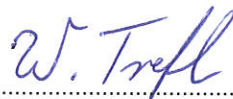


RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400 – 2483.5 MHz band	
Report Reference No	G0M-1810-7783-TFC247WF-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Panasonic Industrial Devices Europe GmbH
Address	Zeppelinstr. 19 21337 Lüneburg GERMANY
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5+A1, 2019-03
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model(s)	ENWF9201A1EF
Additional Model(s)	ENWF9203A1EF
Brand Name(s)	PAN9026
Hardware Version(s)	05
Software Version(s)	01
FCC-ID	T7V-9026
IC	216Q-9026
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
not applicable to EUT	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 23 °C	
Test Lab Humidity	32 – 38 %	
Date of receipt of test item	2018-10-04	
Report:		
Compiled by	Wilfried Treffke	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2019-05-24	
Total number of pages	202	
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:		
The models ENWF9203A1EF and ENWF9201A1EF are completely identical with respect to the 2.4 GHz IEEE 802.11 radio interface.		

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	Description	
1	Product Type Description	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
	Model name	ENWF9208A1EF (multi region)
	Brand name	PAN9026
	Hardware Version	05
	Software Version	01
Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2019-03-06	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
BPSK	Binary Phase Shift Keying
DSSS	Direct Sequence Spread Spectrum
EUT	Equipment Under Test
FCC	Federal Communications Commission
HT	High Throughput
IEEE 802.11	MAC and PHY Layer for WiFi
ISED	Innovation, Science and Economic Development Canada
OFDM	Orthogonal Frequency Division Multiplexing
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage

REPORT INDEX

1	Equipment (Test Item) Under Test.....	7
1.1	Photos – Equipment External	8
1.2	Photos – Equipment Internal	10
1.3	Photos – Test Setup.....	12
1.4	Support Equipment.....	13
1.5	Test mode output power.....	14
1.6	Test mode duty cycle	16
1.7	Test Modes	18
1.8	Test Frequencies.....	19
1.9	Sample emission level calculation.....	20
2	Result Summary.....	21
3	Test Conditions and Results.....	22
3.1	Test Conditions and Results - Occupied bandwidth.....	22
3.2	Test Conditions and Results - 6 dB bandwidth.....	36
3.3	Test Conditions and Results - Maximum peak conducted output power	50
3.4	Test Conditions and Results - Power spectral density	52
3.5	Test Conditions and Results - AC powerline conducted emissions.....	66
3.6	Test Conditions and Results - Band-edge compliance.....	69
3.7	Test Conditions and Results - Conducted spurious emissions.....	79
3.8	Test Conditions and Results - Transmitter radiated emissions	93
3.9	Test Conditions and Results - Receiver radiated emissions	99
ANNEX A	Transmitter spurious emissions	102
ANNEX B	Receiver spurious emissions	192

1 Equipment (Test Item) Under Test

Description	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module	
Model	ENWF9201A1EF	
Additional Model(s)	ENWF9203A1EF	
Brand Name(s)	PAN9026	
Serial Number(s) Model ENWF9201A1EF	1823411;00002129;00134375843B;F9201A1E;0501 (radiated) 1807211;00001040;0013436B110D;F9201A1E;0501 (conducted)	
Serial Number(s) Model ENWF9203A1EF	1829511;00000079;0013437BBD97;F9203A1E;0501 (radiated) 1829511;00000003;0013437AB217;F9203A1E;0501 (conducted)	
Hardware Version(s)	05	
Software Version(s)	01	
PMN	PAN9026	
HVIN	ENWF9203A1EF	
FVIN	-/-	
HMN	-/-	
FCC-ID	T7V-9026	
IC	216Q-9026	
Equipment type	Radio Module	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	IEEE 802.11 b/g/n (HT20 + HT40)	
Modulation	BPSK, QPSK, 16-QAM, 32-QAM	
Number of antenna ports	1	
Antenna	Type	Integrated
	Model	ANT162442DT-2001A2
	Manufacturer	TDK
	Gain	2.1 (customer declaration)
Supply Voltage	V _{NOM}	3.3 VDC
Operating Temperature	T _{NOM}	25 °C
AC/DC-Adaptor	Model	None
	Vendor	None
	Input	None
	Output	None
Manufacturer	Panasonic Industrial Devices Europe GmbH Zeppelinstr. 19 21337 Lüneburg GERMANY	

1.1 Photos – Equipment External

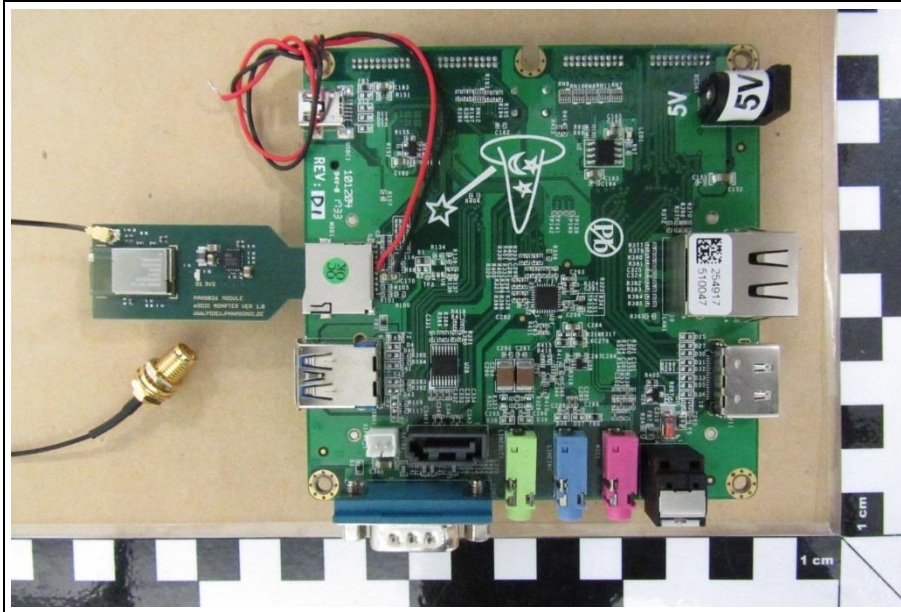
Processor board radiated, front view



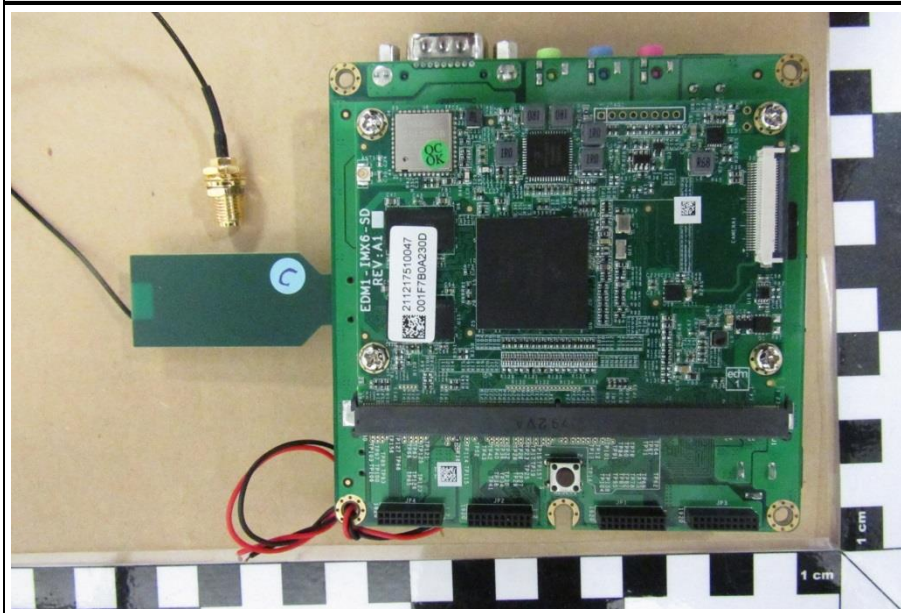
Processor board radiated, rear view



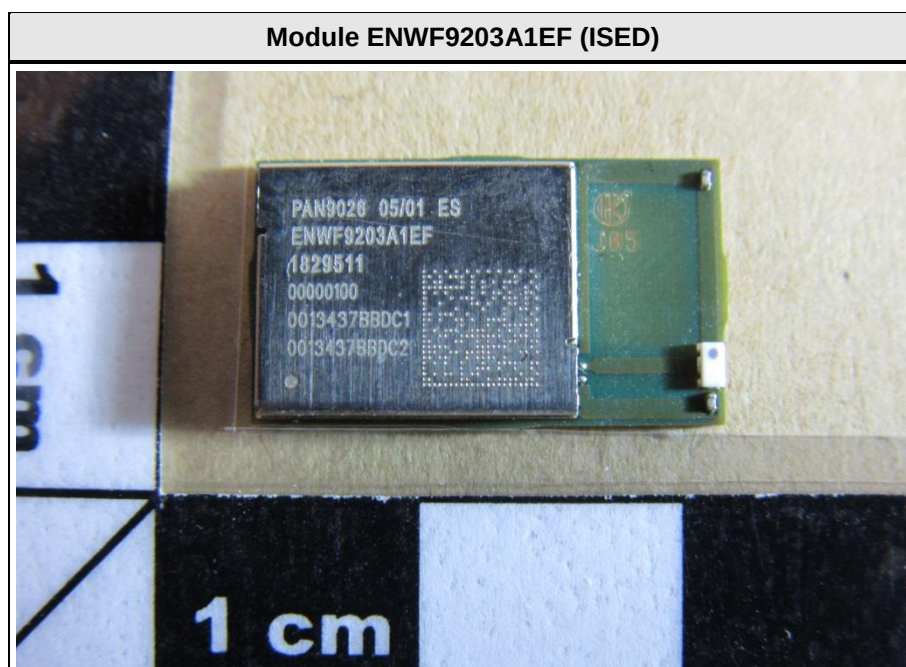
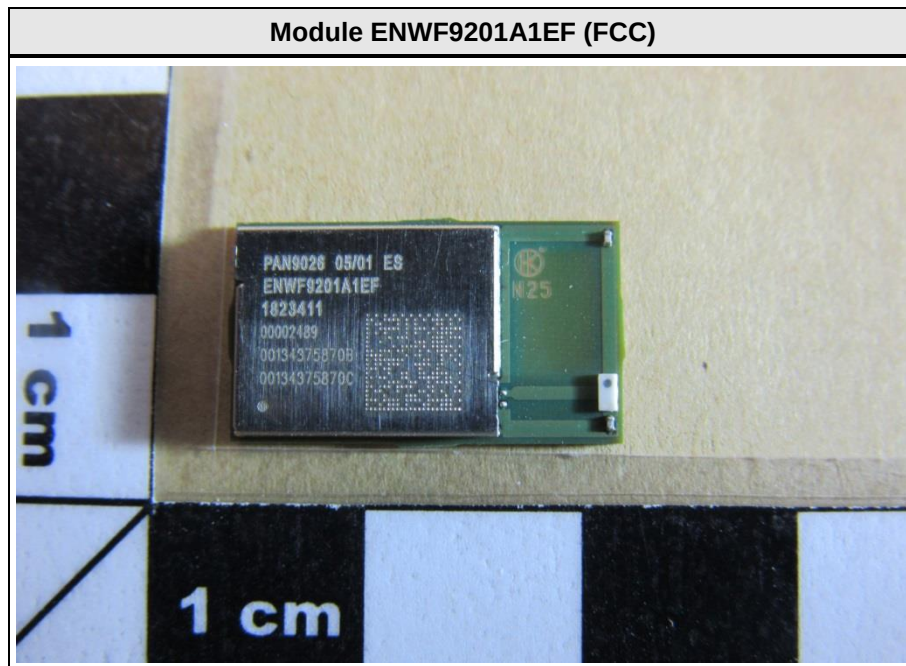
Processor board conducted, top



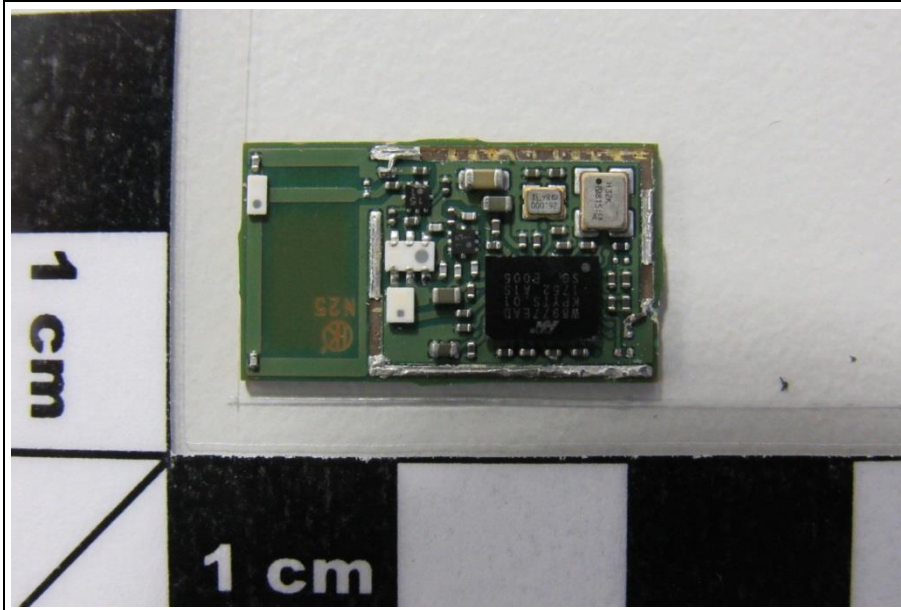
Processor board conducted, bottom



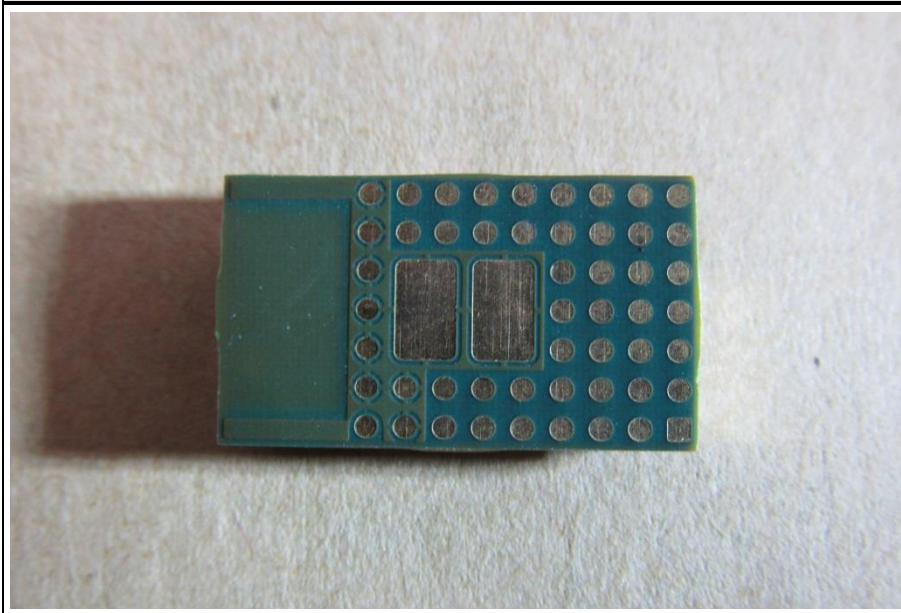
1.2 Photos – Equipment Internal



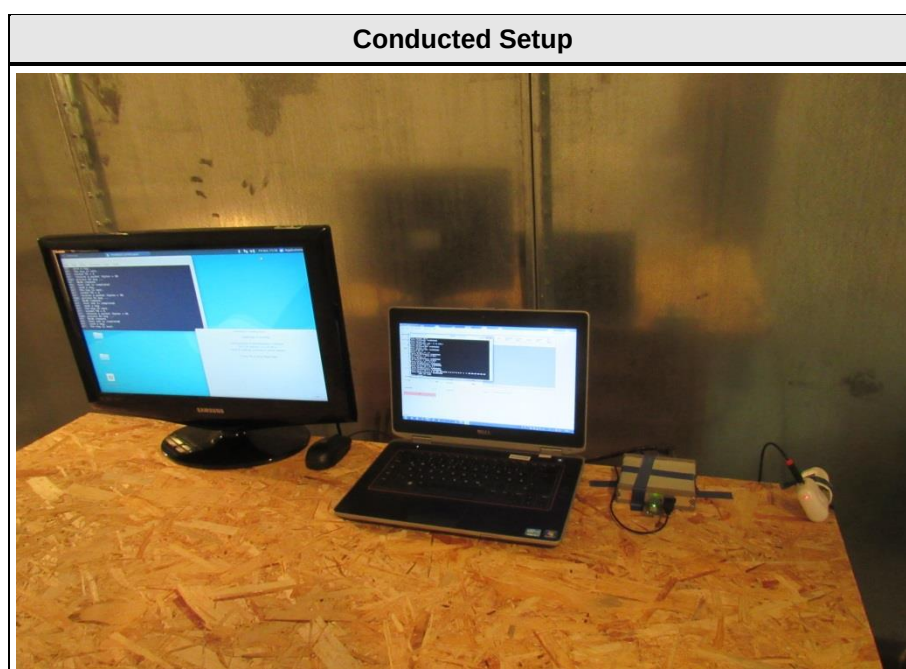
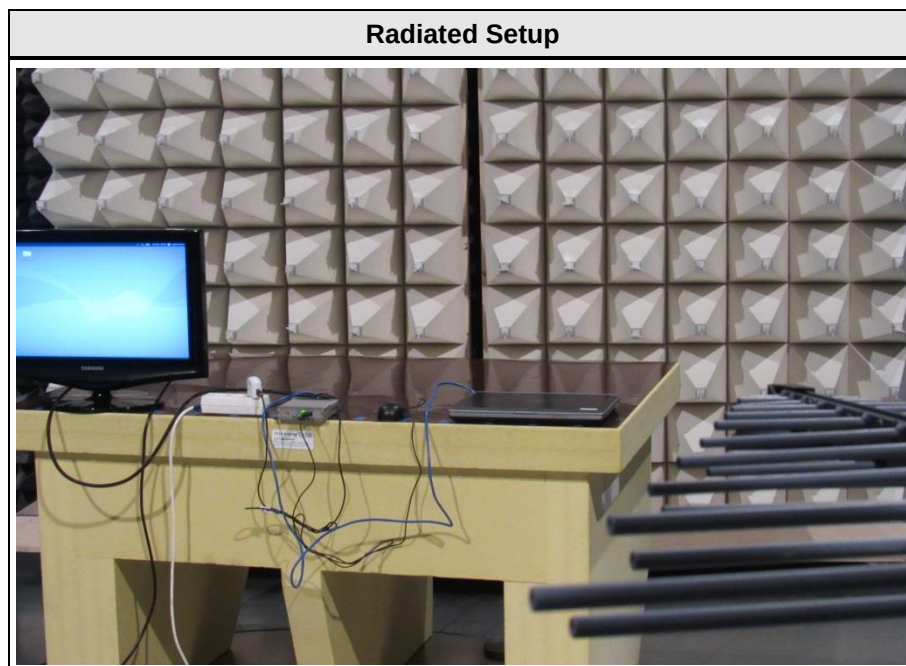
Module without shielding, top view



Module, Bottom view



1.3 Photos – Test Setup



1.4 Support Equipment

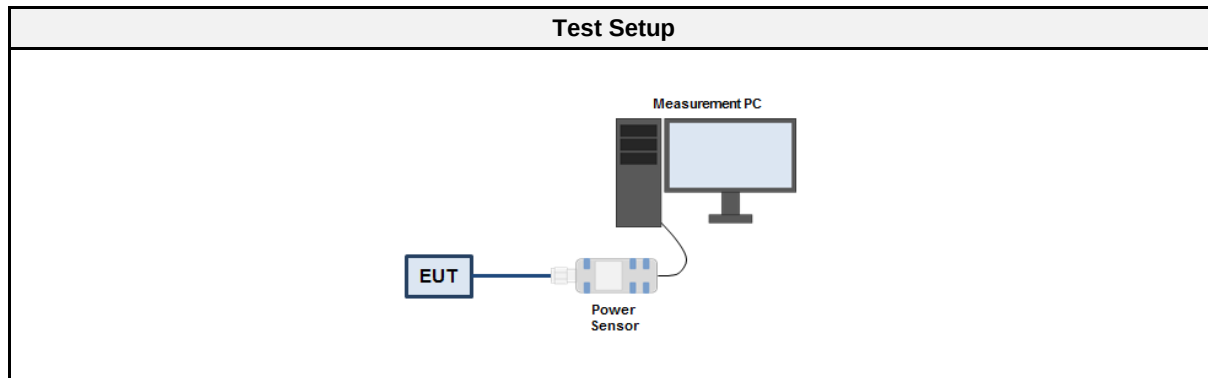
Product Type	Device	Manufacturer	Model	Comment
AE 1	Laptop	Dell	Latitude E6420	S/N HPJ4R1
AE 2	Processor board	Wandboard	WBIMX6U	Wandboard with i.MX6 Dual Core
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Test mode output power

1.5.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.9, 14.3

1.5.2 Setup



1.5.3 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z81	EF00830	2018-07	2019-07

1.5.4 Procedure

Test Procedure
1. EUT set to test mode 2. The peak power is measured with the wideband power sensor 3. The power is measured for the lowest data rate on all three channels 4. For the channel with the highest power the power is also measured for all data rates 5. The data rate with the highest output power is selected for test mode

1.5.5 Results

Results - DSSS			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
1	15.0	15.7	14.0
2	15.1	15.7	14.1
5.5	15.2	15.5	14.1
11	15.3	15.5	14.1

Results - OFDM			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
6	22.4	22.7	22.1
9	22.5	22.8	22.3
12	22.6	22.8	22.5
18	22.4	22.8	22.9
24	22.5	22.8	22.3
36	22.4	22.8	22.3
48	22.1	22.7	21.7
54	21.8	22.5	21.4

Results - HT20			
MCS	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
0	21.7	22.3	21.0
1	22.0	22.5	21.3
2	22.6	22.8	22.3
3	22.2	22.8	21.6
4	22.1	22.6	21.4
5	22.4	21.9	20.6
6	21.5	21.9	20.5
7	21.1	21.6	20.1

Results - HT40			
MCS	Power [dBm] Channel 2422 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2452 [MHz]
0	22.3	22.7	22.6
1	21.0	21.5	21.6
2	21.1	21.7	21.5
3	21.2	21.8	21.7
4	21.4	22.0	22.0
5	19.7	20.4	20.2
6	19.8	20.5	20.4
7	19.9	20.7	20.4

1.6 Test mode duty cycle

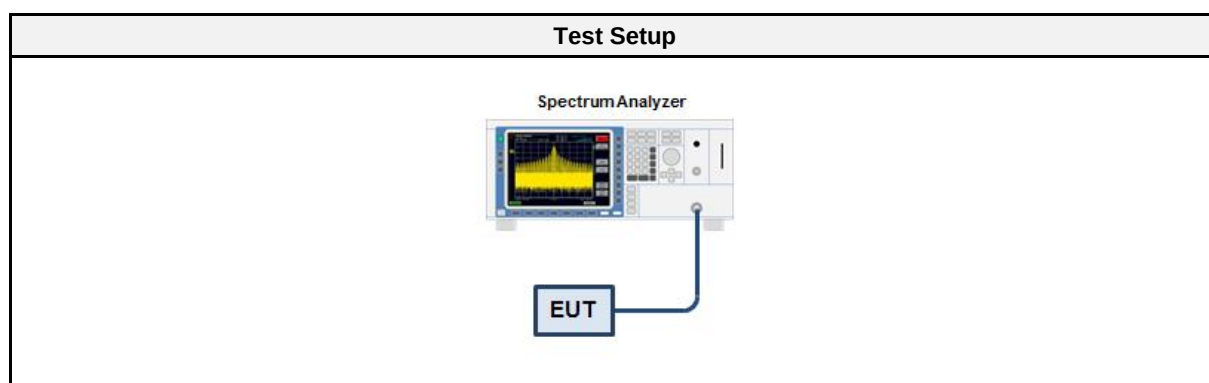
1.6.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.6

1.6.2 Requirements

Requirements	
Duty cycle	Duty cycle correction
$\geq 98 \%$	No correction required
$< 98 \%$	Correction required ($10 \times \log_{10}(1/DC)$)

1.6.3 Setup



1.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

1.6.5 Procedure

Test Procedure
1. EUT set to test mode 2. Span is set to zero span 3. Detector set to peak 4. Sweep time is set long enough to capture at least 5 bursts 5. Envelope peak value of emission spectrum is selected 6. The maximum burst duration T_{ON} is measured using two markers set to the start and the end of the longest burst 7. The minimum idle duration T_{OFF} is measured using two markers set to the start and the end of the shortest idle period 8. The duty cycle is calculated by $DC = T_{ON} / (T_{ON} + T_{OFF})$ 9. The duty cycle correction is calculated by $DC = 10 \times \log_{10}(T_{ON} / (T_{ON} + T_{OFF}))$

1.6.6 Results

Duty Cycle Results		
Mode	Duty Cycle	Correction Factor [dB]
DSSS	99.9% / 0.999	0
OFDM	98.9% / 0.989	0
HT20	98.9% / 0.989	0
HT40	97.6% / 0.976	0.1

1.7 Test Modes

Mode	Description
DSSS (IEEE 802.11b)	Mode = Transmit Modulation = BPSK Spreading = DSSS Bandwidth = 20 MHz Duty cycle = 99.9% Power setting = 15 (software setting) Data rate = 11 Mbps 2Mbps (2437MHz) 11Mbps (2462MHz)
OFDM (IEEE 802.11g)	Mode = Transmit Modulation = BPSK Spreading = OFDM Bandwidth = 20 MHz Duty cycle = 98.9% Power setting = 15 (software setting) Data rate = 12 Mbps 24Mbps (2437MHz) 18Mbps (2462MHz)
HT20 (IEEE 802.11n)	Mode = Transmit Modulation = QPSK 3/4 Spreading = OFDM Bandwidth = 20 MHz Duty cycle = 98.9% Power setting (1 Simultaneous Tx) = 14 (software setting) Data rate (1 Simultaneous Tx) = 19.5 Mbps MCS (1 Simultaneous Tx) = 2
HT40 (IEEE 802.11n)	Mode = Transmit Modulation = BPSK Spreading = OFDM Bandwidth = 40 MHz Duty cycle = 97.6% Power setting (1 Simultaneous Tx) = 13 (software setting) Data rate (1 Simultaneous Tx) = 13.5 Mbps MCS (1 Simultaneous Tx) = 0
Receive	Mode = Receive
Comment: The above settings were found as worst case during pre-tests.	

1.8 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	1	2412
F2	Tx / Rx	3	2422
F3	Tx / Rx	6	2437
F4	Tx / Rx	9	2452
F5	Tx / Rx	11	2462

1.9 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:

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

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:

Reading + AF	= Net Reading	:	Net reading - FCC limit	= Margin
+21.5 dBμV + 26 dB/m	= 47.5 dBμV/m	:	47.5 dBμV/m - 57.0 dBμV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	PASS	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	PASS	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	PASS	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Occupied bandwidth

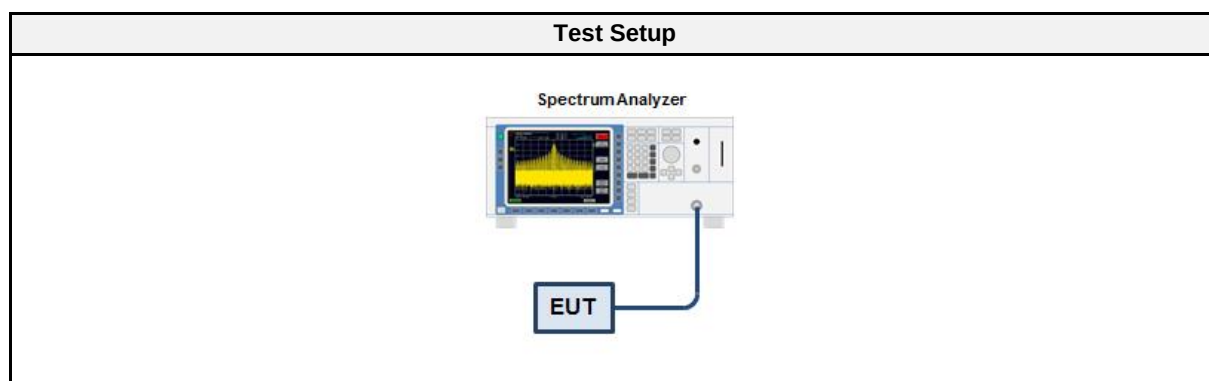
3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.6)
Measurement Method	ANSI C63.10 6.9.3
Operator	Wilfried Treffke
Date	2018-11-16

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

3.1.5 Procedure

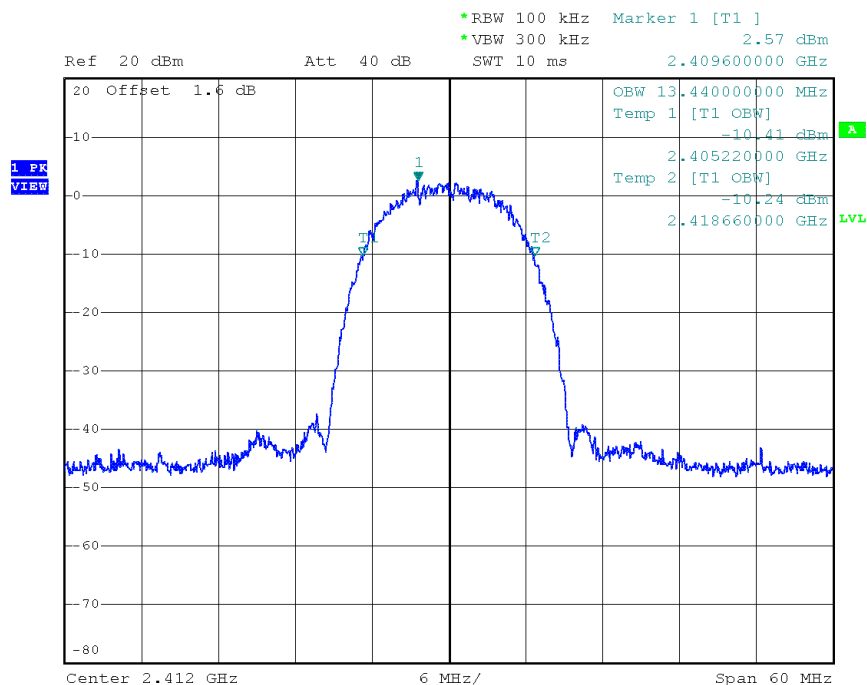
Test Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth 4. The occupied bandwidth is measured with the build-in analyzer function

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DSSS	2412	13.440
DSSS	2437	13.440
DSSS	2462	13.380
OFDM	2412	16.440
OFDM	2437	16.440
OFDM	2462	16.440
HT20	2412	17.640
HT20	2437	17.640
HT20	2462	17.640
HT40	2422	36.240
HT40	2437	36.240
HT40	2452	36.240

Occupied Bandwidth

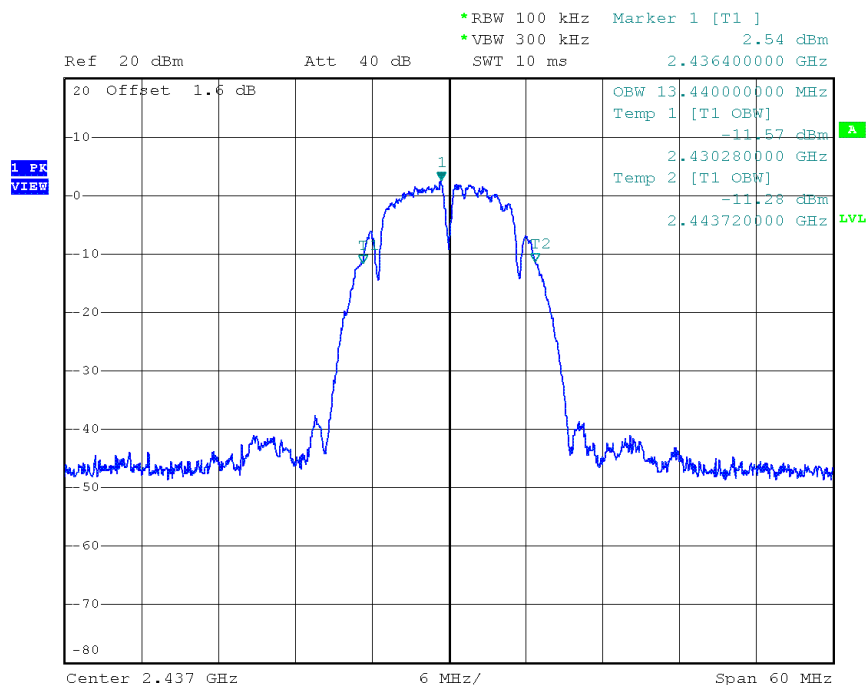
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 13.440



Date: 16.NOV.2018 10:37:21

Occupied Bandwidth

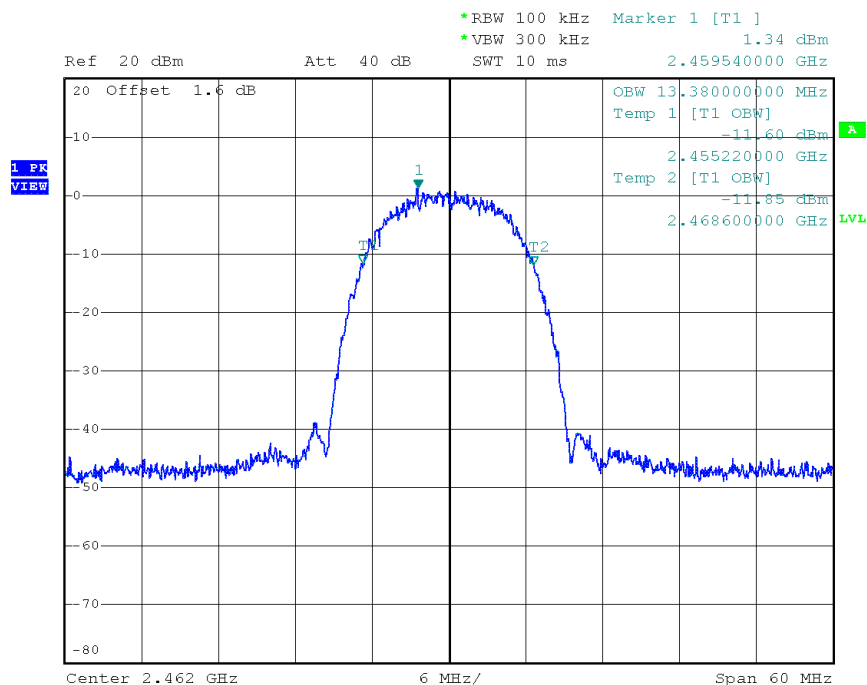
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 13.440



Date: 16.NOV.2018 10:42:17

Occupied Bandwidth

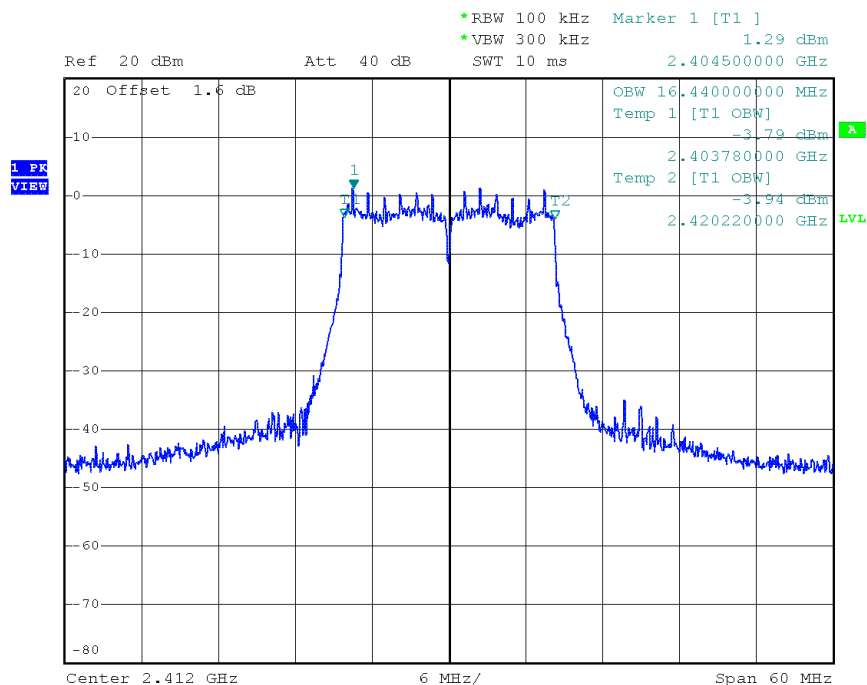
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 13.380



Date: 16.NOV.2018 10:44:31

Occupied Bandwidth

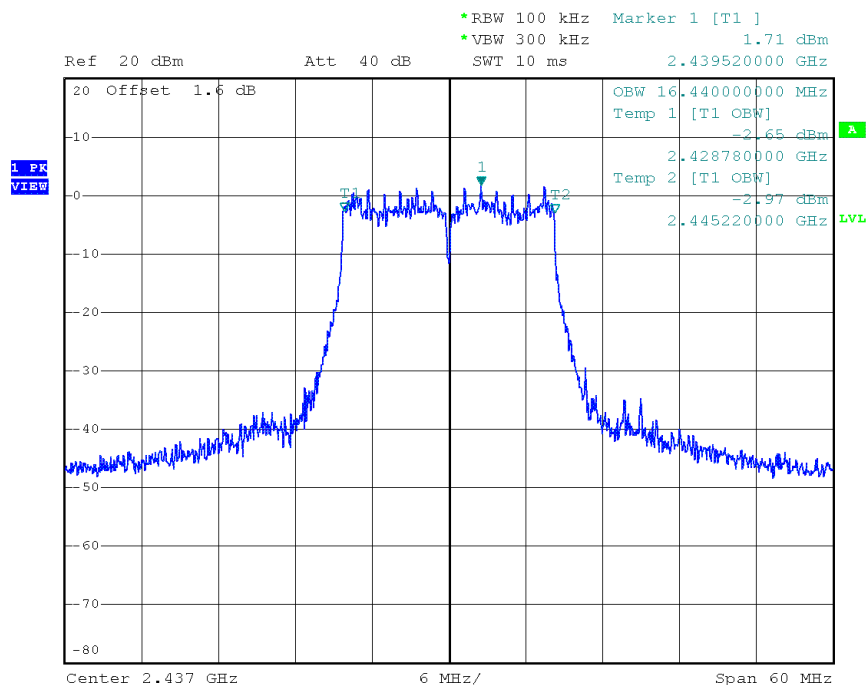
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 16.440



Date: 16.NOV.2018 10:48:09

Occupied Bandwidth

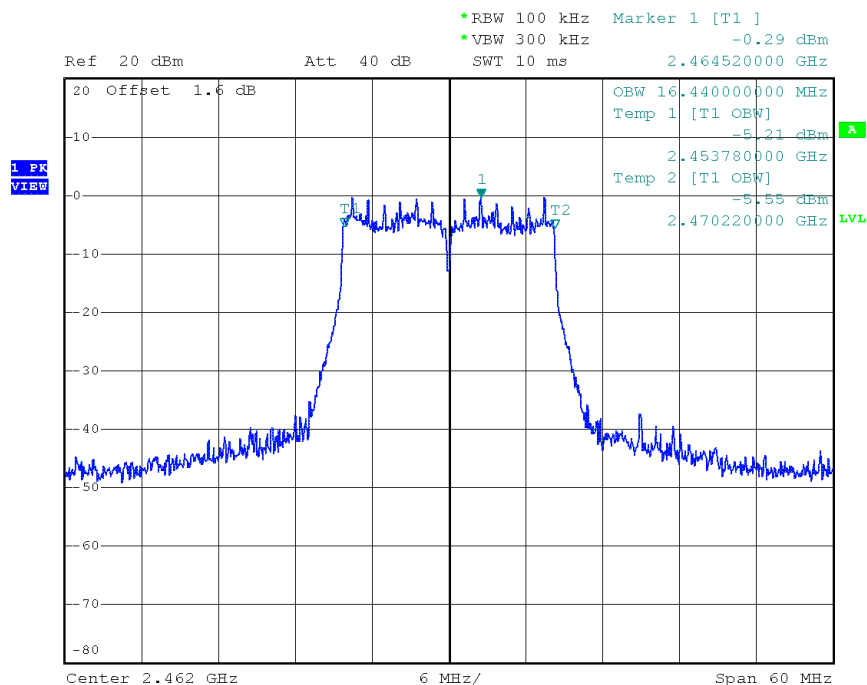
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 16.440



Date: 16.NOV.2018 10:49:44

Occupied Bandwidth

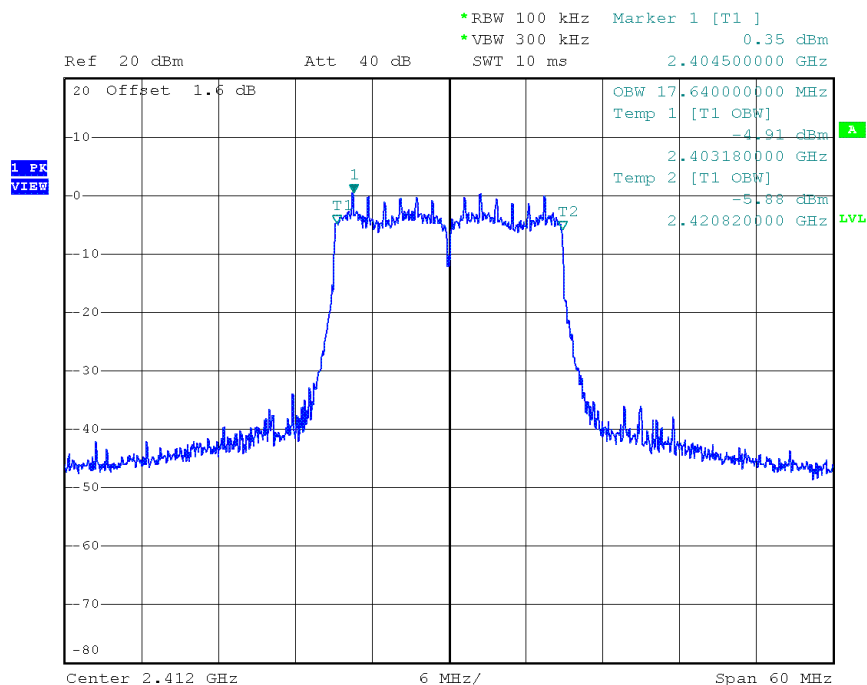
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 16.440



Date: 16.NOV.2018 10:51:03

Occupied Bandwidth

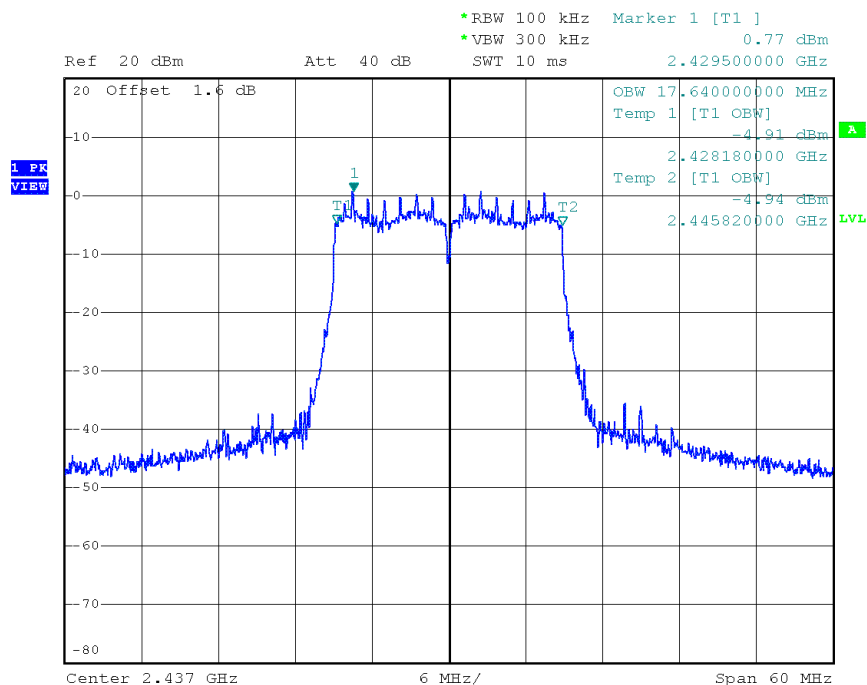
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 17.640



Date: 16.NOV.2018 10:53:29

Occupied Bandwidth

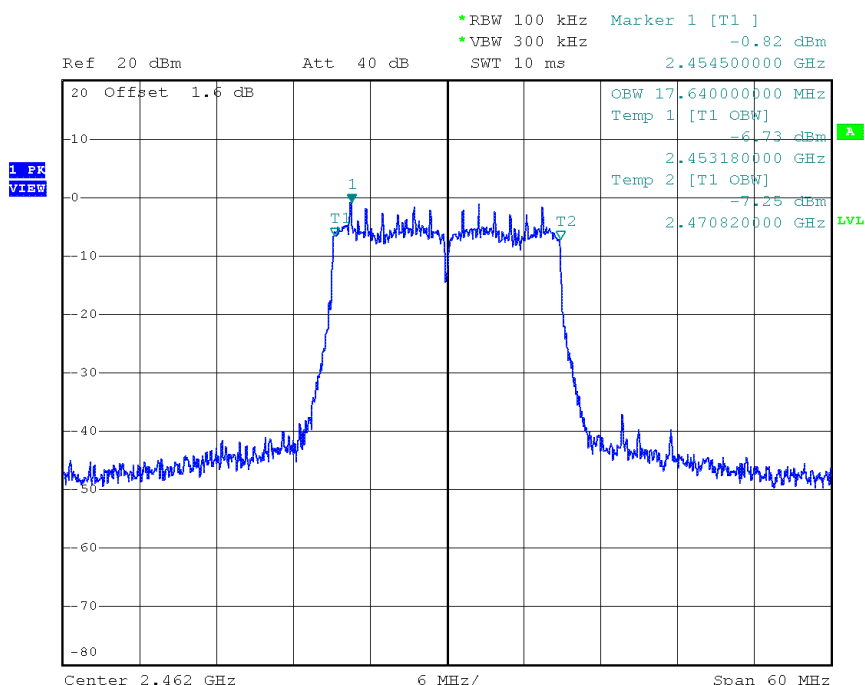
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 17.640



Date: 16.NOV.2018 10:54:51

Occupied Bandwidth

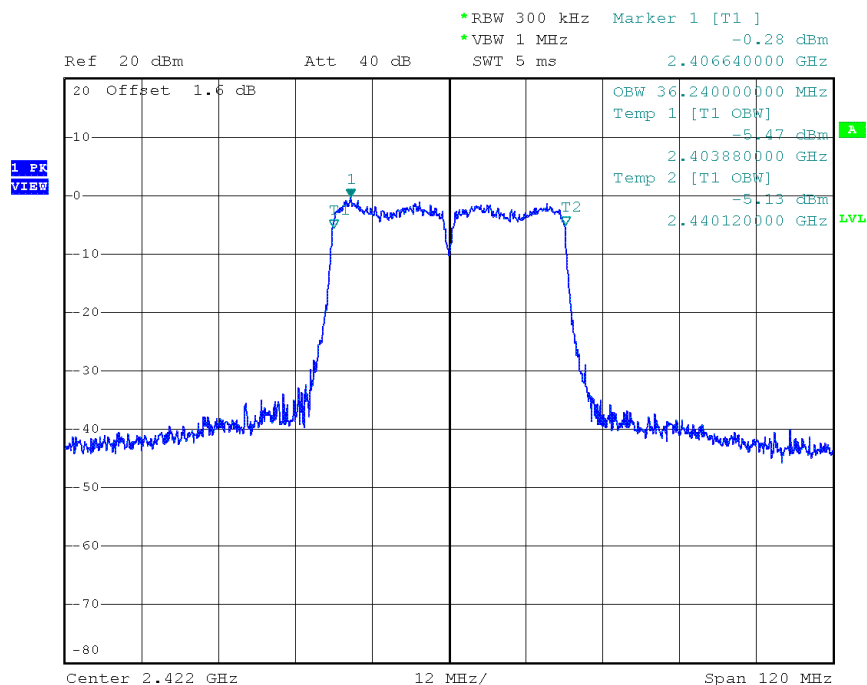
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 17.640



Date: 16.NOV.2018 10:55:57

Occupied Bandwidth

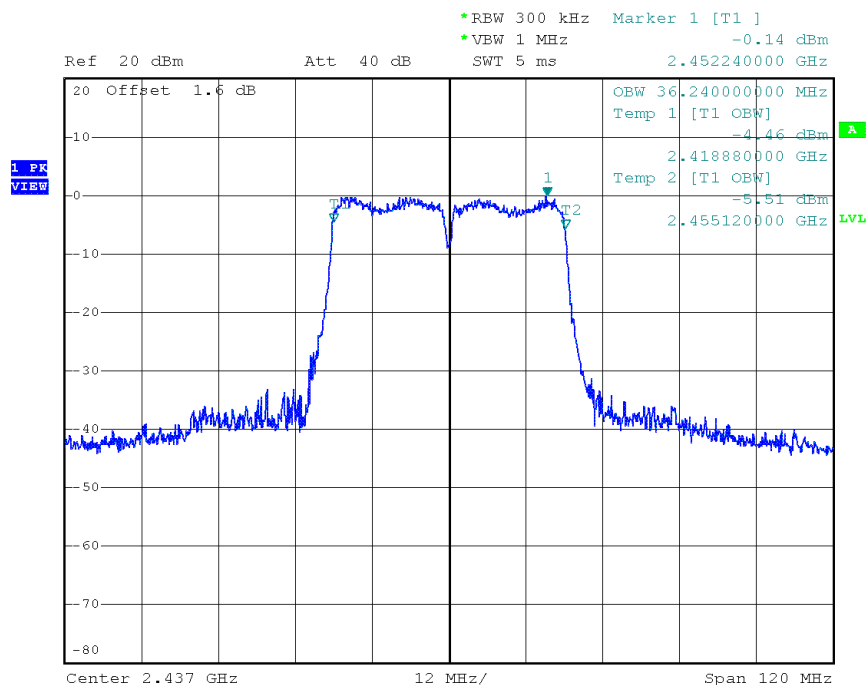
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 36.240



Date: 16.NOV.2018 10:58:52

Occupied Bandwidth

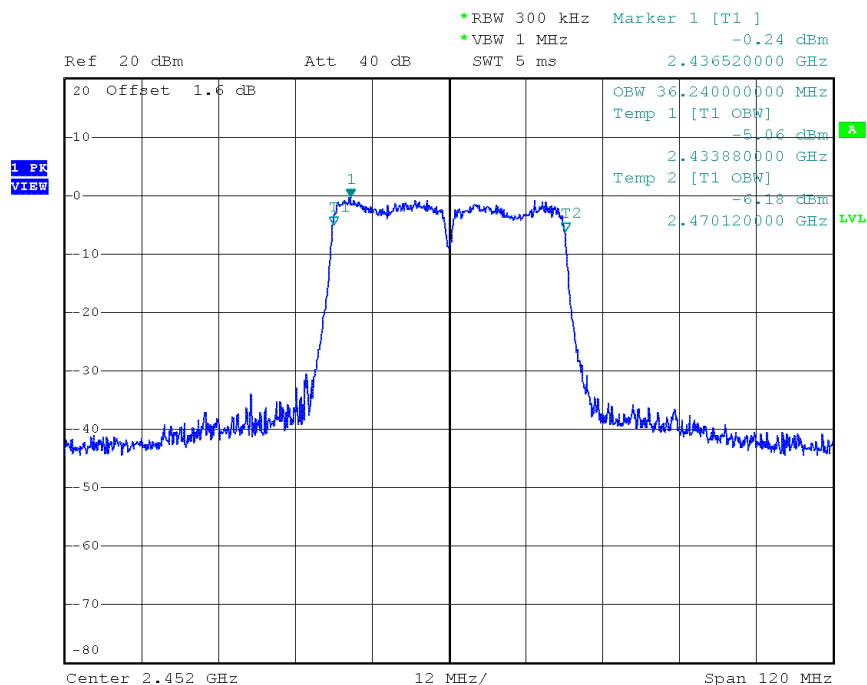
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 36.240



Date: 16.NOV.2018 11:00:31

Occupied Bandwidth

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF
 Test Sample ID: 20584
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Occupied Bandwidth [MHz]: 36.240



Date: 16.NOV.2018 11:01:45

3.2 Test Conditions and Results - 6 dB bandwidth

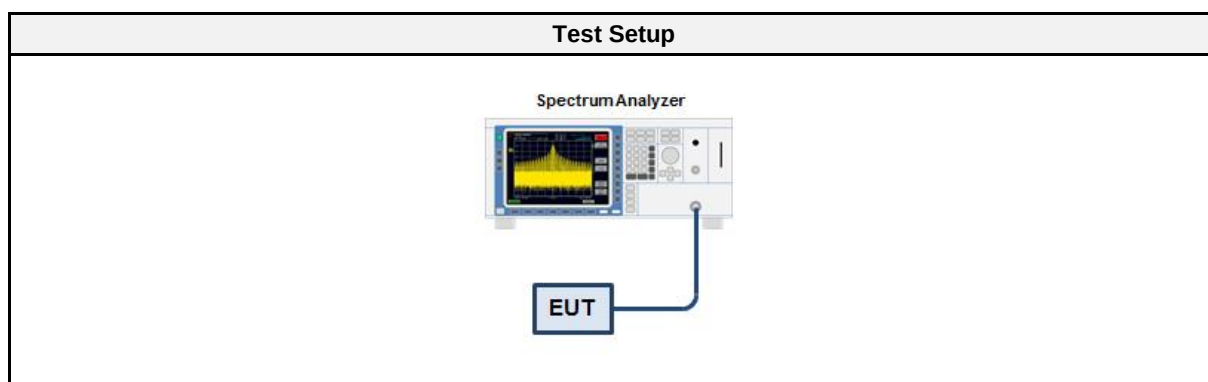
3.2.1 Information

Test Information	
Reference	FCC § 15.247(a)(2); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.8
Operator	Wilfried Treffke
Date	2018-11-16

3.2.2 Limits

Limits
$\geq 500\text{kHz}$

3.2.3 Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

3.2.5 Procedure

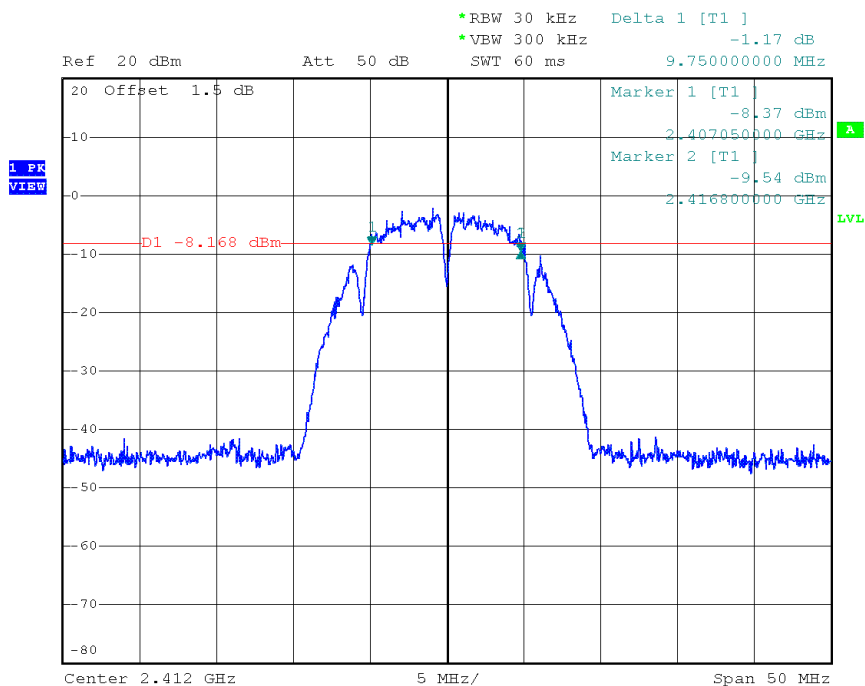
Test Procedure
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and RBW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker 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

3.2.6 Results

Test Results				
Mode	Frequency [MHz]	Bandwidth [kHz]	Limit [kHz]	Verdict
DSSS	2412	9750	500	PASS
DSSS	2437	9900	500	PASS
DSSS	2462	9750	500	PASS
OFDM	2412	16550	500	PASS
OFDM	2437	16450	500	PASS
OFDM	2462	16400	500	PASS
HT20	2412	17750	500	PASS
HT20	2437	17750	500	PASS
HT20	2462	17750	500	PASS
HT40	2422	35600	500	PASS
HT40	2437	35600	500	PASS
HT40	2452	35700	500	PASS

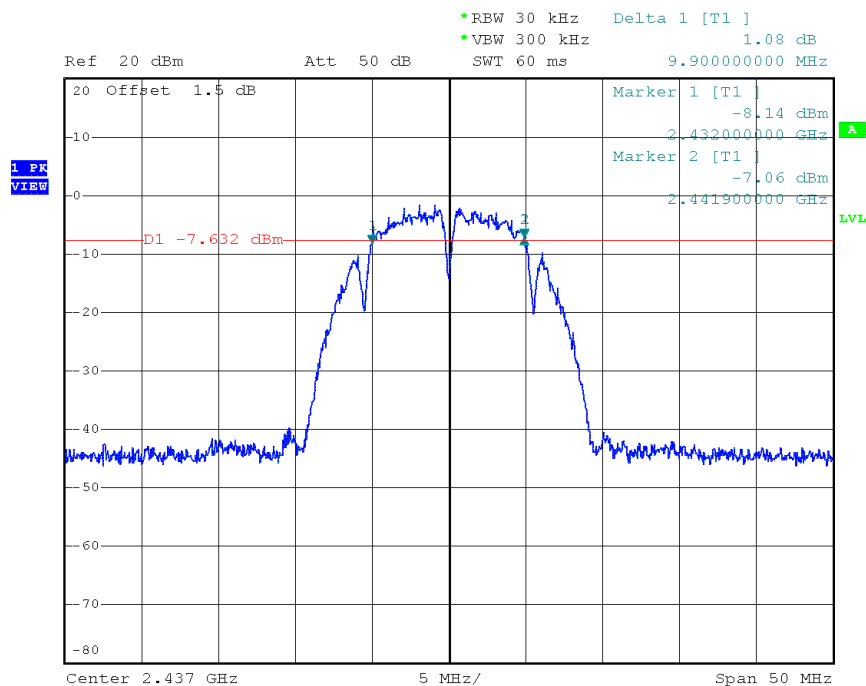
DTS (6 dB) Bandwidth

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2407.050
 Upper Frequency [MHz]: 2416.800
 6 dB Bandwidth [kHz]: 9750



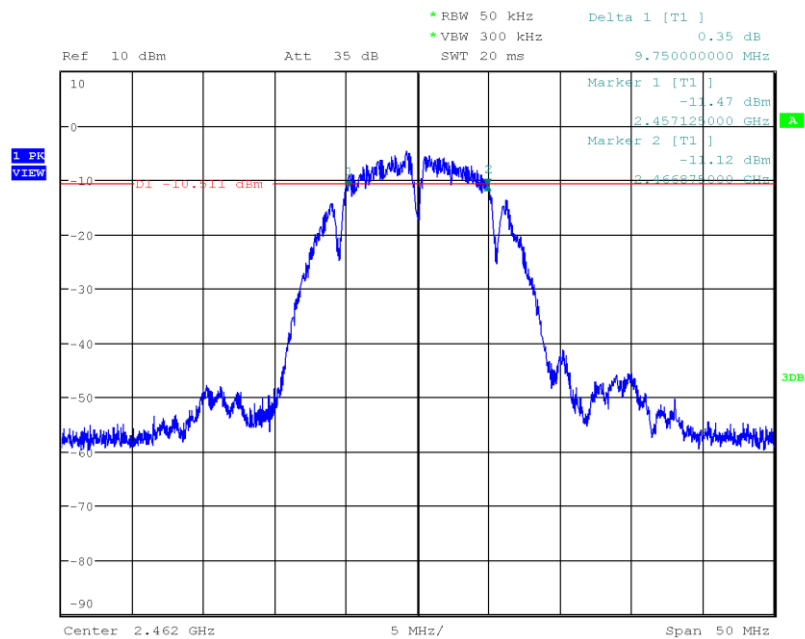
DTS (6 dB) Bandwidth

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2432.000
 Upper Frequency [MHz]: 2441.900
 6 dB Bandwidth [kHz]: 9900



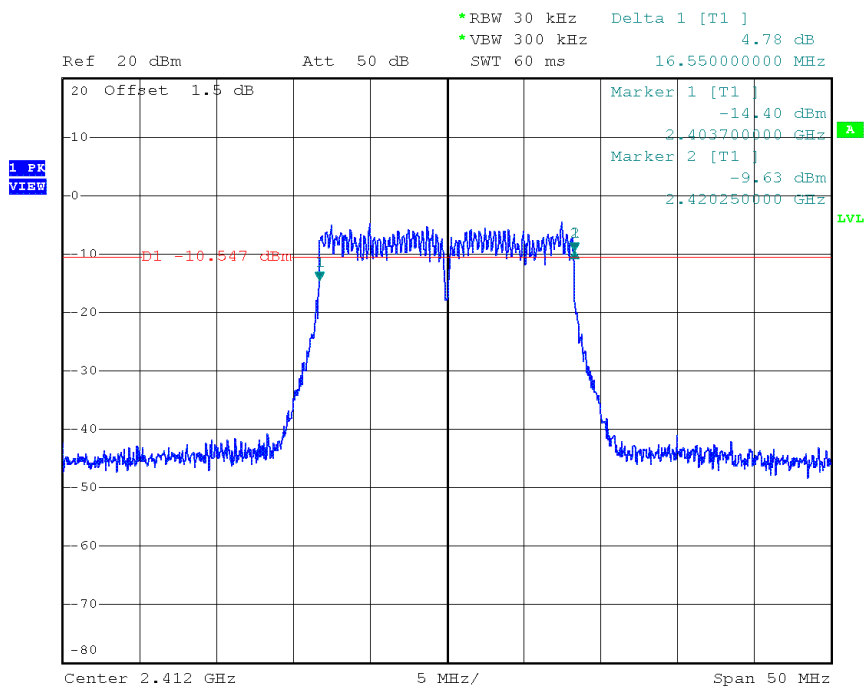
DTS (6 dB) Bandwidth

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2407.050
 Upper Frequency [MHz]: 2416.800
 6 dB Bandwidth [kHz]: 9750



