

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Product Name: M.2 Card form factor Bluetooth / IEEE 802.11a/b/g/n/ac wireless network adapter

Brand Name: acer

Model No.: 7265D2W

Model Difference: N/A

FCC ID: HLZ7265D2

IC: 1754F-7265D2

Report No.: E2/2018/70017

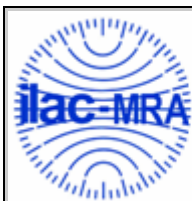
Issue Date: Jul. 27, 2018

FCC Rule Part: §15.407

IC Rule Part: RSS-247 issue 2 :2017

Prepared for: Acer Incorporated
8F., NO. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan

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



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VERIFICATION OF COMPLIANCE

Applicant: Acer Incorporated
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221, Taiwan

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Model No.: 7265D2W

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FCC ID: HLZ7265D2

IC: 1754F-7265D2

File Number: E2/2018/70017

Date of test: Jun 26, 2018 ~ Jul. 24, 2018

Date of EUT Received: Jun 26, 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.

Test By:

Aken Huang

Date:

Jul. 27, 2018

Aken Huang / Engineer

Prepared By:

Yuri Tsai

Date:

Jul. 27, 2018

Yuri Tsai / Clerk

Approved By:

Jim Chang

Date:

Jul. 27, 2018

Jim Chang / Manager

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Revision History

Report Number	Revision	Description	Issue Date
E2/2018/70017	Rev.00	Initial creation of document	Jul. 27, 2018

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1. GENERAL INFORMATION

1.1. Product Description

General Information of Host:

Product Name of Host:	Notebook Computer	
Brand Name:	<i>acer</i>	
Marketing Name of Host:	CP713-1WN	
Model No. of Host:	N18Q2	
Model Difference:	N/A	
Hardware Version:	vesion 1-1	
Software Version:	Win 10	
Model No. of BT/WLAN Module:	7265D2W	
Module FCC ID:	HLZ7265D2	
Module IC:	1754F-7265D2	
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:	M.2 Card form factor Bluetooth / IEEE 802.11a/b/g/n/ac wireless network adapter INSTALLED IN Notebook Computer	
Power Supply:	11.55Vdc from Rechargeable Li-polymer Battery Pack or 5V/9V/15V by AC/DC Power Adapter	
	Battery:	Model No.: AP15O5L, Supplier: acer
	Adapter:	Model No.: PA-1450-78, Supplier: LITEON

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WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.) / Average Rated Power(EIRP)	Modulation Technology	Type of Emission
11a	5150~5250	4	Avg. Power: 15.43dBm EIRP: 16.70dBm	OFDM	17M4D7W
	5250~5350	4	Avg. Power: 15.43dBm EIRP: 16.70dBm		17M5D7W
	5470~5725	12	Avg. Power: 10.43dBm EIRP: 11.49dBm		18M4D7W
	5725~5850	5	Avg. Power: 11.98dBm EIRP: 12.74dBm		16M7D7W
11n / ac_20M	HT20 / VHT20 5150~5250	4	Avg. Power: 15.36dBm EIRP:19.64dBm	OFDM	18M4D7W
	HT20 / VHT20 5250~5350	4	Avg. Power:18.75dBm EIRP:23.03dBm		18M5D7W
	HT20 / VHT20 5470~5725	12	Avg. Power:13.72dBm EIRP:17.79dBm		18M4D7W
	HT20 / VHT20 5725~5850	5	Avg. Power:15.20dBm EIRP:18.97dBm		17M8D7W
11n / ac_40M	HT40 / VHT40 5150-5250	2	Avg. Power: 19.01dBm EIRP:23.29dBm	OFDM	36M6D7W
	HT40 / VHT40 5250-5350	2	Avg. Power: 19.48dBm EIRP: 23.76dBm		36M7D7W
	HT40 / VHT40 5470-5725	6	Avg. Power: 15.93dBm EIRP: 20.00dBm		36M6D7W
	HT40 / VHT40 5725-5850	2	Avg. Power:15.95dBm EIRP: 19.72dBm		36M0D7W
11ac_80M	VHT80 5150~5250	1	Avg. Power: 15.13dBm EIRP: 19.41dBm	OFDM	75M5D7W
	VHT80 5250~5350	1	Avg. Power: 13.96dBm EIRP: 18.24dBm		75M5D7W
	VHT80 5470~5725	3	Avg. Power:12.28dBm EIRP: 16.35dBm		75M6D7W
	VHT80 5725-5850	1	Avg. Power: 13.89dBm EIRP: 17.66dBm		75M1D7W

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<p>Antenna Designation</p>	<p>PIFA Antenna, Supplier: WNC 1. P/N: N/A (Main) Gain: 1.27dBi (5150~5250MHz) Gain: 1.27dBi (5250~5350MHz) Gain: 1.06dBi (5470~5725MHz) Gain: 0.76dBi (5725~5850MHz)</p> <p>2. P/N: N/A (Aux) Gain: -0.98dBi (5150~5250MHz) Gain: -1.81dBi (5250~5350MHz) Gain: -0.6dBi (5470~5725MHz) Gain: -1dBi (5725~5850MHz)</p>
<p>Modulation type</p>	<p>CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM</p>
<p>Transition Rate:</p>	<p>802.11 a: 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 802.11 ac_20MHz: 6.5 –173.3Mbps 802.11 ac_40MHz: 13.5 –400.0Mbps 802.11 ac_80MHz: 29.3 – 866.7Mbps</p>

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1.2. Related Submittal(s) / Grant (s)

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

RSS-247 issue 2 Feb. 2017

RSS-Gen. issue 5 Apr. 2018

ANSI C63.10:2013

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 Numbers are: 735305 / TW0002

Canada Registration Number: 4620A-5

1.4. Special Accessories

There are no special accessories used while test was conducted.

1.5. Equipment Modifications

There was no modification incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

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

2.2. EUT Exercise

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

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as 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 30MHz,. 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 a placed on as 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 RESULT

FCC / IC Rules	Description Of Test	Result
§15.407(a) (1) (2) RSS-247 §6.2.1~ 4 (1)	The Maximum Output Power Measurement	Compliant
§15.407(b) (1) (2) (3)(6) (7) RSS-247 §6.2.1~ 4 (2)	Undesirable Emission – Radiated Measurement	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

4. DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

4 channels are provided for 802.11a, 802.11n, HT20, 802.11ac, VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n, HT40, 802.11ac, VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac, VHT80

CHANNEL	FREQUENCY
42	5210 MHz

Operated band in 5250 MHz ~5350 MHz:

4 channels are provided for 802.11a, 802.11n, HT20, 802.11ac, VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n, HT40, 802.11ac, VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac, VHT80

CHANNEL	FREQUENCY
58	5290 MHz

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Operated band in 5470 MHz ~5725 MHz:

12 channels are provided for 802.11a, 802.11n HT20, 802.11ac VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720

6 channels are provided for 802.11n HT40, 802.11ac VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710

3 channel is provided for 802.11ac VHT80

CHANNEL	FREQUENCY
106	5530 MHz
122	5610 MHz
138	5690 MHz

Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a, 802.11n HT20, 802.11ac VHT20

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

2 channels are provided for 802.11n HT40, 802.11ac VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac VHT80

CHANNEL	FREQUENCY
155	5775 MHz

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RADIATED EMISSION TEST:

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	40	OFDM	6	MAIN
802.11a	5260~5320	52 to 64	60	OFDM	6	MAIN
802.11a	5500~5700	100 to 140	140	OFDM	6	MAIN
802.11a	5745~5825	149 to 165	157	OFDM	6	MAIN
BANDEDGE						
802.11a	5180~5240	36 to 48	36	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100, 140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102, 134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5690	106 to 138	106	OFDM	MCS8	MIMO
802.11a	5745~5825	149 to 165	149, 165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5755~5795	151 to 159	151, 159	OFDM	MCS8	MIMO
802.11ac_VHT80	5755	155	155	OFDM	MCS8	MIMO

Note:

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

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ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,40,48	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100,120,140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102,118,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5690	106 to 138	106,122	OFDM	MCS8	MIMO
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS8	MIMO
802.11ac_VHT80	5755	155	155	OFDM	MCS8	MIMO

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26 dB and 99% Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 1.42 dB
Peak Power Spectral Density Measurement	+/- 1.55 dB
Peak Excursion Measurement	+/- 1.55 dB
Undesirable Emission – Conducted Measurement	+/- 1.55 dB
Transmission in case of Absence of Information	+/- 1.55 dB
Frequency Stability	+/- 123.36 Hz
TPC and DFS Measurement	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : Vertical)	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 : Horizontal)	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. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

6.1 Standard Applicable:

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

According to RSS-247 §6.2.1~ 4 (1)

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP shall not exceed 200 mW or 10 + 10 log10 B
5250~5350 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log10 B EIRP shall not exceed 1.0 W or 17 + 10 log10 B, dBm
5470-5600 MHz and 5650-5725 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log10 B EIRP shall not exceed 1.0 W or 17 + 10 log10 B, dBm
5725~5850 MHz	Conducted output power shall not exceed 1 W

Note: B is the 99% emission bandwidth in MHz.

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

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

Effective Legacy Gain = 1.27+3.01=4.28dBi (5150MHz-5250MHz)

Effective Legacy Gain = 1.27+3.01=4.28dBi (5250MHz-5350MHz)

Effective Legacy Gain = 1.06+3.01=4.07dBi (5470MHz-5725MHz)

Effective Legacy Gain = 0.76+3.01=3.77dBi (5725MHz-5850MHz)

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6.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
3. Set the offset $10 \cdot \log(1/x)$, $n_{HT20}=0.10$, $n_{HT40}=0.12$
4. Record the max. reading.
5. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.
6. Employing step 1 to4 obtaining per-chain basis in MIMO operation, and sum the power in linear to result the output of MIMO operation at frequency of interest (, where MIMO is applicable).

Note: For EIRP/ERP measurement complying with RSS-247 §6.2.1~ 4 (1), the formula as deduced in 1.3.2 of KDB 412172 D01 is used to calculate. $ERP/EIRP = P_t + G_t - L_c$, where P_t = transmitter output power measured directly at antenna port, expressing in dBm, and G_t = gain of the transmitting antenna in dBi that can be referred in antenna spec provided by the manufacturer in section 1.1, L_c = signal attenuation in the cable between the transmitting port and antenna.

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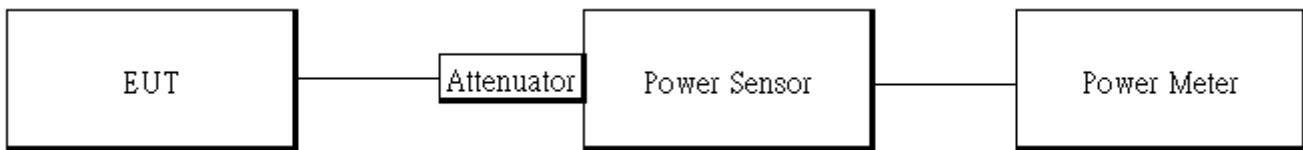
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6.3 Measurement Equipment Used:

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	2018/06/20	2019/06/19
Power Meter	Anritsu	ML2496A	1326001	2018/06/23	2019/06/22
Power Sensor	Anritsu	MA2411B	1315048	2018/06/23	2019/06/22
Power Sensor	Anritsu	MA2411B	1315049	2018/06/23	2019/06/22
Coaxial Cable 30cm	WOKEN	00100A1F1A195 C	RF01	2017/12/24	2018/12/23
DC Block	PASTERNAK	PE8210	RF29	2017/12/24	2018/12/23
Splitter	RF-LAMBAD	RFLT2W1G18G	RF35	2017/12/24	2018/12/23
Attenuator	WOKEN	218FS-10	RF23	2017/12/24	2018/12/23
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/02	2019/05/01

6.4 Test Set-up:



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6.5 Measurement Result

802.11a

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	13.95	24.83	23.98	PASS
40	5200	15.41	34.75	23.98	PASS
48	5240	15.43	34.91	23.98	PASS
52	5260	15.43	34.91	23.98 or $11+10\log(B) = 23.17$	PASS
60	5300	15.28	33.73	23.98 or $11+10\log(B) = 23.15$	PASS
64	5320	13.17	20.75	23.98 or $11+10\log(B) = 23.12$	PASS
100	5500	8.43	6.97	23.98 or $11+10\log(B) = 23.12$	PASS
120	5600	10.43	11.04	23.98 or $11+10\log(B) = 23.15$	PASS
140	5700	7.95	6.24	23.98 or $11+10\log(B) = 23.11$	PASS
149	5745	11.98	15.78	30	PASS
157	5785	11.95	15.67	30	PASS
165	5825	11.41	13.84	30	PASS

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802.11n_HT20 (MIMO)

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CHAIN 0	CHAIN 1				
36	5180	12.54	12.13	15.35	34.278	23.98	PASS
40	5200	12.45	12.01	15.25	33.465	23.98	PASS
48	5240	12.51	12.19	15.36	34.381	23.98	PASS
52	5260	15.48	15.98	18.75	74.946	23.98 or $11+10\log(B) = 23.43$	PASS
60	5300	15.41	15.95	18.70	74.109	23.98 or $11+10\log(B) = 23.42$	PASS
64	5320	12.69	12.28	15.50	35.482	23.98 or $11+10\log(B) = 23.43$	PASS
100	5500	8.43	9.87	12.22	16.671	23.98 or $11+10\log(B) = 23.40$	PASS
116	5600	10.42	10.98	13.72	23.547	23.98 or $11+10\log(B) = 23.42$	PASS
140	5700	7.96	7.98	10.98	12.532	23.98 or $11+10\log(B) = 23.403$	PASS
144	5720	10.41	9.88	13.16	20.718	23.98 or $11+10\log(B) = 23.403$	PASS
149	5745	11.94	12.43	15.20	33.130	30	PASS
157	5785	11.87	12.39	15.15	32.720	30	PASS
165	5825	11.91	12.43	15.19	33.022	30	PASS

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802.11n_HT40 (MIMO)

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CHAIN 0	CHAIN 1				
38	5190	10.96	10.55	13.77	23.82	23.98	PASS
46	5230	16.02	15.98	19.01	79.62	23.98	PASS
54	5270	16.48	16.45	19.48	88.62	23.98 or $11+10\log(B) = 26.53$	PASS
62	5310	12.21	12.23	15.23	33.35	23.98 or $11+10\log(B) = 26.52$	PASS
102	5510	8.43	8.87	11.67	14.68	23.98 or $11+10\log(B) = 26.53$	PASS
118	5590	11.48	11.42	14.46	27.93	23.98 or $11+10\log(B) = 26.52$	PASS
134	5670	11.41	11.38	14.41	27.58	23.98 or $11+10\log(B) = 26.53$	PASS
142	5710	12.92	12.91	15.93	39.13	23.98 or $11+10\log(B) = 26.53$	PASS
151	5755	12.27	12.98	15.65	36.73	30	PASS
159	5795	12.96	12.91	15.95	39.31	30	PASS

802.11ac_VHT80 (MIMO)

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CHAIN 0	CHAIN 1				
42	5210	12.22	12.01	15.13	32.56	23.98	PASS
58	5290	11.02	10.88	13.96	24.89	23.98 or $11+10\log(B) = 29.74$	PASS
106	5530	8.41	8.35	11.39	13.77	23.98 or $11+10\log(B) = 29.74$	PASS
122	5610	9.98	8.42	12.28	16.90	23.98 or $11+10\log(B) = 30.14$	PASS
155	5775	11.31	10.41	13.89	24.51	23.98	PASS

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

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ERP/EIRP Measurement:
802.11a

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
36	5180	13.95	24.83	1.27	15.22	23.01 or 10+10log(B) =22.13	PASS
40	5200	15.41	34.75		16.68	23.01 or 10+10log(B) =22.13	PASS
48	5240	15.43	34.91		16.70	23.01 or 10+10log(B) =22.13	PASS
52	5260	15.43	34.91	1.27	16.70	30 or 17+10log(B) =29.17	PASS
60	5300	15.28	33.73		16.55	30 or 17+10log(B) =29.15	PASS
64	5320	13.17	20.75		14.44	30 or 17+10log(B) =29.12	PASS
100	5500	8.43	6.97	1.06	9.49	30 or 17+10log(B) =29.12	PASS
120	5600	10.43	11.04		11.49	30 or 17+10log(B) =29.11	PASS
140	5700	7.95	6.24		9.01	30 or 17+10log(B) =29.11	PASS
149	5745	11.98	15.78	0.76	12.74	30	PASS
157	5785	11.95	15.67		12.71	30	PASS
165	5825	11.41	13.84		12.17	30	PASS

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802.11n_HT20 (MIMO)

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
36	5180	15.35	34.28	4.28	19.63	23.01 or 10+10log(B) =22.42	PASS
40	5200	15.25	33.50		19.53	23.01 or 10+10log(B) =22.40	PASS
48	5240	15.36	34.36		19.64	23.01 or 10+10log(B) =22.40	PASS
52	5260	18.75	74.99	4.28	23.03	30 or 17+10log(B) =29.43	PASS
60	5300	18.70	74.13		22.98	30 or 17+10log(B) =29.42	PASS
64	5320	15.50	35.48		19.78	30 or 17+10log(B) =29.43	PASS
100	5500	12.22	16.67	4.07	16.29	30 or 17+10log(B) =29.40	PASS
120	5600	13.72	23.55		17.79	30 or 17+10log(B) =29.66	PASS
140	5700	10.98	12.53		15.05	30 or 17+10log(B) =29.40	PASS
144	5720	13.16	20.70		17.23	30 or 17+10log(B) =29.40	PASS
149	5745	15.20	33.11	3.77	18.97	30	PASS
157	5785	15.15	32.73		18.92	30	PASS
165	5825	15.19	33.04		18.96	30	PASS

802.11n_HT40 (MIMO)

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
38	5190	13.77	23.82	4.28	18.05	23.01 or 10+10log(B) =28.75	PASS
46	5230	19.01	79.62		23.29	23.01 or 10+10log(B) =35.80	PASS
54	5270	19.48	88.72	4.28	23.76	30 or 17+10log(B) =32.53	PASS
62	5310	15.23	33.34		19.51	30 or 17+10log(B) =32.53	PASS
102	5510	11.67	14.69	4.07	15.74	30 or 17+10log(B) =32.53	PASS
110	5590	14.46	27.93		18.53	30 or 17+10log(B) =32.52	PASS
134	5670	14.41	27.61		18.48	30 or 17+10log(B) =32.53	PASS
142	5710	15.93	39.17		20.00	30 or 17+10log(B) =32.53	PASS
151	5755	15.65	36.73	3.77	19.42	30	PASS
159	5795	15.95	39.36		19.72	30	PASS

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802.11ac_VHT80 (MIMO)

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	REQUIRED LIMIT (dBm)	RESULT
42	5210	15.13	32.584	4.28	19.41	23.01 or $10+10\log(B) = 28.75$	PASS
58	5290	13.96	24.889	4.28	18.24	30 or $17+10\log(B) = 35.74$	PASS
106	5530	11.39	13.772	4.07	15.46	30 or $17+10\log(B) = 35.74$	PASS
122	5610	12.28	16.904		16.35	30 or $17+10\log(B) = 35.59$	PASS
155	5775	13.89	24.491	3.77	17.66	30	PASS

* **Note:** EIRP = Average Power + Gain

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7. UNDESIRABLE EMISSION - RADIATED MEASUREMENT

7.1 Standard Applicable

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

1. For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
2. For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.3 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
*1 beyond 75 MHz or more above of the bandedge.		
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.		
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.		
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

