FCC Radio Test Report

FCC ID: PJZ2728Y1

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

Project No.	:	1601C103
Equipment	:	(1) GPON 4 Port WiFi 802.11ac Gateway, (2) GE 4 Port WiFi 802.11ac Gateway
Model Name	:	(1) ZNID-GE-2728A1-XX, ZNID-GE-2728A1-NYY, ZNID-GE-2728A1-XX-NYY (2) ZNID-GPON-2728A1-XX, ZNID-GPON-2728A1-NYY, ZNID-GPON-2728A1-XX-NYY More deatials please refer to page 9.
Applicant	:	ZHONE TECHNOLOGIES, INC.
Address	:	7195 Oakport Street Oakland, CA 94621 USA

Date of Receipt	: Jan. 12, 2016
Date of Test	: Jan. 12, 2016 ~ Jun. 28, 2016
Issued Date	: Jun. 29, 2016
Tested by	: BTL Inc.

Testing Engineer : Shawn Xiao
(Shawn Xiao)

Technical Manager : David Mao
(David Mao)

Authorized Signatory : Steven Lu
(Steven Lu)

BTL INC.

No.3,Jinshagang 1st Road, Shixia,Dalang Town, Dongguan, Guangdong, China.
TEL: +86-769-8318-3000FAX: +86-769-8319-6000

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL**shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL**issued reports.

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL**'s authorized written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO Guide17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Table of Contents Page

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-2-1601C103	Original Issue.	May. 11, 2016

1. CERTIFICATION

Equipment	:	(1) GPON 4 Port WiFi 802.11ac Gateway (2) GE 4 Port WiFi 802.11ac Gateway
Brand Name	:	ZHONE Bandwidth Changes Everything™
Model Name	:	(1) ZNID-GE-2728A1-XX, ZNID-GE-2728A1-NYY, ZNID-GE-2728A1-XX-NYY (2) ZNID-GPON-2728A1-XX, ZNID-GPON-2728A1-NYY, ZNID-GPON-2728A1-XX-NYY More deatials please refer to page 9.
Applicant	:	ZHONE TECHNOLOGIES, INC.
Manufacturer	:	ZHONE TECHNOLOGIES, INC.
Address	:	7195 Oakport Street Oakland,CA 94621 USA
Date of Test	:	Jan. 12, 2016 ~ Jun. 28, 2016
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part15, Subpart E(15.407) / ANSI C63.10

The above equipment has been tested and found 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-2-1601C103) 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).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart E			
Standard(s) Section	Test Item	Judgment	Remark
15.207	AC Power Line Conducted Emissions	PASS	
15.407(a)	26dB Spectrum Bandwidth	PASS	
15.407(a)	Maximum Conducted Output Power	PASS	
15.407(a)	Power Spectral Density	PASS	
15.407(a)	Radiated Emissions	PASS	
15.407(b)	Band Edge Emissions	PASS	
15.407(g)	Frequency Stability	PASS	
15.203	Antenna Requirements	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this test report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 319330

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimatedfor 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 ± U, where expanded uncertainty U is based on astandard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 KHz~30MHz	2.32

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9kHz~30MHz	V	3.79
		9kHz~30MHz	H	3.57
		30MHz~200MHz	V	3.82
		30MHz~200MHz	H	3.60
		200MHz~ 1,000MHz	V	3.86
		200MHz~ 1,000MHz	H	3.94
		1GHz~18GHz	V	3.12
		1GHz~18GHz	H	3.68
		18GHz~40GHz	V	4.15
		18GHz~40GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	(1) GPON 4 Port WiFi 802.11ac Gateway; 2) GE 4 Port WiFi 802.11ac Gateway	
Brand Name	ZHONE Bandwidth Changes Everything™	
Model Name	(1) ZNID-GE-2728A1-XX, ZNID-GE-2728A1-NYY, ZNID-GE-2728A1-XX-NYY (2) ZNID-GPON-2728A1-XX, ZNID-GPON-2728A1-NYY, ZNID-GPON-2728A1-XX-NYY ("XX"= NA, EU, UK, SG, blank. which indicates the power adapter plug type, For the optional "NYY" used only inCustomer-specific configurations, "N" identifies the Revision number of the configuration from 0 to 9 or blank, and "YY"specifies the customer using a unique two letter identifier from A to Z or blank.)	
Mode Different	Light module is point to point for GE series, Light module is not point to point for GPON series.	
Product Description	Operation Frequency	UNII-1: 5150-5250MHz UNII-3: 5725-5850MHz
	Modulation Type	OFDM
	Bit Rate of Transmitter	1.7Gbps
Power Source	1) DC voltage supplied from AC adapter. #1 Model:S36B52-120A300-04 #2 Model: SOY-1200300US #3 Model: S040EB1200300 #4 Model: SOY-1200300GB #5 Model: S36B53-120A300-04 2) Supplied from UPS. Model: PS36L-P7	
Power Rating	1)#1 I/P: 100-240V~50/60Hz Max 1.0A O/P: 12V⎓3A #2 I/P: 100-240V~50/60Hz 1.2A Max. O/P: 12V⎓3.0A #3 I/P: 100-240V~50/60Hz 1.2A Max. O/P: 12.0V⎓3000mA #4 I/P: 100-240V~50/60Hz 0.9A Max. O/P: 12V⎓3.0A #5 I/P: 100-240V~50/60Hz Max 1.0A O/P: 12V⎓3A 2) I/P: 100-240V~50/60Hz 1A MAX O/P: 12V⎓3.0Amax(On Vac), 16.0V-11V 3Amax(On Battery)	
Output Power	Output Power (Max.)for UNII-1	802.11a:16.91dBm 802.11n (20M): 22.49dBm 802.11n (40M): 22.69dBm 802.11ac (20M): 22.45dBm 802.11ac (40M): 21.19dBm 802.11ac (80M): 16.34dBm
	Output Power (Max.)for UNII-3	802.11a:16.76dBm 802.11n (20M): 22.64dBm 802.11n (40M): 22.60dBm 802.11ac (20M): 22.66dBm 802.11ac (40M): 22.51dBm 802.11ac (80M): 22.35dBm

Note:

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

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				

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. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Airgain	N5x20B-T-G40U	PCB	U.FL	2.7
2	Airgain	N5X20B-T-G180U	PCB	U.FL	2.7
3	Airgain	N5X20B-T-G220U	PCB	U.FL	2.7
4	Airgain	N5X20B-T-G300U	PCB	U.FL	2.7

4.

Operating Mode / TX Mode	1TX	4TX
802.11a	V (ANT 1)	-
802.11n(20MHz)	-	V (ANT 1 + ANT 2+ ANT 3+ ANT 4)
802.11n(40MHz)	-	V (ANT 1 + ANT 2+ ANT 3+ ANT 4)
802.11ac(20MHz)	-	V (ANT 1 + ANT 2+ ANT 3+ ANT 4)
802.11ac(40MHz)	-	V (ANT 1 + ANT 2+ ANT 3+ ANT 4)
802.11ac(80MHz)	-	V (ANT 1 + ANT 2+ ANT 3+ ANT 4)

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 AC20 Mode/ CH36, CH40, CH48 (UNII-1)
Mode 5	TX AC40 Mode/ CH38, CH46 (UNII-1)
Mode 6	TX AC80 Mode / CH42 (UNII-1)
Mode 7	TX A Mode / CH149,CH157,CH165 (UNII-3)
Mode 8	TX N20 Mode / CH149,CH157,CH165 (UNII-3)
Mode 9	TX N40 Mode / CH151,CH159 (UNII-3)
Mode 10	TX AC20 Mode / CH149,CH157,CH165 (UNII-3)
Mode 11	TX AC40 Mode / CH151,CH159 (UNII-3)
Mode 12	TX AC80 Mode / CH155 (UNII-3)
Mode 13	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 13	TX Mode

For Radiated Test	
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 AC20 Mode/ CH36, CH40, CH48 (UNII-1)
Mode 5	TX AC40 Mode/ CH38, CH46 (UNII-1)
Mode 6	TX AC80 Mode / CH42 (UNII-1)
Mode 7	TX A Mode / CH149,CH157,CH165 (UNII-3)
Mode 8	TX N20 Mode / CH149,CH157,CH165 (UNII-3)
Mode 9	TX N40 Mode / CH151,CH159 (UNII-3)
Mode 10	TX AC20 Mode / CH149,CH157,CH165 (UNII-3)
Mode 11	TX AC40 Mode / CH151,CH159 (UNII-3)
Mode 12	TX AC80 Mode / CH155 (UNII-3)

Note:
(1) For radiated below 1GHz test, the 802.11a mode is found to be the worst case and recorded.

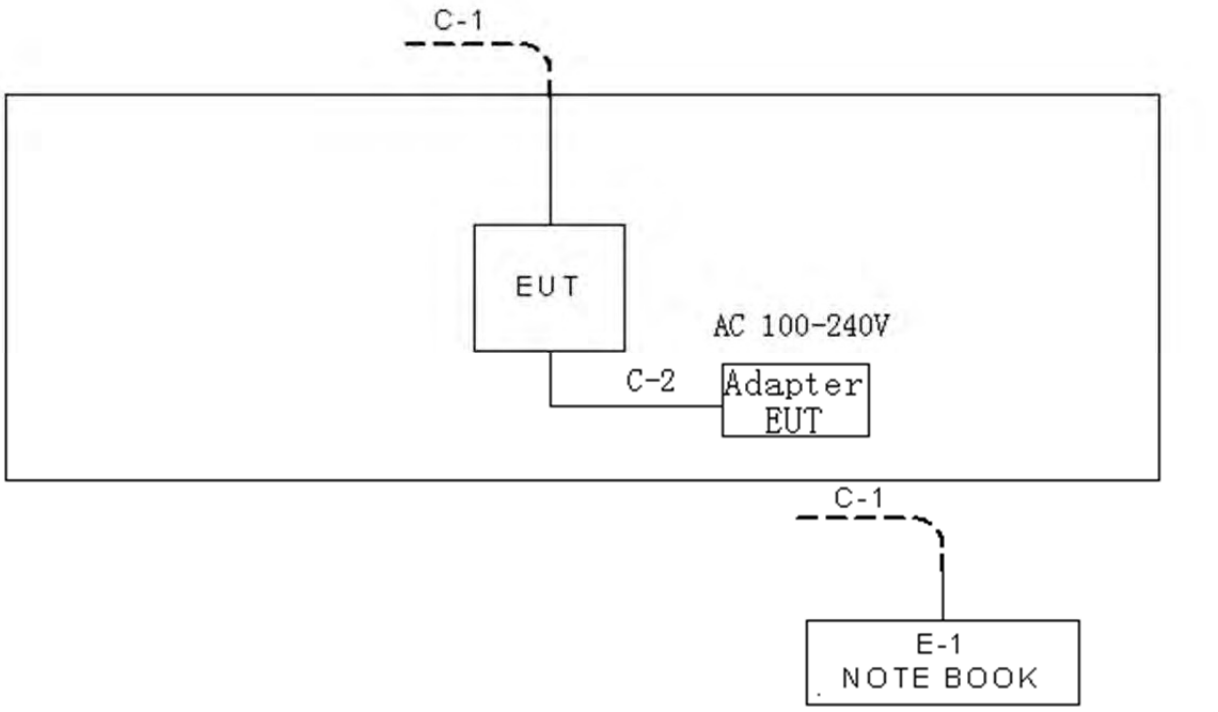
3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product

UNII-1			
Test Software Version	cmd		
Frequency (MHz)	5180	5200	5240
A Mode	14	13	13
N20 Mode	14	13	13
AC20 Mode	14	13	14
Frequency (MHz)	5190	5230	
N40 Mode	11	13	
AC40 Mode	11	13	
Frequency (MHz)	5210		
AC80 Mode	11		

UNII-3			
Test Software Version	cmd		
Frequency (MHz)	5745	5785	5825
A Mode	15	14	14
N20 Mode	14	14	14
AC20 Mode	14	14	14
Frequency (MHz)	5755	5795	
N40 Mode	14	13	
AC40 Mode	14	14	
Frequency (MHz)	5775		
AC80 Mode	14		

3.4BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



3.5DESCRIPTION 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.
E-1	Notebook	Lenovo	H2510	DOC	SS07999198

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NA	NA	10M	RJ45 Cable
C-2	NA	NA	1.2M	Power Cable

4.EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150kHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.50	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

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

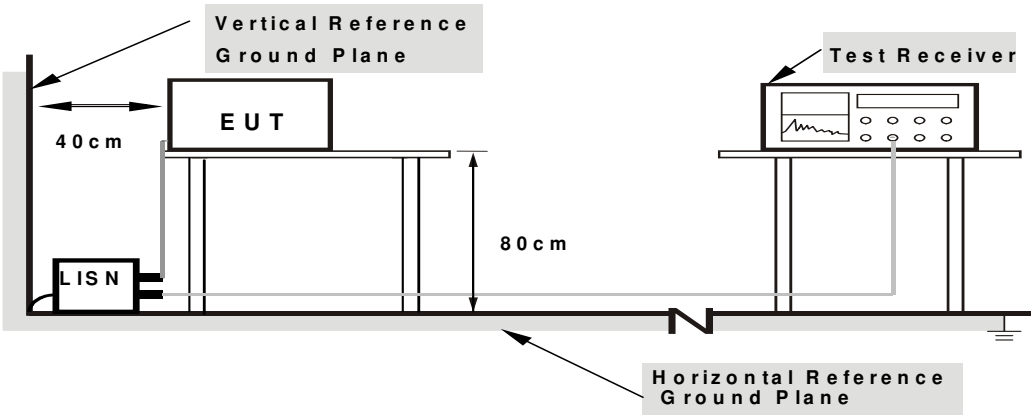
4.1.2 TEST PROCEDURE

a. 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 equipmentspowered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the groundplane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3DEVIATIONFROMTESTSTANDARD

No deviation

4.1.4 TESTSETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.5EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting/TX Mode mode.

4.1.6EUT TEST CONDITIONS

Temperature: 24°CRelative Humidity: 60% Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『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.

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 (micorvolts/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 15C.

(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 (dBμV/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: $E = \frac{1000000\sqrt{30P}}{3}$ μV/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 theband 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 orbelow 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

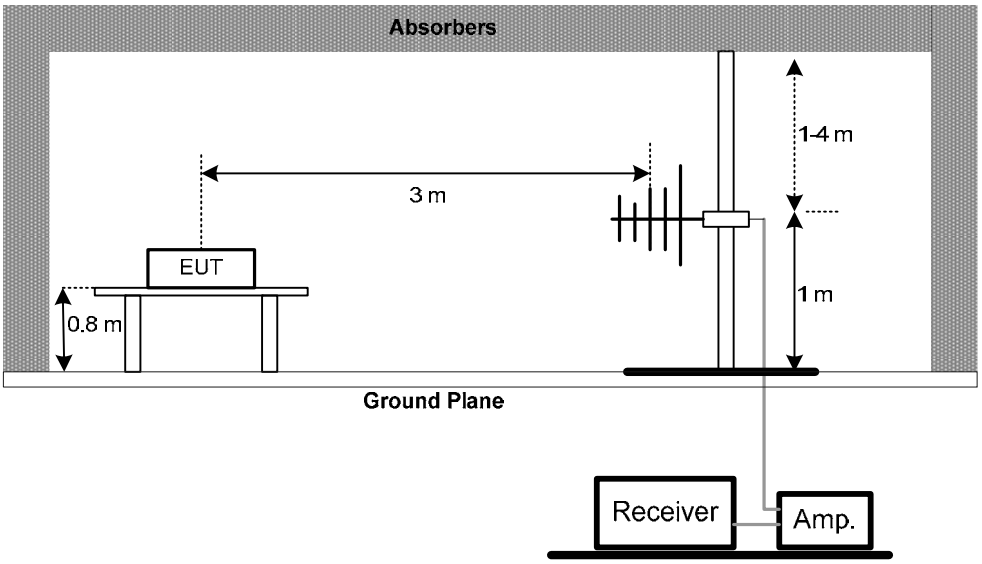
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance 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)
c. 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.
d. 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).
e. 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.
f. 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.
g. 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)
h. 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)
i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3DEVIATIONFROMTESTSTANDARD

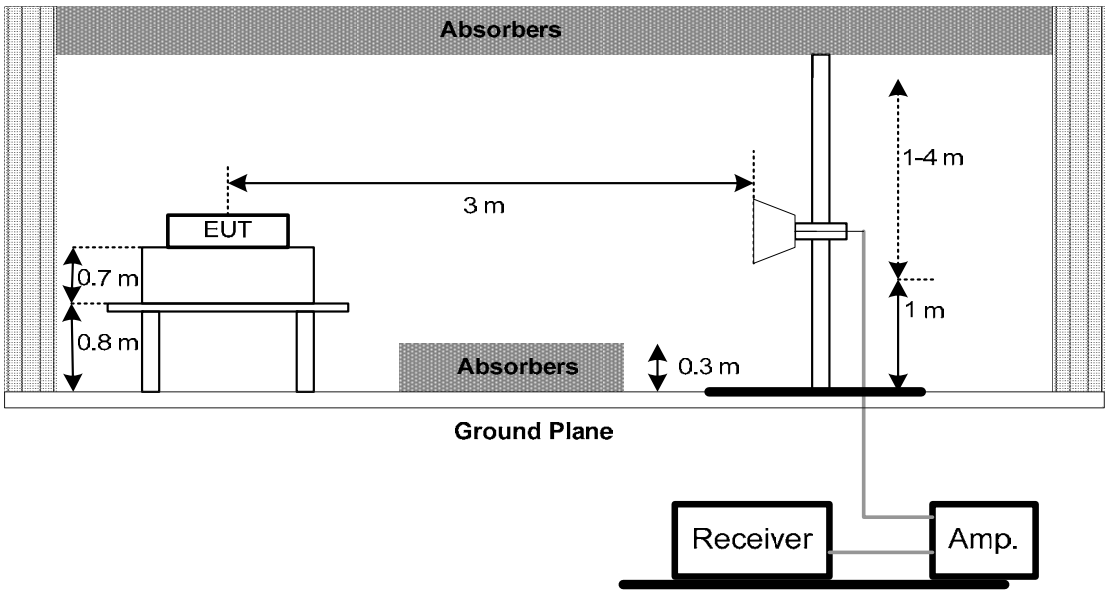
No deviation

4.2.4TESTSETUP

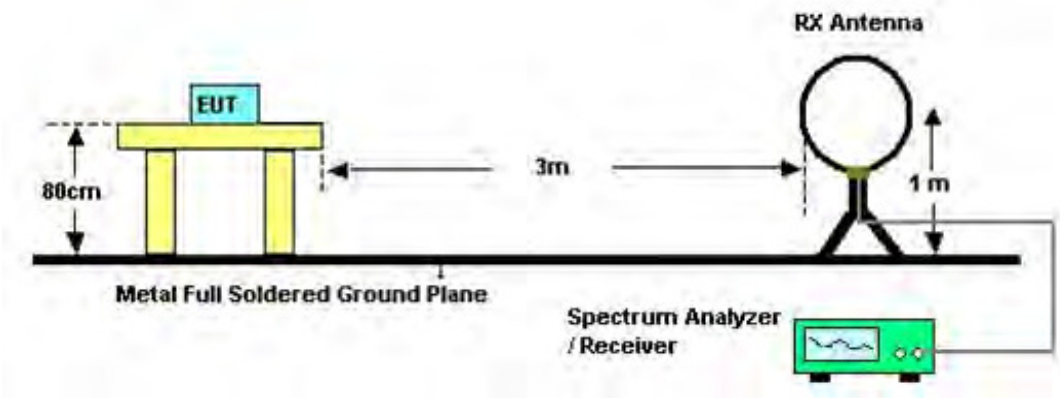
(A)Radiated Emission Test Set-Up Frequency Below 1GHz



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



(C) Radiated emissions below 30MHz



4.2.5EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6EUT TEST CONDITIONS

Temperature: 24°CRelative Humidity: 52% Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULTS (9K TO 30MHz)

Please refer to the Attachment 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 (specific distance / test distance) (dB);
(3) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.2.8 TEST RESULTS(BETWEEN30 TO 1000 MHz)

Please refer to the Attachment C.

