FCC Radio Test Report

FCC ID: SI5VRE3000

This report concerns: Class II Permissive Change

Project No.	:	1807T004A
Equipment	:	Verizon 5G Home Wi-Fi Extender
Test Model	:	VRE3000
Series Model	:	N/A
Applicant	:	U-MEDIA Communications, Inc.
Address	:	9F, No.1, Jin-shan 7th St. Hsinchu Taiwan

Date of Receipt	:	Jul. 02, 2018 (For UNII-1 and UNII-3) Aug. 03, 2018 (For UNII-2A and UNII-2C)
Date of Test	:	Jul. 02, 2018 ~ Aug. 13, 2018 (For UNII-1 and UNII-3) Aug. 03, 2018 ~ Dec. 22, 2018 (For UNII-2A and UNII-2C)
Issued Date	:	Dec. 24, 2018
Tested by	:	BTL Inc.

Testing Engineer : (Kay Wu)

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Authorized Signatory : (Andy Chiu)

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Testing Laboratory
0659

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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BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements in all the possible configurations as representative of its intended use.

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. This is a supplementary report to the original test report (BTL-FCCP-3-1807T004). The difference compared with original report is enabled UNII-2A and UNII-2C bands. All tests had been verified and the other original test data are kept in this report.	Oct. 22, 2018
R01	Revised report to address TCB's comments.	Oct. 31, 2018
R02	Revised report to address TCB's comments.	Dec. 24, 2018

1 CERTIFICATION

Equipment	:	Verizon 5G Home Wi-Fi Extender
Brand Name	:	Verizon
Test Model	:	VRE3000
Series Model	:	N/A
Applicant	:	U-MEDIA Communications, Inc.
Manufacturer	:	U-MEDIA Communications, Inc.
Address	:	No. 90, Kuang Fu Nth.Rd., Hsinchu Industrial Park, Hu Kou, Hsinchu, 303, Taiwan
Date of Test	:	Jul. 02, 2018 ~ Aug. 13, 2018 (For UNII-1 and UNII-3) Aug. 03, 2018 ~ Dec. 22, 2018 (For UNII-2A and UNII-2C)
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part15, Subpart C (§15.247) FCC Part15, Subpart E (§15.407) ANSI C63.10-2013

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-3-1807T004A) 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 Transmit Simultaneously part.

2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Part15, Subpart C (§15.247), FCC Part15, Subpart E (§15.407)				
FCC Clause No	**Description**	**Test Result**	**Judgement**	**Remark**
§15.205 §15.209 §15.247(d) §15.407(b)	Radiated Emissions	APPENDIX A	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:
CB15: (VCCI RN: R-20020; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

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. Radiated emissions above 1 GHz test:

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

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

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

3 GENERAL INFORMATION

3.1 DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td colspan="2">Verizon 5G Home Wi-Fi Extender</td></tr>
<tr><td>Brand Name</td><td colspan="2">Verizon</td></tr>
<tr><td>Test Model</td><td colspan="2">VRE3000</td></tr>
<tr><td>Series Model</td><td colspan="2">N/A</td></tr>
<tr><td>Model Difference</td><td colspan="2">N/A</td></tr>
<tr><td>Power Source</td><td colspan="2">DC Voltage supplied from AC/DC adapter.</td></tr>
<tr><td>Power Rating</td><td colspan="2">#1 Ktec / KSA-24W-120200HU
I/P: 100-240V~50/60Hz, 0.6A
O/P: 12V 2.0A
#2 UMEC / UP0251M-12PA
I/P: 100-240V~50/60Hz, 0.6A MAX
O/P: +12V 2A, 24W MAX</td></tr>
<tr><td rowspan="2">Product Specification</td><td>RF Chips</td><td>The EUT contains two RF Chips which functions are as below
<table>
<tr><td>Chip</td><td>2.4 GHz</td><td>5 GHz</td><td>Chains</td></tr>
<tr><td>MT7615N</td><td>NO</td><td>YES
UNII-1
UNII-2A</td><td>4T4R</td></tr>
<tr><td>MT7615DN</td><td>YES</td><td>YES
UNII-2C
UNII-3</td><td>2T2R</td></tr>
</table></td></tr>
<tr><td rowspan="4">Product Specification for WLAN</td><td>Operation Frequency</td><td>2412 MHz to 2462 MHz</td></tr>
<tr><td>Modulation Type</td><td>IEEE 802.11b: DSSS
IEEE 802.11g: OFDM
IEEE 802.11n: OFDM</td></tr>
<tr><td>Bit Rate of Transmitter</td><td>IEEE 802.11b: 11/5.5/2/1 Mbps
IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps
IEEE 802.11n: up to 300 Mbps</td></tr>
<tr><td>Maximum Output Power</td><td>IEEE 802.11b: 23.49 dBm (0.2234 W)
IEEE 802.11g: 27.08 dBm (0.5108 W)
IEEE 802.11n (HT20): 26.23 dBm (0.4200 W)
IEEE 802.11n (HT40): 26.17 dBm (0.4136 W)</td></tr>
</table>

Product Specification for RLAN	Operation Frequency	UNII-1: 5180 MHz to 5240 MHz UNII-2A: 5260 MHz to 5320 MHz UNII-2C: 5500 MHz to 5700 MHz UNII-3: 5745 MHz to 5825 MHz
	Modulation Type	OFDM
	Bit Rate of Transmitter	up to 1733 Mbps
	Maximum Output Power for UNII-1	IEEE 802.11a: 23.18 dBm (0.2080 W) IEEE 802.11n (HT20): 21.88 dBm (0.1541 W) IEEE 802.11n (HT40): 21.76 dBm (0.1500 W) IEEE 802.11ac (VHT20): 21.25 dBm (0.1335 W) IEEE 802.11ac (VHT40): 21.34 dBm (0.1362 W) IEEE 802.11ac (VHT80): 20.39 dBm (0.1094 W)
	Maximum Output Power for UNII-2A	IEEE 802.11a: 17.82 dBm (0.0606 W) IEEE 802.11n (HT20): 13.09 dBm (0.0204 W) IEEE 802.11n (HT40): 13.08 dBm (0.0203 W) IEEE 802.11ac (VHT20): 12.83 dBm (0.0192 W) IEEE 802.11ac (VHT40): 12.99 dBm (0.0199 W) IEEE 802.11ac (VHT80): 12.80 dBm (0.0191 W)
	Maximum Output Power for UNII-2C	IEEE 802.11a: 19.00 dBm (0.0794 W) IEEE 802.11n (HT20): 18.88 dBm (0.0772 W) IEEE 802.11n (HT40): 21.67 dBm (0.1469 W) IEEE 802.11ac (VHT20): 18.43 dBm (0.0697 W) IEEE 802.11ac (VHT40): 21.41 dBm (0.1384 W) IEEE 802.11ac (VHT80): 21.00 dBm (0.1260 W)
	Maximum Output Power for UNII-3	IEEE 802.11a: 22.12 dBm (0.1628 W) IEEE 802.11n (HT20): 21.21 dBm (0.1320 W) IEEE 802.11n (HT40): 19.96 dBm (0.0991 W) IEEE 802.11ac (VHT20): 20.23 dBm (0.1054 W) IEEE 802.11ac (VHT40): 19.58 dBm (0.0908 W) IEEE 802.11ac (VHT80): 19.61 dBm (0.0914 W)
Product Covered	2 * Adapter: (1) Ktec / KSA-24W-120200HU (2) UMEC / UP0251M-12PA	

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		

For RLAN

UNII-1					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (HT20)		IEEE 802.11n (HT40) IEEE 802.11ac (HT40)		IEEE 802.11ac (VHT80)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

UNII-2A					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (VHT20)		IEEE 802.11n (HT40) IEEE 802.11ac (VHT40)		IEEE 802.11ac (VHT80)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310		
60	5300				
64	5320				

UNII-2C					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (VHT20)		IEEE 802.11n (HT40) IEEE 802.11ac (VHT40)		IEEE 802.11ac (VHT80)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630		
116	5580	134	5670		
120	5600				
124	5620				
128	5640				
132	5660				
136	5680				
140	5700				

UNII-3					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (HT20)		IEEE 802.11n (HT40) IEEE 802.11ac (HT40)		IEEE 802.11ac (VHT80)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				

(3) Table for Filed Antenna:
For WLAN
Group 1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	2.9
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	2.9

Group 2:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	1.1
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	1.1

NOTE:
(a) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R). 2.4 GHz and 5GHz can transmit simultaneously.
(b) For Power Spectral Density (CDD mode)
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 5.91 dBi.
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.
(c) For Conducted Output Power (CDD mode)
For $N_{ANT} = 2 < 5$,
Direction gain = $G_{ANT} + 0 = 2.9 + 0 = 2.9$ dBi .
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.
(d) The WLAN 2.4 GHz does not support beamforming function.