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

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

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

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

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7.2 Measurement Equipment Used:

SGS 966 Chamber No.C					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Horn Antenna	Schwarzbeck	BBHA9120D	1341	2018/06/07	2019/06/06
3m Site NSA	SGS	966 chamber D	N/A	2017/07/06	2018/07/05
EMI Test Receiver	R&S	ESU 40	100363	2018/04/11	2019/04/10
Pre-Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Highpass Filter	Micro Tronics	BRM50701-01	G008	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	2017/12/26	2018/12/25

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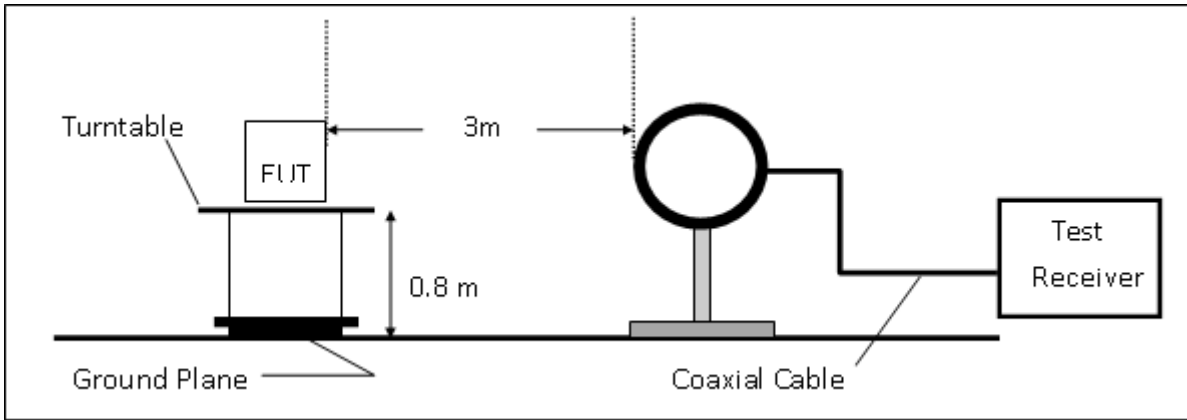
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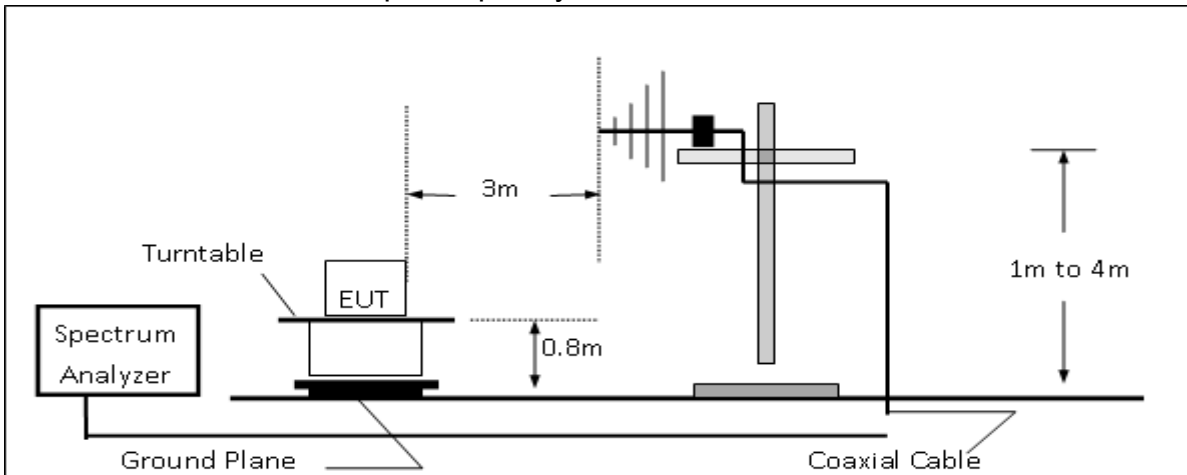
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7.3 Test SET-UP

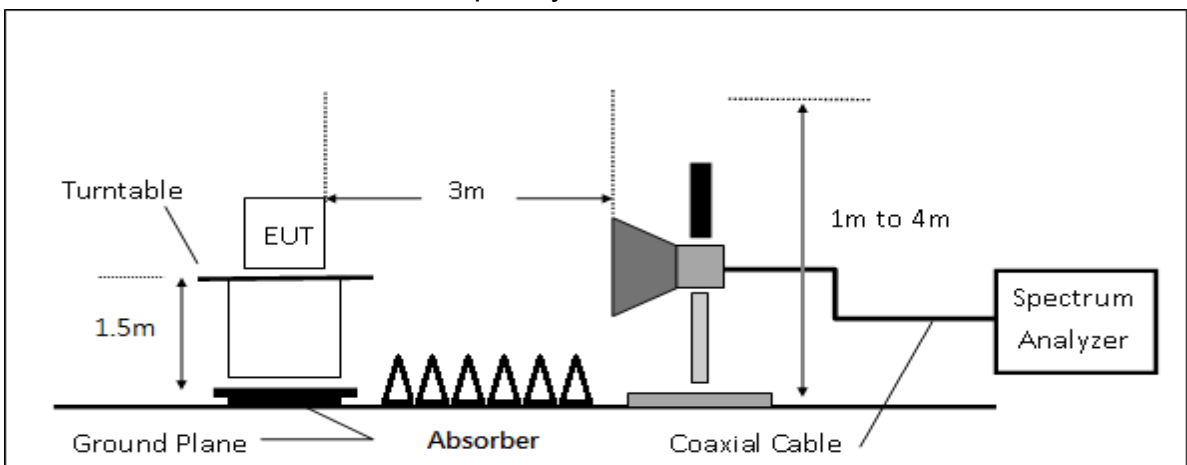
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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7.4 Measurement Procedure

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

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)

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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

Refer to attach tabular data sheets.

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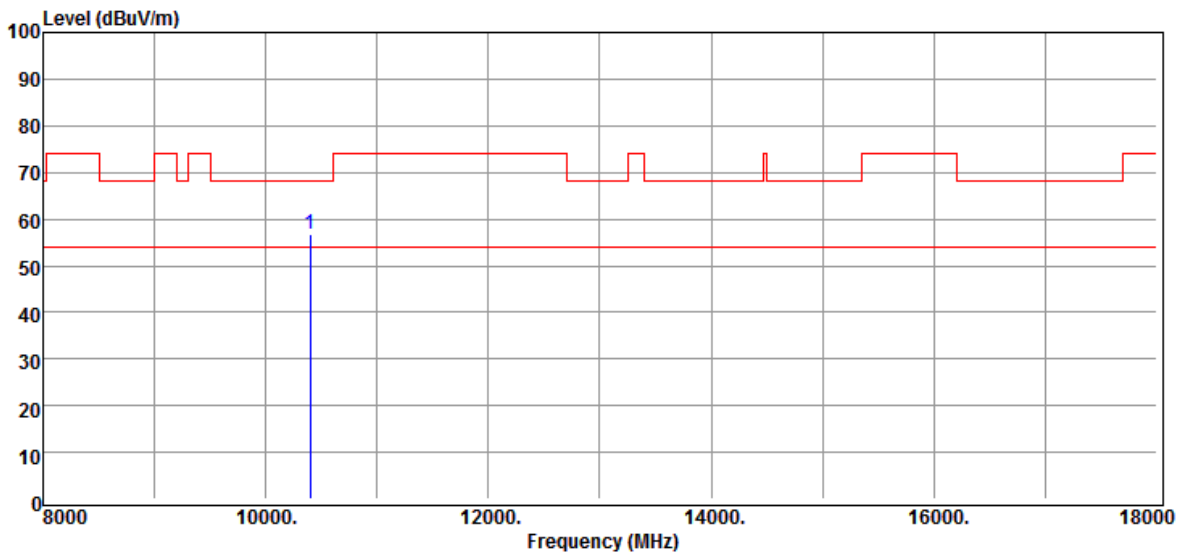
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Radiated Spurious Emission Measurement Result

Above 1GHz Worst-Case Data:

802.11a, 5150~5250 MHz

Operation Mode	:802.11a / Band 1	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5200 MHz	Engineer	:Enzo



Freq. MHz	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
10400.00	Peak	30.00	26.79	56.79	68.20	-11.41

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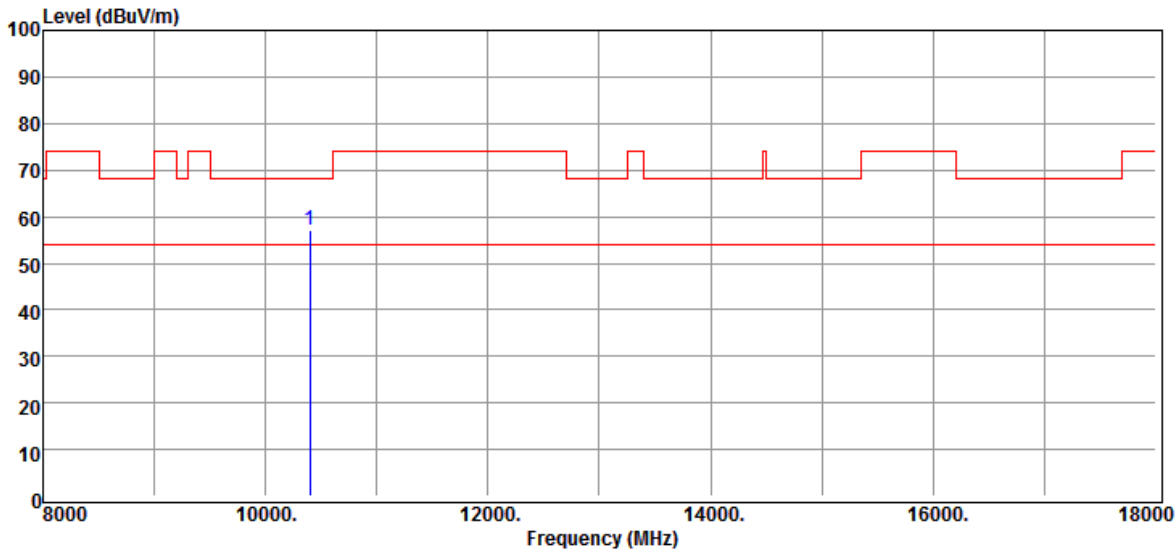
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Operation Mode	:802.11a / Band 1	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5200 MHz	Engineer	:Enzo



Freq. MHz	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
10400.00	Peak	30.41	26.79	57.20	68.20	-11.00

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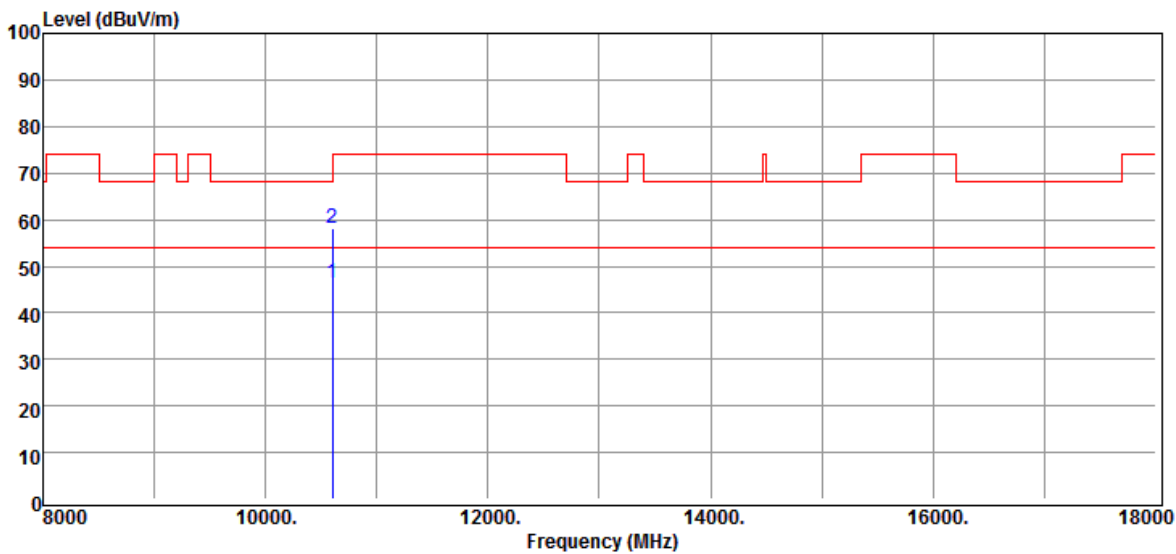
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Radiated Spurious Emission Measurement Result

802.11a, 5250MHz-5350MHz

Operation Mode	:802.11a / Band 2	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5300 MHz	Engineer	:Enzo



Freq. MHz	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
10600.00	Average	19.13	27.21	46.34	54.00	-7.66
10600.00	Peak	30.93	27.21	58.14	68.20	-10.06

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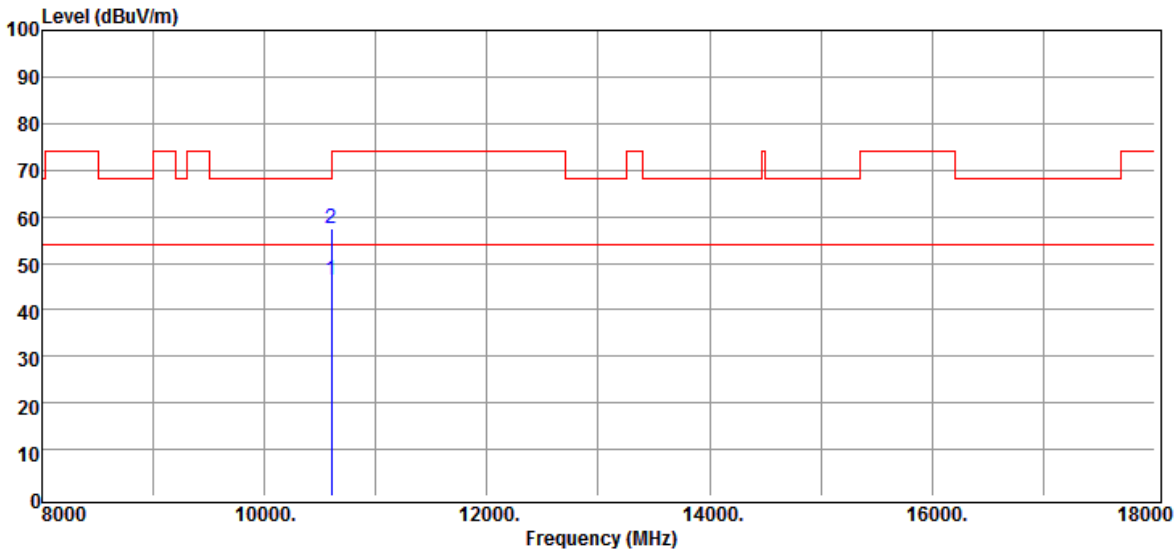
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Operation Mode	:802.11a / Band 2	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5300 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
10600.00	Average	19.11	27.21	46.32	54.00	-7.68
10600.00	Peak	30.39	27.21	57.60	68.20	-10.60

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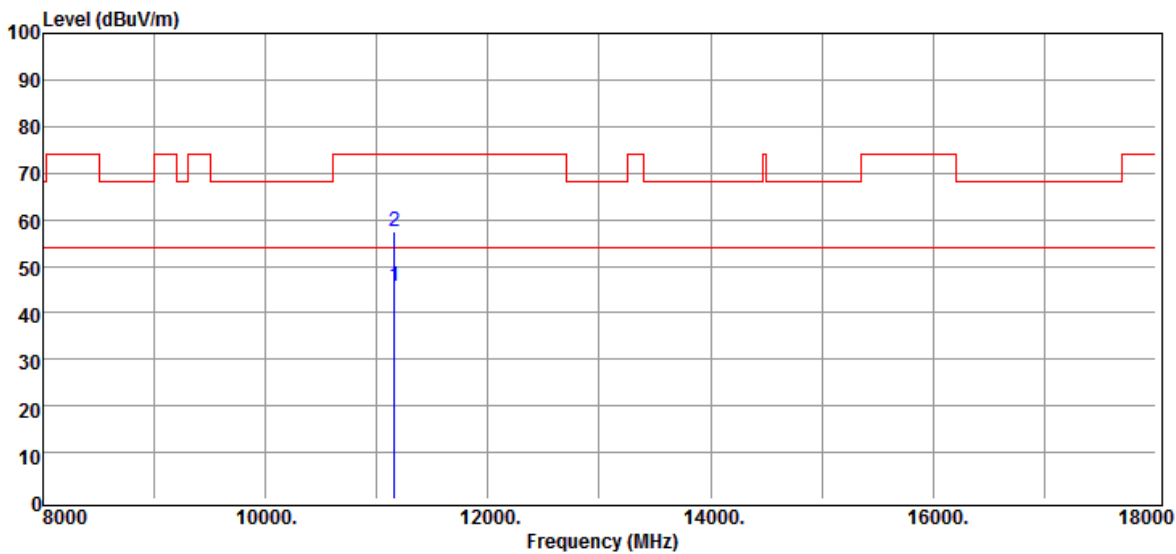
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Radiated Spurious Emission Measurement Result

802.11a, 5470~5725 MHz

Operation Mode	:802.11a / Band 3	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5580 MHz	Engineer	:Enzo



Freq. MHz	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
11160.00	Average	19.05	26.67	45.72	54.00	-8.28
11160.00	Peak	30.66	26.67	57.33	74.00	-16.67

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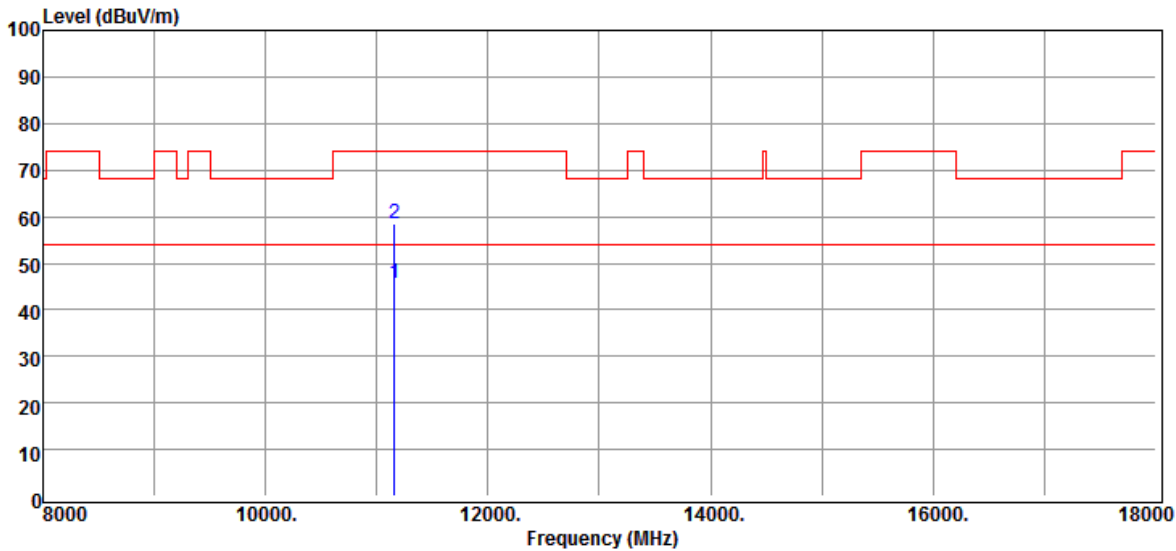
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Operation Mode	:802.11a / Band 3	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5580 MHz	Engineer	:Enzo