DTS (6 dB) Bandwidth

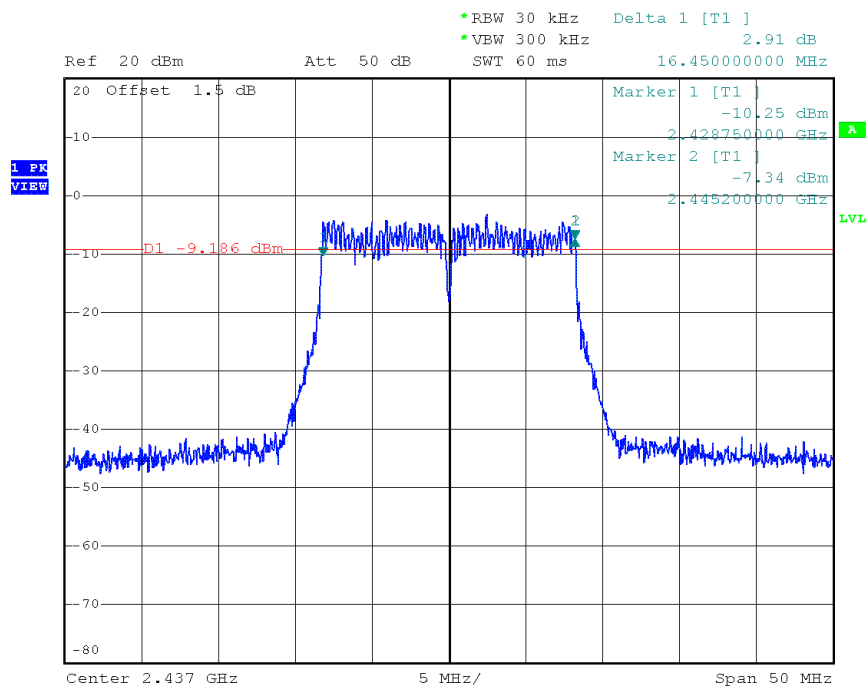
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2403.700
 Upper Frequency [MHz]: 2420.250
 6 dB Bandwidth [kHz]: 16550



Date: 16.NOV.2018 11:13:28

DTS (6 dB) Bandwidth

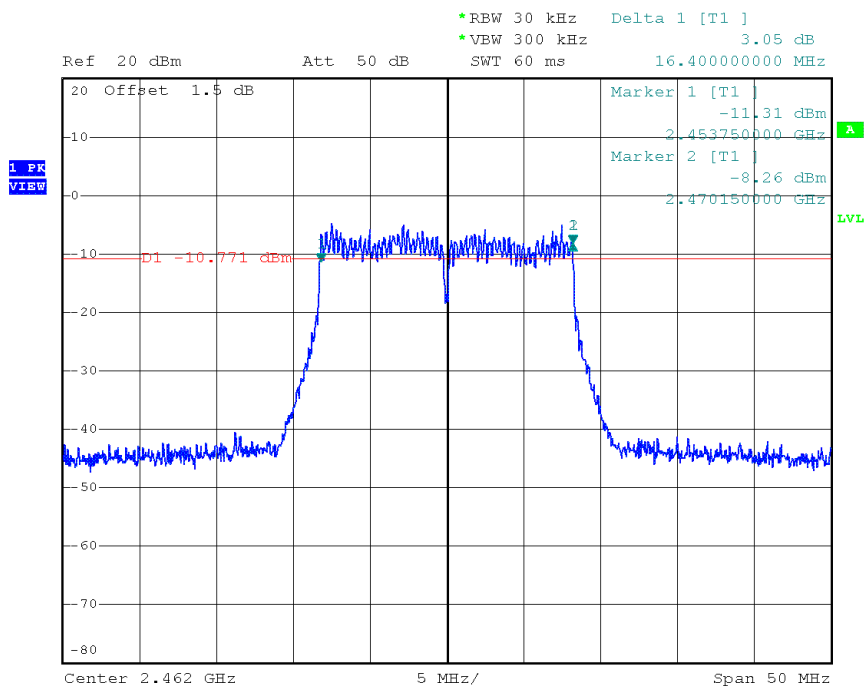
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2428.750
 Upper Frequency [MHz]: 2445.200
 6 dB Bandwidth [kHz]: 16450



Date: 16.NOV.2018 11:14:35

DTS (6 dB) Bandwidth

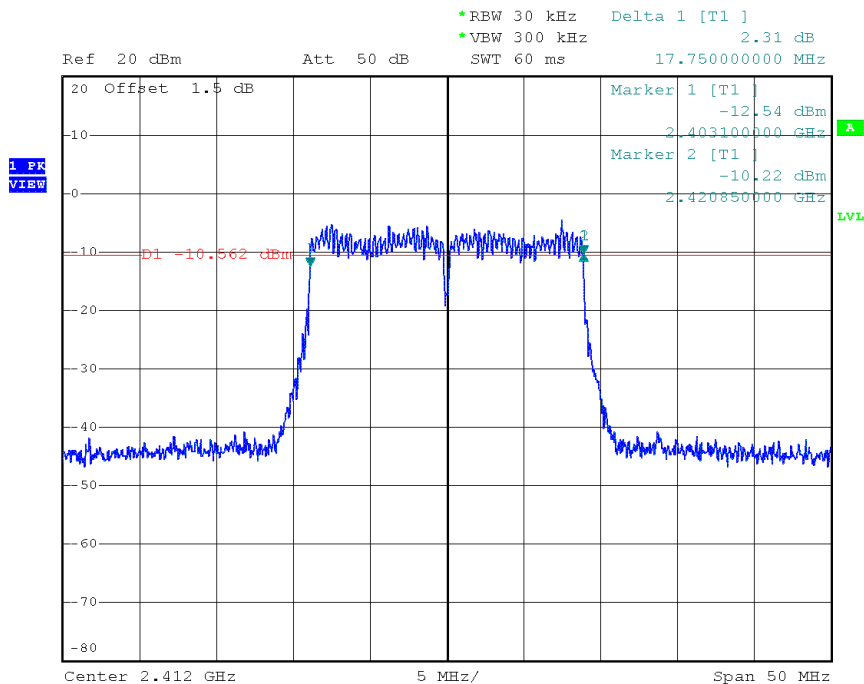
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2453.750
 Upper Frequency [MHz]: 2470.150
 6 dB Bandwidth [kHz]: 16400



Date: 16.NOV.2018 11:15:39

DTS (6 dB) Bandwidth

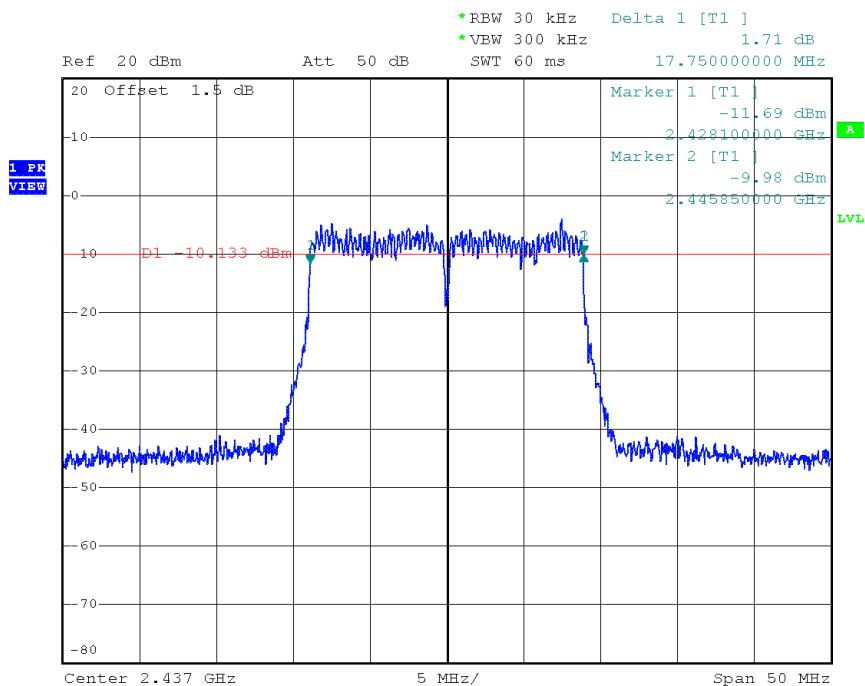
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2403.100
 Upper Frequency [MHz]: 2420.850
 6 dB Bandwidth [kHz]: 17750



Date: 16.NOV.2018 11:17:07

DTS (6 dB) Bandwidth

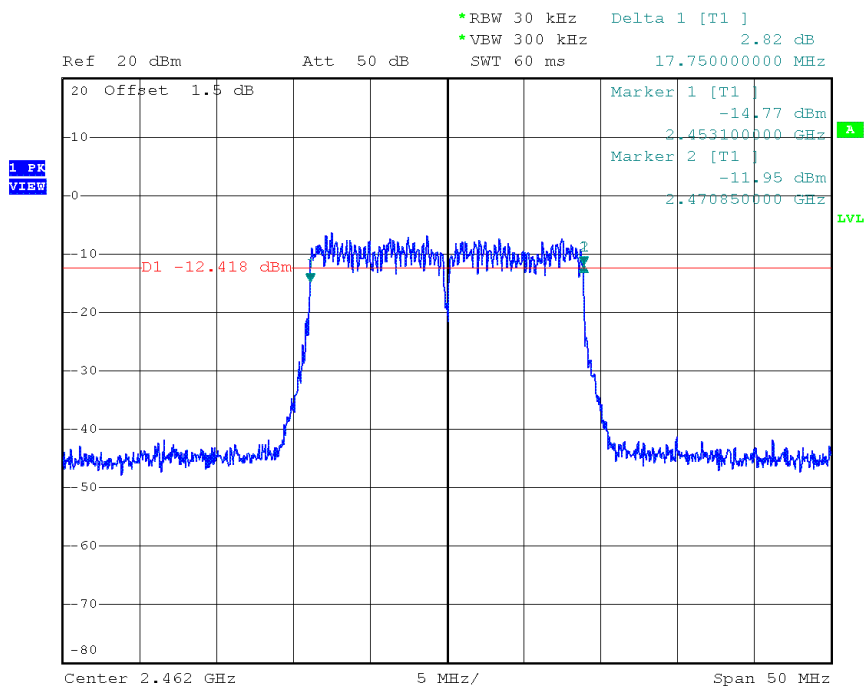
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2428.100
 Upper Frequency [MHz]: 2445.850
 6 dB Bandwidth [kHz]: 17750



Date: 16.NOV.2018 11:18:03

DTS (6 dB) Bandwidth

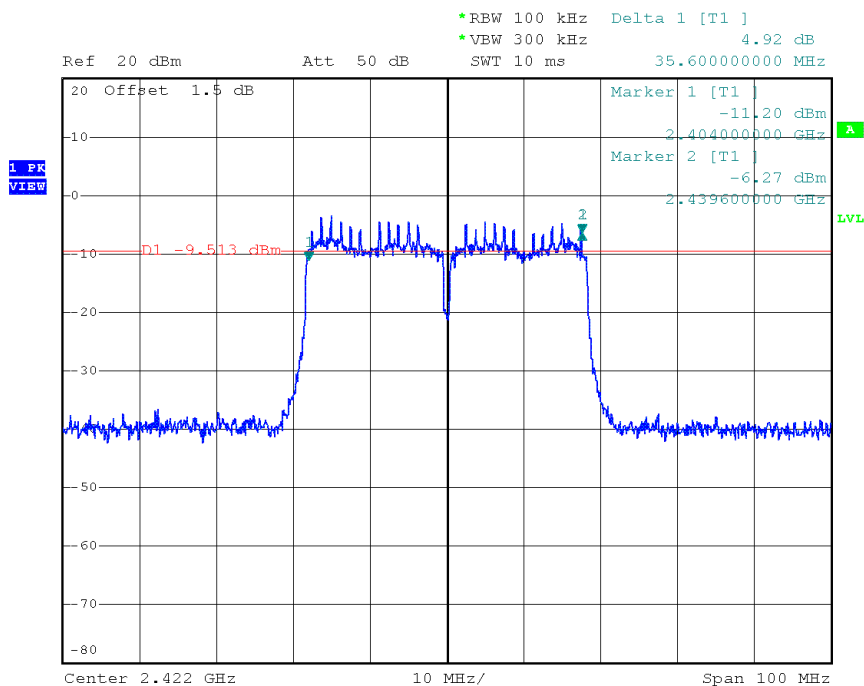
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2453.100
 Upper Frequency [MHz]: 2470.850
 6 dB Bandwidth [kHz]: 17750



Date: 16.NOV.2018 11:18:58

DTS (6 dB) Bandwidth

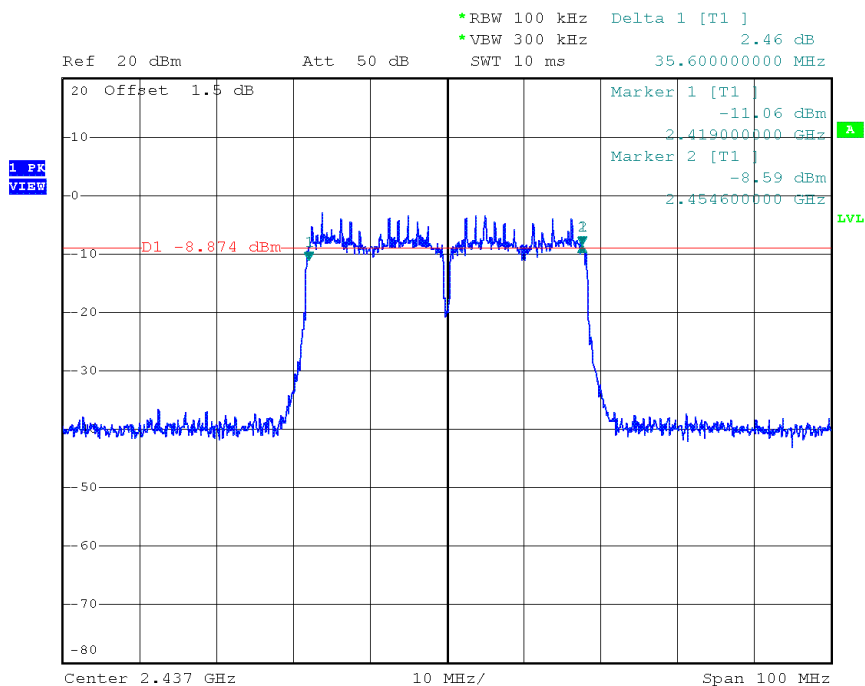
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2404.000
 Upper Frequency [MHz]: 2439.600
 6 dB Bandwidth [kHz]: 35600



Date: 16.NOV.2018 11:20:16

DTS (6 dB) Bandwidth

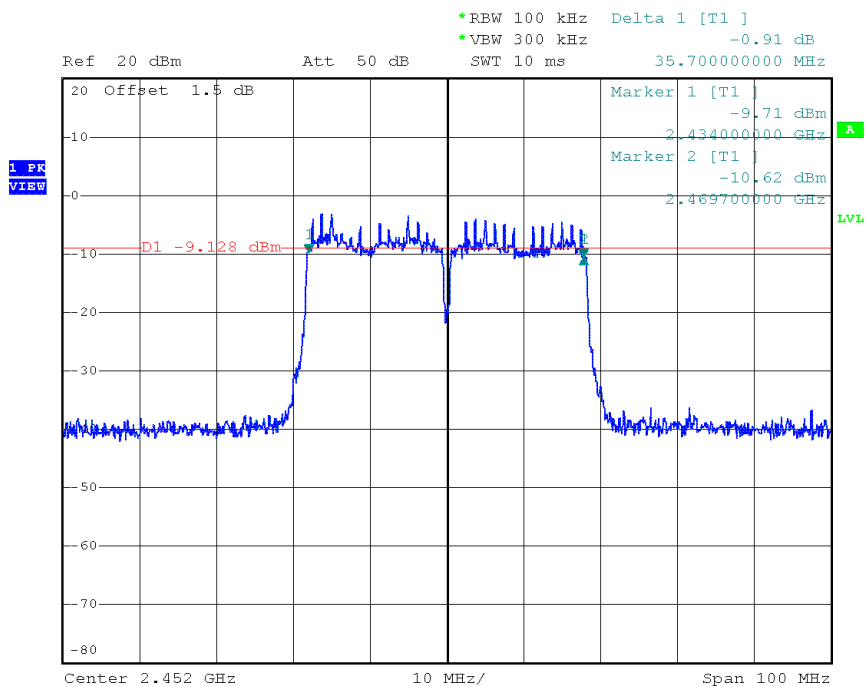
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2419.000
 Upper Frequency [MHz]: 2454.600
 6 dB Bandwidth [kHz]: 35600



Date: 16.NOV.2018 11:21:11

DTS (6 dB) Bandwidth

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Lower Frequency [MHz]: 2434.000
 Upper Frequency [MHz]: 2469.700
 6 dB Bandwidth [kHz]: 35700



Date: 16.NOV.2018 11:22:31

3.3 Test Conditions and Results - Maximum peak conducted output power

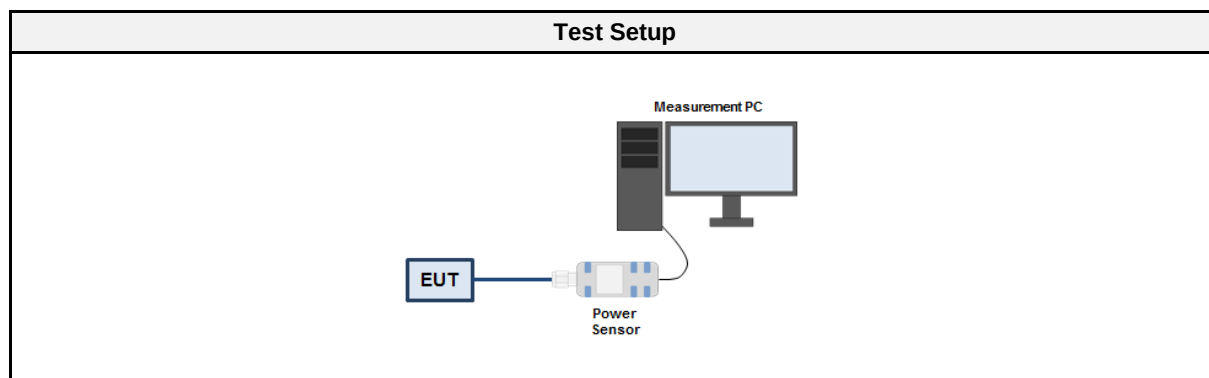
3.3.1 Information

Test Information	
Reference	FCC § 15.247(b)(1); ISSED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 11.9.1
Operator	Wilfried Treffke
Date	2018-11-16

3.3.2 Limits

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.

3.3.3 Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z81	EF00830	2018-07	2019-07

3.3.5 Procedure

Test Procedure
1. EUT set to test transmit mode 2. The EUT antenna port is connected to a wideband power sensor 3. The peak power is measured with the power sensor 4. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain and the power is summed up

3.3.6 Results

Test Results - DSSS				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2412	15.3	0.03	1.0	PASS
2437	15.7	0.04	1.0	PASS
2462	14.1	0.03	1.0	PASS

Test Results - OFDM				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2412	22.6	0.18	1.0	PASS
2437	22.9	0.19	1.0	PASS
2462	22.9	0.19	1.0	PASS

Test Results - HT20				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2412	22.6	0.18	1.0	PASS
2437	22.8	0.19	1.0	PASS
2462	22.3	0.17	1.0	PASS

Test Results - HT40				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2422	22.3	0.17	1.0	PASS
2437	22.7	0.19	1.0	PASS
2452	22.6	0.18	1.0	PASS

3.4 Test Conditions and Results - Power spectral density

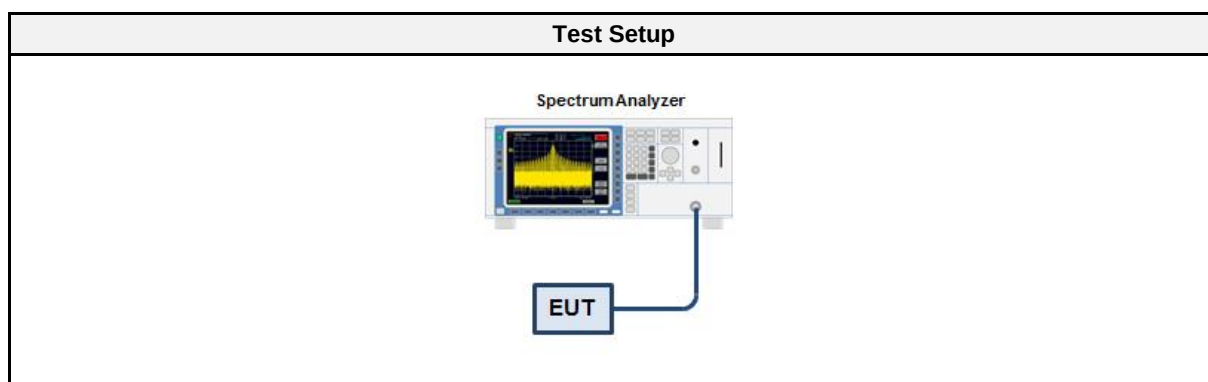
3.4.1 Information

Test Information	
Reference	FCC § 15.247(e); ISSED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.10.2, 14.3.2
Operator	Wilfried Treffke
Date	2018-11-16

3.4.2 Limits

Limits
8 dBm / 3 kHz

3.4.3 Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

3.4.5 Procedure

Test Procedure
1. EUT set to test mode 2. The analyzer is set to DTS channel center frequency with a span of 1.5 times the DTS bandwidth 3. The RBW is set to 100 kHz with VBW $\geq$ RBW and the detector is set to peak with max hold 4. After the trace has stabilized a marker is set to the envelope maximum 5. If the power spectral density is above the limit the RBW is reduced (not lower than 3 kHz) and the measurement is repeated 6. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain

3.4.6 Results

Test Results - DSSS			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	2.282	8.0	PASS
2437	2.495	8.0	PASS
2462	0.994	8.0	PASS
RBW = 100 kHz			

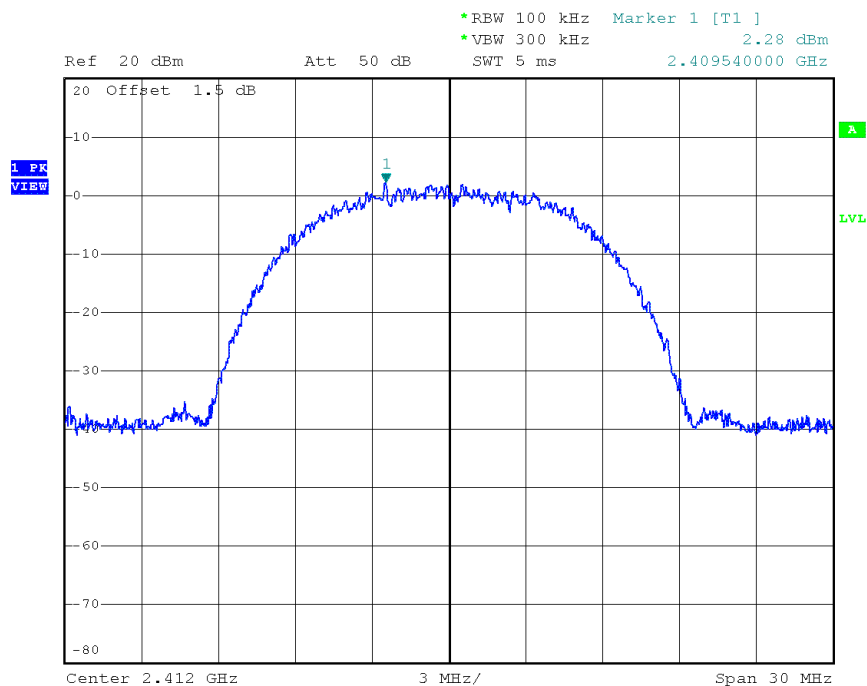
Test Results - OFDM			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	0.868	8.0	PASS
2437	1.803	8.0	PASS
2462	0.120	8.0	PASS
RBW = 100 kHz			

Test Results - HT20			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	-0.111	8.0	PASS
2437	0.583	8.0	PASS
2462	-1.196	8.0	PASS
RBW = 100 kHz			

Test Results - HT40			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2422	-3.658	8.0	PASS
2437	-3.393	8.0	PASS
2452	-3.263	8.0	PASS
RBW = 100 kHz			

Peak Power Spectral Density

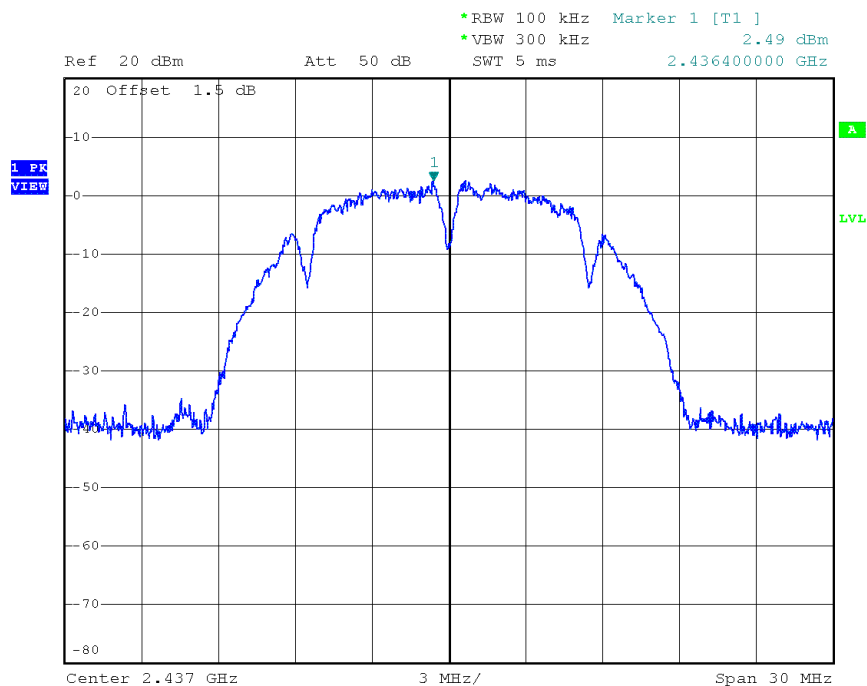
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2409.540
 Spectral Density [dBm/RBW]: 2.282
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:29:05

Peak Power Spectral Density

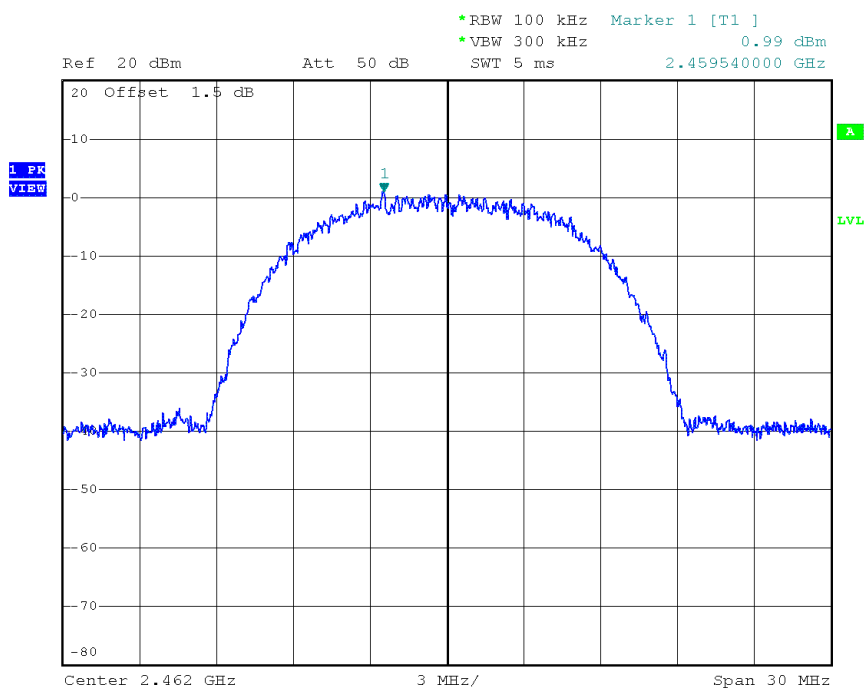
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2436.400
 Spectral Density [dBm/RBW]: 2.495
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:47:32

Peak Power Spectral Density

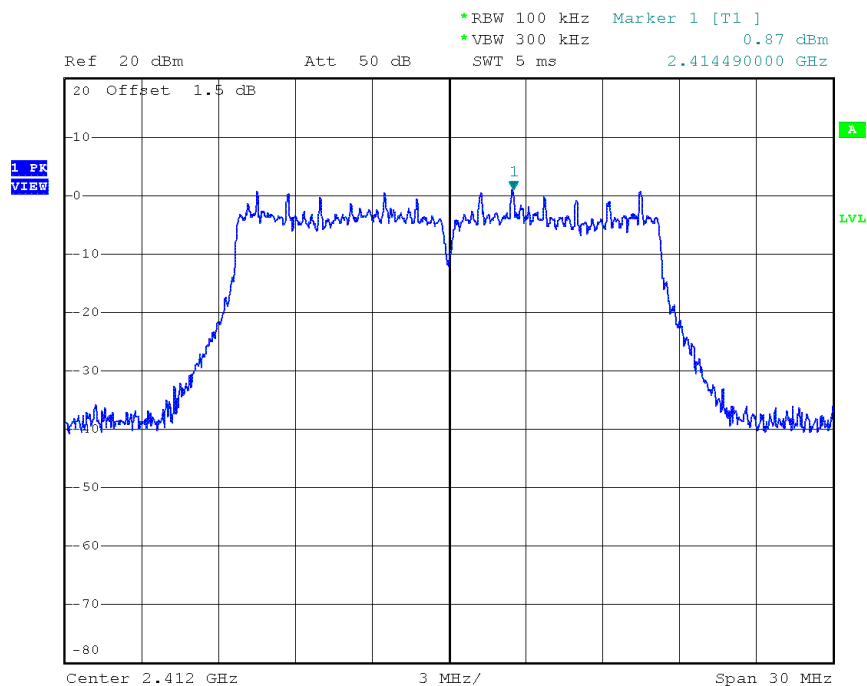
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2459.540
 Spectral Density [dBm/RBW]: 0.994
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:34:14

Peak Power Spectral Density

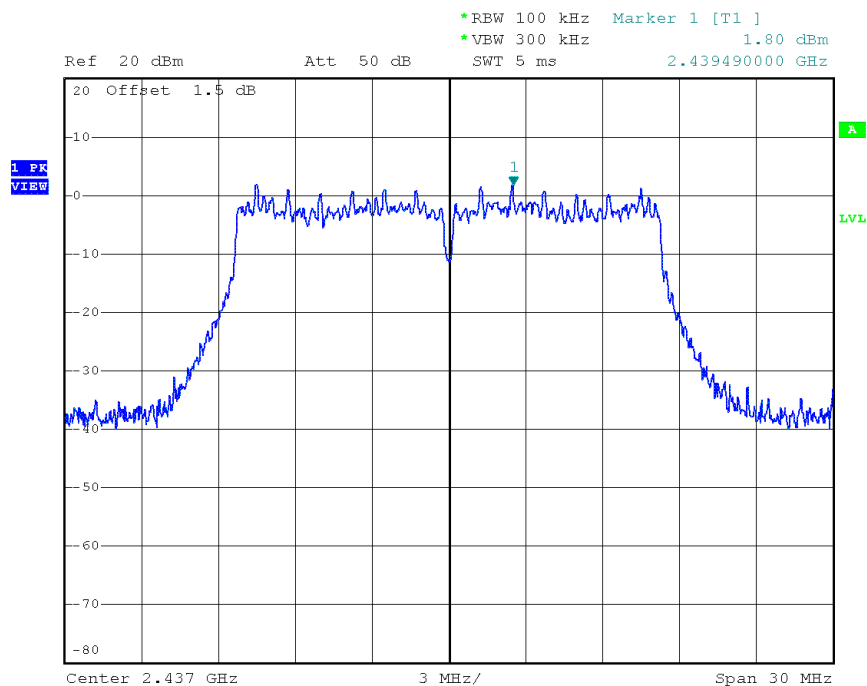
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2414.490
 Spectral Density [dBm/RBW]: 0.868
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:35:57

Peak Power Spectral Density

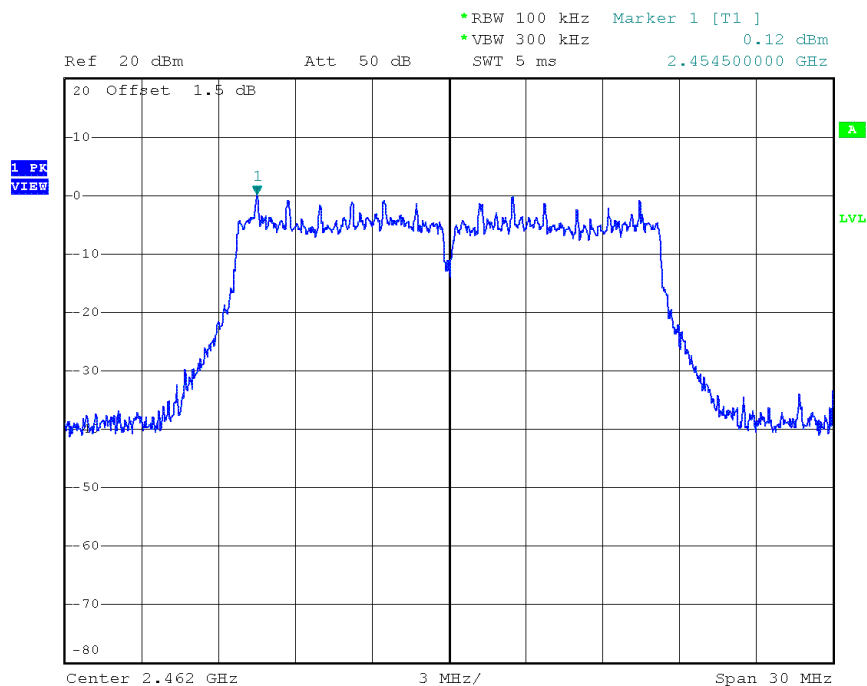
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2439.490
 Spectral Density [dBm/RBW]: 1.803
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:50:54

Peak Power Spectral Density

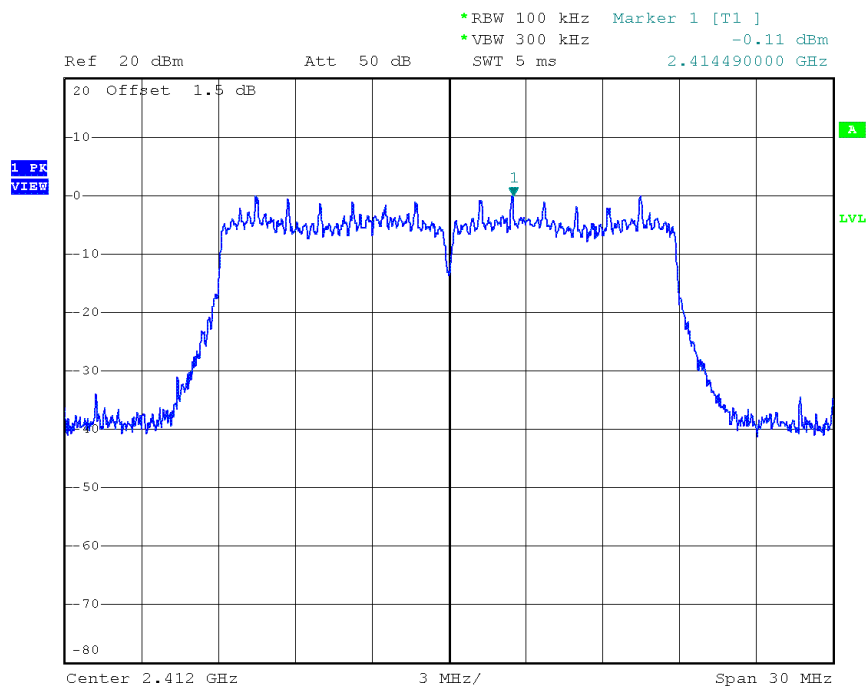
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2454.500
 Spectral Density [dBm/RBW]: 0.120
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 12:01:29

Peak Power Spectral Density

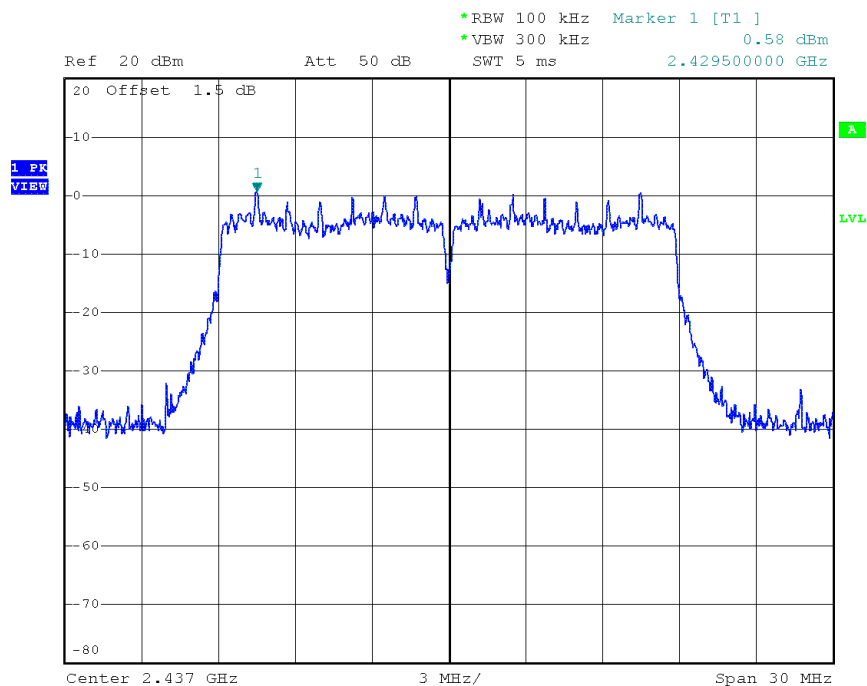
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2414.490
 Spectral Density [dBm/RBW]: -0.111
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:53:32

Peak Power Spectral Density

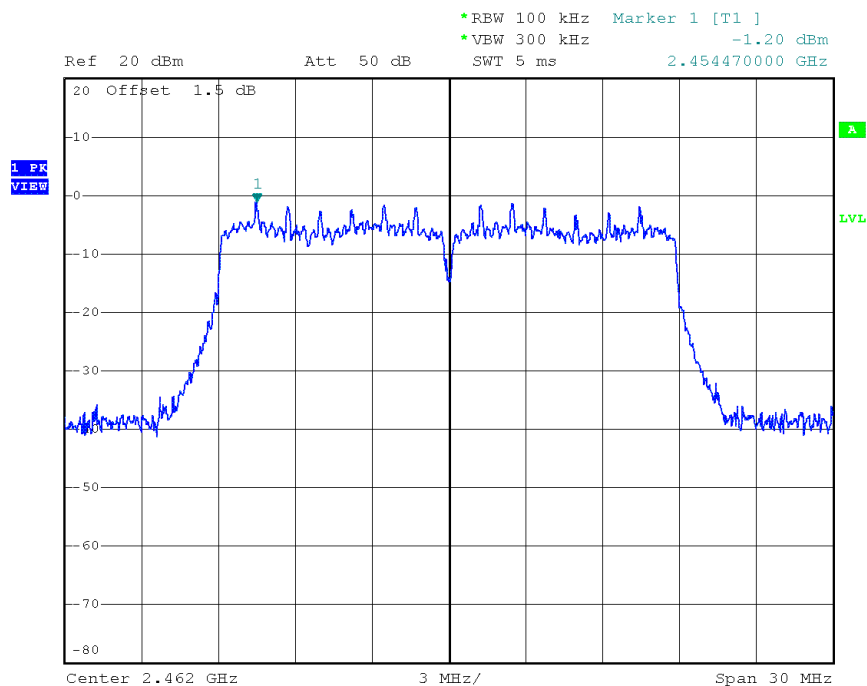
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2429.500
 Spectral Density [dBm/RBW]: 0.583
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:54:23

Peak Power Spectral Density

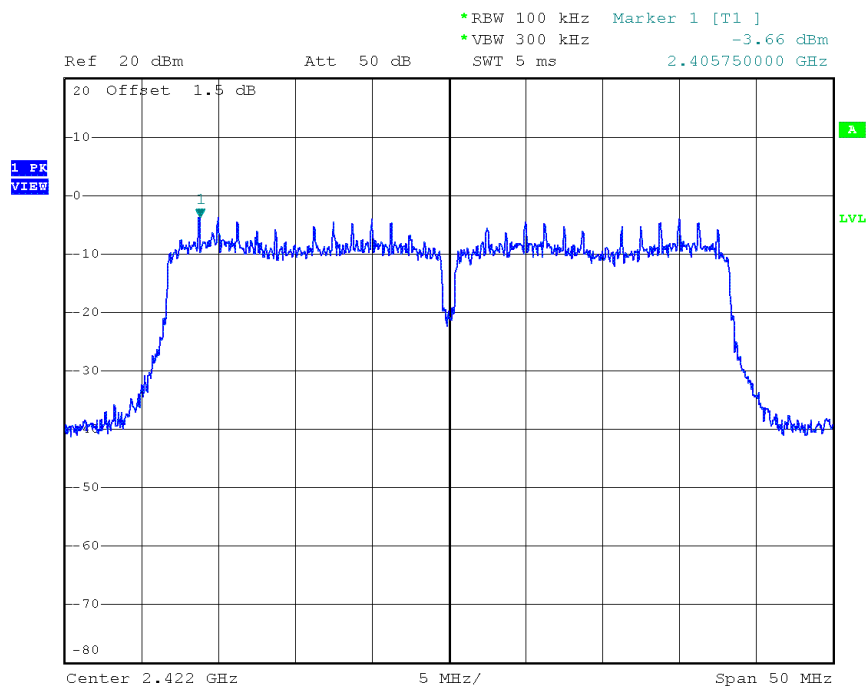
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2454.470
 Spectral Density [dBm/RBW]: -1.196
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:55:25

Peak Power Spectral Density

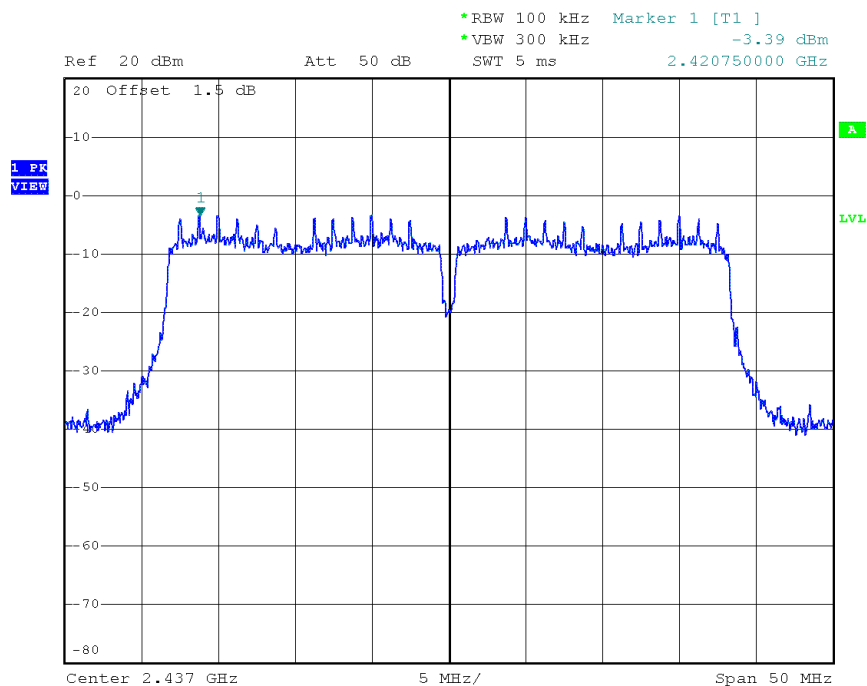
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2405.750
 Spectral Density [dBm/RBW]: -3.658
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:56:56

Peak Power Spectral Density

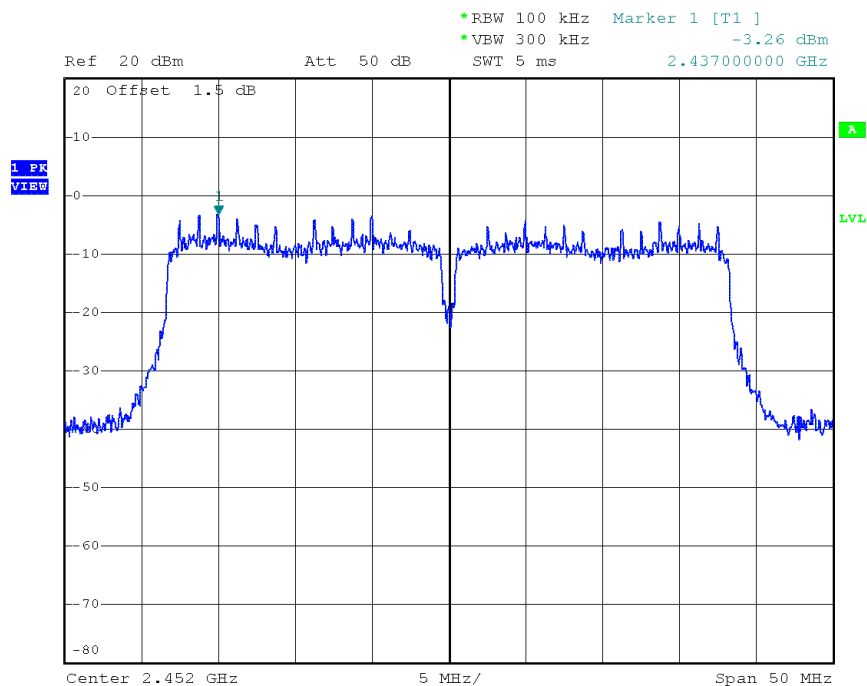
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2420.750
 Spectral Density [dBm/RBW]: -3.393
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:58:14

Peak Power Spectral Density

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Peak Frequency [MHz]: 2437.000
 Spectral Density [dBm/RBW]: -3.263
 Resolution Bandwidth [kHz]: 100 kHz



Date: 16.NOV.2018 11:59:16

3.5 Test Conditions and Results - AC powerline conducted emissions

3.5.1 Information

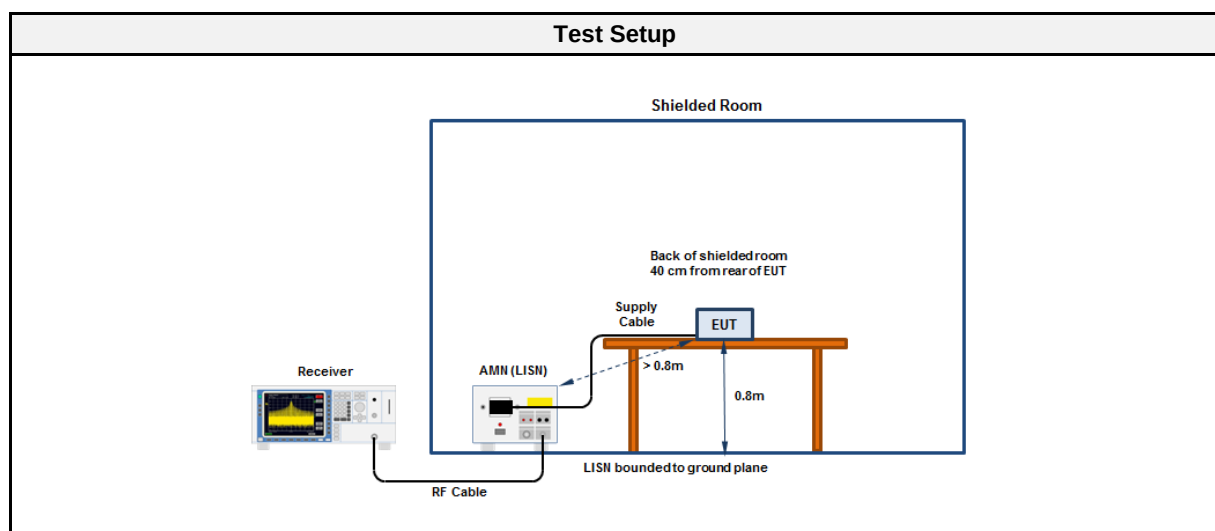
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Wilfried Treffke
Date	2018-11-29

3.5.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dBμV]	Average [dBμV]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Limit decreases linearly with the logarithm of the frequency

3.5.3 Setup



3.5.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

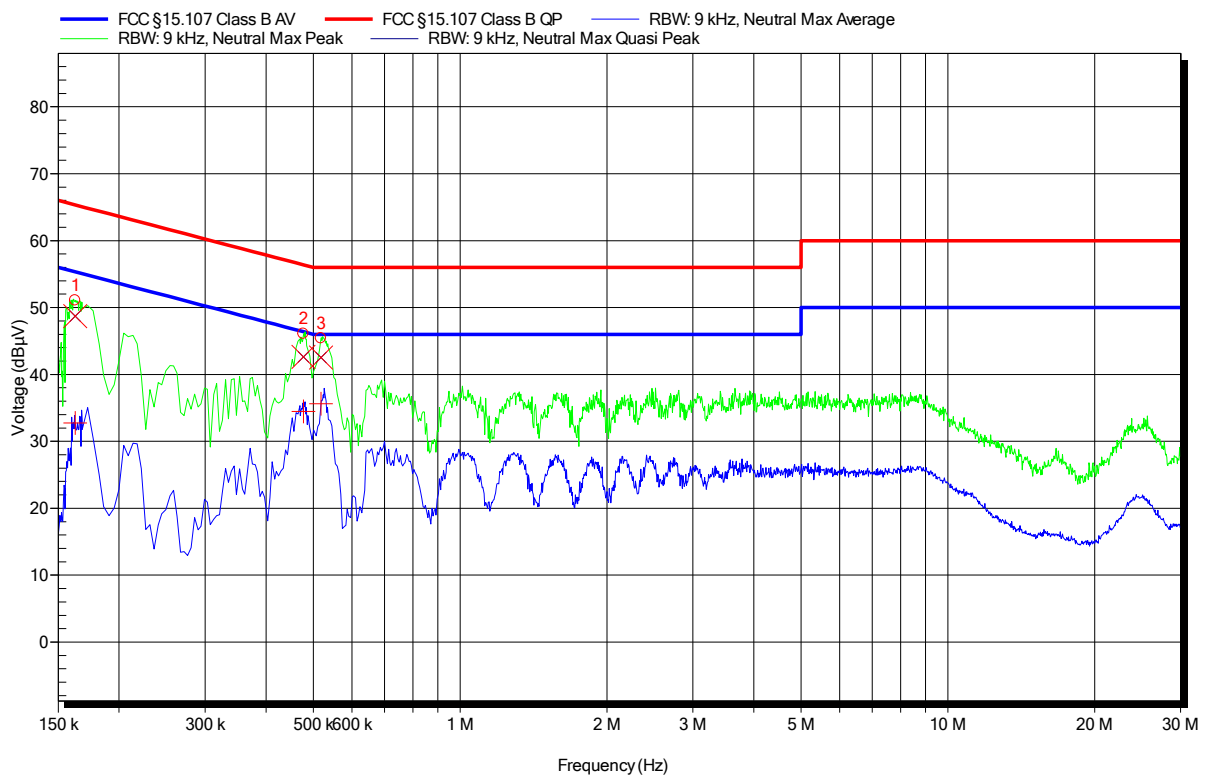
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Receiver	R&S	ESU 26	EF00241	2017-07	2019-07
LISN	R&S	ESH3-Z5	EF00036	2017-01	2019-07

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

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF
Test Site: Eurofins Product Service GmbH
Operator: Mr. Treffke
Test Conditions: Tnom: 22.3°C, Unom: 120 VAC / 60 Hz
LISN: ESH3-Z5 (N)
Mode: IEEE802.11b, 2412 MHz
Test Date: 2018-11-29
Note:

Index 3



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	162.6 kHz	48.69 dBμV	65.33 dBμV	-16.64 dB	Pass
2	477.15 kHz	42.64 dBμV	56.39 dBμV	-13.75 dB	Pass
3	519 kHz	42.53 dBμV	56 dBμV	-13.47 dB	Pass

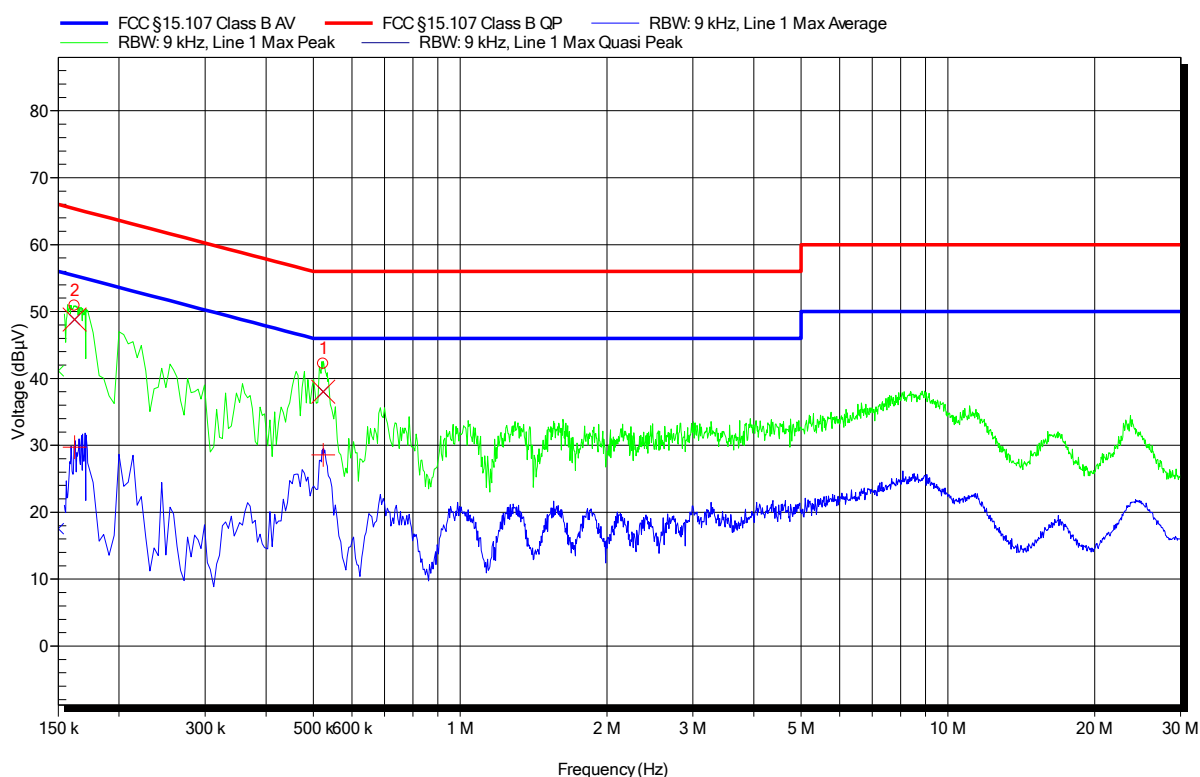
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	162.6 kHz	32.74 dBμV	55.33 dBμV	-22.59 dB	Pass
2	477.15 kHz	34.48 dBμV	46.39 dBμV	-11.91 dB	Pass
3	519 kHz	35.6 dBμV	46 dBμV	-10.4 dB	Pass

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

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 22.3°C, Unom: 120 VAC / 60 Hz
 LISN: ESH3-Z5 (L)
 Mode: IEEE802.11b, 2412 MHz
 Test Date: 2018-11-29
 Note:

Index 4



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	523.95 kHz	38.04 dBμV	56 dBμV	-17.96 dB	Pass
2	162.15 kHz	48.79 dBμV	65.35 dBμV	-16.56 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	523.95 kHz	28.58 dBμV	46 dBμV	-17.42 dB	Pass
2	162.15 kHz	29.72 dBμV	55.35 dBμV	-25.63 dB	Pass

3.6 Test Conditions and Results - Band-edge compliance

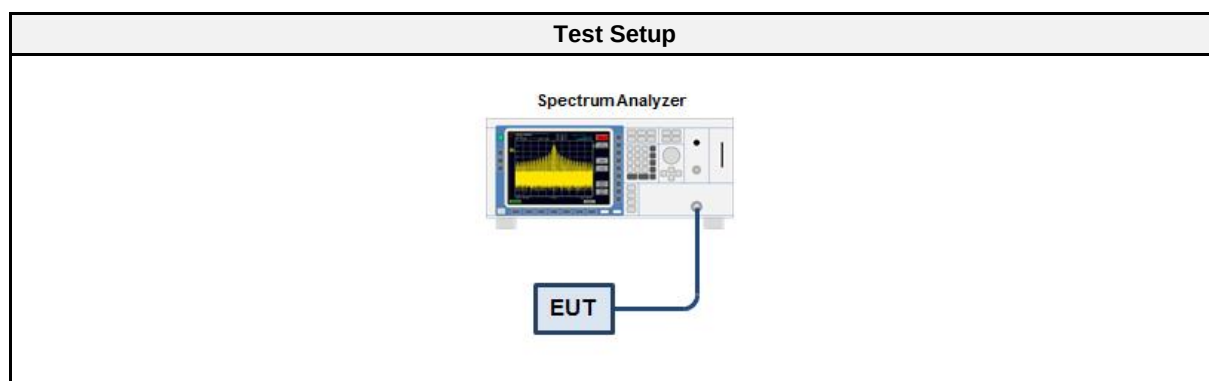
3.6.1 Information

Test Information	
Reference	FCC § 15.247(d); ISSED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.13
Operator	Wilfried Treffke
Date	2018-11-16

3.6.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.6.3 Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

3.6.5 Procedure

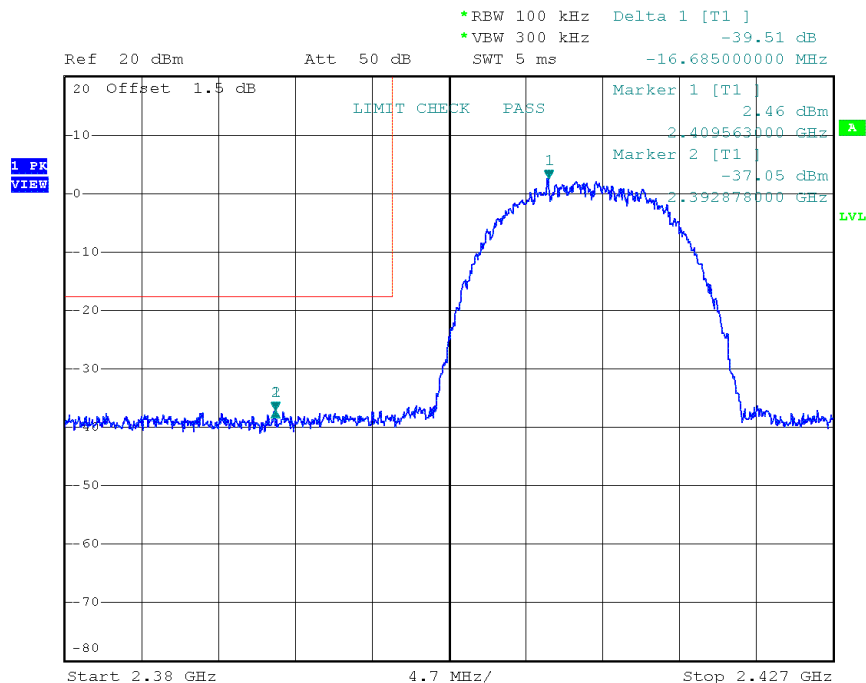
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference

3.6.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
DSSS	2412	-39.51	-20	PASS
DSSS	2462	-37.05	-20	PASS
OFDM	2412	-35.66	-20	PASS
OFDM	2462	-37.33	-20	PASS
HT20	2412	-36.85	-20	PASS
HT20	2462	-36.59	-20	PASS
HT40	2422	-32.40	-20	PASS
HT40	2452	-33.22	-20	PASS

Band-edge Compliance

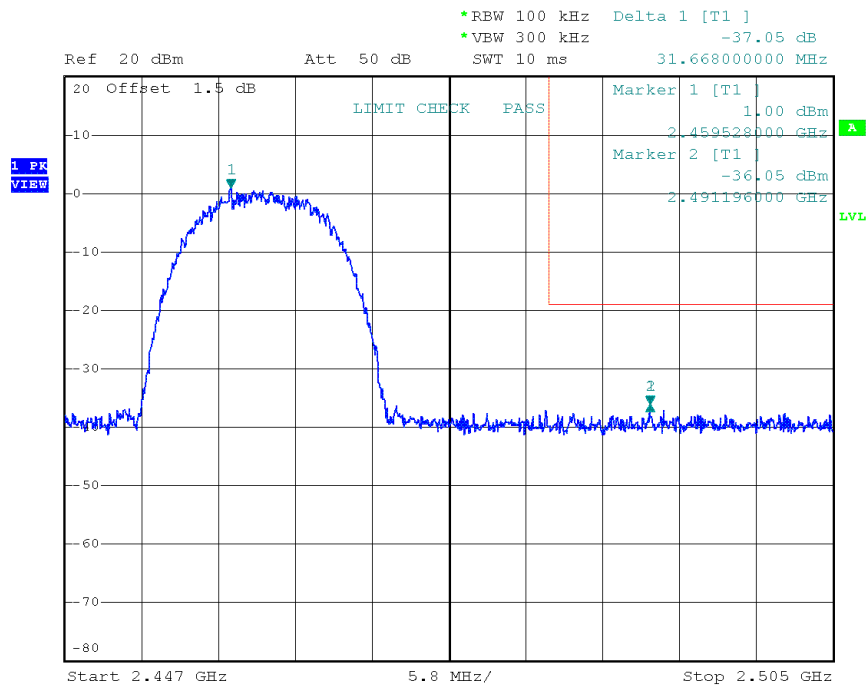
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Lower
 In-band Frequency [MHz]: 2409.563
 Max. in-band Level [dBm/100 kHz]: 2.463
 Out-of-band Frequency [MHz]: 2392.878
 Max. out-of-band Level [dBm/100 kHz]: -37.05
 Attenuation [dB]: -39.51



