FCC Radio Test Report

FCC ID: A4C-10009A

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

Project No.	:	1605099
Equipment	:	OverDryve 7
Test Model	:	OD7
Applicant	:	RM Acquisition, LLC
Address	:	9855 Woods Drive Skokie, IL 60077 USA

Date of Receipt	:	May 20, 2016
Date of Test	:	May 20, 2016 ~ Jun. 01, 2016
Issued Date	:	Jun. 03, 2016
Tested by	:	BTL Inc.

Testing Engineer : Rush Kao
(Rush Kao)

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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).

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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

Issued No.	Description	Issued Date
BTL-FCCP-2-1605099	Original Issue.	Jun. 03, 2016

1. CERTIFICATION

Equipment	:	OverDryve 7
Brand Name	:	RAND McNALLY
Test Model	:	OD7
Applicant	:	RM Acquisition, LLC
Date of Test	:	May 20, 2016 ~ Jun. 01, 2016
Test Sample	:	Engineering Sample
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-2-1605099) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the 5G WIFI UNII-1 part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart E			
Standard(s) Section	Test Item	Judgment	Under Limit
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

Conducted emission Test:

C05: (VCCI RN: C-4742; FCC RN:949005; FCC DN:TW1082)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Below 1 GHz):

CB11: (VCCI RN: R-4260; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1 GHz):

CB11: (VCCI RN: G-868; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

2.2 MEASUREMENT UNCERTAINTY

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

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

A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	2.04

B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
CB11 (3m)	CISPR	30MHz ~ 200MHz	V	3.06
		30MHz ~ 200MHz	H	2.58
		200MHz ~ 1,000MHz	V	3.50
		200MHz ~ 1,000MHz	H	3.10

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
CB11 (3m)	CISPR	1GHz ~ 6GHz	V	4.14
		1GHz ~ 6GHz	H	4.14
		6GHz ~ 18GHz	V	5.34
		6GHz ~ 18GHz	H	5.34

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.

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	OverDryve 7		
Brand Name	RAND McNALLY		
Test Model	OD7		
Model Difference	N/A		
EUT Power Rating	I/P: DC 5V		
Power Adapter Manufacturer	Chicony	Model	W12-010N3A
	DVE	Model	DDA-18A-05 053350
Power Adapter Power Rating	For W12-010N3A I/P: AC 100-240V 50/60Hz 0.3A O/P: DC 5V 2A For DDA-18A-05 053350 I/P: DC 12/24V 2A O/P: DC 5.3V 3.5A		
Battery Pack Manufacturer	McNair New Power	Model	MLP4110172
Product Description	Operation Frequency		UNII-1: 5150-5250MHz
	Modulation Type		OFDM
	Bit Rate of Transmitter		MSC7
Output Power (Max.)	UNII-1		802.11a: 14.01 dBm 802.11n (20M): 12.77 dBm

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 20MHz	
UNII-1	
Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240

3. Table for Filed Antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	JIENG TAI	AH-JT-1575Y2211	PIFA	iPEX	2.66	TX/RX

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 Mode **Note (3)**

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

For AC Power Line Conducted Emissions Test	
Final Test Mode	Description
Mode 3	TX Mode **Note (3)**

For Radiated Emissions 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 Mode **Note (3)**

Note:

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

(2) The EUT was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

(3) The EUT includes two power sources: Adapter and Smart Mount + Adapter. Power source Adapter is the worst mode for all test items

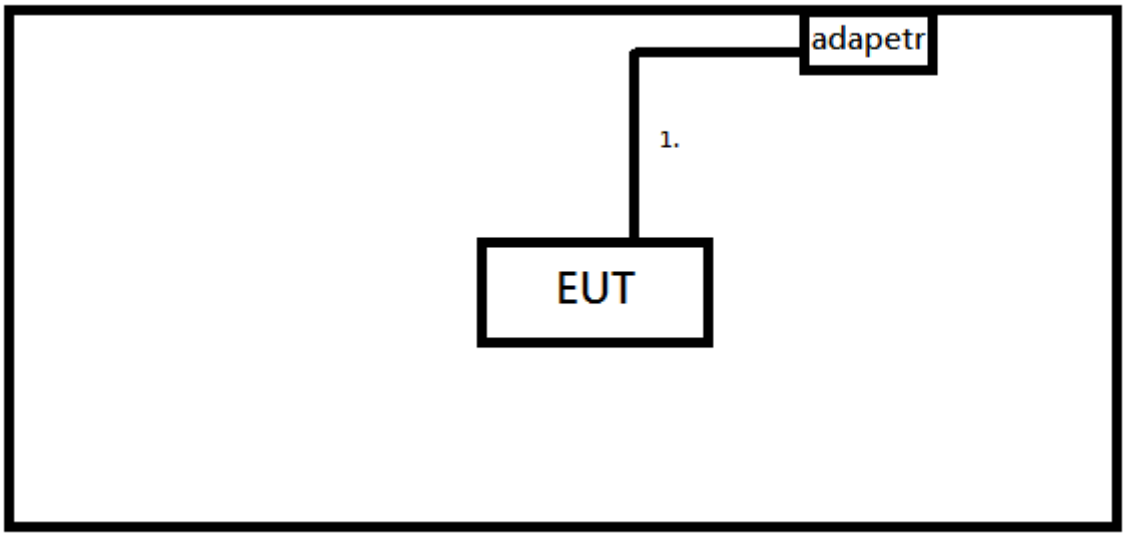
3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

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

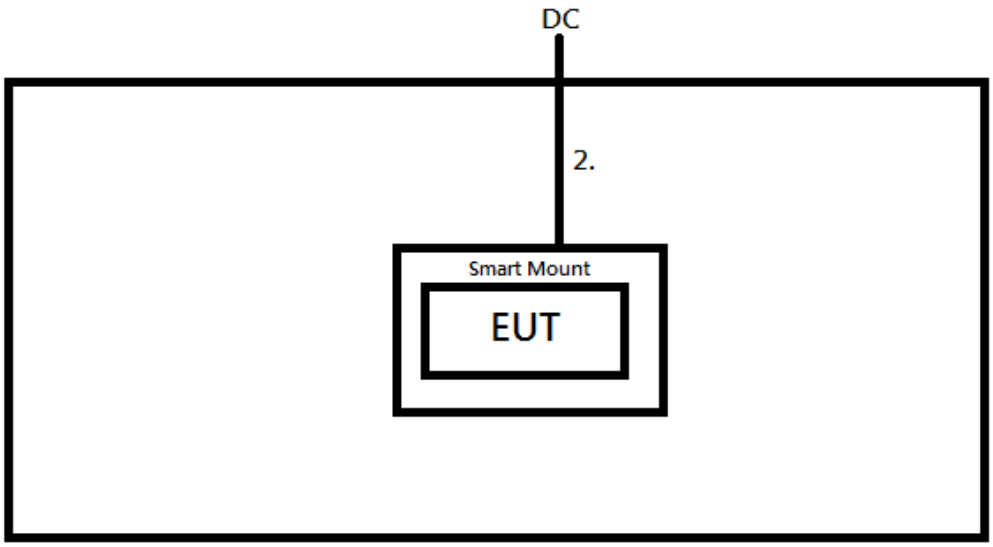
UNII-1			
Test Software Version	ART		
Frequency (MHz)	5180	5200	5240
A Mode	DEF	DEF	DEF
N20 Mode	DEF	DEF	DEF

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Power source: Adapter



Power source: Smart Mount + Adapter



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.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	0.8m	USB Cable
2	NO	NO	2m	DC Adapter

Note:

(1) The support equipment was authorized by Declaration of Conformity (DOC).

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.5	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 limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) 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 equipments 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.

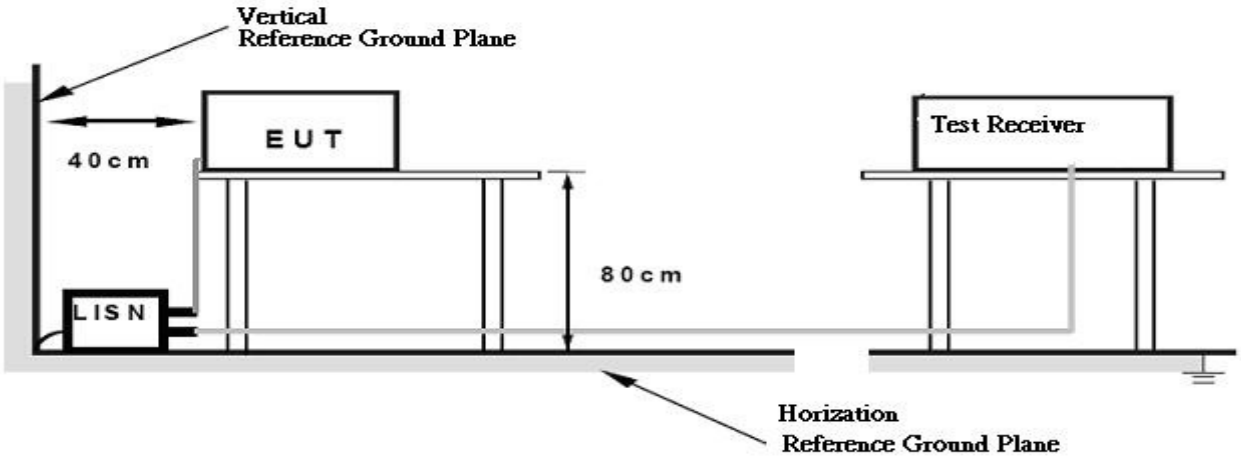
d. LISN at least 80 cm from nearest part of EUT chassis.

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 placed on the test table and programmed in normal function.

4.1.6 EUT TEST CONDITIONS

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

4.1.7 TEST RESULTS

Please refer to the 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.

(3) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

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

Note: 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)

4.2.2 TEST PROCEDURE

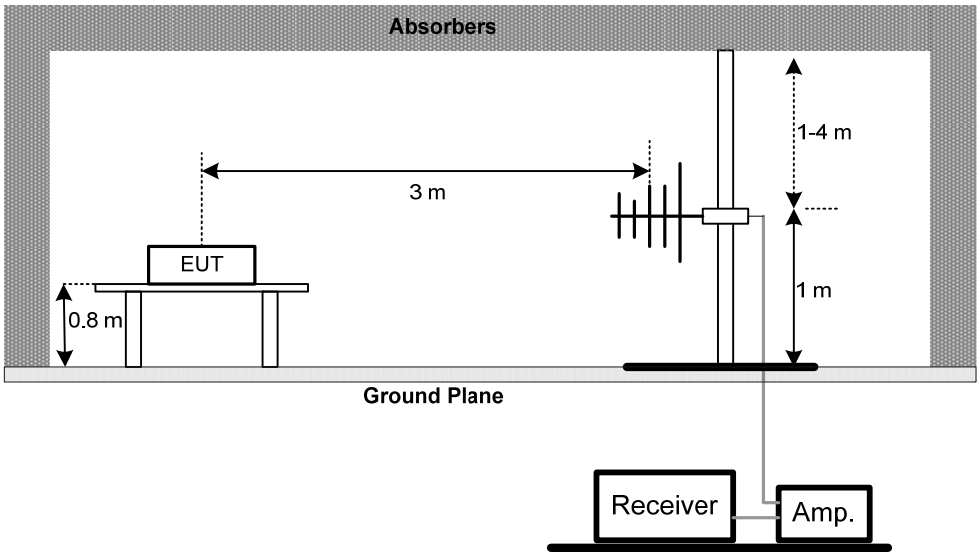
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance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

4.2.3 DEVIATION FROM TEST STANDARD

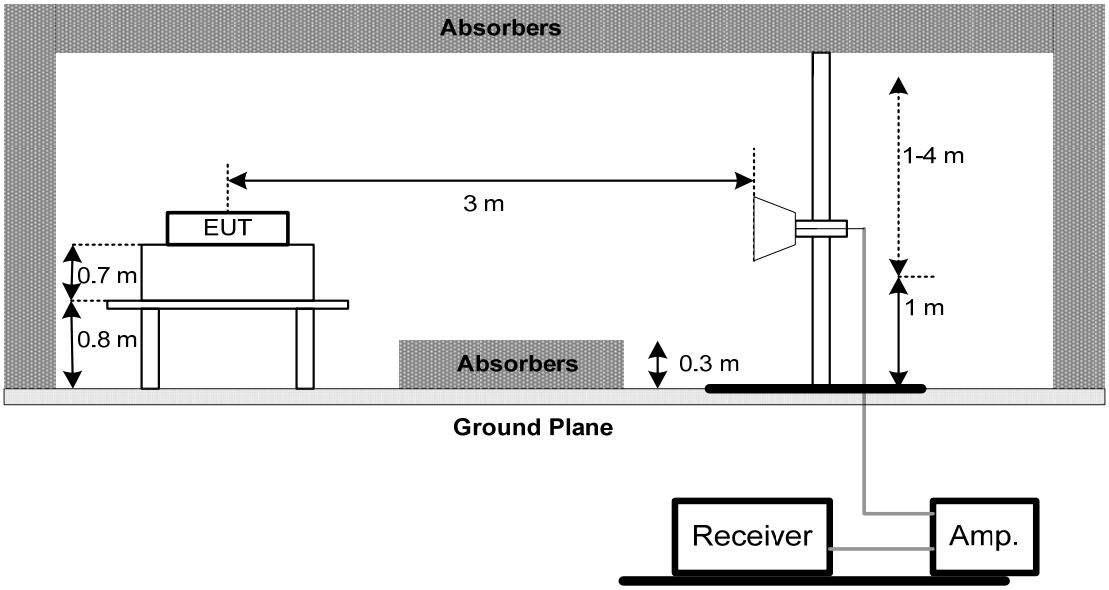
No deviation

4.2.4 TEST SETUP

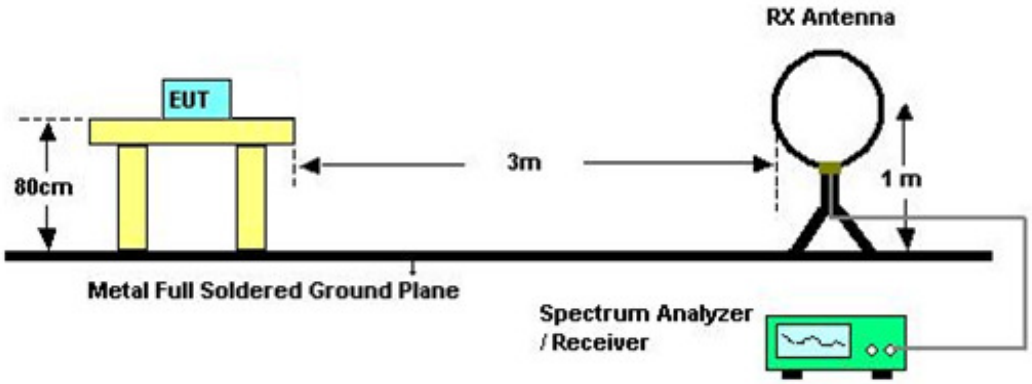
(A) Radiated Emission Test Set-Up Frequency Below 1GHz



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



(C) Radiated emissions below 30MHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 45% 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 (30 TO 1000 MHz)

Please refer to the Attachment C.

Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120kHz, SPA setting in RBW=120kHz, VBW =120kHz, Swp. Time = 0.3 sec./MHz ◦
(2) 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 ◦
(3) Measuring frequency range from 30MHz to 1000MHz ◦
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦

4.2.9 TEST RESULTS (1GHZ~10TH HARMONIC)

Please refer to the Attachment D.

Remark:

(1) Spectrum Setting: 30MHz – 1000MHz , RBW= 100kHz, VBW=100kHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
(6) EUT Orthogonal Axes:
"X" - denotes Laid on Table, "Y" - denotes Vertical Stand, "Z" - denotes Side Stand
(7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.
(8) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

4.3 BAND EDGE MEASUREMENT

4.3.1 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.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

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

Note: 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)

4.3.2 TEST PROCEDURE

For Radiated band edges Measurement:

a. The test procedure is the same as section 4.2.2, only the freqeuncy range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

a. Test was performed in accordance with KDB 789033 D02 General UNII Test Procedures New Rules v01.

4.3.3 DEVIATION FROM TEST STANDARD

No deviation

4.3.4 TEST SETUP LAYOUT

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.2.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.2.4.

4.3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.3.6 EUT TEST CONDITIONS

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

4.3.7 TEST RESULTS (BAND EDGE AND FUNDAMENTAL EMISSIONS)

Please refer to the Attachment E

Remark:

(1) Spectrum Setting: 30MHz – 1000MHz , RBW= 100kHz, VBW=100kHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axes:
"X" - denotes Laid on Table, "Y" - denotes Vertical Stand, "Z" - denotes Side Stand

(7) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

(8) 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

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E			
Test Item	Limit	Frequency Range (MHz)	Result
Bandwidth	26 dB Bandwidth	5150-5250	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.

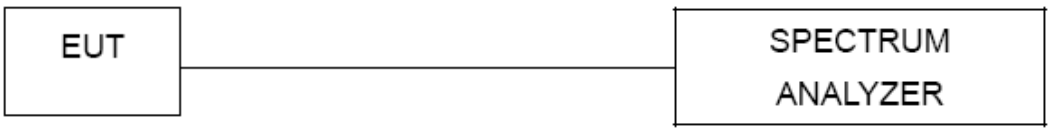
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	300 kHz
VBW	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

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

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.1.5 EUT TEST CONDITIONS

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

5.1.6 TEST RESULTS

Please refer to the Attachment F.

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 APPLIED 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
Note: The maximum e.i.r.p at anyelevation angle above 30 degrees as measured from the horizon must not exceed 125mW(21dBm)			

6.1.1 TEST PROCEDURE

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

b.

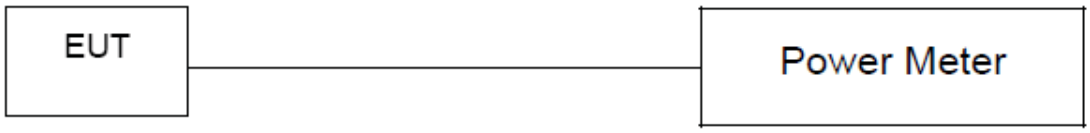
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	= 1MHz.
VBW	≥ 3MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	auto

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

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.1.5 EUT TEST CONDITIONS

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

6.1.6 TEST RESULTS

Please refer to the Attachment G.

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:17dBm/MHz Mobile and portable:11dBm/MHz	5150-5250	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	= 1MHz.
VBW	≥ 3MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

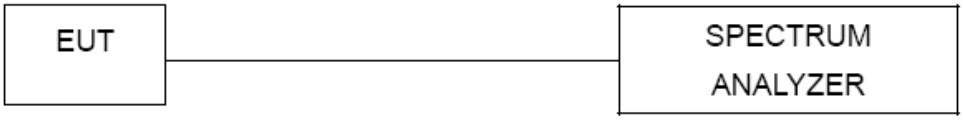
Note:

1. 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.

7.1.1 DEVIATION FROM STANDARD

No deviation.