Freq. MHz	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
11160.00	Average	19.07	26.67	45.74	54.00	-8.26
11160.00	Peak	31.95	26.67	58.62	74.00	-15.38

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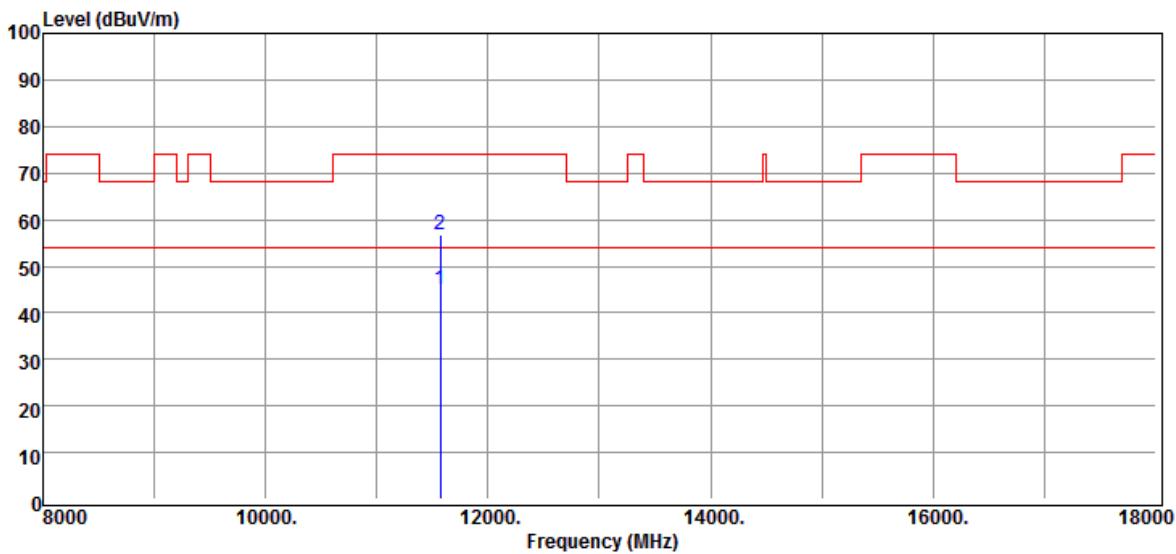
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Radiated Spurious Emission Measurement Result

802.11a, 5725~5850 MHz

Operation Mode	:802.11a / Band 4	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5785 MHz	Engineer	:Enzo



Freq. MHz	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
11570.00	Average	19.04	25.87	44.91	54.00	-9.09
11570.00	Peak	30.87	25.87	56.74	74.00	-17.26

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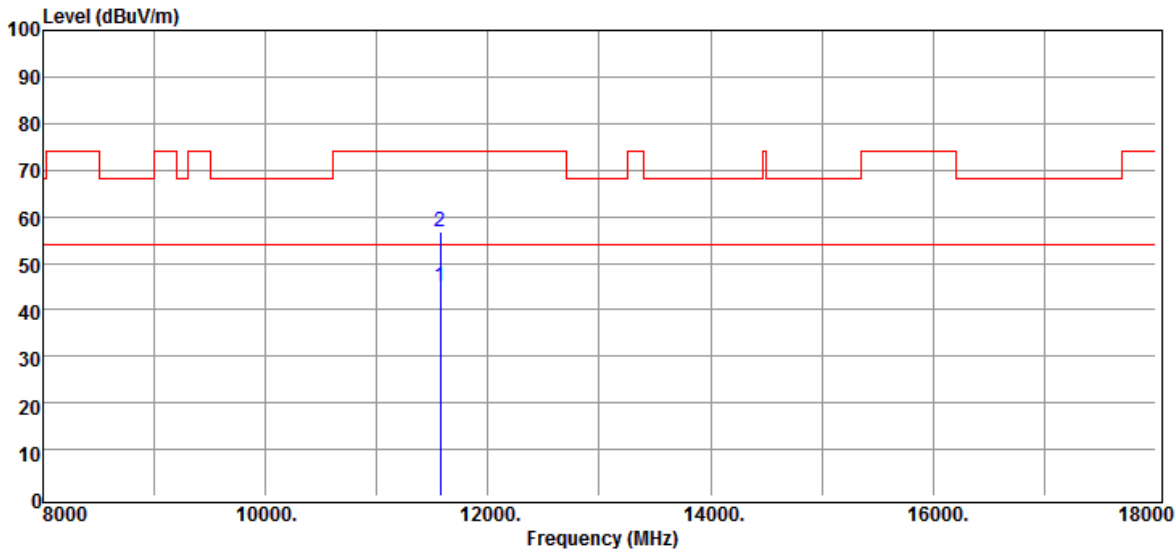
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Operation Mode	:802.11a / Band 4	Test Date	:2018-07-19
Test Mode	:TX CH MID	Temp./Humi.	:26/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5785 MHz	Engineer	:Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
11570.00	Average	19.00	25.87	44.87	54.00	-9.13
11570.00	Peak	30.93	25.87	56.80	74.00	-17.20

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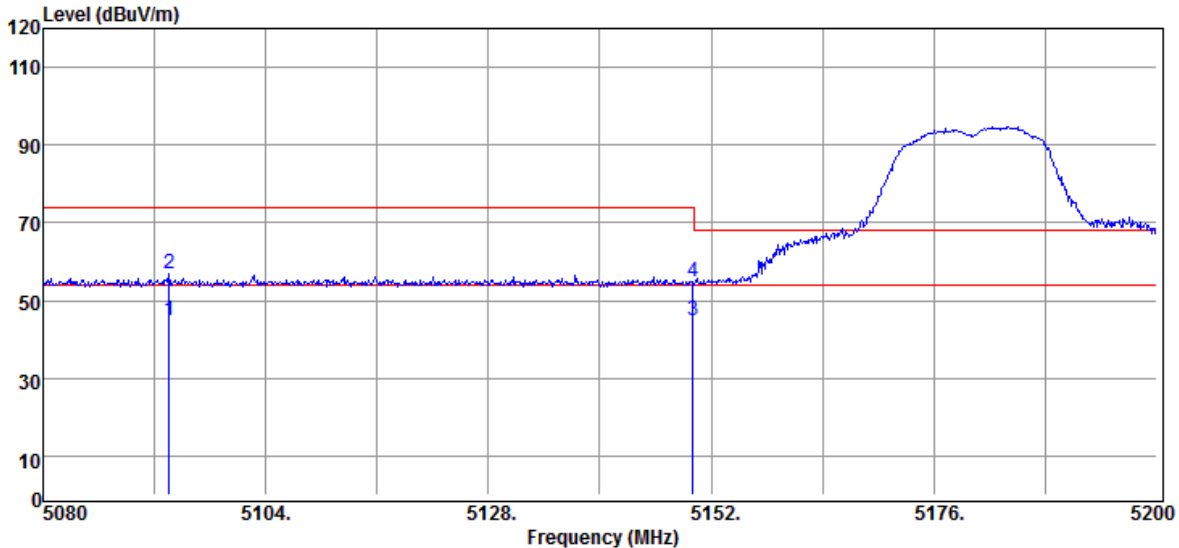
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Band edge falling to restricted band

802.11a mode

Operation Mode	:802.11a/Band 1	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5180 MHz	Engineer	:Ashton



Freq. MHz	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
5093.56	Average	31.21	13.44	44.65	54.00	-9.35
5093.56	Peak	43.63	13.44	57.07	74.00	-16.93
5150.00	Average	31.18	13.65	44.83	54.00	-9.17
5150.00	Peak	40.98	13.65	54.63	74.00	-19.37

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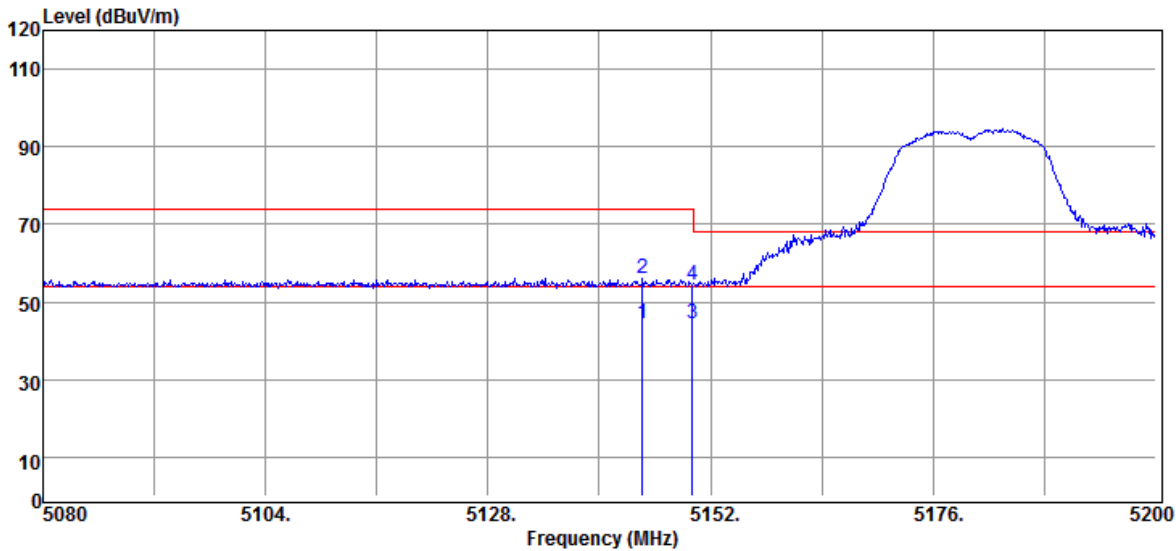
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Operation Mode	:802.11a/Band 1	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5180 MHz	Engineer	:Ashton



Freq. MHz	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
5144.68	Average	30.92	13.63	44.55	54.00	-9.45
5144.68	Peak	42.55	13.63	56.18	74.00	-17.82
5150.00	Average	30.96	13.65	44.61	54.00	-9.39
5150.00	Peak	40.75	13.65	54.40	74.00	-19.60

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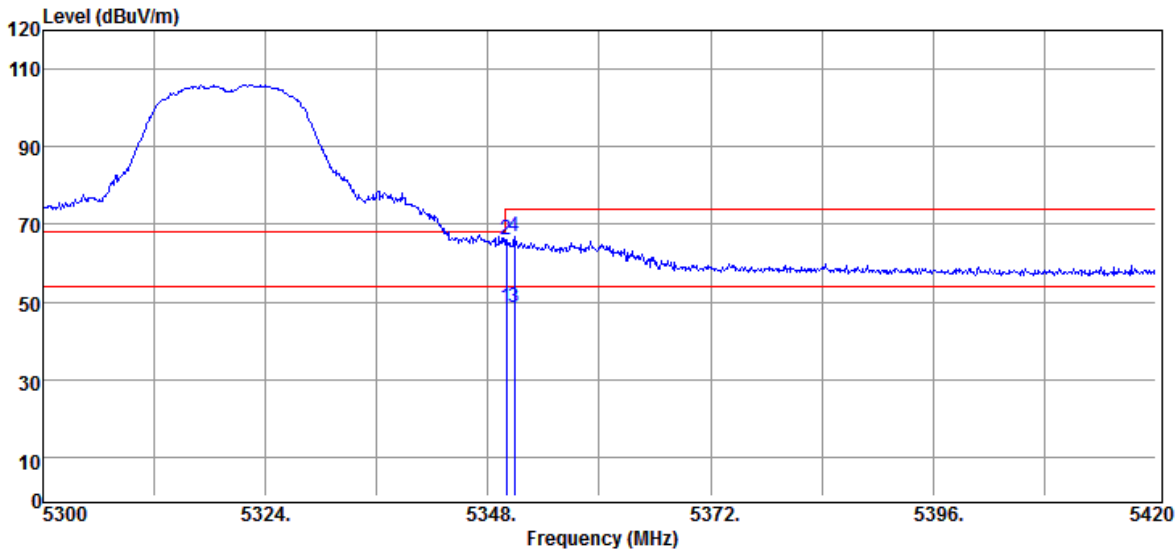
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Operation Mode	:802.11a/Band 2	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5320 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	34.62	14.16	48.78	54.00	-5.22
5350.00	Peak	51.82	14.16	65.98	74.00	-8.02
5350.88	Average	34.21	14.17	48.38	54.00	-5.62
5350.88	Peak	52.69	14.17	66.86	74.00	-7.14

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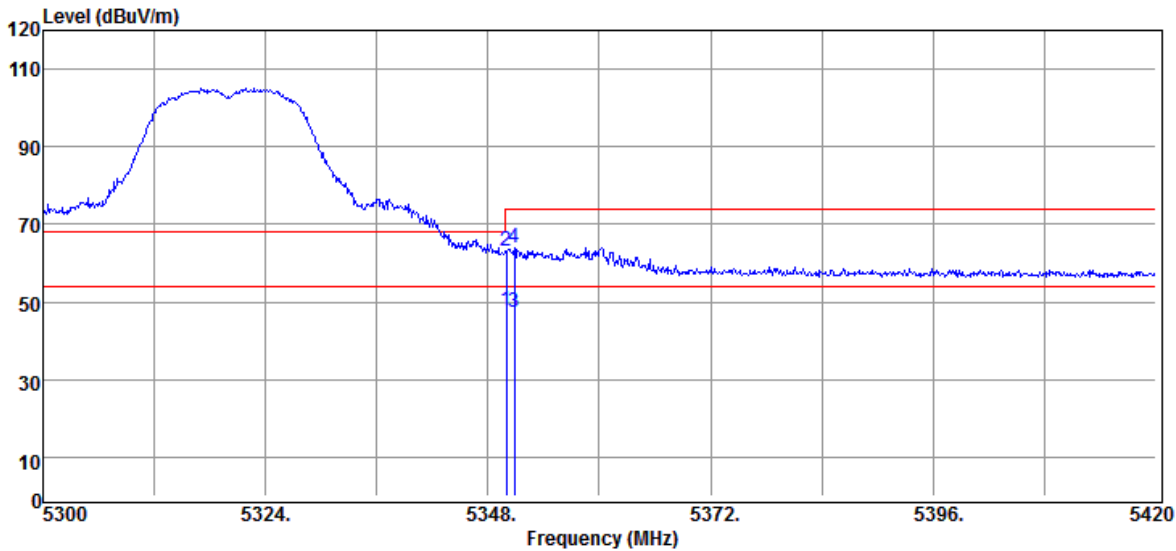
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Operation Mode	:802.11a/Band 2	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5320 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5350.00	Average	33.54	14.16	47.70	54.00	-6.30
5350.00	Peak	48.83	14.16	62.99	74.00	-11.01
5350.88	Average	33.25	14.17	47.42	54.00	-6.58
5350.88	Peak	49.92	14.17	64.09	74.00	-9.91

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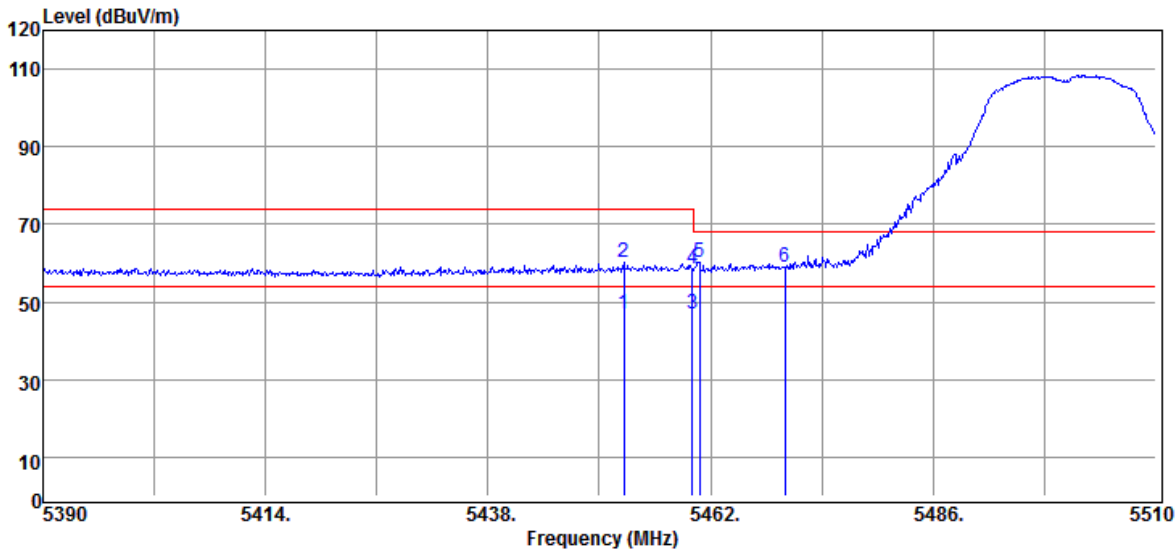
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Operation Mode	:802.11a/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5500 MHz	Engineer	:Ashton



Freq. MHz	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
5452.64	Average	32.45	14.30	46.75	54.00	-7.25
5452.64	Peak	45.77	14.30	60.07	74.00	-13.93
5460.00	Average	32.47	14.31	46.78	54.00	-7.22
5460.00	Peak	44.13	14.31	58.44	74.00	-15.56
5460.80	Peak	46.02	14.31	60.33	68.20	-7.87
5470.00	Peak	44.55	14.31	58.86	68.20	-9.34

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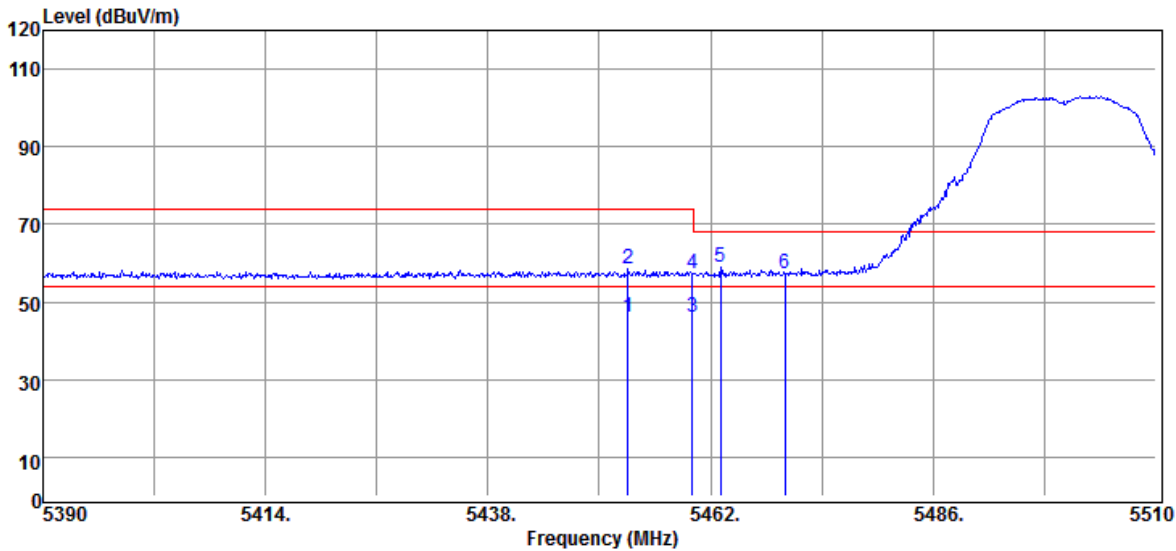
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Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5500 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5453.12	Average	31.61	14.31	45.92	54.00	-8.08
5453.12	Peak	44.16	14.31	58.47	74.00	-15.53
5460.00	Average	31.67	14.31	45.98	54.00	-8.02
5460.00	Peak	43.01	14.31	57.32	74.00	-16.68
5463.08	Peak	44.84	14.31	59.15	68.20	-9.05
5470.00	Peak	43.11	14.31	57.42	68.20	-10.78