Date: 16.NOV.2018 13:04:19

Band-edge Compliance

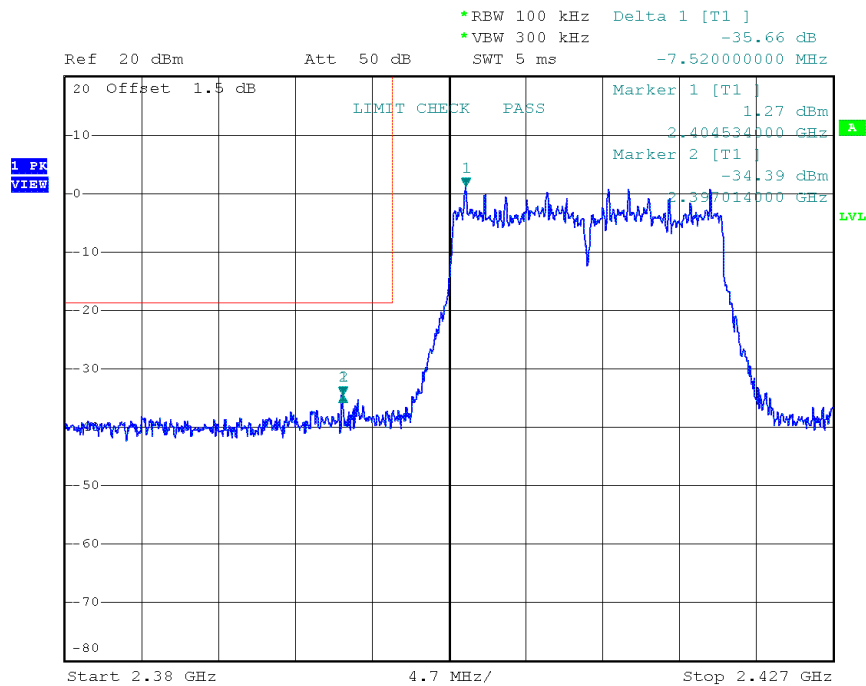
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Upper
 In-band Frequency [MHz]: 2459.528
 Max. in-band Level [dBm/100 kHz]: 1.004
 Out-of-band Frequency [MHz]: 2491.196
 Max. out-of-band Level [dBm/100 kHz]: -36.049
 Attenuation [dB]: -37.05



Date: 16.NOV.2018 13:08:37

Band-edge Compliance

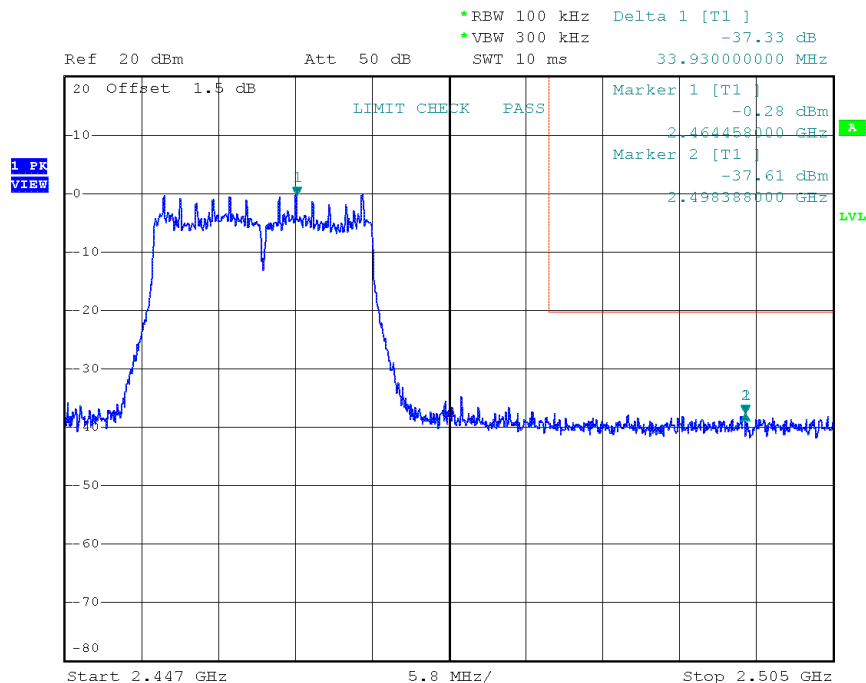
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Lower
 In-band Frequency [MHz]: 2404.534
 Max. in-band Level [dBm/100 kHz]: 1.268
 Out-of-band Frequency [MHz]: 2397.014
 Max. out-of-band Level [dBm/100 kHz]: -34.388
 Attenuation [dB]: -35.66



Date: 16.NOV.2018 13:11:24

Band-edge Compliance

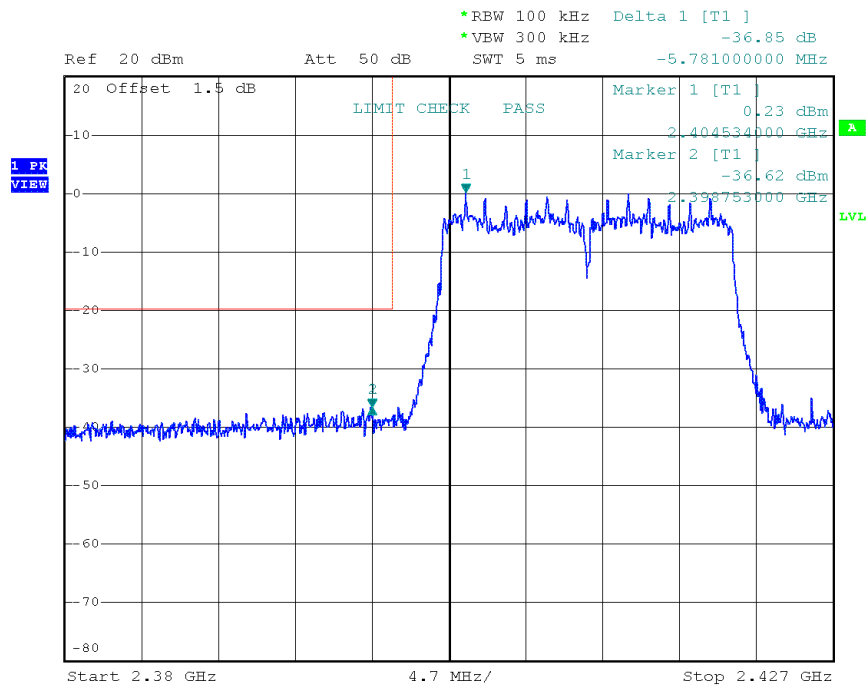
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Upper
 In-band Frequency [MHz]: 2464.458
 Max. in-band Level [dBm/100 kHz]: -0.278
 Out-of-band Frequency [MHz]: 2498.388
 Max. out-of-band Level [dBm/100 kHz]: -37.609
 Attenuation [dB]: -37.33



Date: 16.NOV.2018 13:12:39

Band-edge Compliance

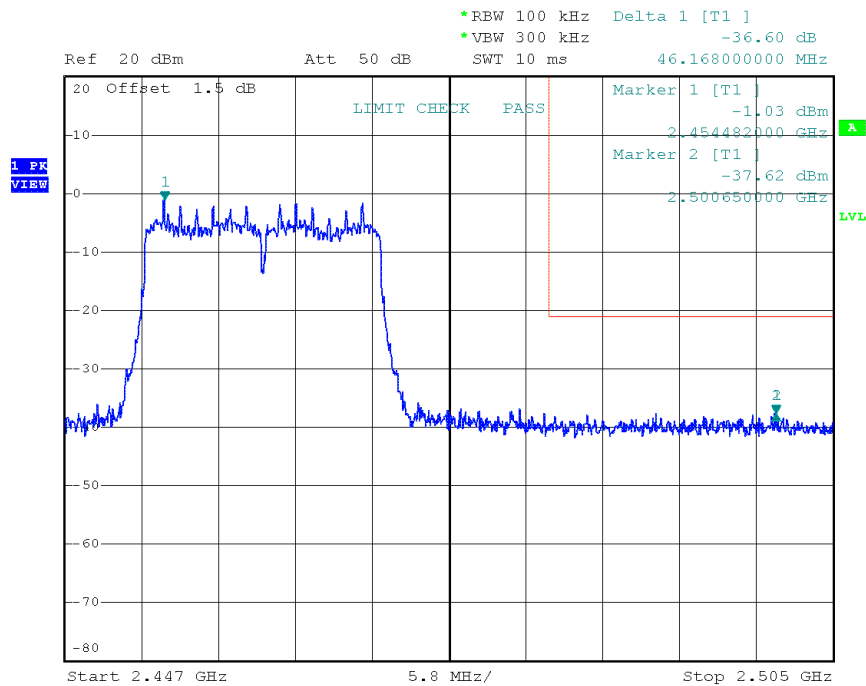
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Lower
 In-band Frequency [MHz]: 2404.534
 Max. in-band Level [dBm/100 kHz]: 0.227
 Out-of-band Frequency [MHz]: 2398.753
 Max. out-of-band Level [dBm/100 kHz]: -36.621
 Attenuation [dB]: -36.85



Date: 16.NOV.2018 13:13:47

Band-edge Compliance

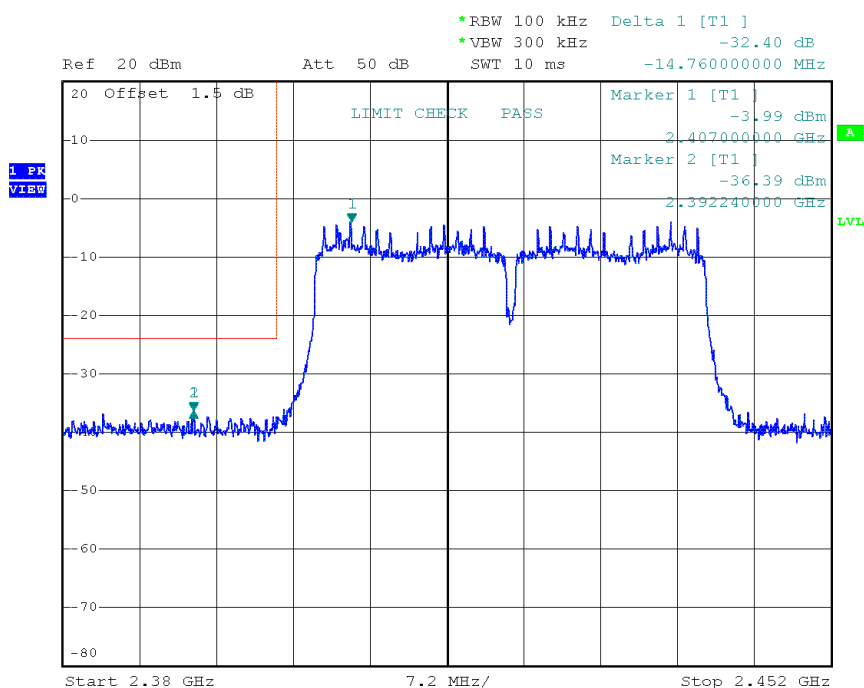
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Upper
 In-band Frequency [MHz]: 2454.482
 Max. in-band Level [dBm/100 kHz]: -1.025
 Out-of-band Frequency [MHz]: 2500.65
 Max. out-of-band Level [dBm/100 kHz]: -37.62
 Attenuation [dB]: -36.59



Date: 16.NOV.2018 13:14:44

Band-edge Compliance

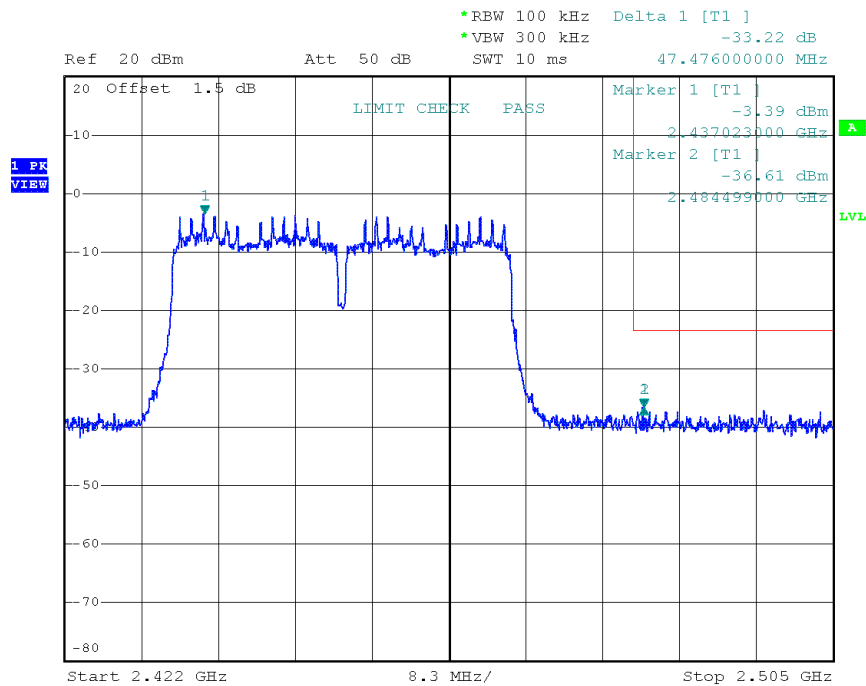
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Lower
 In-band Frequency [MHz]: 2407.0
 Max. in-band Level [dBm/100 kHz]: -3.991
 Out-of-band Frequency [MHz]: 2392.24
 Max. out-of-band Level [dBm/100 kHz]: -36.388
 Attenuation [dB]: -32.4



Date: 16.NOV.2018 13:16:05

Band-edge Compliance

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz
 Operating Conditions: Tnom/Vnom
 Operator: W. Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-11-16
 Band-edge: Upper
 In-band Frequency [MHz]: 2437.023
 Max. in-band Level [dBm/100 kHz]: -3.39
 Out-of-band Frequency [MHz]: 2484.499
 Max. out-of-band Level [dBm/100 kHz]: -36.61
 Attenuation [dB]: -33.22



Date: 16.NOV.2018 13:17:06

3.7 Test Conditions and Results - Conducted spurious emissions

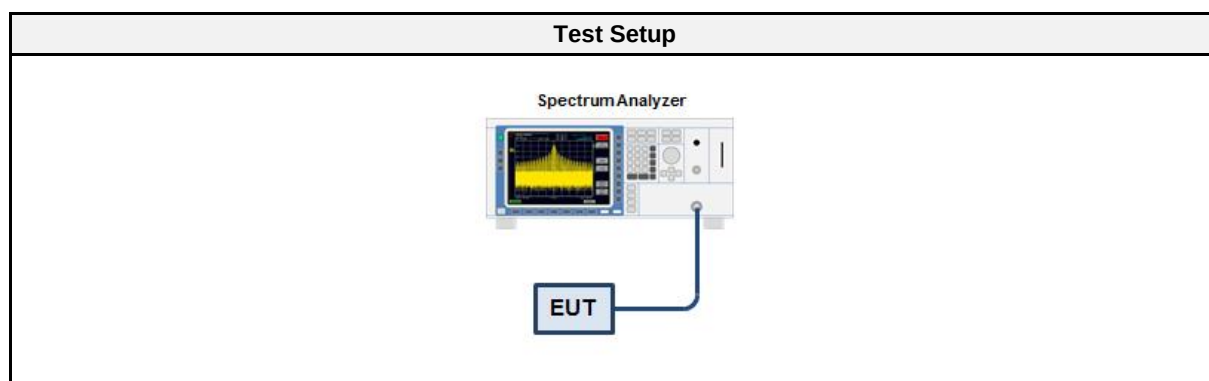
3.7.1 Information

Test Information	
Reference	FCC § 15.247(d); ISSED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.11
Operator	Wilfried Treffke
Date	2019-03-06

3.7.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.7.3 Setup



3.7.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP30	EF00312	2018-07	2019-07

3.7.5 Procedure

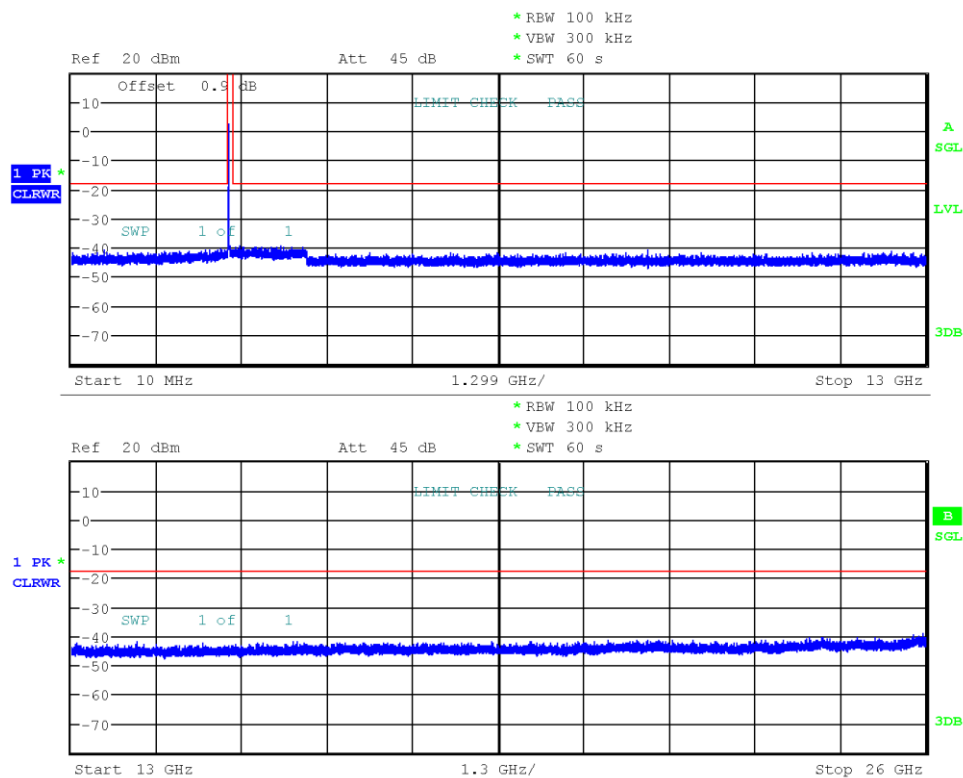
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference

3.7.6 Results

Test Results		
Mode	Channel [MHz]	Verdict
DSSS	2412	PASS
DSSS	2437	PASS
DSSS	2462	PASS
OFDM	2412	PASS
OFDM	2437	PASS
OFDM	2462	PASS
HT20	2412	PASS
HT20	2437	PASS
HT20	2462	PASS
HT40	2422	PASS
HT40	2437	PASS
HT40	2452	PASS

Conducted Spurious Emissions

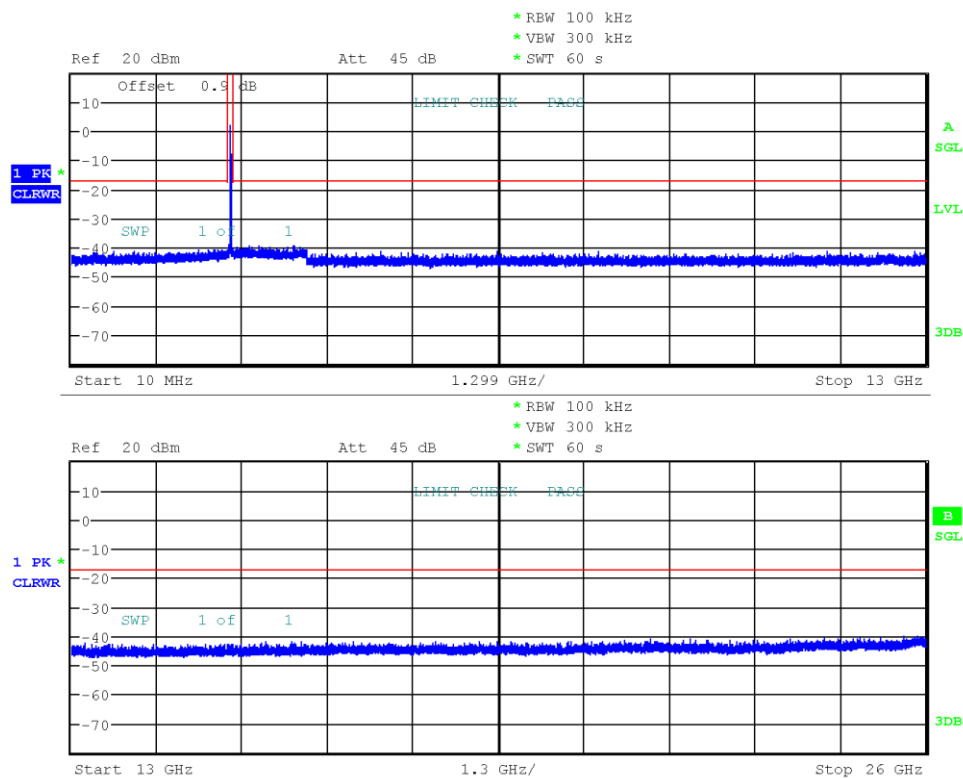
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2413.5
 Max. in-band Level [dBm/100 kHz]: 2.2
 Out-of-band Limit [dBm/100 kHz]: -17.8



Date: 6.MAR.2019 02:45:19

Conducted Spurious Emissions

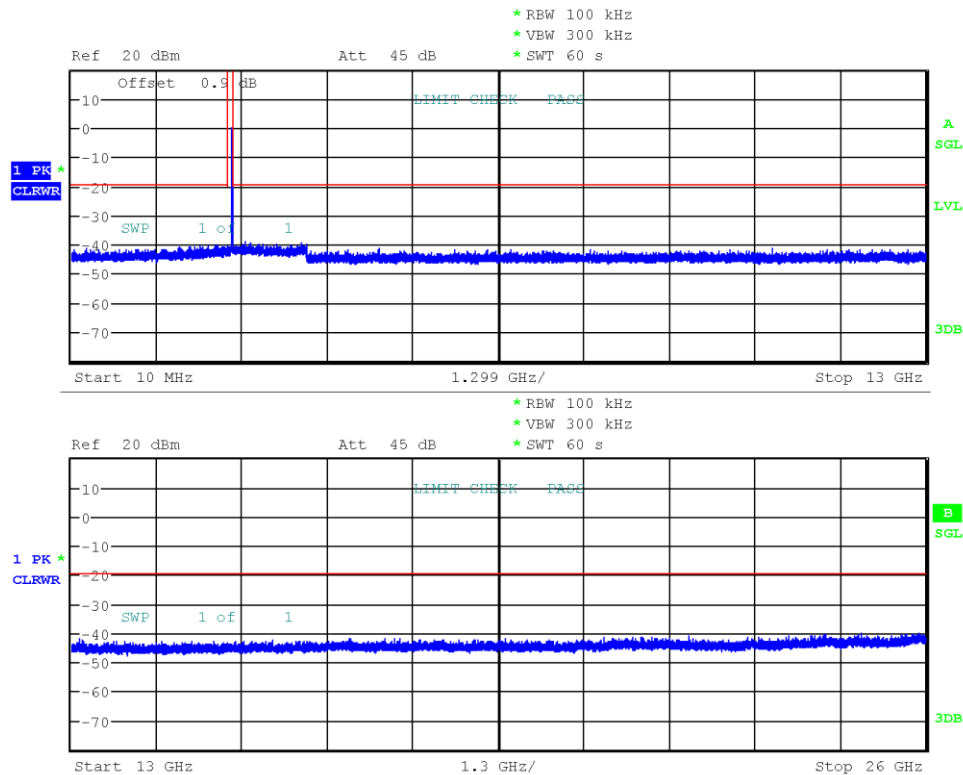
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2437.5
 Max. in-band Level [dBm/100 kHz]: 2.9
 Out-of-band Limit [dBm/100 kHz]: -17.1



Date: 6.MAR.2019 02:49:23

Conducted Spurious Emissions

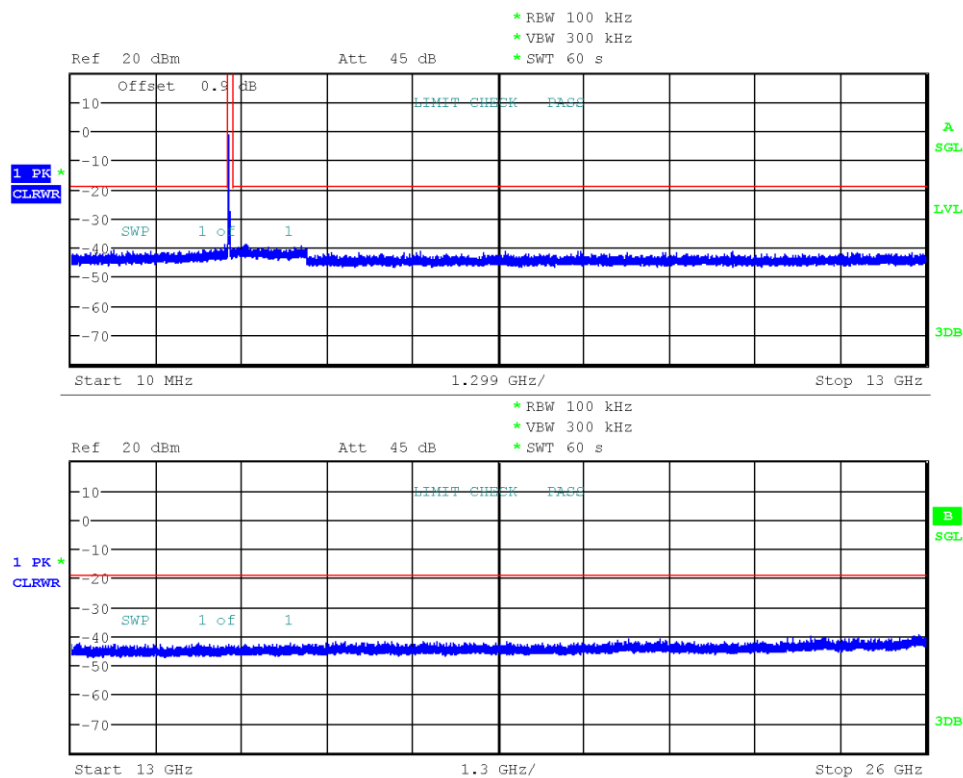
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2460.5
 Max. in-band Level [dBm/100 kHz]: 0.7
 Out-of-band Limit [dBm/100 kHz]: -19.3



Date: 6.MAR.2019 02:55:19

Conducted Spurious Emissions

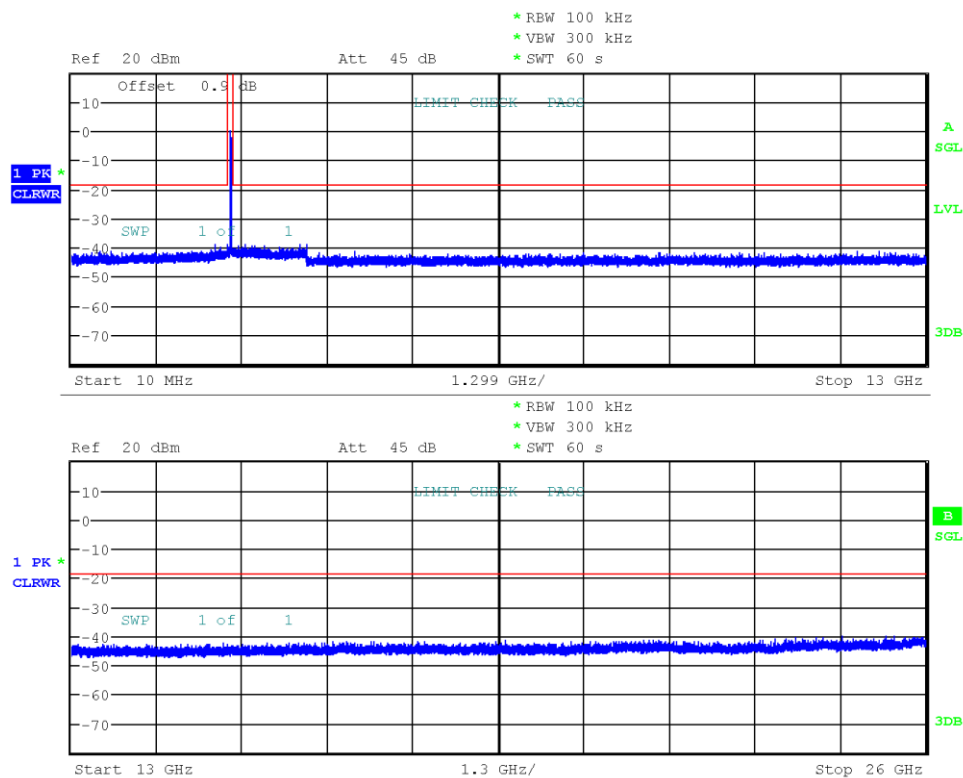
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2414.5
 Max. in-band Level [dBm/100 kHz]: 1.0
 Out-of-band Limit [dBm/100 kHz]: -19.0



Date: 6.MAR.2019 04:11:47

Conducted Spurious Emissions

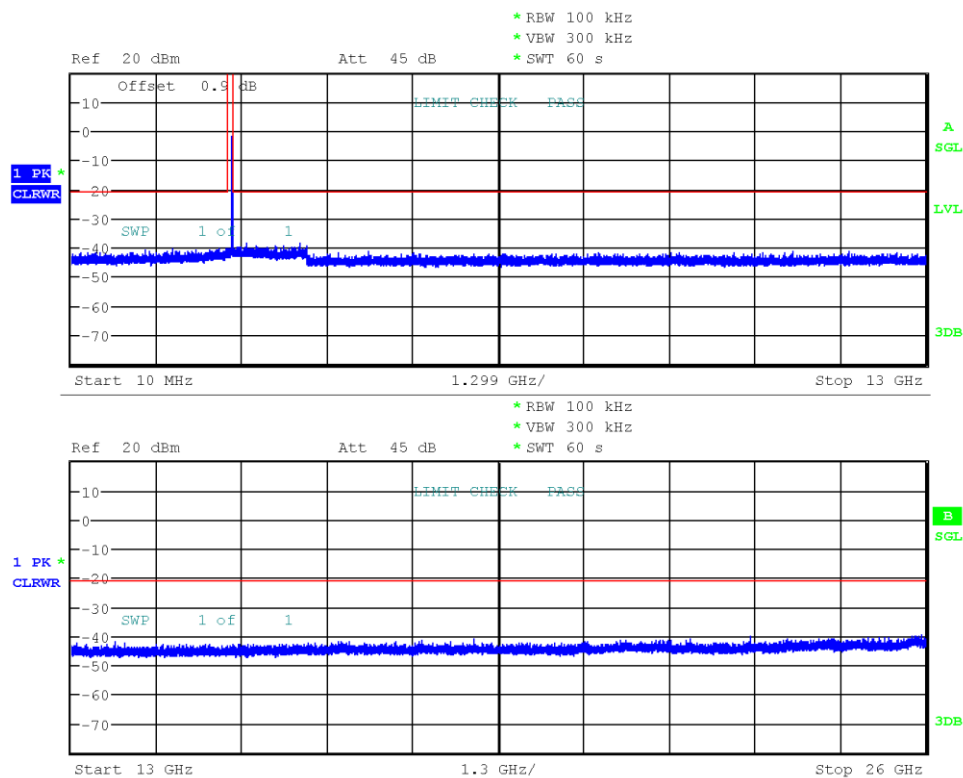
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2429.5
 Max. in-band Level [dBm/100 kHz]: 1.6
 Out-of-band Limit [dBm/100 kHz]: -18.4



Date: 6.MAR.2019 03:25:35

Conducted Spurious Emissions

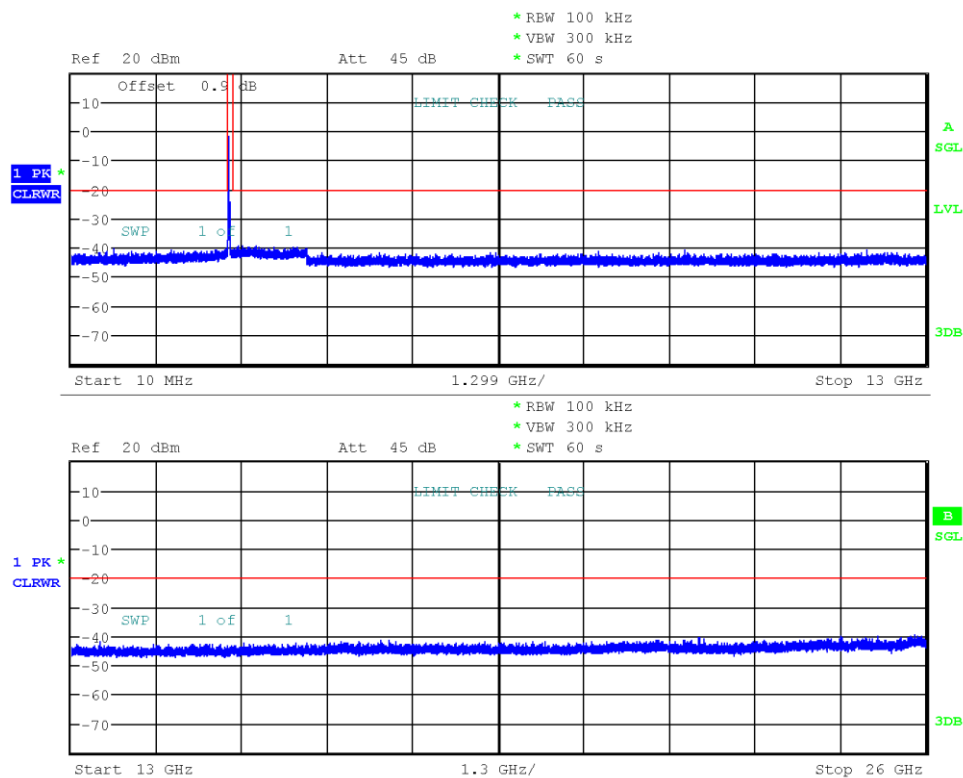
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2454.5
 Max. in-band Level [dBm/100 kHz]: -0.4
 Out-of-band Limit [dBm/100 kHz]: -20.4



Date: 6.MAR.2019 03:18:28

Conducted Spurious Emissions

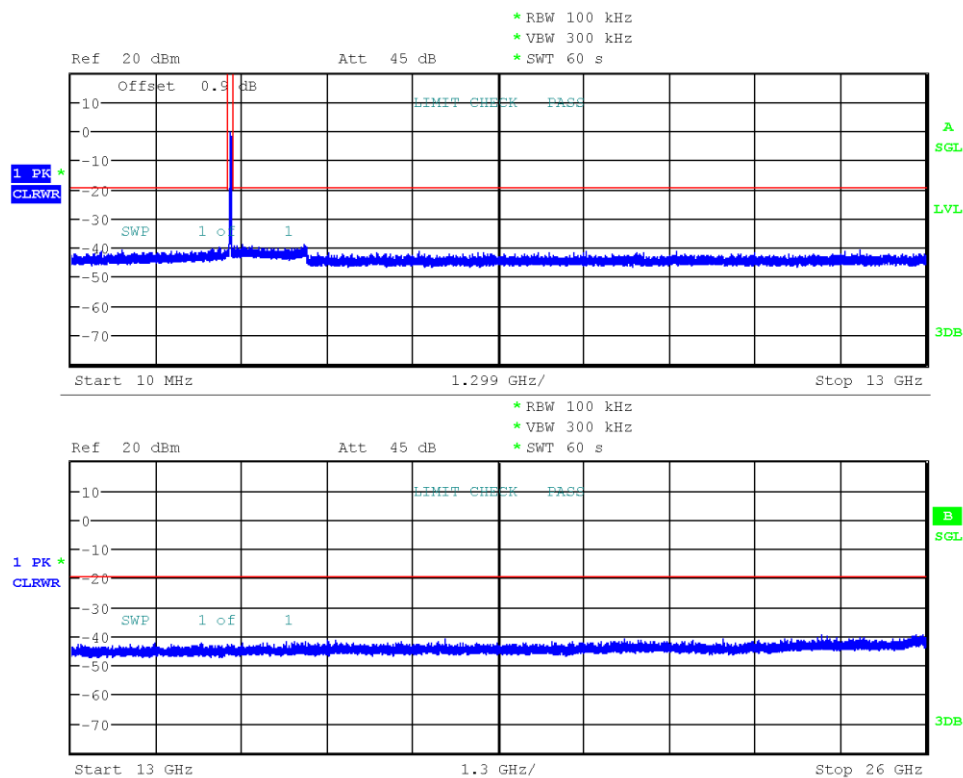
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2419.5
 Max. in-band Level [dBm/100 kHz]: 0.2
 Out-of-band Limit [dBm/100 kHz]: -19.8



Date: 6.MAR.2019 04:15:55

Conducted Spurious Emissions

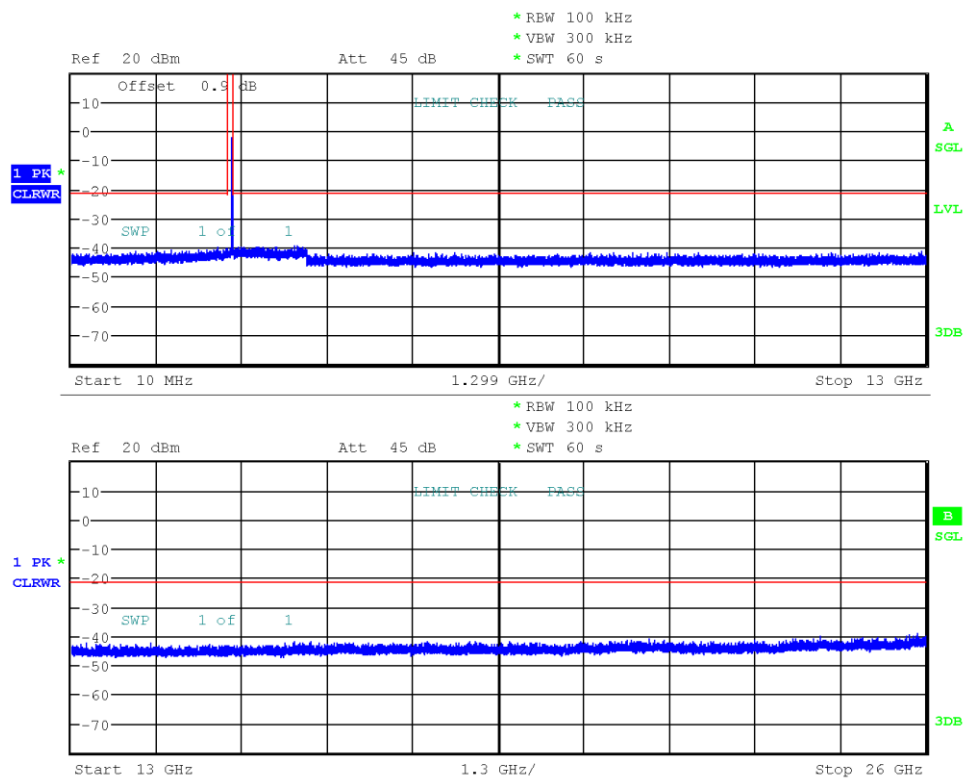
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2429.5
 Max. in-band Level [dBm/100 kHz]: 0.5
 Out-of-band Limit [dBm/100 kHz]: -19.5



Date: 6.MAR.2019 04:19:04

Conducted Spurious Emissions

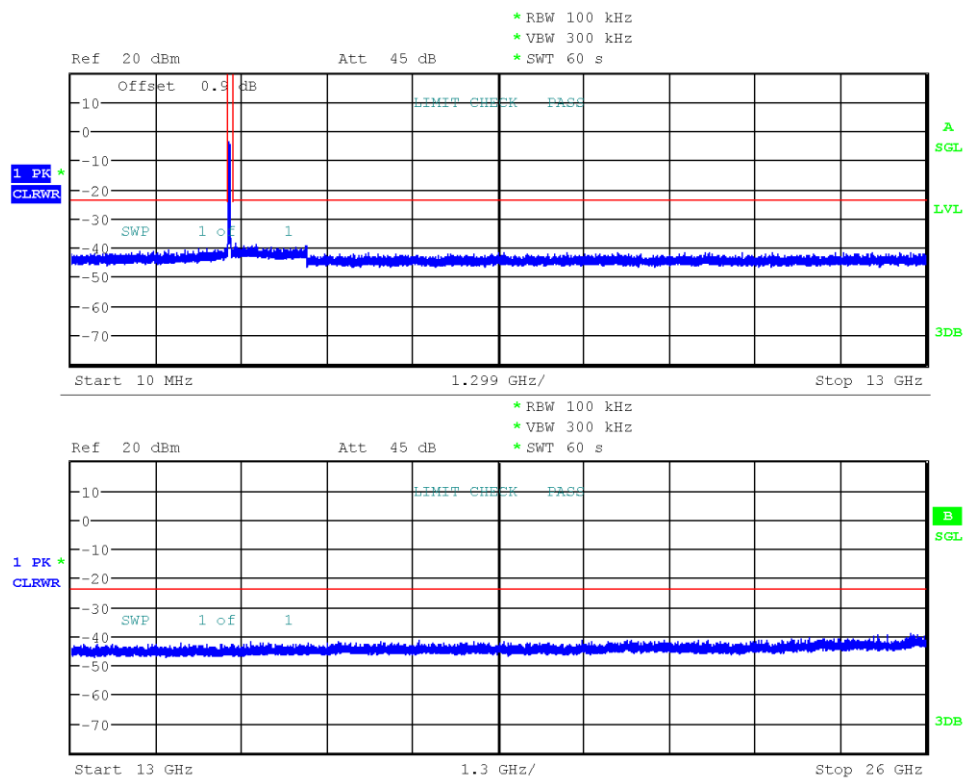
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2454.5
 Max. in-band Level [dBm/100 kHz]: -1.5
 Out-of-band Limit [dBm/100 kHz]: -21.5



Date: 6.MAR.2019 04:22:12

Conducted Spurious Emissions

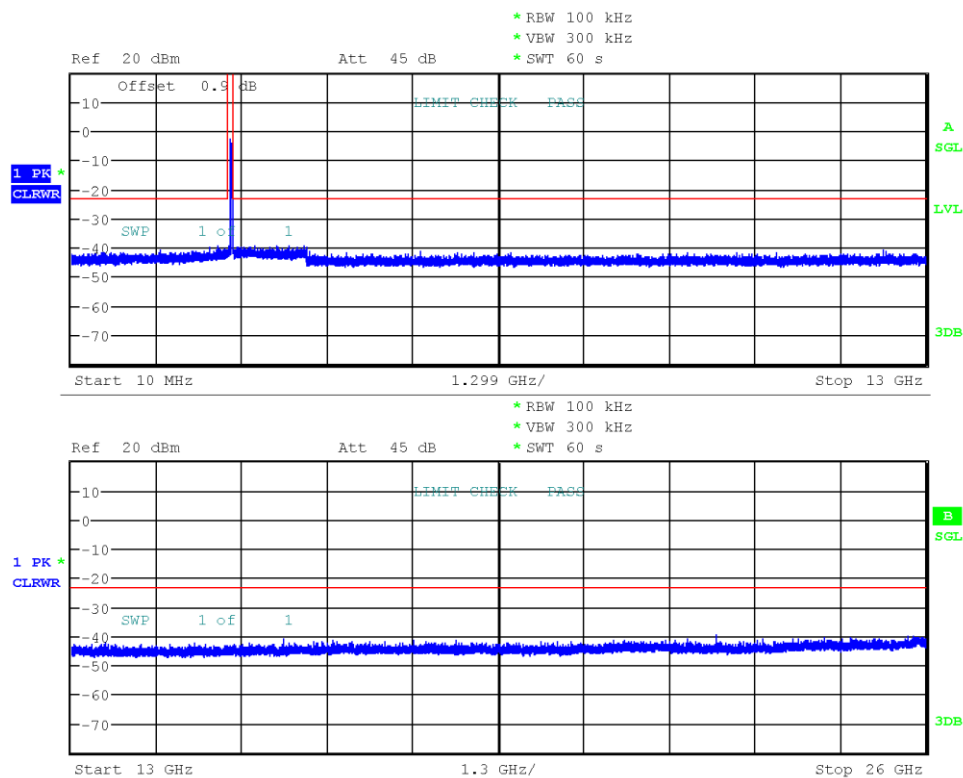
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2405.8
 Max. in-band Level [dBm/100 kHz]: -3.3
 Out-of-band Limit [dBm/100 kHz]: -23.3



Date: 6.MAR.2019 04:29:44

Conducted Spurious Emissions

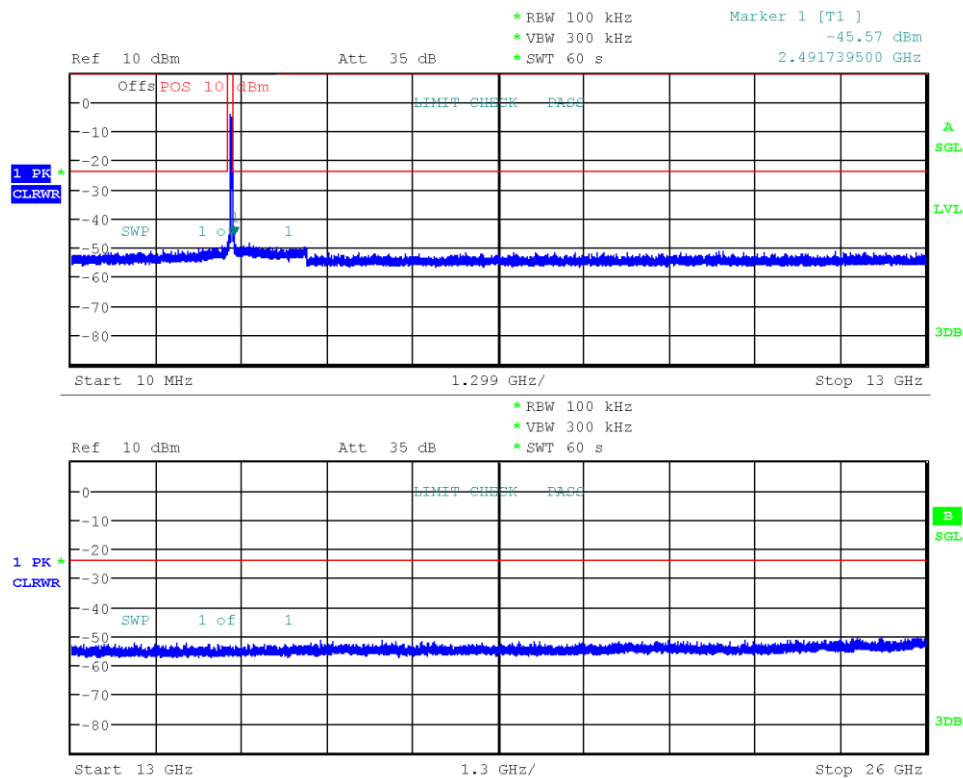
Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2430.8
 Max. in-band Level [dBm/100 kHz]: -2.7
 Out-of-band Limit [dBm/100 kHz]: -22.7



Date: 6.MAR.2019 04:35:44

Conducted Spurious Emissions

Project Number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 Model Description: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF
 Test Sample ID: 20576
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Wilfried Treffke
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-03-06
 Max. in-band Frequency [MHz]: 2435.7
 Max. in-band Level [dBm/100 kHz]: -3.9
 Out-of-band Limit [dBm/100 kHz]: -23.9



Date: 6.MAR.2019 04:39:31

3.8 Test Conditions and Results - Transmitter radiated emissions

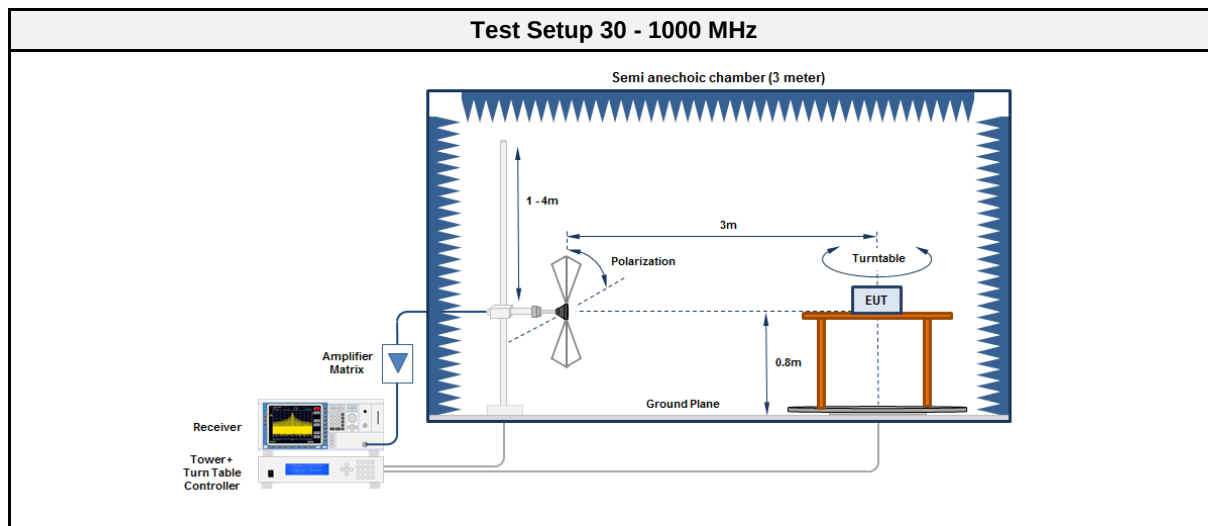
3.8.1 Information

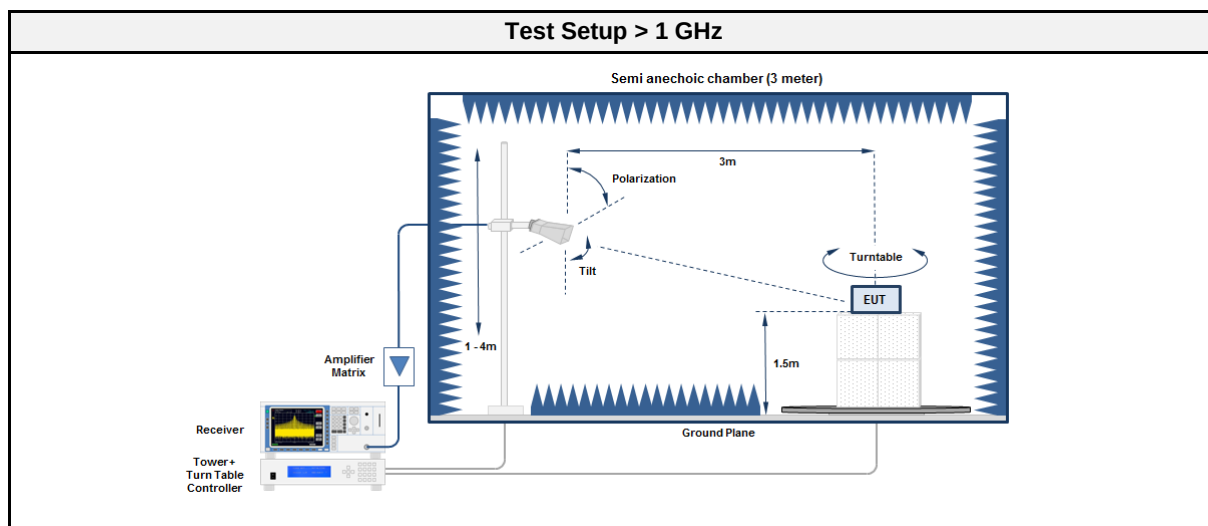
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Burkhard Pudell
Date	2018-11-06

3.8.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [$\mu\text{V/m}$]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.8.3 Setup





3.8.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF00302	2018-04	2019-04

3.8.5 Procedure

Test Procedure < 30 MHz	
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The EUT is rotated through 360° 4. The emissions are measured with peak detector and max hold 5. All significant emissions are measured again using the corresponding final detector	

Test Procedure 30 - 1000 MHz

1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz

1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

3.8.6 Results

Test Results - DSSS						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2412	247.486	40.63	qpk	ver	46.00	-05.37
2412	247.493	42.05	qpk	hor	46.00	-03.95
2412	249.92	34.45	pk	hor	46.00	-11.55
2412	264	30.66	pk	hor	46.00	-15.34
2412	264	34.69	pk	ver	46.00	-11.31
2412	407.36	30.59	pk	hor	46.00	-15.41
2412	998.72	42.85	pk	hor	54.00	-11.15
2412	998.72	38.77	pk	ver	54.00	-15.23
2412	2327.4	55.19	pk	hor	74.00	-18.81
2412	2327.4	35.35	RMS	hor	54.00	-18.65
2412	2337.1	56.14	pk	hor	74.00	-17.86
2412	2337.1	35.31	RMS	hor	54.00	-18.69
2412	4824	52.85	pk	hor	74.00	-21.15
2412	4824	51.73	RMS	hor	54.00	-02.27
2412	4824	46.06	pk	ver	74.00	-27.94
2437	1176.1	30.51	pk	ver	74.00	-43.49
2437	1176.1	23.04	avg	ver	54.00	-30.96
2437	2394.4	52.53	pk	hor	95.00	-42.47
2437	4874	53.95	pk	hor	74.00	-20.05
2437	4874	52.86	RMS	hor	54.00	-01.14
2437	4874	48.07	pk	ver	74.00	-25.93
2437	4874	46.26	RMS	ver	54.00	-07.74
2462	2495.3	52.48	pk	hor	74.00	-21.52
2462	2495.3	35.65	RMS	hor	54.00	-18.35
2462	2704	45.56	pk	hor	74.00	-28.44
2462	4920	44.95	pk	hor	74.00	-29.05
2462	4924	48.15	pk	ver	74.00	-25.85
2462	4924	46.28	RMS	ver	54.00	-07.72

Test Results - OFDM						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2412	2488.7	59.30	pk	hor	74.00	-14.70
2412	2488.7	29.07	RMS	hor	54.00	-24.93
2412	4824	44.37	pk	ver	74.00	-29.63
2412	4825	54.83	pk	hor	74.00	-19.17
2412	4825	45.84	RMS	hor	54.00	-08.16
2437	1500	50.90	pk	hor	74.00	-23.10
2437	1500	44.97	avg	hor	54.00	-09.03
2437	2289	52.08	pk	hor	74.00	-21.92
2437	2289	34.65	avg	hor	54.00	-19.35
2437	2370.2	53.81	pk	hor	74.00	-20.19
2437	2370.2	36.25	RMS	hor	54.00	-17.75
2437	2376.8	55.03	pk	hor	74.00	-18.97
2437	2376.8	36.68	RMS	hor	54.00	-17.32
2437	2388.2	55.45	pk	hor	74.00	-18.55
2437	2388.2	37.07	RMS	hor	54.00	-16.93
2437	2484.6	54.69	pk	hor	74.00	-19.31
2437	2484.6	37.85	RMS	hor	54.00	-16.15
2437	2496	55.24	pk	hor	74.00	-18.76
2437	2496	37.07	RMS	hor	54.00	-16.93
2437	2499.5	55.04	pk	hor	74.00	-18.96
2437	2499.5	36.64	RMS	hor	54.00	-17.36
2437	2695	63.39	pk	hor	74.00	-10.61
2437	2695	46.68	avg	hor	54.00	-07.32
2437	4872	44.68	pk	ver	74.00	-29.32
2437	4874	53.85	pk	hor	74.00	-20.15
2437	4874	45.06	RMS	hor	54.00	-08.94
2437	7304	45.48	pk	hor	74.00	-28.52
2462	2500	53.68	pk	hor	74.00	-20.32
2462	2701	48.61	pk	hor	74.00	-25.39
2462	4920	44.73	pk	hor	74.00	-29.27
2462	4920	44.08	pk	ver	74.00	-29.92
2462	7384	45.91	pk	hor	74.00	-28.09

Test Results - HT40						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2422	2493.7	57.37	pk	hor	74.00	-16.63
2422	2493.7	29.62	RMS	hor	54.00	-24.38
2422	4840	40.08	pk	ver	74.00	-33.92
2422	4845	48.91	pk	hor	74.00	-25.09
2422	4845	39.97	RMS	hor	54.00	-14.03
2437	1040	52.72	pk	hor	74.00	-21.28
2437	1040	50.58	avg	hor	54.00	-03.42
2437	1139	51.71	pk	hor	74.00	-22.29
2437	1139	50.42	avg	hor	54.00	-03.58
2437	1500	52.19	pk	hor	74.00	-21.81
2437	1500	46.53	avg	hor	54.00	-07.47
2437	1584	54.19	pk	hor	74.00	-19.81
2437	1584	50.16	avg	hor	54.00	-03.84
2437	2299	56.18	pk	hor	74.00	-17.82
2437	2299	36.18	avg	hor	54.00	-17.82
2437	2355	54.14	pk	hor	74.00	-19.86
2437	2355	35.77	RMS	hor	54.00	-18.23
2437	2371.4	56.09	pk	hor	74.00	-17.91
2437	2371.4	36.24	RMS	hor	54.00	-17.76
2437	2373.8	56.88	pk	hor	74.00	-17.12
2437	2373.8	36.23	RMS	hor	54.00	-17.77
2437	2382.6	55.32	pk	hor	74.00	-18.68
2437	2382.6	36.65	RMS	hor	54.00	-17.35
2437	2389.6	53.97	pk	ver	74.00	-20.03
2437	2389.6	35.98	avg	ver	54.00	-18.02
2437	2484.8	54.18	pk	ver	74.00	-19.82
2437	2484.8	35.17	avg	ver	54.00	-18.83
2437	2485.2	57.49	pk	hor	74.00	-16.51
2437	2485.2	37.85	RMS	hor	54.00	-16.15
2437	2497.2	56.89	pk	hor	74.00	-17.11
2437	2497.2	37.49	RMS	hor	54.00	-16.51
2437	2500	65.39	pk	hor	74.00	-08.61
2437	2690	63.66	pk	hor	74.00	-10.34
2437	2690	46.39	avg	hor	54.00	-07.61
2437	4872	40.99	pk	ver	74.00	-33.01
2437	4875	48.88	pk	hor	74.00	-25.12
2437	4875	40.28	RMS	hor	54.00	-13.72
2452	2371	46.05	pk	hor	74.00	-27.95
2452	2371	29.16	RMS	hor	54.00	-24.84
2452	2380	53.95	pk	hor	74.00	-20.05
2452	2380	34.16	RMS	hor	54.00	-19.84
2452	2500	53.84	pk	hor	74.00	-20.16

3.9 Test Conditions and Results - Receiver radiated emissions

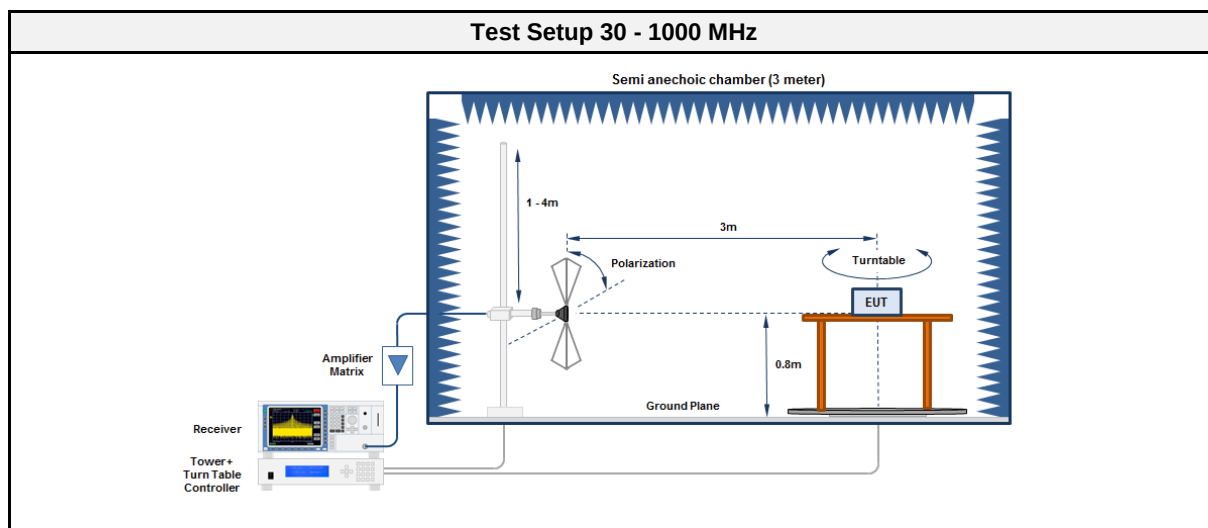
3.9.1 Information

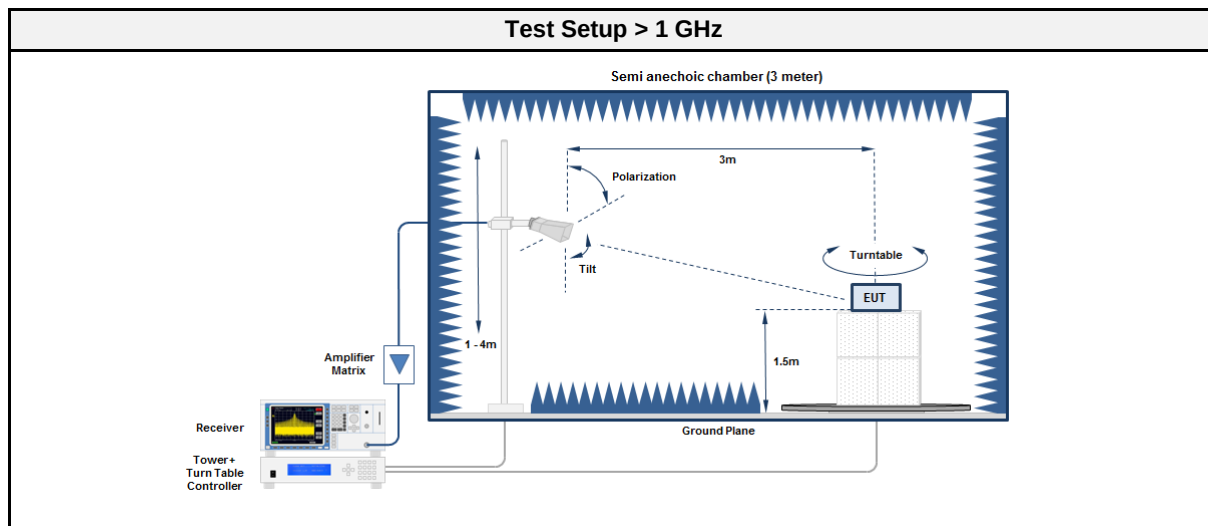
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Burkhard Pudell
Date	2019-03-08

