



9. For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
10. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:  
$$E = \text{EIRP} - 20\log D + 104.8$$
where:  
E = electric field strength in dB $\mu$ V/m,  
EIRP = equivalent isotropic radiated power in dBm  
D = specified measurement distance in meters.
11. Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.
12. Compare the resultant electric field strength level to the applicable regulatory limit.
13. Perform radiated spurious emission test dures until all measured frequencies were complete.



---

### 11.3 Test Result and Data

Test Date: Oct. 15, 2017

Temperature: 26°C

Atmospheric pressure: 996 pha

Humidity: 58%

Modulation Standard	Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
802.11b (11Mbps)	2398.33	-27.302	-20	PASS
	2398.33	-34.234	-20	PASS
802.11g (6Mbps)	2400.00	-25.082	-20	PASS
	2483.50	-38.081	-20	PASS
802.11n HT20 (6.5Mbps)	2400.00	-28.993	-20	PASS
	2483.50	-33.326	-20	PASS



Modulation Standard: 802.11b (1Mbps)  
Channel: 01



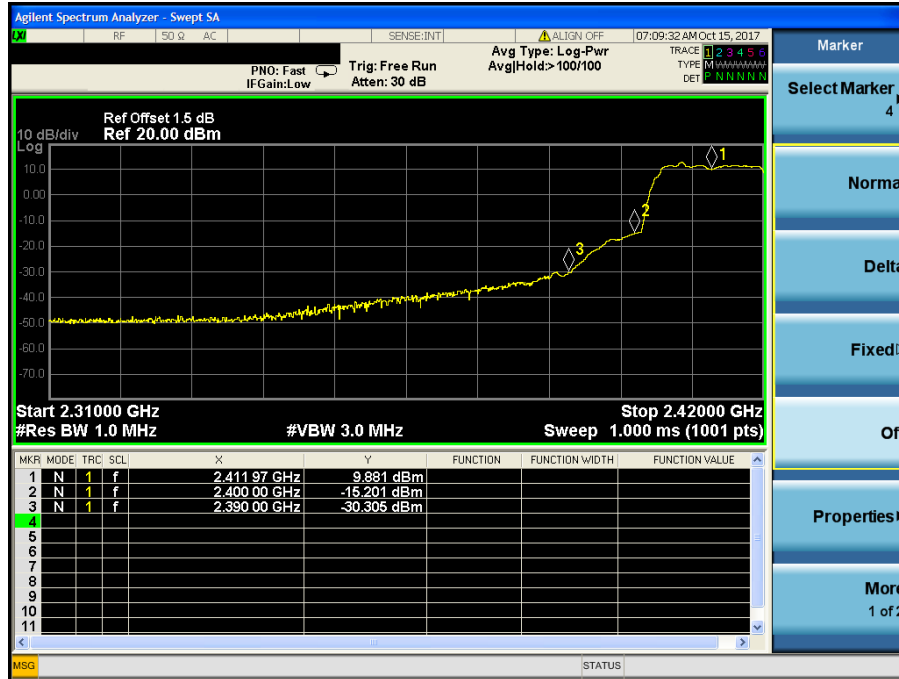
Modulation Standard: 802.11b (1Mbps)  
Channel: 11



Modulation Standard: 802.11g (6Mbps)



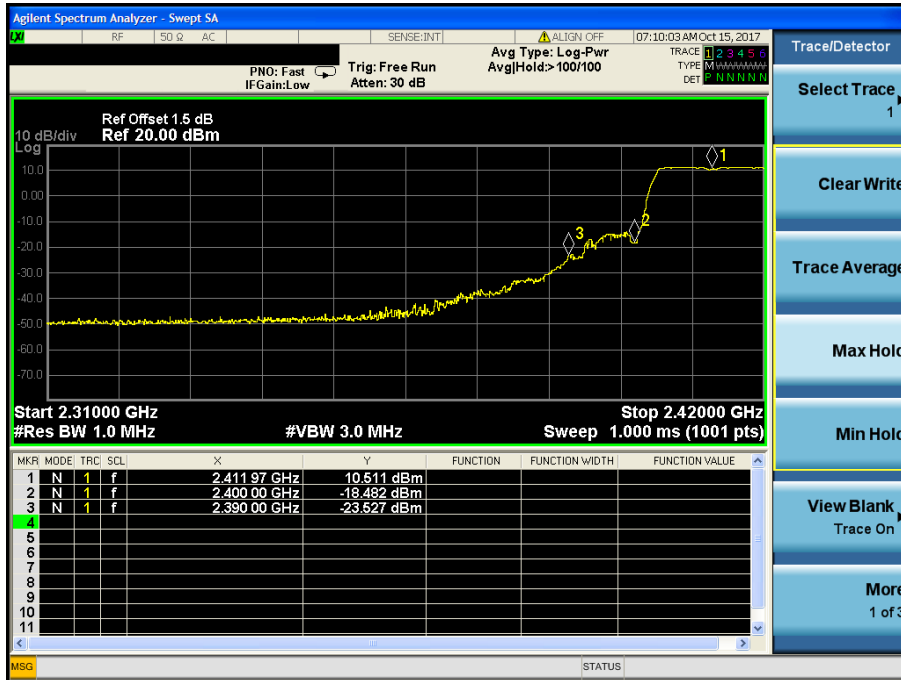
Channel: 01



Modulation Standard: 802.11g (6Mbps)  
Channel: 11



Modulation Standard: 802.11n HT20 (6.5Mbps)  
Channel: 01



Modulation Standard: 802.11n HT20 (6.5Mbps)  
Channel: 11



### 11.4 Restrict Band Emission Measurement Data



Power	:	AC 120V	Pol/Phase	:	H/V
Test Mode 1	:	b - CH1 - CH6 - CH11	Temperature	:	26 °C
Memo	:		Humidity	:	55 %

