Compliance Laboratory

TEST REPORT

For

Applicant	:	**AIDE INTERNATIONAL LIMITED**
Address	:	**Block10 Hualian industry zone，Huaning Rd，longhua district，Shen Zhen，Guangdong**
Product Name	:	**V-Linker**
Model Name	:	**HM-100-05, HM-100-XX**
Brand Name	:	**GGMM**
FCC ID	:	**2AB9F-HM10005**
Report No.	:	**MTE/CEC/B17061143**
Date of Issue	:	**Jun.19, 2017**

Issued by	:	**Most Technology Service Co., Limited**
Address	:	**No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China**
Tel	:	**86-755-8602 6850**
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VERIFICATION OF CONFORMITY

EUT:	V-Linker
Brand Name:	GGMM
Model Number:	HM-100-05
FCC ID:	2AB9F-HM10005
Applicant:	AIDE INTERNATIONAL LIMITED Block10 Hualian industry zone，Huaning Rd，longhua district，Shen Zhen，Guangdong
Manufacturer:	Shenzhen GGMM Industrial Company Limited Building No5,Yongxin Street, Shiyan, Baoan District, Shenzhen
Technical Standards:	47 CFR Part 15 Subpart E
File Number:	MTE/CEC/B17061143
Date of test:	Jun.13-19, 2017
Deviation:	None
Condition of Test Sample:	Normal
Test Result:	PASS

The above equipment was tested by Most Technology Service Co., Ltd. for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Prepared by (+ signature): Chloe

Chloe Cai(Engineer) Jun.13-19, 2017

Review by (+ signature):

John Lin(Engineer) Jun.19, 2017

Approved by (+ signature):

Yvette Zhou (Manager) Jun.19, 2017

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1. GENERAL INFORMATION

1.1 Product Information

Product	V-Linker
Brand Name	GGMM
Model Number	HM-100-05
Series Model Name:	HM-100-XX
Series Model Difference description:	Only difference in the model name.
Power Supply	DC 5V by USB Port
Frequency Range	5150 MHz ~ 5250 MHz
Modulation Technique	OFDM
Modulation Type:	BPSK, QPSK, 16QAM, 64QAM
Channel Number	5150 MHz ~ 5250 MHz: 802.11 a 20M Mode: 4 channels 802.11 n 20M Mode: 4 channels 802.11 ac 20M Mode: 4 channels 802.11 n 40M Mode: 2 channels 802.11 ac 40M Mode: 2 channels 802.11 ac 80M Mode: 1 channels
Antenna Type	Internal PCB Antenna, 1.0dBi
Temperature Range	-10°C ~ +35°C

NOTE:

1. For a more detailed features description about the EUT, please refer to User's Manual.

1.2 Objective

The objective of the report is to perform tests according to FCC Part 15 Subpart E for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices
2	789033 D02 v01r04	GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORAMTION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

1.3 Test Standards and Results

No.	Section	Test Items	Result	Date of Test
1	15.203	Antenna Requirement	--	2017-06-13
2	--	Duty Cycle	PASS	2017-06-13
3	15.207&15.407(b)	Conducted Emission	PASS	2017-06-14
4	15.407(a)(5)	26dB Bandwidth	PASS	2017-06-15
5	15.407(e)(only for 5.725-5.85GHz),	6dB Bandwidth	N/A	2017-06-15
6	15.407(a)	Maximum Conducted Output Power	PASS	2017-06-13
7	15.407(a)	Power Spectral Density	PASS	2017-06-13
8	15.205&15.209&15.407(b)	Radiated Spurious Emission and Band Edge	PASS	2017-06-15
9	15.407(b)	Conducted Spurious Emission	PASS	2017-06-15

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

1.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:
- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

2. TEST METHODOLOGY

2.1 TEST FACILITY

Test Site:	Most Technology Service Co., Limited
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10:2013 and CISPR 16 requirements. The FCC Registration Number is **490827.** The **IC** Registration Number is **7103A-1.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

2.2 GENERAL TEST PROCEDURES

Radiated Emissions

The EUT is placed on a turn table, 0.8 m above ground plane is for frequency below 1GHZ,1.5m above ground plane is for frequency above 1GHZ.The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.5 of ANSI C63.10:2013.

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10:2013,Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

3. SETUP OF EQUIPMENT UNDER TEST

3.1 SETUP CONFIGURATION OF EUT

See test setup photographs for the actual connections between EUT and support equipment.

3.2 EUT configuration

Interface cables:

Interface cable	Length [m]	Type	Line shielded	Line unshielded	Line termination
Power cord	1.5	three wires	☐	☒	Monitor
HDMI cable	1	Video& Audio type	☐	☒	Monitor& EUT

Peripheral devices:
List out all peripheral not inclued with EuT used during the test

Kind of equipment	Manufacturer	Model no.
Monitor	DELL	U2414Hb

Remark:
All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calibration date	Calibration Interval
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2017/03/10	1 Year
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2017/03/10	1 Year
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2017/03/10	1 Year
4	Terminator	Hubersuhner	50Ω	No.1	2017/03/10	1 Year
5	RF Cable	SchwarzBeck	N/A	No.1	2017/03/10	1 Year
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2017/03/10	1 Year
7	Bilog Antenna	Sunol	JB3	A121206	2017/03/10	1 Year
8	Horn Antenna	SCHWARZBECK	BBHA9120D	756	2017/03/10	1 Year
9	Horn Antenna	Penn Engineering	9034	8376	2017/03/10	1 Year
10	Cable	Resenberger	N/A	NO.1	2017/03/10	1 Year
11	Cable	SchwarzBeck	N/A	NO.2	2017/03/10	1 Year
12	Cable	SchwarzBeck	N/A	NO.3	2017/03/10	1 Year
13	DC Power Filter	DuoJi	DL2×30B	N/A	2017/03/10	1 Year
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2017/03/10	1 Year
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2017/03/10	1 Year
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2017/03/10	1 Year
17	Absorbing Clamp	Luthi	MDS21	3635	2017/03/10	1 Year
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2017/03/10	1 Year
19	AC Power Source	Kikusui	AC40MA	LM003232	2017/03/10	1 Year
20	Test Analyzer	Kikusui	KHA1000	LM003720	2017/03/10	1 Year
21	Line Impendence Network	Kikusui	LIN40MA-PCR-L	LM002352	2017/03/10	1 Year
22	ESD Tester	Kikusui	KES4021	LM003537	2017/03/10	1 Year
23	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2017/03/10	1 Year
24	Signal Generator	IFR	2032	203002/100	2017/03/10	1 Year
25	Amplifier	A&R	150W1000	301584	2017/03/10	1 Year
26	CDN	FCC	FCC-801-M2-25	47	2017/03/10	1 Year
27	CDN	FCC	FCC-801-M3-25	107	2017/03/10	1 Year
28	EM Injection Clamp	FCC	F-203I-23mm	403	2017/03/10	1 Year
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2017/03/10	1 Year
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2017/03/10	1 Year
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2017/03/10	1 Year
32	Telecommunication Test Equipment	R&S	CMU200	N/A	2017/03/10	1 Year
33	8 Loop Antenna	ARA	PLA-1030/B	1029	2017/03/10	1 Year
34	Spectrum Analyzer	Agilent	E7405A	US44210471	2017/03/10	1 Year
35	Spectrum Analyzer	Agilent	E4446A	MY44020154	2017/03/10	1 Year

NOTE: *Equipments listed above have been calibrated and are in the period of validation.*

5. 47 CFR Part 15E Requirements

5.1 ANTENNA REQUIREMENT

5.1.1 Applicable Standard

According to FCC § 15.203, each applicant for equipment certification must provide a list of all antenna types that may be used with the transmitter, indicating the maximum permissible antenna gain (in dBi). An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

5.1.2 Evaluation Criteria

(a) Antenna must be permanently attached to the unit.
(b) Antenna must use a unique type of connector to attach to the EUT.
Unit must be professionally installed, Installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.1.3 Result: Compliance.

The EUT has one Internal PCB Antenna arrangement, which was permanently attached and the antenna gain is 1.0dBi, fulfill the requirement of this section.

5.2 Duty Cycle

5.2.1 Measurement:

Measurement Parameter	
Detector:	Peak
Sweep Time:	Auto
Resolution Bandwitdh:	10MHz
Video Bandwidth:	10MHz
Span:	Zero
Trace-Mode:	Video trigger/view/single sweep

5.2.2 Results:

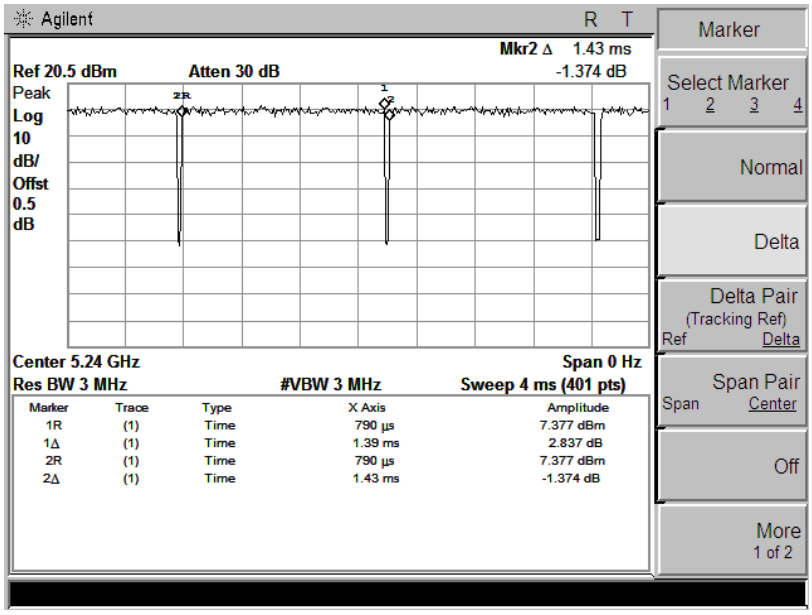
Mode	Duty cycle	Correction Factor
802.11 a 20M	0.97	0.13
802.11 n 20M	0.97	0.13
802.11 ac 20M	0.96	0.18
802.11 n 40M	0.94	0.27
802.11 ac 40M	0.94	0.27
802.11 ac 80M	0.86	0.66

Note: Correction Factor=10Log (1/Duty Cycle)

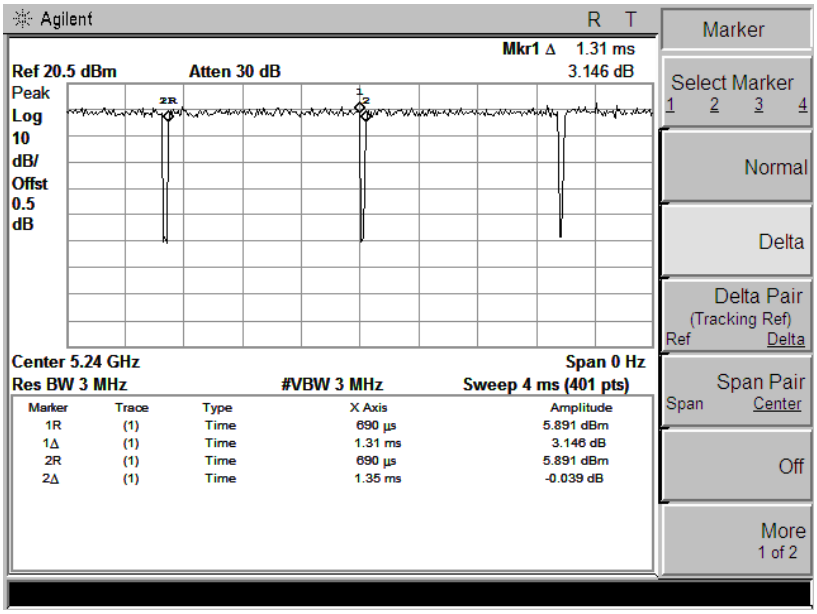
Please refer the following pages.

Duty Cycle

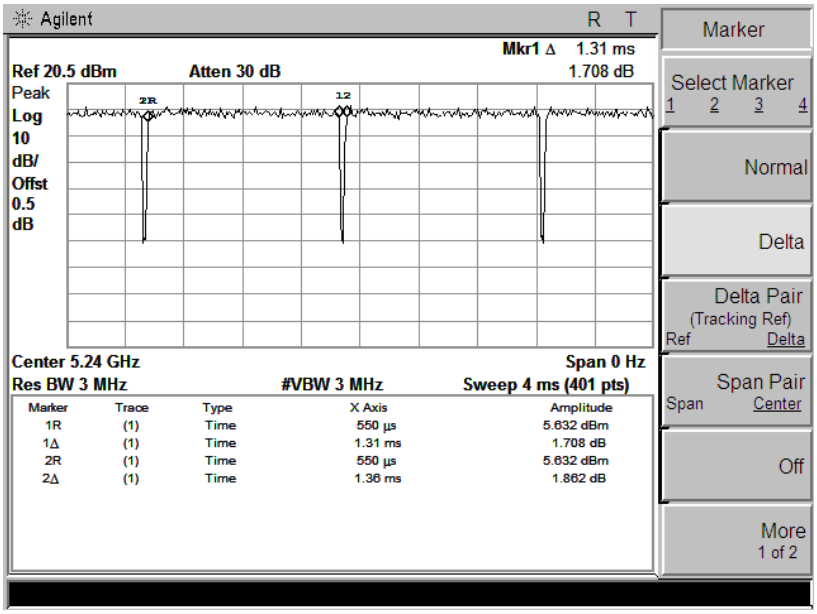
802.11 a 20M



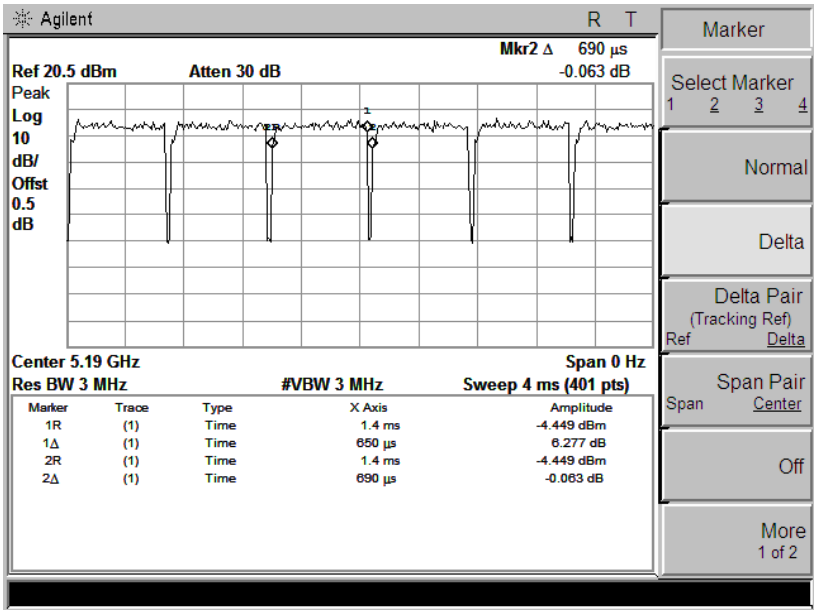
802.11 n 20M



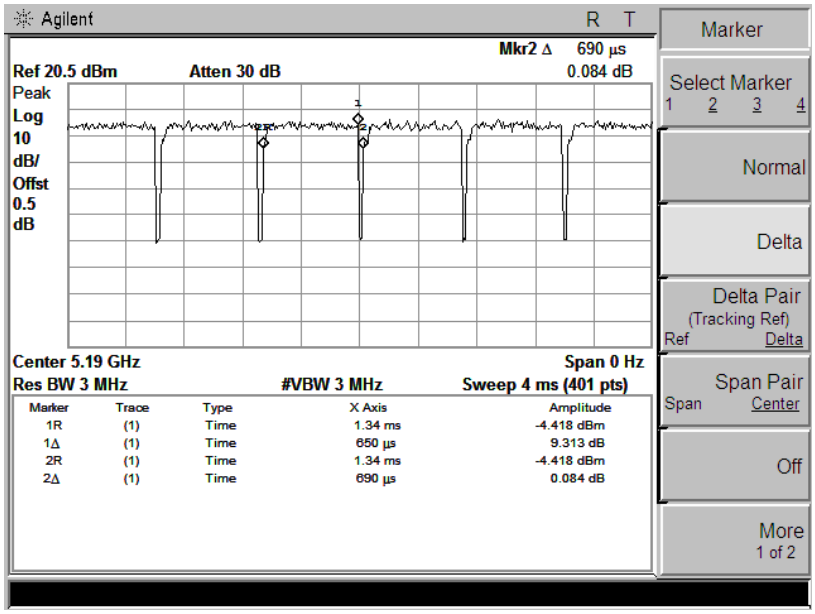
802.11 ac 20M



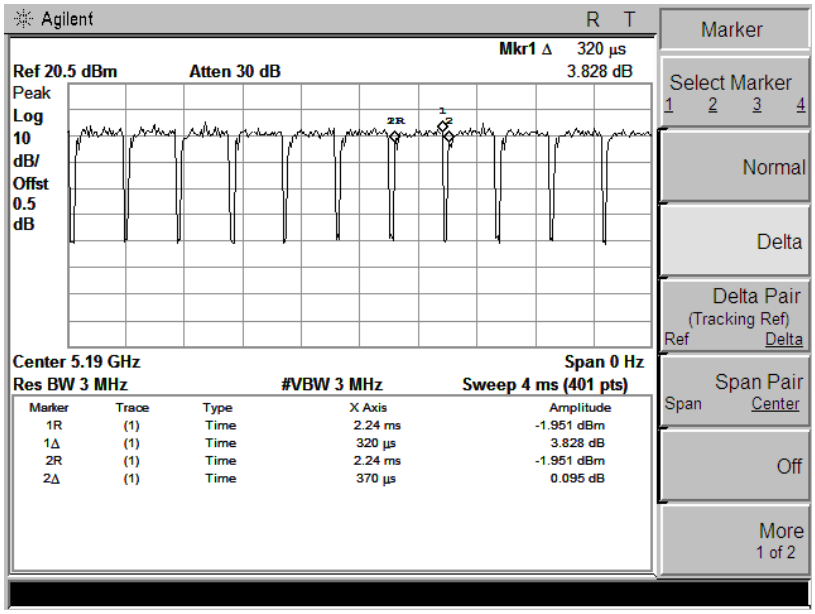
802.11 n 40M



802.11 ac 40M



802.11 ac 80M



6. AC Power Line Conducted Emission

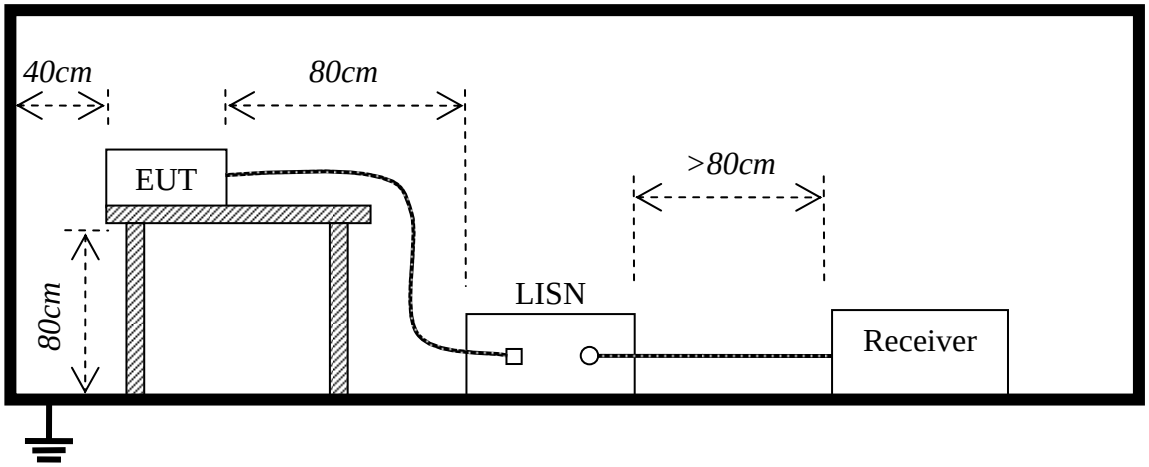
6.1 Requirement

A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which is conducted back onto the AC power line on any frequency or frequencies within the and 150 kHz-30 MHz, shall not exceed the limits in the following table:

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

***Note:** 1. the lower limit shall apply at the band edges.*
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

6.2 Block Diagram of Test Setup



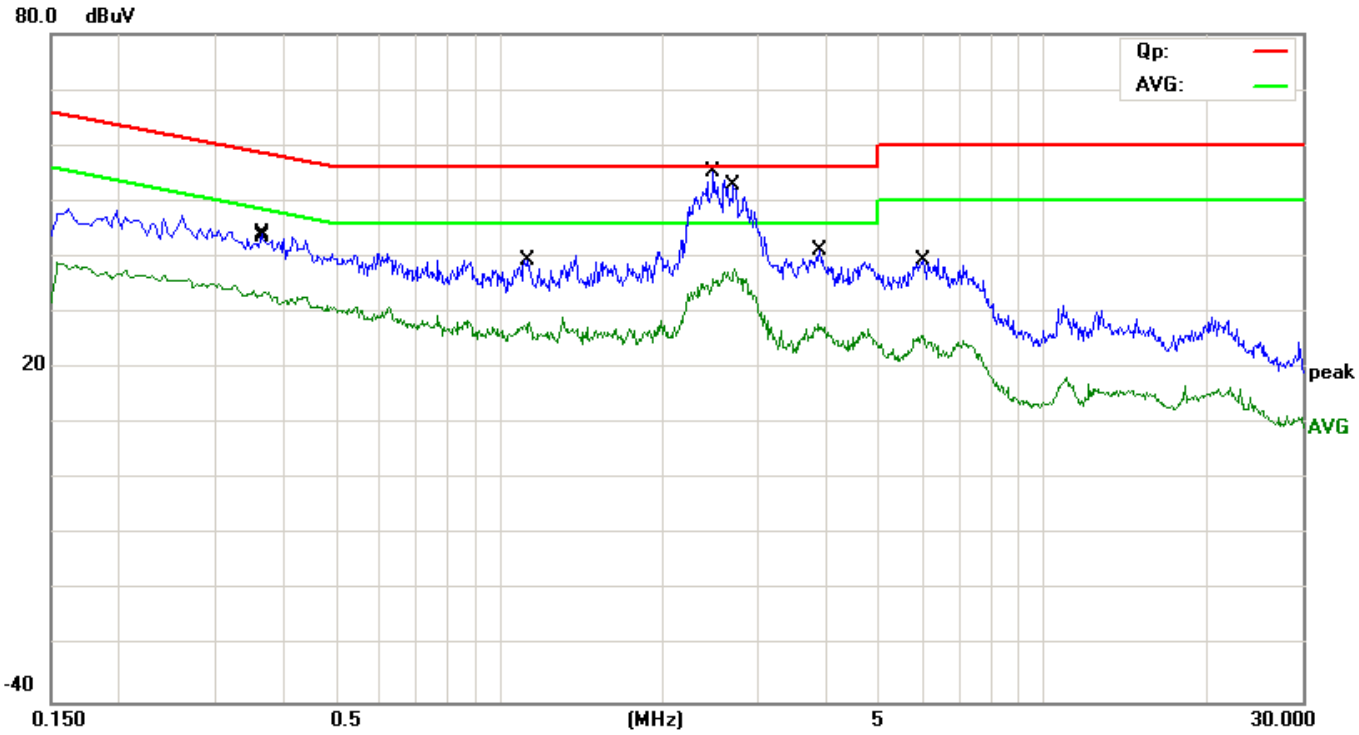
6.3 Test procedure

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. Exploratory measurements were made to identify the frequency of the emission that has the highest amplitude relative to the limit;
3. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
4. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.
5. The bandwidth of test receiver (ESCI) set at 9 KHz.
6. All data was recorded in the Quasi-peak and average detection mode.

6.4 Test Result

Pass
Note: All test modes are performed, only the worst case is recorded in this report.
Please refer the following pages.

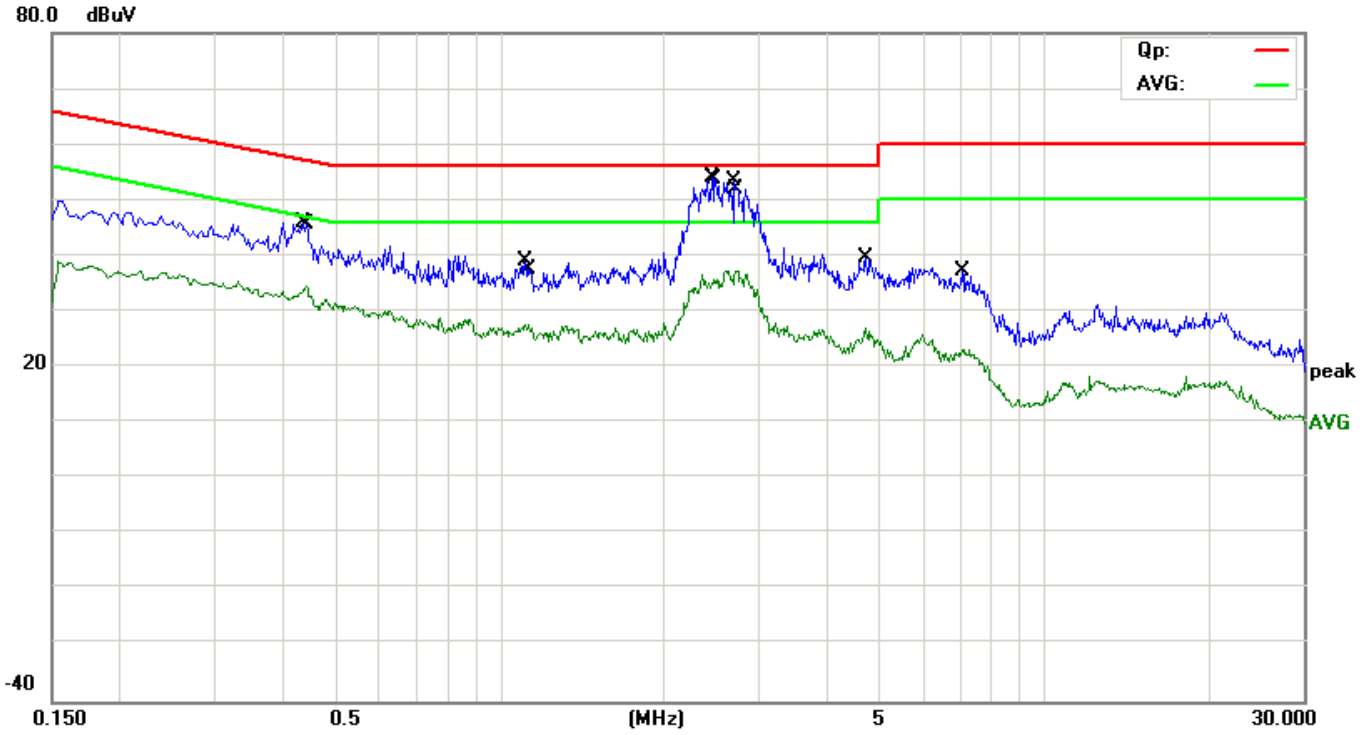
EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Phase	L
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.3℃/ 53.4%	Test date:	2017-06-13



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3660	34.54	9.59	44.13	58.59	-14.46	QP	
2		0.3700	24.03	9.59	33.62	48.50	-14.88	AVG	
3		1.1340	29.75	9.60	39.35	56.00	-16.65	QP	
4		1.1340	18.17	9.60	27.77	46.00	-18.23	AVG	
5		2.4780	37.60	9.61	47.21	56.00	-8.79	QP	
6		2.4780	25.90	9.61	35.51	46.00	-10.49	AVG	
7	*	2.7060	43.30	9.61	52.91	56.00	-3.09	QP	
8		2.7140	28.13	9.61	37.74	46.00	-8.26	AVG	
9		3.8740	18.26	9.62	27.88	46.00	-18.12	AVG	
10		3.8900	31.38	9.62	41.00	56.00	-15.00	QP	
11		6.0020	29.60	9.64	39.24	60.00	-20.76	QP	
12		6.0420	16.23	9.64	25.87	50.00	-24.13	AVG	

*:Maximum data x:Over limit !:over margin

EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Phase	N
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.3℃/ 53.4%	Test date:	2017-06-13



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4340	36.47	9.59	46.06	57.18	-11.12	QP	
2		0.4380	24.49	9.59	34.08	47.10	-13.02	AVG	
3		1.1140	29.56	9.60	39.16	56.00	-16.84	QP	
4		1.1300	18.10	9.60	27.70	46.00	-18.30	AVG	
5		2.4500	35.80	9.61	45.41	56.00	-10.59	QP	
6		2.4860	24.90	9.61	34.51	46.00	-11.49	AVG	
7	*	2.7020	37.50	9.61	47.11	56.00	-8.89	QP	
8		2.7380	24.60	9.61	34.21	46.00	-11.79	AVG	
9		4.7100	30.12	9.63	39.75	56.00	-16.25	QP	
10		4.7100	17.38	9.63	27.01	46.00	-18.99	AVG	
11		7.0820	27.70	9.65	37.35	60.00	-22.65	QP	
12		7.0820	13.54	9.65	23.19	50.00	-26.81	AVG	

*:Maximum data x:Over limit !:over margin

6.5 26dB Emission Bandwidth

6.5.1 Test Requirement

Measurement of the 26dB bandwidth of the modulated signal.

6.5.2 Test Procedure

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > =RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

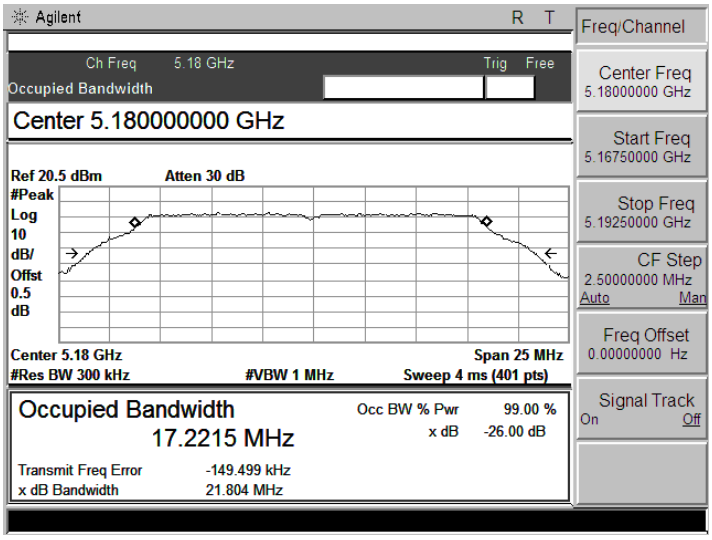
6.5.3 Test Result

Test Item:	26dB Emission Bandwidth	Temperature :	23°C
Test Engineer:	Sunny	Relative Humidity :	65%

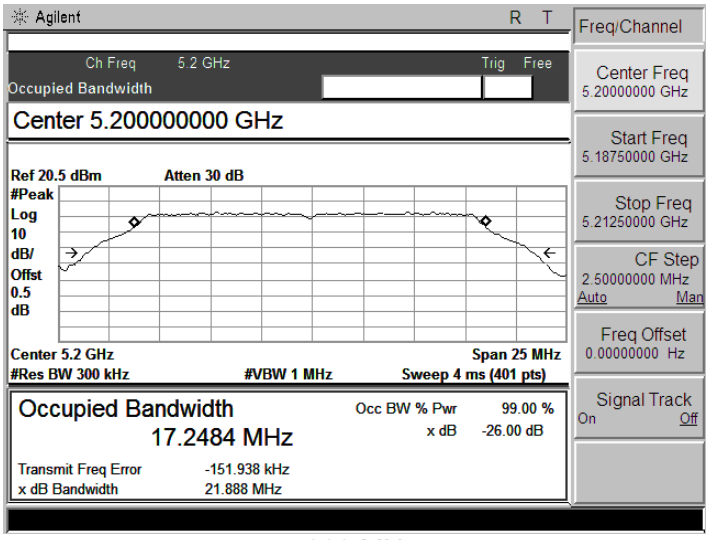
Mode	Channel	Frequency (MHz)	26dB Bandwidth(MHz)
802.11 a (5150-5250MHz)	Low	5180	21.804
	Middle	5200	21.888
	High	5240	21.879
802.11 n 20M (5150-5250MHz)	Low	5180	22.054
	Middle	5200	22.205
	High	5240	22.014
802.11 ac 20M (5150-5250MHz)	Low	5180	22.046
	Middle	5200	22.022
	High	5240	22.083
802.11 n 40M (5150-5250MHz)	Middle	5190	40.111
802.11 ac 40M (5150-5250MHz)	Middle	5190	40.081
802.11 ac 80M (5150-5250MHz)	Middle	5210	80.813

Please refer the following pages.