For RLAN
Group 1:
UNII-1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC3	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC4	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC5	Galtronics	02102142-06808Ax	PCB	iPEX	3.4

UNII-2A:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC3	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC4	Galtronics	02102142-06808Ax	PCB	iPEX	3.4
JC5	Galtronics	02102142-06808Ax	PCB	iPEX	3.4

UNII-2C:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	3.5
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	3.5

UNII-3:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Ax	PCB	iPEX	3.8
JC7	Galtronics	02102140-06808Ax	PCB	iPEX	3.8

Group 2:
UNII-1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC3	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC4	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC5	Galtronics	02102142-06808Cx	PCB	iPEX	3.1

UNII-2A:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC1	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC3	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC4	Galtronics	02102142-06808Cx	PCB	iPEX	3.1
JC5	Galtronics	02102142-06808Cx	PCB	iPEX	3.1

UNII-2C:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	2.8
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	2.8

UNII-3:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
JC6	Galtronics	02102140-06808Bx	PCB	iPEX	3.0
JC7	Galtronics	02102140-06808Bx	PCB	iPEX	3.0

NOTE:

(a) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (**UNII-1 and UNII-2A**: 4T4R, **UNII-2C and UNII-3**: 2T2R). 2.4 GHz and 5GHz can transmit simultaneously.

(b) For **UNII-1 and UNII-2A**:
All JC1, JC3, JC4 and JC5 can be used as transmitting/receiving antenna.
C1, JC3, JC4 and JC5 could transmit/receive simultaneously.
The C1 + JC3 + JC4 + JC5 generated the worst case, so it was selected to test and record in the report.
For **UNII-2C and UNII-3**:
All JC6 and JC7 can be used as transmitting/receiving antenna.
JC6 and JC7 could transmit/receive simultaneously.
The C6 + JC7 generated the worst case, so it was selected to test and record in the report.

(c) The EUT **UNII-1 and UNII-2A** (N mode & AC mode) are with beamforming function.
The **UNII-1 and UNII-2A** beamforming gain is 4.46 dB.
The EUT **UNII-1** (A mode), **UNII-2A** (A mode), **UNII-2C and UNII-3** do not support beamforming function.

3.2 TEST MODES

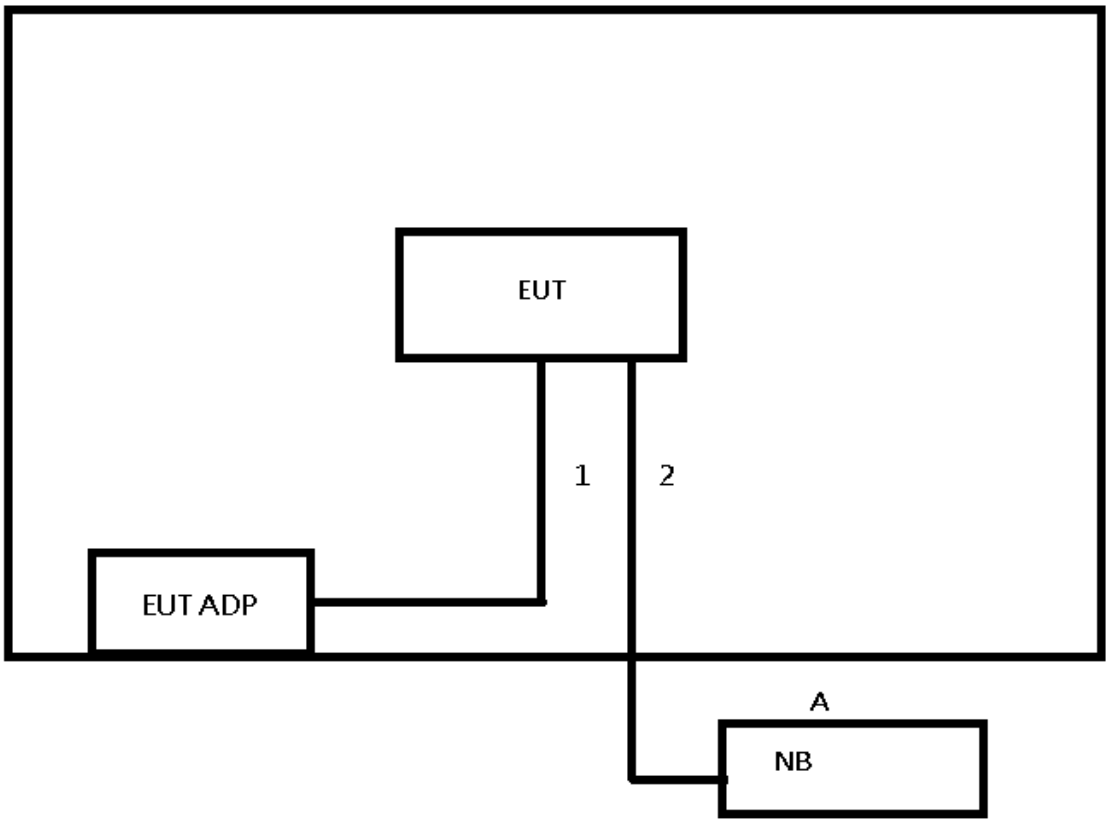
The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.
Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

Radiated emissions test	
Test Mode	Description
1	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42
2	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149
3	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106

NOTE:
(1) For radiated emission tests, the highest output powers were set for final test.
(2) The adapter KSA-24W-120200HU was found to be the worst case and used for final test.
(3) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98 %.

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 3.4.



3.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	NB	HP	TPN-I119	5CG7032BNS	Furnished at test lab

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	NO	NO	1 m	Power Cable	Furnished at test lab
2	NO	NO	4 m	RJ45 Cable	Furnished at test lab

4 RADIATED EMISSIONS TEST

4.1 LIMIT

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

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

Frequency (MHz)	Field Strength (microvolts/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
960~1000	500	3

NOTE:
(1) The limit for radiated test was performed according to FCC Part 15, Subpart C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).
(4) 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

Frequency (MHz)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBµV/m)
5150-5250	-27	68.3
5250-5350	-27	68.3
5470-5725	-27	68.3
5725-5850	-27 (NOTE 2)	68.3
	10 (NOTE 2)	105.3
	15.6 (NOTE 2)	110.9
	27 (NOTE 2)	122.3

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

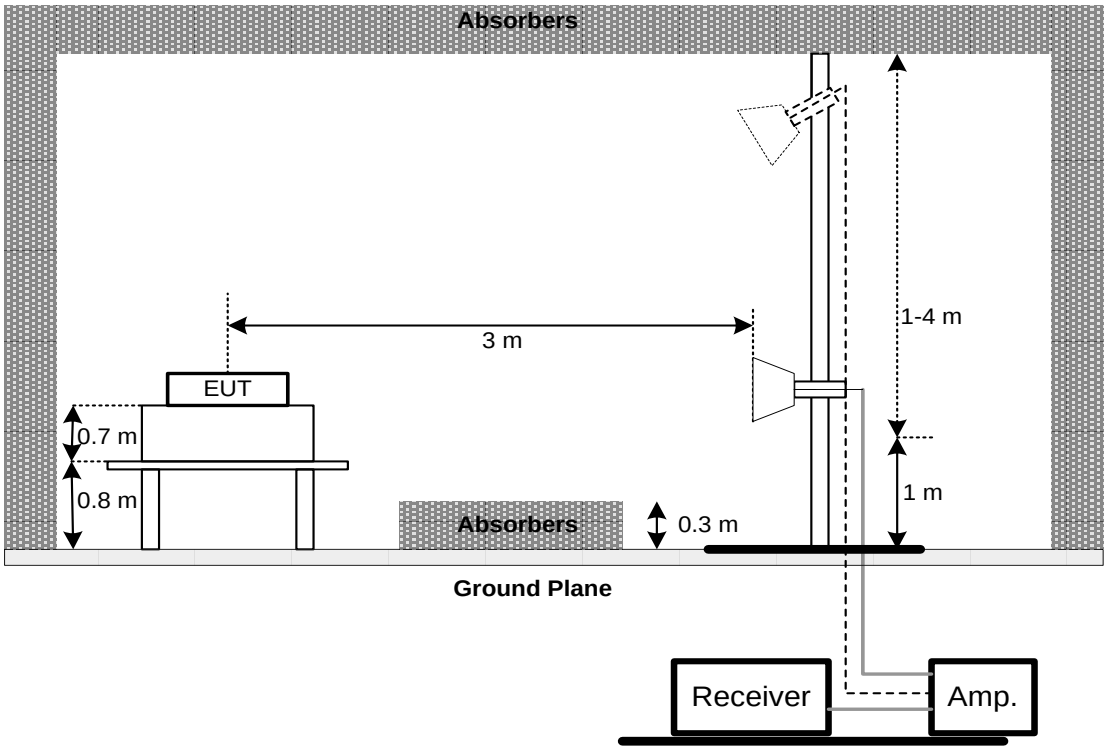
4.2 TEST PROCEDURE

a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 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.
b. The height of the equipment or of the substitution antenna shall be 1.5 m, 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.
c. 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).
d. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
e. 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.
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.
g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT

Temperature: 23 °C Relative Humidity: 70 % Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX A.

