



FCC Test Report

Report No.: PYU-ESH-P20092485B-1

FCC ID: 2AHGM-S-PFW01-U

Product: WIFI socket

Model: smart-PFW01-U

Received Date: Oct.10, 2020

Test Date: Oct.11 to Dec.22, 2020

Issued Date: Dec.23, 2020

Applicant: NINGBO YUSING LIGHTING CO.,LTD

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Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

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Release Control Record

Issue No.	Description	Date Issued
PYU-ESH-P20092485B-1	Original release	Dec.23, 2020



1 Certificate of Conformity

Product: WIFI socket

Brand: --

Model: smart-PFW01-U

Applicant: NINGBO YUSING LIGHTING CO.,LTD

Test Date: Oct.11 to Dec.22, 2020

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

The above equipment has been tested by **BUREAU VERITAS ADT (Shanghai) Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

Yuan Zhang

Date:

Dec.23, 2020

Yuan ZHANG
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Approved by :



Date:

Dec.23, 2020

Daniel Sun
EMC Lab Manager



2 Summary of Test Results

The EUT has been tested according to the following specifications:

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.203	Antenna Requirement	PASS	No antenna connector is used.
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	Minimum 6dB Bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output Power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.247(d)	Conducted Band Edges Measurement	PASS	Meet the requirement of limit.
15.247(d)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
15.247(d)	Emissions in restricted frequency bands	PASS	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions Measurement	PASS	Meet the requirement of limit.



2.1 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Hybrid Antenna(25MHz-1.5GHz)	Schwarzbeck	VULB9168	E1A1012	Jul.29, 20	Jul.28, 22
Horn Antenna(1GHz -18GHz)	Schwarzbeck	BBHA9120D	E1A1017	Aug.25, 20	Aug.24, 22
Double Ridge Horn Antenna(18G-40G)	COM-POWER	AH-840	E1A1040	Jul.15, 20	Jul.14, 22
Pre-Amplifier(100kHz-1.3GHz)	Agilent	8447D	E1A2001	Apr.20, 20	Apr.19, 21
Pre-Amplifier(0.5GHz-18GHz)	EMCI	EMC184045SE	E1A2009	Jul.06, 20	Jul.05, 21
Pre-Amplifier(18GHz-40GHz)	EMCI	EMC051845SE	E1A2008	Jul.06, 20	Jul.05, 21
EMI test receiver	R&S	ESR7	E1R1005	Apr.20, 20	Apr.19, 21
Spectrum Analyzer	Keysight	N9030B	E1S1003	Jul.23, 20	Jul.22, 21
Spectrum Analyzer	Keysight	N9020A	E1S1004	Mar.03, 20	Mar.02, 21
EMI test receiver	R&S	ESCS30	E1R1001	May.12, 20	May.11, 21
LISN	R&S	ENV216	E1L1011	May.12, 20	May.11, 21
Humidity&Temp Tester	Baolima	WS508	E1H1011	Apr. 03, 20	Apr. 02, 21
RF Control Unit	Toscend	JS0806-2	E1C5003	N/A	N/A
Test Software	ADT	ADT_COND_V7 .3.1	N/A	N/A	N/A
Test Software	Toscend	JS32-RE	N/A	N/A	N/A
Test Software	Toscend	JS1120	N/A	N/A	N/A
Test Software	Toscend	JS1120-3	N/A	N/A	N/A



2.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Frequency	Expanded Uncertainty ($k=2$) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.36 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.47 dB
	6GHz ~ 18GHz	3.75 dB
	18GHz ~ 40GHz	3.30 dB

2.3 Modification Record

There were no modifications required for compliance.



3 General Information

3.1 General Description of EUT

Product	WIFI socket
Brand	--
Test Model	smart-PFW01-U
Model Difference	--
Power Rating	110-130V~,10A
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Operating Frequency	802.11b, 802.11g and 802.11n (HT20):2412MHz~2462MHz
Number of Channel	802.11b, 802.11g and 802.11n (HT20):11
Antenna Type	PCB Antenna
Antenna Connector	--
Antenna Gain	-1.0 dBi

Note: For more details, please refer to the User's manual of the EUT.

Modulation Mode	TX /RX Function
802.11b	1TX / 1RX
802.11g	1TX / 1RX
802.11n (HT20)	1TX / 1RX



3.2 Description of Test Modes

13 channels are provided for 802.11b, 802.11g and 802.11n (HT20).

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



3.2.1 Test Mode Applicability:

EUT Configure Mode	Applicable to				Description
	RE ≥ 1G	RE < 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz **RE≤1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0



Antenna Port Conducted Measurement

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

3.2.2 Test Condition:

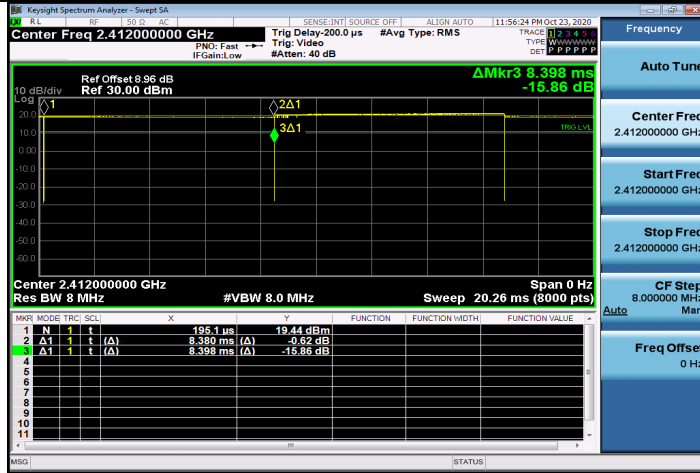
Applicable to	Normal Environmental Conditions	Normal Input Power
RE ≥ 1G	25deg. C, 60%RH	120Vac, 60Hz
RE < 1G	25deg. C, 60%RH	120Vac, 60Hz
PLC	25deg. C, 60%RH	120Vac, 60Hz
APCM	25deg. C, 60%RH	120Vac, 60Hz



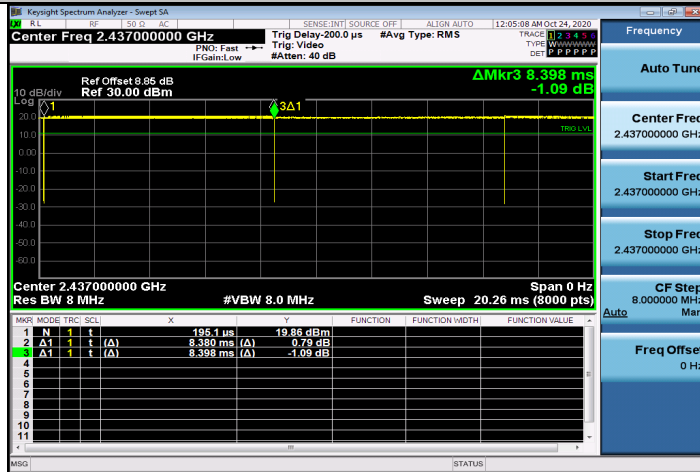
3.3 Duty Cycle of Test Signal

Test Mode	Antenna	Channel [MHz]	Duty Cycle [%]	10log(1/x) Factor[dB]
802.11b	Ant1	2412	99.79	0.01
		2437	99.79	0.01
		2462	99.79	0.01
802.11g	Ant1	2412	98.92	0.05
		2437	98.92	0.05
		2462	98.92	0.05
802.11n (HT20)	Ant1	2412	98.75	0.05
		2437	98.75	0.05
		2462	98.75	0.05

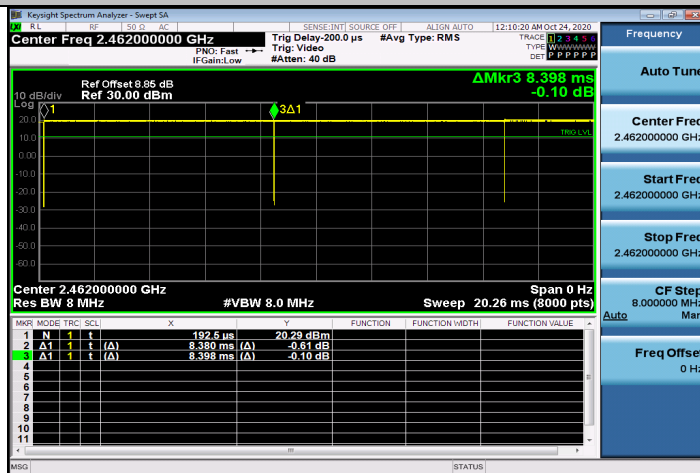
802.11b_Ant1_2412



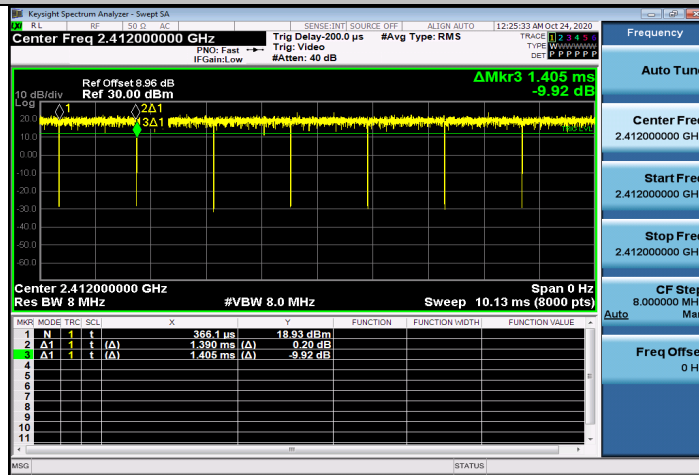
802.11b_Ant1_2437



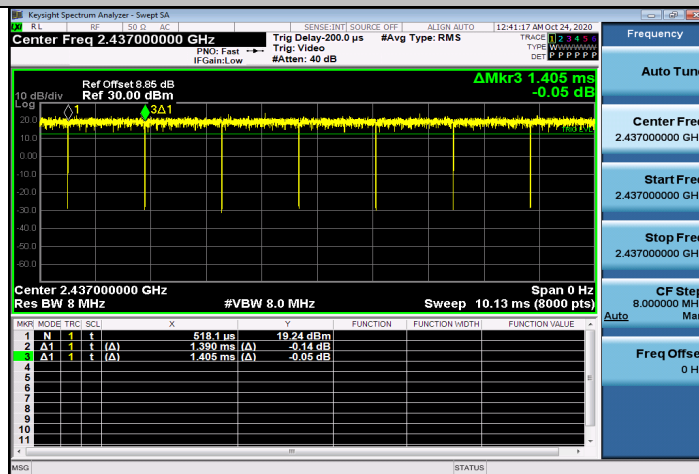
802.11b_Ant1_2462



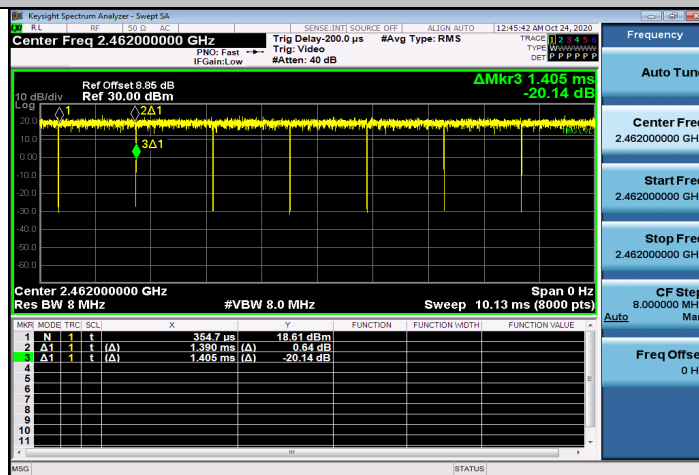
802.11g_Ant1_2412



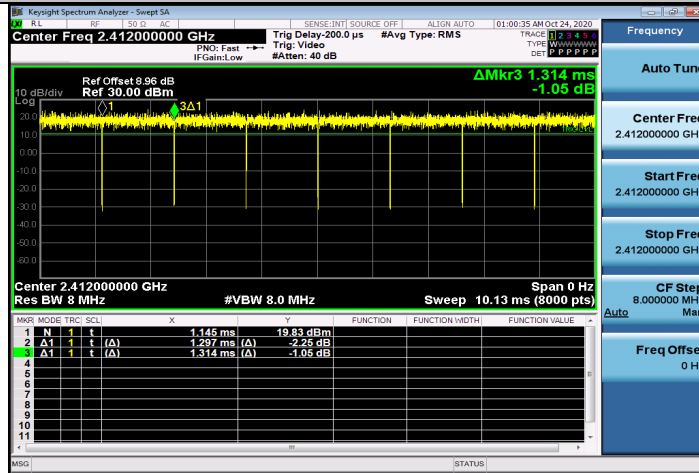
802.11g_Ant1_2437



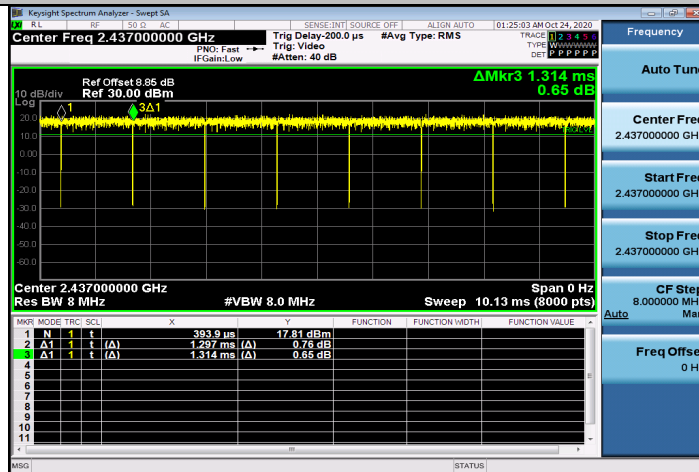
802.11g_Ant1_2462



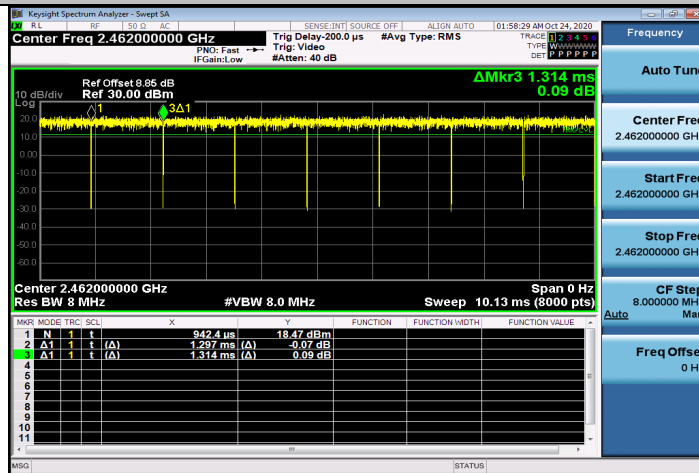
802.11n (HT20)_Ant1_2412



802.11n (HT20)_Ant1_2437



802.11n (HT20)_Ant1_2462





3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standard:

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10:2013

All relaxed test items have been performed and recorded as per the above standard.



