

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART E REQUIREMENT
CLASS II PC REPORT**

OF

Product Name: Vehicle Mount Terminal
Brand Name: Honeywell
Marketing Name: Thor VM2
Model No.: VM2C
Model Difference: N/A
FCC ID: KDZVM2C01
Report No.: EH/2012/A0024-01
Issue Date: Feb. 18, 2016
FCC Rule Part: §15.407
Prepared for: Honeywell International Inc.,
Honeywell Scanning and Mobility
9680 Old Bailes Road, Fort Mill, SC 29707,
USA
Prepared by: SGS Taiwan Ltd.
Electronics & Communication Laboratory
No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City,
Taiwan 24803



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VERIFICATION OF COMPLIANCE

Applicant: Honeywell International Inc.,
Honeywell Scanning and Mobility
9680 Old Bailes Road, Fort Mill, SC 29707, USA

Product Name: Vehicle Mount Terminal

Brand Name: Honeywell

Marketing Name: Thor VM2

Model No.: VM2C

Model Difference: N/A

FCC ID: KDZVM2C01

File Number: EH/2012/A0024-01

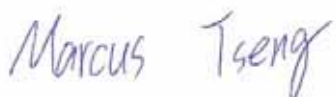
Date of test: Oct. 05, 2012 ~ Feb. 18, 2016

Date of EUT Received: Oct. 05, 2012

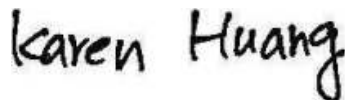
We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

Test By:**Date**

Feb. 18, 2016

Marcus Tseng / Engineer**Prepared By:****Date**

Feb. 18, 2016

Karen Huang / Clerk**Approved By:****Date**

Feb. 18, 2016

Jim Chang / Asst. Manager

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Revision History

Report Number	Revision	Description	Issue Date
EH/2012/A0024-01	Rev.00	Initial creation of document	Feb. 18, 2016

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1. GENERAL INFORMATION

1.1. Product Description

General:

Product Name:	Vehicle Mount Terminal	
Brand Name:	Honeywell	
Marketing Name:	Thor VM2	
Model No.:	VM2C	
Model Difference:	N/A	
Hardware Version:	N/A	
WLAN Driver Version:	V3.03.11	
Power Supply:	10.8Vdc Li-ion battery or 100-240Vdc from AC/DC adapter	
	Battery:	Model No.: OVT310L1R00 Supplier: TOTEX International Limited
	Adapter:	Model No.:GT-81081-6015-T3, Supplier: GlobTek, Inc.
Class II Permissive change:	For the requirement that certain National Information Infrastructure (U-NII) devices must comply with revised Section 15.407 rules in order to be certified.	

WLAN: 802.11 a

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.)	Modulation Technology
11a	5725~5850	5	15.15dBm	OFDM
Antenna Designation		Internal: PIFA Antenna, Model No.: 40120512, 4.97dBi (5.7GHz) External: Dipole Antenna, Model No.: WTS 2450, 0.77dBi (5.7GHz) Model No.: R380500314, 4.85dBi (5.7GHz)		
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM		
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps		

The EUT is compliance with IEEE 802.11 a Standard.

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1.2. Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r01

FCC KDB 662311 D01 Multiple Transmitter Output

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.
2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.
3. The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63.10:2013.

1.3. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

(TAF code 0513)

FCC Registration Numbers are: 509634

1.4. Special Accessories

There are no special accessories used while test was conducted.

1.5. Equipment Modifications

There was no modification incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table 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 max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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2.5. Configuration of Tested System

Fig. 2-1 Radiated Emission Configuration



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	SCU	v3.03.08	N/A	N/A	N/A

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3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.407(a)	6dB Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

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4. DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5745~5825	149 to 165	157	OFDM	6	MAIN
RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11a/n/ac WLAN Transmitter for channel Low, Mid and High, the worst case E1 position was reported.

Pre-scanned was done on external antenna: WTS 2450 and antenna R380500314, and antenna R380500314 results higher emission at 5GHz. Therefore, the completed set of measurement was done on antenna: R380500314 to be presented on this test report.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
6 dB Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 1.42 dB
Peak Power Spectral Density Measurement	+/- 1.55 dB
Frequency Stability	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : Vertical)	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : Horizontal)	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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6. DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Formula:

$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)
802.11a	100.00	0.00

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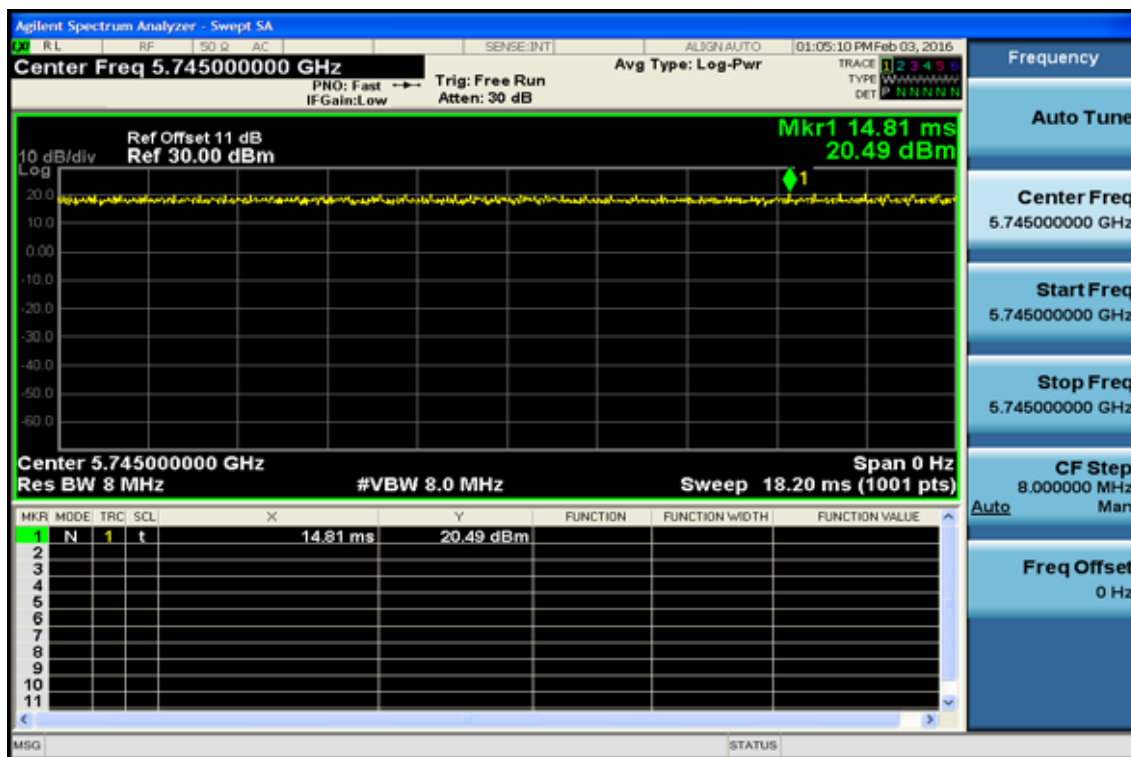
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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



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7. 6dB EMISSION BANDWIDTH MEASUREMENT

7.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3.

7.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
 - a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto, Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
 - b. Mark the peak frequency and -26dB (upper and lower) frequency.
4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
5. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
 - a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto
 - b. Mark the peak frequency and -6dB (upper and lower) frequency.
6. Repeat above procedures until all test default channel measured were complete.

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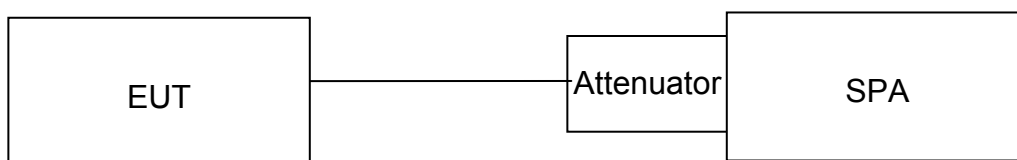
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7.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016
Spectrum Analyzer	Agilent	N9010A	MY50420195	12/21/2015	12/20/2016
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016
Temperature Chamber	TERCHY	MHG-120LF	911009	05/06/2015	05/05/2016

7.4 Test Set-up



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7.5 Measurement Result

6dB Bandwidth

802.11a, 5725~5850 MHz

Frequency (MHz)	6dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5745	16.35	12.14
5785	16.37	12.14
5825	16.38	12.14

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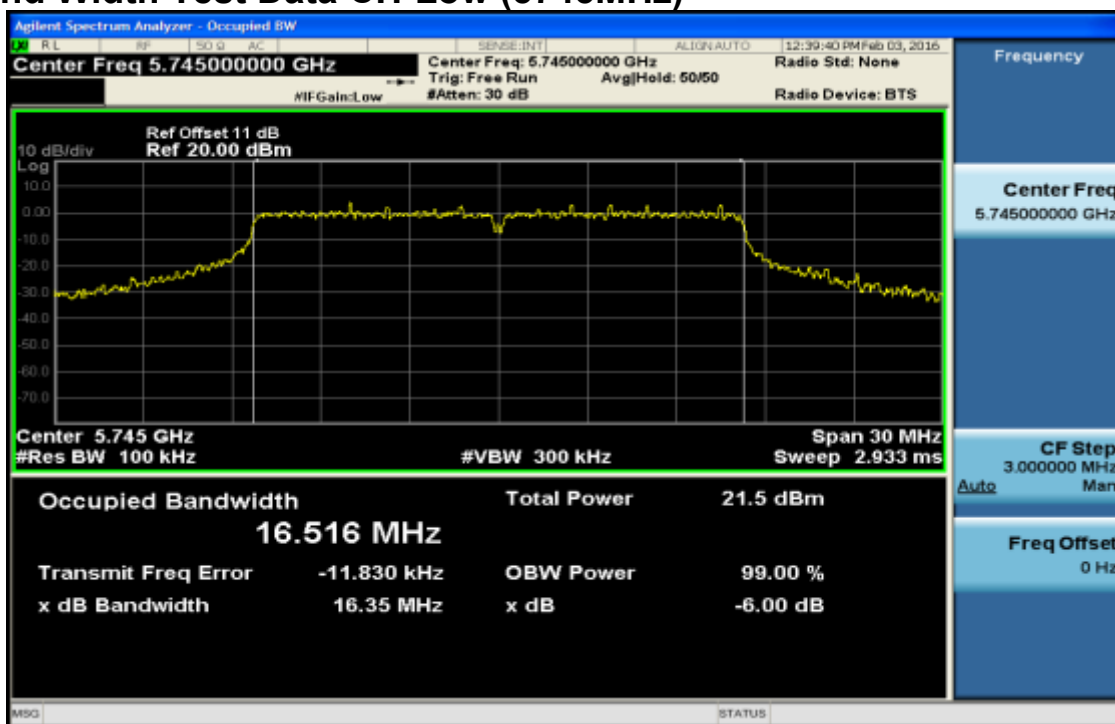
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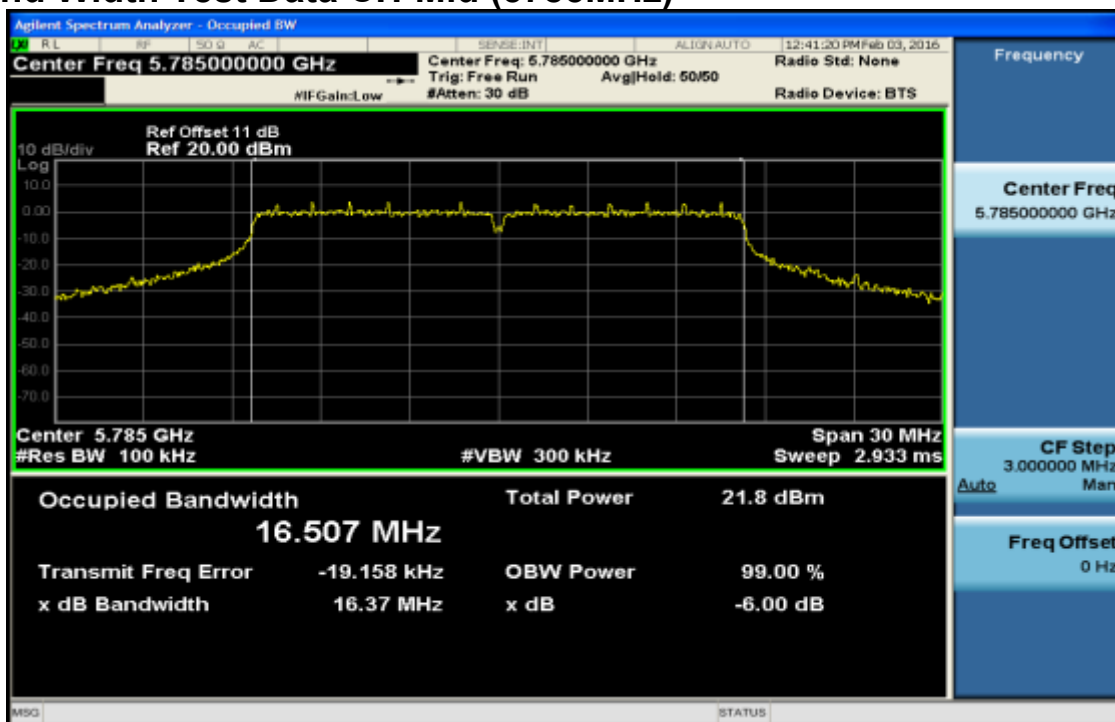
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802.11a, 5725~5850 MHz 6dB Band Width Test Data CH-Low (5745MHz)



