

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

	OF
Applicant:	Sharp Corporation, Mobile Communication B.U. 2-13-1, Hachihonmatsu-Iida, Higashi-hiroshima-shi, Hiroshima, 739-0192, Japan
Manufacturer:	Sharp Corporation 1 Takumi-cho, Sakai-ku, Sakai City,Osaka 590-8522,Japan
Product Name:	Smart Phone
Report Number:	ER/2018/A0088
FCC ID:	APYHRO00264
FCC Rule Part:	§15.407, Cat: NII
Issue Date:	Nov. 08, 2018
Date of Test:	Oct. 03, 2018 ~ Oct. 29, 2018
Date of EUT Received:	Oct. 03, 2018

We hereby certify that:

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

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

Marcus Isen

Tested By:

Approved By:

Marcus Tseng / Sr. Engineer

Jav Lin / Asst. Supervisor





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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2018/A0088	Rev.00	Initial creation of document	All	Nov. 08, 2018	Tiffany Kao

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1. GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Smart Phone
Hardware Version:	DVT
Software Version:	N/A
Power Supply:	3.85V from Rechargeable Li-ion Battery

WLAN 5GHz:

	_		A D		
Wi-Fi	Frequency	· · · · · · · · · · · · · · · · · · ·	Avg. Power	Modulation	
	Range		(dBm)	Technology	
	5180~5240	4	14.93		
11a_20	5260~5320	4	14.93	OFDM	
	5500~5700	11	14.85		
11n HT/	5180~5240	4	HT: 14.90 (Worst Case)		
ac_VHT	5260~5320	4	HT: 14.87 (Worst Case)	OFDM	
20M	5500~5700	11	HT: 14.82 (Worst Case)		
11n HT/	5190~5230	2	HT: 14.94 (Worst Case)		
ac_VHT	5270~5310	2	HT: 14.89 (Worst Case)	OFDM	
40M	5510~5670	5	HT: 14.97 (Worst Case)		
44.5.5	5210	1	14.43		
11ac VHT80M	5290	1	14.31	OFDM	
VIIIOOW	5530~5610 2 14.80				
Modulation Type64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only		М			
802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps 802.11 ac_20MHz: 6.5 – 173.3Mbps 802.11 ac_40MHz: 13.5 – 400.0Mbps 802.11 ac_80MHz: 29.3 – 866.7Mbps					
Antenna Designation: Antenna Designation: Inverted-F Antenna, 5150~5250MHz Gain: -3.3dBi (Main) / -1.1dBi (Aux 5250~5350MHz Gain: -3.3dBi (Main) / -1.1dBi (Aux 5470~5725MHz Gain: -2.5dBi (Main) / -1.3dBi (Aux			1.1dBi (Aux)		

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

KDB 789033 D02 v02r01 General UNII Test Procedures New Rules

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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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.

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2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission

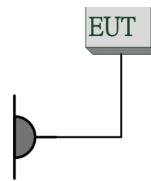


Fig. 2-2 Conducted (Antenna Port) Emission

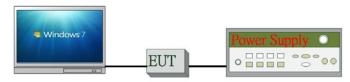


Fig. 2-2 AC Power Line Conducted Emission



ltem	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	Anritsu	E3640A	MY52410006	N/A	Unshielded
3.	Notebook	Lenovo	T440P	P0000564	Shielded	Unshielded

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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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4. DESCRIPTION OF TEST MODES

4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode		
Channel	Frequency	
36	5180	
40	5200	
44	5220	
48	5240	

802.11 n HT40 Mode, 802.11ac VHT40 Mode		
channel	Frequency	
38	5190	
46	5230	

802.11ac VHT80 Mode		
channel	Frequency	
42	5210	

Operated band in 5250 MHz ~5350 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode		
channel	Frequency	
52	5260	
56	5280	
60	5300	
64	5320	

802.11 n HT40 Mode, 802.11ac VHT40 Mode				
channel Frequency				
54 5270				
62 5310				

802.11ac \	/HT80 Mode
Channel	Frequency
58	5290

Operated band in 5470 MHz ~5725 MHz:

802.11a / n HT20 Mode,				
802.11ac VHT20 Mode				
Channel	Frequency			
100	5500			
104	5520			
108	5540			
112	5560			
116	5580			
120	5600			
124	5620			
128	5640			
132	5660			
136	5680			
140	5700			

802.11 n HT40 Mode, 802.11ac VHT40 Mode			
channel	Frequency		
102	5510		
110 5550			
118	5590		
126	5630		
134	5670		

802.11ac VHT80 Mode				
channel	Frequency			
106	5530			
122 5610				

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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.

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	44	OFDM	6	2TX
802.11a	5260~5320	52 to 64	60	OFDM	6	2TX
802.11a	5500~5700	100 to 140	116	OFDM	6	2TX
	RADI	ATED EMISS	ION TEST (A	BOVE 1 GHz)		
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	· · · · ·			OFDM	6	2TX
802.11n_HT20	5180~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	2TX
802.11n_HT20	5200*5520	52 10 04	52,00,04	OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	2TX
802.11n_HT20	5500~5700	100 10 140	100,110,140	OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	MIMO

RADIATED EMISSION TEST:

Note: The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for WLAN 5GHz Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

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ANTENNA PORT CONDUCTED MEASUREMENT:

	CONDUCTED TEST					
MODE	FREQUENCY	ENCY AVAILABLE TESTED	MODULATION	DATA RATE	ANTENNA	
WODE	BAND (MHz)	CHANNEL	CHANNEL	WODULATION	(Mbps)	PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX
802.11n_HT20	5160~5240	50 10 40	50,44,40	OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	E2 to 64 E2 60 64	OFDM	6	2TX
802.11n_HT20	5200~5520	52 10 04	52,60,64	OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	2TX
802.11n_HT20	5500~5700	100 10 140	100,110,140	OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	MIMO

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MEASUREMENT UNCERTAINTY 5.

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:

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

Measurement uncertainty (Polarization : Horizontal)	9kHz-30MHz: +/-2.87dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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6. 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					

1. The lower limit shall apply at the transition frequencies

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

6.2 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100335	02/02/2018	02/01/2019
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/18/2018	05/17/2019

6.3 EUT Setup

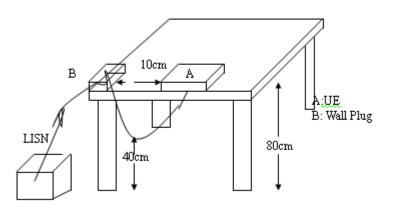
- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz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

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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

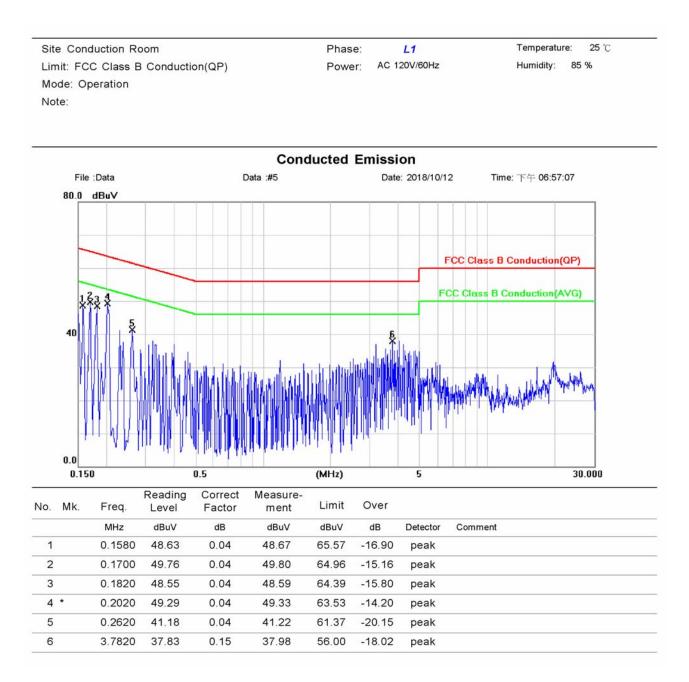
Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit.

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AC POWER LINE CONDUCTED EMISSION TEST DATA



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4

5

6

0.3140

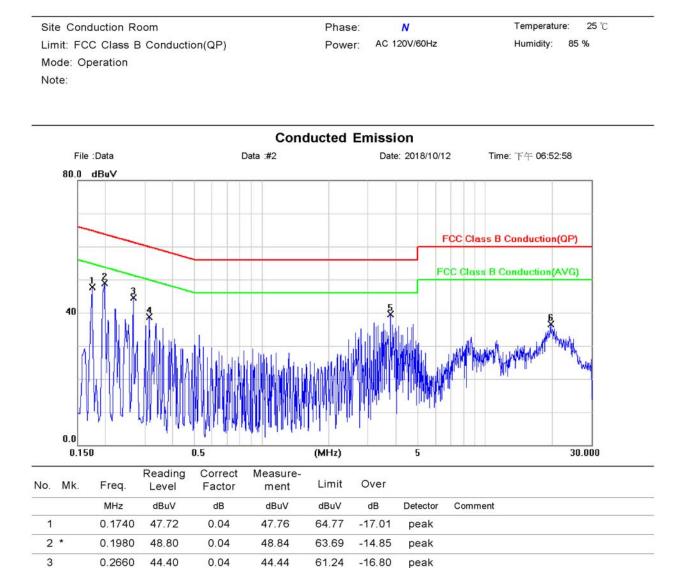
3.7780

19.6940

38.67

39.30

36.18



0.04

0.15

0.42

38.71

39.45

36.60

59.86

56.00

60.00

-21.15

-16.55

-23.40

peak

peak

peak

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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 CycleDuty Factor (dB)(%)=10*log (1/DutyCycle)Cycle)		1/T (kHz)	VBW setting (kHz)
802.11a	98.37	0.07	0.49	0.01
802.11n_20	97.98	0.09	0.53	1.00
802.11n_40	96.19	0.17	1.08	2.00
802.11ac_80	92.84	0.32	2.19	3.00

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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



802.11n HT20



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802.11n HT 40

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10.00		X2	ingth e against heo <mark>i</mark> de	udptaba	tipoget som mogeles t	unitral 34	terredonișt diște	And an and a state of the second	and containing	Center Freq 5.190000000 GHz
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-50.0										Stop Fred 5.190000000 GHz
Center 5. Res BW 8	8 MH	2	Hz	#VBW	/ 8.0 MHz	EUNCTION	Sweep	.933 ms	Span 0 Hz (1001 pts)	CF Step 8.000000 MHz Auto Man
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4 F 6 7 8 9 10 11										Scale Type
MISO					10			5		

802.11 ac VHT 80

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Auto Tur	ΔMkr3 491.7 μs -4.33 dB	4					Offset 13		B/div	
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Stop Fre 5.210000000 GF										0.0
CF Ste 8.000000 MH Auto Mi	Span 0 Hz .067 ms (1001 pts) Foratorivate	Sweep 1.	FUNCTION	3.0 MHz	#VBW	Hz		.2100 8 MH	BW	es
Freq Offs 0 F				-4.69 dB 3.18 dBm -4.33 dB 3.18 dBm	US (A)	320.0	(Δ) (Δ)	ttt	Δ2 F Δ4 F	2 3 4 5
Scale Typ										6 7 8 9
Log L										10
				HT						

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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

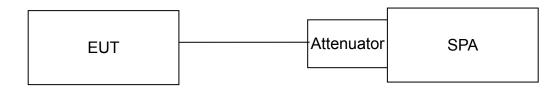
8.2 Measurement Procedure

- 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.

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY57120290	02/14/2018	02/13/2019
DC Power Supply	Anritsu	E3640A	MY52410006	11/28/2017	11/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

8.3 Measurement Equipment Used

8.4 Test Set-up



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8.5 Measurement Result

26dB Bandwidth

802.11a_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.98	13.421
5220	21.67	13.359
5240	21.67	13.358
5260	21.53	13.331
5300	21.48	13.321
5320	21.93	13.411
5500	21.77	13.379
5580	21.44	13.312
5700	21.55	13.334

802.11a_Ch1		
Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.82	13.389
5220	21.66	13.356
5240	21.50	13.324
5260	21.98	13.420
5300	22.10	13.443
5320	21.68	13.361
5500	21.86	13.397
5580	21.52	13.327
5700	21.65	13.354

802.11n_HT20_Ch0

802.11n_HT20_Ch1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.51	13.523	5180	22.97	13.612
5220	22.65	13.551	5220	22.63	13.547
5240	22.54	13.529	5240	22.90	13.597
5260	22.52	13.525	5260	22.57	13.535
5300	22.58	13.538	5300	22.76	13.572
5320	22.77	13.574	5320	22.60	13.540
5500	23.23	13.661	5500	22.53	13.528
5580	22.92	13.603	5580	22.46	13.514
5700	22.56	13.534	5700	22.86	13.591

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802.11n _HT40_Ch0

802.11n _HT40_Ch1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.85	16.217
5230	42.07	16.240
5270	41.94	16.226
5310	42.09	16.242
5510	41.92	16.224
5550	42.11	16.244
5670	42.09	16.241

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	42.22	16.255
5230	42.22	16.255
5270	42.39	16.273
5310	42.05	16.238
5510	41.98	16.230
5550	42.34	16.268
5670	42.39	16.273

802.11ac _VHT80_Ch0

802.11ac _VHT80_Ch1

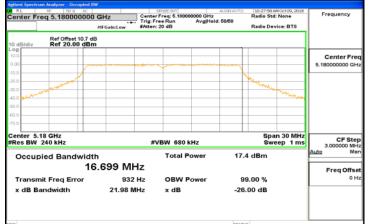
Frequency (MHz)		
5210	84.84	19.286
5290	84.85	19.287
5530	84.93	19.291
5610	85.05	19.297

3)

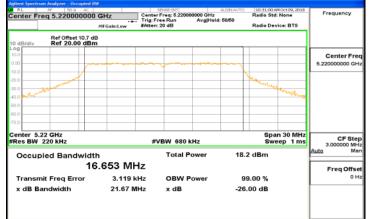
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FCC 802.11a 20MHz Main 5180MHz



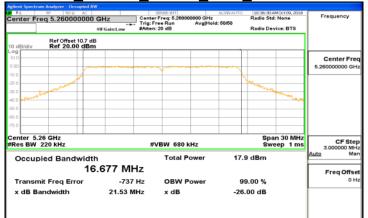
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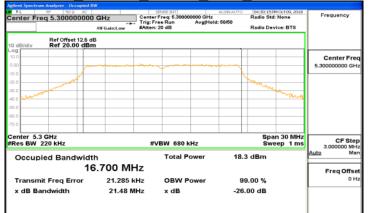
FCC 802.11a 20MHz Main 5240MHz



FCC 802.11a 20MHz Main 5260MHz



FCC 802.11a 20MHz Main 5300MHz



FCC 802.11a 20MHz Main 5320MHz

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Transm	it Freq Error	16.194 kHz	OBW Power	99	9.00 %	01
x dB Ba	ndwidth	21.93 MHz	x dB	-26.	00 dB	
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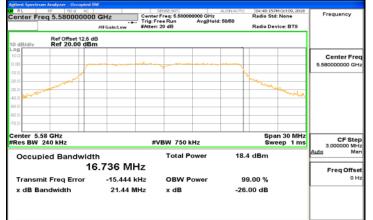
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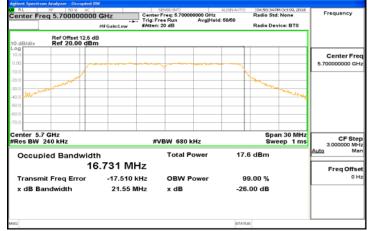
FCC 802.11a 20MHz Main 5500MHz



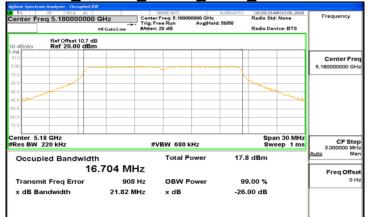
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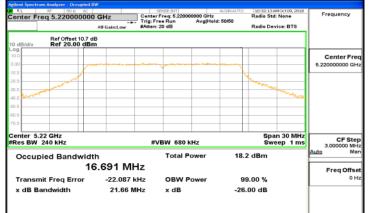
FCC 802.11a 20MHz Main 5700MHz



FCC 802.11a 20MHz AUX1 5180MHz



FCC 802.11a 20MHz AUX1 5220MHz



FCC 802.11a 20MHz AUX1 5240MHz

Center Freg 5.240000000 GHz Radio Stati None Center Freg 5.240000000 GHz Radio Stati None Trig: Freg Using AvgilyHeid. 5000 Radio Device: BTD Ref Offset 12: 65 Mkri S.24000000 GHz Ref Offset 12: 65 Mkri S.24833 GHz -5.1951 dBm Center Freg 5.24000000 GHz Set Offset 12: 65 Center Freg 5.24000000 GHz Center S.24 GHz Center S.24 GHz Center S.24 GHz WEW 680 kHz Sweep 1 ms Occupied Bandwidth Total Power 19.0 dBm Freq Using Center S.24 GHz Span 30 MHz State Mz State Mz		m Analyzer - Occupied 8				
Center Fin Avgilteld: 6050 MKr1 5,24834 Glididiv Ref Offset 12.5 dB Ref Offset 12.5 dB -5,1951 dBm -00 -5,1951 dBm -01 -5,24834 02 -6,24834 03 -6,24834 04 -5,1951 dBm 05 -5,24834 06 -6,24834 07 -6,24834 08 -7,1951 dBm 09 -6,24834 00 -6,24834 01 -6,24834 02 -7,1951 dBm 03 -7,1951 dBm 04 -7,1951 dBm 05,24824 #VBW 680 kHz Span 30 MHz Refees BW 220 kHz #VBW 680 kHz Span 30 dBm 0	RL RL		Cen	SENSE:INT		
-5.1951 dBm -6.1951 dBm Center Fr 5.240000000 G Center Fr 5.240000000 M Center Fr 5.240000000 M Center Fr 5.240000000 M Center Fr 5.24000000 M Center Fr 5.240000000 M Center Fr 5.24000000 M Center Fr 5.2400000 M Center Fr 5.24000000 M Center Fr 5.24000000 M Center Fr 5.24000000 M Center Fr 5.2400000 M Center Fr 5.24000000 M Center Fr 5.24000000 M Center Fr 5.2400000 M Center Fr 5.2400000 M Center Fr 5.24000000 M Center Fr 5.24000000 M Center Fr 5.240000000 M Center Fr 5.24000000	enter Fr	eq 5.24000000	Trig	:FreeRun Avg Hold	: 50/50	
Center Fr 5.24 GHz Res BW 220 KHz Transmit Freq Error 23.402 KHz OBW Power 99.00 %						
00 5.24000000 G 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0						Center Fre
CF Str Res BW 220 kHz #VBW 680 kHz Sweep 1 ms 16.582 MHz Transmit Freq Error 23.402 kHz OBW Power 99.00 %				and an and a second	¹	5.240000000 GH
enter 5.24 GHz enter 5.24 GHz enter 5.24 GHz enter 5.24 GHz enter 5.24 GHz fras BW 220 kHz Transmit Freq Error 23.402 kHz CF St. Syman 30 MHz Sweep 1 ms 3.000000 M Atta Freq Offs 0	0.0	<u>/</u> -				
Alter State CF Street In S					- m	
Image: State of the state o	And and the second				- Andrew	Am
enter 5.24 GHz enter 5.24 GHz Res BW 220 kHz #VBW 680 kHz Span 30 MHz Res BW 220 kHz #VBW 680 kHz Span 30 MHz Sweep 1 ms 16.582 MHz Transmit Freq Error 23.402 kHz OBW Power 99.00 %						
enter 5.24 GHz Span 30 MHz CF Str. Res BW 220 kHz #VBW 680 kHz Sweep 1 ms 3.000000 MHz Occupied Bandwidth Total Power 19.0 dBm Aute 16.582 MHz Freq Offs Transmit Freq Error 23.402 kHz OBW Power 99.00 %						
Res BW 220 kHz #VBW 680 kHz Sweep 1 ms CCF St 3,000000 Occupied Bandwidth Total Power 19.0 dBm Aute M 16.582 MHz Freq Offs Freq Offs 0	0.0					
Res BW 220 kHz #VBW 680 kHz Sweep 1 ms CCF St 3,000000 Occupied Bandwidth Total Power 19.0 dBm Aute M 16.582 MHz Freq Offs Freq Offs 0	enter 5.2	24 GHz			Span 30	MHz
Occupied Bandwidth Total Power 19.0 dBm 16.582 MHz Freq Offs Transmit Freq Error 23.402 kHz OBW Power 99.00 %				#VBW 680 kHz		
16.582 MHz Freq Offs Transmit Freq Error 23.402 kHz OBW Power 99.00 % 0	Occup	ied Bandwidt	h	Total Power	19.0 dBm	Auto Ma
Transmit Freq Error 23.402 kHz OBW Power 99.00 %						Eren Offe
•	Transm	nit Frea Error	23.402 kHz	OBW Power	99.00 %	01
		•			/0	
	X GD Da	nawidan	21.00 1112	XGD	-20.00 48	
STATUS STATUS	~					

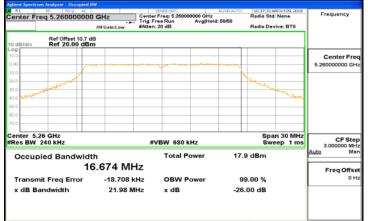
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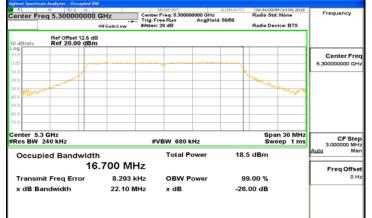
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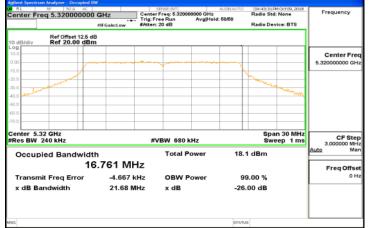
FCC 802.11a 20MHz AUX1 5260MHz



