

Page: 1 of 166

# **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

**Product Name: Smart Phone** FCC ID: APYHRO00257 ER/2017/A0021 Report No.: **Issue Date:** Nov. 10, 2017

**FCC Rule Part: §15.407** 

**Sharp Corporation, IoT Communication B.U.** 

2-13-1, Hachihonmatsu-lida, Hi-**Prepared for:** 

gashi-hiroshima-shi, Hiroshima 739-0192,

Japan

**Sharp Corporation** 

Manufacturer: 1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka

> 590-8522, Japan SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

Prepared by: No.134, Wu Kung Road, New Taipei Industrial

Park, Wuku District, New Taipei City, Taiwan

24803





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台灣檢驗科技股份有限公司

SGS Taiwan Ltd.

t (886-2) 2299-3279

f (886-2) 2298-0488

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sqs.com



Page: 2 of 166

# VERIFICATION OF COMPLIANCE

Sharp Corporation, IoT Communication B.U.

**Applicant:** 2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi, Hiroshima

739-0192, Japan

Sharp Corporation Manufacturer:

1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka 590-8522, Japan

**Product Name:** FCC ID: APYHRO00257 **Report Number:** ER/2017/A0021

Oct. 03, 2017 ~ Nov. 03, 2017 Date of test:

Date of EUT Received: Oct. 03, 2017

# We hereby certify that:

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

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

Test By: Date: Nov. 10, 2017 Tin Lin / Engineer Prepared By: Date: Nov. 10. 2017 Violetta Tang / Clerk Approved By: Date: Nov. 10, 2017

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Jim Chang / Asst. Manager



Page: 3 of 166

# **Revision History**

Report Number	Revision	Description	Issue Date
ER/2017/A0021	Rev.00	Initial creation of document	Nov. 10, 2017

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Page: 4 of 166

# **Contents**

1	GENERAL INFORMATIOqN	5
2	SYSTEM TEST CONFIGURATION	7
3	SUMMARY OF TEST RESULT	8
4	DESCRIPTION OF TEST MODES	10
5	MEASUREMENT UNCERTAINTY	14
6	CONDUCTED EMISSION TEST	15
7	DUTY CYCLE TEST SIGNAL	19
8	26dB & 6dB EMISSION BANDWIDTH MEASUREMENT	22
9	MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT	29
10	PEAK POWER SPECTRAL DENSITY	33
11	UNDESIRABLE RADIATED EMISSION MEASUREMENT	41
12	TRANSMISSION IN THE ABSENCE OF DATA	148
13	FREQUENCY STABILITY	149
11	ANTENNA RECHIREMENT	166

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f (886-2) 2298-0488



Page: 5 of 166

# 1. GENERAL INFORMATIOQN

### 1.1 Product Description

#### General:

Product Name:	Smart Phone	
Hardware Version:	DVT	
Software Version:	N/A	
	3.85V from Rechargeable Li-ion Battery	
Power Supply:	Battery:	Model No.: UBATIA284AFN2, Supplier: SHARP CORPORATION

#### WLAN 5GHz:

OI IZ.						
Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology		
	5150~5250	4	11.48			
11a_20	5250~5350	4	11.46	OFDM		
	5470~5725	11	11.42			
11n HT/	5150~5250	4	HT: 11.43			
ac_VHT	5250~5350	4	HT: 11.42	OFDM		
20M	5470~5725	11	HT: 11.41			
11n HT/	5150~5250	2	HT: 11.40			
ac_VHT	5250~5350	2	HT: 11.32	OFDM		
40M	5470~5725	5	HT: 11.34			
44	5150~5250	1	11.23			
11ac VHT80M	5250~5350	1	11.31	OFDM		
VIIIOON	5470~5725	2	11.42			
Modulation Type			64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only			
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 - 150.0Mbps 802.11 ac_20MHz: 6.5 –86.7Mbps 802.11 ac_40MHz: 13.5 -200.0Mbps 802.11 ac_80MHz: 29.3 – 433.3Mbps				
Antenna Designation:		ILA Antenna, 5150~5250MHz ( 5250~5350MHz ( 5470~5725MHz (	Gain: 1.9dBi Gain: 1.9dBi			

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Page: 6 of 166

# 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

KDB 789033 D02 v01r04 General UNII Test Procedures New Rules

KDB 644545 D03 v01 Guidance for IEEE 802.11ac

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.134, Wu Kung Road, Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

(TAF code 0513)

FCC Registration Numbers are: 509634 / TW0001

# 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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Page: 7 of 166

#### 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 transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

#### 2.4 Measurement Results Explanation Example

## For all conducted test items:

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

#### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 1.8dB, and 10dB attenuator (SISO)

#### Offset:

SISO mode offset = RF cable loss (dB)+ attenuation factor(dB) =11.8(dB)

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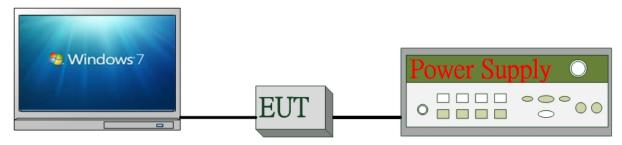
Page: 8 of 166

# 2.5 Configuration of Tested System

Fig. 2-1 Radiated & AC Power Line Conducted Emission



Fig. 2-2 Conducted (Antenna Port) Emission



**Table 2-1 Equipment Used in Tested System** 

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	DC Power Supply	Agilent	E3640A	KR93300208	N/A	Unshielded
3.	Notebook	Lenovo	L430	PK-OCGFF	Shielded	Unshielded

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Page: 9 of 166

### 3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	26 dB Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

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Page: 10 of 166

# 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

Ī	OLIANINIEI	EDEOUENOV
	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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Page: 11 of 166

#### Operated band in 5470 MHz ~5725 MHz:

# 11 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		

5 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		

2 channesl are provided for 802.11ac VHT80

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz

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Page: 12 of 166

#### 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting mode is prorammed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.
- 4. The given UE is pre-scanned among 802.11n and ac modes, and 802.11n yields the highest reading that generates the highest emission.

#### **PADIATED EMISSION TEST**

ADIATED EMISSION TEST:									
	RADIATED EMISSION TEST (BELOW 1 GHz)								
MODE	<b>FREQUENCY</b>	AVAILABLE	AVAILABLE TESTED ,		DATA RATE	ANTENNA			
IVIODE	BAND (MHz)	CHANNEL CHANNEL		MODULATION	(Mbps)	PORT			
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	MAIN			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN			
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN			
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN			
802.11a	5500~5720	100 to 140	100,116,140	OFDM	6	MAIN			
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS0	MAIN			
	RADI	ATED EMISS	ION TEST (AE	BOVE 1 GHz)					
MODE	<b>FREQUENCY</b>	AVAILABLE	TESTED	MODULATION	DATA RATE	ANTENNA			
IVIODE	BAND (MHz)	CHANNEL	CHANNEL		(Mbps)	PORT			
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	MAIN			
802.11n_HT20			, ,	OFDM	MCS0	MAIN			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	MAIN			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN			
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN			
802.11n_HT20	3200 3320	32 10 04	32,00,04	OFDM	MCS0	MAIN			
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MAIN			
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN			
802.11a	5500~5720	100 to 144	100,116,140	OFDM	6	MAIN			
802.11n_HT20	3300~3720	100 to 144	100,110,140	OFDM	MCS0	MAIN			
802.11n_HT40	5510~5710	102 to 142	102,110,134	OFDM	MCS0	MAIN			
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	MAIN			

#### Note:

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

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Page: 13 of 166

#### ANTENNA PORT CONDUCTED MEASUREMENT

ANTENNA FORT CONDUCTED MEASUREMENT.									
	CONDUCTED TEST								
MODE	FREQUENCY		TESTED	MODULATION	DATA RATE				
	BAND (MHz)	CHANNEL	CHANNEL		(Mbps)	PORT			
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	MAIN			
802.11n_HT20	3100~3240	30 10 40	30,44,40	OFDM	MCS0	MAIN			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	MAIN			
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN			
802.11a	E260- E220	50 to 64	E2 60 64	OFDM	6	MAIN			
802.11n_HT20	5260~5320	52 to 64	52,60,64	OFDM	MCS0	MAIN			
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MAIN			
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN			
802.11a	5500~5720	5500 5700 400 to 444		OFDM	6	MAIN			
802.11n_HT20	5500~5720	100 to 144	100,116,140,144	OFDM	MCS0	MAIN			
802.11n_HT40	5510~5710	102 to 142	102,110,134,142	OFDM	MCS0	MAIN			
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	MAIN			

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Page: 14 of 166

### **MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26dB Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 0.96 dB
Peak Power Spectral Density Measurement	+/- 1.67 dB
Frequency Stability	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

# Radiated Spurious Emission:

	9kHz-30MHz: +/-2.87dB			
	30MHz - 180MHz: +/- 3.37dB			
Measurement uncertainty	180MHz -417MHz: +/- 3.19dB			
(Polarization : <b>Vertical</b> )	0.417GHz-1GHz: +/- 3.19dB			
	1GHz - 18GHz: +/- 4.04dB			
	18GHz - 40GHz: +/- 4.04dB			

	9kHz-30MHz: +/-2.87dB				
	30MHz - 167MHz: +/- 4.22dB				
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB				
(Polarization : <b>Horizontal</b> )	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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Page: 15 of 166

#### 6. CONDUCTED EMISSION TEST

# 6.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

Frequency range	Limits dB(uV)			
MHz	Quasi-peak Average			
0.15 to 0.50	66 to 56	56 to 46		
0.50 to 5	56	46		
5 to 30	60	50		

#### Note

# 6.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018				
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/22/2017	05/21/2018				
LISN	MESS TEC	FCC-LISN-50/2 50-25-2-01	4034	03/19/2017	03/18/2018				
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2016	11/25/2017				

### 6.3 EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz power source.

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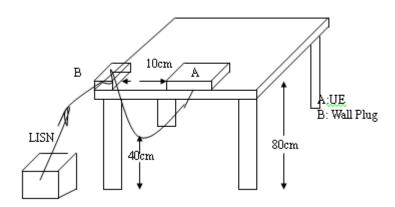
<sup>1.</sup> The lower limit shall apply at the transition frequencies

<sup>2.</sup> The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50



Page: 16 of 166

#### 6.4 Test SET-UP



#### 6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed.

#### 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit.

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Page: 17 of 166

# AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Oct. 30, 2017
Temperature:	<b>20</b> ℃	Humidity:	58 %	Test By:	Tin
				Phase:	L1/N

Site Conduction Room

Phase: L1 Temperature: 20 ℃

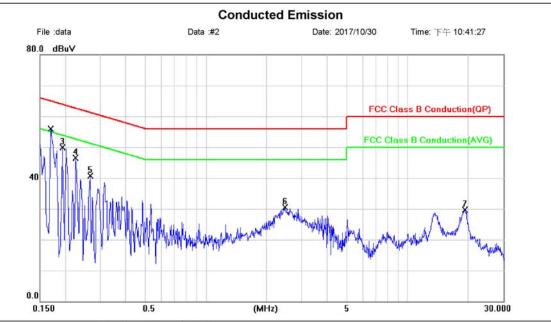
Limit: FCC Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 58 %

Mode: Operation

Note:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1700	53.30	0.07	53.37	64.96	-11.59	QP	
2		0.1700	34.20	0.07	34.27	54.96	-20.69	AVG	
3		0.1940	49.87	0.07	49.94	63.86	-13.92	peak	
4		0.2260	46.44	0.07	46.51	62.60	-16.09	peak	
5		0.2660	40.57	0.07	40.64	61.24	-20.60	peak	
6		2.4620	30.34	0.14	30.48	56.00	-25.52	peak	
7		19.2860	29.22	0.49	29.71	60.00	-30.29	peak	

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20 ℃

Page: 18 of 166

Temperature: Site Conduction Room Phase: AC 120V/60Hz Humidity: 58 %

Power:

Mode: Operation

Limit: FCC Class B Conduction(QP)

Note:

# **Conducted Emission** File :data Data:#1 Date: 2017/10/30 Time: 下午 10:40:00 80.0 dBuV FCC Class B Conduction(QP) 0.5 (MHz) 30.000 0.150

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0.1540	56.40	0.07	56.47	65.78	-9.31	QP	
2	0.1540	36.90	0.07	36.97	55.78	-18.81	AVG	
3	0.2020	47.70	0.07	47.77	63.53	-15.76	QP	
4	0.2020	27.80	0.07	27.87	53.53	-25.66	AVG	
5	0.2260	46.56	0.07	46.63	62.60	-15.97	peak	
6	0.2500	43.08	0.07	43.15	61.76	-18.61	peak	
7	0.2740	38.38	0.07	38.45	61.00	-22.55	peak	
8	18.9220	37.01	0.48	37.49	60.00	-22.51	peak	

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Page: 19 of 166

#### 7. DUTY CYCLE TEST SIGNAL

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

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

#### Formula:

Duty Cycle = Ton / (Ton+Toff)

#### **Measurement Procedure:**

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

### **Duty Cycle:**

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log ( 1/Duty Cycle )
802.11a	93.98	0.27
802.11n_20	93.23	0.30
802.11n_40	87.88	0.56
802.11ac_80	79.62	0.99

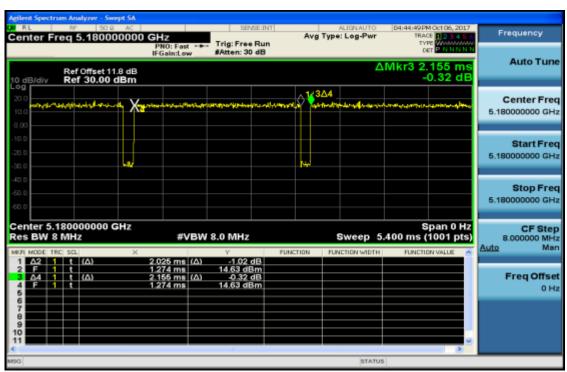
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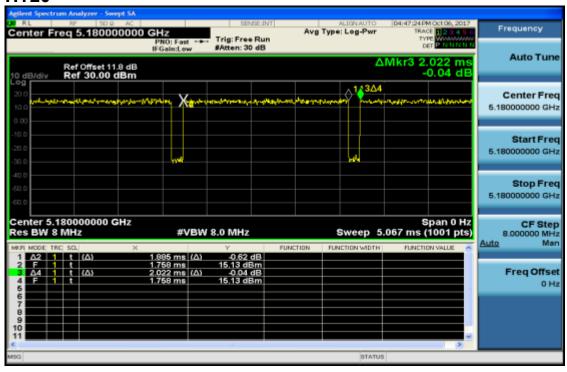


Page: 20 of 166

# **DUTY CYCLE TEST SIGNAL Measurement Result** 802.11a



# 802.11n HT20



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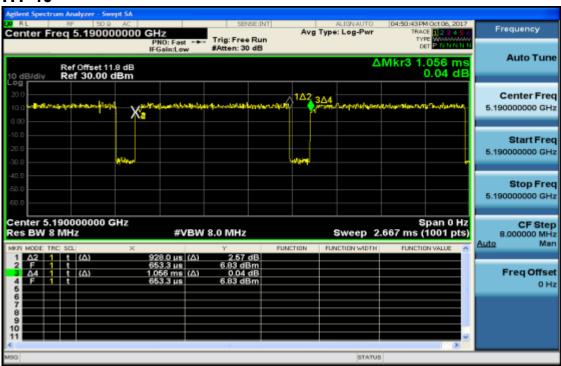
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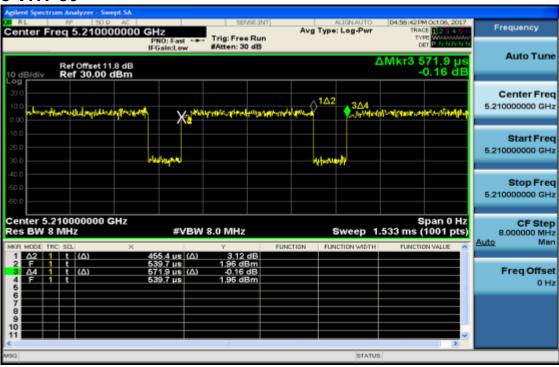


Page: 21 of 166

# 802.11n HT 40



### 802.11 ac VHT 80



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Page: 22 of 166

#### 8. 26DB EMISSION BANDWIDTH MEASUREMENT

# 8.1 Standard Applicable

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

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

#### 8.2 Measurement Procedure

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

8.3 Measurement Equipment Used

	SGS Conducted Room											
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due							
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017							
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017							
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018							
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018							
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018							
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018							
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018							
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017							
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018							

## 8.4 Test Set-up



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Page: 23 of 166

# 8.5 Measurement Result

#### 26dB Bandwidth

802.11a Main

802.11n HT20 Main

002. 1 1a_ivia			002.1111_1111		
Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	23.37	13.686	5180	22.93	13.605
5220	22.54	13.529	5220	23.35	13.683
5240	22.88	13.595	5240	22.92	13.603
5260	22.52	13.526	5260	23.68	13.744
5300	22.54	13.529	5300	23.75	13.757
5320	22.24	13.470	5320	22.85	13.588
5500	22.64	13.549	5500	23.47	13.705
5580	22.81	13.581	5580	23.05	13.626
5700	22.85	13.589	5700	23.21	13.657

#### 802.11n \_HT40\_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.59	16.190
5230	41.45	16.176
5270	41.36	16.165
5310	41.33	16.163
5510	39.85	16.004
5550	42.12	16.245
5670	41.42	16.172

802.11ac VHT80 Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.71	19.228
5290	84.11	19.248
5530	83.71	19.228
5610	83.39	19.211

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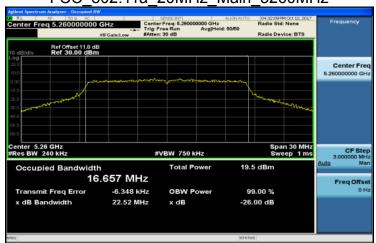


Page: 24 of 166

#### FCC 802.11a 20MHz Main 5180MHz

# FCC 802.11a 20MHz Main 5260MHz





FCC\_802.11a\_20MHz\_Main\_5220MHz

FCC\_802.11a\_20MHz\_Main\_5300MHz

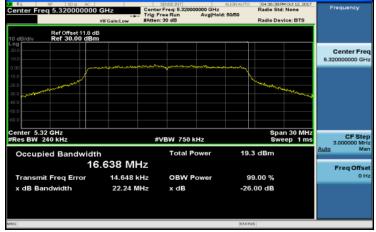




FCC 802.11a 20MHz Main 5240MHz

# FCC 802.11a 20MHz Main 5320MHz





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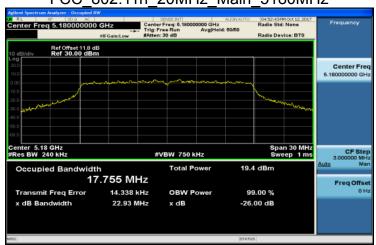


Page: 25 of 166

#### FCC 802.11a 20MHz Main 5500MHz

# FCC 802.11n 20MHz Main 5180MHz

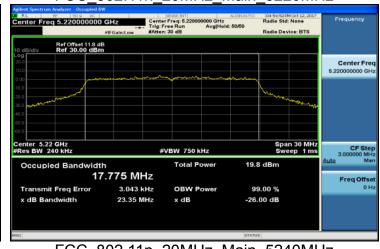




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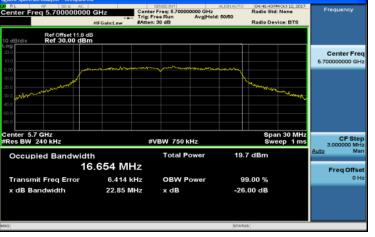
FCC\_802.11n\_20MHz\_Main\_5220MHz





