FCC Test Report
(Class II Permissive Change)

Product Name	Intel® Wireless-AC 9462
Model No.	9462D2W
FCC ID.	PD99462D2

Applicant	Intel Mobile Communications
Address	100 Center Point Circle, Suite 200 Columbia, South Carolina 29210 USA

Date of Receipt	Feb. 22, 2018
Issued Date	Apr. 09, 2018
Report No.	1820197R-RFUSP23V00-A
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issued Date: Apr. 09, 2018
Report No.: 1820197R-RFUSP23V00-A

Product Name	Intel® Wireless-AC 9462
Applicant	Intel Mobile Communications
Address	100 Center Point Circle, Suite 200 Columbia, South Carolina 29210 USA
Manufacturer	Intel Mobile Communications
Model No.	9462D2W
FCC ID.	PD99462D2
EUT Rated Voltage	DC 3.3V (via Mini-PCI Express slot)
EUT Test Voltage	DC 3.3V (via Mini-PCI Express slot)
Trade Name	Intel
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2017 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v04
Test Result	Complied

Documented By : Leven Huang

(Senior Adm. Specialist / Leven Huang)

Tested By : Yun Che Chen

(Engineer / Yunche Chen)

Approved By :

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Intel® Wireless-AC 9462
Trade Name	Intel
Model No.	9462D2W
FCC ID.	PD99462D2
Frequency Range	2402 – 2480MHz
Channel Number	V5.0: 40CH
Type of Modulation	V5.0: GFSK
Antenna Type	Dipole Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	WIESON Technologies co ., ltd	GY121HT0321-003-H / GY121C888-001-H(Main)、GY121HT0321-003-H / GY121C888-001-H(Aux)	Dipole	2.89dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 01:	2404 MHz	Channel 02:	2406 MHz	Channel 03:	2408 MHz
Channel 04:	2410 MHz	Channel 05:	2412 MHz	Channel 06:	2414 MHz	Channel 07:	2416 MHz
Channel 08:	2418 MHz	Channel 09:	2420 MHz	Channel 10:	2422 MHz	Channel 11:	2424 MHz
Channel 12:	2426 MHz	Channel 13:	2428 MHz	Channel 14:	2430 MHz	Channel 15:	2432 MHz
Channel 16:	2434 MHz	Channel 17:	2436 MHz	Channel 18:	2438 MHz	Channel 19:	2440 MHz
Channel 20:	2442 MHz	Channel 21:	2444 MHz	Channel 22:	2446 MHz	Channel 23:	2448 MHz
Channel 24:	2450 MHz	Channel 25:	2452 MHz	Channel 26:	2454 MHz	Channel 27:	2456 MHz
Channel 28:	2458 MHz	Channel 29:	2460 MHz	Channel 30:	2462 MHz	Channel 31:	2464 MHz
Channel 32:	2466 MHz	Channel 33:	2468 MHz	Channel 34:	2470 MHz	Channel 35:	2472 MHz
Channel 36:	2474 MHz	Channel 37:	2476 MHz	Channel 38:	2478 MHz	Channel 39:	2480 MHz

Note:

1. The EUT is an Intel® Wireless-AC 9462 with a built-in WLAN、Bluetooth transceiver, this report for Bluetooth V5.0.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. This is to request a Class II permissive change for FCC ID:PD99462D2,originally granted on 12/18/2017.
   The major change filed under this application is:
   Change #1: Addition an new antenna, antenna type is different with the original application.
   (Antenna type: Dipole Antenna)
   #2: Reduce the Output Power through firmware, All other hardware is identical with original granted.

Test Mode	Mode 1: Transmit - BLE (GFSK)

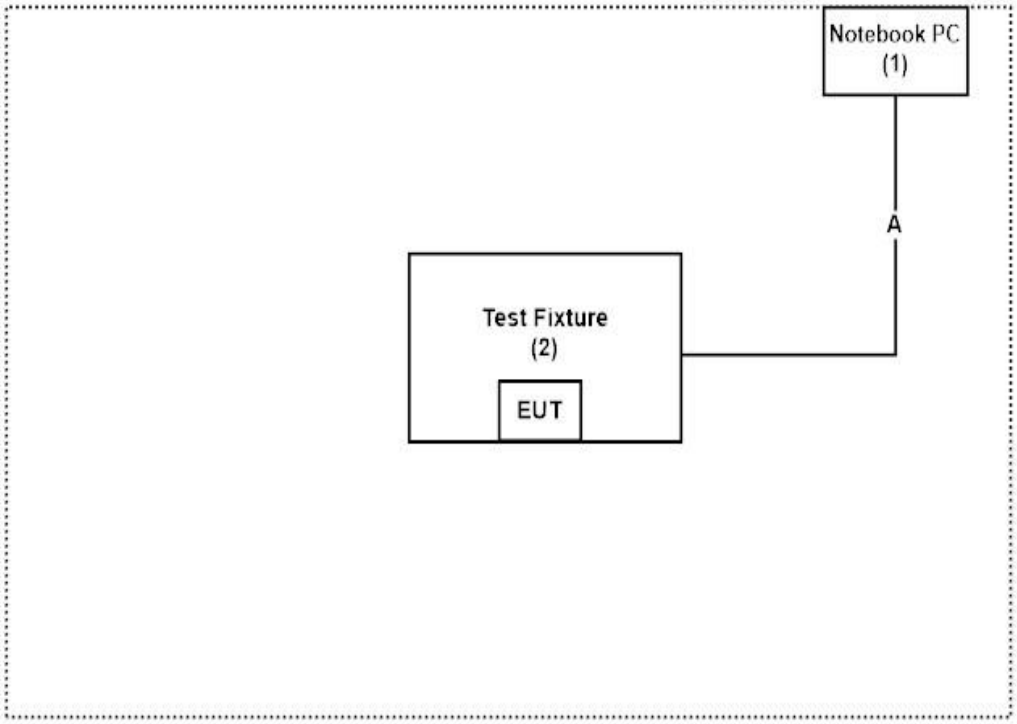
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	N/A	N/A	Non-Shielded, 1.8m
2	Test Fixture	Intel	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	Test Fixture Line	Non-Shielded, 1.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown on 1.4

(2) Execute software “DRTU (Ver 10.1742.0-06126)” on the Notebook PC.

(3) Configure the test mode, the test channel, and the data rate.

