

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

### INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT AND INDUSTRY CANADA RSS 247 CLASS II & IV PC REPORT

OF

Acer Incorporated

8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City  
22181, Taiwan (R.O.C)

**Product Name:** WLAN and BT, 2x2 PCIe M.2 2230 adapter card



9560NGW

**Model Difference:** N/A

**FCC ID:** HLZ9560NG

**IC:** 1754F-9560NG

**Report Number:** E2/2018/80029

**FCC Rule Part:** §15.247, Cat: DTS

**IC Rule Part:** RSS-247 issue 2 Feb 2017

**Issue Date:** Sep. 07, 2018

**Date of Test:** Aug. 02, 2018 ~ Aug. 20, 2018

**Date of EUT Received:** Aug. 02, 2018

#### 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.



**Tested By:**

*Aken Huang / Engineer*



**Approved By:**

*Jim Chang / Manager*



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## Revision History

Report Number	Revision	Description	Effectuated Page	Issue Date	Revised By
E2/2018/80029	Rev.00	Initial creation of document	All	Sep. 07, 2018	Tiffany Kao

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## 1 GENERAL INFORMATION

### 1.1 Product description

General:

Product Name of Host:	Notebook / Tablet Computer	
Brand Name:		
Marketing Name of Host:	SP314-52	
Model No. of Host:	N17W5	
Model Difference:	N/A	
Hardware Version:	version 1-1	
Software Version:	Win 10	
Model No. of BT/WLAN Module:	9560NGW	
Module FCC ID:	HLZ9560NG	
Module IC:	1754F-9560NG	
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 & Class IV Permissive change:	WLAN and BT, 2x2 PCIe M.2 2230 adapter card INSTALLED IN Notebook / Tablet Computer	
Power Supply:	11.55Vdc from Rechargeable Li-Ion Battery Pack or 19V by AC/DC Power Adapter	
	Battery:	Model No.: AC17A8M, Supplier: LG Chem, Ltd.
	Adapter:	Model No.: W15-045N4A, Supplier: Chicony

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## WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Peak) / EIRP	Modulation Technology	Type of Emission	
11b/g	2412-2472	13	b: 17.43dBm b: 16.38dBm (EIRP) g: 19.17dBm g: 16.37dBm (EIRP)	DSSS OFDM	b: 14M5D2W g: 25M5D7W	
11n (2.4GHz)	HT20 / VHT20 2412-2472	13	HT20: 22.68dBm (MIMO) HT20: 22.39dBm (EIRP)	OFDM	23M4D7W	
11n (2.4GHz)	HT40 / VHT40 2422-2462	9	HT40: 21.82dBm (MIMO) HT40: 21.38dBm (EIRP)	OFDM	36M5D7W	
Antenna Designation:		<p>PIFA Antenna, Supplier: WNC NB mode: 1. P/N: 81EAAL15.GJQ, Gain: 1.93dBi (Main) 2. P/N: 81EAAL15.GJR, Gain: -1.60dBi (Aux)</p> <p>Tablet mode: 1. P/N: 81EAAL15.GJQ, Gain: -0.02dBi (Main) 2. P/N: 81EAAL15.GJR, Gain: -3.17dBi (Aux)</p>				
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 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps				

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance

FCC KDB 662911 D01 Multiple Transmitter Output

ANSI C63.10:2013

Canada RSS-247 issue 2 Feb. 2017

Canada RSS-Gen issue 5 Apr. 2018

Note: All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333 (TAF code 0513)

FCC Registration Number and Designation number are: 735305 / TW0002

Canada Registration Number: 4620A-5

## 1.4 Special Accessories

There is no special accessory 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 plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed. 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 plan. 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 Configuration of Tested System**



**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	N/A	N/A	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	IC Rules	Description Of Test	Result
§15.247(b) (3)	RSS-247 §5.4 (2)	Peak Output Power	Compliant
§15.247(d)	RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.203 §15.247(b)	-	Antenna Requirement	Compliant

### 4 DESCRIPTION OF TEST MODES

#### 4.1 Operated in 2400 ~ 2483.5MHz Band

13 channels are provided for 802.11b, 802.11g and 802.11n\_HT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	8	2447 MHz
2	2417 MHz	9	2452 MHz
3	2422 MHz	10	2457 MHz
4	2427 MHz	11	2462 MHz
5	2432 MHz	12	2467 MHz
6	2437 MHz	13	2472 MHz
7	2442 MHz		

9 channels are provided for 802.11n\_HT40

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

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**RADIATED EMISSION TEST:**

<b>RADIATED BAND EDGE EMISSION TEST</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,11,12,13	DSSS	1	2TX
802.11g	1 to 13	1,11,12,13	OFDM	6	2TX
802.11n (HT20)	1 to 13	1,11,12,13	OFDM	MCS8	MIMO
802.11n (HT40)	3 to 11	3,9,10,11	OFDM	MCS8	MIMO

<b>RADIATED EMISSION TEST (ABOVE 1 GHz)</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	7	DSSS	1	2TX

**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/b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case H mode position was tested as resulted in pre-scanned measurement.

Pre-scanned was done on Antenna Main and Antenna Aux, and Antenna MIMO results higher emission at 2.4GHz with NB mode. Therefore, the completed set of measurement was done on Antenna MIMO (2.4GHz) with NB mode to be presented on this test report.

**Remark:**

The device will not operate in 2467/2472MHz for 20MHz BW & 2457/2462MHz for 40MHz BW for IC.

**ANTENNA PORT CONDUCTED MEASUREMENT:**

<b>CONDUCTED TEST</b>					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,7,11,12,13	DSSS	1	2TX
802.11g	1 to 13	1,7,11,12,13	OFDM	6	2TX
802.11n (HT20)	1 to 13	1,7,11,12,13	OFDM	MCS8	MIMO
802.11n (HT40)	3 to 11	3,7,9,10,11	OFDM	MCS8	MIMO

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 1.55dB (for Spectrum) +/- 1.42 dB (for Power Meter)
6dB Bandwidth	+/- 123.36 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB
Peak Power Density	+/- 1.55 dB
99% Power Bandwidth	+/- 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 : <b>Vertical</b> )	9kHz-30MHz: +/-2.87dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	9kHz-30MHz: +/-2.87dB
	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:

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
Power Meter	Anritsu	ML2496A	1326001	2018/07/25	2019/07/24
Power Sensor	Anritsu	MA2411B	1315048	2018/07/25	2019/07/24
Power Sensor	Anritsu	MA2411B	1315049	2018/07/25	2019/07/24
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Attenuator	Marvelous	MVE2213-10	RF31	2017/12/26	2018/12/25
DC Block	PASTER-NACK	PE8210	RF29	2017/12/26	2018/12/25

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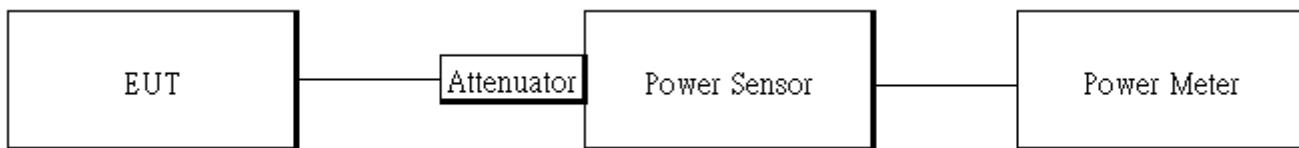
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### 6.3 Test Set-up:

Power Meter:



### 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.
5. For MIMO operation, measurement is done per chain basis, and then sum the simultaneous transmitting output in linear.

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## 6.5 Measurement Result (Worst Case Data Rate):

### 802.11b

CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	1	17.41	55.08	1 Watt = 30 dBm
7	2442	1	17.38	54.70	1 Watt = 30 dBm
11	2462	1	17.39	54.83	1 Watt = 30 dBm
12	2467	1	17.36	54.45	1 Watt = 30 dBm
13	2472	1	<b>17.43</b>	55.34	1 Watt = 30 dBm

CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	1	14.48	28.07	1 Watt = 30 dBm
7	2442	1	14.45	27.88	1 Watt = 30 dBm
11	2462	1	14.46	27.94	1 Watt = 30 dBm
12	2467	1	14.44	27.80	1 Watt = 30 dBm
13	2472	1	14.47	27.99	1 Watt = 30 dBm

### 802.11g

CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit
1	2412	6	19.13	81.85	1 Watt = 30 dBm
7	2442	6	<b>19.17</b>	82.60	1 Watt = 30 dBm
11	2462	6	19.09	81.10	1 Watt = 30 dBm
12	2467	6	17.51	56.36	1 Watt = 30 dBm
13	2472	6	-2.31	0.59	1 Watt = 30 dBm

CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit
1	2412	6	14.42	27.69	1 Watt = 30 dBm
7	2442	6	14.44	27.81	1 Watt = 30 dBm
11	2462	6	14.40	27.56	1 Watt = 30 dBm
12	2467	6	12.47	17.66	1 Watt = 30 dBm
13	2472	6	-7.1	0.19	1 Watt = 30 dBm

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**802.11n\_HT20**

CH	Frequency (MHz)	DATA RATE	Peak Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
1	2412	MCS8	19.76	19.52	22.65	184.160	30dBm	PASS
7	2442	MCS8	18.71	18.49	21.61	144.934	30dBm	PASS
11	2462	MCS8	19.79	19.55	22.68	185.437	30dBm	PASS
12	2467	MCS8	17.89	17.65	20.78	119.728	30dBm	PASS
13	2472	MCS8	-3.07	-3.57	-0.30	0.933	30dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
1	2412	MCS8	13.76	13.61	17.98	46.730	30dBm	PASS
7	2442	MCS8	12.74	12.65	19.91	37.201	30dBm	PASS
11	2462	MCS8	13.77	13.64	17.95	46.944	30dBm	PASS
12	2467	MCS8	11.38	11.12	14.46	26.682	30dBm	PASS
13	2472	MCS8	-9.04	-9.51	-5.21	0.237	30dBm	PASS

**802.11n\_HT40**

CH	Frequency (MHz)	DATA RATE	Peak Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
3	2422	MCS8	18.47	18.25	21.37	137.142	30 dBm	PASS
7	2442	MCS8	18.73	18.89	21.82	152.091	30 dBm	PASS
9	2452	MCS8	18.51	18.28	21.41	138.255	30 dBm	PASS
10	2457	MCS8	17.05	16.44	19.77	94.755	30 dBm	PASS
11	2462	MCS8	10.06	8.65	12.42	17.467	30 dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
3	2422	MCS8	12.21	12.18	16.48	33.154	30 dBm	PASS
7	2442	MCS8	12.71	12.64	17.20	37.029	30 dBm	PASS
9	2452	MCS8	12.24	12.19	16.46	33.307	30 dBm	PASS
10	2457	MCS8	9.46	8.93	12.95	16.647	30 dBm	PASS
11	2462	MCS8	1.15	0.21	5.14	2.353	30 dBm	PASS

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

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EIRP Measurement:  
 802.11b

CH	Frequency (MHz)	Avg. Output Power		GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
		TOTAL POWER (dBm)	TOTAL POWER (mW)				
1	2412	14.48	28.072	1.93	16.41	36	PASS
7	2442	<b>14.45</b>	<b>27.879</b>	1.93	<b>16.38</b>	36	PASS
11	2462	14.46	27.943	1.93	16.39	36	PASS
12	2467	14.44	27.797	1.93	16.37	36	PASS
13	2472	14.47	27.990	1.93	16.40	36	PASS

## 802.11g

CH	Frequency (MHz)	Avg. Output Power		GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
		TOTAL POWER (dBm)	TOTAL POWER (mW)				
1	2412	14.42	27.685	1.93	16.35	36	PASS
7	2442	<b>14.44</b>	<b>27.813</b>	1.93	<b>16.37</b>	36	PASS
11	2462	14.40	27.558	1.93	16.33	36	PASS
12	2467	12.47	17.660	1.93	14.40	36	PASS
13	2472	-7.1	0.195	1.93	-5.17	36	PASS

## 802.11n\_HT20 (MIMO)

CH	Frequency (MHz)	Avg. Output Power		GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
		TOTAL POWER (dBm)	TOTAL POWER (mW)				
1	2412	17.43	55.289	4.94	22.37	36	PASS
7	2442	<b>16.44</b>	<b>44.014</b>	4.94	21.38	36	PASS
11	2462	17.45	55.542	4.94	<b>22.39</b>	36	PASS
12	2467	14.99	31.550	4.94	19.93	36	PASS
13	2472	-5.53	0.280	4.94	-0.59	36	PASS

## 802.11n\_HT40 (MIMO)

CH	Frequency (MHz)	Avg. Output Power		GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
		TOTAL POWER (dBm)	TOTAL POWER (mW)				
3	2422	15.96	39.488	4.94	20.90	36	PASS
7	2442	<b>16.44</b>	<b>44.103</b>	4.94	<b>21.38</b>	36	PASS
9	2452	15.98	39.670	4.94	20.92	36	PASS
10	2457	12.97	19.815	4.94	17.91	36	PASS
11	2462	4.47	2.799	4.94	9.41	36	PASS

Note: EIRP = Average Power + Gain, where the nominal gain of the antenna 4.94dBi for 2.4GHz (MIMO), where MIMO gain = directive gain + nominal gain.

