Test Report

Date : 2017-10-19
No. : HM170843

Applicant: Como Audio LLC
21 Drydock Avenue, Suite 760W, Boston, Massachusetts 02210

Manufacturer: Jwoodaudio Industry Co. Ltd.
No. 4 Industrial District, Liuwu Village, Yuanzhou Town, Huizhou City, Guangdong Province, P.R.C, 516123

Description of Sample(s):

Product:	CD/Internet/FM/Digital Radio with Bluetooth and Spotify/Deezer/Tidal/Napster
Brand Name:	Como Audio
Model Number:	Musica
FCC ID:	2AMWRMUSICA

Date Sample(s) Received: 2017-07-19

Date Tested: 2017-08-07 to 2017-08-11

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with FCC 47 CFR [Codes of Federal Regulations] Part 15: 2015 and ANSI C63.10: 2013 for FCC Certification.

Conclusion(s): The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remark(s): 2.4G WiFi (802.11b/g/n)
This Laboratory Report supersedes our previous Test Report No. HM170843 issued on 2017-08-23 which is hereby deemed null and void.

CHEUNG Chi, Kenneth
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

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Test Report

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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate

Telephone: (852) 26661888
Fax: (852) 26644353

1.2 Equipment Under Test [EUT] Description of Sample(s)

Product:	CD/Internet/FM/Digital Radio with Bluetooth and Spotify/Deezer/Tidal/Napster
Manufacturer:	Jwoodaudio Industry Co. Ltd. No. 4 Industrial District, Liuwu Village, Yuanzhou Town, Huizhou City, Guangdong Province, P.R.C, 516123
Brand Name:	Como Audio
Model Number:	Musica
Rating:	Input: 100 - 240Va.c

1.2.1 Description of EUT Operation

The Equipment Under Test (EUT) is Internet/FM Digital Radio with Bluetooth and Spotify, which is able to connect to the Internet through WiFi. The R.F. signal was modulated by IC; the type of modulation used was DSSS and OFDM.

1.3 Date of Order

2017-07-19

1.4 Submitted Sample(s):

1 Sample

1.5 Test Duration

2017-08-07 to 2017-08-11

1.6 Country of Origin

China

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1.7 Antenna Details

Antenna Type: Circuit board printed meander line antenna
Antenna Gain: 4.1dBi

1.8 Channel List

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472

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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2016 Regulations. ANSI C63.10:2013 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION (WiFi) Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Fail	N/A
Maximum Peak Conducted Output Power	FCC 47CFR 15.247(b)(1)	ANSI C63.10:2013	N/A	☒	☐	☐
Radiated Spurious Emissions	FCC 47CFR 15.209	ANSI C63.10:2013	N/A	☒	☐	☐
AC power-line conducted emissions	FCC 47CFR 15.207	ANSI C63.10:2013	N/A	☒	☐	☐
Power Spectral Density	FCC 47CFR 15.247(a)(1)	ANSI C63.10:2013	N/A	☒	☐	☐
6dB Bandwidth	FCC 47CFR 15.247(a)(1)	ANSI C63.10:2013	N/A	☒	☐	☐
Band-edge measurement (Radiated)	FCC 47CFR 15.247(d)	ANSI C63.10:2013	N/A	☒	☐	☐
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	☒	☐	☐
RF Exposure	FCC 47CFR 15.247(i)	N/A	N/A	☒	☐	☐

Note: N/A – Not Applicable

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2.3 Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate in the table below is the worst case rate with respect to the specific test item.
Investigation has been done on all the possible configurations for searching the worst cases.
The following table is a list of the test modes shown in this test report.

Test Items	Mode
Maximum Peak Conducted Output Power	802.11 b/g/n
Power Spectral Density	802.11 b/g/n
Radiated Spurious Emissions	802.11 b/g/n
Band-edge compliance of Conducted Emission	802.11 b/g/n

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3.0 Test Results

3.1 Emission

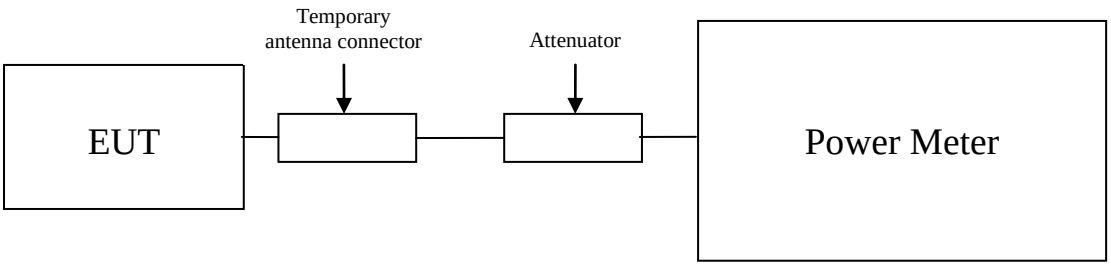
3.1.1 Maximum Peak Conducted Output Power

Test Requirement:	FCC 47CFR 15.247(b)(2)
Test Method:	ANSI C63.10:2013
Test Date:	2017-08-07
Mode of Operation:	802.11b/g/n Tx mode

Test Method:

The RF output of the EUT was connected to the Power Meter. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in dBm.

Test Setup:



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Limits for Maximum Peak Conducted Output Power [FCC 47CFR 15.247]:

2400–2483.5 MHz band:
The maximum peak output power shall not exceeded the following limits:
For frequency hopping systems employing at least 75 hopping channels: 1 Watt
For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watts
For Digital Transmission systems in 2400-2483.5 MHz Band: 1 Watt

Results of 802.11b, TX Mode (2412MHz to 2472MHz) : Pass
Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0138
6	2437	0.0166
13	2472	0.0187

Results of 802.11g, TX Mode (2412MHz to 2472MHz) : Pass
Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0103
6	2437	0.0123
13	2472	0.0132

Results of 802.11n, TX Mode (2412MHz to 2472MHz) : Pass
Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0104
6	2437	0.0127
13	2472	0.0126

Calculated measurement uncertainty : 30MHz to 1GHz 1.7dB
1GHz to 18GHz 1.7dB

Remark:
1. All test data for each data rate were verified, but only the worst case was reported.
2. The EUT is programmed to transmit signals continuously for all testing.

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3.1.2 Conducted Emissions (0.15MHz to 30MHz)

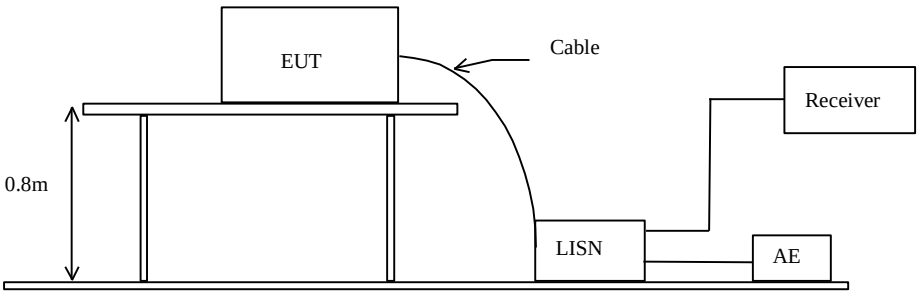
Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.10:2013
Test Date:	2017-08-08
Mode of Operation:	Tx mode/ FM mode/ DAB mode/ Internet Radio mode/ CD Play mode and Aux-in Mode connected to iPod**

Test Method:

The test was performed in accordance with ANSI C63.10:2013, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

** Only results Tx mode will be shown in the report, since that is worst cases found.

Test Setup:



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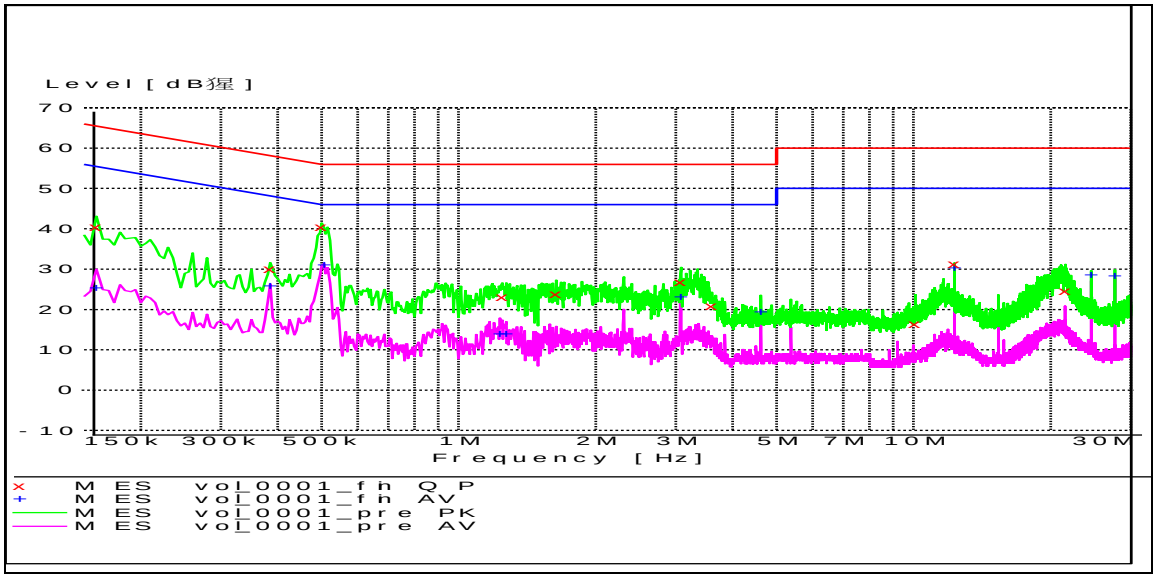
Limit for Conducted Emissions (FCC 47CFR 15.207):

Frequency Range [MHz]	Quasi-Peak Limits [dBμV]	Average [dBμV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Tx Mode – Live and Neutral: PASS



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MEASUREMENT RESULT: "vol_0001_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.160000	40.40	9.9	66	25.1	N	GND
0.385000	30.00	10.0	58	28.1	L1	GND
0.500000	40.40	10.0	56	15.6	L1	GND
1.245000	23.20	9.9	56	32.8	L1	GND
1.635000	23.80	10.0	56	32.2	L1	GND
3.075000	26.90	10.4	56	29.1	N	GND
3.605000	20.90	10.4	56	35.1	L1	GND
10.075000	16.30	10.3	60	43.7	N	GND
12.290000	31.20	10.6	60	28.8	N	GND
21.525000	24.50	10.8	60	35.5	L1	GND

MEASUREMENT RESULT: "vol_0001_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.160000	25.40	9.9	56	30.1	L1	GND
0.385000	25.90	10.0	48	22.2	L1	GND
0.505000	31.10	10.0	46	14.9	L1	GND
1.230000	14.00	9.9	46	32.0	L1	GND
1.270000	13.90	9.9	46	32.1	L1	GND
3.075000	23.00	10.4	46	23.0	N	GND
4.610000	19.30	10.5	46	26.7	L1	GND
12.290000	30.20	10.6	50	19.8	N	GND
24.575000	28.50	10.9	50	21.5	N	GND
27.650000	28.40	10.7	50	21.6	N	GND

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3.1.2 Radiated Spurious Emissions

Test Requirement:	FCC 47CFR 15.209
Test Method:	ANSI C63.10:2013
Test Date:	2017-08-07
Mode of Operation:	802.11b/g/n, Tx mode / FM mode/ DAB mode/ Internet Radio mode/ CD Play mode and Aux-in Mode connected to iPod**

Test Method:

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-anechoic chamber located on the G/F of "The Hong Kong Standards and Testing Centre Ltd." with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

** Only results of Tx mode will be shown in the report, since that are worst cases found.

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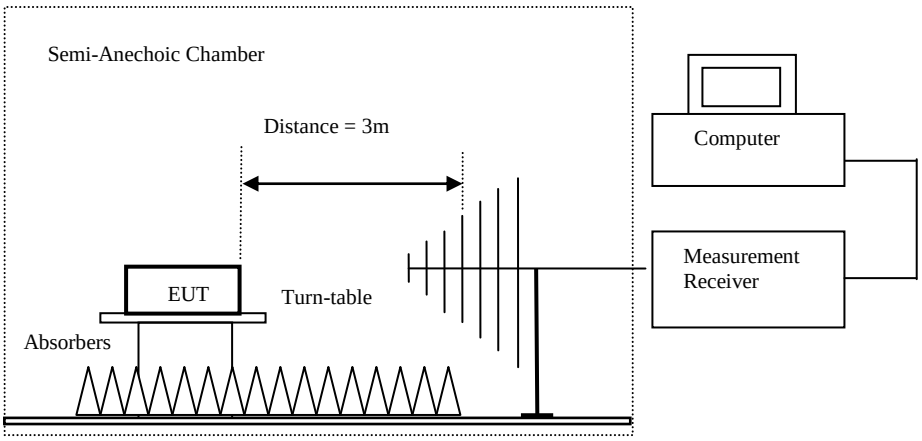
Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)	RBW:	10kHz
	VBW:	30kHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold
30MHz – 1GHz (QP)	RBW:	120kHz
	VBW:	120kHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold
1GHz - 26.5GHz (Pk & Av)	RBW:	1MHz
	VBW:	3MHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold

Test Setup:



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used, 9kHz to 30MHz loop antennas are used.

