

FCC Radio Test Report

FCC ID: KA2AP1820A1

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

Project No. : 1809H005
Equipment : AC2000 Wi-Fi Range Extender,
AC2000 Mesh-Enabled Range Extender
Test Model : DAP-1820
Series Model : DRA-2060
Applicant : D-Link Corporation
Address : 17595 Mt. Herrmann, Fountain Valley, California,
United States 92708

Date of Receipt : Sep. 21, 2018
Date of Test : Sep. 26, 2018 ~ Dec. 09, 2018
Issued Date : Jan. 18, 2019
Tested by : BTL Inc.

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Certificate #5123.03

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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.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Jan. 18, 2019

1. GENERAL SUMMARY

Equipment : AC2000 Wi-Fi Range Extender,
AC2000 Mesh-Enabled Range Extender
Brand Name : D-Link
Test Model : DAP-1820
Series Model : DRA-2060
Applicant : D-Link Corporation.
Manufacturer : D-Link Corporation
Address : 17595 Mt. Herrmann, Fountain Valley, California, United States 92708
Date of Test : Sep. 26, 2018 ~ Dec. 09, 2018
Test Sample : Engineering Sample No.: B180900123
Standard(s) : FCC Part15, Subpart E(15.407) / ANSI C63.10-2013

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-2-1809H005) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

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

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart E(15.407)			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emissions	PASS	
15.407(a)	Spectrum Bandwidth	PASS	
15.407(a)	Maximum 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. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China.

BTL's Test Firm Registration Number for FCC: 476765

BTL's Designation Number for FCC: CN1241

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty figures shall be calculated according the methods described in the ETSI TR 100 028 and shall correspond to an expansion factor (coverage factor) $k=1.96$ or $k=2$ (which provide confidence levels of respectively 90% and 95.45% in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$.

The BTL measurement uncertainty as below table:

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
SH-C01	CISPR	150 KHz ~ 30 MHz	2.70

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
SH-CB01	CISPR	9 kHz~30 MHz	V	3.79
		9 kHz~30 MHz	H	3.57
		30 MHz~200 MHz	V	4.04
		30 MHz~200 MHz	H	3.76
		200 MHz~1,000 MHz	V	4.24
		200 MHz~1,000 MHz	H	3.84
		1 GHz~18 GHz	V	4.46
		1 GHz~18 GHz	H	4.40
		18 GHz~40 GHz	V	3.95
		18 GHz~40 GHz	H	3.95

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	AC2000 Wi-Fi Range Extender, AC2000 Mesh-Enabled Range Extender	
Brand Name	D-Link	
Test Model	DAP-1820	
Series Model	DRA-2060	
Model Difference(s)	(1) DAP-1820 for AC2000 Wi-Fi Range Extender, DRA-2060 for AC2000 Mesh-Enabled Range Extender. (2) Only differs in the color of the ID.	
Product Description	Operation Frequency	UNII-1: 5150MHz ~ 5250MHz UNII-3: 5725MHz ~ 5850MHz
	Modulation Type	OFDM
	Bit Rate of Transmitter	1733 Mbps
	Output Power (Max.)for UNII-1_Non-Beamforming	802.11a: 19.83 dBm 802.11n (20M): 20.77 dBm 802.11n (40M): 20.54 dBm 802.11ac (20M): 20.79 dBm 802.11ac (40M): 20.93 dBm 802.11ac (80M): 16.54 dBm
	Output Power (Max.)for UNII-3_Non-Beamforming	802.11a: 20.69 dBm 802.11n (20M): 26.58 dBm 802.11n (40M): 26.53 dBm 802.11ac (20M): 26.41 dBm 802.11ac (40M): 26.41 dBm 802.11ac (80M): 18.80 dBm
	Output Power (Max.)for UNII-1_With Beamforming	802.11n (20M): 20.73 dBm 802.11n (40M): 21.22 dBm 802.11ac (20M): 21.58 dBm 802.11ac (40M): 21.58 dBm 802.11ac (80M): 16.48 dBm
	Output Power (Max.)for UNII-3_With Beamforming	802.11n (20M): 26.56 dBm 802.11n (40M): 26.49 dBm 802.11ac (20M): 26.39 dBm 802.11ac (40M): 27.46 dBm 802.11ac (80M): 18.78 dBm
Power Source	AC Mains.	
Power Rating	I/P: 100-240Vac,50/60Hz,0.4A	

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-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.	Manufacturer	P/N	Antenna Type	Connector	Gain(dBi)
1	RF link	RF21C03745A	PCB	N/A	3
2	RF link	RF21C03745A	PCB	N/A	3
3	RF link	RF21C04071A	PCB	N/A	3
4	RF link	RF21C04071A	PCB	N/A	3

Note: This EUT supports CDD, and all antennas have the same gain, so,

(1) For Non Beamforming function,

Directional gain= G_{ANT} +Array Gain.

For power spectral density measurements, Array Gain= $10\log(N_{ANT}/N_{SS})$

dB= $3+10\log(4/1)=9.02$. So, the UNII-1 power density limit is $11-9.02+6=7.98$;

the UNII-3 power density limit is $30-9.02+6=26.98$.

(2) For Beamforming function, Beamforming gain=5dBi, so, Directional

gain= $3+5=8$ dBi. Then, the UNII-1 output power limit is $24-8+6=22$, the

power density limit is $11-8+6=9$; the UNII-3 output power limit is $30-8+6=28$, the

power density limit is $30-8+6=28$.

4. The worst case for 1TX and 4TX as follow:

Operating Mode TX Mode	1TX	4TX
802.11a	V (ANT 2)	-
802.11n (20 MHz)	-	V (ANT 1+ ANT 2+ANT 3+ANT 4)
802.11n (40 MHz)	-	V (ANT 1+ ANT 2+ANT 3+ANT 4)
802.11ac (20 MHz)	-	V (ANT 1+ ANT 2+ANT 3+ANT 4)
802.11ac (40 MHz)	-	V (ANT 1+ ANT 2+ANT 3+ANT 4)
802.11ac (80 MHz)	-	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 30 MHz to 1000 MHz 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

Non-Beamforming

UNII-1			
Test Software Version	QA_Tool		
Frequency (MHz)	5180	5200	5240
A Mode	1C	22	23
N20 Mode	11/11/11/11	14/14/14/14	15/15/15/15
AC20 Mode	11/11/11/11	16/16/16/16	12/12/12/12
Frequency (MHz)	5190	5230	
N40 Mode	0E/0E/0E/0E	16/16/16/16	
AC40 Mode	0E/0E/0E/0E	14/14/14/14	
Frequency (MHz)	5210		
AC80 Mode	0D/0D/0D/0D		

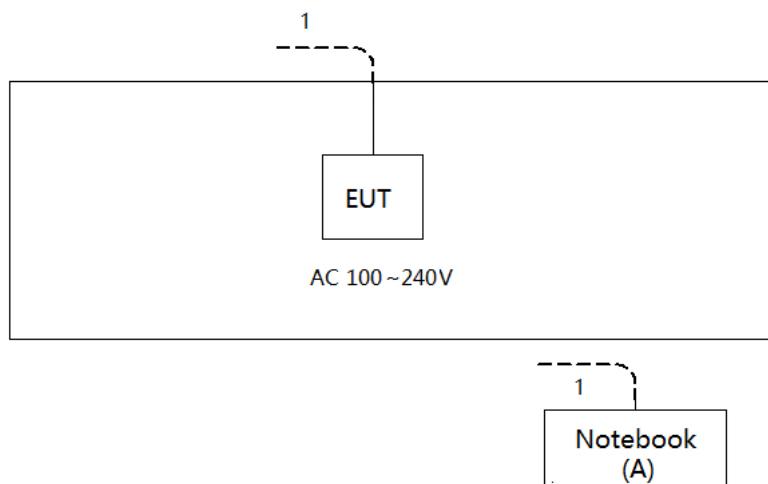
UNII-3			
Test Software Version	QA_Tool		
Frequency (MHz)	5745	5785	5825
A Mode	27	27	27
N20 Mode	27/27/27/27	27/27/27/27	27/27/27/27
AC20 Mode	27/27/27/27	27/27/27/27	27/27/27/27
Frequency (MHz)	5755	5795	
N40 Mode	27/27/27/27	27/27/27/27	
AC40 Mode	21/21/21/21	21/21/21/21	
Frequency (MHz)	5775		
AC80 Mode	13/13/13/13		

With Beamforming

UNII-1			
Test Software Version	QA_Tool		
Frequency (MHz)	5180	5200	5240
N20 Mode	11/11/11/11	14/14/14/14	15/15/15/15
AC20 Mode	11/11/11/11	17/17/17/17	12/12/12/12
Frequency (MHz)	5190	5230	
N40 Mode	0E/0E/0E/0E	17/17/17/17	
AC40 Mode	0E/0E/0E/0E	15/15/15/15	
Frequency (MHz)	5210		
AC80 Mode	0D/0D/0D/0D		

UNII-3			
Test Software Version	QA_Tool		
Frequency (MHz)	5745	5785	5825
N20 Mode	27/27/27/27	27/27/27/27	27/27/27/27
AC20 Mode	27/27/27/27	27/27/27/27	27/27/27/27
Frequency (MHz)	5755	5795	
N40 Mode	27/27/27/27	27/27/27/27	
AC40 Mode	27/27/27/27	27/27/27/27	
Frequency (MHz)	5775		
AC80 Mode	13/13/13/13		

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	Notebook	ThinkPad	20H3-A00VCD	DOC	PF-0S8287

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	10m	RJ45 Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	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 tighter limit applies at the band edges.
- (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

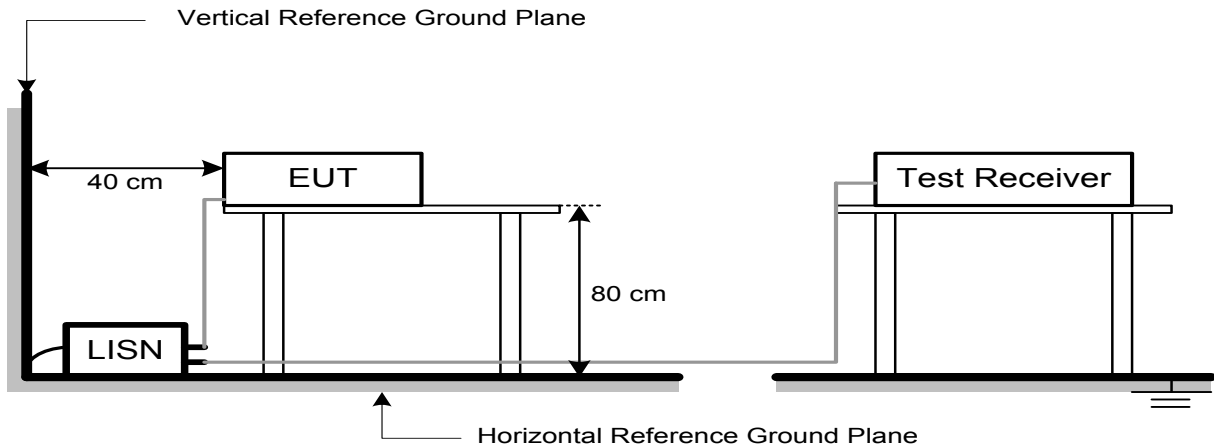
4.1.2 TEST PROCEDURE

- 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 equipment powered 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 ground plane 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.

4.1.3 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 fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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

4.1.6 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 51% 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『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 150 kHz to 30 MHz.

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

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m)
5150-5250	-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: $E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m}$, 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

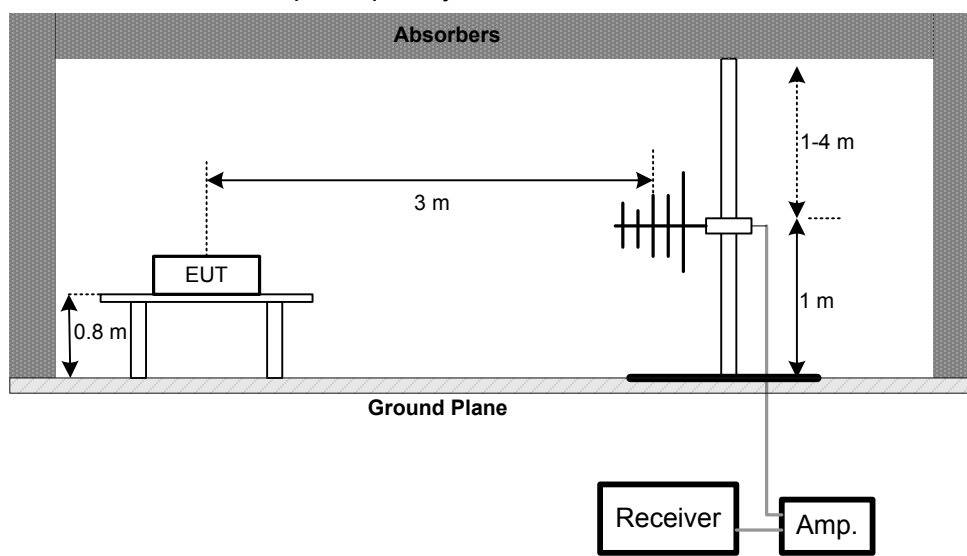
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of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

4.2.3 DEVIATION FROM TEST STANDARD

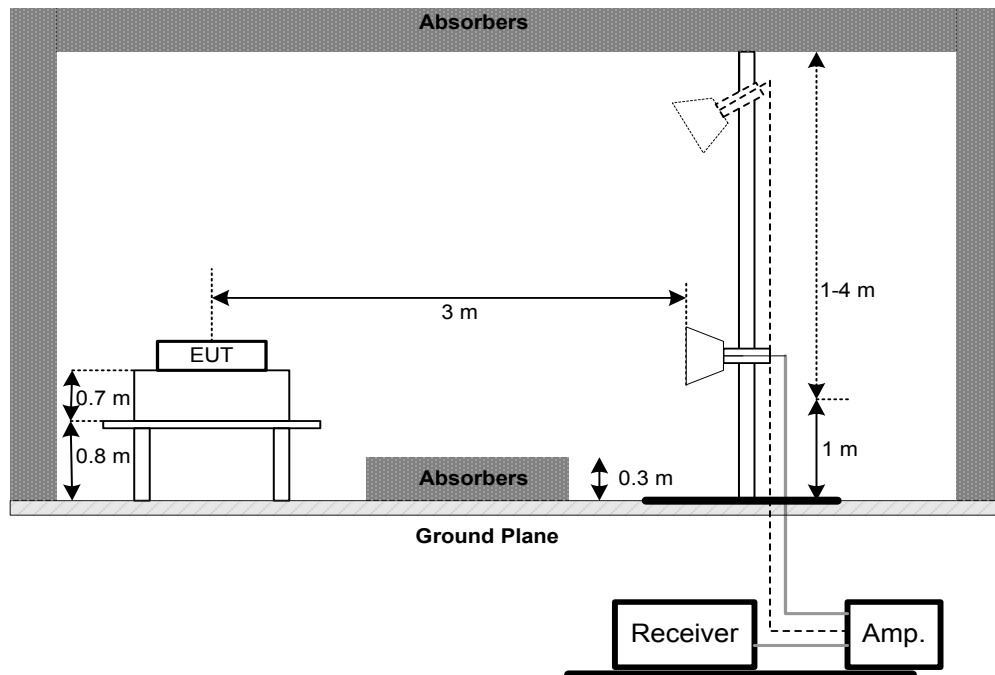
No deviation

4.2.4 TEST SETUP

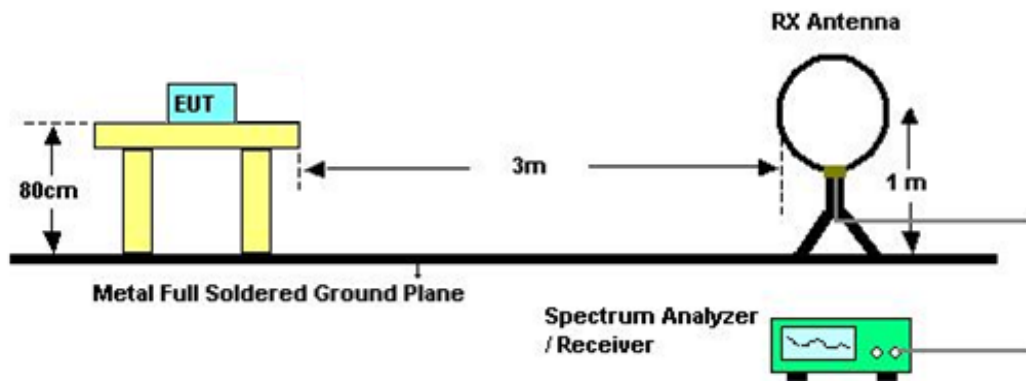
(A)Radiated Emission Test Set-Up Frequency 30 MHz-1000 MHz



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



(C) Radiated emissions below 30 MHz



4.2.5 EUT 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.

4.2.6 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 51% Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULTS (9 kHz TO 30 MHz)

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 (30 MHz TO 1000 MHz)

Please refer to the Appendix C.

4.2.9 TEST RESULTS (ABOVE 1000 MHz)

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. SPECTRUM BANDWIDTH

5.1 APPLIED PROCEDURES / LIMIT

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

5.1.1 TEST 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	> 26 dB Bandwidth
RBW	300 kHz(Bandwidth 20 MHz) 1 MHz(Bandwidth 40 MHz and 80 MHz)
VBW	1 MHz(Bandwidth 20 MHz) 3 MHz(Bandwidth 40 MHz and 80 MHz)
Span Frequency	6 dB Bandwidth
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

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

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT 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.

5.1.5 EUT TEST CONDITIONS

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

5.1.6 TEST RESULTS

Please refer to the Appendix E.

6. MAXIMUM OUTPUT POWER

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Maximum Output Power	Fixed:1 Watt (30 dBm)	5150-5250	PASS
	Mobile and portable: 250 mW (24 dBm)	5150-5250	PASS
	1 Watt (30 dBm)	5725-5850	PASS

Note: For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

6.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Used spectrum analyzer band power measurement function.
-

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	= 1 MHz.
VBW	≥ 3 MHz.
Sweep points	≥ 2 x span / RBW
Detector	RMS
Trace	Trace average at least 100 traces in power averaging(rms) mode.
Sweep Time	auto

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

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT 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.

6.1.5 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 51% Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Appendix F.

