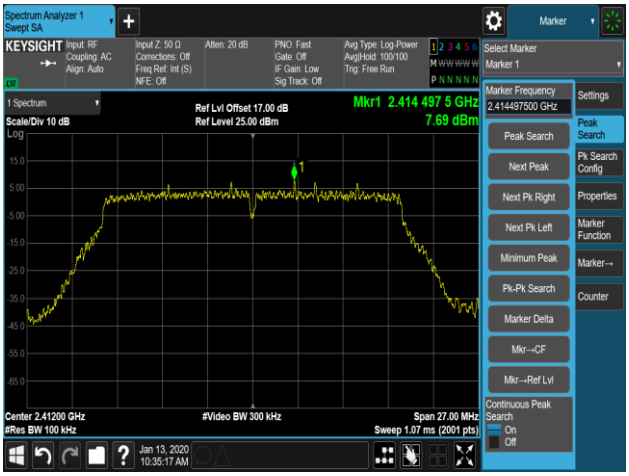
802.11n-HT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

Channel 01 (2412MHz)

100kHz PSD reference Level



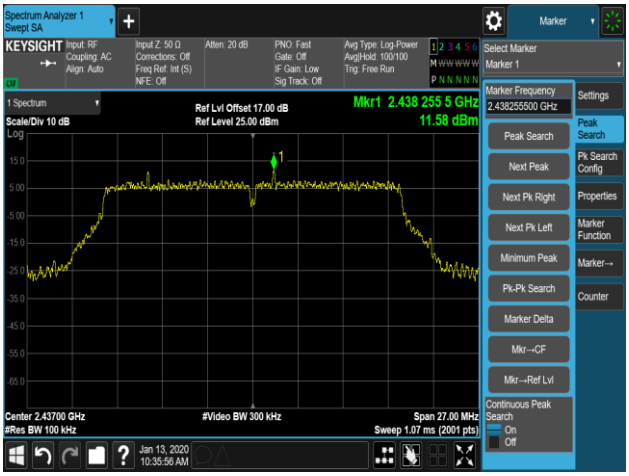
Low Band Edge

Spurious Emission

Note: The Value of the Display Line is -22.31dBm

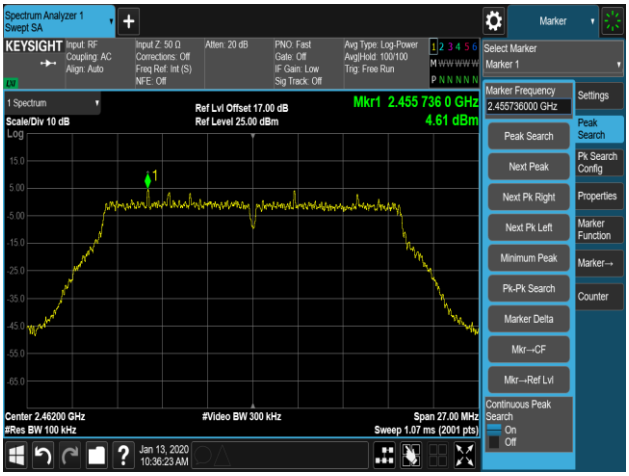
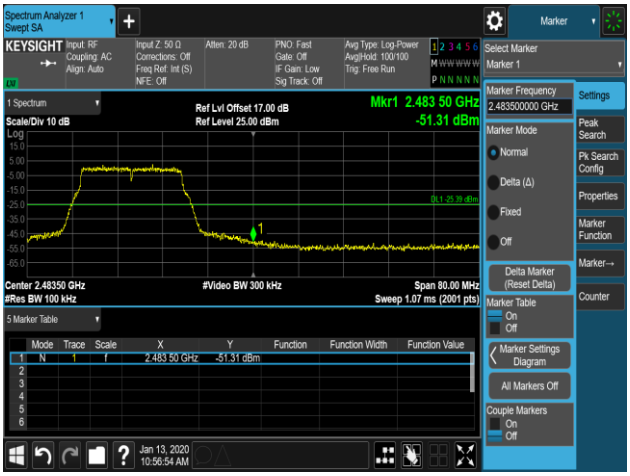
Channel 06 (2437MHz)