7.1.2 TEST SETUP



7.1.3 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.1.4 EUT TEST CONDITIONS

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

7.1.5 TEST RESULTS

Please refer to the Attachment 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

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

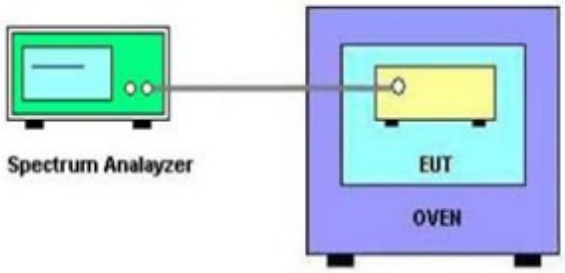
c. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

d. User manual temperature is 0°C~40°C.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.1.5 EUT TEST CONDITIONS

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

8.1.6 TEST RESULTS

Please refer to the Attachment I.

9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 26, 2017
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 14, 2016
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 09, 2016
4	Power Dividers	HP	11636A	8103	May 04, 2016
5	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jul. 30, 2016
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 20, 2016
3	Horn Antenna	Schwarzbeck	BBHA 9120	9120D-1333	May 20, 2016
4	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 16, 2016
5	Pre-Amplifier	Agilent	8449B	3008A01714	Apr. 14, 2016
6	Test Cable	LMR	LMR-400	01(10M)	May 12, 2016
7	Test Cable	LMR	LMR-400	01(3M)	May 12, 2016
8	Test Cable	Harbour industries	27478LL142	1M	May 13, 2016
9	Test Cable	Harbour industries	27478LL142	3M	May 13, 2016
10	Test Cable	AISI	S104-SMAP-1	8M	May 13, 2016
11	Spectrum Analyzer	Agilent	N9020A	MY51160196	Aug. 02, 2016
12	EMI Test Receiver	R&S	ESCI	100080	May 13, 2016
13	Measurement Software	Farad	EZ_EMC (Version NB-03A)	N/A	N/A
14	Loop Ant	EMCO	6502	42960	Nov.15.2016

Spectrum Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017

Maximum Conducted Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	May 19, 2016
2	Power Meter Sensor	Anritsu	MA2491A	034138	May 18, 2016

Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017

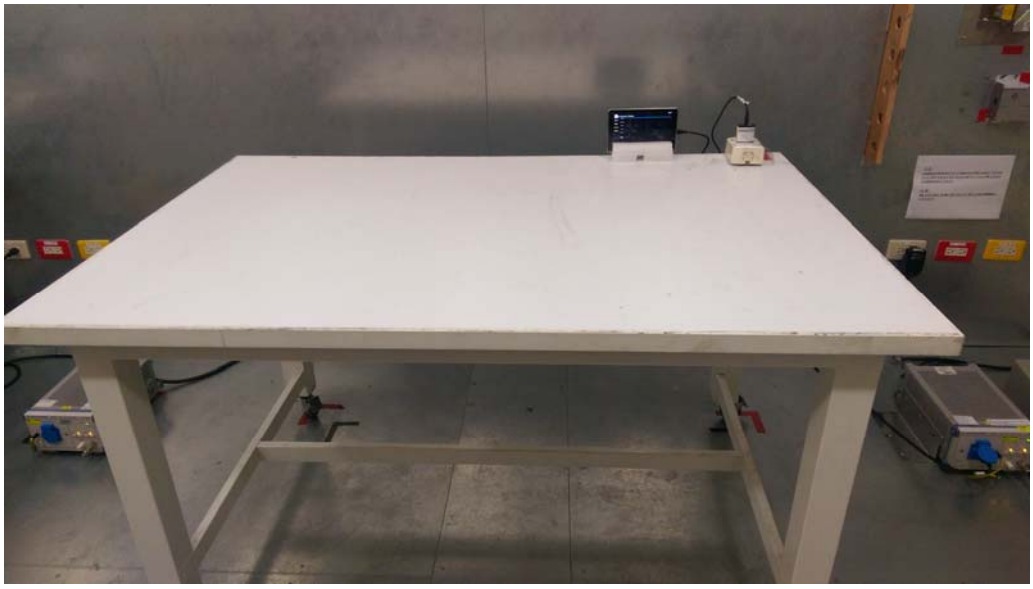
Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017
2	Const Temp. & Humidity Chamber	Giant Force	ITH-225-20-S	IAB0309-001	Dec.04 2016

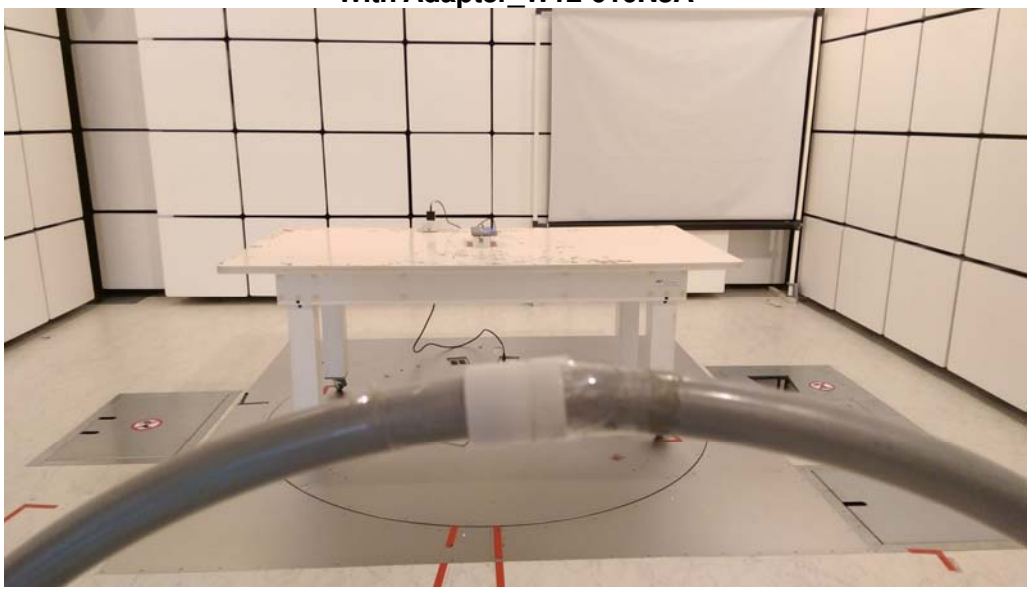
Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

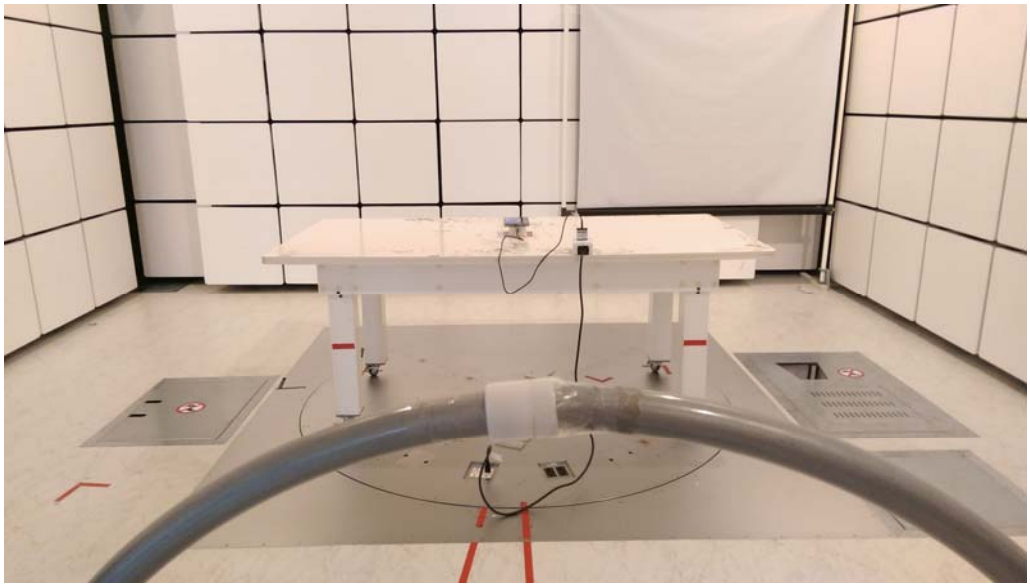
10. EUT TEST PHOTOS

Conducted Measurement Photos
With Adapter_W12-010N3A

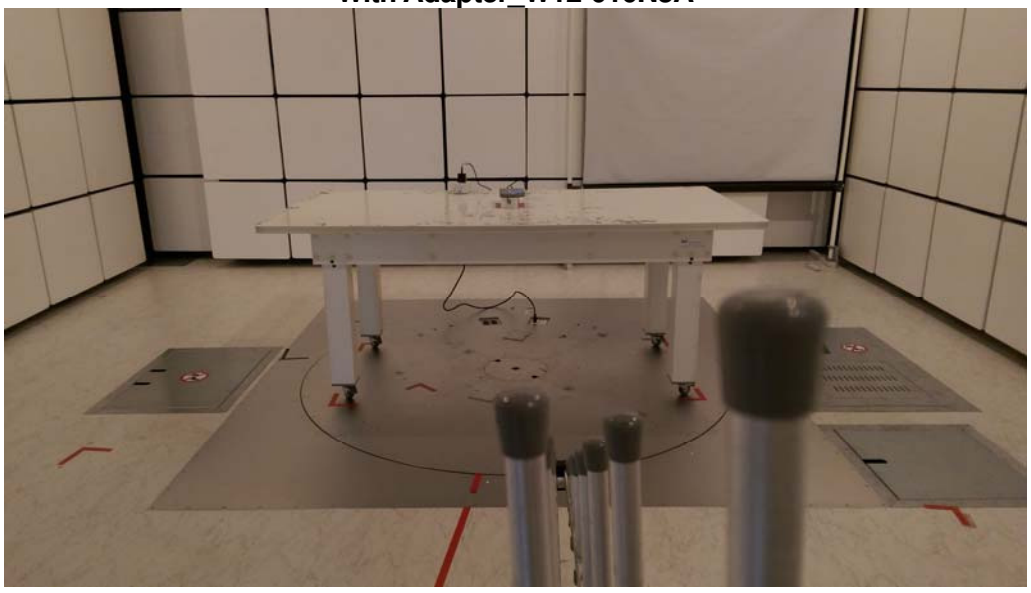


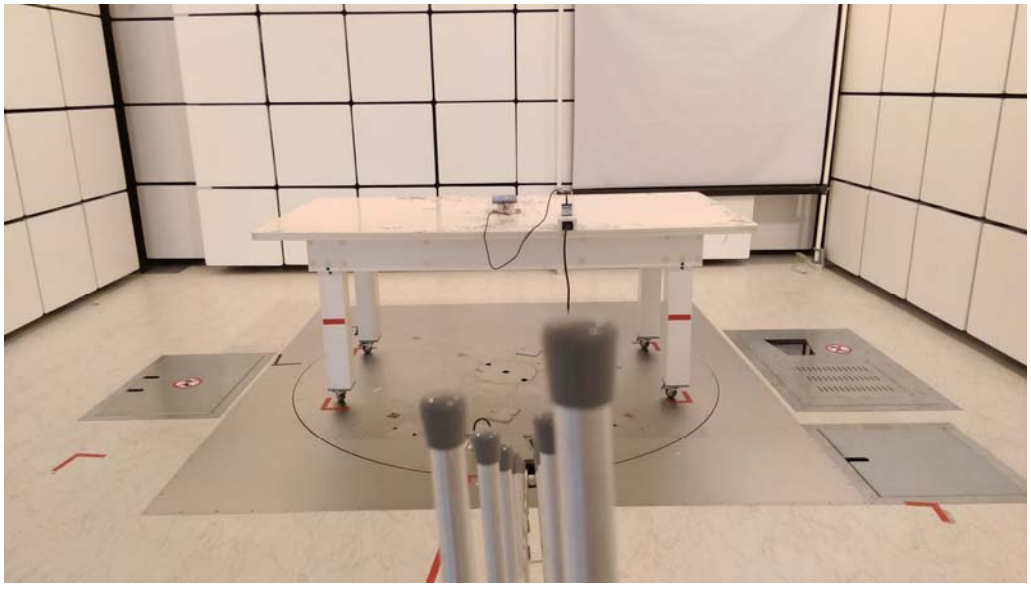
Radiated Measurement Photos
9KHz to 30MHz
With Adapter_W12-010N3A



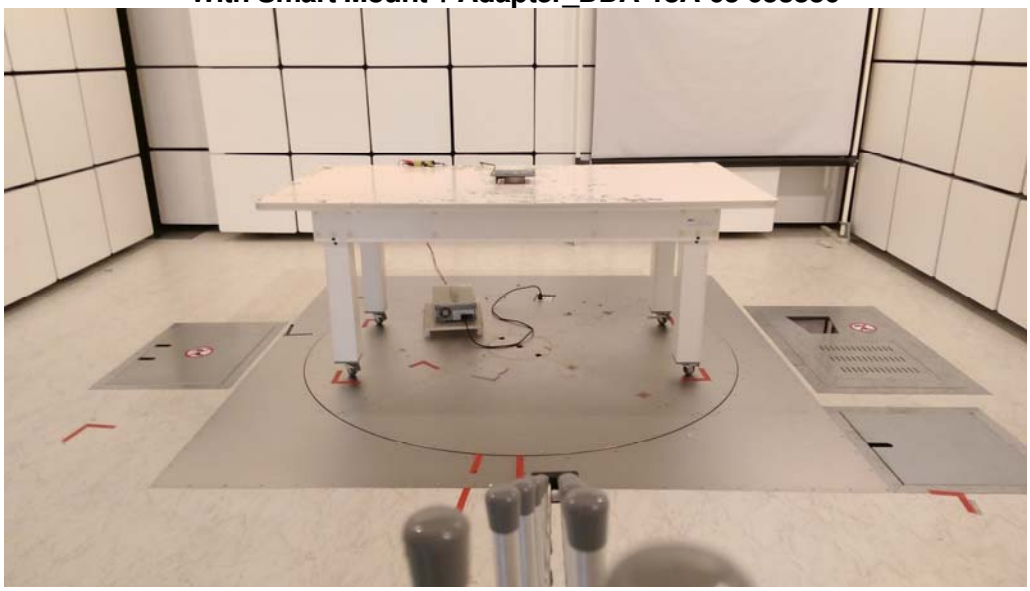


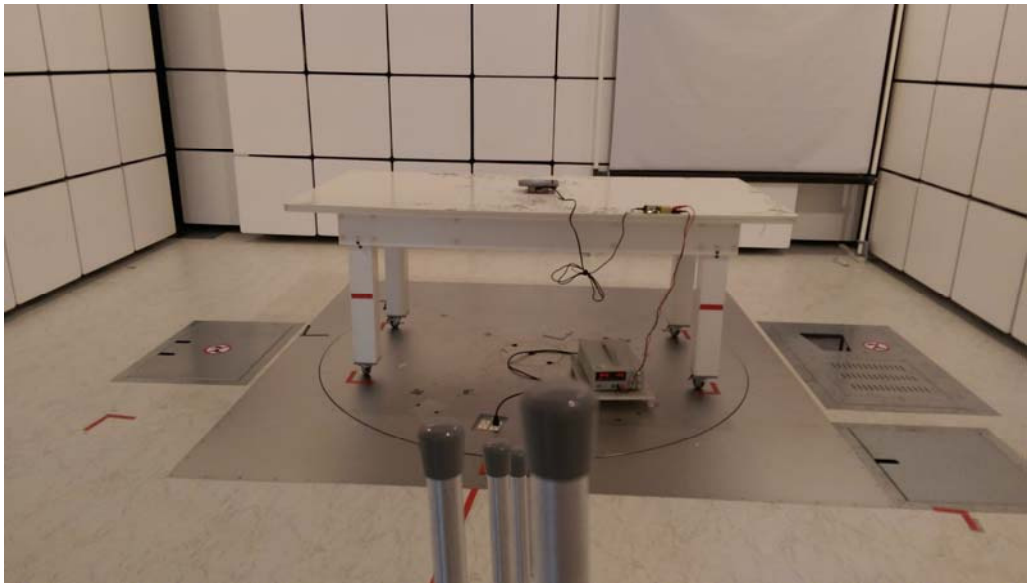
Radiated Measurement Photos
30MHz to 1000MHz
With Adapter_W12-010N3A





Radiated Measurement Photos
30MHz to 1000MHz
With Smart Mount + Adapter_DDA-18A-05 053350



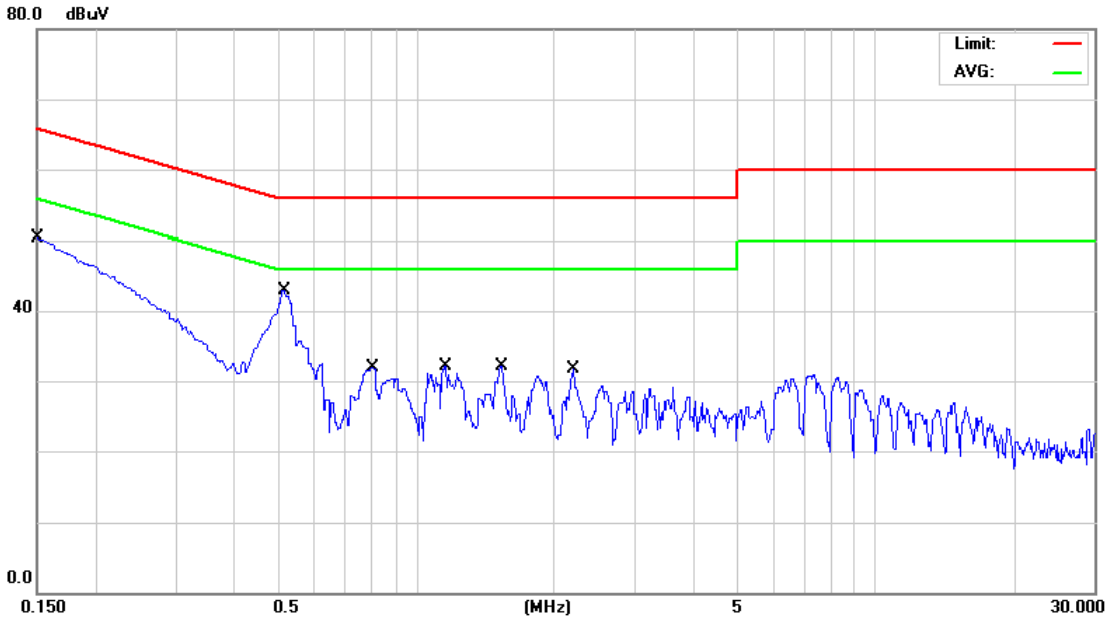


Radiated Measurement Photos
Above 1000MHz
With Adapter_W12-010N3A

ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX Mode_Adapter_W12-010N3A

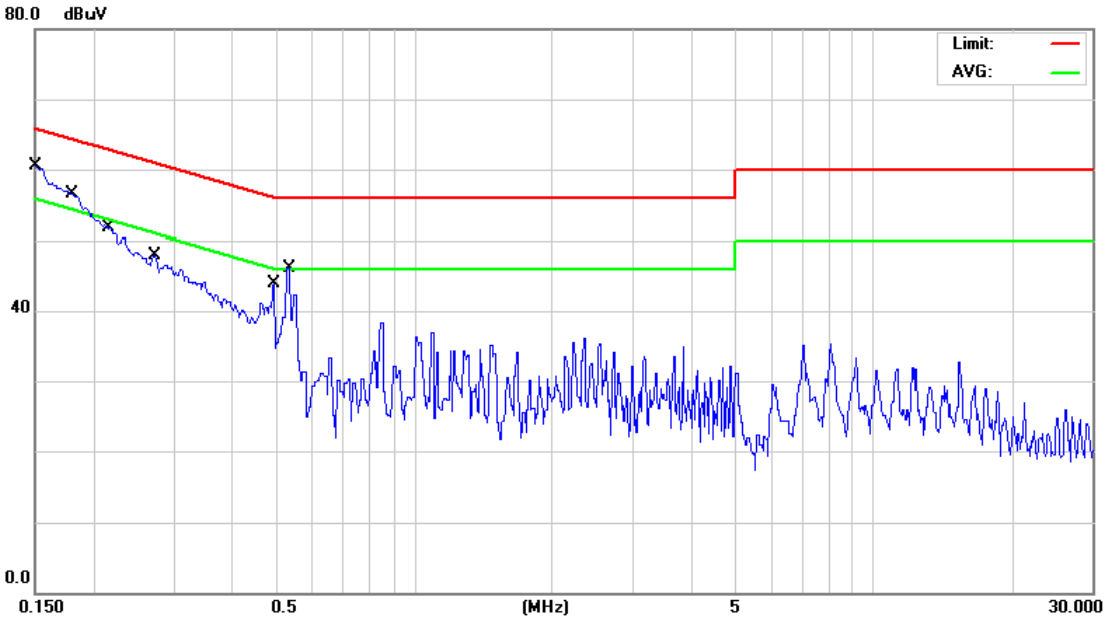
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	36.10	9.68	45.78	65.99	-20.21	QP	
2		0.1500	17.60	9.68	27.28	55.99	-28.71	AVG	
3		0.5180	28.90	9.69	38.59	56.00	-17.41	QP	
4	*	0.5180	20.30	9.69	29.99	46.00	-16.01	AVG	
5		0.8059	17.20	9.70	26.90	56.00	-29.10	QP	
6		0.8059	7.80	9.70	17.50	46.00	-28.50	AVG	
7		1.1570	16.40	9.72	26.12	56.00	-29.88	QP	
8		1.1570	6.60	9.72	16.32	46.00	-29.68	AVG	
9		1.5350	16.40	9.75	26.15	56.00	-29.85	QP	
10		1.5350	6.60	9.75	16.35	46.00	-29.65	AVG	
11		2.2010	13.00	9.78	22.78	56.00	-33.22	QP	
12		2.2010	4.00	9.78	13.78	46.00	-32.22	AVG	