6dB Band Width Test Data CH-Mid (5785MHz)



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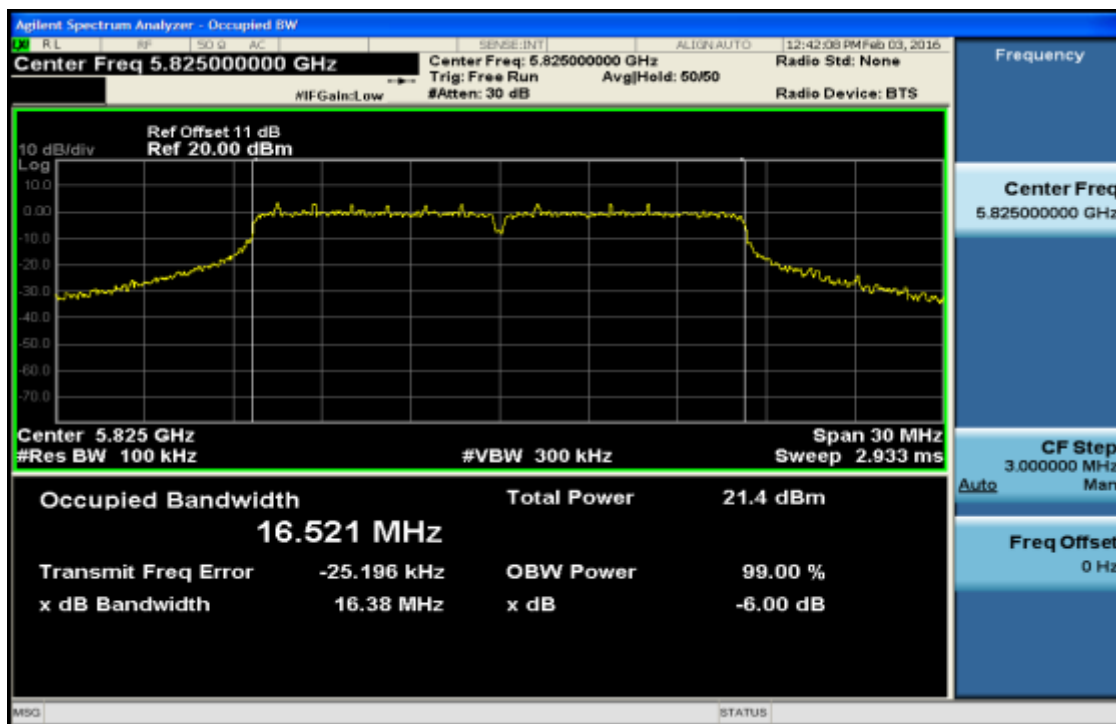
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6dB Band Width Test Data CH-High (5825MHz)



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8. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

8.1 Standard Applicable

OPERATION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Mater device)	1 Watt(30dBm)
		Fixed point-to-point Access Point	1 Watt(30dBm)
		Mobile and portable client device	250mW(23.98dBm)
U-NII-2A			250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C			250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	✓		1 Watt(30dBm)

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

Note: Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

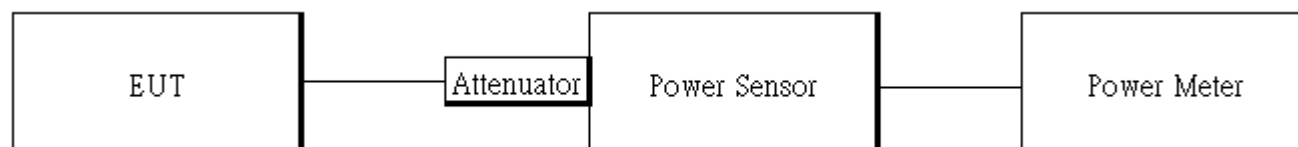
8.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
3. Set the offset $10 \cdot \log(1/x)$, $n_{HT20}=0.10$, $n_{HT40}=0.12$
4. Record the max. reading.
5. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.
6. Employing step 1 to 4 obtaining per-chain basis in MIMO operation, and sum the power in linear to result the output of MIMO operation at frequency of interest (, where MIMO is applicable).

8.3 Measurement Equipment Used:

Refer to section 7.3 for the plot.

8.4 Test Set-up:



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8.5 Measurement Result

802.11a

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
149	5745	15.15	32.734	30	PASS
157	5785	14.68	29.376	30	PASS
165	5825	14.59	28.774	30	PASS

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9. PEAK POWER SPECTRAL DENSITY

9.1 Standard Applicable

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Mater device)	17dBm/ MHz
		Fixed point-to-point Acess Ponit	
		Mobile and portable clinet device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

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

Note: Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

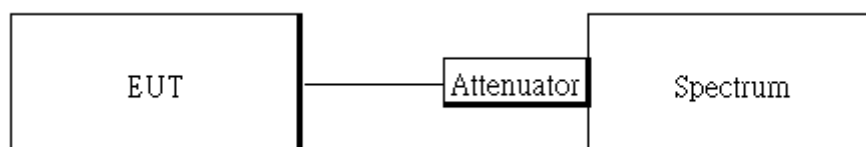
9.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- For U-NII1, U-NII-2A, U-NII-2C Band:**
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
- Use the cursor on spectrum to peak search the highest level of trace
- Record the max. reading and add 10 log(1/duty cycle).
- Repeat above procedures until all default test channel (low, middle, and high) was complete.

9.3 Measurement Equipment Used:

Refer to section 7.3 for details.

9.4 Test Set-up



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9.5 Measurement Result

POWER DENSITY 802.11a MODE			
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5745	8.59	30	-21.41
5785	8.73	30	-21.27
5825	7.76	30	-22.24

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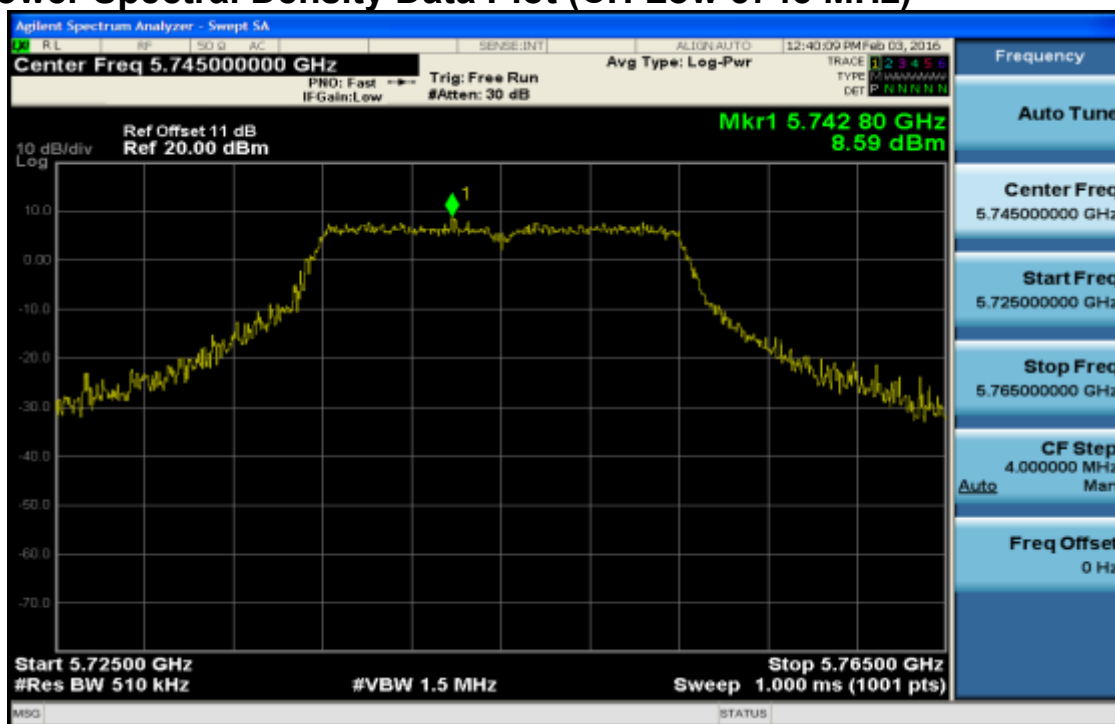
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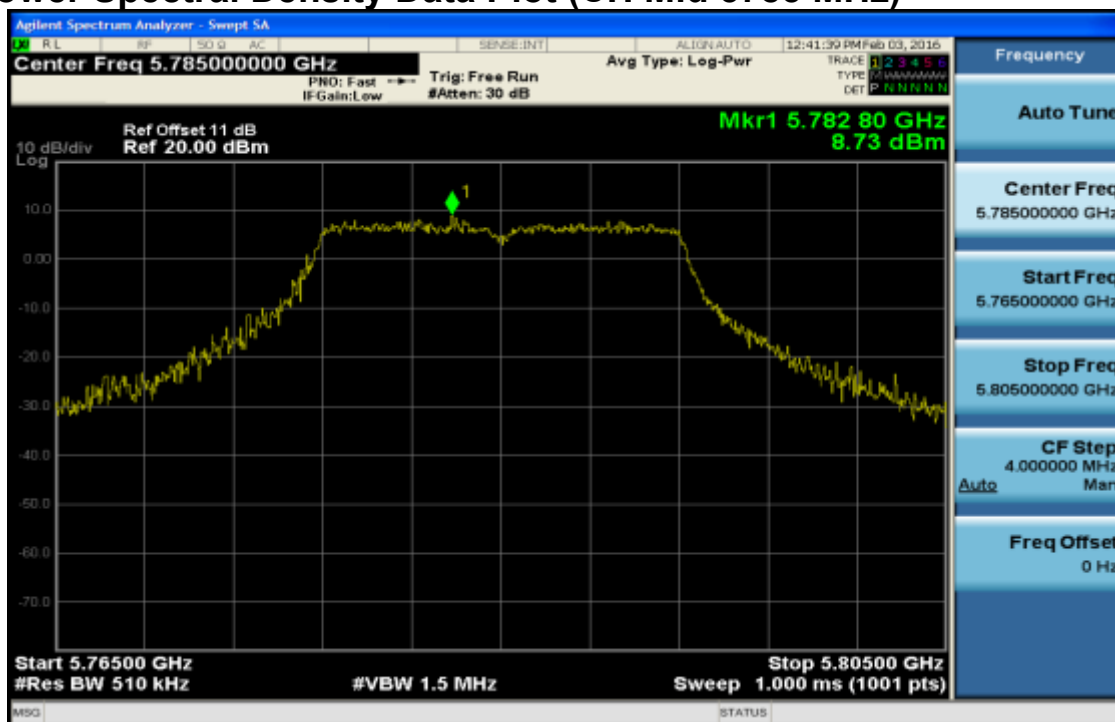
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802.11a, 5725~5825 MHz

Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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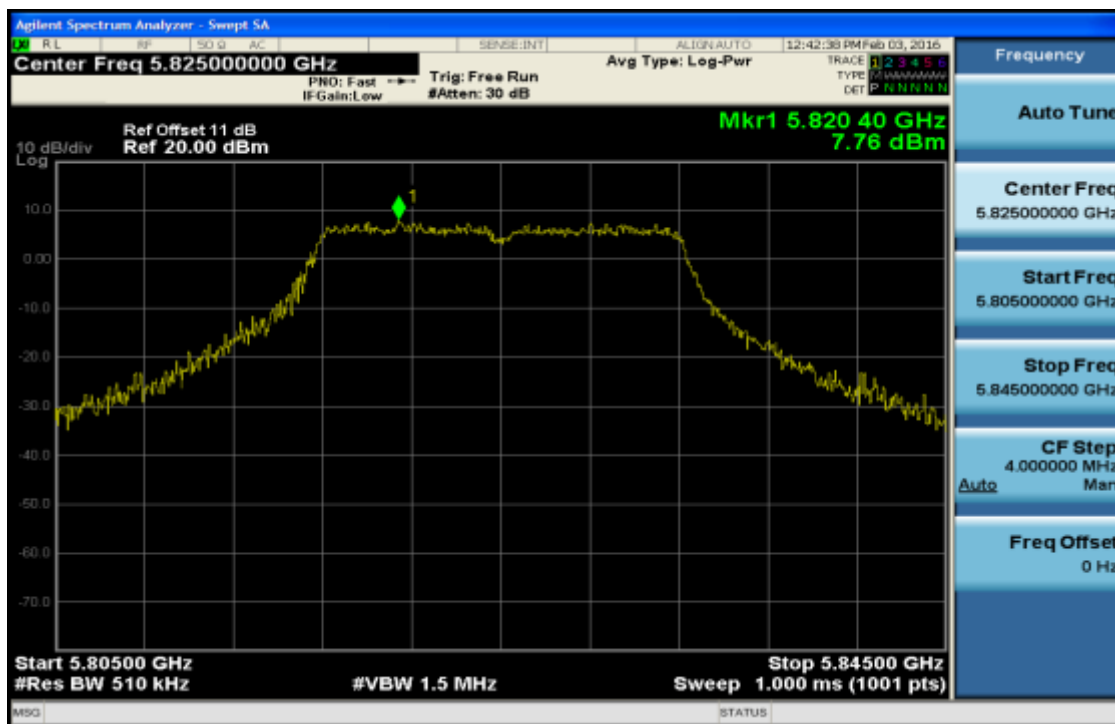
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Peak Power Spectral Density Data Plot (CH High 5825 MHz)



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10. UNDESIRABLE EMISSION - RADIATED MEASUREMENT

10.1 Standard Applicable

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.

APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r01	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.3 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) PK: -17 (dBm/MHz)	PK: 68.3 (dBμV/m) PK: 78.2 (dBμV/m)

$EIRP = (E \cdot d)^2 / 30$, where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
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
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (dBμV/m)

10.2 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100760	05/04/2015	05/03/2016
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/28/2016	01/27/2017
Loop Antenna	ETS.LINDGREN	6502	148045	09/07/2015	09/06/2016
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/14/2015	12/13/2016
Horn antenna	ETS.LINDGREN	3117	123995	05/05/2015	05/04/2016
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/02/2016	01/01/2017
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2016	01/01/2017
3m Site NSA	SGS	966 chamber	N/A	07/02/2015	07/01/2016

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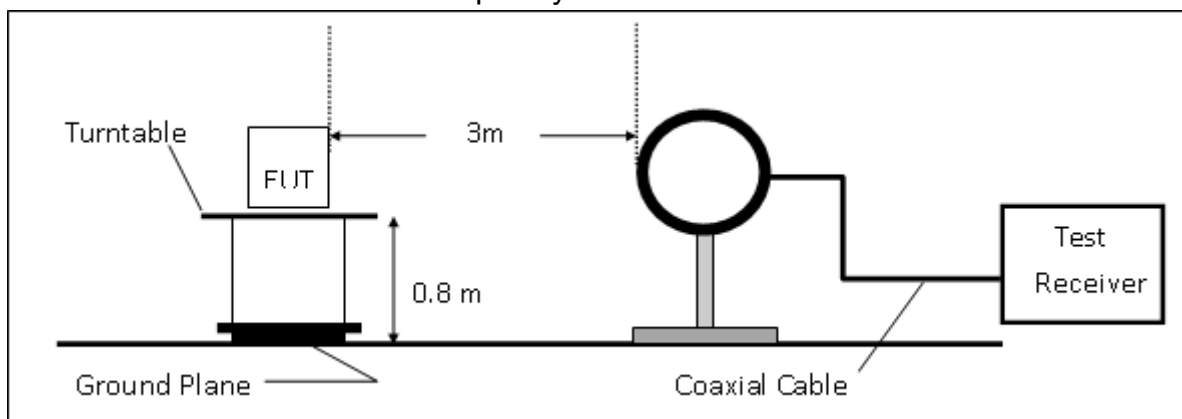
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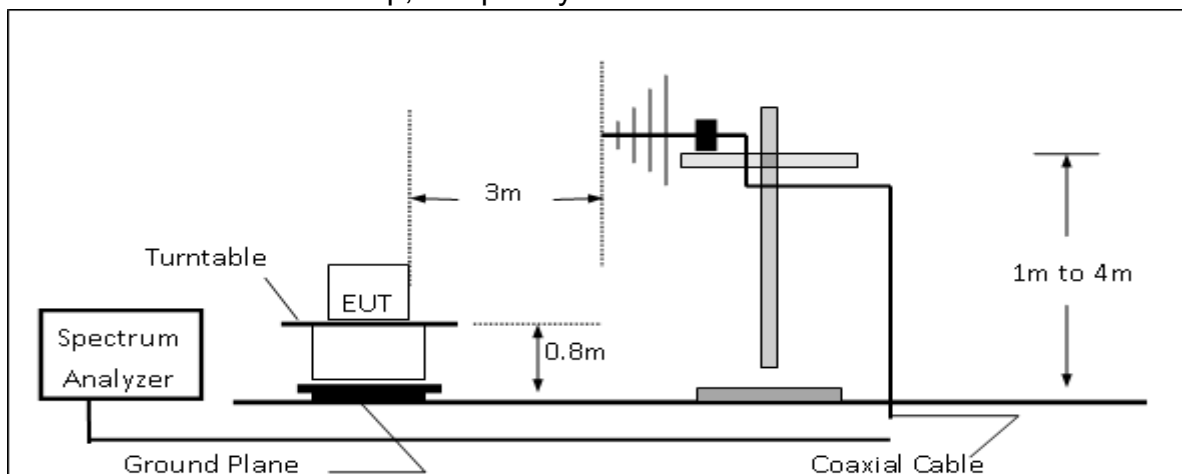
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10.3 Test SET-UP

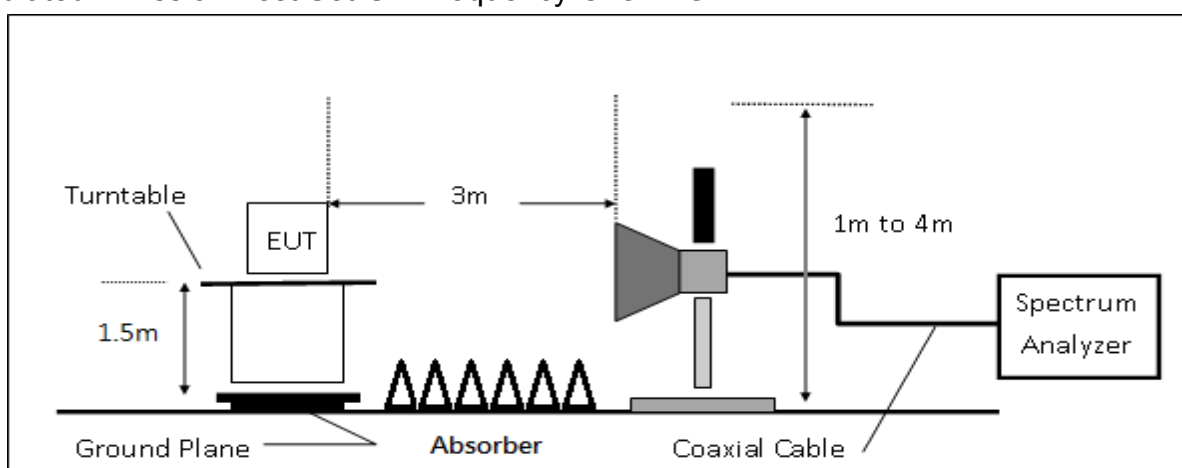
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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10.4 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
3. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
11. Repeat above procedures until all frequency measured were complete.

10.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

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Note :

“F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

10.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

10.7 Measurement Result

Refer to attach tabular data sheets.

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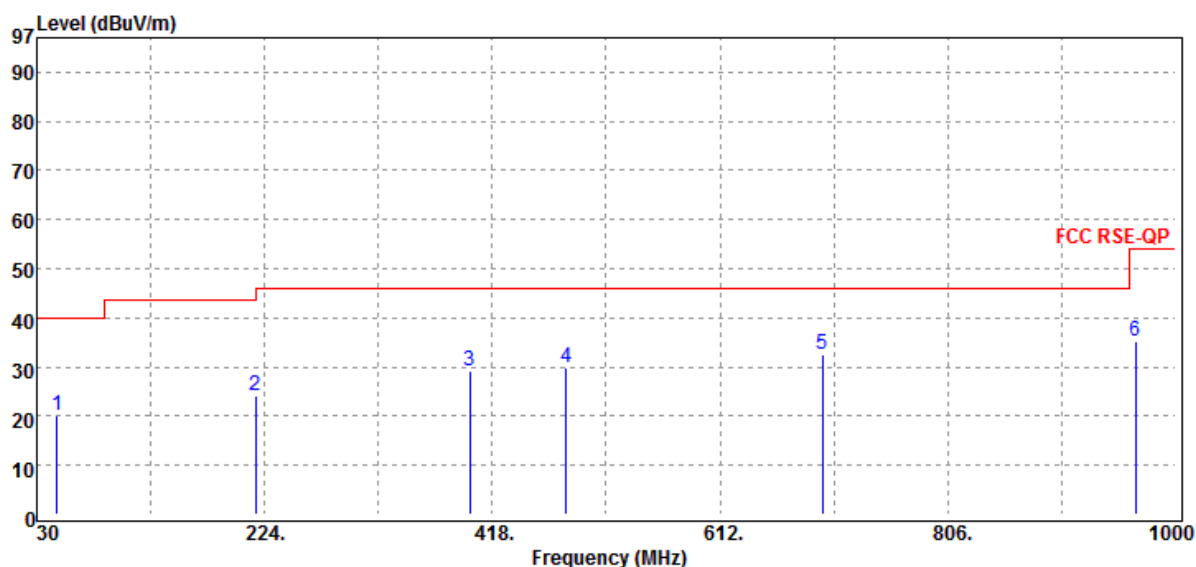
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Radiated Spurious Emission Measurement Result (Below 1GHz)

802.11a, 5725~5850 MHz (Internal Antenna)

Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
47.46	S	Peak	28.08	-7.85	20.23	40.00	-19.77
216.24	S	Peak	33.61	-9.43	24.18	46.00	-21.82
398.60	S	Peak	33.25	-3.97	29.28	46.00	-16.72
481.05	S	Peak	32.32	-2.37	29.95	46.00	-16.05
699.30	S	Peak	31.06	1.44	32.50	46.00	-13.50
966.05	S	Peak	29.16	5.96	35.12	54.00	-18.88

