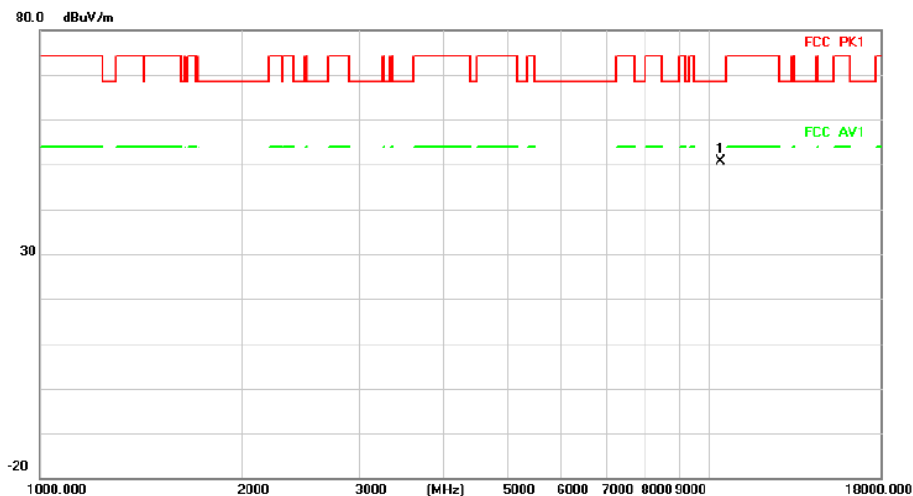


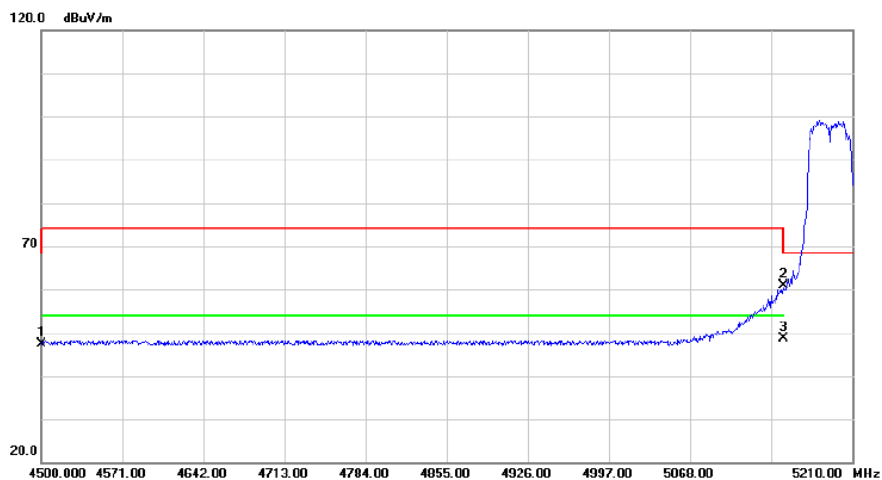
HORIZONTALA

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree
1	*	10380.000	40.74	10.00	50.74	68.20	-17.46	peak	

Radiated Emission



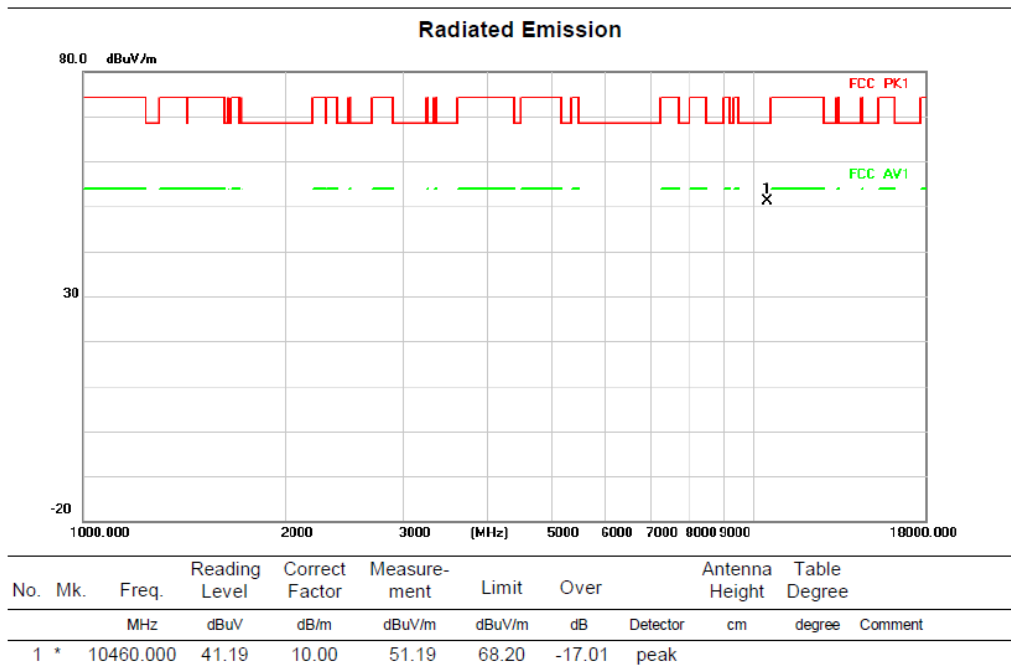
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree
1		4500.000	43.13	4.27	47.40	68.20	-20.80	peak	
2		5150.000	53.58	7.25	60.83	68.20	-7.37	peak	
3	*	5150.000	41.26	7.25	48.51	54.00	-5.49	AVG	