(4) Start the continuous transmission.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/chinese/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http:// www.dekra.com.tw

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Item and Equipment

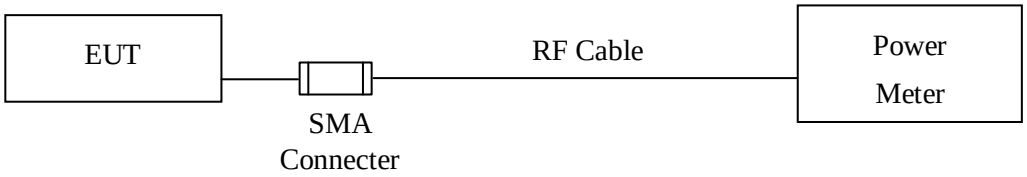
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Power Meter	Keysight	8990B	MY51000410	2017/8/16	2018/8/15
X	Wideband power sensor	Keysight	N1923A	MY5608003	2017/8/16	2018/8/15
X	Spectrum Analyzer	R&S	FSP40	100170	2018/1/5	2019/1/3
	Loop Antenna	TESEQ	HLA6121	37133	2018/3/18	2019/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2017/6/11	2018/6/10
X	Horn Antenna	ETS-Lindgren	3117	00203761	2017/10/15	2018/10/13
	Horn Antenna	Schwarzbeck	BBHA9170	209	2017/4/14	2018/4/13
X	Pre-Amplifier	QuieTek	QTK-LK-E-I-AMP4	N/A	2017/6/16	2018/6/15
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/1/26	2019/1/24
	Pre-Amplifier	NARDA WE	DBL-1840N506	013	2017/8/6	2018/8/4
X	Filter	MicroTRON	BRM50701	019	2017/10/20	2018/10/18
	Filter	Microwave Circuits	N0257881	36681	2017/12/7	2018/12/5
X	Coaxial Cable	QTK(Arnist)	SUCOFLEX 106	L1606-015C	2017/6/23	2018/6/22
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2017/7/21	2018/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2017/6/16	2018/6/15
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2017/6/16	2018/6/15

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version :QuieTek EMI 2.0 V2.1.113.

2. Peak Power Output

2.1. Test Setup



2.2. Limit

The maximum peak power shall be less 1Watt.

2.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

2.4. Uncertainty

± 1.27 dB

2.5. Test Result of Peak Power Output

Product : Intel® Wireless-AC 9462
Test Item : Peak Power Output
Test Site : No.3 OATS
Test date : 2018/03/26
Test Mode : Mode 1: Transmit - BLE (GFSK)

Chain A

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	7.10	1 Watt= 30 dBm	Pass
Channel 19	2440.00	8.27	1 Watt= 30 dBm	Pass
Channel 39	2480.00	9.09	1 Watt= 30 dBm	Pass

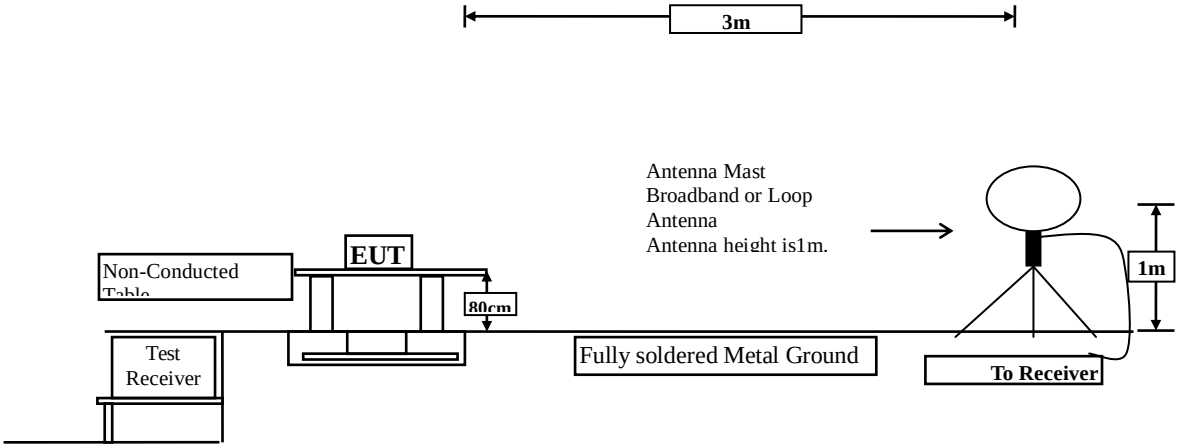
Chain B

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	7.34	1 Watt= 30 dBm	Pass
Channel 19	2440.00	8.28	1 Watt= 30 dBm	Pass
Channel 39	2480.00	9.02	1 Watt= 30 dBm	Pass