7. POWER SPECTRAL DENSITY TEST

7.1 APPLIED PROCEDURES / LIMIT

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

7.1.1 TEST 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) of the signal
RBW	= 1 MHz.
VBW	≥ 3 MHz.
Detector	RMS
Trace average	100 trace
Sweep Time	Auto

Note:

- For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v01r02, section II.F.5., it is acceptable to set RBW at 1 MHz and VBW at 3 MHz if the spectrum analyzer does not have 500 kHz RBW.
- The value measured with RBW=1 MHz is to be added with $10\log(500 \text{ kHz}/1 \text{ MHz})$ which is -3 dB. For example, if the measured value is +10dBm using RBW=1 MHz (that is +10 dBm/MHz), then the converted value will be +7dBm/500kHz.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT 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.

7.1.5 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 52% Test Voltage: AC 120V/60Hz

7.1.6 TEST RESULTS

Please refer to the Appendix H.

8. FREQUENCY STABILITY MEASUREMENT

8.1 APPLIED PROCEDURES / LIMIT

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

8.1.1 TEST PROCEDURE

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

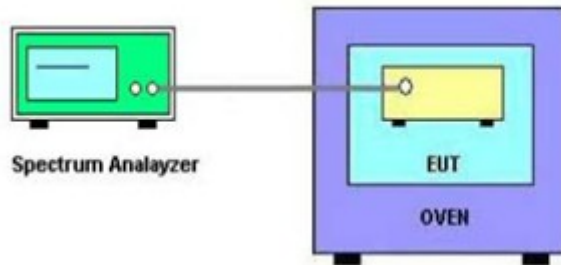
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	10 kHz
Sweep Time	Auto

- 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 0°C~50°C.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT 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.

8.1.5 EUT TEST CONDITIONS

Temperature: 23°C Relative Humidity: 50% Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Appendix I.

9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Line Impedance Stabilisation Network	Schwarzbeck	NNLK 8121	8121-822	Mar. 30, 2019
2	TWO-LINE V-NETWORK	R&S	ENV216	101340	Jan. 17, 2019
3	EMI Test Receiver	R&S	ESCI	100082	Mar. 30, 2019
4	50Ω coaxial switch	Anritsu	MP59B	6201750902	Jul. 17, 2019
5	Cable	10m	EMCRG400-BM-N M-10000	170628	Jun. 10, 2019
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement - 9KHZ TO 30MHZ					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EMCI	EMCI LPA600	275	Mar. 31, 2019
2	Cable	N/A	EMCRG400-BM-N M-10000	170628	Jun. 10, 2019
3	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 30, 2019
4	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A

Radiated Emission Measurement - 30MHZ TO 1000MHZ					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 30, 2019
2	Pre-Amplifier	emci	EMC9135	980400	Mar. 30, 2019
3	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 30, 2019
4	Attenuator	emci	EMCI-N-6-06	AT-N0644	Mar. 30, 2019
5	Cable	7m	EMC104-SM-SM-7000	170330	Jun. 10, 2019
6	Cable	1m	EMC104-SM-SM-1000	170331	Jun. 10, 2019
7	Cable	3.5m	EMC104-SM-NM-3500	170621	Jun. 10, 2019
8	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A

Radiated Emission Measurement - Above 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double-Ridged Waveguide Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1787	Mar. 30, 2019
2	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00203919	Mar. 30, 2019
3	Pre-Amplifier	emci	EMC012645SE	980421	Mar. 30, 2019
4	Pre-Amplifier	emci	EMC184045SE	980409	Mar. 30, 2019
5	EXA Spectrum Analyzer	Keysight	N9010A	MY56480559	Mar. 30, 2019
6	MXE EMI Receiver	Keysight	N9038A	MY56400088	Mar. 30, 2019
7	Cable	7m	EMC104-SM-SM-7000	170330	Jun. 10, 2019
8	Cable	1m	EMC104-SM-SM-1000	170331	Jun. 10, 2019
9	Cable	3.5m	EMC104-SM-NM-3500	170621	Jun. 10, 2019
10	Cable	0.8m	EMC102-SM-SM-800	170335	Jun. 10, 2019
11	Cable	6m	EMC102-SM-SM-6000	170336	Jun. 10, 2019
12	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Spectrum Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019

Maximum Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019

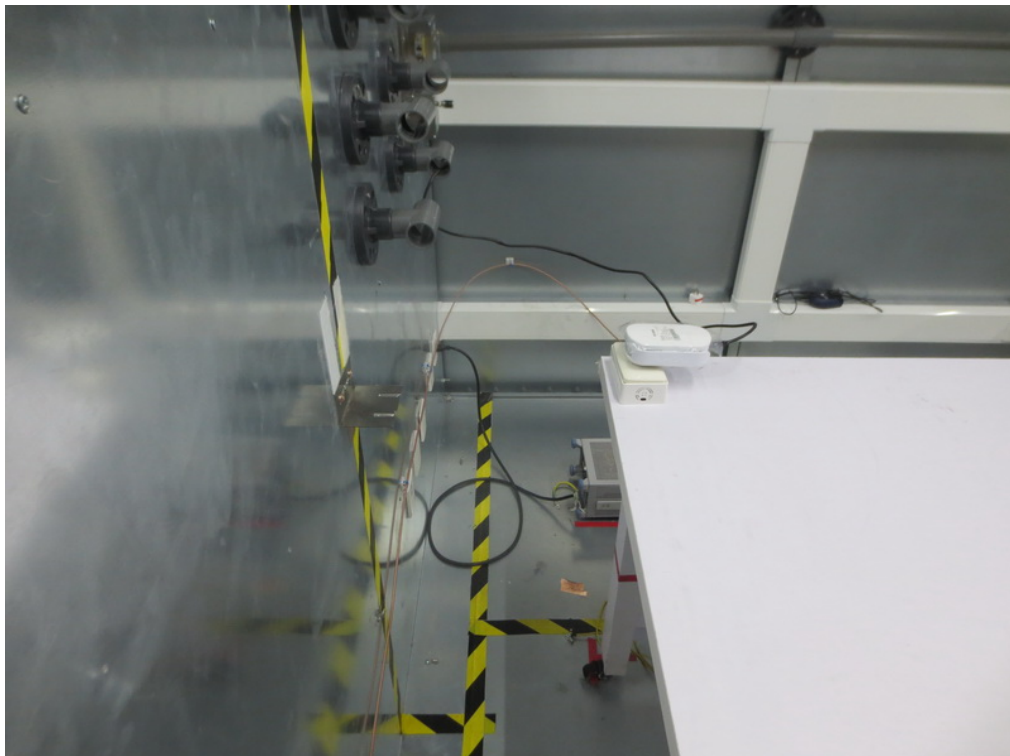
Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019
2	Temperature And Humidity Box	Blue pand	BPHS-120B	170616454	Nov. 10, 2019

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

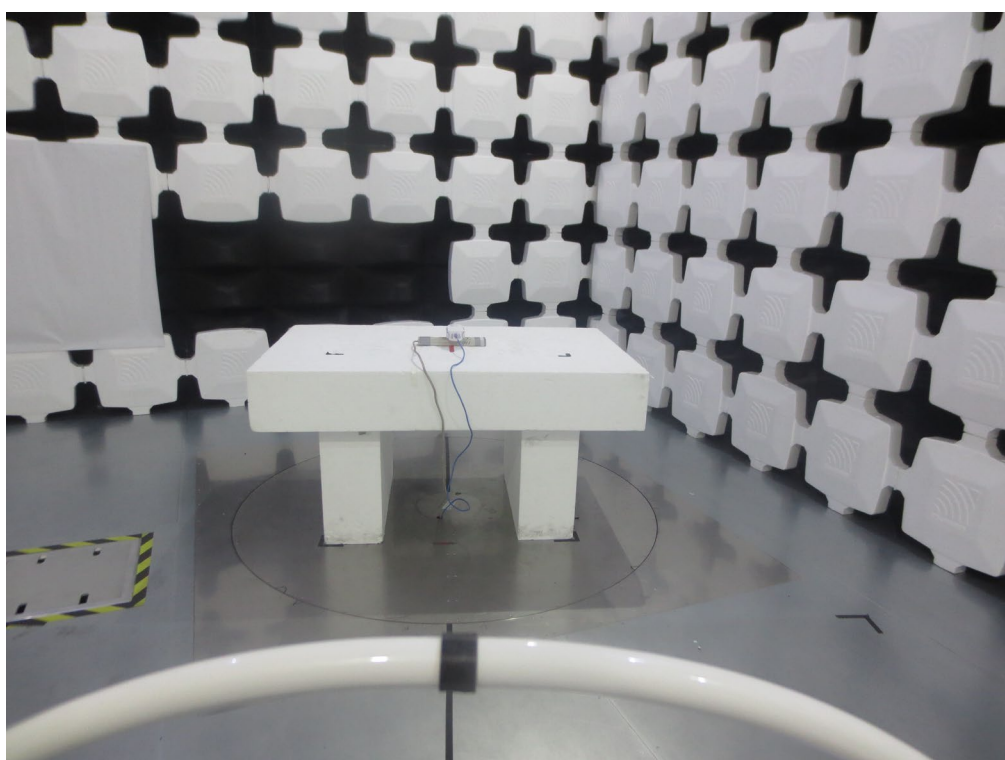
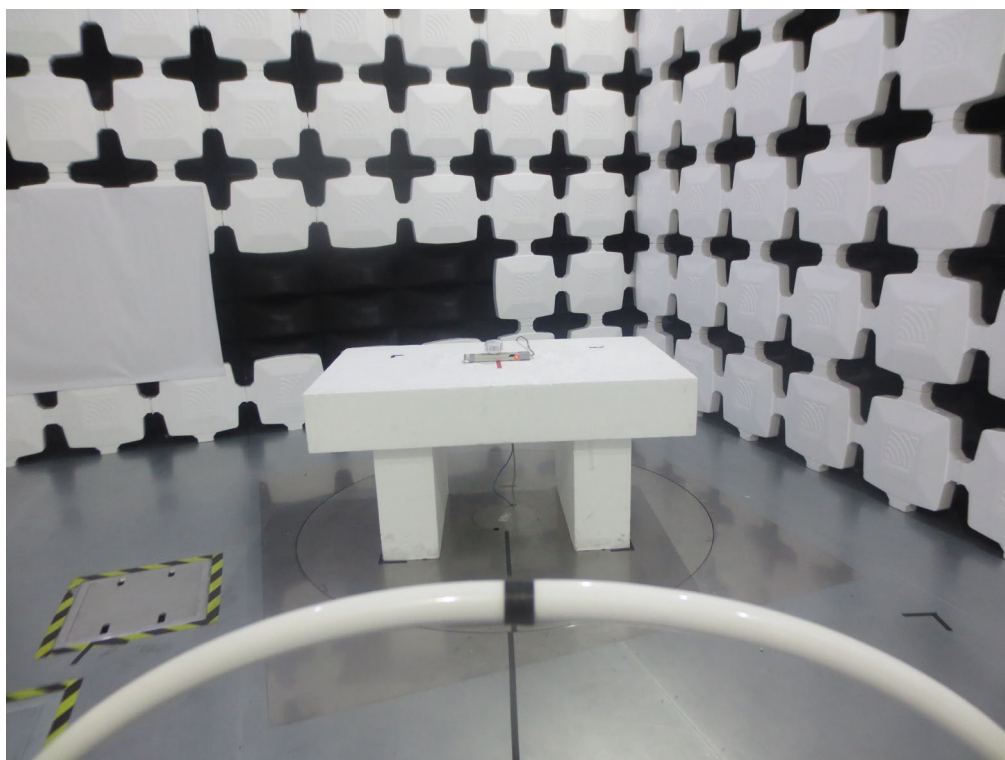
10. EUT TEST PHOTOS

Conducted Measurement Photos



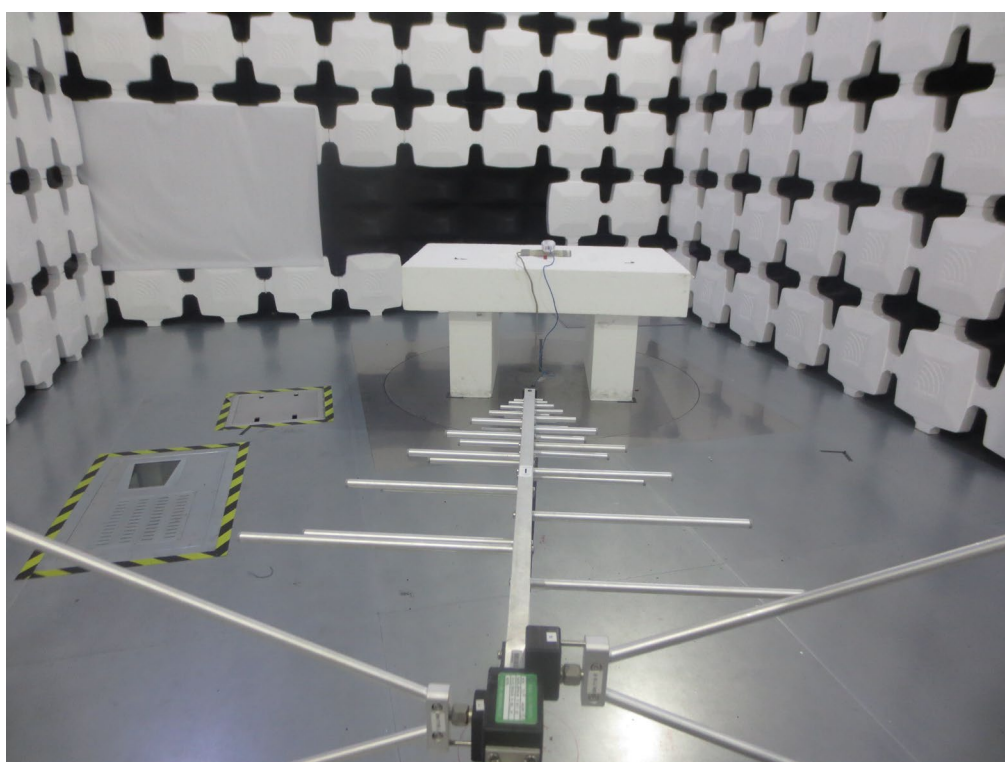
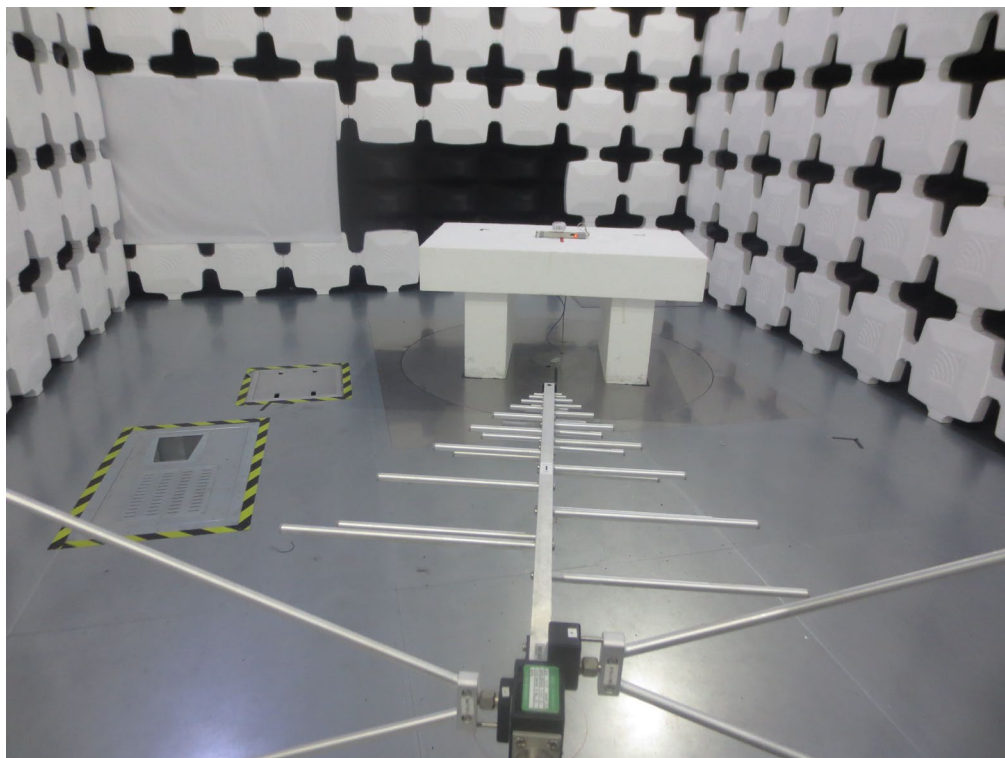
Radiated Measurement Photos

