

Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause	Reference				
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1				
Test according to measurement reference	Reference Method				
	FCC Public Notice DA 00-705				
Test frequency range	Tested frequencies				
	2441 MHz				
EUT test mode	DH5-Hop				
Limits					
Limit					
Time of occupancy ≤ 0.4 s within 0.4 s · Number of hopping channels					
Test setup					
					
Test procedure					
<ol style="list-style-type: none"> 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 zero span and detector to peak and max hold 4. Resolution bandwidth is set to 100kHz and sweep time to observation period 5. Time of occupancy determined from number of peaks multiplied by single hop dwell time 					
Test results					
Observation period [s]	No. of hops	Dwell time/hop [s]	Time of occupancy [s]	Limit [s]	Result
31.6	86	0.0029	0.252	≤ 0.4	PASS
Comments:					


Time of occupancy
**FCC part 15.247
Time of occupancy inquiry**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(a)
Comment 1	Time of occupancy inquiry
Comment 2	Channel.: 39 / 2441 MHz
Comment 3	86 events * 2.933 ms (Burst Length) Result: 252.2 ms



Date: 5.SEP.2013 14:19:07

3.6 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)(1) / IC RSS-210 A8.4	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	$F_{\text{LOW}} / F_{\text{MID}} / F_{\text{HIGH}}$	
Measurement mode	Peak	
Maximum antenna gain	0.9 dBi \Rightarrow Limit correction = 0 dB	
Limits		
Limit	Condition	
1 W (30 dBm)	Number of hopping channels \geq 75	
0.125 W (21 dBm)	75 > Number of hopping channels \geq 15	
<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>		
Test setup		
		
Test procedure		
<ol style="list-style-type: none"> 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]	Result
F _{LOW}	2402	3.7 VDC	DH5-Sngl	0.98	0.001	30	-29.02	PASS
F _{MID}	2441	2.0 VDC	DH5-Sngl	0.99	0.001	30	-29.01	PASS
F _{HIGH}	2480	3.6 VDC	DH5-Sngl	0.34	0.001	30	-29.66	PASS
Comments:								

3.7 Test Conditions and Results – AC power line conducted emissions

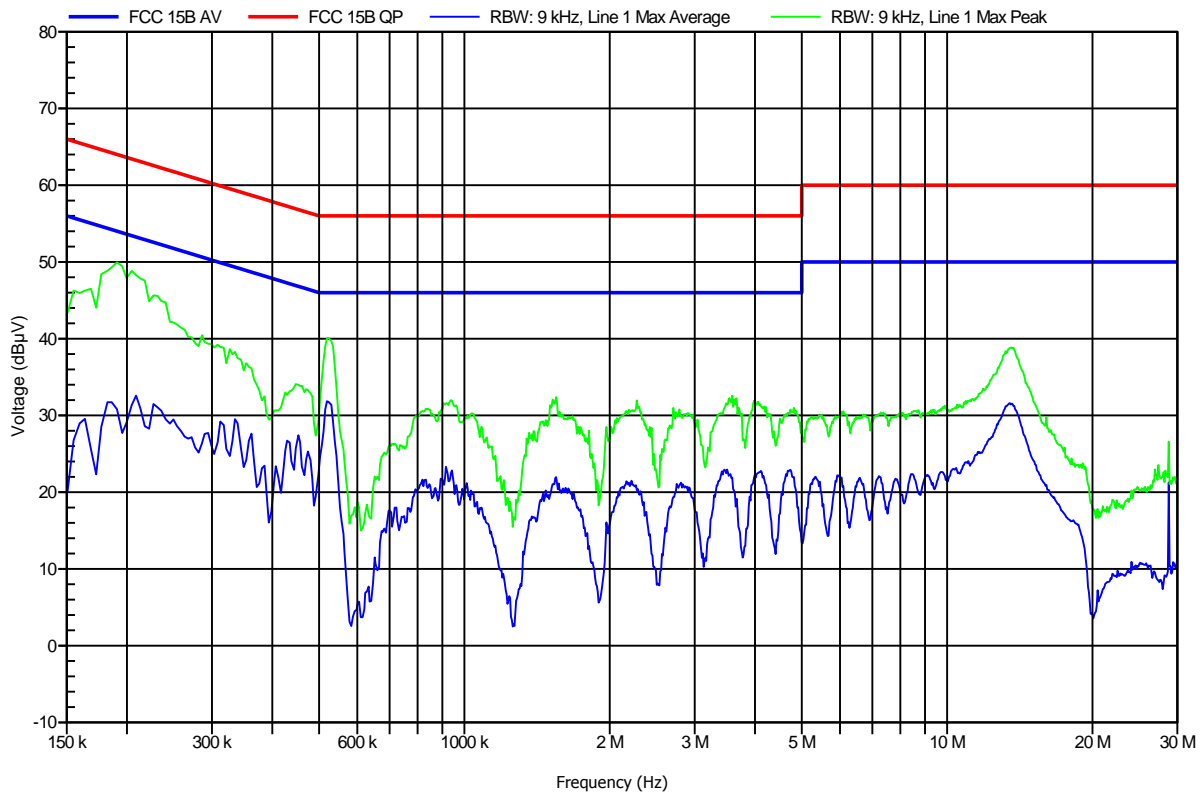
Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen		Verdict: PASS		
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
Limits and results				
Frequency [MHz]	Quasi-Peak [dB μ V]	Result	Average [dB μ 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: * 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 L
 Mode: active
 Test Date: 2013-08-28
 Note:

Index 2

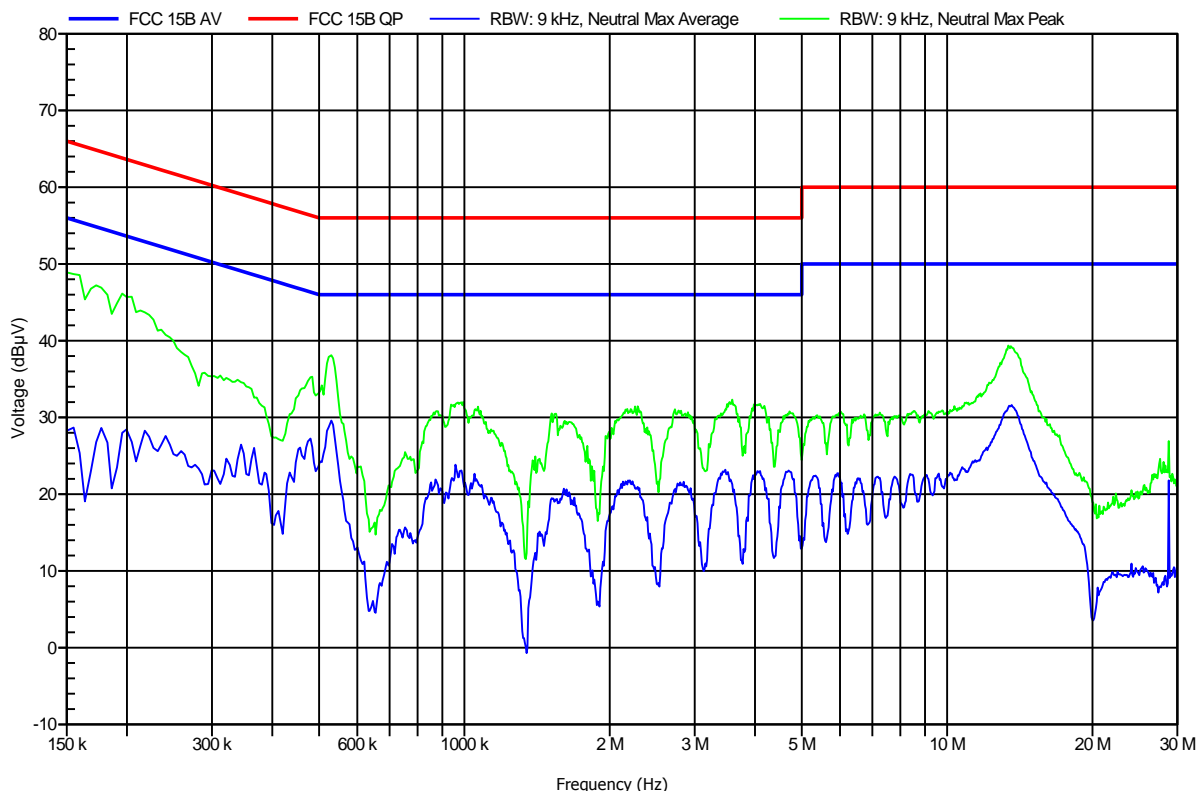


Conducted Emissions
EMI voltage test in the ac-mains according to FCC 15B


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

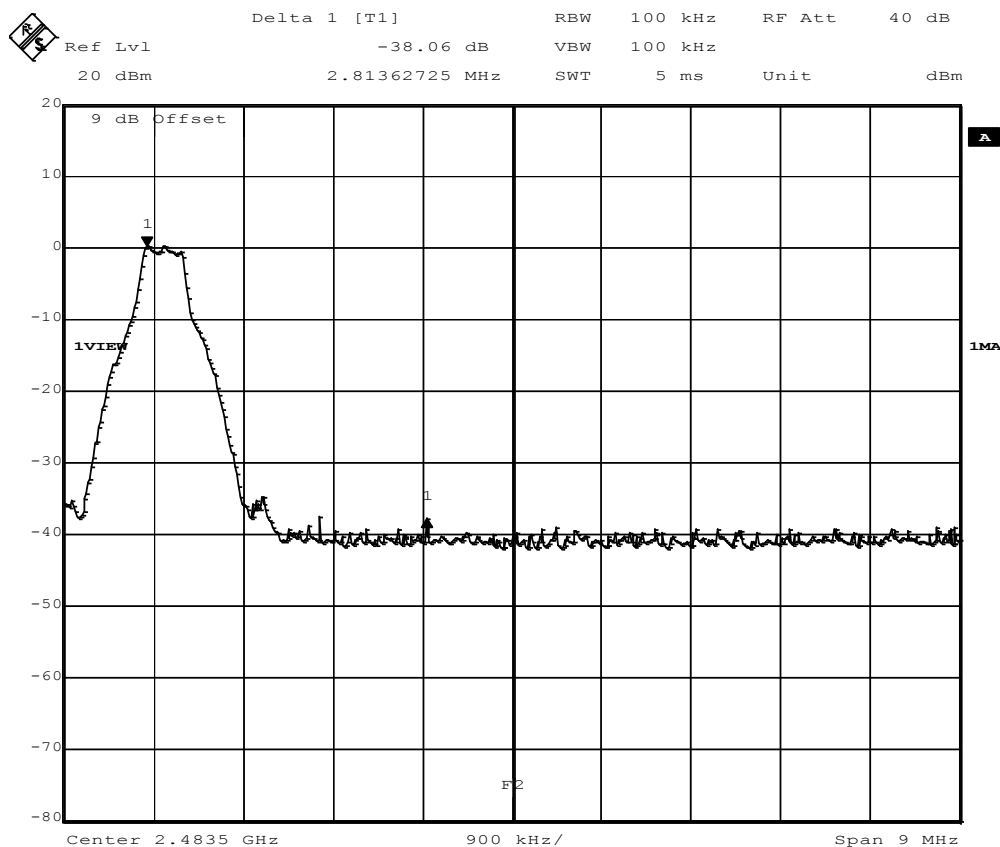


3.8 Test Conditions and Results – Band edge compliance

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 Public Notice DA 00-705					
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						
 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] </pre>						
Test procedure						
<ol style="list-style-type: none"> EUT set to test mode (Communication tester is used if needed) Span set around lower band edge and detector is set to peak and max hold Resolution bandwidth is set to 100 kHz Markers are set to peak emission levels within frequency band and outside frequency band Band edge attenuation is determined from level difference 						
Test results						
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F_{LOW}	2402	DH5-Sngl	-38.00	-20	-18.00	PASS
F_{HIGH}	2480	DH5-Sngl	-38.06	-20	-18.06	PASS
F_{LOW}	2402	DH5-Hop	-38.56	-20	-18.56	PASS
F_{HIGH}	2480	DH5-Hop	-37.21	-20	-17.21	PASS
Comments:						

Band-edge compliance – DH5-Sngl F_{HIGH}
FCC part 15.247
Band-edge compliance of RF conducted emissions

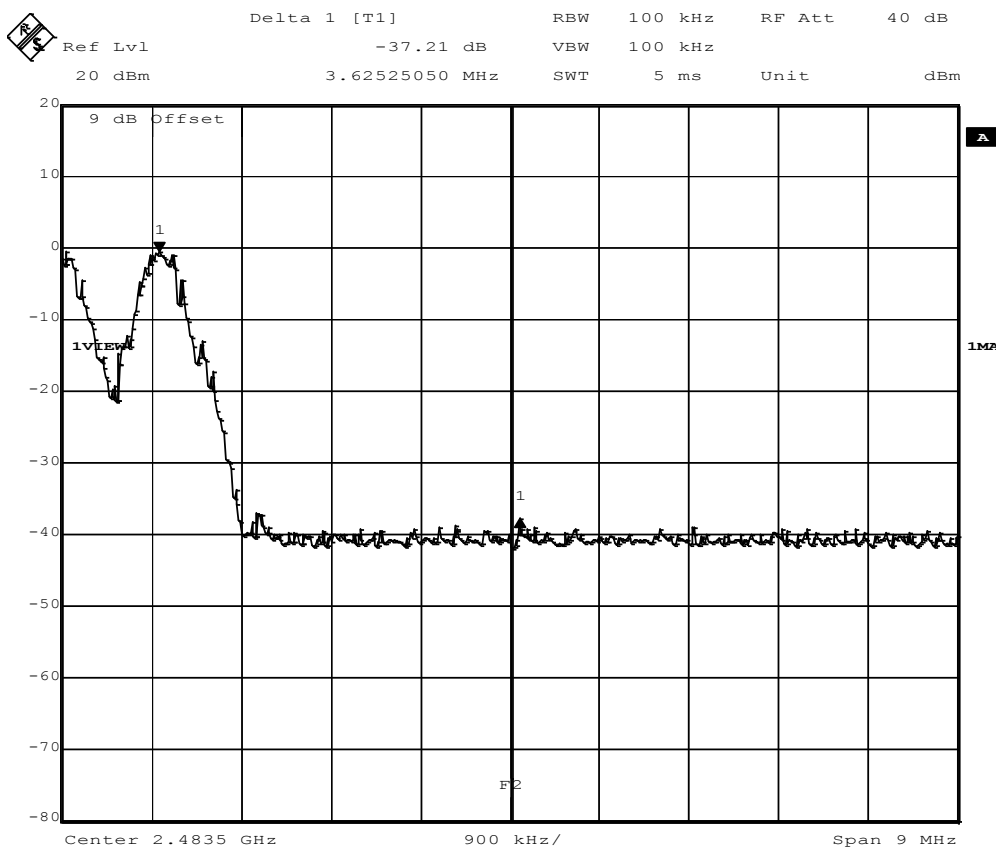
EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	Single frequency mode



Comment A: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 5.SEP.2013 13:17:58


Band-edge compliance – DH5-Hop F_{HIGH}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
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.: 78 / 2480 MHz / GFSK
Comment 3	Hopping mode



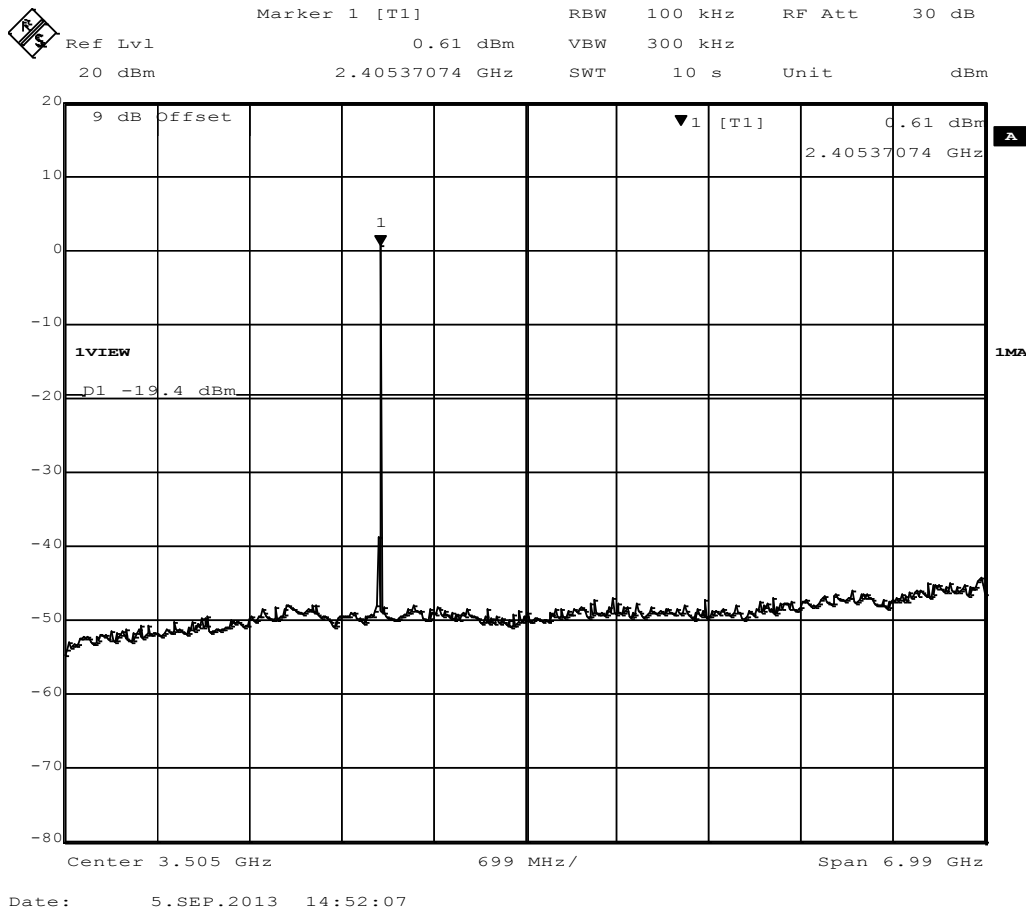
Comment A: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 5.SEP.2013 13:21:37

3.9 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 Public Notice DA 00-705					
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								
								
Test procedure								
<ol style="list-style-type: none"> 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]	Result
No significant spurious emissions								
Comments:								

Conducted spurious emissions – DH5-Sngl F_{Low}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
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	GFSK / DH5

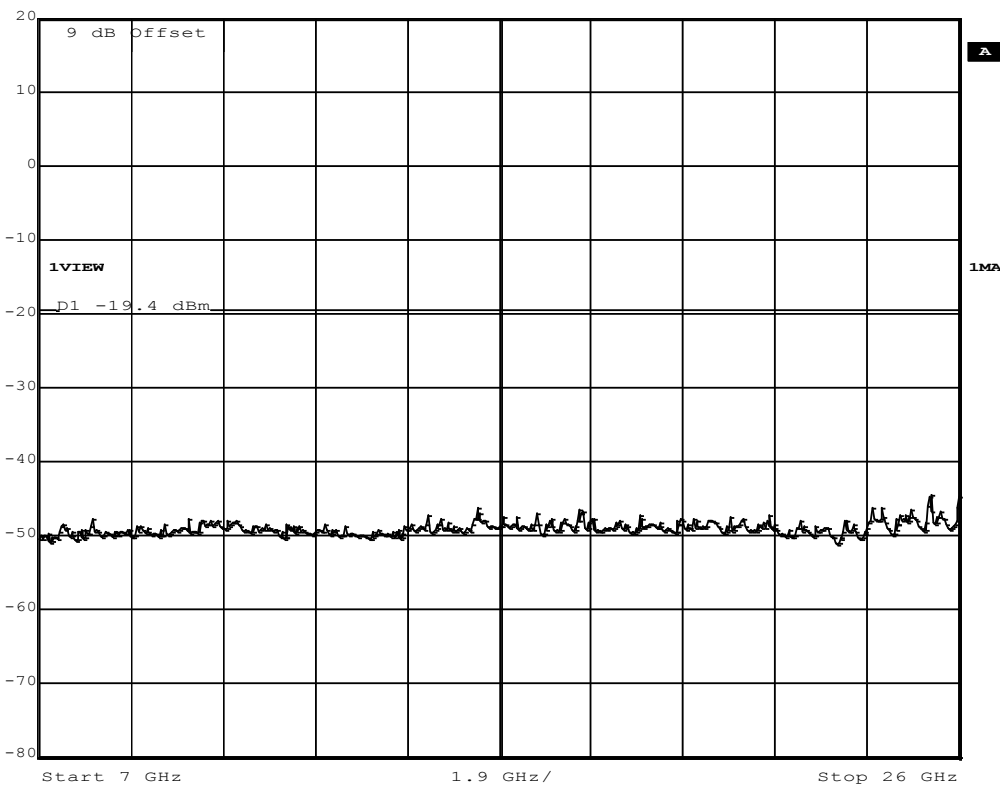


Conducted spurious emissions – DH5-Sngl F_{Low}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
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	GFSK / DH5


 Ref Lvl
20 dBm

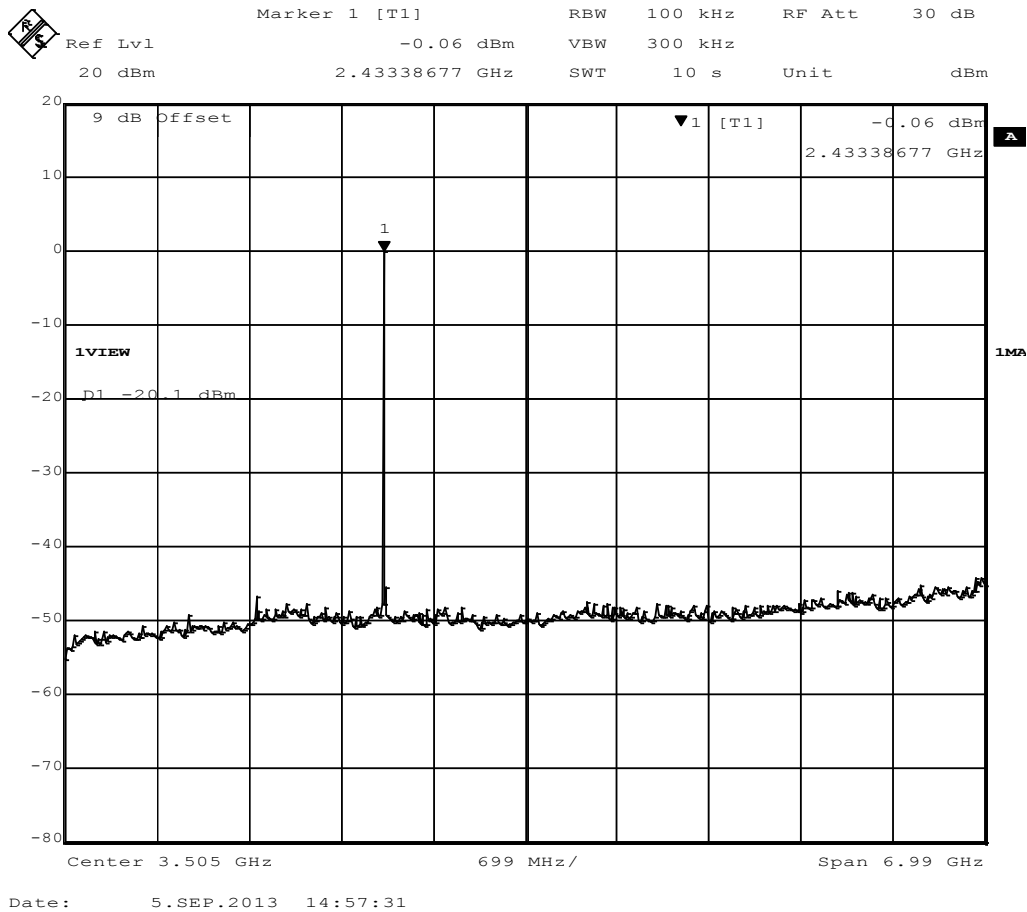
RBW	100 kHz	RF Att	30 dB
VBW	300 kHz		
SWT	10 s	Unit	dBm



