FCC TEST REPORT

FCC ID: 2AEW9JVS-HC301E

Product	:	HD Network Camera
Model Name	:	JVS-HC301E, JVS-HC301C, JVS-HC301, JVS-HD301E, JVS-HD301C, JVS-HF301E, JVS-HT301E, JVS-HE301E, HC301C, HC301E, HD301E, HD301C, HF301E, HT301E, HE301E
Brand	:	JOVISION &CloudSEE
Report No.	:	PTCDQ05170770202-FC01

Prepared for

JOVISION TECHNOLOGY CO.,LTD

Floor 11, Building D, In-hi tech Square, No.2008 Xinluo Street, Jinan, Shandong, China

Prepared by

Dongguan Precise Testing & Certification Corp., Ltd.

Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China

1 TEST RESULT CERTIFICATION

Applicant's name	:	JOVISION TECHNOLOGY CO.,LTD
Address	:	Floor 11, Building D, In-hi tech Square, No.2008 Xinluo Street, Jinan, Shandong, China
Manufacture's name	:	JOVISION TECHNOLOGY CO.,LTD
Address	:	Floor 11, Building D, In-hi tech Square, No.2008 Xinluo Street, Jinan, Shandong, China
Product name	:	HD Network Camera
Model name	:	JVS-HC301E, JVS-HC301C, JVS-HC301, JVS-HD301E, JVS-HD301C, JVS-HF301E, JVS-HT301E, JVS-HE301E, HC301C, HC301E, HD301E, HD301C, HF301E, HT301E, HE301E
Standards	:	FCC CFR47 Part 15 Section 15.247
Test procedure	:	ANSI C63.10:2013
Test Date	:	July 05, 2017 to July 10, 2017
Date of Issue	:	July 12, 2017
Test Result	:	Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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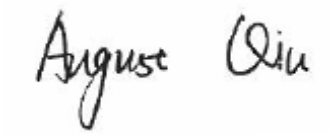
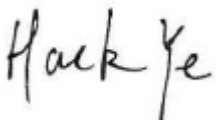
Testing Engineer



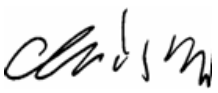
August Qiu

Technical Manager



Hack Ye

Authorized Signatory



Chris Du

Contents

2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Conducted Spurious Emission	15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Power Spectral Density	15.247(e)	PASS
Antenna Requirement	15.203	PASS
Remark: N/A: Not Applicable		

3 General Information

3.1 General Description of E.U.T.

Product Name	:	HD Network Camera
Model Name	:	JVS-HC301E, JVS-HC301C, JVS-HC301, JVS-HD301E, JVS-HD301C, JVS-HF301E, JVS-HT301E, JVS-HE301E, HC301C, HC301E, HD301E, HD301C, HF301E, HT301E, HE301E
Model Description	:	Only the model names and colors are different
Data Rate		802.11 b:1,2,5.5,11Mbps; 802.11 g:6,9,12,18,24,36,48,54Mbps; 802.11n(HT20):MCS0-MCS7; 802.11n(HT40):MCS0-MCS7; 802.11n(HT40):MCS8-MCS15;
Operating frequency	:	2412-2462MHz for 802.11b/g; 2412-2462MHz for 802.11n(HT20); 2422-2452MHz for 802.11n(HT40);
Number of Channels		11 channels for 802.11b/g; 11 channels for 802.11n(HT20); 7 channels for 802.11n(HT40);
Type of Modulation	:	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n;
Antenna installation:	:	Internal PCB Antenna
Antenna Gain:	:	2.79dBi
Power supply	:	For Adapter: Model: SUN-0500200 Input: AC 100-240V, 50/60Hz, 0.3A Max Output: DC 5V, 2.0A

3.2 Channel List

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11b: 1 Mbps; 802.11g: 6 Mbps; 802.11n (HT20): MCS0; 802.11n (HT40): MCS8) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11 b/g/n (HT20):

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

Frequency and Channel list for 802.11 n (HT40):

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

Test Frequency and Channel for 802.11 b/g/n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462

Test Frequency and channel for 802.11 n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	6	2437	9	2452

3.3 Test Site

Dongguan Precise Testing & Certification Corp., Ltd.

Building D,Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China, Dongguan, 523129

China

FCC Registration Number: 371540

IC Registration Number: 12191A-1

4 Equipment During Test

4.1 Equipments List

RF Conducted Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMC Analyzer (9k~26.5GHz)	Agilent	E4407B	MY45109572	Aug.04, 2017	Aug.03, 2018	1 year
2	EXA Signal Analyzer	Keysight	N9010A	MY50520207 526B25MPB W7X	Aug.04, 2017	Aug.03, 2018	1 year
3	EMI Test Receiver	R&S	ESCI	101155	July 15, 2017	July 14, 2018	1 year
4	Humidity Chamber	GF	GTH-225-40-1P	IAA061225	July 15, 2017	July 14, 2018	1 year
5	USB RF power sensor	DARE	RPR3006W	15I00041SNO 01	July 15, 2017	July 14, 2018	1 year
6	Antenna Connector	ARTHUR-YANG	2244-N1TG1	N/A	October 10, 2016	October 09, 2017	1 year
7	Coaxial Cable	CDS	79254	46107086	October 10, 2016	October 09, 2017	1 year

Remark: 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.

Radiated Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 15, 2017	July 14, 2018	1 year
2	Loop Antenna	Schwarzbeck	FMZB 1519	012	July 15, 2017	July 14, 2018	1 year
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3355	July 15, 2017	July 14, 2018	1 year
4	Amplifier	EM	EM-30180	060538	July 15, 2017	July 14, 2018	1 year
5	Horn Antenna	SCHWARZBECK	BBHA9120D	1246	July 15, 2017	July 14, 2018	1 year
6	Horn Antenna	SCHWARZBECK	BBHA9170D	1412	July 15, 2017	July 14, 2018	1 year
7	Coaxial Cable(below 1GHz)	LARGE	CALB1	-	July 15, 2017	July 14, 2018	1 year
8	Coaxial Cable(above 1GHz)	LARGE	CALB2	-	July 15, 2017	July 14, 2018	1 year

Conducted Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	R&S	ESCI	101155	July 15, 2017	July 14, 2018	1 year
2	LISN	SCHWARZBECK	NSLK 8128	8128-289	July 15, 2017	July 14, 2018	1 year
3	Cable	LARGE	RF300	-	July 15, 2017	July 14, 2018	1 year

4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB

5 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

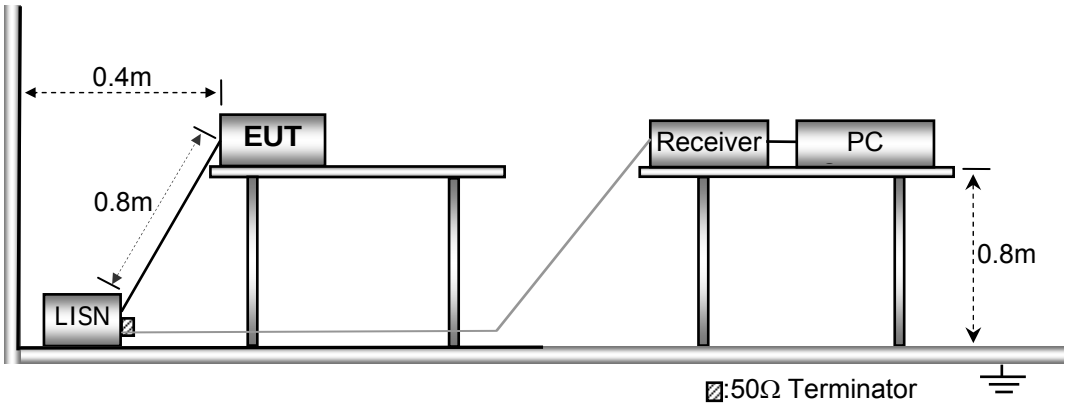
5.1 E.U.T. Operation

Operating Environment **:**

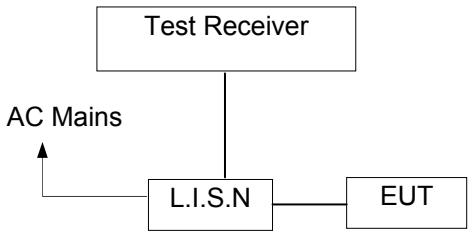
Temperature:	:	25.5 °C
Humidity:	:	51 % RH
Atmospheric Pressure:	:	101.2kPa
EUT Operation **:**	:	Refer to section 3.3

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.

2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:
1. The lower limit shall apply at the transition frequencies
2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

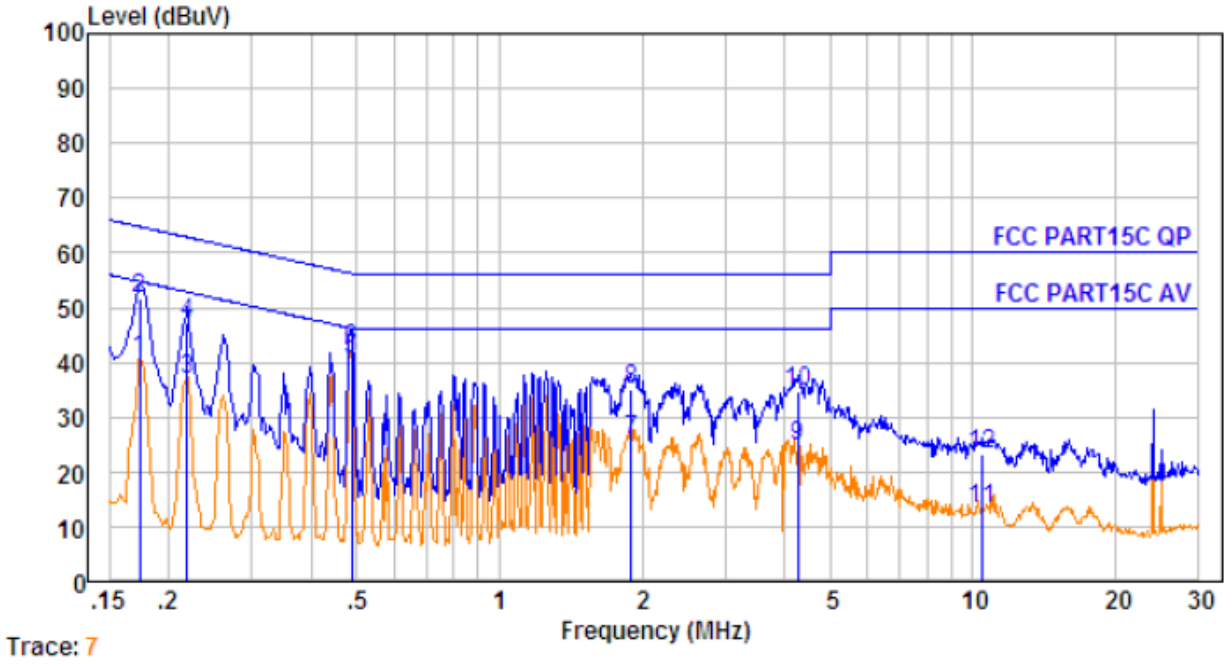
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

Pass.

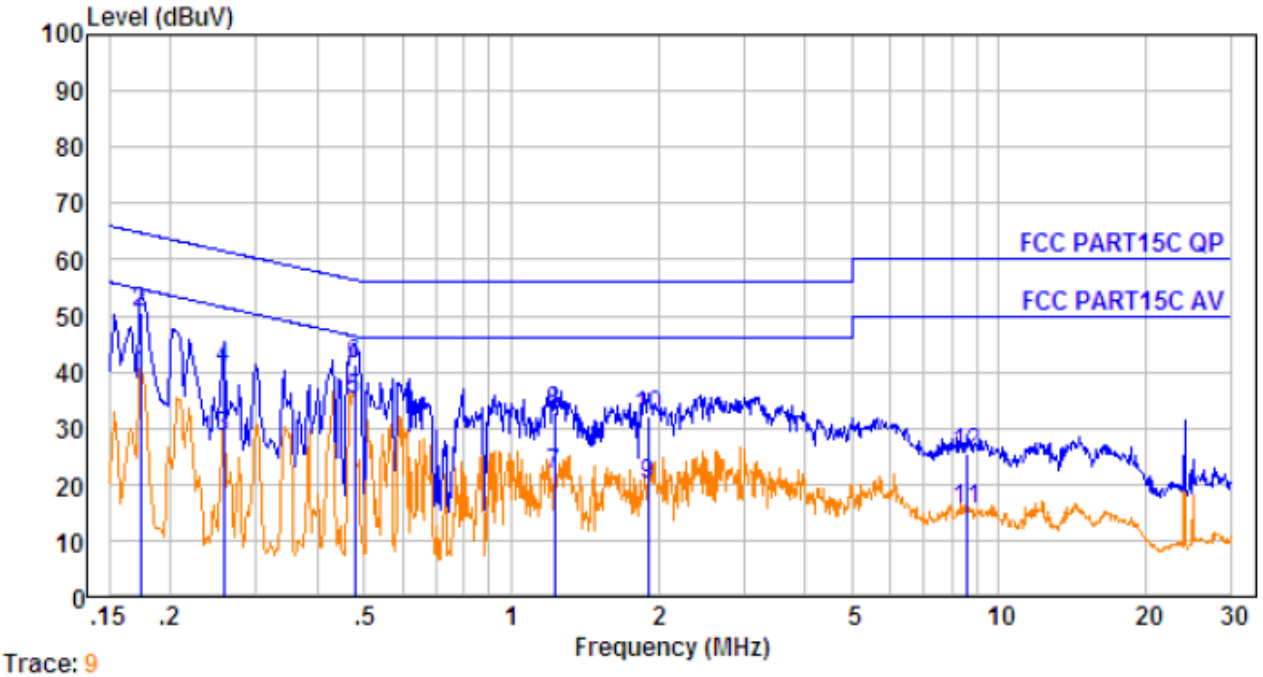
Please refer to the following pages.

Line-AC 120V/60Hz



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.174	10.60	0.60	29.54	40.74	54.77	-14.03	Average
2.	0.174	10.60	0.60	40.54	51.74	64.77	-13.03	QP
3.	0.219	10.61	0.60	25.87	37.08	52.88	-15.80	Average
4.	0.219	10.61	0.60	35.87	47.08	62.88	-15.80	QP
5.	0.486	10.64	0.60	29.37	40.61	46.23	-5.62	Average
6.	0.486	10.64	0.60	31.37	42.61	56.23	-13.62	QP
7.	1.898	10.70	0.60	14.65	25.95	46.00	-20.05	Average
8.	1.898	10.70	0.60	23.65	34.95	56.00	-21.05	QP
9.	4.269	10.73	0.60	13.42	24.75	46.00	-21.25	Average
10.	4.269	10.73	0.60	23.42	34.75	56.00	-21.25	QP
11.	10.508	10.76	0.60	2.01	13.37	50.00	-36.63	Average
12.	10.508	10.76	0.60	12.01	23.37	60.00	-36.63	QP

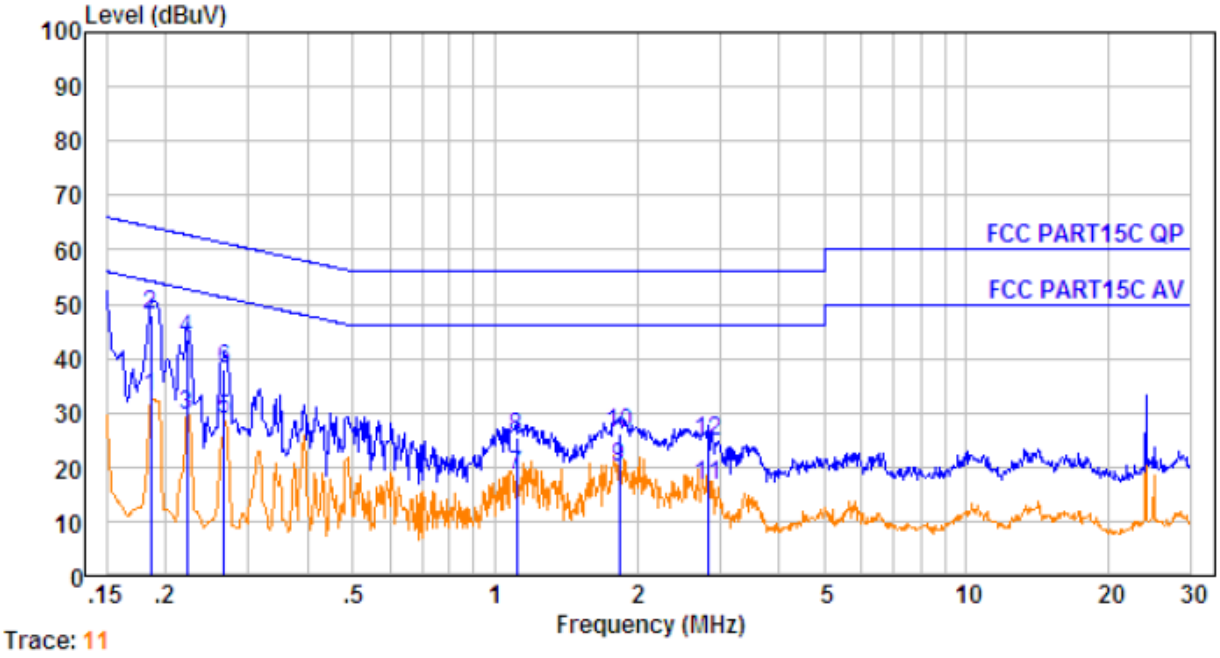
Neutral-AC 120V/60Hz



Trace: 9

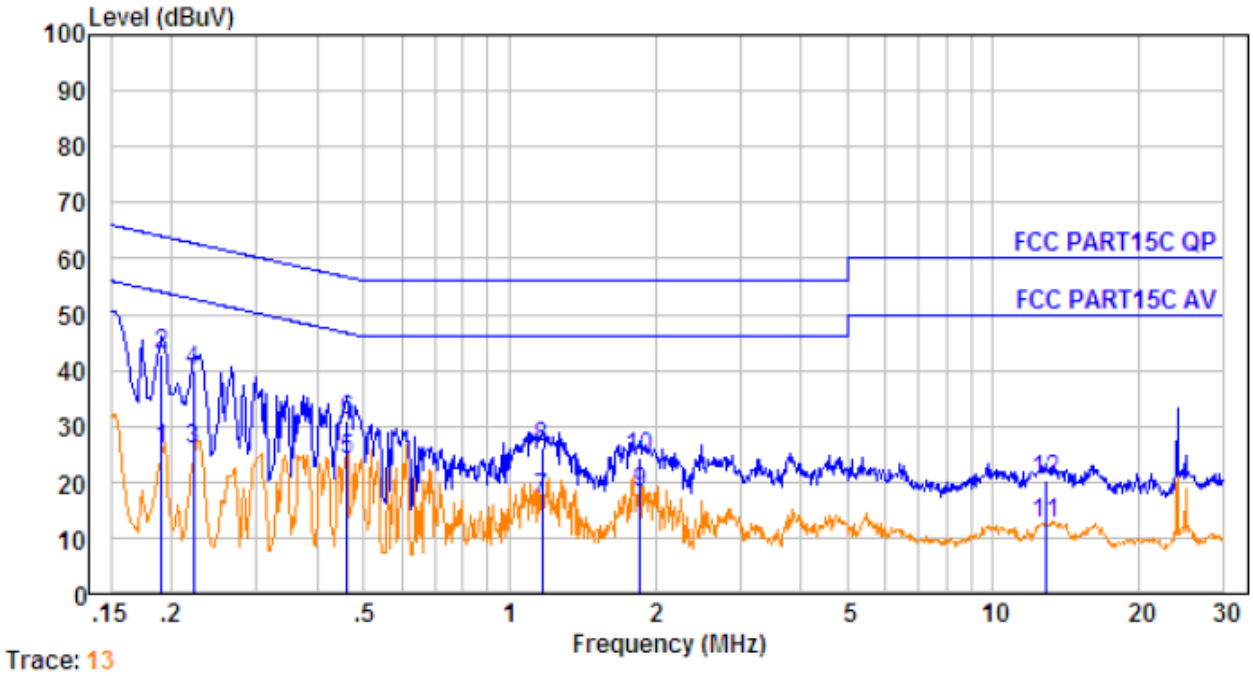
No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.174	10.60	0.60	28.46	39.66	54.77	-15.11	Average
2.	0.174	10.60	0.60	39.46	50.66	64.77	-14.11	QP
3.	0.258	10.62	0.60	17.31	28.53	51.51	-22.98	Average
4.	0.258	10.62	0.60	29.31	40.53	61.51	-20.98	QP
5.	0.479	10.64	0.60	23.92	35.16	46.36	-11.20	Average
6.	0.479	10.64	0.60	29.92	41.16	56.36	-15.20	QP
7.	1.229	10.68	0.60	10.45	21.73	46.00	-24.27	Average
8.	1.229	10.68	0.60	21.45	32.73	56.00	-23.27	QP
9.	1.908	10.70	0.60	8.72	20.02	46.00	-25.98	Average
10.	1.908	10.70	0.60	20.72	32.02	56.00	-23.98	QP
11.	8.592	10.75	0.60	4.25	15.60	50.00	-34.40	Average
12.	8.592	10.75	0.60	14.25	25.60	60.00	-34.40	QP