9 kHz to 30 MHz



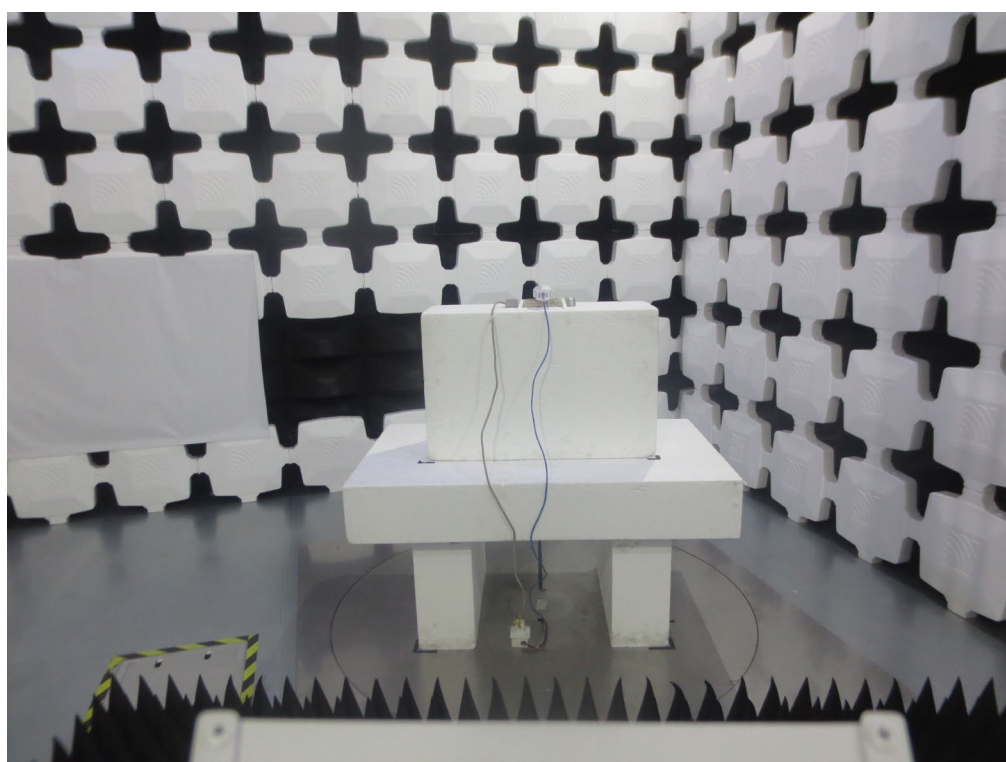
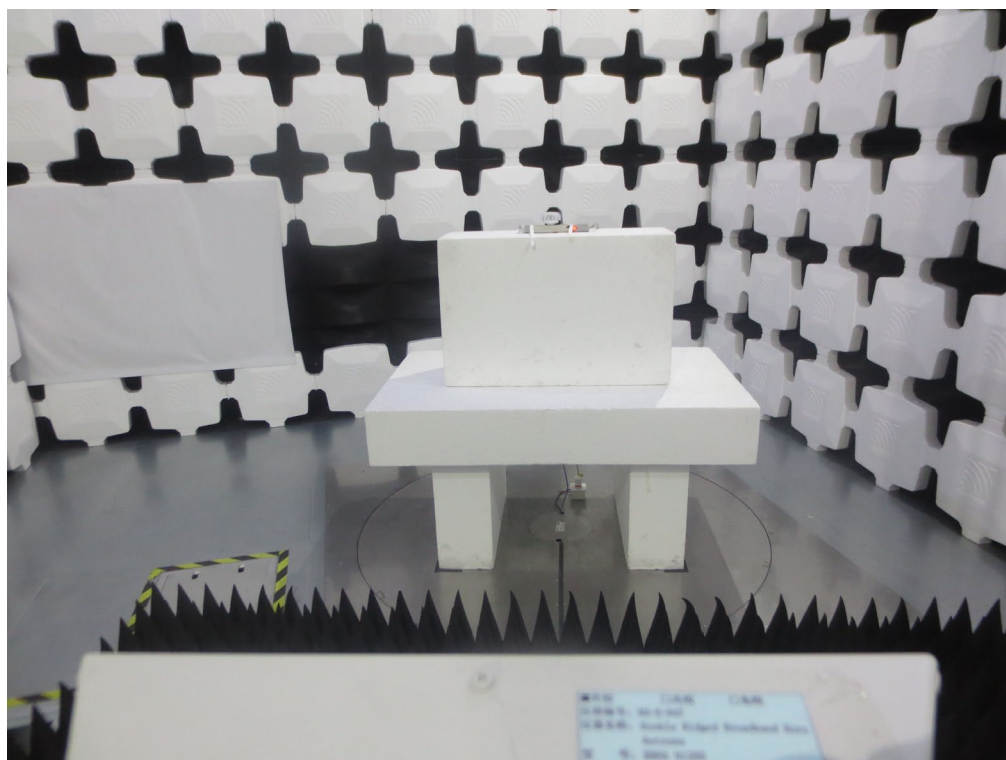
Radiated Measurement Photos

30 MHz to 1000 MHz



Radiated Measurement Photos

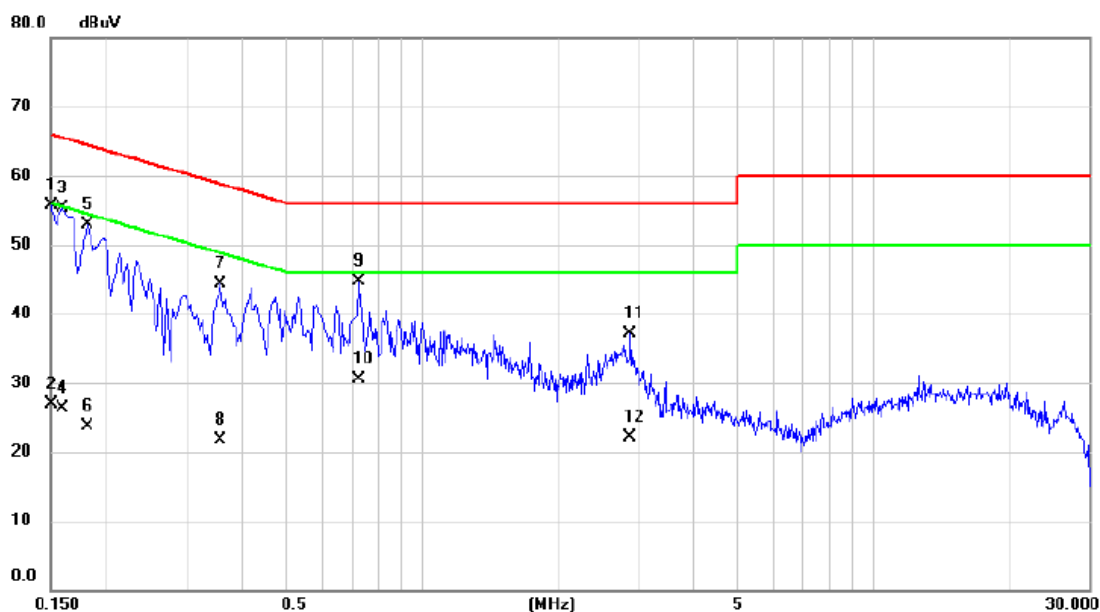
Above 1000 MHz



APPENDIX A - CONDUCTED EMISSION

Test Mode: TX Mode

Line

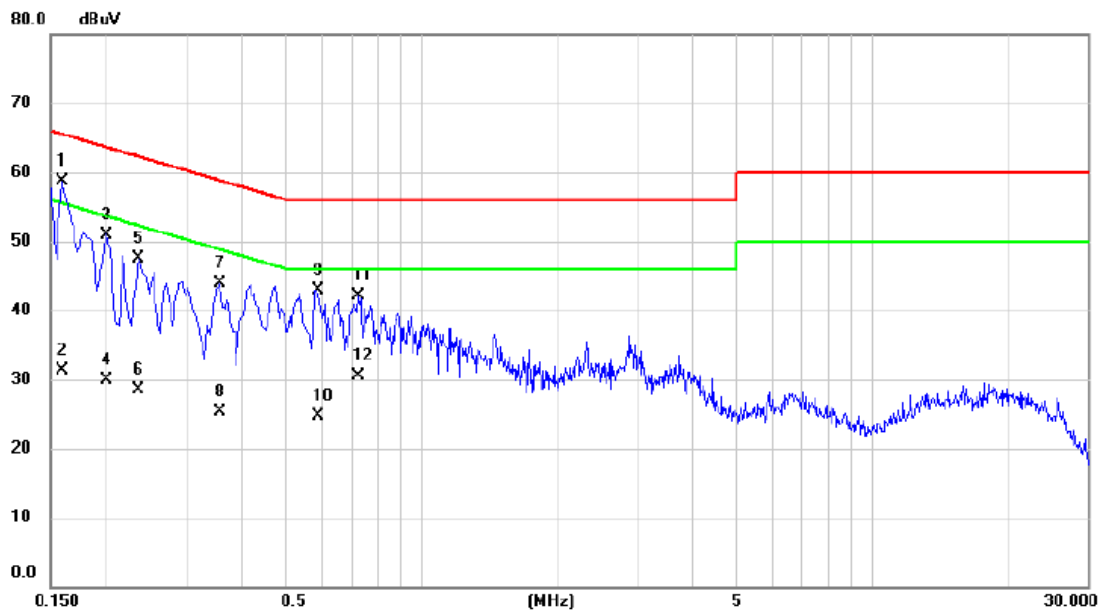


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	45.85	9.77	55.62	66.00	-10.38	QP	
2		0.1500	17.10	9.77	26.87	56.00	-29.13	AVG	
3	*	0.1590	45.57	9.79	55.36	65.52	-10.16	QP	
4		0.1590	16.50	9.79	26.29	55.52	-29.23	AVG	
5		0.1815	43.10	9.83	52.93	64.42	-11.49	QP	
6		0.1815	13.80	9.83	23.63	54.42	-30.79	AVG	
7		0.3570	34.32	10.00	44.32	58.80	-14.48	QP	
8		0.3570	11.80	10.00	21.80	48.80	-27.00	AVG	
9		0.7215	34.70	9.98	44.68	56.00	-11.32	QP	
10		0.7215	20.60	9.98	30.58	46.00	-15.42	AVG	
11		2.8905	26.98	10.04	37.02	56.00	-18.98	QP	
12		2.8905	12.10	10.04	22.14	46.00	-23.86	AVG	

Note: The test result has included the cable loss.

Test Mode: TX Mode

Neutral



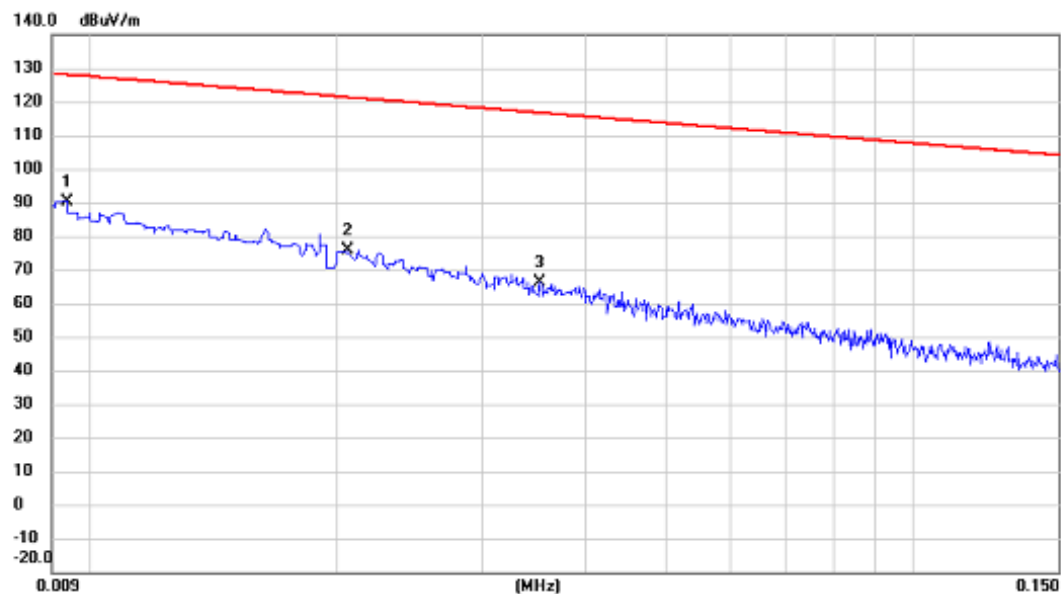
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1590	48.88	9.79	58.67	65.52	-6.85	QP	
2		0.1590	21.50	9.79	31.29	55.52	-24.23	AVG	
3		0.1995	41.15	9.85	51.00	63.63	-12.63	QP	
4		0.1995	20.10	9.85	29.95	53.63	-23.68	AVG	
5		0.2355	37.62	9.90	47.52	62.25	-14.73	QP	
6		0.2355	18.60	9.90	28.50	52.25	-23.75	AVG	
7		0.3570	33.91	10.00	43.91	58.80	-14.89	QP	
8		0.3570	15.40	10.00	25.40	48.80	-23.40	AVG	
9		0.5865	32.86	10.07	42.93	56.00	-13.07	QP	
10		0.5865	14.70	10.07	24.77	46.00	-21.23	AVG	
11		0.7215	32.20	9.98	42.18	56.00	-13.82	QP	
12		0.7215	20.60	9.98	30.58	46.00	-15.42	AVG	

Note: The test result has included the cable loss.

APPENDIX B - RADIATED EMISSION (9 KHZ TO 30 MHZ)

Test Mode: TX Mode

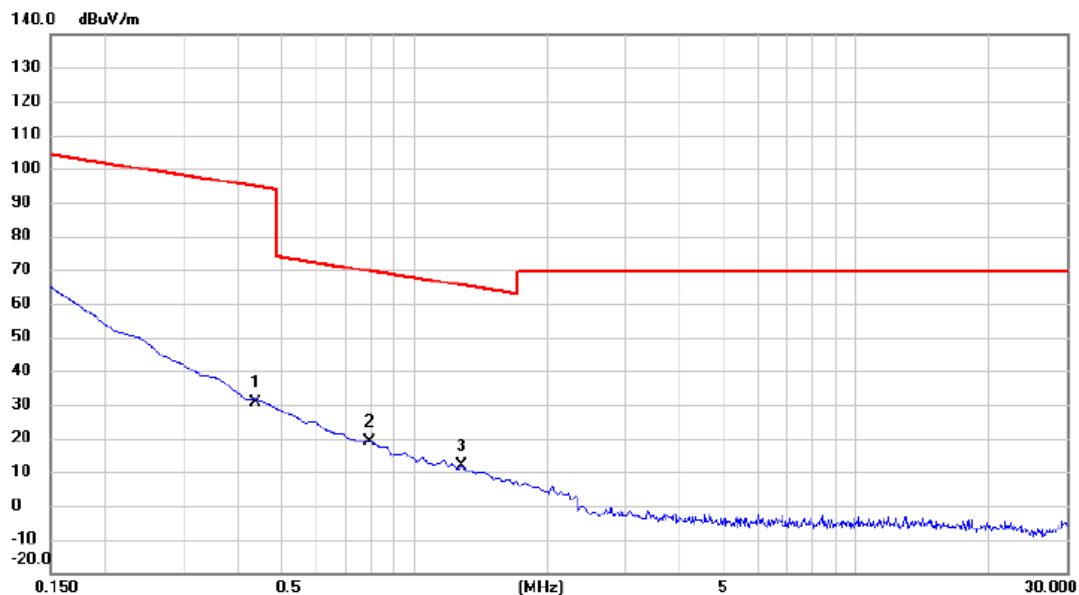
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.0094	69.36	21.04	90.40	128.14	-37.74	AVG	
2		0.0206	56.33	19.60	75.93	121.33	-45.40	AVG	
3		0.0352	47.17	19.16	66.33	116.67	-50.34	AVG	

Test Mode: TX Mode

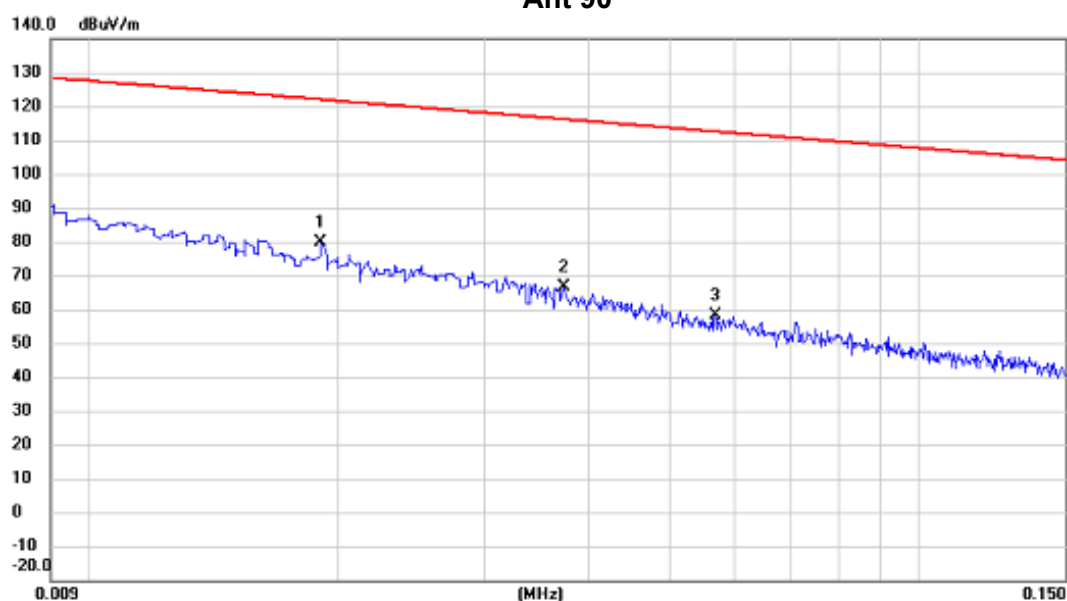
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.4374	14.15	16.52	30.67	94.79	-64.12	AVG	
2	*	0.7915	2.75	16.13	18.88	69.64	-50.76	QP	
3		1.2822	-3.91	15.79	11.88	65.45	-53.57	QP	

Test Mode: TX Mode

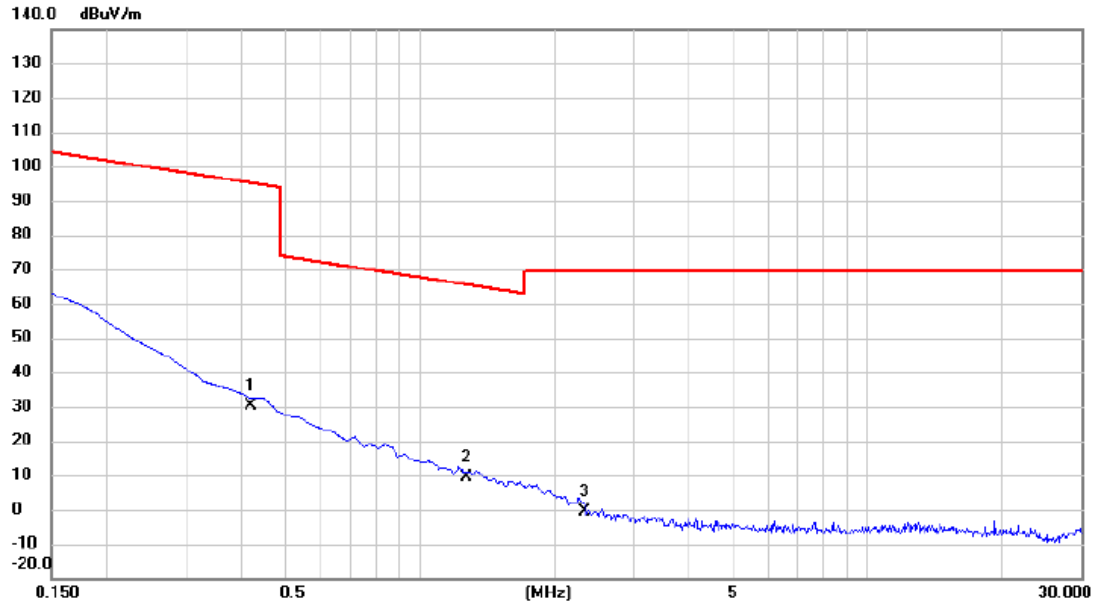
Ant 90°



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	0.0190	59.93	19.75	79.68	122.03	-42.35	AVG	
2		0.0374	47.56	19.10	66.66	116.15	-49.49	AVG	
3		0.0568	39.43	18.59	58.02	112.52	-54.50	AVG	

