TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2ANM9-EVENT1

Product: Mini Projector

Model No.: Event1

Additional Model No.: N/A

Trade Mark: Epic Event

Report No.: TCT171204E013

Issued Date: Dec. 14, 2017

Issued for:

EPIC OPTIX, INC.

1419 Forest Drive Suite 201, Annapolis, MD. US. 21403

Issued By:

Shenzhen Tongce Testing Lab.
1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China
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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. Test Certification

Product:	Mini Projector
Model No.:	Event1
Additional Model No.:	/
Trade Mark:	Epic Event
Applicant:	EPIC OPTIX, INC.
Address:	1419 Forest Drive Suite 201, Annapolis, MD. US. 21403
Manufacturer:	EPIC AVIONICS. CO., LTD
Address:	33-7, Eongmalli-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
Date of Test:	Dec. 07, 2017- Dec. 13, 2017
Applicable Standards:	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:	Brews Xu	***Date:***	***Dec. 07-13, 2017***
	Brews Xu		
Reviewed By:	Joe Zhou	***Date:***	***Dec. 13, 2017***
	Joe Zhou		
Approved By:	Tomsin	***Date:***	***Dec. 14, 2017***
	Tomsin		

SHENZHEN TONGCE TESTING LAB TCT

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2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247 (b)(3) §2.1046	PASS
6dB Emission Bandwidth	§15.247 (a)(2) §2.1049	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	1§5.247(d) §2.1051, §2.1057	PASS
Spurious Emission	§15.205/§15.209 §2.1053, §2.1057	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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3. EUT Description

Product:	Mini Projector
Model No.:	Event1
Additional Model No.:	/
Trade Mark:	Epic Event
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40))
Channel Separation:	5MHz
Number of Channel:	11 for 802.11b/802.11g/802.11n(HT20) 7 for 802.11n(HT40)
Modulation Technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation Technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	Chip Antenna
Antenna Gain:	1dBi (Declared by Applicant)
Power Supply:	DC12V, 3A from adapter With AC 120V/60Hz
Power supply:	SWITCHING ADAPTOR MODEL: SW40-12003000-WA4 INPUT: AC100-240V 50/60Hz 1.5A OUTPUT: DC12V 3A

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Operation Frequency each of channel For 802.11b/g/n(HT20)

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

Operation Frequency each of channel For 802.11n (HT40)

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
--	--	4	2427MHz	7	2442MHz	--	--
--	--	5	2432MHz	8	2447MHz	--	--
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11b/802.11g/802.11n (HT20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

802.11n (HT40)

Channel	Frequency
The lowest channel	2422MHz
The middle channel	2437MHz
The Highest channel	2452MHz

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4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%)
The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m 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, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the 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. For the full battery state and The output power to the maximum state.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation
1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive. 2.According to ANSI C63.10 standards, the test results are both the “worst case” and	

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"worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20), 13.5Mbps for 802.11(H40). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.

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4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

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5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

  Shenzhen Tongce Testing Lab

  The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

5.3. Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

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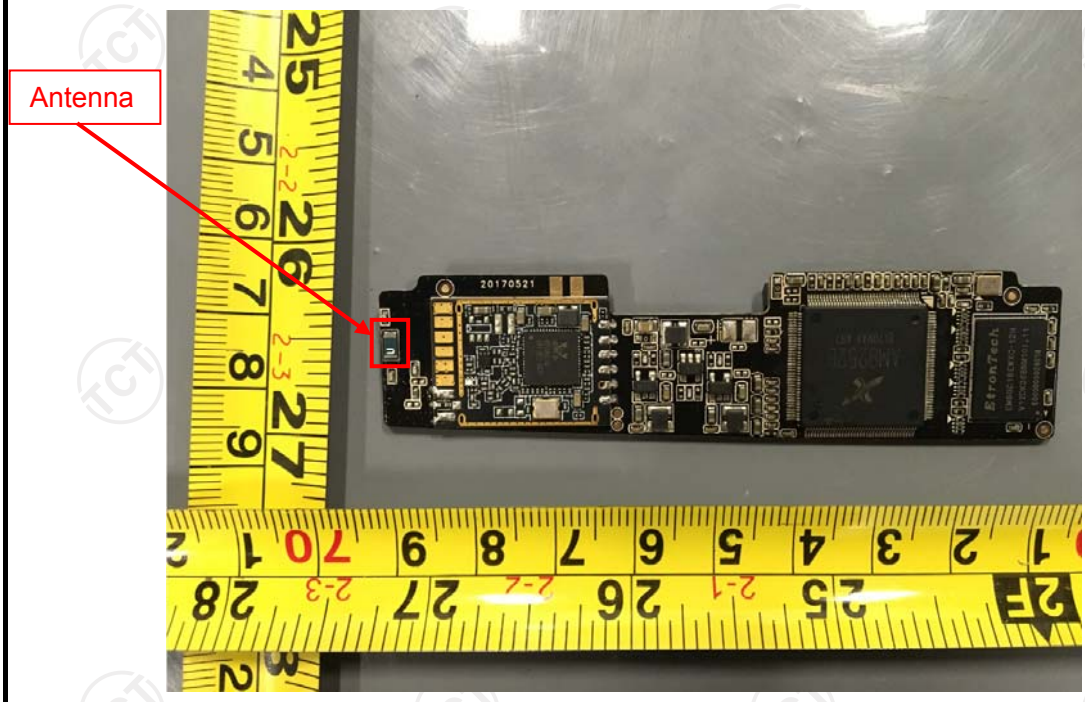
6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 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, 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. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
E.U.T Antenna:	
The WIFI antenna is Chip Antenna which permanently attached, and the best case gain of the antenna is 1.0dBi.	



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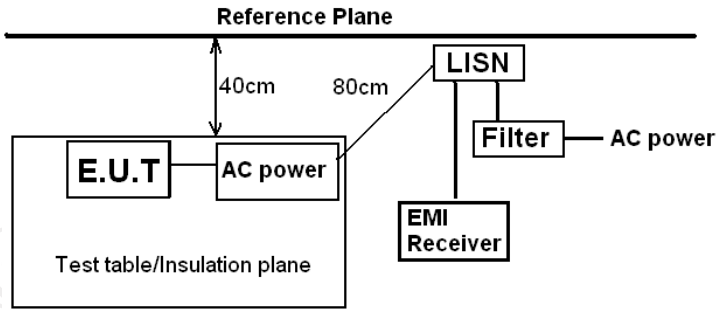
6.2. Conducted Emission

6.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td>


Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m
</td></tr>
<tr><td>Test Mode:</td><td>Charging + transmitting with modulation</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Test Receiver	R&S	ESPI	101401	Jun. 12, 2018
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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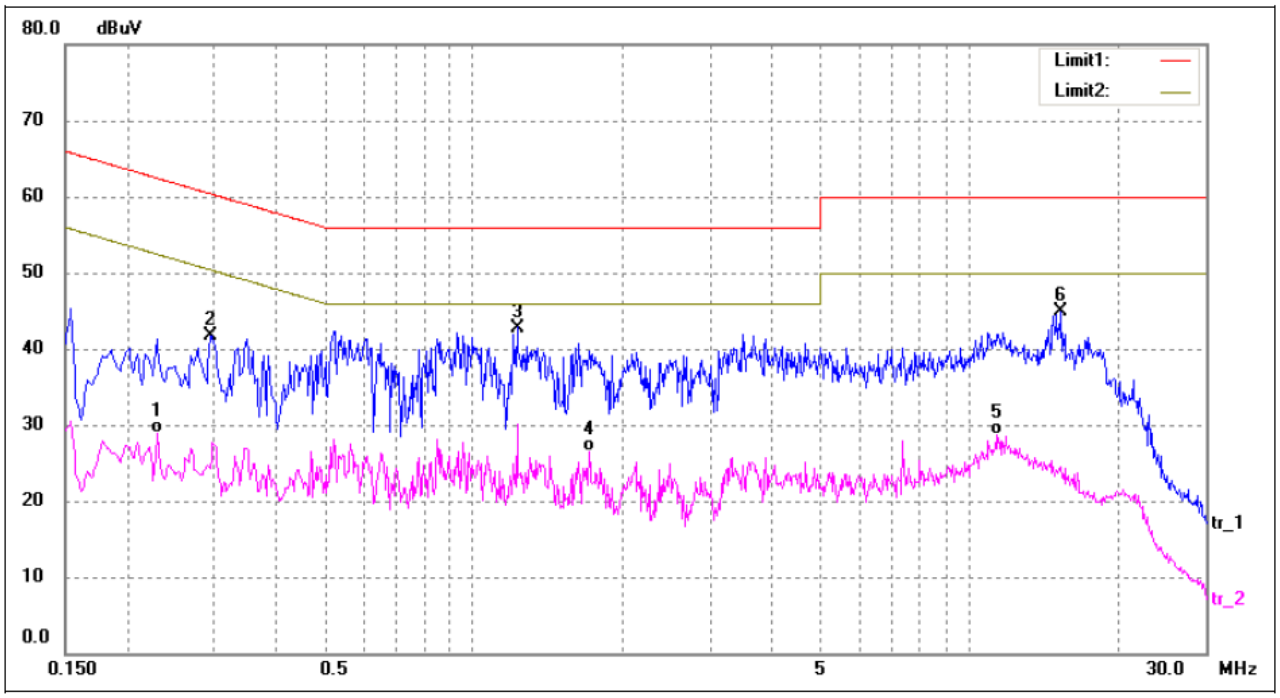
6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)

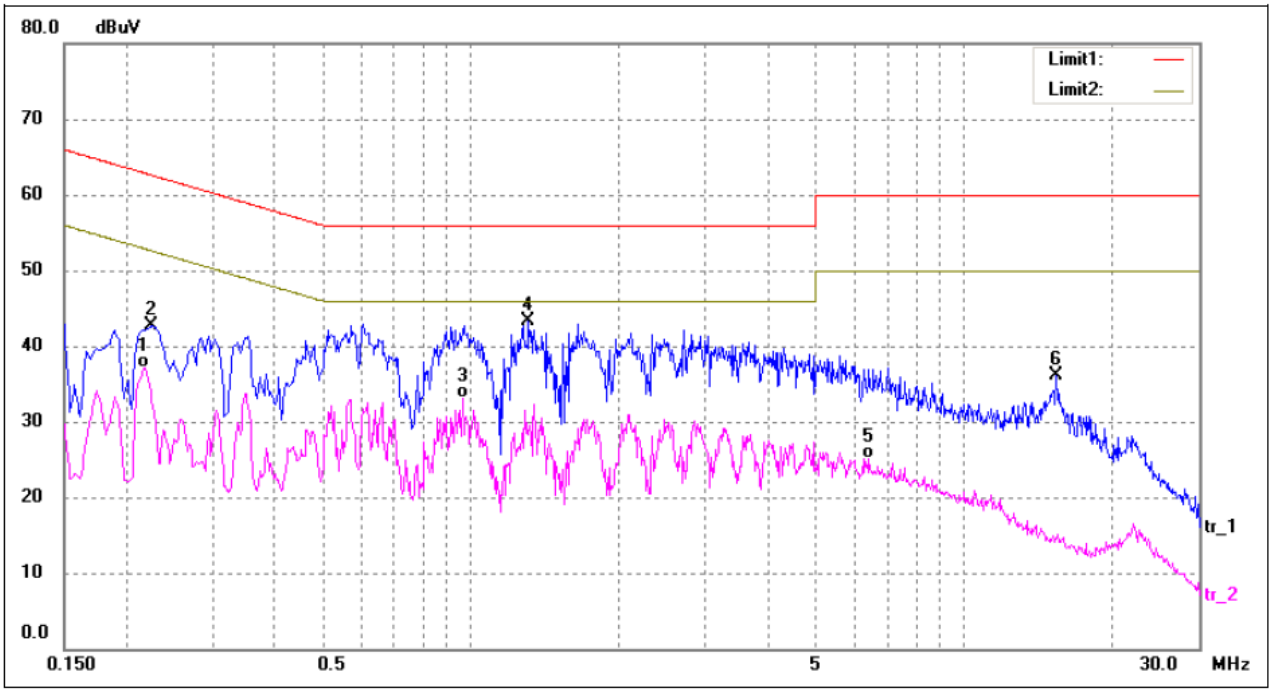


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2300	19.17	9.80	28.97	52.45	-23.48	AVG
2	0.2940	31.90	9.80	41.70	60.41	-18.71	QP
3*	1.2260	33.05	9.75	42.80	56.00	-13.20	QP
4	1.7140	16.68	9.74	26.42	46.00	-19.58	AVG
5	11.3380	19.08	9.54	28.62	50.00	-21.38	AVG
6	15.3660	35.34	9.62	44.96	60.00	-15.04	QP

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss*
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



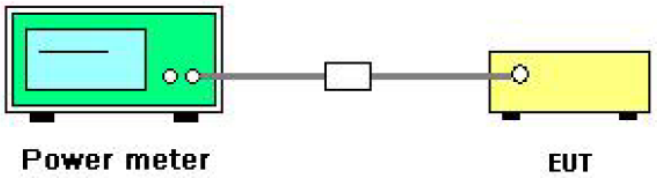
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2180	27.38	9.80	37.18	52.89	-15.71	AVG
2	0.2260	32.86	9.80	42.66	62.60	-19.94	QP
3	0.9660	23.31	9.76	33.07	46.00	-12.93	AVG
4*	1.3100	33.47	9.75	43.22	56.00	-12.78	QP
5	6.4260	15.55	9.62	25.17	50.00	-24.83	AVG
6	15.4620	26.52	9.62	36.14	60.00	-23.86	QP

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

6.2.4. Maximum Conducted Output Power

6.2.5. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB 558074
Limit:	30dBm
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Measure the Peak output power and record the results in the test report.
Test Result:	PASS

