RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-247

Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band

Report Reference No	G0M-2101-9569-TFC247WF-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 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	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 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)	ENWF9408A1EF
Additional Model(s)	None
Brand Name(s)	PAN9028
Hardware Version(s)	04
Software Version(s)	01
FCC ID	T7V9028
IC	216Q-9028
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 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2021-05-27	
Report:		
Compiled by	Wilfried Treffke	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2021-08-20	
Total number of pages	159	
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:		

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	ENWF9408A2EF
	Brand name	PAN9028
	Hardware Version	04
	Software Version	01
	PMN	PAN9028
	HVIN	ENWF9408A2EF
	FVIN	n/a
	HMN	n/a
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	2021-08-20	Initial Release	

ABBREVIATIONS AND ACRONYMS

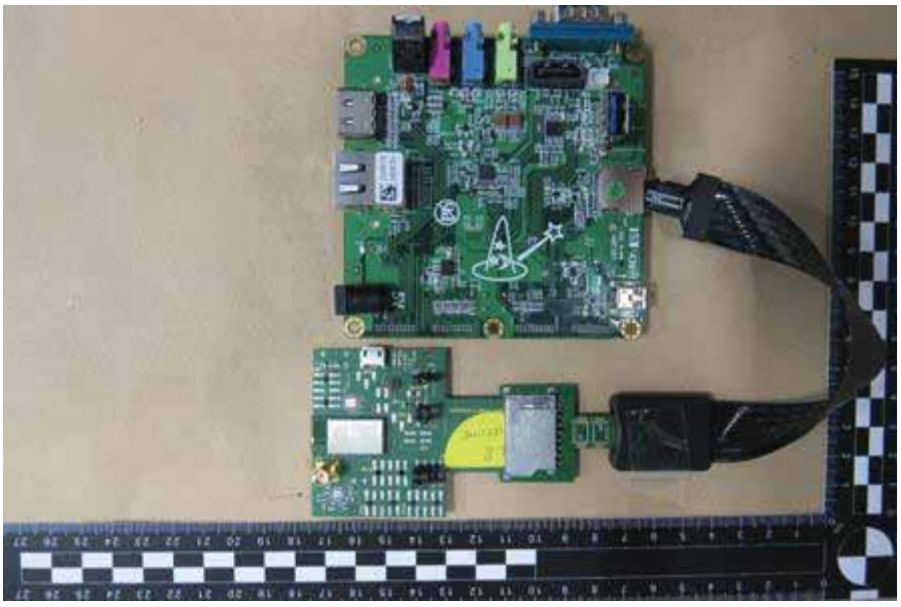
Acronyms	
Acronym	Description
BPSK	Binary Phase Shift Keying
DSSS	Direct Sequence Spread Spectrum
EUT	Equipment Under Test
FCC	Federal Communications Commission
HT	High Throughput
IEEE 802.11	MAC and PHY Layer for WiFi
ISED	Innovation, Science and Economic Development Canada
OFDM	Orthogonal Frequency 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

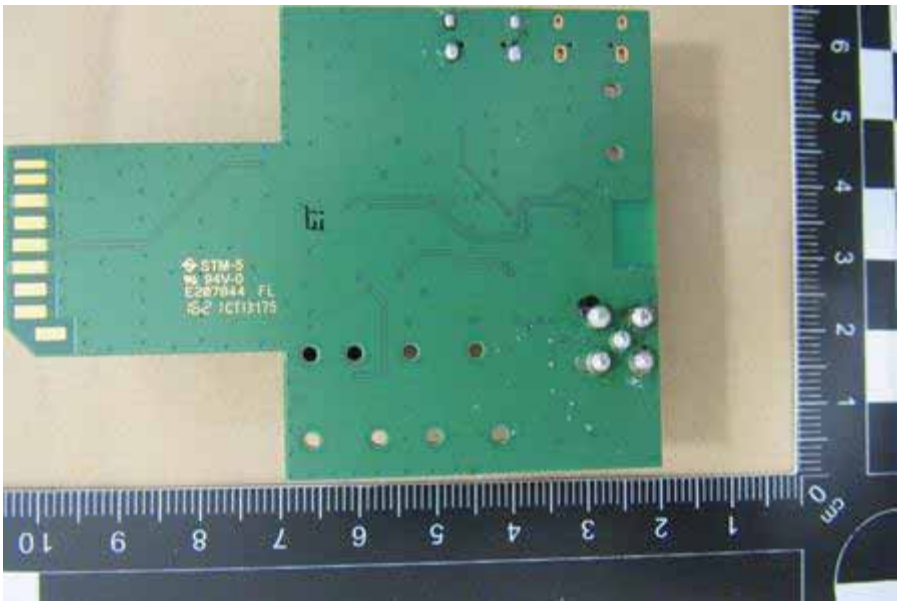
1 Equipment (Test Item) Under Test

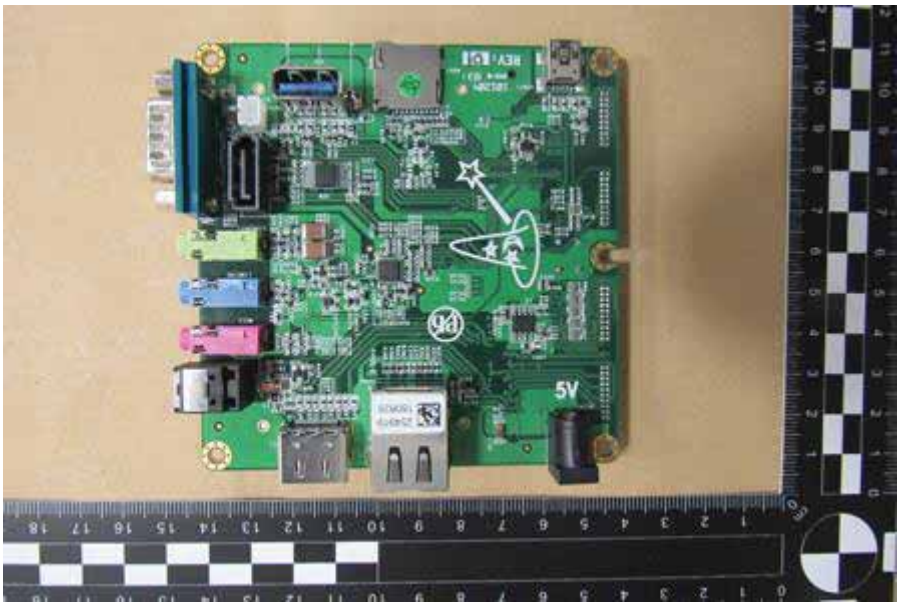
Description	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module	
Model	ENWF9408A1EF	
Additional Model(s)	None	
Brand Name(s)	PAN9028	
Serial Number(s)	A1 8 SerNr: 826 Test Sample ID 34968	
Hardware Version(s)	04	
Software Version(s)	01	
PMN	PAN9028	
HVIN	ENWF9408A1EF	
FVIN	n/a	
HMN	n/a	
FCC ID	T7V9028	
IC	216Q-9028	
Equipment type	Radio Module	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	IEEE 802.11 b/g/n (HT20 + HT40)	
Modulation	BPSK, QPSK, 16-QAM, 64-QAM	
Number of antenna ports	1	
Antenna	Type	Integrated chip antenna
	Model	ANT162442DT-2001A2
	Manufacturer	TDK
	Gain	2.1 dBi (declared by applicant)
Supply Voltage	V_{NOM}	3.3 VDC
Operating Temperature	T_{NOM}	25 °C
AC/DC-Adaptor	Model	None
Manufacturer	Panasonic Industrial Devices Europe GmbH Zeppelinstr. 19 21337 Lüneburg GERMANY	

1.1 Photos – Equipment External

EUT Overview


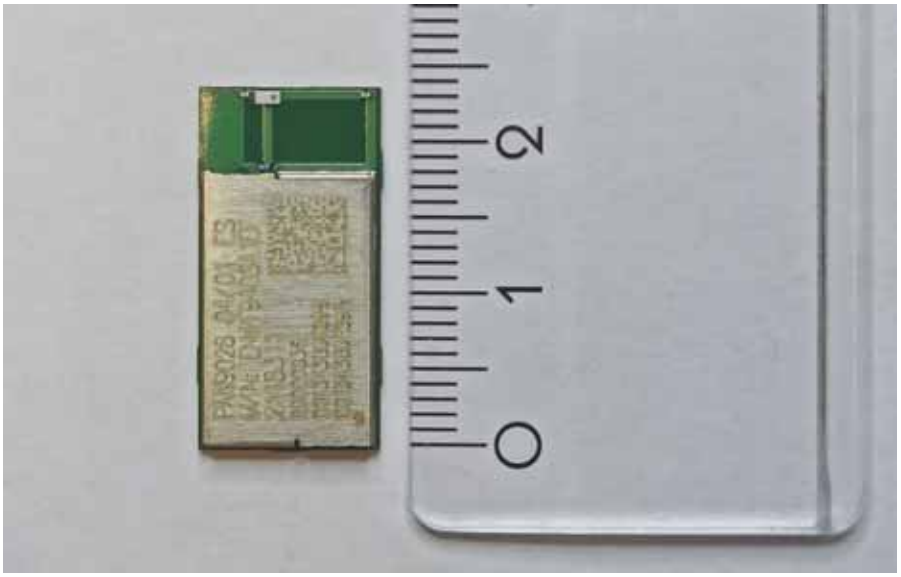
IMG_3311 A1 8 SerNr: 826


EUT Bottom View


AE 1: Wandboard WBIMX6U, Top View


AE 1: Wandboard WBIMX6U, Bottom View

1.2 Photos – Equipment Internal

ENWF9408A1EF_top_case


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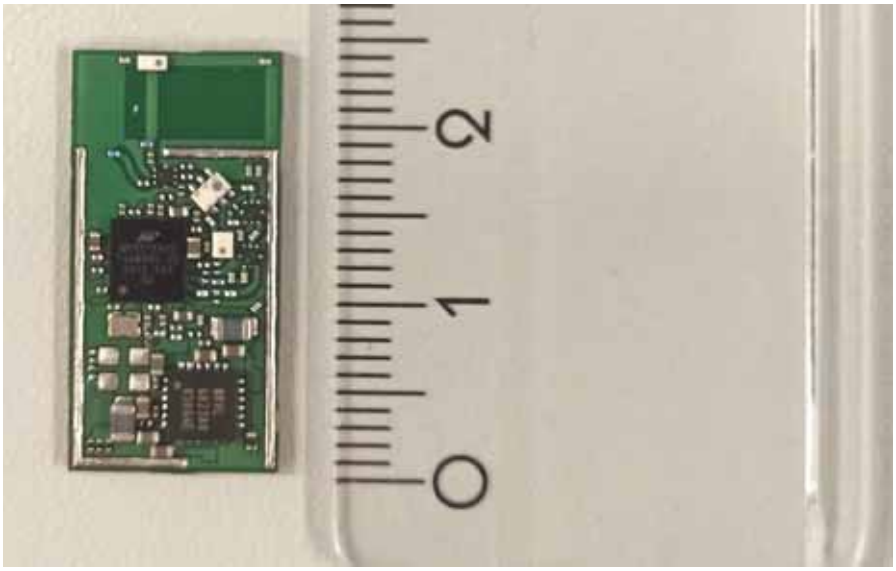

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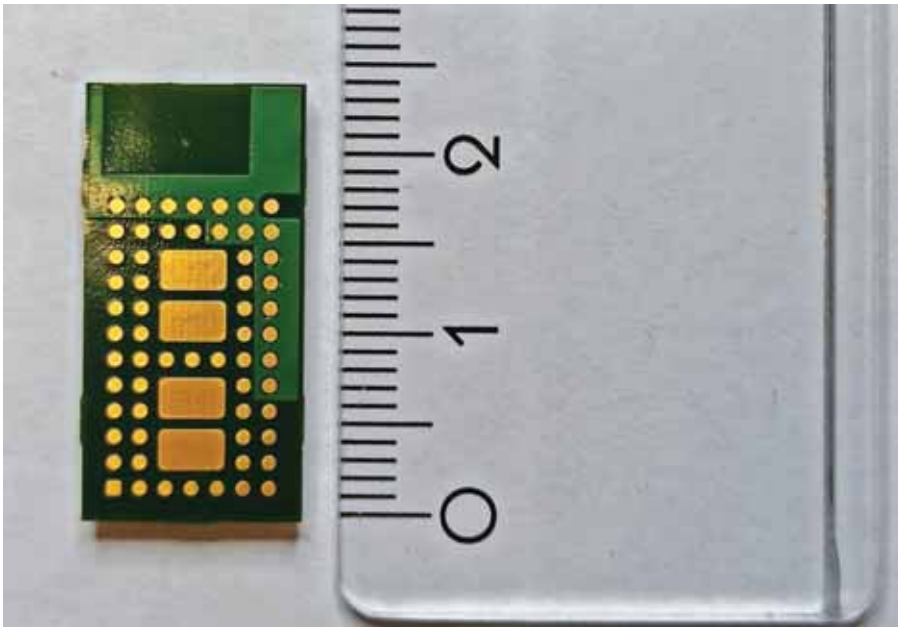

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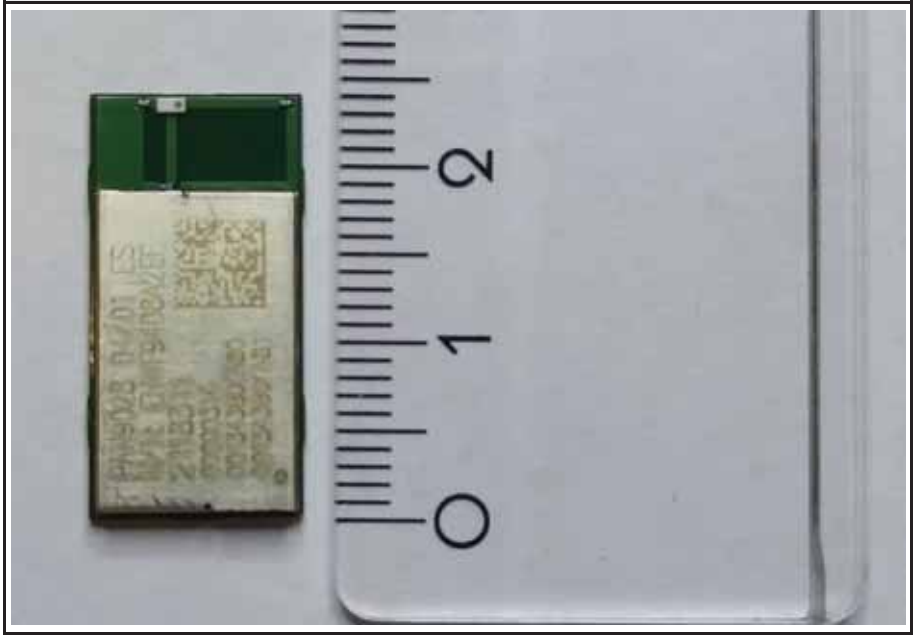
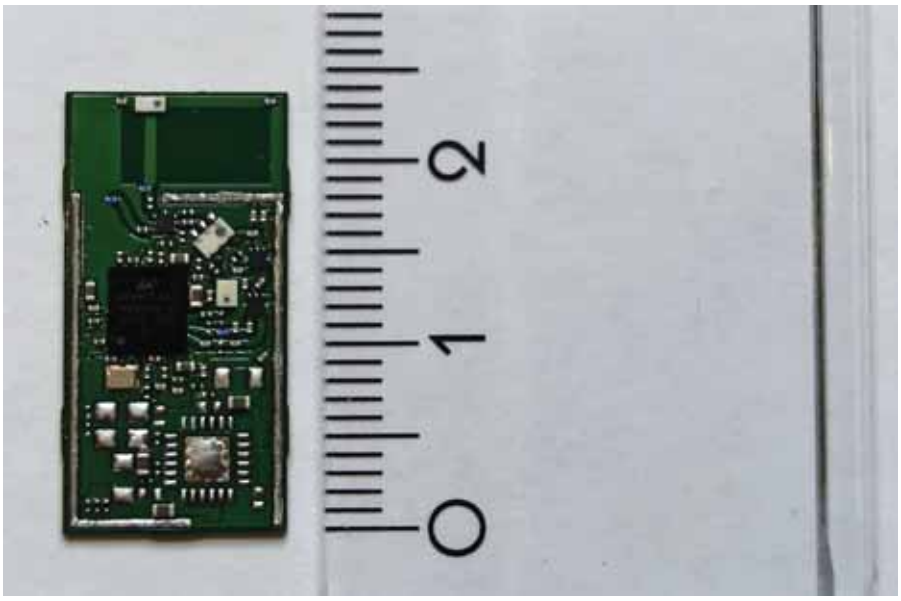


ENWF9408A2EF_top_nocase


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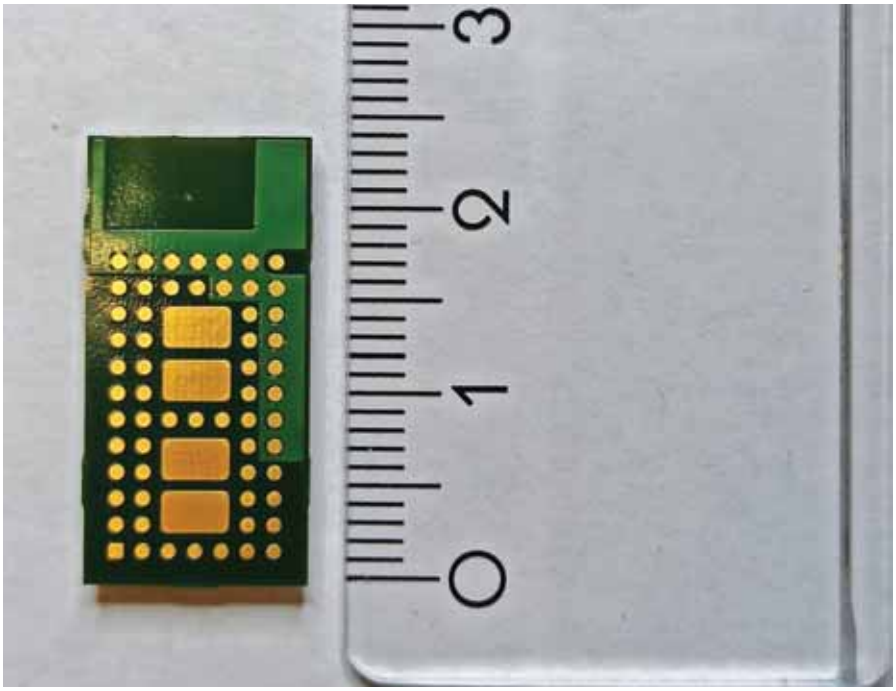
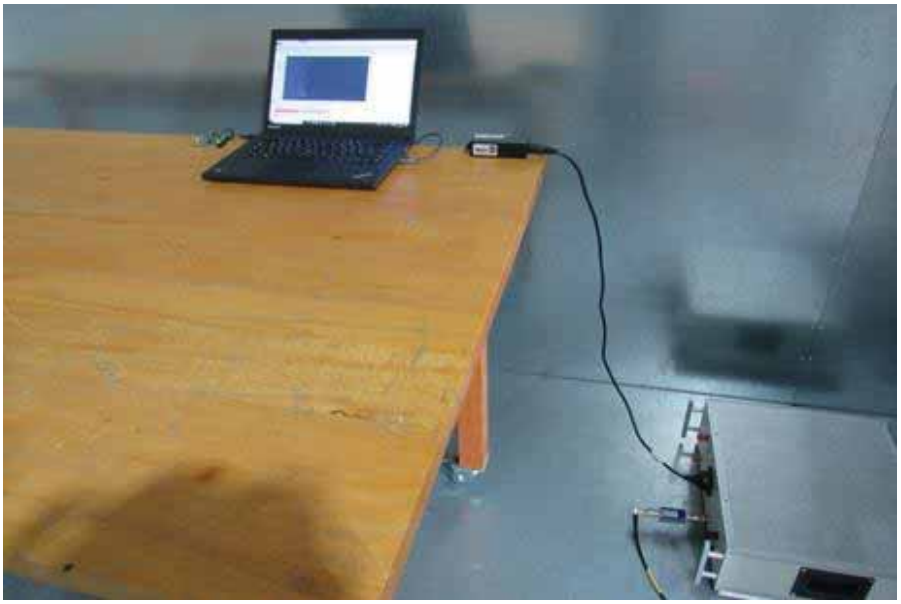


1.1 Photos – Test Setup

Test setup A - conducted measurement


Test setup B - conducted measurement


1.2 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Controller	Wandboard	WBIMX6U	Wandboard with i.MX6 Dual Core
AE	PAN9028 EngBrd_V30	Panasonic Industrial Devices Europe	PAN9028 EngBrd_V30	SDIO Stick
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
SFT Note: The Equipment Under Test used an operating system with a test firmware. The driver for the tested technology was running in a manufacturer mode.				
Comment:				

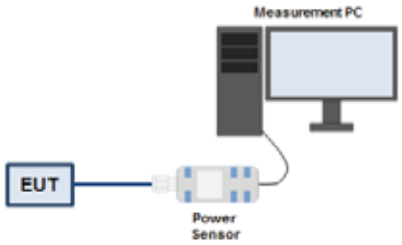
1.3 Test mode output power

1.3.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.9, 14.3

1.3.2 Setup

Test Setup



1.3.3 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z81	EF00935	2020-04	2021-04

1.3.4 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

1.3.5 Results

Results - DSSS			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
1	16.35	**16.80**	15.37
2	16.26	16.78	15.37
5.5	16.28	16.77	15.36
11	16.31	16.79	15.37

Results - OFDM			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
6	23.55	24.40	23.38
9	24.41	24.39	**24.63**
12	23.76	24.60	23.71
18	23.55	24.48	23.42
24	23.60	24.50	23.52
36	23.25	24.12	23.89
48	23.56	24.45	23.44
54	23.50	24.42	23.42

Results - HT20			
MCS	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
0	23.68	24.54	23.56
1	23.85	24.65	23.75
2	24.50	24.66	**24.67**
3	24.03	24.66	24.00
4	23.90	24.65	23.82
5	24.02	24.65	24.05
6	23.96	24.65	23.90
7	23.71	24.64	24.38
Results - HT40			
MCS	Power [dBm] Channel 2422 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2452 [MHz]
0	23.19	**23.97**	23.11
1	22.61	23.38	22.36
2	22.08	22.71	21.66
3	21.92	22.65	21.68
4	22.04	22.71	21.84
5	20.57	21.23	21.67
6	21.05	21.81	20.75
7	21.27	22.00	20.89

1.4 Test mode duty cycle

1.4.1 Information

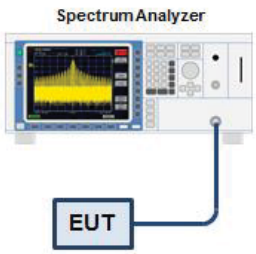
Test Information	
Measurement Method	ANSI C63.10 11.6

1.4.2 Requirements

Requirements	
Duty cycle	Duty cycle correction
≥ 98 %	No correction required
< 98 %	Correction required (10 x Log_{10}(1/DC)

1.4.3 Setup

Test Setup



1.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2018-10	2020-10

1.4.5 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 x Log_{10}(T_{ON} / (T_{ON} + T_{OFF}))

1.4.6 Results

Duty Cycle Results		
Mode	Duty Cycle	Correction Factor [dB]
DSSS	98.8	0
OFDM	98.4	0
HT20	98.6	0
HT40	98.4	0

1.5 Test Modes

Mode	Description
DSSS (IEEE 802.11b)	Mode = Transmit Modulation = BPSK Spreading = DSSS Bandwidth = 20 MHz Duty cycle = 98.8% Data rate = 1 Mbps
OFDM (IEEE 802.11g)	Mode = Transmit Modulation = OFDM/BPSK Bandwidth = 20 MHz Duty cycle = 98.4% Data rate = 9 Mbps
HT20 (IEEE 802.11n)	Mode = Transmit Modulation = OFDM/BPSK Bandwidth = 20 MHz Duty cycle = 98.6% Data rate (1 Simultaneous Tx) = 13 Mbps MCS (1 Simultaneous Tx) = 2
HT40 (IEEE 802.11n)	Mode = Transmit Modulation = OFDM/BPSK Bandwidth = 40 MHz Duty cycle = 98.4% Data rate (1 Simultaneous Tx) = 13 Mbps MCS (1 Simultaneous Tx) = 0
Receive	Mode = Receive
Comment: The above settings were found as worst case during pre-tests.	

1.6 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

1.7 Sample emission level calculation

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

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

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

Reading on Analyzer (dBµV) + A.F. (dB/m) = Net field strength (dBµV/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:

Limit (dBµV/m) = 20*log (µV/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 6.7)	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) 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

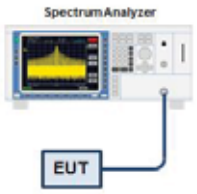
3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.7)
Measurement Method	ANSI C63.10 6.9.3
Measurement Uncertainty	± 1.26 %
Test Sample ID	34968, (A1 8 SerNr: 826)
Operator	Wilfried Treffke
Date	2021-07-27

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup

Test Setup


3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2018-10	2020-10

3.1.5 Procedure

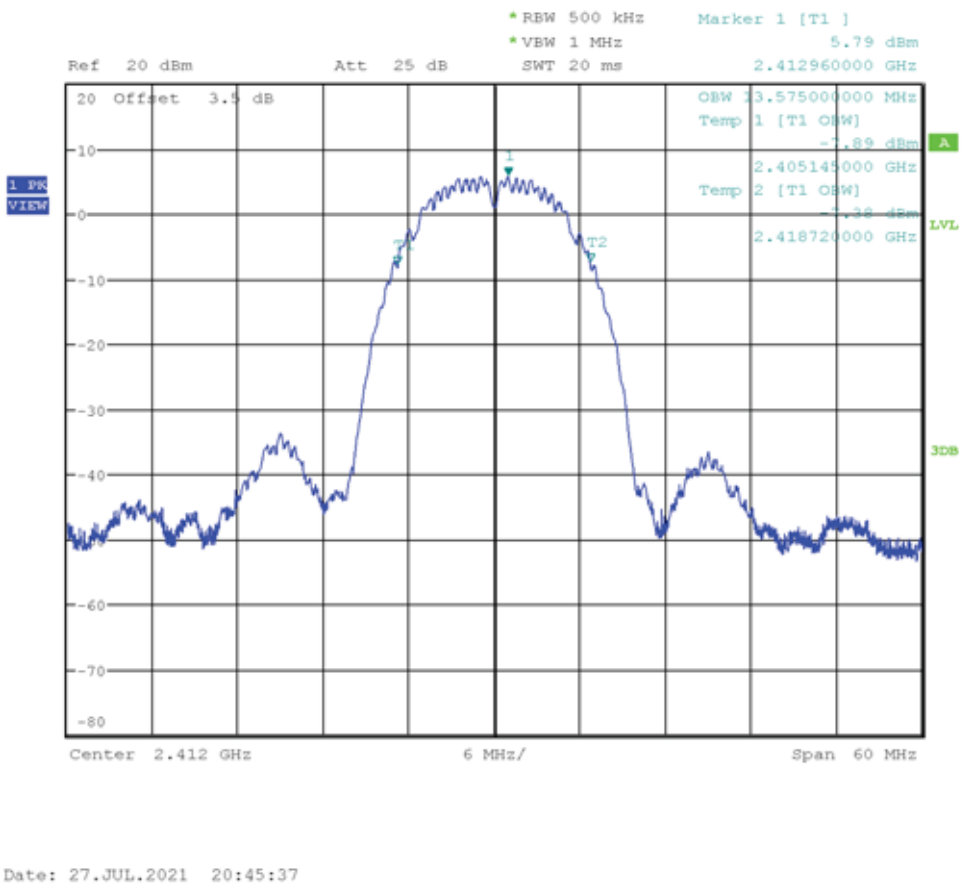
Test Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth 4. The occupied bandwidth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

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DSSS	2412	13.575
DSSS	2437	13.530
DSSS	2462	13.455
OFDM	2412	17.145
OFDM	2437	17.190
OFDM	2462	17.190
HT20	2412	18.015
HT20	2437	18.045
HT20	2462	18.000
HT40	2422	36.150
HT40	2437	36.180
HT40	2452	36.180

Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 b, Channel: 1, 2412
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	13.575



Occupied Bandwidth

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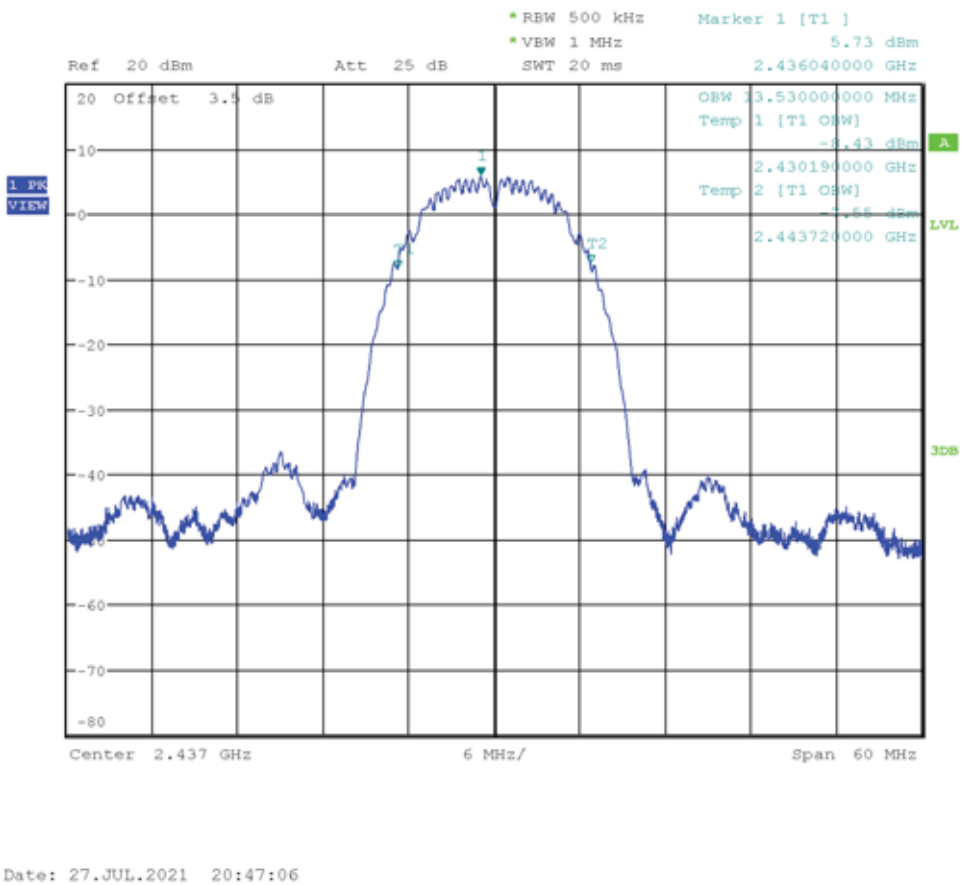
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 b, Channel: 6, 2437
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	13.530



Occupied Bandwidth

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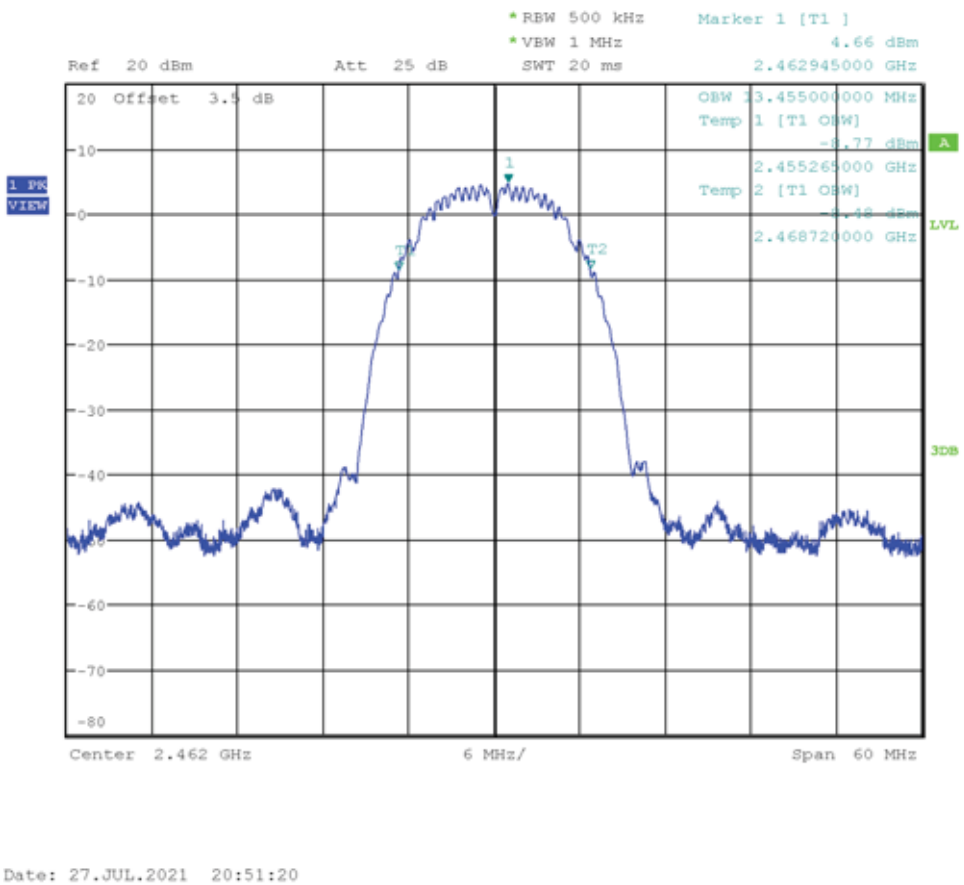
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 b, Channel: 11, 2462
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	13.455



Occupied Bandwidth

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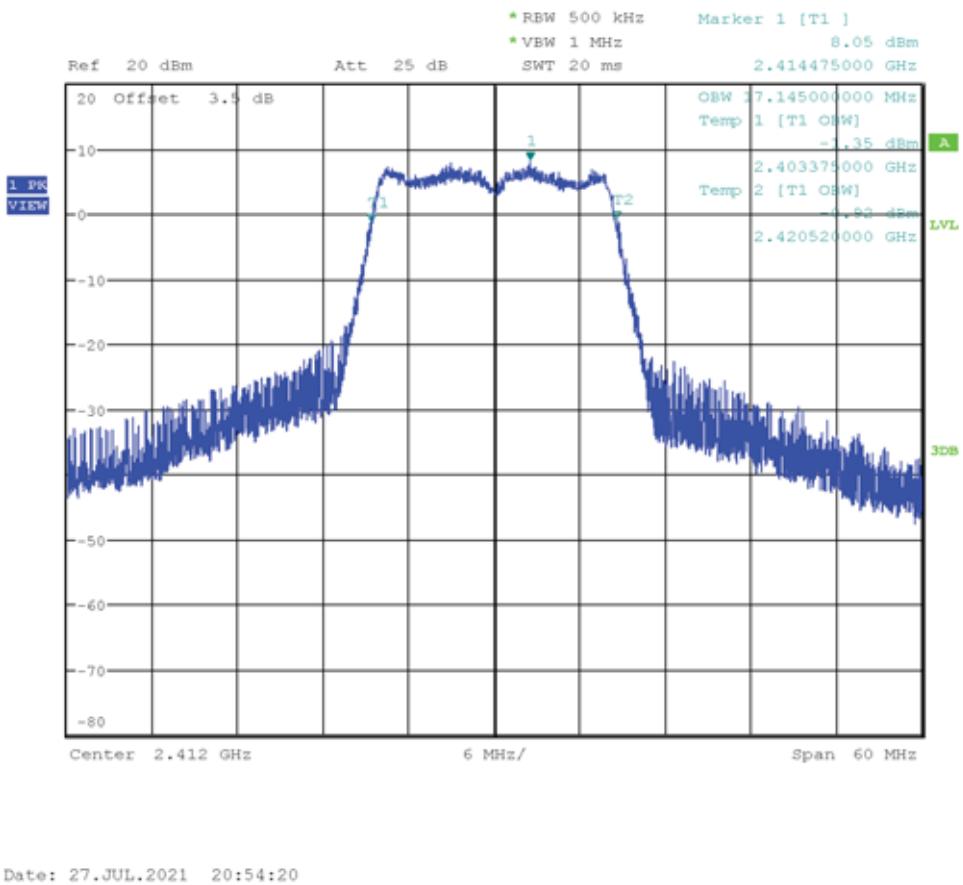
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 g, Channel: 1, 2412
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	17.145



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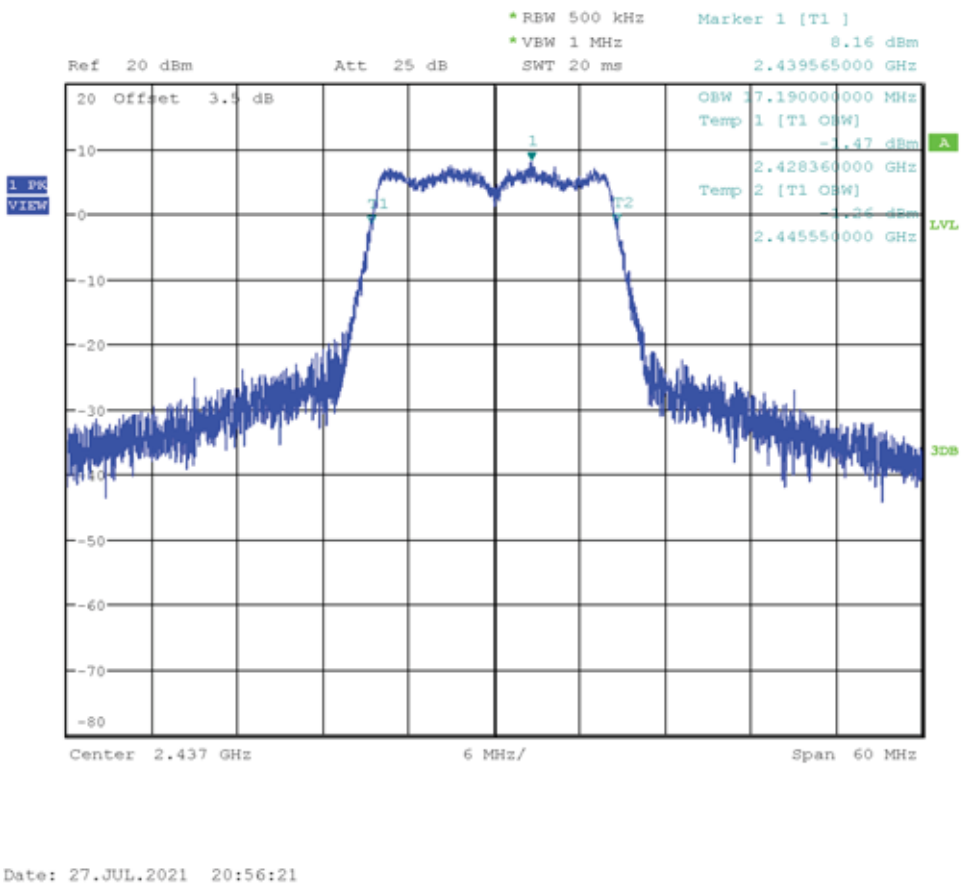
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 g, Channel: 6, 2437
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	17.190



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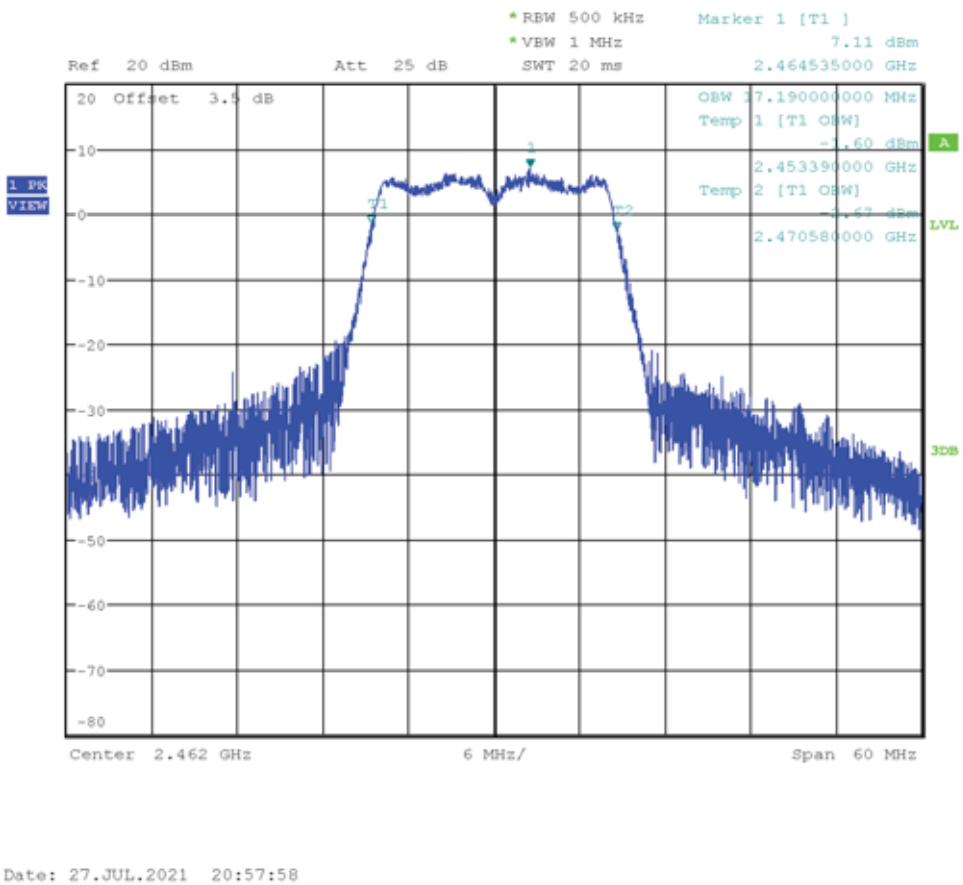
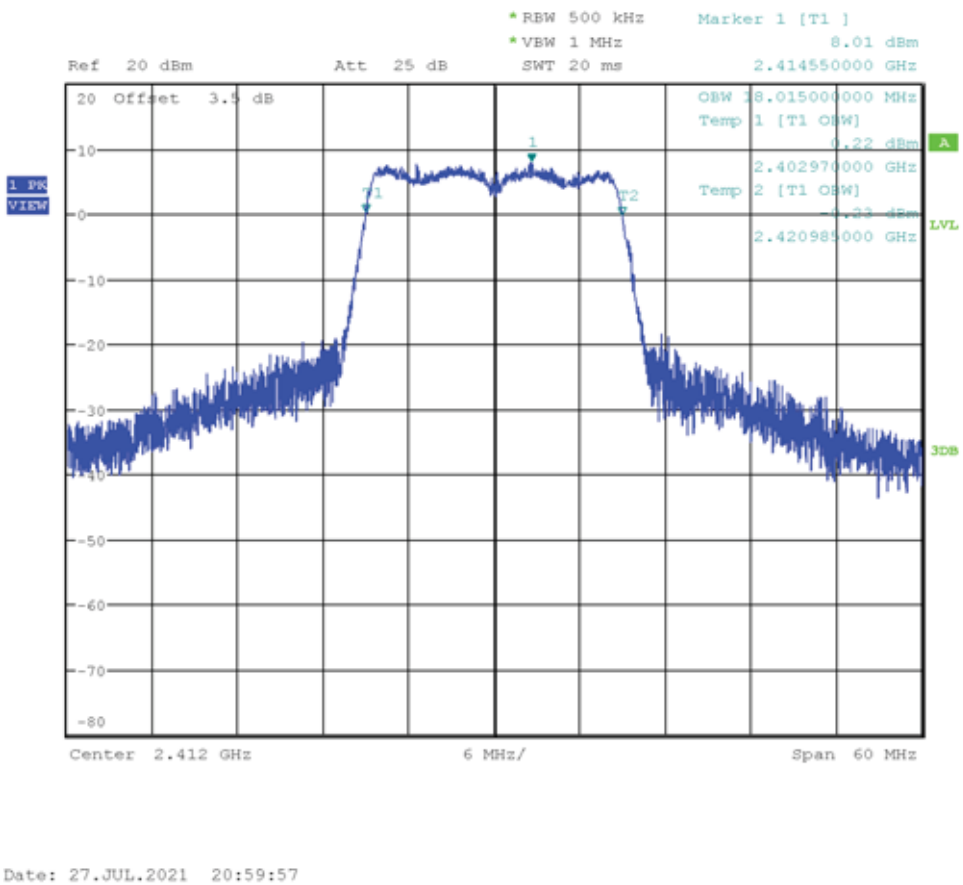
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	IEEE 802.11 g, Channel: 11, 2462
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	17.190



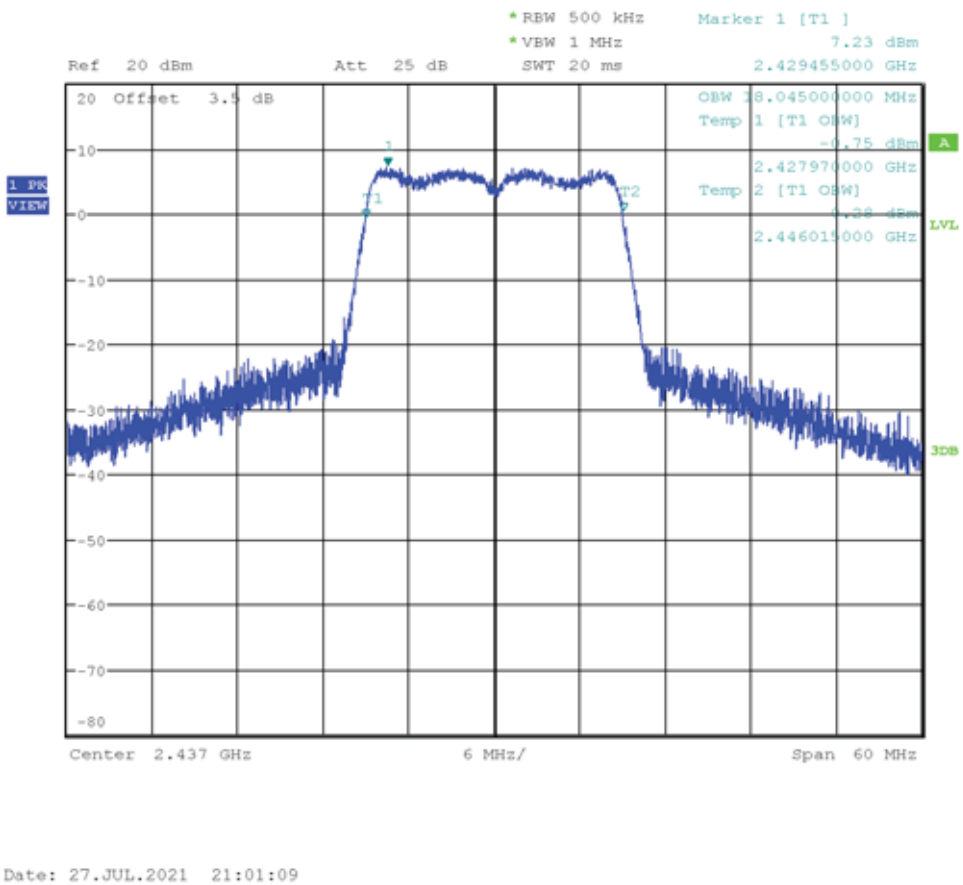
Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	18.015



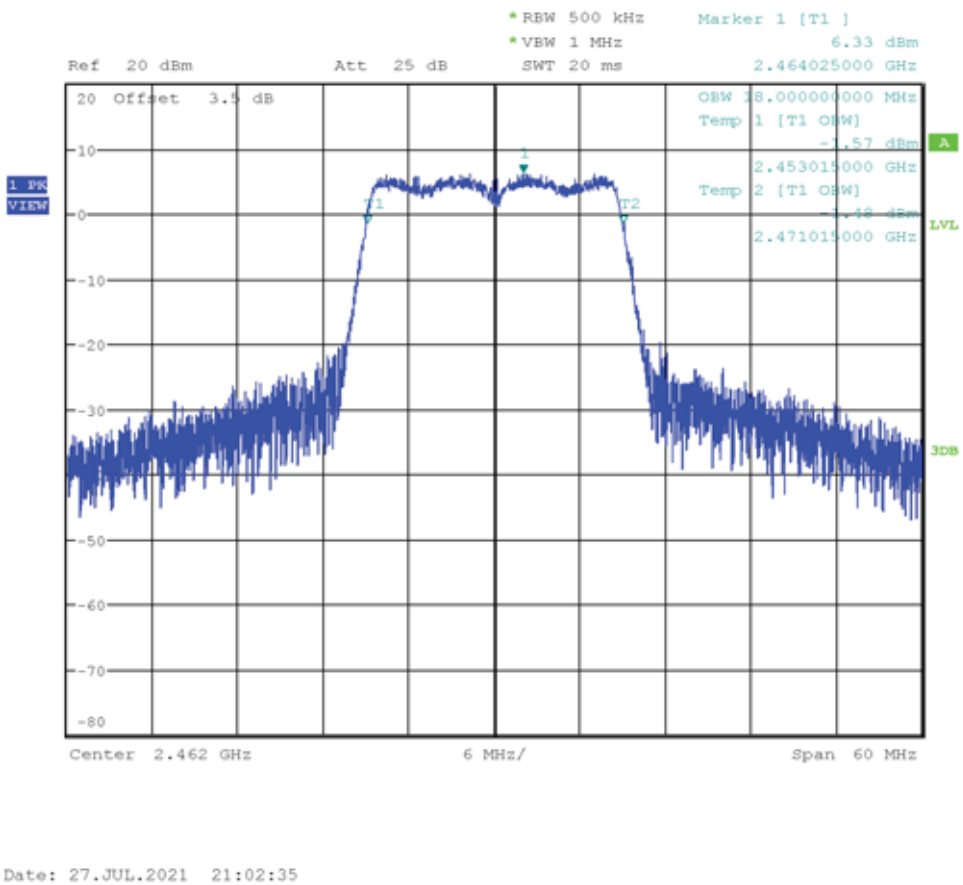
Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	18.045



