

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:	T190304W03-RP5
FCC ID:	APYHRO00272
FCC Rule Part:	§15.407, Cat: NII
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Issued by:	Compliance Certification Services Inc.Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Tai- wan. (R.O.C.) service@ccsrf.com

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Wei

Tested By:

Wei Chang / Engineer

Approved By:

Kevin Tsai / Deputy Manager



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SGS Compliance Certification Services Inc.

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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
T190304W03-RP5	Rev.00	Initial creation of document	All	Mar. 26, 2019	Violetta Tang
T190304W03-RP5	Rev.01	Updated 966A Chamber Equipment list	Page 48	Mar. 29, 2019	Violetta Tang

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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:

	F			Madulation	
Wi-Fi	Frequency	Channels	Avg. Power	Modulation	
	Range		(dBm)	Technology	
	5180~5240	4	16.84		
11a_20	5260~5320	4	16.88	OFDM	
	5500~5700	11	16.63		
11n HT/	5180~5240	4	HT: 16.98 (Worst Case)		
ac_VHT	5260~5320	4	HT: 16.93 (Worst Case)	OFDM	
20M	5500~5700	11	HT: 16.91 (Worst Case)		
11n HT/	5190~5230	2	HT: 16.97 (Worst Case)		
ac_VHT	5270~5310	2	HT: 16.85 (Worst Case)	OFDM	
40M	5510~5670	5 HT: 16.80 (Worst Case)			
44	5210	1	14.37		
11ac 5290 VHT80M		1	14.42	OFDM	
VIIIOOWI	5530~5610	2 16.35			
Modulation Type64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only		М			
			6/9/12/18/24/36/48/54 Mbps		
		802.11 n_20MHz: 6.5 – 144.4Mbps			
Transition Rate:		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:		Inverted-F Antenna,			
		5150~5250MHz Gain: -0.3dBi (ANT0) / -2.8dBi (ANT1) 5250~5350MHz Gain: -0.3dBi (ANT0) / -2.8dBi (ANT1)			
		5470~5725MHz Gain: -0.1dBi (ANT0) / -2.2dBi (ANT1)			
5470*5723				2.2381 (/ ((11))	

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407 FCC KDB 789033 D02 General UNII Test Procedures New Rules V02r01 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10:2013 Note:

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

1.3 Test Facility

Compliance Certification Services Inc. Wugu Lab. No.11, Wugong 6th Rd.,

Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) (TAF code 1309)

FCC Designation number: TW1309

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 **Conducted Test (RF)**

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

Radiated Emissions 2.3.3

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.

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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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Fig. 2-2 Conducted (Antenna Port) Emission

EUT

Windows 7

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



Fig. 2-2 AC Power Line Conducted Emission



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	DC Power Supply	Anritsu	E3640A	MY52410006	N/A	Unshielded
3.	Notebook	Lenovo	T440P	PC-089AH5	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 & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.205 §15.209 §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. The gevin UE is pre-scanned among below modes.

Modulation	Transmiss	ion Chain	Multiple Transmission Spatial
□ 802.11 a	🛛 Ch0	🛛 Ch1	⊠ 2TX
🗆 802.11 n	🛛 Ch0	🛛 Ch1	🛛 MIMO
□ 802.11 ac	🛛 Ch0	🛛 Ch1	⊠ MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

AC POWER LINE CONDUCTED EMISSION TEST:

Test Condition	AC Power line conducted emission for line and neutral			
Worst Case	Operation in normal mode			

RADIATED EMISSION TEST:

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								
	RADIATED EMISSION TEST (ABOVE 1 GHz)													
MODE	FREQUENCY	AVAILABLE	TESTED	MODULATION	DATA RATE	ANTENNA								
NIODE	BAND (MHz)	CHANNEL	CHANNEL	MODULATION	(Mbps)	PORT								
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2TX								
802.11n_HT20	5160~5240	30 10 40		30 10 40	50 10 40	50 10 40	50 10 40	30 10 40	30 10 40	30,44,48	30 10 40 30,44,48	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	52,60,64	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								

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802.11a	5500~5700 10	100 to 140 100,11	100 116 140	OFDM	6	Ch1
802.11n_HT20	5500~5700		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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST							
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	
802.11ac_VHT20				OFDIVI	MCS0		
802.11n_HT40	5190~5230	29 to 16	38,46	OFDM	MCS8	MIMO	
802.11ac_VHT40	5190~5250	38 to 46	30,40	OFDIVI	MCS0		
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MIMO	
802.11a				OFDM	6	2TX	
802.11n_HT20	5260~5320	52 to 64	52,60,64	OFDM	MCS8		
802.11ac_VHT20				OFDIVI	MCS0	MIMO	
802.11n_HT40	5270~5310	54 to 62	54.60		MCS8		
802.11ac_VHT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MIMO	
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MIMO	
802.11a				OFDM	6	2TX	
802.11n_HT20	5500~5700 100 to 14	100 to 140	100,116,140	OFDM	MCS8	МІМО	
802.11ac_VHT20				OFDIVI	MCS0		
802.11n_HT40				102 110 124		MCS8	
802.11ac_VHT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	MIMO	
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	MIMO	

The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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MEASUREMENT UNCERTAINTY 5.

