

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C CLASS II PC REPORT

OF

Product Name: Otoscope
Brand Name: QOCA
Model No.: Q-tube-O
Model Difference: N/A
FCC ID: WS2-WG7831DELF
Report No.: E2/2016/30005
Issue Date: Mar. 30, 2016
FCC Rule Part: §15.247, Cat: DTS
Prepared for: Quanta Computer Inc.
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VERIFICATION OF COMPLIANCE

Applicant: Quanta Computer Inc.
211 Wen Hwa 2nd Rd., Kueishan, Taoyuan 33377, Taiwan

Product Name: Otoscope

Brand Name: QOCA

Model No.: Q-tube-O

Model Difference: N/A

FCC ID: WS2-WG7831DELF

Report Number: E2/2016/30005

Date of test: Mar. 01, 2016 ~ Mar. 25, 2015

Date of EUT Received: Mar. 01, 2016

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:

Jazz Huang

Date:

Mar. 30, 2016

Jazz Huang / Asst. Supervisor

Prepared By:

Allen Tsai

Date:

Mar. 30, 2016

Allen Tsai / Engineer

Approved By:

Jim Chang

Date:

Mar. 30, 2016

Jim Chang / Asst. Manager

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Revision History

Report Number	Revision	Description	Issue Date
E2/2016/30005	Rev.00	Initial creation of document	Mar. 30, 2016

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7.9 Standard Applicable	62
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1 GENERAL INFORMATION

1.1 Product description

General:

Product Name:	Otoscope
Brand Name:	QOCA
Model No.:	Q-tube-O
Model Difference:	N/A
Software version:	N/A
Hardware version:	Rev.C
Model No. for BT/WLAN Module:	WG7831DELF
Module FCC ID:	WS2-WG7831DELF
Scope:	The test report covers the radiated emissions requirements of the standards referenced in the report to allow system level approval of the module in this specific host.
Class II Permissive change:	Wireless module(WG7831DELF) is installed in a host of portable category.
Power Supply:	3.7Vdc from battery, 5Vdc from adapter.
	Battery: Model No.:Q6T Supplier: Getac
	Adapter: Model No.: MIL0502200U Supplier: TPT
	Charging Dock: Model No.:N/A Supplier: N/A

WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology
11b/g	2412-2462	11	b: 14.15dBm g: 14.09dBm	DSSS, OFDM
11n	HT20 2412-2462	11	HT20:14.58dBm	OFDM
11n	HT40 2422-2452	11	HT40:13.91dBm	OFDM
Antenna Designation:	PIFA Antenna Part No.: DQ6EP000200 (680-INNEP0002-A) Supplier: Inno Wave Technology Co.,Ltd. Gain: 2.35dBi			
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps			

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1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is supporting Wi-Fi 802.11b/g/n and Bluetooth LE features, and below is details of information.

Product Feature	
Product Name:	Otoscope
Brand Name:	QOCA
Model No.:	Q-tube-O
Model Difference:	N/A
FCC ID:	WS2-WG7831DELF
Wi-Fi Specification	802.11b/g/n
Bluetooth Version	V4.0 BLE

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance

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 a DoC procedure.

1.4 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: 628985

1.5 Special Accessories

There are no special accessories used while test was conducted.

1.6 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.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 1dB and 10dB attenuator.

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2.5 Configuration of Tested System

Fig. 2-1 Radiated & Conducted (Antenna Port) Emission



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	DRTU	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L440	R9-007LAZ	Shielded	Unshielded

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3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(d)	Radiated Band edge and Spurious Emission	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 Operated in 2400 ~ 2483.5MHz Band

11 channels are provided for 802.11b, 802.11g and 802.11n HT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11g	1 to 11	1,6,11	OFDM	6

RADIATED EMISSION TEST (ABOVE 1 GHz)				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 0

Note:

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

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ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 0

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, 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 PEAK OUTPUT POWER MEASUREMENT

6.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

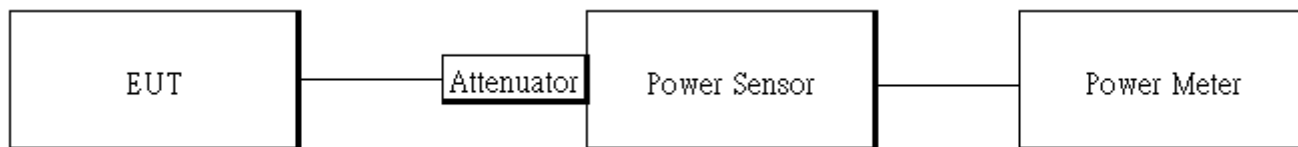
In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2015	04/13/2016
Power Meter	Anritsu	ML2496A	1326001	06/23/2015	06/22/2016
Power Sensor	Anritsu	MA2411B	1315048	06/23/2015	06/22/2016
Power Sensor	Anritsu	MA2411B	1315049	06/23/2015	06/22/2016
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2015	12/11/2016
DC Block	PASTERNAK	PE8210	RF29	12/12/2015	12/11/2016
Splitter	RF-LAMBDA	RFLT2W1G18G	RF35	12/12/2015	12/11/2016
Attenuator	WOKEN	218FS-10	RF23	12/12/2015	12/11/2016
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/23/2015	06/22/2016

6.3 Test Set-up

Power Meter:



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6.4 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

6.5 Measurement Result

802.11b Main						
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	1	14.15	26.00	1 Watt = 30.00 dBm	PASS
6	2437	1	13.19	20.84	1 Watt = 30.00 dBm	PASS
11	2462	1	13.17	20.75	1 Watt = 30.00 dBm	PASS
802.11b Main						
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	1	12.19	16.56	1 Watt = 30.00 dBm	PASS
6	2437	1	11.38	13.74	1 Watt = 30.00 dBm	PASS
11	2462	1	11.29	13.46	1 Watt = 30.00 dBm	PASS

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802.11g Main						
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	6	13.61	22.96	1 Watt = 30.00 dBm	PASS
6	2437	6	14.09	25.64	1 Watt = 30.00 dBm	PASS
11	2462	6	13.85	24.27	1 Watt = 30.00 dBm	PASS

802.11g Main						
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	6	11.84	15.28	1 Watt = 30.00 dBm	PASS
6	2437	6	11.79	15.10	1 Watt = 30.00 dBm	PASS
11	2462	6	11.77	15.03	1 Watt = 30.00 dBm	PASS

802.11n HT20M Main						
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
1	2412	MCS0	14.2	26.30	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	14.58	28.71	1 Watt = 30.00 dBm	PASS
11	2462	MCS0	14.42	27.67	1 Watt = 30.00 dBm	PASS

802.11n HT20M Main						
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
1	2412	MCS0	11.89	15.45	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	11.68	14.72	1 Watt = 30.00 dBm	PASS
11	2462	MCS0	11.54	14.26	1 Watt = 30.00 dBm	PASS

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802.11n_HT40M Main						
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit	RESULT
3	2422	MCS0	10.68	11.69	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	13.91	24.60	1 Watt = 30.00 dBm	PASS
9	2452	MCS0	11.27	13.40	1 Watt = 30.00 dBm	PASS
802.11n_HT40M Main						
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit	RESULT
3	2422	MCS0	8.03	6.35	1 Watt = 30.00 dBm	PASS
6	2437	MCS0	11.75	14.96	1 Watt = 30.00 dBm	PASS
9	2452	MCS0	8.81	7.60	1 Watt = 30.00 dBm	PASS

*** Note: The duty cycle factor is compensated to obtain the maximum value of measurement in average.**

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7 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

7.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

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)

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7.2 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Agilent	N9038A	MY52260216	11/16/2016	11/15/2016
Spectrum Analyzer	Keysight	N9010A	MY51440113	06/10/2015	06/09/2016
Loop Antenna	ETS-Lindgren	6502	143303	12/23/2015	12/22/2016
Broadband Antenna	SCHWAZBECK	VULB9168	9168-617	10/15/2015	10/14/2016
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1341	05/21/2015	15/20/2016
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170-185	07/24/2015	07/23/2016
Pre Amplifier	EMC Instruments	EMC9135	980234	08/13/2015	08/12/2016
Pre Amplifier	EMC Instruments	EMC12630SE	980271	08/13/2015	08/12/2016
Pre Amplifier	EMC Instruments	EMC184045B	980135	10/27/2015	10/26/2016
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	08/13/2015	08/12/2016
Coaxial Cable	Huber+Suhner	RG 214/U	W22.01	08/13/2015	08/12/2016
Coaxial Cable	EMC Instruments	EMC106-SM-SM-2300	150702	08/13/2015	08/12/2016
Coaxial Cable	EMC Instruments	EMC106-SM-SM-7200	150703	08/13/2015	08/12/2016
Coaxial Cable	EMC Instruments	EMC106-SM-SM-2300	150701	08/13/2015	08/12/2016
Coaxial Cable	EMC Instruments	EMC106-SM-SM-9100	150704	08/13/2015	08/12/2016
Attenuator	WOKEN	218FS-10	RF27	12/12/2015	12/11/2016
Site NSA	SGS	966 Chamber D	SAC-D	07/09/2015	07/08/2016
Site VSWR	SGS	966 Chamber D	SAC-D	07/09/2015	07/08/2016
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

NOTE: N.C.R refers to Not Calibrated Required.

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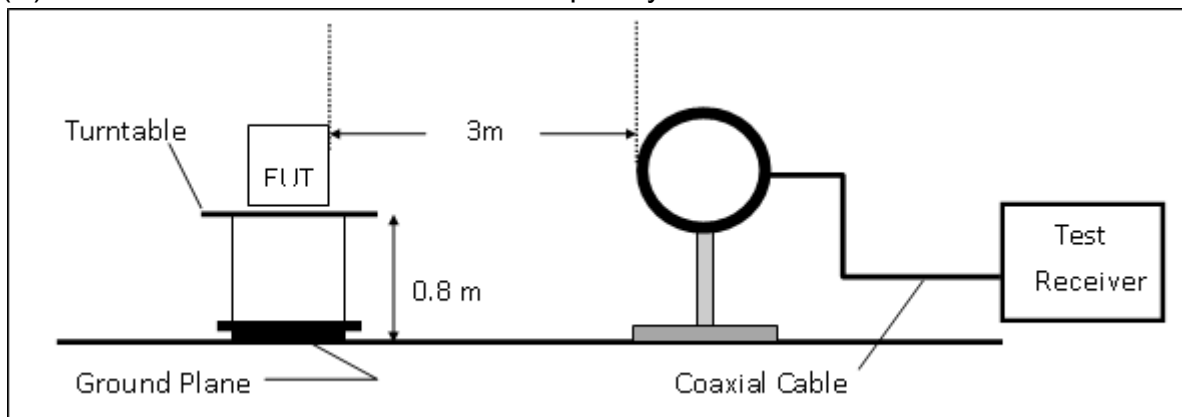
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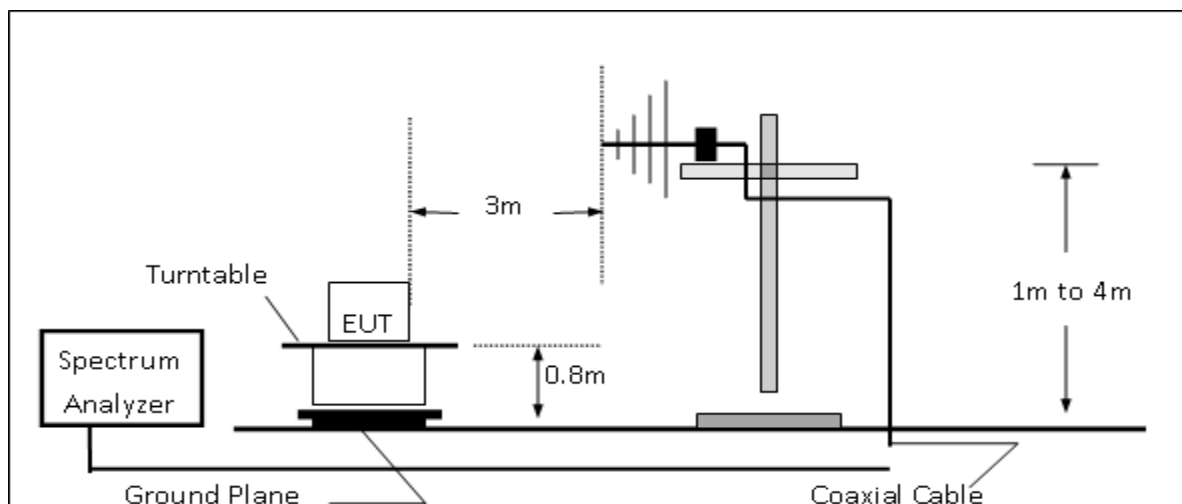
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7.3 Test SET-UP

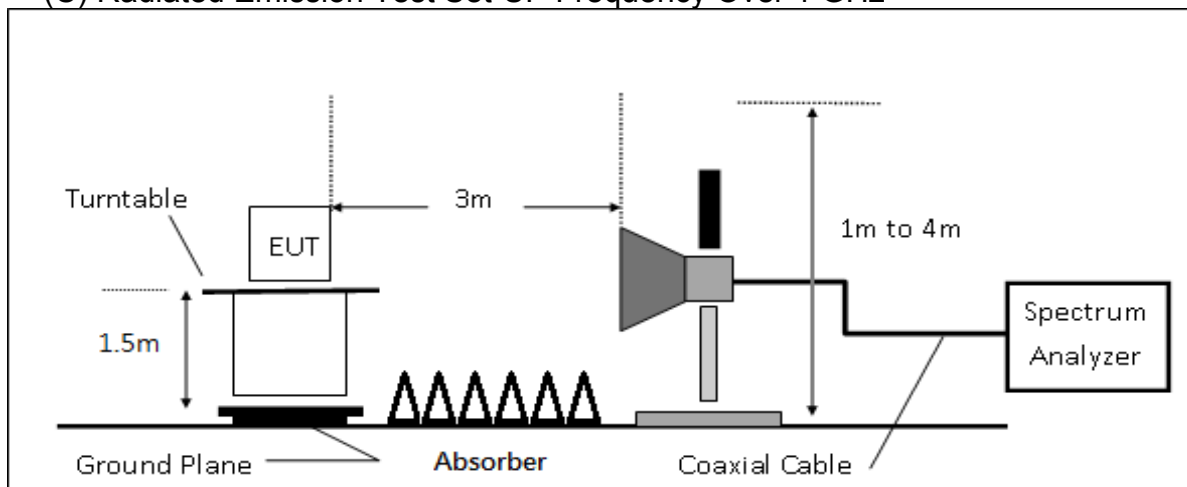
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(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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7.4 Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. When 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.
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. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
12. Repeat above procedures until all default test channel measured were complete.

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7.5 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)

Note :

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

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

7.6 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.