Test Mode: TX Mode

Ant 90°

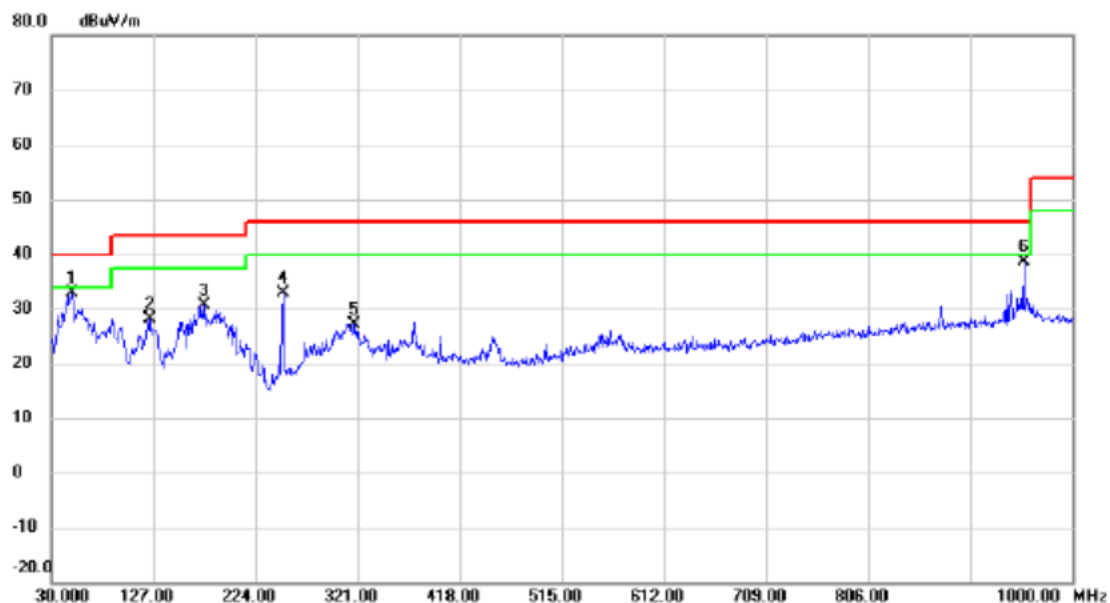


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.4187	13.52	16.54	30.06	95.17	-65.11	AVG	
2	*	1.2694	-6.56	15.79	9.23	65.53	-56.30	QP	
3		2.3291	-16.10	15.42	-0.68	69.54	-70.22	QP	

APPENDIX C - RADIATED EMISSION (30 MHZ TO 1000 MHZ)

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

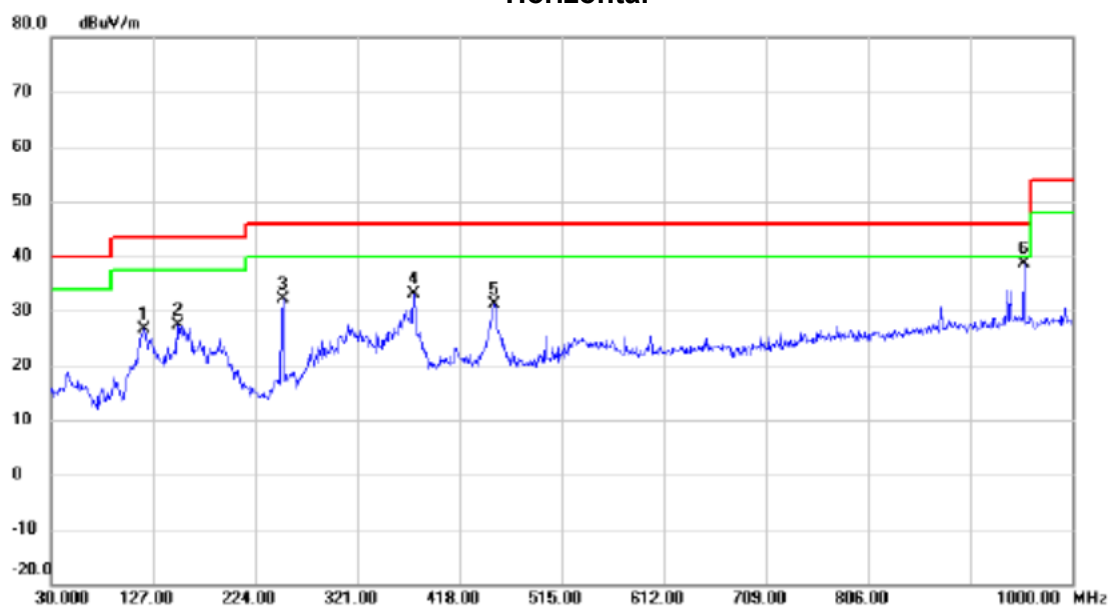
Vertical



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	49.4000	50.29	-17.42	32.87	40.00	-7.13	peak	
2		123.1200	45.64	-17.53	28.11	43.50	-15.39	peak	
3		175.0150	48.01	-17.42	30.59	43.50	-12.91	peak	
4		250.1900	50.27	-17.47	32.80	46.00	-13.20	peak	
5		318.0900	42.37	-15.16	27.21	46.00	-18.79	peak	
6		953.9250	43.88	-5.33	38.55	46.00	-7.45	peak	

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

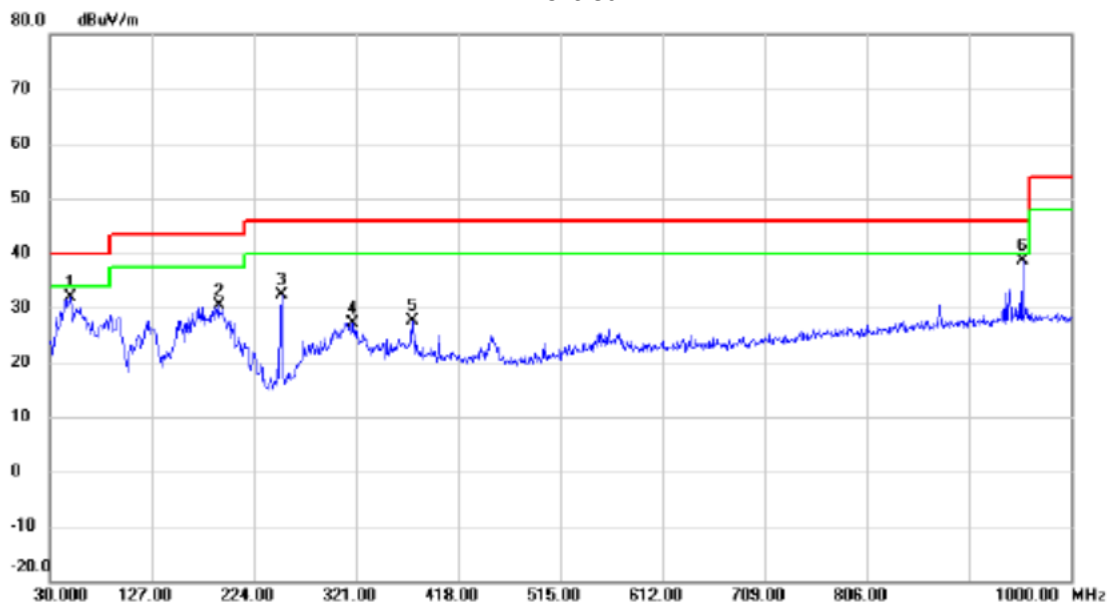
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	44.30	-17.78	26.52	43.50	-16.98	peak	
2		150.7650	42.95	-15.56	27.39	43.50	-16.11	peak	
3		250.1900	49.55	-17.47	32.08	46.00	-13.92	peak	
4		374.8350	47.54	-14.46	33.08	46.00	-12.92	peak	
5		450.9800	43.60	-12.39	31.21	46.00	-14.79	peak	
6	*	953.9250	43.94	-5.33	38.61	46.00	-7.39	peak	

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

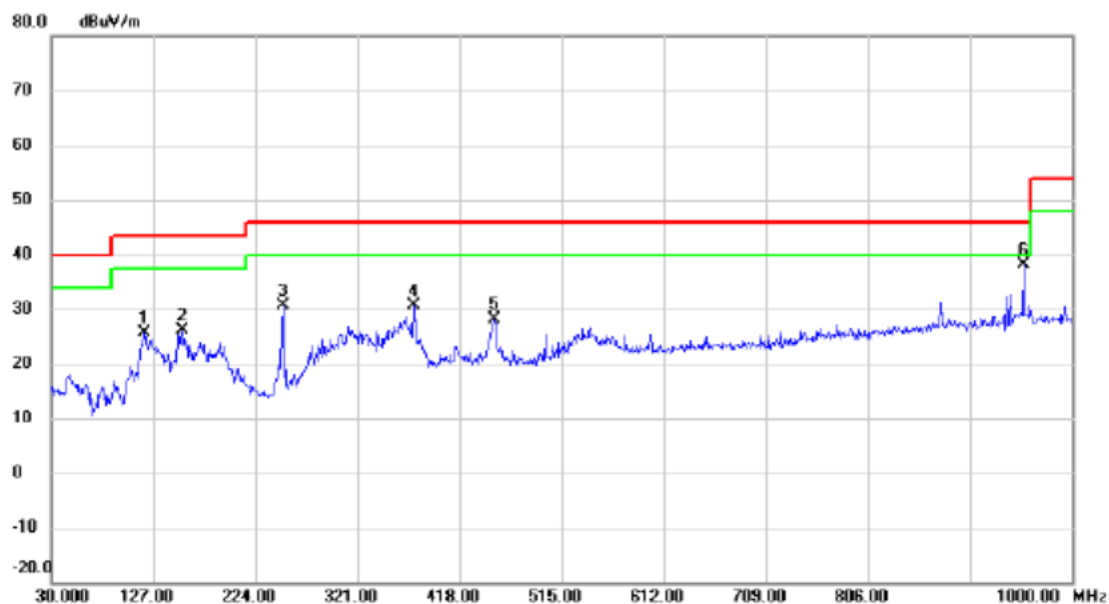
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		49.4000	49.29	-17.42	31.87	40.00	-8.13	peak	
2		190.5350	49.62	-19.33	30.29	43.50	-13.21	peak	
3		250.1900	49.77	-17.47	32.30	46.00	-13.70	peak	
4		318.0900	42.37	-15.16	27.21	46.00	-18.79	peak	
5		374.8350	42.02	-14.46	27.56	46.00	-18.44	peak	
6	*	953.9250	43.88	-5.33	38.55	46.00	-7.45	peak	

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

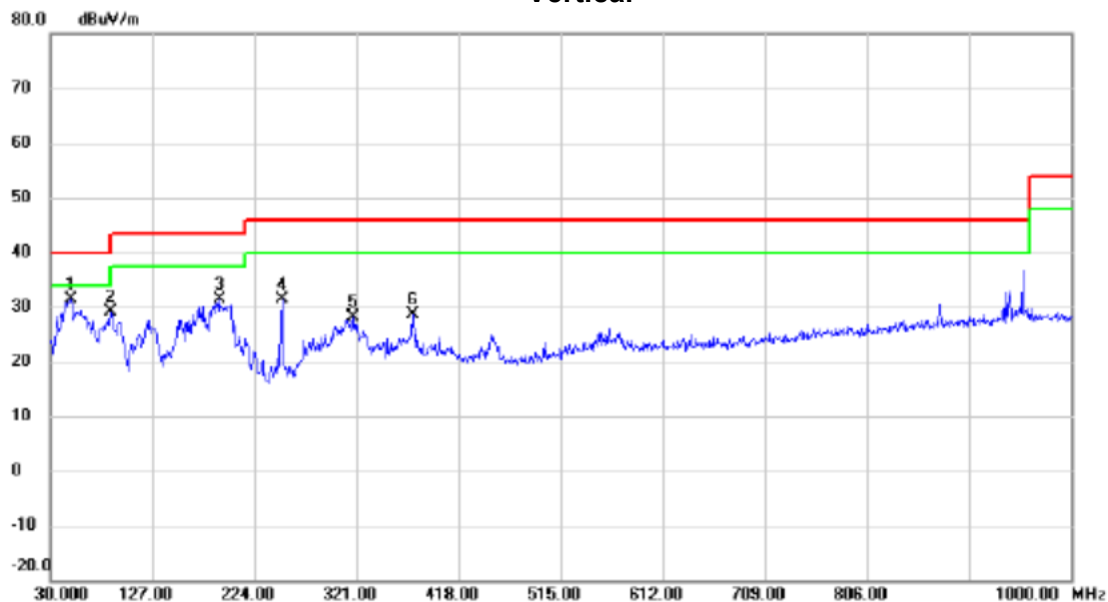
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	43.30	-17.78	25.52	43.50	-17.98	peak	
2		154.1600	41.85	-15.65	26.20	43.50	-17.30	peak	
3		250.1900	48.04	-17.47	30.57	46.00	-15.43	peak	
4		374.8350	45.04	-14.46	30.58	46.00	-15.42	peak	
5		450.9800	40.60	-12.39	28.21	46.00	-17.79	peak	
6	*	953.9250	43.44	-5.33	38.11	46.00	-7.89	peak	

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

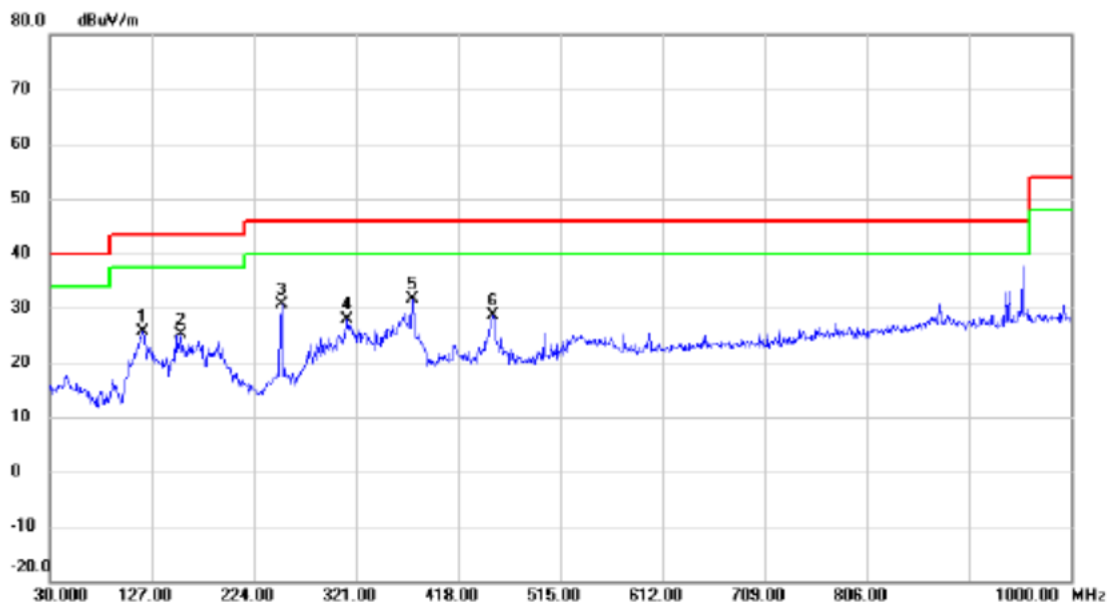
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	49.4000	48.79	-17.42	31.37	40.00	-8.63	peak	
2		87.7150	50.04	-20.79	29.25	40.00	-10.75	peak	
3		190.5350	50.62	-19.33	31.29	43.50	-12.21	peak	
4		250.1900	48.77	-17.47	31.30	46.00	-14.70	peak	
5		318.0900	43.37	-15.16	28.21	46.00	-17.79	peak	
6		374.8350	43.02	-14.46	28.56	46.00	-17.44	peak	

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

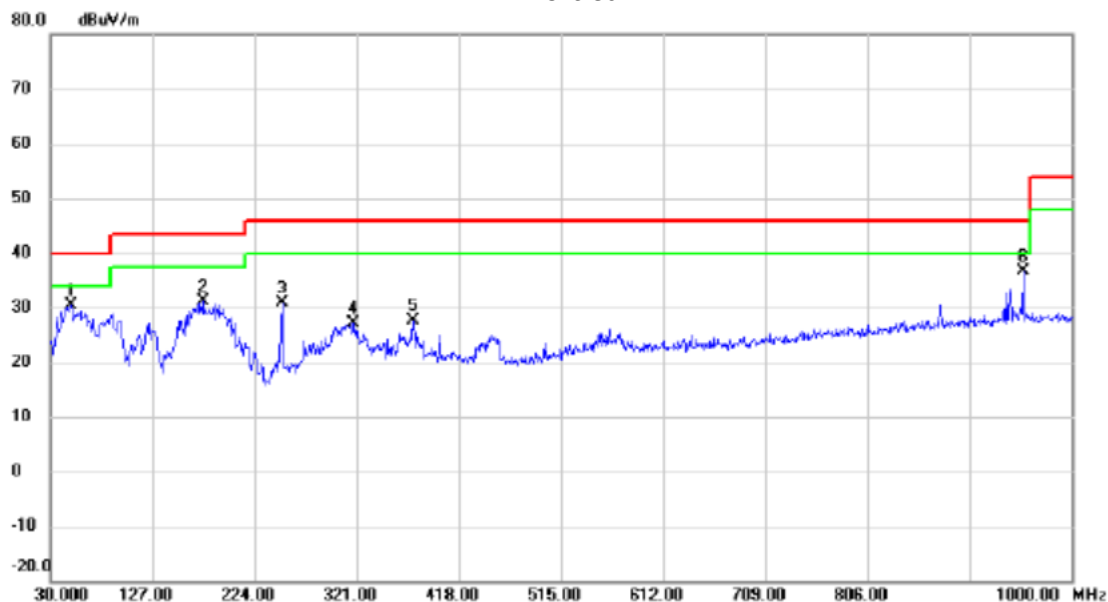
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	43.30	-17.78	25.52	43.50	-17.98	peak	
2		154.1600	40.85	-15.65	25.20	43.50	-18.30	peak	
3		250.1900	48.04	-17.47	30.57	46.00	-15.43	peak	
4		312.7550	43.30	-15.41	27.89	46.00	-18.11	peak	
5	*	374.8350	46.04	-14.46	31.58	46.00	-14.42	peak	
6		450.9800	41.10	-12.39	28.71	46.00	-17.29	peak	