3.9.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dB μ V/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.9.3 Setup





3.9.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF00302	2018-04	2019-04

3.9.5 Procedure

Test Procedure 30 - 1000 MHz	
1.	EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz	
1.	EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

3.9.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2437	30.611	37.64	qpk	hor	40.00	-02.36
2437	31.088	34.32	qpk	ver	40.00	-05.68
2437	49.491	37.60	qpk	ver	40.00	-02.40
2437	544.32	39.89	pk	ver	46.00	-06.11
2437	544.482	40.40	qpk	hor	46.00	-05.60
2437	643.476	42.00	qpk	ver	46.00	-04.00
2437	643.482	42.31	qpk	hor	46.00	-03.69
2437	741.44	39.73	pk	ver	46.00	-06.27
2437	742.474	42.01	pk	hor	46.00	-03.99
2437	742.474	41.30	qpk	hor	46.00	-04.70
2437	841.28	37.61	pk	hor	46.00	-08.39
2437	841.47	42.53	pk	ver	46.00	-03.47
2437	841.47	41.90	qpk	ver	46.00	-04.10
2437	939.84	39.31	pk	ver	46.00	-06.69
2437	940.465	42.23	pk	hor	46.00	-03.77
2437	940.465	41.70	qpk	hor	46.00	-04.30
2437	7688	51.10	pk	hor	53.98	-02.88
2437	7824	51.00	pk	ver	53.98	-02.98
2437	14310	49.40	pk	hor	53.98	-04.60

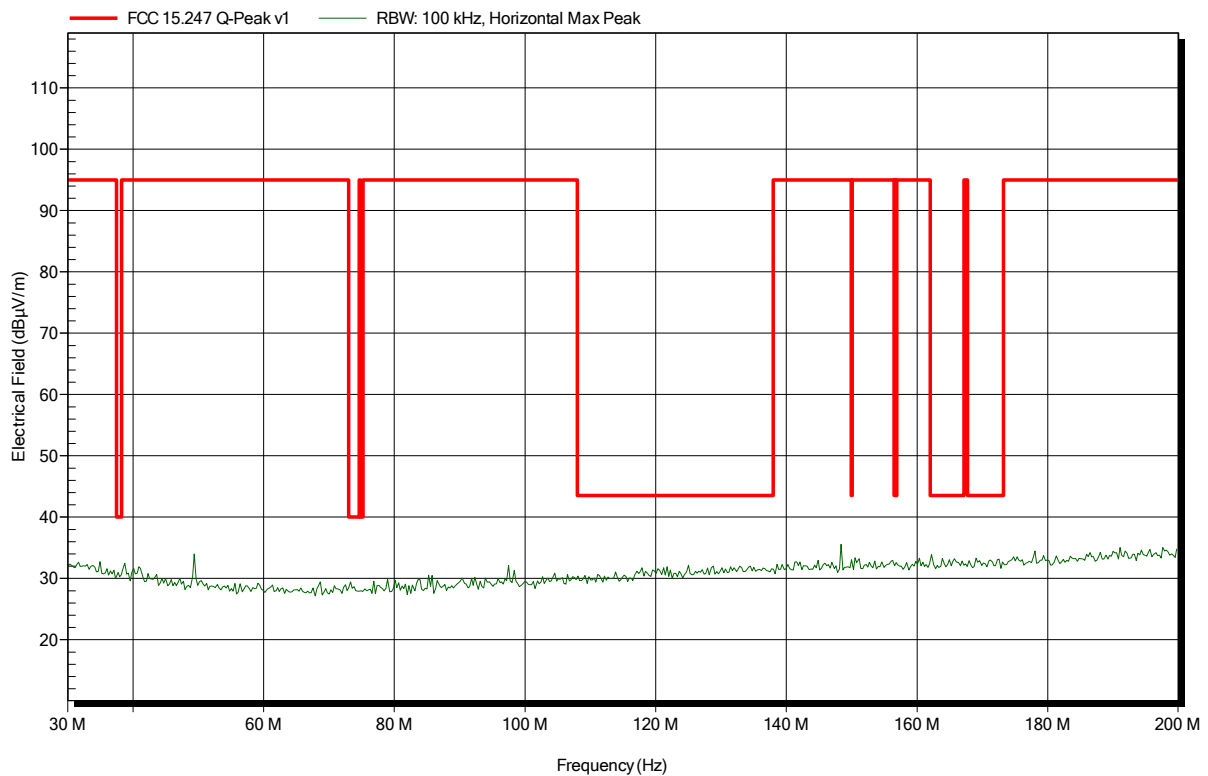
ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
 Test Date: 2018-11-08
 Note:

Index 172

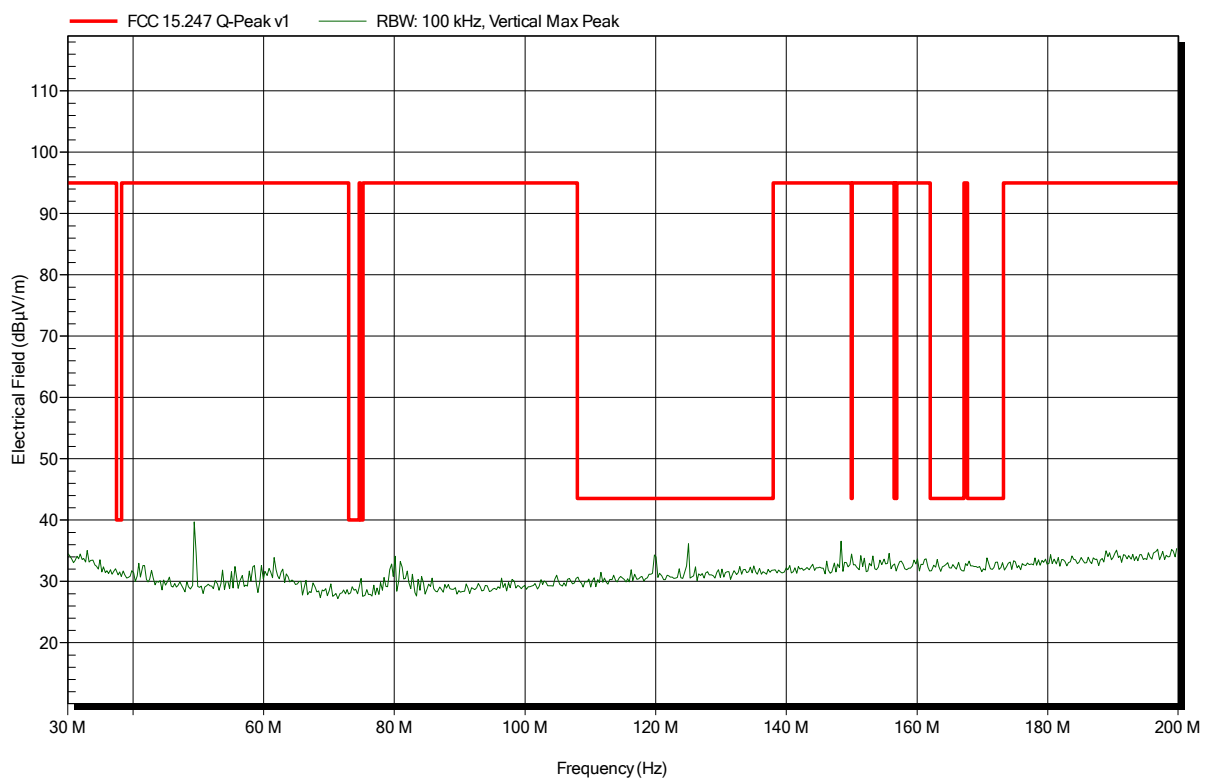


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-08
Note:

Index 173

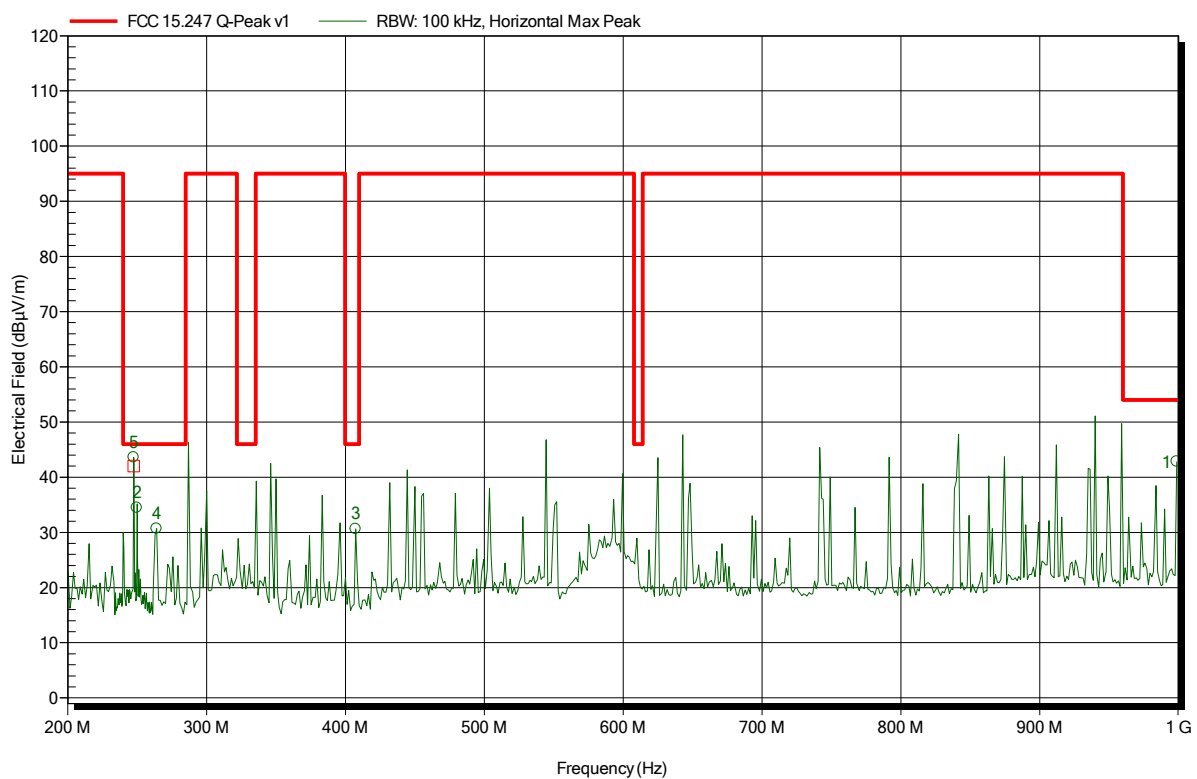


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
 Test Date: 2018-11-08
 Note:

Index 174



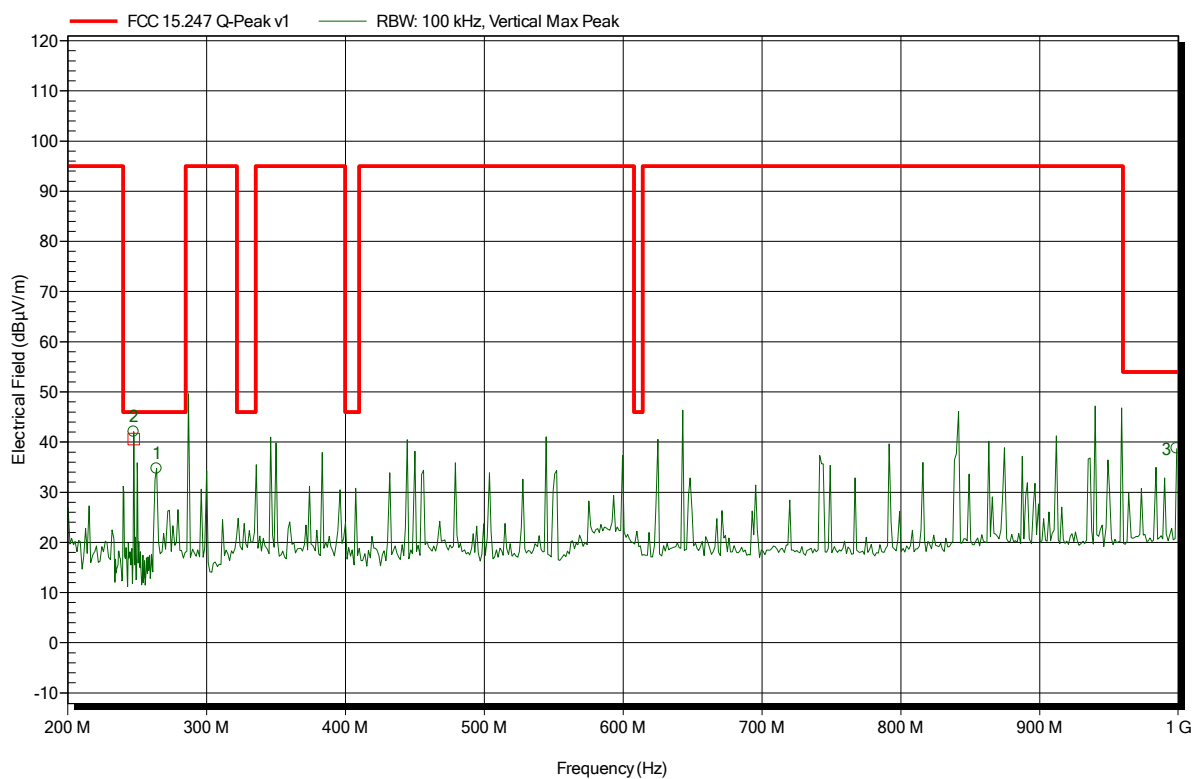
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
247.493 MHz	43.58 dBµV/m	46 dBµV/m	-2.42 dB	Pass
249.92 MHz	34.45 dBµV/m	46 dBµV/m	-11.55 dB	Pass
264 MHz	30.66 dBµV/m	46 dBµV/m	-15.34 dB	Pass
407.36 MHz	30.59 dBµV/m	46 dBµV/m	-15.41 dB	Pass
998.72 MHz	42.85 dBµV/m	54 dBµV/m	-11.15 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
 Test Date: 2018-11-08
 Note:

Index 175



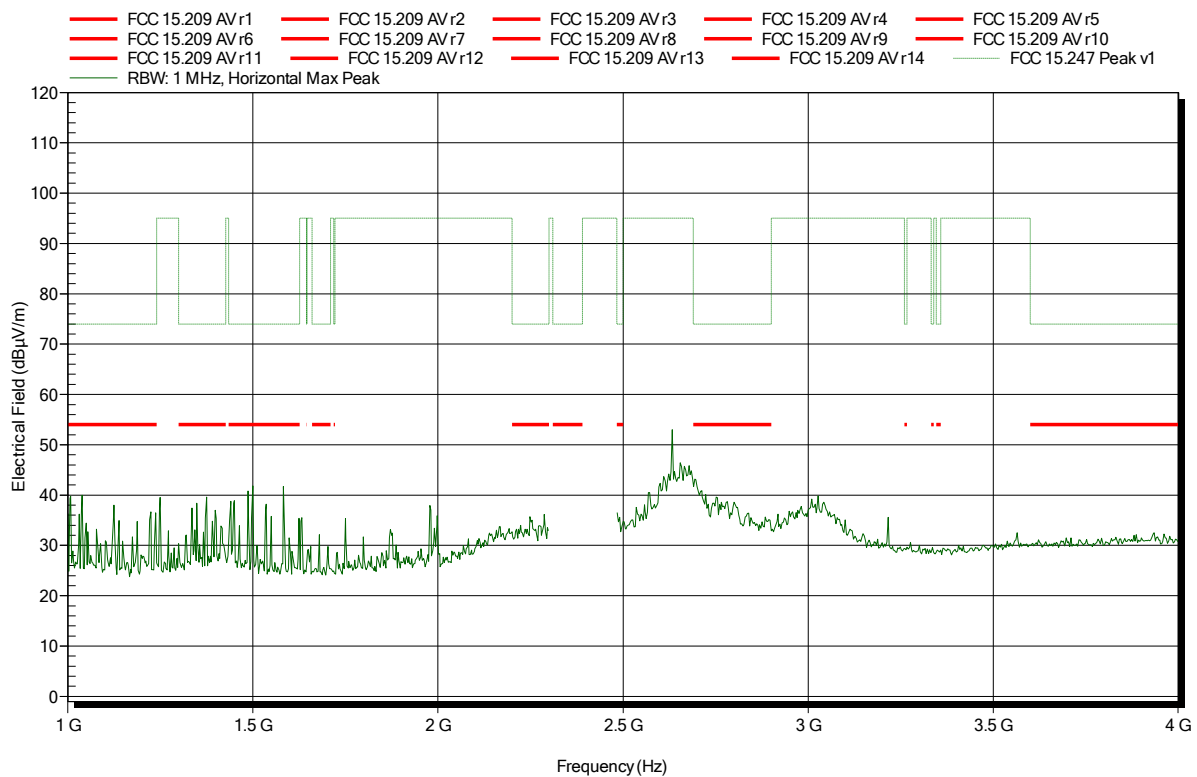
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
247.486 MHz	42.09 dBµV/m	46 dBµV/m	-3.91 dB	Pass
264 MHz	34.69 dBµV/m	46 dBµV/m	-11.31 dB	Pass
998.72 MHz	38.77 dBµV/m	54 dBµV/m	-15.23 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 77

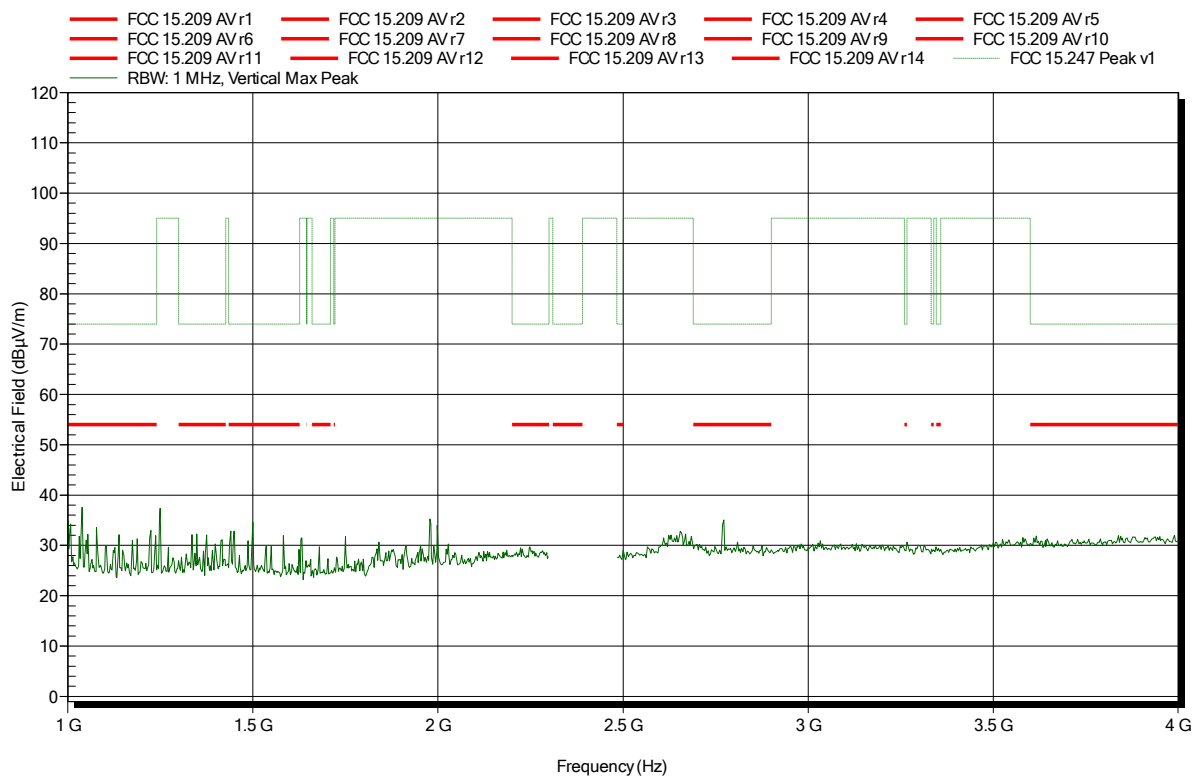


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 66

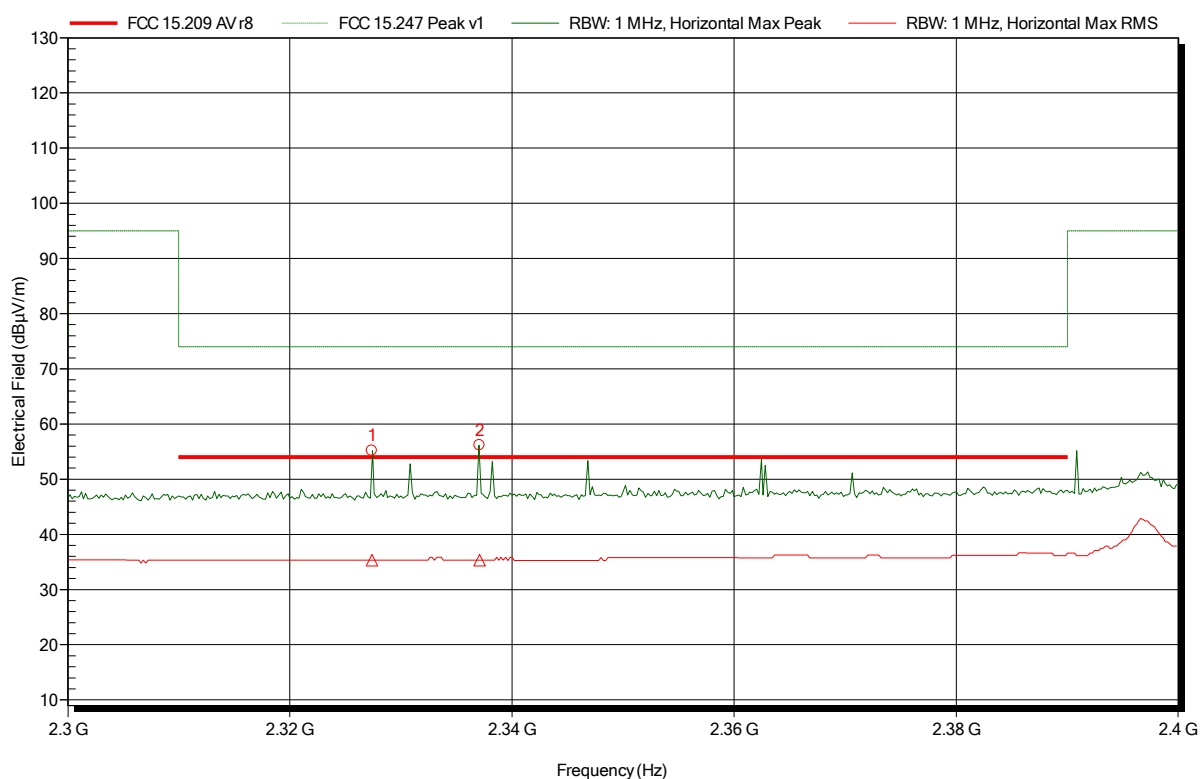


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal; lower bandedge

Index 75



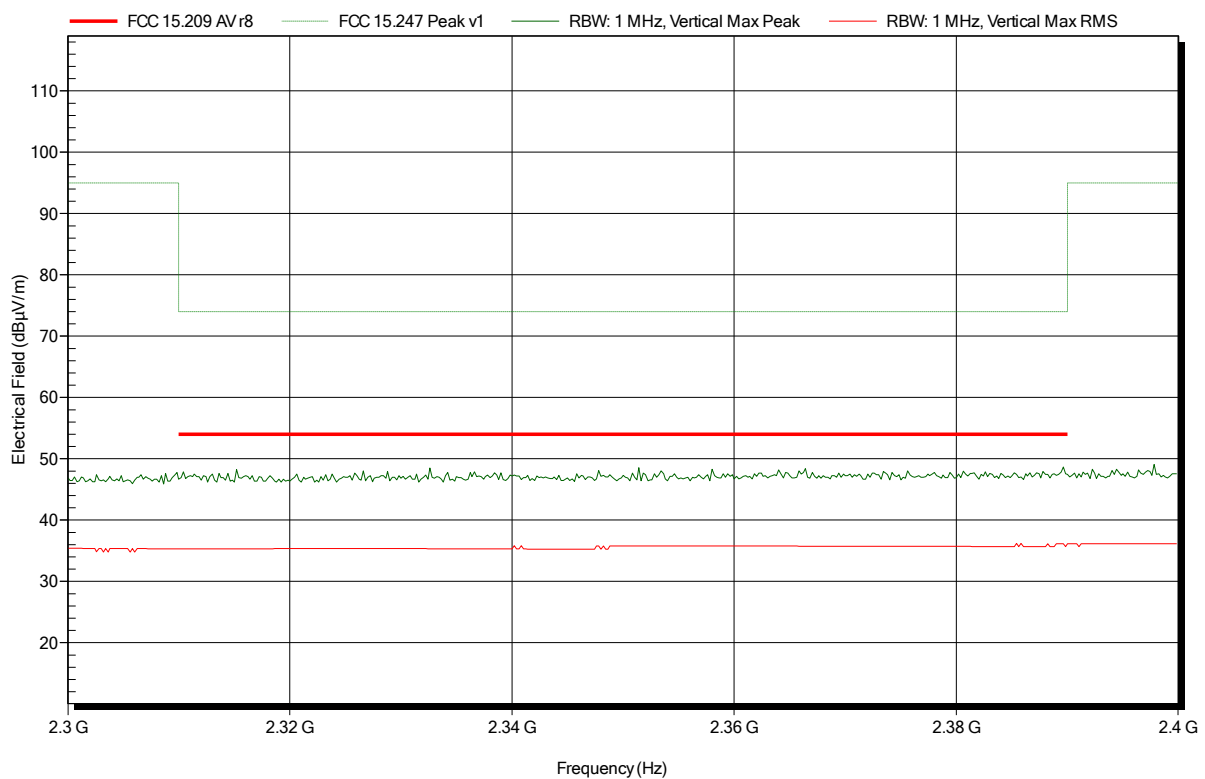
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3274 GHz	55.19 dBµV/m	74 dBµV/m	-18.81 dB	Pass
2.3371 GHz	56.14 dBµV/m	74 dBµV/m	-17.86 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3274 GHz	35.35 dBµV/m	54 dBµV/m	-18.65 dB	Pass
2.3371 GHz	35.31 dBµV/m	54 dBµV/m	-18.69 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal; lower bandedge

Index 68

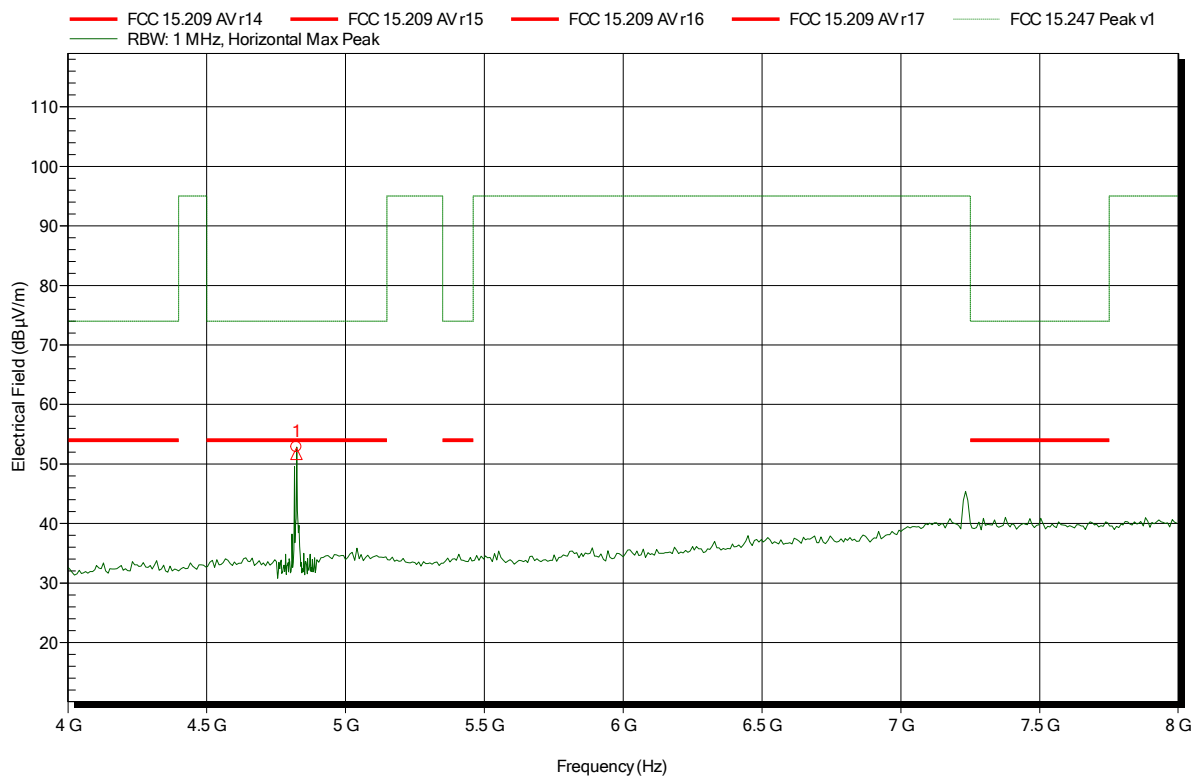


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
 Test Date: 2018-11-06
 Note: EUT horizontal

Index 74



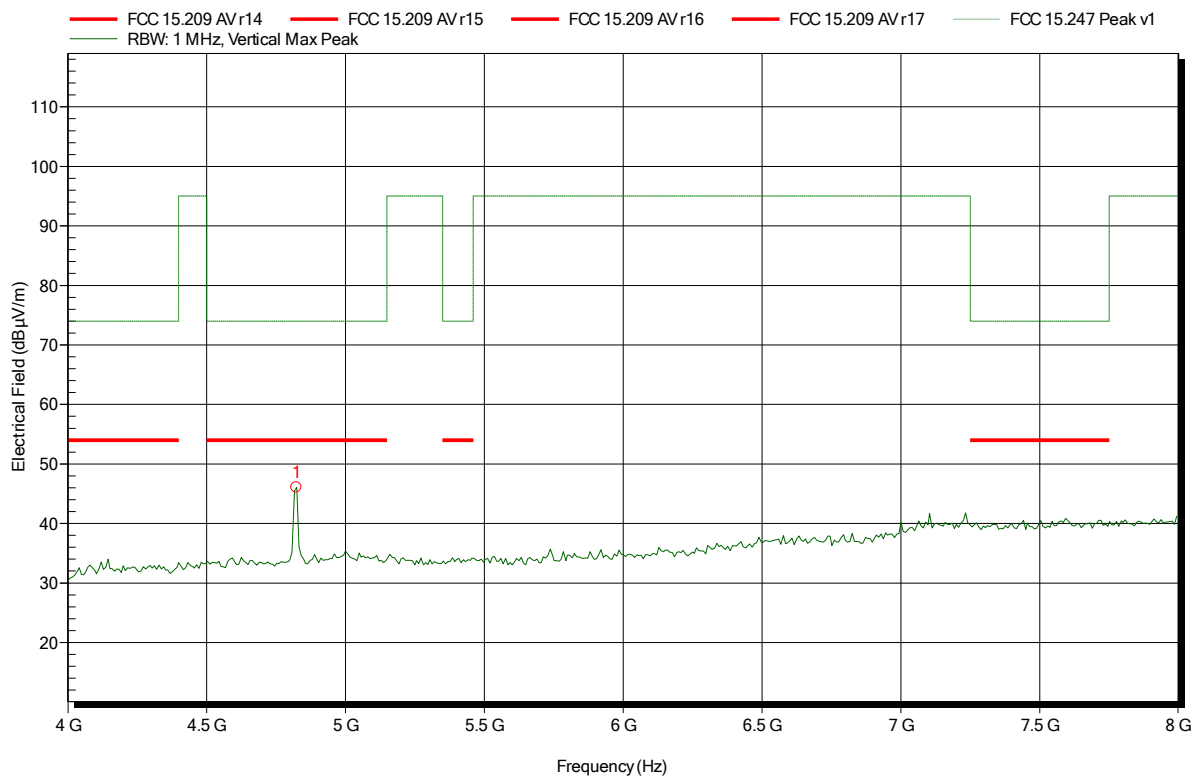
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.824 GHz	52.85 dBµV/m	74 dBµV/m	-21.15 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.824 GHz	51.73 dBµV/m	54 dBµV/m	-2.27 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
 Test Date: 2018-11-06
 Note: EUT horizontal

Index 69



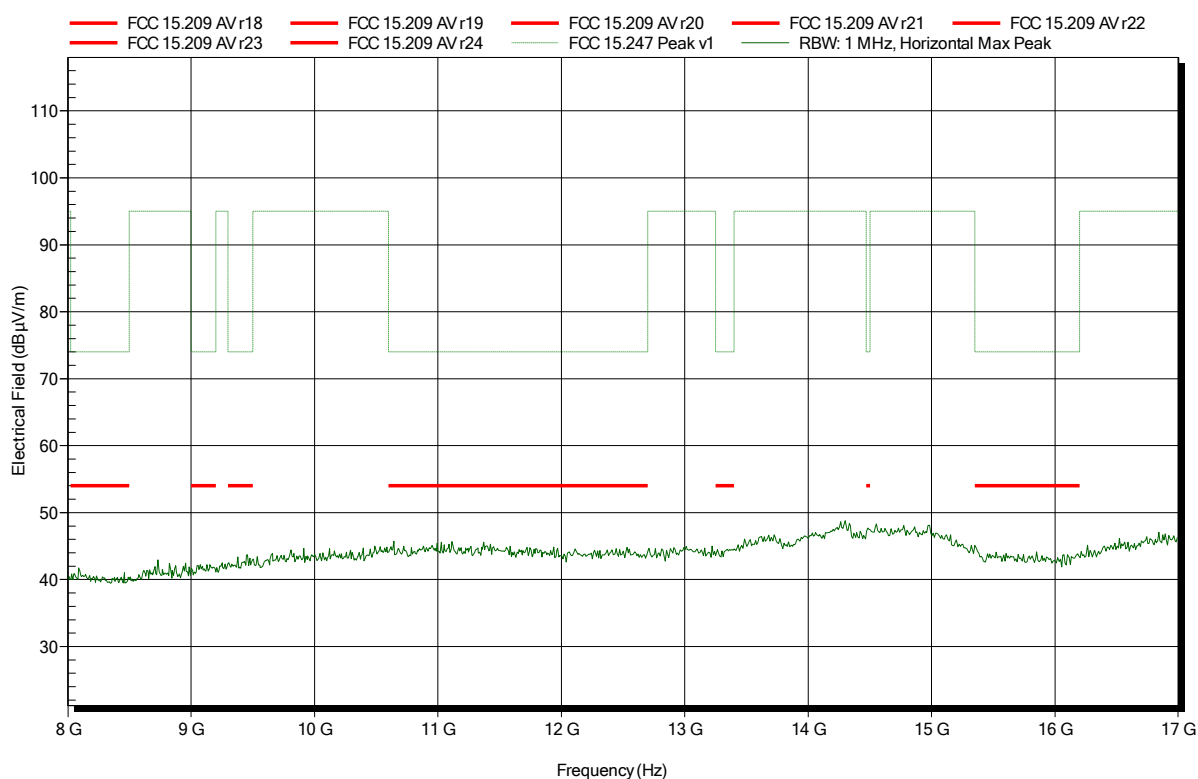
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.824 GHz	46.06 dBµV/m	74 dBµV/m	-27.94 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 73

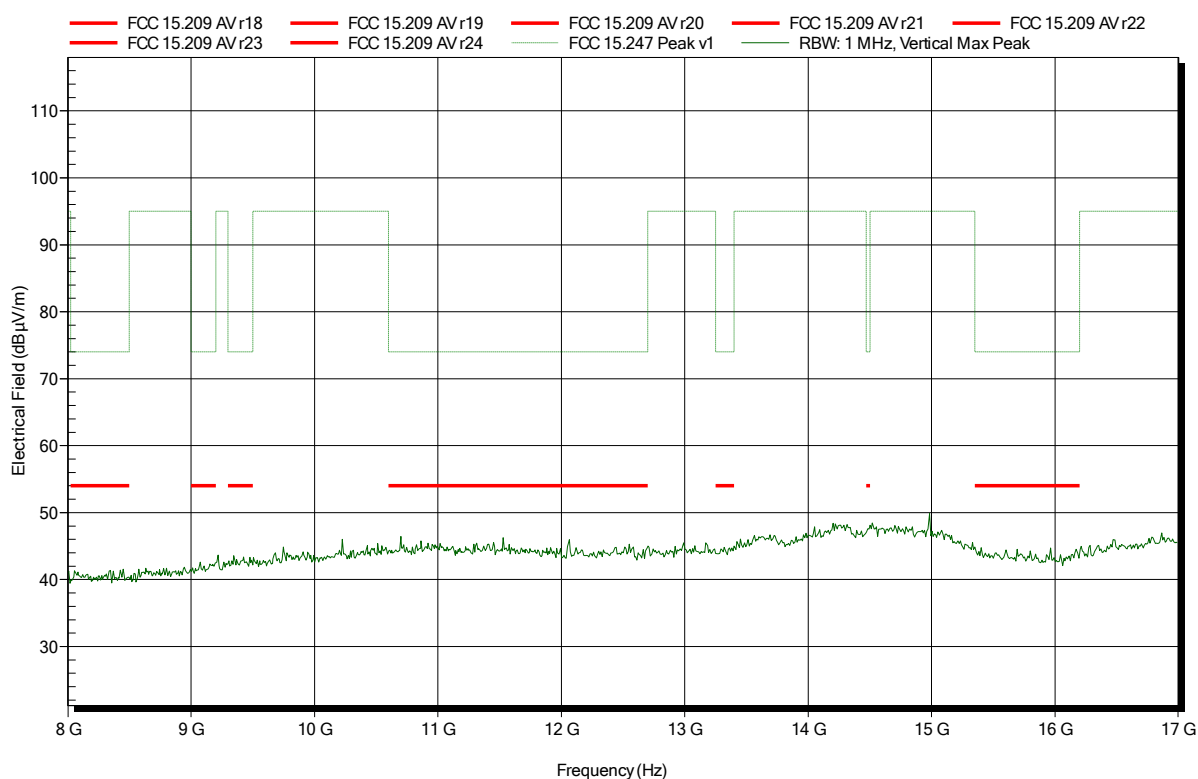


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 70

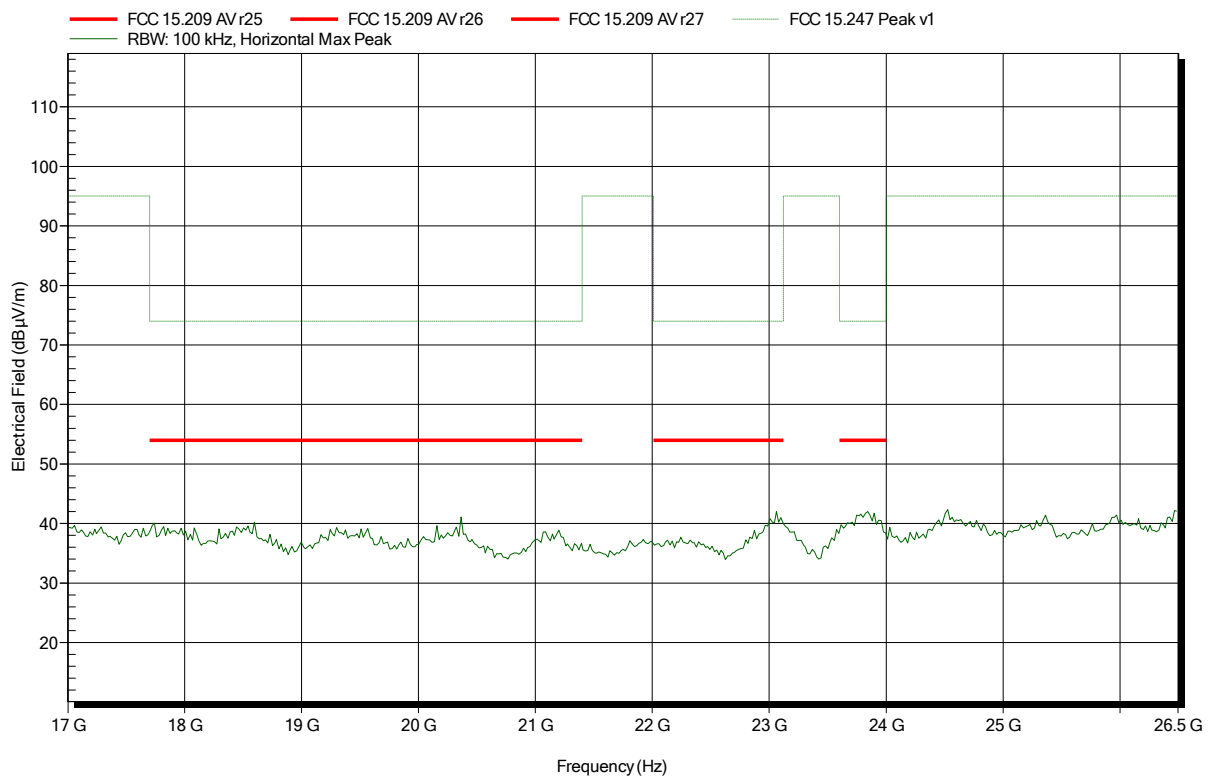


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 72

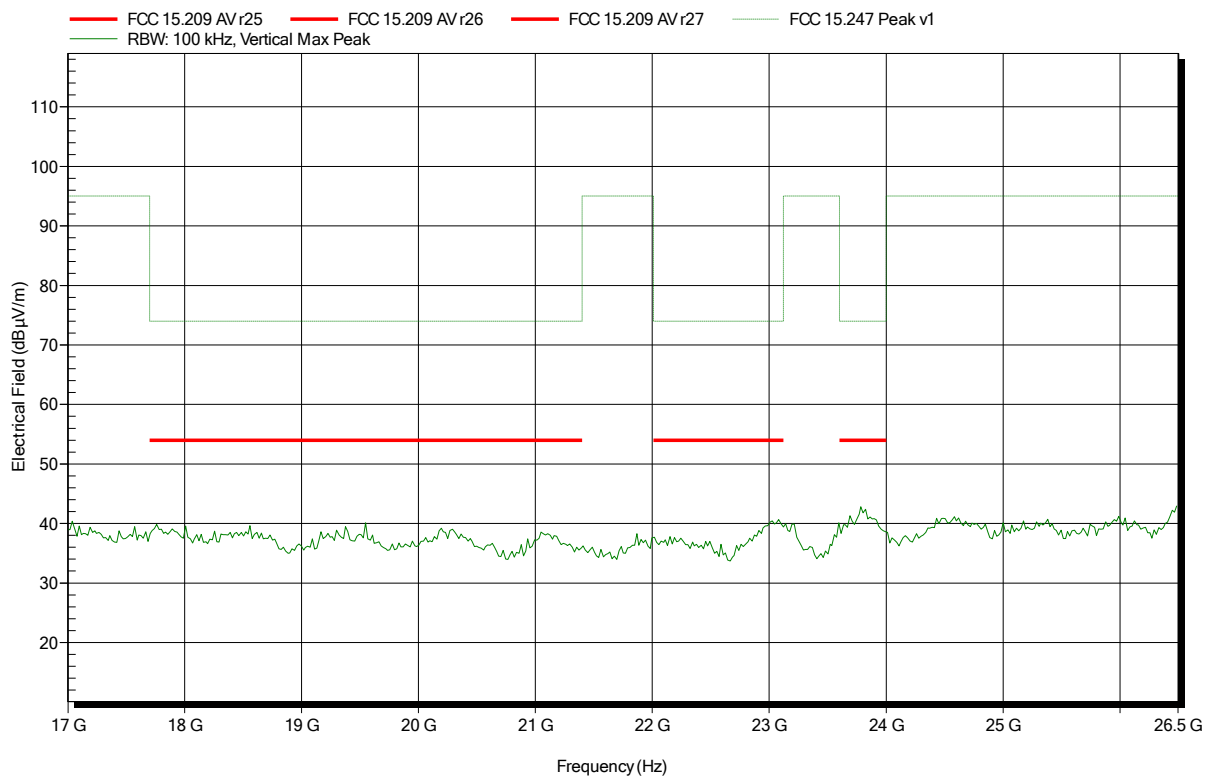


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 71

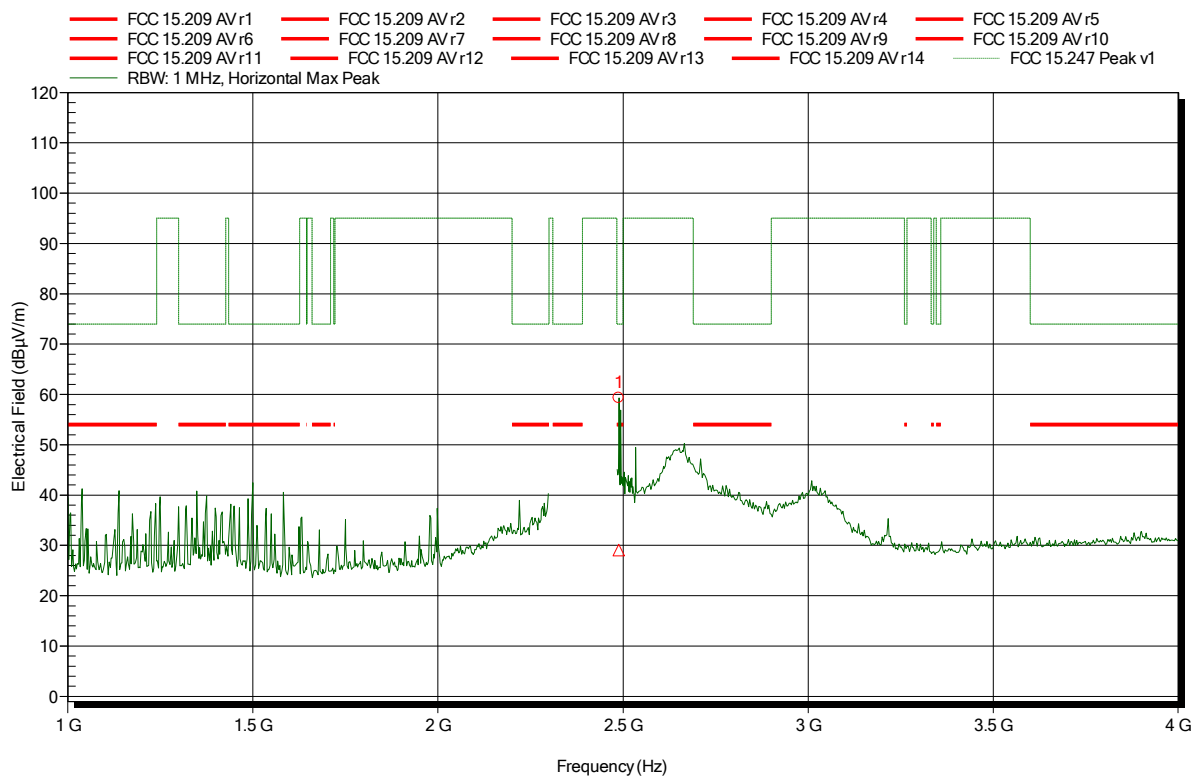


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 137



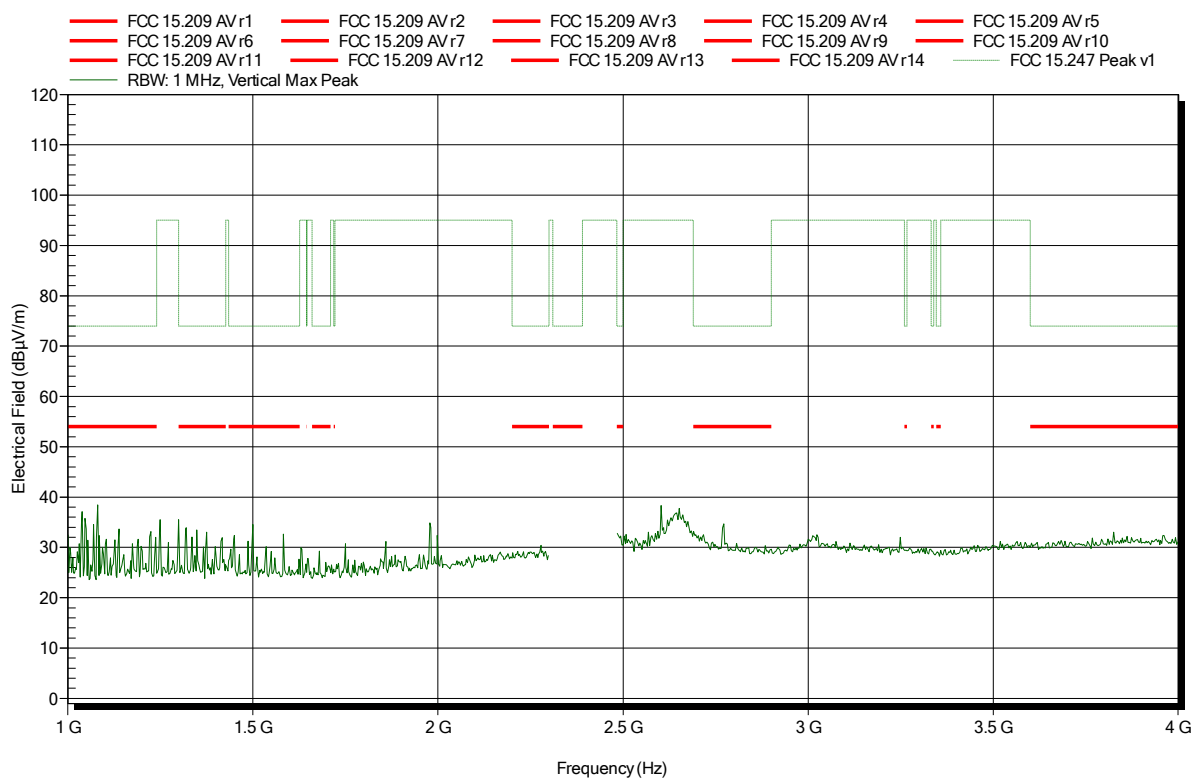
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4887 GHz	59.3 dBµV/m	74 dBµV/m	-14.7 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4887 GHz	29.07 dBµV/m	54 dBµV/m	-24.93 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 126

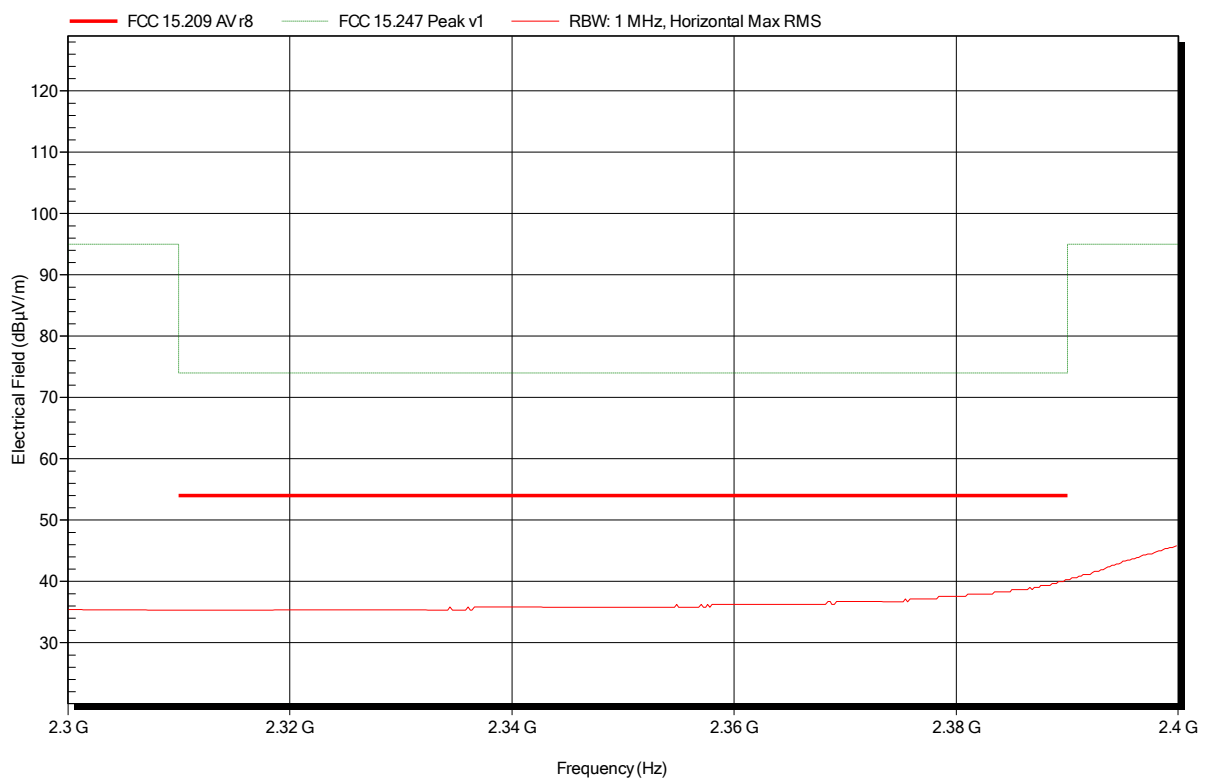


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal; lower bandedge

Index 136

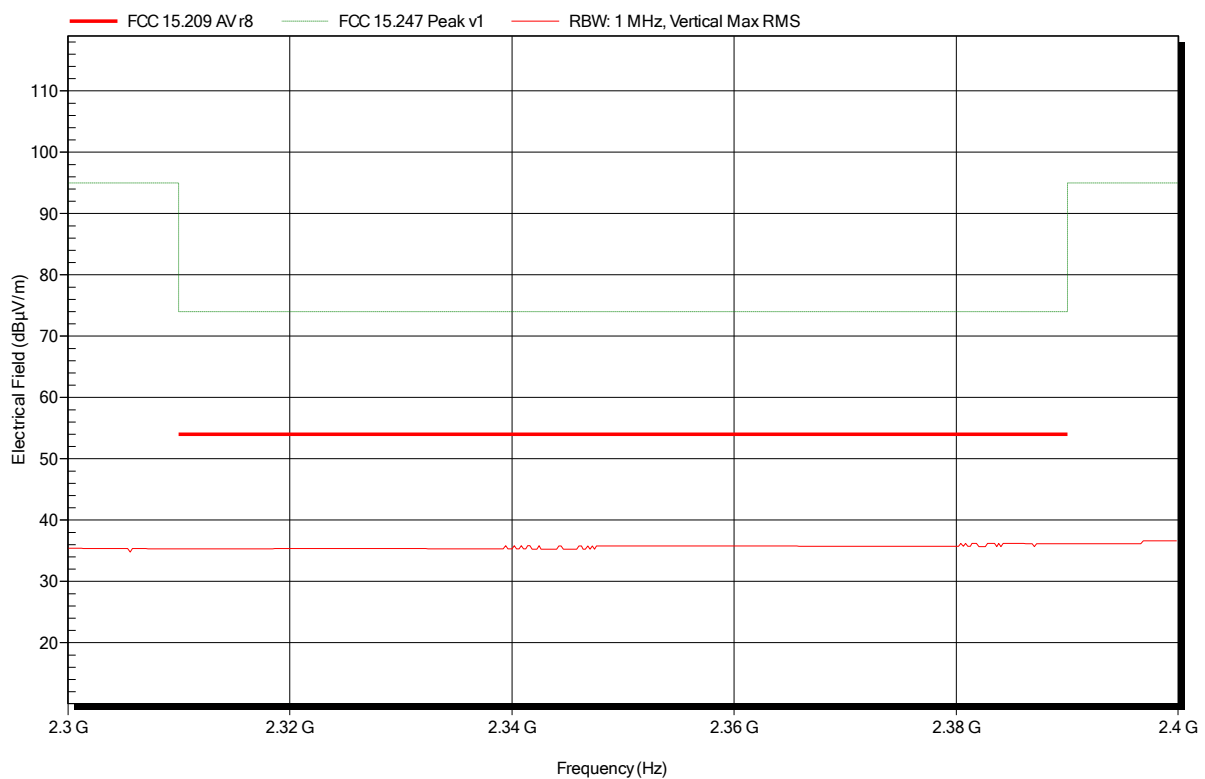


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal; lower bandedge

Index 129

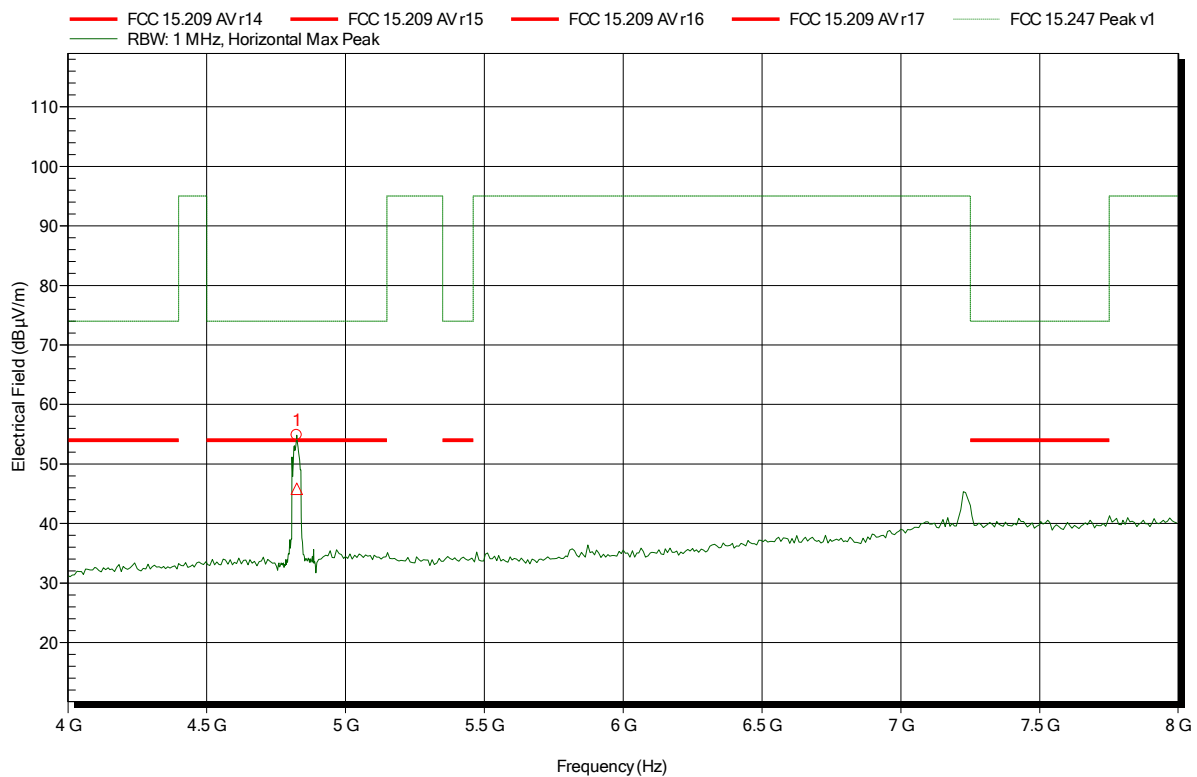


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 135



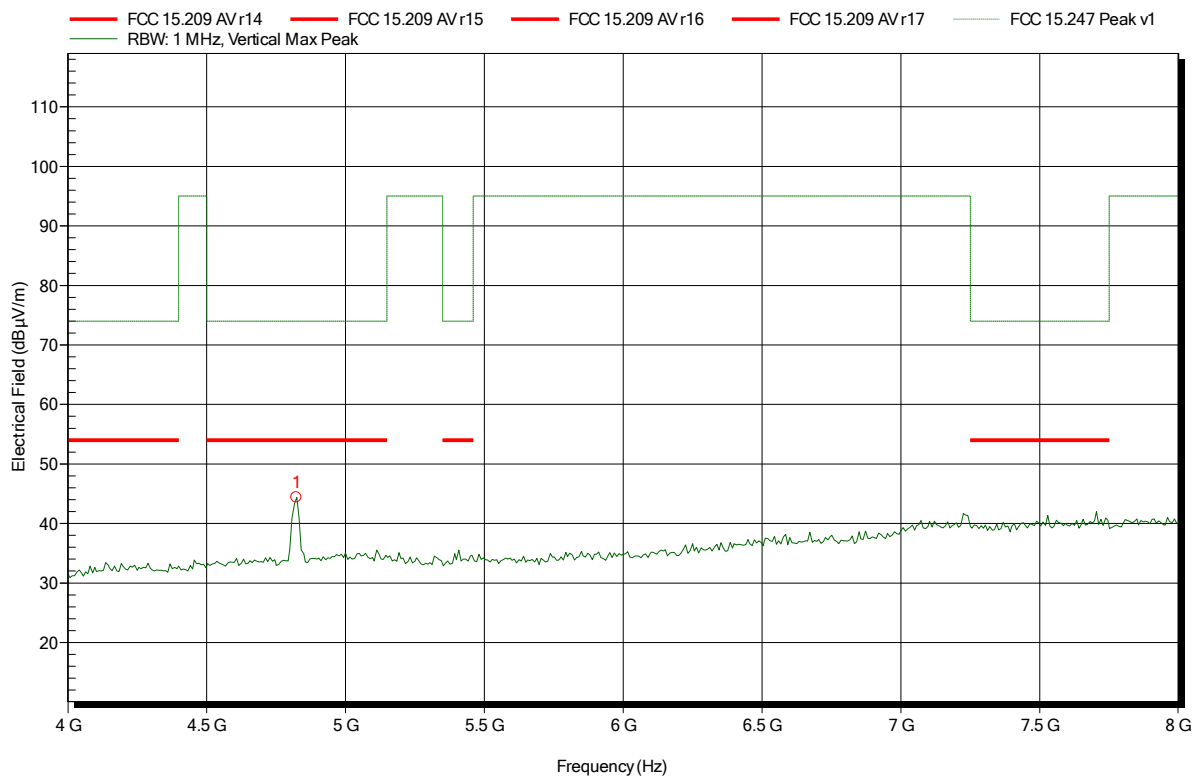
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.825 GHz	54.83 dBµV/m	74 dBµV/m	-19.17 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.825 GHz	45.84 dBµV/m	54 dBµV/m	-8.16 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 130