7.7 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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Radiated Band Edge Measurement Result (802.11b)

Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2388.60	S	Peak	45.28	5.76	51.04	74	-22.96
2388.60	S	Average	30.30	5.76	36.06	54	-17.94
2390.00	E	Peak	43.28	5.78	49.05	74	-24.95
2390.00	E	Average	30.70	5.78	36.48	54	-17.52

Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2385.96	S	Peak	45.82	5.72	51.55	74	-22.45
2385.96	S	Average	32.18	5.72	37.90	54	-16.10
2390.00	E	Peak	43.92	5.78	49.70	74	-24.30
2390.00	E	Average	31.38	5.78	37.16	54	-16.84

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Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	43.49	5.88	49.37	74	-24.63
2483.50	E	Average	31.64	5.88	37.52	54	-16.48

Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	44.87	5.88	50.75	74	-23.25
2483.50	E	Average	31.54	5.88	37.42	54	-16.58
2485.30	S	Peak	46.79	5.88	52.67	74	-21.33
2485.30	S	Average	31.72	5.88	37.60	54	-16.40

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Radiated Band Edge Measurement Result (802.11g)

Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2390.00	E	Peak	59.22	5.78	64.99	74	-9.01
2390.00	E	Average	35.53	5.78	41.31	54	-12.69

Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2389.80	S	Peak	64.51	5.77	70.28	74	-3.72
2389.80	S	Average	38.02	5.77	43.79	54	-10.21
2390.00	E	Peak	63.62	5.78	69.40	74	-4.60
2390.00	E	Average	38.22	5.78	44.00	54	-10.00

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Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	64.43	5.88	70.31	74	-3.69
2483.50	E	Average	36.71	5.88	42.59	54	-11.41

Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	65.83	5.88	71.71	74	-2.29
2483.50	E	Average	38.29	5.88	44.17	54	-9.83

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Radiated Band Edge Measurement Result (802.11_HT20)

Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2390.00	E	Peak	61.18	5.78	66.96	74	-7.04
2390.00	E	Average	35.79	5.78	41.57	54	-12.43

Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
2390.00	E	Peak	65.22	5.78	71.00	74	-3.00
2390.00	E	Average	39.91	5.78	45.69	54	-8.31

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Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	63.41	5.88	69.29	74	-4.71
2483.50	E	Average	38.87	5.88	44.75	54	-9.25

Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Pony
EUT Pol. :	H	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
2483.50	E	Peak	65.97	5.88	71.86	74	-2.14
2483.50	E	Average	40.09	5.88	45.97	54	-8.03
2483.70	S	Peak	66.77	5.88	72.65	74	-1.35
2483.70	S	Average	39.85	5.88	45.73	54	-8.27

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Operation Mode : 802.11n40 Test Date : 2016/3/13
 Fundamental Frequency : 2422 MHz Temp. / Humi. : 22.7deg_C/57RH
 Operation Band : BE CH Low Test Engineer : Pony
 EUT Pol. : H 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
2384.40	S	Peak	64.96	5.70	70.66	74	-3.34
2384.40	S	Average	36.02	5.70	41.72	54	-12.28
2390.00	E	Peak	63.60	5.78	69.38	74	-4.62
2390.00	E	Average	37.66	5.78	43.44	54	-10.56

Operation Mode : 802.11n40 Test Date : 2016/3/13
 Fundamental Frequency : 2422 MHz Temp. / Humi. : 22.7deg_C/57RH
 Operation Band : BE CH Low Test Engineer : Pony
 EUT Pol. : H 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
2389.08	S	Peak	66.79	5.76	72.55	74	-1.45
2389.08	S	Average	38.37	5.76	44.13	54	-9.87
2390.00	E	Peak	64.94	5.78	70.71	74	-3.29
2390.00	E	Average	38.49	5.78	44.27	54	-9.73

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Operation Mode : 802.11n40 Test Date : 2016/3/13
 Fundamental Frequency : 2452 MHz Temp. / Humi. : 22.7deg_C/57RH
 Operation Band : BE CH High Test Engineer : Pony
 EUT Pol. : H 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
2483.50	E	Peak	64.44	5.88	70.33	74	-3.67
2483.50	E	Average	39.57	5.88	45.45	54	-8.55
2486.40	S	Peak	65.80	5.87	71.68	74	-2.32
2486.40	S	Average	38.49	5.87	44.36	54	-9.64

Operation Mode : 802.11n40 Test Date : 2016/3/13
 Fundamental Frequency : 2452 MHz Temp. / Humi. : 22.7deg_C/57RH
 Operation Band : BE CH High Test Engineer : Pony
 EUT Pol. : H 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
2483.50	E	Peak	66.68	5.88	72.56	74	-1.44
2483.50	E	Average	40.29	5.88	46.17	54	-7.83
2487.30	S	Peak	67.50	5.87	73.37	74	-0.63
2487.30	S	Average	39.17	5.87	45.04	54	-8.96

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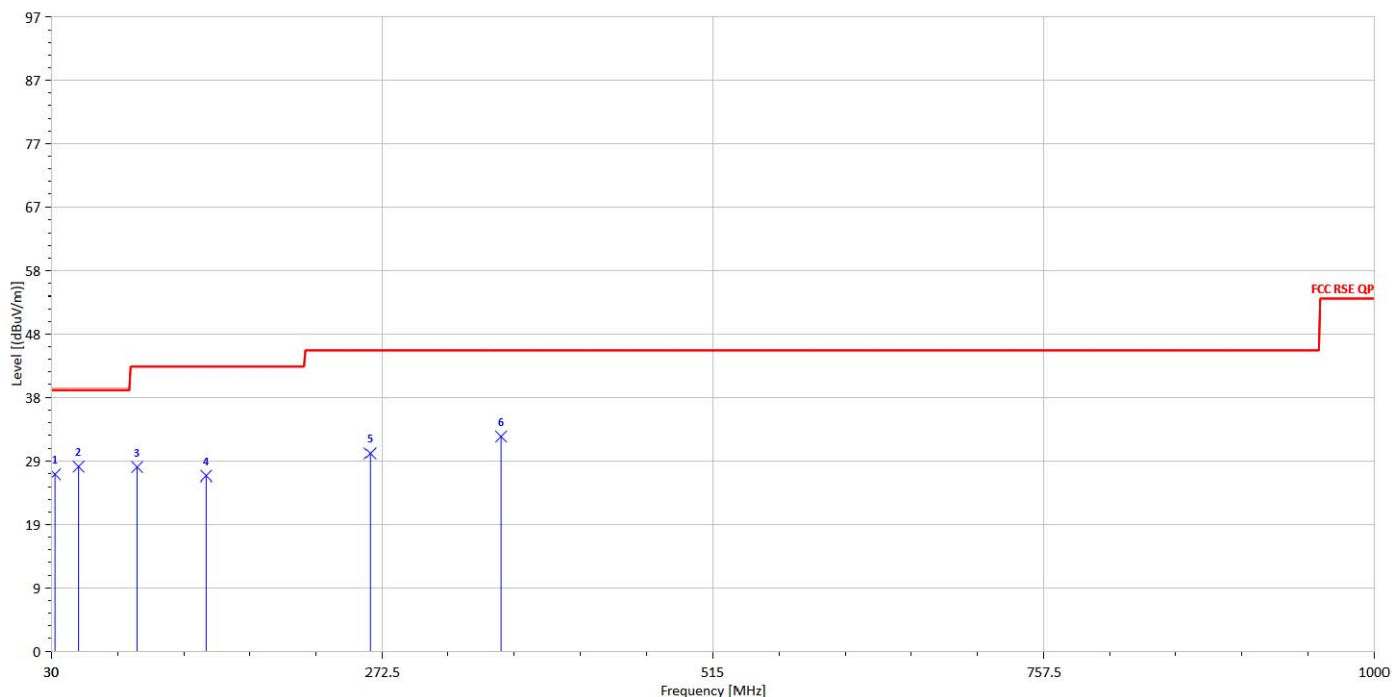
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Below 1GHz Worst-Case Data:

Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode :	802.11g	Test Date :	2016/3/14
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH Low	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
31.94	S	Peak	43.14	-8.22	34.92	40	-5.08
99.84	S	Peak	47.93	-17.77	30.16	43.5	-13.34
146.40	S	Peak	42.99	-16.45	26.54	43.5	-16.96
232.73	S	Peak	44.12	-15.99	28.13	46	-17.87
391.81	S	Peak	39.22	-10.01	29.21	46	-16.79
579.02	S	Peak	36.67	-6.38	30.29	46	-15.71

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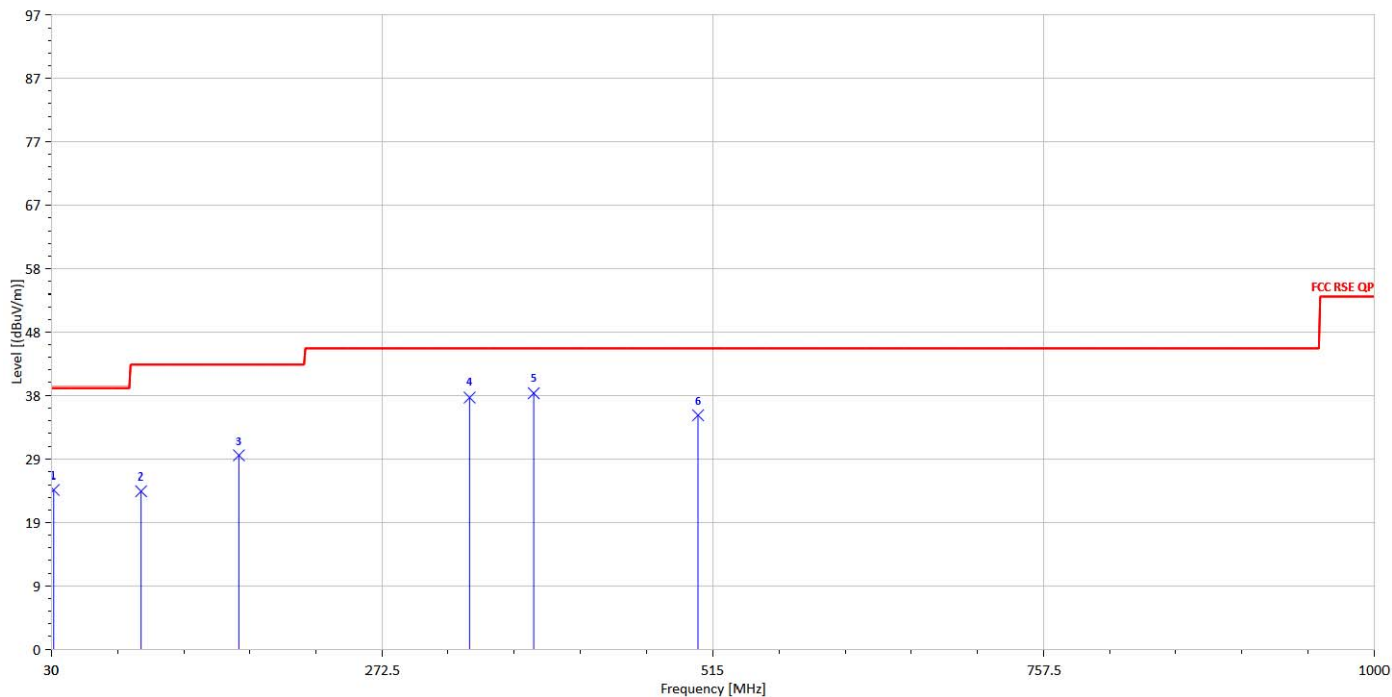
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Operation Mode : 802.11g Test Date : 2016/3/14
Fundamental Frequency : 2412 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
31.94	S	Peak	36.80	-8.22	28.58	40	-11.42
62.98	S	Peak	44.66	-22.56	22.10	40	-17.90
167.74	S	Peak	46.97	-18.06	28.92	43.5	-14.58
232.73	S	Peak	50.72	-15.99	34.73	46	-11.27
391.81	S	Peak	46.96	-10.01	36.94	46	-9.06
521.79	S	Peak	38.79	-7.26	31.53	46	-14.47

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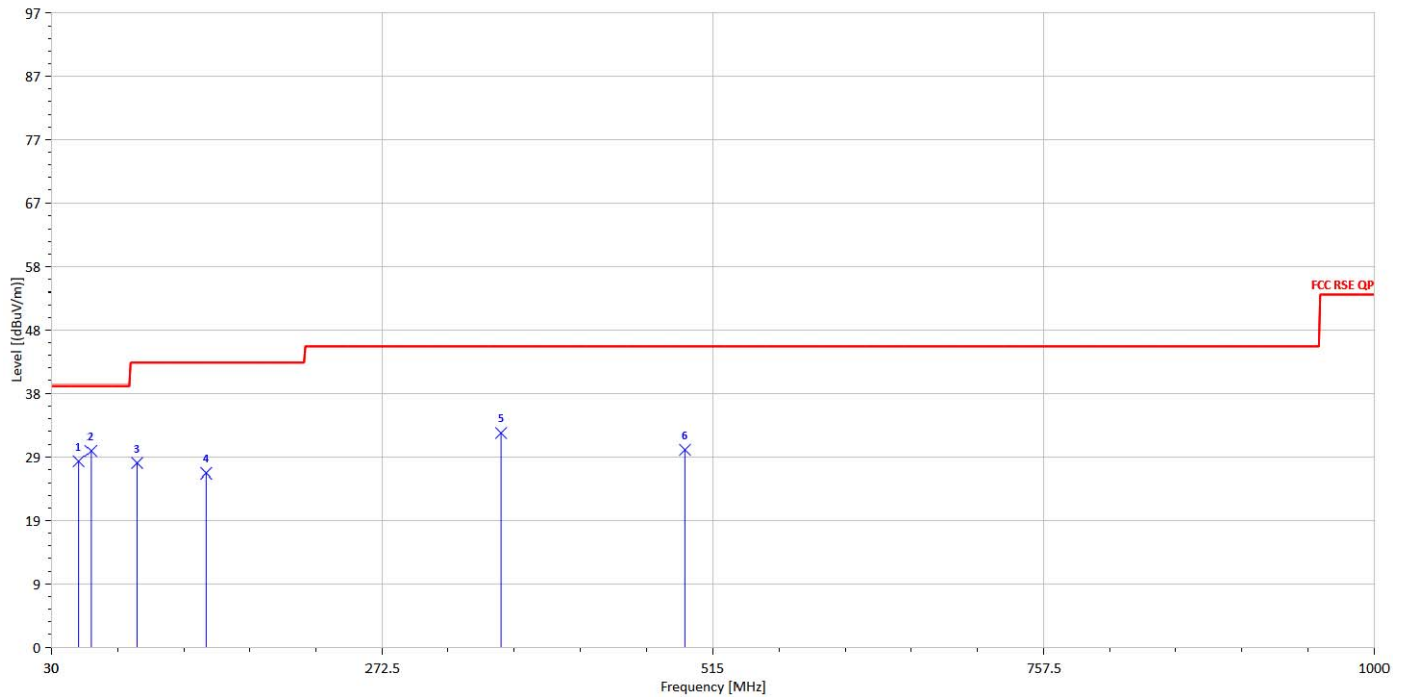
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Operation Mode : 802.11g Test Date : 2016/3/14
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
33.88	S	Peak	34.37	-9.27	25.10	40	-14.90
66.86	S	Peak	45.58	-22.18	23.40	40	-16.60
100.81	S	Peak	45.23	-17.64	27.59	43.5	-15.91
167.74	S	Peak	44.57	-18.06	26.52	43.5	-16.98
497.54	S	Peak	36.33	-7.72	28.62	46	-17.38
583.87	S	Peak	37.42	-5.98	31.44	46	-14.56