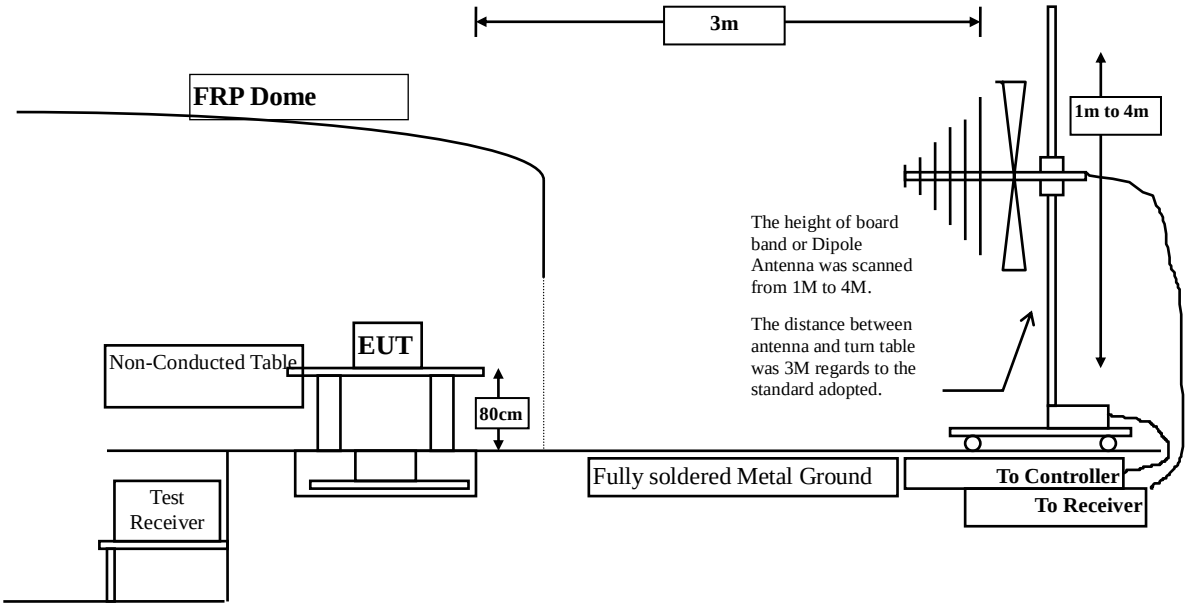
3. Radiated Emission

3.1. Test Setup

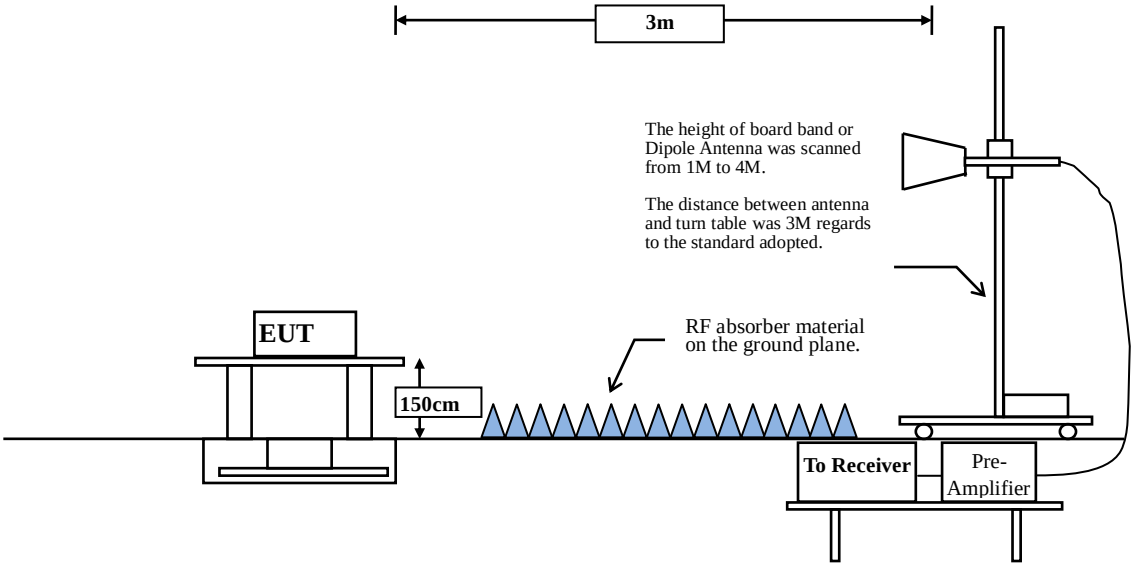
Under 30MHz



Below 1GHz



Above 1GHz



3.2. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

According to KDB 558074 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
BLE	57.69	1.0870	920	1k

Note: Duty Cycle Refer to Section 5

3.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

3.5. Test Result of Radiated Emission

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK)(2402MHz) - Chain A

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	-9.896	55.240	45.344	-28.656	74.000
7206.000	-5.013	47.670	42.657	-31.343	74.000
9608.000	-1.472	45.330	43.859	-30.141	74.000
Average					
Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4804.000	-6.585	59.310	52.725	-21.275	74.000
7206.000	-4.144	47.910	43.766	-30.234	74.000
9608.000	-1.075	46.380	45.306	-28.694	74.000
Average					
Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz) - Chain A

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4880.000	-10.307	54.720	44.413	-29.587	74.000
7320.000	-3.857	47.190	43.333	-30.667	74.000
9760.000	-2.579	44.570	41.992	-32.008	74.000
Average					
Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4880.000	-7.579	57.970	50.391	-23.609	74.000
7320.000	-2.987	48.290	45.303	-28.697	74.000
9760.000	-2.107	45.710	43.603	-30.397	74.000
Average					
Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain A

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	-10.666	54.420	43.755	-30.245	74.000
7440.000	-3.631	46.710	43.079	-30.921	74.000
9920.000	-2.397	46.390	43.993	-30.007	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4960.000	-7.869	55.980	48.112	-25.888	74.000
7440.000	-2.772	47.030	44.258	-29.742	74.000
9920.000	-1.895	46.570	44.675	-29.325	74.000
Average Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK)(2402MHz) - Chain B

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	-9.896	55.760	45.864	-28.136	74.000
7206.000	-5.013	47.630	42.617	-31.383	74.000
9608.000	-1.472	45.710	44.239	-29.761	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4804.000	-6.585	59.610	53.025	-20.975	74.000
7206.000	-4.144	48.560	44.416	-29.584	74.000
9608.000	-1.075	46.920	45.846	-28.154	74.000
Average Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz) - Chain B

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4880.000	-10.307	55.320	45.013	-28.987	74.000
7320.000	-3.857	47.810	43.953	-30.047	74.000
9760.000	-2.579	44.790	42.212	-31.788	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4880.000	-7.579	57.860	50.281	-23.719	74.000
7320.000	-2.987	48.370	45.383	-28.617	74.000
9760.000	-2.107	45.610	43.503	-30.497	74.000
Average Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/15
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain B

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	-10.666	54.020	43.355	-30.645	74.000
7440.000	-3.631	46.490	42.859	-31.141	74.000
9920.000	-2.397	46.380	43.983	-30.017	74.000
Average					
Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4960.000	-7.869	55.370	47.502	-26.498	74.000
7440.000	-2.772	47.060	44.288	-29.712	74.000
9920.000	-1.895	46.590	44.695	-29.305	74.000
Average					
Detector:					
--	--	--	--	--	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Wireless-AC 9462
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/17
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz) - Chain A

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
130.880	-7.407	44.066	36.658	-6.842	43.500
245.340	-6.478	44.747	38.269	-7.731	46.000
379.200	1.301	34.772	36.073	-9.927	46.000
593.570	3.492	31.081	34.573	-11.427	46.000
814.730	6.348	25.328	31.676	-14.324	46.000
961.200	6.810	31.326	38.136	-15.864	54.000
Vertical					
120.210	-3.535	41.470	37.935	-5.565	43.500
174.530	-2.247	39.939	37.691	-5.809	43.500
341.370	-1.116	30.765	29.649	-16.351	46.000
600.360	1.302	26.096	27.398	-18.602	46.000
778.840	2.580	23.691	26.271	-19.729	46.000
927.250	3.490	23.273	26.763	-19.237	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Intel® Wireless-AC 9462
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test date : 2018/03/17
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz) - Chain B

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
121.180	-7.289	42.039	34.750	-8.750	43.500
167.740	-9.816	45.616	35.800	-7.700	43.500
369.500	0.787	34.940	35.727	-10.273	46.000
551.860	3.390	29.509	32.899	-13.101	46.000
816.670	6.584	28.184	34.768	-11.232	46.000
959.260	6.640	24.773	31.413	-14.587	46.000
Vertical					
131.850	-3.855	41.732	37.877	-5.623	43.500
178.410	-0.966	37.831	36.865	-6.635	43.500
304.510	-4.007	34.662	30.655	-15.345	46.000
532.460	1.209	25.152	26.361	-19.639	46.000
824.430	3.084	26.540	29.624	-16.376	46.000
955.380	2.956	25.544	28.500	-17.500	46.000