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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 (dB $\mu$ V/m) = 20 log Emission level (dB $\mu$ V/m)

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## 7.2 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	Schwarzbeck	BBHA9120D	1187	2018/01/04	2019/01/03
Horn Antenna	SCHWAZBECK	BBHA9170	184	2017/12/12	2018/12/11
EMI Test Receiver	R&S	ESU 40	100363	2018/04/11	2019/4/10
Pre-Amplifier	EMC Instruments	EMC330	980096	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC0011830	980199	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Attenuator	Marvelous	WATT-218FS-10	RF246	2017/12/26	2018/12/25
Highpass Filter	Micro Tronics	BRM50701-01	G008	2017/12/26	2018/12/25
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	2017/12/26	2018/12/25

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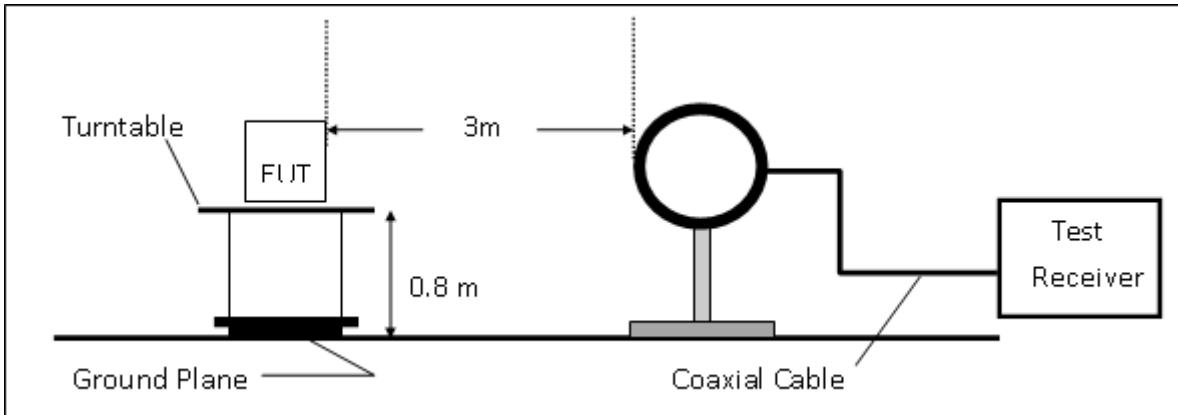
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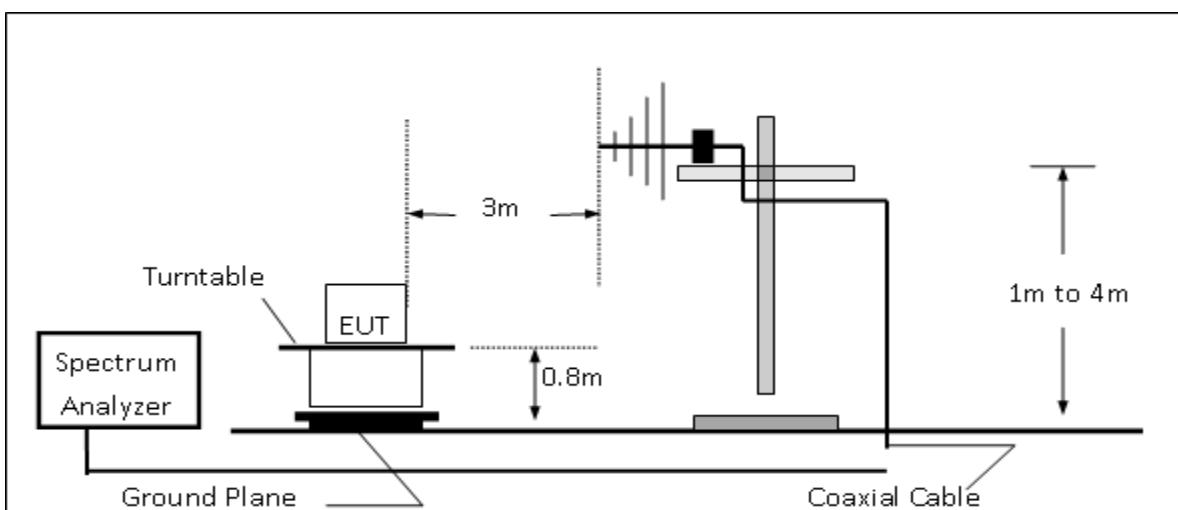
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### 7.3 Test SET-UP:

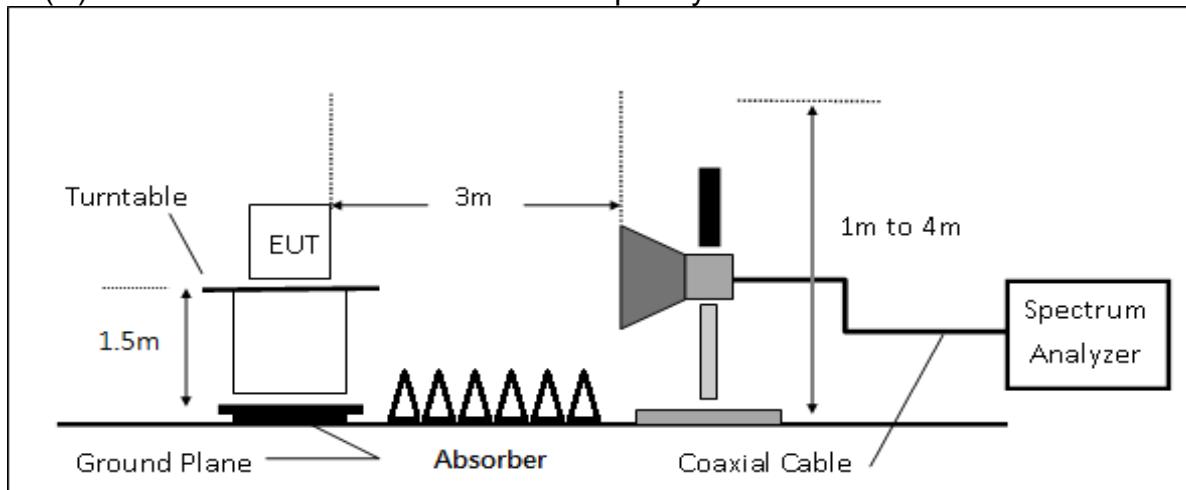
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (B) Radiated Emission Test Set-UP, Frequency from 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  $\geq$  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(dB $\mu$ V/m) = SPA. Reading level(dB $\mu$ V) + Factor(dB)

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

## 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 tabular data sheets.

Note: There is a comparison data of both open-field test site and semi-Anechoic, and test result came out very similar.

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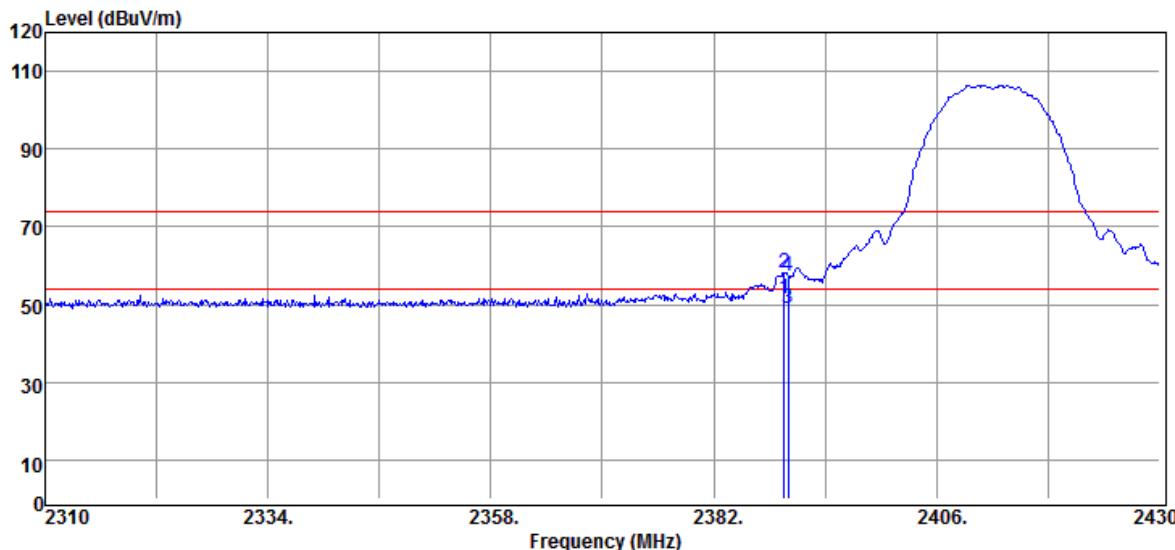
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**Radiated Band Edge Measurement Result:**

Operation Mode	:802.11b	Test Date	:2018-07-16
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m dB $\mu$ V/m	Margin dB
				FS dB $\mu$ V/m		
2389.56	Average	48.00	3.40	51.40	54.00	-2.60
2389.56	Peak	54.85	3.40	58.25	74.00	-15.75
2390.00	Average	45.69	3.39	49.08	54.00	-4.92
2390.00	Peak	53.85	3.39	57.24	74.00	-16.76

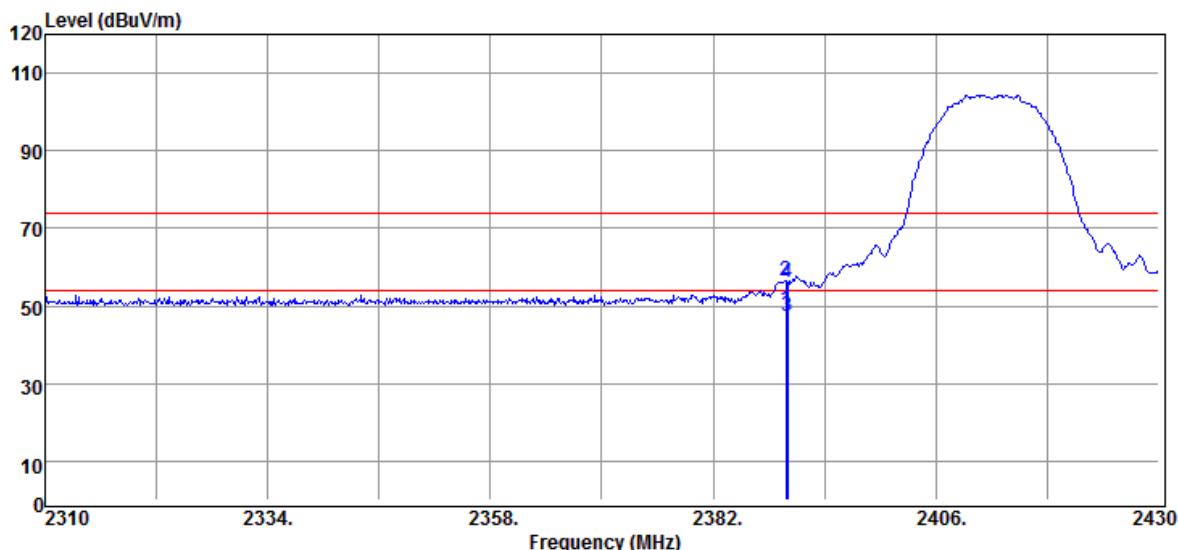
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Operation Mode :802.11b  
Test Mode :BE CH LOW  
EUT Pol :H Plan  
Test Channel :2412 MHz

Test Date :2018-07-16  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Ashton



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2389.80	Average	45.80	3.39	49.19	54.00	-4.81
2389.80	Peak	53.23	3.39	56.62	74.00	-17.38
2390.00	Average	44.13	3.39	47.52	54.00	-6.48
2390.00	Peak	52.53	3.39	55.92	74.00	-18.08