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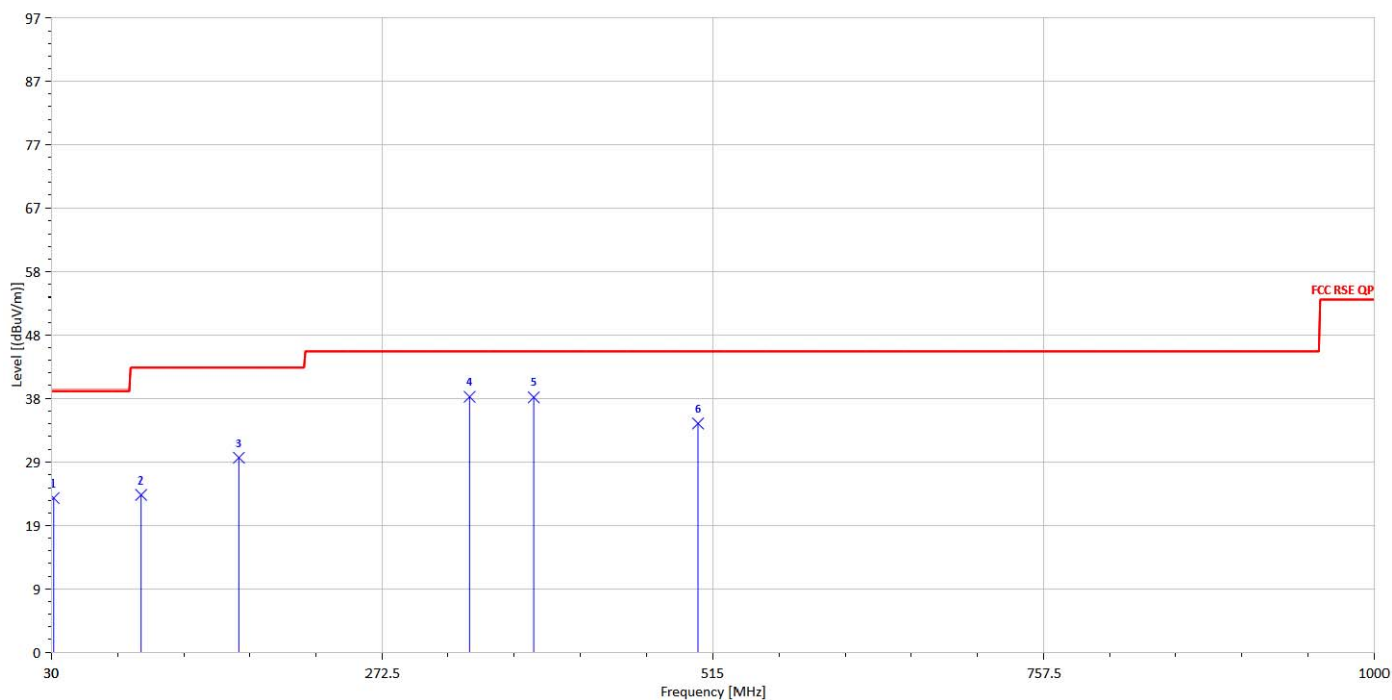
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Operation Mode : 802.11g Test Date : 2016/3/14
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
31.94	S	Peak	34.59	-8.22	26.37	40	-13.63
62.01	S	Peak	45.37	-22.71	22.66	40	-17.34
161.92	S	Peak	46.42	-17.71	28.71	43.5	-14.79
232.73	S	Peak	50.70	-15.99	34.71	46	-11.29
390.84	S	Peak	46.34	-10.07	36.27	46	-9.73
521.79	S	Peak	41.18	-7.26	33.92	46	-12.08

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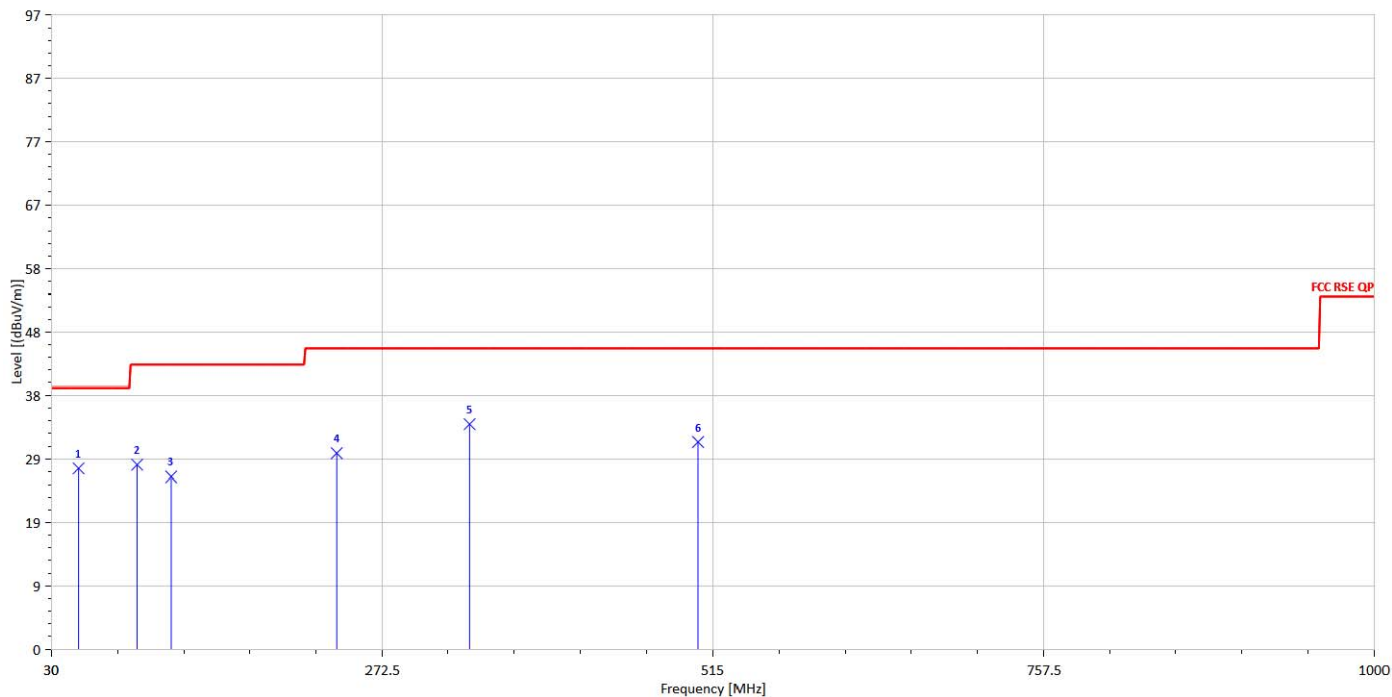
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Operation Mode : 802.11g Test Date : 2016/3/14
Fundamental Frequency : 2462 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
31.94	S	Peak	40.03	-8.22	31.81	40	-8.19
93.05	S	Peak	46.48	-18.95	27.53	43.5	-15.97
166.77	S	Peak	44.28	-17.95	26.33	43.5	-17.17
240.49	S	Peak	41.44	-15.21	26.23	46	-19.77
399.57	S	Peak	38.79	-9.73	29.05	46	-16.95
502.39	S	Peak	36.70	-7.77	28.92	46	-17.08

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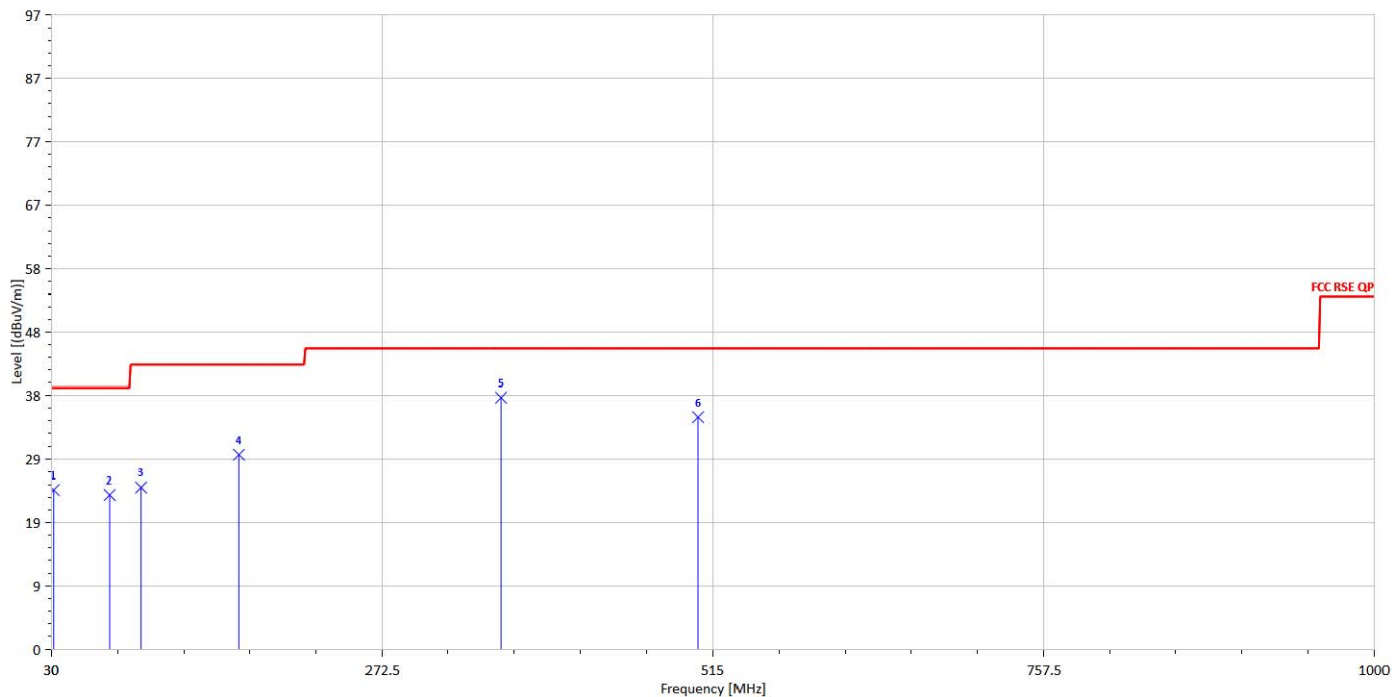
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Operation Mode : 802.11g Test Date : 2016/3/14
Fundamental Frequency : 2462 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
32.91	S	Peak	35.32	-8.75	26.57	40	-13.43
62.01	S	Peak	44.71	-22.71	22.01	40	-17.99
99.84	S	Peak	43.84	-17.77	26.07	43.5	-17.43
120.21	S	Peak	40.52	-15.84	24.68	43.5	-18.82
305.48	S	Peak	46.64	-12.86	33.78	46	-12.22
360.77	S	Peak	42.91	-11.17	31.74	46	-14.26

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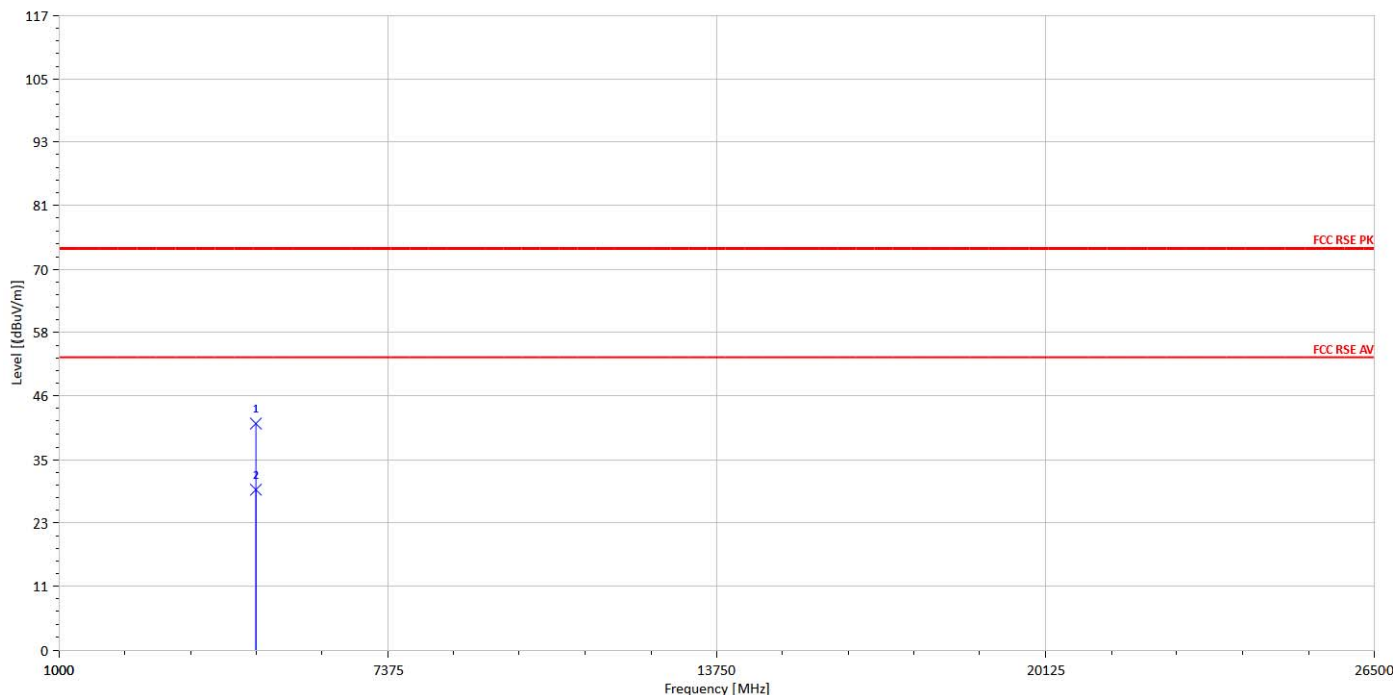
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Above 1GHz Data:

Radiated Spurious Emission Measurement Result (802.11 b)

Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH Low	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4824.00	H	Peak	32.13	10.43	42.55	74	-31.45
4824.00	H	Average	22.73	10.43	33.16	54	-20.84