6.2.6. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Power Meter	Agilent	N1911A	MY45101557	Sep. 27, 2018
Power Sensor	Agilent	N1922A	MY44124432	Sep. 27, 2018
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-03	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.2.7. Test Data

TX 802.11b Mode			
Test Channe	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	LIMIT dBm
CH01	2412	12.18	30
CH06	2437	11.86	30
CH11	2462	12.01	30
TX 802.11g Mode			
CH01	2412	11.85	30
CH06	2437	11.72	30
CH11	2462	11.59	30
TX 802.11n20 Mode			
CH01	2412	11.42	30
CH06	2437	11.26	30
CH11	2462	10.93	30
TX 802.11n40 Mode			
CH03	2422	11.83	30
CH06	2437	11.77	30
CH09	2452	11.48	30

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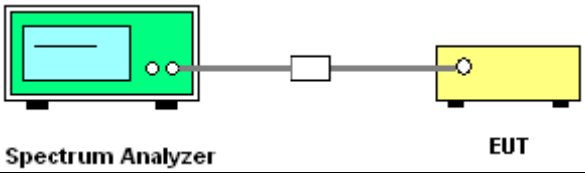
6.3. Emission Bandwidth

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB 558074
Limit:	>500kHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

6.3.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF Cable (9KHz-26.5GHz)	TCT	RE-06	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-01	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.3.3. Test data

Test channel	6dB Emission Bandwidth (MHz)			
	802.11b	802.11g	802.11n(H20)	802.11n(H40)
Lowest	8.992	16.39	17.59	35.38
Middle	9.466	16.43	17.58	35.53
Highest	9.023	16.41	17.59	35.57
Limit:	>500k			
Test Result:	PASS			

Test plots as follows:

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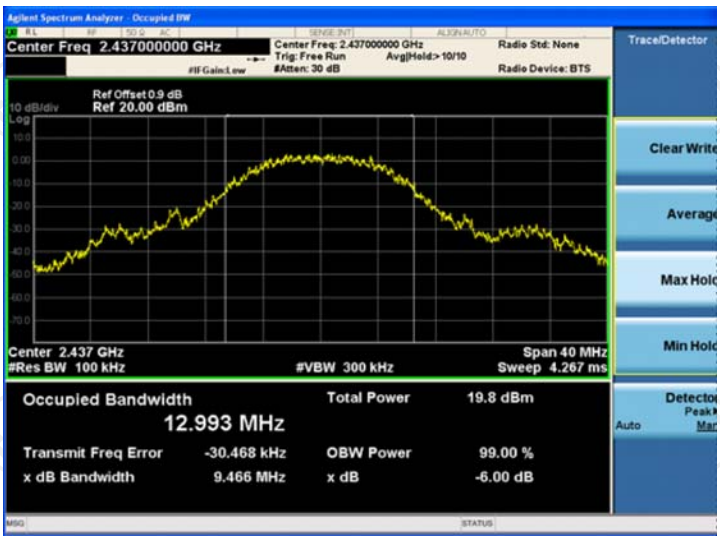
802.11b Modulation

Lowest channel

Middle channel

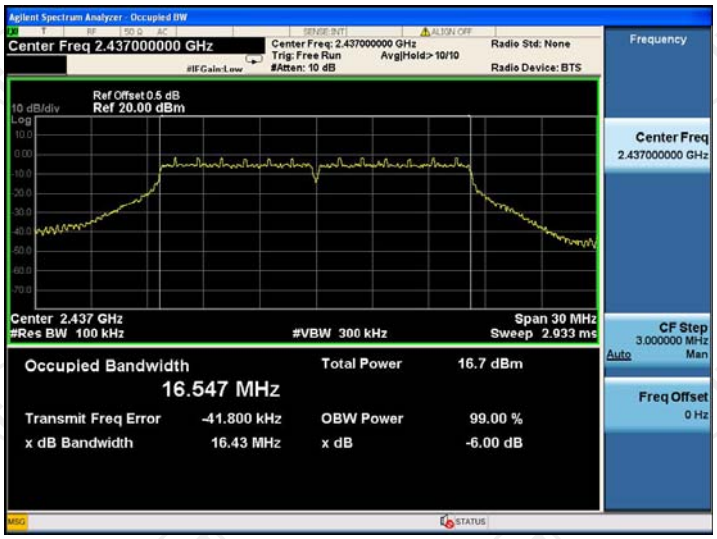


Highest channel

802.11g Modulation

Lowest channel

Middle channel

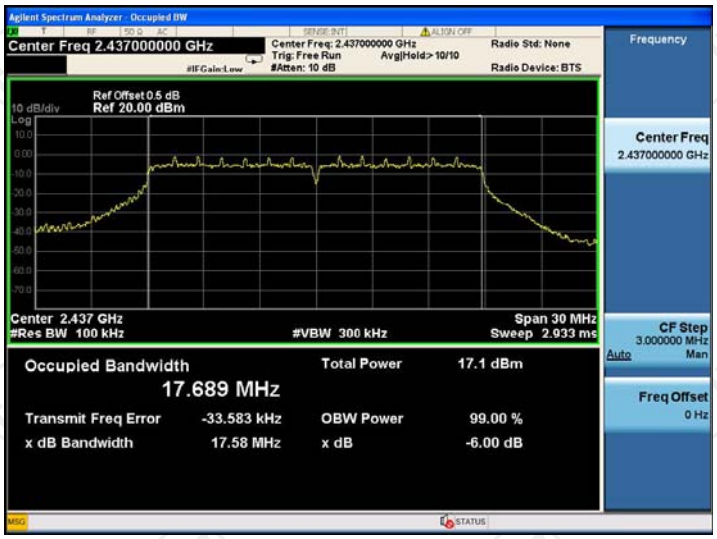


Highest channel

802.11n (HT20) Modulation

Lowest channel

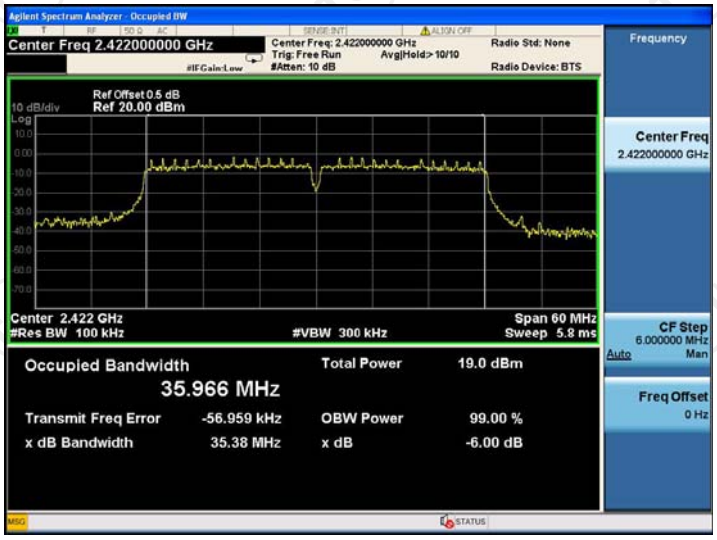
Middle channel



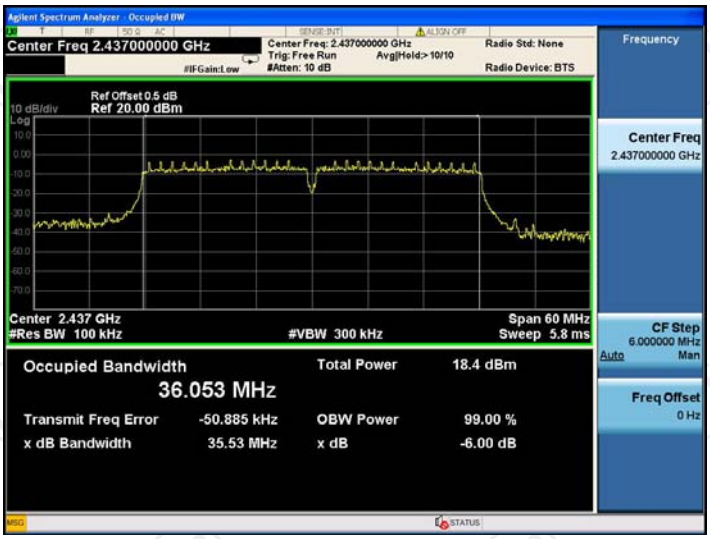
Highest channel

802.11n (HT40) Modulation

Lowest channel



Middle channel



Highest channel

6.4. Power Spectral Density

6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows Measurement Procedure 10.3 Method AVGPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v04 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): 3 kHz ≤ RBW ≤ 100 kHz. Video bandwidth VBW ≥ 3 x RBW. Set the span to at least 1.5 times the OBW. 5. Detector = RMS, Sweep time = auto couple. 6. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. 6. Measure and record the results in the test report.
Test Result:	PASS

6.4.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF Cable (9KHz-26.5GHz)	TCT	RE-06	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-01	N/A	Sep. 27, 2018

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.4.3. Test data

Test channel	Power Spectral Density (dBm/3kHz)			
	802.11b	802.11g	802.11n(H20)	802.11n(H40)
Lowest	-13.826	-15.727	-18.324	-17.287
Middle	-12.367	-14.136	-15.011	-17.581
Highest	-13.529	-15.003	-16.058	-16.929
Limit:	8dBm/3kHz			
Test Result:	PASS			

Test plots as follows:

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802.11b Modulation

Lowest channel

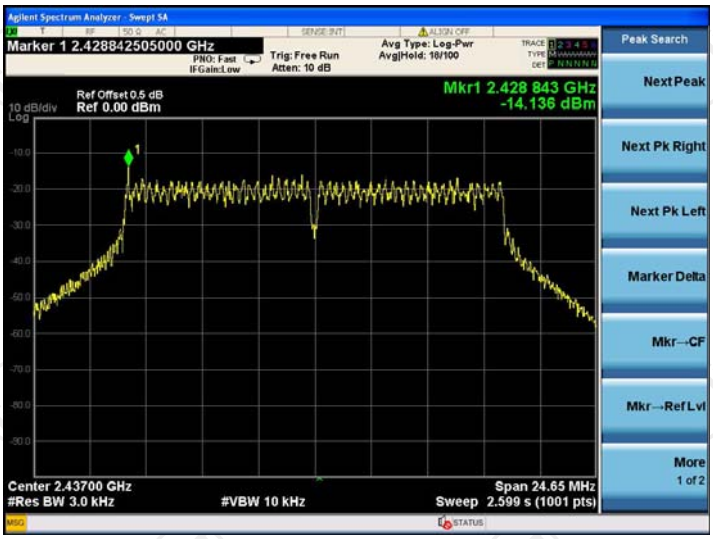
Middle channel

Highest channel

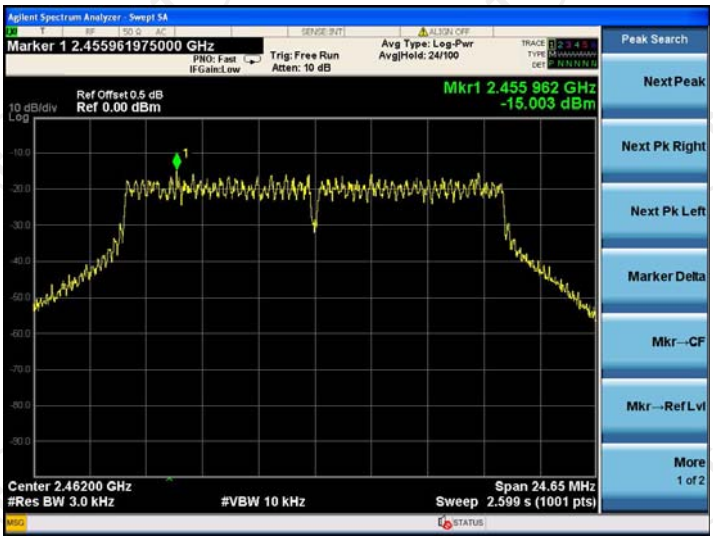
802.11g Modulation

Lowest channel

Middle channel



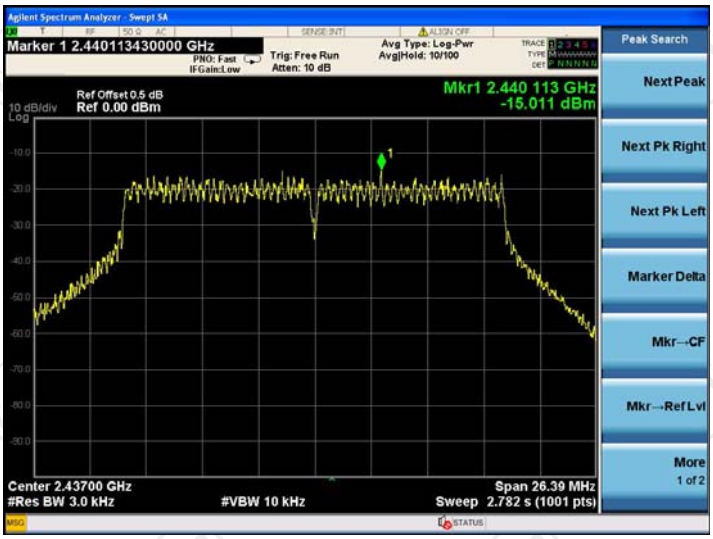
Highest channel



802.11n (HT20) Modulation

Lowest channel

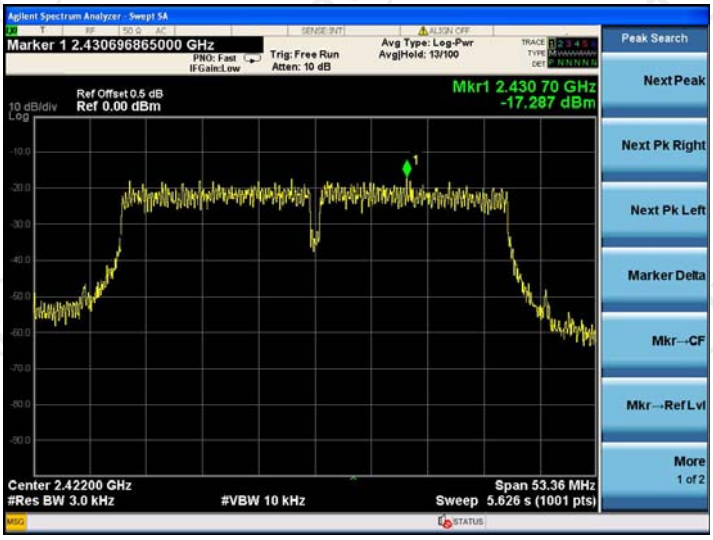
Middle channel



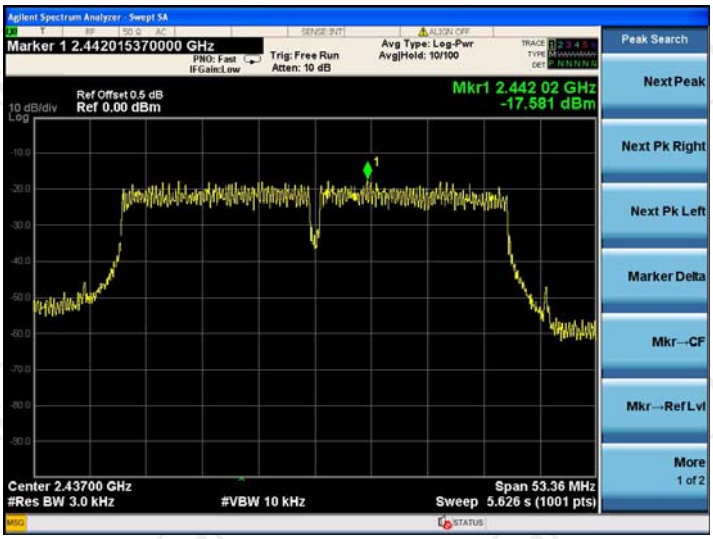
Highest channel

802.11n (HT40) Modulation

Lowest channel



Middle channel



Highest channel

6.5. Conducted Band Edge and Spurious Emission Measurement

6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and 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).
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04. 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). 5. Measure and record the results in the test report. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

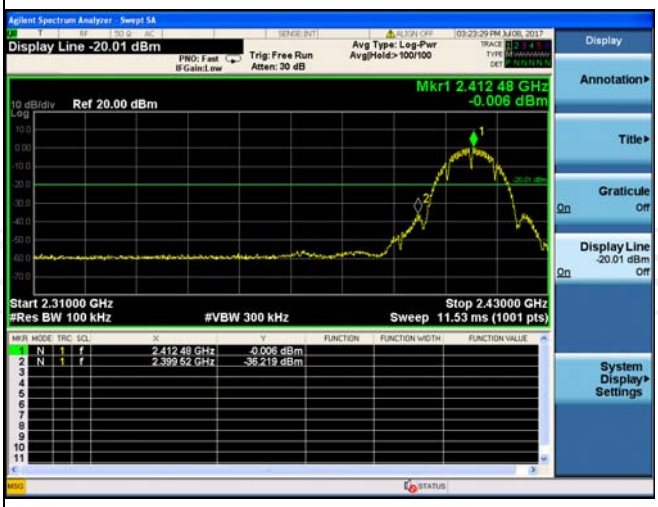
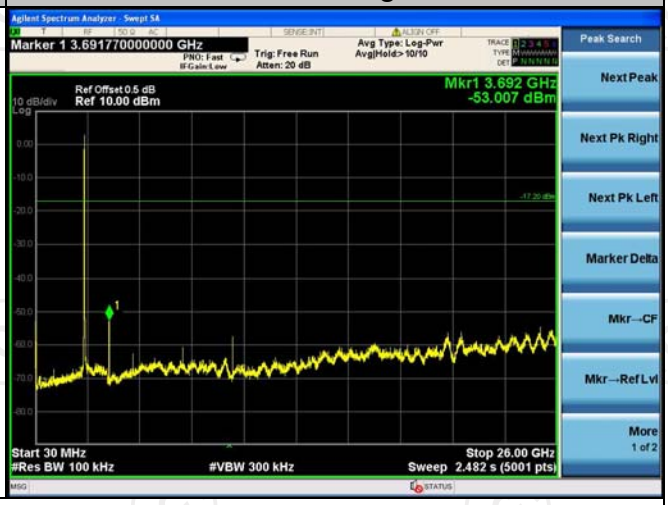
6.5.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ	200061	Sep. 27, 2018
RF Cable (9KHz-26.5GHz)	TCT	RE-06	N/A	Sep. 27, 2018
Antenna Connector	TCT	RFC-01	N/A	Sep. 27, 2018

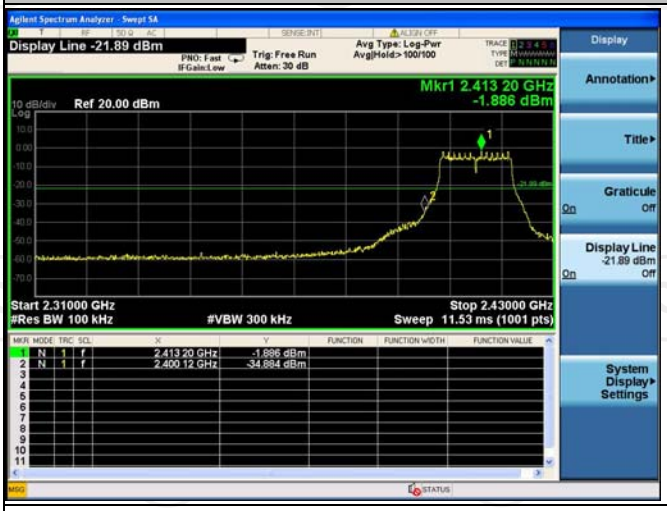
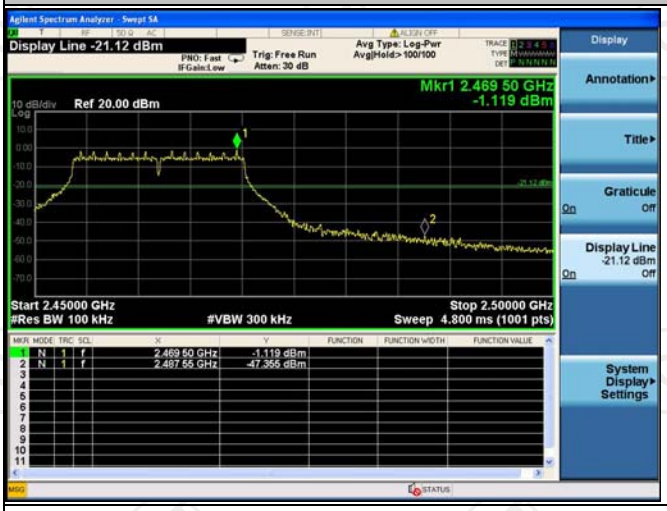
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5.3. Test Data

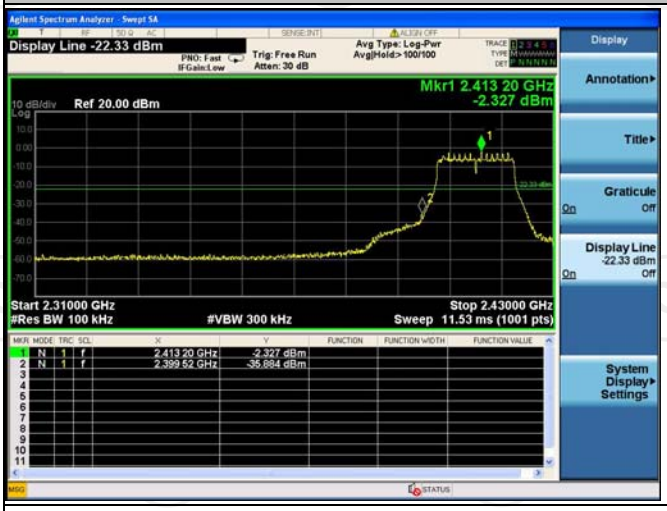
802.11b Modulation

Spurious emission	Band Edge
	
Lowest Channel	
Spurious emission	Band Edge
	
Highest Channel	

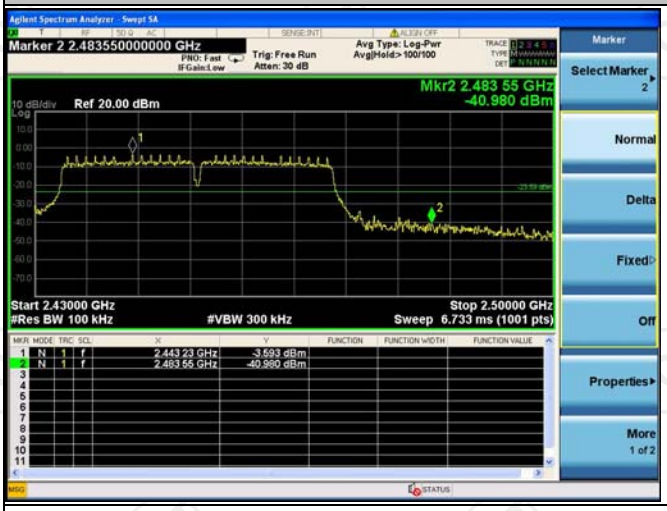
802.11g Modulation

Spurious emission	Band Edge
	
Lowest Channel	
Spurious emission	Band Edge
	
Highest Channel	

802.11n (HT20) Modulation

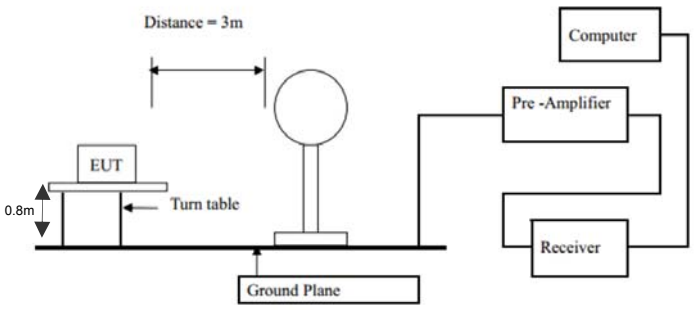
Spurious emission	Band Edge
	
Lowest Channel	
Spurious emission	Band Edge
	
Highest Channel	

802.11n (HT40) Modulation

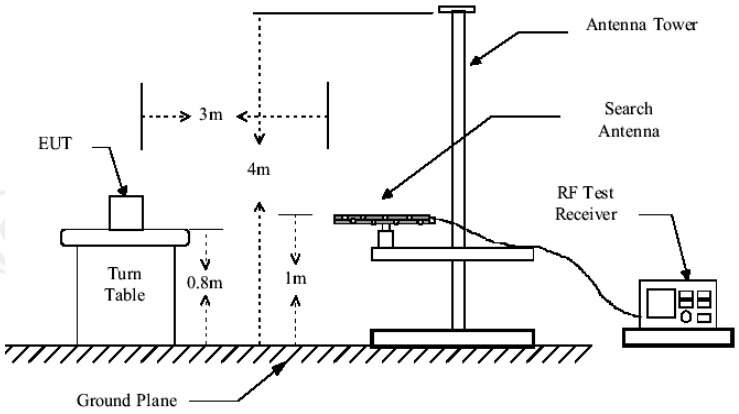
Spurious emission	Band Edge
	
Lowest Channel	
Spurious emission	Band Edge
	
Highest Channel	

6.6. Radiated Spurious Emission Measurement

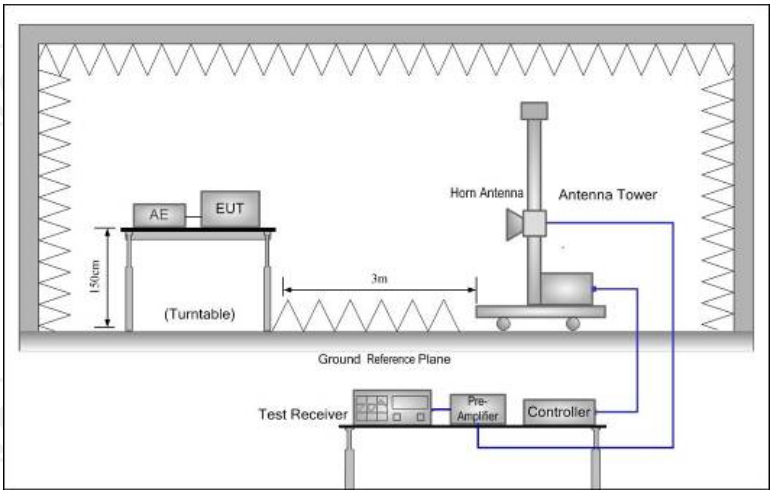
6.6.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Operation mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>30</td></tr>
<tr><td>1.705-30</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100</td><td>3</td></tr>
<tr><td>88-216</td><td>150</td><td>3</td></tr>
<tr><td>216-960</td><td>200</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td><td>Detector</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>3</td><td>Average</td></tr>
<tr><td>5000</td><td>3</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

30MHz to 1GHz</td></tr>
</table>



Above 1GHz



Test Procedure:

1. For the radiated emission test below 1GHz:
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.
For the radiated emission test above 1GHz:
Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for

	receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is 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.
Test results:	PASS