Above 1G (1GHz~18GHz)

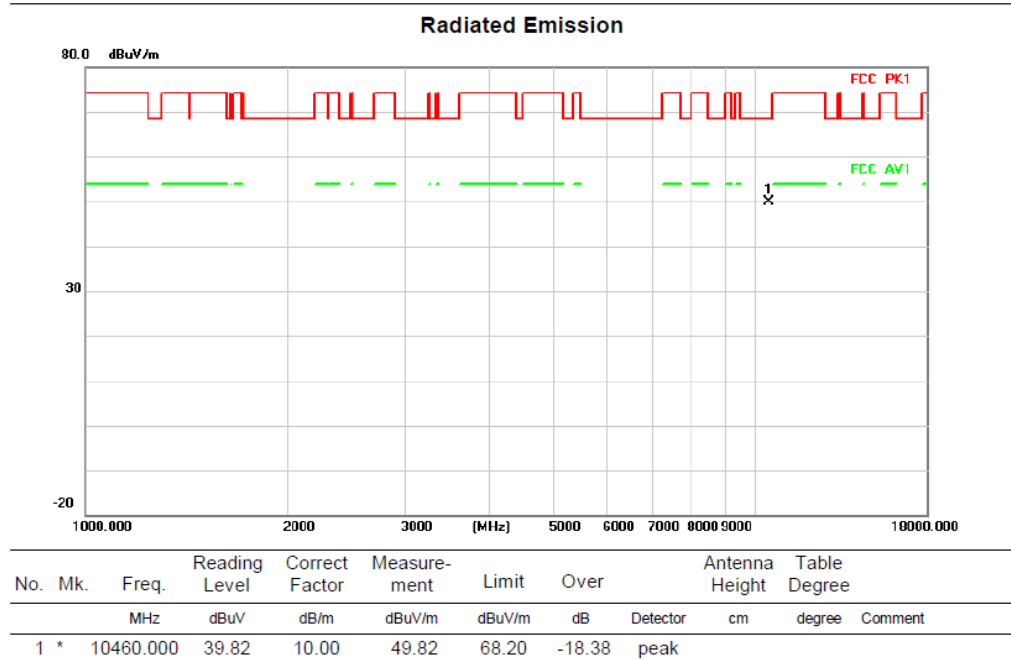
Test mode: 11AC40

Test Channel:46

VERTICAL



HORIZONTAL

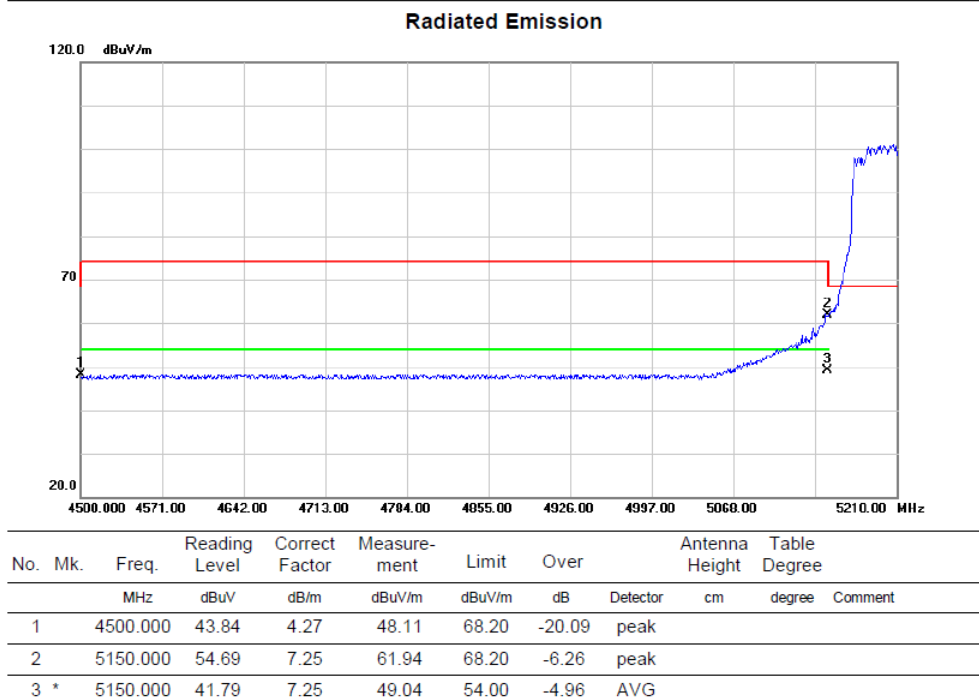
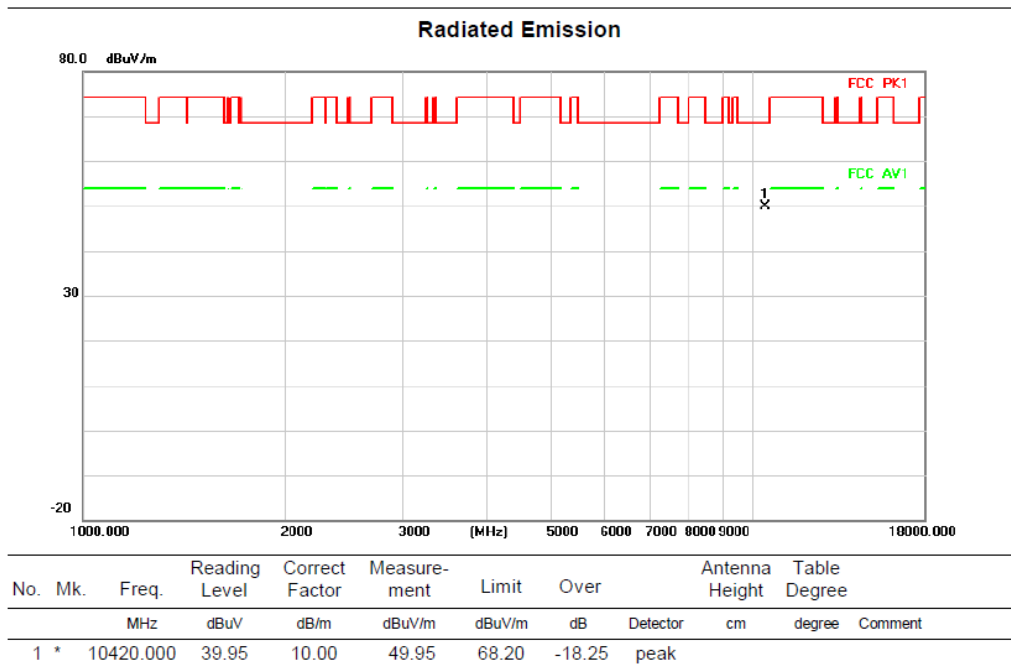