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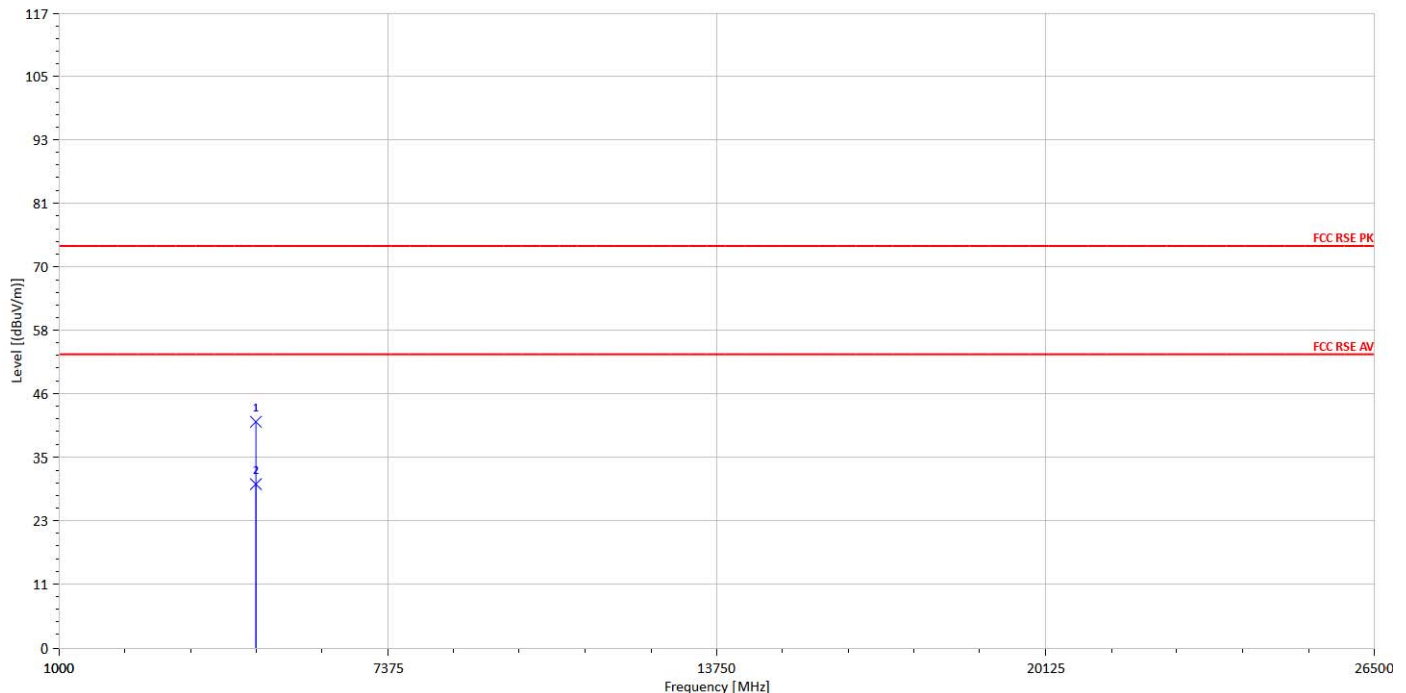
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Operation Mode : 802.11b Test Date : 2016/3/13
Fundamental Frequency : 2412 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4824.00	H	Peak	31.84	10.43	42.27	74	-31.73
4824.00	H	Average	24.40	10.43	34.83	54	-19.17

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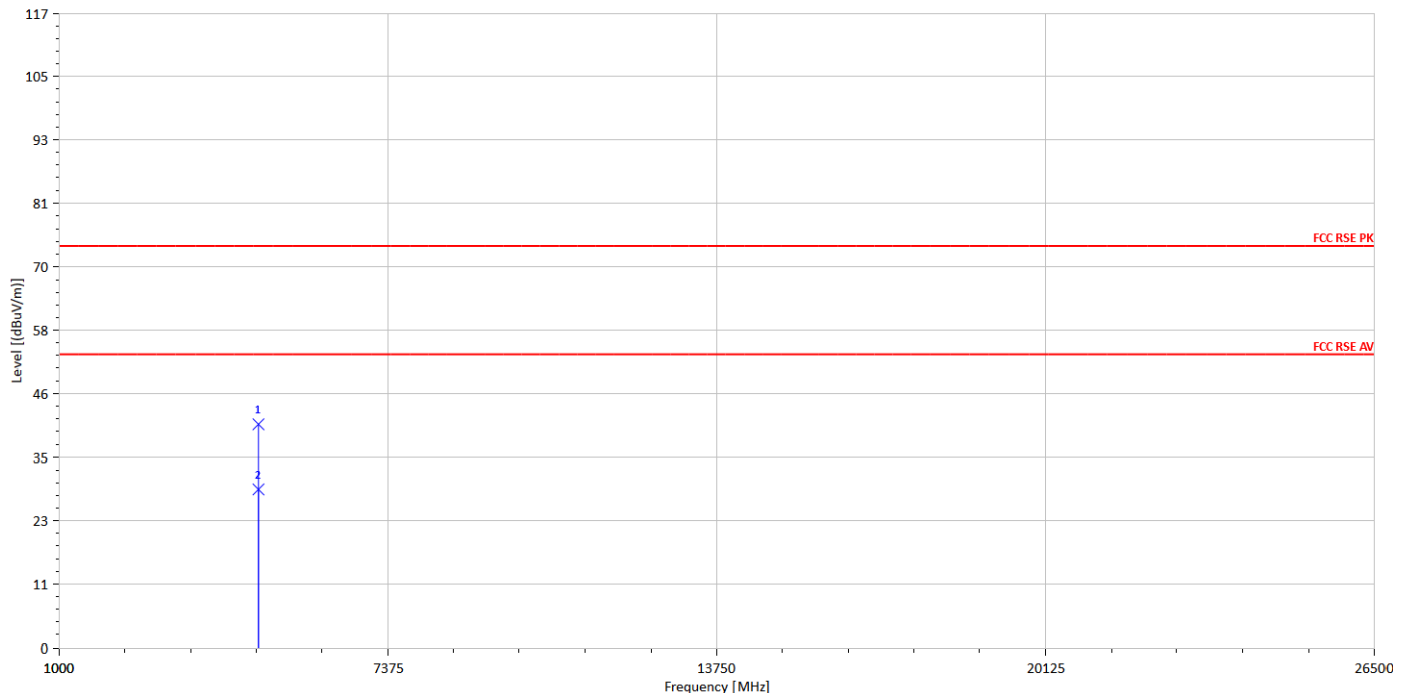
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Operation Mode : 802.11b Test Date : 2016/3/13
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4874.00	H	Peak	29.75	10.66	40.41	74	-33.59
4874.00	H	Average	19.77	10.66	30.43	54	-23.57

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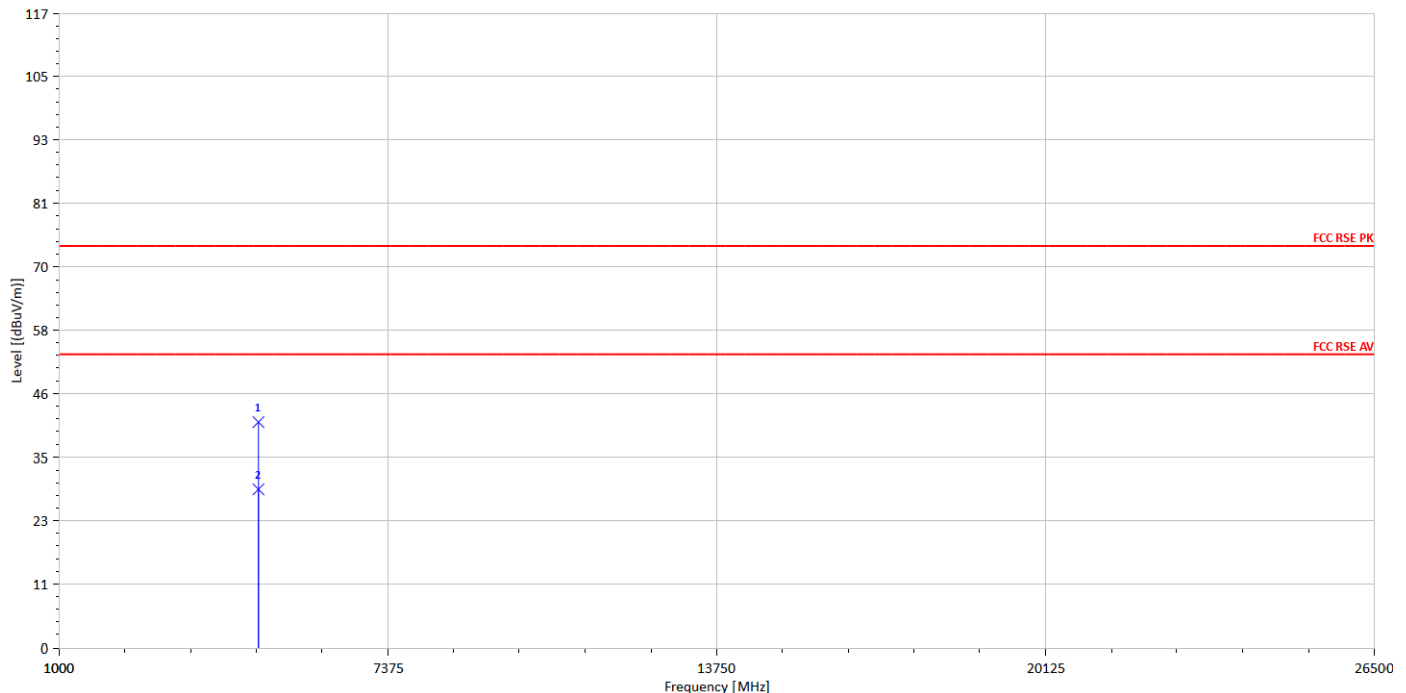
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Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4874.00	H	Peak	32.62	10.66	43.28	74	-30.72
4874.00	H	Average	25.69	10.66	36.35	54	-17.65

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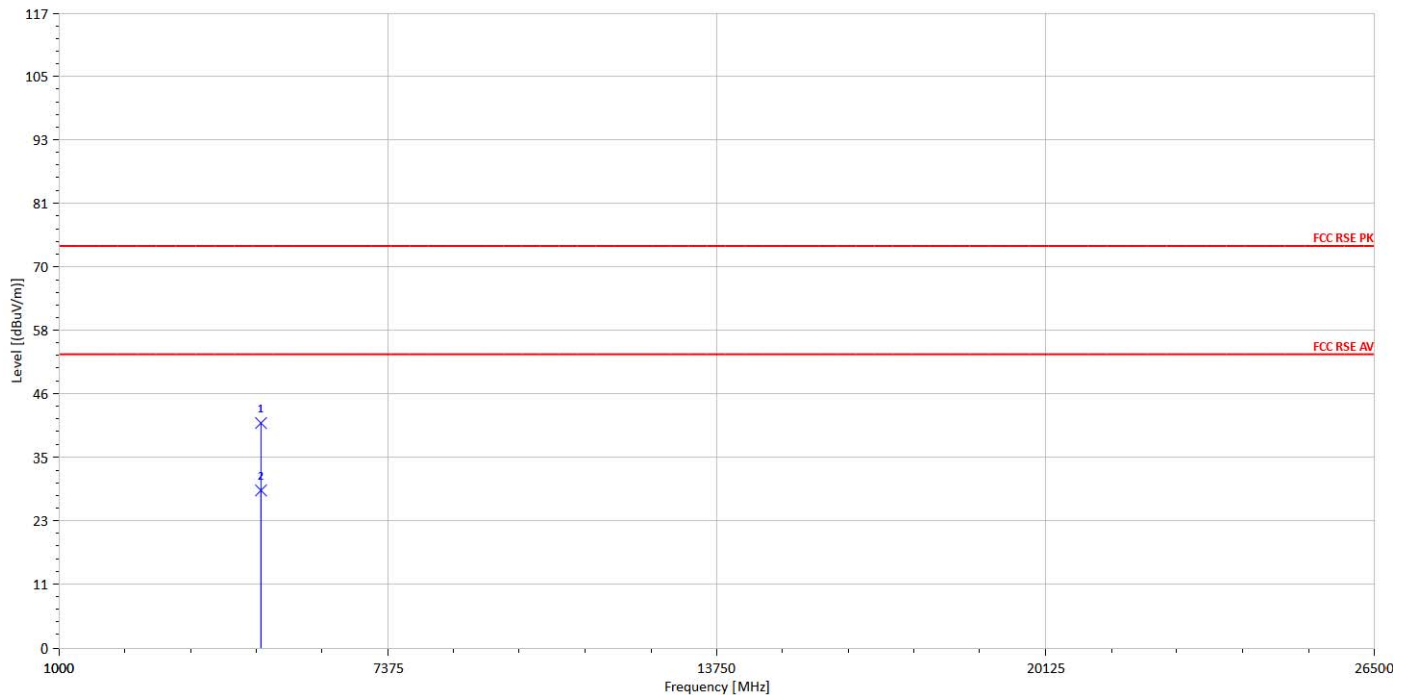
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Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH High	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Vertical



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4924.00	H	Peak	31.94	10.57	42.51	74	-31.49
4924.00	H	Average	20.94	10.57	31.51	54	-22.49

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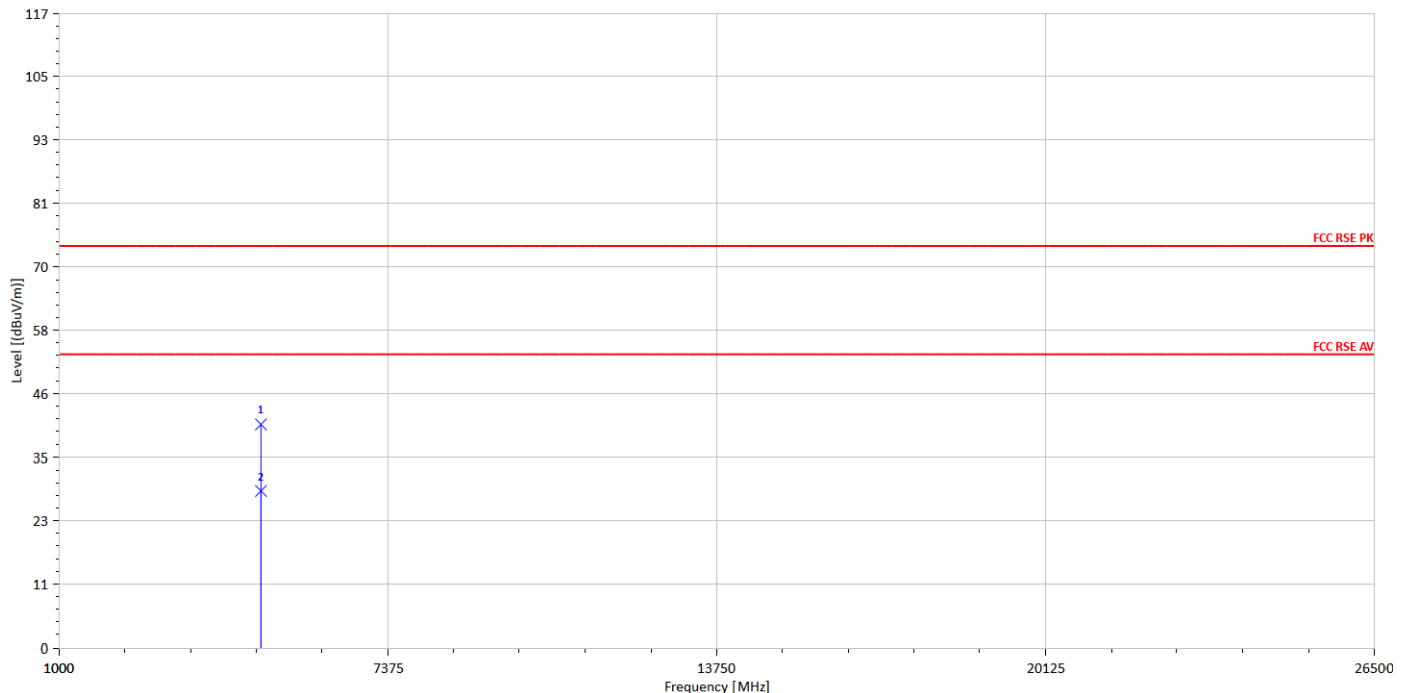
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Operation Mode :	802.11b	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH High	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Horizontal