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575 dB
26dB & 6dB Emission Bandwidth	+/- 147.256 Hz
The Maximum Output Power	+/- 2.128 dB
Peak Power Spectral Density	+/- 2.878 dB
Frequency Stability	+/- 147.256 Hz
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12 dB
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68 dB
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18 dB
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47 dB
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81 dB
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87 dB

Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.
- 3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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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

Conducted Emission Test Site							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
CABLE	EMCI	CFD300-NL	CERF	06/29/2018	06/28/2019		
EMI Test Receiver	R&S	ESCI	100064	07/24/2018	07/23/2019		
LISN	SCHWARZBECK	NSLK 8127	8127-541	01/31/2019	01/30/2020		
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2019	02/12/2020		
Software		EZ-EMC(CCS-3A1-CE)					

6.3 EUT Setup

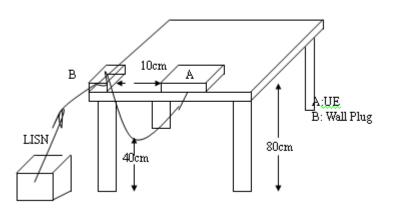
- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- The LISN was connected with 120Vac/60Hz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

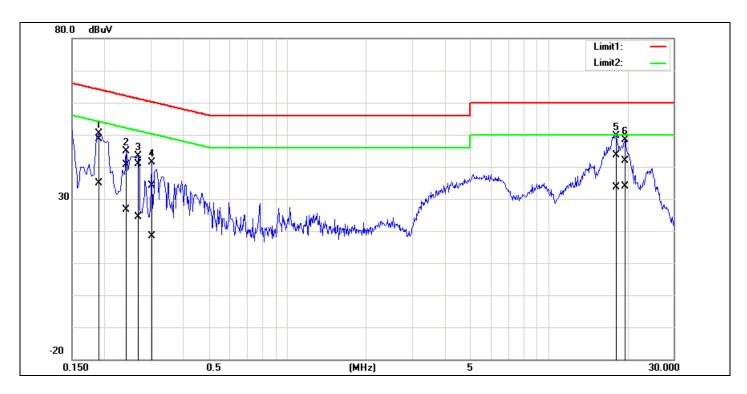
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	Operation	Date:	2019/3/11
Line:	L1	Temp.(°C)/Hum.(%):	24(°C)/52%
Test Voltage:	AC 120V/60Hz	Test By:	Peter



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1900	48.48	34.61	0.15	48.63	34.76	64.03	54.04	-15.40	-19.28	Pass
2	0.2420	40.36	26.44	0.15	40.51	26.59	62.02	52.03	-21.51	-25.44	Pass
3	0.2700	40.69	24.21	0.15	40.84	24.36	61.12	51.12	-20.28	-26.76	Pass
4	0.3020	34.00	18.13	0.16	34.16	18.29	60.19	50.19	-26.03	-31.90	Pass
5	18.1100	42.96	33.00	0.65	43.61	33.65	60.00	50.00	-16.39	-16.35	Pass
6	19.5340	41.17	33.17	0.69	41.86	33.86	60.00	50.00	-18.14	-16.14	Pass

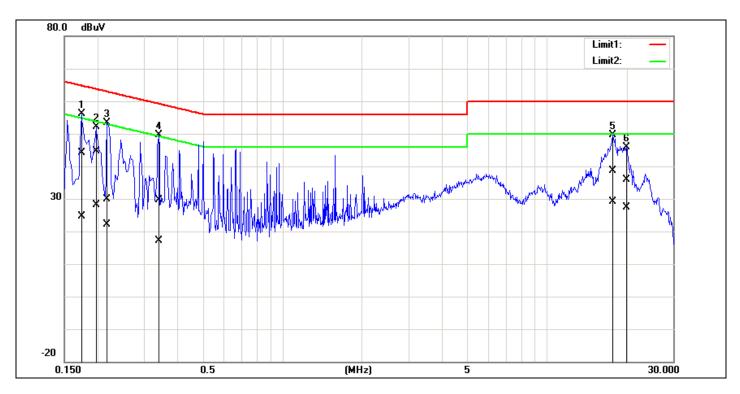
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Description:	Operation	Date:	2019/3/11
Line:	Ν	Temp.(°C)/Hum.(%):	24(°C)/52%
Test Voltage:	AC 120V/60Hz	Test By:	Peter



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1740	44.02	24.65	0.10	44.12	24.75	64.76	54.77	-20.64	-30.02	Pass
2*	0.1980	44.43	28.14	0.10	44.53	28.24	63.69	53.69	-19.16	-25.45	Pass
3	0.2180	29.75	22.13	0.10	29.85	22.23	62.89	52.89	-33.04	-30.66	Pass
4	0.3420	29.47	16.91	0.11	29.58	17.02	59.15	49.15	-29.57	-32.13	Pass
5	17.7099	38.12	28.61	0.51	38.63	29.12	60.00	50.00	-21.37	-20.88	Pass
6	19.9900	35.45	26.81	0.55	36.00	27.36	60.00	50.00	-24.00	-22.64	Pass

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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 Cycle (%)	Duty Factor (dB) =10*log(1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	98.17	0.08	0.49	1.00
802.11n_20	98.00	0.09	0.53	1.00
802.11n_40	96.02	0.18	1.08	2.00
802.11ac_80	100.00	0.00	0.00	0.01

Duty Cycle Factor: $10 * \log(1/0.9817) = 0.08$ Duty Cycle Factor: $10 * \log(1/0.98) = 0.09$ Duty Cycle Factor: $10 * \log(1/0.9602) = 0.18$ Duty Cycle Factor: $10 * \log(1/1) = 0$

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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