Above 1G (1GHz~18GHz)

Test mode: 11AC80

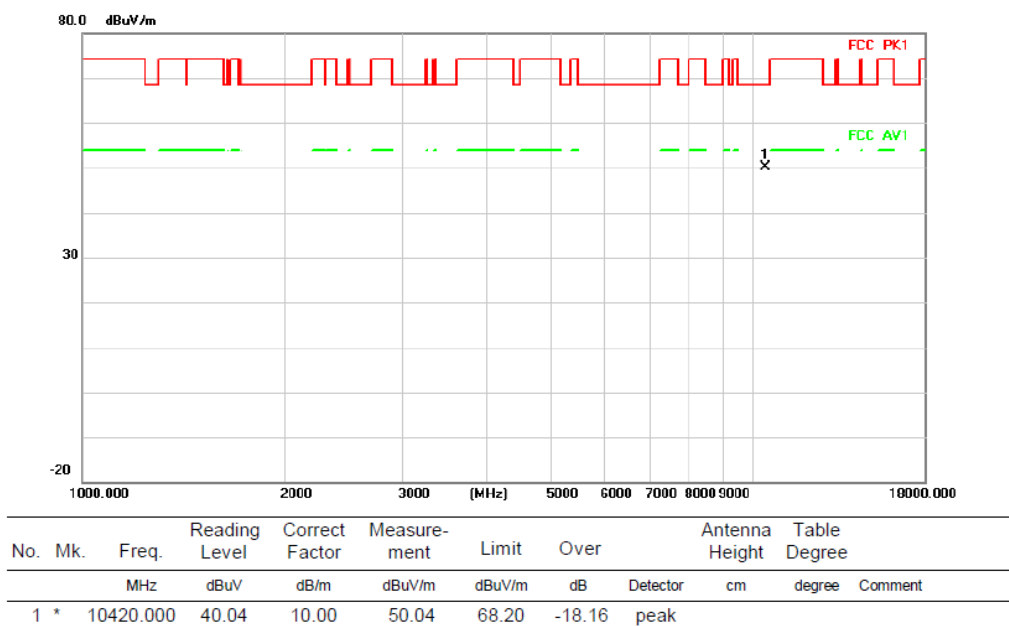
Test Channel:42

VERTICAL

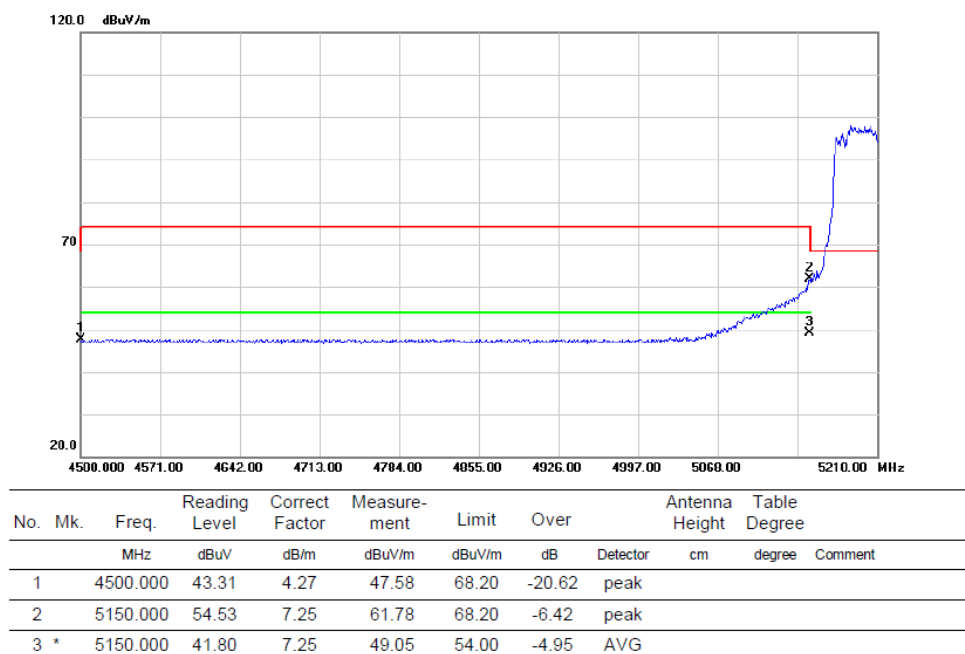


HORIZONTALA

Radiated Emission



Radiated Emission



Note: The high frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit line was not recorded in this report.