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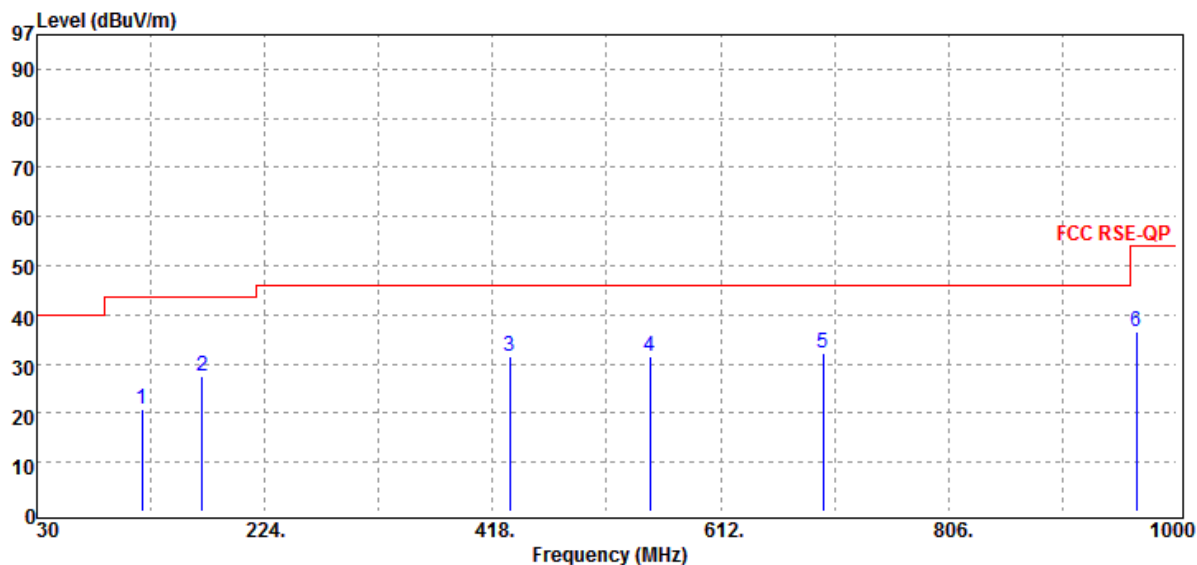
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
119.24	S	Peak	31.25	-10.53	20.72	43.50	-22.78
170.65	S	Peak	35.11	-7.66	27.45	43.50	-16.05
432.55	S	Peak	34.92	-3.43	31.49	46.00	-14.51
551.86	S	Peak	33.23	-1.62	31.61	46.00	-14.39
699.30	S	Peak	30.84	1.44	32.28	46.00	-13.72
966.05	S	Peak	30.74	5.96	36.70	54.00	-17.30

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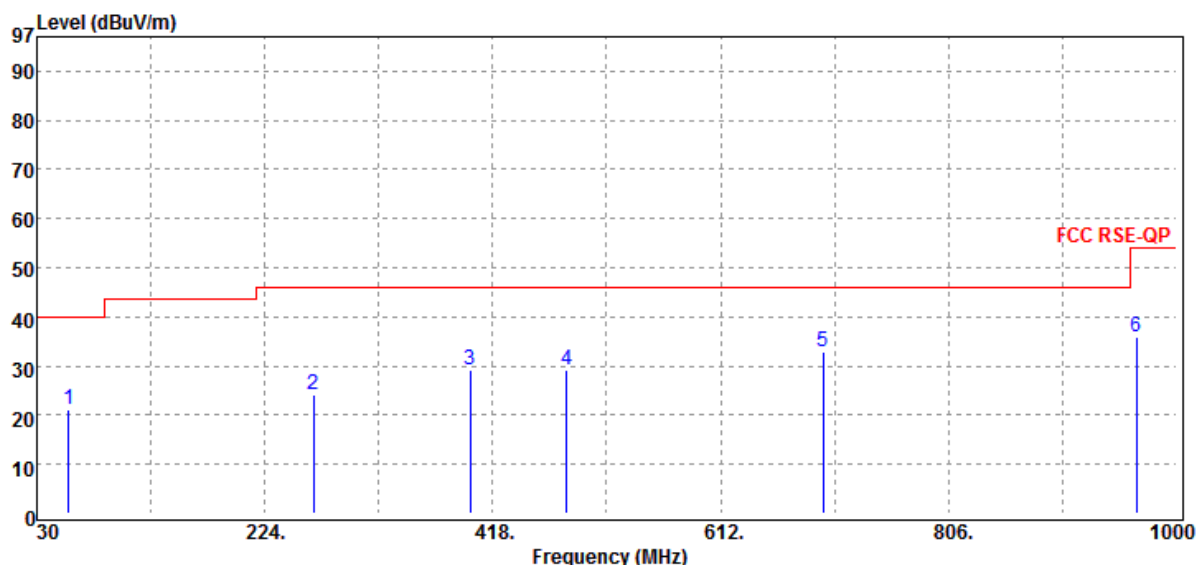
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
57.16	S	Peak	29.19	-7.98	21.21	40.00	-18.79
265.71	S	Peak	31.13	-7.00	24.13	46.00	-21.87
398.60	S	Peak	33.32	-3.97	29.35	46.00	-16.65
481.05	S	Peak	31.55	-2.37	29.18	46.00	-16.82
699.30	S	Peak	31.50	1.44	32.94	46.00	-13.06
966.05	S	Peak	29.97	5.96	35.93	54.00	-18.07

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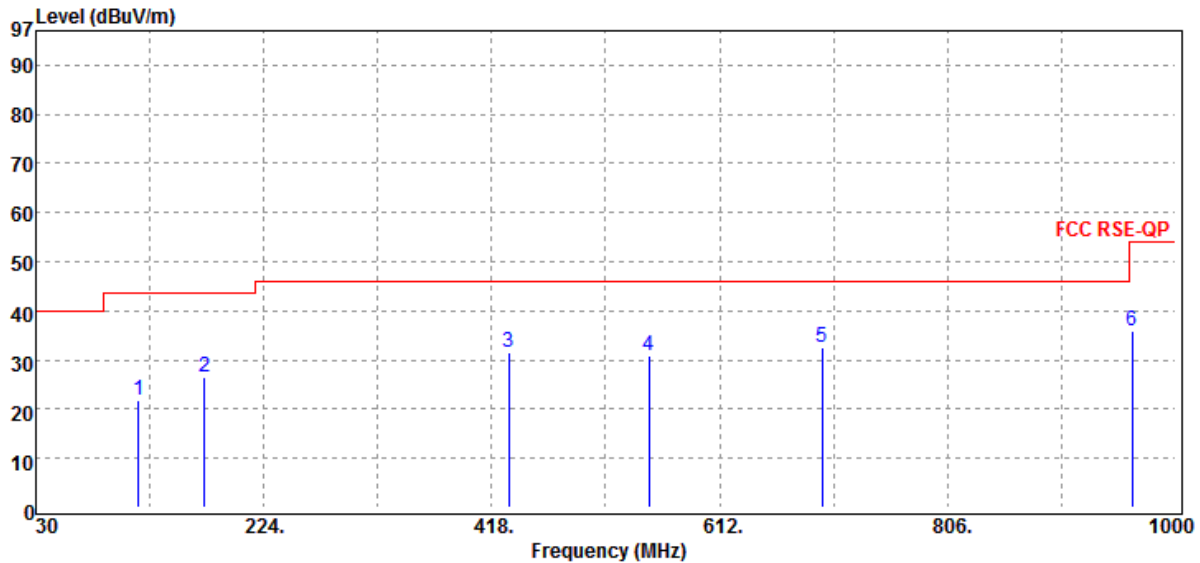
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
117.30	S	Peak	32.51	-10.66	21.85	43.50	-21.65
173.56	S	Peak	34.43	-7.96	26.47	43.50	-17.03
432.55	S	Peak	34.83	-3.43	31.40	46.00	-14.60
551.86	S	Peak	32.44	-1.62	30.82	46.00	-15.18
699.30	S	Peak	31.27	1.44	32.71	46.00	-13.29
963.14	S	Peak	29.91	6.06	35.97	54.00	-18.03

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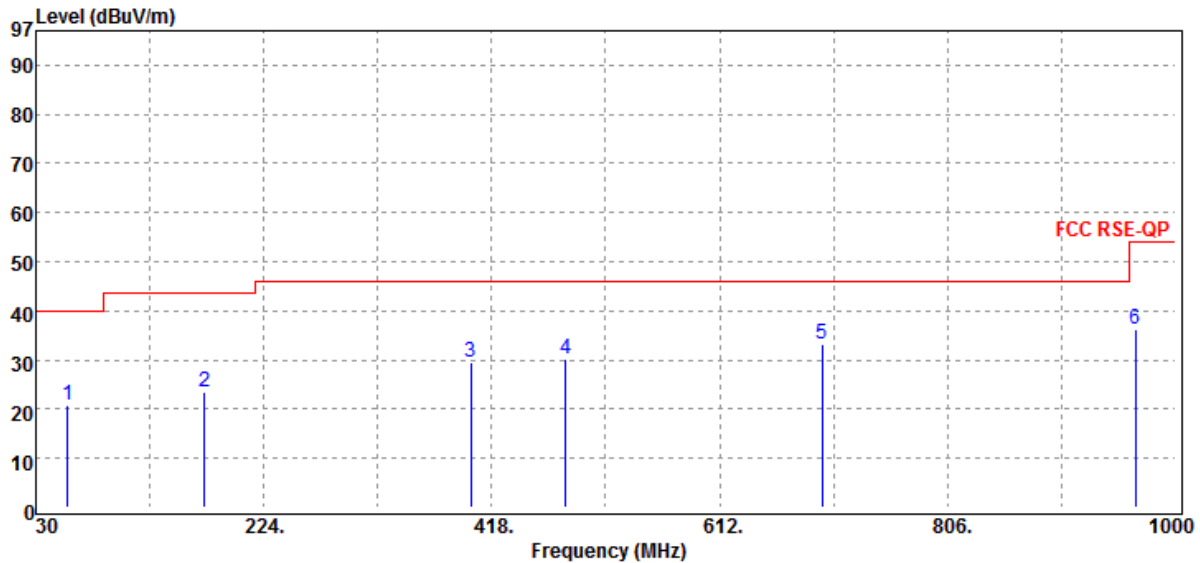
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
57.16	S	Peak	28.64	-7.98	20.66	40.00	-19.34
173.56	S	Peak	31.47	-7.96	23.51	43.50	-19.99
400.54	S	Peak	33.54	-3.94	29.60	46.00	-16.40
481.05	S	Peak	32.70	-2.37	30.33	46.00	-15.67
699.30	S	Peak	31.90	1.44	33.34	46.00	-12.66
966.05	S	Peak	30.44	5.96	36.40	54.00	-17.60

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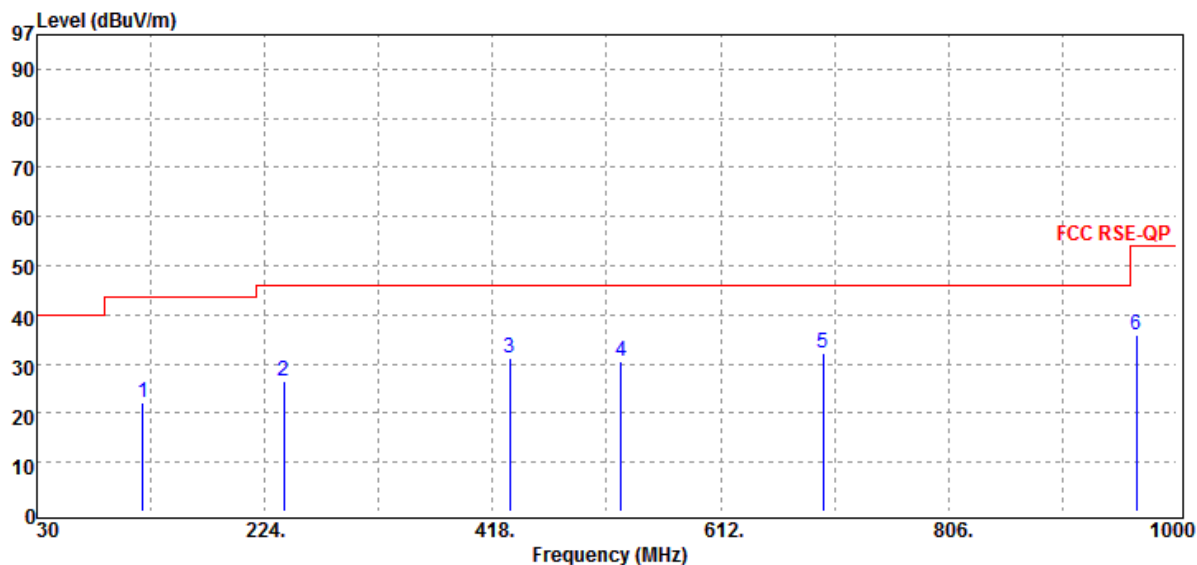
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
120.21	S	Peak	32.72	-10.44	22.28	43.50	-21.22
240.49	S	Peak	34.61	-8.04	26.57	46.00	-19.43
432.55	S	Peak	34.61	-3.43	31.18	46.00	-14.82
527.61	S	Peak	32.00	-1.32	30.68	46.00	-15.32
699.30	S	Peak	30.72	1.44	32.16	46.00	-13.84
966.05	S	Peak	29.99	5.96	35.95	54.00	-18.05

