

# FCC Radio Test Report

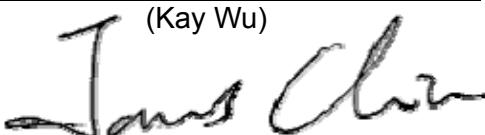
## FCC ID: RYK-WNFQ258ACNBT

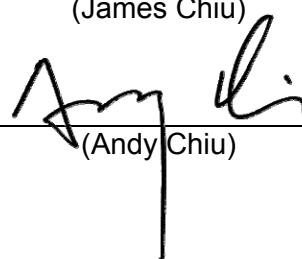
This report concerns (check one):  Original Grant  Class I Change  Class II Change

**Project No.** : 1708083  
**Equipment** : 802.11ac/b/g/n WiFi + Bluetooth M.2 Card  
**Test Model** : WNFQ-258ACN(BT)  
**Series Model** : N/A  
**Applicant** : SparkLAN Communications, Inc.  
**Address** : 8F., No.257, Sec.2, Tiding-Blvd., Neihu District, Taipei City 11493, Taiwan (R.O.C.)

**Date of Receipt** : Aug. 21, 2017  
**Date of Test** : Aug. 21, 2017 ~ Oct. 03, 2017  
**Issued Date** : Oct. 11, 2017  
**Tested by** : BTL Inc.

**Testing Engineer** :   
(Kay Wu)

**Technical Manager** :   
(James Chiu)

**Authorized Signatory** :   
(Andy Chiu)

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**REPORT ISSUED HISTORY**

Issued No.	Description	Issued Date
BTL-FCCP-4-1708083	Original Issue.	Oct. 11, 2017

## 1. CERTIFICATION

Equipment : 802.11ac/b/g/n WiFi + Bluetooth M.2 Card  
Brand Name : Sparklan  
Test Model : WNFQ-258ACN(BT)  
Series Model : N/A  
Applicant : SparkLAN Communications, Inc.  
Manufacturer : SparkLAN Communications, Inc.  
Address : 8F.,No.257,Sec.2,Tiding-Blvd.,Neihu District,Taipei City 11493,Taiwan (R.O.C.)  
Date of Test : Aug. 21, 2017 ~ Oct. 03, 2017  
Test Sample : Engineering Sample  
Standard(s) : FCC Part15, Subpart E(15.407)  
ANSI C63.10-2013

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-4-1708083) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**Test result included in this report is only for the 5GHz RLAN part.**

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15, Subpart E (15.407)			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	-----
15.247(d) 15.209	Radiated emission	PASS	-----
15.203	Antenna Requirement	PASS	-----

Note:

- (1)" N/A" denotes test is not applicable in this test report
- (2) Accord to the EUT((Report Number: RF150107E06Z, RF150107E06Z-1 and model: WNFQ-258ACN(BT)) has been certificated, Conducted and Radiated emission were criticized and reconfirmed in this report.
- (3) Compared with the previous report (RF150107E06Z, RF150107E06Z-1), Added two new different type (Dipole) antennas.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

### Conducted emission Test:

**C05:** (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

### Radiated emission Test (Below 1 GHz):

**CB15:** (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

### Radiated emission Test (Above 1 GHz):

**CB15:** (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{cispr}$  requirement.

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

### A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	$U$ ,(dB)
C05	CISPR	150 kHz ~ 30MHz	2.68

### B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	$U$ ,(dB)
CB15 (3m)	CISPR	9kHz ~ 150kHz	2.82
		150kHz ~ 30MHz	2.58

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
CB15 (3m)	CISPR	30MHz ~ 200MHz	V	4.20
		30MHz ~ 200MHz	H	3.64
		200MHz ~ 1,000MHz	V	4.56
		200MHz ~ 1,000MHz	H	3.90

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
CB15 (3m)	CISPR	1GHz ~ 6GHz	V	4.46
		1GHz ~ 6GHz	H	4.40
		6GHz ~ 18GHz	V	3.88
		6GHz ~ 18GHz	H	4.00

Test Site	Method	Measurement Frequency Range	$U$ ,(dB)
CB15 (1m)	CISPR	18 ~ 26.5 GHz	4.62
		26.5 ~ 40 GHz	5.12

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	802.11ac/b/g/n WiFi + Bluetooth M.2 Card	
Brand Name	Sparklan	
Test Model	WNFQ-258ACN(BT)	
Series Model	N/A	
Model Difference	N/A	
Product Description	Operation Frequency	UNII-1: 5150-5250MHz UNII-2A: 5250-5350MHz UNII-2C: 5470-5725MHz UNII-3: 5725-5850MHz
	Modulation Type	OFDM
	Bit Rate of Transmitter	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
EUT Power Rating	3.3Vdc form host equipment	
Products Covered	N/A	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Channel List:

802.11a, 802.11n (20 MHz), 802.11ac (20 MHz)		802.11n (40 MHz), 802.11ac (40 MHz)		802.11ac (80 MHz)	
UNII-1		UNII-1		UNII-1	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

802.11a, 802.11n (20 MHz), 802.11ac (20 MHz)		802.11n (40 MHz), 802.11ac (40 MHz)		802.11ac (80 MHz)	
UNII-2A		UNII-2A		UNII-2A	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310		
60	5300				
64	5320				

802.11a, 802.11n (20 MHz), 802.11ac (20 MHz)		802.11n (40 MHz), 802.11ac (40 MHz)		802.11ac (80 MHz)	
UNII-2C		UNII-2C		UNII-2C	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630		
116	5580	134	5670		
120	5600	142	5710		
132	5660				
136	5680				
140	5700				
144	5720				

802.11a, 802.11n (20 MHz), 802.11ac (20 MHz)		802.11n (40 MHz), 802.11ac (40 MHz)		802.11ac (80 MHz)	
UNII-3		UNII-3		UNII-3	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				

## 3. Table for Filed Antenna:

Ant.	Brand	Model	Type	Connector	Gain (dBi)				
					2.4 GHz	Band 1	Band 2	Band 3	Band 4
1	Wanshin	R3410110203 WSS003	Dipole	RP-SMA	2.02	1.93	1.93	2.03	2.03
2	Long Cheng	FDE_ACBSMA-BGP	Dipole	RP-SMA	3.27	5.436	5.436	5.436	5.96

4.

Operating Mode	TX Mode	2 TX
IEEE 802.11a		V (ANT 1+ANT 2)
IEEE 802.11n (20 MHz)		V (ANT 1+ANT 2)
IEEE 802.11n (40 MHz)		V (ANT 1+ANT 2)
IEEE 802.11ac (20 MHz)		V (ANT 1+ANT 2)
IEEE 802.11ac (40 MHz)		V (ANT 1+ANT 2)
IEEE 802.11ac (80 MHz)		V (ANT 1+ANT 2)

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX A Mode / CH36, CH40, CH48 (UNII-1)
Mode 2	TX N20 Mode / CH36, CH40, CH48 (UNII-1)
Mode 3	TX N40 Mode / CH38, CH46 (UNII-1)
Mode 4	TX AC80 Mode / CH42 (UNII-1)
Mode 5	TX A Mode / CH52, CH60, CH64 (UNII-2A)
Mode 6	TX N20 Mode / CH52, CH60, CH64 (UNII-2A)
Mode 7	TX N40 Mode / CH54, CH62 (UNII-2A)
Mode 8	TX AC80 Mode / CH58 (UNII-2A)
Mode 9	TX A Mode / CH100, CH116, CH120, CH140, CH144 (UNII-2C)
Mode 10	TX N20 Mode / CH100, CH116, CH120, CH140, CH144 (UNII-2C)
Mode 11	TX N40 Mode / CH102, CH118, CH134, CH142 (UNII-2C)
Mode 12	TX AC80 Mode / CH106, CH122, CH138 (UNII-2C)
Mode 13	TX A Mode / CH149, CH157, CH165 (UNII-3)
Mode 14	TX N20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 15	TX N40 Mode / CH151, CH159 (UNII-3)
Mode 16	TX AC80 Mode / CH155 (UNII-3)
Mode 17	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

**For Conducted Test**

Final Test Mode	Description
Mode 17	TX Mode

**For Radiated Emission**

Final Test Mode	Description
Mode 1	TX A Mode / CH36, CH40, CH48 (UNII-1)
Mode 2	TX N20 Mode / CH36, CH40, CH48 (UNII-1)
Mode 3	TX N40 Mode / CH38, CH46 (UNII-1)
Mode 4	TX AC80 Mode / CH42 (UNII-1)
Mode 5	TX A Mode / CH52, CH60, CH64 (UNII-2A)
Mode 6	TX N20 Mode / CH52, CH60, CH64 (UNII-2A)
Mode 7	TX N40 Mode / CH54, CH62 (UNII-2A)
Mode 8	TX AC80 Mode / CH58 (UNII-2A)
Mode 9	TX A Mode / CH100, CH116, CH120, CH140, CH144 (UNII-2C)
Mode 10	TX N20 Mode / CH100, CH116, CH120, CH140, CH144 (UNII-2C)
Mode 11	TX N40 Mode / CH102, CH118, CH134, CH142 (UNII-2C)
Mode 12	TX AC80 Mode / CH106, CH122, CH138 (UNII-2C)
Mode 13	TX A Mode / CH149, CH157, CH165 (UNII-3)
Mode 14	TX N20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 15	TX N40 Mode / CH151, CH159 (UNII-3)
Mode 16	TX AC80 Mode / CH155 (UNII-3)

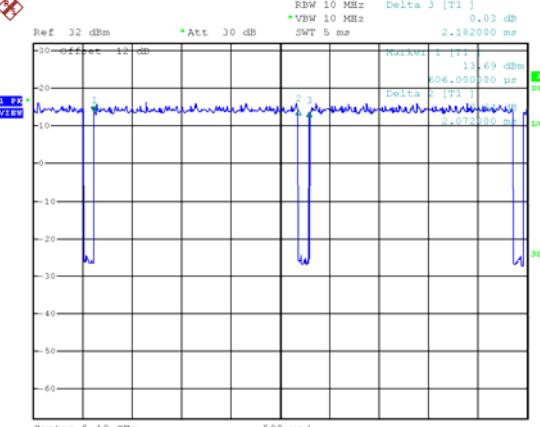
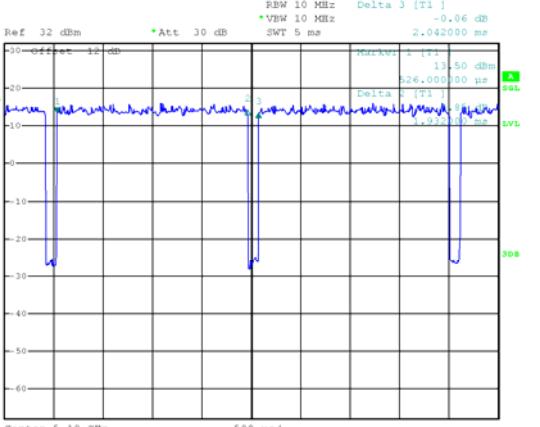
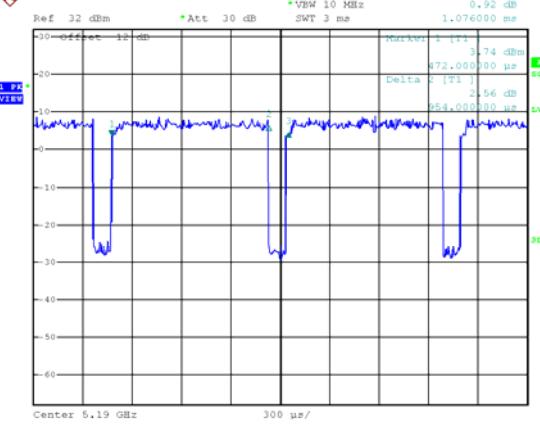
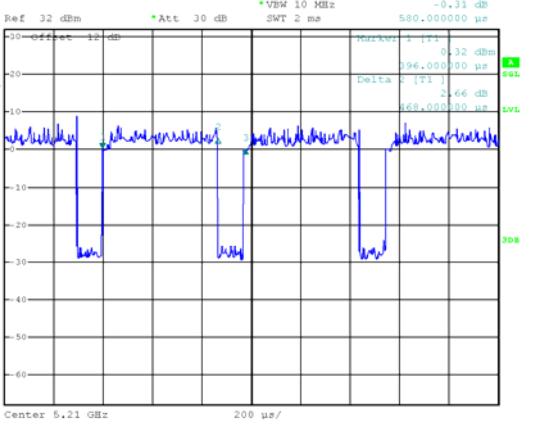
## Note:

(1) For radiated emission below 1GHz test, only the worst case is recorded.

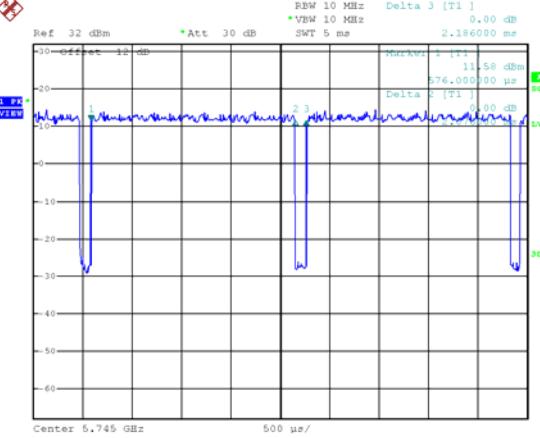
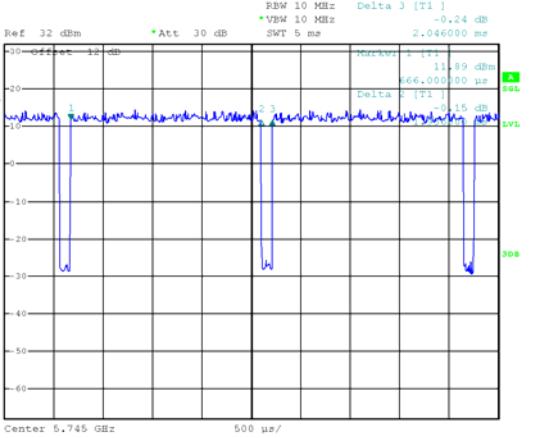
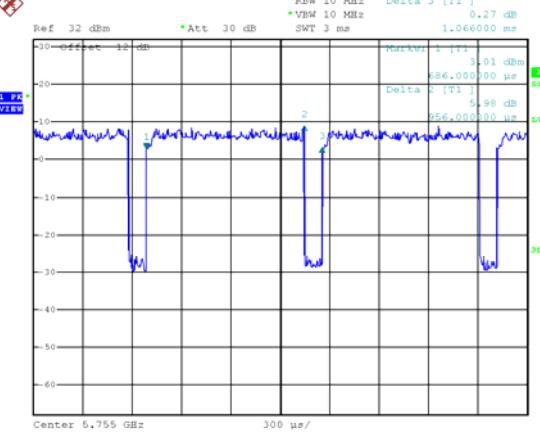
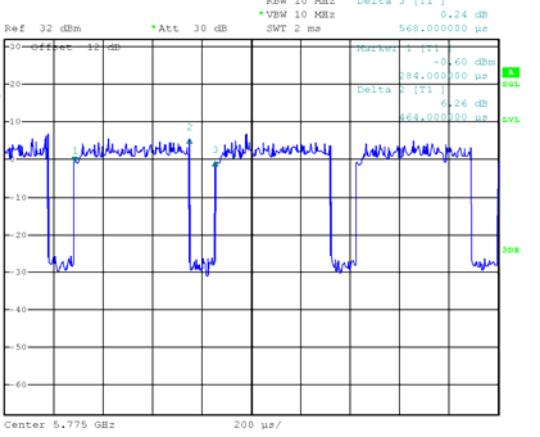
### 3.3 DUTY CYCLE

If duty cycle is  $\geq 98\%$ , duty factor is not required.  
 If duty cycle is  $< 98\%$ , duty factor shall be considered.

#### For UNII-1, UNII-2A and UNII-2C

IEEE 802.11a	IEEE 802.11ac (20 MHz)
 <p>Ref 32 dBm * Att 30 dB RBW 10 MHz Delta 3 [T1] 0.03 dB VBW 10 MHz 13.69 dB SWT 5 ms 504.000000 us</p> <p>30-offset 10 dB 100 kHz 500 μs/ 30B</p> <p>10 0 -10 -20 -30 -40 -50 -60</p> <p>Center 5.18 GHz</p>	 <p>Ref 32 dBm * Att 30 dB RBW 10 MHz Delta 3 [T1] -0.06 dB VBW 10 MHz 13.50 dB SWT 5 ms 524.000000 us</p> <p>30-offset 10 dB 100 kHz 500 μs/ 30B</p> <p>10 0 -10 -20 -30 -40 -50 -60</p> <p>Center 5.18 GHz</p>
<p>Duty cycle = <math>2.072 \text{ ms} / 2.182 \text{ ms} = 94.96\%</math>  Duty Factor = <math>10 * \log(1 / 0.9496) = 0.22</math></p>	<p>Duty cycle = <math>1.932 \text{ ms} / 2.042 \text{ ms} = 94.61\%</math>  Duty Factor = <math>10 * \log(1 / 0.9461) = 0.24</math></p>
IEEE 802.11ac (40 MHz)	IEEE 802.11ac (80 MHz)
 <p>Ref 32 dBm * Att 30 dB RBW 10 MHz Delta 3 [T1] 0.92 dB VBW 10 MHz 3.74 dB SWT 3 ms 472.000000 us</p> <p>30-offset 10 dB 100 kHz 300 μs/ 30B</p> <p>10 0 -10 -20 -30 -40 -50 -60</p> <p>Center 5.19 GHz</p>	 <p>Ref 32 dBm * Att 30 dB RBW 10 MHz Delta 3 [T1] -0.31 dB VBW 10 MHz 0.32 dB SWT 2 ms 596.000000 us</p> <p>30-offset 10 dB 100 kHz 200 μs/ 30B</p> <p>10 0 -10 -20 -30 -40 -50 -60</p> <p>Center 5.21 GHz</p>
<p>Duty cycle = <math>0.954 \text{ ms} / 2.042 \text{ ms} = 88.66\%</math>  Duty Factor = <math>10 * \log(1 / 0.8866) = 0.52</math></p>	<p>Duty cycle = <math>0.468 \text{ ms} / 0.580 \text{ ms} = 80.69\%</math>  Duty Factor = <math>10 * \log(1 / 0.8069) = 0.93</math></p>

## For UNII-3

IEEE 802.11a	IEEE 802.11ac (20 MHz)
 <p>Ref 32 dBm *Att 30 dB *VSW 10 MHz SWT 5 ms</p> <p>RBW 10 MHz Delta 3 [T1] 0.00 dB</p> <p>Marker 1 [T1] 11.58 dBm 576.000000 us</p> <p>Marker 2 [T1] 0.00 dBm 576.000000 us</p> <p>Marker 3 [T1] 0.00 dBm 576.000000 us</p> <p>Center 5.745 GHz 500 μs/ 3dB</p>	 <p>Ref 32 dBm *Att 30 dB *VSW 10 MHz SWT 5 ms</p> <p>RBW 10 MHz Delta 3 [T1] -0.24 dB</p> <p>Marker 1 [T1] 11.89 dBm 666.000000 us</p> <p>Marker 2 [T1] 0.15 dBm 666.000000 us</p> <p>Marker 3 [T1] 0.00 dBm 666.000000 us</p> <p>Center 5.745 GHz 500 μs/ 3dB</p>
Date: 30.OCT.2017 18:11:30	Date: 30.OCT.2017 18:10:34
Duty cycle = $2.076 \text{ ms} / 2.186 \text{ ms} = 94.97\%$ Duty Factor = $10 * \log(1 / 0.9497) = 0.22$	Duty cycle = $1.936 \text{ ms} / 2.046 \text{ ms} = 94.62\%$ Duty Factor = $10 * \log(1 / 0.9462) = 0.24$
IEEE 802.11ac (40 MHz)	IEEE 802.11ac (80 MHz)
 <p>Ref 32 dBm *Att 30 dB *VSW 10 MHz SWT 3 ms</p> <p>RBW 10 MHz Delta 3 [T1] 0.27 dB</p> <p>Marker 1 [T1] 1.91 dBm 586.000000 us</p> <p>Marker 2 [T1] 5.98 dBm 256.000000 us</p> <p>Marker 3 [T1] 0.00 dBm 256.000000 us</p> <p>Center 5.755 GHz 300 μs/ 3dB</p>	 <p>Ref 32 dBm *Att 30 dB *VSW 10 MHz SWT 2 ms</p> <p>RBW 10 MHz Delta 3 [T1] 0.24 dB</p> <p>Marker 1 [T1] -0.60 dBm 184.000000 us</p> <p>Marker 2 [T1] 6.26 dBm 164.000000 us</p> <p>Marker 3 [T1] 0.00 dBm 164.000000 us</p> <p>Center 5.775 GHz 200 μs/ 3dB</p>
Date: 30.OCT.2017 18:09:31	Date: 30.OCT.2017 18:08:15
Duty cycle = $0.956 \text{ ms} / 1.066 \text{ ms} = 89.68\%$ Duty Factor = $10 * \log(1 / 0.8968) = 0.47$	Duty cycle = $0.464 \text{ ms} / 0.568 \text{ ms} = 81.69\%$ Duty Factor = $10 * \log(1 / 0.8169) = 0.88$

## Note:

For IEEE 802.11a and IEEE 802.11ac (20 MHz):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle < 98%).