100kHz PSD reference Level



Spurious Emission

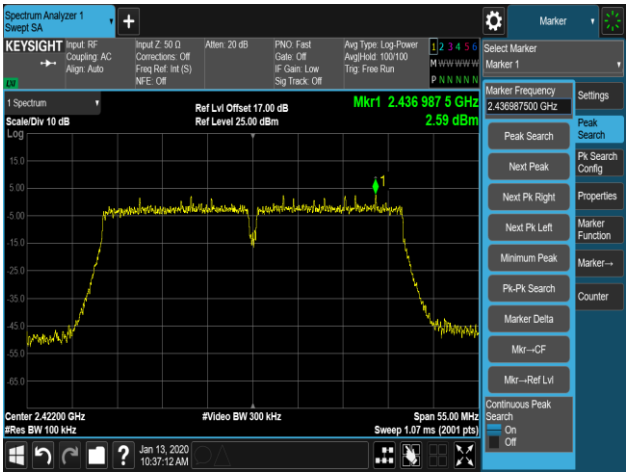
Note: The Value of the Display Line is -18.42dBm

802.11n-HT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1	
Channel 11 (2462MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission	
	Note: The Value of the Display Line is -25.39dBm

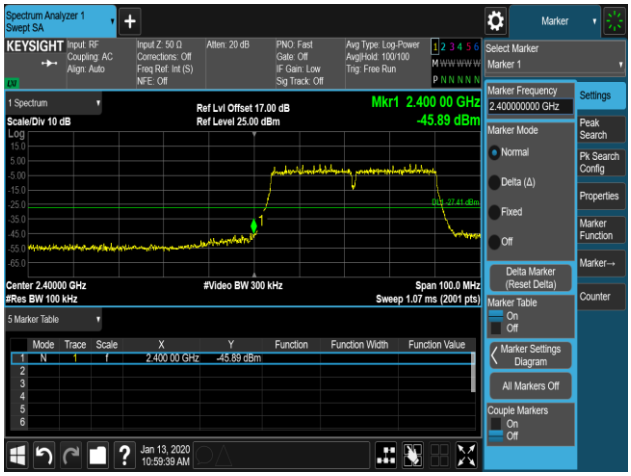
802.11n-HT40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

Channel 03 (2422MHz)

100kHz PSD reference Level



Low Band Edge



Spurious Emission

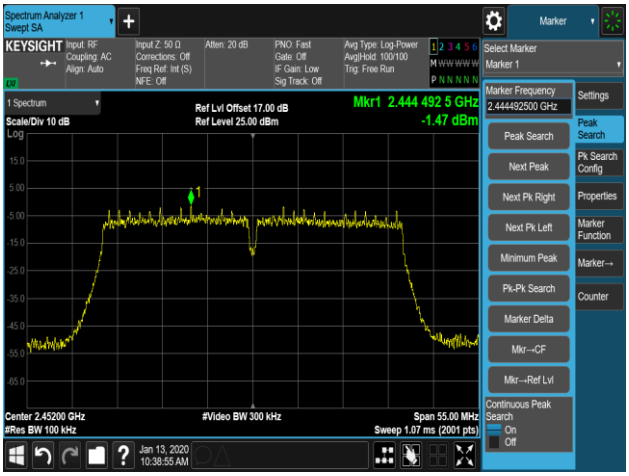
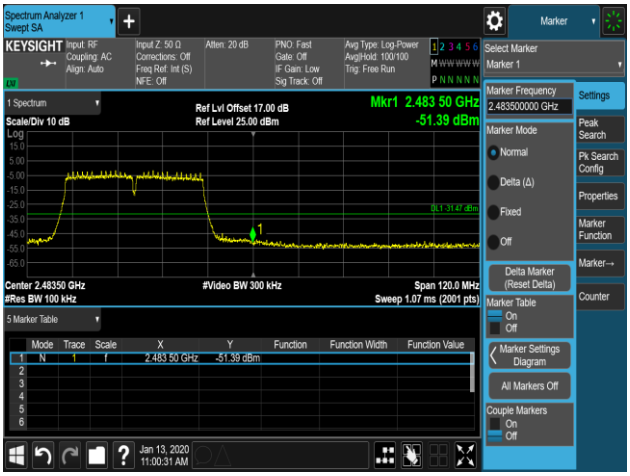
Note: The Value of the Display Line is -27.41dBm