NOTE:

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

5 LIST OF MEASURING EQUIPMENTS

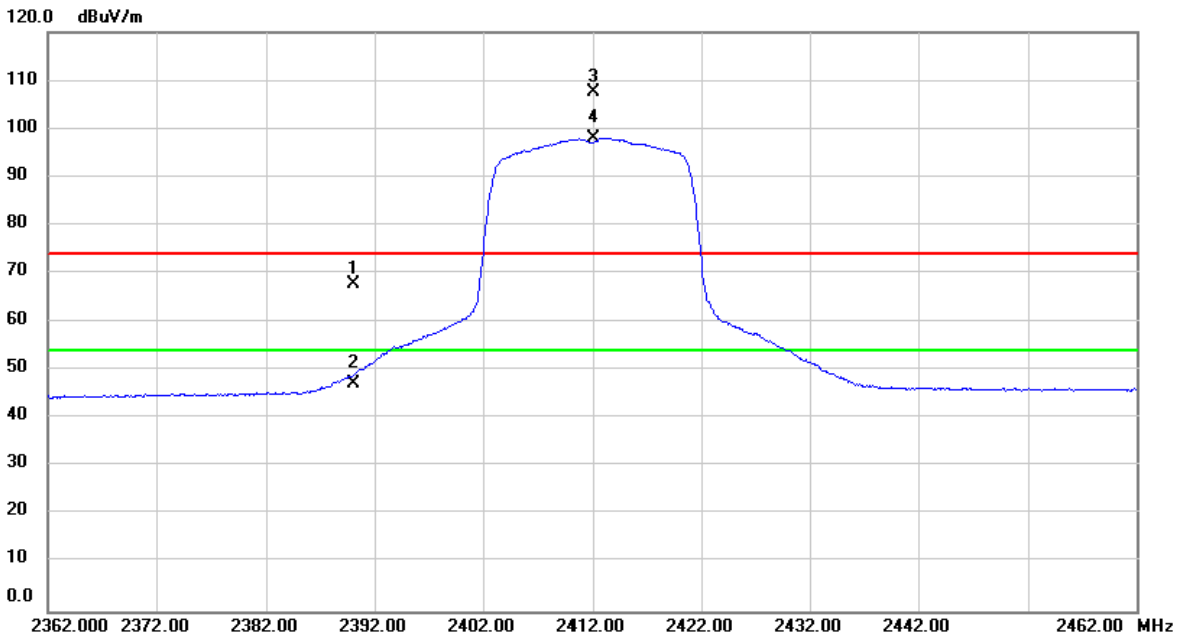
Radiated Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 27, 2019
2	Preamplifier	EMCI	EMC02325	980217	Dec. 28, 2018
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 13, 2019
4	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
5	Test Cable	EMCI	EMC104-SM-SM-800	150207	Mar. 15, 2019
6	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
9	Loop Ant	EMCI	LPA600	274	May 03, 2019
10	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 27, 2019
11	Horm Ant	Schwarzbeck	BBHA 9170	187	Dec. 05, 2018
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019

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

APPENDIX A RADIATED EMISSIONS

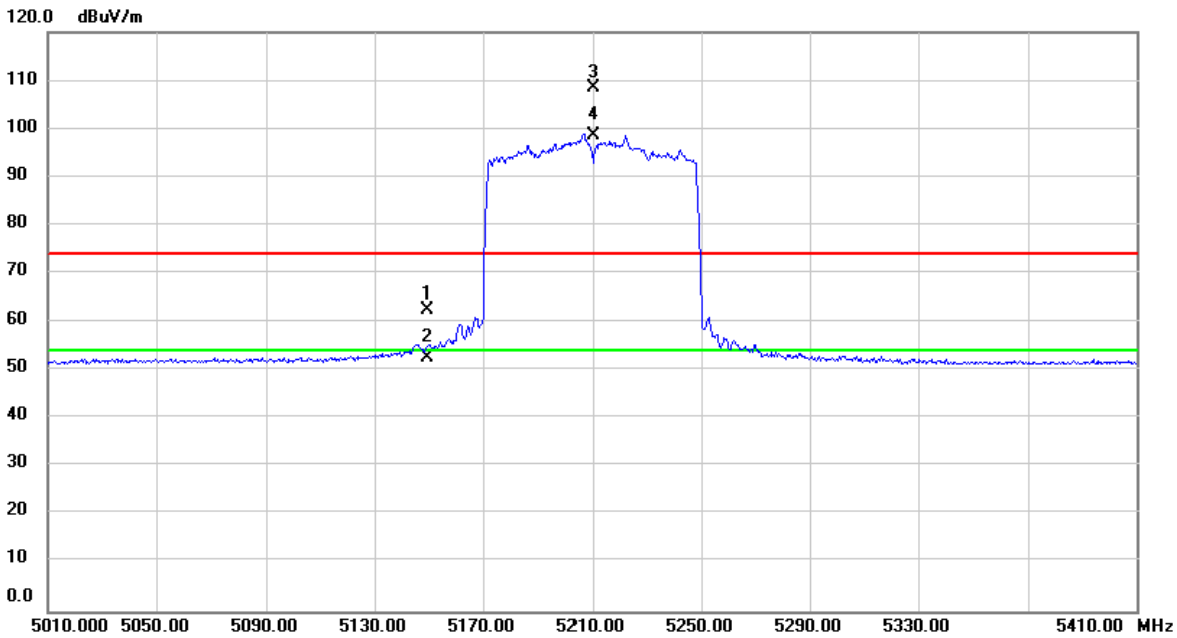
CONTINUE ON NEXT PAGE

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Vertical



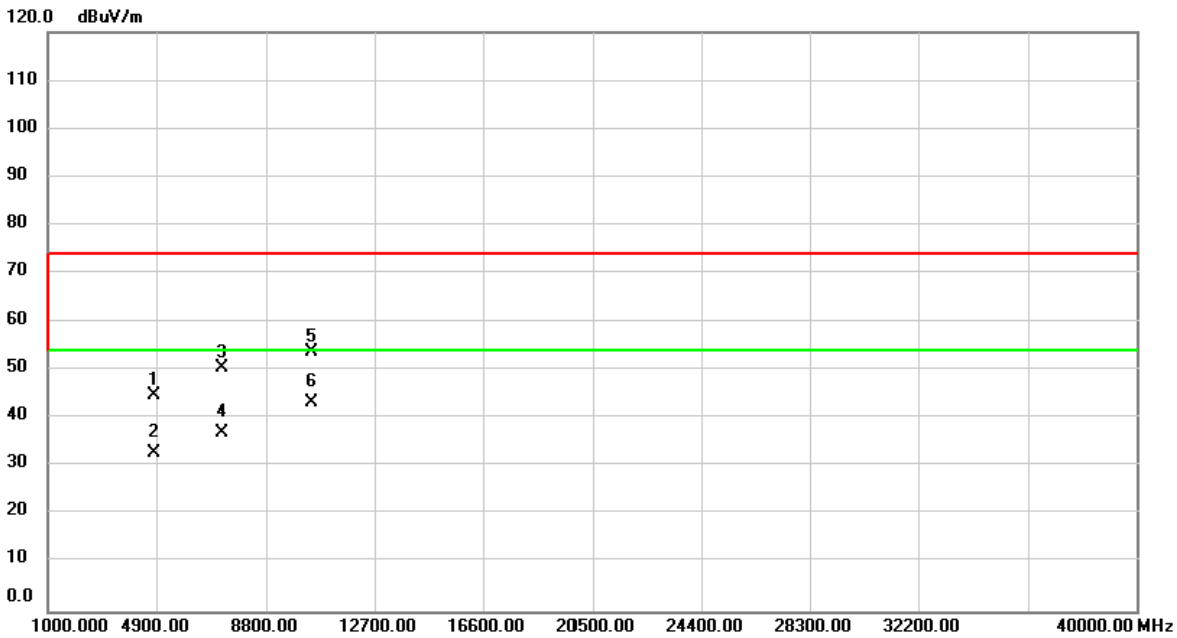
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	36.86	30.84	67.70	74.00	-6.30	peak	
2		2390.000	16.50	30.84	47.34	54.00	-6.66	AVG	
3	X	2412.000	76.65	30.92	107.57	74.00	33.57	peak	
4	*	2412.000	67.15	30.92	98.07	54.00	44.07	AVG	