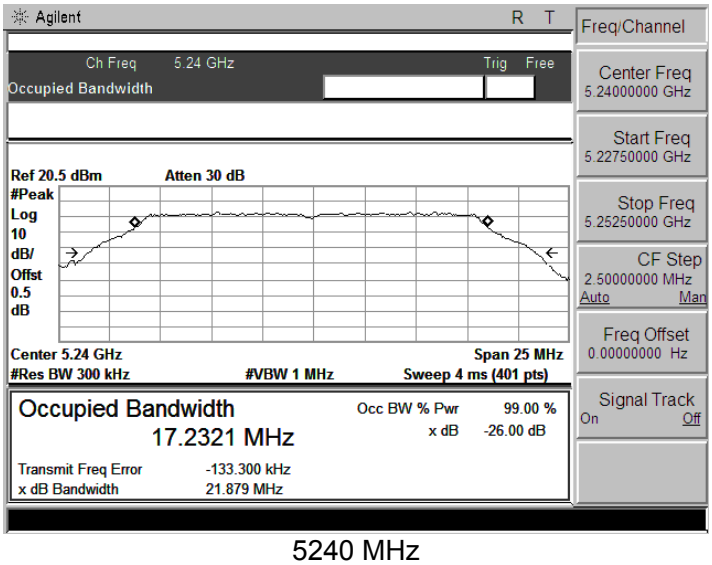
802.11 a 20M mode



5180 MHz

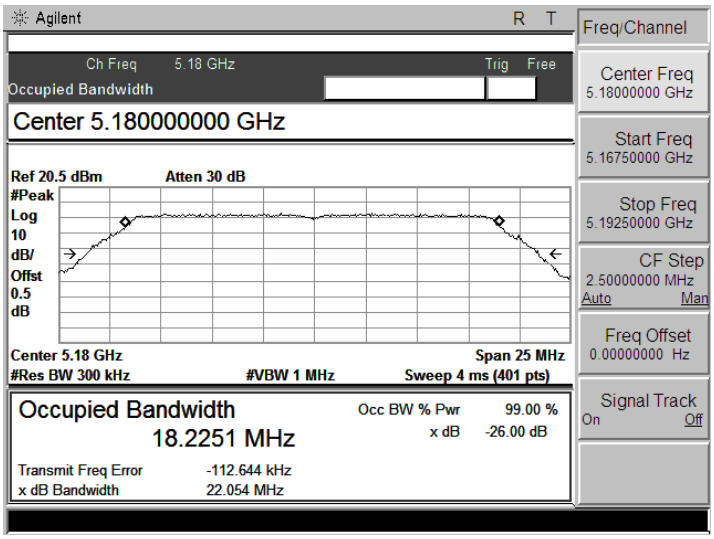


5200 MHz

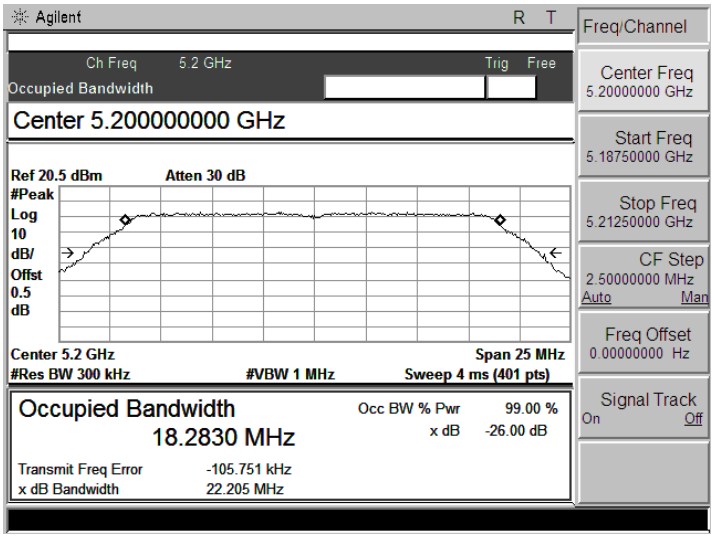


5240 MHz

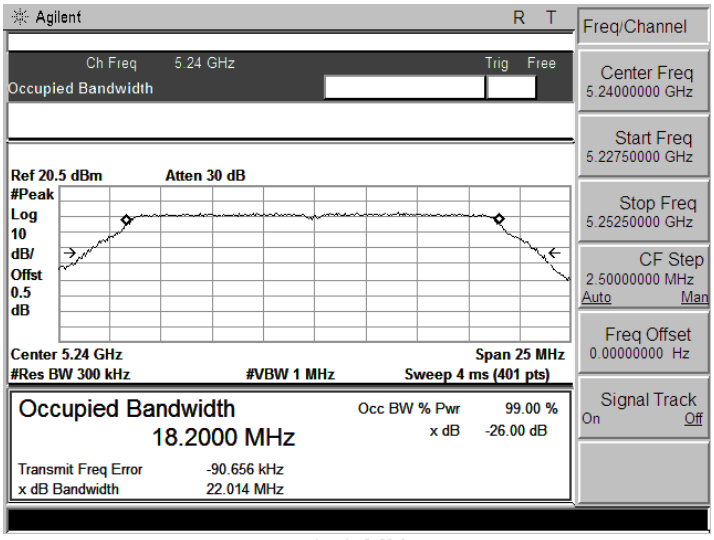
802.11 n 20M mode



5180 MHz

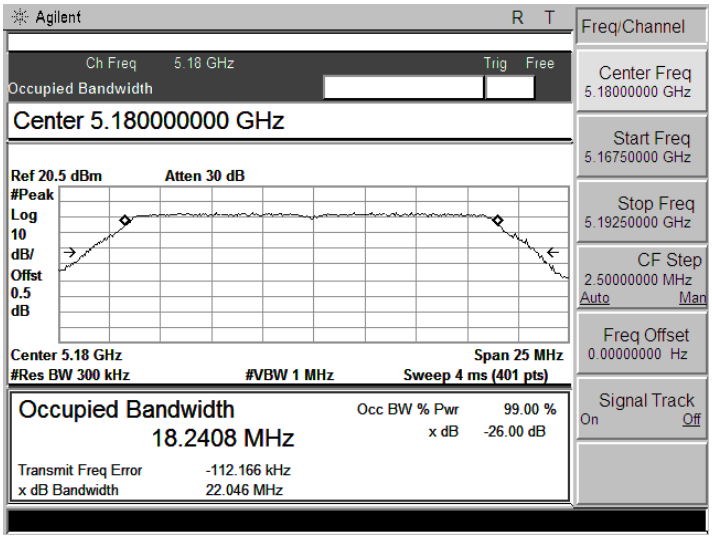


5200 MHz

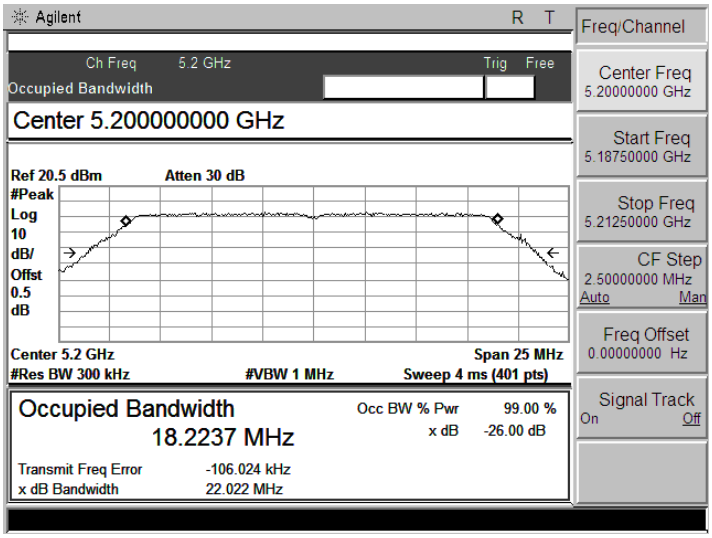


5240 MHz

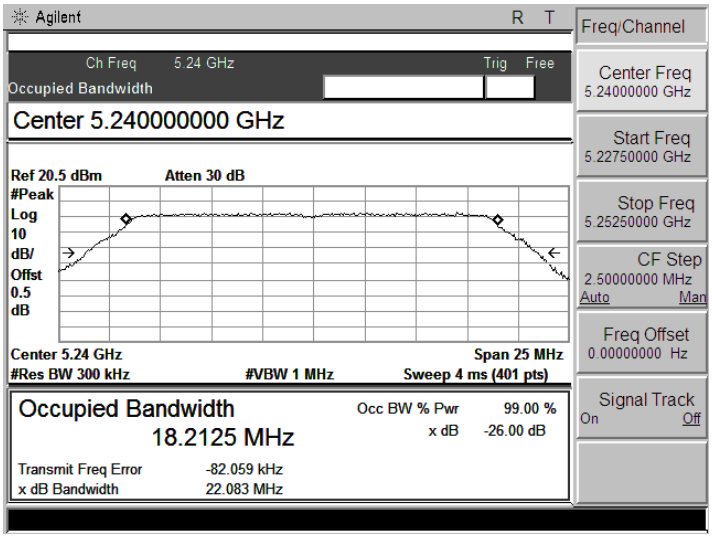
802.11 ac 20M mode



5180 MHz

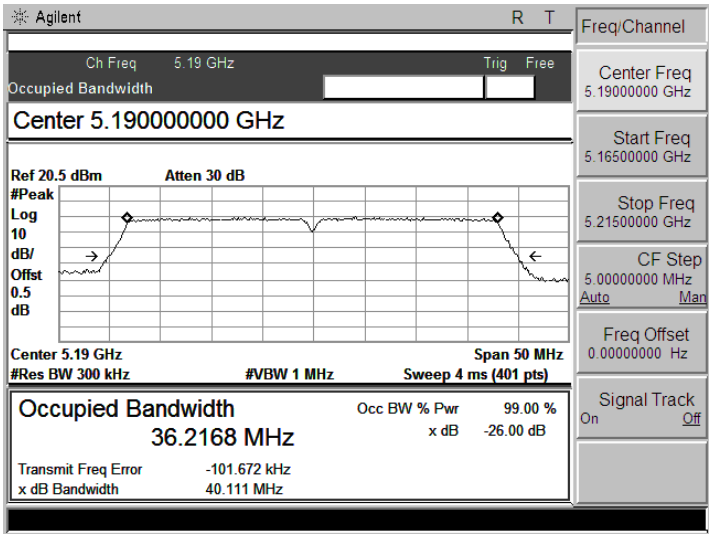


5200 MHz



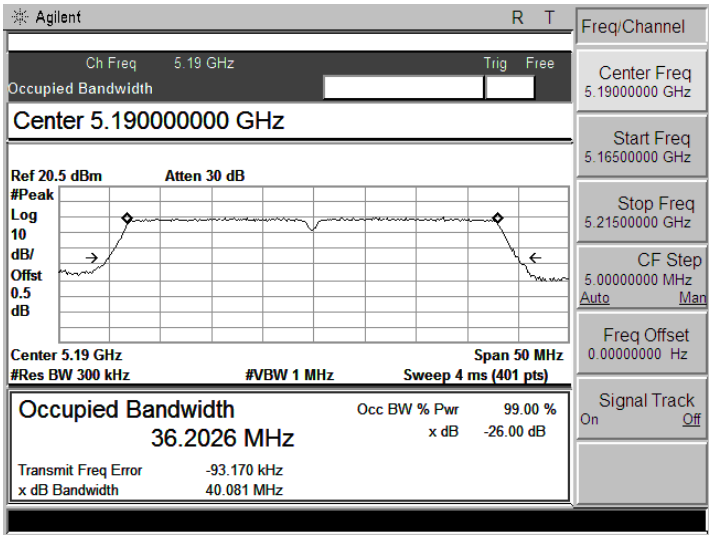
5240 MHz

802.11 n 40M mode



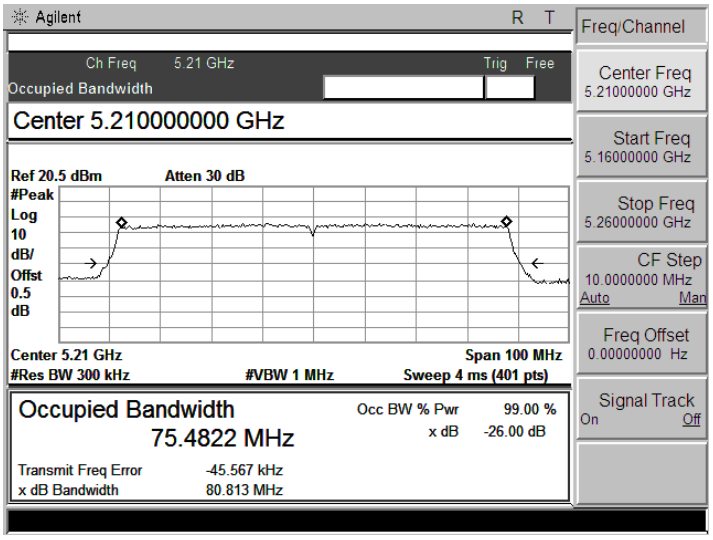
5190 MHz

802.11 ac 40M mode



5190 MHz

802.11 ac 80M mode



5210 MHz

6.6 6dB Emission Bandwidth

6.6.1 Test Requirement

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

6.6.2 Test Procedure

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > =RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.6.3 Test Result

Not applicable

6.7 MAXIMUM CONDUCTED OUTPUT POWER

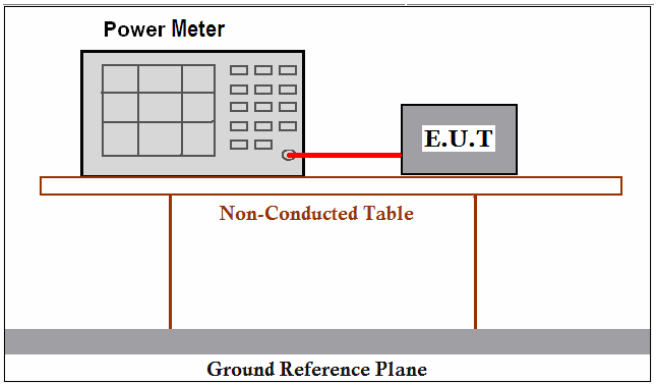
6.7.1 LIMIT

According to §15.407(a),

1. For an indoor 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.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.
3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

   If transmitting antennas of directional gain greater than 6dBi are used, both the maximum transmit power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

6.7.2 Block Diagram of Test Setup



6.7.3 Test Procedure

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.Method PM (Measurement using an RF average power meter):

1. Measurement is performed using an RF average power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

6.7.4 Test Result

Test Item:	Max Output Power	Temperature :	23°C
Test Engineer:	Sunny	Relative Humidity :	65%

Mode	Channel	Frequency (MHz)	Reading Power(dBm)	Actual Power (dBm)	Limit		Pass /Fail
					(mW)	(dBm)	
802.11 a 20M (5150-5250MHz)	Low	5180	9.81	9.94	1000	30	Pass
	Middle	5200	9.12	9.25	1000	30	Pass
	High	5240	8.98	9.11	1000	30	Pass
802.11 n 20M (5150-5250MHz)	Low	5180	9.52	9.65	1000	30	Pass
	Middle	5200	9.17	9.30	1000	30	Pass
	High	5240	9.95	10.08	1000	30	Pass
802.11 ac 20M (5150-5250MHz)	Low	5180	9.25	9.43	1000	30	Pass
	Middle	5200	9.87	10.05	1000	30	Pass
	High	5240	9.78	9.96	1000	30	Pass
802.11 n 40M (5150-5250MHz)	Middle	5190	7.91	8.18	1000	30	Pass
802.11 ac 40M (5150-5250MHz)	Middle	5190	7.84	8.11	1000	30	Pass
802.11 ac 80M (5150-5250MHz)	Middle	5210	4.58	5.24	1000	30	Pass
Remark:	1: Actual Power= Reading Power + duty factor duty factor (802.11 a 20M): 0.13 duty factor (802.11 n 20M): 0.13 duty factor (802.11 ac 20M): 0.18 duty factor (802.11 n 40M): 0.27 duty factor (802.11 ac 40M): 0.27 duty factor (802.11 ac 80M): 0.66 2:Duty factor is reference to section 5.2.2						

6.8 POWER SPECTRAL DENSITY TEST

6.8.1 LIMIT

According to §15.407(a),

1. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
3. For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

   If transmitting antennas of directional gain greater than 6dBi are used, both the maximum transmit power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

6.8.2 Block Diagram of Test Setup

6.8.3 Test Procedure

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

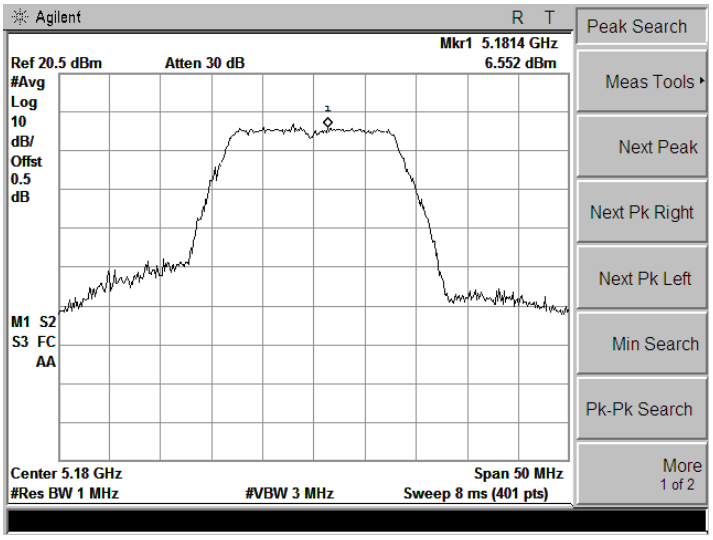
6.8.4 Test Result

Test Item:	PSD TEST	Temperature :	23°C
Test Engineer:	Sunny	Relative Humidity :	65%

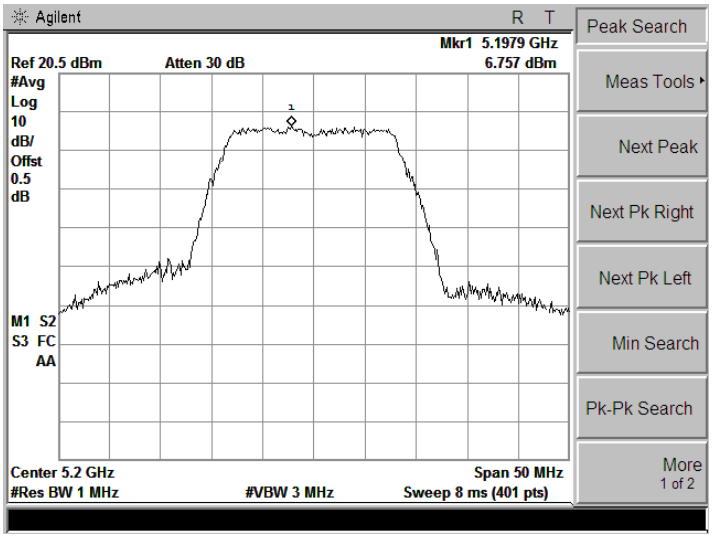
Mode	Channel	Frequency (MHz)	Factor(dB)	Average PSD	Total PSD	Limited	Result
				(dBm/MHz)			
802.11 a 20M (5150-5250MHz)	Low	5180	2.33	6.552	8.882	17	PASS
	Middle	5200	2.33	6.757	9.087	17	PASS
	High	5240	2.33	6.307	8.637	17	PASS
802.11 n 20M (5150-5250MHz)	Low	5180	2.33	6.390	8.720	17	PASS
	Middle	5200	2.33	6.133	8.463	17	PASS
	High	5240	2.33	6.361	8.691	17	PASS
802.11 ac 20M (5150-5250MHz)	Low	5180	2.38	6.064	8.444	17	PASS
	Middle	5200	2.38	6.051	8.431	17	PASS
	High	5240	2.38	6.033	8.413	17	PASS
802.11 n 40M (5150-5250MHz)	Middle	5190	2.47	4.385	6.855	17	PASS
802.11 ac 40M (5150-5250MHz)	Middle	5190	2.47	3.259	5.729	17	PASS
802.11 ac 80M (5150-5250MHz)	Middle	5210	2.86	-0.054	2.806	17	PASS

Please refer the following pages.