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6.6.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ	200061	Sep. 27, 2018
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
Coax cable (9KHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9KHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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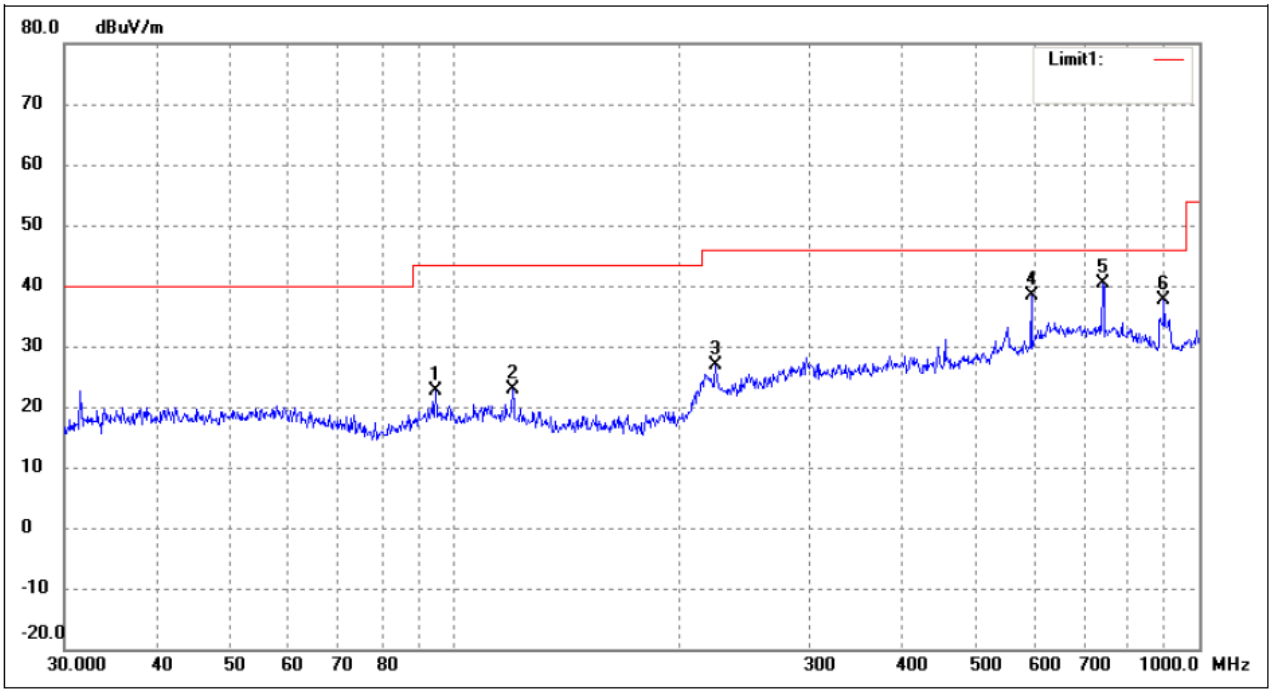
6.6.3. Test Data

Please refer to following diagram for individual
Below 1GHz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	94.4284	18.53	4.10	22.63	43.50	-20.87	51	100	peak
2	119.8556	18.18	4.82	23.00	43.50	-20.50	158	100	peak
3	224.5193	18.91	7.95	26.86	46.00	-19.14	59	100	peak
4	595.1329	20.50	17.85	38.35	46.00	-7.65	167	100	peak
5	742.2587	21.38	18.93	40.31	46.00	-5.69	186	100	peak
6	896.9965	22.27	15.39	37.66	46.00	-8.34	234	100	peak

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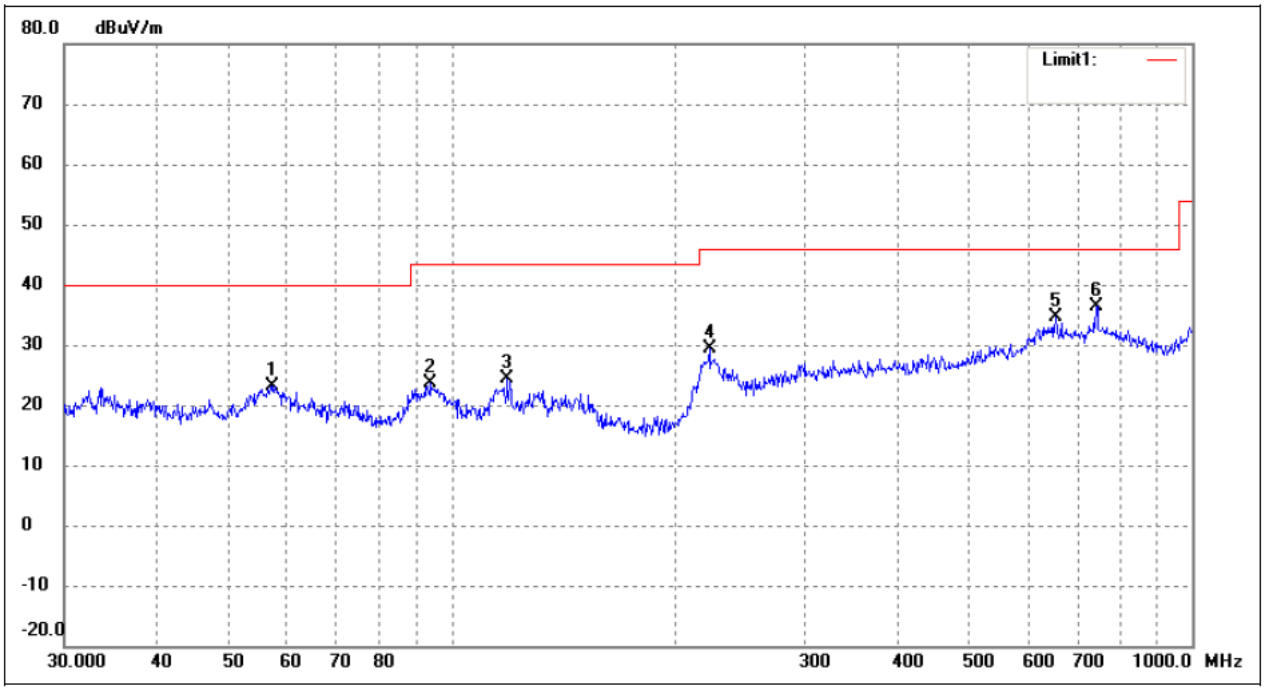
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	57.1914	18.14	4.99	23.13	40.00	-16.87	338	100	peak
2	93.7685	19.65	4.01	23.66	43.50	-19.84	98	100	peak
3	119.0180	19.64	4.82	24.46	43.50	-19.04	68	100	peak
4	222.9502	21.42	7.85	29.27	46.00	-16.73	99	100	peak
5	654.2318	16.83	17.71	34.54	46.00	-11.46	347	100	peak
6	742.2587	17.55	18.93	36.48	46.00	-9.52	107	100	peak

Above 1GHz

RADIATED EMISSION TEST

LOW CH1 (802.11b Mode)/2412
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	62.59	-3.64	58.95	74	-15.05	peak
4824	46.23	-3.64	42.59	54	-11.41	AVG
7236	56.46	-0.95	55.51	74	-18.49	peak
7236	41.08	-0.95	40.13	54	-13.87	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	61.82	-3.64	58.18	74	-15.82	peak
4824	45.78	-3.64	42.14	54	-11.86	AVG
7236	56.34	-0.95	55.39	74	-18.61	peak
7236	41.03	-0.95	40.08	54	-13.92	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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MID CH6 (802.11b Mode)/2437
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	62.16	-3.51	58.65	74	-15.35	peak
4874	46.81	-3.51	43.3	54	-10.7	AVG
7311	56.99	-0.82	56.17	74	-17.83	peak
7311	41.06	-0.82	40.24	54	-13.76	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	61.24	-3.51	57.73	74	-16.27	peak
4874	46.13	-3.51	42.62	54	-11.38	AVG
7311	56.77	-0.82	55.95	74	-18.05	peak
7311	42.05	-0.82	41.23	54	-12.77	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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HIGH CH11 (802.11b Mode)/2462
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	61.85	-3.43	58.42	74	-15.58	peak
4924	45.09	-3.43	41.66	54	-12.34	AVG
7386	56.33	-0.75	55.58	74	-18.42	peak
7386	41.96	-0.75	41.21	54	-12.79	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	61.31	-3.43	57.88	74	-16.12	peak
4924	46.27	-3.43	42.84	54	-11.16	AVG
7386	56.18	-0.75	55.43	74	-18.57	peak
7386	42.05	-0.75	41.3	54	-12.7	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz。
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4) Data of measurement within this frequency range shown “--- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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LOW CH1 (802.11g Mode)/2412
Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	62.54	-3.64	58.9	74	-15.1	peak
4824	46.38	-3.64	42.74	54	-11.26	AVG
7236	56.96	-0.95	56.01	74	-17.99	peak
7236	42.13	-0.95	41.18	54	-12.82	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	62.12	-3.64	58.48	74	-15.52	peak
4824	46.35	-3.64	42.71	54	-11.29	AVG
7236	56.49	-0.95	55.54	74	-18.46	peak
7236	41.67	-0.95	40.72	54	-13.28	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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MID CH6 (802.11g Mode)/2437
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	61.57	-3.51	58.06	74	-15.94	peak
4874	46.34	-3.51	42.83	54	-11.17	AVG
7311	56.19	-0.82	55.37	74	-18.63	peak
7311	41.25	-0.82	40.43	54	-13.57	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	61.05	-3.51	57.54	74	-16.46	peak
4874	45.24	-3.51	41.73	54	-12.27	AVG
7311	55.18	-0.82	54.36	74	-19.64	peak
7311	40.33	-0.82	39.51	54	-14.49	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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HIGH CH11 (802.11g Mode)/2462
Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	61.86	-3.43	58.43	74	-15.57	peak
4924	46.29	-3.43	42.86	54	-11.14	AVG
7386	56.73	-0.75	55.98	74	-18.02	peak
7386	42.41	-0.75	41.66	54	-12.34	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	61.13	-3.43	57.7	74	-16.3	peak
4924	45.28	-3.43	41.85	54	-12.15	AVG
7386	55.45	-0.75	54.7	74	-19.3	peak
7386	41.74	-0.75	40.99	54	-13.01	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz。
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4) Data of measurement within this frequency range shown “--- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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LOW CH1 (802.11n/H20 Mode)/2412
Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	61.42	-3.64	57.78	74	-16.22	peak
4824	45.37	-3.64	41.73	54	-12.27	AVG
7236	56.49	-0.95	55.54	74	-18.46	peak
7236	41.85	-0.95	40.9	54	-13.1	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	60.26	-3.64	56.62	74	-17.38	peak
4824	45.53	-3.64	41.89	54	-12.11	AVG
7236	55.41	-0.95	54.46	74	-19.54	peak
7236	40.84	-0.95	39.89	54	-14.11	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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MID CH6 (802.11n/H20 Mode)/2437
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.00	60.85	-3.51	57.34	74.00	-16.66	peak
4874.00	45.79	-3.51	42.28	54.00	-11.72	AVG
7311.00	55.92	-0.82	55.10	74.00	-18.90	peak
7311.00	41.08	-0.82	40.26	54.00	-13.74	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.00	60.84	-3.51	57.33	74.00	-16.67	peak
4874.00	45.39	-3.51	41.88	54.00	-12.12	AVG
7311.00	55.42	-0.82	54.60	74.00	-19.40	peak
7311.00	40.65	-0.82	39.83	54.00	-14.17	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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HIGH CH11 (802.11n/H20 Mode)/2462
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	60.73	-3.43	57.3	74	-16.7	peak
4924	45.28	-3.43	41.85	54	-12.15	AVG
7386	55.46	-0.75	54.71	74	-19.29	peak
7386	41.15	-0.75	40.4	54	-13.6	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924	59.61	-3.43	56.18	74	-17.82	peak
4924	45.37	-3.43	41.94	54	-12.06	AVG
7386	55.59	-0.75	54.84	74	-19.16	peak
7386	40.48	-0.75	39.73	54	-14.27	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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LOW CH3 (802.11n/H40 Mode)/2422
Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	61.54	-3.63	57.91	74	-16.09	peak
4844	45.39	-3.63	41.76	54	-12.24	AVG
7266	56.82	-0.94	55.88	74	-18.12	peak
7266	40.46	-0.94	39.52	54	-14.48	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	60.49	-3.63	56.86	74	-17.14	peak
4844	45.26	-3.63	41.63	54	-12.37	AVG
7266	55.18	-0.94	54.24	74	-19.76	peak
7266	40.32	-0.94	39.38	54	-14.62	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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MID CH6 (802.11n/H40 Mode)/2437
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	60.17	-3.51	56.66	74	-17.34	peak
4874	45.83	-3.51	42.32	54	-11.68	AVG
7311	56.24	-0.82	55.42	74	-18.58	peak
7311	41.58	-0.82	40.76	54	-13.24	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	59.67	-3.51	56.16	74	-17.84	peak
4874	45.25	-3.51	41.74	54	-12.26	AVG
7311	55.43	-0.82	54.61	74	-19.39	peak
7311	40.58	-0.82	39.76	54	-14.24	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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HIGH CH9 (802.11n/H40 Mode)/2452
Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904	61.47	-3.43	58.04	74	-15.96	peak
4904	45.81	-3.43	42.38	54	-11.62	AVG
7356	55.29	-0.75	54.54	74	-19.46	peak
7356	40.34	-0.75	39.59	54	-14.41	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