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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

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Result of Tx mode (802.11b: 2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11b: 2412.0 MHz) (30MHz – 1GHz): Pass

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11b: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	14.3	42.4	56.7	74.0	17.3	Vertical
7236.0	4.2	46.7	50.9	74.0	23.1	Vertical
9648.0	2.9	48.4	51.3	74.0	22.7	Vertical
12060.0	1.7	53.1	54.8	74.0	19.2	Vertical

Result of Tx mode (802.11b: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	-5.3	42.4	37.1	54.0	16.9	Vertical
7236.0	-9.7	46.7	37.0	54.0	17.0	Vertical
9648.0	-11.3	48.4	37.1	54.0	16.9	Vertical
12060.0	-11.9	53.1	41.2	54.0	12.8	Vertical

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Result of Tx mode (802.11b: 2437.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11b: 2437.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11b: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	12.3	42.5	54.8	74.0	19.2	Vertical
7311.0	7.8	47.1	54.9	74.0	19.1	Vertical
9748.0	3.3	49.3	52.6	74.0	21.4	Vertical
12185.0	1.6	53.1	54.7	74.0	19.3	Vertical

Result of Tx mode (802.11b: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	-4.1	42.5	38.4	54.0	15.6	Vertical
7311.0	-6.3	47.1	40.8	54.0	13.2	Vertical
9748.0	-9.8	49.3	39.5	54.0	14.5	Vertical
12185.0	-10.7	53.1	42.4	54.0	11.6	Vertical

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Result of Tx mode (802.11b: 2472.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11b: 2472.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11b: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	11.4	43.2	54.6	74.0	19.4	Vertical
7416.0	5.5	46.2	51.7	74.0	22.3	Vertical
9888.0	2.0	50.9	52.9	74.0	21.1	Vertical
12360.0	1.1	54.3	55.4	74.0	18.6	Vertical

Result of Tx mode (802.11b: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	-5.7	43.2	37.5	54.0	16.5	Vertical
7416.0	-10.9	46.2	35.3	54.0	18.7	Vertical
9888.0	-11.0	50.9	39.9	54.0	14.1	Vertical
12360.0	-11.7	54.3	42.6	54.0	11.4	Vertical

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Result of Tx mode (802.11g: 2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11g: 2412.0 MHz) (30MHz – 1GHz): Pass

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11g: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	12.3	42.4	54.7	74.0	19.3	Vertical
7236.0	3.1	46.7	49.8	74.0	24.2	Vertical
9648.0	2.7	48.4	51.1	74.0	22.9	Vertical
12060.0	1.9	53.1	55.0	74.0	19.0	Vertical

Result of Tx mode (802.11g: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	-6.1	42.4	36.3	54.0	17.7	Vertical
7236.0	-10.3	46.7	36.4	54.0	17.6	Vertical
9648.0	-11.1	48.4	37.3	54.0	16.7	Vertical
12060.0	-12.1	53.1	41.0	54.0	13.0	Vertical

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Result of Tx mode (802.11g: 2437.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11g: 2437.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11g: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	10.3	42.5	52.8	74.0	21.2	Vertical
7311.0	6.7	47.1	53.8	74.0	20.2	Vertical
9748.0	2.9	49.3	52.2	74.0	21.8	Vertical
12185.0	1.7	53.1	54.8	74.0	19.2	Vertical

Result of Tx mode (802.11g: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	-3.4	42.5	39.1	54.0	14.9	Vertical
7311.0	-7.9	47.1	39.2	54.0	14.8	Vertical
9748.0	-10.1	49.3	39.2	54.0	14.8	Vertical
12185.0	-11.1	53.1	42.0	54.0	12.0	Vertical

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Result of Tx mode (802.11g: 2472.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11g: 2472.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11g: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	12.7	43.2	55.9	74.0	18.1	Vertical
7416.0	4.3	46.2	50.5	74.0	23.5	Vertical
9888.0	3.1	50.9	54.0	74.0	20.0	Vertical
12360.0	1.8	54.3	56.1	74.0	17.9	Vertical

Result of Tx mode (802.11g: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	-4.3	43.2	38.9	54.0	15.1	Vertical
7416.0	-9.9	46.2	36.3	54.0	17.7	Vertical
9888.0	-10.7	50.9	40.2	54.0	13.8	Vertical
12360.0	-11.2	54.3	43.1	54.0	10.9	Vertical

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Result of Tx mode (802.11n: 2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11n: 2412.0 MHz) (30MHz – 1GHz): Pass

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11n: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	12.3	42.4	54.7	74.0	19.3	Vertical
7236.0	3.7	46.7	50.4	74.0	23.6	Vertical
9648.0	3.1	48.4	51.5	74.0	22.5	Vertical
12060.0	1.8	53.1	54.9	74.0	19.1	Vertical

Result of Tx mode (802.11n: 2412.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4824.0	-5.7	42.4	36.7	54.0	17.3	Vertical
7236.0	-8.9	46.7	37.8	54.0	16.2	Vertical
9648.0	-10.7	48.4	37.7	54.0	16.3	Vertical
12060.0	-11.8	53.1	41.3	54.0	12.7	Vertical

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Result of Tx mode (802.11n: 2437.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11n: 2437.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11n: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	11.8	42.5	54.3	74.0	19.7	Vertical
7311.0	5.9	47.1	53.0	74.0	21.0	Vertical
9748.0	3.1	49.3	52.4	74.0	21.6	Vertical
12185.0	1.4	53.1	54.5	74.0	19.5	Vertical

Result of Tx mode (802.11n: 2437.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4874.0	-4.3	42.5	38.2	54.0	15.8	Vertical
7311.0	-6.4	47.1	40.7	54.0	13.3	Vertical
9748.0	-9.8	49.3	39.5	54.0	14.5	Vertical
12185.0	-10.3	53.1	42.8	54.0	11.2	Vertical

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Result of Tx mode (802.11n: 2472.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx mode (802.11n: 2472.0 MHz) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (802.11n: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	10.9	43.2	54.1	74.0	19.9	Vertical
7416.0	6.1	46.2	52.3	74.0	21.7	Vertical
9888.0	2.3	50.9	53.2	74.0	20.8	Vertical
12360.0	1.4	54.3	55.7	74.0	18.3	Vertical

Result of Tx mode (802.11n: 2472.0 MHz) (1GHz - 26.5GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
4944.0	-5.3	43.2	37.9	54.0	16.1	Vertical
7416.0	-8.9	46.2	37.3	54.0	16.7	Vertical
9888.0	-10.7	50.9	40.2	54.0	13.8	Vertical
12360.0	-11.9	54.3	42.4	54.0	11.6	Vertical

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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx mode, (9kHz – 30MHz): PASS
Emissions detected are more than 20 dB below the FCC Limits

Result of Tx mode, (30MHz – 1GHz): PASS

Field Strength of Fundamental and Harmonics Emissions Quasi-Peak Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
41.4	26.8	10.0	36.8	69.2	100	Vertical
76.0	23.5	7.2	30.7	34.3	150	Horizontal
110.2	18.1	8.7	26.8	21.9	150	Horizontal
153.6	22.8	10.0	32.8	43.7	200	Horizontal
305.0	30.8	13.9	44.7	171.8	200	Horizontal
577.1	10.4	20.0	30.4	33.1	200	Horizontal

Result of Tx mode, (1GHz – 18GHz): PASS
Emissions detected are more than 20 dB below the Limits

Remarks:
Frequencies not listed are more than 20 dB below the Limits
* Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: (9kHz - 30MHz): 3.3dB
(30MHz - 1GHz): 4.6dB
(1GHz - 26GHz): 4.4dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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3.1.3 Power Spectral Density

Test Requirement: FCC 47CFR 15.247(e)
Test Method: ANSI C63.10:2013
Test Date: 2017-08-11
Mode of Operation: Tx mode

Test Method:

The RF output of the EUT was connected to the spectrum analyzer. Set the fundamental frequency as the center frequency of the spectral analyzer. Use RBW=100kHz , VBW= 300KHz , Set the span to 1.5 times the DTS channel bandwidth. Detector = peak, Sweep time = auto couple , Trace mode = max hold. Measure the Power Spectral Density (PSD) and record the results in dBm/100kHz, the results would then apply correction factor to convert results from dBm/100kHz to dBm/3kHz, which is -15.2dB.

Test Setup:

As Test Setup of clause 3.1.3 in this test report.

Test Limit:
The maximum power spectral density (PSD) shall not exceeded 8dBm in any 3kHz band.

Result of on mode: Pass
Results of Tx Mode (802.11b) (Tx:2412MHz to 2472MHz) : Pass

Transmitter Frequency (MHz)	Measured Power spectral density level / 100kHz band (dBm)	Correction Factor (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	0.1	-15.2	-15.1	**8dBm**
2437.0	0.9	-15.2	-14.3	**8dBm**
2472.0	1.6	-15.2	-13.6	**8dBm**

Results of Tx Mode (802.11g) (Tx:2412MHz to 2472MHz) : Pass

Transmitter Frequency (MHz)	Measured Power spectral density level / 100kHz band (dBm)	Correction Factor (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-2.2	-15.2	-17.4	**8dBm**
2437.0	-1.1	-15.2	-16.3	**8dBm**
2472.0	-0.6	-15.2	-15.8	**8dBm**

Results of Tx Mode (802.11n) (Tx:2412MHz to 2472MHz) : Pass

Transmitter Frequency (MHz)	Measured Power spectral density level / 100kHz band (dBm)	Correction Factor (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-2.4	15.2	-17.6	**8dBm**
2437.0	-1.4	15.2	-16.6	**8dBm**
2472.0	-0.9	15.2	-16.1	**8dBm**

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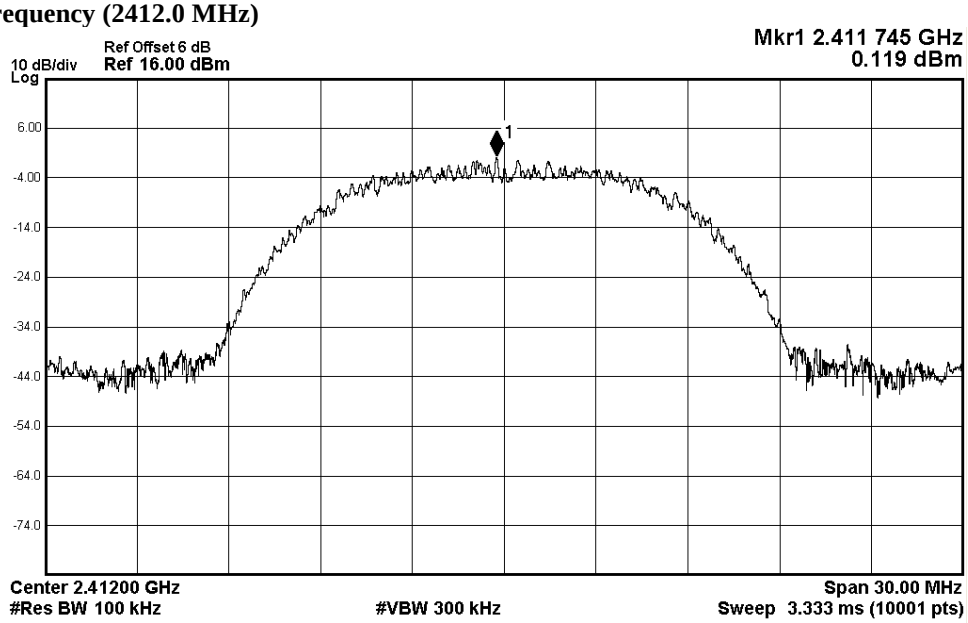
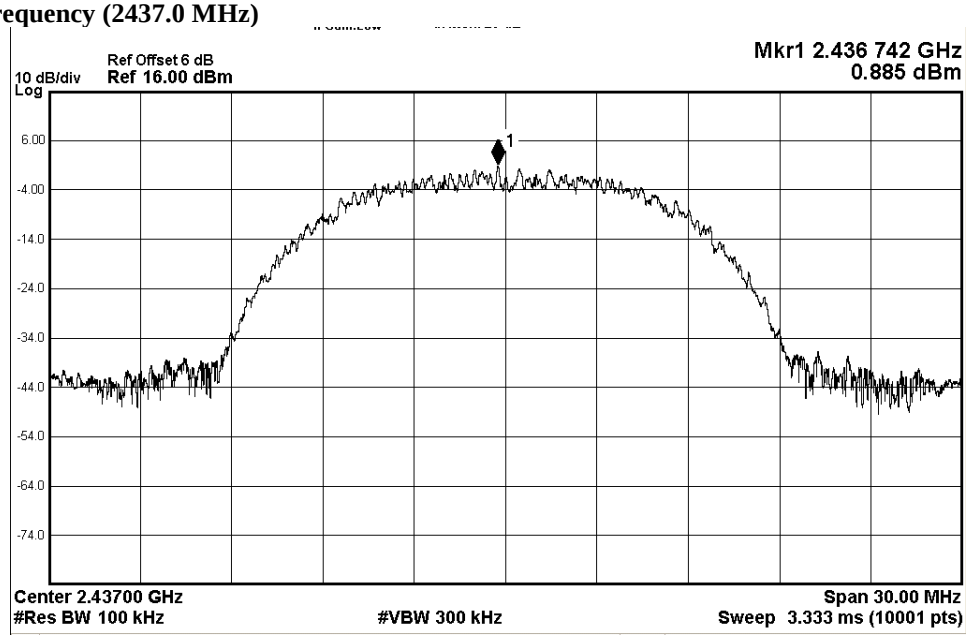
Tx mode 802.11b (Tx: 2412MHz to 2472MHz)
Lowest Frequency (2412.0 MHz)