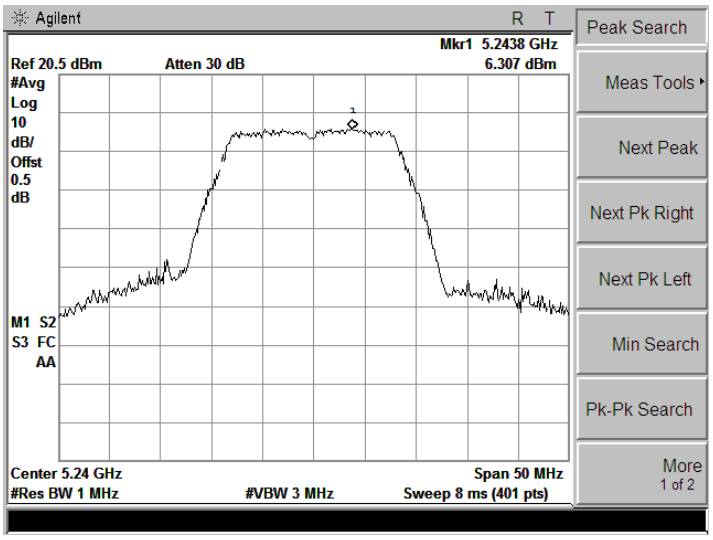
802.11 a 20M mode



5180 MHz

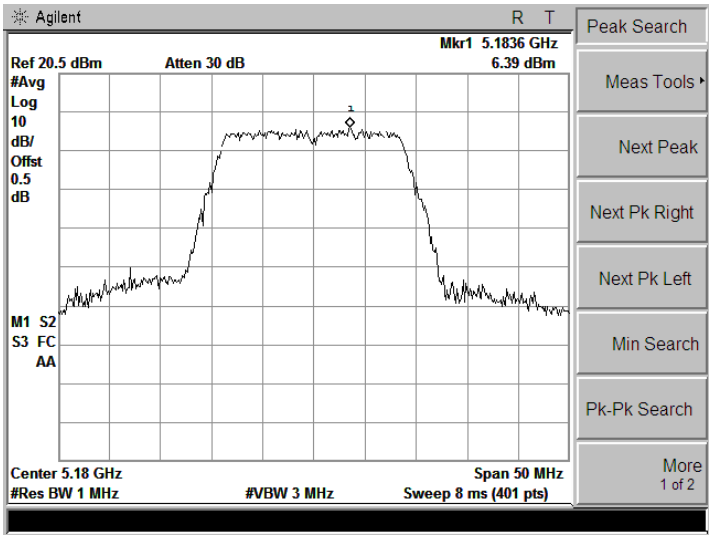


5200 MHz

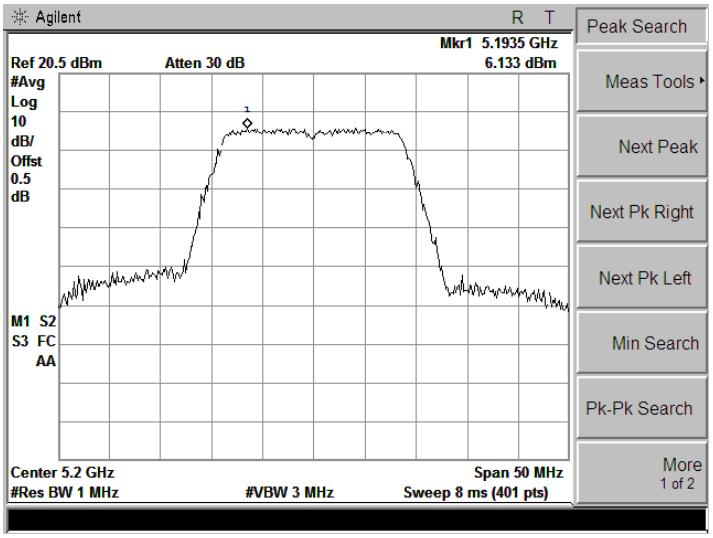


5240 MHz

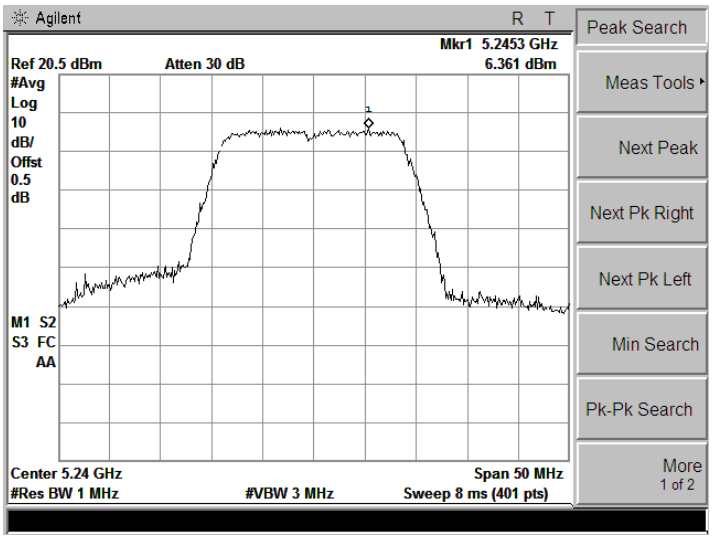
802.11 n 20M mode



5180 MHz

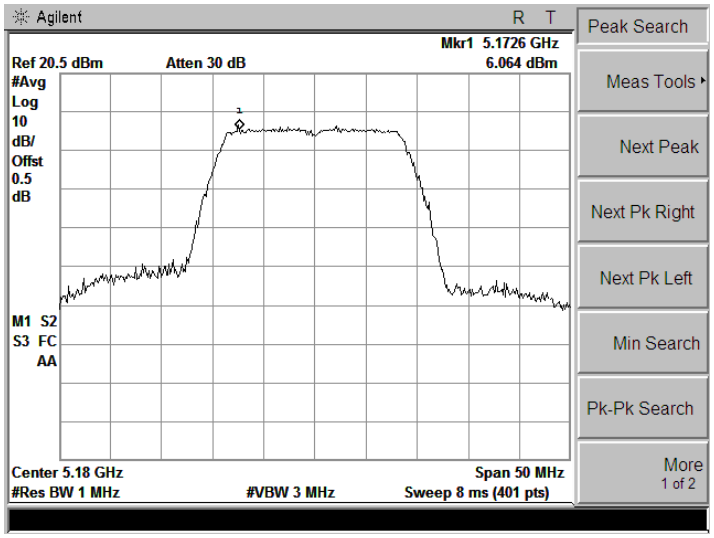


5200 MHz

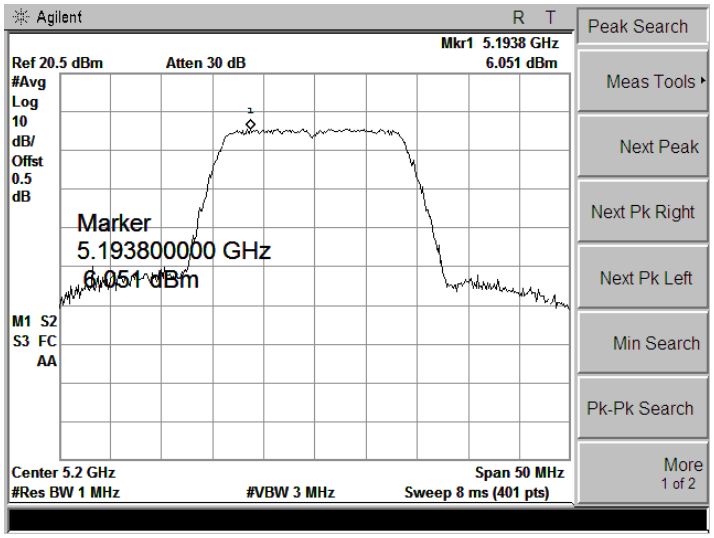


5240 MHz

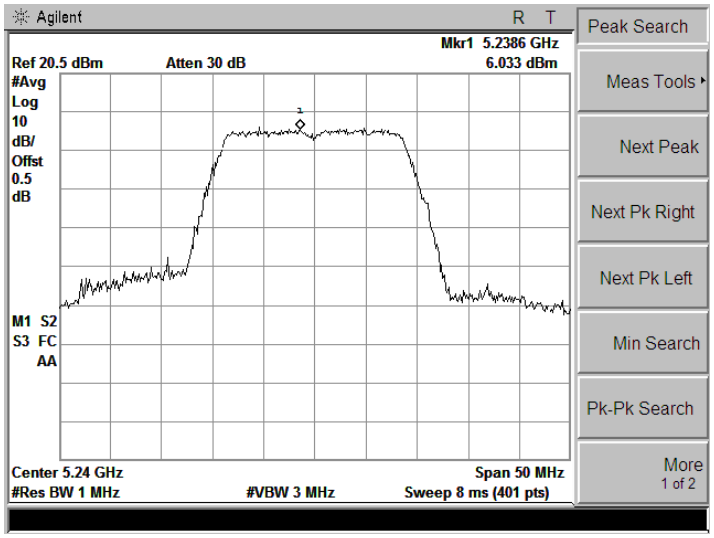
802.11 ac 20M mode



5180 MHz

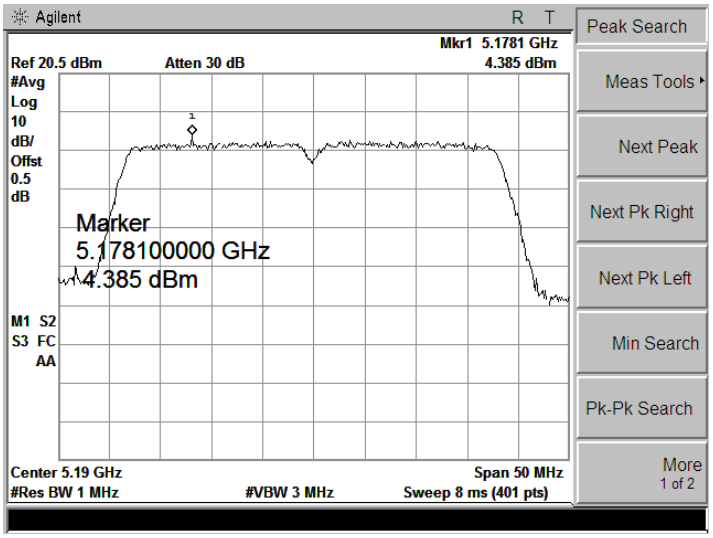


5200 MHz



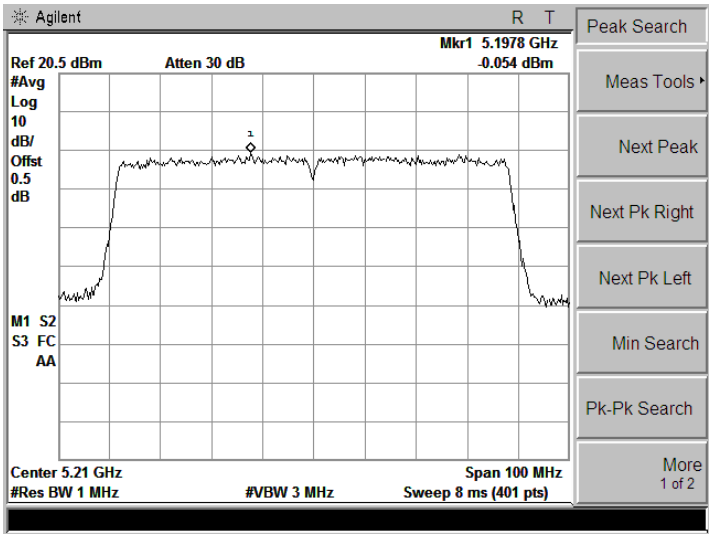
5240 MHz

802.11 n 40M mode



5190 MHz

802.11 ac 80M mode



5210 MHz

6.9 Radiated Emission and Band Edges

6.9.1 Requirement

According to §15.407(b),

1. The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
2. When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.
3. According to FCC section 15.209(a), Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Test Distance (m)	Field Strength (dBμV/m at 3-meter)
0.009 - 0.490	2400/F(kHz)	300	
0.490 - 1.705	24000/F(kHz)	30	
1.705-30	30	30	
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Note:

1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

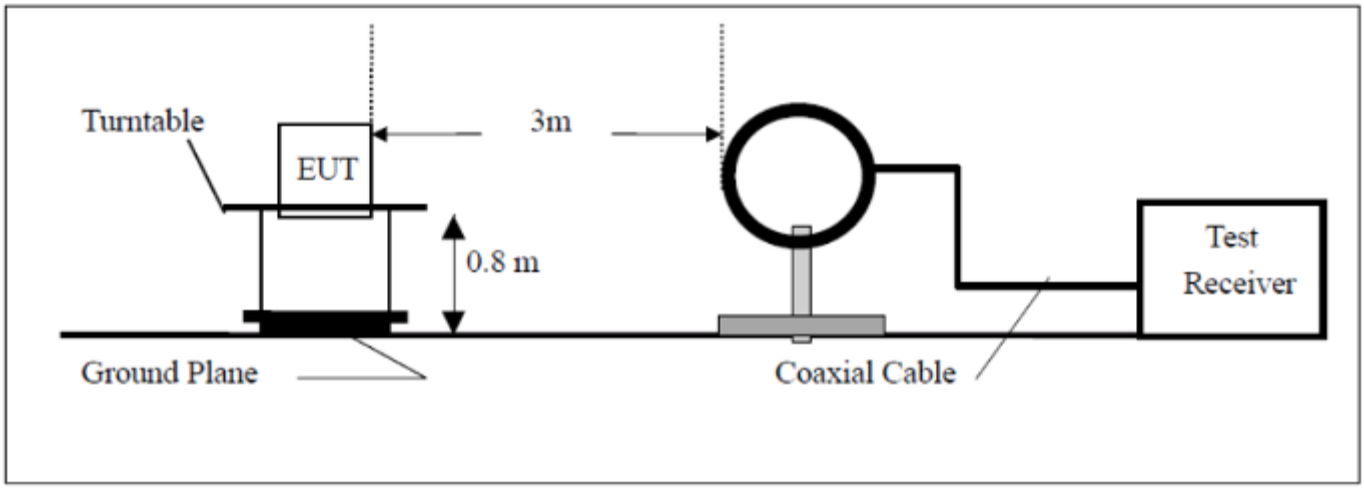
2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

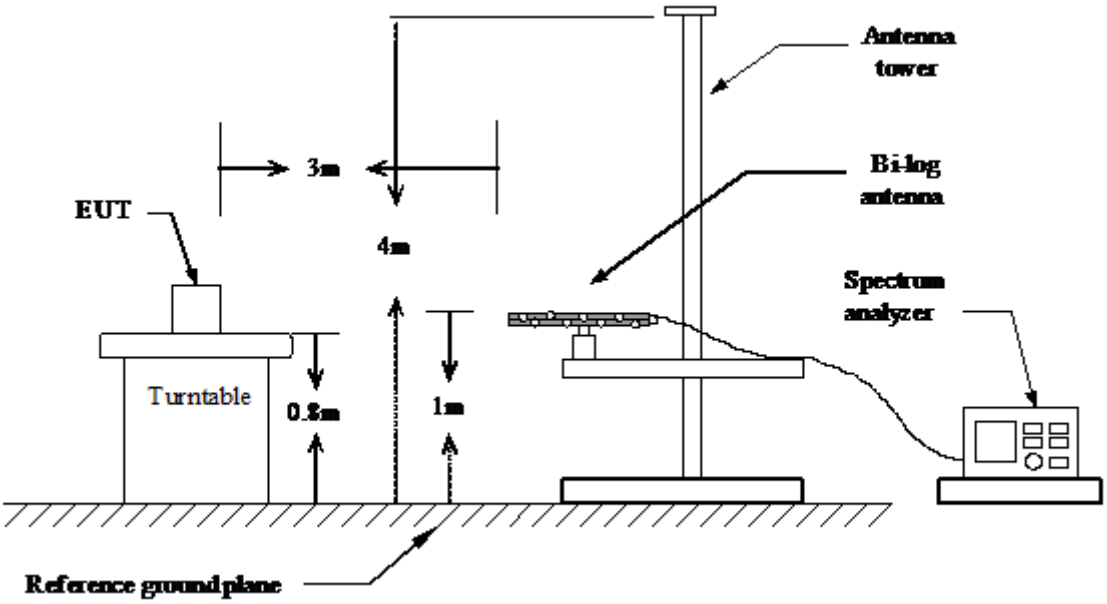
6.9.2 Test Configuration

Test Setup:

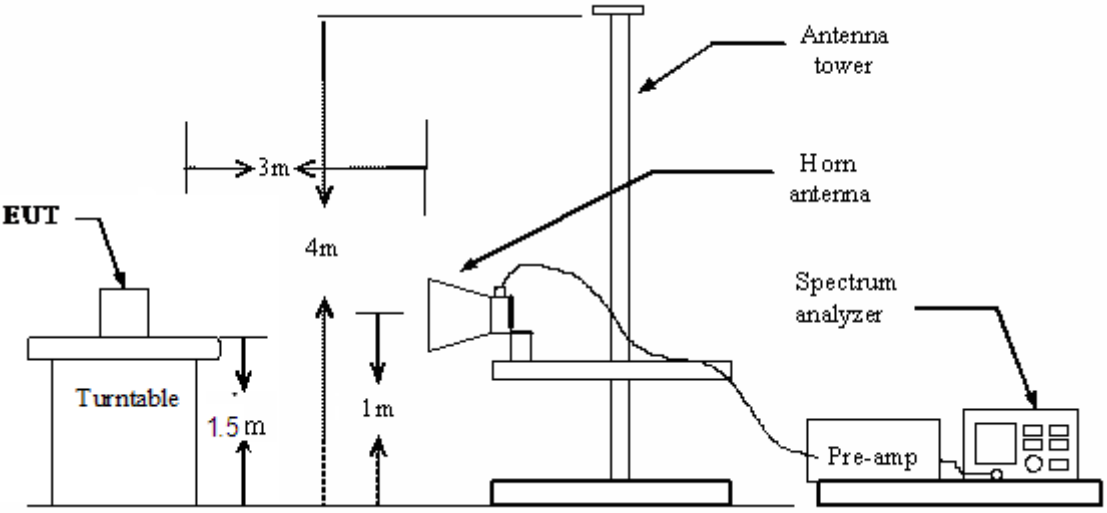
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



6.9.3 Test Procedure:

1. The EUT was placed on the top of a wooden table 0.8 meters (for measurement at frequency below 1GHz) and a wooden table 1.5 meters (for measurement at frequency above 1GHz) above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter, for the test frequency of above 1GHz, horn antenna opening in the test would have been facing the EUT when rise or fall) and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

5. Set the spectrum analyzer in the following setting as:

Below 1GHz: PEAK: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO QP: RBW=120 kHz / Sweep=AUTO
Above 1GHz: (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b)AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

6.9.4 Test Result

Pass

Remark:

1.During the test, pre-scan the 802.11a（20M）, 802.11n(20M), 802.11n(40M)，802.11ac（20M）, 802.11ac(40M) ,802.11ac（80M）modulation, and found the 802.11a(20M) modulation Low channel is worse case in above 1GHz and below 1GHz.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

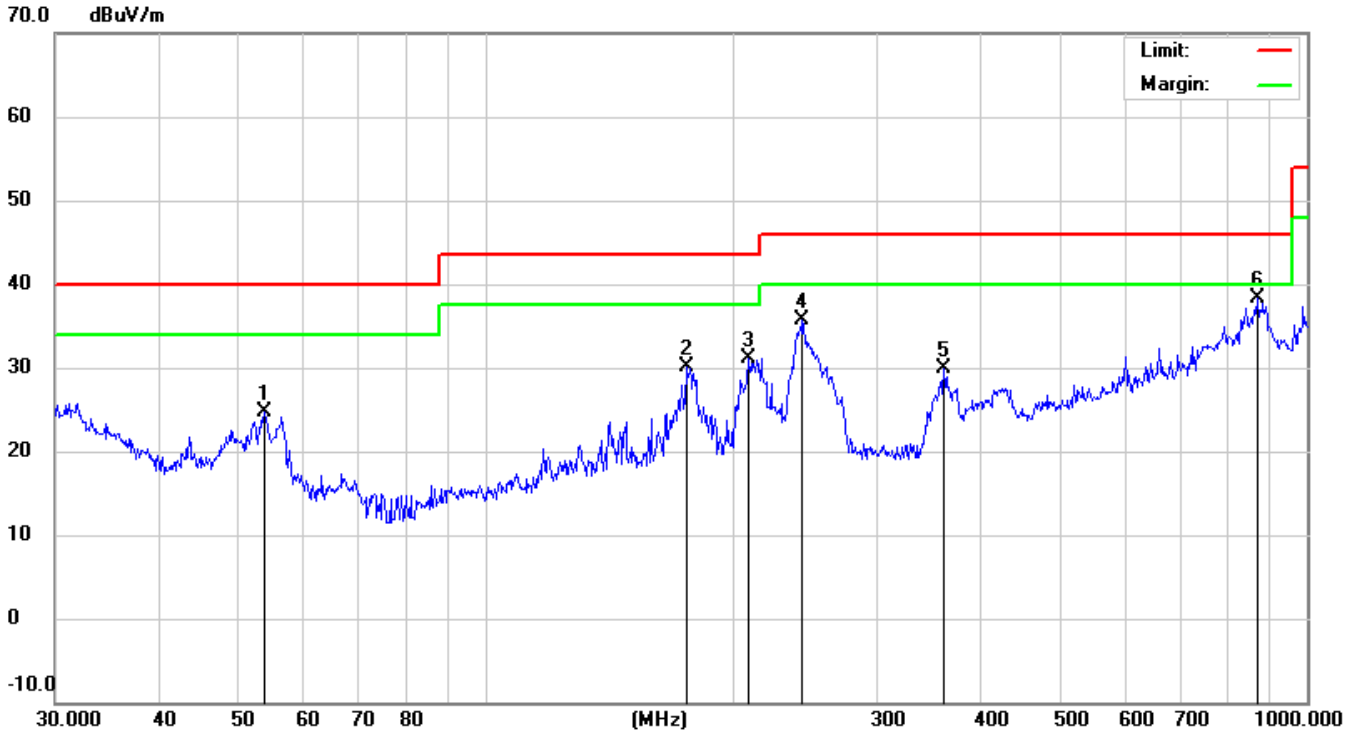
3. For radiated emissions from 9kHz to 30MHz, Test results show that the margin of over -20db.