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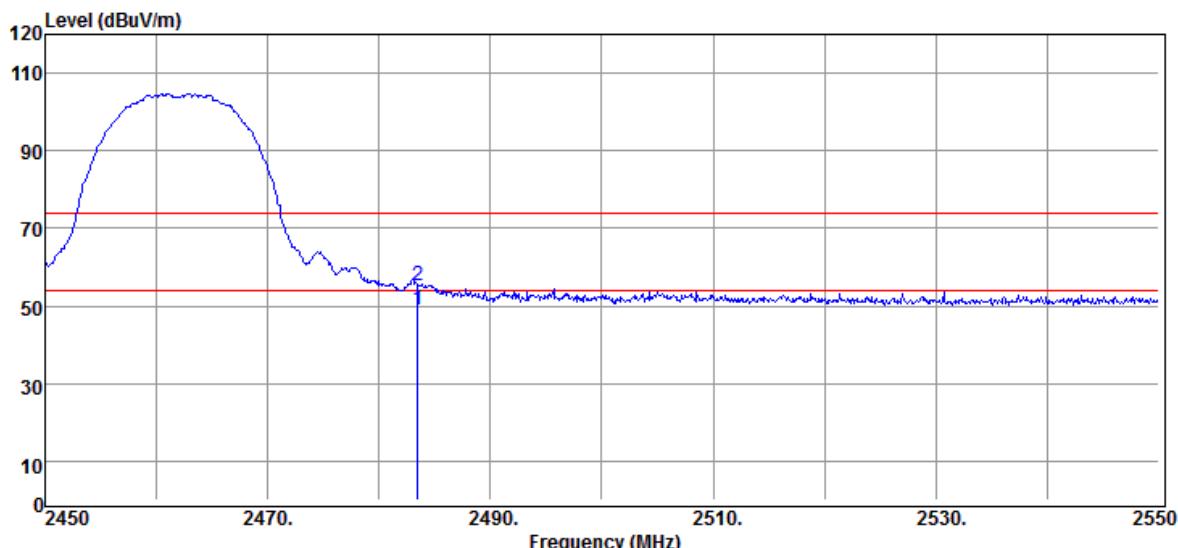
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Operation Mode :802.11b  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2462 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB	dB
2483.50	Average	44.83	3.96	48.79	54.00	-5.21
2483.50	Peak	51.28	3.96	55.24	74.00	-18.76

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

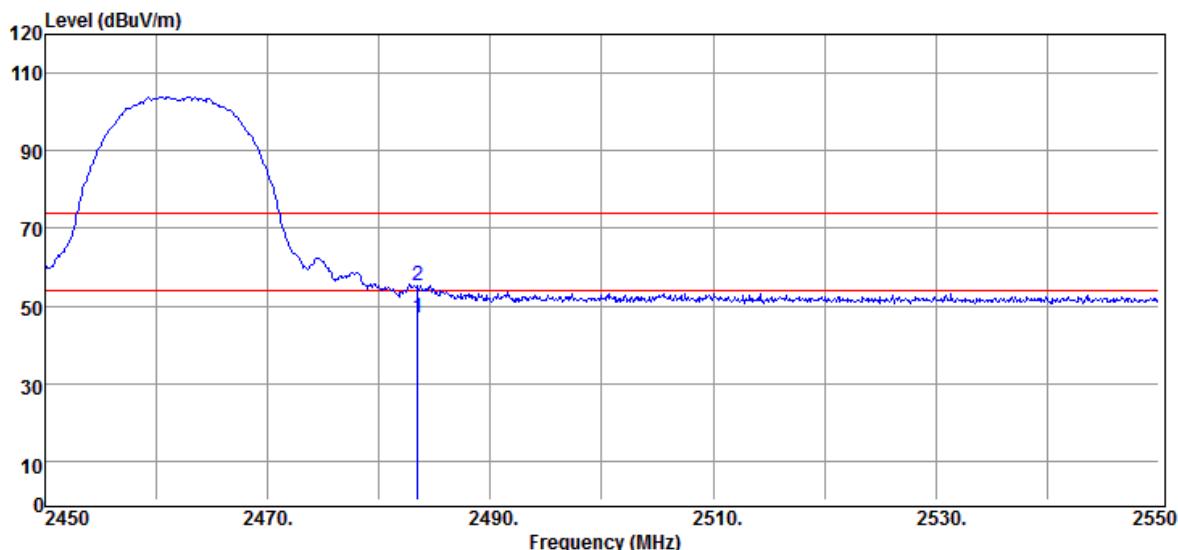
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Operation Mode :802.11b  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2462 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



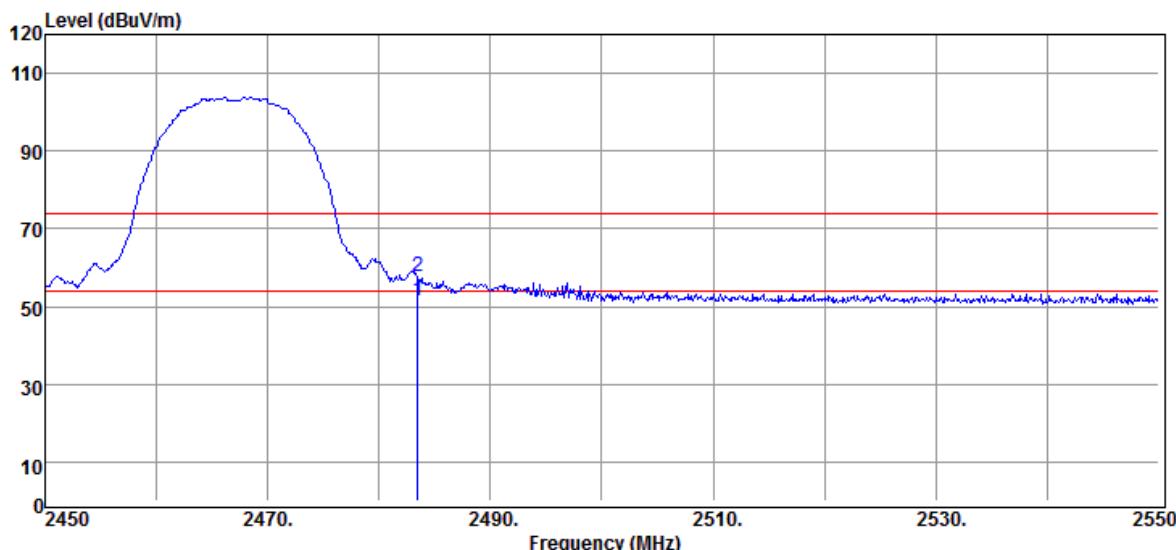
Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	43.09	3.96	47.05	54.00	-6.95
2483.50	Peak	51.24	3.96	55.20	74.00	-18.80

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Operation Mode	:802.11b	Test Date	:2018-07-23
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB	dB
2483.50	Average	47.55	3.96	51.51	54.00	-2.49
2483.50	Peak	53.59	3.96	57.55	74.00	-16.45

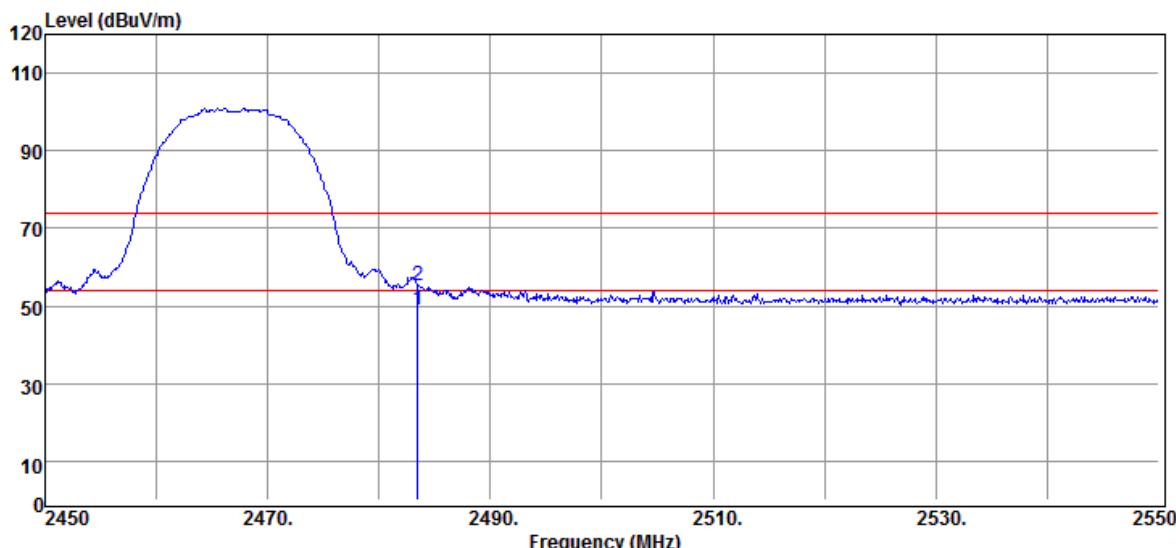
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Operation Mode :802.11b  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2467 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	44.85	3.96	48.81	54.00	-5.19
2483.50	Peak	51.31	3.96	55.27	74.00	-18.73

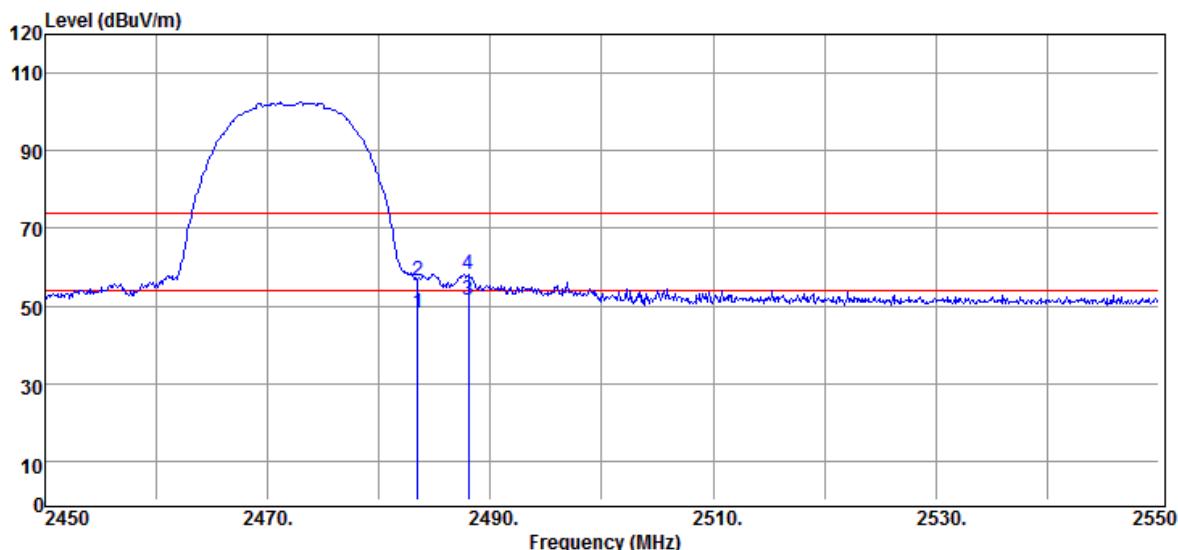
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Operation Mode :802.11b  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m	Margin
					dB $\mu$ V/m	dB
2483.50	Average	44.37	3.96	48.33	54.00	-5.67
2483.50	Peak	52.40	3.96	56.36	74.00	-17.64
2488.00	Average	47.37	3.99	51.36	54.00	-2.64
2488.00	Peak	54.15	3.99	58.14	74.00	-15.86

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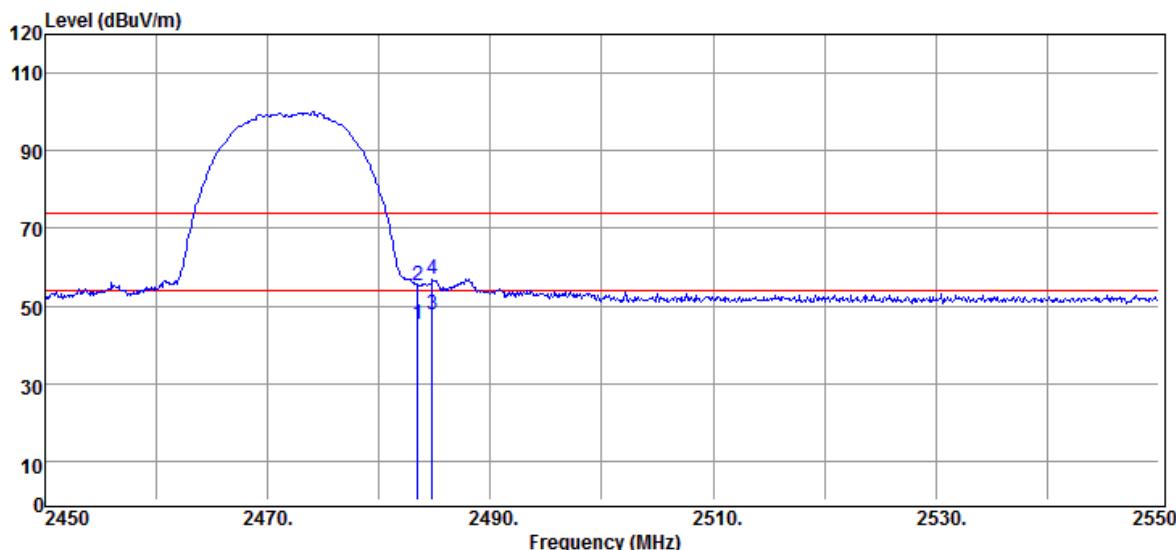
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Operation Mode :802.11b  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	41.32	3.96	45.28	54.00	-8.72
2483.50	Peak	51.10	3.96	55.06	74.00	-18.94
2484.80	Average	43.88	3.96	47.84	54.00	-6.16
2484.80	Peak	53.07	3.96	57.03	74.00	-16.97