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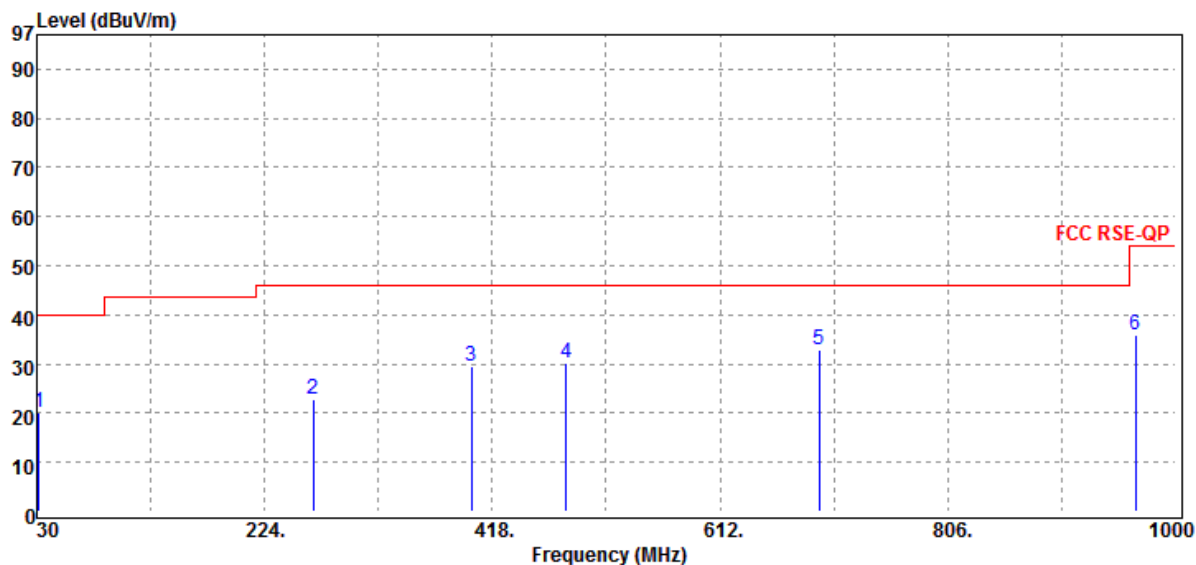
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802.11a, 5725~5850 MHz (External Antenna)

Operation Band :802.11aB4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2016-01-28
Temp./Humi. :21 deg_C / 61 RH
Engineer :Edward
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
31.94	S	Peak	29.38	-9.11	20.27	40.00	-19.73
265.71	S	Peak	29.82	-7.00	22.82	46.00	-23.18
400.54	S	Peak	33.54	-3.94	29.60	46.00	-16.40
481.05	S	Peak	32.67	-2.37	30.30	46.00	-15.70
696.39	S	Peak	31.67	1.35	33.02	46.00	-12.98
966.05	S	Peak	29.97	5.96	35.93	54.00	-18.07

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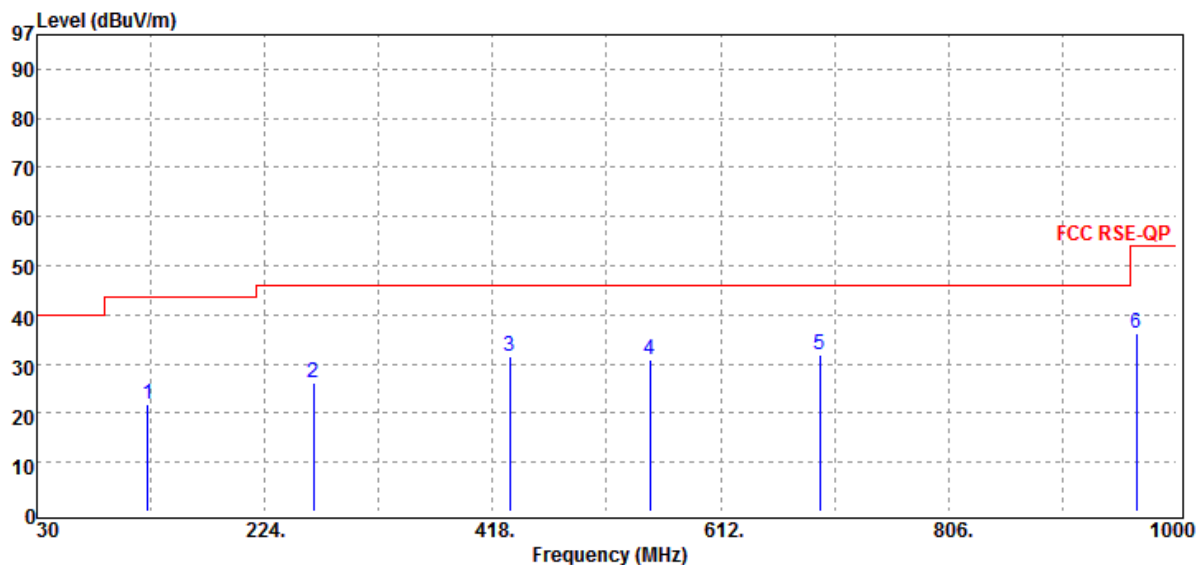
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Operation Band :802.11aB4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2016-01-28
Temp./Humi. :21 deg_C / 61 RH
Engineer :Edward
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
124.09	S	Peak	31.84	-10.07	21.77	43.50	-21.73
265.71	S	Peak	33.19	-7.00	26.19	46.00	-19.81
432.55	S	Peak	34.96	-3.43	31.53	46.00	-14.47
551.86	S	Peak	32.37	-1.62	30.75	46.00	-15.25
696.39	S	Peak	30.44	1.35	31.79	46.00	-14.21
966.05	S	Peak	30.41	5.96	36.37	54.00	-17.63

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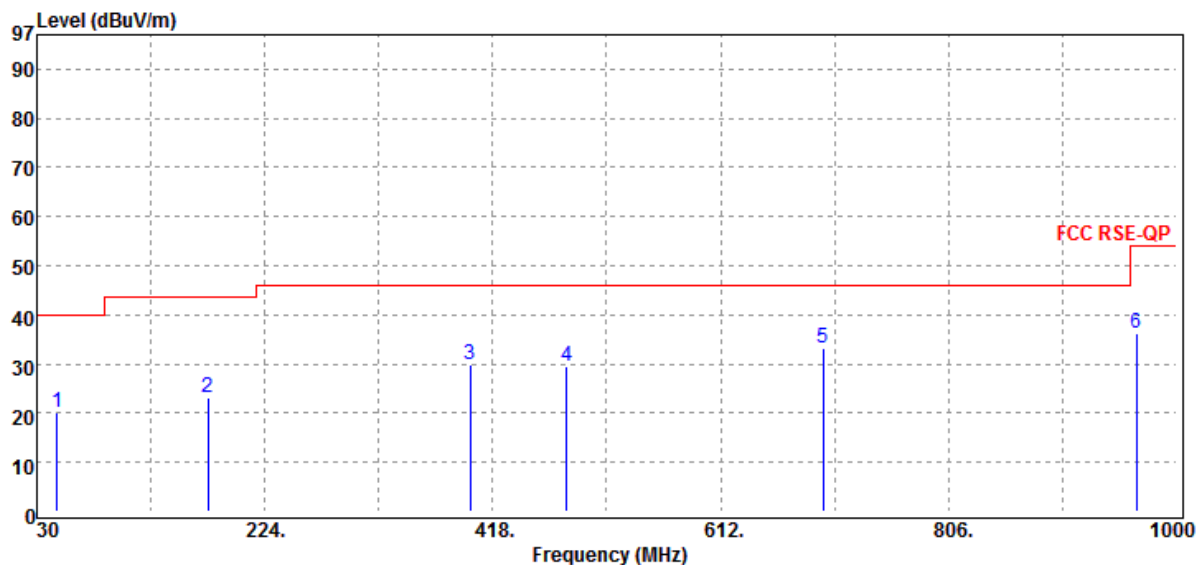
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
47.46	S	Peak	27.95	-7.85	20.10	40.00	-19.90
175.50	S	Peak	31.24	-8.20	23.04	43.50	-20.46
398.60	S	Peak	33.98	-3.97	30.01	46.00	-15.99
481.05	S	Peak	31.75	-2.37	29.38	46.00	-16.62
699.30	S	Peak	31.67	1.44	33.11	46.00	-12.89
966.05	S	Peak	30.14	5.96	36.10	54.00	-17.90

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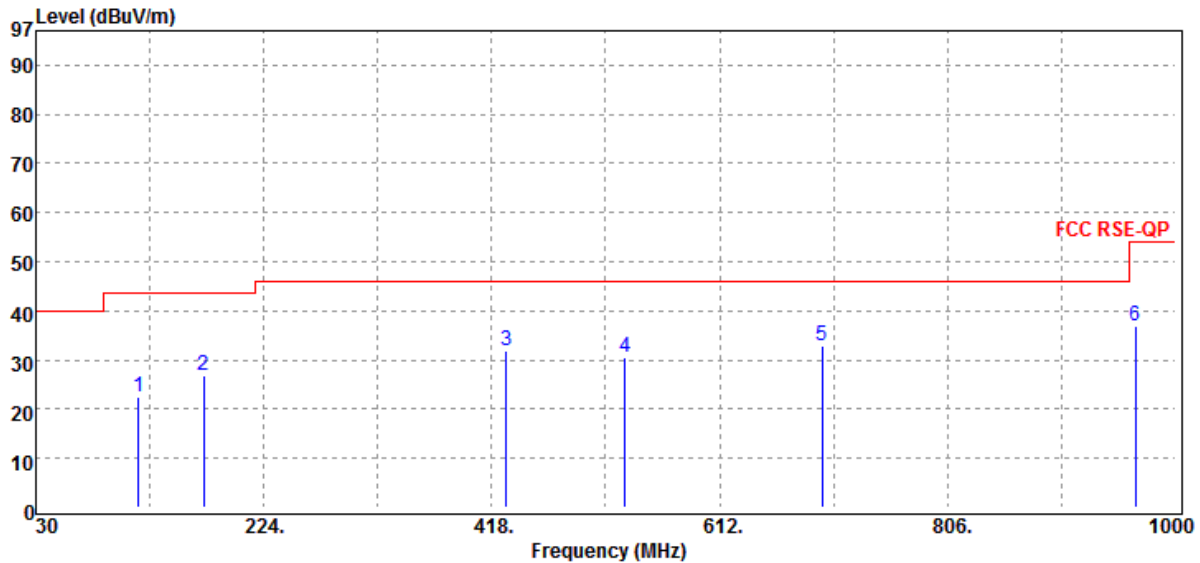
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
117.30	S	Peak	33.08	-10.66	22.42	43.50	-21.08
172.59	S	Peak	34.70	-7.86	26.84	43.50	-16.66
430.61	S	Peak	35.12	-3.33	31.79	46.00	-14.21
531.49	S	Peak	32.08	-1.57	30.51	46.00	-15.49
699.30	S	Peak	31.35	1.44	32.79	46.00	-13.21
966.05	S	Peak	30.94	5.96	36.90	54.00	-17.10