4 Test Procedure and Results

4.1 AC Power Conducted Emission

4.1.1 Limits

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 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.

4.1.2 Test Procedures

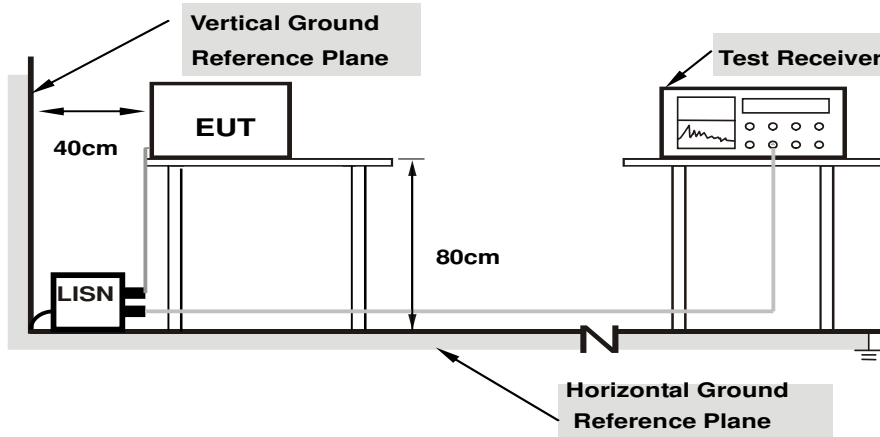
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.1.3 Deviation from Test Standard

No deviation.

4.1.4 Test Setup



Note: 1.Support units were connected to second LISN.

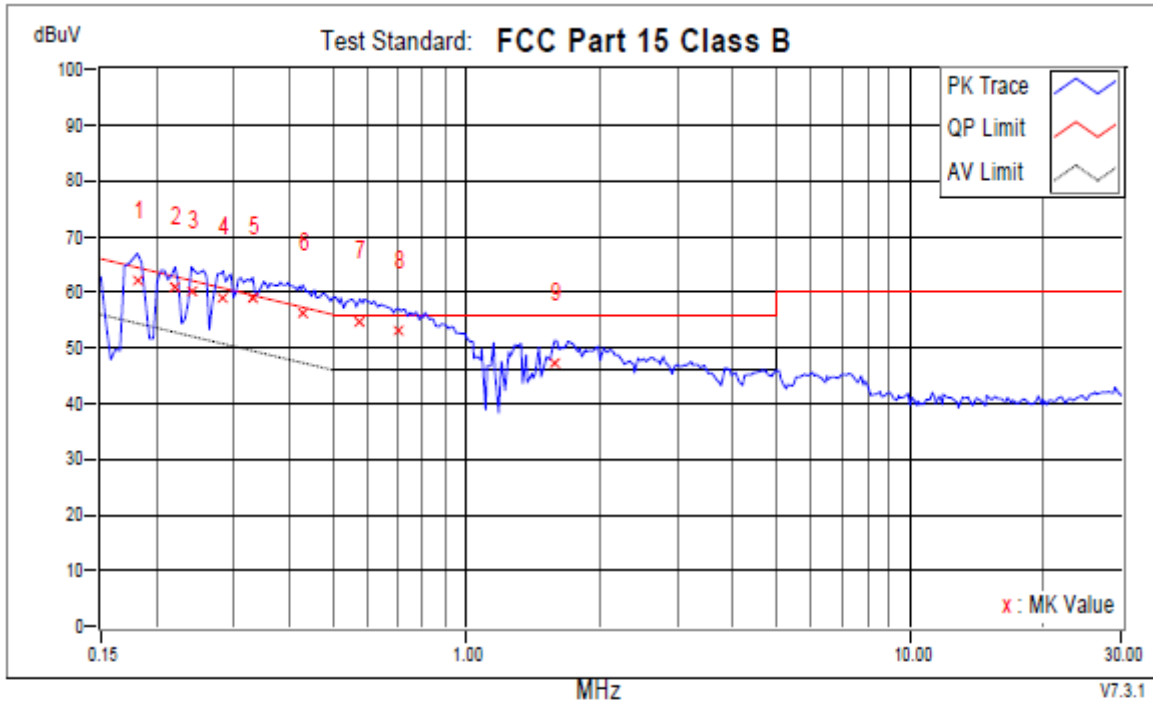
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.5 EUT Operating Conditions

Same as 4.1.6.

4.1.6 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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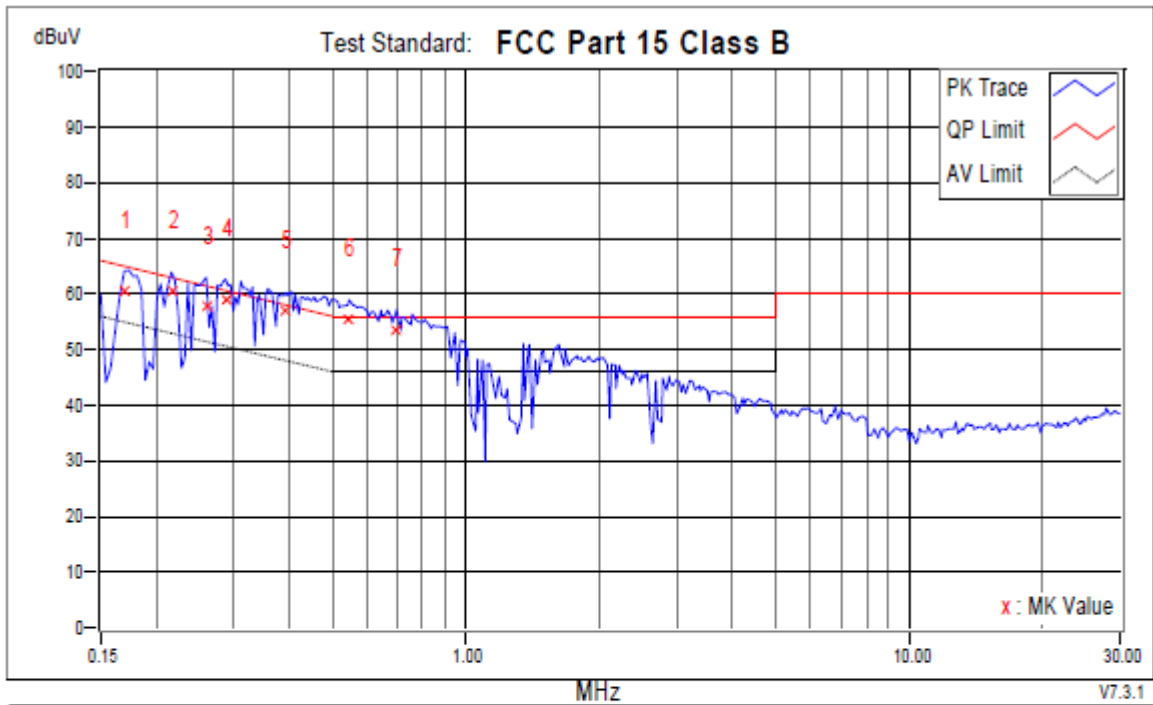


No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.18128	9.88	52.27	30.98	62.15	40.86	64.43	54.43	-2.27	-13.56	
2	0.22038	9.86	51.04	26.89	60.90	36.75	62.80	52.80	-1.91	-16.06	
3	0.23993	9.83	50.42	28.35	60.25	38.18	62.10	52.10	-1.85	-13.92	
4	0.28294	9.76	49.35	28.52	59.11	38.28	60.73	50.73	-1.62	-12.45	
+5	0.32986	9.74	49.07	26.62	58.81	36.36	59.45	49.45	-0.65	-13.10	
6	0.42761	9.75	46.41	25.03	56.16	34.78	57.30	47.30	-1.14	-12.52	
7	0.57619	9.70	45.02	27.15	54.72	36.85	56.00	46.00	-1.28	-9.15	
8	0.70131	9.62	43.46	25.37	53.08	34.99	56.00	46.00	-2.92	-11.01	
9	1.58259	9.72	37.70	26.54	47.42	36.26	56.00	46.00	-8.58	-9.74	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No.	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
	MHz		QP	AV	QP	AV	QP	AV	QP	AV	
1	0.16955	9.86	50.60	27.47	60.46	37.33	64.98	54.98	-4.52	-17.65	
2	0.21647	9.84	50.85	28.22	60.69	38.06	62.95	52.95	-2.26	-14.89	
3	0.25948	9.87	48.03	20.35	57.90	30.22	61.45	51.45	-3.55	-21.23	
4	0.28685	9.89	49.17	26.06	59.06	35.95	60.62	50.62	-1.55	-14.66	
5	0.39242	9.90	46.95	21.76	56.85	31.66	58.01	48.01	-1.17	-16.36	
+6	0.54491	9.86	45.75	24.13	55.61	33.99	56.00	46.00	-0.39	-12.01	
7	0.69740	9.83	43.74	21.00	53.57	30.83	56.00	46.00	-2.43	-15.17	

REMARKS:

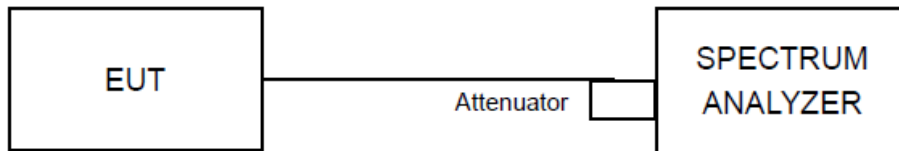
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

4.2 Minimum 6dB Bandwidth

4.2.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz

4.2.2 Test Setup



4.2.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” for compliance to FCC 47CFR 15.247 requirements (clause 8.2).

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW \geq 3 · RBW, peak detector with maximum hold) is implemented by the instrumentation function.

4.2.4 Deviation of Test Standard

No deviation.



4.2.5 Test Results

Test Mode	Antenna	Channel [MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
802.11b	Ant1	2412	8.640	2407.480	2416.120	≥ 0.5	PASS
		2437	8.360	2433.240	2441.600	≥ 0.5	PASS
		2462	8.680	2457.920	2466.600	≥ 0.5	PASS
802.11g	Ant1	2412	10.160	2408.160	2418.320	≥ 0.5	PASS
		2437	10.720	2430.720	2441.440	≥ 0.5	PASS
		2462	10.160	2456.960	2467.120	≥ 0.5	PASS
802.11n (HT20)	Ant1	2412	11.360	2405.720	2417.080	≥ 0.5	PASS
		2437	11.360	2430.720	2442.080	≥ 0.5	PASS
		2462	11.400	2455.680	2467.080	≥ 0.5	PASS

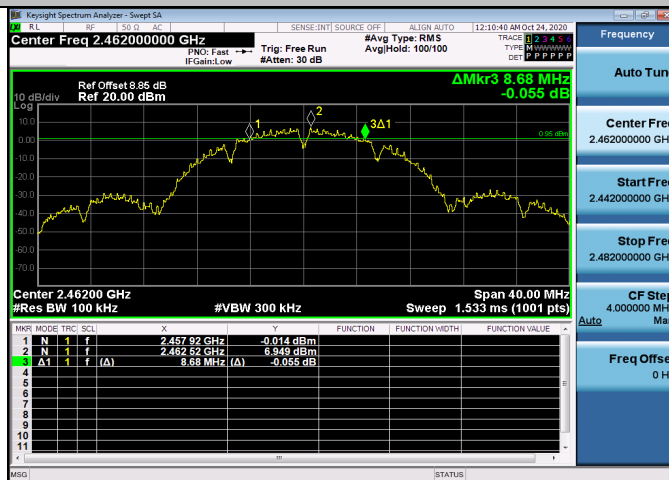
802.11b_Ant1_2412



802.11b_Ant1_2437



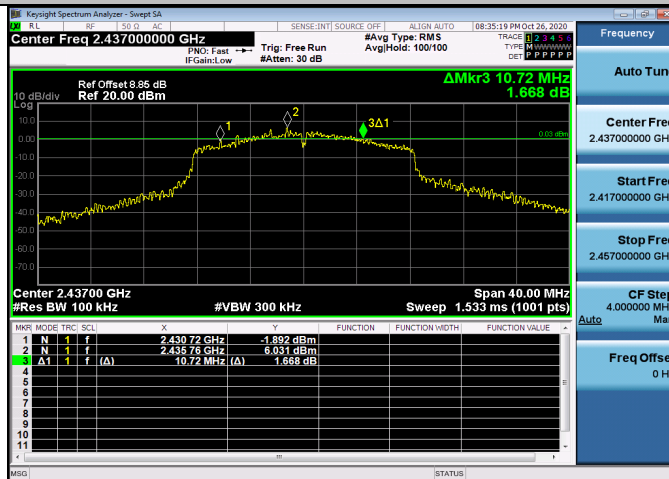
802.11b_Ant1_2462



802.11g_Ant1_2412



802.11g_Ant1_2437



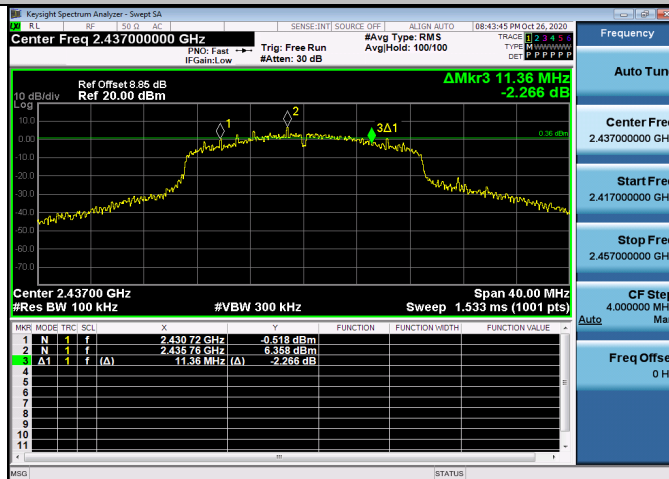
802.11g_Ant1_2462



802.11n (HT20)_Ant1_2412



802.11n (HT20)_Ant1_2437



802.11n (HT20)_Ant1_2462

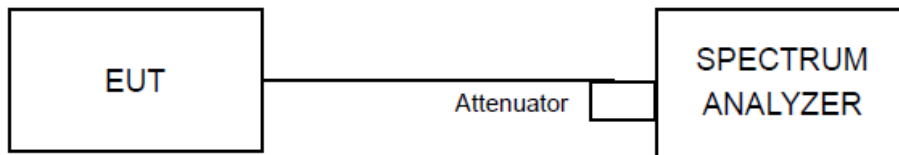


4.3 Conducted Output Power

4.3.1 Limit

For systems using digital modulation in the 2400 – 2483.5 MHz bands: 1 Watt (30 dBm)

4.3.2 Test Setup



4.3.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” for compliance to FCC 47CFR 15.247 requirements (clause 9.2.2.4).