3.3 Spectrum Bandwidth

3.3.1 Limit

FCC Part15, Subpart E (15.407)			
Section	Test Item	Limit	Frequency Range (MHz)
15.407(a)	26 dB Bandwidth	-	5150-5250
	26 dB Bandwidth	-	5250-5350
	26 dB Bandwidth	-	5470-5725
15.407(e)	26 dB Bandwidth	-	5725-5850
	6 dB Bandwidth	Minimum 500 kHz	5725-5850

3.3.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.

b) the spectrum analyser is set as follow:

For 26 dB Bandwidth

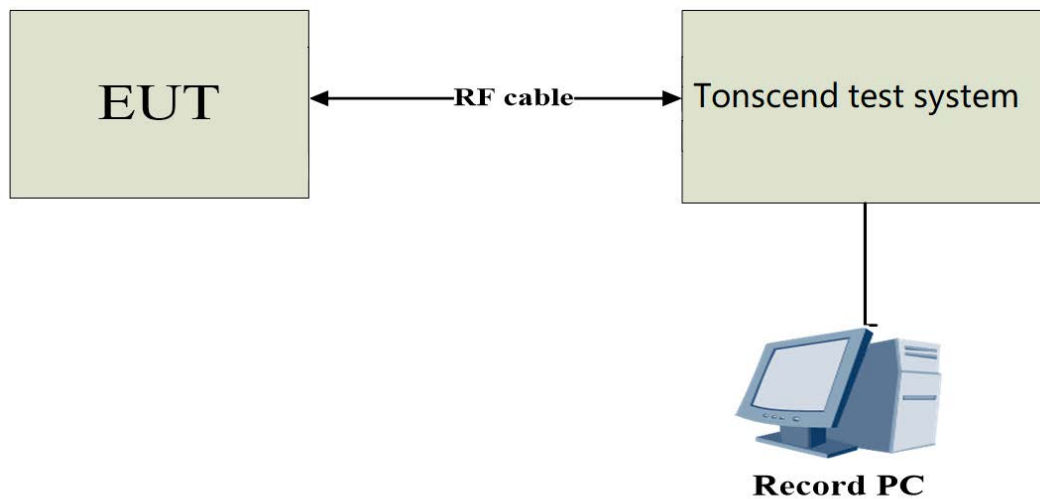
Centre Frequency	The centre frequency of the channel under test
RBW	≥1% x Nominal Channel Bandwidth
VBW	≥3 x RBW
Frequency span	2 x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

For 6 dB Bandwidth

Centre Frequency	The centre frequency of the channel under test
RBW	100 kHz
VBW	300 kHz
Frequency span	2 x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

- c) Wait for the trace to stabilize then find the peak value of the trace and place the analyser marker on this peak.
- d) Use the -26/-6dB bandwidth function of the spectrum analyser to measure the -26/-6dB Bandwidth of the EUT. This value shall be recorded.
- e) Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

3.3.3 Test Setup



3.3.4 Test Result

26 dB Bandwidth

Test Mode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	31.640	5162.280	5193.920	---	---
		5200	23.480	5189.080	5212.560	---	---
		5240	26.360	5225.920	5252.280	---	---
11N20SISO	Ant1	5180	31.440	5165.480	5196.920	---	---
		5200	31.960	5183.760	5215.720	---	---
		5240	32.000	5223.640	5255.640	---	---
11N40SISO	Ant1	5190	58.400	5156.640	5215.040	---	---
		5230	55.760	5203.440	5259.200	---	---
11AC20SISO	Ant1	5180	30.280	5165.360	5195.640	---	---
		5200	33.560	5183.520	5217.080	---	---
		5240	30.920	5224.760	5255.680	---	---
11AC40SISO	Ant1	5190	62.080	5158.720	5220.800	---	---
		5230	70.400	5196.400	5266.800	---	---
11AC80SISO	Ant1	5210	109.920	5154.800	5264.720	---	---

11A_Ant1_5180



11A_Ant1_5200



11A_Ant1_5240



11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



11N20SISO_Ant1_5240



11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



11AC20SISO_Ant1_5180



11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Occupied channel bandwidth

Test Mode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.679	5171.1591	5188.8381	---	---
		5200	17.428	5191.2910	5208.7190	---	---
		5240	17.530	5231.2131	5248.7431	---	---
11N20SISO	Ant1	5180	18.592	5170.6552	5189.2472	---	---
		5200	18.670	5190.6441	5209.3141	---	---
		5240	18.495	5230.7018	5249.1968	---	---
11N40SISO	Ant1	5190	37.456	5171.2205	5208.6765	---	---
		5230	37.312	5211.3508	5248.6628	---	---
11AC20SISO	Ant1	5180	18.565	5170.6252	5189.1902	---	---
		5200	19.209	5190.3035	5209.5125	---	---
		5240	18.904	5230.3959	5249.2999	---	---
11AC40SISO	Ant1	5190	37.331	5171.3474	5208.6784	---	---
		5230	37.268	5211.3746	5248.6426	---	---
11AC80SISO	Ant1	5210	76.766	5171.6059	5248.3719	---	---