Date: 5.SEP.2013 14:55:08

Conducted spurious emissions – DH5-Sngl F_{MID}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
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 / 2441 MHz
Comment 3	GFSK / DH5

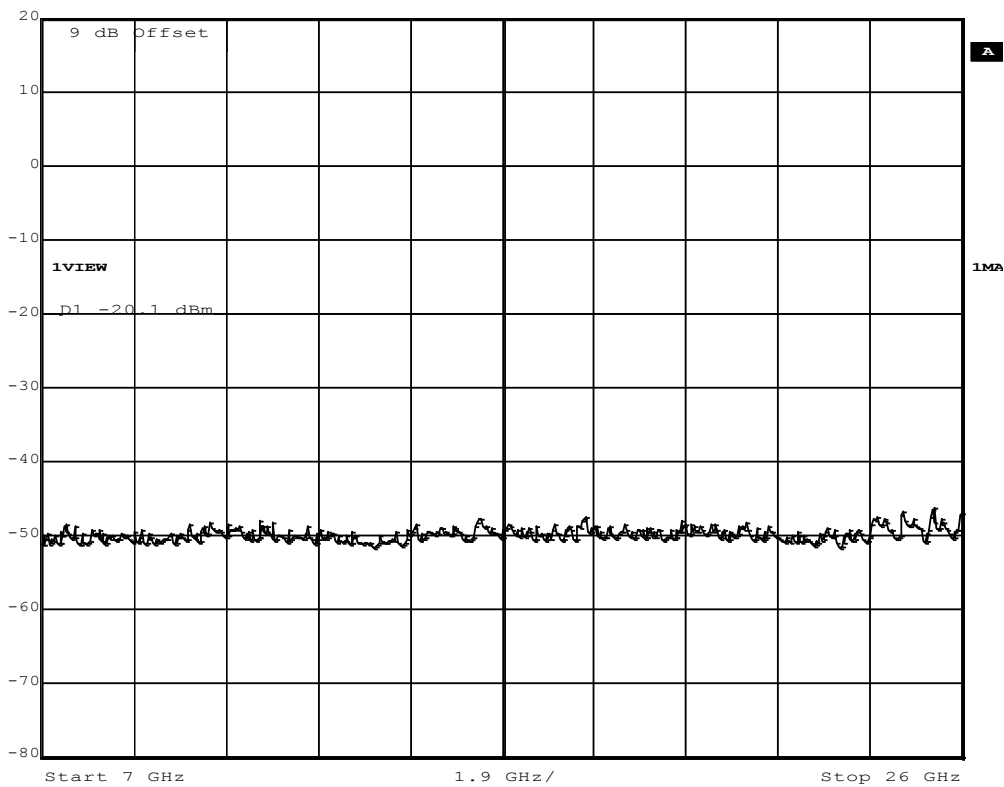


Conducted spurious emissions – DH5-Sngl F_{HIGH}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
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 / 2441 MHz
Comment 3	GFSK / DH5


 Ref Lvl
20 dBm

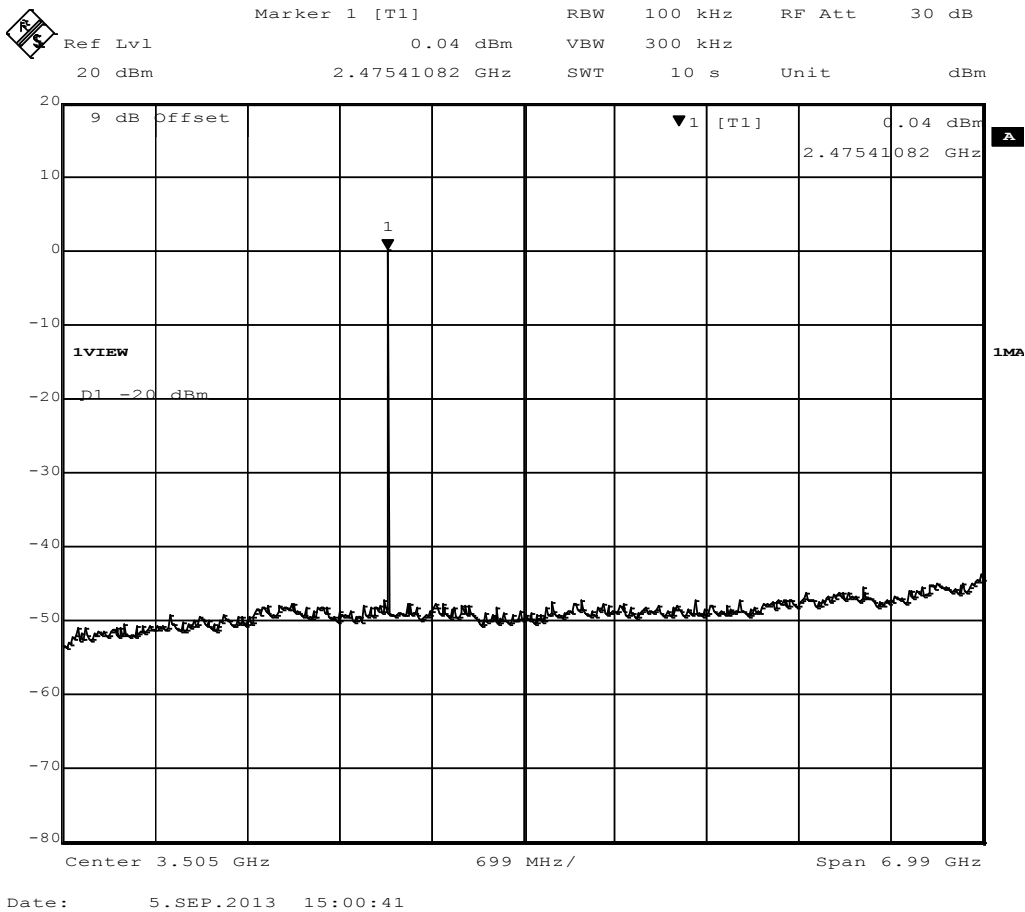
RBW	100 kHz	RF Att	30 dB
VBW	300 kHz		
SWT	10 s	Unit	dBm



Date: 5.SEP.2013 14:58:54

Conducted spurious emissions – DH5-Sngl F_{HIGH}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 78 / 2480 MHz
Comment 3	GFSK / DH5

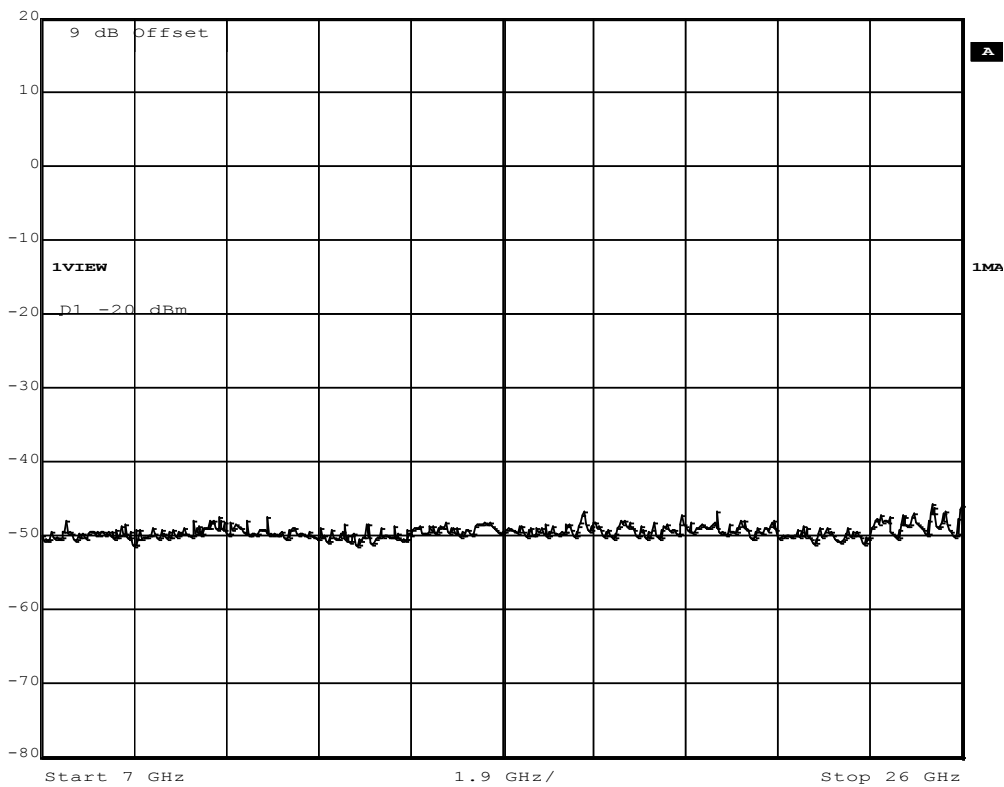


Conducted spurious emissions – DH5-Sngl F_{HIGH}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Class 2 Bluetooth Low Energy Module
Model	ENW89837AXKF / BT1026
Approval Holder	Panasonic Industrial device Europe GmbH / G0M-1208-2160
Temperature / Voltage	Tnom: 24°C / Unom: 3.3V DC
Test Site / Operator	Eurofins Product Service GmbH / Mr. Pudell
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 78 / 2480 MHz
Comment 3	GFSK / DH5

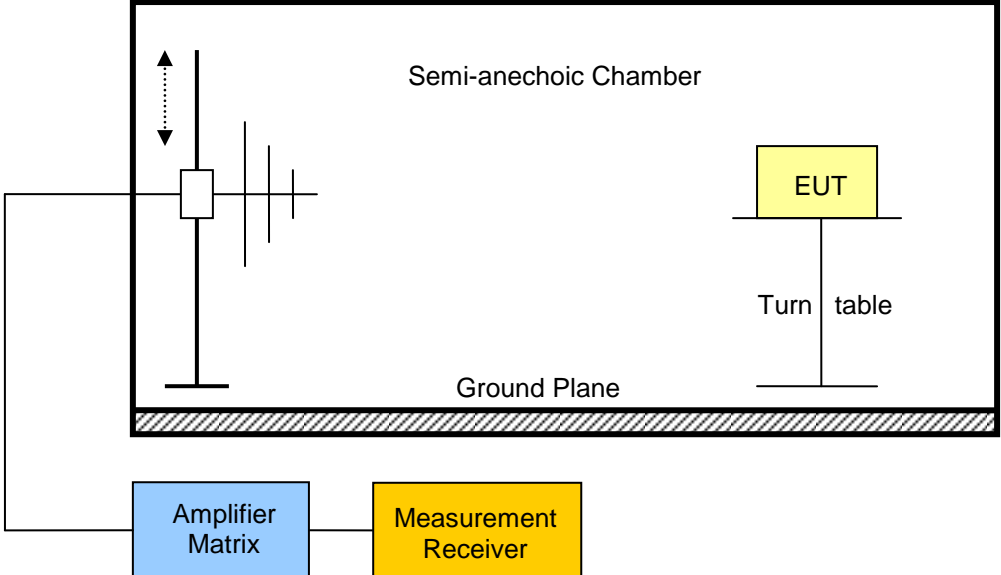

 Ref Lvl
20 dBm

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



Date: 5.SEP.2013 15:01:45

3.10 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 Public Notice DA 00-705 / ANSI C63.4			
Test frequency range		Tested frequencies			
		30 MHz – 10 th Harmonic			
Limits					
Frequency range [MHz]	Detector	Limit [μ V/m]	Limit [dB μ 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. A Semi-anechoic Chamber is shown with a Ground Plane at the bottom. Inside the chamber, an Amplifier Matrix is connected to a Measurement Receiver. The Equipment Under Test (EUT) is placed on a Turn table within the chamber. A vertical antenna is positioned to the left of the chamber, with a dashed arrow indicating its vertical movement. The Amplifier Matrix and Measurement Receiver are located outside the chamber, connected to the internal components.</p>					

Test procedure

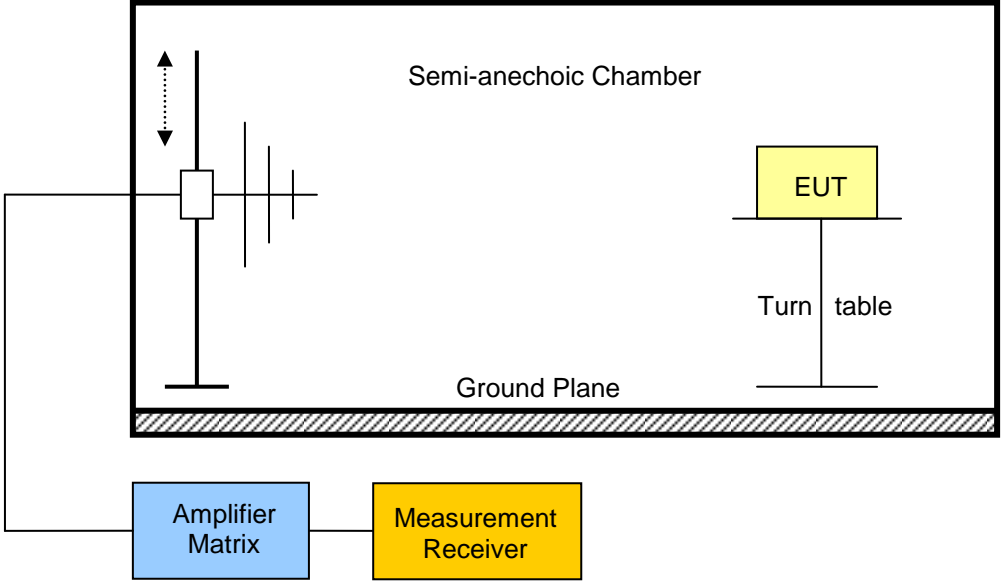
1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4. Markers are set to peak emission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

Test results – Internal Antenna

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dB μ V/m]	Det.	Pol.	Limit [dB μ V/m]	Limit dist. [m]*	Margin [dB]
F _{HIGH}	2480	DH5	2483.5	59.28	pk	ver	74.00	3	-14.72
F _{HIGH}	2480	DH5	2483.5	32.91	avg	ver	54.00	3	-21.09
F _{HIGH}	2480	DH5	2483.5	63.51	pk	hor	74.00	3	-10.49
F _{HIGH}	2480	DH5	2483.5	36.62	avg	hor	54.00	3	-17.38

Comments: * Physical distance between EUT and measurement antenna.

3.11 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 [μ V/m]	Limit [dB μ 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 EUT (Equipment Under Test) is placed on a Turn table. An Amplifier Matrix is connected to the chamber, and its output is fed into a Measurement Receiver. A vertical antenna is positioned to the left of the chamber, with a dashed arrow indicating its vertical movement.</p>				

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}	2441	7.726	**	398.57	pk	500	101.43

Comments:

* Physical distance between EUT and measurement antenna.

** Emission level corresponds to ambient noise floor

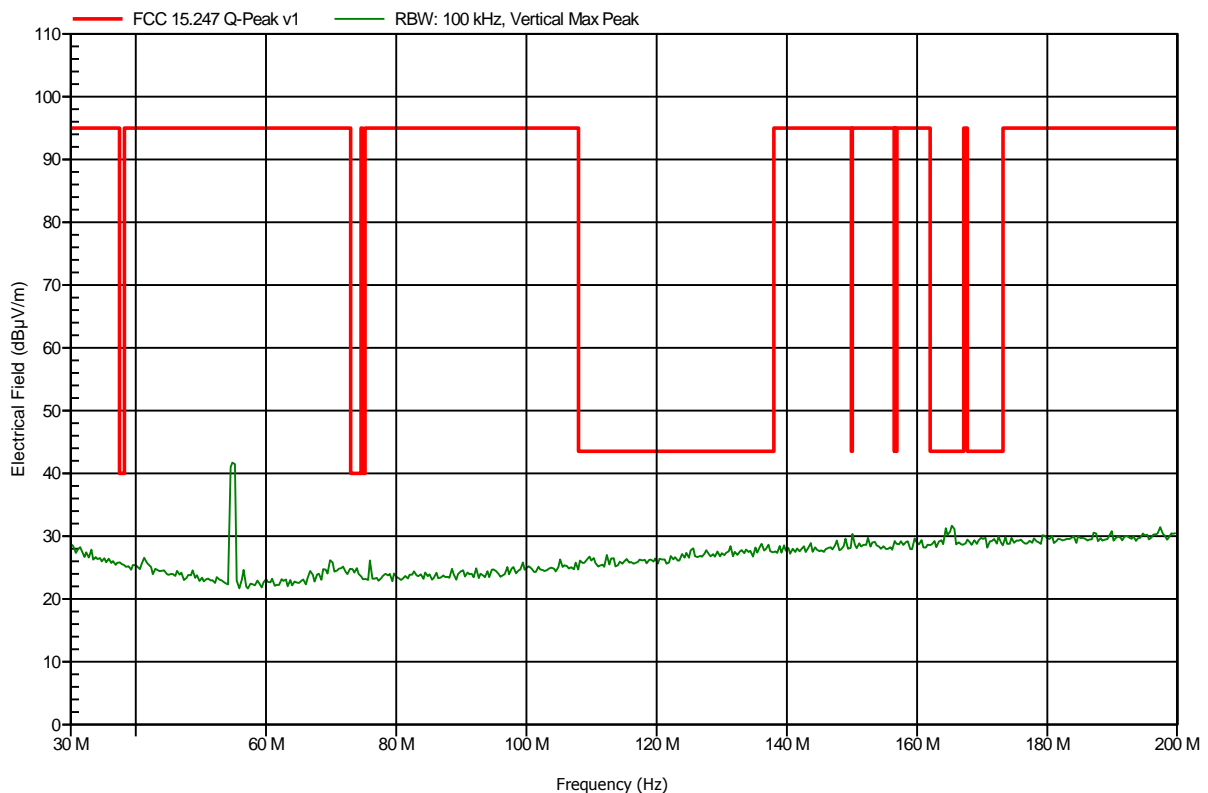
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT Mode; worst case