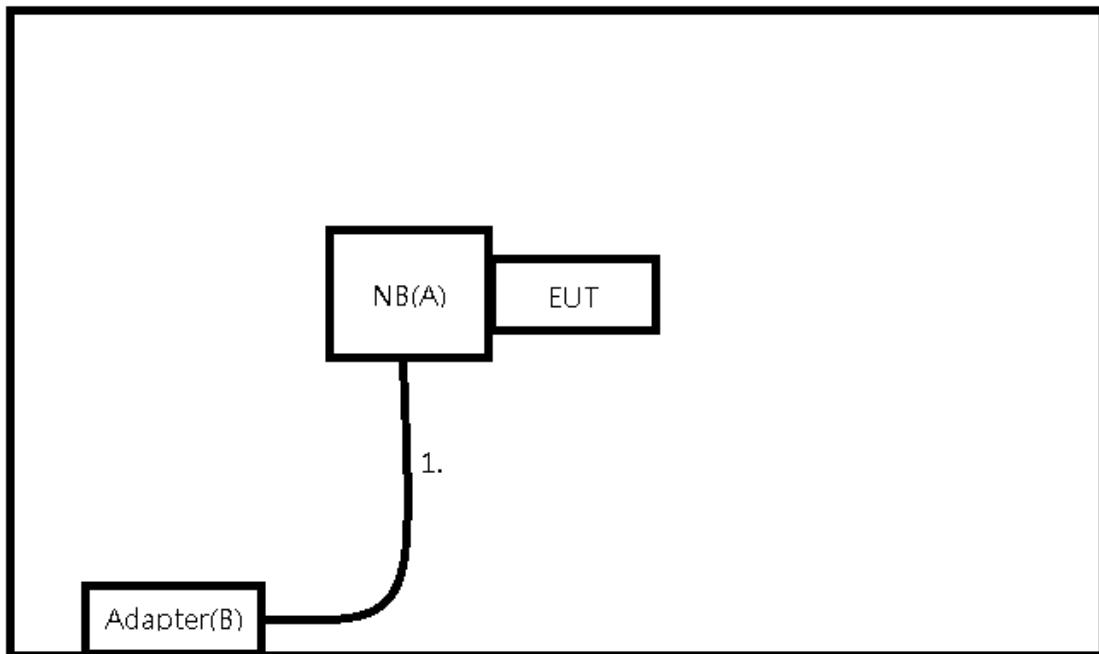
For IEEE 802.11ac (40 MHz):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 2 kHz (Duty cycle < 98%).

For IEEE 802.11ac (80 MHz):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 kHz (Duty cycle < 98%).

### 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
A	NB	Lenovo	P50	N/A	N/A
B	Adapter	Lenovo	ADL170NDC2A	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	YES	1.5m	Power Cable

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 -0.50	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " \* " decreases with the logarithm of the frequency

(2) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)

Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

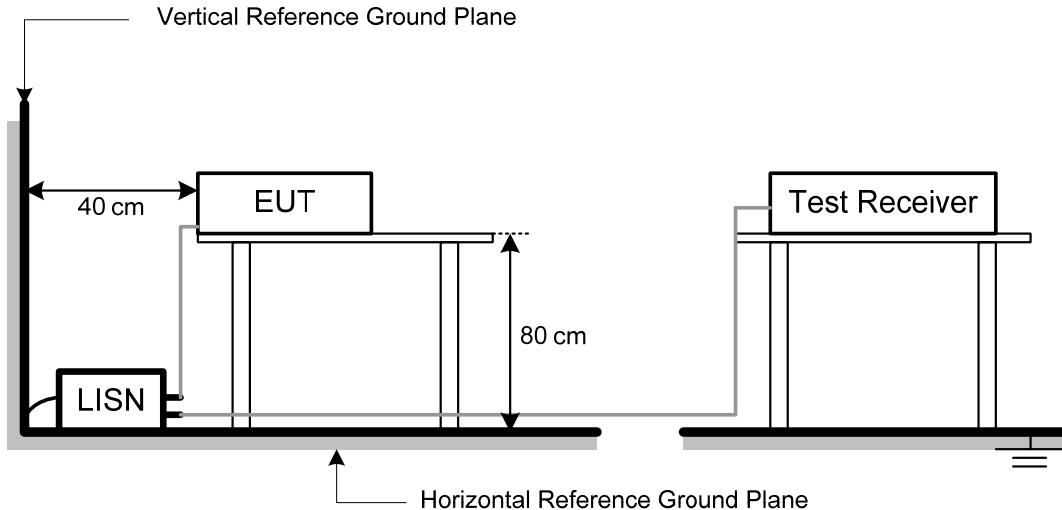
#### 4.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



#### 4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting/receiving data or hopping on mode.

#### 4.1.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

#### 4.1.7 TEST RESULTS

Please refer to the Appendix A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of <sup>†</sup>Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “\*” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.
- (3) “N/A” denotes test is not applicable to this device.

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/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 limit for radiated test was performed according to FCC Part 15, Subpart E.
- (2) The tighter limit applies at the band edges.

### LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dB $\mu$ V/m)
5150-5250	-27	68.3
5250-5350	-27	68.3
5470-5725	-27	68.3
5725-5850	-27(Note 2)	68.3
	10(Note 2)	105.3
	15.6(Note 2)	110.9
	27(Note 2)	122.3

Note:

1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:  $E = \frac{1000000\sqrt{30P}}{3}$   $\mu$ V/m, where P is the eirp (Watts)
2. According to FCC 16-24, All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

#### 4.2.2 TEST PROCEDURE

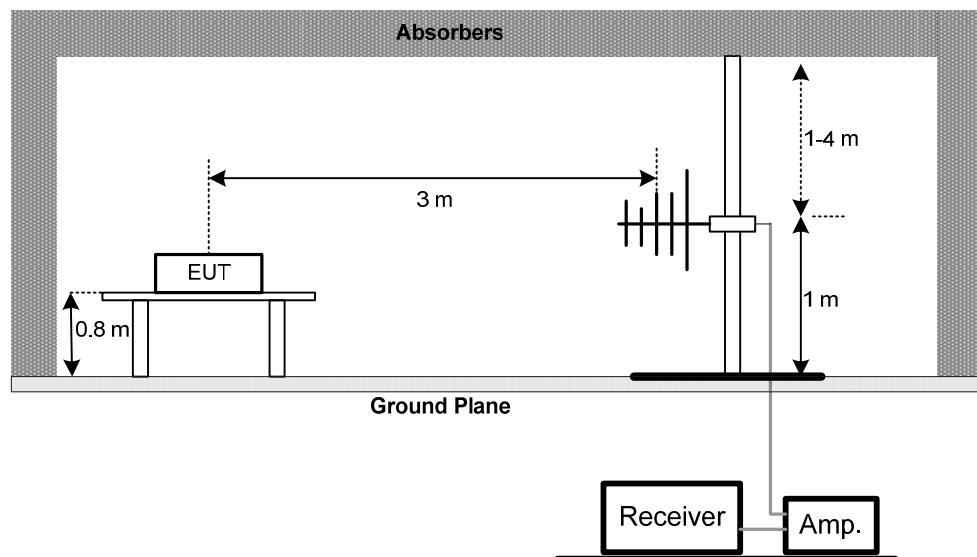
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.2.3 DEVIATION FROM TEST STANDARD

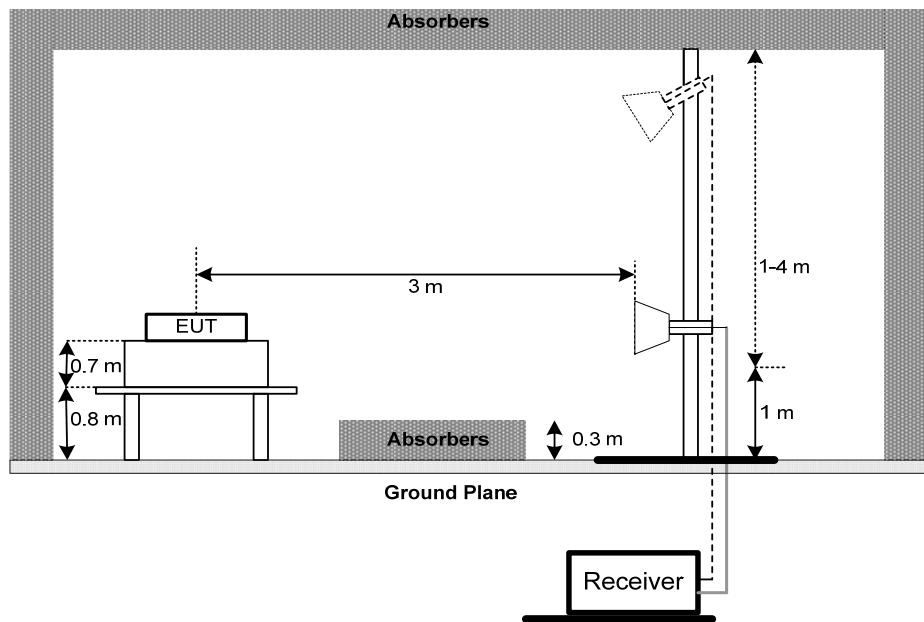
No deviation

#### 4.2.4 TEST SETUP

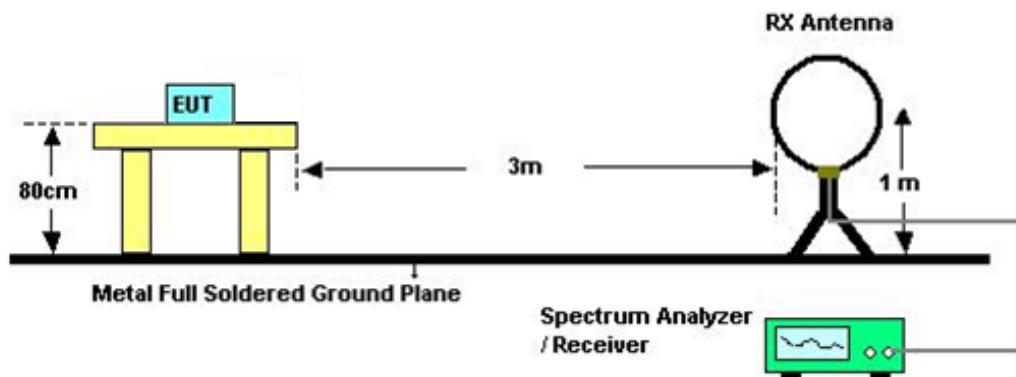
##### (A)Radiated Emission Test Set-Up Frequency Below 1GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) Radiated emissions below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 23°C/25°C   Relative Humidity: 70%/45%   Test Voltage: AC 120V/60Hz

#### **4.2.7 TEST RESULTS (9KHZ TO 30MHZ)**

Please refer to the Appendix B.

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

#### **4.2.8 TEST RESULTS (30MHZ TO 1000MHZ)**

Please refer to the Appendix C.

#### **4.2.8 TEST RESULTS (ABOVE 1000MHZ)**

Please refer to the Appendix D.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 5. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 25, 2018
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 14, 2018
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 09, 2017
4	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 28, 2018
2	Preamplifier	EMCI	EMC02325	980217	Dec. 29, 2017
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 14, 2018
4	Test Cable	EMCI	EMC104-SM-S M-8000	8m	Jan. 04, 2018
5	Test Cable	EMCI	EMC104-SM-S M-800	150207	Jan. 04, 2018
6	Test Cable	EMCI	EEMC104-SM-S M-3000	151205	Jan. 04, 2018
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 09, 2018
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 22, 2018
9	Loop Ant	EMCO	6502	42960	Nov. 24, 2017
10	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 28, 2018
11	Horn Ant	Schwarzbeck	BBHA 9170	187	Dec. 07, 2017
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 16, 2018
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 16, 2018

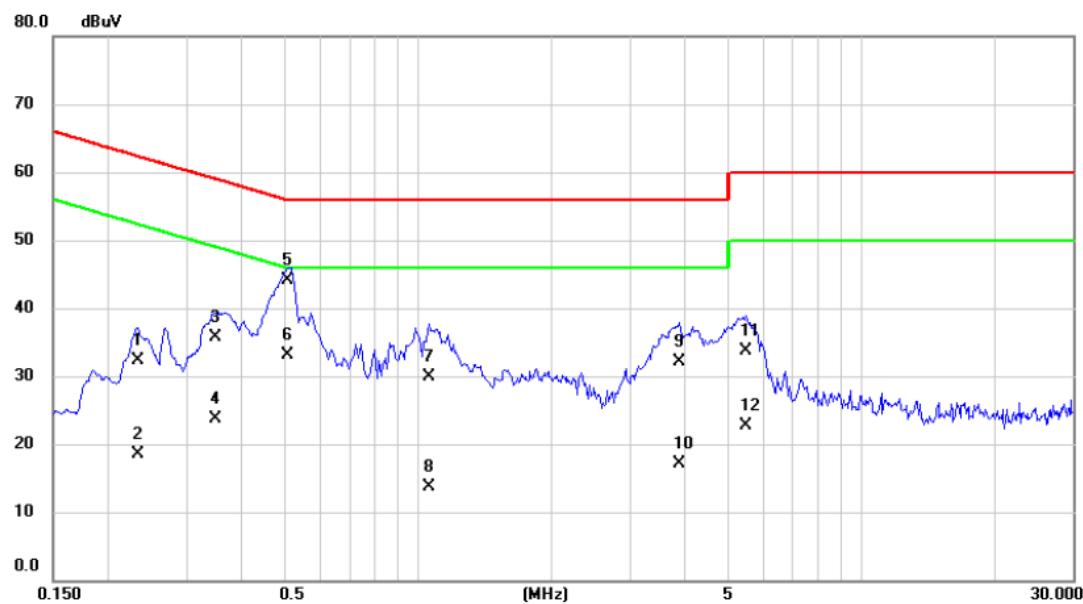
Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

## APPENDIX A – CONDUCTED EMISSION

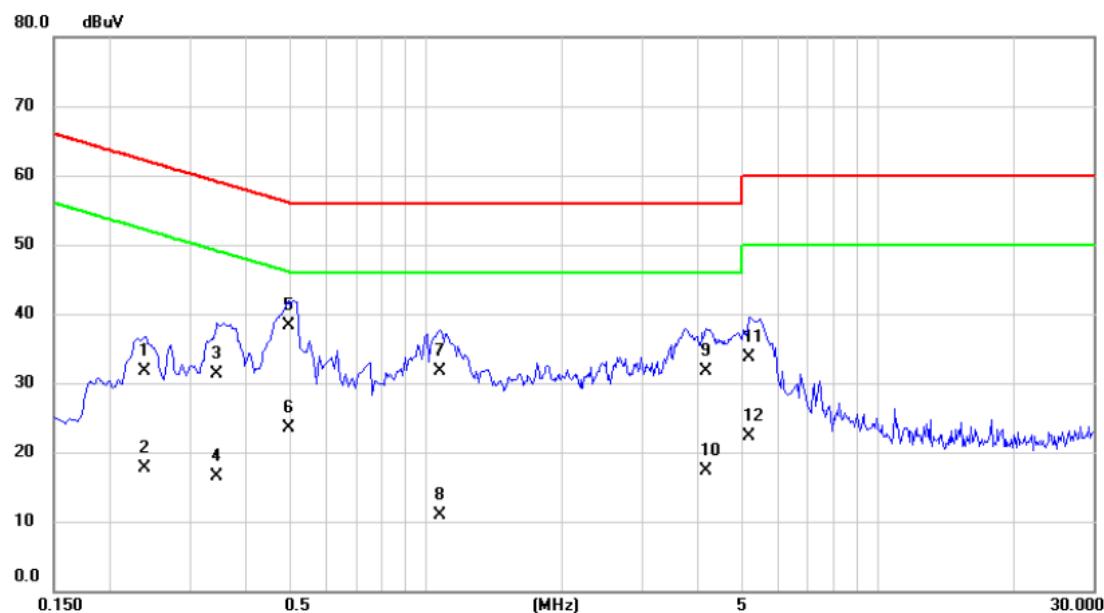
Test Mode: UNII-1/TX Mode

## Line



No.	Mk.	Freq.	Reading Level MHz	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2326	22.60	9.72	32.32	62.36	-30.04	QP	
2		0.2326	8.80	9.72	18.52	52.36	-33.84	AVG	
3		0.3481	26.00	9.73	35.73	59.01	-23.28	QP	
4		0.3481	14.00	9.73	23.73	49.01	-25.28	AVG	
5	*	0.5090	34.40	9.74	44.14	56.00	-11.86	QP	
6		0.5090	23.30	9.74	33.04	46.00	-12.96	AVG	
7		1.0580	20.10	9.74	29.84	56.00	-26.16	QP	
8		1.0580	4.00	9.74	13.74	46.00	-32.26	AVG	
9		3.8930	22.30	9.80	32.10	56.00	-23.90	QP	
10		3.8930	7.30	9.80	17.10	46.00	-28.90	AVG	
11		5.5000	23.80	9.84	33.64	60.00	-26.36	QP	
12		5.5000	12.80	9.84	22.64	50.00	-27.36	AVG	

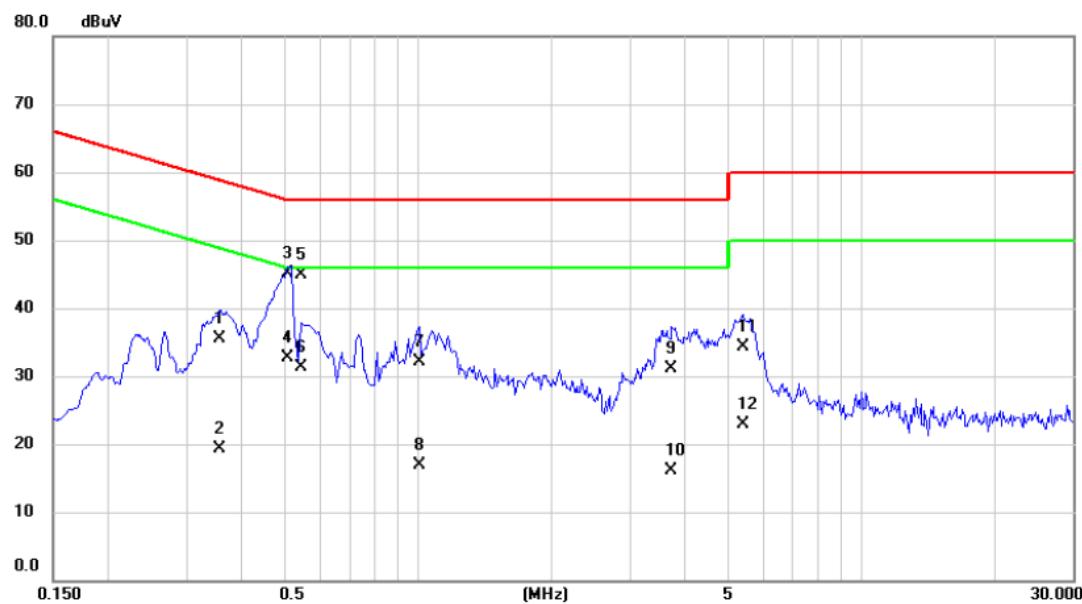
Test Mode: UNII-1/TX Mode

**Neutral**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2390	22.10	9.66	31.76	62.13	-30.37	QP	
2		0.2390	8.10	9.66	17.76	52.13	-34.37	AVG	
3		0.3446	21.70	9.67	31.37	59.09	-27.72	QP	
4		0.3446	6.90	9.67	16.57	49.09	-32.52	AVG	
5	*	0.4972	28.60	9.68	38.28	56.05	-17.77	QP	
6		0.4972	13.80	9.68	23.48	46.05	-22.57	AVG	
7		1.0760	22.00	9.69	31.69	56.00	-24.31	QP	
8		1.0760	1.30	9.69	10.99	46.00	-35.01	AVG	
9		4.1630	22.00	9.77	31.77	56.00	-24.23	QP	
10		4.1630	7.60	9.77	17.37	46.00	-28.63	AVG	
11		5.2000	24.00	9.79	33.79	60.00	-26.21	QP	
12		5.2000	12.60	9.79	22.39	50.00	-27.61	AVG	