4.2.9 TEST RESULTS (ABOVE1000 MHz)

Please refer to the Attachment D.

Remark:

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

5.26dB SPECTRUM BANDWIDTH

5.1APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Bandwidth	26 dB Bandwidth	5150-5250	PASS
	Minimum 500kHz 6dB Bandwidth	5725-5850	PASS

5.1.1TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

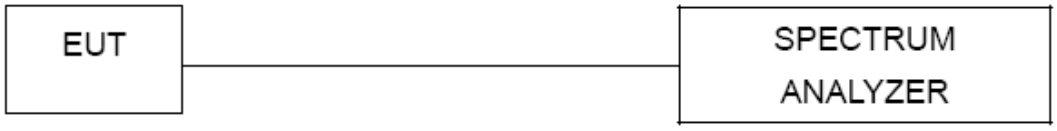
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	300 kHz
VBW	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

c. Measured the spectrum width with power higher than 26dB below carrier

5.1.2DEVIATION FROM STANDARD

No deviation.

5.1.3TEST SETUP



5.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5EUT TEST CONDITIONS

Temperature: 24°CRelative Humidity: 52% Test Voltage: AC 120V/60Hz

5.1.6TEST RESULTS

Please refer to the Attachment E.

6.MAXIMUM CONDUCTED OUTPUT POWER

6.1APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Conducted Output Power	Fixed:1 Watt (30dBm) Mobile and portable: 250mW (24dBm)	5150-5250	PASS
	1 Watt (30dBm)	5725-5850	PASS
Note: The maximum e.i.r.p at anyelevation angle above 30 degrees as measured from the horizon must not exceed 125mW(21dBm)			

6.1.1TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

b.

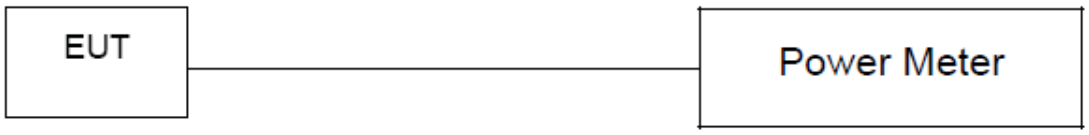
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) ofthe signal
RBW	= 1MHz.
VBW	≥ 3MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	auto

c. Test was performed in accordance with method of KDB 789033 D02 v01r02.

6.1.2DEVIATION FROM STANDARD

No deviation.

6.1.3TEST SETUP



6.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5EUT TEST CONDITIONS

Temperature: 24°CRelative Humidity: 52% Test Voltage: AC 120V/60Hz

6.1.6TEST RESULTS

Please refer to the Attachment F.

7.POWER SPECTRAL DENSITY TEST

7.1APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Power Spectral Density	Other then Mobile and portable:17dBm/MHz Mobile and portable:11dBm/MHz	5150-5250	PASS
	30dBm/500kHz	5725-5850	PASS

7.1.1TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) ofthe signal
RBW	= 1MHz.
VBW	≥ 3MHz.
Detector	RMS
Trace average	100 trace
Sweep Time	Auto

Note:

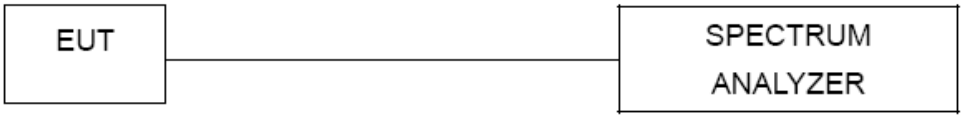
1.For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v01, section II.F.5., it is acceptable to set RBW at 1MHz and VBW at 3MHz if the spectrum analyzer does not have 500kHz RBW.

2.The value measured with RBW=1MHz is to be added with 10log(500kHz/1MHz) which is -3dB. For example, if the measured value is +10dBm using RBW=1MHz (that is +10dBm/MHz), then the converted value will be +7dBm/500kHz.

7.1.2DEVIATION FROM STANDARD

No deviation.

7.1.3TEST SETUP



7.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5EUT TEST CONDITIONS

Temperature: 24°CRelative Humidity: 52% Test Voltage: AC 120V/60Hz

7.1.6TEST RESULTS

Please refer to the Attachment G.

8.FREQUENCY STABILITY MEASUREMENT

8.1APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
FSpecified in the user's manualSpecified in the user's manualrequency Stability	Specifiedin the user's manual	5150-5250	PASS
		5725-5850	PASS

8.1.1TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissionsbandwidth
RBW	10 kHz
VBW	10kHz
Sweep Time	Auto

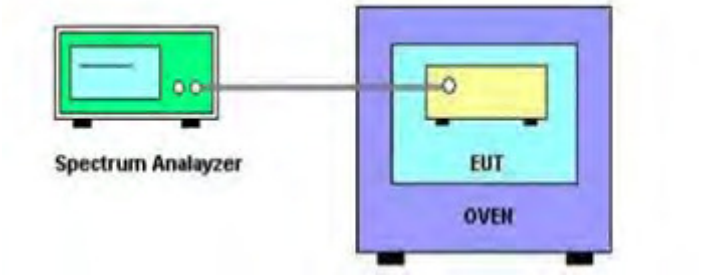
c. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

d. User manual temperature is-5°C~45°C.

8.1.2DEVIATION FROM STANDARD

No deviation.

8.1.3TEST SETUP



8.1.4EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5EUT TEST CONDITIONS

Temperature: 25°CRelative Humidity: 55%Test Voltage: AC 120V/60Hz

8.1.6TEST RESULTS

Please refer to the Attachment H.

9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	0052765	Mar. 27, 2017
2	LISN	R&S	ENV216	101447	Mar. 27, 2017
3	Test Cable	emci	RG223(9KHz-30 MHz)	C_17	Mar. 10, 2017
4	EMI Test Receiver	R&S	ESCI	100382	Mar. 27, 2017
5	50Ω Terminator	SHX	TF2-3G-A	08122901	Mar. 27, 2017
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 27, 2017
2	Amplifier	HP	8447D	2944A09673	Nov. 09, 2016
3	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
4	Test Cable	emci	LMR-400(30MH z-1GHz)	C-01	Jun. 27, 2017
5	Controller	CT	SC100	N/A	N/A
6	Antenna	ETS	3115	00075789	Mar. 27, 2017
7	Amplifier	Agilent	8449B	3008A02274	Nov. 01, 2016
8	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
9	Test Cable	emci	EMC104-SM-S M-10000(1GHz －26.5GHz)	C-68	Jun. 27, 2017
10	Controller	CT	SC100	N/A	N/A
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Apr. 23, 2017
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 27, 2017
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Sep. 07, 2016
14	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Spectrum BandwidthMeasurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016
2	Test Cable	emci	EMC104-SM-SM-9000(0.01GHz－26.5GHz)	C-100	N/A

Maximum Conducted Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	ANRITSU	ML2495A	1128009	Mar. 27, 2017
2	Pulse Power Sensor	ANRITSU	MA 2411B	1027500	Mar. 27, 2017

Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016
2	Test Cable	emci	EMC104-SM-SM-9000(0.01GHz－26.5GHz)	C-100	N/A

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 26, 2017
2	Test Cable	N/A	RG316	Cable4-001	Jul. 15, 2016
3	Const Temp. & Humidity Chamber	GIANT FORCE	ITH-225-20-S	IAB0309-001	Dec.04, 2016
4	DC power supply	GW Instek	GPC-3030DN	EK880675	Oct. 13, 2016

Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

10.EUT TEST PHOTO

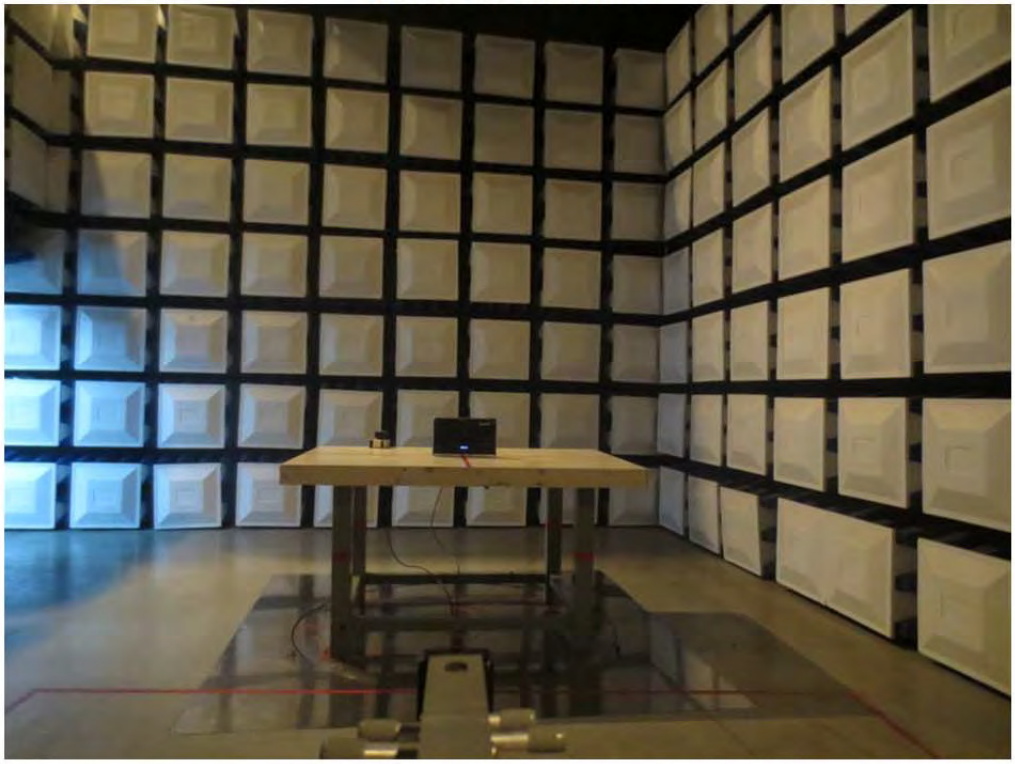
Conducted Measurement Photos

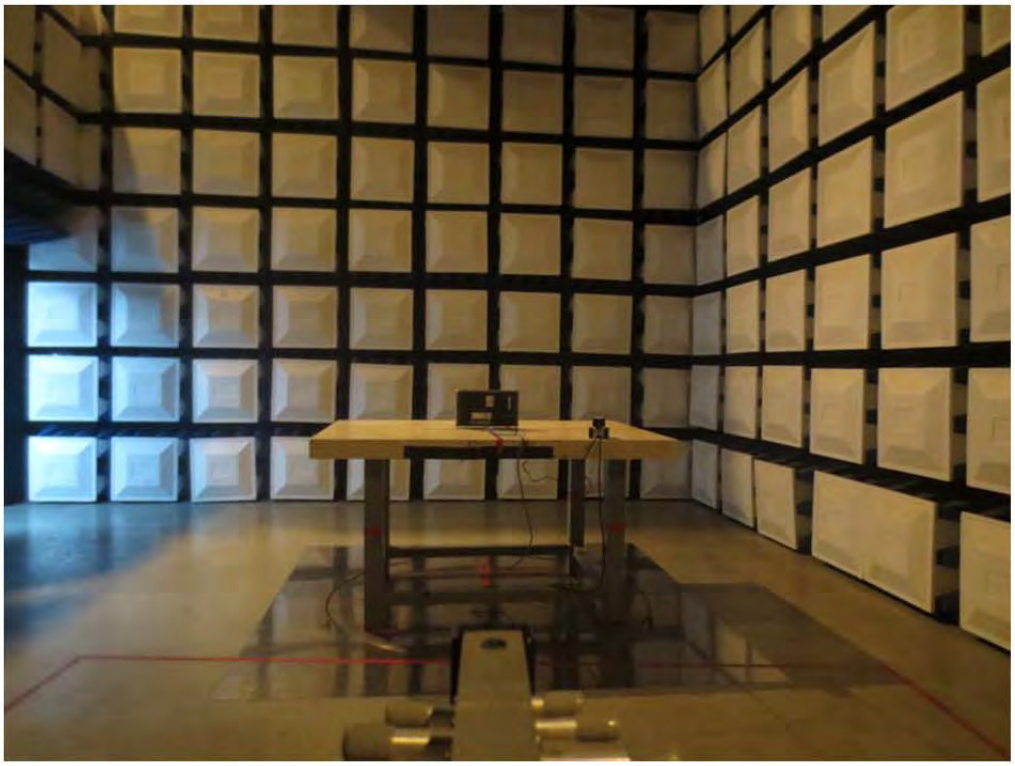
Radiated Measurement Photos

9KHz to 30MHz

Radiated Measurement Photos

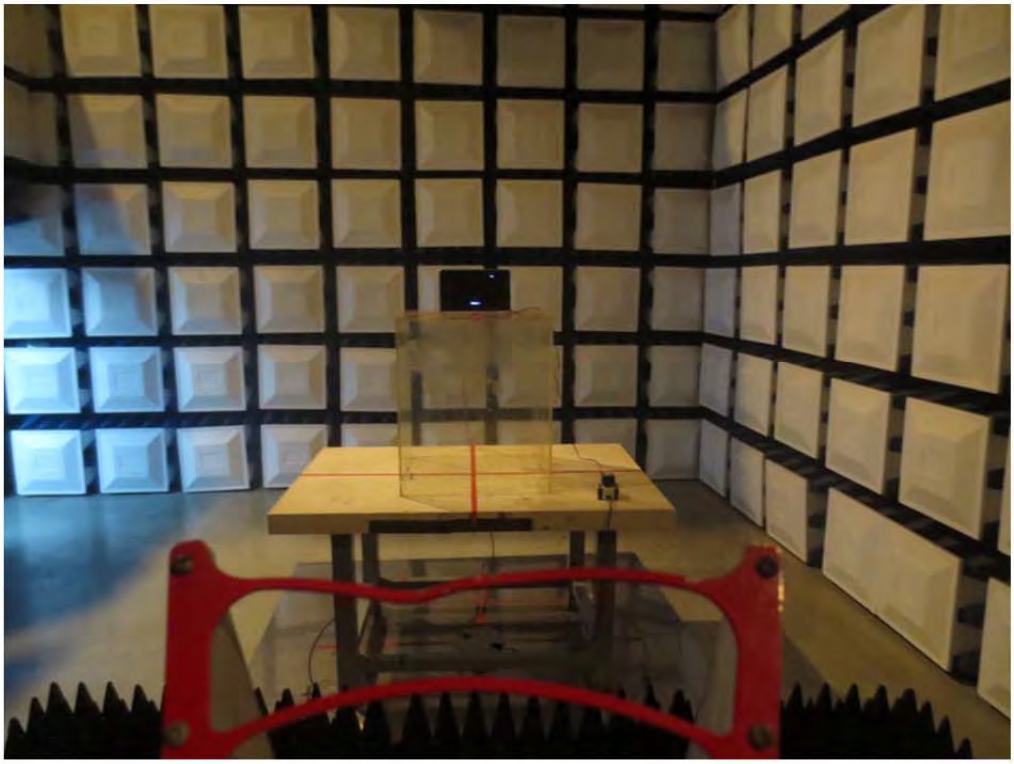
30MHz to 1000MHz

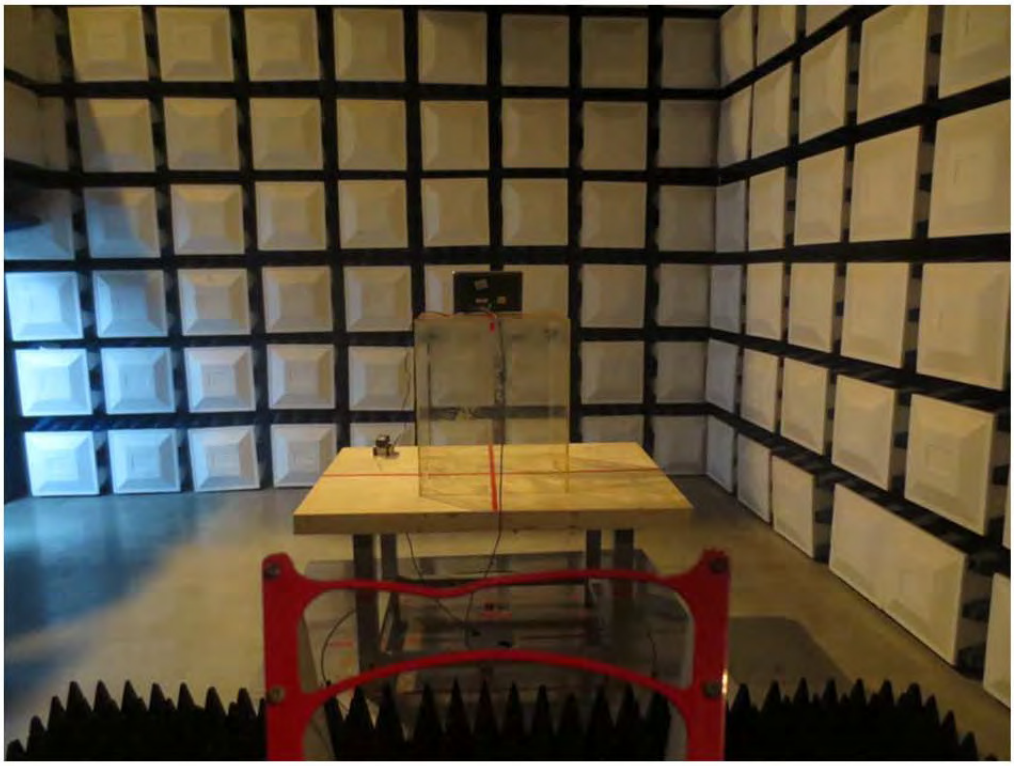




Radiated Measurement Photos

Above 1000MHz

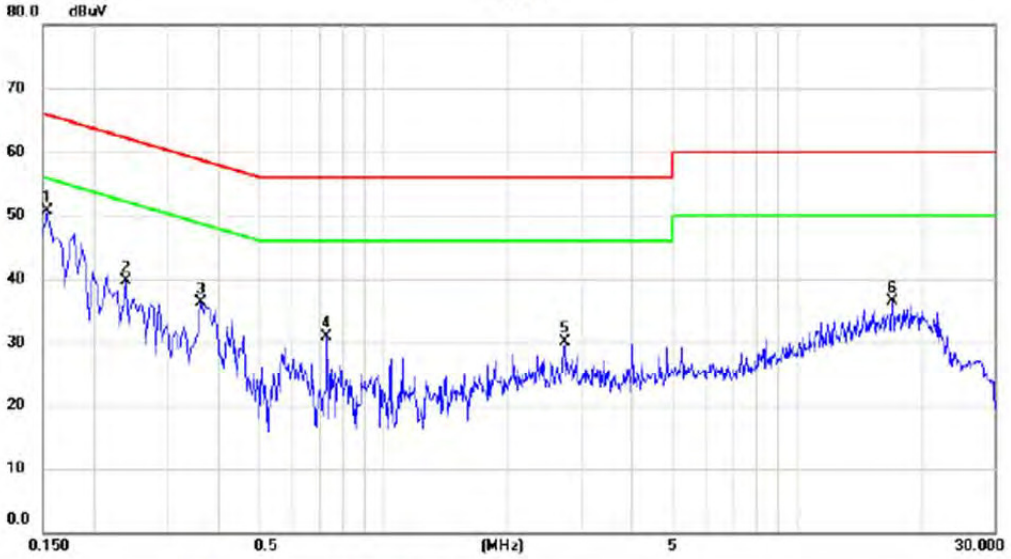




ATTACHMENTA -CONDUCTED EMISSION

Test Mode:	TX MODE

Line

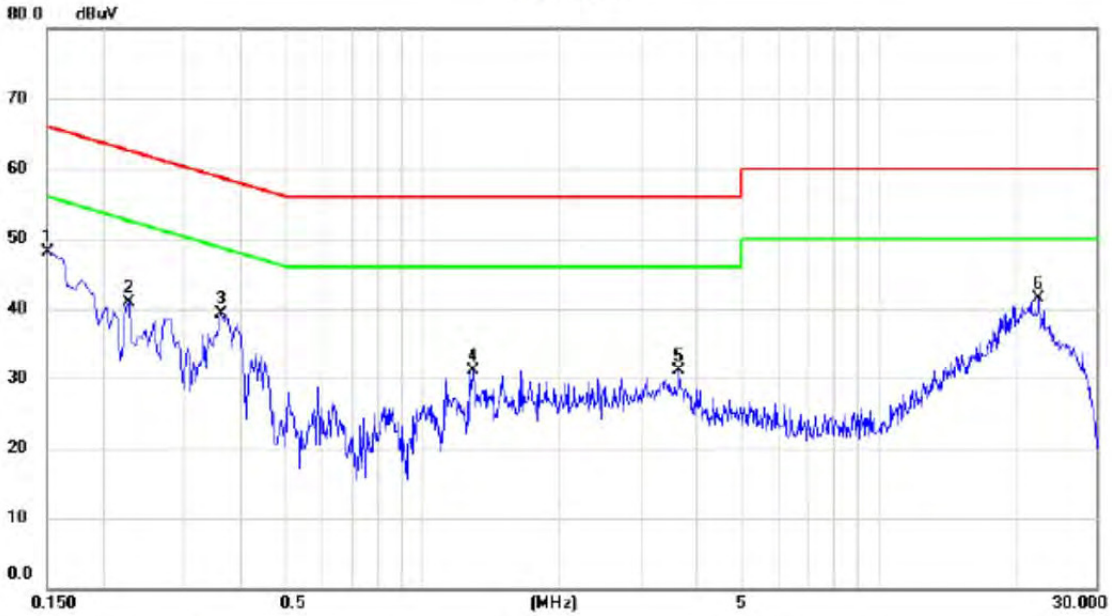


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1540	41.09	9.54	50.63	65.78	-15.15	peak	
2		0.2380	30.07	9.60	39.67	62.17	-22.50	peak	
3		0.3620	26.68	9.66	36.34	58.68	-22.34	peak	
4		0.7300	21.17	9.74	30.91	56.00	-25.09	peak	
5		2.7380	20.01	10.01	30.02	56.00	-25.98	peak	
6		17.0180	26.57	9.84	36.41	60.00	-23.59	peak	

Note：The test result has included the cable loss.