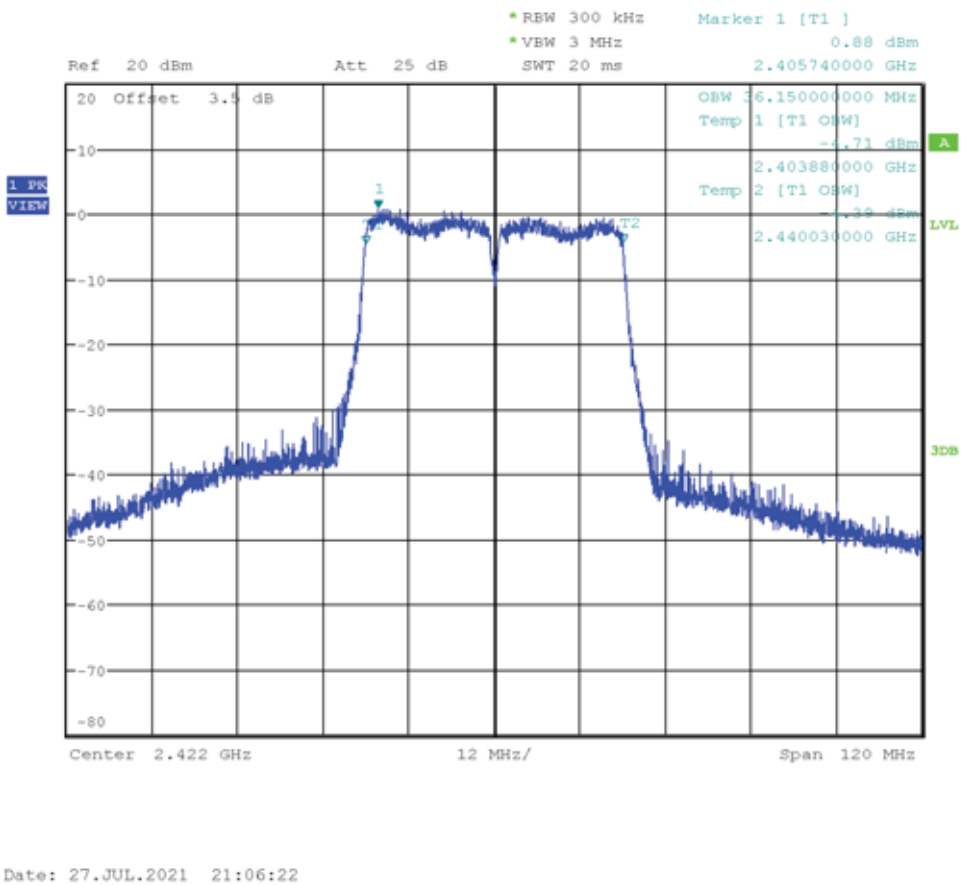
Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	18.000



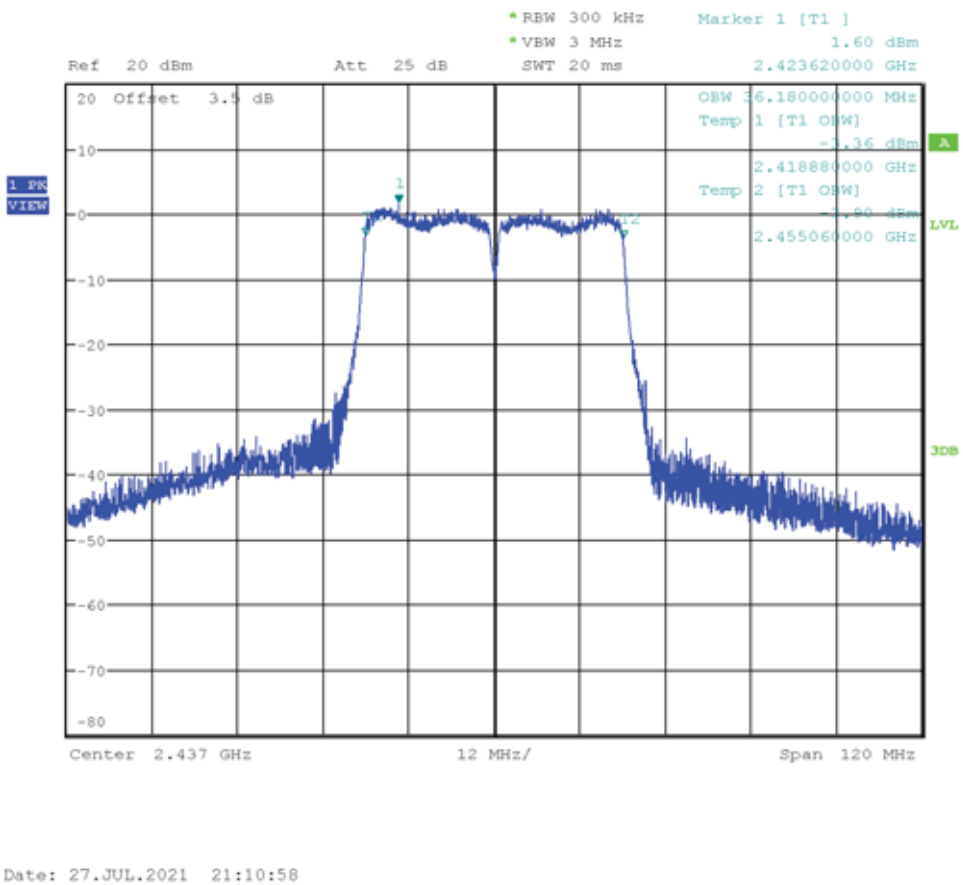
Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	36.150



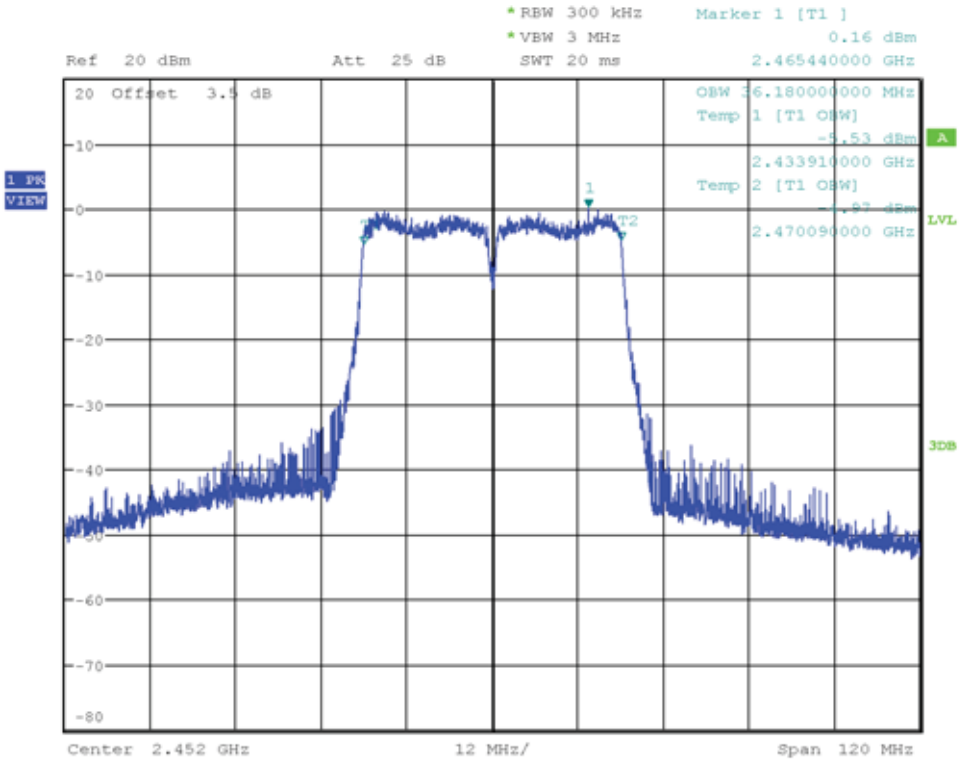
Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	36.180



Occupied Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-27
Antenna port:	A
Occupied Bandwidth [MHz]:	36.180



Date: 27.JUL.2021 21:13:05

3.2 Test Conditions and Results - 6 dB bandwidth

3.2.1 Information

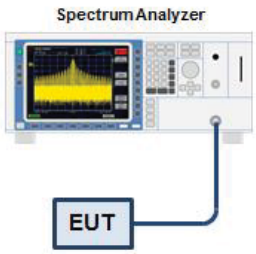
Test Information	
Reference	FCC § 15.247(a)(2); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.8
Measurement Uncertainty	± 1.26 %
Operator	Wilfried Treffke
Date	2021-07-28

3.2.2 Limits

Limits
≥ 500kHz

3.2.3 Setup

Test Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2020-12	2021-12

3.2.5 Procedure

Test Procedure

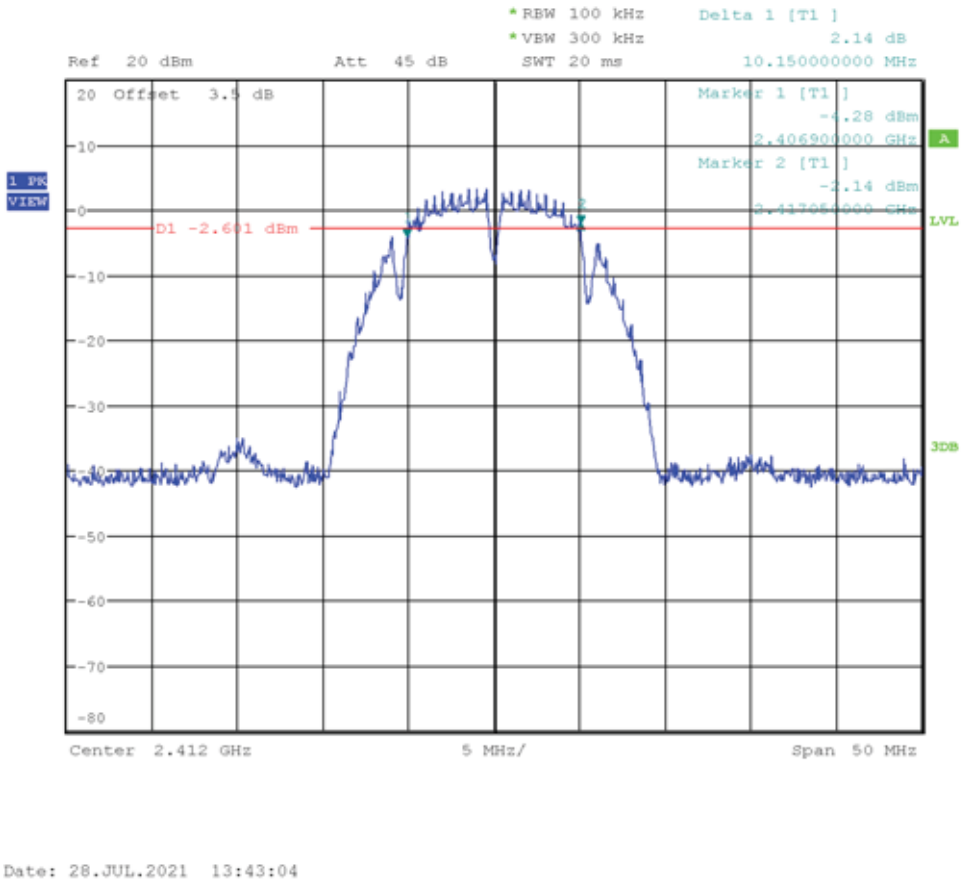
1. EUT set to test mode
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold and RBW is set to 100 kHz
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak
6. Marker on envelope of 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	10150	500	PASS
DSSS	2437	10150	500	PASS
DSSS	2462	10150	500	PASS
OFDM	2412	16450	500	PASS
OFDM	2437	16450	500	PASS
OFDM	2462	16400	500	PASS
HT20	2412	17650	500	PASS
HT20	2437	17650	500	PASS
HT20	2462	17650	500	PASS
HT40	2422	35700	500	PASS
HT40	2437	35700	500	PASS
HT40	2452	35800	500	PASS

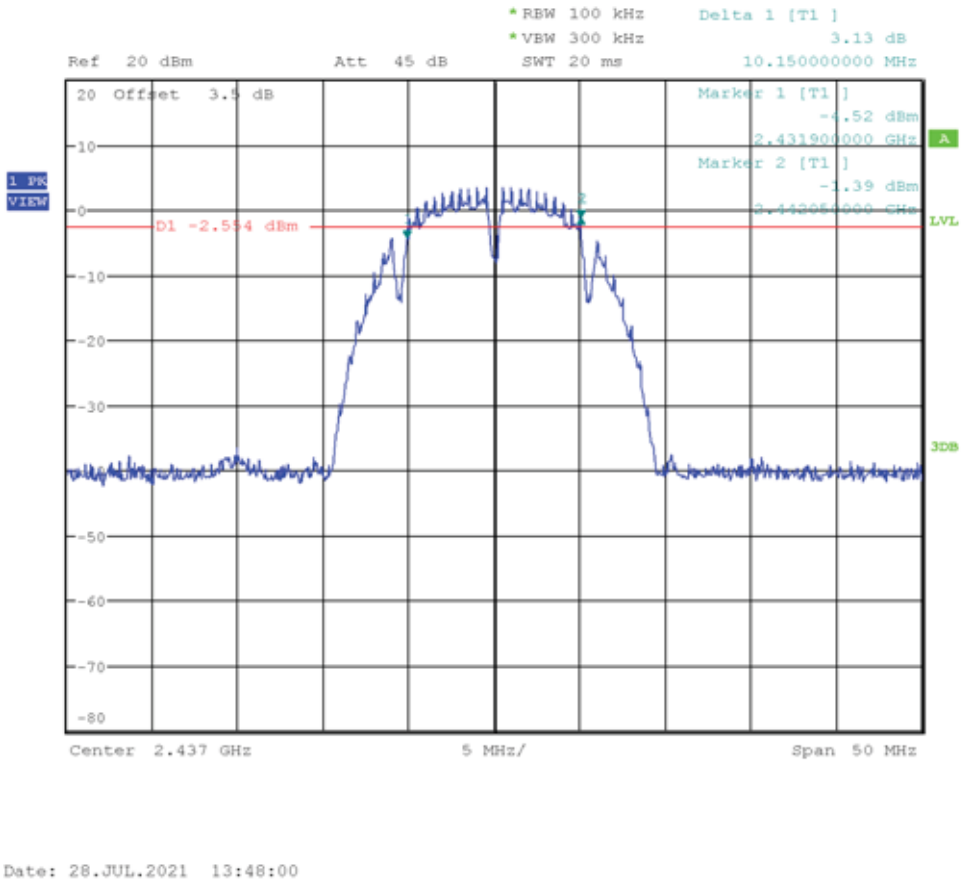
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2406.900
Upper Frequency [MHz]:	2417.050
6 dB Bandwidth [kHz]:	10150



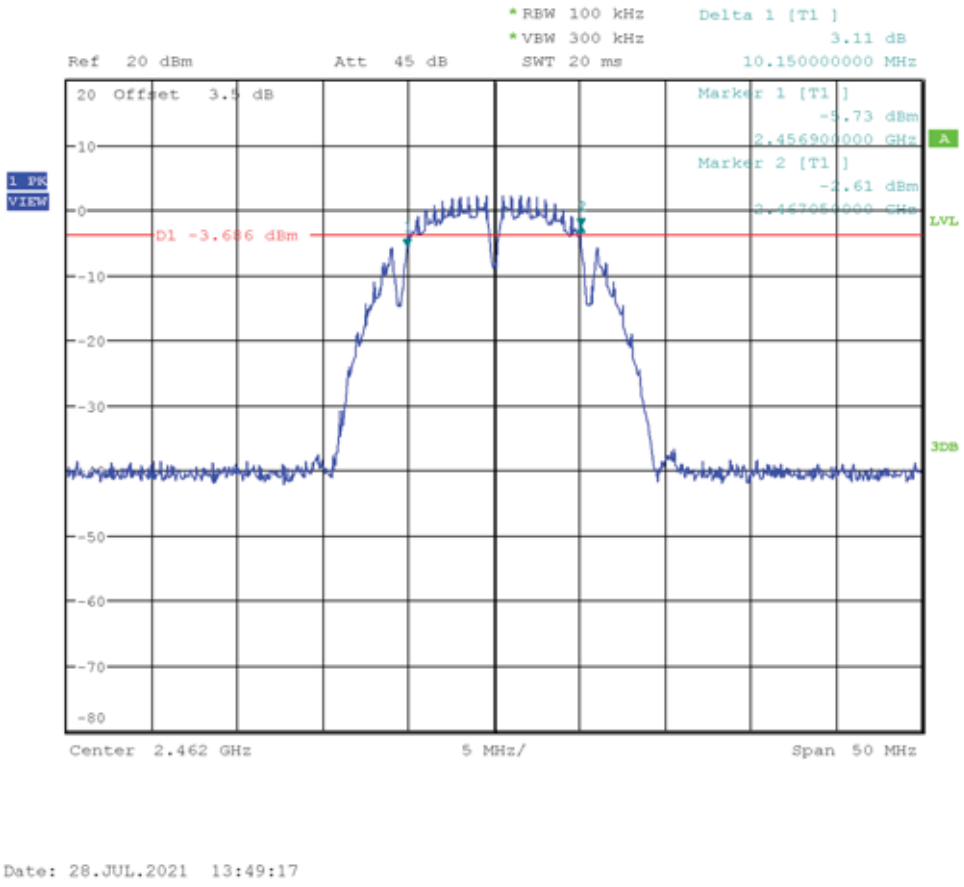
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2431.900
Upper Frequency [MHz]:	2442.050
6 dB Bandwidth [kHz]:	10150



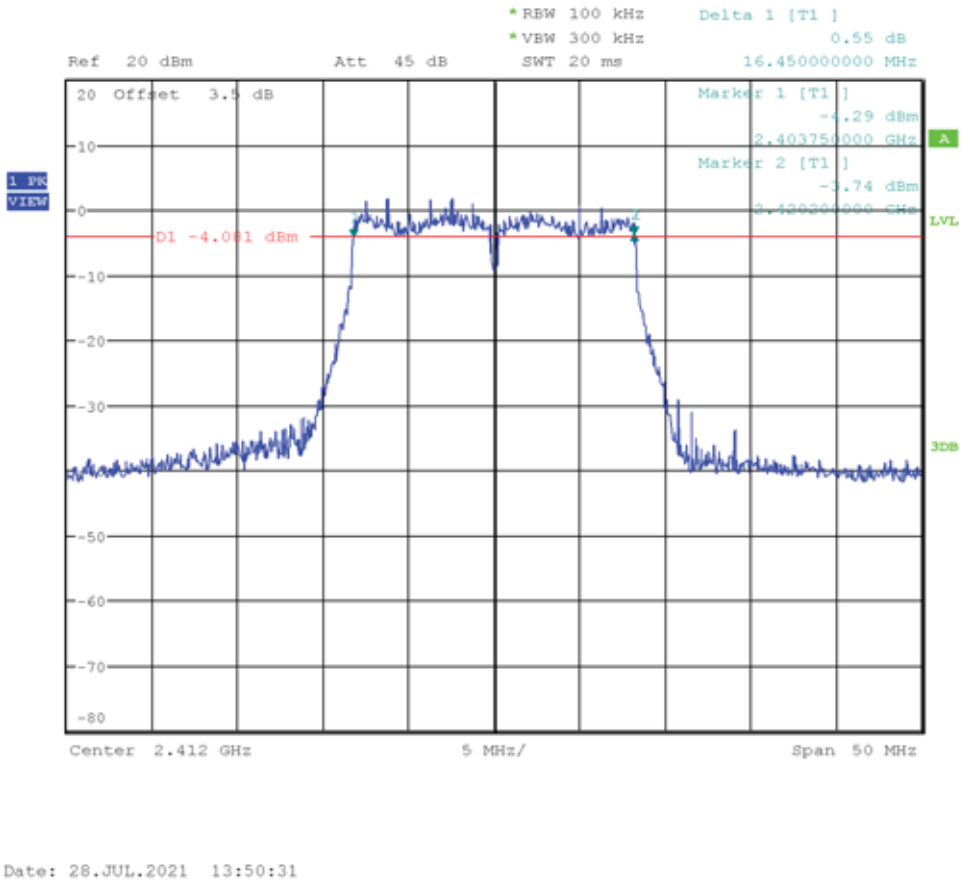
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2456.900
Upper Frequency [MHz]:	2467.050
6 dB Bandwidth [kHz]:	10150



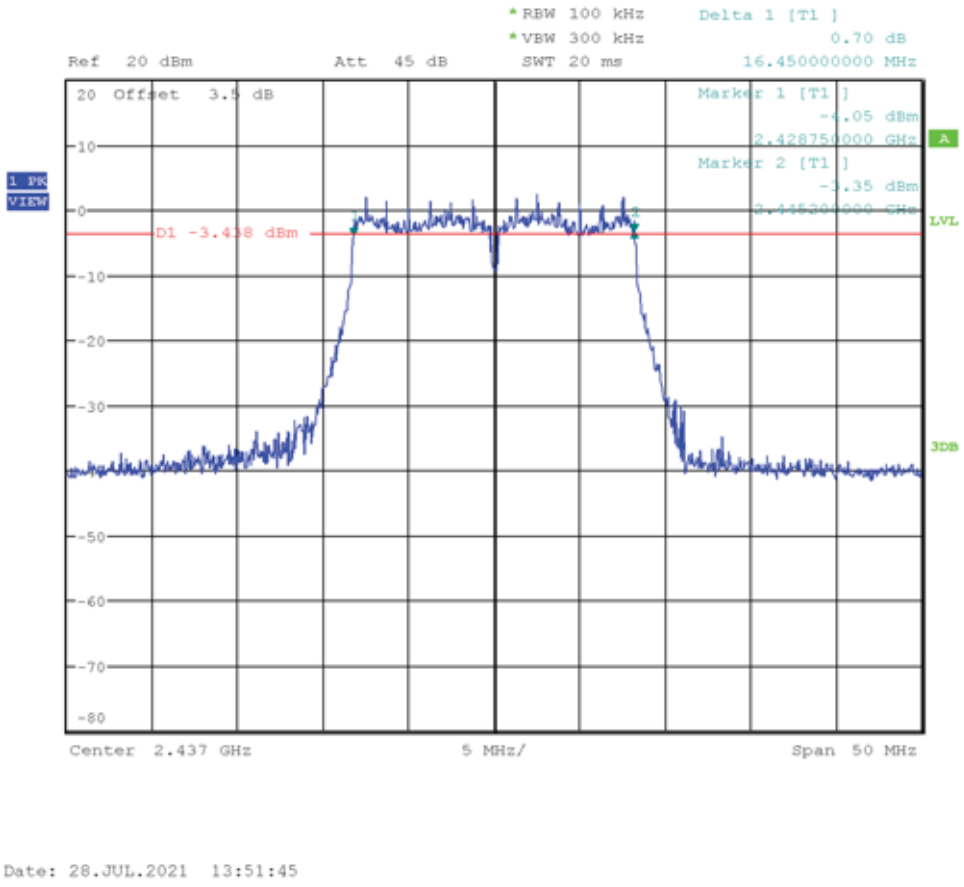
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2403.750
Upper Frequency [MHz]:	2420.200
6 dB Bandwidth [kHz]:	16450



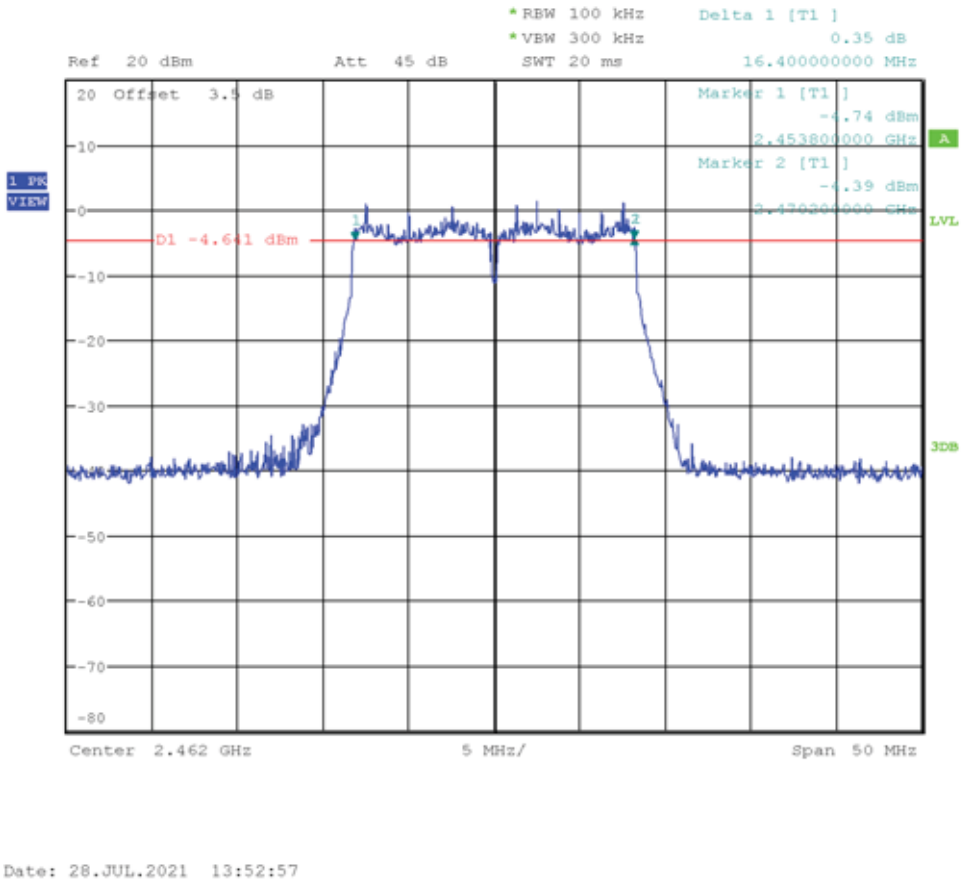
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2428.750
Upper Frequency [MHz]:	2445.200
6 dB Bandwidth [kHz]:	16450



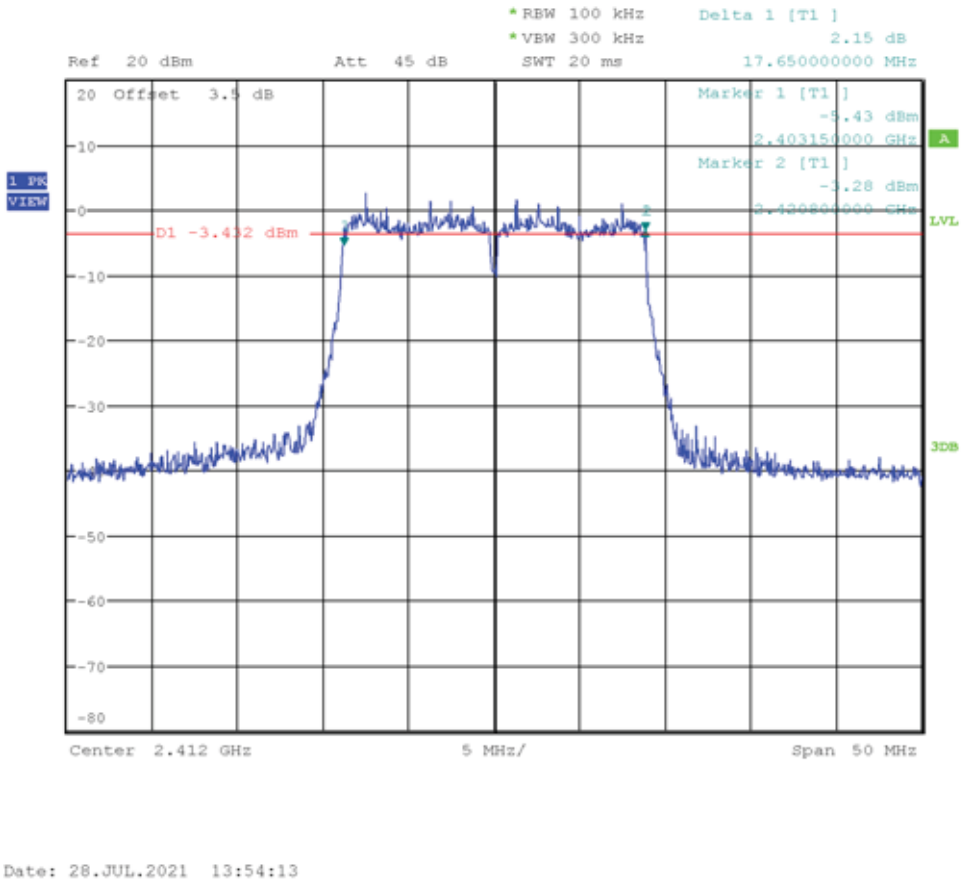
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2453.800
Upper Frequency [MHz]:	2470.200
6 dB Bandwidth [kHz]:	16400



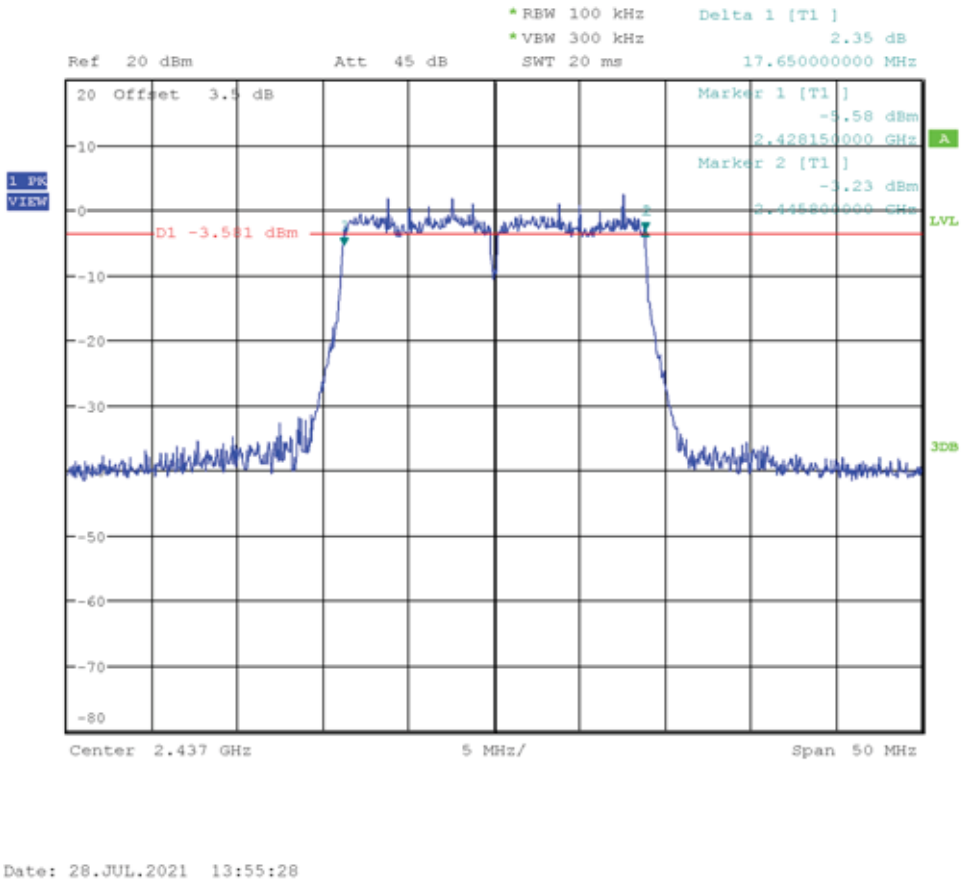
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2403.150
Upper Frequency [MHz]:	2420.800
6 dB Bandwidth [kHz]:	17650



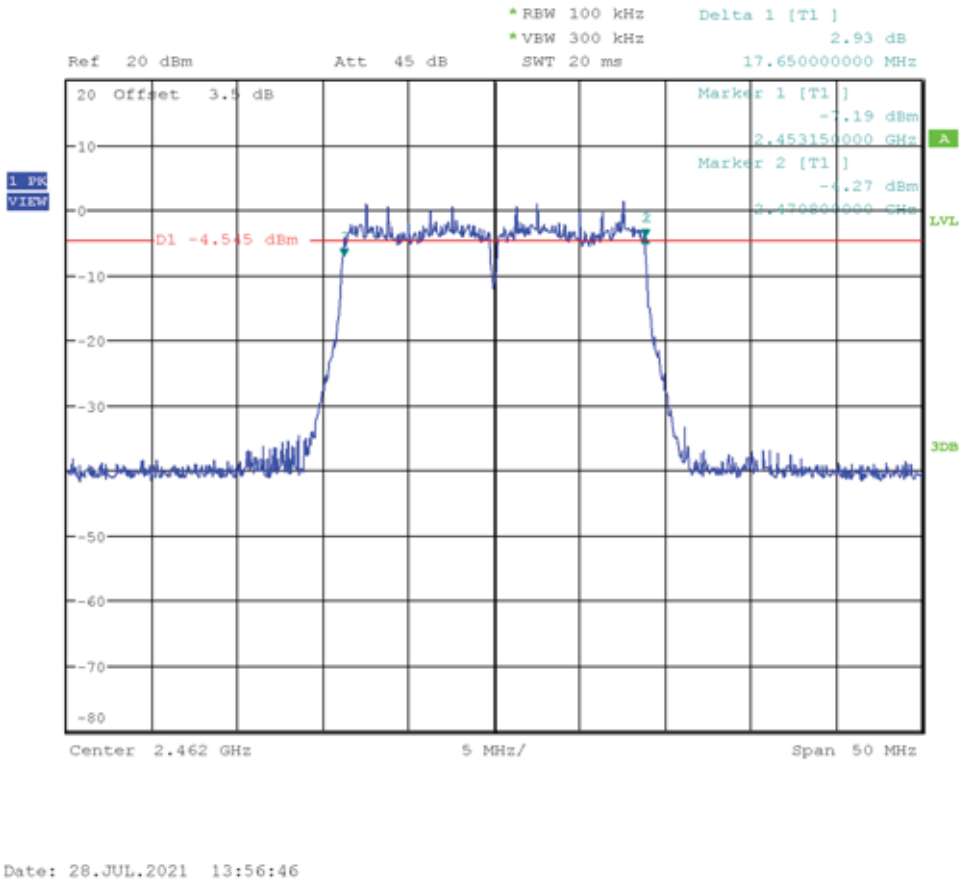
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2428.150
Upper Frequency [MHz]:	2445.800
6 dB Bandwidth [kHz]:	17650



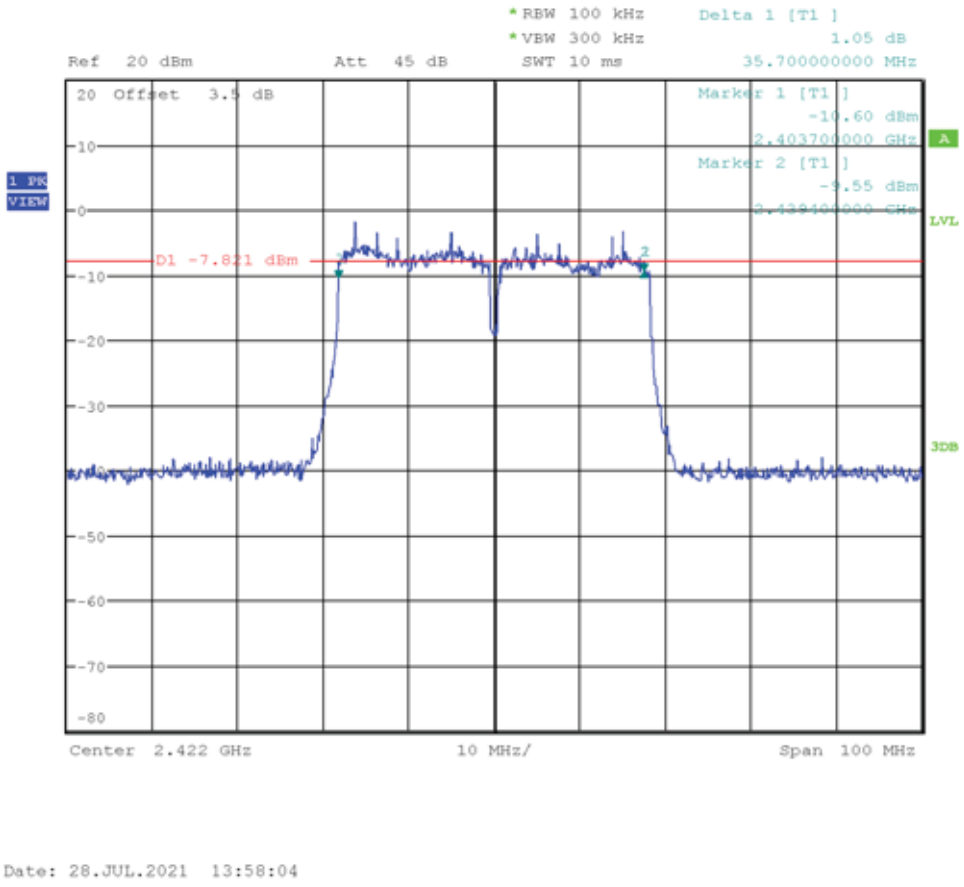
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2453.150
Upper Frequency [MHz]:	2470.800
6 dB Bandwidth [kHz]:	17650



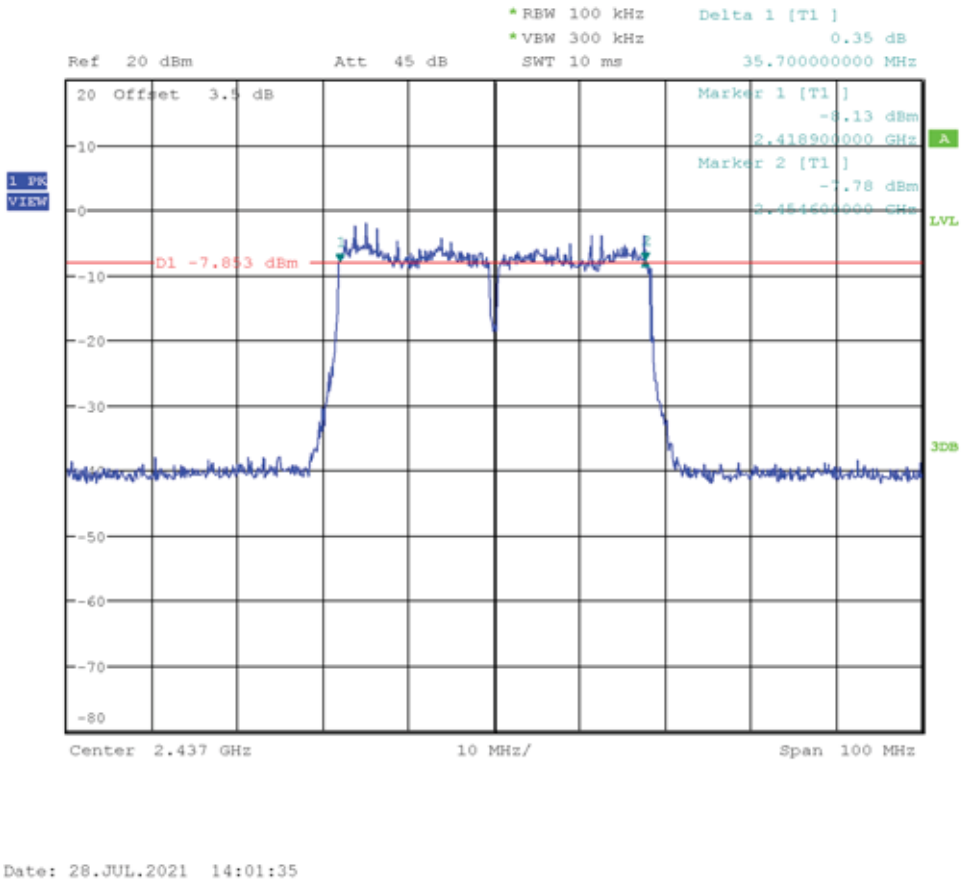
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2403.700
Upper Frequency [MHz]:	2439.400
6 dB Bandwidth [kHz]:	35700



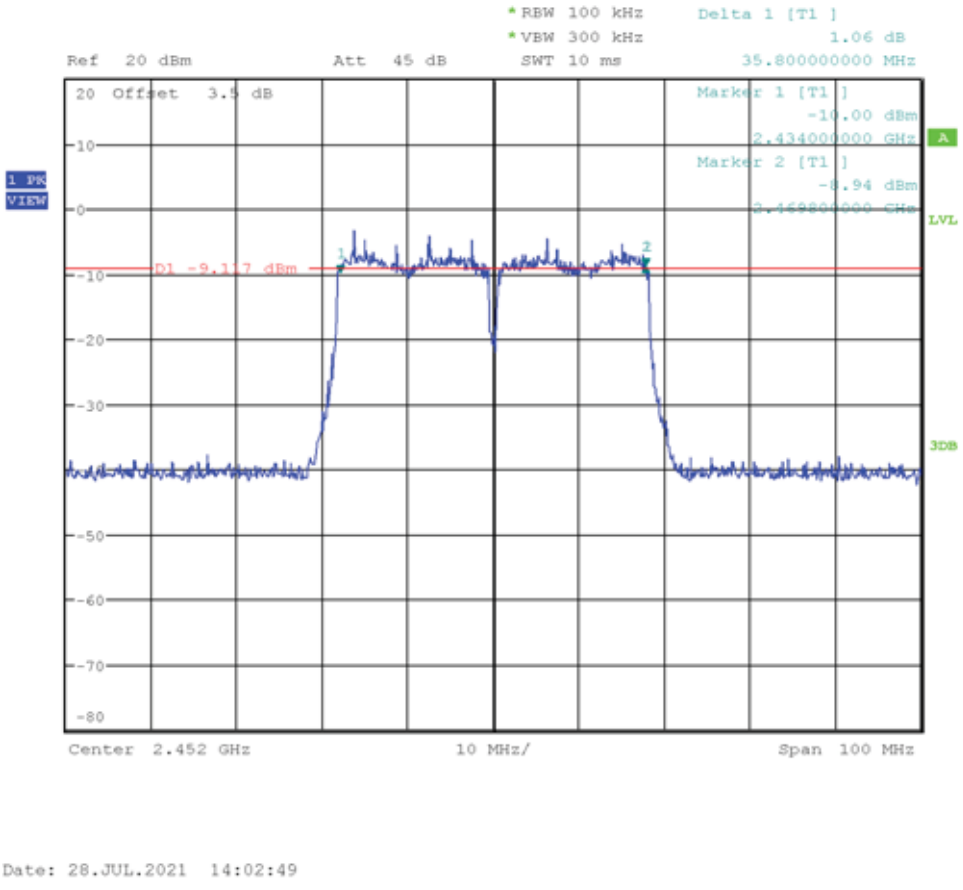
DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2418.900
Upper Frequency [MHz]:	2454.600
6 dB Bandwidth [kHz]:	35700



DTS (6 dB) Bandwidth

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-28
Antenna port:	A
Lower Frequency [MHz]:	2434.000
Upper Frequency [MHz]:	2469.800
6 dB Bandwidth [kHz]:	35800



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3.3 Test Conditions and Results - Maximum peak conducted output power

3.3.1 Information

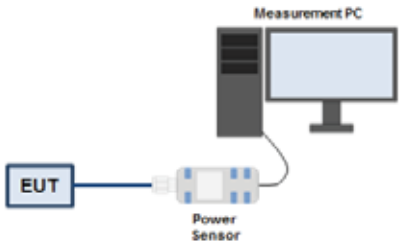
Test Information	
Reference	FCC § 15.247(b); ISED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 11.9.1
Measurement Uncertainty	± 2.86 dB
Operator	Wilfried Treffke
Date	2021-07-27

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

Test Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z81	EF00935	2021-07	2022-07

3.3.5 Procedure

Test Procedure

1. EUT set to test mode (Communication tester is used if needed)
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	16.35	0.043	1.0	PASS
2437	16.80	0.048	1.0	PASS
2462	15.37	0.034	1.0	PASS

Test Results - OFDM				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2412	24.41	0.276	1.0	PASS
2437	24.39	0.275	1.0	PASS
2462	24.63	0.290	1.0	PASS

Test Results - HT20				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2412	24.50	0.282	1.0	PASS
2437	24.66	0.292	1.0	PASS
2462	24.67	0.293	1.0	PASS

Test Results - HT40				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2422	23.19	0.208	1.0	PASS
2437	23.97	0.249	1.0	PASS
2452	23.11	0.205	1.0	PASS

3.4 Test Conditions and Results - Power spectral density

3.4.1 Information

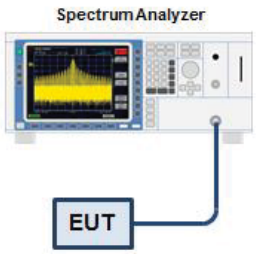
Test Information	
Reference	FCC § 15.247(e); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.10.2, 14.3.2
Measurement Uncertainty	± 2.86 dB
Operator	Wilfried Treffke
Date	2021-07-28

3.4.2 Limits

Limits
8 dBm / 3 kHz

3.4.3 Setup

Test Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2020-12	2021-12

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 ≥ 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	3.510	8.0	PASS
2437	3.531	8.0	PASS
2462	2.391	8.0	PASS
RBW = 100 kHz			

Test Results - OFDM			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	2.449	8.0	PASS
2437	2.069	8.0	PASS
2462	1.416	8.0	PASS
RBW = 100 kHz			

Test Results - HT20			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	2.179	8.0	PASS
2437	2.590	8.0	PASS
2462	1.481	8.0	PASS
RBW = 100 kHz			

Test Results - HT40			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2422	-1.592	8.0	PASS
2437	-2.057	8.0	PASS
2452	-3.594	8.0	PASS
RBW = 100 kHz			

3.5 Test Conditions and Results - AC powerline conducted emissions

3.5.1 Information

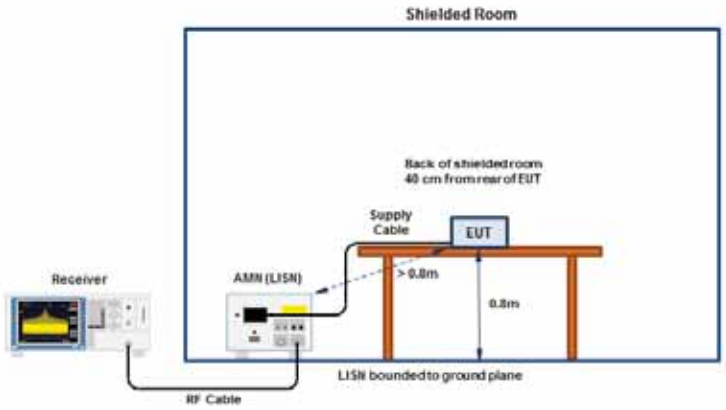
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Measurement Uncertainty	± 3.82 dB
Operator	Wilfried Treffke
Date	2021-06-10

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

Test Setup



3.5.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESR7	EF00943	2020-07	2021-07
Pulse Limiter	R&S	ESH3-Z2	EF01222	2020-07	2021-07
LISN	Schwarzbeck	NSLK 8127 RC	EF01592	2020-07	2021-07

Conducted emissions at the mains power port
according to FCC 47 CFR Part 15 Subpart C

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Date:	2021-06-10
Operating Conditions:	ambient temperature: 22 °Celsius power input: 120 VAC
LISN:	Schwarzbeck NSLK 8127 RC L
Operational Mode &	WLAN 2437MHz 1Mbps
Applied to Port:	AC mains

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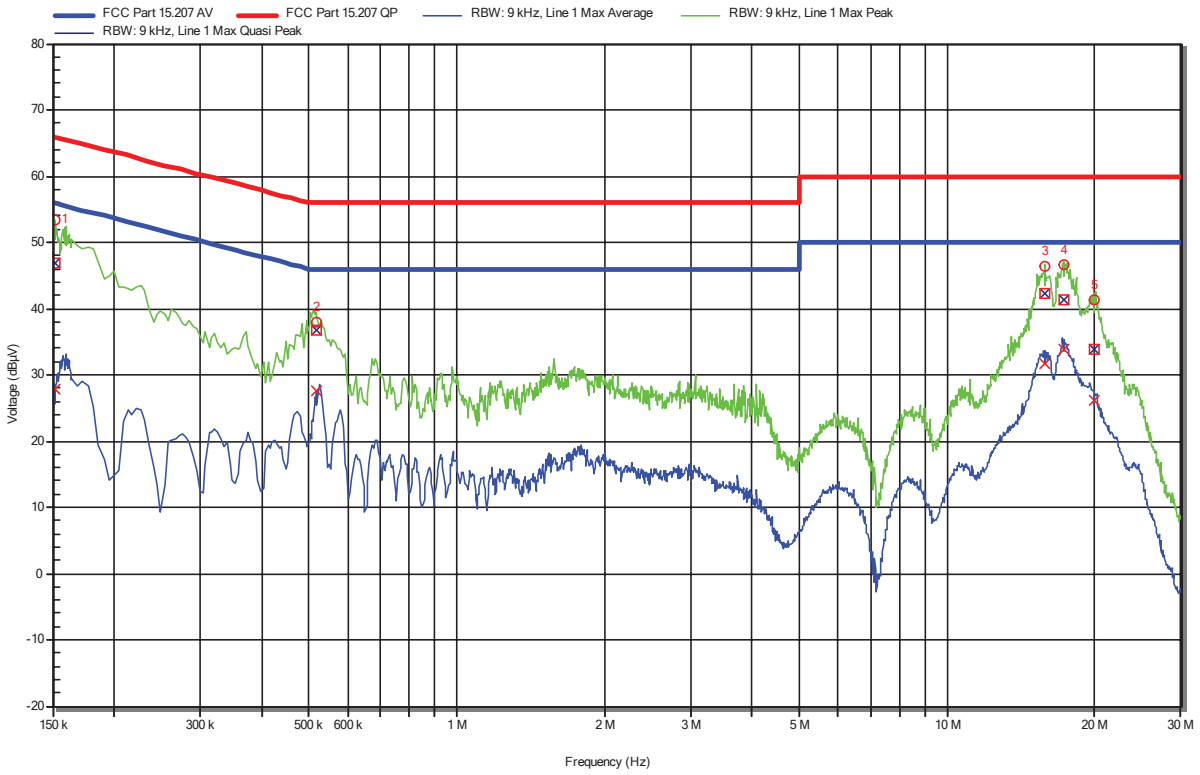
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	151.8 kHz	46.75 dBµV	65.9 dBµV	-19.15 dB	Pass	Line 1
2	518.55 kHz	36.74 dBµV	56 dBµV	-19.26 dB	Pass	Line 1
3	15.864 MHz	42.21 dBµV	60 dBµV	-17.79 dB	Pass	Line 1
4	17.309 MHz	41.33 dBµV	60 dBµV	-18.67 dB	Pass	Line 1
5	19.946 MHz	33.94 dBµV	60 dBµV	-26.06 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	151.8 kHz	27.92 dBµV	55.9 dBµV	-27.98 dB	Pass	Line 1
2	518.55 kHz	27.66 dBµV	46 dBµV	-18.34 dB	Pass	Line 1
3	15.864 MHz	31.8 dBµV	50 dBµV	-18.2 dB	Pass	Line 1
4	17.309 MHz	33.94 dBµV	50 dBµV	-16.06 dB	Pass	Line 1
5	19.946 MHz	26.1 dBµV	50 dBµV	-23.9 dB	Pass	Line 1

Conducted emissions at the mains power port
according to FCC 47 CFR Part 15 Subpart C