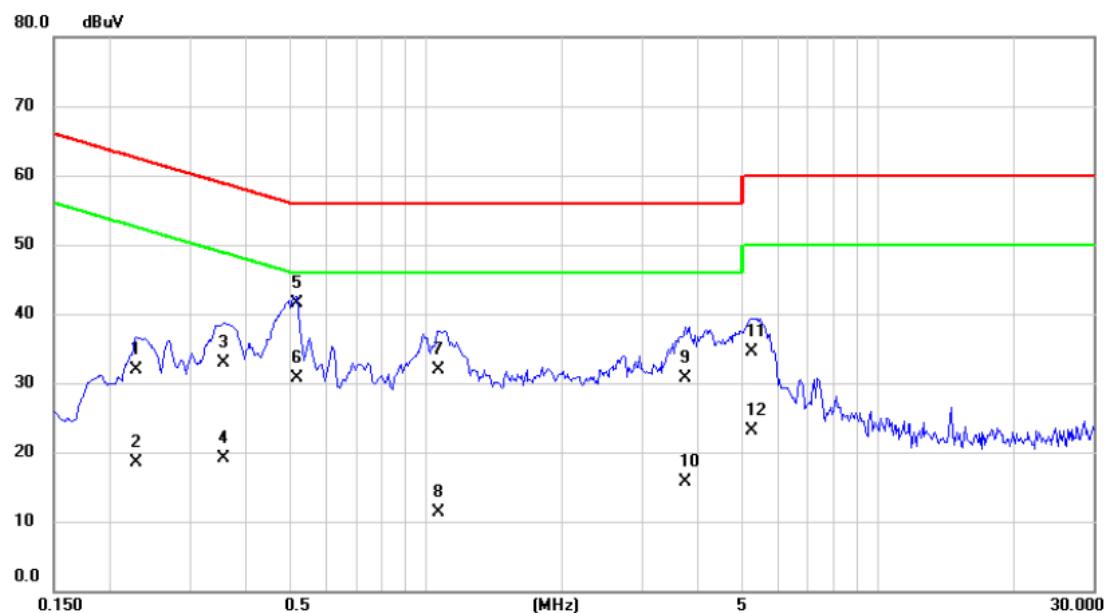
Test Mode: UNII-2A/TX Mode

## Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over Detector	Comment
1		0.3571	25.80	9.73	35.53	58.80	-23.27	QP
2		0.3571	9.60	9.73	19.33	48.80	-29.47	AVG
3	*	0.5090	35.40	9.74	45.14	56.00	-10.86	QP
4		0.5090	22.90	9.74	32.64	46.00	-13.36	AVG
5		0.5450	35.20	9.74	44.94	56.00	-11.06	QP
6		0.5450	21.50	9.74	31.24	46.00	-14.76	AVG
7		1.0040	22.40	9.74	32.14	56.00	-23.86	QP
8		1.0040	7.20	9.74	16.94	46.00	-29.06	AVG
9		3.7310	21.40	9.80	31.20	56.00	-24.80	QP
10		3.7310	6.40	9.80	16.20	46.00	-29.80	AVG
11		5.4000	24.40	9.84	34.24	60.00	-25.76	QP
12		5.4000	13.00	9.84	22.84	50.00	-27.16	AVG

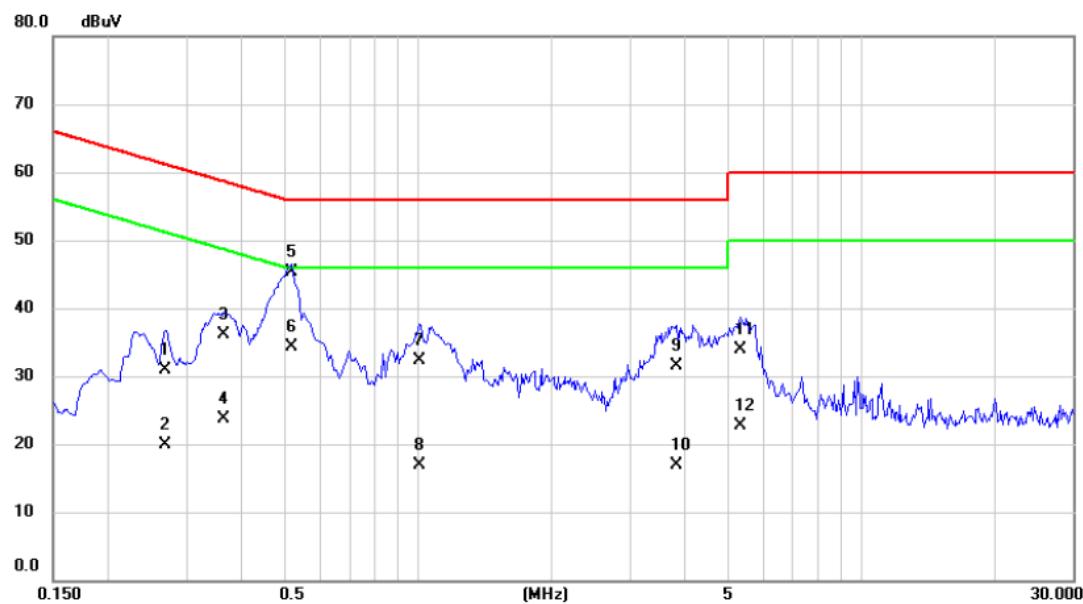
Test Mode: UNII-2A/TX Mode

**Neutral**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2291	22.20	9.66	31.86	62.48	-30.62	QP	
2		0.2291	8.90	9.66	18.56	52.48	-33.92	AVG	
3		0.3571	23.20	9.67	32.87	58.80	-25.93	QP	
4		0.3571	9.40	9.67	19.07	48.80	-29.73	AVG	
5	*	0.5180	31.80	9.68	41.48	56.00	-14.52	QP	
6		0.5180	21.10	9.68	30.78	46.00	-15.22	AVG	
7		1.0670	22.20	9.69	31.89	56.00	-24.11	QP	
8		1.0670	1.60	9.69	11.29	46.00	-34.71	AVG	
9		3.7400	20.90	9.76	30.66	56.00	-25.34	QP	
10		3.7400	5.90	9.76	15.66	46.00	-30.34	AVG	
11		5.2500	24.63	9.80	34.43	60.00	-25.57	QP	
12		5.2500	13.40	9.80	23.20	50.00	-26.80	AVG	

Test Mode: UNII-2C/TX Mode

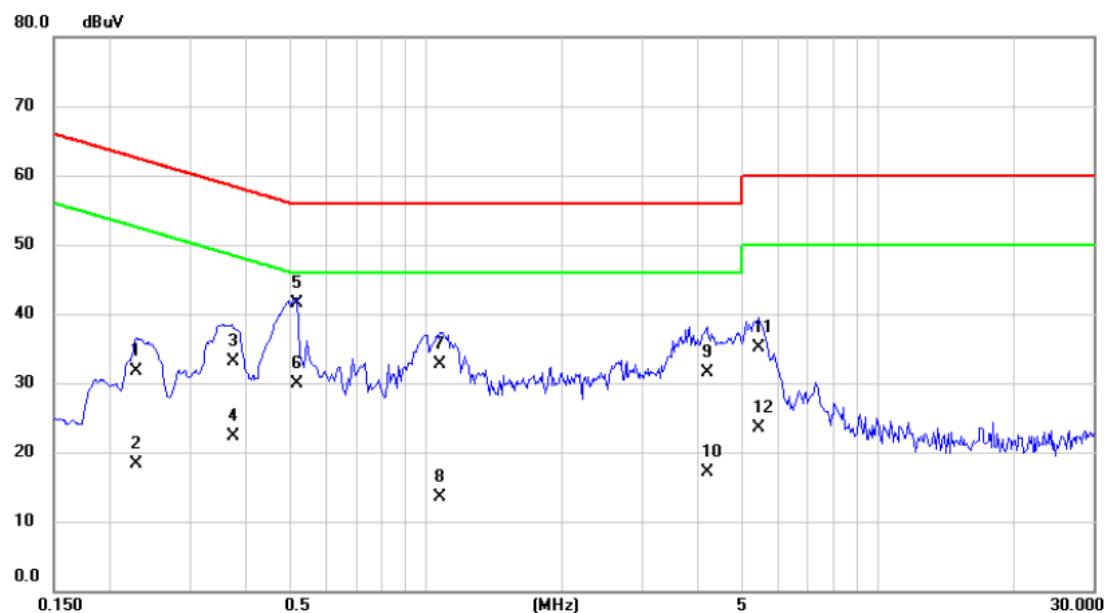
## Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over	Detector	Comment
1		0.2690	21.20	9.73	30.93	61.15	-30.22	QP	
2		0.2690	10.20	9.73	19.93	51.15	-31.22	AVG	
3		0.3642	26.30	9.73	36.03	58.63	-22.60	QP	
4		0.3642	14.00	9.73	23.73	48.63	-24.90	AVG	
5	*	0.5180	35.63	9.74	45.37	56.00	-10.63	QP	
6		0.5180	24.50	9.74	34.24	46.00	-11.76	AVG	
7		1.0040	22.60	9.74	32.34	56.00	-23.66	QP	
8		1.0040	7.20	9.74	16.94	46.00	-29.06	AVG	
9		3.8300	21.80	9.80	31.60	56.00	-24.40	QP	
10		3.8300	7.10	9.80	16.90	46.00	-29.10	AVG	
11		5.3500	24.00	9.84	33.84	60.00	-26.16	QP	
12		5.3500	12.90	9.84	22.74	50.00	-27.26	AVG	

Test Mode: UNII-2C/TX Mode

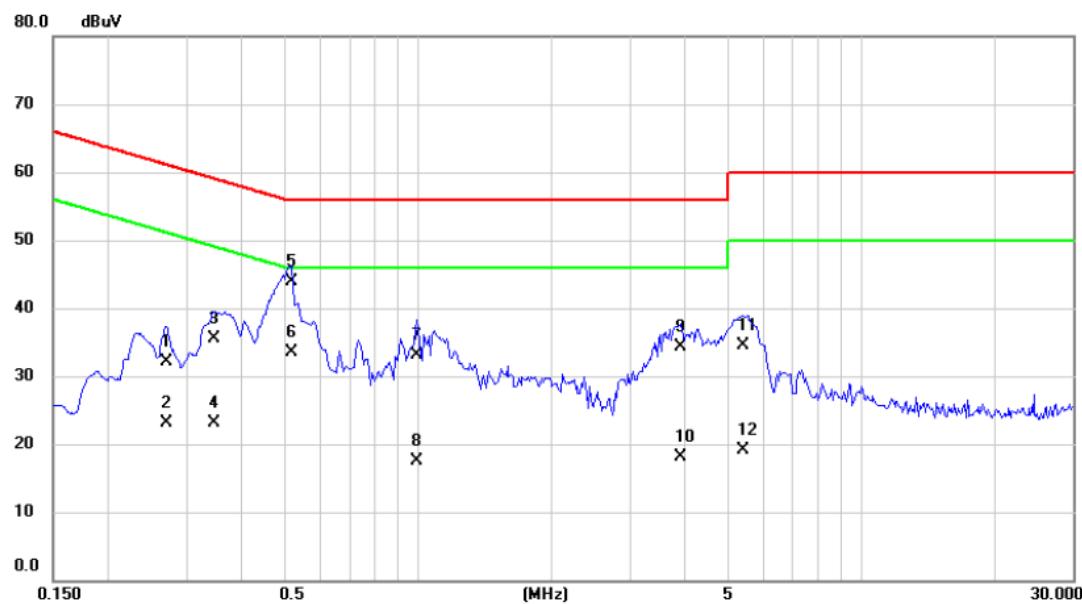
## Neutral



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2291	22.00	9.66	31.66	62.48	-30.82	QP	
2		0.2291	8.70	9.66	18.36	52.48	-34.12	AVG	
3		0.3733	23.40	9.67	33.07	58.43	-25.36	QP	
4		0.3733	12.70	9.67	22.37	48.43	-26.06	AVG	
5	*	0.5180	31.80	9.68	41.48	56.00	-14.52	QP	
6		0.5180	20.30	9.68	29.98	46.00	-16.02	AVG	
7		1.0760	23.00	9.69	32.69	56.00	-23.31	QP	
8		1.0760	3.90	9.69	13.59	46.00	-32.41	AVG	
9		4.1990	21.80	9.77	31.57	56.00	-24.43	QP	
10		4.1990	7.40	9.77	17.17	46.00	-28.83	AVG	
11		5.4500	25.40	9.80	35.20	60.00	-24.80	QP	
12		5.4500	13.80	9.80	23.60	50.00	-26.40	AVG	

Test Mode: UNII-3/TX Mode

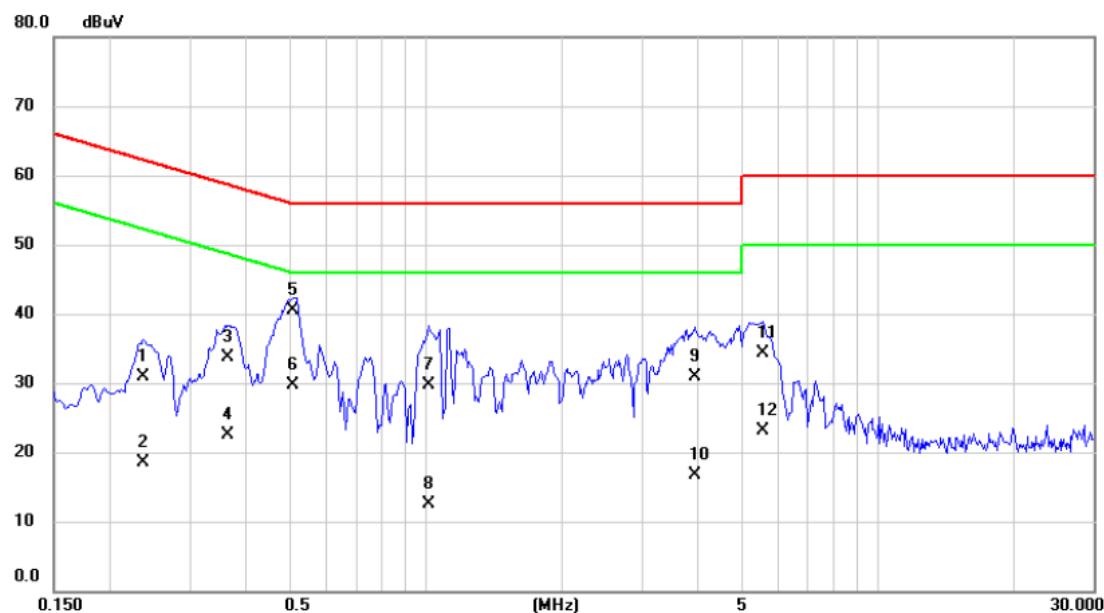
## Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over Detector	Comment
1		0.2704	22.40	9.73	32.13	61.11	-28.98	QP
2		0.2704	13.40	9.73	23.13	51.11	-27.98	AVG
3		0.3467	25.70	9.73	35.43	59.04	-23.61	QP
4		0.3467	13.40	9.73	23.13	49.04	-25.91	AVG
5	*	0.5180	34.20	9.74	43.94	56.00	-12.06	QP
6		0.5180	23.70	9.74	33.44	46.00	-12.56	AVG
7		0.9950	23.40	9.74	33.14	56.00	-22.86	QP
8		0.9950	7.70	9.74	17.44	46.00	-28.56	AVG
9		3.9020	24.50	9.80	34.30	56.00	-21.70	QP
10		3.9020	8.30	9.80	18.10	46.00	-27.90	AVG
11		5.4000	24.70	9.84	34.54	60.00	-25.46	QP
12		5.4000	9.30	9.84	19.14	50.00	-30.86	AVG

Test Mode: UNII-3/TX Mode

## Neutral



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2368	21.30	9.66	30.96	62.21	-31.25	QP	
2		0.2368	8.90	9.66	18.56	52.21	-33.65	AVG	
3		0.3648	24.10	9.67	33.77	58.62	-24.85	QP	
4		0.3648	12.80	9.67	22.47	48.62	-26.15	AVG	
5	*	0.5090	30.90	9.68	40.58	56.00	-15.42	QP	
6		0.5090	20.10	9.68	29.78	46.00	-16.22	AVG	
7		1.0130	20.00	9.69	29.69	56.00	-26.31	QP	
8		1.0130	2.90	9.69	12.59	46.00	-33.41	AVG	
9		3.9290	21.20	9.76	30.96	56.00	-25.04	QP	
10		3.9290	6.90	9.76	16.66	46.00	-29.34	AVG	
11		5.5500	24.40	9.81	34.21	60.00	-25.79	QP	
12		5.5500	13.30	9.81	23.11	50.00	-26.89	AVG	

## APPENDIX A - RADIATED EMISSION (9KHZ TO 30MHZ)

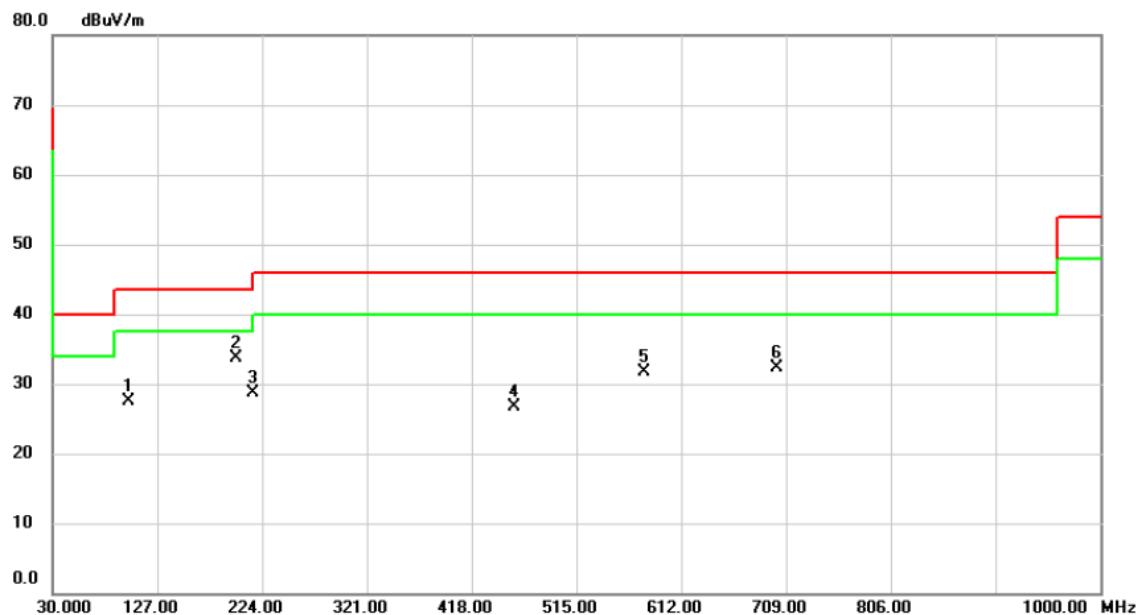
**Test Mode: N/A**

Note: "N/A" denotes test is not applicable to this device.