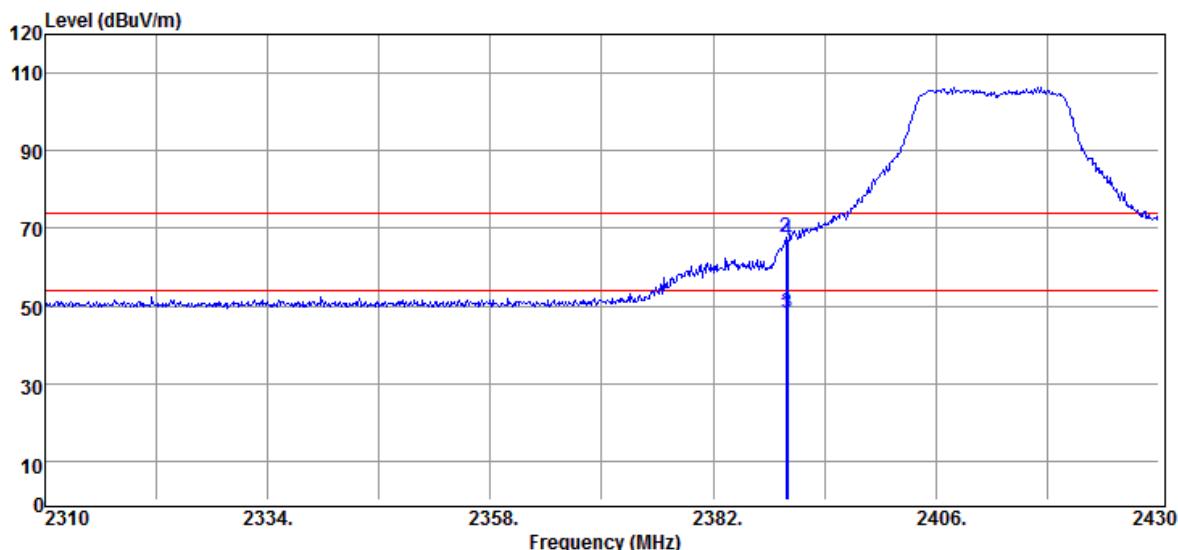
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Operation Mode	:802.11g	Test Date	:2018-07-12
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2389.80	Average	44.57	3.39	47.96	54.00	-6.04
2389.80	Peak	64.17	3.39	67.56	74.00	-6.44
2390.00	Average	44.66	3.39	48.05	54.00	-5.95
2390.00	Peak	63.62	3.39	67.01	74.00	-6.99

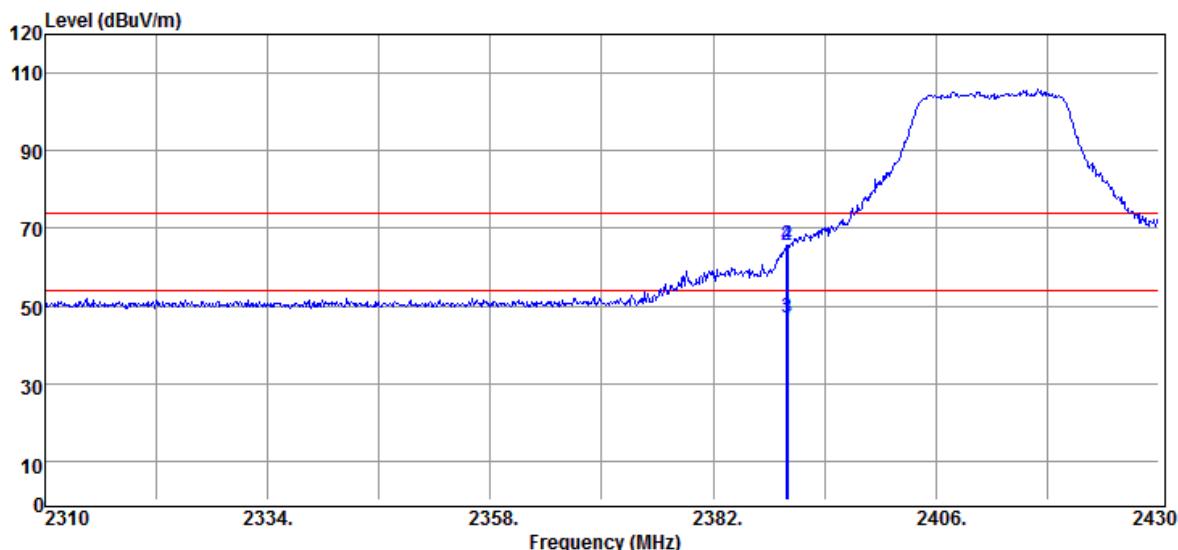
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Operation Mode	:802.11g	Test Date	:2018-07-12
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Enzo



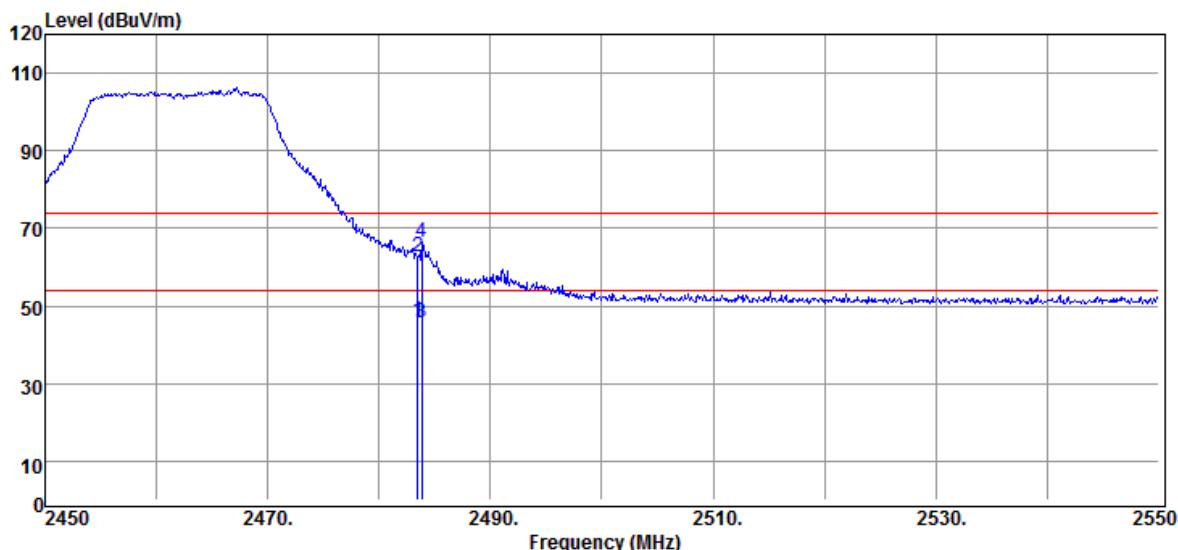
Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2389.92	Average	43.27	3.39	46.66	54.00	-7.34
2389.92	Peak	62.36	3.39	65.75	74.00	-8.25
2390.00	Average	43.53	3.39	46.92	54.00	-7.08
2390.00	Peak	62.19	3.39	65.58	74.00	-8.42

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Operation Mode	:802.11g	Test Date	:2018-07-12
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	42.23	3.96	46.19	54.00	-7.81
2483.50	Peak	58.69	3.96	62.65	74.00	-11.35
2483.80	Average	41.79	3.96	45.75	54.00	-8.25
2483.80	Peak	62.52	3.96	66.48	74.00	-7.52

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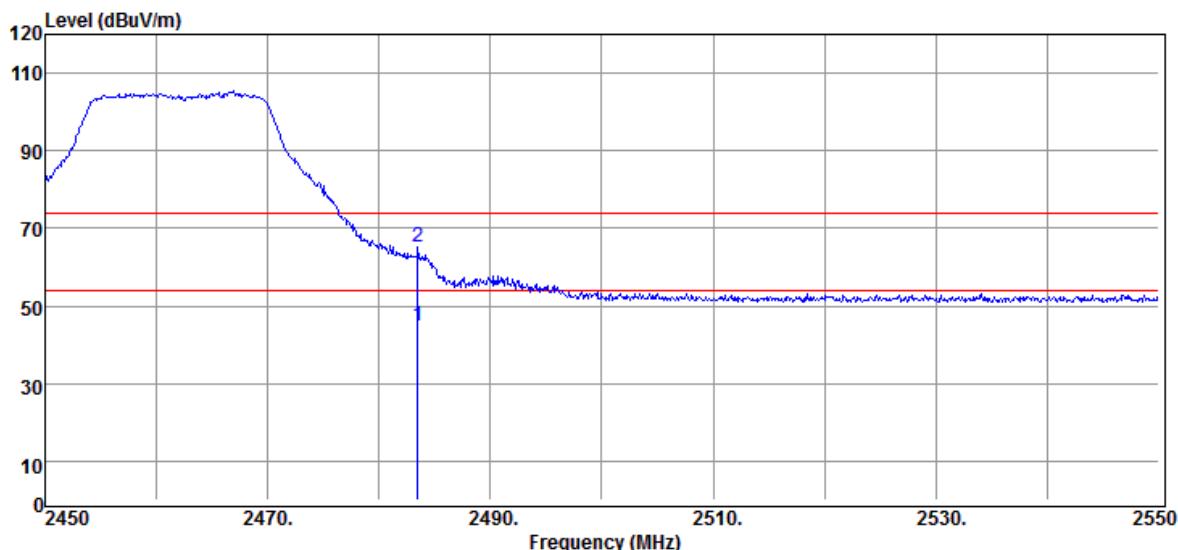
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Operation Mode :802.11g  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2462 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	41.06	3.96	45.02	54.00	-8.98
2483.50	Peak	61.17	3.96	65.13	74.00	-8.87

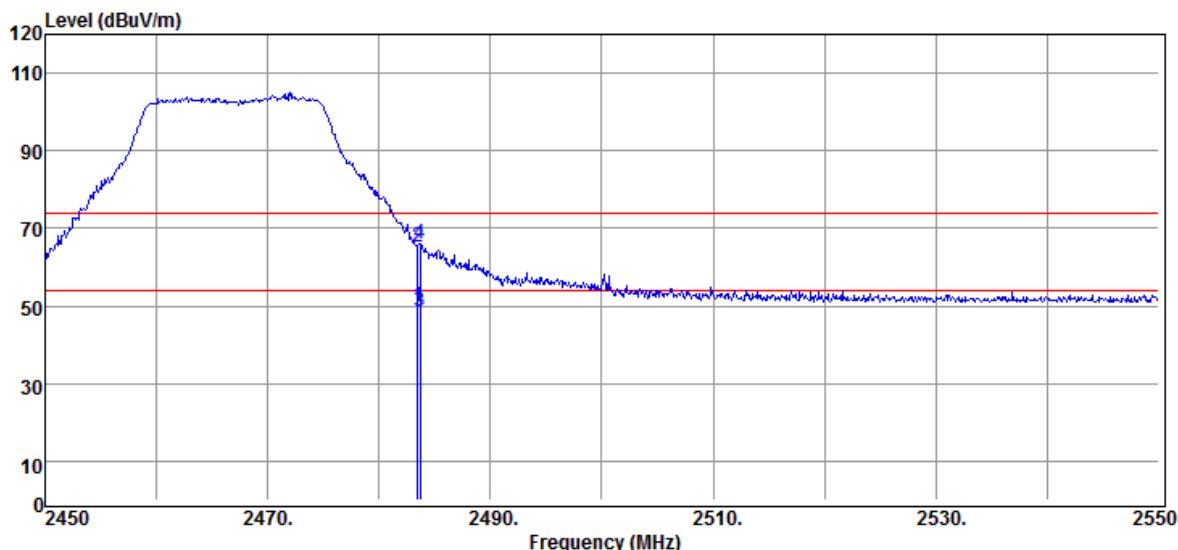
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Operation Mode :802.11g  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2467 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	45.77	3.96	49.73	54.00	-4.27
2483.50	Peak	61.10	3.96	65.06	74.00	-8.94
2483.70	Average	44.61	3.96	48.57	54.00	-5.43
2483.70	Peak	62.27	3.96	66.23	74.00	-7.77

