TEST REPORT

Reference No.	:	WTU19S06035807W001
FCC ID.....	:	2ATL8VZACATXX-01
Applicant	:	Vesta Lighting Inc.
Address	:	815 Brazos Street, Austin,Texas, 78701 USA
Manufacturer	:	Jiaxing Hanri Electronics Co,.Ltd.
Address	:	No.1352-1 Road, Nanhu District, Jiaxing, Zhe Jiang Province, China
Product.....	:	See the Model List of section 4.4.
Model(s).....	:	See the Model List of section 4.4.
Standards.....	:	FCC CFR47 Part 15 C Section 15.247: 2019
Date of Receipt sample.....	:	2019-06-03
Date of Test.....	:	2019-10-15 to 2019-10-23
Date of Issue	:	2019-10-29
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
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Compiled by:

Frank Yin

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Philo Zhong

Philo Zhong / Manager

1 Contents

2 Revision History

Test report #	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTU19S06035807W001	2019-06-03	2019-10-15 to 2019-10-23	2019-10-29	Original	-	Valid

3 General Information

3.1 General Description of E.U.T

Product : See the Model List of section 4.4.

Model(s). : See the Model List of section 4.4.

Operation Frequency :Zigbee: 2405-2480MHz

Antenna installation :Integrated Antenna

Antenna Gain :0dBi

Type of modulation :O-QPSK

3.2 Details of E.U.T

Ratings See the Model List of section 4.4.

3.3 Channel List

Zigbee:

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2405	1	2410	2	2415	3	2420
4	2425	5	2430	6	2435	7	2440
8	2445	9	2450	10	2455	11	2460
12	2465	13	2470	14	2475	15	2480

3.4 Model List

Product	Model	Ratings
zigbee module	VZACATXX-01	DC 3.3V

Remark:

1. All models are same with all other aspect but model name for the same Product.

2. For modes code:

First character: can be V (represent “VESTA”);

Second character: can be Z (represent “ZIGBEE”);

Third character: can be A (represent the voltage:3.3V);

Fourth character and Fifth character : can be “CA” or “PA” (“CA” represent Ceramic Antenna, “PA” represent PCB Antenna);

Sixth character: can be T (represent universal type);

Seventh and Eighth character: can be the value of output power(dBm);

Ninth character: can be “-”;

The other character: can be 01(represent serial number)

3.5 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum Peak Output Power	Zigbee	250kbps	0/7/15	TX
Power Spectral Density	Zigbee	250kbps	0/7/15	TX
Bandwidth	Zigbee	250kbps	0/7/15	TX
Band Edge	Zigbee	250kbps	0/15	TX
Transmitter Spurious Emissions	Zigbee	250kbps	0/7/15	TX

Note :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product.

4 Equipment Used during Test

4.1 Equipments List

Conducted Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMI Test Receiver	R&S	ESCI	100947	2019-09-17	2020-09-16
2	LISN	R&S	ENV216	100115	2019-09-17	2020-09-16
3	Cable	Top	TYPE16(3.5M)	-	2019-09-17	2020-09-16
3m Semi-anechoic Chamber for Radiation Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP30	100091	2019-04-19	2020-04-18
2	Broad-band Horn Antenna(1-18GHz)	SCHWARZBECK	BBHA 9120 D	667	2019-04-19	2020-04-18
3	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2019-04-19	2020-04-18
4	Coaxial Cable (above 1GHz)	Top	1GHz-18GHz	EW02014-7	2019-04-19	2020-04-18
5	Spectrum Analyzer	R&S	FSP40	100501	2019-09-17	2020-09-16
6	Broad-band Horn Antenna(18-40GHz)	SCHWARZBECK	BBHA 9170	335	2019-09-17	2020-09-16
7	Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	100472	2019-09-17	2020-09-16
8	Cable	Top	18-40GHz	-	2019-09-17	2020-09-16
3m Semi-anechoic Chamber for Radiation Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	2019-04-20	2020-04-19
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2019-05-24	2020-05-23
3	Active Loop Antenna	Com-power	AL-130R	10160007	2019-04-28	2020-04-27
4	Amplifier	ANRITSU	MH648A	M43381	2019-04-19	2020-04-18
5	Cable	HUBER+SUHNER	CBL2	525178	2019-04-20	2020-04-19

RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	Spectrum Analyzer	R&S	FSP30	100091	2019-04-19	2020-04-18
2	Coaxial Cable	Top	10Hz-30GHz	-	2019-09-17	2020-09-16
3	Antenna Connector*	Realacc	45RSm	-	2019-09-17	2020-09-16
4	DC Block	Gwave	GDCB-3G-N-SMA	140307001	2019-09-17	2020-09-16
"*": The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.						

4.2 Measurement Uncertainty

Parameter	**Uncertainty**
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

4.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD. address is No.163, Pingyun Rd. West of Huangpu Ave,Tianhe District, Guangzhou, Guang dong, China.

5 Test Summary

Test Items	Test Requirement	Result
Spurious Radiated Emissions	15.247 15.205(a) 15.209(a)	C
Conducted Emissions	15.207(a)	C
Conducted Spurious Emissions	15.247	C
Bandwidth	15.247(a)(2)	C
Maximum Peak Output Power	15.247(b)(3),(4)	C
Power Spectral Density	15.247(e)	C
Band Edge	15.247(d)	C
Antenna Requirement	15.203	C
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	C
Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable.		

6 Conducted Emission

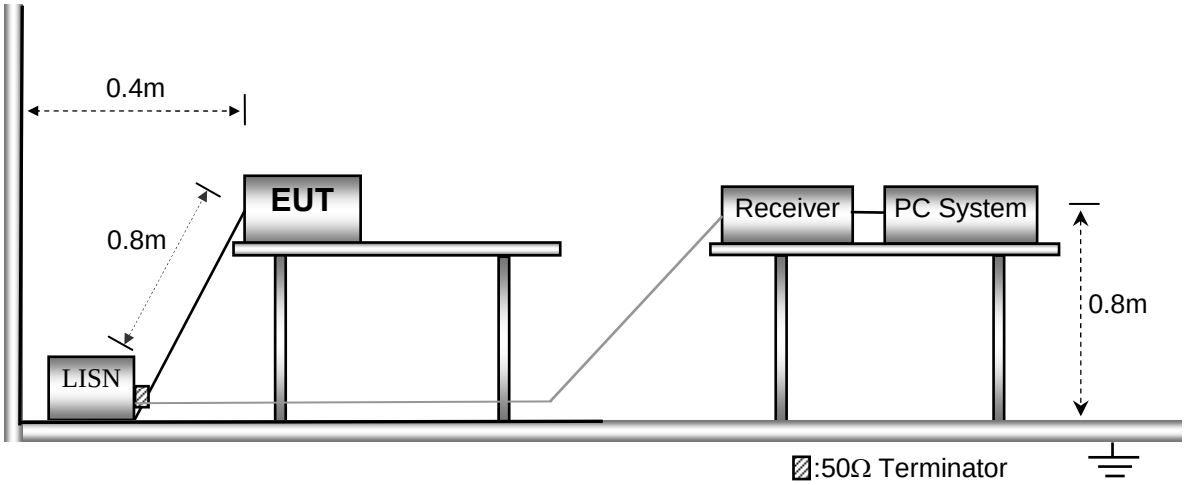
Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.10:2013
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dBμV between 0.15MHz & 0.5MHz
	56 dBμV between 0.5MHz & 5MHz
	60 dBμV between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

6.1 E.U.T. Operation

Operating Environment:	
Temperature:	21.5 °C
Humidity:	51.9 % RH
Atmospheric Pressure:	101.2kPa
EUT Operation:	The test was performed in Transmitting mode, Only the worst case Low channel were record in the report.