## **APPENDIX B - RADIATED EMISSION (30MHZ TO 1000MHZ)**

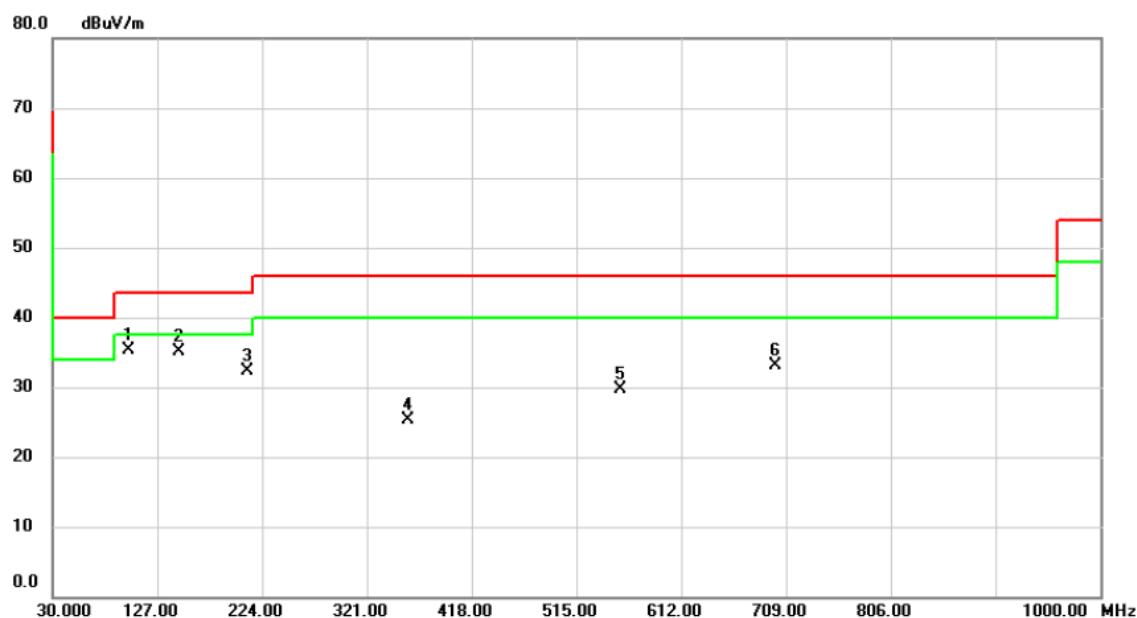
Test Mode: UNII-1/TX AC80 Mode 5210MHz

## Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB	Over Detector	Comment
1		99.8400	39.95	-12.39	27.56	43.50	-15.94	peak
2	*	199.7500	44.42	-10.64	33.78	43.50	-9.72	peak
3		215.2700	39.64	-10.87	28.77	43.50	-14.73	peak
4		456.8000	30.10	-3.45	26.65	46.00	-19.35	peak
5		577.0800	32.82	-1.02	31.80	46.00	-14.20	peak
6		700.2700	31.35	0.86	32.21	46.00	-13.79	peak

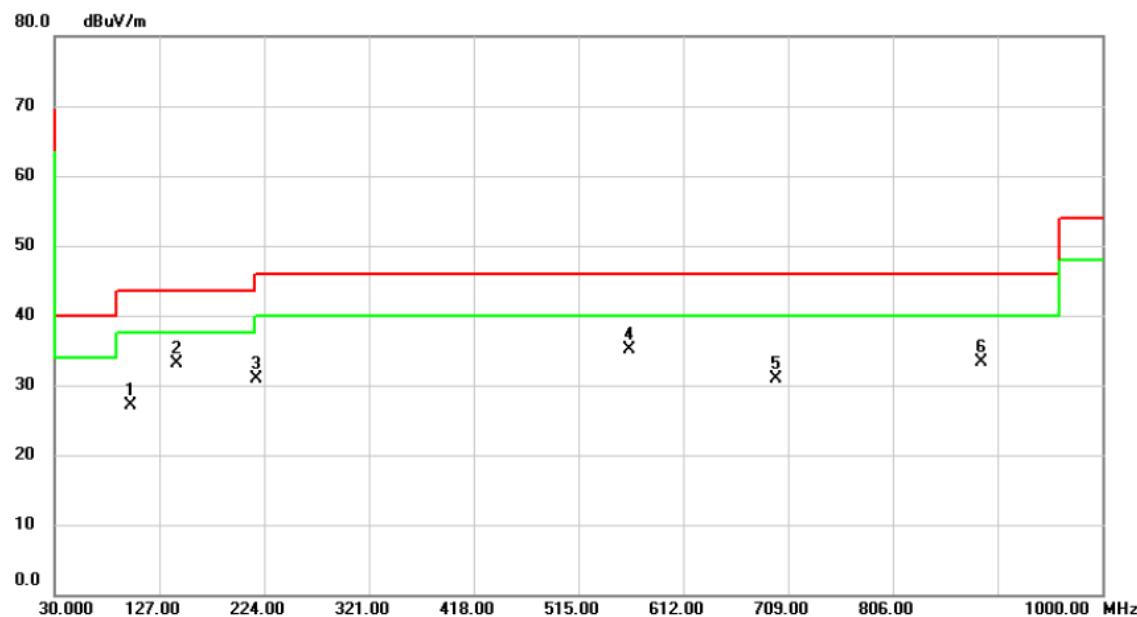
Test Mode: UNII-1/TX AC80 Mode 5210MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Comment
			Level					
		MHz	dBuV		dBuV/m	dB		
1	*	99.8400	47.76	-12.39	35.37	43.50	-8.13	peak
2		146.4000	44.09	-9.04	35.05	43.50	-8.45	peak
3		210.4200	43.18	-10.94	32.24	43.50	-11.26	peak
4		358.8300	31.35	-6.01	25.34	46.00	-20.66	peak
5		555.7400	31.19	-1.57	29.62	46.00	-16.38	peak
6		699.3000	32.19	0.85	33.04	46.00	-12.96	peak

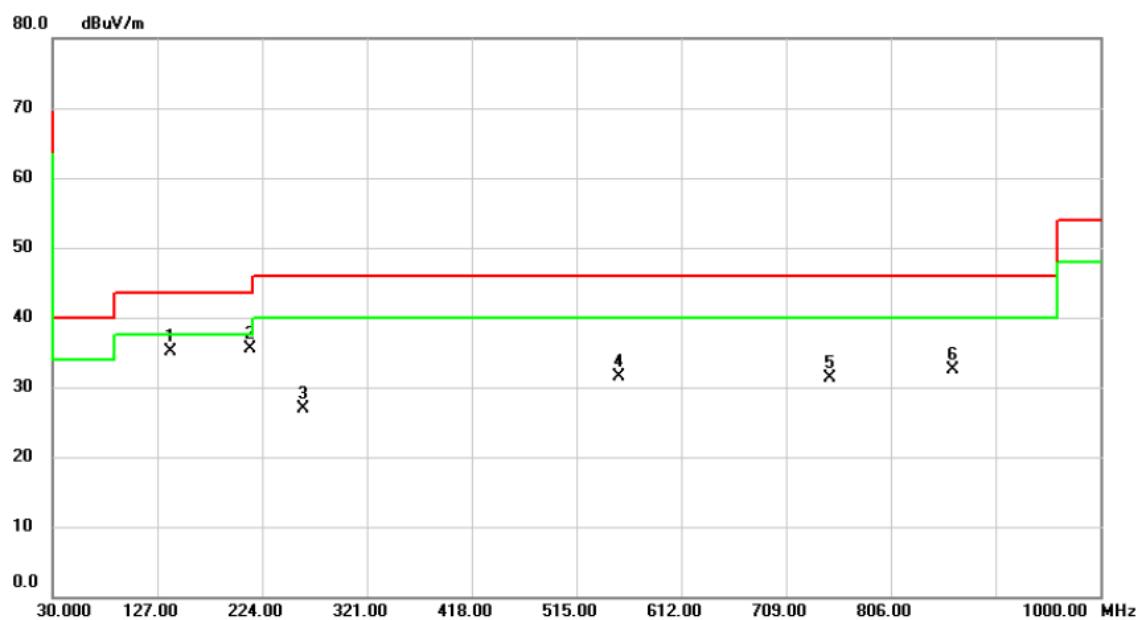
Test Mode: UNII-2A/TX AC80 Mode 5290MHz

## Vertical



No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		99.8400	39.59	-12.39	27.20	43.50	-16.30	peak
2	*	143.4900	42.15	-9.09	33.06	43.50	-10.44	peak
3		216.2400	41.84	-10.87	30.97	46.00	-15.03	peak
4		562.5300	36.54	-1.39	35.15	46.00	-10.85	peak
5		697.3600	30.05	0.81	30.86	46.00	-15.14	peak
6		888.4500	29.35	3.91	33.26	46.00	-12.74	peak

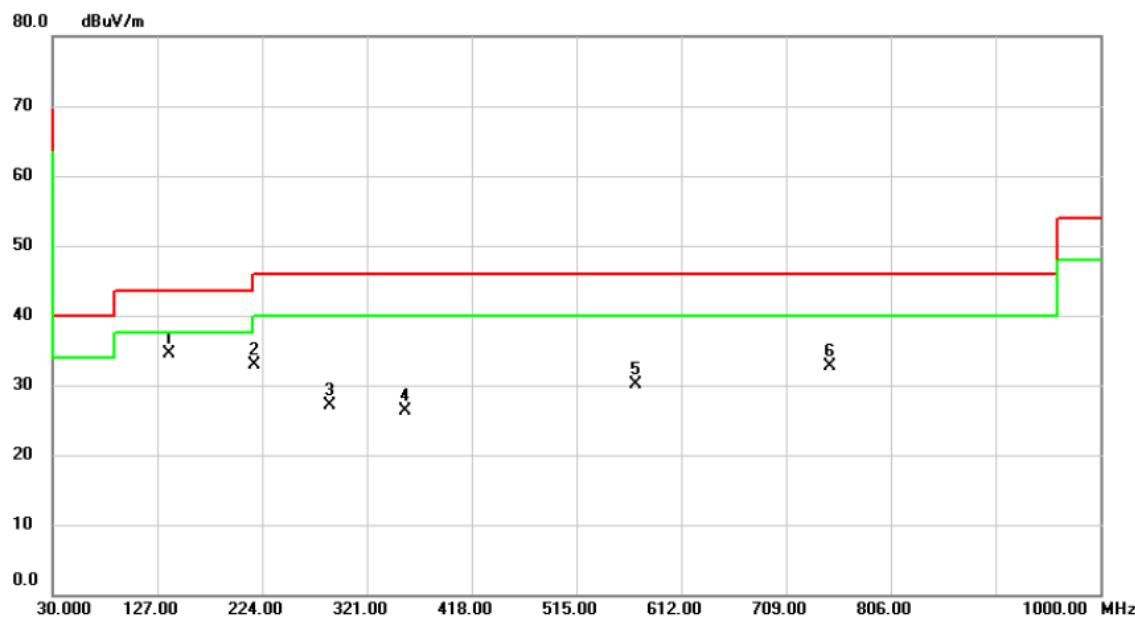
Test Mode: UNII-2A/TX AC80 Mode 5290MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level				dB	Detector
		MHz	dBuV		dBuV/m	dBuV/m		
1		139.6100	44.25	-9.19	35.06	43.50	-8.44	peak
2	*	213.3300	46.45	-10.90	35.55	43.50	-7.95	peak
3		261.8300	35.61	-8.71	26.90	46.00	-19.10	peak
4		554.7700	33.03	-1.60	31.43	46.00	-14.57	peak
5		749.7400	29.46	1.88	31.34	46.00	-14.66	peak
6		863.2300	29.03	3.46	32.49	46.00	-13.51	peak

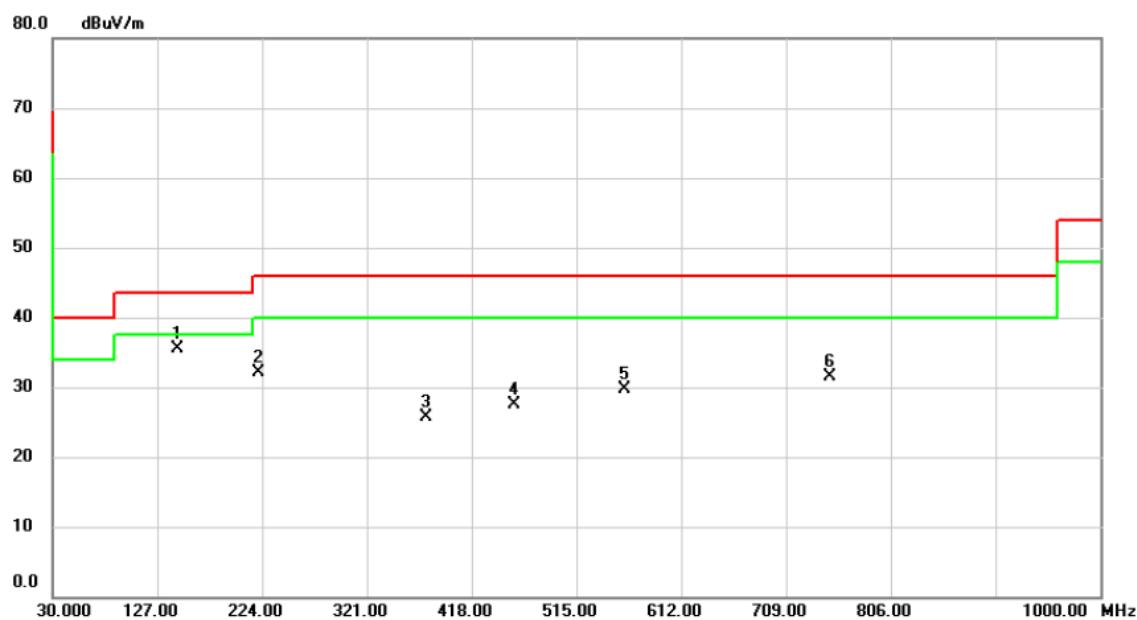
Test Mode: UNII-2C/TX AC80 Mode 5530MHz

## Vertical



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Comment
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	
1	*	138.6400	43.69	-9.21	34.48	43.50	-9.02	peak
2		217.2100	43.70	-10.86	32.84	46.00	-13.16	peak
3		286.0800	34.87	-7.84	27.03	46.00	-18.97	peak
4		355.9200	32.45	-6.09	26.36	46.00	-19.64	peak
5		569.3200	31.40	-1.22	30.18	46.00	-15.82	peak
6		749.7400	30.80	1.88	32.68	46.00	-13.32	peak

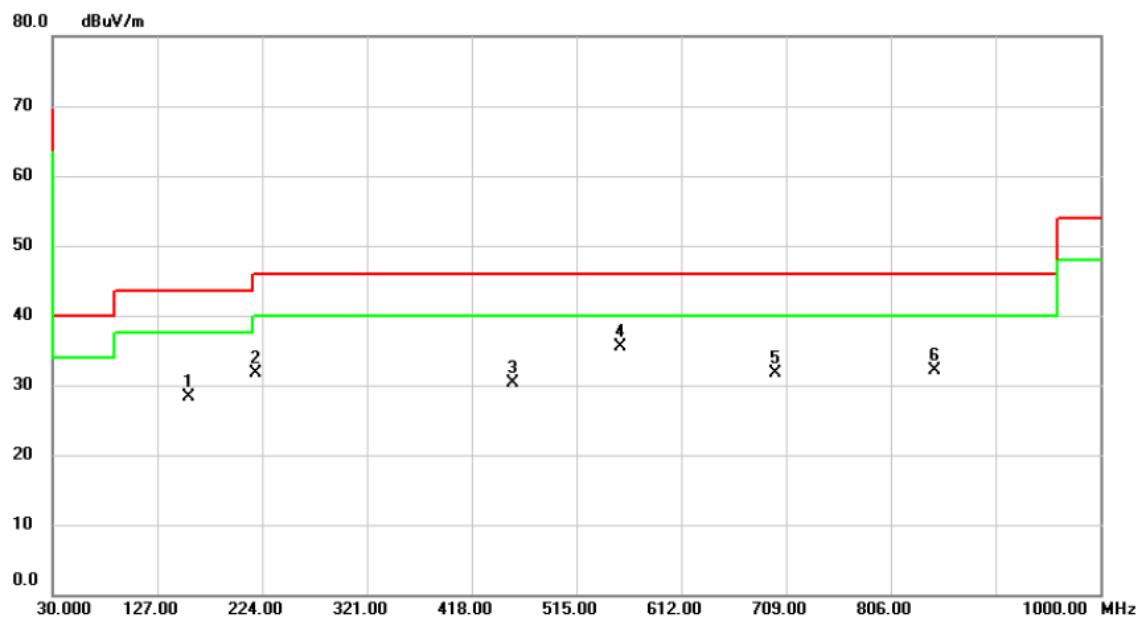
Test Mode: UNII-2C/TX AC80 Mode 5530MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level				dB	Detector
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	*	145.4300	44.60	-9.05	35.55	43.50	-7.95	peak
2		220.1200	42.92	-10.81	32.11	46.00	-13.89	peak
3		375.3200	31.36	-5.58	25.78	46.00	-20.22	peak
4		457.7700	31.02	-3.43	27.59	46.00	-18.41	peak
5		559.6200	31.12	-1.47	29.65	46.00	-16.35	peak
6		749.7400	29.68	1.88	31.56	46.00	-14.44	peak

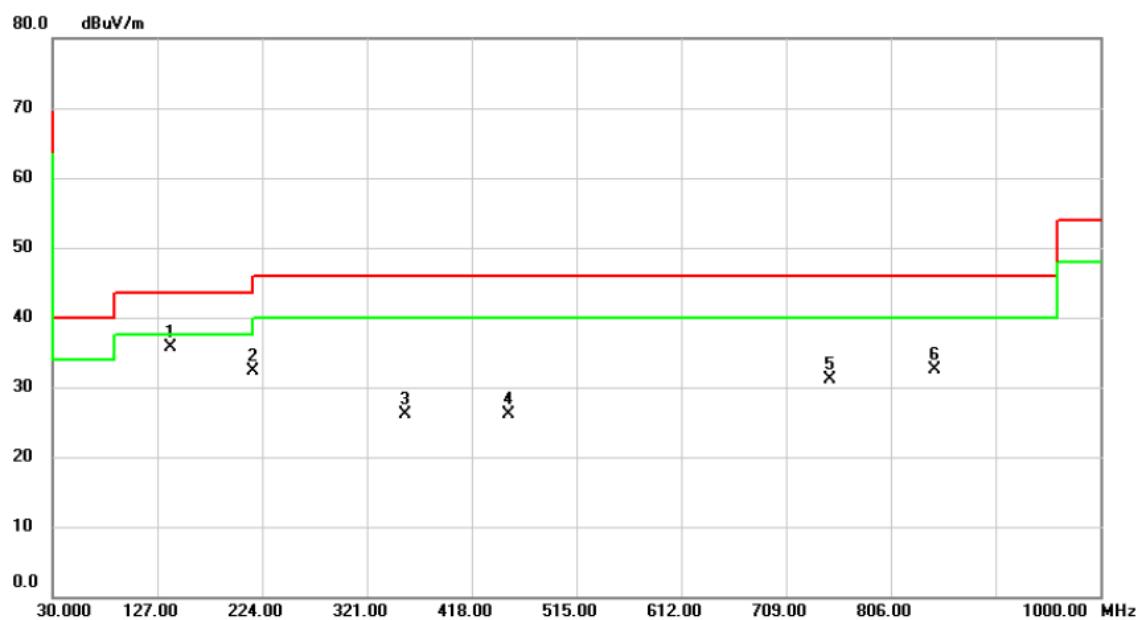
Test Mode: UNII-3/TX N40 Mode 5795MHz

## Vertical



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Comment
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	
1		156.1000	37.11	-8.73	28.38	43.50	-15.12	peak
2		218.1800	42.53	-10.85	31.68	46.00	-14.32	peak
3		455.8300	33.68	-3.46	30.22	46.00	-15.78	peak
4	*	555.7400	37.00	-1.57	35.43	46.00	-10.57	peak
5		699.3000	30.92	0.85	31.77	46.00	-14.23	peak
6		846.7400	28.98	3.18	32.16	46.00	-13.84	peak

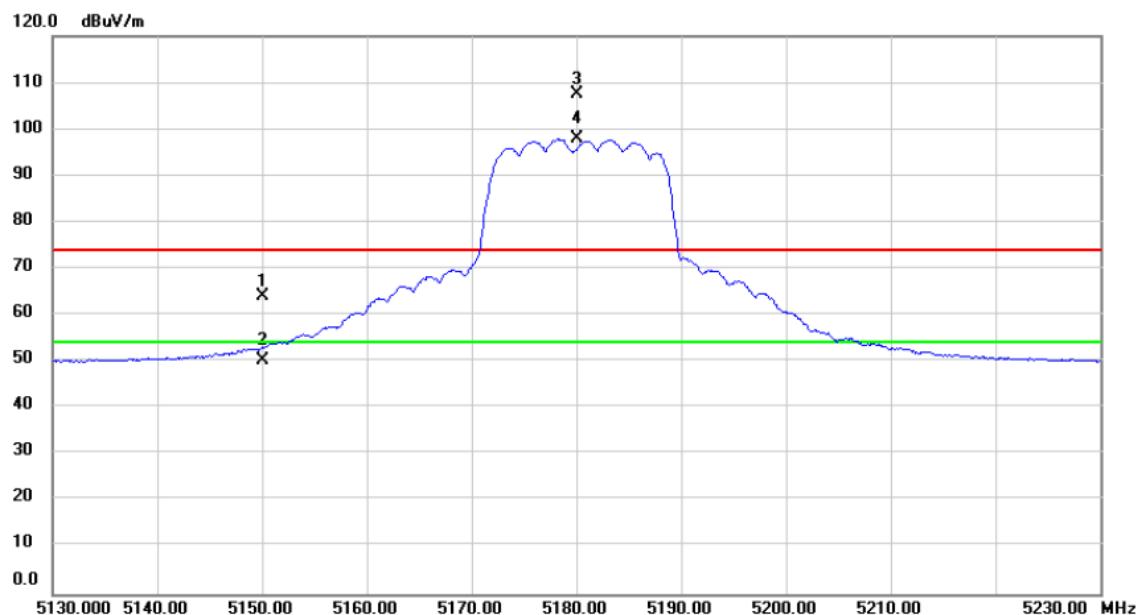
Test Mode: UNII-3/TX N40 Mode 5795MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Comment	
			Level						
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	139.6100	44.88	-9.19	35.69	43.50	-7.81	peak	
2		215.2700	43.10	-10.87	32.23	43.50	-11.27	peak	
3		355.9200	32.23	-6.09	26.14	46.00	-19.86	peak	
4		451.9500	29.67	-3.53	26.14	46.00	-19.86	peak	
5		749.7400	29.19	1.88	31.07	46.00	-14.93	peak	
6		846.7400	29.27	3.18	32.45	46.00	-13.55	peak	