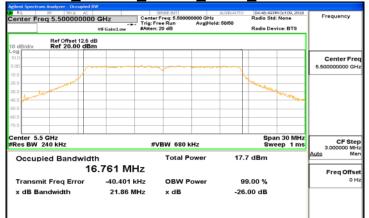
FCC 802.11a 20MHz AUX1 5300MHz



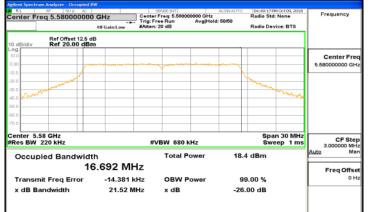
FCC 802.11a 20MHz AUX1 5320MHz



FCC 802.11a 20MHz AUX1 5500MHz



FCC 802.11a 20MHz AUX1 5580MHz



FCC 802.11a 20MHz AUX1 5700MHz

			Free Run Avg Hold 1:20 dB	: 50/50	Radio Std: Radio Devi		Frequency
0 dB/div Ref	Offset 12.5 dE f 20.00 dBm						
10.0							Center Fre
10.0							0.1000000000
20.0 30.0					and all and	North L	
40.0 4.00							
50.0							
Center 5.7 GHz	H7		VBW 680 kHz			a 30 MHz ep 1 ms	CF Ste
Occupied E			Total Power	17.7		<u> </u>	3.000000 MH Auto Ma
	16	5.704 MHz					Freq Offs
Transmit Fre	q Error	-32.921 kHz	OBW Power	99.	00 %		01
x dB Bandwi	dth	21.65 MHz	x dB	-26.0	0 dB		

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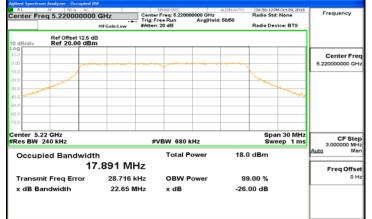
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FCC 802.11n 20MHz Main 5180MHz



FCC 802.11n 20MHz Main 5220MHz



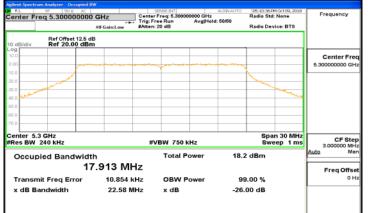
FCC 802.11n 20MHz Main 5240MHz

	m Analyzer - Occu									
enter Fre	eq 5.240000	0000 GI	Hz Gain:Low	Center		0000 GHz Avg Hold	ALIGN AUTO	Radio St	PM Oct 09, 2018 d: None vice: BTS	Frequency
0 dB/div	Ref Offset 1 Ref 20.00	2.5 dB	Gamicow				Mki	1 5.24	894 GHz 198 dBm	
og 0.0 1.00								1		Center Free 5.240000000 GH
0.0								Some a	~	
0.0										
0.0										
enter 5.2 Res BW				#V	BW 750 k	Hz			an 30 MHz eep 1 ms	CF Step 3.000000 MH
Occup	ied Bandv		890 MF	łz	Total P	ower	18.0	0 dBm		Auto Mar
	it Freq Erro Indwidth	or	13.400 k 22.54 M		OBW P x dB	ower	-	9.00 % .00 dB		0 H
0							STATU	5		

FCC 802.11n 20MHz Main 5260MHz



FCC 802.11n 20MHz Main 5300MHz



FCC 802.11n 20MHz Main 5320MHz

Center Free	q 5.320000000	Trig:	sense:init er Freq: 5.320000000 GHz Free Run Avg Hold n: 20 dB	ALIGNAUTO 1: 50/50	Radio Std: N	lone	Frequency
10 dB/div	Ref Offset 12.5 dB Ref 20.00 dBm						
10.0 0.00							Center Fre 5.320000000 GH
20.0	-				and the second		
30.0 40.0						mark	
60.0							
Center 5.32 Res BW 2			#VBW 750 kHz			30 MHz p 1 ms	CF Ste
Occupi	ed Bandwidt	h 7.833 MHz	Total Power	17.9	dBm		<u>Auto</u> Ma
Transmit	t Freq Error	23.053 kHz	OBW Power	99	0.00 %		Freq Offs 0 H
x dB Bar	ndwidth	22.77 MHz	x dB	-26.	00 dB		
20				STATU			

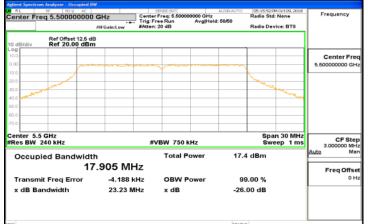
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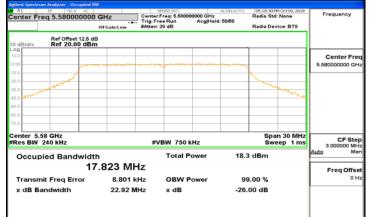
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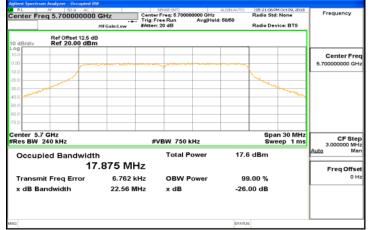
FCC 802.11n 20MHz Main 5500MHz



FCC 802.11n 20MHz Main 5580MHz



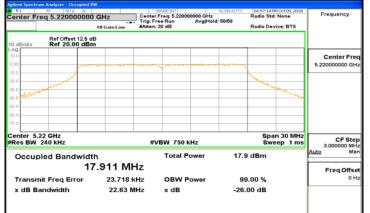
FCC 802.11n 20MHz Main 5700MHz



FCC 802.11n 20MHz AUX1 5180MHz



FCC 802.11n 20MHz AUX1 5220MHz



FCC 802.11n 20MHz AUX1 5240MHz

Center Fre	eq 5.240000000	GHz	SENSE:INT Center Freq: 5.2400		ALIGNAUTO	Radio Std	MO:t09,2018 : None	Frequency
	•	#IFGain:Low	rig: Free Run Atten: 20 dB	Avg Hold	: 60/50	Radio Dev	rice: BTS	
10 dB/div	Ref Offset 12.5 dl Ref 20.00 dBn				Mkr		94 GHz 59 dBm	
.og 10.0								Center Fre
			and the second			1		5.240000000 GH
10.0								
0.0						North Road		
10.0							markhow	
50.0								
0.0								
70.0								
Center 5.2			#VBW 750	kHz			n 30 MHz ep 1 ms	CF Ste
Occup	ied Bandwidt	h	Total F	ower	18.2	dBm		3.000000 Mi- Auto Ma
		.895 MHz	2					Freq Offs
Transm	it Freq Error	18.929 kH	Z OBW F	ower	99	.00 %		01
x dB Ba	ndwidth	22.89 MH	z xdB		-26.	00 dB		
90					STATUS			L

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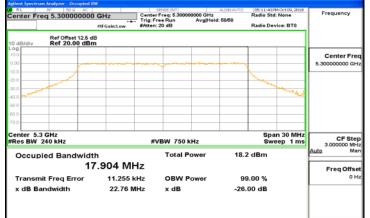
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FCC 802.11n 20MHz AUX1 5260MHz

Center Fr	eq 5.260000000	Trig: I	r Freq: 5.260000000 GHz Free Run Avg Hold 1:20 dB		td: None evice: BTS	Frequency
10 dB/div	Ref Offset 12.5 dE Ref 20.00 dBm					
.og 10.0						Center Free 5.260000000 GH
20.0	manual -			- Ann	- aller	
10.0 						
30.0 70.0						
enter 5.2 Res BW		#	VBW 750 kHz		an 30 MHz veep 1 ms	CF Step 3.000000 MH
Occup	ied Bandwidtl 17	h 7.855 MHz	Total Power	18.1 dBm		Auto Mar Freg Offse
Transm	nit Freq Error	-154 Hz	OBW Power	99.00 %		0 Н
x dB Ba	andwidth	22.57 MHz	x dB	-26.00 dB		

FCC 802.11n 20MHz AUX1 5300MHz



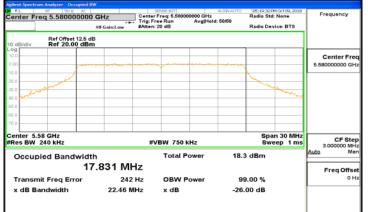
FCC 802.11n 20MHz AUX1 5320MHz

RL RL	m Analyzer - Occupied E RF 50.9 AC	w	SENSE:INT	ALIONAUTO	05:14:21PM Oct 09, 2018	
	eq 5.32000000		enter Freq: 5.320000000 GH		Radio Std: None Radio Device: BTS	Frequency
0 dB/div	Ref Offset 12.5 d Ref 20.00 dBr					
						Center Fre 5.320000000 GH
0.0					- marine	
0.0						
0.0						
enter 5.3 Res BW			#VBW 750 kHz		Span 30 MHz Sweep 1 ms	3.000000 MH
Occup	ied Bandwidt 17	^{.h} 7.842 MHz	Total Power	17.9) dBm	Auto Ma
	it Freq Error andwidth	11.124 kH 22.59 MH			0.00 % 00 dB	он

FCC 802.11n 20MHz AUX1 5500MHz



FCC_802.11n_20MHz_AUX1 5580MHz



FCC 802.11n 20MHz AUX1 5700MHz

Center Pred 5.70000000 Genz Trig Pres Run Augibidit 5000 Radio Device: BTS 10 Badio Device: BTS Radio Device: BTS Radio Device: BTS 10 Badio Device: BTS Stream 11 Badio Device: BTS Stream 12 Stream Stream 13 Badio Device: BTS 14 Badio Device: BTS 15 Stream 15 Stream 16 Badio Device: BTS	RL RF 50.0 AC		SENSE:INT	ALIGNAUTO	05:22:10PM Oct		Frequency
AFF CalmLow AAtten: 20 dB Radio Device: BTS 0 dB/drv Ref 20.00 dBm Center F 100 Center F 5.700000000 200 Center F 5.700000000 200 Center F 5.700000000 200 Center F 5.700000000 201 Center F 5.700000000 201 Center F 5.700000000 201 Center F 5.700000000 201 Center F 5.700000000 202 Center F 5.700000000 203 Center F 5.700000000 204 Center F 5.700000000 205 Center F 5.700000000 206 Center F 5.700000000 207 Center F 5.700000000 208 Center F 5.700000000 209 Center F 5.700000000 200 Center F 5.7000000000000000000000000 200	Center Freq 5.70000000	GHz Cente	Free Run Availlal	0.50/50	Radio Std: Nor	ne	riequency
0 dB/d Ref 20.00 dBm Center F 5.70000000 Center F 5.3000000 Center F 5.3000000 Center F 5.3000000 Center F 5.3000000 Center F 5.300000 Center F 5.3000000 Center F 5.30000000 Center F 5.3000000 Center F F Center F 5.3000000 Center F F Center F S.3000000 Center F S.3000000 Center F S.3000000 Center F S.30000000 Center F S.3000000 Center F S.30000000 Center F S.30000000 Center F S.30000000 Center F S.30000000 Center F S.30000000 Center F S.3000000000 Center F S.3000000000000000000000000000000000000					Radio Device:	BTS	
Control Center F 5.700000000 5.700000000 Center F 5.700000000 Conter F 5.700000000 Conter F 5.700000000 Conter F 5.70000000 Conter F 5.700000000 Conter F 5.7000000000 Conter 5.7000000000	0 dB/div Ref 20.00 dBr						
Converter 5.7 GHz Res BW 240 kHz Transmit Freq Error 5.398 kHz CBW Power 99.00 %							Contor Fre
Creating and the second							5.700000000 GH
enter 5.7 GHz Res BW 240 kHz #VBW 750 kHz Span 30 MHz Ges BW 240 kHz #VBW 750 kHz Span 30 MHz Occupied Bandwidth Total Power 17.6 dBm 17.886 MHz Freq or Transmit Freq Error 5.398 kHz OBW Power 99.00 %	0.0		Y				
an and a state of the state	0.0						
Image: Constraint of the second se	0.0				- And	~~	
enter 5.7 GHz Res BW 240 kHz #VBW 750 kHz Span 30 MHz Res BW 240 kHz #VBW 750 kHz Span 30 MHz Sweep 1 ms 17.886 MHz Transmit Freq Error 5.398 kHz OBW Power 99.00 %						~	
enter 5.7 GHz Res BW 240 kHz #VBW 750 kHz Span 30 MHz Occupied Bandwidth Total Power 17.6 dBm 17.886 MHz Transmit Freq Error 5.398 kHz OBW Power 99.00 %							
enter 5.7 GHz Res BW 240 kHz #VBW 750 kHz Span 30 MHz Occupied Bandwidth Total Power 17.6 dBm 17.886 MHz Transmit Freq Error 5.398 kHz OBW Power 99.00 %							
Res BW 240 kHz #VBW 750 kHz Sweep 1 ms Occupied Bandwidth Total Power 17.6 dBm 17.886 MHz Freq Of Transmit Freq Error 5.398 kHz OBW Power 99.00 %							
Occupied Bandwidth Total Power 17.6 dBm Auto 17.886 MHz Freq of Transmit Freq Error 5.398 kHz OBW Power 99.00 %		#	VBW 750 kHz		Span 3 Sweep	0 MHz 1 ms	CF Ste 3.000000 Mi
17.886 MHz Freq Of Transmit Freq Error 5.398 kHz OBW Power 99.00 %	Occupied Bandwidt	h	Total Power	17.0	5 dBm	Au	
						- E	Freq Offs
x dB Bandwidth 22.86 MHz x dB -26.00 dB	Transmit Freq Error	5.398 kHz	OBW Power	99	9.00 %		. 01
	x dB Bandwidth	22.86 MHz	x dB	-26.	00 dB		

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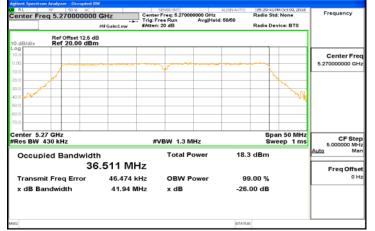
FCC 802.11n 40MHz Main 5190MHz



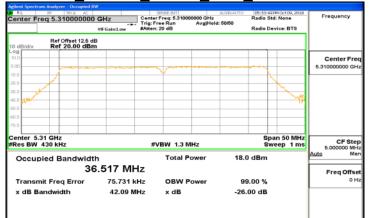
FCC 802.11n 40MHz Main 5230MHz



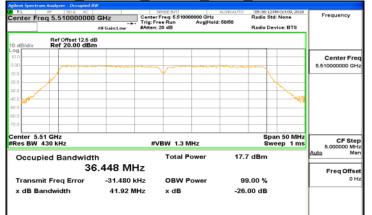
FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5310MHz



FCC 802.11n 40MHz Main 5510MHz



FCC 802.11n 40MHz Main 5550MHz

Agilent Spectrur	m Analyzer - Occupied BV	N	SENSE INT	ALIGNAUTO	05:39:10 PM Oct 09, 2018	
	g 5.550000000	GHz Cen	ter Freq: 5.550000000 GHz	ALIGNAUTO	Radio Std: None	Frequency
	1000000000	Trig	Free Run Avg Hol en: 20 dB	d: 50/50	Radio Device: BTS	
0 dB/div	Ref Offset 12.5 dE Ref 20.00 dBm					
0.0				_		Center Fre
	- marine -		man providence and the second			5.550000000 GH
0.0	1		- Y	-		
0.0						
					MA	
0.0						
0.0						
0.0						
enter 5.5 Res BW			#VBW 1.3 MHz		Span 50 MHz Sweep 1 ms	CF Ste
Kes BW	430 KHZ		#VDVV 1.5 MHz			5.000000 MH Auto Ma
Occup	ied Bandwidt	h	Total Power	18.2	2 dBm	Cherry Inte
	36	6.461 MHz				Freq Offs
Transm	it Freq Error	23.337 kHz	OBW Power	99	0.00 %	01
x dB Ba	ndwidth	42.11 MHz	x dB	-26.	00 dB	
a				STATU	2	

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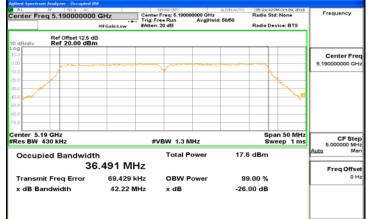
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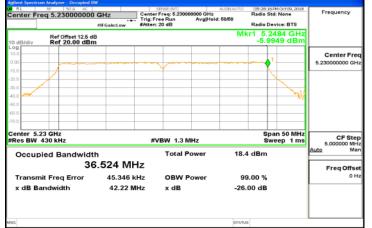
FCC 802.11n 40MHz Main 5670MHz

enter Fr	eq 5.67000000		SENSE:INT Center Freq: 5,67000 Frig: Free Run (Atten: 20 dB	ALIONAUTO 0000 GHz Avg[Hold: 50/50	05:42:00 PM Oct 09, 20 Radio Std: None Radio Device: BTS	Frequency
0 dB/div	Ref Offset 12.5 c Ref 20.00 dB					
.00		،				Center Fre 5.670000000 GH
0.0 0.0						
enter 5.0	2 041				Span 50 Mi	
Res BW			#VBW 1.3 M	Hz	Sweep 1 n	
Occup	ied Bandwid 3	th 6.487 MHz	Total P	ower 18	8.1 dBm	Auto Ma
	iit Freq Error andwidth	17.956 kH 42.09 MH			99.00 % 6.00 dB	01

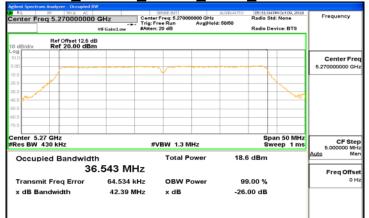
FCC 802.11n 40MHz AUX1 5190MHz



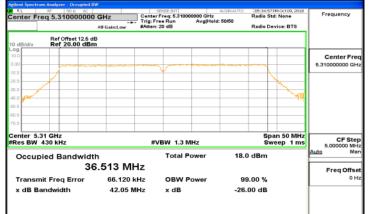
FCC 802.11n 40MHz AUX1 5230MHz



FCC 802.11n 40MHz AUX1 5270MHz



FCC_802.11n_40MHz_AUX1 5310MHz



FCC 802.11n 40MHz AUX1 5510MHz

Center Pred 5.510000000 GHZ Trip Free Run Avgitted 6050 Radio Device: BTS 0 dB/dv Ref Offset 12.5 dB GB Center Fr 0 dB/dv Ref 20.00 dBm GB GB	RL	RF 50.9 AC		SENSE:INT	ALIGNAUTO	05:37:18PM Oct 09, 2018	Frequency
Afficience W EAster: 20 dB Radio Device: BTS Afficience W EAster: 20 dB Ref Offset 12.5 dB Ref 20.00 dBm Center Fr 551000000 d Center 5.51 GHz Res BW 430 kHz Cocupied Bandwidth Solution Transmit Freq Error Transmit Freq Error Transmit Freq Error Transmit Freq Error Transmit Freq Error Transmit Freq Error Transmit Freq Error Affice and W a	Center Freq 5.510000000 GHz			Free Run AvalHalr	50/50	Radio Std: None	, requery
o delative Ref 20.00 dBm Center 5.51 GHz Res BW 430 kHz Transmit Freq Error -38.234 kHz OBW Power 99.00 %						Radio Device: BTS	
Center F, 5.51 GHz Res BW 430 kHz Transmit Freq Error -38.234 kHz OBW Power 99.00 %	0 dB/div						
Contraction of the second seco							Center Fre
CF St enter 5.51 GHz Res BW 430 kHz CCF St Sweep 1 ms Sweep 1				my mentioned		~	5.51000000 GH
enter 5.51 GHz enter 5.51 GHz res BW 430 kHz GC St GC St Span 50 MHz Span 50		1		Ť –			
Image: Span 50 MHz Span 50 MHz Image: Span 5							
Image: Constraint of the second se							
enter 5.51 GHz Res BW 430 kHz #VEW 1.3 MHz Span 50 MHz Occupied Bandwidth Total Power 17.7 dBm 36.476 MHz Transmit Freq Error -38.234 kHz OBW Power 99.00 %	N *						
enter 5.51 GHz Res BW 430 kHz #VBW 1.3 MHz Sweep 1 ms Occupied Bandwidth Total Power 17.7 dBm 36.476 MHz Transmit Freq Error -38.234 kHz OBW Power 99.00 %	0.0						
Res BW 430 kHz #VBW 1.3 MHz Sweep 1 ms C P st Occupied Bandwidth Total Power 17.7 dBm Auto Muto 36.476 MHz Freq Offst Freq Offst 0	0.0						
Auto Source of the second							CESta
Occupied Bandwidth Total Power 17.7 dBm 36.476 MHz Freq Offs Transmit Freq Error -38.234 kHz OBW Power 99.00 % 0	Res BW	430 kHz		#VBW 1.3 MHz		Sweep 1 ms	5.000000 MH
36.476 MHz Freq Offs Transmit Freq Error -38.234 kHz OBW Power 99.00 % 0	Occup	ied Bandwidt	h	Total Power	17.7	/ dBm	Auto Ma
							Freq Offs
x dB Bandwidth 41.98 MHz x dB -26.00 dB	Transm	it Freq Error	-38.234 kHz	OBW Power	99	9.00 %	01
	x dB Ba	andwidth	41.98 MHz	x dB	-26.	00 dB	

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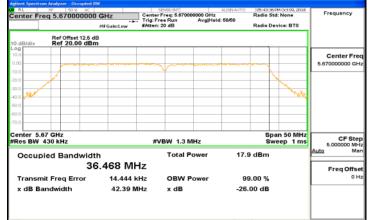
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FCC 802.11n 40MHz AUX1 5550MHz