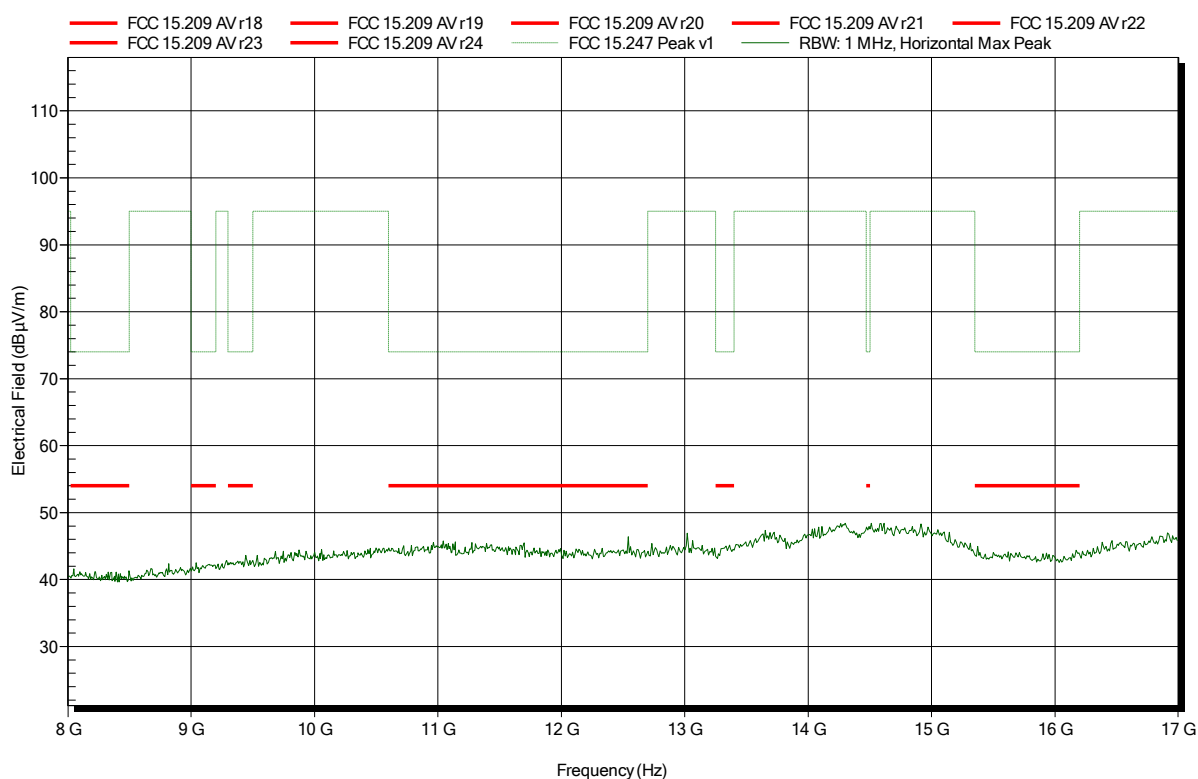
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.824 GHz	44.37 dBµV/m	74 dBµV/m	-29.63 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 134

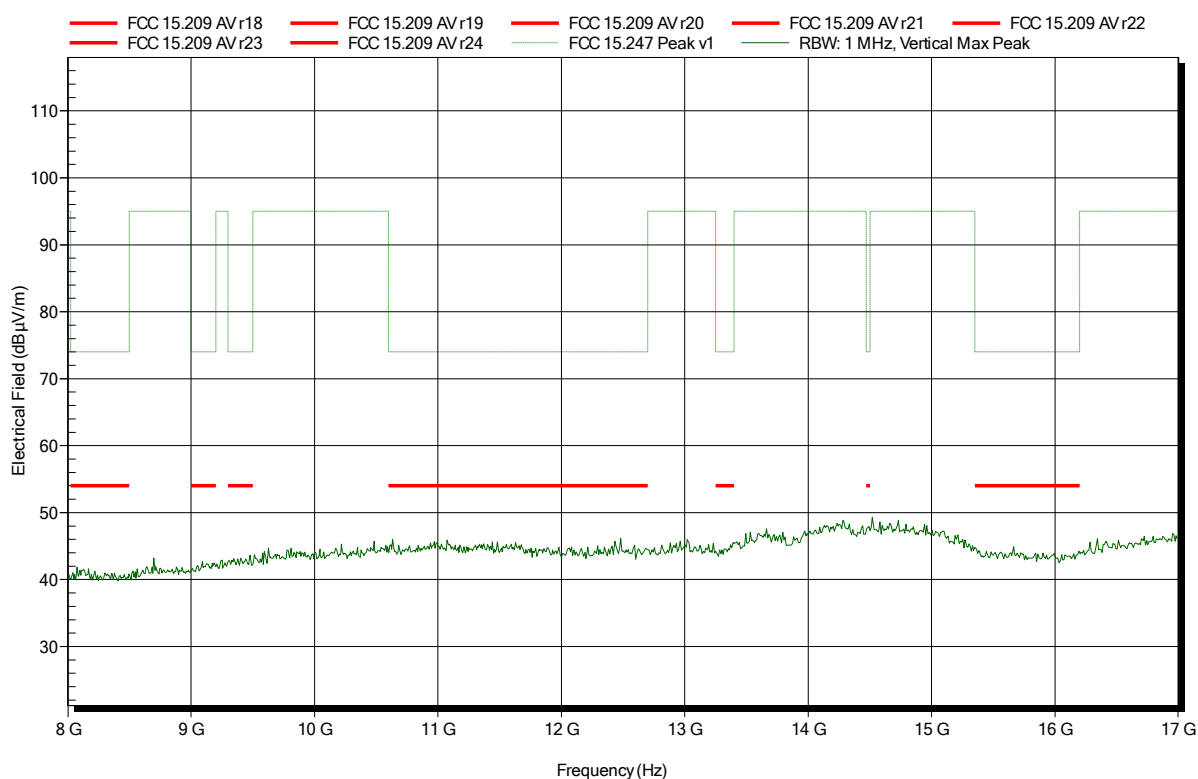


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 131

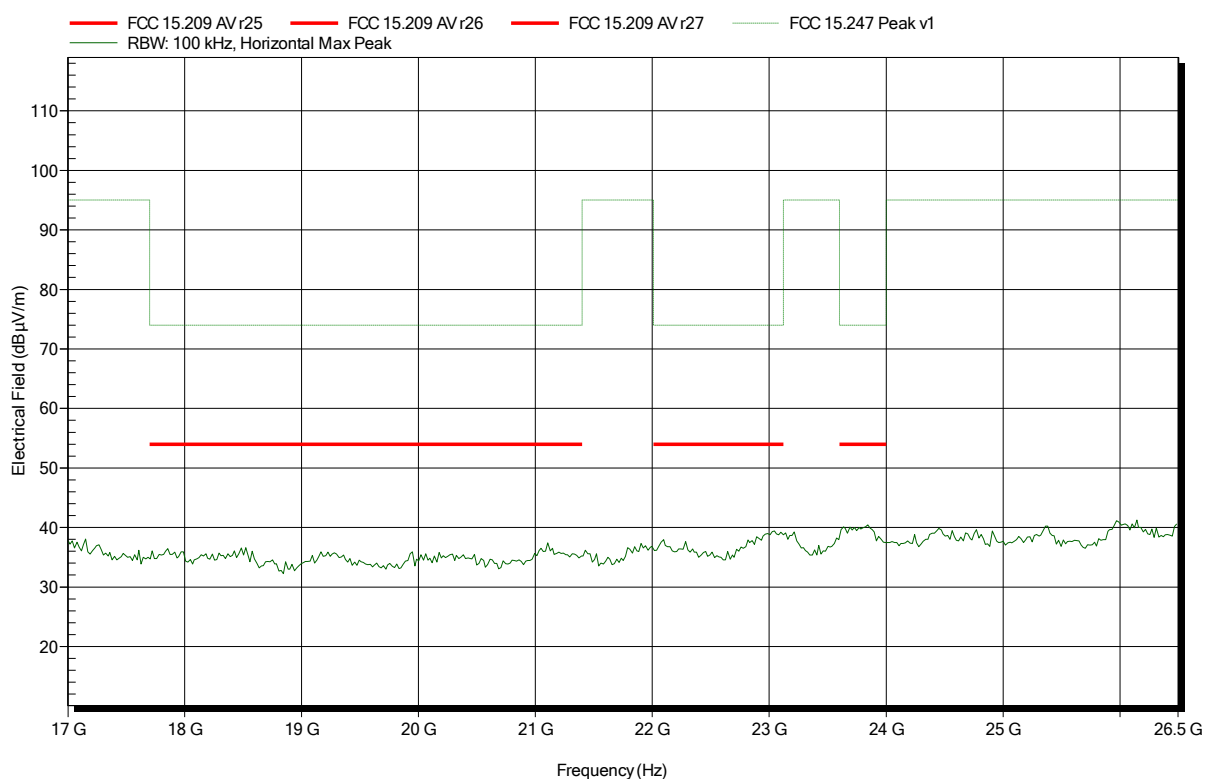


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 133

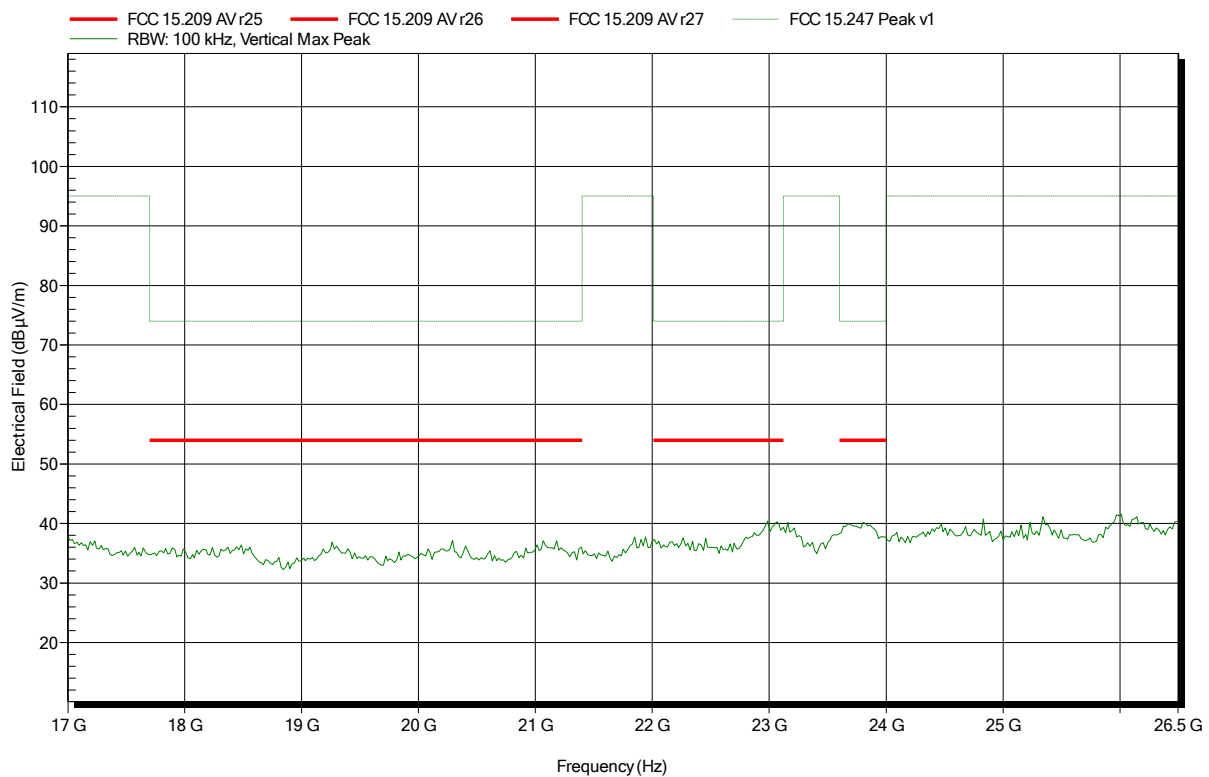


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 1; 2412 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 132

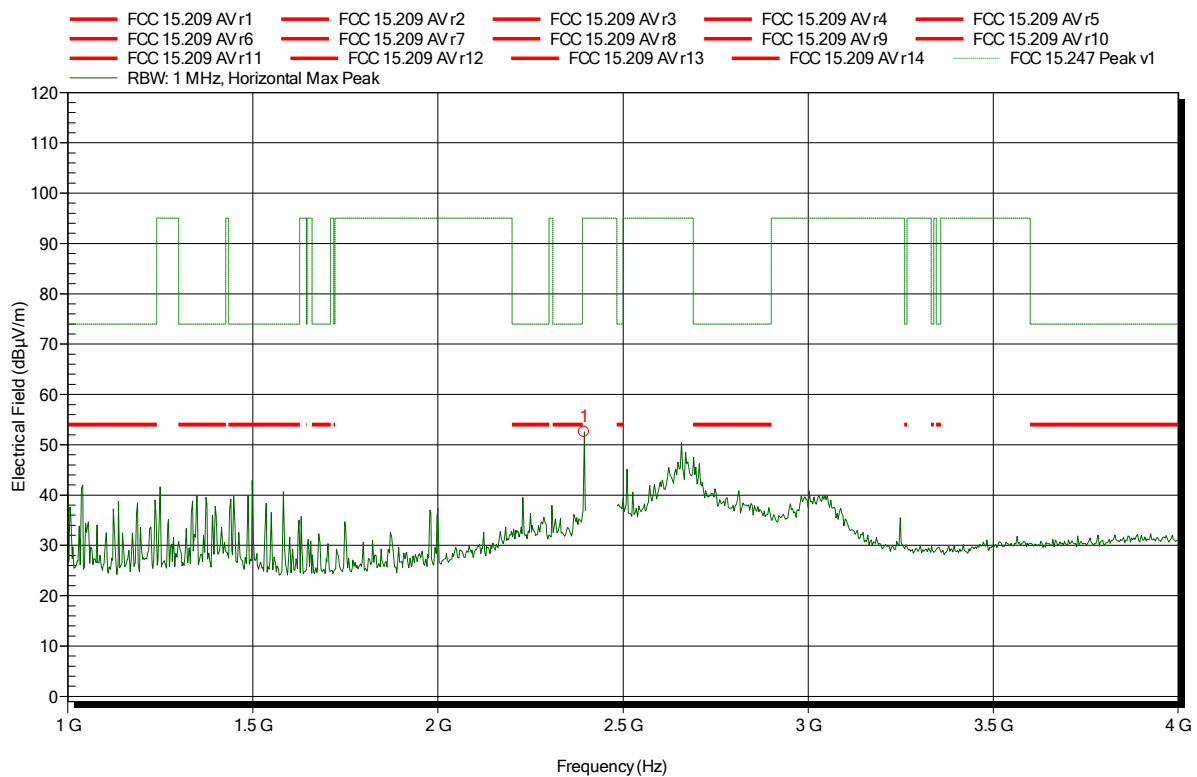


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 99



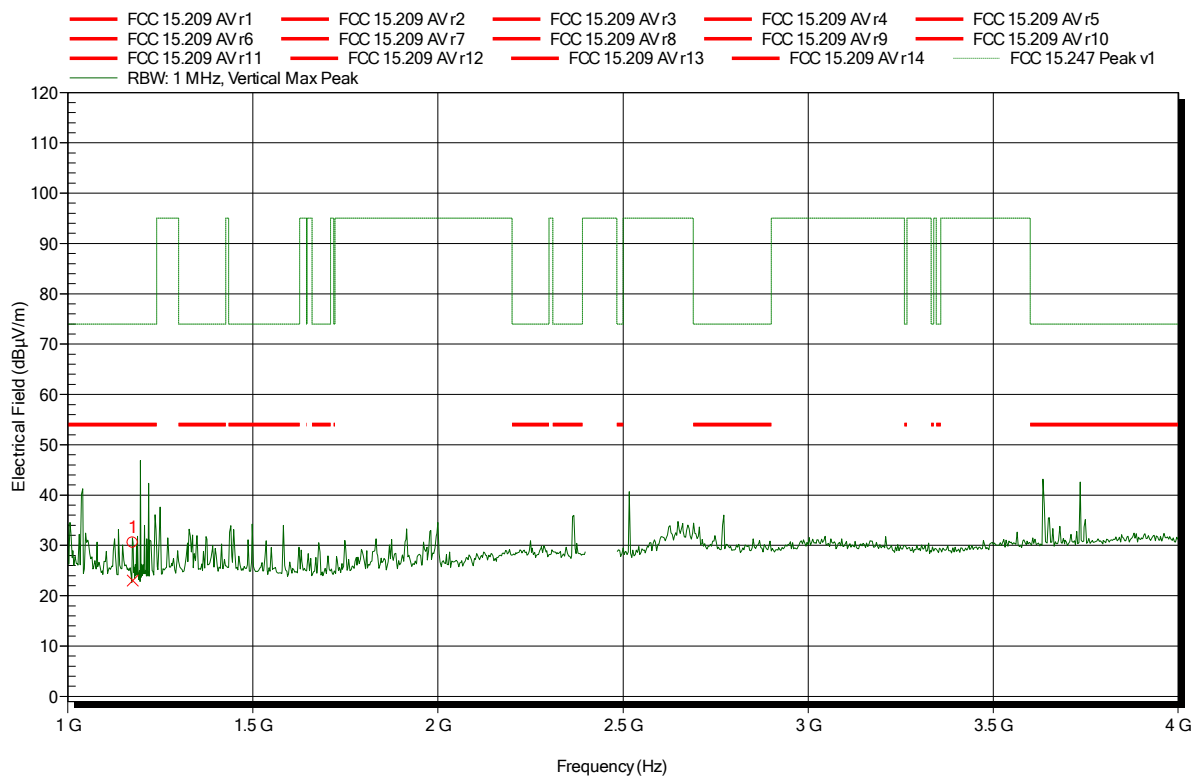
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3944 GHz	52.53 dBµV/m	95 dBµV/m	-42.47 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 91



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.1761 GHz	30.51 dBµV/m	74 dBµV/m	-43.49 dB	Pass

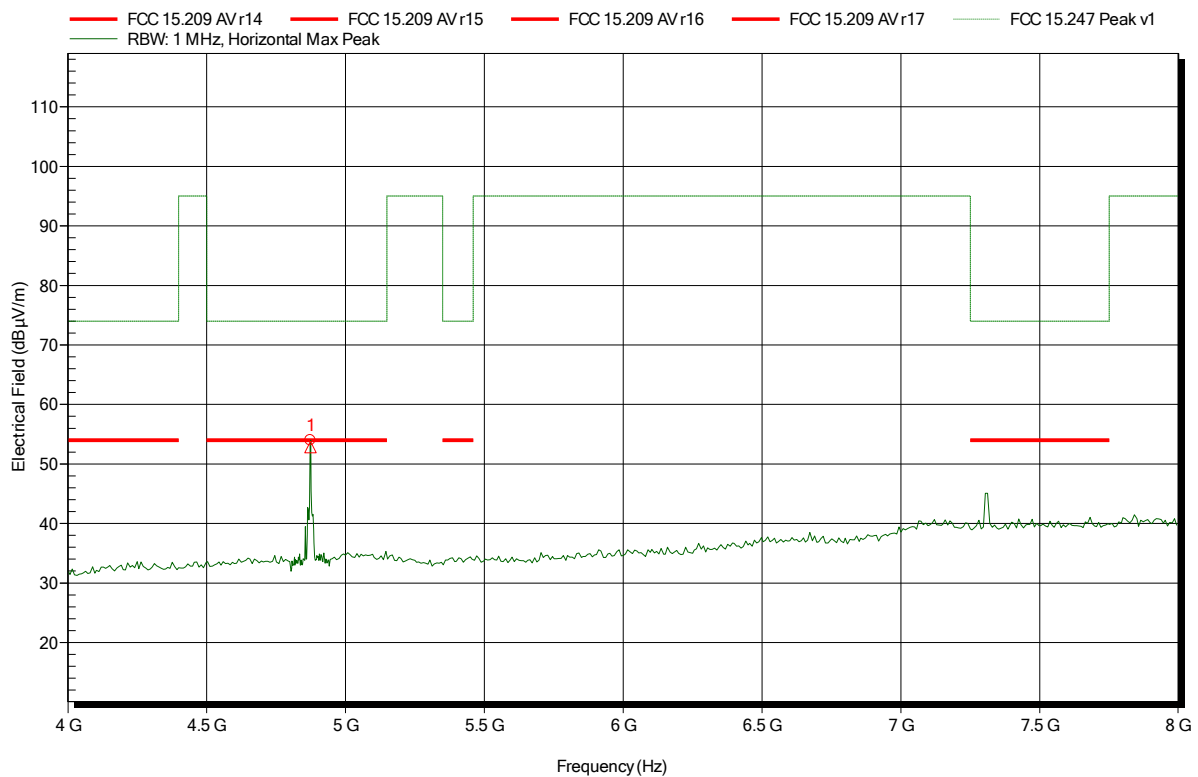
Frequency	Average	Average Limit	Average Difference	Average Status
1.1761 GHz	23.04 dBµV/m	54 dBµV/m	-30.96 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 98



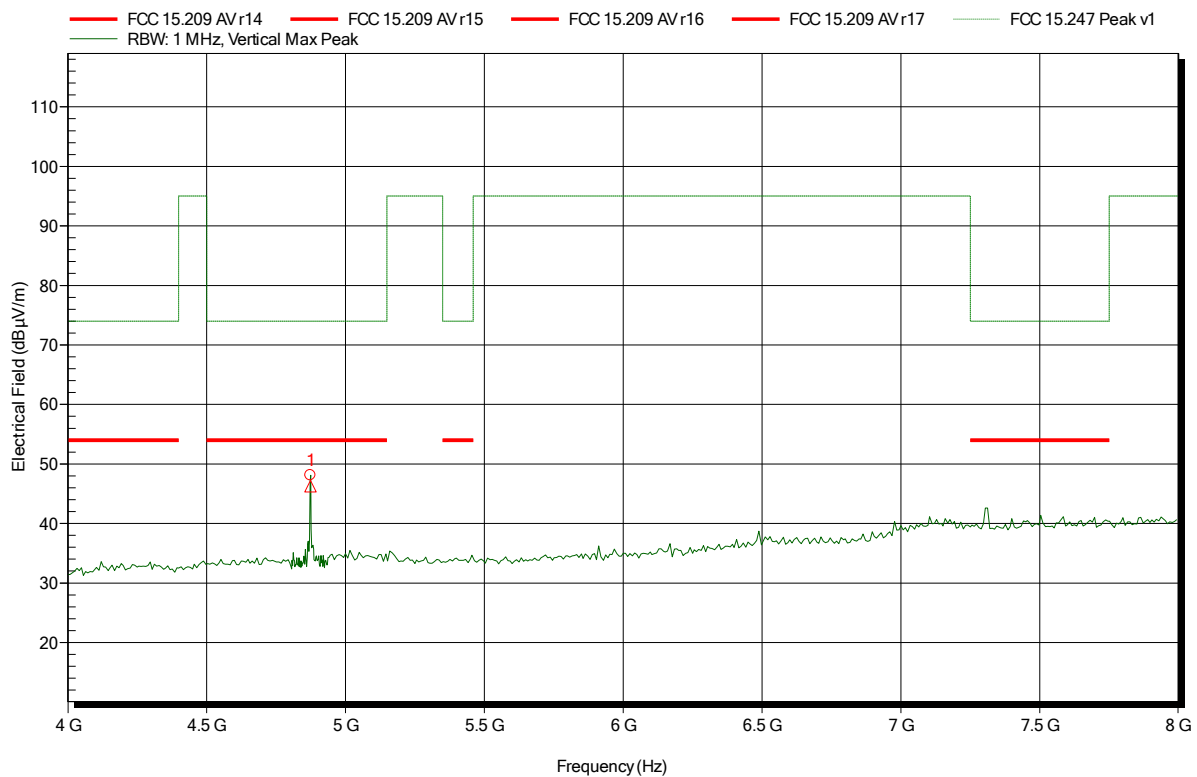
Frequency 4.874 GHz	Peak 53.95 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -20.05 dB	Peak Status Pass
Frequency 4.874 GHz	RMS 52.86 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -1.14 dB	RMS Status Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 92



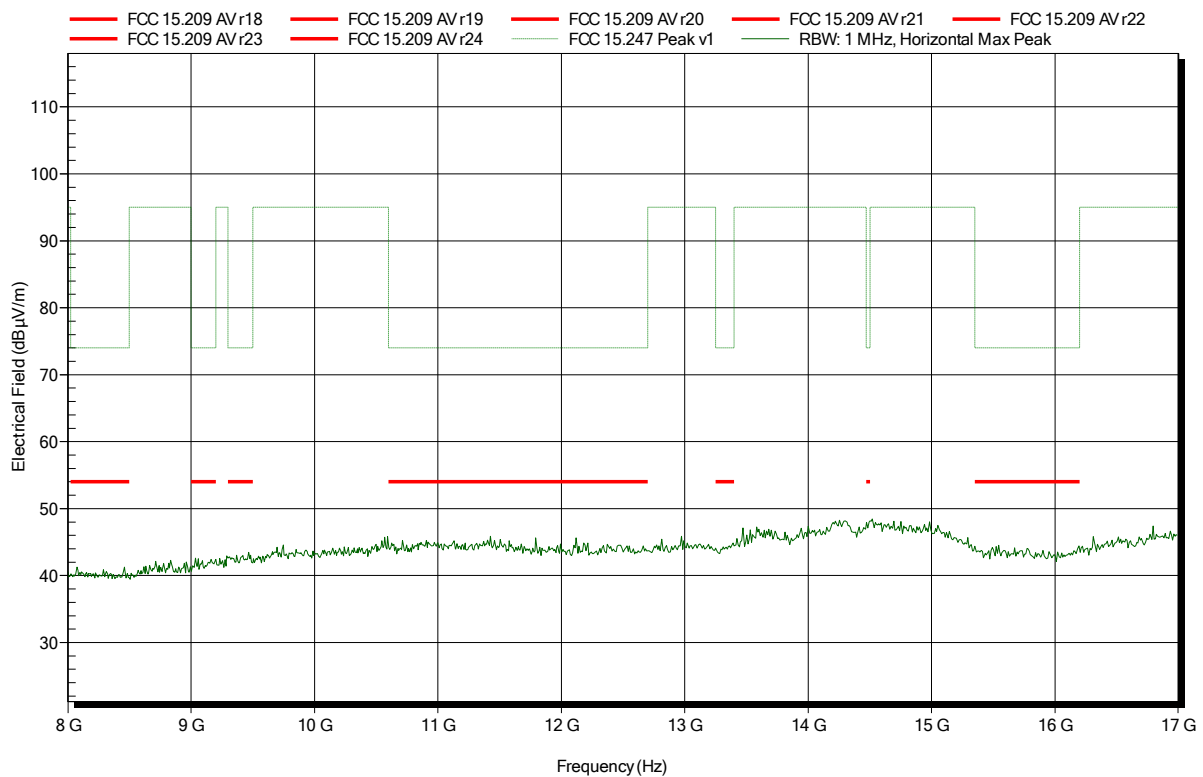
Frequency 4.874 GHz	Peak 48.07 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -25.93 dB	Peak Status Pass
Frequency 4.874 GHz	RMS 46.26 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -7.74 dB	RMS Status Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 97

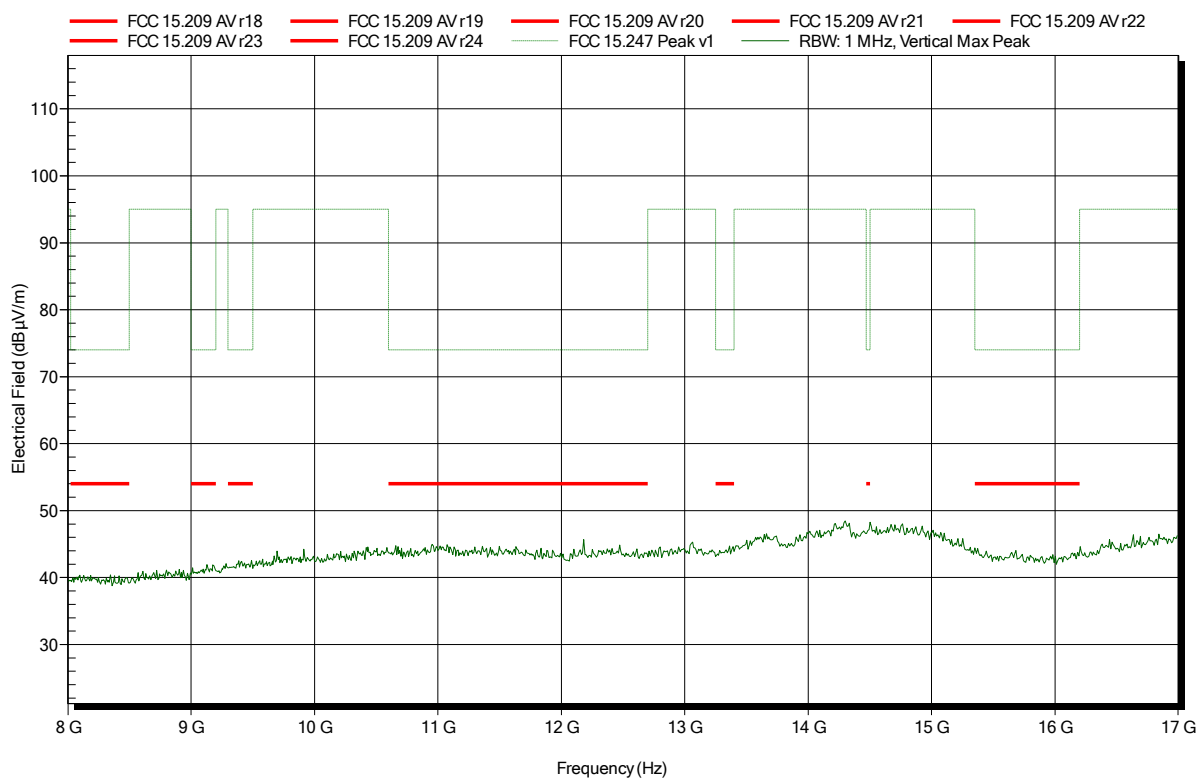


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 93

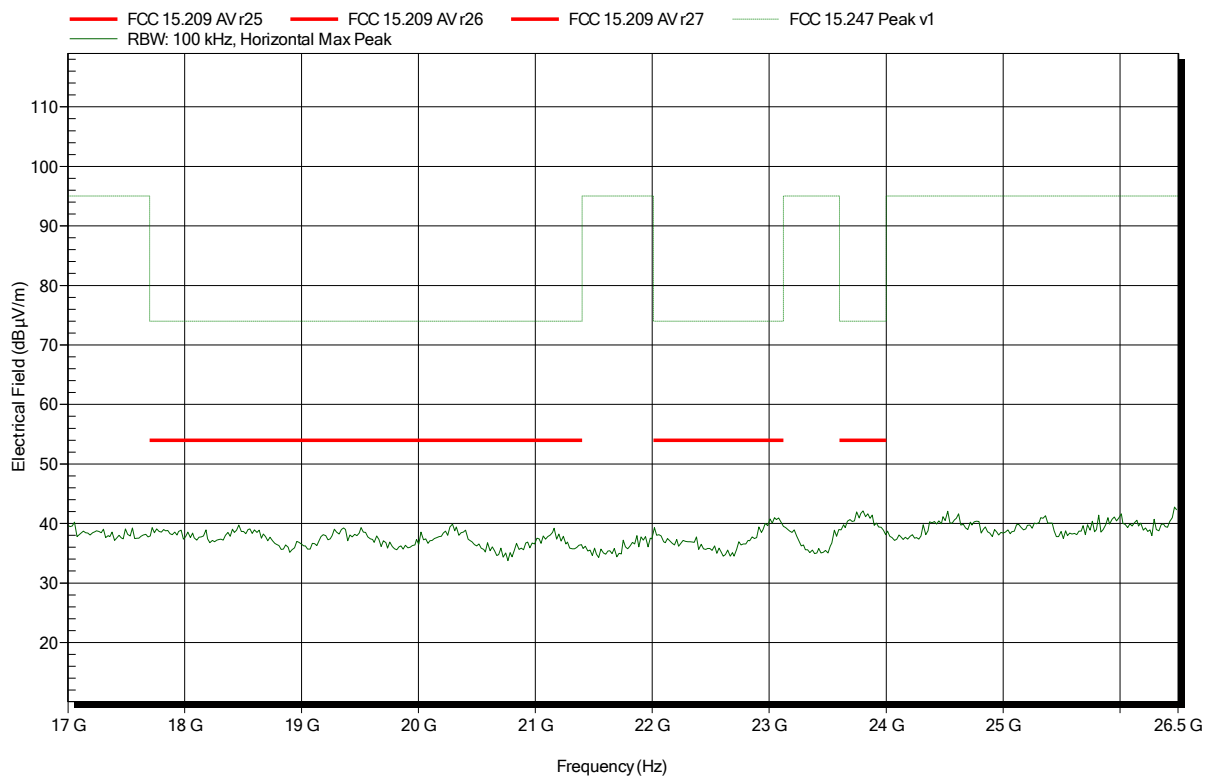


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 96

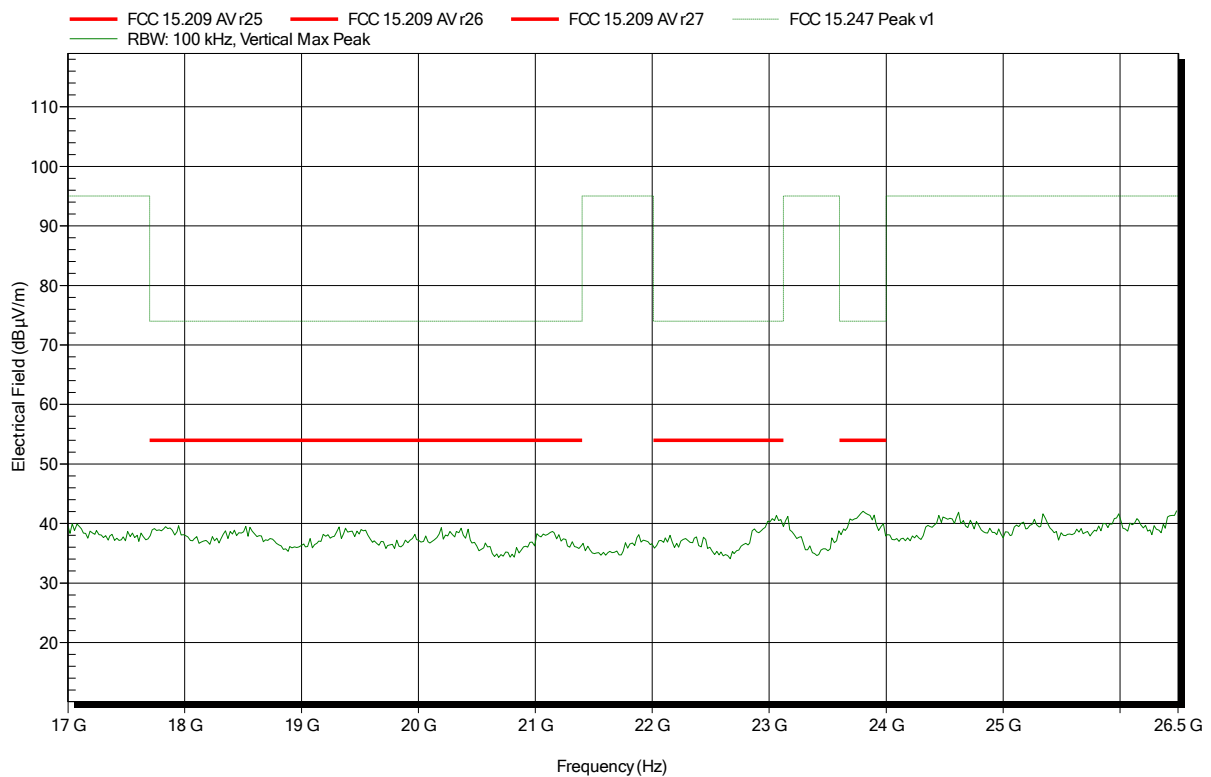


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: ATH18G40, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 95

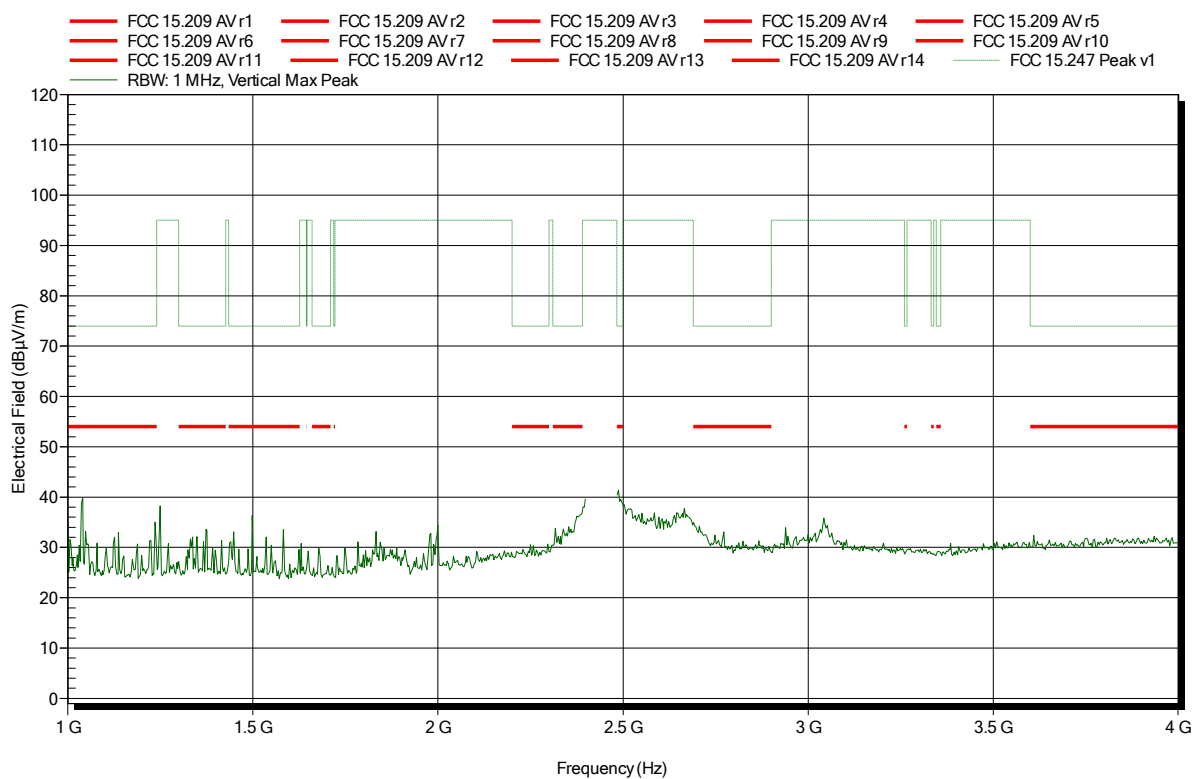


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 100

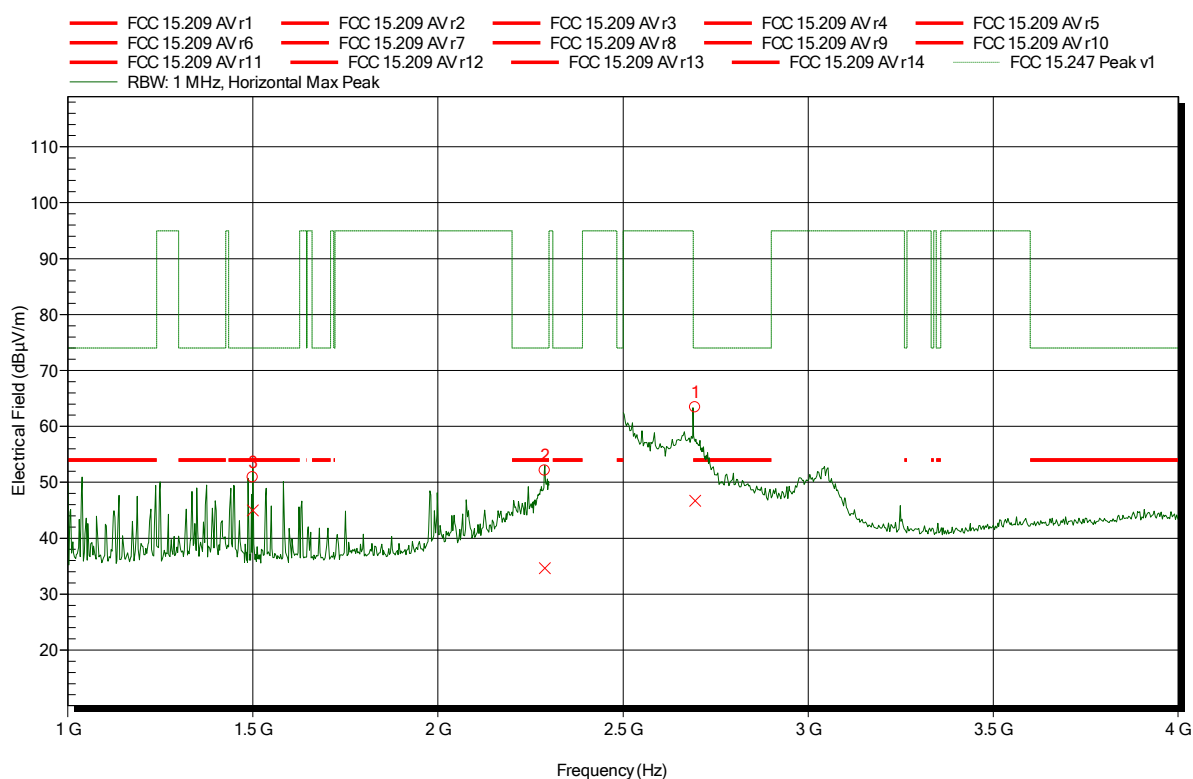


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 110



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.5 GHz	50.9 dBµV/m	74 dBµV/m	-23.1 dB	Pass
2.289 GHz	52.08 dBµV/m	74 dBµV/m	-21.92 dB	Pass
2.695 GHz	63.39 dBµV/m	74 dBµV/m	-10.61 dB	Pass

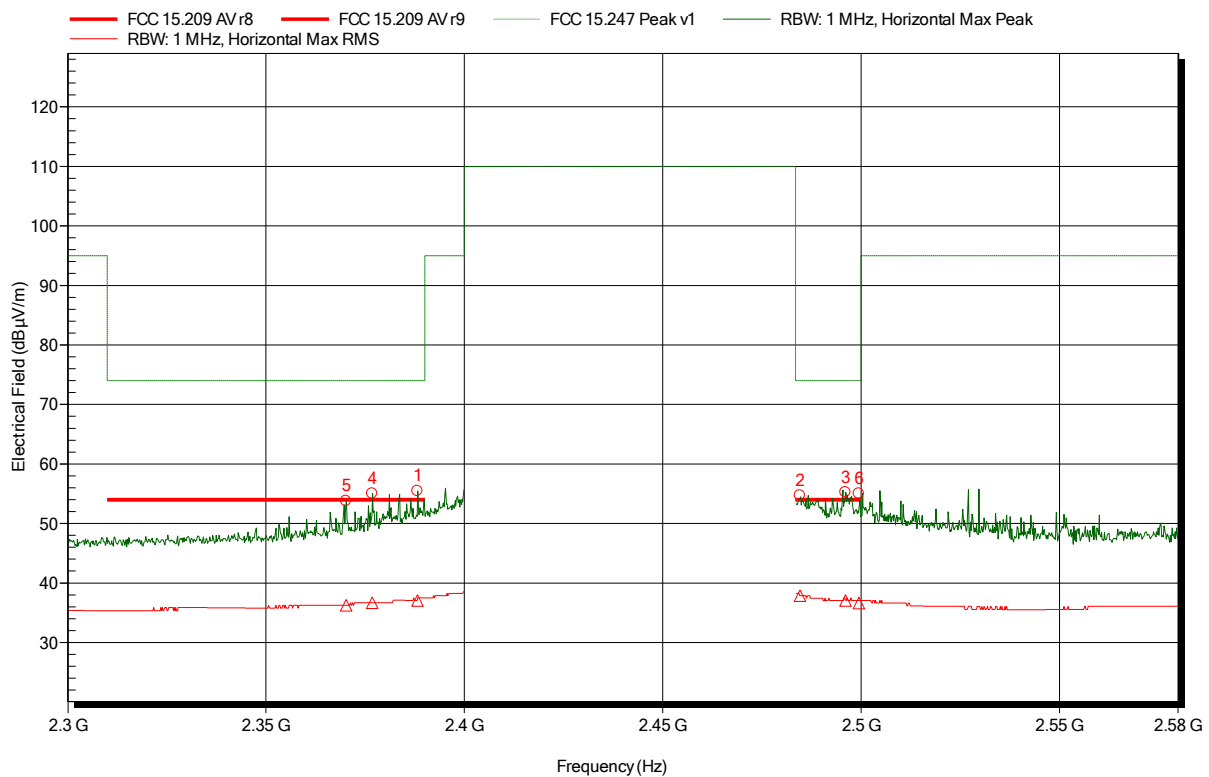
Frequency	Average	Average Limit	Average Difference	Average Status
1.5 GHz	44.97 dBµV/m	54 dBµV/m	-9.03 dB	Pass
2.289 GHz	34.65 dBµV/m	54 dBµV/m	-19.35 dB	Pass
2.695 GHz	46.68 dBµV/m	54 dBµV/m	-7.32 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal; lower + upper bandedge

Index 111



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3702 GHz	53.81 dBµV/m	74 dBµV/m	-20.19 dB	Pass
2.3768 GHz	55.03 dBµV/m	74 dBµV/m	-18.97 dB	Pass
2.3882 GHz	55.45 dBµV/m	74 dBµV/m	-18.55 dB	Pass
2.4846 GHz	54.69 dBµV/m	74 dBµV/m	-19.31 dB	Pass
2.496 GHz	55.24 dBµV/m	74 dBµV/m	-18.76 dB	Pass
2.4995 GHz	55.04 dBµV/m	74 dBµV/m	-18.96 dB	Pass

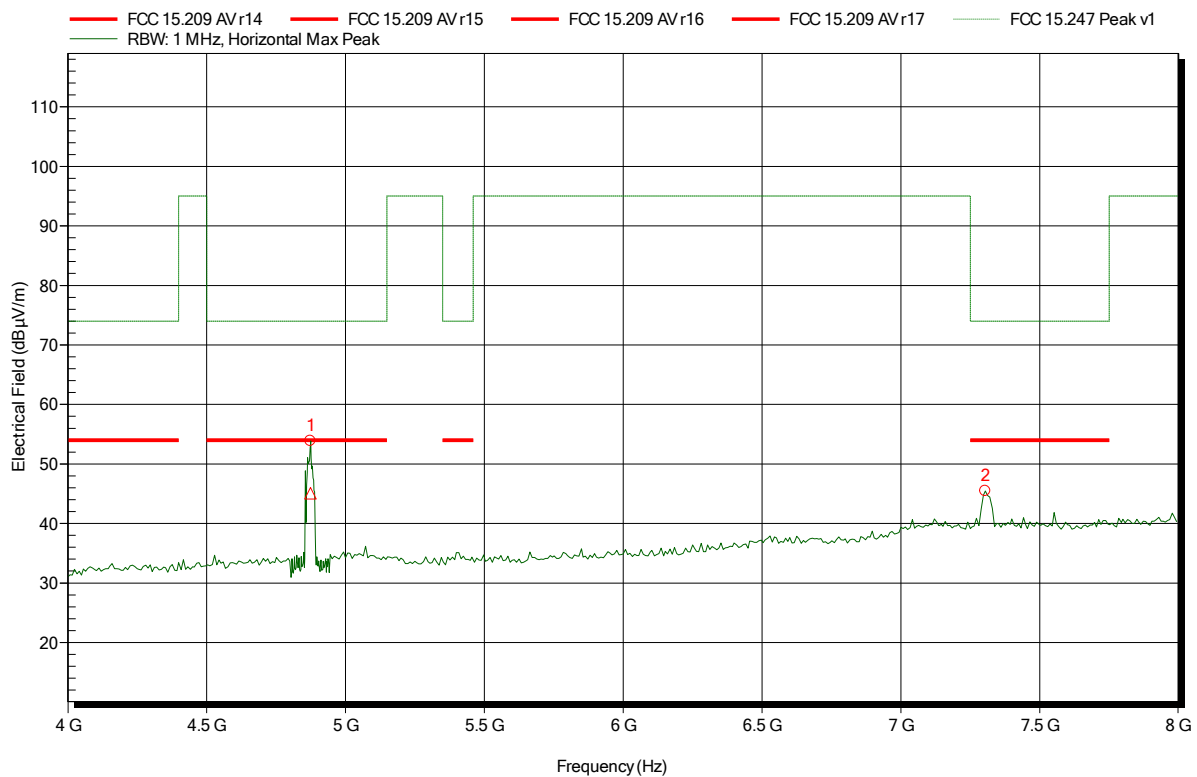
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3702 GHz	36.25 dBµV/m	54 dBµV/m	-17.75 dB	Pass
2.3768 GHz	36.68 dBµV/m	54 dBµV/m	-17.32 dB	Pass
2.3882 GHz	37.07 dBµV/m	54 dBµV/m	-16.93 dB	Pass
2.4846 GHz	37.85 dBµV/m	54 dBµV/m	-16.15 dB	Pass
2.496 GHz	37.07 dBµV/m	54 dBµV/m	-16.93 dB	Pass
2.4995 GHz	36.64 dBµV/m	54 dBµV/m	-17.36 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 106



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.874 GHz	53.85 dBµV/m	74 dBµV/m	-20.15 dB	Pass
7.304 GHz	45.48 dBµV/m	74 dBµV/m	-28.52 dB	Pass

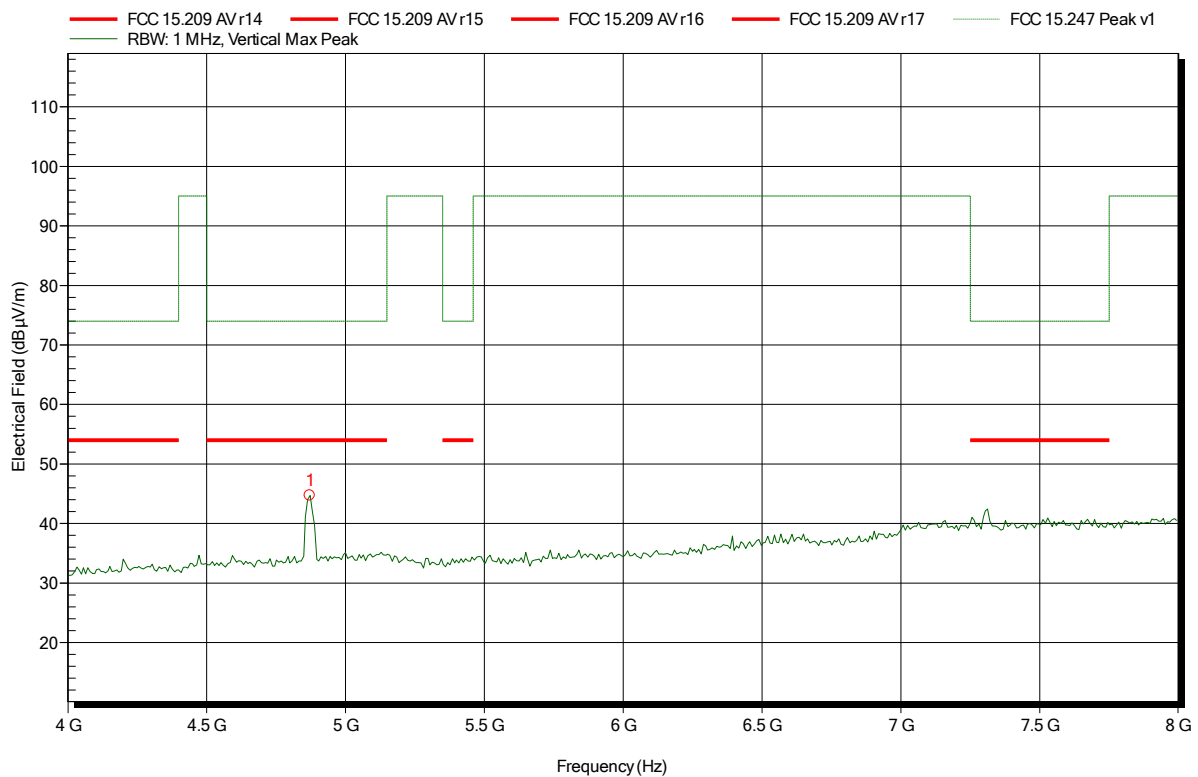
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.874 GHz	45.06 dBµV/m	54 dBµV/m	-8.94 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 101



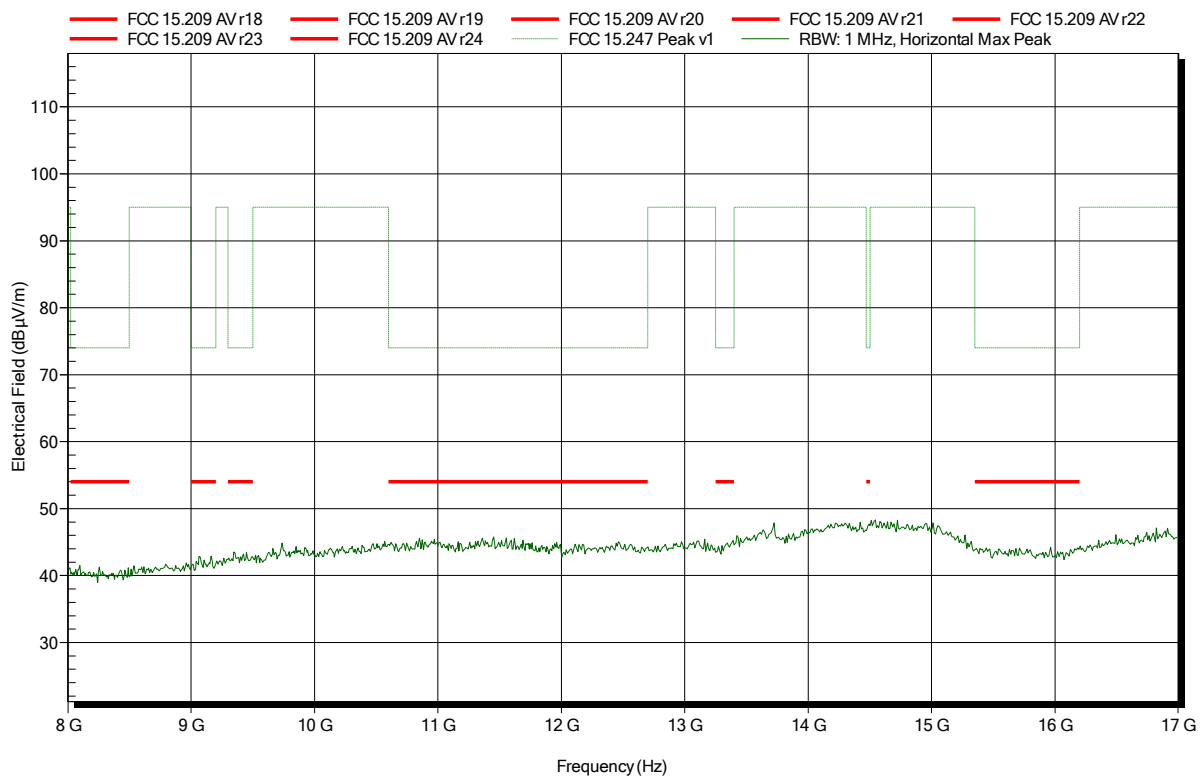
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.872 GHz	44.68 dBµV/m	74 dBµV/m	-29.32 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 105

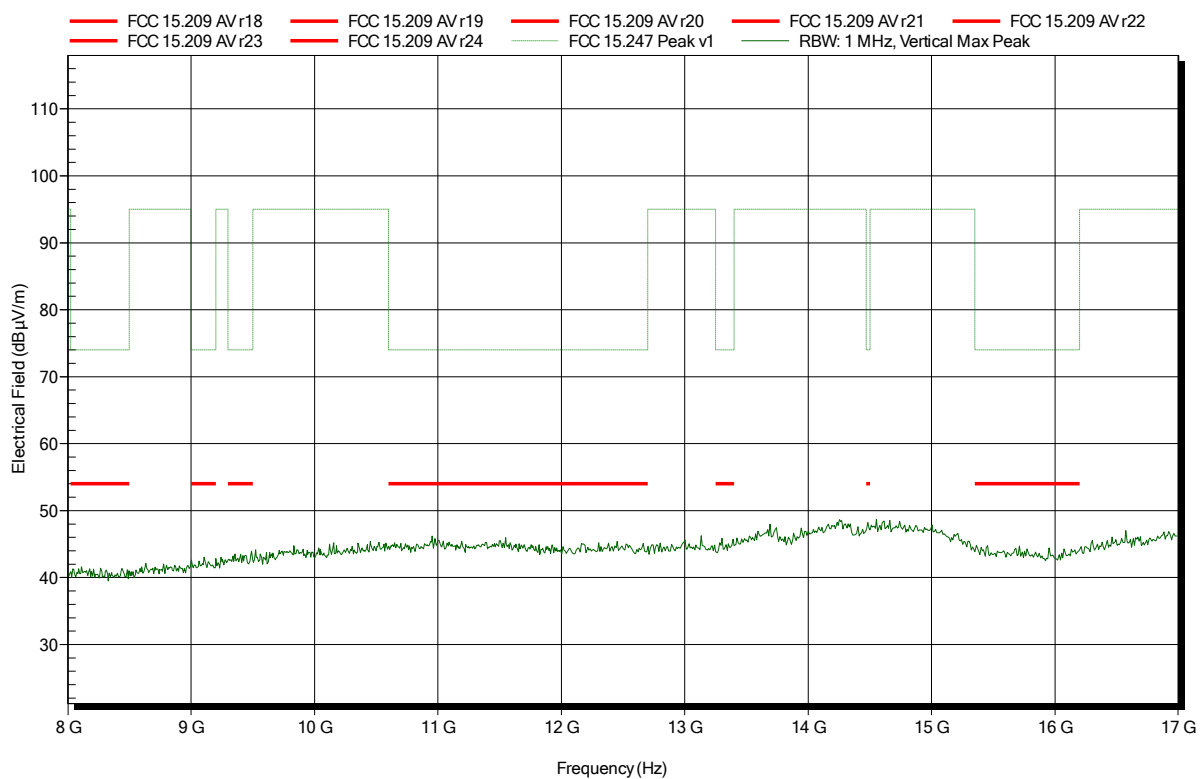


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 102

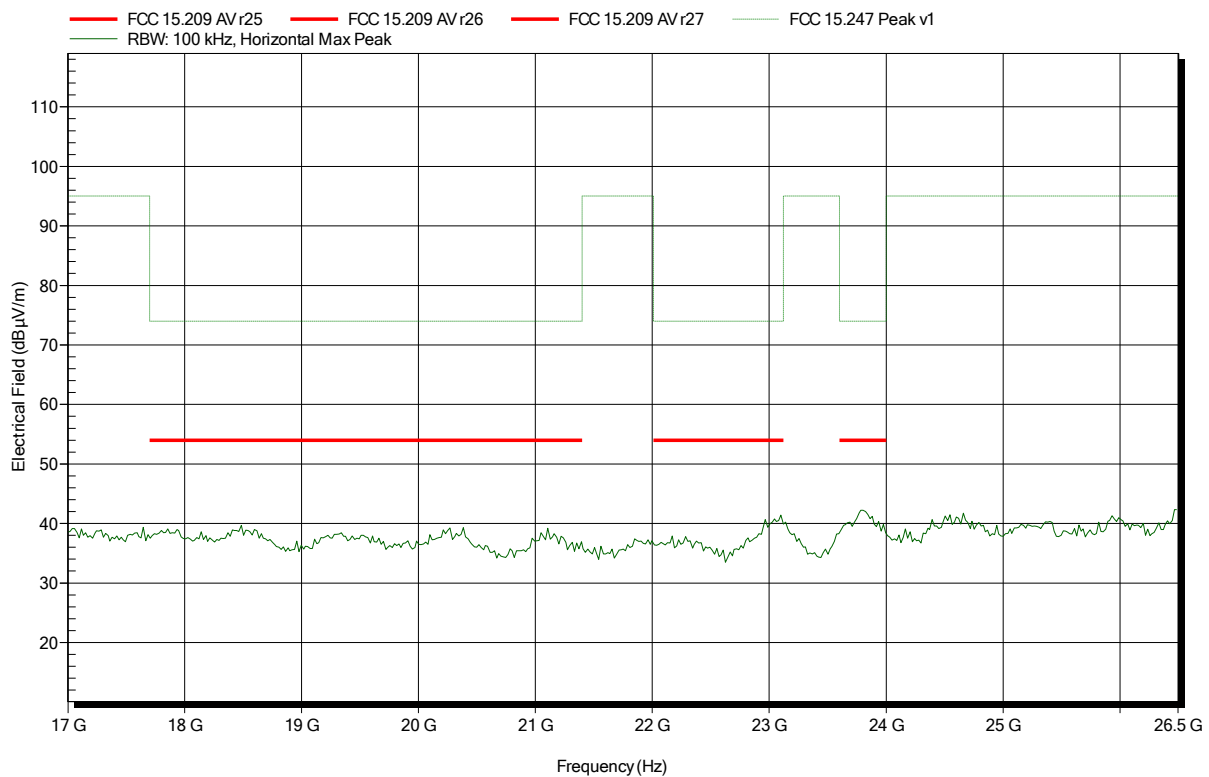


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 104

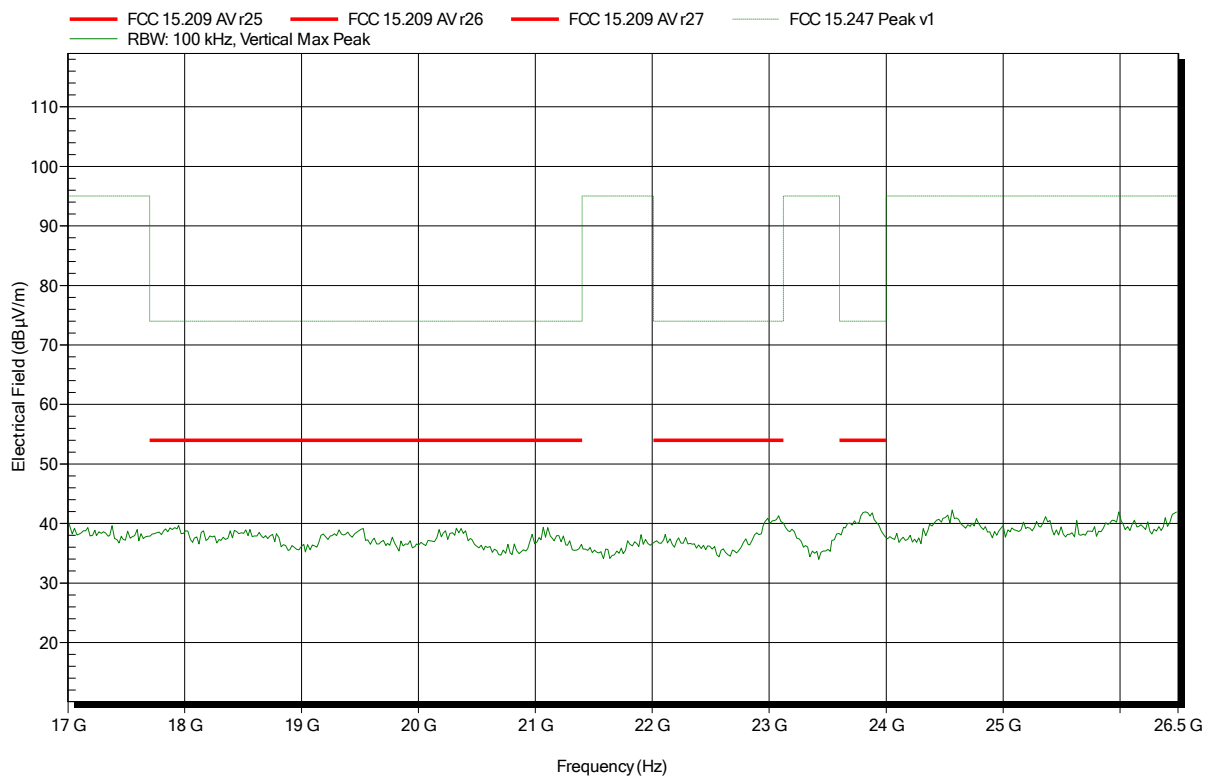


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 103

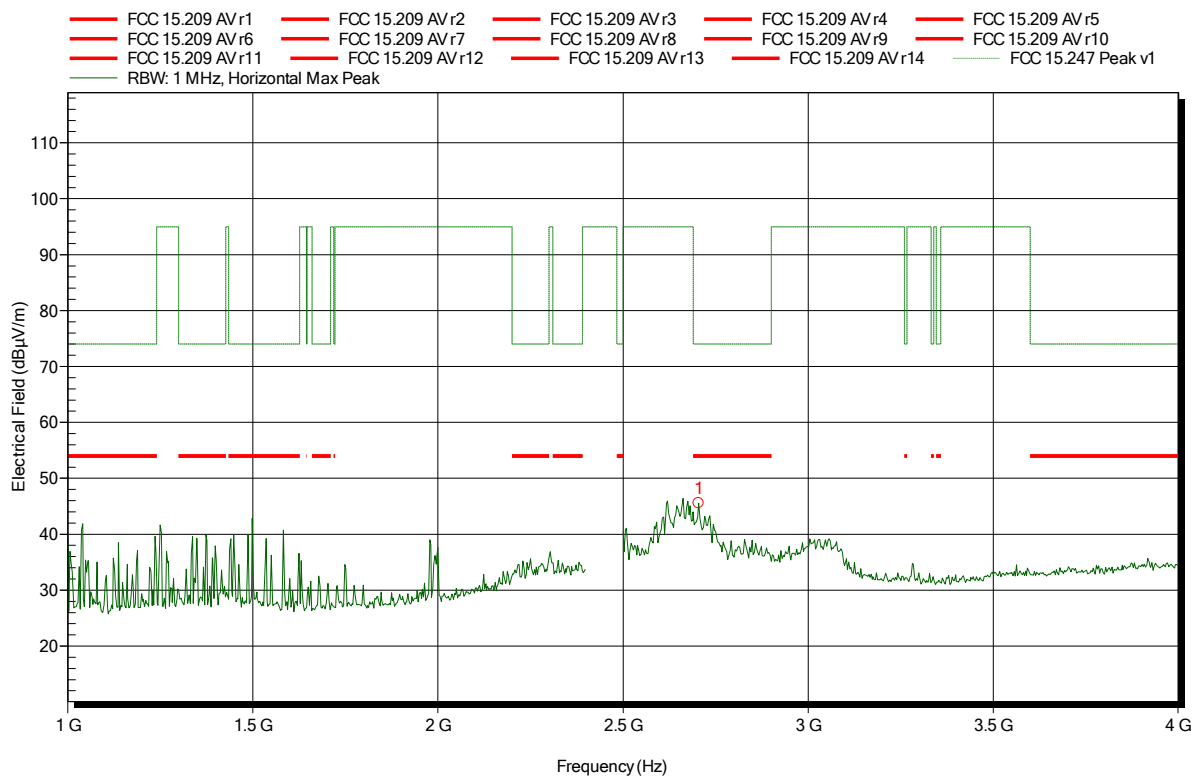


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
 Test Date: 2018-11-06
 Note: EUT horizontal