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Date:	2021-06-10
Operating Conditions:	ambient temperature: 22 °Celsius power input: 120 VAC
LISN:	Schwarzbeck NSLK 8127 RC N
Operational Mode &	WLAN 2437MHz 1Mbps
Applied to Port:	AC mains

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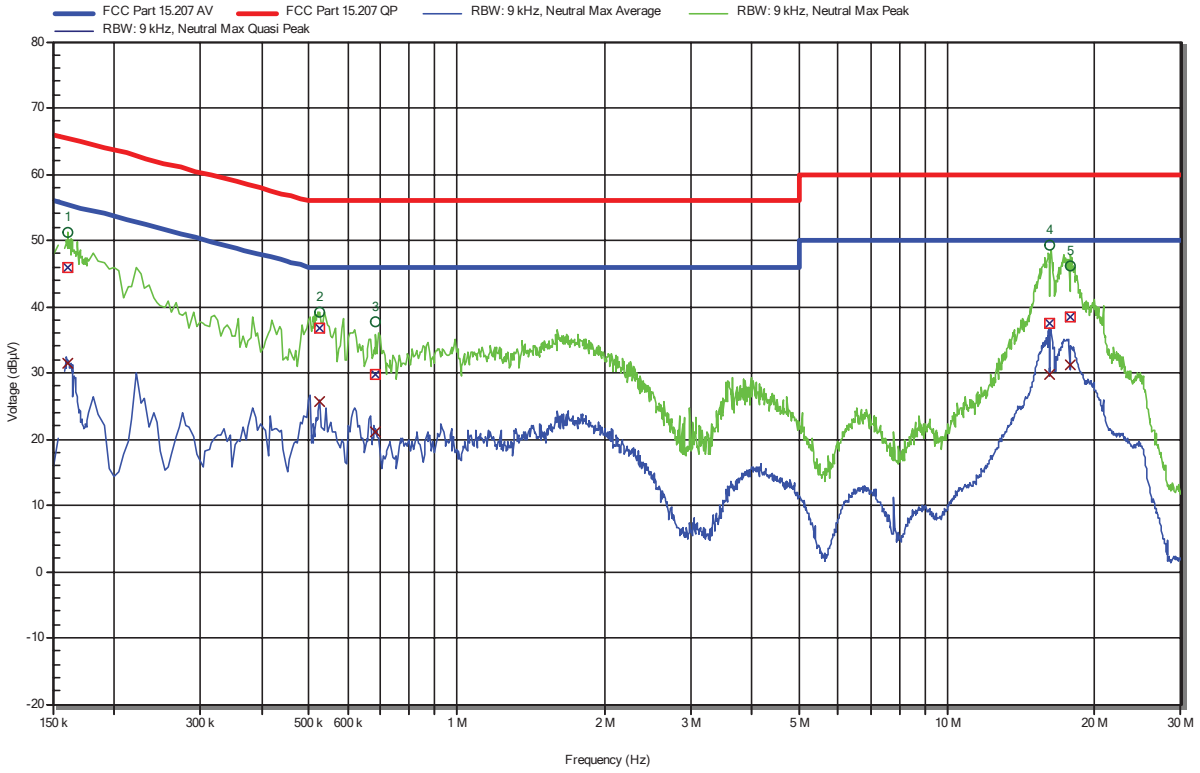
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	160.8 kHz	45.83 dBµV	65.42 dBµV	-19.59 dB	Pass	Neutral
2	523.5 kHz	36.66 dBµV	56 dBµV	-19.34 dB	Pass	Neutral
3	681 kHz	29.76 dBµV	56 dBµV	-26.24 dB	Pass	Neutral
4	16.179 MHz	37.37 dBµV	60 dBµV	-22.63 dB	Pass	Neutral
5	17.777 MHz	38.35 dBµV	60 dBµV	-21.65 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	160.8 kHz	31.37 dBµV	55.42 dBµV	-24.05 dB	Pass	Neutral
2	523.5 kHz	25.65 dBµV	46 dBµV	-20.35 dB	Pass	Neutral
3	681 kHz	21.11 dBµV	46 dBµV	-24.89 dB	Pass	Neutral
4	16.179 MHz	29.79 dBµV	50 dBµV	-20.21 dB	Pass	Neutral
5	17.777 MHz	31.23 dBµV	50 dBµV	-18.77 dB	Pass	Neutral

3.6 Test Conditions and Results - Band-edge compliance

3.6.1 Information

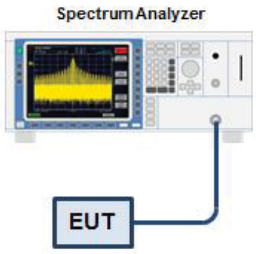
Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Uncertainty	± 3.64 dB
Measurement Method	ANSI C63.10 11.13
Operator	Wilfried Treffke
Date	2021-07-28

3.6.2 Limits

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

3.6.3 Setup

Test Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2020-12	2021-12

3.6.5 Procedure

Test Procedure

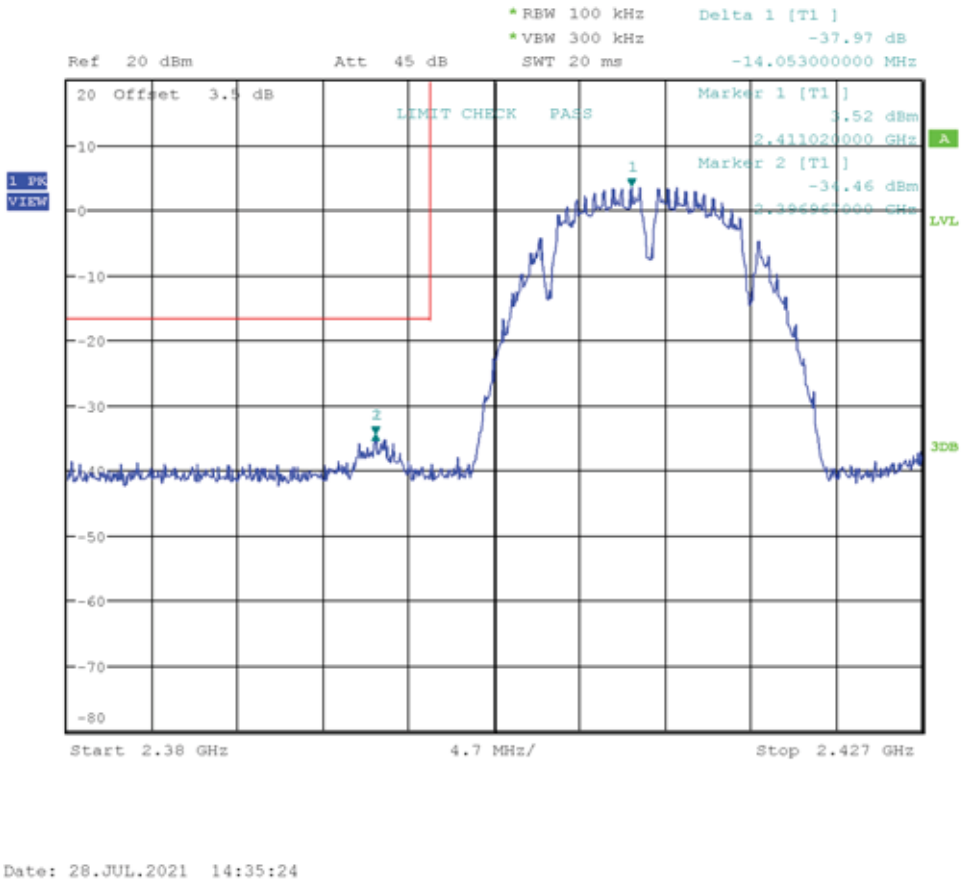
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is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

3.6.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
DSSS	2412	-37.97	-20	PASS
DSSS	2462	-42.09	-20	PASS
OFDM	2412	-34.72	-20	PASS
OFDM	2462	-38.86	-20	PASS
HT20	2412	-34.64	-20	PASS
HT20	2462	-38.77	-20	PASS
HT40	2422	-33.81	-20	PASS
HT40	2452	-34.11	-20	PASS

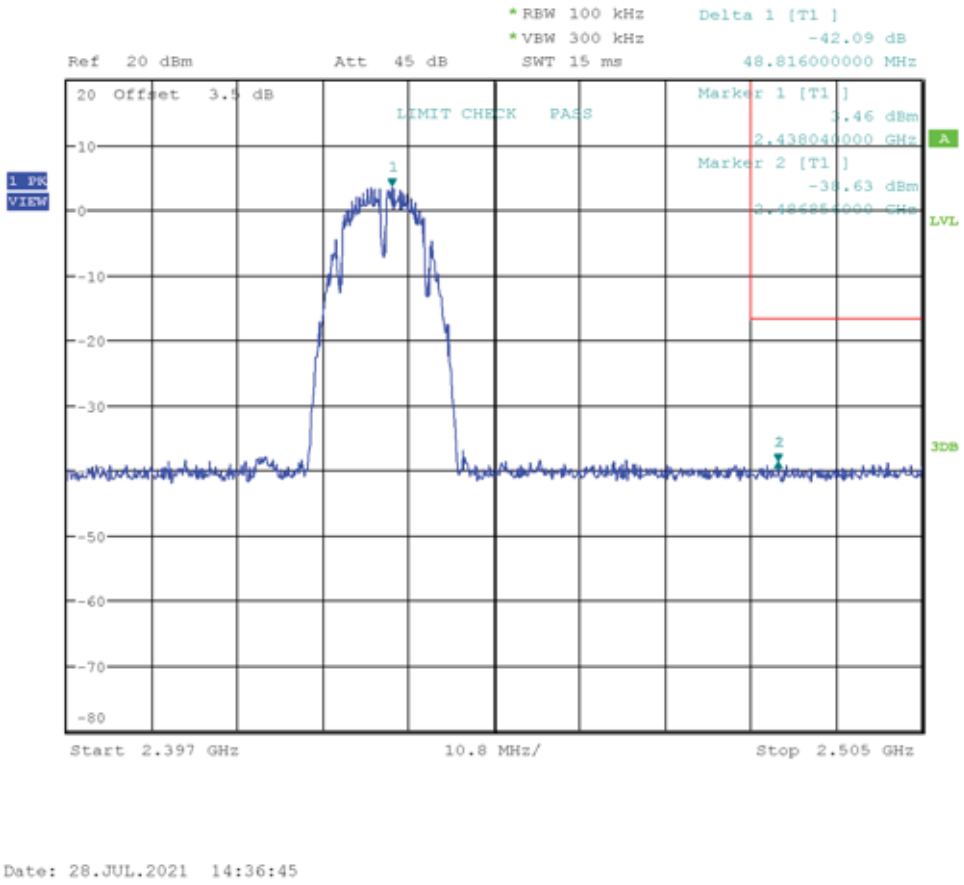
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Lower
Max. in-band Level [dBm/100 kHz]:	3.517
Out-of-band Frequency [MHz]:	2396.967
Max. out-of-band Level [dBm/100 kHz]:	-34.456
Attenuation [dB]:	-37.97



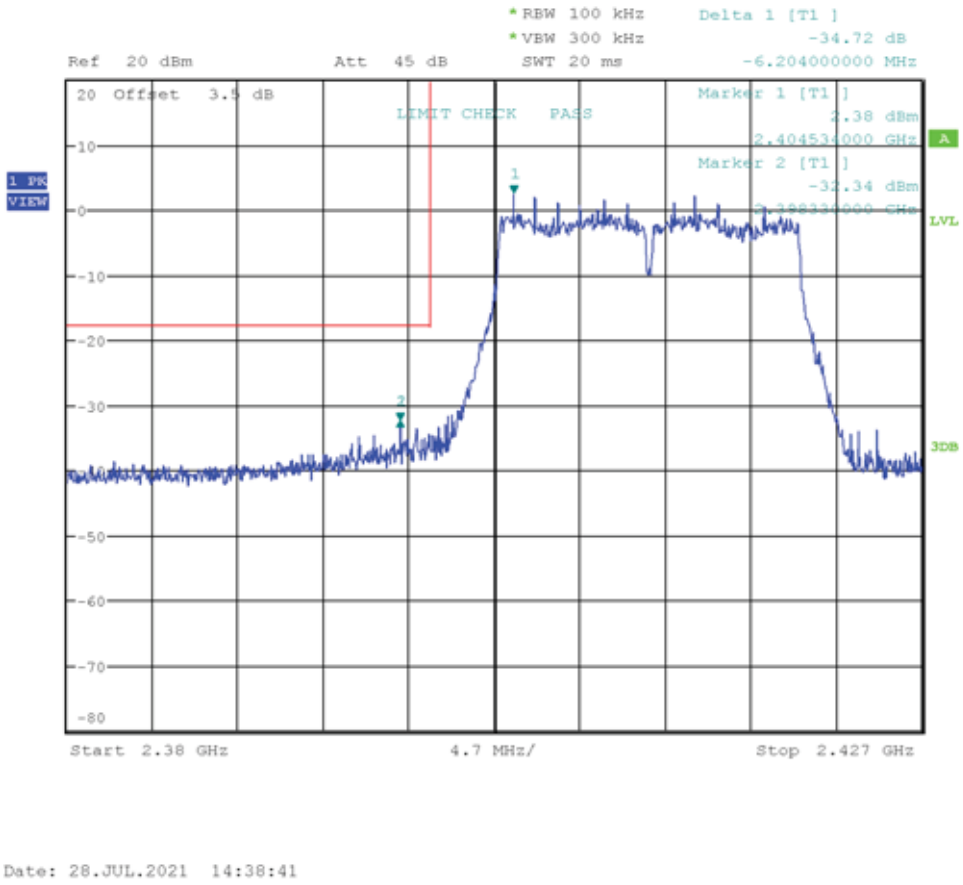
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Upper
Max. in-band Level [dBm/100 kHz]:	3.461
Out-of-band Frequency [MHz]:	2486.856
Max. out-of-band Level [dBm/100 kHz]:	-38.63
Attenuation [dB]:	-42.09



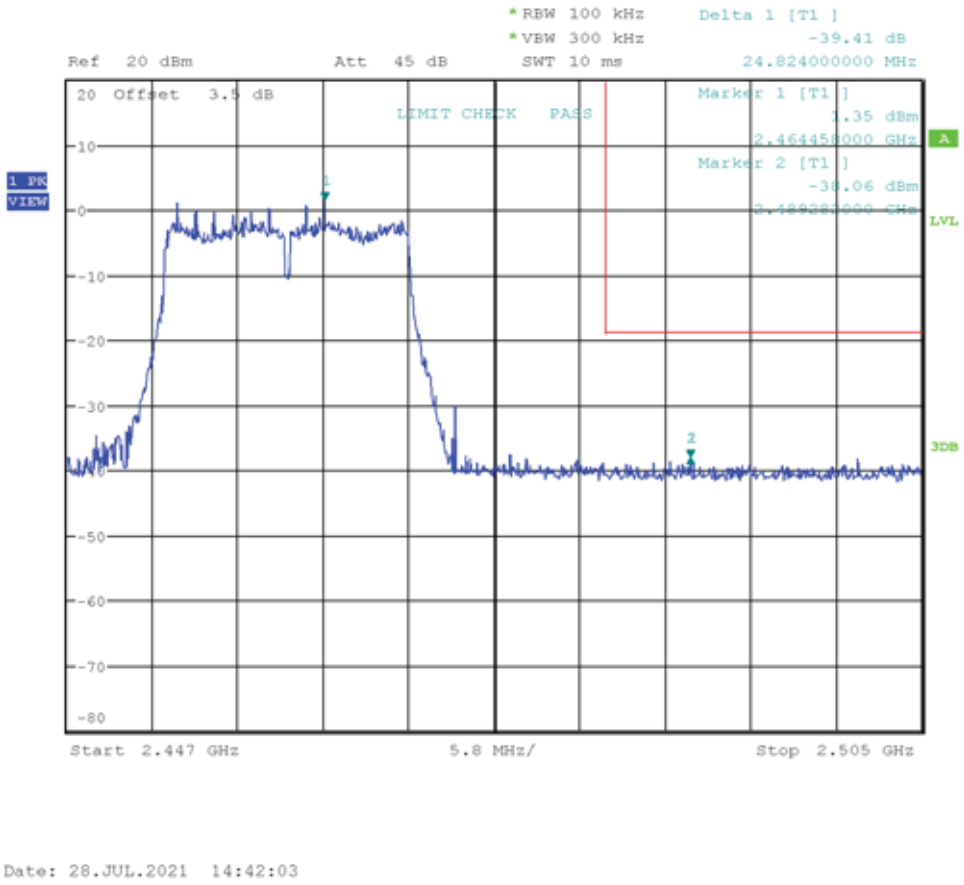
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Lower
Max. in-band Level [dBm/100 kHz]:	2.377
Out-of-band Frequency [MHz]:	2398.33
Max. out-of-band Level [dBm/100 kHz]:	-32.344
Attenuation [dB]:	-34.72



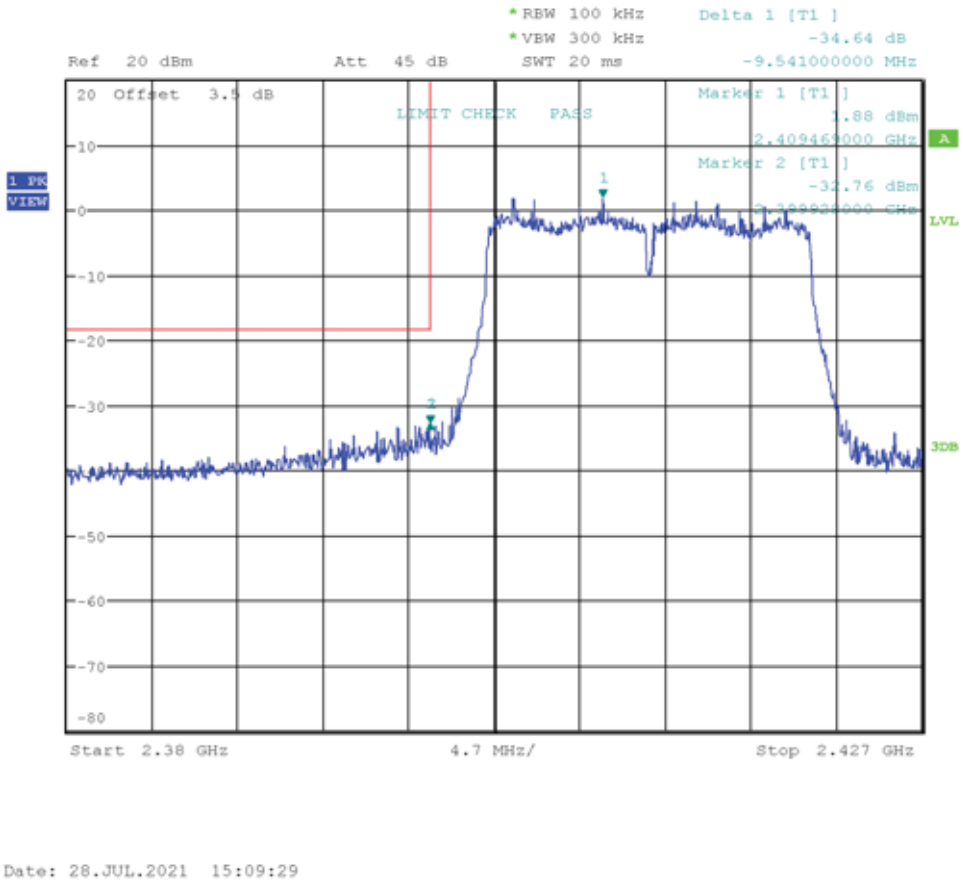
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Upper
Max. in-band Level [dBm/100 kHz]:	1.349
Out-of-band Frequency [MHz]:	2489.282
Max. out-of-band Level [dBm/100 kHz]:	-38.056
Attenuation [dB]:	-39.4



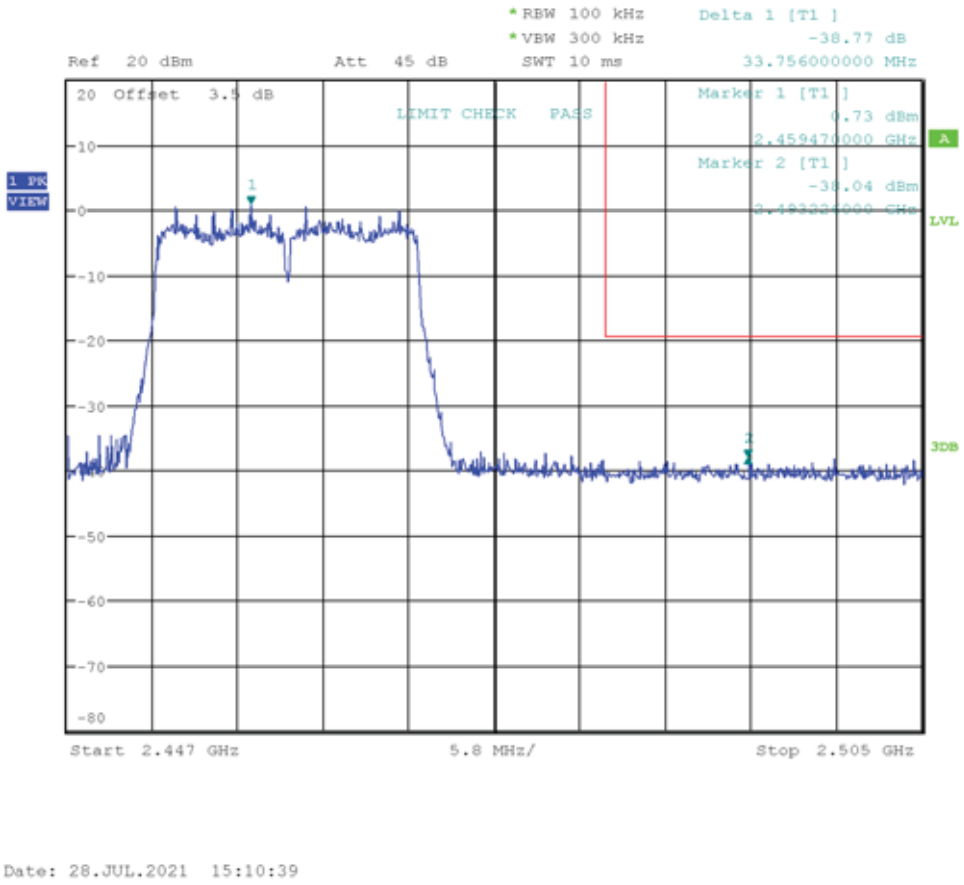
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Lower
Max. in-band Level [dBm/100 kHz]:	1.881
Out-of-band Frequency [MHz]:	2399.928
Max. out-of-band Level [dBm/100 kHz]:	-32.763
Attenuation [dB]:	-34.64



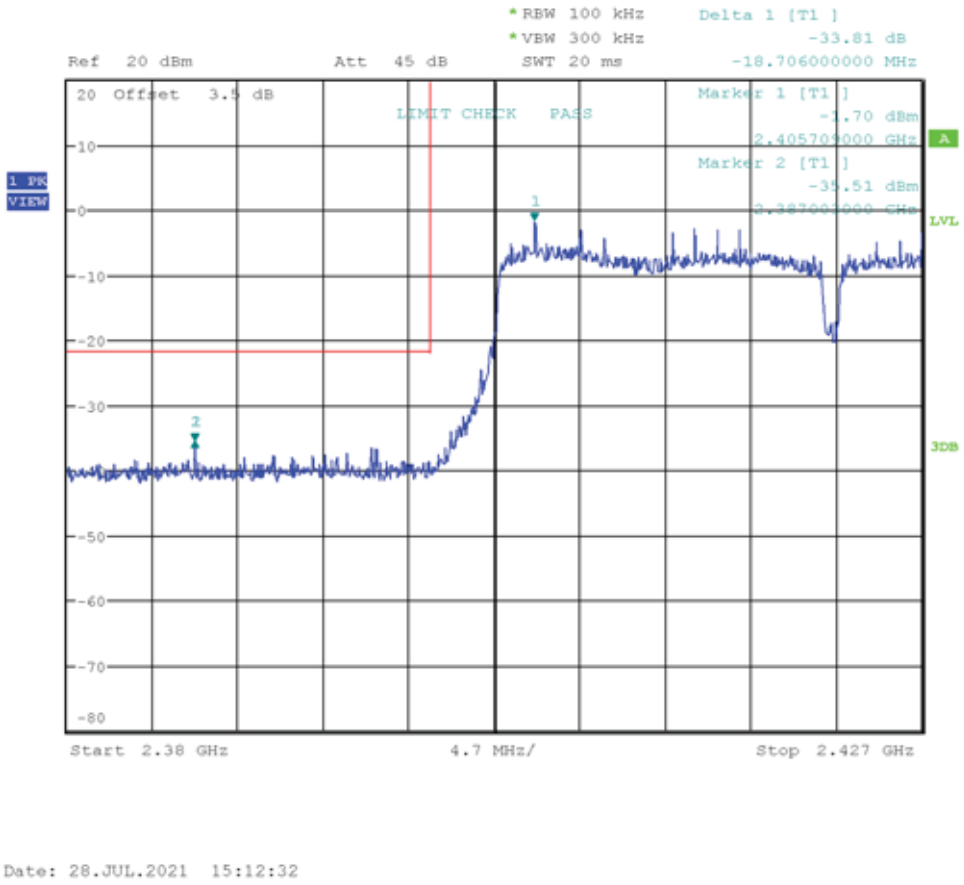
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Upper
In-band Frequency [MHz]:	2459.47
Out-of-band Frequency [MHz]:	2493.226
Max. out-of-band Level [dBm/100 kHz]:	-38.038
Attenuation [dB]:	-38.77



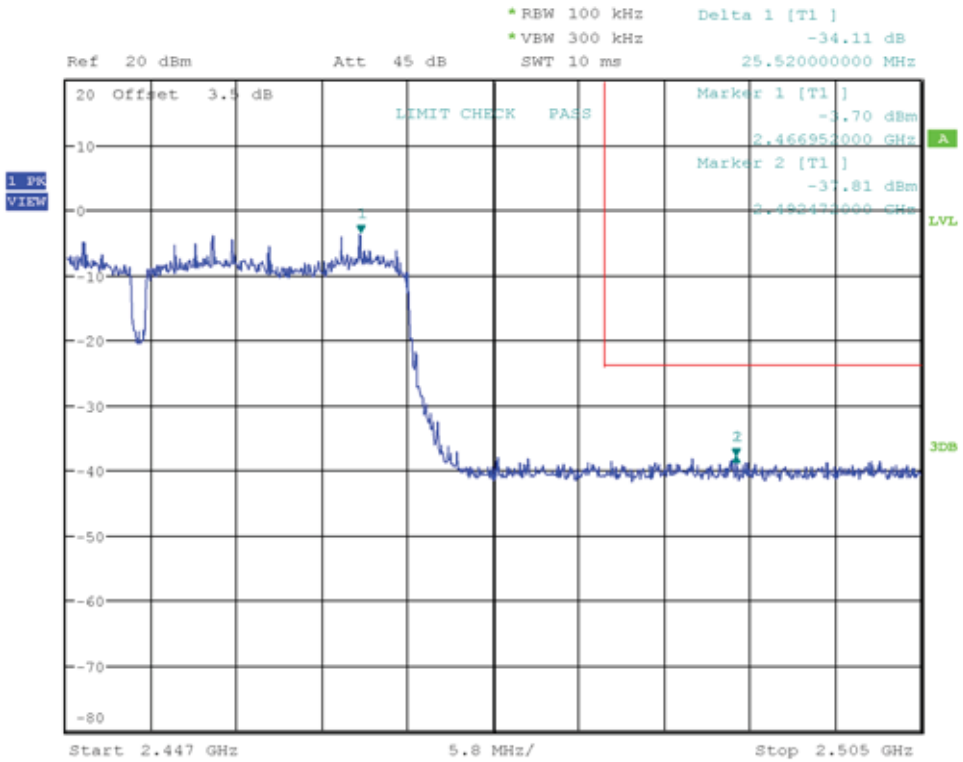
Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Lower
Max. in-band Level [dBm/100 kHz]:	-1.699
Out-of-band Frequency [MHz]:	2387.003
Max. out-of-band Level [dBm/100 kHz]:	-35.511
Attenuation [dB]:	-33.81



Emissions in nonrestricted frequency bands at the Band-edge

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Band-edge	Upper
Max. in-band Level [dBm/100 kHz]:	-3.7
Out-of-band Frequency [MHz]:	2492.472
Max. out-of-band Level [dBm/100 kHz]:	-37.808
Attenuation [dB]:	-34.11



3.7 Test Conditions and Results - Conducted spurious emissions

3.7.1 Information

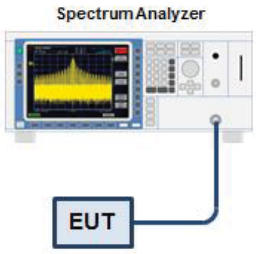
Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Uncertainty	± 4.25 dB
Measurement Method	ANSI C63.10 11.11
Operator	Wilfried Treffke
Date	2021-07-28

3.7.2 Limits

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

3.7.3 Setup

Test Setup



3.7.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSU 43	EF01631	2020-07	2021-07
Cable	Gigalane	SMS111B	EF00779 CAABC	2020-12	2021-12

3.7.5 Procedure

Test Procedure

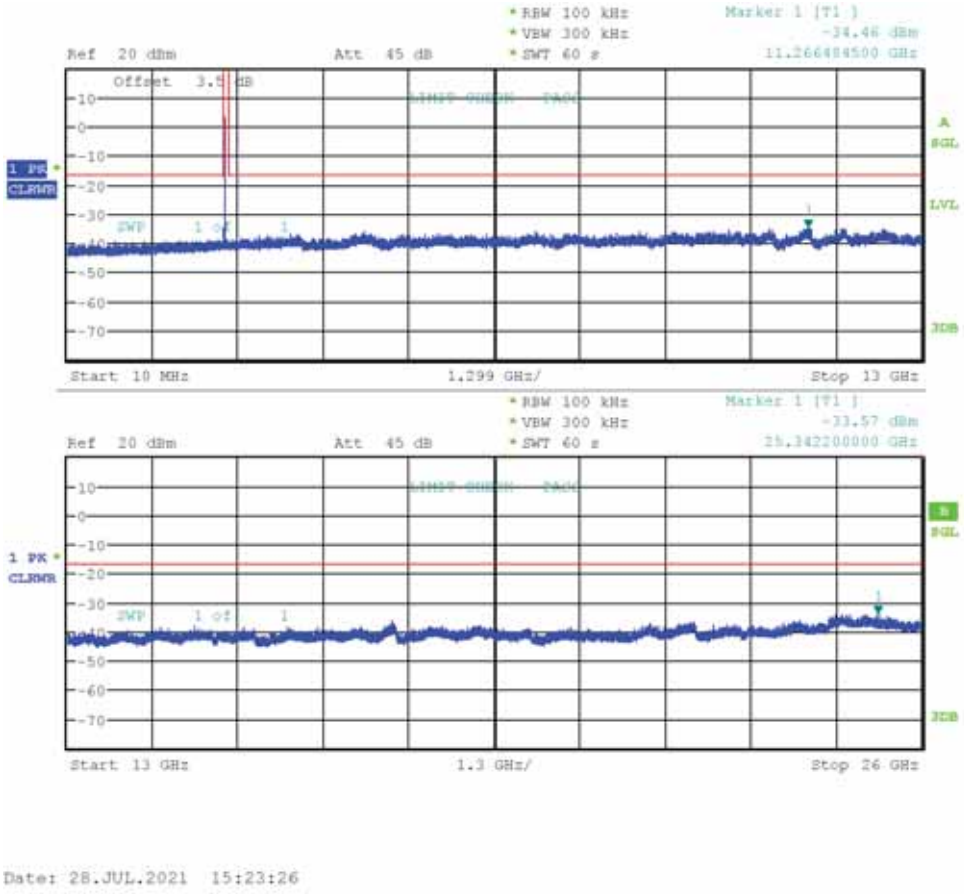
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels outside frequency band

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

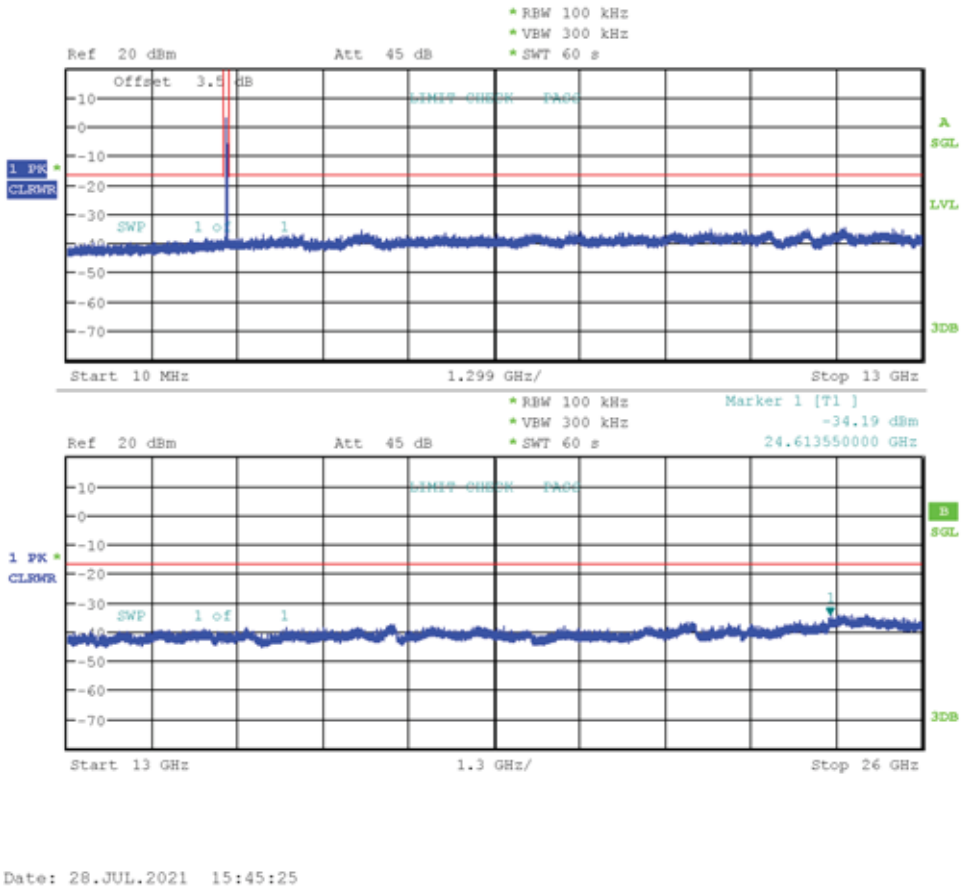
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2410.5
Max. in-band Level [dBm/100 kHz]:	3.6
Out-of-band Limit [dBm/100 kHz]:	-16.4



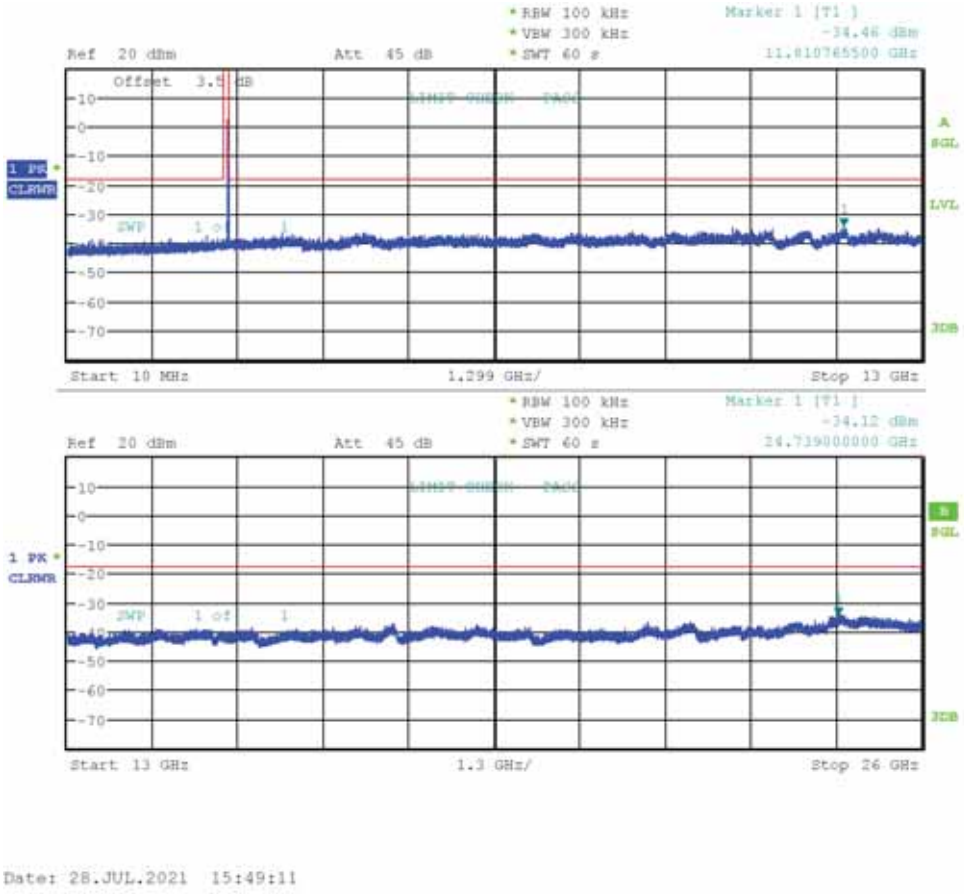
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2438.0
Max. in-band Level [dBm/100 kHz]:	3.5
Out-of-band Limit [dBm/100 kHz]:	-16.5



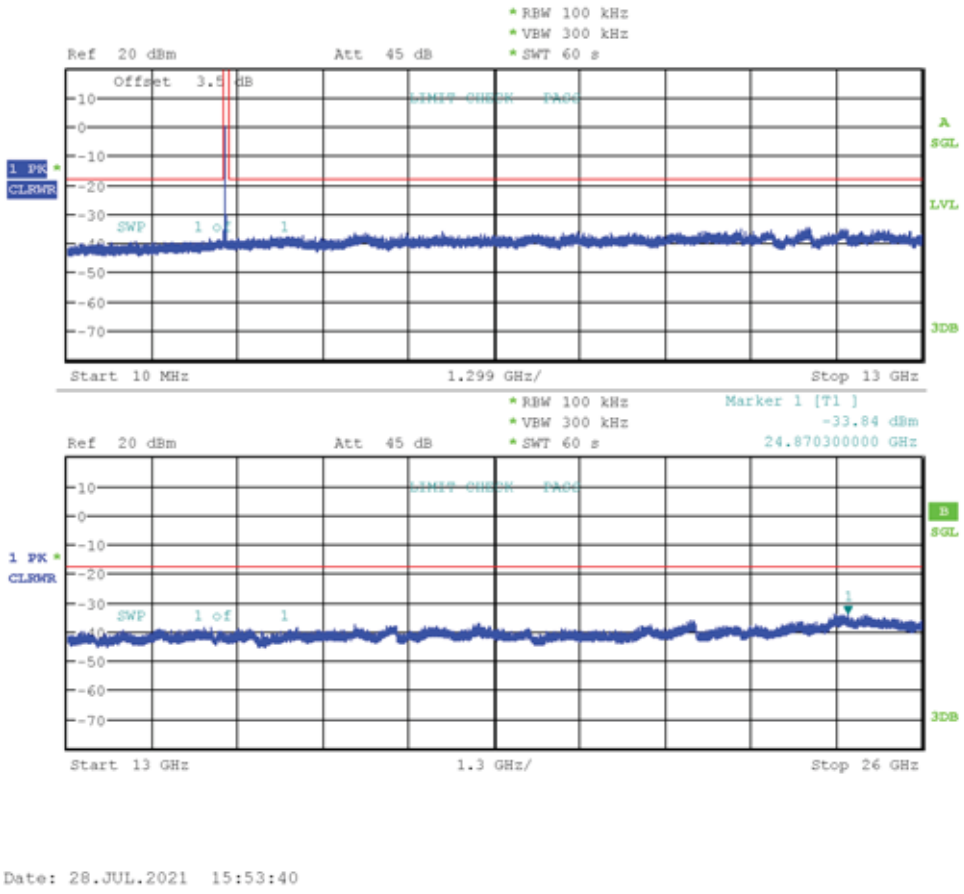
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2463.0
Max. in-band Level [dBm/100 kHz]:	2.4
Out-of-band Limit [dBm/100 kHz]:	-17.6



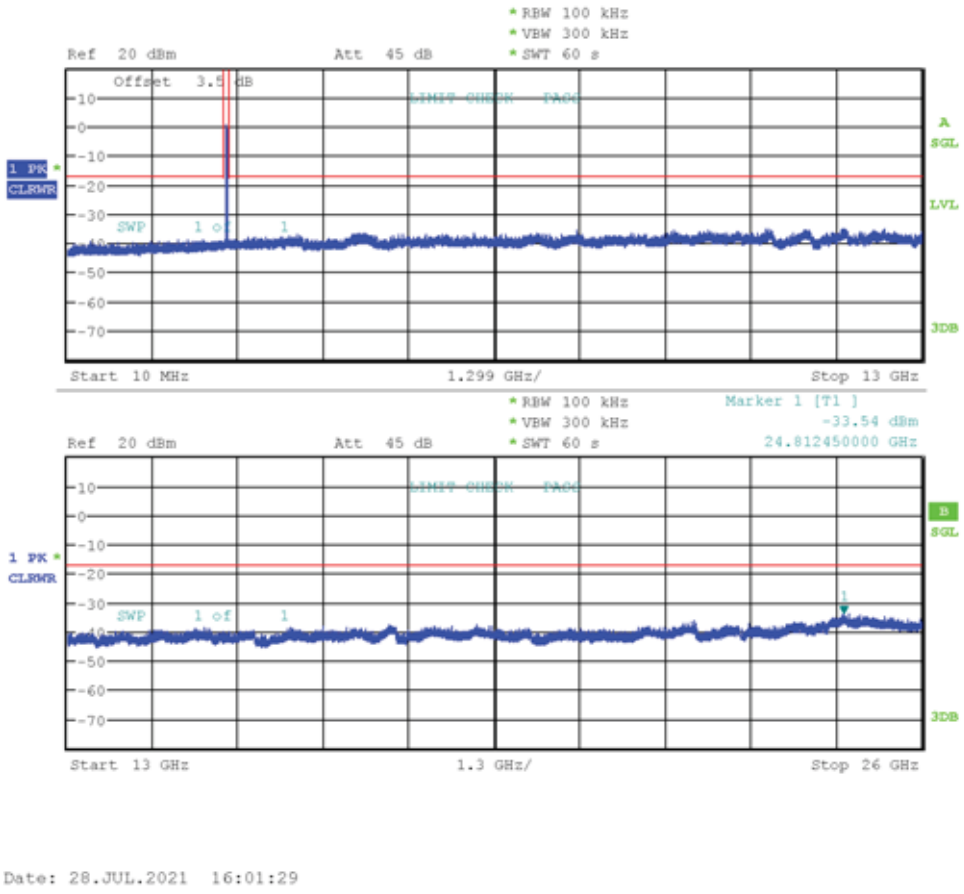
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2419.5
Max. in-band Level [dBm/100 kHz]:	2.2
Out-of-band Limit [dBm/100 kHz]:	-17.8



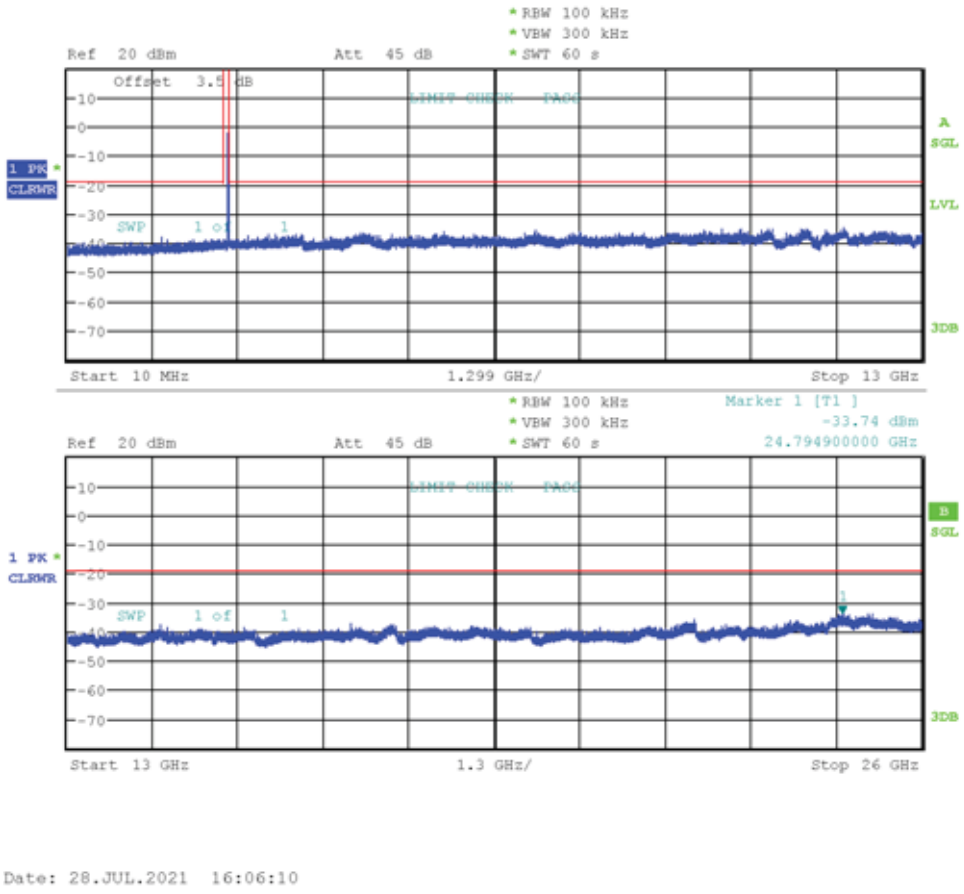
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2429.5
Max. in-band Level [dBm/100 kHz]:	2.6
Out-of-band Limit [dBm/100 kHz]:	-17.4



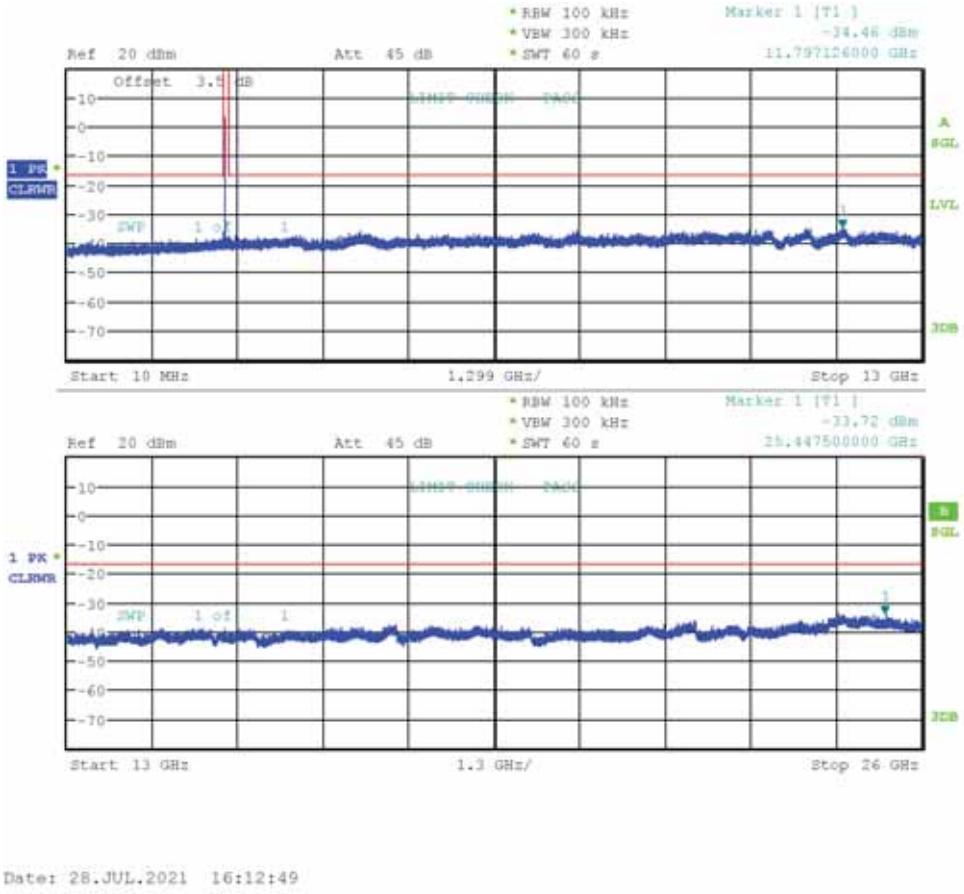
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2469.5
Max. in-band Level [dBm/100 kHz]:	1.0
Out-of-band Limit [dBm/100 kHz]:	-19.0



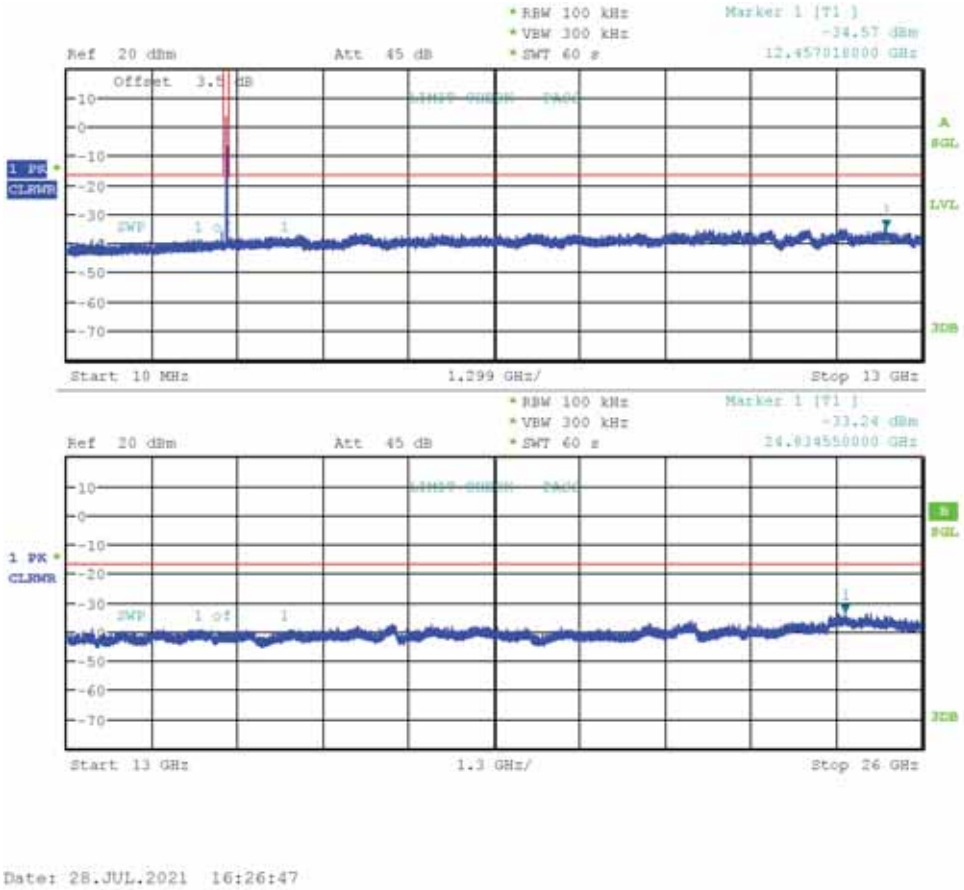
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2411.0
Max. in-band Level [dBm/100 kHz]:	3.6
Out-of-band Limit [dBm/100 kHz]:	-16.4