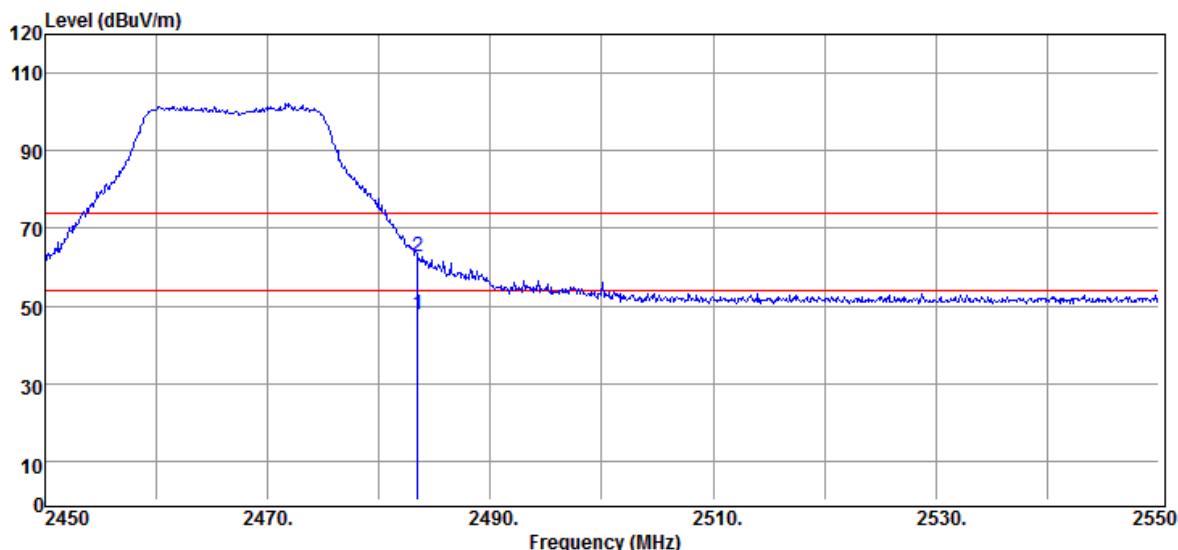
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Operation Mode :802.11g  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2467 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB $\mu$ V/m
2483.50	Average	43.67	3.96	47.63	54.00	-6.37
2483.50	Peak	58.84	3.96	62.80	74.00	-11.20

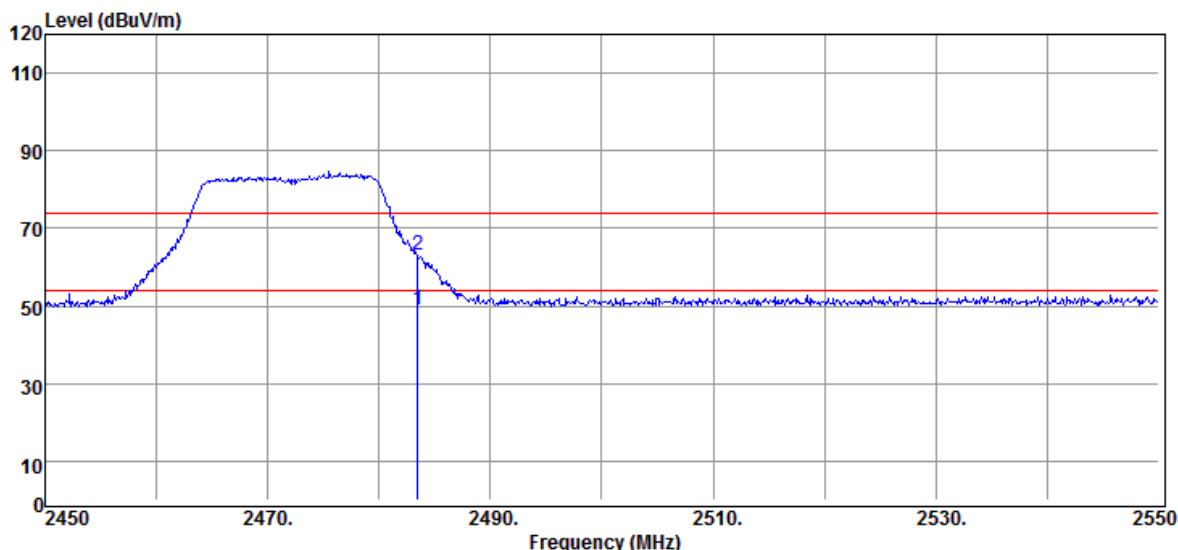
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Operation Mode :802.11g  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					FS dB $\mu$ V/m	Margin dB
2483.50	Average	44.95	3.96	48.91	54.00	-5.09
2483.50	Peak	59.04	3.96	63.00	74.00	-11.00

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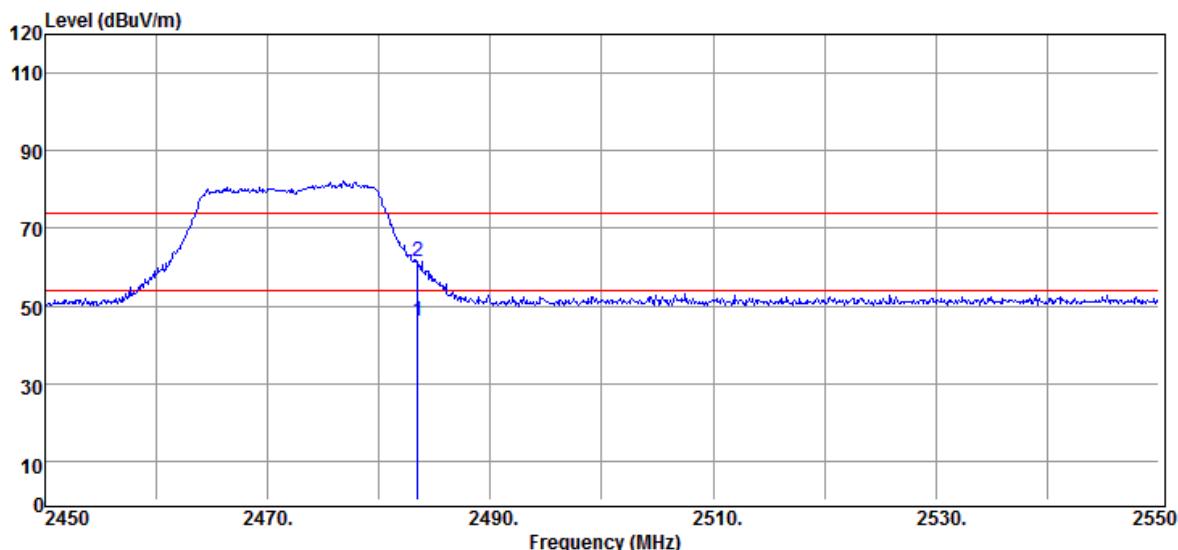
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Operation Mode :802.11g  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	42.07	3.96	46.03	54.00	-7.97
2483.50	Peak	57.68	3.96	61.64	74.00	-12.36

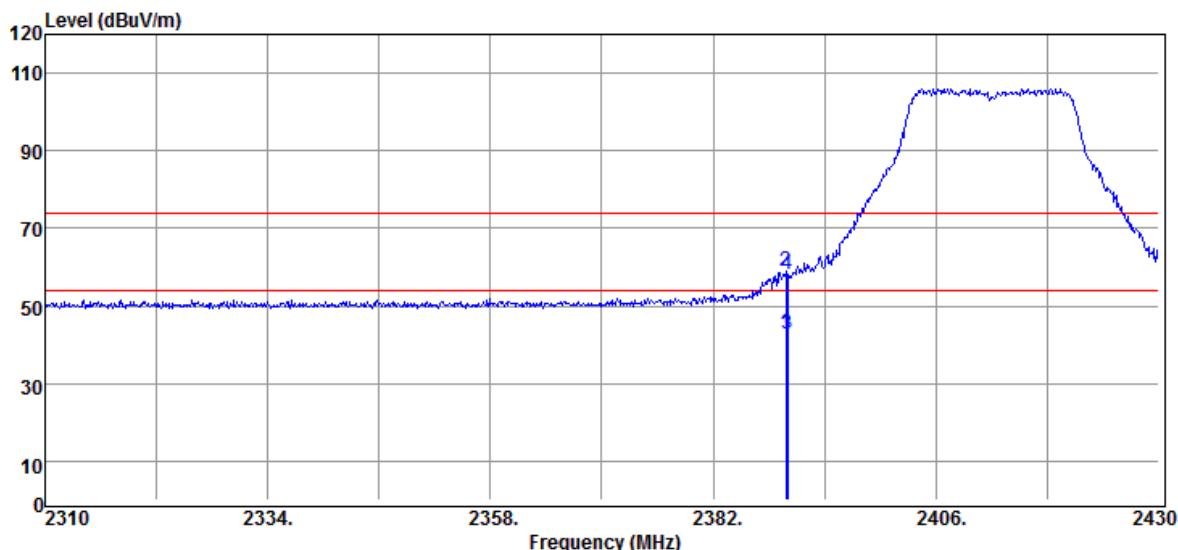
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Operation Mode :802.11n20  
Test Mode :BE CH LOW  
EUT Pol :H Plan  
Test Channel :2412 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB <sub>u</sub> V	Factor dB	Actual FS dB <sub>u</sub> V/m	Limit @3m	Margin dB
					dB <sub>u</sub> V/m	
2389.80	Average	39.44	3.39	42.83	54.00	-11.17
2389.80	Peak	55.39	3.39	58.78	74.00	-15.22
2390.00	Average	39.41	3.39	42.80	54.00	-11.20
2390.00	Peak	54.73	3.39	58.12	74.00	-15.88

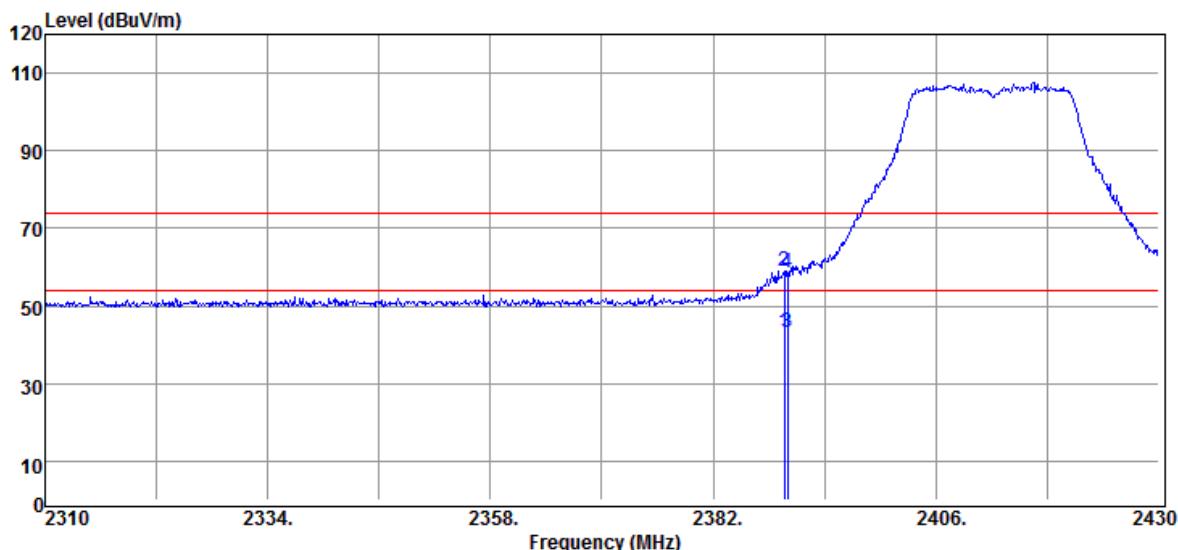
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Operation Mode :802.11n20  
Test Mode :BE CH LOW  
EUT Pol :H Plan  
Test Channel :2412 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2389.68	Average	39.76	3.39	43.15	54.00	-10.85
2389.68	Peak	55.47	3.39	58.86	74.00	-15.14
2390.00	Average	39.94	3.39	43.33	54.00	-10.67
2390.00	Peak	55.08	3.39	58.47	74.00	-15.53