Center Freq	5.550000000	Trig:	SENSE:INT Freq: 5.550000000 GHz Free Run Avg Hol n: 20 dB	R d: 50/50	05:40:30 PM Oct 09, 2018 adio Std: None adio Device: BTS	Frequency
10 dB/div	Ref Offset 12.5 dB Ref 20.00 dBm					
0.00					-	Center Free 5.550000000 GH;
20.0	A				A A A A A A A A A A A A A A A A A A A	
0.0						
enter 5.55 C Res BW 430		#	VBW 1.3 MHz		Span 50 MHz Sweep 1 ms	CF Ste 5.000000 MH
Occupied	d Bandwidtl 36	n 3.449 MHz	Total Power	18.3 d	Bm	Auto Ma
Transmit F	req Error	10.856 kHz	OBW Power	99.0	0 %	0 H
x dB Band	lwidth	42.34 MHz	x dB	-26.00	dB	

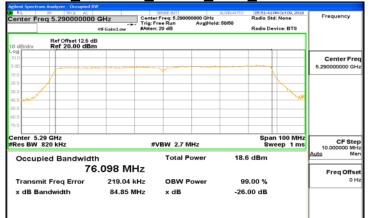
FCC 802.11n 40MHz AUX1 5670MHz



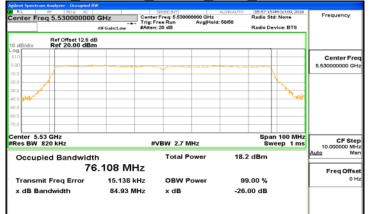
FCC 802.11ac 80MHz Main 5210MHz

gilent Spectrum Analyzer - Occ				
enter Freq 5.21000		SENSE:INT Center Freq: 5.210000000 GHz Trig: Free Run Avg Ho #Atten: 20 dB	ALIONAUTO 05:48:16PM Oct 09, 201 z Radio Std: None old: 50/50 Radio Device: BTS	B Frequency
0 dB/div Ref Offset			Mkr1 5.2483 GH -3.1132 dBr	
				Center Free 5.210000000 GH
0.0				
				,
enter 5.21 GHz			Span 100 MH	- z [
Res BW 820 kHz		#VBW 2.7 MHz	Sweep 1 m	s CF Step 10.000000 MH
Occupied Band	width 76.028 MH	Total Power	18.4 dBm	Auto Mar
Transmit Freq Err x dB Bandwidth	or 271.63 k 84.84 №		99.00 % -26.00 dB	он
A de Bandwidth	04.04 1		-20.00 UB	
90			STATUS	

FCC 802.11ac 80MHz Main 5290MHz



FCC 802.11ac 80MHz Main 5530MHz



FCC 802.11ac 80MHz Main 5610MHz

RL NF 500 A		SENSE:INT Freq: 5.610000000 GHz	ALIGNAUTO	06:00:33PM Oct 09, 2018 Radio Std: None	Frequency
center Freq 5.610000	Trig:1	FreeRun Avg Hold	1: 50/50		
	#IFGain:Low #Atter	n: 20 dB		Radio Device: BTS	
10 dB/div Ref 20.00 d					
.0g					Center Fre
					5.61000000 GH
0.0		Y			
20.0					
0.0					
40.0				<u>~</u>	
50.0					
30.0					
70.0					
Center 5.61 GHz Res BW 820 kHz	#	VBW 2.4 MHz		Span 100 MHz Sweep 1 ms	CF Ste 10.000000 MH
Occupied Bandwi	dth	Total Power	19.3	2 dBm	Auto Ma
-	75.979 MHz				Freq Offs
Transmit Freq Error	-14.627 kHz	OBW Power	9	9.00 %	01
x dB Bandwidth	85.05 MHz	x dB	-26	00 dB	
93			STATU	8	

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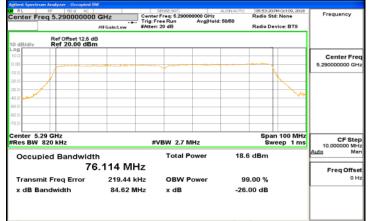
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FCC 802.11ac 80MHz AUX1 5210MHz

Center Fr	req 5.210000000	Trig: F	SENSE:INT r Freq: 5.210000000 GHz free Run Avg Hold: h: 20 dB	ALIONAUTO 05:49:40 PM Oct 09, 20 Radio Std: None 50/50 Radio Device: BTS	Frequency
10 dB/div	Ref Offset 12.5 dE Ref 20.00 dBm			Mkr1 5.2481 GH -2.2445 dB	
10.0 0.00					Center Freq 5.210000000 GHz
20.0					
10.0 50.0 50.0					-
70.0	21 GHz			Span 100 Mi	12
Res BW	820 kHz	#	VBW 2.7 MHz	Sweep 1 n	10.000000 MHz
Occup	oied Bandwidtl 75	n 5.953 MHz	Total Power	18.5 dBm	Auto Man
Transm	nit Freq Error	218.29 kHz	OBW Power	99.00 %	0 H
x dB B	andwidth	84.82 MHz	x dB	-26.00 dB	

FCC 802.11ac 80MHz AUX1 5290MHz



FCC 802.11ac 80MHz AUX1 5530MHz

enter Freq 5.530000000	Trig:	sense:INT er Freq: 5,530000000 GHz Free Run Avg Hold: n: 20 dB	Radio 5	Std: None	Frequency
	An Game Cow	n: 20 dB	Radio	Device: BTS	
Ref Offset 12.5 d 0 dB/div Ref 20.00 dBr					
20					Center Fre
00					5.530000000 GH
1.0					
1.0				N	
I CONTRACT				- Marc	
1.0					
0.0					
0.0					
enter 5.53 GHz Res BW 820 kHz	#	VBW 2.7 MHz		an 100 MHz weep 1 ms	CF Ste 10.000000 MH
Occupied Bandwidt	h	Total Power	18.4 dBm		<u>Auto</u> Ma
76	6.162 MHz				Freq Offse
Transmit Freq Error	-15.517 kHz	OBW Power	99.00 %		0 H
x dB Bandwidth	85.63 MHz	x dB	-26.00 dB		
3			STATUS		

FCC 802.11ac 80MHz AUX1 5610MHz

RL NF 50 Q AC		SENSE:INT enter Freq: 5,610000000		06:01:59PM Oct 09, 2018 Radio Std: None	Frequency
		rig:FreeRun Av Atten:20 dB	g Hold: 50/50	Radio Device: BTS	
Ref Offset 12.5 dB					
.og					Center Fre
1.00					5.61000000 GH
0.0					
0.0				<u> </u>	
0.0 *****					
0.0					
0.0					
enter 5.61 GHz				Span 100 MHz	
Res BW 820 kHz		#VBW 2.7 MHz		Sweep 1 ms	CF Ste 10.000000 MH
Occupied Bandwidth	1	Total Powe	r 19.3	2 dBm	Auto Ma
75	.954 MHz	2			Freq Offse
Transmit Freq Error	-8.128 kH	Z OBW Powe	r 99	9.00 %	01
x dB Bandwidth	84.61 MH	z xdB	-26.	00 dB	
9			STATU	s.	

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9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

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

If transmitting antennas of directional gain greater than 6 dBi are used, both the 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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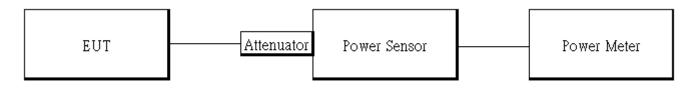
9.2 Measurement Procedure

- 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 power meter
- 4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
- 5. Record the max. reading and add 10 log(1/duty cycle).
- 6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1804001	02/01/2018	01/31/2019
Power Sensor	Anritsu	MA2411B	1726104	02/01/2018	01/31/2019
Power Sensor	Anritsu	MA2411B	1726107	02/01/2018	01/31/2019
DC Power Supply	Anritsu	E3640A	MY52410006	11/28/2017	11/27/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

9.3 Measurement Equipment Used

9.4 Test Set-up



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9.5 Measurement Result

802.11a_2Tx

	Frequency	Data	Avg. POWER (dBm)		TOTAL	TOTAL	REQUIRED			
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
36	5180	6	11.37	11.41	14.47	28.001		23.98		PASS
44	5220	6	11.89	11.75	14.90	30.919		23.98		PASS
48	5240	6	11.87	11.83	14.93	31.129		23.98		PASS
52	5260	6	11.74	11.96	14.93	31.139	23.98	or 11+10log(B) =	24.33	PASS
60	5300	6	11.84	11.79	14.90	30.880	23.98	or 11+10log(B) =	24.32	PASS
64	5320	6	11.33	11.28	14.39	27.458	23.98	or 11+10log(B) =	24.36	PASS
100	5500	6	11.23	11.46	14.43	27.722	23.98	or 11+10log(B) =	24.38	PASS
116	5580	6	11.75	11.79	14.85	30.561	23.98	or 11+10log(B) =	24.31	PASS
140	5700	6	11.29	11.42	14.44	27.779	23.98	or 11+10log(B) =	24.33	PASS

802.11n HT20 MIMO

CH Frequency		Data	Avg. POWER (dBm)		TOTAL TOTAL POWER POWER	REQUIRED LIMIT			RESULT	
СП	(MHz)	Rate CH 0 CH 1		POWER (dBm)						
36	5180	MCS8	11.22	11.45	14.44	27.768		23.98		PASS
44	5220	MCS8	11.84	11.73	14.88	30.791		23.98		PASS
48	5240	MCS8	11.9	11.71	14.90	30.938		23.98		PASS
52	5260	MCS8	11.64	11.89	14.87	30.660	23.98	or 11+10log(B) =	24.52	PASS
60	5300	MCS8	11.67	11.82	14.84	30.511	23.98	or 11+10log(B) =	24.54	PASS
64	5320	MCS8	11.21	11.28	14.34	27.190	23.98	or 11+10log(B) =	24.54	PASS
100	5500	MCS8	11.24	11.39	14.41	27.635	23.98	or 11+10log(B) =	24.53	PASS
116	5580	MCS8	11.62	11.82	14.82	30.339	23.98	or 11+10log(B) =	24.51	PASS
140	5700	MCS8	11.26	11.4	14.43	27.730	23.98	or 11+10log(B) =	24.53	PASS

802.11n_HT40_MIMO

СН	Frequency	Data	Avg. POWER (dBm)			TOTAL POWER	REQUIRED LIMIT			RESULT
СП	(MHz) Rate		CH 0	CH 1	(dBm)	(mW)				
38	5190	MCS8	11.26	11.28	14.45	27.855		23.98		PASS
46	5230	MCS8	11.79	11.73	14.94	31.182		23.98		PASS
54	5270	MCS8	11.67	11.75	14.89	30.826	23.98	or 11+10log(B) =	27.23	PASS
62	5310	MCS8	11.27	11.18	14.40	27.569	23.98	or 11+10log(B) =	27.24	PASS
102	5510	MCS8	11.24	11.32	14.46	27.920	23.98	or 11+10log(B) =	27.22	PASS
110	5550	MCS8	11.66	11.91	14.97	31.375	23.98	or 11+10log(B) =	27.24	PASS
134	5670	MCS8	11.15	11.42	14.47	27.965	23.98	or 11+10log(B) =	27.24	PASS

802.11ac VHT80 MIMO

сн	Frequency	Data	Avg. POWER (dBm)		TOTAL POWER	TOTAL POWER	REQUIRED LIMIT			RESULT
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		RESULT
42	5210	MCS0	11.06	11.14	14.43	27.753		23.98		PASS
58	5290	MCS0	10.88	11.08	14.31	27.003	23.98	or 11+10log(B) =	30.27	PASS
106	5530	MCS0	10.83	11.15	14.33	27.076	23.98	or 11+10log(B) =	30.29	PASS
122	5610	MCS0	11.19	11.73	14.80	30.209	23.98	or 11+10log(B) =	30.27	PASS

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10. POWER SPECTRAL DENSITY

10.1 Standard Applicable

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

If transmitting antennas of directional gain greater than 6 dBi are used, both the 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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10.2Measurement 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:

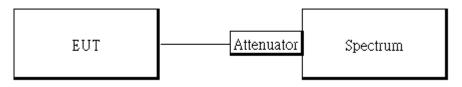
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

- 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.

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY57120290	02/14/2018	02/13/2019
DC Power Supply	Anritsu	E3640A	MY52410006	11/28/2017	11/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

10.3Measurement Equipment Used

10.4Test Set-up



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10.5Measurement Result

	POWER DENSITY 802.11a MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)		
5180	0.20	10.68	0.07	0.27	11	-10.73		
5220	1.06	10.68	0.07	1.13	11	-9.87		
5240	0.74	10.68	0.07	0.81	11	-10.19		
5260	0.14	10.68	0.07	0.21	11	-10.79		
5300	0.90	12.49	0.07	0.97	11	-10.03		
5320	0.96	12.49	0.07	1.03	11	-9.97		
5500	0.51	12.49	0.07	0.58	11	-10.42		
5580	1.11	12.49	0.07	1.18	11	-9.82		
5700	0.41	12.49	0.07	0.48	11	-10.52		

POWER DENSITY 802.11n HT20 MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)	
5180	-0.37	12.49	0.09	-0.28	11	-11.28	
5220	0.39	12.49	0.09	0.48	11	-10.52	
5240	0.35	12.49	0.09	0.44	11	-10.56	
5260	0.54	12.49	0.09	0.63	11	-10.37	
5300	0.45	12.49	0.09	0.54	11	-10.46	
5320	0.32	12.49	0.09	0.41	11	-10.59	
5500	0.05	12.49	0.09	0.14	11	-10.86	
5580	0.61	12.49	0.09	0.70	11	-10.30	
5700	0.24	12.49	0.09	0.33	11	-10.67	

POWER DENSITY 802.11n HT40 MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)	
5190	-3.7	12.49	0.17	-3.53	11	-14.53	
5230	-2.78	12.49	0.17	-2.61	11	-13.61	
5270	-2.89	12.49	0.17	-2.72	11	-13.72	
5310	-3.32	12.49	0.17	-3.15	11	-14.15	
5510	-2.95	12.49	0.17	-2.78	11	-13.78	
5550	-2.93	12.49	0.17	-2.76	11	-13.76	
5670	-3.00	12.49	0.17	-2.83	11	-13.83	

POWER DENSITY 802.11ac VHT80 MODE						
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Offset	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-6.42	12.49	0.32	-6.10	11	-17.10
5290	-7.50	12.49	0.32	-7.18	11	-18.18
5530	-7.13	12.49	0.32	-6.81	11	-17.81
5610	-6.73	12.49	0.32	-6.41	11	-17.41

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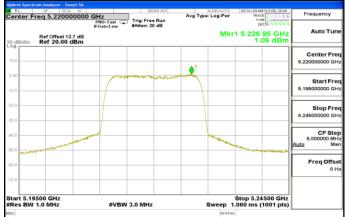
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802.11a 20MHz 5180MHz



802.11a 20MHz 5220MHz



802.11a 20MHz 5240MHz



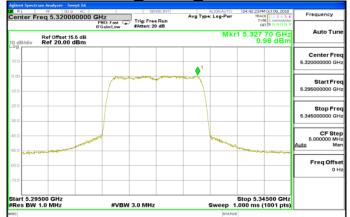
802.11a 20MHz 5260MHz



802.11a 20MHz 5300MHz



802.11a_20MHz_5320MHz



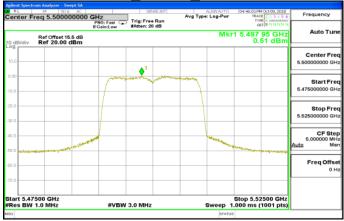
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802.11a 20MHz 5500MHz



802.11a 20MHz 5580MHz



802.11a 20MHz 5700MHz



802.11n 20MHz 5180MHz



802.11n 20MHz 5220MHz



802.11n 20MHz 5240MHz



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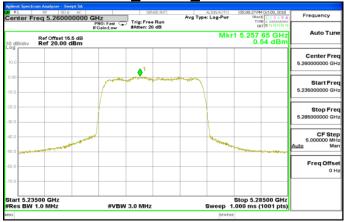
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802.11n 20MHz 5260MHz



802.11n 20MHz 5300MHz



802.11n 20MHz 5320MHz



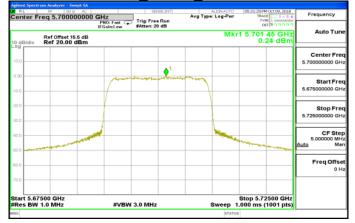
802.11n 20MHz 5500MHz



802.11n 20MHz 5580MHz



802.11n 20MHz 5700MHz



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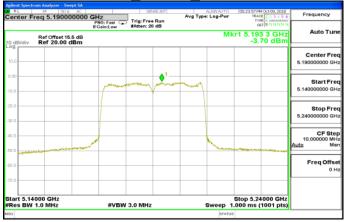
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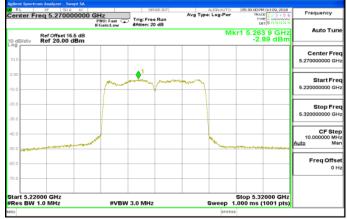
802.11n 40MHz 5190MHz



802.11n 40MHz 5230MHz



802.11n 40MHz 5270MHz



802.11n 40MHz 5310MHz



802.11n 40MHz 5510MHz



802.11n 40MHz 5550MHz



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802.11n 40MHz 5670MHz



802.11ac_80MHz 5210MHz



802.11ac 80MHz 5290MHz



802.11ac 80MHz 5530MHz



802.11ac 80MHz 5610MHz



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11. UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

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

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

APPLICABLE TO	LIMIT			
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m			
	PK: 74 (dBµV/m)	AV 54 (dBµV/m)		
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m		
15.407(b)(1)				
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.3 (dBµV/m)		
15.407(b)(3)				
	PK:-27 (dBm/MHz) *1	PK: 68.2(dBµV/m) *1		
15.407(h)(4)(i)	PK:10 (dBm/MHz) *2	PK:105.2 (dBµV/m) *2		
15.407(b)(4)(i)	PK:15.6 (dBm/MHz) *3	PK: 110.8(dBµV/m) *3		
	PK:27 (dBm/MHz) *4	PK:122.2 (dBµV/m) *4		

*1 beyond 75 MHz or more above of the bandedge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

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

Note:

1. The lower limit shall apply at the transition frequencies.

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

11.2Measurement Equipment Used

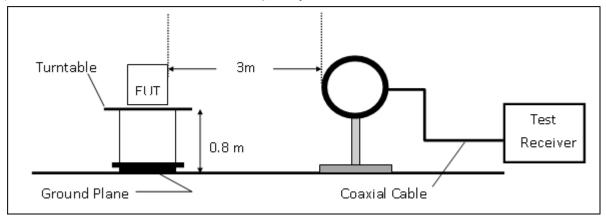
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	12/29/2017	12/28/2018
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/16/2018	08/15/2019
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2017	12/11/2018
Loop Antenna	ETS.LINDGREN	6502	148045	10/03/2018	10/02/2019
3m Site NSA	SGS	966 chamber	N/A	01/02/2018	01/01/2019
Spectrum Analyz- er	Agilent	E4446A	MY51100003	05/15/2018	05/14/2019
EMI Test Receiver	R&S	ESCI7	100335	02/02/2018	02/01/2019
Pre-Amplifier	HP	8449B	3008A00578	01/02/2018	01/01/2019
Pre-Amplifier	HP	8447D	2944A07676	01/02/2018	01/01/2019
Pre-Amplifier	EMC Instru- ments	EMC184045B	980135	10/02/2018	10/01/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	01/02/2018	01/01/2019
Filter 5470-5725 MHz	Micro-Tronics	BRM50704	1	01/02/2018	01/01/2019
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2018	01/01/2019
Notebook	Lenovo	L420	LR-7HXZA	N/A	N/A

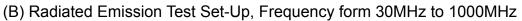
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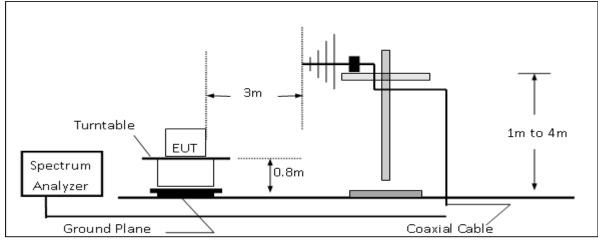


11.3Test SET-UP

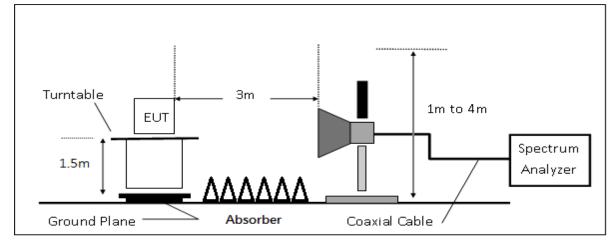
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.







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



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11.4Measurement Procedure

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

11.5Field 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 μ V/m) = SPA. Reading level(dB μ V) + Factor(dB)

Factor(dB) = Antenna Factor(dBuV/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

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.

11.7Measurement Result

Refer to next page for tabular data sheets.