Middle Frequency (2437.0 MHz)



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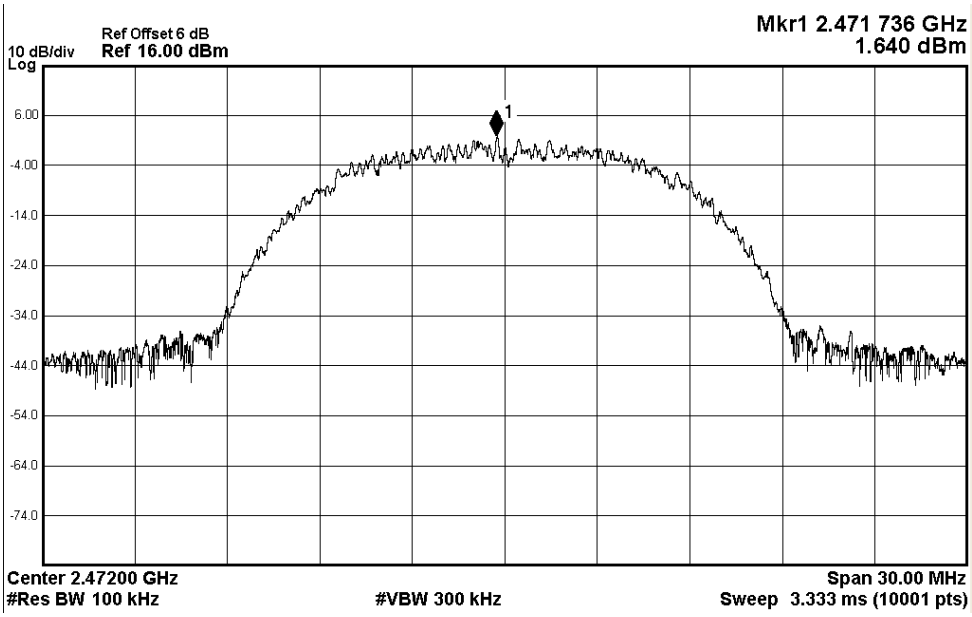
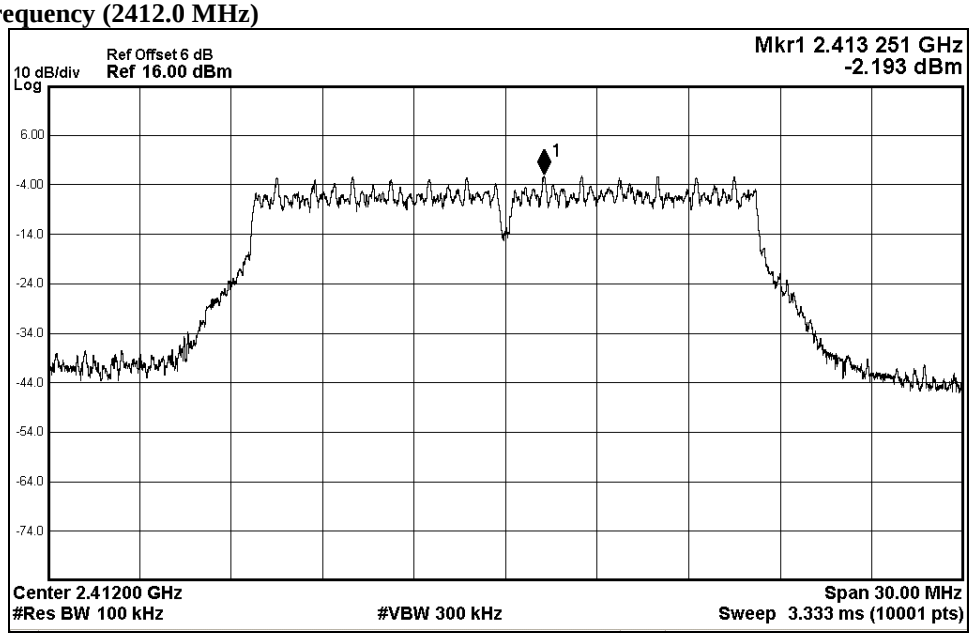
Highest Frequency (2472.0 MHz)



Tx mode 802.11g (Tx: 2412MHz to 2472MHz)
Lowest Frequency (2412.0 MHz)



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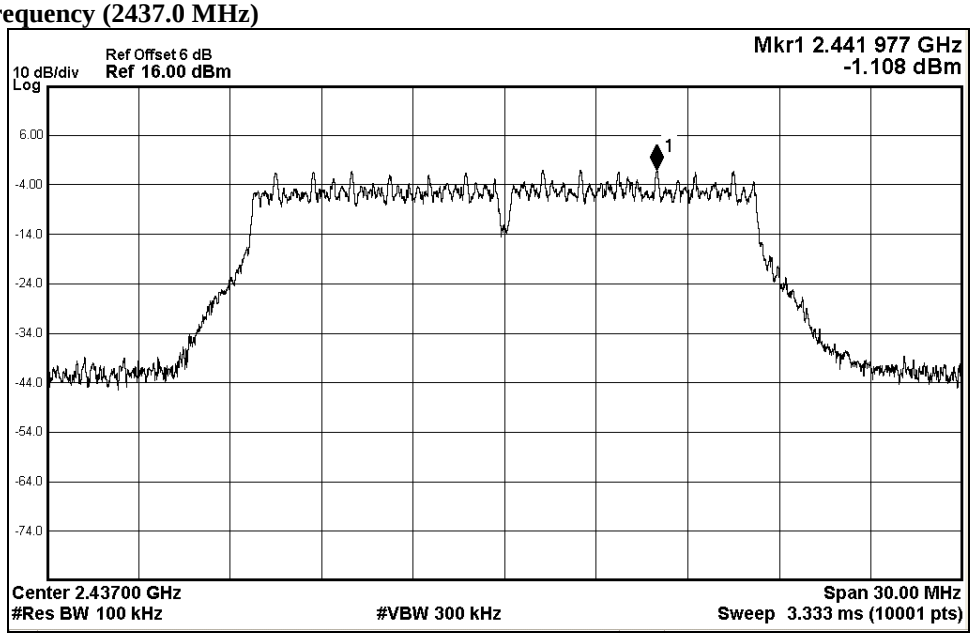
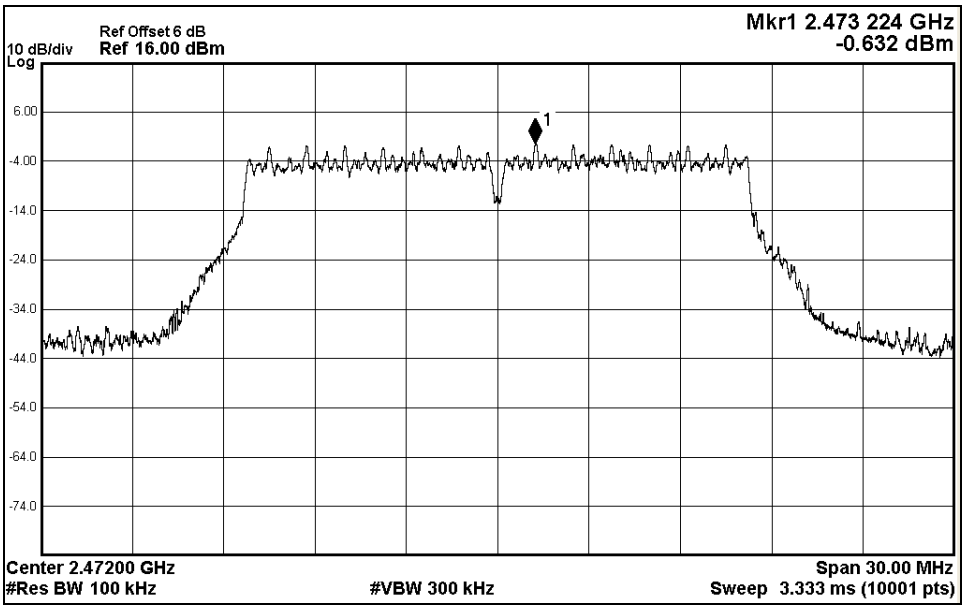
Middle Frequency (2437.0 MHz)



Highest Frequency (2472.0 MHz)



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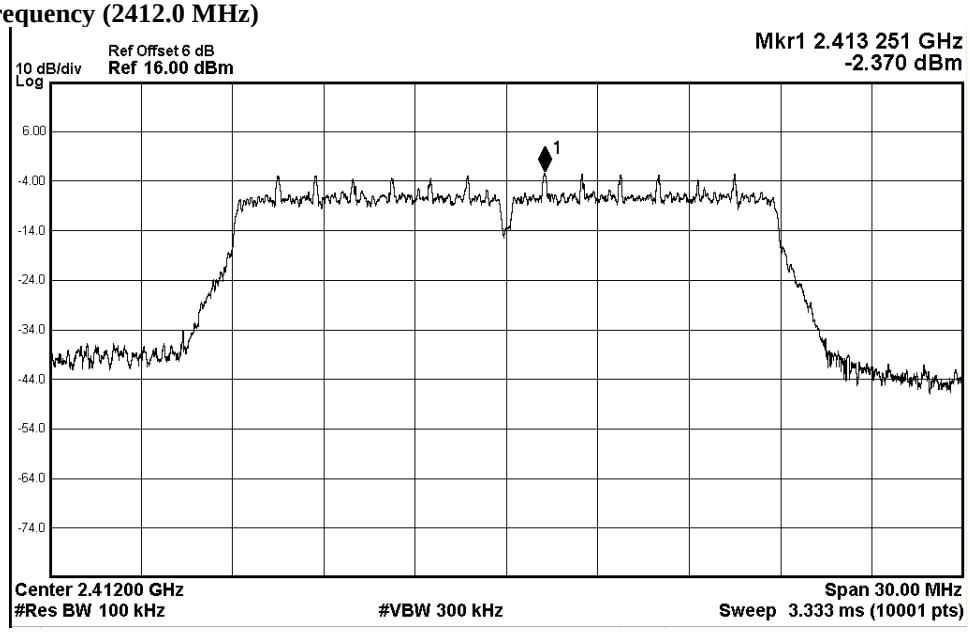
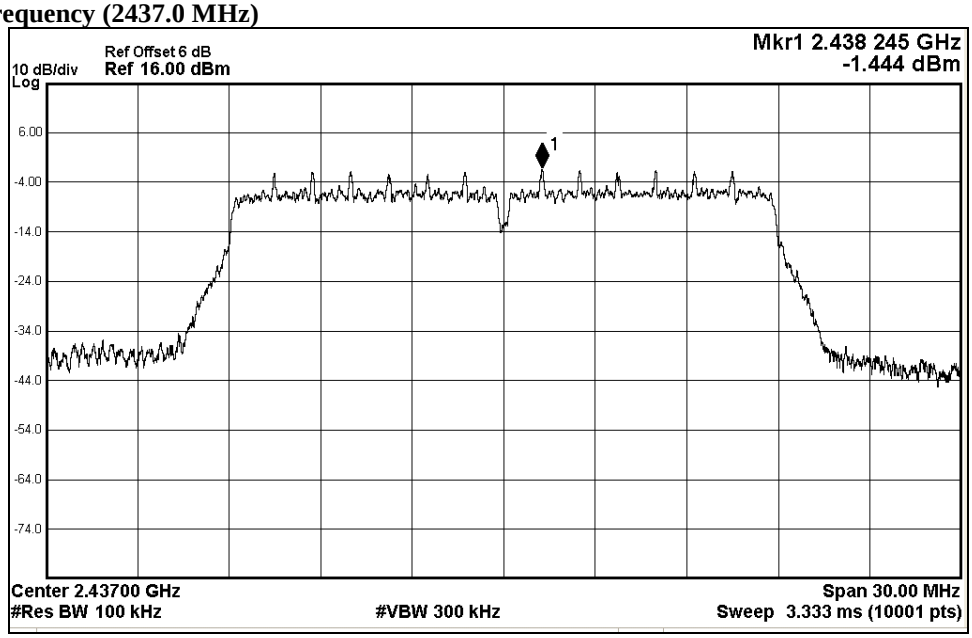
Tx mode 802.11n (Tx: 2412MHz to 2472MHz)
Lowest Frequency (2412.0 MHz)