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
4924.00	H	Peak	31.65	10.57	42.23	74	-31.77
4924.00	H	Average	25.37	10.57	35.94	54	-18.06

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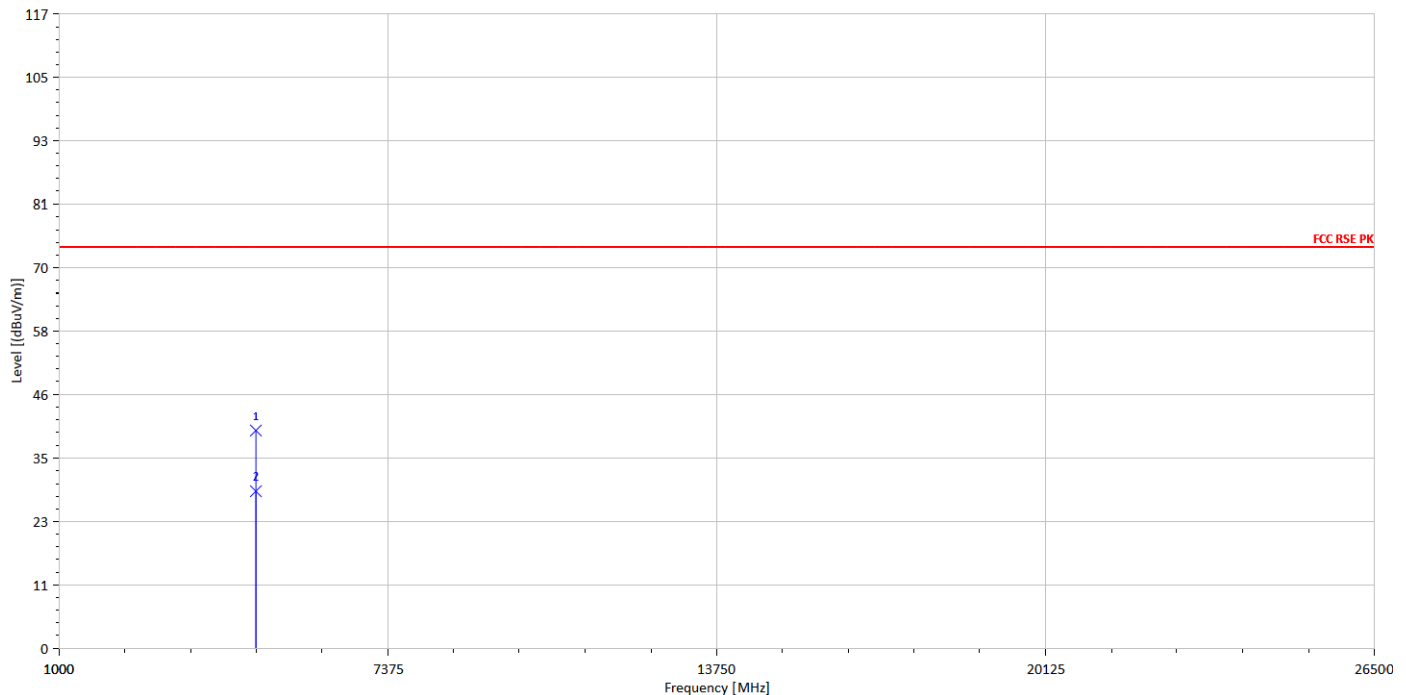
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Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH Low	Test Engineer :	Pony
EUT Pol. :	H	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
4824.00	H	Peak	31.12	10.43	41.55	74	-32.45
4824.00	H	Average	19.54	10.43	29.97	54	-24.03

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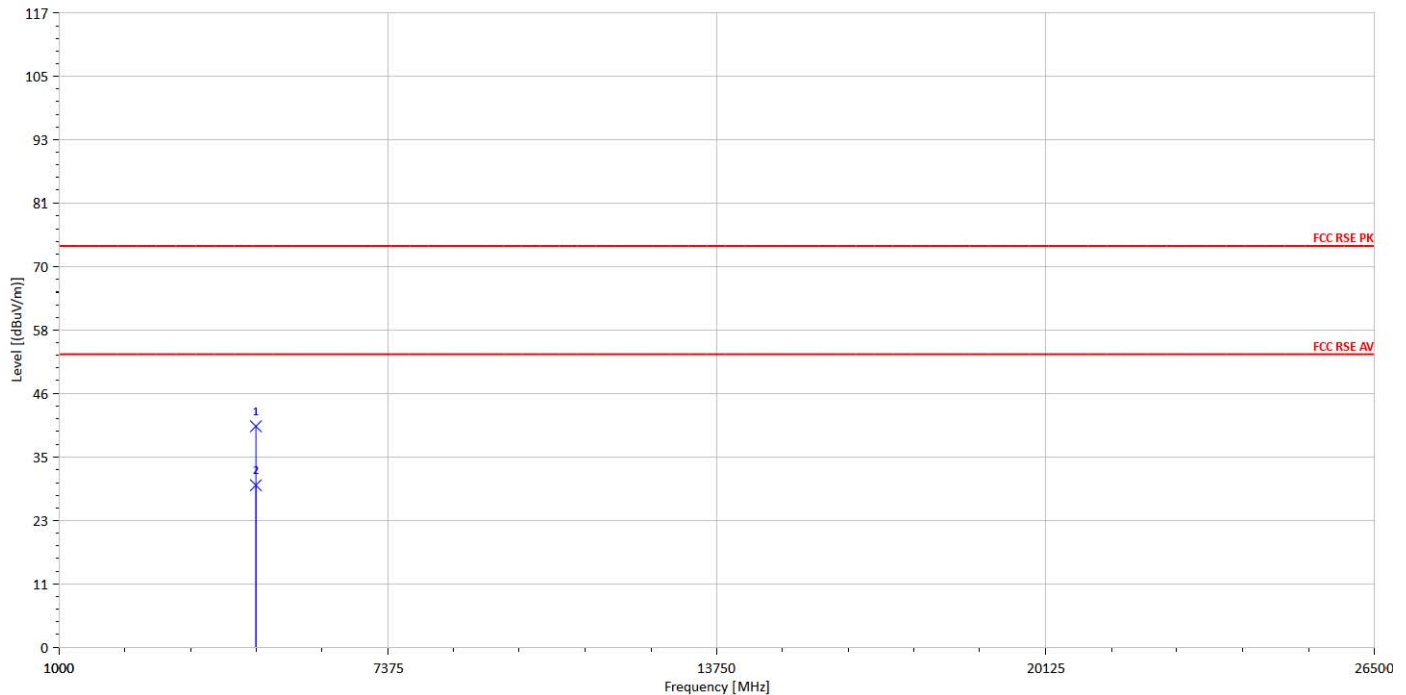
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Operation Mode : 802.11g Test Date : 2016/3/13
Fundamental Frequency : 2412 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4824.00	H	Peak	31.37	10.43	41.80	74	-32.20
4824.00	H	Average	18.94	10.43	29.37	54	-24.63

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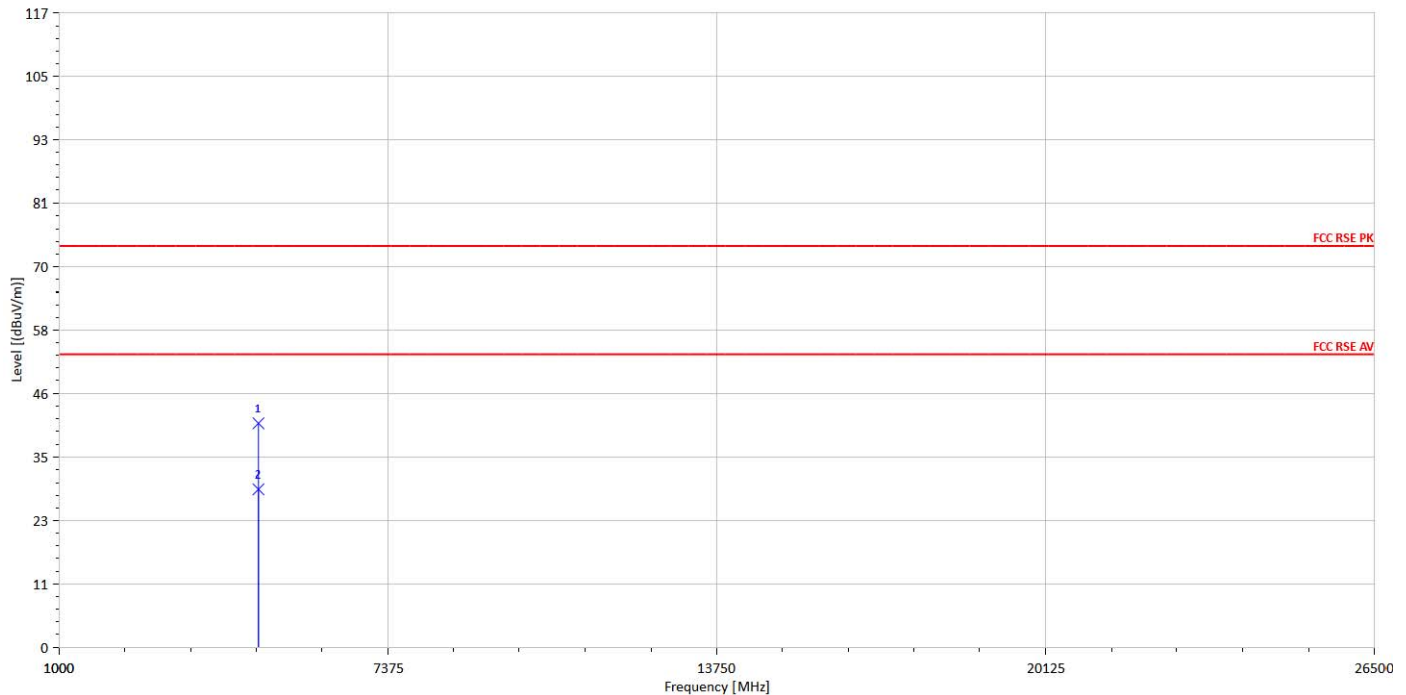
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Operation Mode : 802.11g Test Date : 2016/3/13
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4874.00	H	Peak	30.60	10.66	41.26	74	-32.74
4874.00	H	Average	18.47	10.66	29.13	54	-24.87

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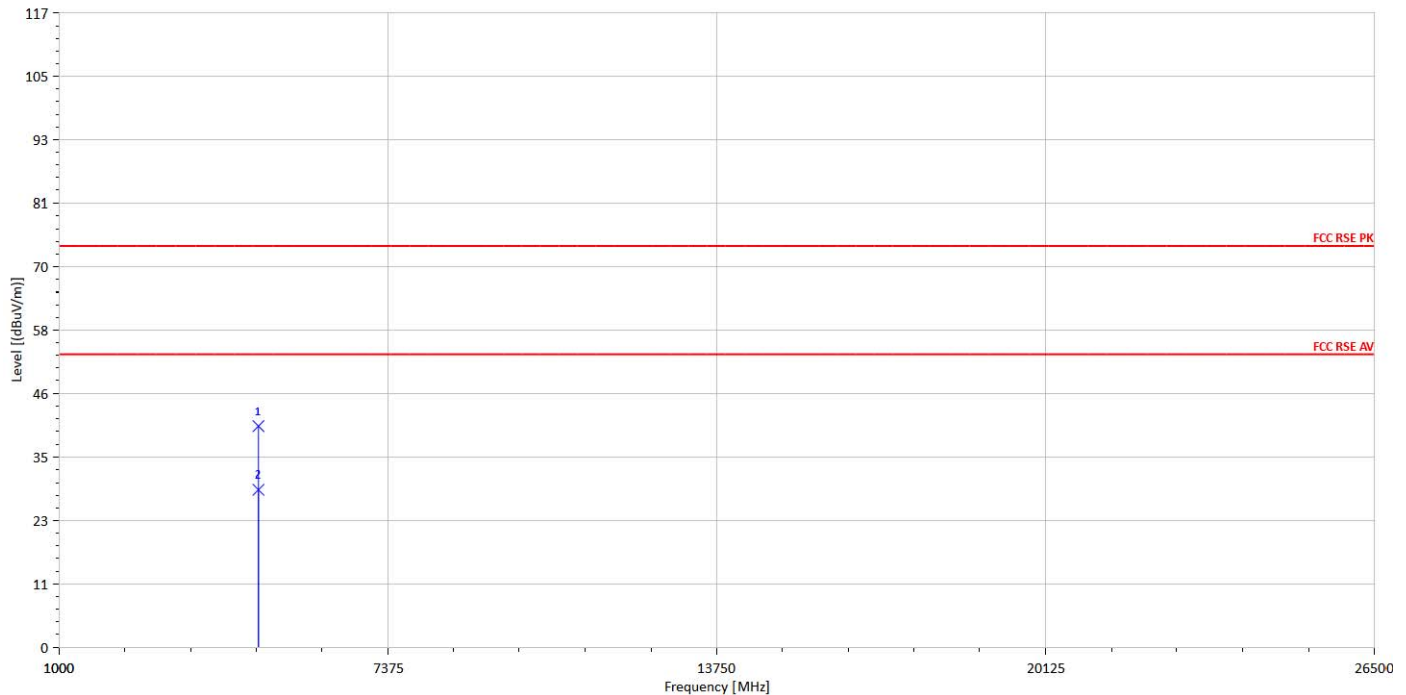
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Operation Mode : 802.11g Test Date : 2016/3/13
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4874.00	H	Peak	30.09	10.66	40.76	74	-33.24
4874.00	H	Average	18.67	10.66	29.33	54	-24.67

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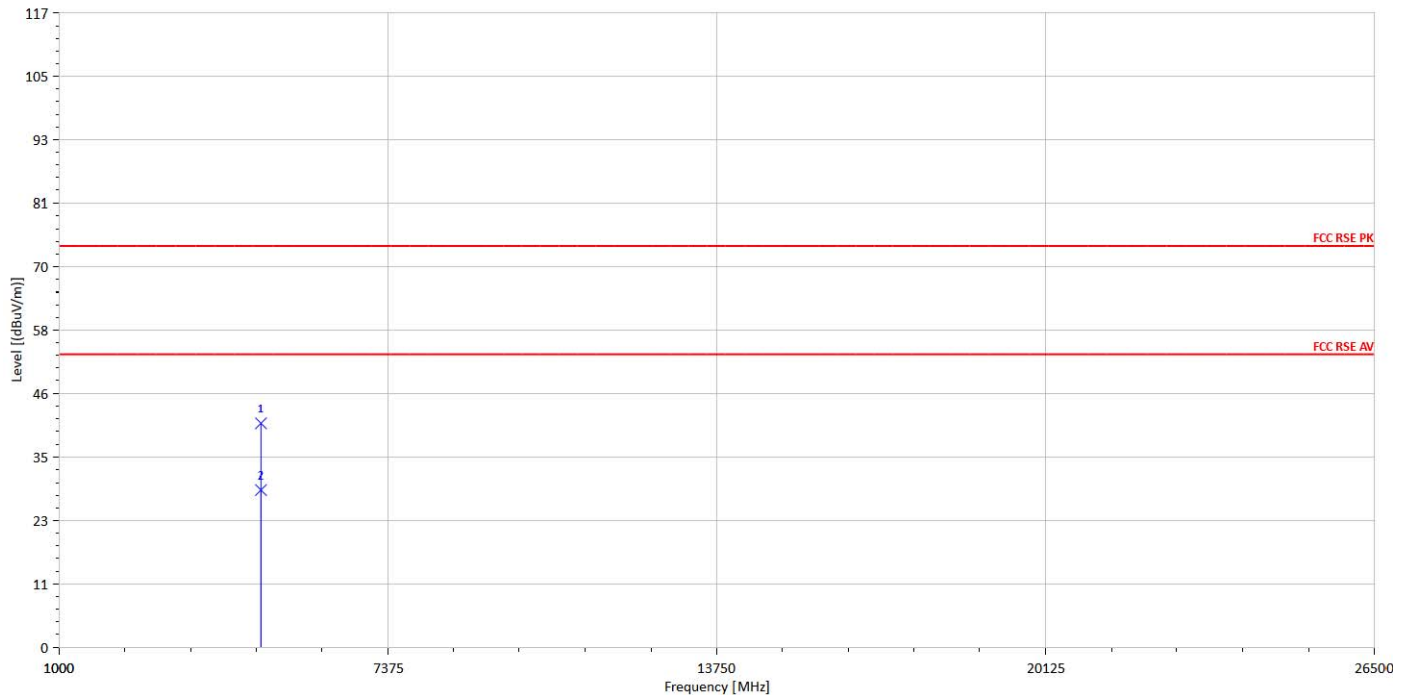
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Operation Mode :	802.11g	Test Date :	2016/3/13
Fundamental Frequency :	2462 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH High	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Vertical