Test Mode:	TX Mode_Adapter_W12-010N3A

Neutral

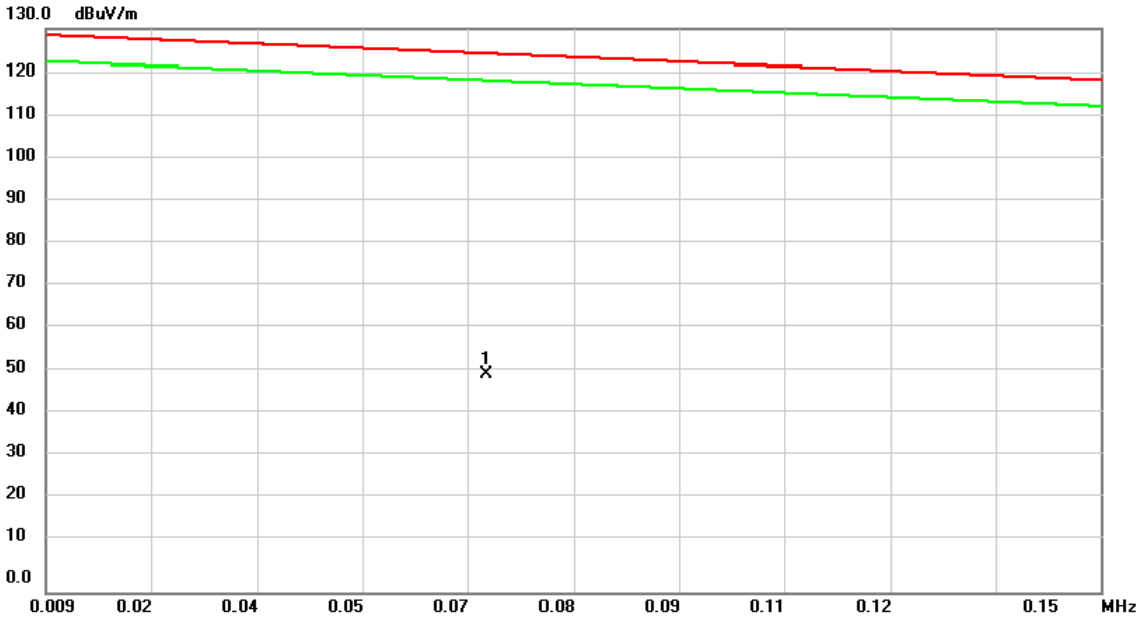


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	44.00	9.69	53.69	65.99	-12.30	QP	
2		0.1500	26.10	9.69	35.79	55.99	-20.20	AVG	
3		0.1801	40.30	9.68	49.98	64.48	-14.50	QP	
4		0.1801	22.20	9.68	31.88	54.48	-22.60	AVG	
5		0.2165	34.70	9.68	44.38	62.95	-18.57	QP	
6		0.2165	17.90	9.68	27.58	52.95	-25.37	AVG	
7		0.2711	29.20	9.68	38.88	61.08	-22.20	QP	
8		0.2711	13.30	9.68	22.98	51.08	-28.10	AVG	
9		0.4958	23.70	9.69	33.39	56.07	-22.68	QP	
10		0.4958	13.90	9.69	23.59	46.07	-22.48	AVG	
11		0.5360	29.80	9.69	39.49	56.00	-16.51	QP	
12		0.5360	20.40	9.69	30.09	46.00	-15.91	AVG	

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

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

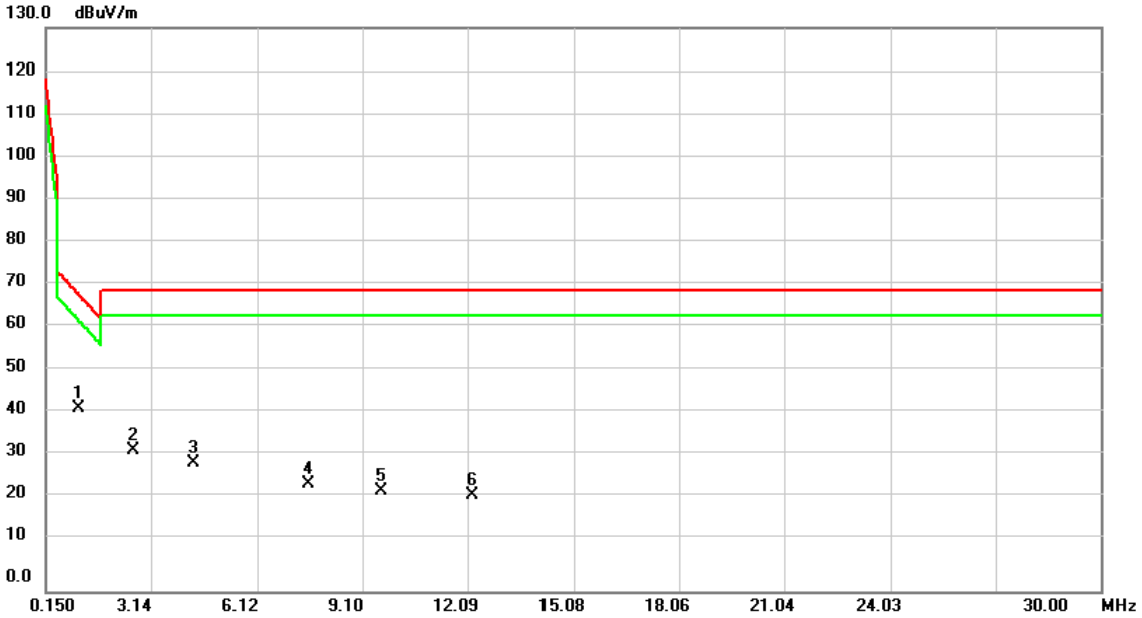
Open



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0680	37.85	12.68	50.53	124.26	-73.73	peak	

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

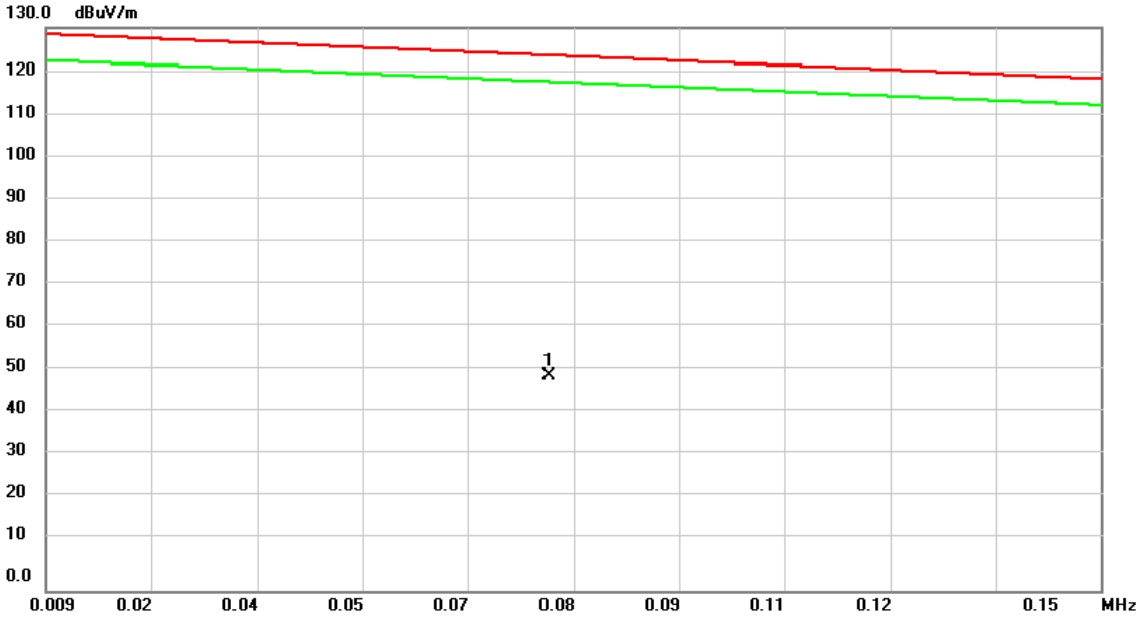
Open



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	1.0750	30.36	11.97	42.33	68.59	-26.26	peak	
2		2.6274	21.29	11.27	32.56	69.54	-36.98	peak	
3		4.3290	18.38	11.30	29.68	69.54	-39.86	peak	
4		7.5528	13.60	11.35	24.95	69.54	-44.59	peak	
5		9.6423	11.84	11.31	23.15	69.54	-46.39	peak	
6		12.2094	10.93	11.23	22.16	69.54	-47.38	peak	

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

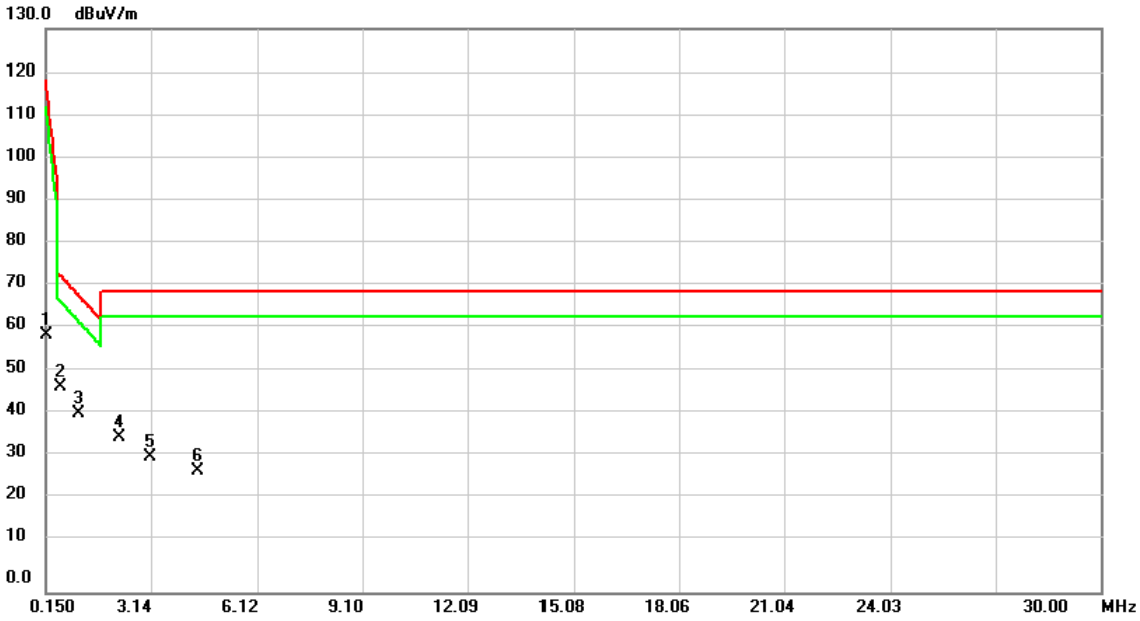
Close



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0763	37.36	12.53	49.89	123.66	-73.77	peak	

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

Close

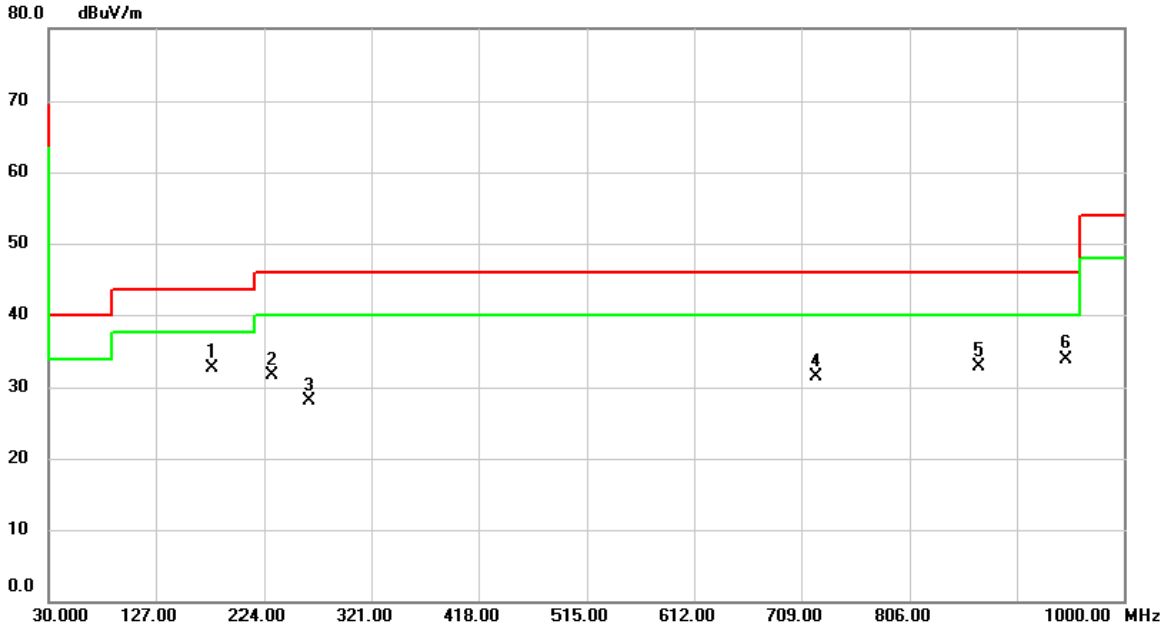


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.16	12.03	59.19	118.34	-59.15	peak	
2	*	0.5675	35.78	11.83	47.61	73.11	-25.50	peak	
3		1.1050	29.36	11.95	41.31	68.32	-27.01	peak	
4		2.2395	24.62	11.44	36.06	69.54	-33.48	peak	
5		3.1051	20.33	11.12	31.45	69.54	-38.09	peak	
6		4.4484	16.93	11.32	28.25	69.54	-41.29	peak	

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

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

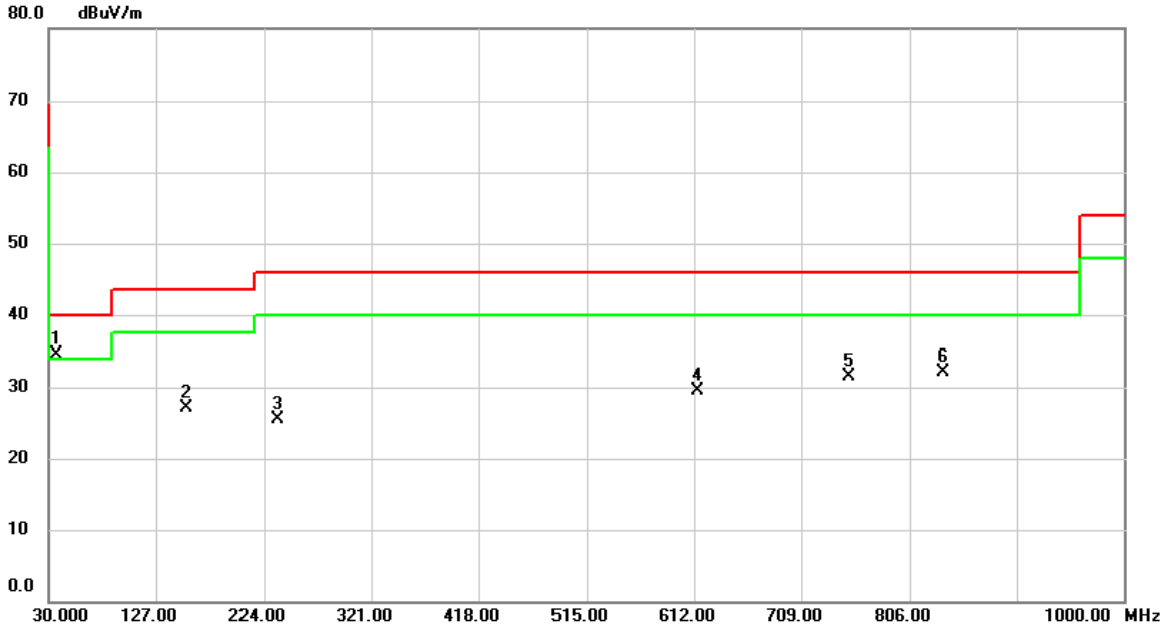
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	177.4400	42.25	-9.63	32.62	43.50	-10.88	peak	
2		230.7900	41.84	-10.09	31.75	46.00	-14.25	peak	
3		264.7400	36.72	-8.58	28.14	46.00	-17.86	peak	
4		722.5800	29.82	1.77	31.59	46.00	-14.41	peak	
5		868.0800	28.91	3.97	32.88	46.00	-13.12	peak	
6		947.6200	28.37	5.44	33.81	46.00	-12.19	peak	