Middle Frequency (2437.0 MHz)



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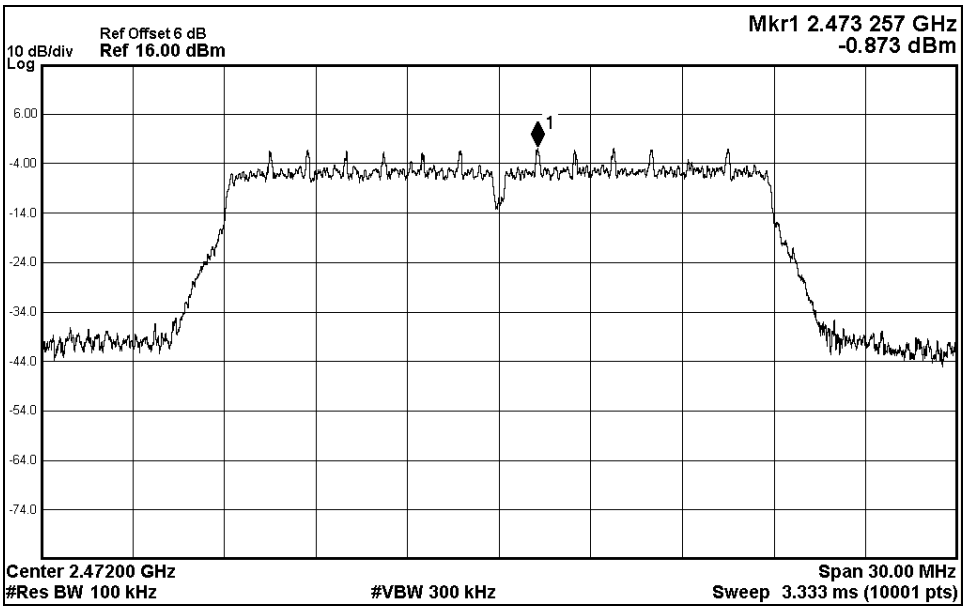
Highest Frequency (2472.0 MHz)



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3.1.5 6dB Bandwidth Measurement

Test Requirement:	FCC 47CFR 15.247(a)(2)
Test Method:	ANSI C63.10-2013
Test Date:	2017-08-11
Mode of Operation:	Tx mode (802.11b/g/n)

Remark:
The result has been done on all the possible configurations for searching the worst cases.

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.3 in this test report.

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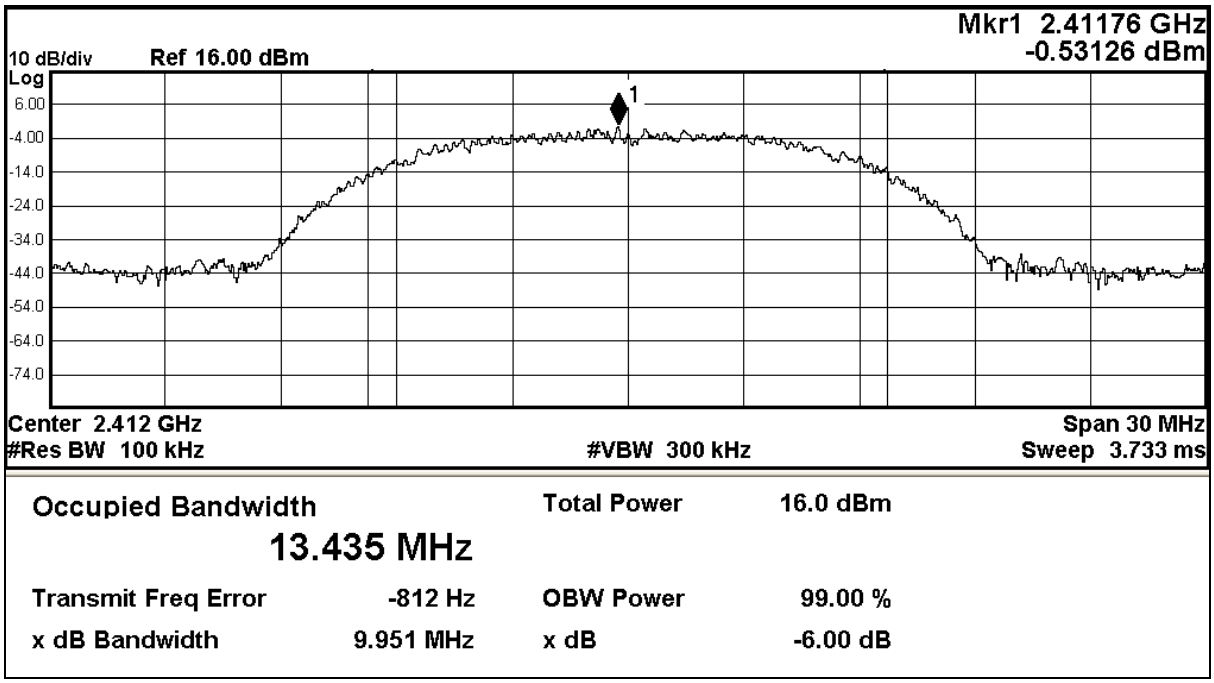
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2412	9.95	>500kHz

(Lowest Operating Frequency) - (802.11b)



Occupied Bandwidth	13.435 MHz	Total Power	16.0 dBm
Transmit Freq Error	-812 Hz	OBW Power	99.00 %
x dB Bandwidth	9.951 MHz	x dB	-6.00 dB

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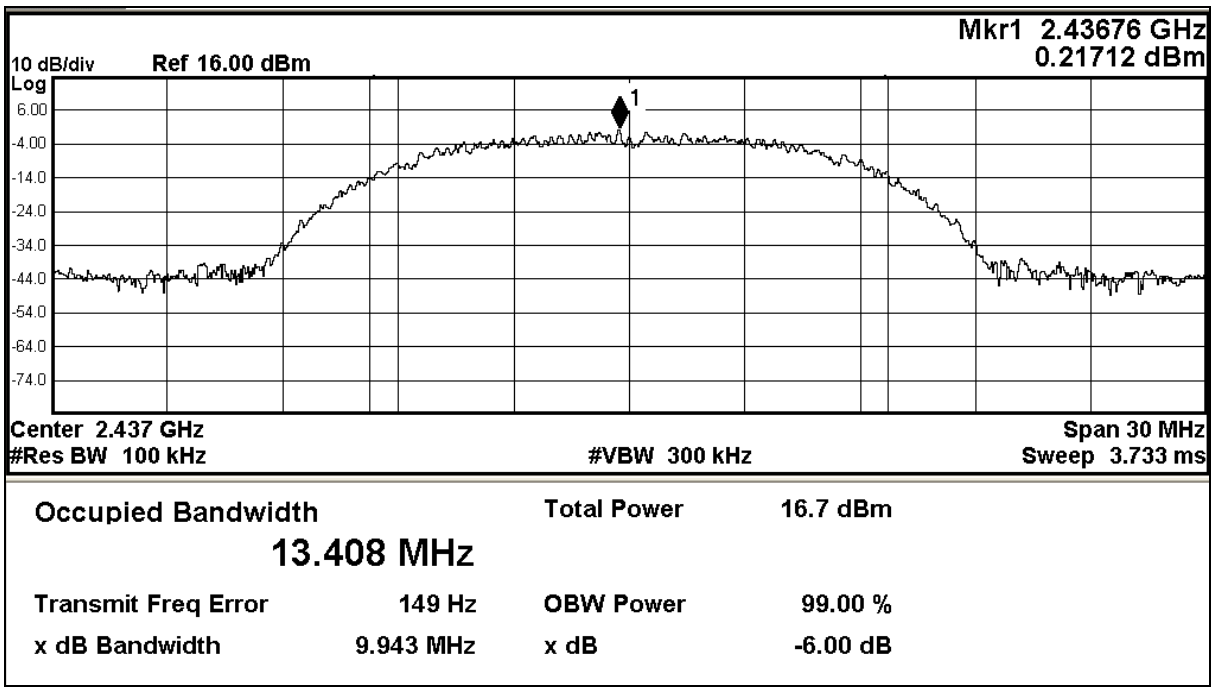
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2437	9.94	>500kHz

(Middle Operating Frequency) - (802.11b)



Occupied Bandwidth	13.408 MHz	Total Power	16.7 dBm
Transmit Freq Error	149 Hz	OBW Power	99.00 %
x dB Bandwidth	9.943 MHz	x dB	-6.00 dB

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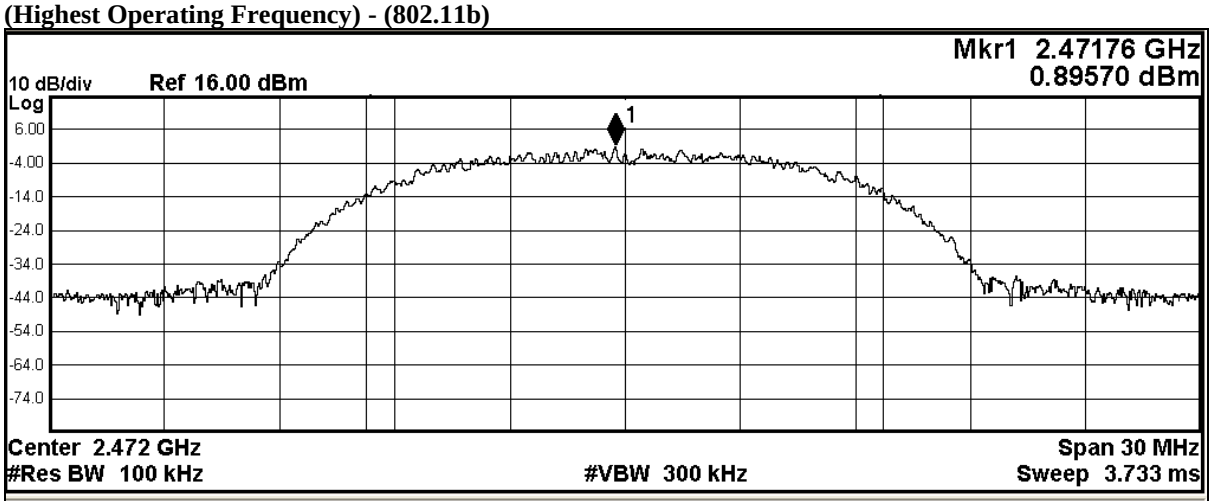
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2472	9.95	>500kHz

(Highest Operating Frequency) - (802.11b)



Occupied Bandwidth	13.412 MHz	Total Power	17.3 dBm
Transmit Freq Error	7.207 kHz	OBW Power	99.00 %
x dB Bandwidth	9.950 MHz	x dB	-6.00 dB

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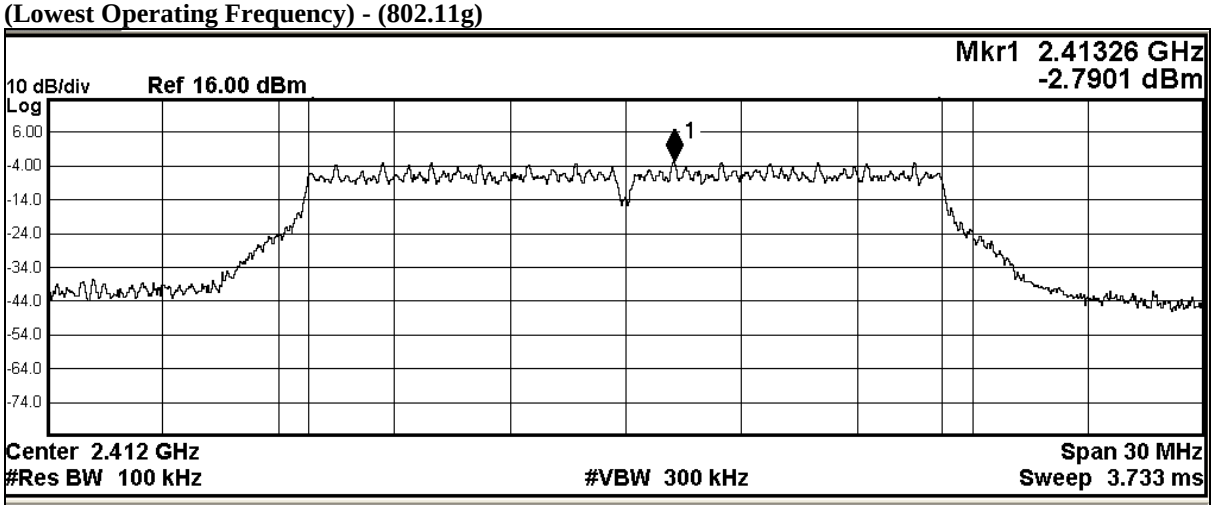
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2412	16.45	>500kHz