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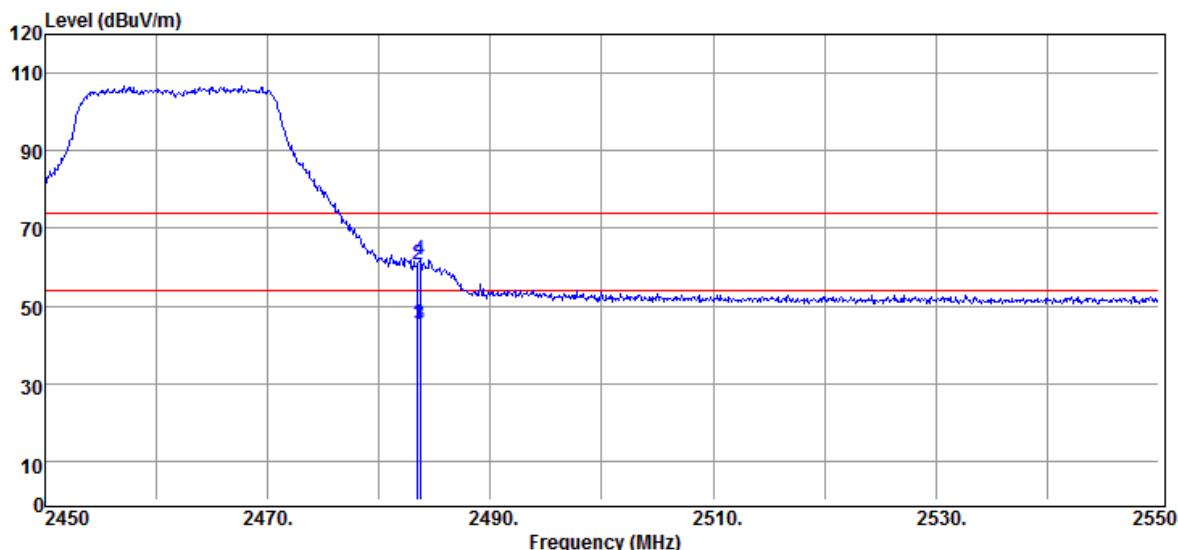
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Operation Mode :802.11n20  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2462 MHz

Test Date :2018-07-12  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	41.27	3.96	45.23	54.00	-8.77
2483.50	Peak	56.83	3.96	60.79	74.00	-13.21
2483.70	Average	41.33	3.96	45.29	54.00	-8.71
2483.70	Peak	58.04	3.96	62.00	74.00	-12.00

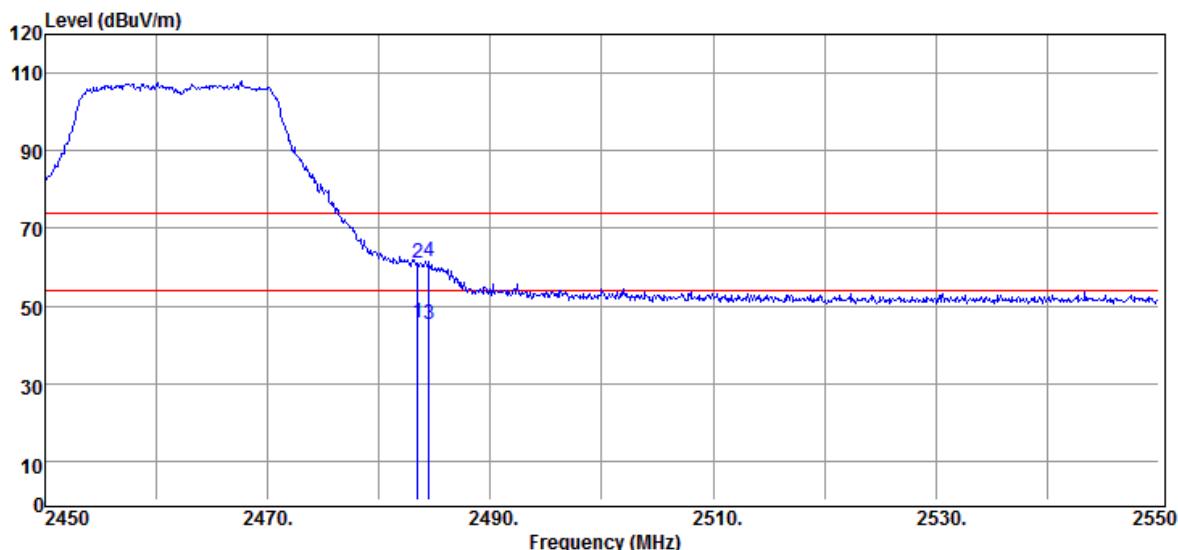
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Operation Mode	:802.11n20	Test Date	:2018-07-12
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	41.86	3.96	45.82	54.00	-8.18
2483.50	Peak	57.11	3.96	61.07	74.00	-12.93
2484.50	Average	41.12	3.96	45.08	54.00	-8.92
2484.50	Peak	57.42	3.96	61.38	74.00	-12.62

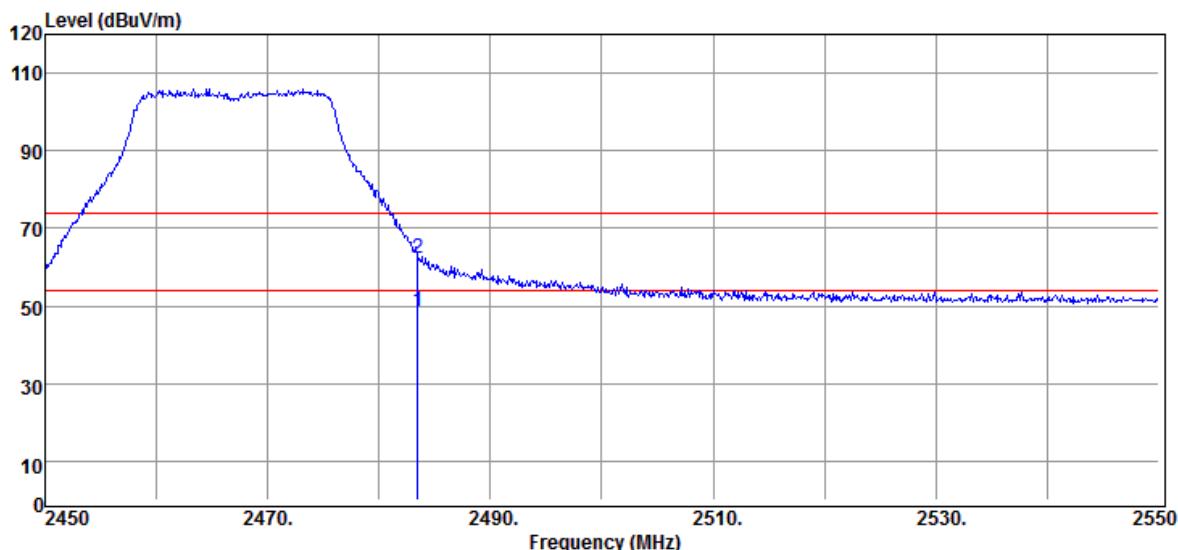
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Operation Mode :802.11n20  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2467 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					FS dB $\mu$ V/m	dB $\mu$ V/m
2483.50	Average	44.46	3.96	48.42	54.00	-5.58
2483.50	Peak	58.36	3.96	62.32	74.00	-11.68

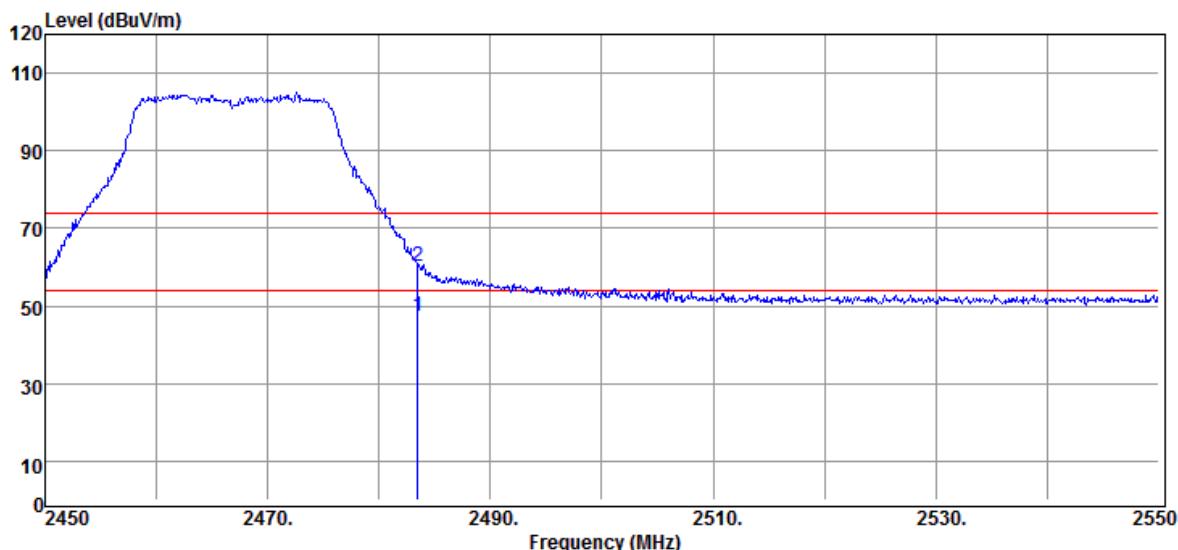
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Operation Mode	:802.11n20	Test Date	:2018-07-23
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	43.42	3.96	47.38	54.00	-6.62
2483.50	Peak	56.31	3.96	60.27	74.00	-13.73

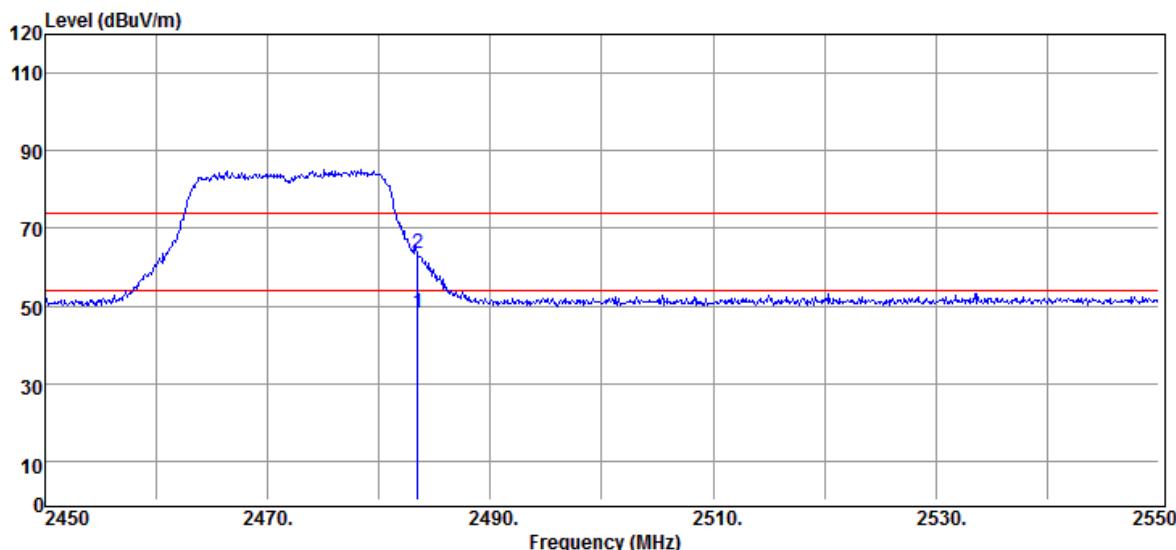
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Operation Mode :802.11n20  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	44.01	3.96	47.97	54.00	-6.03
2483.50	Peak	59.75	3.96	63.71	74.00	-10.29

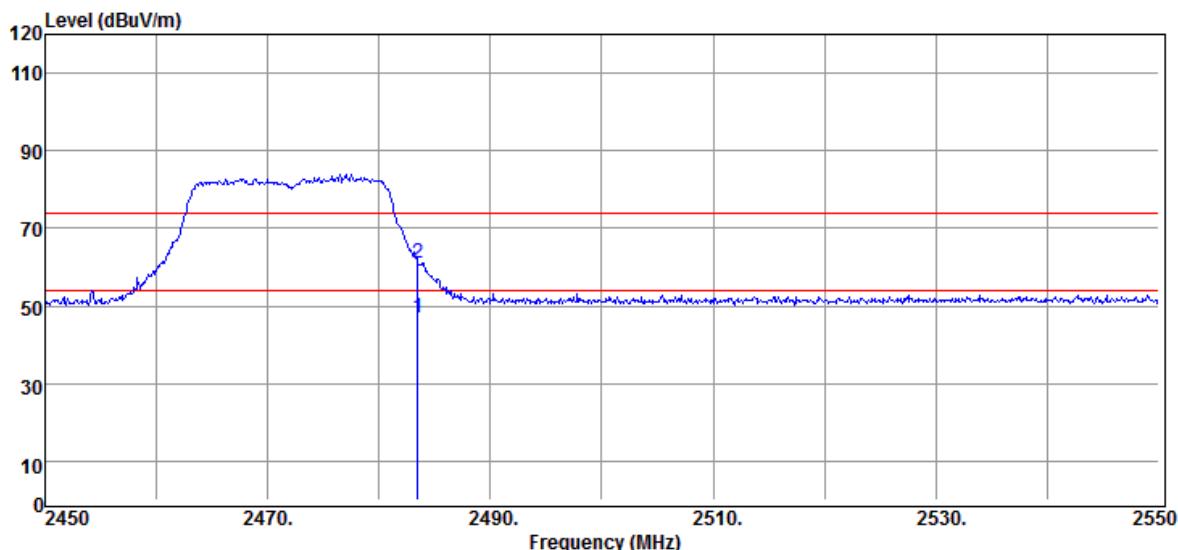
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Operation Mode :802.11n20  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2472 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