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Vertical



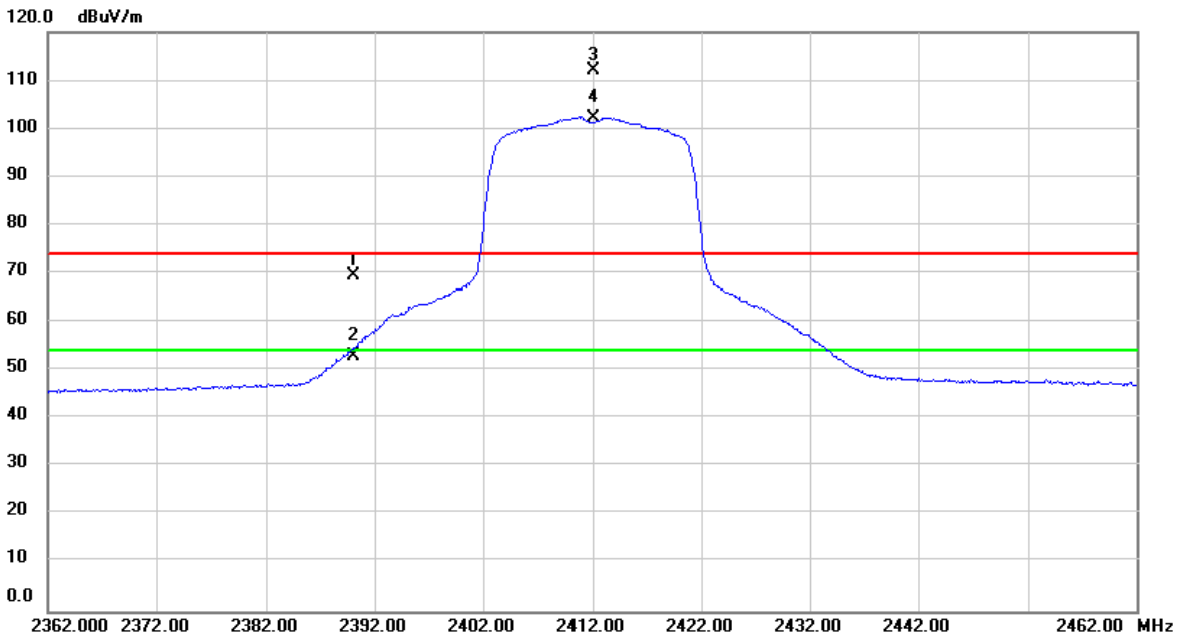
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5149.580	25.16	37.30	62.46	74.00	-11.54	peak	
2		5149.580	15.34	37.30	52.64	54.00	-1.36	AVG	
3	X	5210.000	70.96	37.38	108.34	74.00	34.34	peak	
4	*	5210.000	61.09	37.38	98.47	54.00	44.47	AVG	

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Vertical



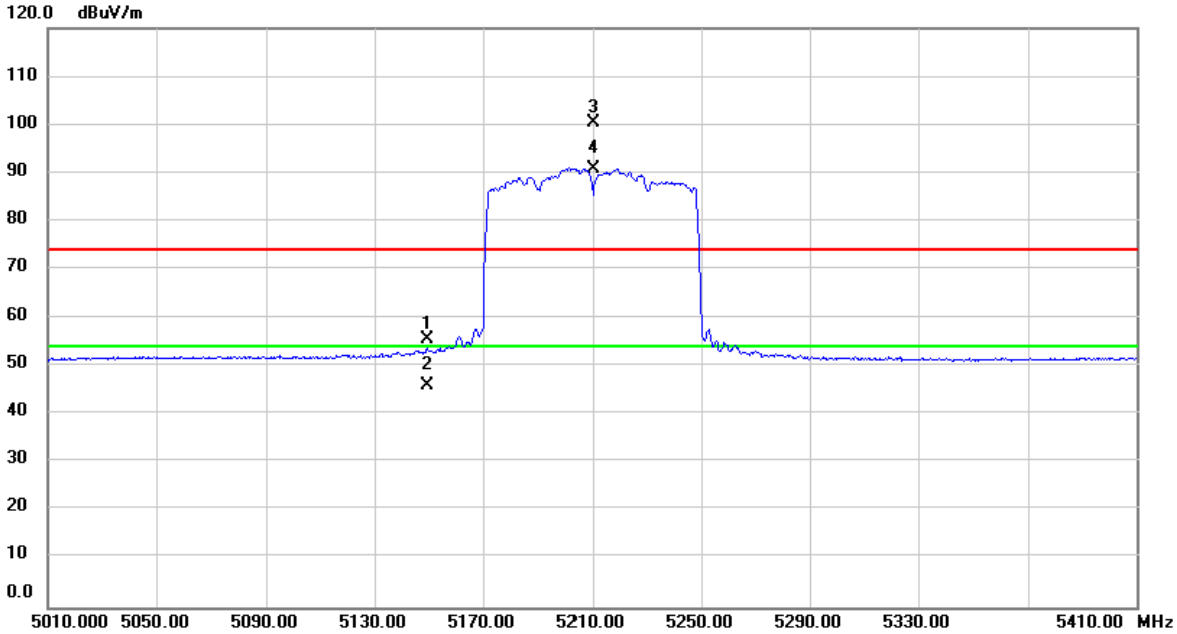
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	56.43	-11.48	44.95	74.00	-29.05	peak	
2		4824.000	44.19	-11.48	32.71	54.00	-21.29	AVG	
3		7236.000	55.69	-5.26	50.43	74.00	-23.57	peak	
4		7236.000	42.43	-5.26	37.17	54.00	-16.83	AVG	
5		10420.00	52.34	1.64	53.98	74.00	-20.02	peak	
6	*	10420.00	41.57	1.64	43.21	54.00	-10.79	AVG	

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Horizontal



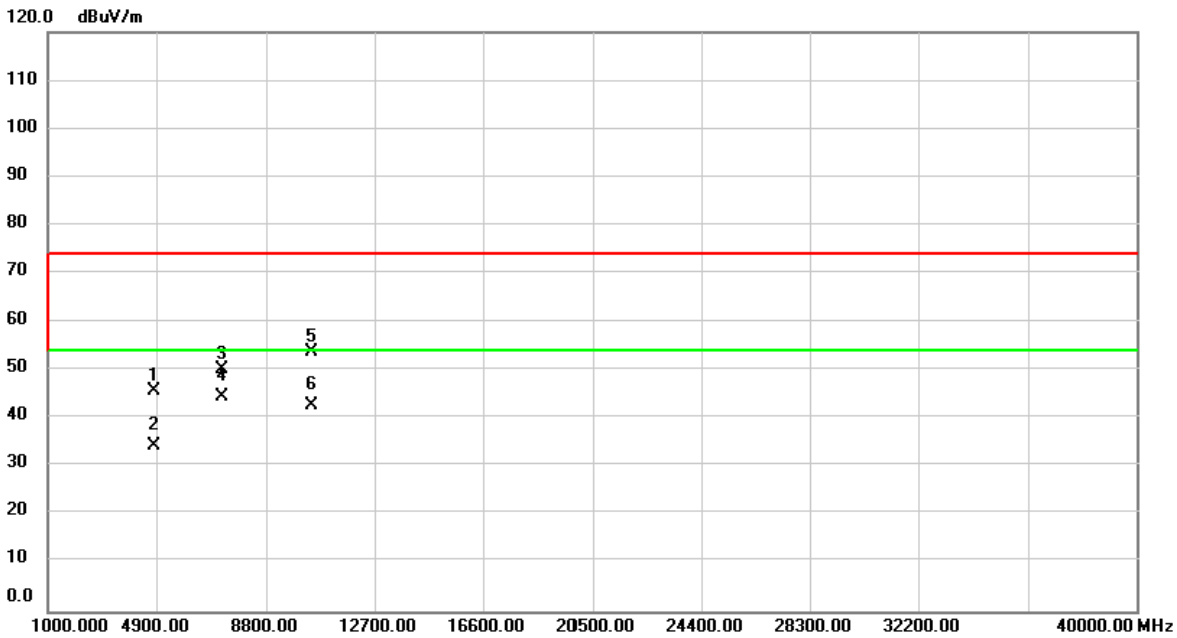
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	38.50	30.84	69.34	74.00	-4.66	peak	
2		2390.000	22.07	30.84	52.91	54.00	-1.09	AVG	
3	X	2412.000	81.03	30.92	111.95	74.00	37.95	peak	
4	*	2412.000	71.24	30.92	102.16	54.00	48.16	AVG	