(Lowest Operating Frequency) - (802.11g)



Occupied Bandwidth	16.415 MHz	Total Power	15.2 dBm
Transmit Freq Error	-10.555 kHz	OBW Power	99.00 %
x dB Bandwidth	16.45 MHz	x dB	-6.00 dB

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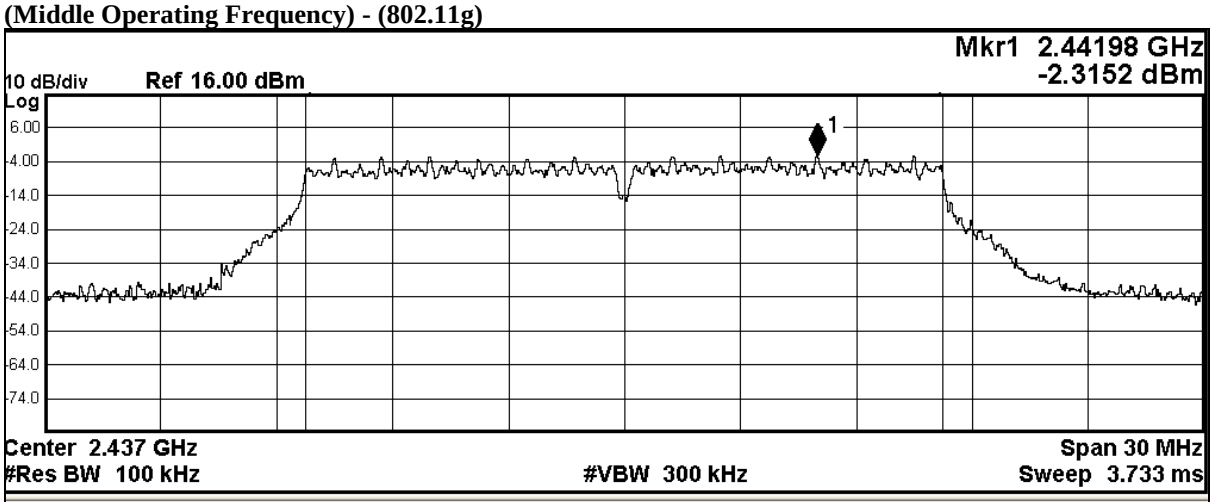
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2437	16.5	>500kHz

(Middle Operating Frequency) - (802.11g)



Occupied Bandwidth	16.439 MHz	Total Power	15.9 dBm
Transmit Freq Error	-7.908 kHz	OBW Power	99.00 %
x dB Bandwidth	16.50 MHz	x dB	-6.00 dB

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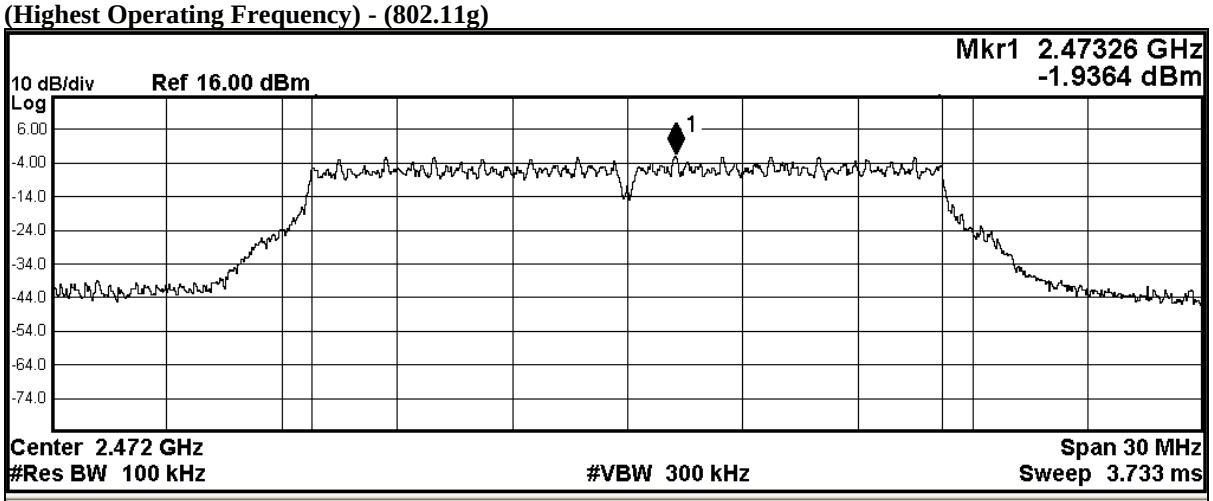
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2472	16.5	>500kHz

(Highest Operating Frequency) - (802.11g)



Occupied Bandwidth	16.413 MHz	Total Power	16.1 dBm
Transmit Freq Error	-10.899 kHz	OBW Power	99.00 %
x dB Bandwidth	16.45 MHz	x dB	-6.00 dB

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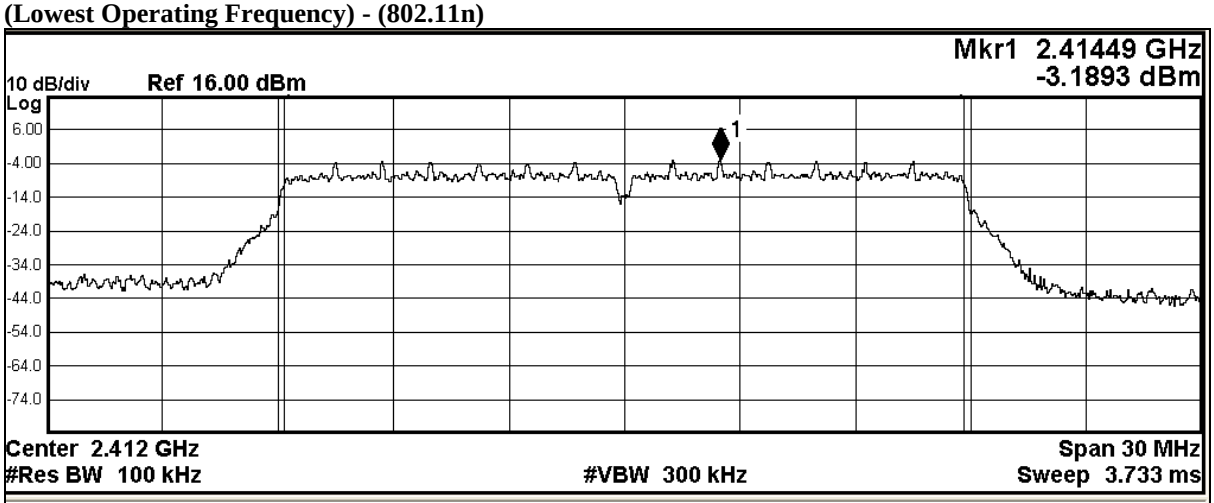
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2412	17.6	>500kHz

(Lowest Operating Frequency) - (802.11n)



Occupied Bandwidth	17.641 MHz	Total Power	14.8 dBm
Transmit Freq Error	649 Hz	OBW Power	99.00 %
x dB Bandwidth	17.59 MHz	x dB	-6.00 dB

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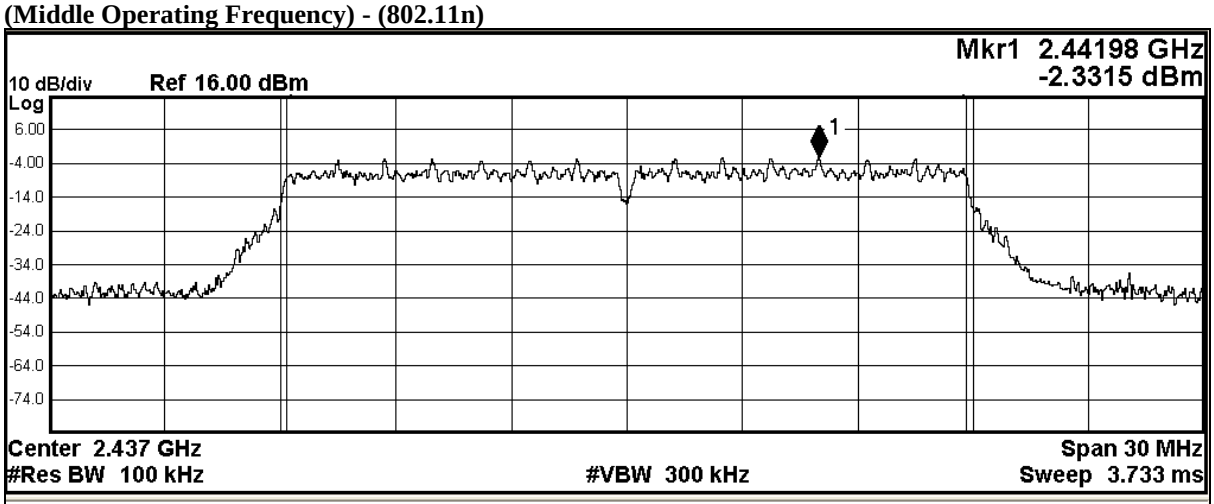
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2437	17.7	>500kHz

(Middle Operating Frequency) - (802.11n)



Occupied Bandwidth	17.653 MHz	Total Power	15.6 dBm
Transmit Freq Error	-4.781 kHz	OBW Power	99.00 %
x dB Bandwidth	17.69 MHz	x dB	-6.00 dB

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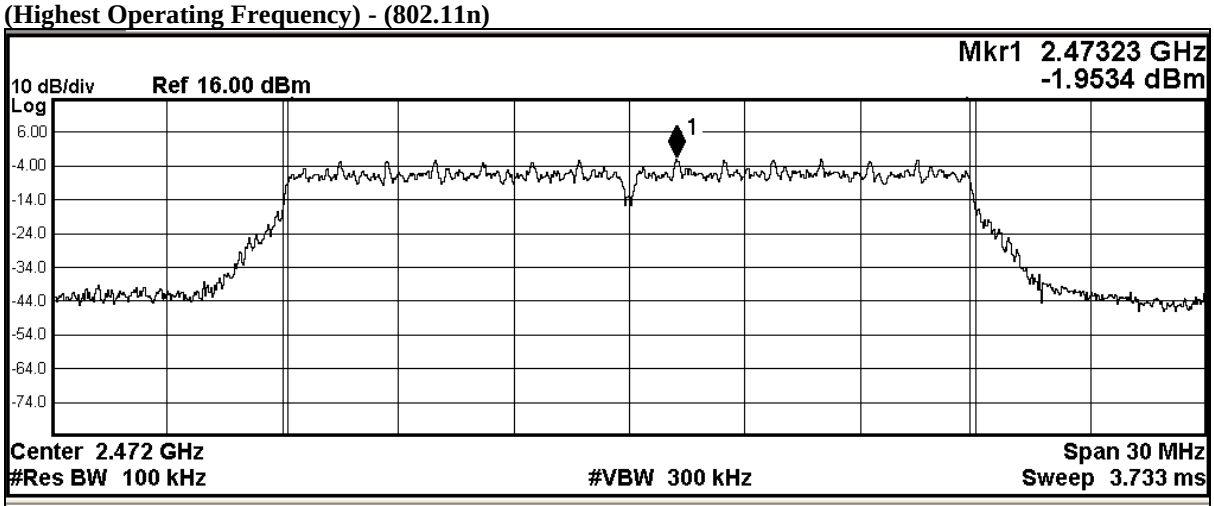
Fundamental Frequency [MHz]	6dB Bandwidth [MHz]	Limits [kHz]
2472	17.7	>500kHz

(Highest Operating Frequency) - (802.11n)



Occupied Bandwidth	17.662 MHz	Total Power	16.0 dBm
Transmit Freq Error	6.738 kHz	OBW Power	99.00 %
x dB Bandwidth	17.69 MHz	x dB	-6.00 dB

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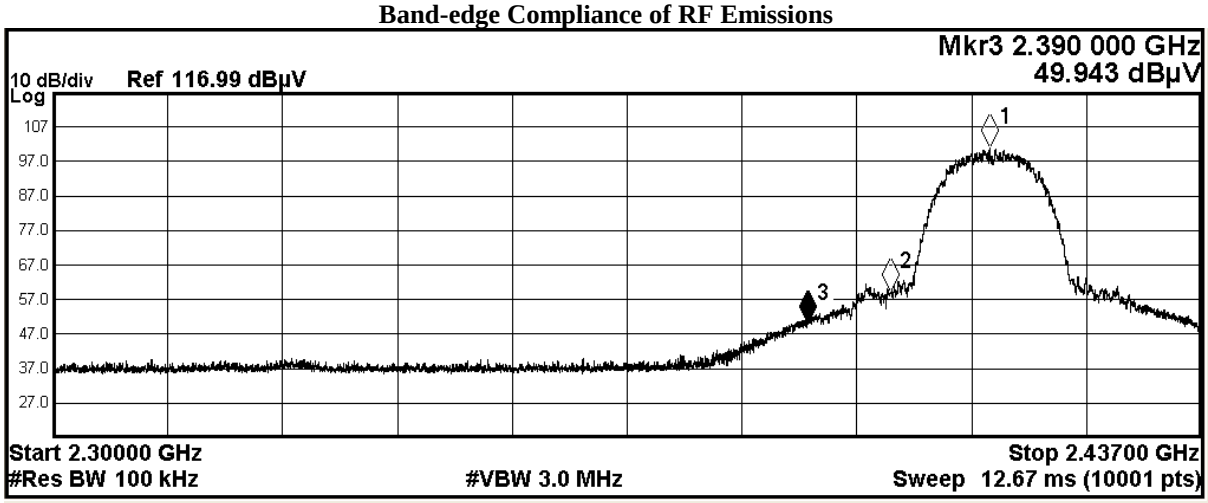
3.1.6 Band-edge Emissions Measurement:

Limit：
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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.