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

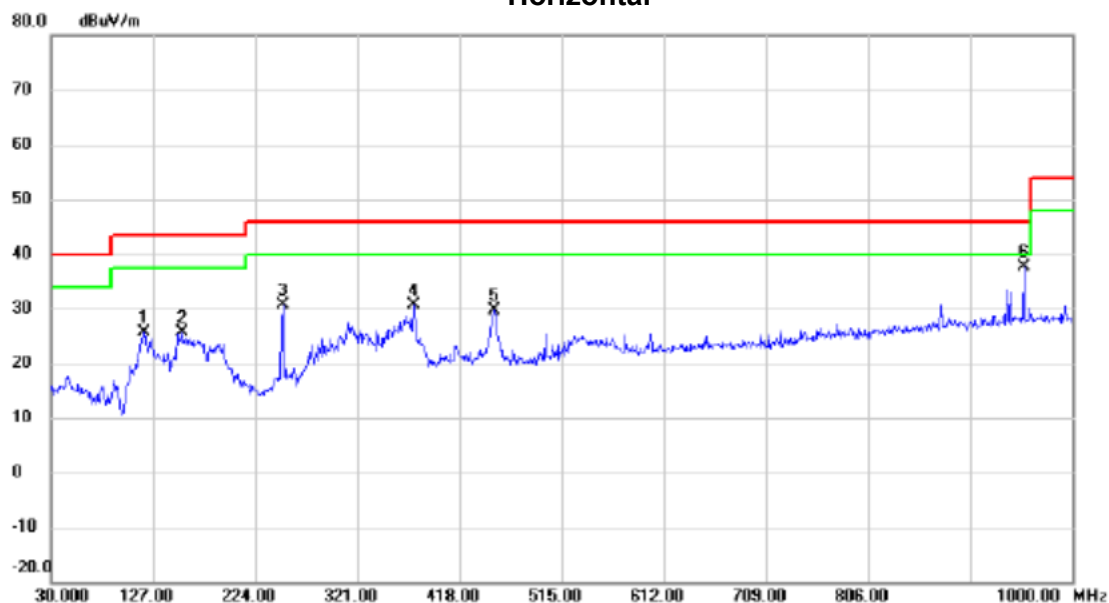
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		49.4000	47.79	-17.42	30.37	40.00	-9.63	peak	
2		175.0150	48.51	-17.42	31.09	43.50	-12.41	peak	
3		250.1900	48.27	-17.47	30.80	46.00	-15.20	peak	
4		318.0900	42.37	-15.16	27.21	46.00	-18.79	peak	
5		374.8350	42.02	-14.46	27.56	46.00	-18.44	peak	
6	*	953.9250	41.88	-5.33	36.55	46.00	-9.45	peak	

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

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	43.30	-17.78	25.52	43.50	-17.98	peak	
2		154.1600	41.35	-15.65	25.70	43.50	-17.80	peak	
3		250.1900	48.04	-17.47	30.57	46.00	-15.43	peak	
4		374.8350	45.04	-14.46	30.58	46.00	-15.42	peak	
5		450.9800	42.10	-12.39	29.71	46.00	-16.29	peak	
6	*	953.9250	42.94	-5.33	37.61	46.00	-8.39	peak	

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

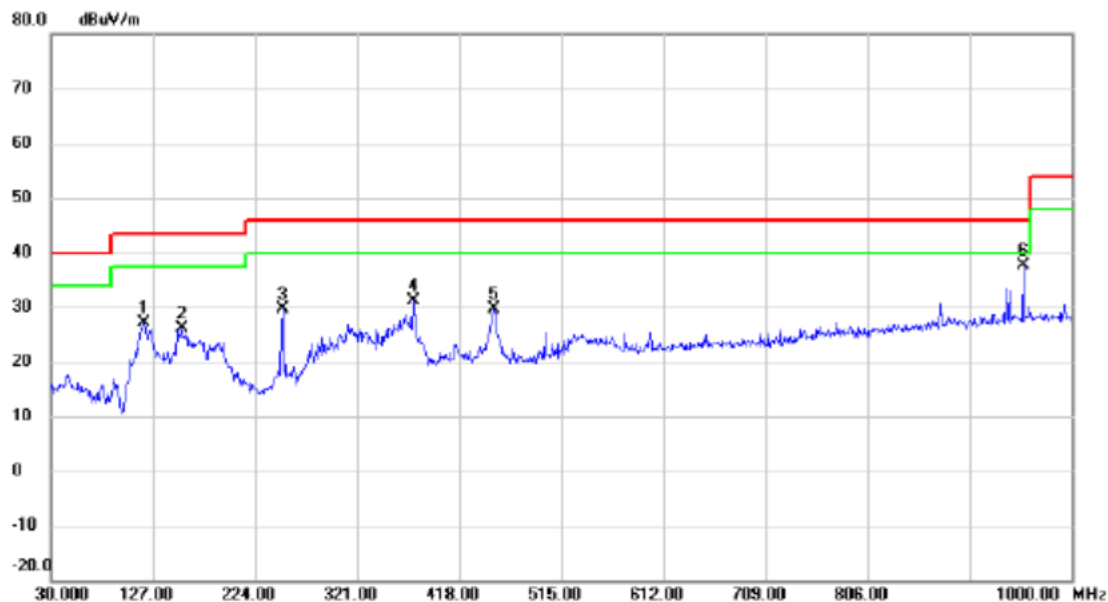
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	49.4000	49.79	-17.42	32.37	40.00	-7.63	peak	
2		175.0150	48.51	-17.42	31.09	43.50	-12.41	peak	
3		250.1900	47.27	-17.47	29.80	46.00	-16.20	peak	
4		318.0900	43.37	-15.16	28.21	46.00	-17.79	peak	
5		374.8350	43.02	-14.46	28.56	46.00	-17.44	peak	
6		953.9250	41.88	-5.33	36.55	46.00	-9.45	peak	

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

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	44.80	-17.78	27.02	43.50	-16.48	peak	
2		154.1600	41.85	-15.65	26.20	43.50	-17.30	peak	
3		250.1900	47.04	-17.47	29.57	46.00	-16.43	peak	
4		374.8350	45.54	-14.46	31.08	46.00	-14.92	peak	
5		450.9800	42.10	-12.39	29.71	46.00	-16.29	peak	
6	*	953.9250	42.94	-5.33	37.61	46.00	-8.39	peak	

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

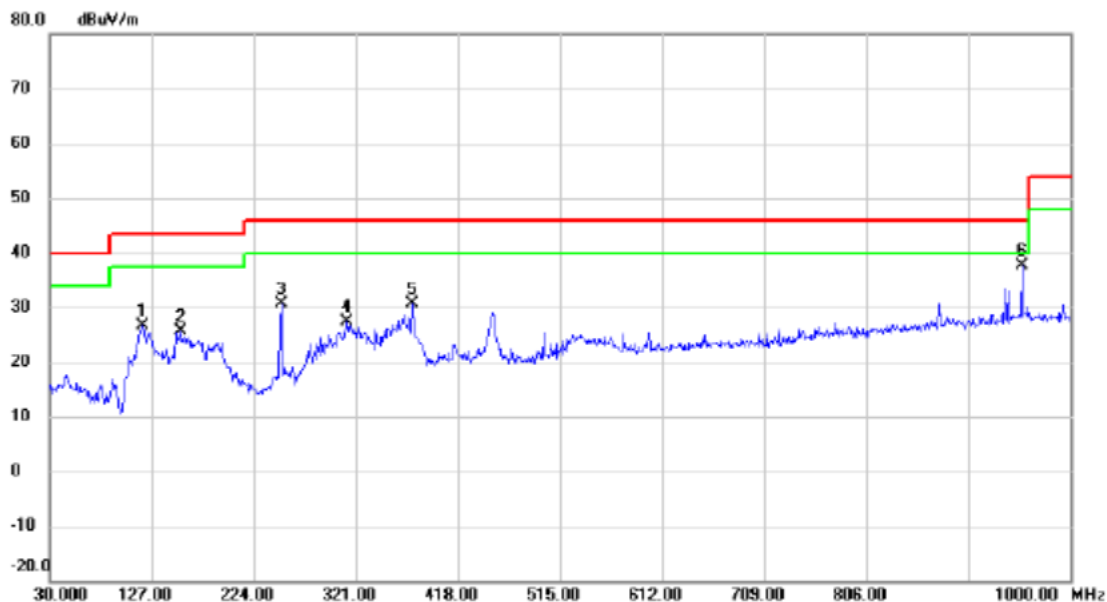
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		49.4000	48.29	-17.42	30.87	40.00	-9.13	peak	
2		175.0150	48.51	-17.42	31.09	43.50	-12.41	peak	
3		250.1900	48.77	-17.47	31.30	46.00	-14.70	peak	
4		318.0900	42.37	-15.16	27.21	46.00	-18.79	peak	
5		374.8350	42.02	-14.46	27.56	46.00	-18.44	peak	
6	*	953.9250	42.38	-5.33	37.05	46.00	-8.95	peak	

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

Horizontal

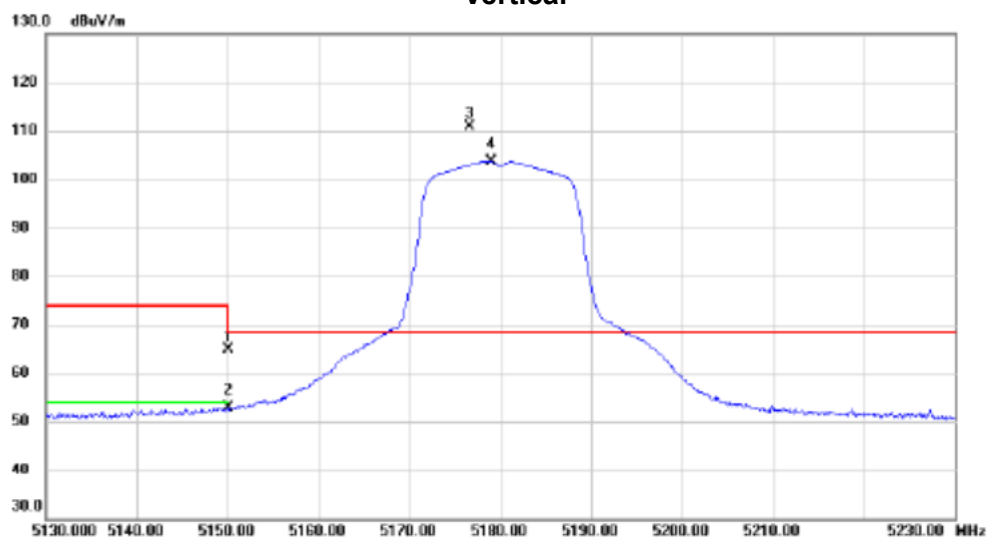


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		118.7550	44.30	-17.78	26.52	43.50	-16.98	peak	
2		154.1600	41.35	-15.65	25.70	43.50	-17.80	peak	
3		250.1900	48.04	-17.47	30.57	46.00	-15.43	peak	
4		312.7550	42.80	-15.41	27.39	46.00	-18.61	peak	
5		374.8350	45.04	-14.46	30.58	46.00	-15.42	peak	
6	*	953.9250	42.94	-5.33	37.61	46.00	-8.39	peak	

APPENDIX D - RADIATED EMISSION (ABOVE 1000 MHZ)

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

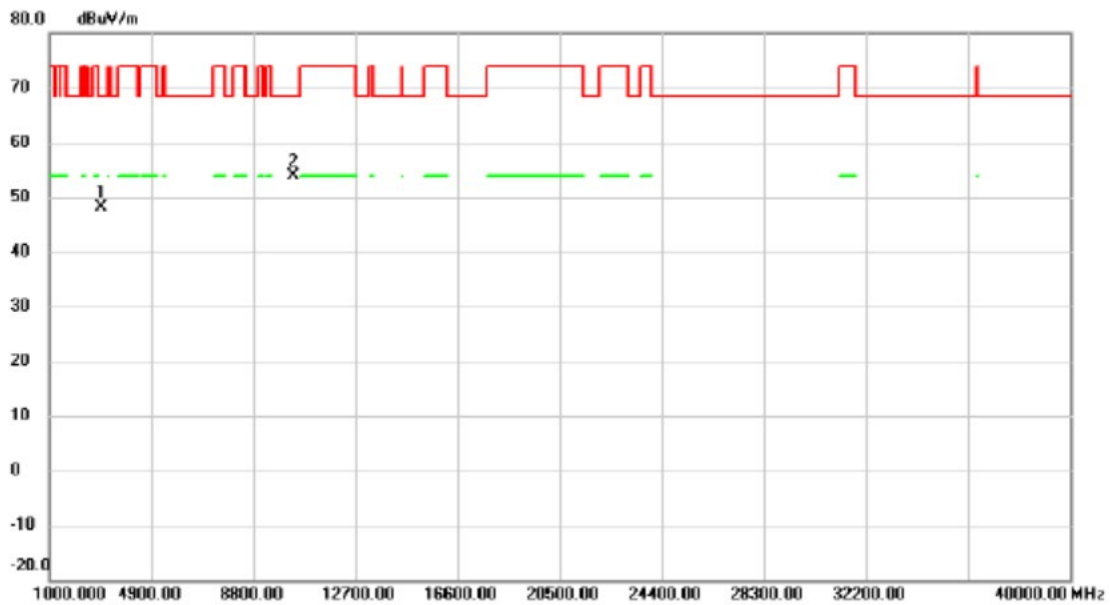
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	25.96	39.00	64.96	74.00	-9.04	peak	
2		5150.000	13.82	39.00	52.82	54.00	-1.18	AVG	
3	*	5178.650	71.88	39.09	110.97	68.30	42.67	peak	No Limit
4	X	5179.000	64.64	39.09	103.73	68.30	35.43	AVG	No Limit

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

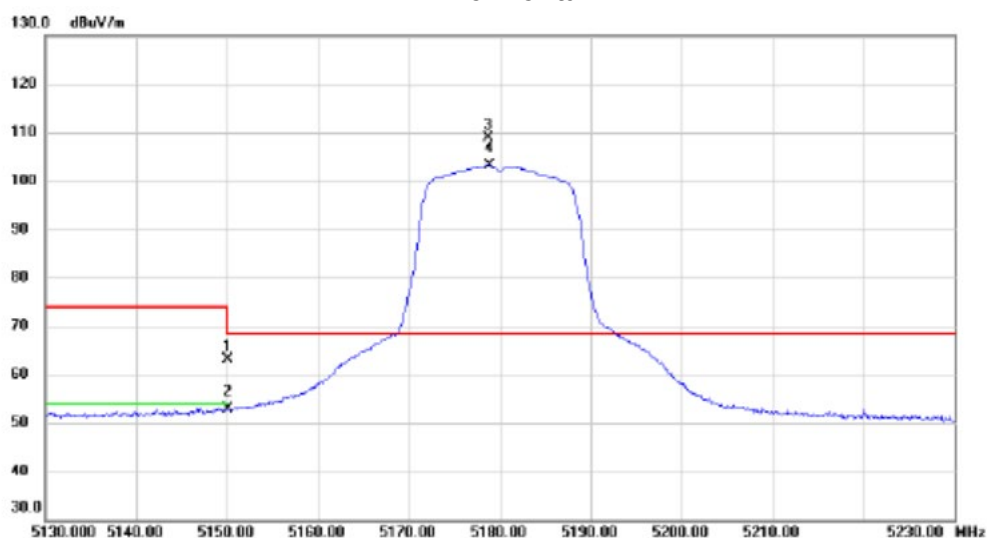
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2999.960	63.51	-15.48	48.03	68.30	-20.27	peak	
2	*	10357.65	52.34	1.52	53.86	68.30	-14.44	peak	

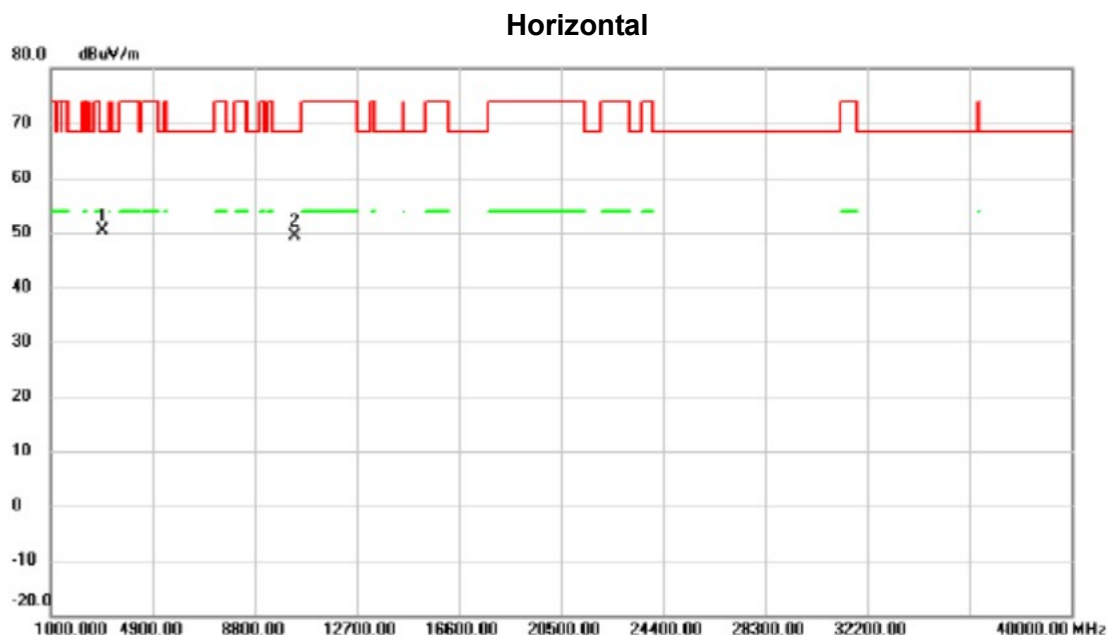
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5180 MHz