Index 45

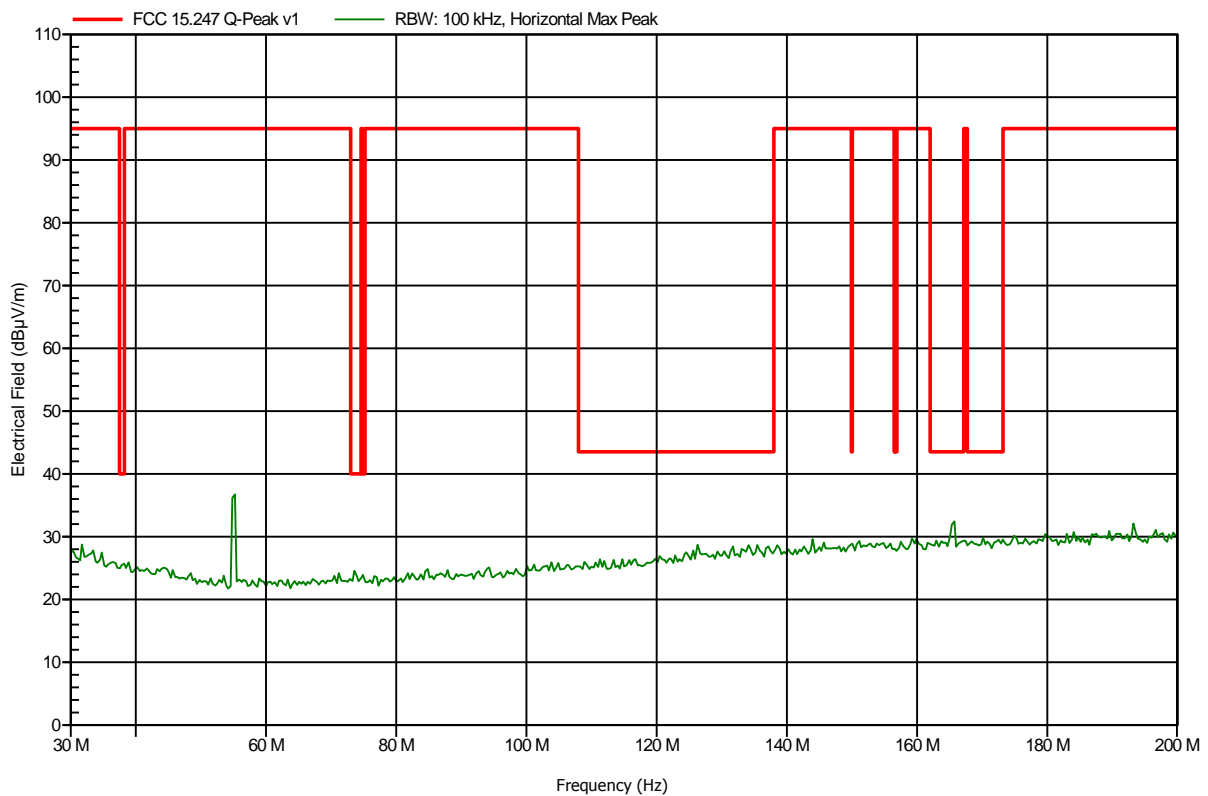


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT Mode; worst case

Index 46

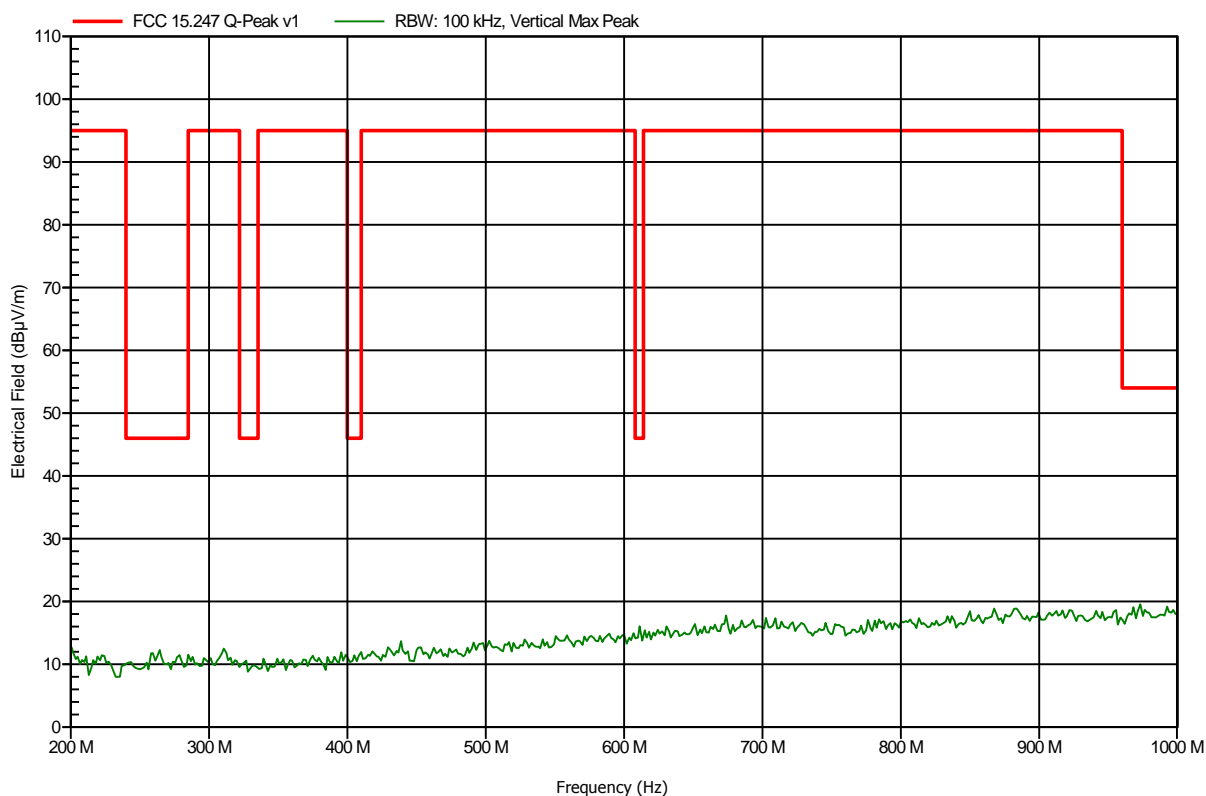


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT Mode; worst case

Index 51

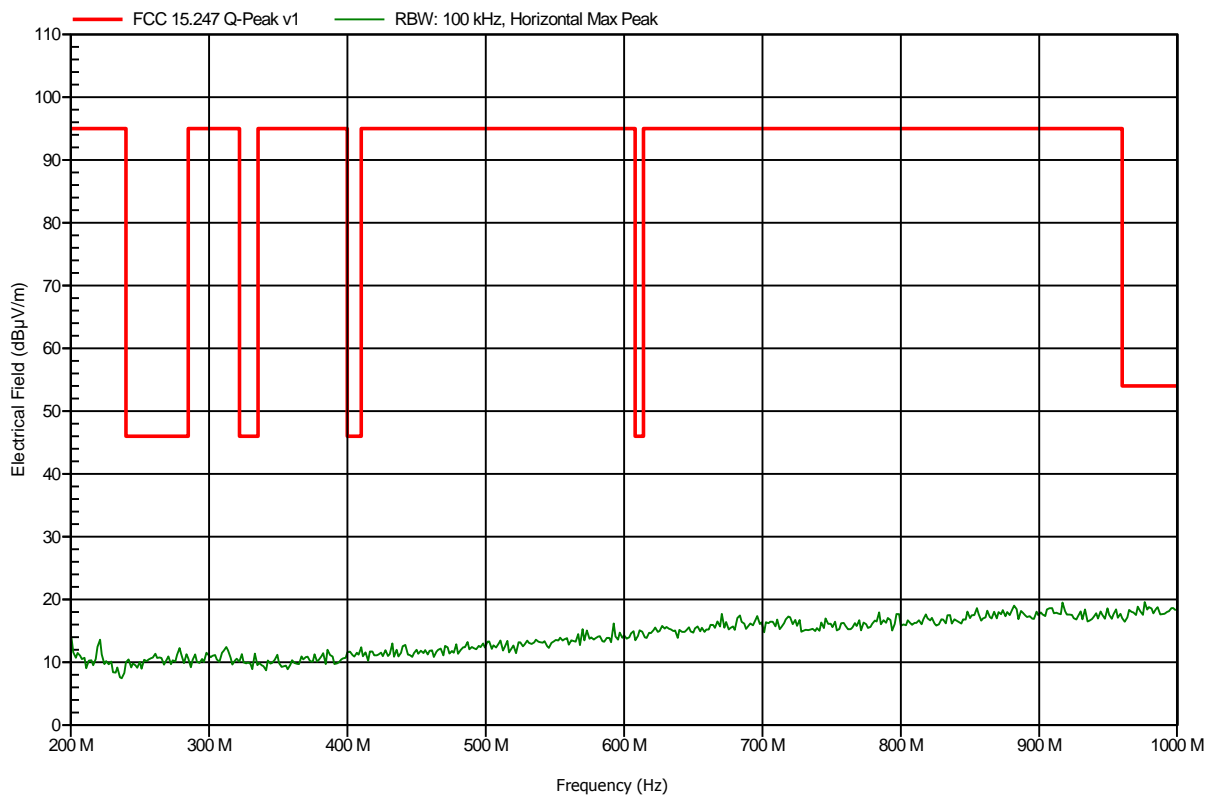


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT Mode; worst case

Index 50

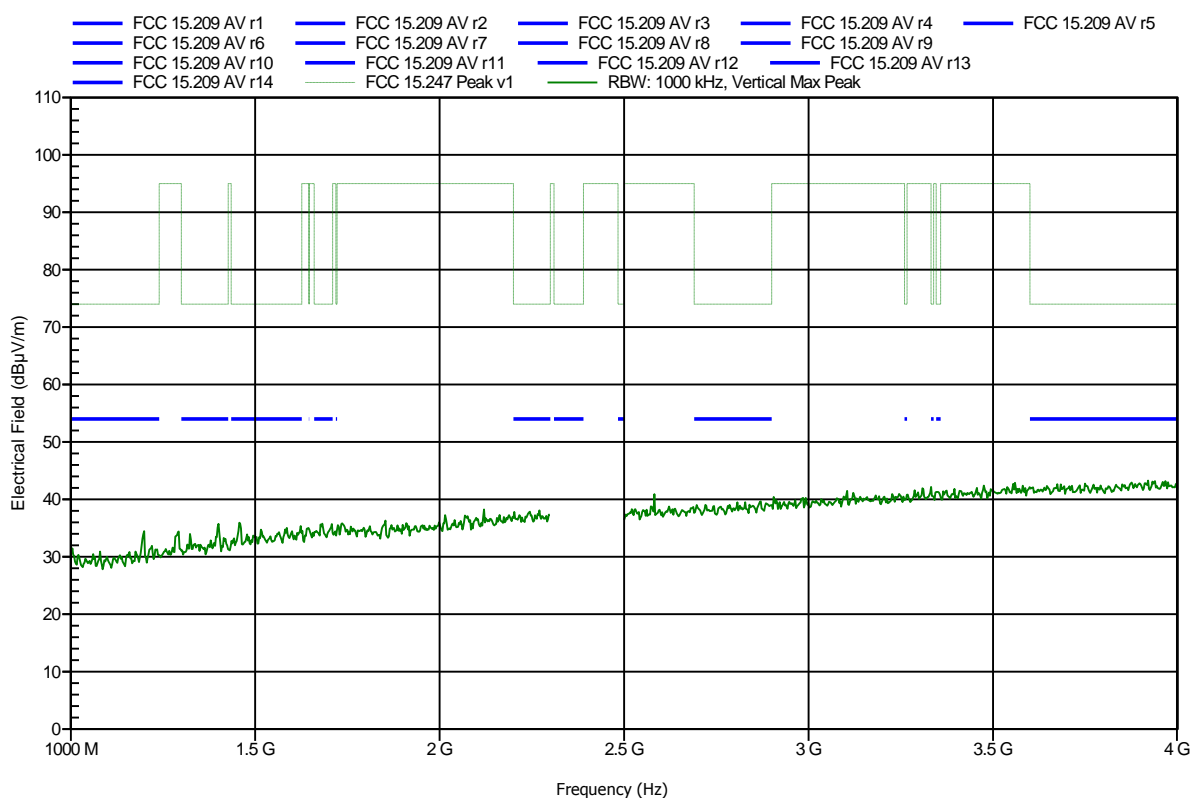


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT mode

Index 8

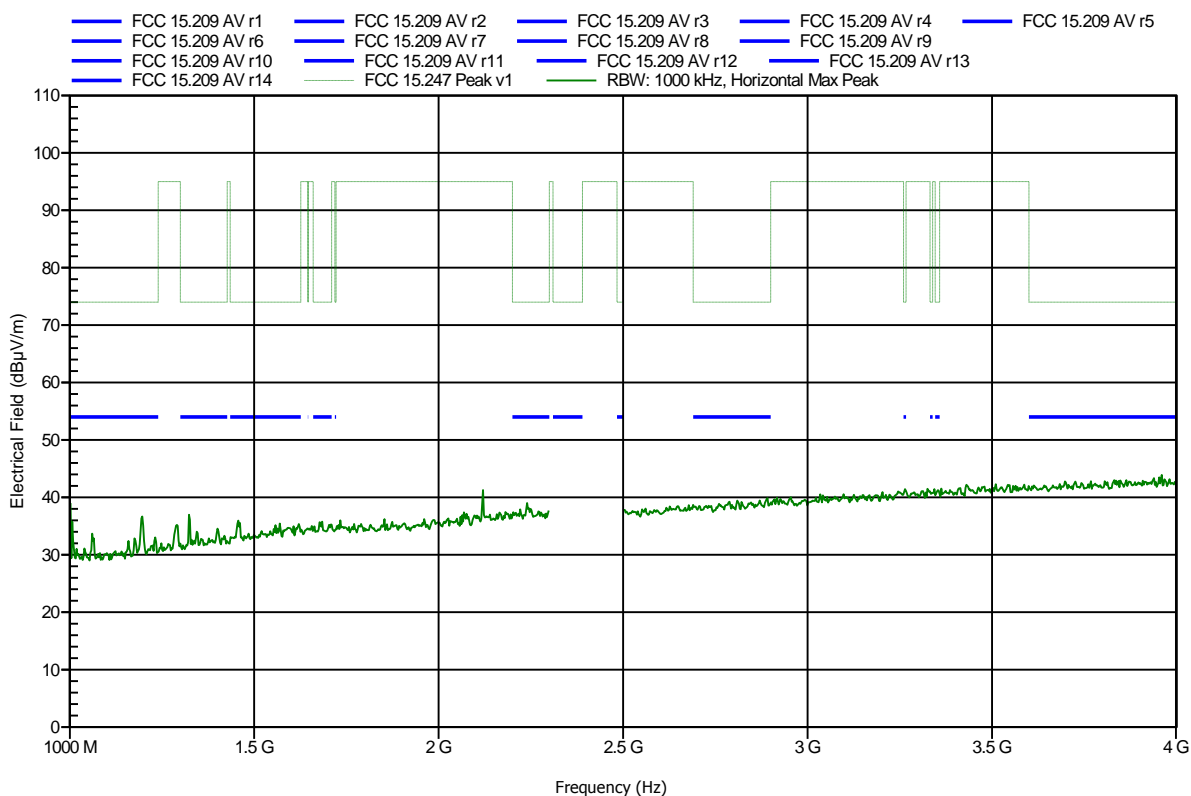


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT mode

Index 11

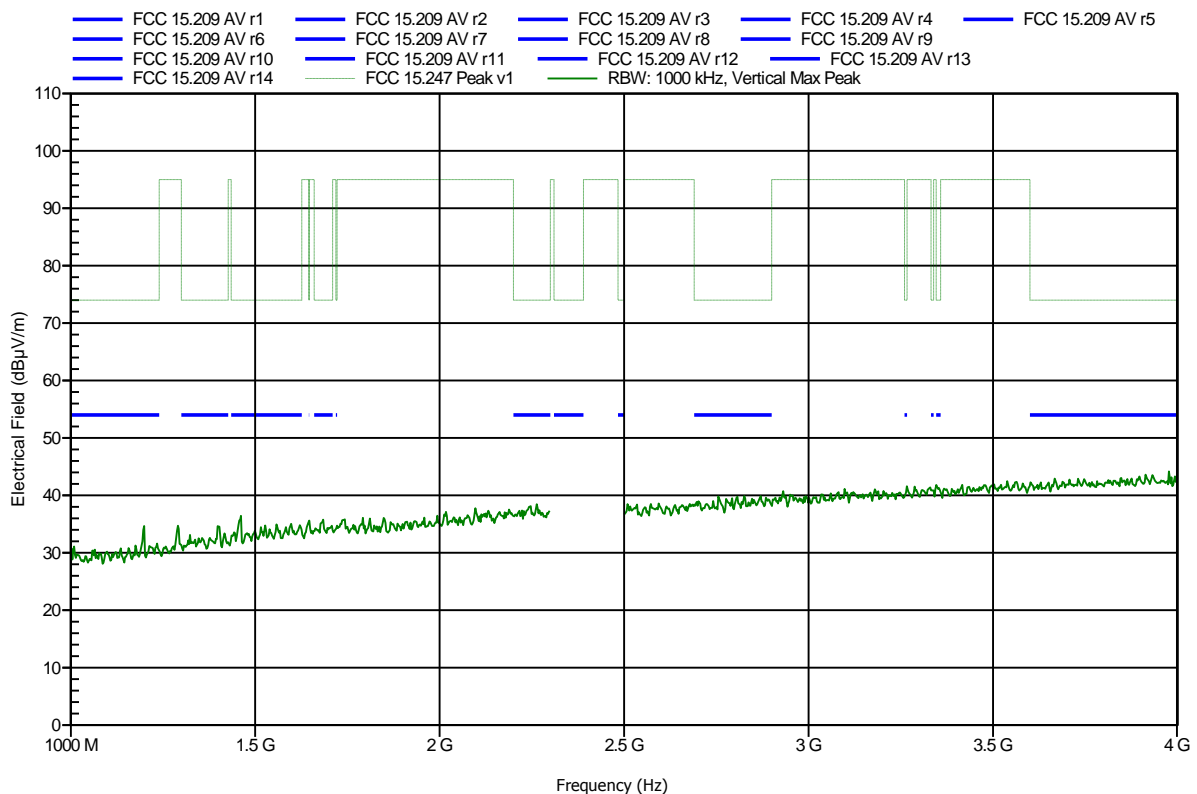


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT Mode

Index 23

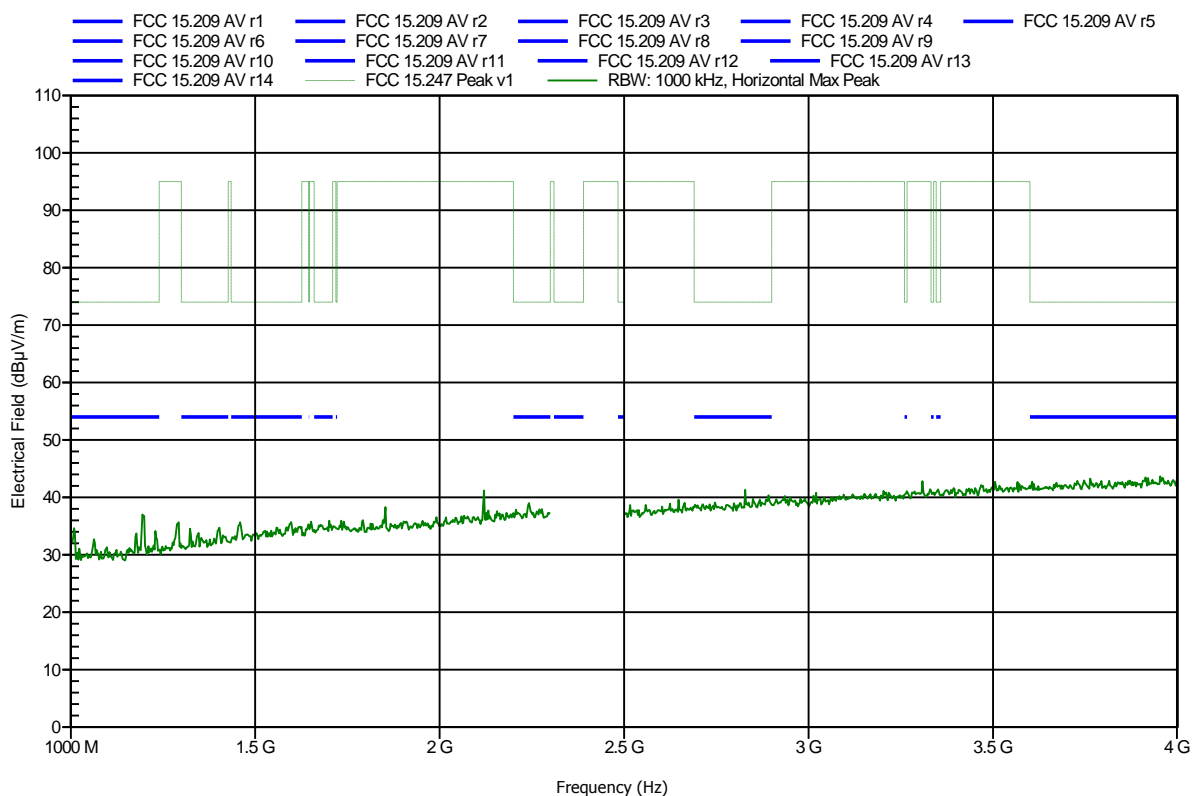


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT mode

Index 14

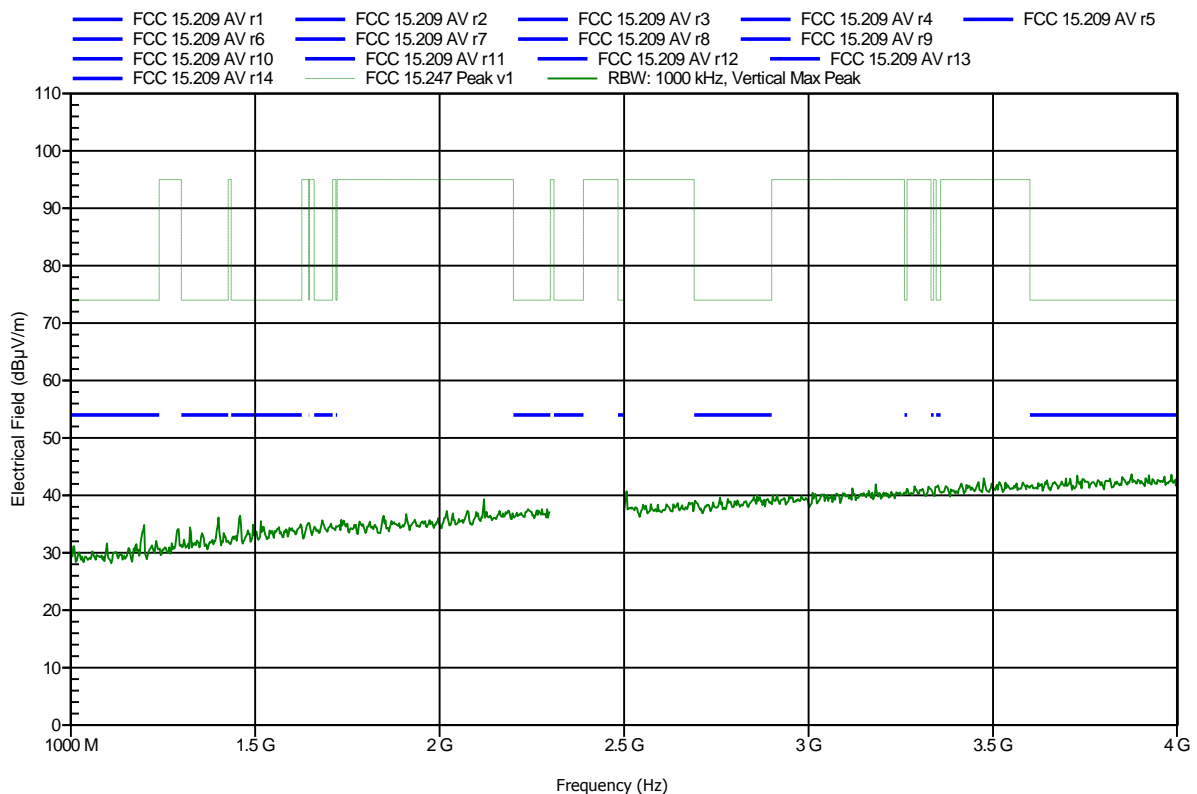


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT Mode

Index 20

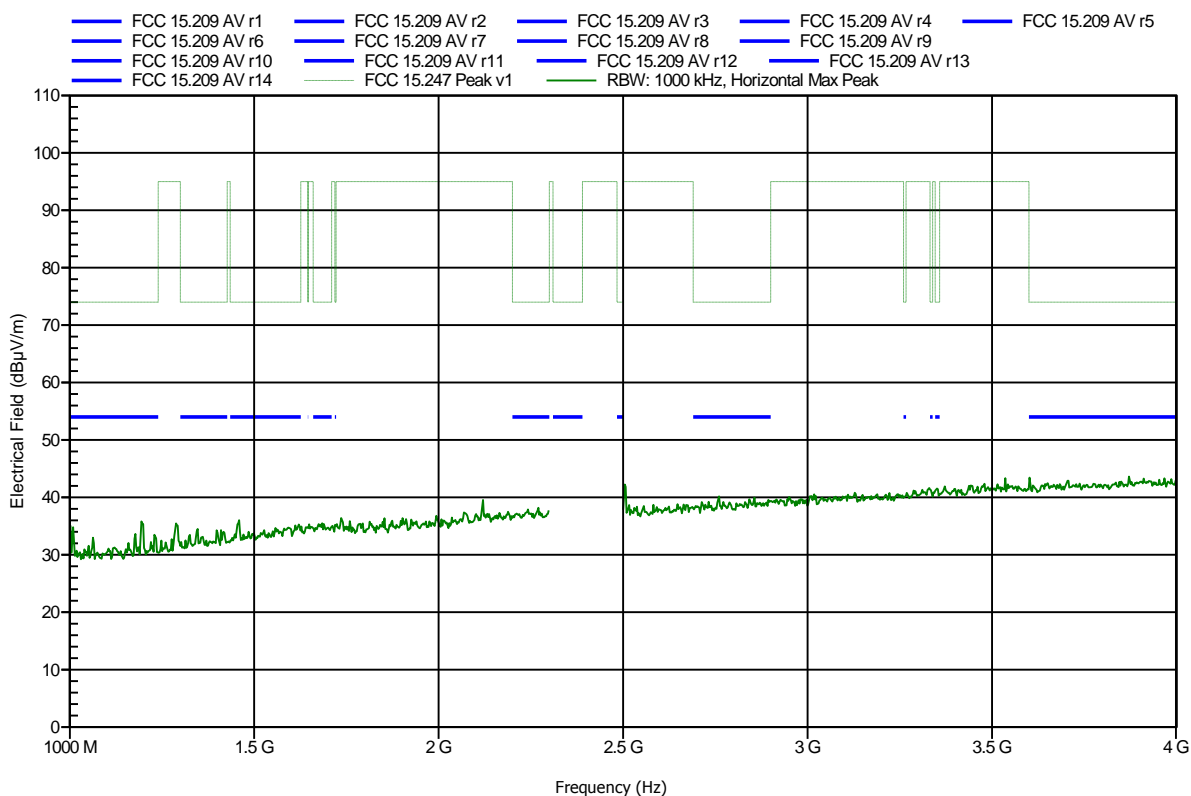