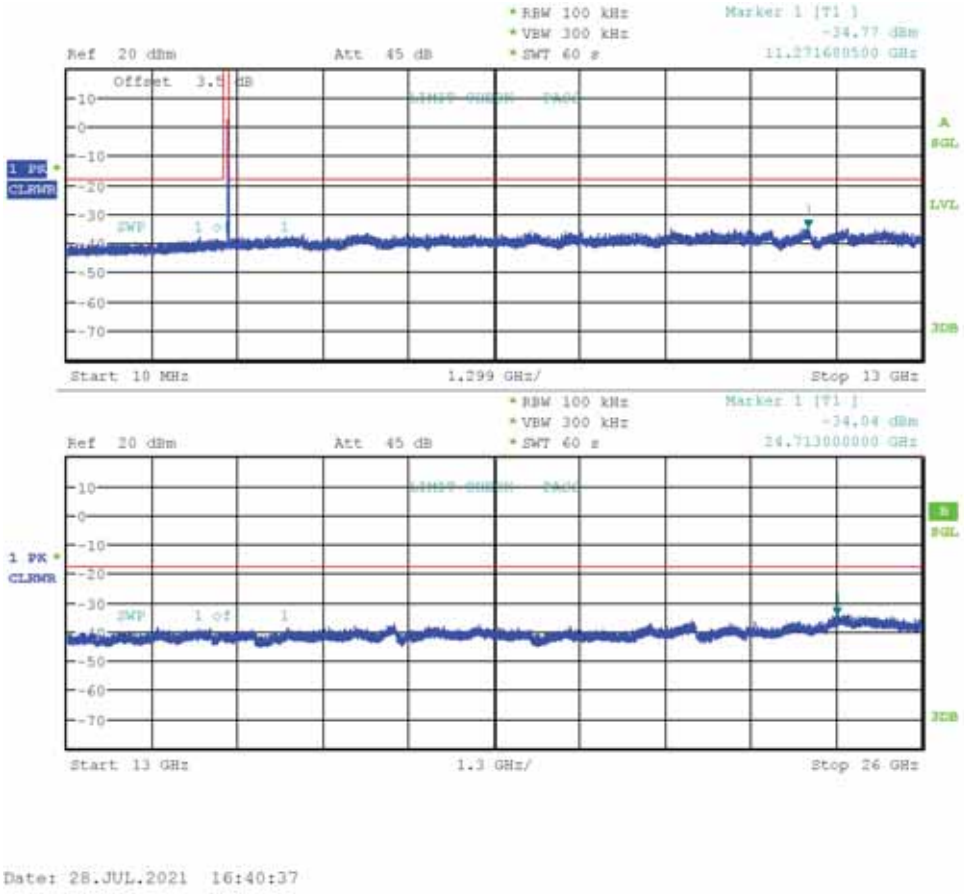
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2435.5
Max. in-band Level [dBm/100 kHz]:	3.6
Out-of-band Limit [dBm/100 kHz]:	-16.4



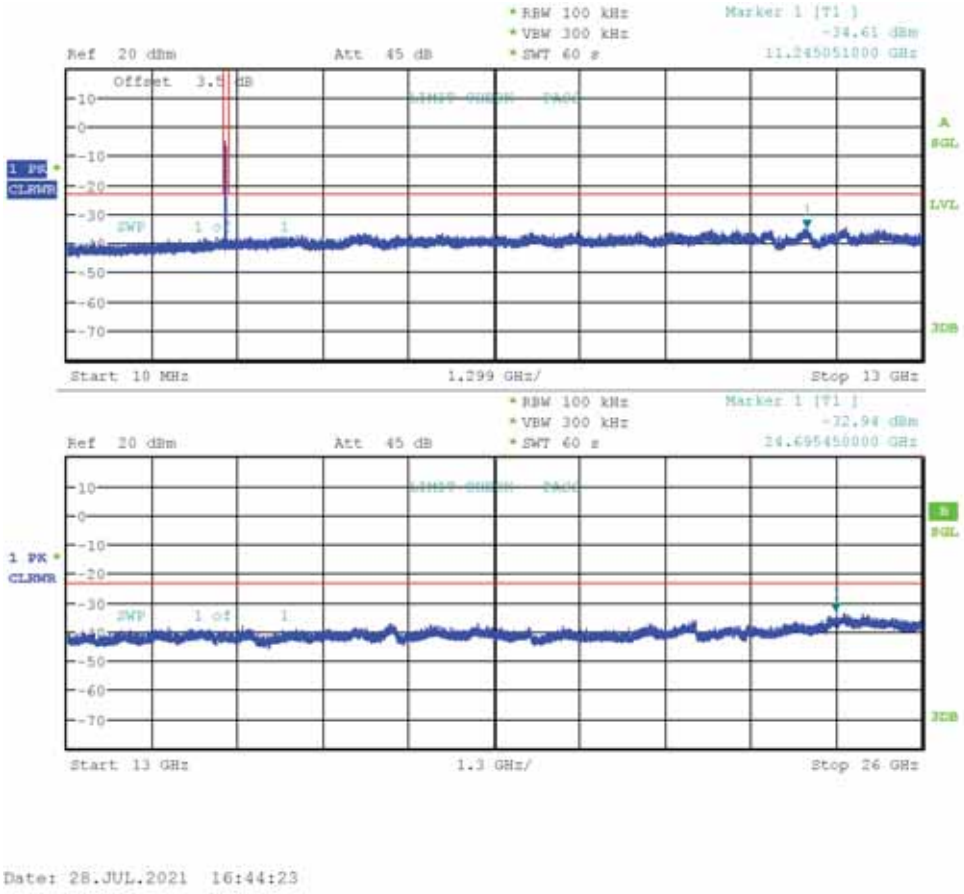
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2463.0
Max. in-band Level [dBm/100 kHz]:	2.4
Out-of-band Limit [dBm/100 kHz]:	-17.6



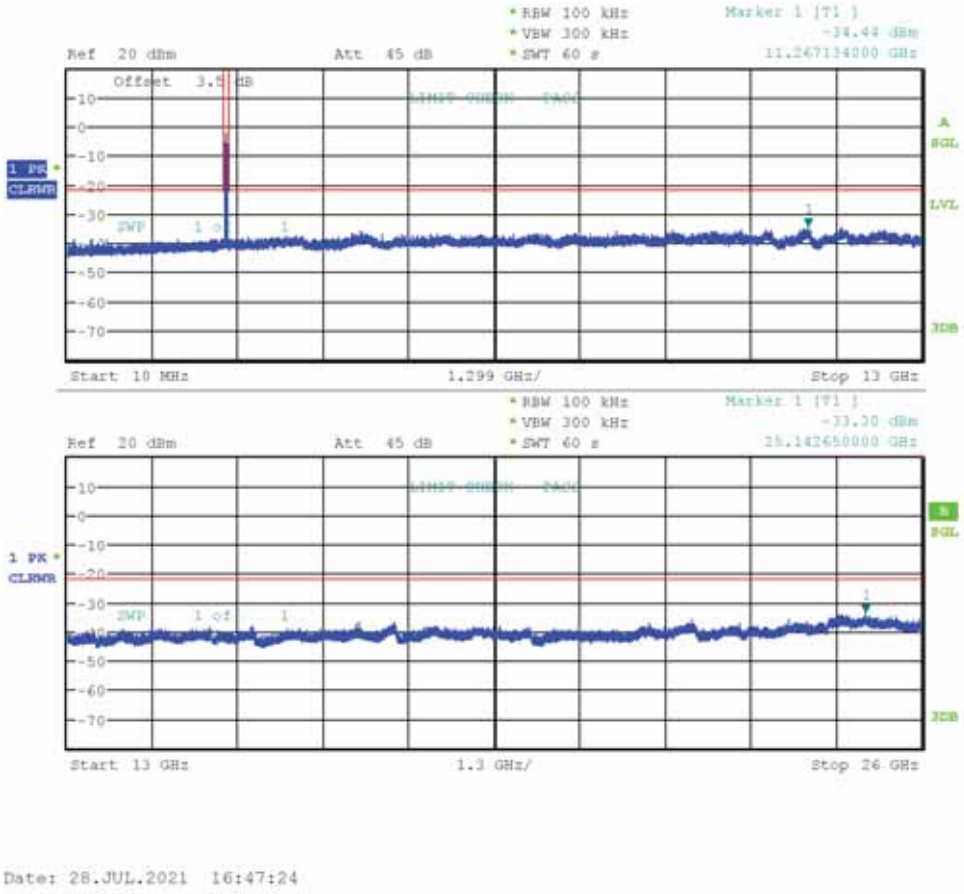
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2408.2
Max. in-band Level [dBm/100 kHz]:	-2.8
Out-of-band Limit [dBm/100 kHz]:	-22.8



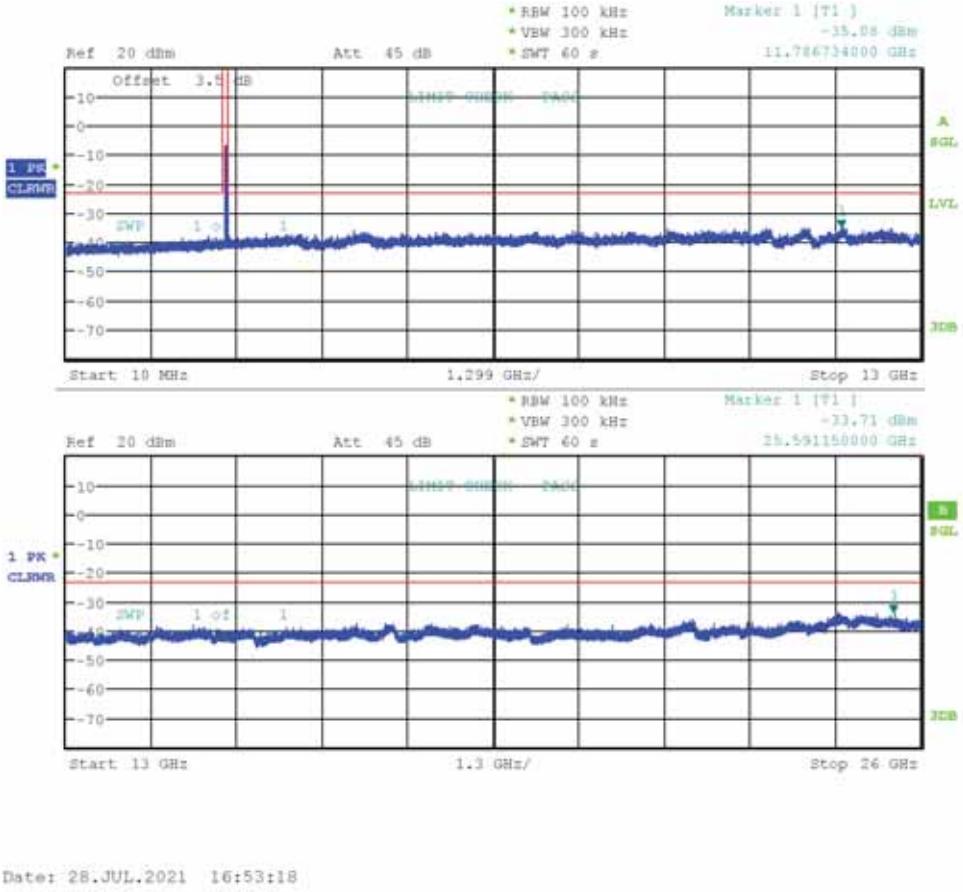
Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2420.7
Max. in-band Level [dBm/100 kHz]:	-1.8
Out-of-band Limit [dBm/100 kHz]:	-21.8



Conducted Spurious Emissions

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34968, (A1 8 SerNr: 826)
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:	2021-07-28
Antenna port:	A
Max. in-band Frequency [MHz]:	2437.0
Max. in-band Level [dBm/100 kHz]:	-3.0
Out-of-band Limit [dBm/100 kHz]:	-23.0



3.8 Test Conditions and Results - Transmitter radiated emissions

3.8.1 Information

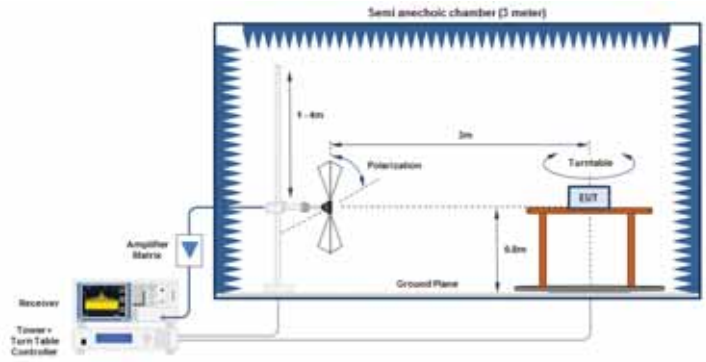
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISED RSS-Gen, Issue 5 (section 6.13)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Wilfried Treffke
Date	2021-06-08

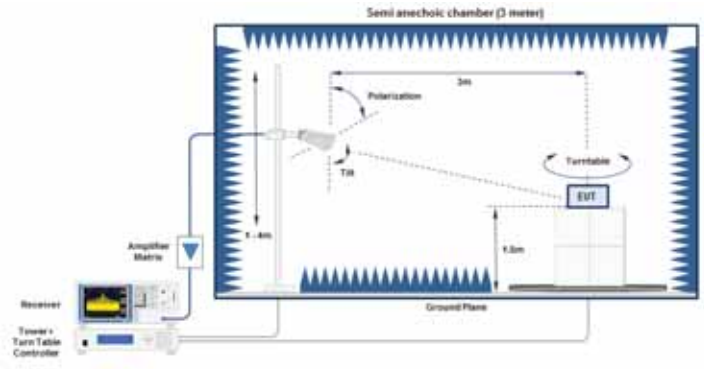
3.8.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [µV/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

Test Setup 30 MHz - 1000 MHz



Test Setup > 1 GHz


3.8.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 MHz - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00212	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2019-10	2022-10
Antenna	Amplifier Research	AT4560	EF01152	2020-11	2022-11

3.8.5 Procedure

Test Procedure 30 MHz - 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	2386.1	52.42	pk	hor	74.00	-21.58
2412	2386.1	39.99	avg	hor	54.00	-14.01
2412	2386.2	50.90	pk	ver	74.00	-23.10
2412	2386.2	38.32	avg	ver	54.00	-15.68
2412	4824	47.64	pk	ver	74.00	-26.36
2412	4824	46.02	avg	ver	54.00	-07.98
2437	4872	45.05	pk	ver	74.00	-28.95
2437	7314	46.36	pk	hor	74.00	-27.64
2462	2486	53.77	pk	hor	74.00	-20.23
2462	2486	40.22	avg	hor	54.00	-13.78
2462	4923	44.85	pk	ver	74.00	-29.15
2462	7385	44.43	pk	hor	74.00	-29.57

Test Results - OFDM						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2412	2389.9	68.02	pk	hor	74.00	-05.98
2412	2389.9	41.02	avg	hor	54.00	-12.98
2412	2389.9	57.19	pk	ver	74.00	-16.81
2412	2389.9	37.97	avg	ver	54.00	-16.03
2412	4824	47.86	pk	ver	74.00	-26.14
2412	4824	34.45	avg	ver	54.00	-19.55
2437	4872	43.20	pk	ver	74.00	-30.80
2437	7313	48.90	pk	hor	74.00	-25.10
2437	7313	36.39	avg	hor	54.00	-17.61
2437	7314	46.74	pk	ver	74.00	-27.26
2462	2483.5	68.84	pk	hor	74.00	-05.16
2462	2483.5	44.17	avg	hor	54.00	-09.83
2462	2483.8	55.79	pk	ver	74.00	-18.21
2462	2483.8	38.71	avg	ver	54.00	-15.29
2462	7385	45.07	pk	ver	74.00	-28.93
2462	7391	45.35	pk	hor	74.00	-28.65

Test Results - HT20						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2412	2388.6	69.15	pk	hor	74.00	-04.85
2412	2388.6	43.49	avg	hor	54.00	-10.51
2412	2389.1	59.41	pk	ver	74.00	-14.59
2412	2389.1	38.99	avg	ver	54.00	-15.01
2437	7327	44.40	pk	ver	74.00	-29.60
2437	7333	46.13	pk	hor	74.00	-27.87
2462	2483.5	72.01	pk	hor	74.00	-01.99
2462	2483.5	44.09	avg	hor	54.00	-09.91
2462	2483.7	58.77	pk	ver	74.00	-15.23
2462	2483.7	38.93	avg	ver	54.00	-15.07
2462	7391	44.55	pk	hor	74.00	-29.45

Test Results - HT40						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2422	2389.6	67.07	pk	hor	74.00	-06.93
2422	2389.6	42.42	avg	hor	54.00	-11.58
2422	2389.9	58.18	pk	ver	74.00	-15.82
2422	2389.9	38.91	avg	ver	54.00	-15.09
2452	2483.9	66.92	pk	hor	74.00	-07.08
2452	2483.9	41.40	avg	hor	54.00	-12.60
2452	2485.9	53.52	pk	ver	74.00	-20.48
2452	2485.9	38.52	avg	ver	54.00	-15.48

3.9 Test Conditions and Results - Receiver radiated emissions

3.9.1 Information

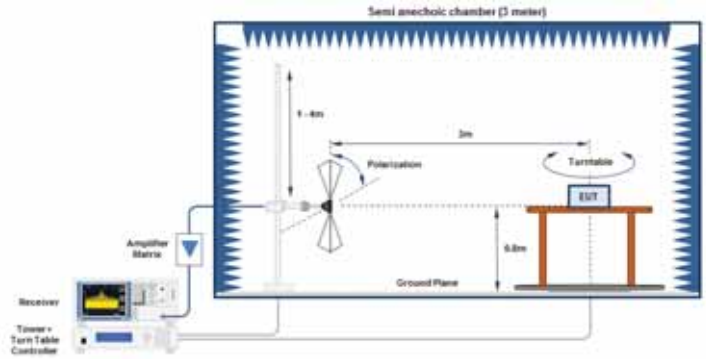
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Wilfried Treffke
Date	2021-06-08

3.9.2 Limits

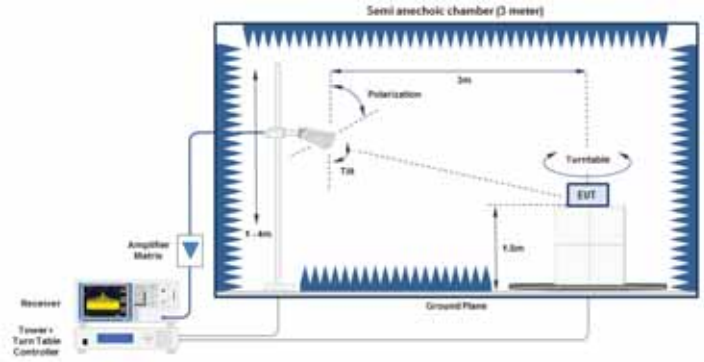
Limits			
Frequency range [MHz]	Detector	Field strength [µV/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.9.3 Setup

Test Setup 30 MHz - 1000 MHz



Test Setup > 1 GHz



3.9.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 MHz - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00212	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2019-10	2022-10

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

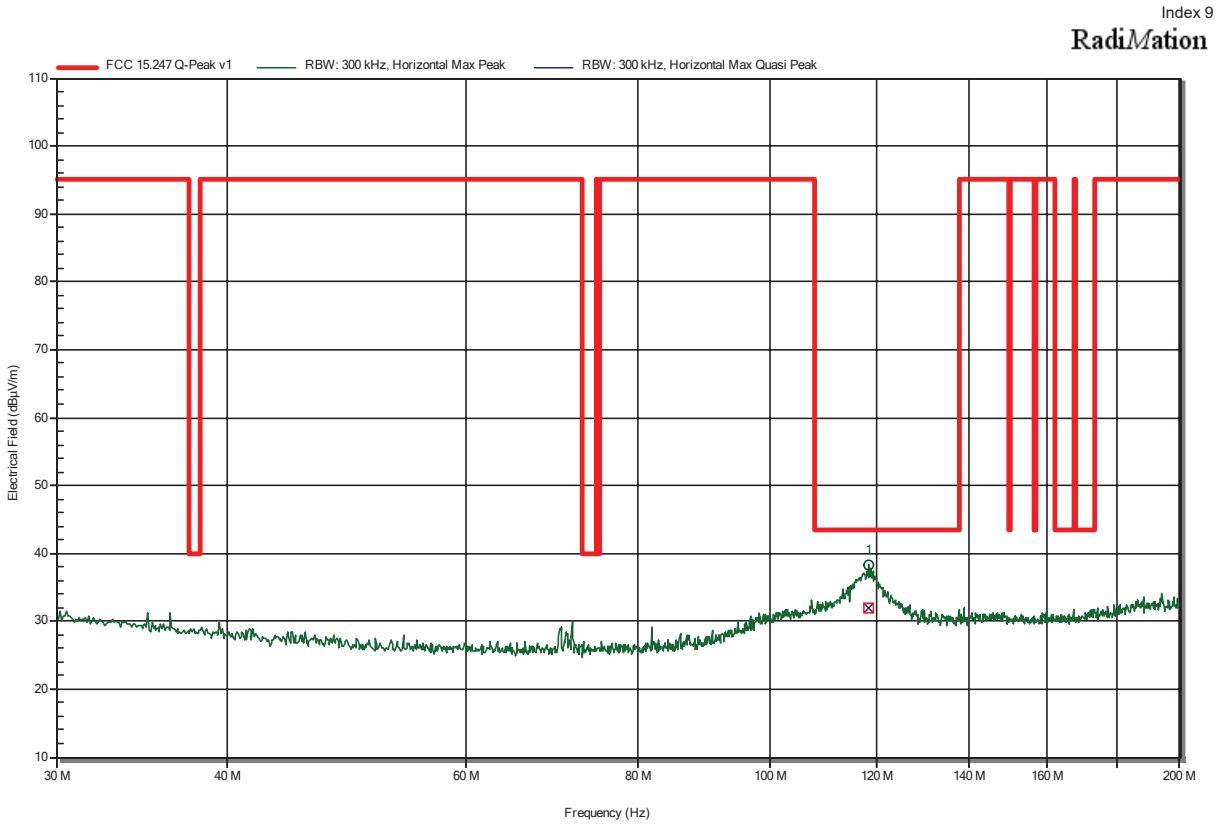
3.9.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2437	117.179	34.78	pk	hor	43.50	-08.72
2437	237.179	17.03	pk	hor	46.00	-28.97
2437	2438	27.72	pk	ver	53.98	-26.26
2437	7590	39.63	pk	ver	53.98	-14.35
2437	7.962	39.63	pk	hor	53.98	-14.35 dB
2437	10.719	44.41	pk	hor	53.98	-9.57 dB

ANNEX A Transmitter spurious emissions

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 21 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	Tx; IEEE 802.11n; HT20; MCS0; 2412 MHz
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
118.286 MHz	38.21 dBµV/m	43.52 dBµV/m	-5.31 dB	Pass

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
118.286 MHz	31.95 dBµV/m	43.52 dBµV/m	-11.57 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 21 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	Tx; IEEE 802.11n; HT20; MCS0; 2412 MHz
Test Date:	2021-06-08
Note:	3.3 V Battery (KEIN USB)

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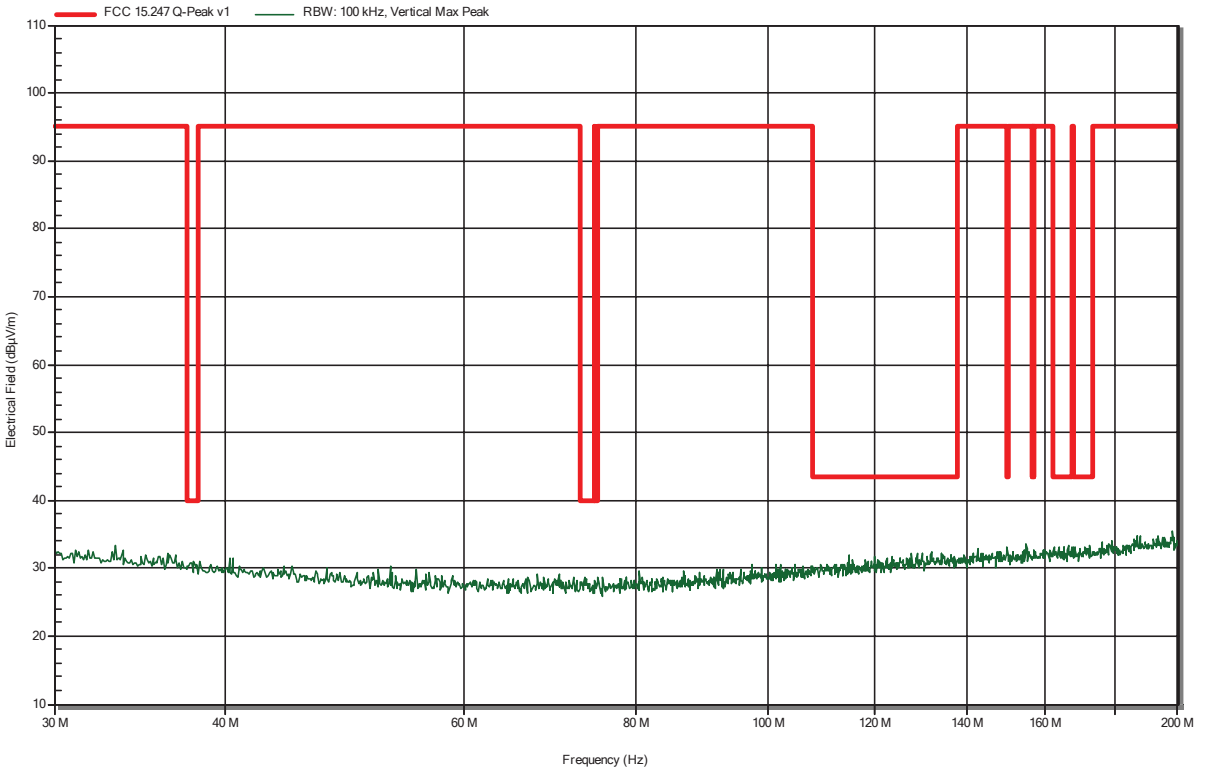
RadiMation



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
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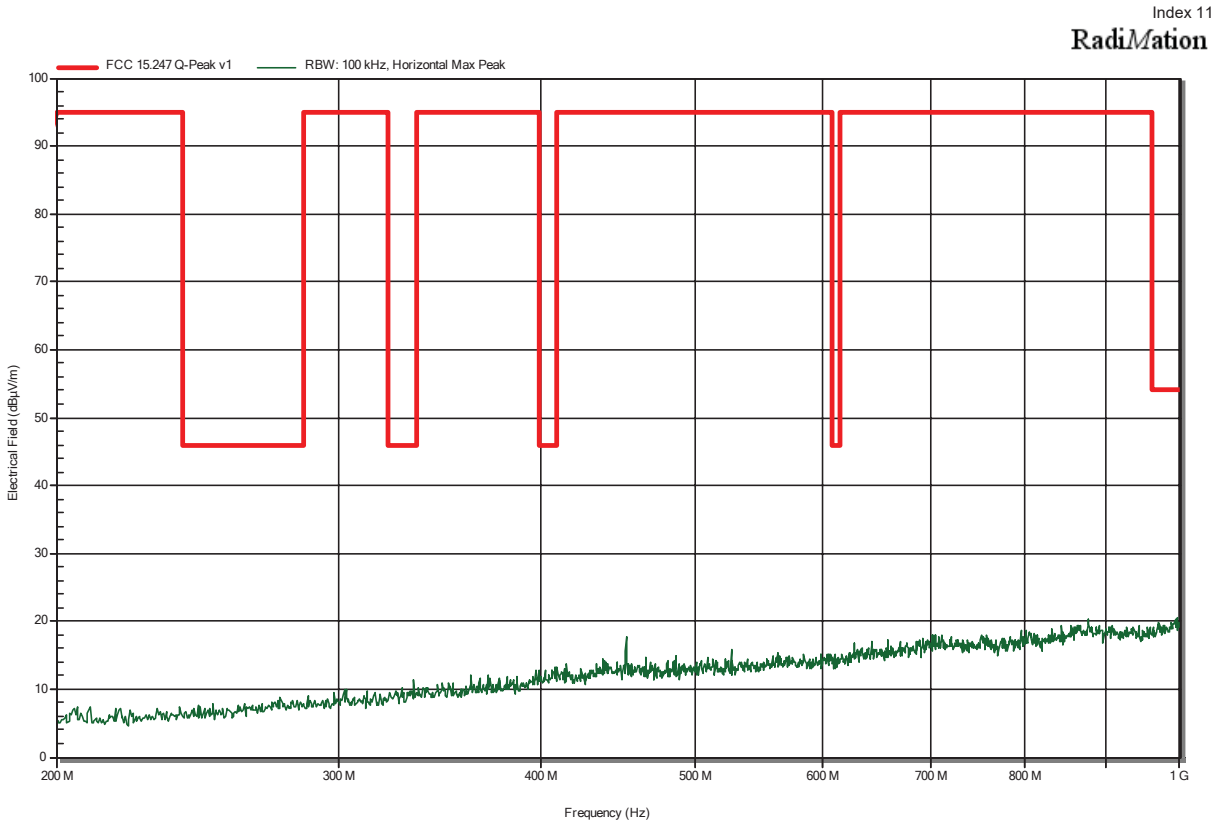
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 21 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz
Test Date:	2021-06-08



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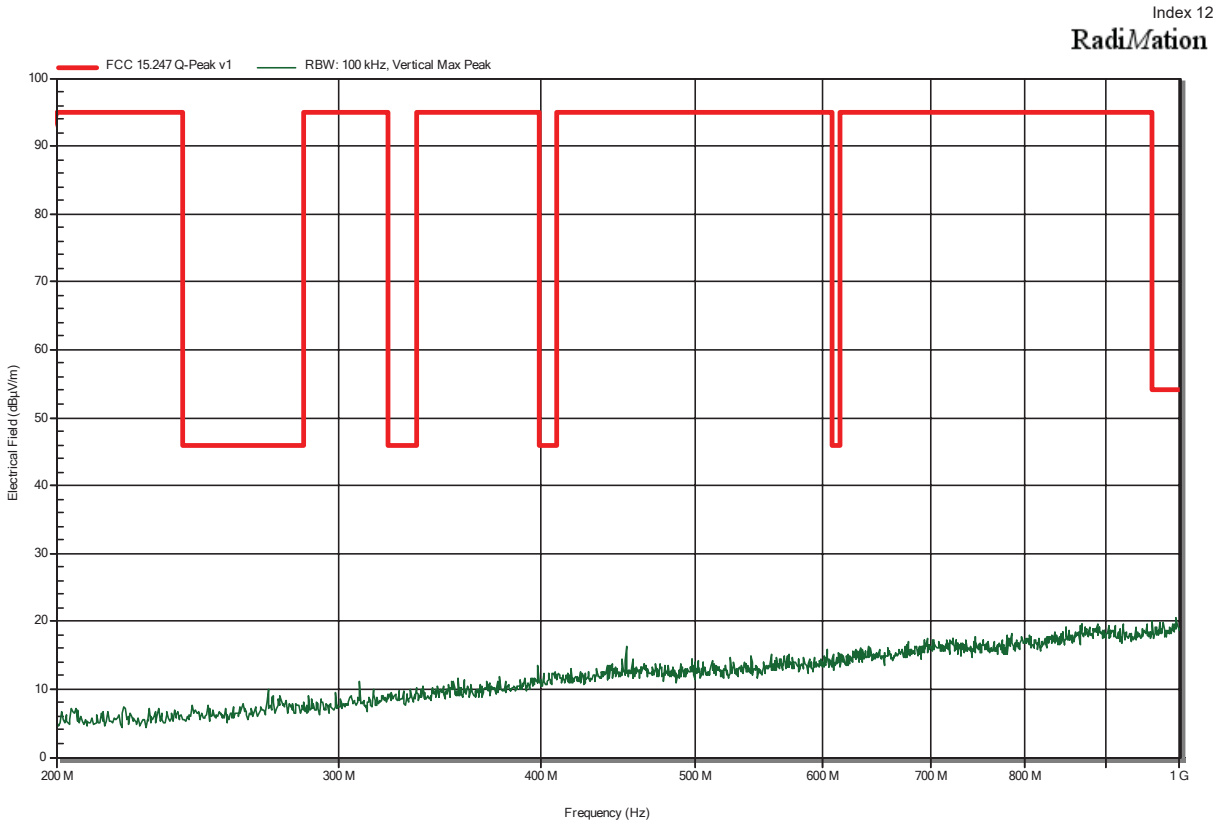
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 21 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

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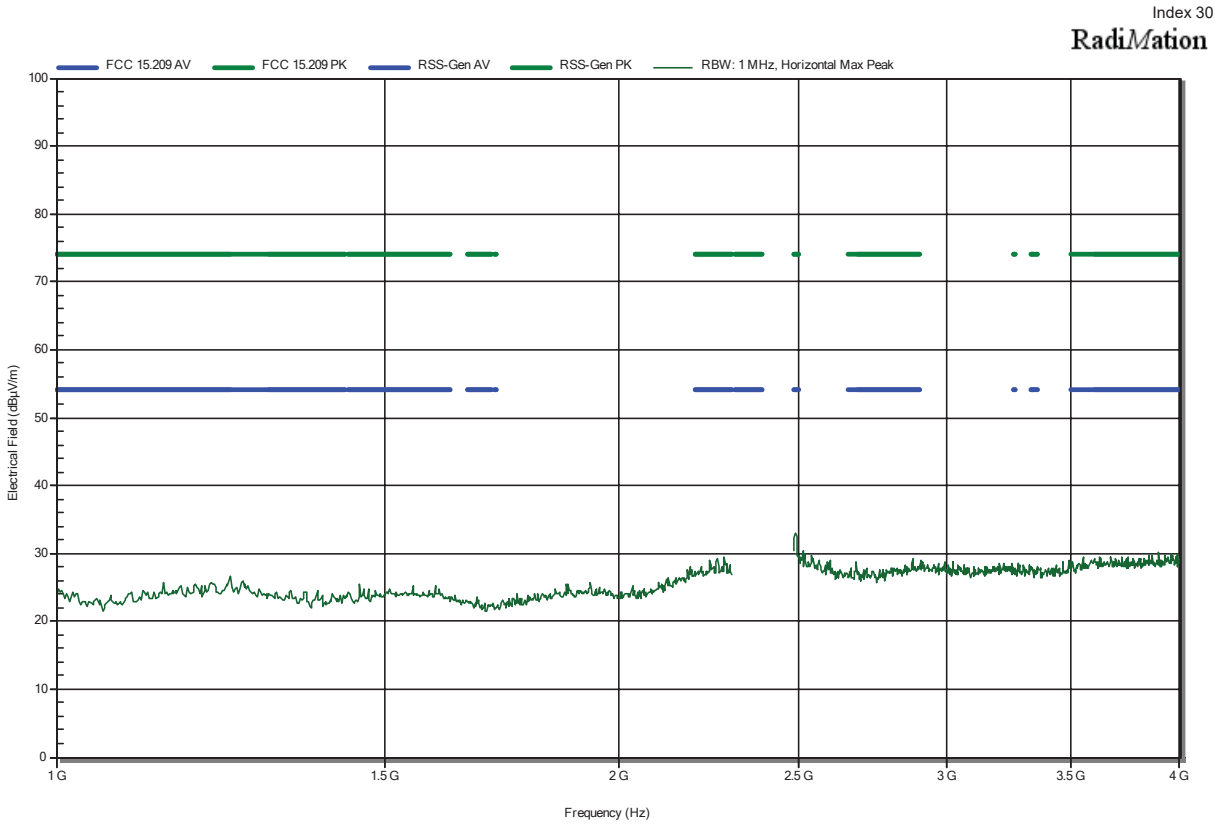
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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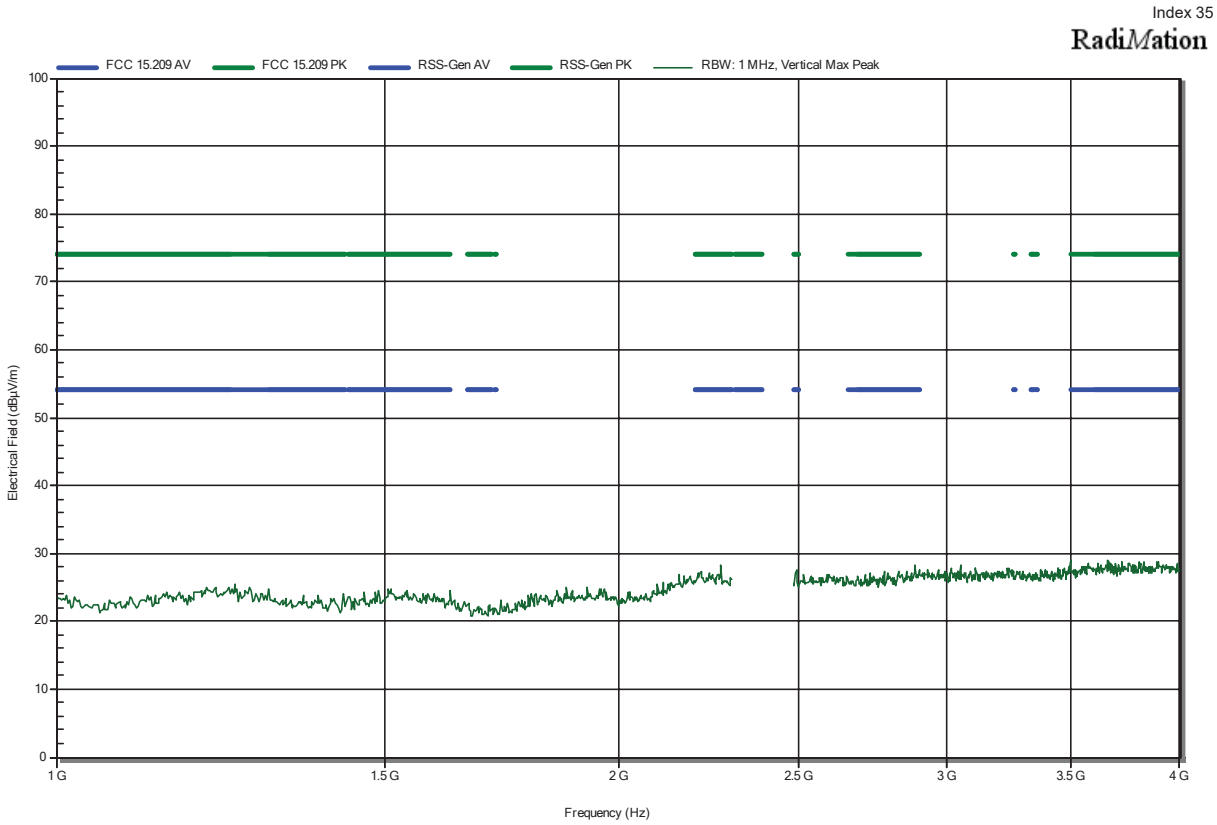
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

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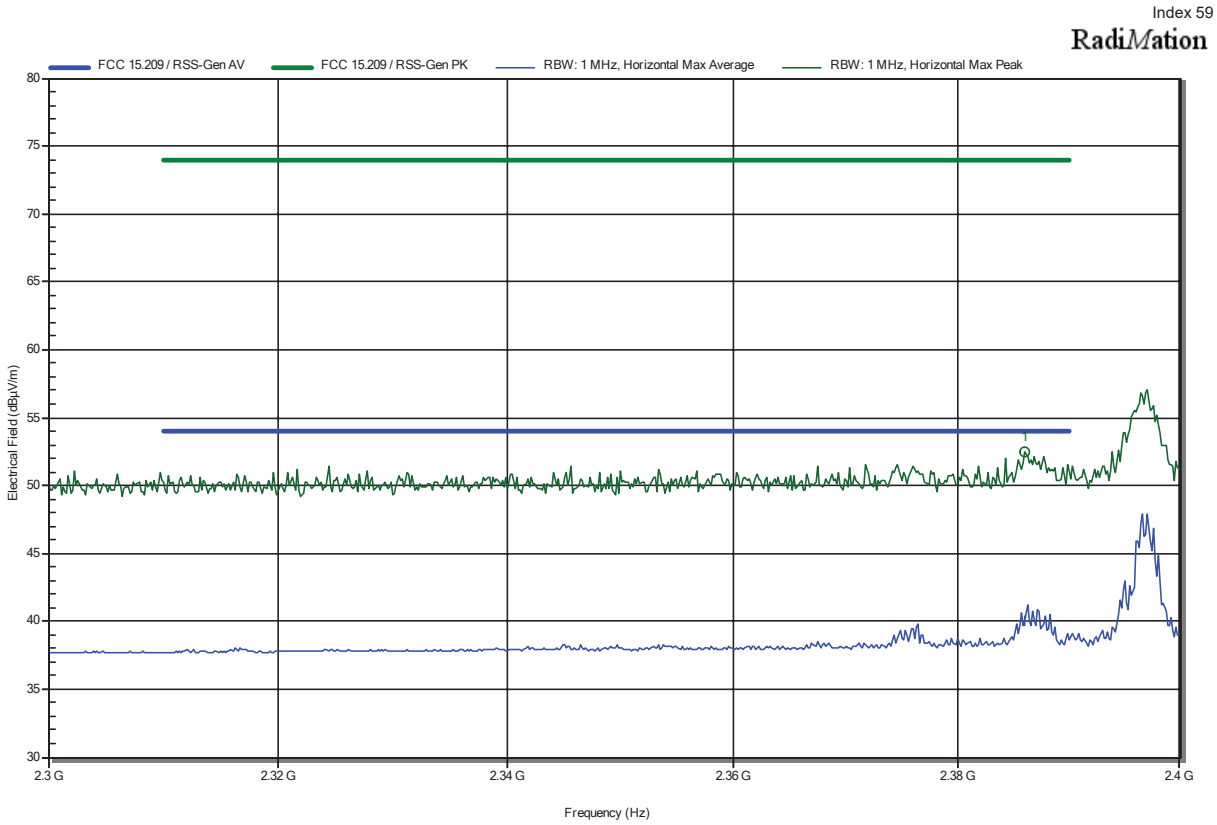
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08
	lower bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3861 GHz	52.42 dBµV/m	74 dBµV/m	-21.58 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3861 GHz	39.99 dBµV/m	54 dBµV/m	-14.01 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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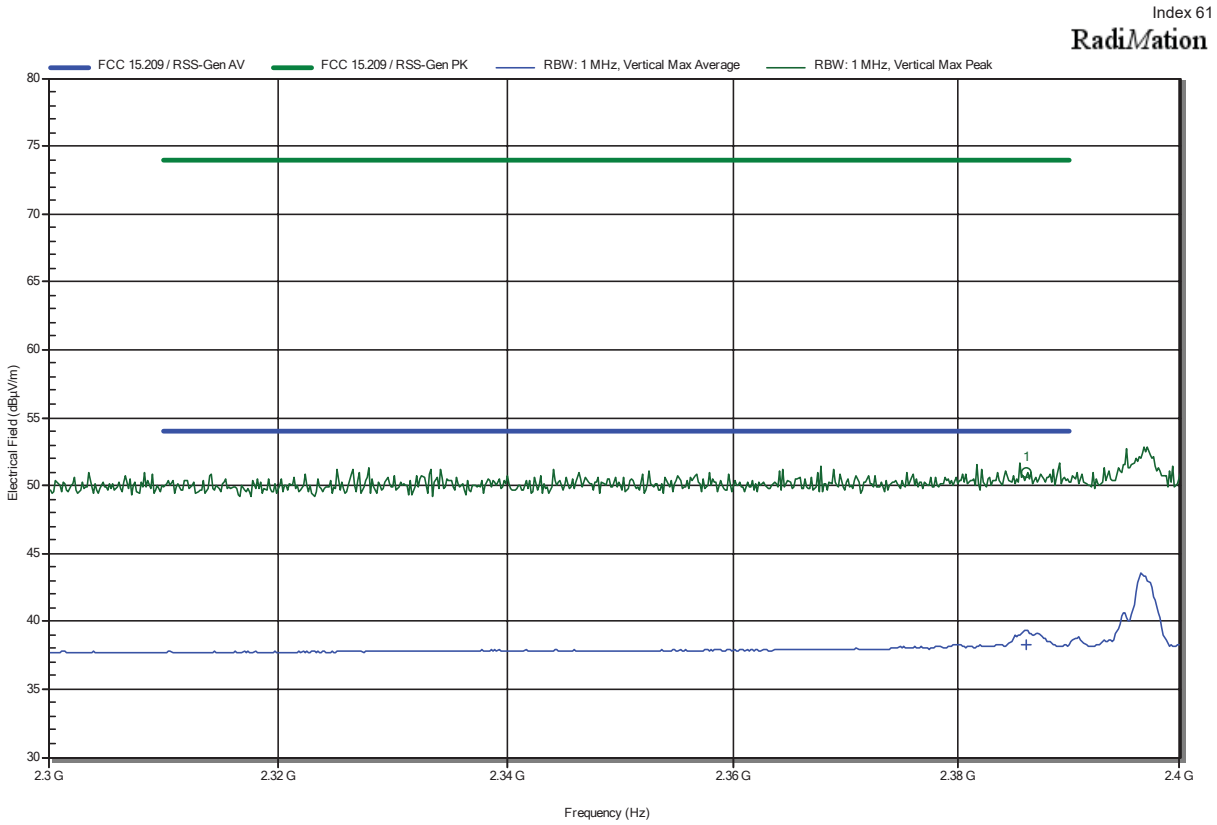
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08
	lower bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3862 GHz	50.9 dBµV/m	74 dBµV/m	-23.1 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3862 GHz	38.32 dBµV/m	54 dBµV/m	-15.68 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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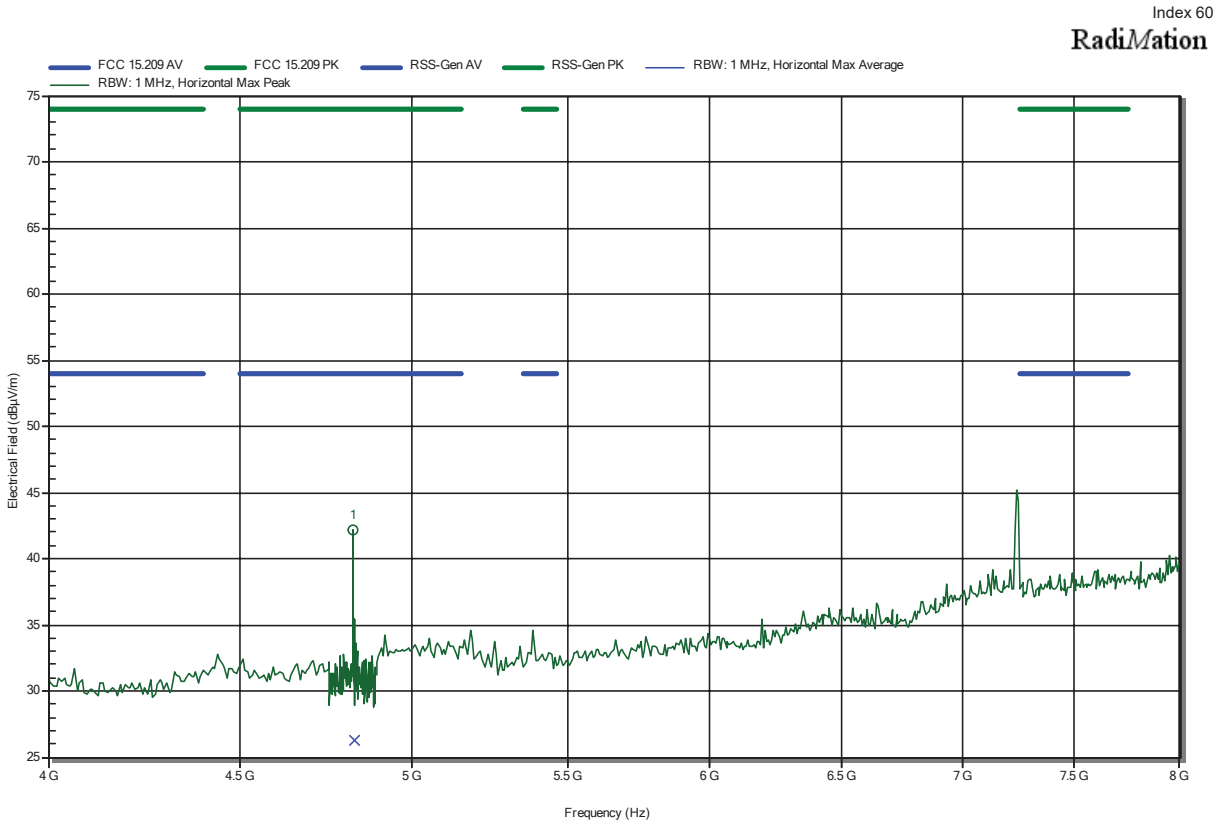
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.821 GHz	42.22 dBµV/m	74 dBµV/m	-31.78 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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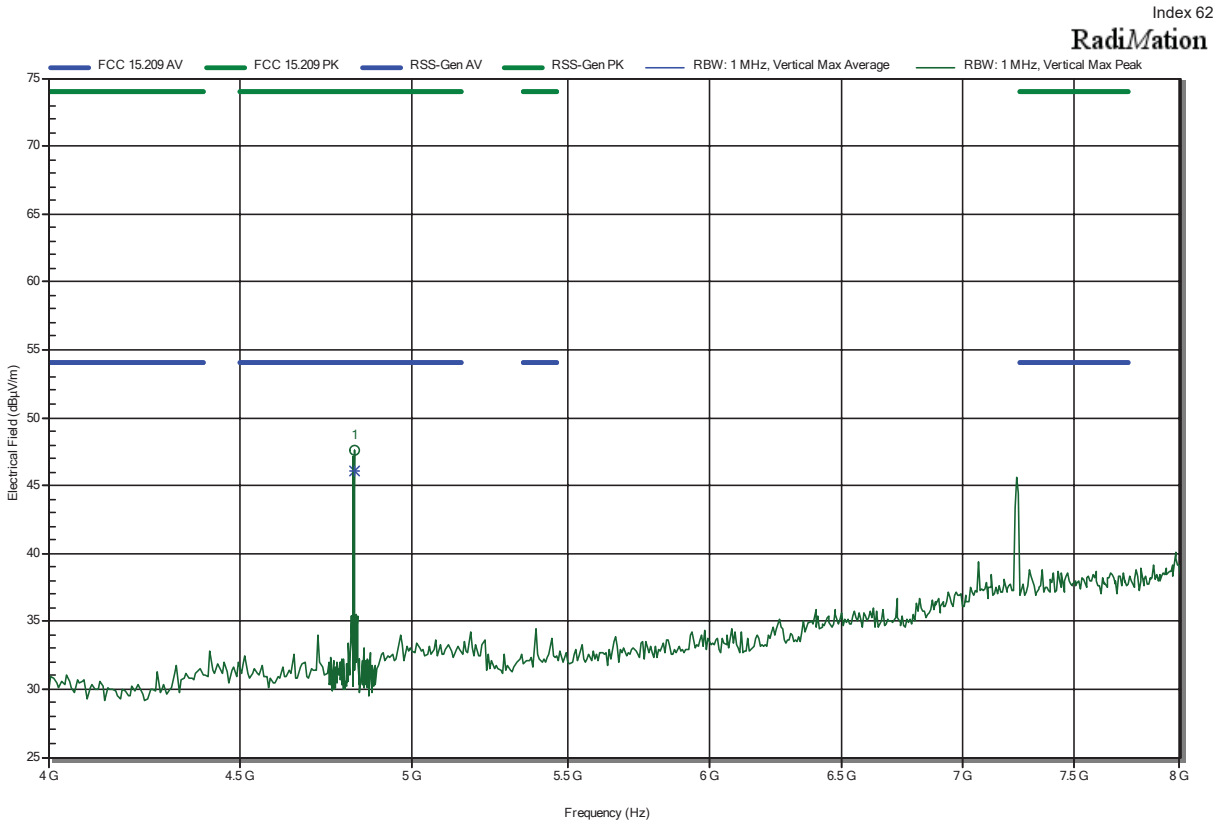
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.824 GHz	47.64 dBµV/m	74 dBµV/m	-26.36 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
4.824 GHz	46.02 dBµV/m	54 dBµV/m	-7.98 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08