802.11n HT20



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802.11n HT 40

Agilent Spect	rum An	alyzer - S	Swept SA														
Center F	req :		00000					SE:INT		Avg T		.og-Pw		TRA	M Mar 20, 21	5.6	Frequency
			10.7 dB		: Fast in:Low	•	Trig: Free #Atten: 20						ΔN	lkr3 s	64.8	IN N	Auto Tune
10.0 dB/div 10.0 ionym 0.00		f 20.00	0 dBm	Ka Na	, na se	r and	للمؤسساني	w/76.4	(*bp):	4	344	}-terna	-		0.46 d	_	Center Fred 5.19000000 GHz
-10.0 -20.0 -30.0 -40.0																	Start Free 5.19000000 GH;
-50.0 -60.0 -70.0										_	_						Stop Freq 5.19000000 GHz
Center 5. Res BW 3	8 MH	z	GHz		#VE	w	8.0 MHz							0 ms (pan 0 1001 p		CF Step 8.000000 MH: Auto Mar
1 Δ2 2 F 8 Δ4 4 F 6 7 8 9 10 11		(Δ) (Δ)	*	607.	Bµs (/	-	4.56 dE 6.28 dE 0.46 d 6.28 dE	8m dB	PUNCTIO		FUNCT	ION WIDT		FUNCTION			Freq Offsel
MBG												STAT	TUS				

802.11 ac VHT 80

lent Spectrum Analyzer - Swept SA					
enter Freq 5.210000000	GHz	SENSE:INT	Avg Type: Log-Pwr	08:17:18 PM Mar 20, 2019 TRACE 1 2 3 4 5 6 TYPE WWWWWW	Frequency
Ref Offset 10.7 dB dB/div Ref 20.00 dBm	IFGain:Low	#Atten: 20 dB	2	orr⊫¤NNNNN 1000 AMKr3 491.5 µs -2.54 dB	Auto Tur
29 0.0 00 00	water sorrang XK3	erresonal Markadersee	rallinarigeneticidany 103	Ad stifting open south	Center Fre 5.210000000 Gi
.0					Start Fr 5.210000000 G
1.0 1.0					Stop Fr 5.210000000 G
enter 5.210000000 GHz es BW 8 MHz	#VBW	8.0 MHz	Sweep 1	Span 0 Hz 267 ms (1001 pts)	CF Sto 8.000000 M Auto M
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	456.0 μs (Δ) 487.7 μs 491.5 μs (Δ) 487.7 μs	-4.55 dB 4.37 dBm -2.54 dB 4.37 dBm			Freq Offs
7 3 9 0 1					

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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. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
 - a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=Peak.

Sweep=auto

- b. Mark the peak frequency and –6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:

Set the spectrum analyzer as RBW=1%, VBW = 3*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.

7. Turn on the 99% bandwidth function, max reading.

Repeat above procedures until all frequency of interest measured was complete.

8.3 Measurement Equipment Used

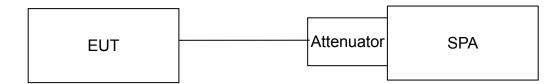
	Conducted Emission Test Site											
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.							
TYPE		NUMBER	NUMBER	CAL.								
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019							
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/09/2018	04/08/2019							
Thermostatic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	10/08/2018	10/07/2019							
DC Block	Mini-Circuit s	BLK-18-S+	31129(1)	02/26/2019	02/25/2020							
Attenuator	Mini-Circuit	BW-S10W2+	1	02/26/2019	02/25/2020							

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8.4 Test Set-up



8.5 Measurement Result

26dB Bandwidth

802.11a_Ch0			802.11a_Ch1		
Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.68	13.556	5180	22.53	13.528
5220	22.90	13.598	5220	22.44	13.510
5240	23.12	13.640	5240	23.17	13.649
5260	23.36	13.685	5260	22.19	13.462
5300	22.71	13.562	5300	22.75	13.570
5320	23.13	13.642	5320	22.66	13.552
5500	23.65	13.738	5500	23.01	13.619
5580	23.62	13.733	5580	23.40	13.692
5700	23.20	13.655	5700	23.74	13.755

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	23.54	13.717	5180	22.43	13.508
5220	22.85	13.588	5220	23.31	13.675
5240	23.67	13.742	5240	23.30	13.673
5260	23.30	13.673	5260	23.67	13.741
5300	23.68	13.743	5300	23.92	13.788
5320	23.75	13.757	5320	22.25	13.474
5500	23.47	13.706	5500	24.20	13.838
5580	24.05	13.812	5580	23.65	13.738
5700	23.62	13.733	5700	23.39	13.690

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802.11n	HT40	Ch0

802.11n _HT40_Ch1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.06	16.134	5190	41.03	16.130
5230	41.59	16.190	5230	41.32	16.162
5270	41.17	16.146	5270	40.51	16.076
5310	40.97	16.125	5310	40.83	16.110
5510	40.87	16.114	5510	40.97	16.124
5550	40.29	16.052	5550	41.44	16.174
5670	40.75	16.101	5670	41.35	16.165

802.11ac _VHT80_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.60	19.222
5290	82.53	19.166
5530	83.82	19.233
5610	82.91	19.186

802.11ac	VHT80	Ch1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.96	19.241
5290	82.97	19.189
5530	82.84	19.182
5610	83.53	19.218

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99% BW verification for DFS Function

802.11a_Ch0			802.11a_Ch1			
Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	
5240	5248.37	< 5250	5240	5248.37	< 5250	

802.11n_HT20_Ch0

802.11n_HT20_Ch1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.97	< 5250	5240	5248.97	< 5250

802.11n _HT40_Ch0

802.11n _HT40_Ch1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.20	< 5250	5230	5248.15	< 5250

802.11ac _VHT80_Ch0

802.11n _HT80_Ch1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5248.00	< 5250	5210	5248.00	< 5250

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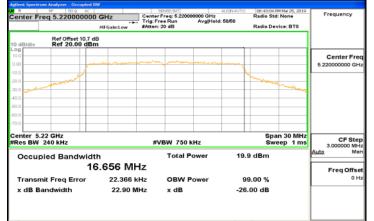
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FCC 802.11a 20MHz Main 5180MHz