Line-AC 240V/60Hz



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.186	10.61	0.60	21.68	32.89	54.20	-21.31	Average
2.	0.186	10.61	0.60	36.68	47.89	64.20	-16.31	QP
3.	0.222	10.61	0.60	18.44	29.65	52.74	-23.09	Average
4.	0.222	10.61	0.60	32.44	43.65	62.74	-19.09	QP
5.	0.266	10.62	0.60	17.61	28.83	51.25	-22.42	Average
6.	0.266	10.62	0.60	26.61	37.83	61.25	-23.42	QP
7.	1.111	10.68	0.60	7.01	18.29	46.00	-27.71	Average
8.	1.111	10.68	0.60	14.01	25.29	56.00	-30.71	QP
9.	1.839	10.69	0.60	8.74	20.03	46.00	-25.97	Average
10.	1.839	10.69	0.60	14.74	26.03	56.00	-29.97	QP
11.	2.824	10.71	0.60	5.27	16.58	46.00	-29.42	Average
12.	2.824	10.71	0.60	13.27	24.58	56.00	-31.42	QP

Neutral-AC 240V/60Hz



Trace: 13

No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.190	10.61	0.60	14.74	25.95	54.02	-28.07	Average
2.	0.190	10.61	0.60	31.74	42.95	64.02	-21.07	QP
3.	0.222	10.61	0.60	14.67	25.88	52.74	-26.86	Average
4.	0.222	10.61	0.60	28.67	39.88	62.74	-22.86	QP
5.	0.461	10.64	0.60	12.84	24.08	46.67	-22.59	Average
6.	0.461	10.64	0.60	19.84	31.08	56.67	-25.59	QP
7.	1.166	10.68	0.60	5.83	17.11	46.00	-28.89	Average
8.	1.166	10.68	0.60	14.83	26.11	56.00	-29.89	QP
9.	1.858	10.70	0.60	6.95	18.25	46.00	-27.75	Average
10.	1.858	10.70	0.60	12.95	24.25	56.00	-31.75	QP
11.	12.852	10.77	0.60	1.05	12.42	50.00	-37.58	Average
12.	12.852	10.77	0.60	9.05	20.42	60.00	-39.58	QP

6 Radiated Spurious 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: : See the follow table

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	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment :

Temperature: : 23.5 °C

Humidity: : 51.1 % RH

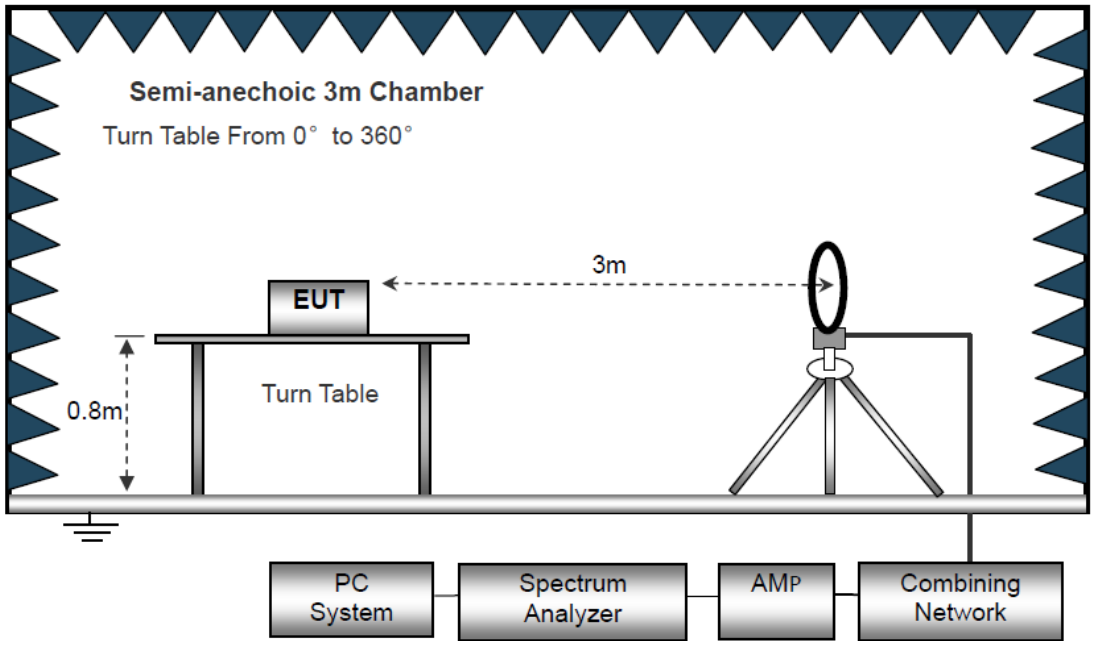
Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

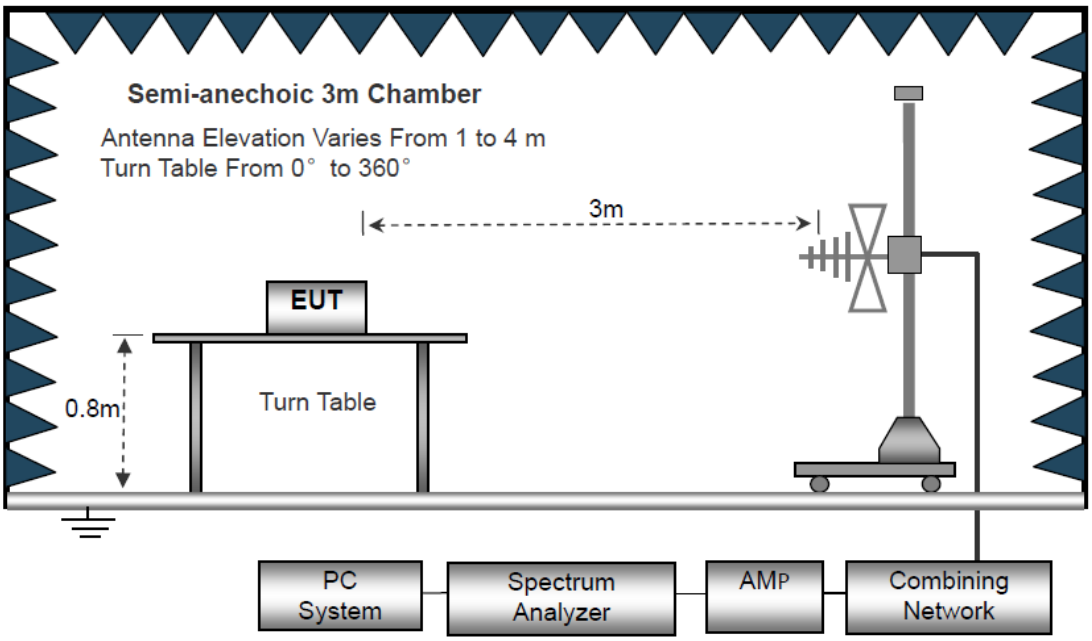
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

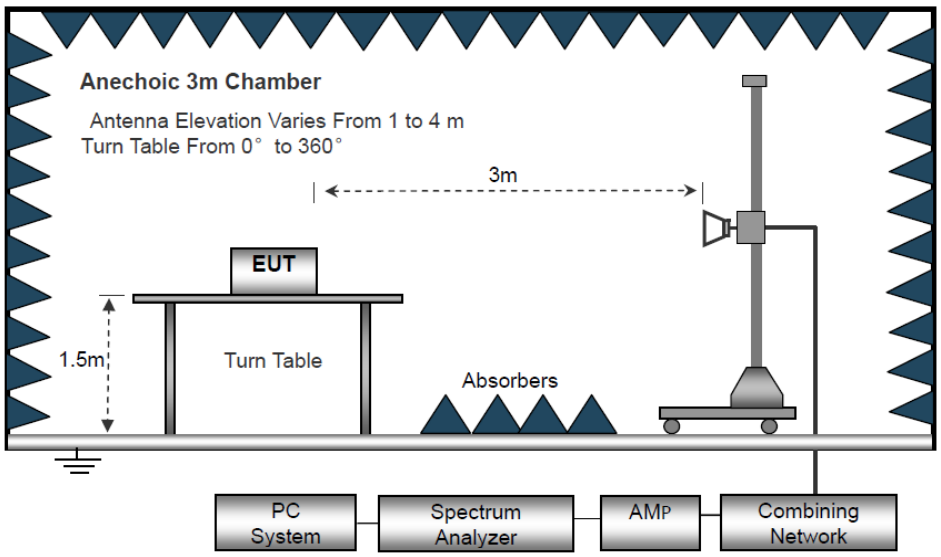
The test setup for emission measurement below 30MHz



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



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Below 30MHz			
IF Bandwidth	:	10kHz	
Resolution Bandwidth	:	10kHz	
Video Bandwidth	:	10kHz	
30MHz ~ 1GHz			
Detector	:	PK	QP
Resolution Bandwidth	:	100kHz	120kHz
Video Bandwidth	:	300kHz	300kHz
Above 1GHz			
Detector	:	PK	AV
Resolution Bandwidth	:	1MHz	1MHz
Video Bandwidth	:	3MHz	10Hz

6.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which 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. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

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 tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room

6.5 Summary of Test Results

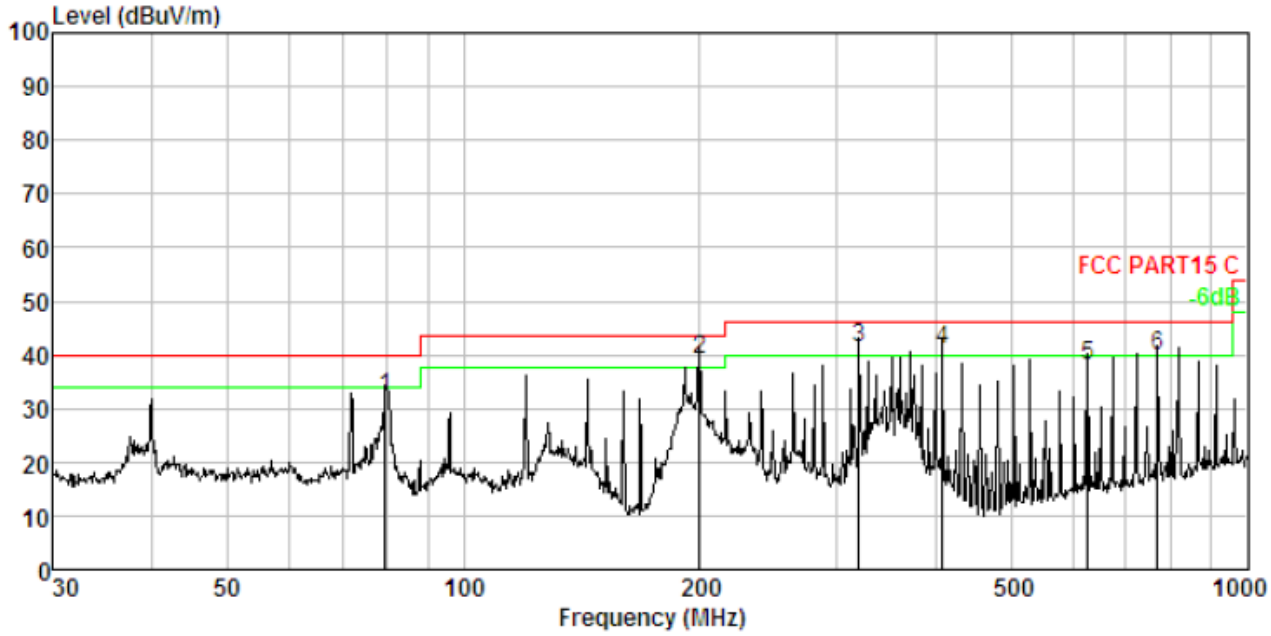
Test Frequency: Below 30MHz

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

Test Frequency: 30MHz ~ 1GHz

All applicable test modes have been tested and only the worst case (802.11b TX in middle channel) is recorded.

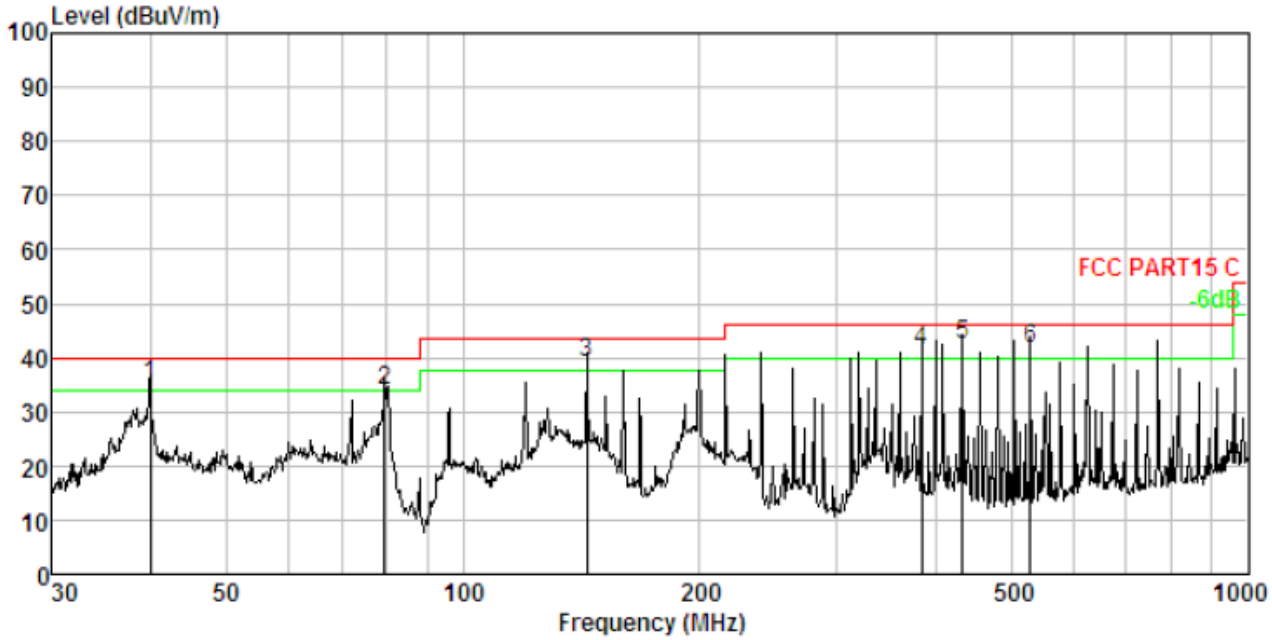
Antenna Polarization: Horizontal



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	79.521	1.94	8.87	51.70	30.31	32.20	40.00	-7.80	QP
2.	199.986	2.77	10.38	56.64	30.63	39.16	43.50	-4.34	QP
3.	319.937	3.20	13.65	55.09	30.79	41.15	46.00	-4.85	QP
4.	408.946	3.42	15.49	52.94	30.88	40.97	46.00	-5.03	QP
5.	625.078	3.80	19.22	46.12	31.03	38.11	46.00	-7.89	QP
6.	768.748	3.99	21.40	45.55	31.10	39.84	46.00	-6.16	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Antenna Polarization: Vertical



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	39.994	1.32	13.71	50.09	30.07	35.05	40.00	-4.95	QP
2.	79.521	1.94	8.87	53.53	30.31	34.03	40.00	-5.97	QP
3.	143.830	2.47	13.57	53.57	30.52	39.09	43.50	-4.41	QP
4.	383.932	3.36	14.97	53.71	30.86	41.18	46.00	-4.82	QP
5.	432.546	3.47	16.02	53.79	30.90	42.38	46.00	-3.62	QP
6.	528.246	3.65	17.48	51.58	30.97	41.74	46.00	-4.26	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Above 1000MHz:

802.11b Low Channel (2412MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	30.22	AV	V	28.53	5.16	27.46	36.45	54	-17.55
4824	34.15	AV	H	28.53	5.16	27.46	40.38	54	-13.62
4824	36.05	PK	V	28.53	5.16	27.46	42.28	74	-31.72
4824	35.04	PK	H	28.53	5.16	27.46	41.27	74	-32.73
16884	26.92	AV	V	32.04	6.08	26.22	38.82	54	-15.18
16884	28.42	AV	H	32.04	6.08	26.22	40.32	54	-13.68
16884	31.25	PK	V	32.04	6.08	26.22	43.15	74	-30.85
16884	32.06	PK	H	32.04	6.08	26.22	43.96	74	-30.04