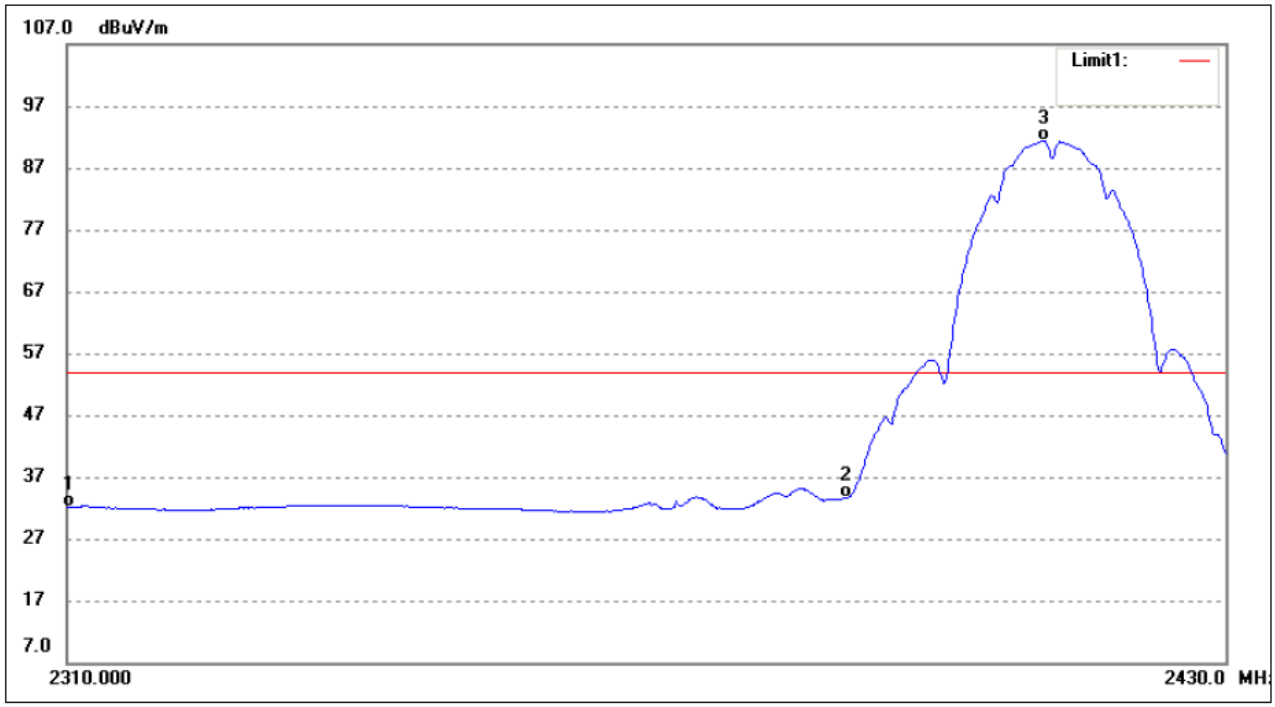
Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904	60.55	-3.43	57.12	74	-16.88	peak
4904	45.29	-3.43	41.86	54	-12.14	AVG
7356	55.01	-0.75	54.26	74	-19.74	peak
7356	40.08	-0.75	39.33	54	-14.67	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz。
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4) Data of measurement within this frequency range shown “--- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

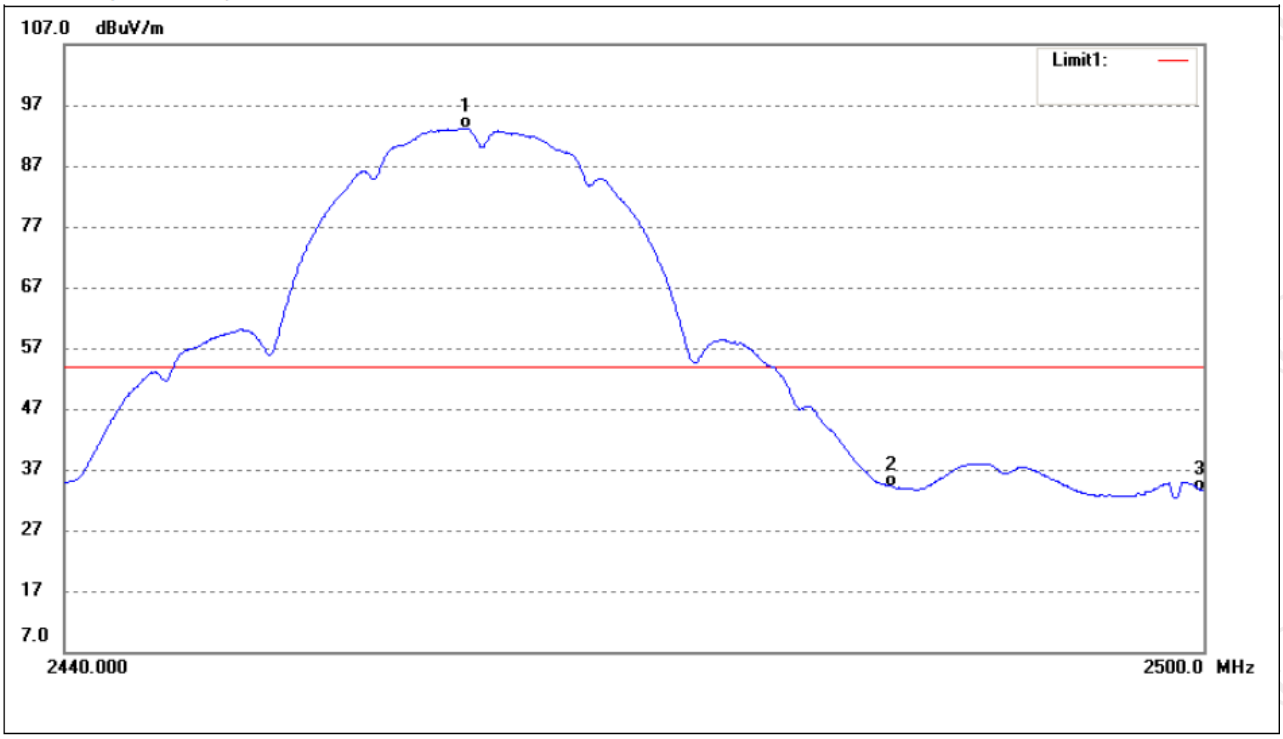
Test Result of Radiated Spurious at Band edges

Operation Mode:
802.11b-Lowest Bandedge
Vertical (Worst case)



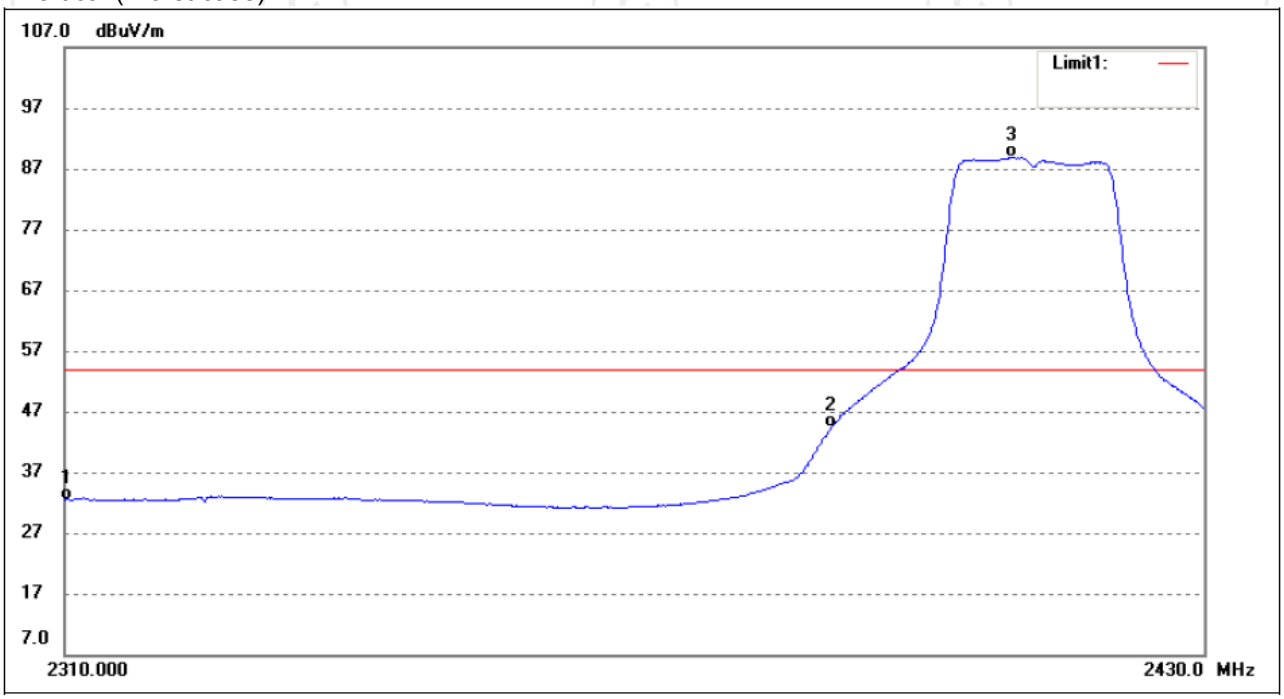
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.57	-6.38	32.19	54.00	-21.81	Average Detector
	2310.000	50.80	-6.38	44.42	74.00	-29.58	Peak Detector
2	2390.000	40.81	-7.26	33.55	54.00	-20.45	Average Detector
	2390.000	51.92	-7.26	44.66	74.00	-29.34	Peak Detector
3	2410.756	98.86	-7.41	91.45	/	/	Average Detector
	2410.511	103.87	-7.41	96.46	/	/	Peak Detector

802.11b-Highest Bandedge
Vertical (Worst case)



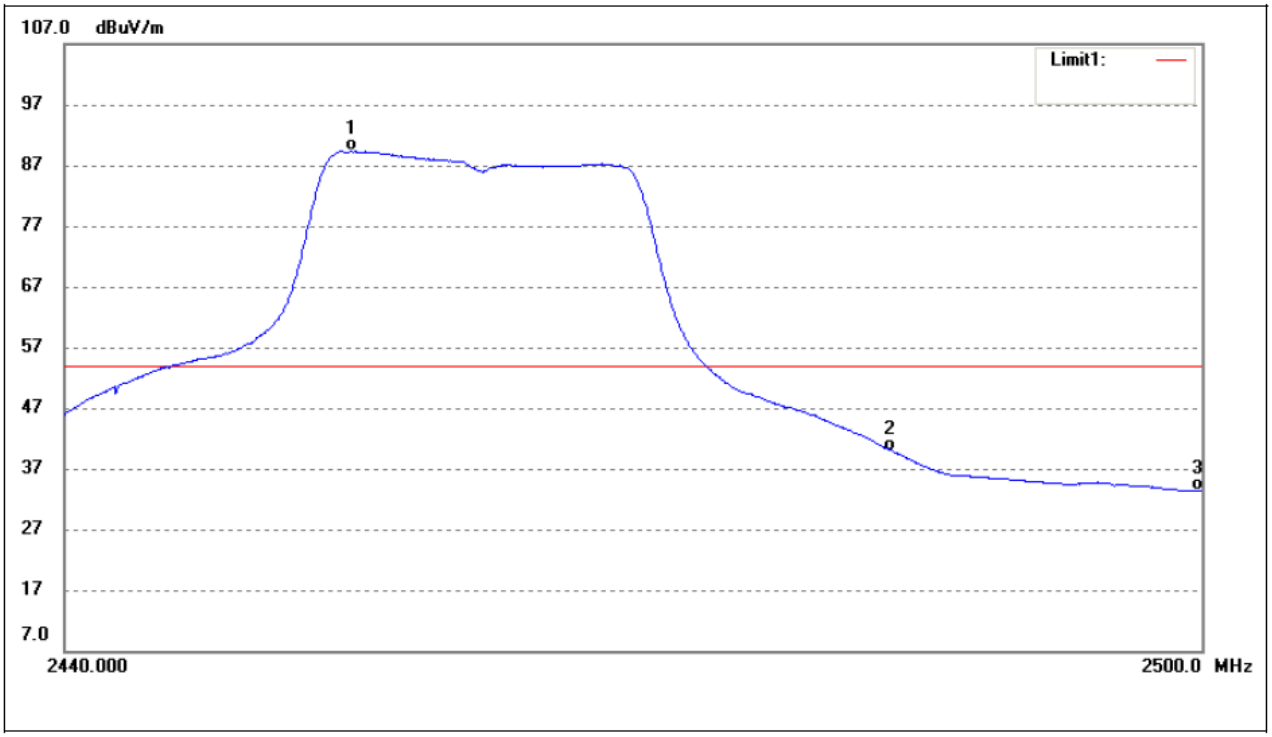
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2460.954	100.48	-7.32	93.16	/	/	Average Detector
	2460.655	104.93	-7.32	97.61	/	/	Peak Detector
2	2483.500	41.43	-7.28	34.15	54.00	-19.85	Average Detector
	2483.500	52.78	-7.28	45.50	74.00	-28.50	Peak Detector
3	2500.000	40.69	-7.25	33.44	54.00	-20.56	Average Detector
	2500.000	51.37	-7.25	44.12	74.00	-29.88	Peak Detector

802.11g-Lowest Bandedge
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.88	-6.38	32.50	54.00	-21.50	Average Detector
	2310.000	50.40	-6.38	44.02	74.00	-29.98	Peak Detector
2	2390.000	51.52	-7.26	44.26	54.00	-9.74	Average Detector
	2390.000	68.81	-7.26	61.55	74.00	-12.45	Peak Detector
3	2409.291	96.28	-7.42	88.86	/	/	Average Detector
	2408.315	106.01	-7.42	98.59	/	/	Peak Detector

802.11g-Highest Bandedge
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2454.983	96.72	-7.33	89.39	/	/	Average Detector
	2455.043	106.52	-7.33	99.19	/	/	Peak Detector
2	2483.500	47.20	-7.28	39.92	54.00	-14.08	Average Detector
	2483.500	62.90	-7.28	55.62	74.00	-18.38	Peak Detector
3	2500.000	40.57	-7.25	33.32	54.00	-20.68	Average Detector
	2500.000	53.31	-7.25	46.06	74.00	-27.94	Peak Detector