- a) Measure the duty cycle, x , of the transmitter output signal as described in Section 6.0.
- b) Set span to at least 1.5 OBW.
- c) Set RBW = 1 % to 5 % of the OBW, not to exceed 1 MHz.
- d) Set VBW \geq 3 RBW.
- e) Number of points in sweep \geq 2 span / RBW. (This gives bin-to-bin spacing \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
- f) Sweep time = auto.
- g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- h) Do not use sweep triggering. Allow the sweep to “free run”.
- i) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the on and off periods of the transmitter.
- j) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- k) Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on- and off-times of the transmission). For example, add $10 \log (1/0.25) = 6 \text{ dB}$ if the duty cycle is 25 %.

4.3.4 Deviation of Test Standard

No deviation.

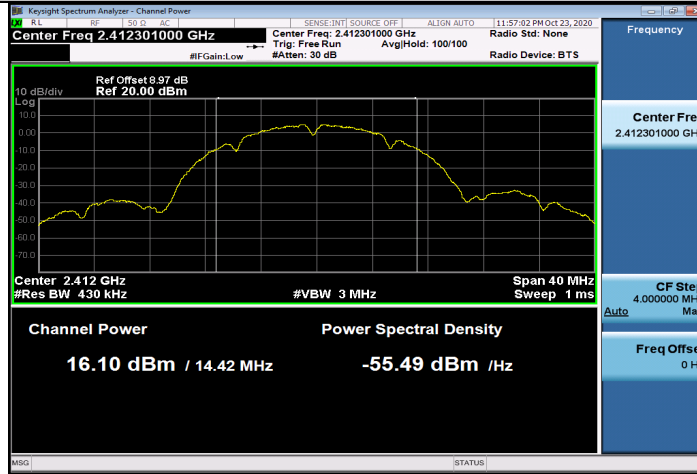


4.3.5 Test Results

Test Mode	Antenna	Channel [MHz]	Level [dBm]	10log(1/x) Factor[dB]	Power [dBm]	Limit [dBm]	Verdict
802.11b	Ant1	2412	16.10	0.01	16.11	<=30	PASS
		2437	16.64	0.01	16.65	<=30	PASS
		2462	16.47	0.01	16.48	<=30	PASS
802.11g	Ant1	2412	15.73	0.05	15.78	<=30	PASS
		2437	15.83	0.05	15.88	<=30	PASS
		2462	15.84	0.05	15.89	<=30	PASS
802.11n (HT20)	Ant1	2412	14.55	0.05	14.6	<=30	PASS
		2437	14.79	0.05	14.84	<=30	PASS
		2462	14.87	0.05	14.92	<=30	PASS



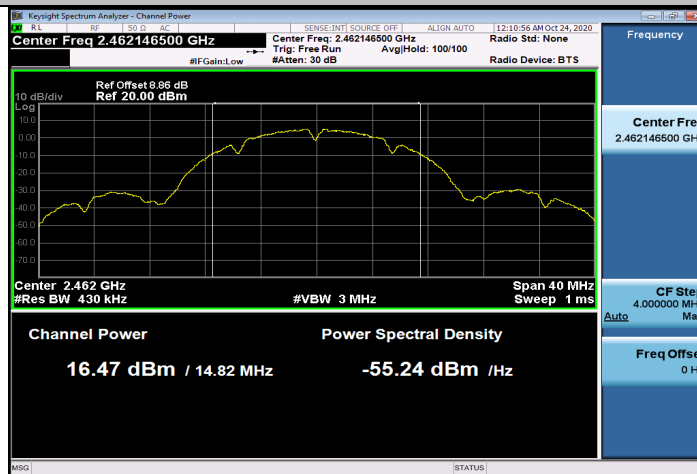
802.11b_Ant1_2412



802.11b_Ant1_2437

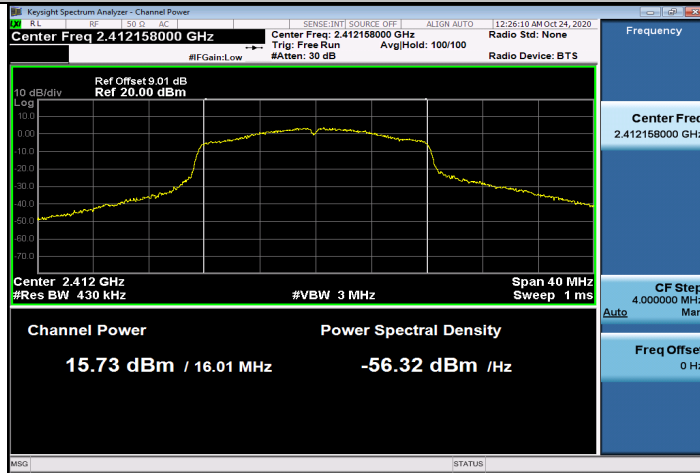


802.11b_Ant1_2462

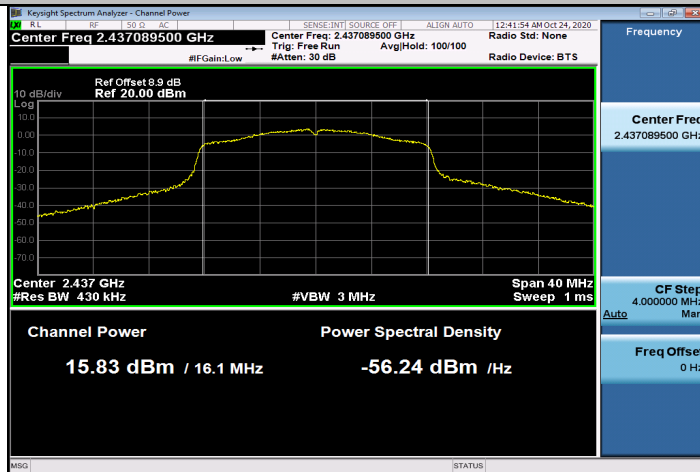




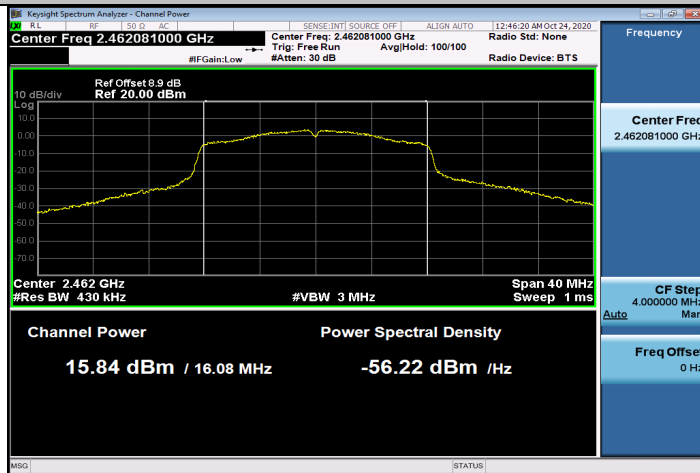
802.11g_Ant1_2412



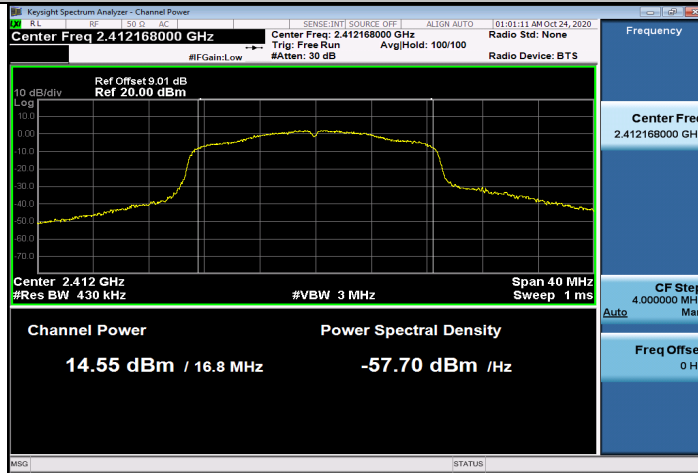
802.11g_Ant1_2437



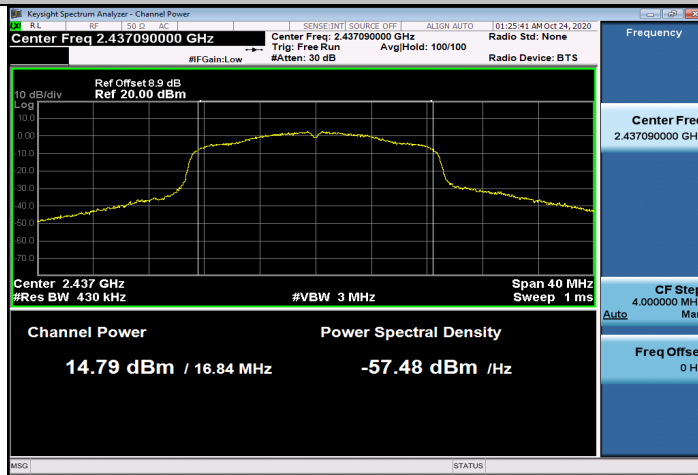
802.11g_Ant1_2462



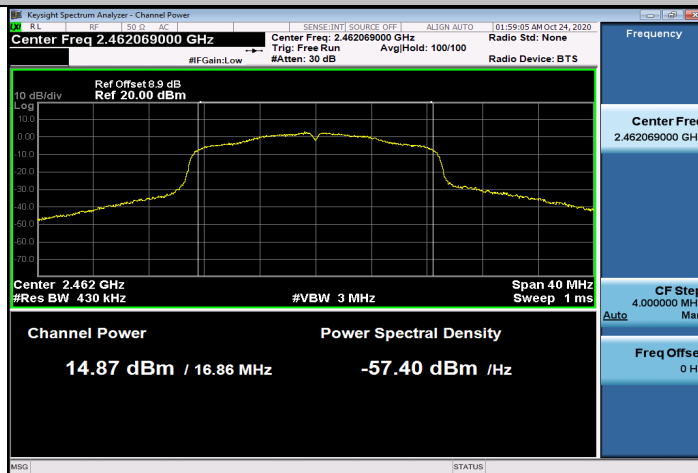
802.11n (HT20)_Ant1_2412



802.11n (HT20)_Ant1_2437



802.11n (HT20)_Ant1_2462

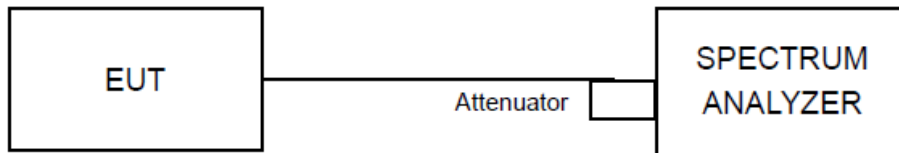


4.4 Power Spectral Density

4.4.1 Limit

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz band.

4.4.2 Test Setup



4.4.3 Test Procedures

The power output per FCC § 15.247(e) was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” (clause 10.5) for compliance to FCC 47CFR 15.247 requirements.

- a) Measure the duty cycle (x) of the transmitter output signal.
- b) Set instrument center frequency to DTS channel center frequency.
- c) Set span to at least 1.5 OBW.
- d) Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- e) Set VBW $\geq 3 \text{ RBW}$.
- f) Detector = power averaging (RMS) or sample detector (when RMS not available).
- g) Ensure that the number of measurement points in the sweep $\geq 2 \text{ span/RBW}$.
- h) Sweep time = auto couple.
- i) Do not use sweep triggering. Allow sweep to “free run”.
- j) Employ trace averaging (RMS) mode over a minimum of 100 traces.
- k) Use the peak marker function to determine the maximum amplitude level.
- l) Add $10 \log(1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.
- m) If resultant value exceeds the limit, then reduce RBW (no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

4.4.4 Deviation of Test Standard

No deviation.