Note: All test modes are performed, only the worst case is recorded in this report.

Please refer the following pages

Below 1GHz:

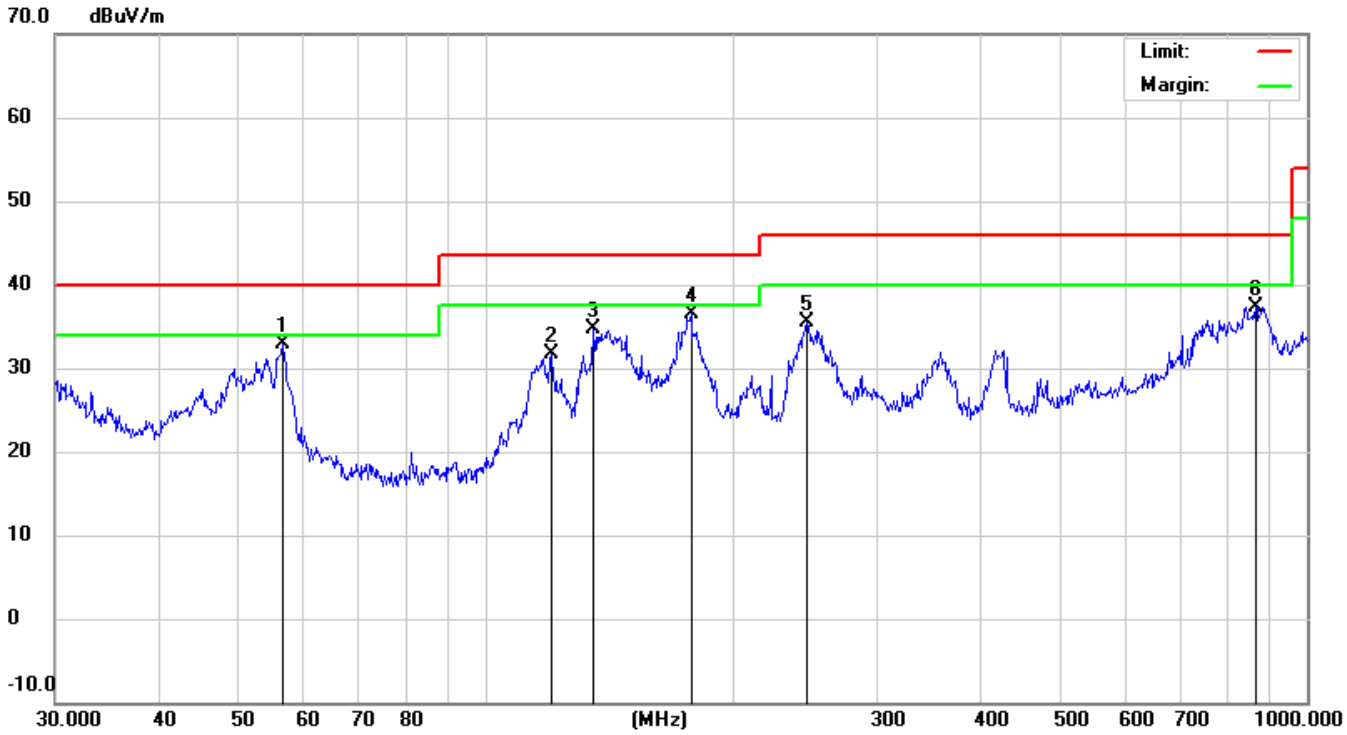
EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Polarization:	Horizontal
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		53.8817	14.22	10.50	24.72	40.00	-15.28	QP			
2		176.2686	13.14	16.89	30.03	43.50	-13.47	QP			
3		209.3129	15.13	16.00	31.13	43.50	-12.37	QP			
4		243.3771	18.36	17.27	35.63	46.00	-10.37	QP			
5		361.7137	11.66	18.28	29.94	46.00	-16.06	QP			
6	*	869.1302	11.27	27.00	38.27	46.00	-7.73	QP			

*:Maximum data x:Over limit !:over margin

EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Polarization:	Vertical
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		56.7917	22.17	10.64	32.81	40.00	-7.19	QP			
2		120.2766	14.12	17.51	31.63	43.50	-11.87	QP			
3		135.5061	17.22	17.43	34.65	43.50	-8.85	QP			
4	*	178.1325	19.73	16.79	36.52	43.50	-6.98	QP			
5		245.9509	18.14	17.32	35.46	46.00	-10.54	QP			
6		866.0878	10.32	27.00	37.32	46.00	-8.68	QP			

*:Maximum data x:Over limit I:over margin

Above 1GHz:

EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Polarization:	Horizontal
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
1060.00	H	53.54	49.53	-9.32	44.22	40.21	74.00	54.00	-13.79
1060.00	V	52.63	45.78	-9.32	43.31	36.46	74.00	54.00	-17.54
1780.00	H	50.25	47.60	-7.64	42.61	39.96	74.00	54.00	-14.04
1780.00	V	47.19	44.51	-7.64	39.55	36.87	74.00	54.00	-17.13
5980.14	H	53.12	41.34	-2.76	50.36	38.58	74.00	54.00	-15.42
5980.14	V	47.57	34.48	-2.76	44.81	31.72	74.00	54.00	-22.28
8860.00	H	50.92	41.62	-1.08	49.84	40.54	74.00	54.00	-13.46
8860.00	V	39.48	26.10	-1.08	38.40	25.02	74.00	54.00	-28.98
11260.00	H	54.09	41.92	-0.97	53.12	40.95	74.00	54.00	-13.05
11260.00	V	43.56	35.43	-0.97	42.59	34.46	74.00	54.00	-19.54
N/A									>20

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

4. Spectrum setting:

a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.

b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

EUT:	V-Linker	M/N:	HM-100-05
Mode:	802.11 a 20M-5180MHz	Polarization:	Vertical
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
1120.00	H	48.85	42.08	-9.05	39.80	33.03	74.00	54.00	-20.97
1120.00	V	40.74	34.23	-9.05	31.69	25.18	74.00	54.00	-28.82
2440.00	H	49.12	42.33	-8.36	40.76	33.97	74.00	54.00	-20.03
2440.00	V	42.37	35.17	-8.36	34.01	26.81	74.00	54.00	-27.19
5980.00	H	41.54	32.92	-2.76	38.78	30.16	74.00	54.00	-23.84
5980.00	V	34.35	27.56	-2.76	31.59	24.80	74.00	54.00	-29.20
8320.00	H	42.27	30.15	-0.59	41.68	29.56	74.00	54.00	-24.44
8320.00	V	34.99	22.47	-0.59	34.40	21.88	74.00	54.00	-32.12
16240.00	H	40.89	31.54	3.83	44.72	35.37	74.00	54.00	-18.63
16240.00	V	32.50	28.12	3.83	36.33	31.95	74.00	54.00	-22.05
N/A									>20

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

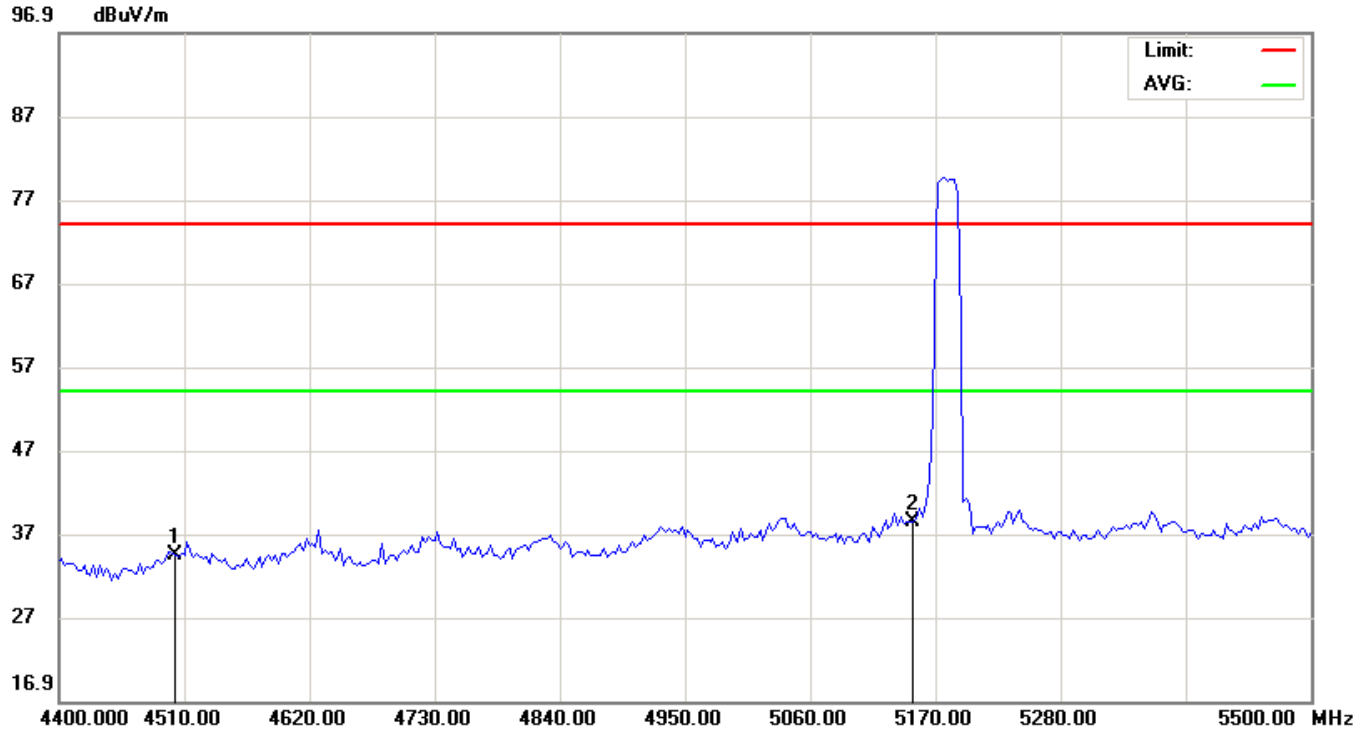
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

4. Spectrum setting:

a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.

b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

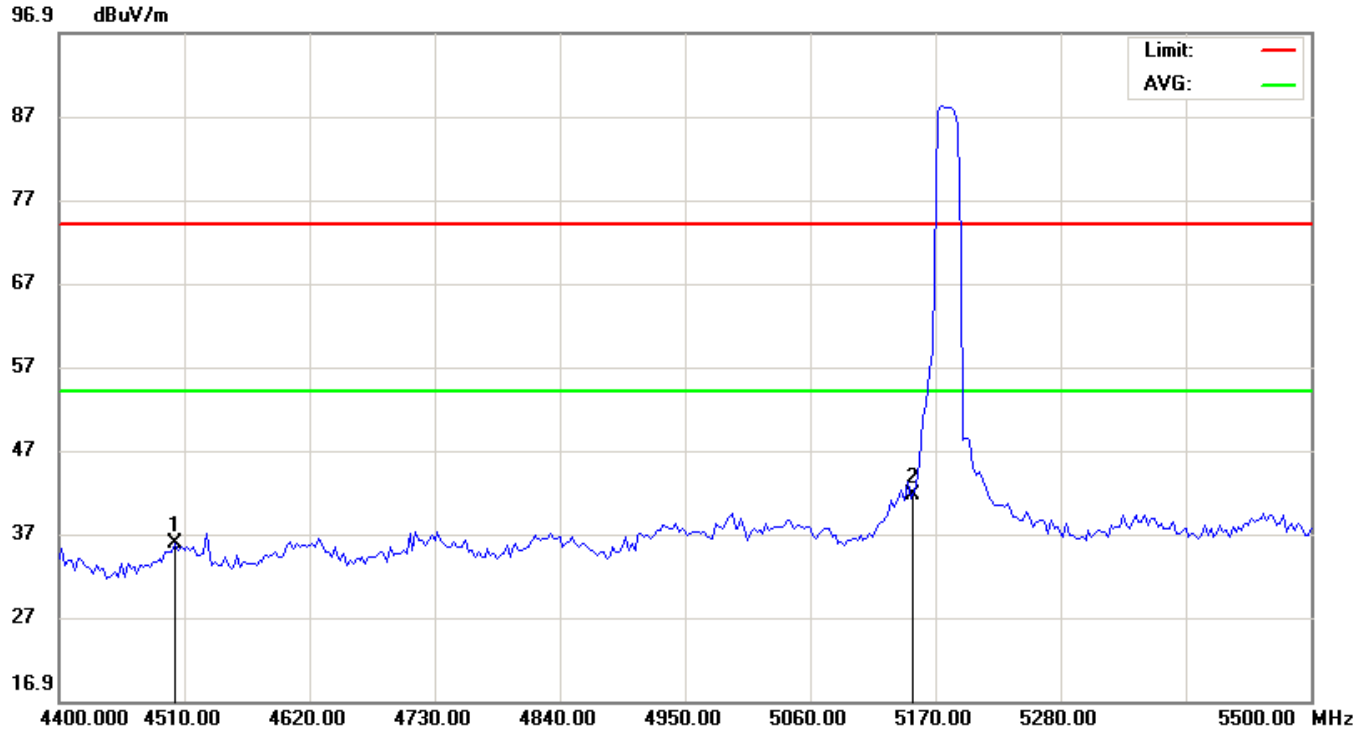
EUT:	V-Linker	M/N:	HM-100-05
Mode:	a-20-5180	Polarization:	Horizontal
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	41.86	-7.53	34.33	74.00	-39.67	peak			
2	*	5150.000	42.76	-4.32	38.44	74.00	-35.56	peak			

*:Maximum data x:Over limit !:over margin

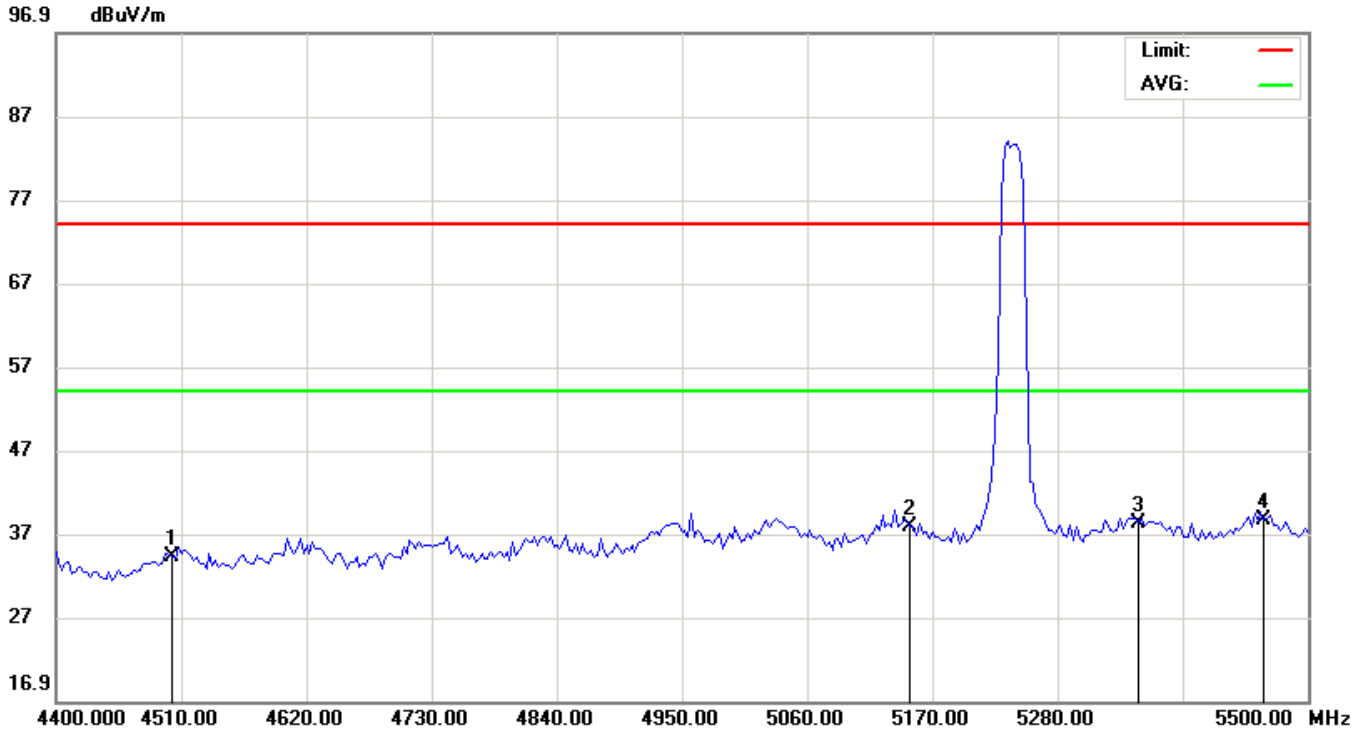
EUT:	V-Linker	M/N:	HM-100-05
Mode:	a-20-5180	Polarization:	*Vertical*
Test by:	John	Power:	DC 5V by USB Port
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	43.27	-7.53	35.74	74.00	-38.26	peak			
2	*	5150.000	45.90	-4.32	41.58	74.00	-32.42	peak			