Test Mode:	UNII-1/ TX_Adapter_W12-010N3A

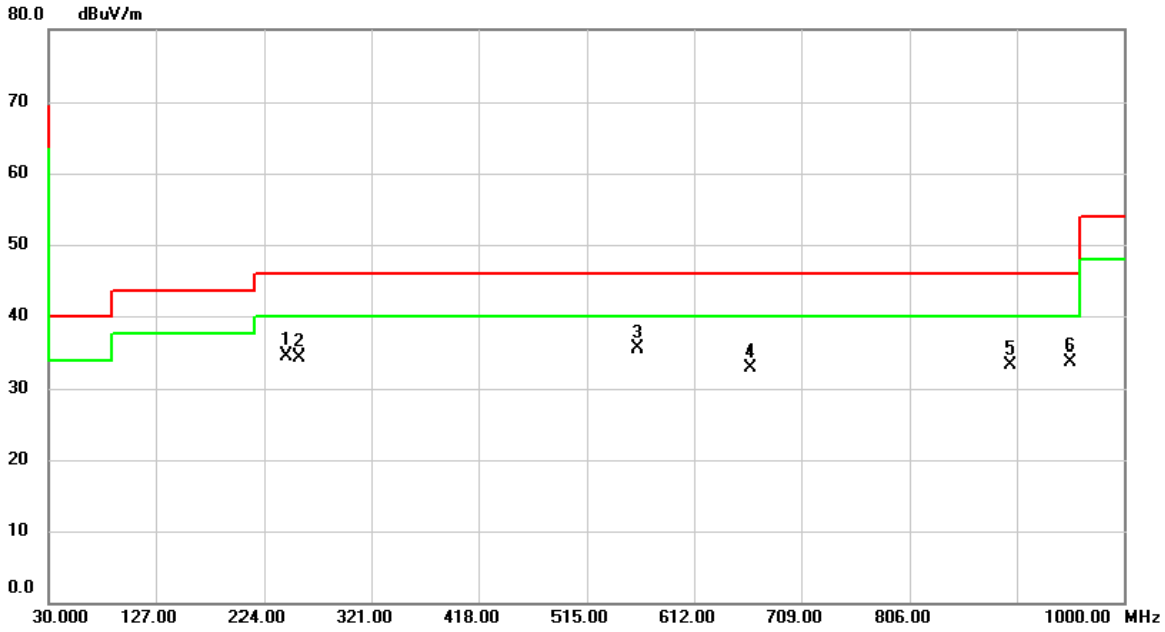
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	36.7900	43.33	-8.87	34.46	40.00	-5.54	peak	
2		154.1600	35.79	-8.66	27.13	43.50	-16.37	peak	
3		236.6100	35.25	-9.68	25.57	46.00	-20.43	peak	
4		614.9100	29.68	-0.10	29.58	46.00	-16.42	peak	
5		752.6500	29.21	2.37	31.58	46.00	-14.42	peak	
6		836.0700	28.71	3.39	32.10	46.00	-13.90	peak	

Test Mode:	UNII-1/ TX_Smart Mount + Adapter_ DDA-18A-05 053350

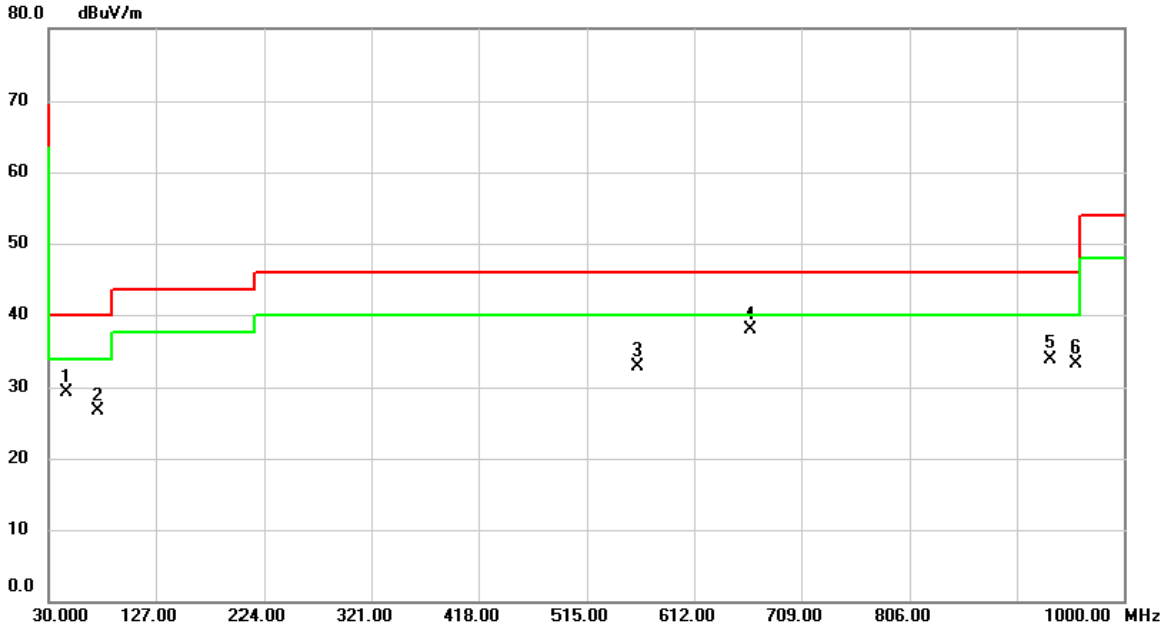
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		244.3700	43.85	-9.33	34.52	46.00	-11.48	peak	
2		255.0400	43.22	-9.00	34.22	46.00	-11.78	peak	
3	*	560.5900	36.73	-1.26	35.47	46.00	-10.53	peak	
4		663.4100	32.48	0.48	32.96	46.00	-13.04	peak	
5		897.1800	28.70	4.55	33.25	46.00	-12.75	peak	
6		951.5000	28.10	5.51	33.61	46.00	-12.39	peak	

Test Mode:	UNII-1/ TX_Smart Mount + Adapter_ DDA-18A-05 053350

Horizontal

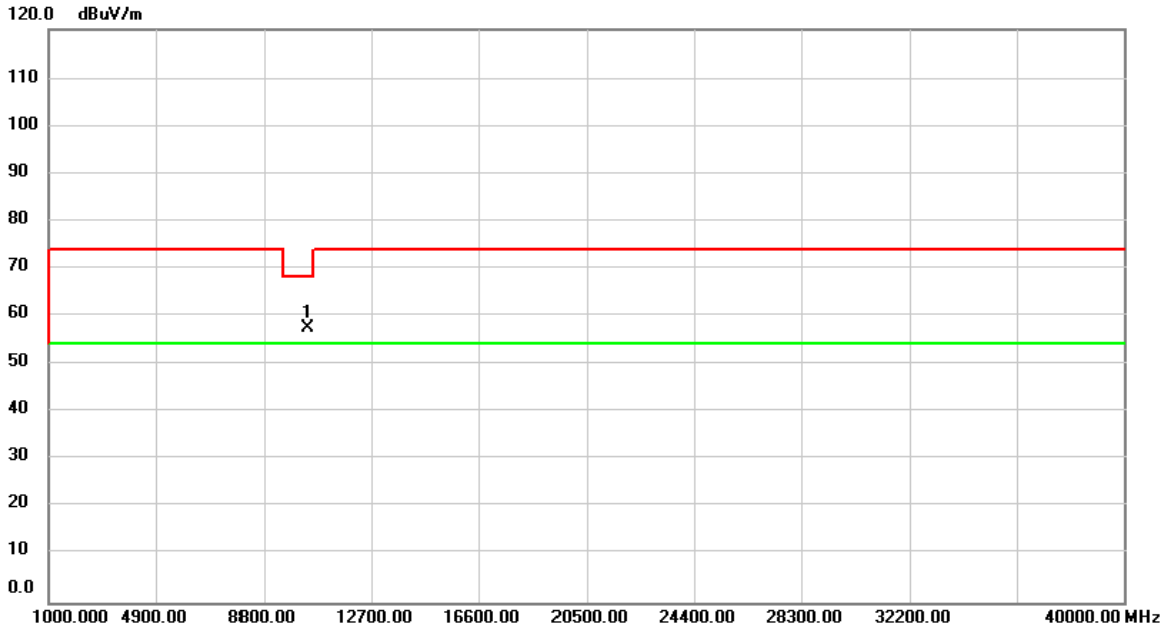


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		46.4900	37.60	-8.25	29.35	40.00	-10.65	peak	
2		74.6200	38.04	-11.30	26.74	40.00	-13.26	peak	
3		560.5900	34.22	-1.26	32.96	46.00	-13.04	peak	
4	*	663.4100	37.38	0.48	37.86	46.00	-8.14	peak	
5		933.0700	28.64	5.19	33.83	46.00	-12.17	peak	
6		956.3500	27.66	5.57	33.23	46.00	-12.77	peak	

ATTACHMENT D - RADIATED EMISSION (1GHZ~10TH HARMONIC)

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

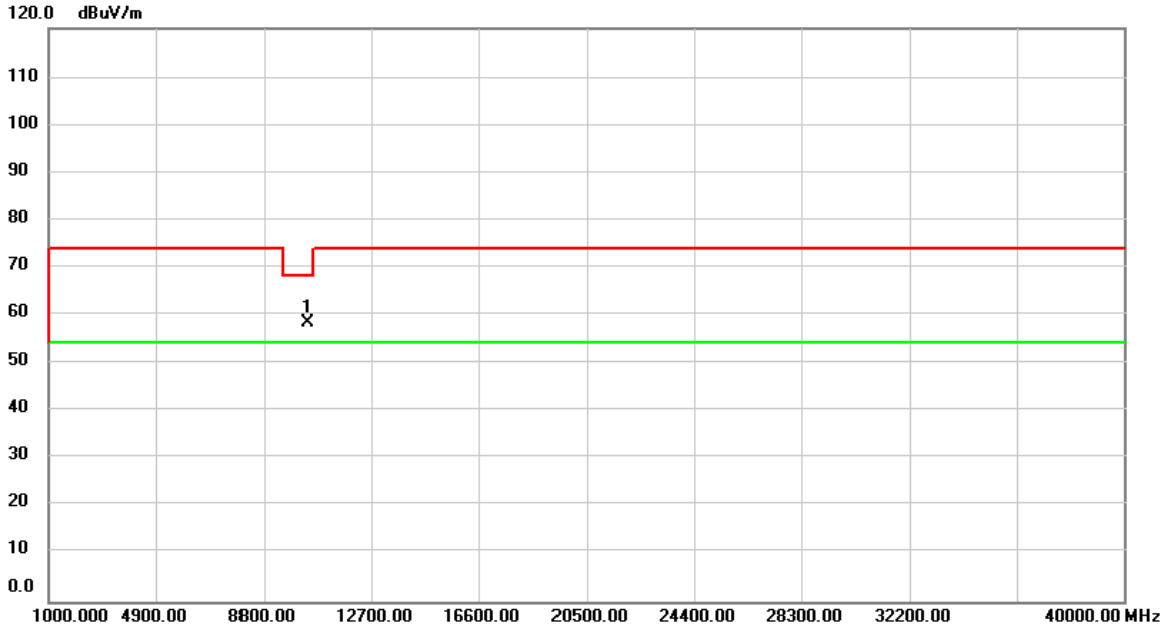
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10360.00	54.11	3.21	57.32	68.20	-10.88	peak	

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

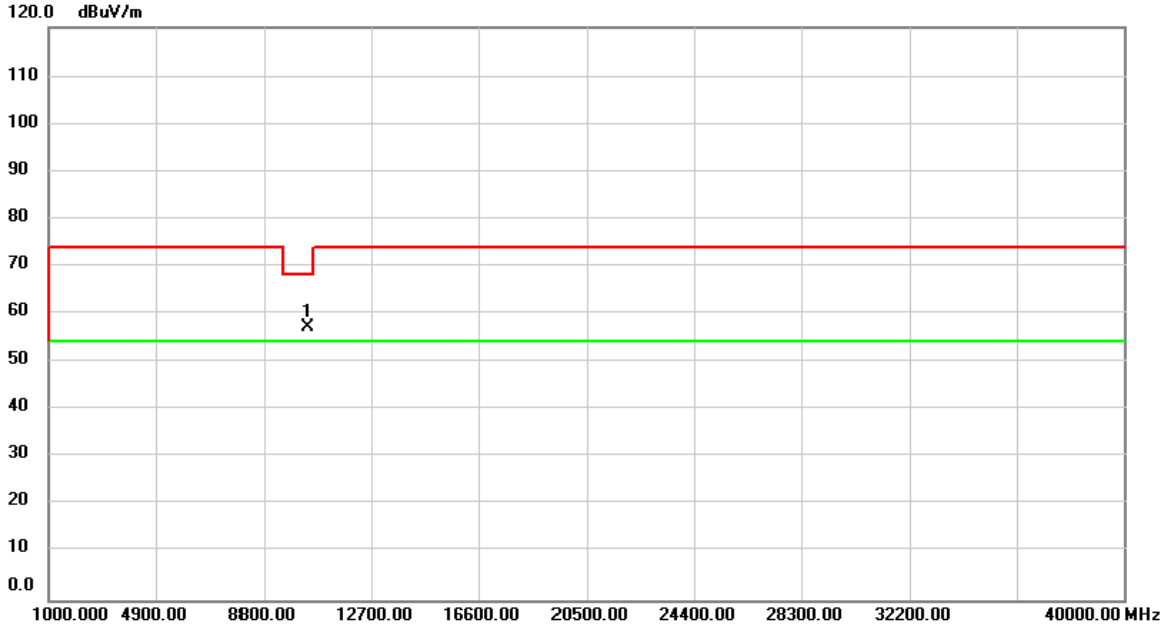
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10360.00	55.17	3.21	58.38	68.20	-9.82	peak	

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

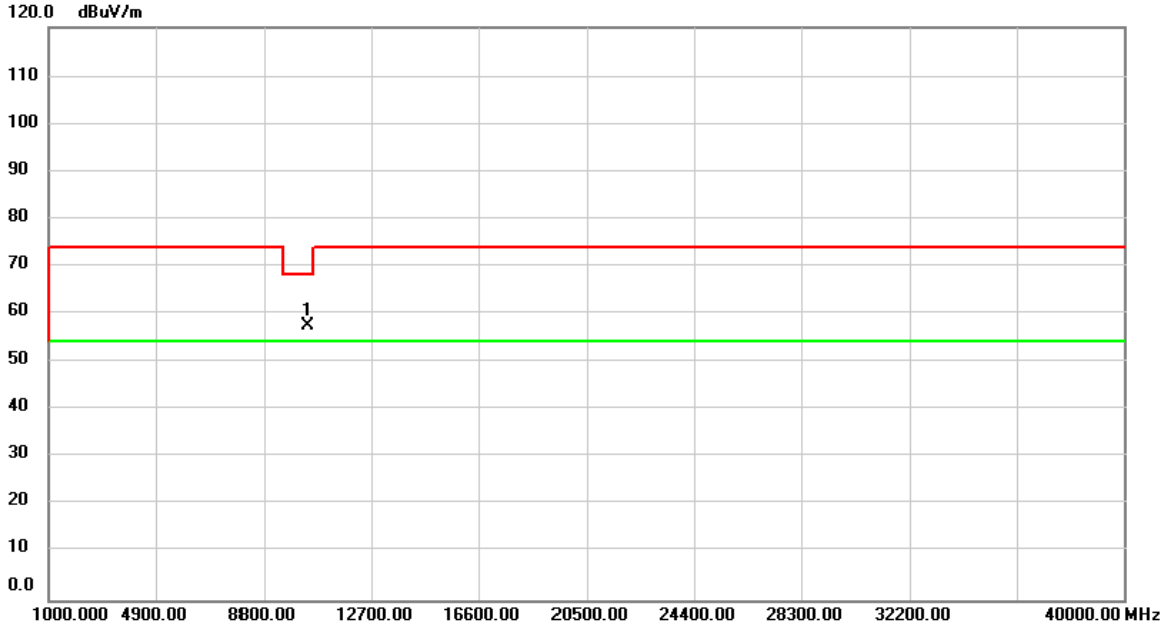
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10400.00	53.96	3.22	57.18	68.20	-11.02	peak	

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

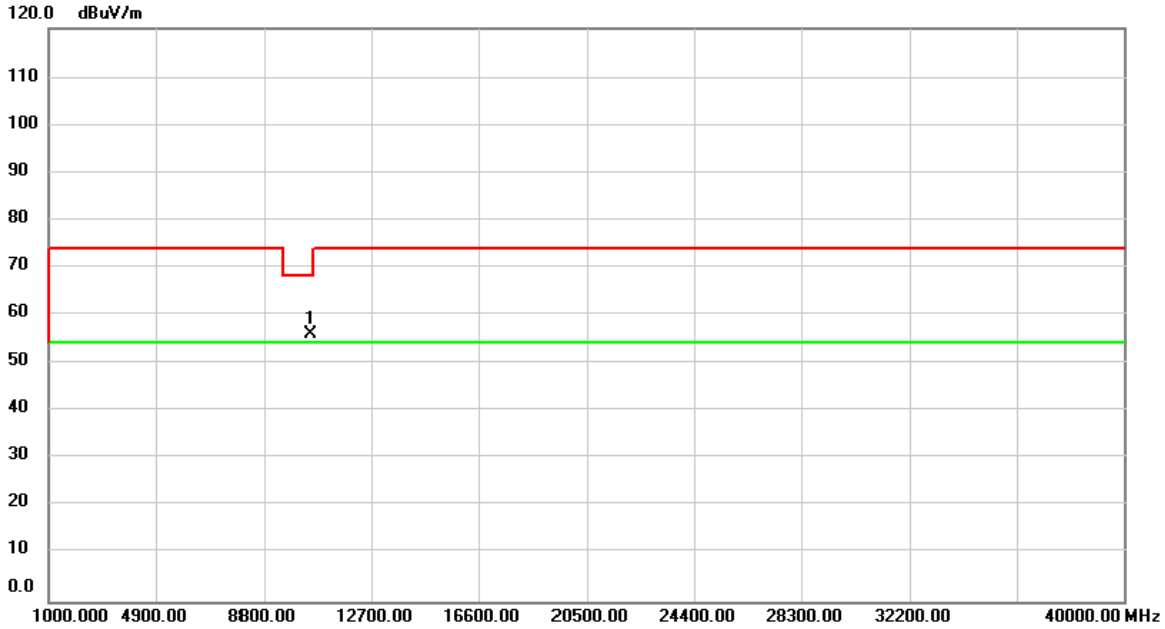
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10397.69	54.29	3.22	57.51	68.20	-10.69	peak	