Channel 06 (2437MHz)

100kHz PSD reference Level

Spurious Emission

Note: The Value of the Display Line is -21.90dBm

802.11n-HT40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1	
Channel 09 (2452MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission	
	Note: The Value of the Display Line is -31.47dBm

802.11ax-VHT20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

Channel 01 (2412MHz)

100kHz PSD reference Level

Low Band Edge

Spurious Emission

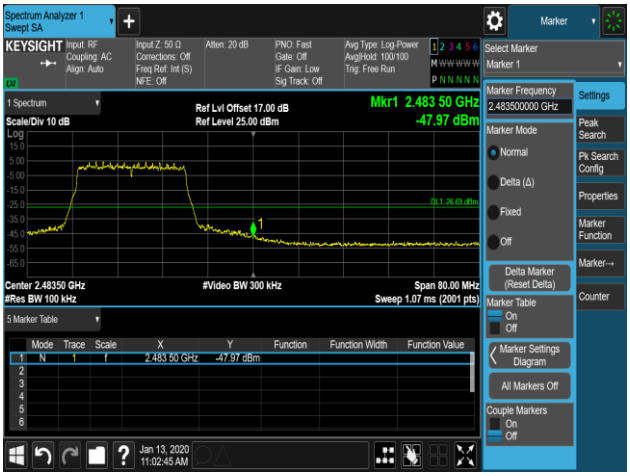
Note: The Value of the Display Line is -23.23dBm

Channel 06 (2437MHz)

100kHz PSD reference Level

Spurious Emission

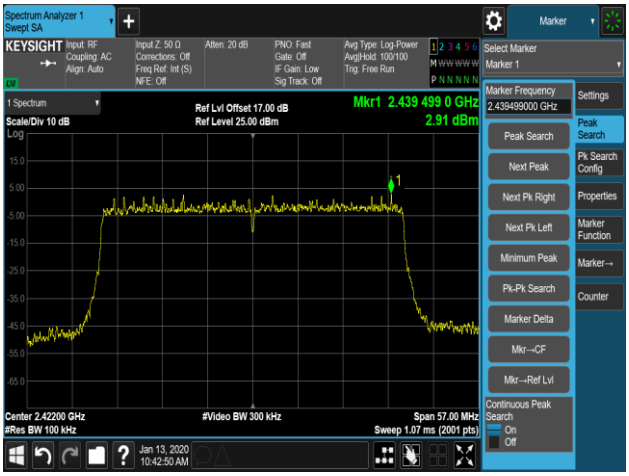
Note: The Value of the Display Line is -18.86dBm

802.11ax-HE20 Out-of-Band Emissions - Ant 0 / Ant 0 + 1	
Channel 11 (2462MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission	
	Note: The Value of the Display Line is -26.69dBm

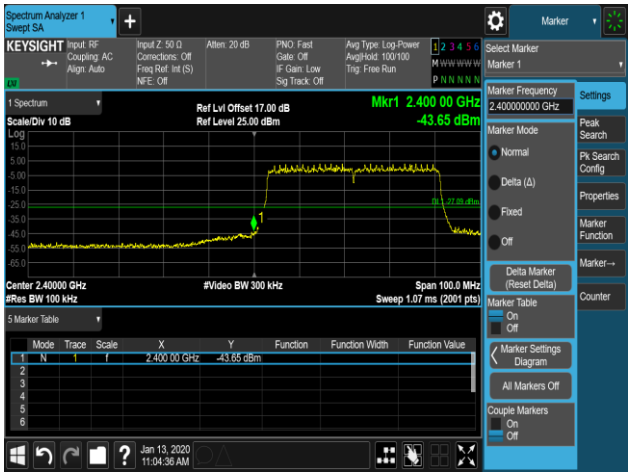
802.11ax-HE40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1