802.11b Middle Channel (2437MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	33.42	AV	V	27.49	5.69	27.43	39.17	54	-14.83
4874	32.04	AV	H	27.49	5.69	27.43	37.79	54	-16.21
4874	31.24	PK	V	27.49	5.69	27.43	36.99	74	-37.01
4874	30.54	PK	H	27.49	5.69	27.43	36.29	74	-37.71
17059	26.55	AV	V	30.55	8.44	32.59	32.95	54	-21.05
17059	27.41	AV	H	30.55	8.44	32.59	33.81	54	-20.19
17059	30.26	PK	V	30.55	8.44	32.59	36.66	74	-37.34
17059	31.2	PK	H	30.55	8.44	32.59	37.6	74	-36.4

802.11b High Channel (2462MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	29.55	AV	V	26.75	4.88	23.66	37.52	54	-16.48
4924	30.49	AV	H	26.75	4.88	23.66	38.46	54	-15.54
4924	32.15	PK	V	26.75	4.88	23.66	40.12	74	-33.88
4924	33.46	PK	H	26.75	4.88	23.66	41.43	74	-32.57
17234	30.26	AV	V	34.16	6.28	29.46	41.24	54	-12.76
17234	29.45	AV	H	34.16	6.28	29.46	40.43	54	-13.57
17234	32.15	PK	V	34.16	6.28	29.46	43.13	74	-30.87
17234	33.26	PK	H	34.16	6.28	29.46	44.24	74	-29.76

802.11g Low Channel (2412MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	33.22	AV	V	27.46	6.43	26.86	40.25	54	-13.75
4824	32.41	AV	H	27.46	6.43	26.86	39.44	54	-14.56
4824	35.06	PK	V	27.46	6.43	26.86	42.09	74	-31.91
4824	34.29	PK	H	27.46	6.43	26.86	41.32	74	-32.68
16884	29.56	AV	V	33.22	7.86	30.49	40.15	54	-13.85
16884	28.46	AV	H	33.22	7.86	30.49	39.05	54	-14.95
16884	27.26	PK	V	33.22	7.86	30.49	37.85	74	-36.15
16884	31.04	PK	H	33.22	7.86	30.49	41.63	74	-32.37

802.11g Middle Channel (2437MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	33.22	AV	V	27.42	6.73	26	41.37	54	-12.63
4874	32.15	AV	H	27.42	6.73	26	40.3	54	-13.7
4874	30.66	PK	V	27.42	6.73	26	38.81	74	-35.19
4874	34.26	PK	H	27.42	6.73	26	42.41	74	-31.59
17059	36.26	AV	V	29.86	9.43	30.76	44.79	54	-9.21
17059	35.15	AV	H	29.86	9.43	30.76	43.68	54	-10.32
17059	34.08	PK	V	29.86	9.43	30.76	42.61	74	-31.39
17059	32.69	PK	H	29.86	9.43	30.76	41.22	74	-32.78

802.11g High Channel (2462MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	30.55	AV	V	27.86	5.76	22.75	41.42	54	-12.58
4924	31.72	AV	H	27.86	5.76	22.75	42.59	54	-11.41
4924	33.29	PK	V	27.86	5.76	22.75	44.16	74	-29.84
4924	35.05	PK	H	27.86	5.76	22.75	45.92	74	-28.08
17234	32.49	AV	V	33.04	8.43	33.29	40.67	54	-13.33
17234	30.69	AV	H	33.04	8.43	33.29	38.87	54	-15.13
17234	32.54	PK	V	33.04	8.43	33.29	40.72	74	-33.28
17234	36.29	PK	H	33.04	8.43	33.29	44.47	74	-29.53

802.11n-HT 20 Low Channel (2412MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	32.05	AV	V	29.86	8.46	24.26	46.11	54	-7.89
4824	31.46	AV	H	29.86	8.46	24.26	45.52	54	-8.48
4824	29.55	PK	V	29.86	8.46	24.26	43.61	74	-30.39
4824	33.46	PK	H	29.86	8.46	24.26	47.52	74	-26.48
16884	32.26	AV	V	35.69	10.26	33.64	44.57	54	-9.43
16884	30.58	AV	H	35.69	10.26	33.64	42.89	54	-11.11
16884	29.69	PK	V	35.69	10.26	33.64	42	74	-32
16884	34.16	PK	H	35.69	10.26	33.64	46.47	74	-27.53

802.11n-HT20 Middle Channel (2437MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	36.25	AV	V	25.49	8.63	26.33	44.04	54	-9.96
4874	35.04	AV	H	25.49	8.63	26.33	42.83	54	-11.17
4874	34.65	PK	V	25.49	8.63	26.33	42.44	74	-31.56
4874	33.16	PK	H	25.49	8.63	26.33	40.95	74	-33.05
17059	34.05	AV	V	27.42	6.03	31.24	36.26	54	-17.74
17059	36.29	AV	H	27.42	6.03	31.24	38.5	54	-15.5
17059	35.24	PK	V	27.42	6.03	31.24	37.45	74	-36.55
17059	33.54	PK	H	27.42	6.03	31.24	35.75	74	-38.25

802.11n-HT20 High Channel (2462MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	31.25	AV	V	25.48	6.86	21.46	42.13	54	-11.87
4924	30.22	AV	H	25.48	6.86	21.46	41.1	54	-12.9
4924	33.29	PK	V	25.48	6.86	21.46	44.17	74	-29.83
4924	34.18	PK	H	25.48	6.86	21.46	45.06	74	-28.94
17234	29.56	AV	V	32.36	10.24	34.65	37.51	54	-16.49
17234	30.59	AV	H	32.36	10.24	34.65	38.54	54	-15.46
17234	31.24	PK	V	32.36	10.24	34.65	39.19	74	-34.81
17234	35.66	PK	H	32.36	10.24	34.65	43.61	74	-30.39

802.11n-HT40 Low Channel (2422MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4844	31.04	AV	V	29.66	8.43	24.15	44.98	54	-9.02
4844	30.43	AV	H	29.66	8.43	24.15	44.37	54	-9.63
4844	32.65	PK	V	29.66	8.43	24.15	46.59	74	-27.41
4844	32.46	PK	H	29.66	8.43	24.15	46.4	74	-27.6
16954	29.6	AV	V	32.04	9.6	32.05	39.19	54	-14.81
16954	30.24	AV	H	32.04	9.6	32.05	39.83	54	-14.17
16954	29.43	PK	V	32.04	9.6	32.05	39.02	74	-34.98
16954	32.69	PK	H	32.04	9.6	32.05	42.28	74	-31.72

802.11n-HT40 Middle Channel (2437MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	33.22	AV	V	23.66	7.62	24.15	40.35	54	-13.65
4874	32.15	AV	H	23.66	7.62	24.15	39.28	54	-14.72
4874	30.29	PK	V	23.66	7.62	24.15	37.42	74	-36.58
4874	34.26	PK	H	23.66	7.62	24.15	41.39	74	-32.61
17059	35.04	AV	V	24.05	8.96	30.22	37.83	54	-16.17
17059	32.56	AV	H	24.05	8.96	30.22	35.35	54	-18.65
17059	34.92	PK	V	24.05	8.96	30.22	37.71	74	-36.29
17059	33.26	PK	H	24.05	8.96	30.22	36.05	74	-37.95

802.11n-HT40 High Channel (2452MHz)

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4904	30.33	AV	V	24.05	8.42	20	42.8	54	-11.2
4904	29.42	AV	H	24.05	8.42	20	41.89	54	-12.11
4904	31.22	PK	V	24.05	8.42	20	43.69	74	-30.31
4904	33.69	PK	H	24.05	8.42	20	46.16	74	-27.84
17164	30.58	AV	V	33.66	11.62	32.04	43.82	54	-10.18
17164	31.26	AV	H	33.66	11.62	32.04	44.5	54	-9.5
17164	27.45	PK	V	33.66	11.62	32.04	40.69	74	-33.31
17164	29.66	PK	H	33.66	11.62	32.04	42.9	74	-31.1

Note: 1. The testing has been conformed to 10*2480MHz=24800MHz.

2. All other emissions more than 30dB below the limit.

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit

7 Conducted Spurious Emission

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	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	:	Refer to section 3.3

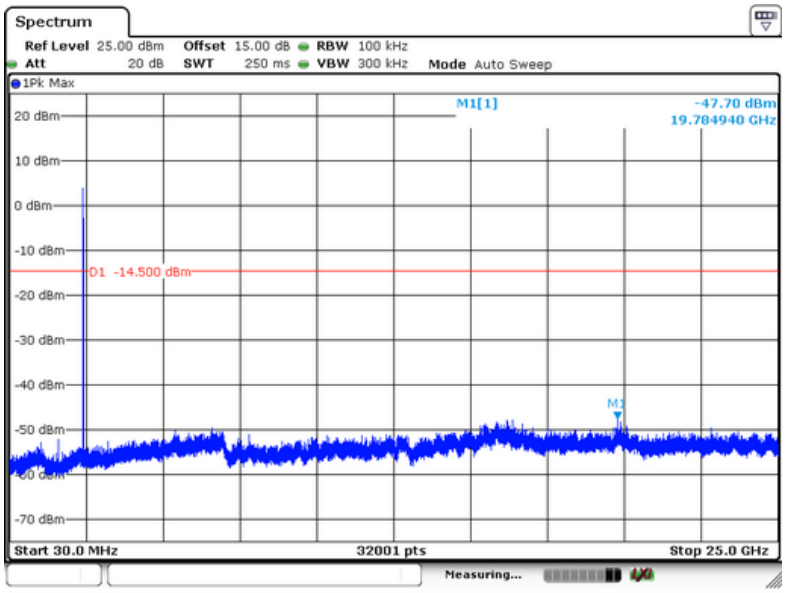
7.1 Test Procedure

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, Sweep = auto
Detector function = peak, Trace = max hold