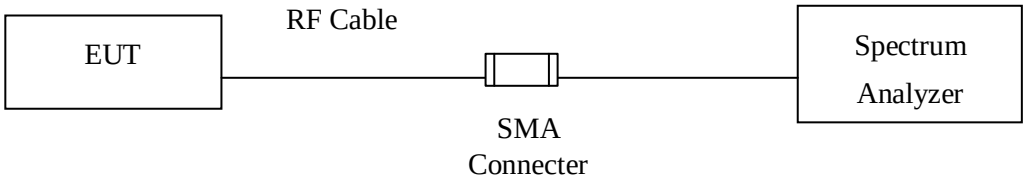
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

4. Band Edge

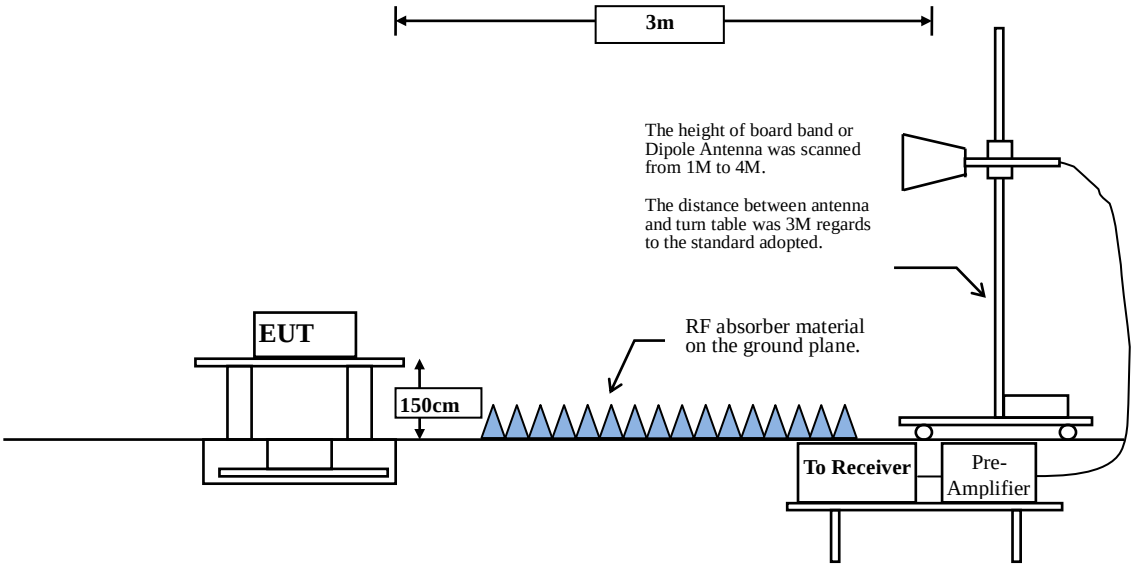
4.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



4.2. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

According to KDB 558074 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
BLE	57.69	1.0870	920	1k

Note: Duty Cycle Refer to Section 5

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Band Edge

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz) - Chain A

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	6.474	41.281	47.756	74.000	54.000	Pass
00 (Peak)	2400.000	6.528	67.657	74.185	--	--	--
00 (Peak)	2402.609	6.544	89.208	95.752	--	--	--
00 (Average)	2363.478	6.356	25.659	32.015	74.000	54.000	Pass
00 (Average)	2390.000	6.474	23.475	29.950	74.000	54.000	Pass
00 (Average)	2400.000	6.528	58.584	65.112	--	--	--
00 (Average)	2402.029	6.540	87.577	94.117	--	--	--

Figure Channel 00: Horizontal (Peak)

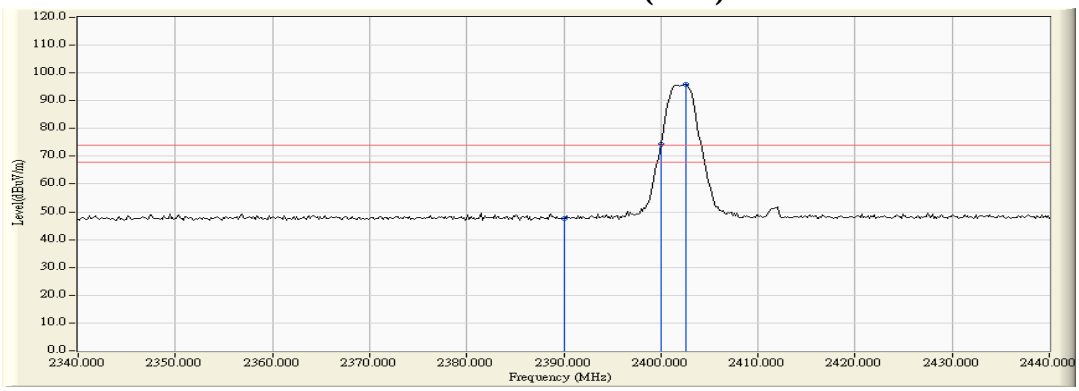
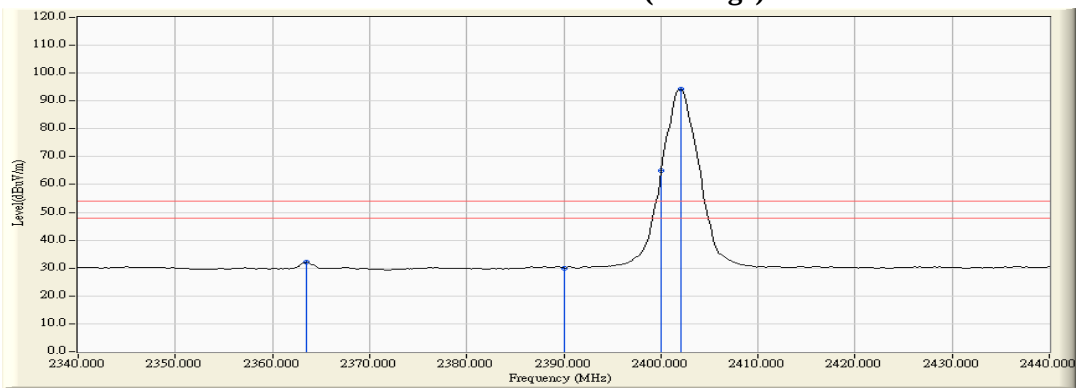


Figure Channel 00: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz) - Chain A