Index 78



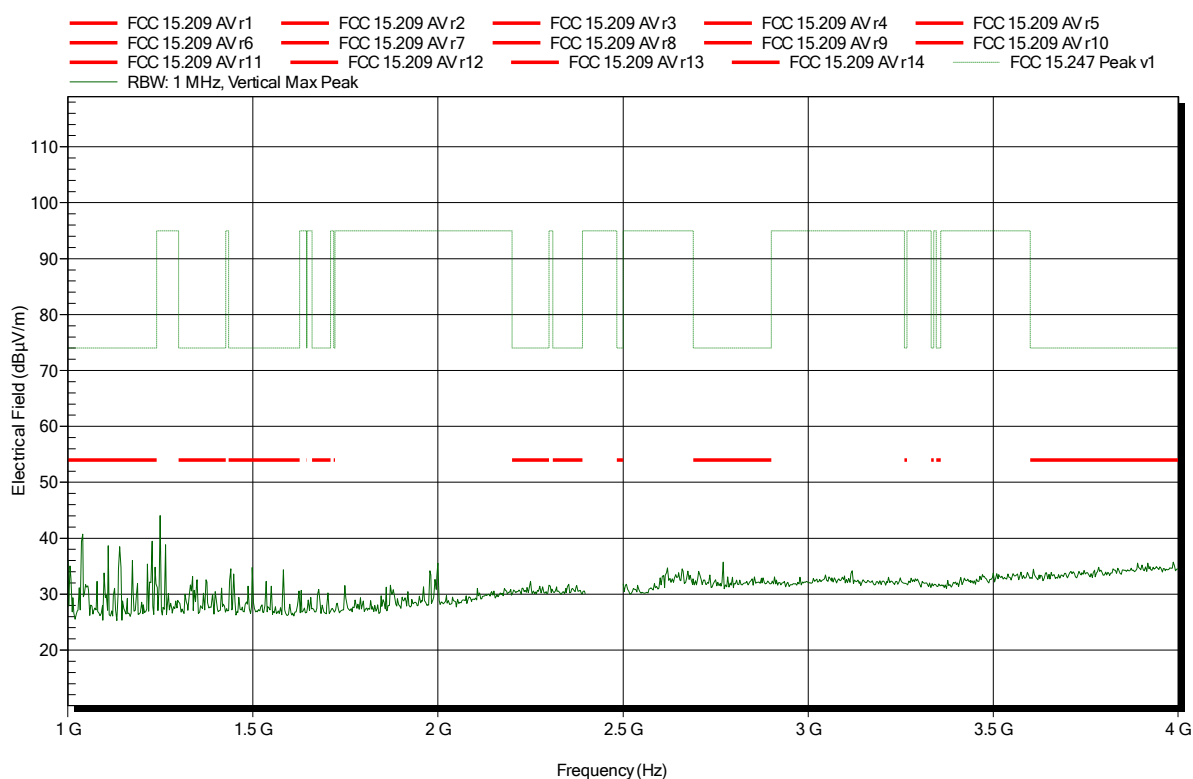
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.704 GHz	45.56 dBµV/m	74 dBµV/m	-28.44 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 89

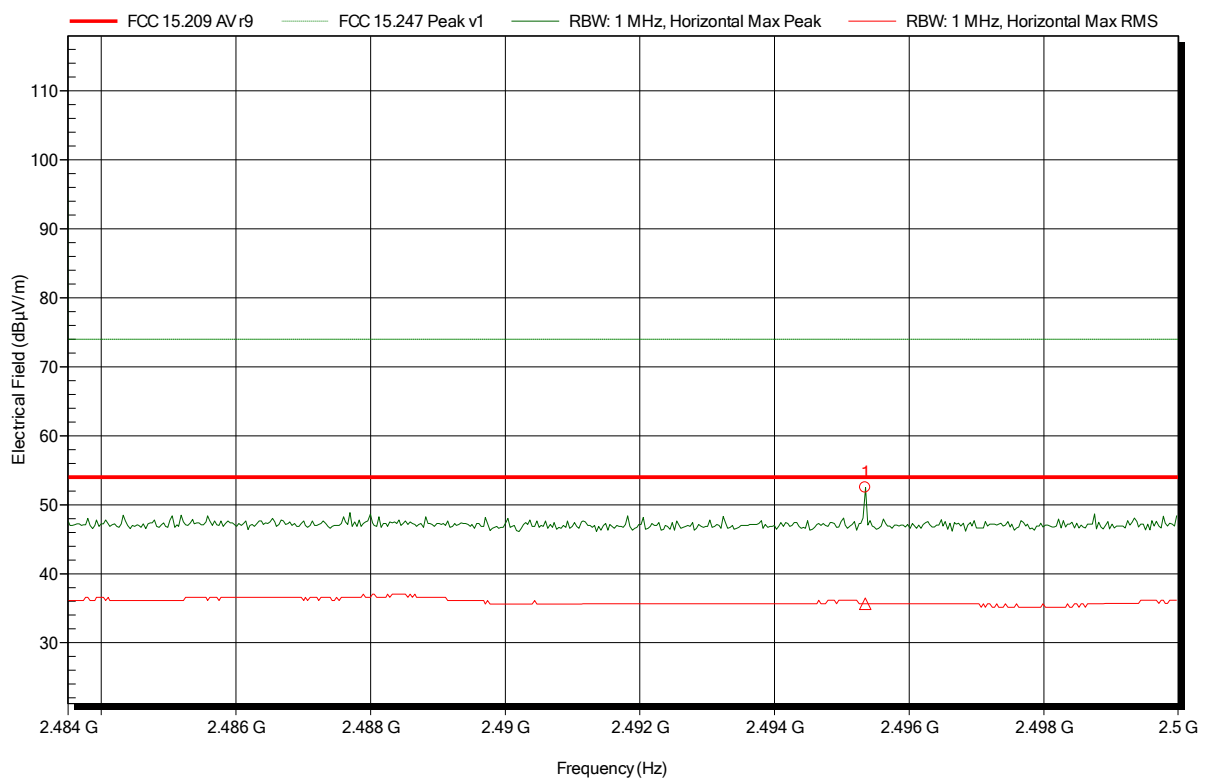


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal; upper bandedge

Index 79



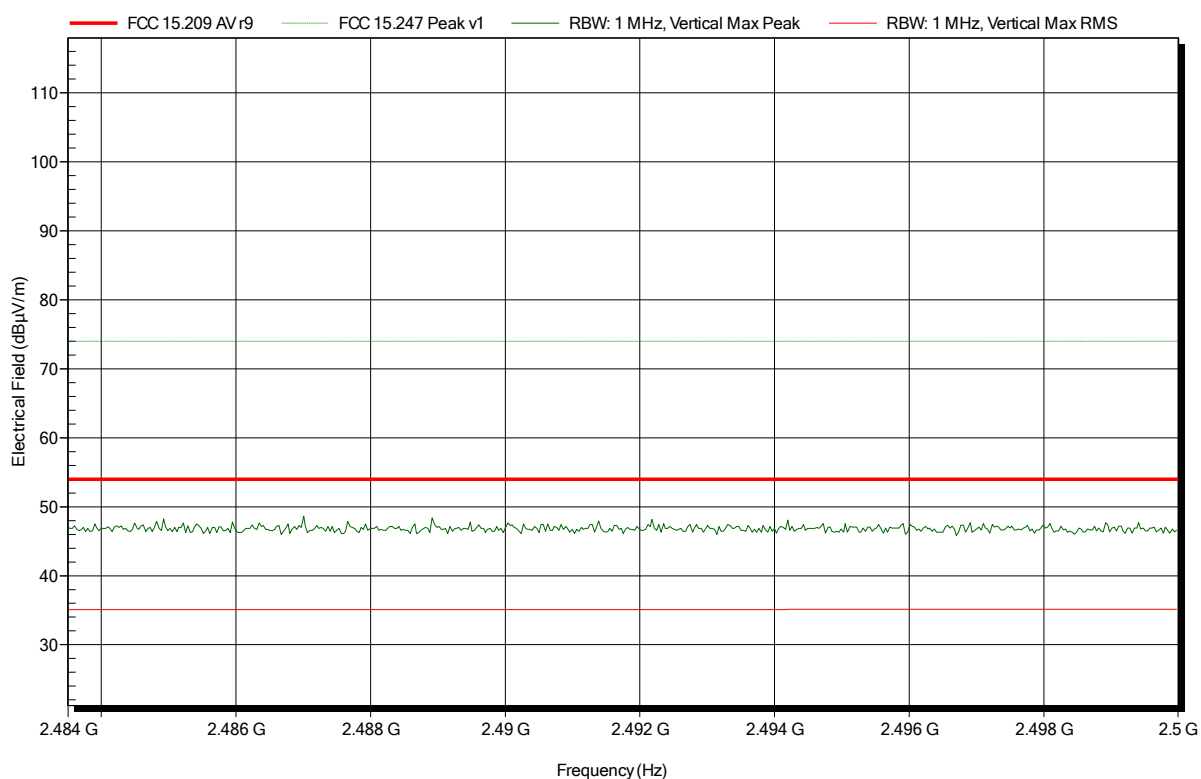
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4953 GHz	52.48 dBµV/m	74 dBµV/m	-21.52 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4953 GHz	35.65 dBµV/m	54 dBµV/m	-18.35 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-07
Note: EUT horizontal; upper bandedge

Index 88

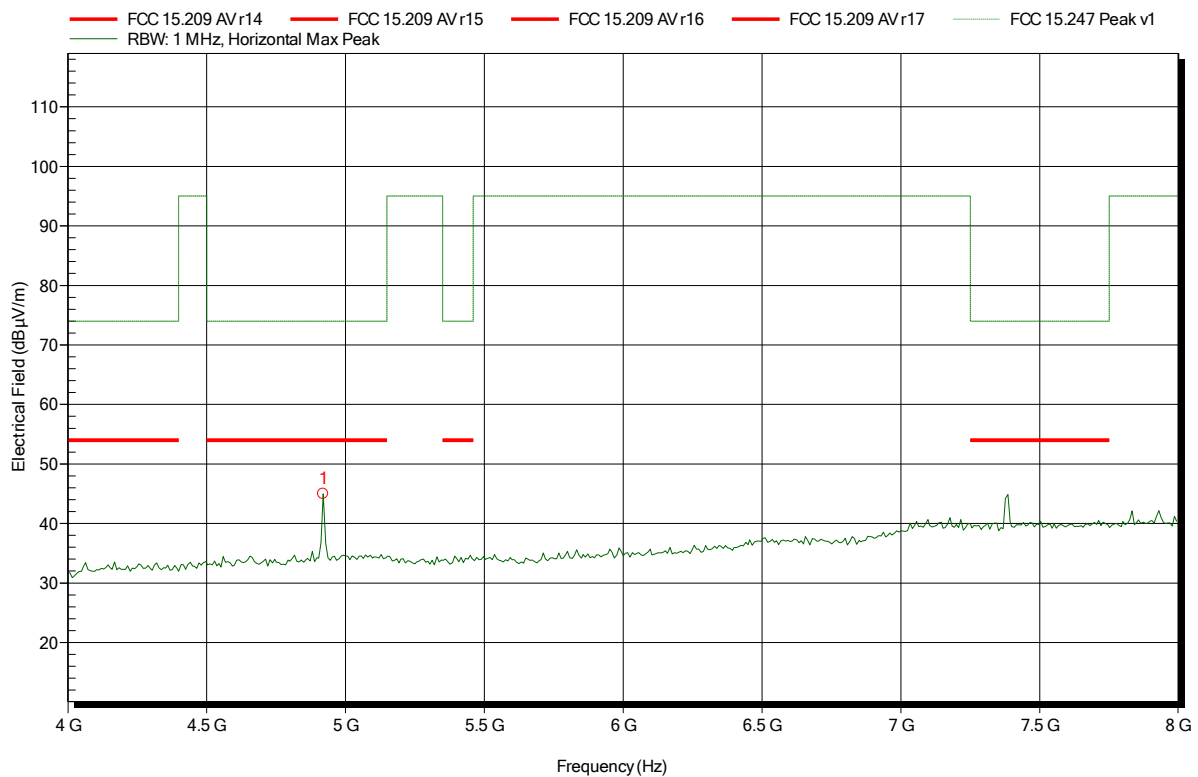


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
 Test Date: 2018-11-06
 Note: EUT horizontal

Index 80



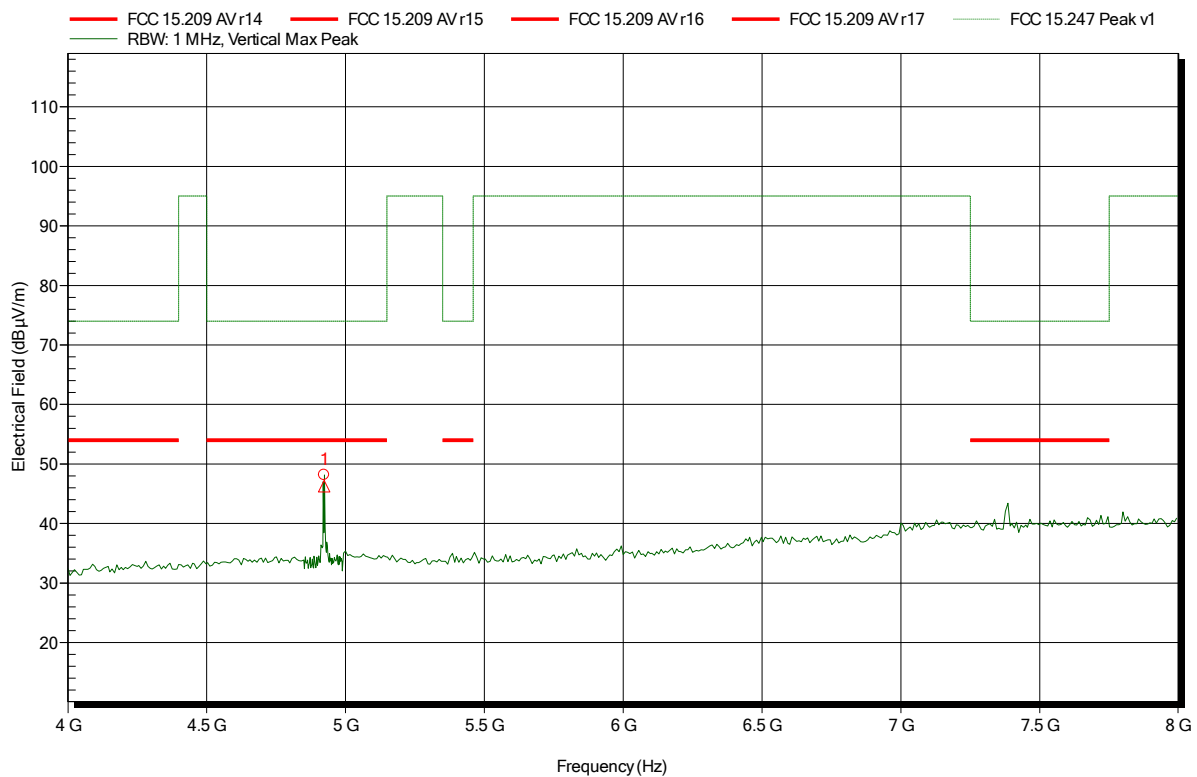
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.92 GHz	44.95 dBµV/m	74 dBµV/m	-29.05 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 87



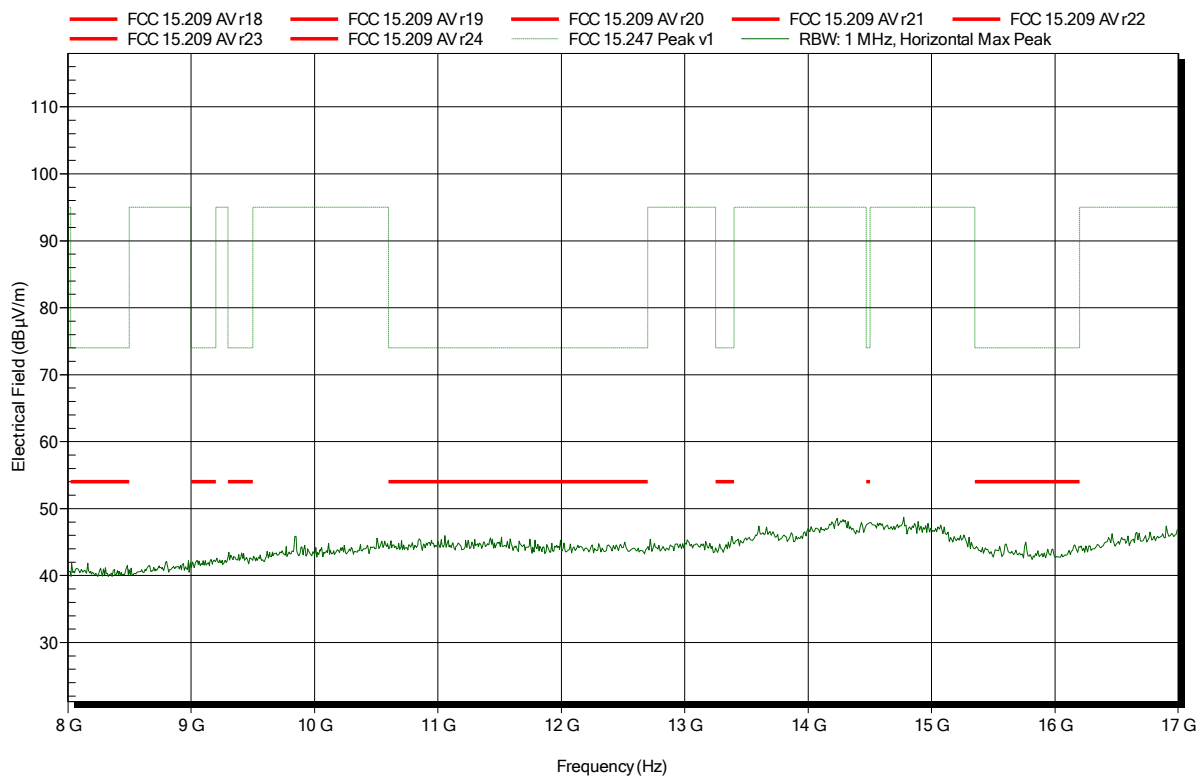
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.924 GHz	48.15 dBµV/m	74 dBµV/m	-25.85 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.924 GHz	46.28 dBµV/m	54 dBµV/m	-7.72 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 81

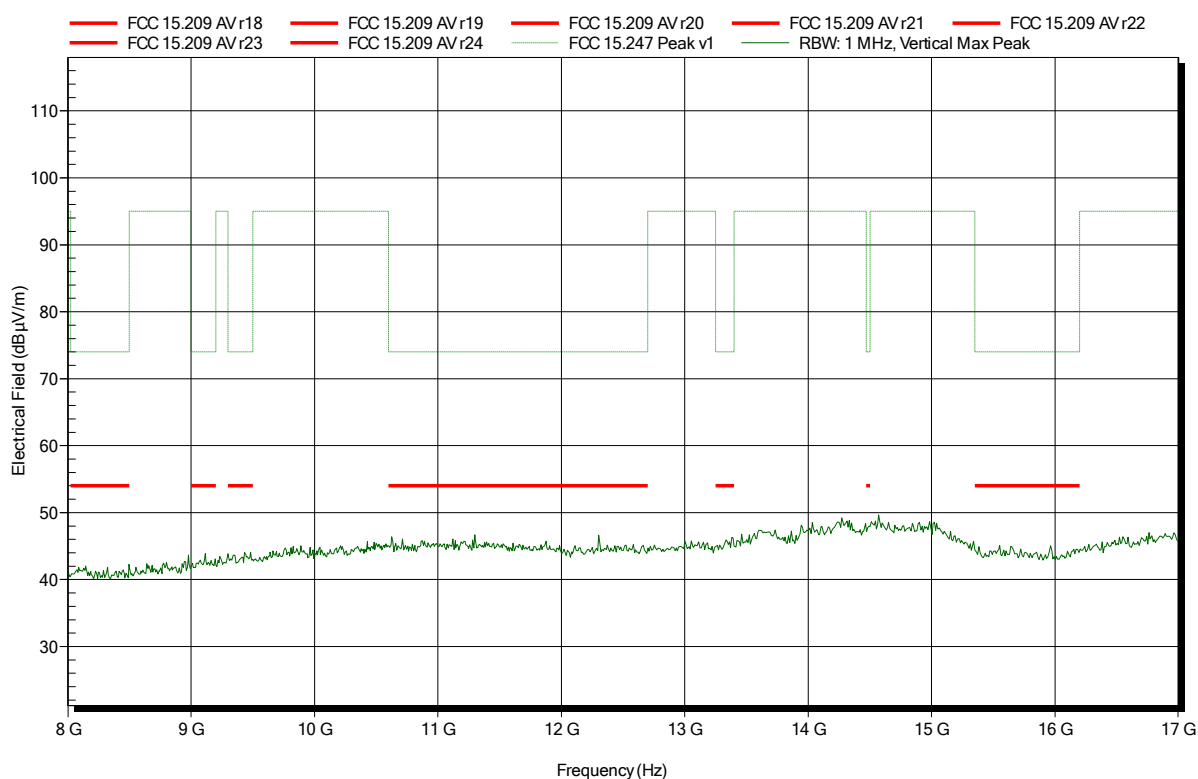


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 84

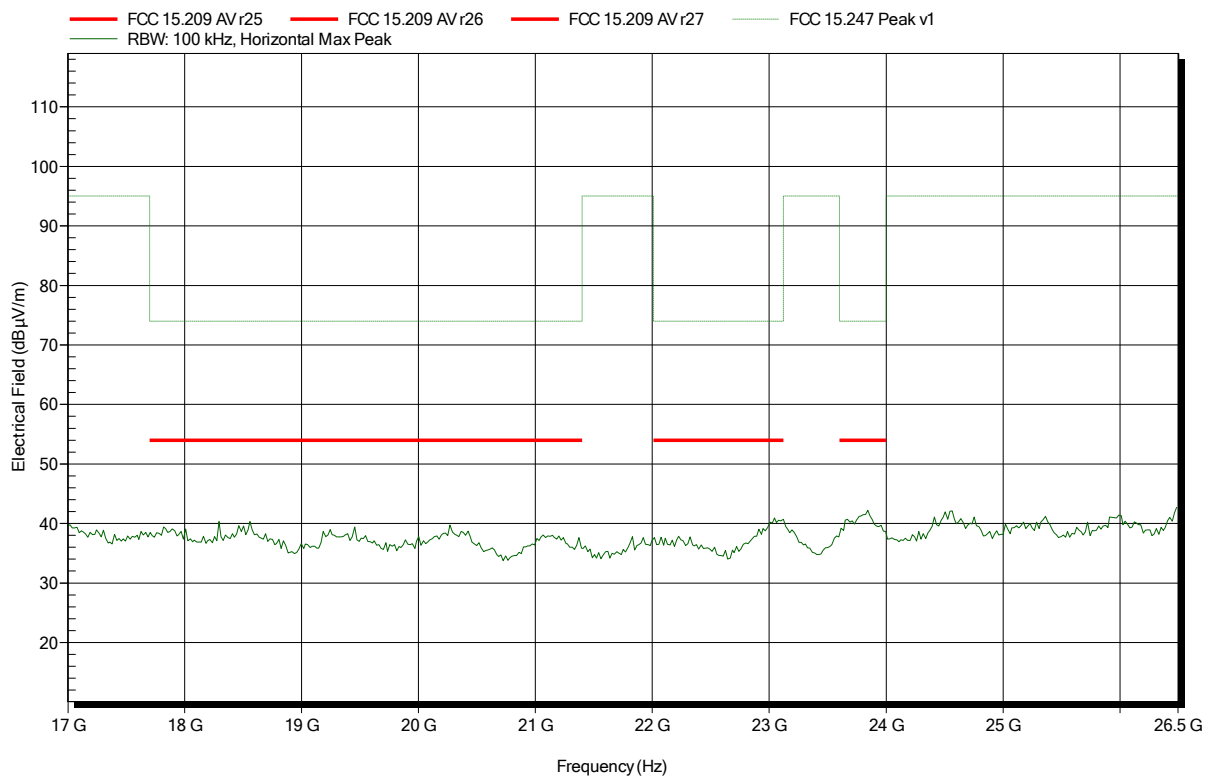


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
Test Date: 2018-11-06
Note: EUT horizontal

Index 82

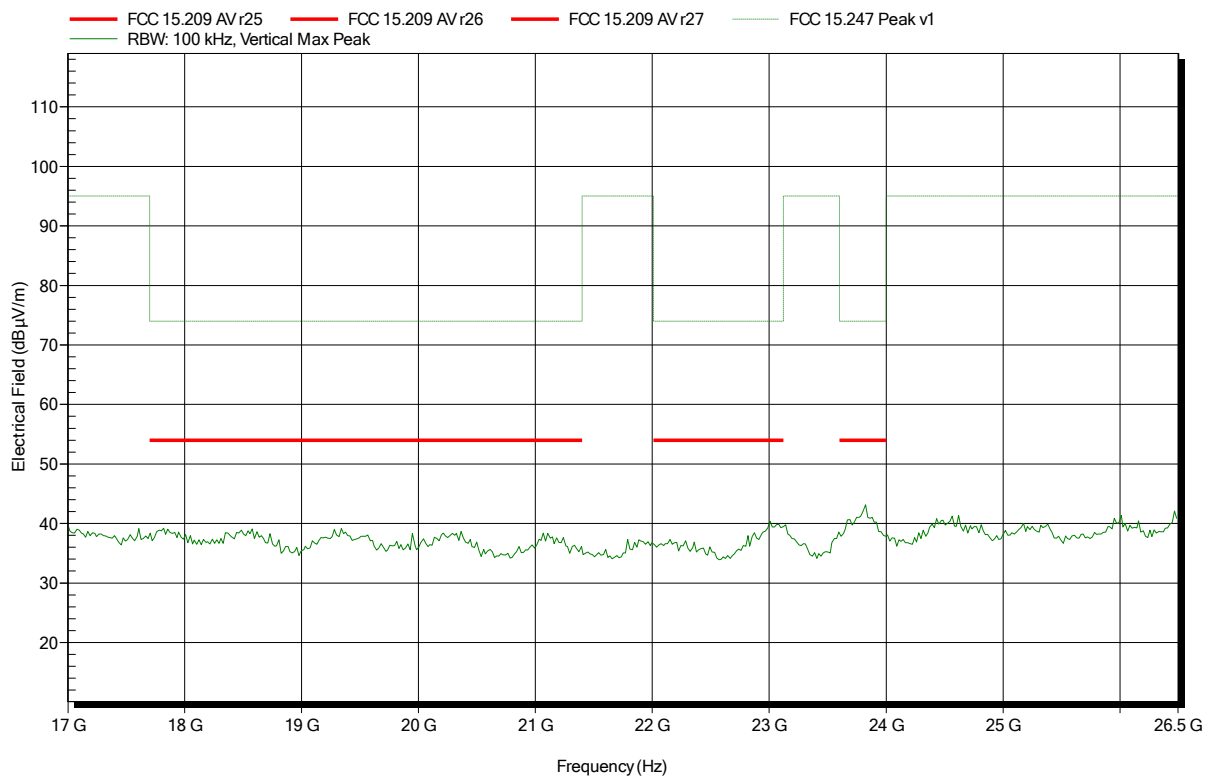


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: ATH18G40, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; DSSS 1Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 83

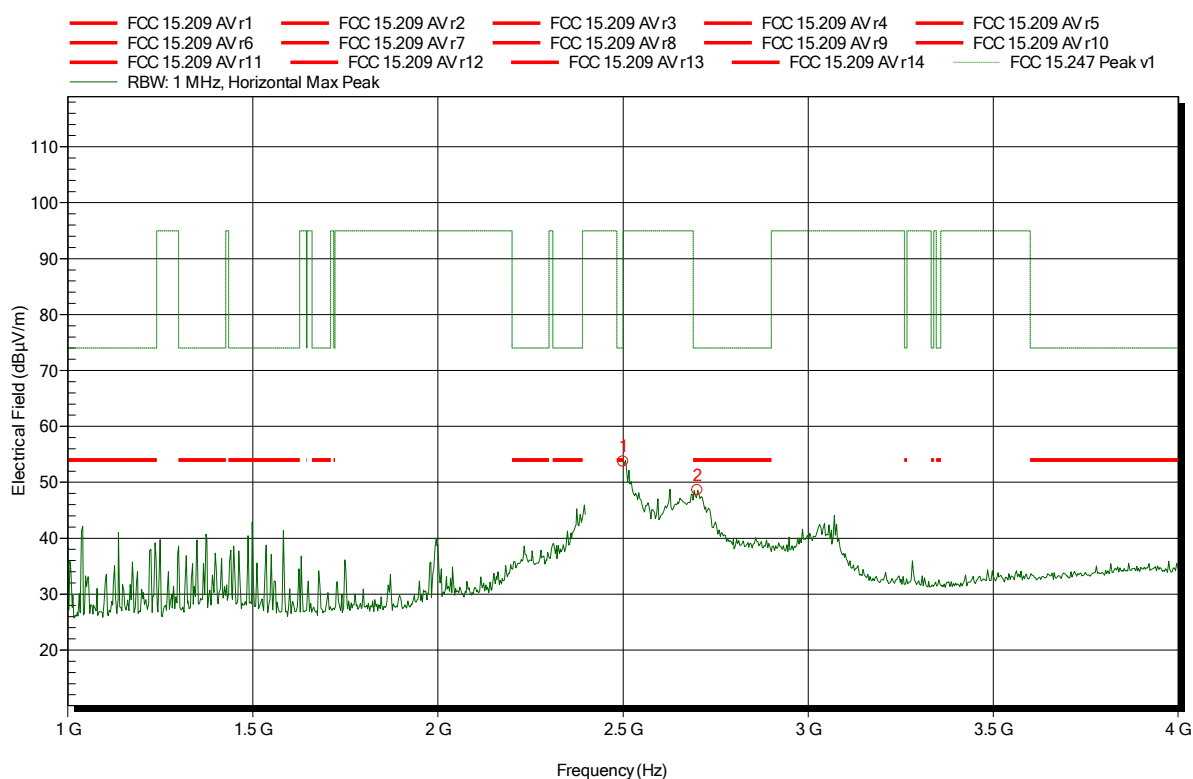


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 112



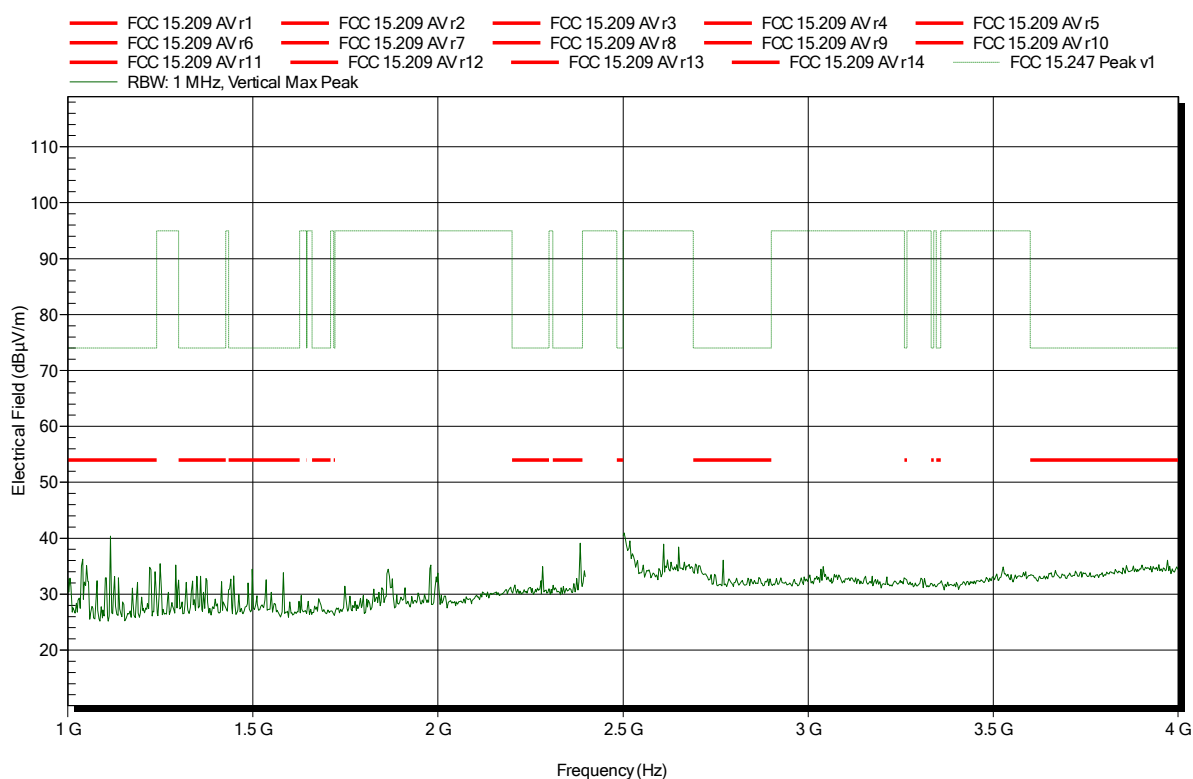
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.5 GHz	53.68 dBμV/m	74 dBμV/m	-20.32 dB	Pass
2.701 GHz	48.61 dBμV/m	74 dBμV/m	-25.39 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 125

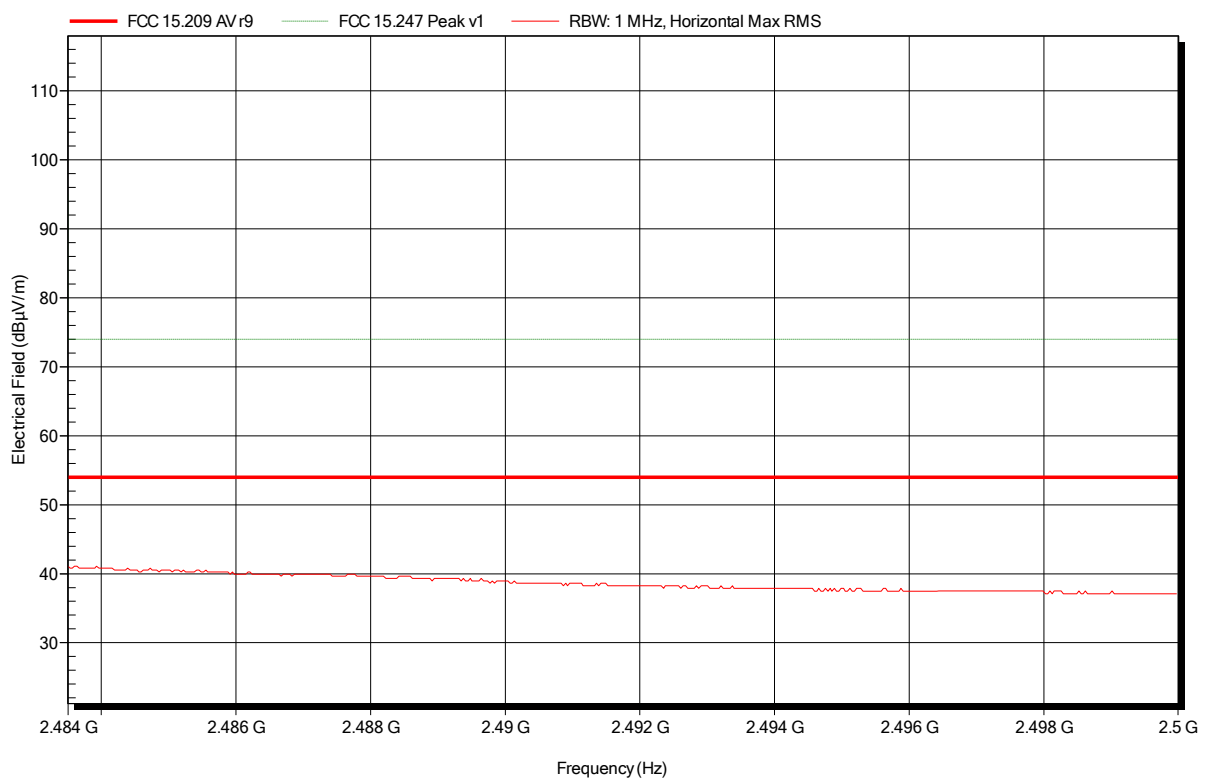


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal; upper bandedge

Index 115

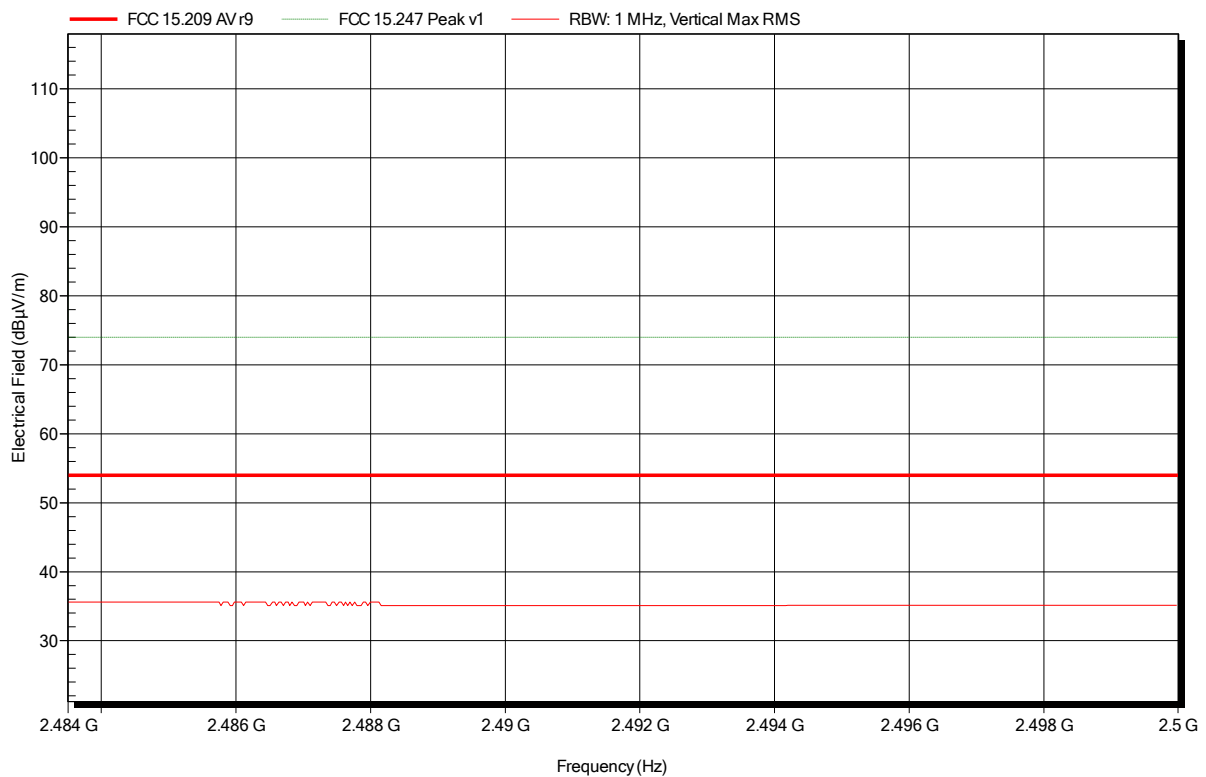


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal; upper bandedge

Index 124

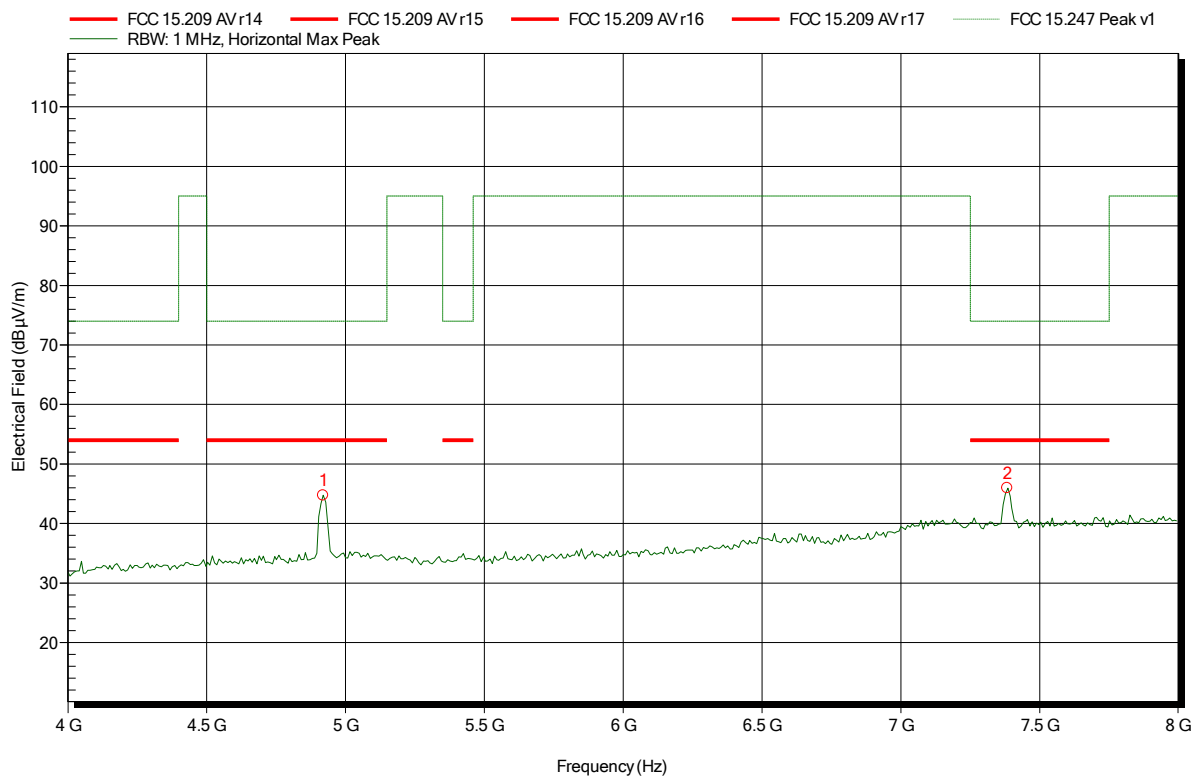


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 116



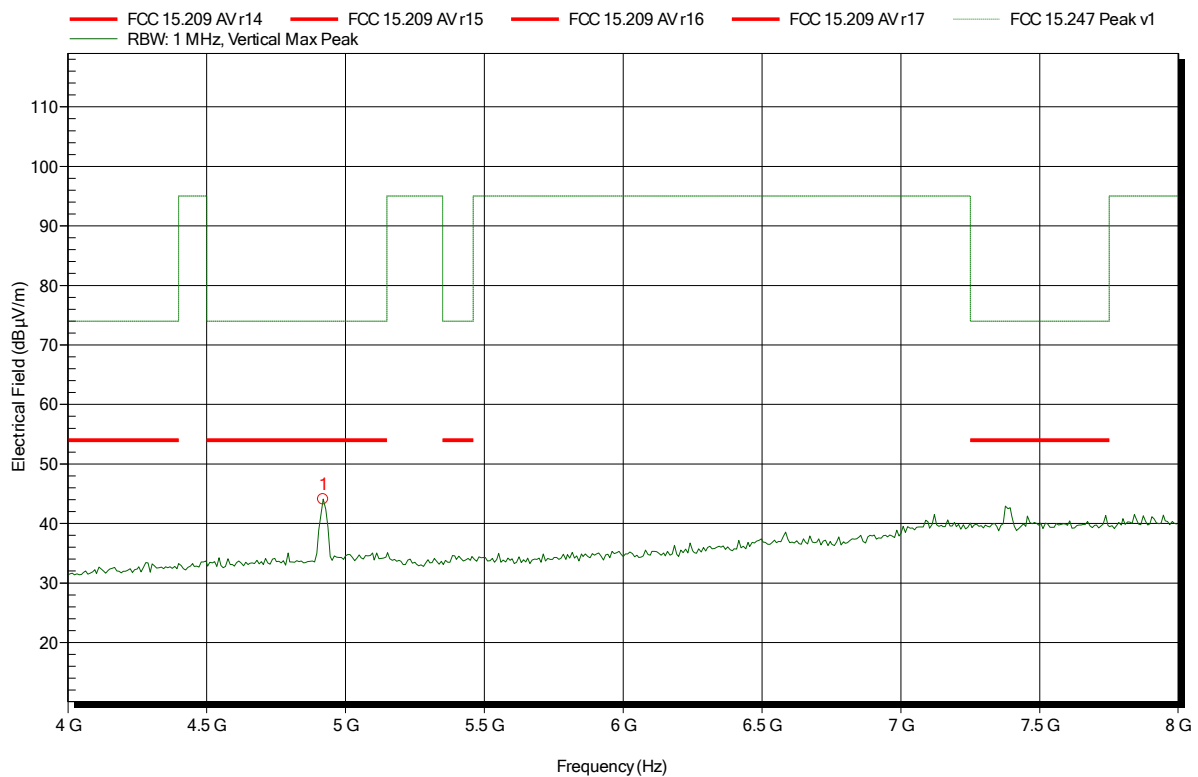
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.92 GHz	44.73 dBµV/m	74 dBµV/m	-29.27 dB	Pass
7.384 GHz	45.91 dBµV/m	74 dBµV/m	-28.09 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 122



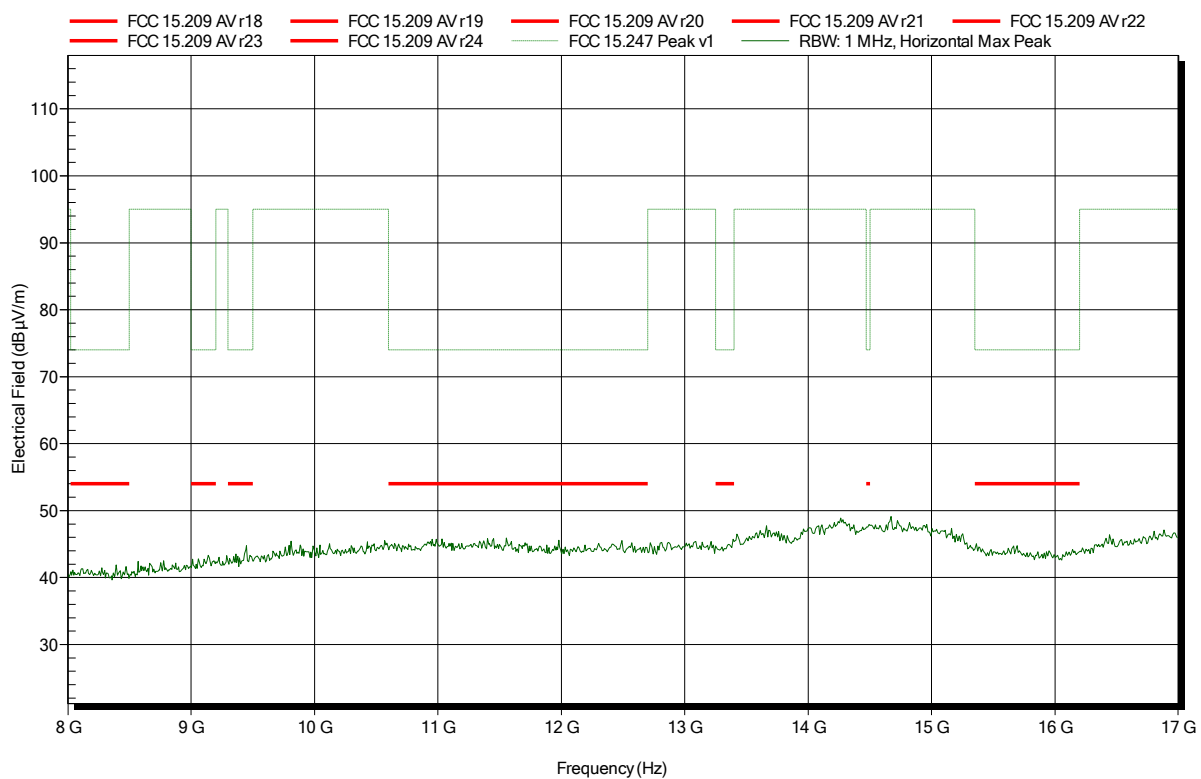
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.92 GHz	44.08 dBµV/m	74 dBµV/m	-29.92 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

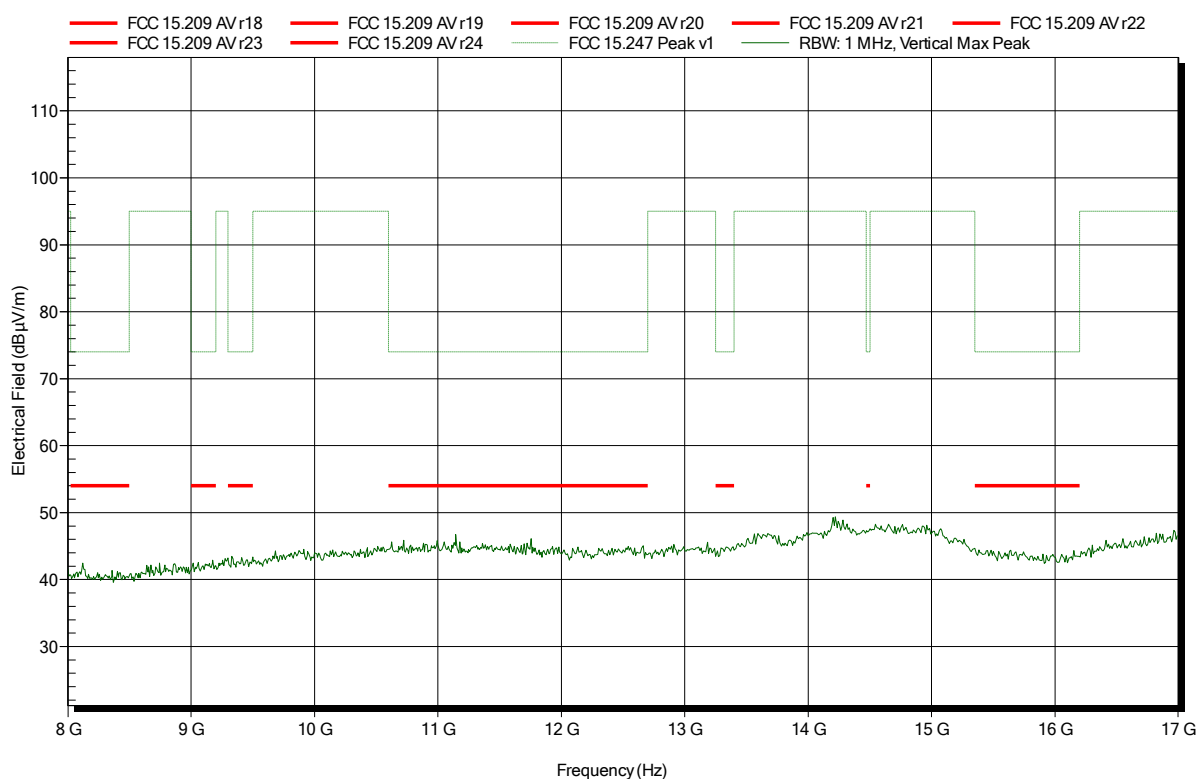
Index 117



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783
 Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 121

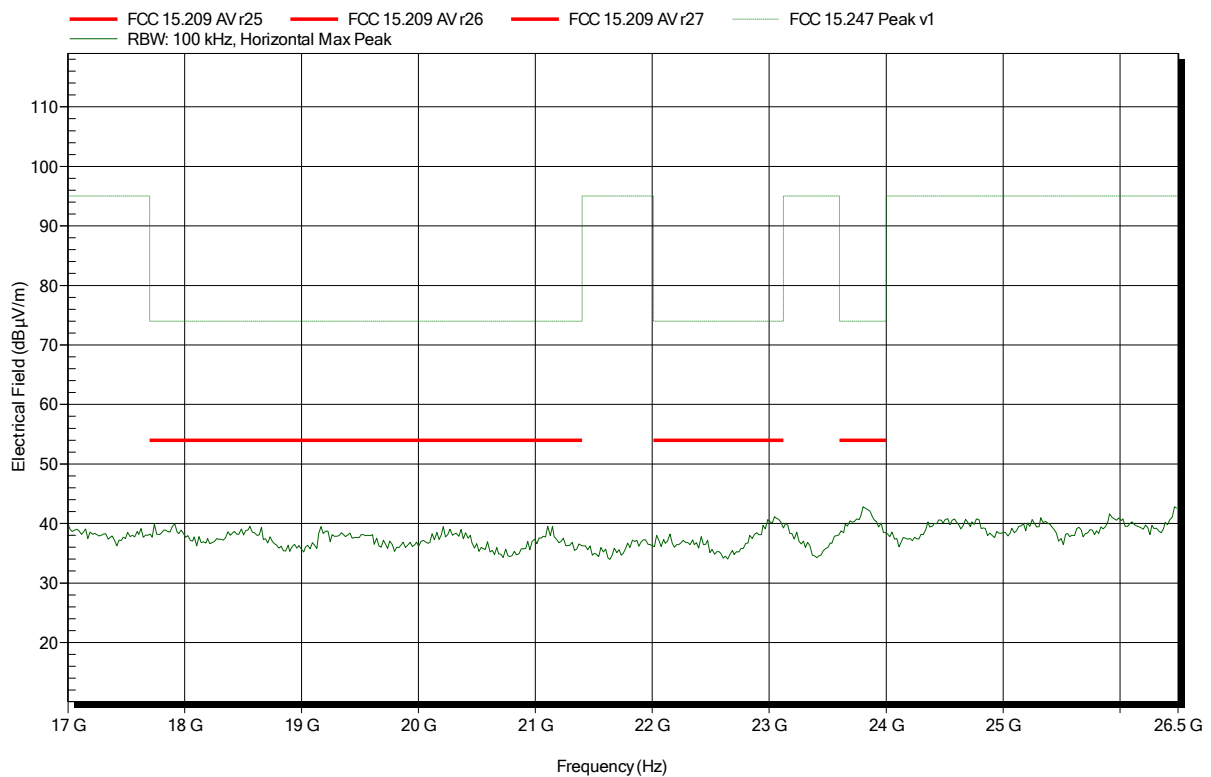


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: ATH18G40, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 118

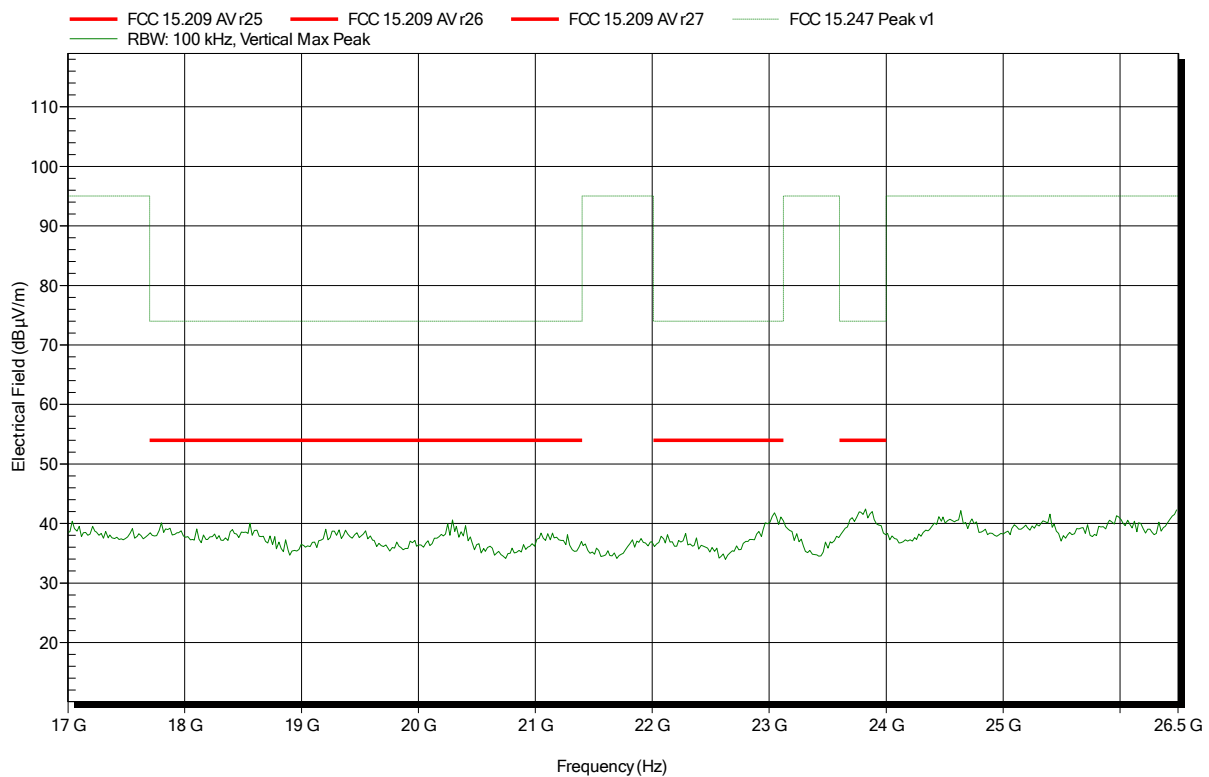


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 11; 2462 MHz; OFDM 6Mbps
Test Date: 2018-11-07
Note: EUT horizontal