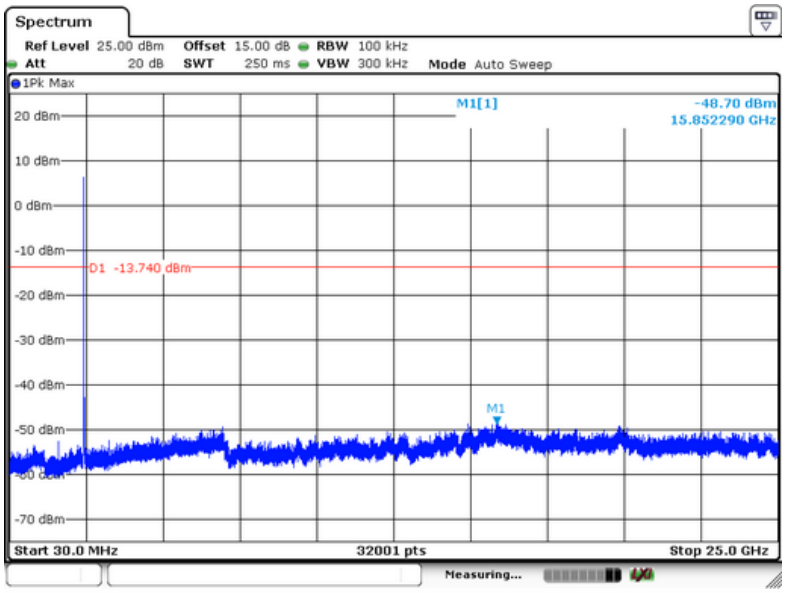
7.2 Test Result

802.11 b

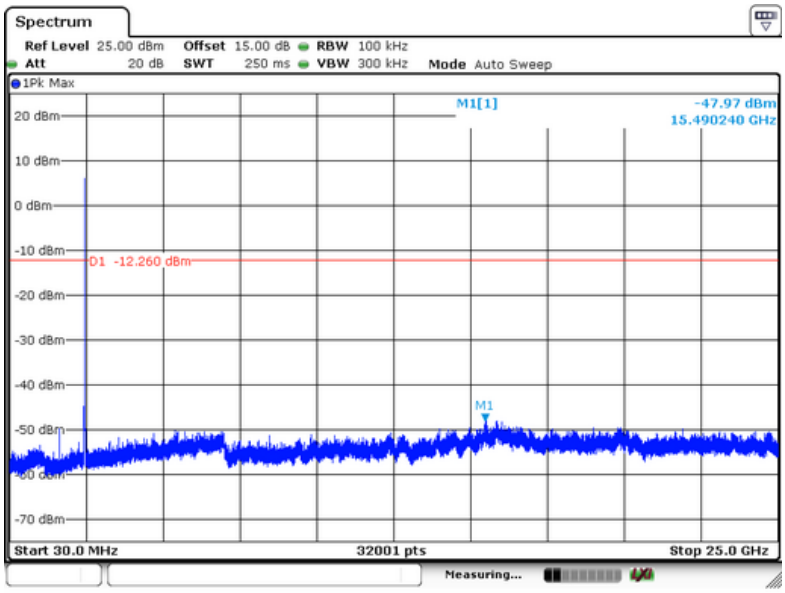
Low Channel



Middle Channel

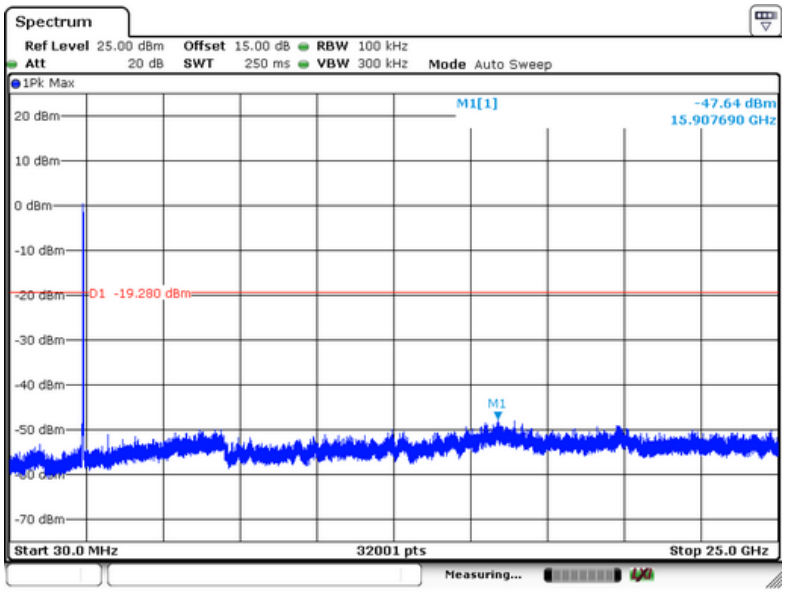


High Channel

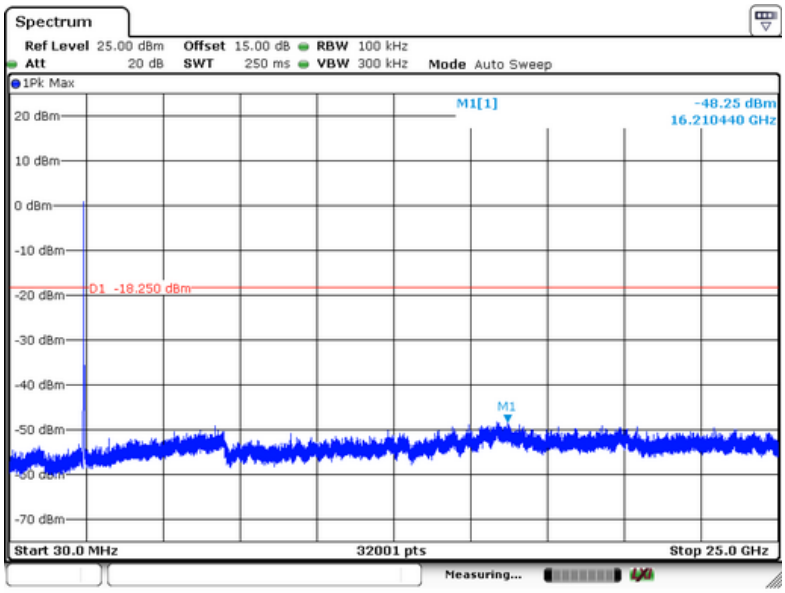


802.11g

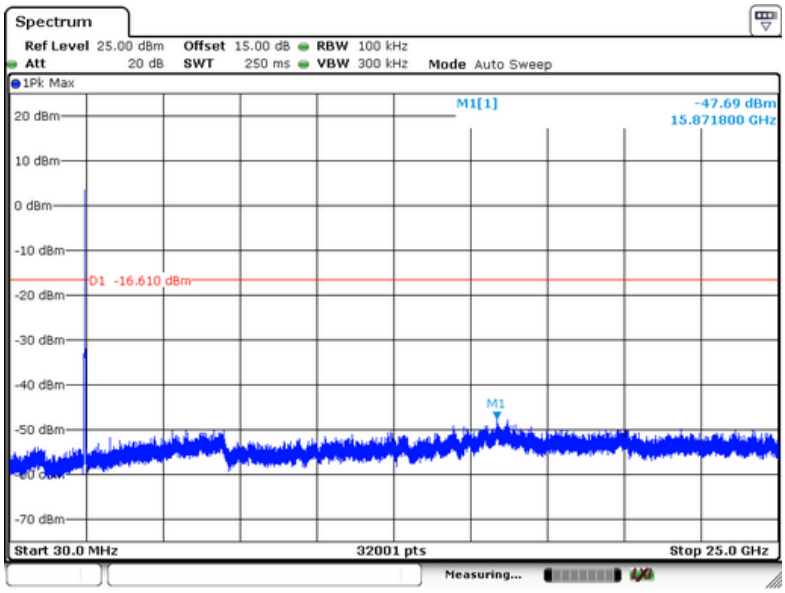
Low Channel



Middle Channel

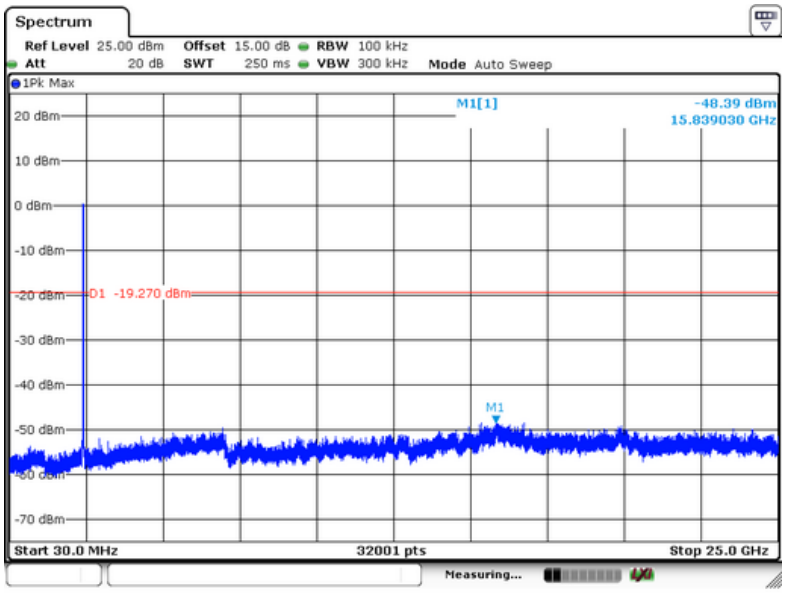


High Channel

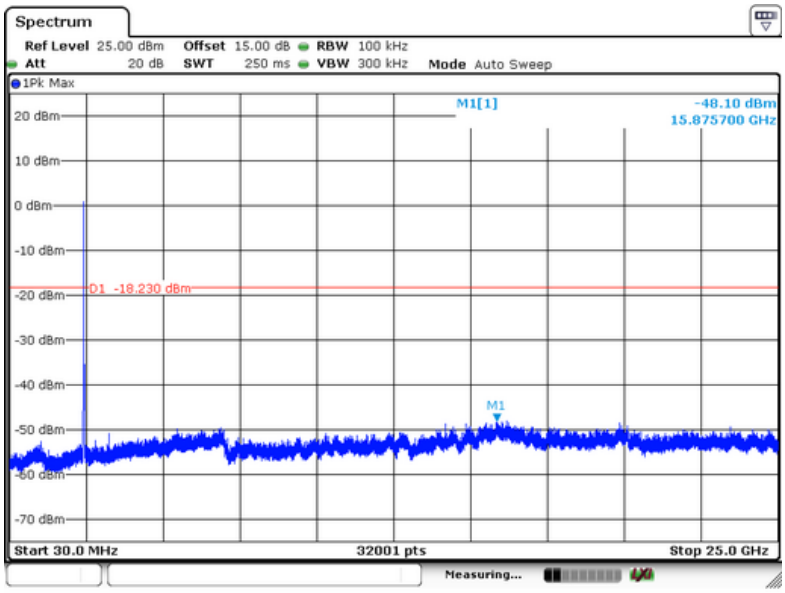


802.11n-HT20

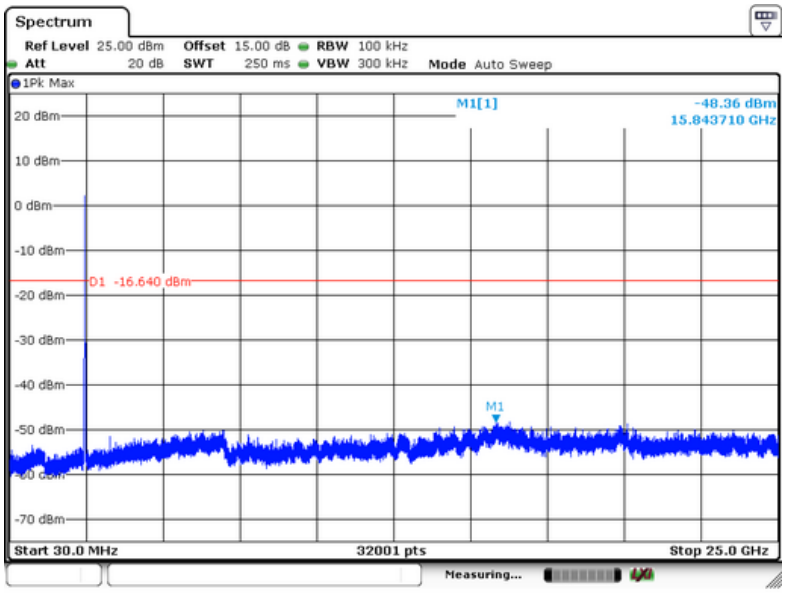
Low Channel



Middle Channel

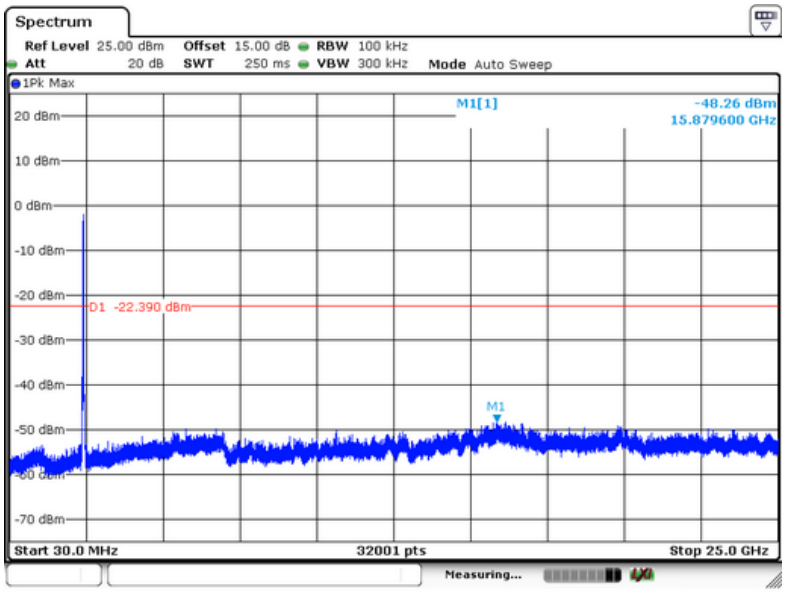


High Channel

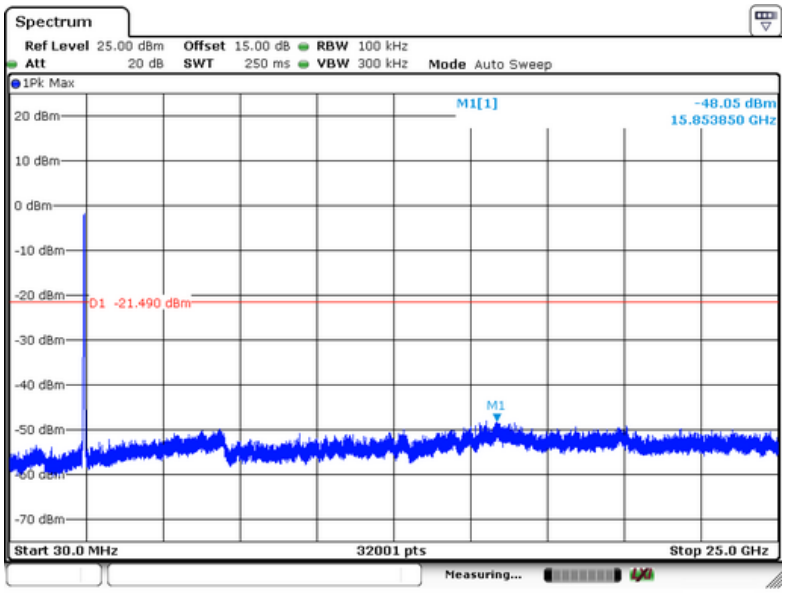


802.11n-HT40

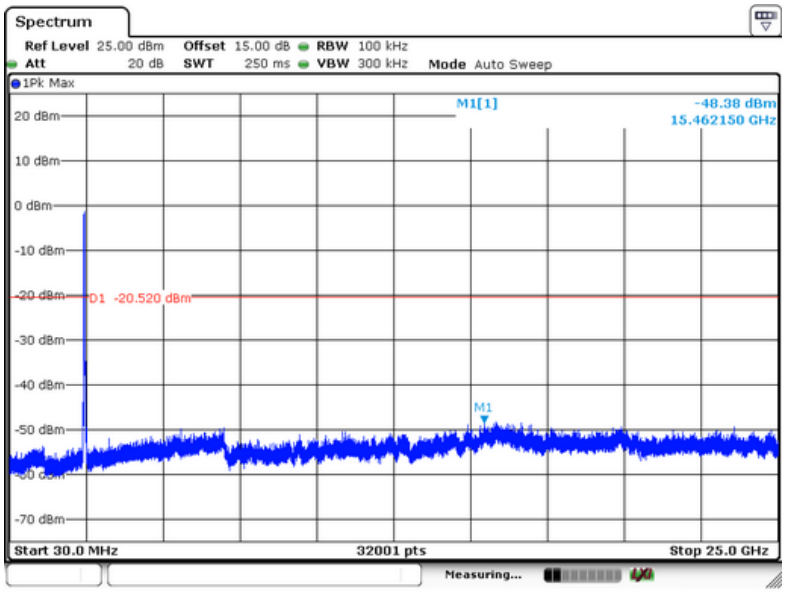
Low Channel



Middle Channel



High Channel



8 Band Edge Measurement

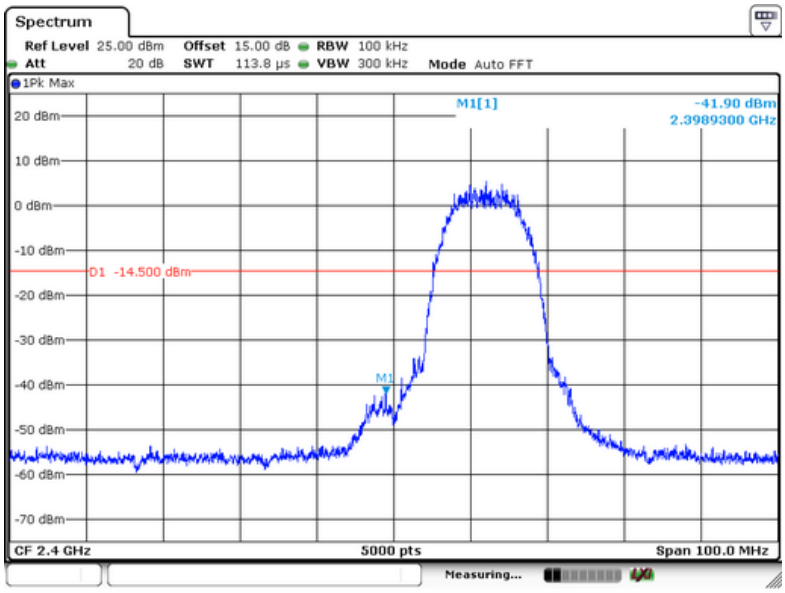
Test Requirement	:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R03
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	:	Refer to section 3.3

8.1 Test Procedure

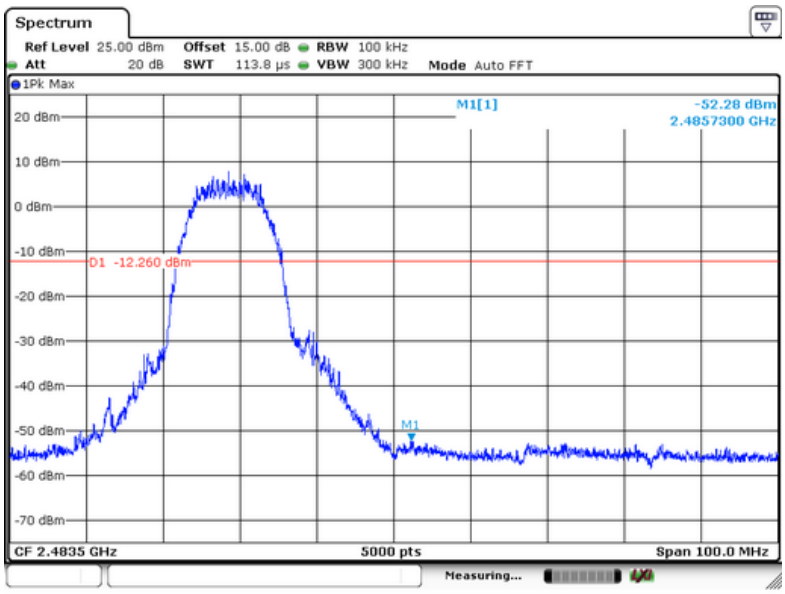
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

8.2 Test Result

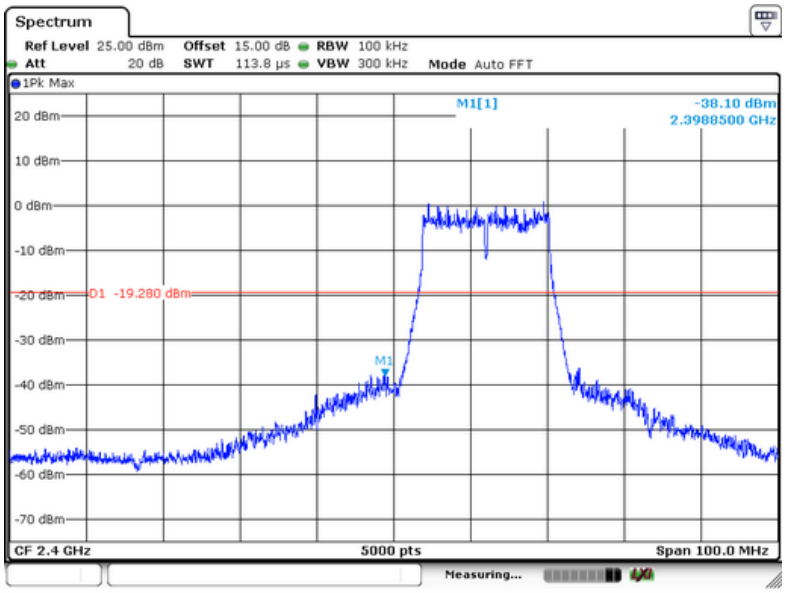
802.11b



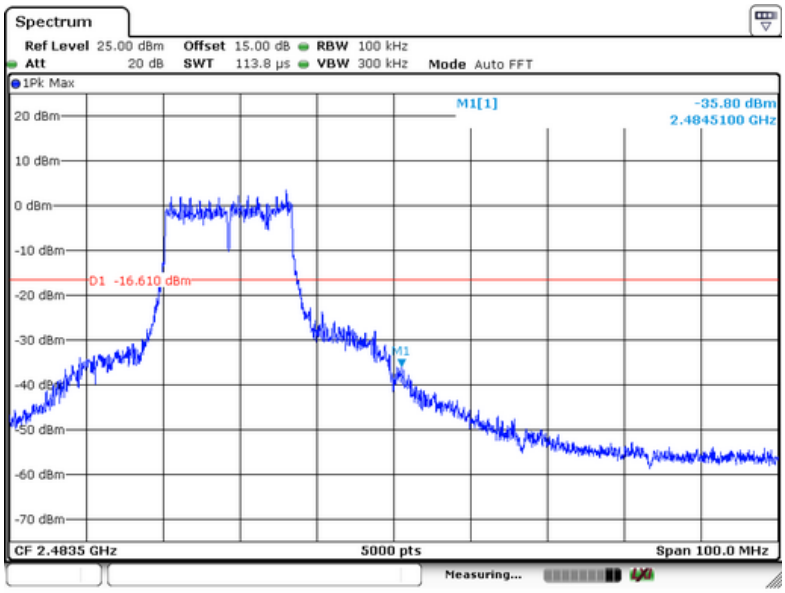
802.11b



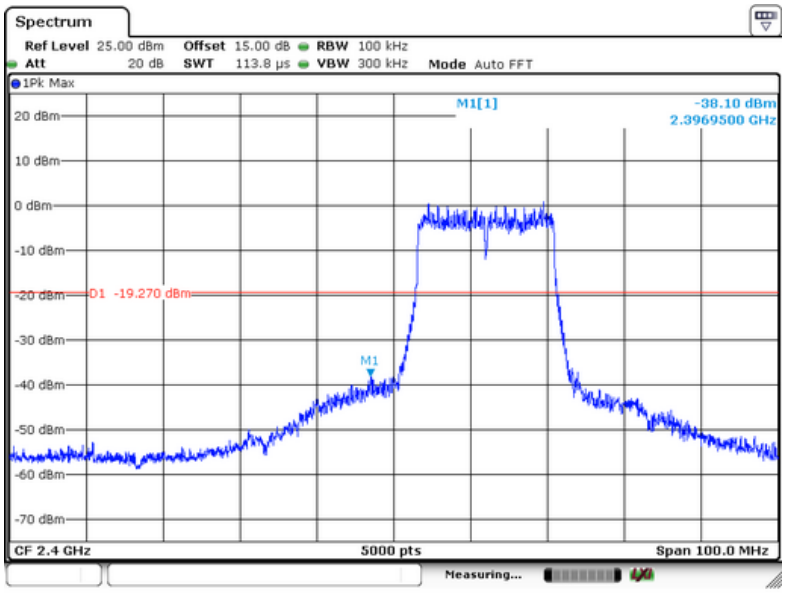
802.11g



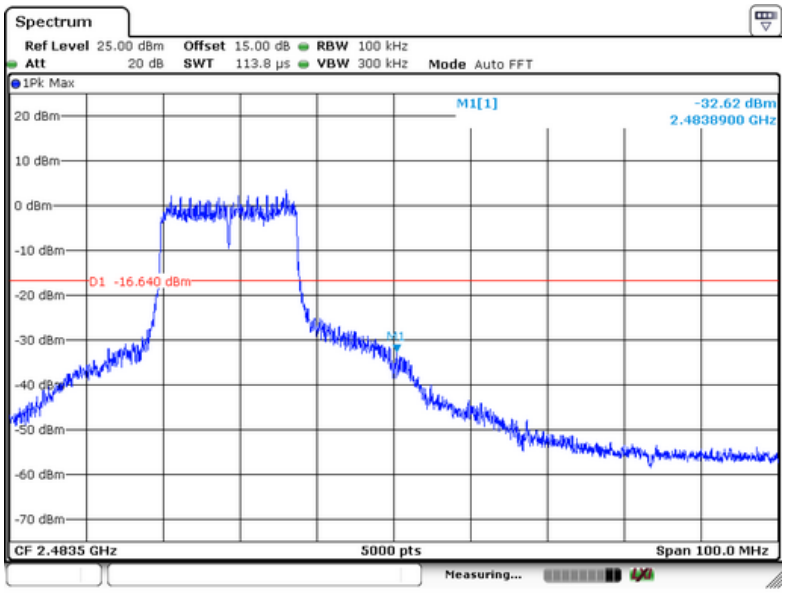
802.11g



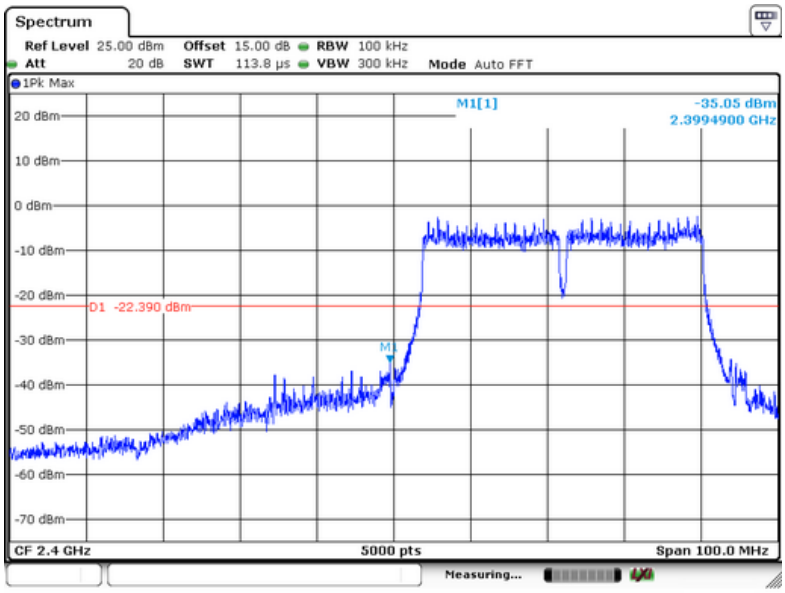
802.11n-HT20



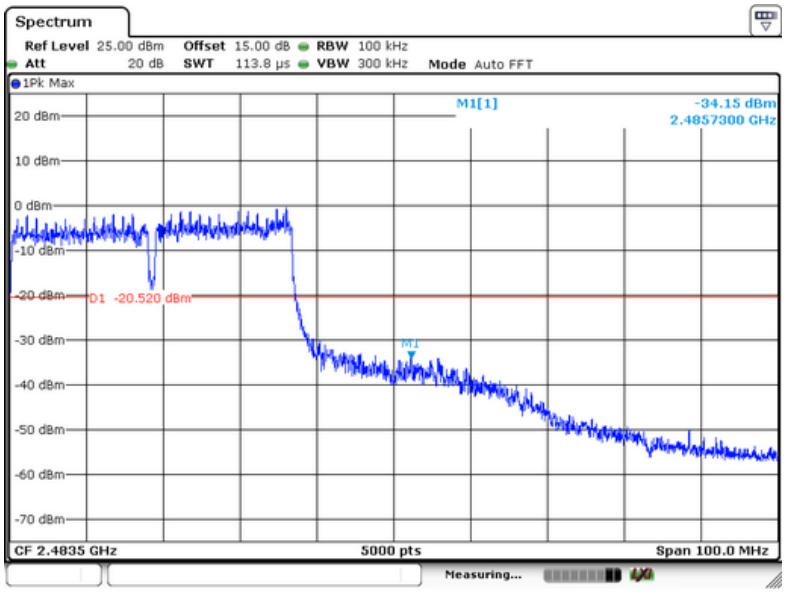
802.11n-HT20



802.11n-HT40



802.11n-HT40



9 6dB Bandwidth Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit		Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Mode	:	Refer to section 3.3