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Horizontal



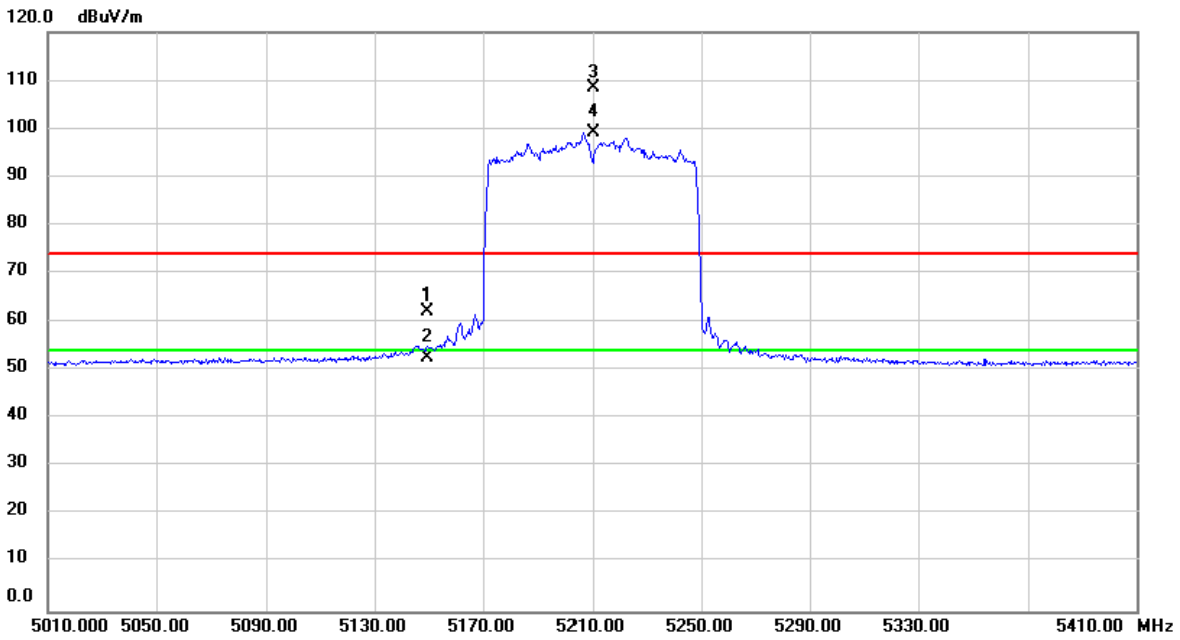
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5149.440	18.22	37.30	55.52	74.00	-18.48	peak	
2		5149.440	8.63	37.30	45.93	54.00	-8.07	AVG	
3	X	5210.000	63.11	37.38	100.49	74.00	26.49	peak	
4	*	5210.000	53.29	37.38	90.67	54.00	36.67	AVG	

Test Mode	TX N (HT20) MODE CHANNEL 01 + UNII-1_TX AC (VHT80) MODE CHANNEL 42	Polarization	Horizontal



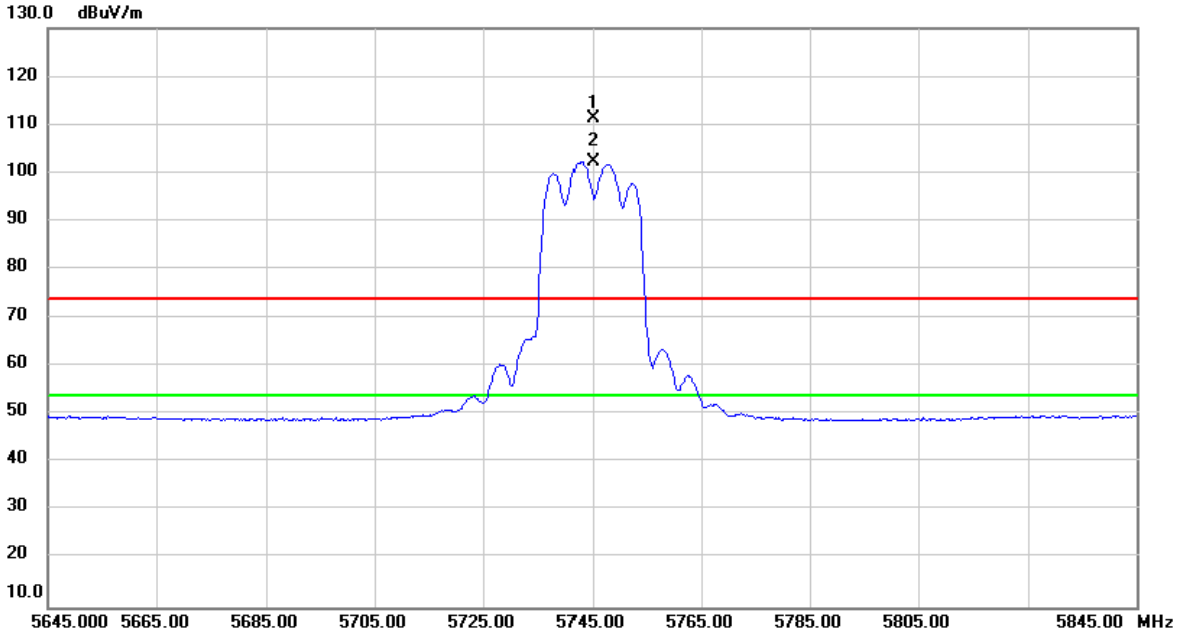
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.000	57.16	-11.48	45.68	74.00	-28.32	peak	
2		4824.000	45.73	-11.48	34.25	54.00	-19.75	AVG	
3		7236.000	55.61	-5.26	50.35	74.00	-23.65	peak	
4	*	7236.000	49.70	-5.26	44.44	54.00	-9.56	AVG	
5		10420.00	52.11	1.64	53.75	74.00	-20.25	peak	
6		10420.00	41.23	1.64	42.87	54.00	-11.13	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Vertical



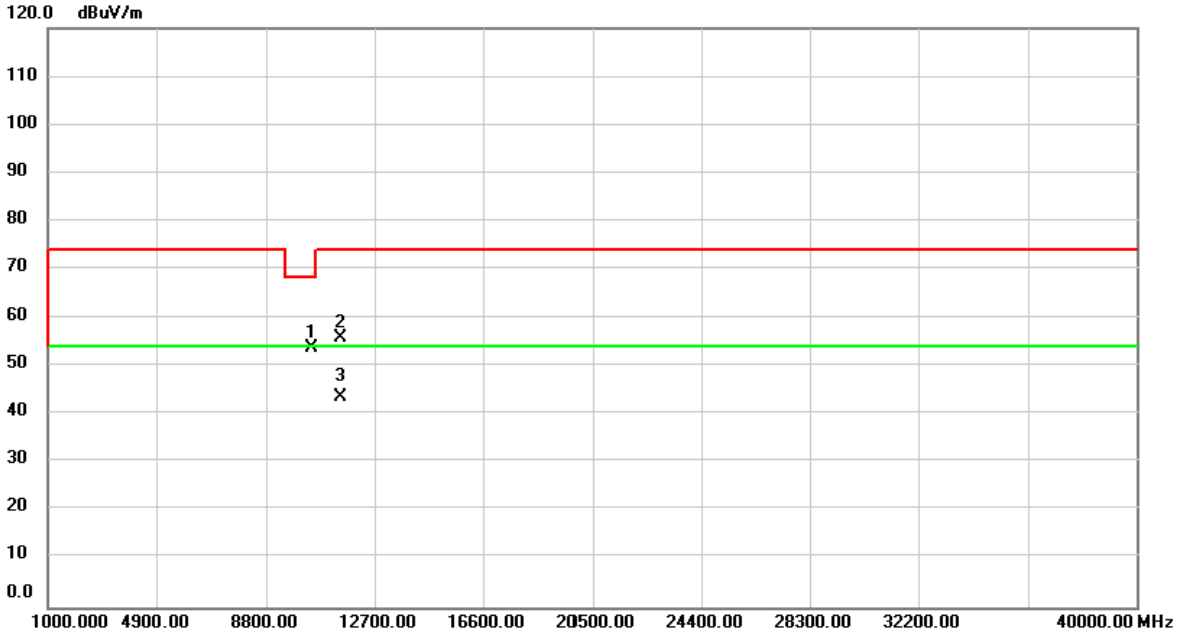
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5149.580	25.03	37.30	62.33	74.00	-11.67	peak	
2		5149.580	15.22	37.30	52.52	54.00	-1.48	AVG	
3	X	5210.000	71.03	37.38	108.41	74.00	34.41	peak	
4	*	5210.000	61.66	37.38	99.04	54.00	45.04	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Vertical