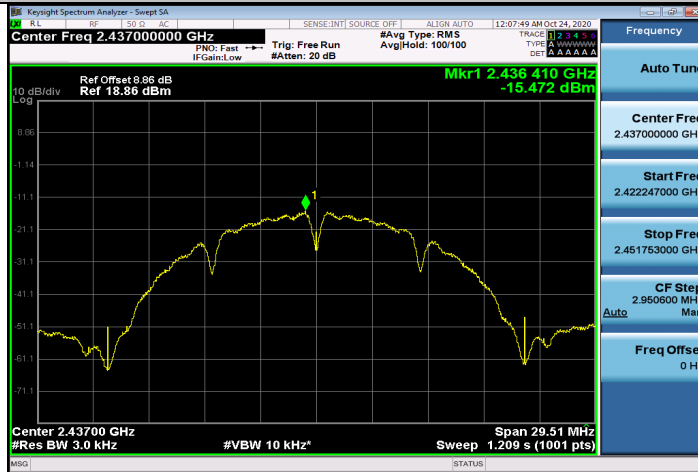
4.4.5 Test Results

Test Mode	Antenna	Channel [MHz]	Level [dBm/3kHz]	10log(1/x) Factor[dB]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
802.11b	Ant1	2412	-16.11	0.01	-16.10	<=8	PASS
		2437	-15.47	0.01	-15.46	<=8	PASS
		2462	-15.76	0.01	-15.75	<=8	PASS
802.11g	Ant1	2412	-15.62	0.05	-15.57	<=8	PASS
		2437	-15.39	0.05	-15.34	<=8	PASS
		2462	-15.56	0.05	-15.51	<=8	PASS
802.11n (HT20)	Ant1	2412	-17.78	0.05	-17.73	<=8	PASS
		2437	-17.40	0.05	-17.35	<=8	PASS
		2462	-17.55	0.05	-17.50	<=8	PASS

802.11b_Ant1_2412



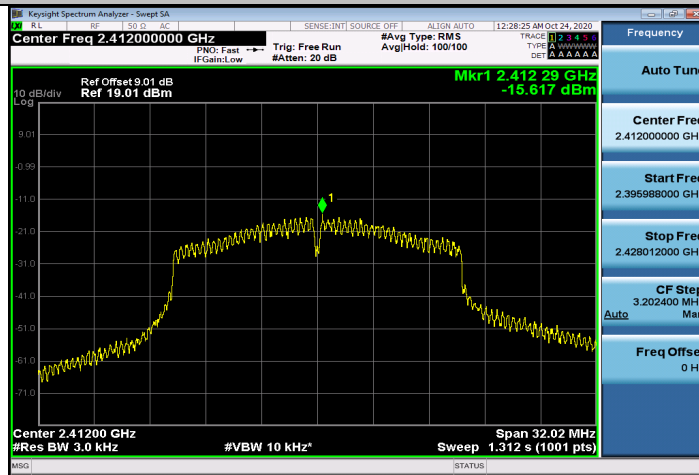
802.11b_Ant1_2437



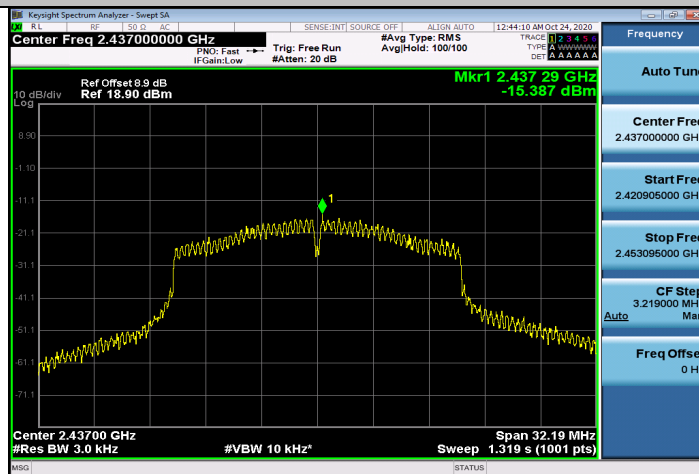
802.11b_Ant1_2462



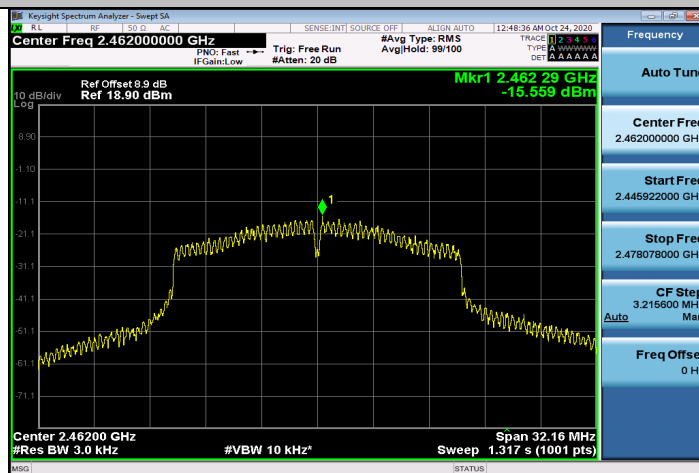
802.11g_Ant1_2412



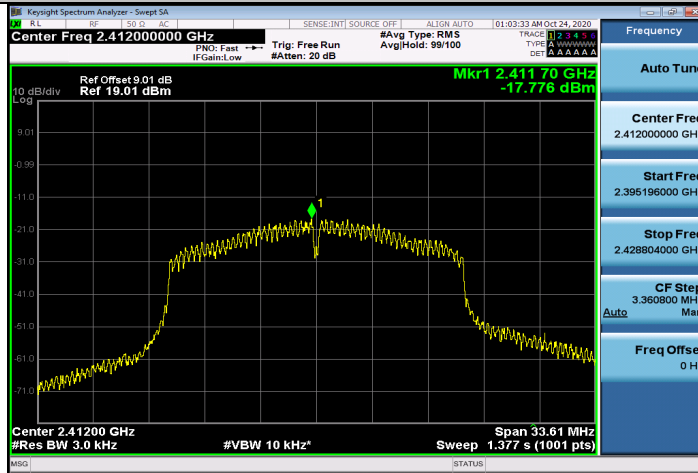
802.11g_Ant1_2437



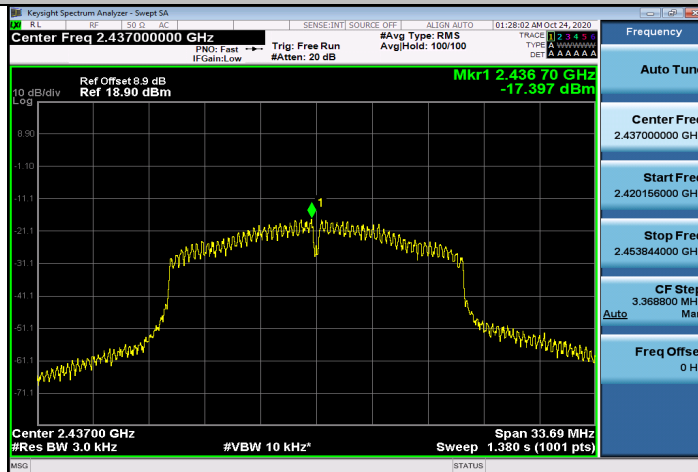
802.11g_Ant1_2462



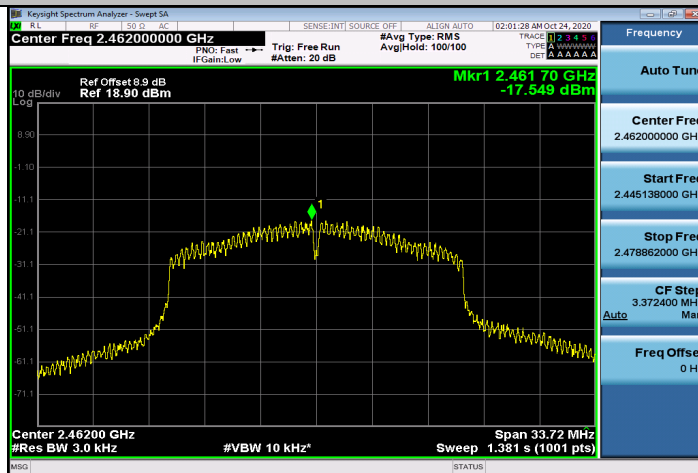
802.11n (HT20)_Ant1_2412



802.11n (HT20)_Ant1_2437



802.11n (HT20)_Ant1_2462

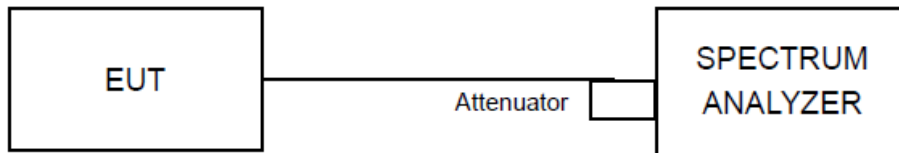


4.5 Conducted Band Edges Measurement

4.5.1 Limit

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

4.5.2 Test Setup



4.5.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.5.4 Deviation of Test Standard

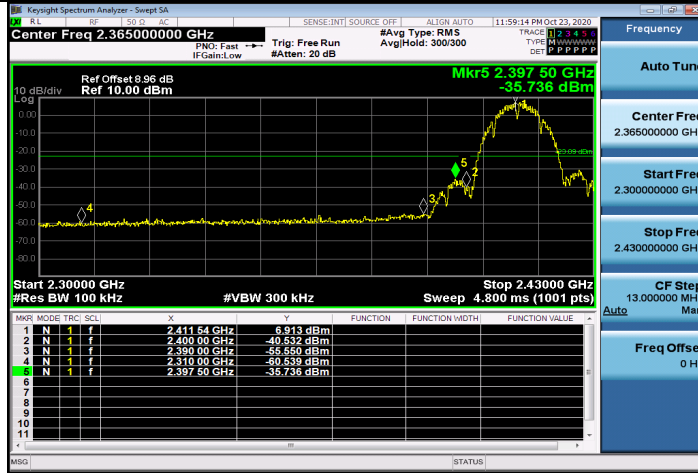
No deviation.



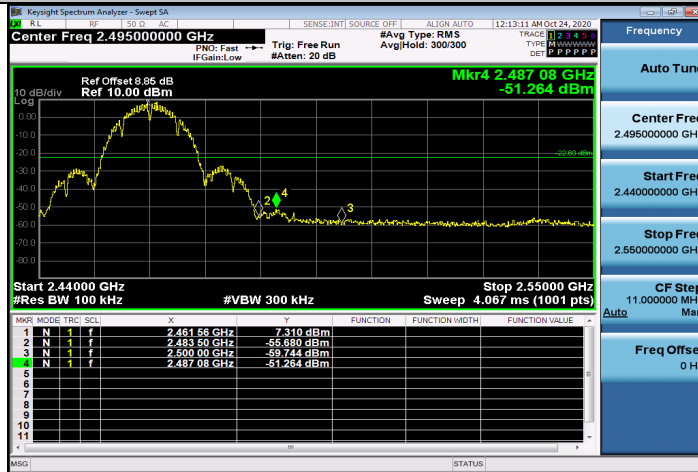
4.5.5 Test Results

Test Mode	Antenna	ChName	Channel [MHz]	RefLevel [dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
802.11b	Ant1	Low	2412	6.91	-35.74	<=-23.09	PASS
		High	2462	7.31	-51.26	<=-22.69	PASS
802.11g	Ant1	Low	2412	6.06	-31.66	<=-23.94	PASS
		High	2462	6.18	-38.7	<=-23.83	PASS
802.11n (HT20)	Ant1	Low	2412	5.31	-36.54	<=-24.69	PASS
		High	2462	4.96	-41.58	<=-25.04	PASS

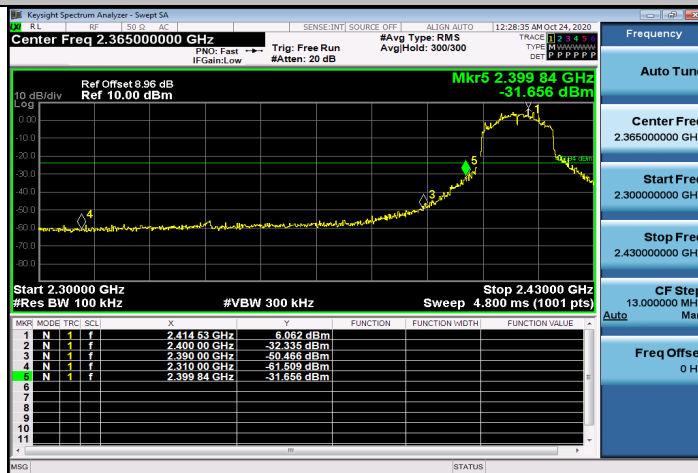
802.11b_Ant1_Low_2412



802.11b_Ant1_High_2462



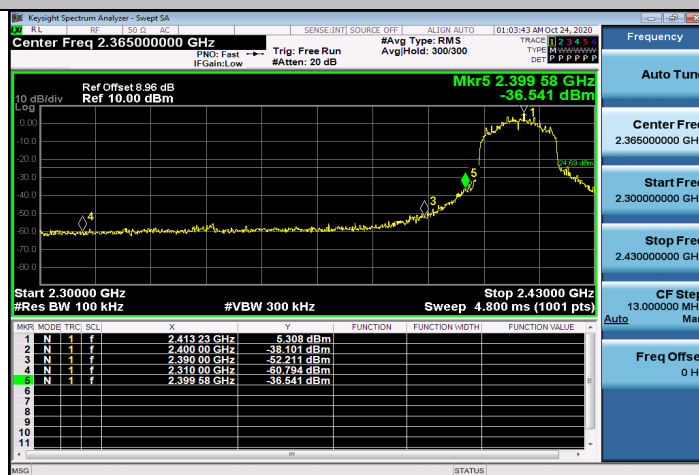
802.11g_Ant1_Low_2412



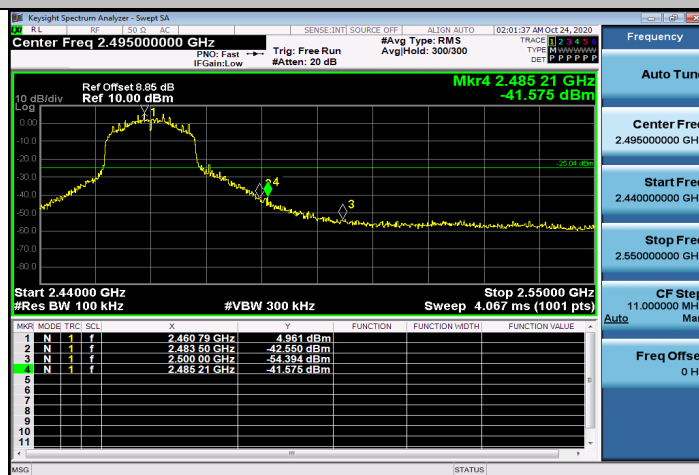
802.11g_Ant1_High_2462



802.11n (HT20)_Ant1_Low_2412



802.11n (HT20)_Ant1_High_2462

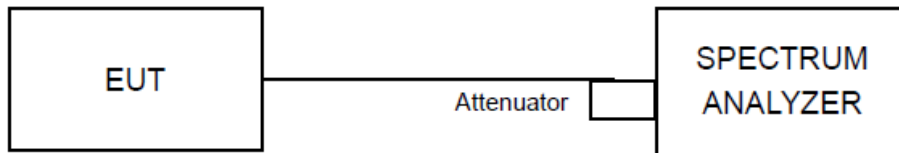


4.6 Conducted Spurious Emissions

4.6.1 Limit

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.4 Deviation of Test Standard

No deviation.