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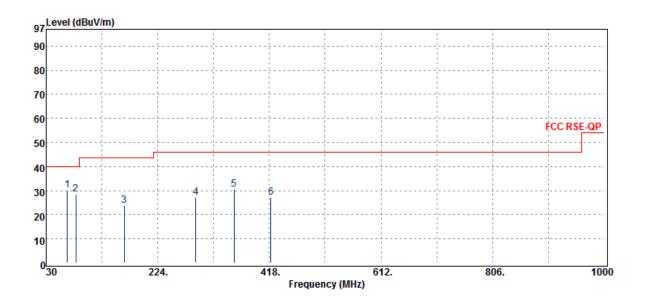


Radiated Spurious Emission Measurement Result

Below 1GHz Worst-Case Data:

802.11a 5150~5250 MHz

Operation Band	:802.11aB1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



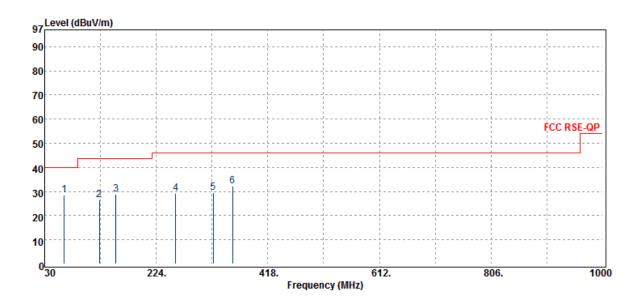
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
66.86	Peak	39.75	-9.42	30.33	40.00	-9.67
81.41	Peak	40.79	-12.22	28.57	40.00	-11.43
165.80	Peak	31.01	-7.32	23.69	43.50	-19.81
289.96	Peak	33.04	-5.82	27.22	46.00	-18.78
356.89	Peak	34.89	-4.21	30.68	46.00	-15.32
420.91	Peak	30.17	-2.84	27.33	46.00	-18.67

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Operation Band	:802.11aB1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	Peak	37.32	-8.75	28.57	40.00	-11.43
125.06	Peak	36.17	-9.62	26.55	43.50	-16.95
154.16	Peak	36.24	-7.30	28.94	43.50	-14.56
257.95	Peak	36.32	-7.08	29.24	46.00	-16.76
322.94	Peak	34.44	-5.07	29.37	46.00	-16.63
356.89	Peak	36.43	-4.21	32.22	46.00	-13.78

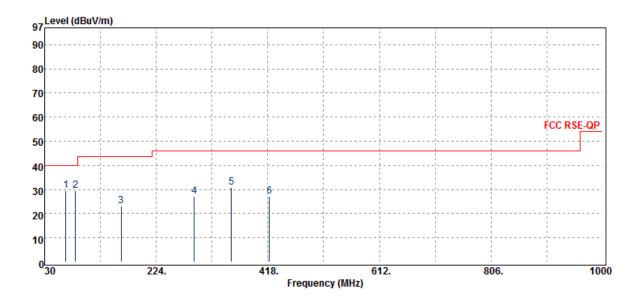
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802.11a 5250~5350 MHz

Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

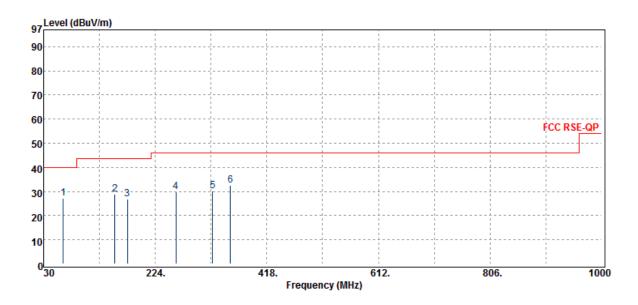


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
66.86	Peak	38.91	-9.42	29.49	40.00	-10.51
83.35	Peak	41.96	-12.58	29.38	40.00	-10.62
162.89	Peak	30.49	-7.23	23.26	43.50	-20.24
289.96	Peak	33.09	-5.82	27.27	46.00	-18.73
354.95	Peak	35.07	-4.18	30.89	46.00	-15.11
420.91	Peak	30.17	-2.84	27.33	46.00	-18.67

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Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



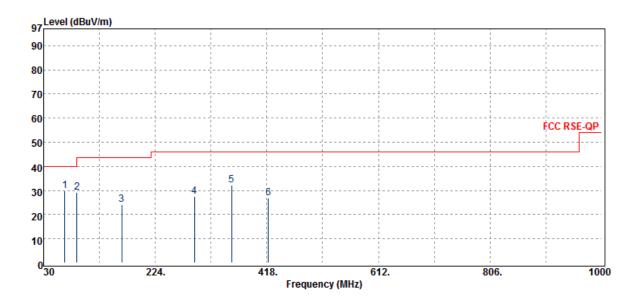
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	Peak	36.05	-8.75	27.30	40.00	-12.70
154.16	Peak	36.02	-7.30	28.72	43.50	-14.78
175.50	Peak	34.70	-7.89	26.81	43.50	-16.69
259.89	Peak	36.94	-7.03	29.91	46.00	-16.09
323.91	Peak	35.14	-5.08	30.06	46.00	-15.94
354.95	Peak	36.82	-4.18	32.64	46.00	-13.36



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802.11a, 5470~5725 MHz

Operation Band	:802.11aB3	Test Date	:2018-10-29
Fundamental Frequency	:5580 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
66.86	Peak	39.29	-9.42	29.87	40.00	-10.13
88.20	Peak	42.49	-13.39	29.10	43.50	-14.40
165.80	Peak	31.60	-7.32	24.28	43.50	-19.22
291.90	Peak	33.26	-5.76	27.50	46.00	-18.50
356.89	Peak	36.34	-4.21	32.13	46.00	-13.87
420.91	Peak	29.74	-2.84	26.90	46.00	-19.10

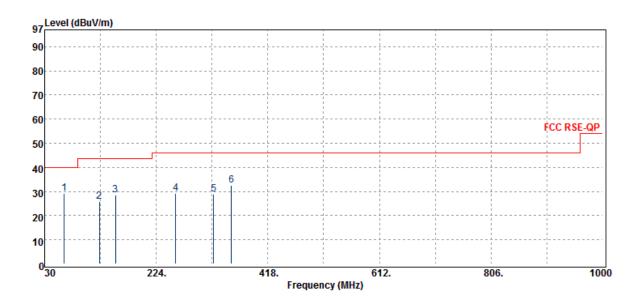
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Operation Band	:802.11aB3	Test Date	:2018-10-29
Fundamental Frequency	:5580 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	Peak	37.81	-8.75	29.06	40.00	-10.94
125.06	Peak	35.48	-9.62	25.86	43.50	-17.64
153.19	Peak	35.68	-7.31	28.37	43.50	-15.13
257.95	Peak	36.34	-7.08	29.26	46.00	-16.74
323.91	Peak	34.01	-5.08	28.93	46.00	-17.07
354.95	Peak	36.58	-4.18	32.40	46.00	-13.60



Above 1GHz Worst-Case Data:

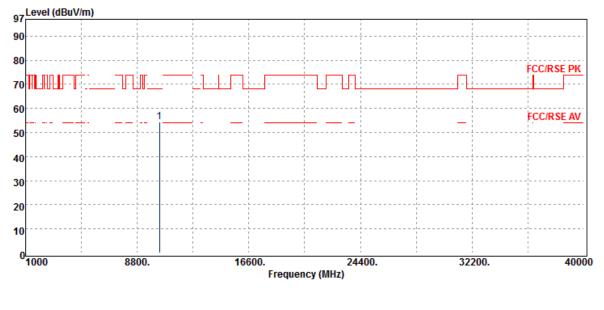
Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11aB1 :5180 MHz :Tx CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :VERTICAL



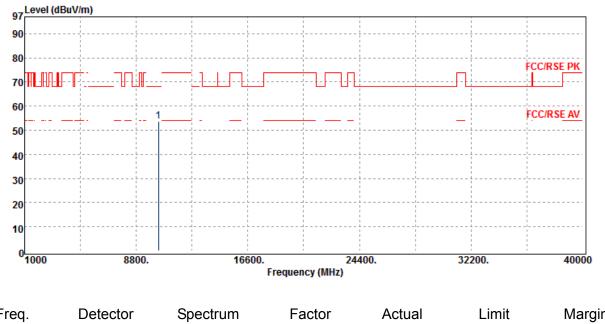
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	34.57	19.71	54.28	68.20	-13.92

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Operation Band	:802.11aB1	Test Date	:2018-10-29
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

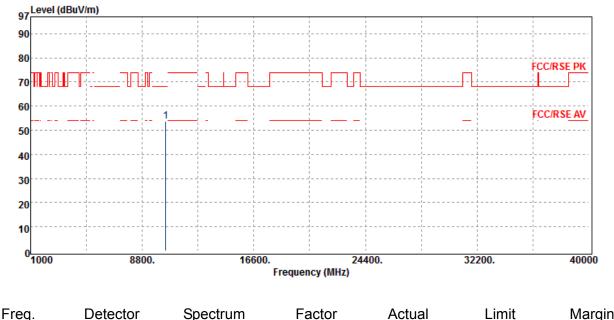


Freq.	Detector	Spectrum	Factor	Actual	Limit	iviargin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	Peak	34.12	19.71	53.83	68.20	-14.37

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Operation Band	:802.11aB1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Fleq.	Delector	Spectrum	Facilli	Actual		Margin
	Mode	Reading Level		FS	@3m	
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
 10440.00	Peak	33.58	20.05	53.63	68.20	-14.57

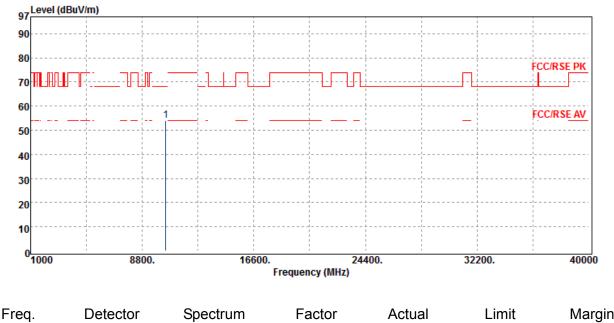
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Operation Band	:802.11aB1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Fleq.	Delector	Spectrum	Facilli	Actual		Margin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10440.00	Peak	34.04	20.05	54.09	68.20	-14.11	

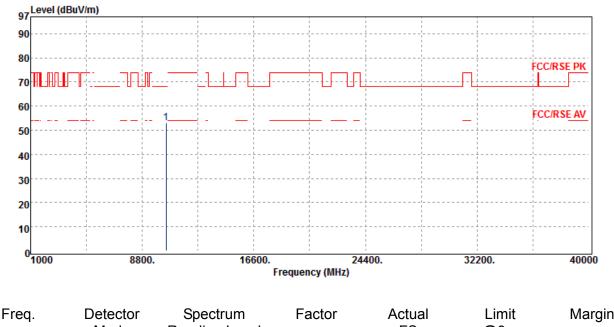
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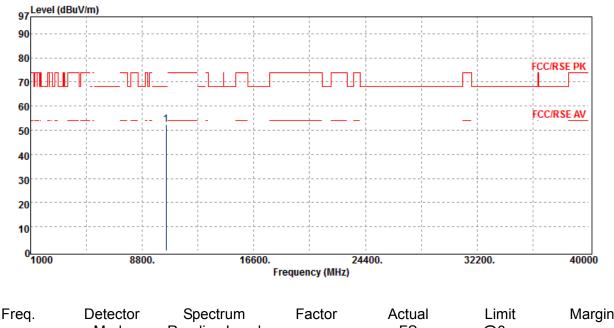
Operation Band	:802.11aB1	Engineer	:2018-10-29
Fundamental Frequency	:5240 MHz		:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH		:Wei
EUT Pol.	:E2 Plane		:VERTICAL



	Fleq.	Delector	Spectrum	Factor	Actual		waryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10480.00	Peak	32.84	20.07	52.91	68.20	-15.29	



Operation Band	:802.11aB1	Engineer	:2018-10-29
Fundamental Frequency	:5240 MHz		:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH		:Wei
EUT Pol.	:E2 Plane		:HORIZONTAL



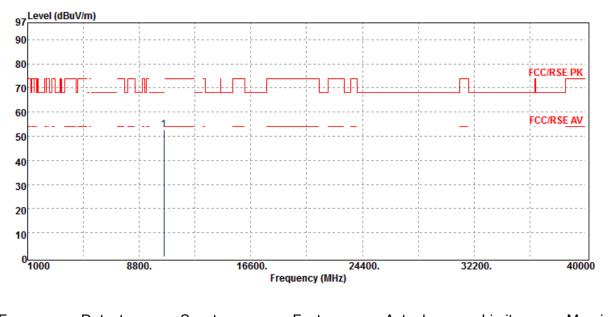
	печ.	Deleciol	Spectrum	i actor	Actual		iviaryiri	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10480.00	Peak	32.34	20.07	52.41	68.20	-15.79	_



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

:802.11aB2
:5260 MHz
:Tx CH LOW
:E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10520.00	Peak	32.67	20.00	52.67	68.20	-15.53	_

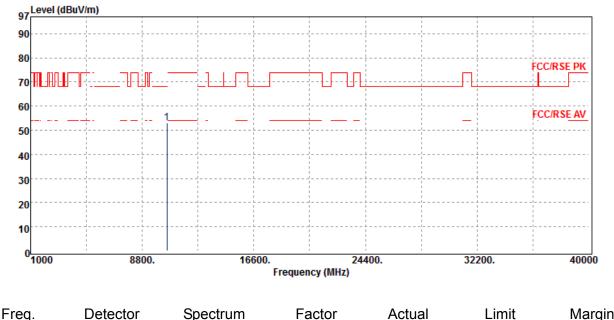
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Report No.: ER/2018/A0088 Page: 61 of 164



Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5260 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

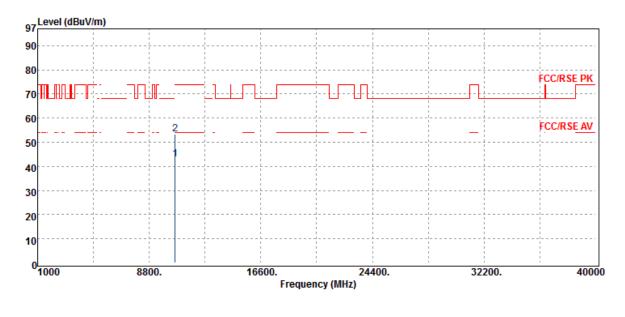


Fleq.	Delector	Spectrum	Factor	Actual		warym	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10520.00	Peak	33.06	20.00	53.06	68.20	-15.14	

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Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

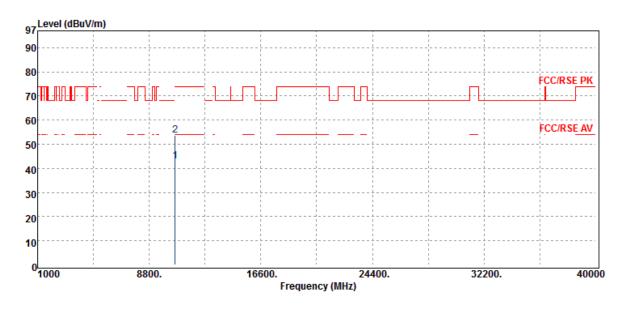


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.57	20.38	42.95	54.00	-11.05
10600.00	Peak	33.14	20.38	53.52	74.00	-20.48

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Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

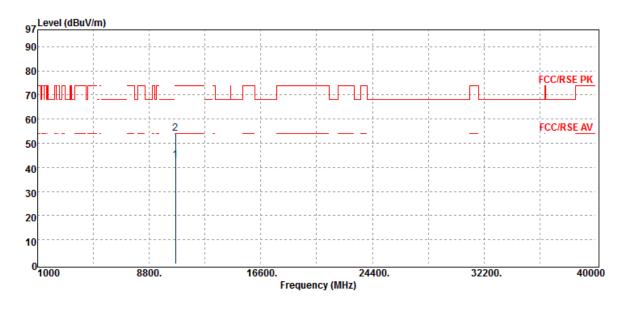


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.62	20.38	43.00	54.00	-11.00
10600.00	Peak	33.48	20.38	53.86	74.00	-20.14

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	:802.11aB2	Test Date	:2018-10-29
	:5320 MHz	Temp./Humi.	:23 deg C / 62 RH
Operation Mode	:Tx CH HIGH :E2 Plane	Engineer	:Wei :VERTICAL

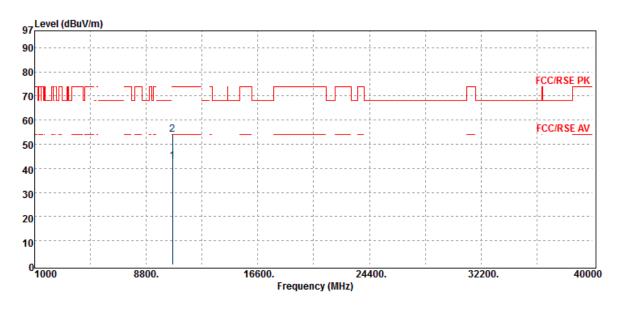


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.45	20.44	42.89	54.00	-11.11
10640.00	Peak	33.75	20.44	54.19	74.00	-19.81



RH

Operation Band	:802.11aB2	Test Date	:2018-10-29
Fundamental Frequency	:5320 MHz	Temp./Humi.	:23 deg_C / 62 F
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.57	20.44	43.01	54.00	-10.99
10640.00	Peak	33.76	20.44	54.20	74.00	-19.80



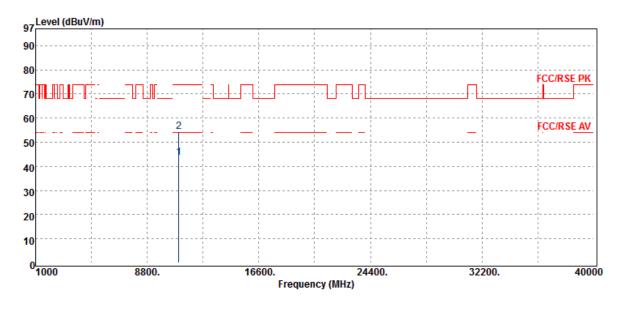
Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

Operation Band	
Fundamental Frequency	
Operation Mode	
EUT Pol.	

:802.11aB3 :5500 MHz :Tx CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.27	21.37	43.64	54.00	-10.36
11000.00	Peak	33.13	21.37	54.50	74.00	-19.50

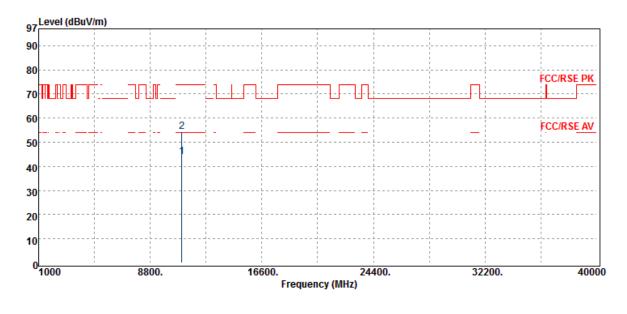
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Operation Band	:802.11aB3	Test Date	:2018-10-29
Fundamental Frequency	:5500 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol	:HORIZONTAL
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

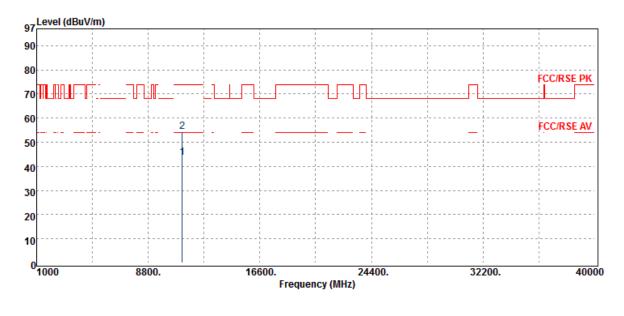


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	_
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.53	21.37	43.90	54.00	-10.10
11000.00	Peak	33.06	21.37	54.43	74.00	-19.57

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Operation Band	:802.11aB3	Engineer	:2018-10-29
Fundamental Frequency	:5580 MHz		:23 deg_C / 62 RH
Operation Mode	:Tx CH MID		:Wei
EUT Pol.	:E2 Plane		:VERTICAL

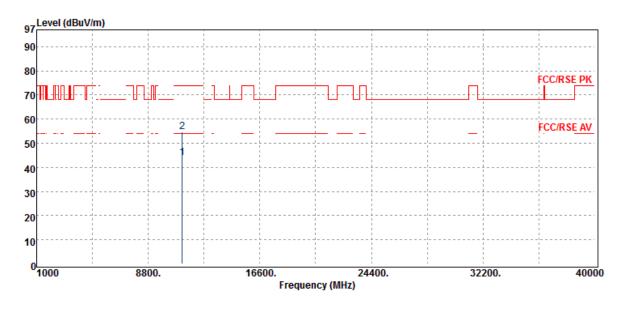


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.06	21.51	43.57	54.00	-10.43
11160.00	Peak	32.94	21.51	54.45	74.00	-19.55

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Operation Band Fundamental Frequency Operation Mode	:802.11aB3 :5580 MHz :Tx CH MID :E2 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol	:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAI
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



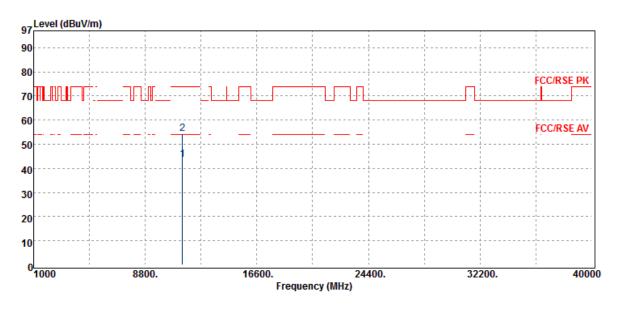
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.35	21.51	43.86	54.00	-10.14
11160.00	Peak	33.11	21.51	54.62	74.00	-19.38

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Operation Band	:802.11aB3	Test Date
Fundamental Frequency	:5700 MHz	Temp./Humi.
Operation Mode	:Tx CH HIGH	Engineer
EUT Pol.	:E2 Plane	Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.18	21.62	43.80	54.00	-10.20
11400.00	Peak	32.90	21.62	54.52	74.00	-19.48

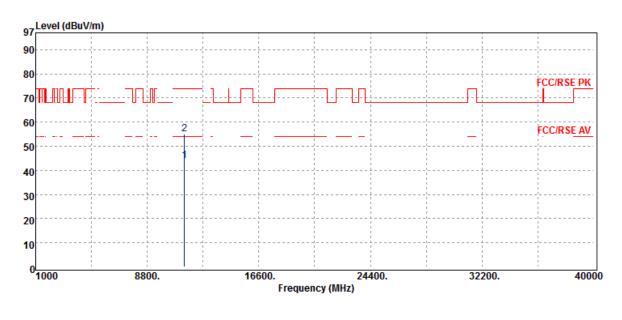
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Operation Band Fundamental Frequency Operation Mode	:802.11aB3 :5700 MHz :Tx CH HIGH	Test Date Temp./Humi. Engineer
EUT Pol.	:E2 Plane	Measurement Ar

:Wei Intenna Pol.