Channel 03 (2422MHz)

100kHz PSD reference Level



Low Band Edge



Spurious Emission

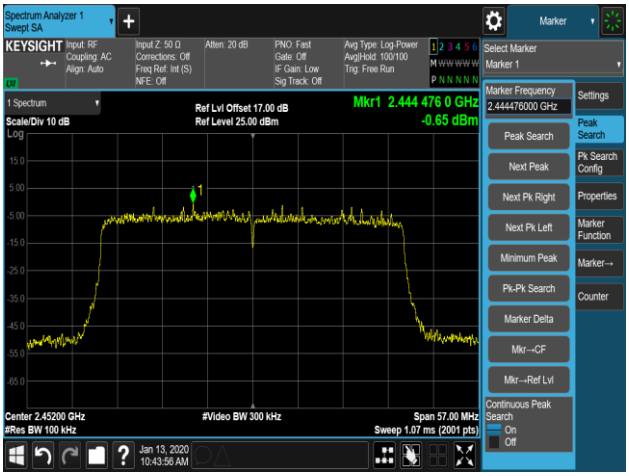
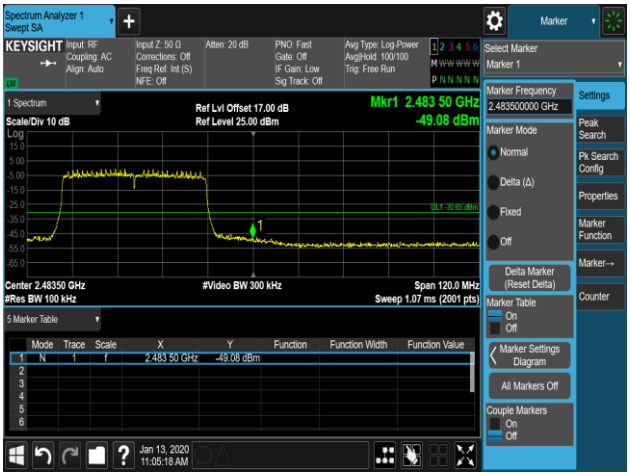
Note: The Value of the Display Line is -27.09dBm

Channel 06 (2437MHz)

100kHz PSD reference Level

Spurious Emission

Note: The Value of the Display Line is -21.21dBm

802.11ax-HE40 Out-of-Band Emissions - Ant 0 / Ant 0 + 1	
Channel 09 (2452MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission	
	Note: The Value of the Display Line is -30.65dBm

7.6. Radiated Spurious Emission Measurement

7.6.1.Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR 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

7.6.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

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

7.6.3.Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. Span was set greater than 1MHz