## APPENDIX C - RADIATED EMISSION (ABOVE 1000MHZ)

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180MHz

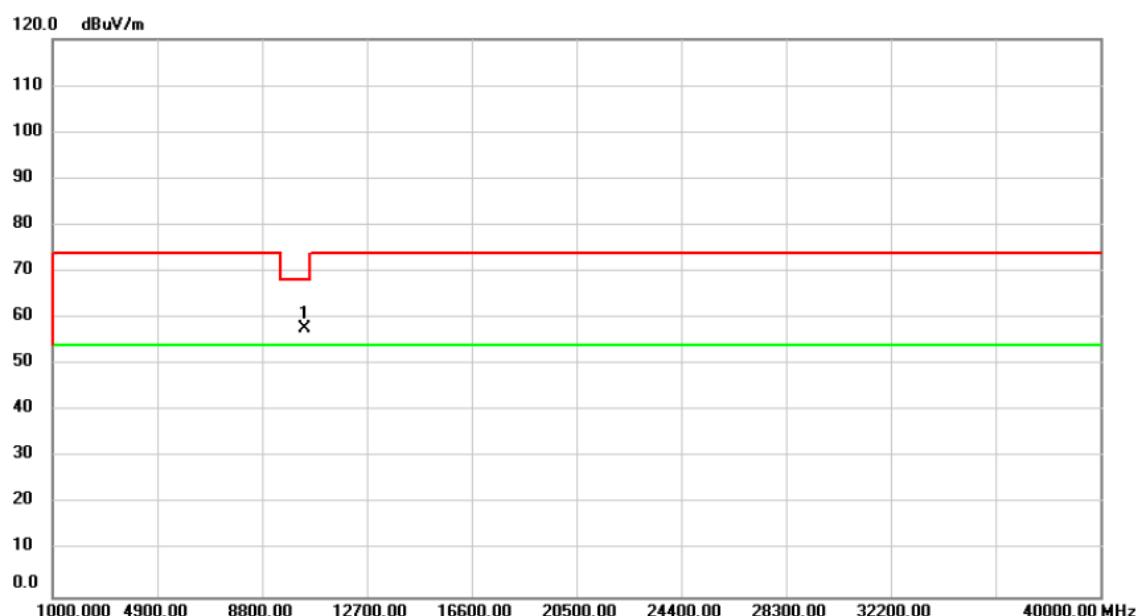
**Vertical**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Comment	
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	26.54	37.54	64.08	74.00	-9.92	peak	
2		5150.000	12.83	37.54	50.37	54.00	-3.63	AVG	
3	X	5180.000	70.12	37.58	107.70	74.00	33.70	peak	No Limit
4	*	5180.000	60.33	37.58	97.91	54.00	43.91	AVG	No Limit

Orthogonal Axis: X

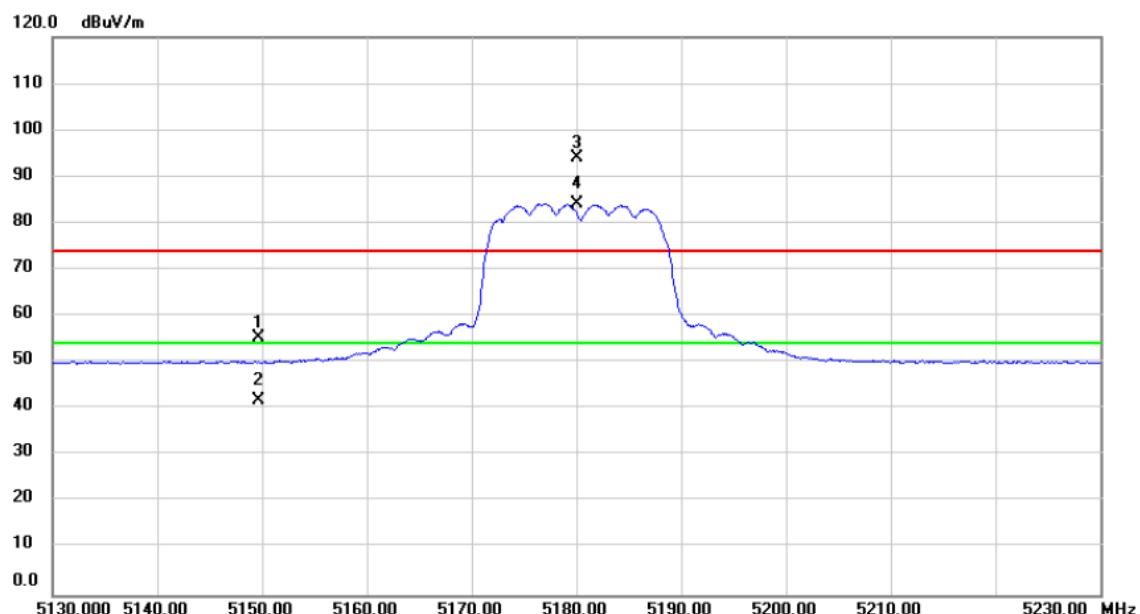
Test Mode: UNII-1/ TX A Mode 5180MHz

## Vertical



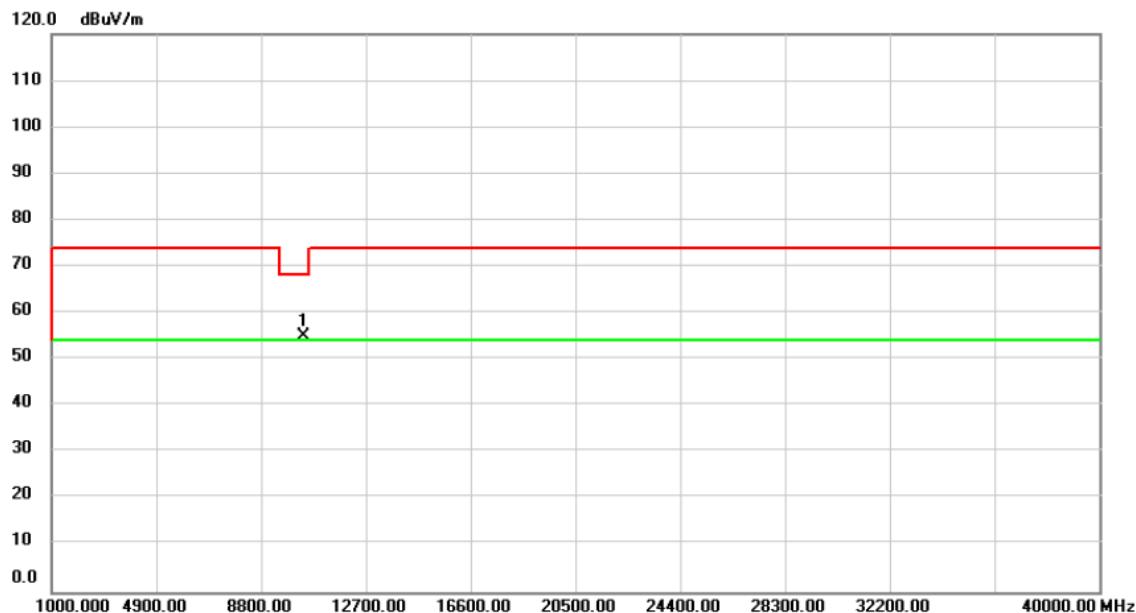
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10360.00	55.77	1.92	57.69	68.20	-10.51 peak

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180MHz

**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1		5149.600	17.83	37.54	55.37	74.00	-18.63	peak
2		5149.600	4.25	37.54	41.79	54.00	-12.21	AVG
3	X	5180.000	56.32	37.58	93.90	74.00	19.90	peak No Limit
4	*	5180.000	46.58	37.58	84.16	54.00	30.16	AVG No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180MHz

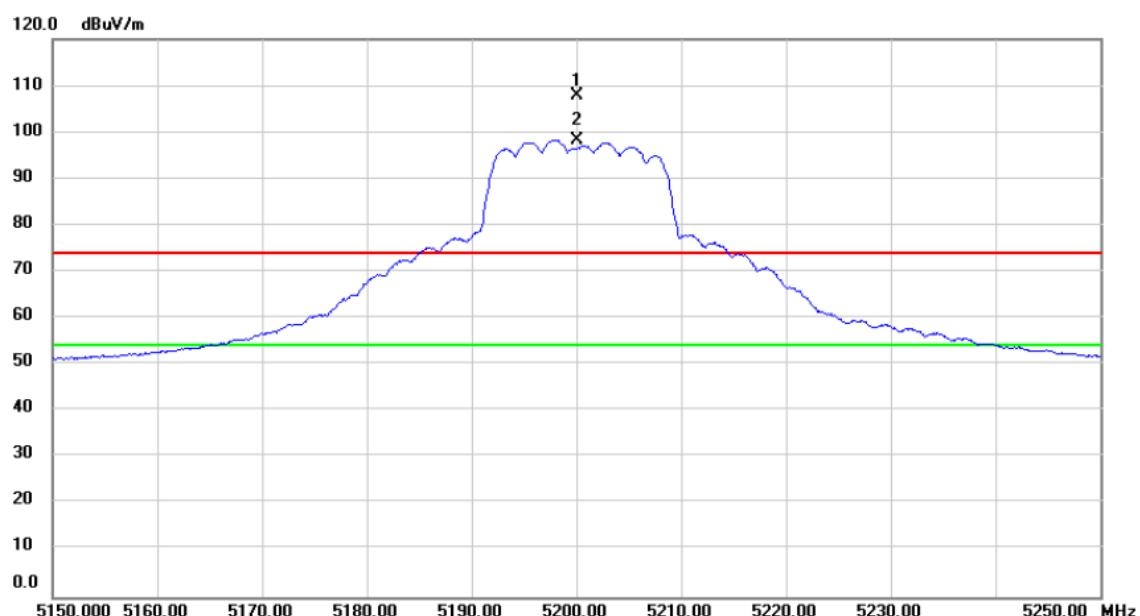
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBmV	dB	dBm/m	dB	Detector Comment
1	*	10360.00	53.18	1.92	55.10	68.20	-13.10 peak

Orthogonal Axis: X

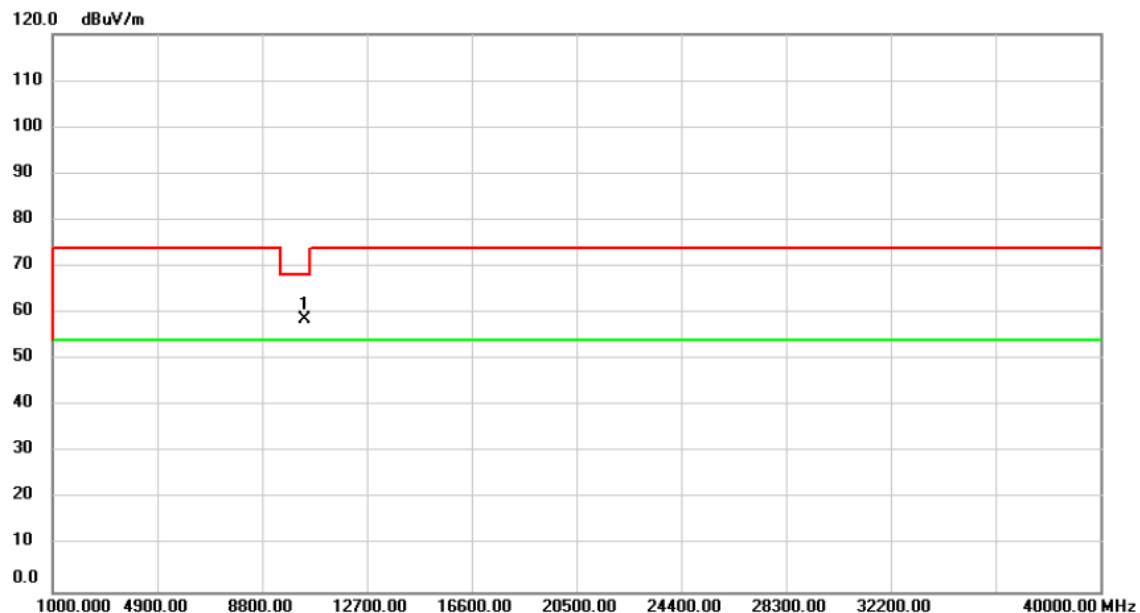
Test Mode: UNII-1/ TX A Mode 5200MHz

## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5200.000	70.17	37.60	107.77	74.00	33.77	peak No Limit
2	*	5200.000	60.72	37.60	98.32	54.00	44.32	AVG No Limit

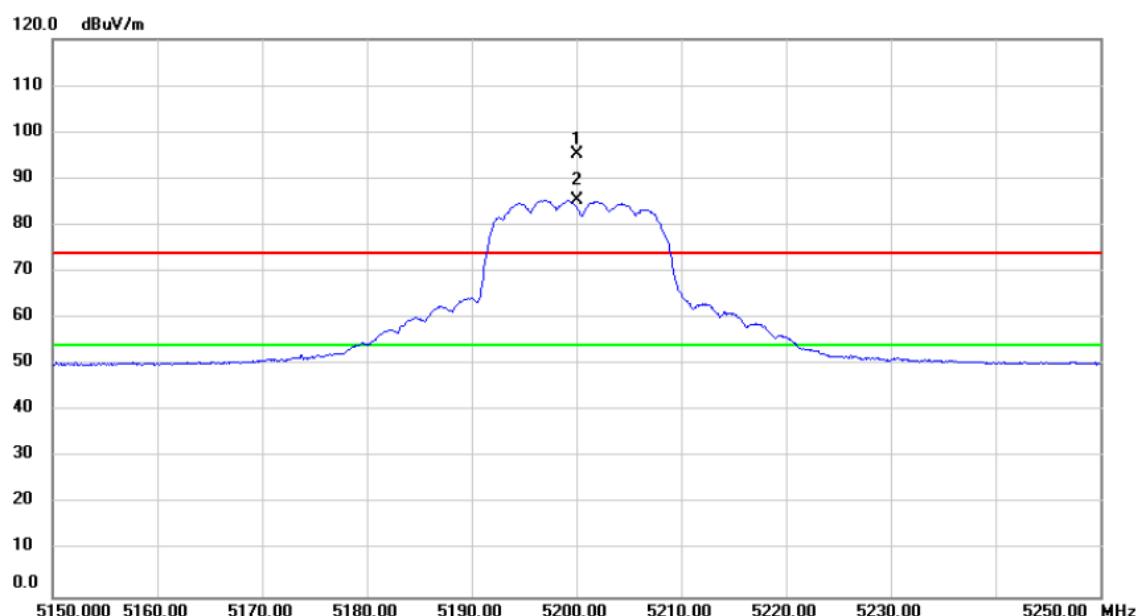
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200MHz

**Vertical**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10400.00	56.66	1.95	58.61	68.20	-9.59 peak

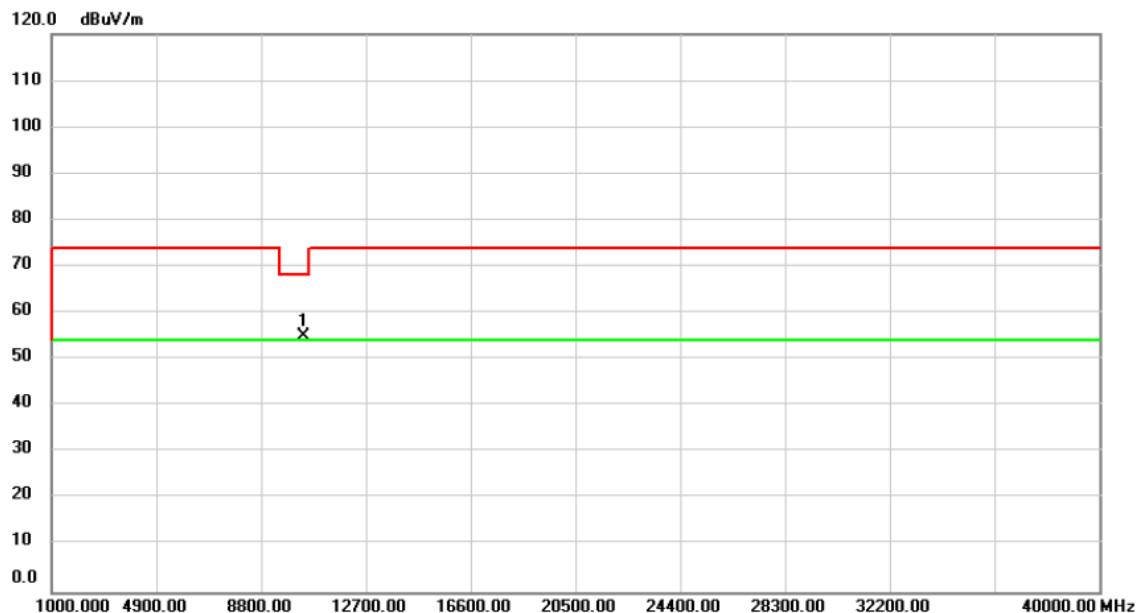
Orthogonal Axis: X

Test Mode: UNII-1/ TX A Mode 5200MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5200.000	57.55	37.60	95.15	74.00	21.15	peak No Limit
2	*	5200.000	47.80	37.60	85.40	54.00	31.40	AVG No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200MHz

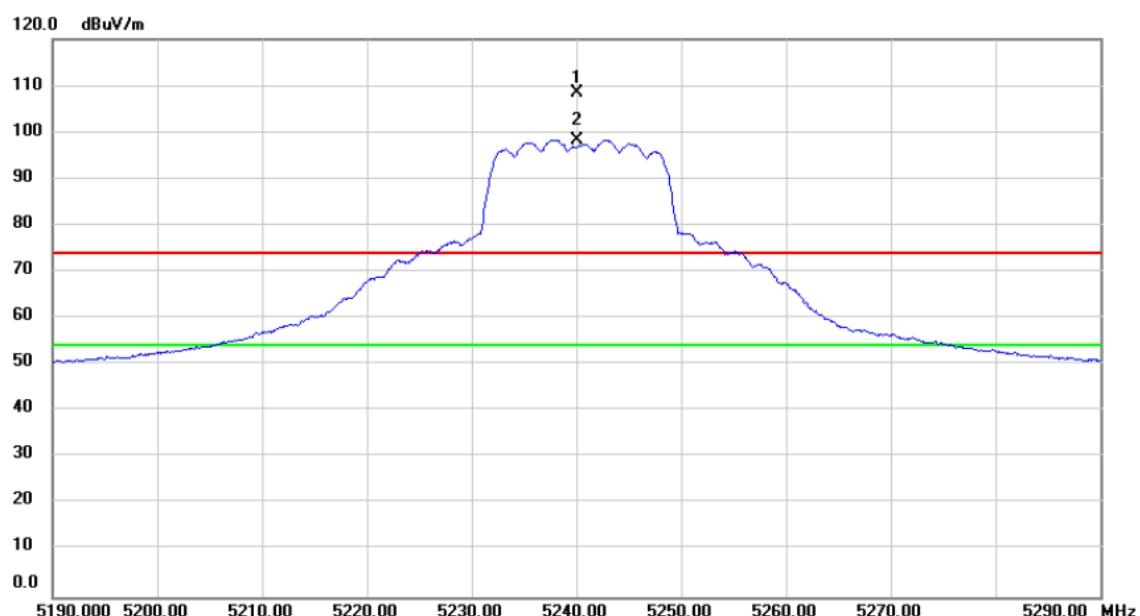
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10400.00	53.05	1.95	55.00	68.20	-13.20 peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX A Mode 5240MHz

## Vertical

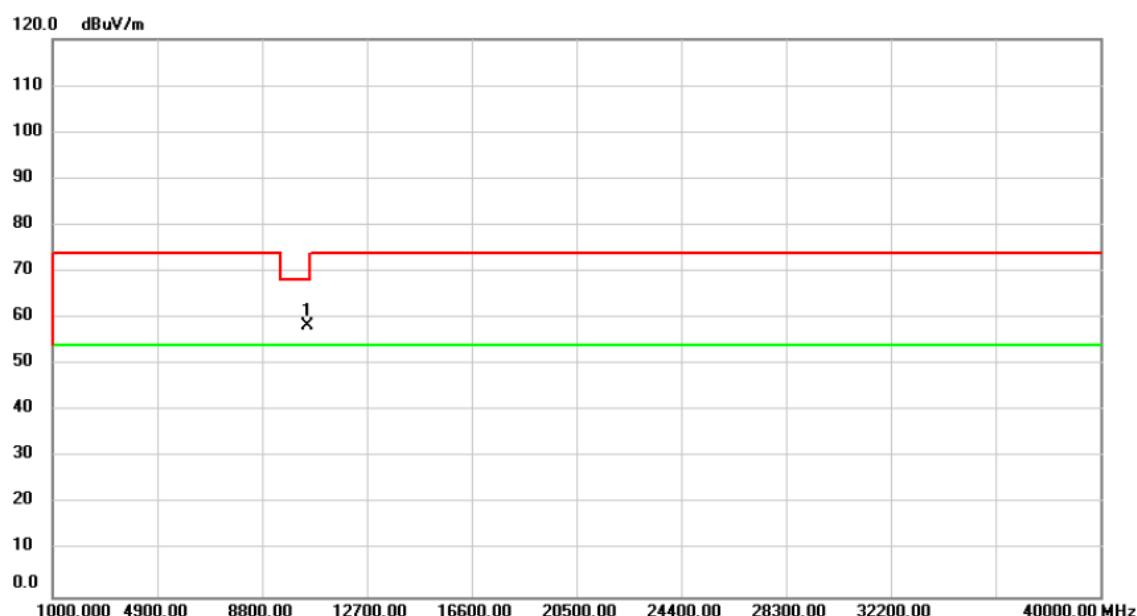


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5240.000	70.77	37.64	108.41	74.00	34.41	peak No Limit
2	*	5240.000	60.75	37.64	98.39	54.00	44.39	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX A Mode 5240MHz