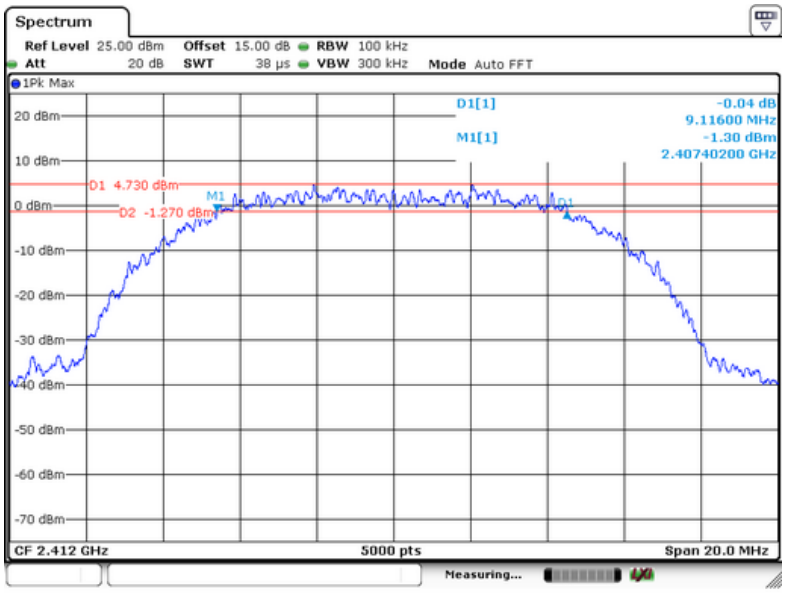
9.1 Test Procedure

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,

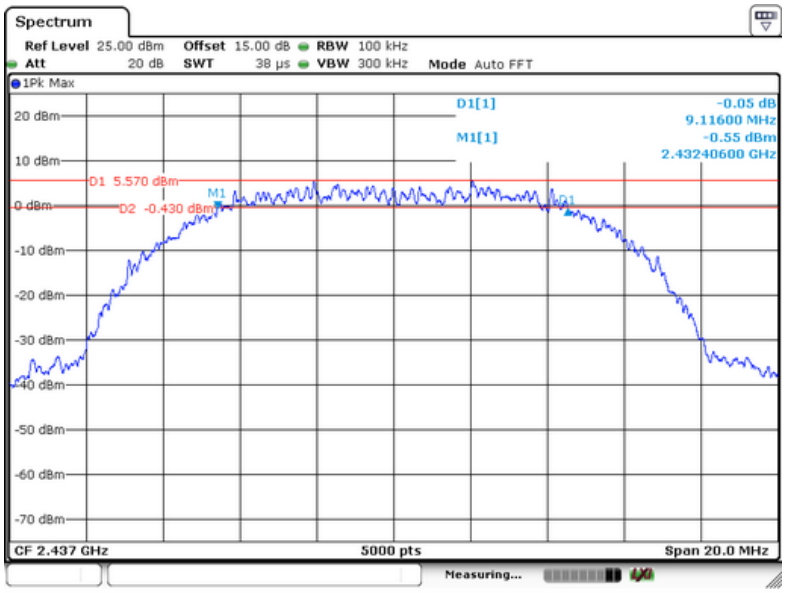
9.2 Test Result

Modulation	Bandwidth(MHz)			Limit
	Low Channel	Middle Channel	High Channel	
802.11b	9.116	9.116	9.292	≥500kHz
802.11g	16.480	16.480	16.480	≥500kHz
802.11n-HT20	17.624	17.612	17.604	≥500kHz
802.11n-HT40	36.368	36.352	36.352	≥500kHz