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	5.880	41.964	47.845	74.000	54.000	Pass
00 (Peak)	2400.000	5.879	74.716	80.595	--	--	--
00 (Peak)	2402.464	5.885	96.312	102.197	--	--	--
00 (Average)	2363.623	5.989	29.930	35.919	74.000	54.000	Pass
00 (Average)	2390.000	5.880	24.916	30.797	74.000	54.000	Pass
00 (Average)	2400.000	5.879	65.825	71.704	--	--	--
00 (Average)	2402.029	5.884	94.914	100.798	--	--	--

Figure Channel 00: Vertical (Peak)

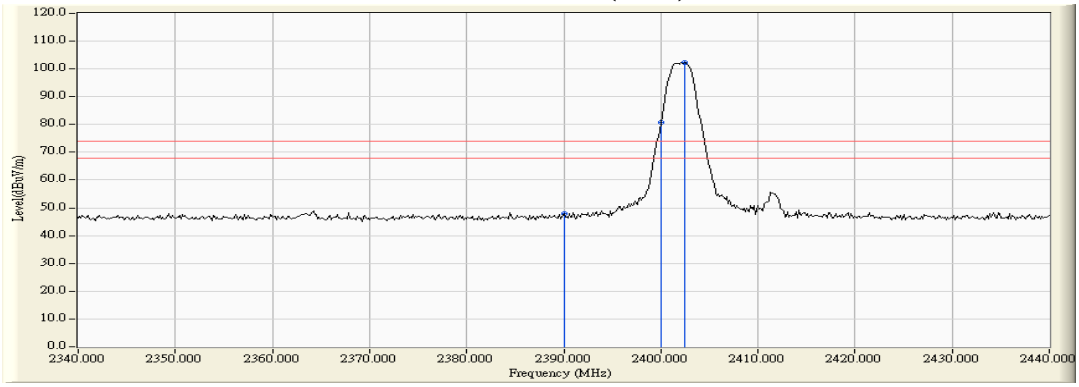
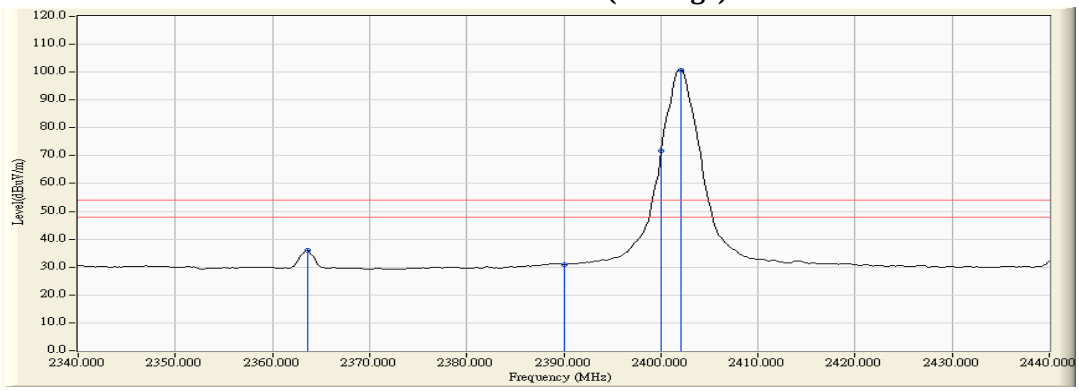


Figure Channel 00: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain A

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
39 (Peak)	2479.587	7.082	89.784	96.866	--	--	--
39 (Peak)	2483.500	7.110	45.097	52.207	74.000	54.000	Pass
39 (Average)	2480.022	7.086	88.243	95.328	--	--	--
39 (Average)	2483.500	7.110	31.325	38.435	74.000	54.000	Pass

Figure Channel 39: Horizontal (Peak)

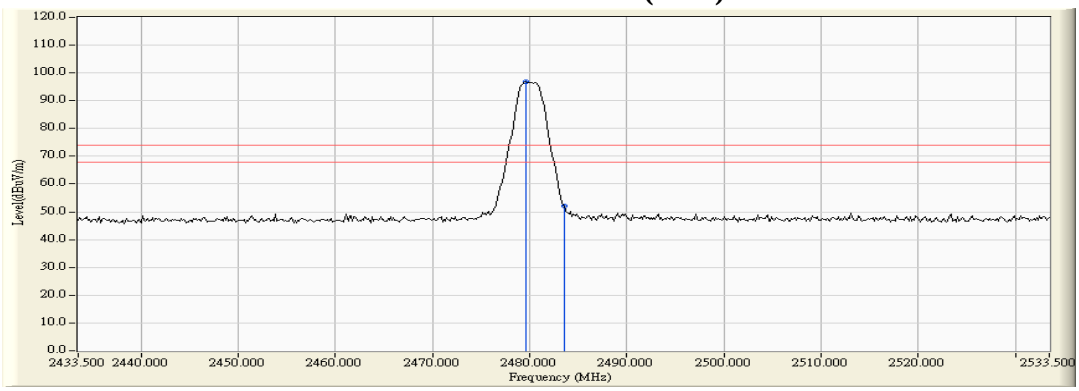
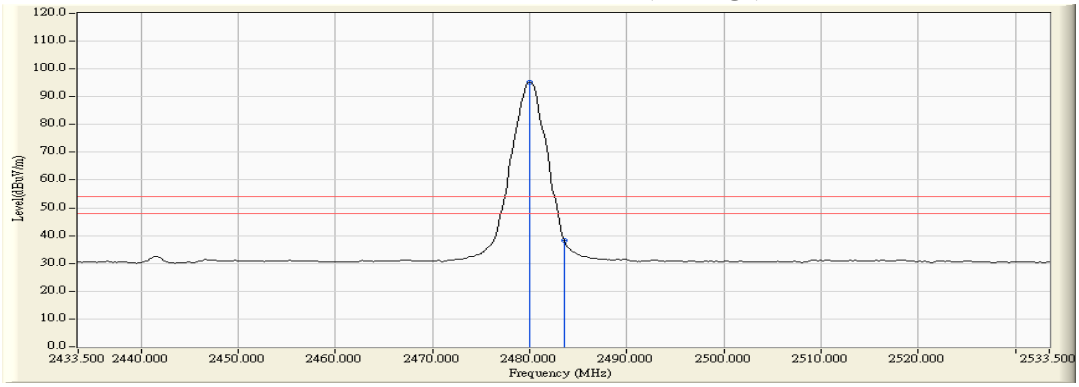


Figure Channel 39: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Intel® Wireless-AC 9462
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/03/09
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain A