Test Mode:	TX MODE

Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	38.68	9.49	48.17	66.00	-17.83	peak	
2		0.2260	31.47	9.51	40.98	62.60	-21.62	peak	
3		0.3620	29.72	9.54	39.26	58.68	-19.42	peak	
4		1.2860	21.46	9.64	31.10	56.00	-24.90	peak	
5		3.6340	21.15	9.88	31.03	56.00	-24.97	peak	
6		22.4180	31.59	9.98	41.57	60.00	-18.43	peak	

Note：The test result has included the cable loss.

ATTACHMENTB -RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode:	TX A Mode 5180MHz

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0117	0°	15.13	24.83	39.96	126.24	-86.28	AVG
0.0117	0°	16.75	24.83	41.58	146.24	-104.66	PEAK
0.0326	0°	7.28	23.50	30.78	117.34	-86.56	AVG
0.0326	0°	8.56	23.50	32.06	137.34	-105.28	PEAK
0.0408	0°	4.52	22.98	27.50	115.39	-87.89	AVG
0.0408	0°	6.05	22.98	29.03	135.39	-106.36	PEAK
0.0619	0°	1.27	22.16	23.43	111.77	-88.34	AVG
0.0619	0°	2.36	22.16	24.52	131.77	-107.25	PEAK
0.7128	0°	22.17	20.48	42.65	70.54	-27.89	QP
2.2503	0°	25.51	19.35	44.86	69.54	-24.68	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0141	90°	13.77	24.30	38.07	124.62	-86.55	AVG
0.0141	90°	15.21	24.30	39.51	144.62	-105.11	PEAK
0.0296	90°	6.15	23.69	29.84	118.18	-88.34	AVG
0.0296	90°	8.53	23.69	32.22	138.18	-105.96	PEAK
0.0412	90°	4.06	22.96	27.02	115.31	-88.29	AVG
0.0412	90°	6.38	22.96	29.34	135.31	-105.97	PEAK
0.0703	90°	1.83	21.99	23.82	110.67	-86.84	AVG
0.0703	90°	2.75	21.99	24.74	130.67	-105.92	PEAK
0.6185	90°	20.36	20.18	40.54	71.78	-31.24	QP
2.0173	90°	24.17	19.49	43.66	69.54	-25.88	QP

ATTACHMENTC -RADIATED EMISSION (30MHZ TO 1000MHZ)

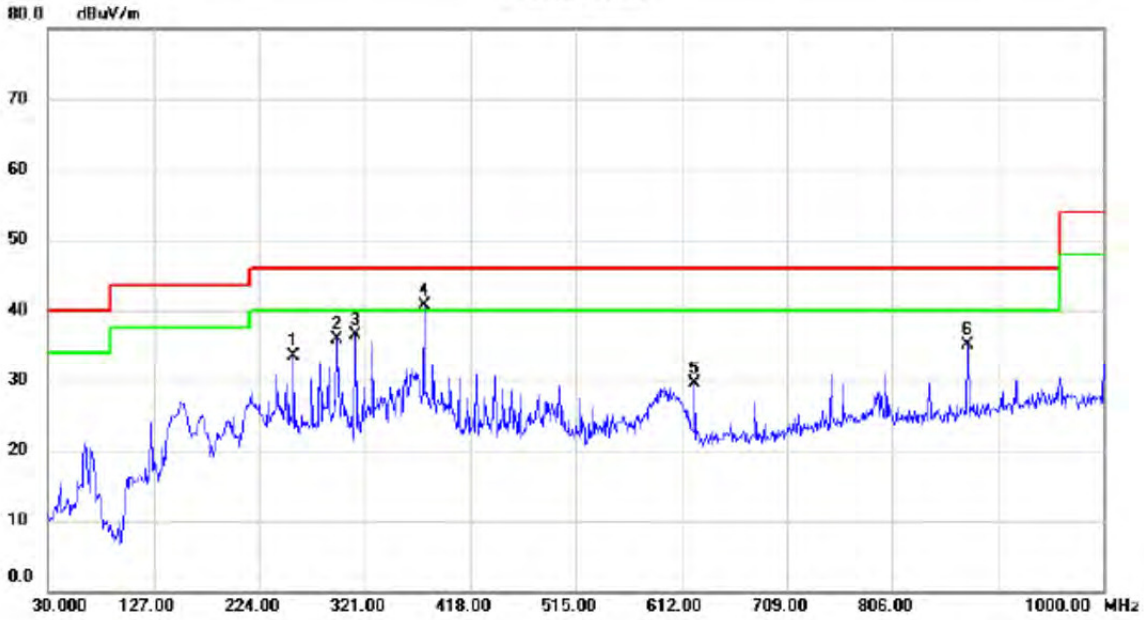
Test Mode:	UNII-1/TX A Mode 5180MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	63.9500	47.13	-14.21	32.92	40.00	-7.08	peak	
2		219.1500	48.75	-15.63	33.12	46.00	-12.88	peak	
3		375.3200	41.87	-9.78	32.09	46.00	-13.91	peak	
4		624.6100	41.42	-4.77	36.65	46.00	-9.35	peak	
5		656.6200	36.19	-4.24	31.95	46.00	-14.05	peak	
6		749.7400	33.48	-2.00	31.48	46.00	-14.52	peak	

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		256.0100	46.72	-13.14	33.58	46.00	-12.42	peak	
2		295.7800	47.40	-11.47	35.93	46.00	-10.07	peak	
3		312.2700	47.67	-11.12	36.55	46.00	-9.45	peak	
4	*	375.3200	50.55	-9.78	40.77	46.00	-5.23	peak	
5		624.6100	34.19	-4.77	29.42	46.00	-16.58	peak	
6		874.8700	35.36	-0.19	35.17	46.00	-10.83	peak	

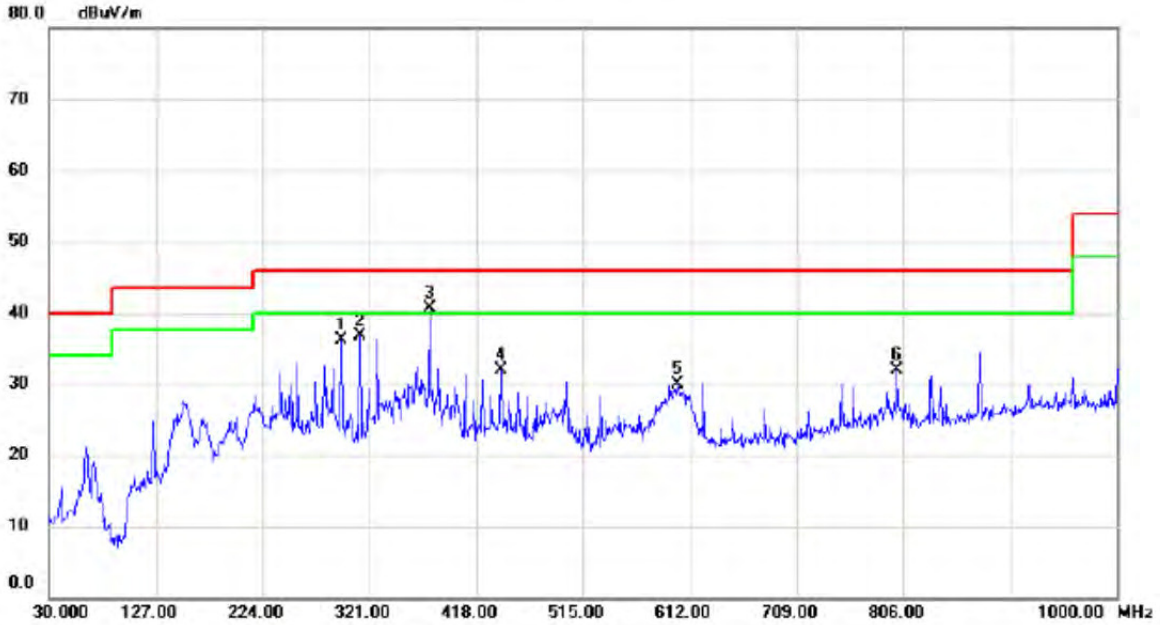
Test Mode:	UNII-1/TX A Mode 5200MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	63.9500	46.91	-14.21	32.70	40.00	-7.30	peak	
2		217.2100	48.66	-15.65	33.01	46.00	-12.99	peak	
3		375.3200	42.17	-9.78	32.39	46.00	-13.61	peak	
4		595.5100	38.27	-5.34	32.93	46.00	-13.07	peak	
5		624.6100	40.70	-4.77	35.93	46.00	-10.07	peak	
6		749.7400	34.80	-2.00	32.80	46.00	-13.20	peak	

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		295.7800	47.49	-11.47	36.02	46.00	-9.98	peak	
2		312.2700	47.79	-11.12	36.67	46.00	-9.33	peak	
3	*	375.3200	50.50	-9.78	40.72	46.00	-5.28	peak	
4		440.3100	39.92	-8.01	31.91	46.00	-14.09	peak	
5		601.3300	35.08	-5.19	29.89	46.00	-16.11	peak	
6		800.1800	33.58	-1.68	31.90	46.00	-14.10	peak	

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

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	63.9500	46.83	-14.21	32.62	40.00	-7.38	peak	
2		217.2100	48.63	-15.65	32.98	46.00	-13.02	peak	
3		375.3200	42.06	-9.78	32.28	46.00	-13.72	peak	
4		624.6100	41.38	-4.77	36.61	46.00	-9.39	peak	
5		679.9000	35.02	-4.00	31.02	46.00	-14.98	peak	
6		749.7400	35.34	-2.00	33.34	46.00	-12.66	peak	

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

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		295.7800	47.52	-11.47	36.05	46.00	-9.95	peak	
2		312.2700	47.75	-11.12	36.63	46.00	-9.37	peak	
3		327.7900	46.93	-10.81	36.12	46.00	-9.88	peak	
4	*	375.3200	50.41	-9.78	40.63	46.00	-5.37	peak	
5		749.7400	33.19	-2.00	31.19	46.00	-14.81	peak	
6		874.8700	34.60	-0.19	34.41	46.00	-11.59	peak	

Test Mode:	UNII-3/TX A Mode 5745MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	63.9500	46.51	-14.21	32.30	40.00	-7.70	peak	
2		217.2100	48.61	-15.65	32.96	46.00	-13.04	peak	
3		375.3200	42.16	-9.78	32.38	46.00	-13.62	peak	
4		601.3300	37.73	-5.19	32.54	46.00	-13.46	peak	
5		624.6100	41.61	-4.77	36.84	46.00	-9.16	peak	
6		749.7400	34.32	-2.00	32.32	46.00	-13.68	peak	

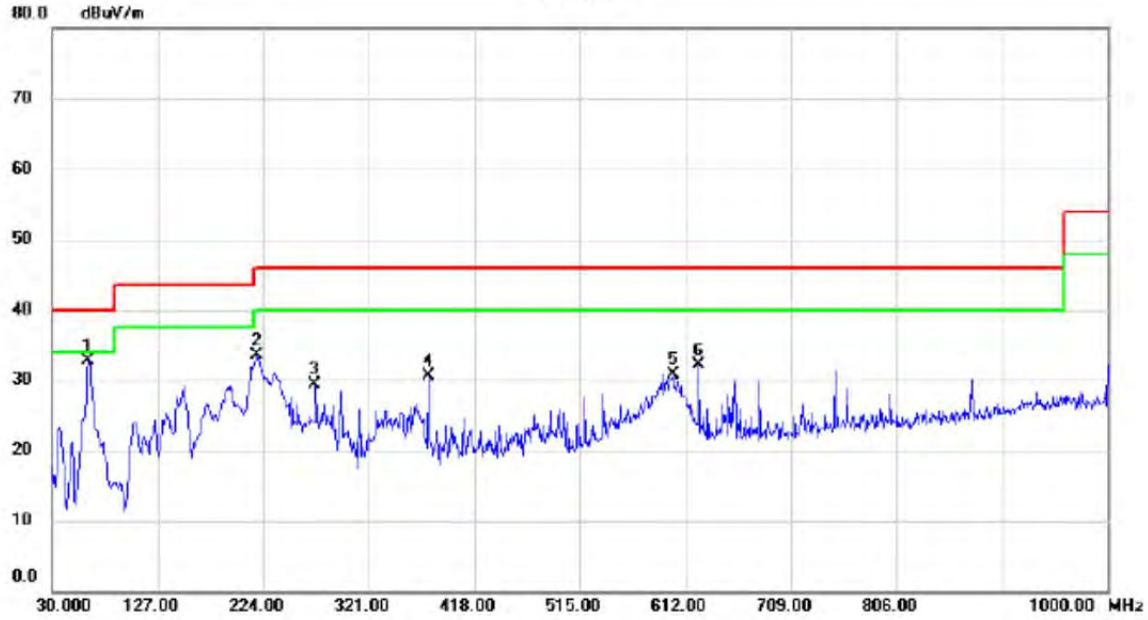
Test Mode:	UNII-3/TX A Mode 5745MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		295.7800	47.51	-11.47	36.04	46.00	-9.96	peak	
2		312.2700	47.78	-11.12	36.66	46.00	-9.34	peak	
3		327.7900	46.56	-10.81	35.75	46.00	-10.25	peak	
4	*	375.3200	50.26	-9.78	40.48	46.00	-5.52	peak	
5		440.3100	39.96	-8.01	31.95	46.00	-14.05	peak	
6		624.6100	35.94	-4.77	31.17	46.00	-14.83	peak	

Test Mode:	UNII-3/TX A Mode 5785MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	62.9800	46.76	-14.08	32.68	40.00	-7.32	peak	
2		218.1800	49.18	-15.63	33.55	46.00	-12.45	peak	
3		271.5300	41.60	-12.34	29.26	46.00	-16.74	peak	
4		375.3200	40.28	-9.78	30.50	46.00	-15.50	peak	
5		600.3600	35.82	-5.21	30.61	46.00	-15.39	peak	
6		624.6100	36.87	-4.77	32.10	46.00	-13.90	peak	

Test Mode:	UNII-3/TX A Mode 5785MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		312.2700	47.90	-11.12	36.78	46.00	-9.22	peak	
2		327.7900	46.28	-10.81	35.47	46.00	-10.53	peak	
3	*	375.3200	50.29	-9.78	40.51	46.00	-5.49	peak	
4		500.4500	37.06	-7.15	29.91	46.00	-16.09	peak	
5		601.3300	34.74	-5.19	29.55	46.00	-16.45	peak	
6		874.8700	35.10	-0.19	34.91	46.00	-11.09	peak	

Test Mode:	UNII-3/TX A Mode 5825MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	63.9500	47.68	-14.21	33.47	40.00	-6.53	peak	
2		217.2100	48.66	-15.65	33.01	46.00	-12.99	peak	
3		375.3200	42.08	-9.78	32.30	46.00	-13.70	peak	
4		624.6100	41.44	-4.77	36.67	46.00	-9.33	peak	
5		749.7400	34.53	-2.00	32.53	46.00	-13.47	peak	
6		760.4100	33.55	-1.92	31.63	46.00	-14.37	peak	

Test Mode:	UNII-3/TX A Mode 5825MHz

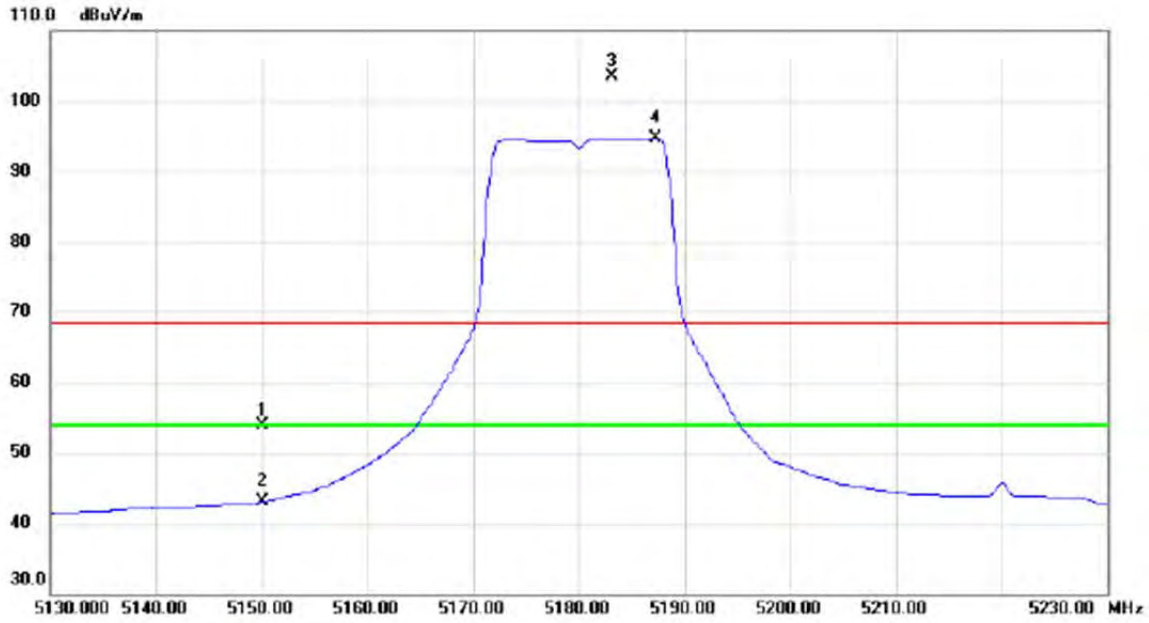
Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		295.7800	47.78	-11.47	36.31	46.00	-9.69	peak	
2		312.2700	47.66	-11.12	36.54	46.00	-9.46	peak	
3		327.7900	46.36	-10.81	35.55	46.00	-10.45	peak	
4	*	375.3200	49.41	-9.78	39.63	46.00	-6.37	peak	
5		500.4500	37.37	-7.15	30.22	46.00	-15.78	peak	
6		598.4200	35.91	-5.26	30.65	46.00	-15.35	peak	