Horizontal



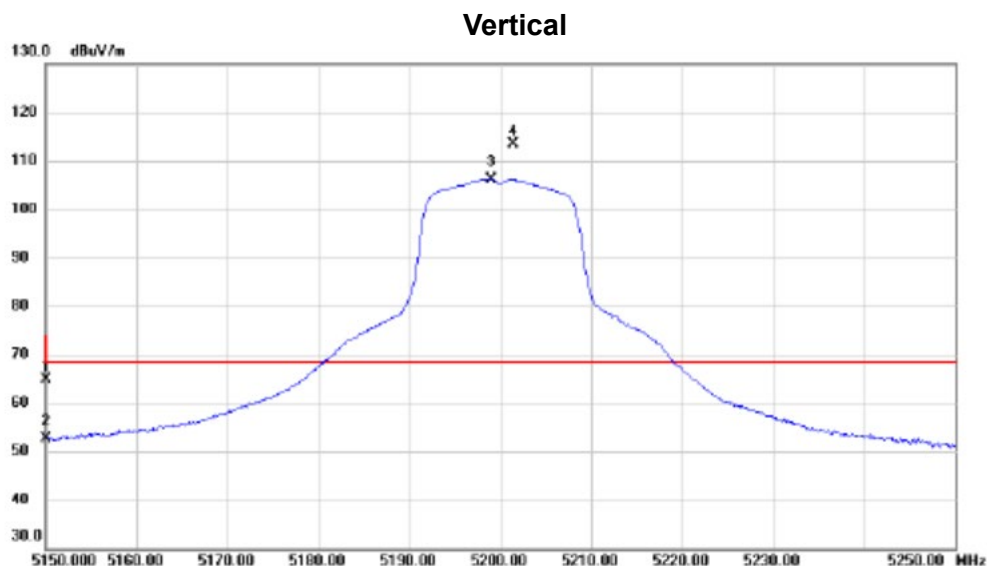
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	24.05	39.00	63.05	74.00	-10.95	peak	
2		5150.000	13.99	39.00	52.99	54.00	-1.01	AVG	
3	*	5178.700	69.88	39.09	108.97	68.30	40.67	peak	No Limit
4	X	5178.900	64.02	39.09	103.11	68.30	34.81	AVG	No Limit

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



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	3000.395	65.97	-15.48	50.49	68.30	-17.81	peak	
2		10359.15	47.93	1.52	49.45	68.30	-18.85	peak	

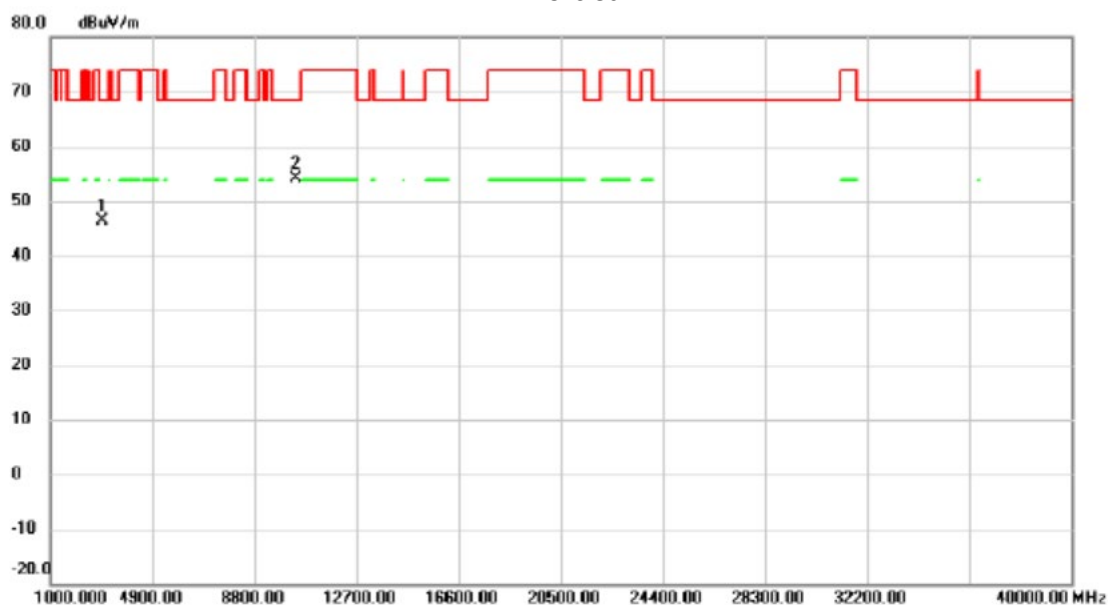
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200 MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	25.83	39.00	64.83	74.00	-9.17	peak	
2		5150.000	13.64	39.00	52.64	54.00	-1.36	AVG	
3	X	5199.000	67.08	39.16	106.24	68.30	37.94	AVG	No Limit
4	*	5201.350	74.21	39.16	113.37	68.30	45.07	peak	No Limit

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

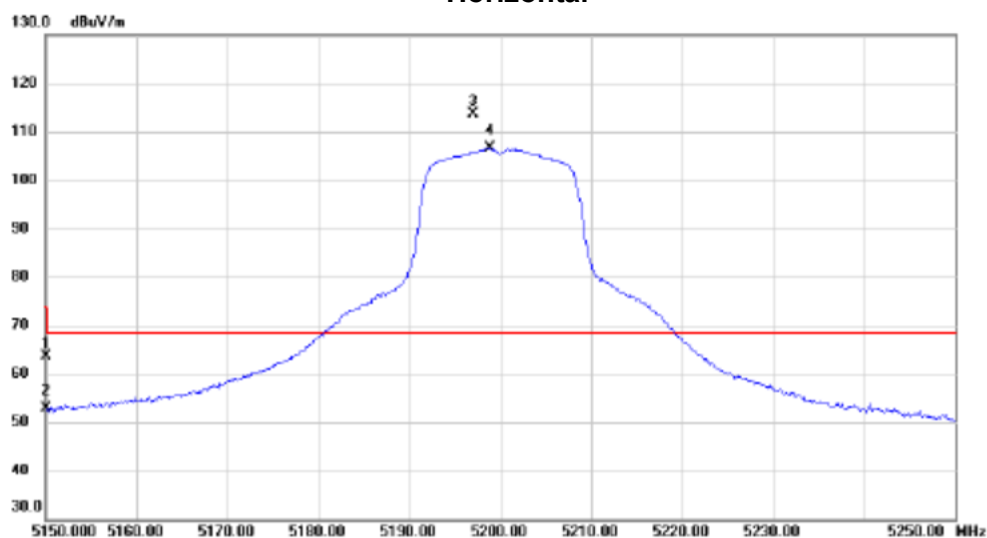
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2999.800	61.82	-15.48	46.34	68.30	-21.96	peak	
2	*	10401.57	52.69	1.56	54.25	68.30	-14.05	peak	

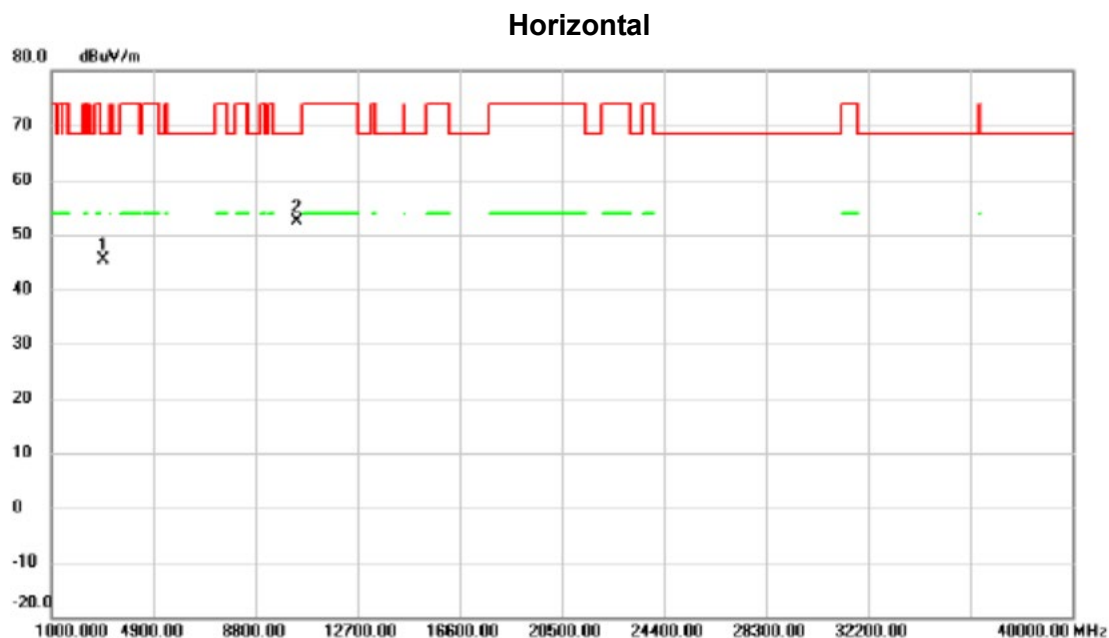
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200 MHz

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	24.65	39.00	63.65	74.00	-10.35	peak	
2		5150.000	13.85	39.00	52.85	54.00	-1.15	AVG	
3	*	5197.000	74.36	39.15	113.51	68.30	45.21	peak	No Limit
4	X	5198.850	67.36	39.16	106.52	68.30	38.22	AVG	No Limit

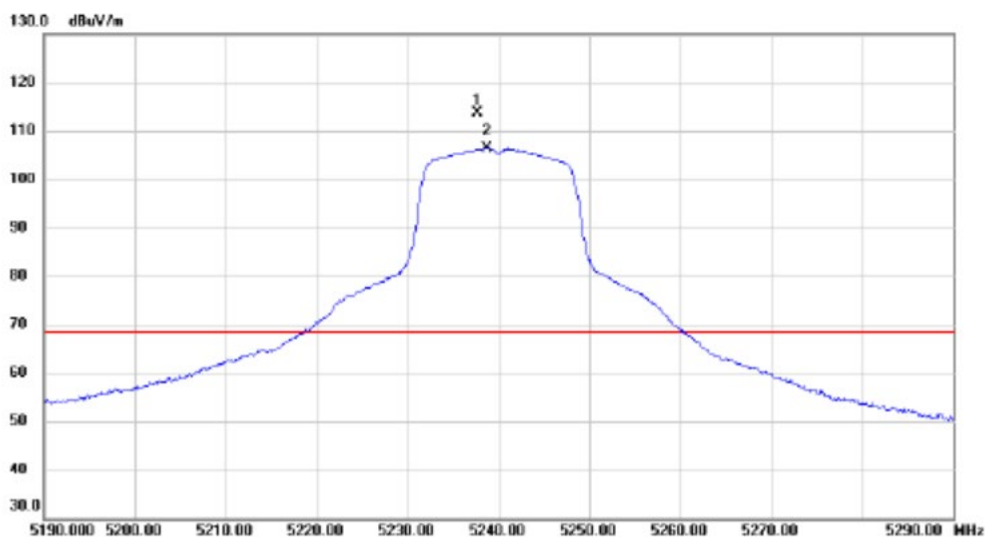
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5200 MHz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		3000.040	60.82	-15.48	45.34	68.30	-22.96	peak	
2	*	10399.97	50.83	1.56	52.39	68.30	-15.91	peak	

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

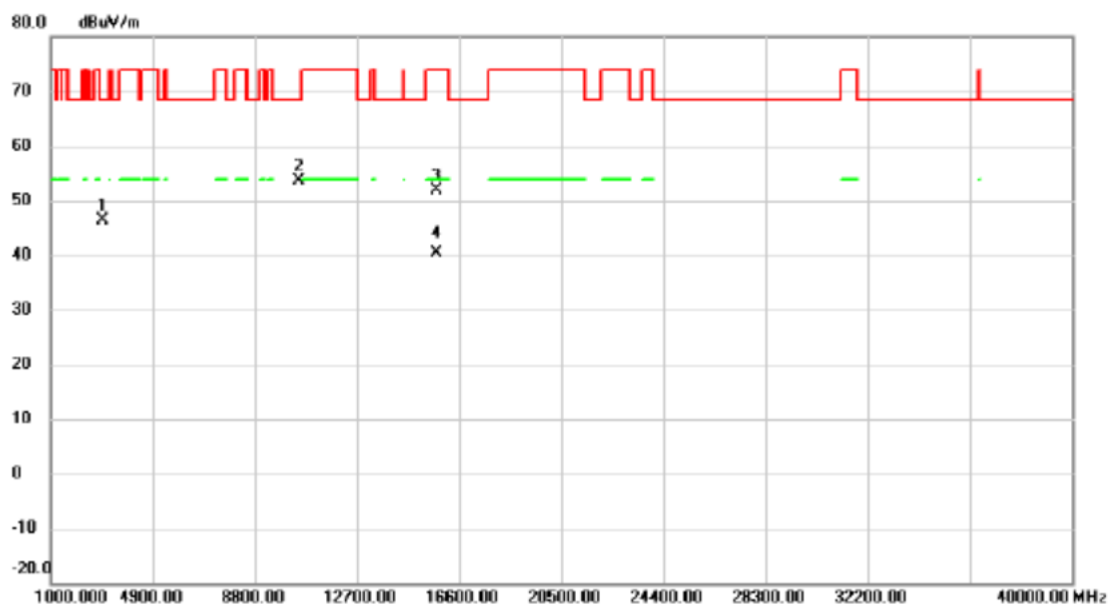
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5237.600	74.29	39.28	113.57	68.30	45.27	peak	No Limit
2	X	5238.700	67.12	39.29	106.41	68.30	38.11	AVG	No Limit

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

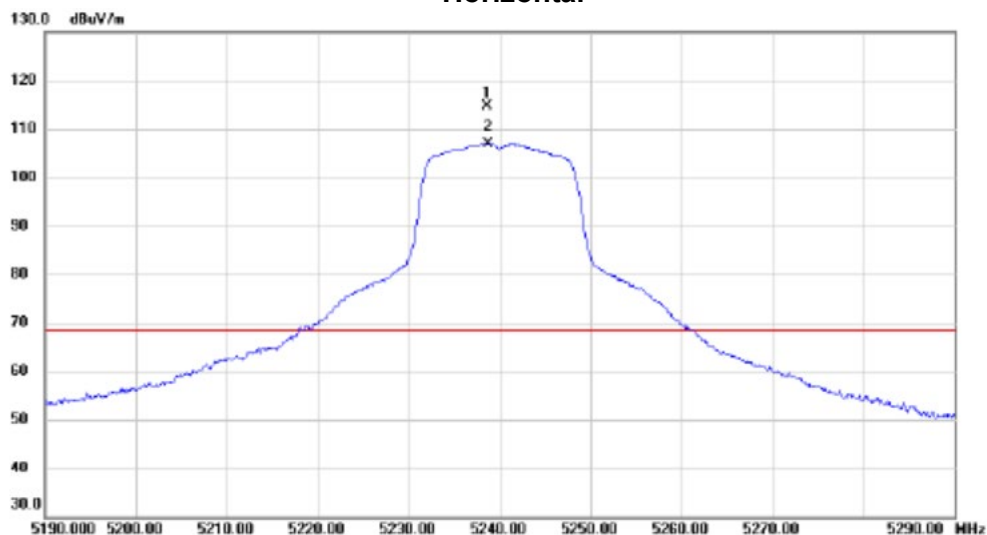
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2999.980	61.78	-15.48	46.30	68.30	-22.00	peak	
2		10480.80	51.87	1.64	53.51	68.30	-14.79	peak	
3		15716.02	49.50	2.50	52.00	74.00	-22.00	peak	
4	*	15722.00	38.01	2.48	40.49	54.00	-13.51	AVG	

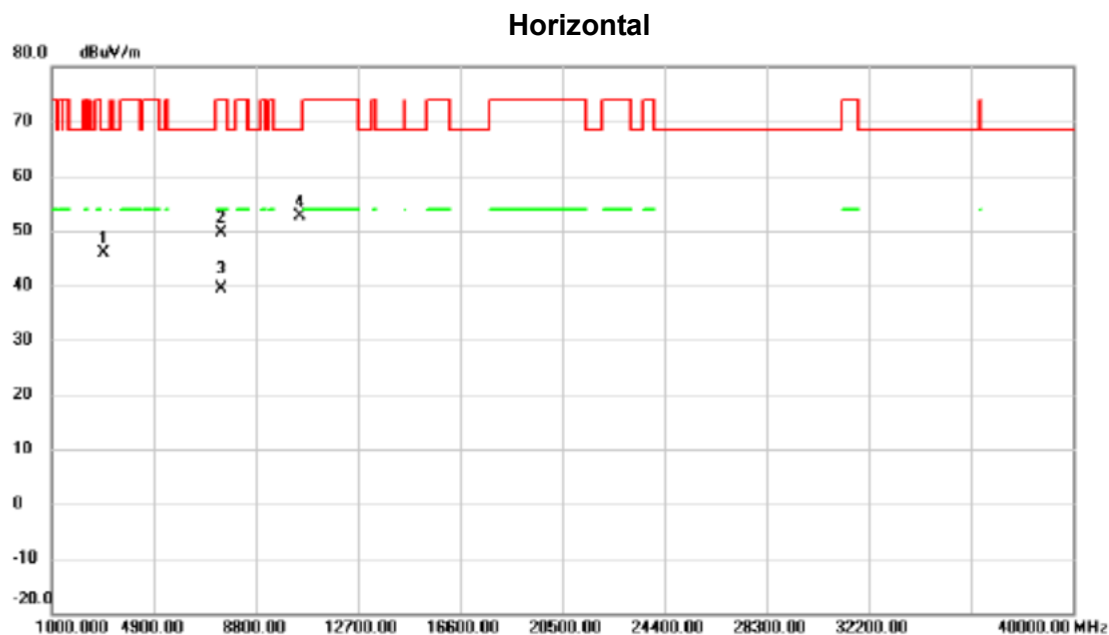
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5240 MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5238.600	75.33	39.28	114.61	68.30	46.31	peak	No Limit
2	X	5238.700	67.65	39.29	106.94	68.30	38.64	AVG	No Limit