11A_Ant1_5180



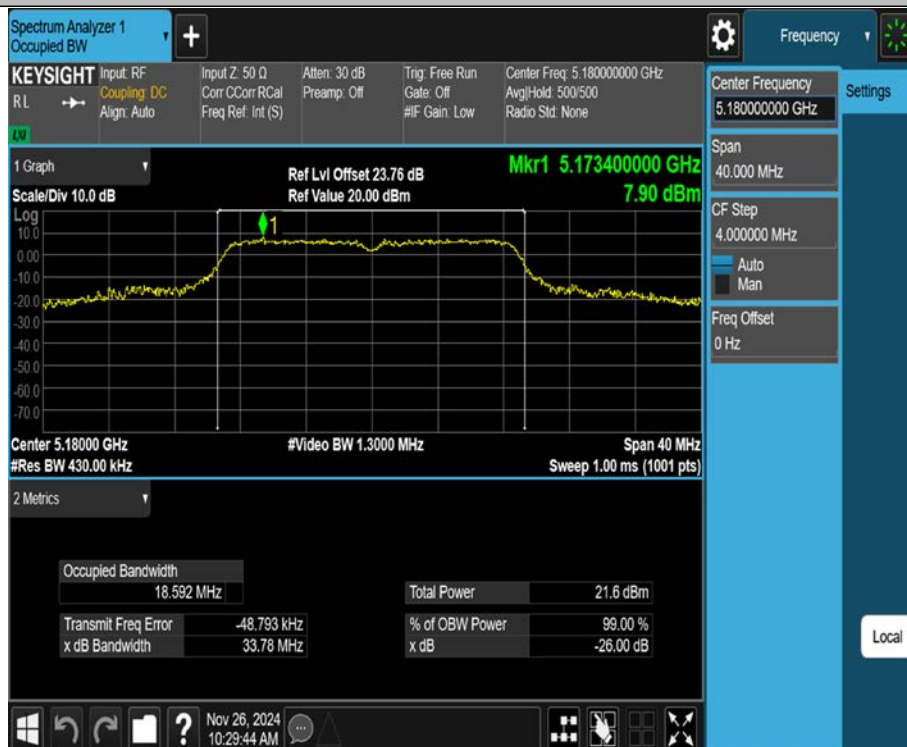
11A_Ant1_5200



11A_Ant1_5240



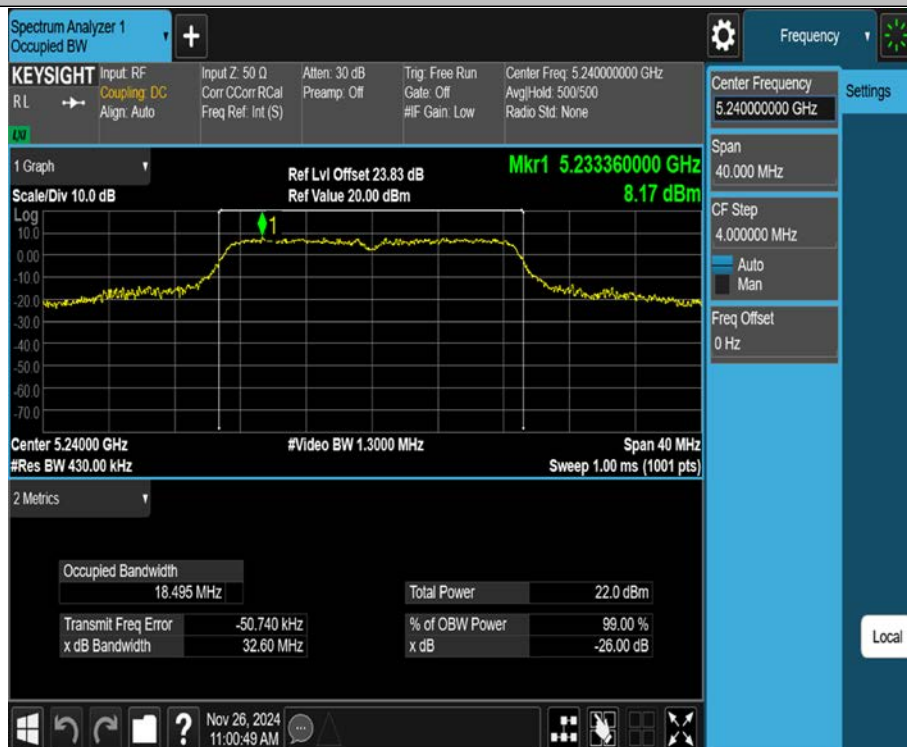
11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