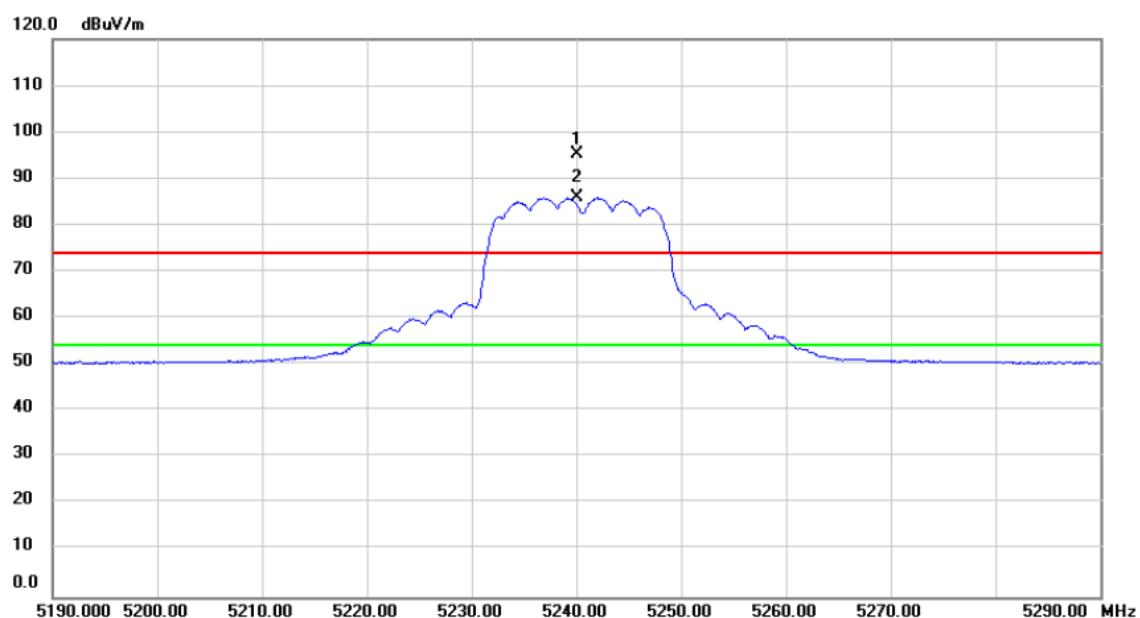
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10480.00	56.28	1.96	58.24	68.20	-9.96 peak

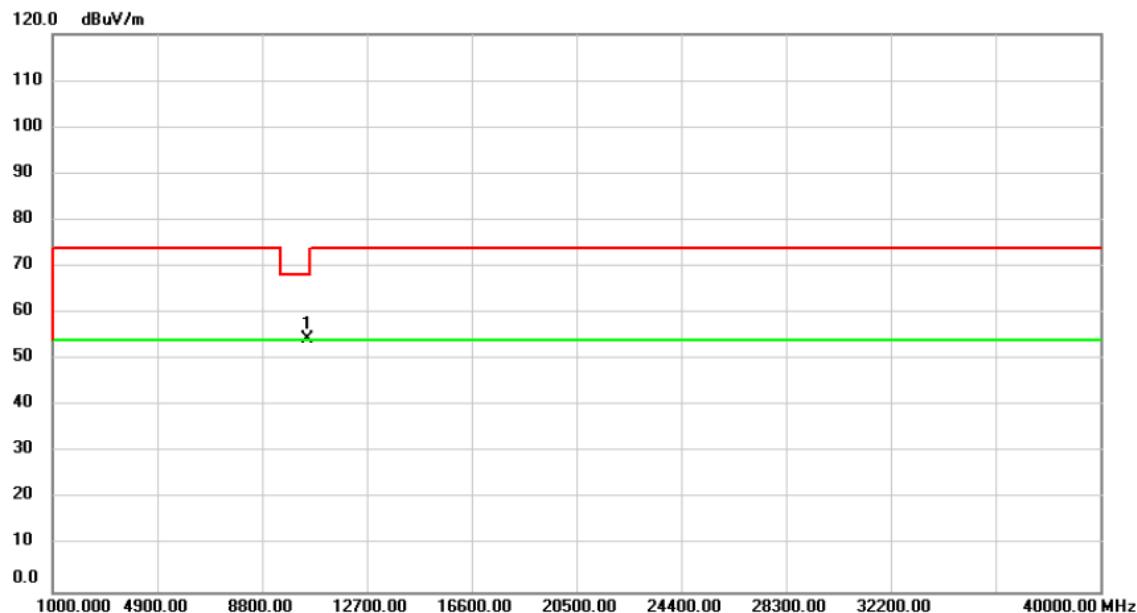
Orthogonal Axis: X

Test Mode: UNII-1/ TX A Mode 5240MHz

**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5240.000	57.48	37.64	95.12	74.00	21.12	peak No Limit
2	*	5240.000	48.17	37.64	85.81	54.00	31.81	AVG No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5240MHz

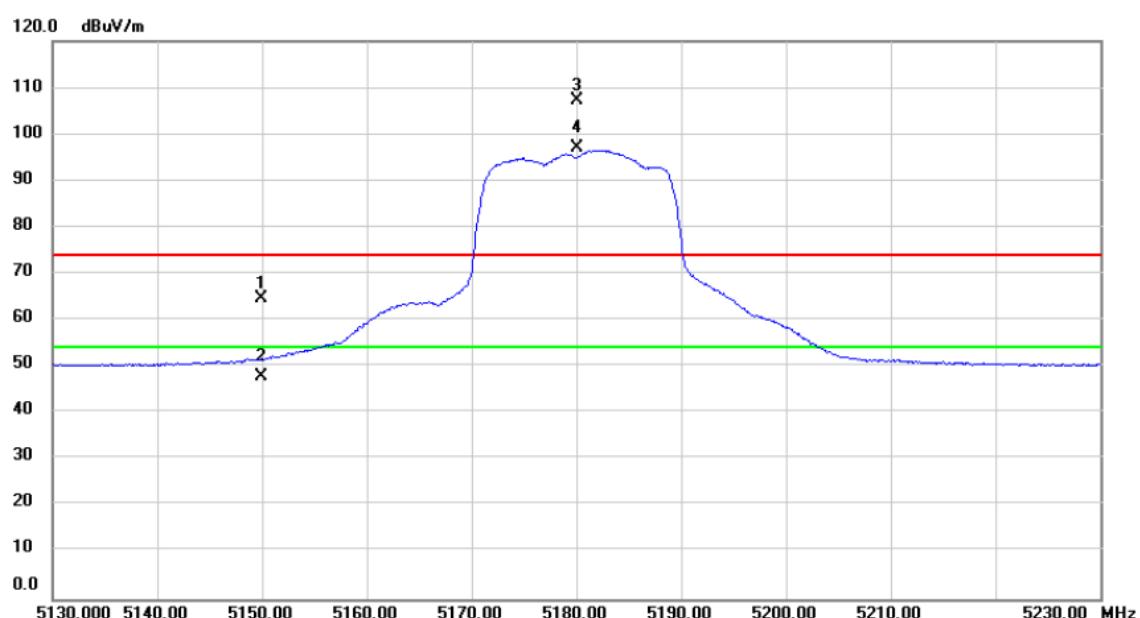
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over
		MHz	dB <sub>B</sub> uV	dB	dB <sub>B</sub> uV/m	dB	Detector Comment
1	*	10480.00	52.64	1.96	54.60	68.20	-13.60 peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5180MHz

## Vertical

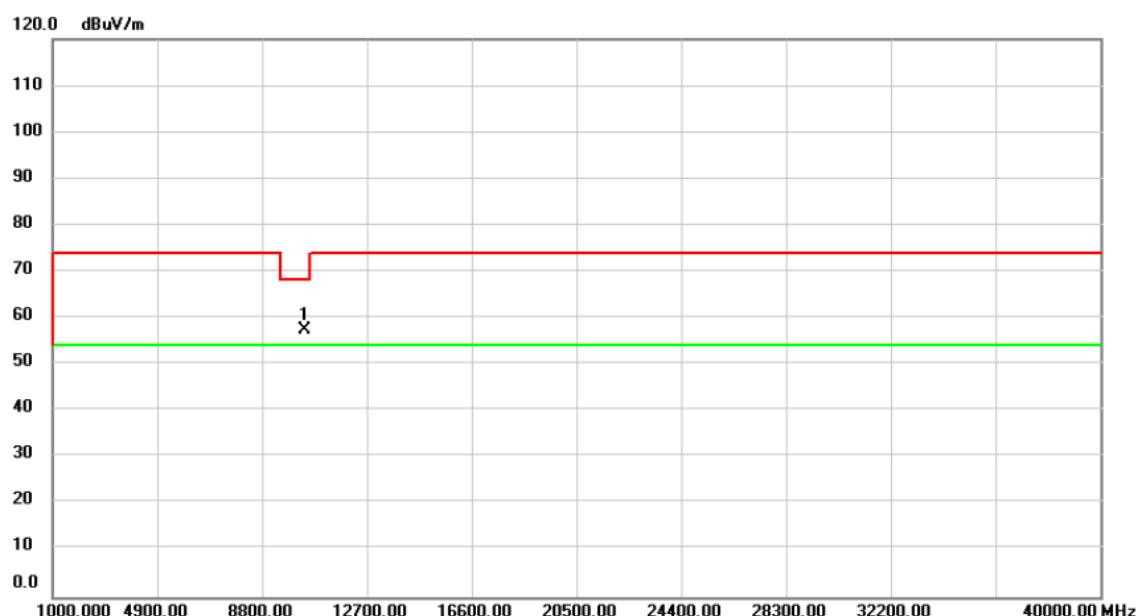


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1		5149.960	27.18	37.54	64.72	74.00	-9.28	peak
2		5149.960	10.25	37.54	47.79	54.00	-6.21	AVG
3	X	5180.000	69.70	37.58	107.28	74.00	33.28	peak No Limit
4	*	5180.000	59.55	37.58	97.13	54.00	43.13	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5180MHz

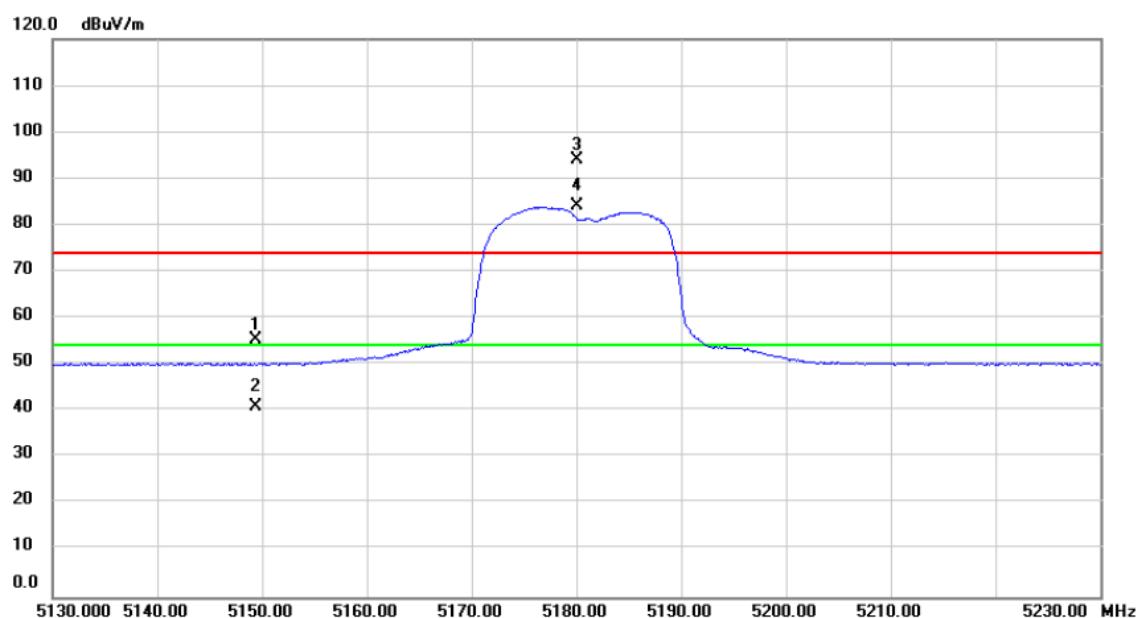
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10360.00	55.65	1.92	57.57	68.20	-10.63 peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5180MHz

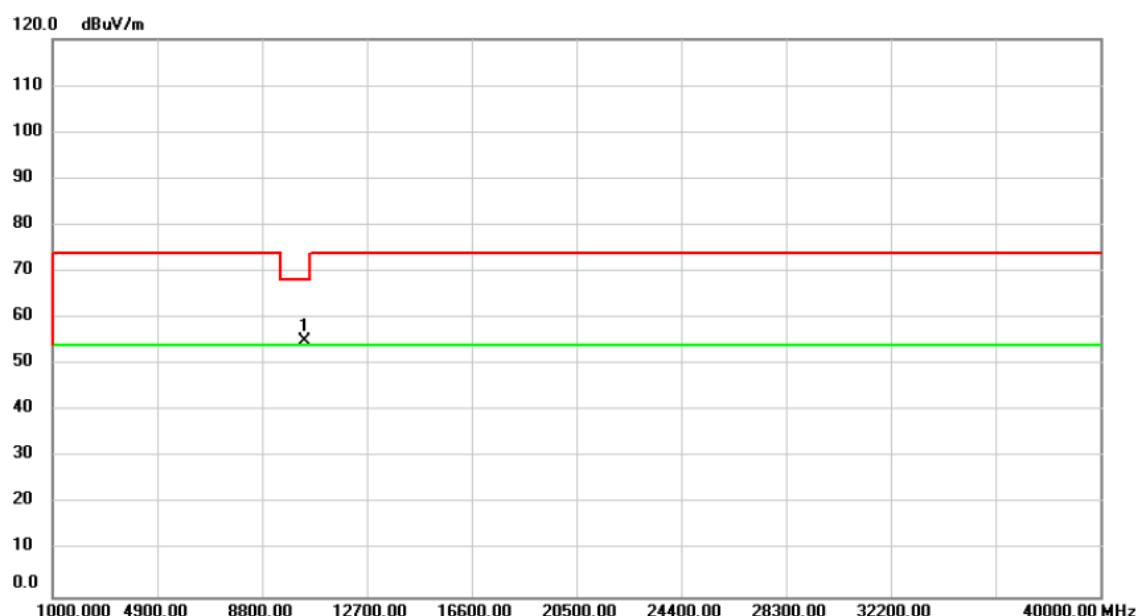
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1		5149.360	17.76	37.54	55.30	74.00	-18.70	peak
2		5149.360	3.55	37.54	41.09	54.00	-12.91	AVG
3	X	5180.000	56.35	37.58	93.93	74.00	19.93	peak No Limit
4	*	5180.000	46.46	37.58	84.04	54.00	30.04	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5180MHz

## Horizontal

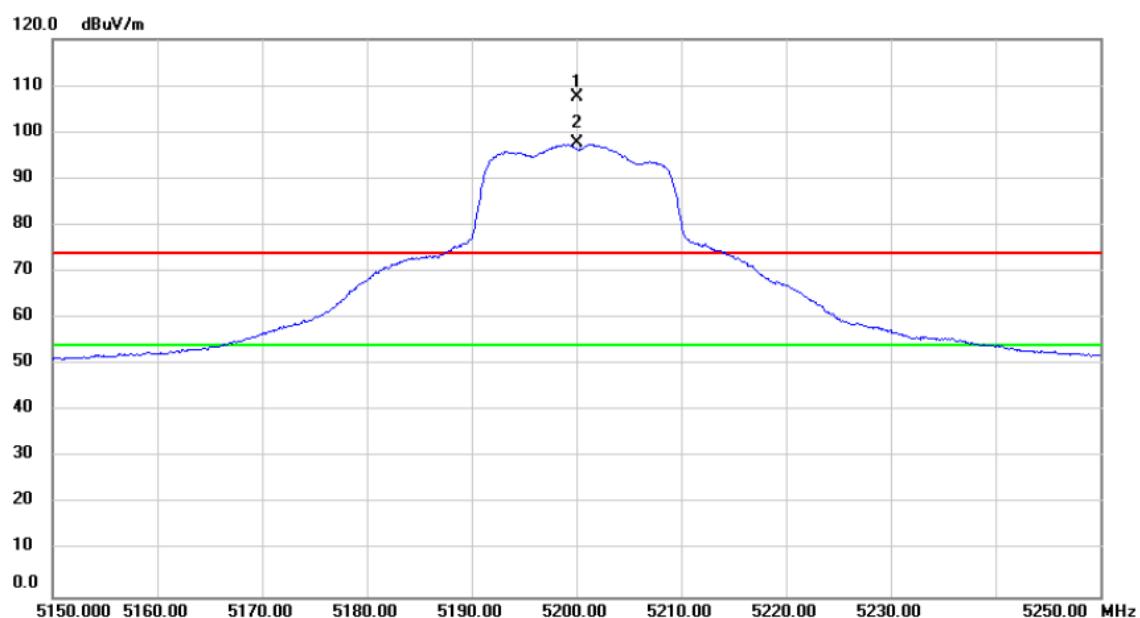


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBmV	dB	dBm/m	dB	Detector	Comment
1	*	10360.00	53.11	1.92	55.03	68.20	-13.17	peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5200MHz

## Vertical

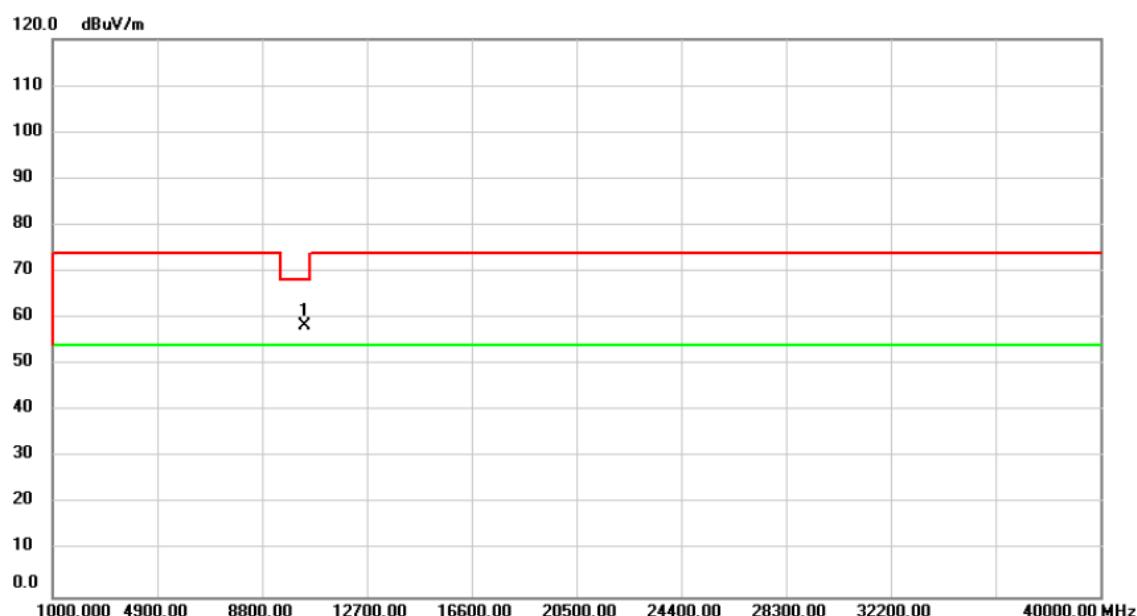


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5200.000	69.85	37.60	107.45	74.00	33.45	peak No Limit
2	*	5200.000	60.15	37.60	97.75	54.00	43.75	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5200MHz

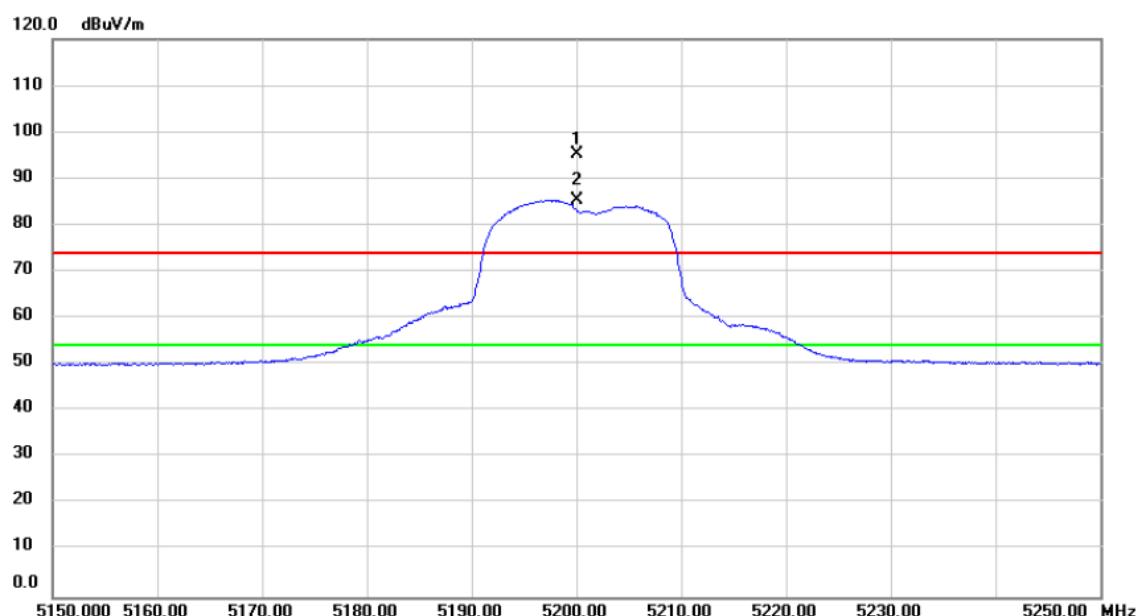
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB	Detector Comment
1	*	10400.00	56.51	1.95	58.46	68.20	-9.74 peak