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
39 (Peak)	2479.587	6.338	99.233	105.572	--	--	--
39 (Peak)	2483.500	6.363	53.588	59.951	74.000	54.000	Pass
39 (Peak)	2489.442	6.401	50.354	56.754	74.000	54.000	Pass
39 (Average)	2480.022	6.342	97.879	104.221	--	--	--
39 (Average)	2483.500	6.363	40.539	46.902	74.000	54.000	Pass
39 (Average)	2518.283	6.466	29.287	35.753	74.000	54.000	Pass

Figure Channel 39: Vertical (Peak)

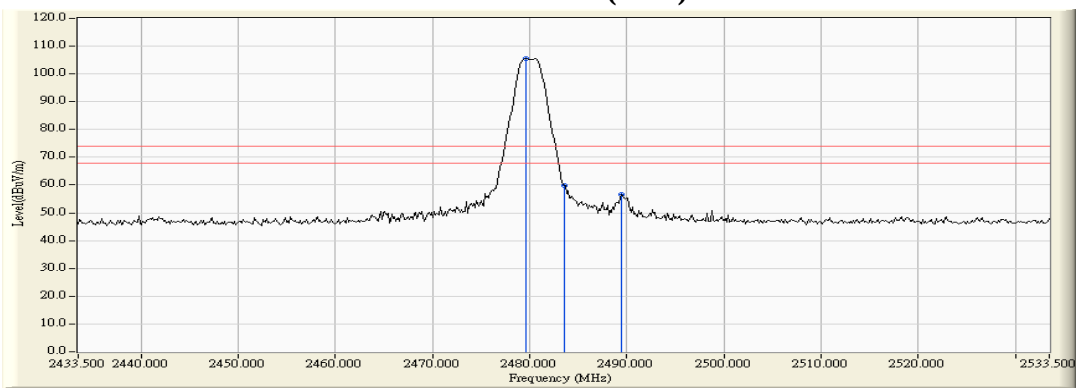
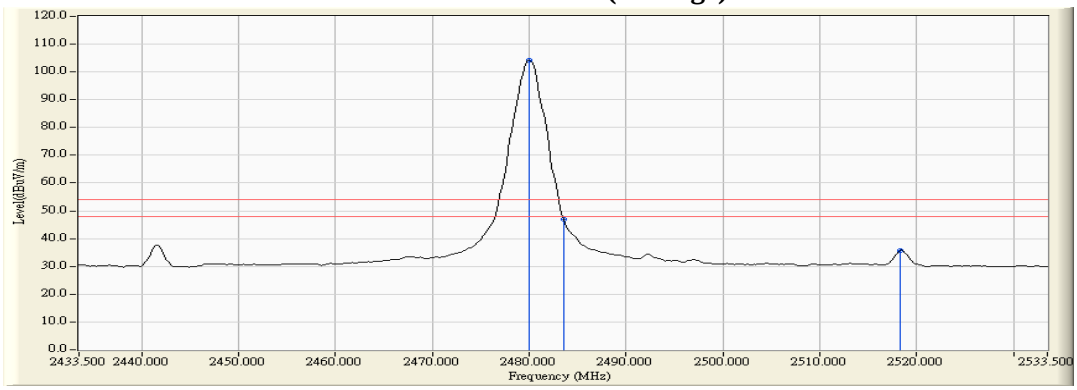


Figure Channel 39: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz) - Chain B

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	6.474	41.275	47.750	74.000	54.000	Pass
00 (Peak)	2400.000	6.528	64.978	71.506	--	--	--
00 (Peak)	2402.464	6.543	86.281	92.824	--	--	--
00 (Average)	2390.000	6.474	23.265	29.740	74.000	54.000	Pass
00 (Average)	2400.000	6.528	55.981	62.509	--	--	--
00 (Average)	2401.884	6.540	84.843	91.383	--	--	--

Figure Channel 00: Horizontal (Peak)

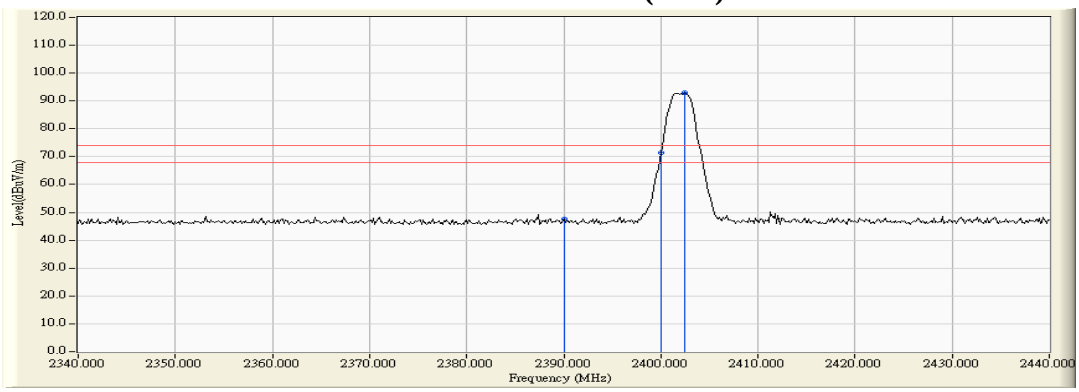
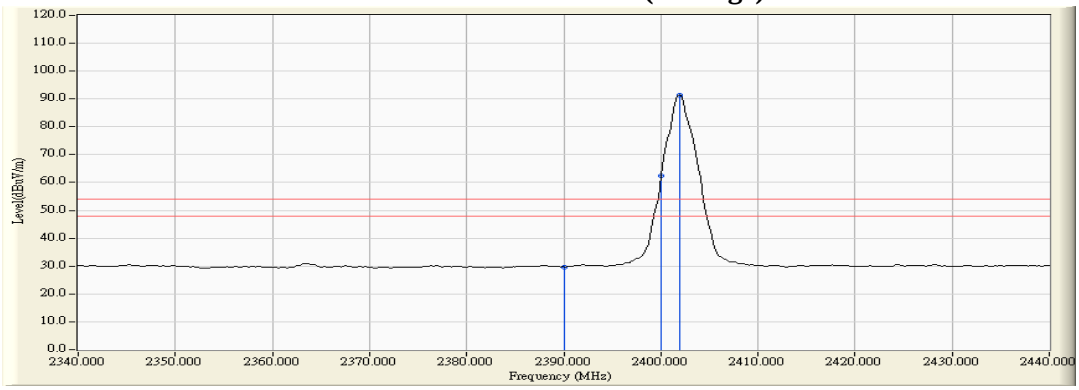


Figure Channel 00: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz) - Chain B

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	5.880	40.964	46.845	74.000	54.000	Pass
00 (Peak)	2400.000	5.879	75.095	80.974	--	--	--
00 (Peak)	2402.609	5.885	96.198	102.084	--	--	--
00 (Average)	2363.768	5.988	31.269	37.257	74.000	54.000	Pass
00 (Average)	2390.000	5.880	24.753	30.634	74.000	54.000	Pass
00 (Average)	2400.000	5.879	65.988	71.867	--	--	--
00 (Average)	2402.029	5.884	94.921	100.805	--	--	--