:2018-10-29 :23 deg_C / 62 RH :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.51	21.62	44.13	54.00	-9.87
11400.00	Peak	33.33	21.62	54.95	74.00	-19.05

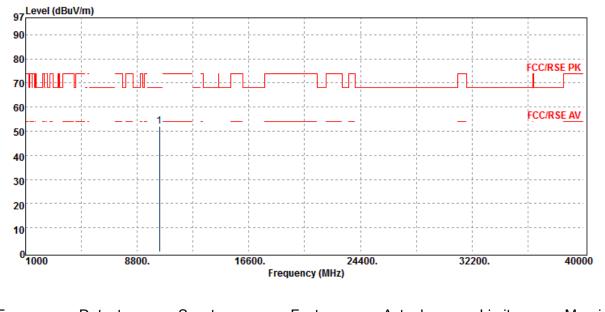


Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B1 :5180 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10360.00	Peak	32.36	19.71	52.07	68.20	-16.13	_

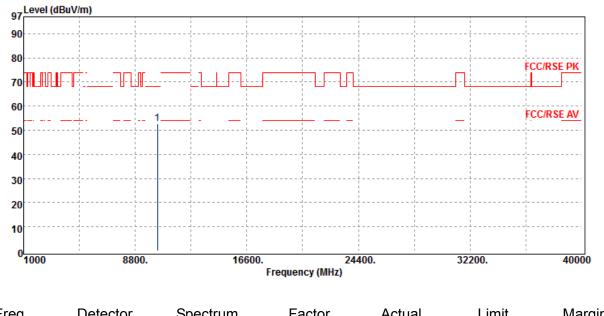
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Operation Band	:802.11n20B1	Test Date	:2018-10-29
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

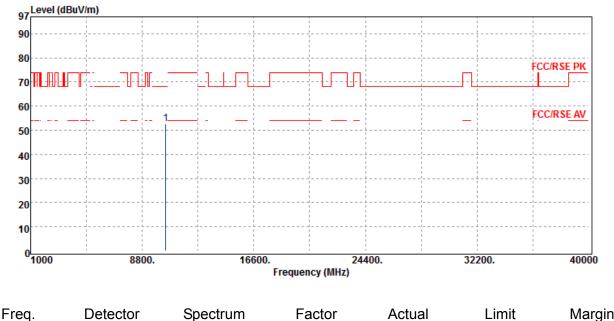


	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10360.00	Peak	32.91	19.71	52.62	68.20	-15.58	_

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Operation Band	:802.11n20B1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

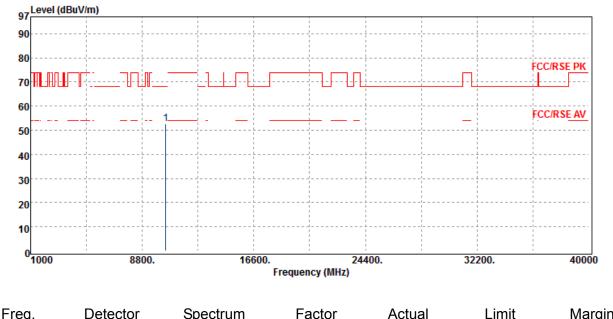


rieq.	Delector	opectium	1 actor	Actual	LIIII	margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	32.71	20.05	52.76	68.20	-15.44

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Operation Band	:802.11n20B1	Test Date	:2018-10-29
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



	Freq.	Delector	Spectrum	Factor	Actual		wargin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	10440.00	Peak	32.53	20.05	52.58	68.20	-15.62	

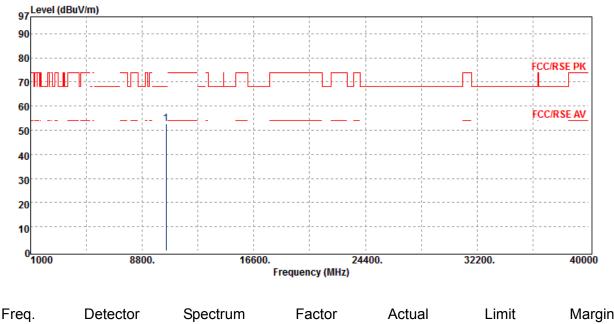
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No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

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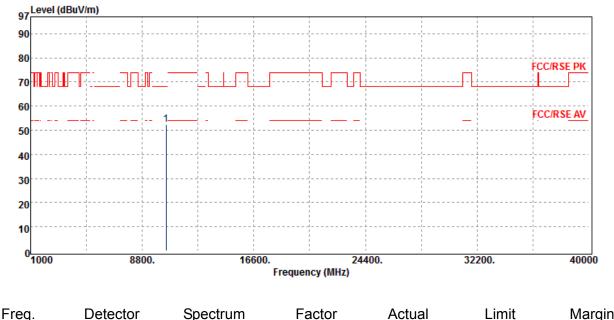
Operation Band	:802.11n20B1	Test Date	:2018-10-29
Fundamental Frequency	:5240 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



	Fleq.	Delector	Spectrum	Facilli	Actual		waryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10480.00	Peak	32.70	20.07	52.77	68.20	-15.43	_

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	TTEY.	Delecioi	Spectrum	T actor	Actual		Maryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	10480.00	Peak	32.23	20.07	52.30	68.20	-15.90	_

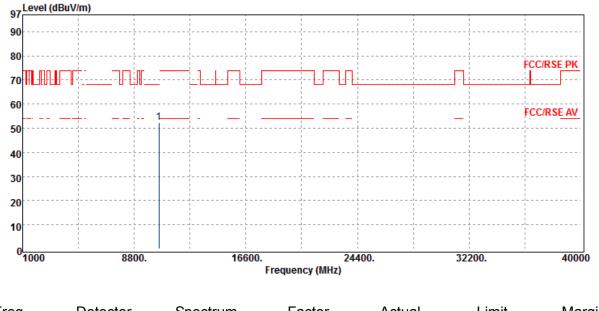


Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B2 :5260 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	iviargin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10520.00	Peak	32.41	20.00	52.41	68.20	-15.79	_

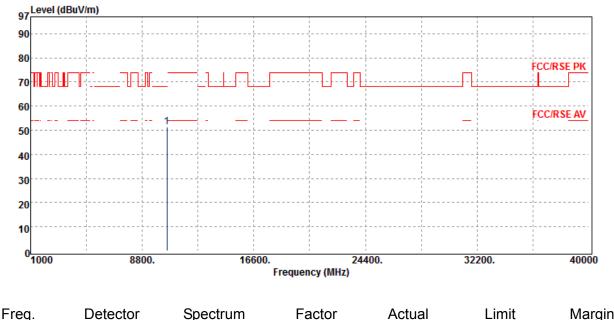
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Operation Band	:802.11n20B2	Test Date	:2018-10-29
Fundamental Frequency	:5260 MHz	Temp./Humi.	:23 deg C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

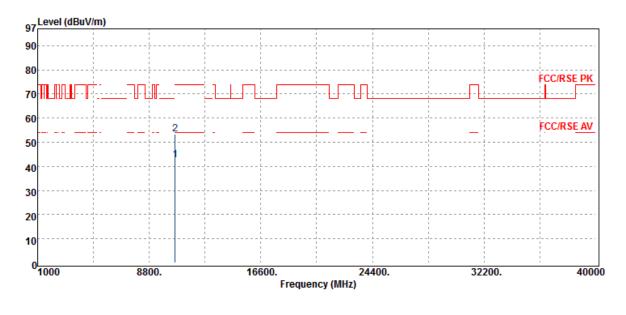


	печ.	Delecioi	Specifulli	i actor	Actual		maryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10520.00	Peak	31.47	20.00	51.47	68.20	-16.73	

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Operation Band Fundamental Frequency Operation Mode	:802.11n20B2 :5300 MHz :Tx CH MID :E2 Plane	Engineer	:2018-10-29 :23 deg_C / 62 RH :Wei :VERTICAL
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

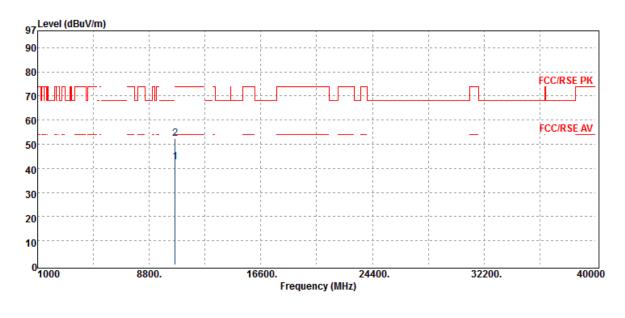


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
10600.00	Average	22.23	20.38	42.61	54.00	-11.39	•
10600.00	Peak	33.09	20.38	53.47	74.00	-20.53	

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:802.11n20B2 :5300 MHz :Tx CH MID :E2 Plane		:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL
	Measurement Antenna Fol.	
	:5300 MHz :Tx CH MID	:5300 MHz Temp./Humi. :Tx CH MID Engineer

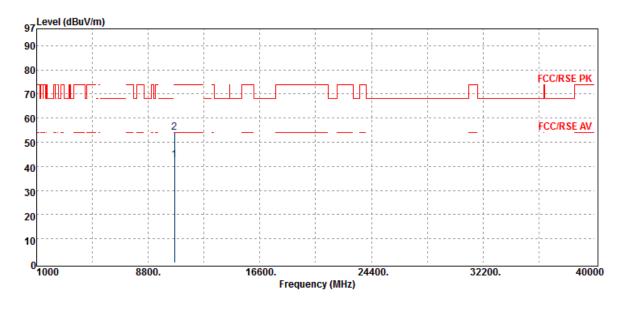


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	22.31	20.38	42.69	54.00	-11.31
10600.00	Peak	31.93	20.38	52.31	74.00	-21.69

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Operation Band Fundamental Frequency Operation Mode	:802.11n20B2 :5320 MHz :Tx CH HIGH :F2 Plana	Test Date Temp./Humi. Engineer	:2018-10-29 :23 deg_C / 62 RH :Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



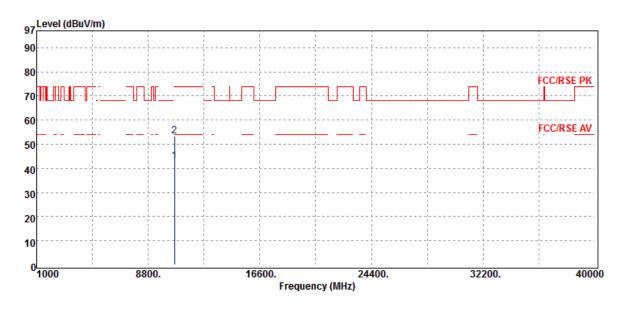
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.27	20.44	42.71	54.00	-11.29
10640.00	Peak	33.67	20.44	54.11	74.00	-19.89

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Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.59	20.44	43.03	54.00	-10.97
10640.00	Peak	32.91	20.44	53.35	74.00	-20.65

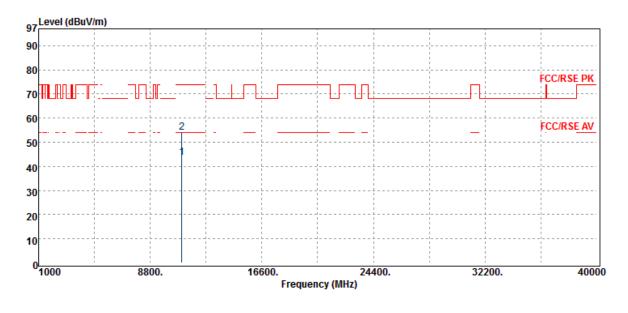


Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B3 :5500 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.17	21.37	43.54	54.00	-10.46
11000.00	Peak	32.62	21.37	53.99	74.00	-20.01

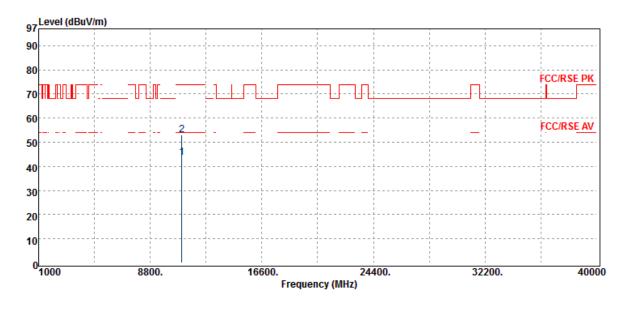
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Operation Band	:802.11n20B3		:2018-10-29
Fundamental Frequency	:5500 MHz		:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW		:Wei
EUT Pol.	:E2 Plane		:HORIZONTAL
		Measurement Antenna Pol.	INTECNIZ

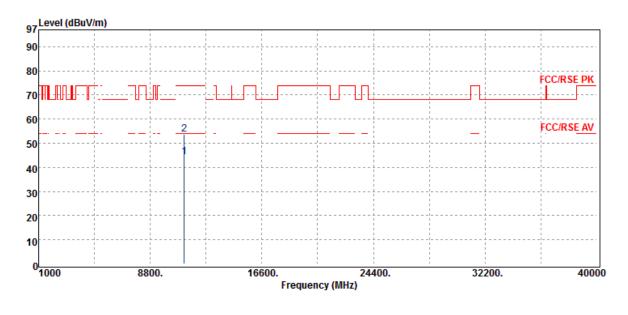


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11000.00	Average	22.39	21.37	43.76	54.00	-10.24
11000.00	Peak	31.64	21.37	53.01	74.00	-20.99

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Operation Mode:Tx CH MIDEngineer:WeiEUT Pol.:E2 PlaneMeasurement Antenna Pol.:VERTICAL	1		Temp./Humi. Engineer	
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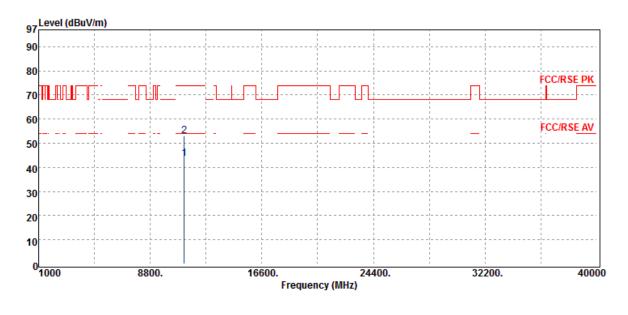


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.86	21.51	44.37	54.00	-9.63
11160.00	Peak	32.09	21.51	53.60	74.00	-20.40

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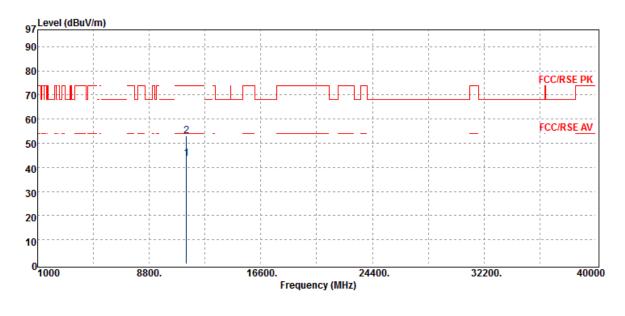
Operation Band	:802.11n20B3	Test Date	:2018-10-29
Fundamental Frequency	:5580 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol	:HORIZONTAL
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	21.96	21.51	43.47	54.00	-10.53
11160.00	Peak	31.60	21.51	53.11	74.00	-20.89

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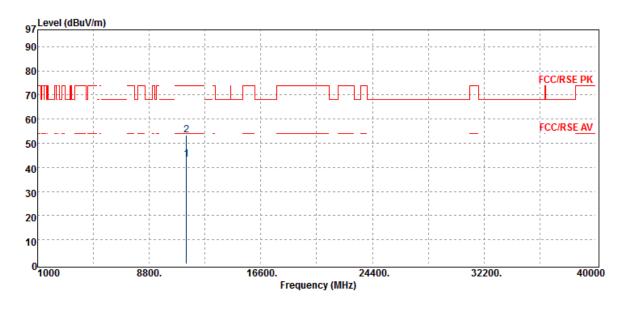


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	21.87	21.62	43.49	54.00	-10.51
11400.00	Peak	31.29	21.62	52.91	74.00	-21.09

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EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL	Operation Band	:802.11n20B3	Test Date	:2018-10-29
	Fundamental Frequency	:5700 MHz	Temp./Humi.	:23 deg_C / 62 RH
	Operation Mode	:Tx CH HIGH	Engineer	:Wei
	EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Detector	Spectrum	Factor	Actual	Limit	Margin	
Mode	Reading Level		FS	@3m	-	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
Average	21.75	21.62	43.37	54.00	-10.63	•
Peak	31.84	21.62	53.46	74.00	-20.54	
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage21.75	ModeReading LevelPK/QP/AVdBµVdBAverage21.7521.62	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage21.7521.6243.37	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 21.75 21.62 43.37 54.00	Mode Reading Level FS @3m PK/QP/AV dBµV dB dBµV/m dBµV/m dB Average 21.75 21.62 43.37 54.00 -10.63

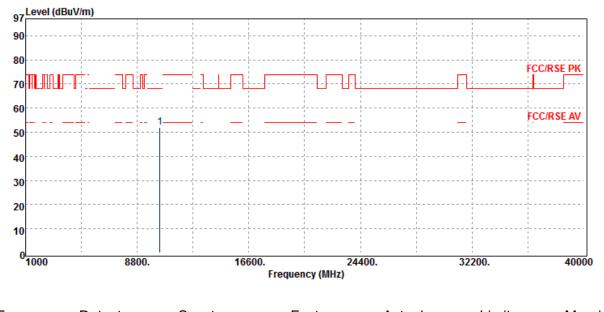


Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n40B1 :5190 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10380.00	Peak	32.24	19.78	52.02	68.20	-16.18	

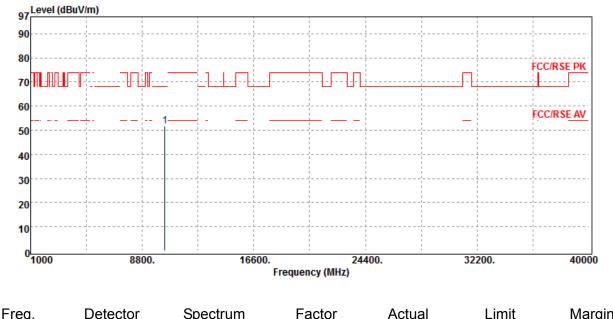
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Operation Band	:802.11n40B1	Test Date	:2018-10-29
Fundamental Frequency	:5190 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

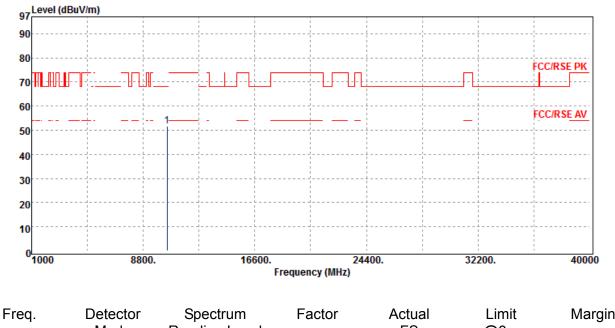


	Freq.	Delector	Spectrum	Factor	Actual		wargin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	10380.00	Peak	32.01	19.78	51.79	68.20	-16.41

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Operation Band	:802.11n40B1	Test Date	:2018-10-29
Fundamental Frequency	:5230 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

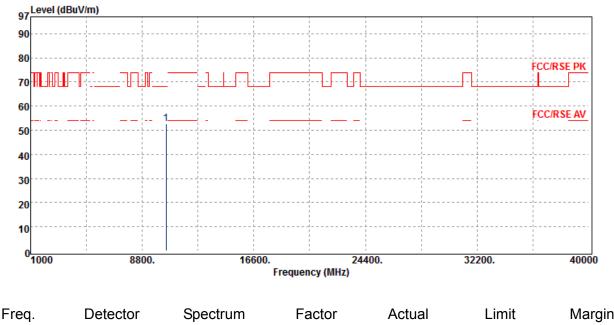


rieq.	Delector	opectium	racior	Actual	LIIIIL	Margin
	Mode	Reading Level		FS	@3m	
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
 10460.00	Peak	31.68	20.07	51.75	68.20	-16.45

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Fundamental Frequency:5230 MHzTemp./Humi.:23 deg_C / 62 ROperation Mode:Tx CH HIGHEngineer:WeiEUT Pol.:E2 PlaneMeasurement Antenna Pol.:HORIZONTAL	Operation Mode	:Tx CH HIGH	Engineer	
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Fleq.	Delector	Spectrum	Factor	Actual		waryin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10460.00	Peak	32.70	20.07	52.77	68.20	-15.43	

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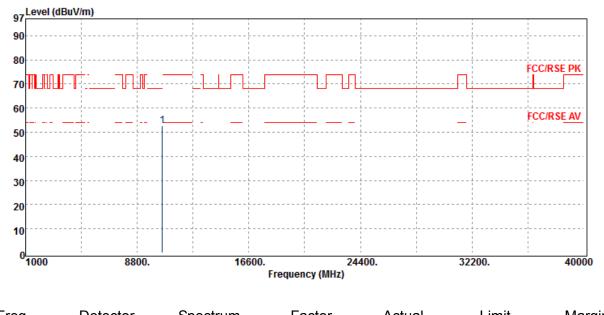


Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

Operation Band	
Fundamental Frequency	
Operation Mode	
EUT Pol.	