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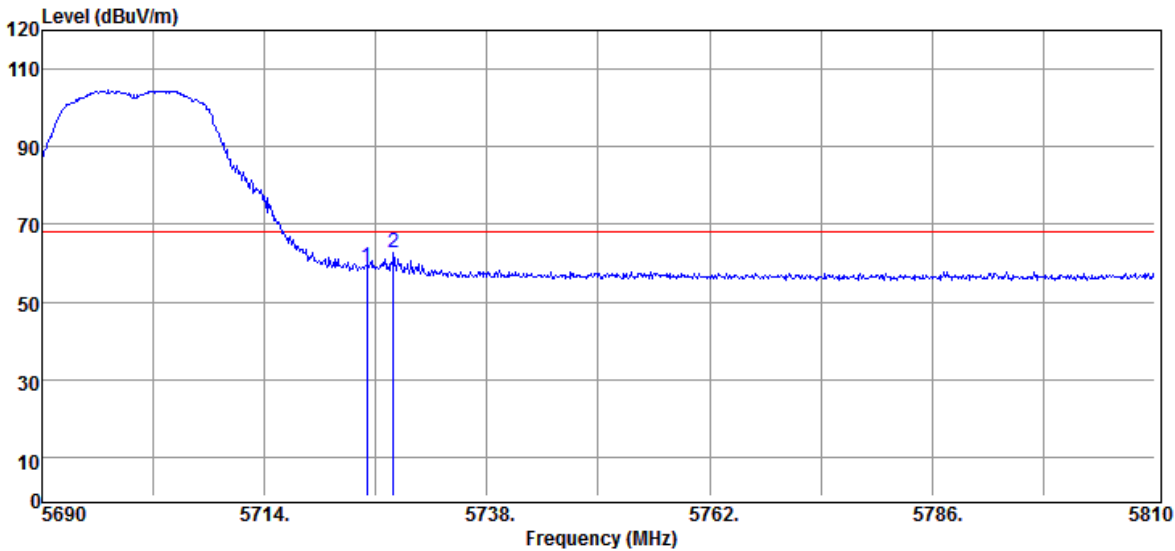
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Operation Mode	:802.11a/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5700 MHz	Engineer	:Ashton



Freq. MHz	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
5725.00	Peak	44.33	14.50	58.83	68.20	-9.37
5727.92	Peak	48.01	14.50	62.51	68.20	-5.69

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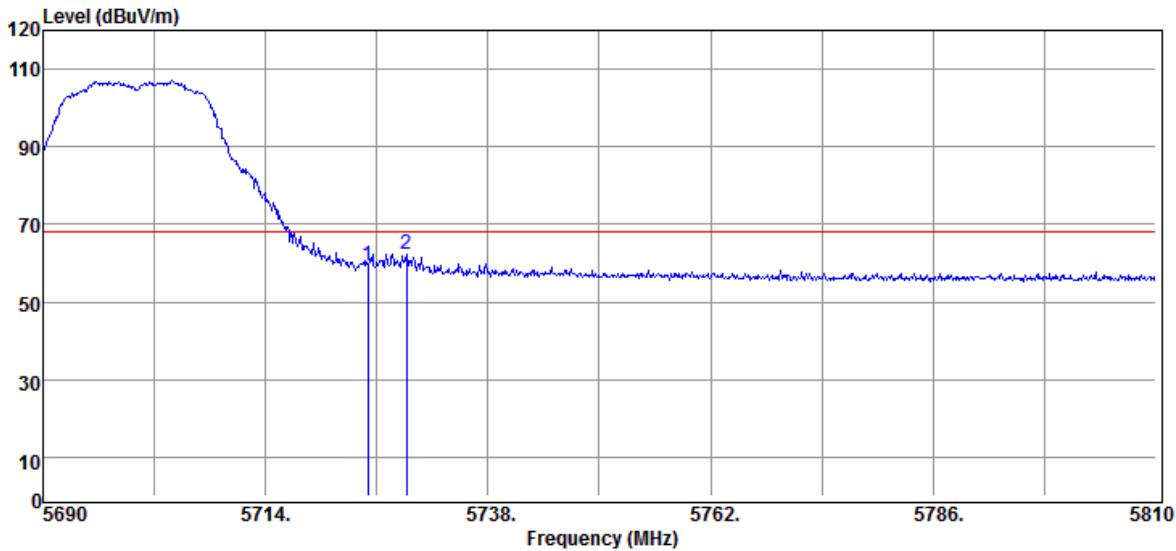
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Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5700 MHz	Engineer	:Ashton



Freq. MHz	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
5725.00	Peak	44.70	14.50	59.20	68.20	-9.00
5729.24	Peak	47.94	14.50	62.44	68.20	-5.76

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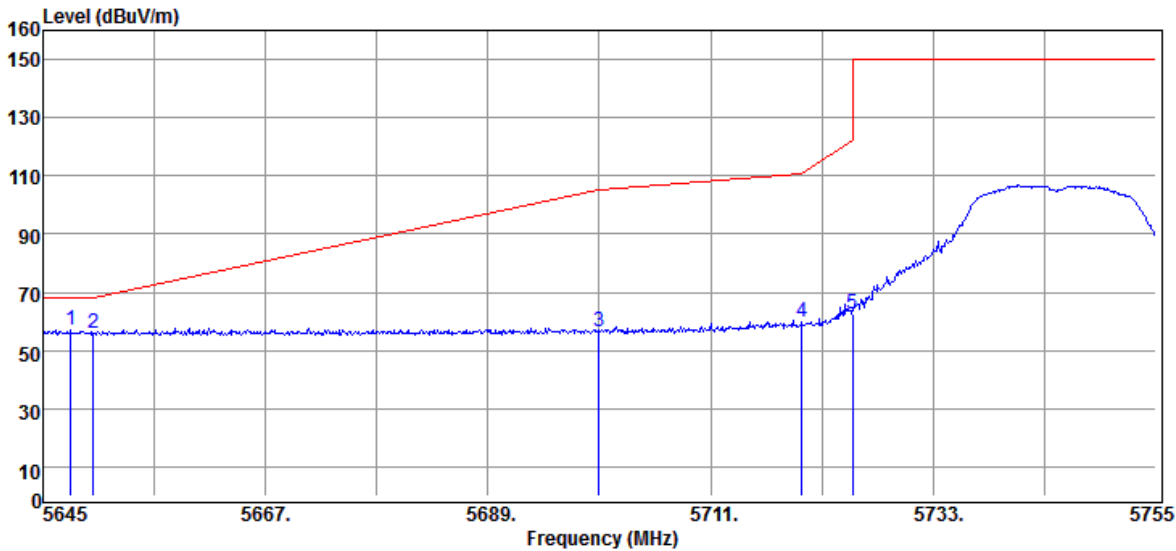
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Operation Mode	:802.11a/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5745 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5647.75	Peak	42.84	14.41	57.25	68.20	-10.95
5650.00	Peak	41.65	14.42	56.07	68.20	-12.13
5700.00	Peak	42.22	14.47	56.69	105.20	-48.51
5720.00	Peak	45.36	14.49	59.85	110.80	-50.95
5725.00	Peak	48.01	14.50	62.51	122.20	-59.69

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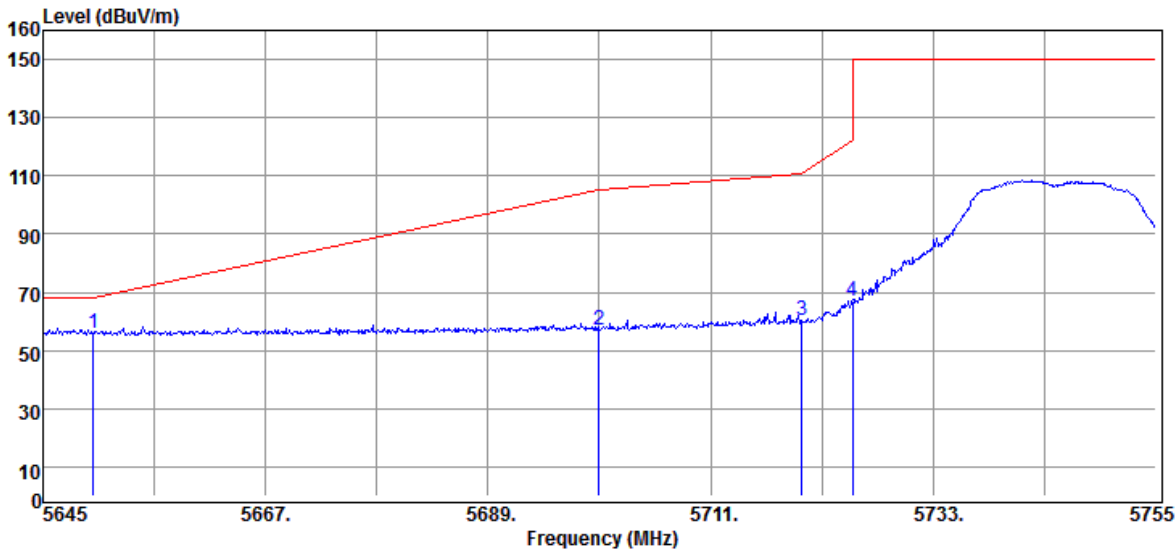
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Operation Mode	:802.11a/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5745 MHz	Engineer	:Ashton



Freq. MHz	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
5650.00	Peak	41.68	14.42	56.10	68.20	-12.10
5700.00	Peak	42.71	14.47	57.18	105.20	-48.02
5720.00	Peak	45.71	14.49	60.20	110.80	-50.60
5725.00	Peak	52.31	14.50	66.81	122.20	-55.39

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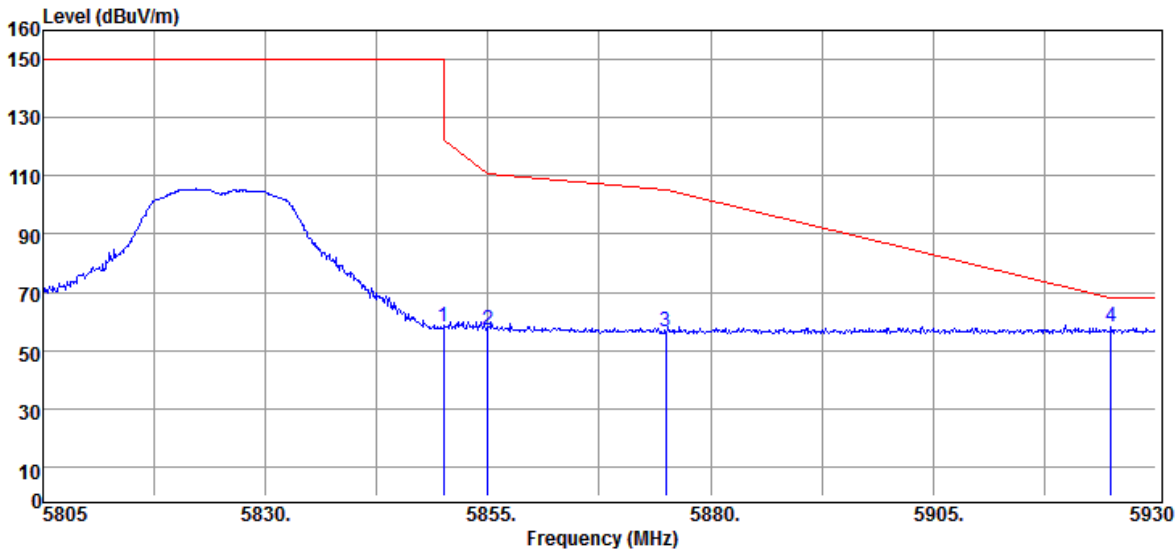
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Operation Mode	:802.11a/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5825 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	43.27	14.72	57.99	122.20	-64.21
5855.00	Peak	42.54	14.73	57.27	110.80	-53.53
5875.00	Peak	41.74	14.78	56.52	105.20	-48.68
5925.00	Peak	42.96	14.91	57.87	68.20	-10.33

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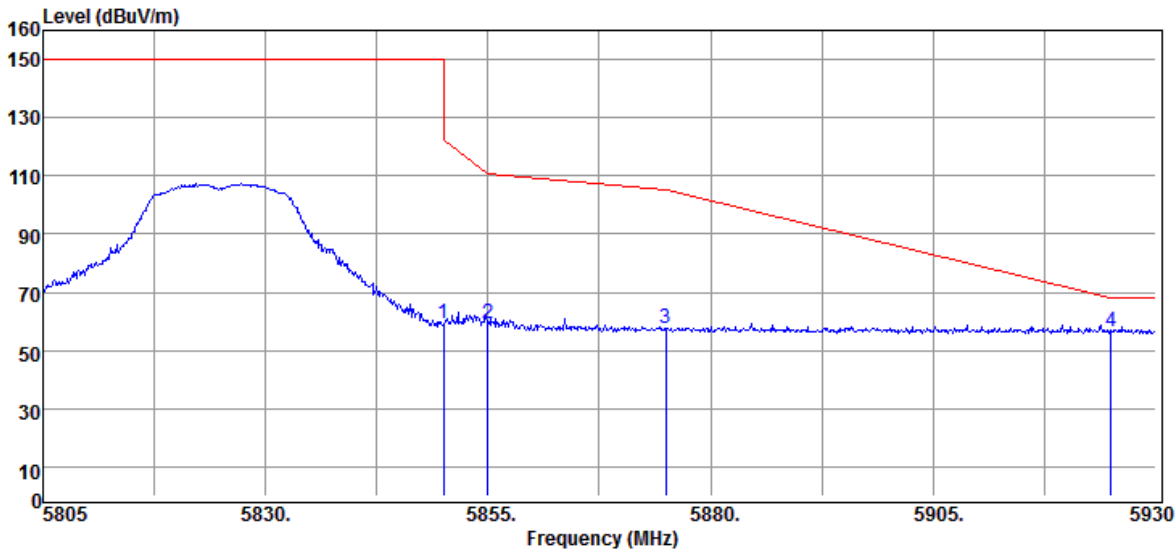
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Operation Mode	:802.11a/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5825 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	44.28	14.72	59.00	122.20	-63.20
5855.00	Peak	44.36	14.73	59.09	110.80	-51.71
5875.00	Peak	42.90	14.78	57.68	105.20	-47.52
5925.00	Peak	41.77	14.91	56.68	68.20	-11.52

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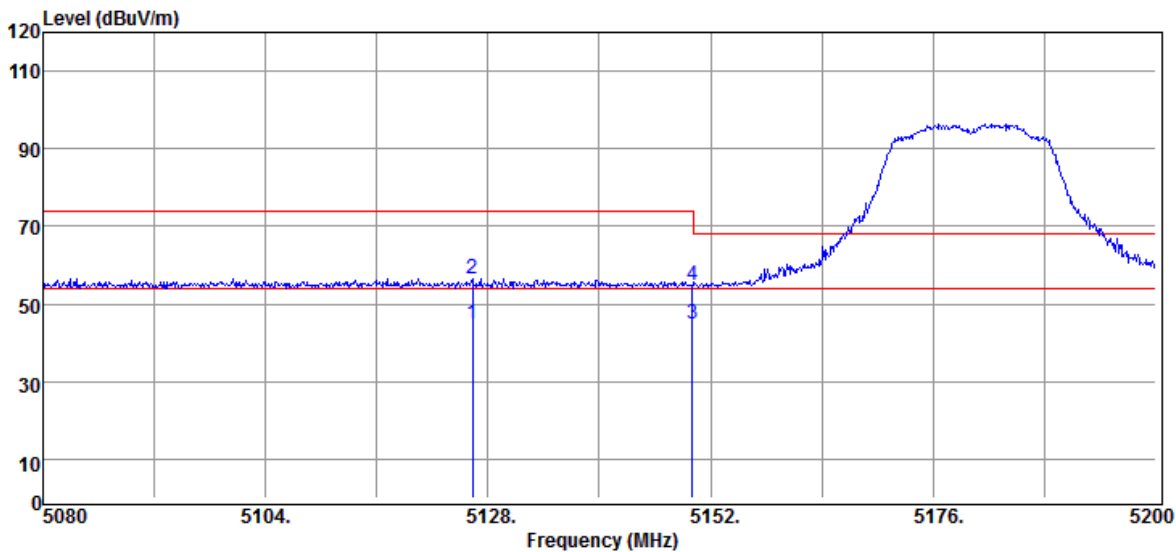
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Band edge falling to restricted band
802.11n_HT20 mode

Operation Mode	:802.11n20/Band 1	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5180 MHz	Engineer	:Ashton



Freq. MHz	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
5126.32	Average	31.28	13.56	44.84	54.00	-9.16
5126.32	Peak	42.88	13.56	56.44	74.00	-17.56
5150.00	Average	31.28	13.65	44.93	54.00	-9.07
5150.00	Peak	41.25	13.65	54.90	74.00	-19.10

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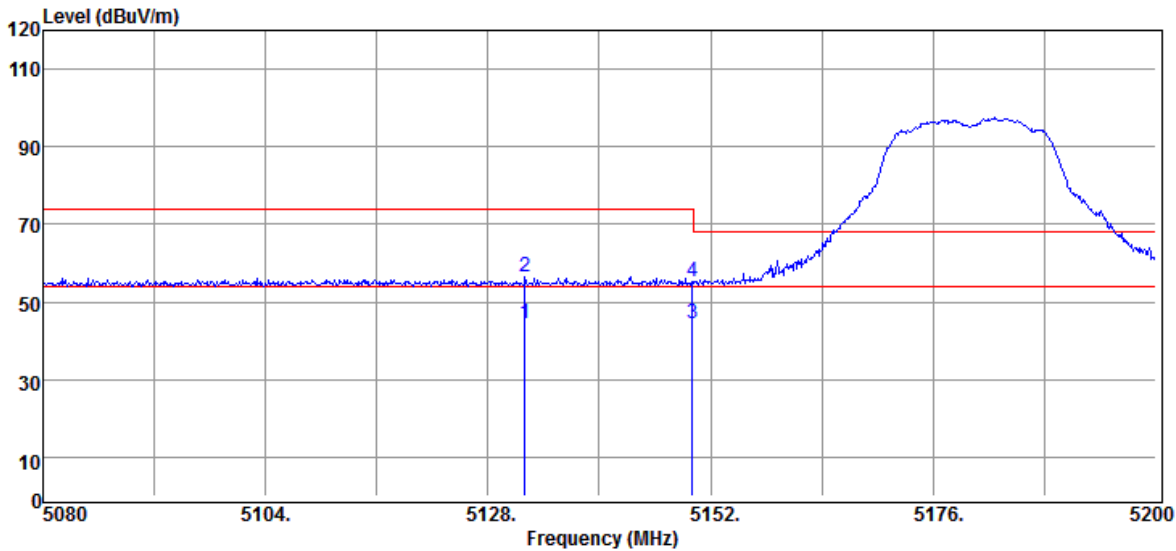
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Operation Mode	:802.11n20/Band 1	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5180 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5131.96	Average	30.96	13.58	44.54	54.00	-9.46
5131.96	Peak	42.79	13.58	56.37	74.00	-17.63
5150.00	Average	30.98	13.65	44.63	54.00	-9.37
5150.00	Peak	41.54	13.65	55.19	74.00	-18.81