Figure Channel 00: Vertical (Peak)

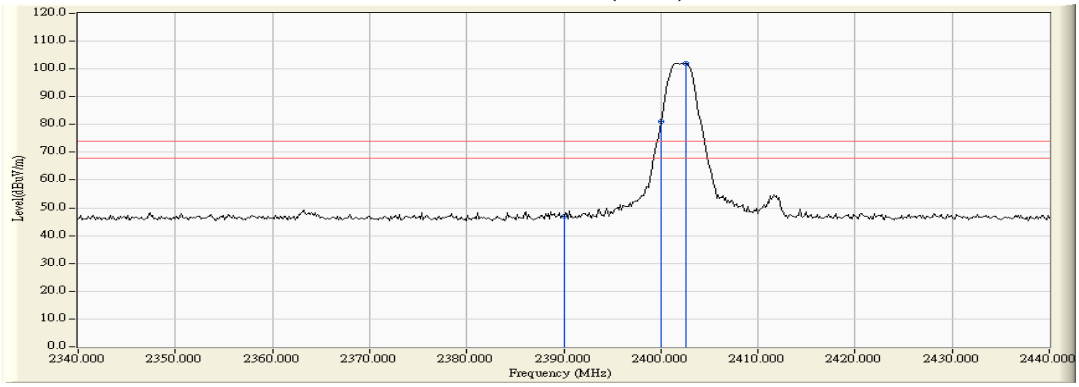
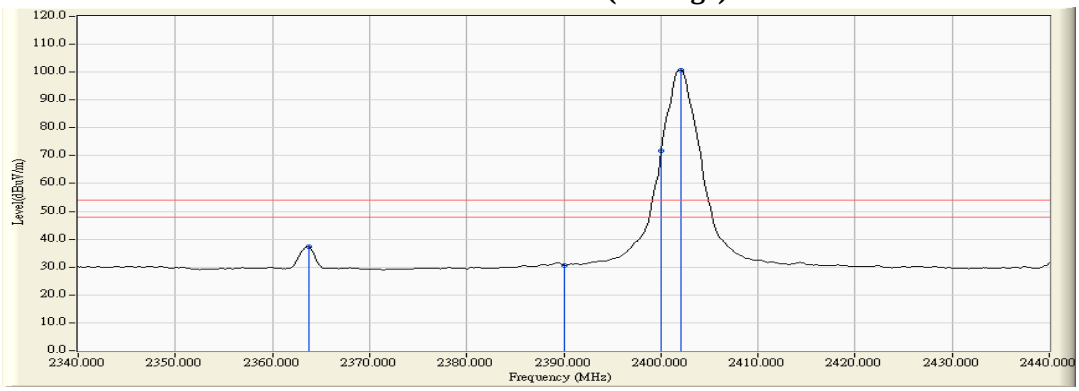


Figure Channel 00: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Intel® Wireless-AC 9462
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2018/03/09
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain B

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
39 (Peak)	2479.442	7.081	88.222	95.303	--	--	--
39 (Peak)	2483.500	7.110	44.707	51.817	74.000	54.000	Pass
39 (Average)	2480.022	7.086	86.802	93.887	--	--	--
39 (Average)	2483.500	7.110	30.363	37.473	74.000	54.000	Pass

Figure Channel 39: Horizontal (Peak)

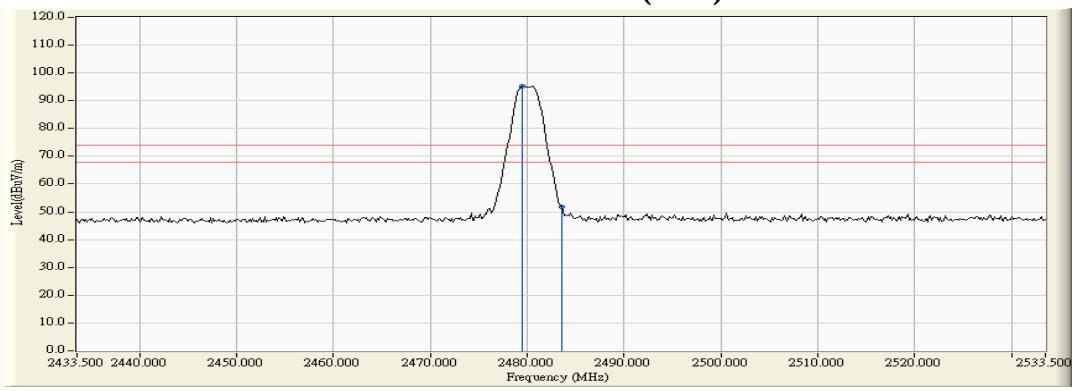
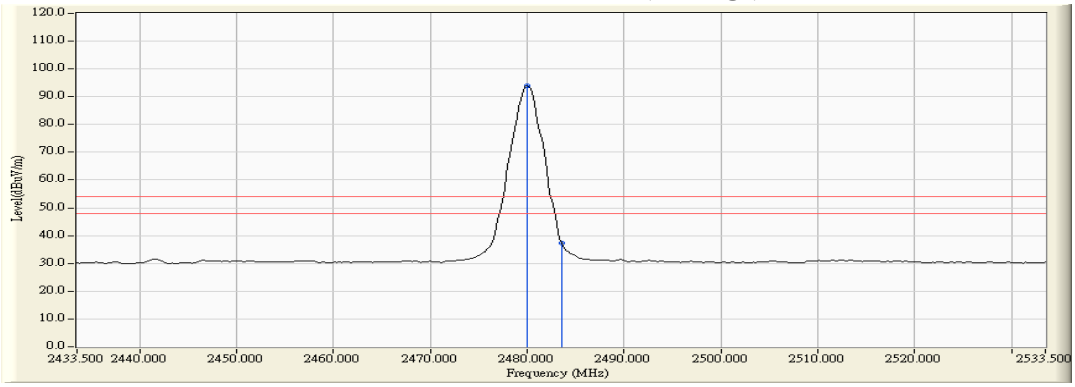


Figure Channel 39: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Intel® Wireless-AC 9462
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/03/09
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) - Chain B

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
39 (Peak)	2479.587	6.338	98.022	104.361	--	--	--
39 (Peak)	2483.500	6.363	52.743	59.106	74.000	54.000	Pass
39 (Peak)	2489.732	6.403	49.972	56.374	74.000	54.000	Pass
39 (Average)	2480.022	6.342	96.622	102.964	--	--	--
39 (Average)	2483.500	6.363	39.700	46.063	74.000	54.000	Pass
39 (Average)	2518.717	6.465	28.308	34.774	74.000	54.000	Pass