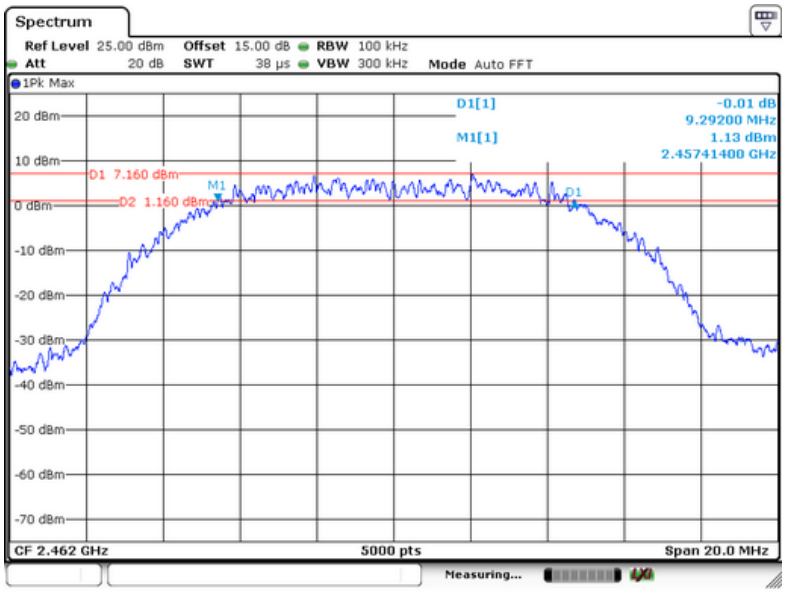
802.11b Low Channel



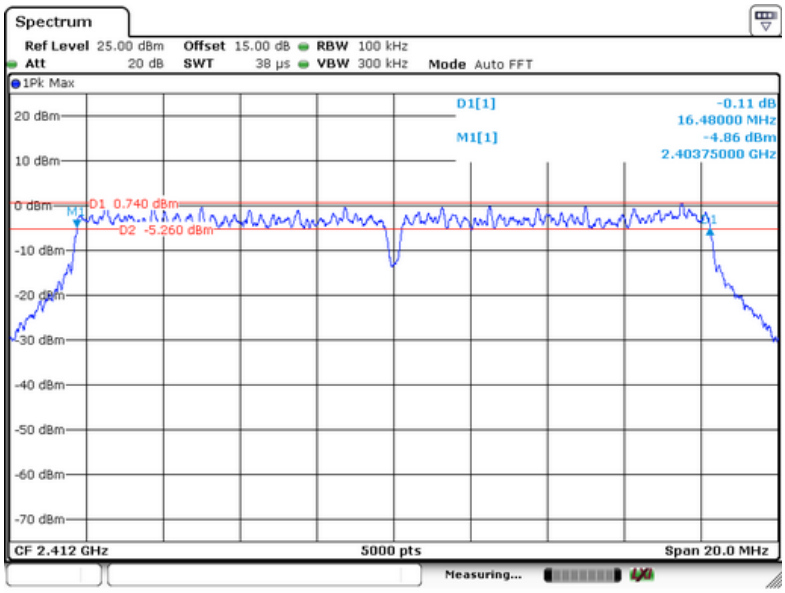
802.11b Middle Channel



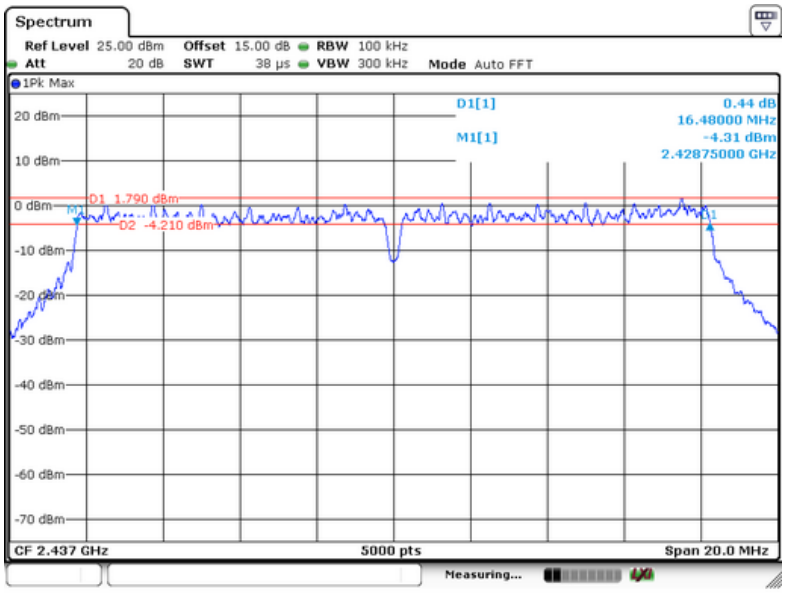
802.11b High Channel



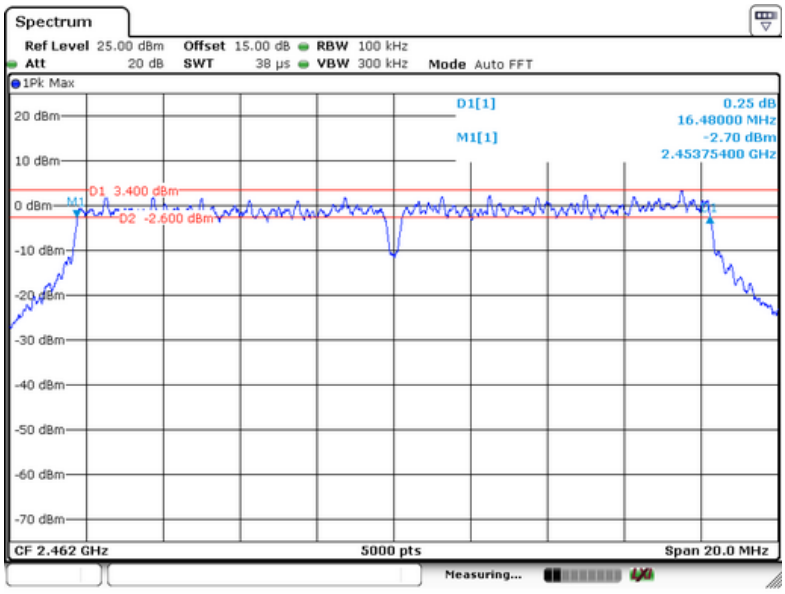
802.11g Low Channel



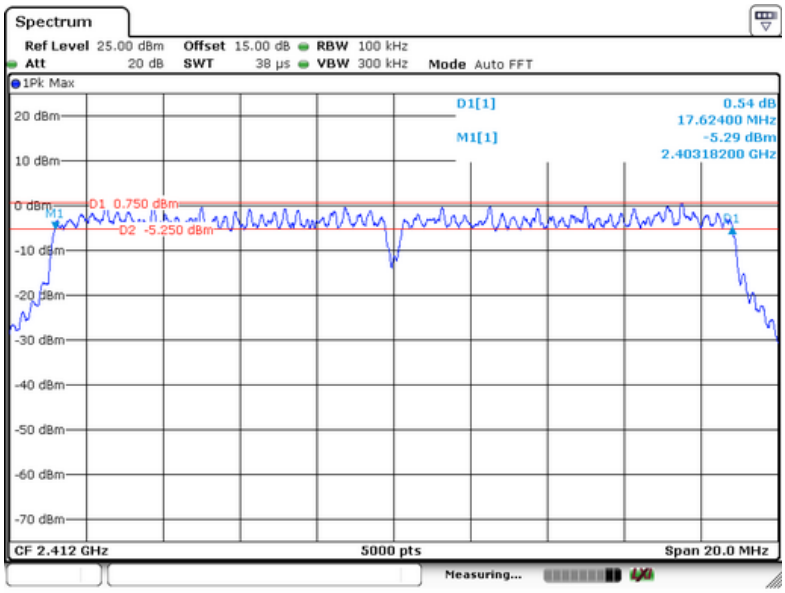
802.11g Middle Channel



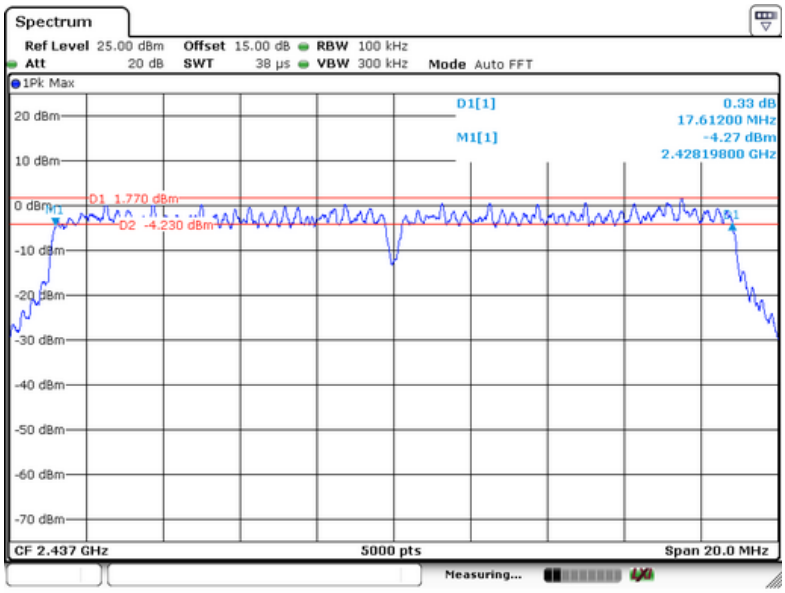
802.11g High Channel



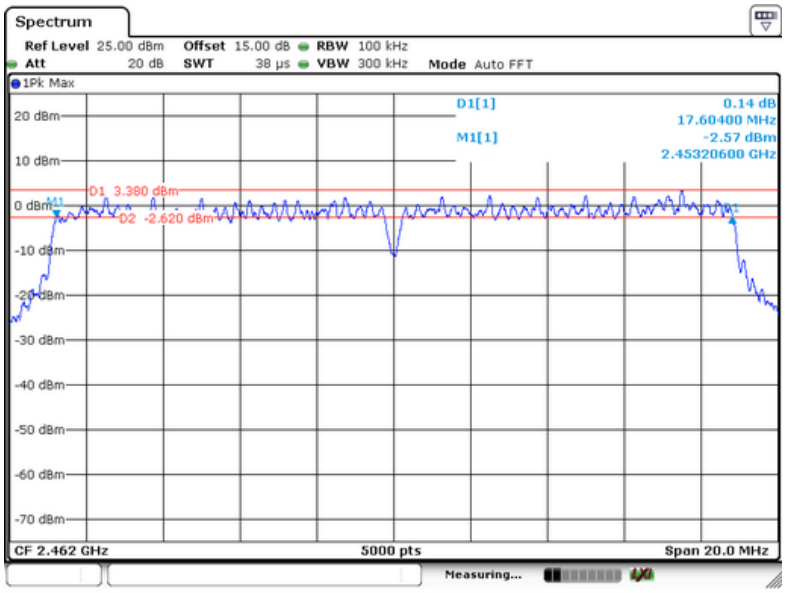
802.11n-HT20 Low Channel



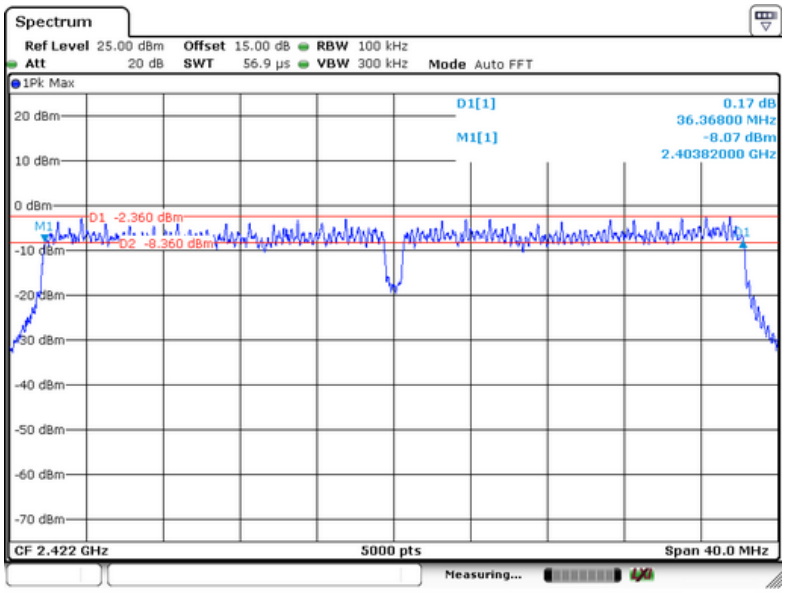
802.11n-HT20 Middle Channel



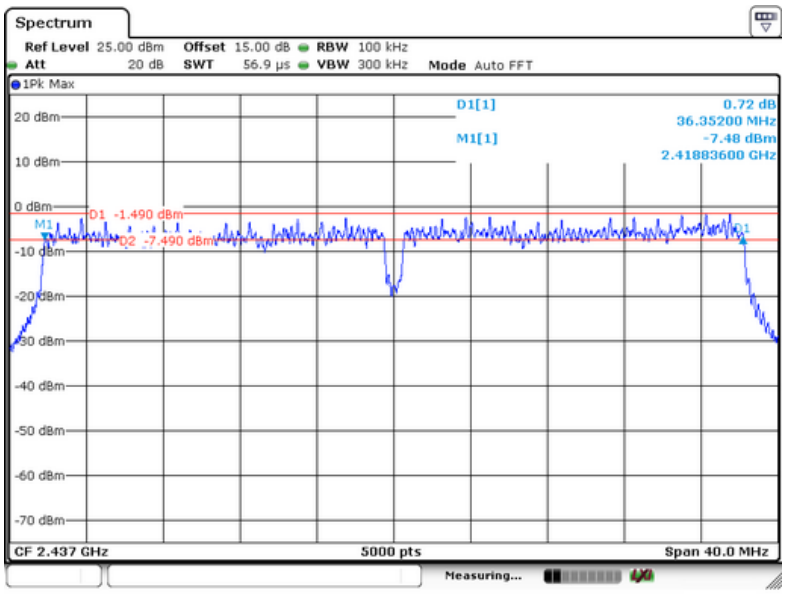
802.11n-HT20 High Channel



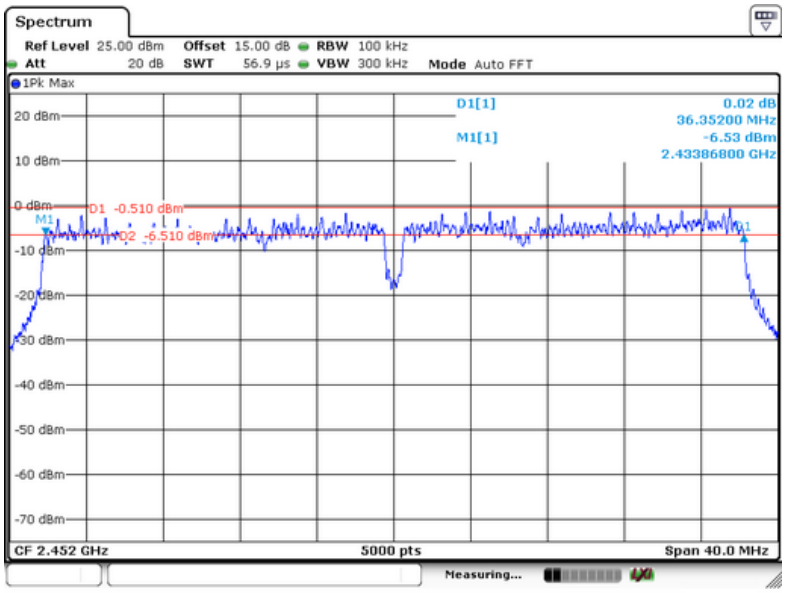
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



10 Maximum Peak Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.
Test Mode	:	Refer to section 3.3

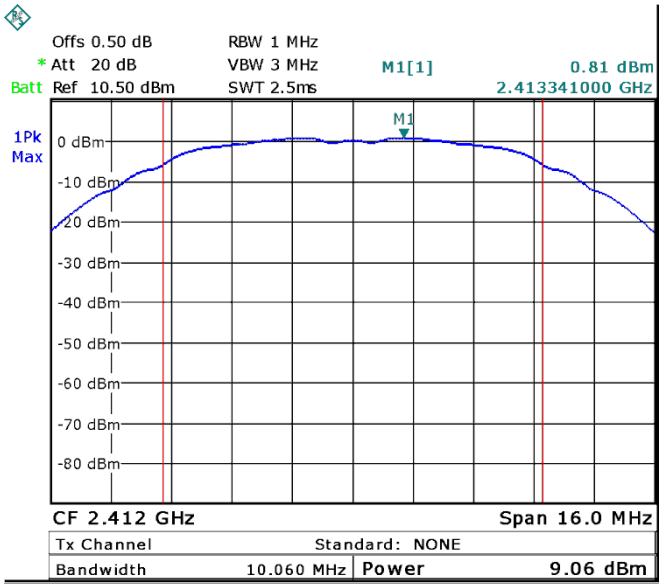
10.1 Test Procedure

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

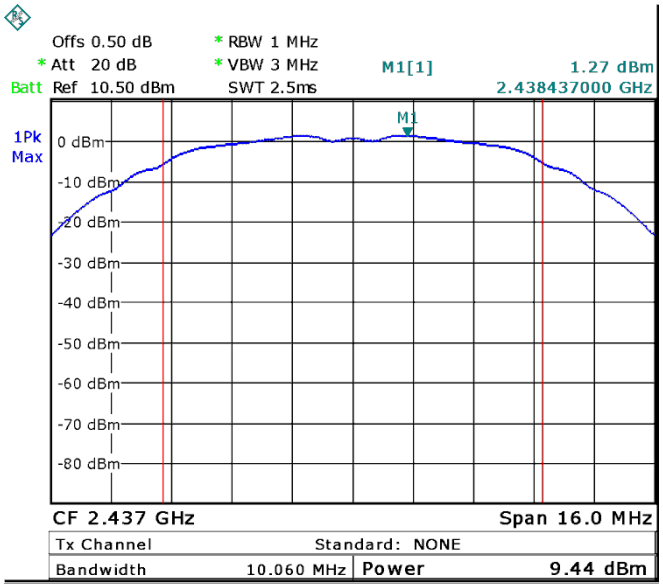
10.2 Test Result

Modulation	Maximum Peak Output Power (dBm)			Limit
	Low Channel	Middle Channel	High Channel	
802.11b	9.06	9.44	9.07	1W(30dBm)
802.11g	9.18	9.33	9.37	1W(30dBm)
802.11n-HT20	9.13	9.34	9.35	1W(30dBm)
802.11n-HT40	9.10	9.29	9.27	1W(30dBm)

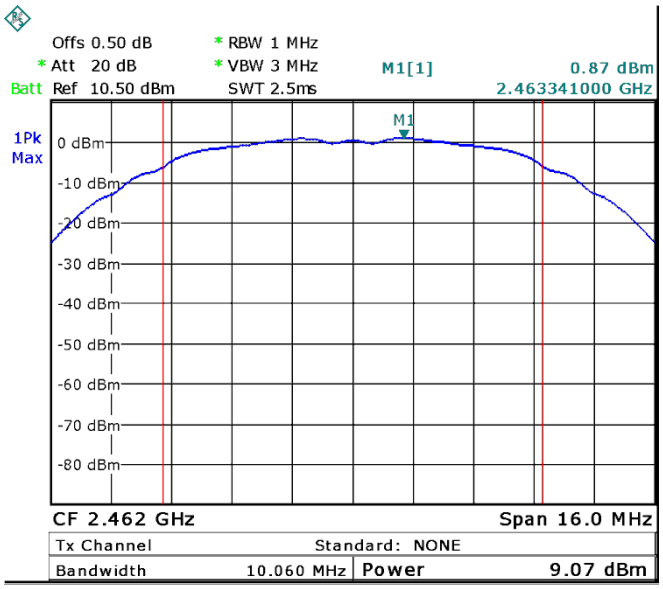
802.11b Low Channel



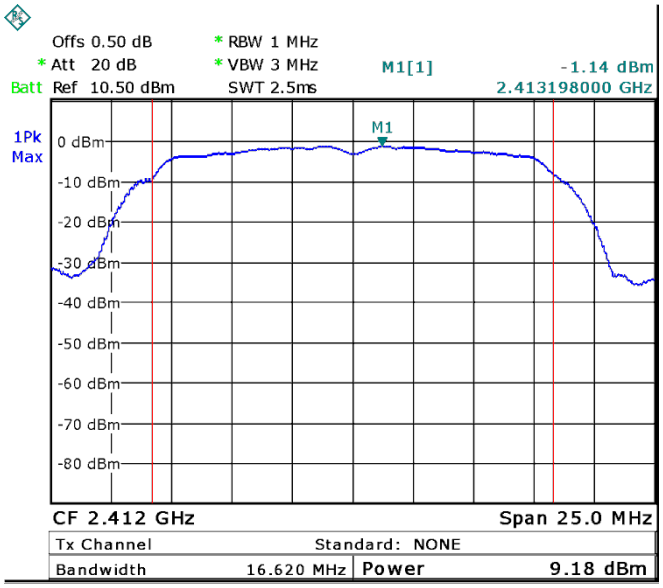
802.11b Middle Channel



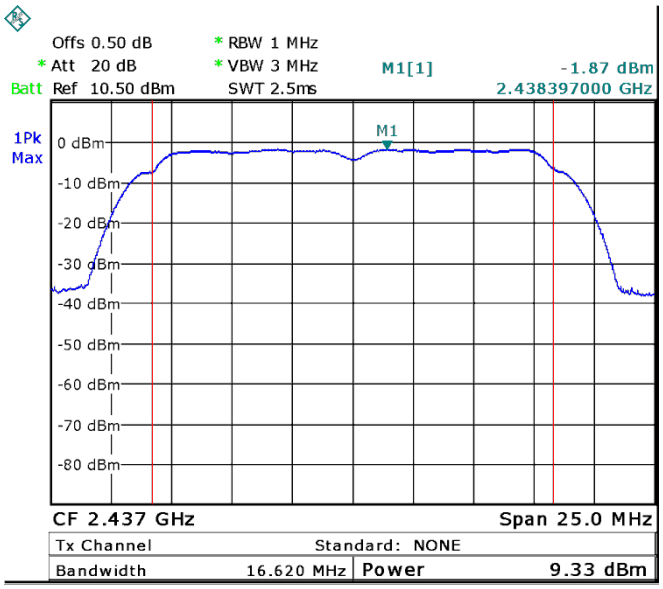
802.11b High Channel



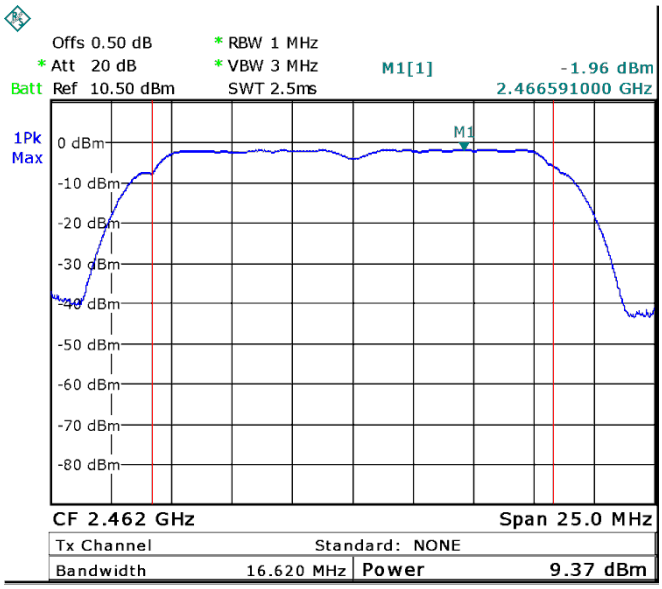
802.11g Low Channel



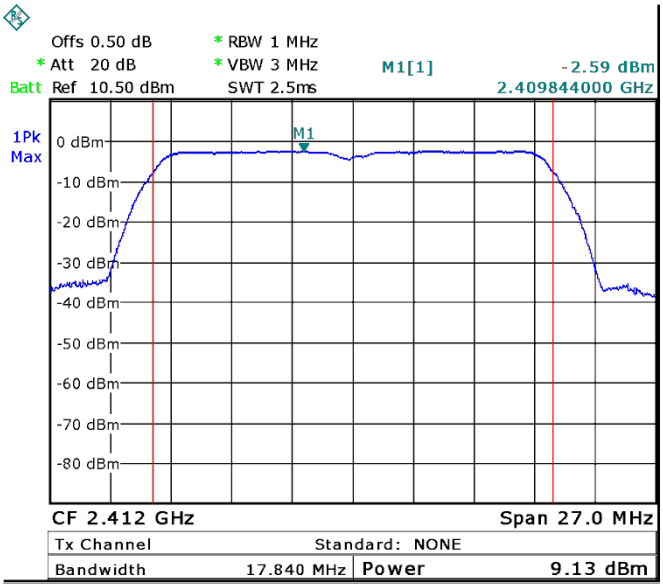
802.11g Middle Channel



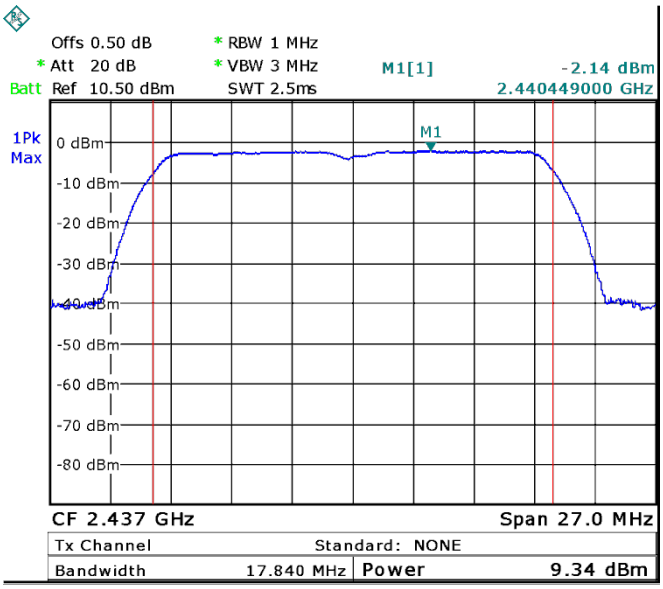
802.11g High Channel



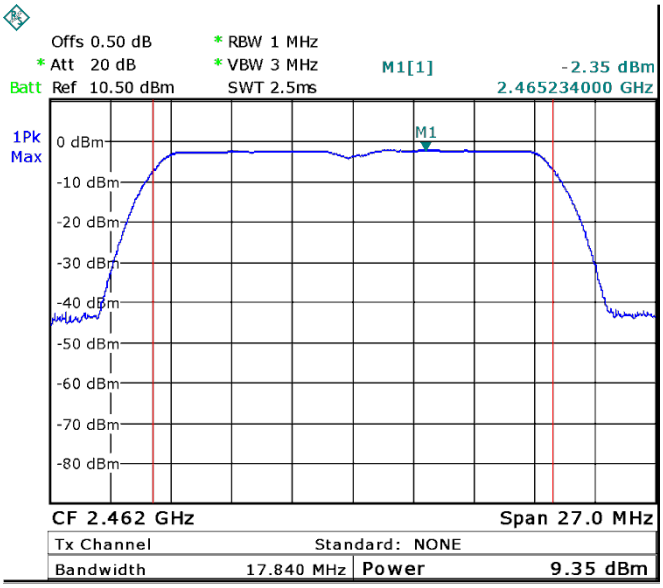
802.11n-HT20 Low Channel



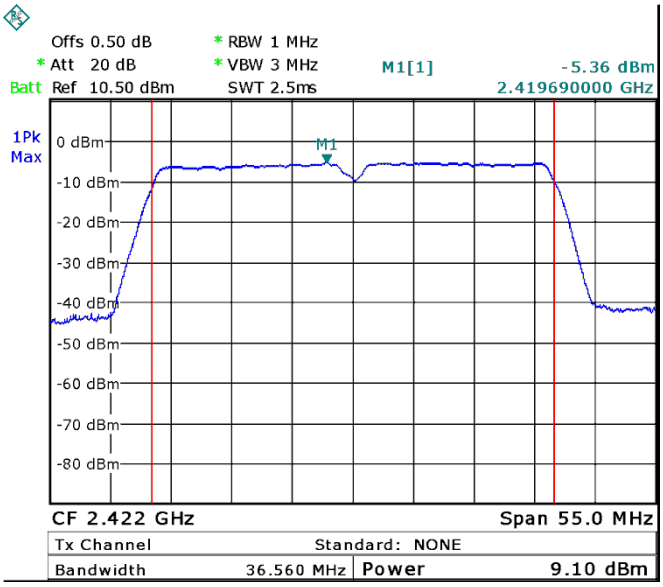
802.11n-HT20 Middle Channel



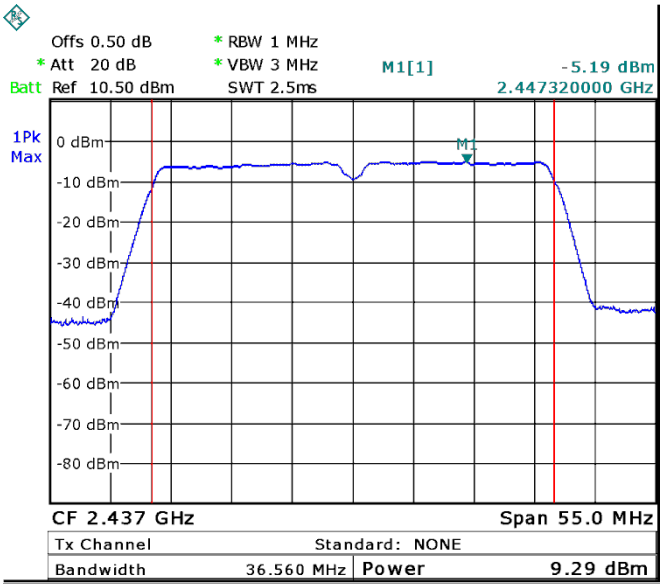
802.11n-HT20 High Channel



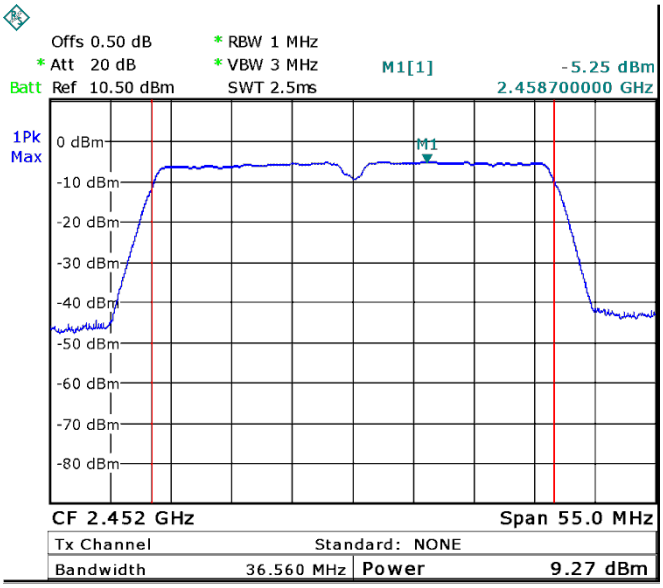
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



11 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Test Mode	:	Refer to section 3.3

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.