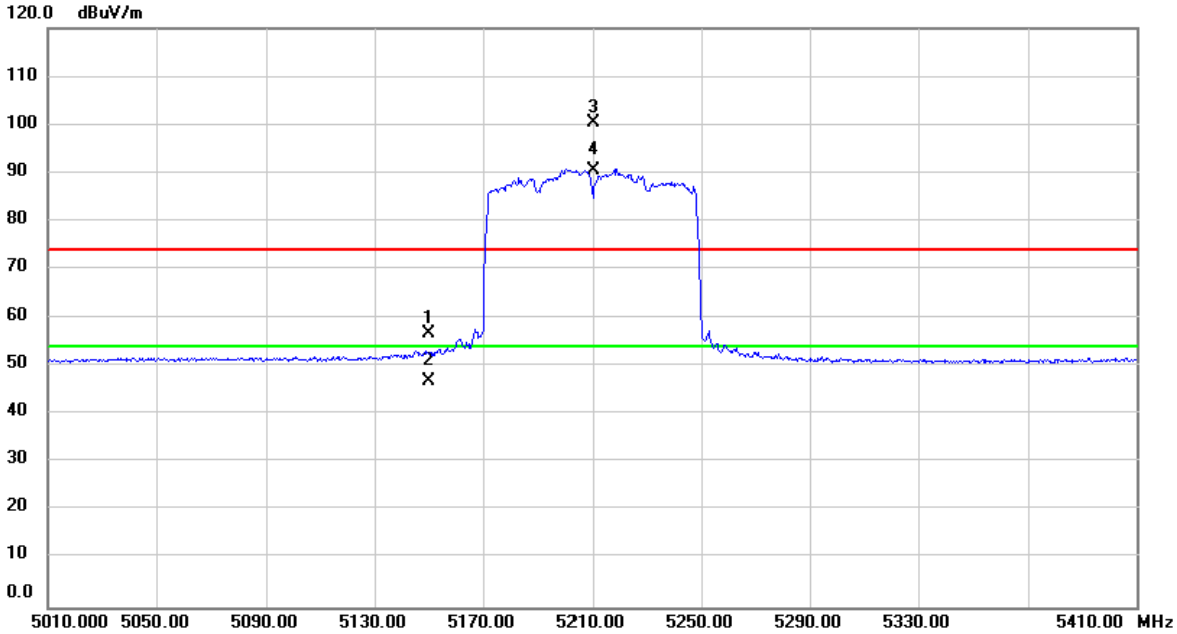
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5745.000	72.95	38.19	111.14	74.00	37.14	peak	
2	*	5745.000	64.01	38.19	102.20	54.00	48.20	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Vertical



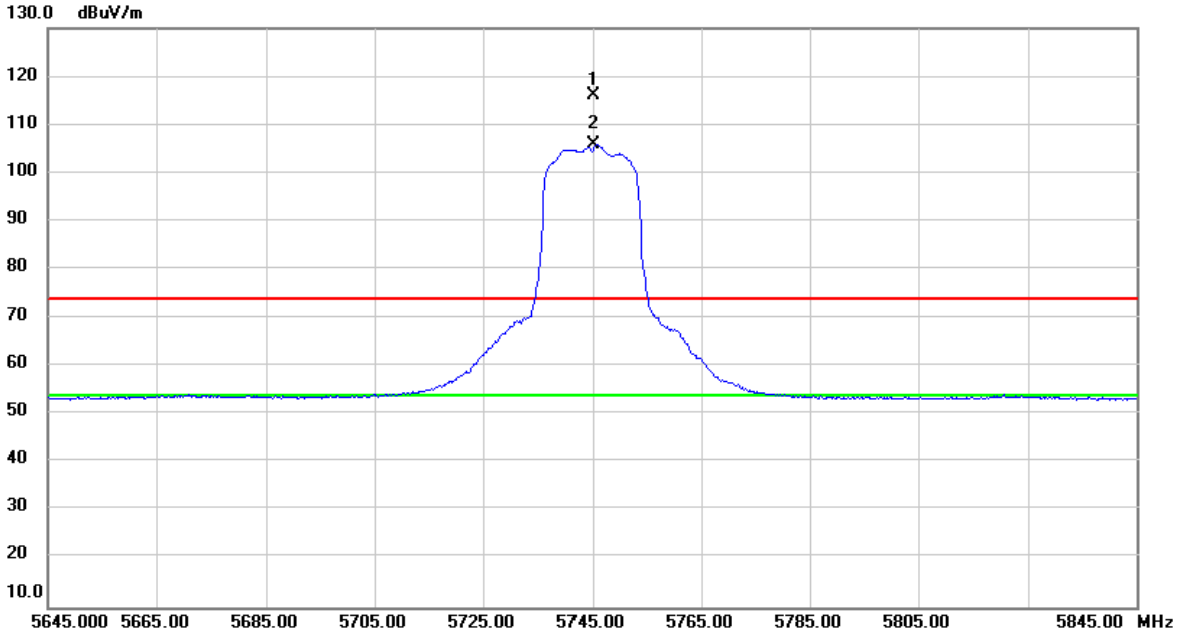
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10420.00	52.34	1.64	53.98	68.20	-14.22	peak	
2		11490.00	53.01	2.89	55.90	74.00	-18.10	peak	
3	*	11490.00	40.72	2.89	43.61	54.00	-10.39	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Horizontal



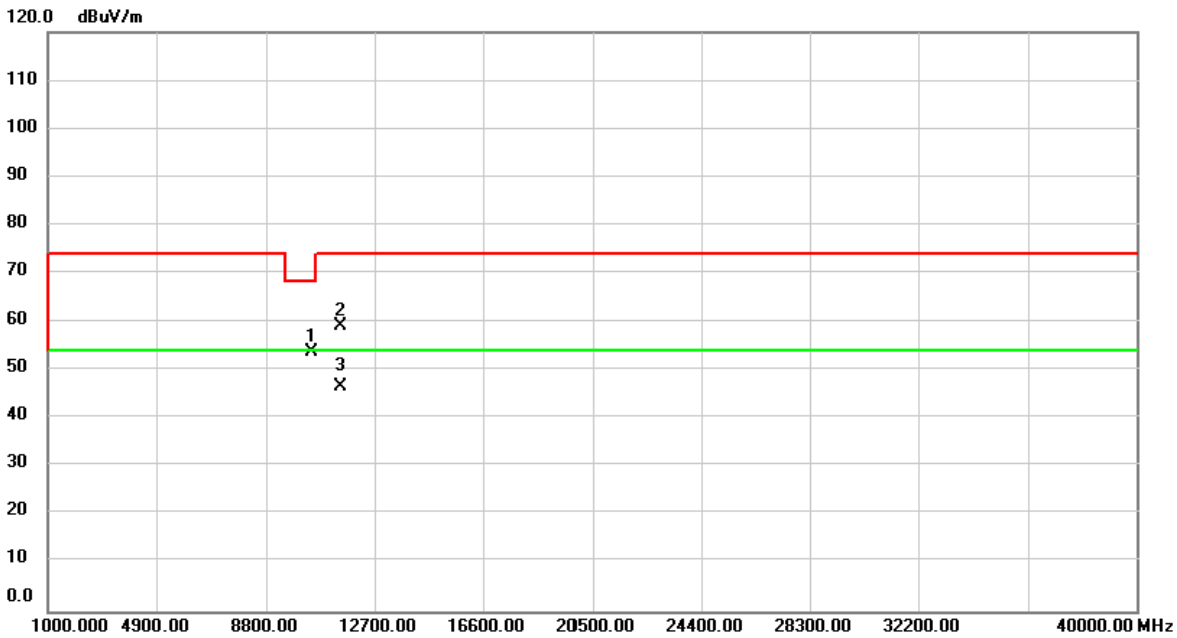
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	19.53	37.31	56.84	74.00	-17.16	peak	
2		5150.000	9.58	37.31	46.89	54.00	-7.11	AVG	
3	X	5210.000	63.10	37.38	100.48	74.00	26.48	peak	
4	*	5210.000	53.22	37.38	90.60	54.00	36.60	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Horizontal