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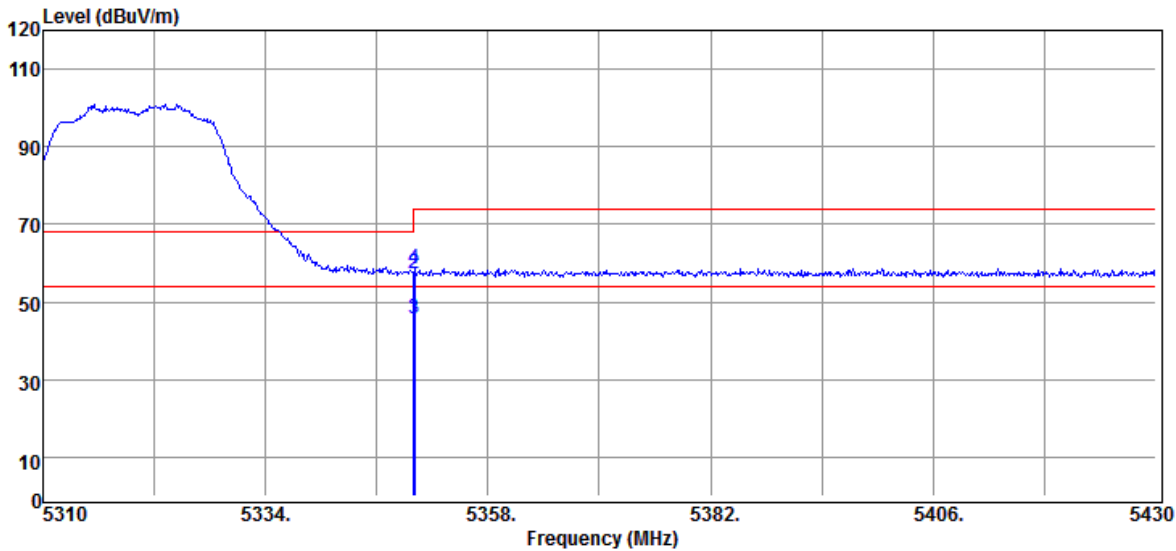
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Operation Mode	:802.11n20/Band 2	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5320 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	31.36	14.16	45.52	54.00	-8.48
5350.00	Peak	43.30	14.16	57.46	74.00	-16.54
5350.08	Average	31.37	14.17	45.54	54.00	-8.46
5350.08	Peak	44.45	14.17	58.62	74.00	-15.38

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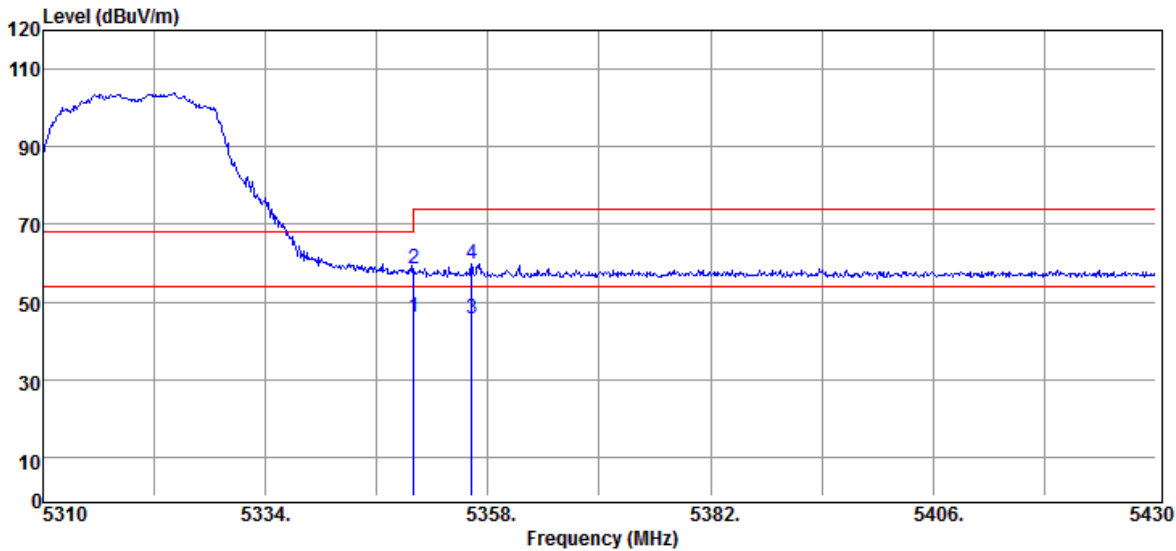
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Operation Mode	:802.11n20/Band 2	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5320 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	31.89	14.16	46.05	54.00	-7.95
5350.00	Peak	44.21	14.16	58.37	74.00	-15.63
5356.20	Average	31.58	14.18	45.76	54.00	-8.24
5356.20	Peak	45.63	14.18	59.81	74.00	-14.19

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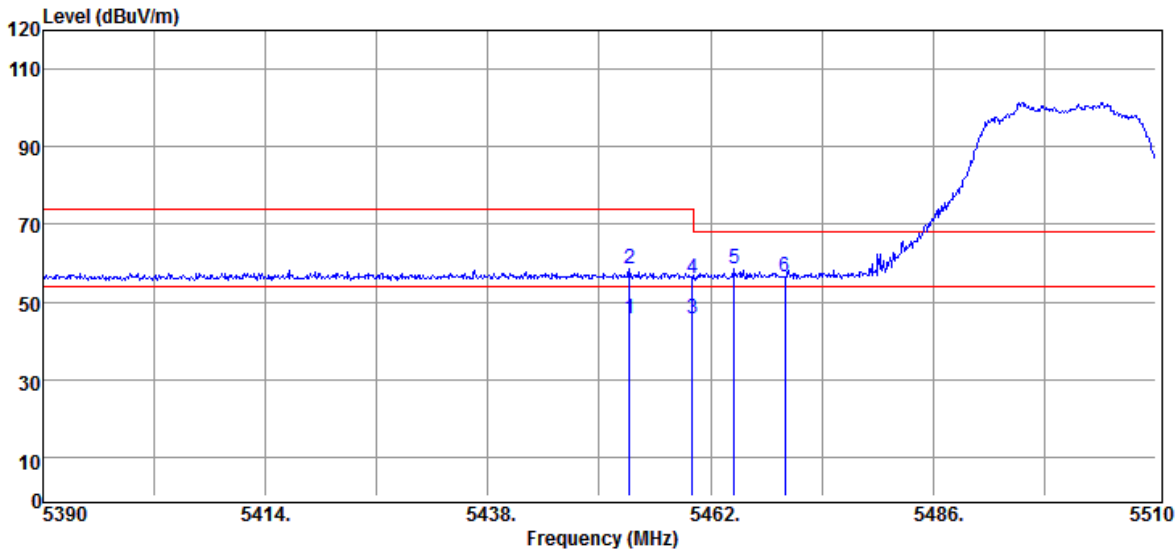
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Operation Mode	:802.11n20/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5500 MHz	Engineer	:Ashton



Freq. MHz	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
5453.24	Average	31.37	14.31	45.68	54.00	-8.32
5453.24	Peak	44.30	14.31	58.61	74.00	-15.39
5460.00	Average	31.40	14.31	45.71	54.00	-8.29
5460.00	Peak	41.75	14.31	56.06	74.00	-17.94
5464.52	Peak	44.07	14.32	58.39	68.20	-9.81
5470.00	Peak	42.23	14.31	56.54	68.20	-11.66

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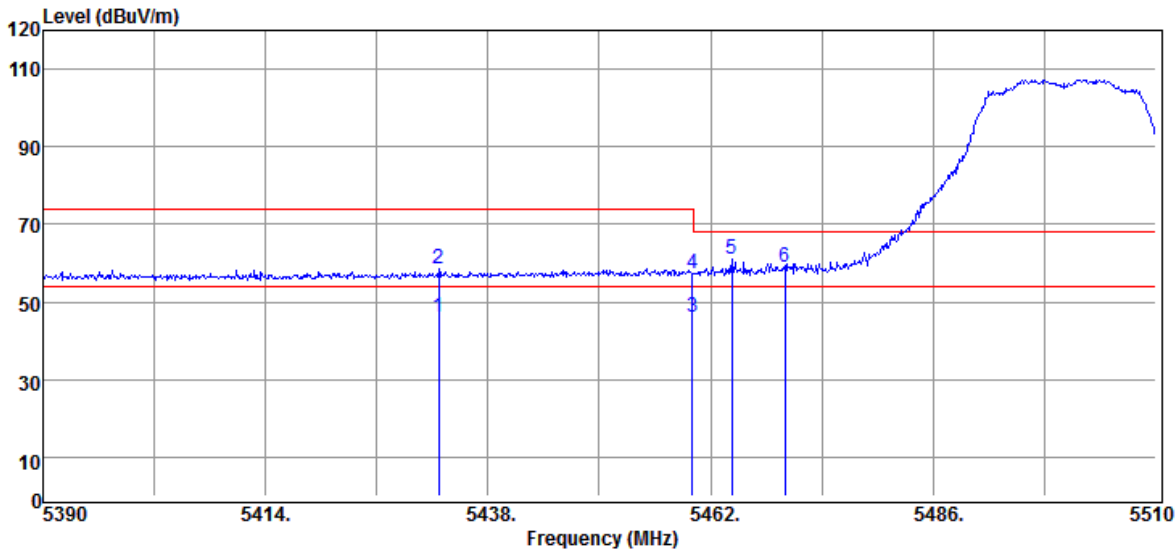
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Operation Mode	:802.11n20/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5500 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5432.72	Average	31.60	14.30	45.90	54.00	-8.10
5432.72	Peak	44.10	14.30	58.40	74.00	-15.60
5460.00	Average	31.93	14.31	46.24	54.00	-7.76
5460.00	Peak	42.98	14.31	57.29	74.00	-16.71
5464.28	Peak	46.59	14.32	60.91	68.20	-7.29
5470.00	Peak	44.56	14.31	58.87	68.20	-9.33

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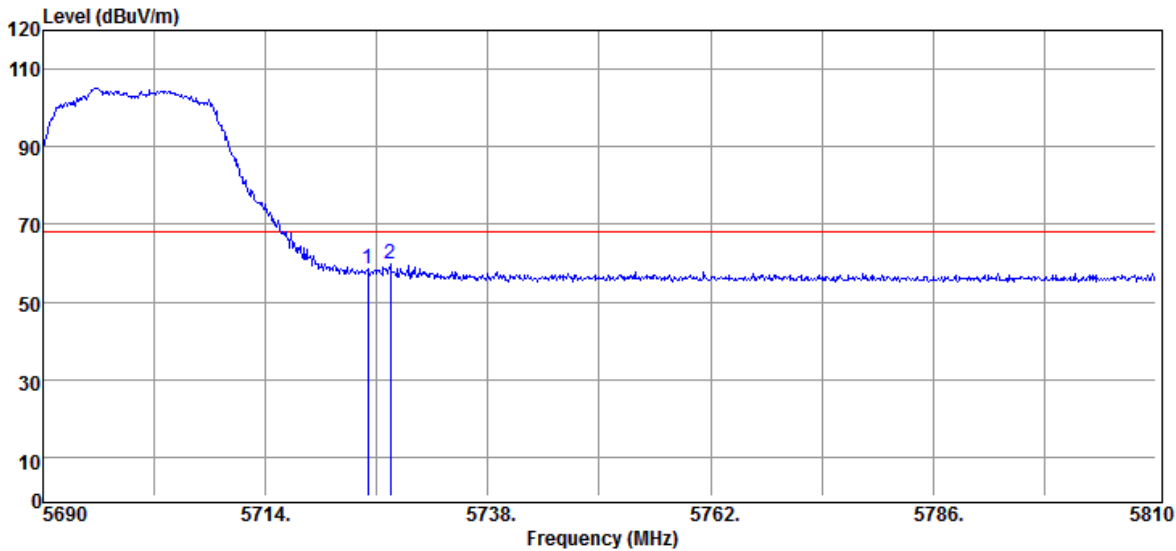
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Operation Mode	:802.11n20/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5700 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	43.98	14.50	58.48	68.20	-9.72
5727.44	Peak	45.23	14.50	59.73	68.20	-8.47

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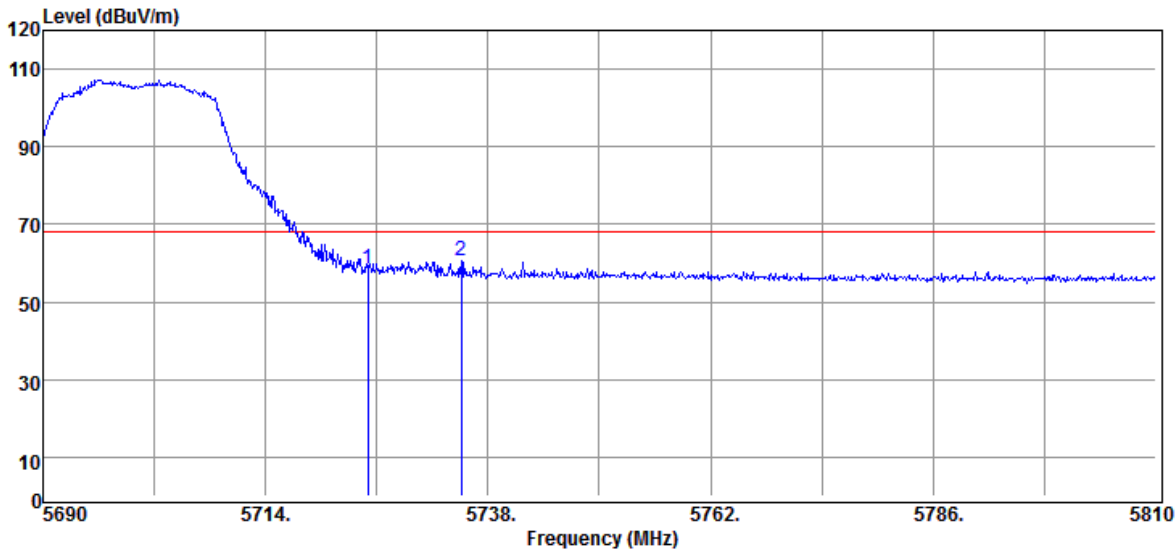
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Operation Mode	:802.11n20/Band 3	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5700 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5725.00	Peak	44.00	14.50	58.50	68.20	-9.70
5735.12	Peak	46.28	14.52	60.80	68.20	-7.40

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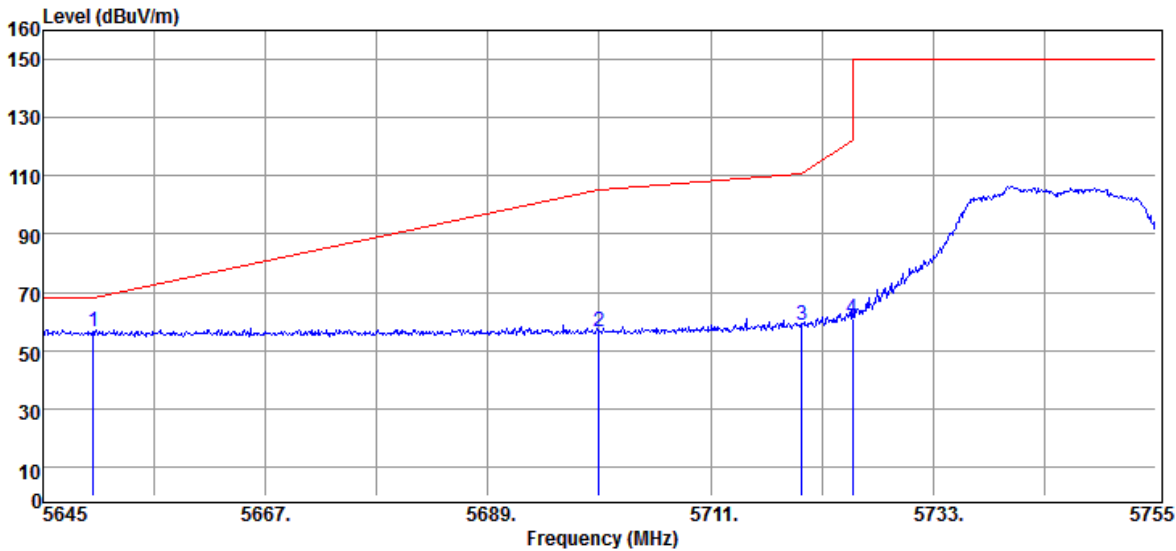
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Operation Mode	:802.11n20/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5745 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	42.26	14.42	56.68	68.20	-11.52
5700.00	Peak	42.21	14.47	56.68	105.20	-48.52
5720.00	Peak	44.36	14.49	58.85	110.80	-51.95
5725.00	Peak	46.44	14.50	60.94	122.20	-61.26

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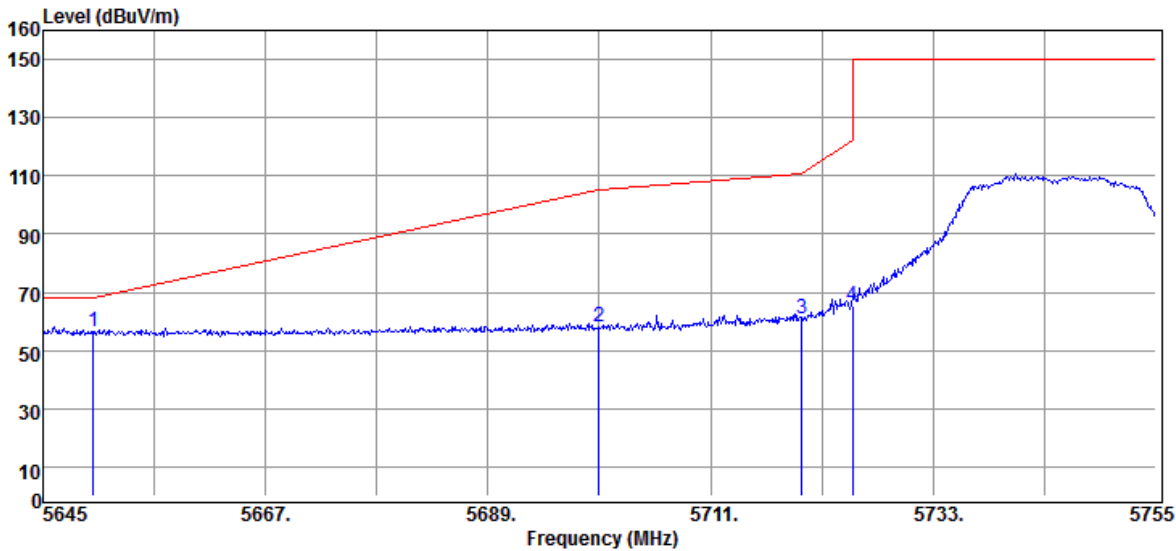
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Operation Mode	:802.11n20/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5745 MHz	Engineer	:Ashton



Freq. MHz	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
5650.00	Peak	42.09	14.42	56.51	68.20	-11.69
5700.00	Peak	43.38	14.47	57.85	105.20	-47.35
5720.00	Peak	46.33	14.49	60.82	110.80	-49.98
5725.00	Peak	50.90	14.50	65.40	122.20	-56.80