ATTACHMENTD -RADIATED EMISSION (ABOVE 1000MHZ)

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

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	13.60	40.22	53.82	68.30	-14.48	peak	
2		5150.000	2.89	40.22	43.11	54.00	-10.89	AVG	
3	X	5183.200	63.26	40.29	103.55	68.30	35.25	peak	No Limit
4	*	5187.300	54.49	40.30	94.79	54.00	40.79	AVG	No Limit

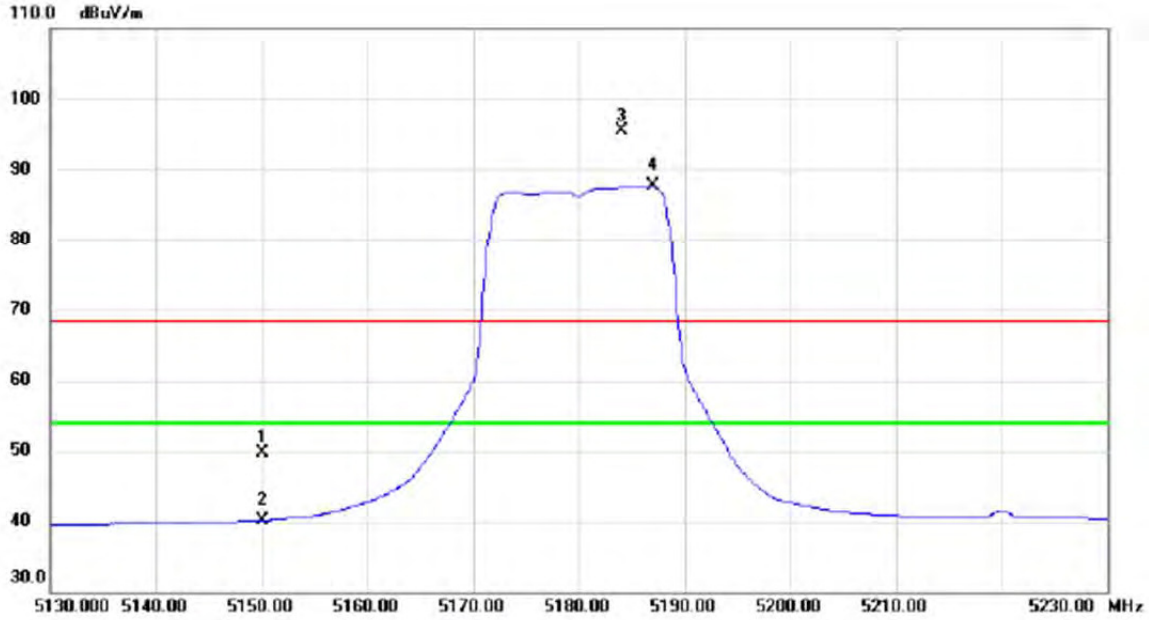
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10360.45	25.63	13.85	39.48	54.00	-14.52	AVG	
2		10360.16	37.76	13.85	51.61	68.30	-16.69	peak	

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	9.50	40.22	49.72	68.30	-18.58	peak	
2		5150.000	-0.09	40.22	40.13	54.00	-13.87	AVG	
3	X	5184.000	55.27	40.29	95.56	68.30	27.26	peak	No Limit
4	*	5187.000	47.32	40.30	87.62	54.00	33.62	AVG	No Limit

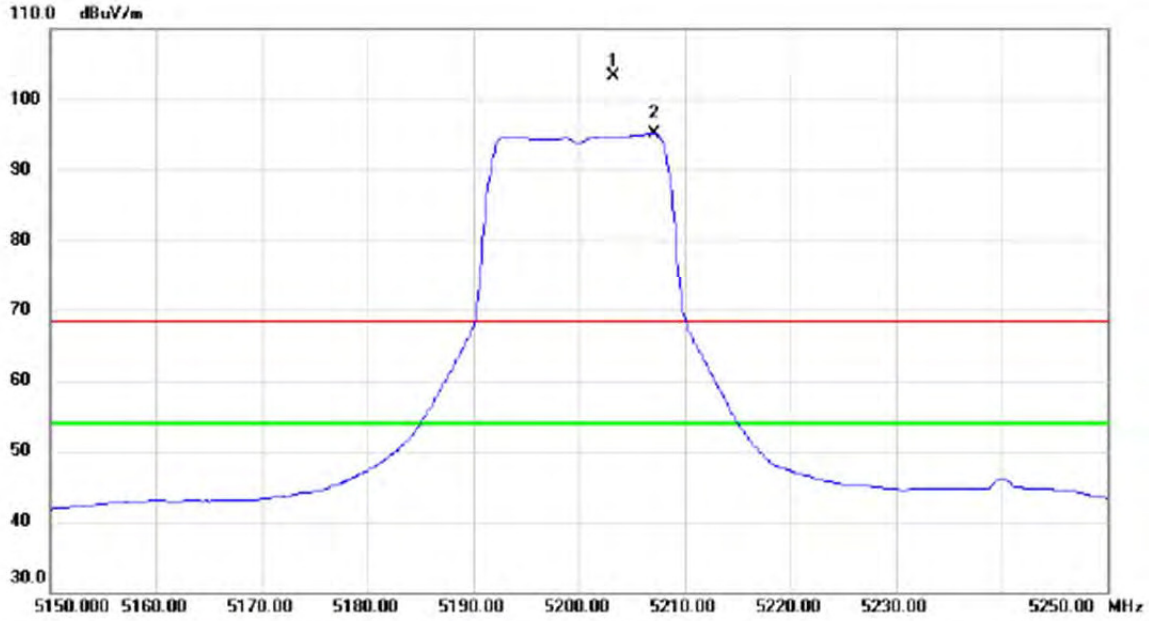
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10360.41	39.14	13.85	52.99	68.30	-15.31	peak	
2	*	10360.64	27.57	13.85	41.42	54.00	-12.58	AVG	

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

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5203.300	62.88	40.33	103.21	68.30	34.91	peak	No Limit
2	*	5207.100	54.76	40.34	95.10	54.00	41.10	AVG	No Limit

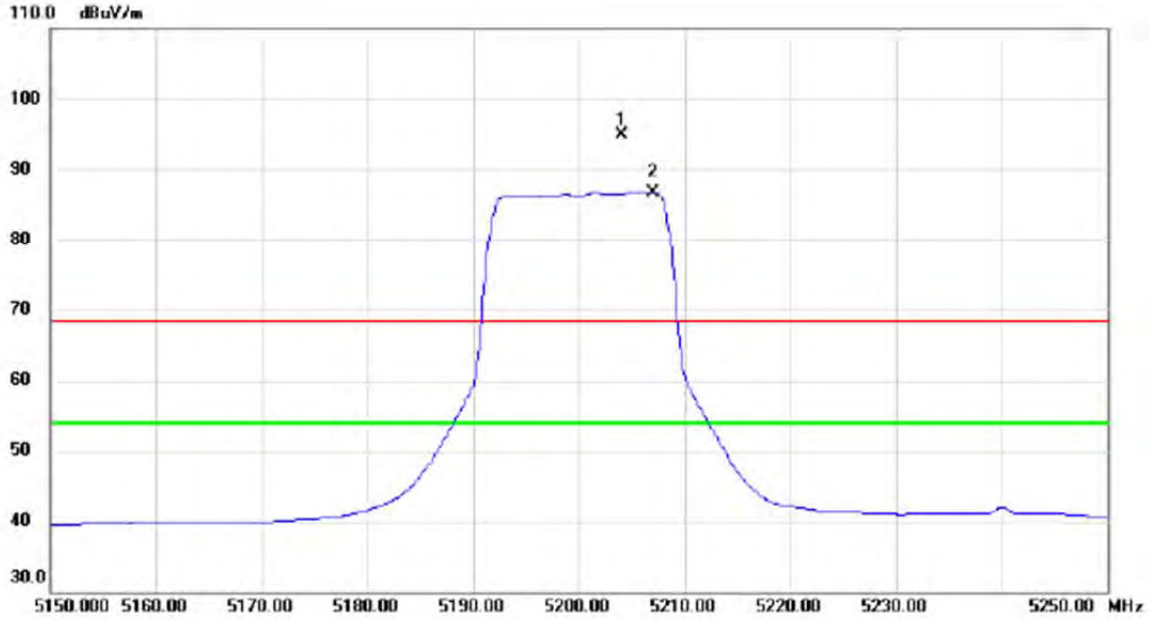
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10400.35	39.51	13.80	53.31	68.30	-14.99	peak	
2	*	10440.67	28.15	13.74	41.89	54.00	-12.11	AVG	

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5204.000	54.54	40.33	94.87	68.30	26.57	peak	No Limit
2	*	5207.000	46.46	40.34	86.80	54.00	32.80	AVG	No Limit

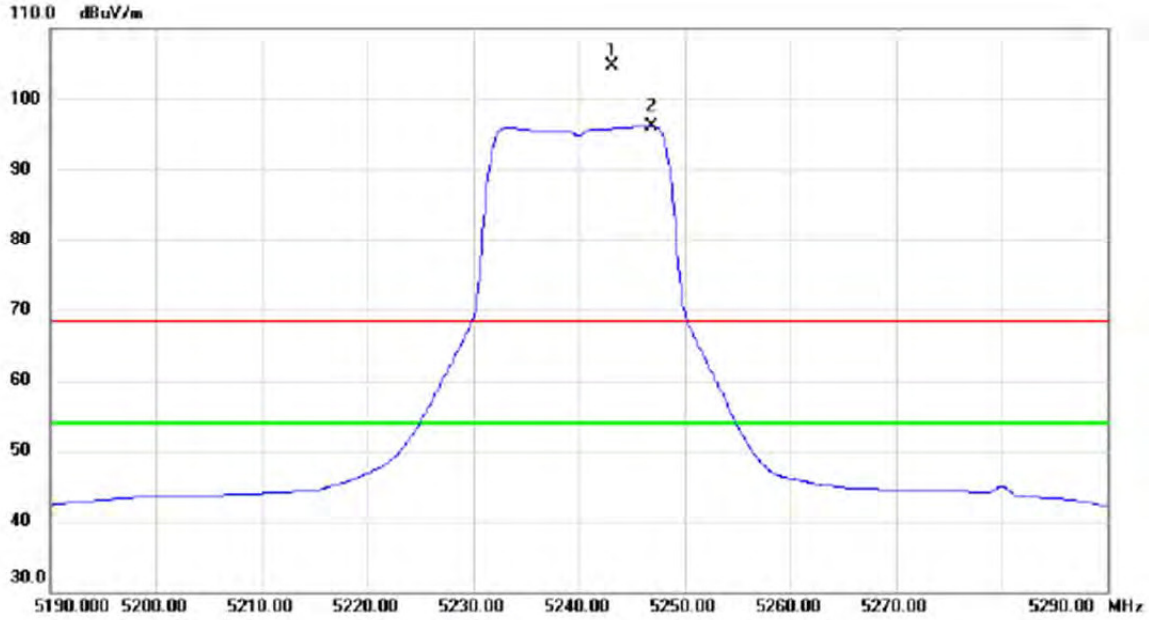
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10399.95	38.92	13.80	52.72	68.30	-15.58	peak	
2	*	10399.90	26.66	13.80	40.46	54.00	-13.54	AVG	

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

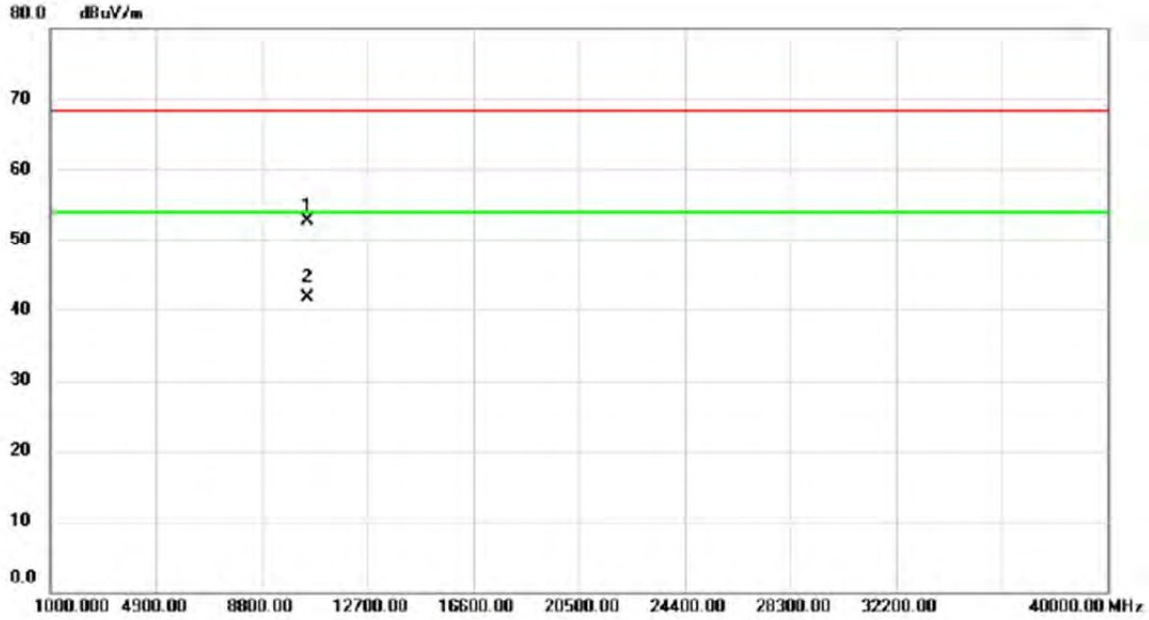
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5243.200	64.26	40.41	104.67	68.30	36.37	peak	No Limit
2	*	5246.900	55.66	40.42	96.08	54.00	42.08	AVG	No Limit

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

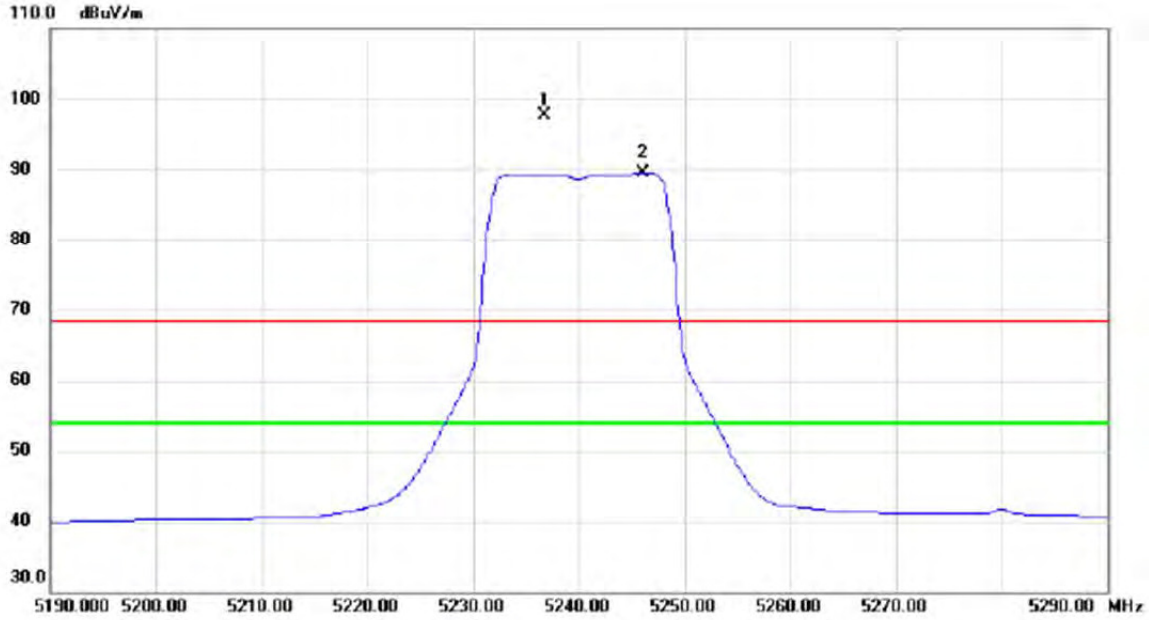
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10480.62	39.06	13.70	52.76	68.30	-15.54	peak	
2	*	10481.04	27.91	13.70	41.61	54.00	-12.39	AVG	

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

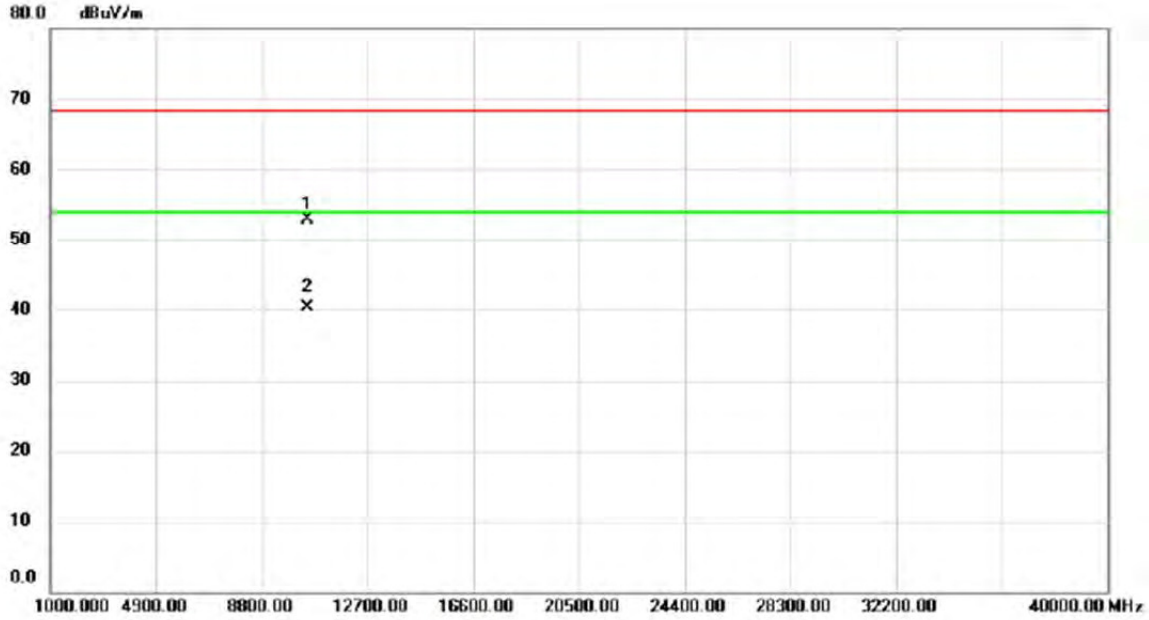
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5236.700	57.34	40.40	97.74	68.30	29.44	peak	No Limit
2	*	5246.000	49.03	40.42	89.45	54.00	35.45	AVG	No Limit