:802.11n40B2 :5270 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	iviargin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10540.00	Peak	32.56	20.02	52.58	68.20	-15.62	_

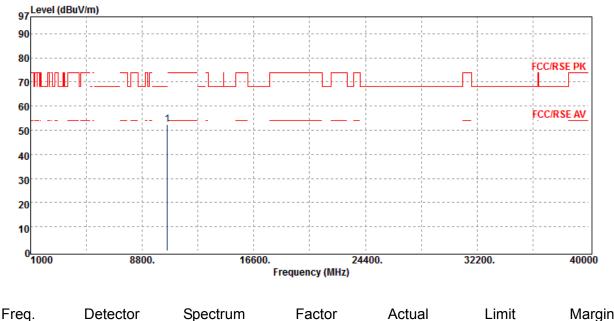
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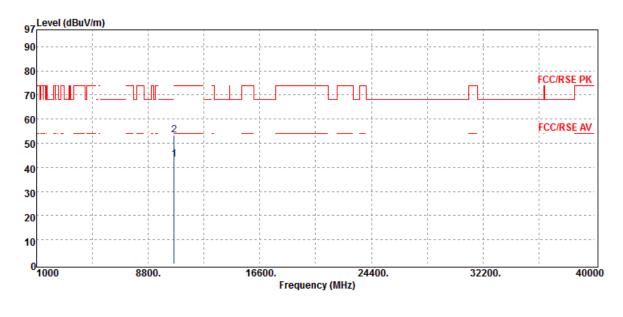
Fundamental Frequency Operation Mode	:802.11n40B2 :5270 MHz :Tx CH LOW :E2 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL
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	Fleq.	Delector	Spectrum	Factor	Actual		Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	10540.00	Peak	32.17	20.02	52.19	68.20	-16.01	

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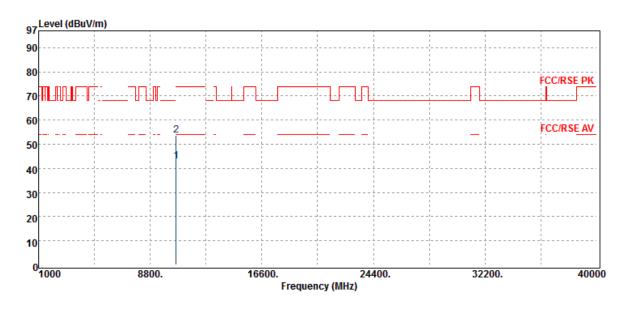




Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10620.00	Average	22.87	20.41	43.28	54.00	-10.72
10620.00	Peak	32.82	20.41	53.23	74.00	-20.77

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Margin
-
dB
-11.02
-20.43
-

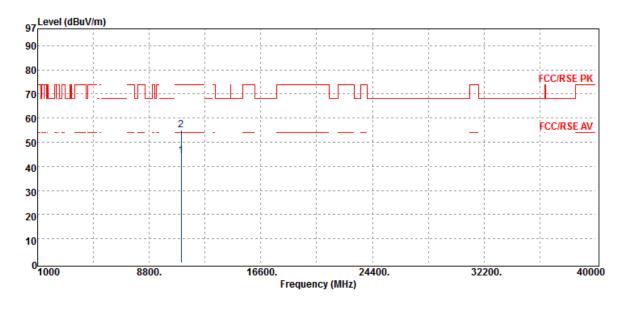


Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n40B3 :5510 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11020.00	Average	22.71	21.46	44.17	54.00	-9.83
11020.00	Peak	33.60	21.46	55.06	74.00	-18.94

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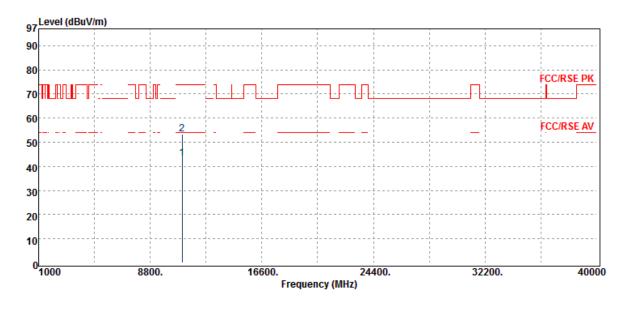
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Fundamental Frequency Operation Mode	:802.11n40B3 :5510 MHz :Tx CH LOW :E2 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL
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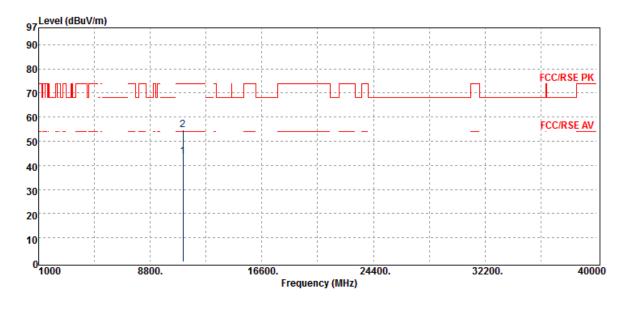


	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	_
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	11020.00	Average	21.92	21.46	43.38	54.00	-10.62
	11020.00	Peak	31.87	21.46	53.33	74.00	-20.67

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Operation Band	:802.11n40B3	 :2018-10-29
Fundamental Frequency	:5550 MHz	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	:Wei
EUT Pol.	:E2 Plane	:VERTICAL

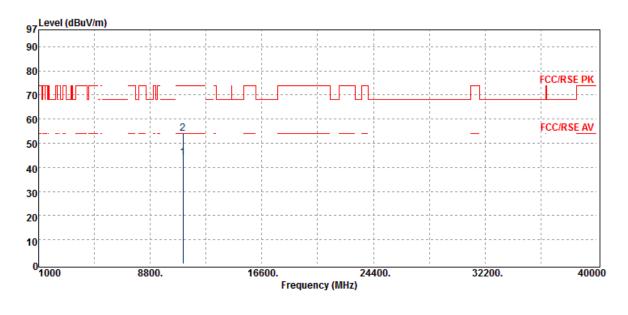


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
 11100.00	Average	22.13	21.53	43.66	54.00	-10.34
11100.00	Peak	33.04	21.53	54.57	74.00	-19.43
 11100.00	PK/QP/AV Average	dBµV 22.13	21.53	dBµV/m 43.66	dBµV/m 54.00	-10.34

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EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL		Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11n40B3 :5550 MHz :Tx CH MID :E2 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL
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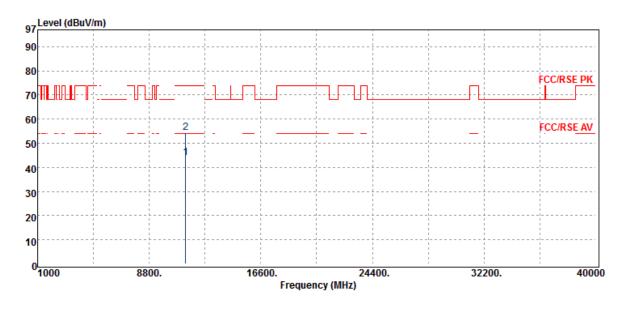


Detector Spec	trum Factor	- Actual	Limit	Margin
Mode Readin	g Level	FS	@3m	-
K/QP/AV dB	μV dB	dBµV/m	dBµV/m	dB
Average 22	.41 21.53	43.94	54.00	-10.06
Peak 32	.62 21.53	54.15	74.00	-19.85
	Mode Readin K/QP/AV dB Average 22	ModeReading LevelK/QP/AVdBµVdBAverage22.4121.53	ModeReading LevelFSK/QP/AVdBµVdBdBµV/mAverage22.4121.5343.94	Mode Reading Level FS @3m K/QP/AV dBµV dB dBµV/m dBµV/m Average 22.41 21.53 43.94 54.00

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Operation Band	:802.11n40B3	Test Date	:2018-10-29
Fundamental Frequency	:5670 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

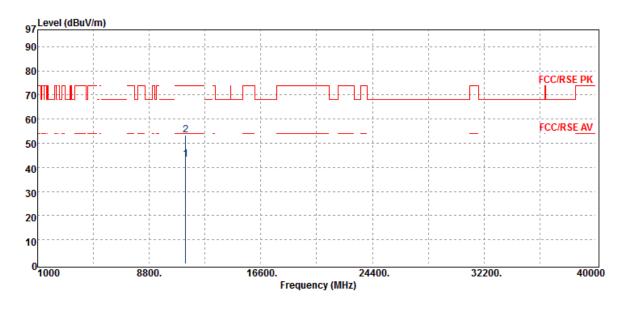


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
11340.00	Average	22.28	21.54	43.82	54.00	-10.18	-
11340.00	Peak	32.73	21.54	54.27	74.00	-19.73	

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Fundamental Frequency:5670 MHzTemp./Humi.:23 deg_C / 62 ROperation Mode:Tx CH HIGHEngineer:WeiEUT Pol.:E2 PlaneMeasurement Antenna Pol.:HORIZONTAL	Operation Mode	:Tx CH HIGH	Engineer	
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Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00	Average	21.80	21.54	43.34	54.00	-10.66
11340.00	Peak	31.85	21.54	53.39	74.00	-20.61

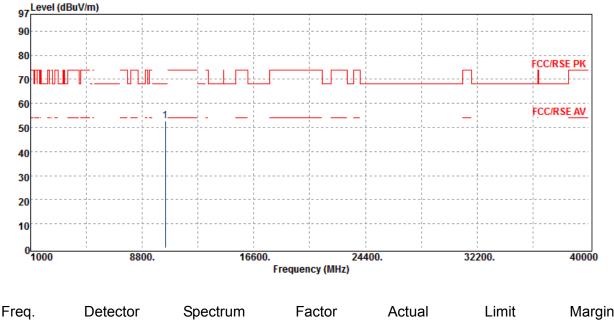


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B1 :5210 MHz :Tx CH LOW :E2 Plane

:2018-10-29 Test Date Temp./Humi. :23 deg_C / 62 RH Engineer :Wei Measurement Antenna Pol. :VERTICAL



Fieq.	Delector	Spectrum	Factor	Actual		Margin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10420.00	Peak	32.54	19.99	52.53	68.20	-15.67	

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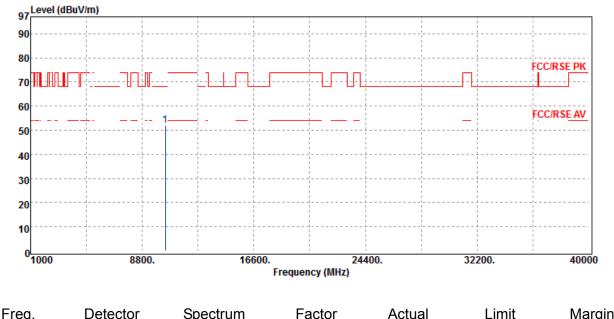
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Operation Band:802.11ac80B1Test DateFundamental Frequency:5210 MHzTemp./Humi.Operation Mode:Tx CH LOWEngineerEUT Pol.:E2 PlaneMeasurement A	:2018-10-29 :23 deg_C / 62 RH :Wei Antenna Pol. :HORIZONTAL
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	Fleq.	Delector	Spectrum	Factor	Actual		warym	
		Mode	Reading Level		FS	@3m		
	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10420.00	Peak	32.08	19.99	52.07	68.20	-16.13	

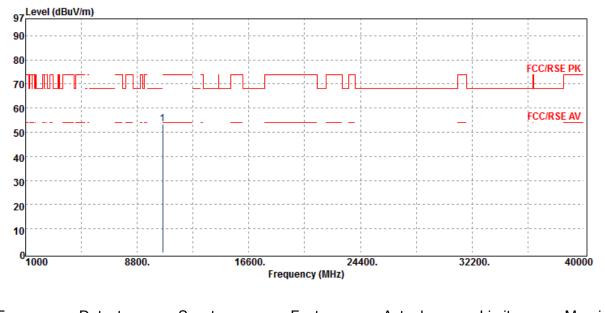


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B2 :5290 MHz :Tx CH HIGH :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10580.00	Peak	32.98	20.23	53.21	68.20	-14.99	_

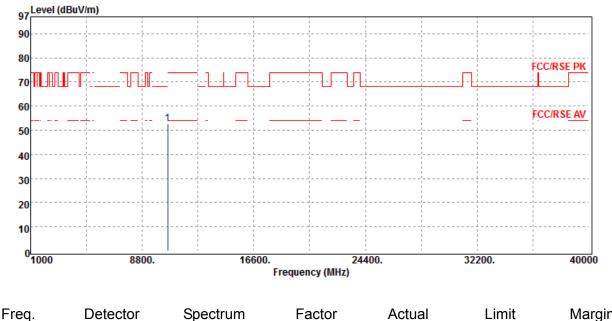
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Operation Band:802.11ac80B2Test DaFundamental Frequency:5290 MHzTemp./Operation Mode:Tx CH HIGHEngineEUT Pol.:E2 PlaneMeasu	Humi. :23 deg_C / 62 RH
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Freq.	Delector	Spectrum	Factor	Actual		wargin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10580.00	Peak	32.39	20.23	52.62	68.20	-15.58	_

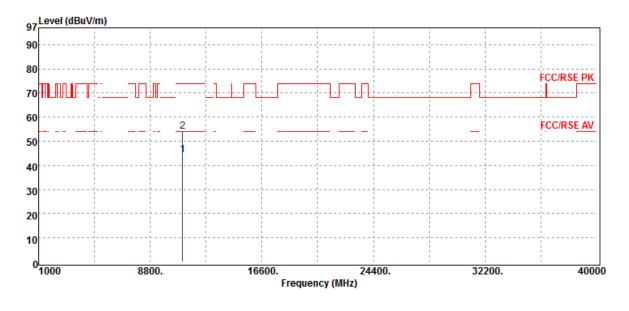


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B3 :5530 MHz :Tx CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11060.00	Average	22.74	21.53	44.27	54.00	-9.73
11060.00	Peak	32.34	21.53	53.87	74.00	-20.13

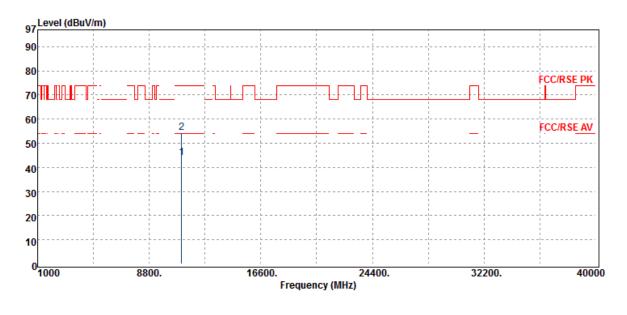
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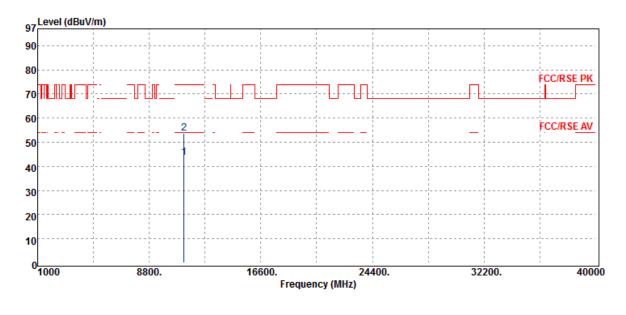
Operation Band	:802.11ac80B3	Test Date	:2018-10-29
Fundamental Frequency	:5530 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11060.00	Average	22.61	21.53	44.14	54.00	-9.86
11060.00	Peak	32.99	21.53	54.52	74.00	-19.48

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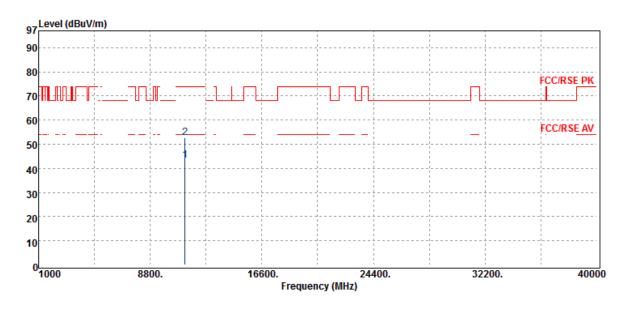


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11220.00	Average	22.18	21.56	43.74	54.00	-10.26
11220.00	Peak	32.03	21.56	53.59	74.00	-20.41

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Operation Band	:802.11ac80B3	Test Date	:2018-10-29
Fundamental Frequency	:5610 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11220.00	Average	21.86	21.56	43.42	54.00	-10.58
11220.00	Peak	31.23	21.56	52.79	74.00	-21.21

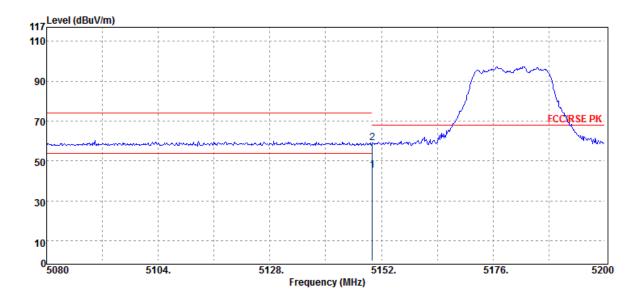


Band Edge falling to restricted band

802.11a mode

:802.11aB1 **Operation Band** Fundamental Frequency :5180 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.10	8.32	45.42	54.00	-8.58
5150.00	Peak	50.78	8.32	59.10	74.00	-14.90

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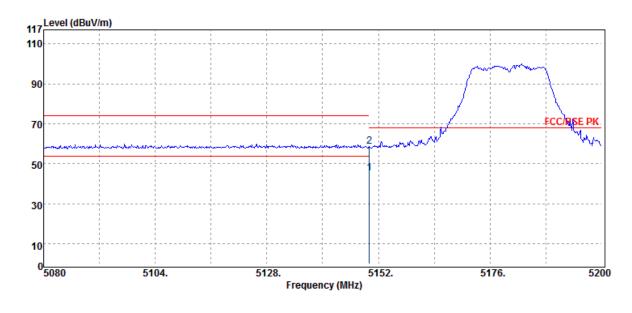


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB1 :5180 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.15	8.32	45.47	54.00	-8.53
5150.00	Peak	50.21	8.32	58.53	74.00	-15.47

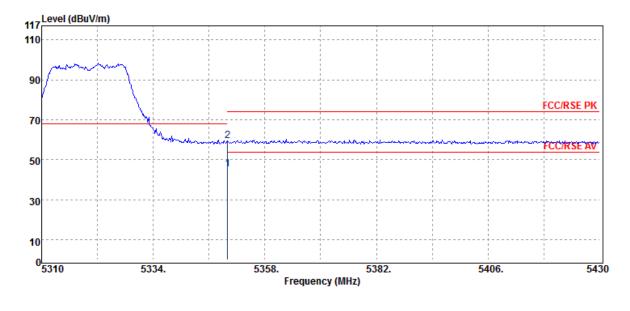
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Operation Band Fundamental Frequency Operation Mode EUT Pol.