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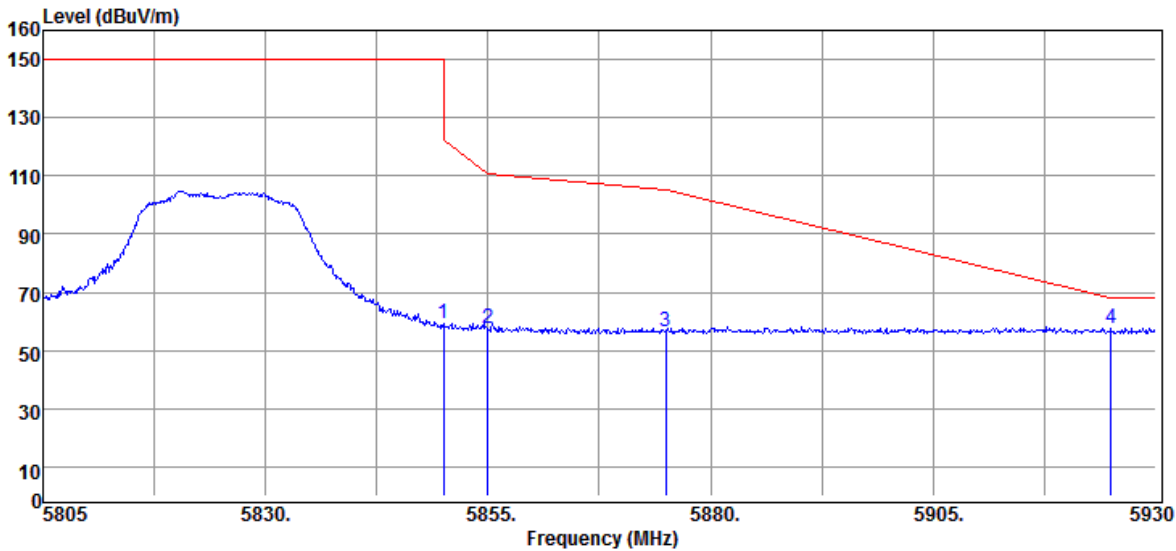
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Operation Mode	:802.11n20/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5825 MHz	Engineer	:Ashton



Freq. MHz	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
5850.00	Peak	44.75	14.72	59.47	122.20	-62.73
5855.00	Peak	42.71	14.73	57.44	110.80	-53.36
5875.00	Peak	41.93	14.78	56.71	105.20	-48.49
5925.00	Peak	42.47	14.91	57.38	68.20	-10.82

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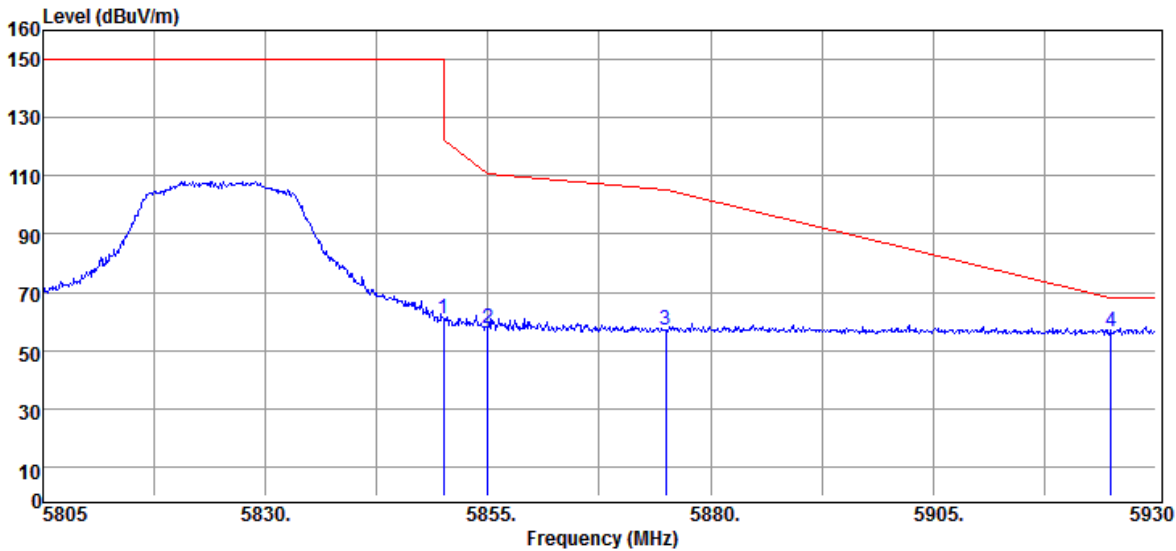
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Operation Mode	:802.11n20/Band 4	Test Date	:2018-06-26
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5825 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	46.24	14.72	60.96	122.20	-61.24
5855.00	Peak	43.03	14.73	57.76	110.80	-53.04
5875.00	Peak	42.35	14.78	57.13	105.20	-48.07
5925.00	Peak	41.39	14.91	56.30	68.20	-11.90

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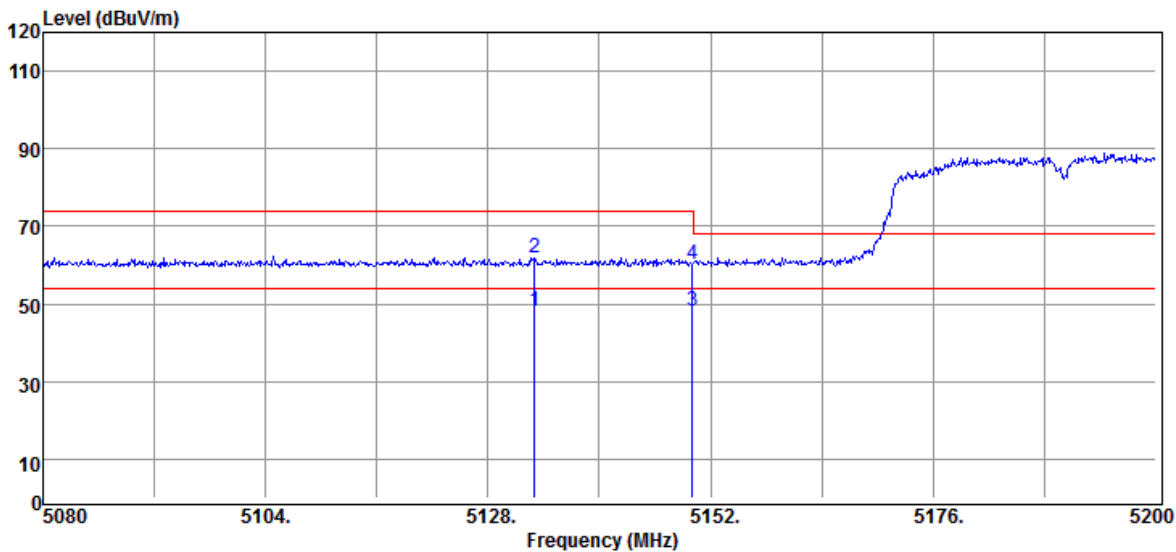
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Band edge falling to restricted band
802.11n_HT40 mode

Operation Mode	:802.11n40/Band 1	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5190 MHz	Engineer	:Ashton



Freq. MHz	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
5133.04	Average	34.60	13.58	48.18	54.00	-5.82
5133.04	Peak	48.36	13.58	61.94	74.00	-12.06
5150.00	Average	34.66	13.65	48.31	54.00	-5.69
5150.00	Peak	46.63	13.65	60.28	74.00	-13.72

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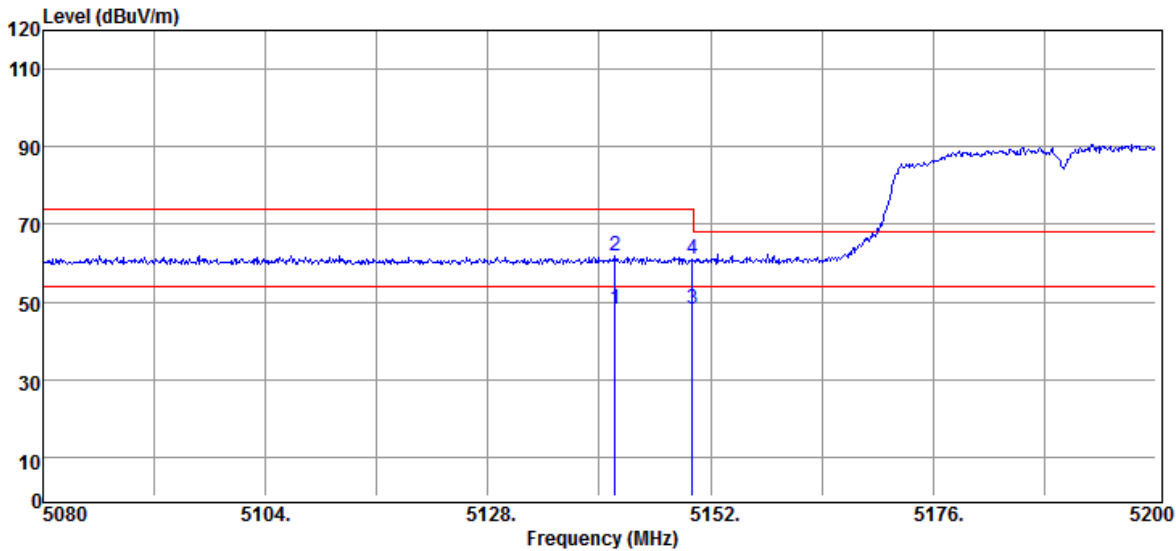
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Operation Mode	:802.11n40/Band 1	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5190 MHz	Engineer	:Ashton



Freq. MHz	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
5141.68	Average	34.52	13.62	48.14	54.00	-5.86
5141.68	Peak	48.33	13.62	61.95	74.00	-12.05
5150.00	Average	34.54	13.65	48.19	54.00	-5.81
5150.00	Peak	47.34	13.65	60.99	74.00	-13.01

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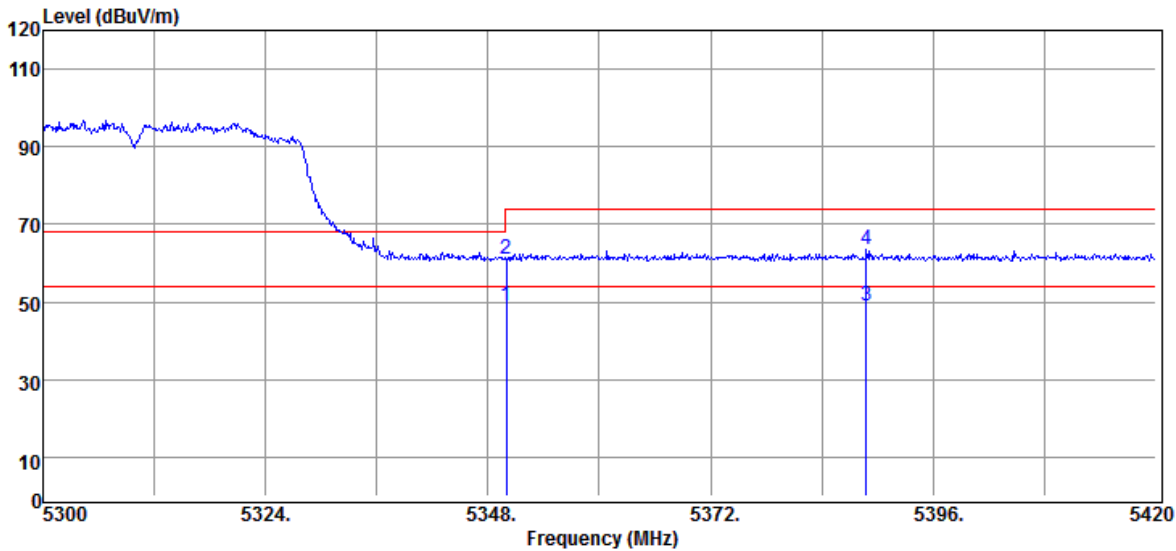
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Operation Mode	:802.11n40/Band 2	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5310 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5350.00	Average	34.72	14.16	48.88	54.00	-5.12
5350.00	Peak	46.88	14.16	61.04	74.00	-12.96
5388.80	Average	34.67	14.25	48.92	54.00	-5.08
5388.80	Peak	49.07	14.25	63.32	74.00	-10.68

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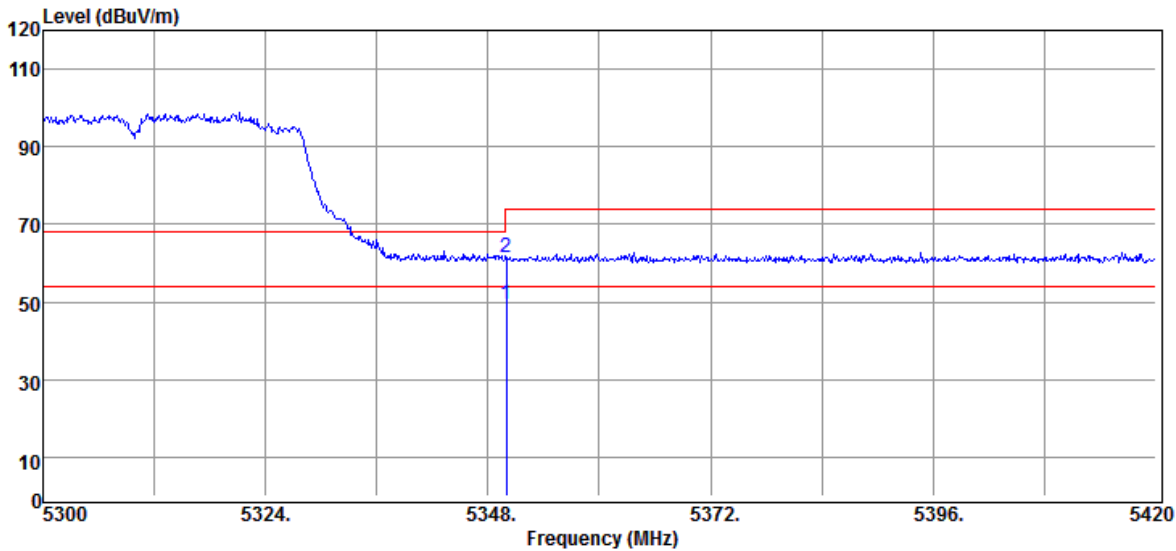
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Operation Mode	:802.11n40/Band 2	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5310 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	35.05	14.16	49.21	54.00	-4.79
5350.00	Peak	47.43	14.16	61.59	74.00	-12.41

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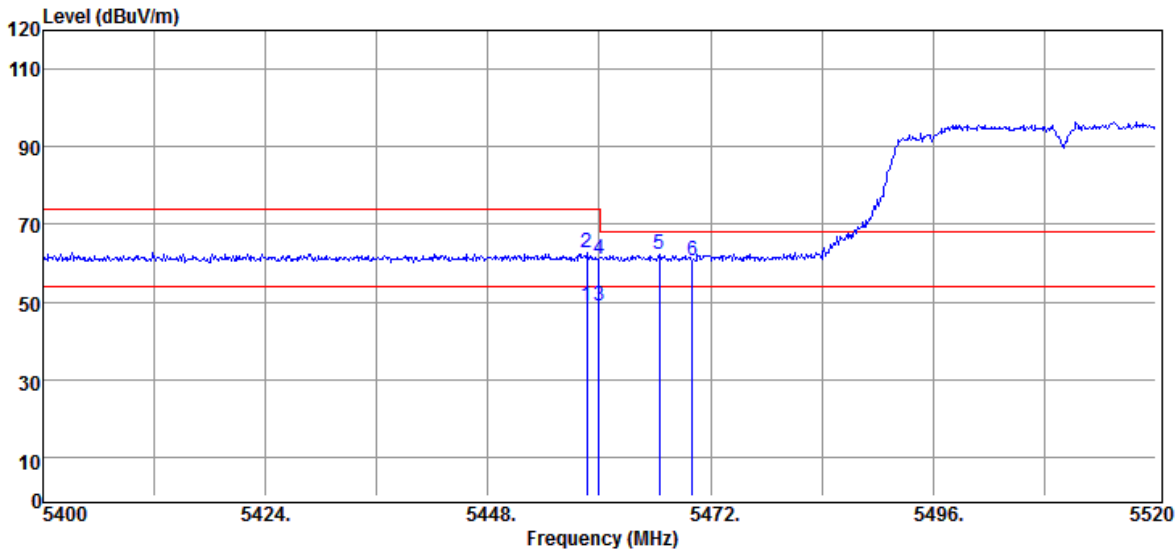
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Operation Mode	:802.11n40/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5510 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5458.68	Average	34.67	14.31	48.98	54.00	-5.02
5458.68	Peak	48.25	14.31	62.56	74.00	-11.44
5460.00	Average	34.70	14.31	49.01	54.00	-4.99
5460.00	Peak	46.58	14.31	60.89	74.00	-13.11
5466.48	Peak	47.87	14.32	62.19	68.20	-6.01
5470.00	Peak	46.45	14.31	60.76	68.20	-7.44

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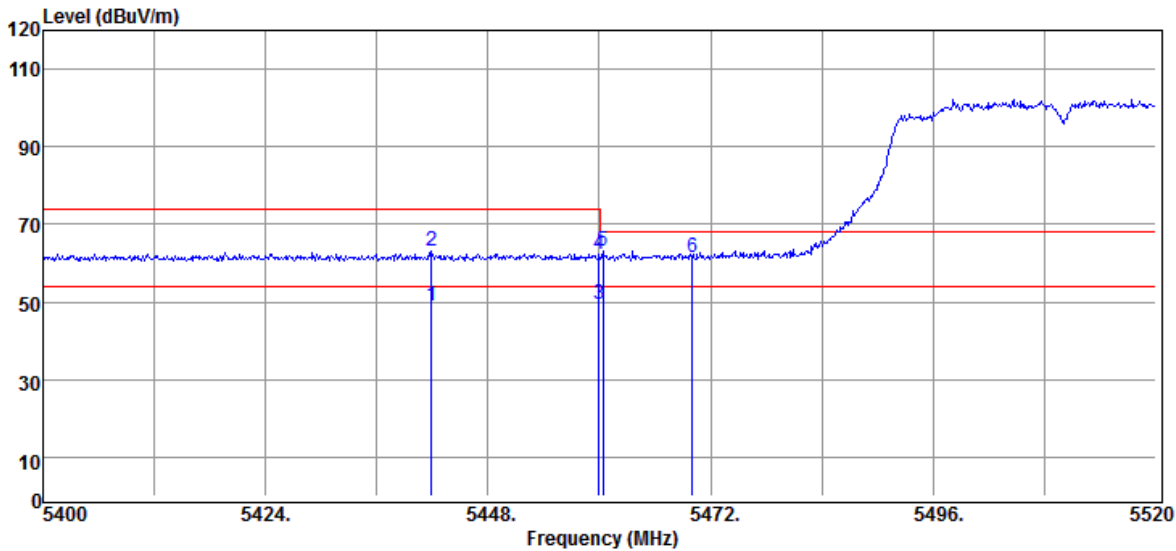
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Operation Mode	:802.11n40/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5510 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5441.88	Average	34.79	14.30	49.09	54.00	-4.91
5441.88	Peak	48.82	14.30	63.12	74.00	-10.88
5460.00	Average	34.98	14.31	49.29	54.00	-4.71
5460.00	Peak	47.84	14.31	62.15	74.00	-11.85
5460.36	Peak	48.93	14.31	63.24	68.20	-4.96
5470.00	Peak	47.04	14.31	61.35	68.20	-6.85