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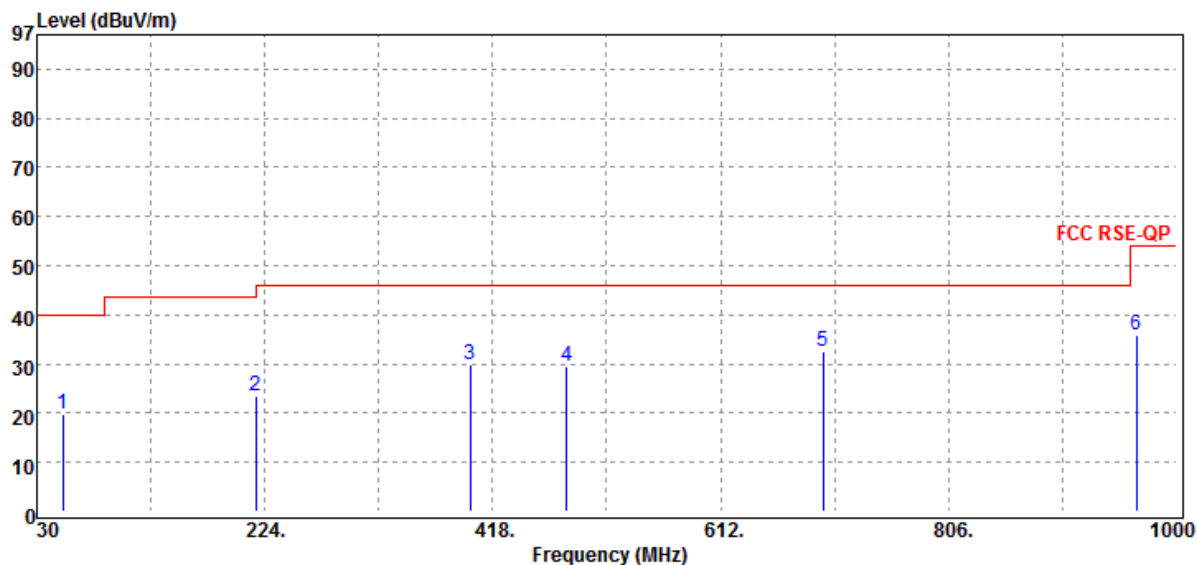
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
52.31	S	Peak	27.66	-7.76	19.90	40.00	-20.10
216.24	S	Peak	33.07	-9.43	23.64	46.00	-22.36
398.60	S	Peak	33.88	-3.97	29.91	46.00	-16.09
481.05	S	Peak	32.07	-2.37	29.70	46.00	-16.30
699.30	S	Peak	31.01	1.44	32.45	46.00	-13.55
966.05	S	Peak	30.01	5.96	35.97	54.00	-18.03

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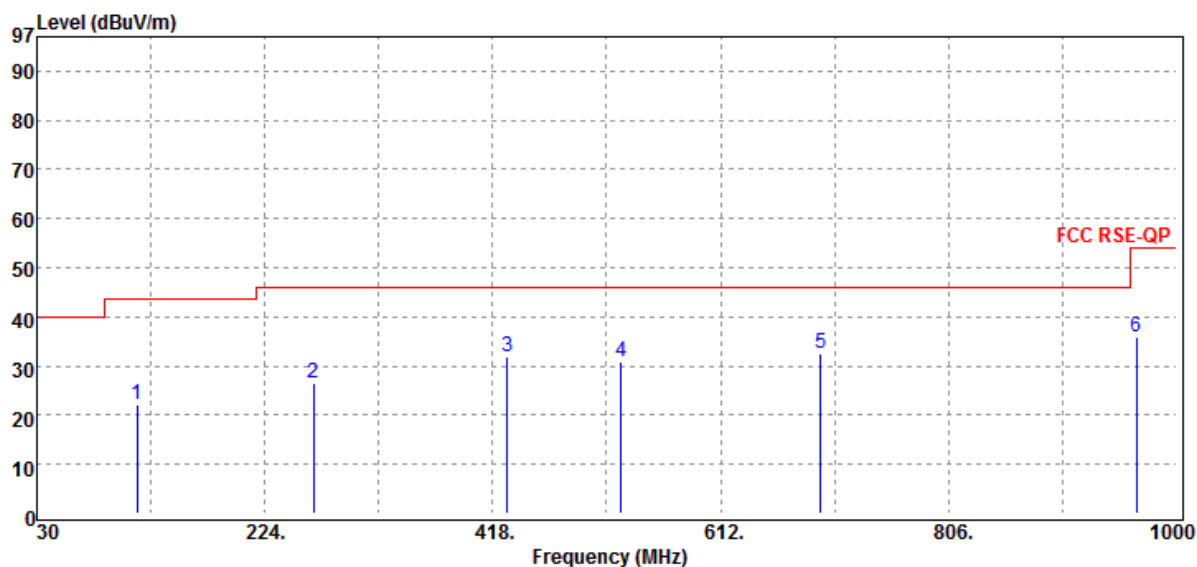
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
115.36	S	Peak	32.93	-10.79	22.14	43.50	-21.36
265.71	S	Peak	33.60	-7.00	26.60	46.00	-19.40
430.61	S	Peak	35.36	-3.33	32.03	46.00	-13.97
527.61	S	Peak	32.32	-1.32	31.00	46.00	-15.00
697.36	S	Peak	31.06	1.36	32.42	46.00	-13.58
966.05	S	Peak	30.01	5.96	35.97	54.00	-18.03

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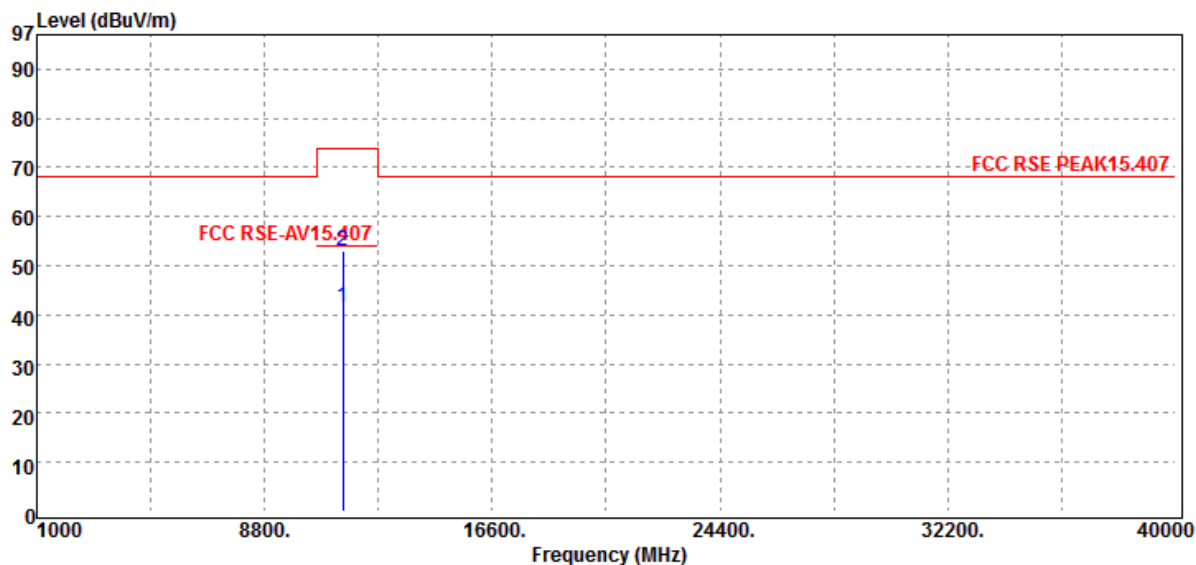
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Above 1GHz:

802.11a, 5725~5850 MHz (Internal Antenna)

Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	Margin
		PK/QP/AV	dBμV		dBμV/m	dBμV/m	dB
11490.00	H	Average	21.07	20.42	41.49	54.00	-12.51
11490.00	H	Peak	32.45	20.42	52.87	74.00	-21.13

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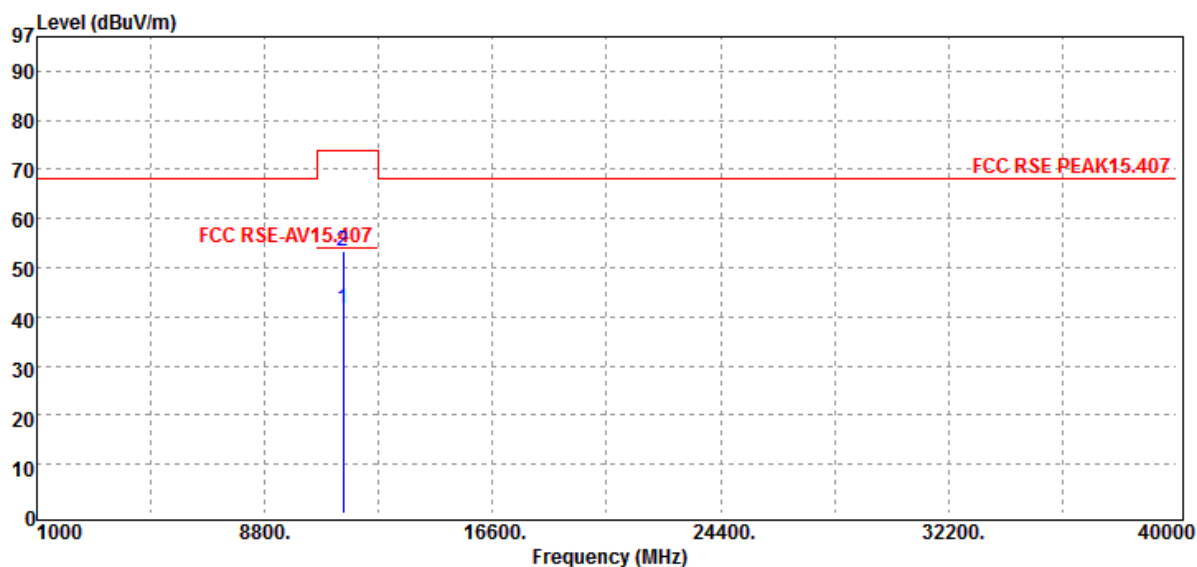
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	Margin
		PK/QP/AV	dBuV		dBuV/m	dBuV/m	dB
11490.00	H	Average	21.22	20.42	41.64	54.00	-12.36
11490.00	H	Peak	32.98	20.42	53.40	74.00	-20.60

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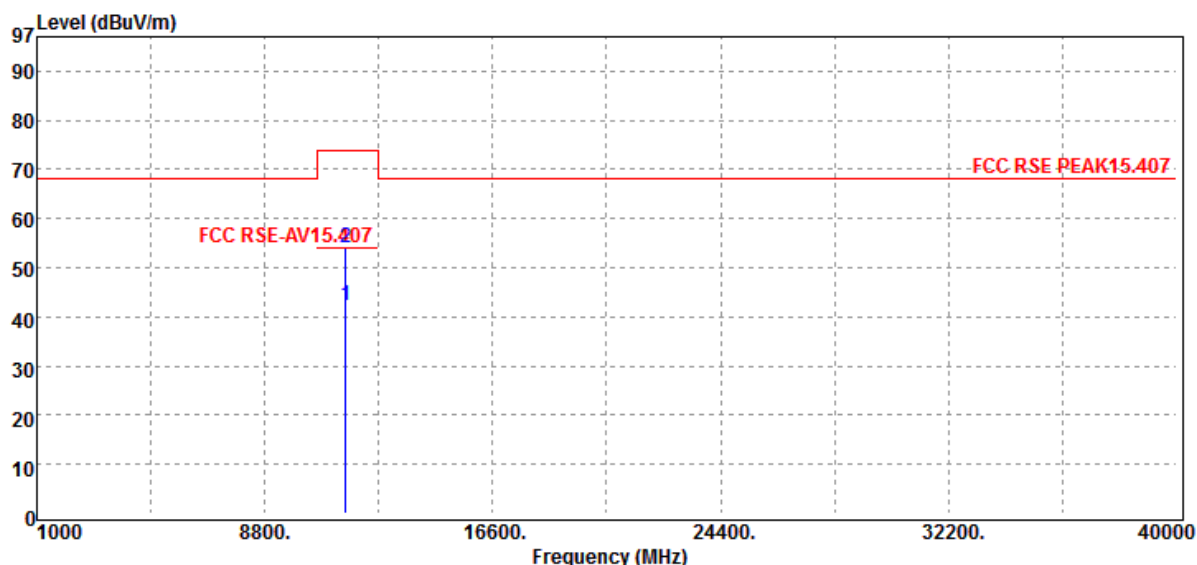
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11570.00	H	Average	21.78	20.58	42.36	54.00	-11.64
11570.00	H	Peak	33.30	20.58	53.88	74.00	-20.12