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4924.00	H	Peak	30.09	10.66	40.75	74	-33.25
4924.00	H	Average	18.87	10.66	29.53	54	-24.47

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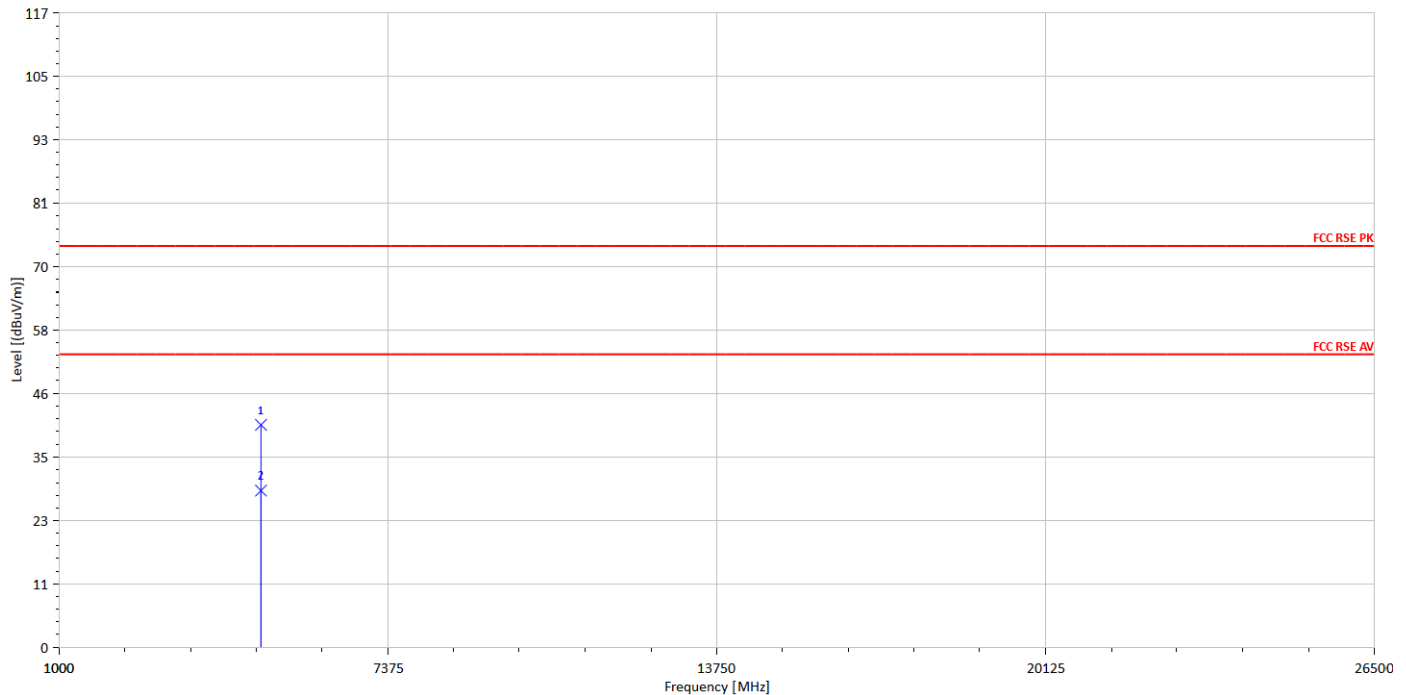
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Operation Mode : 802.11g Test Date : 2016/3/13
Fundamental Frequency : 2462 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4924.00	H	Peak	29.92	10.66	40.58	74	-33.42
4924.00	H	Average	18.52	10.66	29.18	54	-24.82

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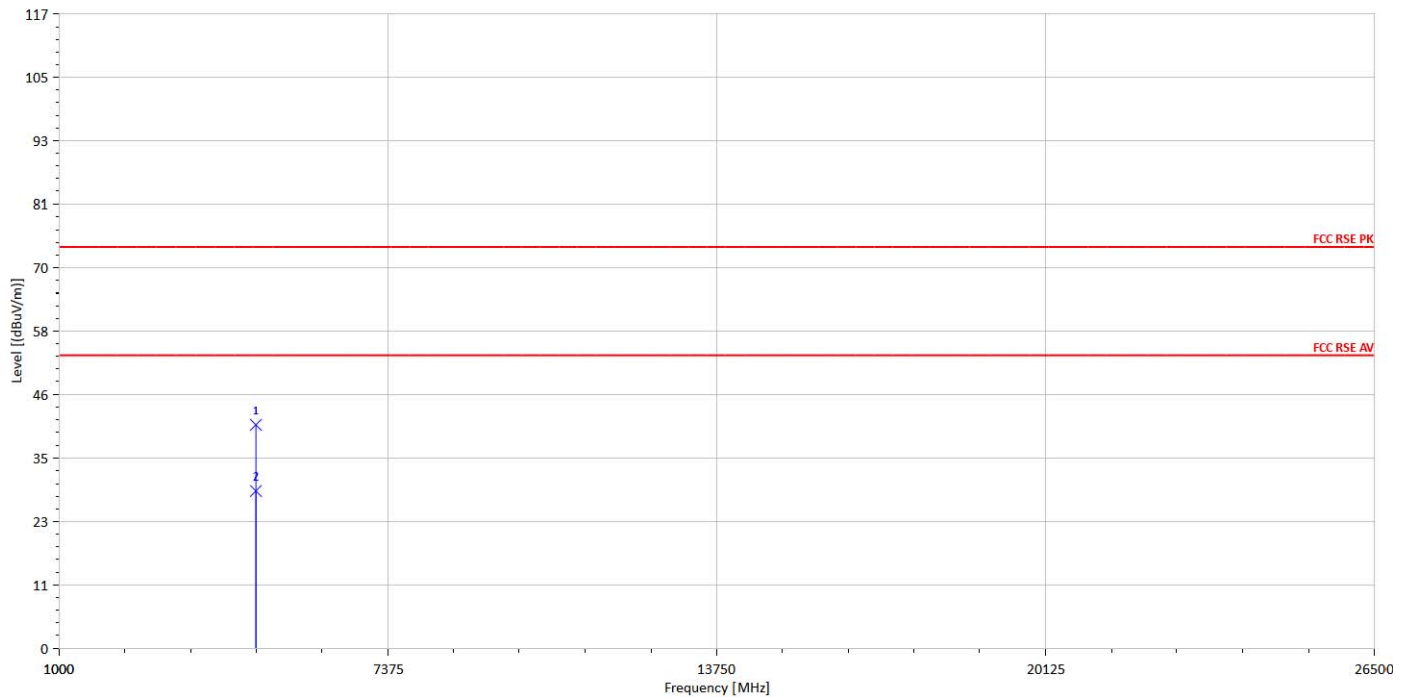
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Radiated Spurious Emission Measurement Result (802.11_HT20)

Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH Low	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
4824.00	H	Peak	31.09	10.43	41.52	74	-32.48
4824.00	H	Average	19.02	10.43	29.45	54	-24.55

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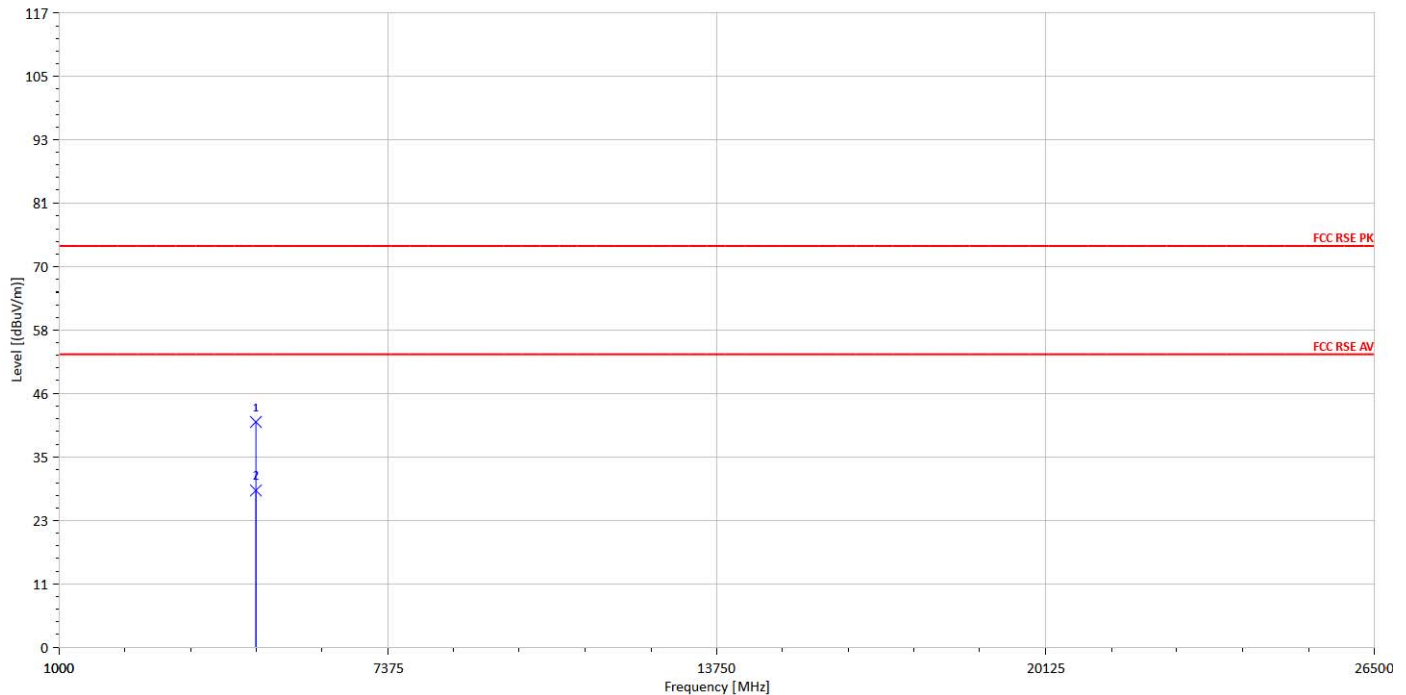
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Operation Mode : 802.11n20 Test Date : 2016/3/13
Fundamental Frequency : 2412 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4824.00	H	Peak	31.87	10.43	42.30	74	-31.70
4824.00	H	Average	18.62	10.43	29.05	54	-24.95

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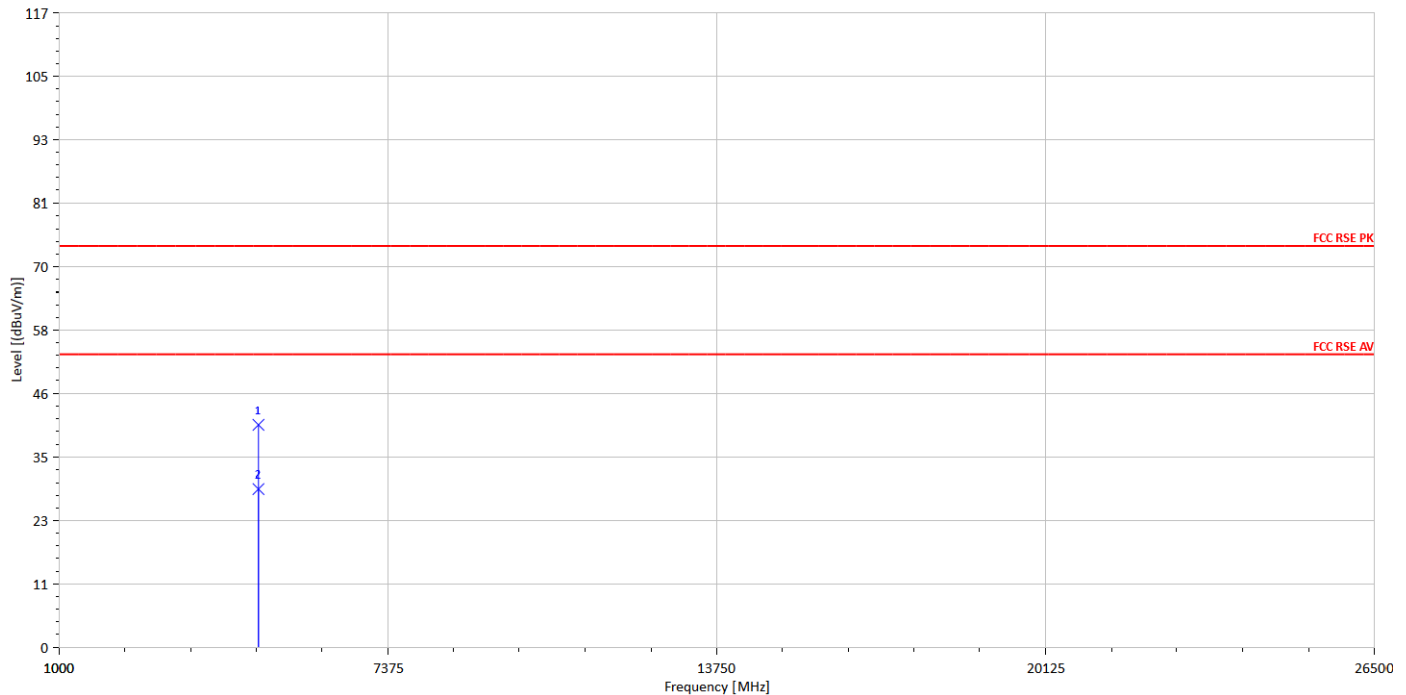
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Operation Mode : 802.11n20 Test Date : 2016/3/13
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



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
4874.00	H	Peak	29.42	10.66	40.08	74	-33.92
4874.00	H	Average	19.11	10.66	29.77	54	-24.23