# FCC 802.11a 20MHz Main 5700MHz

# FCC 802.11n 20MHz Main 5240MHz





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Page: 26 of 166

#### FCC 802.11n 20MHz Main 5260MHz

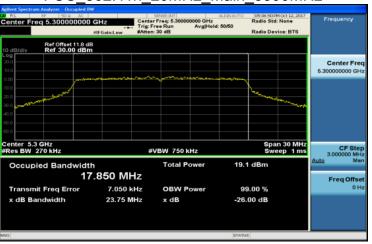
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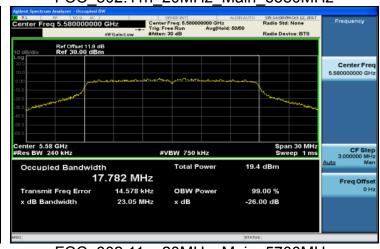




# FCC\_802.11n\_20MHz\_Main\_5300MHz

FCC\_802.11n\_20MHz\_Main\_5580MHz

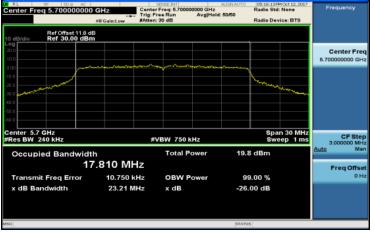




# FCC 802.11n 20MHz Main 5320MHz

# FCC 802.11n 20MHz Main 5700MHz





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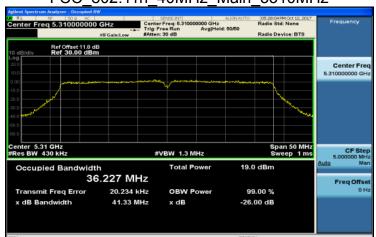


Page: 27 of 166

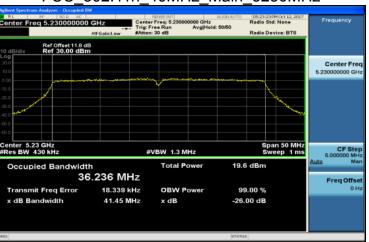
#### FCC 802.11n 40MHz Main 5190MHz

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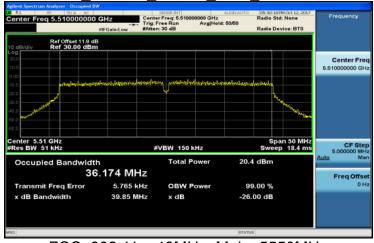
# FCC 802.11n 40MHz Main 5310MHz



# FCC\_802.11n\_40MHz\_Main\_5230MHz



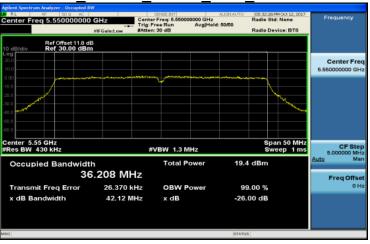
FCC\_802.11n\_40MHz\_Main\_5510MHz



# FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5550MHz



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Page: 28 of 166

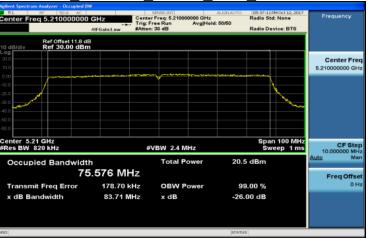
#### FCC 802.11n 40MHz Main 5670MHz



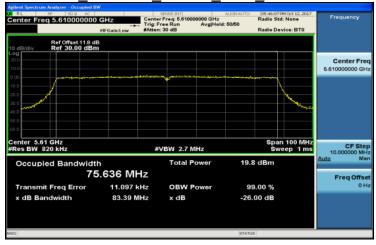
#### FCC 802.11ac 80MHz Main 5530MHz



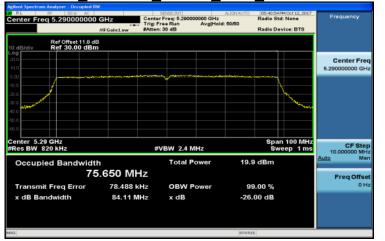
# FCC\_802.11ac\_80MHz\_Main\_5210MHz



FCC\_802.11ac\_80MHz\_Main\_5610MHz



# FCC 802.11ac 80MHz Main 5290MHz



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Page: 29 of 166

## MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

# 9.1 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	V		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3			1 Watt(30dBm)

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

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Page: 30 of 166

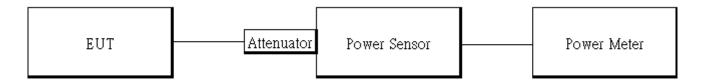
#### 9.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- 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 is used as the auxiliary test equipment to conduct the output power measurement.
- Record the max. reading and add 10 log(1/duty cycle).
- Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

#### 9.3 Measurement Equipment Used

	SGS Conducted Room										
Name of Equip- ment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due						
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017						
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017						
EXA Spectrum An- alyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018						
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018						
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018						
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018						
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018						
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017						
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018						

# 9.4 Test Set-up



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Page: 31 of 166

# 9.5 Measurement Result **Conducted output power**

# 802 11a Main

002.11a_	iviaiii							
СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
36	5180	6	11.48	14.059		23.98		PASS
44	5220	6	11.45	13.963		23.98		PASS
48	5240	6	11.47	14.027		23.98		PASS
52	5260	6	11.41	13.835	23.98	or 11+10log(B) =	24.53	PASS
60	5300	6	11.46	13.995	23.98	or 11+10log(B) =	24.53	PASS
64	5320	6	11.36	13.676	23.98	or 11+10log(B) =	24.47	PASS
100	5500	6	11.42	13.866	23.98	or 11+10log(B) =	24.55	PASS
116	5580	6	11.31	13.520	23.98	or 11+10log(B) =	24.58	PASS
140	5700	6	11.38	13.739	23.98	or 11+10log(B) =	24.59	PASS

### 802.11n\_HT20\_Main

СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	11.40	13.818		23.98		PASS
44	5220	MCS0	11.43	13.914		23.98		PASS
48	5240	MCS0	11.32	13.566		23.98		PASS
52	5260	MCS0	11.36	13.691	23.98	or 11+10log(B) =	24.74	PASS
60	5300	MCS0	11.42	13.882	23.98	or 11+10log(B) =	24.76	PASS
64	5320	MCS0	11.37	13.723	23.98	or 11+10log(B) =	24.59	PASS
100	5500	MCS0	11.41	13.850	23.98	or 11+10log(B) =	24.70	PASS
116	5580	MCS0	11.31	13.535	23.98	or 11+10log(B) =	24.63	PASS
140	5700	MCS0	11.34	13.628	23.98	or 11+10log(B) =	24.66	PASS

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Page: 32 of 166

## 802.11n HT40 Main

СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
38	5190	MCS0	11.27	13.400		23.98		PASS
46	5230	MCS0	11.40	13.807		23.98		PASS
54	5270	MCS0	11.42	13.871	23.98	or 11+10log(B) =	27.17	PASS
62	5310	MCS0	11.35	13.649	23.98	or 11+10log(B) =	27.16	PASS
102	5510	MCS0	11.29	13.462	23.98	or 11+10log(B) =	27.00	PASS
110	5550	MCS0	11.31	13.524	23.98	or 11+10log(B) =	27.25	PASS
134	5670	MCS0	11.34	13.618	23.98	or 11+10log(B) =	27.17	PASS

# 802.11ac VHT80 Main

СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
42	5210	MCS0	11.23	13.273		23.98		PASS
58	5290	MCS0	11.31	13.520	23.98	or 11+10log(B) =	30.25	PASS
106	5530	MCS0	11.34	13.614	23.98	or 11+10log(B) =	30.23	PASS
122	5610	MCS0	11.42	13.867	23.98	or 11+10log(B) =	30.21	PASS

Note:

SISO offset=

11.8

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Page: 33 of 166

#### 10. POWER SPECTRAL DENSITY

# **Standard Applicable**

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

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

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Page: 34 of 166

#### 10.2 Measurement Procedure

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

#### **Measurement Equipment Used** 10.3

SGS Conducted Room							
Name of Equip- ment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018		
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018		
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018		
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018		
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017		

#### 10.4 **Test Set-up**



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Page: 35 of 166

#### 10.5 **Measurement Result**

POWER DENSITY 802.11a MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-1.50	0.27	-1.23	11	-12.23
5220	-1.60	0.27	-1.33	11	-12.33
5240	-2.23	0.27	-1.96	11	-12.96
5260	-2.29	0.27	-2.02	11	-13.02
5300	-2.43	0.27	-2.16	11	-13.16
5320	-2.81	0.27	-2.54	11	-13.54
5500	-2.41	0.27	-2.14	11	-13.14
5580	-2.41	0.27	-2.14	11	-13.14
5700	-1.17	0.27	-0.90	11	-11.90

POWER DENSITY 802.11n HT20 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)	
5180	-2.07	0.30	-1.77	11	-12.77	
5220	-2.41	0.30	-2.11	11	-13.11	
5240	-1.27	0.30	-0.97	11	-11.97	
5260	-3.56	0.30	-3.26	11	-14.26	
5300	-3.51	0.30	-3.21	11	-14.21	
5320	-3.48	0.30	-3.18	11	-14.18	
5500	-3.08	0.30	-2.78	11	-13.78	
5580	-2.10	0.30	-1.80	11	-12.80	
5700	-4.05	0.30	-3.75	11	-14.75	

POWER DENSITY 802.11n HT40 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)	
5190	-7.66	0.56	-7.10	11	-18.10	
5230	-7.73	0.56	-7.17	11	-18.17	
5270	-8.62	0.56	-8.06	11	-19.06	
5310	-8.13	0.56	-7.57	11	-18.57	
5510	-6.89	0.56	-6.33	11	-17.33	
5550	-6.72	0.56	-6.16	11	-17.16	
5670	-7.02	0.56	-6.46	11	-17.46	

POWER DENSITY 802.11ac VHT80 MODE						
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)	
5210	-12.97	0.99	-11.98	11	-22.98	
5290	-13.34	0.99	-12.35	11	-23.35	
5530	-13.66	0.99	-12.67	11	-23.67	
5610	-12.45	0.99	-11.46	11	-22.46	

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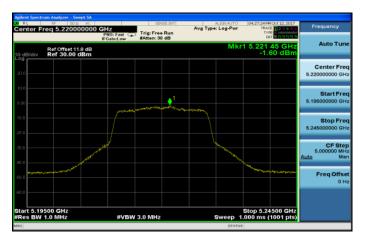


Page: 36 of 166

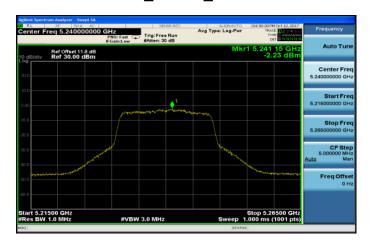
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802.11a 20MHz 5220MHz



802.11a 20MHz 5240MHz



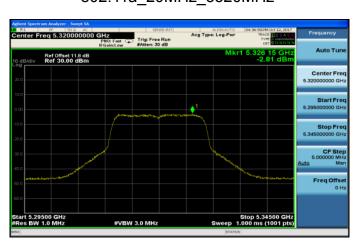
802.11a\_20MHz\_5260MHz



802.11a 20MHz 5300MHz



802.11a 20MHz 5320MHz



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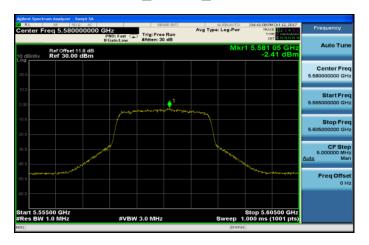


Page: 37 of 166

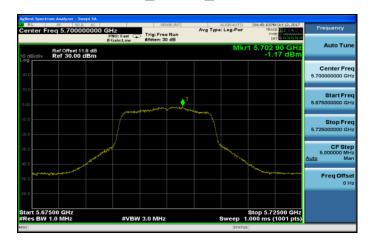
## 802.11a 20MHz 5500MHz



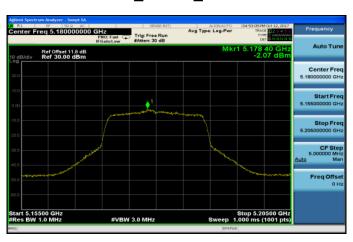
### 802.11a 20MHz 5580MHz



## 802.11a\_20MHz\_5700MHz



### 802.11n 20MHz 5180MHz



## 802.11n 20MHz 5220MHz



## 802.11n\_20MHz\_5240MHz



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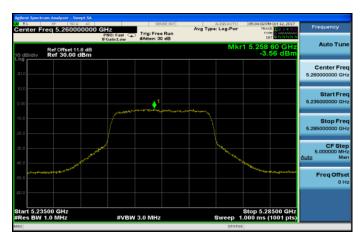
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Page: 38 of 166

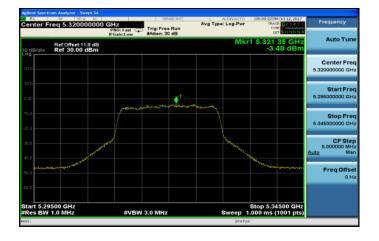
# 802.11n 20MHz 5260MHz



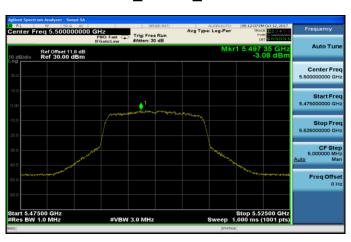
802.11n 20MHz 5300MHz



802.11n\_20MHz\_5320MHz



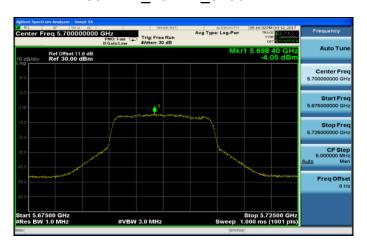
### 802.11n 20MHz 5500MHz



802.11n 20MHz 5580MHz



802.11n\_20MHz\_5700MHz



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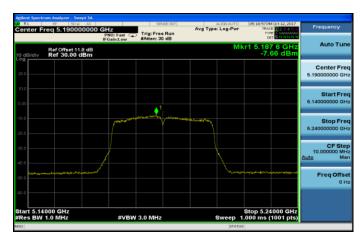
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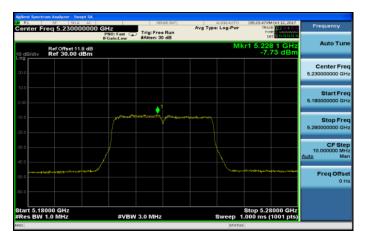


Page: 39 of 166

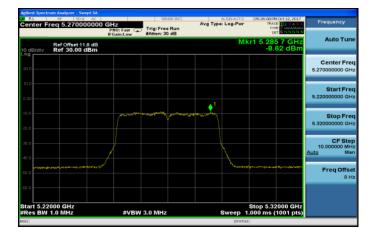
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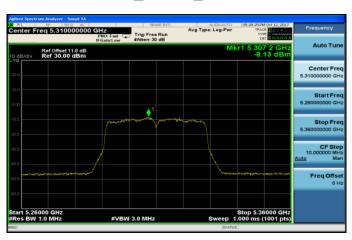
802.11n 40MHz 5230MHz



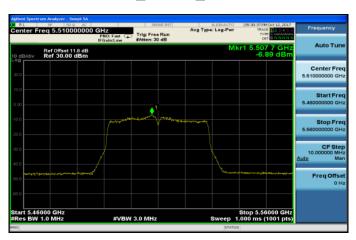
802.11n\_40MHz\_5270MHz



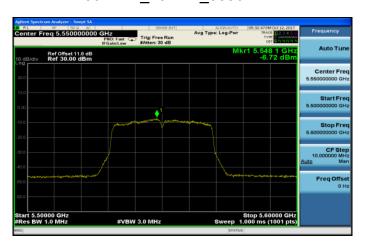
802.11n 40MHz 5310MHz



802.11n 40MHz 5510MHz



802.11n\_40MHz\_5550MHz



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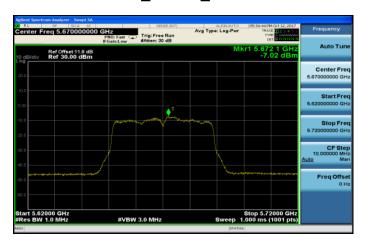
Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.

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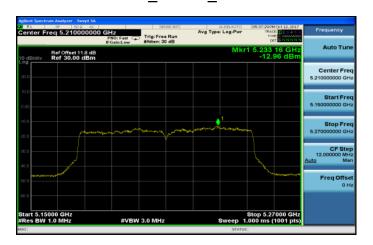


Page: 40 of 166

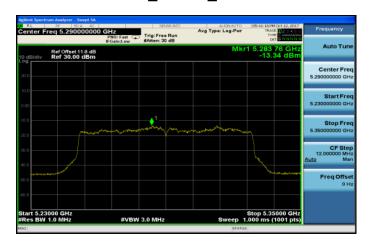
### 802.11n 40MHz 5670MHz



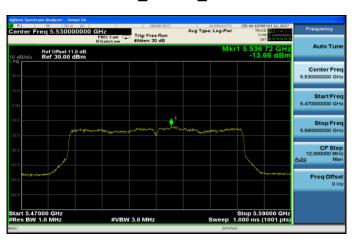
## 802.11ac 80MHz 5210MHz



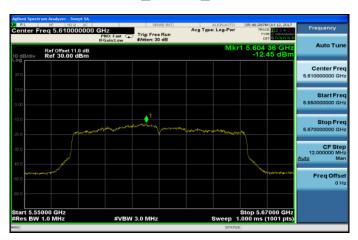
## 802.11ac\_80MHz\_5290MHz



### 802.11ac 80MHz 5530MHz



802.11ac 80MHz 5610MHz



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Page: 41 of 166

### 11. UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 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 STRE	ENGTH AT 3m				
	PK: 74 (dBμV/m)	AV 54 (dBμV/m)				
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m				
15.407(b)(1) RSS-247 6.2.1.2						
15.407(b)(2) RSS-247 6.2.2.2	PK: -27 (dBm/MHz)	PK: 68.3 (dBµV/m)				
15.407(b)(3) RSS-247 6.2.3.2						
	PK:-27 (dBm/MHz) *1	PK: 68.2(dBµV/m) *1				
15.407(b)(4)(i)	PK:10 (dBm/MHz) *2	PK:105.2 (dBµV/m) *2				
RSS-247 6.2.4.2	PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 110.8(dBµV/m) *3 PK:122.2 (dBµV/m) *4				

<sup>\*1</sup> beyond 75 MHz or more above of the bandedge.

EIRP =  $((E*d)^2) / 30$ , 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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<sup>\*2</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

<sup>\*3</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

<sup>\*4</sup> from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.



Page: 42 of 166

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

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Page: 43 of 166

#### 11.2 **Measurement Equipment Used**

	SGS SAC-III									
Name of Equip- ment	Manufacturer	Model	Serial Num- ber	Calibration Date	Calibration Due					
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018					
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018					
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2017	09/19/2018					
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017					
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/04/2017	08/03/2018					
Pre-Amplifier	Agilent	8447D	2944A07676	01/03/2017	01/02/2018					
Pre-Amplifier	EMC Instru- ments Corp.	EMC0126530	980038	01/03/2017	01/02/2018					
Turn Table	HD	DT420	N/A	N.C.R	N.C.R					
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R					
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R					
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018					
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018					
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018					
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017					
Pre-Amplifier	EMC Instru- ments Corp.	EMC184045	980135	01/05/2017	01/04/2018					

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

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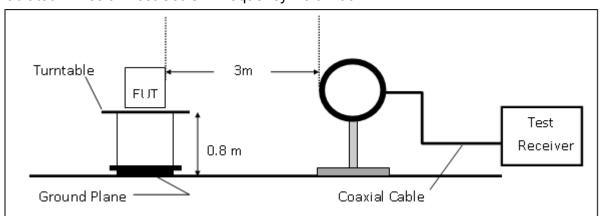
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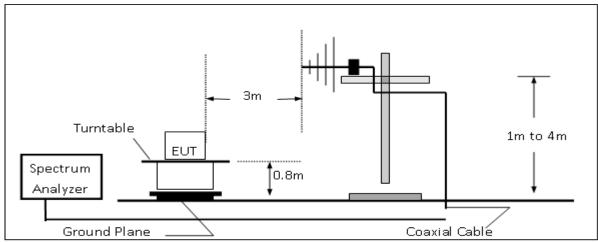
Page: 44 of 166

#### 11.3 **Test SET-UP**

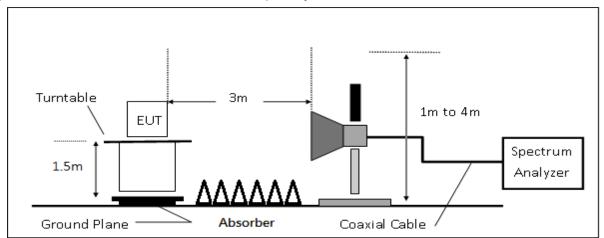
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(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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Page: 45 of 166

#### 11.4 **Measurement Procedure**

- The EUT was placed on a turn table which is 0.8m above ground plane. 1.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules . 2.
- The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 3. 1GHz above ground plane.
- 4. 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 emissions.
- Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and 6. 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.
- Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T 8. (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 9. Maximum procedure was performed on the six highest emissions to ensure EUT compli-
- 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.