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

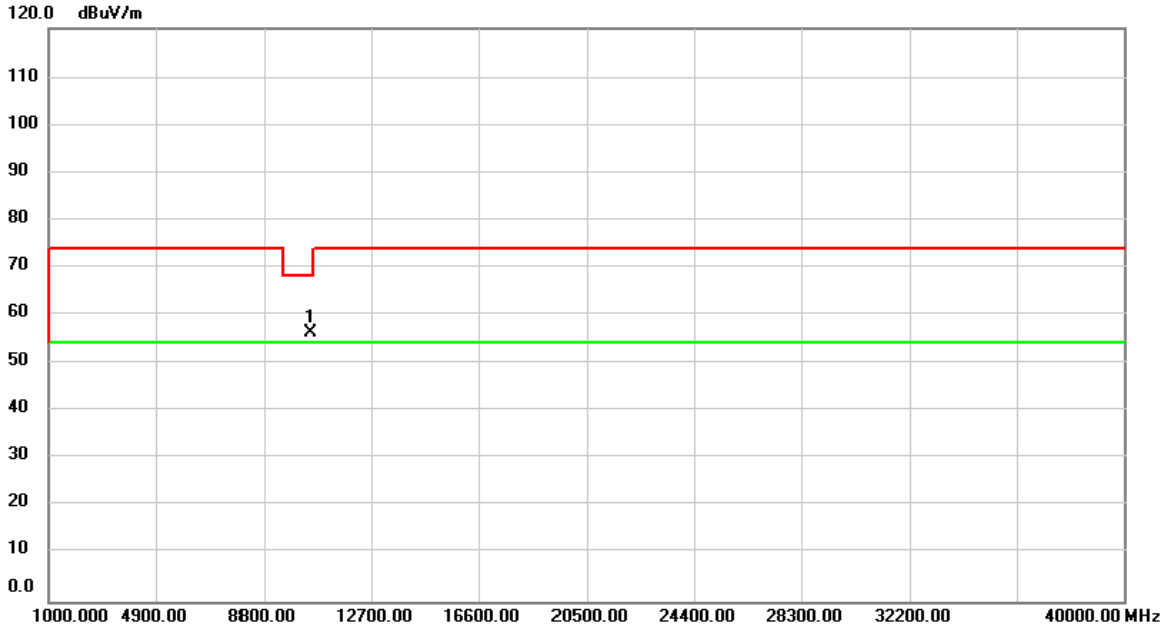
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10480.00	52.83	3.21	56.04	68.20	-12.16	peak	

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

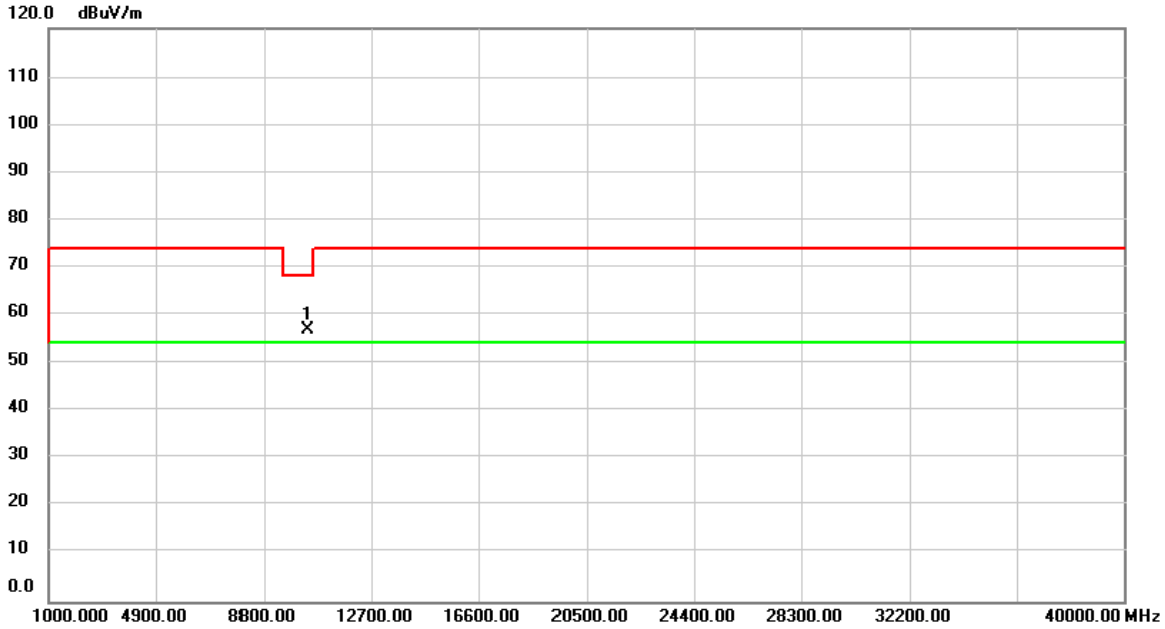
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10480.00	52.98	3.21	56.19	68.20	-12.01	peak	

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

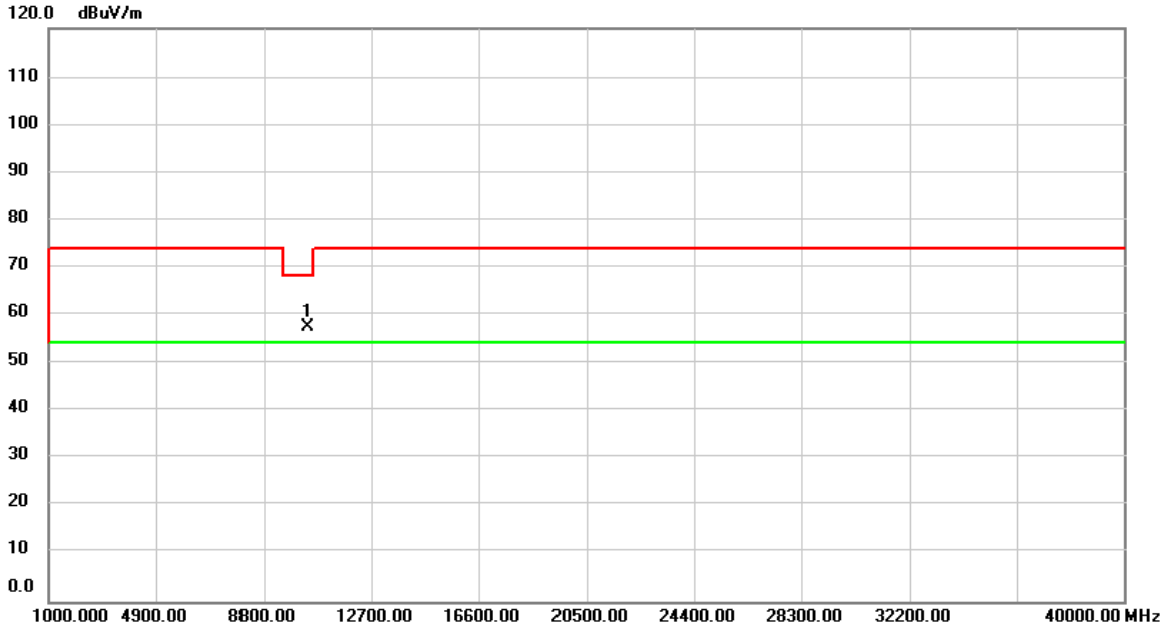
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10360.00	53.74	3.21	56.95	68.20	-11.25	peak	

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

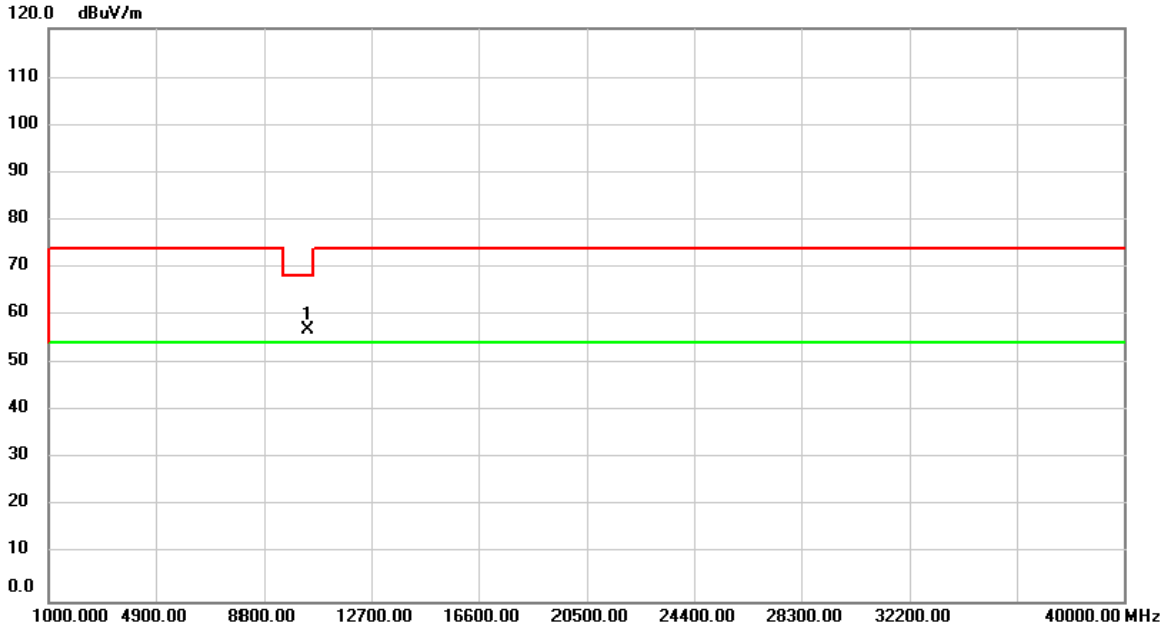
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10360.00	54.10	3.21	57.31	68.20	-10.89	peak	

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

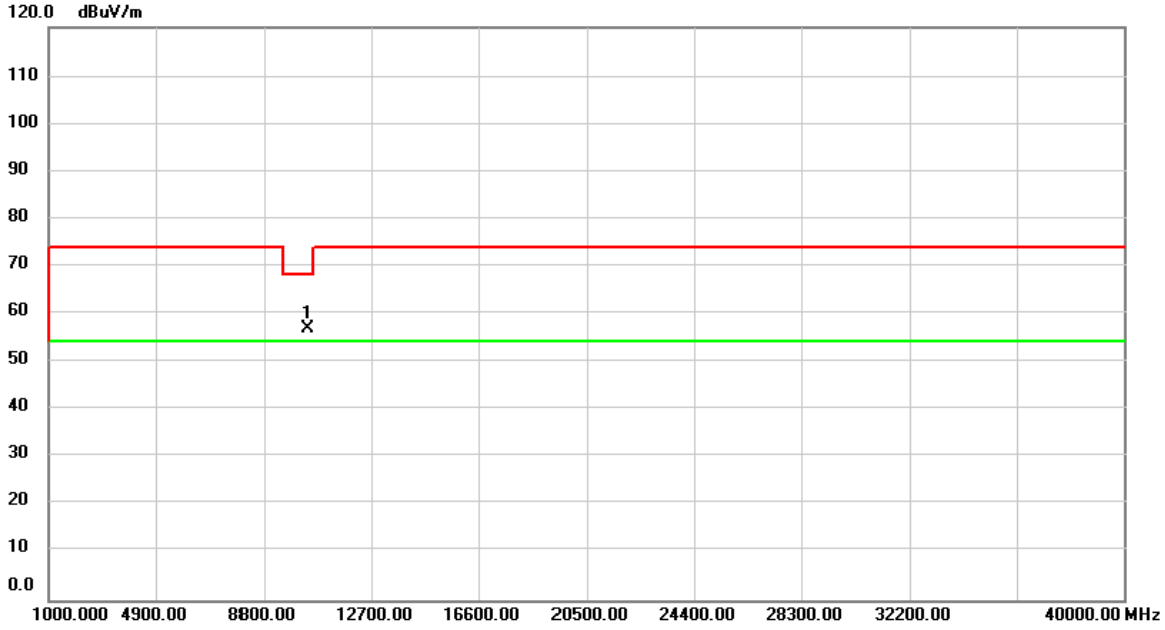
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10400.00	53.68	3.22	56.90	68.20	-11.30	peak	

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

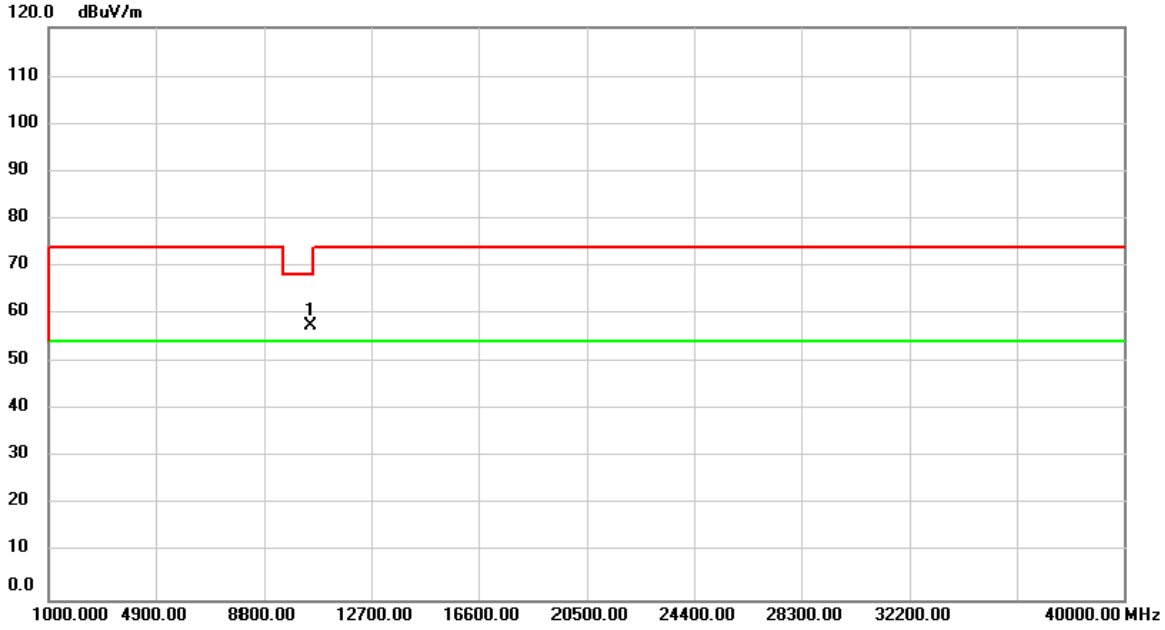
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10400.00	53.59	3.22	56.81	68.20	-11.39	peak	

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

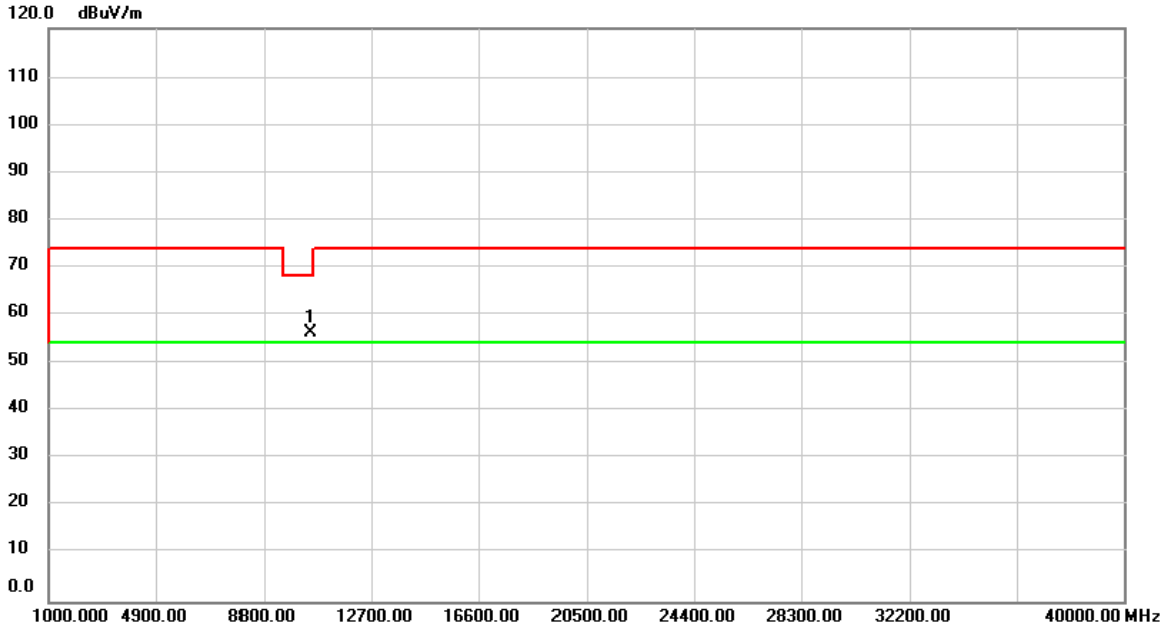
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10480.00	54.34	3.21	57.55	68.20	-10.65	peak	

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

Horizontal

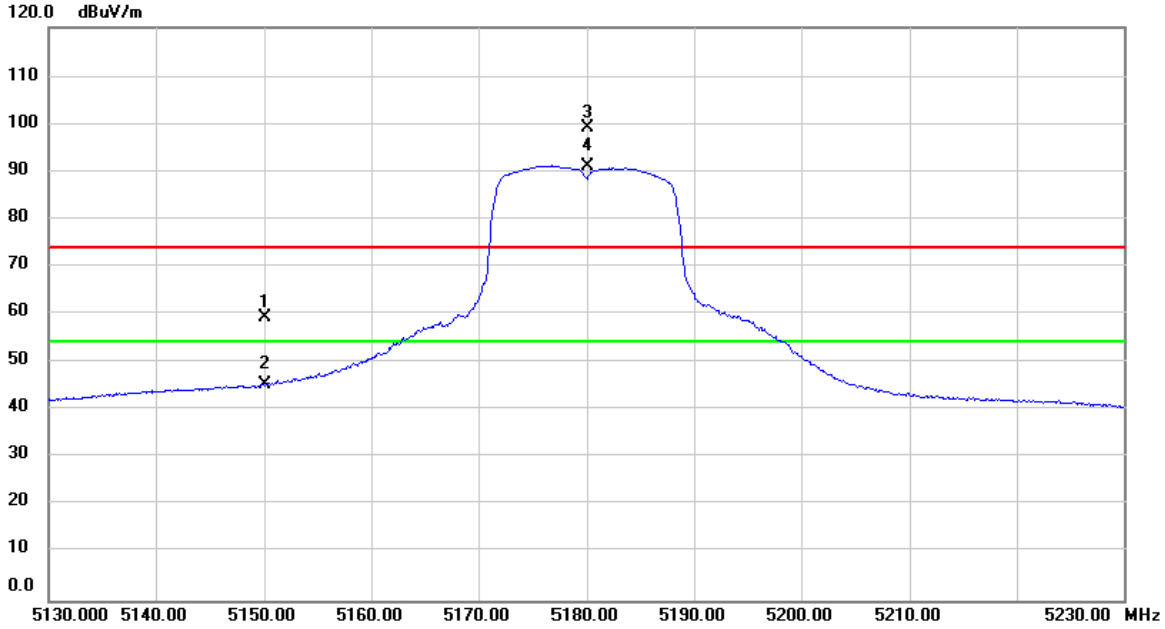


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	10480.00	53.08	3.21	56.29	68.20	-11.91	peak	