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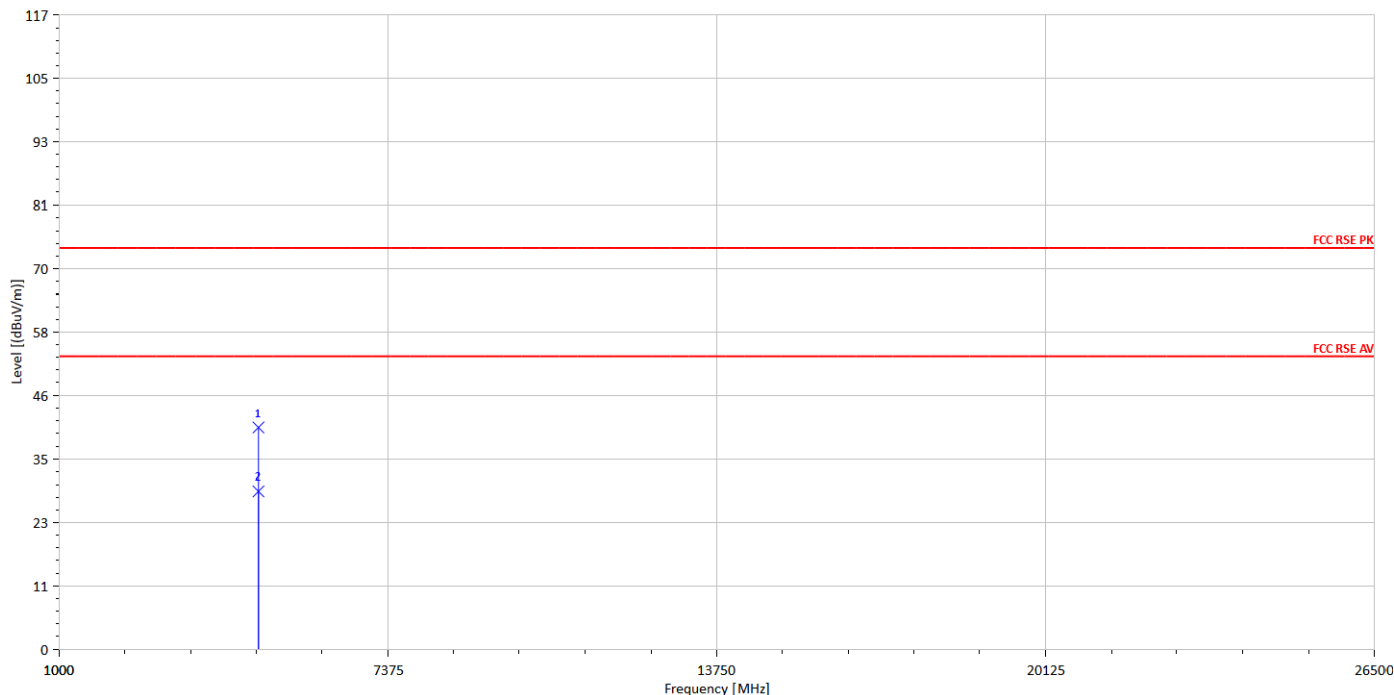
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Operation Mode :	802.11n20	Test Date :	2016/3/13
Fundamental Frequency :	2437 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH Mid	Test Engineer :	Pony
EUT Pol. :	H	Measurement Antenna Pol. :	Horizontal



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
4874.00	H	Peak	30.05	10.66	40.71	74	-33.29
4874.00	H	Average	18.39	10.66	29.05	54	-24.95

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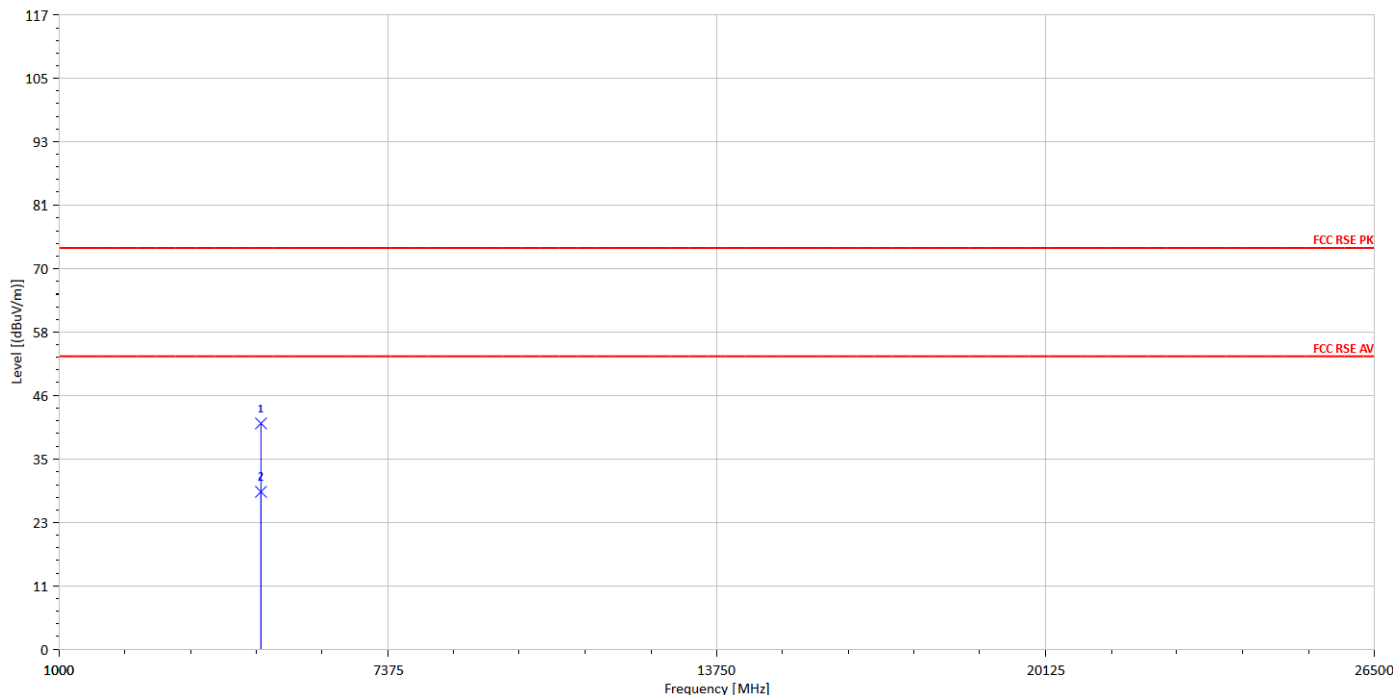
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Operation Mode : 802.11n20 Test Date : 2016/3/13
Fundamental Frequency : 2462 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



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
4924.00	H	Peak	29.81	10.57	40.39	74	-33.61
4924.00	H	Average	18.63	10.57	29.20	54	-24.80

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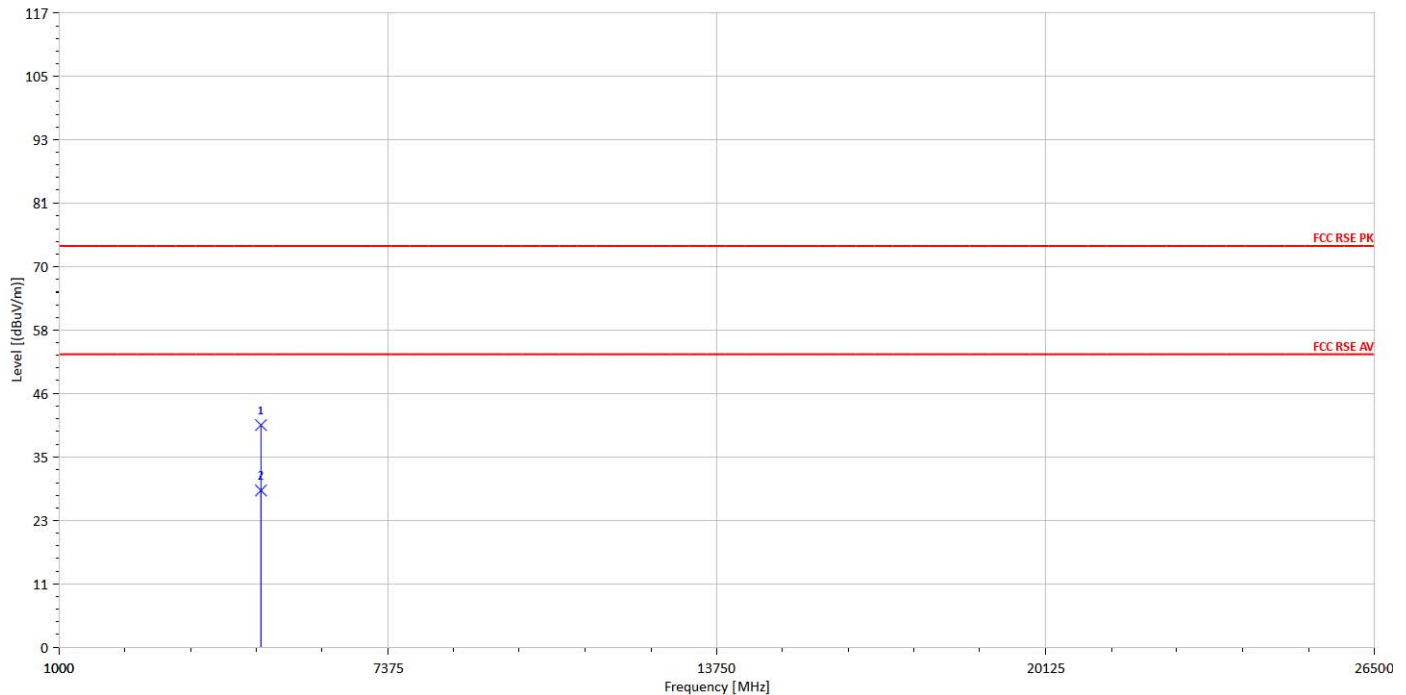
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Operation Mode : 802.11n20 Test Date : 2016/3/13
Fundamental Frequency : 2462 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	dB
		PK/QP/AV	dBuV		dBuV/m	dBuV/m	
4924.00	H	Peak	29.77	10.57	40.35	74	-33.65
4924.00	H	Average	18.34	10.57	28.91	54	-25.09

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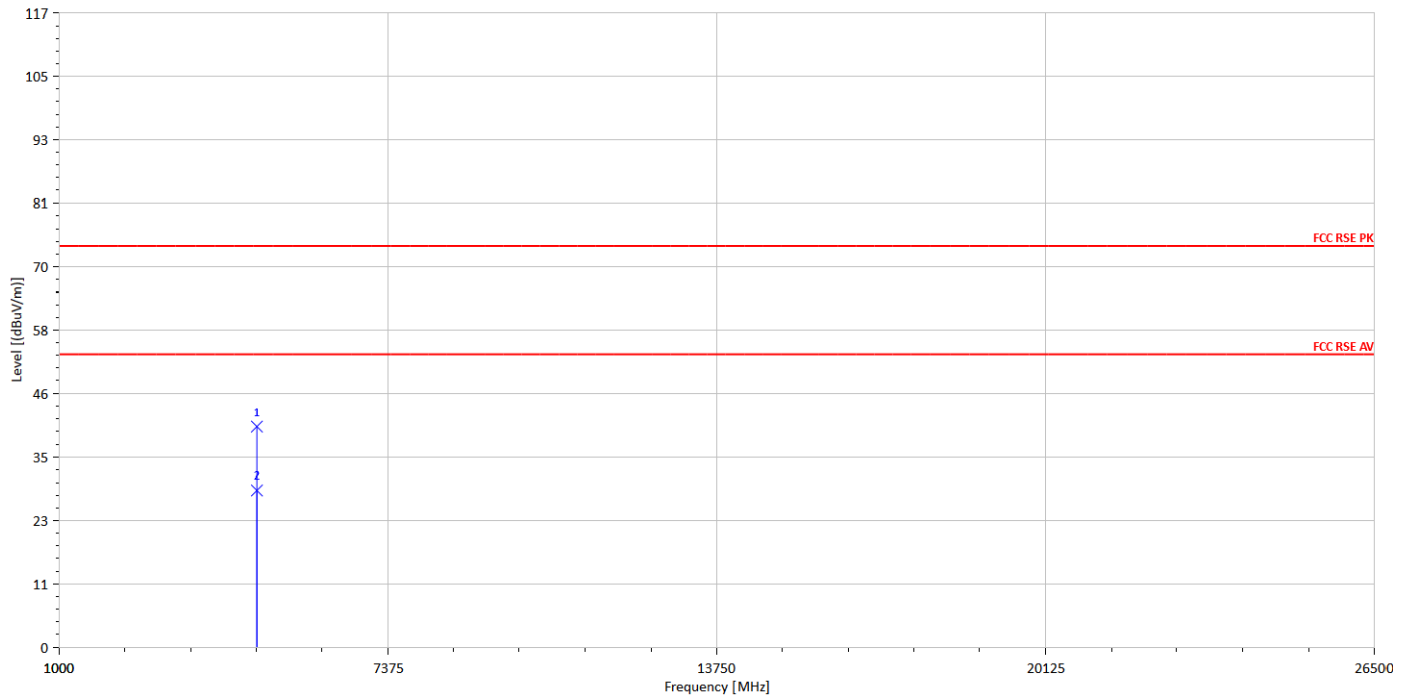
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Operation Mode : 802.11n40 Test Date : 2016/3/13
Fundamental Frequency : 2422 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level		FS	@3m	
		PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB
4844.00	H	Peak	30.21	10.36	40.57	74	-33.43
4844.00	H	Average	18.65	10.36	29.01	54	-24.99

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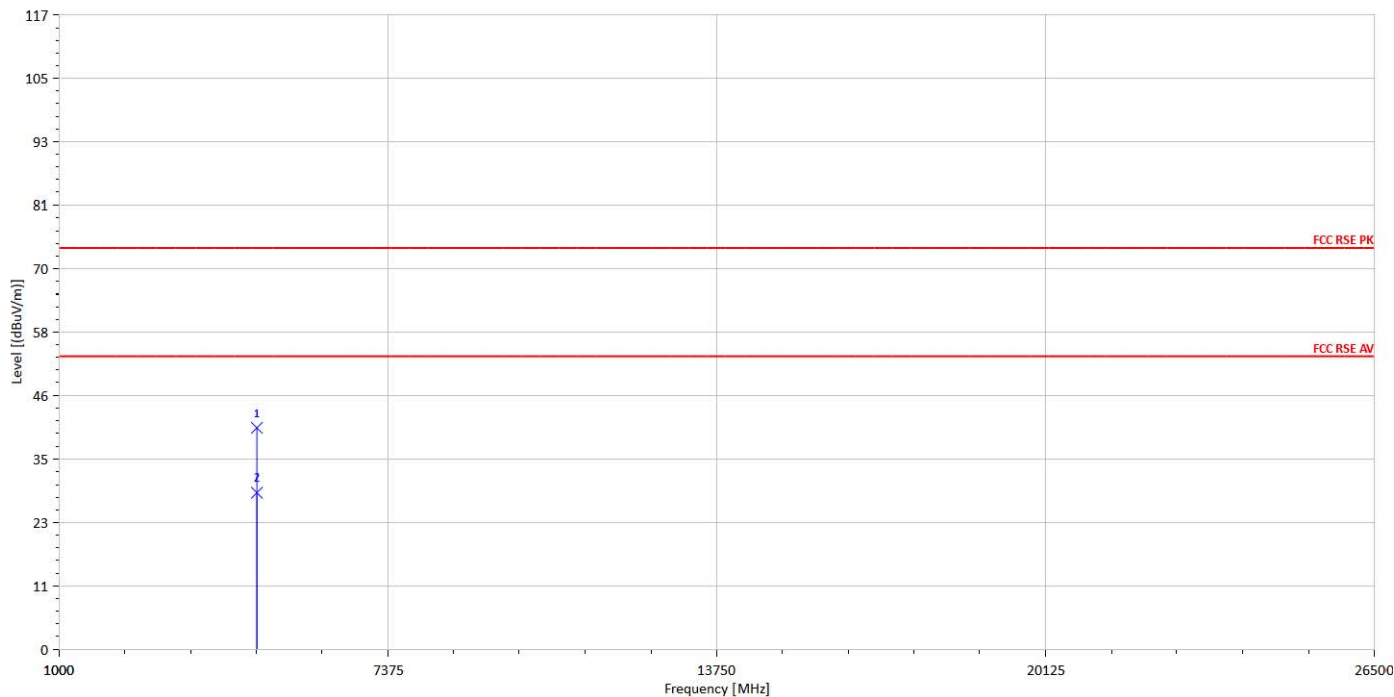
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Operation Mode : 802.11n40 Test Date : 2016/3/13
Fundamental Frequency : 2422 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Low Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4844.00	H	Peak	31.30	10.36	41.66	74	-32.34
4844.00	H	Average	18.92	10.36	29.28	54	-24.72