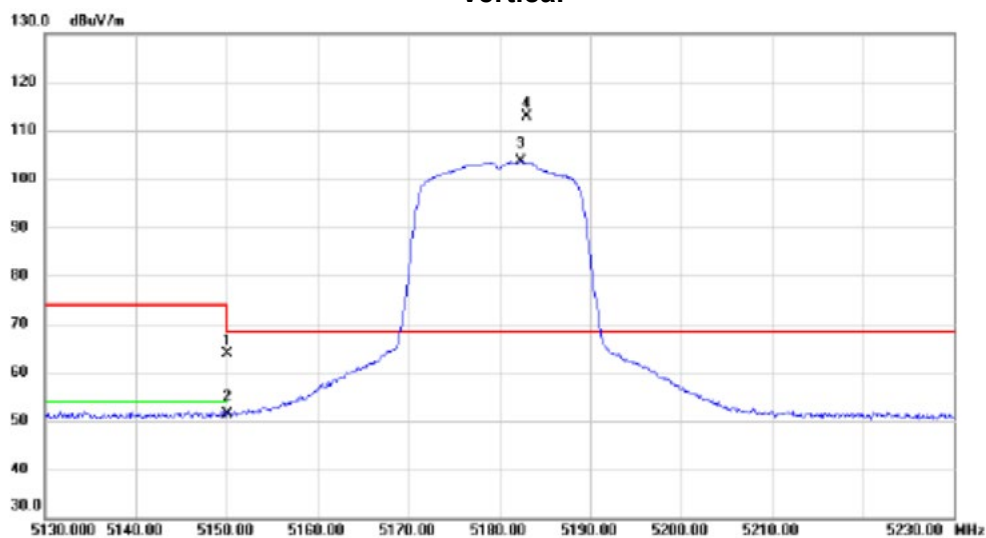
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX A Mode 5240 MHz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		3000.010	61.31	-15.48	45.83	68.30	-22.47	peak	
2		7493.340	52.18	-2.55	49.63	74.00	-24.37	peak	
3	*	7494.000	41.86	-2.55	39.31	54.00	-14.69	AVG	
4		10481.15	50.92	1.64	52.56	68.30	-15.74	peak	

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

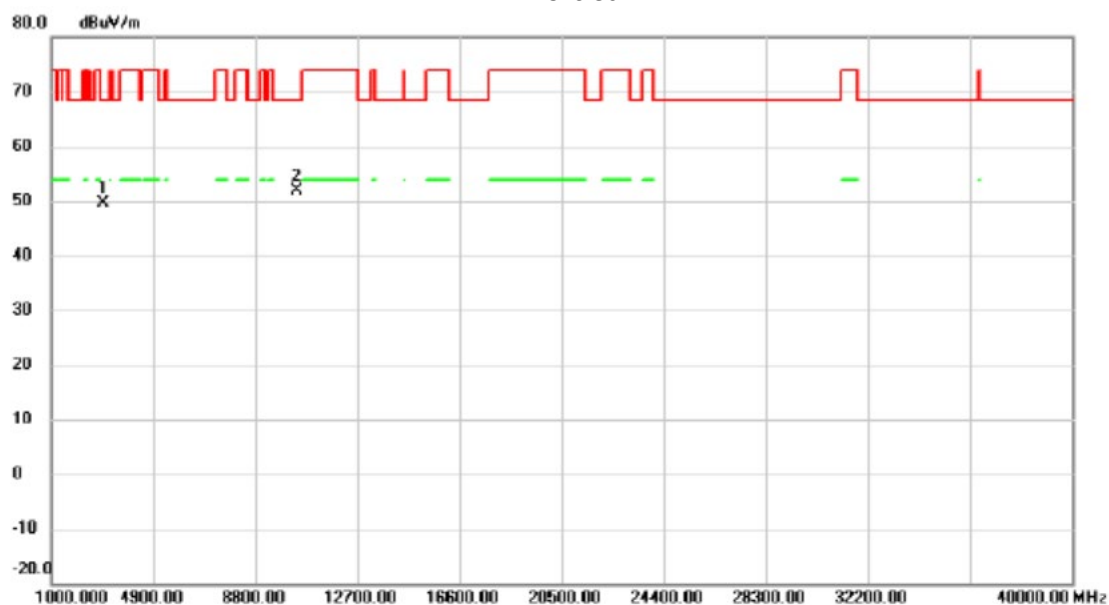
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	24.81	39.00	63.81	74.00	-10.19	peak	
2		5150.000	12.44	39.00	51.44	54.00	-2.56	AVG	
3	X	5182.300	64.46	39.10	103.56	68.30	35.26	AVG	No Limit
4	*	5182.950	73.78	39.10	112.88	68.30	44.58	peak	No Limit

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

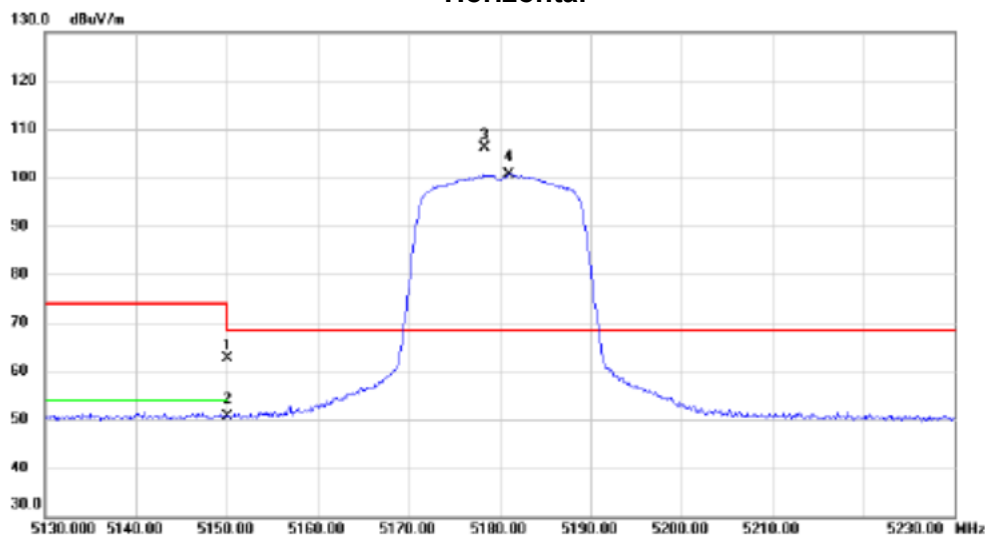
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		3000.210	65.13	-15.48	49.65	68.30	-18.65	peak	
2	*	10360.79	50.35	1.53	51.88	68.30	-16.42	peak	

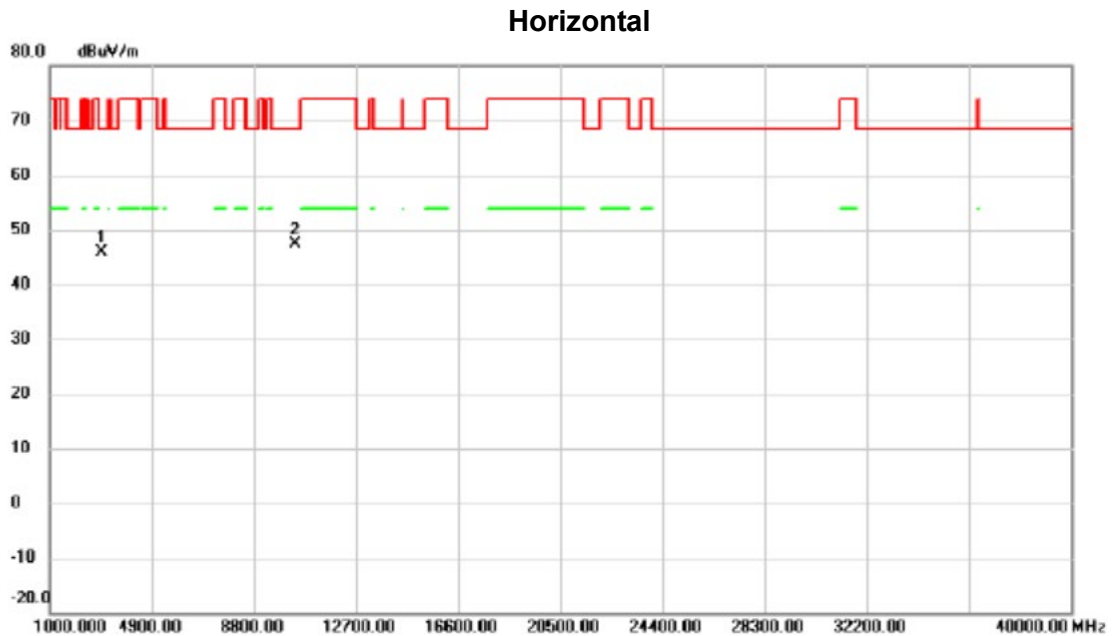
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180 MHz

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	23.55	39.00	62.55	74.00	-11.45	peak	
2		5150.000	11.70	39.00	50.70	54.00	-3.30	AVG	
3	*	5178.350	67.14	39.09	106.23	68.30	37.93	peak	No Limit
4	X	5181.000	61.61	39.10	100.71	68.30	32.41	AVG	No Limit

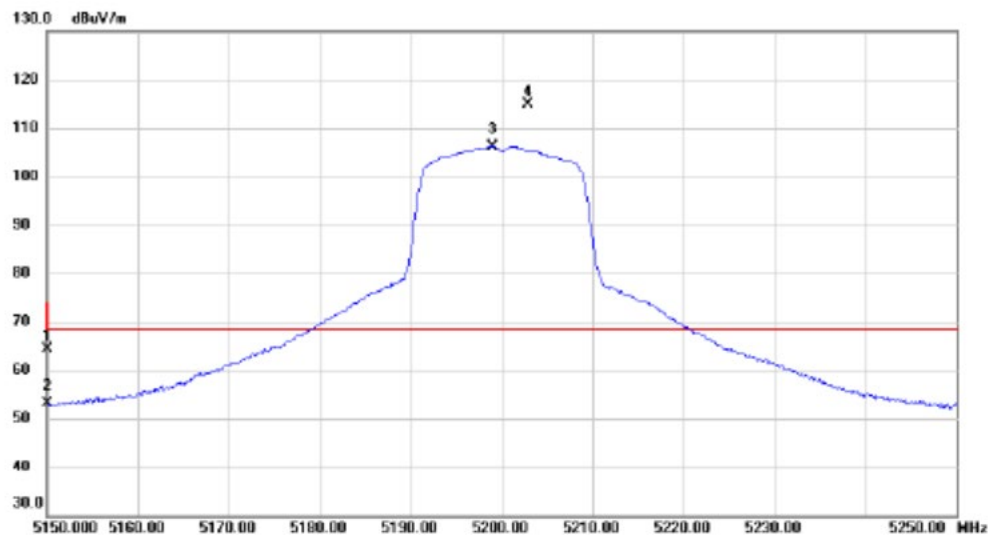
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5180 MHz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		3000.330	61.46	-15.48	45.98	68.30	-22.32	peak	
2	*	10361.52	45.89	1.53	47.42	68.30	-20.88	peak	

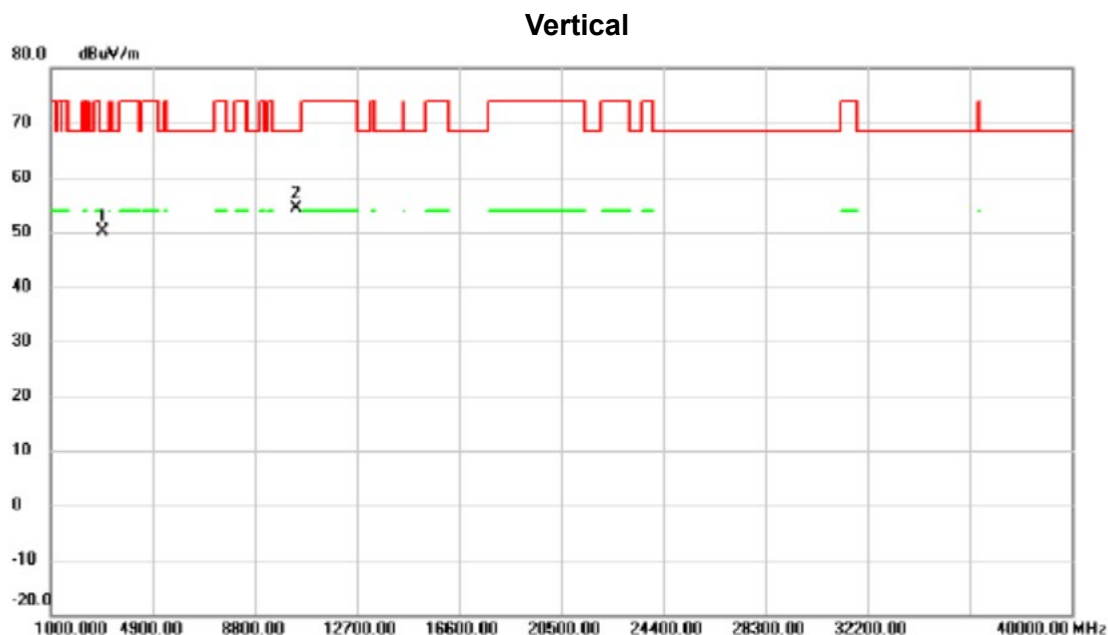
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5200 MHz

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	25.48	39.00	64.48	74.00	-9.52	peak	
2		5150.000	14.02	39.00	53.02	54.00	-0.98	AVG	
3	X	5199.000	67.07	39.16	106.23	68.30	37.93	AVG	No Limit
4	*	5202.900	75.63	39.18	114.81	68.30	46.51	peak	No Limit

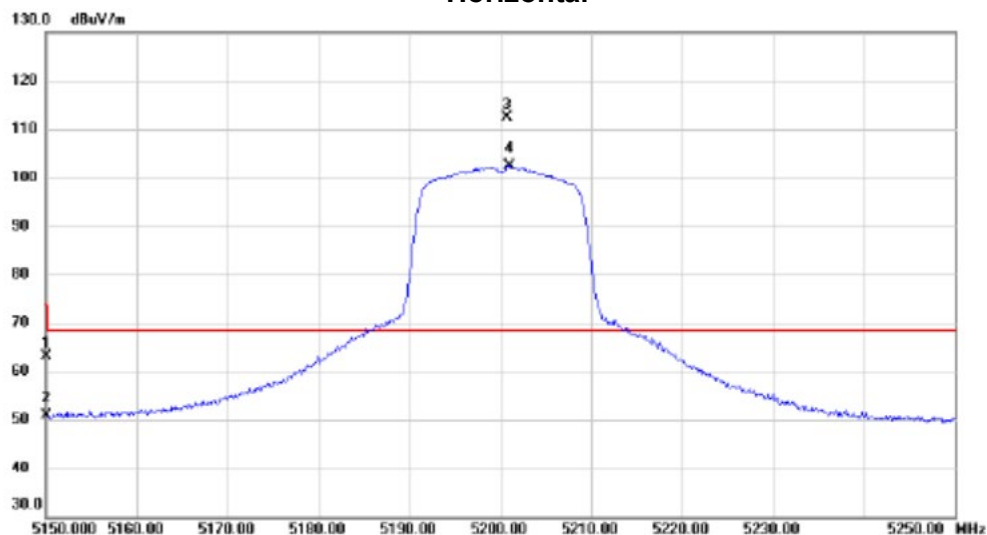
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5200 MHz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2999.940	65.70	-15.48	50.22	68.30	-18.08	peak	
2	*	10397.70	52.71	1.56	54.27	68.30	-14.03	peak	

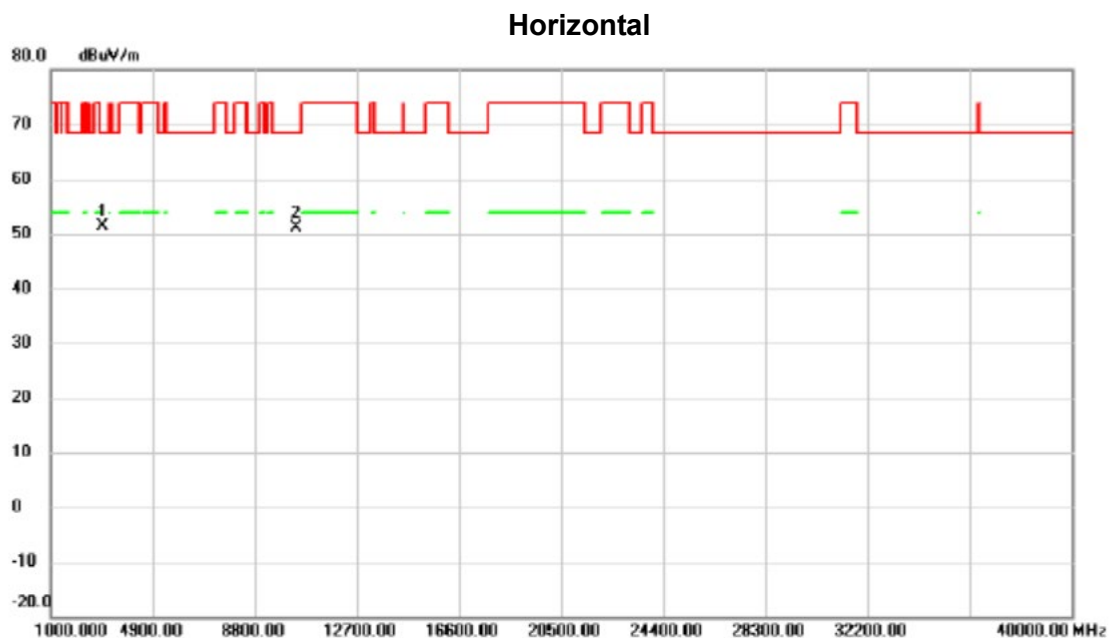
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5200 MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	24.14	39.00	63.14	74.00	-10.86	peak	
2		5150.000	11.82	39.00	50.82	54.00	-3.18	AVG	
3	*	5200.700	73.26	39.16	112.42	68.30	44.12	peak	No Limit
4	X	5201.000	63.25	39.16	102.41	68.30	34.11	AVG	No Limit

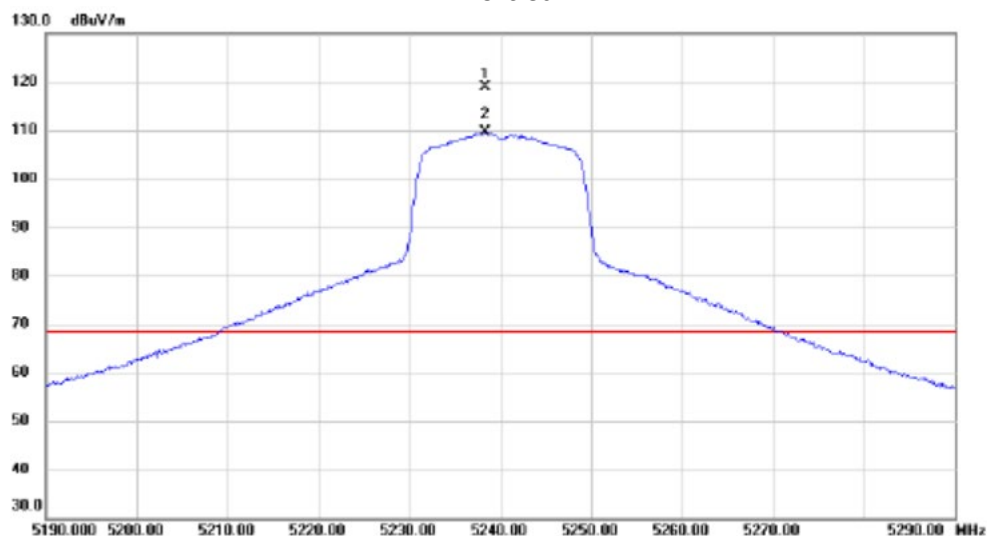
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5200 MHz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	3000.300	66.80	-15.48	51.32	68.30	-16.98	peak	
2		10403.00	49.47	1.56	51.03	68.30	-17.27	peak	