**802.11b**

Frequency(MHz):			2412			Polarity:			HORIZONTAL		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	55.27	PK	74.00	18.73	1.00	85	60.58	27.49	3.32	36.12	-5.31
2390.00	42.44	AV	54.00	11.56	1.00	85	47.75	27.49	3.32	36.12	-5.31
Frequency(MHz):			2412			Polarity:			VERTICAL		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	57.32	PK	74.00	16.68	1.00	119	62.63	27.49	3.32	36.12	-5.31
2390.00	42.38	AV	54.00	11.62	1.00	119	47.69	27.49	3.32	36.12	-5.31
Frequency(MHz):			2462			Polarity:			HORIZONTAL		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	57.81	PK	74.00	16.19	1.00	218	63.53	27.45	3.38	36.55	-5.72
2483.50	41.42	AV	54.00	12.58	1.00	218	47.14	27.45	3.38	36.55	-5.72
Frequency(MHz):			2462			Polarity:			VERTICAL		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	58.65	PK	74.00	15.35	1.00	169	64.37	27.45	3.38	36.55	-5.72
2483.50	41.14	AV	54.00	12.86	1.00	169	46.86	27.45	3.38	36.55	-5.72



**802.11g**

<b>Frequency(MHz):</b>			<b>2412</b>			<b>Polarity:</b>			<b>HORIZONTAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	58.66	PK	74.00	15.34	1.00	132	63.97	27.49	3.32	36.12	-5.31
2390.00	42.64	AV	54.00	11.36	1.00	132	47.95	27.49	3.32	36.12	-5.31
<b>Frequency(MHz):</b>			<b>2412</b>			<b>Polarity:</b>			<b>VERTICAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	59.88	PK	74.00	14.12	1.00	221	65.19	27.49	3.32	36.12	-5.31
2390.00	41.26	AV	54.00	12.74	1.00	221	46.57	27.49	3.32	36.12	-5.31
<b>Frequency(MHz):</b>			<b>2462</b>			<b>Polarity:</b>			<b>HORIZONTAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	57.46	PK	74.00	16.54	1.00	167	63.18	27.45	3.38	36.55	-5.72
2483.50	42.89	AV	54.00	11.11	1.00	167	48.61	27.45	3.38	36.55	-5.72
<b>Frequency(MHz):</b>			<b>2462</b>			<b>Polarity:</b>			<b>VERTICAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	55.96	PK	74.00	18.04	1.00	98	61.68	27.45	3.38	36.55	-5.72
2483.50	42.50	AV	54.00	11.50	1.00	98	48.22	27.45	3.38	36.55	-5.72



**802.11n HT20**

<b>Frequency(MHz):</b>			<b>2412</b>			<b>Polarity:</b>			<b>HORIZONTAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	50.96	PK	74.00	23.04	1.00	168	56.27	27.49	3.32	36.12	-5.31
2390.00	42.45	AV	54.00	11.55	1.00	168	47.76	27.49	3.32	36.12	-5.31
<b>Frequency(MHz):</b>			<b>2412</b>			<b>Polarity:</b>			<b>VERTICAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2390.00	51.78	PK	74.00	22.22	1.00	205	57.09	27.49	3.32	36.12	-5.31
2390.00	43.13	AV	54.00	10.87	1.00	205	48.44	27.49	3.32	36.12	-5.31
<b>Frequency(MHz):</b>			<b>2462</b>			<b>Polarity:</b>			<b>HORIZONTAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	50.84	PK	74.00	23.16	1.00	132	56.56	27.45	3.38	36.55	-5.72
2483.50	43.01	AV	54.00	10.99	1.00	132	48.73	27.45	3.38	36.55	-5.72
<b>Frequency(MHz):</b>			<b>2462</b>			<b>Polarity:</b>			<b>VERTICAL</b>		
Frequency (MHz)	Emission Level		Limit (dBuV/m)	Margin (dB)	Antenna Height	Table Angle	Raw Value	Antenna Factor	Cable Facto	Pre-a mplifi	Correction Factor
2483.50	50.35	PK	74.00	23.65	1.00	158	56.07	27.45	3.38	36.55	-5.72
2483.50	43.76	AV	54.00	10.24	1.00	158	49.48	27.45	3.38	36.55	-5.72





## 12. Spurious RF Conducted Emission

### 12.1 Test Limit

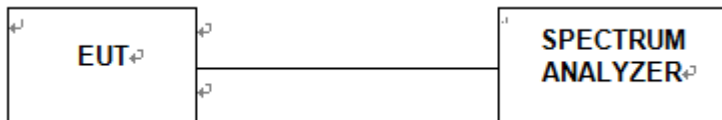
Below -20dB of the highest emission level in operating band.

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).

### 12.2 Test Procedure

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013, For 9KHz-150kHz, Set RBW=1kHz and VBW= 3KHz;For 150KHz-10MHz, Set RBW=10kHz and VBW= 30KHz;For 10MHz-25GHz ,Set RBW=100kHz and VBW= 300KHz in order to measure the peak field strength, and mwasure frequency range from 9KHz to 25GHz.

### 12.3 Test Setup Layout



### 12.4 TEST RESULTS

Remark: The measurement frequency range is from 9KHz to the 10<sup>th</sup> harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