Index 119

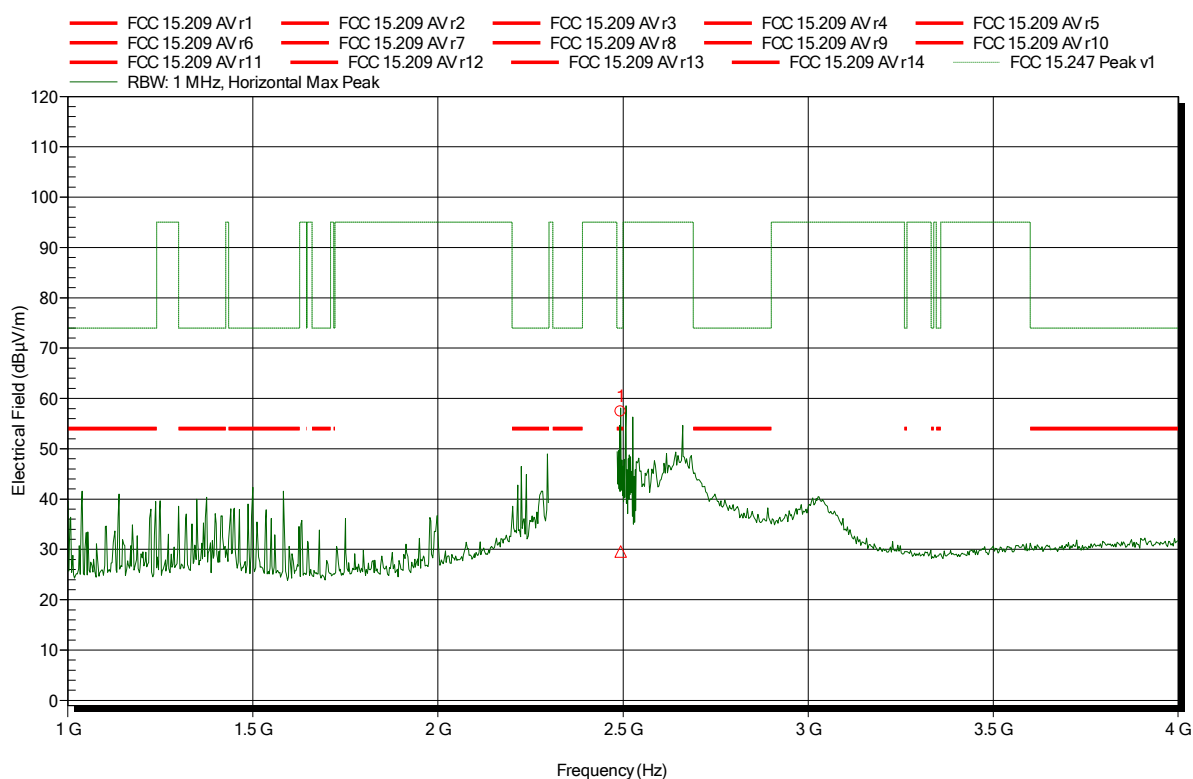


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 138



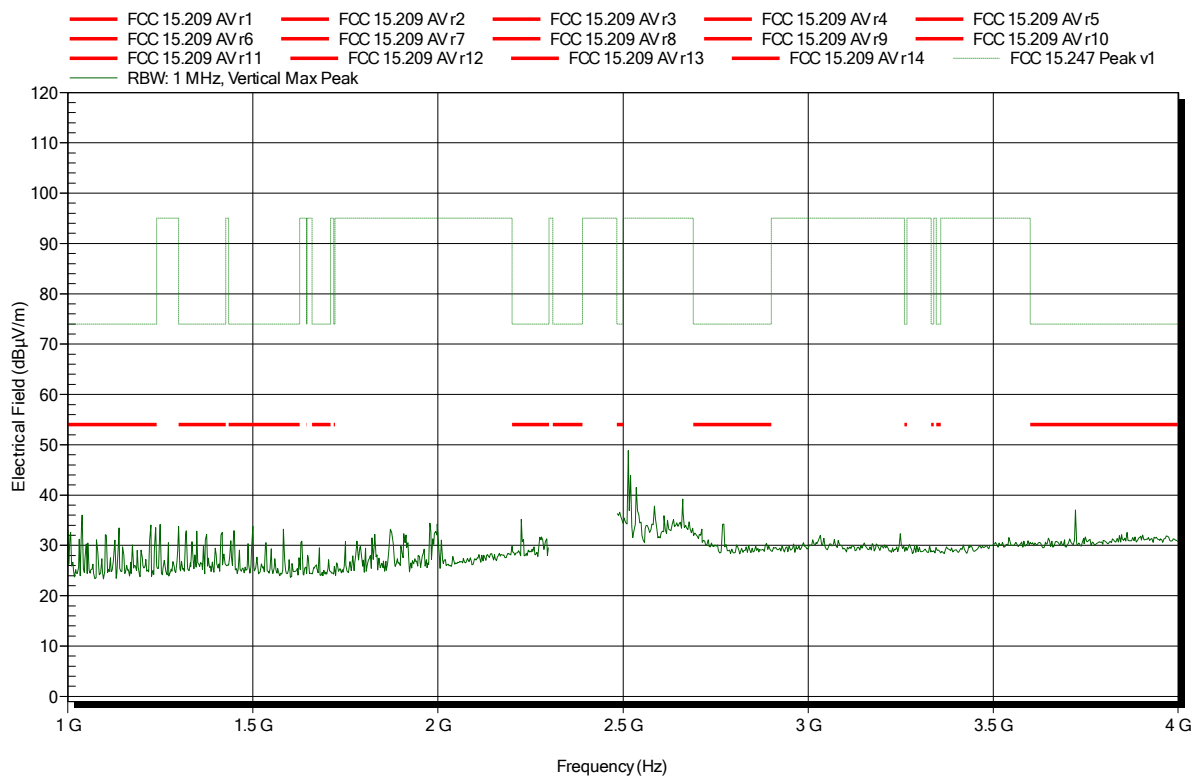
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4937 GHz	57.37 dBµV/m	74 dBµV/m	-16.63 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4937 GHz	29.62 dBµV/m	54 dBµV/m	-24.38 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 152

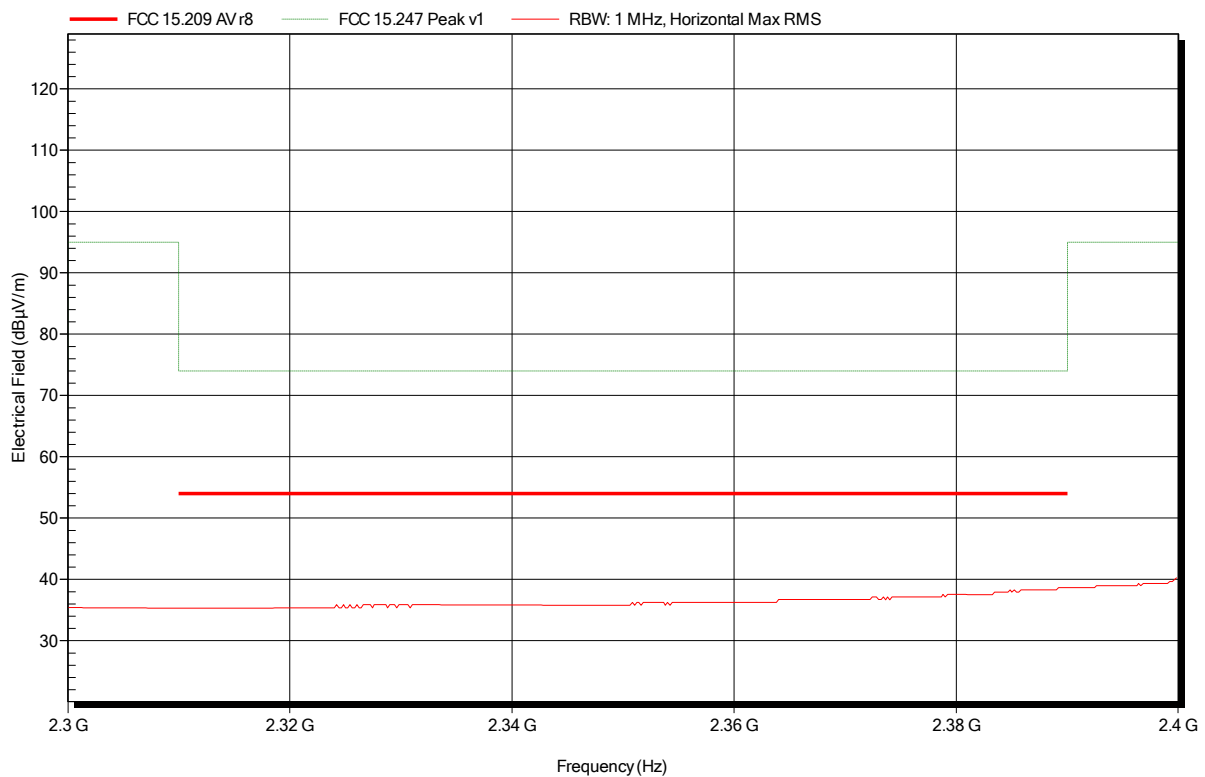


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal; lower bandedge

Index 140

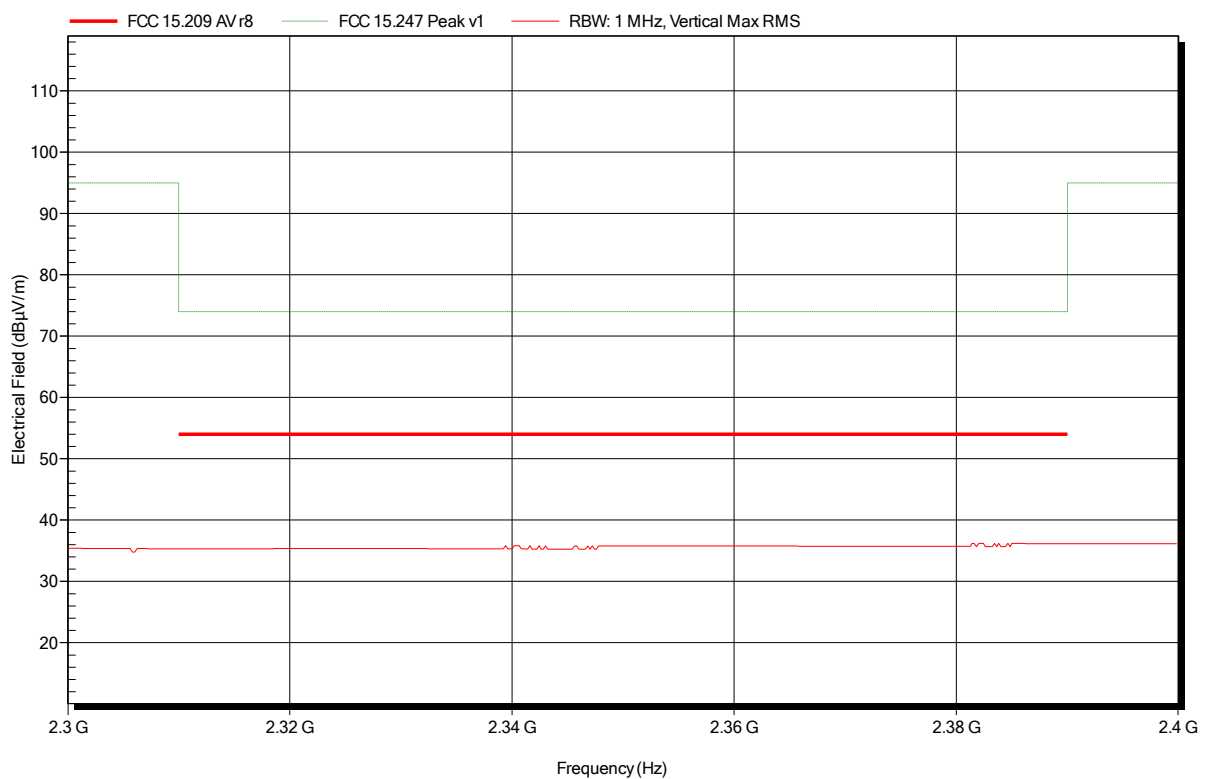


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal; lower bandedge

Index 151

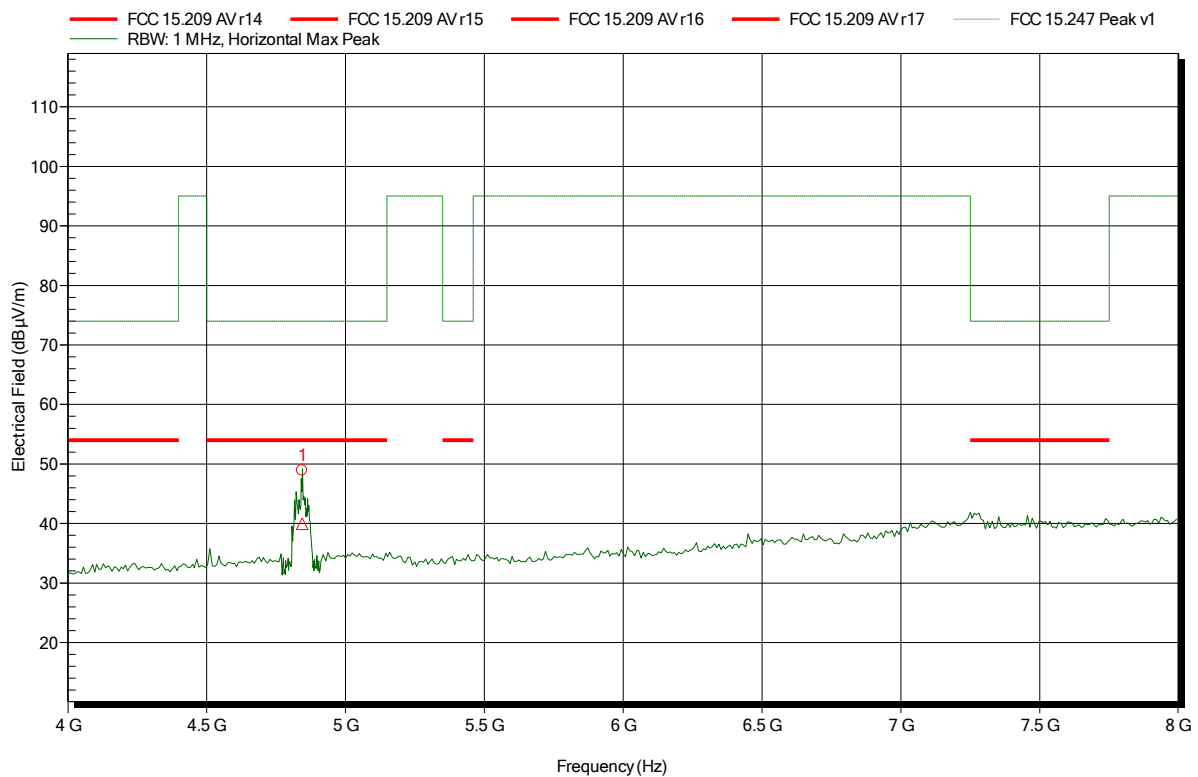


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 141



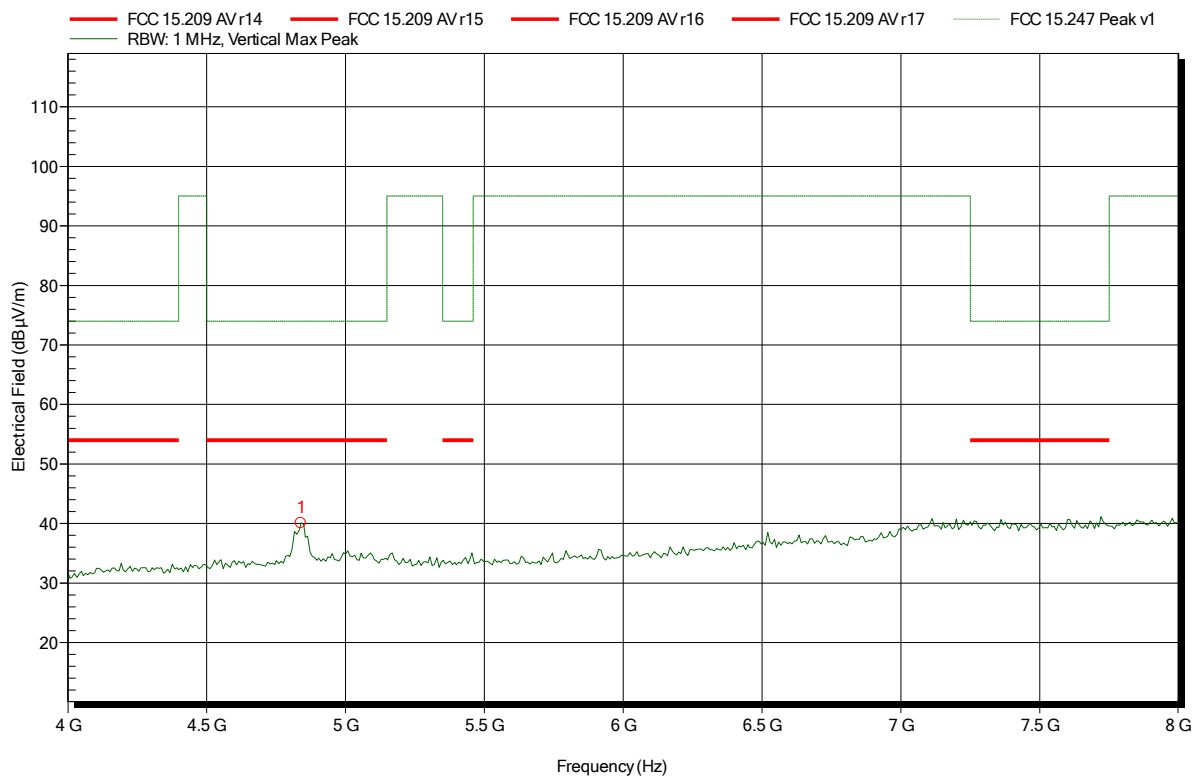
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.845 GHz	48.91 dBµV/m	74 dBµV/m	-25.09 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.845 GHz	39.97 dBµV/m	54 dBµV/m	-14.03 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 150



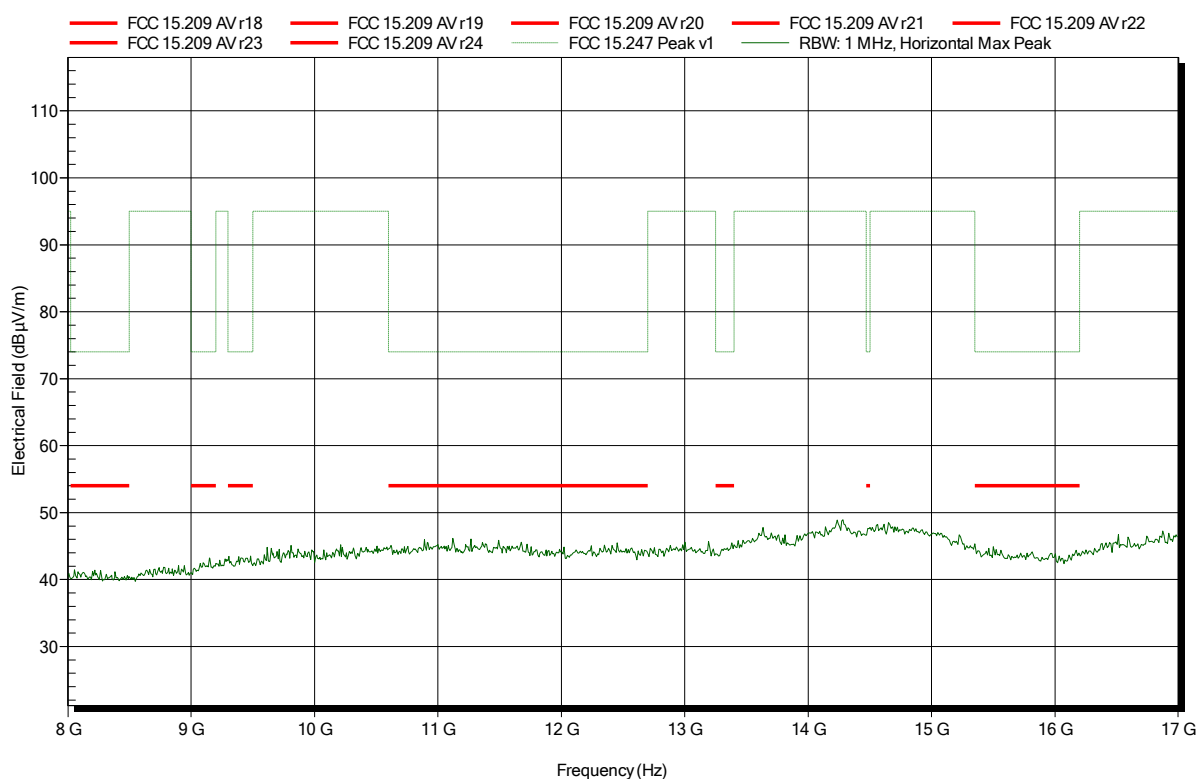
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.84 GHz	40.08 dBµV/m	74 dBµV/m	-33.92 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 142

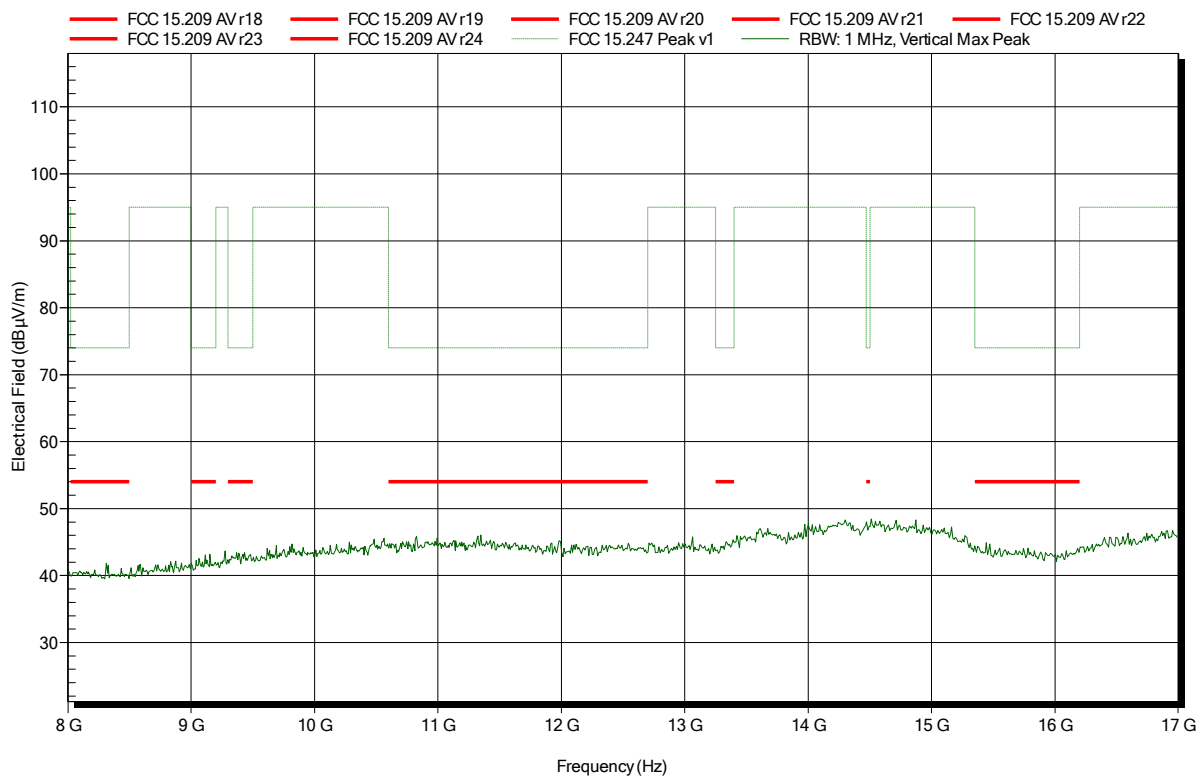


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 145

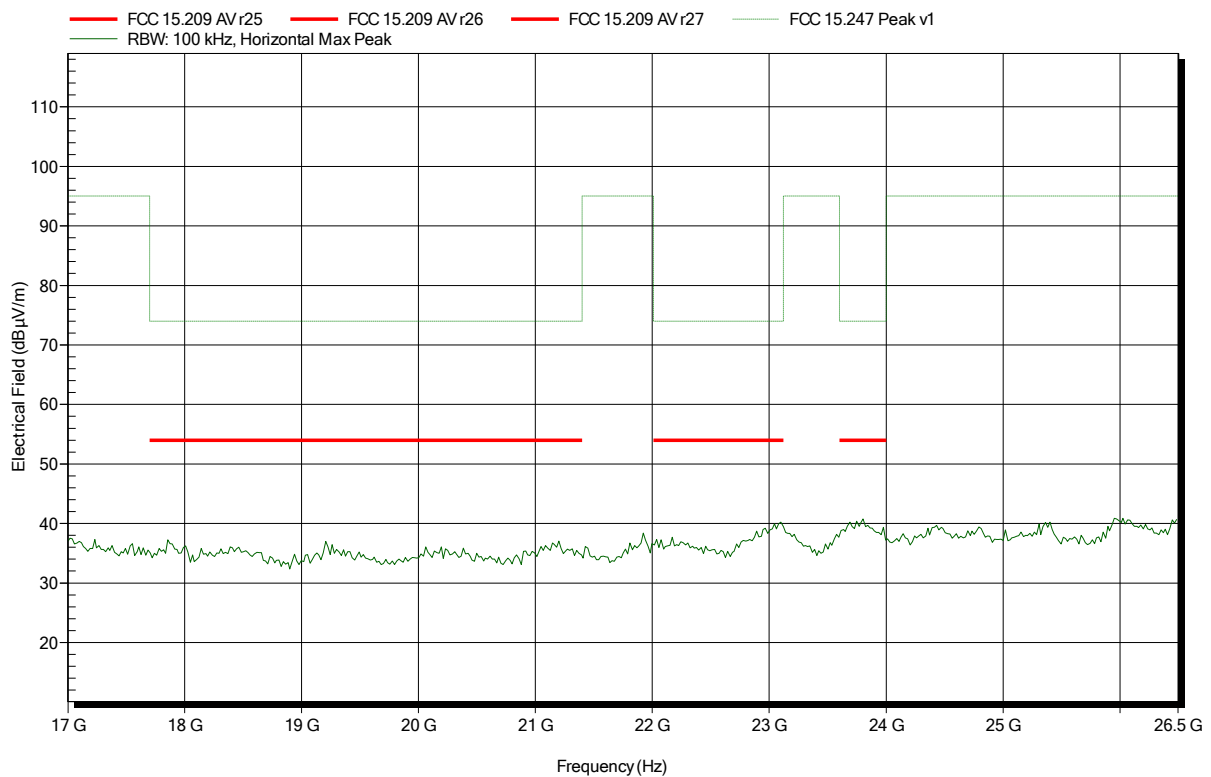


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: ATH18G40, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 143

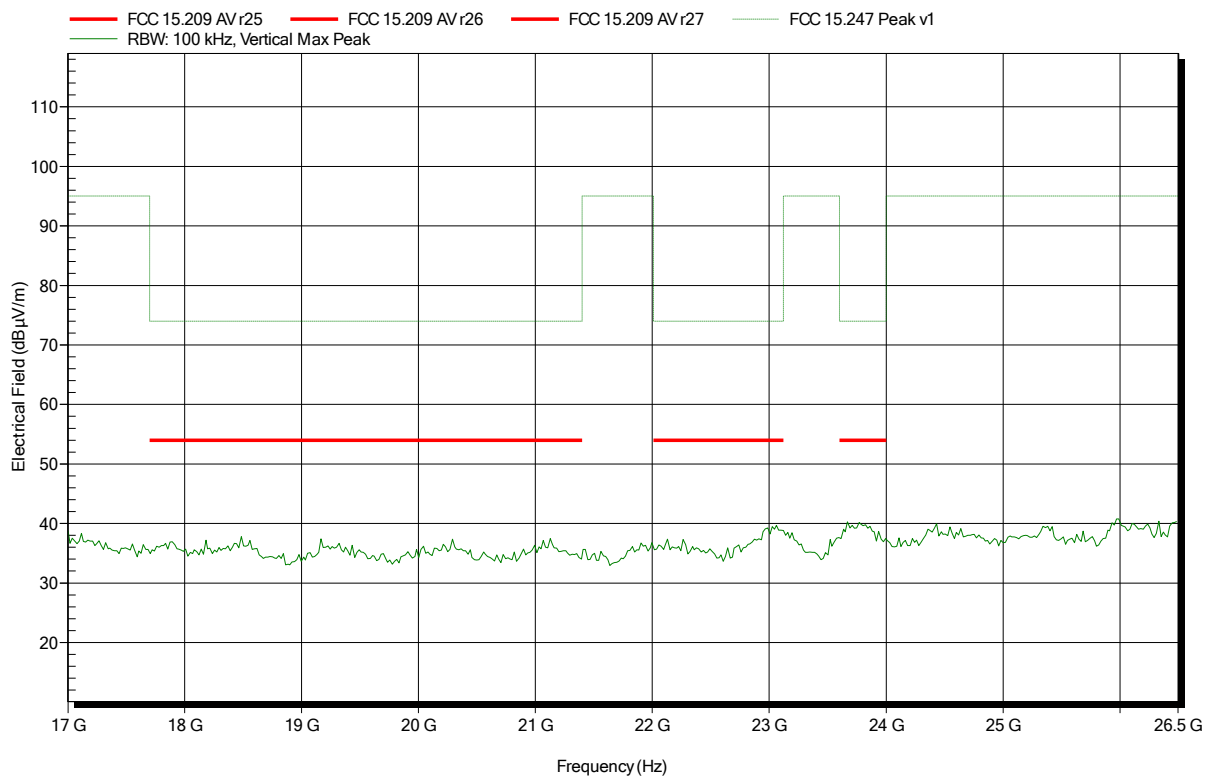


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 3; 2422 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 144

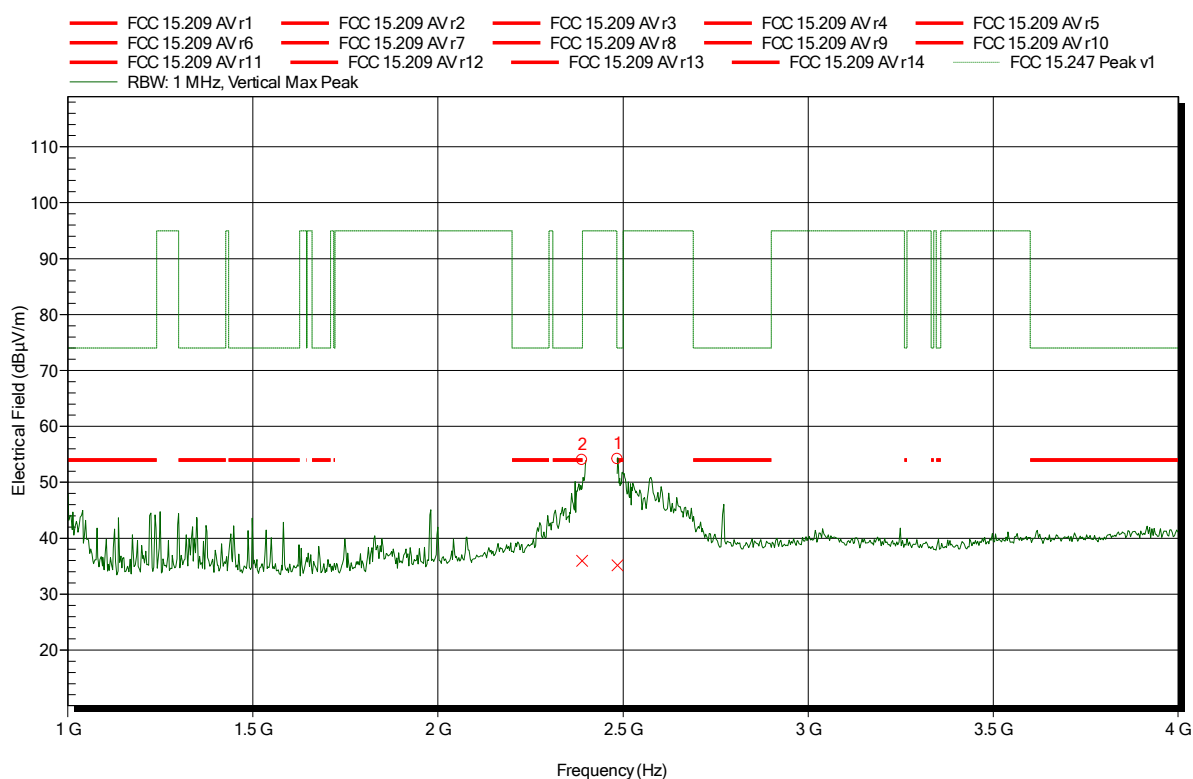


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal

Index 171



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3896 GHz	53.97 dBμV/m	74 dBμV/m	-20.03 dB	Pass
2.4848 GHz	54.18 dBμV/m	74 dBμV/m	-19.82 dB	Pass

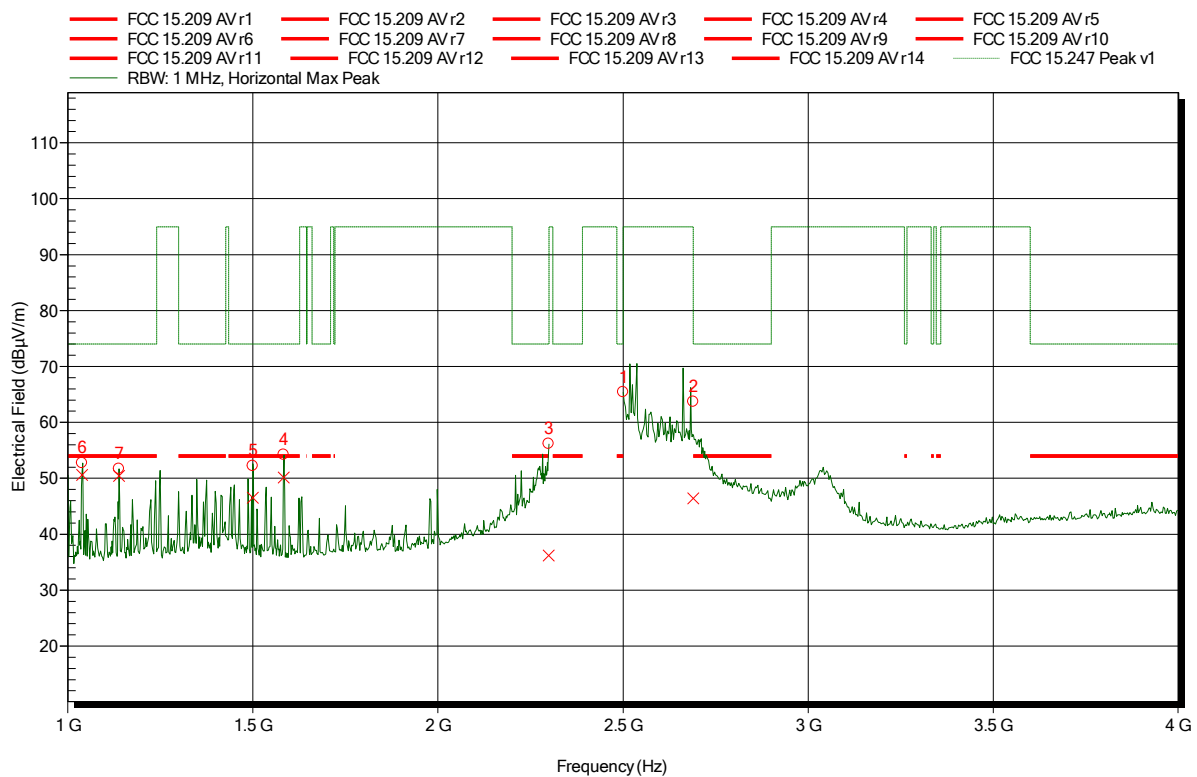
Frequency	Average	Average Limit	Average Difference	Average Status
2.3896 GHz	35.98 dBμV/m	54 dBμV/m	-18.02 dB	Pass
2.4848 GHz	35.17 dBμV/m	54 dBμV/m	-18.83 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal

Index 163



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.04 GHz	52.72 dBµV/m	74 dBµV/m	-21.28 dB	Pass
1.139 GHz	51.71 dBµV/m	74 dBµV/m	-22.29 dB	Pass
1.5 GHz	52.19 dBµV/m	74 dBµV/m	-21.81 dB	Pass
1.584 GHz	54.19 dBµV/m	74 dBµV/m	-19.81 dB	Pass
2.299 GHz	56.18 dBµV/m	74 dBµV/m	-17.82 dB	Pass
2.5 GHz	65.39 dBµV/m	74 dBµV/m	-8.61 dB	Pass
2.69 GHz	63.66 dBµV/m	74 dBµV/m	-10.34 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.04 GHz	50.58 dBµV/m	54 dBµV/m	-3.42 dB	Pass
1.139 GHz	50.42 dBµV/m	54 dBµV/m	-3.58 dB	Pass
1.5 GHz	46.53 dBµV/m	54 dBµV/m	-7.47 dB	Pass
1.584 GHz	50.16 dBµV/m	54 dBµV/m	-3.84 dB	Pass
2.299 GHz	36.18 dBµV/m	54 dBµV/m	-17.82 dB	Pass
2.69 GHz	46.39 dBµV/m	54 dBµV/m	-7.61 dB	Pass

Test Report No.: G0M-1810-7783-TFC247WF-V01

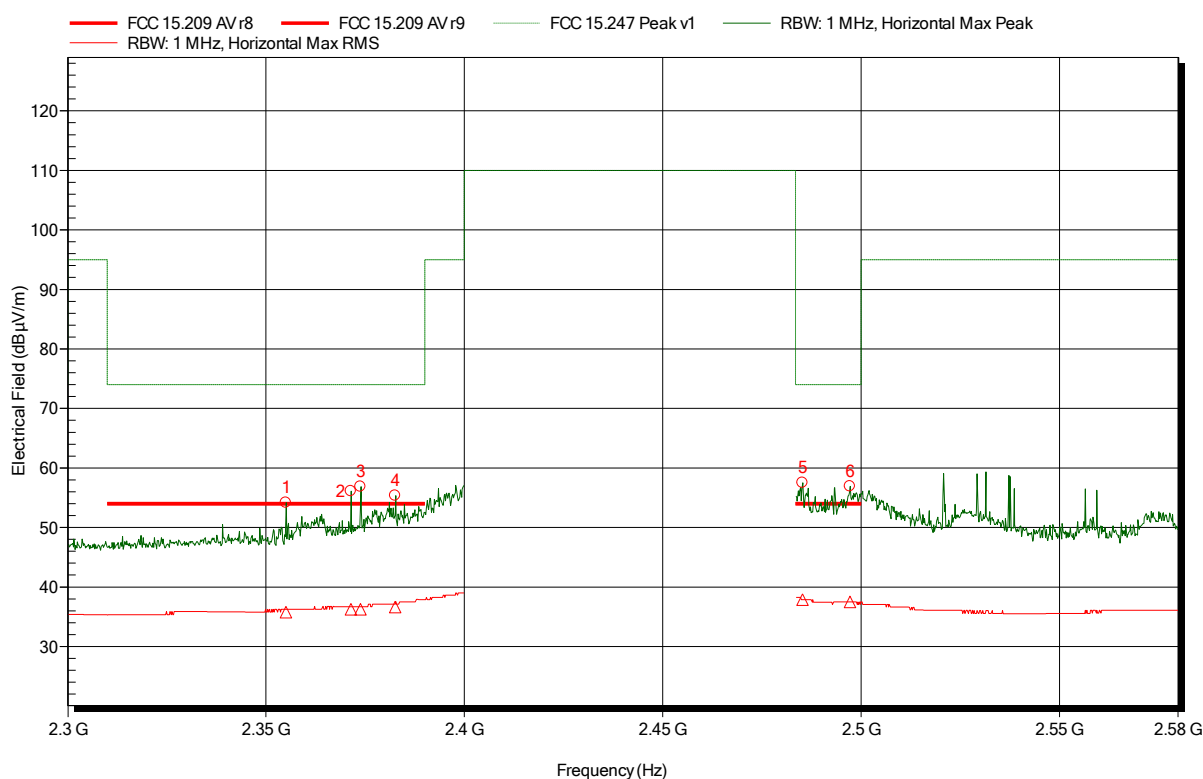
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
Test Date: 2018-11-08
Note: EUT horizontal; lower + upper bandedge

Index 164



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.355 GHz	54.14 dBµV/m	74 dBµV/m	-19.86 dB	Pass
2.3714 GHz	56.09 dBµV/m	74 dBµV/m	-17.91 dB	Pass
2.3738 GHz	56.88 dBµV/m	74 dBµV/m	-17.12 dB	Pass
2.3826 GHz	55.32 dBµV/m	74 dBµV/m	-18.68 dB	Pass
2.4852 GHz	57.49 dBµV/m	74 dBµV/m	-16.51 dB	Pass
2.4972 GHz	56.89 dBµV/m	74 dBµV/m	-17.11 dB	Pass

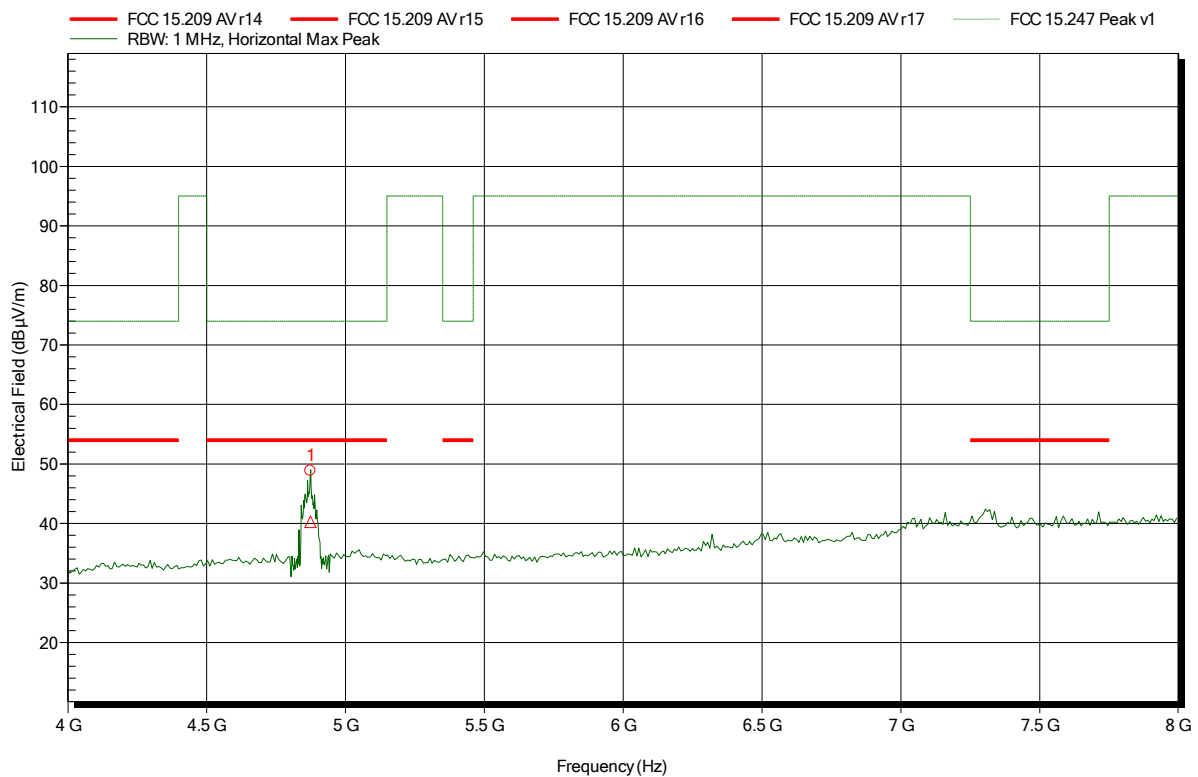
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.355 GHz	35.77 dBµV/m	54 dBµV/m	-18.23 dB	Pass
2.3714 GHz	36.24 dBµV/m	54 dBµV/m	-17.76 dB	Pass
2.3738 GHz	36.23 dBµV/m	54 dBµV/m	-17.77 dB	Pass
2.3826 GHz	36.65 dBµV/m	54 dBµV/m	-17.35 dB	Pass
2.4852 GHz	37.85 dBµV/m	54 dBµV/m	-16.15 dB	Pass
2.4972 GHz	37.49 dBµV/m	54 dBµV/m	-16.51 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal

Index 165



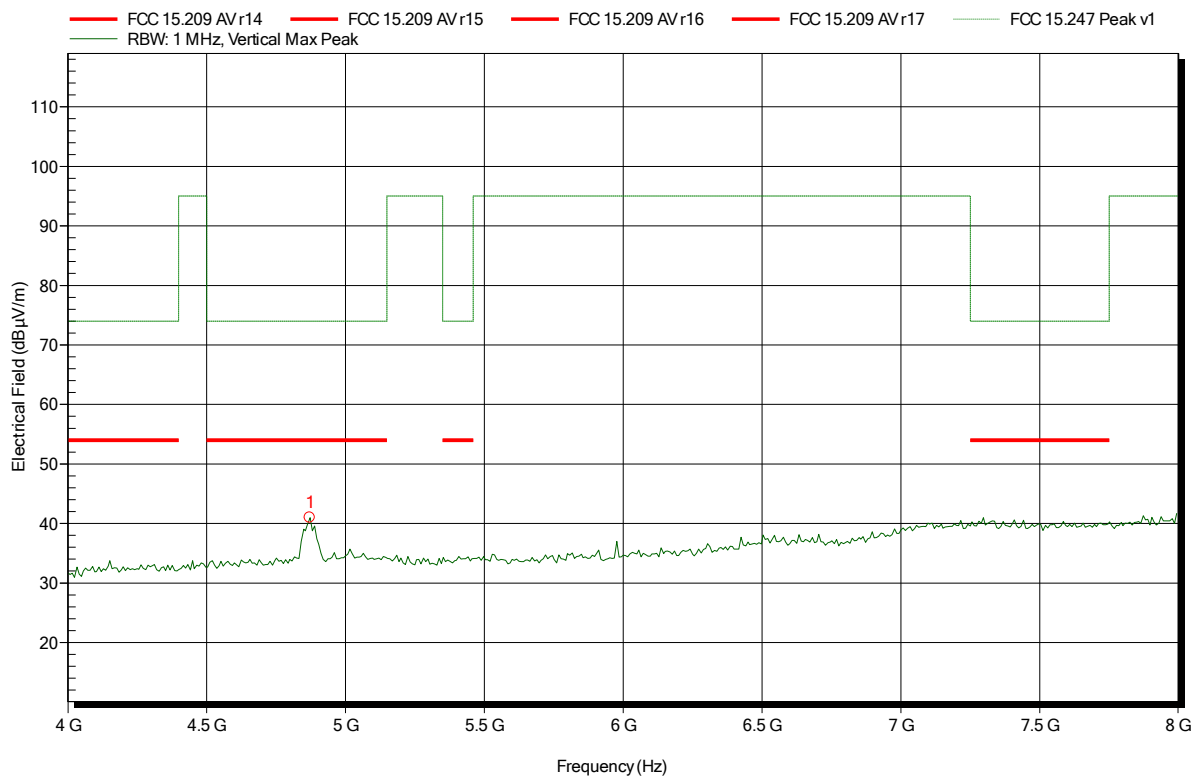
Frequency 4.875 GHz	Peak 48.88 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -25.12 dB	Peak Status Pass
Frequency 4.875 GHz	RMS 40.28 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -13.72 dB	RMS Status Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal

Index 170



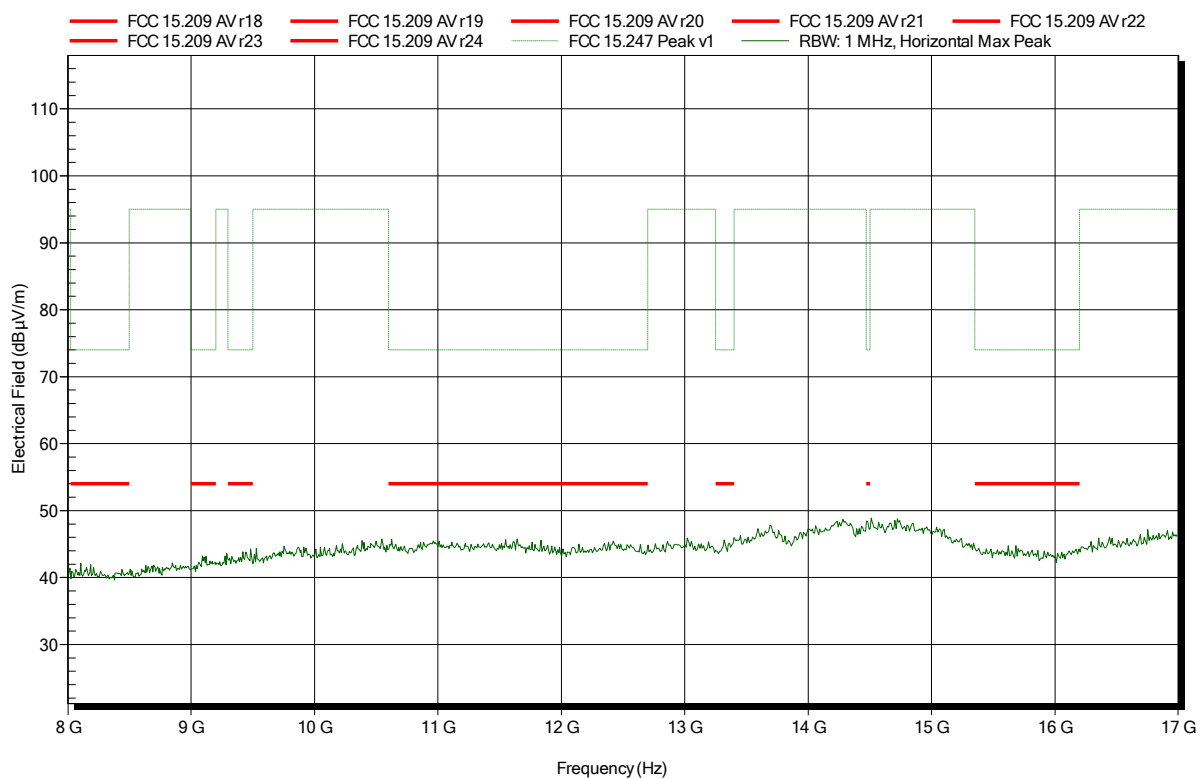
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.872 GHz	40.99 dBµV/m	74 dBµV/m	-33.01 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
Test Date: 2018-11-08
Note: EUT horizontal

Index 166

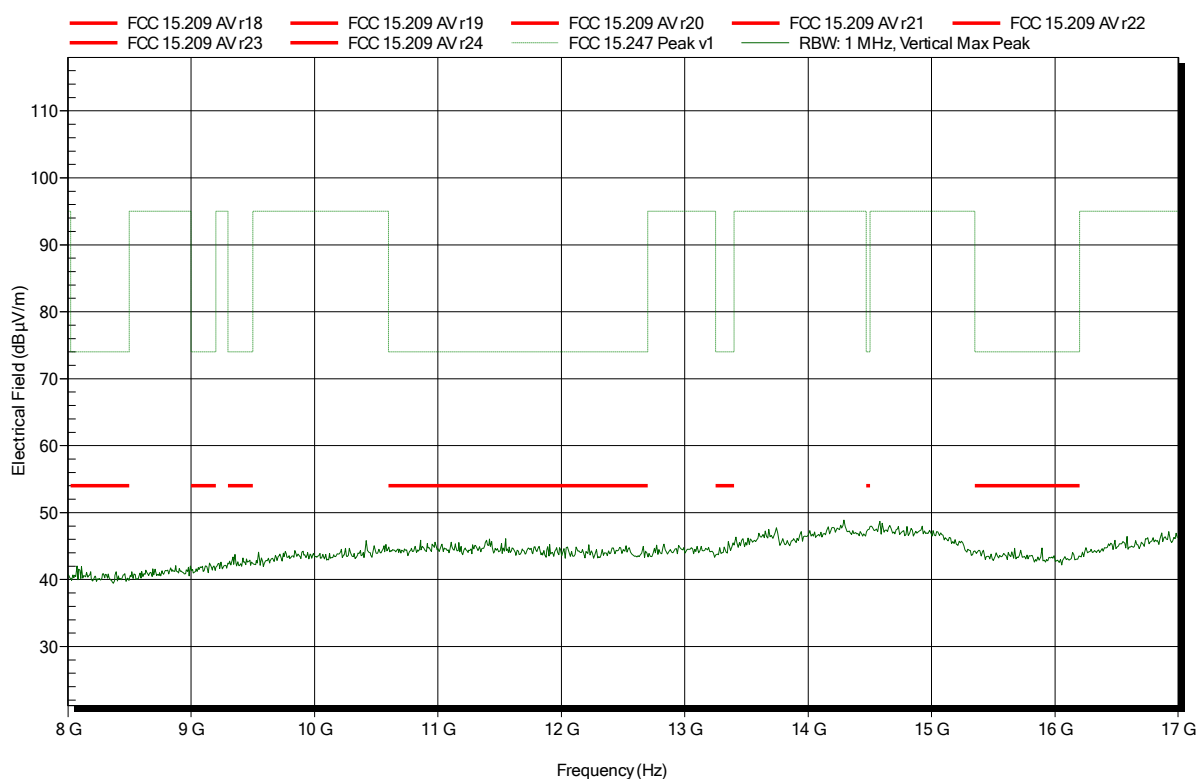


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
Test Date: 2018-11-08
Note: EUT horizontal

Index 169

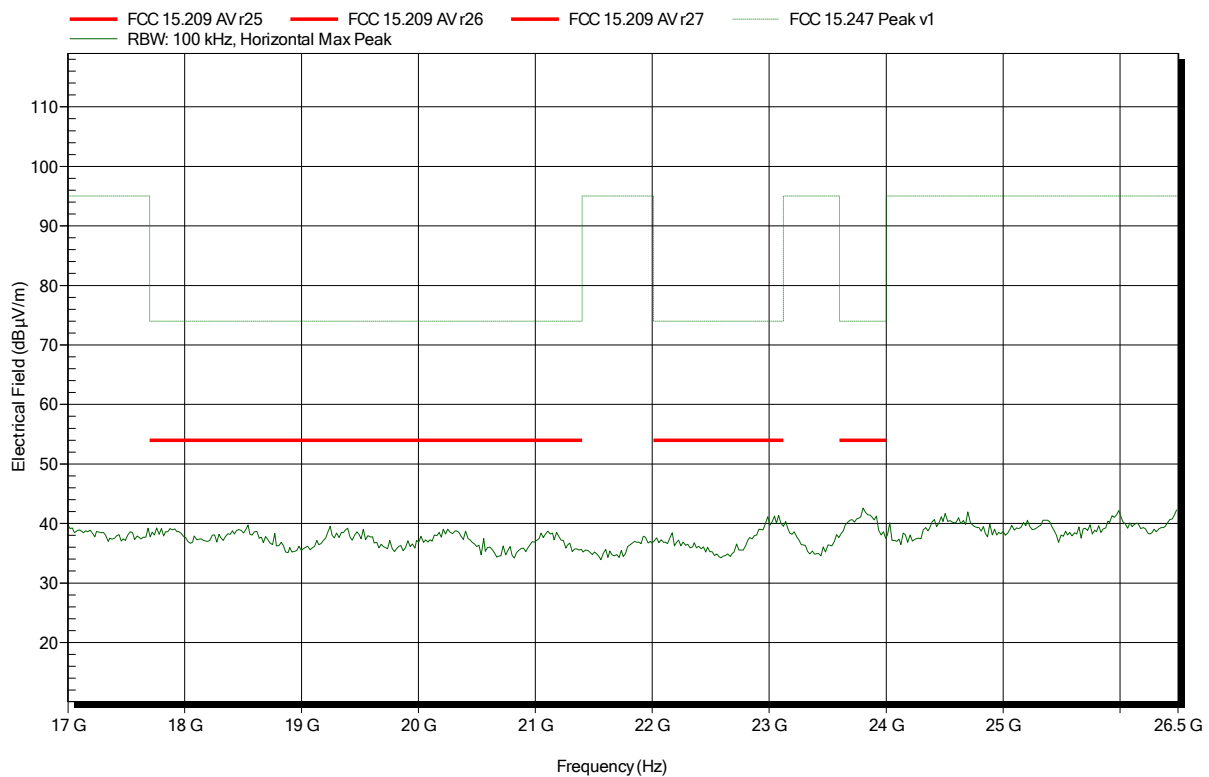


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
Test Date: 2018-11-08
Note: EUT horizontal

Index 167

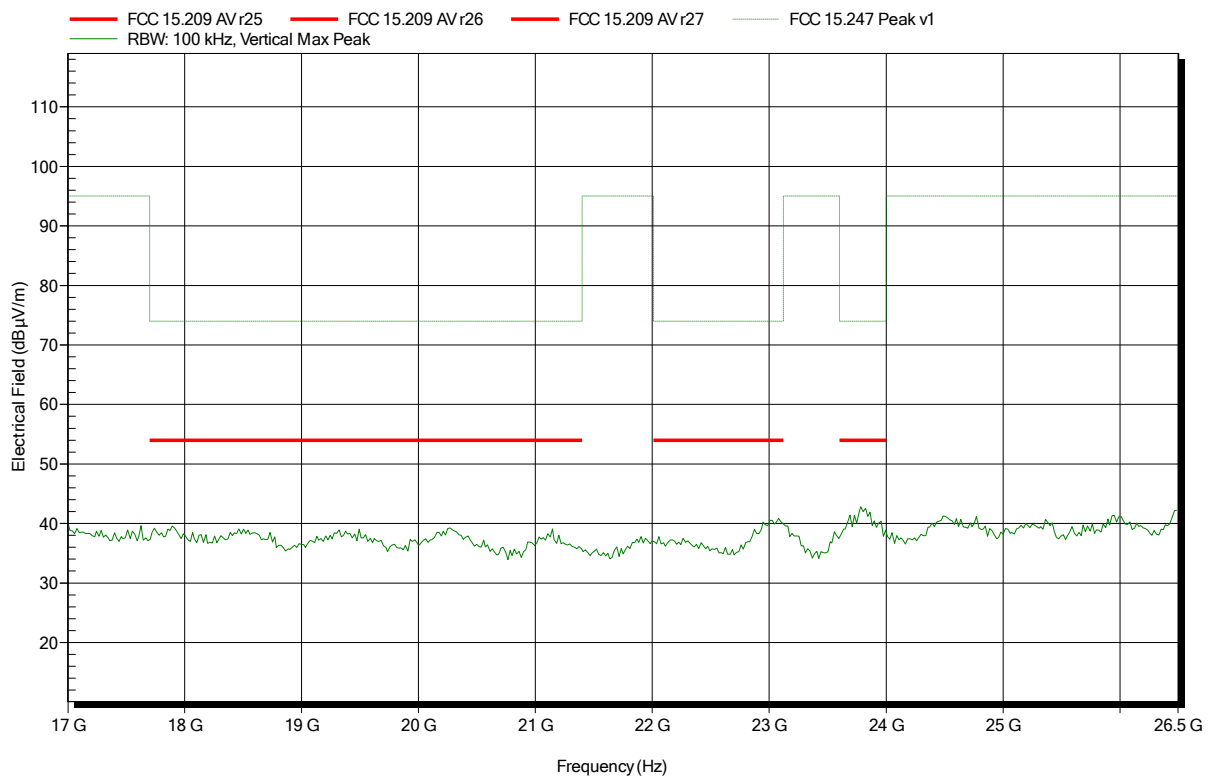


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 6; 2437 MHz; HT40 MCS0
Test Date: 2018-11-08
Note: EUT horizontal

Index 168

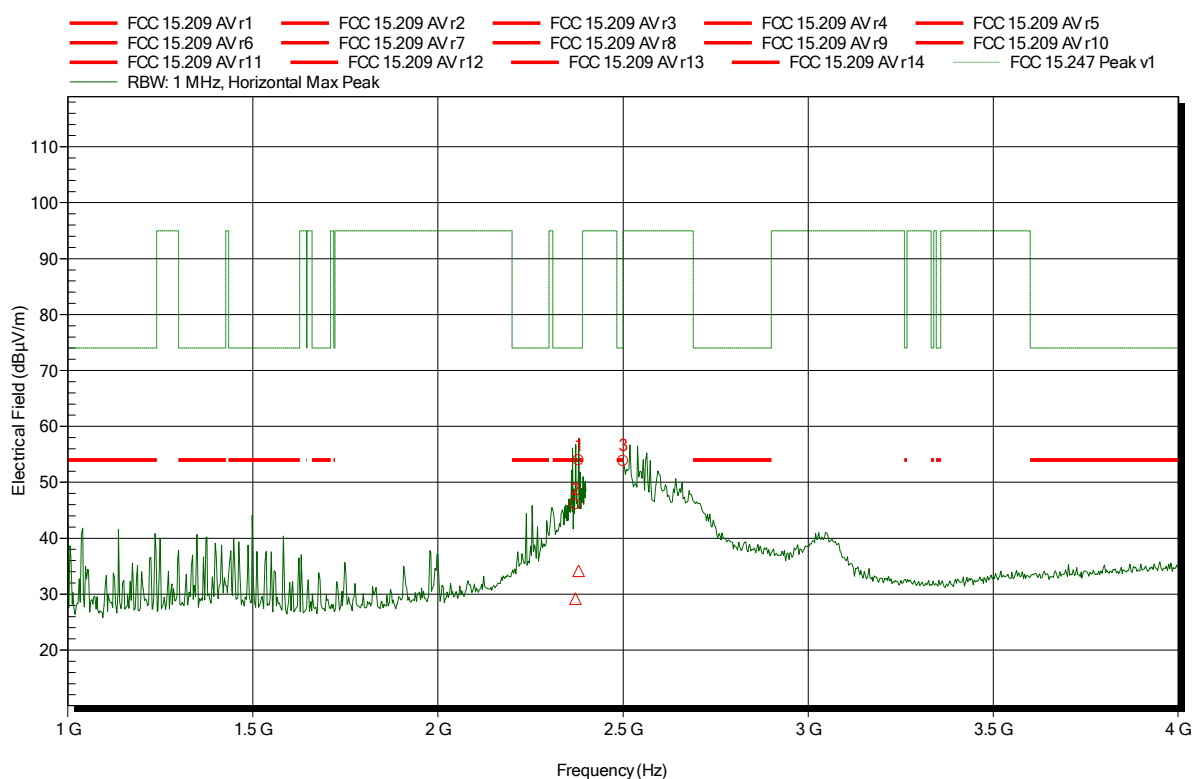


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal

Index 162



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.371 GHz	46.05 dBµV/m	74 dBµV/m	-27.95 dB	Pass
2.38 GHz	53.95 dBµV/m	74 dBµV/m	-20.05 dB	Pass
2.5 GHz	53.84 dBµV/m	74 dBµV/m	-20.16 dB	Pass