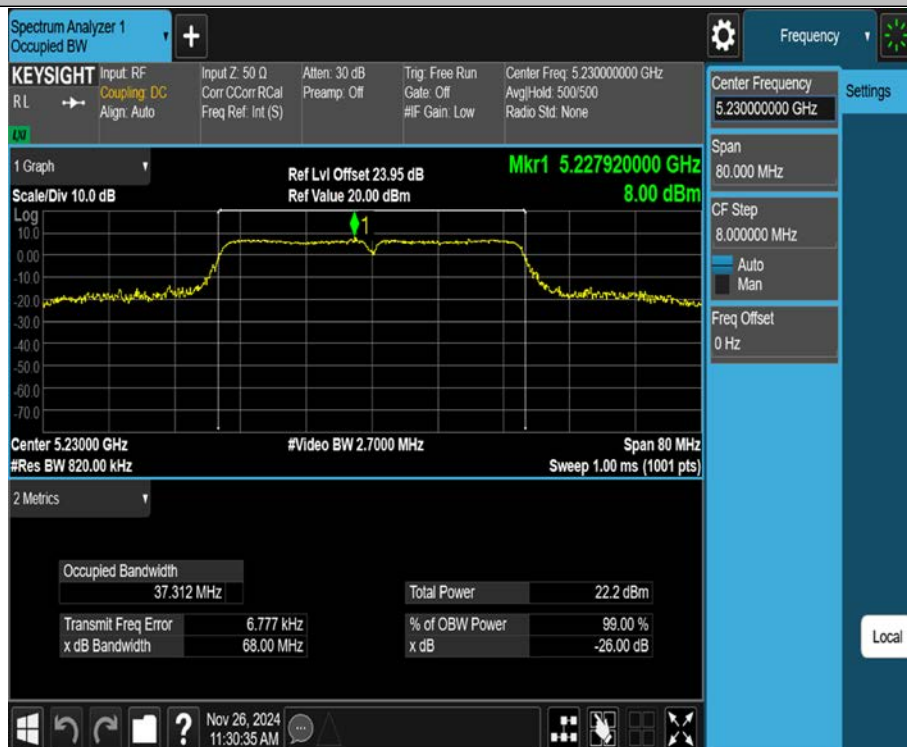
11N20SISO_Ant1_5240



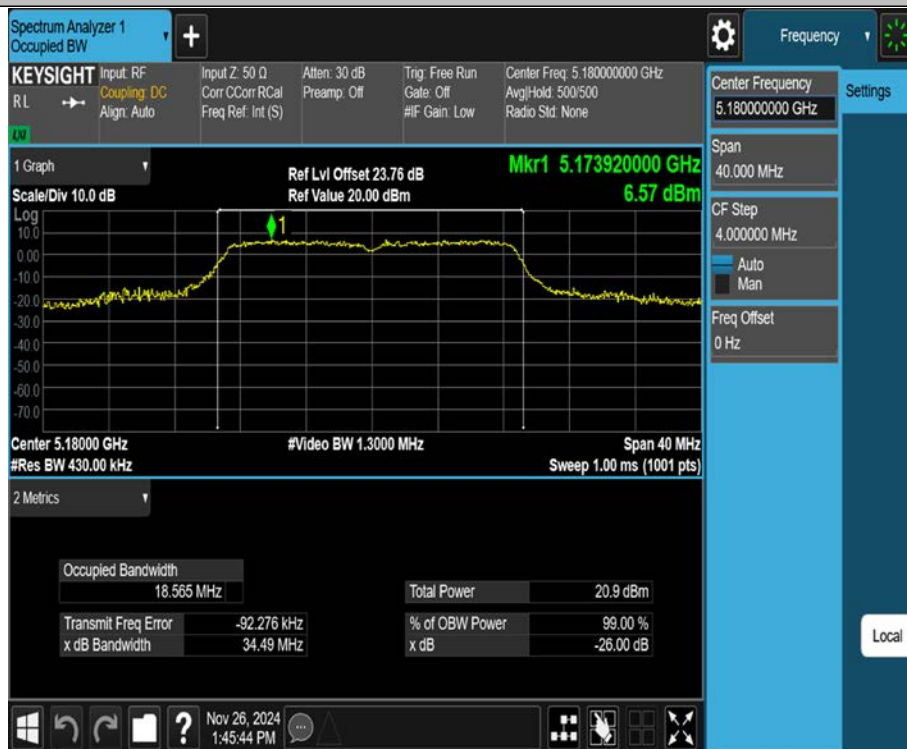
11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



11AC20SISO_Ant1_5180



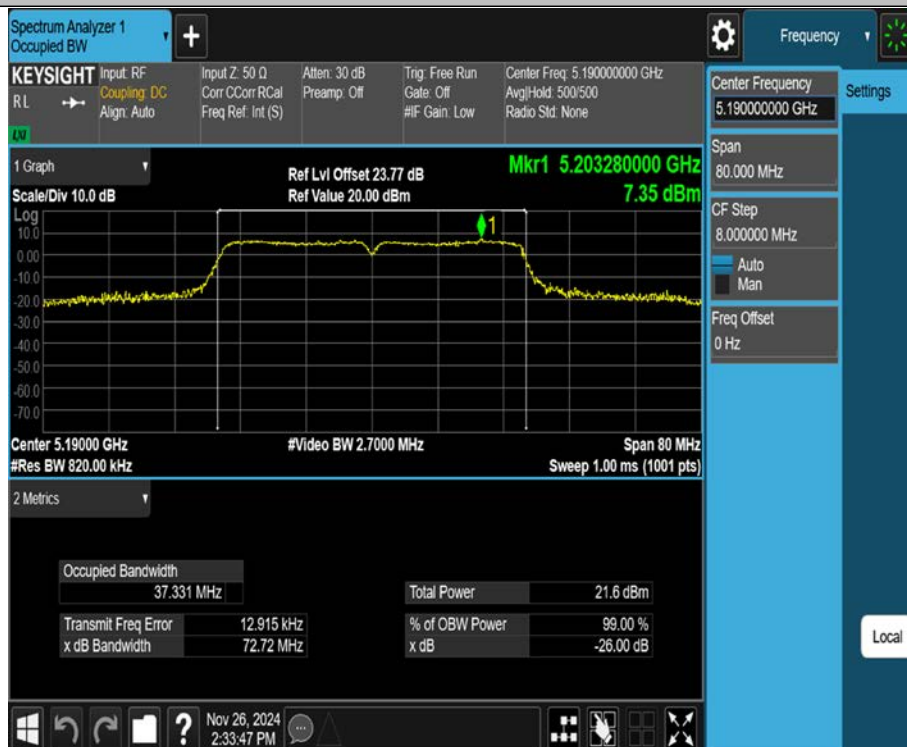
11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240