### 11.5 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(dBµV/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

### Note:

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

# 11.6 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.

#### Measurement Result 11.7

Refer to next page for tabular data sheets.

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SGS Taiwan Ltd. No.134, WuKung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號



:2017-10-16

:Tin

:21 deg\_C / 62 RH

Page: 46 of 166

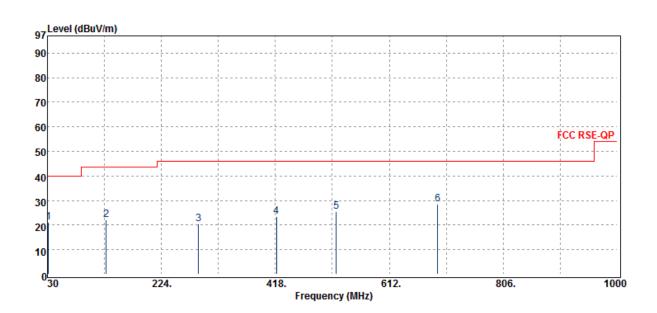
# **Radiated Spurious Emission Measurement Result Below 1GHz Worst-Case Data:**

### 802.11a 5150~5250 MHz

**Operation Band Test Date** :802.11aB1 **Fundamental Frequency** :5220 MHz Temp./Humi.

**Operation Mode** :Tx CH MID Engineer

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
31.94	S	Peak	30.28	-9.11	21.17	40.00	-18.83
129.91	S	Peak	31.54	-9.50	22.04	43.50	-21.46
287.05	S	Peak	26.80	-6.19	20.61	46.00	-25.39
419.94	S	Peak	26.89	-3.39	23.50	46.00	-22.50
521.79	S	Peak	27.03	-1.61	25.42	46.00	-20.58
694.45	S	Peak	27.28	1.36	28.64	46.00	-17.36

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Page: 47 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

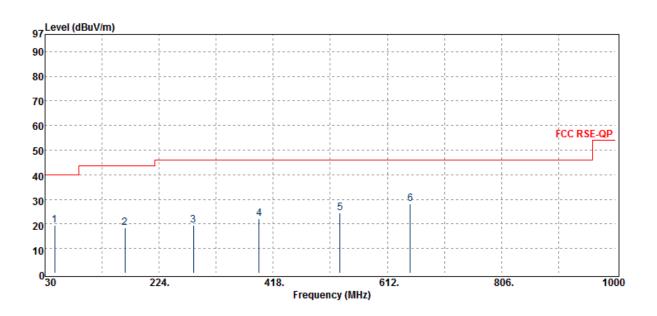
:802.11aB1 :5220 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
46.49	S	Peak	27.35	-7.91	19.44	40.00	-20.56
165.80	S	Peak	25.93	-7.40	18.53	43.50	-24.97
282.20	S	Peak	25.61	-6.27	19.34	46.00	-26.66
393.75	S	Peak	26.29	-4.17	22.12	46.00	-23.88
531.49	S	Peak	25.96	-1.57	24.39	46.00	-21.61
650.80	S	Peak	27.63	0.49	28.12	46.00	-17.88

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Page: 48 of 166

### 802.11a 5250~5350 MHz

**Operation Band** :802.11aB2 Fundamental Frequency :5300 MHz **Operation Mode** 

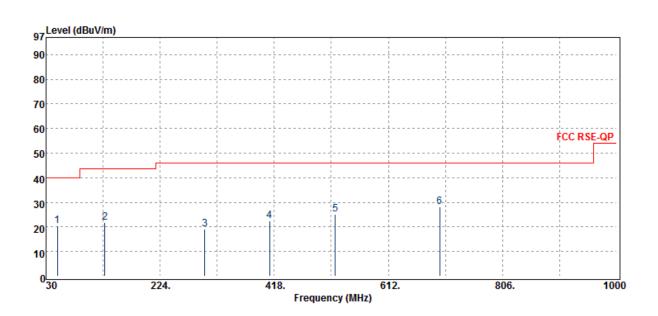
EUT Pol.

:Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
49.40	S	Peak	28.37	-7.74	20.63	40.00	-19.37
129.91	S	Peak	31.27	-9.50	21.77	43.50	-21.73
299.66	S	Peak	24.99	-5.93	19.06	46.00	-26.94
410.24	S	Peak	26.16	-3.62	22.54	46.00	-23.46
521.79	S	Peak	26.82	-1.61	25.21	46.00	-20.79
699.30	S	Peak	26.66	1.44	28.10	46.00	-17.90

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Page: 49 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

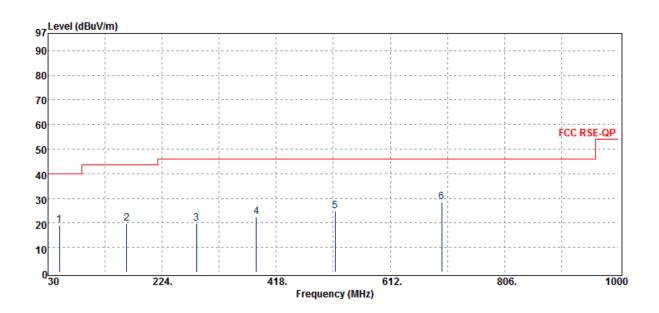
:802.11aB2 :5300 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi. :2017-10-16 :21 deg\_C / 62 RH

Engineer

Measurement Antenna Pol.

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
49.40	S	Peak	26.97	-7.74	19.23	40.00	-20.77
163.86	S	Peak	27.30	-7.45	19.85	43.50	-23.65
282.20	S	Peak	25.97	-6.27	19.70	46.00	-26.30
384.05	S	Peak	26.81	-4.35	22.46	46.00	-23.54
517.91	S	Peak	26.76	-1.82	24.94	46.00	-21.06
699.30	S	Peak	27.05	1.44	28.49	46.00	-17.51

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Page: 50 of 166

### 802.11a, 5470~5725 MHz

**Operation Band** :802.11aB3 Fundamental Frequency :5580 MHz **Operation Mode** :Tx CH MID

EUT Pol.

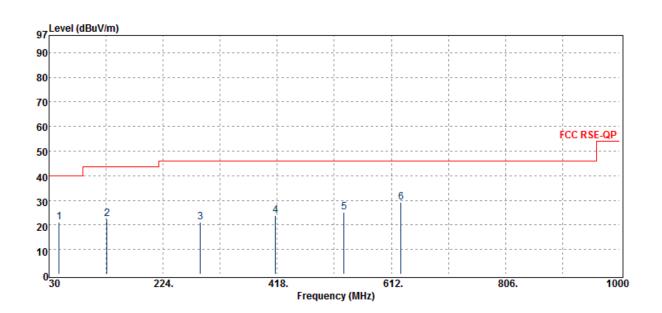
:H Plane

**Test Date** Temp./Humi. :2017-10-16

:21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
47.46	S	Peak	28.83	-7.85	20.98	40.00	-19.02
128.94	S	Peak	32.07	-9.57	22.50	43.50	-21.00
287.05	S	Peak	27.49	-6.19	21.30	46.00	-24.70
415.09	S	Peak	26.97	-3.21	23.76	46.00	-22.24
531.49	S	Peak	26.91	-1.57	25.34	46.00	-20.66
628.49	S	Peak	29.13	0.23	29.36	46.00	-16.64

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Page: 51 of 166

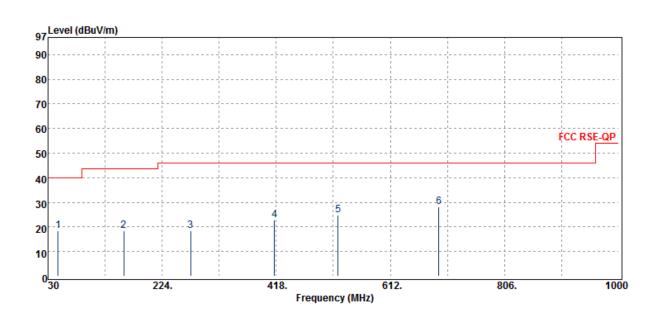
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5580 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi. Engineer

:2017-10-16 :21 deg\_C / 62 RH

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
47.46	S	Peak	26.46	-7.85	18.61	40.00	-21.39
159.01	S	Peak	25.72	-7.38	18.34	43.50	-25.16
272.50	S	Peak	25.38	-6.77	18.61	46.00	-27.39
415.09	S	Peak	25.87	-3.21	22.66	46.00	-23.34
522.76	S	Peak	26.57	-1.66	24.91	46.00	-21.09
694.45	S	Peak	26.68	1.36	28.04	46.00	-17.96

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Page: 52 of 166

### Above 1GHz Worst-Case Data:

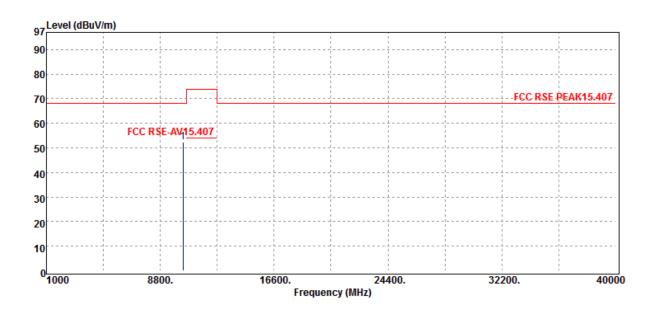
## Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

:2017-10-16 **Operation Band** :802.11aB1 **Test Date** 

**Fundamental Frequency** Temp./Humi. :5180 MHz :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer :Tin

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10360.00	Н	Peak	34.10	18.29	52.39	68.30	-15.91

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Page: 53 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

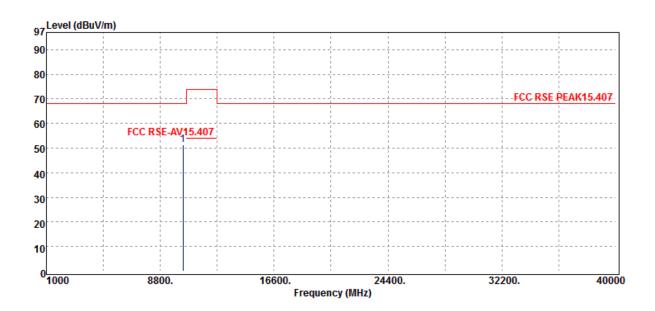
:802.11aB1 :5180 MHz :Tx CH LOW :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10360.00	Н	Peak	33.16	18.29	51.45	68.30	-16.85

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Page: 54 of 166

**Operation Band** Fundamental Frequency

:5220 MHz **Operation Mode** :Tx CH MID EUT Pol. :H Plane

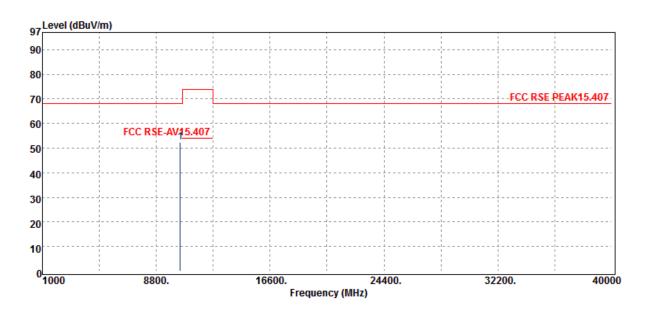
:802.11aB1

**Test Date** Temp./Humi. :2017-10-16

:21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10440.00	Н	Peak	33.54	18.69	52.23	68.30	-16.07

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Page: 55 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

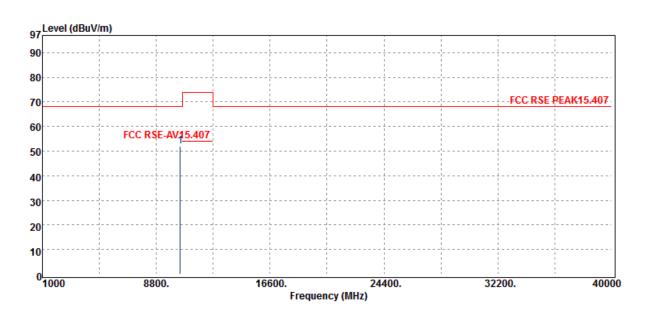
:802.11aB1 :5220 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB	
10440.00	Н	Peak	33.40	18.69	52.09	68.30	-16.21	



Page: 56 of 166

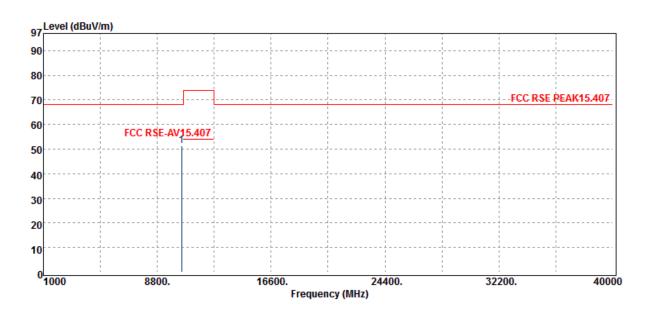
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB1 :5240 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμ̈V	dB	dBµV/m	dBμV/m	dB
10480.00	Н	Peak	33.11	18.30	51.41	68.30	-16.89

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Page: 57 of 166

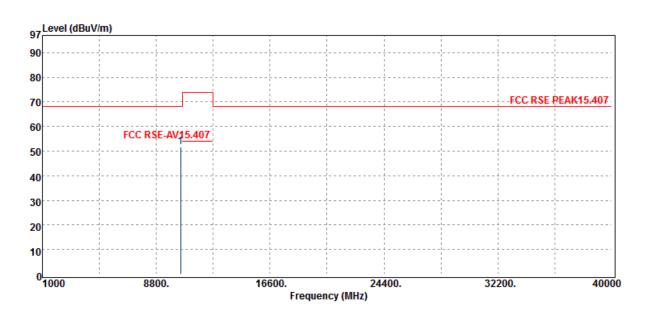
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB1 :5240 MHz :Tx CH HIGH :H Plane

**Test Date** Temp./Humi. :2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10480.00	Н	Peak	33.29	18.30	51.59	68.30	-16.71



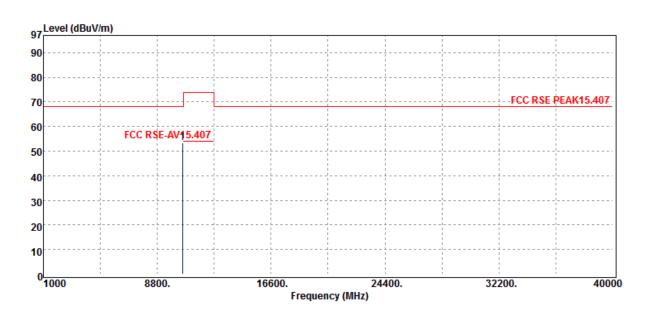
Page: 58 of 166

# Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

**Operation Band** :802.11aB2 **Test Date** 

:2017-10-16 Fundamental Frequency :5260 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10520.00	Н	Peak	34.06	19.38	53.44	68.30	-14.86

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Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.

f (886-2) 2298-0488



Page: 59 of 166

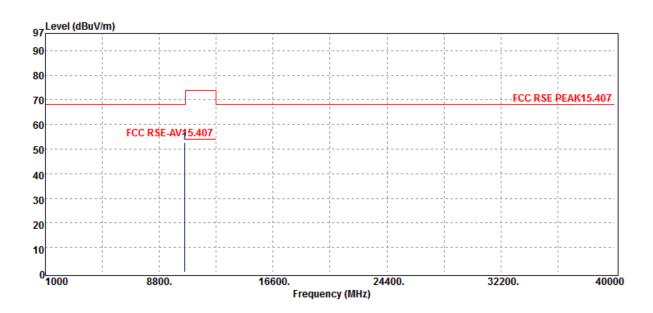
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5260 MHz :Tx CH LOW :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
•							
10520.00	Н	Peak	33.27	19.38	52.65	68.30	-15.65

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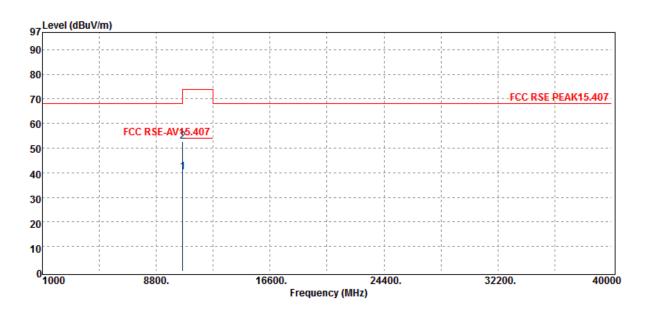
Page: 60 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5300 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10600.00	Н	Average	21.50	18.91	40.41	54.00	-13.59
10600.00	Н	Peak	33.87	18.91	52.78	74.00	-21.22

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Page: 61 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

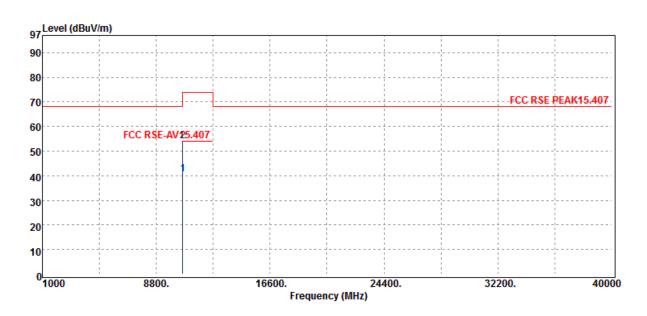
:802.11aB2 :5300 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10600.00	Н	Average	21.61	18.91	40.52	54.00	-13.48
10600.00	Н	Peak	35.18	18.91	54.09	74.00	-19.91



Page: 62 of 166

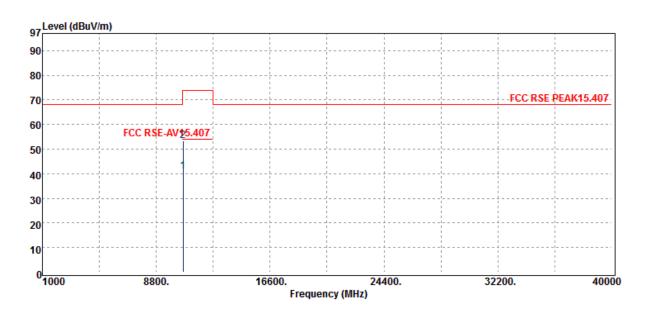
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5320 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10640.00	Н	Average	21.87	19.19	41.06	54.00	-12.94
10640.00	Н	Peak	34.30	19.19	53.49	74.00	-20.51

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Page: 63 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

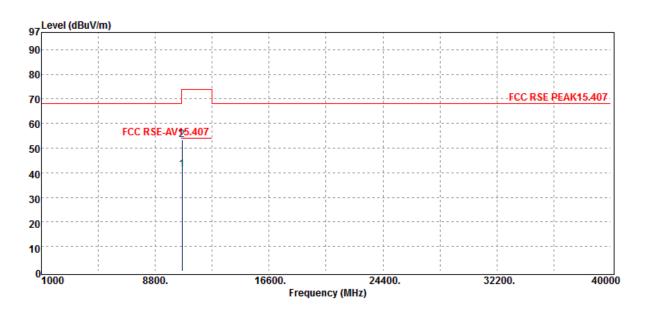
:802.11aB2 :5320 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Measurement Antenna Pol.