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10.



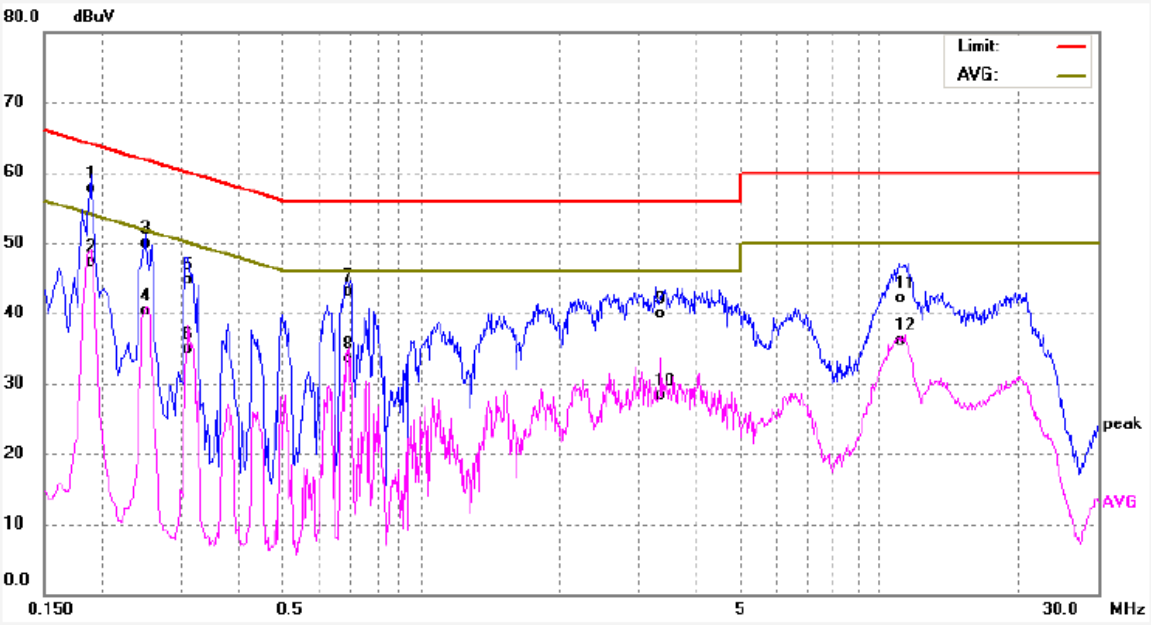
6.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.4 Conducted Emission Test Result

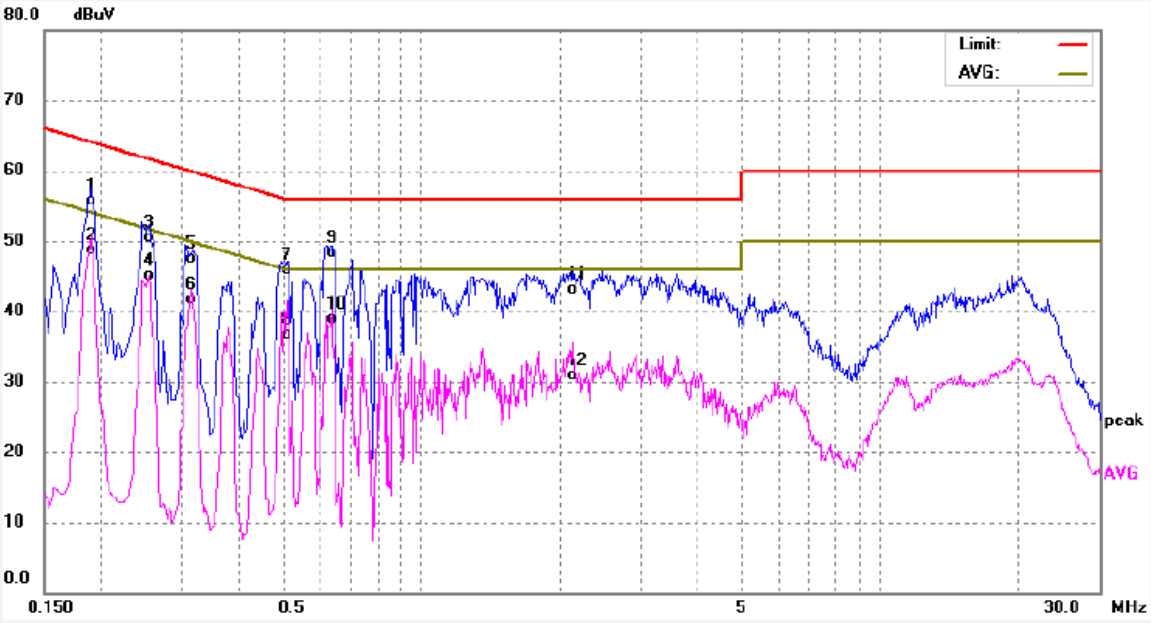
An initial pre-scan was performed on the live and neutral lines.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1900	47.84	9.77	57.61	64.03	-6.42	QP	
2	0.1900	37.44	9.77	47.21	54.03	-6.82	AVG	
3	0.2500	40.07	9.76	49.83	61.75	-11.92	QP	
4	0.2500	30.57	9.76	40.33	51.75	-11.42	AVG	
5	0.3100	34.91	9.82	44.73	59.97	-15.24	QP	
6	0.3100	25.00	9.82	34.82	49.97	-15.15	AVG	
7	0.6900	33.26	9.83	43.09	56.00	-12.91	QP	
8	0.6900	23.62	9.83	33.45	46.00	-12.55	AVG	
9	3.3420	30.06	9.93	39.99	56.00	-16.01	QP	
10	3.3420	18.35	9.93	28.28	46.00	-17.72	AVG	
11	10.9660	32.05	10.08	42.13	60.00	-17.87	QP	
12	10.9660	26.02	10.08	36.10	50.00	-13.90	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1900	45.91	9.77	55.68	64.03	-8.35	QP	
2	0.1900	38.85	9.77	48.62	54.03	-5.41	AVG	
3	0.2540	40.69	9.76	50.45	61.62	-11.17	QP	
4	0.2540	35.25	9.76	45.01	51.62	-6.61	AVG	
5	0.3140	37.62	9.81	47.43	59.86	-12.43	QP	
6	0.3140	31.86	9.81	41.67	49.86	-8.19	AVG	
7	0.5100	36.00	9.81	45.81	56.00	-10.19	QP	
8	0.5100	26.97	9.81	36.78	46.00	-9.22	AVG	
9	0.6340	38.55	9.84	48.39	56.00	-7.61	QP	
10	0.6340	28.97	9.84	38.81	46.00	-7.19	AVG	
11	2.1260	33.11	9.96	43.07	56.00	-12.93	QP	
12	2.1260	20.95	9.96	30.91	46.00	-15.09	AVG	