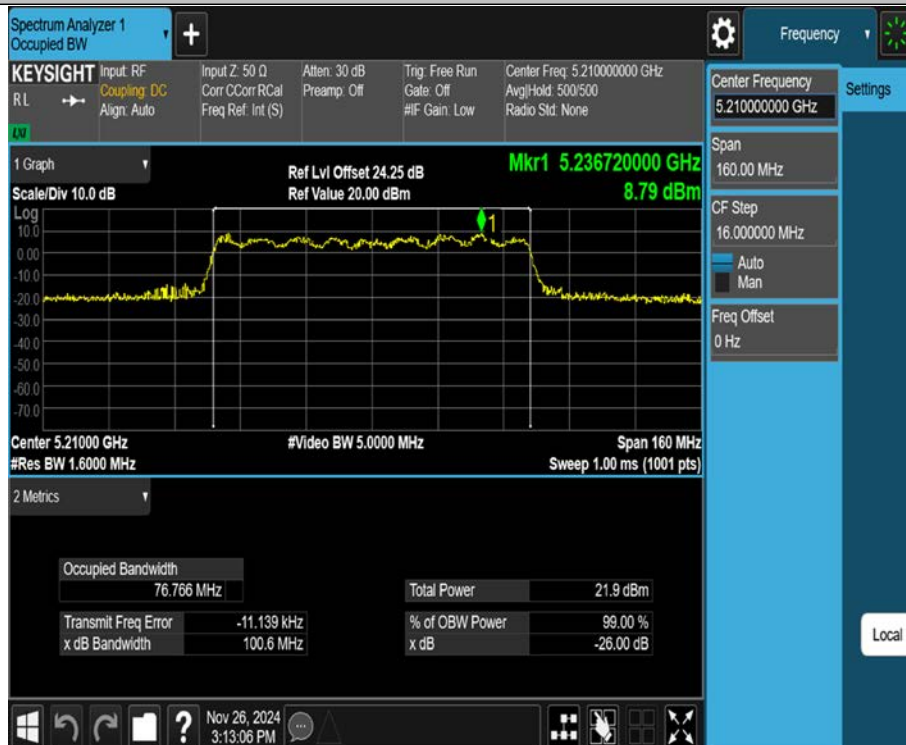
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



3.4 Conducted Output Power

3.4.1 Limit

FCC Part15, Subpart E (15.407)			
Section	Test Item	Limit	Frequency Range (MHz)
15.407(a)	Conducted Output Power	Master device: 1 Watt (30 dBm) Client device: 250 mW (23.98 dBm)	5150-5250
		250 mW (23.98 dBm)	5250-5350
		250 mW (23.98 dBm)	5470-5725
		1 Watt (30dBm)	5725-5850

Note:

- For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26dB Bandwidth in megahertz.

3.4.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- Test was performed in accordance with method of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

3.4.3 Test Setup



3.4.4 Table of Parameters of Text Software Setting

UNII-1			
Test Software Version	MPTool		
Frequency (MHz)	5180	5200	5240
IEEE 802.11a	40	40	40
IEEE 802.11n20	40	40	40
IEEE 802.11ac20	40	40	40
Frequency (MHz)	5190	5230	
IEEE 802.11n40	40	40	
IEEE 802.11ac40	40	40	
Frequency (MHz)	5210		
IEEE 802.11ac80	40		

3.4.5 The Result

Test Mode	Antenna	Freq(MHz)	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	15.20	≤23.98	PASS
		5200	14.87	≤23.98	PASS
		5240	15.12	≤23.98	PASS
11N20SISO	Ant1	5180	15.17	≤23.98	PASS
		5200	15.29	≤23.98	PASS
		5240	15.40	≤23.98	PASS
11N40SISO	Ant1	5190	14.13	≤23.98	PASS
		5230	15.02	≤23.98	PASS
11AC20SISO	Ant1	5180	14.43	≤23.98	PASS
		5200	15.50	≤23.98	PASS
		5240	15.64	≤23.98	PASS
11AC40SISO	Ant1	5190	14.56	≤23.98	PASS
		5230	15.01	≤23.98	PASS
11AC80SISO	Ant1	5210	14.93	≤23.98	PASS

Note: The duty cycle factor and line loss are compensated in the average conducted output power.

3.5 Power Spectral Density

3.5.1 Limit

FCC Part15, Subpart E (15.407)			
Section	Test Item	Limit	Frequency Range (MHz)
15.407(a)	Power Spectral Density	Master device: 17 dBm/MHz Client device: 11 dBm/MHz	5150-5250
		11 dBm/MHz	5250-5350
		11 dBm/MHz	5470-5725
		30 dBm/500 kHz	5725-5850

Note:

- For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v02r01, section II.F.5., it is acceptable to set RBW at 300kHz and VBW at 1500kHz if the spectrum analyzer does not have 500 kHz RBW. Then, add 10 log (500 kHz/300 kHz) to the measured result, i.e. 2.22 dB.
- During the test of U-NII 3 PSD, the measurement result with RBW=300kHz has been added 2.22 dB by compensating offset, offset=cable loss+duty factor+10log(500kHz/300kHz).