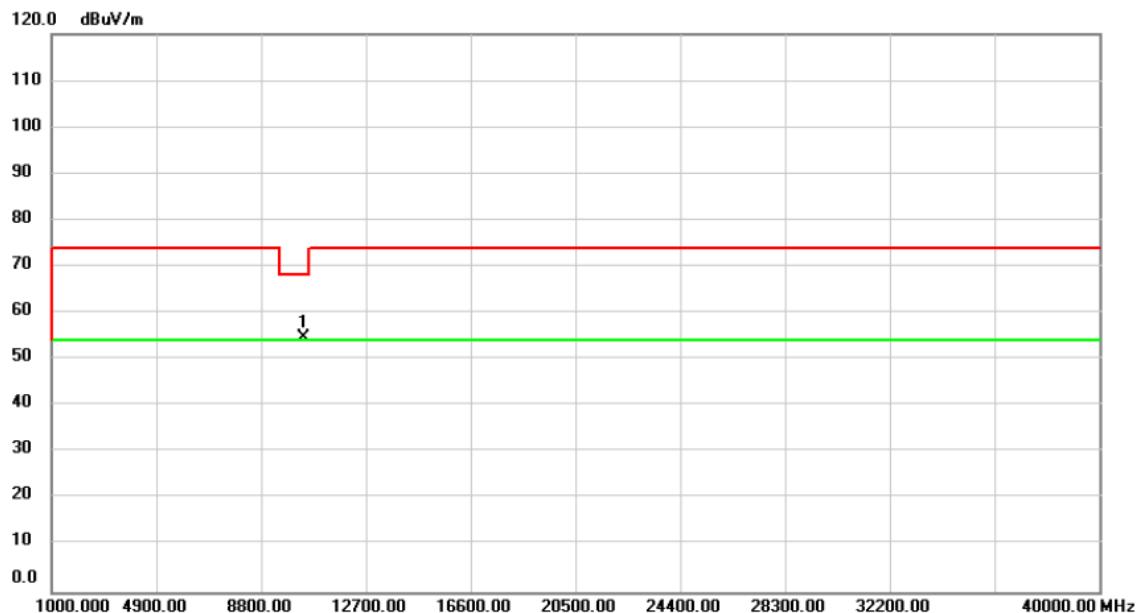
Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5200MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5200.000	57.57	37.60	95.17	74.00	21.17	peak No Limit
2	*	5200.000	47.75	37.60	85.35	54.00	31.35	AVG No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5200MHz

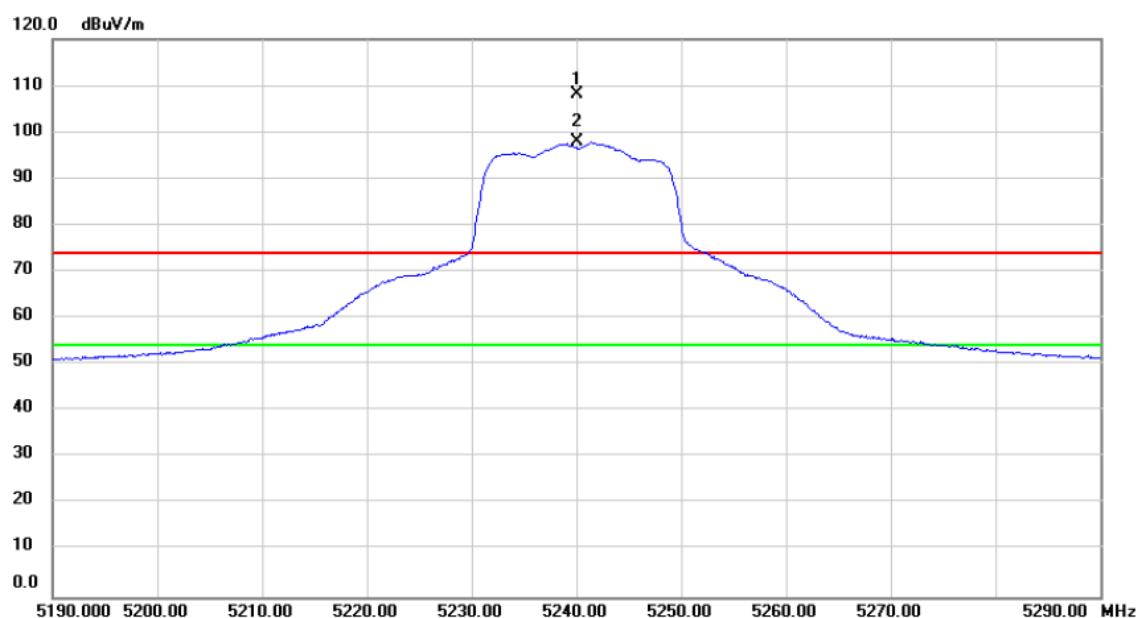
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	*	10400.00	52.91	1.95	54.86	68.20	-13.34	peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5240MHz

## Vertical

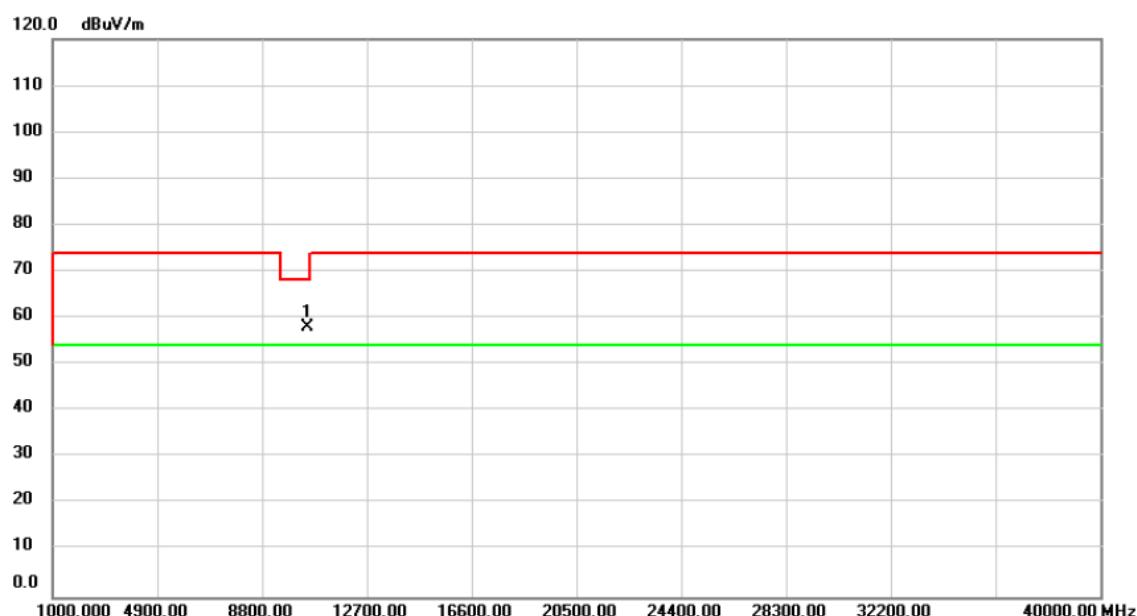


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5240.000	70.46	37.64	108.10	74.00	34.10	peak No Limit
2	*	5240.000	60.40	37.64	98.04	54.00	44.04	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5240MHz

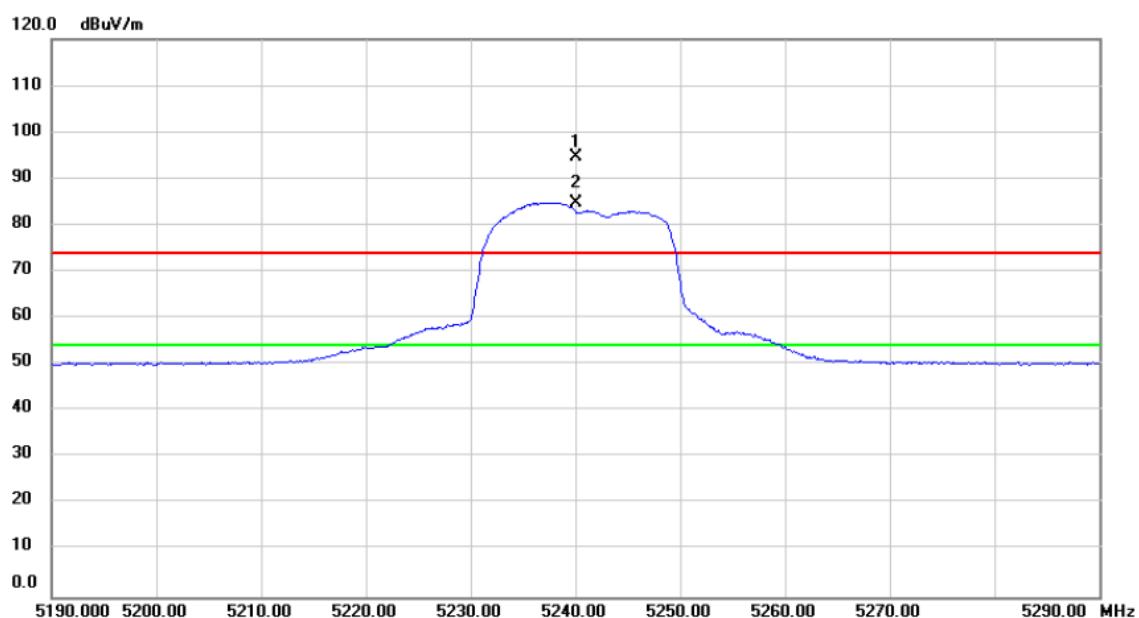
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10480.00	56.06	1.96	58.02	68.20	-10.18 peak

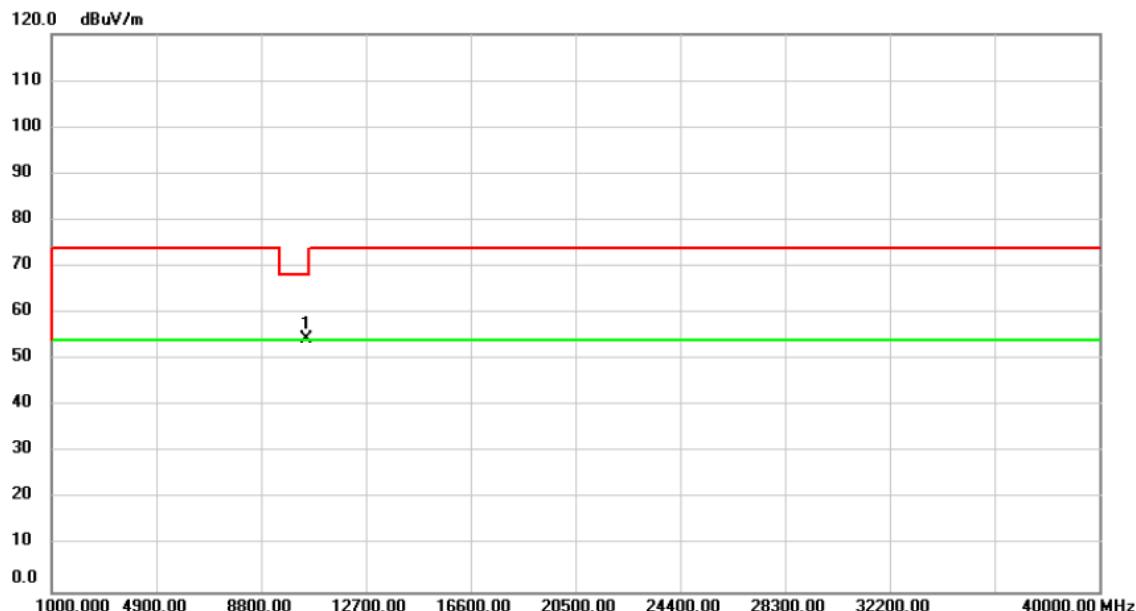
Orthogonal Axis: X

Test Mode: UNII-1/ TX N20 Mode 5240MHz

**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	X	5240.000	56.95	37.64	94.59	74.00	20.59	peak No Limit
2	*	5240.000	47.22	37.64	84.86	54.00	30.86	AVG No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240MHz

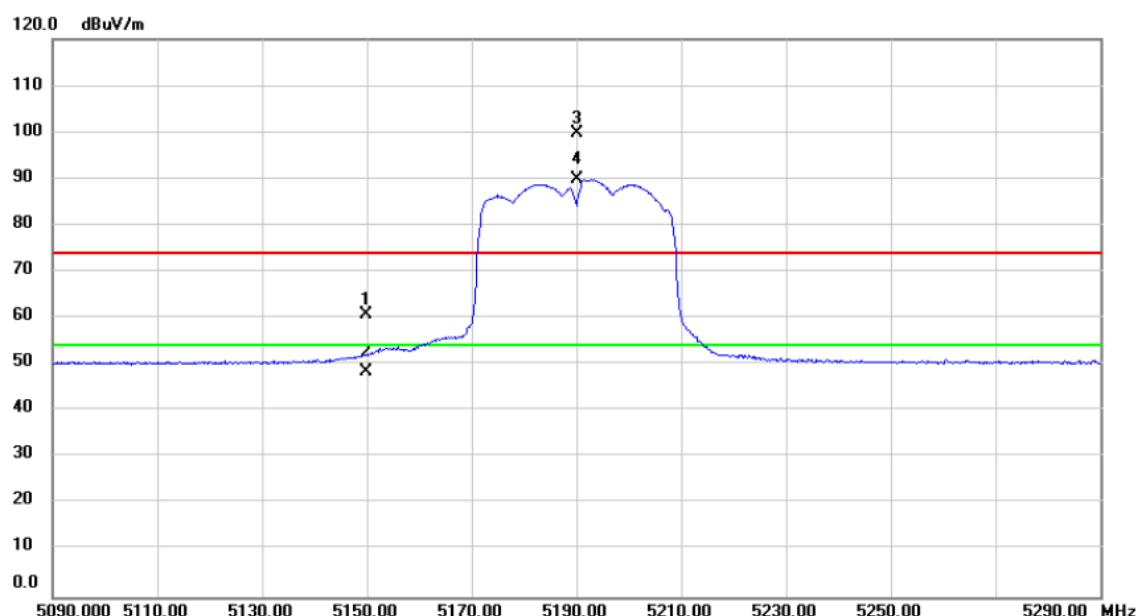
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	*	10480.00	52.62	1.96	54.58	68.20	-13.62	peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5190MHz

## Vertical

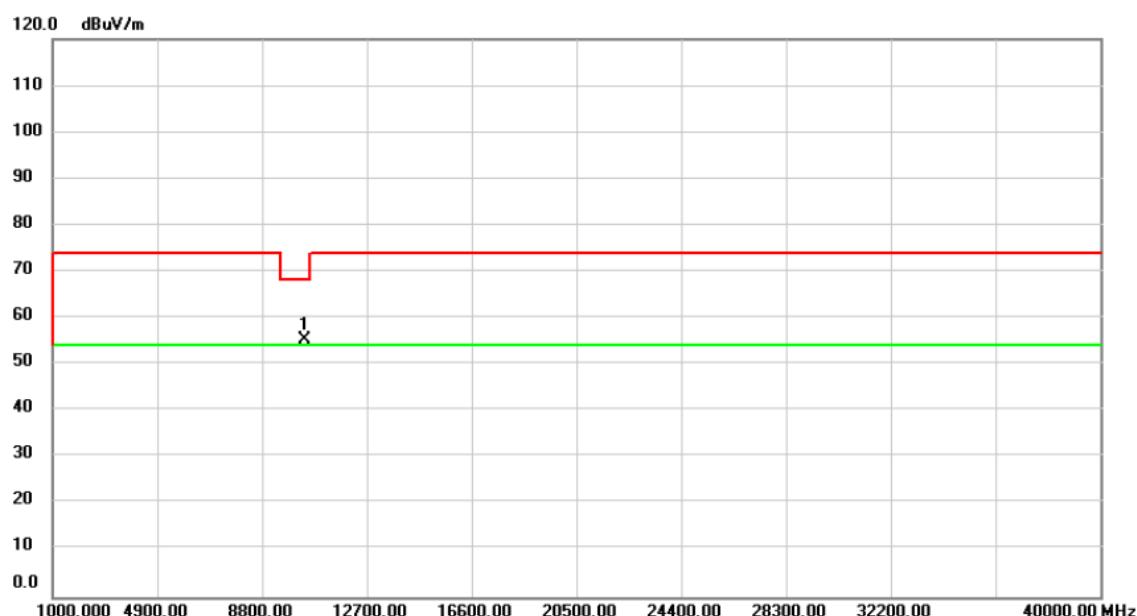


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1		5149.940	23.16	37.54	60.70	74.00	-13.30	peak
2		5149.940	10.86	37.54	48.40	54.00	-5.60	AVG
3	X	5190.000	62.07	37.58	99.65	74.00	25.65	peak No Limit
4	*	5190.000	52.21	37.58	89.79	54.00	35.79	AVG No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5190MHz

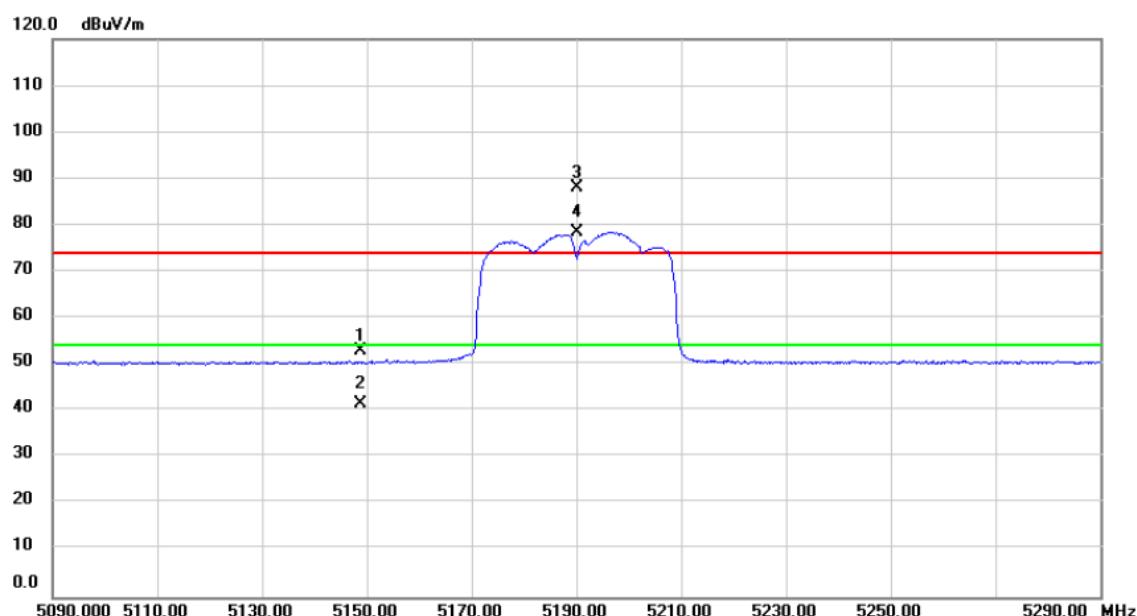
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBm	dB	dBm	dB	Detector Comment
1	*	10380.00	53.56	1.94	55.50	68.20	-12.70 peak

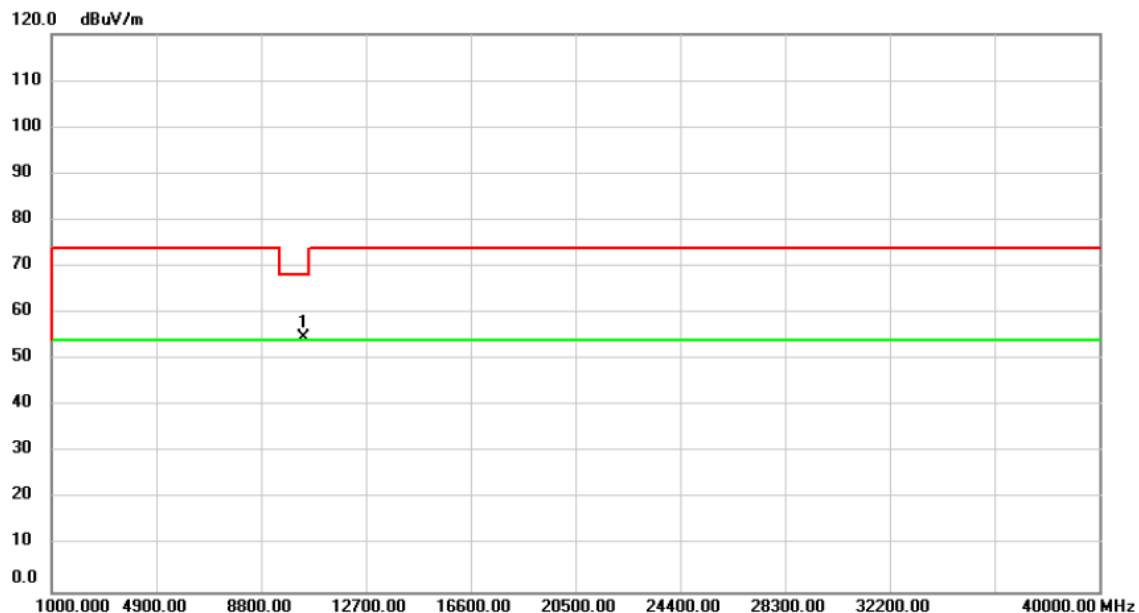
Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5190MHz