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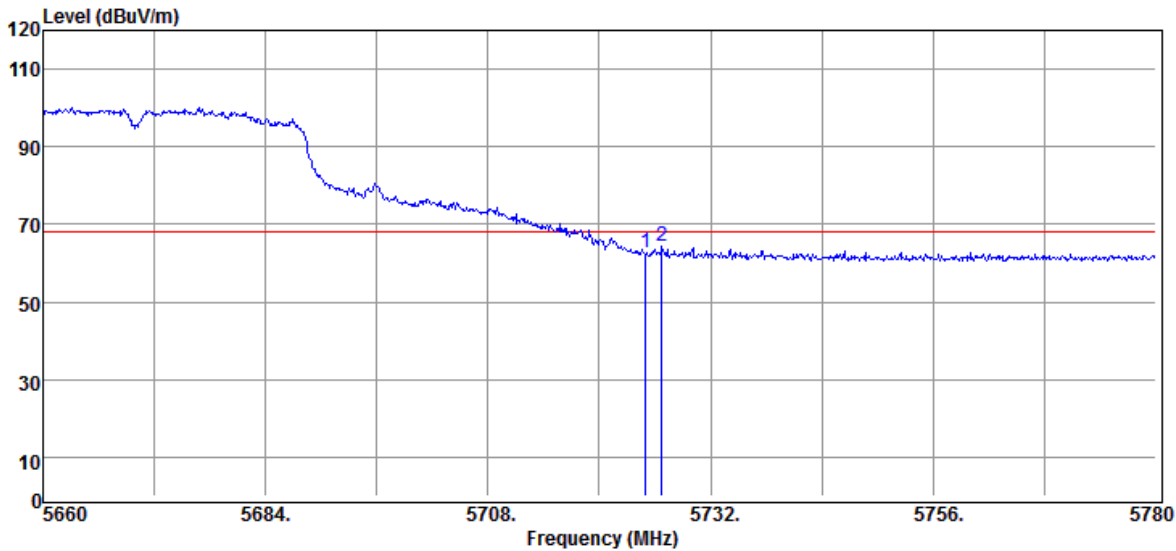
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Operation Mode	:802.11n40/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5670 MHz	Engineer	:Ashton



Freq. MHz	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
5725.00	Peak	48.18	14.50	62.68	68.20	-5.52
5726.72	Peak	49.78	14.50	64.28	68.20	-3.92

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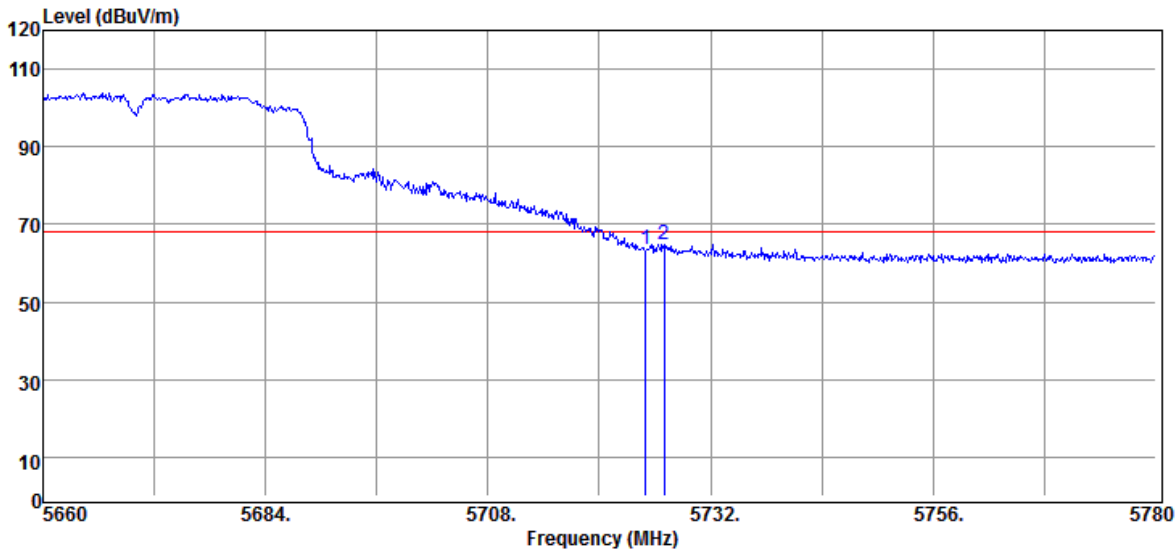
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Operation Mode	:802.11n40/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5670 MHz	Engineer	:Ashton



Freq. MHz	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
5725.00	Peak	49.13	14.50	63.63	68.20	-4.57
5726.96	Peak	50.48	14.50	64.98	68.20	-3.22

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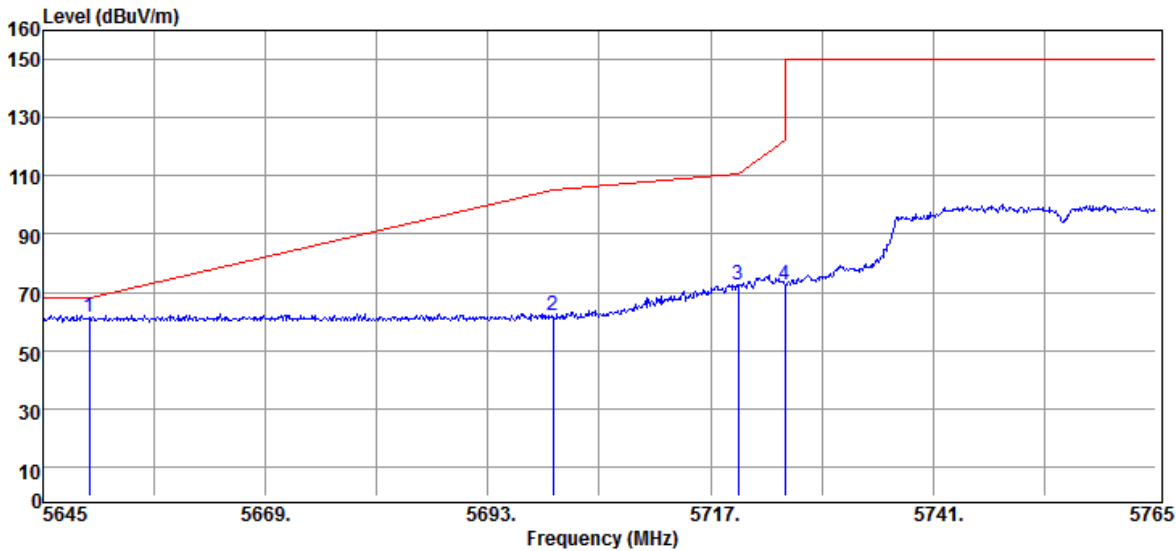
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Operation Mode	:802.11n40/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5755 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5650.00	Peak	46.99	14.42	61.41	68.20	-6.79
5700.00	Peak	47.33	14.47	61.80	105.20	-43.40
5720.00	Peak	58.19	14.49	72.68	110.80	-38.12
5725.00	Peak	57.86	14.50	72.36	122.20	-49.84

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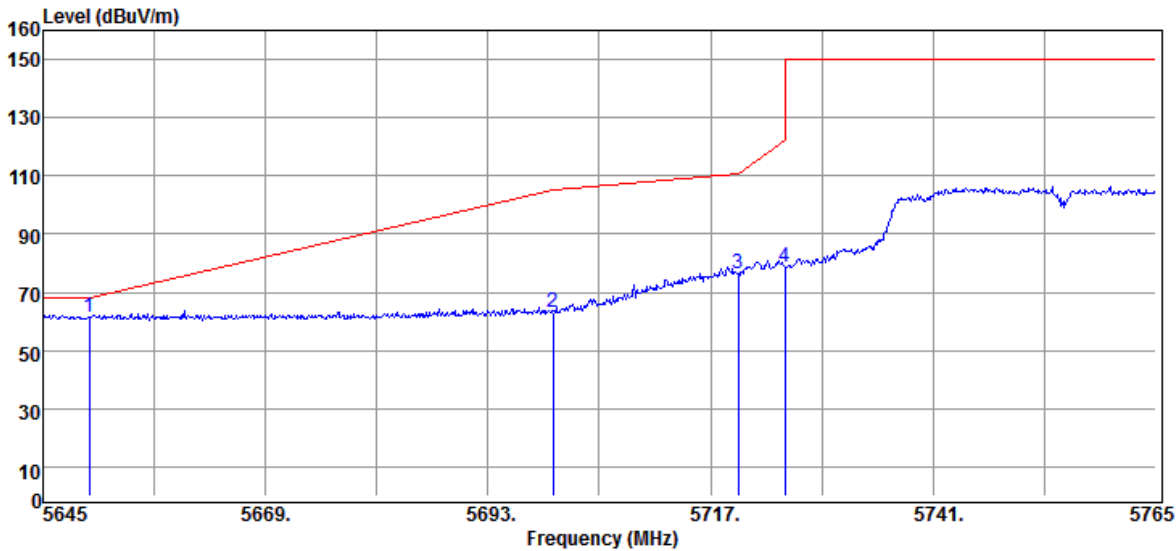
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Operation Mode	:802.11n40/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5755 MHz	Engineer	:Ashton



Freq. MHz	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
5650.00	Peak	47.28	14.42	61.70	68.20	-6.50
5700.00	Peak	48.38	14.47	62.85	105.20	-42.35
5720.00	Peak	61.79	14.49	76.28	110.80	-34.52
5725.00	Peak	64.20	14.50	78.70	122.20	-43.50

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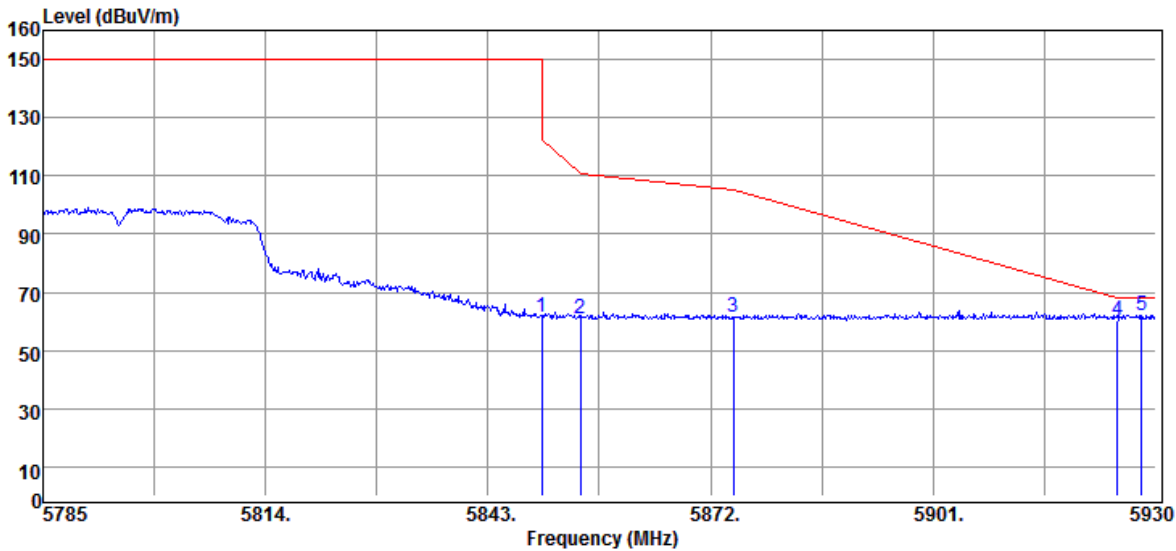
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Operation Mode	:802.11n40/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5795 MHz	Engineer	:Ashton



Freq. MHz	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
5850.00	Peak	46.88	14.72	61.60	122.20	-60.60
5855.00	Peak	46.30	14.73	61.03	110.80	-49.77
5875.00	Peak	46.83	14.78	61.61	105.20	-43.59
5925.00	Peak	45.67	14.91	60.58	68.20	-7.62
5928.12	Peak	47.27	14.93	62.20	68.20	-6.00

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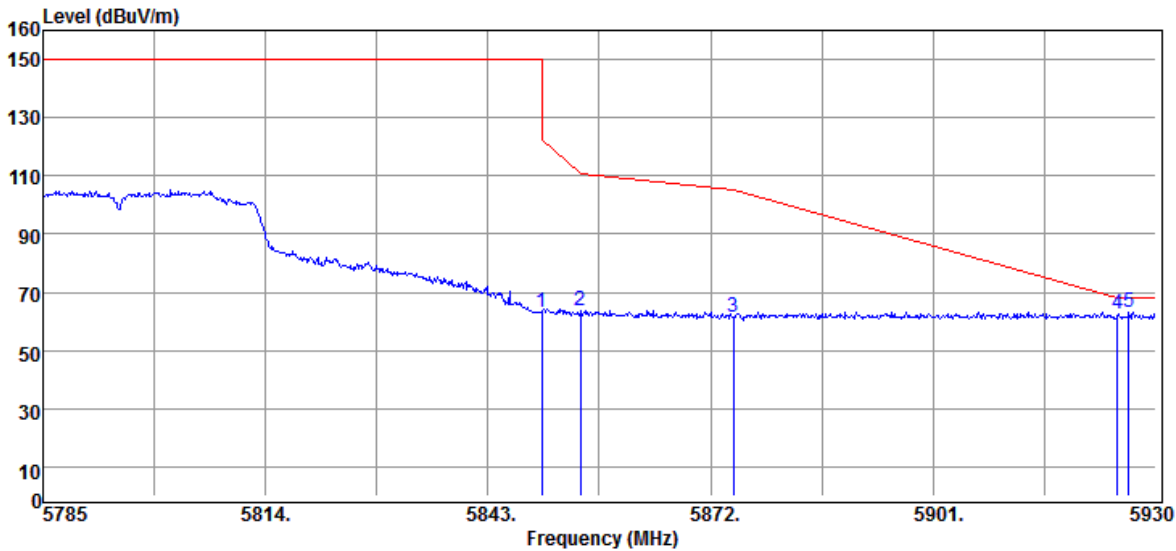
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Operation Mode	:802.11n40/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5795 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	48.41	14.72	63.13	122.20	-59.07
5855.00	Peak	48.97	14.73	63.70	110.80	-47.10
5875.00	Peak	46.93	14.78	61.71	105.20	-43.49
5925.00	Peak	47.57	14.91	62.48	68.20	-5.72
5926.52	Peak	48.16	14.92	63.08	68.20	-5.12

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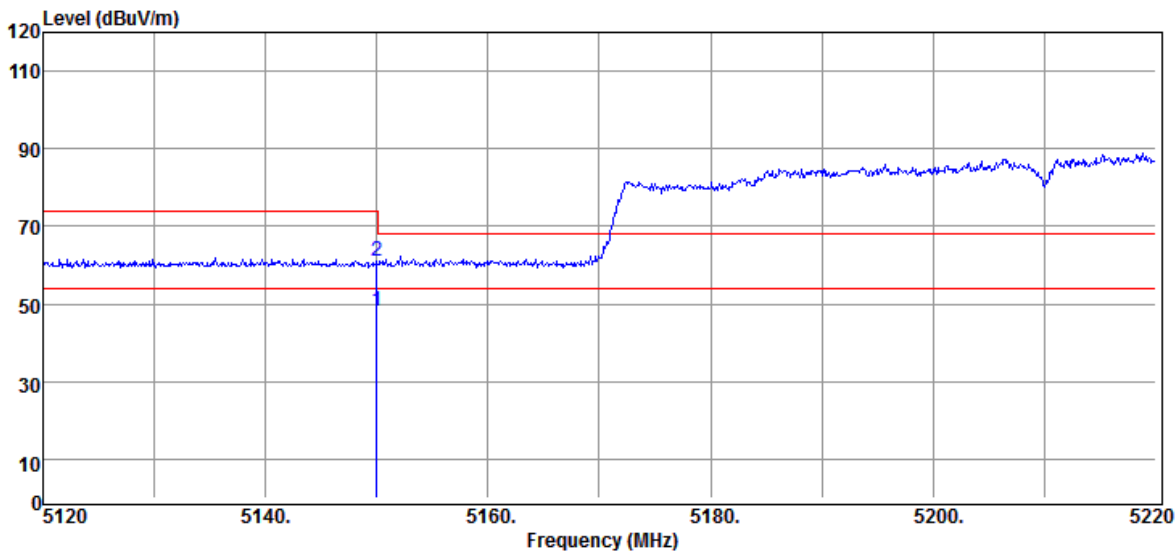
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Band edge falling to restricted band
802.11ac_VHT80 mode

Operation Mode	:802.11ac80/Band 1	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5210 MHz	Engineer	:Ashton



Freq. MHz	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
5150.00	Average	34.52	13.65	48.17	54.00	-5.83
5150.00	Peak	47.54	13.65	61.19	74.00	-12.81

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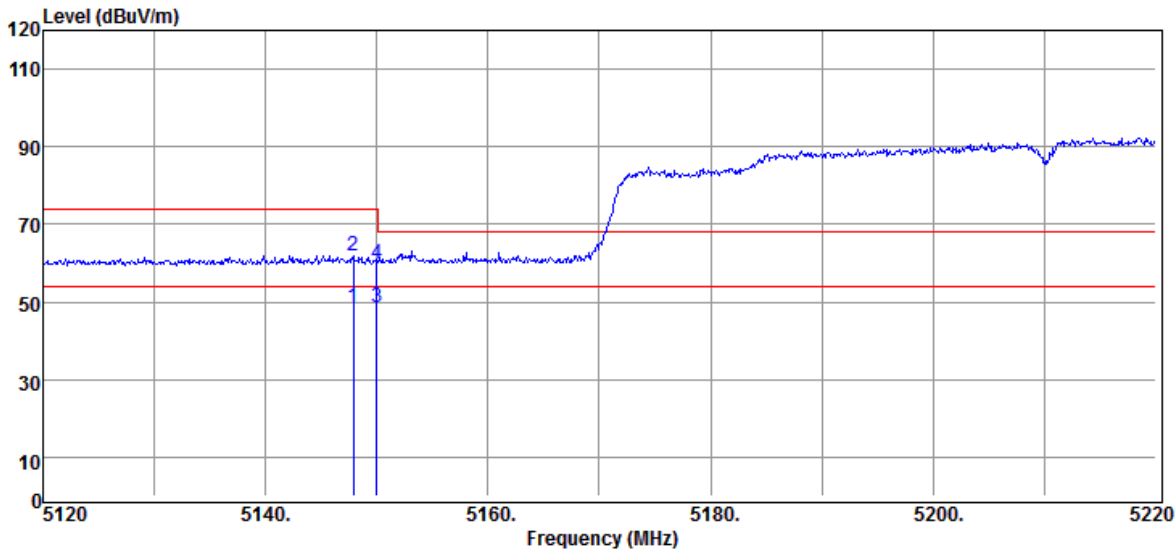
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Operation Mode	:802.11ac80/Band 1	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5210 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5147.90	Average	35.01	13.63	48.64	54.00	-5.36
5147.90	Peak	48.43	13.63	62.06	74.00	-11.94
5150.00	Average	34.95	13.65	48.60	54.00	-5.40
5150.00	Peak	46.15	13.65	59.80	74.00	-14.20