*:Maximum data x:Over limit !:over margin

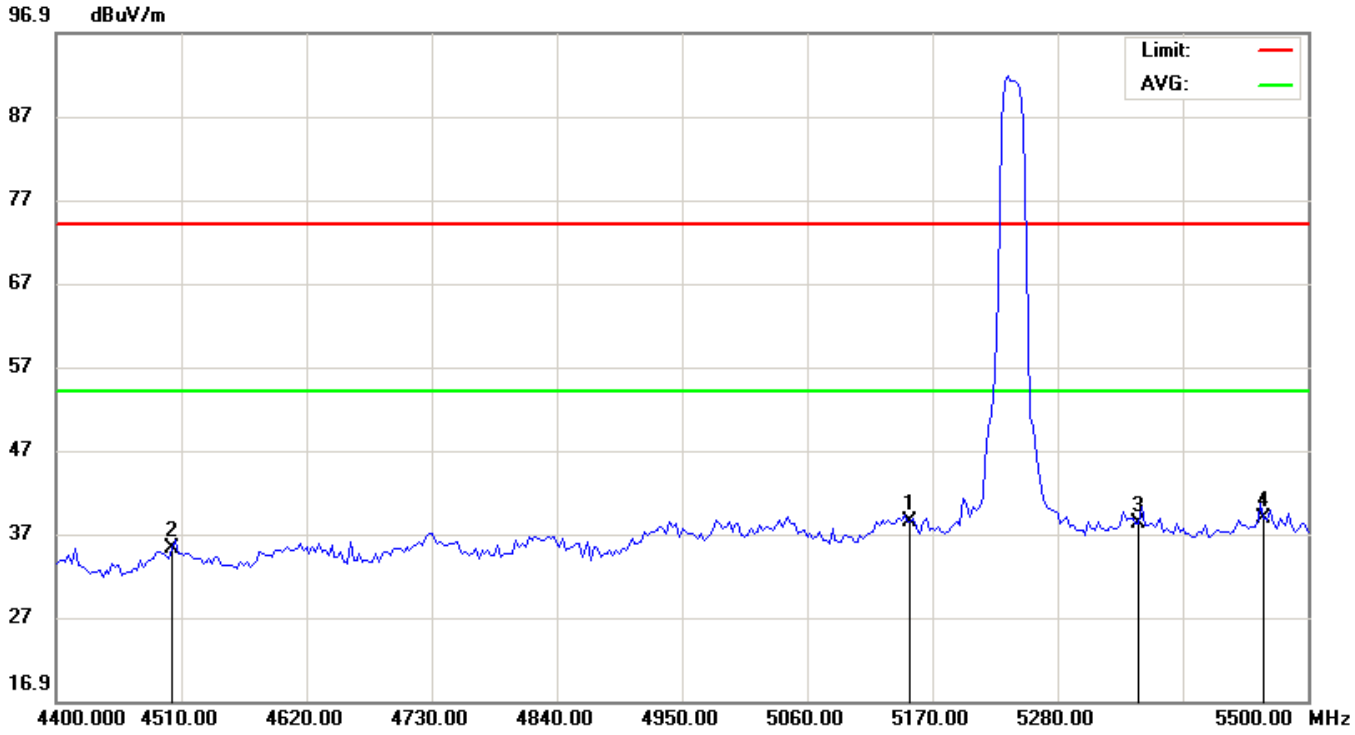
EUT:	V-Linker	M/N:	HM-100-05
Mode:	a-20-5240	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	41.74	-7.53	34.21	74.00	-39.79	peak			
2		5150.000	42.17	-4.32	37.85	74.00	-36.15	peak			
3		5350.000	42.60	-4.44	38.16	74.00	-35.84	peak			
4	*	5460.000	43.09	-4.42	38.67	74.00	-35.33	peak			

*:Maximum data x:Over limit !:over margin

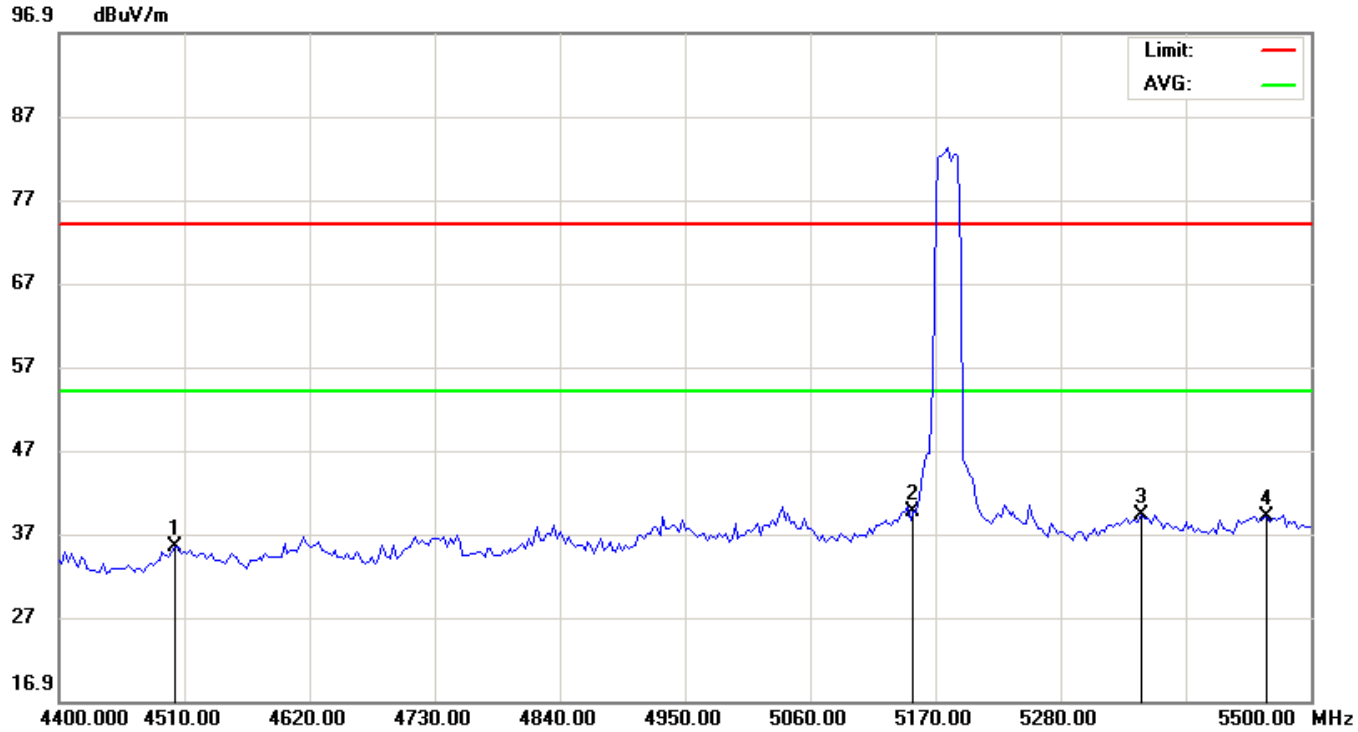
EUT:	V-Linker	M/N:	HM-100-05
Mode:	a-20-5240	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		5150.000	42.76	-4.32	38.44	74.00	-35.56	peak			
2		4500.000	42.76	-7.53	35.23	74.00	-38.77	peak			
3		5350.000	42.57	-4.44	38.13	74.00	-35.87	peak			
4	*	5460.000	43.16	-4.42	38.74	74.00	-35.26	peak			

*:Maximum data x:Over limit !:over margin

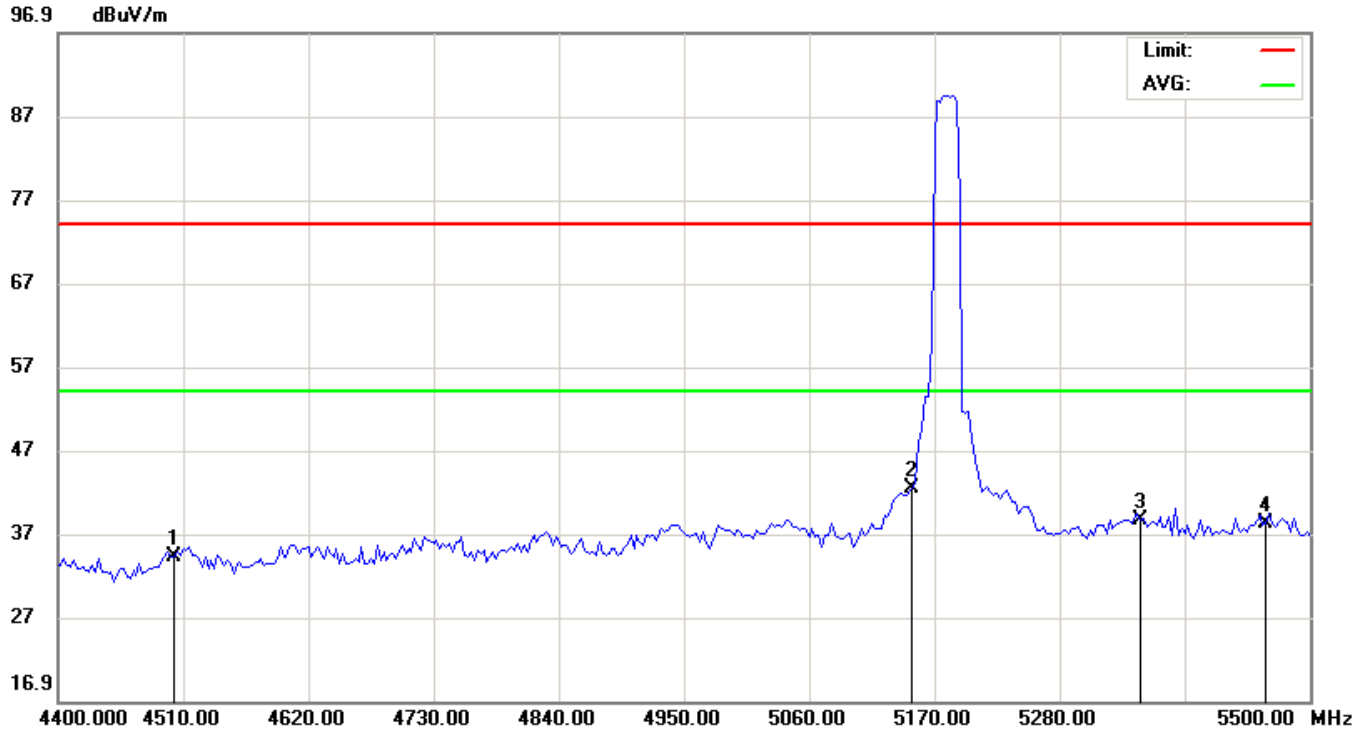
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-20-5180	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	43.03	-7.53	35.50	74.00	-38.50	peak			
2	*	5150.000	44.01	-4.32	39.69	74.00	-34.31	peak			
3		5350.000	43.69	-4.44	39.25	74.00	-34.75	peak			
4		5460.000	43.52	-4.42	39.10	74.00	-34.90	peak			

*:Maximum data x:Over limit !:over margin

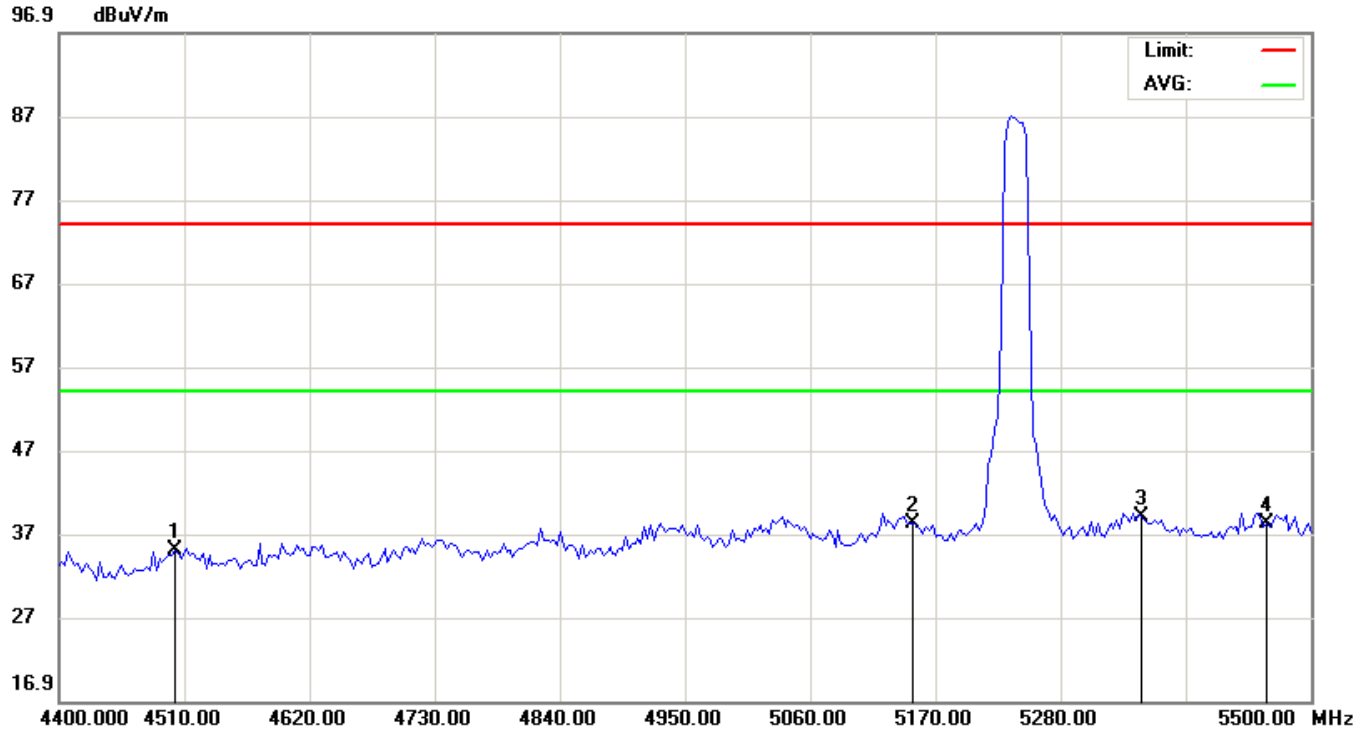
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-20-5180	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	41.66	-7.53	34.13	74.00	-39.87	peak			
2	*	5150.000	46.70	-4.32	42.38	74.00	-31.62	peak			
3		5350.000	43.13	-4.44	38.69	74.00	-35.31	peak			
4		5460.000	42.65	-4.42	38.23	74.00	-35.77	peak			

*:Maximum data x:Over limit !:over margin

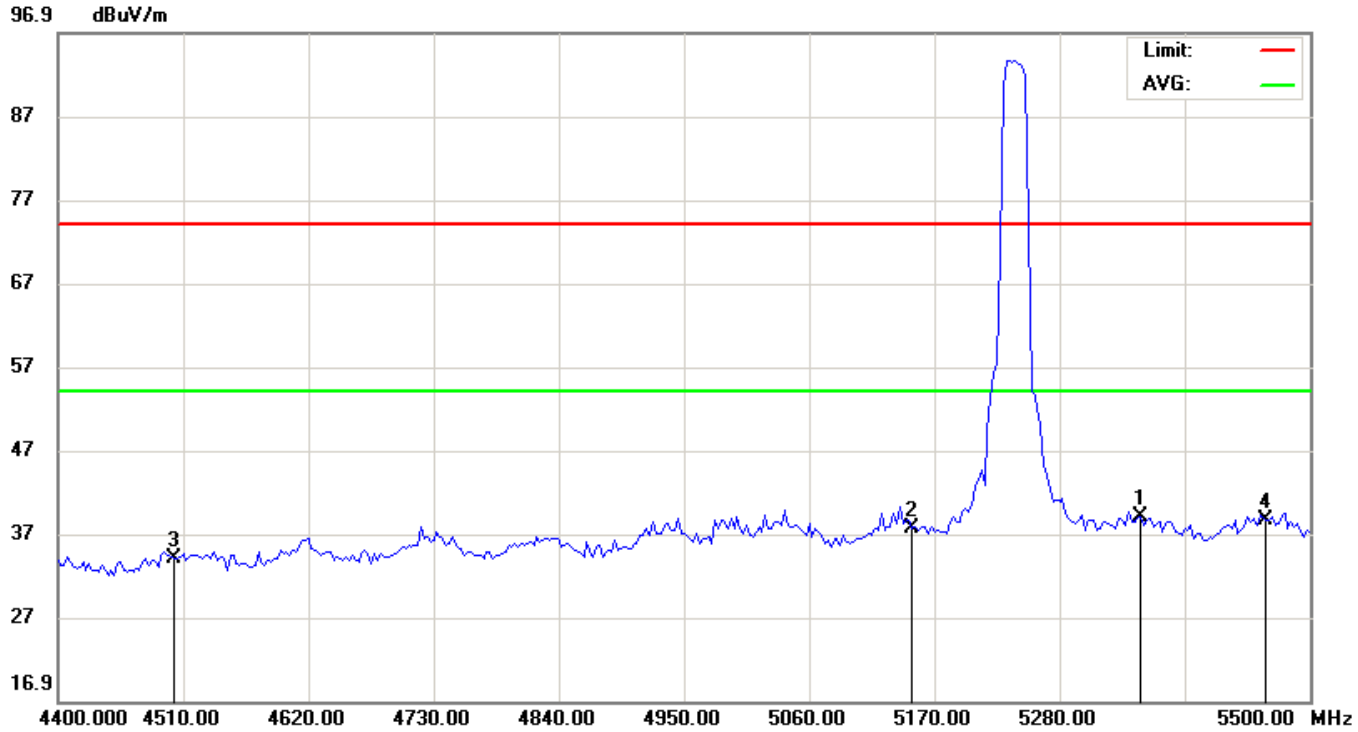
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-20-5240	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.56	-7.53	35.03	74.00	-38.97	peak			
2		5150.000	42.44	-4.32	38.12	74.00	-35.88	peak			
3	*	5350.000	43.35	-4.44	38.91	74.00	-35.09	peak			
4		5460.000	42.56	-4.42	38.14	74.00	-35.86	peak			