Engineer

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10640.00	Н	Average	22.07	19.19	41.26	54.00	-12.74
10640.00	Н	Peak	34.10	19.19	53.29	74.00	-20.71

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Page: 64 of 166

# Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

**Operation Band Fundamental Frequency Operation Mode** 

EUT Pol.

:802.11aB3 :5500 MHz :Tx CH LOW :H Plane

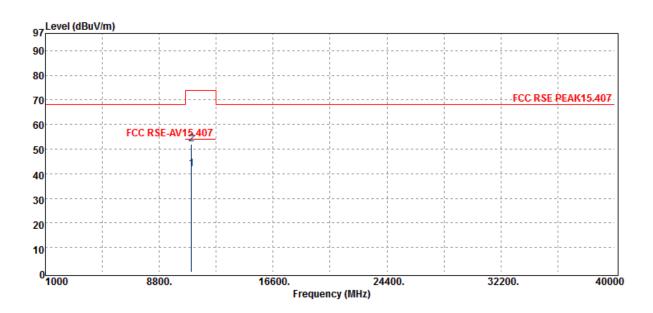
**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

Measurement Antenna Pol.

:VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11000.00	Н	Average	21.75	20.16	41.91	54.00	-12.09
11000.00	Н	Peak	31.90	20.16	52.06	74.00	-21.94

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Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.

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Page: 65 of 166

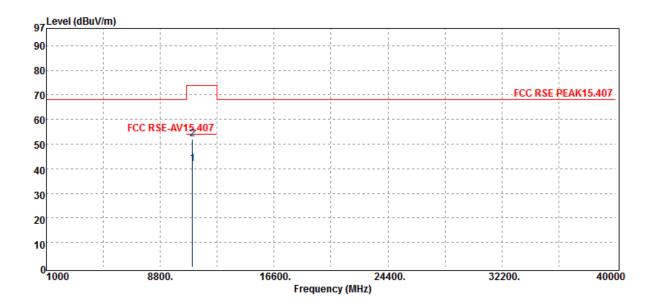
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz :Tx CH LOW :H Plane

**Test Date** Temp./Humi. Engineer

:2017-10-16 :21 deg\_C / 62 RH

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
_							_
11000.00	Н	Average	21.94	20.16	42.10	54.00	-11.90
11000.00	Н	Peak	31.97	20.16	52.13	74.00	-21.87

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Page: 66 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

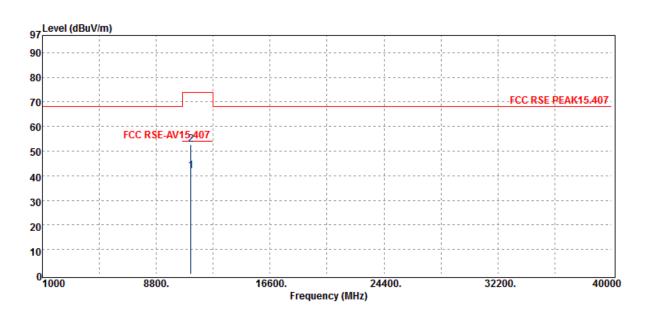
:802.11aB3 :5580 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11160.00	Н	Average	21.56	20.44	42.00	54.00	-12.00
11160.00	Н	Peak	32.14	20.44	52.58	74.00	-21.42



Page: 67 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5580 MHz :Tx CH MID :H Plane

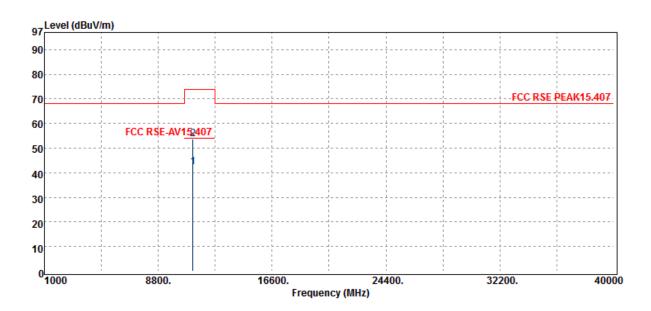
**Test Date** Temp./Humi.

Measurement Antenna Pol.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11160.00	Н	Average	21.69	20.44	42.13	54.00	-11.87
11160.00	Н	Peak	33.10	20.44	53.54	74.00	-20.46



Page: 68 of 166

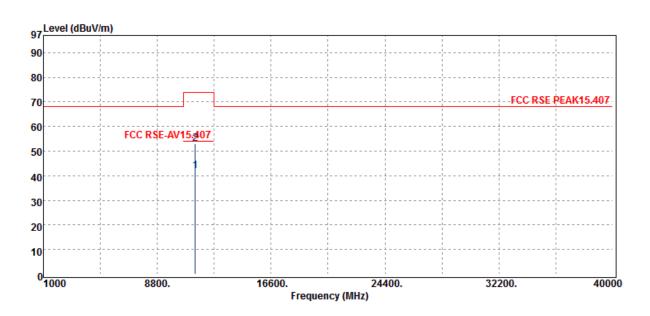
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
11400.00	Н	Average	21.49	20.56	42.05	54.00	-11.95
11400.00	Н	Peak	32.49	20.56	53.05	74.00	-20.95

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Page: 69 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

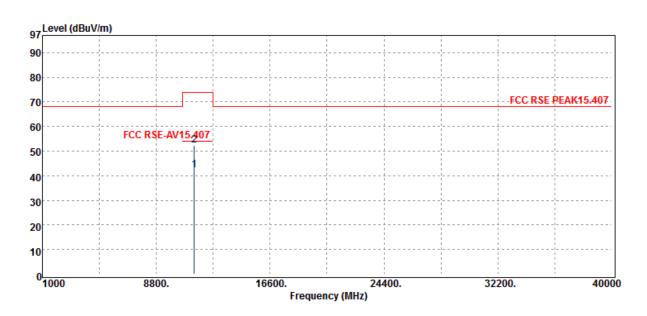
:802.11aB3 :5700 MHz :Tx CH HIGH :H Plane

**Test Date** Temp./Humi. :2017-10-16

:21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11400.00	Н	Average	21.61	20.56	42.17	54.00	-11.83
11400.00	Н	Peak	31.81	20.56	52.37	74.00	-21.63



Page: 70 of 166

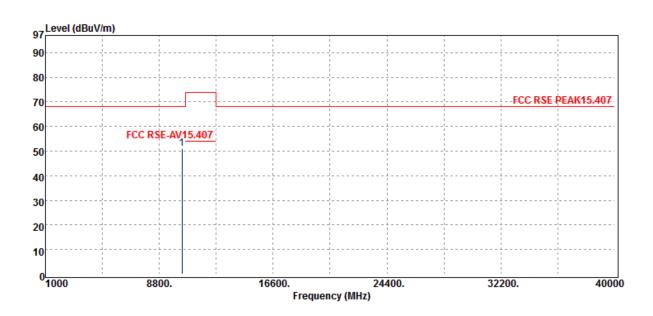
### Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

**Operation Band** :802.11n20B1 **Test Date** 

:2017-10-16 Fundamental Frequency :5180 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10360.00	Н	Peak	32.70	18.29	50.99	68.30	-17.31

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Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.

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Page: 71 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

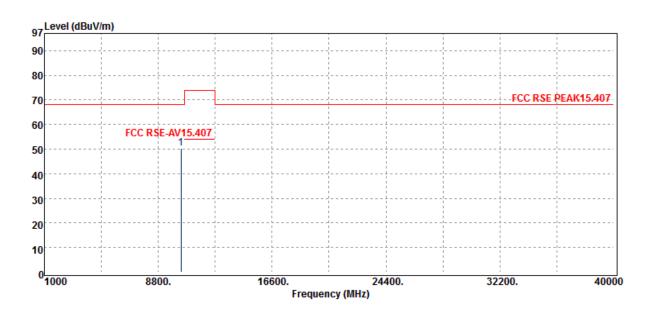
:802.11n20B1 :5180 MHz :Tx CH LOW :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10360.00	Н	Peak	31.97	18.29	50.26	68.30	-18.04



Page: 72 of 166

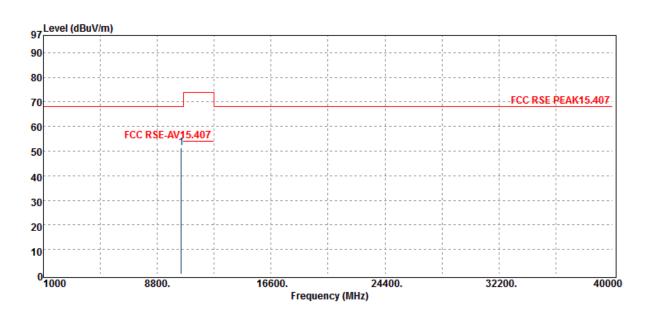
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5220 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB
							_
10440.00	Н	Peak	32.65	18.69	51.34	68.30	-16.96



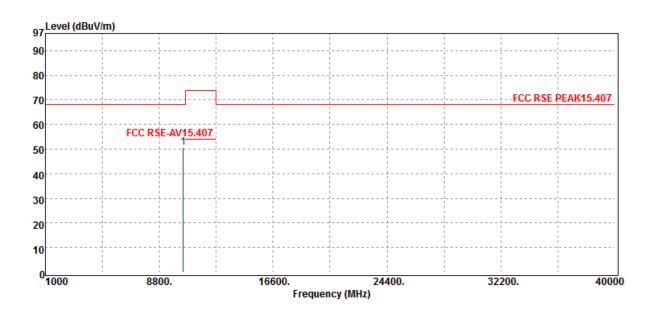
Page: 73 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5220 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10440.00	Н	Peak	31.93	18.69	50.62	68.30	-17.68

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Page: 74 of 166

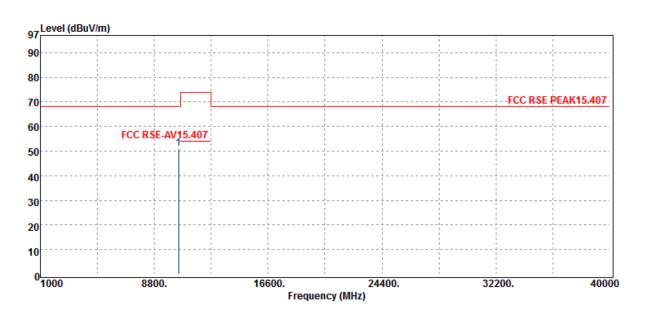
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5240 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB
							_
10480.00	Н	Peak	32.59	18.30	50.89	68.30	-17.41

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Page: 75 of 166

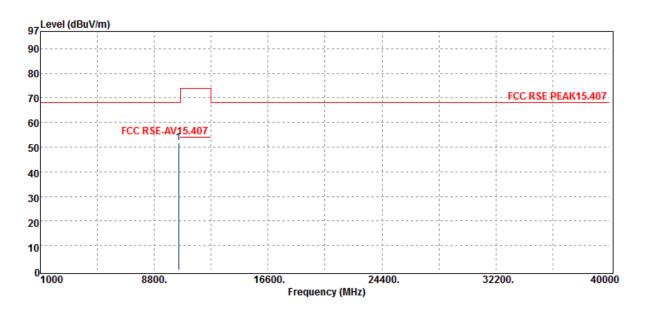
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5240 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10480.00	Н	Peak	33.55	18.30	51.85	68.30	-16.45

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Page: 76 of 166

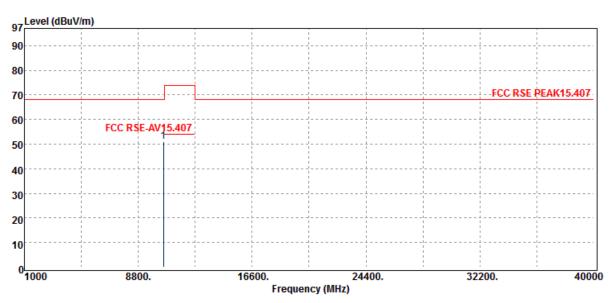
# Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

**Operation Band** :802.11n20B2 **Test Date** 

:2017-10-16 Fundamental Frequency :5260 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
10520.00	Н	Peak	31.72	19.38	51.10	68.30	-17.20

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Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.



Page: 77 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5260 MHz :Tx CH LOW :H Plane

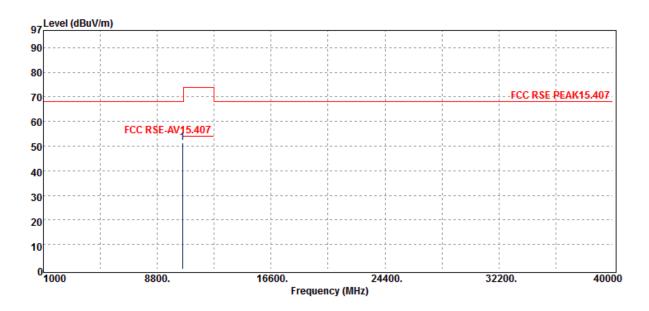
**Test Date** Temp./Humi.

Measurement Antenna Pol.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10520.00	Н	Peak	32.05	19.38	51.43	68.30	-16.87

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Page: 78 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5300 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

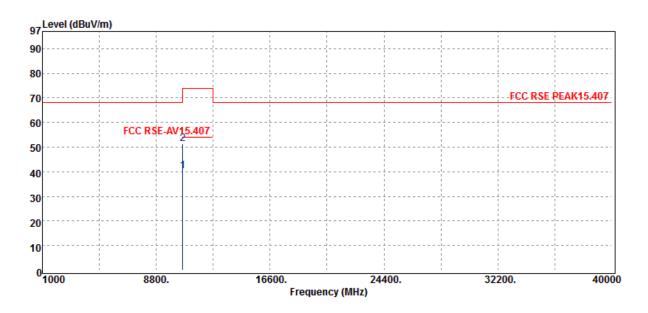
Measurement Antenna Pol.

:2017-10-16

:21 deg\_C / 62 RH

Engineer

:VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10600.00	Н	Average	21.33	18.91	40.24	54.00	-13.76
10600.00	Н	Peak	32.55	18.91	51.46	74.00	-22.54

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Page: 79 of 166

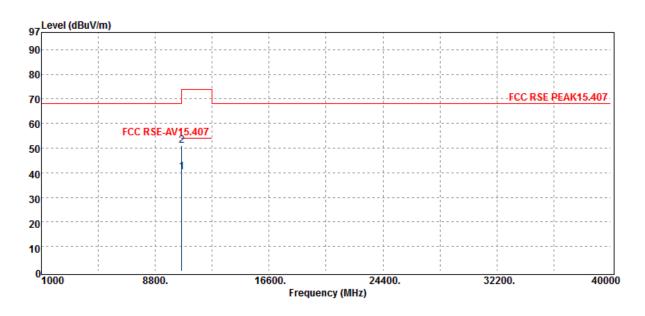
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5300 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10600.00	Н	Average	21.49	18.91	40.40	54.00	-13.60
10600.00	Н	Peak	32.07	18.91	50.98	74.00	-23.02

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Page: 80 of 166

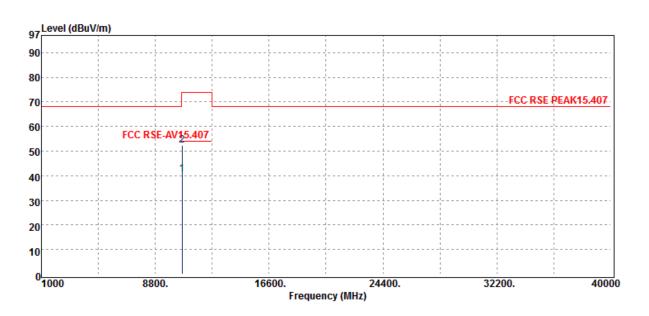
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5320 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10640.00	Н	Average	21.36	19.19	40.55	54.00	-13.45
10640.00	Н	Peak	33.10	19.19	52.29	74.00	-21.71

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Page: 81 of 166

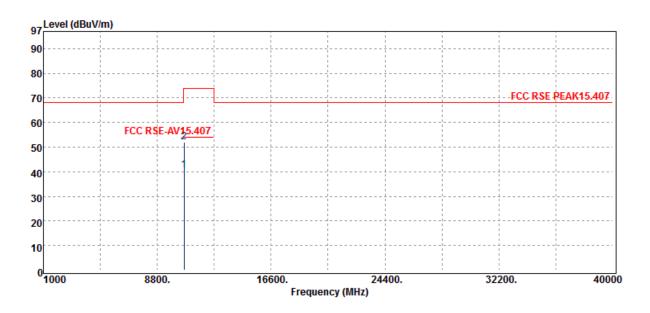
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5320 MHz :Tx CH HIGH :H Plane

**Test Date** Temp./Humi. :2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10640.00	Н	Average	21.53	19.19	40.72	54.00	-13.28
10640.00	Н	Peak	32.84	19.19	52.03	74.00	-21.97

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Page: 82 of 166

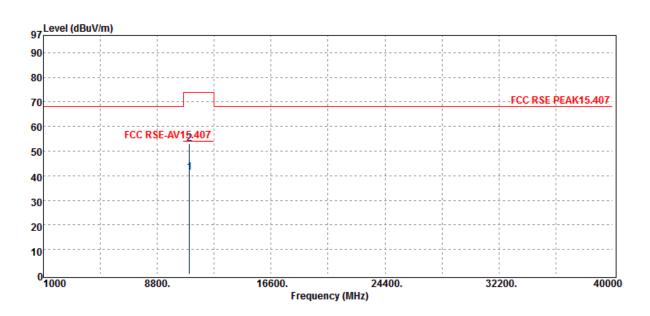
# Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

**Operation Band** :802.11n20B3 **Test Date** 

:2017-10-16 **Fundamental Frequency** :5500 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11000.00	Н	Average	21.29	20.16	41.45	54.00	-12.55
11000.00	Н	Peak	32.75	20.16	52.91	74.00	-21.09

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SGS Taiwan Ltd.



Page: 83 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Tx CH LOW :H Plane

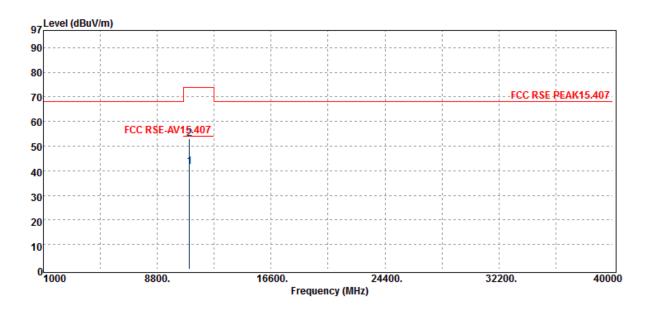
**Test Date** Temp./Humi.