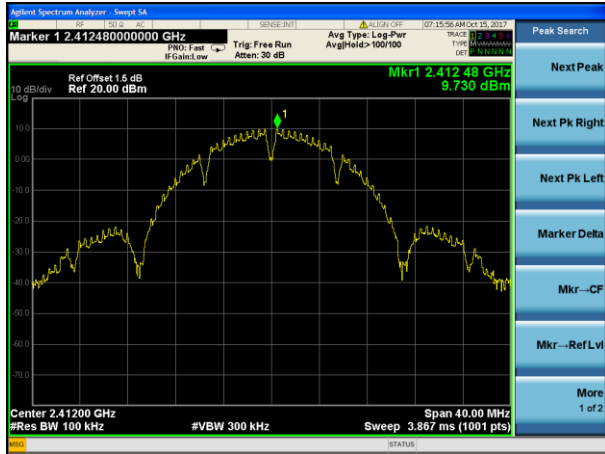


**Test Mode:**

**802.11b**

**Test channel :**

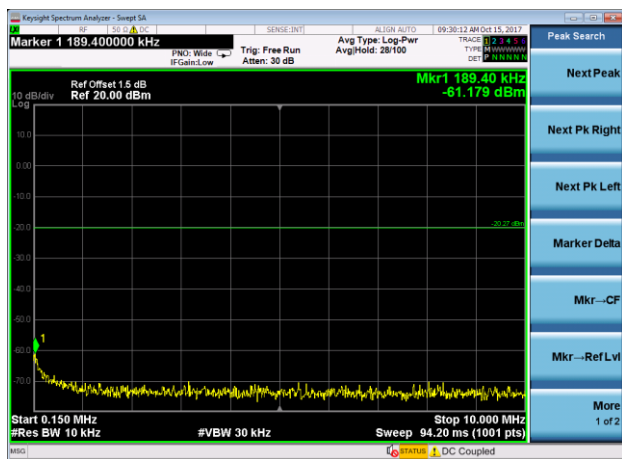
**01**



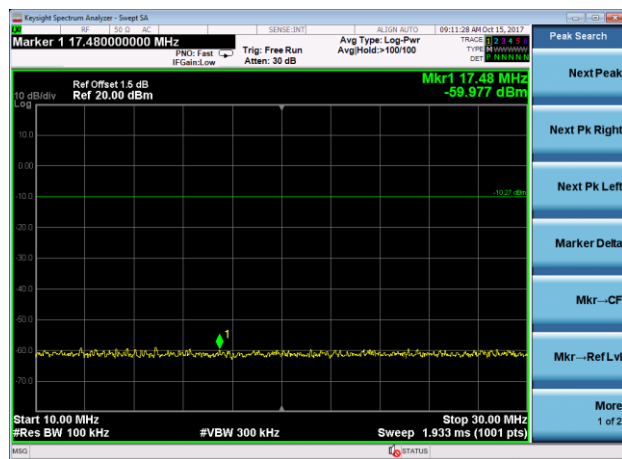
2412



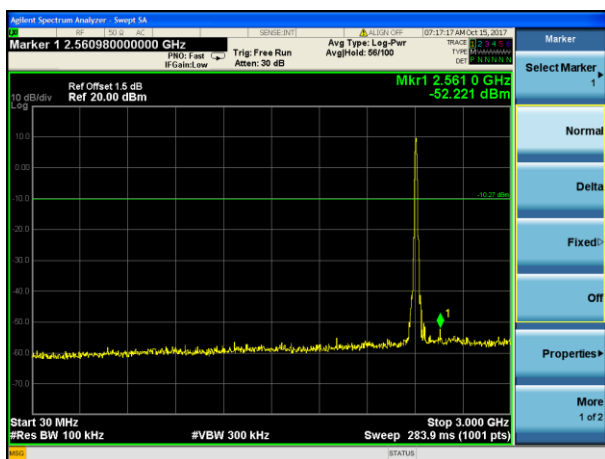
9KHZ~150KHZ



150KHZ~10MHZ



10MHZ~30MHZ



30MHz~3GHz



3GHz~25GHz

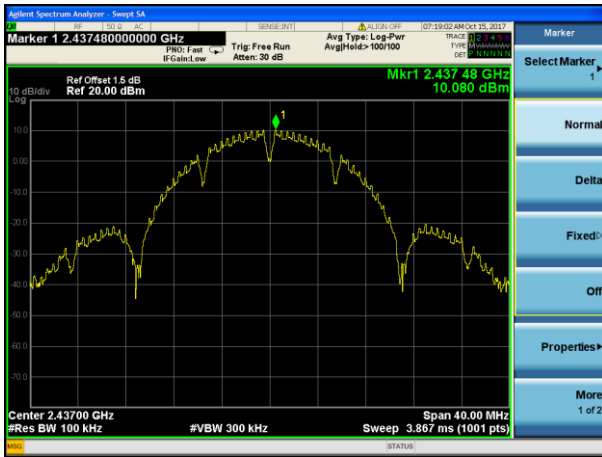


Test Mode:

802.11b

Test channel :

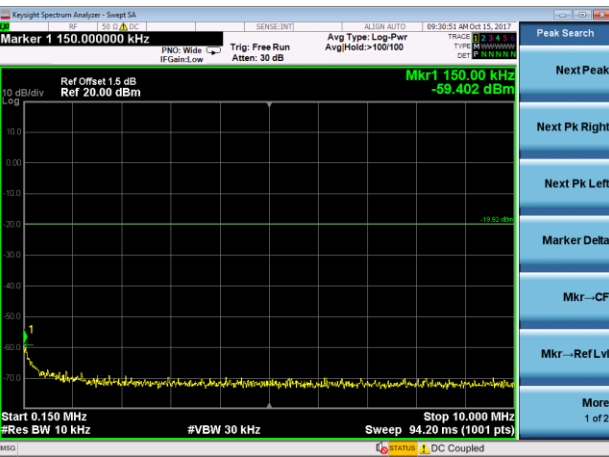
06



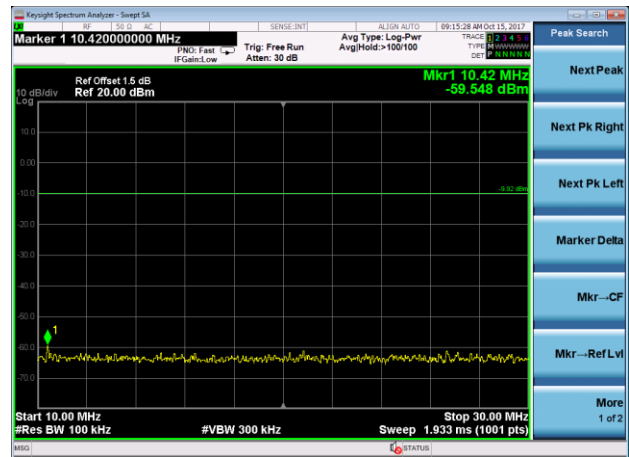
2437



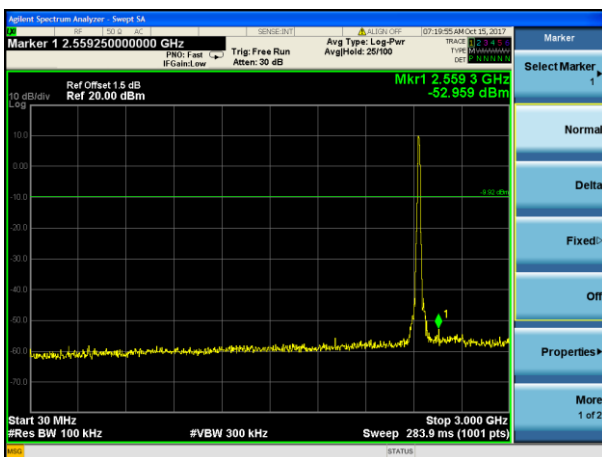
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz

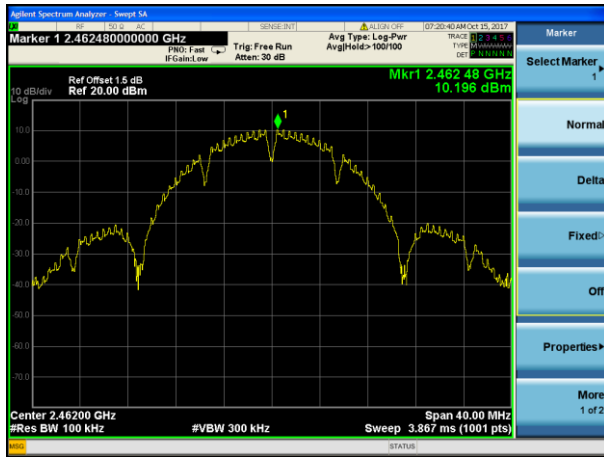


Test Mode:

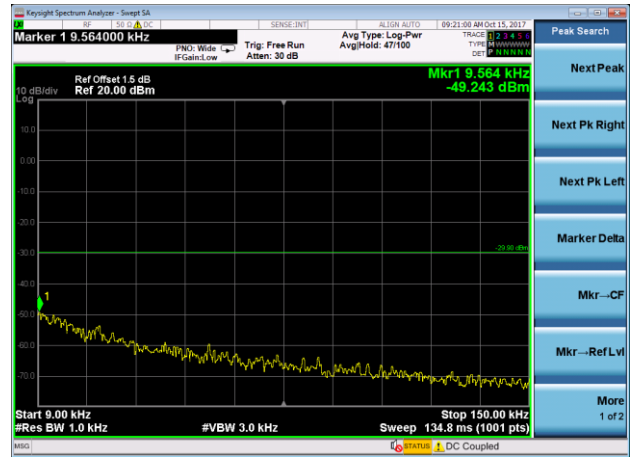
802.11b

Test channel :

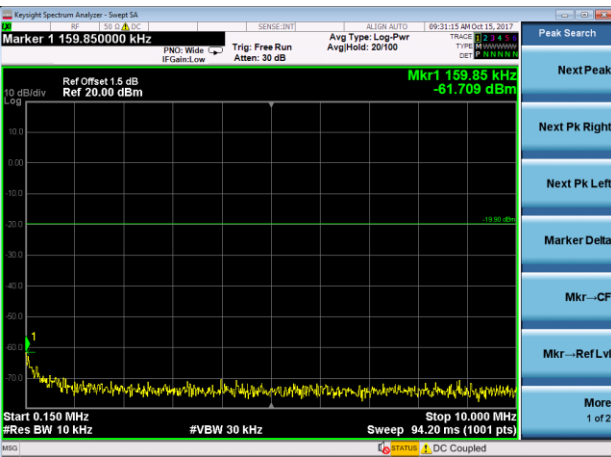
11



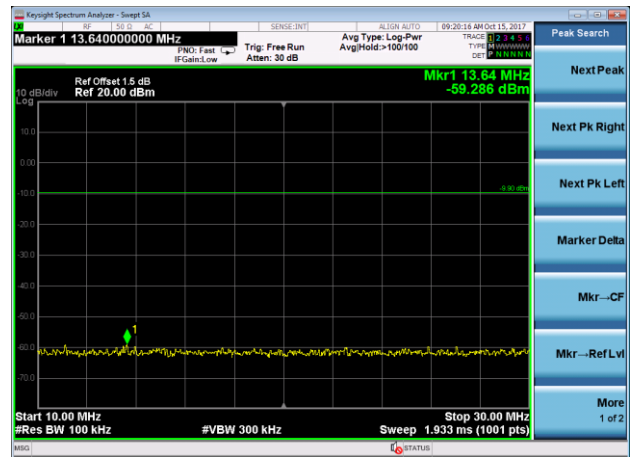
2462



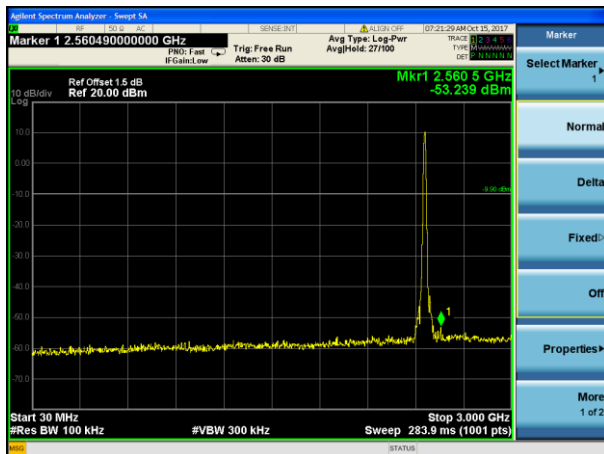
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz

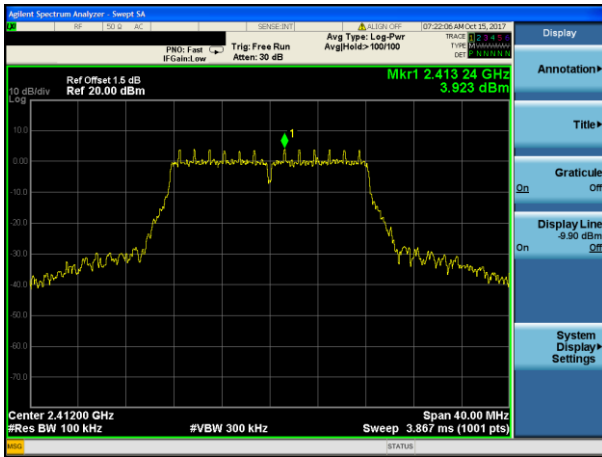


Test Mode:

802.11g

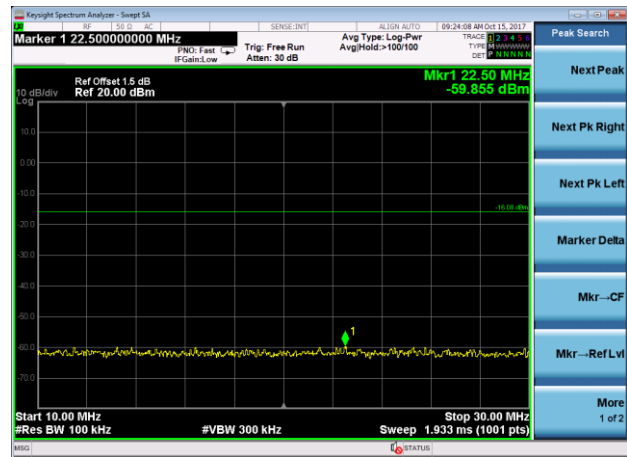
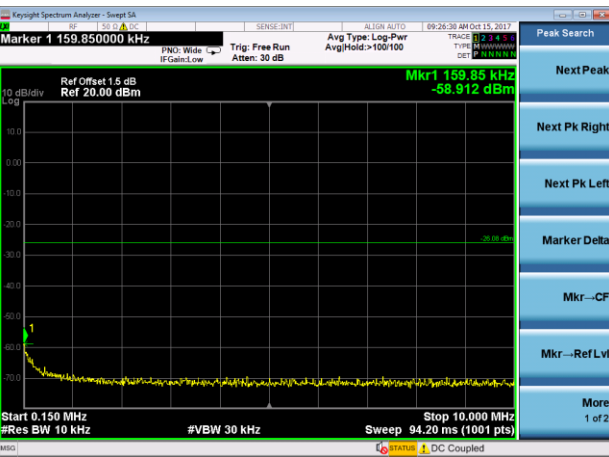
Test channel :

01



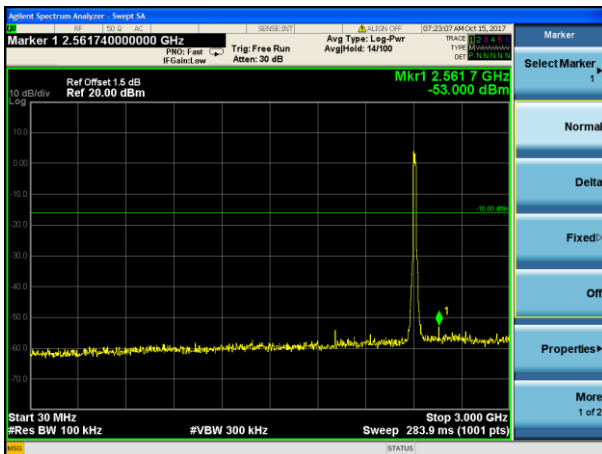
2412

9KHz~150KHz



150KHz~10MHz

10MHz~30MHz



30MHz~3GHz

3GHz~25GHz



Test Mode:	802.11g	Test channel :	06
2437		9KHz~150KHz	
150KHz~10MHz		10MHz~30MHz	
30MHz~3GHz		3GHz~25GHz	



Test Mode:

802.11g

Test channel :

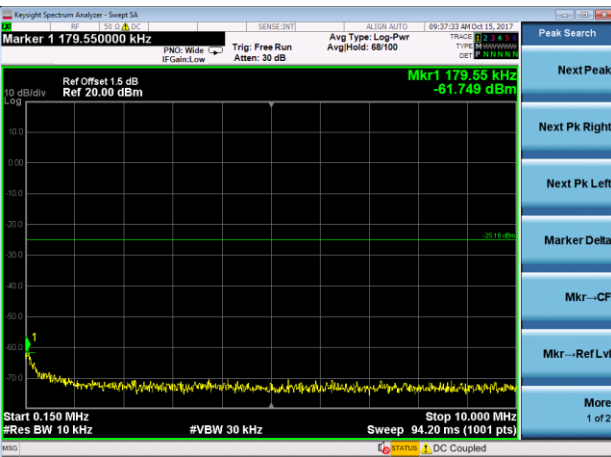
11



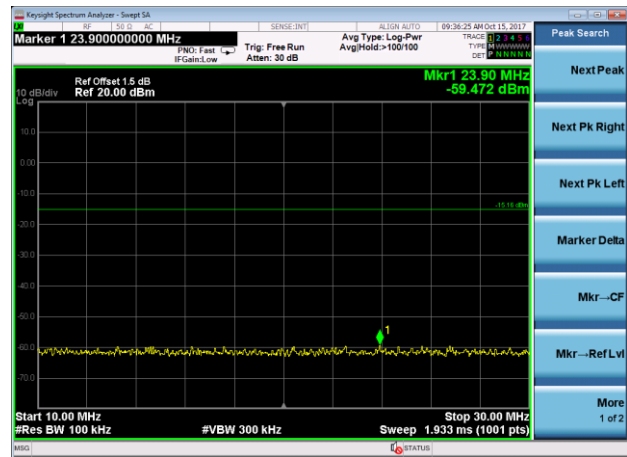
2462



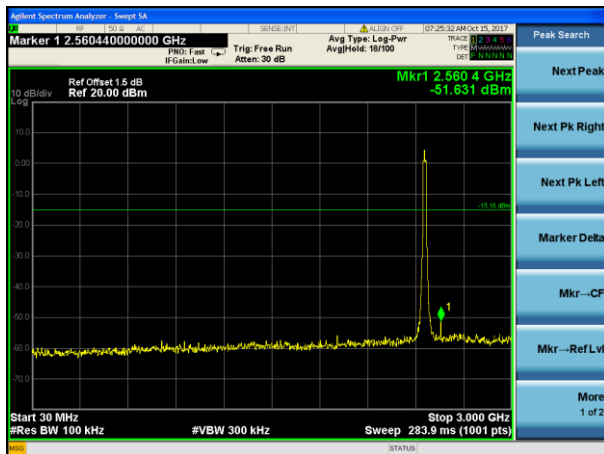
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz

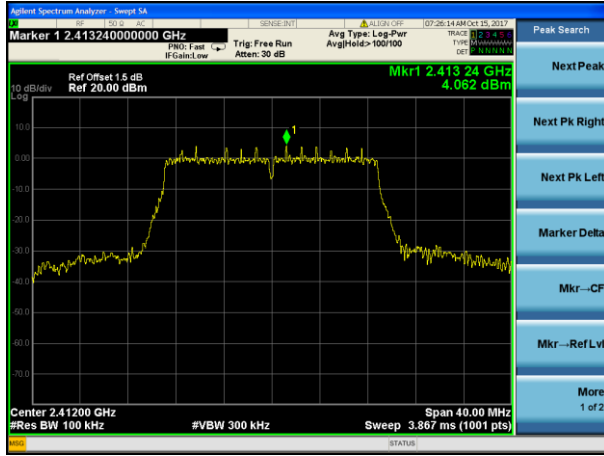


Test Mode:

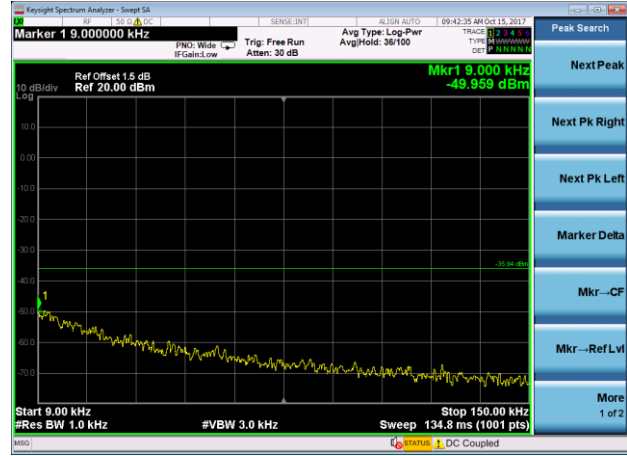
802.11n HT20

Test channel :

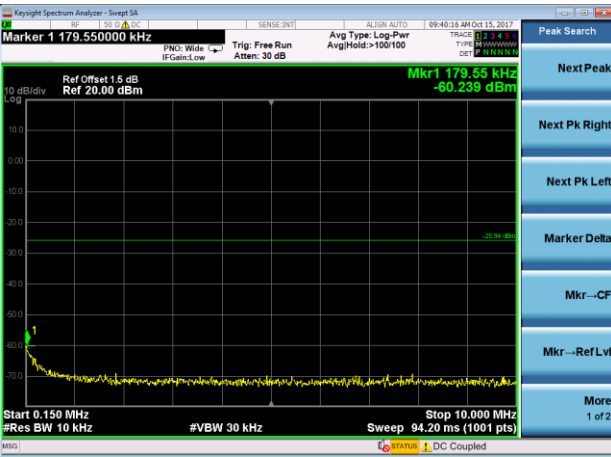
01



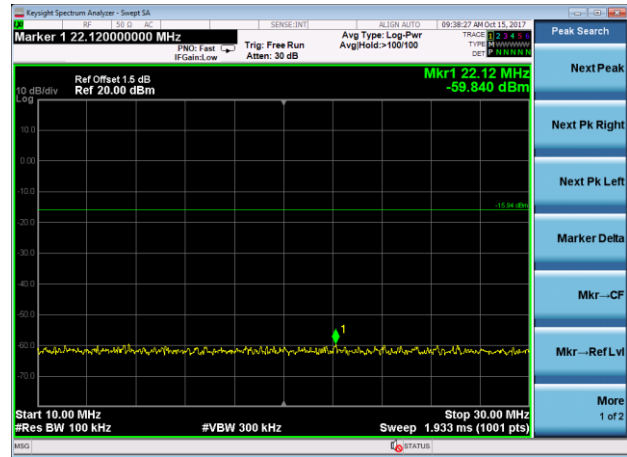
2412



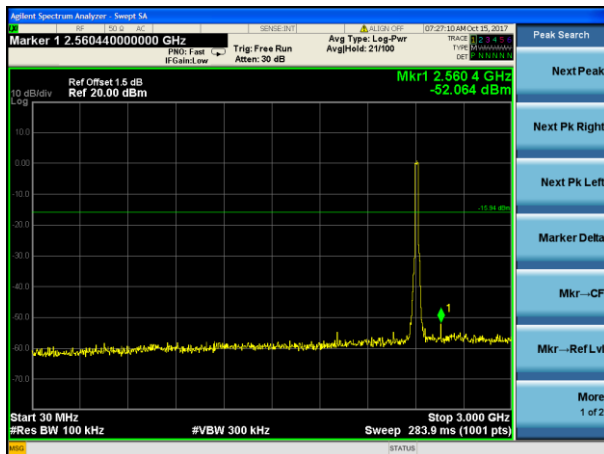
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz



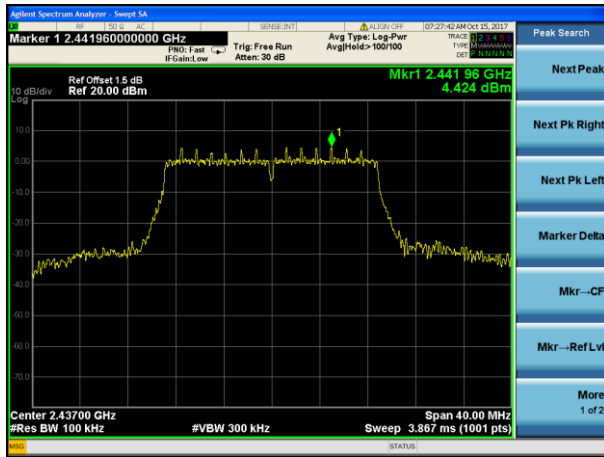


Test Mode:

802.11n HT20

Test channel :