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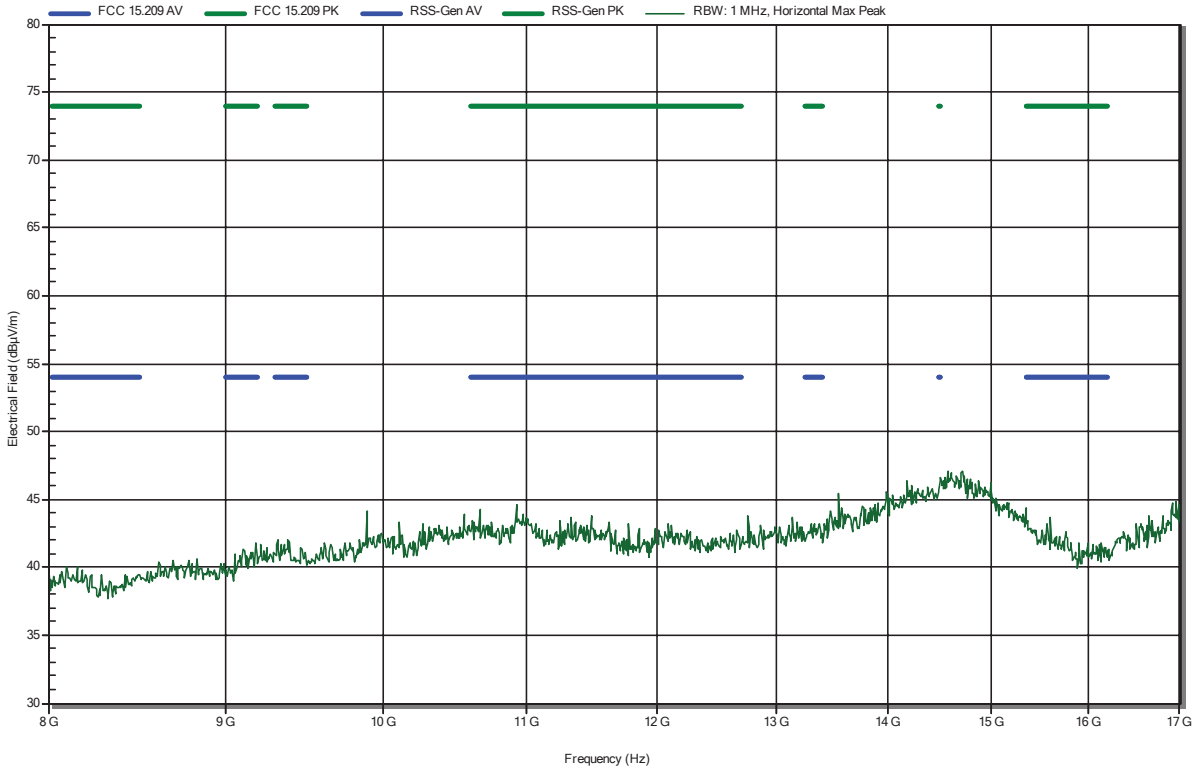

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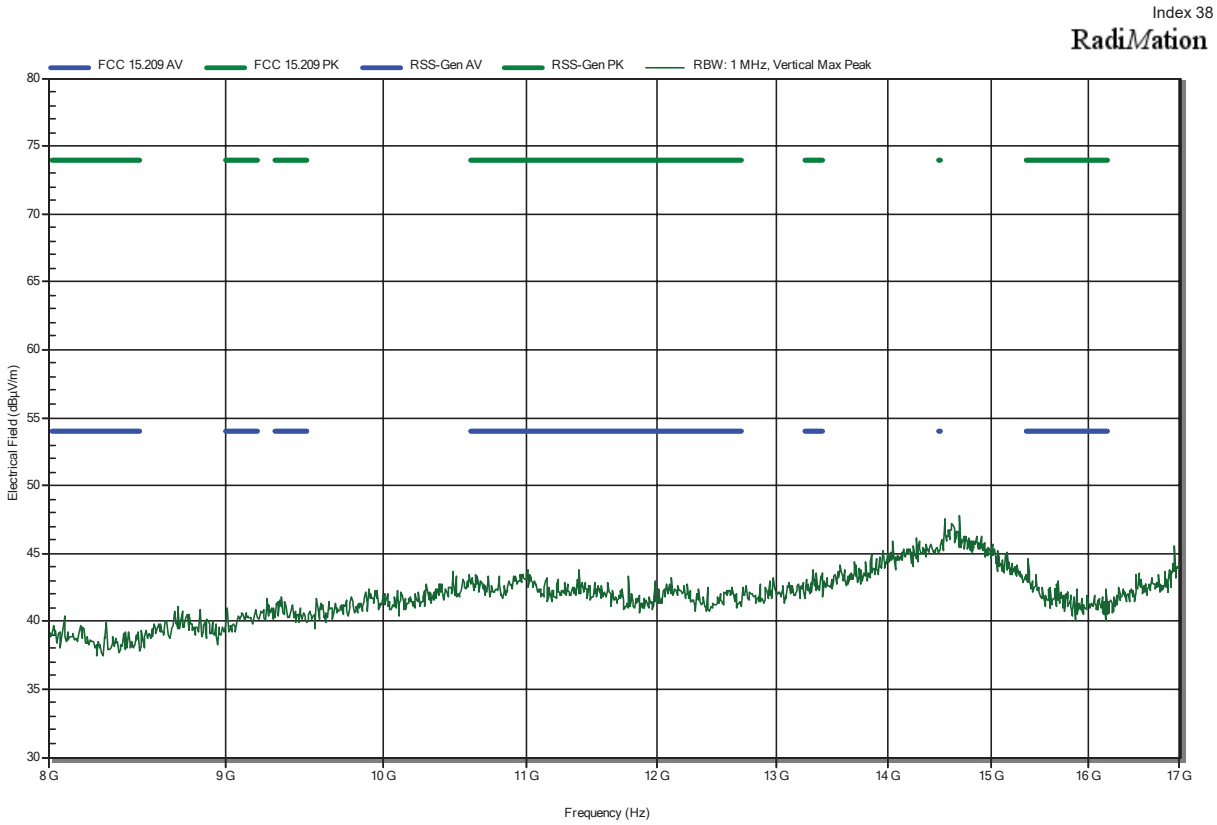
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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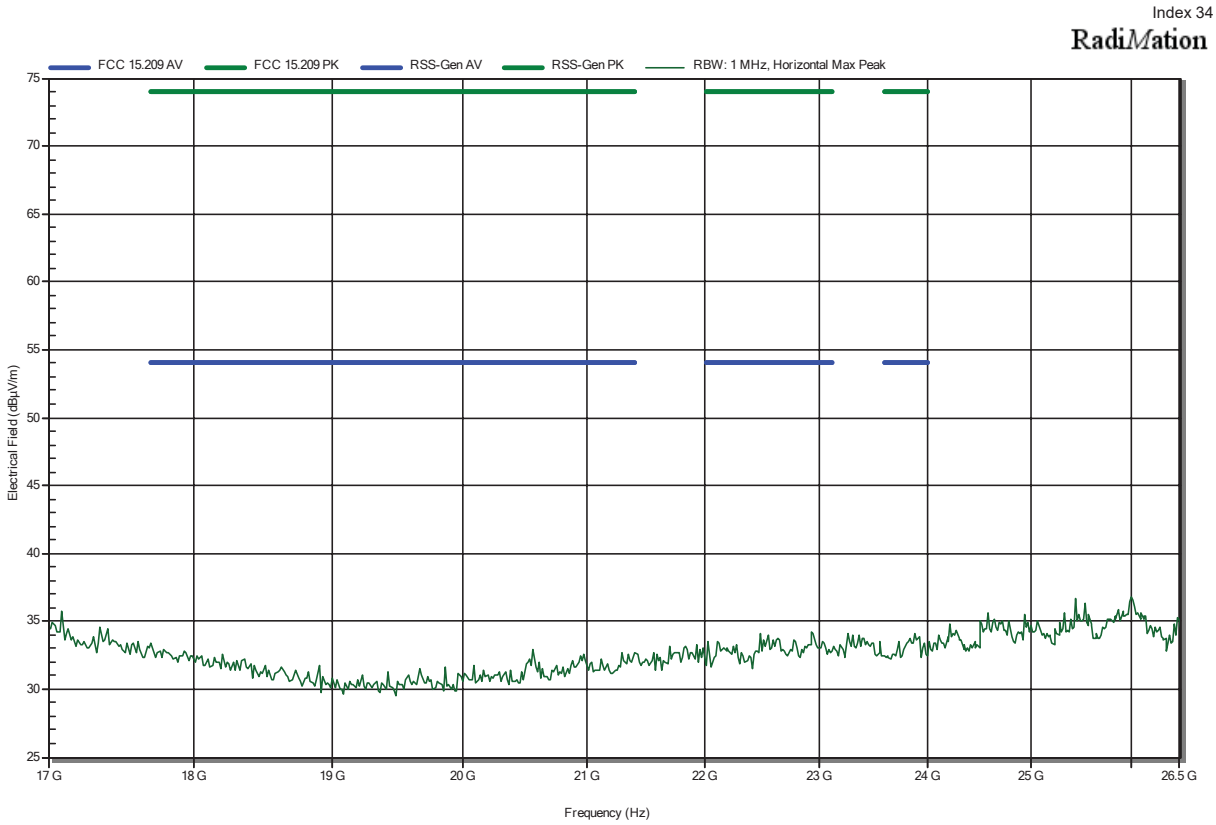
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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Mode:	Tx; IEEE 802.11b; 1 Mbps; 2412 MHz; #A1 8 SerNr: 826
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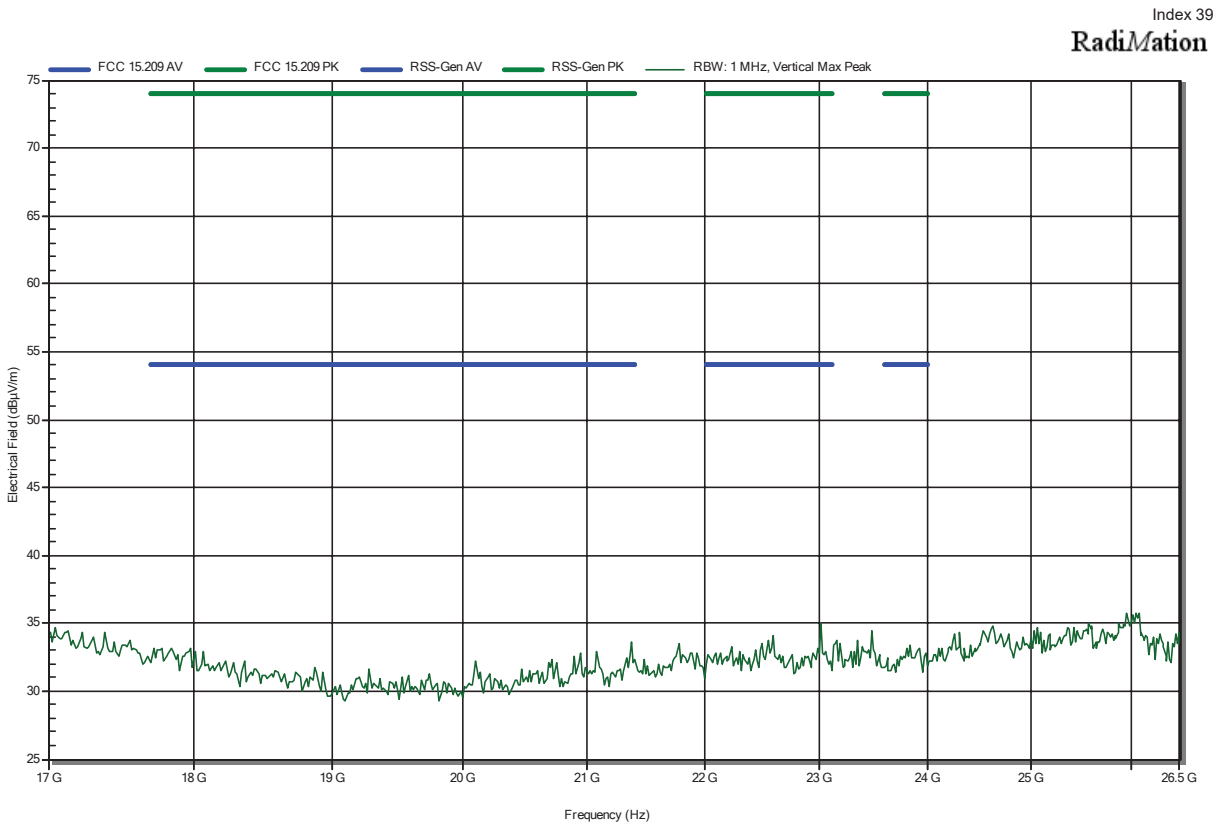

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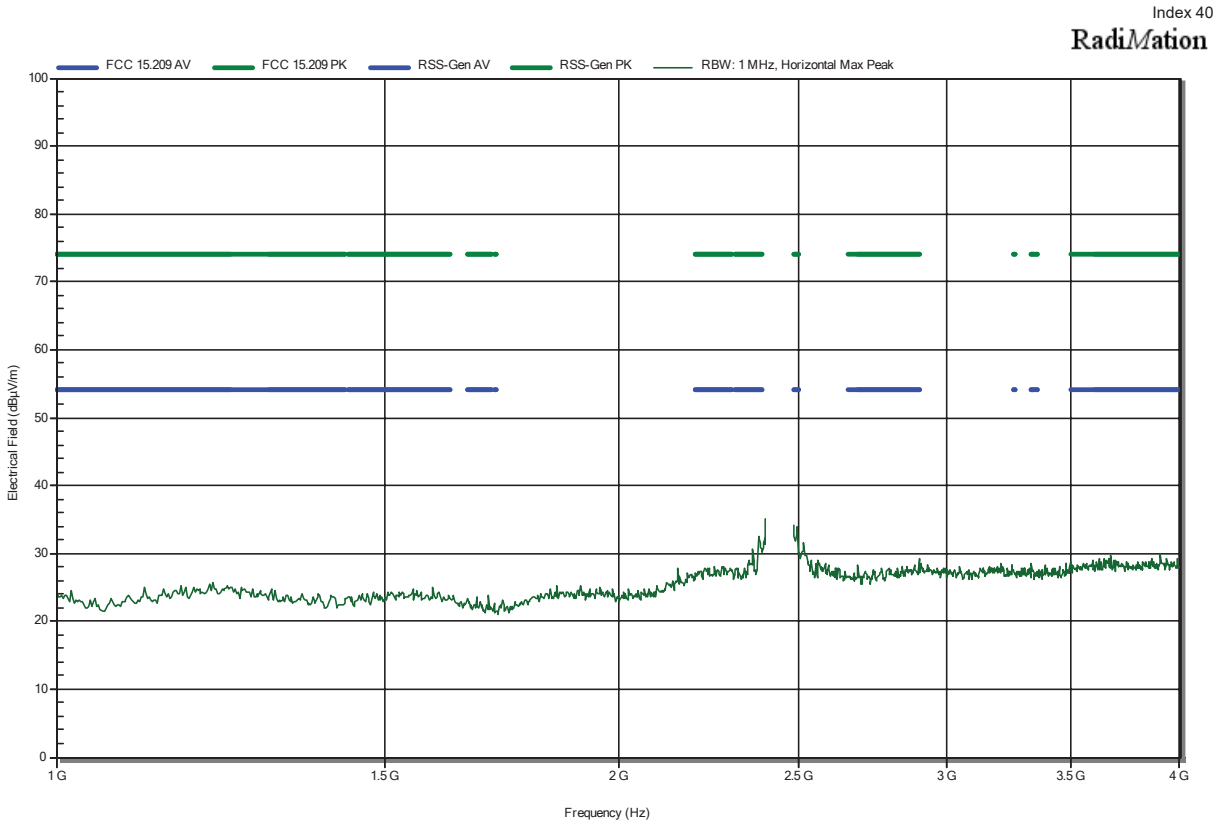
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
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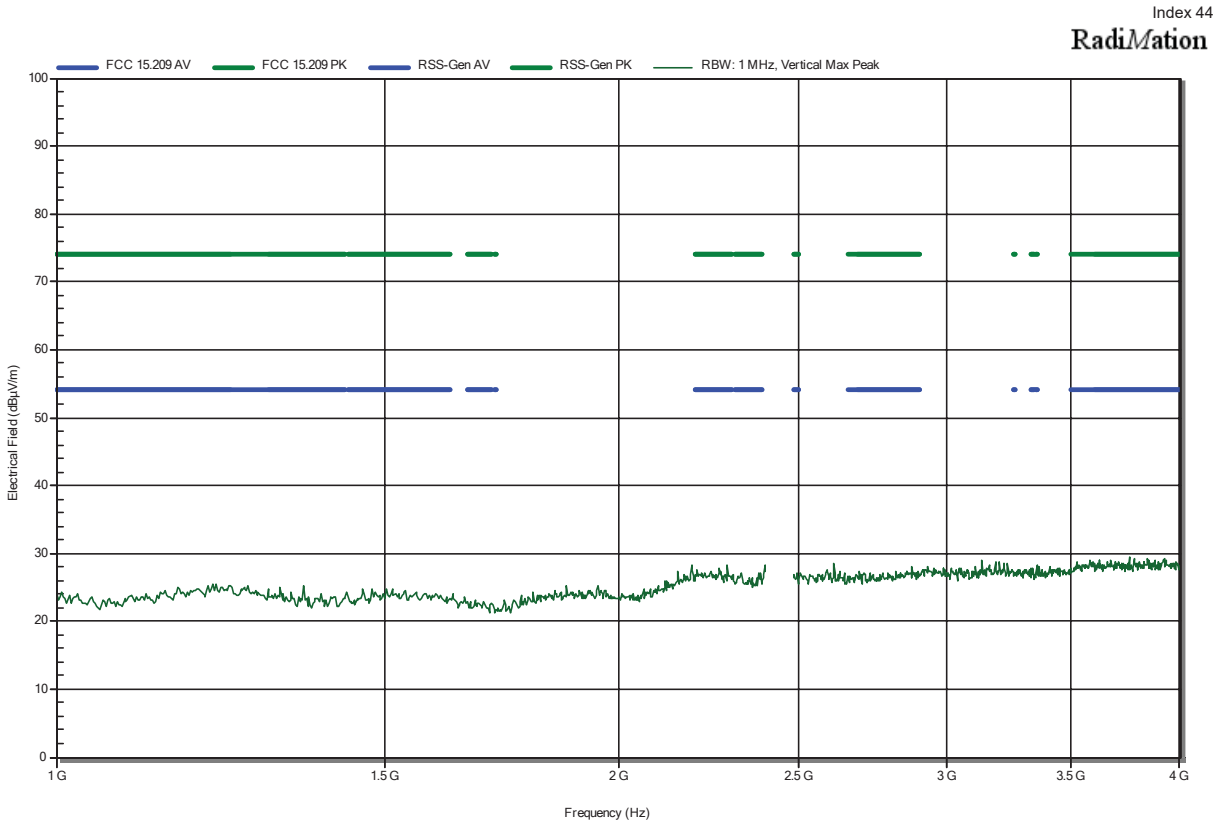
Test Date:	2021-06-08



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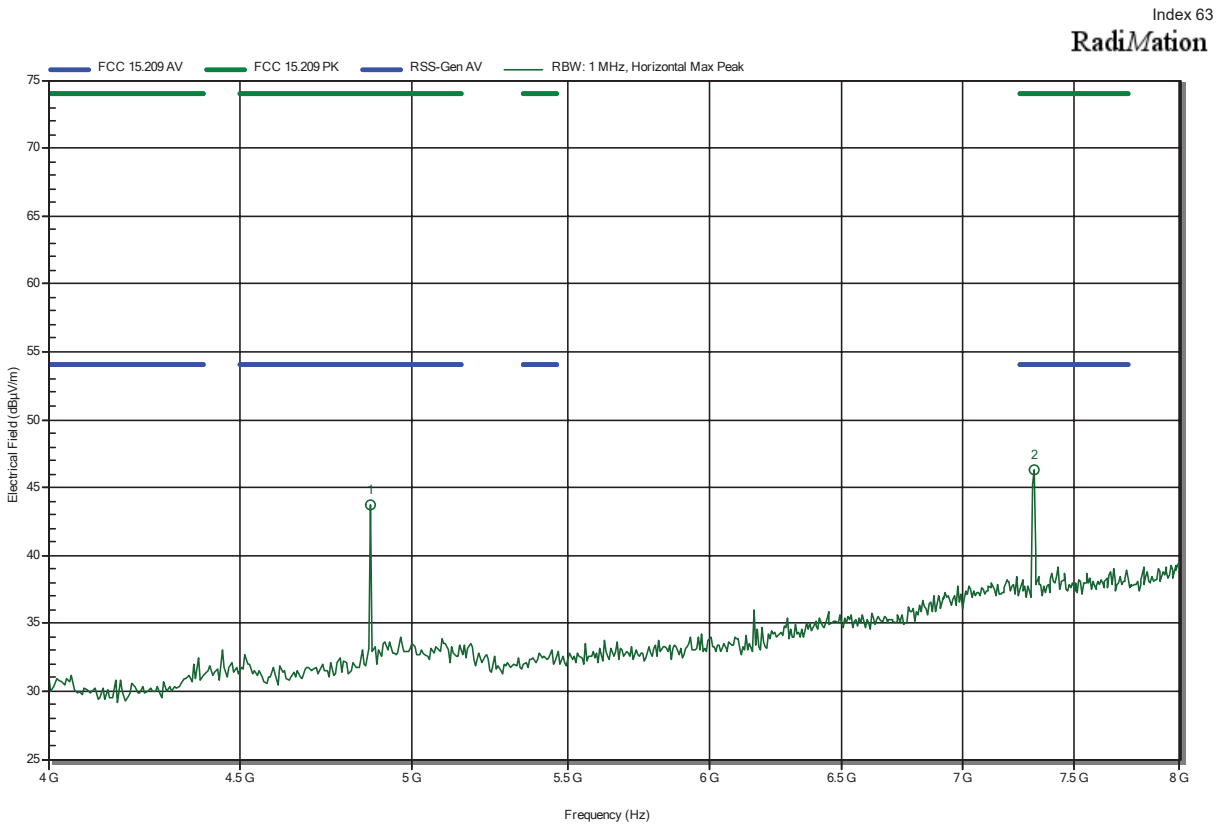

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.872 GHz	43.73 dBµV/m	74 dBµV/m	-30.27 dB	Pass
7.314 GHz	46.36 dBµV/m	74 dBµV/m	-27.64 dB	Pass

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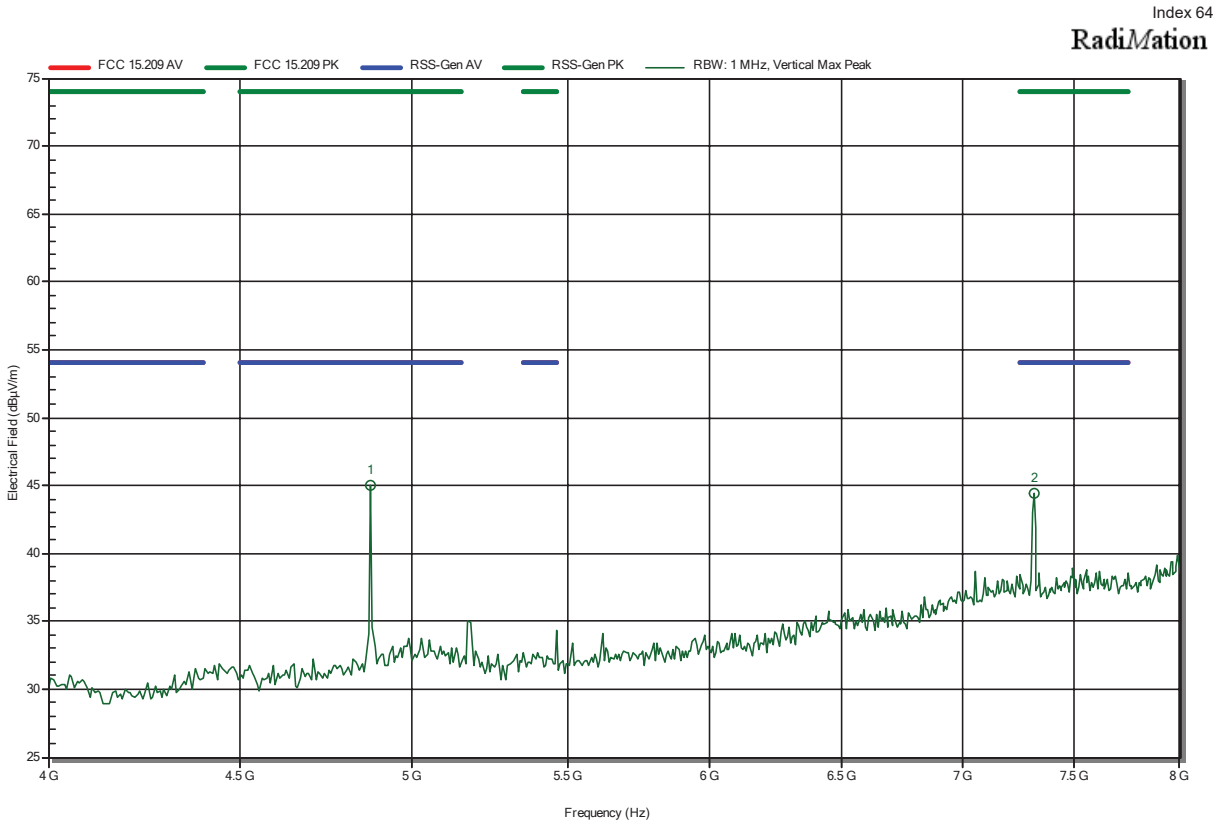

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.872 GHz	45.05 dBµV/m	74 dBµV/m	-28.95 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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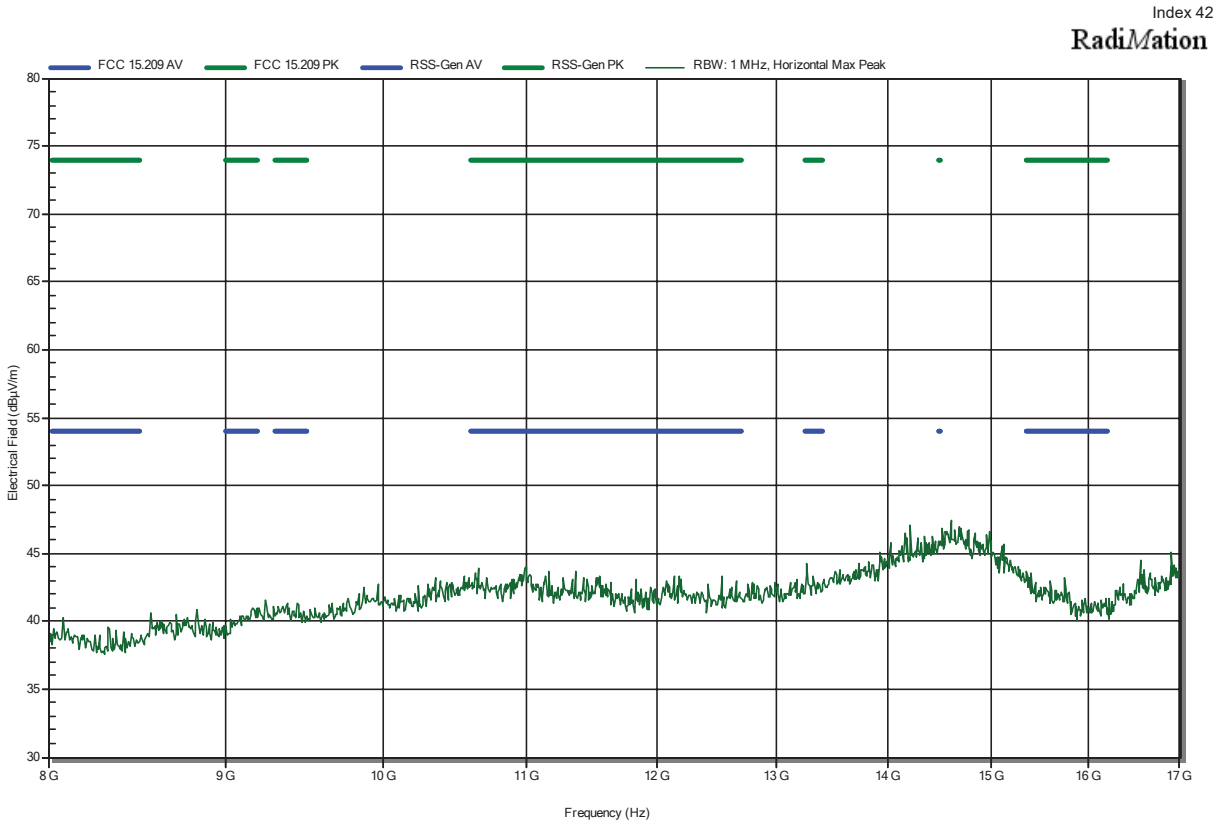

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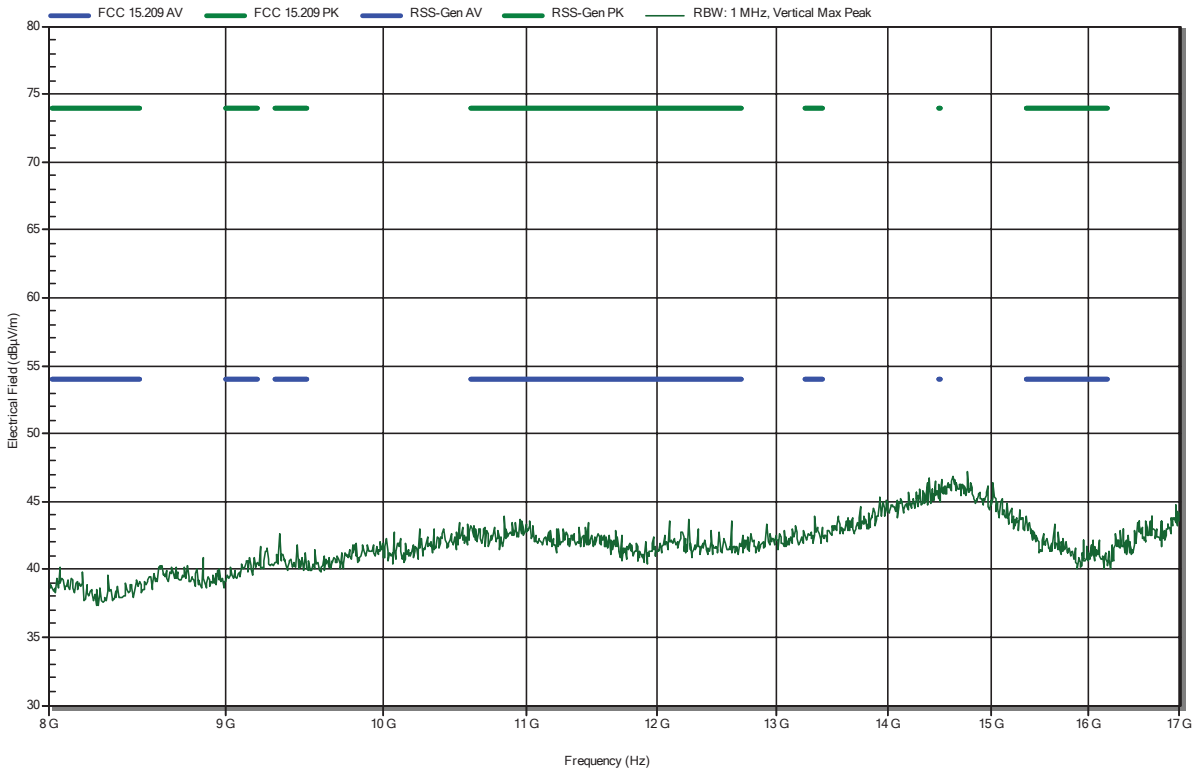

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Measurement distance:	1 m, converted to 3 m
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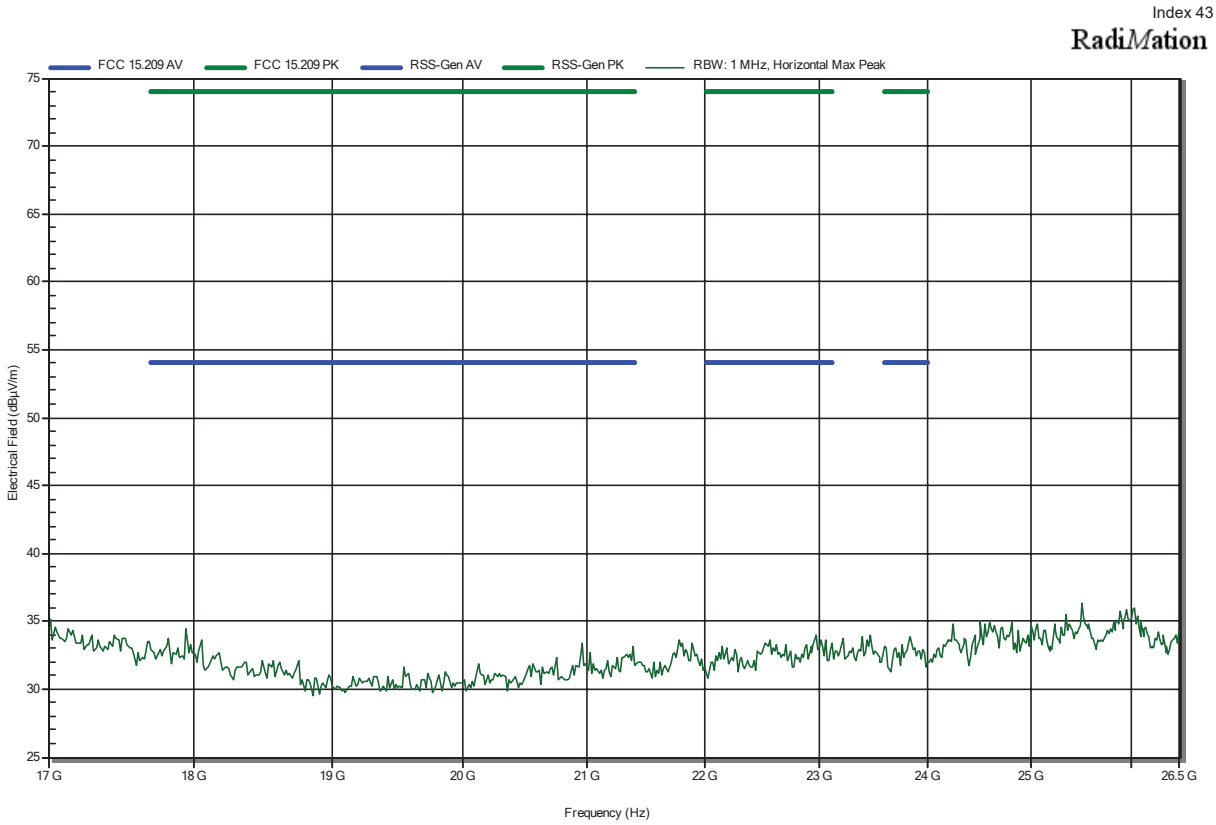

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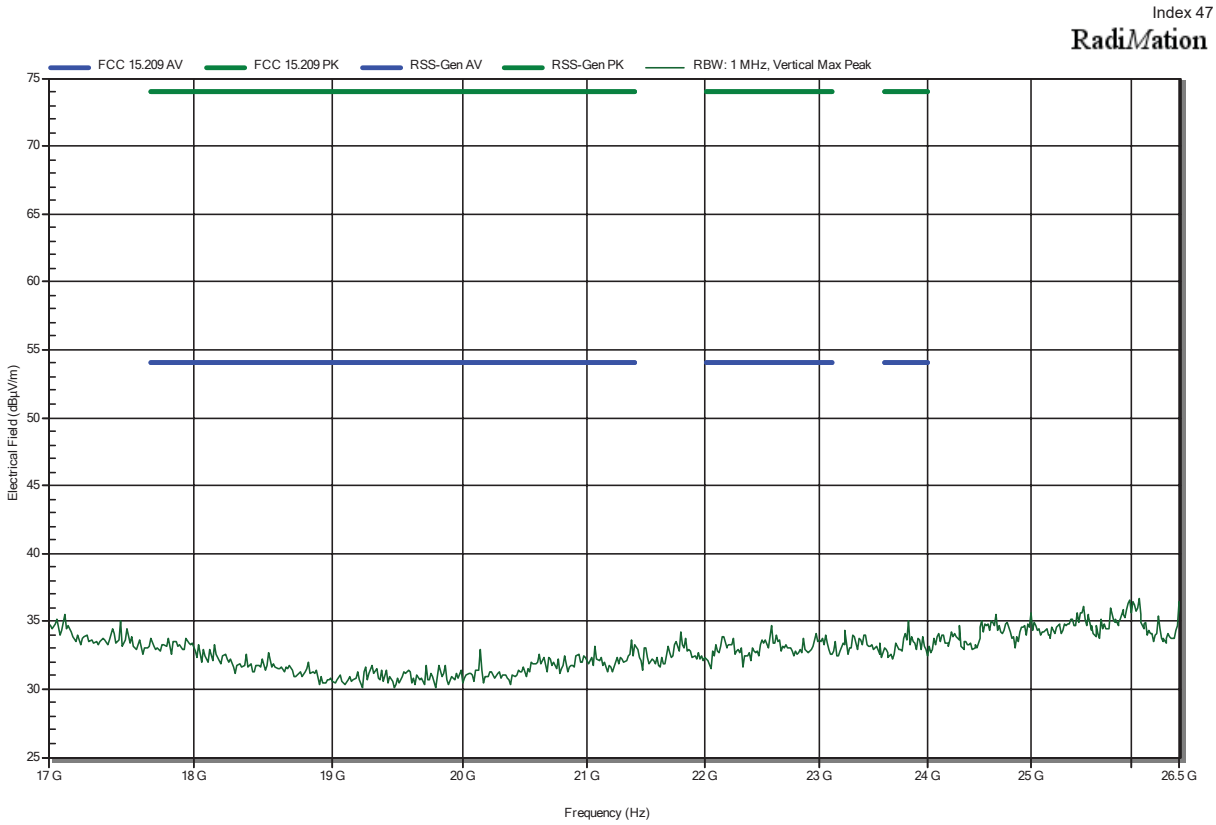

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Project Number:	G0M-2101-9569
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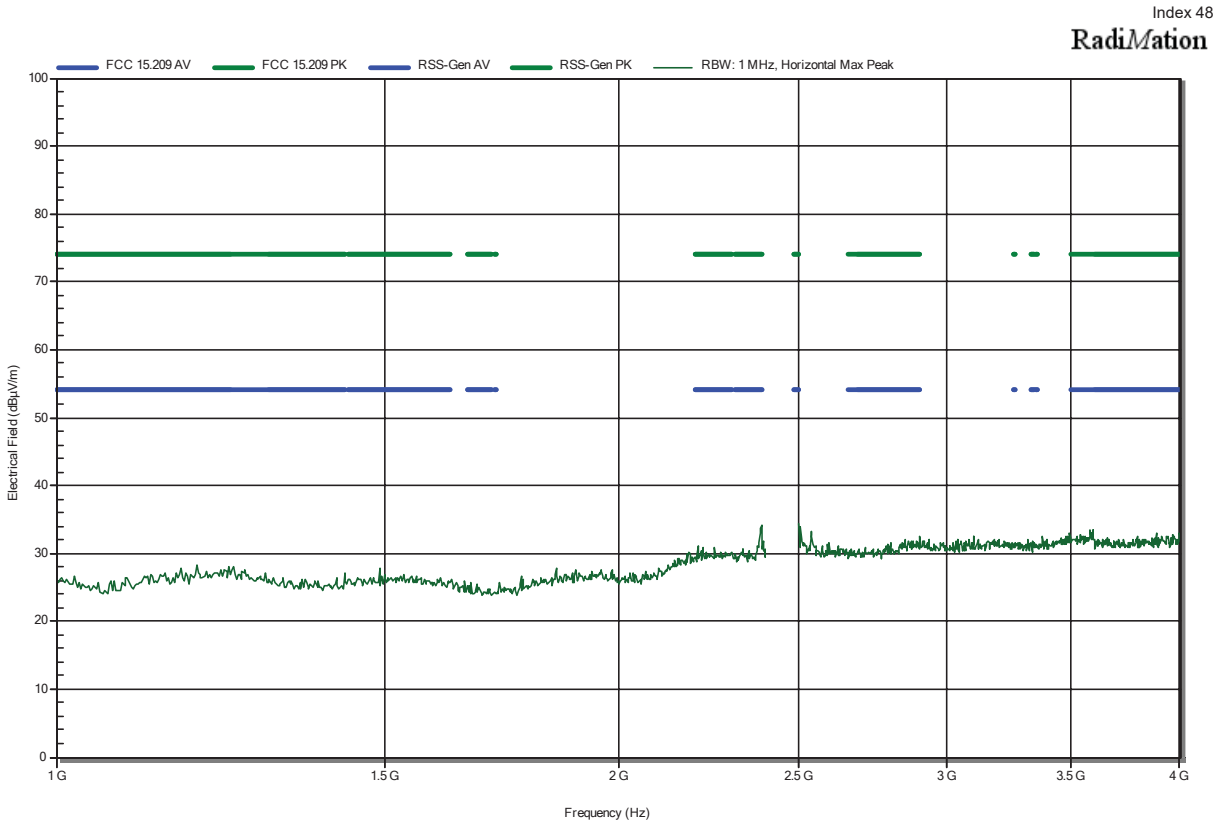
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
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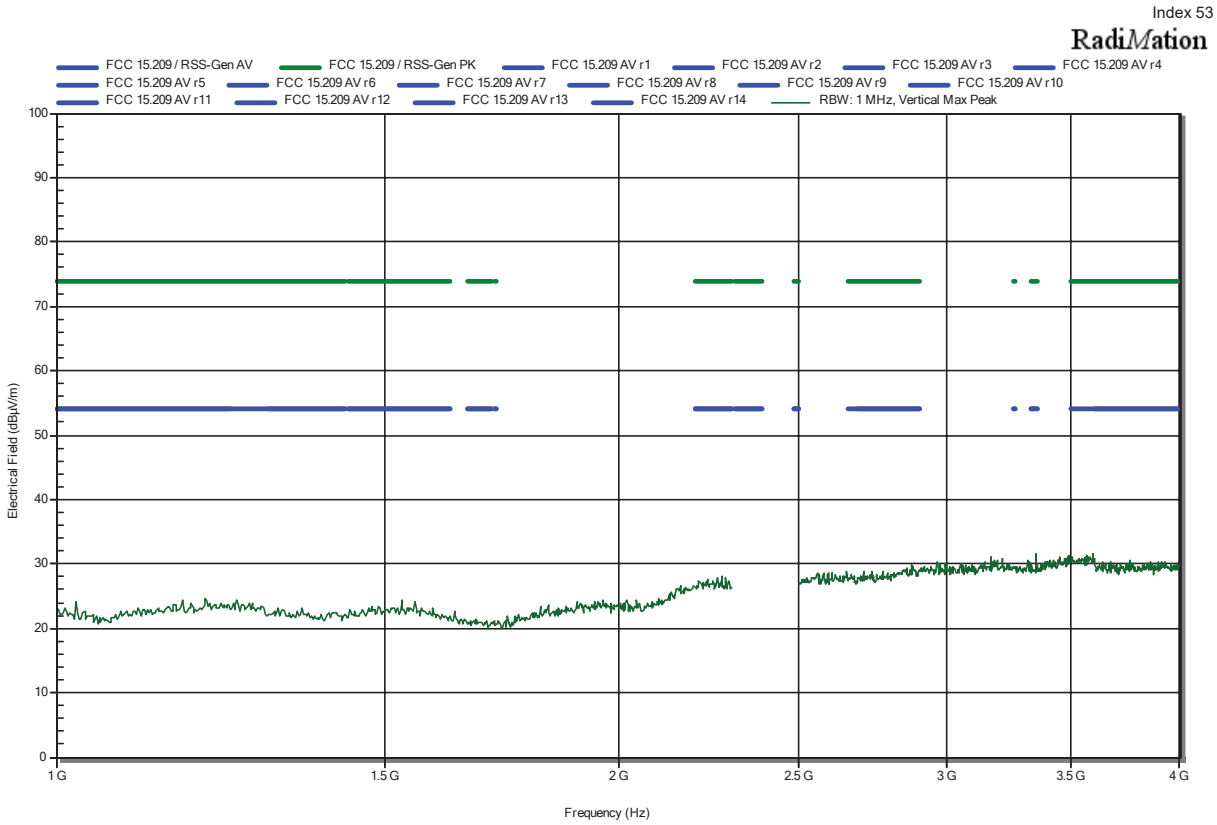
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
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Test Sample ID:	34967, A1 8 SerNr: 826
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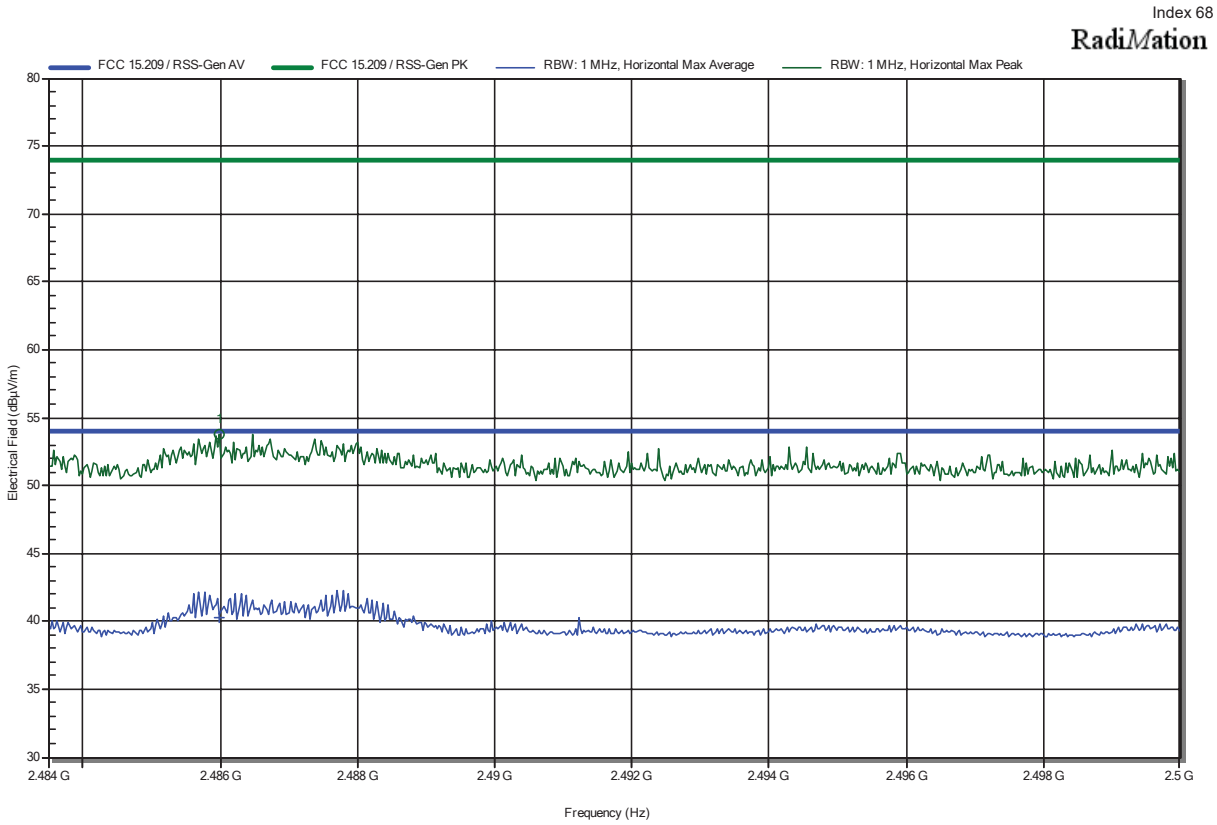
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08
	upper bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.486 GHz	53.77 dBµV/m	74 dBµV/m	-20.23 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.486 GHz	40.22 dBµV/m	54 dBµV/m	-13.78 dB	Pass