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

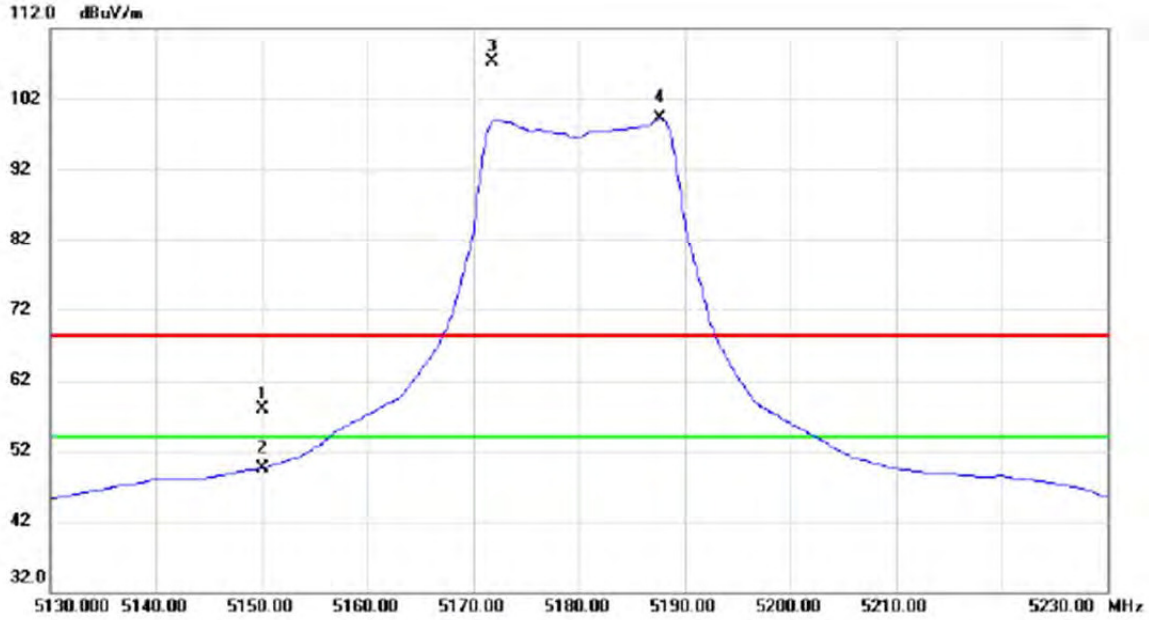
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10480.68	39.26	13.70	52.96	68.30	-15.34	peak	
2	*	10480.64	26.62	13.70	40.32	54.00	-13.68	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	17.60	40.22	57.82	68.30	-10.48	peak	
2		5150.000	9.34	40.22	49.56	54.00	-4.44	AVG	
3	X	5171.800	67.01	40.26	107.27	68.30	38.97	peak	No Limit
4	*	5187.700	58.91	40.30	99.21	54.00	45.21	AVG	No Limit

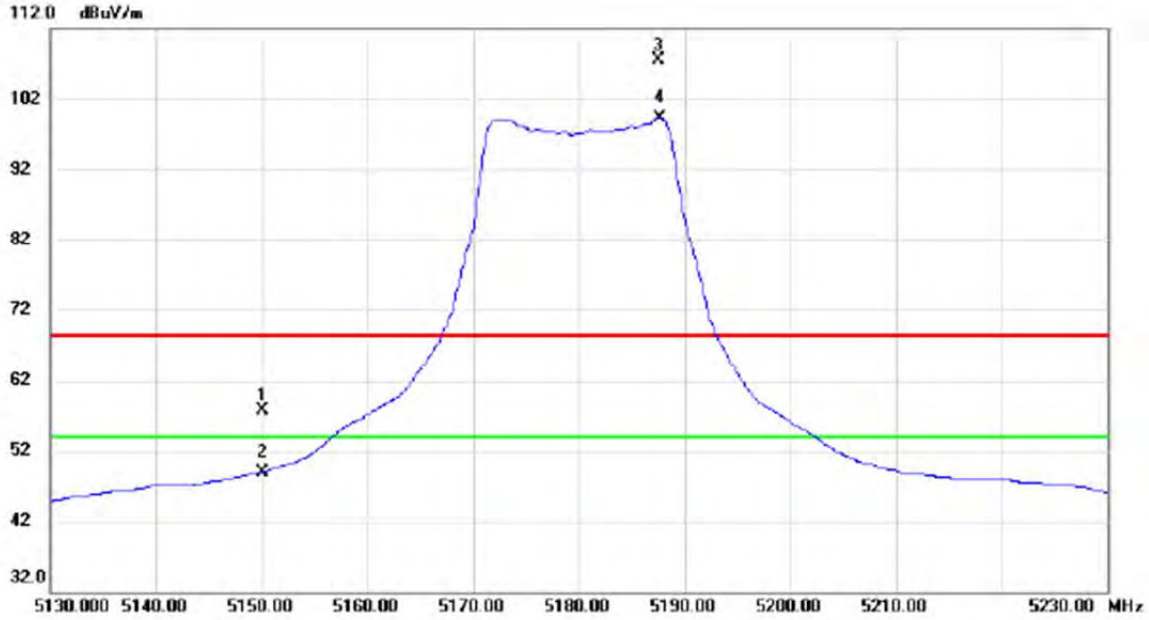
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10360.02	37.35	13.85	51.20	68.30	-17.10	peak	
2	*	10360.08	25.12	13.85	38.97	54.00	-15.03	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180MHz

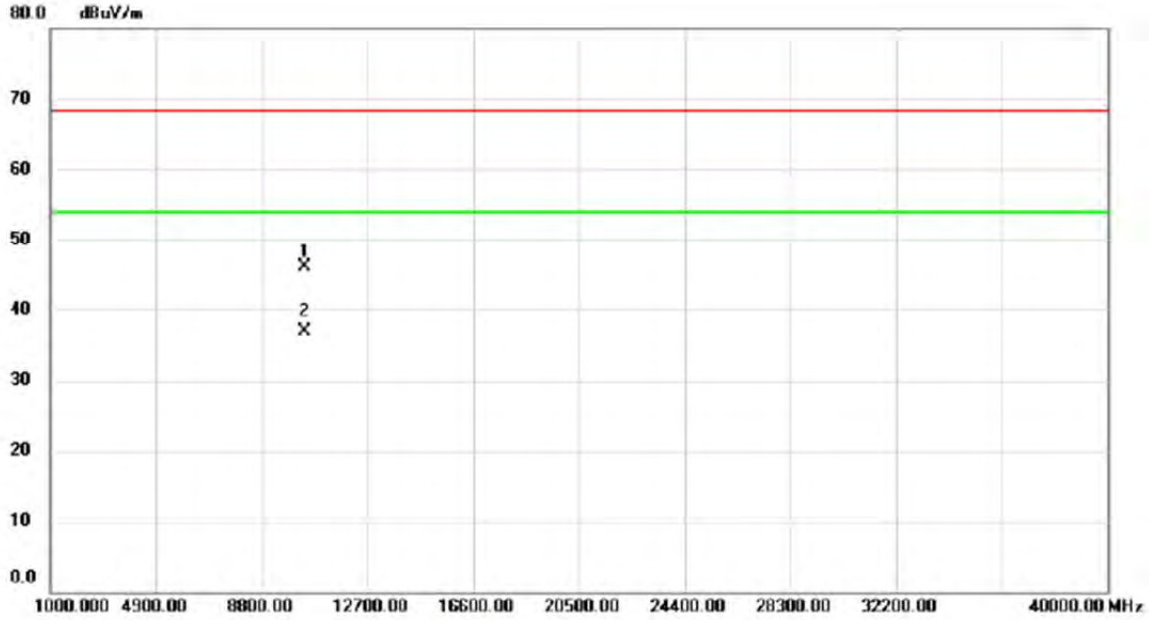
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	17.39	40.22	57.61	68.30	-10.69	peak	
2		5150.000	8.77	40.22	48.99	54.00	-5.01	AVG	
3	X	5187.500	67.22	40.30	107.52	68.30	39.22	peak	No Limit
4	*	5187.600	59.05	40.30	99.35	54.00	45.35	AVG	No Limit

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180MHz

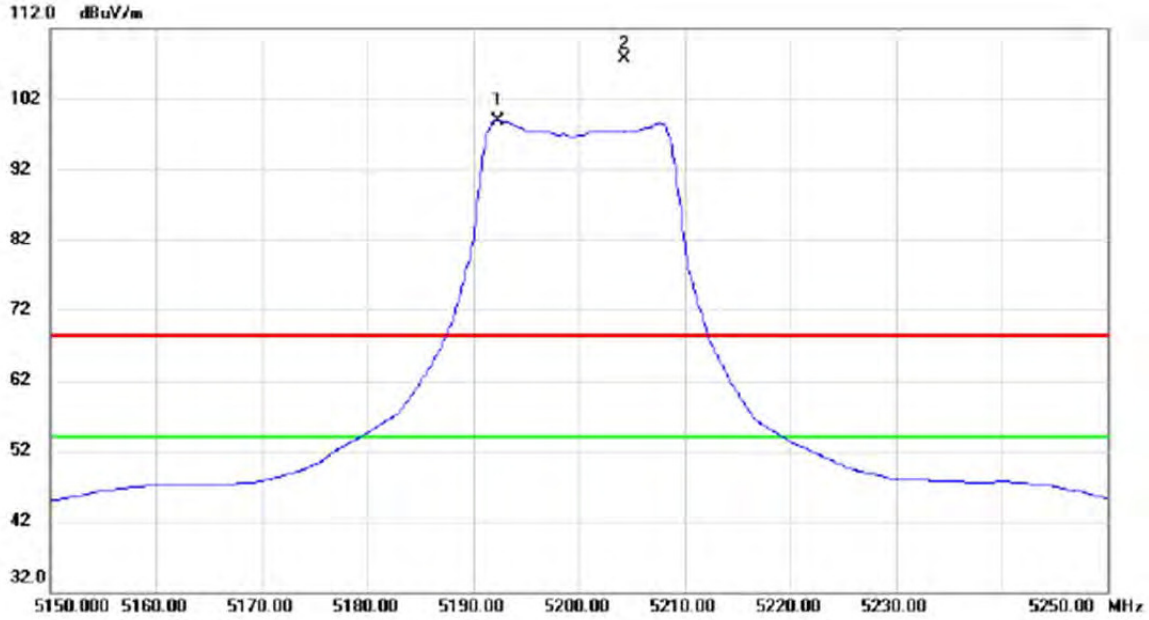
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10360.25	32.35	13.85	46.20	68.30	-22.10	peak	
2	*	10360.35	23.15	13.85	37.00	54.00	-17.00	AVG	

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

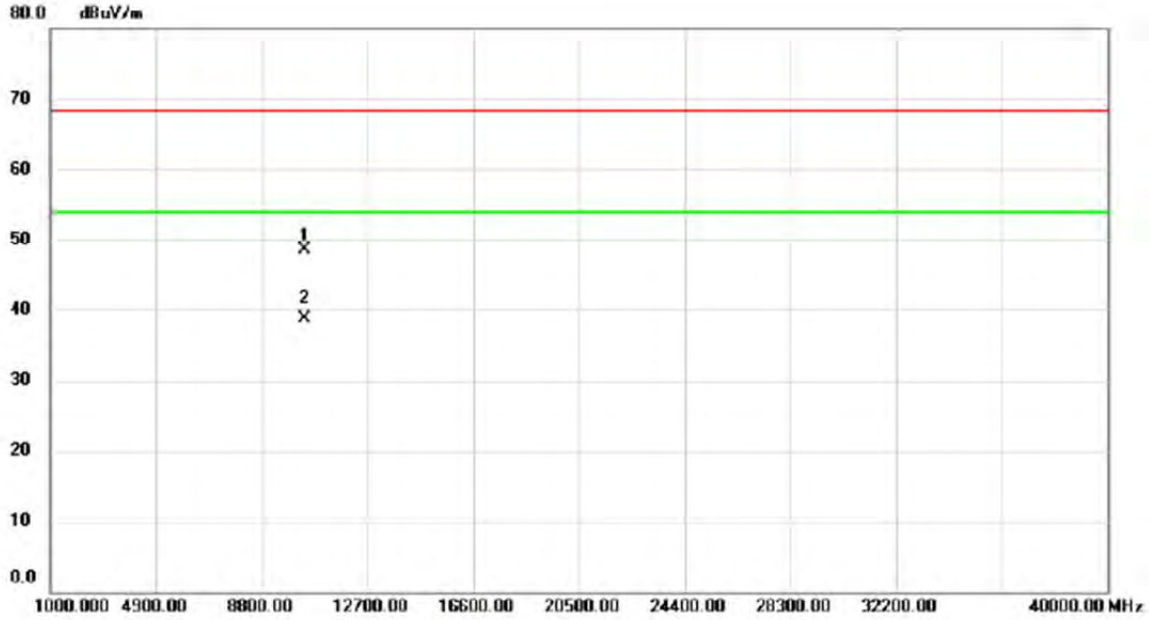
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5192.300	58.68	40.31	98.99	54.00	44.99	AVG	No Limit
2	X	5204.400	67.33	40.33	107.66	68.30	39.36	peak	No Limit

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

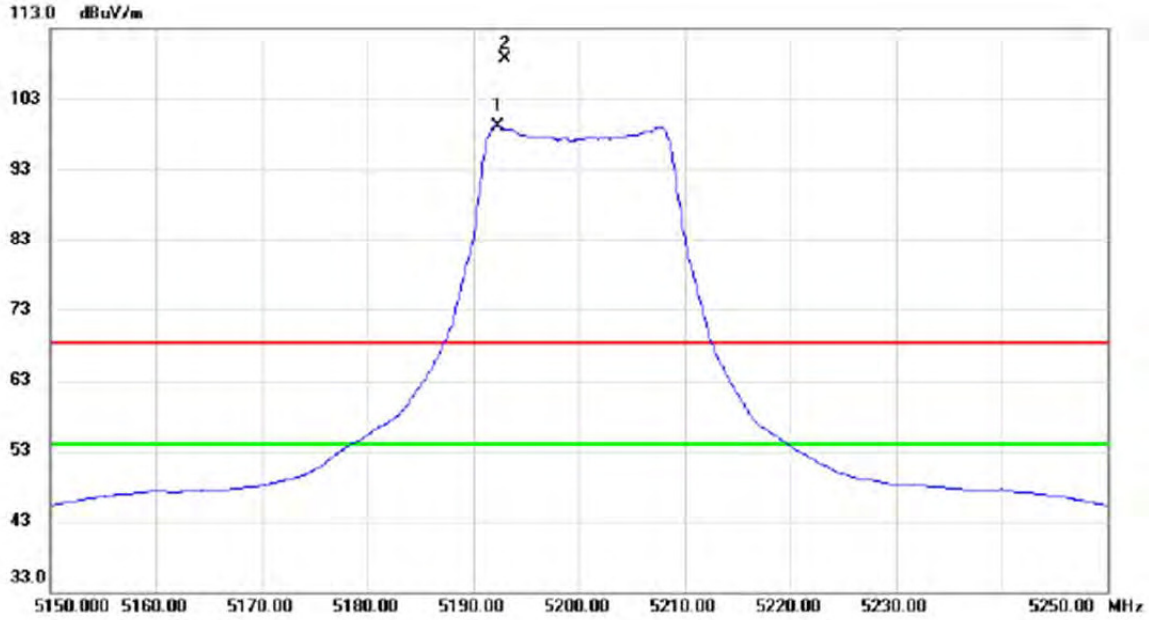
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10400.35	34.65	13.80	48.45	68.30	-19.85	peak	
2	*	10400.17	24.87	13.80	38.67	54.00	-15.33	AVG	

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

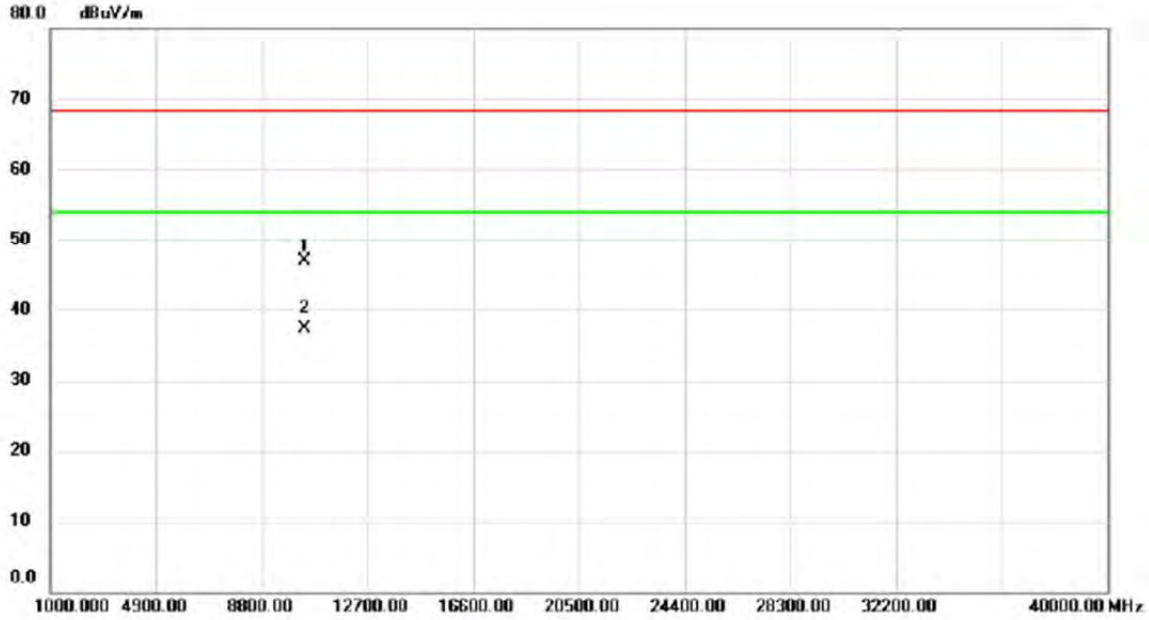
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5192.300	58.83	40.31	99.14	54.00	45.14	AVG	No Limit
2	X	5193.000	68.32	40.31	108.63	68.30	40.33	peak	No Limit

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

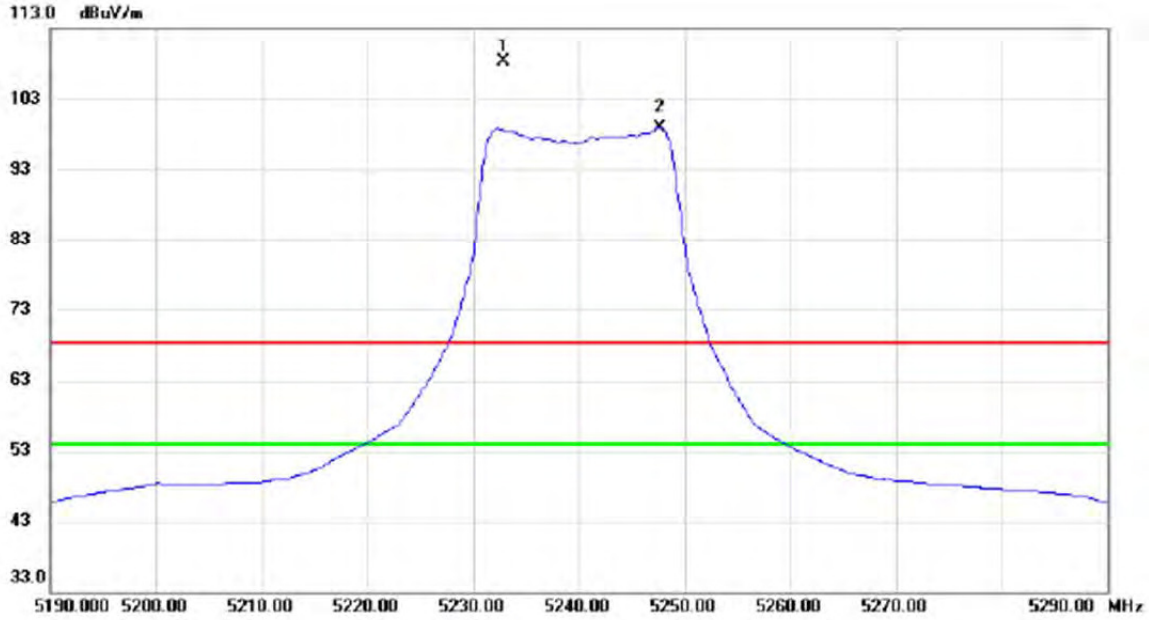
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10400.22	33.02	13.80	46.82	68.30	-21.48	peak	
2	*	10400.22	23.54	13.80	37.34	54.00	-16.66	AVG	