		#IFGain:Low #Atter	FreeRun Avg Hold n:20 dB	: 50/50 Radio Device: B	ets
0 dB/div	Ref Offset 10.7 dB Ref 20.00 dBm				
					Center Fre 5.180000000 GH
0.0				- Contraction - and the second	
0.0					
0.0					
enter 5.1 Res BW 2		#	VBW 750 kHz	Span 30 Sweep	
Occupi	ied Bandwidth 16	646 MHz	Total Power	18.3 dBm	Auto Ma
Transmi	it Freq Error	24.373 kHz	OBW Power	99.00 %	0 H
x dB Ba	ndwidth	22.68 MHz	x dB	-26.00 dB	

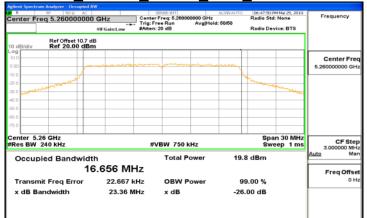
FCC_802.11a_20MHz_Main 5220MHz



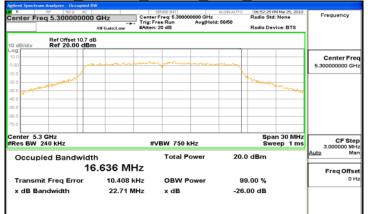
FCC 802.11a 20MHz Main 5240MHz

	m Analyzer - Occupied BV	v			
Center Fre	eq 5.240000000	Trig:	SENSE:INT er Freq: 5.240000000 GHz Free Run Avg Hold n: 20 dB	ALIONAUTO [07:28:16 PM Mar 2 Radio Std: None : 50/50 Radio Device: B	Frequency
0 dB/div	Ref Offset 10.7 dE Ref 20.00 dBm	l .	n: 20 alb	Mkr1 5.24837 -5.8660 c	GHZ
o.o 				••••••••••••••••••••••••••••••••••••••	Center Free 5.240000000 GH
0.0	~~~~~				
0.0					
0.0					
enter 5.2 Res BW		#	¢VB₩ 750 kHz	Span 30 Sweep	1 ms 3.000000 MH
Occup	ied Bandwidth 16	668 MHz	Total Power	20.1 dBm	Auto Mar Freg Offse
	iit Freq Error andwidth	25.858 kHz 23.12 MHz	OBW Power x dB	99.00 % -26.00 dB	он

FCC 802.11a 20MHz Main 5260MHz



FCC 802.11a 20MHz Main 5300MHz



FCC 802.11a 20MHz Main 5320MHz

R	RF 50.0 AC	Li- Contr	SENSE:INT Freq: 5.320000000 GHz	ALIGNAUTO	06:55:17 PM Mar 25, 201 Radio Std: None	Frequency
enter Fre	q 5.320000000 G	Trig:	FreeRun Avg Hole	d: 50/50		
	wi Wi	FGain:Low #Atte	n: 20 dB		Radio Device: BTS	-
0 dB/div	Ref Offset 10.7 dB Ref 20.00 dBm					
eg						
						5.320000000 GH
0.0				- And		5.32000000 GP
0.0	C			1	The second se	
0.0	and the second s				the second second	
0.0					~~~~	
0.0						
0.0						
70.0						
enter 5.3	0.011-				Span 30 MH	
Res BW 2		#	VBW 680 kHz		Sweep 1 m	
Occurri	ed Bandwidth		Total Power	17 9	9 dBm	Auto Mi
Occupi			rotari ower		o dom	
	16.0	640 MHz				Freq Offs
Transmi	t Freq Error	-5.124 kHz	OBW Power	9	9.00 %	01
x dB Bar	ndwidth	23.13 MHz	x dB	-26	.00 dB	
20				STATU	18	

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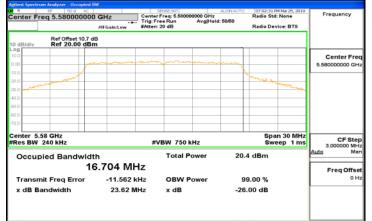
No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan / 新北市五股區五工六路 11 號 t:(886-2) 2299-9720 f:(886-2) 2298-1882 www.sgs.tw www.ccsrf.com



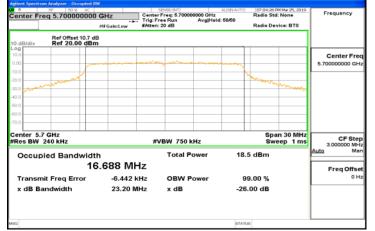
FCC 802.11a 20MHz Main 5500MHz

R Center Fre	NF 50.0 AC	GHz C	sense:int enter Freq: 5.50000 ig: Free Run		Rad	:59:40 PM Mar 25, 2019 dio Std: None	Frequency
			tten: 20 dB			lio Device: BTS	
0 dB/div	Ref Offset 10.7 dB Ref 20.00 dBm						
0.0							Center Fre
					~		5.50000000 GH
0.0					hu		
0.0	No. Line and and a second second					- marchen	
0.0							
0.0							
0.0							
0.0							
enter 5.5 Res BW 2			#VBW 750 k	Hz		Span 30 MHz Sweep 1 ms	
Occupi	ied Bandwidth	ı	Total P	ower	18.7 dB	m	Auto Ma
	16	.724 MHz					Freq Offse
Transmi	it Freq Error	-12.251 kHz	OBW P	ower	99.00	%	0 H
x dB Ba	ndwidth	23.65 MHz	x dB		-26.00	1B	