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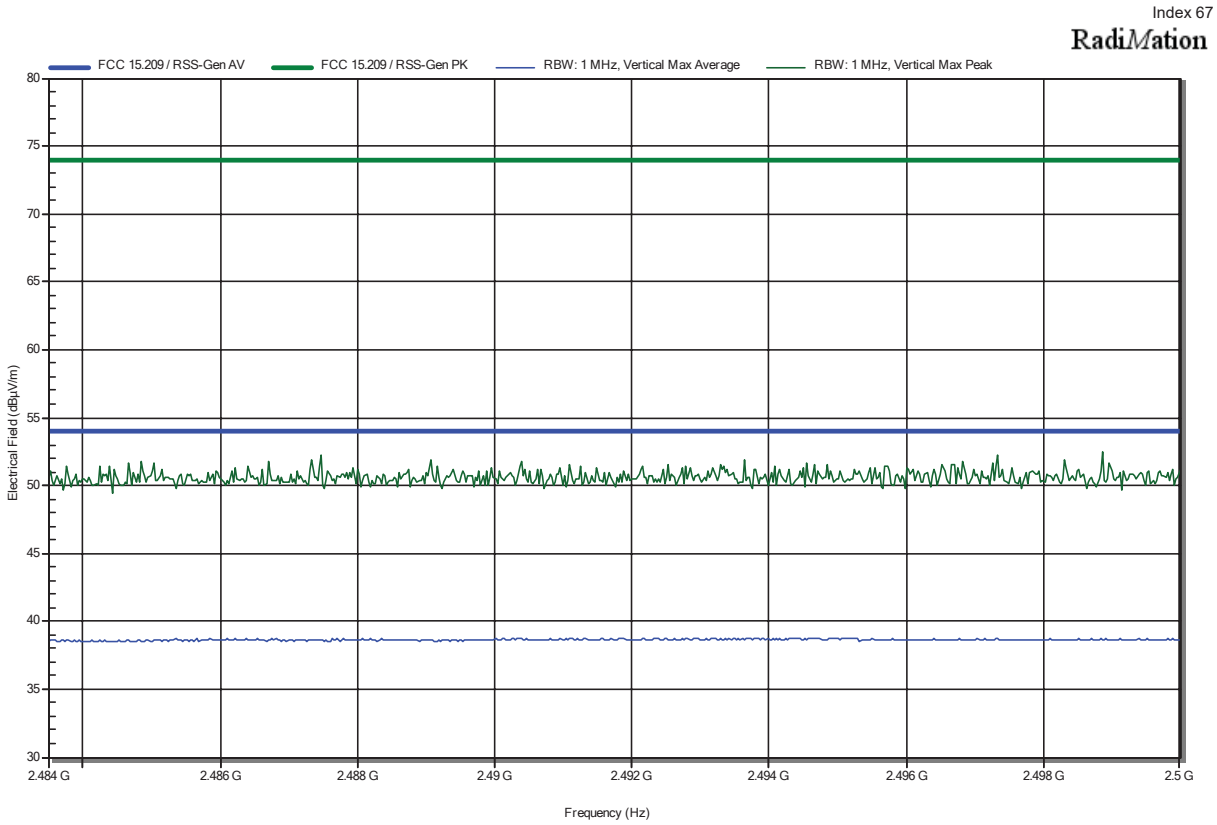
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08
	upper bandedge



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
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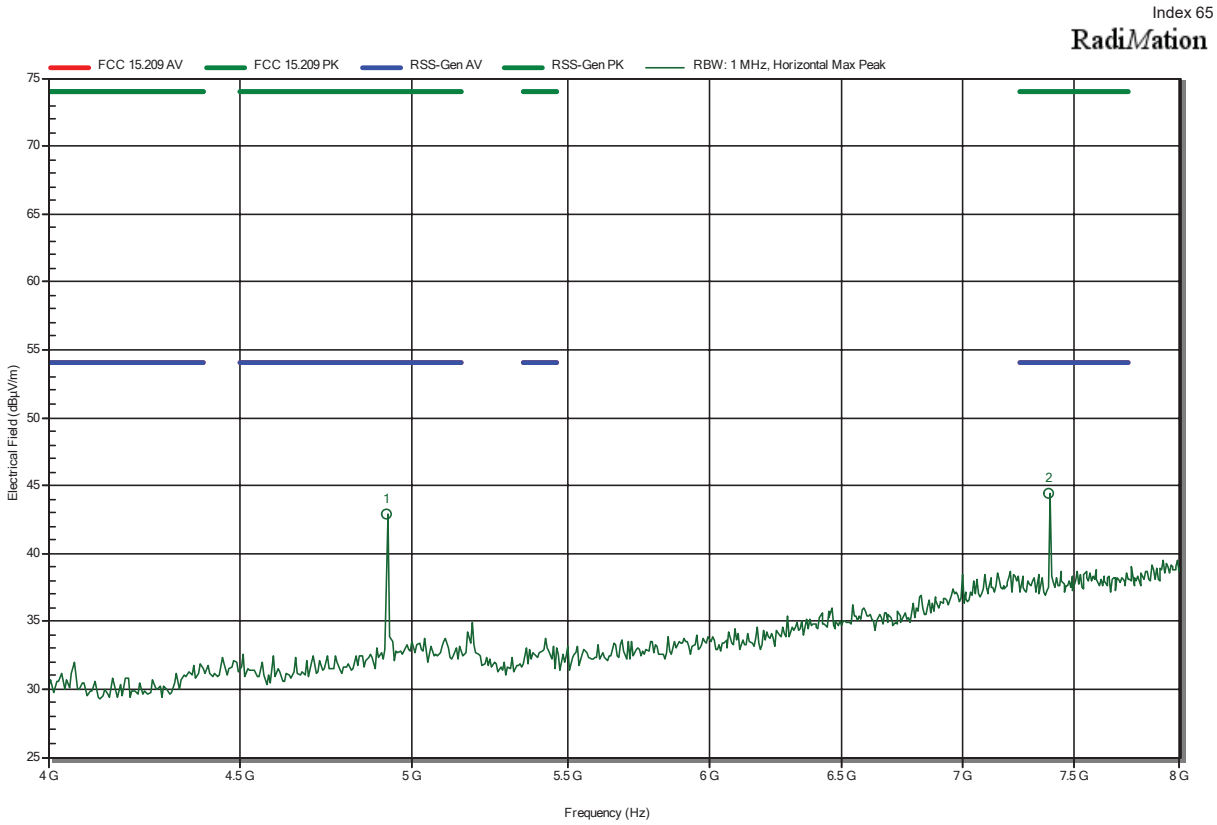
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.923 GHz	42.95 dBµV/m	74 dBµV/m	-31.05 dB	Pass
7.385 GHz	44.43 dBµV/m	74 dBµV/m	-29.57 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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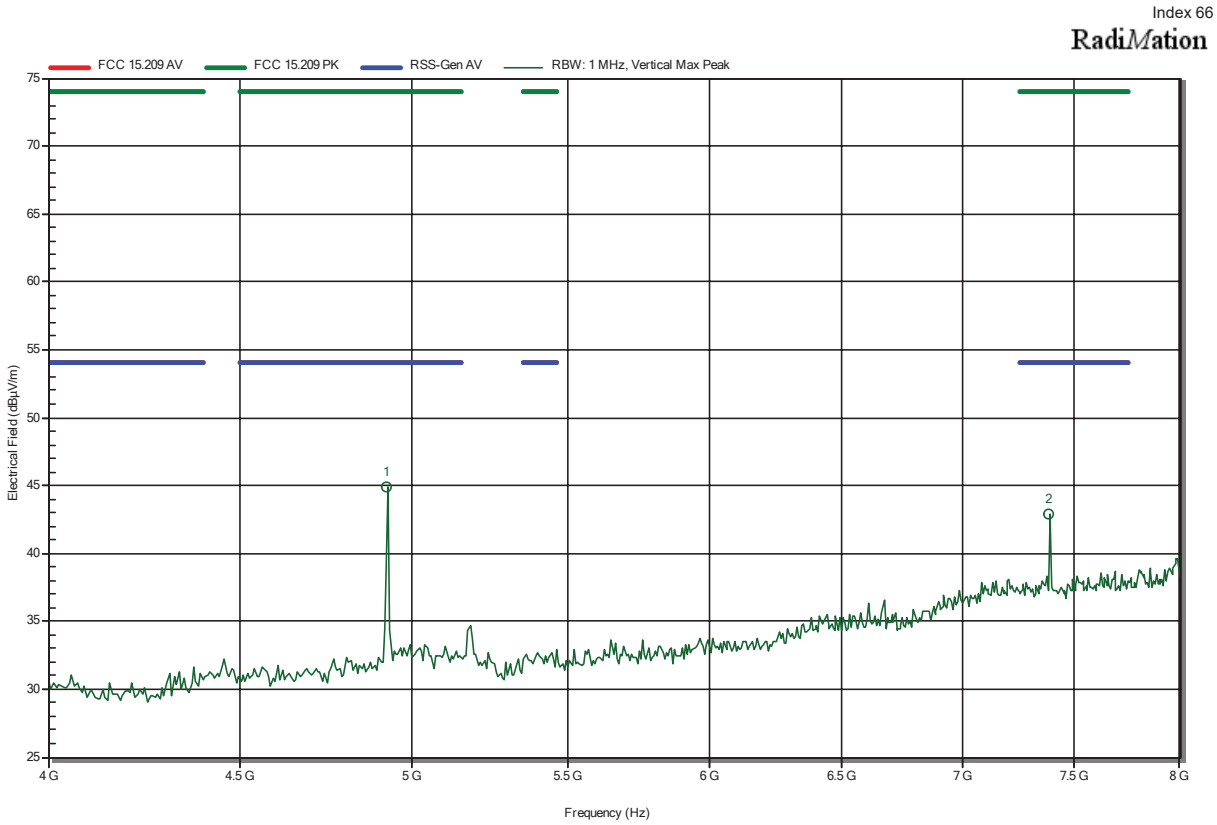
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.923 GHz	44.85 dBµV/m	74 dBµV/m	-29.15 dB	Pass
7.385 GHz	42.91 dBµV/m	74 dBµV/m	-31.09 dB	Pass

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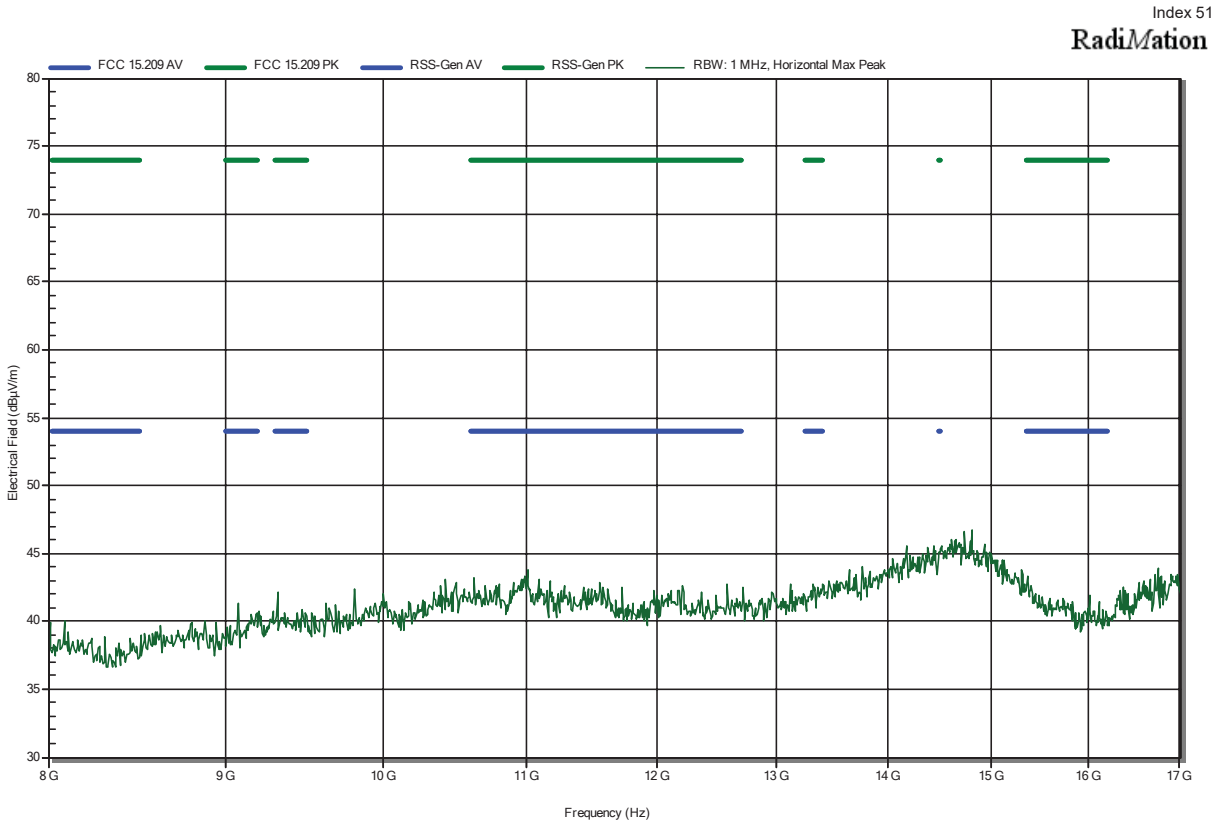
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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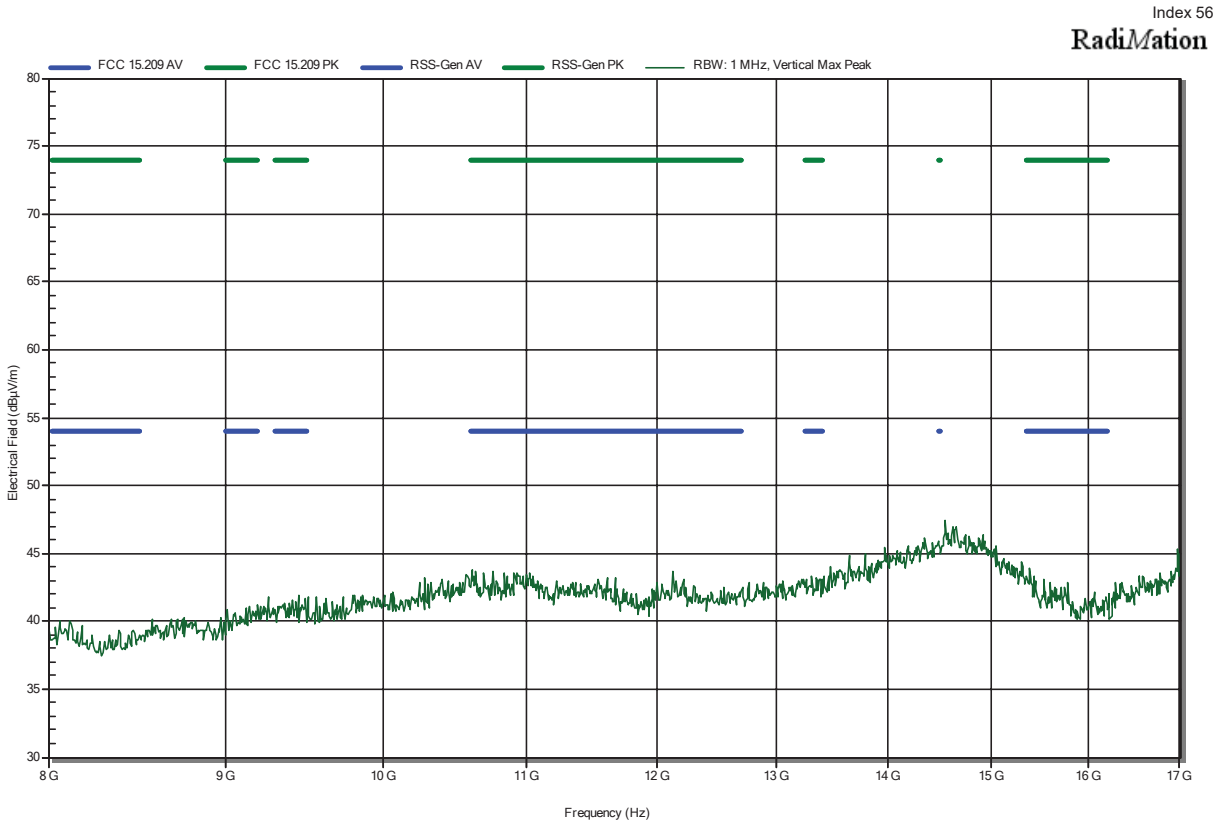
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
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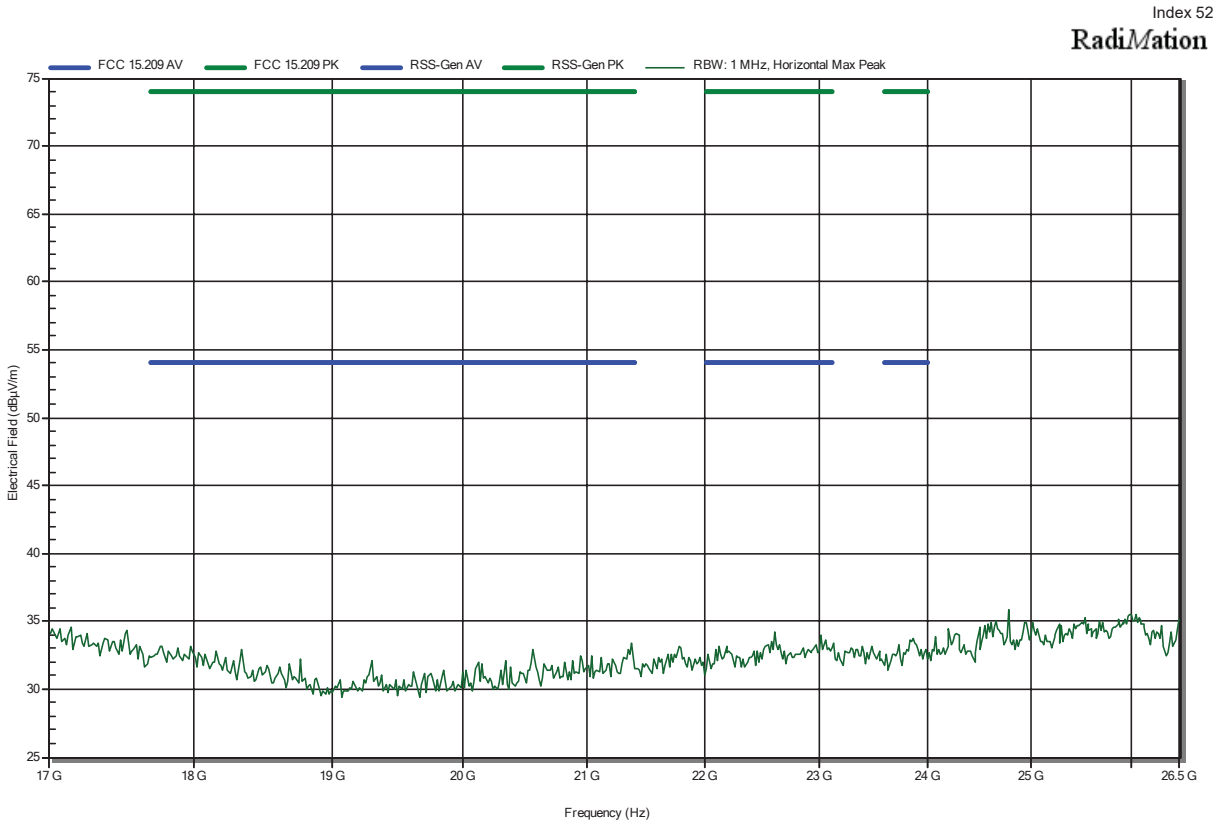
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



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Applicant:	Panasonic Industrial Devices Europe GmbH
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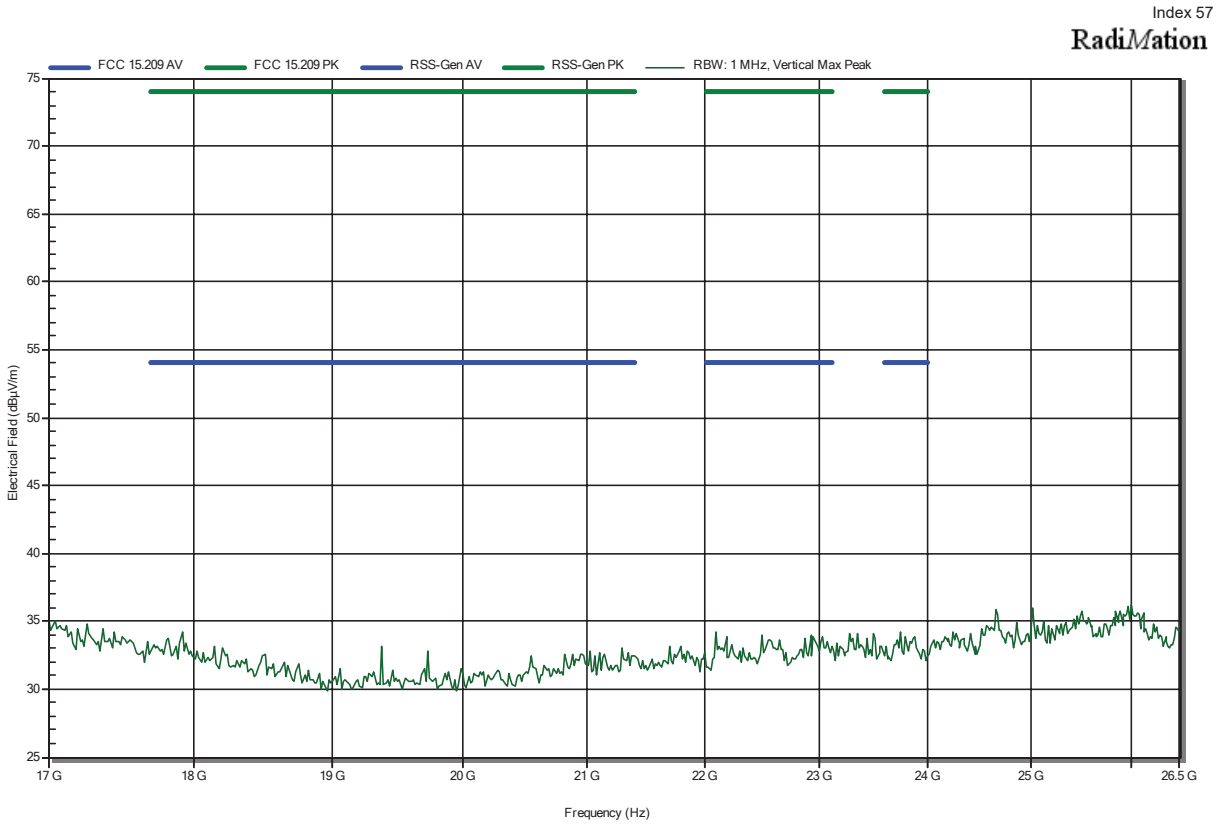
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11b; 1 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to FCC 47 CFR 15.247

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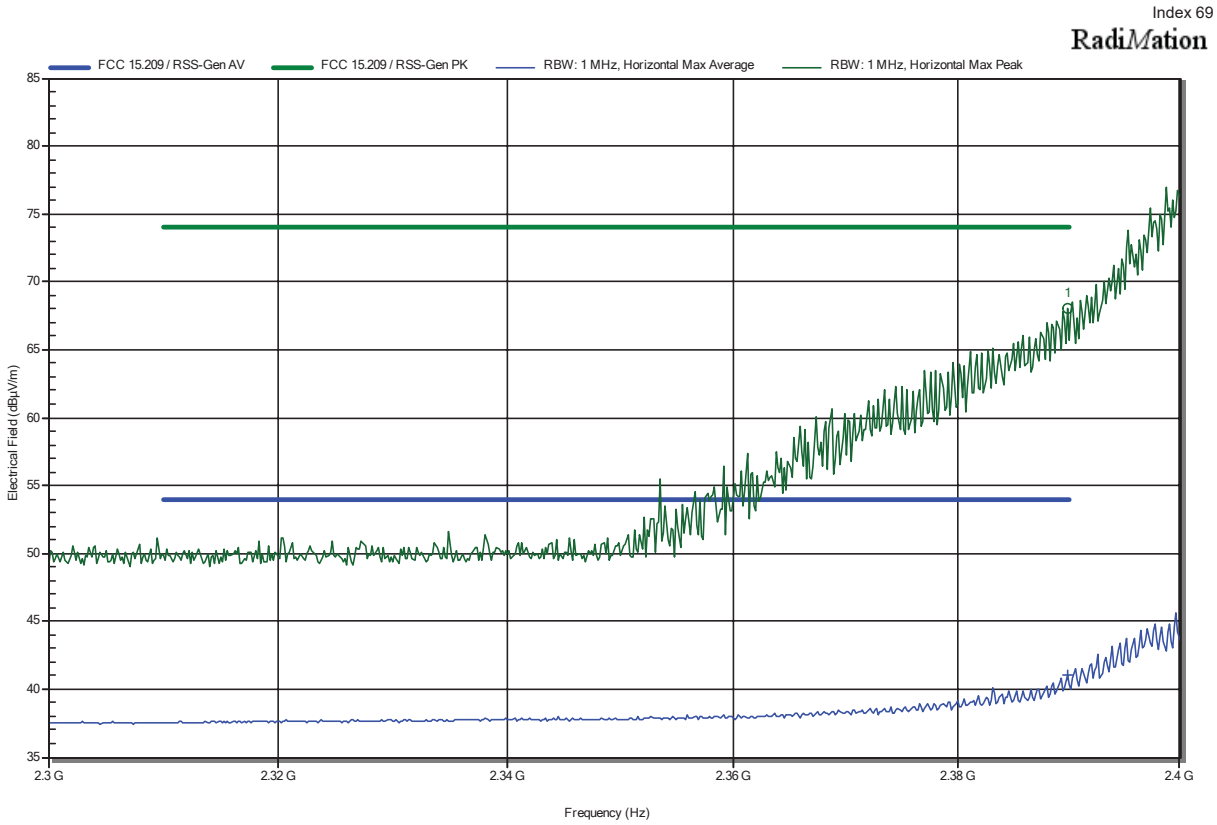
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3899 GHz	68.02 dBµV/m	74 dBµV/m	-5.98 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3899 GHz	41.02 dBµV/m	54 dBµV/m	-12.98 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
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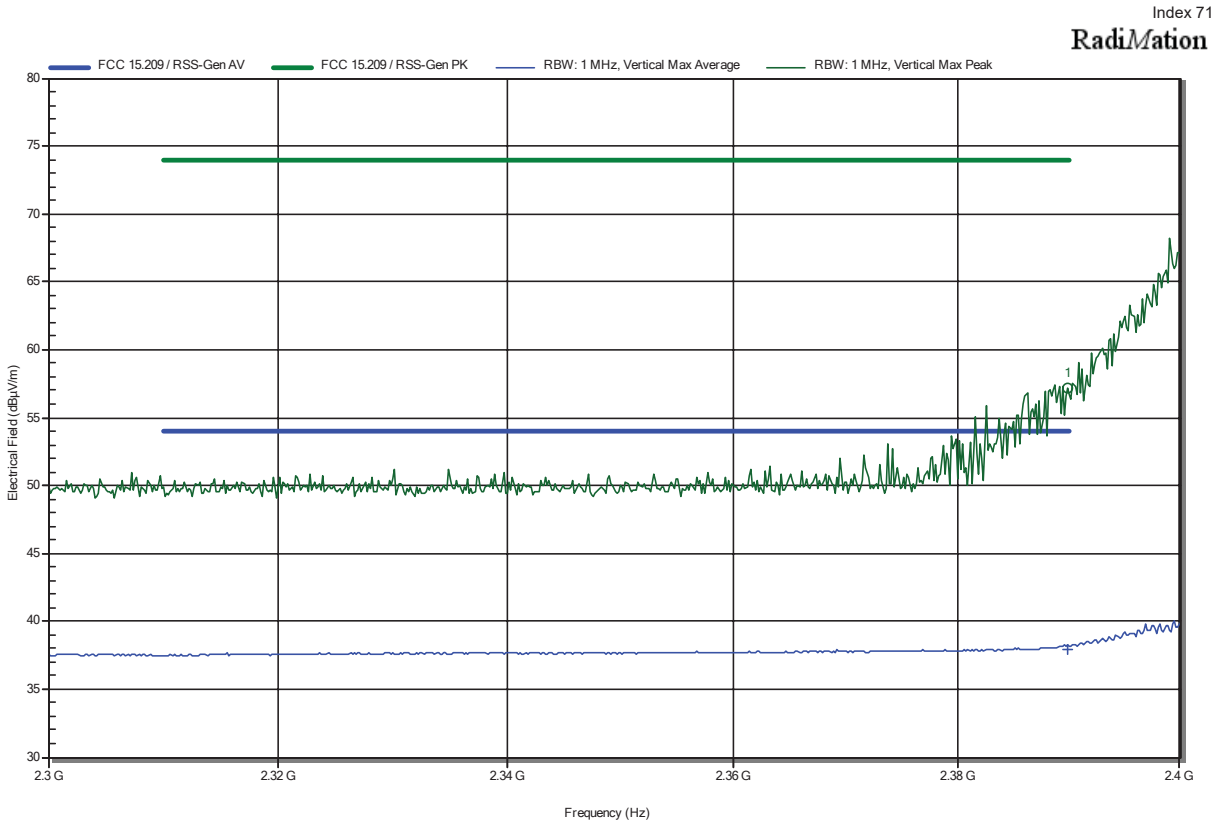
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3899 GHz	57.19 dBµV/m	74 dBµV/m	-16.81 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3899 GHz	37.97 dBµV/m	54 dBµV/m	-16.03 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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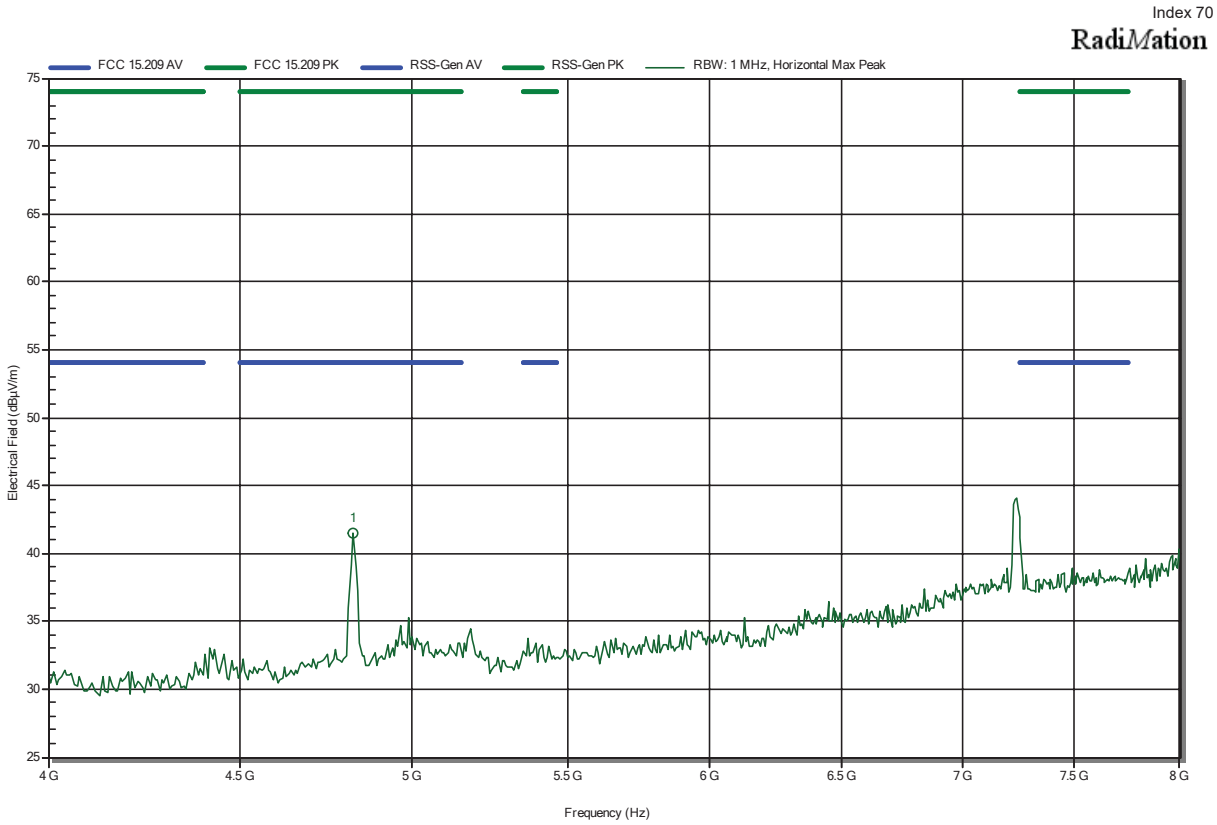
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.821 GHz	41.45 dBµV/m	74 dBµV/m	-32.55 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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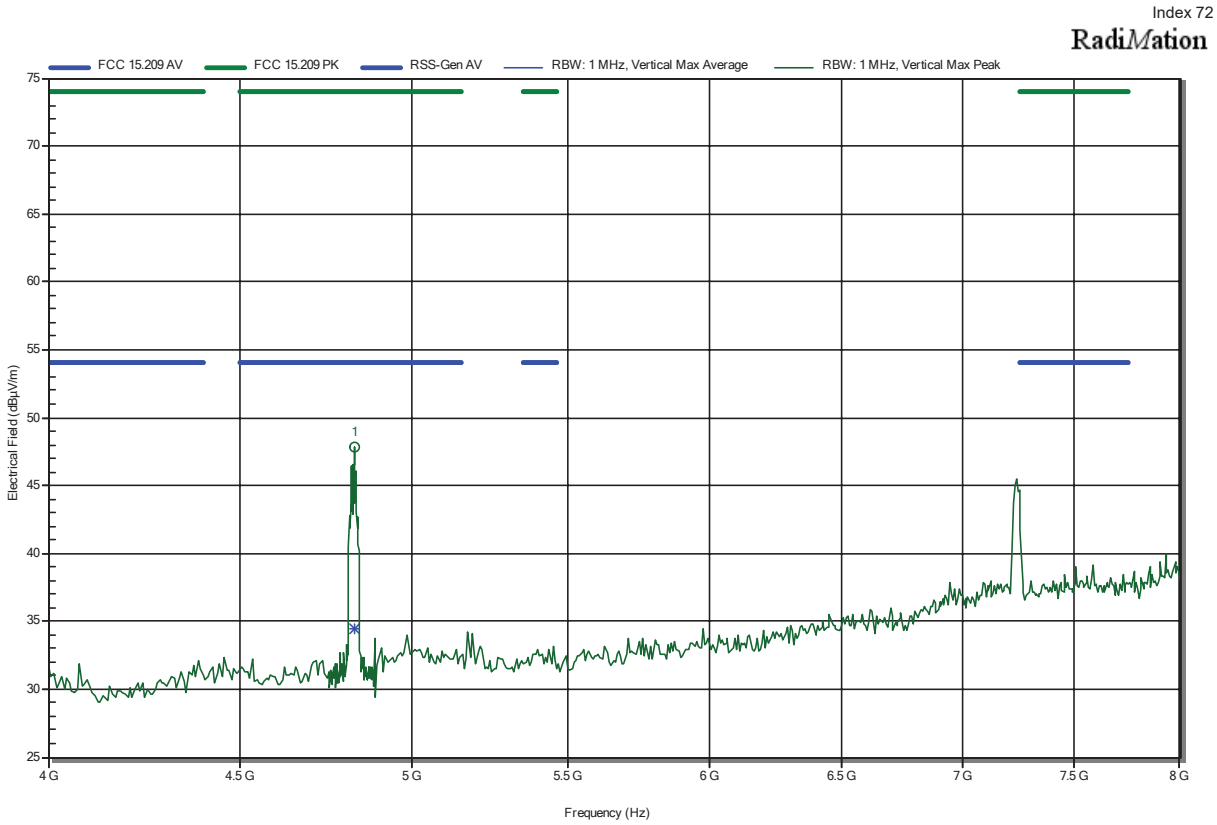
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.824 GHz	47.86 dBµV/m	74 dBµV/m	-26.14 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
4.824 GHz	34.45 dBµV/m	54 dBµV/m	-19.55 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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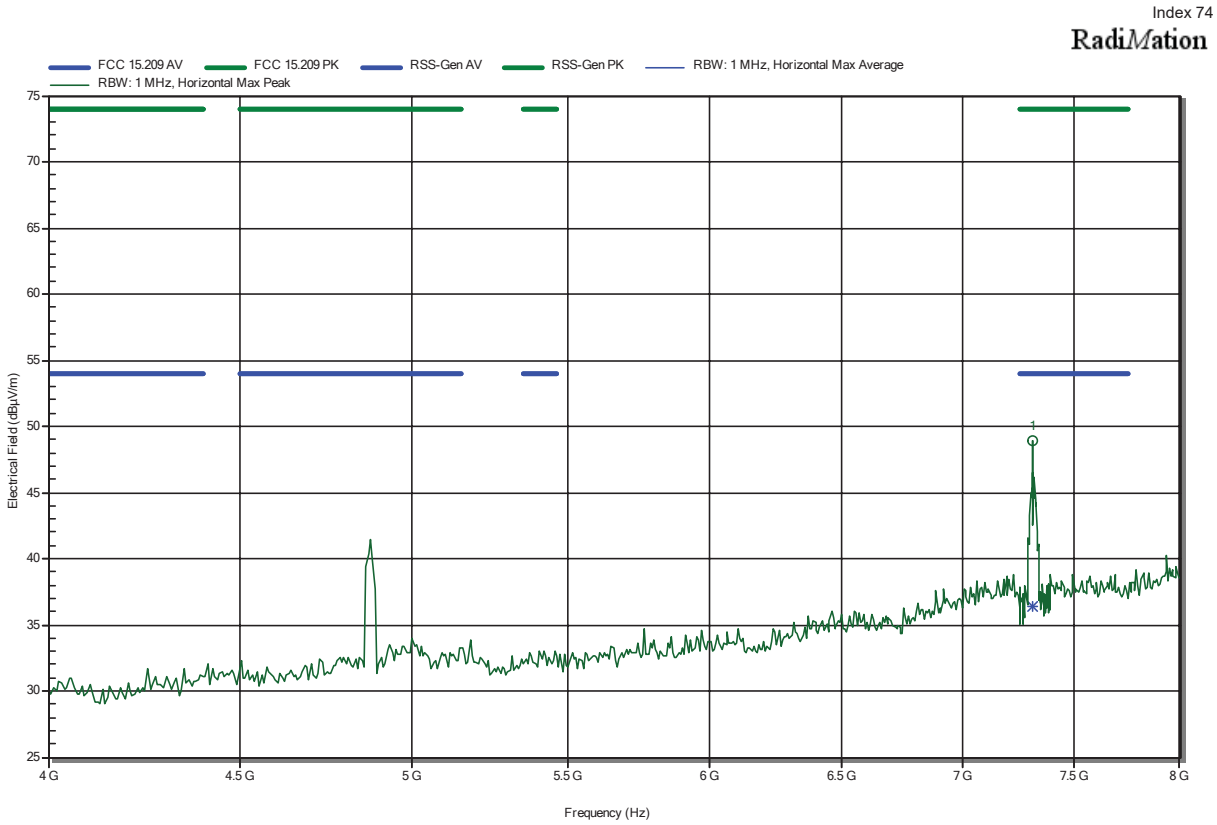
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.313 GHz	48.9 dBµV/m	74 dBµV/m	-25.1 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
7.313 GHz	36.39 dBµV/m	54 dBµV/m	-17.61 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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Measurement distance:	1 m, converted to 3 m
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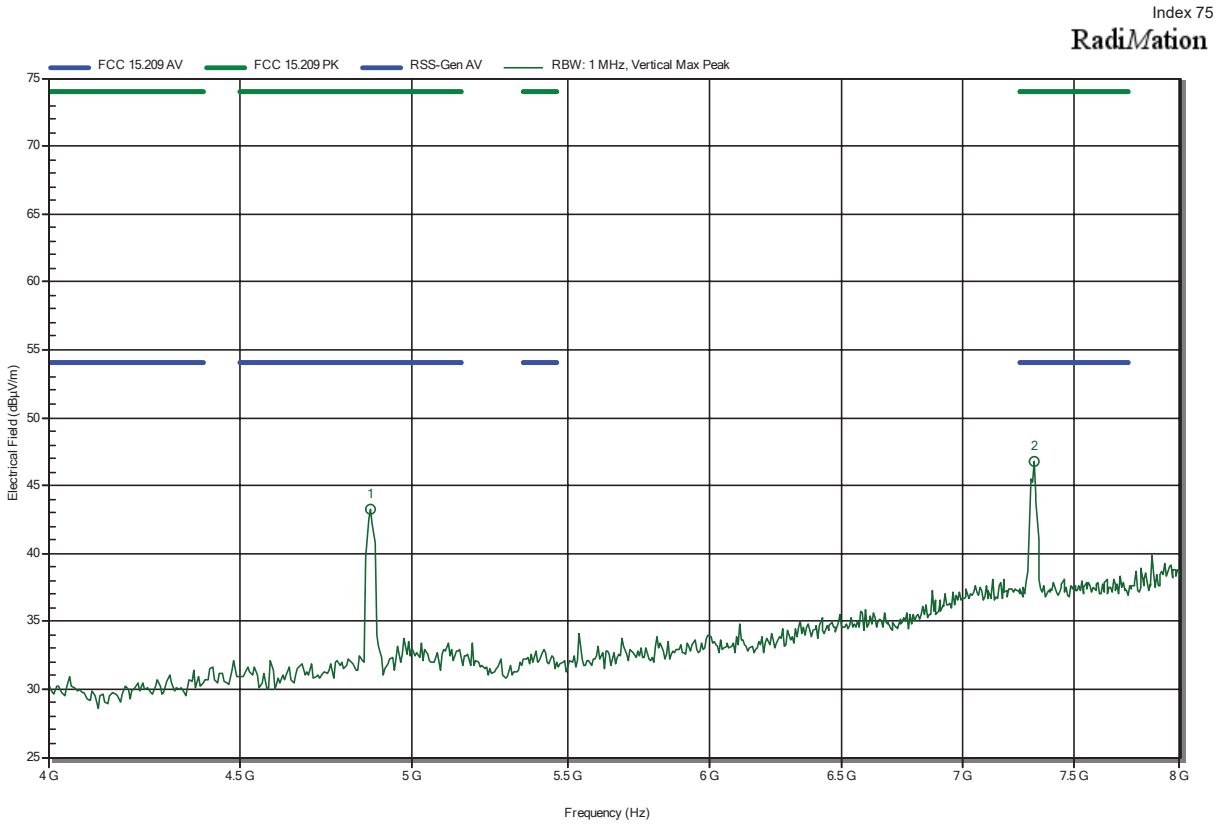
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.872 GHz	43.2 dBµV/m	74 dBµV/m	-30.8 dB	Pass
7.314 GHz	46.74 dBµV/m	74 dBµV/m	-27.26 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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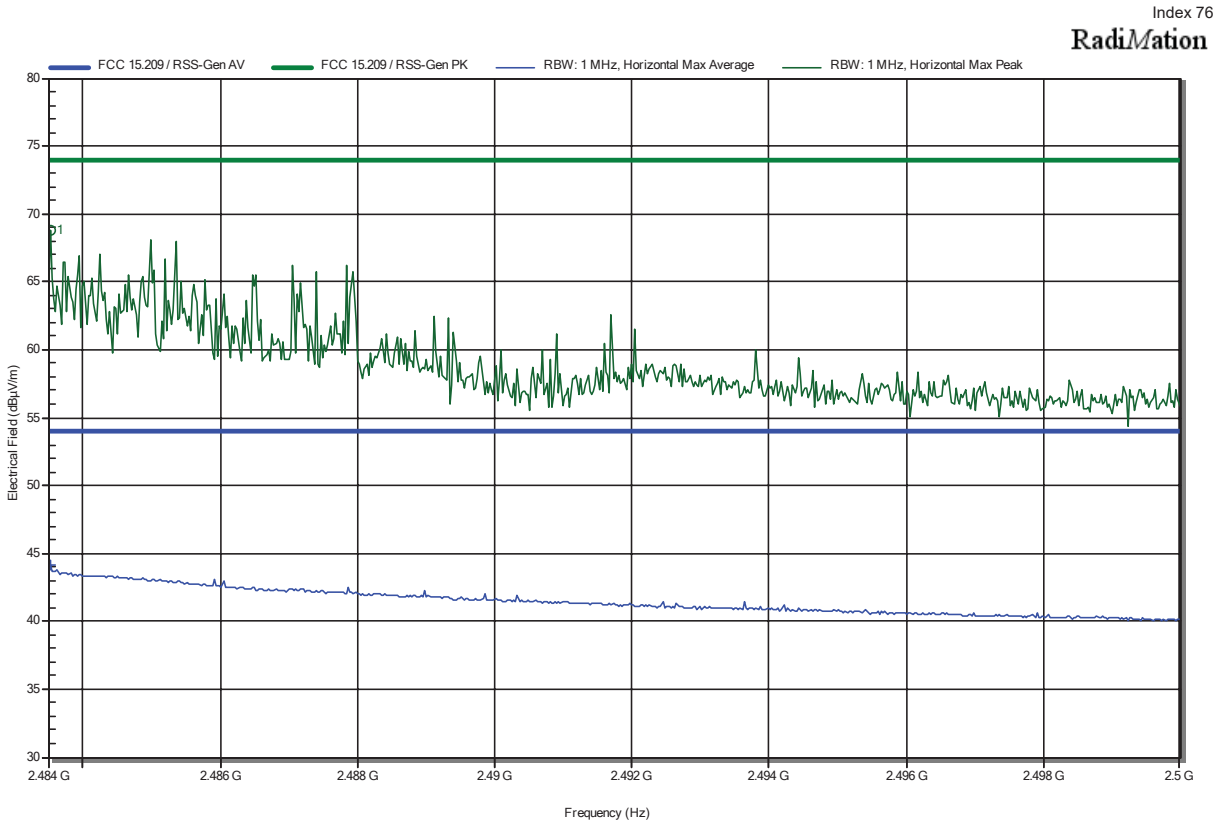
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	upper bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4835 GHz	68.84 dBµV/m	74 dBµV/m	-5.16 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4835 GHz	44.17 dBµV/m	54 dBµV/m	-9.83 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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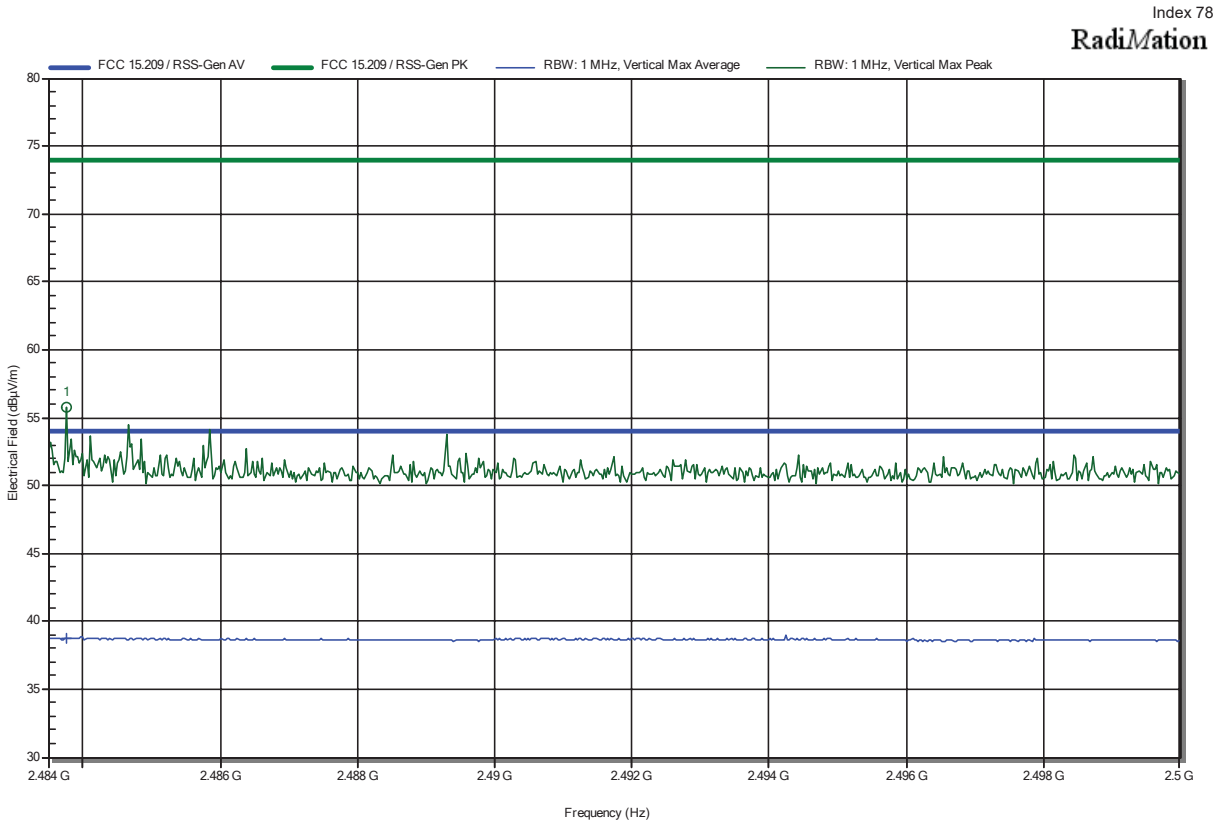