3. RBW = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

Peak Measurements above 1GHz

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

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

4. Detector = Peak

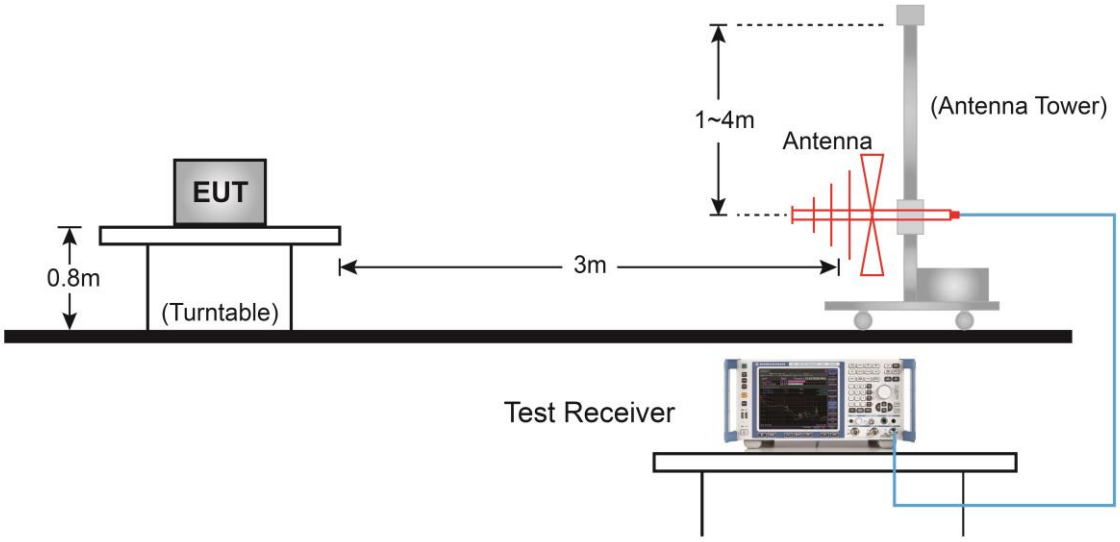
5. Sweep time = auto

6. Trace mode = max hold

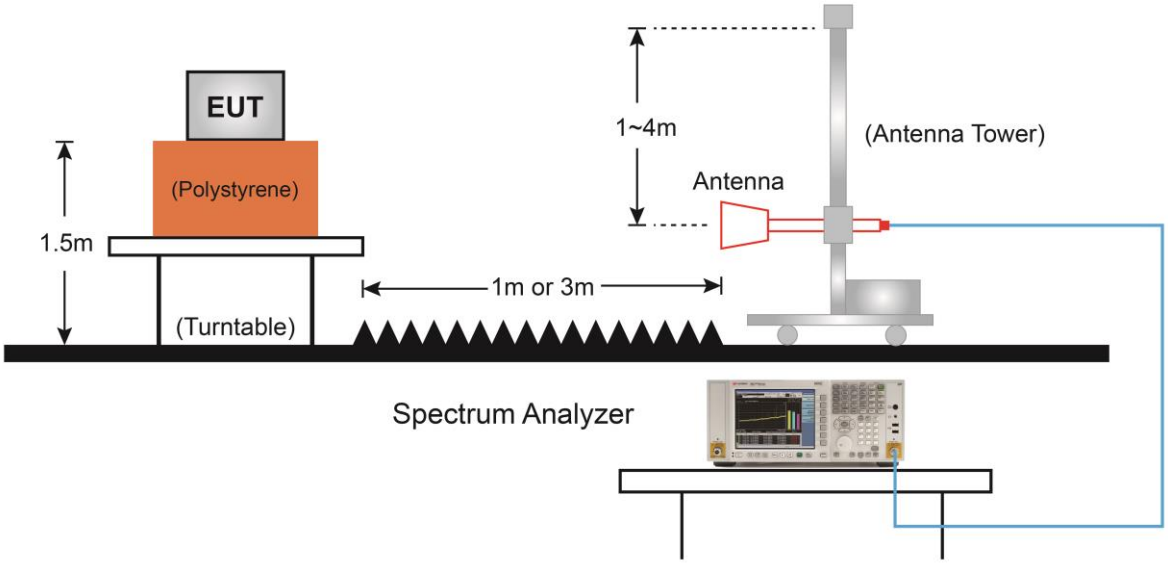
7. Trace was allowed to stabilize

7.6.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



Note: This item was performed with the Wi-Fi antenna connected.

7.6.5.Test Result

For APEX0574, please refer to Annex A clause 2;

For APEX0575, please refer to Annex B clause 2;

For APEX0577, please refer to Annex C clause 2;

7.7. Radiated Restricted Band Edge Measurement

7.7.1.Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, 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	8.25 - 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

7.7.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

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

7.7.3.Test Setting

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)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