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

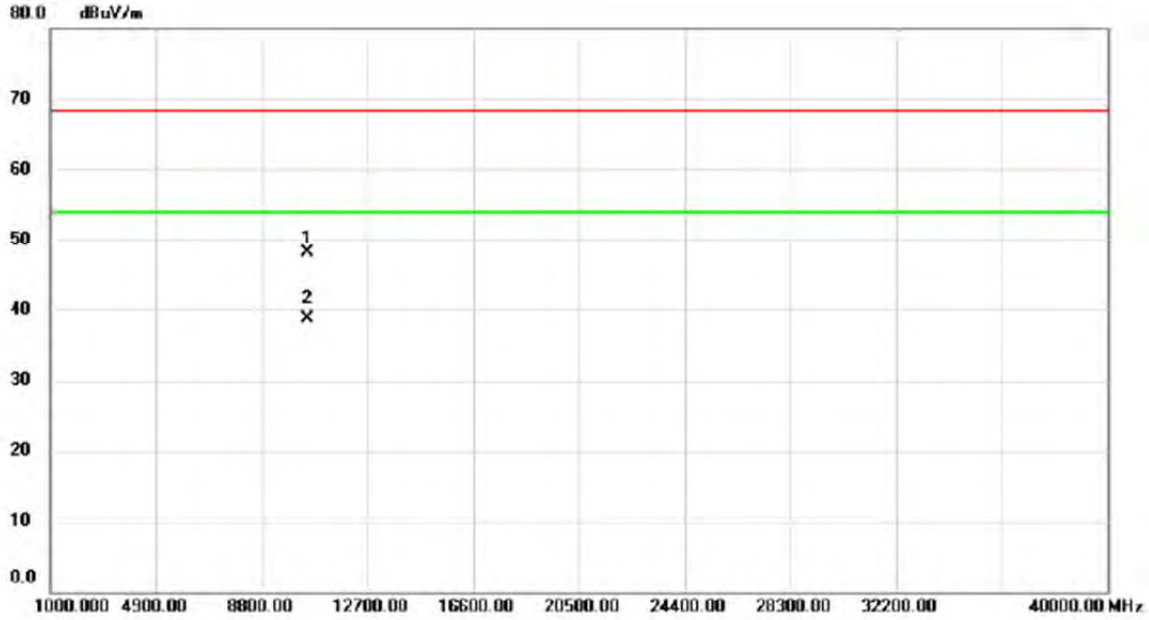
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5232.900	67.91	40.39	108.30	68.30	40.00	peak	No Limit
2	*	5247.600	58.51	40.42	98.93	54.00	44.93	AVG	No Limit

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

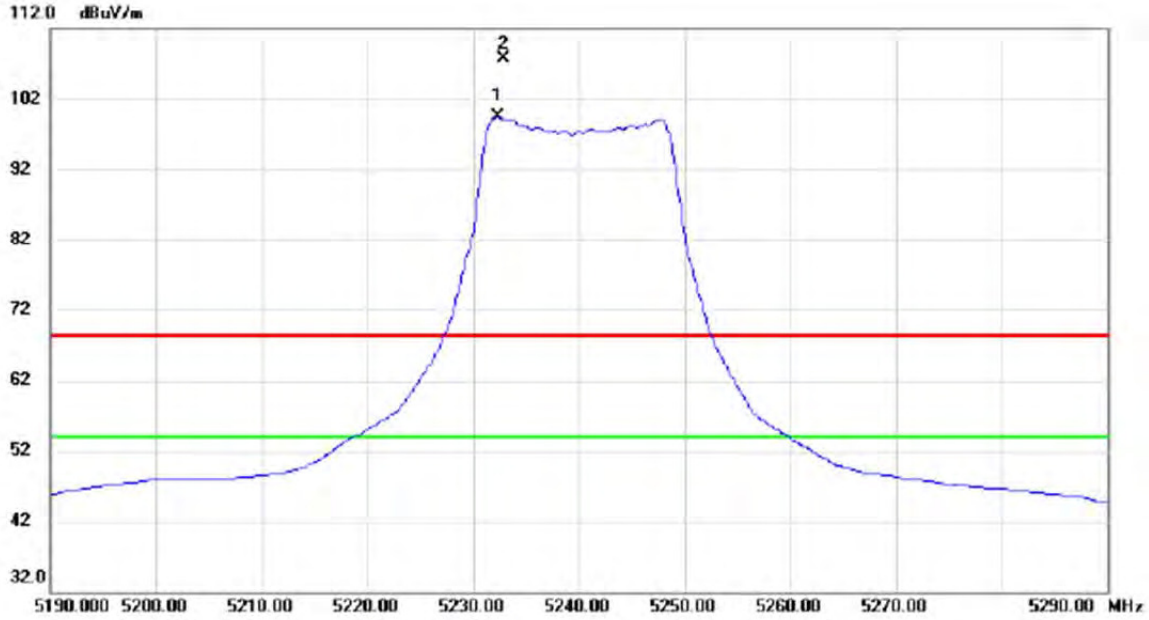
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10480.31	34.34	13.69	48.03	68.30	-20.27	peak	
2	*	10480.31	25.10	13.69	38.79	54.00	-15.21	AVG	

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

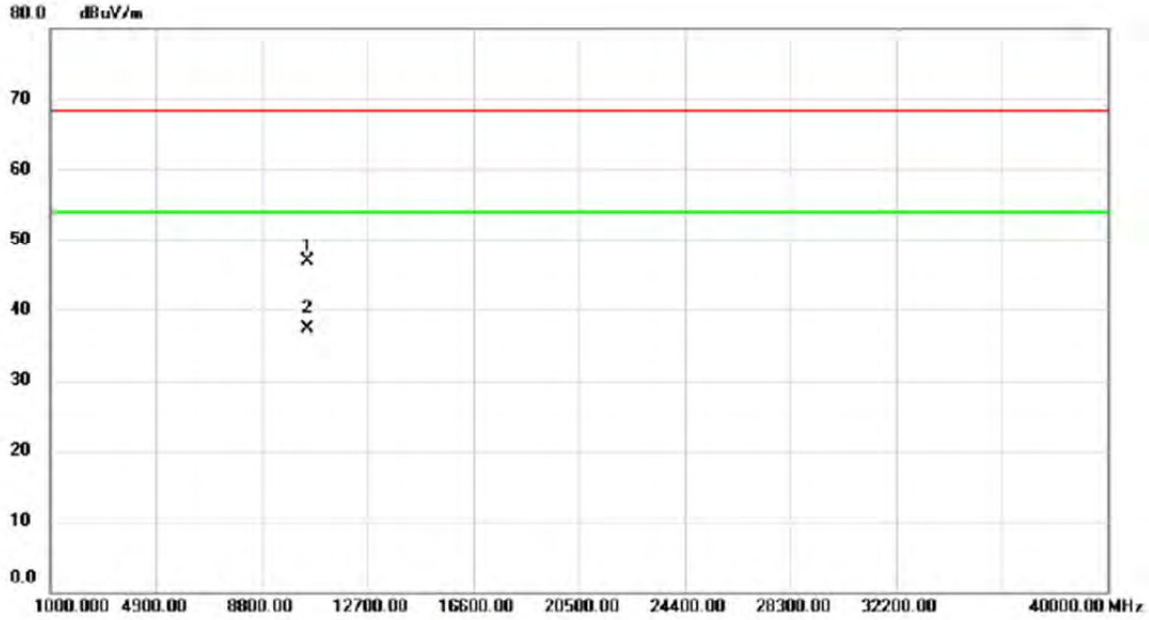
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5232.300	59.03	40.39	99.42	54.00	45.42	AVG	No Limit
2	X	5232.900	67.27	40.39	107.66	68.30	39.36	peak	No Limit

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

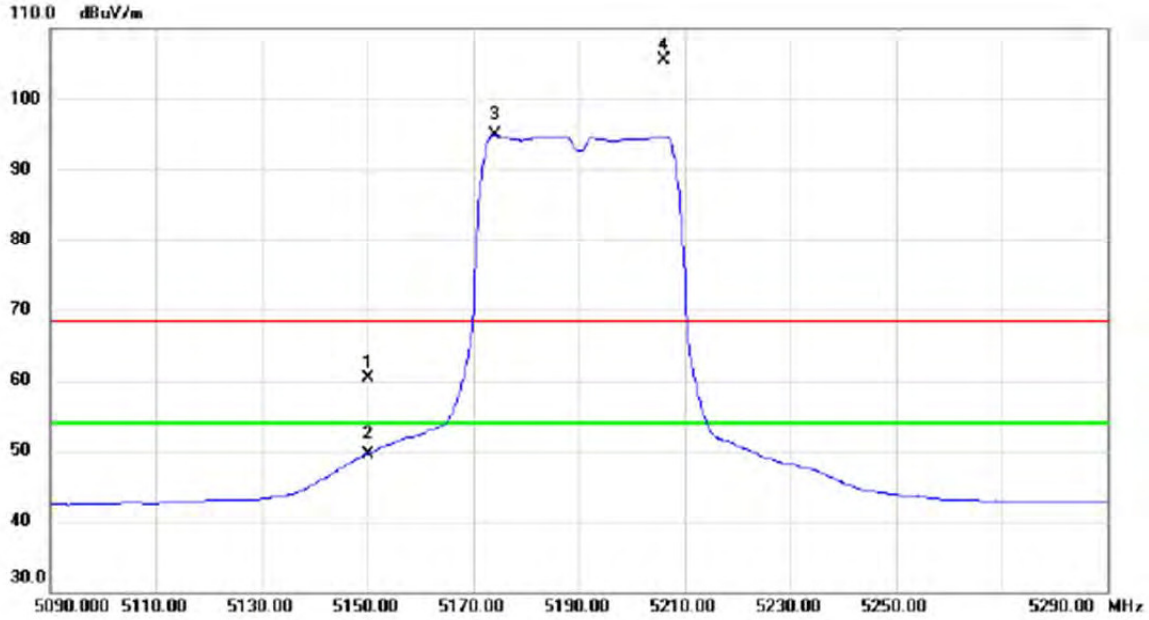
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10480.36	33.22	13.69	46.91	68.30	-21.39	peak	
2	*	10480.66	23.70	13.70	37.40	54.00	-16.60	AVG	

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

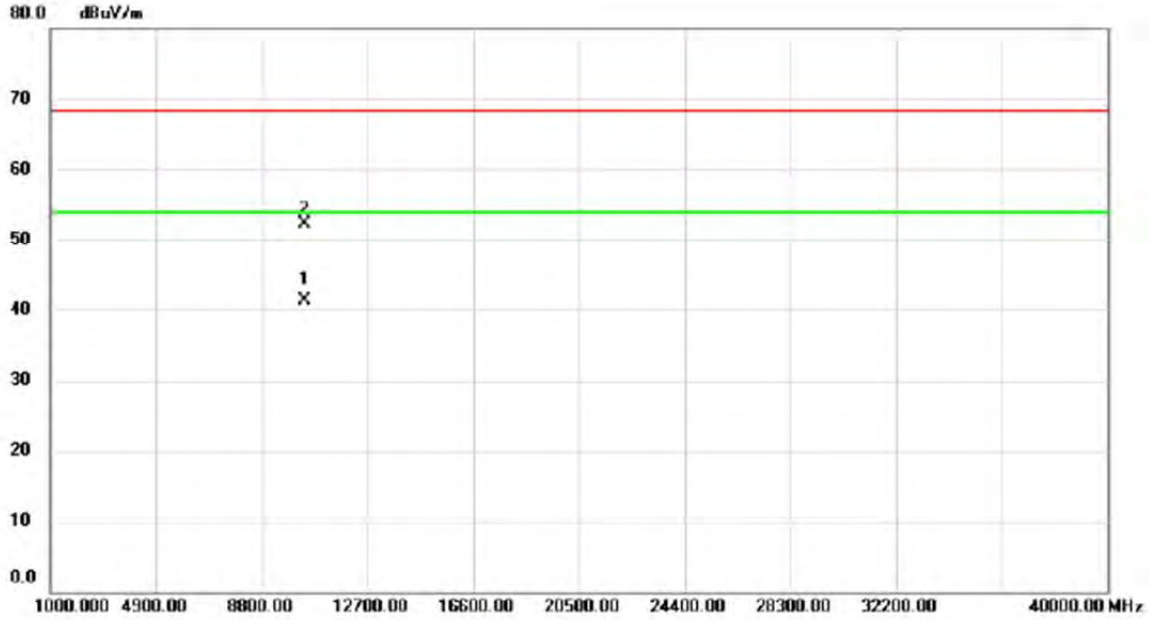
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	20.04	40.22	60.26	68.30	-8.04	peak	
2		5150.000	9.37	40.22	49.59	54.00	-4.41	AVG	
3	*	5174.000	54.60	40.27	94.87	54.00	40.87	AVG	No Limit
4	X	5206.200	65.19	40.33	105.52	68.30	37.22	peak	No Limit

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

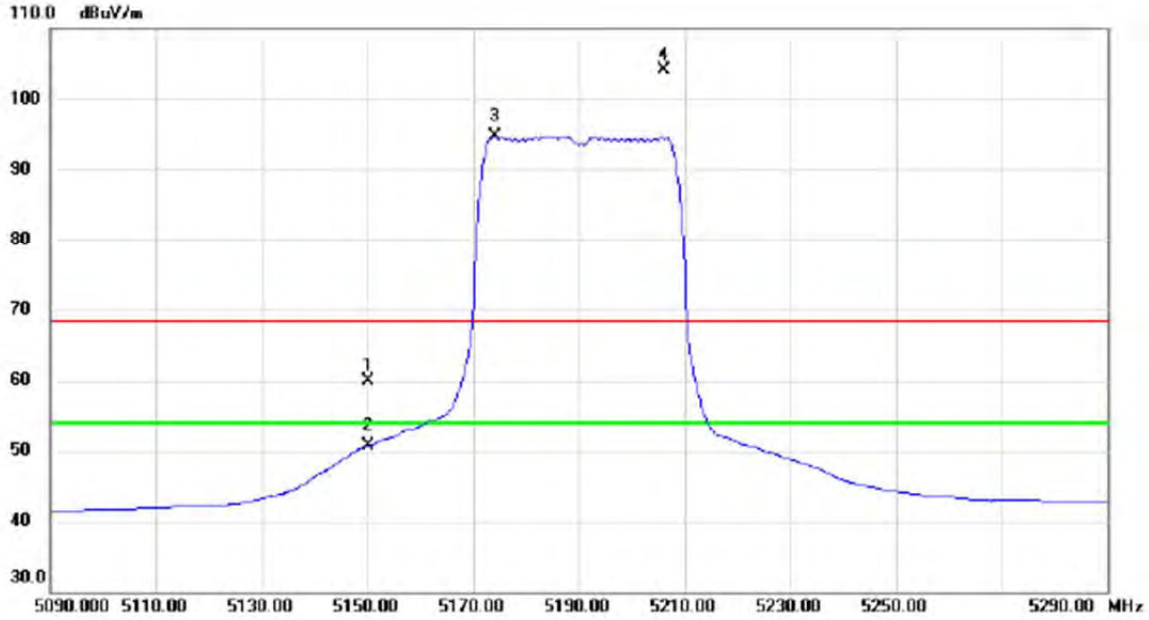
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10381.66	27.57	13.82	41.39	54.00	-12.61	AVG	
2		10381.46	38.46	13.82	52.28	68.30	-16.02	peak	

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

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	19.67	40.22	59.89	68.30	-8.41	peak	
2		5150.000	10.44	40.22	50.66	54.00	-3.34	AVG	
3	*	5174.200	54.46	40.27	94.73	54.00	40.73	AVG	No Limit
4	X	5206.200	63.83	40.33	104.16	68.30	35.86	peak	No Limit

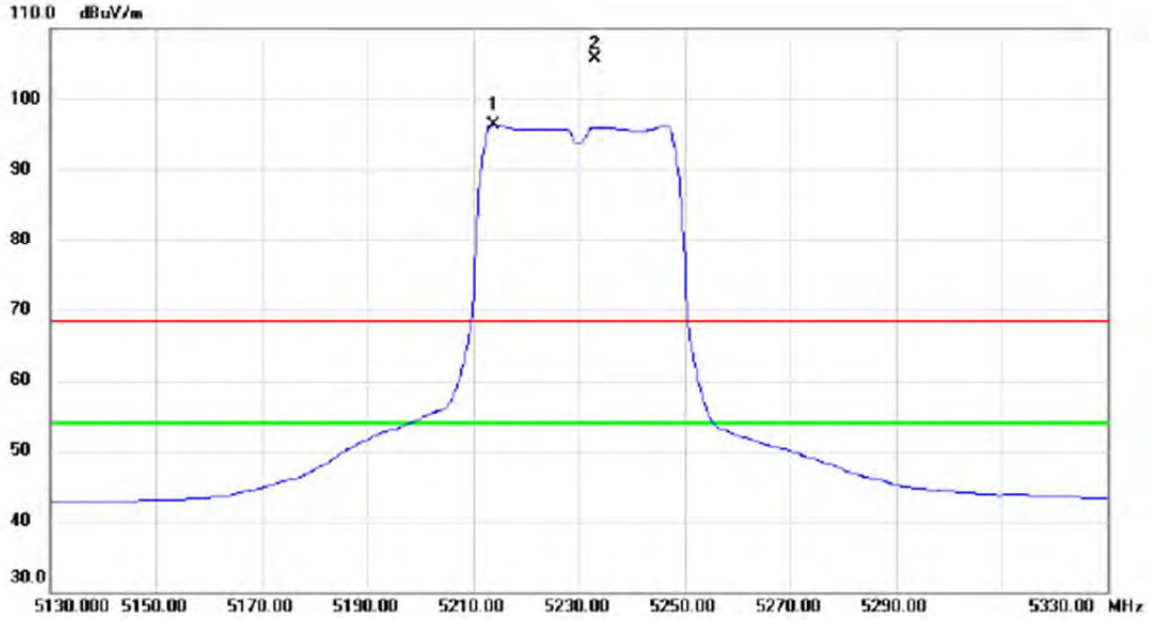
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5190MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10380.00	29.23	13.83	43.06	54.00	-10.94	AVG	
2		10380.43	41.35	13.83	55.18	68.30	-13.12	peak	

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5230MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5213.800	55.89	40.35	96.24	54.00	42.24	AVG	No Limit
2	X	5233.200	65.39	40.39	105.78	68.30	37.48	peak	No Limit

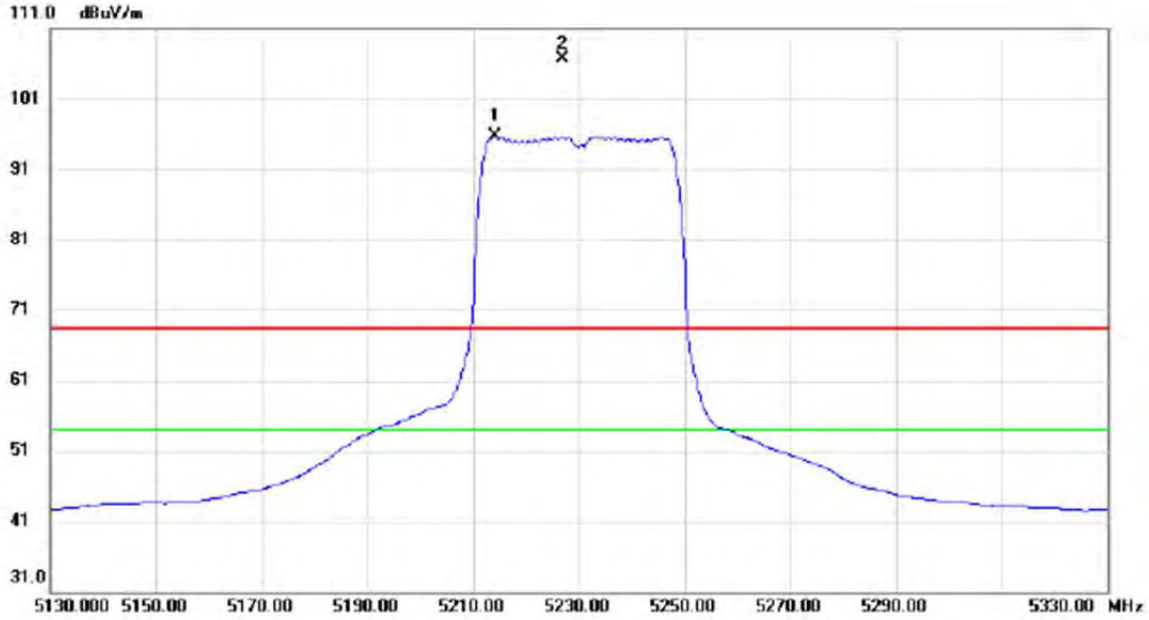
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5230MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10460.12	27.16	13.71	40.87	54.00	-13.13	AVG	
2		10460.61	39.89	13.71	53.60	68.30	-14.70	peak	

Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5230MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5214.200	55.37	40.35	95.72	54.00	41.72	AVG	No Limit
2	X	5226.800	66.24	40.38	106.62	68.30	38.32	peak	No Limit

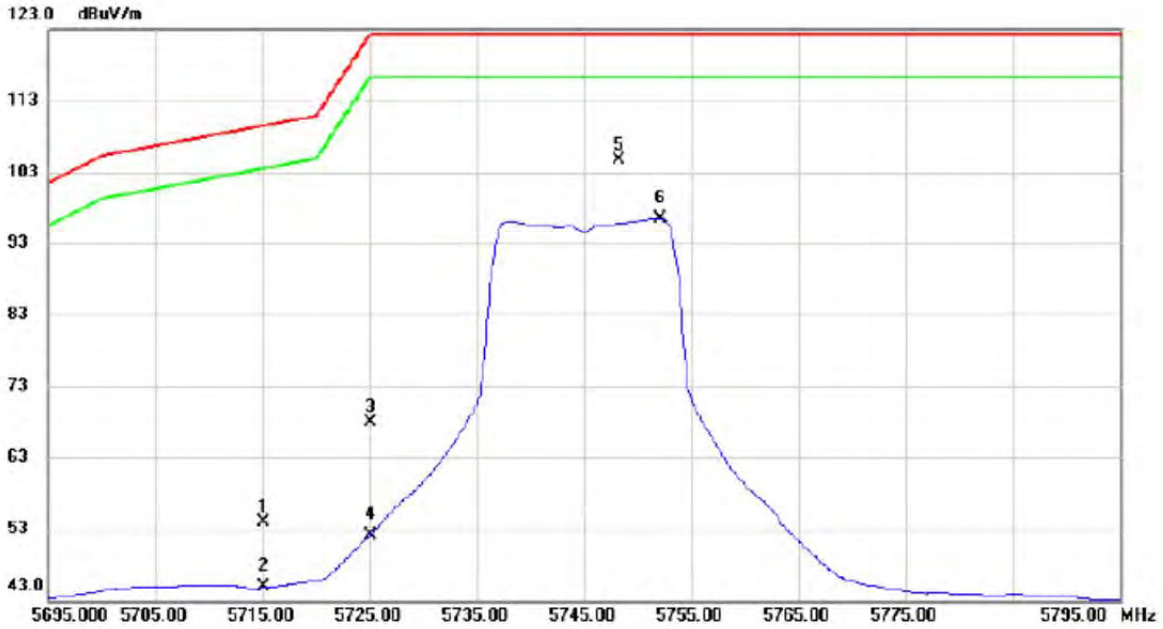
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N40 Mode 5230MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10460.49	41.56	13.71	55.27	68.30	-13.03	peak	
2	*	10460.69	30.55	13.71	44.26	54.00	-9.74	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5745MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5715.000	12.64	41.25	53.89	109.50	-55.61	peak	
2		5715.000	3.56	41.25	44.81	109.50	-64.69	AVG	
3		5725.000	26.57	41.27	67.84	122.30	-54.46	peak	
4		5725.000	10.84	41.27	52.11	122.30	-70.19	AVG	
5	*	5748.300	63.33	41.30	104.63	122.30	-17.67	peak	
6		5752.100	55.26	41.30	96.56	122.30	-25.74	AVG	

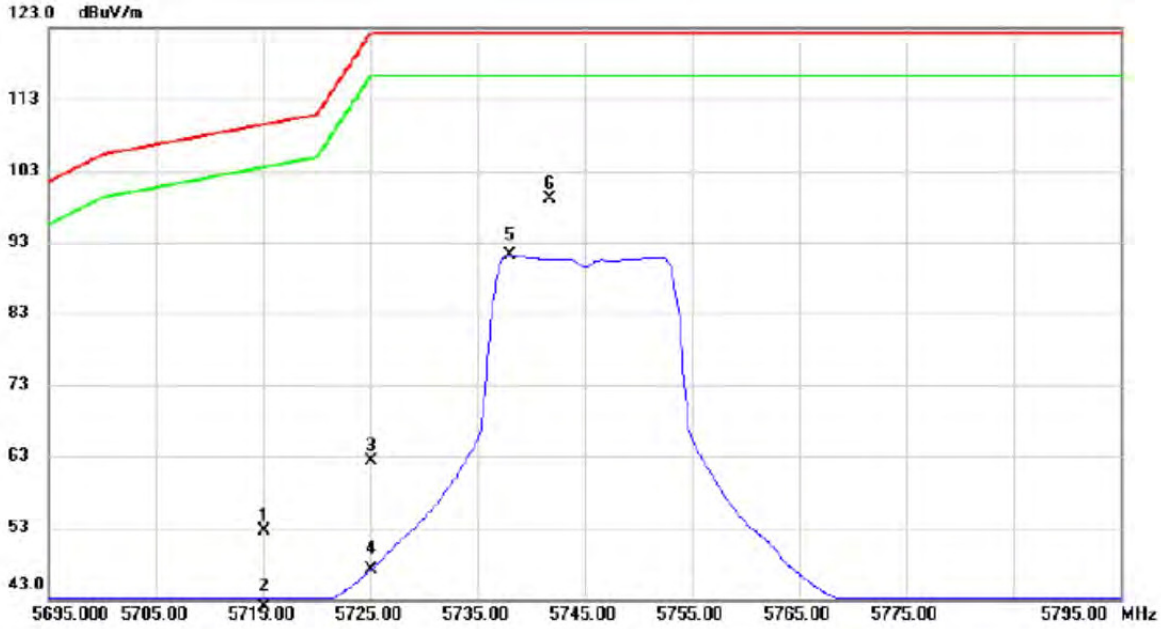
Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5745MHz

Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		11490.26	38.91	16.91	55.82	68.30	-12.48	peak	
2	*	11490.11	27.25	16.91	44.16	54.00	-9.84	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5745MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5715.000	11.19	41.25	52.44	109.50	-57.06	peak	
2		5715.000	0.68	41.25	41.93	109.50	-67.57	AVG	
3		5725.000	21.05	41.27	62.32	122.30	-59.98	peak	
4		5725.000	5.77	41.27	47.04	122.30	-75.26	AVG	
5		5738.000	49.80	41.28	91.08	122.30	-31.22	AVG	
6	*	5741.700	57.81	41.29	99.10	122.30	-23.20	peak	

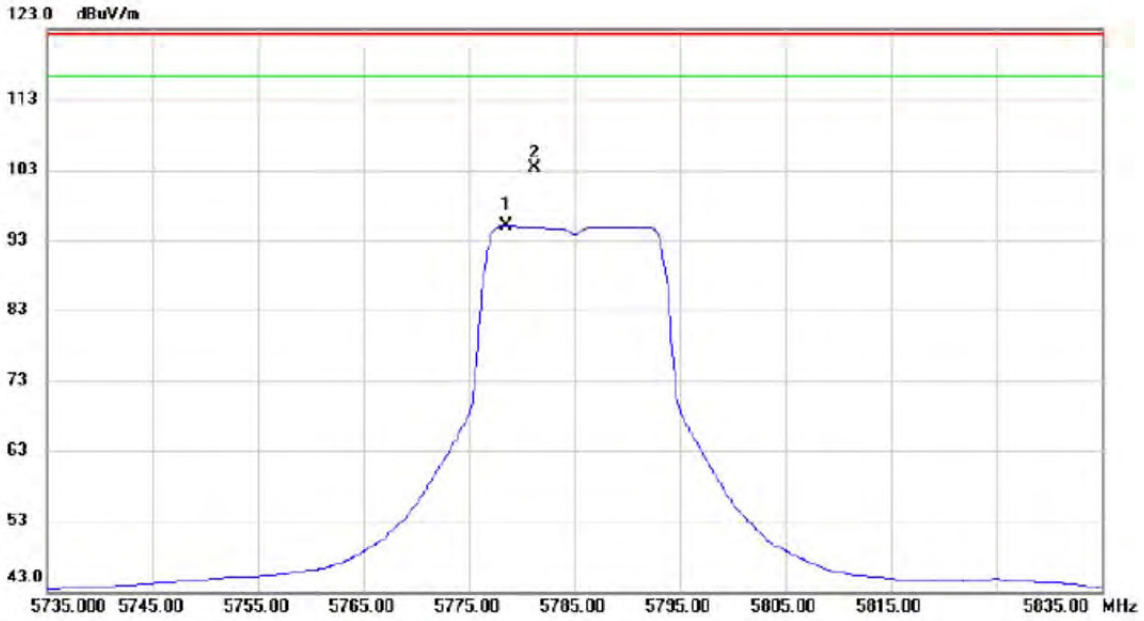
Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5745MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	11490.347	25.62	16.91	42.53	54.00	-11.47	AVG	
2		11490.569	37.34	16.91	54.25	68.30	-14.05	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5785MHz

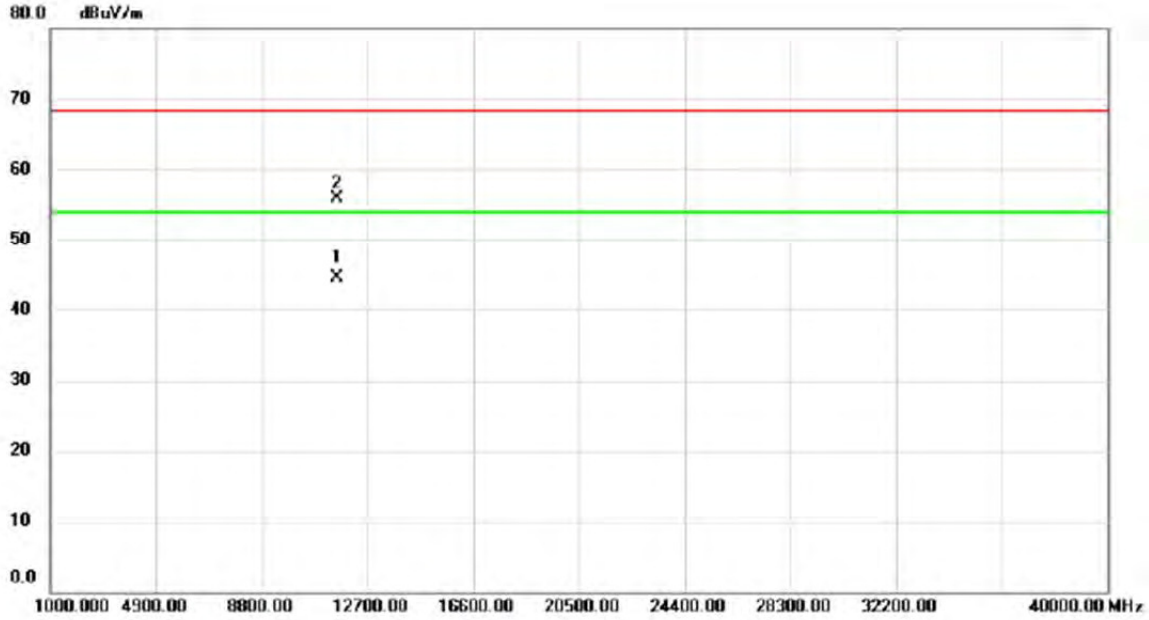
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5778.500	53.74	41.34	95.08	122.30	-27.22	AVG	
2	*	5781.200	62.05	41.34	103.39	122.30	-18.91	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5785MHz

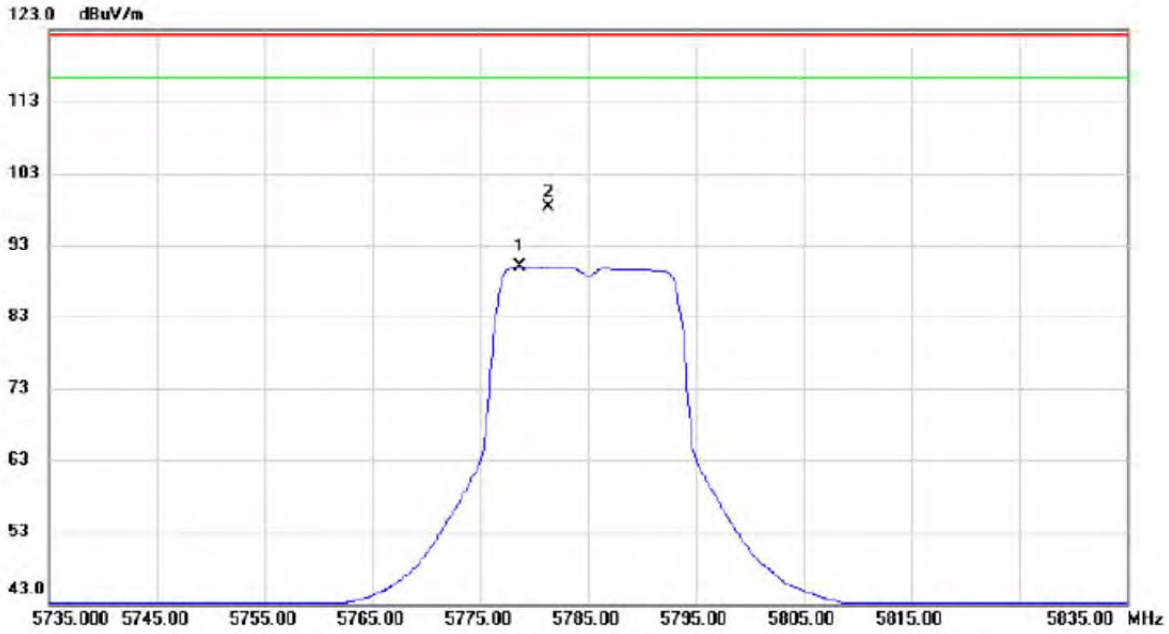
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	11570.25	27.36	17.05	44.41	54.00	-9.59	AVG	
2		11570.36	38.76	17.05	55.81	68.30	-12.49	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5785MHz

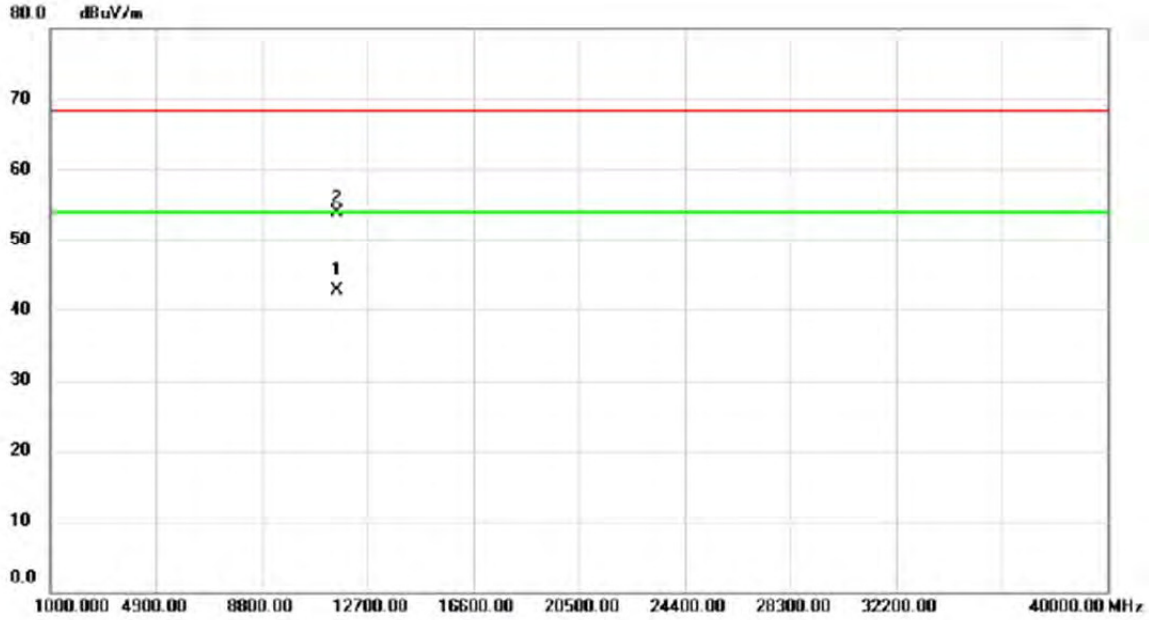
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5778.700	48.56	41.34	89.90	122.30	-32.40	AVG	
2	*	5781.400	56.90	41.34	98.24	122.30	-24.06	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5785MHz

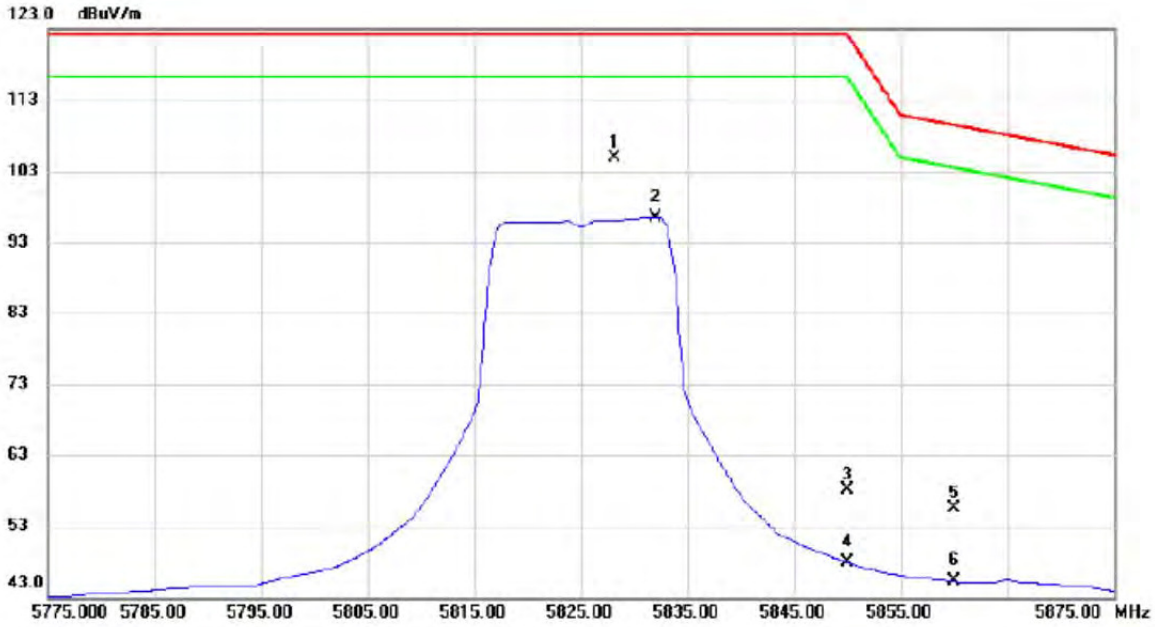
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	11570.05	25.64	17.05	42.69	54.00	-11.31	AVG	
2		11570.22	36.76	17.05	53.81	68.30	-14.49	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5825MHz