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: EUT horizontal; DUT mode

Index 17

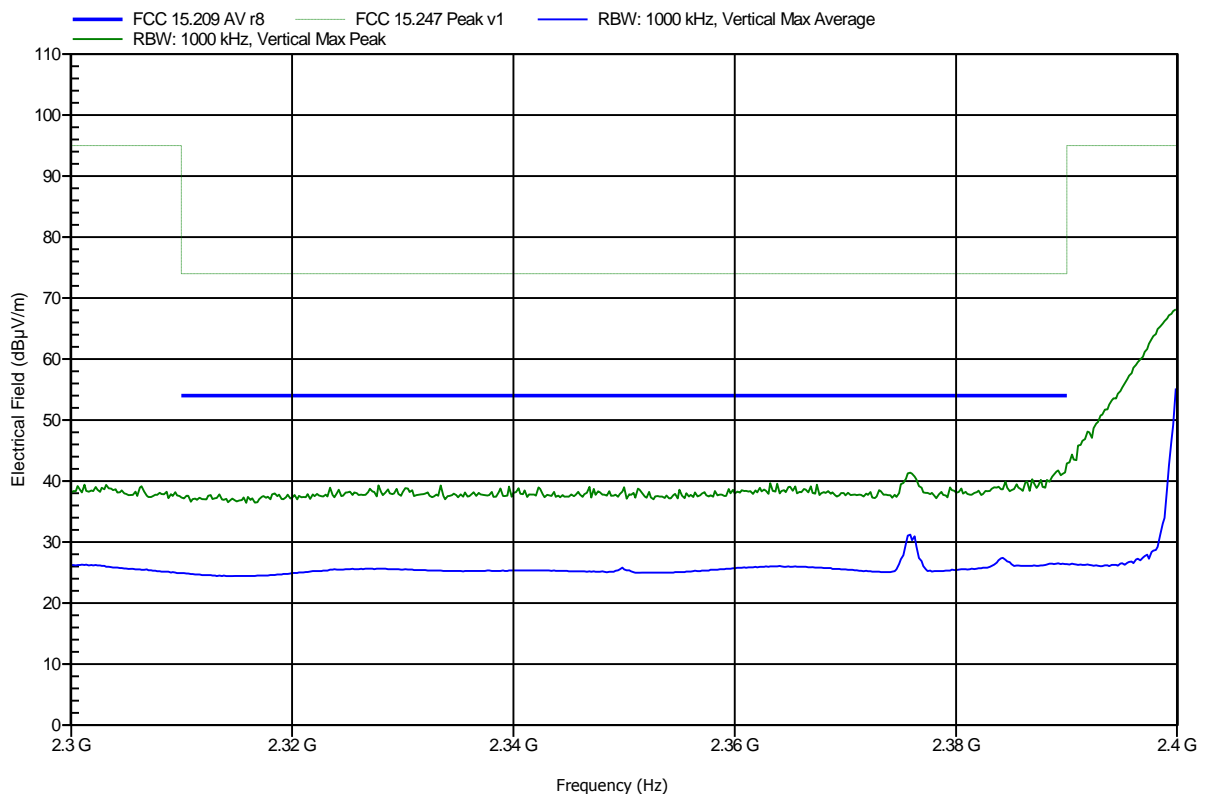


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 9

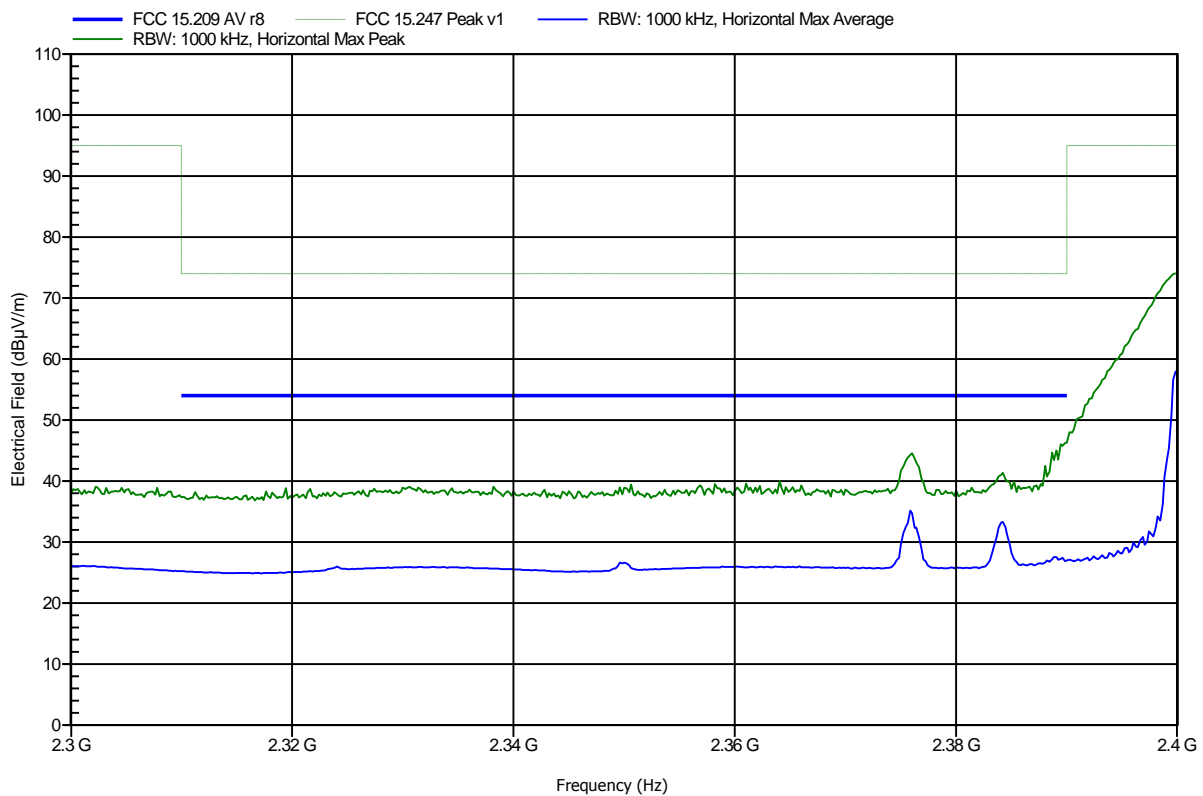


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 12

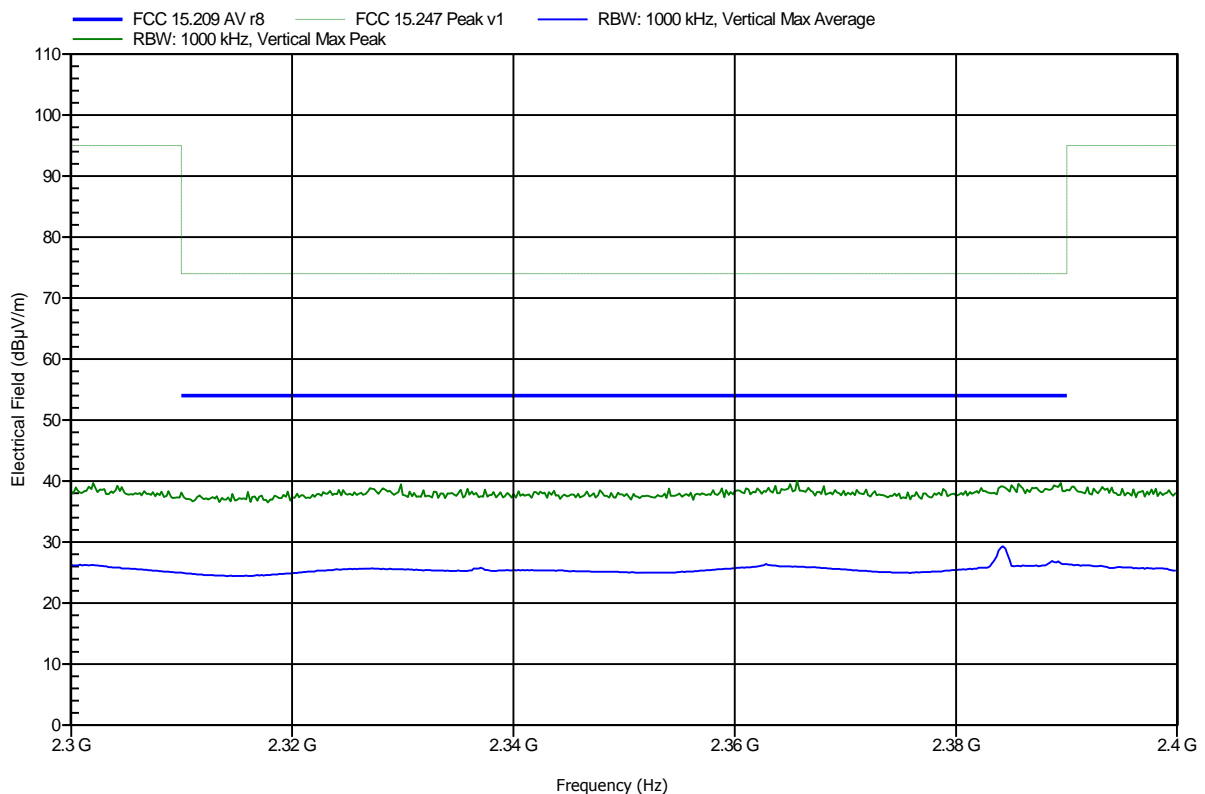


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 24

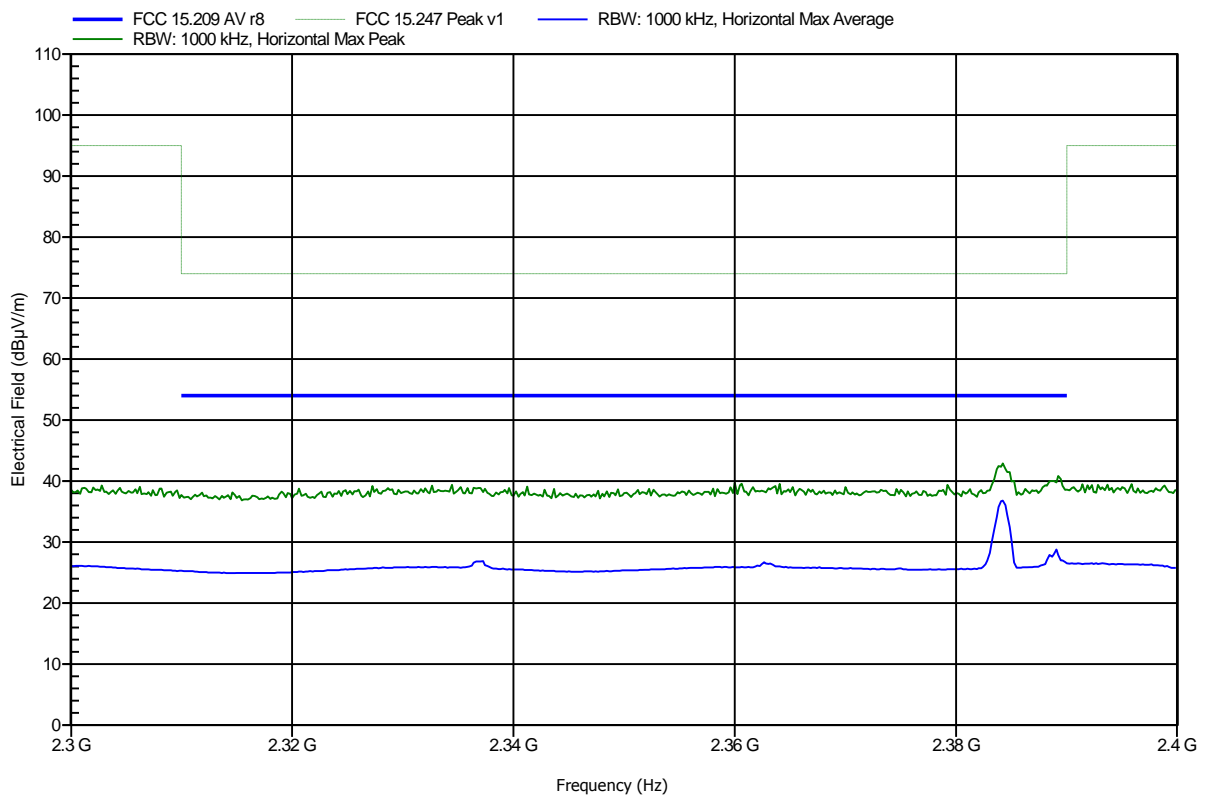


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 15

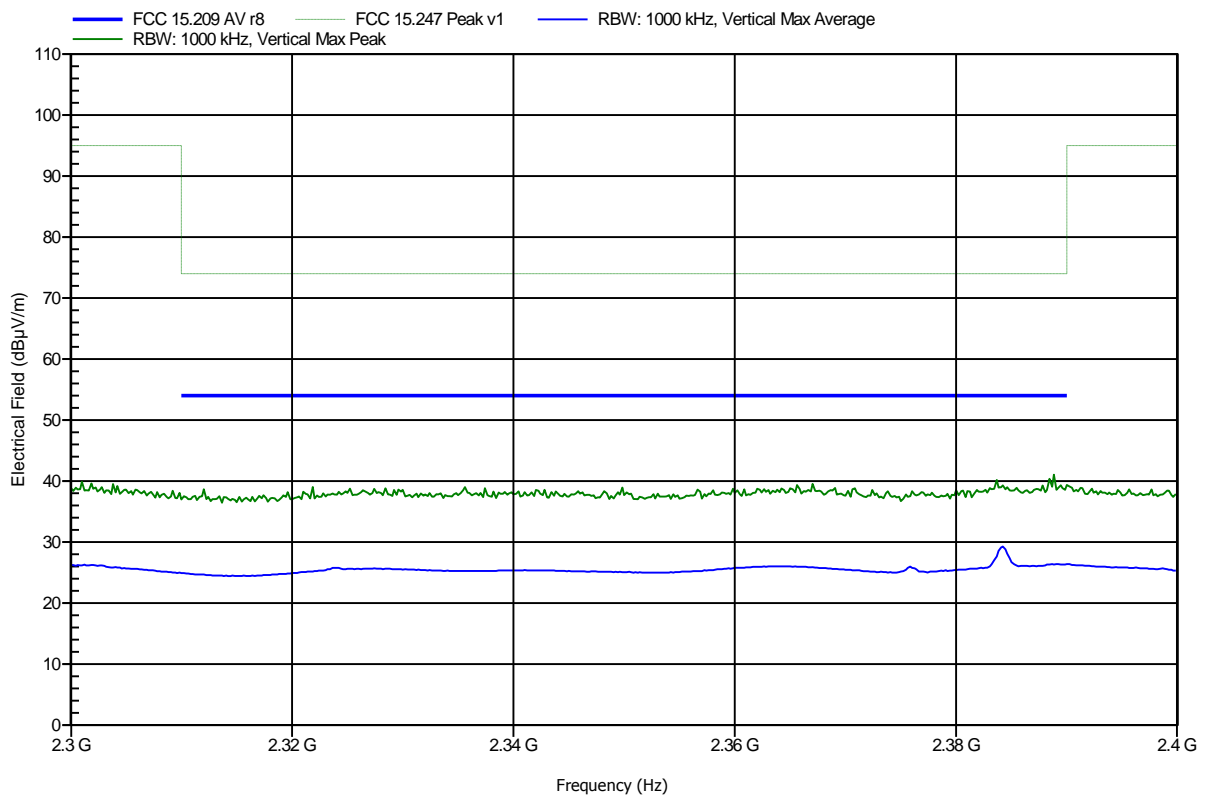


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 21

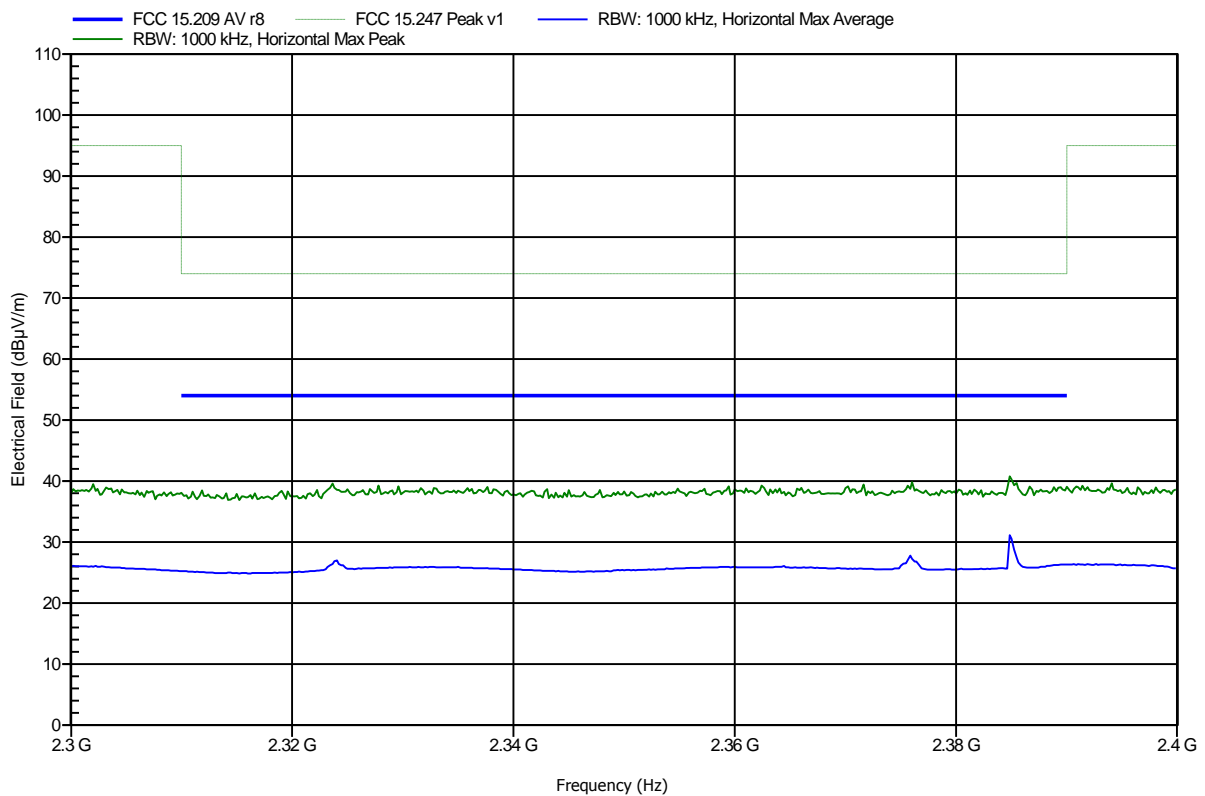


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Lower Band Edge; EUT horizontal; DUT mode

Index 18

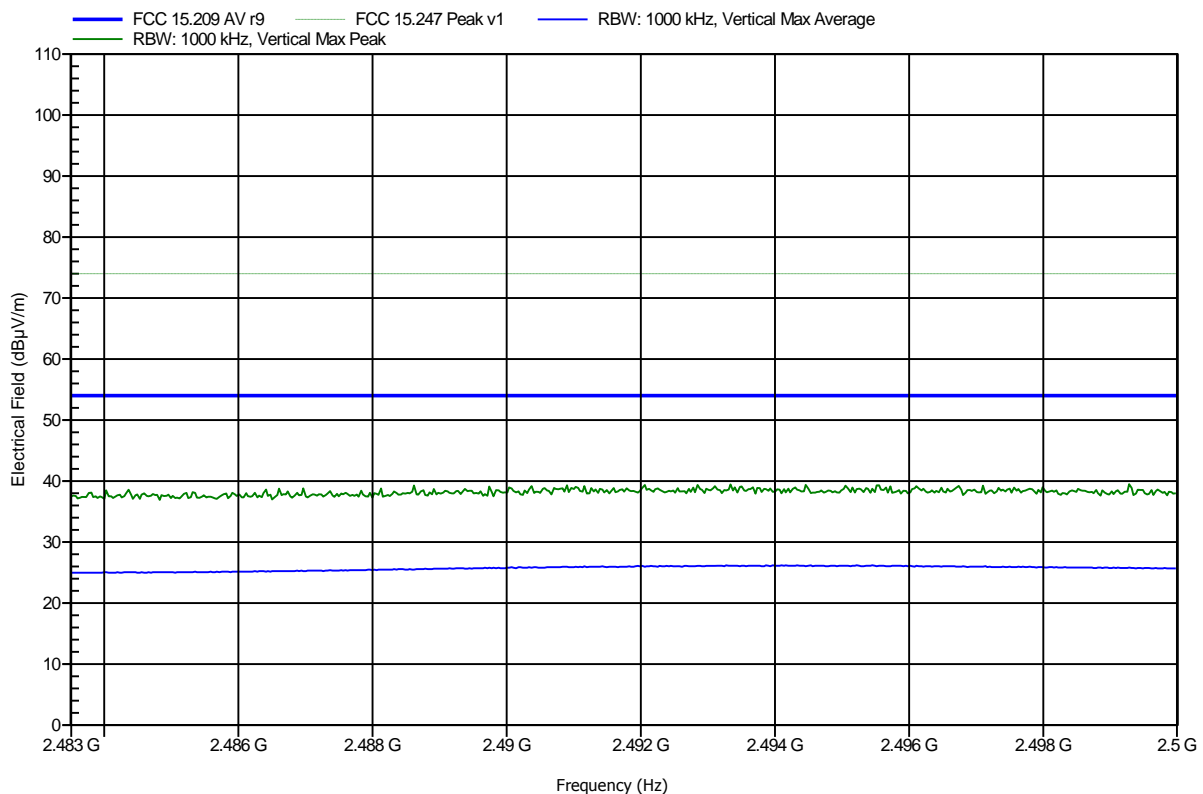


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Upper Band Edge; EUT horizontal; DUT mode

Index 10

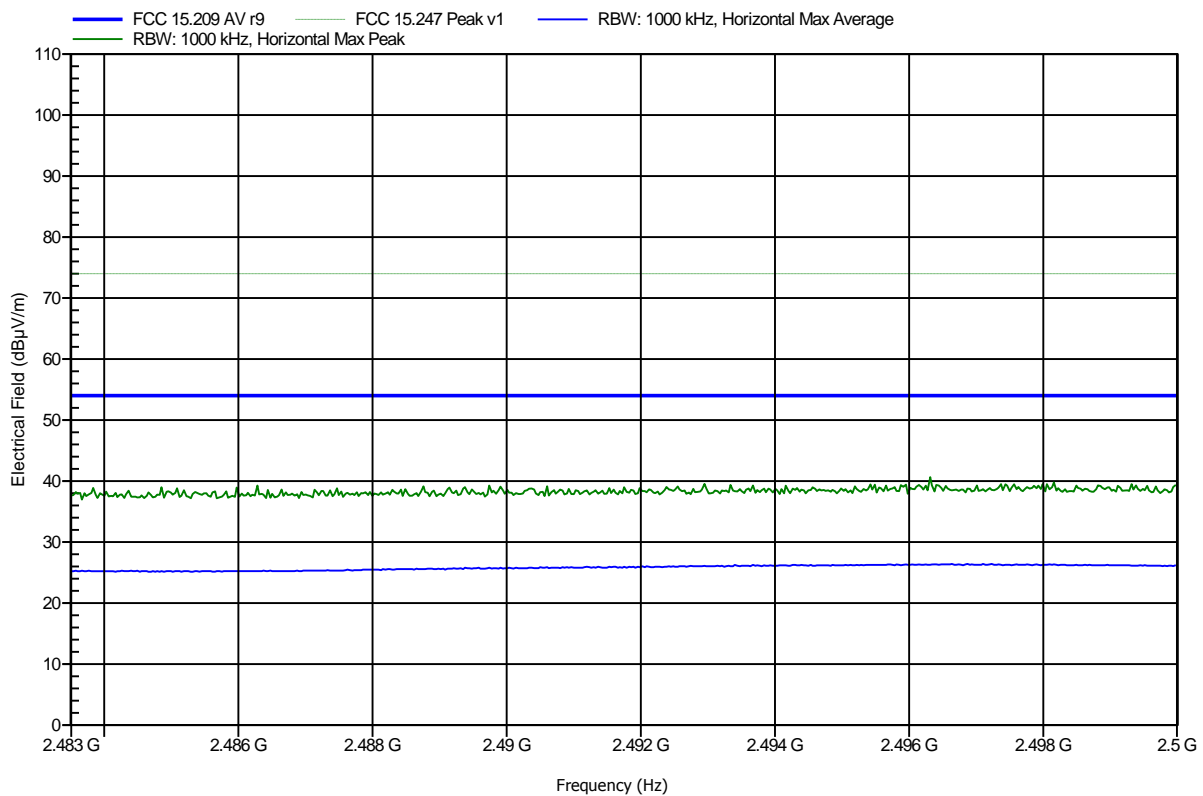


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Upper Band Edge; EUT horizontal; DUT mode