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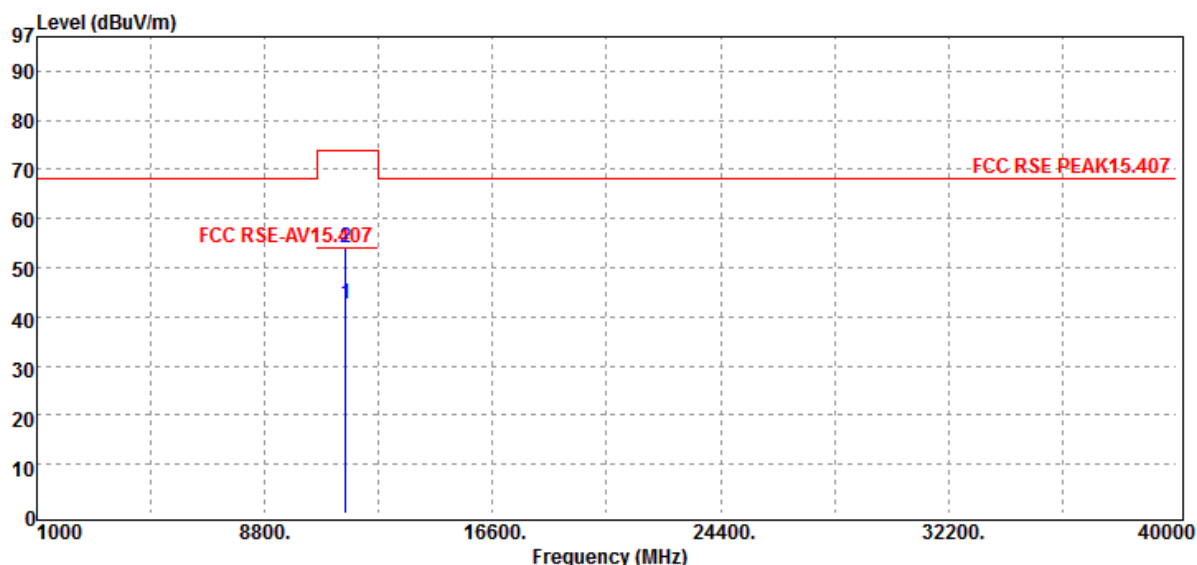
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11570.00	H	Average	21.95	20.58	42.53	54.00	-11.47
11570.00	H	Peak	33.61	20.58	54.19	74.00	-19.81

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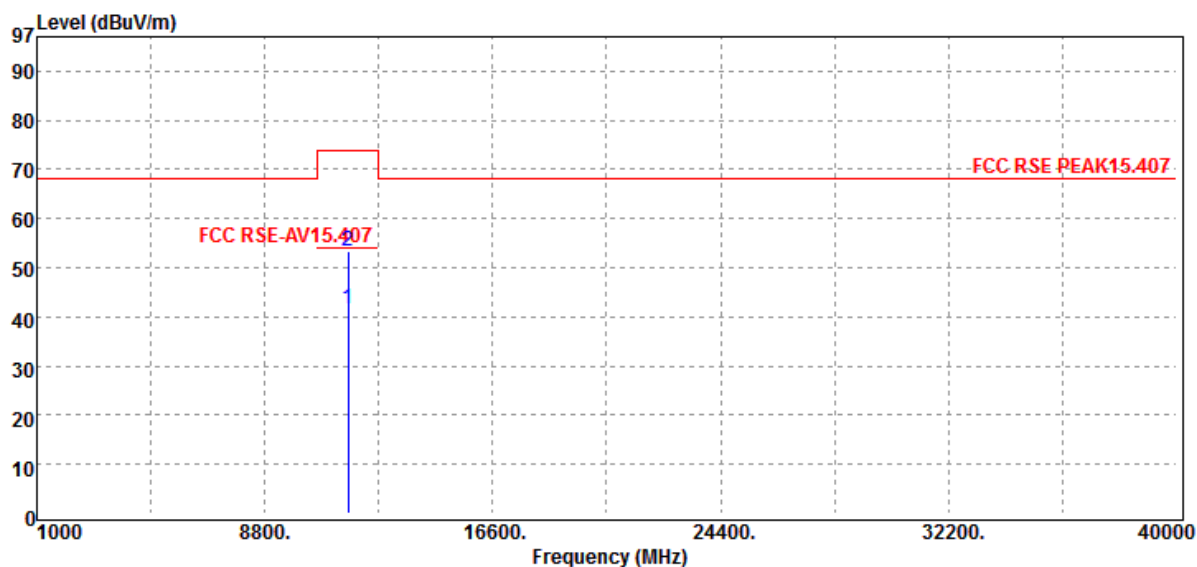
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11650.00	H	Average	21.21	20.43	41.64	54.00	-12.36
11650.00	H	Peak	32.97	20.43	53.40	74.00	-20.60

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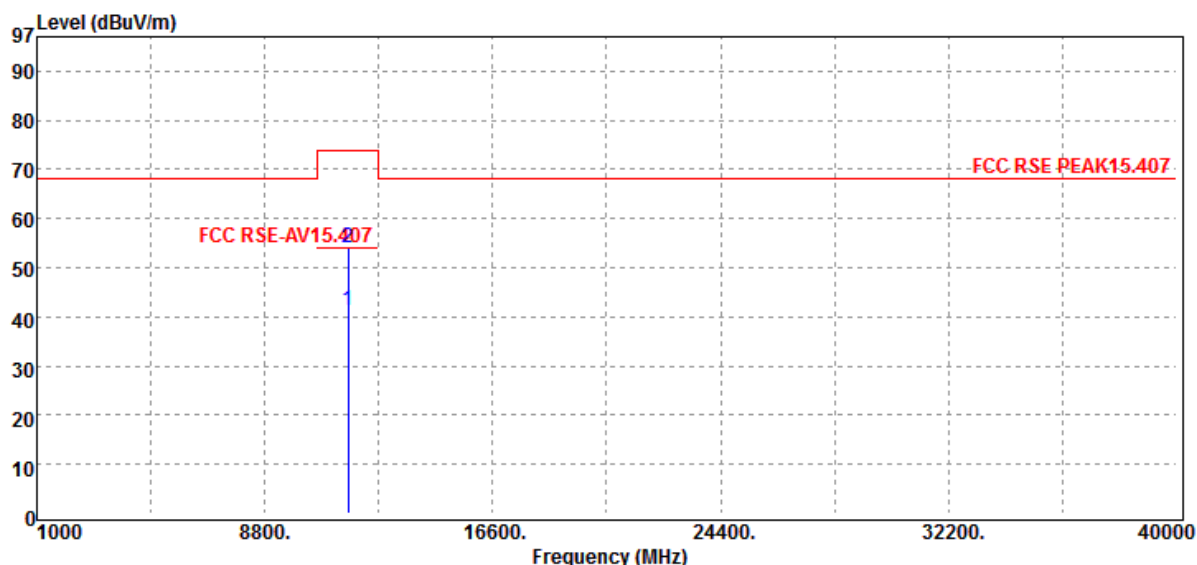
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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11650.00	H	Average	20.91	20.43	41.34	54.00	-12.66
11650.00	H	Peak	33.61	20.43	54.04	74.00	-19.96

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Band edge falling to restricted band

Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5725.00	E	Peak	68.19	6.59	74.78	78.20	-3.42

Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5725.00	E	Peak	60.40	6.59	66.99	78.20	-11.21

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Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5850.00	E	Peak	54.93	7.28	62.21	78.20	-15.99

Operation Band	:802.11aB4	Test Date	:2016-01-28
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5850.00	E	Peak	49.21	7.28	56.49	78.20	-21.71

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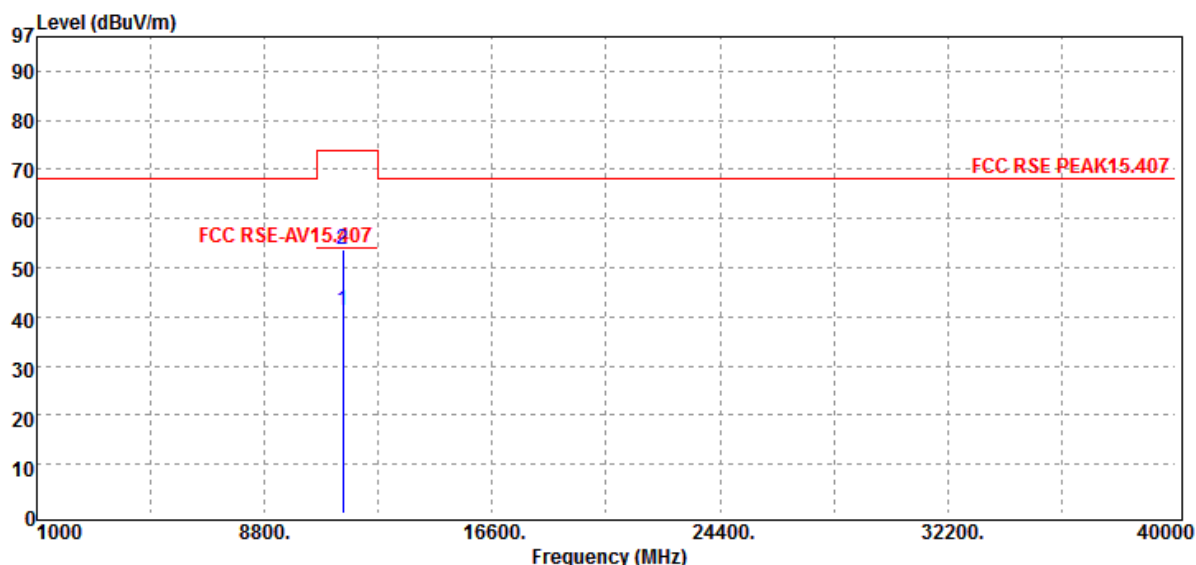
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802.11a, 5725~5850 MHz (External Antenna)

Operation Band :802.11aB4
Fundamental Frequency :5745 MHz
Operation Mode :Tx CH LOW
EUT Pol. :E2 Plane

Test Date :2016-01-26
Temp./Humi. :21 deg_C / 61 RH
Engineer :Edward
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11490.00	H	Average	20.93	20.42	41.35	54.00	-12.65
11490.00	H	Peak	33.27	20.42	53.69	74.00	-20.31

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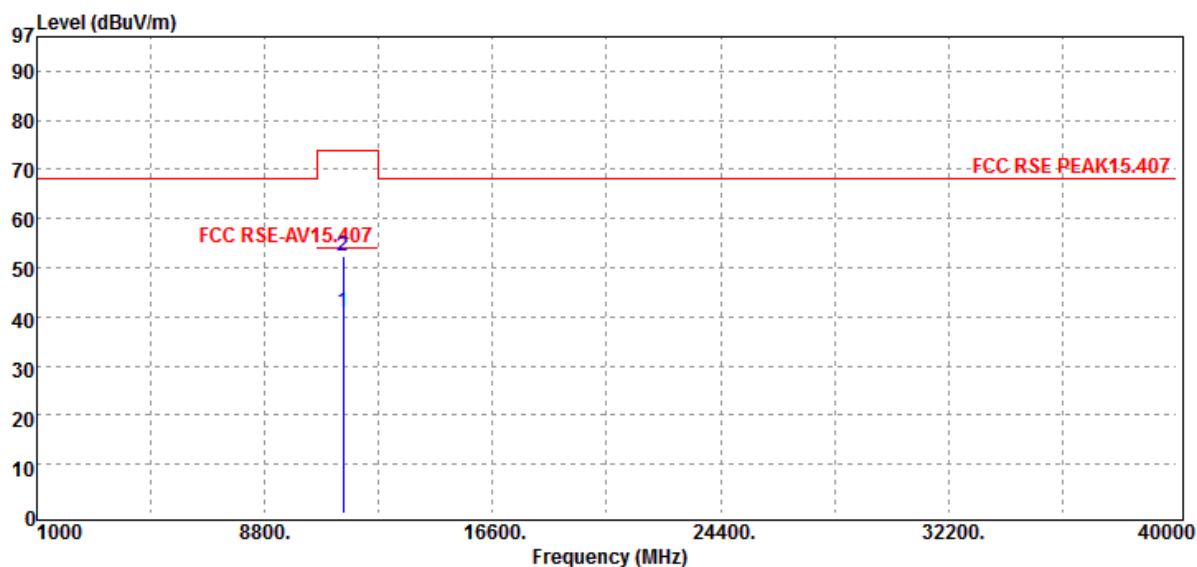
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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11490.00	H	Average	20.47	20.42	40.89	54.00	-13.11
11490.00	H	Peak	31.89	20.42	52.31	74.00	-21.69