Measurement Antenna Pol.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
11000.00	Н	Average	21.58	20.16	41.74	54.00	-12.26
11000.00	Н	Peak	32.75	20.16	52.91	74.00	-21.09

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Page: 84 of 166

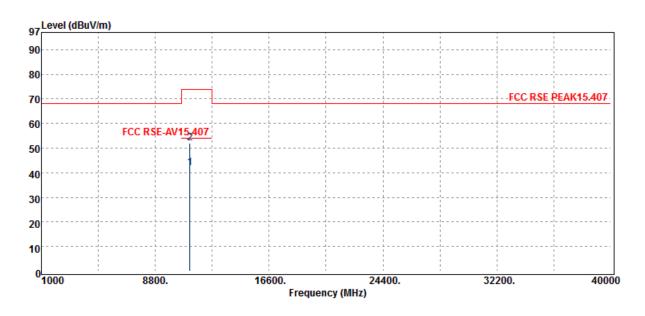
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5580 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
11160.00	Н	Average	21.39	20.44	41.83	54.00	-12.17
11160.00	Н	Peak	31.62	20.44	52.06	74.00	-21.94

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Page: 85 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5580 MHz :Tx CH MID :H Plane

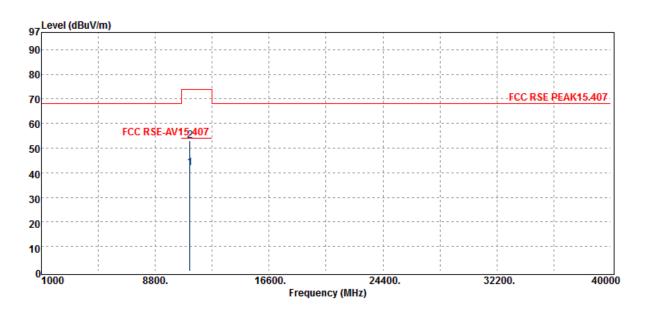
**Test Date** Temp./Humi.

Measurement Antenna Pol.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
11160.00	Н	Average	21.62	20.44	42.06	54.00	-11.94
11160.00	Н	Peak	32.46	20.44	52.90	74.00	-21.10

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Page: 86 of 166

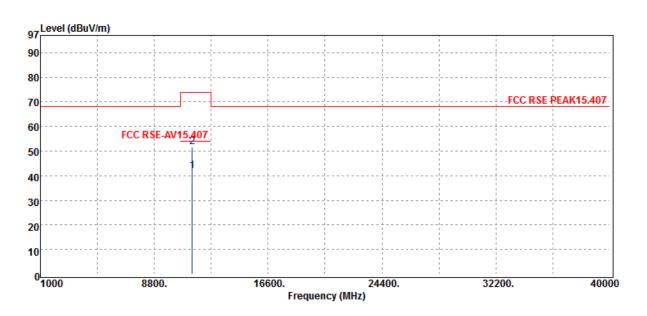
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11400.00	Н	Average	21.39	20.56	41.95	54.00	-12.05
11400.00	Н	Peak	30.96	20.56	51.52	74.00	-22.48

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Page: 87 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

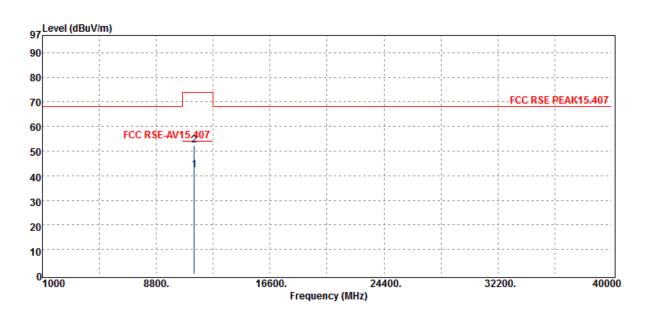
:802.11n20B3 :5700 MHz :Tx CH HIGH :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11400.00	Н	Average	21.57	20.56	42.13	54.00	-11.87
11400.00	Н	Peak	31.87	20.56	52.43	74.00	-21.57

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:2017-10-16

Page: 88 of 166

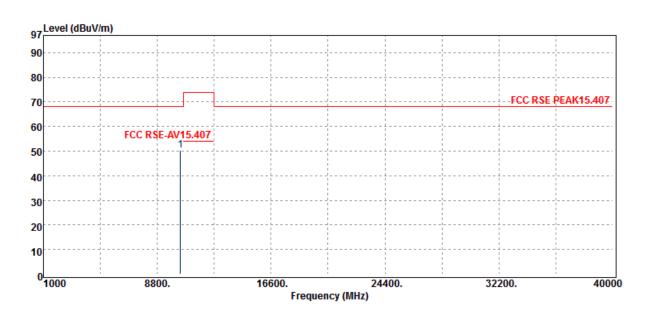
# Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

**Operation Band** :802.11n40B1 **Test Date** 

Fundamental Frequency :5190 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
10380.00	Н	Peak	32.38	18.12	50.50	68.30	-17.80	

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Page: 89 of 166

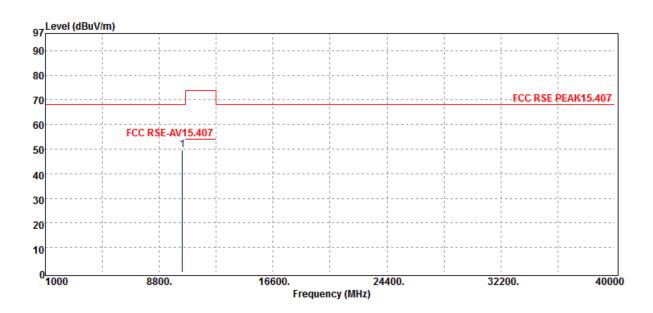
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5190 MHz :Tx CH LOW :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB
							_
10380.00	Н	Peak	31.40	18.12	49.52	68.30	-18.78

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Page: 90 of 166

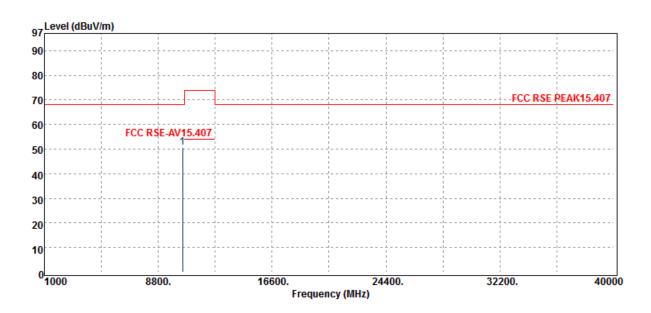
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5230 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10460.00	Н	Peak	32.16	18.55	50.71	68.30	-17.59

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Page: 91 of 166

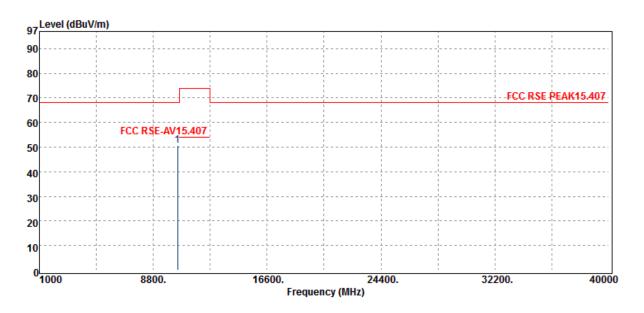
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5230 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10460.00	Н	Peak	32.24	18.55	50.79	68.30	-17.51

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Page: 92 of 166

# Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

**Operation Band** 

**Fundamental Frequency Operation Mode** 

EUT Pol.

:802.11n40B2 :5270 MHz :Tx CH LOW

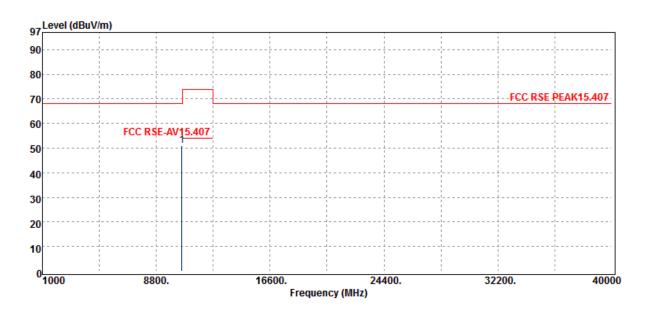
:H Plane

**Test Date** :2017-10-16

Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10540.00	Н	Peak	31.83	19.17	51.00	68.30	-17.30

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Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.

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Page: 93 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5270 MHz :Tx CH LOW :H Plane

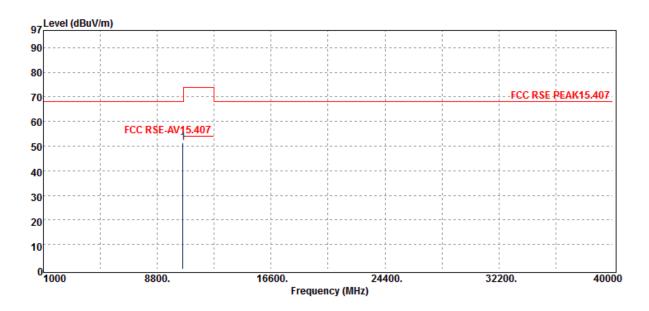
**Test Date** Temp./Humi. :2017-10-16

:21 deg\_C / 62 RH

Engineer

Measurement Antenna Pol.

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10540.00	Н	Peak	32.22	19.17	51.39	68.30	-16.91

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Page: 94 of 166

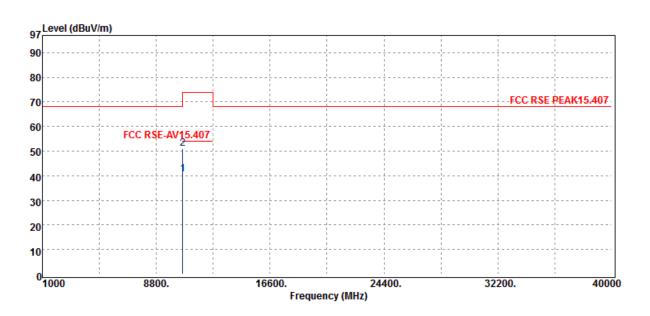
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10620.00	Н	Average	21.41	19.11	40.52	54.00	-13.48
10620.00	Н	Peak	31.82	19.11	50.93	74.00	-23.07

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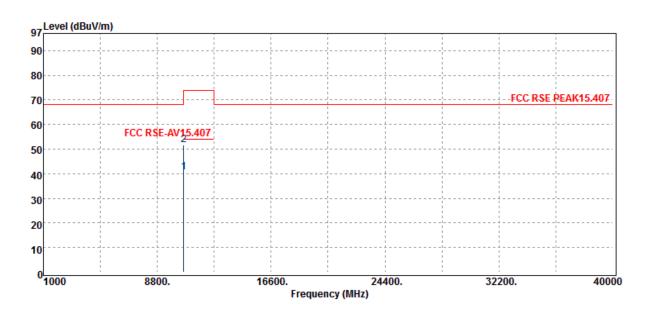
Page: 95 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
10620.00	Н	Average	21.57	19.11	40.68	54.00	-13.32
10620.00	Н	Peak	32.60	19.11	51.71	74.00	-22.29

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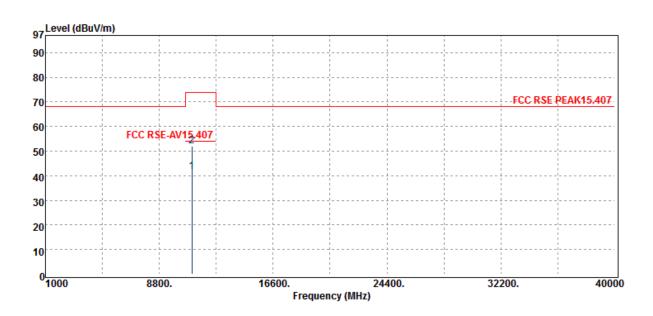
Page: 96 of 166

# Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

**Operation Band** :802.11n40B3 **Test Date** :2017-10-16

**Fundamental Frequency** :5510 MHz Temp./Humi. :21 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
11020.00	Н	Average	21.35	20.16	41.51	54.00	-12.49
11020.00	Н	Peak	31.84	20.16	52.00	74.00	-22.00

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Page: 97 of 166

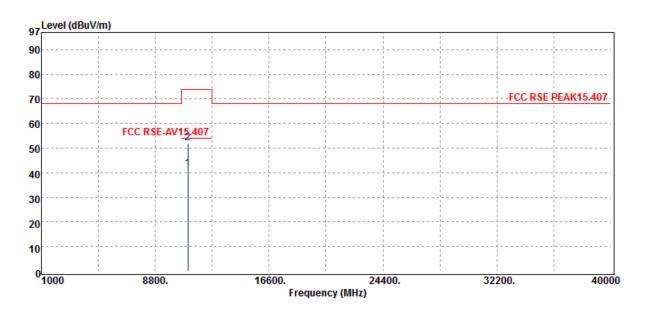
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Tx CH LOW :H Plane

**Test Date** Temp./Humi. :2017-10-16 :21 deg\_C / 62 RH

Engineer Measurement Antenna Pol.

:HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11020.00	Н	Average	21.49	20.16	41.65	54.00	-12.35
11020.00	Н	Peak	31.98	20.16	52.14	74.00	-21.86

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Page: 98 of 166

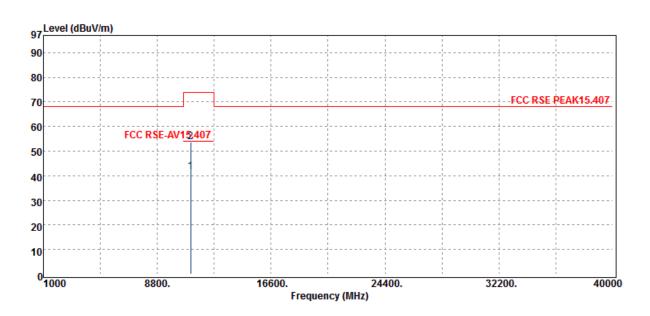
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5550 MHz :Tx CH MID :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
11100.00	Н	Average	21.32	20.32	41.64	54.00	-12.36
11100.00	Н	Peak	33.36	20.32	53.68	74.00	-20.32

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Page: 99 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

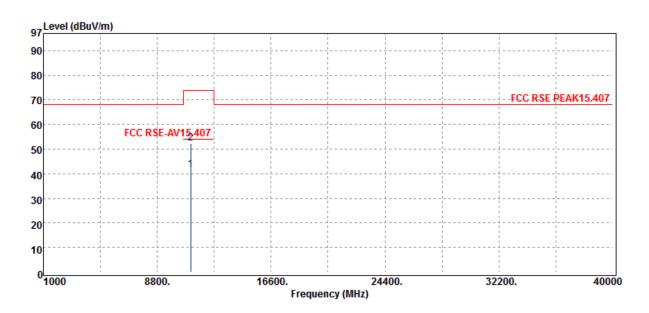
:802.11n40B3 :5550 MHz :Tx CH MID :H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11100.00	Н	Average	21.44	20.32	41.76	54.00	-12.24
11100.00	Н	Peak	31.93	20.32	52.25	74.00	-21.75

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Page: 100 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

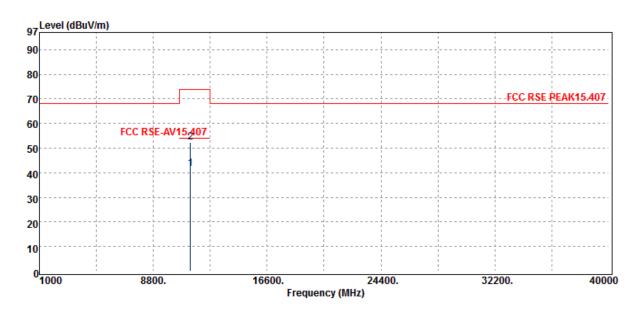
:802.11n40B3 :5670 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi.

:21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11340.00	Н	Average	21.40	20.38	41.78	54.00	-12.22
11340.00	Н	Peak	31.97	20.38	52.35	74.00	-21.65

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Page: 101 of 166

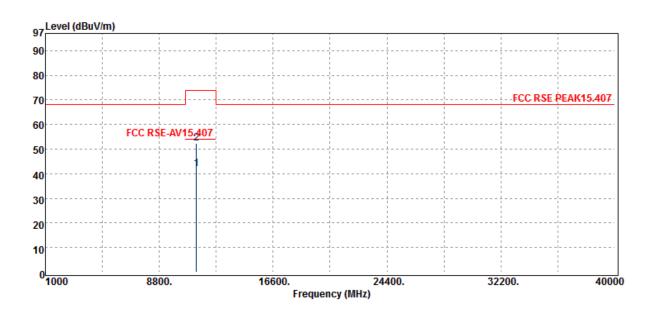
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz :Tx CH HIGH :H Plane

**Test Date** Temp./Humi. :2017-10-16 :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11340.00	Н	Average	21.52	20.38	41.90	54.00	-12.10
11340.00	Н	Peak	32.09	20.38	52.47	74.00	-21.53

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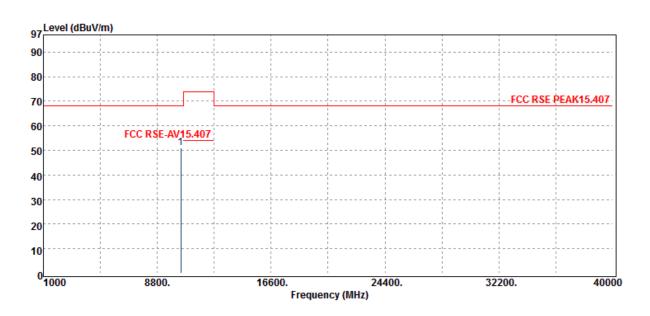
Page: 102 of 166

### Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

**Operation Band** :802.11ac80B1 **Test Date** :2017-10-16

**Fundamental Frequency** :5210 MHz Temp./Humi. :21 deg\_C / 62 RH **Operation Mode** :Tx CH LOW Engineer :Tin

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10420.00	Н	Peak	32.44	18.71	51.15	68.30	-17.15

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Page: 103 of 166

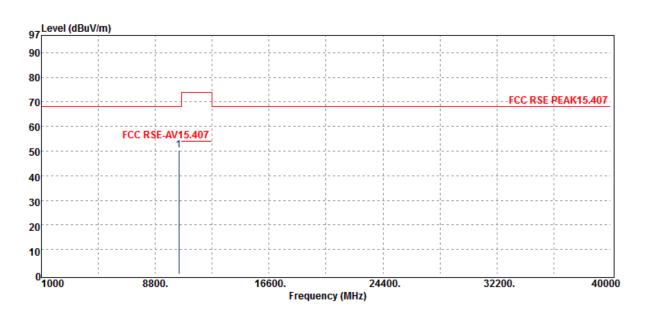
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B1 :5210 MHz :Tx CH LOW :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
10420.00	Н	Peak	31.55	18.71	50.26	68.30	-18.04

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Page: 104 of 166

# Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

**Operation Band Fundamental Frequency** 

**Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Tx CH HIGH

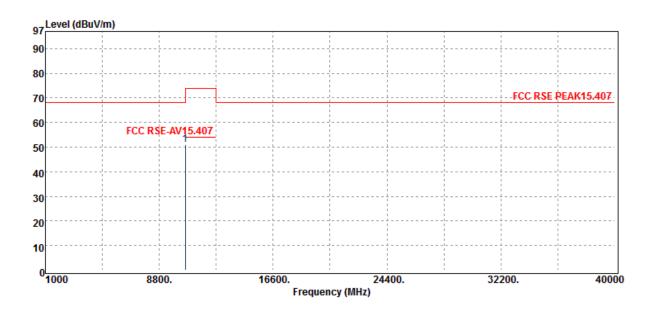
:H Plane

**Test Date** Temp./Humi.

:2017-10-16 :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
10580.00	Н	Peak	32.29	18.88	51.17	68.30	-17.13

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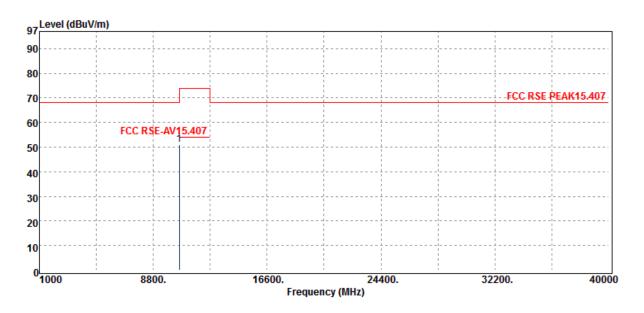
Page: 105 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
10580.00	Н	Peak	32.25	18.88	51.13	68.30	-17.17

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Page: 106 of 166

### Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

**Operation Band** 

**Fundamental Frequency Operation Mode** 

EUT Pol.