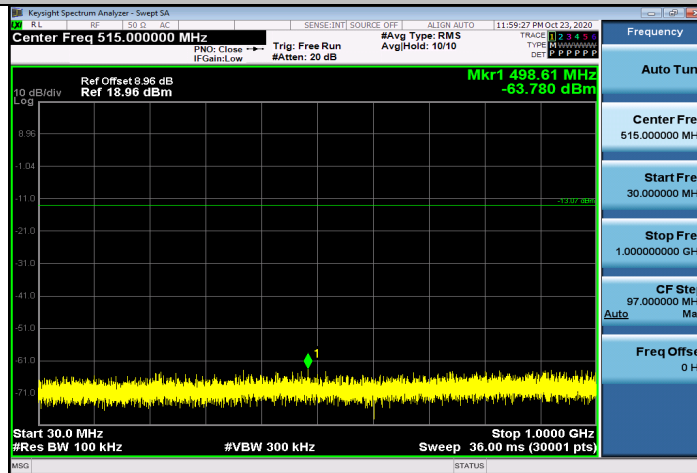
4.6.5 Test Results

Test Mode	Antenna	Channel [MHz]	FreqRange [MHz]	RefLevel [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
802.11b	Ant1	2412	Reference	6.93	6.93	---	PASS
			30~1000	30~1000	-63.78	<=-13.07	PASS
			1000~26500	1000~26500	-46.161	<=-13.07	PASS
		2437	Reference	7.03	7.03	---	PASS
			30~1000	30~1000	-63.405	<=-12.967	PASS
			1000~26500	1000~26500	-45.766	<=-12.967	PASS
		2462	Reference	7.48	7.48	---	PASS
			30~1000	30~1000	-62.106	<=-12.524	PASS
			1000~26500	1000~26500	-46.968	<=-12.524	PASS
802.11g	Ant1	2412	Reference	6.35	6.35	---	PASS
			30~1000	30~1000	-62.643	<=-13.655	PASS
			1000~26500	1000~26500	-45.405	<=-13.655	PASS
		2437	Reference	3.92	3.92	---	PASS
			30~1000	30~1000	-63.055	<=-16.081	PASS
			1000~26500	1000~26500	-46.058	<=-16.081	PASS
		2462	Reference	6.25	6.25	---	PASS
			30~1000	30~1000	-62.871	<=-13.753	PASS
			1000~26500	1000~26500	-45.917	<=-13.753	PASS
802.11n (HT20)	Ant1	2412	Reference	5.32	5.32	---	PASS
			30~1000	30~1000	-63.355	<=-14.684	PASS
			1000~26500	1000~26500	-45.244	<=-14.684	PASS
		2437	Reference	3.12	3.12	---	PASS
			30~1000	30~1000	-63.016	<=-16.878	PASS
			1000~26500	1000~26500	-46.653	<=-16.878	PASS
		2462	Reference	3.16	3.16	---	PASS
			30~1000	30~1000	-63.335	<=-16.845	PASS
			1000~26500	1000~26500	-46.857	<=-16.845	PASS