:802.11aB2 :5320 MHz :Bandedge CH HIGH :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	_
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Average	36.82	8.63	45.45	54.00	-8.55
Peak	50.72	8.63	59.35	74.00	-14.65
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage36.82	ModeReading LevelPK/QP/AVdBµVdBAverage36.828.63	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage36.828.6345.45	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 36.82 8.63 45.45 54.00

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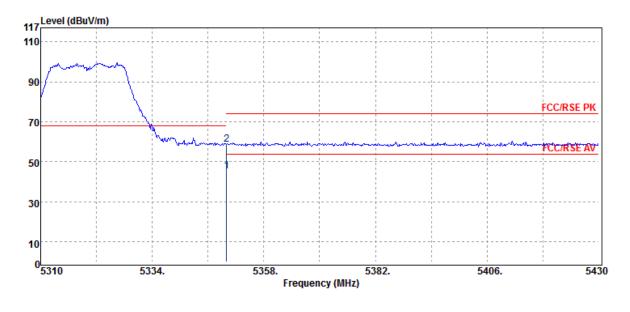


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB2 :5320 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5350.00	Average	36.90	8.63	45.53	54.00	-8.47	-
5350.00	Peak	50.24	8.63	58.87	74.00	-15.13	

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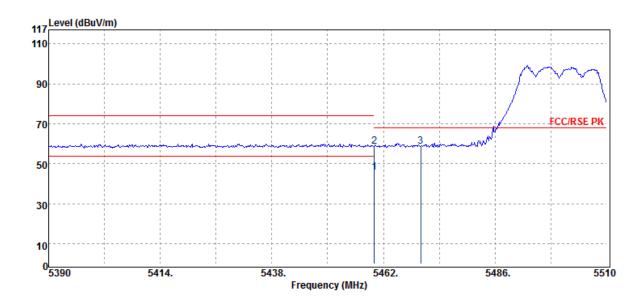
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz :Bandedge CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	36.91	8.75	45.66	54.00	-8.34
5460.00	Peak	49.98	8.75	58.73	74.00	-15.27
5470.00	Peak	50.07	8.74	58.81	68.20	-9.39

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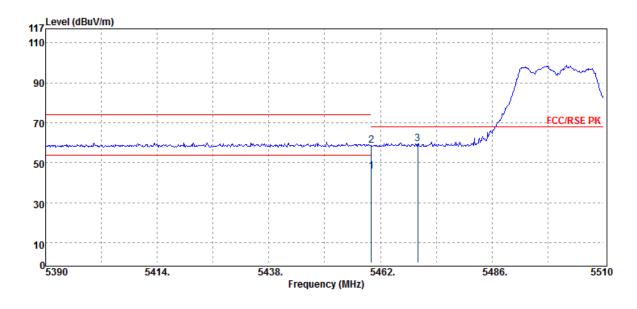


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Average	36.84	8.75	45.59	54.00	-8.41
Peak	49.98	8.75	58.73	74.00	-15.27
Peak	50.80	8.74	59.54	68.20	-8.66
	Mode PK/QP/AV Average Peak	ModeReading LevelPK/QP/AVdBµVAverage36.84Peak49.98	ModeReading LevelPK/QP/AVdBµVdBAverage36.848.75Peak49.988.75	Mode Reading Level FS PK/QP/AV dBμV dB dBμV/m Average 36.84 8.75 45.59 Peak 49.98 8.75 58.73	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 36.84 8.75 45.59 54.00 Peak 49.98 8.75 58.73 74.00

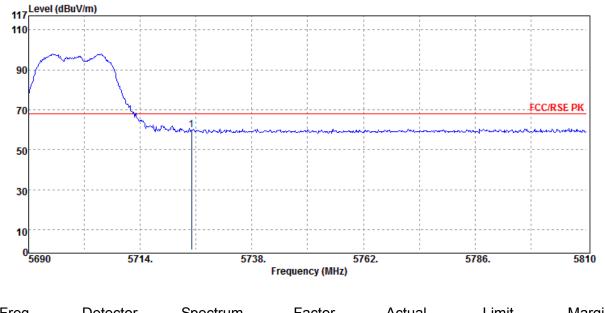
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz :Bandedge CH HIGH :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



⊢req.	Detector	Spectrum	Factor	Actual	Limit	iviargin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	50.58	9.44	60.02	68.20	-8.18	_

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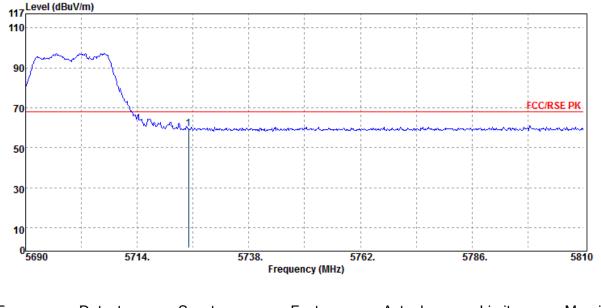


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	50.02	9.44	59.46	68.20	-8.74	

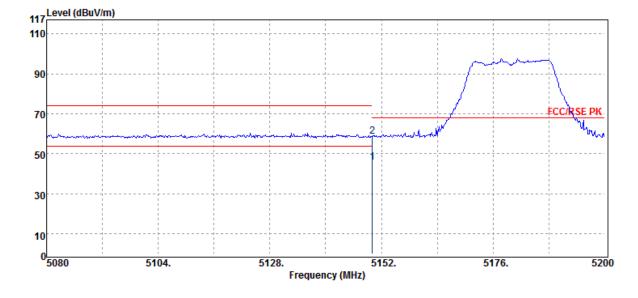


802.11n20 HT mode

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

:802.11n20B1 :5180 MHz :Bandedge CH LOW :E2 Plane

Test Date :2018-10-29 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.38	8.32	45.70	54.00	-8.30
5150.00	Peak	50.46	8.32	58.78	74.00	-15.22

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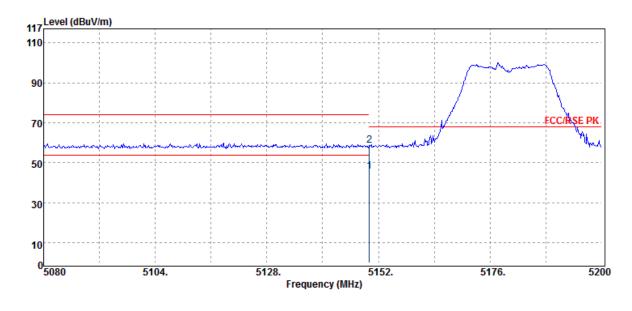


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5180 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.57	8.32	45.89	54.00	-8.11
5150.00	Peak	50.47	8.32	58.79	74.00	-15.21

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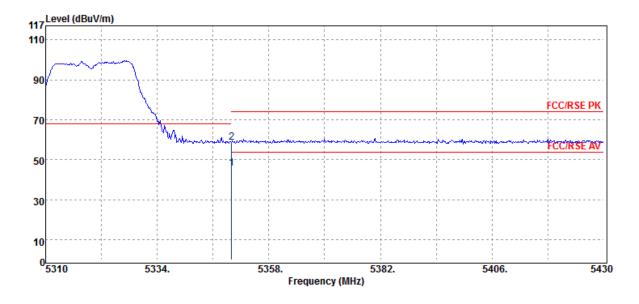


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5320 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.





Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.26	8.63	45.89	54.00	-8.11
5350.00	Peak	49.90	8.63	58.53	74.00	-15.47

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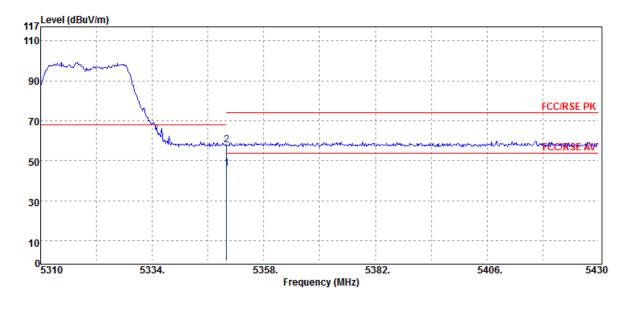


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5320 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.33	8.63	45.96	54.00	-8.04
5350.00	Peak	49.22	8.63	57.85	74.00	-16.15

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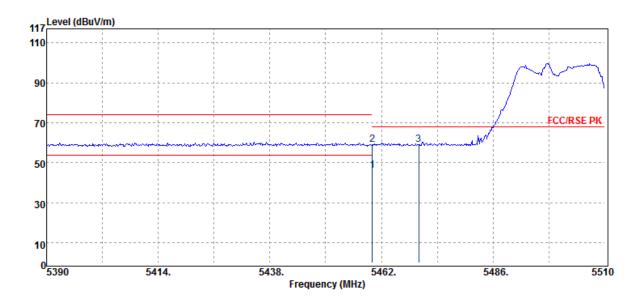


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.55	8.75	46.30	54.00	-7.70
5460.00	Peak	50.48	8.75	59.23	74.00	-14.77
5470.00	Peak	50.39	8.74	59.13	68.20	-9.07
5460.00 5460.00	PK/QP/AV Average Peak	dBµV 37.55 50.48	8.75 8.75	dBμV/m 46.30 59.23	dBµV/m 54.00 74.00	-7.70 -14.77

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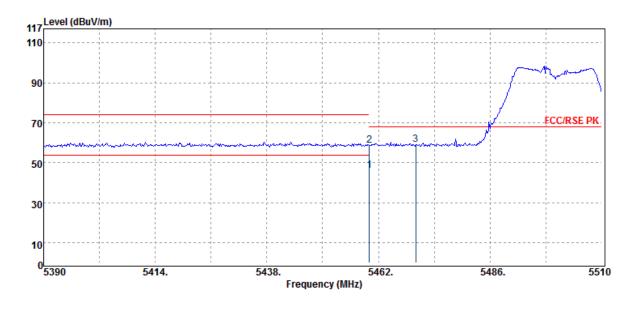


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.31	8.75	46.06	54.00	-7.94
5460.00	Peak	50.06	8.75	58.81	74.00	-15.19
5470.00	Peak	50.24	8.74	58.98	68.20	-9.22

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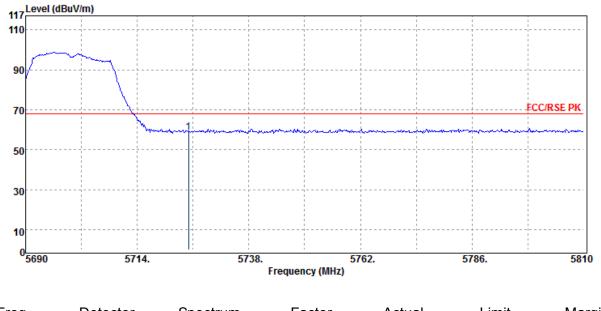


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :VERTICAL



⊢req.	Detector	Spectrum Deading Level	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	49.25	9.44	58.69	68.20	-9.51	

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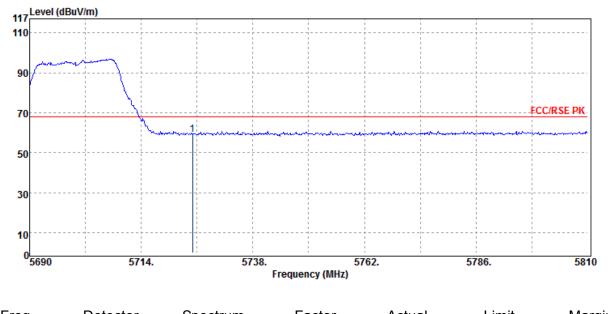


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-29 :23 deg_C / 62 RH :Wei :HORIZONTAL



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	49.63	9.44	59.07	68.20	-9.13	

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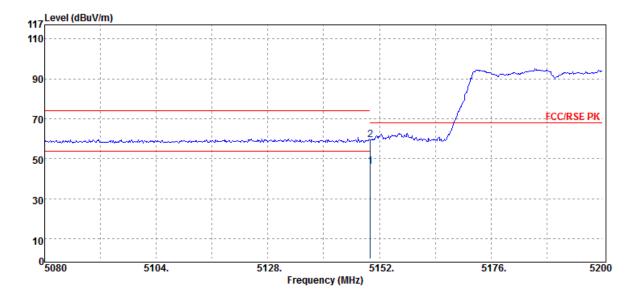


802.11n40 HT mode

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

:802.11n40B1 :5190 MHz :Bandedge CH LOW :E2 Plane

Test Date :2018-10-19 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.68	8.32	46.00	54.00	-8.00
5150.00	Peak	51.16	8.32	59.48	74.00	-14.52

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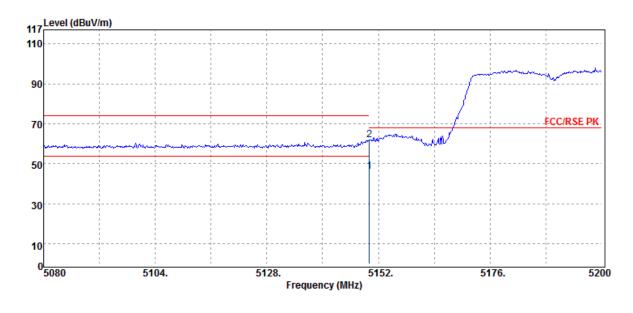


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5190 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	37.96	8.32	46.28	54.00	-7.72
5150.00	Peak	53.54	8.32	61.86	74.00	-12.14

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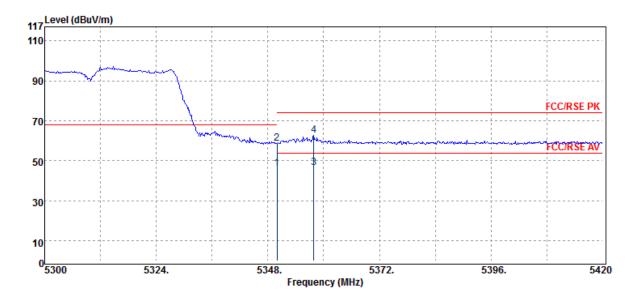


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :VERTICAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.72	8.63	46.35	54.00	-7.65
5350.00	Peak	50.21	8.63	58.84	74.00	-15.16
5357.84	Average	37.84	8.65	46.49	54.00	-7.51
5357.84	Peak	54.19	8.65	62.84	74.00	-11.16

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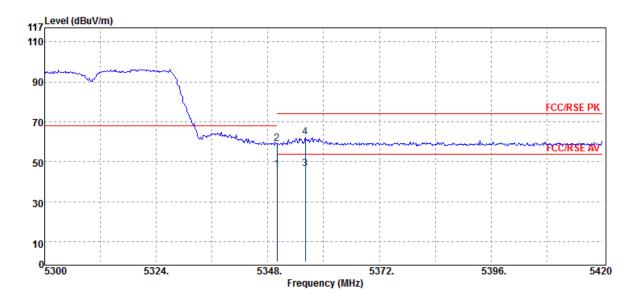


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	37.58	8.63	46.21	54.00	-7.79
5350.00	Peak	50.37	8.63	59.00	74.00	-15.00
5356.04	Average	37.81	8.64	46.45	54.00	-7.55
5356.04	Peak	53.80	8.64	62.44	74.00	-11.56

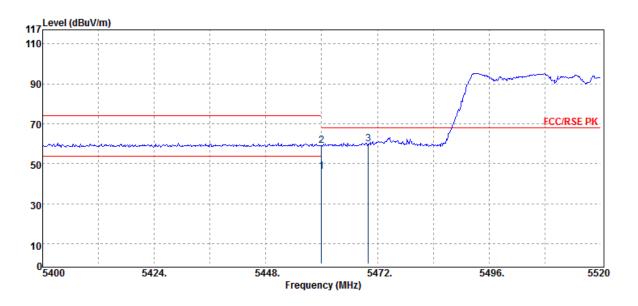
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Bandedge CH LOW :E2 Plane

Test Date :2018-10-19 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



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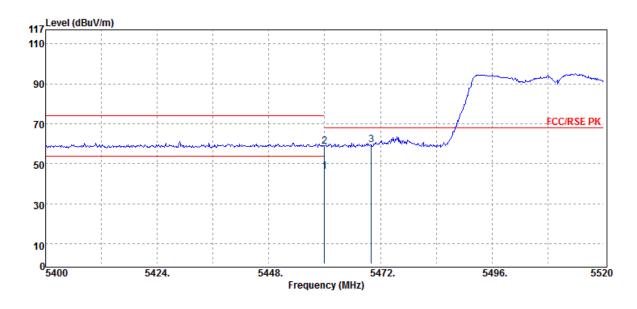


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	37.41	8.75	46.16	54.00	-7.84
5460.00	Peak	49.99	8.75	58.74	74.00	-15.26
5470.00	Peak	50.75	8.74	59.49	68.20	-8.71

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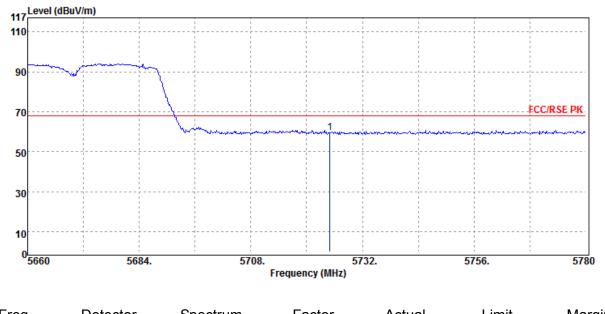


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :VERTICAL



Freq.	Mode	Spectrum Reading Level	Factor	Actual FS	©3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	50.25	9.44	59.69	68.20	-8.51	

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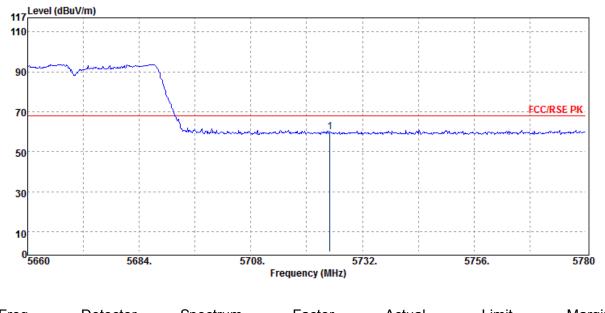


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
5725.00	Peak	50.35	9.44	59.79	68.20	-8.41	

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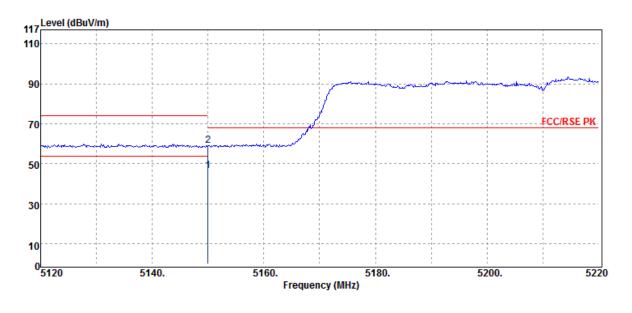
802.11ac VHT80 mode

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

:802.11ac80B1 :5210 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	38.29	8.32	46.61	54.00	-7.39
5150.00	Peak	50.62	8.32	58.94	74.00	-15.06

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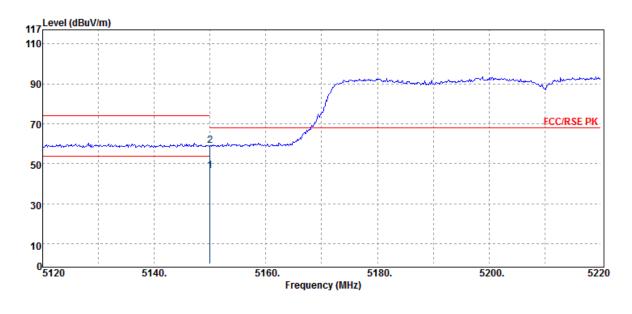


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B1 :5210 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Average	38.20	8.32	46.52	54.00	-7.48
5150.00	Peak	50.93	8.32	59.25	74.00	-14.75

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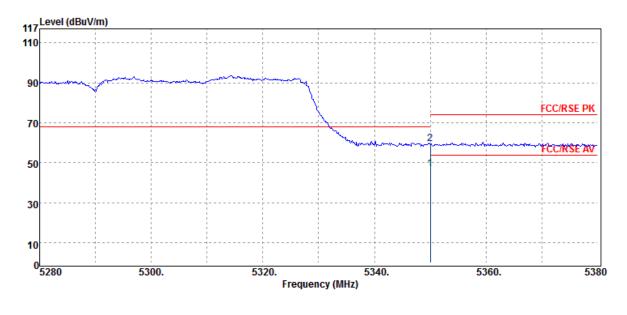


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer :Wei Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	38.18	8.63	46.81	54.00	-7.19
5350.00	Peak	51.07	8.63	59.70	74.00	-14.30

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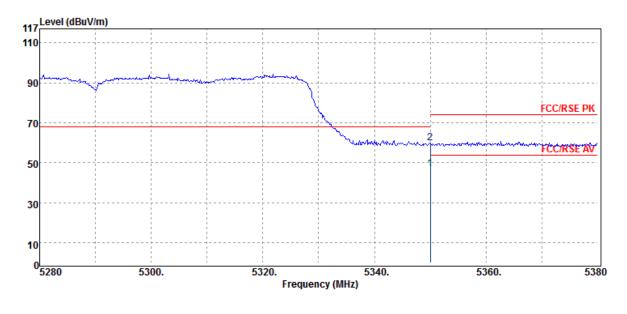


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Bandedge CH HIGH :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.00	Average	38.21	8.63	46.84	54.00	-7.16
5350.00	Peak	51.14	8.63	59.77	74.00	-14.23

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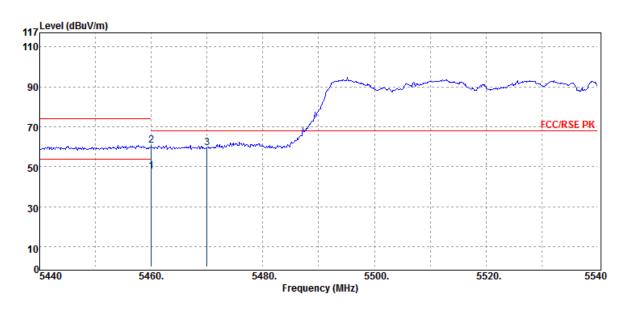
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz :Bandedge CH LOW :E2 Plane

Test Date :2018-10-19 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5460.00	Average	39.19	8.75	47.94	54.00	-6.06
5460.00	Peak	51.82	8.75	60.57	74.00	-13.43
5470.00	Peak	50.71	8.74	59.45	68.20	-8.75

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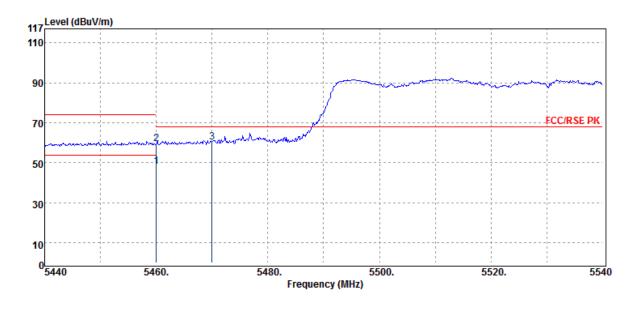


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz :Bandedge CH LOW :E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2018-10-19 :23 deg_C / 62 RH :Wei :HORIZONTAL



Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Average	39.23	8.75	47.98	54.00	-6.02
Peak	50.67	8.75	59.42	74.00	-14.58
Peak	51.43	8.74	60.17	68.20	-8.03
	Mode PK/QP/AV Average Peak	ModeReading LevelPK/QP/AVdBµVAverage39.23Peak50.67	ModeReading LevelPK/QP/AVdBµVdBAverage39.238.75Peak50.678.75	Mode Reading Level FS PK/QP/AV dBμV dB dBμV/m Average 39.23 8.75 47.98 Peak 50.67 8.75 59.42	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 39.23 8.75 47.98 54.00 Peak 50.67 8.75 59.42 74.00

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12. TRANSMISSION IN THE ABSENCE OF DATA

12.1 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.