Index 13

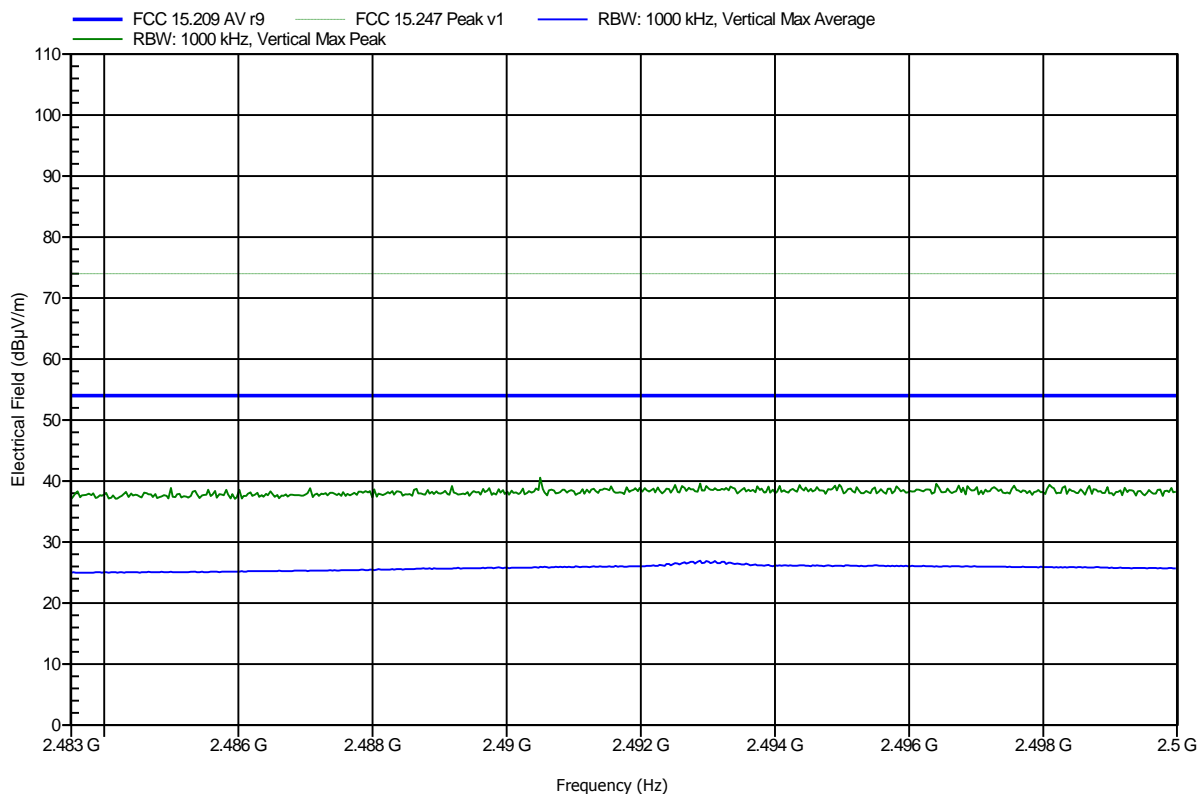


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Upper Band Edge; EUT horizontal; DUT mode

Index 25

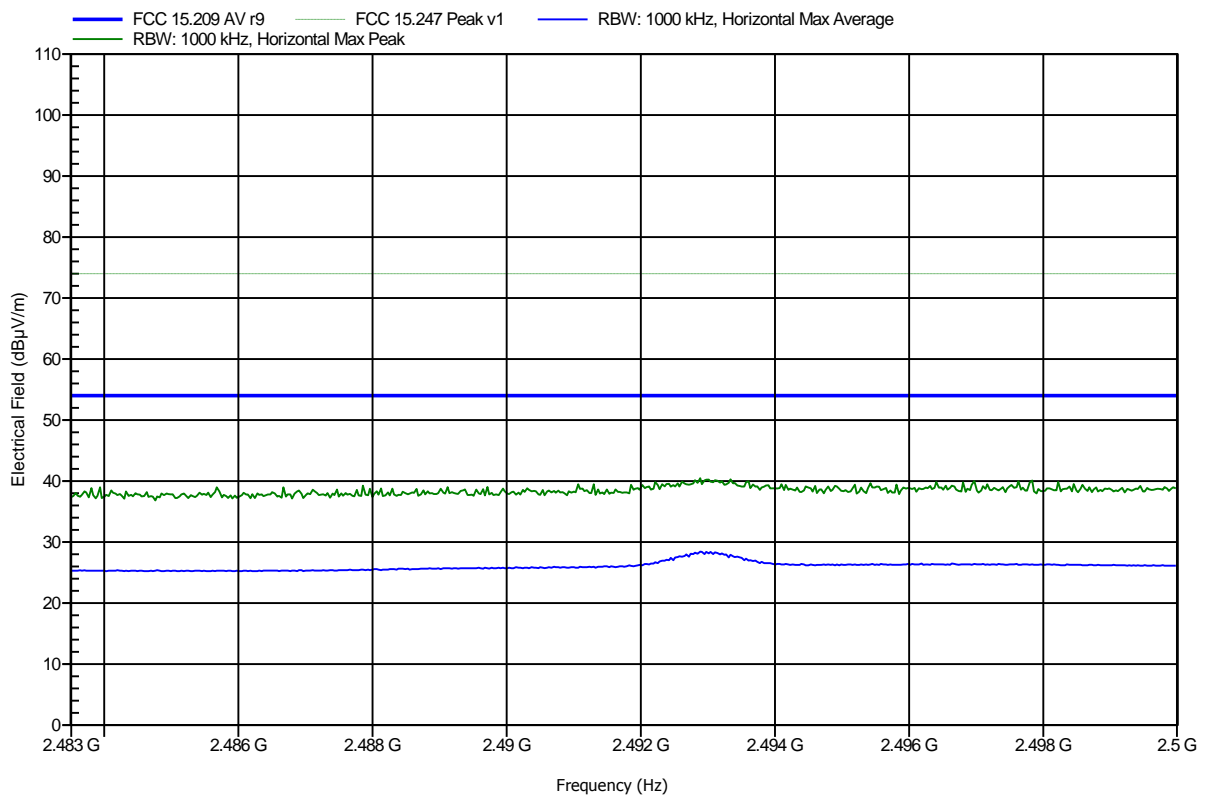


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-03
Note:	Upper Band Edge; EUT horizontal; DUT mode

Index 16

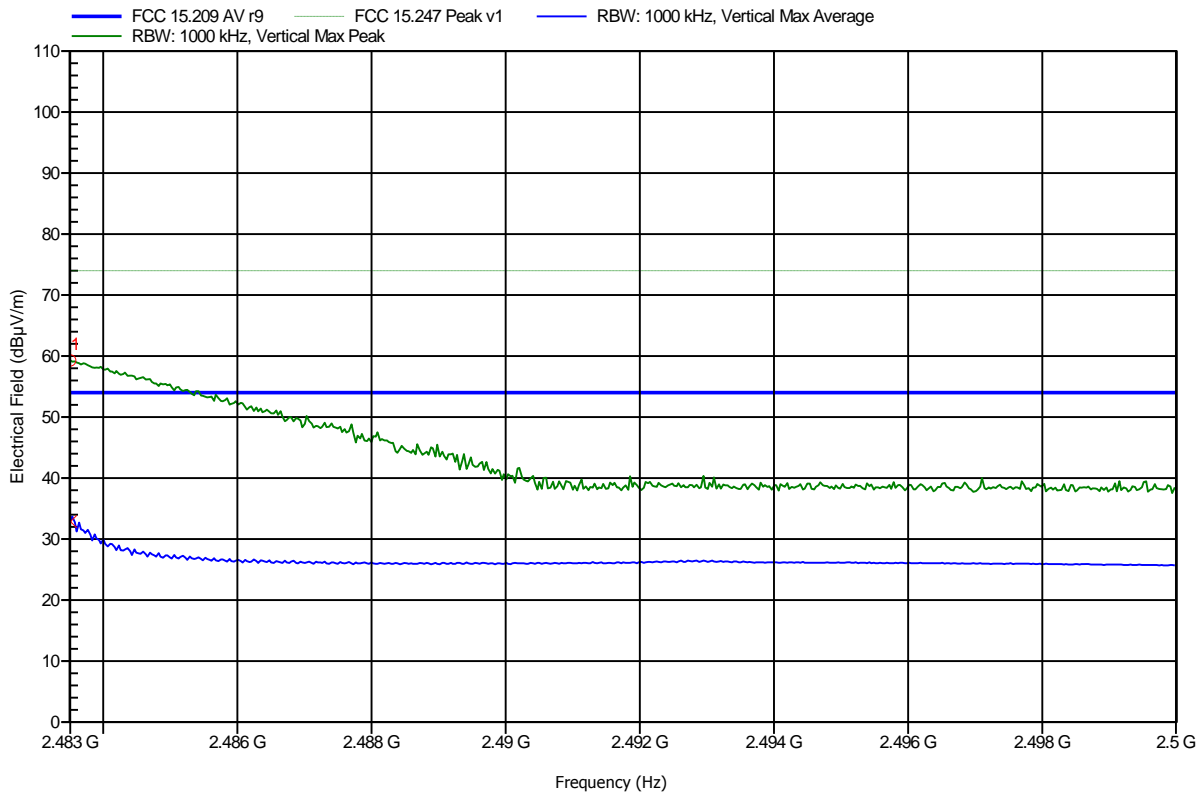


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: Upper Band Edge; EUT horizontal; DUT mode

Index 22



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4835 GHz	59.28 dBµV/m	74 dBµV/m	-14.72 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.4835 GHz	32.91 dBµV/m	54 dBµV/m	-21.09 dB	Pass

Test Report No.: G0M-1208-2160-TFC247B-V01

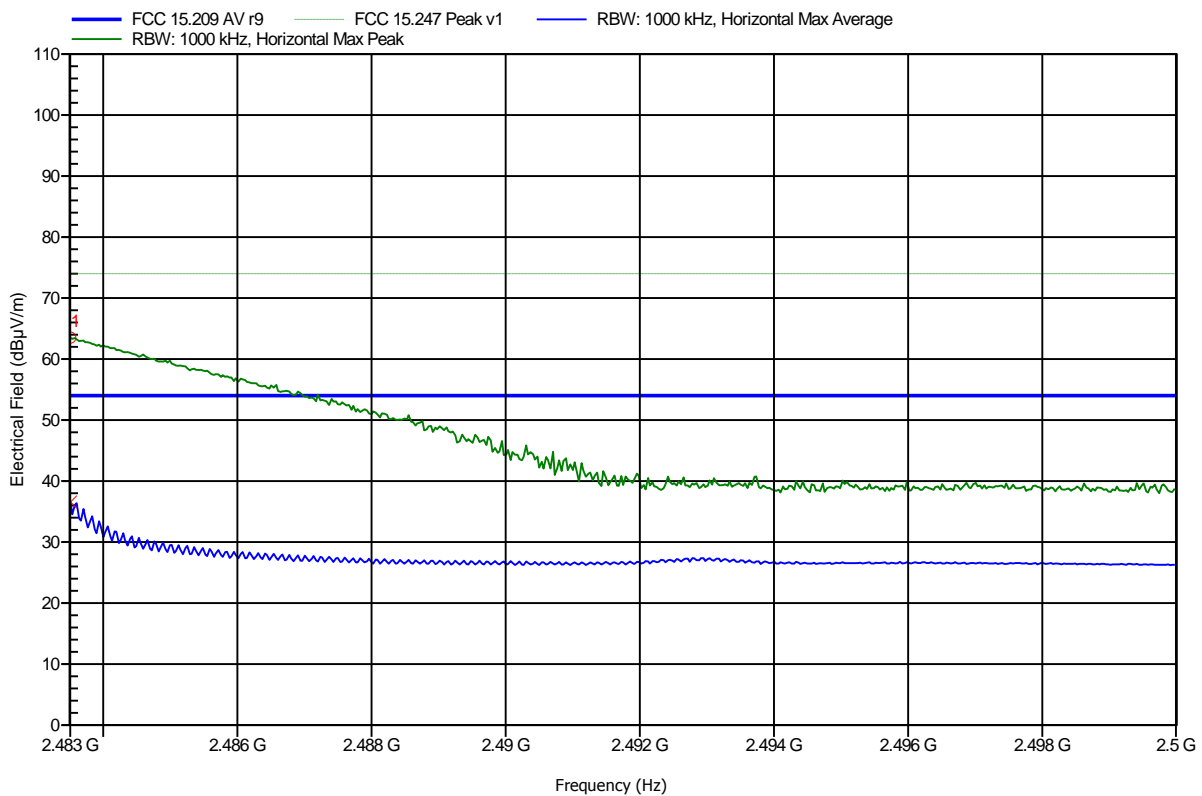
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-03
 Note: Upper Band Edge; EUT horizontal; DUT mode

Index 19



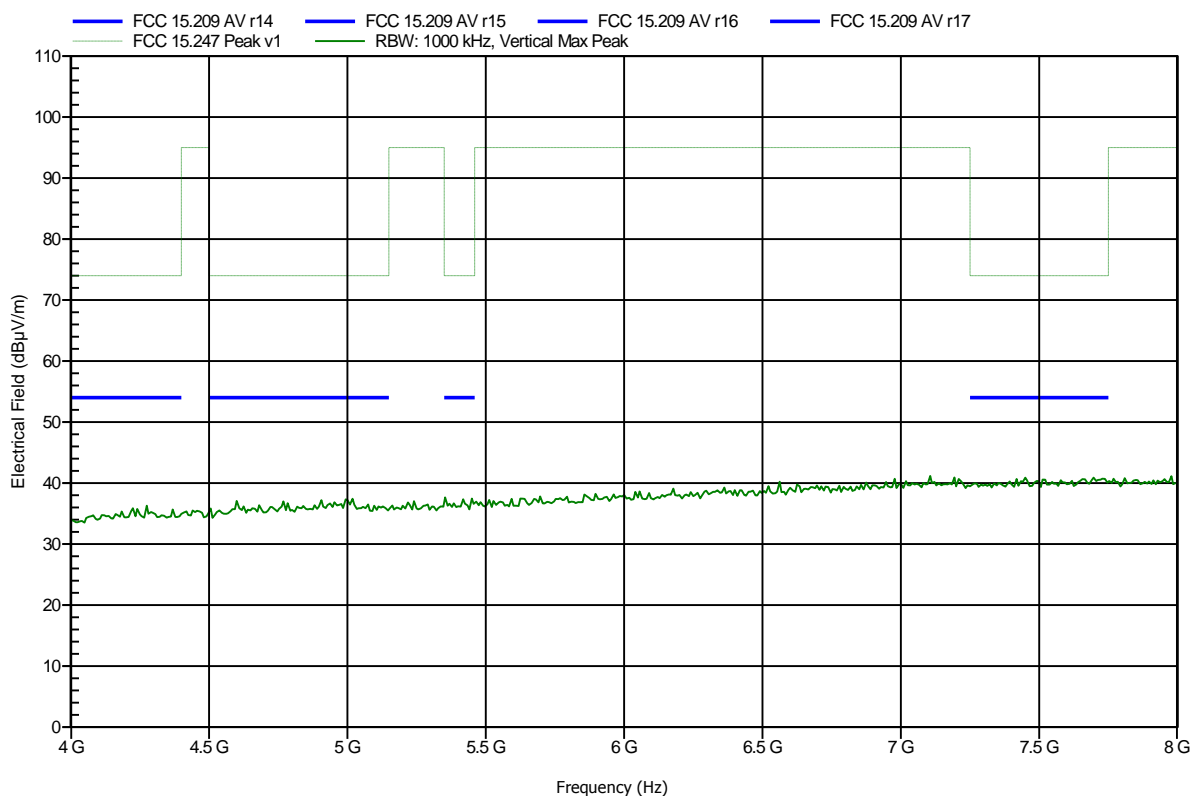
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4835 GHz	63.51 dBµV/m	74 dBµV/m	-10.49 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.4835 GHz	36.62 dBµV/m	54 dBµV/m	-17.38 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 26