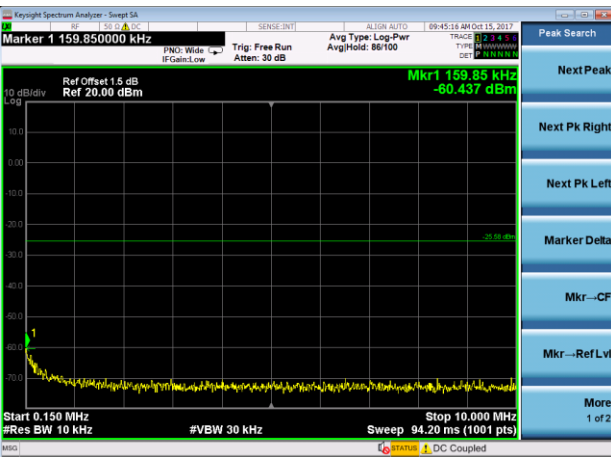
06



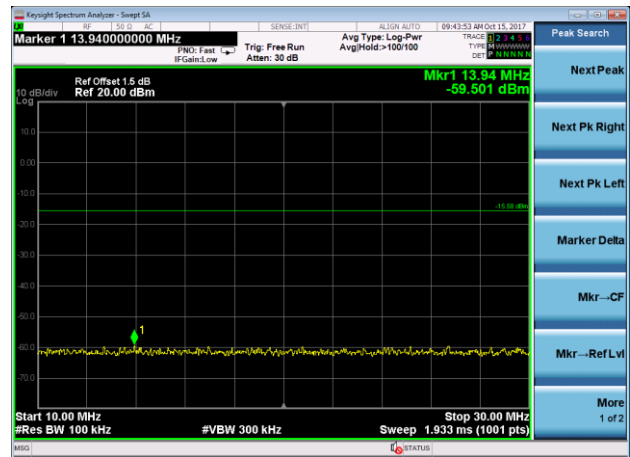
2437



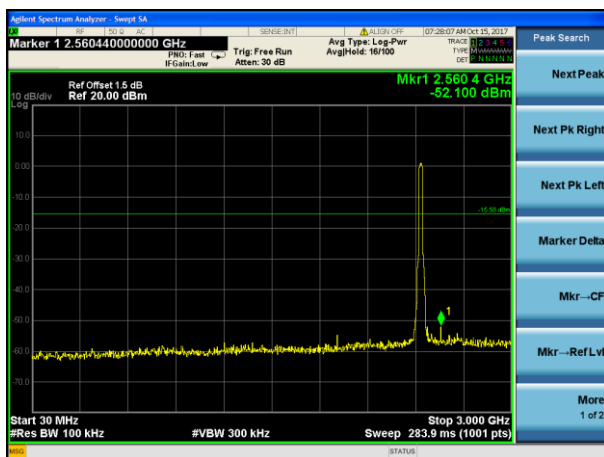
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz

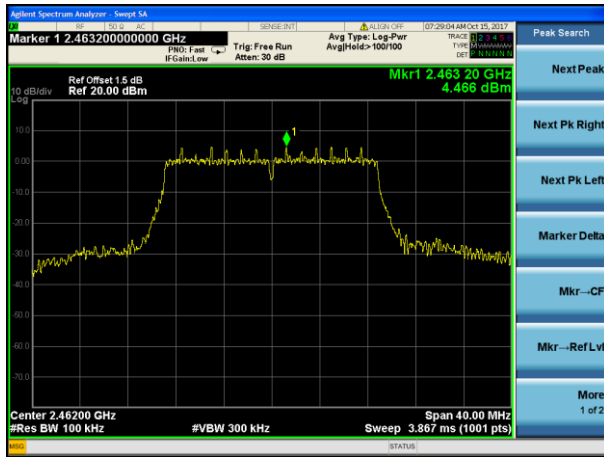


Test Mode:

802.11n HT20

Test channel :