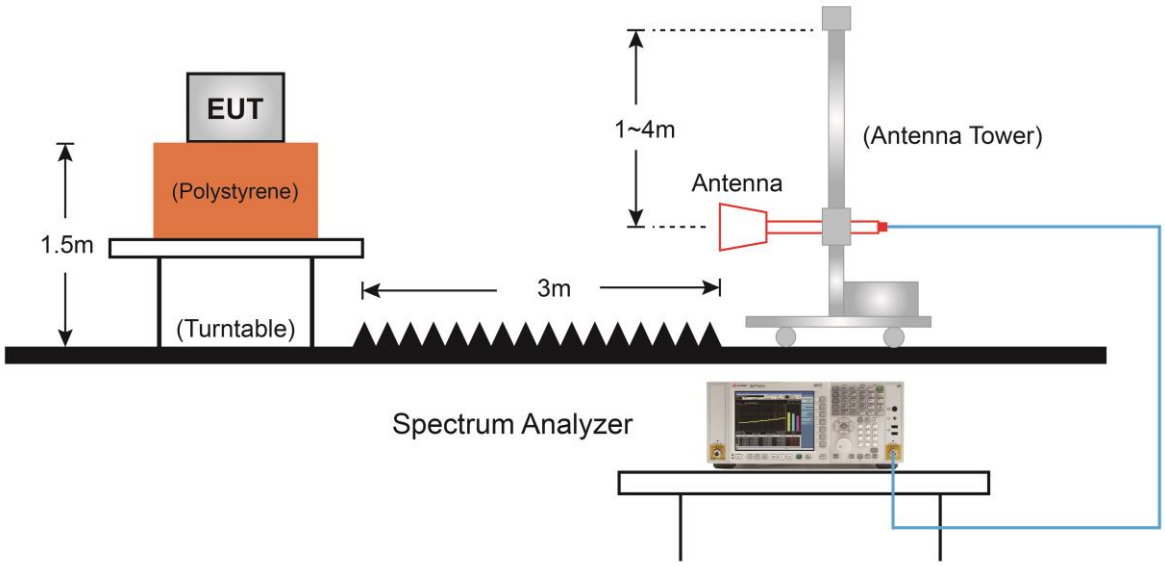
4. Detector = Peak

5. Sweep time = auto

6. Trace mode = max hold

7. Trace was allowed to stabilize

7.7.4.Test Setup



7.7.5.Test Result

For APEX0574, please refer to Annex A clause 3;

For APEX0575, please refer to Annex B clause 3;

For APEX0577, please refer to Annex C clause 3;

7.8. AC Conducted Emissions Measurement

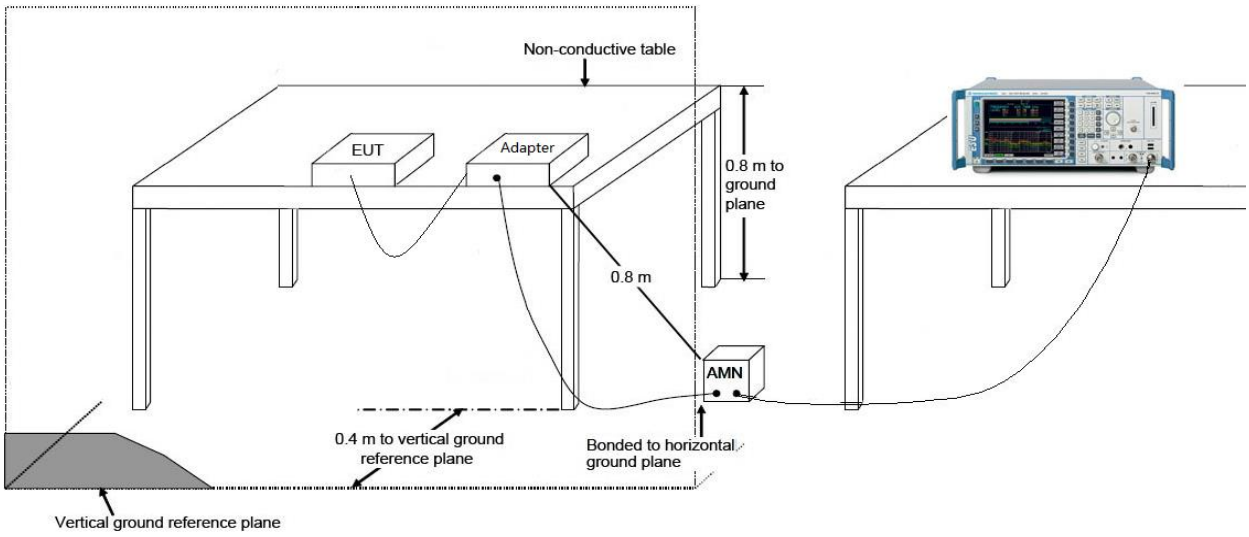
7.8.1.Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