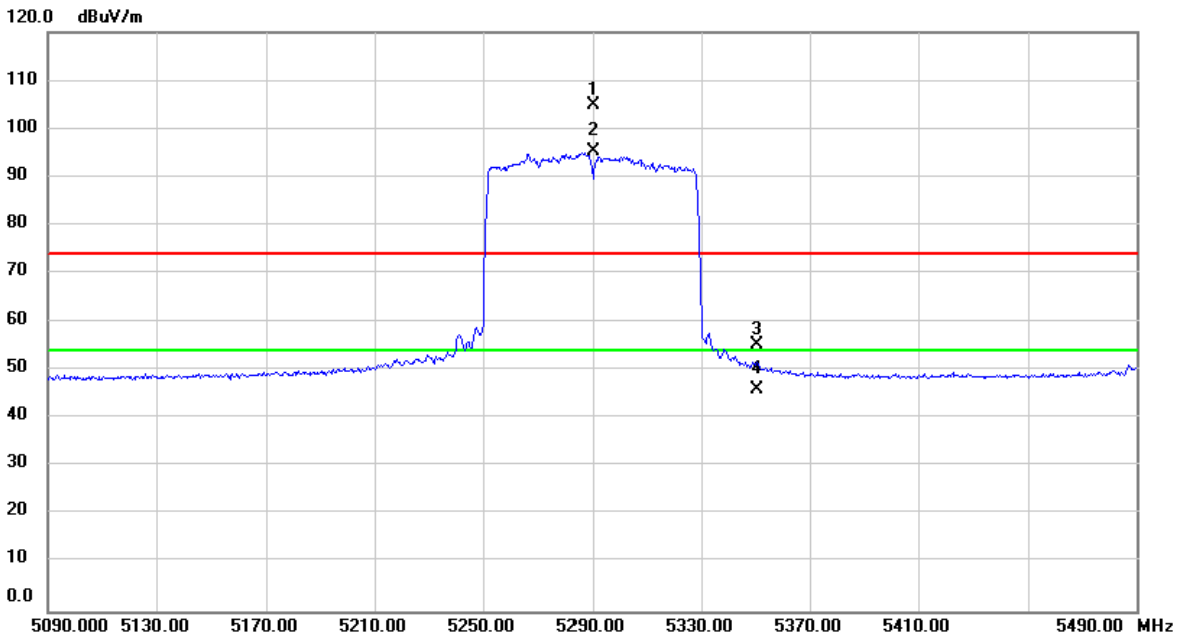
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5745.000	77.71	38.19	115.90	74.00	41.90	peak	
2	*	5745.000	67.72	38.19	105.91	54.00	51.91	AVG	

Test Mode	UNII-1_TX AC (VHT80) MODE CHANNEL 42 + UNII-3_TX A MODE CHANNEL 149	Polarization	Horizontal



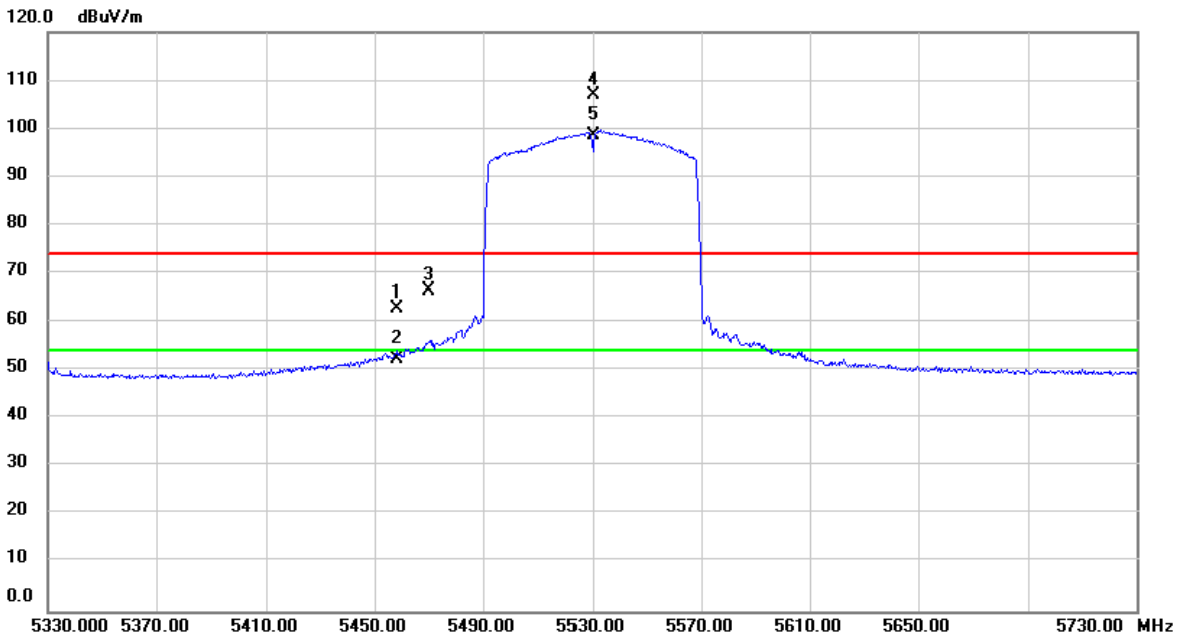
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10420.00	52.29	1.64	53.93	68.20	-14.27	peak	
2		11490.00	56.31	2.89	59.20	74.00	-14.80	peak	
3	*	11490.00	43.85	2.89	46.74	54.00	-7.26	AVG	

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Vertical



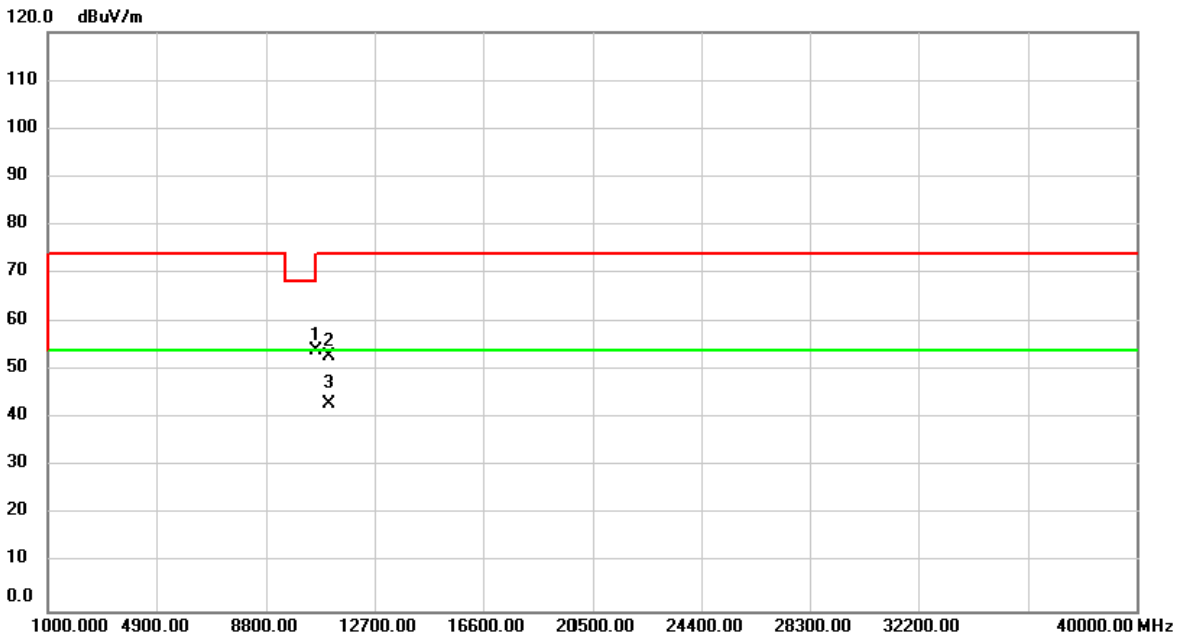
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5290.000	67.48	37.45	104.93	74.00	30.93	peak	No Limit
2	*	5290.000	57.82	37.45	95.27	54.00	41.27	AVG	No Limit
3		5350.660	17.92	37.53	55.45	74.00	-18.55	peak	
4		5350.660	8.46	37.53	45.99	54.00	-8.01	AVG	