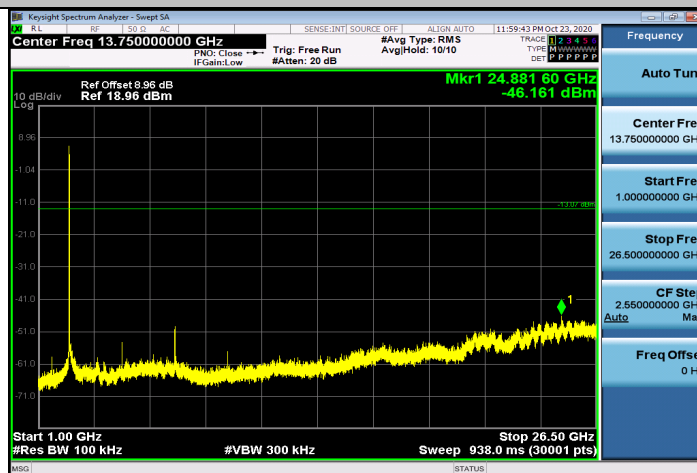
802.11b_Ant1_2412_0~Reference



802.11b_Ant1_2412_30~1000



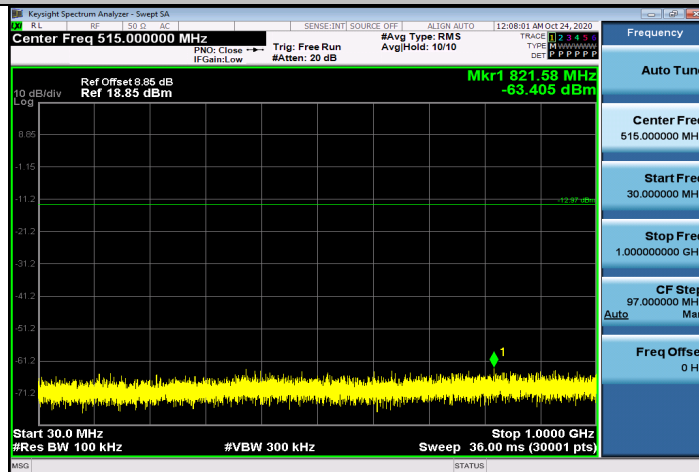
802.11b_Ant1_2412_1000~26500



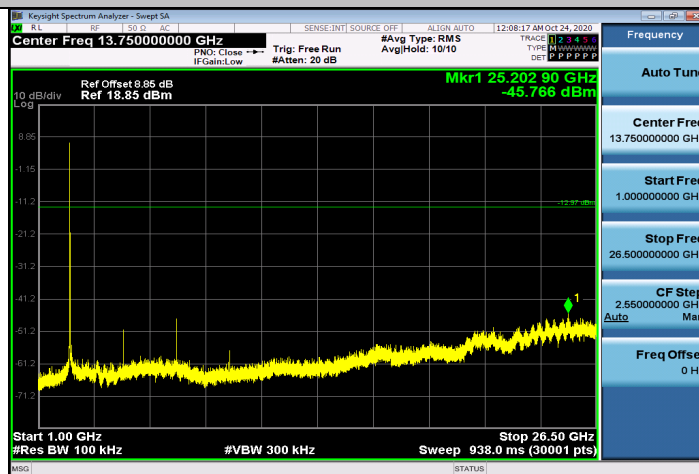
802.11b_Ant1_2437_0~Reference



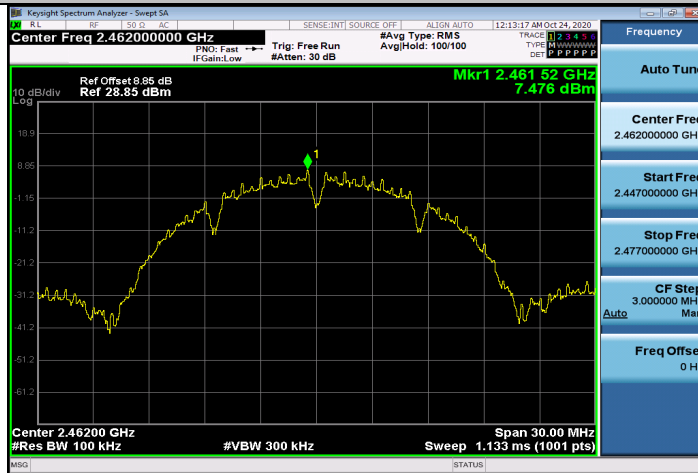
802.11b_Ant1_2437_30~1000



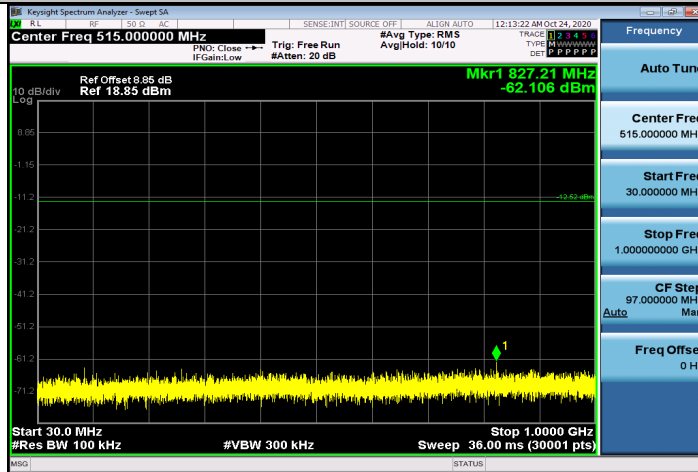
802.11b_Ant1_2437_1000~26500



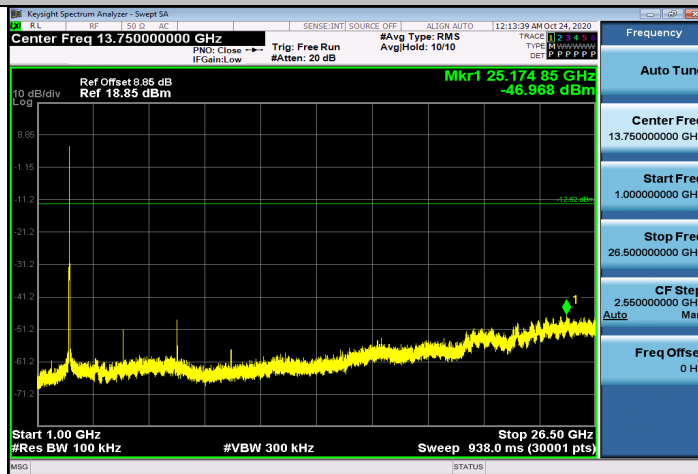
802.11b_Ant1_2462_0~Reference



802.11b_Ant1_2462_30~1000



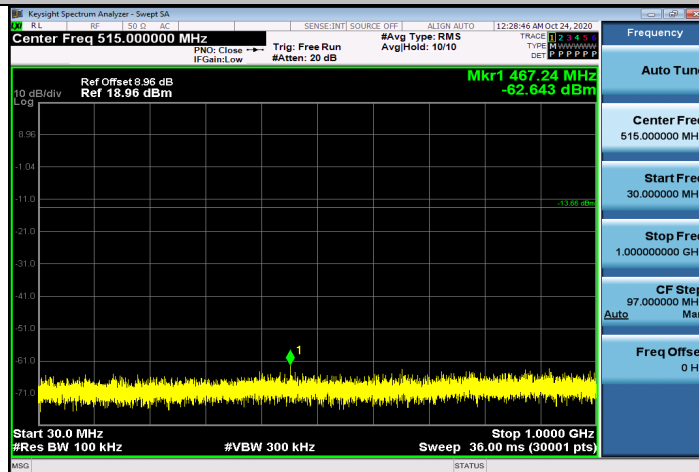
802.11b_Ant1_2462_1000~26500



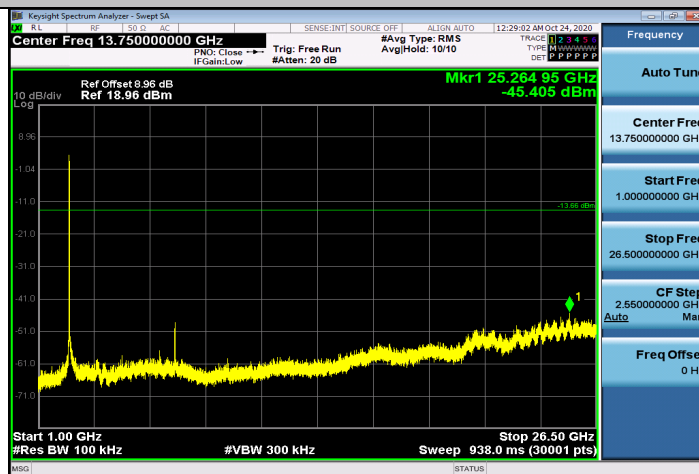
802.11g_Ant1_2412_0~Reference



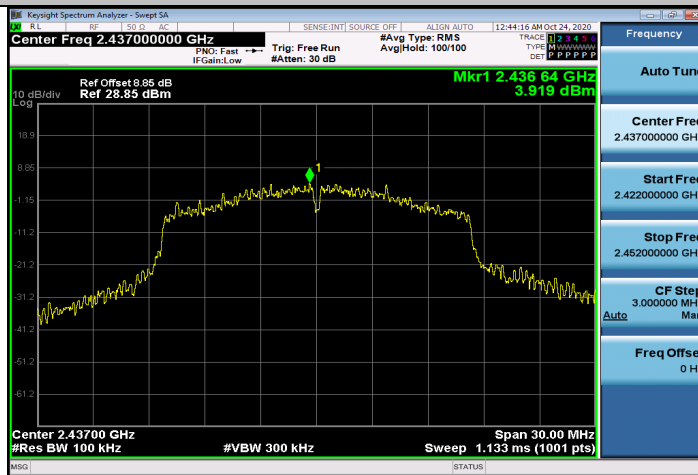
802.11g_Ant1_2412_30~1000



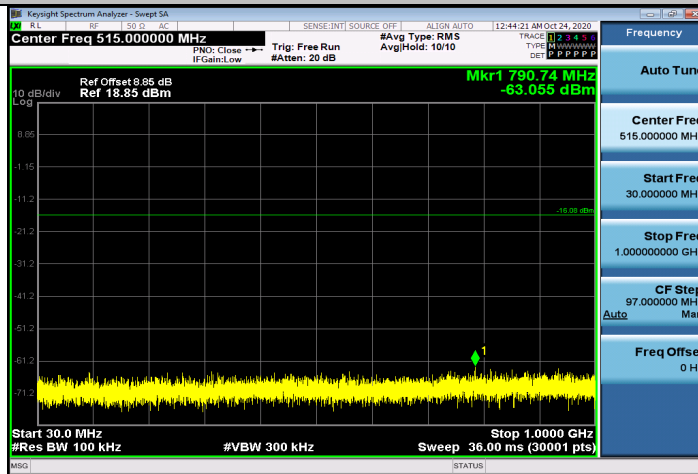
802.11g_Ant1_2412_1000~26500



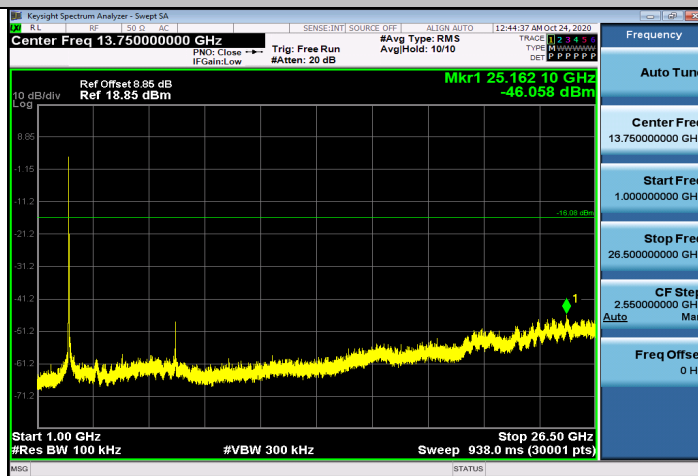
802.11g_Ant1_2437_0~Reference



802.11g_Ant1_2437_30~1000



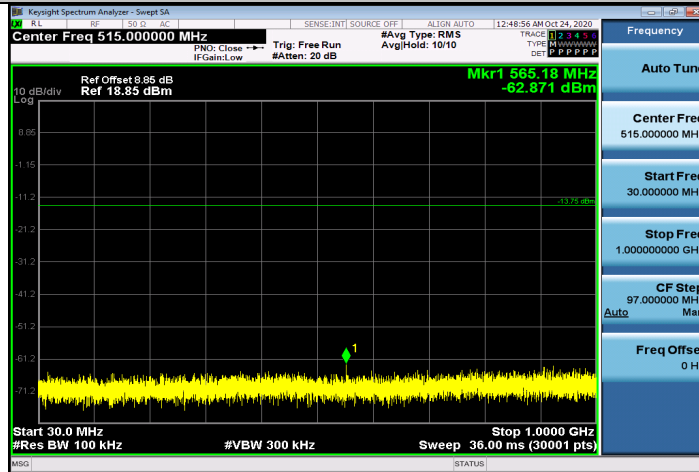
802.11g_Ant1_2437_1000~26500



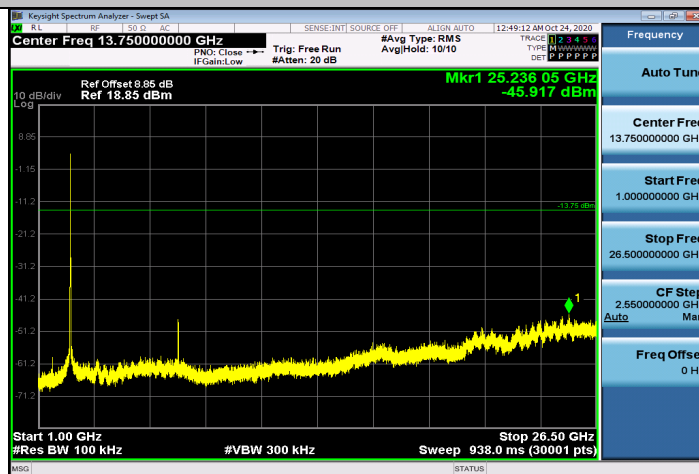
802.11g_Ant1_2462_0~Reference



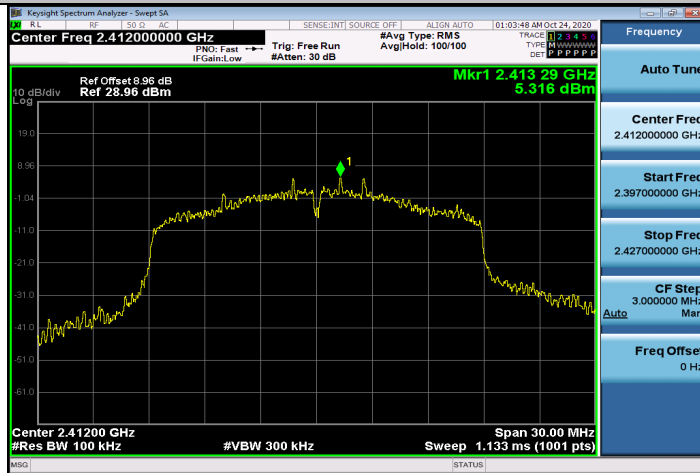
802.11g_Ant1_2462_30~1000



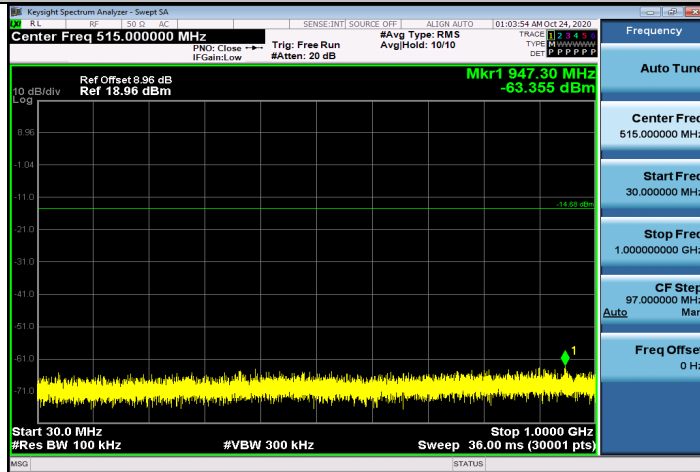
802.11g_Ant1_2462_1000~26500



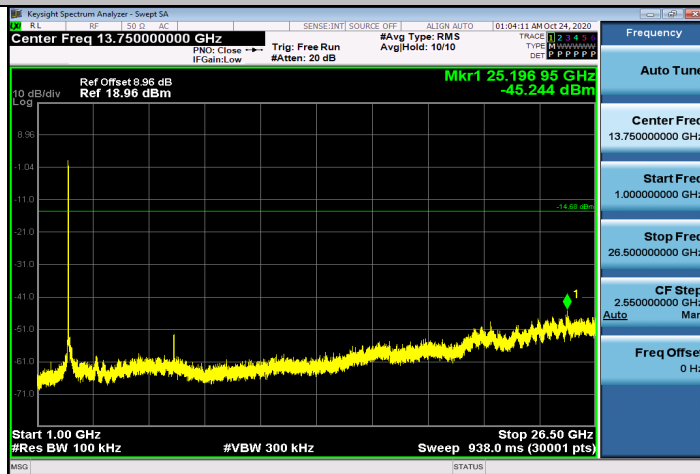
802.11n (HT20)_Ant1_2412_0~Reference



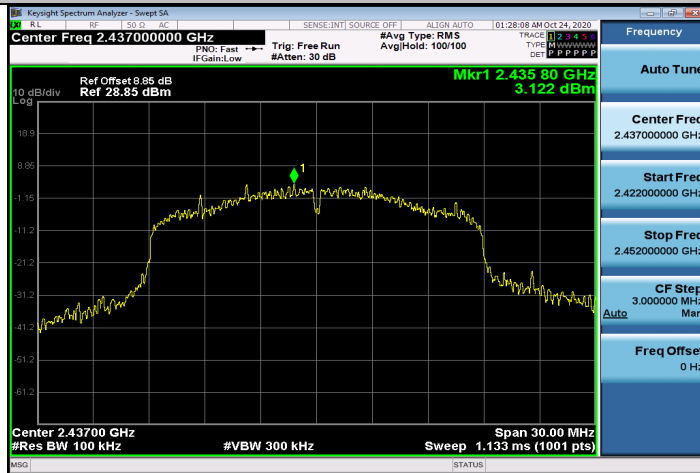
802.11n (HT20)_Ant1_2412_30~1000



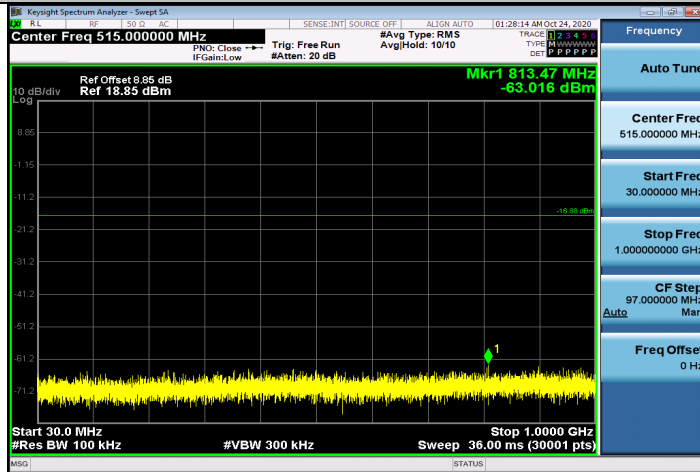
802.11n (HT20)_Ant1_2412_1000~26500



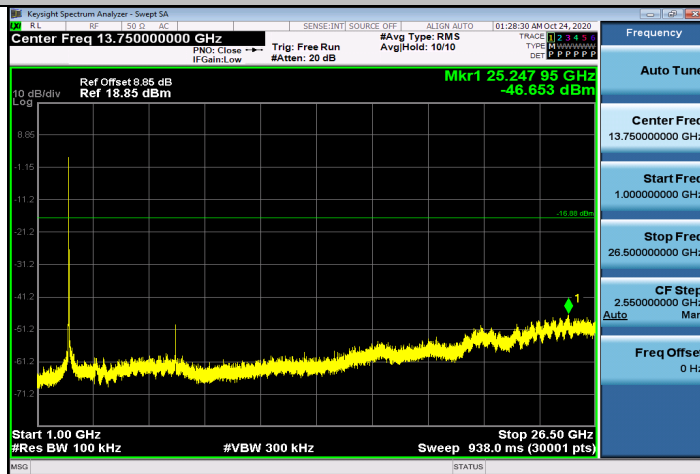
802.11n (HT20)_Ant1_2437_0~Reference



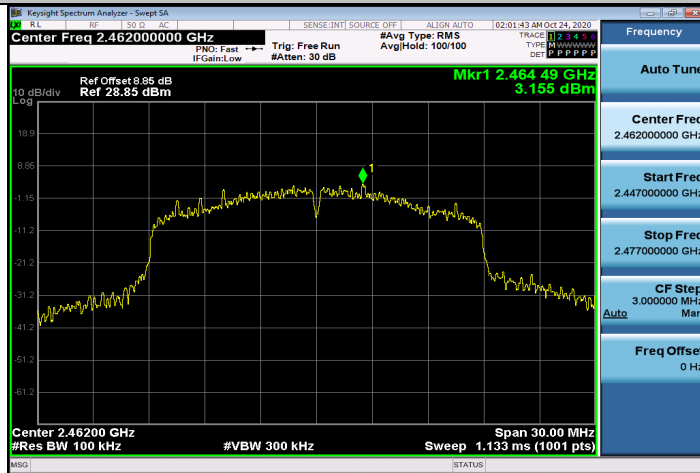
802.11n (HT20)_Ant1_2437_30~1000



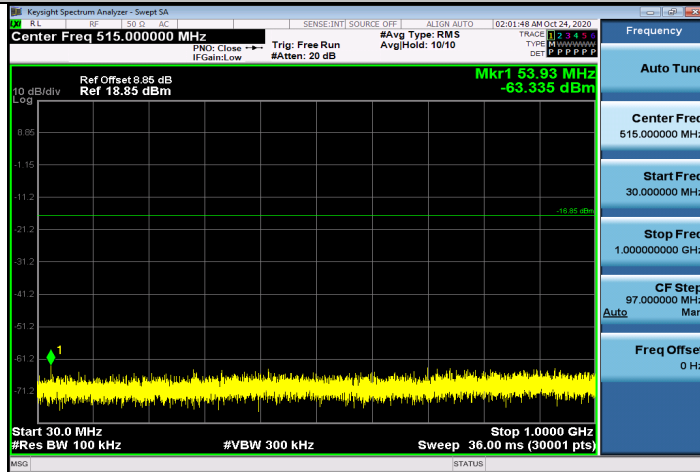
802.11n (HT20)_Ant1_2437_1000~26500



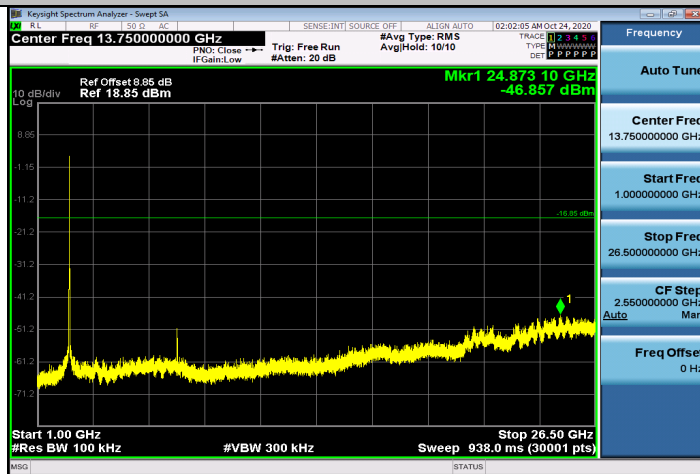
802.11n (HT20)_Ant1_2462_0~Reference



802.11n (HT20)_Ant1_2462_30~1000



802.11n (HT20)_Ant1_2462_1000~26500





4.7 Emissions in restricted frequency bands

4.7.1 Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
1 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41	--	--	--



All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

4.7.2 Test Procedure Reference

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

4.7.3 Test Procedures

Peak Field Strength Measurements

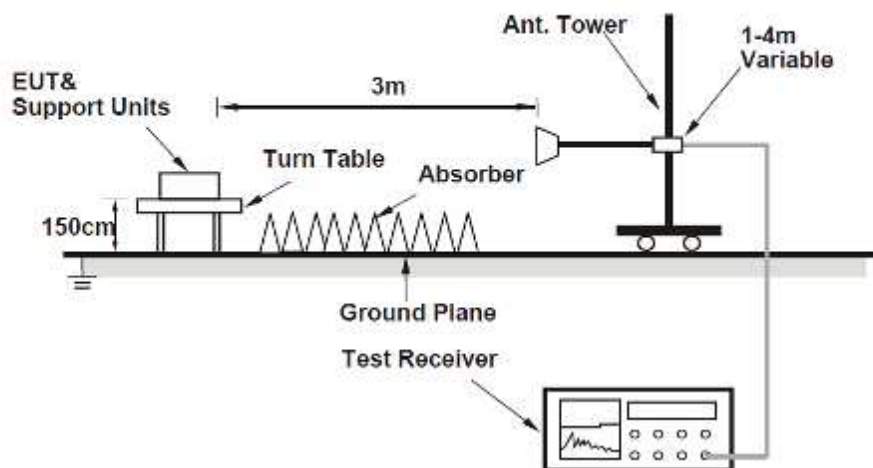
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

8. 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
9. 2. RBW = 1MHz
10. 3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
11. If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
12. 4. Detector = Peak
13. 5. Sweep time = auto
14. 6. Trace mode = max hold
15. 7. Trace was allowed to stabilize