**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5148.740	15.50	37.54	53.04	74.00	-20.96	peak	
2		5148.740	4.13	37.54	41.67	54.00	-12.33	AVG	
3	X	5190.000	50.50	37.58	88.08	74.00	14.08	peak	No Limit
4	*	5190.000	40.97	37.58	78.55	54.00	24.55	AVG	No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5190MHz

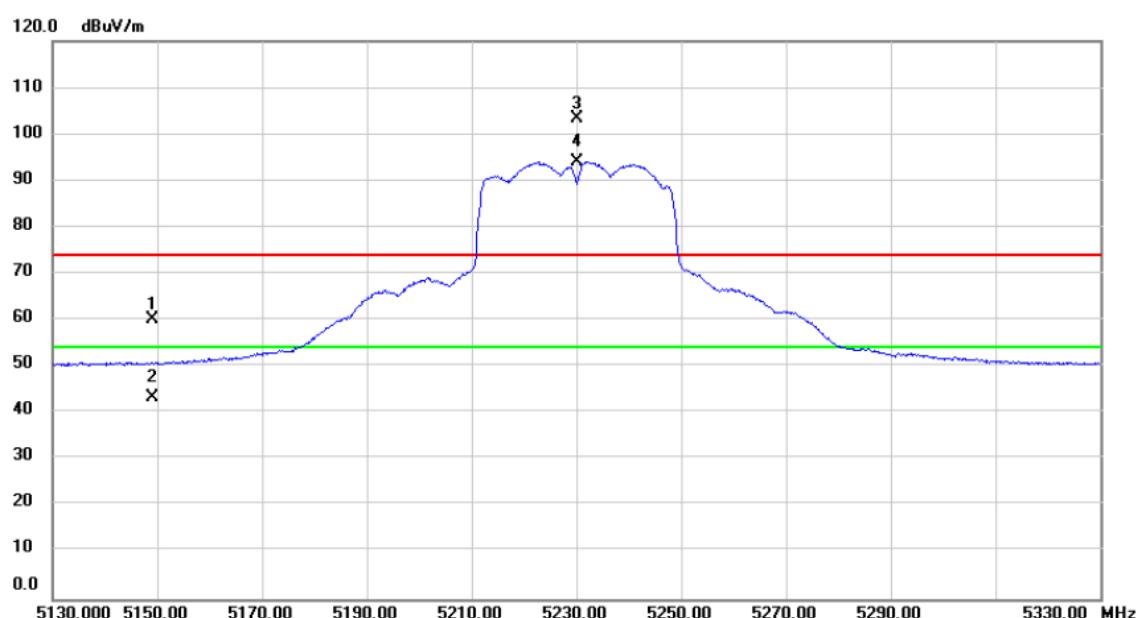
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dB <sub>B</sub> uV	dB	dB <sub>B</sub> uV/m	dB	Detector	Comment
1	*	10380.00	52.76	1.94	54.70	68.20	-13.50	peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5230MHz

## Vertical

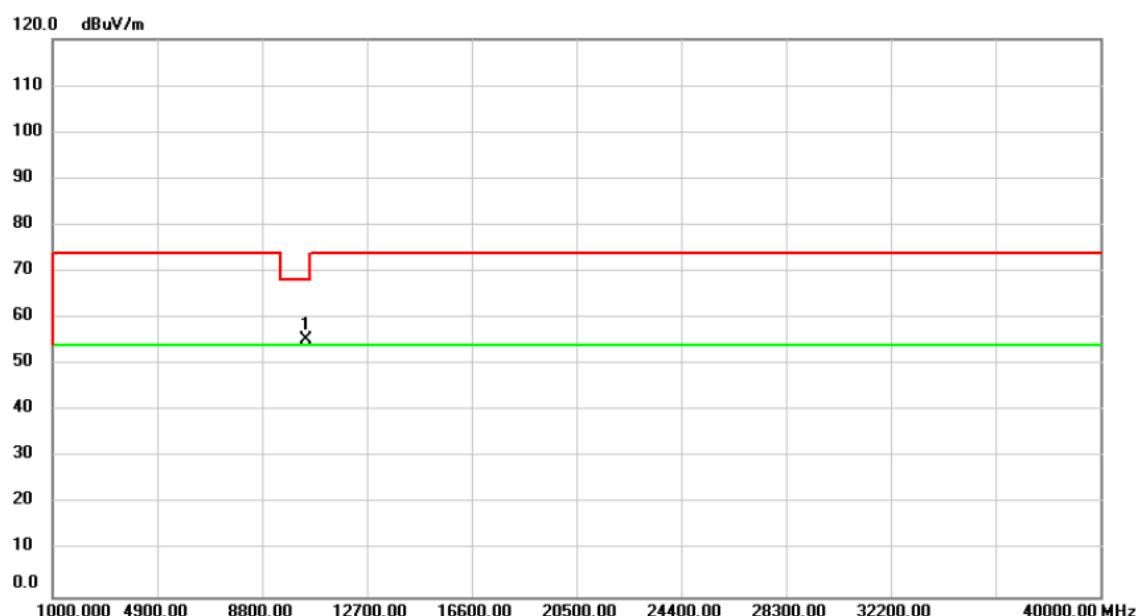


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5149.200	22.73	37.54	60.27	74.00	-13.73	peak	
2		5149.200	5.73	37.54	43.27	54.00	-10.73	AVG	
3	X	5230.000	65.68	37.63	103.31	74.00	29.31	peak	No Limit
4	*	5230.000	56.42	37.63	94.05	54.00	40.05	AVG	No Limit

Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5230MHz

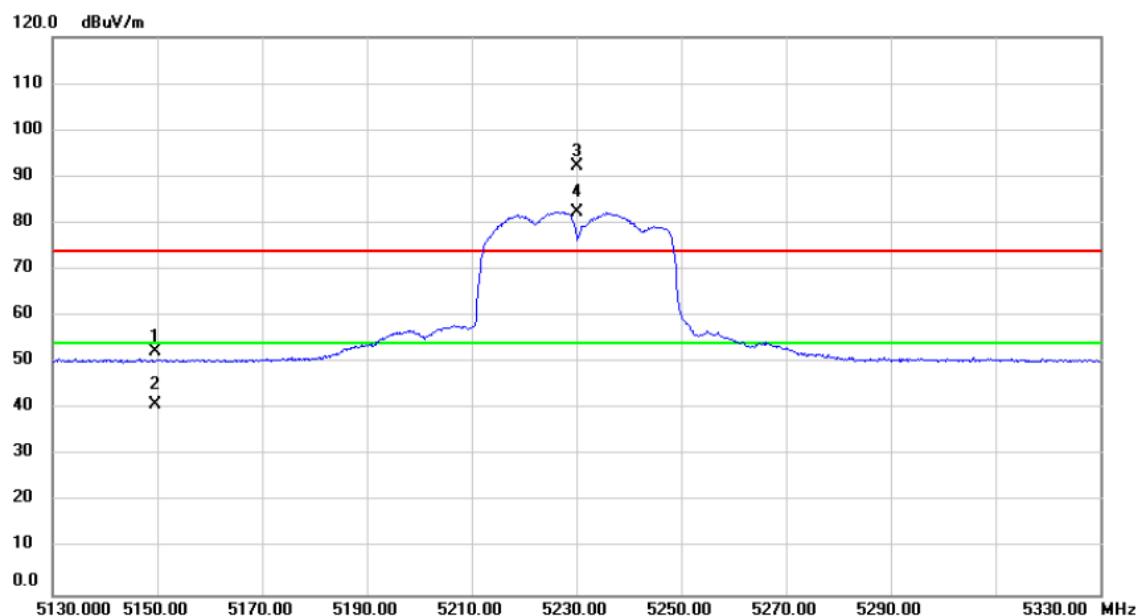
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB	Detector Comment
1	*	10460.00	53.31	1.96	55.27	68.20	-12.93 peak

Orthogonal Axis: X

Test Mode: UNII-1/ TX N40 Mode 5230MHz

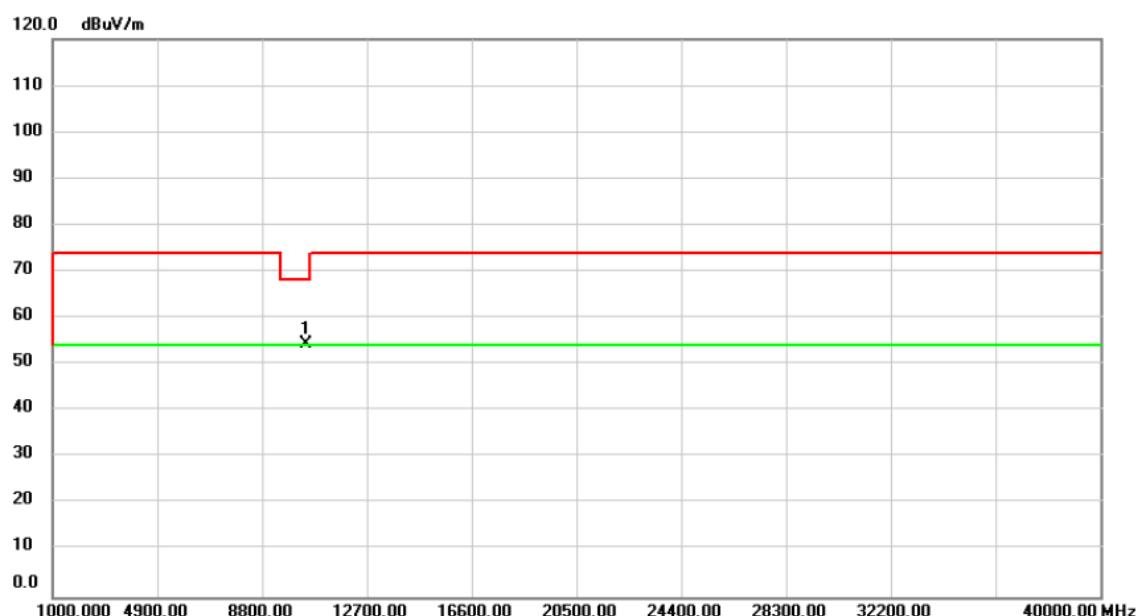
**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1		5149.700	14.88	37.54	52.42	74.00	-21.58	peak
2		5149.700	3.46	37.54	41.00	54.00	-13.00	AVG
3	X	5230.000	54.50	37.63	92.13	74.00	18.13	peak No Limit
4	*	5230.000	44.80	37.63	82.43	54.00	28.43	AVG No Limit

Orthogonal Axis: X

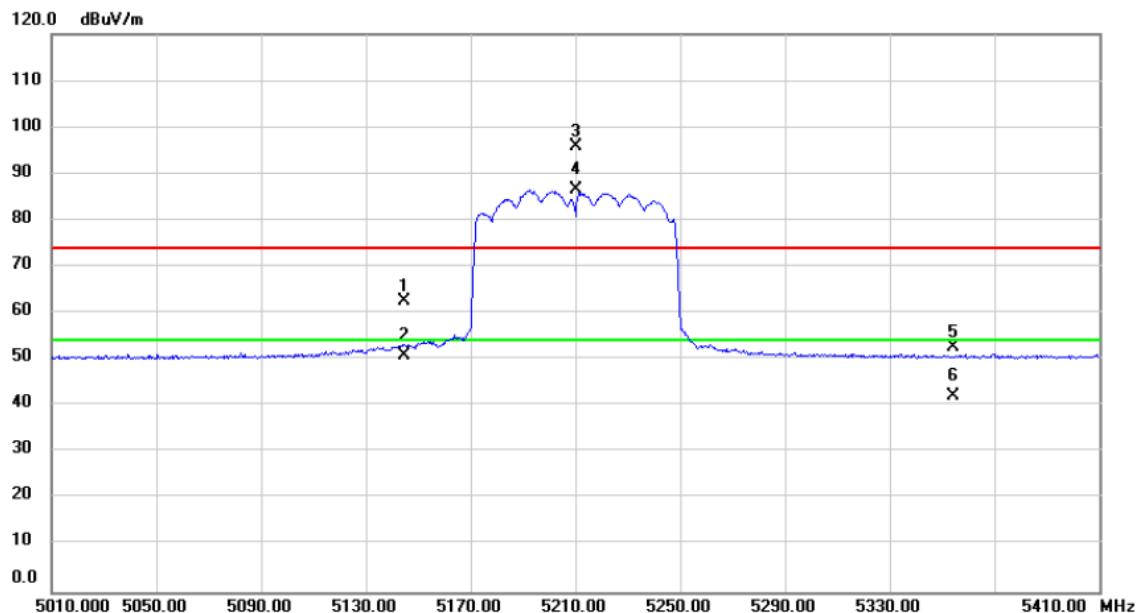
Test Mode: UNII-1/ TX N40 Mode 5230MHz

## Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB	Detector Comment
1	*	10460.00	52.56	1.96	54.52	68.20	-13.68 peak

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX AC80 Mode 5210MHz

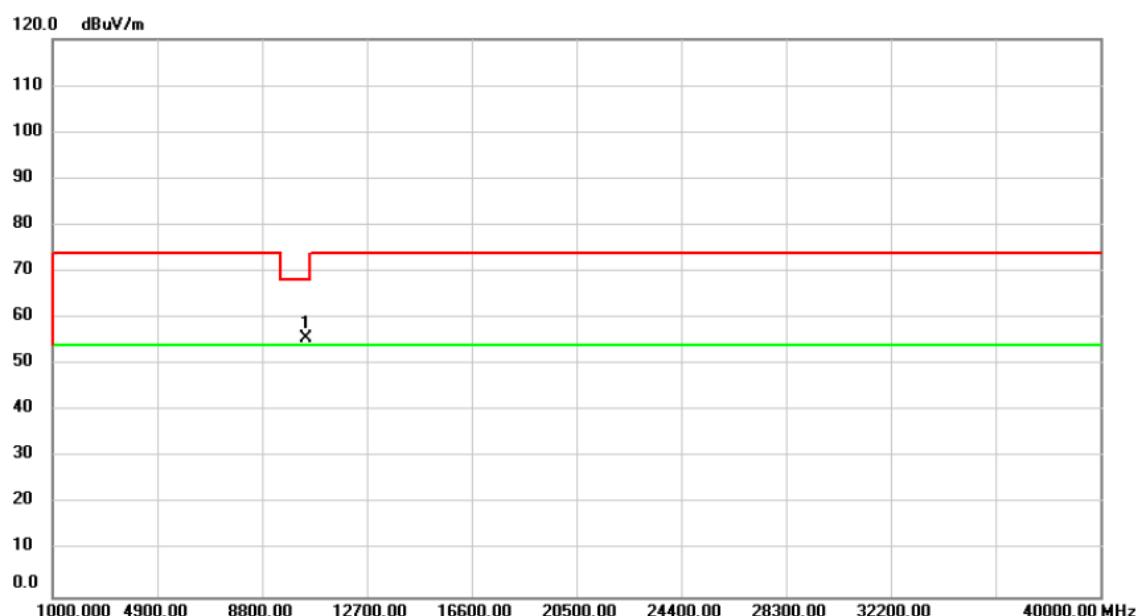
**Vertical**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5144.680	25.05	37.54	62.59	74.00	-11.41	peak	
2		5144.680	13.39	37.54	50.93	54.00	-3.07	AVG	
3	X	5210.000	58.24	37.61	95.85	74.00	21.85	peak	No Limit
4	*	5210.000	49.04	37.61	86.65	54.00	32.65	AVG	No Limit
5		5354.400	14.91	37.76	52.67	74.00	-21.33	peak	
6		5354.400	4.42	37.76	42.18	54.00	-11.82	AVG	

Orthogonal Axis: X

Test Mode: UNII-1/ TX AC80 Mode 5210MHz

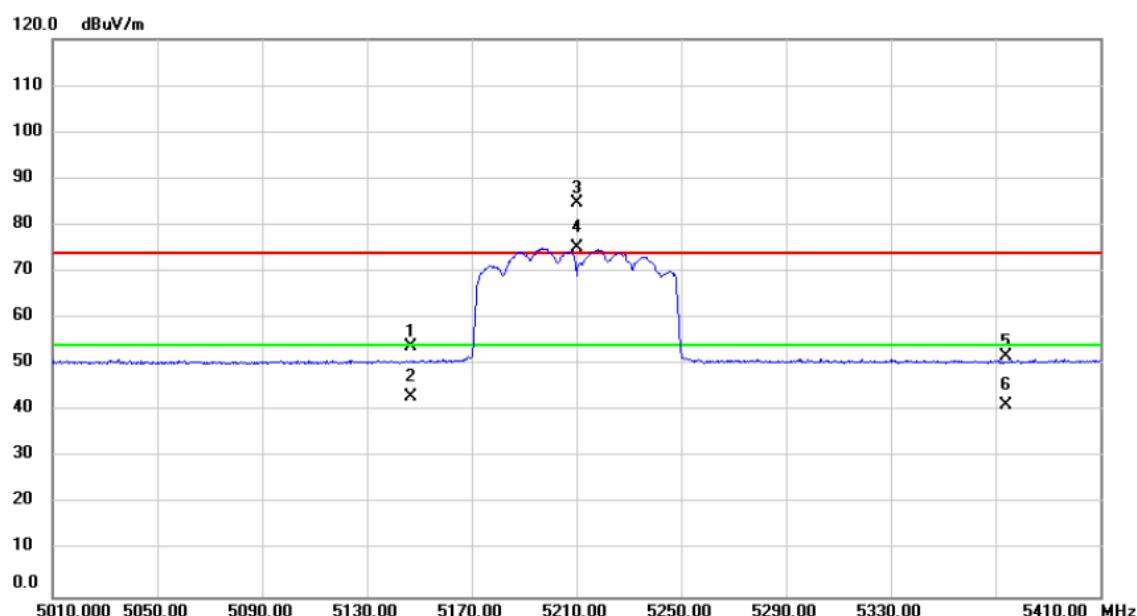
## Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dB	Detector Comment
1	*	10420.00	53.83	1.95	55.78	68.20	-12.42 peak

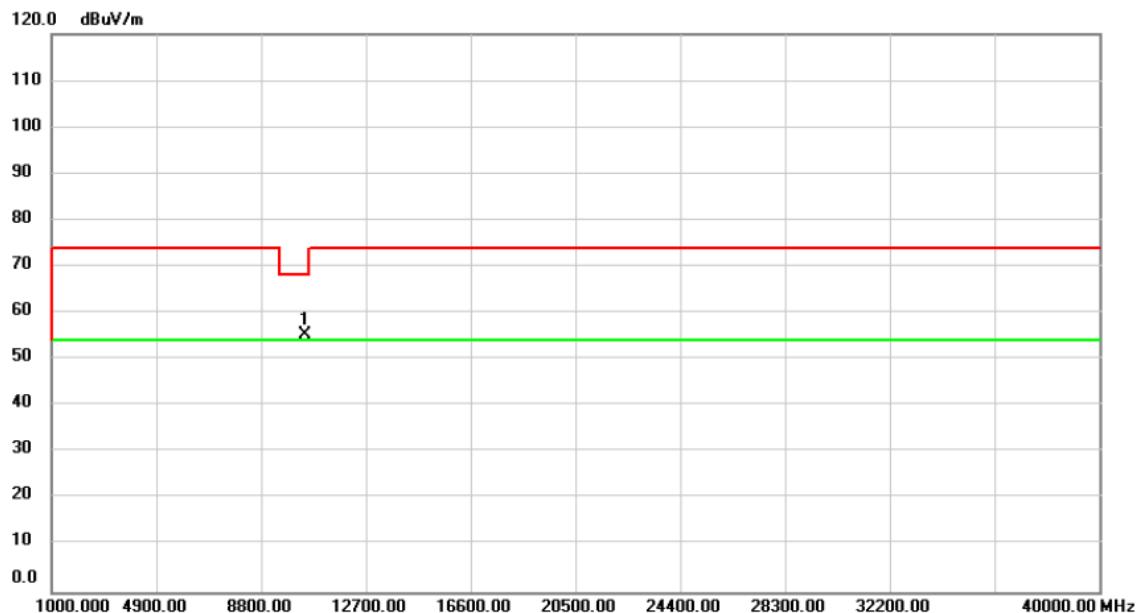
Orthogonal Axis: X

Test Mode: UNII-1/ TX AC80 Mode 5210MHz

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		5146.780	16.31	37.54	53.85	74.00	-20.15	peak	
2		5146.780	5.49	37.54	43.03	54.00	-10.97	AVG	
3	X	5210.000	47.09	37.61	84.70	74.00	10.70	peak	No Limit
4	*	5210.000	37.40	37.61	75.01	54.00	21.01	AVG	No Limit
5		5374.050	14.02	37.78	51.80	74.00	-22.20	peak	
6		5374.050	3.44	37.78	41.22	54.00	-12.78	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX AC80 Mode 5210MHz

**Horizontal**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB	Detector	Comment
1	*	10420.00	53.52	1.95	55.47	68.20	-12.73	peak