*:Maximum data x:Over limit !:over margin

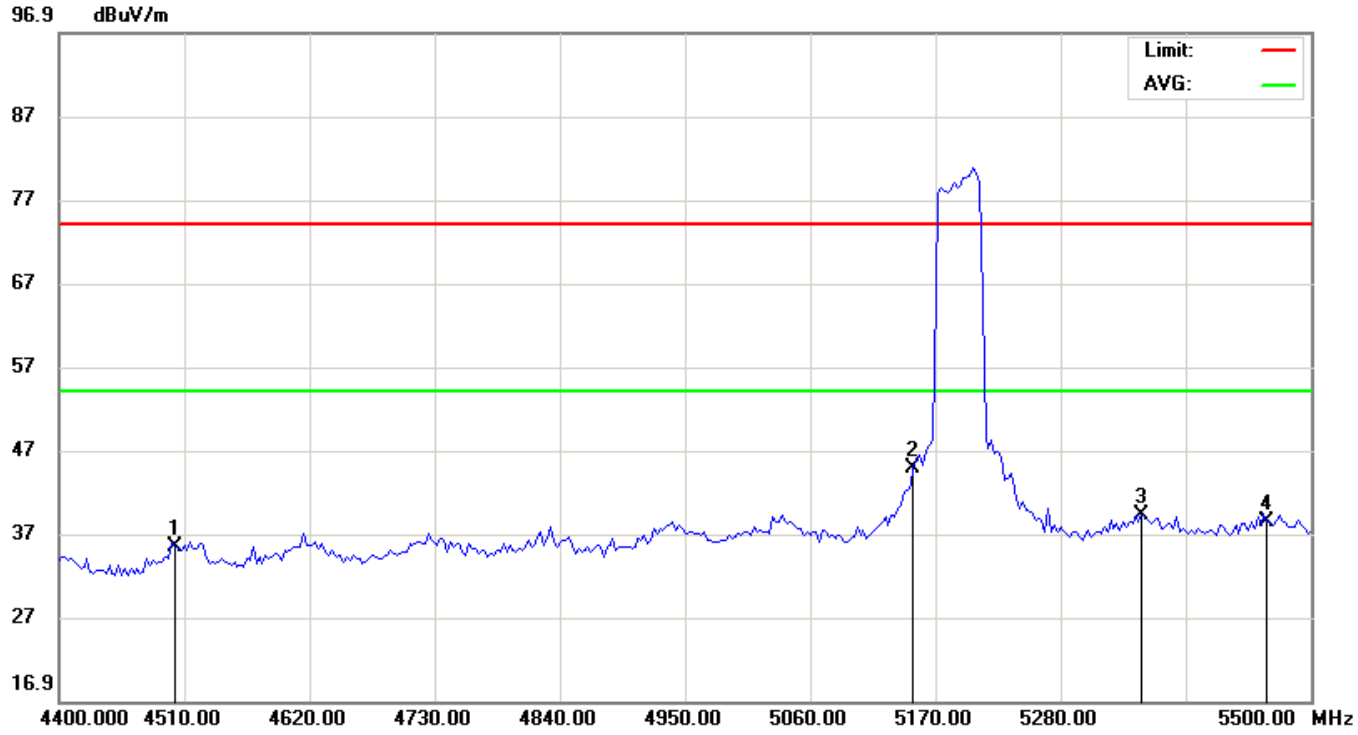
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-20-5240	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	5350.000	43.37	-4.44	38.93	74.00	-35.07	peak			
2		5150.000	41.91	-4.32	37.59	74.00	-36.41	peak			
3		4500.000	41.50	-7.53	33.97	74.00	-40.03	peak			
4		5460.000	43.05	-4.42	38.63	74.00	-35.37	peak			

*:Maximum data x:Over limit !:over margin

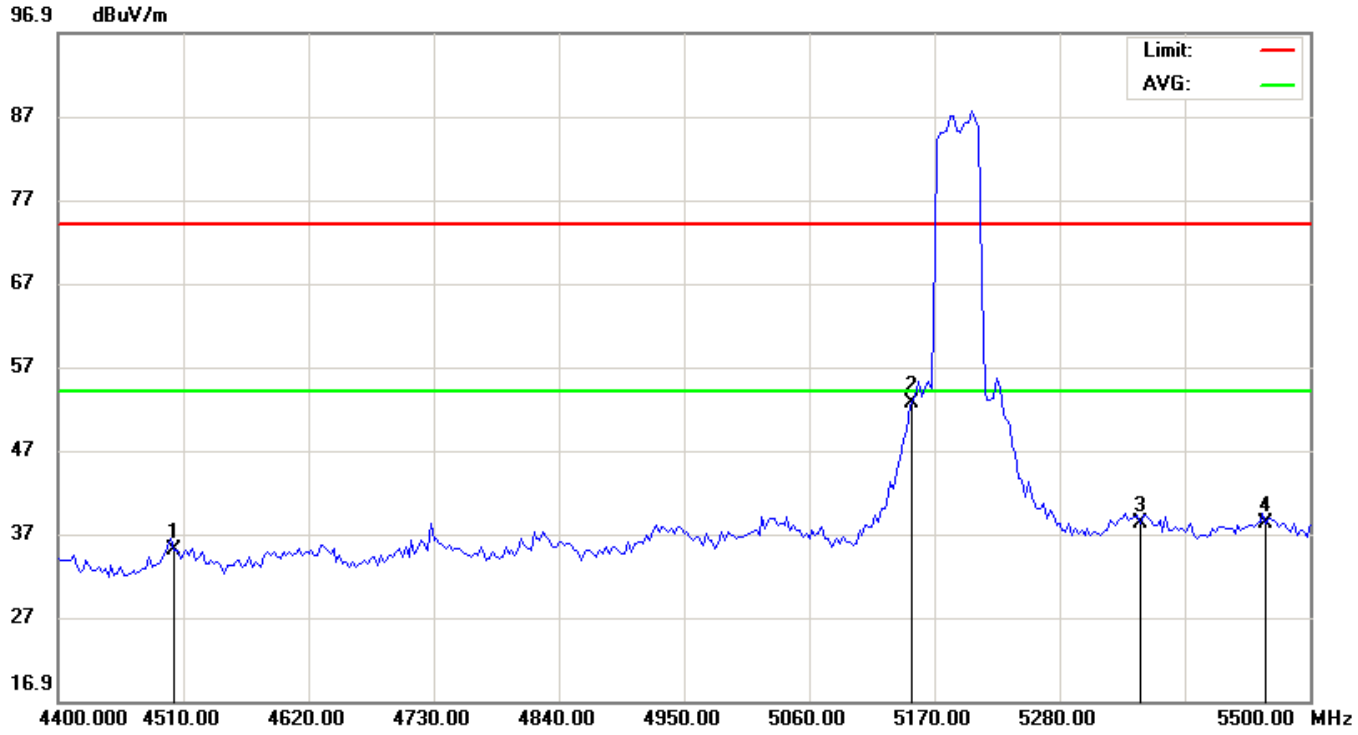
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-40-5190	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.95	-7.53	35.42	74.00	-38.58	peak			
2	*	5150.000	49.12	-4.32	44.80	74.00	-29.20	peak			
3		5350.000	43.69	-4.44	39.25	74.00	-34.75	peak			
4		5460.000	42.83	-4.42	38.41	74.00	-35.59	peak			

*:Maximum data x:Over limit l:over margin

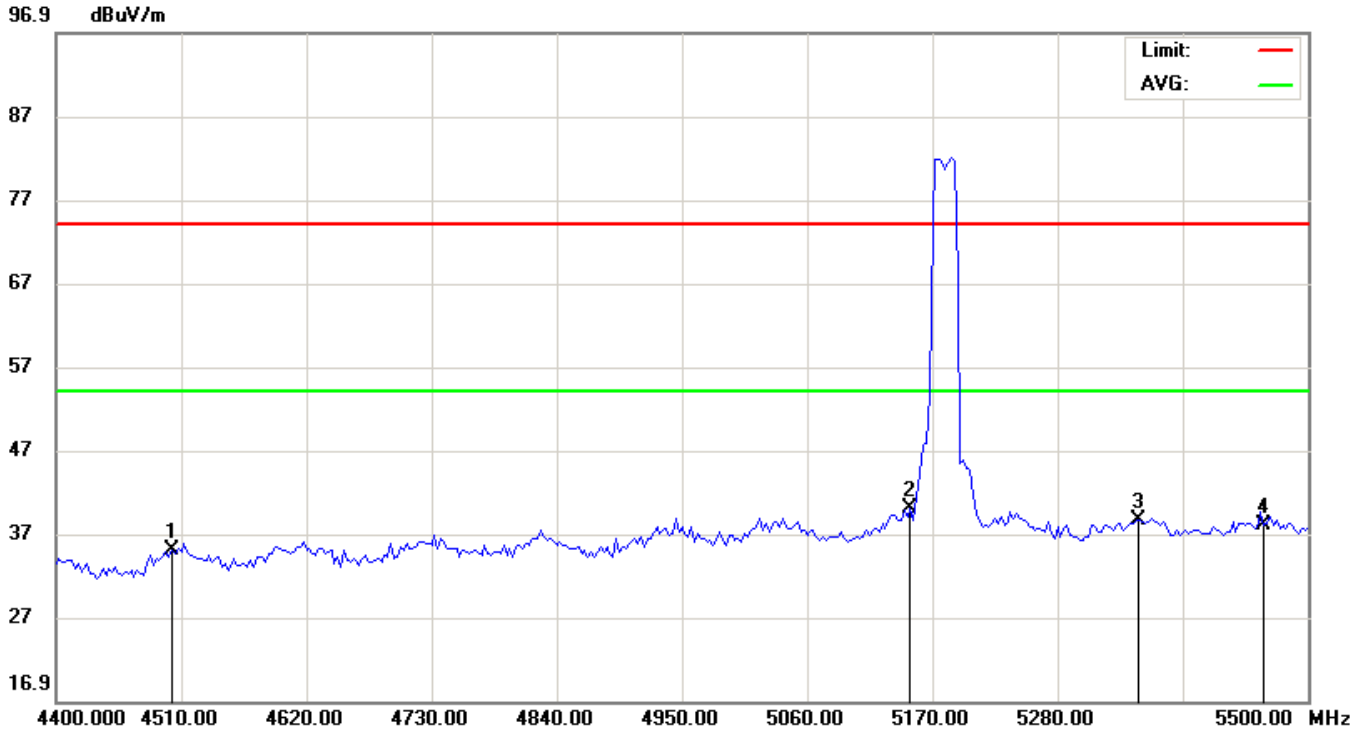
EUT:	V-Linker	M/N:	HM-100-05
Mode:	n-40-5190	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.49	-7.53	34.96	74.00	-39.04	peak			
2	*	5150.000	56.94	-4.32	52.62	74.00	-21.38	peak			
3		5350.000	42.71	-4.44	38.27	74.00	-35.73	peak			
4		5460.000	42.54	-4.42	38.12	74.00	-35.88	peak			

*:Maximum data x:Over limit !:over margin

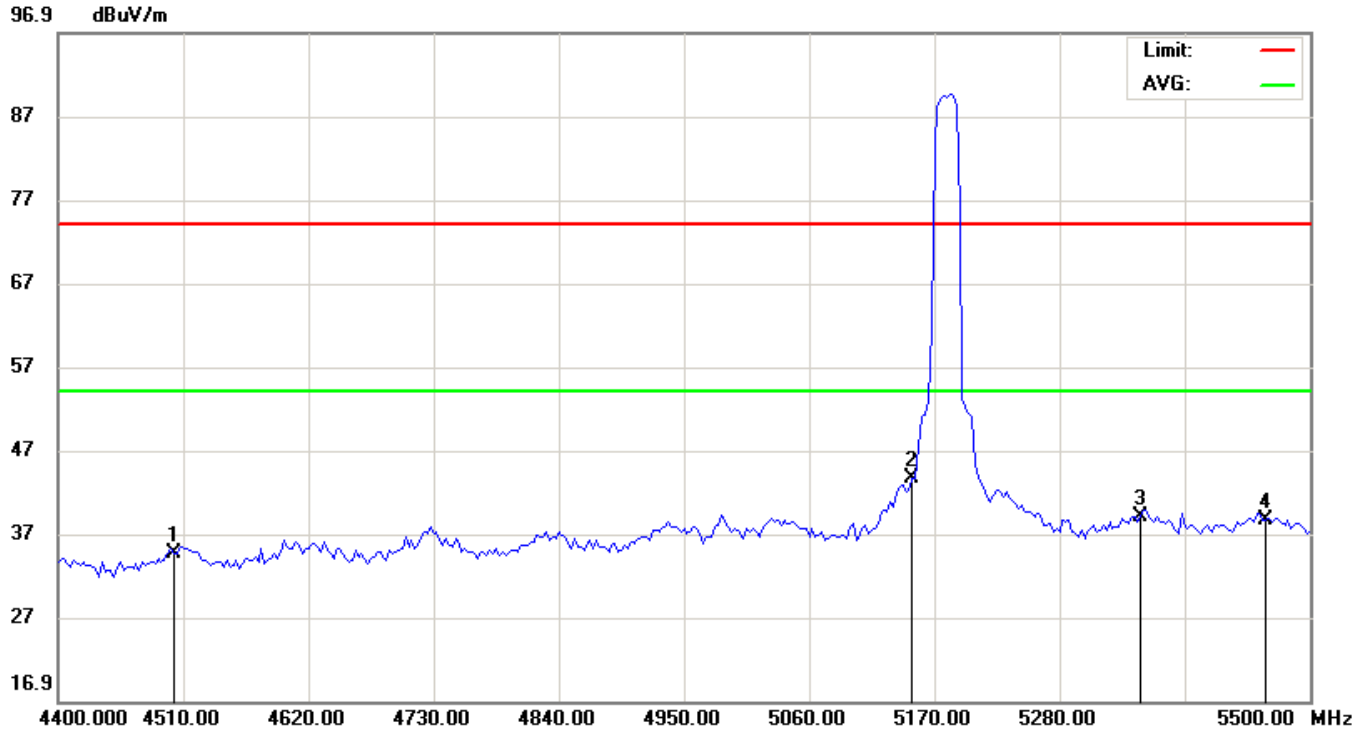
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-20-5180	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.56	-7.53	35.03	74.00	-38.97	peak			
2	*	5150.000	44.25	-4.32	39.93	74.00	-34.07	peak			
3		5350.000	42.98	-4.44	38.54	74.00	-35.46	peak			
4		5460.000	42.35	-4.42	37.93	74.00	-36.07	peak			

*:Maximum data x:Over limit l:over margin

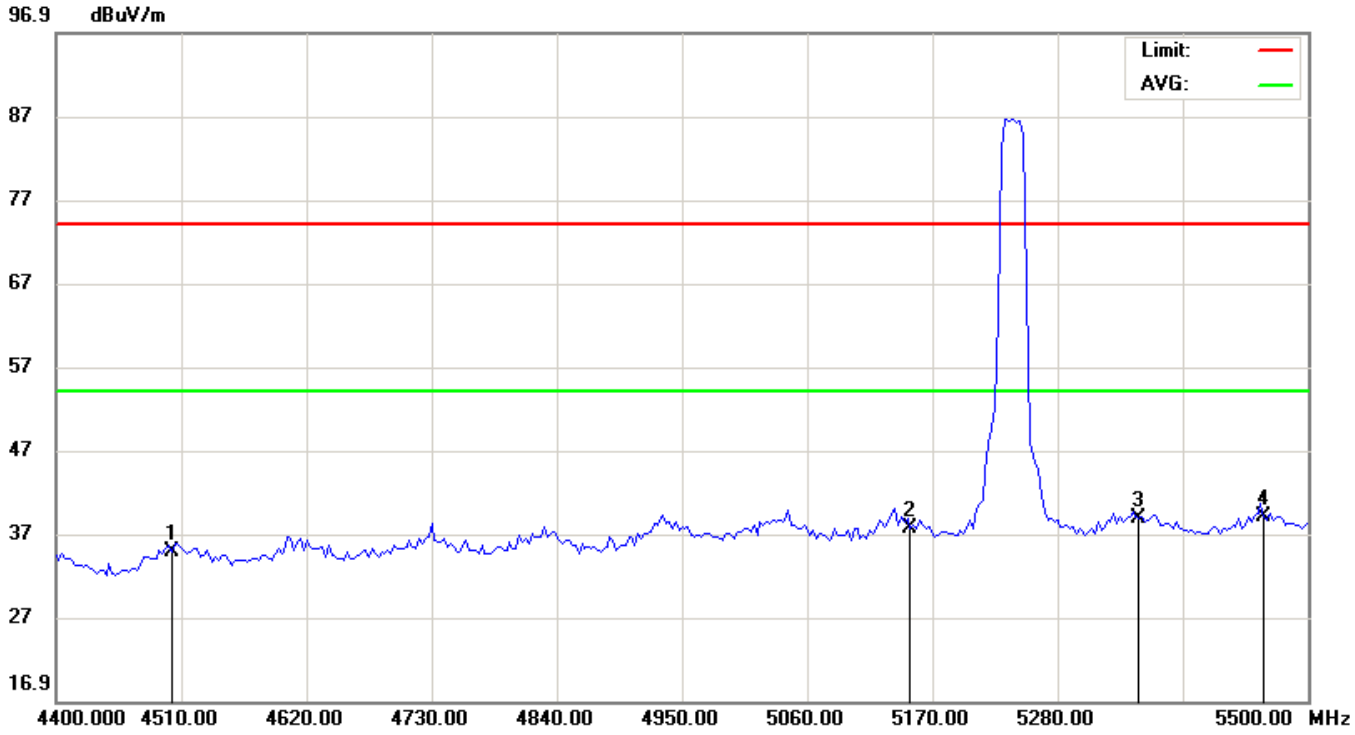
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-20-5180	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.14	-7.53	34.61	74.00	-39.39	peak			
2	*	5150.000	47.84	-4.32	43.52	74.00	-30.48	peak			
3		5350.000	43.37	-4.44	38.93	74.00	-35.07	peak			
4		5460.000	43.04	-4.42	38.62	74.00	-35.38	peak			