:802.11ac80B3 :5530 MHz :Tx CH LOW

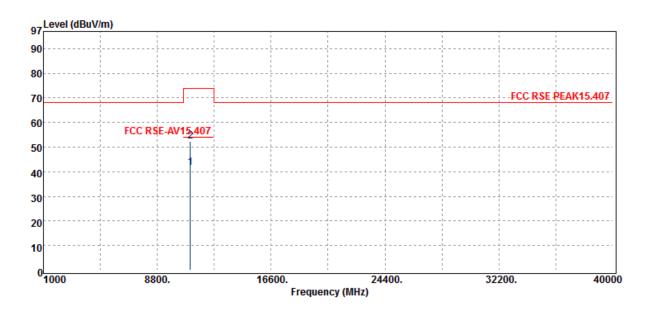
:H Plane

**Test Date** :2017-10-16

Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11060.00	Н	Average	21.33	20.27	41.60	54.00	-12.40
11060.00	Н	Peak	32.18	20.27	52.45	74.00	-21.55

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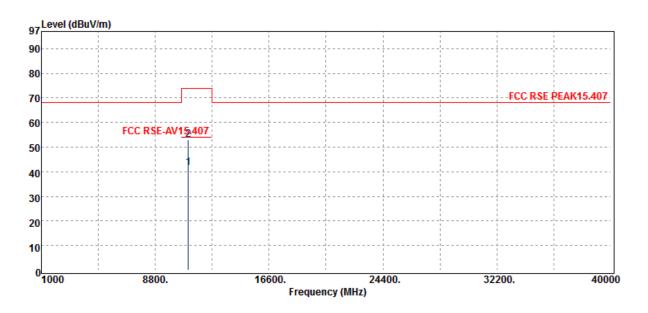
Page: 107 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz :Tx CH LOW :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11060.00	Н	Average	21.40	20.27	41.67	54.00	-12.33
11060.00	Н	Peak	32.72	20.27	52.99	74.00	-21.01

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Page: 108 of 166

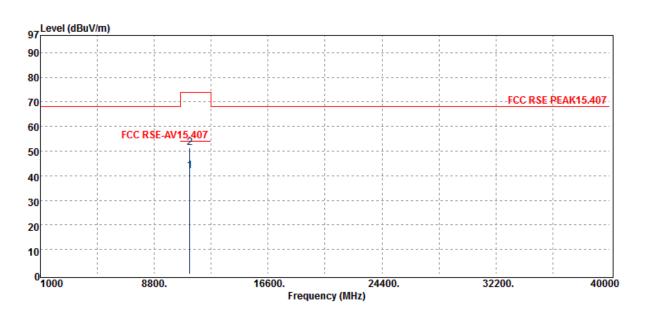
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5610 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11220.00	Н	Average	21.48	20.47	41.95	54.00	-12.05
11220.00	Н	Peak	30.95	20.47	51.42	74.00	-22.58

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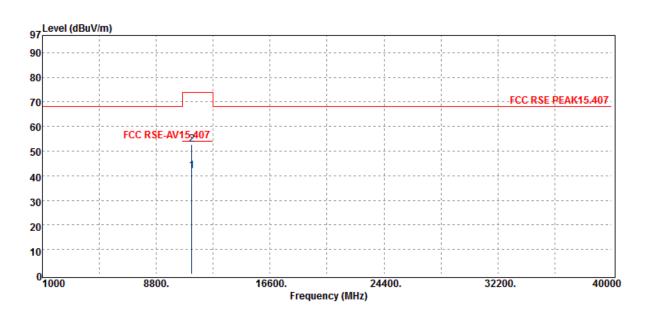
Page: 109 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5610 MHz :Tx CH HIGH :H Plane

**Test Date** :2017-10-16 Temp./Humi. :21 deg\_C / 62 RH Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
11220.00	Н	Average	21.54	20.47	42.01	54.00	-11.99
11220.00	Н	Peak	32.08	20.47	52.55	74.00	-21.45

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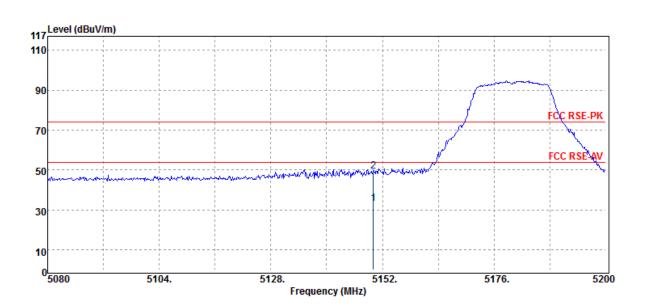
Page: 110 of 166

## Band edge falling to restricted band 802.11a mode

Operation Band :802.11aB1 **Test Date** :2017-10-14

**Fundamental Frequency** :5180 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Bandedge CH LOW Engineer :Tin EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5150.00	Е	Average	27.41	5.88	33.29	54.00	-20.71
5150.00	E	Peak	43.59	5.88	49.47	74.00	-24.53

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Page: 111 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB1 :5180 MHz

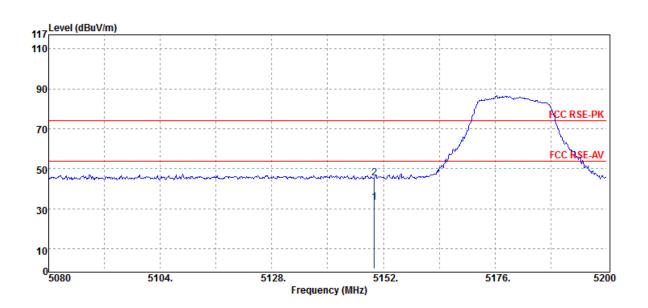
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq	. Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBμV/m	dB
5150.	00 E	Average	27.14	5.88	33.02	54.00	-20.98
5150.	00 E	Peak	39.48	5.88	45.36	74.00	-28.64

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Page: 112 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5320 MHz

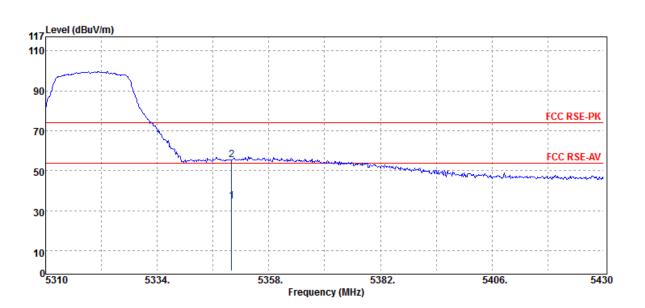
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5350.00	E	Average	28.65	6.16	34.81	54.00	-19.19
5350.00	Е	Peak	49.49	6.16	55.65	74.00	-18.35

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Page: 113 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5320 MHz

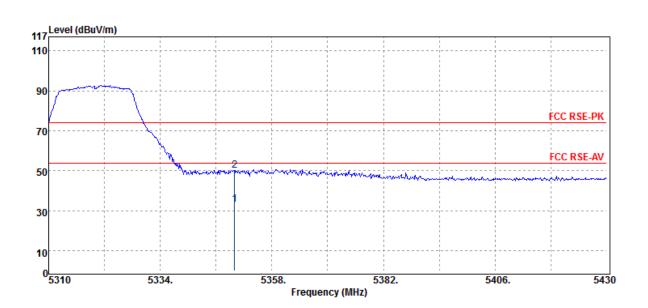
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5350.00	E	Average	27.23	6.16	33.39	54.00	-20.61
5350.00	E	Peak	43.99	6.16	50.15	74.00	-23.85

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Page: 114 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz

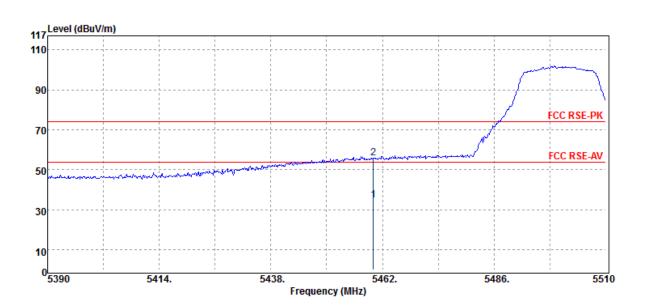
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5460.00	Е	Average	28.56	6.23	34.79	54.00	-19.21
5460.00	E	Peak	49.51	6.23	55.74	74.00	-18.26

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Page: 115 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz

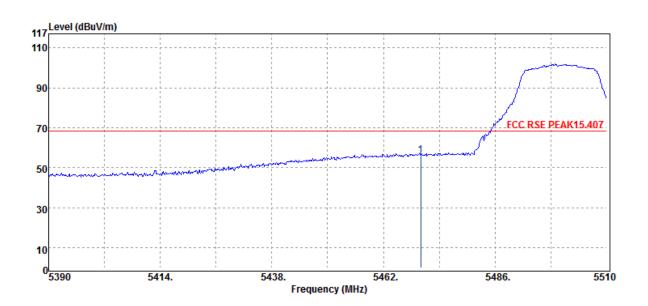
:Bandedge CH LOW RSE

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	49.87	6.26	56.13	68.30	-12.17	_

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Page: 116 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz

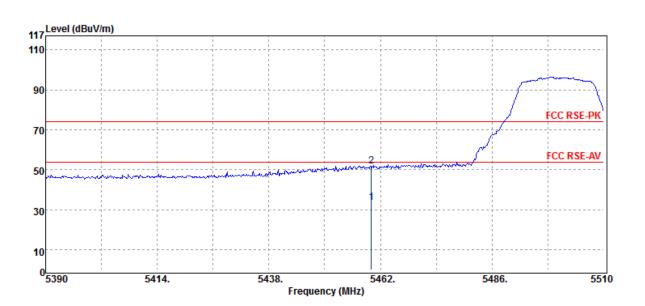
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5460.00	E	Average	27.35	6.23	33.58	54.00	-20.42
5460.00	Е	Peak	45.40	6.23	51.63	74.00	-22.37

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Page: 117 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz

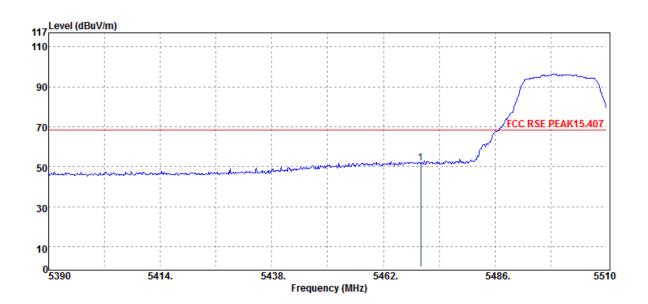
:Bandedge CH LOW RSE

:H Plane

**Test Date** Temp./Humi. :2017-10-14 :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	45.54	6.26	51.80	68.30	-16.50	

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SGS Taiwan Ltd.



Page: 118 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz

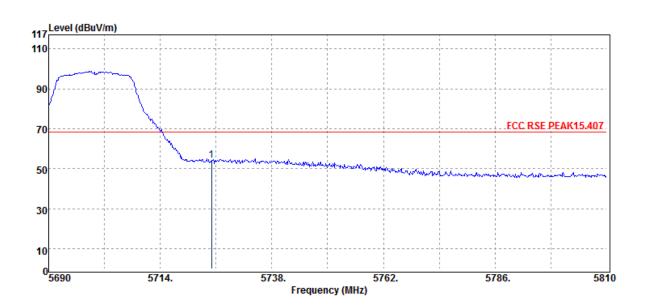
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
5725.00	E	Peak	47.59	6.59	54.18	68.30	-14.12	_

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Page: 119 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz

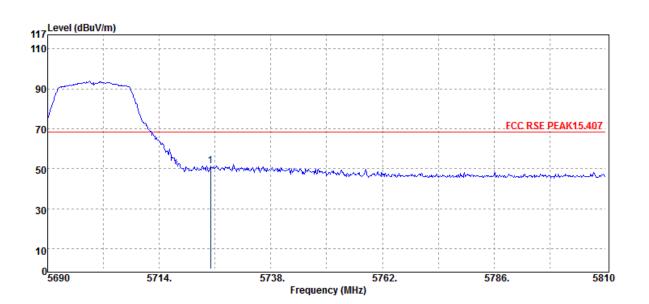
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-14 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
5725.00	E	Peak	44.65	6.59	51.24	68.30	-17.06	

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Page: 120 of 166

## 802.11n20 HT mode

**Operation Band Fundamental Frequency Operation Mode** EUT Pol.

:802.11n20B1 :5180 MHz

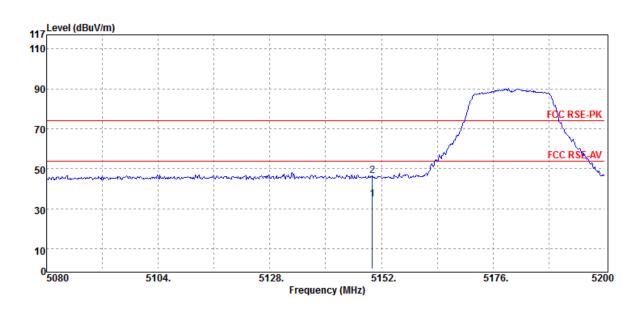
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5150.00	Е	Average	29.00	5.88	34.88	54.00	-19.12
5150.00	E	Peak	40.56	5.88	46.44	74.00	-27.56

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Page: 121 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5180 MHz

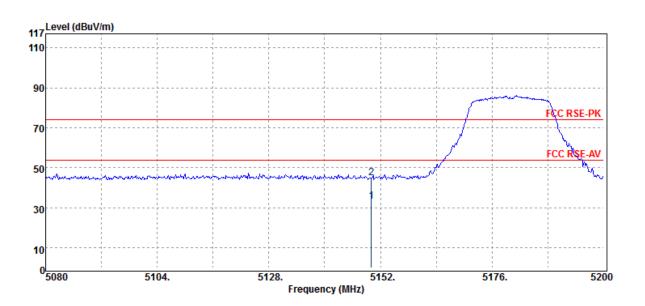
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



	Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dΒμV/m	dB
5	5150.00	E	Average	27.32	5.88	33.20	54.00	-20.80
5	5150.00	E	Peak	38.98	5.88	44.86	74.00	-29.14

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Page: 122 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5320 MHz

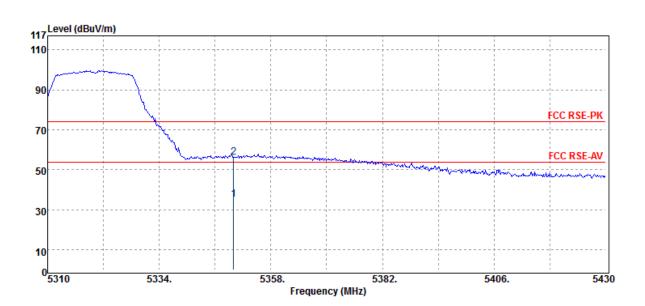
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5350.00	E	Average	29.13	6.16	35.29	54.00	-18.71
5350.00	E	Peak	50.12	6.16	56.28	74.00	-17.72

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Page: 123 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5320 MHz

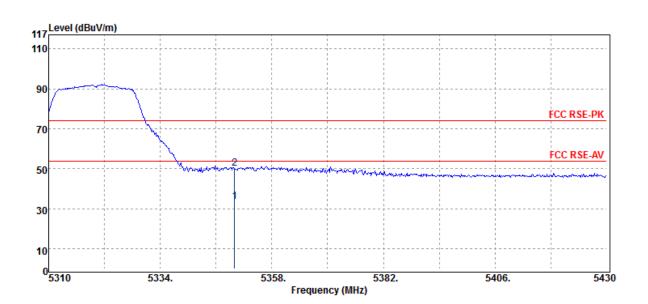
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5350.00	Е	Average	27.35	6.16	33.51	54.00	-20.49
5350.00	E	Peak	43.93	6.16	50.09	74.00	-23.91

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Page: 124 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Bandedge CH LOW **Test Date** Temp./Humi. :2017-10-16

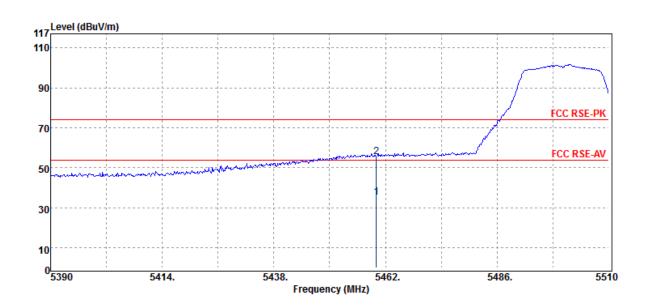
Engineer

:23 deg\_C / 62 RH

:H Plane

Measurement Antenna Pol.

:VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5460.00	E	Average	28.80	6.23	35.03	54.00	-18.97
5460.00	E	Peak	49.37	6.23	55.60	74.00	-18.40

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Page: 125 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz

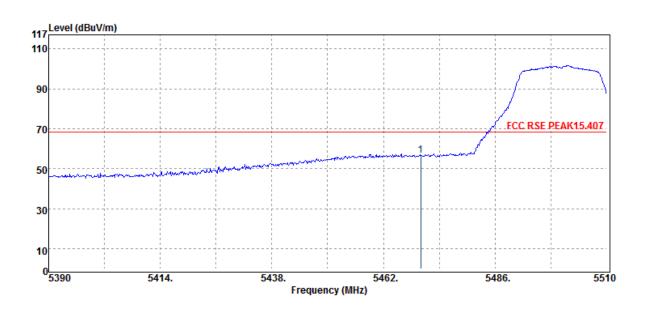
:Bandedge CH LOW RSE

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB	
_	5470.00	E	Peak	50.55	6.26	56.81	68.30	-11.49	

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Page: 126 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz

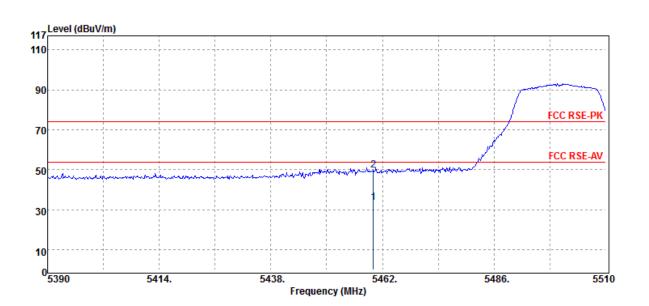
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5460.00	E	Average	27.23	6.23	33.46	54.00	-20.54
5460.00	E	Peak	43.45	6.23	49.68	74.00	-24.32

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Page: 127 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz

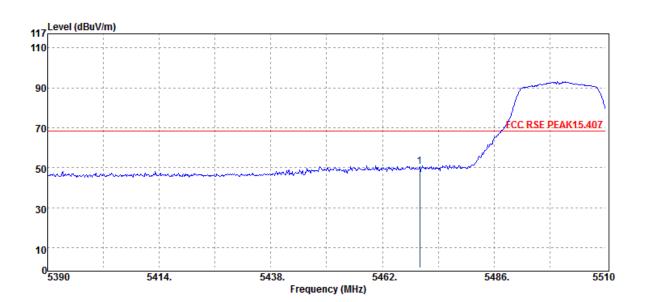
:Bandedge CH LOW RSE

:H Plane

**Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	44.26	6.26	50.52	68.30	-17.78	-

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Page: 128 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz

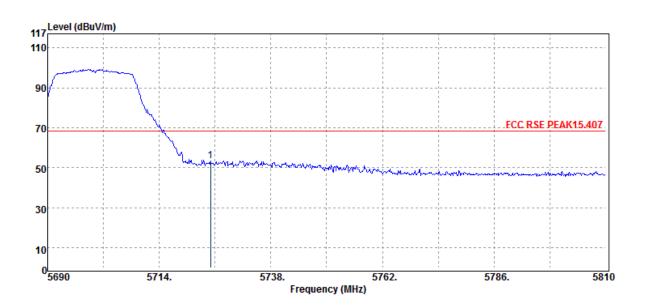
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB	
5725.00	E	Peak	46.70	6.59	53.29	68.30	-15.01	_