12.2Result

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.

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13. FREQUENCY STABILITY

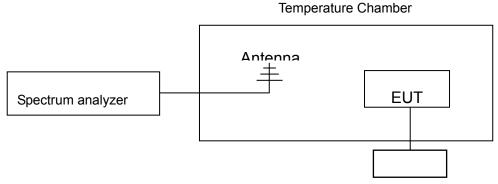
13.1 Standard Applicable

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

13.2Measurement 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.

13.3Test SET-UP



Variable AC Power Supply

13.4 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY57120290	02/14/2018	02/13/2019
DC Power Supply	Anritsu	E3640A	MY52410006	11/28/2017	11/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

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13.5Measurement Result

Startup:

Operation Mode	802.11 a	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10 °C	4.43V	36	5180	5,180.00132	-0.00000025
		44	5220	5,219.99492	0.00000097
		48	5240	5,239.97911	0.00000399
		52	5260	5,260.01565	-0.00000298
		60	5300	5,299.97813	0.00000413
		64	5320	5,319.99590	0.00000077
		100	5500	5,499.99636	0.00000066
		116	5580	5,579.97307	0.00000483
		140	5700	5,699.97524	0.00000434
	3.27V	36	5180	5,179.97310	0.00000519
		44	5220	5,219.98560	0.00000276
		48	5240	5,239.96990	0.00000574
		52	5260	5,259.99617	0.0000073
		60	5300	5,299.98453	0.00000292
		64	5320	5,320.00293	-0.00000055
		100	5500	5,500.00184	-0.0000033
		116	5580	5,580.00646	-0.00000116
		140	5700	5,700.00588	-0.00000103

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		-	-		
		36	5180	5,179.97933	0.00000399
		44	5220	5,219.99941	0.00000011
		48	5240	5,239.98324	0.00000320
		52	5260	5,260.01932	-0.00000367
25 ℃	3.85V	60	5300	5,299.98320	0.00000317
		64	5320	5,319.98566	0.00000270
		100	5500	5,499.98961	0.00000189
		116	5580	5,579.98059	0.00000348
		140	5700	5,700.00191	-0.0000033
		36	5180	5,179.99959	0.0000008
		44	5220	5,220.00391	-0.00000075
		48	5240	5,239.98909	0.0000208
		52	5260	5,259.99608	0.00000075
	4.43V	60	5300	5,299.99937	0.00000012
		64	5320	5,319.98804	0.00000225
		100	5500	5,499.97920	0.00000378
		116	5580	5,580.00159	-0.00000029
		140	5700	5,699.97714	0.00000401
55 °C		36	5180	5,180.00058	-0.00000011
		44	5220	5,219.98257	0.00000334
		48	5240	5,240.00163	-0.00000031
		52	5260	5,259.98504	0.00000284
	3.27V	60	5300	5,300.00775	-0.00000146
		64	5320	5,320.01268	-0.00000238
		100	5500	5,500.00049	-0.00000009
		116	5580	5,579.98970	0.00000185
		140	5700	5,699.99738	0.00000046



Operation Mode	802.11 n_HT40	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,189.99895	0.00000020
		46	5230	5,229.99749	0.00000048
		54	5270	5,269.98457	0.00000293
	4.43V	62	5310	5,309.99622	0.00000071
		102	5510	5,509.99309	0.00000125
		110	5550	5,550.00529	-0.00000095
		134	5670	5,669.99020	0.00000173
-10 °C		38	5190	5,189.99832	0.0000032
		46	5230	5,229.99703	0.0000057
		54	5270	5,269.99089	0.00000173
	3.27V	62	5310	5,309.99983	0.0000003
		102	5510	5,509.98946	0.00000191
		110	5550	5,549.99087	0.00000165
		134	5670	5,669.98967	0.00000182



		38	5190	5,189.98313	0.00000325
		46	5230	5,230.00407	-0.00000078
		54	5270	5,269.99473	0.00000100
25 °C	3.85V	62	5310	5,309.99912	0.00000017
		102	5510	5,510.00174	-0.0000032
		110	5550	5,549.99363	0.00000115
		134	5670	5,669.99096	0.00000159
		38	5190	5,189.99289	0.00000137
	4.43V	46	5230	5,230.01298	-0.00000248
		54	5270	5,269.98531	0.00000279
		62	5310	5,309.99315	0.00000129
		102	5510	5,509.99411	0.00000107
		110	5550	5,550.00459	-0.0000083
		134	5670	5,670.00231	-0.00000041
55 ° C		38	5190	5,189.99724	0.00000053
		46	5230	5,230.00958	-0.00000183
		54	5270	5,269.98195	0.00000342
	3.27V	62	5310	5,310.00663	-0.00000125
		102	5510	5,509.99288	0.00000129
		110	5550	5,549.99062	0.00000169
		134	5670	5,669.99896	0.00000018



Operation Mode	802.11 ac_VHT80	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,209.99553	0.00000086
	4.43V	58	5290	5,290.00238	-0.00000045
	4.43 V	106	5530	5,530.00832	-0.00000150
-10 °C		122	5610	5,609.99448	0.0000098
-10 C		42	5210	5,209.99602	0.00000076
	3.27V	58	5290	5,290.00580	-0.00000110
	5.27 V	106	5530	5,530.00635	-0.00000115
		122	5610	5,610.00574	-0.00000102
	3.85V	42	5210	5,210.00493	-0.00000095
25 ° C		58	5290	5,290.00700	-0.00000132
20 C		106	5530	5,530.00408	-0.00000074
		122	5610	5,610.00716	-0.00000128
		42	5210	5,209.99531	0.00000090
	4.43V	58	5290	5,289.99158	0.00000159
	4.43V	106	5530	5,529.99207	0.00000143
		122	5610	5,610.00611	-0.00000109
55 ° ℃		42	5210	5,209.99757	0.00000047
	3.27V	58	5290	5,289.99487	0.0000097
	3.27V	106	5530	5,529.99035	0.00000175
		122	5610	5,610.00515	-0.00000092



2 Minutes:

Operation Mode	802.11 a	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,179.99712	0.00000056
		44	5220	5,219.99729	0.00000052
		48	5240	5,239.97472	0.00000482
		52	5260	5,260.01737	-0.00000330
	4.43V	60	5300	5,299.98002	0.00000377
		64	5320	5,319.99519	0.00000090
		100	5500	5,499.99485	0.00000094
		116	5580	5,579.97301	0.00000484
		140	5700	5,699.98552	0.00000254
-10 °C		36	5180	5,179.98154	0.00000356
		44	5220	5,219.98188	0.00000347
		48	5240	5,239.97074	0.00000558
		52	5260	5,260.00547	-0.00000104
	3.27V	60	5300	5,299.98031	0.00000371
		64	5320	5,319.99439	0.00000105
		100	5500	5,499.98944	0.00000192
		116	5580	5,580.01244	-0.00000223
		140	5700	5,700.01433	-0.00000251
			5100	E 470 00404	0.00000170
		36	5180	5,179.99104	0.00000173
		44	5220	5,220.01024	-0.00000196
		48	5240	5,239.96988	0.00000575
		52	5260	5,260.01506	-0.00000286
25 °C	3.85V	60	5300	5,299.99078	0.00000174
		64	5320	5,319.96926	0.00000578
		100	5500	5,499.97518	0.00000451
		116	5580	5,579.99239	0.00000136
		140	5700	5,699.98704	0.00000227

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		36	5180	5,179.99771	0.00000044
		44	5220	5,220.00278	-0.0000053
		48	5240	5,239.98550	0.00000277
		52	5260	5,260.00976	-0.00000186
	4.43V	60	5300	5,300.00684	-0.00000129
		64	5320	5,319.99791	0.0000039
		100	5500	5,499.97909	0.00000380
		116	5580	5,579.98826	0.00000210
		140	5700	5,699.98357	0.00000288
55 ° C		36	5180	5,179.99534	0.00000090
		44	5220	5,219.97273	0.00000522
		48	5240	5,240.00955	-0.00000182
		52	5260	5,259.99908	0.00000018
	3.27V	60	5300	5,300.00224	-0.00000042
		64	5320	5,320.01458	-0.00000274
		100	5500	5,500.01529	-0.00000278
		116	5580	5,579.98721	0.00000229
		140	5700	5,700.00030	-0.00000005



Operation Mode	802.11 n_HT40	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %	•	

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,189.98618	0.00000266
		46	5230	5,230.01146	-0.00000219
		54	5270	5,269.99299	0.00000133
	4.43V	62	5310	5,309.99498	0.0000095
		102	5510	5,510.00369	-0.00000067
		110	5550	5,549.99595	0.0000073
		134	5670	5,670.00627	-0.00000111
-10 °C	3.27V	38	5190	5,190.00126	-0.00000024
		46	5230	5,229.99324	0.00000129
		54	5270	5,270.00554	-0.00000105
		62	5310	5,309.99673	0.0000062
		102	5510	5,509.97415	0.00000469
		110	5550	5,550.00373	-0.00000067
		134	5670	5,670.01061	-0.00000187



r					
		38	5190	5,189.99883	0.0000023
		46	5230	5,230.00080	-0.00000015
		54	5270	5,270.01394	-0.00000264
25 °C	3.85V	62	5310	5,309.99531	0.0000088
		102	5510	5,509.99468	0.00000097
		110	5550	5,550.01271	-0.00000229
		134	5670	5,669.99465	0.0000094
		38	5190	5,190.01688	-0.00000325
	4.43V	46	5230	5,229.99314	0.00000131
		54	5270	5,270.00054	-0.00000010
		62	5310	5,309.98763	0.00000233
		102	5510	5,510.01896	-0.00000344
		110	5550	5,549.98994	0.00000181
		134	5670	5,670.00280	-0.00000049
55 °C		38	5190	5,189.99276	0.00000140
		46	5230	5,230.01295	-0.00000248
		54	5270	5,269.99815	0.0000035
	3.27V	62	5310	5,309.99302	0.00000132
		102	5510	5,510.00240	-0.00000044
		110	5550	5,550.00337	-0.00000061
		134	5670	5,670.01528	-0.00000269



Operation Mode	802.11 ac_VHT80	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.00590	-0.00000113
	4.43V	58	5290	5,289.99835	0.0000031
	4.43V	106	5530	5,530.00116	-0.00000021
-10 ℃		122	5610	5,609.99061	0.00000167
-10 C		42	5210	5,210.00174	-0.0000033
	3.27V	58	5290	5,289.99977	0.00000004
	3.27V	106	5530	5,530.00842	-0.00000152
		122	5610	5,610.00994	-0.00000177
		42	5210	5,209.99053	0.00000182
25 ℃	3.85V	58	5290	5,290.00418	-0.00000079
20 C	3.03V	106	5530	5,530.00508	-0.00000092
		122	5610	5,609.99155	0.00000151
		42	5210	5,210.00063	-0.00000012
	4.43V	58	5290	5,290.00226	-0.00000043
	55 °C 3.27V	106	5530	5,530.00082	-0.00000015
55 %		122	5610	5,609.99575	0.00000076
55 C		42	5210	5,210.00215	-0.00000041
		58	5290	5,290.00196	-0.0000037
	J.Z/V	106	5530	5,530.00056	-0.00000010
		122	5610	5,610.00513	-0.00000091



5 Minutes:

Operation Mode	802.11 a	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,179.98352	0.00000318
		44	5220	5,219.99922	0.00000015
		48	5240	5,239.98025	0.00000377
		52	5260	5,260.02763	-0.00000525
	4.43V	60	5300	5,299.97279	0.00000513
		64	5320	5,320.00803	-0.00000151
		100	5500	5,499.98998	0.00000182
		116	5580	5,579.98048	0.00000350
		140	5700	5,699.96594	0.00000598
-10 °C		36	5180	5,179.97741	0.00000436
		44	5220	5,219.97114	0.00000553
		48	5240	5,239.97733	0.00000433
	3.27V	52	5260	5,259.99707	0.00000056
		60	5300	5,299.97892	0.00000398
		64	5320	5,319.98677	0.00000249
		100	5500	5,499.99430	0.00000104
		116	5580	5,580.00624	-0.00000112
		140	5700	5,700.01111	-0.00000195

		36	5180	5,179.98804	0.0000231
		44	5220	5,219.99356	0.00000123
		48	5240	5,239.98461	0.00000294
	3.85V	52	5260	5,260.01103	-0.00000210
25 °C		60	5300	5,299.99540	0.0000087
		64	5320	5,319.97730	0.00000427
		100	5500	5,499.99290	0.00000129
		116	5580	5,579.98841	0.00000208
		140	5700	5,700.00373	-0.00000065

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		36	5180	5,180.01148	-0.00000222
		44	5220	5,219.99237	0.00000146
		48	5240	5,239.98184	0.00000347
		52	5260	5,259.99671	0.0000062
	4.43V	60	5300	5,299.99930	0.00000013
		64	5320	5,319.98133	0.00000351
		100	5500	5,499.97620	0.00000433
		116	5580	5,579.99504	0.0000089
		140	5700	5,699.98031	0.00000345
55 °C		36	5180	5,179.99870	0.0000025
		44	5220	5,219.98719	0.00000245
		48	5240	5,240.01189	-0.00000227
		52	5260	5,259.98830	0.00000222
3.27V	3.27V	60	5300	5,300.00541	-0.00000102
		64	5320	5,320.00338	-0.00000063
		100	5500	5,499.99931	0.00000012
		116	5580	5,579.98764	0.00000222
		140	5700	5,700.00787	-0.00000138



Operation Mode	802.11 n_HT40	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,189.99870	0.0000025
		46	5230	5,229.99594	0.0000078
		54	5270	5,269.99187	0.00000154
	4.43V	62	5310	5,309.99183	0.00000154
		102	5510	5,510.00479	-0.0000087
		110	5550	5,550.00474	-0.0000085
		134	5670	5,670.00216	-0.0000038
-10 °C		38	5190	5,190.01061	-0.00000204
		46	5230	5,230.00212	-0.00000041
	3.27V	54	5270	5,269.99670	0.0000063
		62	5310	5,309.99323	0.00000127
		102	5510	5,509.96059	0.00000715
		110	5550	5,550.00428	-0.00000077
		134	5670	5,670.00730	-0.00000129



		38	5190	5,190.01007	-0.00000194
		46	5230	5,229.98553	0.00000277
		54	5270	5,270.01366	-0.00000259
25 °C	3.85V	62	5310	5,310.00228	-0.00000043
		102	5510	5,509.99269	0.00000133
		110	5550	5,550.01352	-0.00000244
		134	5670	5,670.00328	-0.00000058
		38	5190	5,190.01877	-0.00000362
		46	5230	5,229.99420	0.00000111
		54	5270	5,270.01456	-0.00000276
	4.43V	62	5310	5,309.98605	0.00000263
		102	5510	5,510.00763	-0.00000138
		110	5550	5,549.98218	0.00000321
		134	5670	5,670.01113	-0.00000196
55 °C		38	5190	5,190.00714	-0.00000138
		46	5230	5,230.01105	-0.00000211
3.2		54	5270	5,269.99655	0.00000066
	3.27V	62	5310	5,310.00020	-0.00000004
		102	5510	5,509.99383	0.00000112
		110	5550	5,549.99384	0.00000111
		134	5670	5,670.01156	-0.00000204



Operation Mode	802.11 ac_VHT80	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.00783	-0.00000150
	4.43V	58	5290	5,289.99052	0.00000179
	4.43 V	106	5530	5,529.99754	0.00000045
-10 ℃		122	5610	5,609.99664	0.00000060
-10 C		42	5210	5,210.00537	-0.00000103
	3.27V	58	5290	5,290.00832	-0.00000157
	J.27V	106	5530	5,529.99228	0.00000140
		122	5610	5,610.00995	-0.00000177
		42	5210	5,209.99582	0.00000080
25 °C	3.85V	58	5290	5,290.00912	-0.00000172
23 C	5.00 V	106	5530	5,529.99789	0.0000038
		122	5610	5,609.99169	0.00000148
		42	5210	5,210.00333	-0.00000064
	4.43V	58	5290	5,289.99282	0.00000136
		106	5530	5,529.99336	0.00000120
55 ° C		122	5610	5,610.00750	-0.00000134
55 C		42	5210	5,210.00660	-0.00000127
רר ר <i>י</i>	3.27V	58	5290	5,290.00994	-0.00000188
	3.Z/V	106	5530	5,529.99661	0.0000061
		122	5610	5,609.99480	0.00000093



10 Minutes:

Operation Mode	802.11 a	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,179.98614	0.00000268
		44	5220	5,219.99304	0.00000133
		48	5240	5,239.97831	0.00000414
		52	5260	5,260.01974	-0.00000375
	4.43V	60	5300	5,299.98304	0.00000320
		64	5320	5,320.00011	-0.00000002
		100	5500	5,499.99395	0.00000110
		116	5580	5,579.97649	0.00000421
		140	5700	5,699.96898	0.00000544
-10 °C	3.27V	36	5180	5,179.97526	0.00000478
		44	5220	5,219.97143	0.00000547
		48	5240	5,239.97631	0.00000452
		52	5260	5,259.99699	0.0000057
		60	5300	5,299.97633	0.00000447
		64	5320	5,319.99575	0.00000080
		100	5500	5,499.99960	0.0000007
		116	5580	5,580.01158	-0.00000207
		140	5700	5,700.00567	-0.00000099

	3.85V	36	5180	5,179.97672	0.00000449
		44	5220	5,219.99300	0.00000134
		48	5240	5,239.97693	0.00000440
25 ℃ 3.85V		52	5260	5,260.01190	-0.00000226
		60	5300	5,299.99460	0.00000102
		64	5320	5,319.98578	0.00000267
		100	5500	5,499.98596	0.00000255
		116	5580	5,579.99060	0.00000168
		140	5700	5,700.00161	-0.0000028

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		36	5180	5,180.01684	-0.00000325
		44	5220	5,220.00498	-0.00000095
		48	5240	5,239.98850	0.00000220
		52	5260	5,260.00847	-0.00000161
	4.43V	60	5300	5,300.00971	-0.00000183
		64	5320	5,319.98831	0.00000220
		100	5500	5,499.97310	0.00000489
		116	5580	5,580.00265	-0.00000047
		140	5700	5,699.97890	0.00000370
55 °C	3.27V	36	5180	5,179.98288	0.00000331
		44	5220	5,219.98671	0.00000255
		48	5240	5,240.01663	-0.00000317
		52	5260	5,259.99128	0.00000166
		60	5300	5,299.99756	0.00000046
		64	5320	5,320.00103	-0.00000019
		100	5500	5,500.01509	-0.00000274
		116	5580	5,579.98355	0.00000295
		140	5700	5,699.99667	0.0000058



Operation Mode	802.11 n_HT40	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,189.98491	0.00000291
		46	5230	5,230.01139	-0.00000218
		54	5270	5,269.99668	0.0000063
	4.43V	62	5310	5,310.00997	-0.00000188
		102	5510	5,510.00623	-0.00000113
		110	5550	5,550.00052	-0.00000009
		134	5670	5,670.00516	-0.00000091
-10 °C	3.27V	38	5190	5,190.01415	-0.00000273
		46	5230	5,229.99594	0.0000078
		54	5270	5,269.99868	0.0000025
		62	5310	5,310.00768	-0.00000145
		102	5510	5,509.97586	0.00000438
		110	5550	5,549.99600	0.0000072
		134	5670	5,670.01048	-0.00000185



	3.85V	38	5190	5,189.99274	0.00000140
		46	5230	5,229.99845	0.0000030
		54	5270	5,270.00617	-0.00000117
25 °C		62	5310	5,309.99733	0.00000050
		102	5510	5,509.99361	0.00000116
		110	5550	5,549.99529	0.0000085
		134	5670	5,670.00283	-0.00000050
		38	5190	5,190.01623	-0.00000313
	4.43V	46	5230	5,229.99831	0.0000032
		54	5270	5,270.00383	-0.00000073
		62	5310	5,309.98898	0.00000207
		102	5510	5,510.00010	-0.00000002
		110	5550	5,549.97403	0.00000468
		134	5670	5,670.00314	-0.00000055
55 ° C	3.27V	38	5190	5,190.01226	-0.00000236
		46	5230	5,230.00008	-0.00000001
		54	5270	5,270.00145	-0.00000027
		62	5310	5,310.00803	-0.00000151
		102	5510	5,509.98799	0.00000218
		110	5550	5,549.99240	0.00000137
		134	5670	5,670.00529	-0.0000093



Operation Mode	802.11 ac_VHT80	Test Date	2018.10.09
Temperature	:23 °C	Test By	Tom
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,210.00799	-0.00000153
	4.43V	58	5290	5,290.00775	-0.00000146
	4.43 V	106	5530	5,530.00775	-0.00000140
-10 °C		122	5610	5,610.00454	-0.00000081
		42	5210	5,210.00299	-0.00000057
	3.27V	58	5290	5,290.00458	-0.0000087
	5.27 V	106	5530	5,530.00937	-0.00000169
		122	5610	5,610.00304	-0.00000054
	3.85V	42	5210	5,209.99962	0.0000007
25 ° C		58	5290	5,290.00404	-0.00000076
23 C		106	5530	5,530.00363	-0.00000066
		122	5610	5,610.00759	-0.00000135
	4.43V	42	5210	5,209.99907	0.00000018
		58	5290	5,289.99709	0.00000055
		106	5530	5,529.99343	0.00000119
55 °C		122	5610	5,610.00739	-0.00000132
	3.27V	42	5210	5,209.99128	0.00000167
		58	5290	5,290.00730	-0.00000138
		106	5530	5,529.99748	0.00000045
		122	5610	5,609.99065	0.00000167



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.

14.2Antenna Connected Construction

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

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.

When stated the results a winning that the only to the sample(s) ester and store an interview and store Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law