ATTACHMENT E - BAND EDGE AND FUNDAMENTAL EMISSIONS

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

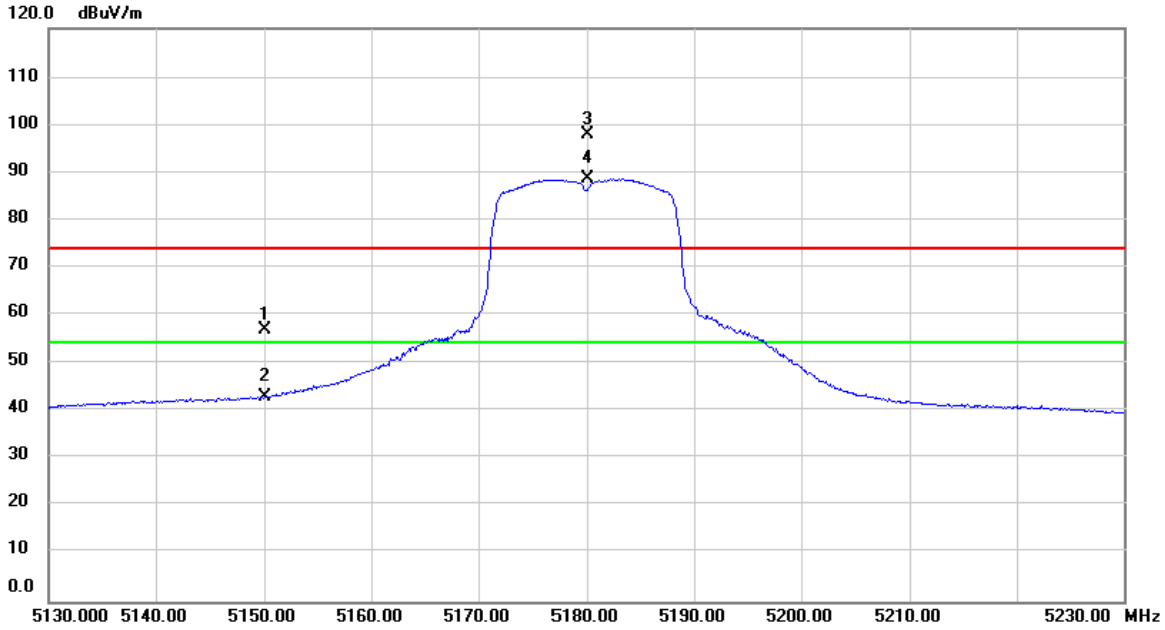
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	20.80	38.45	59.25	74.00	-14.75	peak	
2		5150.000	6.99	38.45	45.44	54.00	-8.56	AVG	
3	X	5180.000	60.60	38.48	99.08	74.00	25.08	peak	No Limit
4	*	5180.000	52.72	38.48	91.20	54.00	37.20	AVG	No Limit

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

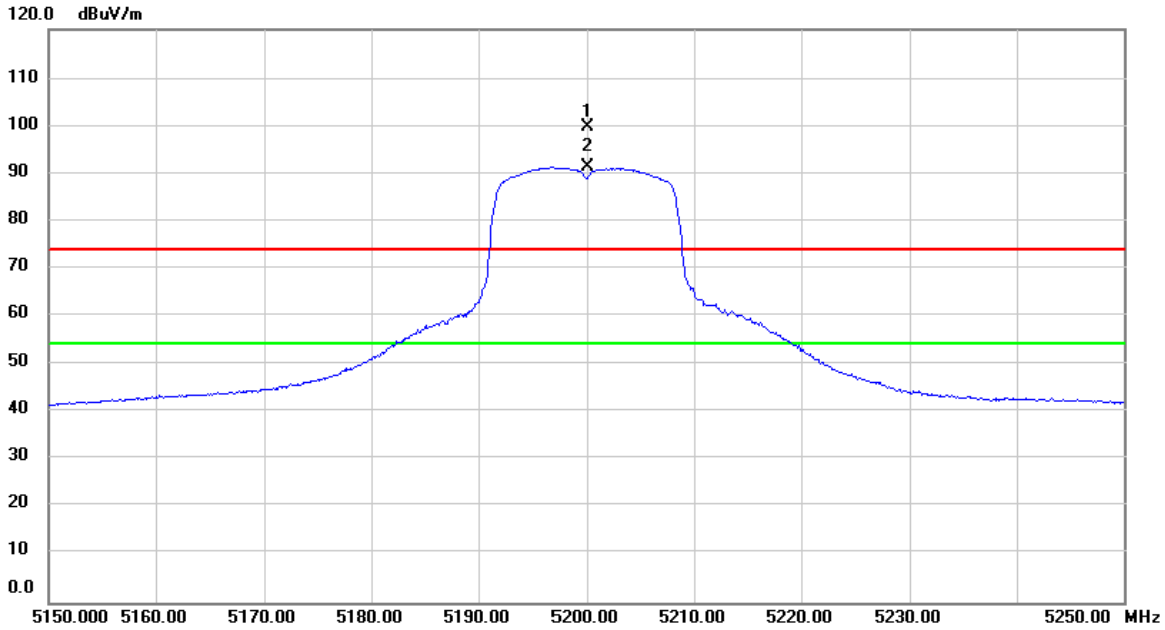
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	18.52	38.45	56.97	74.00	-17.03	peak	
2		5150.000	4.72	38.45	43.17	54.00	-10.83	AVG	
3	X	5180.000	59.38	38.48	97.86	74.00	23.86	peak	No Limit
4	*	5180.000	50.13	38.48	88.61	54.00	34.61	AVG	No Limit

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

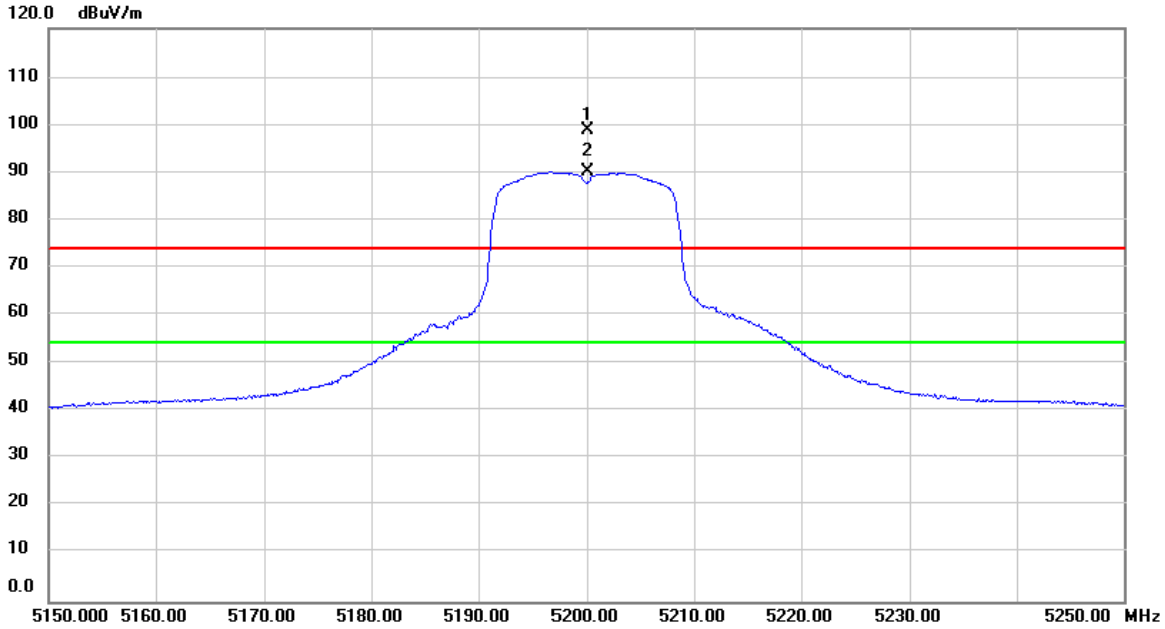
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5200.000	61.31	38.51	99.82	74.00	25.82	peak	No Limit
2	*	5200.000	52.78	38.51	91.29	54.00	37.29	AVG	No Limit

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

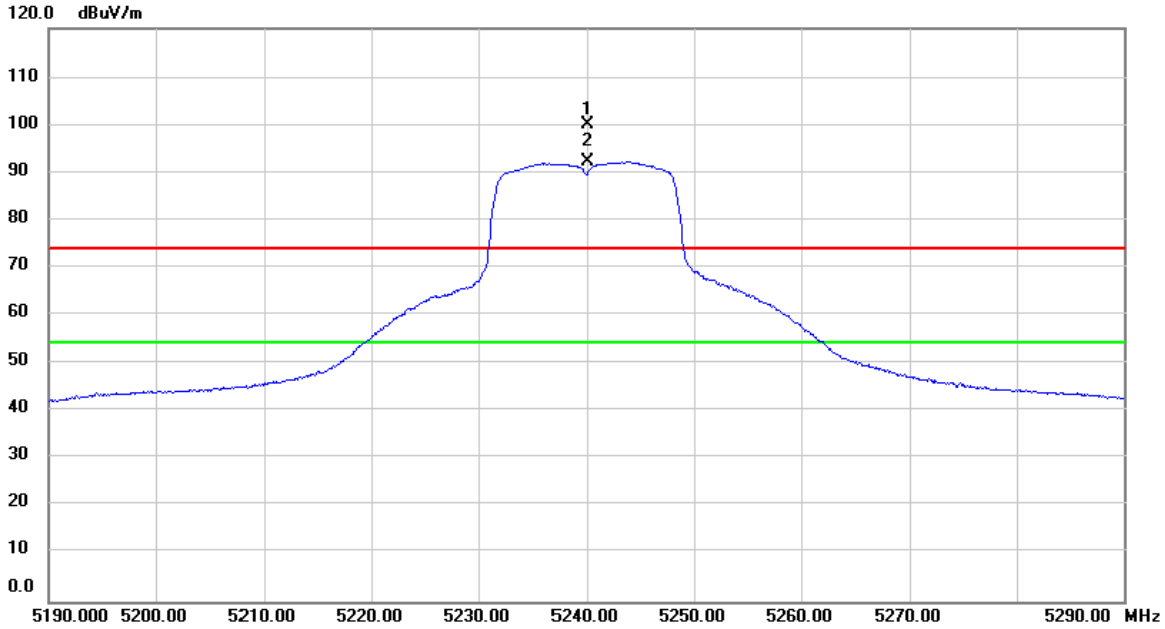
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5200.000	60.49	38.51	99.00	74.00	25.00	peak	No Limit
2	*	5200.000	51.55	38.51	90.06	54.00	36.06	AVG	No Limit

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

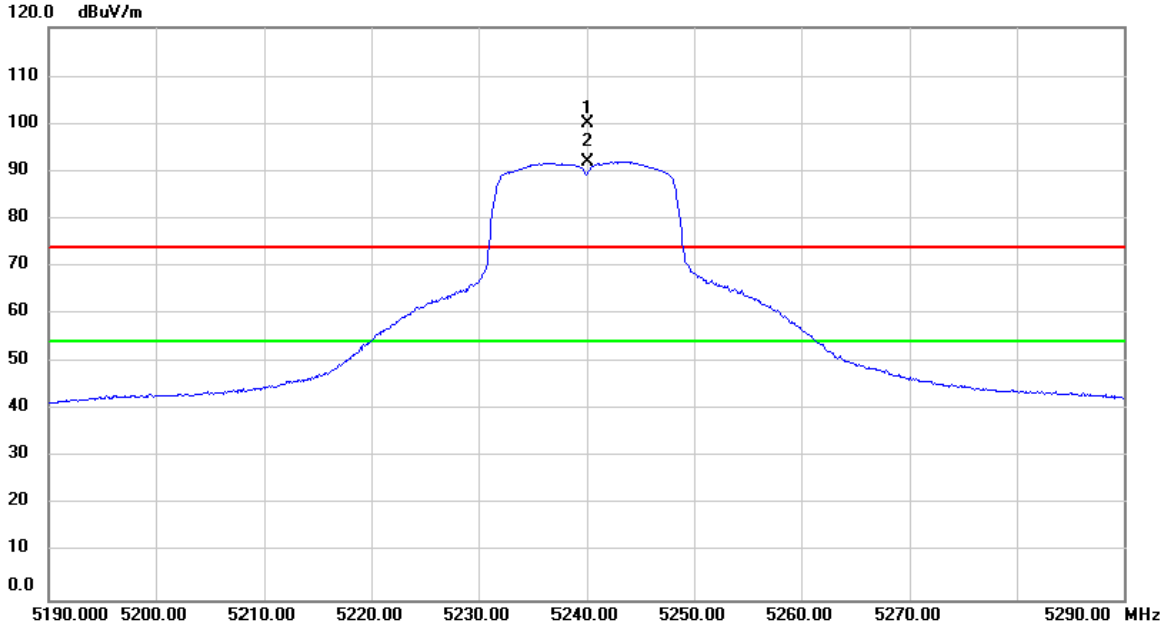
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5240.000	61.48	38.56	100.04	74.00	26.04	peak	No Limit
2	*	5240.000	53.69	38.56	92.25	54.00	38.25	AVG	No Limit

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

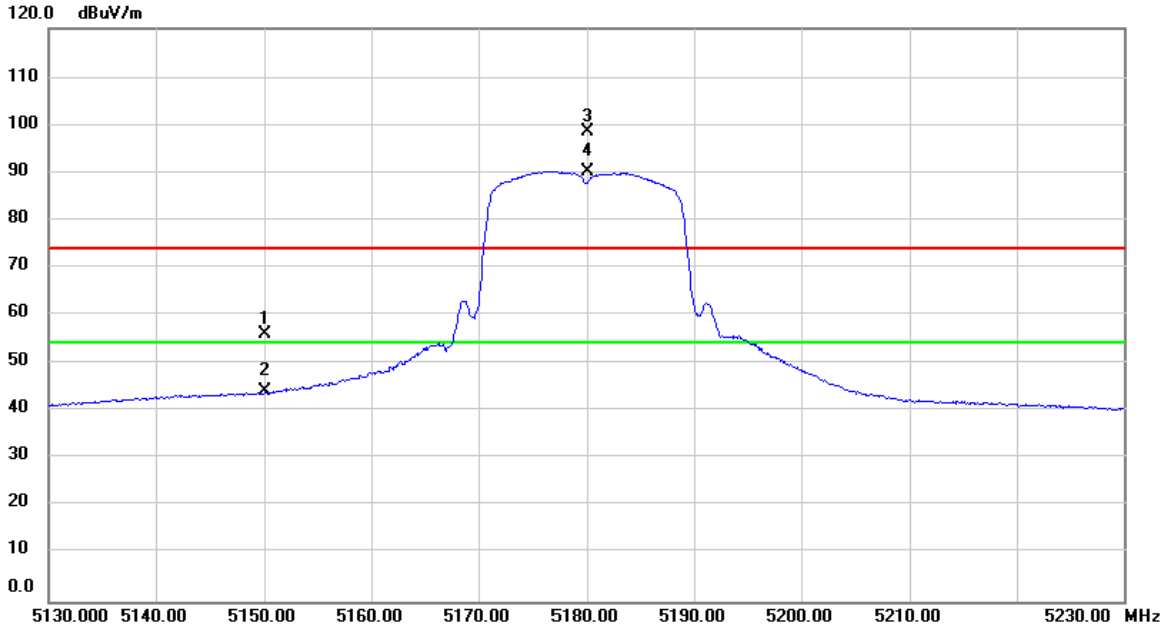
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5240.000	61.60	38.56	100.16	74.00	26.16	peak	No Limit
2	*	5240.000	53.38	38.56	91.94	54.00	37.94	AVG	No Limit

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

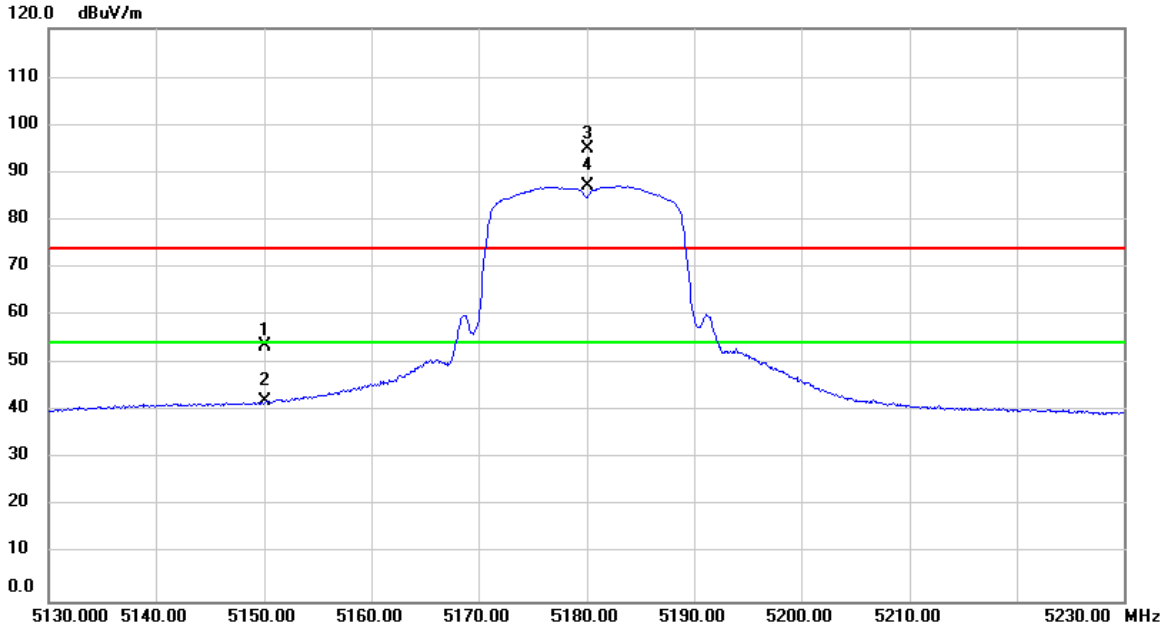
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	17.60	38.45	56.05	74.00	-17.95	peak	
2		5150.000	5.71	38.45	44.16	54.00	-9.84	AVG	
3	X	5180.000	60.21	38.48	98.69	74.00	24.69	peak	No Limit
4	*	5180.000	51.76	38.48	90.24	54.00	36.24	AVG	No Limit