4.7.4 Test Setup

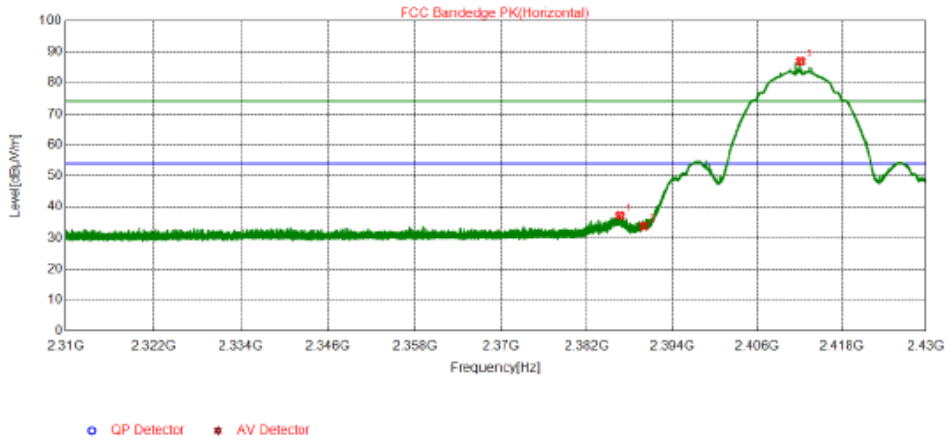
For Radiated emission above 1GHz



4.7.5 Test Results

802.11b-2412MHz/ Horizontal

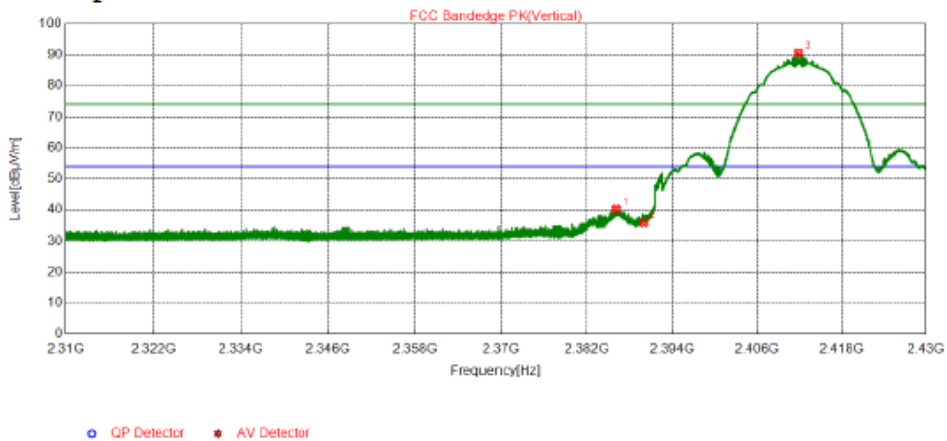
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2386.6440	52.95	37.13	74.00	36.87	155	143	Horizontal	PK
2	2390.0040	49.54	33.73	74.00	40.27	155	143	Horizontal	PK
3	2412.1800	102.63	86.90	74.00	-12.90	155	143	Horizontal	PK

802.11b-2412MHz/ Vertical

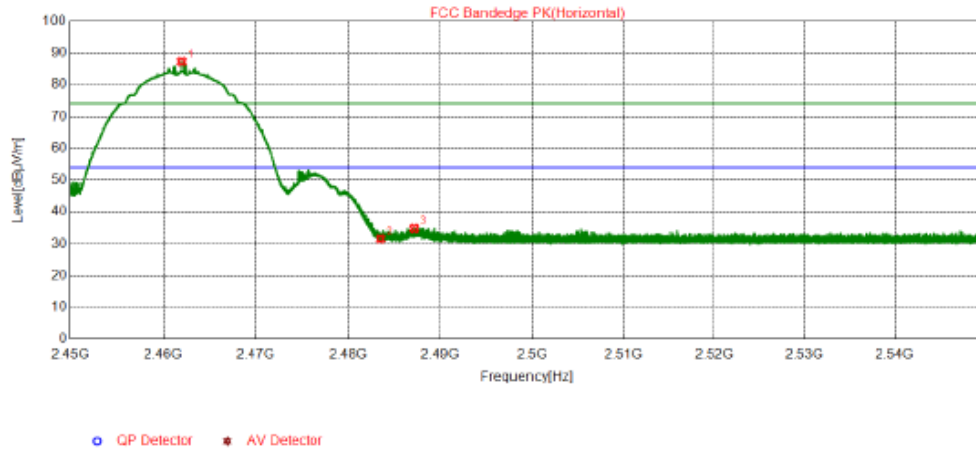
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2386.1340	56.05	40.22	74.00	33.78	155	287	Vertical	PK
2	2390.0040	51.72	35.91	74.00	38.09	155	287	Vertical	PK
3	2411.8800	106.40	90.67	74.00	-16.67	155	348	Vertical	PK

802.11b-2462MHz/ Horizontal

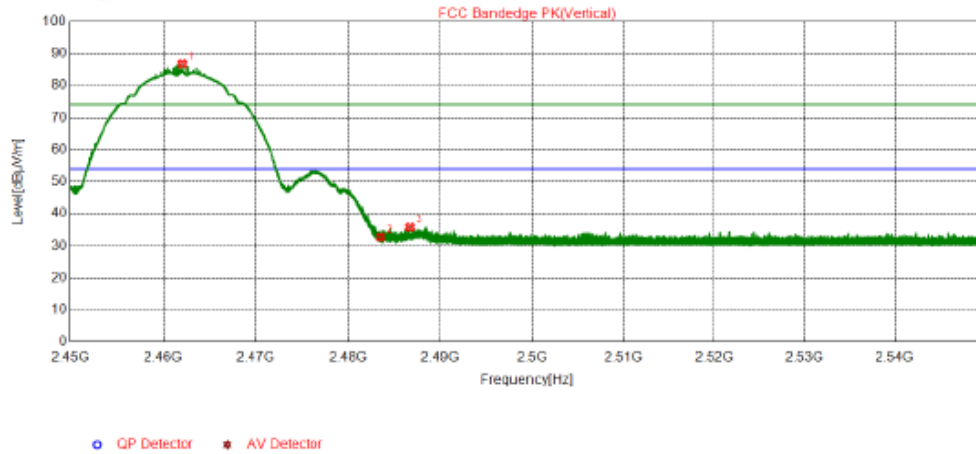
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2461.9750	102.86	87.29	74.00	-13.29	155	12	Horizontal	PK
2	2483.5000	47.05	31.55	74.00	42.45	155	257	Horizontal	PK
3	2487.1500	50.28	34.80	74.00	39.20	155	12	Horizontal	PK

802.11b-2462MHz/ Vertical

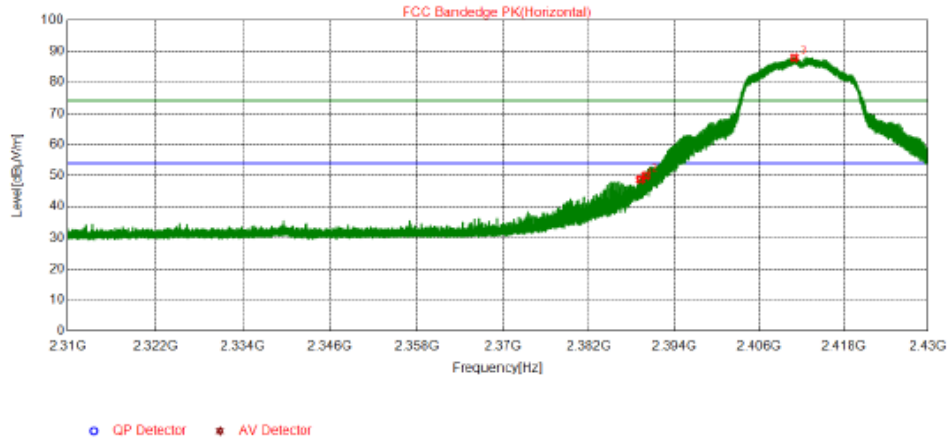
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2462.0400	102.28	86.71	74.00	-12.71	155	347	Vertical	PK
2	2483.5000	48.25	32.75	74.00	41.25	155	327	Vertical	PK
3	2486.6950	51.31	35.83	74.00	38.17	155	347	Vertical	PK

802.11g-2412MHz/ Horizontal

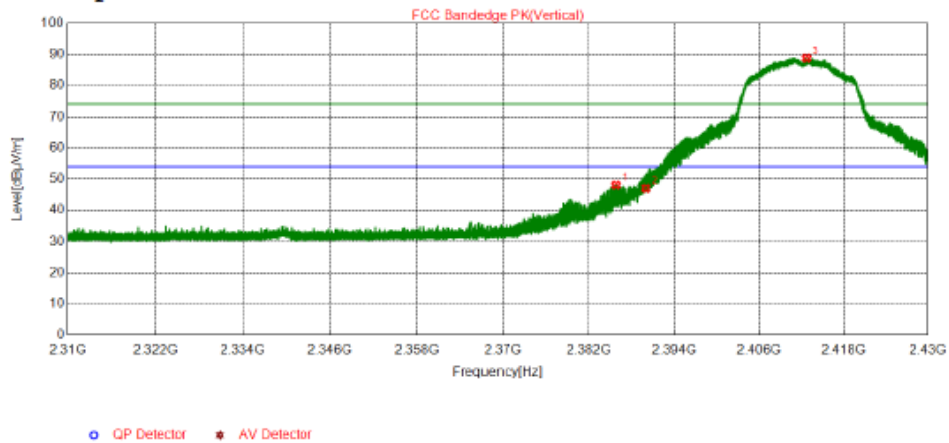
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2389.2660	64.52	48.71	74.00	25.29	155	135	Horizontal	PK
2	2390.0040	65.87	50.06	74.00	23.94	155	135	Horizontal	PK
3	2411.0100	103.66	87.92	74.00	-13.92	155	135	Horizontal	PK

802.11g-2412MHz/ Vertical

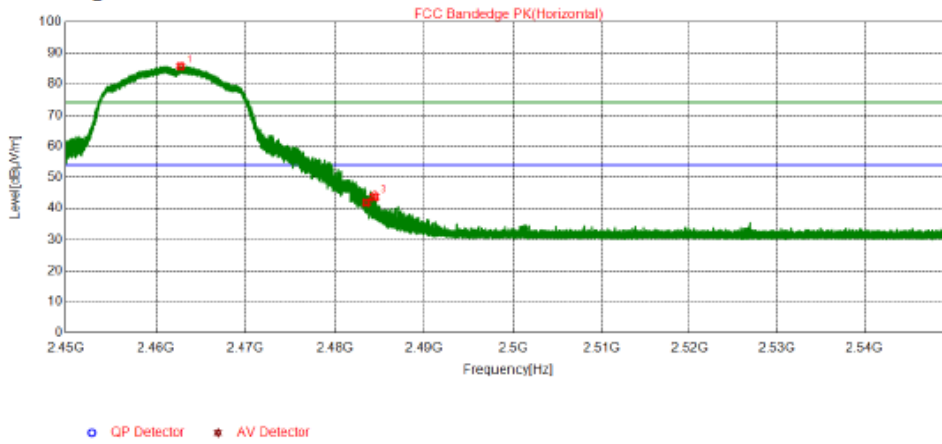
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2385.8400	63.92	48.09	74.00	25.91	155	245	Vertical	PK
2	2390.0040	62.89	47.08	74.00	26.92	155	347	Vertical	PK
3	2412.7260	104.54	88.81	74.00	-14.81	155	347	Vertical	PK

802.11g-2462MHz/ Horizontal

Test Graph



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2462.7550	101.28	85.72	74.00	-11.72	155	41	Horizontal	PK
2	2483.5000	57.39	41.89	74.00	32.11	155	41	Horizontal	PK
3	2484.4000	59.19	43.70	74.00	30.30	155	41	Horizontal	PK

802.11g-2462MHz/ Vertical

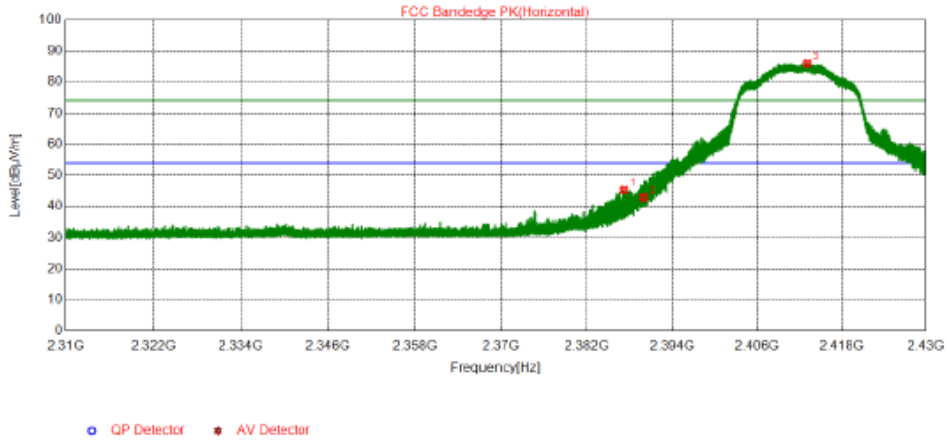
Test Graph



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2461.1050	103.28	87.71	74.00	-13.71	155	217	Vertical	PK
2	2483.5000	60.35	44.85	74.00	29.15	155	319	Vertical	PK
3	2484.3450	65.45	49.96	74.00	24.04	155	196	Vertical	PK

802.11n (HT20)-2412MHz/ Horizontal

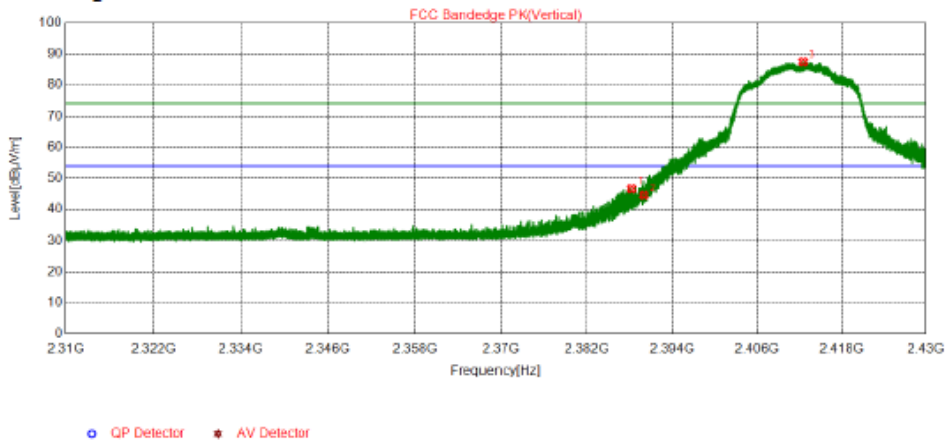
Test Graph



NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2387.2260	61.13	45.31	74.00	28.69	155	143	Horizontal	PK
2	2390.0040	58.62	42.81	74.00	31.19	155	143	Horizontal	PK
3	2413.1280	101.70	85.97	74.00	-11.97	155	143	Horizontal	PK