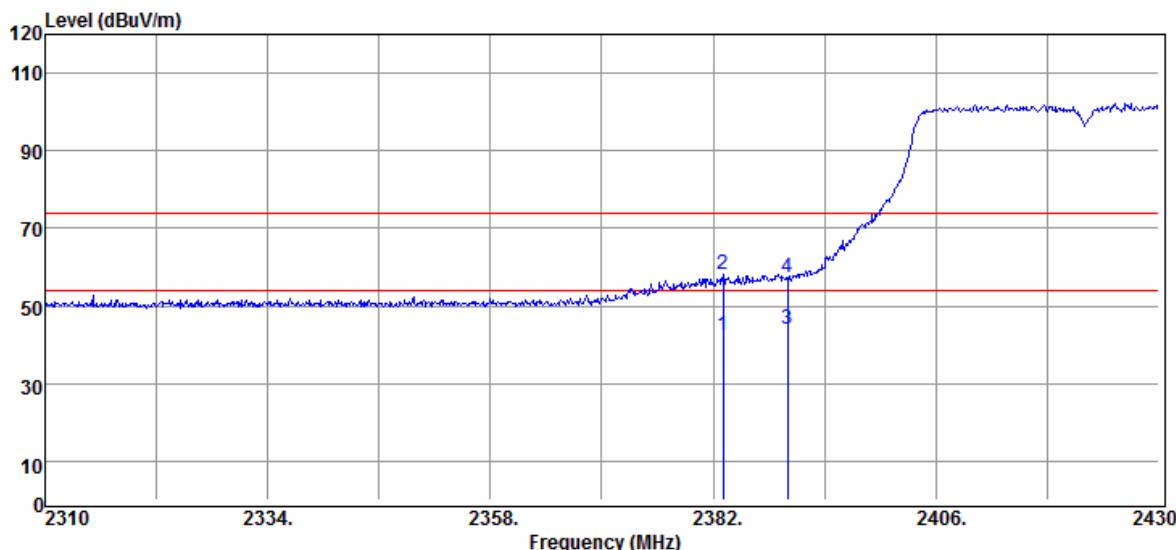
Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	42.94	3.96	46.90	54.00	-7.10
2483.50	Peak	57.13	3.96	61.09	74.00	-12.91

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Operation Mode	:802.11n40	Test Date	:2018-07-13
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2422 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2383.08	Average	38.91	3.38	42.29	54.00	-11.71
2383.08	Peak	54.63	3.38	58.01	74.00	-15.99
2390.00	Average	40.77	3.39	44.16	54.00	-9.84
2390.00	Peak	53.72	3.39	57.11	74.00	-16.89

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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

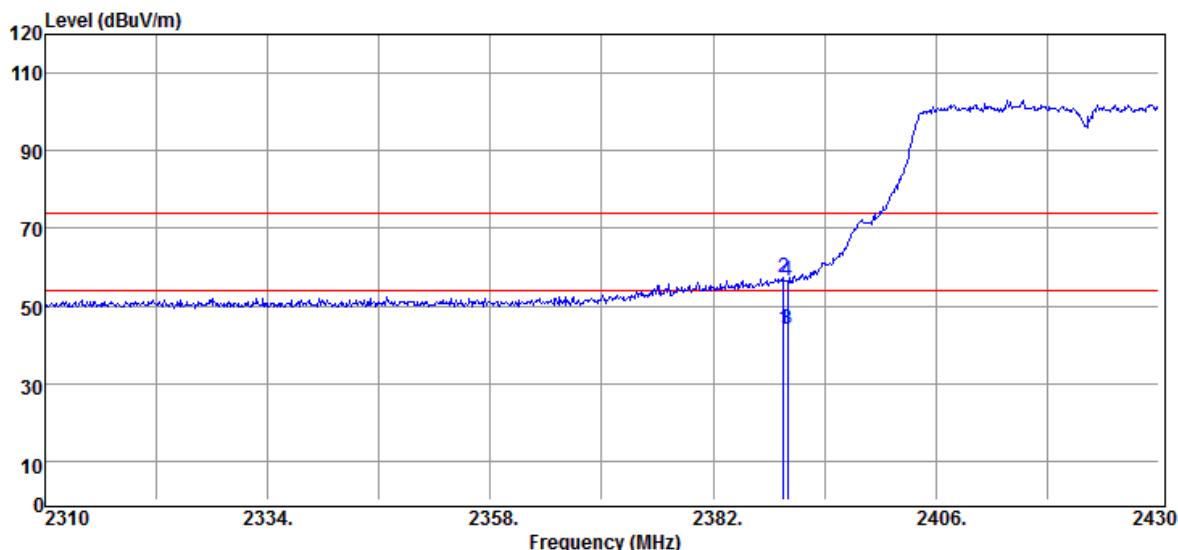
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Operation Mode :802.11n40  
Test Mode :BE CH LOW  
EUT Pol :H Plan  
Test Channel :2422 MHz

Test Date :2018-07-13  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB $\mu$ V/m
2389.56	Average	40.43	3.40	43.83	54.00	-10.17
2389.56	Peak	53.71	3.40	57.11	74.00	-16.89
2390.00	Average	40.51	3.39	43.90	54.00	-10.10
2390.00	Peak	53.21	3.39	56.60	74.00	-17.40

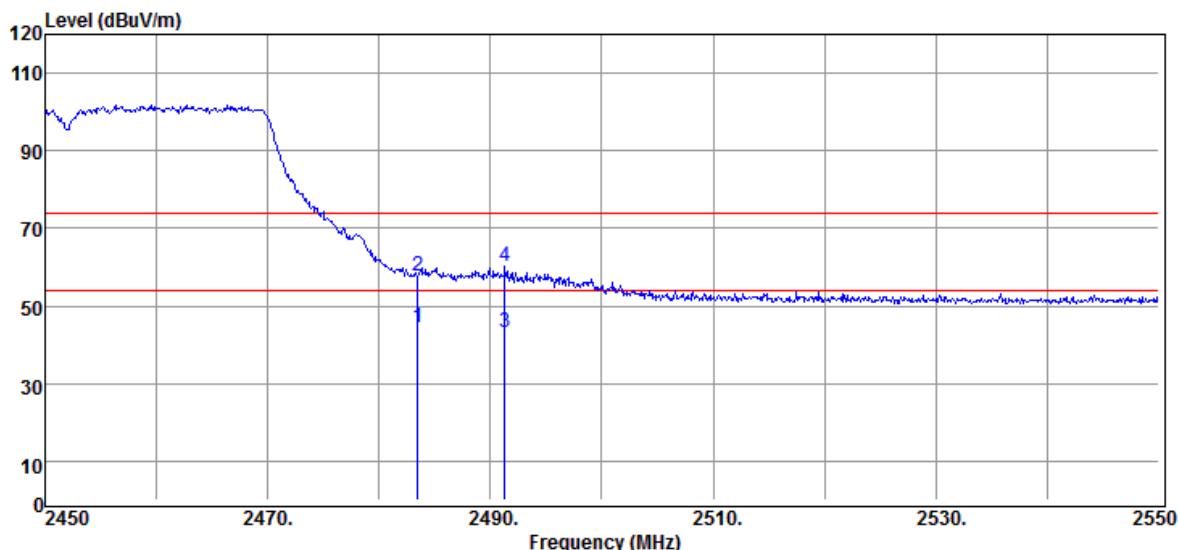
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Operation Mode :802.11n40  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2452 MHz

Test Date :2018-07-13  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	40.48	3.96	44.44	54.00	-9.56
2483.50	Peak	53.77	3.96	57.73	74.00	-16.27
2491.30	Average	39.27	4.01	43.28	54.00	-10.72
2491.30	Peak	56.23	4.01	60.24	74.00	-13.76

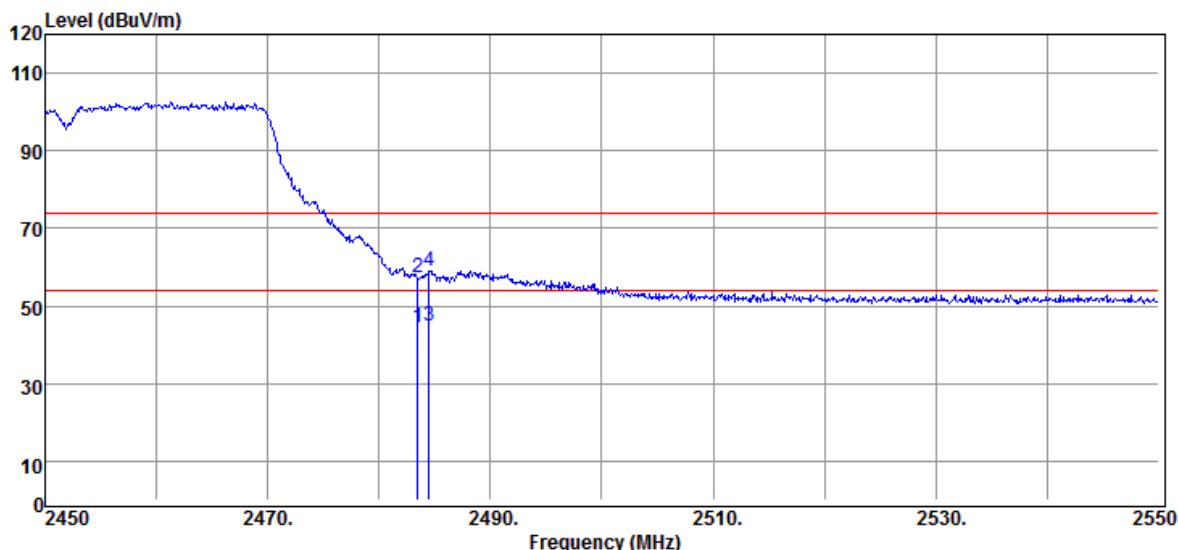
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Operation Mode :802.11n40  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2452 MHz

Test Date :2018-07-13  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



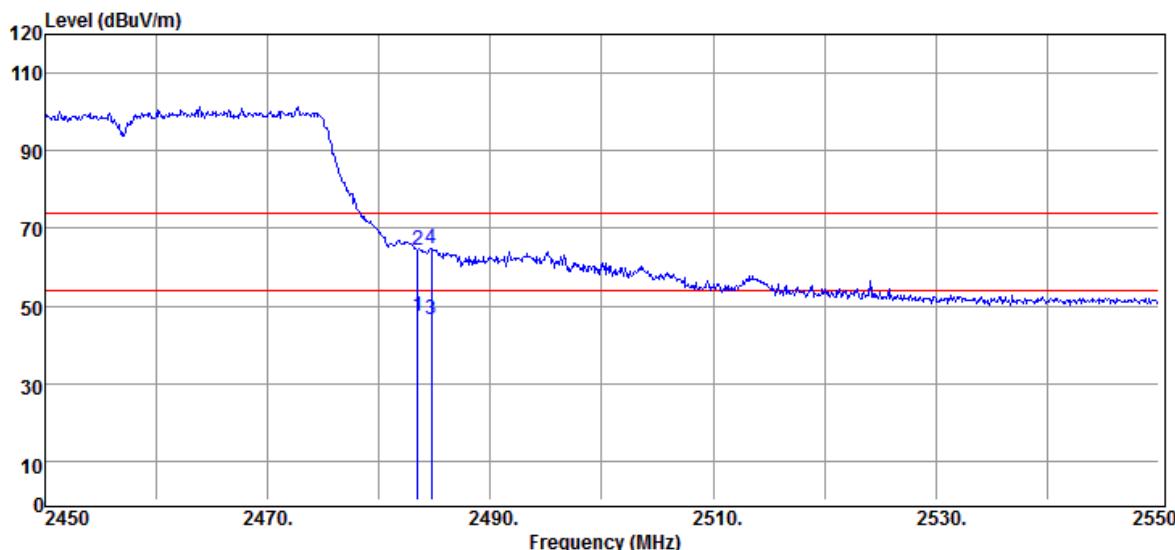
Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	40.52	3.96	44.48	54.00	-9.52
2483.50	Peak	53.40	3.96	57.36	74.00	-16.64
2484.50	Average	40.74	3.96	44.70	54.00	-9.30
2484.50	Peak	55.09	3.96	59.05	74.00	-14.95

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Operation Mode	:802.11n40	Test Date	:2018-07-23
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2457 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	43.53	3.96	47.49	54.00	-6.51
2483.50	Peak	60.59	3.96	64.55	74.00	-9.45
2484.70	Average	42.53	3.96	46.49	54.00	-7.51
2484.70	Peak	60.78	3.96	64.74	74.00	-9.26