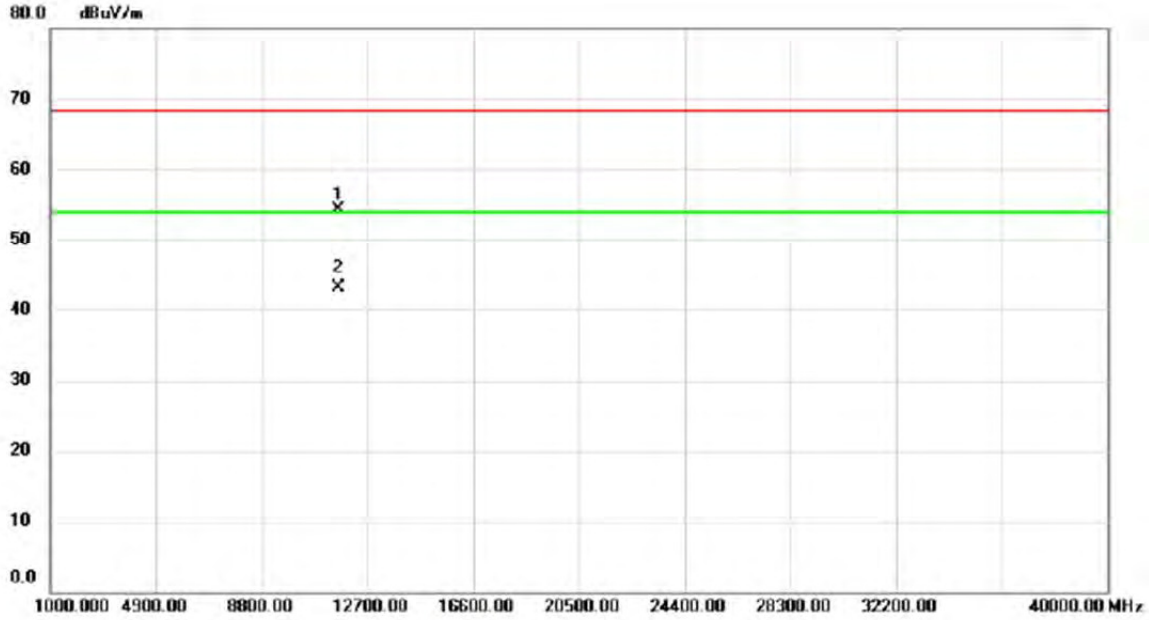
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5828.200	63.50	41.41	104.91	122.30	-17.39	peak	
2		5832.000	55.15	41.41	96.56	122.30	-25.74	AVG	
3		5850.000	16.65	41.44	58.09	122.30	-64.21	peak	
4		5850.000	6.46	41.44	47.90	122.30	-74.40	AVG	
5		5860.000	13.97	41.45	55.42	109.50	-54.08	peak	
6		5860.000	3.84	41.45	45.29	109.50	-64.21	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5825MHz

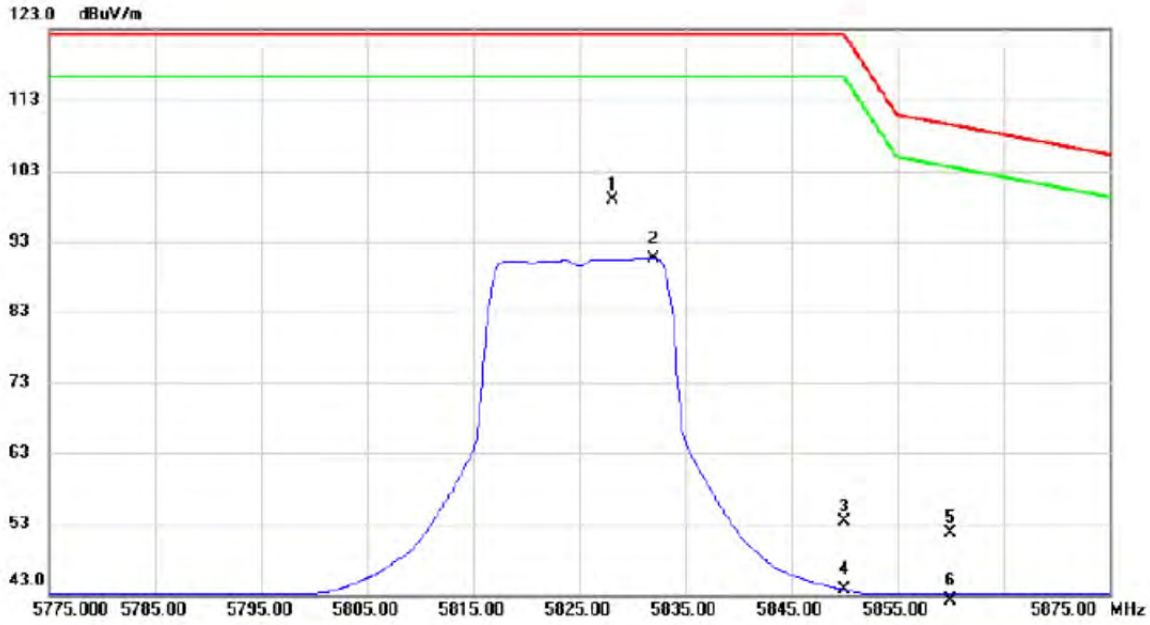
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		11650.56	37.08	17.17	54.25	68.30	-14.05	peak	
2	*	11650.13	25.89	17.17	43.06	54.00	-10.94	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5825MHz

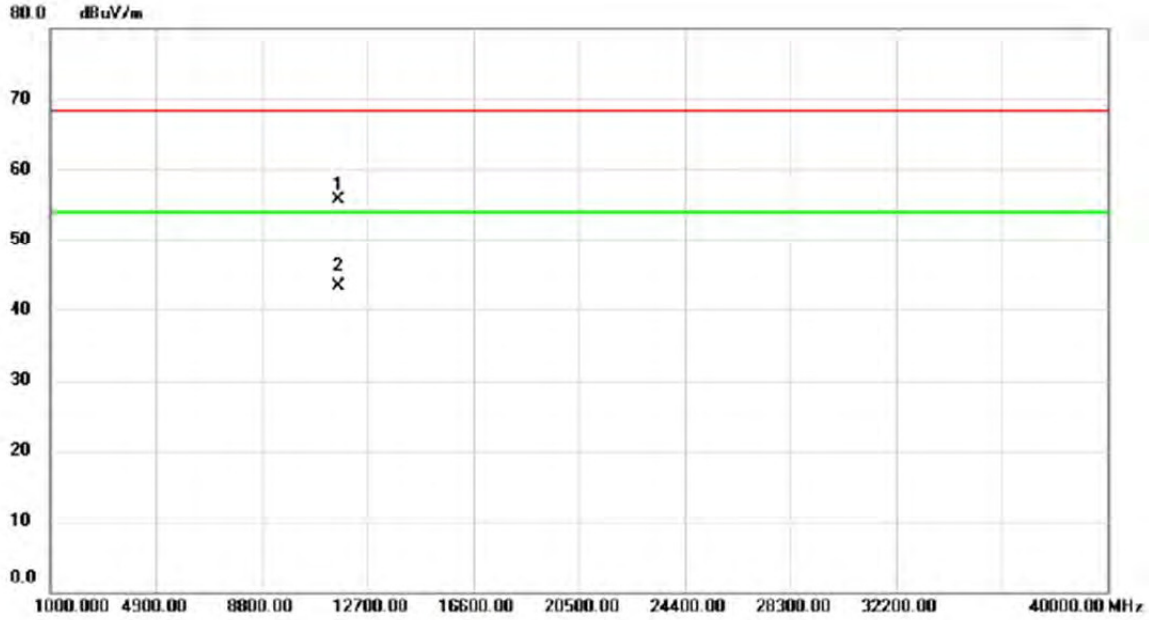
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5828.200	57.50	41.41	98.91	122.30	-23.39	peak	
2		5832.000	49.12	41.41	90.53	122.30	-31.77	AVG	
3		5850.000	11.90	41.44	53.34	122.30	-68.96	peak	
4		5850.000	2.24	41.44	43.68	122.30	-78.62	AVG	
5		5860.000	10.26	41.45	51.71	109.50	-57.79	peak	
6		5860.000	0.74	41.45	42.19	109.50	-67.31	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX A Mode 5825MHz

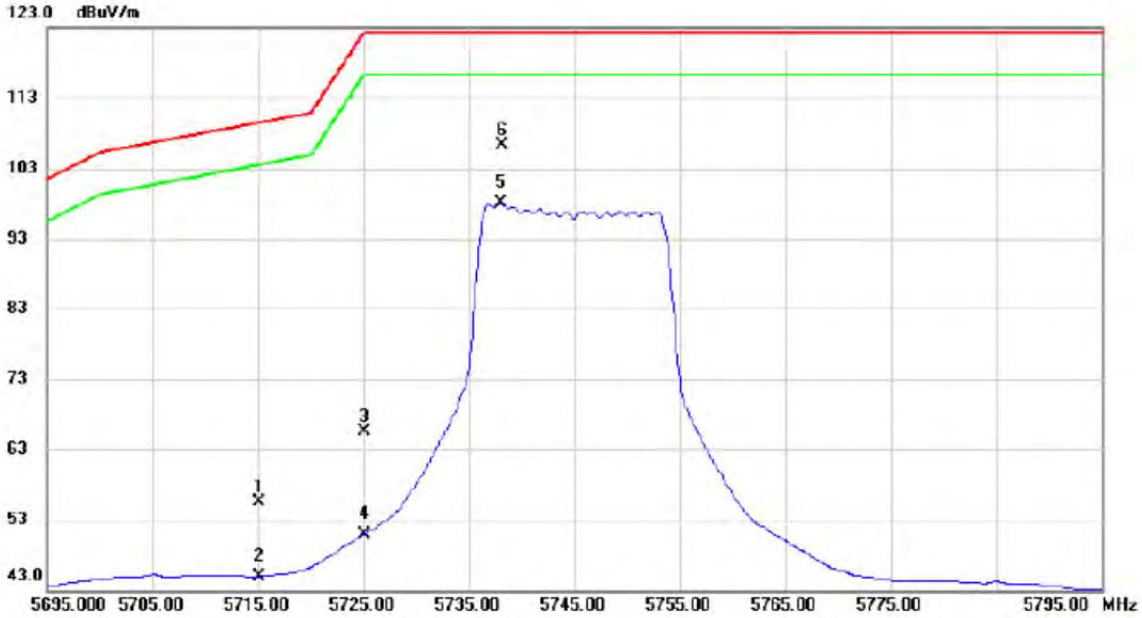
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		11650.36	38.62	17.17	55.79	68.30	-12.51	peak	
2	*	11650.68	26.07	17.17	43.24	54.00	-10.76	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX N20 Mode 5745MHz

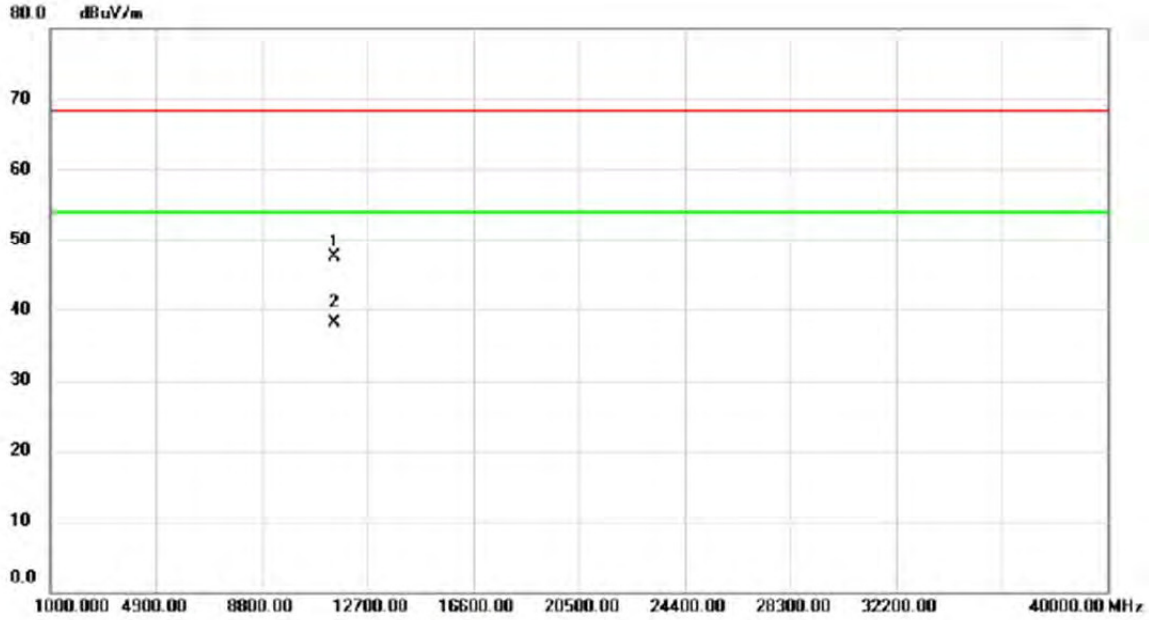
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5715.000	14.17	41.25	55.42	109.50	-54.08	peak	
2		5715.000	3.71	41.25	44.96	109.50	-64.54	AVG	
3		5725.000	24.31	41.27	65.58	122.30	-56.72	peak	
4		5725.000	9.69	41.27	50.96	122.30	-71.34	AVG	
5		5738.000	56.78	41.28	98.06	122.30	-24.24	AVG	
6	*	5738.200	64.96	41.28	106.24	122.30	-16.06	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX N20 Mode 5745MHz

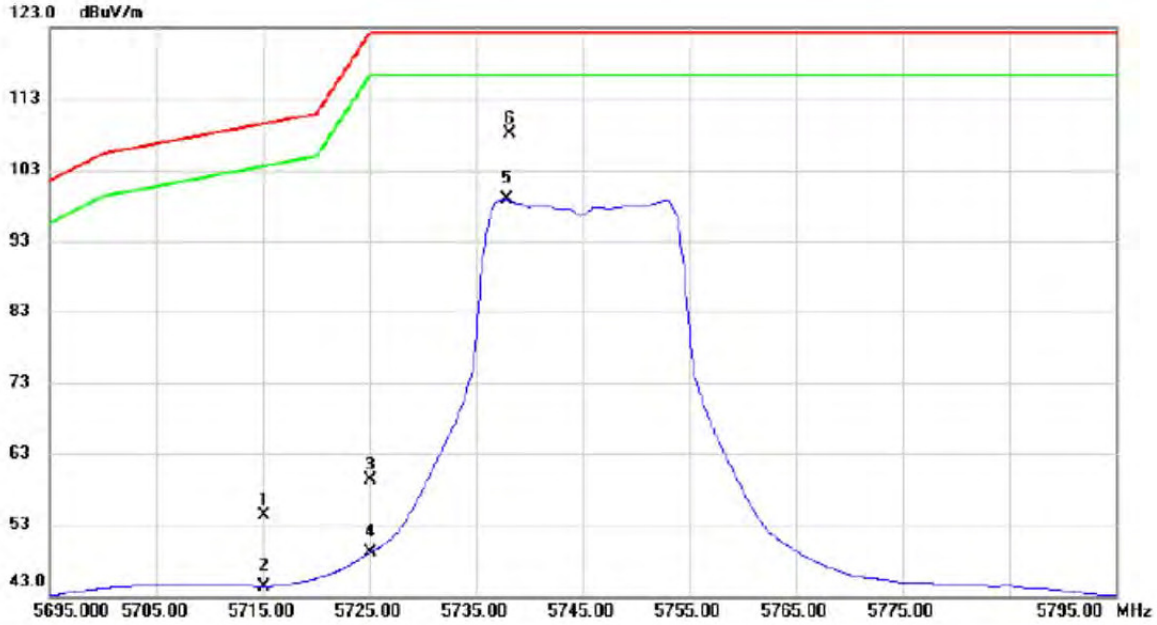
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		11490.13	30.65	16.91	47.56	68.30	-20.74	peak	
2	*	11490.13	21.26	16.91	38.17	54.00	-15.83	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX N20 Mode 5745MHz

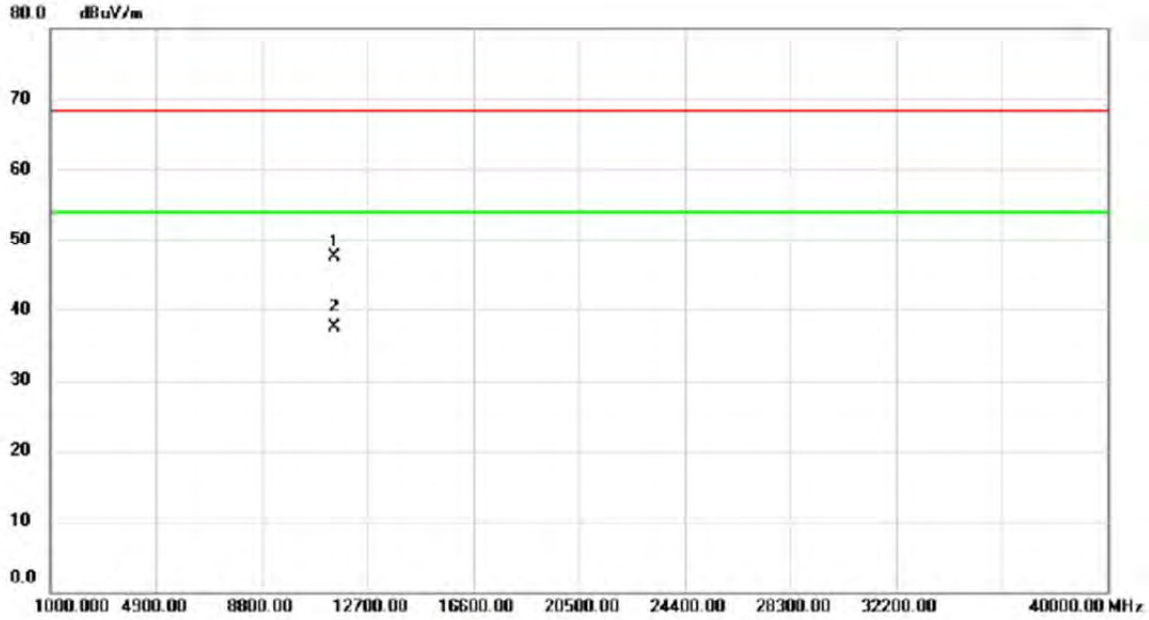
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5715.000	12.97	41.25	54.22	109.50	-55.28	peak	
2		5715.000	3.01	41.25	44.26	109.50	-65.24	AVG	
3		5725.000	18.02	41.27	59.29	122.30	-63.01	peak	
4		5725.000	7.79	41.27	49.06	122.30	-73.24	AVG	
5		5737.800	57.53	41.28	98.81	122.30	-23.49	AVG	
6	*	5738.200	66.84	41.28	108.12	122.30	-14.18	peak	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX N20 Mode 5745MHz

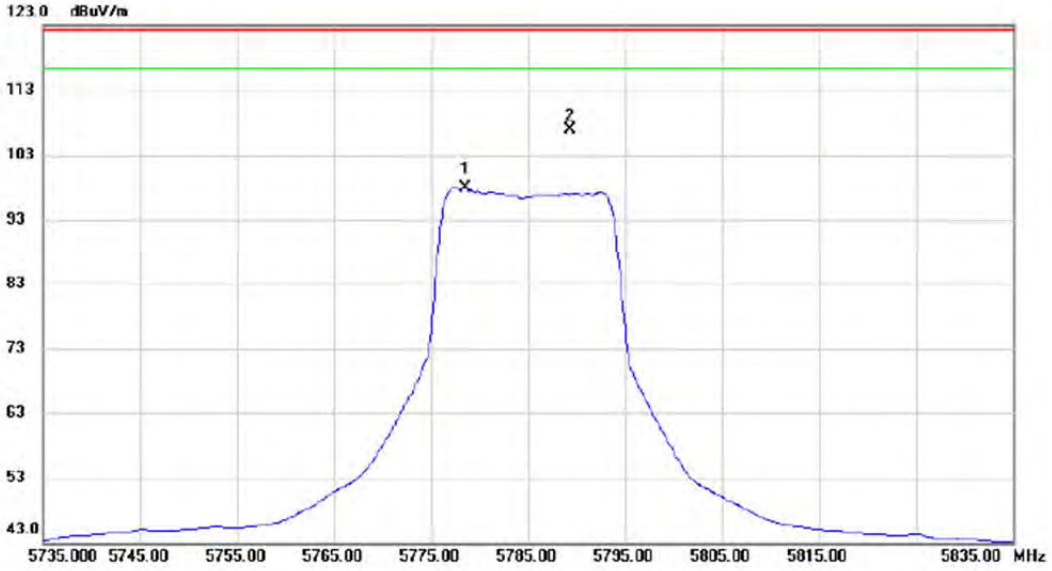
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		11490.77	30.54	16.91	47.45	68.30	-20.85	peak	
2	*	11490.34	20.64	16.91	37.55	54.00	-16.45	AVG	

Orthogonal Axis:	X
Test Mode:	UNII-3/TX N20 Mode 5785MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5778.500	56.54	41.34	97.88	122.30	-24.42	AVG	
2	*	5789.400	65.63	41.35	106.98	122.30	-15.32	peak	