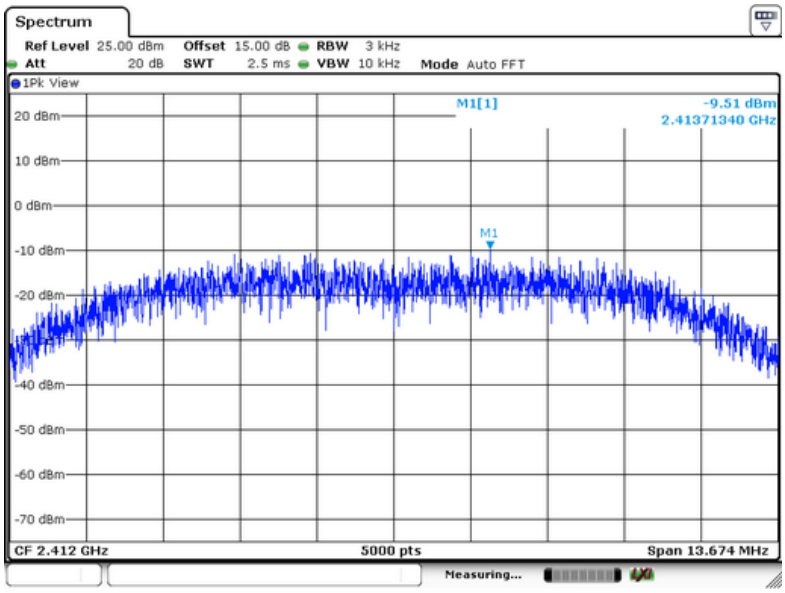
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

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.

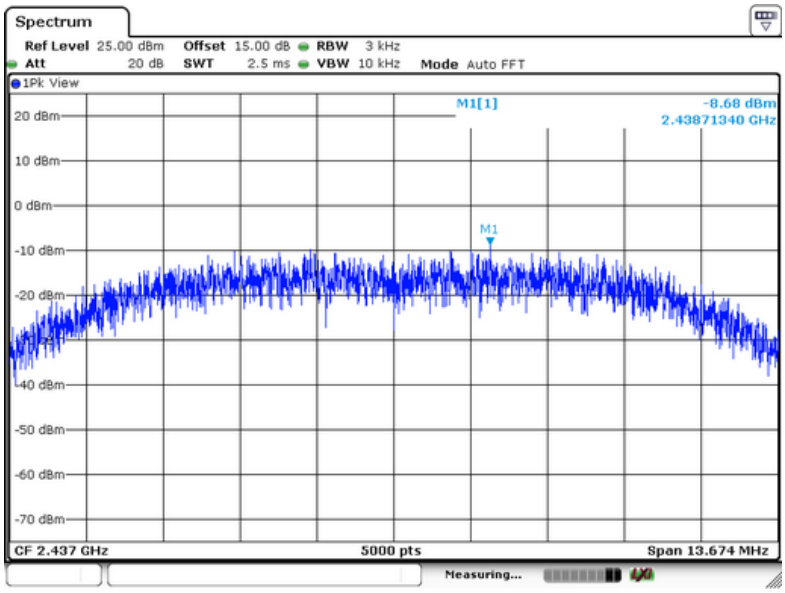
11.2 Test Result

Modulation	Power Spectral density (dBm/3kHz)			Limit
	Low Channel	Middle Channel	High Channel	
802.11b	-9.51	-8.68	-7.20	8dBm/3kHz
802.11g	-14.49	-13.22	-11.58	8dBm/3kHz
802.11n-HT20	-15.53	-14.29	-12.91	8dBm/3kHz
802.11n-HT40	-19.76	-18.88	-17.95	8dBm/3kHz

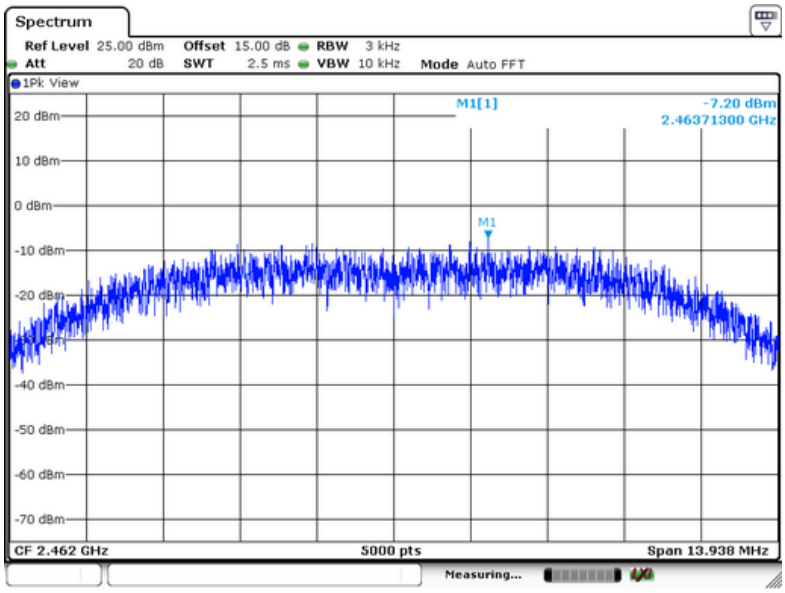
802.11b Low Channel



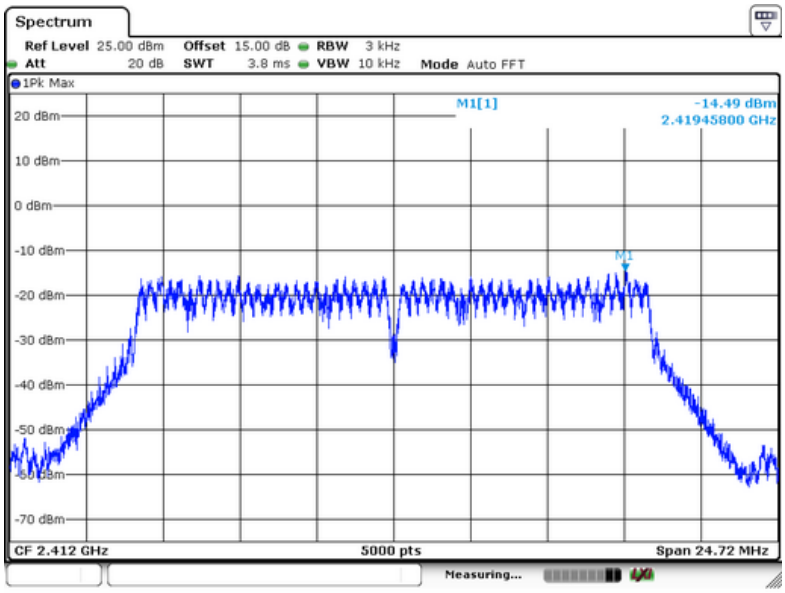
802.11b Middle Channel



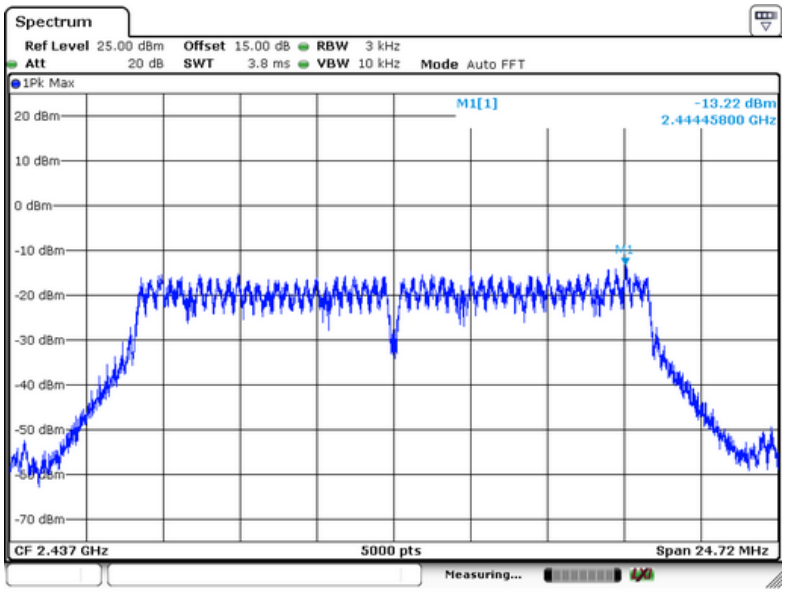
802.11b High Channel



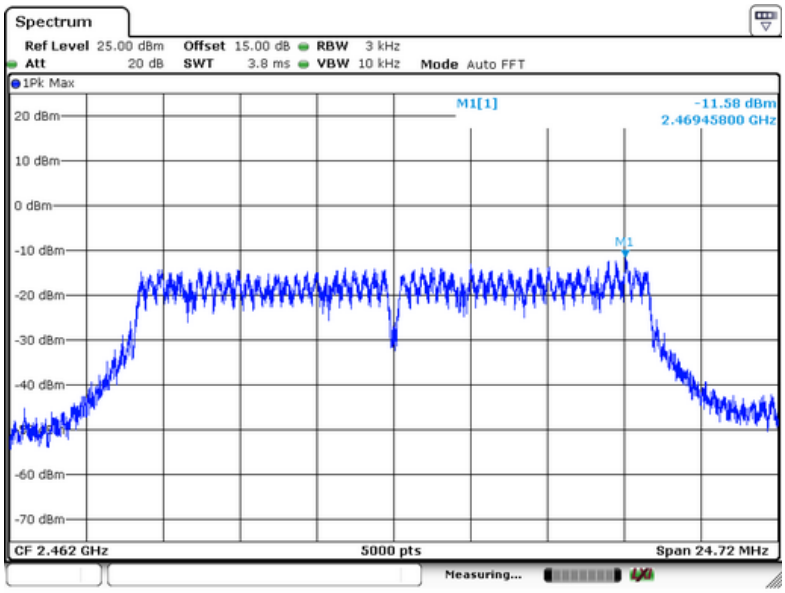
802.11g Low Channel



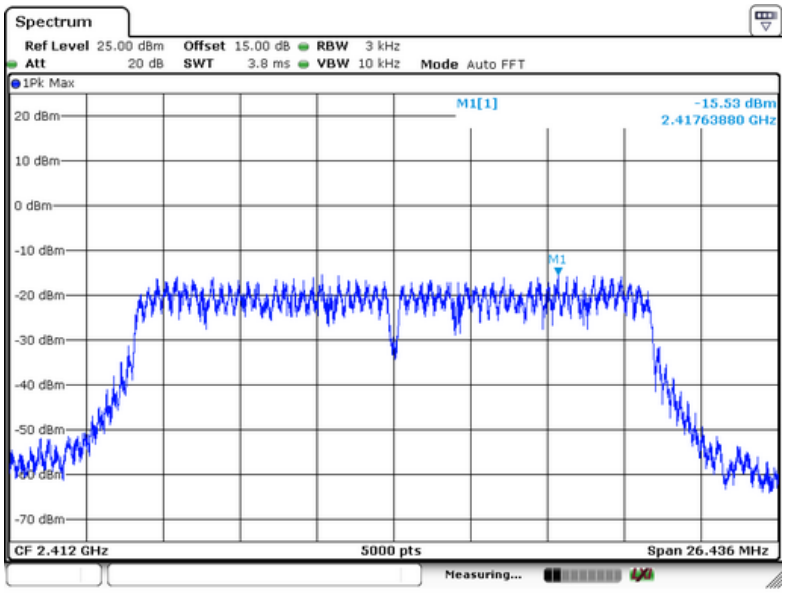
802.11g Middle Channel



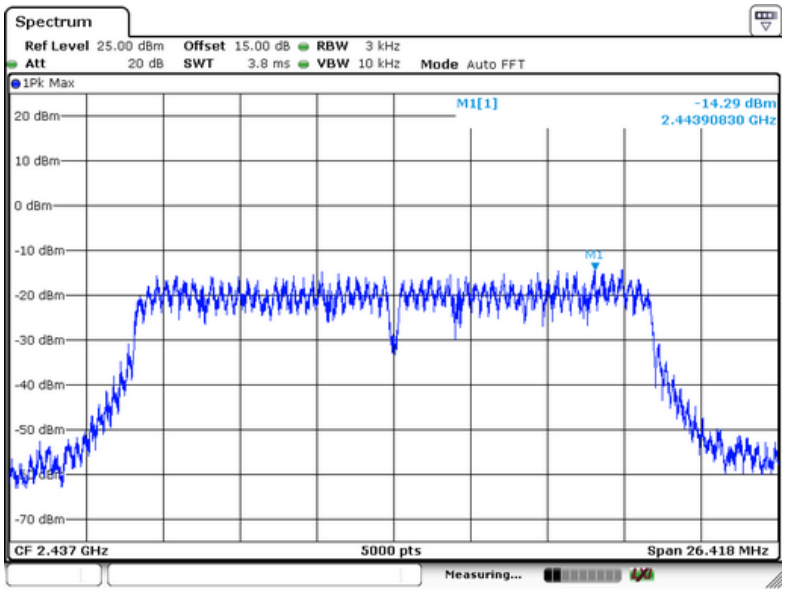
802.11g High Channel



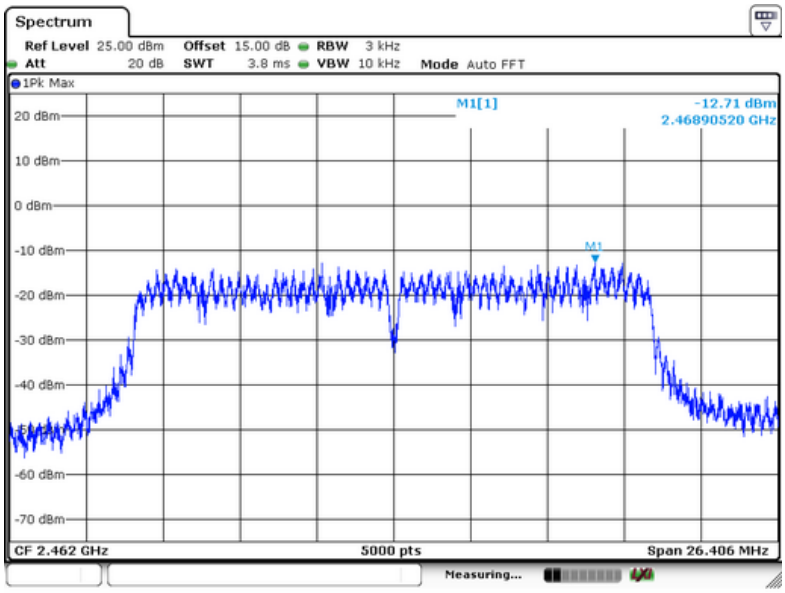
802.11n-HT20 Low Channel



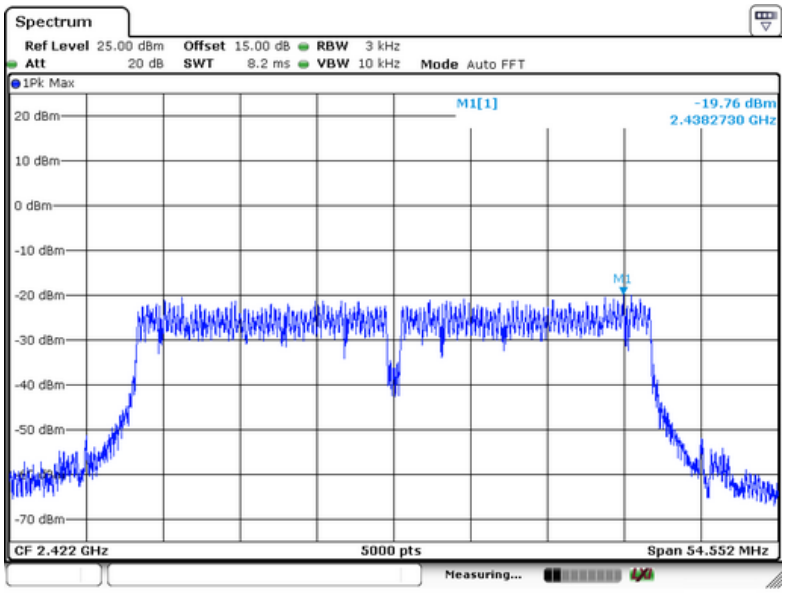
802.11n-HT20 Middle Channel



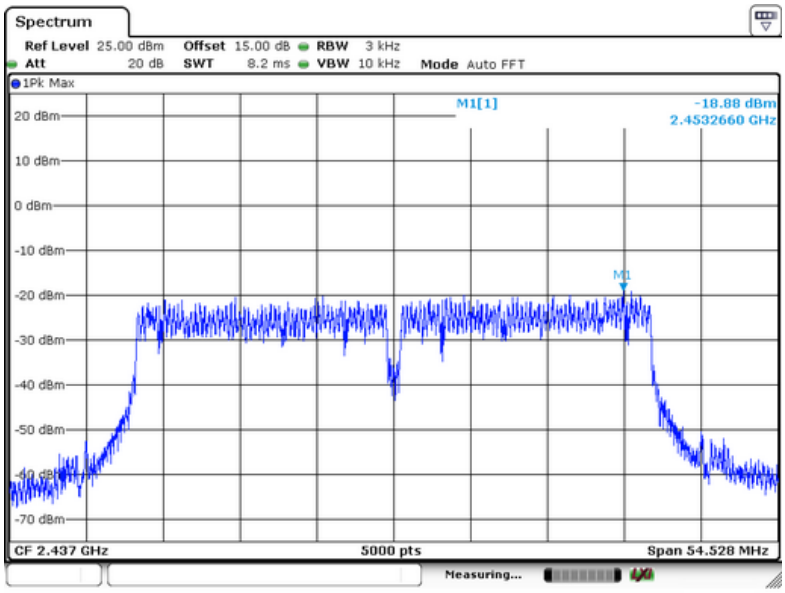
802.11n-HT20 High Channel



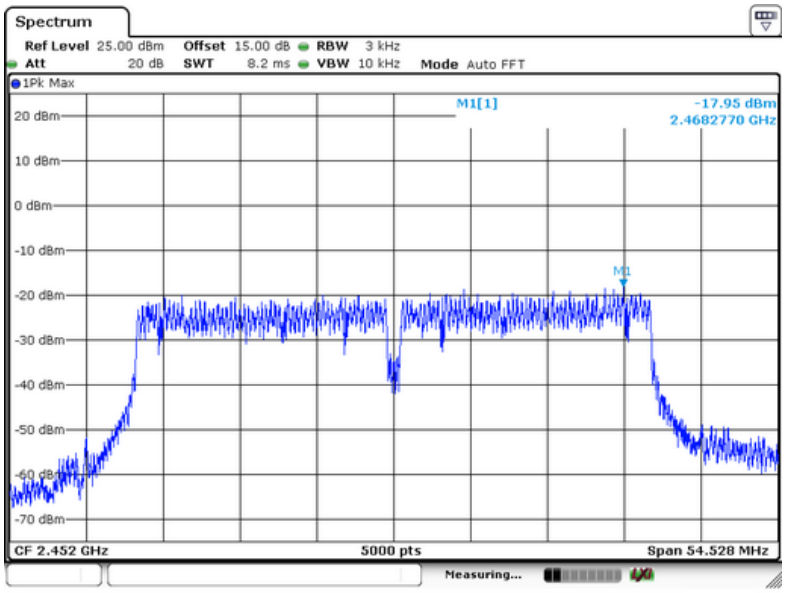
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



12 Antenna Application

12.1 Antenna Requirement

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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

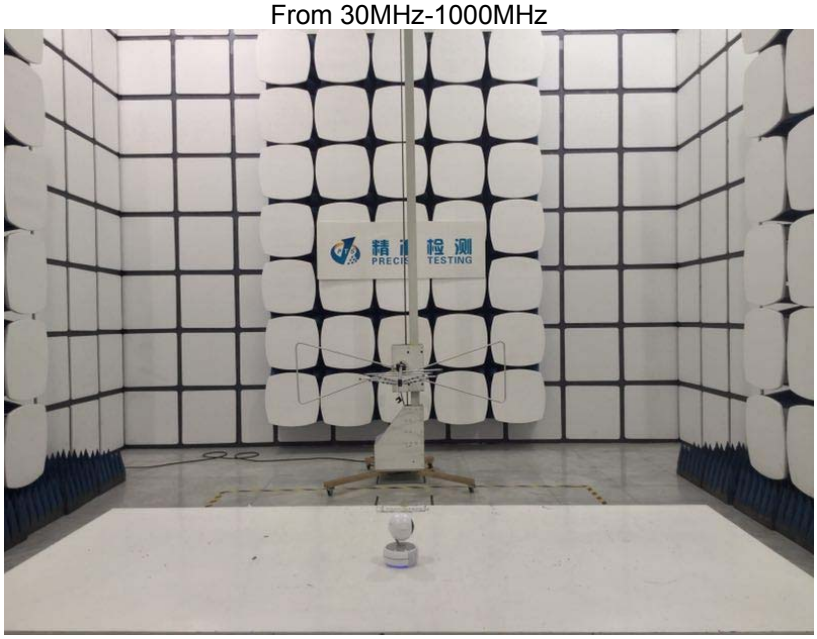
12.2 Result

The EUT'S antenna, permanent attached antenna, is internal antenna. The antenna's gain is 2.79dBi and meets the requirement.