802.11n (HT20)-2412MHz/ Vertical

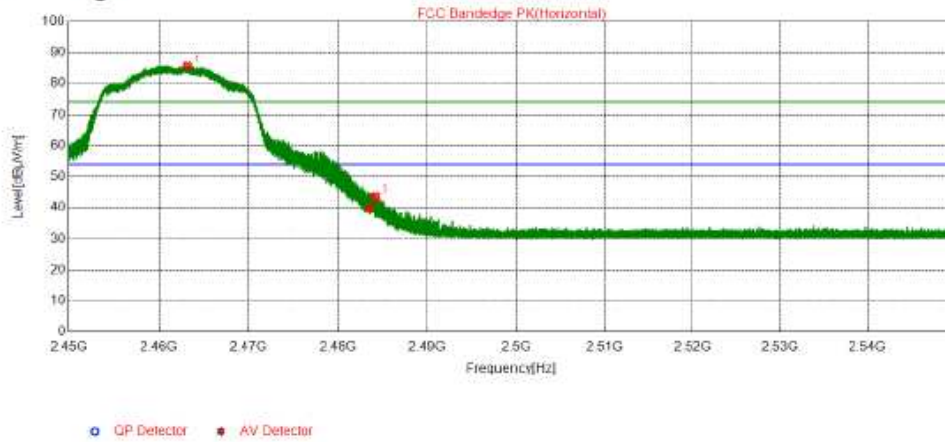
Test Graph



NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2388.3120	62.52	46.70	74.00	27.30	155	340	Vertical	PK
2	2390.0040	60.44	44.63	74.00	29.37	155	258	Vertical	PK
3	2412.5220	103.21	87.48	74.00	-13.48	155	13	Vertical	PK

802.11n (ht20)-2462MHz/ Horizontal

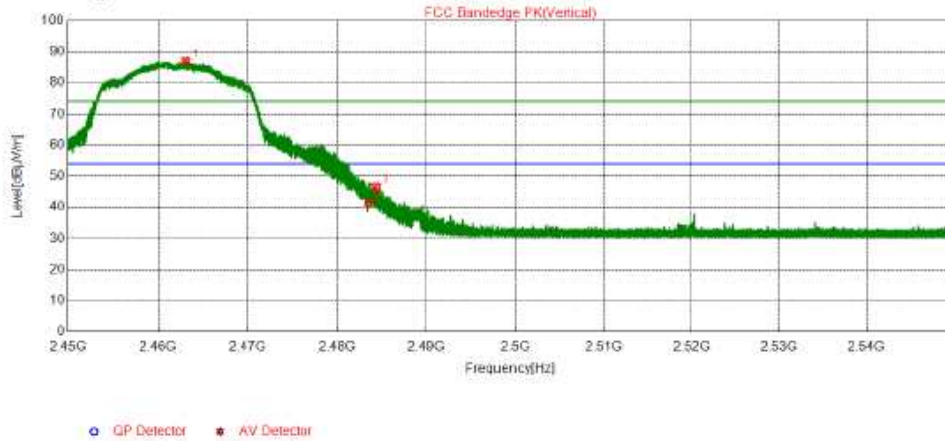
Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2463.2150	101.30	85.74	74.00	-11.74	155	12	Horizontal	PK
2	2483.5000	55.31	39.81	74.00	34.19	155	33	Horizontal	PK
3	2484.1950	59.08	43.59	74.00	30.41	155	12	Horizontal	PK

802.11n (HT20)-2462MHz/ Vertical

Test Graph



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	2463.0900	102.49	86.93	74.00	-12.93	155	347	Vertical	PK
2	2483.5000	56.99	41.49	74.00	32.51	155	245	Vertical	PK
3	2484.3900	62.08	46.59	74.00	27.41	155	347	Vertical	PK



4.8 Radiated Emission Measurement

4.8.1 Limits

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.8.2 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degree to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotate table was turned from 0 degree to 360 degree to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.



For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

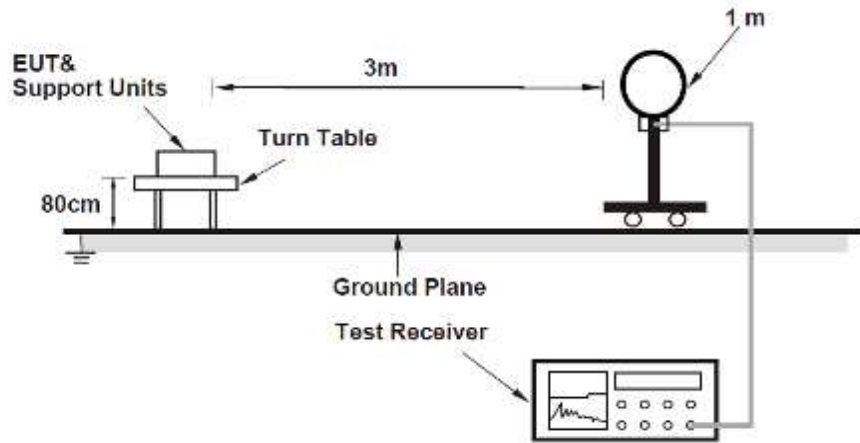
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for RMS Average (Duty cycle < 98 %) for Peak detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle \geq 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.8.3 Deviation from Test Standard

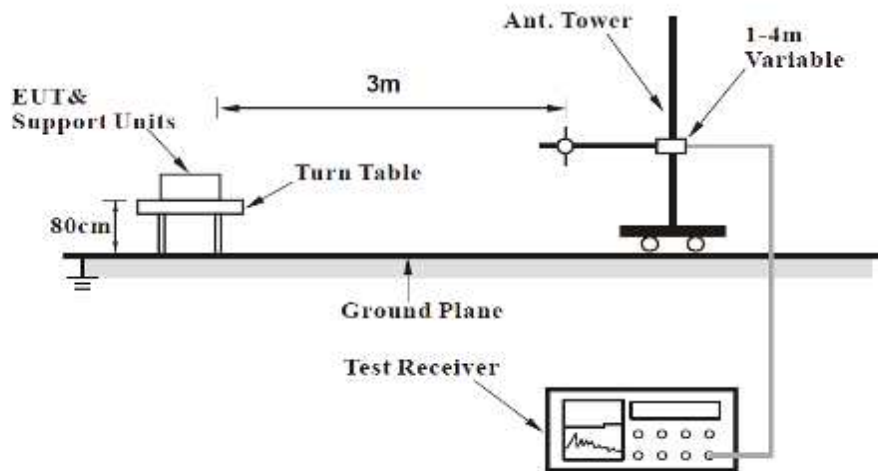
No deviation.

4.8.4 Test Setup

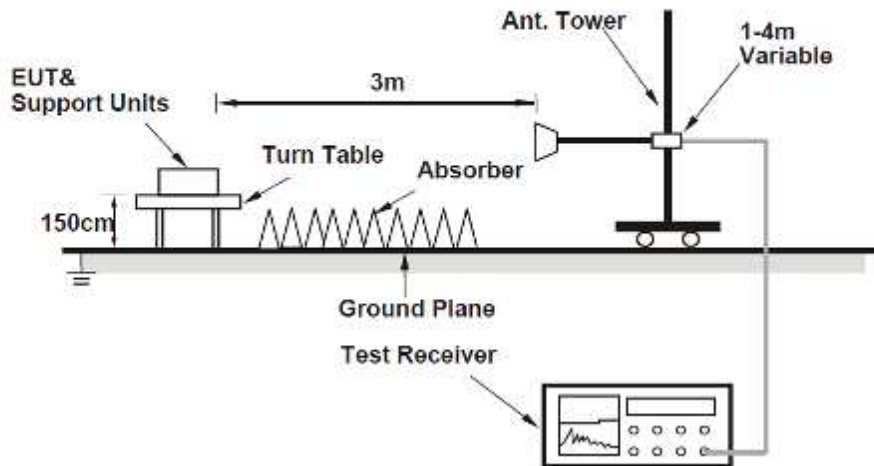
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.5 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

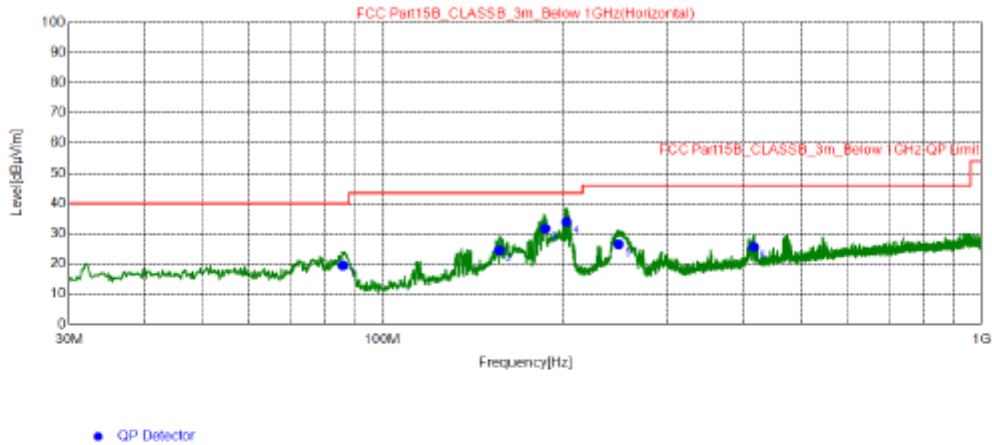
4.8.6 Test Results

Radiated Emissions Range 9kHz~30MHz

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Radiated Emissions Range 30MHz~1GHz

Mode	802.11b-2412MHz	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Horizontal

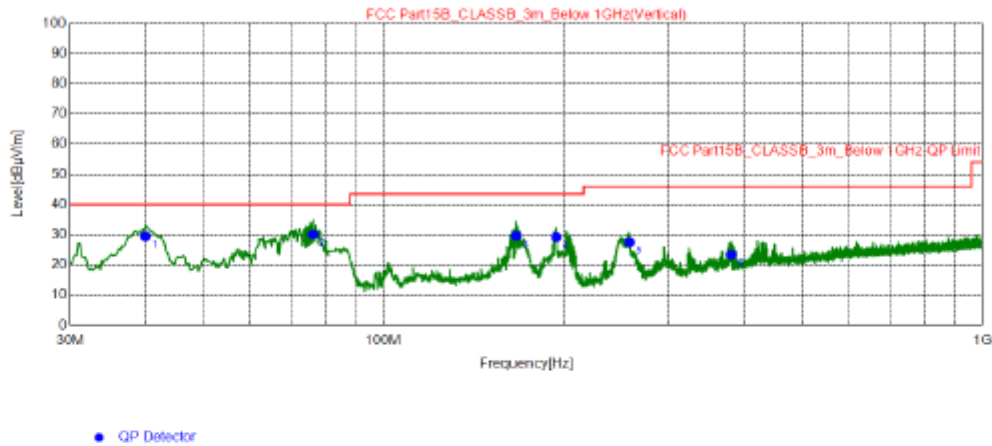


Final Data List									
NO.	Freq. [MHz]	QP Reading [dB µV/m]	Factor [dB]	QP Value [dB µV/m]	QP Limit [dB µV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	85.87	34.7	-15.25	19.45	40.00	20.55	200	90	Horizontal
2	156.8	34.43	-9.85	24.58	43.50	18.92	200	158	Horizontal
3	186.9	43.03	-11.32	31.71	43.50	11.79	200	349	Horizontal
4	203.0	45.98	-12.07	33.91	43.50	9.59	200	313	Horizontal
5	247.8	37.18	-10.68	26.50	46.00	19.50	200	54	Horizontal
6	417.0	31.47	-5.90	25.57	46.00	20.43	200	235	Horizontal

REMARKS:

1. Emission Level(dBuV/m) = Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level

Mode	802.11b-2412MHz	Detector Function	Quasi-Peak (QP)
Frequency Range	30MHz ~ 1GHz	Antenna Polarity	Vertical



Final Data List									
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.08	39.89	-10.43	29.46	40.00	10.54	100	196	Vertical
2	76.36	43.61	-13.50	30.11	40.00	9.89	100	238	Vertical
3	166.5	39.75	-10.13	29.62	43.50	13.88	100	40	Vertical
4	194.5	40.98	-11.79	29.19	43.50	14.31	100	212	Vertical
5	257.7	37.73	-10.19	27.54	46.00	18.46	100	76	Vertical
6	381.1	29.97	-6.59	23.38	46.00	22.62	100	181	Vertical

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



Radiated Emission Range 1GHz~10th Harmonic

802.11b

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7235.6000	38.48	74.00	35.52	-0.65	H	PK
2	7236.4500	32.07	54.00	21.93	-0.66	H	AV
3	7235.6000	42.56	74.00	31.44	-0.65	V	PK
4	7238.1500	37.37	54.00	16.63	-0.66	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7312.1000	37.40	74.00	36.60	-0.85	H	PK
2	7311.2500	30.26	54.00	23.74	-0.85	H	AV
3	7312.1000	38.49	74.00	35.51	-0.85	V	PK
4	7311.2500	30.37	54.00	23.63	-0.85	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7386.0500	31.83	74.00	42.17	-1.05	H	PK
2	7386.0500	24.80	54.00	29.20	-1.05	H	AV
3	7384.3500	36.33	74.00	37.67	-1.04	V	PK
4	7386.0500	30.57	54.00	23.43	-1.05	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



802.11g

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7240.7000	46.49	74.00	27.51	-0.67	H	PK
2	7237.3000	38.90	54.00	15.10	-0.66	H	AV
3	7234.7500	52.91	74.00	21.09	-0.65	V	PK
4	7235.6000	43.25	54.00	10.75	-0.65	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7311.2500	40.30	74.00	33.70	-0.85	H	PK
2	7310.4000	29.46	54.00	24.54	-0.85	H	AV
3	7312.9500	46.98	74.00	27.02	-0.86	V	PK
4	7311.2500	38.02	54.00	15.98	-0.85	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7385.2000	37.85	74.00	36.15	-1.05	H	PK
2	7392.8500	29.07	54.00	24.93	-1.07	H	AV
3	7385.2000	42.45	74.00	31.55	-1.05	V	PK
4	7385.2000	33.80	54.00	20.20	-1.05	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



802.11n (HT20)

Channel	TX Channel 1	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7238.1500	46.54	74.00	27.46	-0.66	H	PK
2	7239.0000	36.85	54.00	17.15	-0.66	H	AV
3	7232.2000	48.95	74.00	25.05	-0.65	V	PK
4	7230.5000	40.49	54.00	13.51	-0.64	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7307.8500	38.49	74.00	35.51	-0.84	H	PK
2	7308.7000	31.18	54.00	22.82	-0.85	H	AV
3	7310.4000	44.98	74.00	29.02	-0.85	V	PK
4	7314.6500	35.87	54.00	18.13	-0.86	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value =Limit value – Emission Level



Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Spurious Emission Level							
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Correction Factor (dB/m)	Antenna Polarity	Detector
1	7386.0500	36.21	74.00	37.79	-1.05	H	PK
2	7386.9000	27.53	54.00	26.47	-1.05	H	AV
3	7392.8500	41.23	74.00	32.77	-1.07	V	PK
4	7393.7000	32.11	54.00	21.89	-1.07	V	AV

REMARKS:

1. Emission Level(dBuV/m) = Original Spectrum reading (dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission Level



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

END