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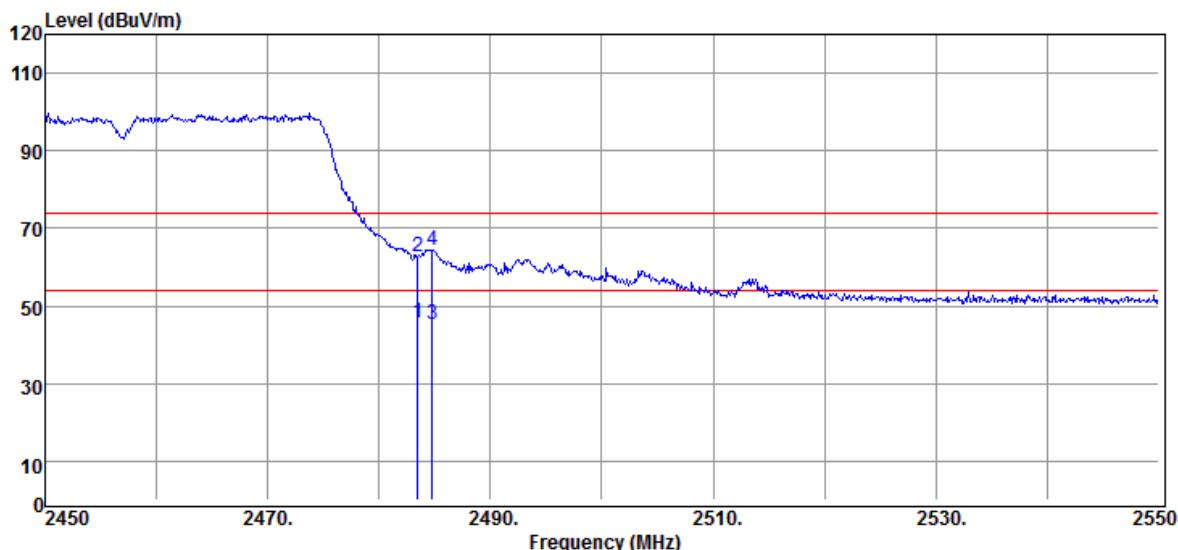
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Operation Mode :802.11n40  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2457 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m	Margin
				FS dB $\mu$ V/m	dB $\mu$ V/m	dB
2483.50	Average	41.82	3.96	45.78	54.00	-8.22
2483.50	Peak	58.82	3.96	62.78	74.00	-11.22
2484.80	Average	41.39	3.96	45.35	54.00	-8.65
2484.80	Peak	60.55	3.96	64.51	74.00	-9.49

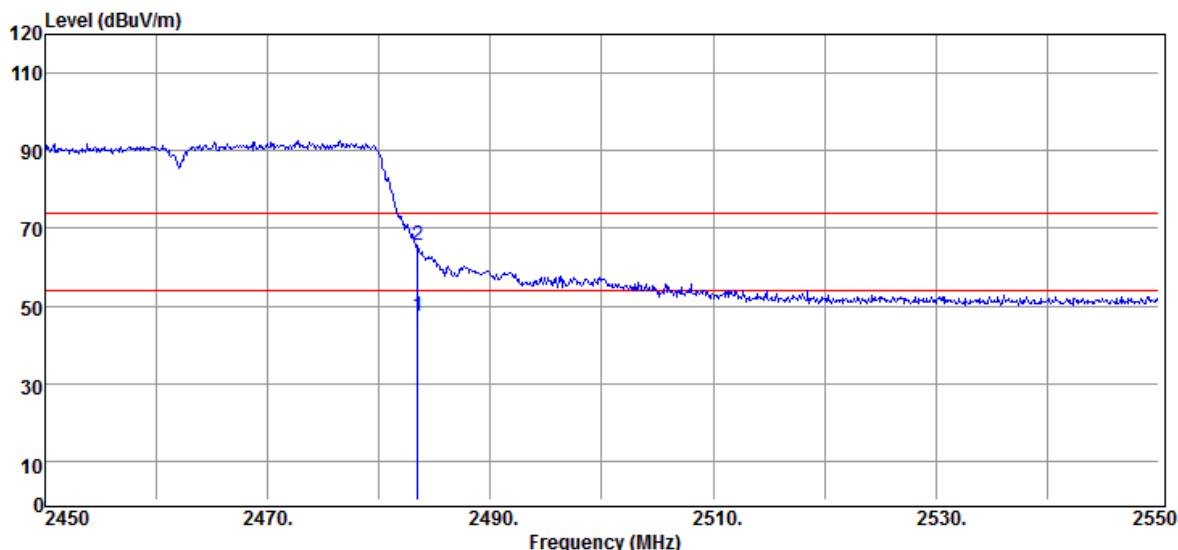
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Operation Mode :802.11n40  
 Test Mode :BE CH HIGH  
 EUT Pol :H Plan  
 Test Channel :2462 MHz

Test Date :2018-07-23  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	43.44	3.96	47.40	54.00	-6.60
2483.50	Peak	61.84	3.96	65.80	74.00	-8.20

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

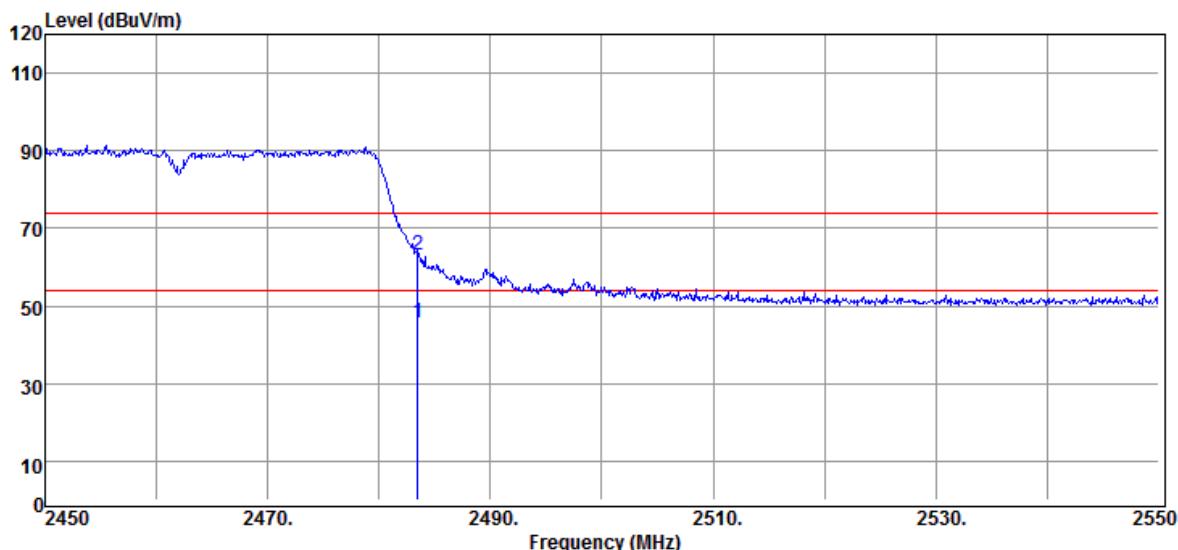
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Operation Mode :802.11n40  
Test Mode :BE CH HIGH  
EUT Pol :H Plan  
Test Channel :2462 MHz

Test Date :2018-07-23  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Enzo



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
					dB $\mu$ V/m	dB
2483.50	Average	41.86	3.96	45.82	54.00	-8.18
2483.50	Peak	59.07	3.96	63.03	74.00	-10.97

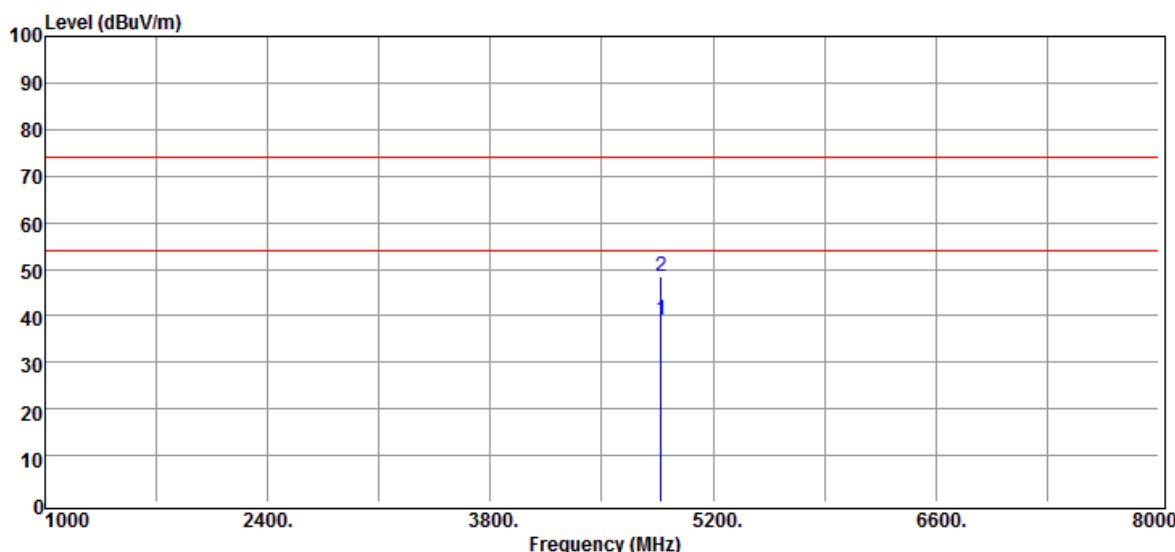
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**Radiated Spurious Emission Measurement Result (802.11 b)****Above 1GHz Data:**

Operation Mode	:802.11b	Test Date	:2018-08-20
Test Mode	:TX CH MID	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
				FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4874.00	Average	26.57	12.58	39.15	54.00	-14.85
4874.00	Peak	35.97	12.58	48.55	74.00	-25.45

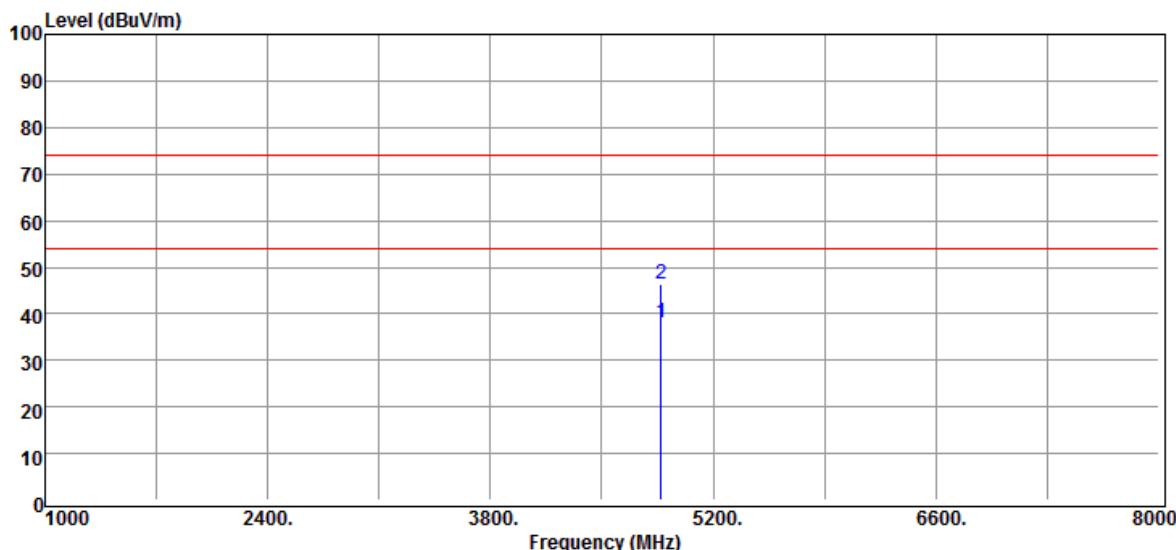
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Operation Mode :802.11b  
Test Mode :TX CH MID  
EUT Pol :H Plan  
Test Channel :2437 MHz

Test Date :2018-08-20  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



Freq. MHz	Detector Mode	Spectrum Reading Level dB <sub>u</sub> V	Factor dB	Actual FS dB <sub>u</sub> V/m	Limit @3m dB <sub>u</sub> V/m	Margin dB
					dB <sub>u</sub> V/m	dB <sub>u</sub> V/m
4874.00	Average	25.59	12.58	38.17	54.00	-15.83
4874.00	Peak	33.77	12.58	46.35	74.00	-27.65

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## 8 ANTENNA REQUIREMENT

### 8.1 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.

### 8.2 Antenna Connected Construction:

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo for details.

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