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4838 GHz	55.79 dBµV/m	74 dBµV/m	-18.21 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4838 GHz	38.71 dBµV/m	54 dBµV/m	-15.29 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
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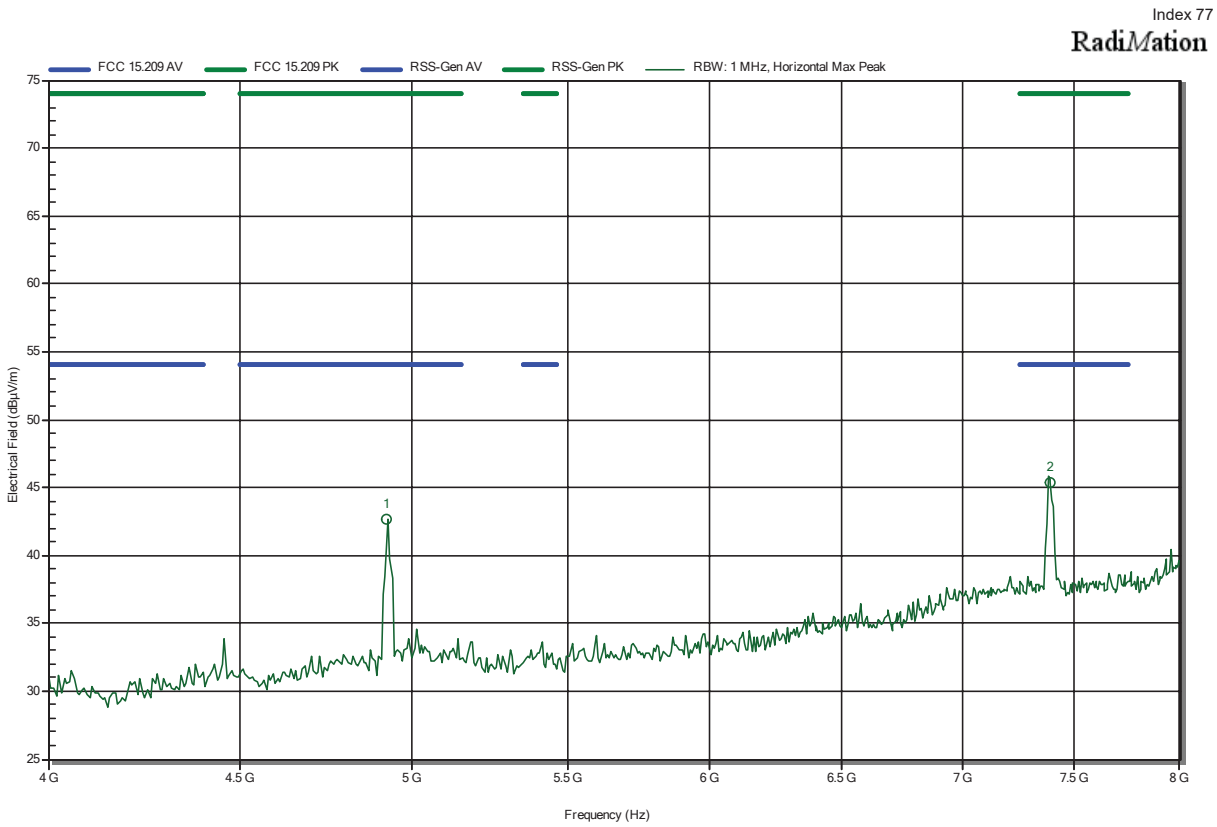

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.923 GHz	42.7 dBµV/m	74 dBµV/m	-31.3 dB	Pass
7.391 GHz	45.35 dBµV/m	74 dBµV/m	-28.65 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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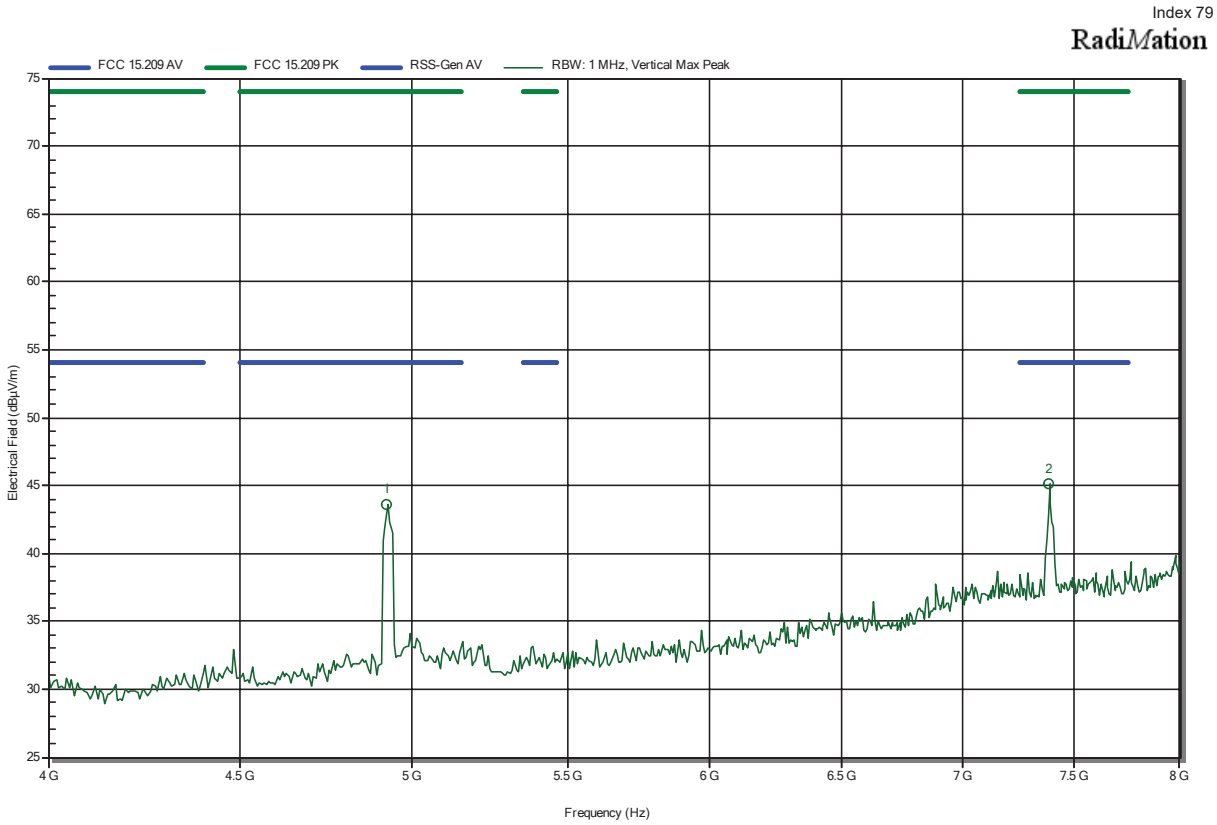
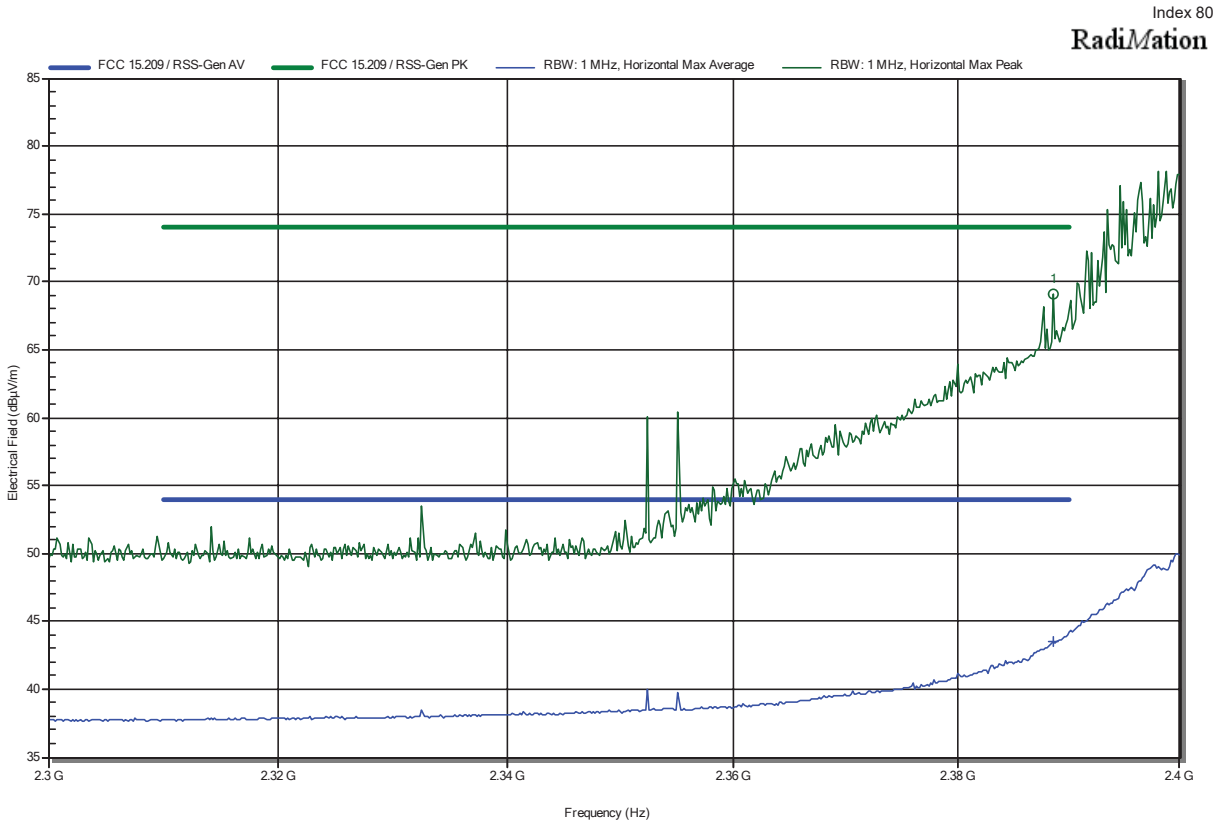
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11g; 9 Mbps; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.923 GHz	43.6 dBµV/m	74 dBµV/m	-30.4 dB	Pass
7.385 GHz	45.07 dBµV/m	74 dBµV/m	-28.93 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge

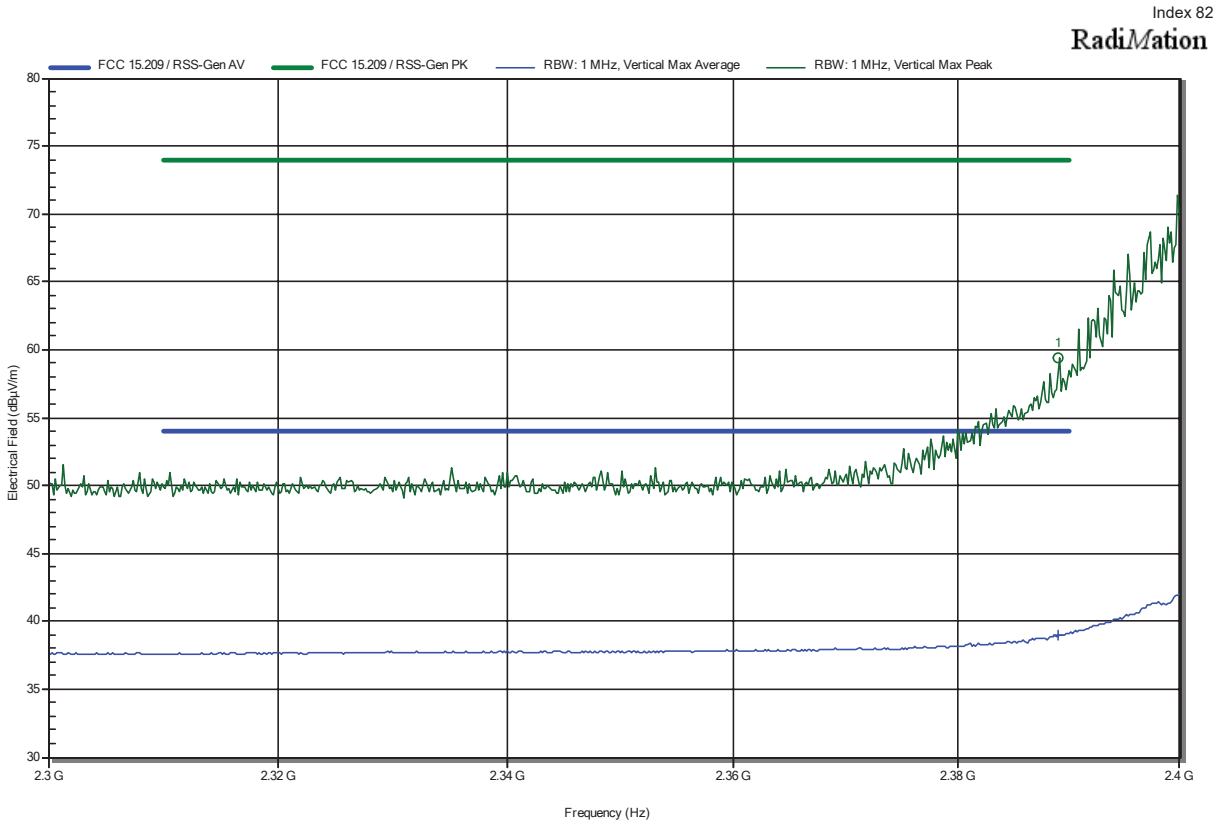


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3886 GHz	69.15 dBµV/m	74 dBµV/m	-4.85 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3886 GHz	43.49 dBµV/m	54 dBµV/m	-10.51 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge

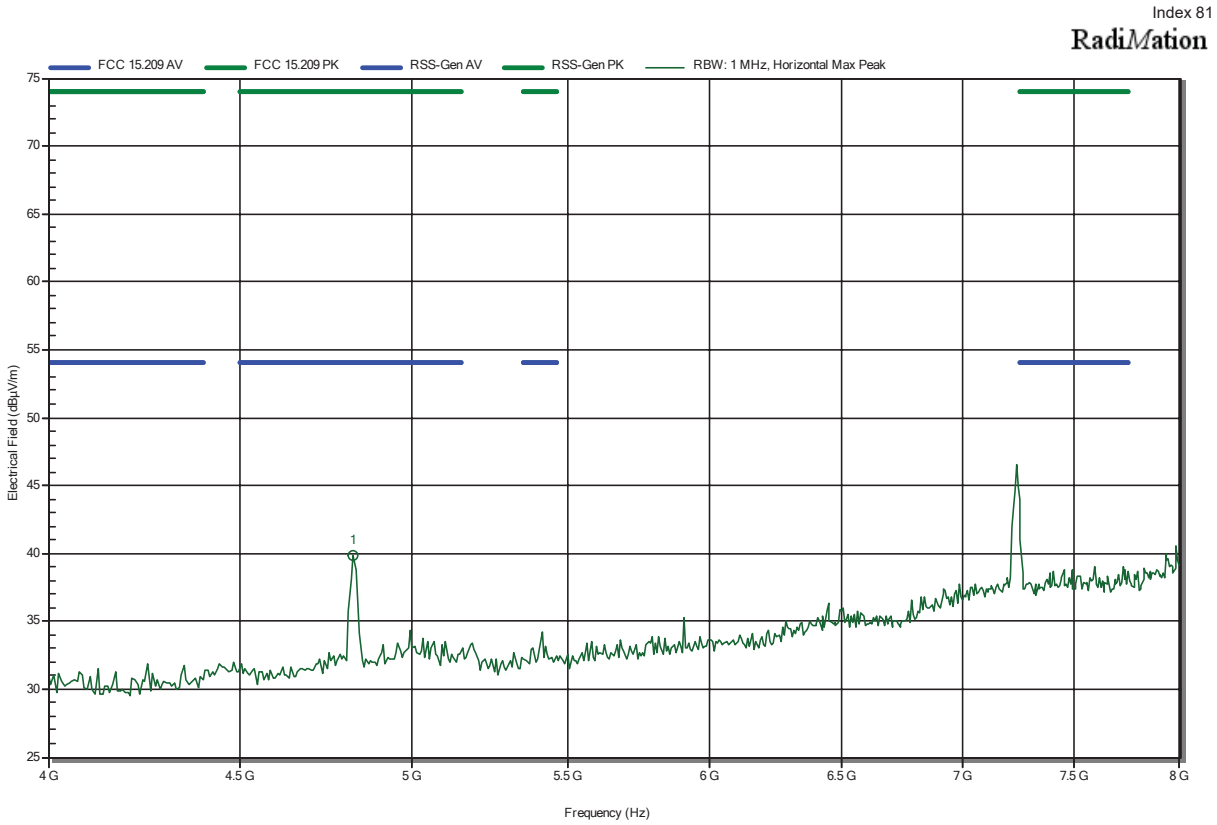


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3891 GHz	59.41 dBµV/m	74 dBµV/m	-14.59 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3891 GHz	38.99 dBµV/m	54 dBµV/m	-15.01 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

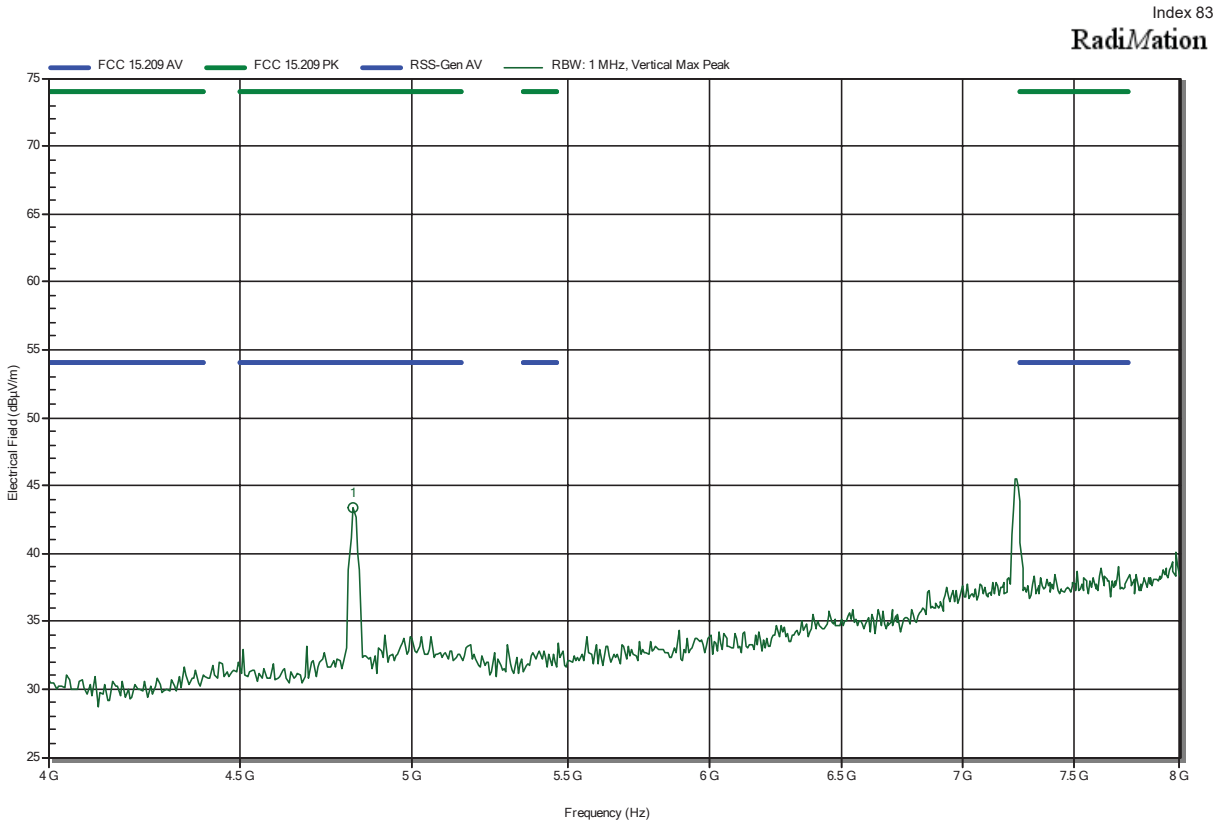
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.821 GHz	39.85 dBµV/m	74 dBµV/m	-34.15 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

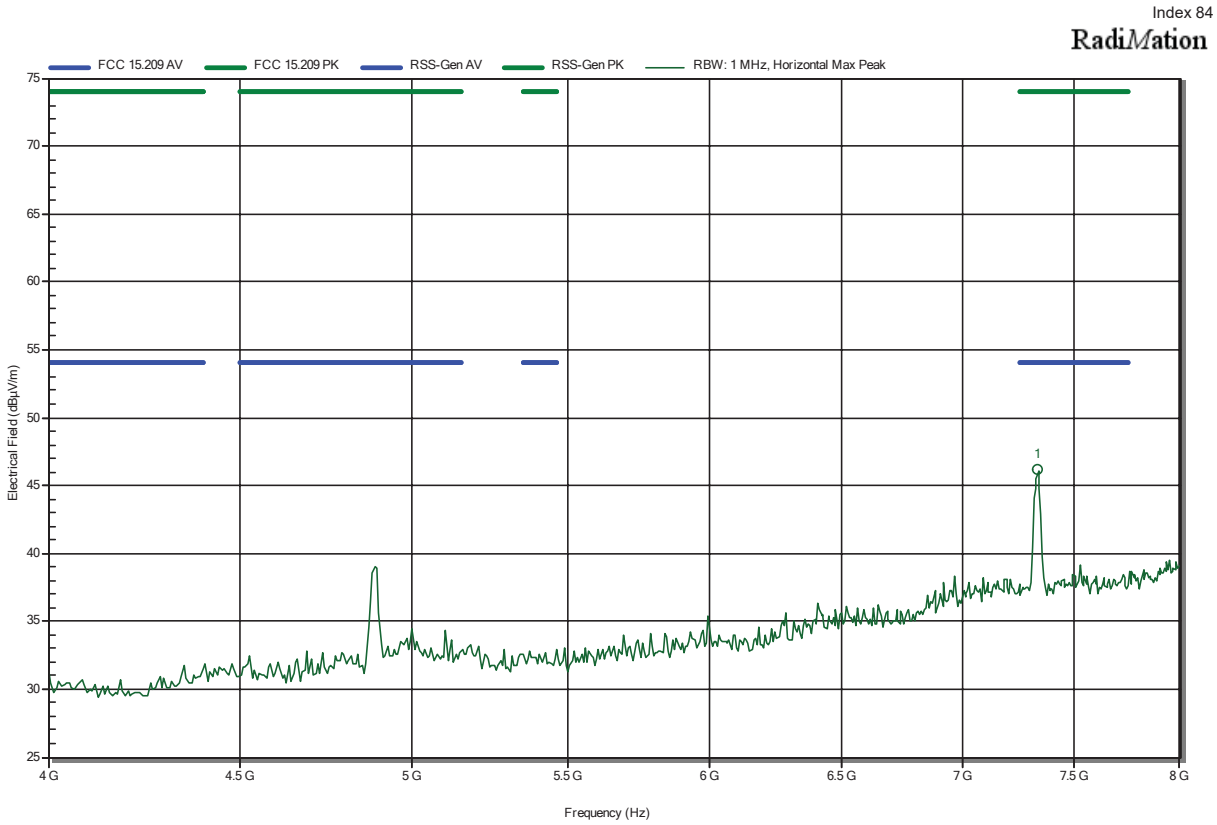
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2412 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.821 GHz	43.41 dBµV/m	74 dBµV/m	-30.59 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

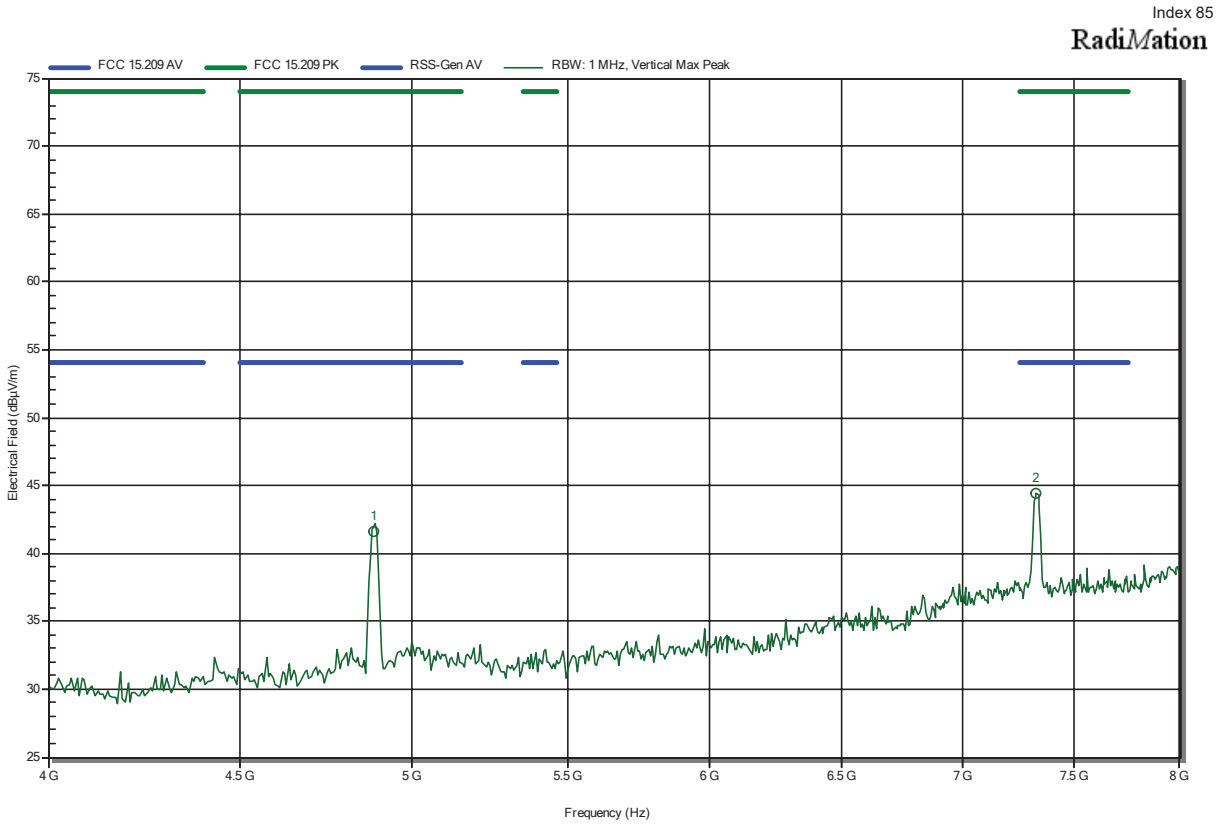
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.333 GHz	46.13 dBµV/m	74 dBµV/m	-27.87 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

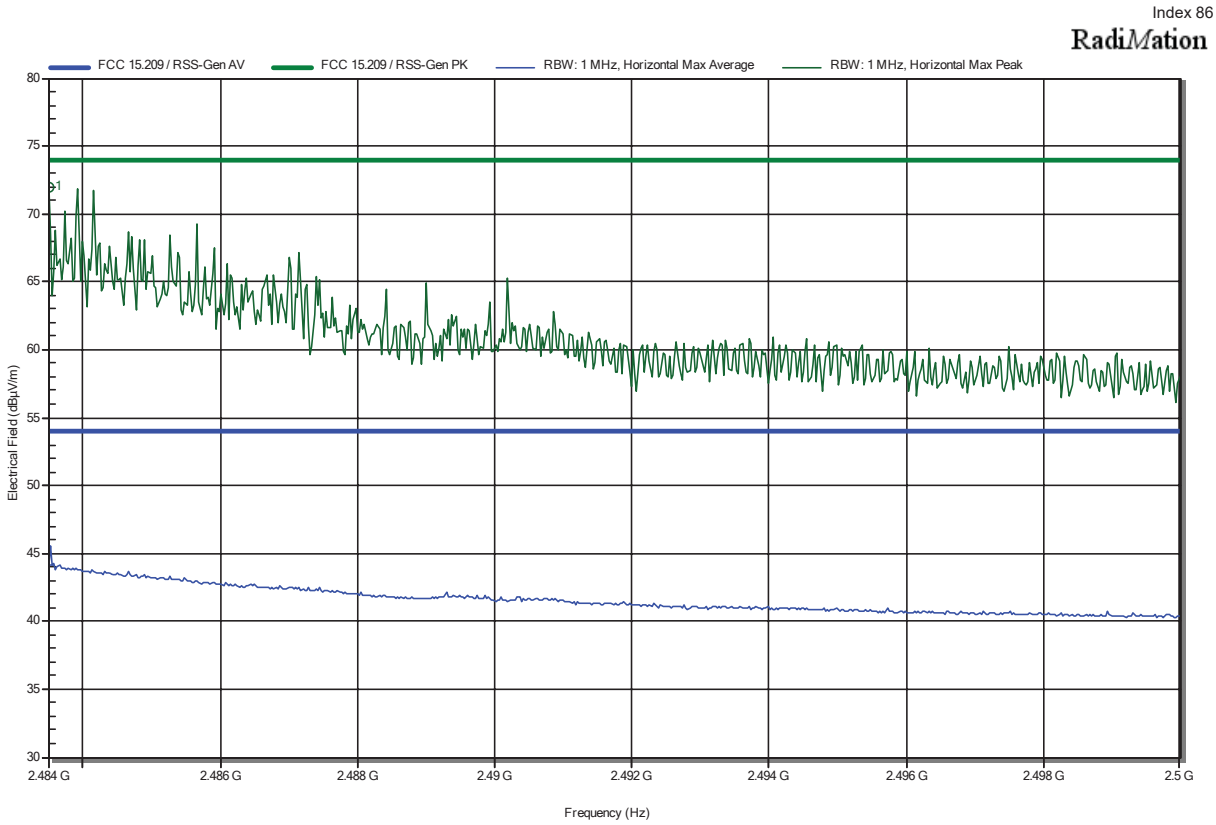
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.885 GHz	41.64 dBµV/m	74 dBµV/m	-32.36 dB	Pass
7.327 GHz	44.4 dBµV/m	74 dBµV/m	-29.6 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	upper bandedge

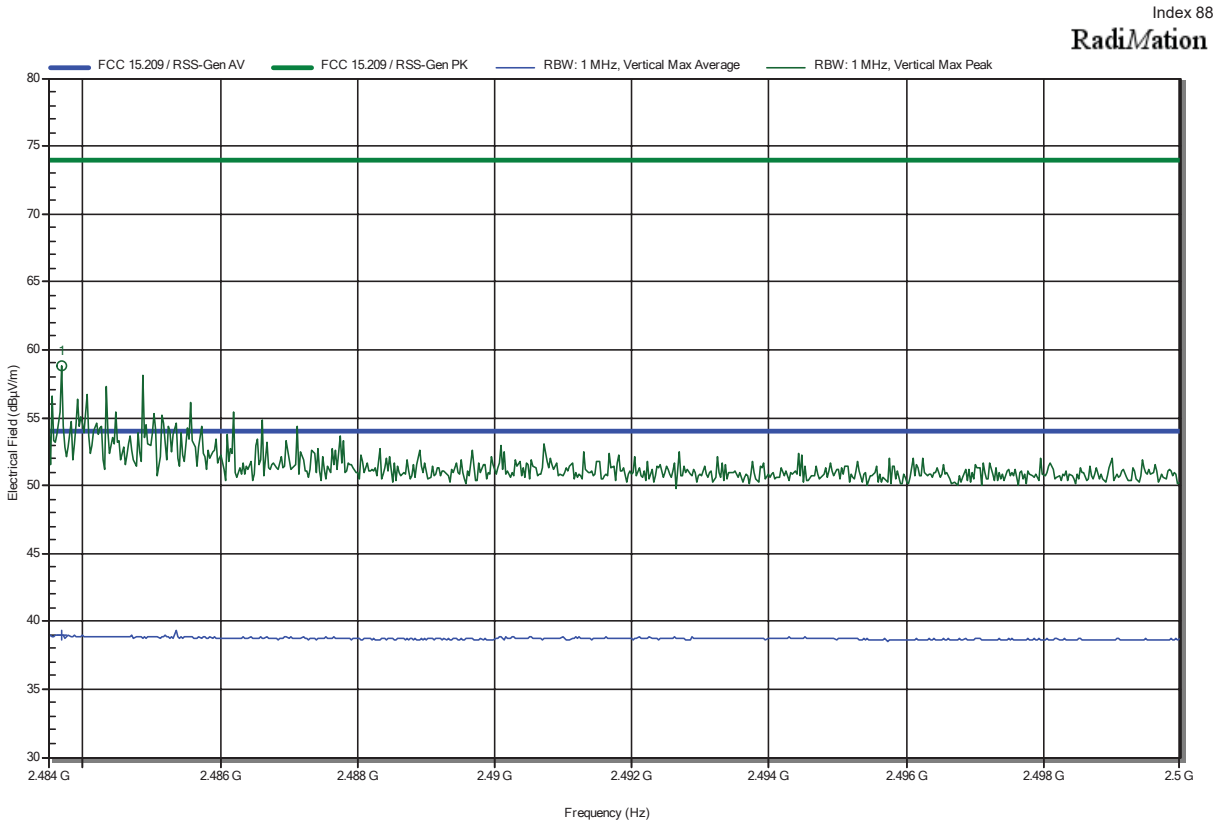


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4835 GHz	72.01 dBµV/m	74 dBµV/m	-1.99 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4835 GHz	44.09 dBµV/m	54 dBµV/m	-9.91 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	upper bandedge

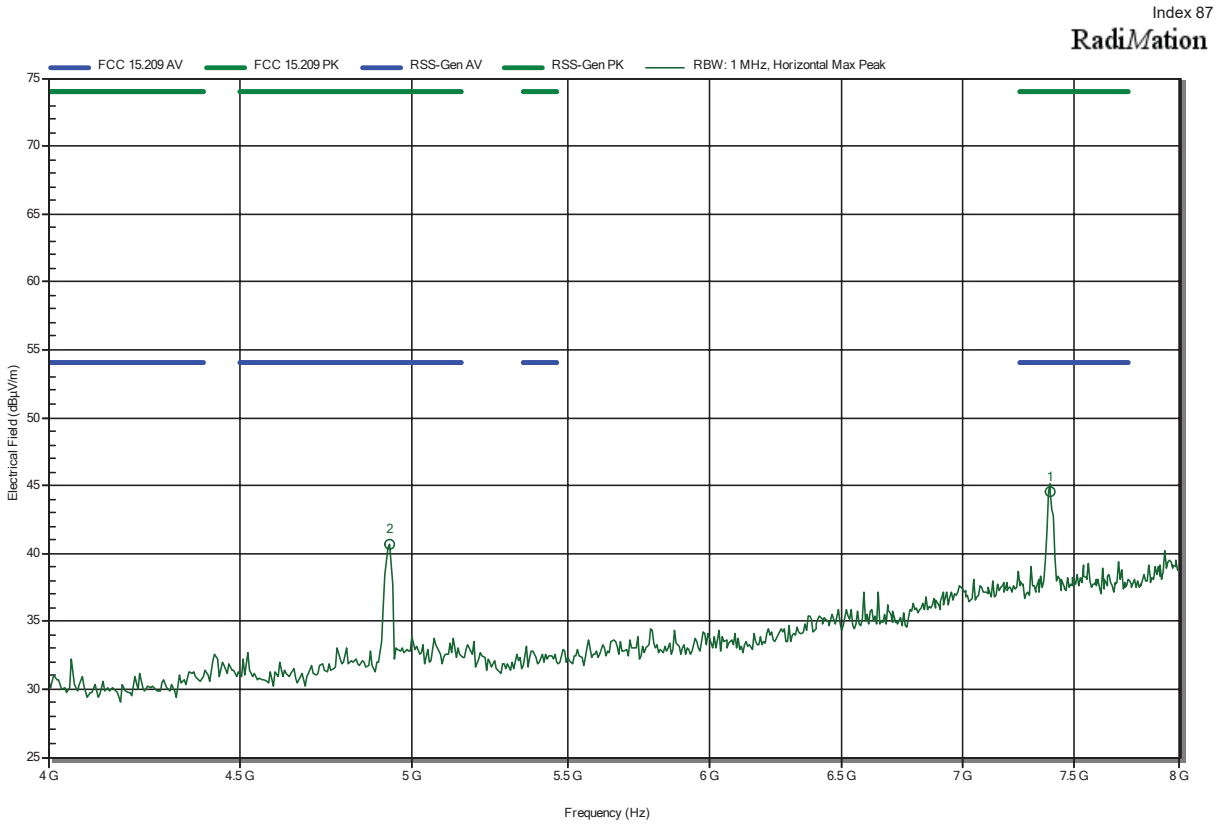


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4837 GHz	58.77 dBµV/m	74 dBµV/m	-15.23 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4837 GHz	38.93 dBµV/m	54 dBµV/m	-15.07 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

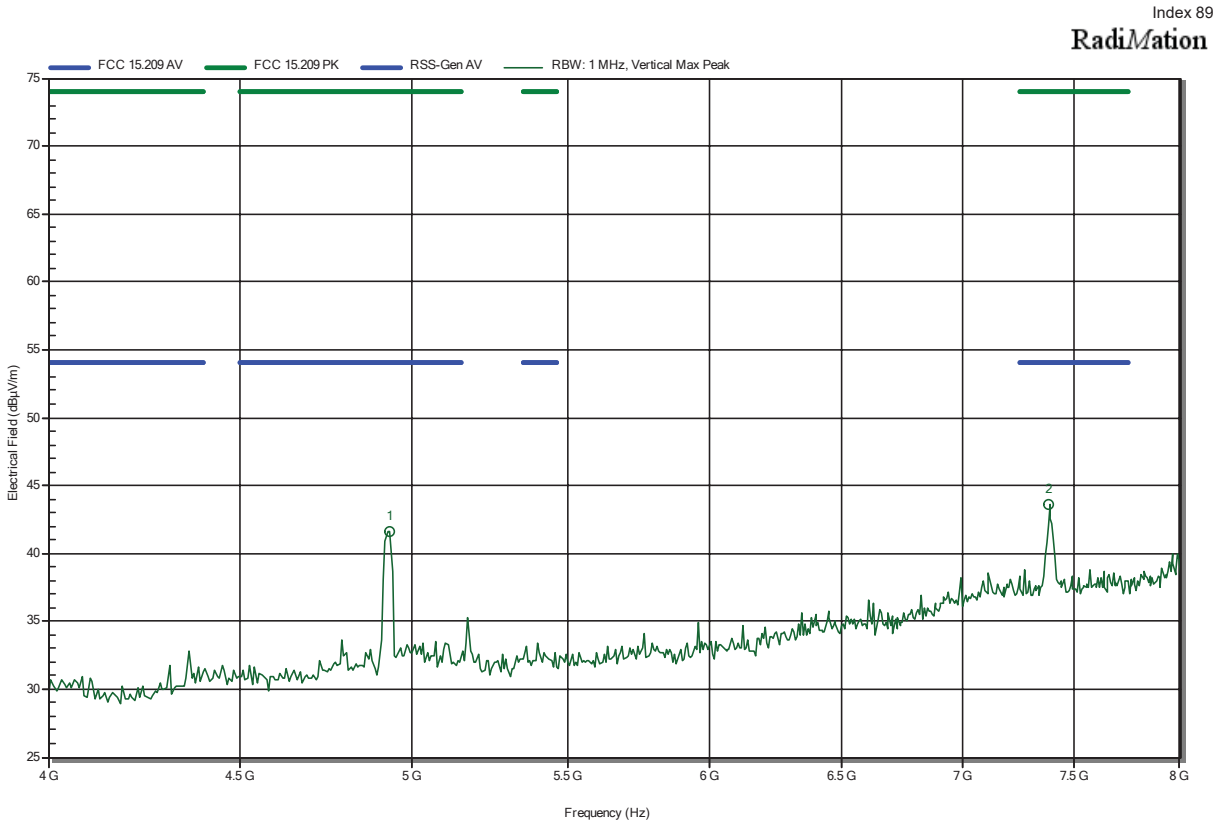
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.929 GHz	40.71 dBµV/m	74 dBµV/m	-33.29 dB	Pass
7.391 GHz	44.55 dBµV/m	74 dBµV/m	-29.45 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

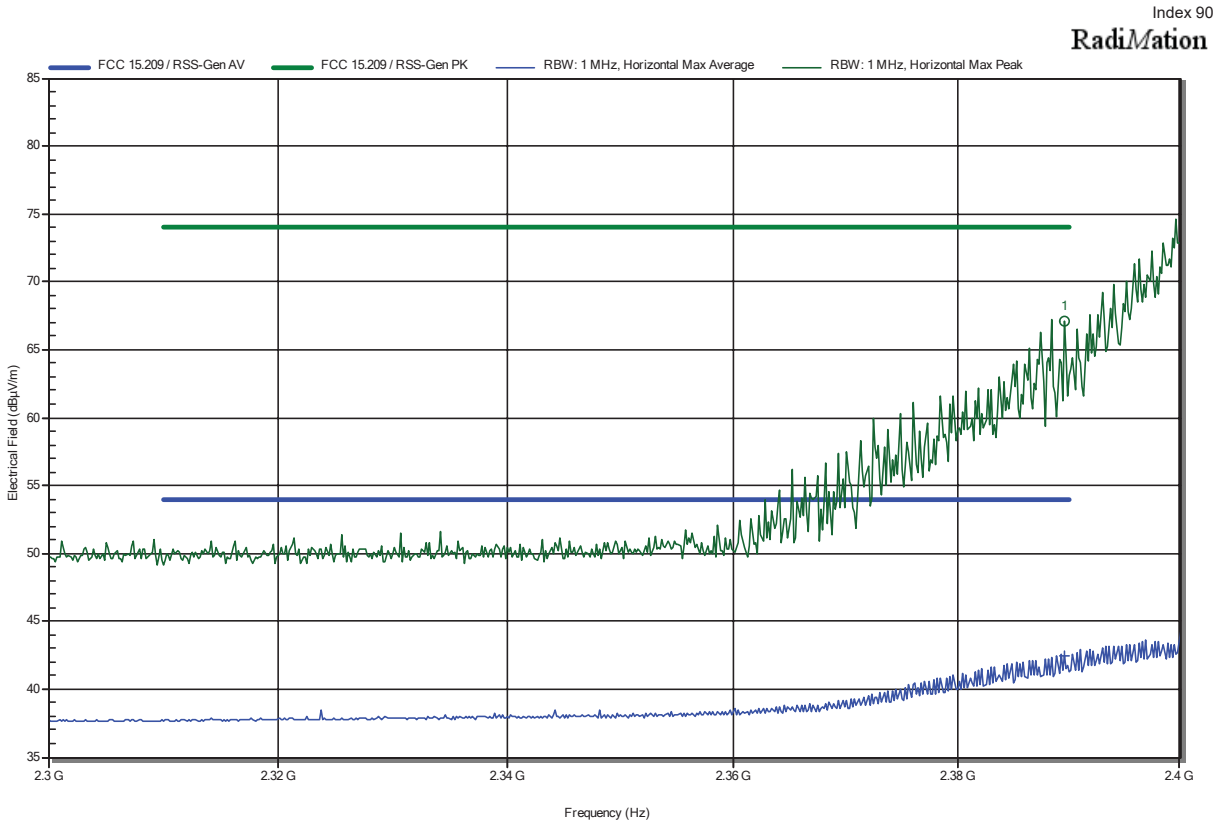
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT20; 2462 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.929 GHz	41.63 dBµV/m	74 dBµV/m	-32.37 dB	Pass
7.385 GHz	43.65 dBµV/m	74 dBµV/m	-30.35 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2422 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge

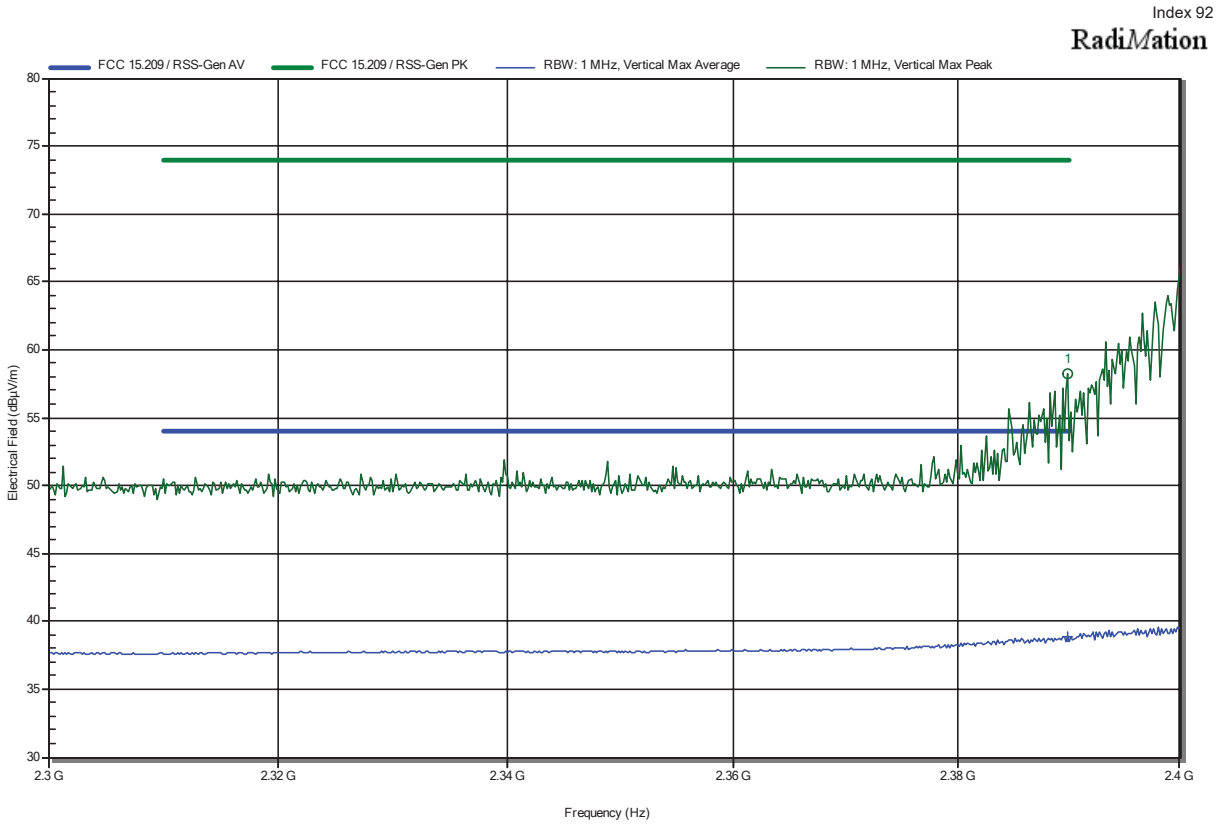


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3896 GHz	67.07 dBµV/m	74 dBµV/m	-6.93 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3896 GHz	42.42 dBµV/m	54 dBµV/m	-11.58 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2422 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	lower bandedge