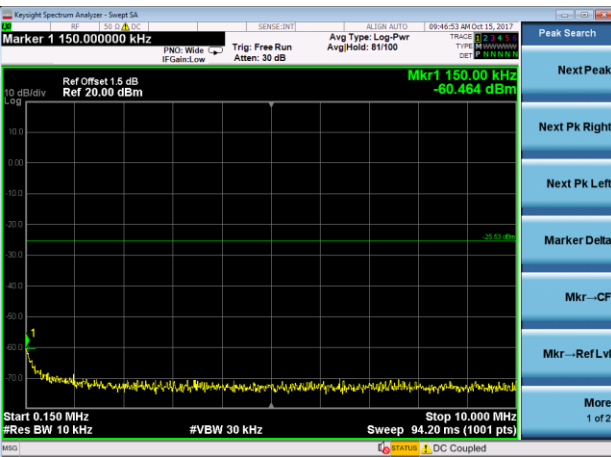
11



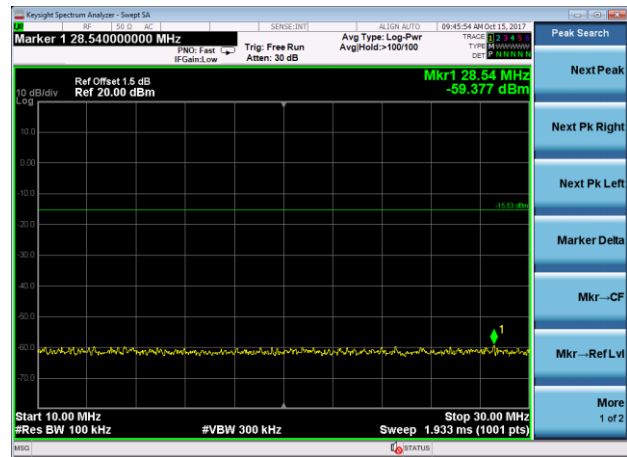
2462



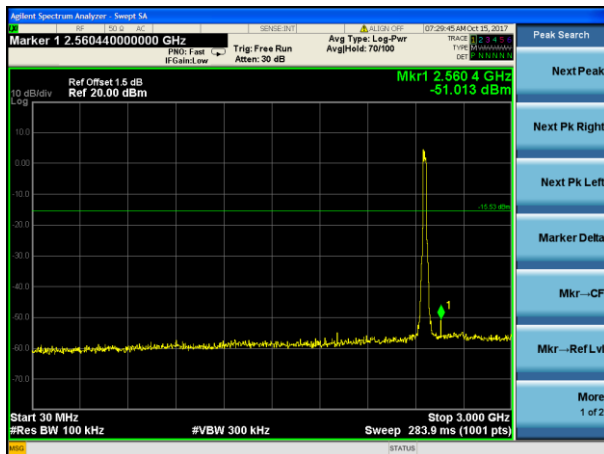
9KHz~150KHz



150KHz~10MHz



10MHz~30MHz



30MHz~3GHz



3GHz~25GHz



### 13. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.150
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

\*\* : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

#### 13.1 Labeling Requirement

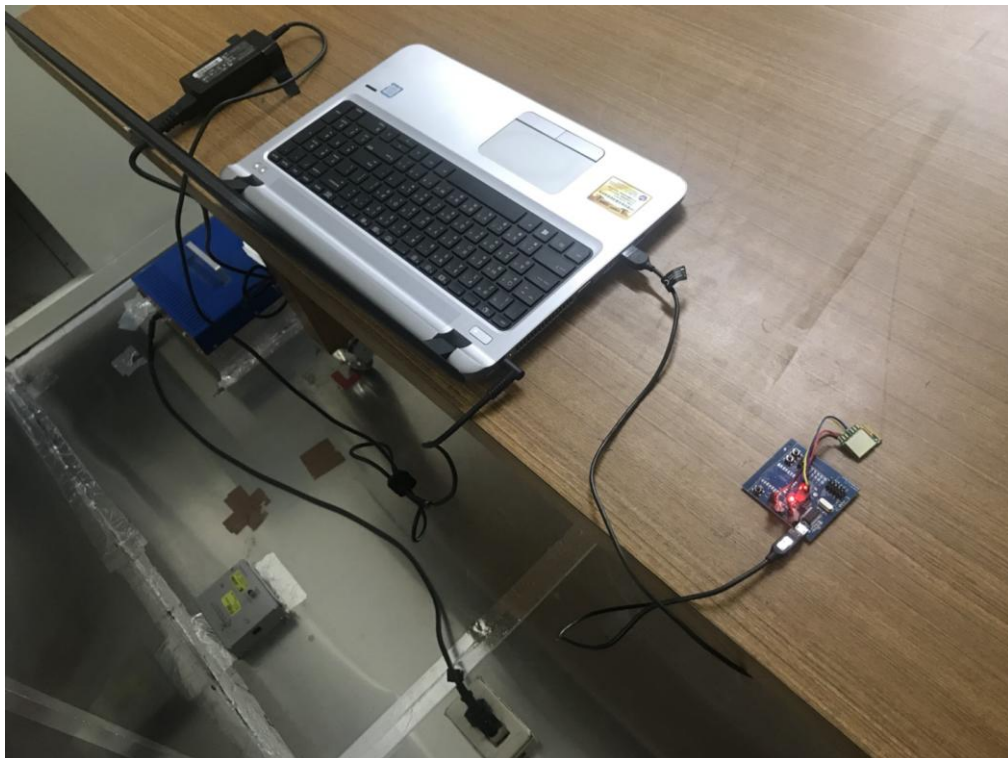
The device shall bear the following statement in a conspicuous location on the device:

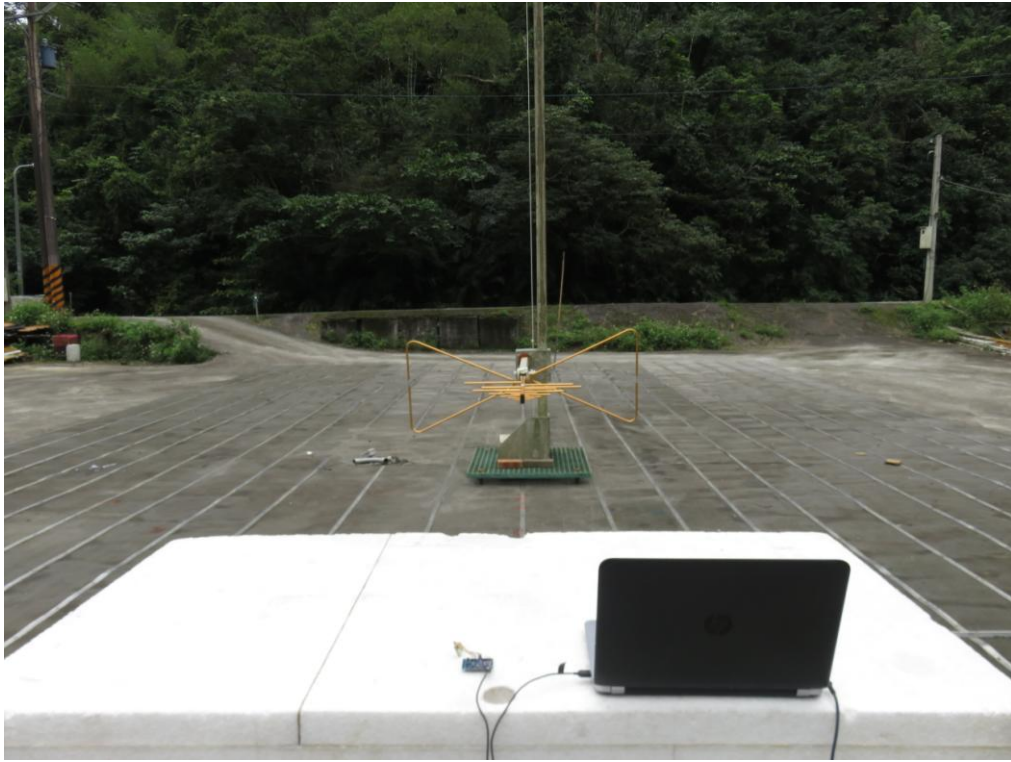
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



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**APPENDIX 1 PHOTOS OF TEST CONFIGURATION**







**APPENDIX 1 PHOTOS OF EUT**