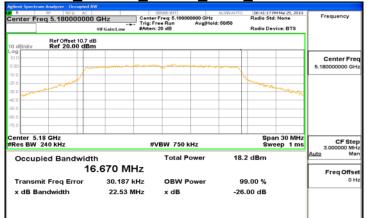
FCC 802.11a 20MHz Main 5580MHz



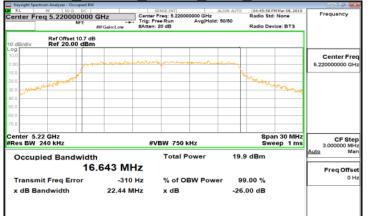
FCC 802.11a 20MHz Main 5700MHz



FCC 802.11a 20MHz Aux1 5180MHz



FCC 802.11a 20MHz Aux1 5220MHz



FCC 802.11a 20MHz Aux1 5240MHz

RL Center Fre	g 5.240000000	GHz Cente	sense:INT Freq: 5.240000000 GHz	ALIGNAUTO	07:29:09 PM Mar 25, 2 Radio Std: None	Frequency
Jointor 110		Trig:	FreeRun Avg Hol n: 20 dB	d: 50/50	Radio Device: BTS	
	Ref Offset 10.7 dB	ouncon .		Mkr	1 5.24837 G	
10 dB/div	Ref 20.00 dBm				-4.9751 dB	Im
10.0						Center Fre
1.00		mannem			1	5.240000000 GH
0.0	1			- X		
0.0					Manageneter	_
10.0 Januar 10.0					- and the second	~
10.0						
50.0						
0.0						
70.0						
enter 5.24	4 GHz				Span 30 M	Hz
Res BW 2	240 kHz	#	VBW 750 kHz		Sweep 1 r	
0	ed Bandwidth		Total Power	20 /	1 dBm	Auto M
Occupi			Total Fower	20.4	(dbiii	
	16	.679 MHz				Freq Offs
Transmi	it Freq Error	13.901 kHz	OBW Power	99	9.00 %	0
x dB Bar	ndwidth	23.17 MHz	x dB	-26.	00 dB	
190				STATU	8	

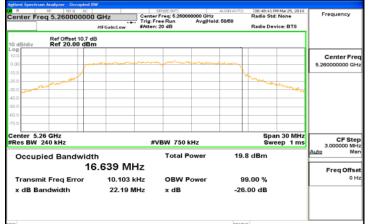
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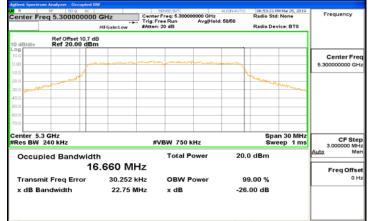
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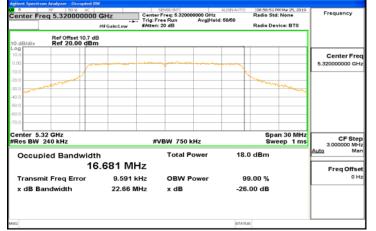
FCC 802.11a 20MHz Aux1 5260MHz



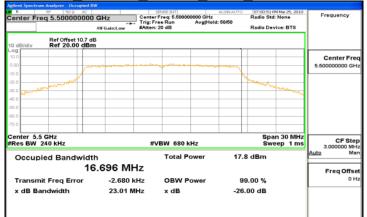
FCC_802.11a_20MHz_Aux1_5300MHz



FCC 802.11a 20MHz Aux1 5320MHz



FCC 802.11a 20MHz Aux1 5500MHz



FCC 802.11a 20MHz Aux1 5580MHz



FCC 802.11a 20MHz Aux1 5700MHz

R RF SOQ AC		SENSE:INT Freq: 5.70000000 GHz	ALIGNAUTO	07:05:17 PM Mar 25, 2019 Radio Std: None	Frequency
Center Freq 5.700000000	GHZ Cente	Free Run Avg Hold	i: 50/50	Radio Std: None	, requerey
	/IFGain:Low #Atter	1: 20 dB		Radio Device: BTS	
Ref Offset 10.7 dB					
.0g					Center Fre
100		m mono			5.70000000 GH
10.0					
0.0			· · · ·	man	
20.0				- Marian	
40.0					
0.0					
50.0					
70.0					
enter 5.7 GHz				Span 30 MHz	
Res BW 240 kHz	#	VBW 750 kHz		Sweep 1 ms	3.000000 MH
Occupied Bandwidth		Total Power	18.5	ö dBm	Auto Ma
	686 MHz				Freq Offs
Transmit Freq Error	7.739 kHz	OBW Power	99	9.00 %	01
x dB Bandwidth	23.74 MHz	x dB	-26.	00 dB	
90			STATU	5	

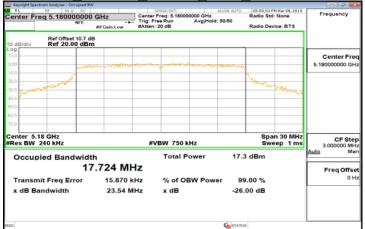
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FCC 802.11n 20MHz Main 5180MHz



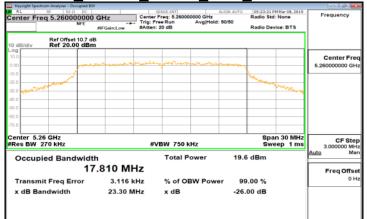
FCC 802.11n 20MHz Main 5220MHz



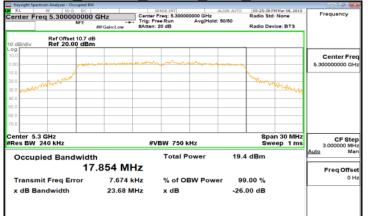
FCC 802.11n 20MHz Main 5240MHz

	am Analyzer - Occup						
enter Fr	req 5.240000		Trig: F	sense:int r Freq: 5.240000000 GHz Free Run Avg Hol a: 20 dB	ALION AUTO 4: 50/50	03:29:43 PM Mar 11, 20 Radio Std: None Radio Device: BTS	Frequency
0 dB/div	Ref Offset 1 Ref 20.00				Mkr	1 5.24897 GI -3.6264 dB	
				and a second second		1	Center Free 5.240000000 GH
0.0	Markallan aller					and and a second second	
10.0 50.0 50.0							
center 5.2				VBW 750 kHz		Span 30 M Sweep 1 r	CF Step
	bied Bandw	vidth 17.846		Total Power		dBm	Auto Mar
	nit Freq Erro andwidth	or 34.	651 kHz .67 MHz	OBW Power x dB		0.00 % 00 dB	Freq Offse 0 H
					STATUS		
193					STATUS	5	