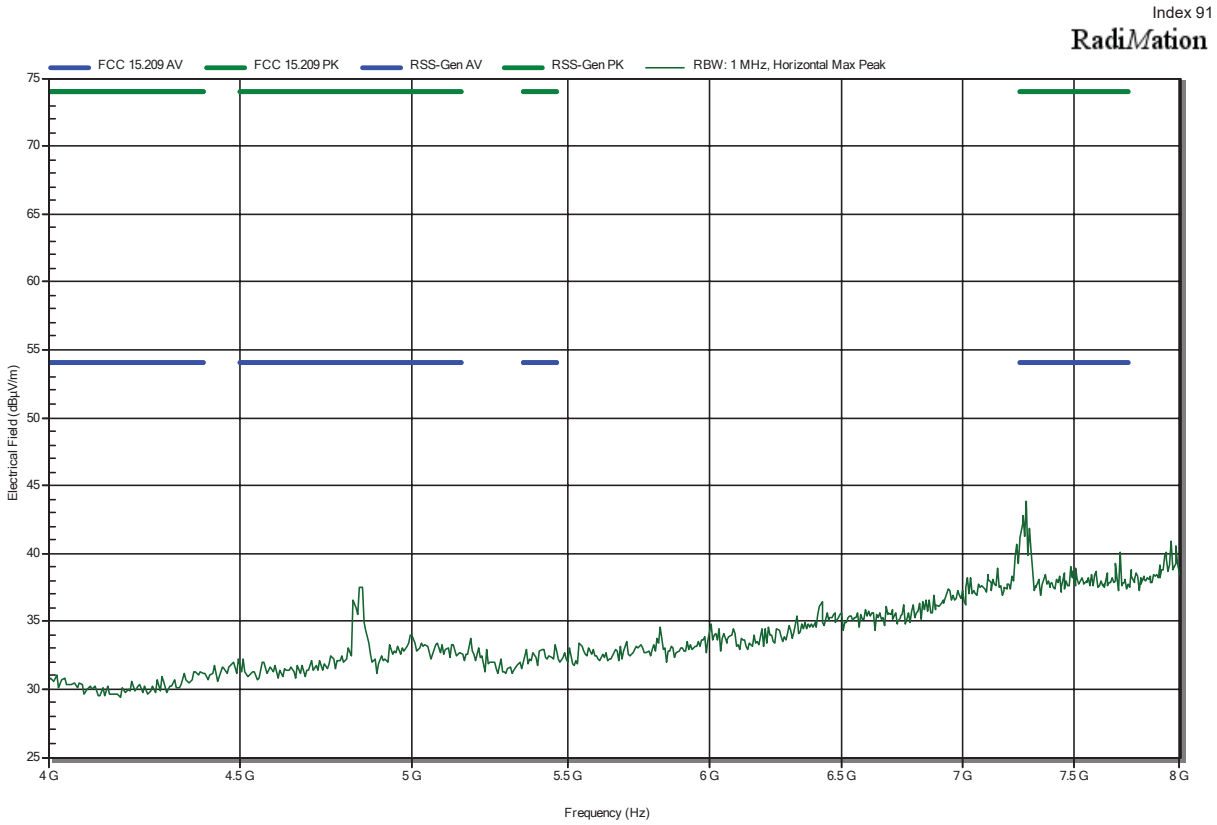


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3899 GHz	58.18 dBµV/m	74 dBµV/m	-15.82 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.3899 GHz	38.91 dBµV/m	54 dBµV/m	-15.09 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2422 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
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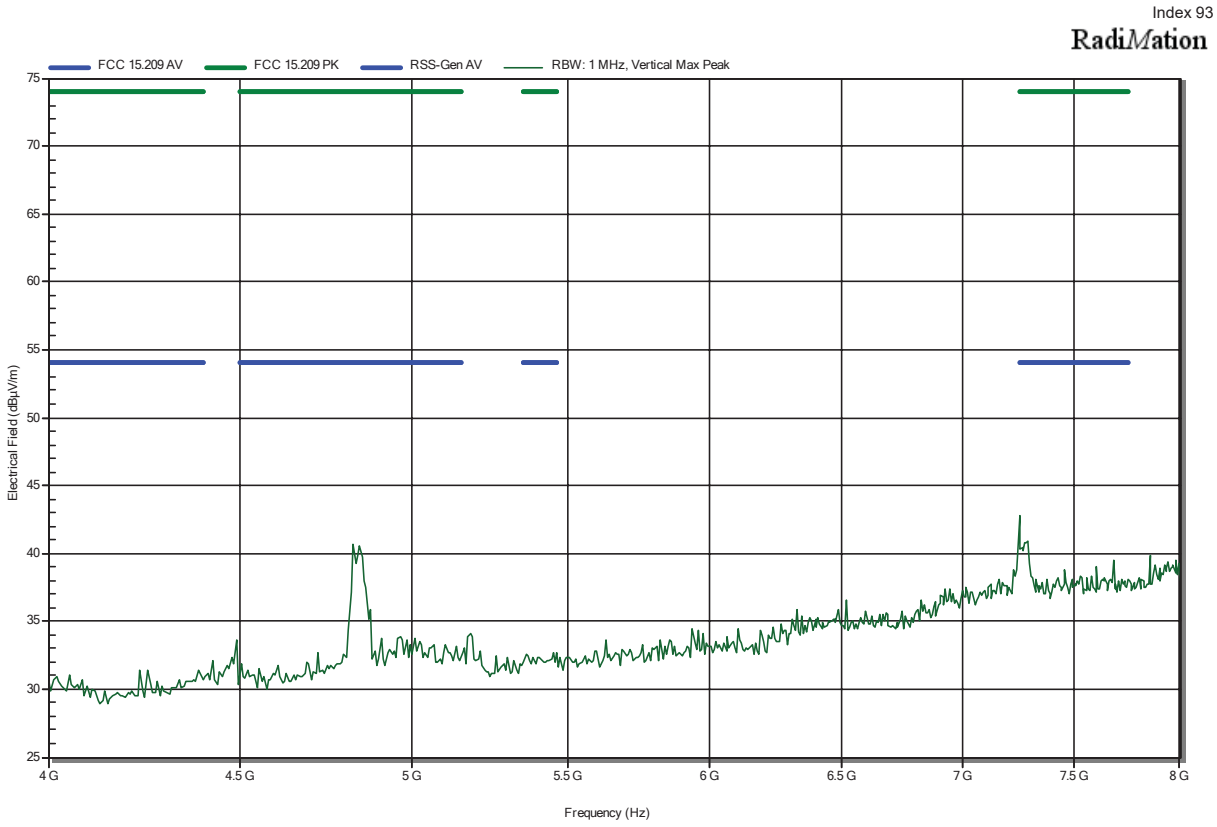
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2422 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
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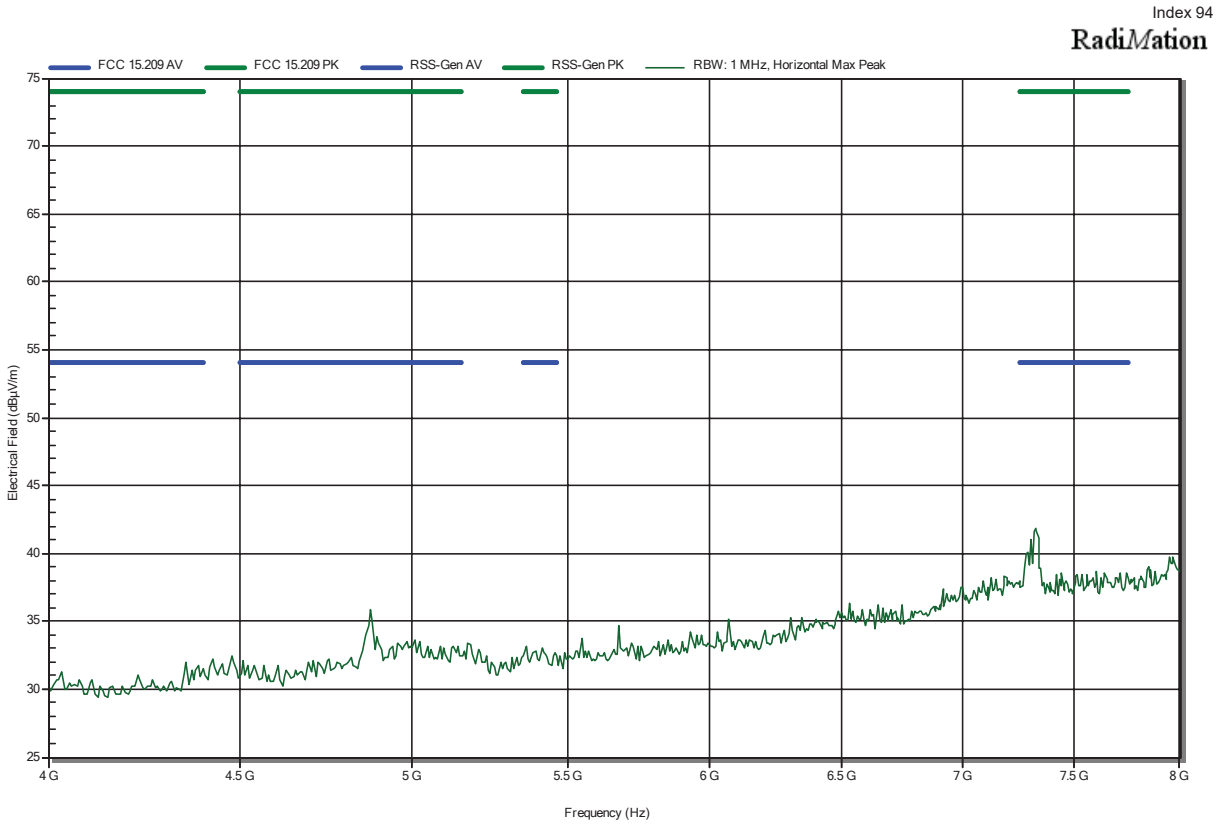
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
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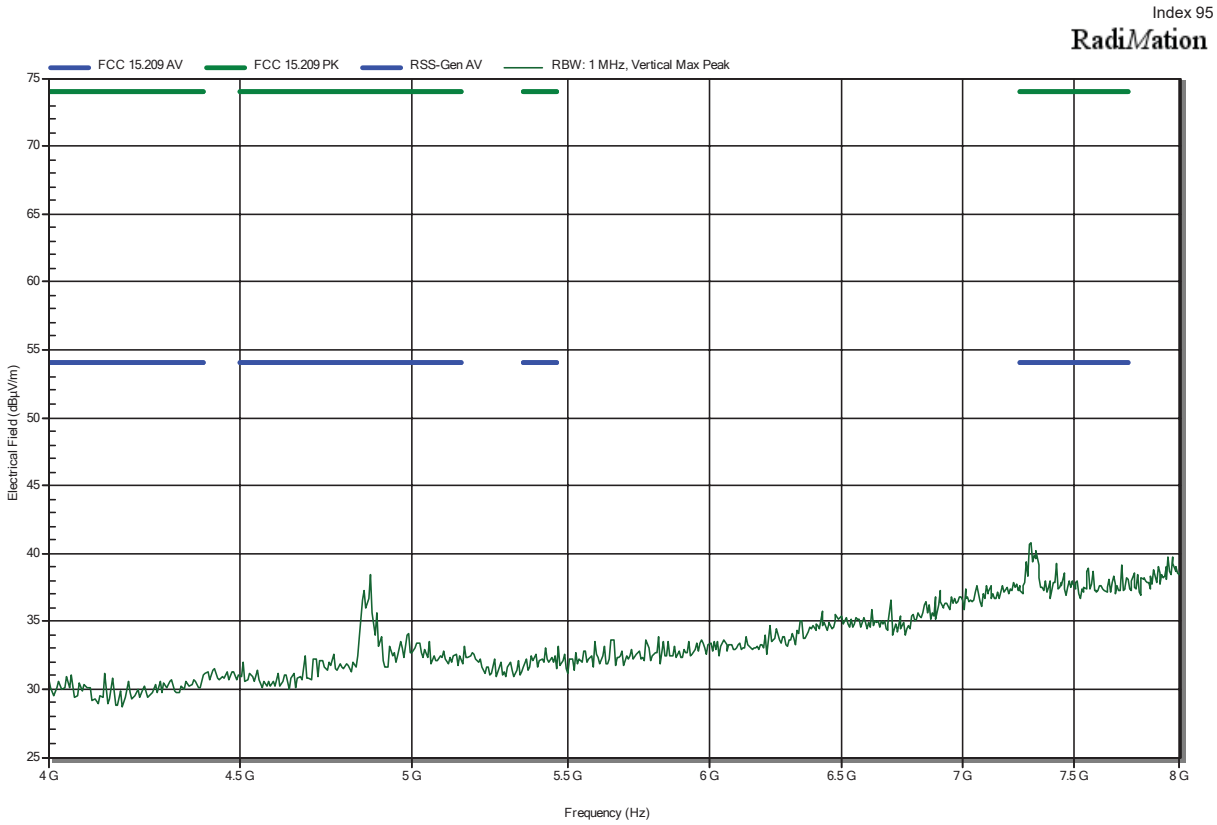
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Radiated Spurious Emissions according to FCC 47 CFR 15.247

Project Number:	G0M-2101-9569
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Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
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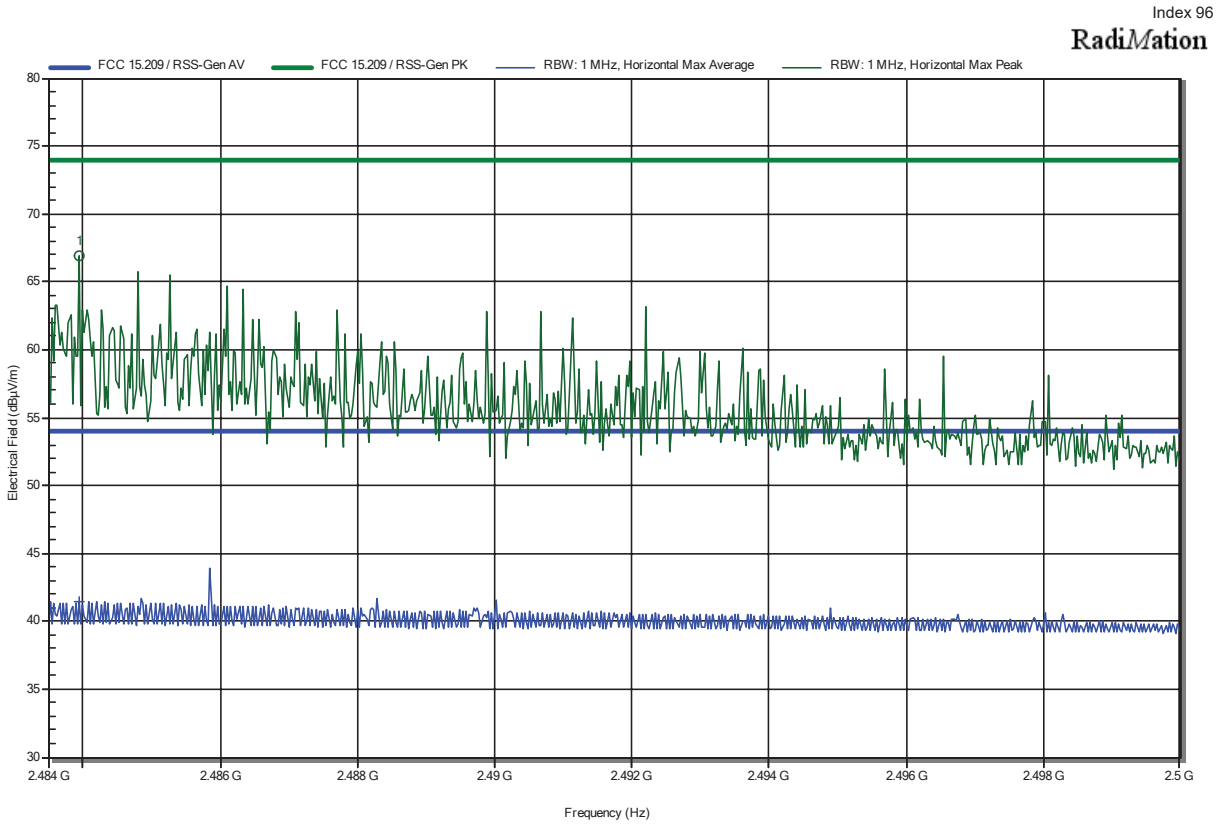
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2452 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	upper bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4839 GHz	66.92 dBµV/m	74 dBµV/m	-7.08 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4839 GHz	41.4 dBµV/m	54 dBµV/m	-12.6 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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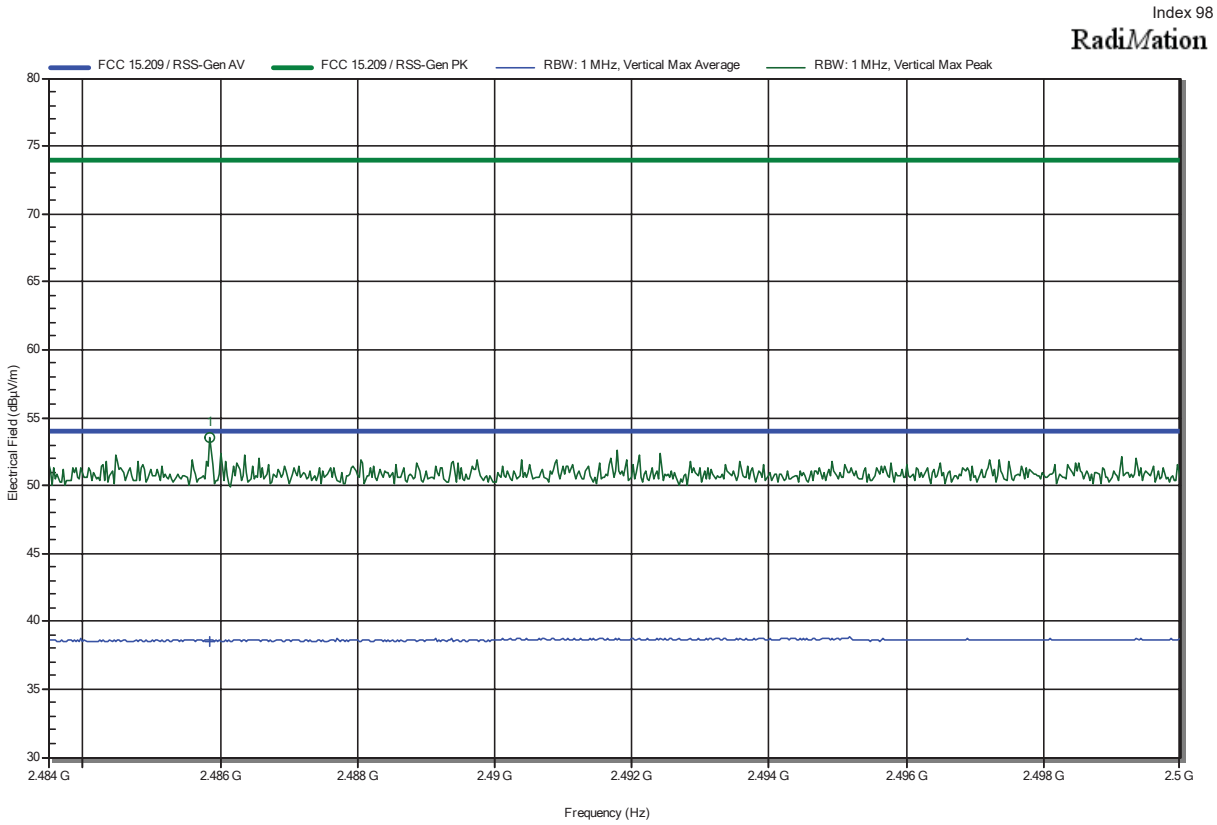
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2452 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09
	upper bandedge



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4859 GHz	53.52 dBµV/m	74 dBµV/m	-20.48 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.4859 GHz	38.52 dBµV/m	54 dBµV/m	-15.48 dB	Pass

Radiated Spurious Emissions according to FCC 47 CFR 15.247

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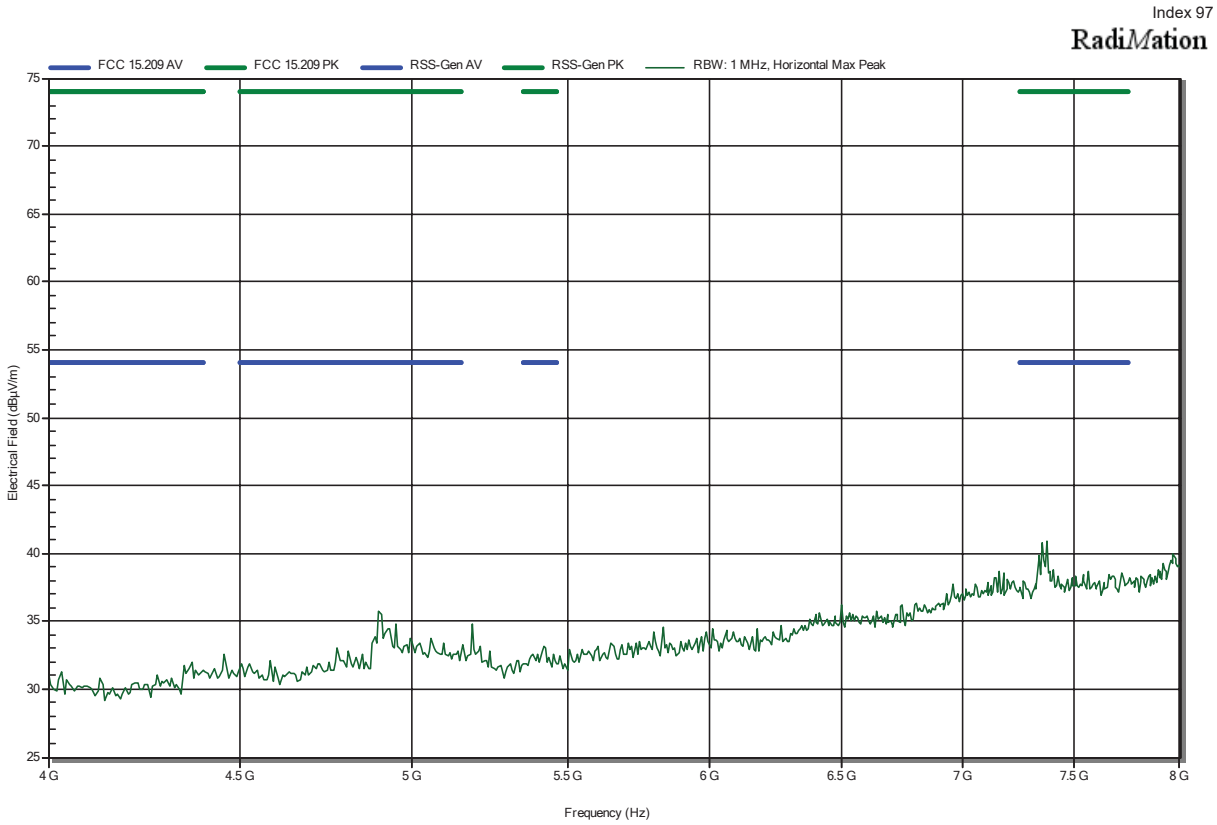
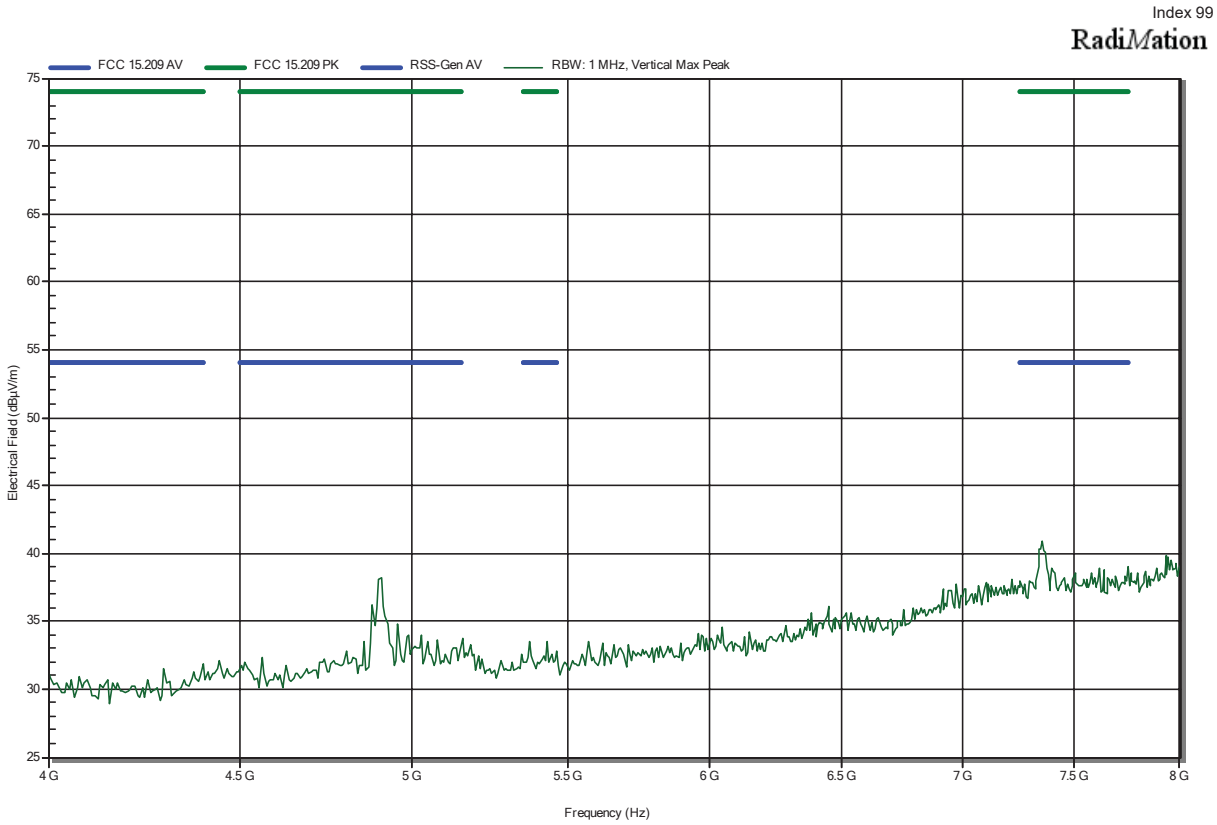
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2452 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



Radiated Spurious Emissions according to FCC 47 CFR 15.247

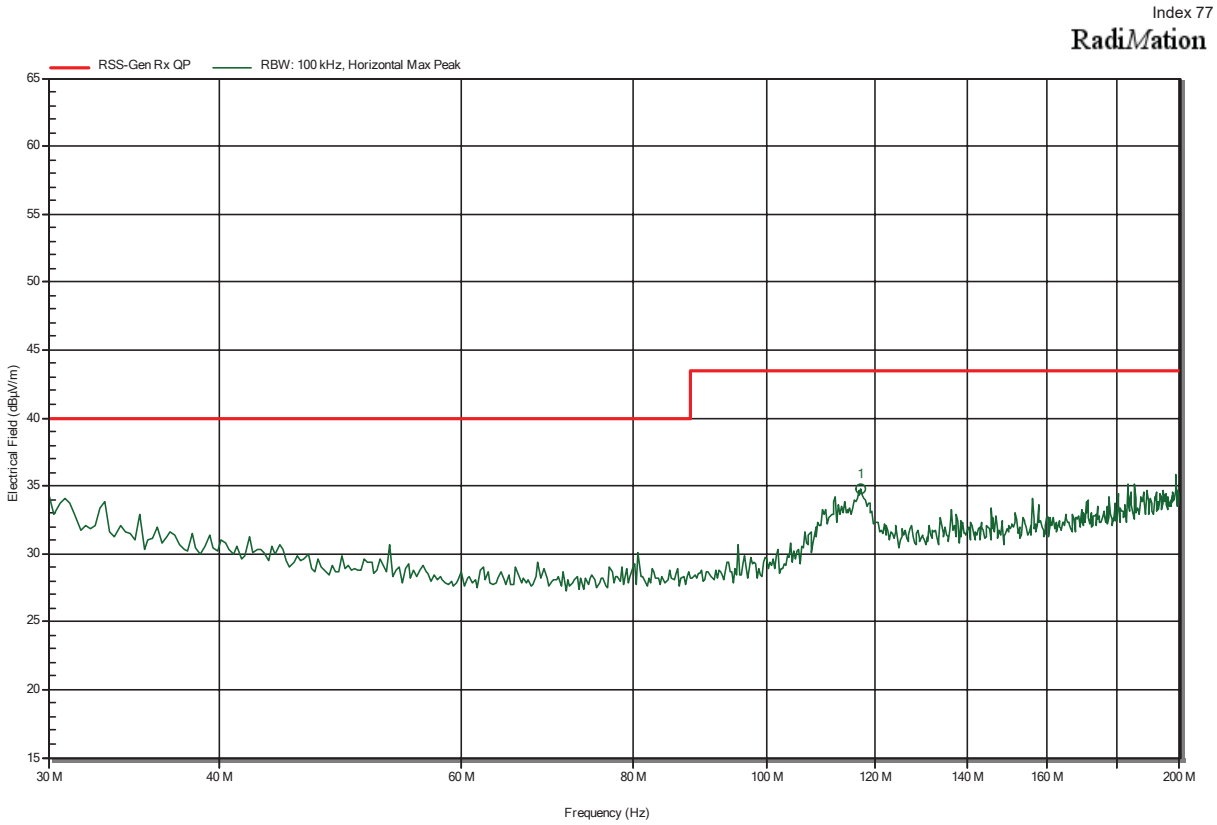
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Tx; IEEE 802.11n; HT40; 2452 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-09



ANNEX B Receiver spurious emissions

Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

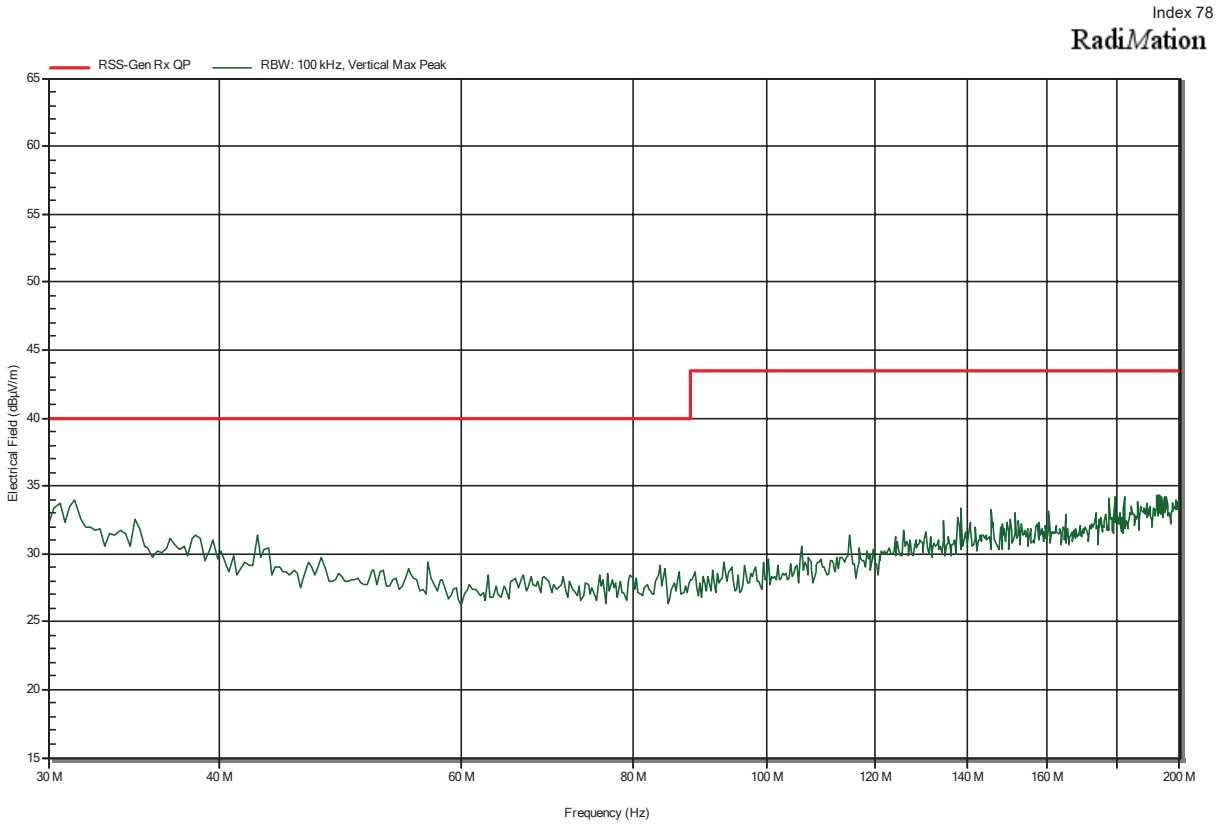
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
117.179 MHz	34.78 dBµV/m	43.5 dBµV/m	-8.72 dB	Pass

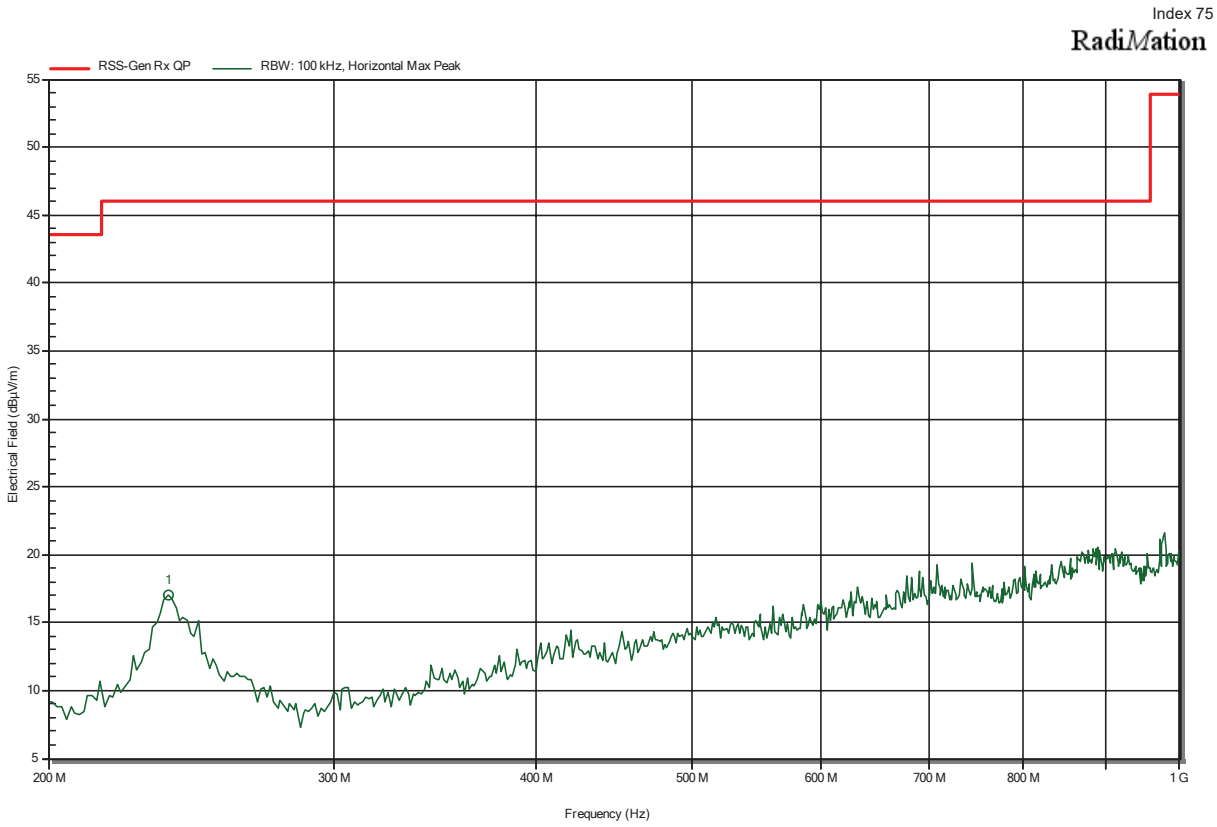
Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

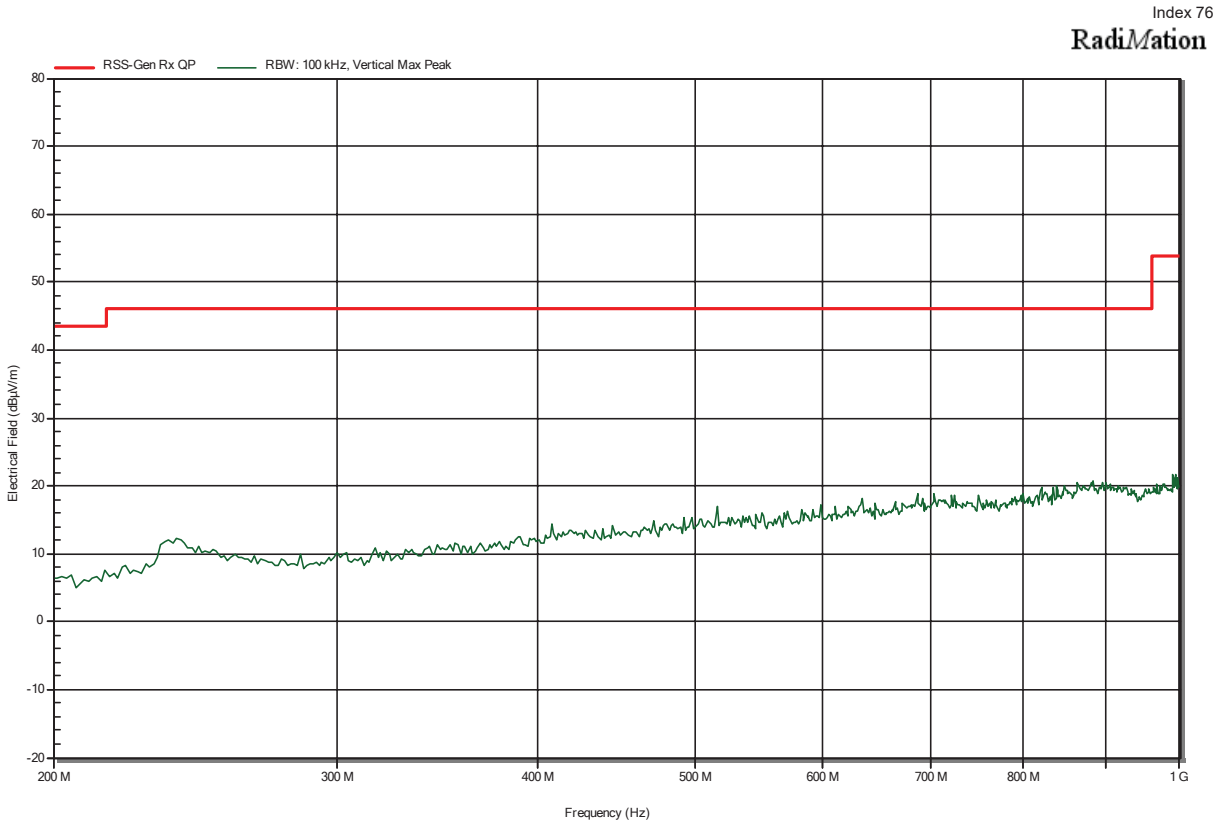
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
237.179 MHz	17.03 dBµV/m	46 dBµV/m	-28.97 dB	Pass

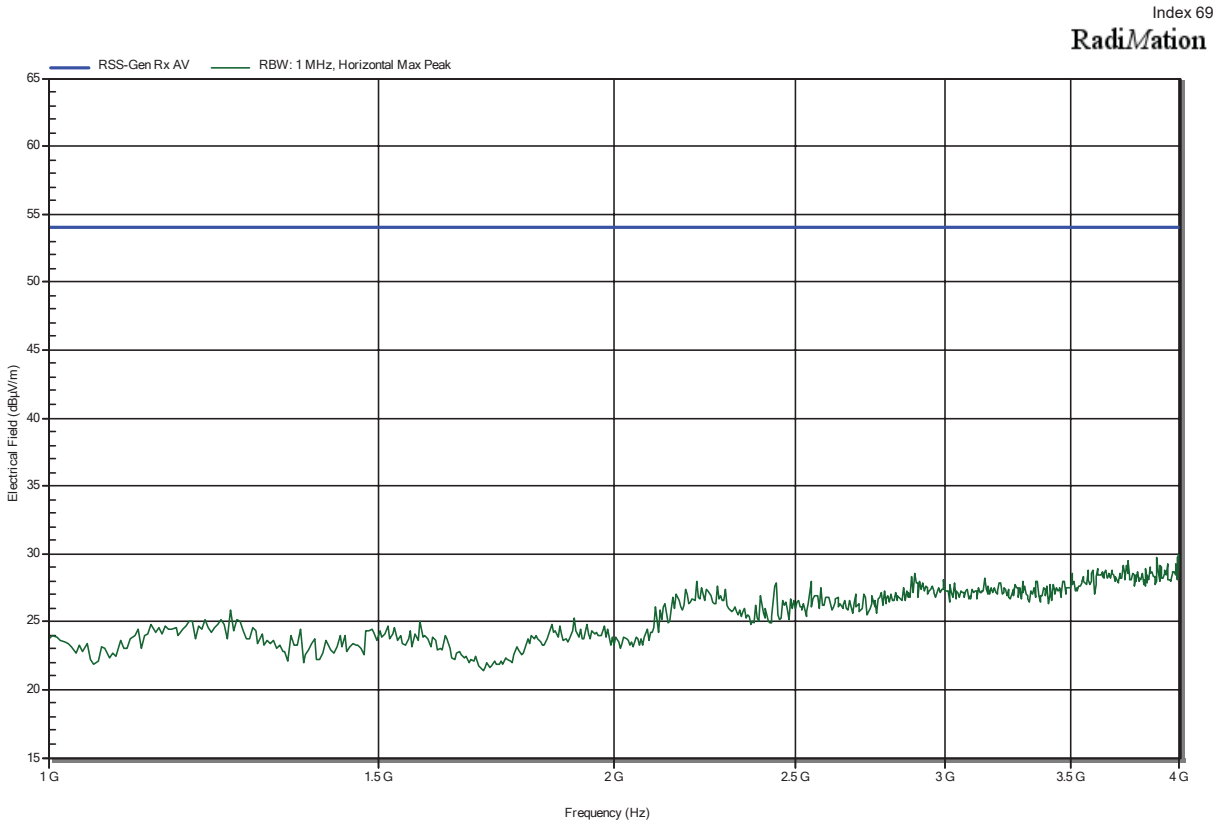
Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



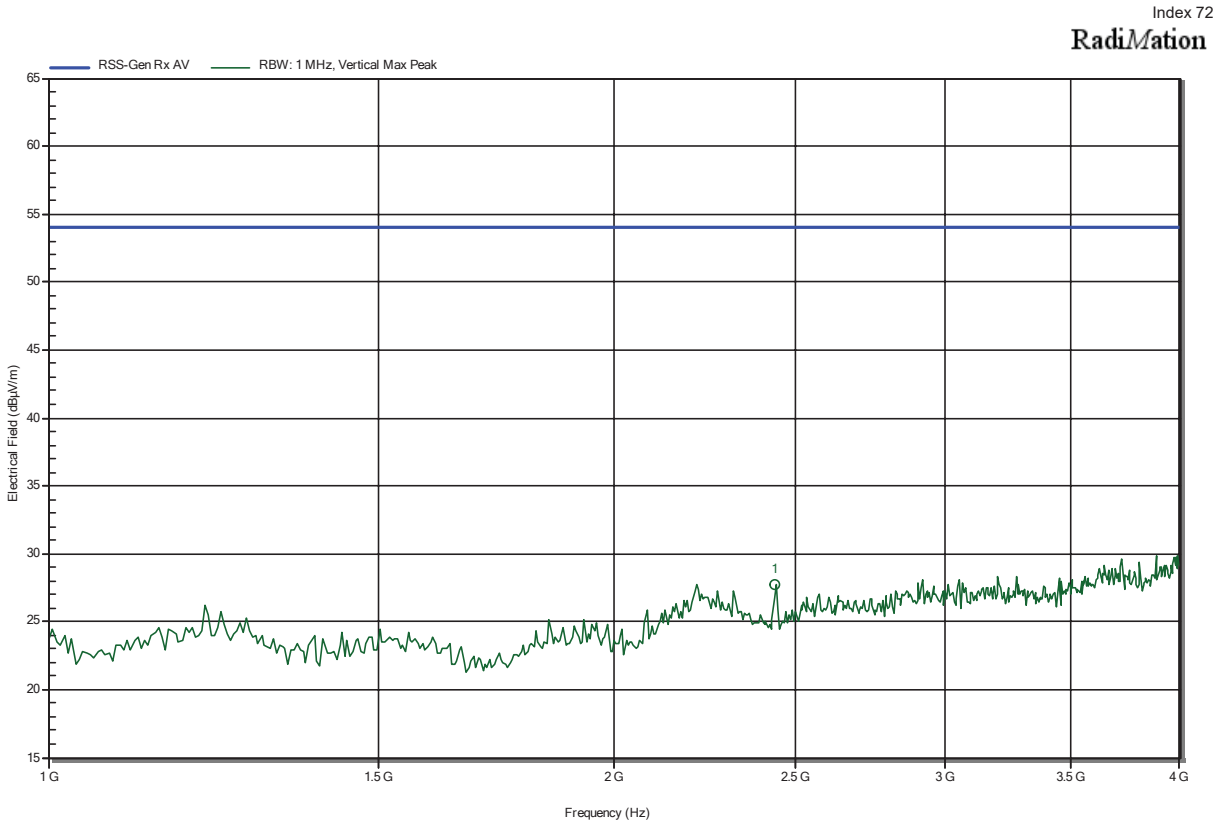
Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

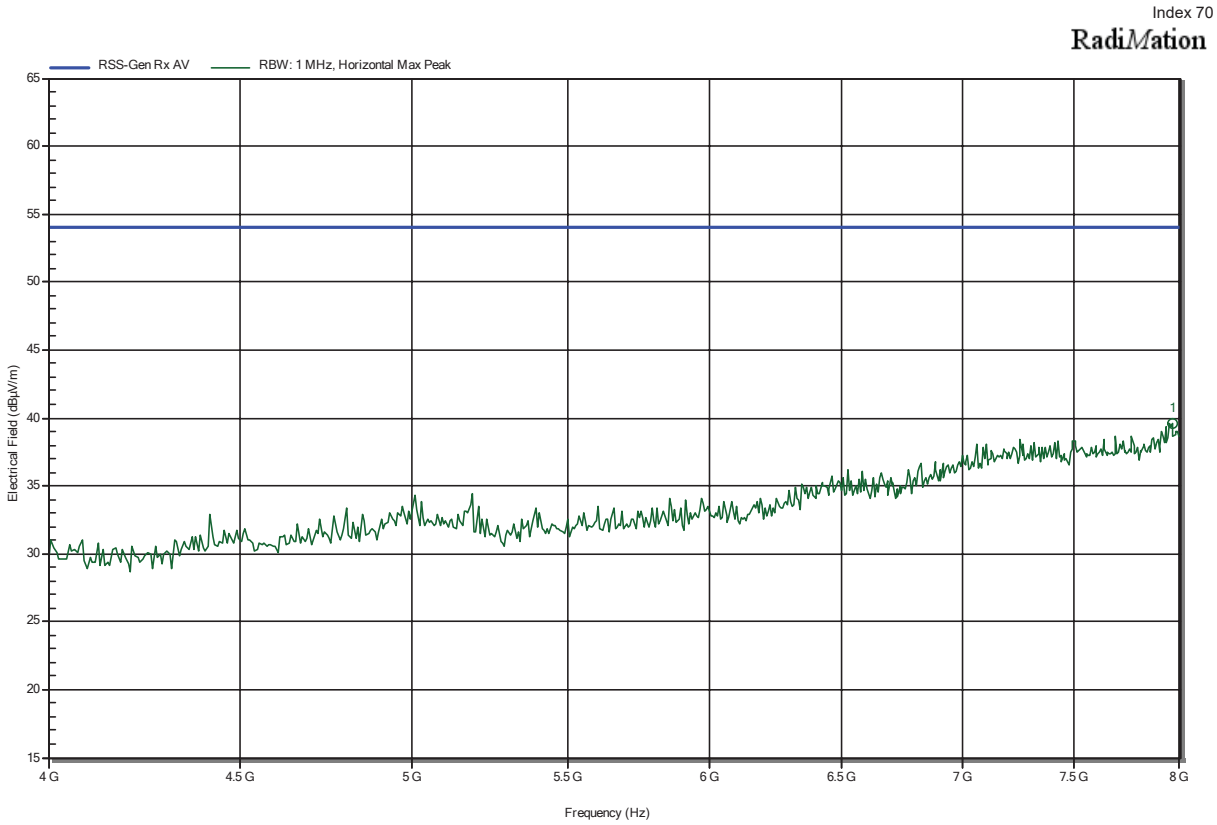
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.438 GHz	27.72 dBµV/m	53.98 dBµV/m	-26.26 dB	Pass

Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

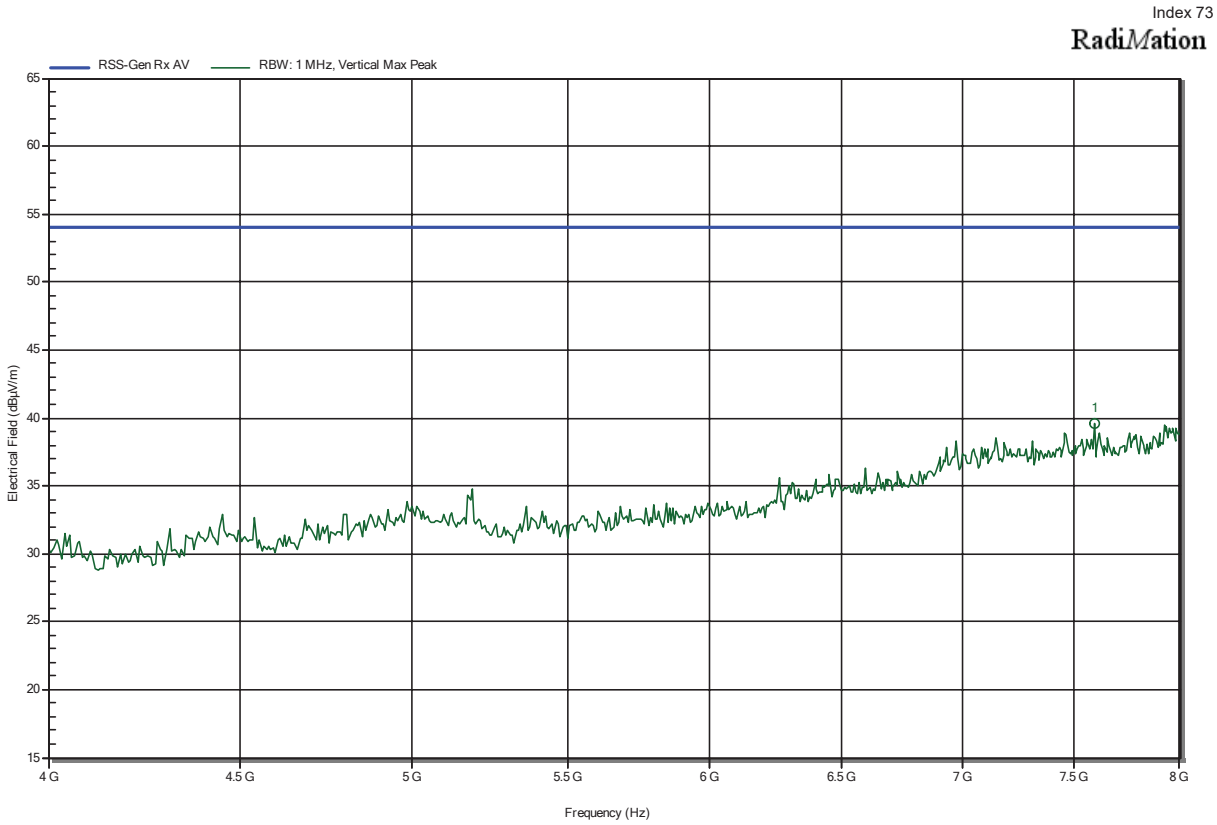
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.962 GHz	39.63 dBµV/m	53.98 dBµV/m	-14.35 dB	Pass

Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

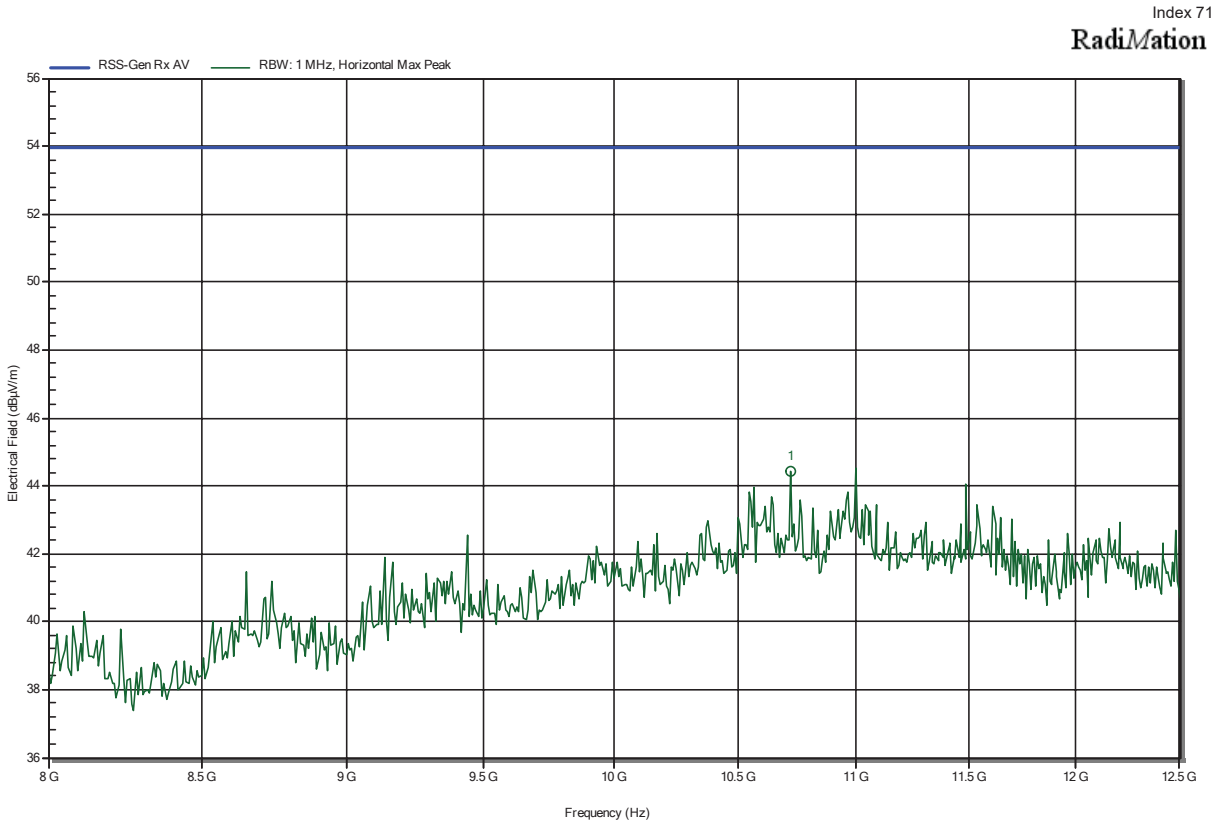
Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m, converted to 3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.59 GHz	39.63 dBµV/m	53.98 dBµV/m	-14.35 dB	Pass

Radiated Spurious Emissions according to ISED RSS-247 Issue 2 (February 2017)

Project Number:	G0M-2101-9569
Applicant:	Panasonic Industrial Devices Europe GmbH
Model Description:	Wi-Fi Dual Band 2.4/5 GHz and Bluetooth Module
Model:	ENWF9408A1EF
Test Sample ID:	34967, A1 8 SerNr: 826
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 3.3 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m, converted to 3 m
Mode:	Rx; IEEE 802.11b; 2437 MHz; #A1 8 SerNr: 826
Test Date:	2021-06-08



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
10.719 GHz	44.41 dBµV/m	53.98 dBµV/m	-9.57 dB	Pass

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