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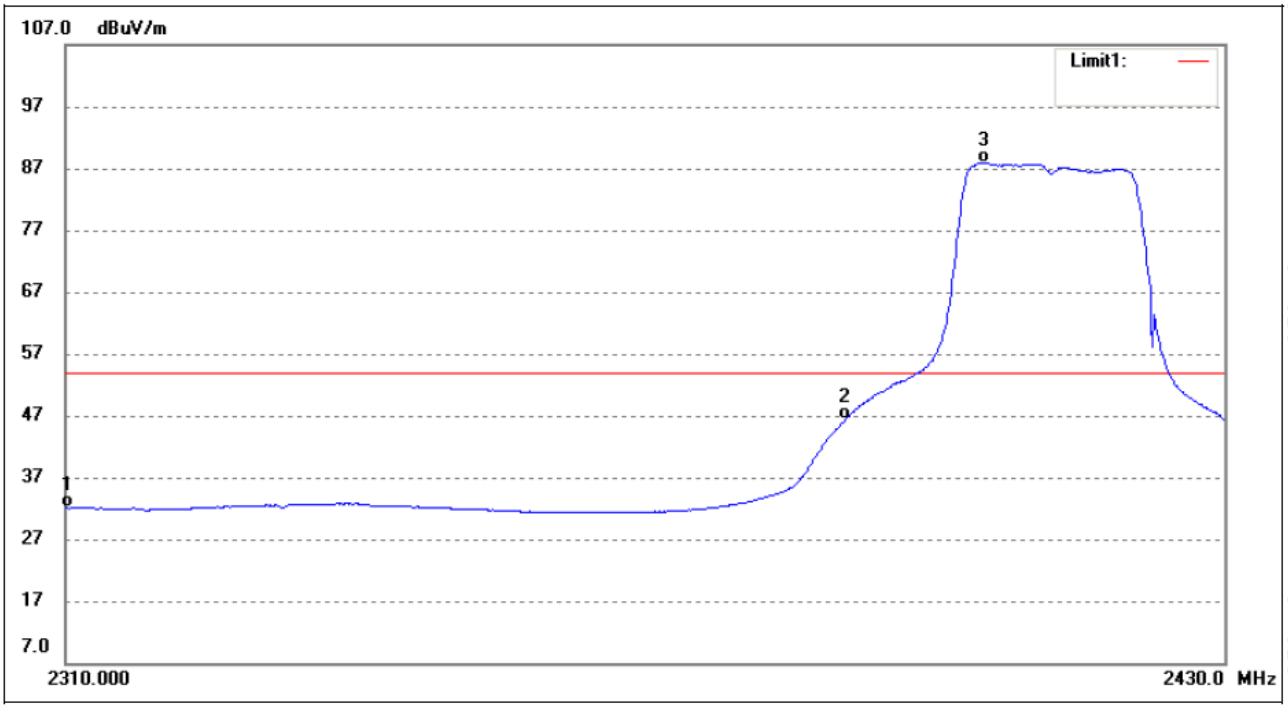
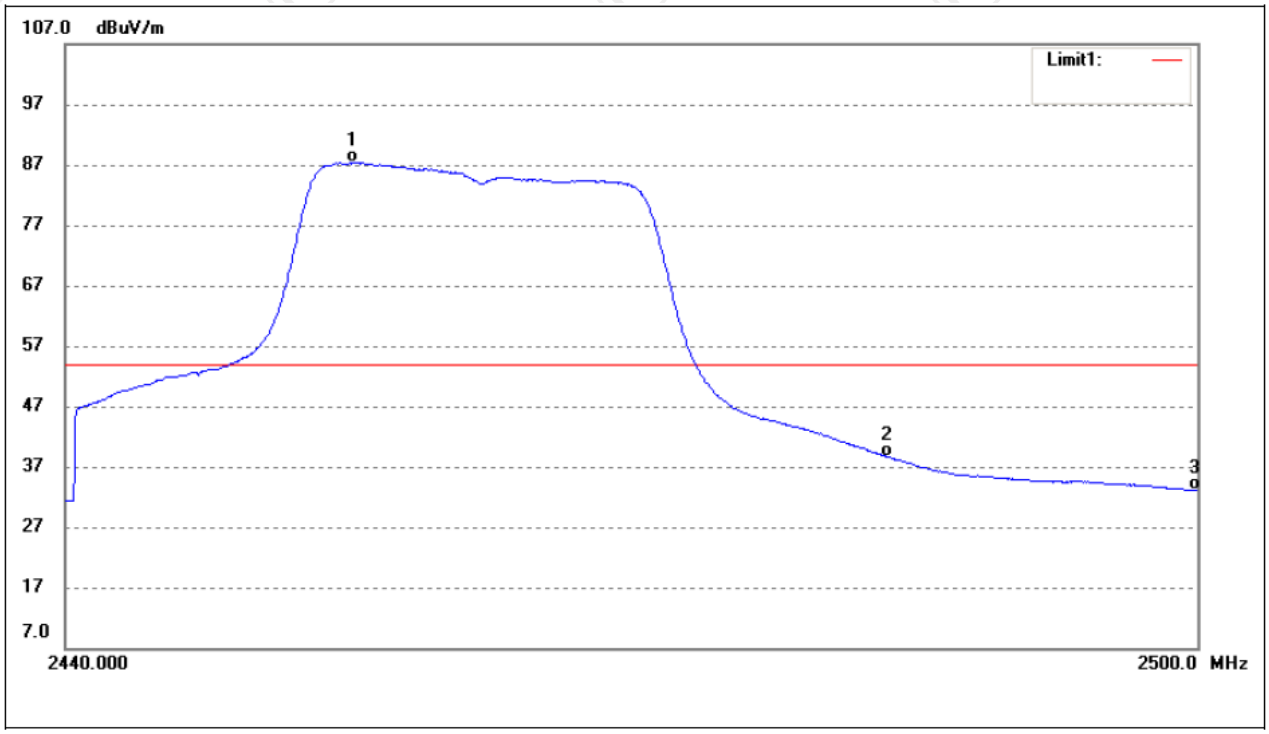
802.11n-HT20-Lowest Bandedge
Vertical (Worst case)



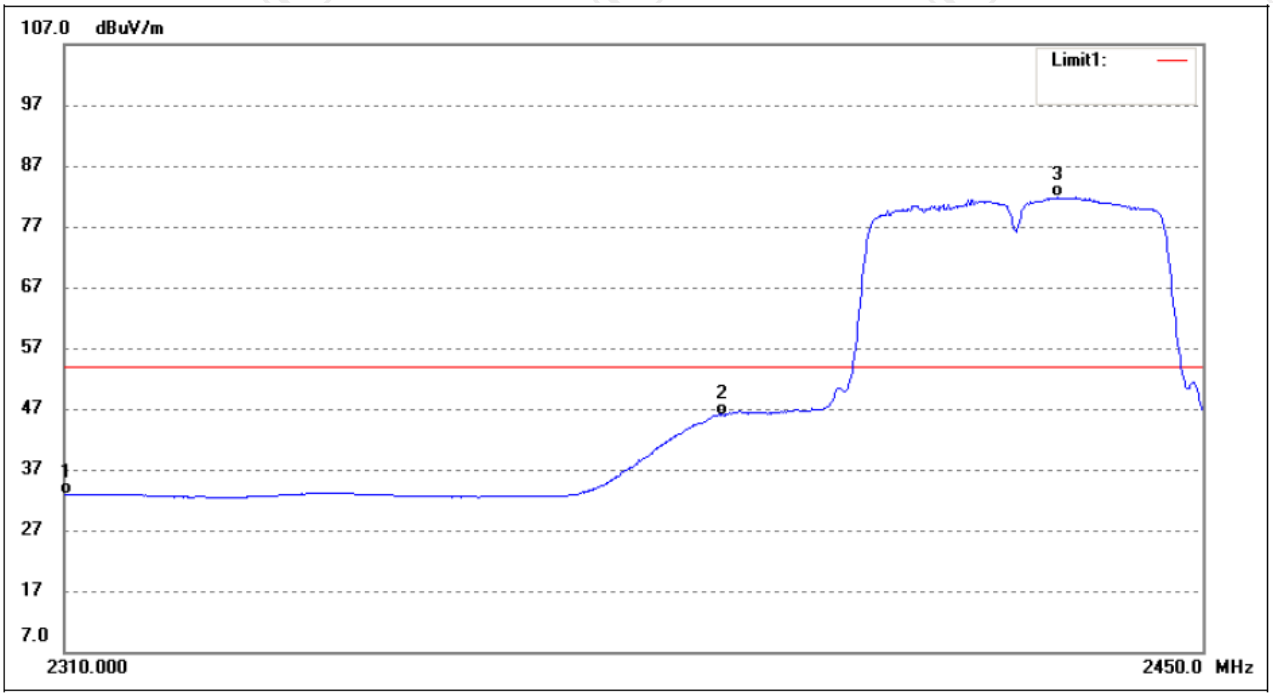
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.45	-6.38	32.07	54.00	-21.93	Average Detector
	2310.000	51.50	-6.38	45.12	74.00	-28.88	Peak Detector
2	2390.000	53.63	-7.26	46.37	54.00	-7.63	Average Detector
	2390.000	73.35	-7.26	66.09	74.00	-7.91	Peak Detector
3	2404.659	95.35	-7.42	87.93	/	/	Average Detector
	2418.949	105.37	-7.39	97.98	/	/	Peak Detector

802.11n-HT20-Highest Bandedge
Vertical (Worst case)



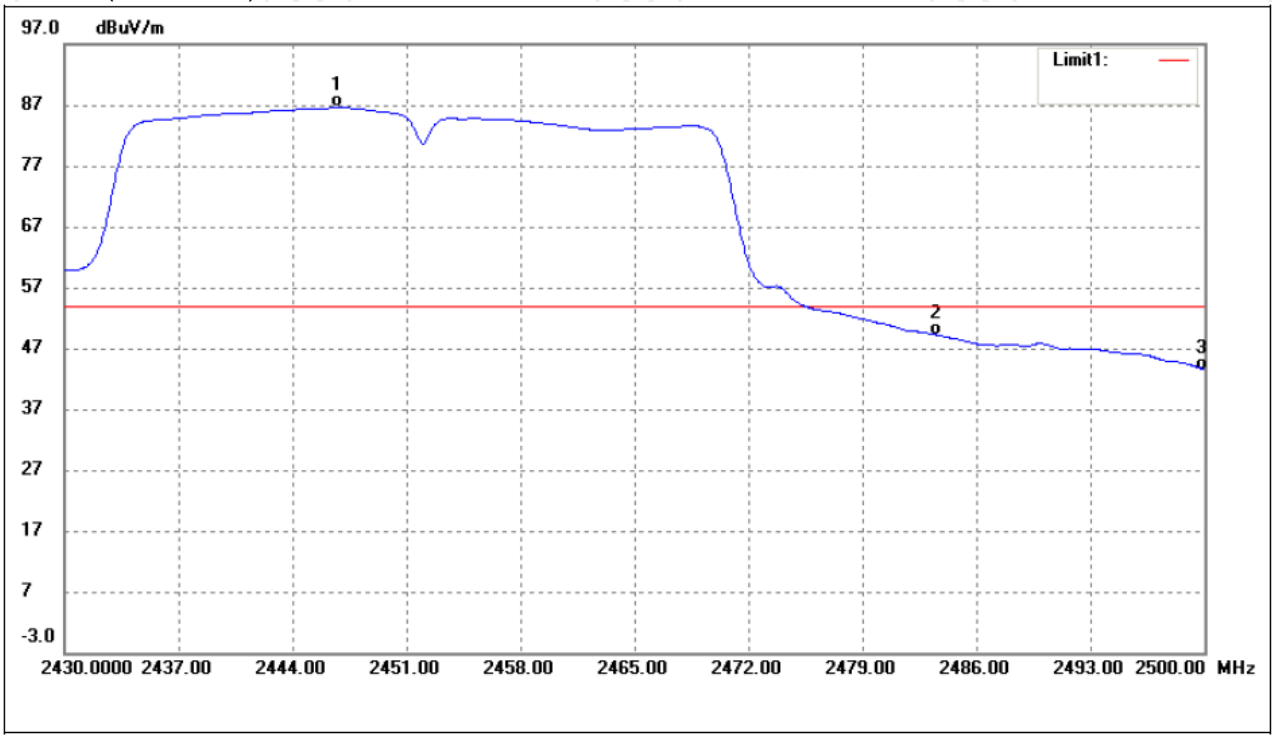
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2455.102	94.71	-7.33	87.38	/	/	Average Detector
	2456.594	104.87	-7.33	97.54	/	/	Peak Detector
2	2483.500	45.83	-7.28	38.55	54.00	-15.45	Average Detector
	2483.500	67.82	-7.28	60.54	74.00	-13.46	Peak Detector
3	2500.000	40.40	-7.25	33.15	54.00	-20.85	Average Detector
	2500.000	56.11	-7.25	48.86	74.00	-25.14	Peak Detector

802.11n-HT40-Lowest Bandedge
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	39.38	-6.38	33.00	54.00	-21.00	Average Detector
	2310.000	52.16	-6.38	45.78	74.00	-28.22	Peak Detector
2	2390.000	53.21	-7.26	45.95	54.00	-8.05	Average Detector
	2390.000	70.75	-7.26	63.49	74.00	-10.51	Peak Detector
3	2431.760	89.17	-7.37	81.80	/	/	Average Detector
	2433.907	101.52	-7.37	94.15	/	/	Peak Detector