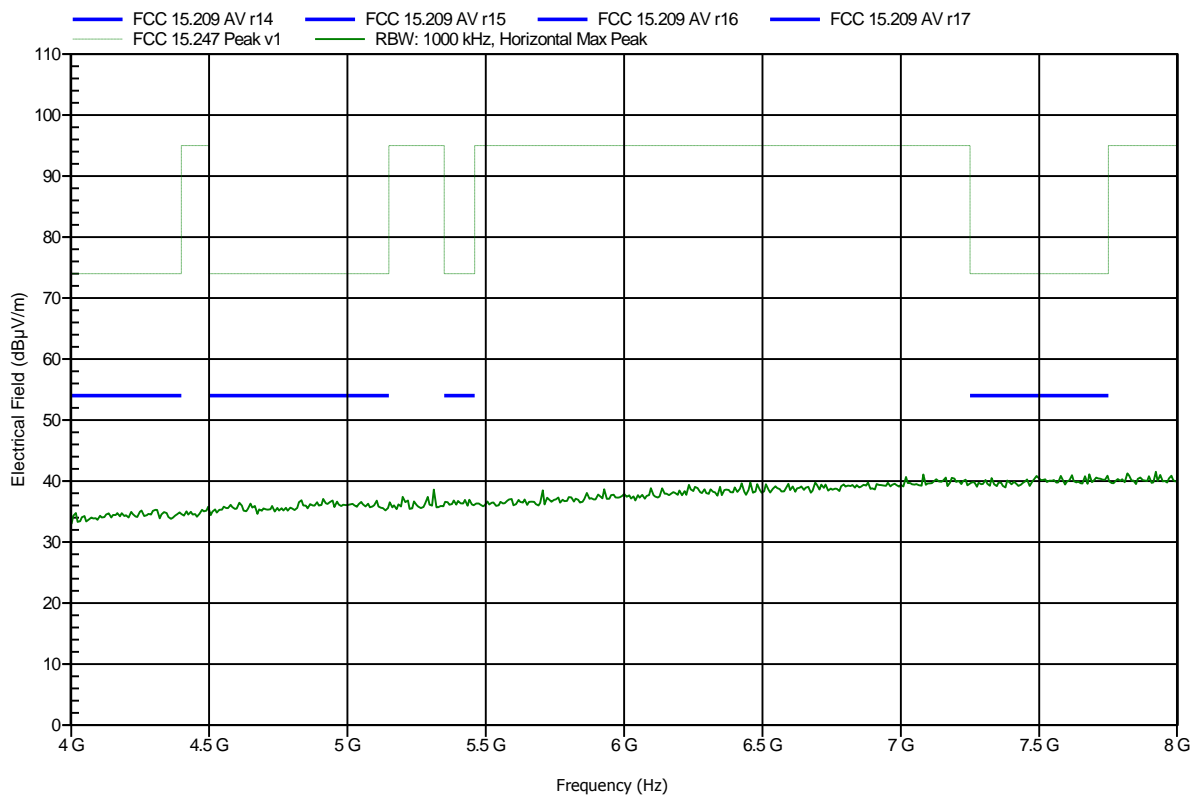


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 42

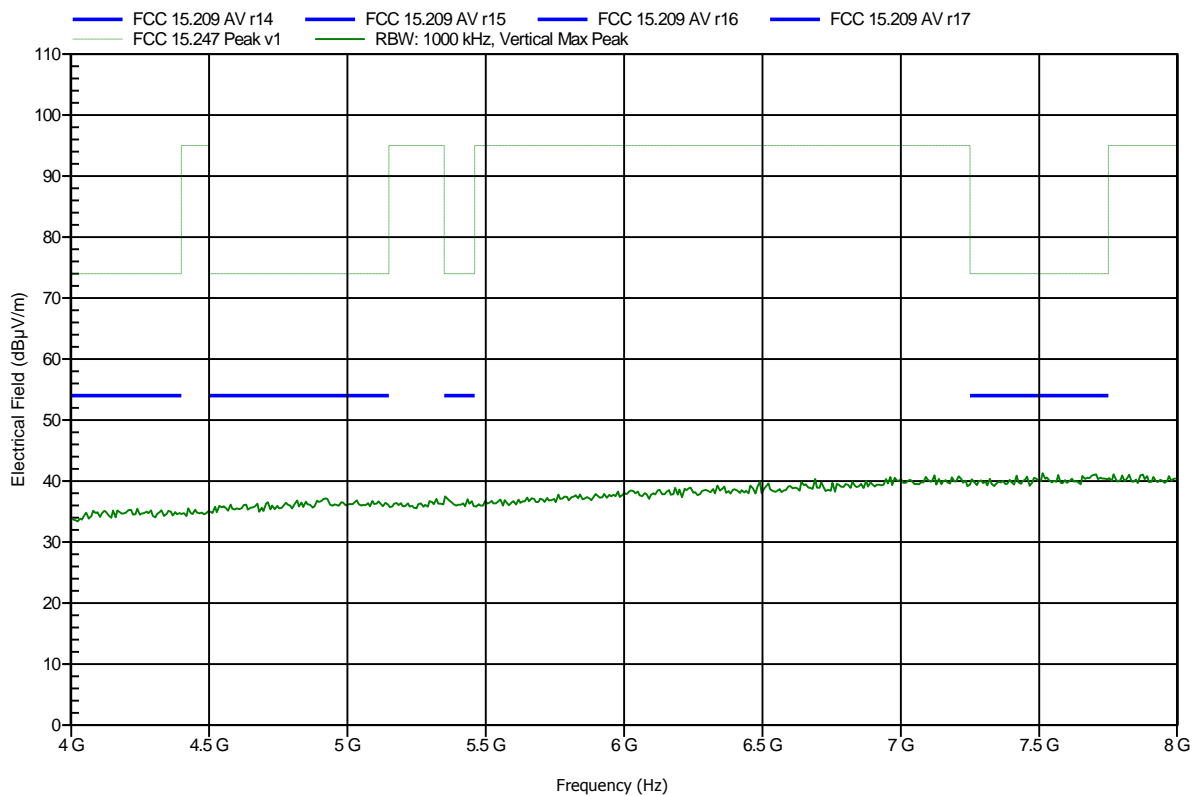


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 29

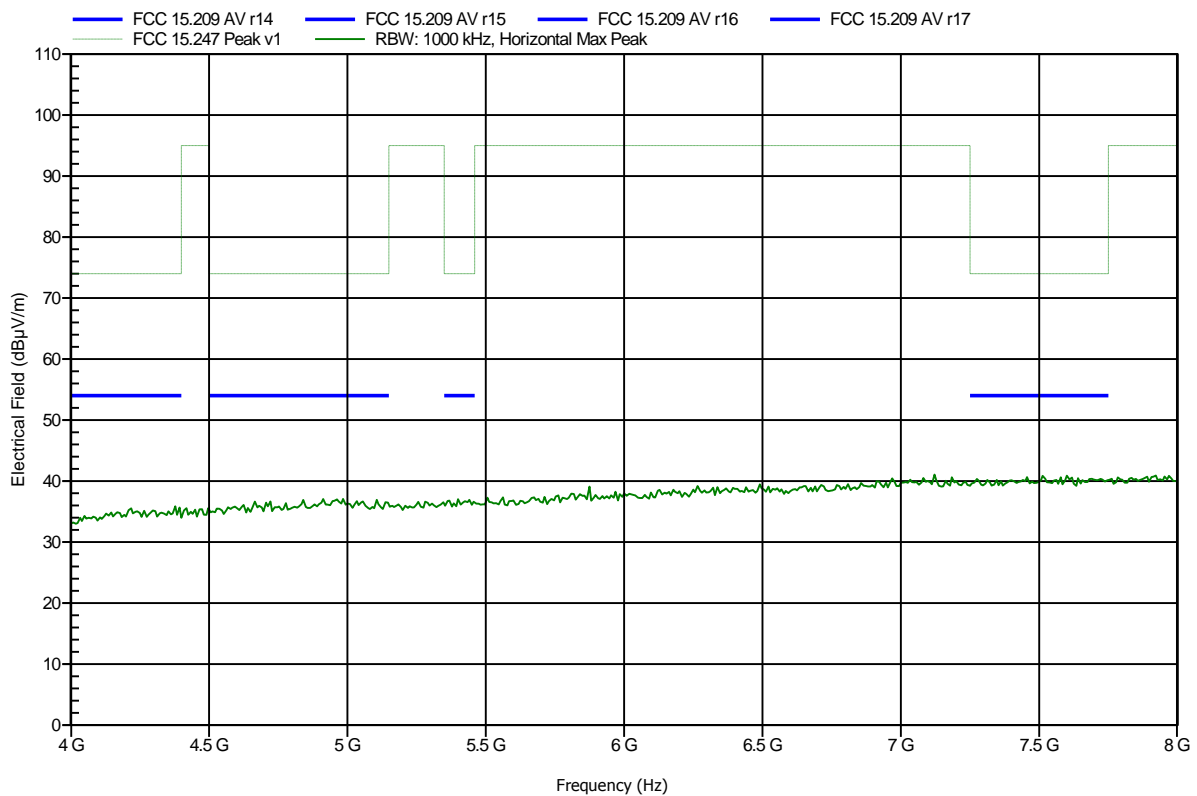


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 39

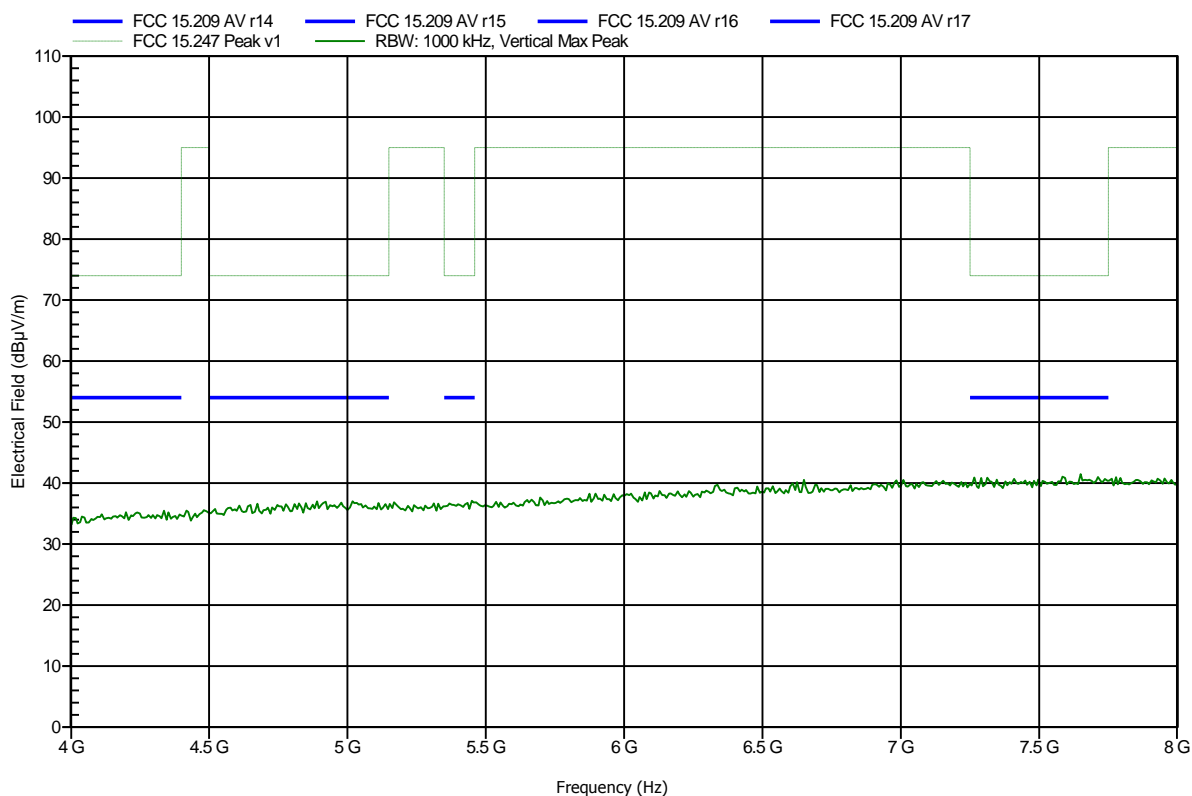


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 32

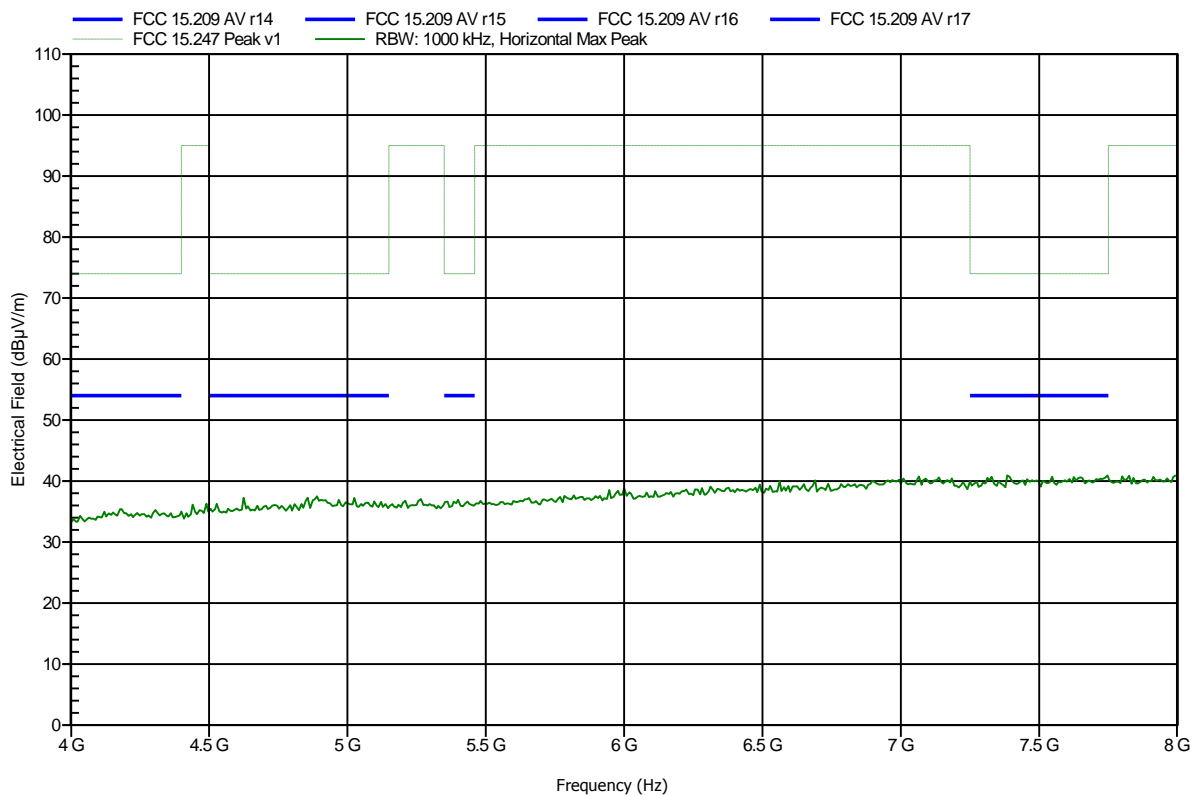


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 35

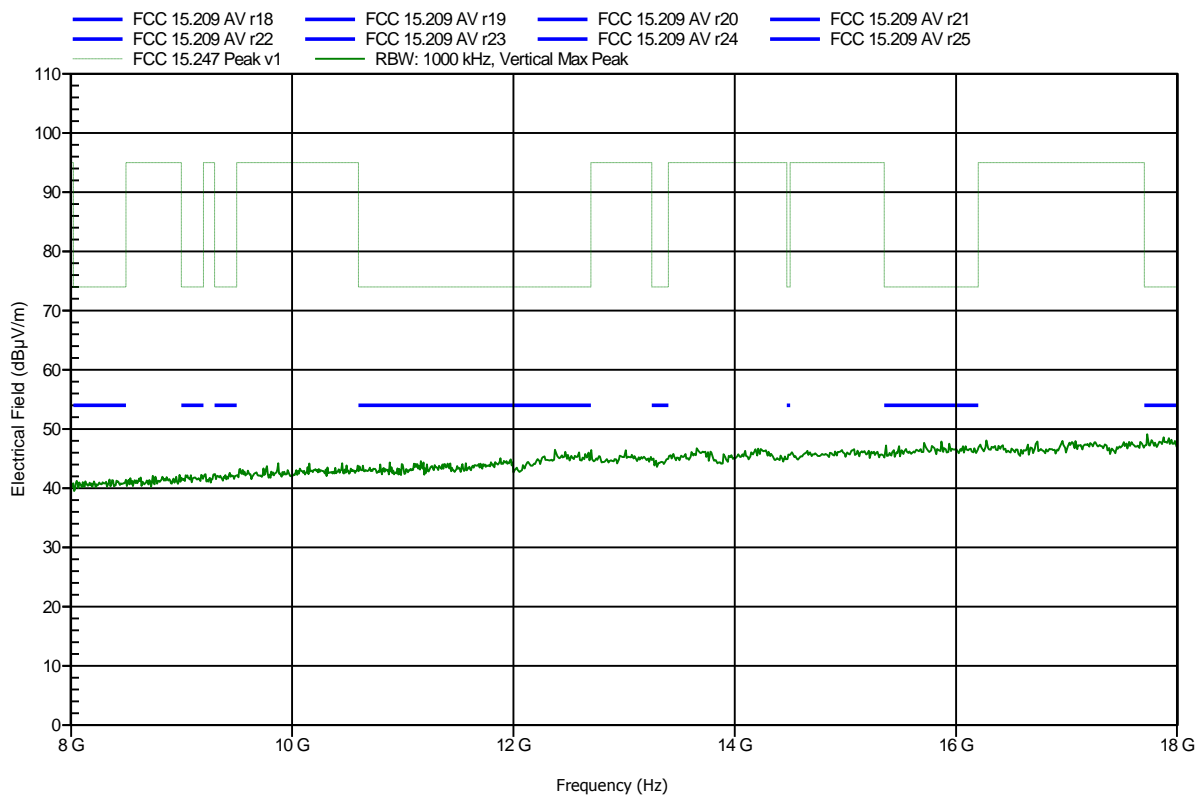


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 27

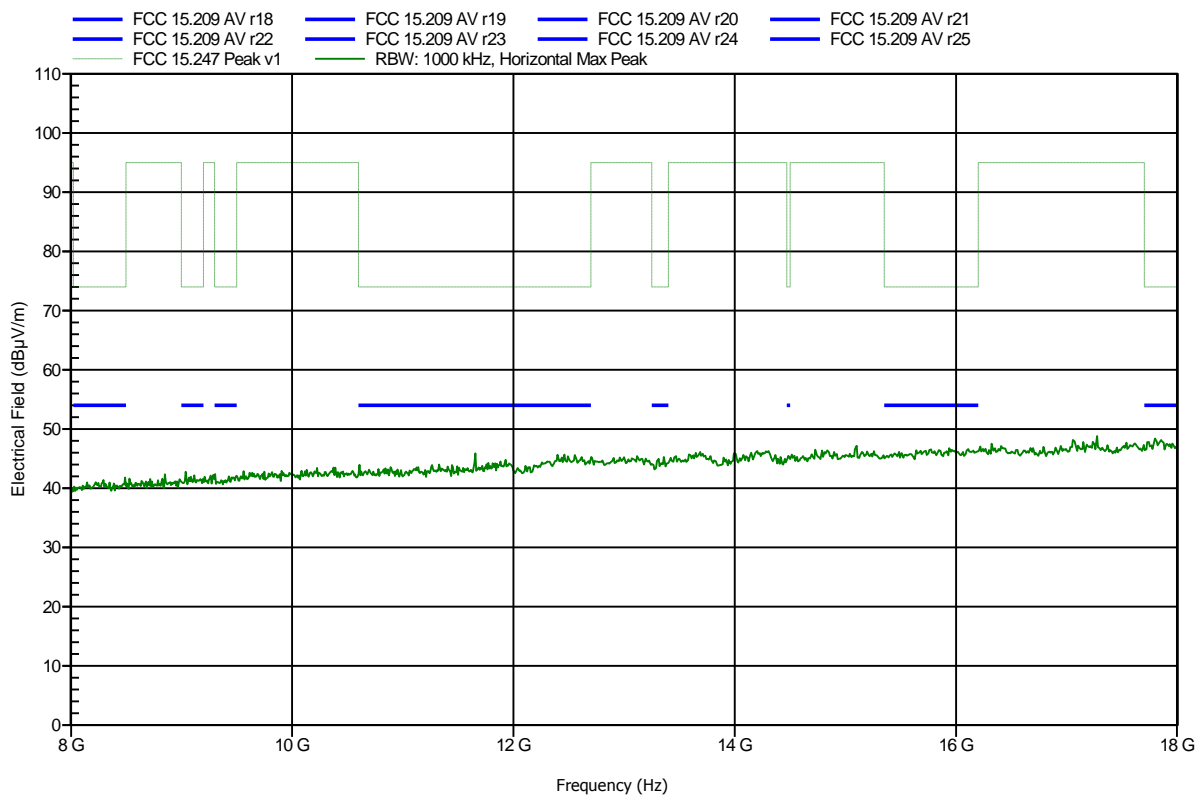


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 43

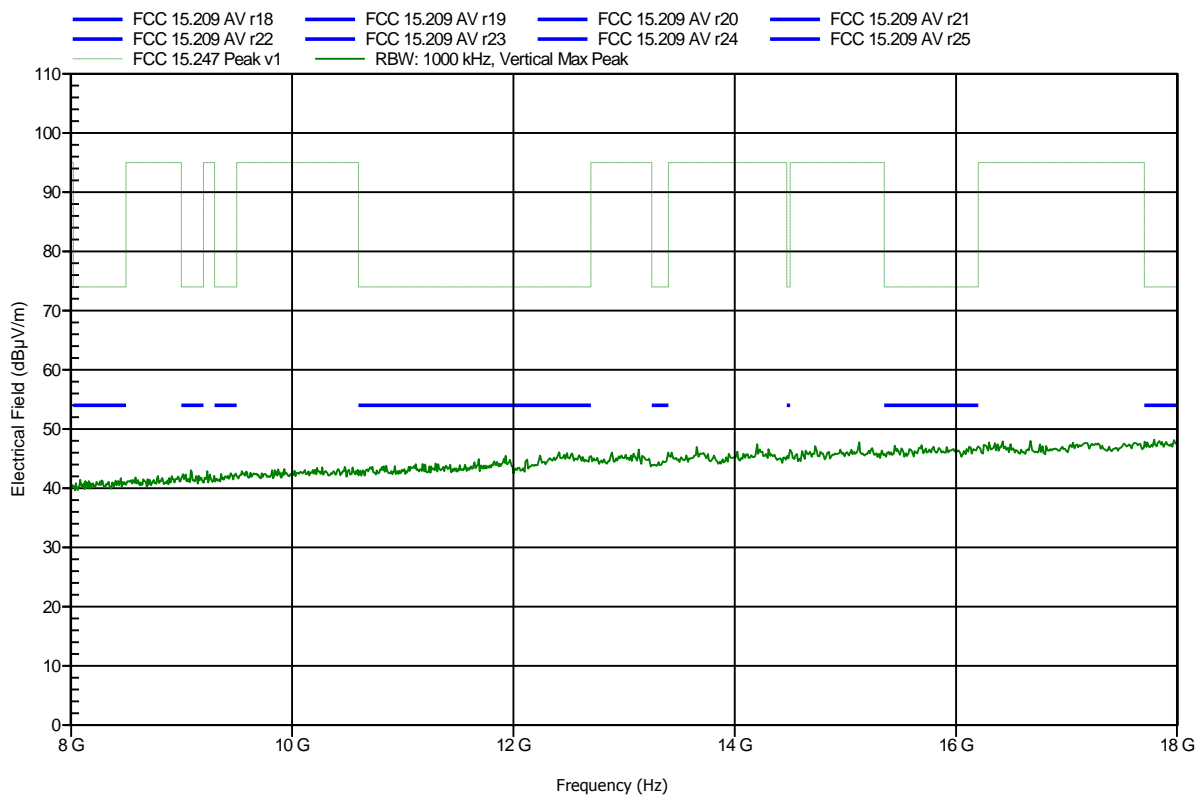


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 30

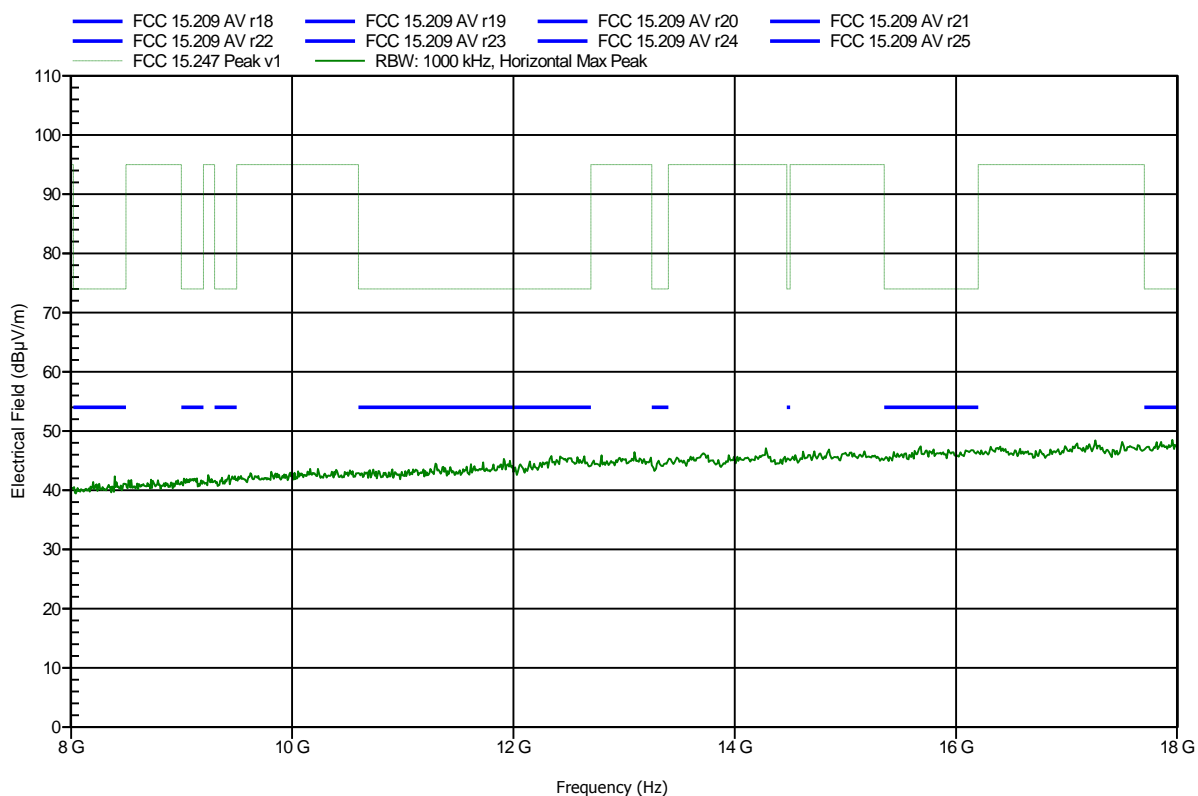


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 40

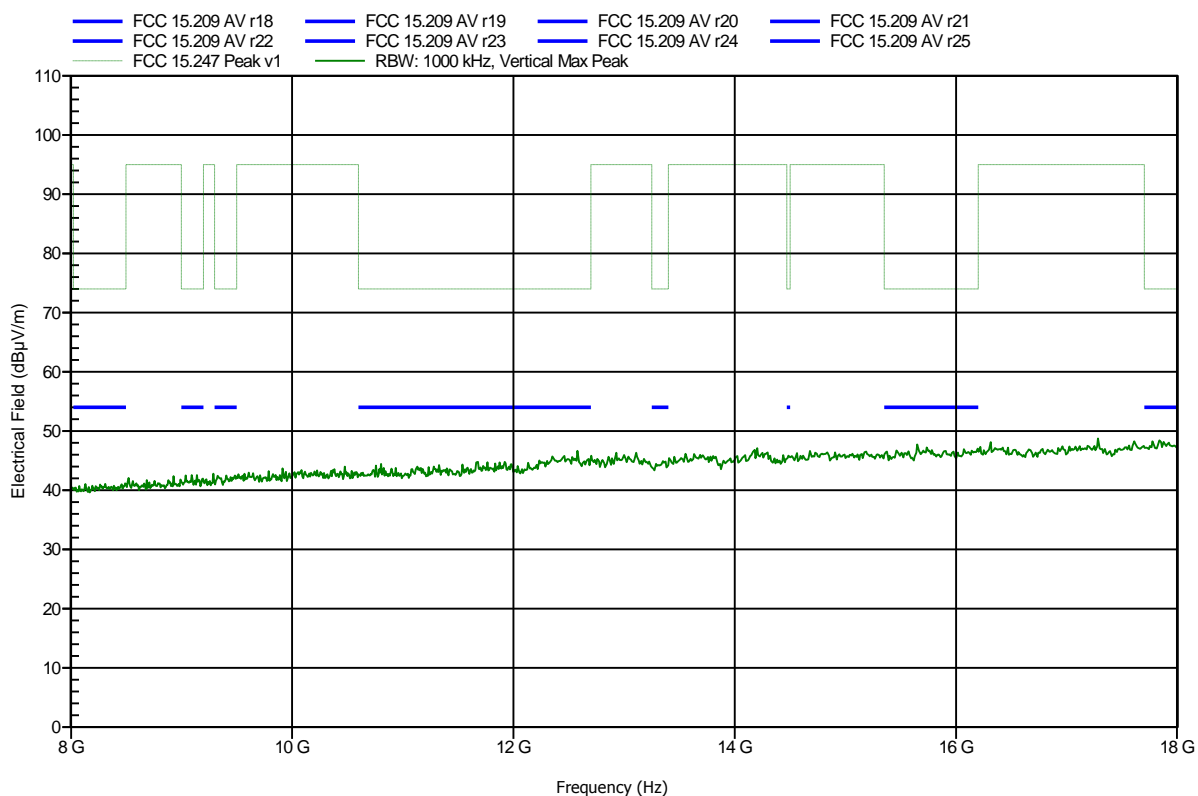


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 33

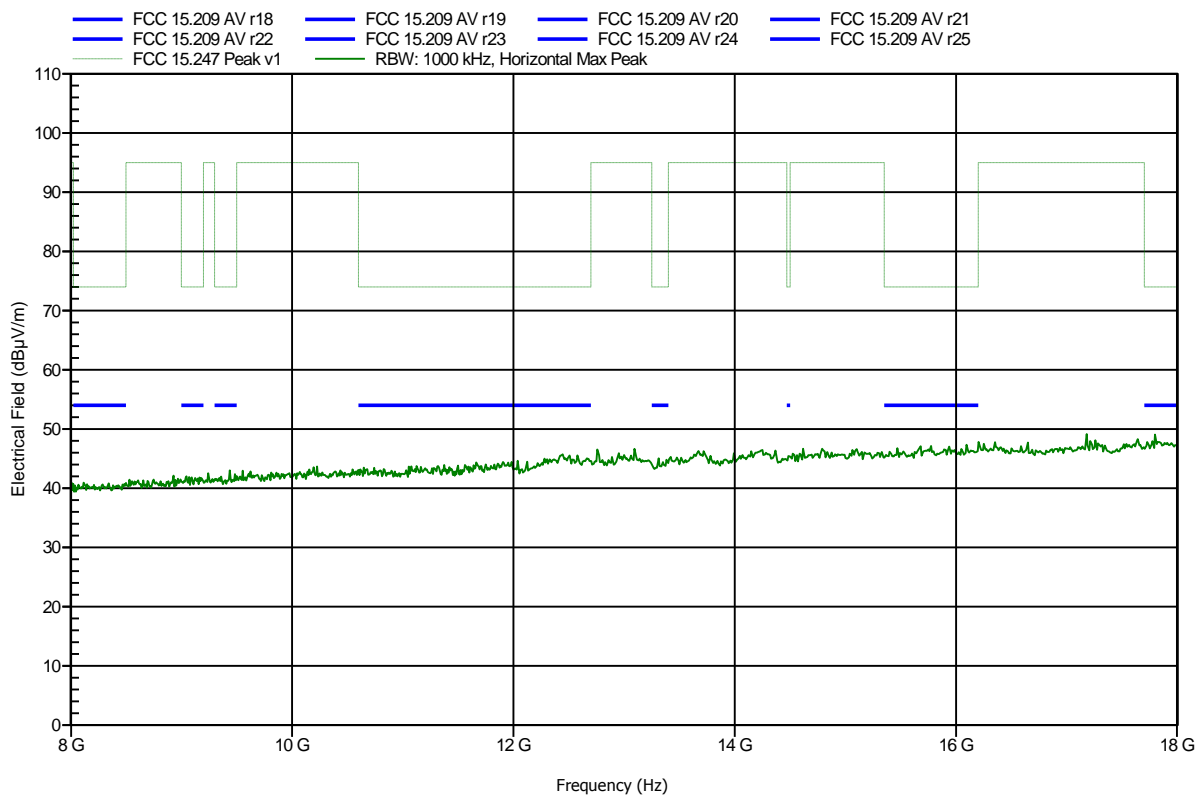


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer: Panasonic Industrial device Europe GmbH
 EUT Name: Class 2 Bluetooth Low Energy Module
 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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
 Test Date: 2013-09-04
 Note: EUT horizontal; DUT mode