FCC 802.11n 20MHz Main 5260MHz



FCC 802.11n 20MHz Main 5300MHz



FCC 802.11n 20MHz Main 5320MHz

Keysight Spectrum Analyzer - Occupied BV RL RF 50 Ω DC	,	SENSE:INT A.	IGN AUTO 05:27:5	5 PM Mar 08, 2019	
Center Freq 5.32000000		r Freq: 5.320000000 GHz	Radio S	td: None	Frequency
NFE	#IFGain:Low #Atter	FreeRun Avg Hold:5 n:20 dB		evice: BTS	
Ref Offset 10.7 d 10 dB/div Ref 20.00 dBn					
10.0					Center Fre
1.00	and an and a stranger	man man and man and and and and and and and and and a	m		5.320000000 G
10.0			×		
20.0 30.0 John Jak Maker Market			Maylan	and the second	
10.0 Mar 141 4				my	
50.0					
50.0					
70.0					
Center 5.32 GHz Res BW 240 kHz	#	VBW 750 kHz		oan 30 MHz weep 1 ms	CF Ste 3.000000 MH
Occupied Bandwidt	h	Total Power	17.7 dBm		Auto Ma
17	7.732 MHz				Freq Offs
Transmit Freq Error	-24.976 kHz	% of OBW Power	99.00 %		01
x dB Bandwidth	23.75 MHz	x dB	-26.00 dB		
90			STATUS		

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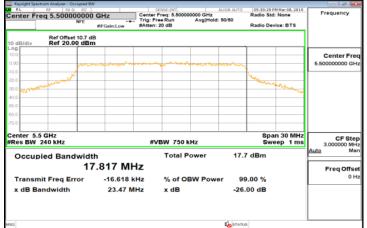
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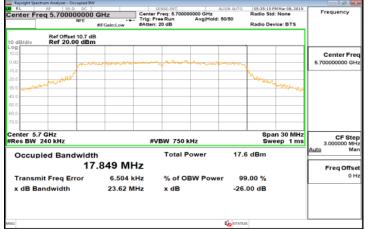
FCC 802.11n 20MHz Main 5500MHz



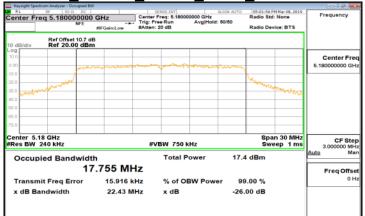
FCC 802.11n 20MHz Main 5580MHz



FCC 802.11n 20MHz Main 5700MHz



FCC 802.11n 20MHz AUX1 5180MHz



FCC 802.11n 20MHz AUX1 5220MHz



FCC 802.11n 20MHz AUX1 5240MHz

	Freq 5.240000000 GHz Center Freq: 5.240000000 GHz Radio Std: #IFGaind w #Atten: 20 dB Radio Devi									
) dB/div	Ref Offset 1 Ref 20.00	10.7 dB	GainiLow	protein p			Mkr	1 5.24	897 GHz 86 dBm	
.00			-	~~~~,			m	1		Center Fre 5.240000000 GH
0.0	and and and							when	menole	
0.0										
enter 5.24 Res BW 24				#VE	3W 750 k	Hz			an 30 MHz eep 1 ms	CF Ste 3.000000 MH
Occupie	ed Bandy		321 MI	Total Power 20.8 dBm					<u>Auto</u> Ma	
Transmit	Freq Erro		29.177		OBW P	ower	99	.00 %		Freq Offs 01
x dB Ban	dwidth		23.30 N	/Hz	x dB		-26.	00 dB		
							STATUS			

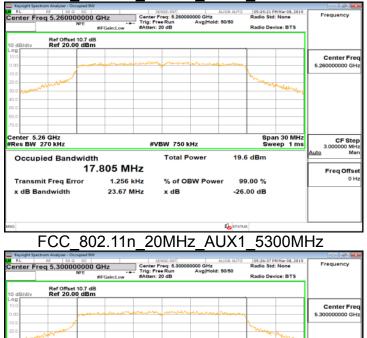
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FCC 802.11n 20MHz AUX1 5260MHz

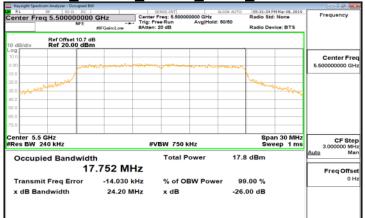


enter 5.3 GHz Res BW 270 kHz Span 30 MHz CF Ste 3.000000 MH #VBW 750 kHz Occupied Bandwidth Total Power 19.5 dBm 17.789 MHz Freq Offs Transmit Freg Error -9.015 kHz % of OBW Power 99.00 % x dB Bandwidth 23.92 MHz x dB -26.00 dB