*:Maximum data x:Over limit !:over margin

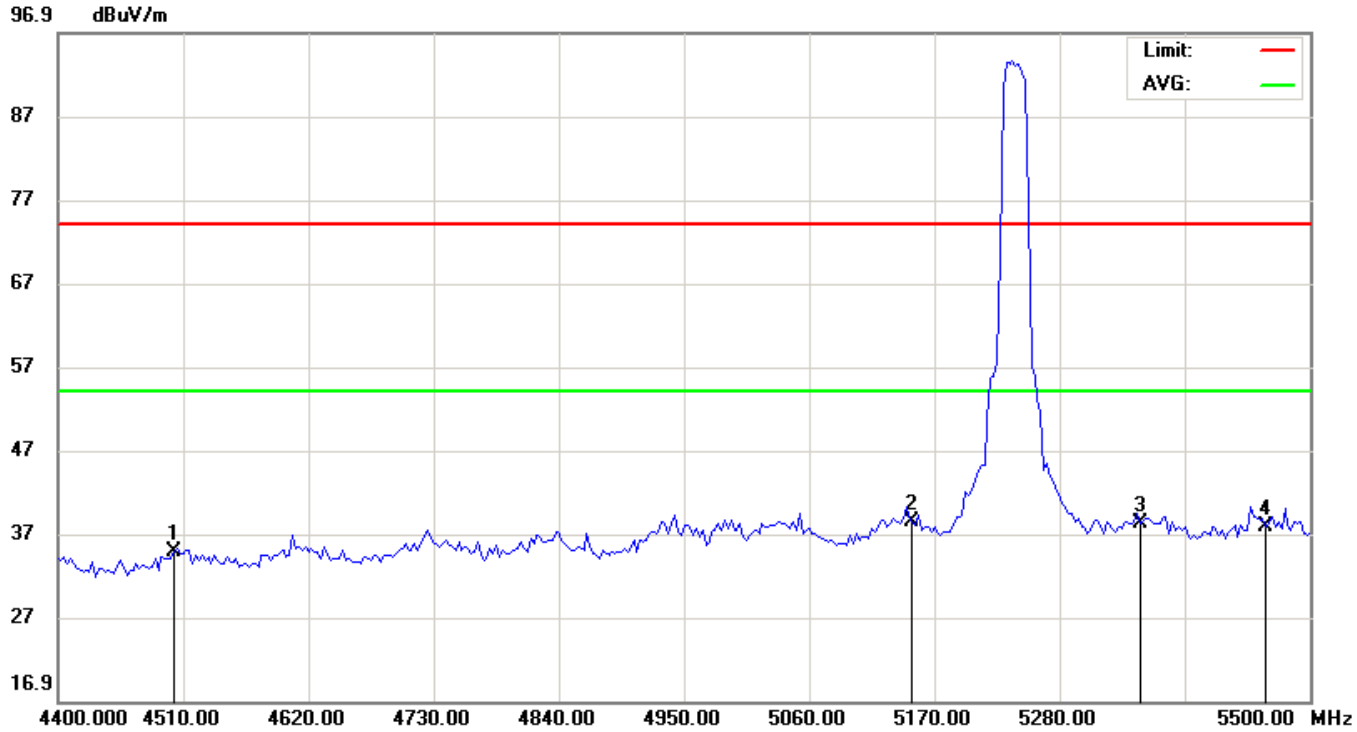
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-20-5240	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.37	-7.53	34.84	74.00	-39.16	peak			
2		5150.000	41.99	-4.32	37.67	74.00	-36.33	peak			
3		5350.000	43.26	-4.44	38.82	74.00	-35.18	peak			
4	*	5460.000	43.38	-4.42	38.96	74.00	-35.04	peak			

*:Maximum data x:Over limit !:over margin

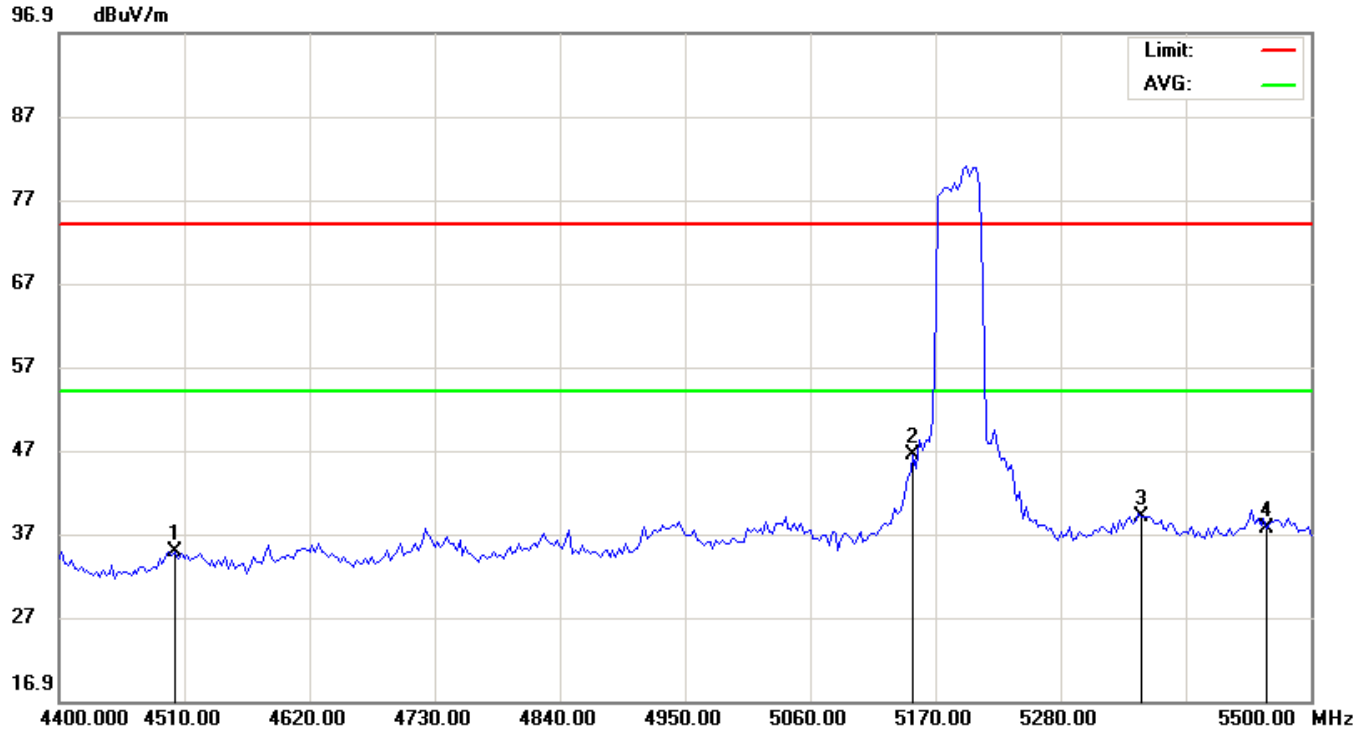
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-20-5240	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.38	-7.53	34.85	74.00	-39.15	peak			
2	*	5150.000	42.81	-4.32	38.49	74.00	-35.51	peak			
3		5350.000	42.69	-4.44	38.25	74.00	-35.75	peak			
4		5460.000	42.16	-4.42	37.74	74.00	-36.26	peak			

*:Maximum data x:Over limit !:over margin

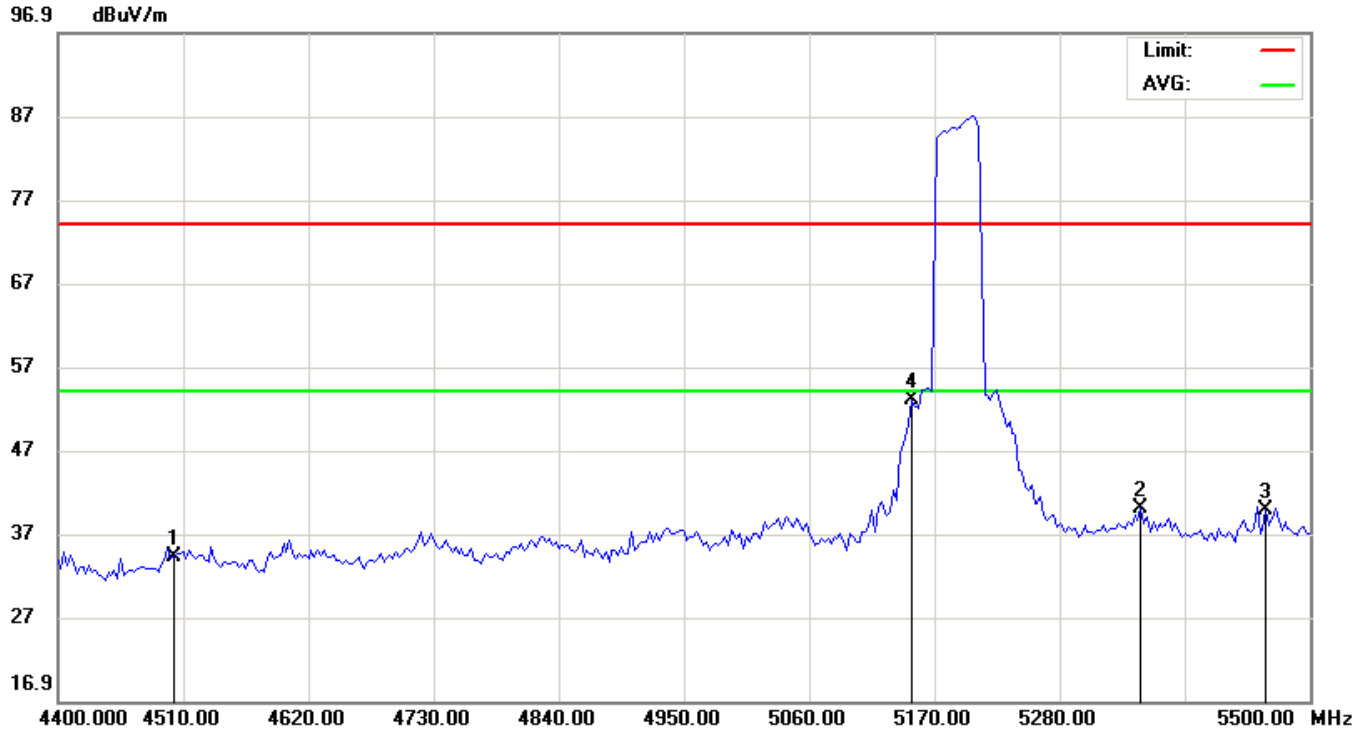
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-40-5190	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.30	-7.53	34.77	74.00	-39.23	peak			
2	*	5150.000	50.77	-4.32	46.45	74.00	-27.55	peak			
3		5350.000	43.50	-4.44	39.06	74.00	-34.94	peak			
4		5460.000	41.93	-4.42	37.51	74.00	-36.49	peak			

*:Maximum data x:Over limit !:over margin

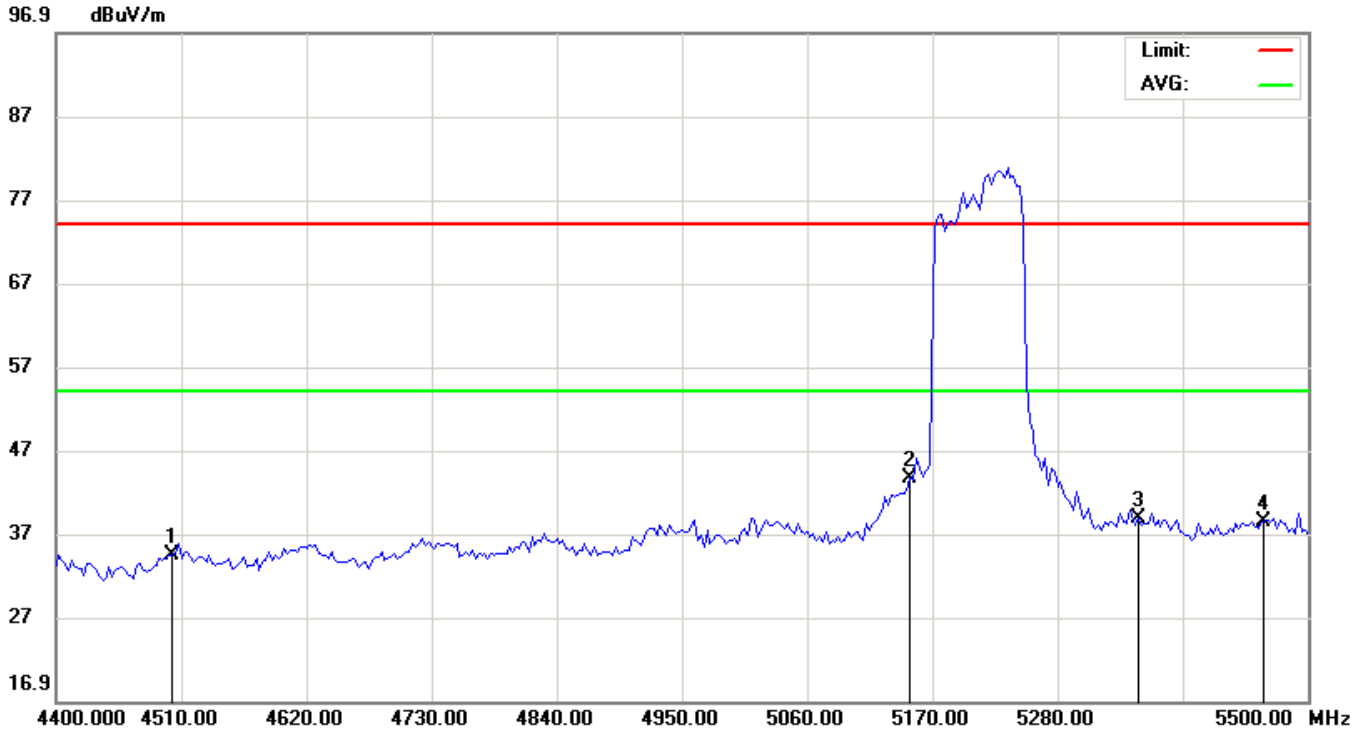
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-40-5190	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	41.79	-7.53	34.26	74.00	-39.74	peak			
2		5350.000	44.35	-4.44	39.91	74.00	-34.09	peak			
3		5460.000	44.17	-4.42	39.75	74.00	-34.25	peak			
4	*	5150.000	57.23	-4.32	52.91	74.00	-21.09	peak			

*:Maximum data x:Over limit !:over margin

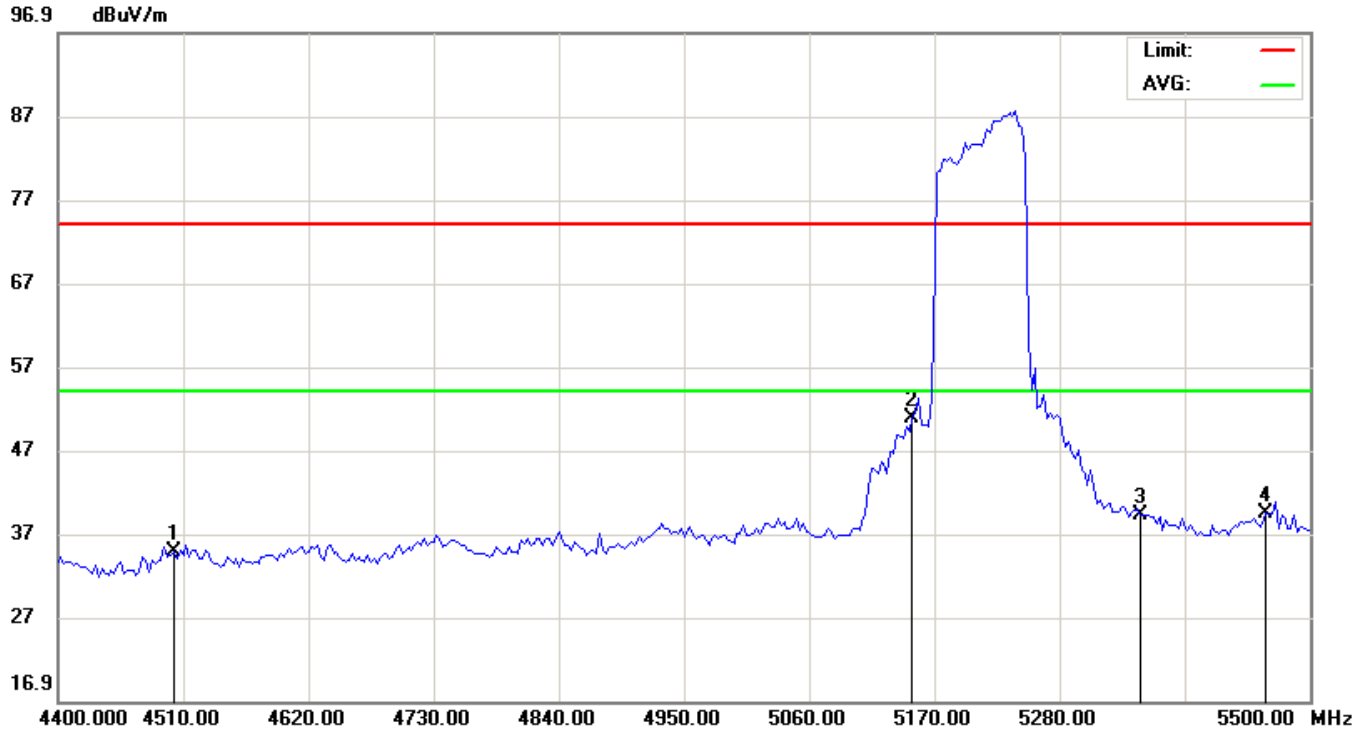
EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-80-5210	Polarization:	Horizontal
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	41.93	-7.53	34.40	74.00	-39.60	peak			
2	*	5150.000	47.94	-4.32	43.62	74.00	-30.38	peak			
3		5350.000	43.24	-4.44	38.80	74.00	-35.20	peak			
4		5460.000	42.74	-4.42	38.32	74.00	-35.68	peak			

*:Maximum data x:Over limit !:over margin

EUT:	V-Linker	M/N:	HM-100-05
Mode:	ac-80-5210	Polarization:	Vertical
Test by:	John	Power:	AC 230V/50Hz
Temperature: / Humidity	24.9℃/ 52.5%	Test date:	2017-06-15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4500.000	42.40	-7.53	34.87	74.00	-39.13	peak			
2	*	5150.000	55.18	-4.32	50.86	74.00	-23.14	peak			
3		5350.000	43.61	-4.44	39.17	74.00	-34.83	peak			
4		5460.000	43.86	-4.42	39.44	74.00	-34.56	peak			

*:Maximum data x:Over limit !:over margin

6.10 Conducted Spurious Emissions

6.10.1 Test Requirement

According to §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

6.10.2 Test Result

Not applicable

Remark: According to KDB 789033, Section G.2.C, out-of-band emission reference to section 4.9 (Radiated Emission and Band Edges) is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit.

End of Report