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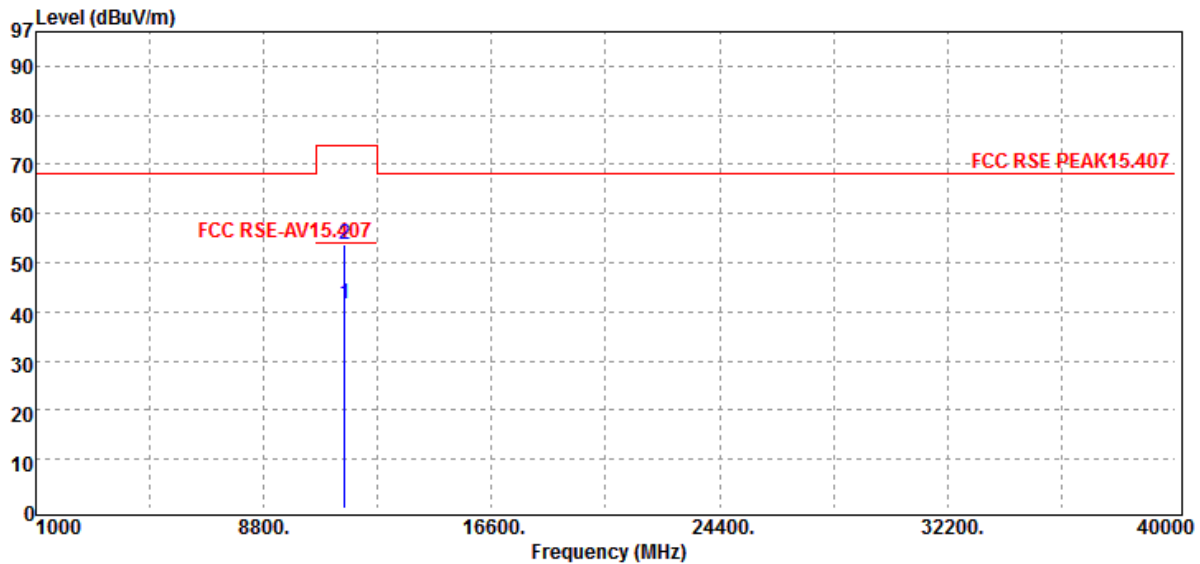
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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	Margin
		PK/QP/AV	dBμV		dBμV/m	dBμV/m	dB
11570.00	H	Average	21.14	20.58	41.72	54.00	-12.28
11570.00	H	Peak	33.17	20.58	53.75	74.00	-20.25

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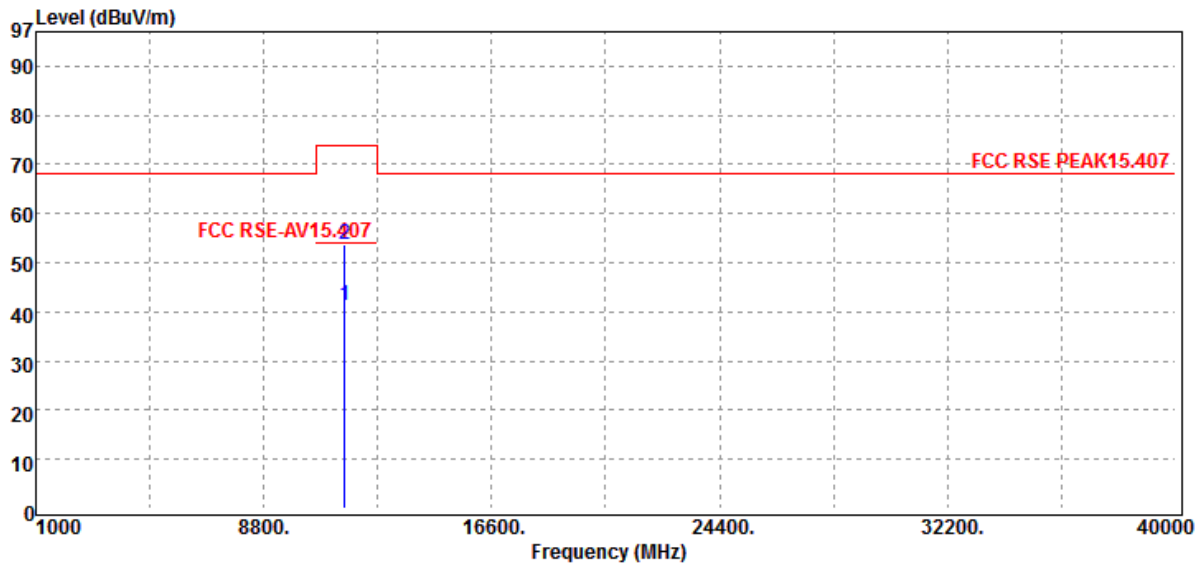
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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5785 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11570.00	H	Average	20.80	20.58	41.38	54.00	-12.62
11570.00	H	Peak	33.18	20.58	53.76	74.00	-20.24

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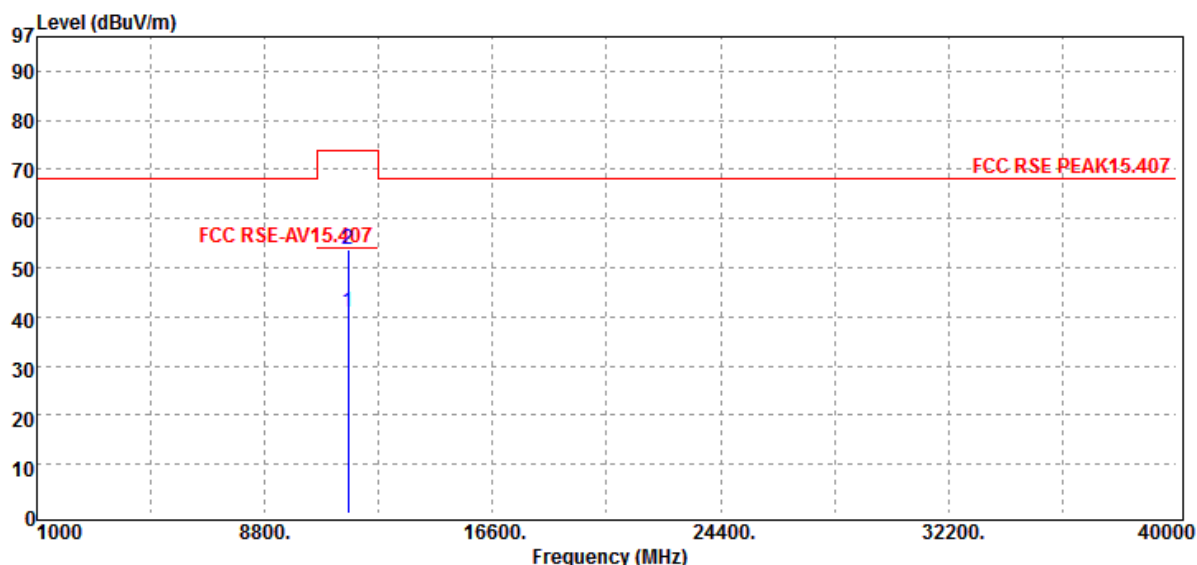
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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	Margin
		PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
11650.00	H	Average	20.57	20.43	41.00	54.00	-13.00
11650.00	H	Peak	33.11	20.43	53.54	74.00	-20.46

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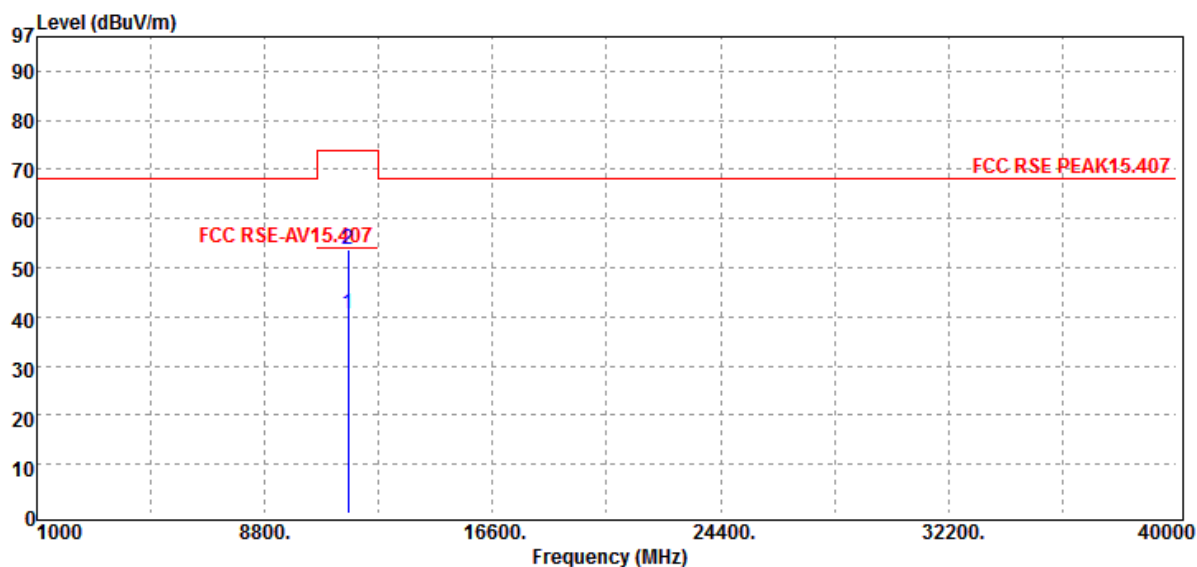
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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	Margin
		PK/QP/AV	dBμV		dBμV/m	dBμV/m	dB
11650.00	H	Average	20.28	20.43	40.71	54.00	-13.29
11650.00	H	Peak	33.37	20.43	53.80	74.00	-20.20

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Band edge falling to restricted band

Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5725.00	E	Peak	67.05	6.59	73.64	78.20	-4.56

Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5745 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5725.00	E	Peak	54.28	6.59	60.87	78.20	-17.33

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Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5850.00	E	Peak	53.77	7.28	61.05	78.20	-17.15

Operation Band	:802.11aB4	Test Date	:2016-01-26
Fundamental Frequency	:5825 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Edward
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
5850.00	E	Peak	46.42	7.28	53.70	78.20	-24.50

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11. FREQUENCY STABILITY

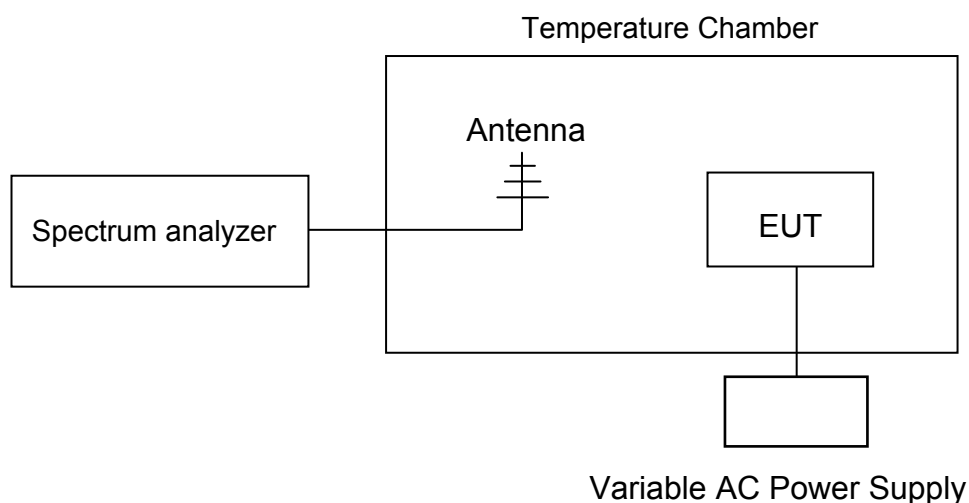
11.1 Standard Applicable

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

11.2 Measurement Procedure

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

11.3 Test SET-UP



11.4 Measurement Equipment Used

Please refer to section 7.3 for the plot.

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Operation Mode	:TX	Test Date	2015,12,21
Temperature	:17 °C	Test By	Cooper
Humidity	:65 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
25 °C	AC 110V	149	5745	5,745.00000	0.00000000
		157	5785	5,784.99952	0.00000008
		165	5825	5,824.99980	0.00000003
55 °C	AC 110V	149	5745	5,744.99790	0.00000037
		157	5785	5,784.99931	0.00000012
		165	5825	5,824.99965	0.00000006
-20 °C	AC 110V	149	5745	5,744.99760	0.00000042
		157	5785	5,784.99897	0.00000018
		165	5825	5,825.00000	0.00000000

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12. ANTENNA REQUIREMENT

12.1 Standard Applicable

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

According to §15.407, If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

12.2 Antenna Connected Construction

The antenna is designed with permanent attached and no consideration of replacement. Please see EUT photo and antenna spec. for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

~ End of Report ~

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