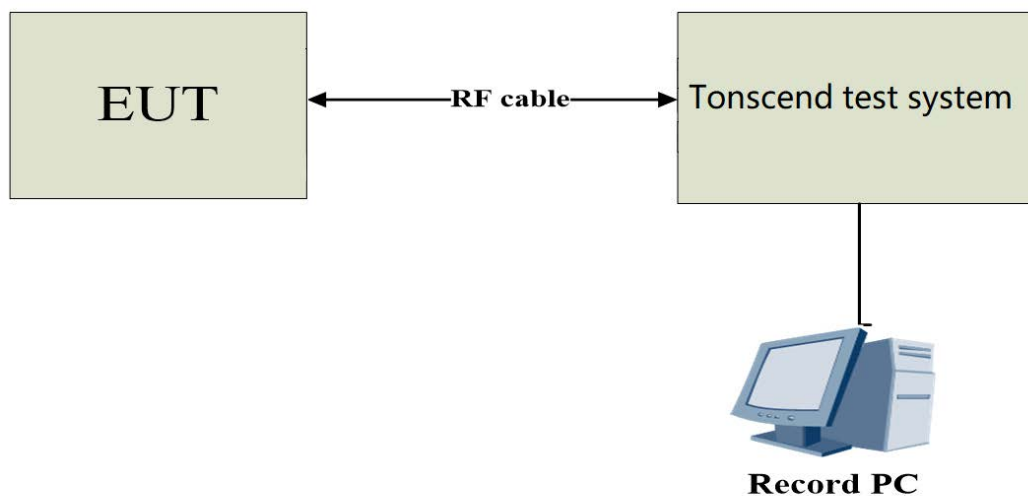
3.5.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscond test system and antenna output port as show in the block diagram below. Spectrum analyser settings as following:

Centre Frequency	The centre frequency of the channel under test
RBW	= 1 MHz (Band1/2/3); = 300kHz (Band4)
VBW	≥3 x RBW
Frequency span	2 x Nominal Channel Bandwidth
Detector Mode	Average
Trace Mode	Max Hold
Sweep Time	Auto Couple

3.5.3 Test Setup



3.5.4 The Result

Test Mode	Antenna	Freq(MHz)	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	4.77	≤11.00	PASS
		5200	4.03	≤11.00	PASS
		5240	4.68	≤11.00	PASS
11N20SISO	Ant1	5180	3.98	≤11.00	PASS
		5200	4.75	≤11.00	PASS
		5240	4.75	≤11.00	PASS
11N40SISO	Ant1	5190	1.24	≤11.00	PASS
		5230	0.94	≤11.00	PASS
11AC20SISO	Ant1	5180	3.12	≤11.00	PASS
		5200	4.82	≤11.00	PASS
		5240	4.75	≤11.00	PASS
11AC40SISO	Ant1	5190	0.62	≤11.00	PASS
		5230	3.42	≤11.00	PASS
11AC80SISO	Ant1	5210	-1.10	≤11.00	PASS

Note: The Duty Cycle Factor and line loss are compensated in the test system

11A_Ant1_5180



11A_Ant1_5200



11A_Ant1_5240



11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



11N20SISO_Ant1_5240



11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



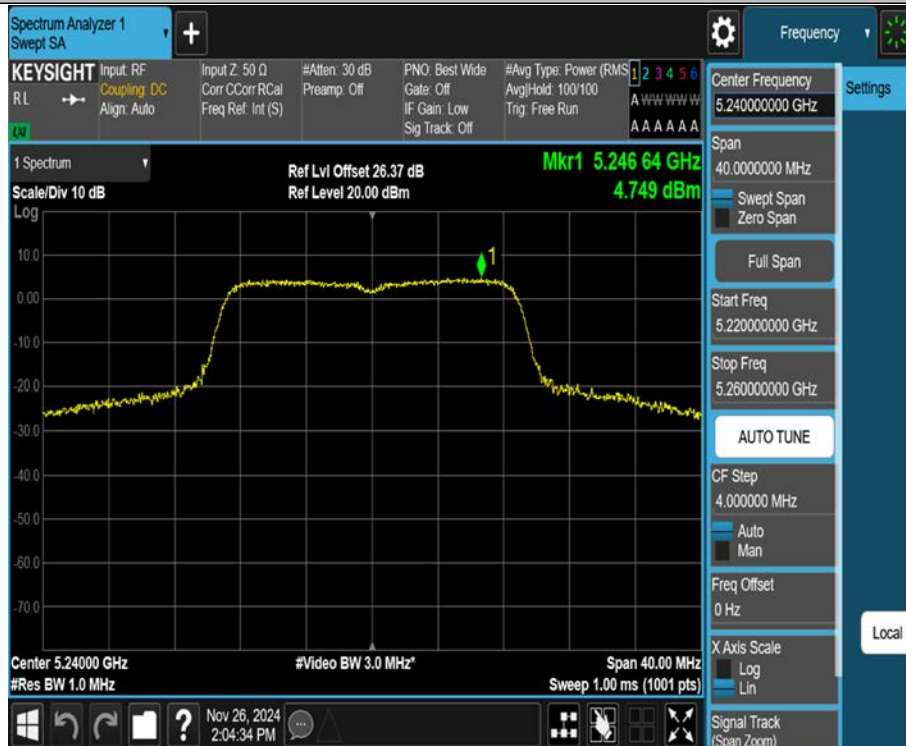
11AC20SISO_Ant1_5180



11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Statement

1. The report is invalid without the official seal or special seal of Shenzhen Haiyun Standard Technology Co., Ltd. (hereinafter referred to as the unit).
2. The report is invalid without the signature of the approver.
3. The report is invalid if altered arbitrarily.
4. The report shall not be partially copied without the written approval of the unit.
5. The reported test results are only valid for the tested samples.
6. If there is any objection to the test report, it shall be submitted to the test unit within 15 days from the date of receiving the report, and the overdue shall not be accepted.

Shenzhen Haiyun Standard Technology Co., Ltd.

Address: Room 110, 111, 112, 113, 115, 116, Block B, Jinyuan Business Building, No. 302, Xixiang Avenue, Labor Community, Xixiang Street, Baoan District, Shenzhen, China

Tel: 0755-26024411

Email: service@hy-lab.cn

(END OF REPORT)