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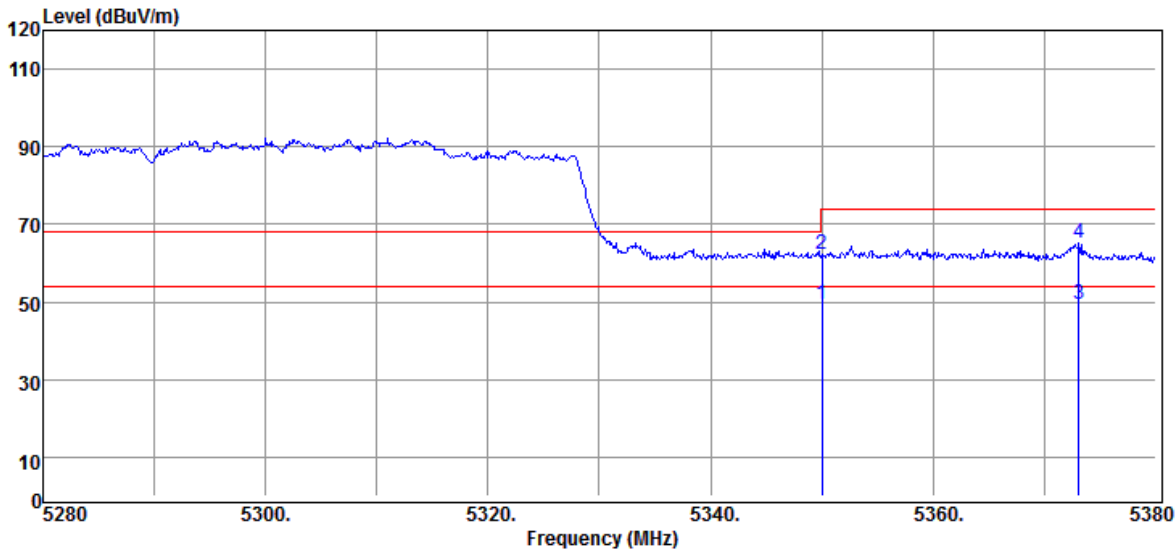
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Operation Mode	:802.11ac80/Band 2	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5290 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	35.44	14.16	49.60	54.00	-4.40
5350.00	Peak	48.19	14.16	62.35	74.00	-11.65
5373.10	Average	35.00	14.22	49.22	54.00	-4.78
5373.10	Peak	51.14	14.22	65.36	74.00	-8.64

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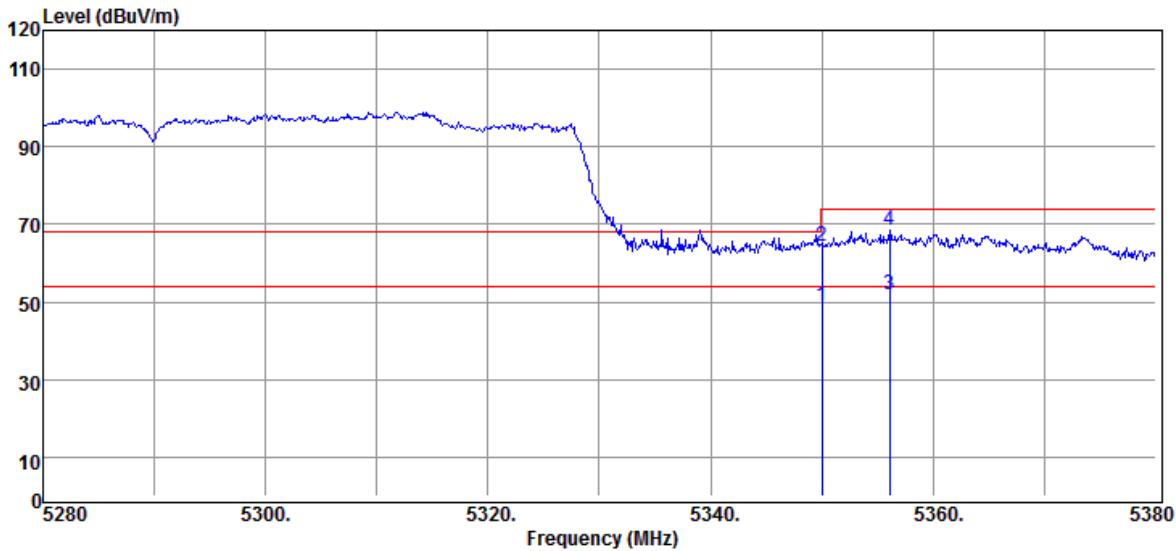
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Operation Mode	:802.11ac80/Band 2	Test Date	:2018-06-29
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5290 MHz	Engineer	:Ashton



Freq. MHz	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
5350.00	Average	34.87	14.16	49.03	54.00	-4.97
5350.00	Peak	50.41	14.16	64.57	74.00	-9.43
5356.10	Average	37.59	14.18	51.77	54.00	-2.23
5356.10	Peak	54.14	14.18	68.32	74.00	-5.68

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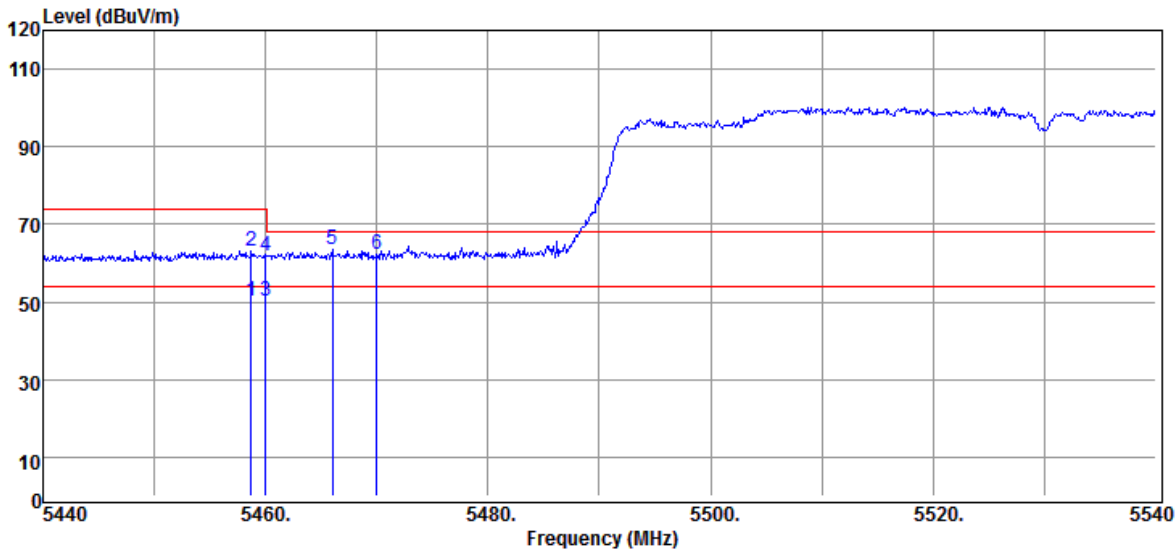
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Operation Mode	:802.11ac80/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5530 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5458.70	Average	35.99	14.31	50.30	54.00	-3.70
5458.70	Peak	48.85	14.31	63.16	74.00	-10.84
5460.00	Average	35.97	14.31	50.28	54.00	-3.72
5460.00	Peak	47.59	14.31	61.90	74.00	-12.10
5466.00	Peak	49.06	14.32	63.38	68.20	-4.82
5470.00	Peak	48.03	14.31	62.34	68.20	-5.86

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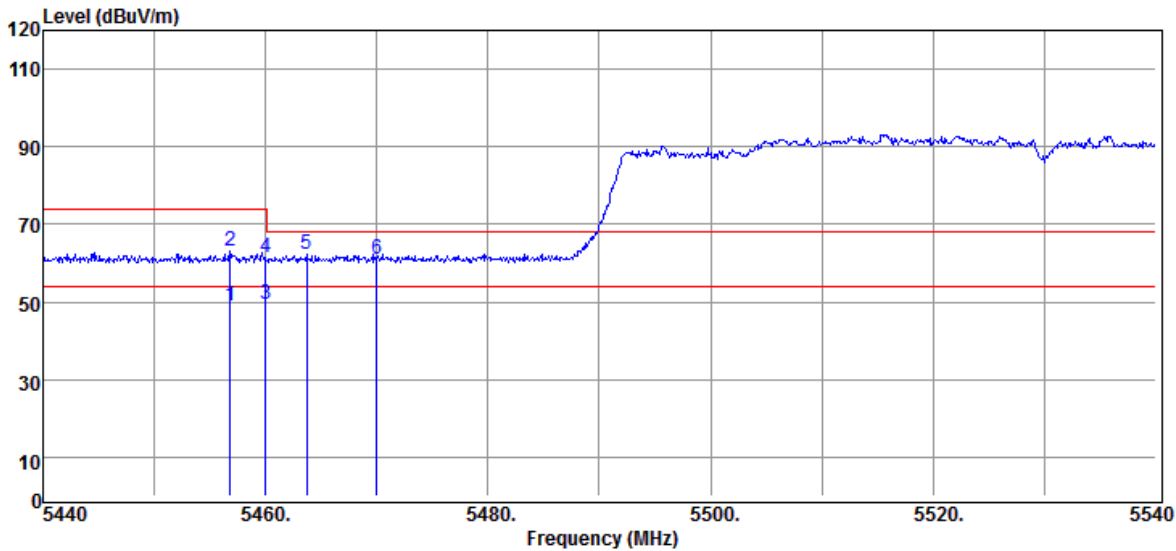
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Operation Mode	:802.11ac80/Band 3	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5530 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5456.80	Average	34.82	14.31	49.13	54.00	-4.87
5456.80	Peak	48.69	14.31	63.00	74.00	-11.00
5460.00	Average	34.98	14.31	49.29	54.00	-4.71
5460.00	Peak	47.23	14.31	61.54	74.00	-12.46
5463.70	Peak	47.80	14.32	62.12	68.20	-6.08
5470.00	Peak	46.69	14.31	61.00	68.20	-7.20

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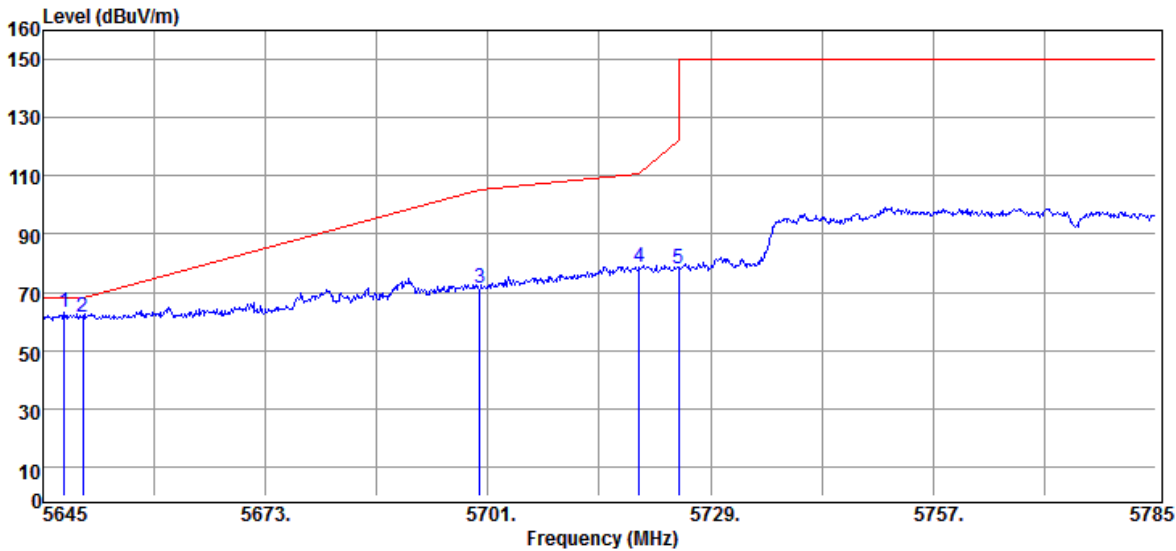
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Operation Mode	:802.11ac80/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5775 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5647.66	Peak	48.72	14.41	63.13	68.20	-5.07
5650.00	Peak	46.98	14.42	61.40	68.20	-6.80
5700.00	Peak	56.80	14.47	71.27	105.20	-33.93
5720.00	Peak	64.40	14.49	78.89	110.80	-31.91
5725.00	Peak	63.41	14.50	77.91	122.20	-44.29

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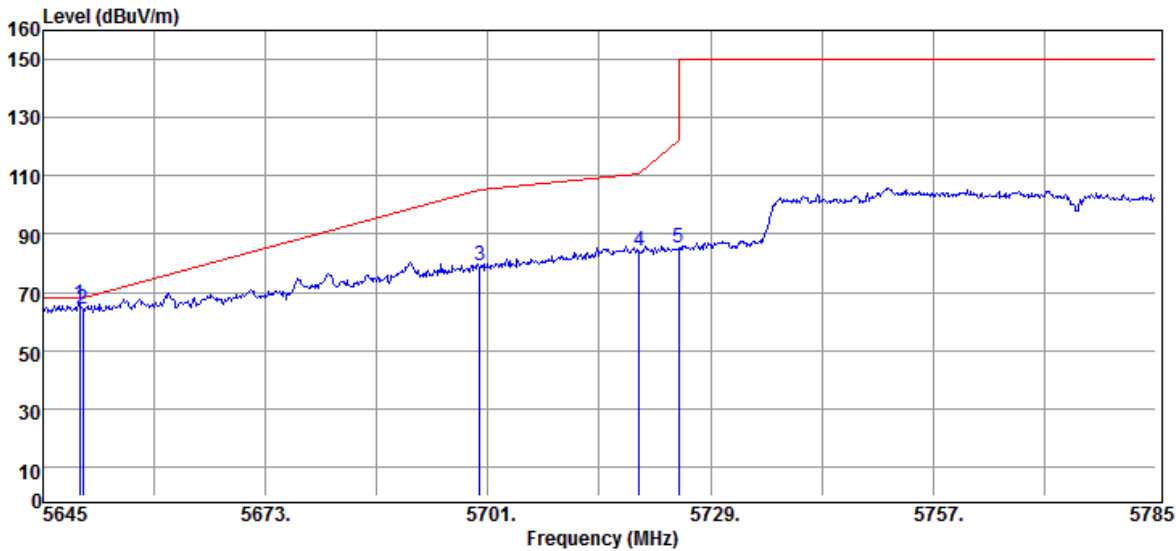
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Operation Mode	:802.11ac80/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH LOW	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5775 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5649.62	Peak	51.72	14.42	66.14	68.20	-2.06
5650.00	Peak	49.97	14.42	64.39	68.20	-3.81
5700.00	Peak	64.44	14.47	78.91	105.20	-26.29
5720.00	Peak	69.41	14.49	83.90	110.80	-26.90
5725.00	Peak	70.57	14.50	85.07	122.20	-37.13

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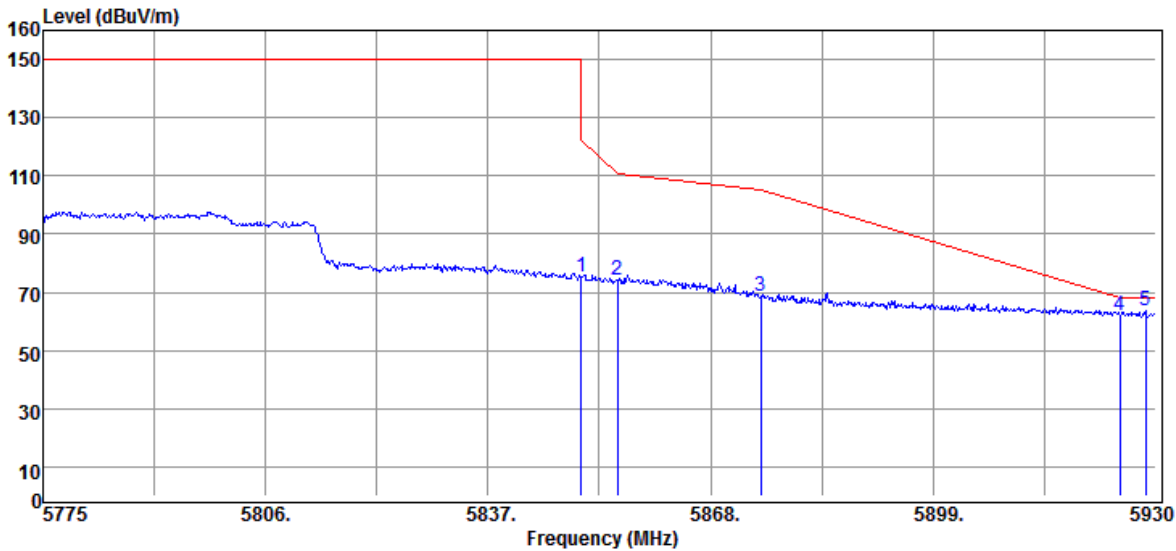
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Operation Mode	:802.11ac80/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:5775 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	Peak	60.30	14.72	75.02	122.20	-47.18
5855.00	Peak	59.44	14.73	74.17	110.80	-36.63
5875.00	Peak	53.94	14.78	68.72	105.20	-36.48
5925.00	Peak	47.32	14.91	62.23	68.20	-5.97
5928.61	Peak	49.00	14.93	63.93	68.20	-4.27

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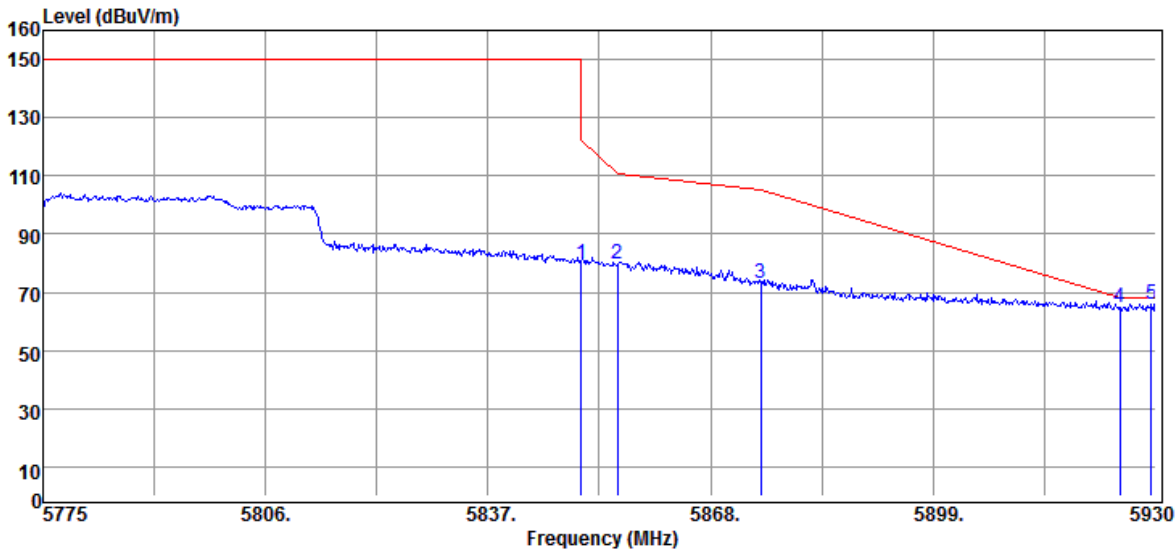
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Operation Mode	:802.11ac80/Band 4	Test Date	:2018-06-28
Test Mode	:BE CH HIGH	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:5775 MHz	Engineer	:Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
5850.00	Peak	65.24	14.72	79.96	122.20	-42.24
5855.00	Peak	64.97	14.73	79.70	110.80	-31.10
5875.00	Peak	58.16	14.78	72.94	105.20	-32.26
5925.00	Peak	50.02	14.91	64.93	68.20	-3.27
5929.38	Peak	50.93	14.93	65.86	68.20	-2.34

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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

An embedded-in antenna design is used.

The antenna is designed with permanent attached and no consideration of replacement.

Please see EUT photo and antenna spec. for details.

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

~ End of Report ~

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