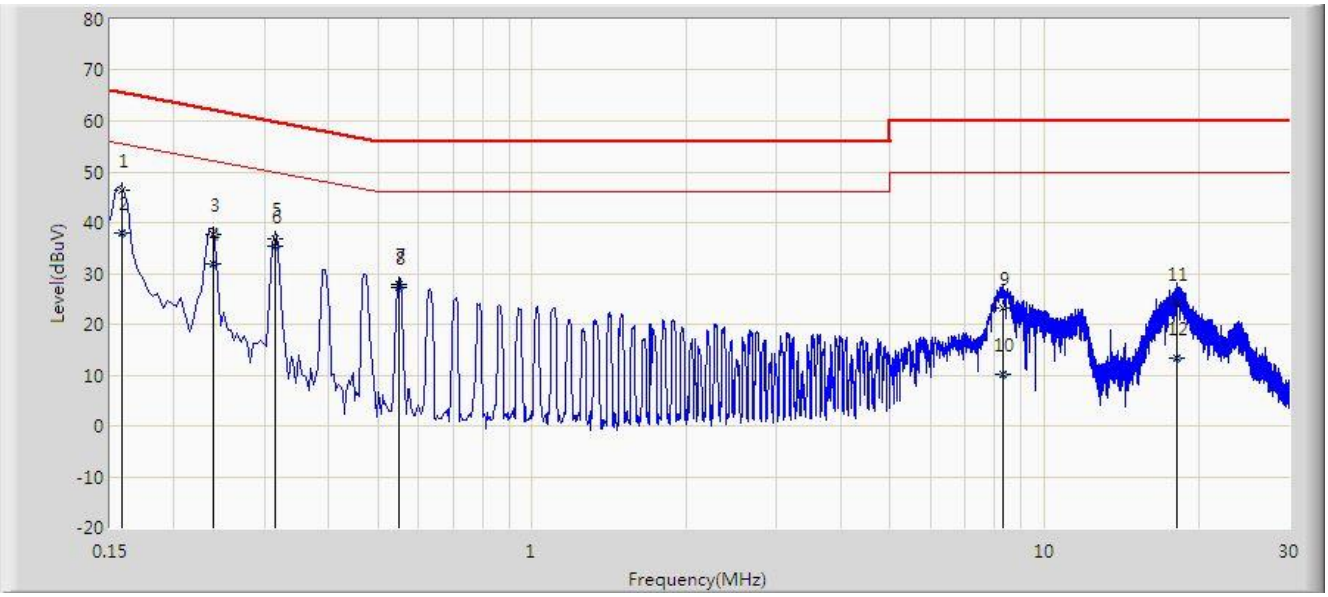
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2.Test Setup



7.8.3.Test Result

Site: SR2	Time: 2020/03/21 - 18:04
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: ACCESS POINT	Power: AC 120V/60Hz
Test Mode 1 (APEX0574)	