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

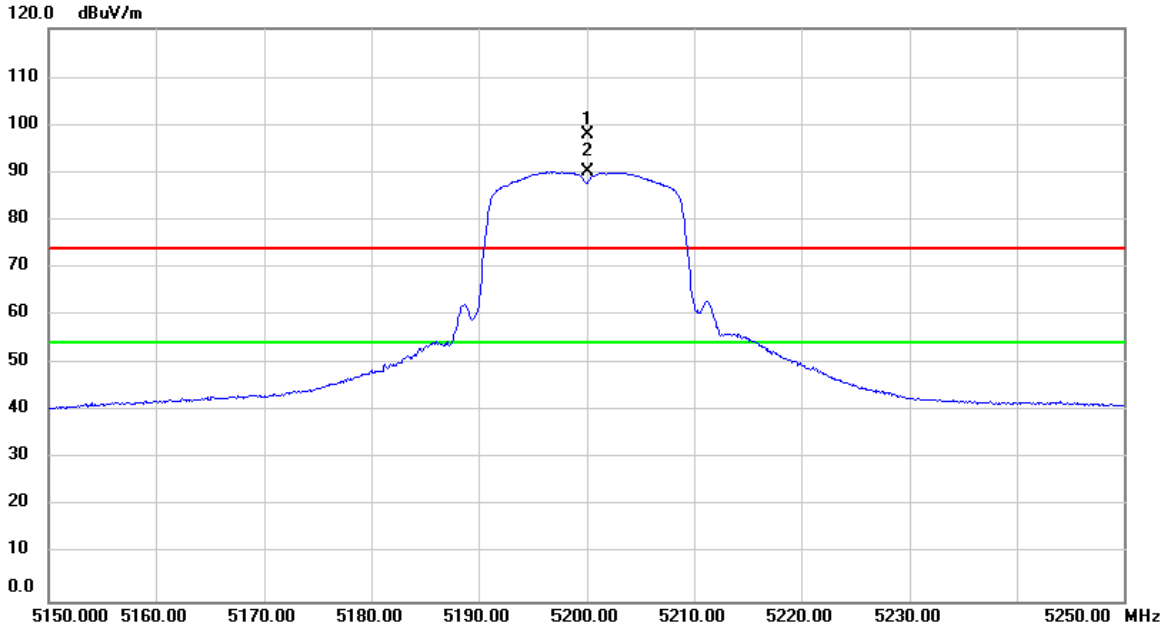
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	15.06	38.45	53.51	74.00	-20.49	peak	
2		5150.000	3.62	38.45	42.07	54.00	-11.93	AVG	
3	X	5180.000	56.61	38.48	95.09	74.00	21.09	peak	No Limit
4	*	5180.000	48.65	38.48	87.13	54.00	33.13	AVG	No Limit

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

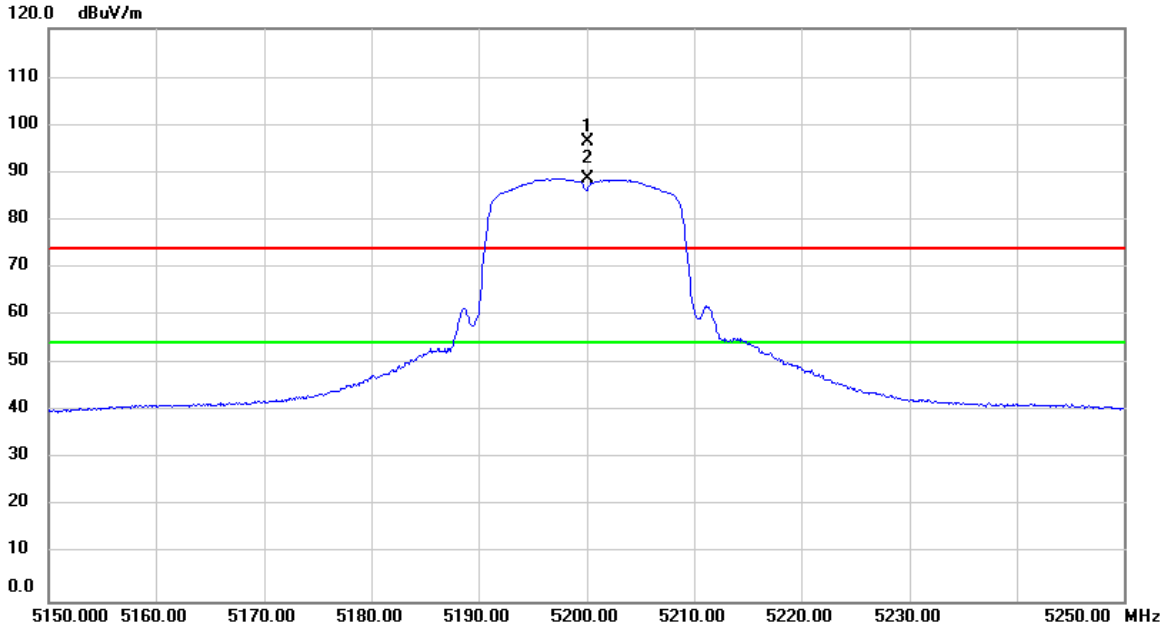
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5200.000	59.55	38.51	98.06	74.00	24.06	peak	No Limit
2	*	5200.000	51.55	38.51	90.06	54.00	36.06	AVG	No Limit

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

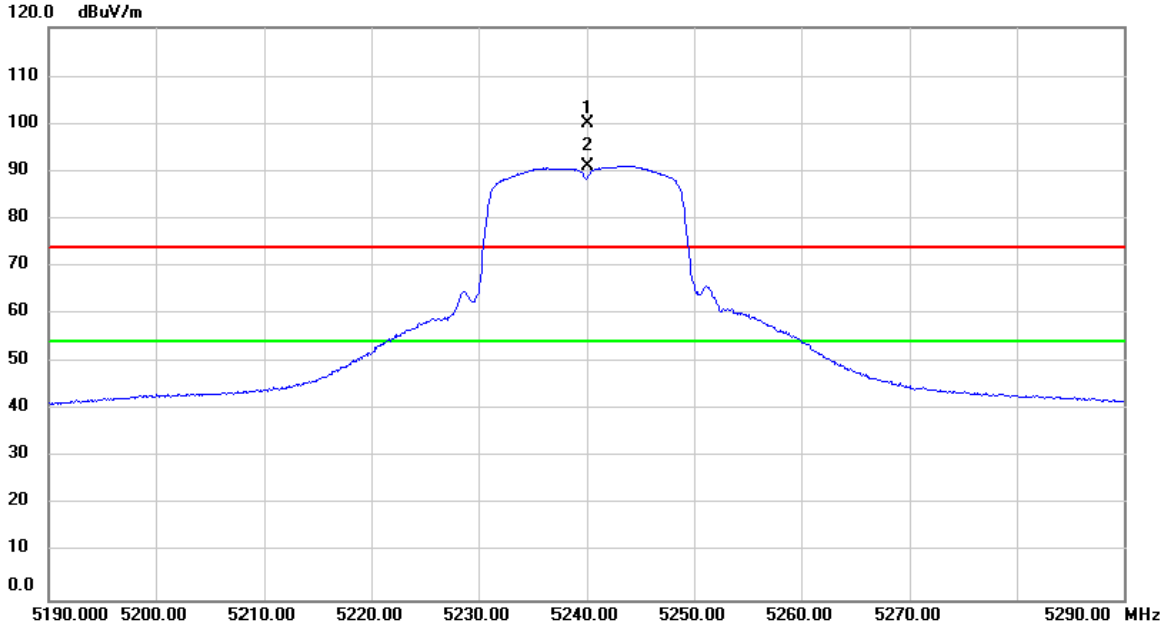
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5200.000	57.94	38.51	96.45	74.00	22.45	peak	No Limit
2	*	5200.000	50.12	38.51	88.63	54.00	34.63	AVG	No Limit

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

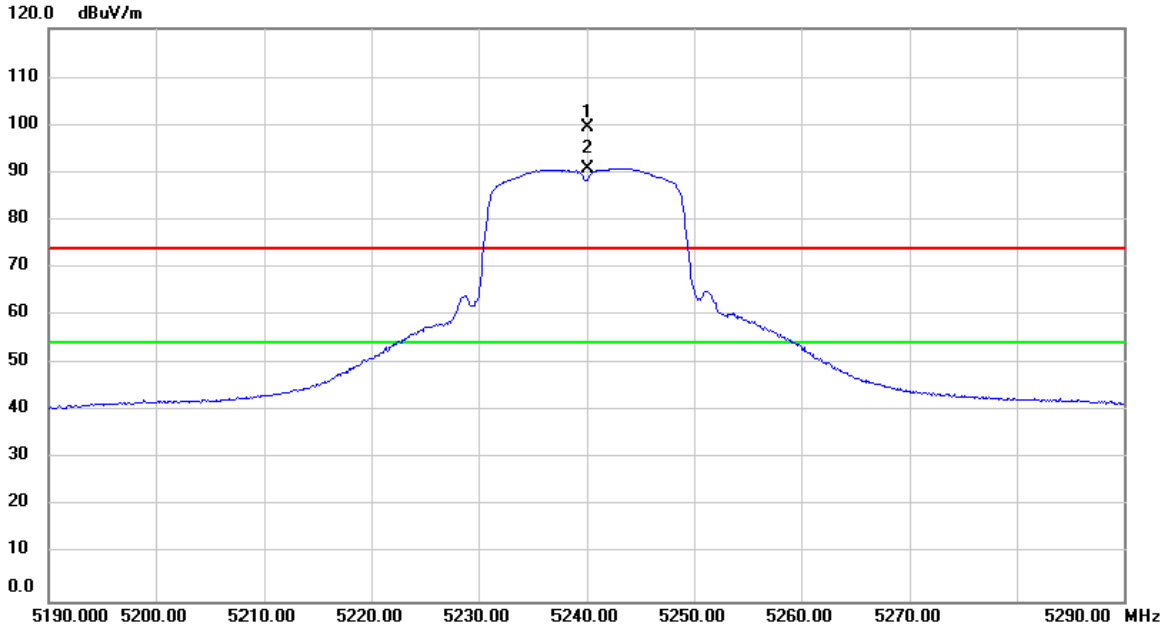
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5240.000	61.35	38.56	99.91	74.00	25.91	peak	No Limit
2	*	5240.000	52.54	38.56	91.10	54.00	37.10	AVG	No Limit

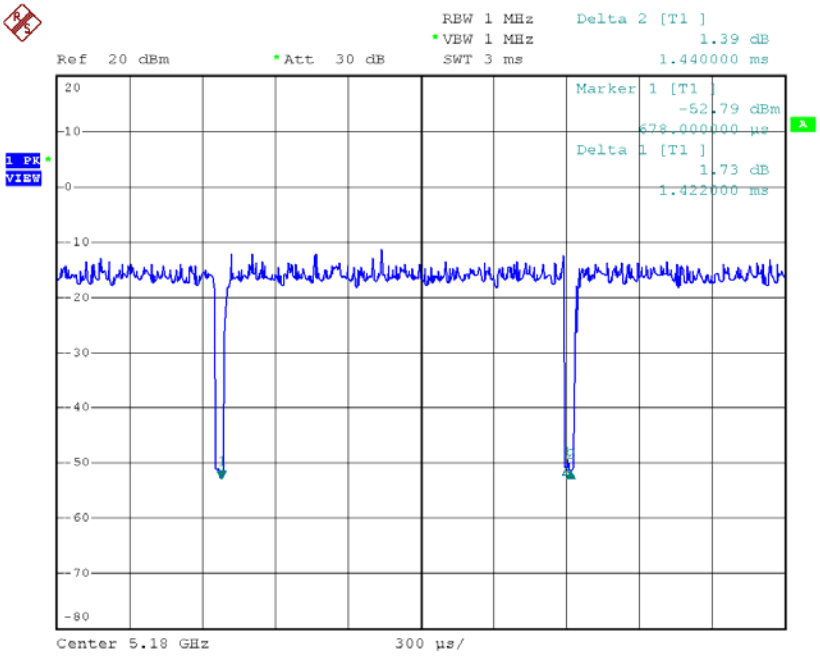
Orthogonal Axis:	X
Test Mode:	UNII-1/ TX N20 Mode 5240MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5240.000	60.97	38.56	99.53	74.00	25.53	peak	No Limit
2	*	5240.000	52.30	38.56	90.86	54.00	36.86	AVG	No Limit

TX A Mode_DUTY CYCLE



Date: 16.MAY.2016 15:22:20

Duty cycle: 5180 MHz

Duty cycle = T_{ON} / T_{Total}

T_{ON}: 1.422 msec

T_{Total}: 1.440 msec

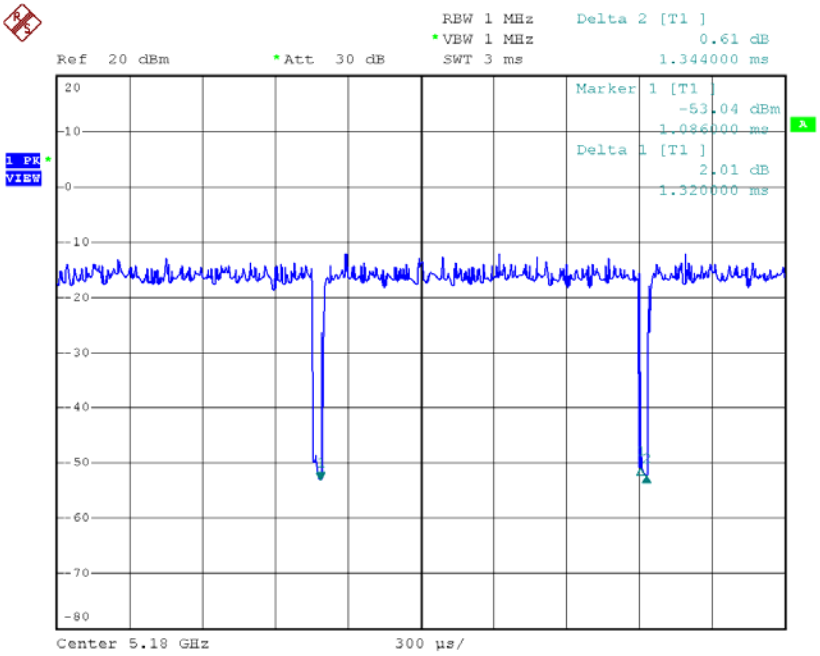
Duty cycle: 98.75 %

Duty Factor = 10 log(1/Duty cycle)

Duty Factor = 0.05

Note: The EUT was programmed to be in countinously transmitting mode and the transmit duty cycle is not ess than 98 %, so, the output power and power density should be cacluated as Output Power = Measured power + Ducy factor
Power Spectral Density = Measured density + Duty factor

TX N20 Mode_DUTY CYCLE



Duty cycle: 5180 MHz

Duty cycle = T_{ON} / T_{Total}

T_{ON}: 1.320 msec

T_{Total}: 1.344 msec

Duty cycle: 98.21 %

Duty Factor = 10 log(1/Duty cycle)

Duty Factor = 0.08

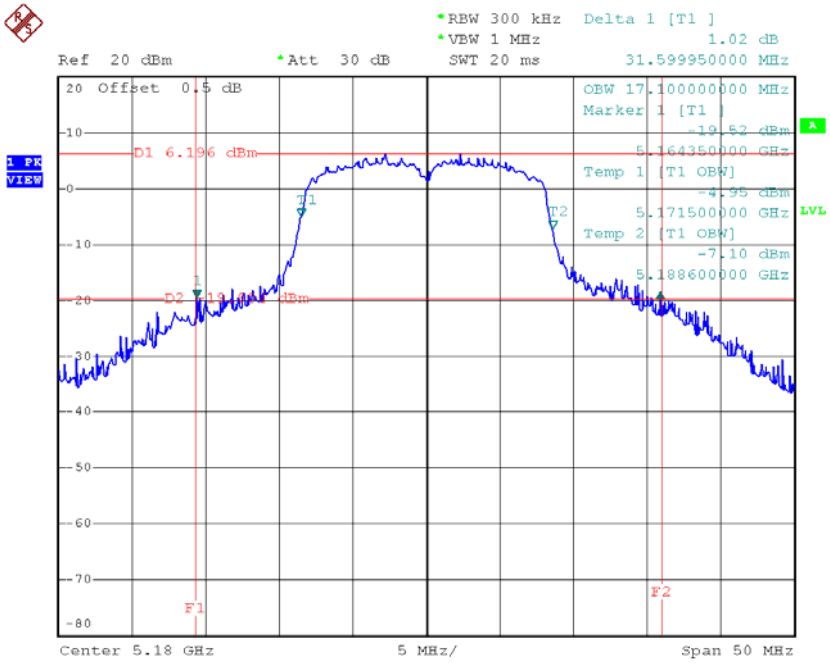
Note: The EUT was programmed to be in countinously transmitting mode and the transmit duty cycle is not ess than 98 %, so, the output power and power density should be cacluated as Output Power = Measured power + Ducy factor
Power Spectral Density = Measured density + Duty factor

ATTACHMENT F - BANDWIDTH

Test Mode: UNII-1/TX A Mode_CH36/CH40/CH48			

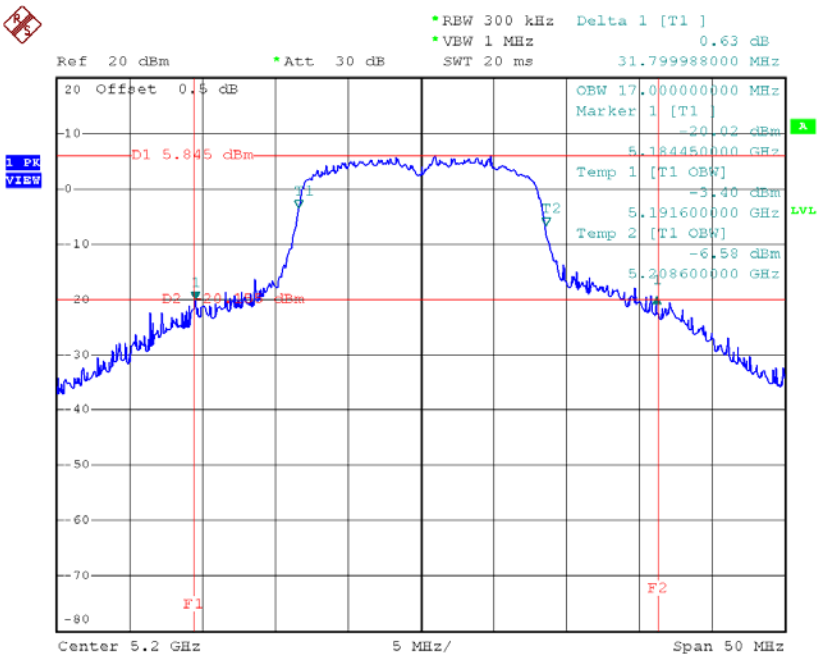
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH36	5180	31.60	17.10
CH40	5200	31.80	17.00
CH48	5240	32.60	17.10