FCC 802.11n 20MHz AUX1 5320MHz



FCC 802.11n 20MHz AUX1 5500MHz



FCC 802.11n 20MHz AUX1 5580MHz



FCC 802.11n 20MHz AUX1 5700MHz

RL	trum Analyzer - Occupied BW RF 50 Ω DC	La Casta	Freg: 5.70000000 GHz	ALIGN AUTO	05:36:19 PM M		Frequency
enter Fr	eq 5.70000000 G	Trig: I	ree Run Avg Hole	d: 50/50			
	8	FGain:Low #Atter	: 20 dB		Radio Device	BTS	
10 dB/div	Ref Offset 10.7 dB Ref 20.00 dBm						
10.0							Center Fre
0.00		mon war	and a second and a second s	mone			5.700000000 GH
10.0							
20.0	- ALANNAN				Manna		
10.0 production	water water				Mark Mark	m	
40.0							
50.0							
60.0							
70.0							
Center 5.7 Res BW		#	VBW 750 kHz		Span 3 Sweep	80 MHz 9 1 ms	CF Ste 3.000000 Mi
Occup	ied Bandwidth		Total Power	17.6	6 dBm		Auto Ma
	17.8	326 MHz					Freq Offs
Transm	nit Freq Error	2.272 kHz	% of OBW Pow	ver 99	9.00 %		01
x dB Ba	andwidth	23.39 MHz	x dB	-26.	00 dB		
80				STATU:			

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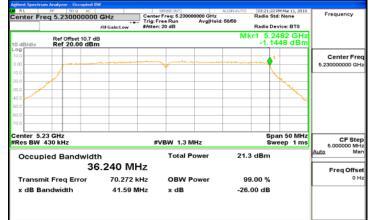
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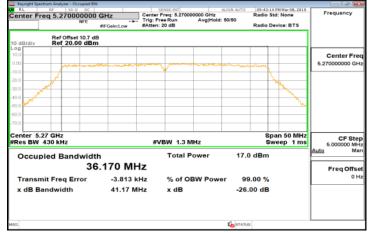
FCC 802.11n 40MHz Main 5190MHz



FCC 802.11n 40MHz Main 5230MHz

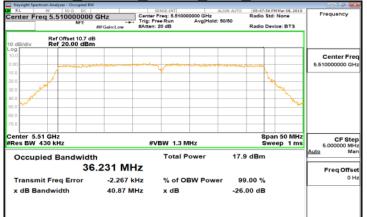


FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5310MHz 05:45:35 PM Mar 08, Radio Std: None RL RF SO ID DC Center Freq 5.310000000 GHz DEF DEF DEF Center Freq: 5.31 Trig: Free Run Radio Device: BTS Ref Offset 10.7 dB Ref 20.00 dBm Center Fre 5.310000000 GH r 5.31 GH Span 50 MHz CF Step #VBW 1.3 MHz M 17.8 dBn Occupied Bandwidth Total Powe 36.184 MHz Freq Offse Transmit Freq Error -25.490 kHz 0 H 99.00 % % of OBW Power dB Bandwidth 40.97 MHz x dB -26.00 dB

FCC 802.11n 40MHz Main 5510MHz



FCC 802.11n 40MHz Main 5550MHz

RL με 50 Ω DC	CHa	SENSE:2NT ALL r Freq: 5.550000000 GHz		50 PM Mar 08, 2019 Std: None	Frequency
NFE NFE	Trig:	Free Run Avg Hold: 5	0/50	Device: BTS	
	in dam.com	1. 20 00	Radio	Device. B13	
Ref Offset 10.7 dB 0 dB/div Ref 20.00 dBn					
og					
1.00		n markenmanna			Center Fre 5.55000000 Gi
0.0		Y		\	5.55000000 G
20.0				h.,	
0.0				The second	
10.0 - 10 - 10				- ×.	
50.0				H++	
0.0					
0.0				_	
enter 5.55 GHz			S	pan 50 MHz	
Res BW 430 kHz	#	VBW 1.3 MHz		weep 1 ms	CF Ste 5.000000 M
Occupied Bandwidt	h	Total Power	19.3 dBm		Auto M
50	.239 WINZ				Freq Offs
Transmit Freq Error	-47.980 kHz	% of OBW Power	99.00 %		0
x dB Bandwidth	40.29 MHz	x dB	-26.00 dB		

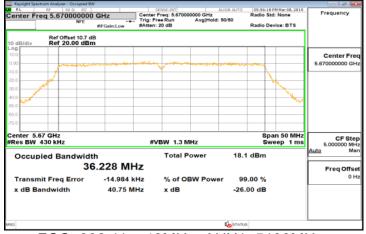
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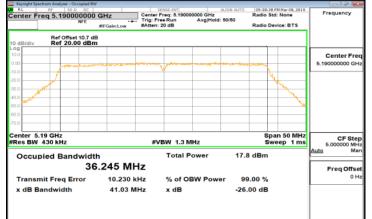
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FCC 802.11n 40MHz Main 5670MHz



FCC 802.11n 40MHz AUX1 5190MHz



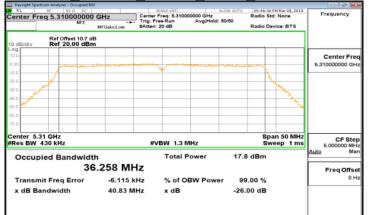
FCC_802.11n_40MHz_AUX1_5230MHz



FCC 802.11n 40MHz AUX1 5270MHz RL RF 50 Ω DC Center Freq 5.270000000 GHz Center Freq: 5.27 Trig: Free Run