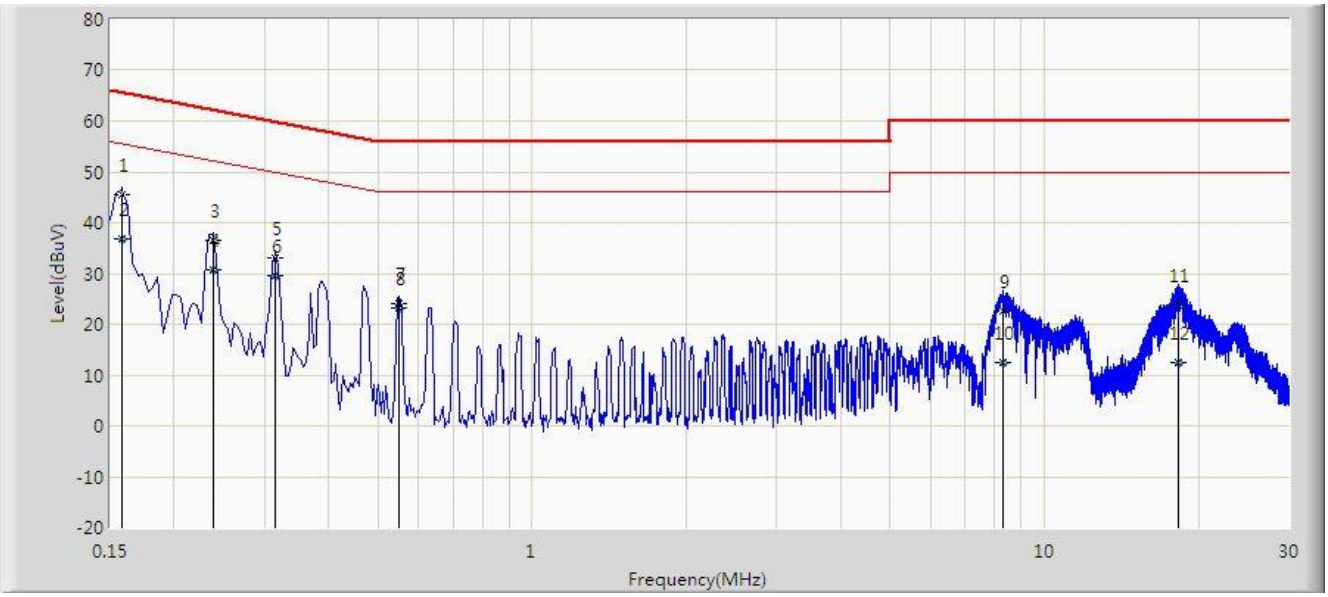


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.158	46.434	36.123	-19.134	65.568	10.311	QP
2			0.158	38.038	27.727	-17.530	55.568	10.311	AV
3			0.238	37.747	27.793	-24.418	62.166	9.954	QP
4			0.238	31.807	21.853	-20.358	52.166	9.954	AV
5			0.314	36.907	26.892	-22.957	59.864	10.015	QP
6		*	0.314	35.314	25.298	-14.550	49.864	10.015	AV
7			0.550	27.948	17.807	-28.052	56.000	10.141	QP
8			0.550	27.248	17.107	-18.752	46.000	10.141	AV
9			8.326	23.212	13.045	-36.788	60.000	10.166	QP
10			8.326	10.110	-0.056	-39.890	50.000	10.166	AV
11			18.182	24.063	13.962	-35.937	60.000	10.101	QP
12			18.182	13.384	3.283	-36.616	50.000	10.101	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Site: SR2	Time: 2020/03/21 - 18:11
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: ACCESS POINT	Power: AC 120V/60Hz
Test Mode 1 (APEX0574)	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.158	45.546	35.257	-20.022	65.568	10.290	QP
2		*	0.158	36.753	26.463	-18.816	55.568	10.290	AV
3			0.238	36.453	26.461	-25.713	62.166	9.992	QP
4			0.238	30.694	20.702	-21.471	52.166	9.992	AV
5			0.314	33.004	22.956	-26.860	59.864	10.048	QP
6			0.314	29.664	19.616	-20.200	49.864	10.048	AV
7			0.550	24.086	13.927	-31.914	56.000	10.159	QP
8			0.550	23.139	12.980	-22.861	46.000	10.159	AV
9			8.302	22.702	12.520	-37.298	60.000	10.181	QP
10			8.302	12.362	2.181	-37.638	50.000	10.181	AV
11			18.270	23.874	13.736	-36.126	60.000	10.138	QP
12			18.270	12.356	2.218	-37.644	50.000	10.138	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

8. CONCLUSION

The data collected relate only the item(s) tested and show that the unit is in compliance with Part 15C of the FCC Rules.

The End

Appendix A - Test Setup Photograph

Refer to “2003TW0002-UT” file.

Appendix B - EUT Photograph

Refer to “2003TW0002-UE” file.