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2400 – Lowest Fundamental (2412)	43.4

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.411 751 GHz	100.998 dBµV			
2	N	1	f	2.400 000 GHz	59.276 dBµV			
3	N	1	f	2.390 000 GHz	49.943 dBµV			
4								

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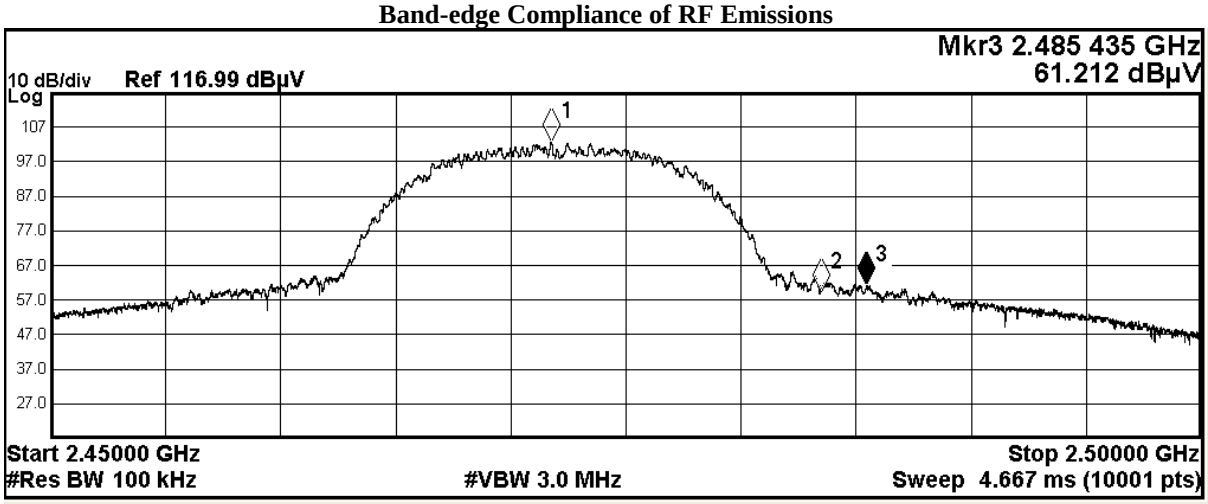
Band-edge Emissions Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2483.5 - Highest Fundamental (2472)	43.4

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.471 745 GHz	102.775 dBµV			
2	N	1	f	2.483 500 GHz	59.356 dBµV			
3	N	1	f	2.485 435 GHz	61.212 dBµV			
4								

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Band-edge Emissions Measurement:

Result: RF Radiated Emissions - 802.11b

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2390.0	13.1	36.8	49.9	74.0	24.1	Vertical
2485.4	24.3	36.9	61.2	74.0	12.8	Vertical

Field Strength of Band-edge Compliance AverageValue						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2390.0	9.6	36.8	46.4	54.0	7.6	Vertical
2485.4	12.1	36.9	49.0	54.0	5.0	Vertical

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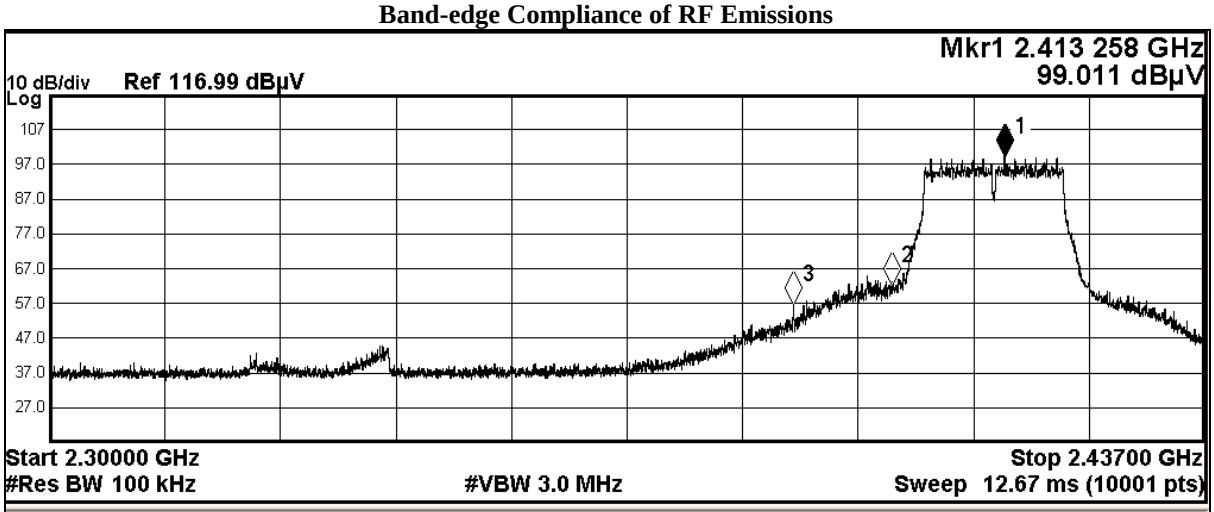
Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2400 – Lowest Fundamental (2412)	30.5

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.413 258 GHz	99.011 dBµV			
2	N	1	f	2.400 000 GHz	61.983 dBµV			
3	N	1	f	2.388 246 GHz	56.672 dBµV			
4								

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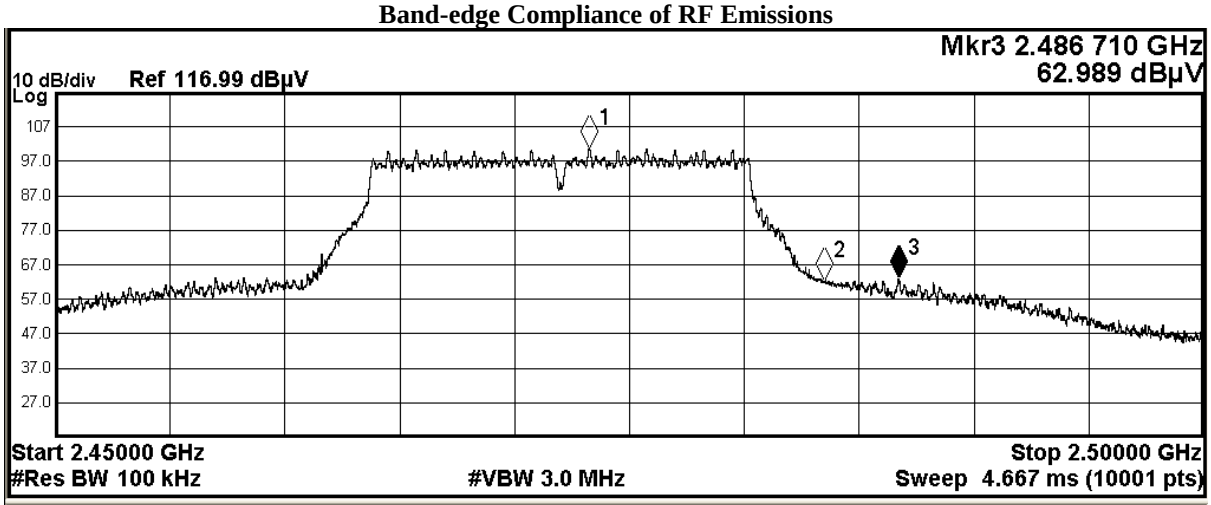
Band-edge Emissions Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2483.5 - Highest Fundamental (2472)	55.5

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.473 250 GHz	100.749 dBµV			
2	N	1	f	2.483 500 GHz	62.256 dBµV			
3	N	1	f	2.486 710 GHz	62.989 dBµV			
4								

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Band-edge Emissions Measurement:

Result: RF Radiated Emissions - 802.11g

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2388.2	19.9	36.8	56.7	74.0	17.3	Vertical
2486.7	26.1	36.9	63.0	74.0	11.0	Vertical

Field Strength of Band-edge Compliance AverageValue						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2388.2	9.4	36.8	46.2	54.0	7.8	Vertical
2486.7	12.1	36.9	49.0	54.0	5.0	Vertical

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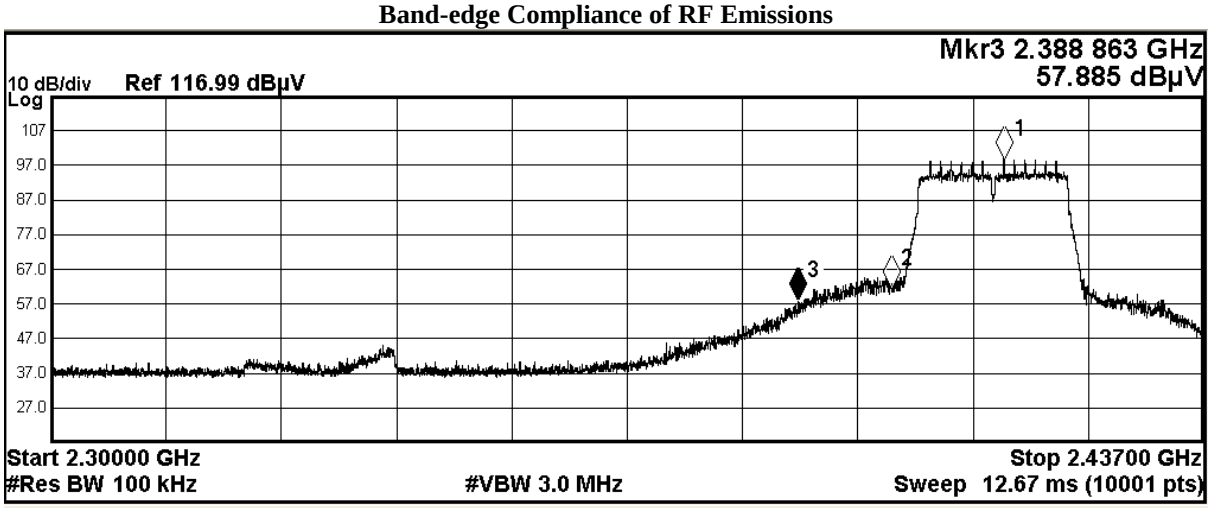
Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2400 – Lowest Fundamental (2412)	30.5

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.413 258 GHz	98.752 dBµV			
2	N	1	f	2.400 000 GHz	61.435 dBµV			
3	N	1	f	2.388 863 GHz	57.885 dBµV			
4								