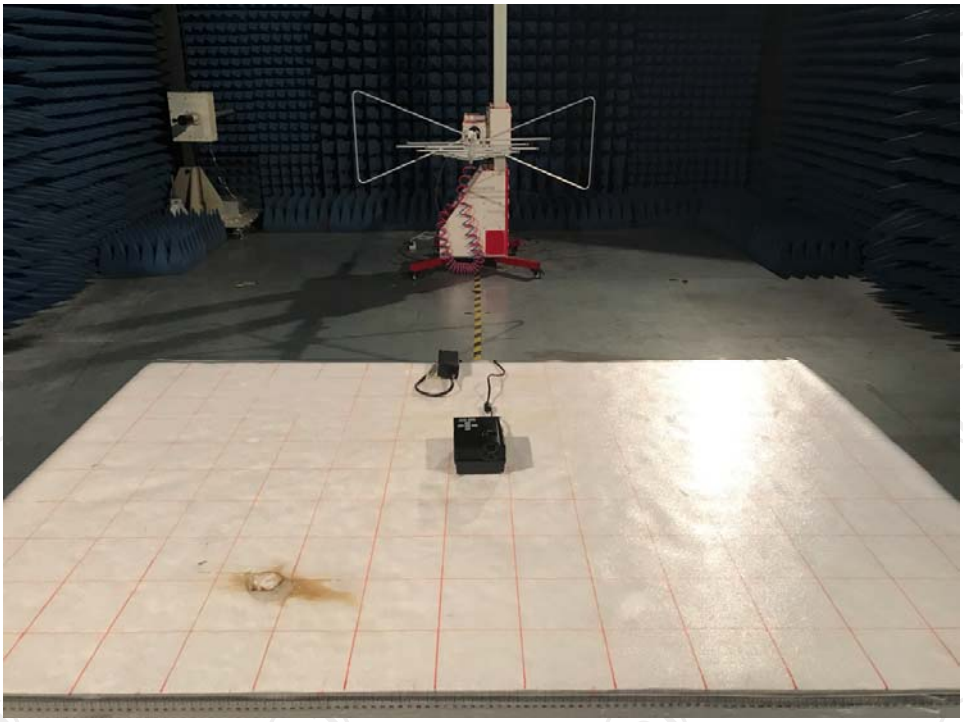
802.11n-HT40-Highest Bandedge
Vertical (Worst case)

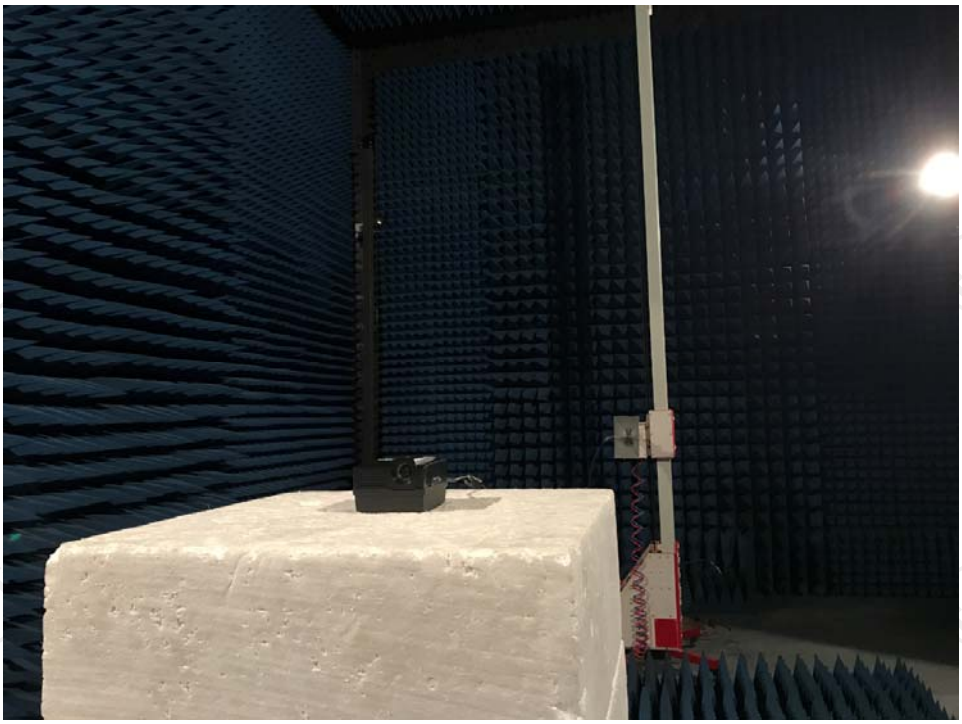


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2446.730	93.89	-7.35	86.54	/	/	Average Detector
	2448.270	100.95	-7.34	93.61	/	/	Peak Detector
2	2483.500	56.53	-7.28	49.25	54.00	-4.75	Average Detector
	2483.500	71.73	-7.28	64.45	74.00	-9.55	Peak Detector
3	2500.000	50.70	-7.25	43.45	54.00	-10.55	Average Detector
	2500.000	65.99	-7.25	58.74	74.00	-15.26	Peak Detector

Appendix A: Photographs of Test Setup

Product: Mini Projector
Model: Event1
Radiated Emission





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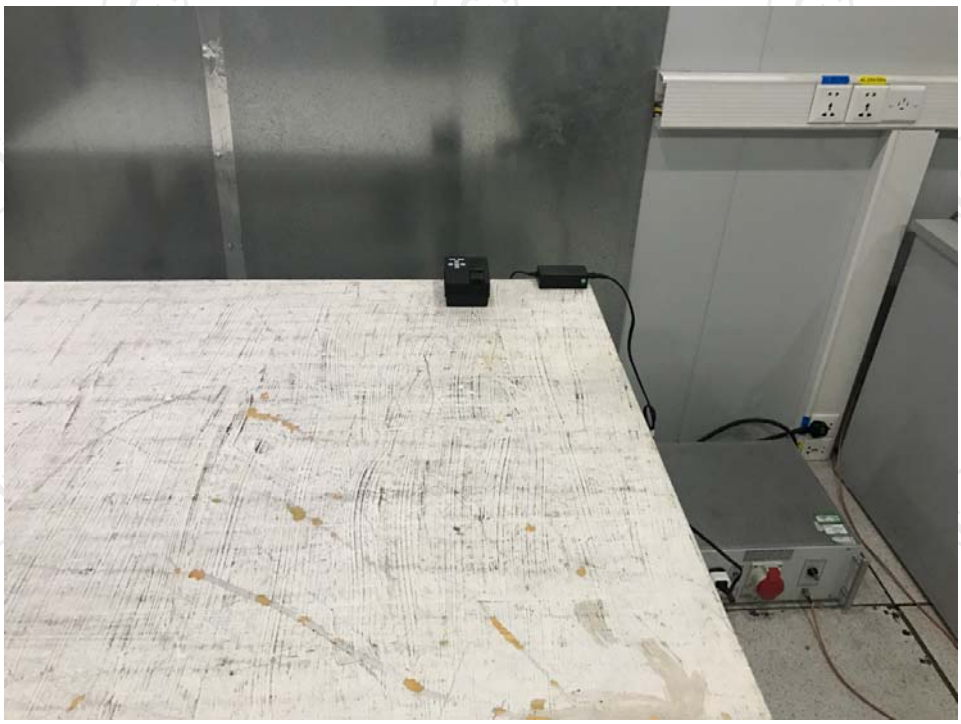
Conducted Emission



Appendix B: Photographs of EUT
Product: Mini Projector
Model: Event1
External Photos

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com


DLP
HDMI


DC IN
HDMI

Product: Mini Projector
Model: Event1
Internal Photos

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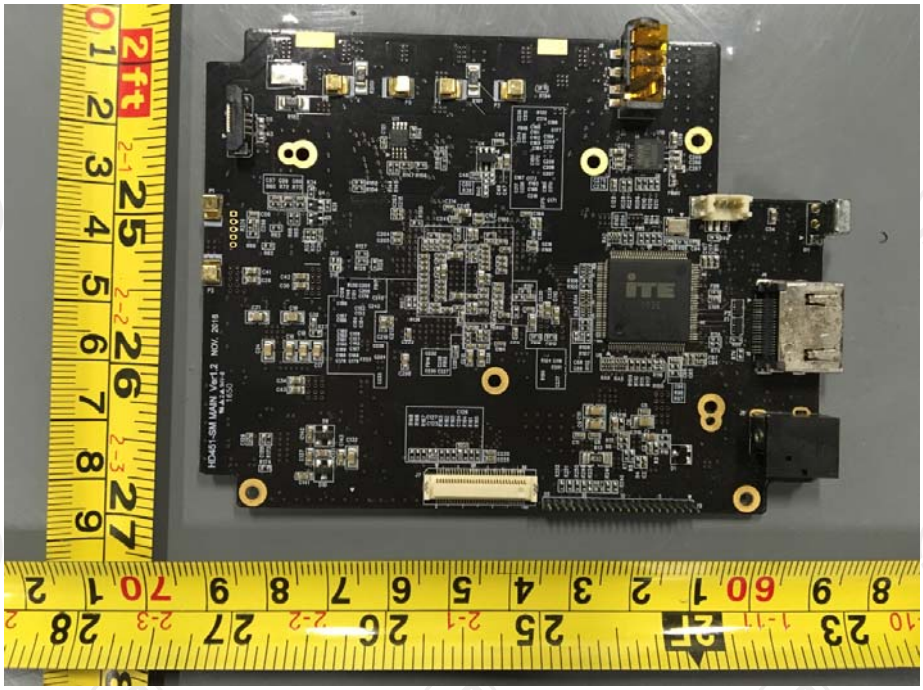