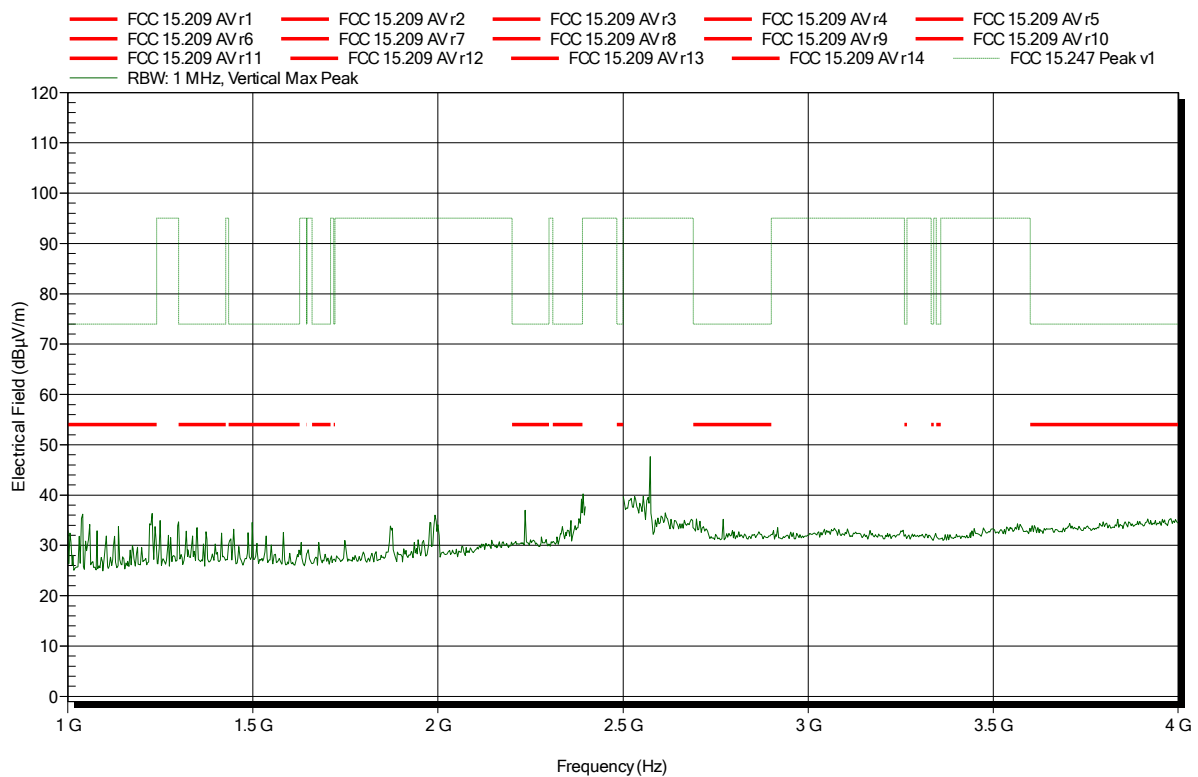
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.371 GHz	29.16 dBµV/m	54 dBµV/m	-24.84 dB	Pass
2.38 GHz	34.16 dBµV/m	54 dBµV/m	-19.84 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 153

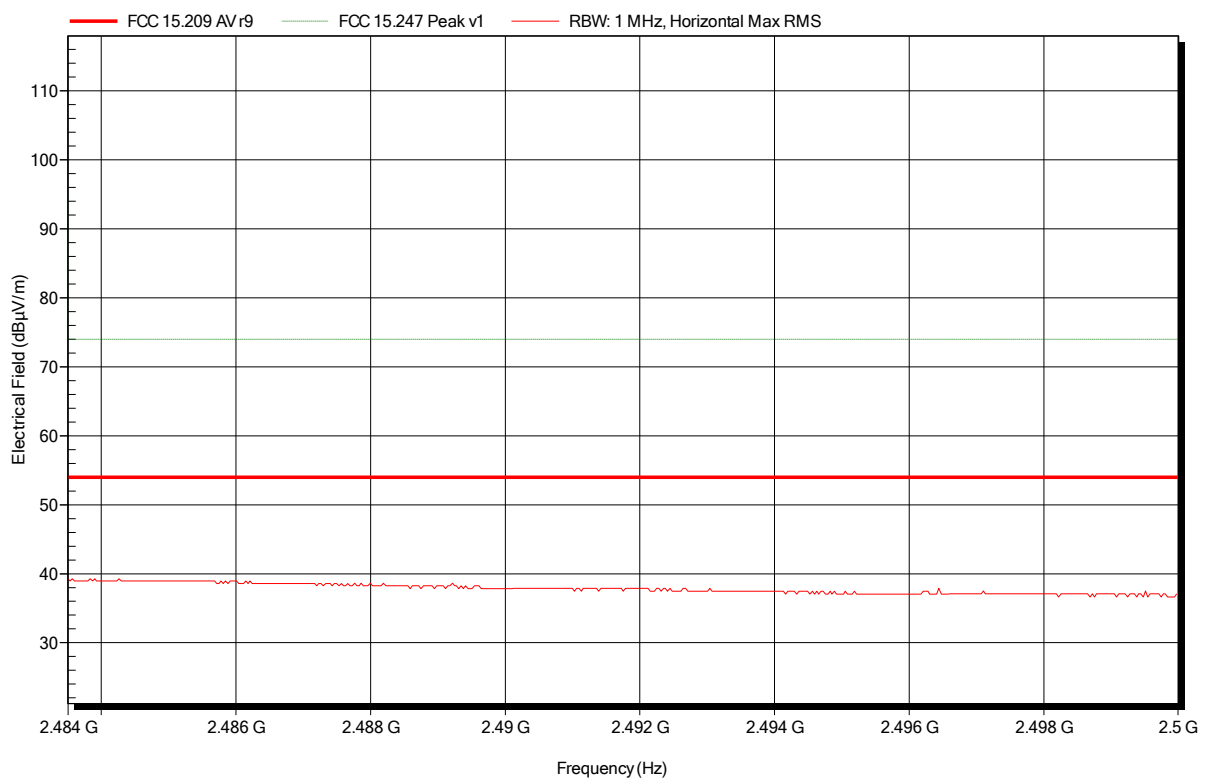


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
 Test Date: 2018-11-08
 Note: EUT horizontal; upper bandedge

Index 161

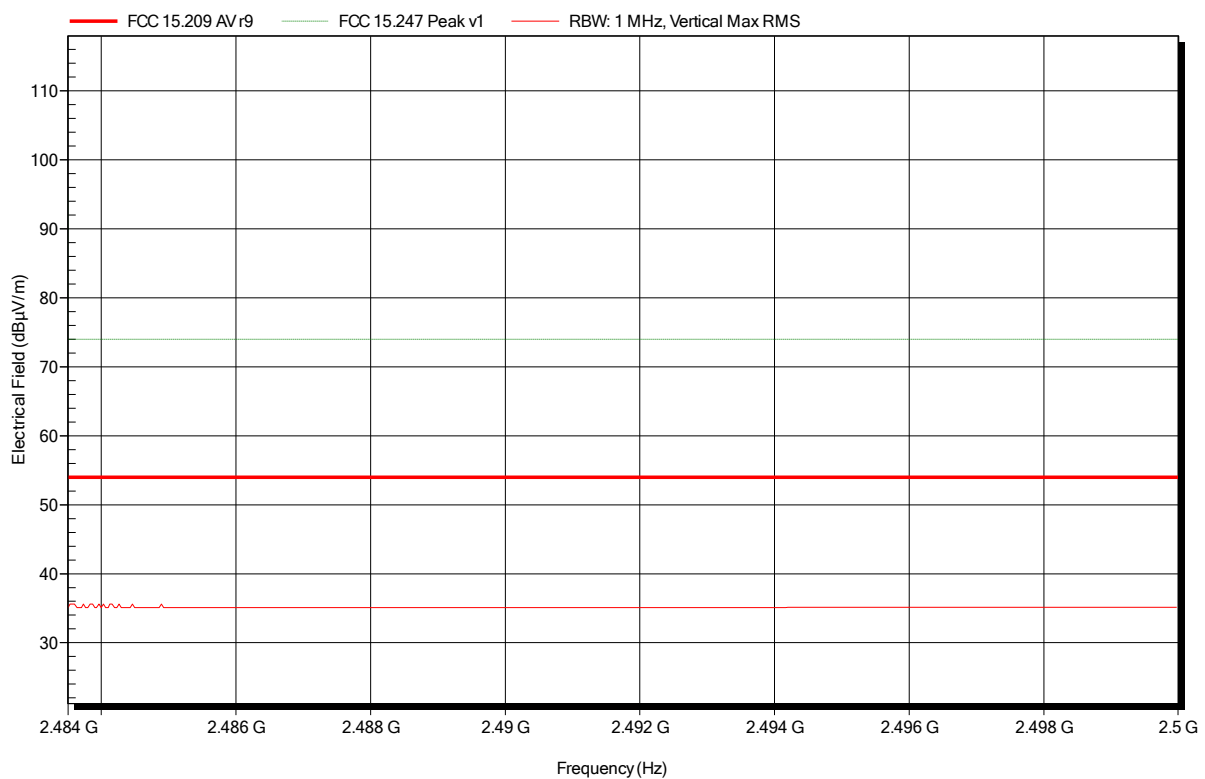


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal; upper bandedge

Index 154

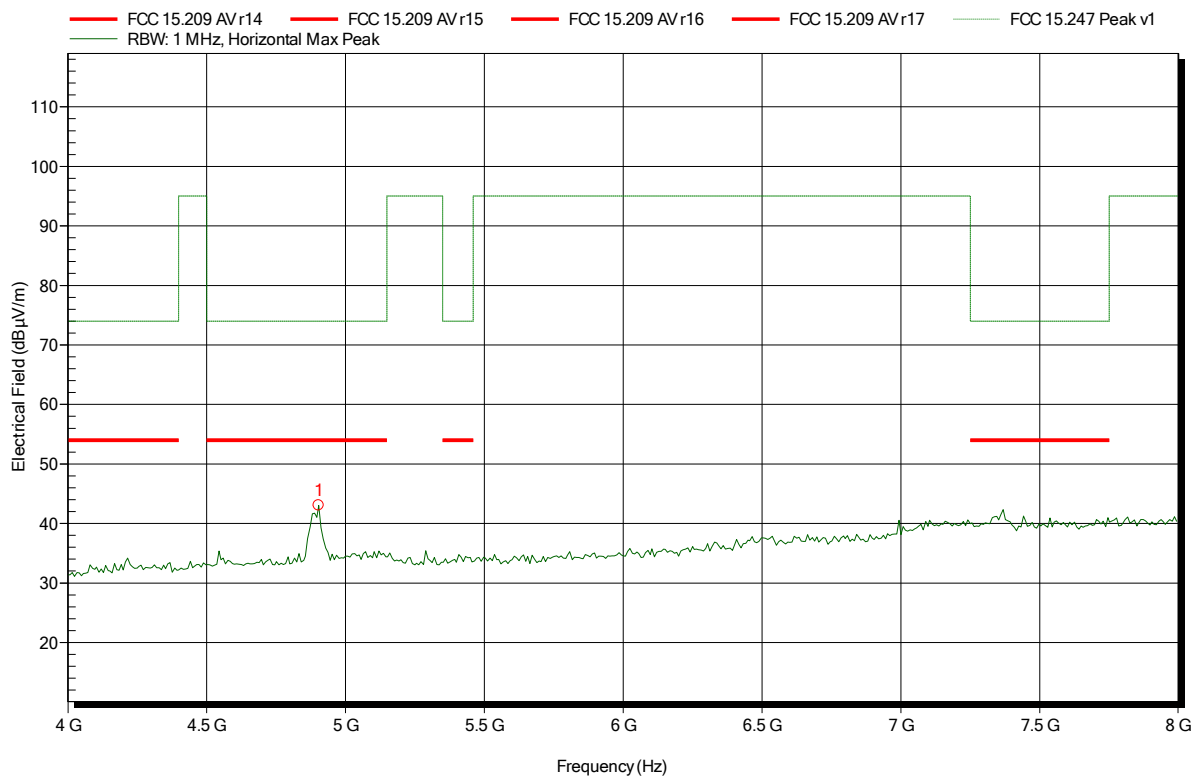


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 160



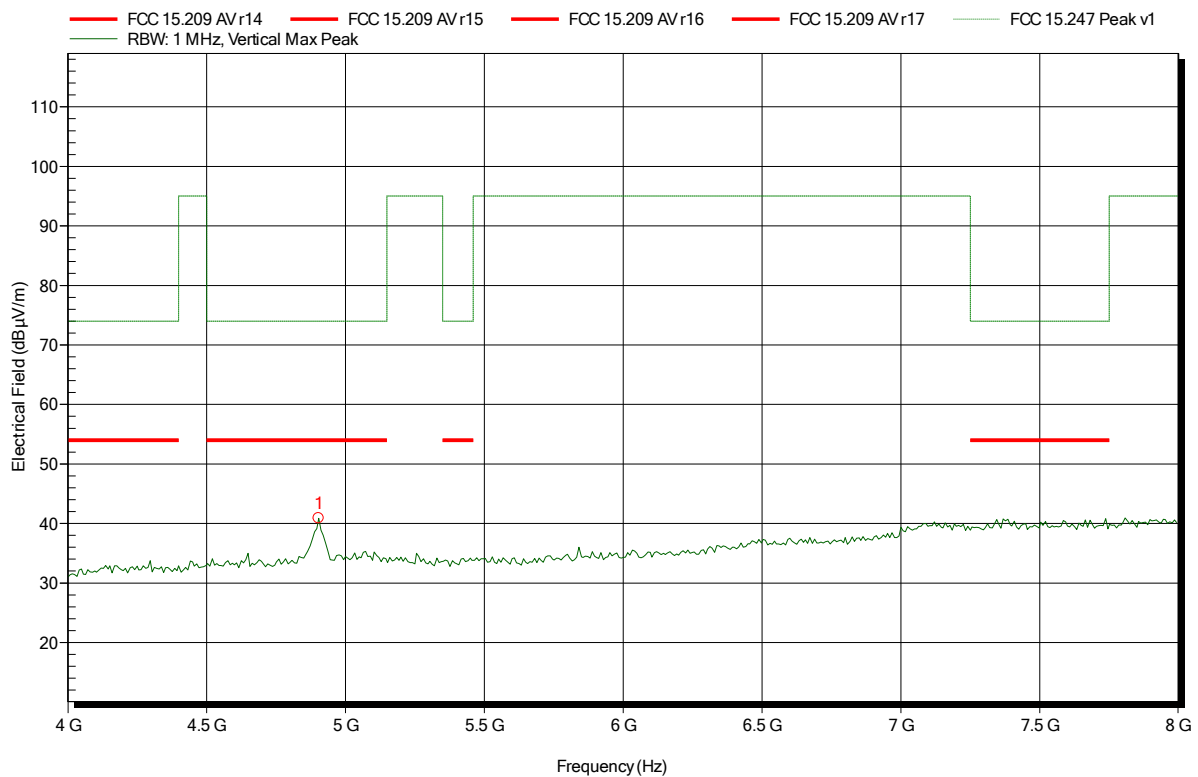
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.904 GHz	43.04 dBµV/m	74 dBµV/m	-30.96 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 155



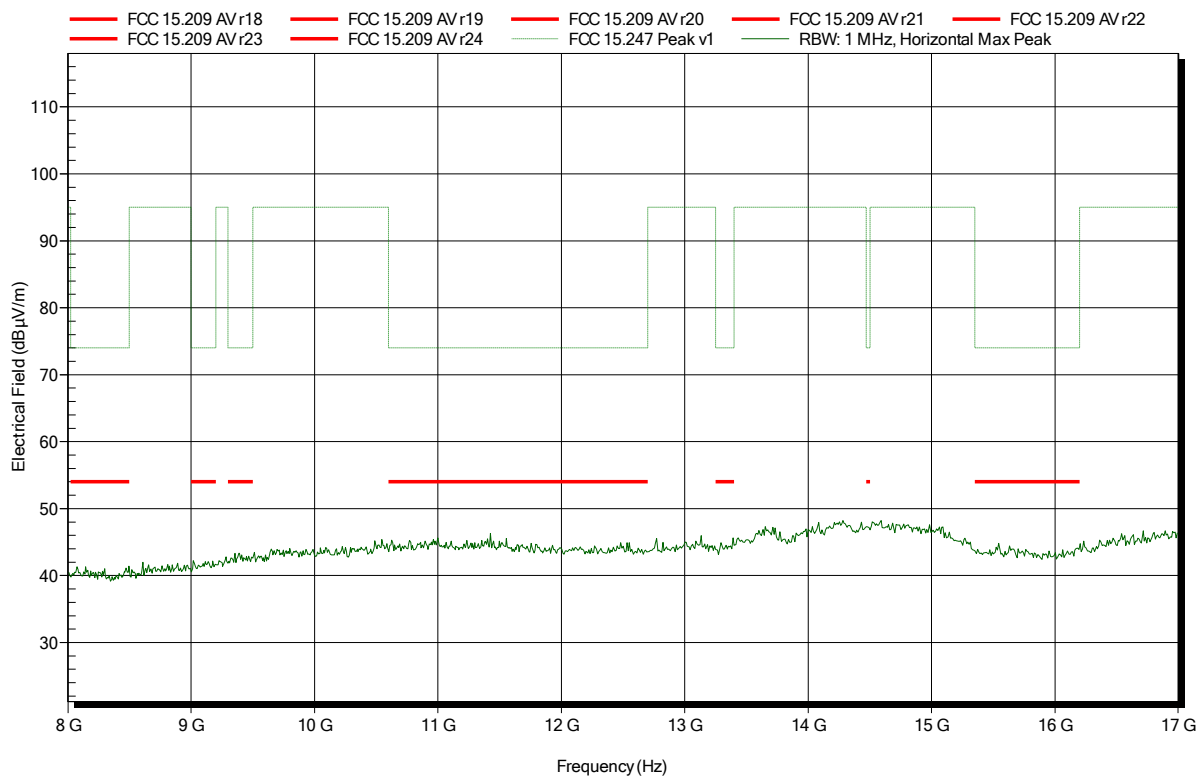
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.904 GHz	40.86 dBµV/m	74 dBµV/m	-33.14 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 159

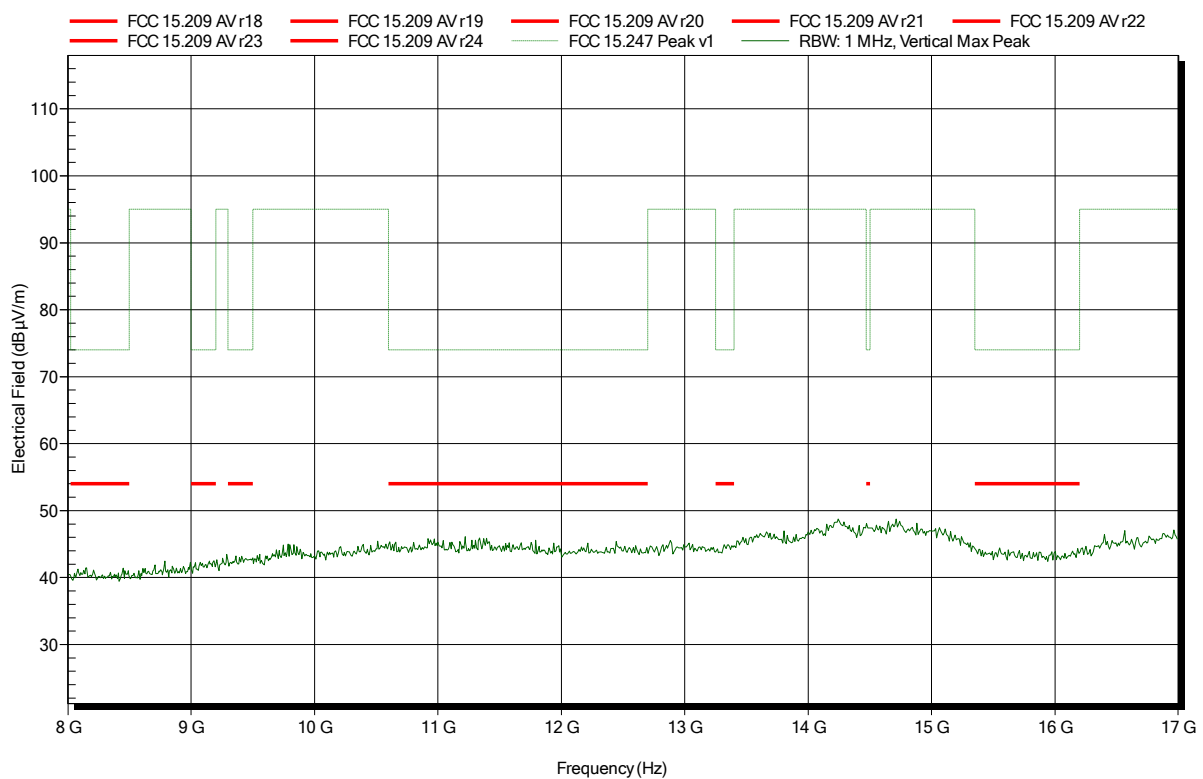


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 156

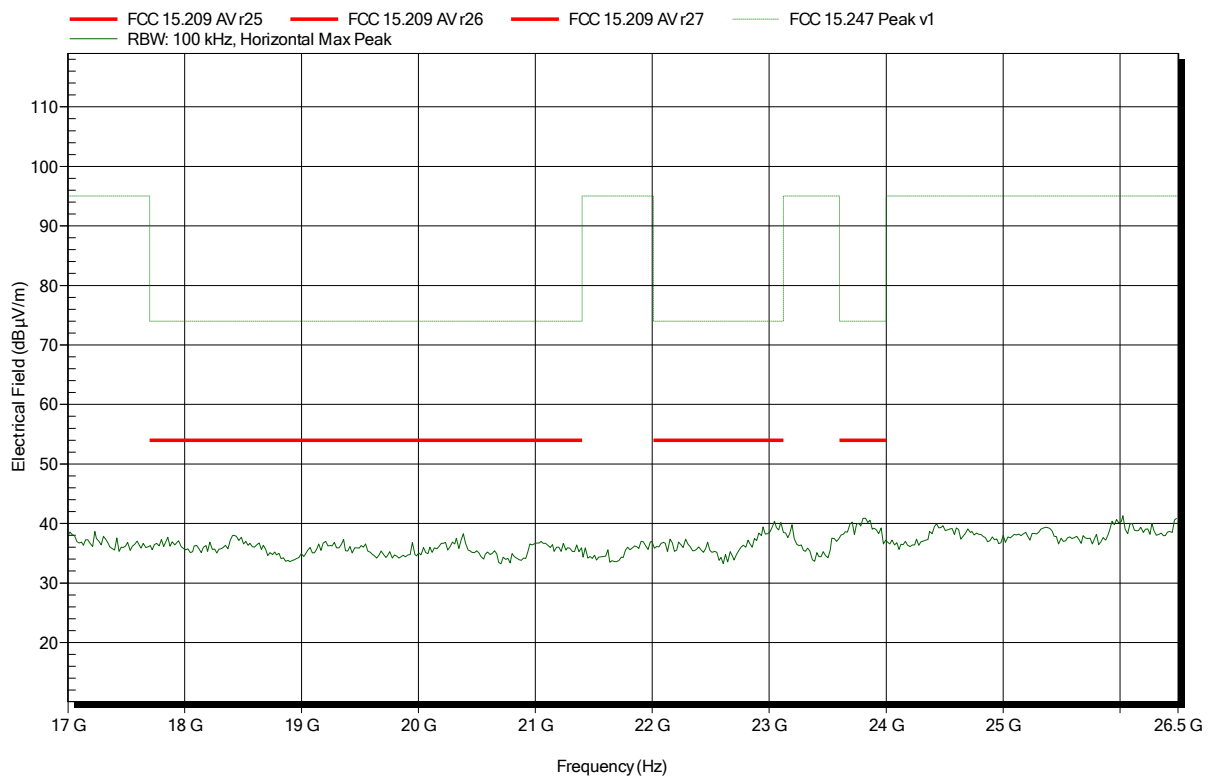


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9201A1EF (Sample 20573)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: ATH18G40, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
 Test Date: 2018-11-07
 Note: EUT horizontal

Index 158

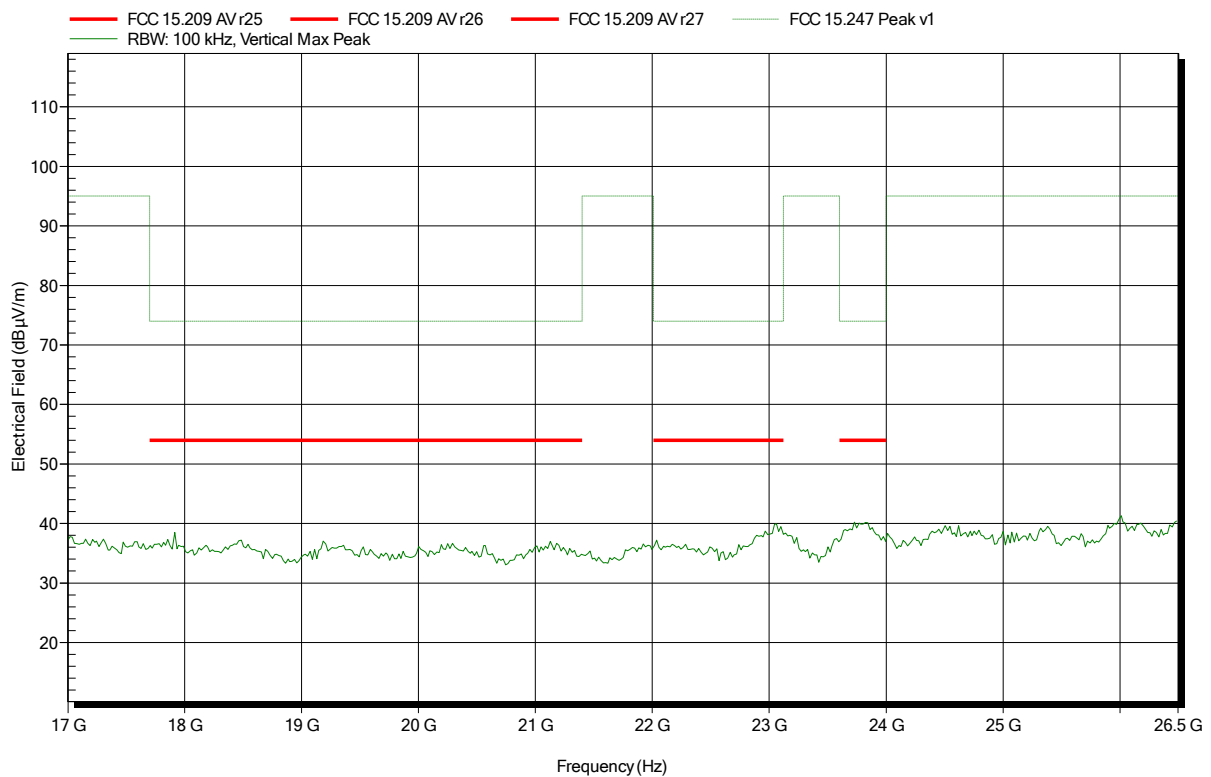


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9201A1EF (Sample 20573)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; WLAN 2.4G; CH: 9; 2452 MHz; HT40 MCS0
Test Date: 2018-11-07
Note: EUT horizontal

Index 157

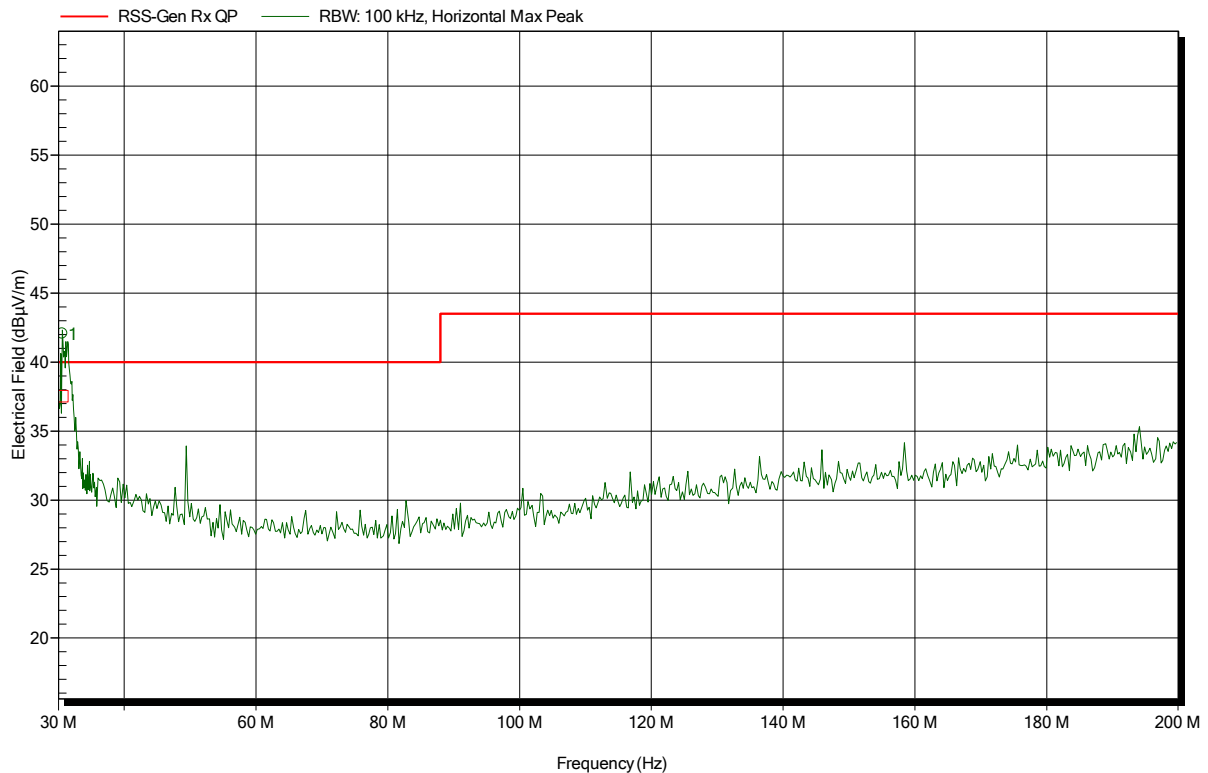


ANNEX B Receiver spurious emissions

Spurious emissions according to ISSED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-08
Note:

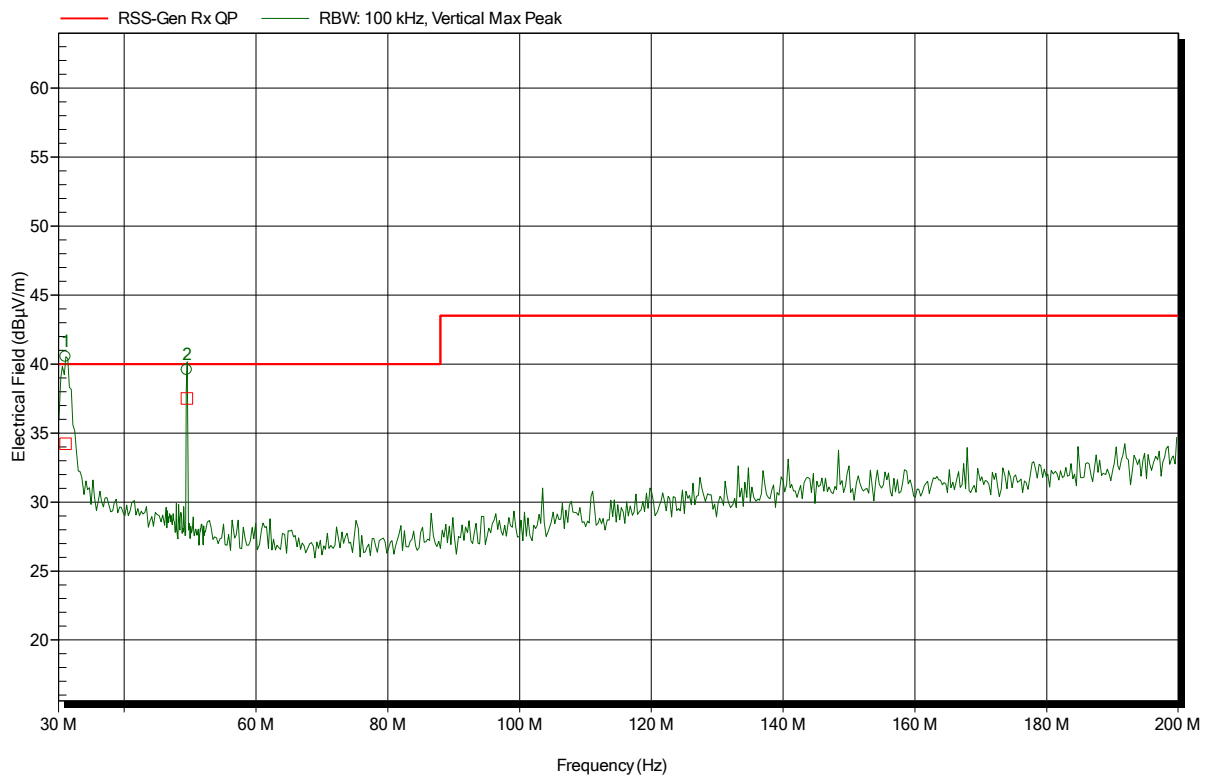


Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
30.611 MHz	42.07 dBμV/m	40 dBμV/m	2.07 dB	Fail	291 Degree	1.2 m
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
30.611 MHz	37.64 dBμV/m	40 dBμV/m	-2.36 dB	Pass	291 Degree	1.2 m

Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF (Sample 20581)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; WiFi 2437 MHz
 Test Date: 2018-11-08
 Note:



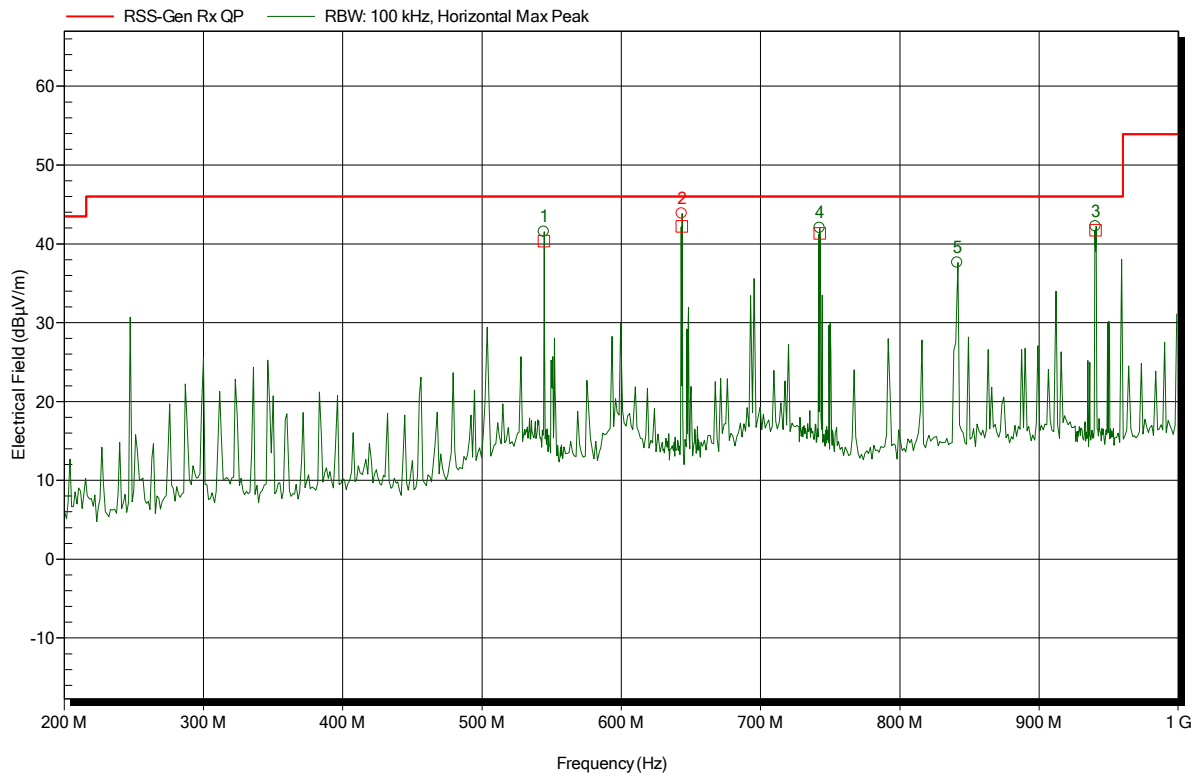
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
31.088 MHz	40.54 dBμV/m	40 dBμV/m	0.54 dB	Fail	90 Degree	1.2 m
49.491 MHz	39.67 dBμV/m	40 dBμV/m	-0.43 dB	Pass	61 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
31.088 MHz	34.32 dBμV/m	40 dBμV/m	-5.68 dB	Pass	90 Degree	1.2 m
49.491 MHz	37.6 dBμV/m	40 dBμV/m	-2.4 dB	Pass	61 Degree	1.2 m

Spurious emissions according to ISSED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-08
Note:



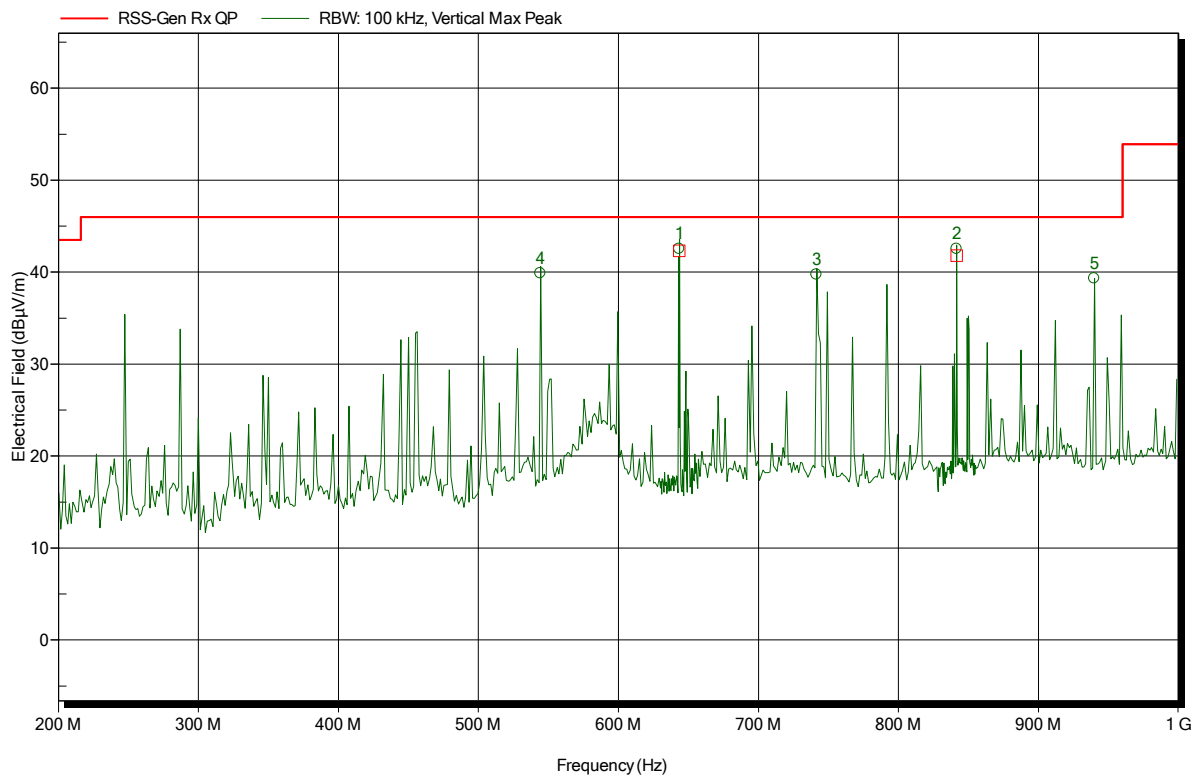
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
544.482 MHz	41.55 dBµV/m	46 dBµV/m	-4.45 dB	Pass	31 Degree	1.2 m
643.482 MHz	43.83 dBµV/m	46 dBµV/m	-2.17 dB	Pass	31 Degree	1.2 m
742.474 MHz	42.01 dBµV/m	46 dBµV/m	-3.99 dB	Pass	31 Degree	1.2 m
841.28 MHz	37.61 dBµV/m	46 dBµV/m	-8.39 dB	Pass	32 Degree	1.2 m
940.465 MHz	42.23 dBµV/m	46 dBµV/m	-3.77 dB	Pass	31 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
544.482 MHz	40.40 dBµV/m	46 dBµV/m	-5.60 dB	Pass	31 Degree	1.2 m
643.482 MHz	42.31 dBµV/m	46 dBµV/m	-3.69 dB	Pass	31 Degree	1.2 m
742.474 MHz	41.30 dBµV/m	46 dBµV/m	-4.70 dB	Pass	31 Degree	1.2 m
940.465 MHz	41.70 dBµV/m	46 dBµV/m	-4.30 dB	Pass	31 Degree	1.2 m

Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-08
Note:



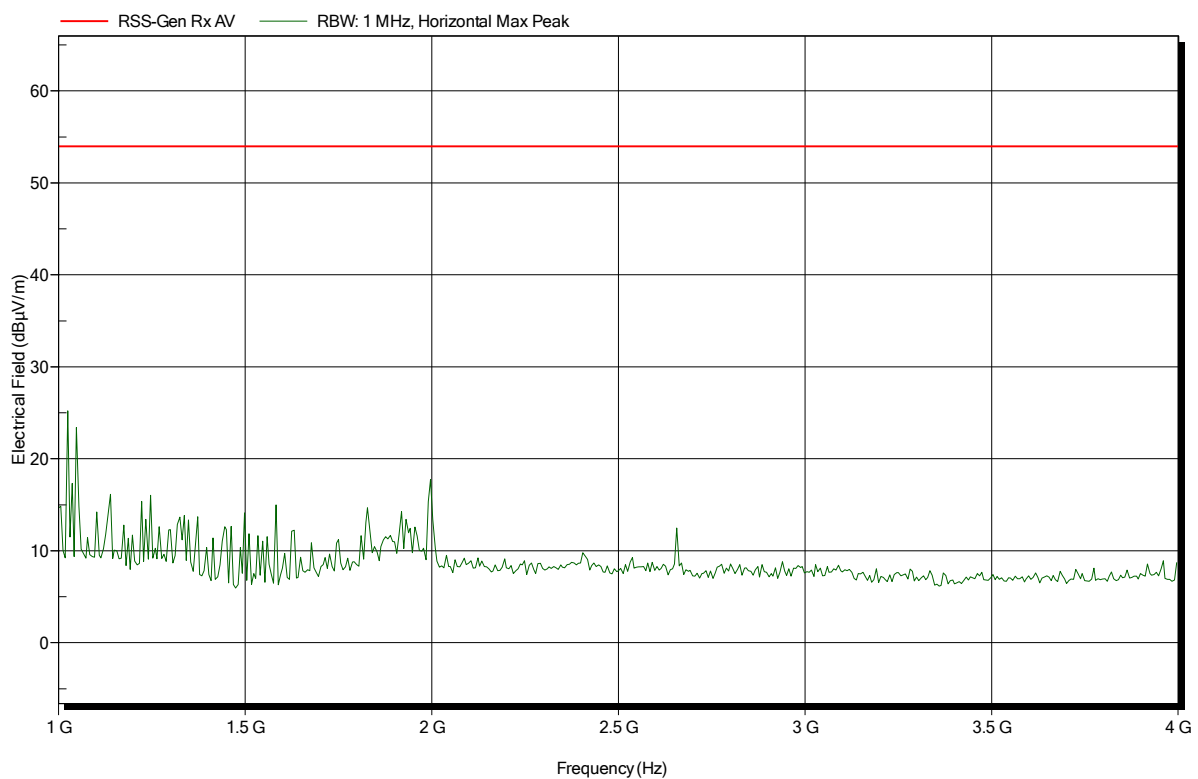
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
544.32 MHz	39.89 dBµV/m	46 dBµV/m	-6.11 dB	Pass	67 Degree	1.2 m
643.476 MHz	42.51 dBµV/m	46 dBµV/m	-3.49 dB	Pass	358 Degree	1.2 m
741.44 MHz	39.73 dBµV/m	46 dBµV/m	-6.27 dB	Pass	45 Degree	1.2 m
841.47 MHz	42.53 dBµV/m	46 dBµV/m	-3.47 dB	Pass	1 Degree	1.2 m
939.84 MHz	39.31 dBµV/m	46 dBµV/m	-6.69 dB	Pass	67 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
643.476 MHz	42.0 dBµV/m	46 dBµV/m	-4.0 dB	Pass	358 Degree	1.2 m
841.47 MHz	41.9 dBµV/m	46 dBµV/m	-4.1 dB	Pass	1 Degree	1.2 m

Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

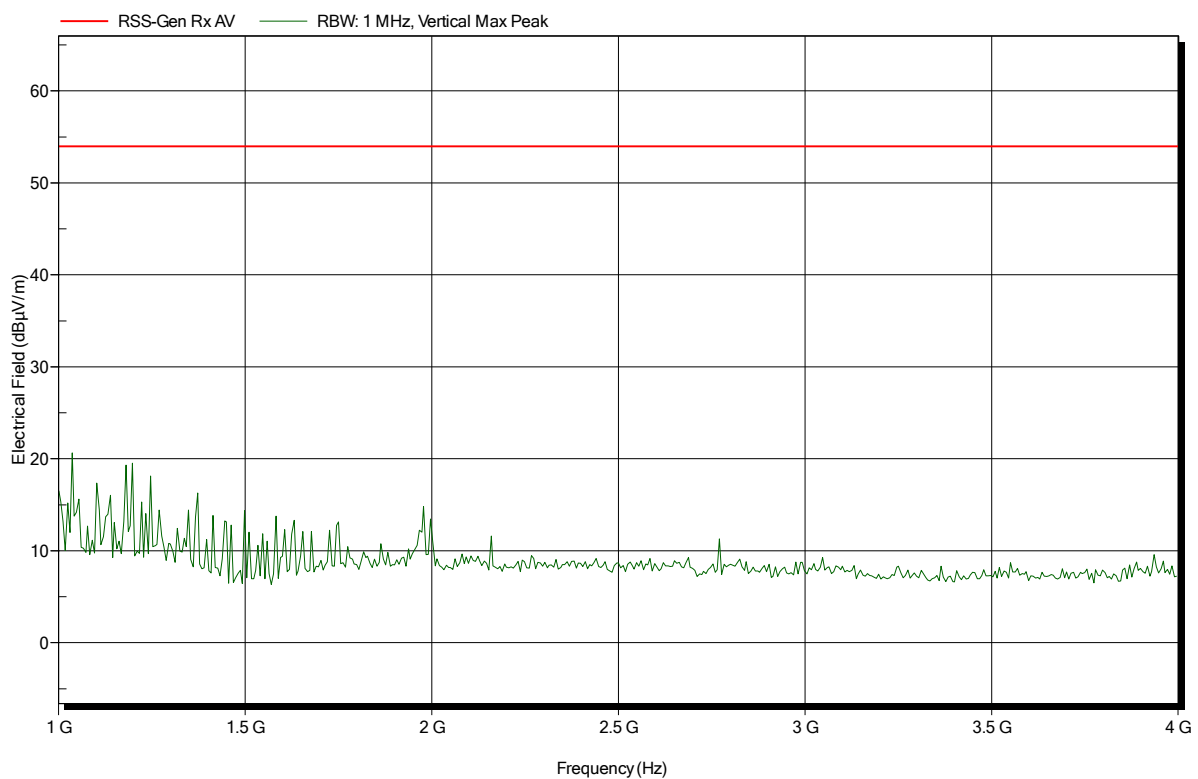
Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ETS-Lindgren 3117, Horizontal
Measurement distance: 3 m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-06
Note: EUT horizontal



Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

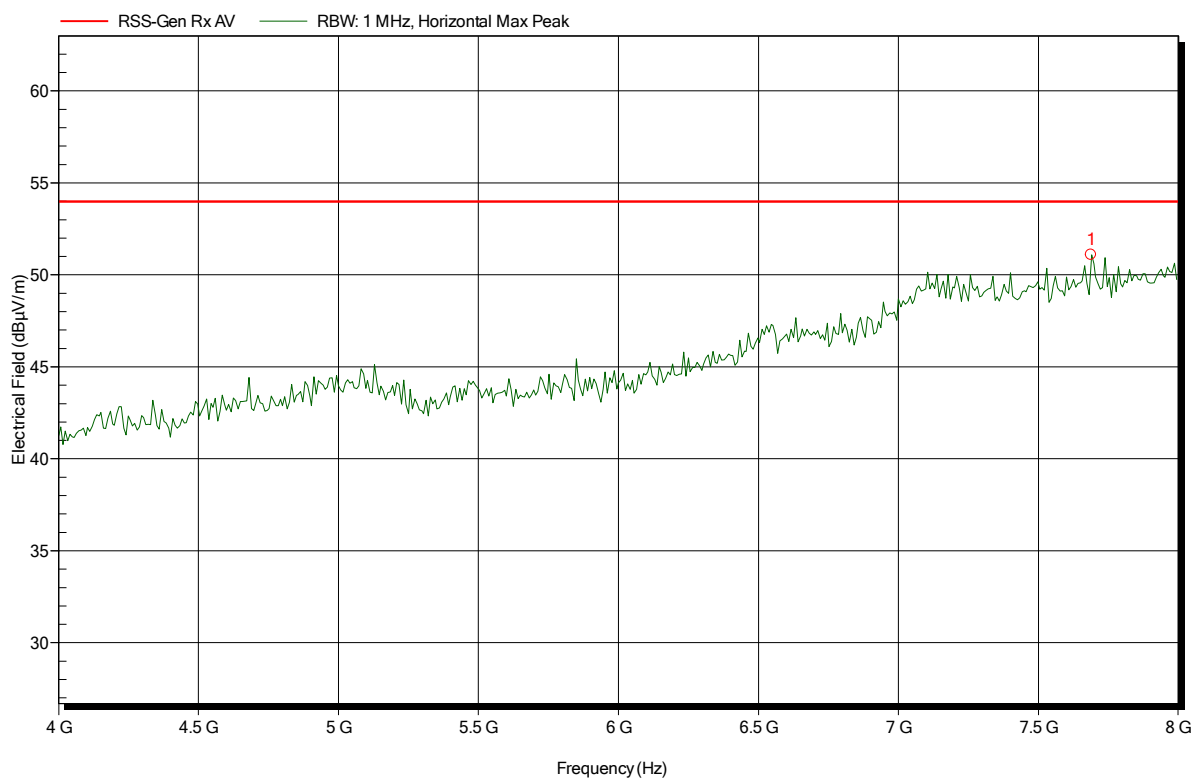
Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ETS-Lindgren 3117, Vertical
Measurement distance: 3 m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-06
Note: EUT horizontal



Spurious emissions according to ISSED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF (Sample 20581)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; WiFi 2437 MHz
 Test Date: 2018-11-06
 Note: EUT horizontal

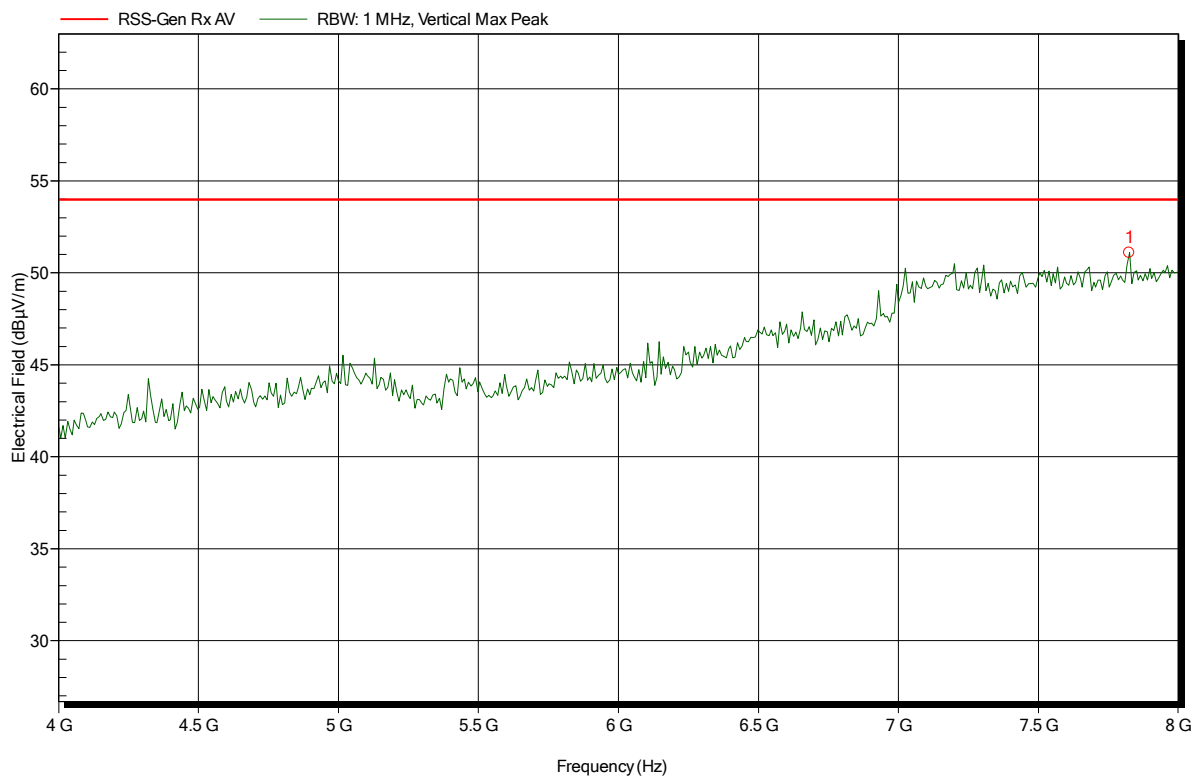


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.688 GHz	51.1 dBμV/m	53.98 dBμV/m	-2.88 dB	Pass

Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
 EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
 Model: ENWF9203A1EF (Sample 20581)
 Test Site: Eurofins Product Service GmbH
 Operator: Burkhard Pudell
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; WiFi 2437 MHz
 Test Date: 2018-11-06
 Note: EUT horizontal

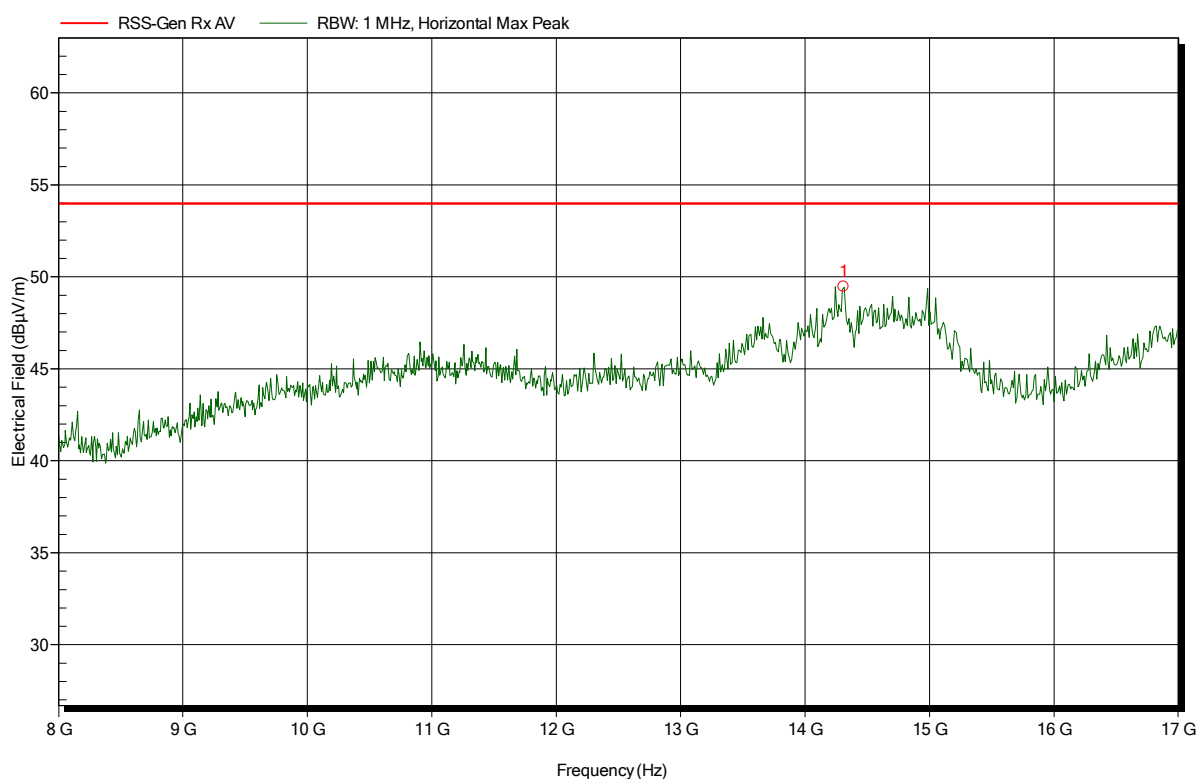


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.824 GHz	51.0 dBμV/m	53.98 dBμV/m	-2.98 dB	Pass

Spurious emissions according to ISSED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-06
Note: EUT horizontal

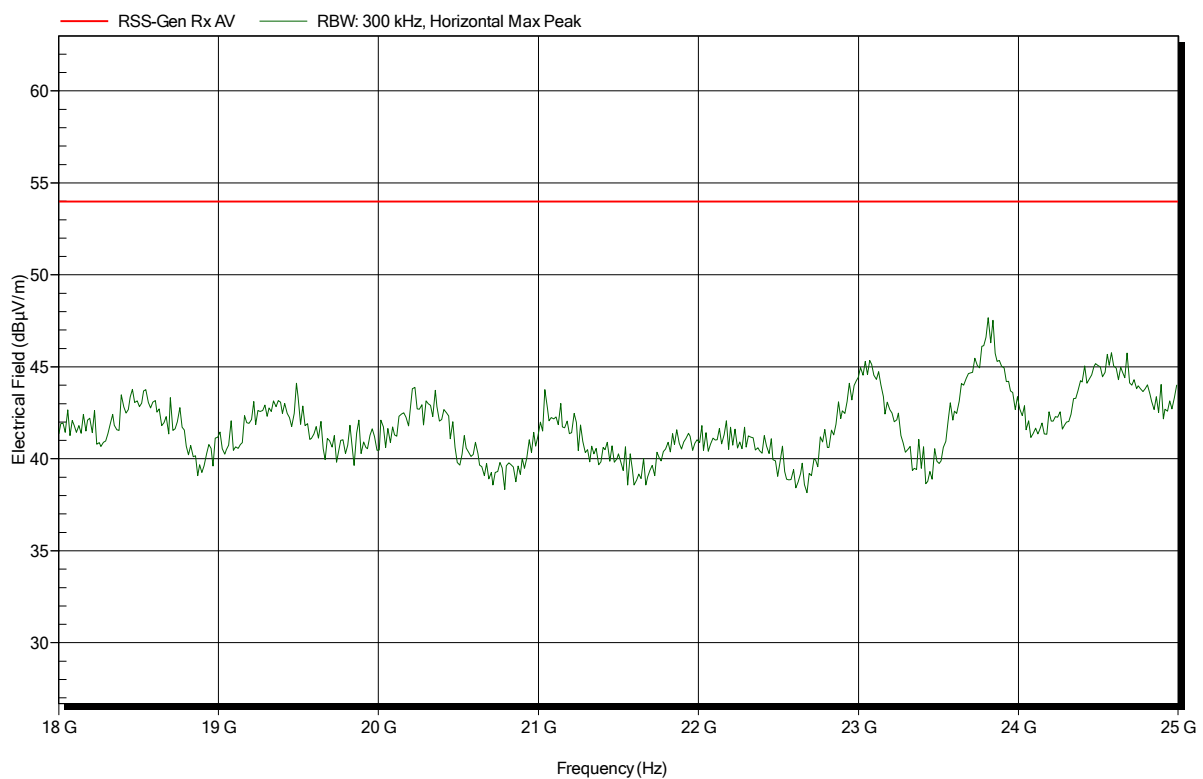


Frequency	Peak	Peak Limit	Peak Difference	Status
14.31 GHz	49.40 dBµV/m	53.98 dBµV/m	-4.60 dB	Pass

Spurious emissions according to ISED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Horizontal
Measurement distance: 1 m converted to 3m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-06
Note: EUT horizontal



Spurious emissions according to ISSED RSS-247, I1

Project number: G0M-1810-7783

Applicant: Panasonic Industrial Devices Europe GmbH
EUT Name: Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model: ENWF9203A1EF (Sample 20581)
Test Site: Eurofins Product Service GmbH
Operator: Burkhard Pudell
Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC
Antenna: ATH18G40, Vertical
Measurement distance: 1 m converted to 3m
Mode: RX; WiFi 2437 MHz
Test Date: 2018-11-06
Note: EUT horizontal