Index 37

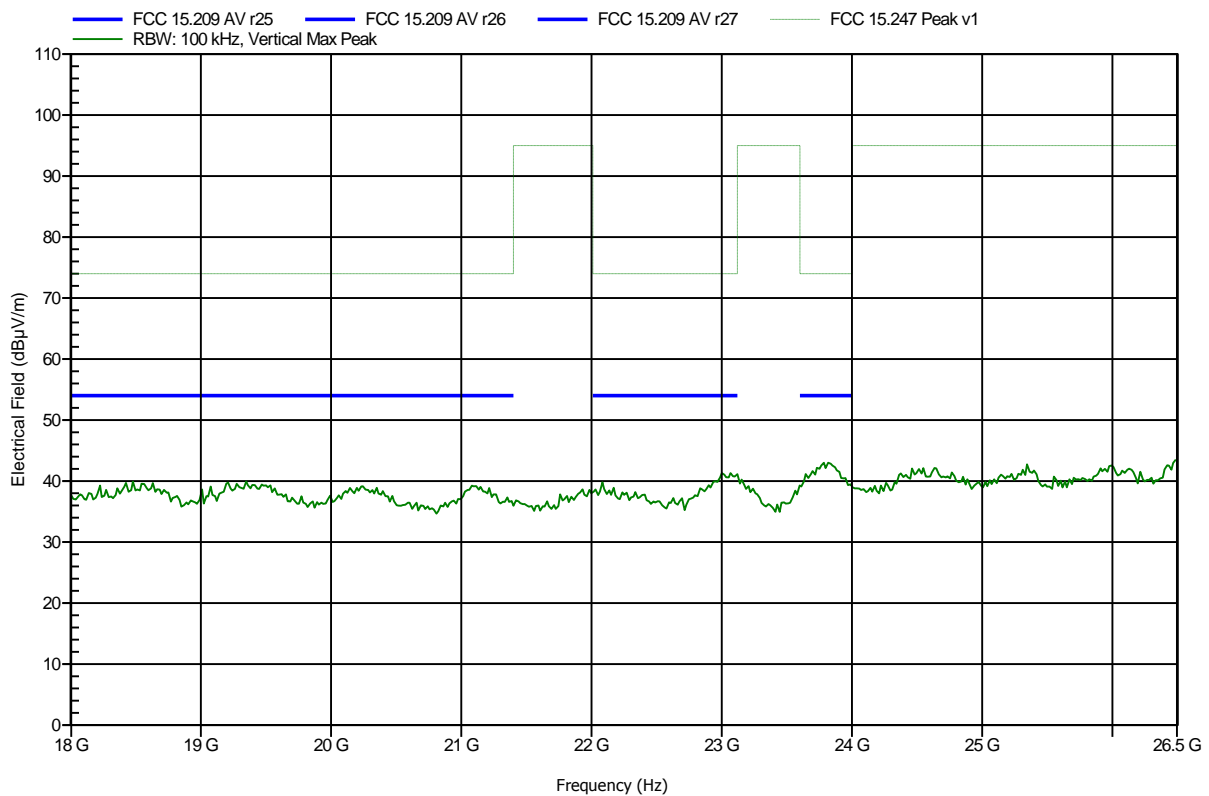


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 28

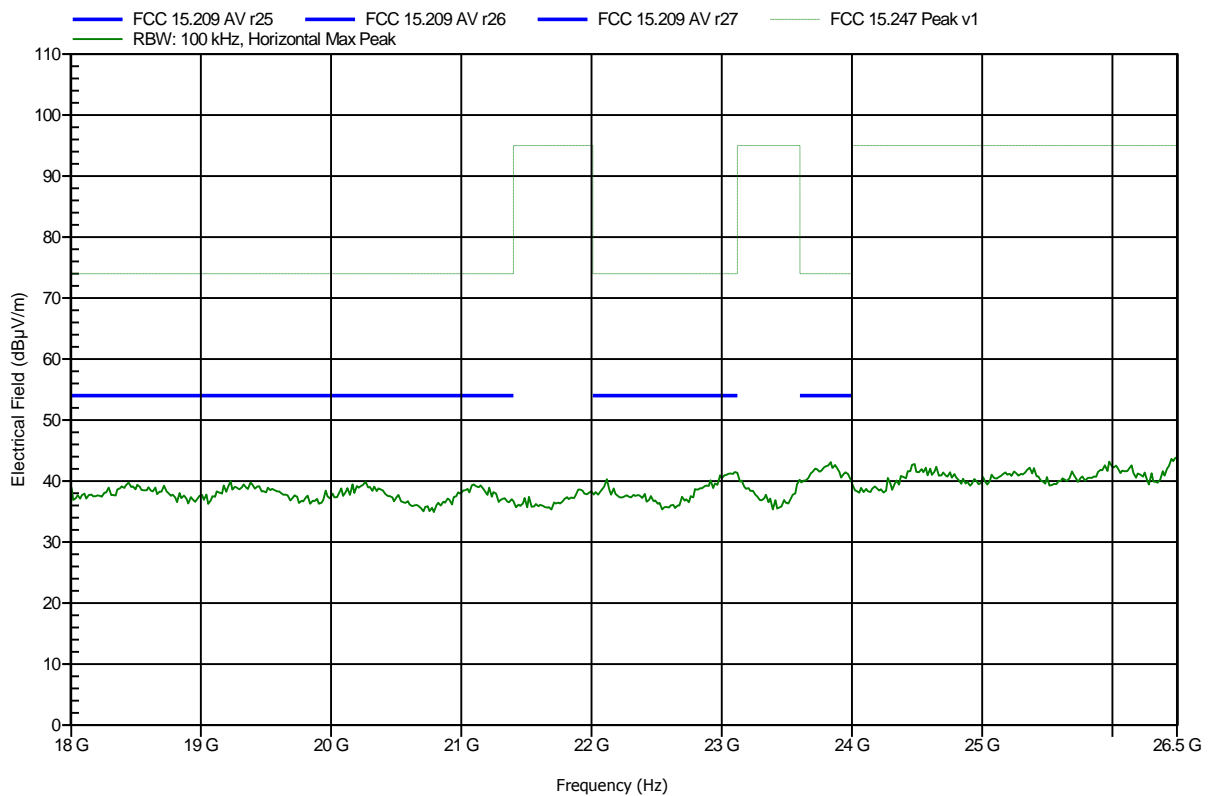


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 0; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 44

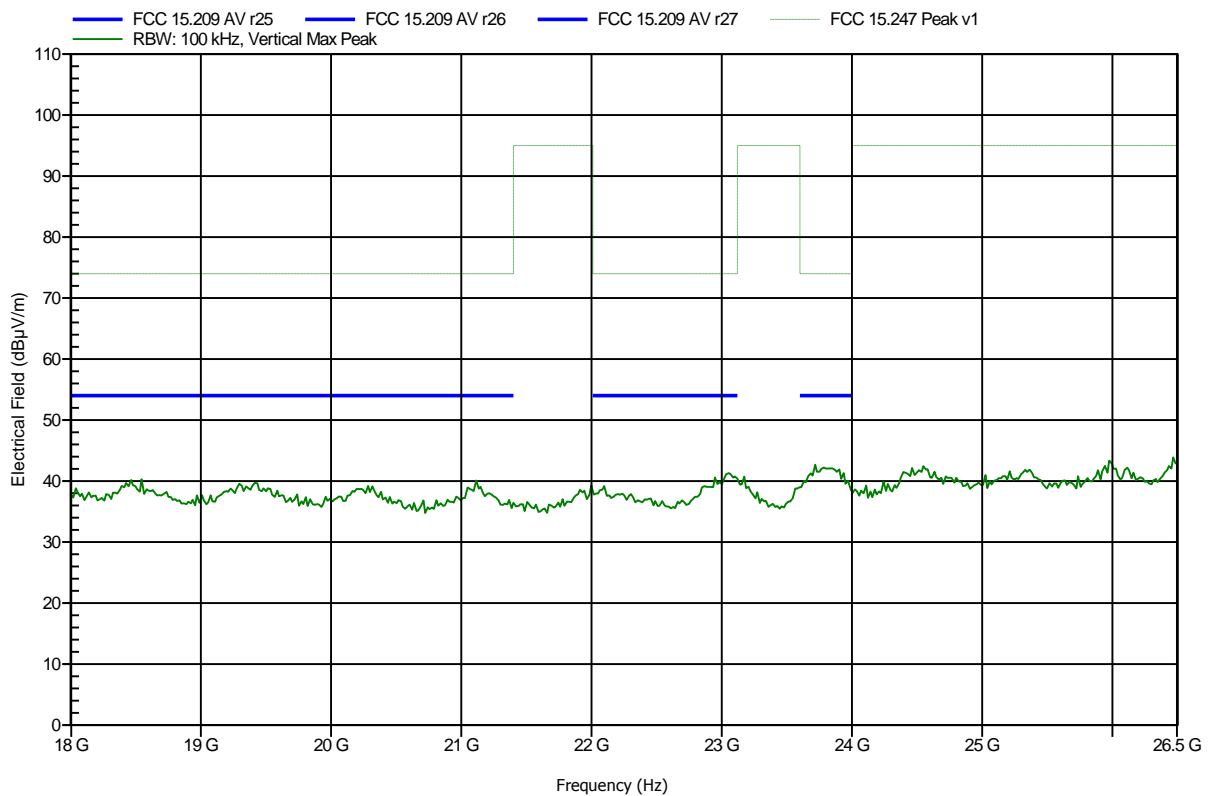


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 31

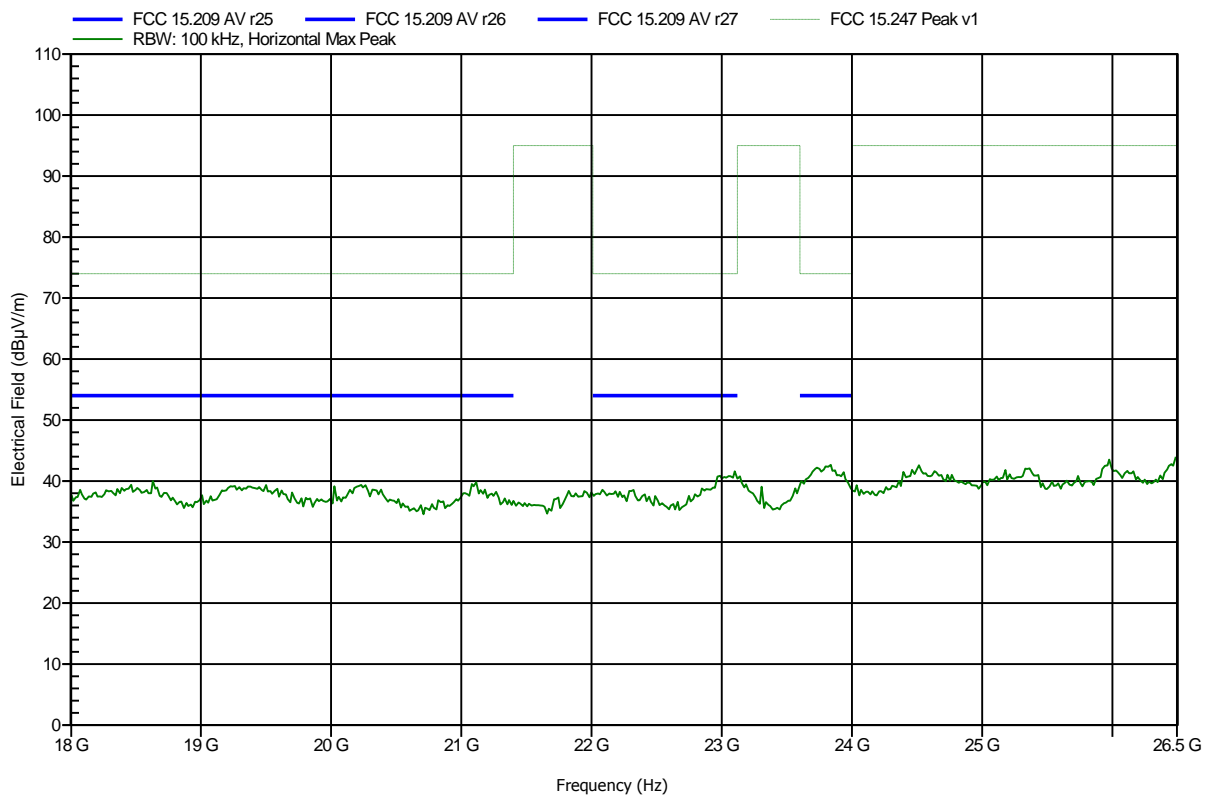


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 41

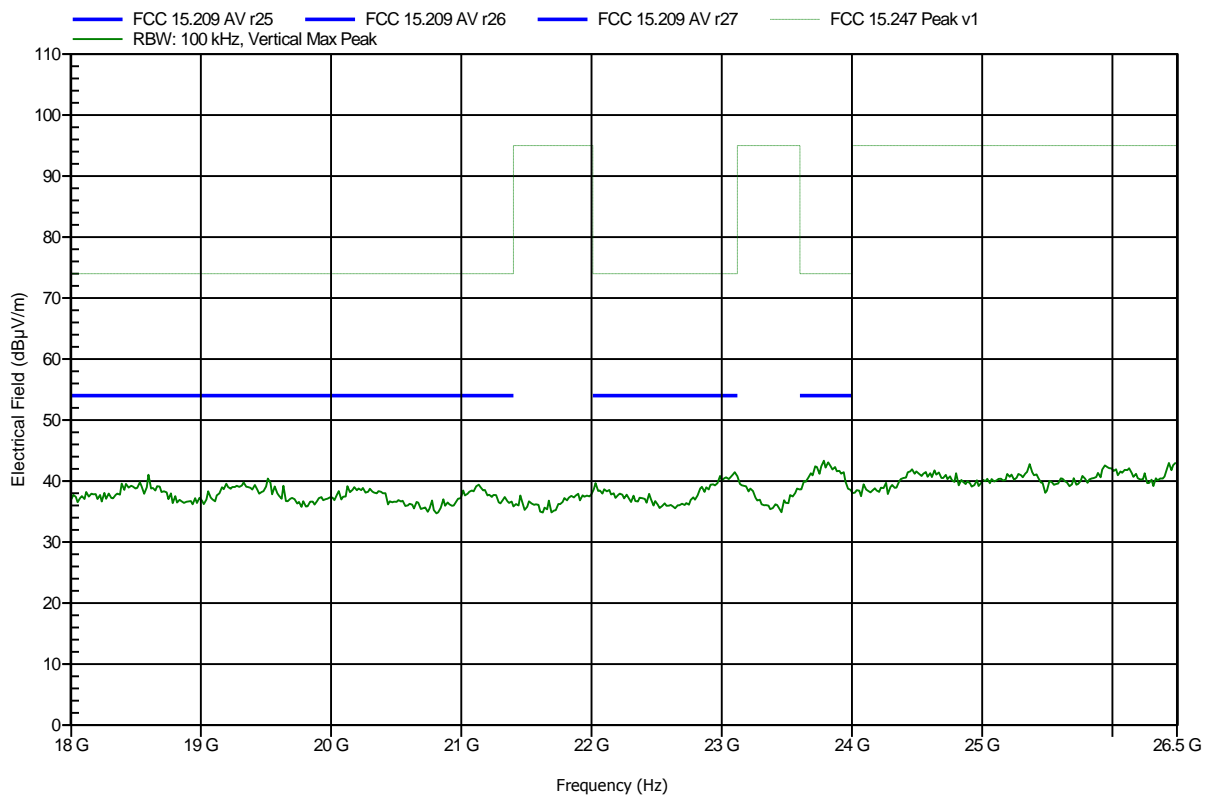


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 34

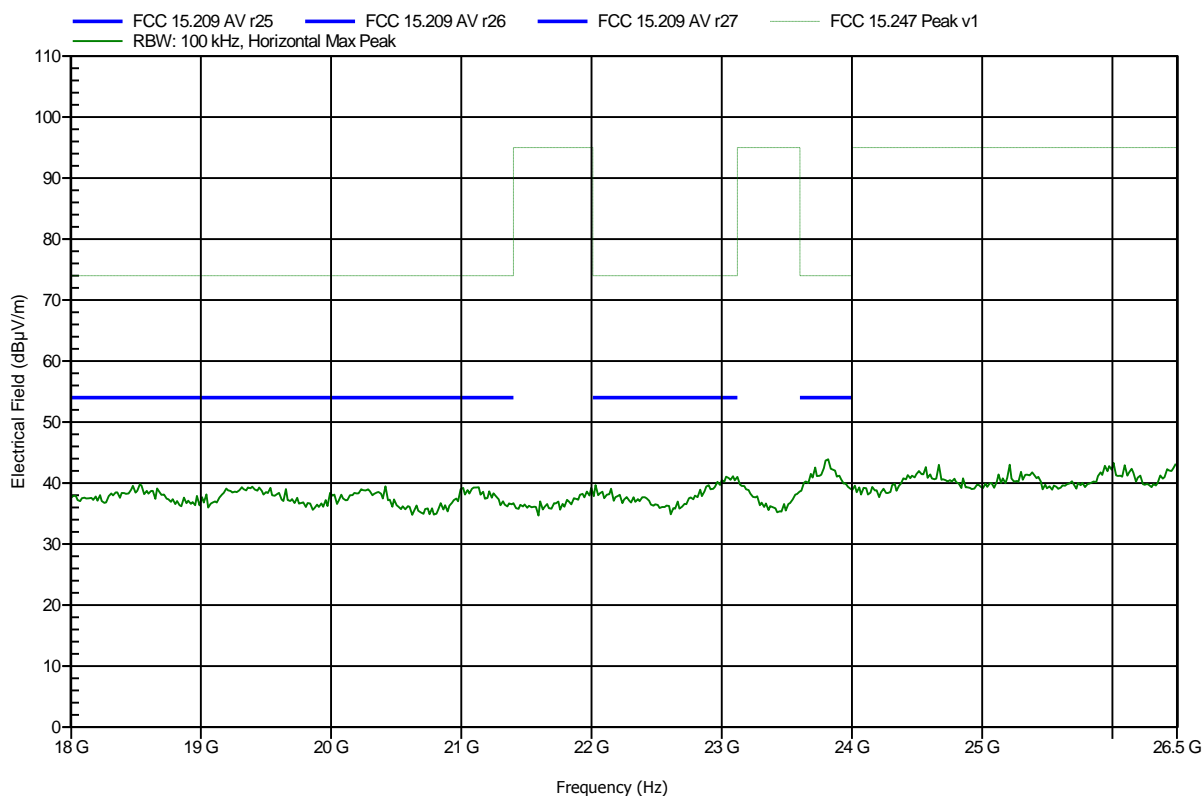


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 78; DH5; Pmax; powercontrol, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal; DUT mode

Index 38



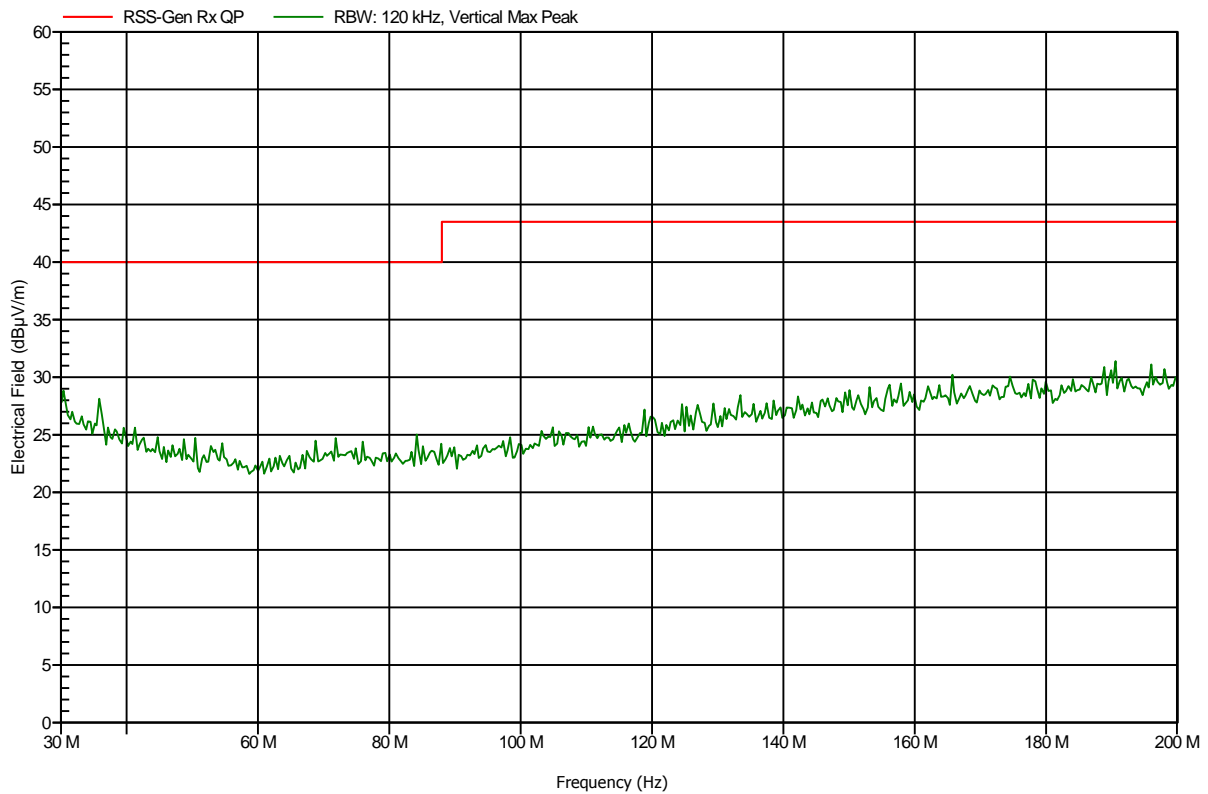
ANNEX B Receiver radiated spurious emissions

Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 47

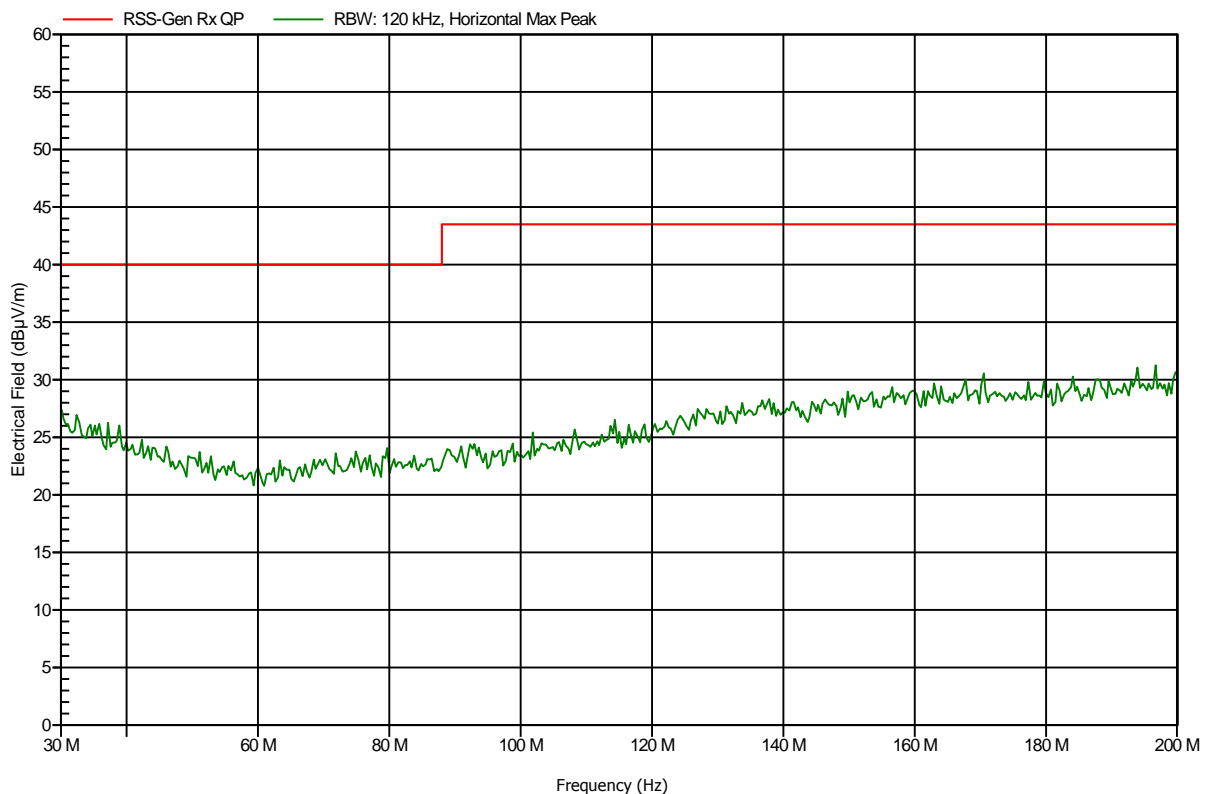


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 48

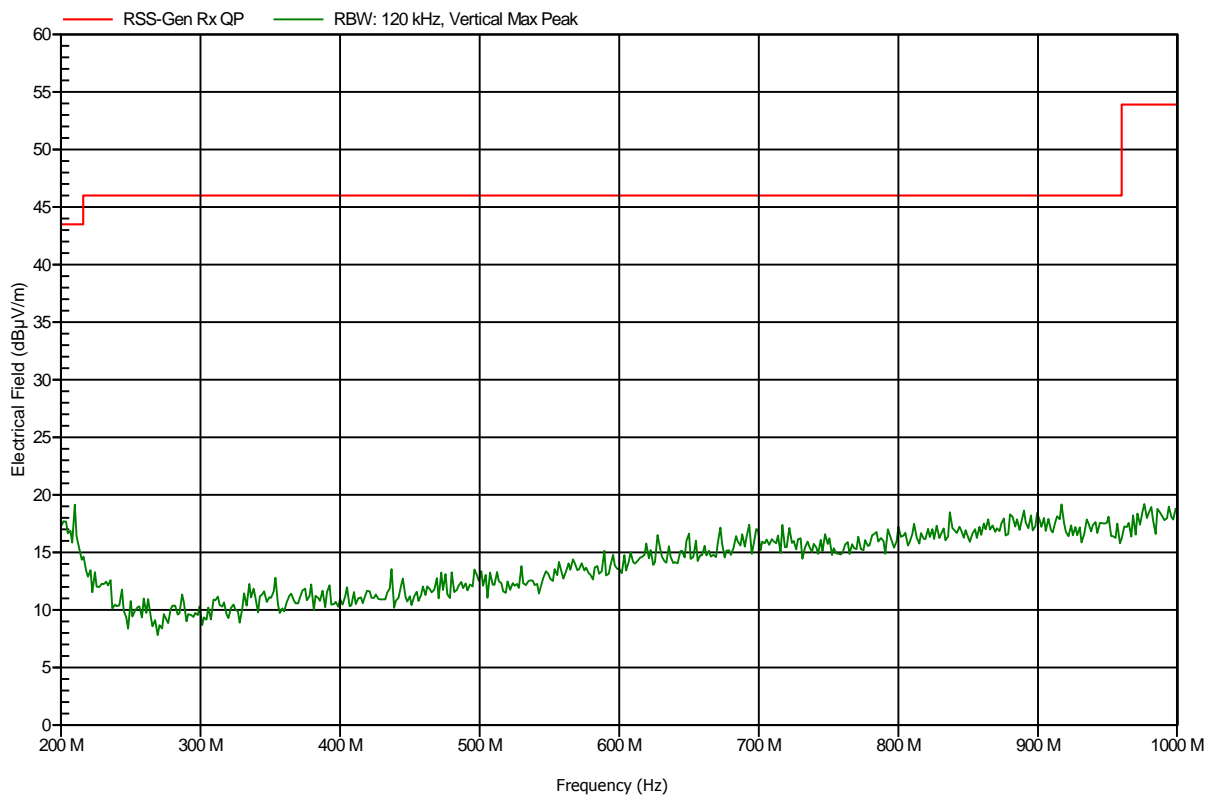


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 49

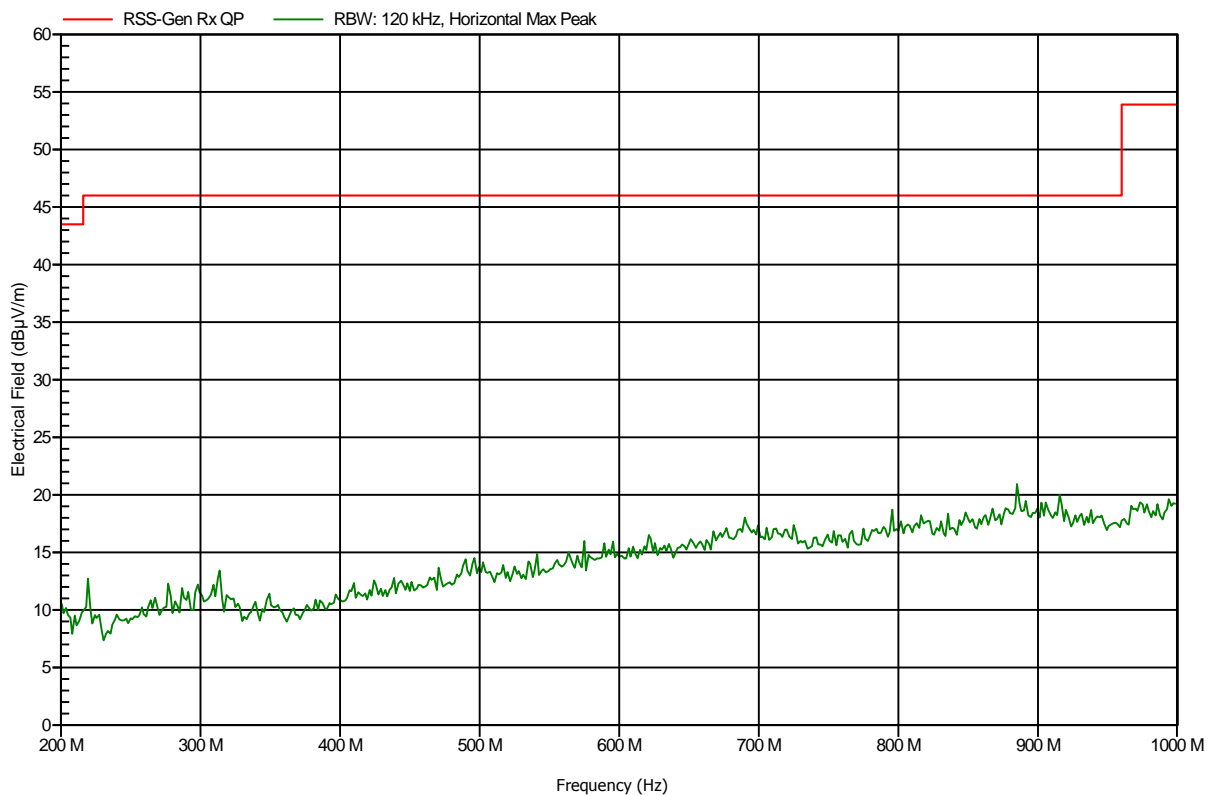


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 50

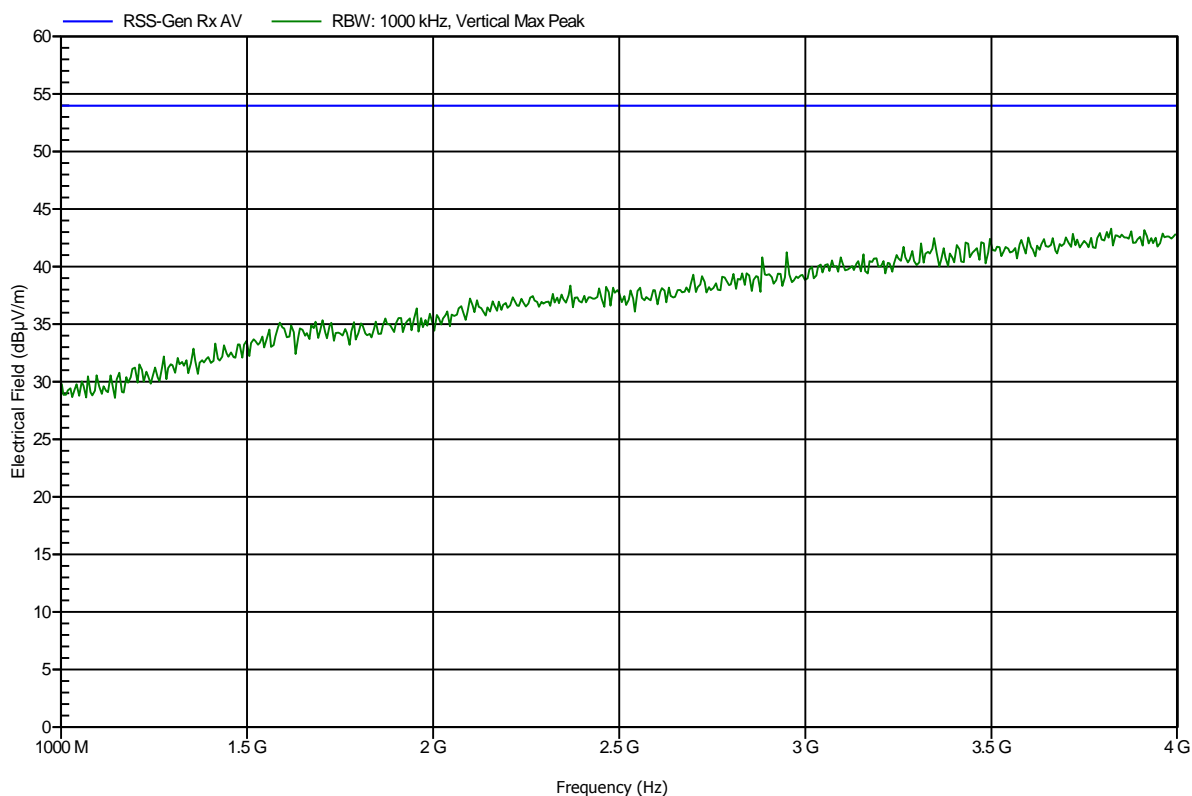


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 51

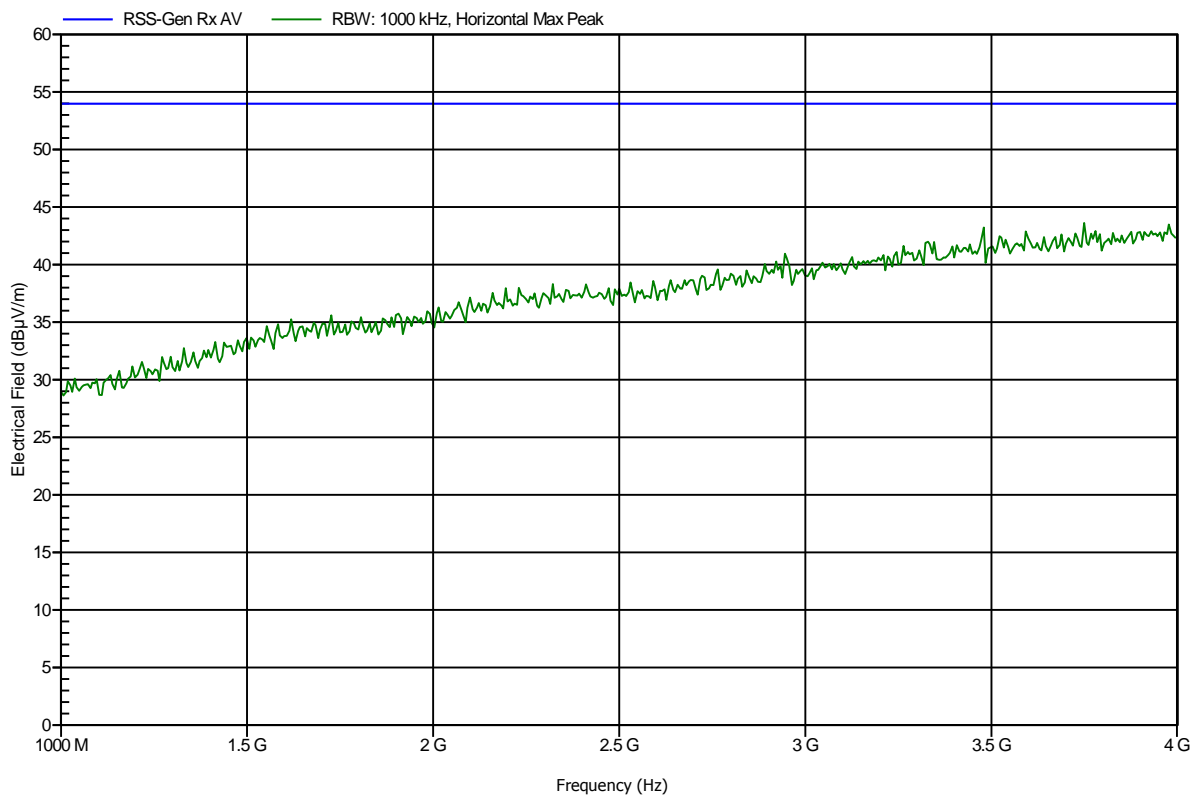


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 54

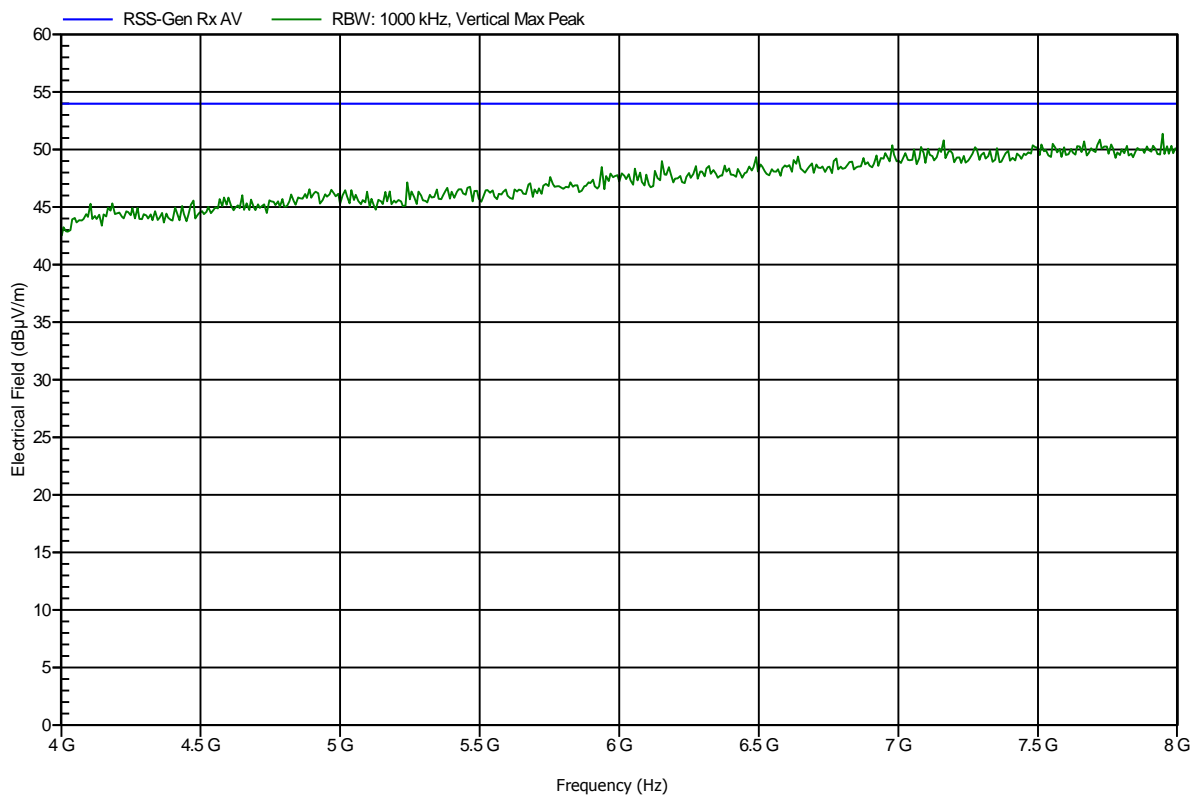


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 52

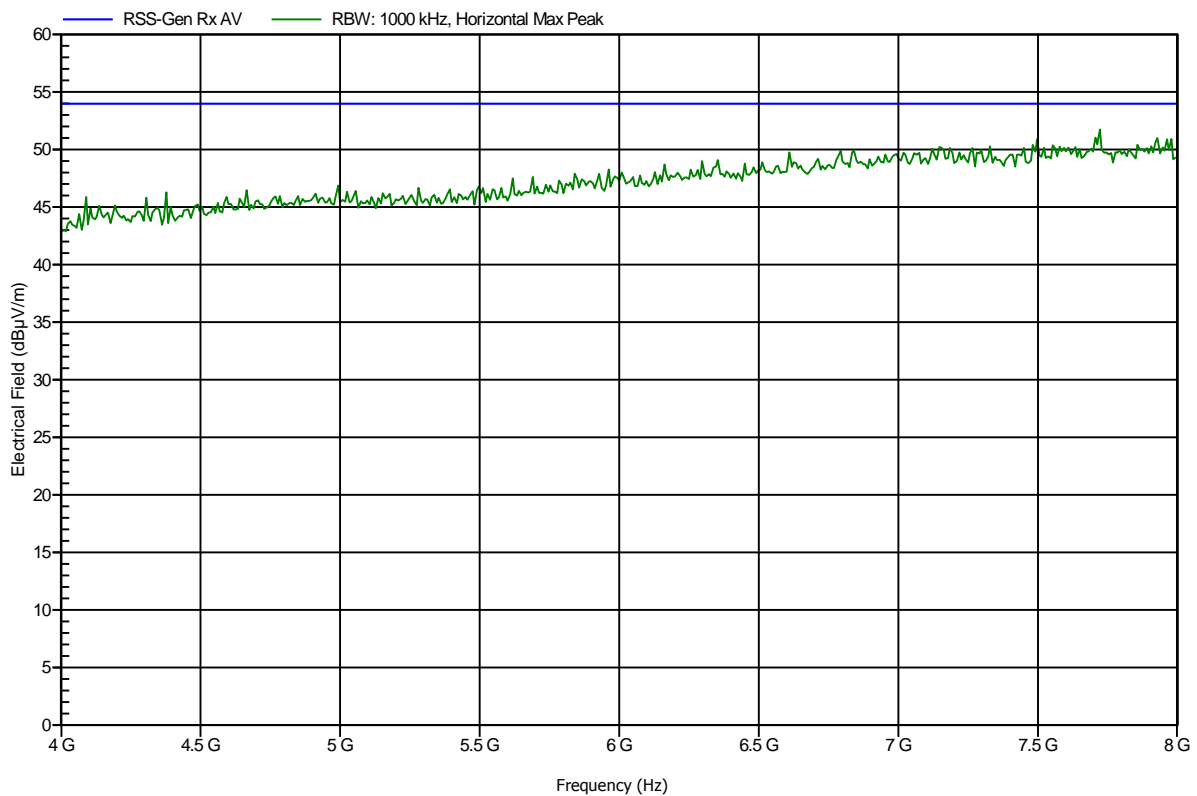


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 55

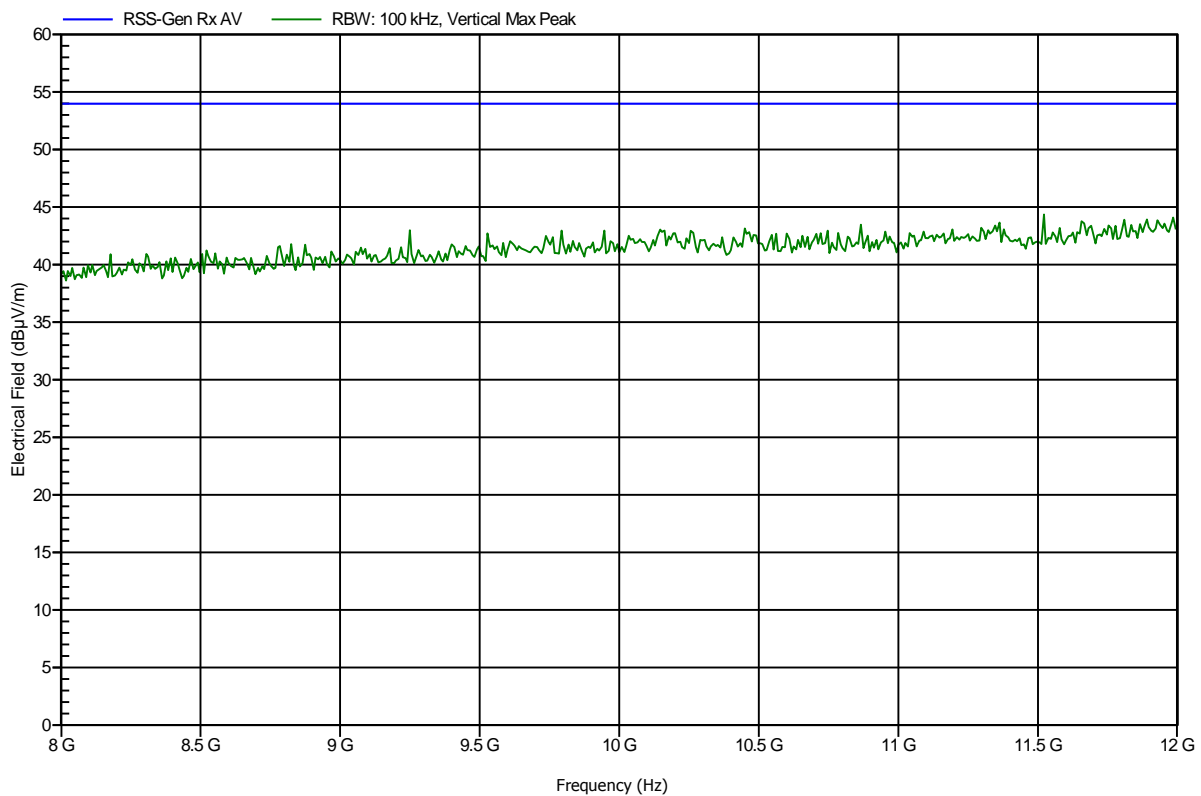


Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 53



Spurious emissions according to IC RSS-210

Project number: G0M-1208-2160

Manufacturer:	Panasonic Industrial device Europe GmbH
EUT Name:	Class 2 Bluetooth Low Energy Module
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-BR; CH 39; RX mode, Ant integral
Test Date:	2013-09-04
Note:	EUT horizontal

Index 56