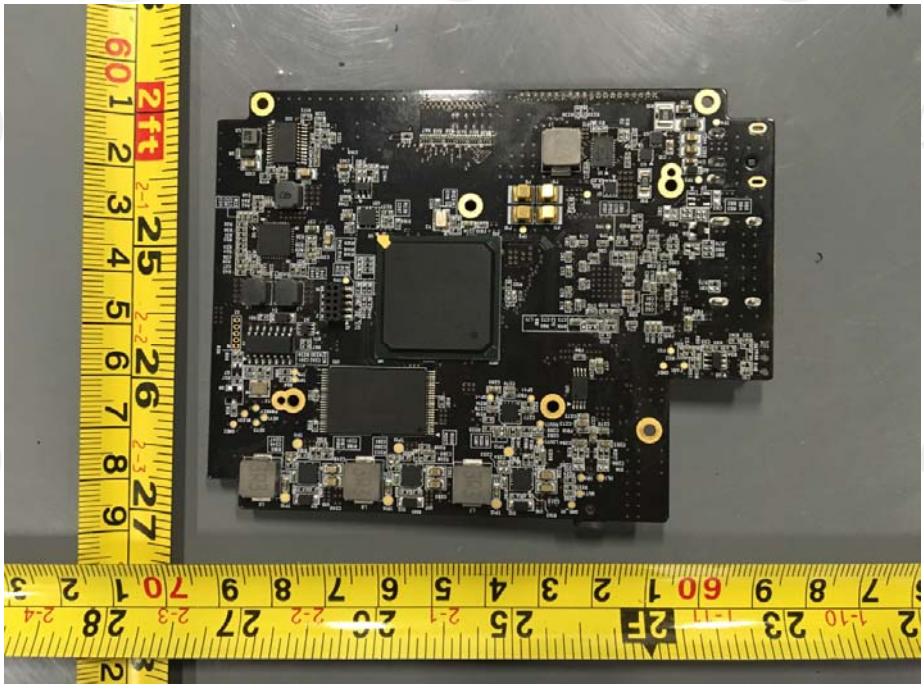

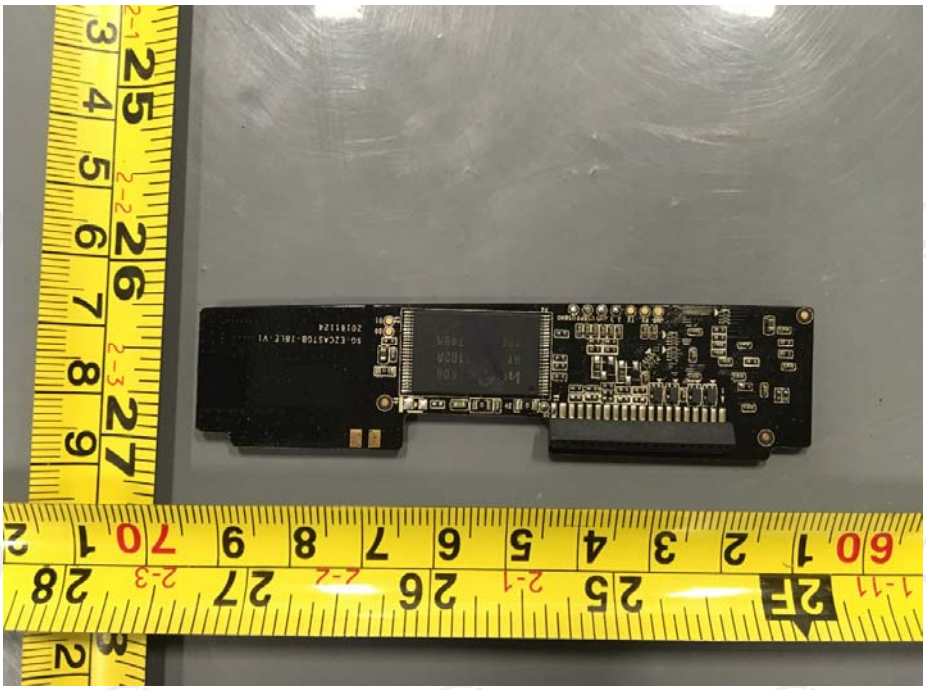

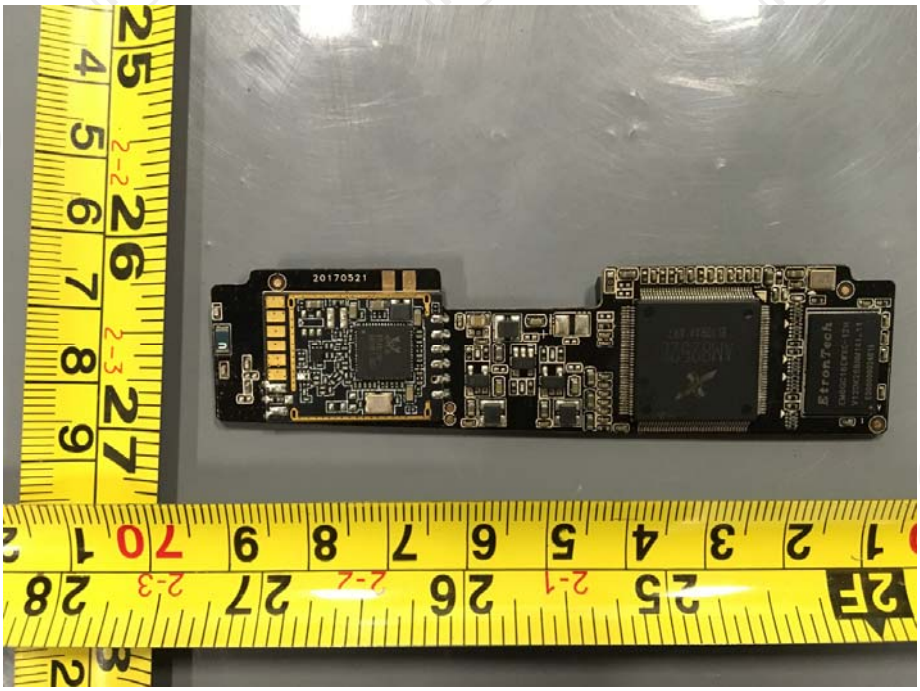

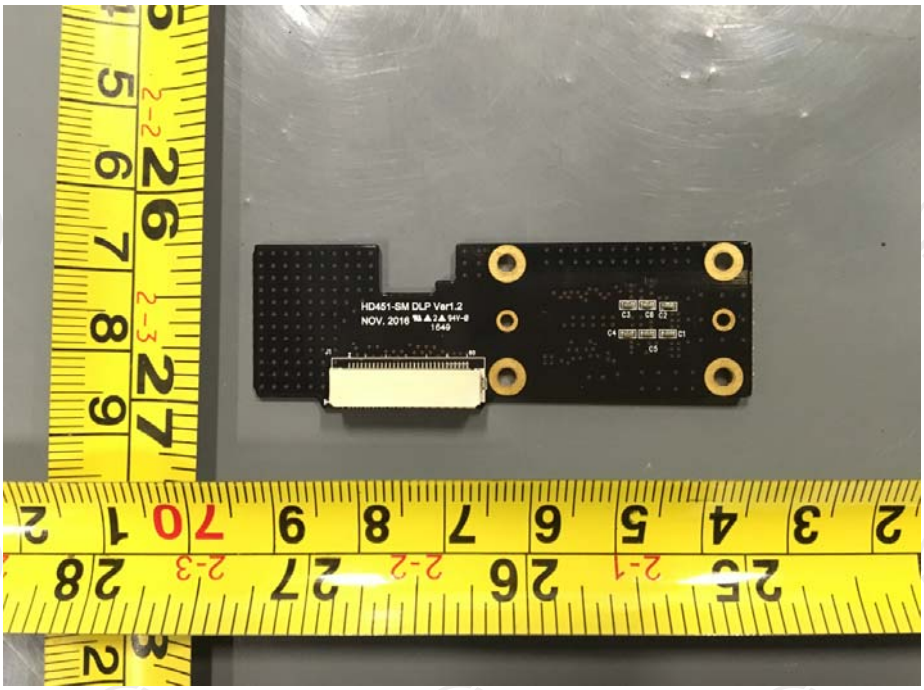
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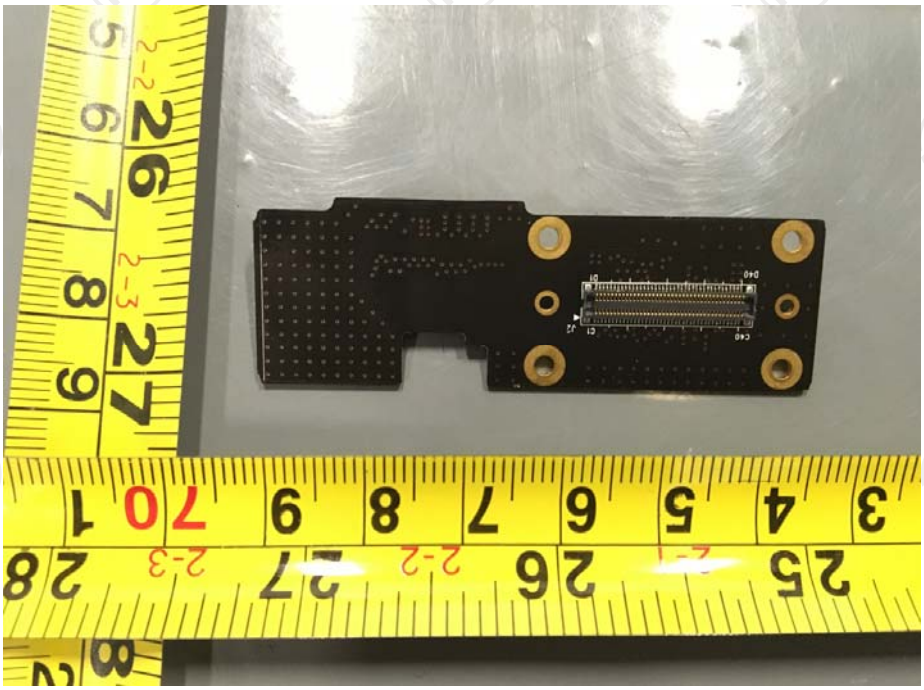
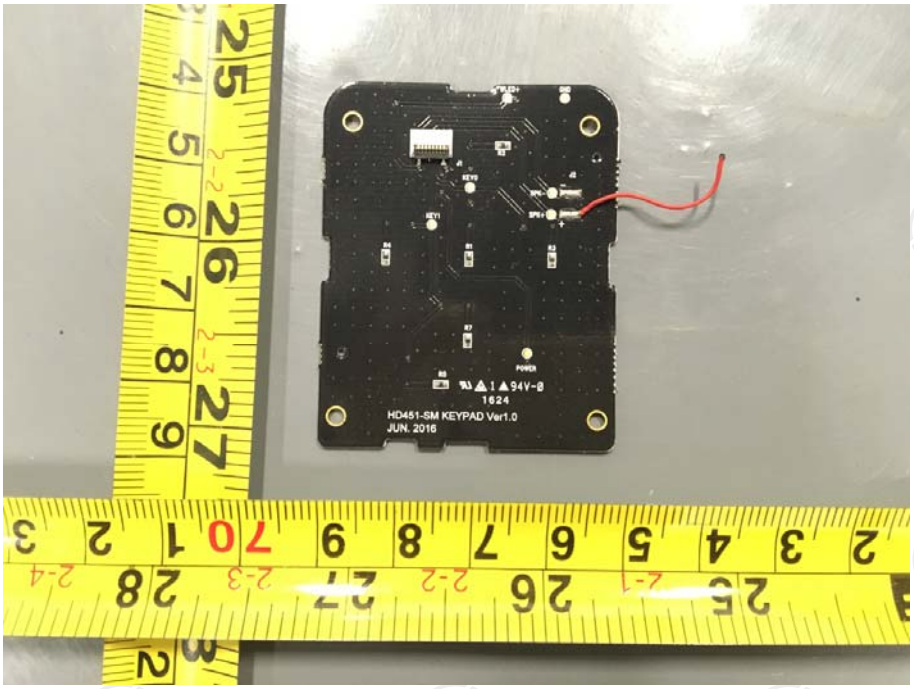
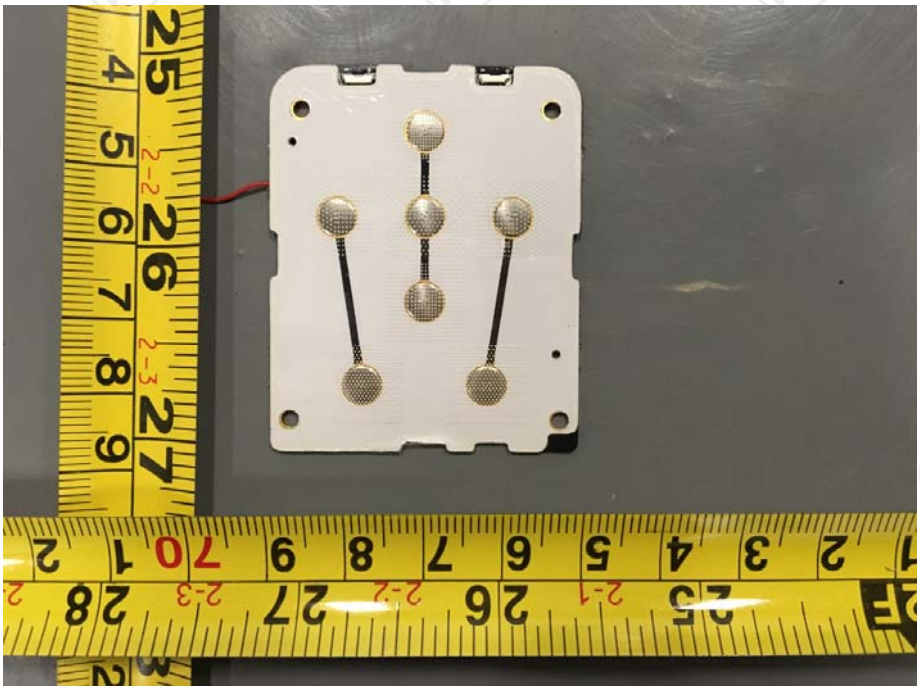
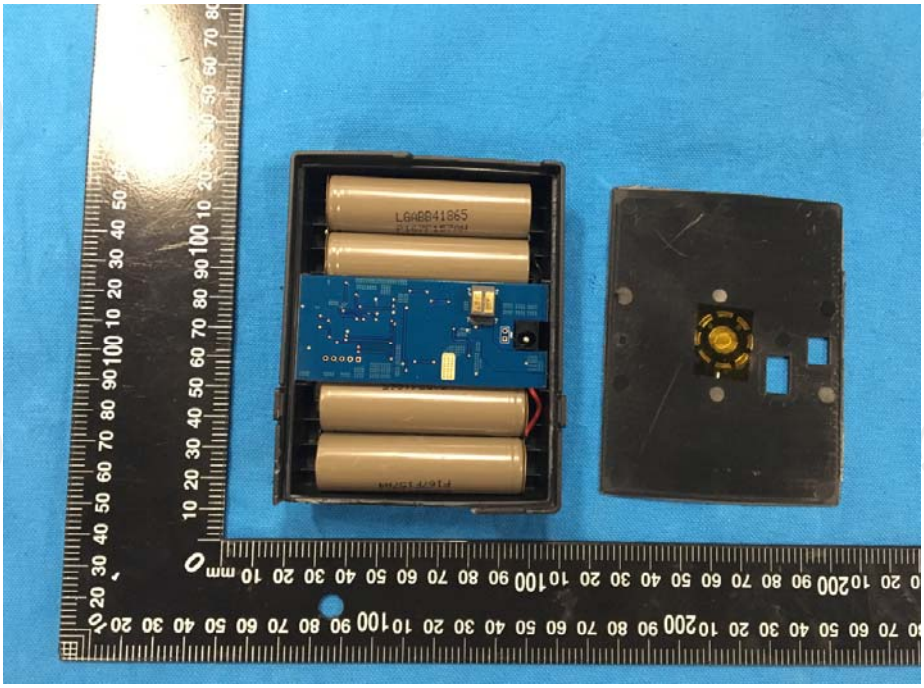
NOV. 2016




HD451-SM KEYPAD Ver1.0
JUN. 2016



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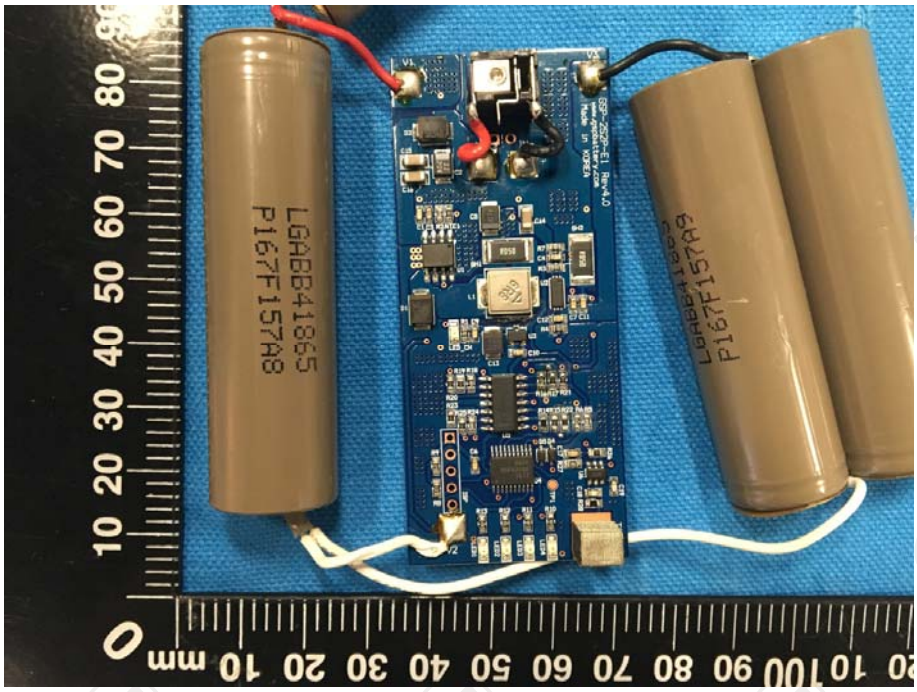

*****END OF REPORT*****

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