7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation

Operating Environment:

Temperature: 23.5 °C

Humidity: 52.1 % RH

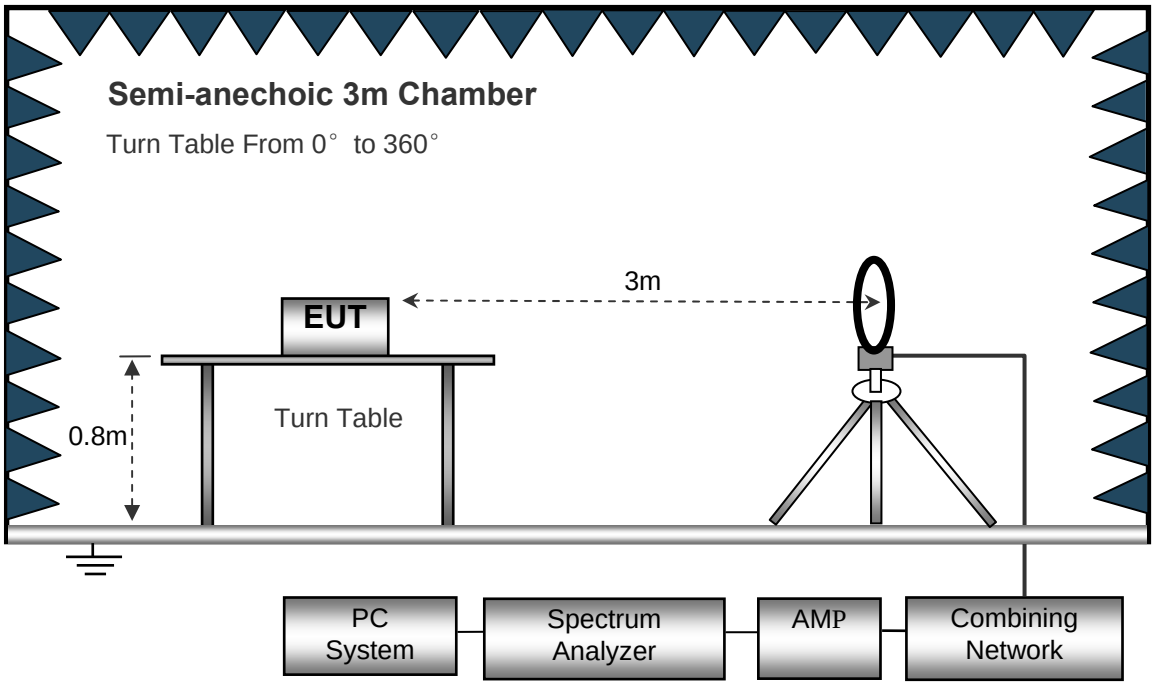
Atmospheric Pressure: 101.2kPa

EUT Operation: The test was performed in transmitting mode, the test data were shown in the report.

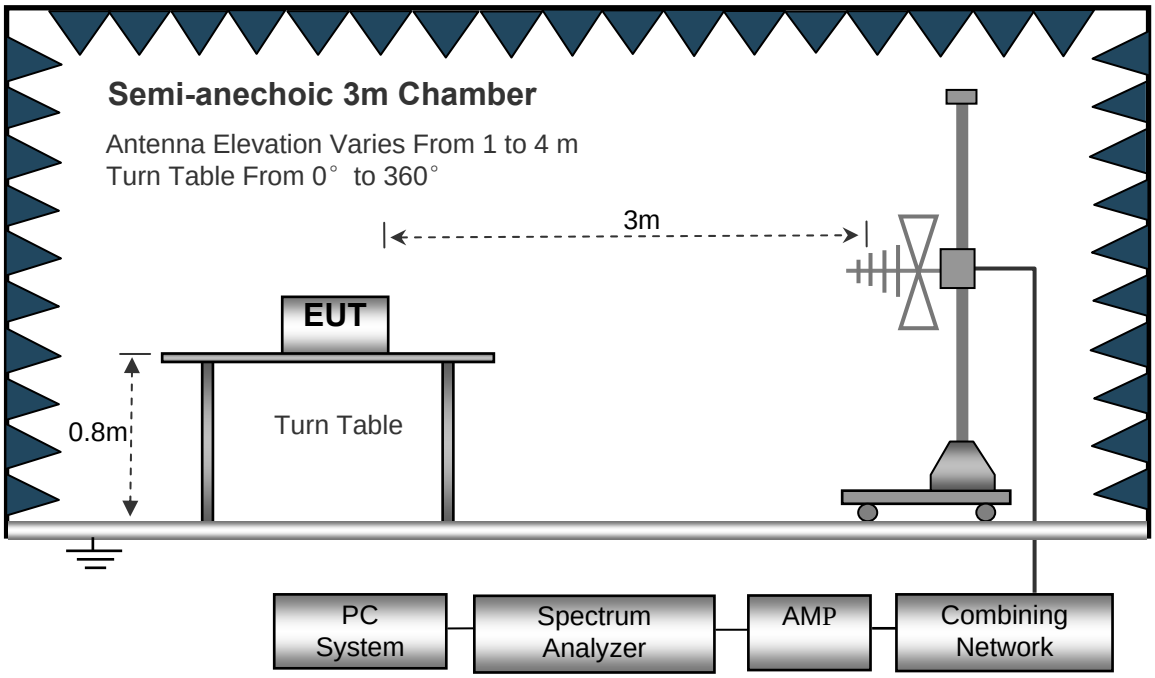
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