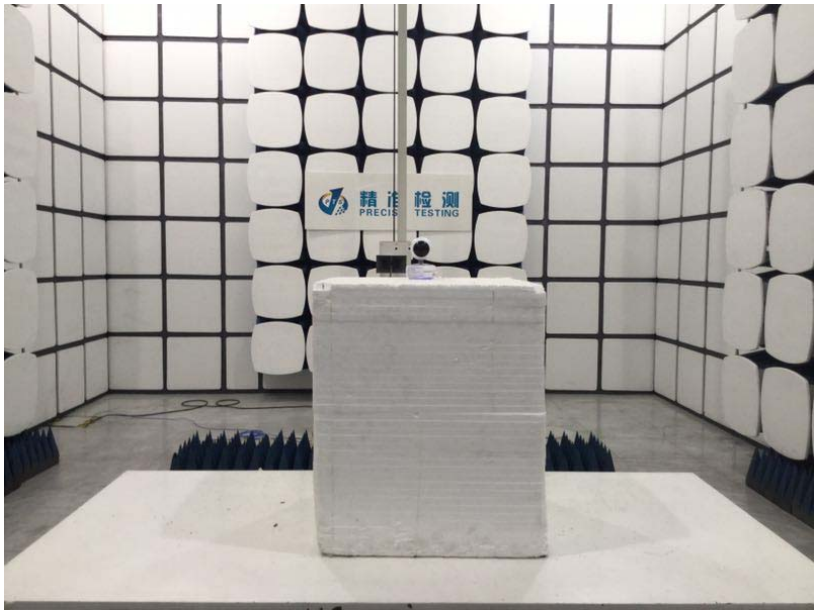
13 Test Setup

Conducted Emissions

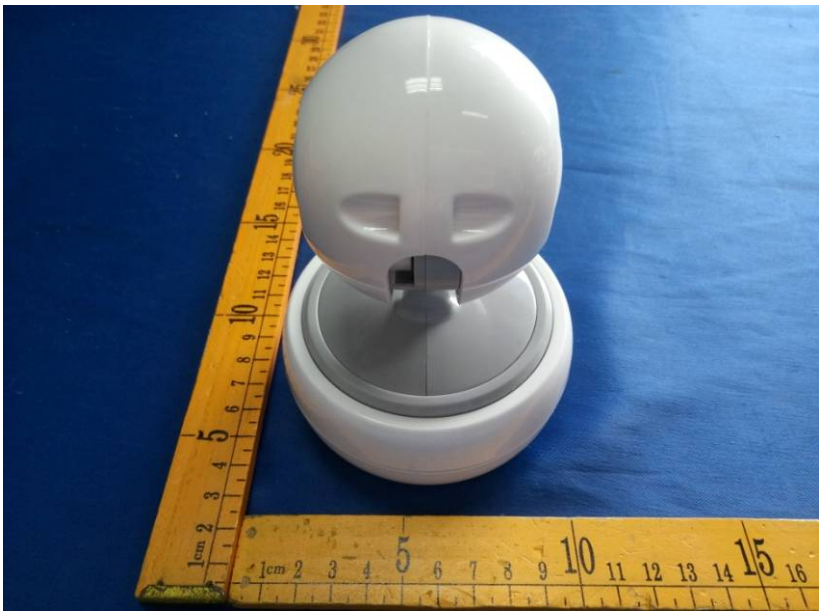
Radiated Spurious Emissions
From 30MHz-1000MHz



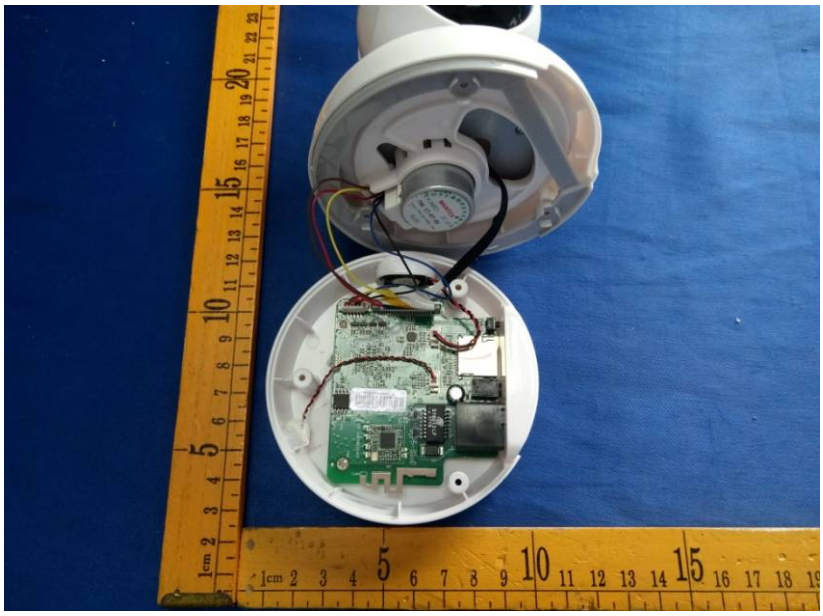
Above 1GHz

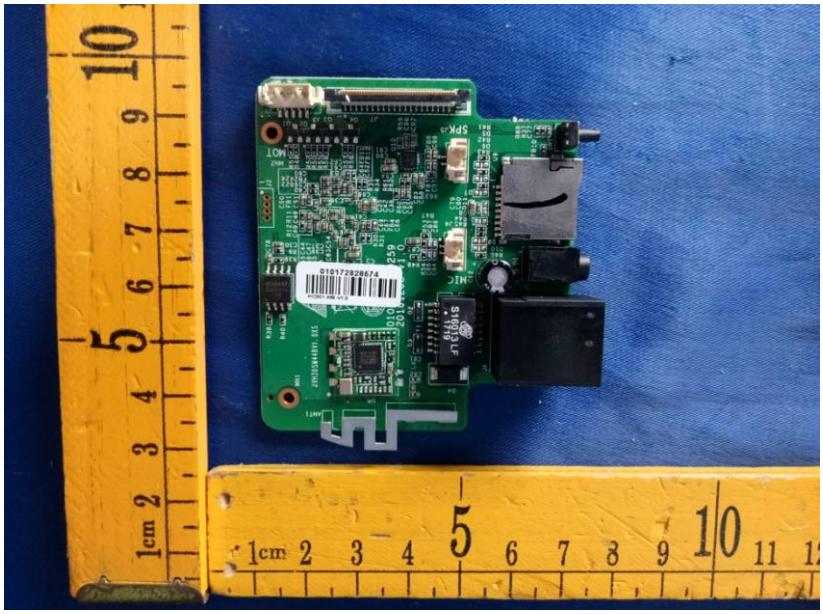


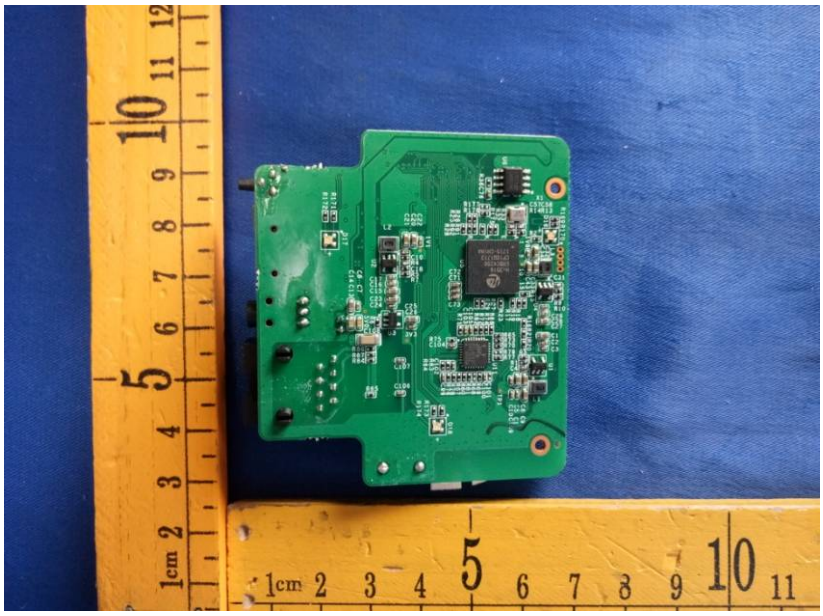
14 EUT Photos

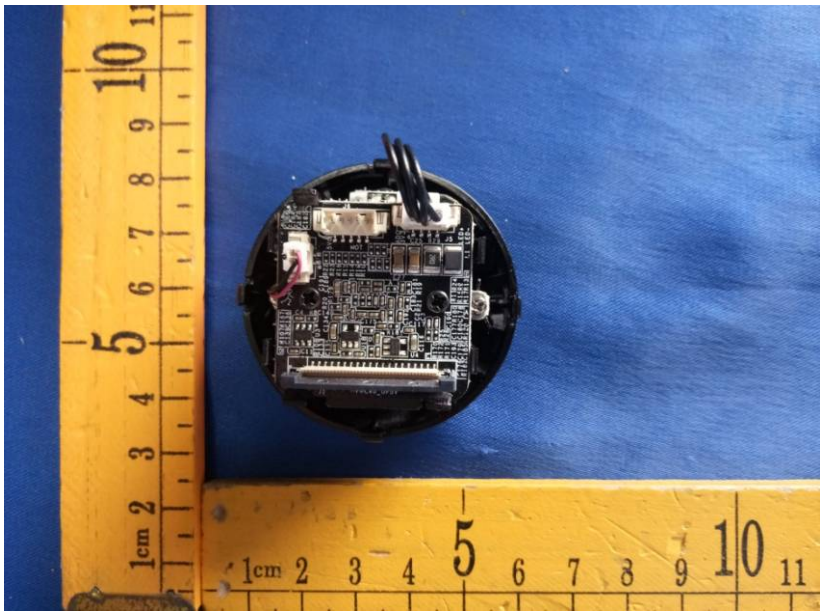


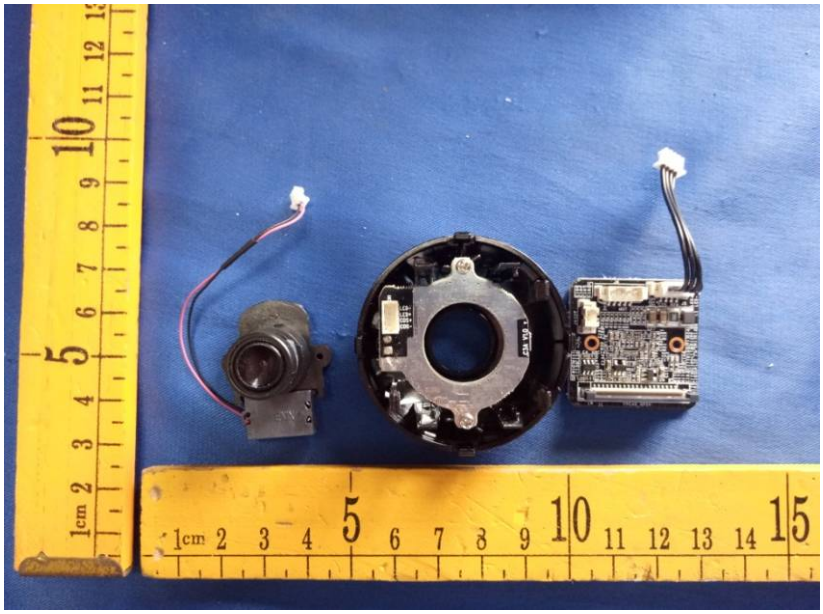

CLOUDSEE

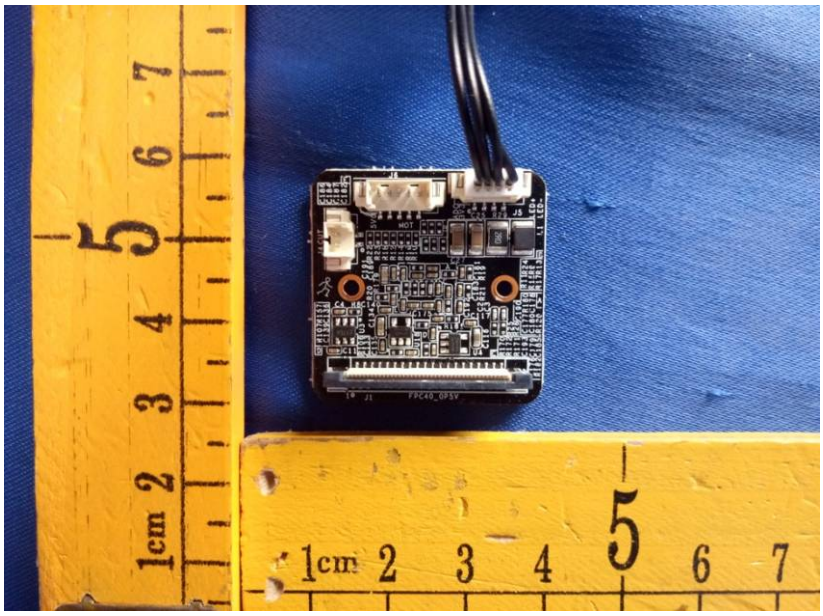


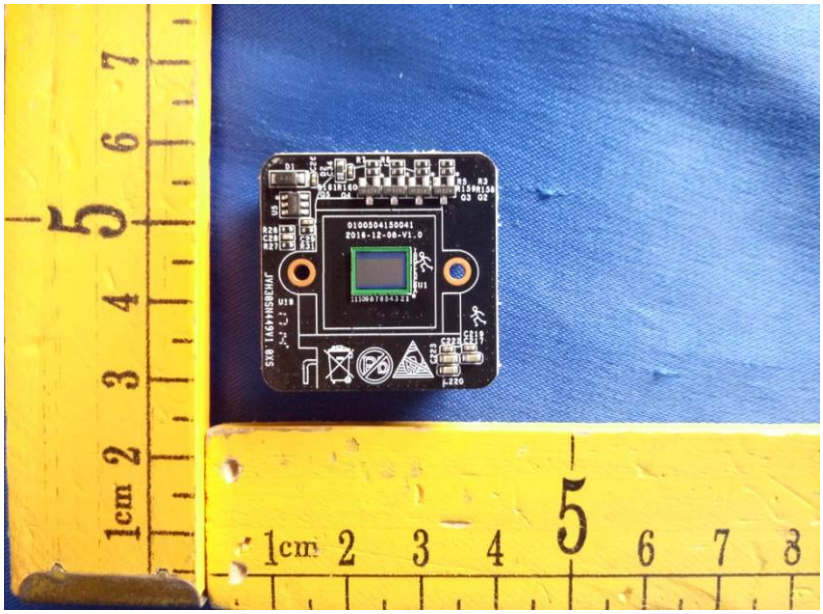


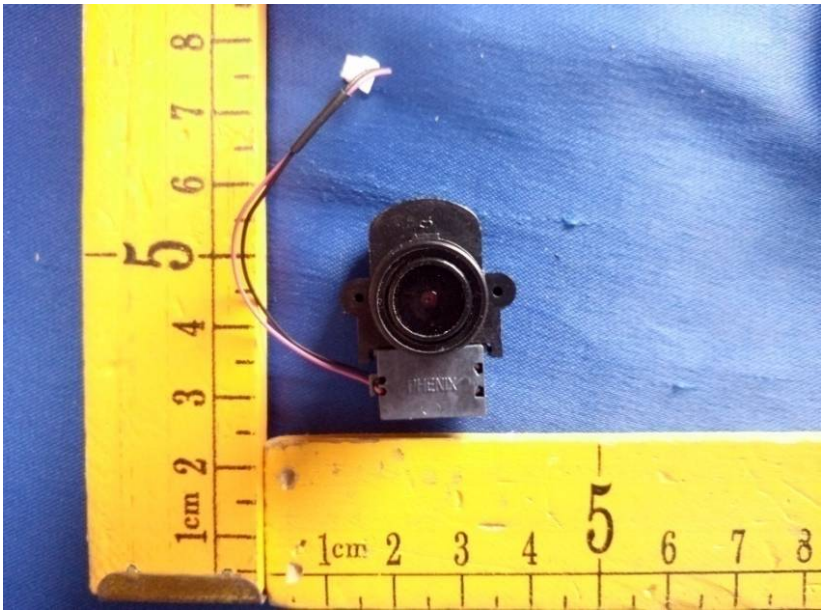












********THE END REPORT********