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Vertical



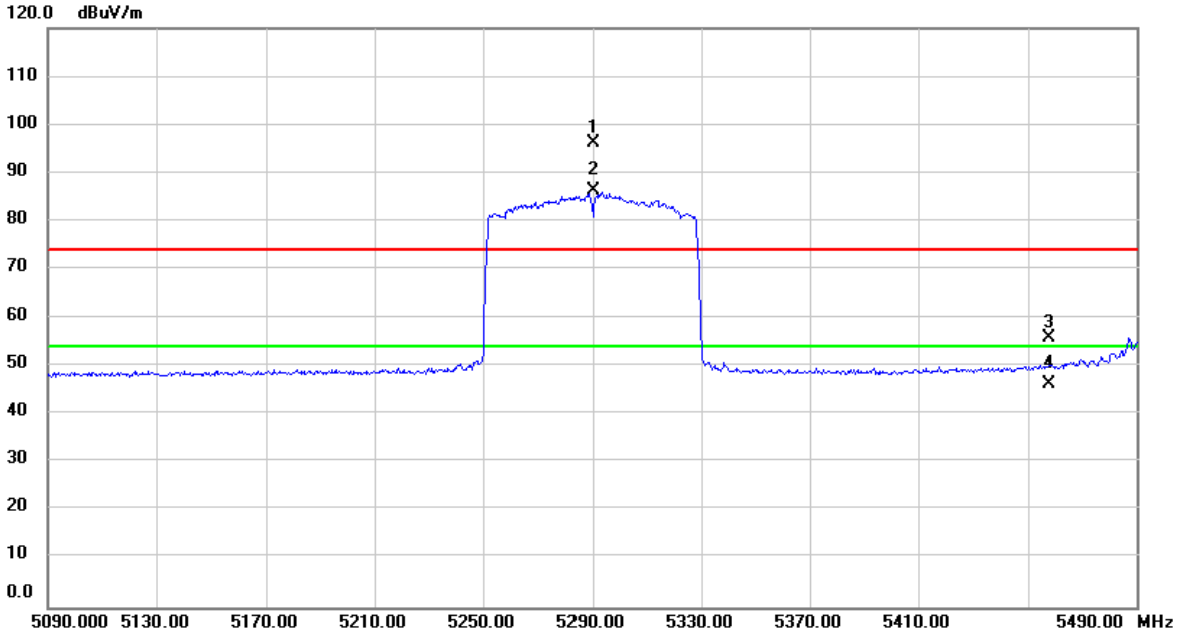
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5458.130	25.24	37.64	62.88	74.00	-11.12	peak	
2		5458.130	14.77	37.64	52.41	54.00	-1.59	AVG	
3		5469.900	28.75	37.65	66.40	74.00	-7.60	peak	
4	X	5530.000	69.21	37.75	106.96	74.00	32.96	peak	No Limit
5	*	5530.000	60.65	37.75	98.40	54.00	44.40	AVG	No Limit

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Vertical



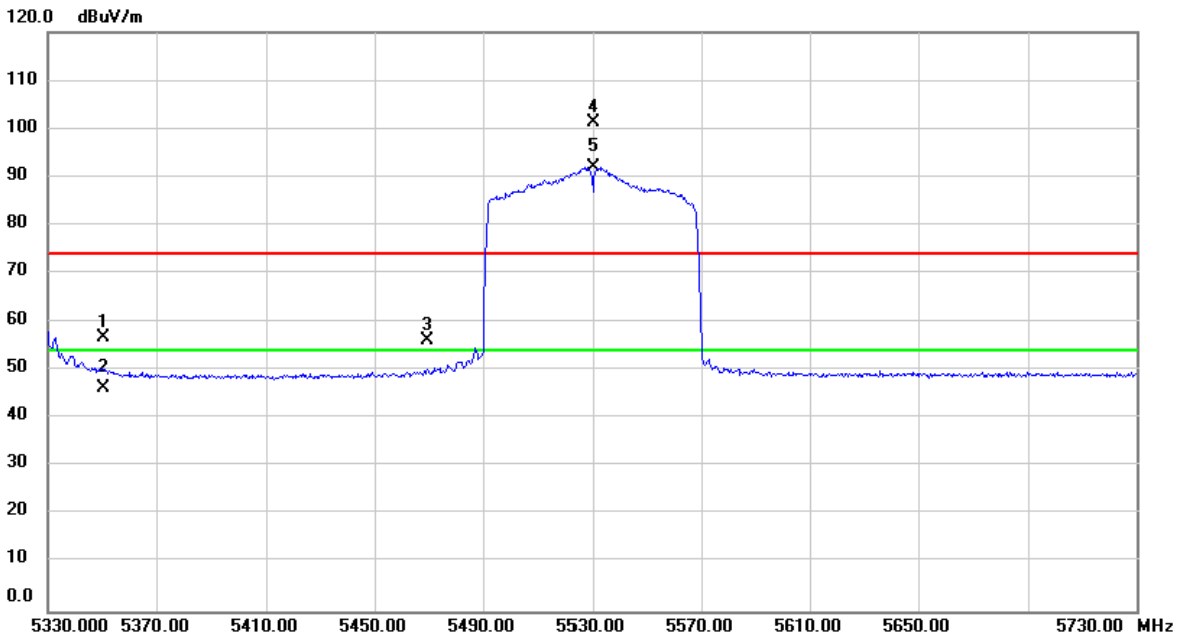
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10580.00	52.45	1.84	54.29	68.20	-13.91	peak	
2		11060.00	50.52	2.54	53.06	74.00	-20.94	peak	
3	*	11060.00	40.43	2.54	42.97	54.00	-11.03	AVG	

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Horizontal



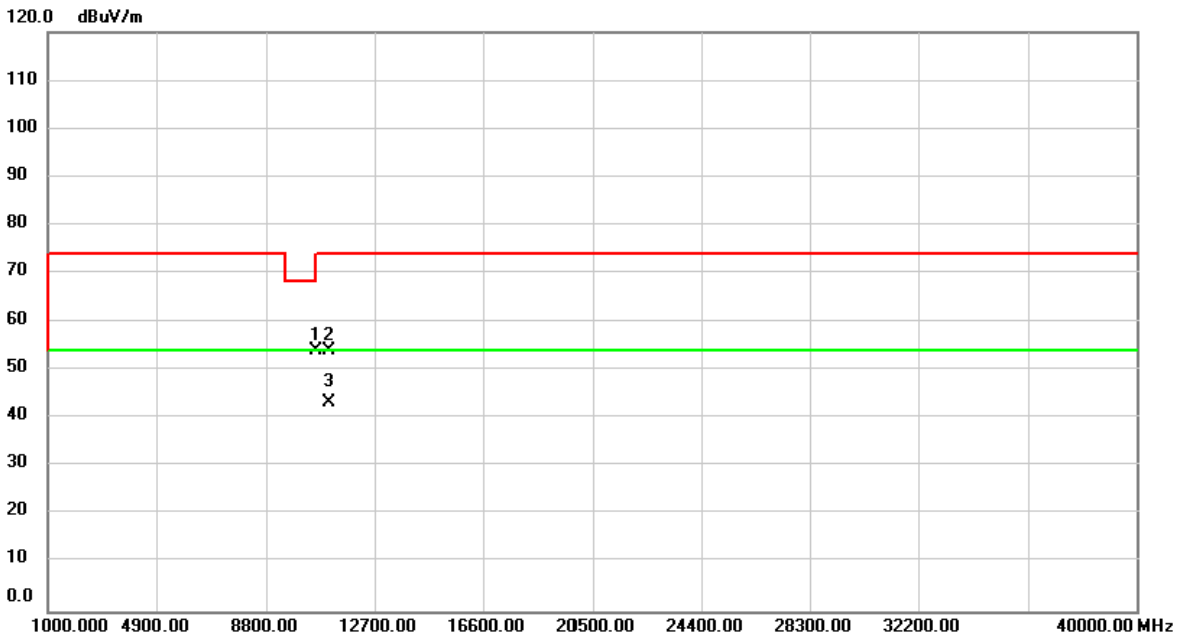
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	5290.000	58.69	37.45	96.14	74.00	22.14	peak	No Limit
2	*	5290.000	48.75	37.45	86.20	54.00	32.20	AVG	No Limit
3		5457.800	18.42	37.64	56.06	74.00	-17.94	peak	
4		5457.800	8.60	37.64	46.24	54.00	-7.76	AVG	

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5350.770	19.29	37.53	56.82	74.00	-17.18	peak	
2		5350.770	8.94	37.53	46.47	54.00	-7.53	AVG	
3		5469.440	18.51	37.65	56.16	74.00	-17.84	peak	
4	X	5530.000	63.41	37.75	101.16	74.00	27.16	peak	No Limit
5	*	5530.000	54.15	37.75	91.90	54.00	37.90	AVG	No Limit

Test Mode	UNII-2A_TX AC (VHT80) MODE CHANNEL 58 + UNII-2C_TX AC (VHT80) MODE CHANNEL 106	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10580.00	52.21	1.84	54.05	68.20	-14.15	peak	
2		11060.00	51.72	2.54	54.26	74.00	-19.74	peak	
3	*	11060.00	40.83	2.54	43.37	54.00	-10.63	AVG	

End of Test Report