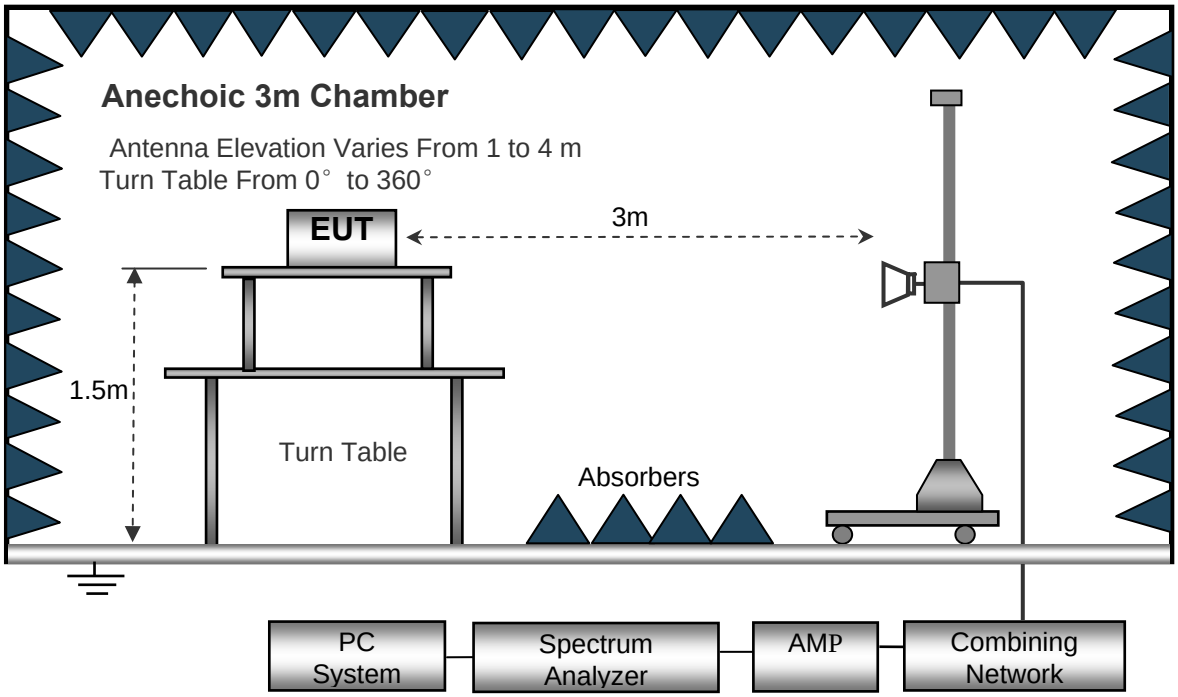
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed .....Auto
IF Bandwidth.....10kHz
Video Bandwidth.....10kHz
Resolution Bandwidth.....10kHz

30MHz ~ 1GHz

Sweep Speed .....Auto
Detector .....PK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed .....Auto
Detector .....PK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
Detector .....Ave.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

7.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane; For above1GHz, the EUT is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

7.6 Summary of Test Results

Test Frequency: 9kHz ~ 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel 2405MHz									
192.42	56.83	QP	193	1.6	H	-18.83	38.00	43.50	-5.50
192.42	45.85	QP	148	1.5	V	-18.83	27.02	43.50	-16.48
4810.00	45.44	PK	100	1.0	V	-1.06	44.38	74.00	-29.62
4810.00	43.95	Ave	100	1.0	V	-1.06	42.89	54.00	-11.11
7215.00	40.94	PK	166	1.6	H	1.33	42.27	74.00	-31.73
7215.00	32.40	Ave	166	1.6	H	1.33	33.73	54.00	-20.27
2345.26	46.73	PK	63	1.6	V	-13.19	33.54	74.00	-40.46
2345.26	39.81	Ave	63	1.6	V	-13.19	26.62	54.00	-27.38
2388.29	44.27	PK	245	1.2	H	-13.14	31.13	74.00	-42.87
2388.29	36.96	Ave	245	1.2	H	-13.14	23.82	54.00	-30.18
2491.44	42.04	PK	158	1.9	V	-13.08	28.96	74.00	-45.04
2491.44	37.80	Ave	158	1.9	V	-13.08	24.72	54.00	-29.28

Frequency	Receiver Reading	Detector	Turntable Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel 2440MHz									
192.42	58.28	QP	96	1.2	H	-18.83	39.45	43.50	-4.05
192.42	45.40	QP	297	1.9	V	-18.83	26.57	43.50	-16.93
4880.00	46.68	PK	196	1.6	V	-0.62	46.06	74.00	-27.94
4880.00	40.60	Ave	196	1.6	V	-0.62	39.98	54.00	-14.02
7320.00	39.68	PK	191	1.6	H	2.21	41.89	74.00	-32.11
7320.00	34.10	Ave	191	1.6	H	2.21	36.31	54.00	-17.69
2324.67	46.17	PK	315	1.5	V	-13.19	32.98	74.00	-41.02
2324.67	37.24	Ave	315	1.5	V	-13.19	24.05	54.00	-29.95
2375.91	42.19	PK	265	1.3	H	-13.14	29.05	74.00	-44.95
2375.91	37.93	Ave	265	1.3	H	-13.14	24.79	54.00	-29.21
2497.01	44.06	PK	20	1.2	V	-13.08	30.98	74.00	-43.02
2497.01	38.66	Ave	20	1.2	V	-13.08	25.58	54.00	-28.42

Frequency	Receiver Reading	Detector	Turntable Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
High Channel 2480MHz									
192.42	56.59	QP	52	1.3	H	-18.83	37.76	43.50	-5.74
192.42	45.05	QP	235	1.8	V	-18.83	26.22	43.50	-17.28
4960.00	44.10	PK	183	1.7	V	-0.24	43.86	74.00	-30.14
4960.00	42.85	Ave	183	1.7	V	-0.24	42.61	54.00	-11.39
7440.00	42.42	PK	93	1.1	H	2.84	45.26	74.00	-28.74
7440.00	32.81	Ave	93	1.1	H	2.84	35.65	54.00	-18.35
2311.04	45.66	PK	335	1.9	V	-13.19	32.47	74.00	-41.53
2311.04	37.35	Ave	335	1.9	V	-13.19	24.16	54.00	-29.84
2366.95	43.24	PK	355	1.6	H	-13.14	30.10	74.00	-43.90
2366.95	37.67	Ave	355	1.6	H	-13.14	24.53	54.00	-29.47
2487.75	42.84	PK	282	1.2	V	-13.08	29.76	74.00	-44.24
2487.75	38.40	Ave	282	1.2	V	-13.08	25.32	54.00	-28.68

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not recorded.

8 Conducted Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05r02

Test Result: PASS

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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)).

8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:

Blow 30MHz:

RBW = 100kHz, VBW = 300kHz, Sweep = auto

Detector function = peak, Trace = max hold

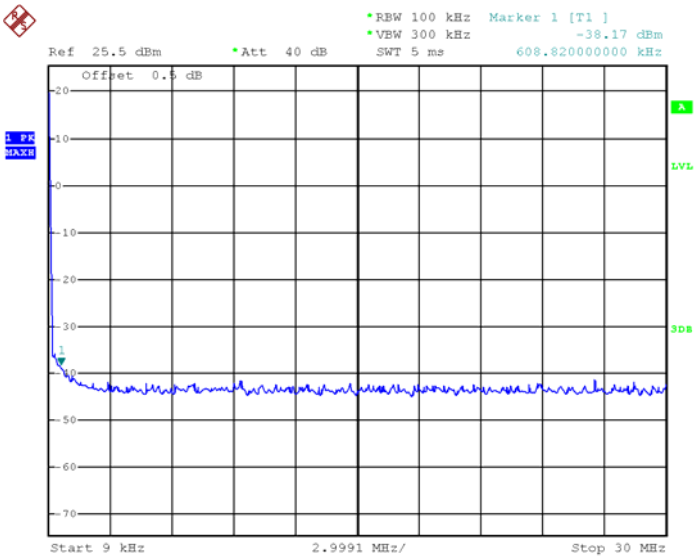
Above 30MHz:

RBW = 1MHz, VBW = 3MHz, Sweep = auto

Detector function = peak, Trace = max hold

8.2 Test Result

Low Channel



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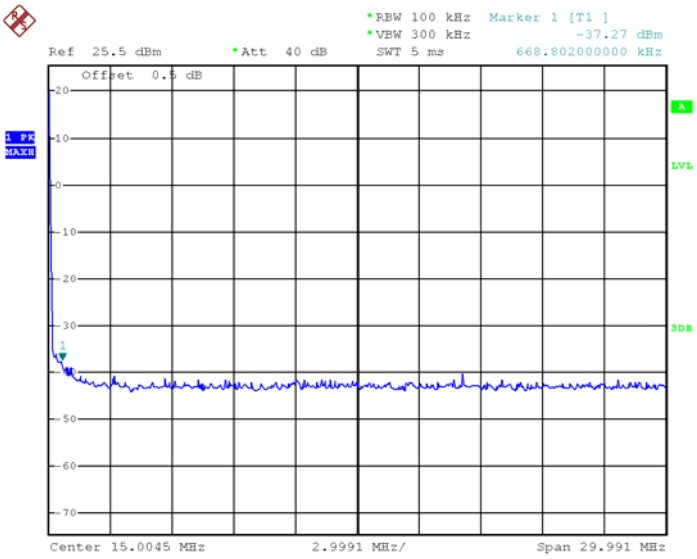
Middle Channel



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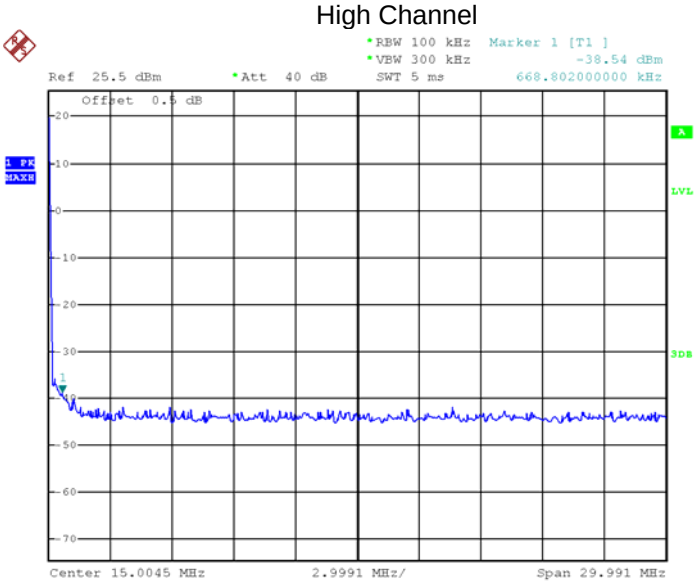
High Channel



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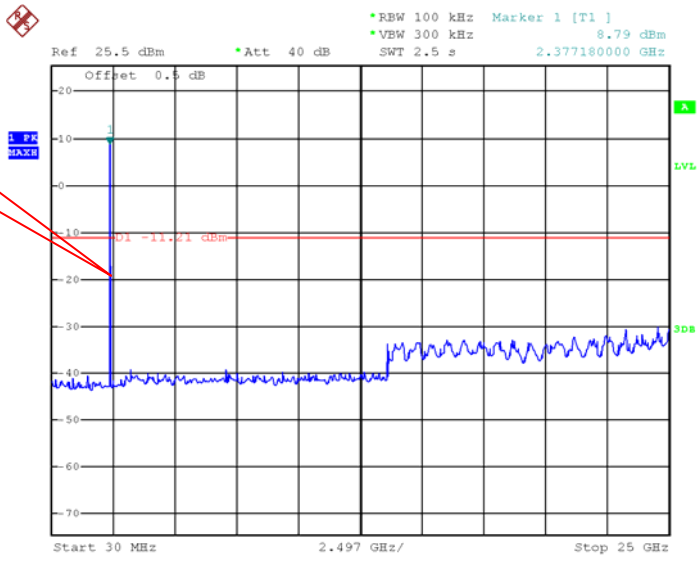
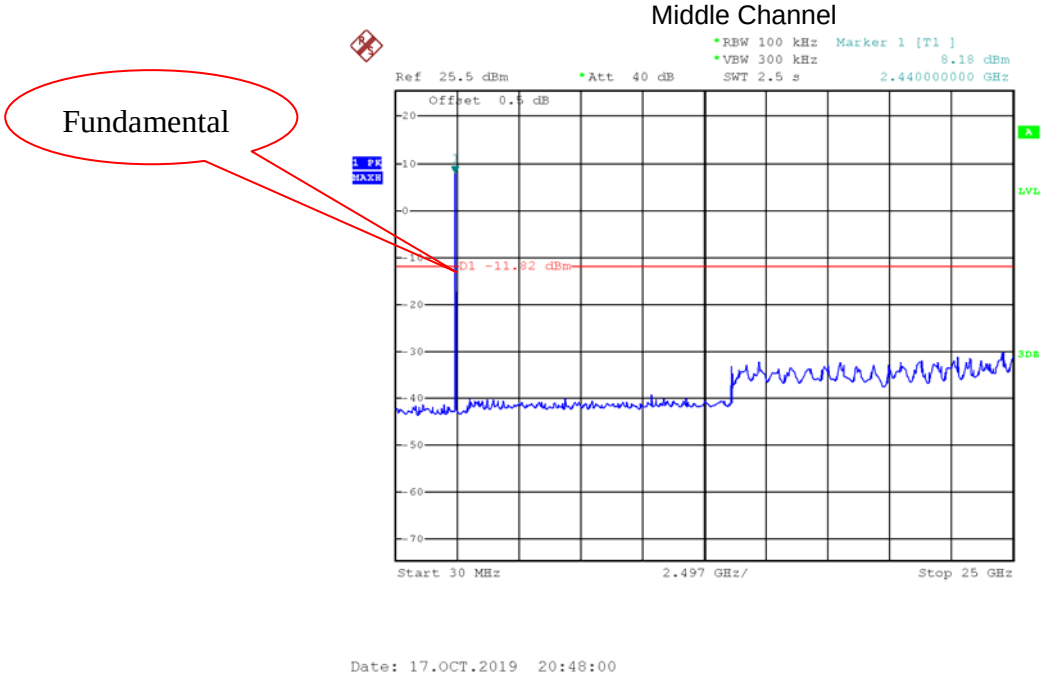
Low Channel