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Page: 129 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz

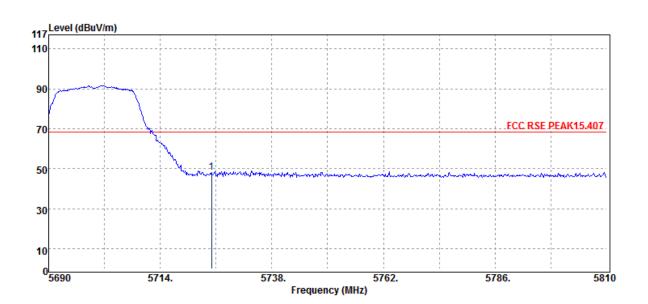
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
5725.00	E	Peak	41.51	6.59	48.10	68.30	-20.20	_

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Page: 130 of 166

## 802.11n40 HT mode

**Operation Band Fundamental Frequency Operation Mode** EUT Pol.

:802.11n40B1 :5190 MHz

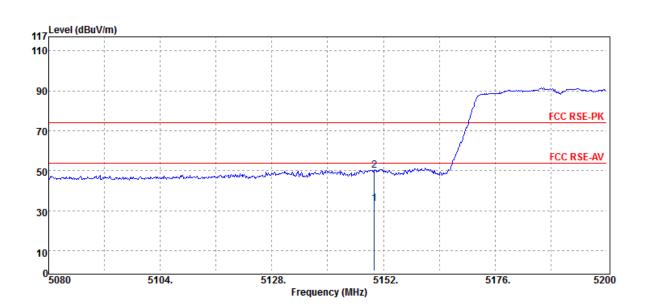
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5150.00	Е	Average	27.91	5.88	33.79	54.00	-20.21
5150.00	Е	Peak	44.39	5.88	50.27	74.00	-23.73

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Page: 131 of 166

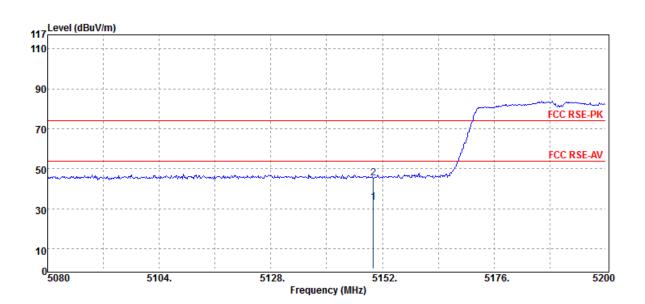
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5190 MHz :Bandedge CH LOW **Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:H Plane

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5150.00	E	Average	27.34	5.88	33.22	54.00	-20.78
5150.00	Е	Peak	39.59	5.88	45.47	74.00	-28.53

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Page: 132 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz

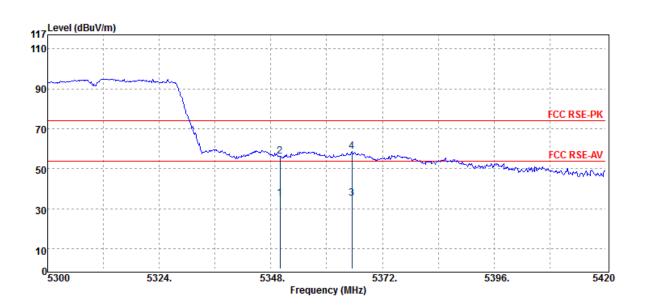
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-17 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	<b>@</b> 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5350.00	E	Average	28.99	6.16	35.15	54.00	-18.85
5350.00	Е	Peak	50.00	6.16	56.16	74.00	-17.84
5365.40	S	Average	29.17	6.04	35.21	54.00	-18.79
5365.40	S	Peak	52.58	6.04	58.62	74.00	-15.38

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Page: 133 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz

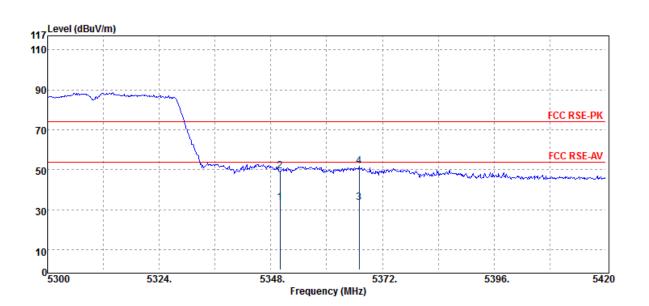
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5350.00	E	Average	27.30	6.16	33.46	54.00	-20.54
5350.00	Е	Peak	43.10	6.16	49.26	74.00	-24.74
5366.96	S	Average	27.49	6.02	33.51	54.00	-20.49
5366.96	S	Peak	45.97	6.02	51.99	74.00	-22.01

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.

Unless otherwise stated the results shown in this test report teer only to the sample(s) tested and such as a feet and the sample states are stated and such as the sample state and the sample states are stated and such as the sample state and samples teached and sample state and samples teached and sample st may be prosecuted to the fullest extent of the law.



Page: 134 of 166

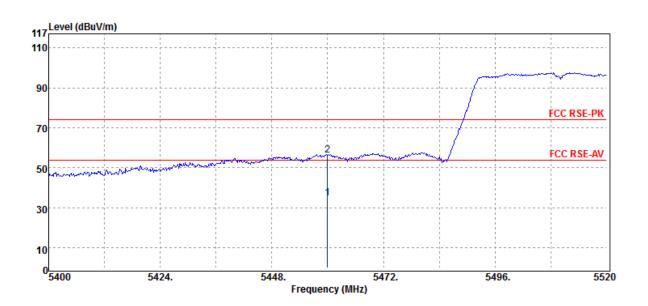
**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Bandedge CH LOW **Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:H Plane

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5460.00	Е	Average	28.60	6.23	34.83	54.00	-19.17
5460.00	E	Peak	49.92	6.23	56.15	74.00	-17.85

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Page: 135 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz

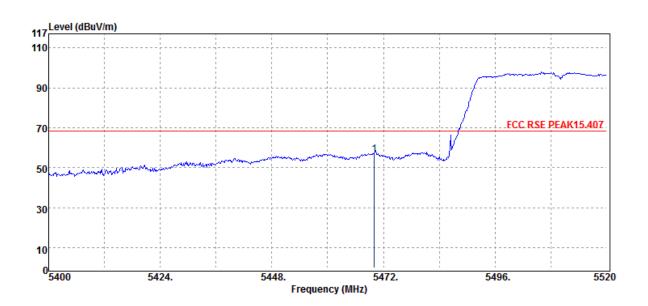
:Bandedge CH LOW RSE

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	50.59	6.26	56.85	68.30	-11.45	_

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Page: 136 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz

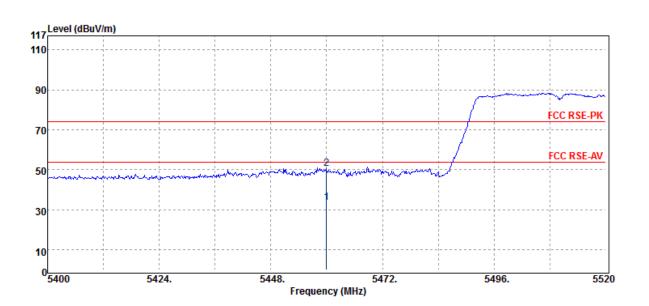
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5460.00	E	Average	27.23	6.23	33.46	54.00	-20.54
5460.00	E	Peak	44.55	6.23	50.78	74.00	-23.22

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Page: 137 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz

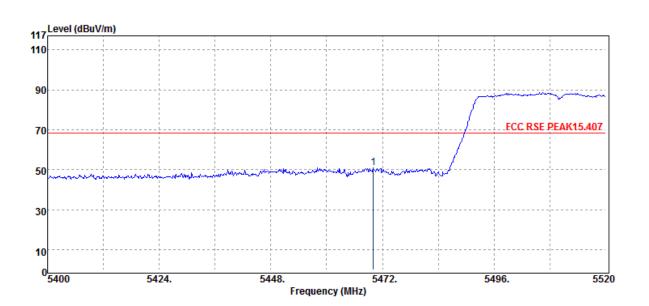
:Bandedge CH LOW RSE

:H Plane

**Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	44.70	6.26	50.96	68.30	-17.34	_

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Page: 138 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz

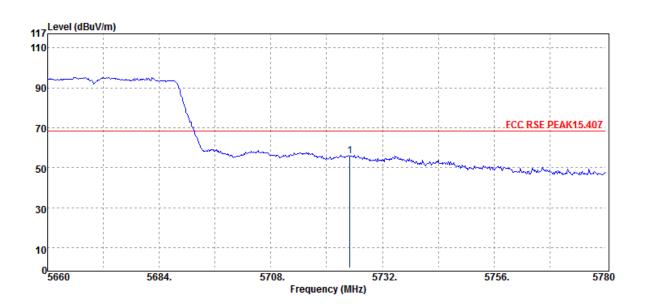
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5725.00	E	Peak	49.10	6.59	55.69	68.30	-12.61	_

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Page: 139 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz

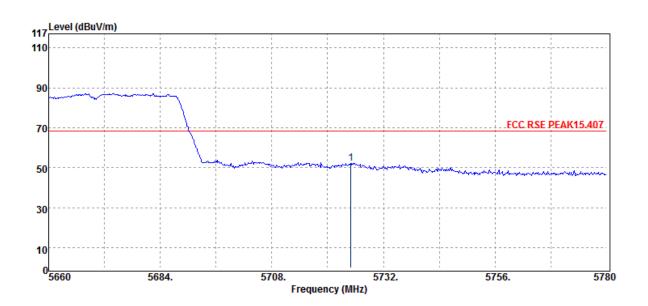
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB	
5725.00	E	Peak	45.52	6.59	52.11	68.30	-16.19	_

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Page: 140 of 166

## 802.11ac80 VHT mode

**Operation Band Fundamental Frequency Operation Mode** EUT Pol.

:802.11ac80B1 :5210 MHz

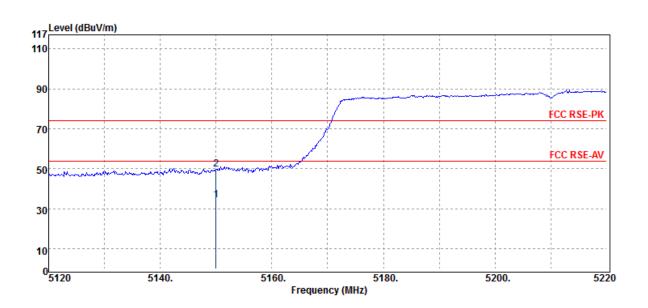
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5150.00	E	Average	28.34	5.88	34.22	54.00	-19.78
5150.00	E	Peak	44.05	5.88	49.93	74.00	-24.07

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Page: 141 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B1 :5210 MHz

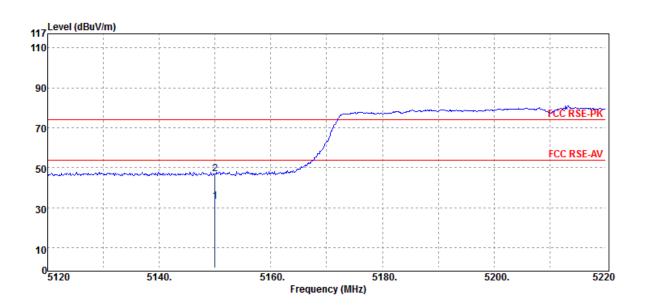
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
5150.00	Е	Average	27.47	5.88	33.35	54.00	-20.65
5150.00	E	Peak	40.96	5.88	46.84	74.00	-27.16

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Page: 142 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz

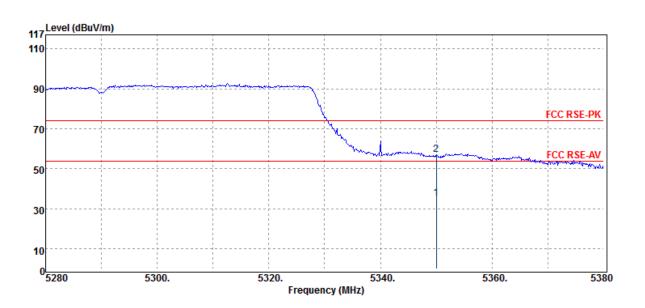
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5350.00	E	Average	29.26	6.16	35.42	54.00	-18.58
5350.00	E	Peak	51.03	6.16	57.19	74.00	-16.81

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Page: 143 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz

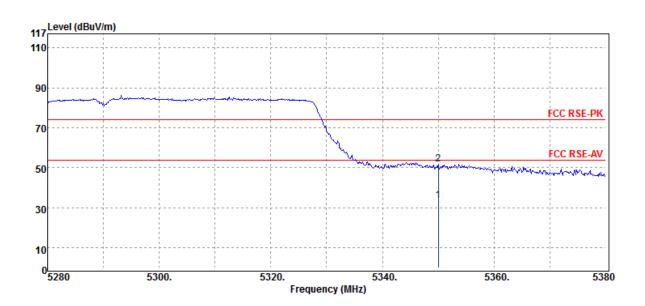
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Fred	. Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MH:	z F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBμV/m	dB
5350.	00 E	Average	27.38	6.16	33.54	54.00	-20.46
5350.	00 E	Peak	45.52	6.16	51.68	74.00	-22.32

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Page: 144 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz

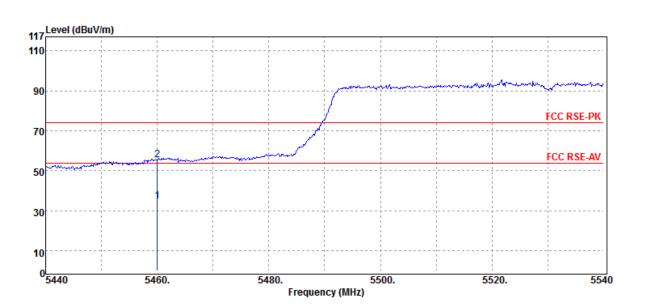
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
5460.00	E	Average	28.63	6.23	34.86	54.00	-19.14
5460.00	Е	Peak	49.12	6.23	55.35	74.00	-18.65

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Page: 145 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz

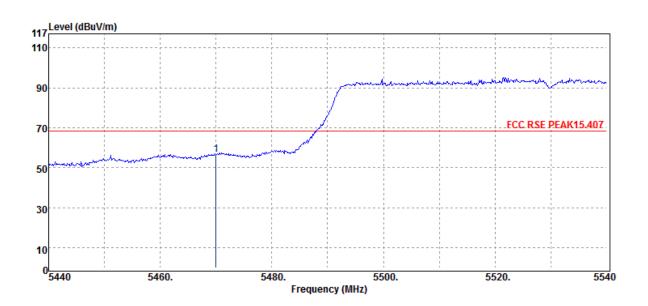
:Bandedge CH LOW RSE

:H Plane

**Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:VERTICAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	50.48	6.26	56.74	68.30	-11.56	_

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Page: 146 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz

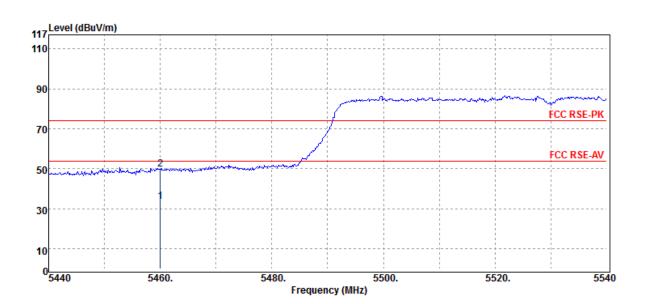
:Bandedge CH LOW

:H Plane

**Test Date** :2017-10-16 Temp./Humi. :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
5460.00	E	Average	27.31	6.23	33.54	54.00	-20.46
5460.00	Е	Peak	43.51	6.23	49.74	74.00	-24.26

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Page: 147 of 166

**Operation Band** Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz

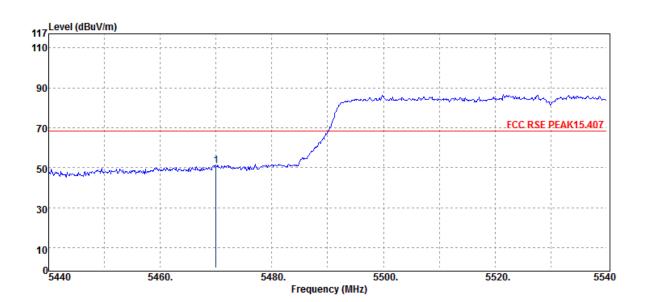
:Bandedge CH LOW RSE

:H Plane

**Test Date** Temp./Humi. :2017-10-16 :23 deg\_C / 62 RH

Engineer

:HORIZONTAL Measurement Antenna Pol.



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB	
_	5470.00	E	Peak	44.70	6.26	50.96	68.30	-17.34	_

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Page: 148 of 166

## 12. TRANSMISSION IN THE ABSENCE OF DATA

# Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

#### 12.2 Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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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Page: 149 of 166

## 13. FREQUENCY STABILITY

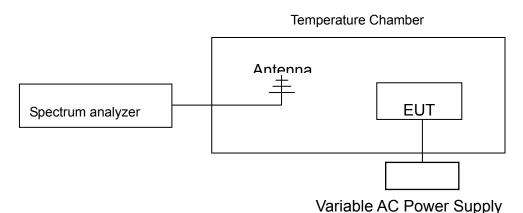
## Standard Applicable

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

#### 13.2 **Measurement Procedure**

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

#### 13.3 Test SET-UP



#### 13.4 **Measurement Equipment Used:**

	SGS Conducted Room									
Name of Equip- ment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due					
EXA Spectrum Analyzer	· I AdiiAnt I		MY53120760	03/21/2017	03/20/2018					
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018					
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018					
Attenuator Mini-Circuit		BW-S10W2+	2	01/05/2017	01/04/2018					
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017					

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Page: 150 of 166

#### 13.5Measurement Result

## Startup:

Operation Mode	802.11 a	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,180.01489	-0.00000288
		44	5220	5,220.01489	-0.00000285
		48	5240	5,240.02979	-0.00000568
		52	5260	5,260.04492	-0.00000854
		60	5300	5,300.02979	-0.00000562
	4.43V	64	5320	5,320.01489	-0.00000280
		100	5500	5,500.00000	0.00000000
		116	5580	5,580.00000	0.00000000
		140	5700	5,700.01489	-0.00000261
-10 °C		36	5180	5,180.02979	-0.00000575
		44	5220	5,220.02979	-0.00000571
		48	5240	5,240.03003	-0.00000573
		52	5260	5,260.01489	-0.00000283
		60	5300	5,300.01489	-0.00000281
	3.27V	64	5320	5,320.01514	-0.00000285
		100	5500	5,500.00000	0.00000000
		116	5580	5,580.01489	-0.00000267
		140	5700	5,700.00000	0.00000000

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Page: 151 of 166

		36	5180	5,180.03003	-0.00000580
		44	5220	5,220.01489	-0.00000285
		48	5240	5,240.01489	-0.00000284
		52	5260	5,260.01489	-0.00000283
		60	5300	5,300.00000	0.00000000
25 °C	3.85	64	5320	5,320.00000	0.00000000
		100	5500	5,499.98511	0.00000271
		116	5580	5,580.00000	0.00000000
		140	5700	5,699.98511	0.00000261
		36	5180	5,180.02979	-0.00000575
		44	5220	5,220.04492	-0.00000861
		48	5240	5,240.01489	-0.00000284
		52	5260	5,260.01489	-0.00000283
		60	5300	5,300.01489	-0.00000281
		64	5320	5,320.00000	0.00000000
	4.43V	100	5500	5,500.01489	-0.00000271
		116	5580	5,580.01489	-0.00000267
		140	5700	5,700.00000	0.00000000
55 °C		36	5180	5,180.04492	-0.00000867
		44	5220	5,219.98511	0.00000285
		48	5240	5,240.01489	-0.00000284
		52	5260	5,260.01489	-0.00000283
		60	5300	5,300.00000	0.00000000
	3.27V	64	5320	5,320.00000	0.00000000
		100	5500	5,500.01489	-0.00000271
		116	5580	5,580.01489	-0.00000267
		140	5700	5,699.98511	0.00000261