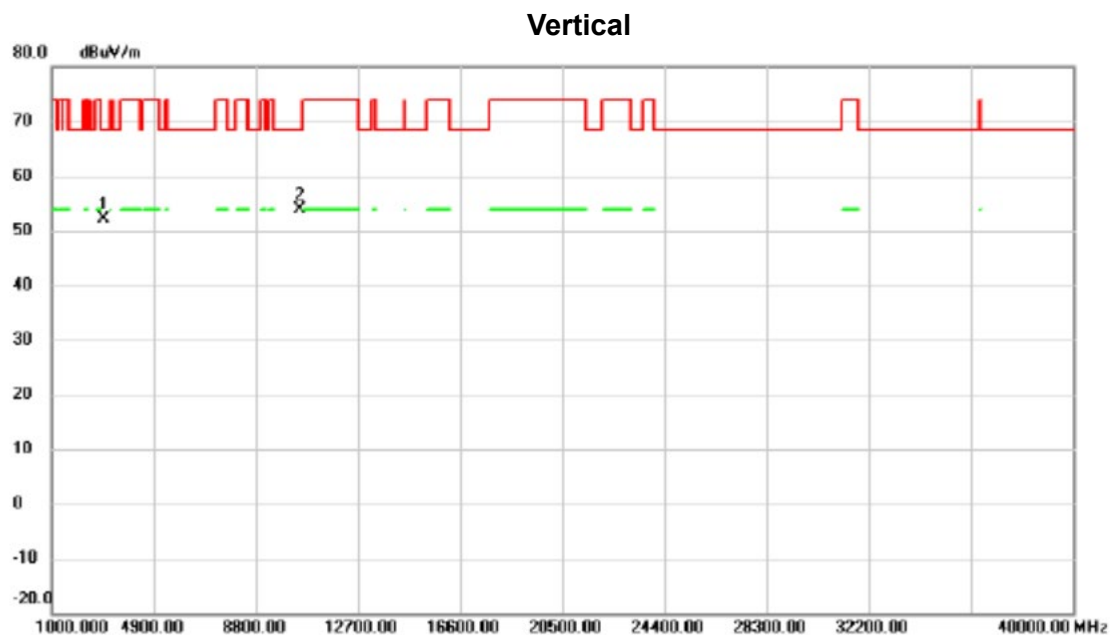
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240 MHz

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	5238.300	79.69	39.28	118.97	68.30	50.67	peak	No Limit
2	X	5238.400	70.36	39.28	109.64	68.30	41.34	AVG	No Limit

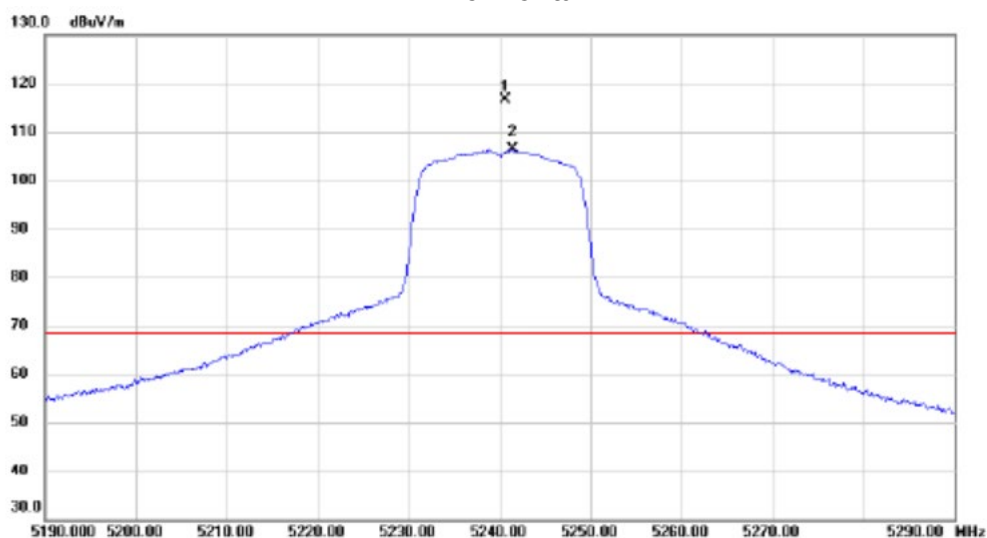
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240 MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		3000.200	67.58	-15.48	52.10	68.30	-16.20	peak	
2	*	10480.20	52.15	1.64	53.79	68.30	-14.51	peak	

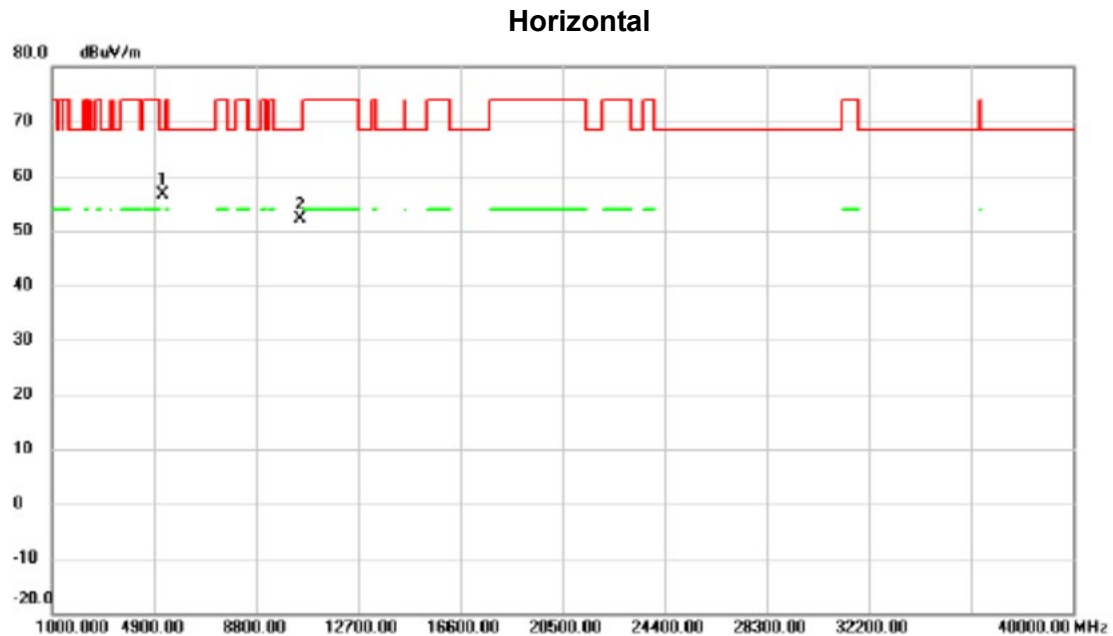
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240 MHz

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	5240.650	77.23	39.30	116.53	68.30	48.23	peak	No Limit
2	X	5241.400	67.07	39.30	106.37	68.30	38.07	AVG	No Limit

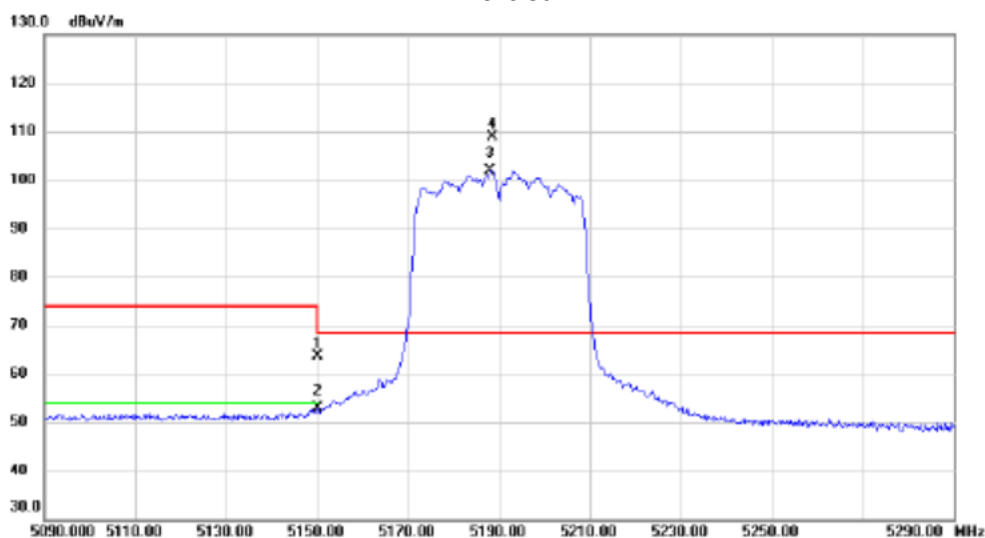
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240 MHz



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment				
			dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5240.800	65.72	-9.08	56.64	68.30	-11.66	peak	
2		10476.20	50.49	1.63	52.12	68.30	-16.18	peak	

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

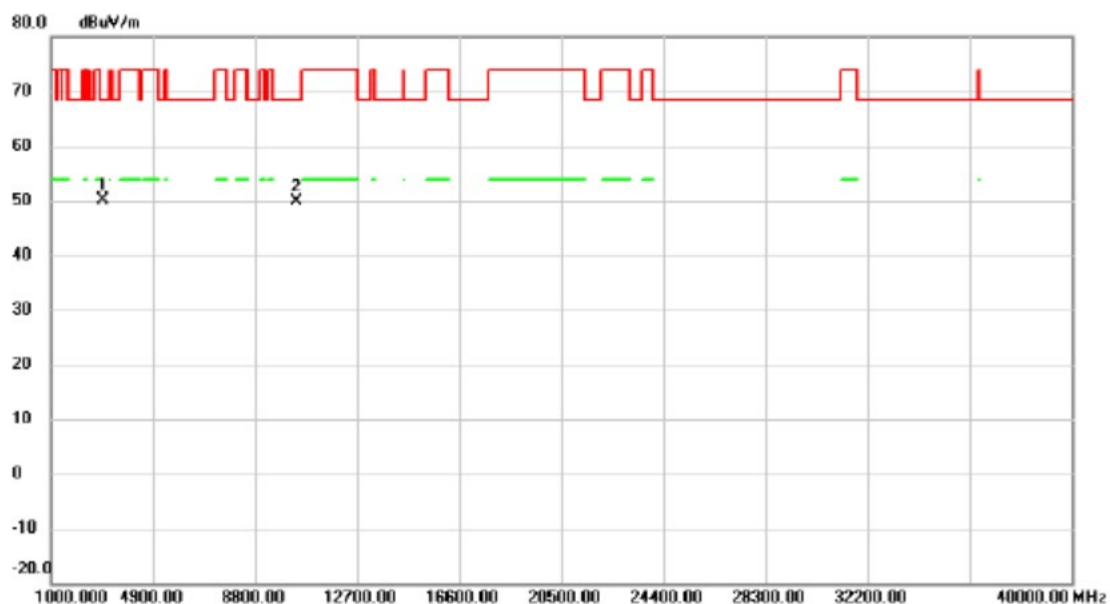
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	24.75	39.00	63.75	74.00	-10.25	peak	
2		5150.000	13.92	39.00	52.92	54.00	-1.08	AVG	
3	X	5188.100	62.84	39.12	101.96	68.30	33.66	AVG	No Limit
4	*	5188.600	69.77	39.12	108.89	68.30	40.59	peak	No Limit

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

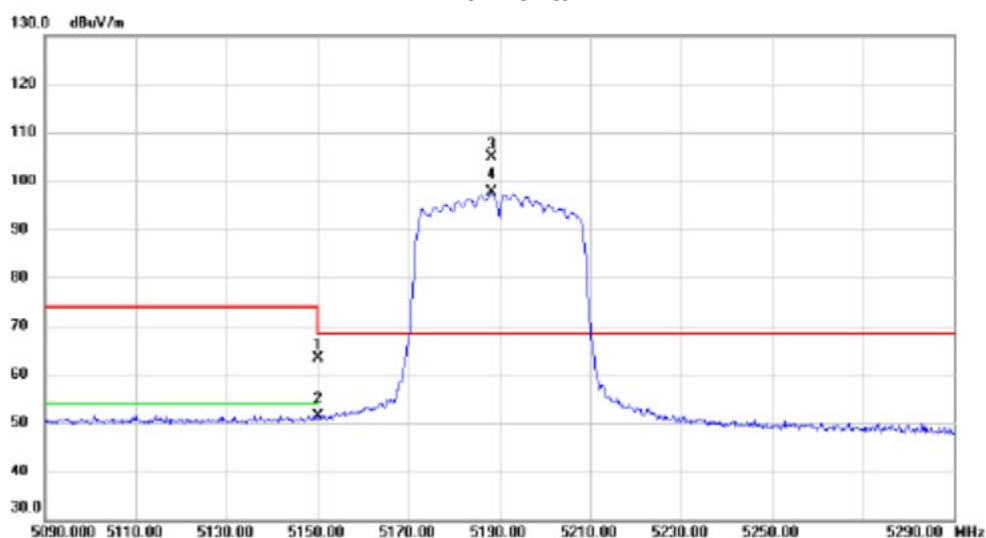
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2999.940	65.51	-15.48	50.03	68.30	-18.27	peak	
2		10379.52	48.37	1.54	49.91	68.30	-18.39	peak	

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

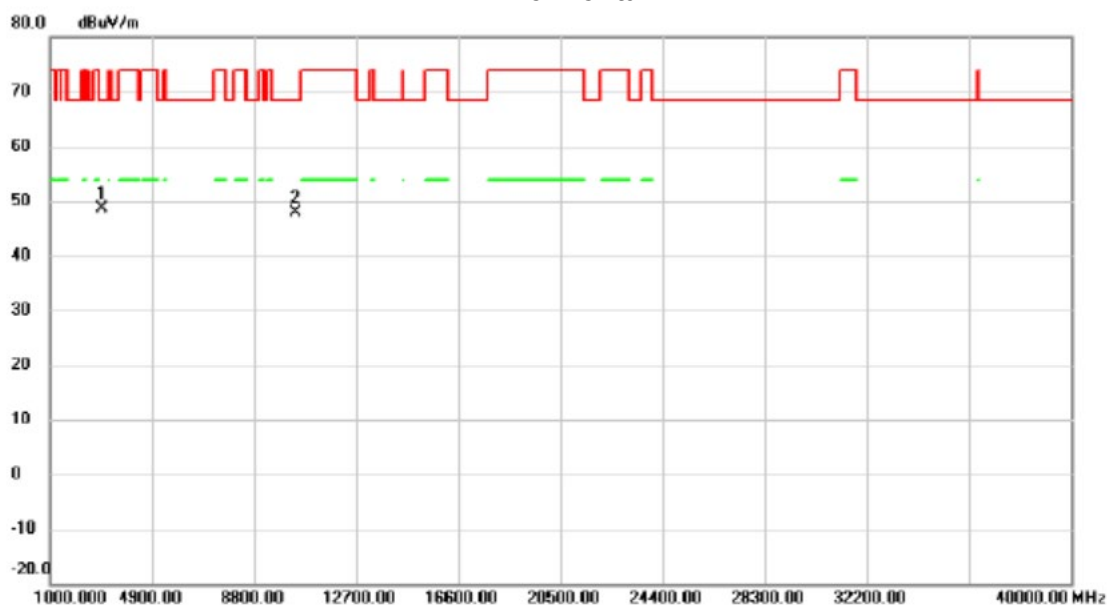
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	24.44	39.00	63.44	74.00	-10.56	peak	
2		5150.000	12.28	39.00	51.28	54.00	-2.72	AVG	
3	*	5188.200	65.68	39.12	104.80	68.30	36.50	peak	No Limit
4	X	5188.200	58.48	39.12	97.60	68.30	29.30	AVG	No Limit

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

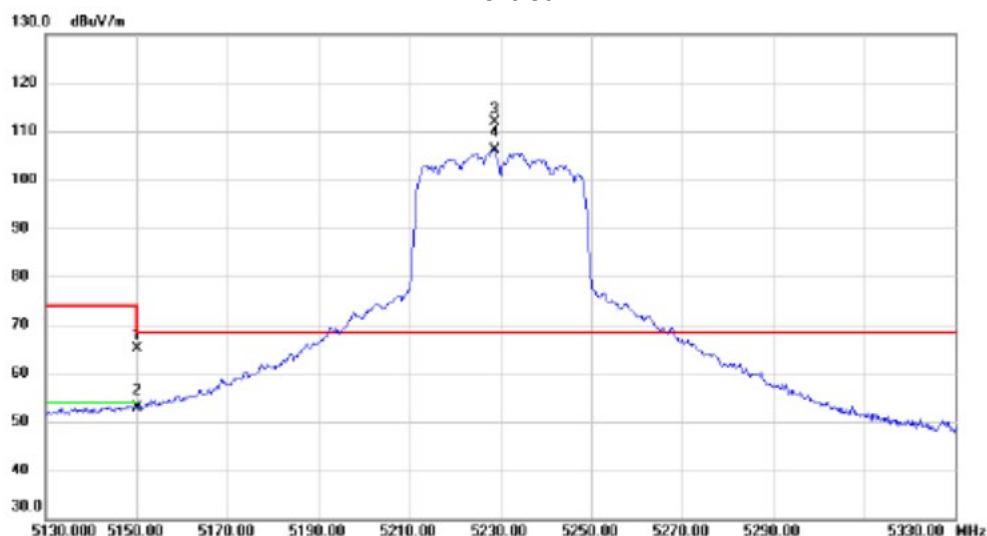
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	2999.760	64.18	-15.48	48.70	68.30	-19.60	peak	
2		10381.68	46.27	1.54	47.81	68.30	-20.49	peak	

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

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		5150.000	26.13	39.00	65.13	74.00	-8.87	peak	
2		5150.000	13.91	39.00	52.91	54.00	-1.09	AVG	
3	*	5228.700	72.64	39.25	111.89	68.30	43.59	peak	No Limit
4	X	5228.800	66.97	39.25	106.22	68.30	37.92	AVG	No Limit