TX CH36



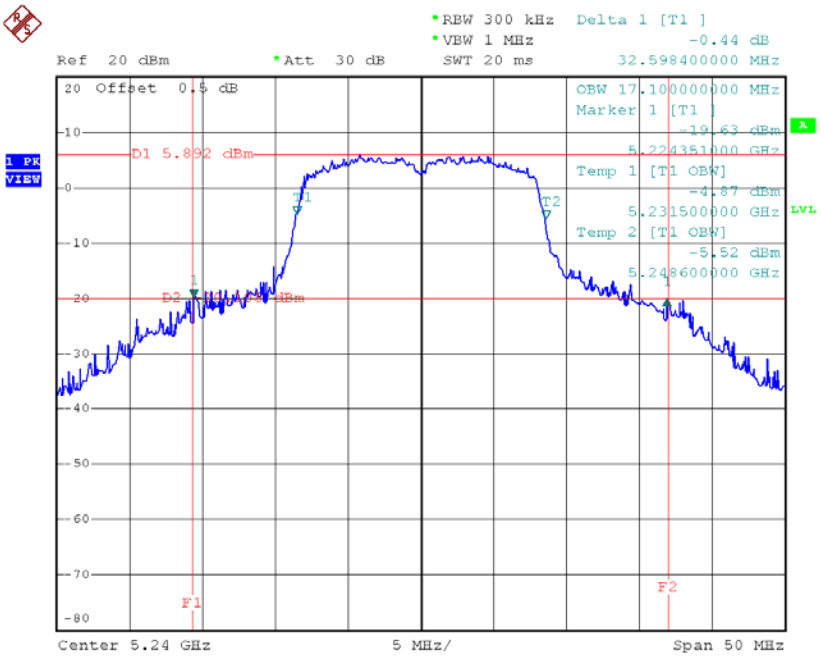
Date: 18.MAY.2016 11:03:44

TX CH40



Date: 18.MAY.2016 11:04:56

TX CH48

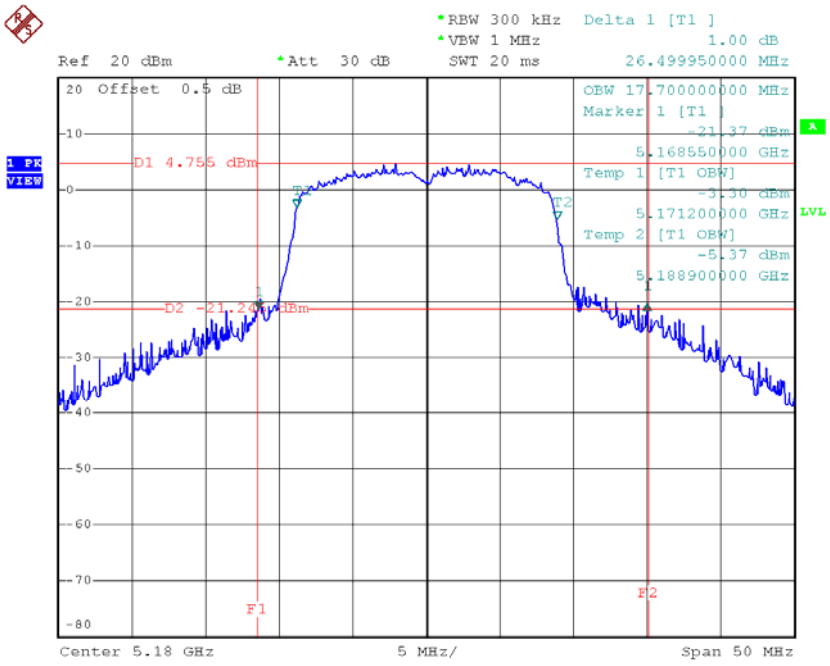


Date: 18.MAY.2016 11:06:06

Test Mode: UNII-1/TX N20 Mode_CH36/CH40/CH48

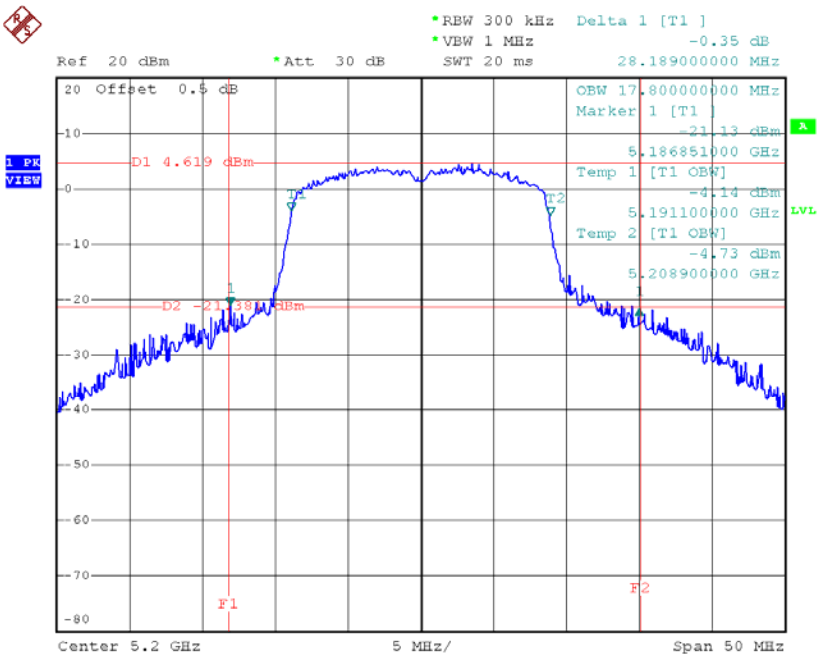
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH36	5180	26.50	17.70
CH40	5200	28.19	17.80
CH48	5240	28.55	17.80

TX CH36



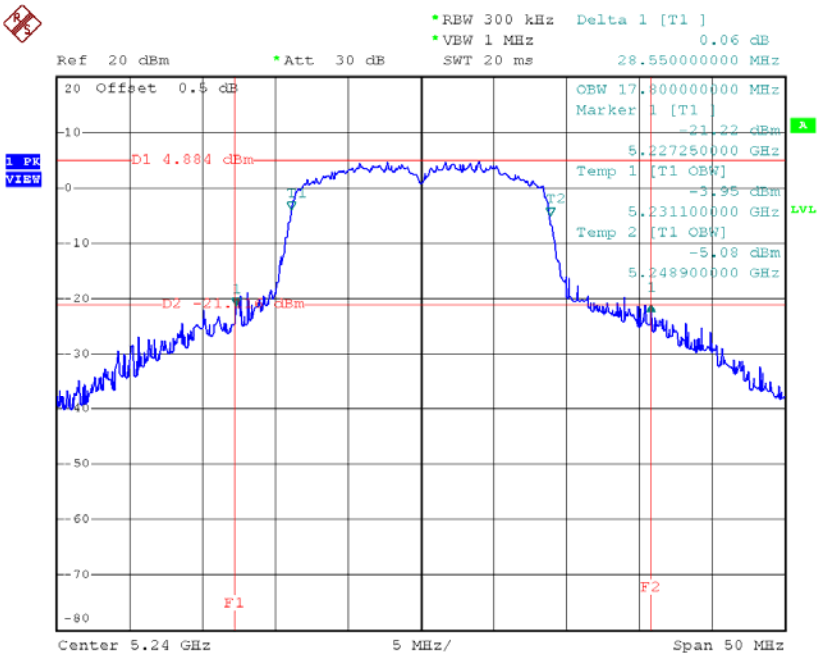
Date: 18.MAY.2016 11:07:56

TX CH40



Date: 18.MAY.2016 11:09:45

TX CH48



Date: 18.MAY.2016 11:10:36

ATTACHMENT G - MAXIMUM OUTPUT POWER

Test Mode: UNII-1/TX A Mode						

Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor (dBm)	Output Power + Duty Factor (dBm)	Limit (dBm)	Limit (Watt)
CH36	5180	13.90	0.05	13.95	30.00	1.00
CH40	5200	13.89	0.05	13.94	30.00	1.00
CH48	5240	13.96	0.05	14.01	30.00	1.00

Test Mode: UNII-1/TX N20 Mode						

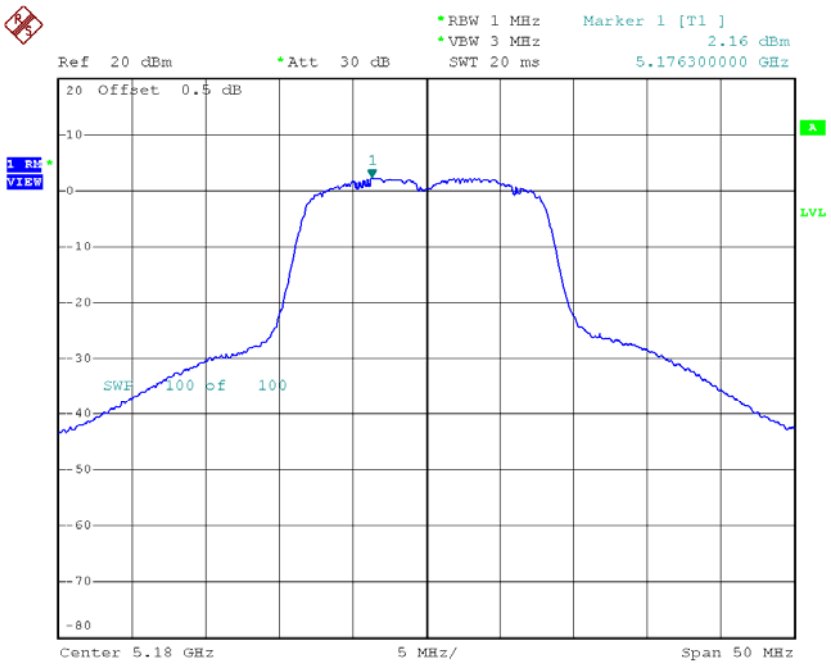
Channel	Frequency (MHz)	Output Power (dBm)	Duty Factor (dBm)	Output Power + Duty Factor (dBm)	Limit (dBm)	Limit (Watt)
CH36	5180	12.63	0.08	12.71	30.00	1.00
CH40	5200	12.57	0.08	12.65	30.00	1.00
CH48	5240	12.69	0.08	12.77	30.00	1.00

ATTACHMENT H - POWER SPECTRAL DENSITY

Test Mode: UNII-1/ TX A Mode_CH36/CH40/CH48

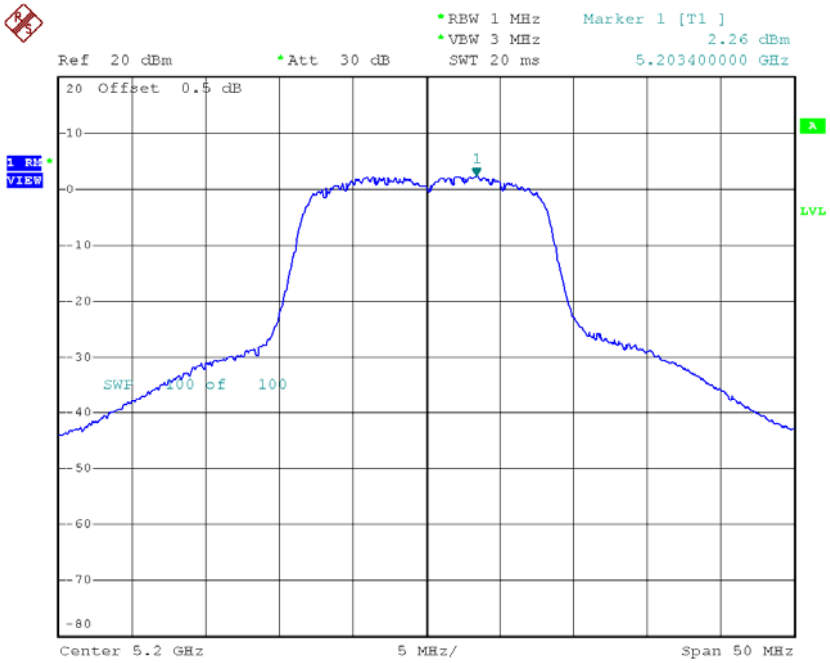
Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Factor (dBm/MHz)	Power Density + Duty Factor (dBm/MHz)	Limit (dBm/MHz)
CH36	5180	2.16	0.05	2.21	17.00
CH40	5200	2.26	0.05	2.31	17.00
CH48	5240	2.47	0.05	2.52	17.00

CH36



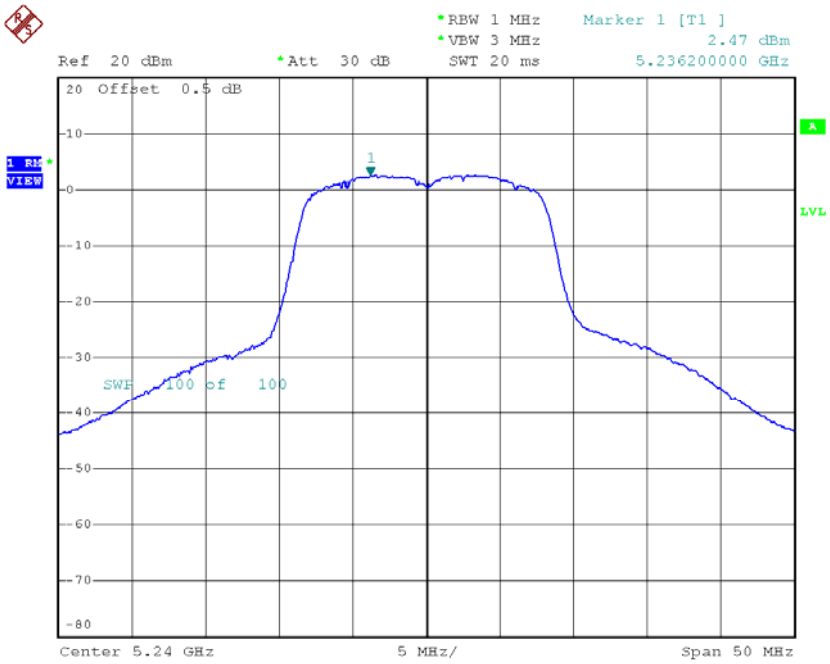
Date: 18.MAY.2016 11:03:52

CH40



Date: 18.MAY.2016 11:05:05

CH48

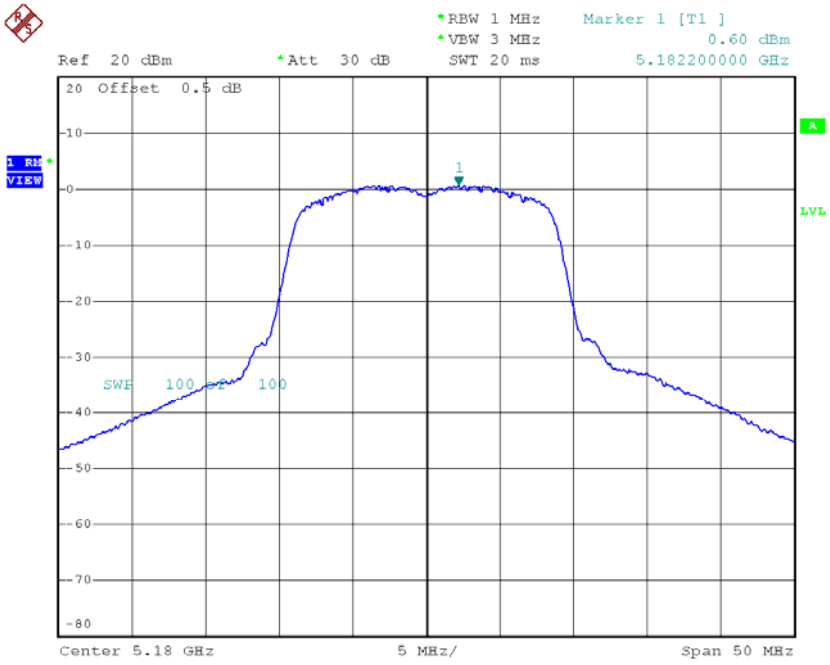


Date: 18.MAY.2016 11:06:14

Test Mode: UNII-1/TX N20 Mode_CH36/CH40/CH48

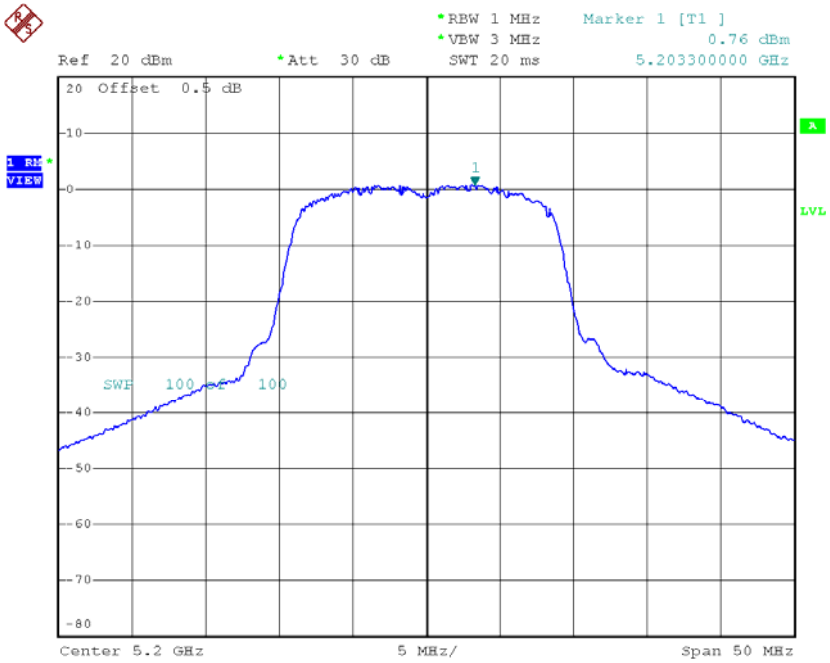
Channel	Frequency (MHz)	Power Density (dBm/MHz)	Duty Factor (dBm/MHz)	Power Density + Duty Factor (dBm/MHz)	Limit (dBm/MHz)
CH36	5180	0.60	0.08	0.68	17.00
CH40	5200	0.76	0.08	0.84	17.00
CH48	5240	1.06	0.08	1.14	17.00

CH36



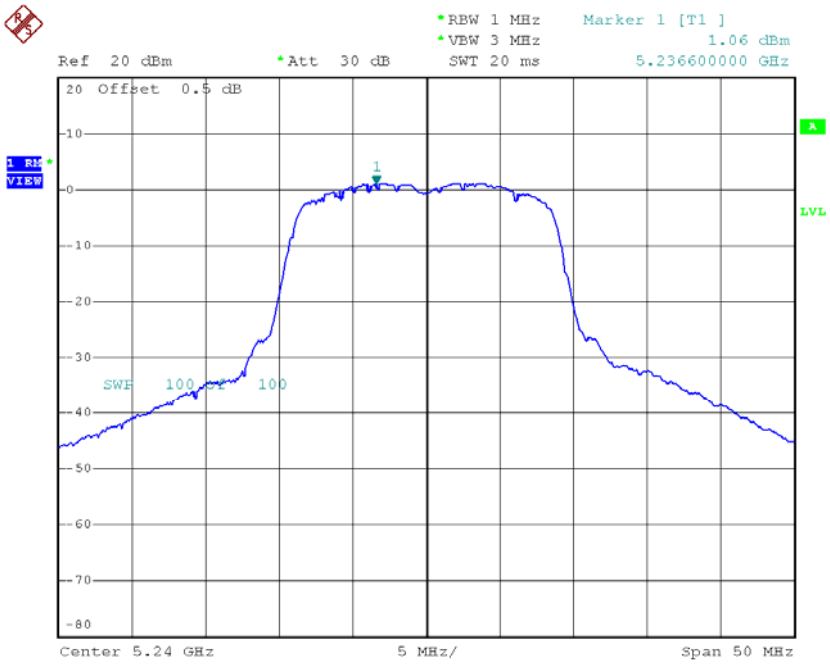
Date: 18.MAY.2016 11:08:04

CH40



Date: 18.MAY.2016 11:09:53

CH48



Date: 18.MAY.2016 11:10:45

ATTACHMENT I - FREQUENCY STABILITY

Test Mode:	UNII-1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5180.0000
5.75	5179.9308
5	5179.9304
4.25	5179.9300
Max. Deviation (MHz)	0.0700
Max. Deviation (ppm)	13.5135

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(℃)	5180.0000
-5	5179.9296
5	5179.9296
15	5179.9296
25	5179.9296
35	5179.9296
45	5179.9292
50	5179.9300
Max. Deviation (MHz)	0.0708
Max. Deviation (ppm)	13.6680