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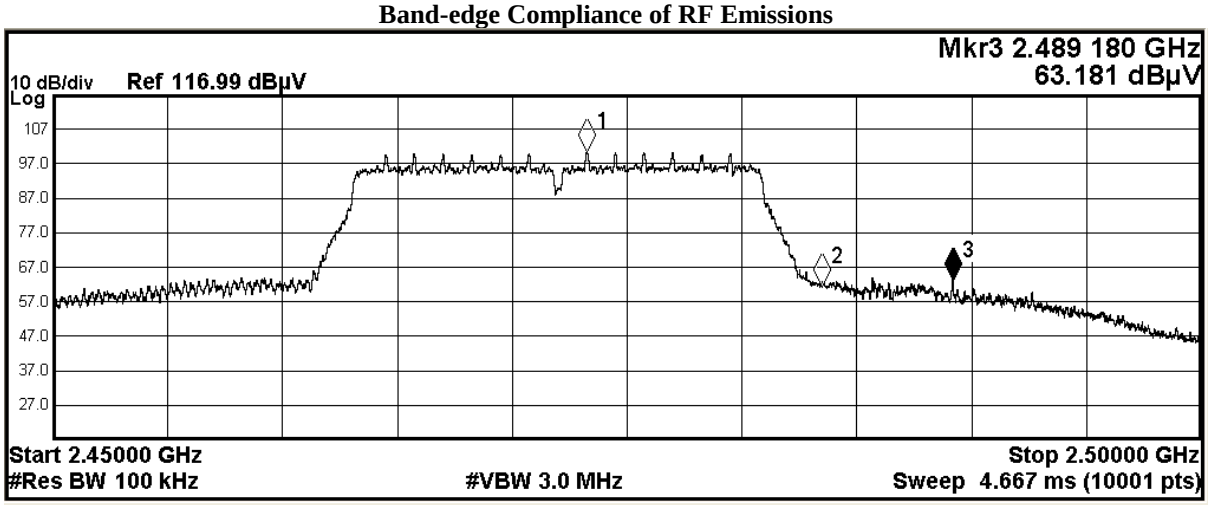
Band-edge Emissions Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2483.5 - Highest Fundamental (2472)	55.5

Band-edge Compliance of RF Emissions



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.473 235 GHz	100.420 dBµV			
2	N	1	f	2.483 500 GHz	61.455 dBµV			
3	N	1	f	2.489 180 GHz	63.181 dBµV			
4								

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Band-edge Emissions Measurement:

Result: RF Radiated Emissions - 802.11n

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2388.9	21.1	36.8	57.9	74.0	16.1	Vertical
2489.2	26.3	36.9	63.2	74.0	10.8	Vertical

Field Strength of Band-edge Compliance AverageValue						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2388.9	9.8	36.8	46.6	54.0	7.4	Vertical
2489.2	13.7	36.9	50.6	54.0	3.4	Vertical

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3.1.11 Antenna Requirement

Test Requirements: § 15.203

Test Specification:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Results:

This is Circuit printed meander line antenna. There is no external antenna, the antenna gain = 4.1dBi. User is unable to remove or changed the Antenna.

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3.1.12 RF Exposure

Test Requirement:	FCC 47CFR 15.247(i)
Test Date:	2017-08-11
Mode of Operation:	Tx mode (802.11b)

Test Method:

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

Test Results:
The EUT complied with the requirement(s) of this section.
EUT meets the requirements of these sections as proven through MPE calculation
The MPE calculation for EUT @ 20cm

802.11b
Based on the highest P = 18.7mW (2472MHz)

Pd = PG/ 4pi*R^2 = (18.7 x2.57)/12.566* $(20)^2$
= (48.06)/12.566x 400= 48.06 /5026.4
= 0.0096mW/cm^2

where:
*Pd = power density in mW/cm2
* G = Antenna numeric gain (2.57); Log G = g/10 (g = 4.1dBi).
* P = Conducted RF power to antenna (18.7mW).
* R = Minimum allowable distance.(20 cm)

**The SAR evaluation is not needed (this is a desk top device, R> 20 cm)
**The EUT(antenna) must be 0.2 meters away from the General Population.

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Appendix A

List of Measurement Equipment

LIST OF MEASUREMENT EQUIPMENT

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2017/04/24	2018/04/24
EM356	ANTENNA POSITIONING TOWER	ETS-LINDGREN	2171B	00150346	N/A	N/A
EM354	BICONILOG ANTENNA	ETS-LINDGREN	3143B	00142073	2016/02/29	2018/02/29
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2017/06/01	2018/06/01
EM299	DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA	ETS-LINDGREN	3115	00114120	2016/04/27	2018/04/27
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2016/05/13	2018/05/13
EM301	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-10	00130988	2016/05/13	2018/05/13
EM302	PRECISION OMNIDIRECTIONAL DIPOLE (1 – 6GHZ)	SEIBERSDORF LABORATORIES	POD 16	161806/L	2016/05/11	2018/05/11
EM303	PRECISION OMNIDIRECTIONAL DIPOLE (6 – 18GHZ)	SEIBERSDORF LABORATORIES	POD 618	6181908/L	2016/05/11	2018/05/11
EM353	LOOP ANTENNA	ETS_LINDGREN	6502	00206533	2016/03/16	2018/03/16

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	2016/11/29	2017/11/29
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2017/06/01	2018/06/01
EM179	IMPULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	357-8810.52/54	2017/01/11	2018/01/11
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2017/02/02	2022/02/02
N/A	MEASUREMENT AND EVALUATION SOFTWARE	ROHDE & SCHWARZ	ESIB-K1	V1.20	N/A	N/A

Remarks:-

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

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Appendix B

Photographs of EUT

Front View of the product

Rear View of the product

Rear View of the product

Rear View of the product

Inside View of the product

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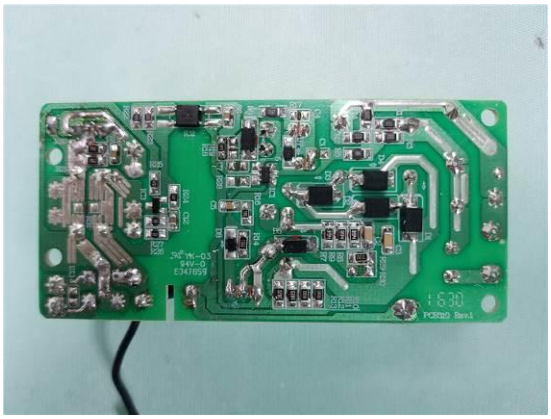
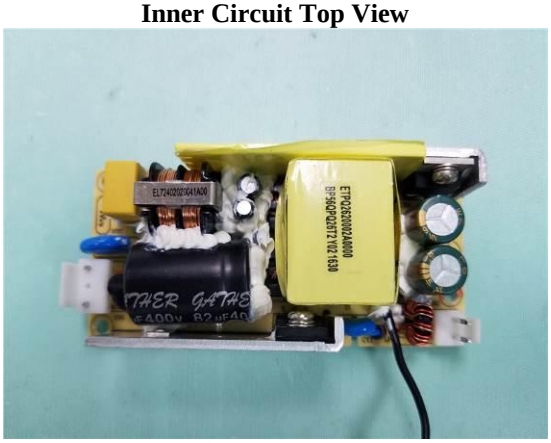
Photographs of EUT

Inner Circuit Bottom View



Inner Circuit Top View



WiFi module Top View (with Shield)

WiFi module Top View

WiFi module Bottom View

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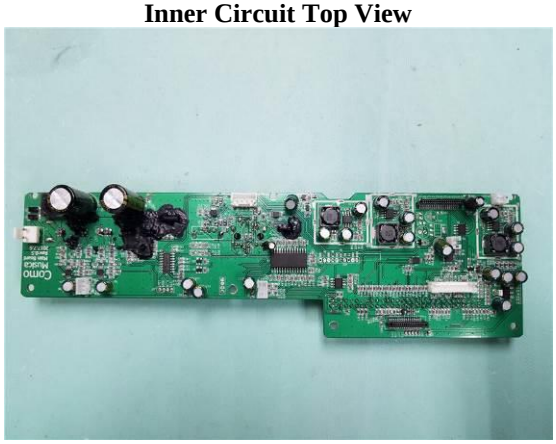
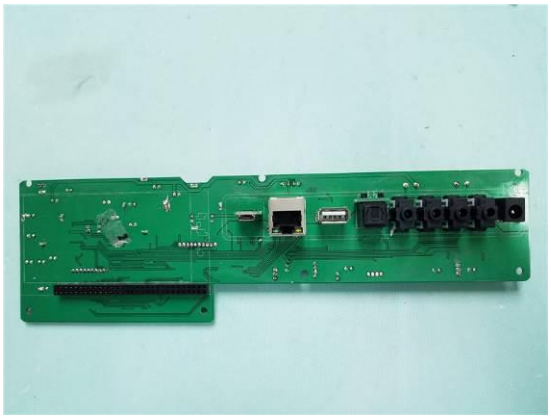
Photographs of EUT

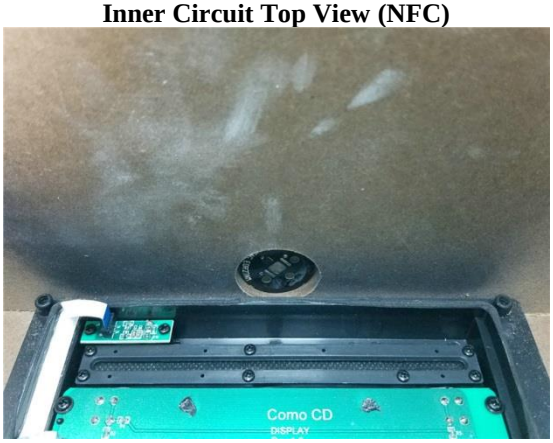
Inner Circuit Top View



Inner Circuit Bottom View



Inner Circuit Top View (NFC)



Inner Circuit Top View (NFC)

Inner Circuit Bottom View (NFC)

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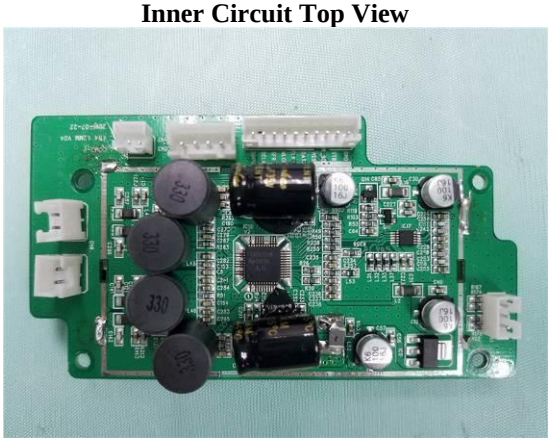
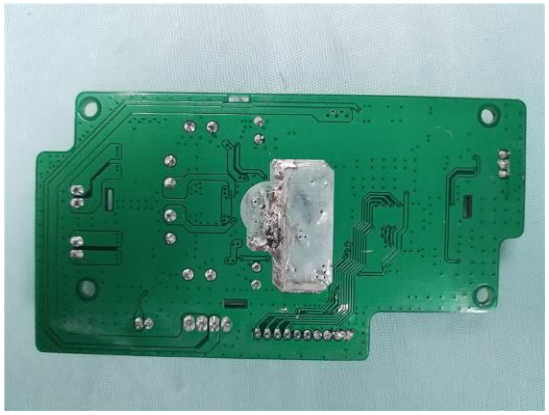
Photographs of EUT