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Page: 152 of 166

Operation Mode	802.11 n_HT40	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,190.02490	-0.00000480
		46	5230	5,230.00000	0.00000000
		54	5270	5,270.02490	-0.00000473
		62	5310	5,309.97510	0.00000469
	4.43V	102	5510	5,510.00000	0.00000000
		110	5550	5,550.00000	0.00000000
		134	5670	5,670.00000	0.00000000
-10 °C		38	5190	5,190.00000	0.00000000
		46	5230	5,230.04981	-0.00000952
		54	5270	5,270.00000	0.00000000
		62	5310	5,310.02490	-0.00000469
	3.27V	102	5510	5,510.00000	0.00000000
		110	5550	5,550.00000	0.00000000
		134	5670	5,669.97510	0.00000439
		38	5190	5,190.00000	0.00000000
		46	5230	5,230.00000	0.00000000
		54	5270	5,270.00000	0.00000000
		62	5310	5,310.00000	0.00000000
25 <b>℃</b>	3.85	102	5510	5,510.00000	0.00000000
		110	5550	5,550.00000	0.00000000
		134	5670	5,669.97510	0.00000439
		38	5190	5,190.00000	0.00000000
		46	5230	5,230.00000	0.00000000
		54	5270	5,270.02490	-0.00000473
		62	5310	5,310.00000	0.00000000
	4.43V	102	5510	5,510.02490	-0.00000452
		110	5550	5,549.97510	0.00000449
		134	5670	5,670.00000	0.00000000
55 <b>℃</b>		38	5190	5,190.02490	-0.00000480
		46	5230	5,230.00000	0.00000000
		54	5270	5,270.02490	-0.00000473
		62	5310	5,310.00000	0.00000000
	3.27V	102	5510	5,510.00000	0.00000000
		110	5550	5,550.02490	-0.00000449
		134	5670	5,670.00000	0.00000000

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Page: 153 of 166

Operation Mode	802.11 ac_VHT80	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.04981	-0.00000956
		58	5290	5,290.00000	0.00000000
	4.43V	106	5530	5,530.00000	0.00000000
		122	5610	5,610.00000	0.00000000
-10°C		42	5210	5,210.00000	0.00000000
		58	5290	5,290.04981	-0.00000941
	3.27V	106	5530	5,530.00000	0.00000000
		122	5610	5,610.00000	0.00000000
		42	5210	5,210.00000	0.00000000
		58	5290	5,290.00000	0.00000000
25 °C	3.85	106	5530	5,530.00000	0.00000000
		122	5610	5,610.00000	0.00000000
		42	5210	5,210.04981	-0.00000956
		58	5290	5,290.00000	0.00000000
	4.43V	106	5530	5,530.00000	0.00000000
		122	5610	5,610.00000	0.00000000
55°C		42	5210	5,210.04981	-0.00000956
		58	5290	5,290.04981	-0.00000941
	3.27V	106	5530	5,530.00000	0.00000000
		122	5610	5,610.00000	0.00000000

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Page: 154 of 166

#### 2 Minutes:

Operation Mode	802.11 a	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,180.01912	-0.00000369
		44	5220	5,220.00831	-0.00000159
		48	5240	5,240.03925	-0.00000749
		52	5260	5,260.04372	-0.00000831
		60	5300	5,300.03627	-0.00000684
	4.43V	64	5320	5,320.00708	-0.00000133
		100	5500	5,500.00605	-0.00000110
		116	5580	5,579.99211	0.00000141
		140	5700	5,700.02047	-0.00000359
-10 °C		36	5180	5,180.03963	-0.00000765
		44	5220	5,220.03602	-0.00000690
		48	5240	5,240.03546	-0.00000677
		52	5260	5,260.01671	-0.00000318
		60	5300	5,300.01504	-0.00000284
	3.27V	64	5320	5,320.02340	-0.00000440
		100	5500	5,500.00713	-0.00000130
		116	5580	5,580.00743	-0.00000133
		140	5700	5,699.99832	0.00000030
		36	5180	5,180.02919	-0.00000564
		44	5220	5,220.00760	-0.00000146
		48	5240	5,240.00847	-0.00000162
		52	5260	5,260.01676	-0.00000319
		60	5300	5,299.99989	0.00000002
25 ℃	3.85	64	5320	5,320.00041	-0.00000008
		100	5500	5,499.98438	0.00000284
		116	5580	5,579.99493	0.00000091
		140	5700	5,699.99134	0.00000152

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Page: 155 of 166

-					
		36	5180	5,180.03735	-0.00000721
		44	5220	5,220.05474	-0.00001049
		48	5240	5,240.02360	-0.00000450
		52	5260	5,260.02264	-0.00000430
		60	5300	5,300.00812	-0.00000153
		64	5320	5,320.00302	-0.0000057
	4.43V	100	5500	5,500.01215	-0.00000221
		116	5580	5,580.02114	-0.00000379
		140	5700	5,699.99732	0.00000047
55 °C		36	5180	5,180.05314	-0.00001026
		44	5220	5,219.99289	0.00000136
		48	5240	5,240.01650	-0.00000315
		52	5260	5,260.02377	-0.00000452
		60	5300	5,299.99030	0.00000183
	3.27V	64	5320	5,320.00279	-0.00000053
		100	5500	5,500.01216	-0.00000221
		116	5580	5,580.02236	-0.00000401
		140	5700	5,699.97660	0.00000411

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Page: 156 of 166

Operation Mode	802.11 n_HT40	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %	-	

Test Temp.	Test Voltage	Channel	Measured Frequency	Spectrum Frequency	ΔFrequency (MHz)
		20	(MHz)	(MHz)	0.00000272
		38	5190	5,190.01933	-0.00000372
		46	5230	5,229.99125	0.00000167
		54	5270	5,270.01827	-0.00000347
	4.4017	62	5310	5,309.97840	0.00000407
	4.43V	102	5510	5,509.99752	0.00000045
		110	5550	5,549.99185	0.00000147
		134	5670	5,669.99565	0.00000077
-10℃		38	5190	5,189.99030	0.00000187
		46	5230	5,230.05377	-0.00001028
		54	5270	5,269.99245	0.00000143
		62	5310	5,310.02620	-0.00000493
	3.27V	102	5510	5,510.00067	-0.00000012
		110	5550	5,549.99850	0.00000027
		134	5670	5,669.97615	0.00000421
		38	5190	5,189.99262	0.00000142
		46	5230	5,230.00016	-0.00000003
		54	5270	5,270.00275	-0.00000052
		62	5310	5,310.00909	-0.00000171
25 <b>℃</b>	3.85	102	5510	5,509.99706	0.00000053
		110	5550	5,550.00547	-0.00000099
		134	5670	5,669.97787	0.00000390
		38	5190	5,189.99945	0.00000011
		46	5230	5,229.99752	0.00000047
		54	5270	5,270.02677	-0.00000508
		62	5310	5,310.00054	-0.00000010
	4.43V	102	5510	5,510.02246	-0.00000408
		110	5550	5,549.97424	0.00000464
		134	5670	5,669.99163	0.00000148
55 ℃		38	5190	5,190.02415	-0.00000465
		46	5230	5,230.00220	-0.00000042
		54	5270	5,270.03405	-0.00000646
		62	5310	5,309.99825	0.00000033
	3.27V	102	5510	5,509.99109	0.00000162
		110	5550	5,550.01504	-0.00000271
		134	5670	5,669.99164	0.00000147

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Page: 157 of 166

Operation Mode	802.11 ac_VHT80	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.05496	-0.00001055
		58	5290	5,290.00089	-0.00000017
	4.43V	106	5530	5,530.00738	-0.00000133
		122	5610	5,610.00011	-0.00000002
-10°C		42	5210	5,209.99321	0.00000130
		58	5290	5,290.04315	-0.00000816
	3.27V	106	5530	5,530.00573	-0.00000104
		122	5610	5,610.00142	-0.00000025
		42	5210	5,209.99394	0.00000116
		58	5290	5,289.99832	0.00000032
25 <b>℃</b>	3.85	106	5530	5,529.99100	0.00000163
		122	5610	5,609.99267	0.00000131
		42	5210	5,210.04545	-0.00000872
		58	5290	5,290.00405	-0.00000077
	4.43V	106	5530	5,530.00093	-0.00000017
		122	5610	5,609.99930	0.00000013
55°C		42	5210	5,210.05003	-0.00000960
		58	5290	5,290.05721	-0.00001081
	3.27V	106	5530	5,529.99812	0.00000034
		122	5610	5,609.99492	0.00000090

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Page: 158 of 166

#### 5 Minutes:

Operation Mode	802.11 a	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,180.02313	-0.00000447
		44	5220	5,220.00939	-0.00000180
		48	5240	5,240.02614	-0.00000499
		52	5260	5,260.05096	-0.00000969
		60	5300	5,300.03389	-0.00000639
	4.43V	64	5320	5,320.01006	-0.00000189
		100	5500	5,500.00177	-0.00000032
		116	5580	5,580.00305	-0.00000055
		140	5700	5,700.01681	-0.00000295
-10 °C		36	5180	5,180.03442	-0.00000664
		44	5220	5,220.03491	-0.00000669
		48	5240	5,240.03275	-0.00000625
		52	5260	5,260.01893	-0.00000360
		60	5300	5,300.00869	-0.00000164
	3.27V	64	5320	5,320.00620	-0.00000116
		100	5500	5,500.00039	-0.00000007
		116	5580	5,580.01766	-0.00000317
		140	5700	5,700.00267	-0.0000047
	Γ	36	5180	5,180.03518	-0.00000679
		44	5220	5,180.03518	-0.00000079
		48	5240	5,240.01310	-0.00000257
		52	5260	5,260.01262	-0.00000230
		60	5300	5,300.00283	-0.00000240
25 °C	3.85	64	5320	5,320.00074	-0.00000014
20 0	0.00	100	5500	5,499.97684	0.00000421
		116	5580	5,579.99911	0.000000121
		140	5700	5,699.97695	0.00000404

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Page: 159 of 166

		36	5180	5,180.03108	-0.00000600
		44	5220	5,220.03620	-0.00000693
		48	5240	5,240.01389	-0.00000265
		52	5260	5,260.00531	-0.00000101
		60	5300	5,300.01878	-0.00000354
		64	5320	5,319.99656	0.00000065
	4.43V	100	5500	5,500.01538	-0.00000280
		116	5580	5,580.01775	-0.00000318
		140	5700	5,700.00741	-0.00000130
55 °C		36	5180	5,180.04634	-0.00000894
		44	5220	5,219.99266	0.00000141
		48	5240	5,240.02056	-0.00000392
		52	5260	5,260.02436	-0.00000463
		60	5300	5,299.99243	0.00000143
	3.27V	64	5320	5,320.00467	-0.00000088
		100	5500	5,500.00809	-0.00000147
		116	5580	5,580.02327	-0.00000417
		140	5700	5,699.98793	0.00000212

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Page: 160 of 166

Operation Mode	802.11 n_HT40	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,190.01646	-0.00000317
		46	5230	5,230.00616	-0.00000118
		54	5270	5,270.02638	-0.00000501
		62	5310	5,309.97175	0.00000532
	4.43V	102	5510	5,509.99960	0.00000007
		110	5550	5,549.99915	0.00000015
		134	5670	5,670.00091	-0.00000016
-10°C		38	5190	5,190.00257	-0.00000050
		46	5230	5,230.05268	-0.00001007
		54	5270	5,269.99506	0.00000094
		62	5310	5,310.01539	-0.00000290
	3.27V	102	5510	5,509.99939	0.00000011
		110	5550	5,549.99272	0.00000131
		134	5670	5,669.96617	0.00000597
		38	5190	5,189.99935	0.00000013
		46	5230	5,230.00542	-0.00000104
		54	5270	5,269.99724	0.00000052
		62	5310	5,310.00543	-0.00000102
25 <b>℃</b>	3.85	102	5510	5,510.00992	-0.00000180
		110	5550	5,549.99199	0.00000144
		134	5670	5,669.97711	0.00000404
		38	5190	5,190.00177	-0.00000034
		46	5230	5,230.00346	-0.00000066
		54	5270	5,270.02882	-0.00000547
		62	5310	5,309.99995	0.00000001
	4.43V	102	5510	5,510.01590	-0.00000289
		110	5550	5,549.97118	0.00000519
		134	5670	5,670.00981	-0.00000173
55 ℃		38	5190	5,190.03148	-0.00000606
		46	5230	5,229.99304	0.00000133
		54	5270	5,270.02527	-0.00000479
		62	5310	5,309.99385	0.00000116
	3.27V	102	5510	5,509.99420	0.00000105
		110	5550	5,550.03340	-0.00000602
		134	5670	5,669.99001	0.00000176

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Page: 161 of 166

Operation Mode	802.11 ac_VHT80	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.05578	-0.00001071
		58	5290	5,290.00528	-0.00000100
	4.43V	106	5530	5,529.99060	0.00000170
		122	5610	5,609.99070	0.00000166
-10°C		42	5210	5,210.00659	-0.00000126
		58	5290	5,290.05312	-0.00001004
	3.27V	106	5530	5,529.99942	0.00000010
		122	5610	5,609.99841	0.00000028
		42	5210	5,210.00166	-0.00000032
		58	5290	5,289.99184	0.00000154
25 <b>℃</b>	3.85	106	5530	5,530.00541	-0.00000098
		122	5610	5,610.00143	-0.00000025
		42	5210	5,210.05800	-0.00001113
		58	5290	5,289.99817	0.00000035
	4.43V	106	5530	5,529.99262	0.00000133
		122	5610	5,610.00060	-0.00000011
55°C		42	5210	5,210.05321	-0.00001021
		58	5290	5,290.04304	-0.00000814
	3.27V	106	5530	5,530.00723	-0.00000131
		122	5610	5,609.99387	0.00000109

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Page: 162 of 166

#### 10 Minutes:

Operation Mode	802.11 a	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,180.01078	-0.00000208
		44	5220	5,220.02423	-0.00000464
		48	5240	5,240.03126	-0.00000597
		52	5260	5,260.03791	-0.00000721
		60	5300	5,300.03494	-0.00000659
	4.43	64	5320	5,320.01879	-0.00000353
		100	5500	5,500.00517	-0.00000094
		116	5580	5,579.99572	0.00000077
		140	5700	5,700.02346	-0.00000412
-10 °C		36	5180	5,180.03544	-0.00000684
		44	5220	5,220.03463	-0.00000663
		48	5240	5,240.03570	-0.00000681
		52	5260	5,260.00886	-0.00000168
		60	5300	5,300.01790	-0.00000338
	3.27	64	5320	5,320.01774	-0.00000333
		100	5500	5,499.99866	0.00000024
		116	5580	5,580.02028	-0.00000363
		140	5700	5,699.99192	0.00000142
	<b>.</b>	0.4	5400	F 400 0000/	0.0000750
		36	5180	5,180.03926	-0.00000758
		44	5220	5,220.01486	-0.00000285
		48	5240	5,240.02415	-0.00000461
		52	5260	5,260.00976	-0.00000186
2= 2	0.05	60	5300	5,299.99958	0.00000008
25 ℃	3.85	64	5320	5,320.00759	-0.00000143
		100	5500	5,499.98913	0.00000198
		116	5580	5,580.00514	-0.00000092
		140	5700	5,699.99396	0.00000106

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Page: 163 of 166

		36	5180	5,180.02628	-0.00000507
		44	5220	5,220.03949	-0.00000757
		48	5240	5,240.01062	-0.00000203
		52	5260	5,260.01902	-0.00000362
		60	5300	5,300.01457	-0.00000275
		64	5320	5,320.00901	-0.00000169
	4.43	100	5500	5,500.01799	-0.00000327
		116	5580	5,580.02164	-0.00000388
		140	5700	5,700.00079	-0.0000014
55 ℃		36	5180	5,180.05031	-0.00000971
		44	5220	5,219.98190	0.00000347
		48	5240	5,240.01272	-0.00000243
		52	5260	5,260.02229	-0.00000424
		60	5300	5,299.99963	0.00000007
	3.27	64	5320	5,320.00925	-0.00000174
		100	5500	5,500.02468	-0.00000449
		116	5580	5,580.01219	-0.00000218
		140	5700	5,699.99382	0.00000109

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Page: 164 of 166

Operation Mode	802.11 n_HT40	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

			Measured	Spectrum	
Test Temp.	Test Voltage	Channel	Frequency	Frequency	ΔFrequency
1000 1011101	. oot vonago		(MHz)	(MHz)	(MHz)
		38	5190	5,190.01591	-0.00000307
		46	5230	5,230.00509	-0.00000097
		54	5270	5,270.01727	-0.00000328
		62	5310	5,309.96947	0.00000575
	4.43	102	5510	5,510.00170	-0.00000031
		110	5550	5,549.99032	0.00000174
		134	5670	5,670.00698	-0.00000123
-10°C		38	5190	5,189.99132	0.00000167
		46	5230	5,230.04816	-0.00000921
		54	5270	5,270.00693	-0.00000132
		62	5310	5,310.02497	-0.00000470
	3.27	102	5510	5,509.99604	0.00000072
		110	5550	5,549.99071	0.00000167
		134	5670	5,669.98018	0.00000350
		38	5190	5,190.00435	-0.00000084
		46	5230	5,230.00473	-0.00000090
		54	5270	5,269.99081	0.00000174
		62	5310	5,309.99567	0.00000082
25 <b>℃</b>	3.85	102	5510	5,510.00792	-0.00000144
		110	5550	5,550.00420	-0.00000076
		134	5670	5,669.97760	0.00000395
		38	5190	5,189.99520	0.00000093
		46	5230	5,229.99827	0.00000033
		54	5270	5,270.02837	-0.00000538
		62	5310	5,310.00361	-0.00000068
	4.43	102	5510	5,510.02897	-0.00000526
		110	5550	5,549.98277	0.00000310
		134	5670	5,670.00718	-0.00000127
55 <b>℃</b>		38	5190	5,190.01563	-0.00000301
		46	5230	5,229.99259	0.00000142
		54	5270	5,270.03115	-0.00000591
		62	5310	5,309.99776	0.00000042
	3.27	102	5510	5,509.99086	0.00000166
		110	5550	5,550.02364	-0.00000426
		134	5670	5,669.99260	0.00000131

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Page: 165 of 166

Operation Mode	802.11 ac_VHT80	Test Date	2017.10.11
Temperature	:23 ℃	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.04006	-0.00000769
		58	5290	5,290.00633	-0.00000120
	4.43	106	5530	5,529.99872	0.00000023
		122	5610	5,610.00324	-0.00000058
-10°C		42	5210	5,209.99512	0.00000094
		58	5290	5,290.05828	-0.00001102
	3.27	106	5530	5,529.99307	0.00000125
		122	5610	5,610.00719	-0.00000128
		42	5210	5,209.99129	0.00000167
		58	5290	5,290.00399	-0.00000075
25 <b>℃</b>	3.85	106	5530	5,530.00224	-0.00000041
		122	5610	5,609.99167	0.00000149
		42	5210	5,210.05538	-0.00001063
		58	5290	5,289.99138	0.00000163
	4.43	106	5530	5,529.99942	0.00000011
		122	5610	5,609.99241	0.00000135
55°C		42	5210	5,210.05822	-0.00001118
		58	5290	5,290.04974	-0.00000940
	3.27	106	5530	5,530.00554	-0.00000100
		122	5610	5,610.00304	-0.00000054

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Page: 166 of 166

## 14. ANTENNA REQUIREMENT

## 14.1 Standard Applicable

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

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

#### 14.2 Antenna Connected Construction

An embedded-in antenna design is used.

The antenna is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

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

~ End of Report ~

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