Fundamental

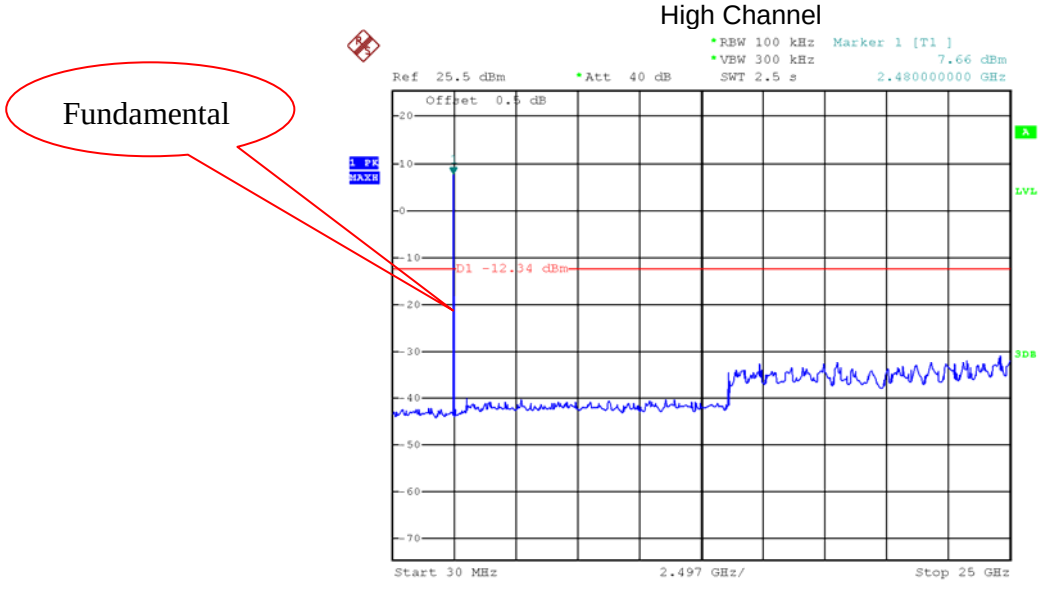
Date: 17.OCT.2019 20:46:07

Middle Channel



Date: 17.OCT.2019 20:48:00

High Channel



Date: 17.OCT.2019 20:44:03

9 Band Edge Measurement

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	558074 D01 15.247 Meas Guidance v05r02&ANSI C63.10:2013
Test Limit:	Regulation 15.247 (d),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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode:	Transmitting

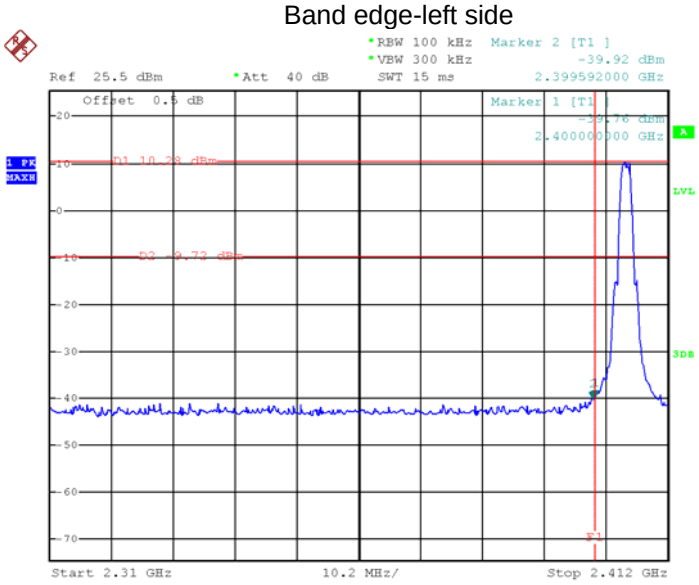
9.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

9.2 Test Result

Test result plots shown as follows:

Band edge-left side



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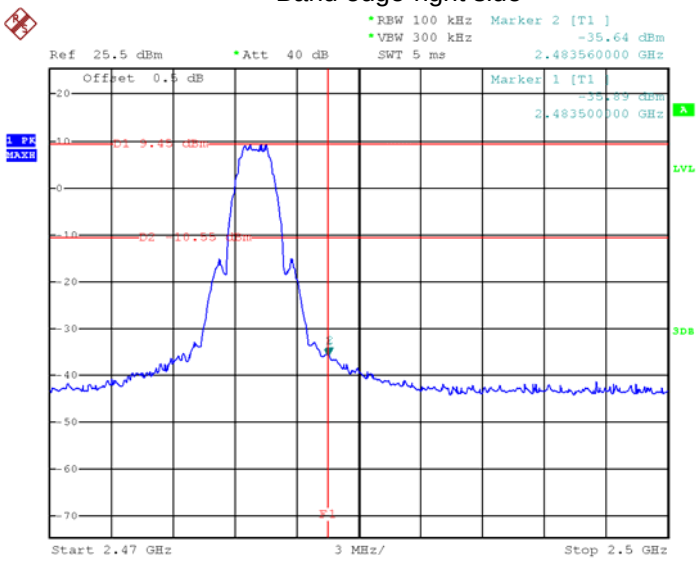
Band edge-right side



Date: 17.OCT.2019 20:42:51

10 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05r02 &ANSI C63.10:2013

10.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

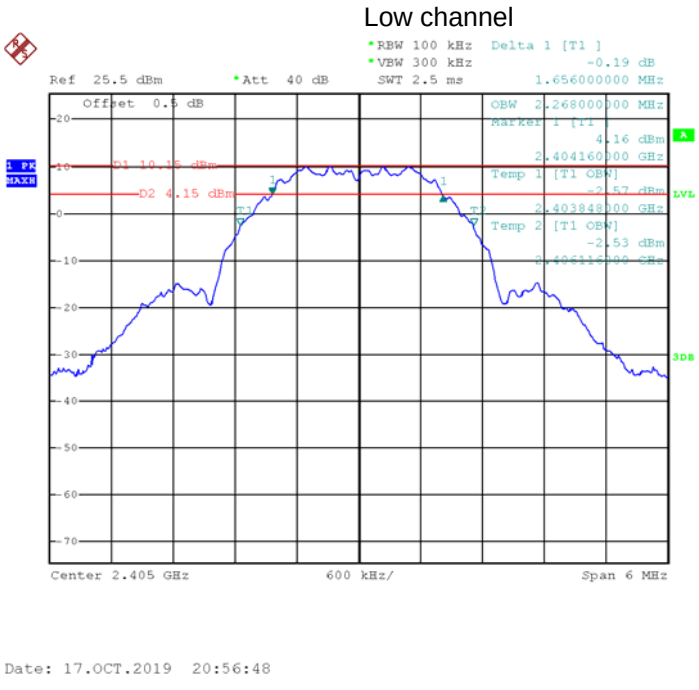
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

10.2 Test Result:

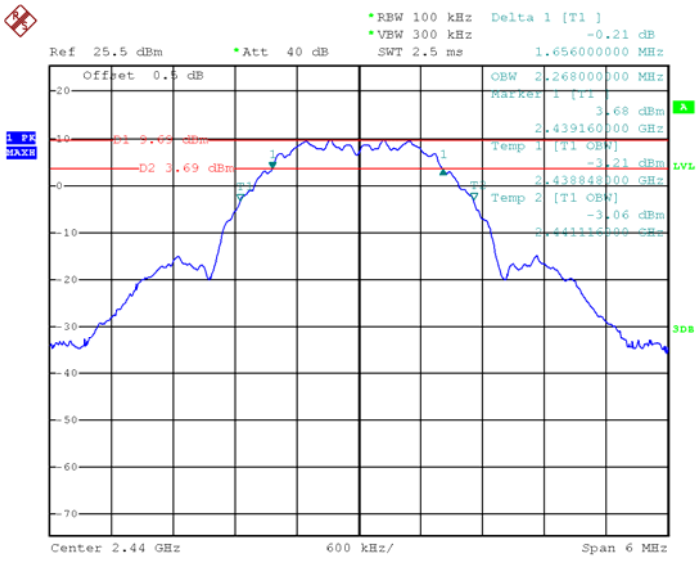
Operation mode	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low channel	1.656	2.268
Middle channel	1.656	1.268
High channel	1.656	1.292