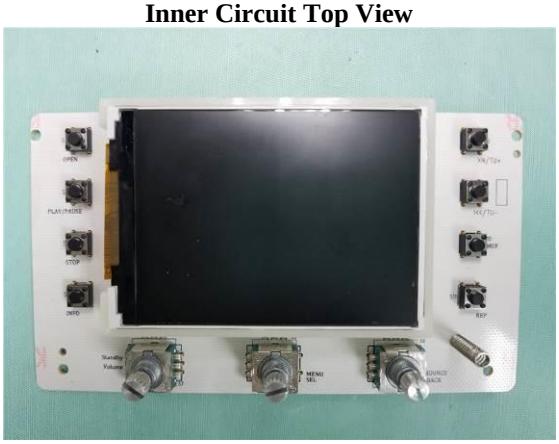
Inner Circuit Top View



Inner Circuit Bottom View

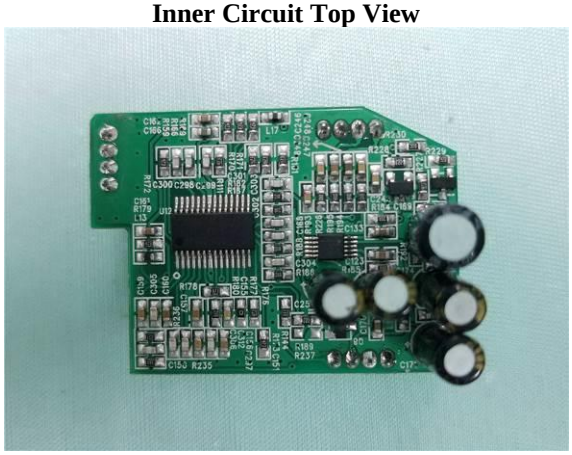


Inner Circuit Top View

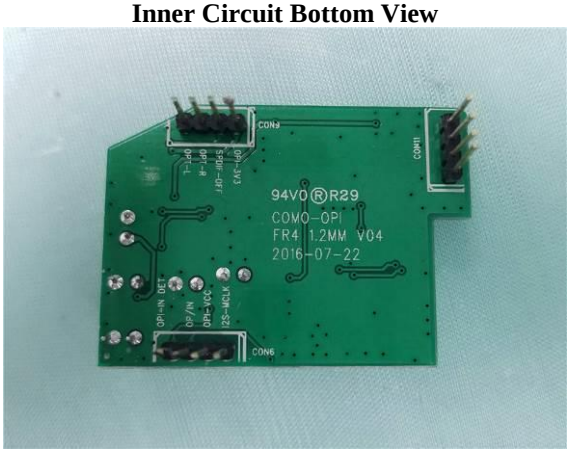


Inner Circuit Bottom View

Inner Circuit Top View



Inner Circuit Bottom View



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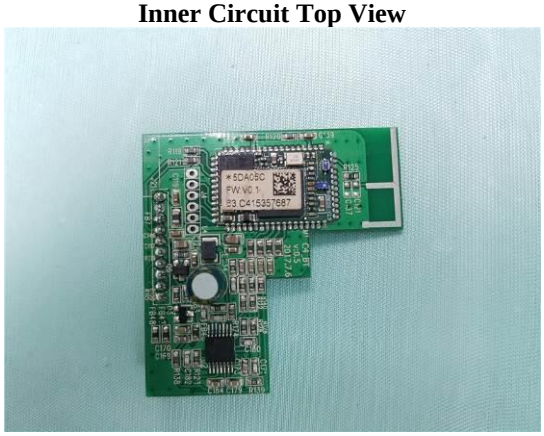
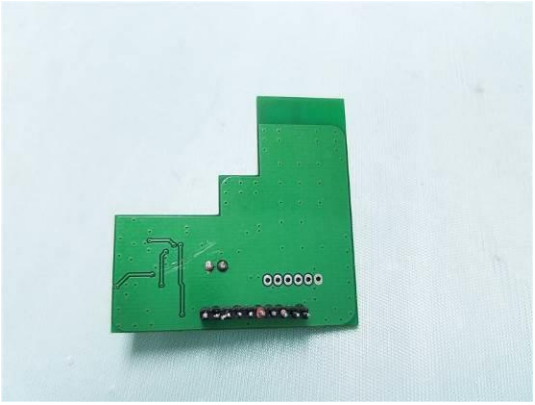
Photographs of EUT

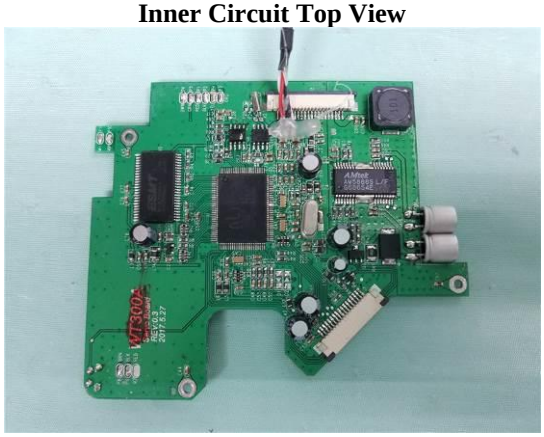
Inner Circuit Top View



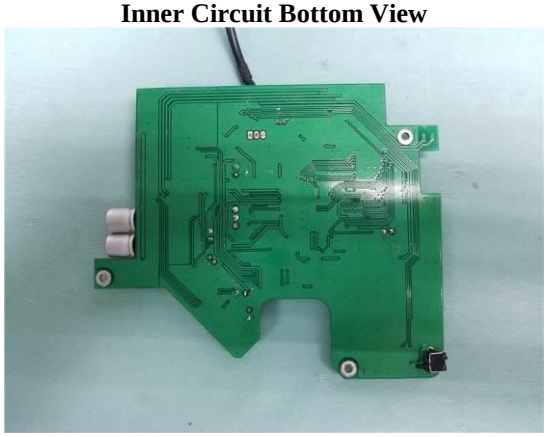
Inner Circuit Bottom View



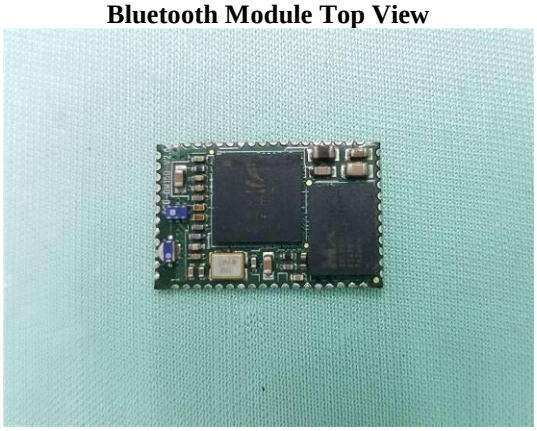
Inner Circuit Top View



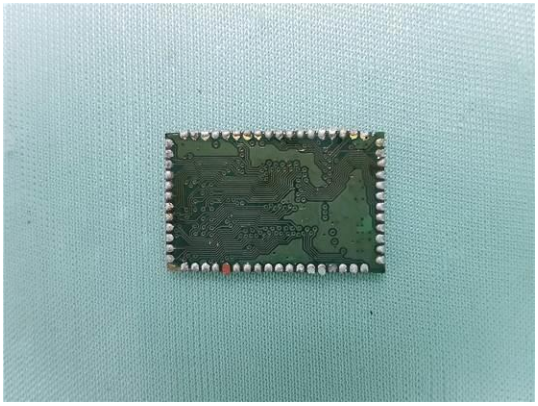
Inner Circuit Bottom View



Bluetooth Module Top View



Bluetooth Module Bottom View



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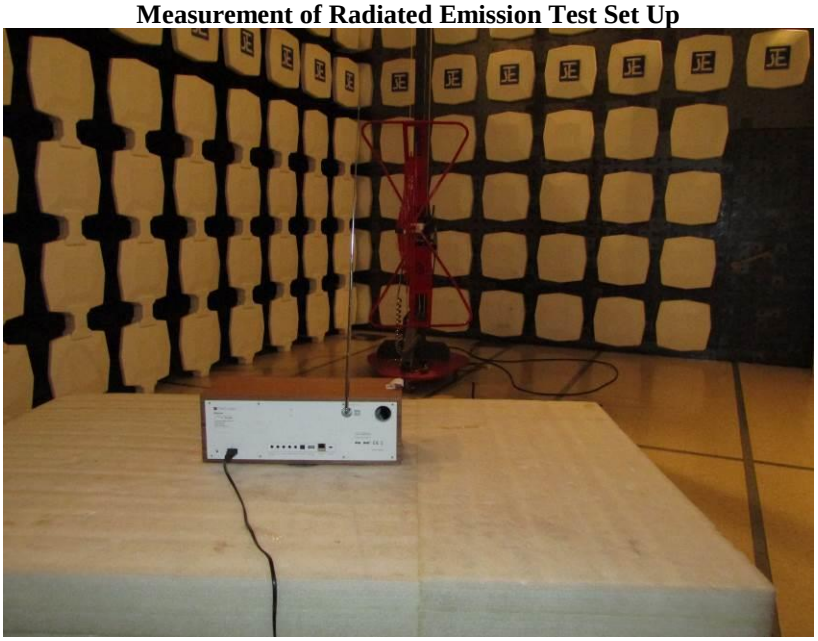
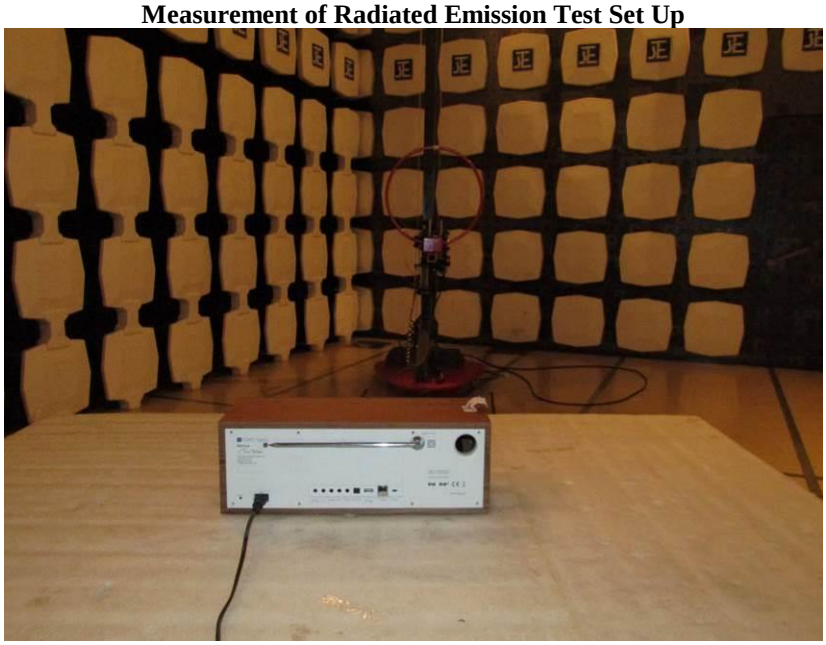
Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Radiated Emission Test Set Up



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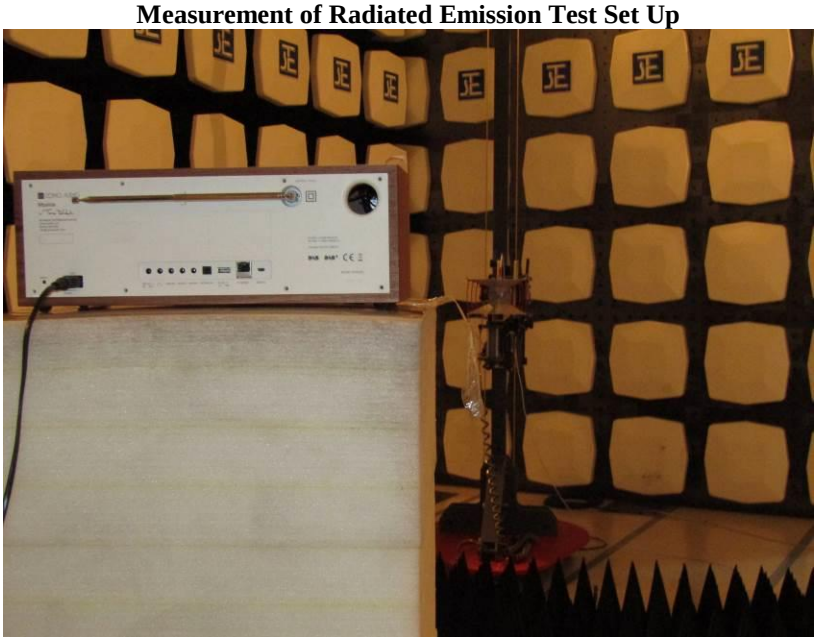
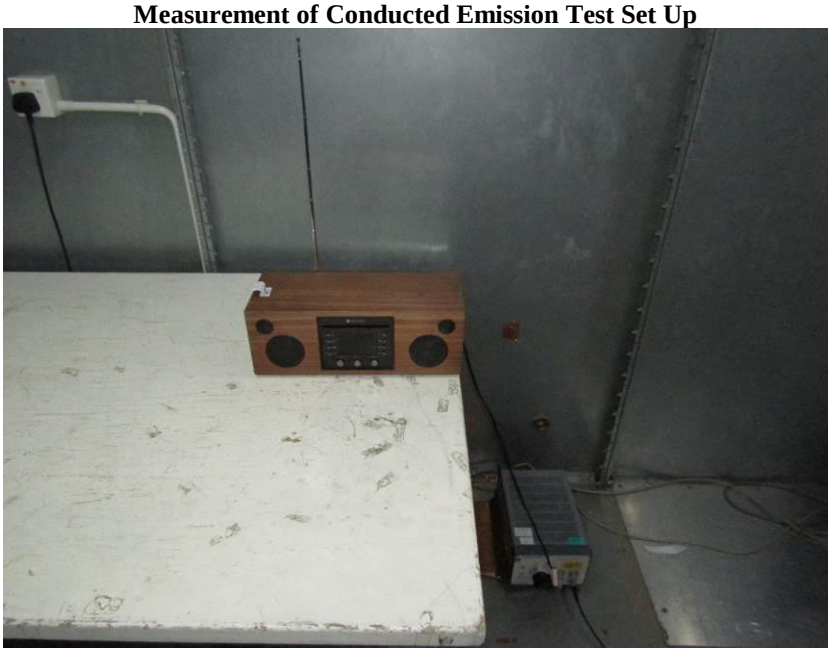
Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Conducted Emission Test Set Up



******* End of Test Report *******

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