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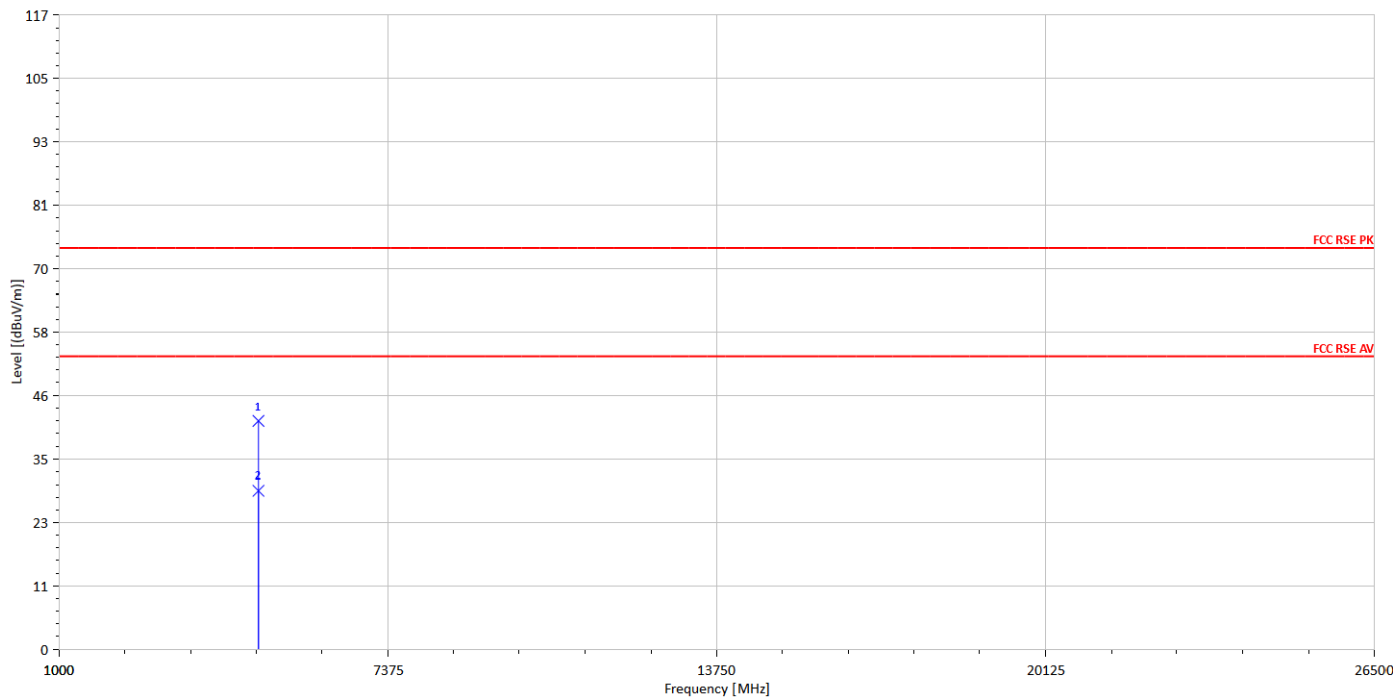
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Operation Mode : 802.11n40 Test Date : 2016/3/13
Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



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
4874.00	H	Peak	30.24	10.66	40.91	74	-33.09
4874.00	H	Average	18.71	10.66	29.37	54	-24.63

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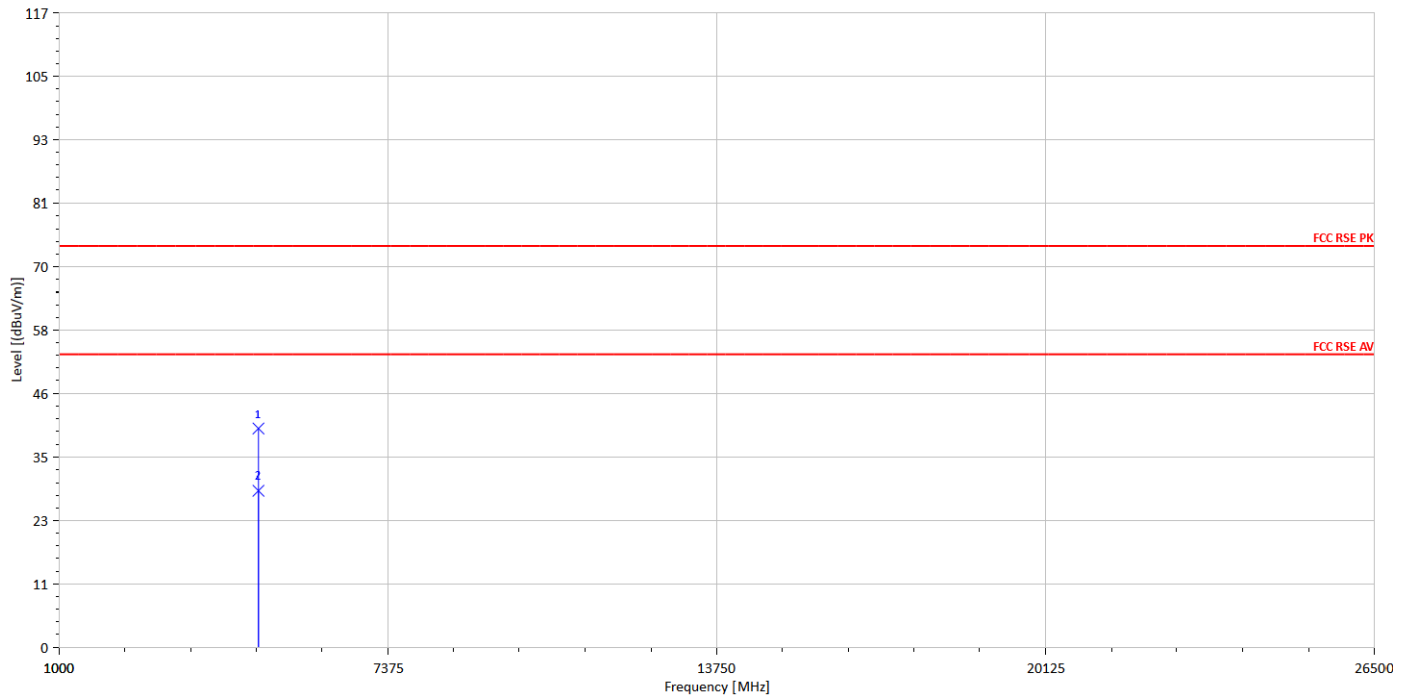
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Fundamental Frequency : 2437 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH Mid Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4874.00	H	Peak	30.99	10.66	41.65	74	-32.35
4874.00	H	Average	18.68	10.66	29.34	54	-24.66

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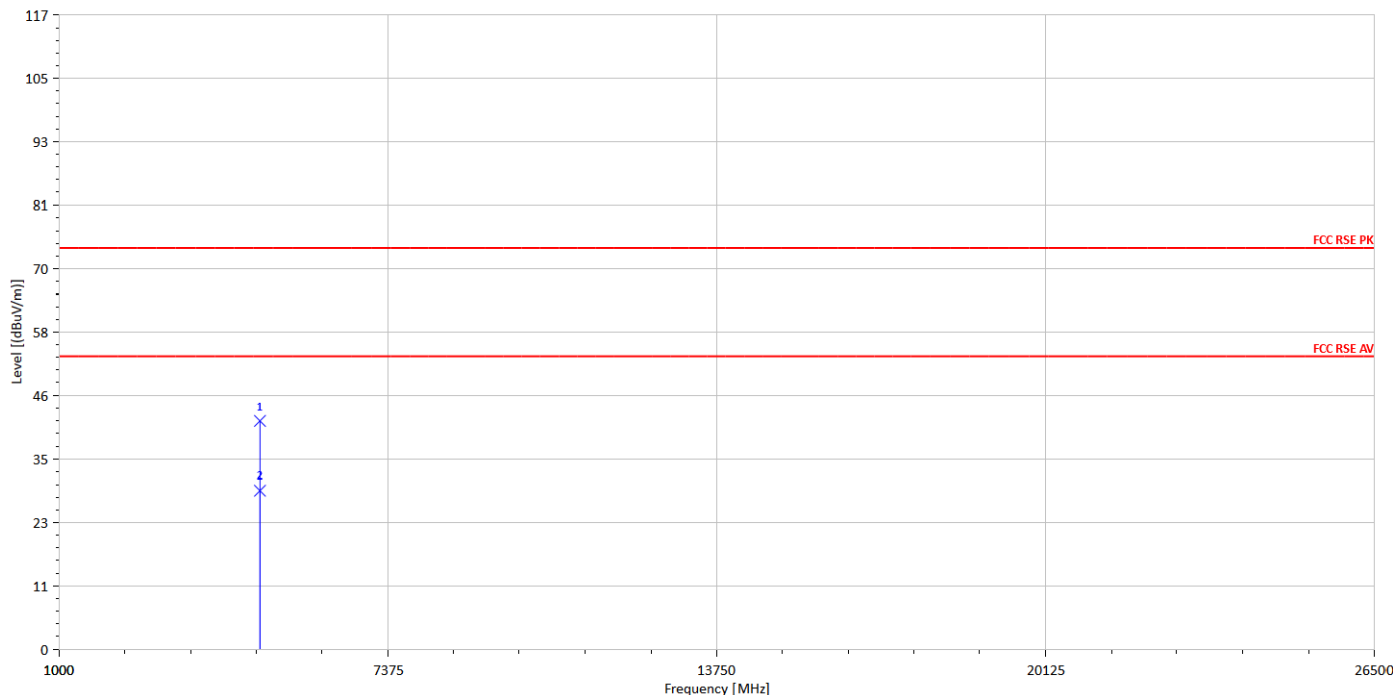
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Operation Mode : 802.11n40 Test Date : 2016/3/13
Fundamental Frequency : 2452 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Vertical



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
4904.00	H	Peak	30.62	10.14	40.75	74	-33.25
4904.00	H	Average	18.59	10.14	28.73	54	-25.27

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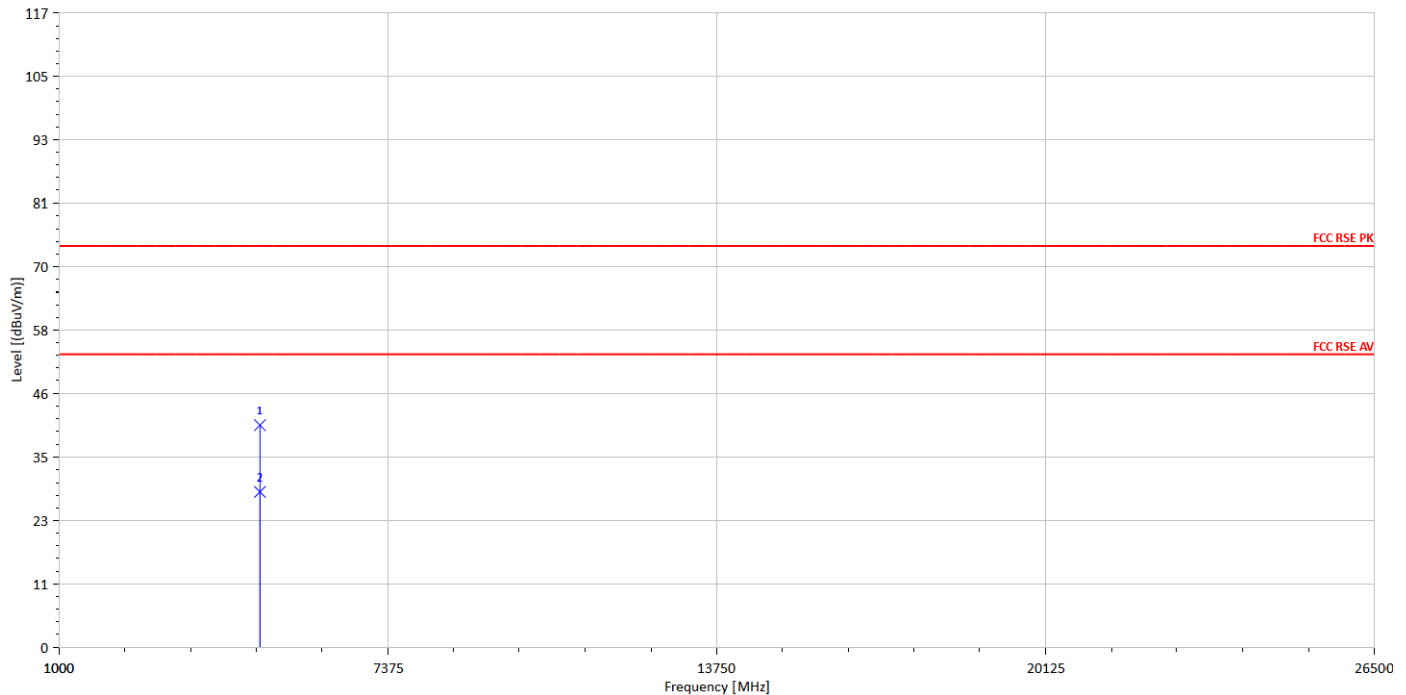
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Operation Mode : 802.11n40 Test Date : 2016/3/13
Fundamental Frequency : 2452 MHz Temp. / Humi. : 22.7deg_C/57RH
Operation Band : Tx CH High Test Engineer : Pony
EUT Pol. : H Measurement Antenna Pol. : Horizontal



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
4904.00	H	Peak	30.72	10.14	40.86	74	-33.14
4904.00	H	Average	18.55	10.14	28.69	54	-25.31

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7.8 ANTENNA REQUIREMENT

7.9 Standard Applicable

For intentional device, 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.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

7.10 Antenna Connected Construction

An embedded-in antenna design is used.

The antenna connector is designed with unique type RF connector 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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