Test result plot as follows:

Low channel

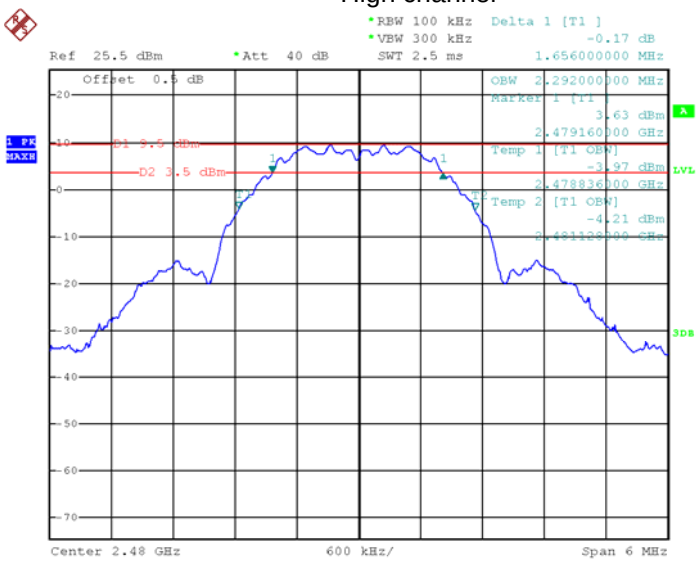


Mode: Middle channel



Date: 17.OCT.2019 20:59:32

High channel



Date: 17.OCT.2019 20:54:45

11 Maximum Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05r02 &ANSI C63.10:2013

11.1 Test Procedure:

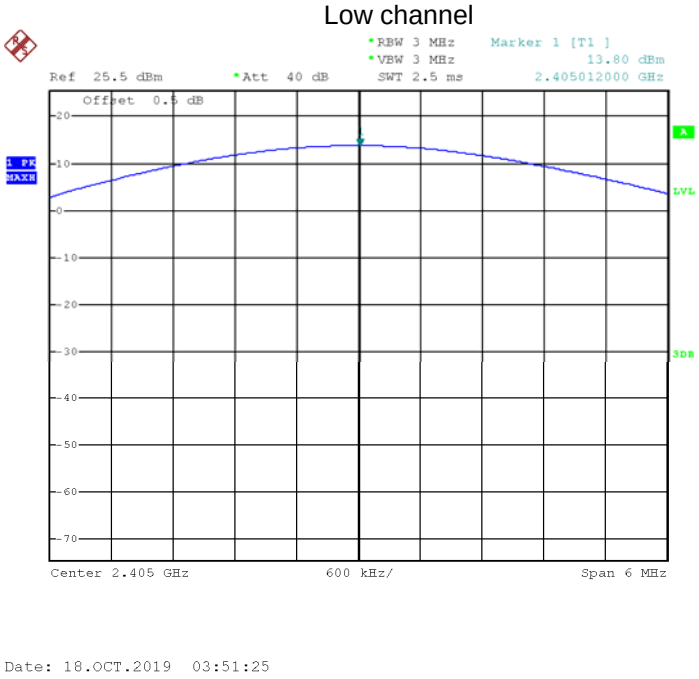
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function =RMS, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

11.2 Test Result:

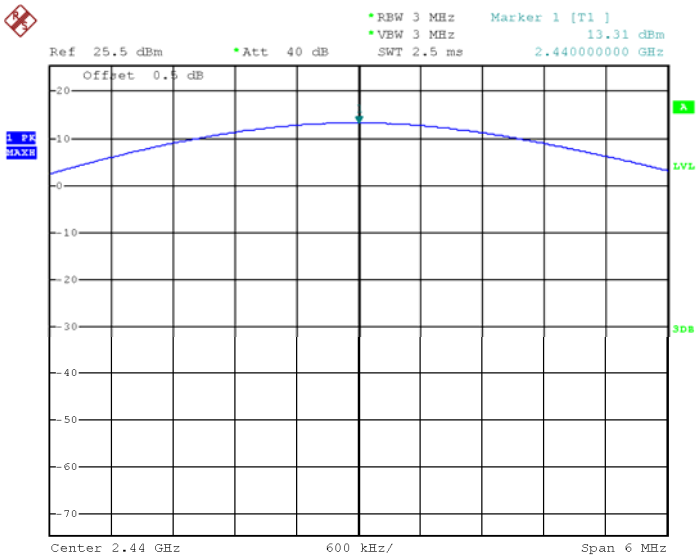
Maximum Peak Output Power (dBm)		
Low channel	Middle channel	High channel
13.80	13.31	13.09
Limit: 1W/30dBm		

Test result plot as follows:

Low channel

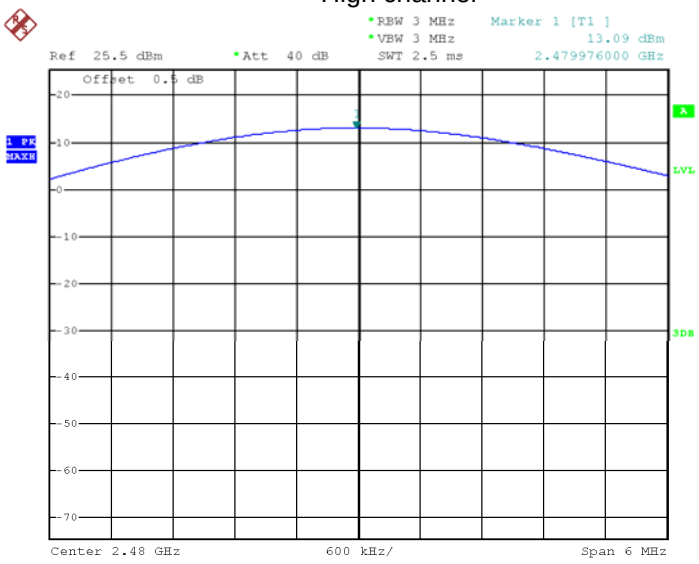


Middle channel



Date: 18.OCT.2019 03:52:04

High channel



Date: 18.OCT.2019 03:52:56

12 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05r02
&ANSI C63.10:2013

12.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

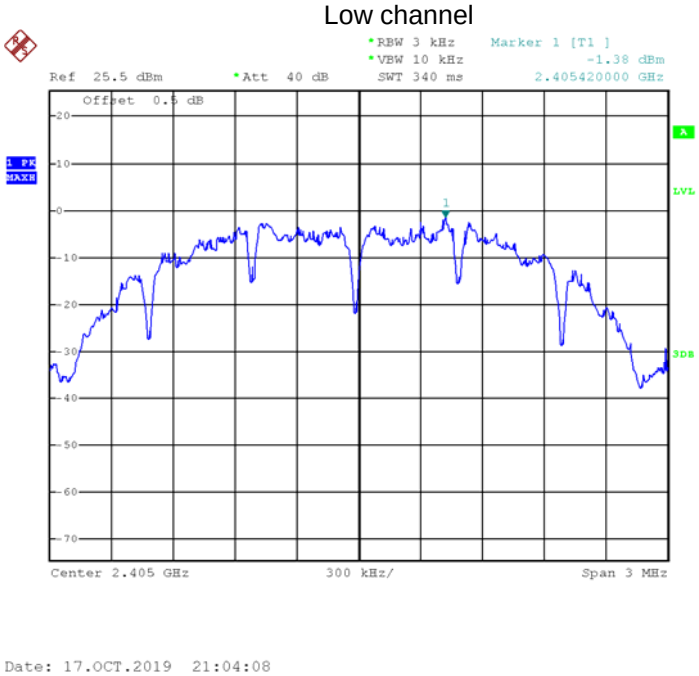
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

12.2 Test Result:

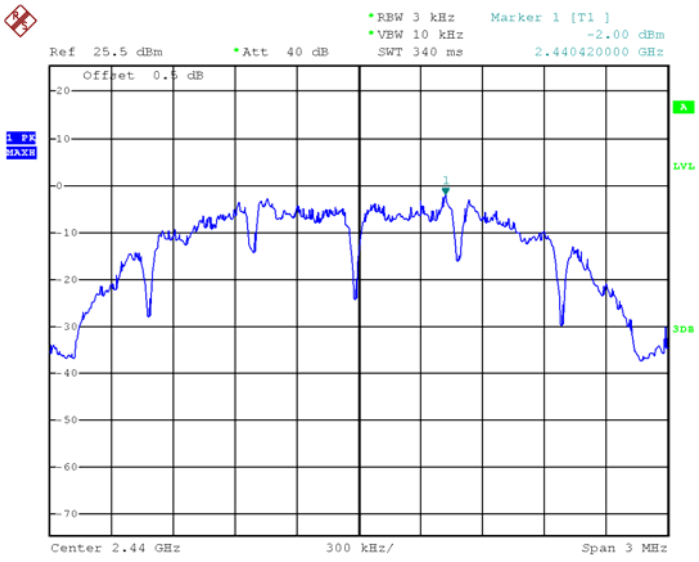
Power Spectral Density(dBm)		
Low channel	Middle channel	High channel
-1.38	-2.00	-2.08
Limit: 8dBm per 3kHz		

Test result plot as follows:

Low channel

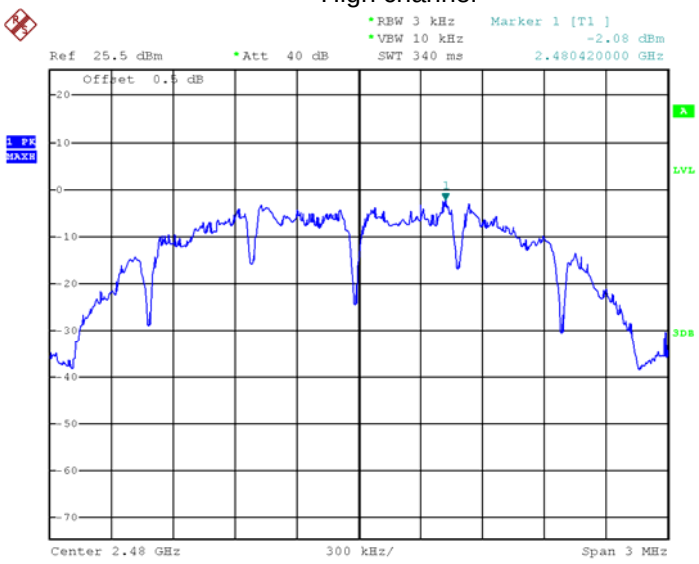


Middle channel



Date: 17.OCT.2019 21:03:02

High channel



Date: 17.OCT.2019 21:04:56

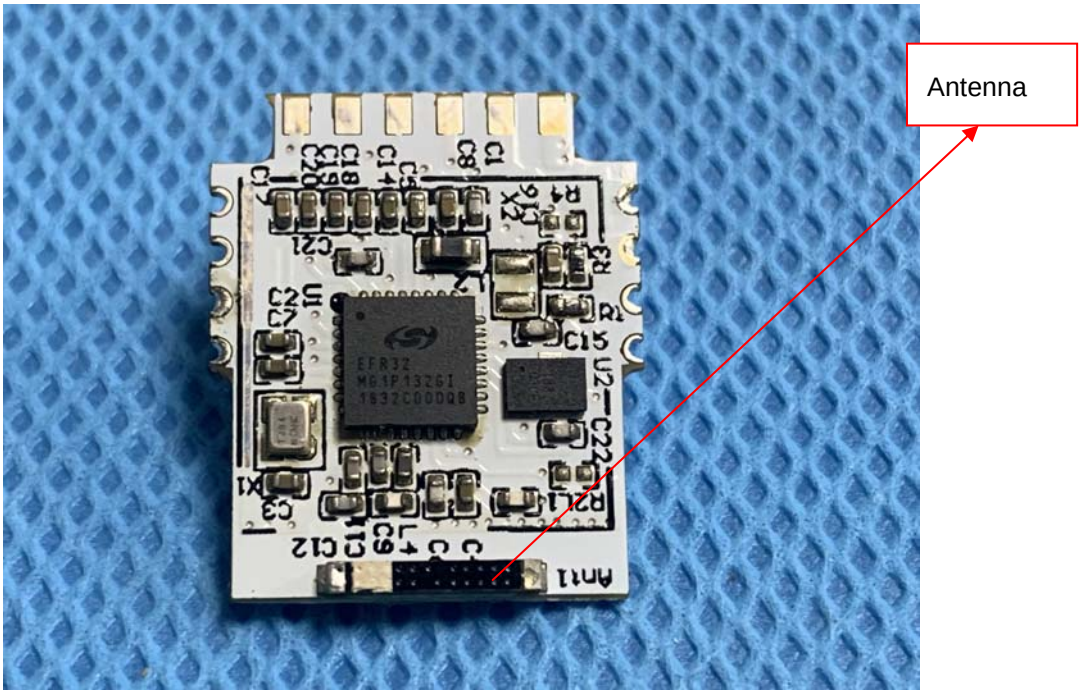
13 Antenna Requirement

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, 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.

Result:

The EUT have one Integrated Antenna, meets the requirements of FCC 15.203.



14 FCC ID: 2ATL8VZACATXX-01 RF Exposure Report

Note: Please refer to RF Exposure Report: WTU19S06035807W002.

15 Photographs - Test Setup Photos

Note: Refer to the file VZACATXX-01_Test Setup Photos.

16 Photographs - Constructional Details

16.1 External Photos

Note: Refer to the file VZACATXX-01_External Photos.

16.2 Internal Photos

Note: Refer to the file VZACATXX-01_Internal Photos.

======End of Report======