Figure Channel 39: Vertical (Peak)

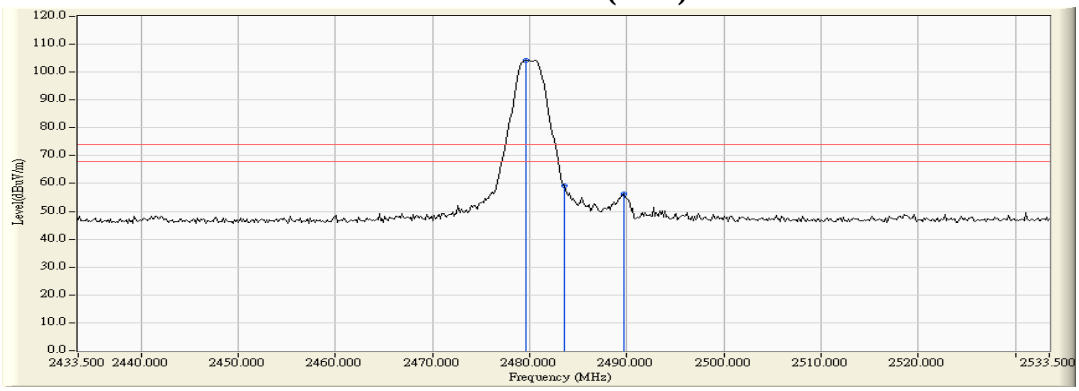
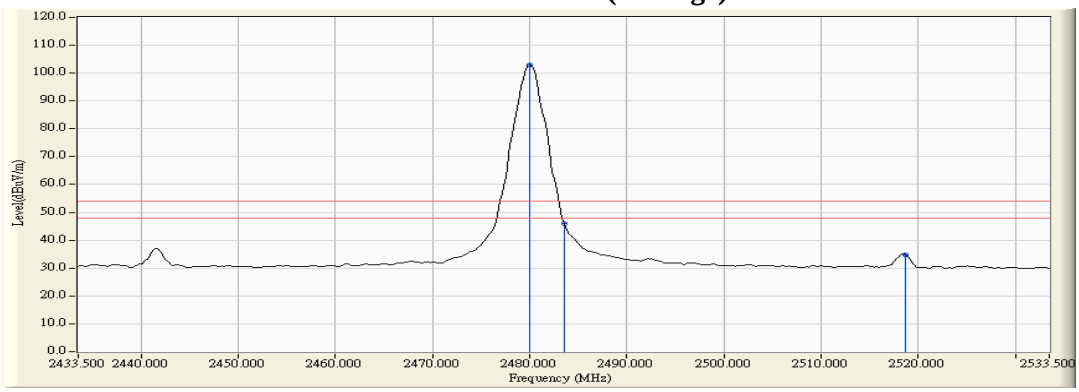


Figure Channel 39: Vertical (Average)

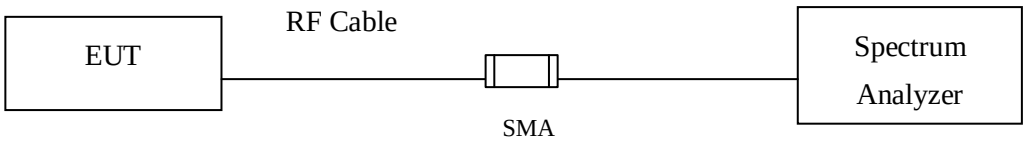


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

5. Duty Cycle

5.1. Test Setup



5.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

5.3. Uncertainty

± 2.31msec

5.4. Test Result of Duty Cycle

Product	:	Intel® Wireless-AC 9462
Test Item	:	Duty Cycle
Test date	:	2018/03/07
Test Mode	:	Mode 1: Transmit - BLE (GFSK)

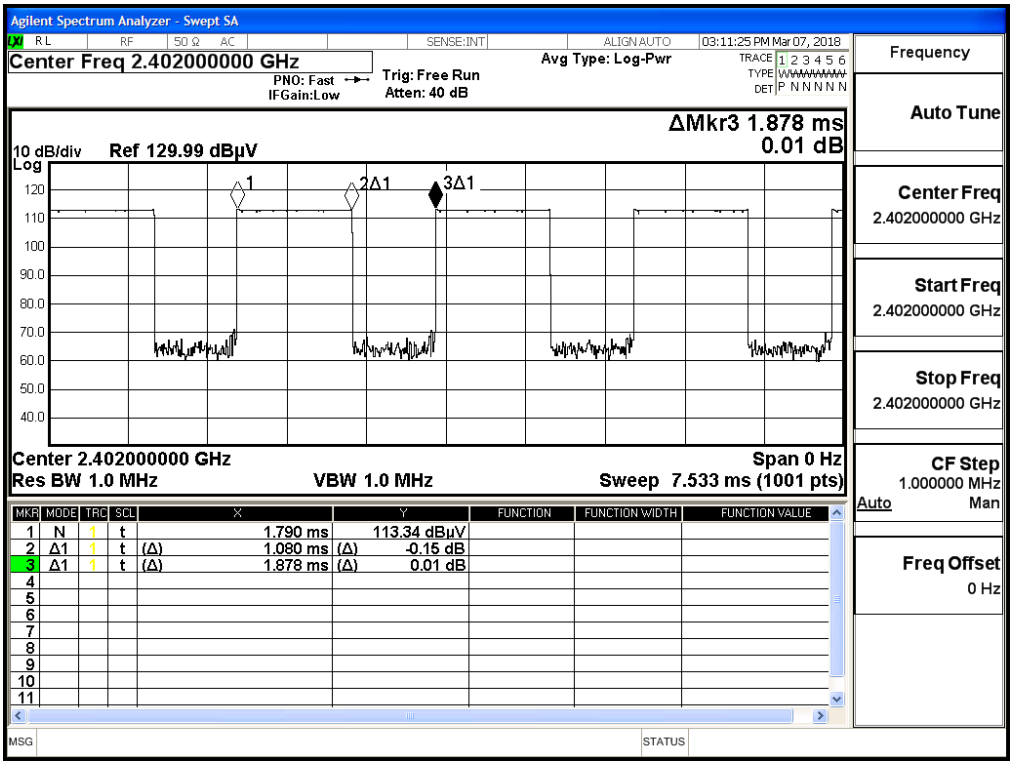
Duty Cycle Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results:

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
BLE	1.08	1.878	57.50	0.93



6. EMI Reduction Method During Compliance Testing

No modification was made during testing.