FCC 802.11n 40MHz AUX1 5310MHz



FCC 802.11n 40MHz AUX1 5510MHz

	M Junear and the state of the s			Center Free
a providence and a second s	M. John Martin Martin Strategy	and the state of t		
				5.510000000 GH
			han -	
			- Archine	
			man 50 MHz	
#	VBW 1.3 MHz		Sweep 1 ms	CF Ste 5.000000 MH
	Total Power	17.9 dBm	1	Auto Ma
213 MHz				Freq Offs
-7.556 kHz	% of OBW Power	99.00 %		01
40.97 MHz	x dB	-26.00 dE	1	
	213 MHz -7.556 kHz	213 MHz -7.556 kHz % of OBW Power 40.97 MHz x dB	#VBW 1.3 MHz 8 Total Power 17.9 dBm 213 MHz -7.556 kHz % of OBW Power 99.00 %	Total Power 17.9 dBm 213 MHz -7.556 kHz % of OBW Power 99.00 % 40.97 MHz x dB -26.00 dB

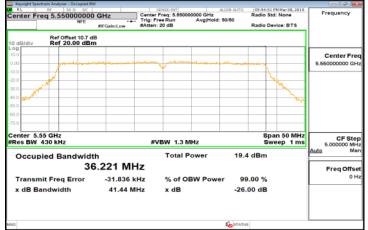
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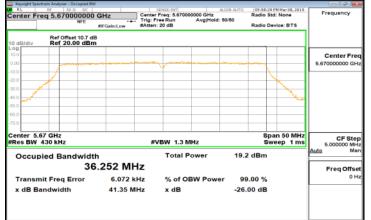
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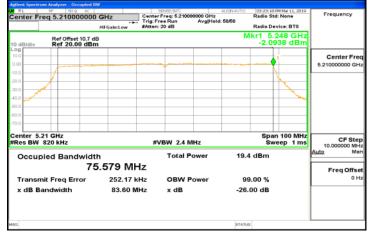
FCC 802.11n 40MHz AUX1 5550MHz



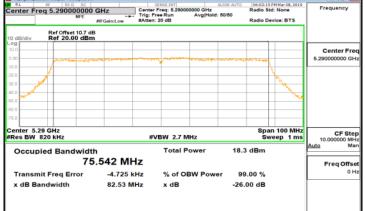
FCC 802.11n 40MHz AUX1 5670MHz



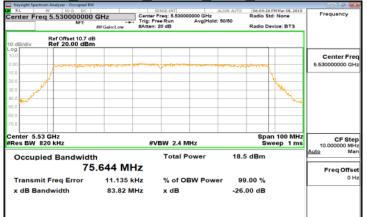
FCC 802.11ac 80MHz Main 5210MHz



FCC 802.11ac 80MHz Main 5290MHz



FCC 802.11ac 80MHz Main 5530MHz



FCC 802.11ac 80MHz Main 5610MHz

RL RF 50 Ω DC Center Freq 5.610000000 NFE NFE	Trig: I	r Freq: 5.61000000 GHz Free Run Avg Hold: 50 h: 20 dB	IGN AUTO 06:07:23 PM Mar 08, 2019 Radio Std: None 0/50 Radio Device: BTS	Frequency
Ref Offset 10.7 dB				
10.0		the state of the second second		Center Free 5.610000000 GH
20.0 K			- Verter Andrewski - Verter Andr	
40.0				
-70.0 Center 5.61 GHz			Span 100 MHz	CF Step
Res BW 820 kHz Occupied Bandwidth		VBW 2.7 MHz Total Power	Sweep 1 ms	10.000000 MH Auto Ma
	.599 MHz	i cui i chei	2017 0211	Freq Offse
Transmit Freq Error	65.057 kHz	% of OBW Power	99.00 %	0 H
x dB Bandwidth	82.91 MHz	x dB	-26.00 dB	
isg.				

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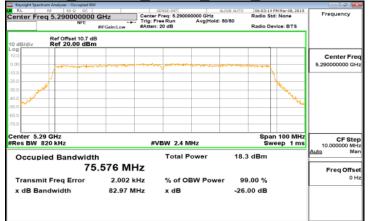
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FCC 802.11ac 80MHz_AUX1_5210MHz

Center Freq 5.		TI	sense:ent ig: Free Run itten: 20 dB		Ra:	:23:53 PM Mar 11, 2019 fio Std: None fio Device: BTS	Frequency
	f Offset 10.7 dB f 20.00 dBm					5.248 GHz 1.7888 dBm	
10.0							Center Free 5.21000000 GHz
10.0							0.21000000 011
30.0							
50.0						~	
60.0							
Center 5.21 GH #Res BW 820 k			#VBW 2.4	MHz		Span 100 MHz Sweep 1 ms	CF Step
Occupied I	Bandwidth		Total I		19.5 dE		10.000000 MH: <u>Auto</u> Mar
	75.	590 MHz					Freq Offset
Transmit Fre	eq Error	254.32 kHz	OBW	Power	99.00	%	0 Ha
x dB Bandwi	idth	83.96 MHz	x dB		-26.00	зв	

FCC_802.11ac_80MHz_AUX1 5290MHz



FCC 802.11ac 80MHz AUX1 5530MHz

RL	rum Analyzer - Occupied BV RF 50 Ω DC		SENSE			LIGN AUTO	06:05:31 PM		
enter Fre		530000000 GHz Center Freq: 5.530000000 GHz Radio Std: None Trig: Free Run Avg Hold: 50/50					None	Frequency	
	NFE	#IFGain:Low	#Atten: 20 d		Avginoia:	80/80	Radio Devic	e: BTS	
0 dB/div	Ref Offset 10.7 d Ref 20.00 dBn								
0.0									Center Free
	Paul Transmission and a state	mennen	man	, may many	Start Bridge	and you also			5.530000000 GH
0.0									
0.0							- N		
0.0								~	
and any and								- Vela	
0.0									
0.0									
enter 5.5 Res BW 8			#VBW	/ 2.4 M	Hz			100 MHz ep 1 ms	CF Step 10.000000 MH
Occupi	ied Bandwidt	h	1	otal P	ower	18.5	5 dBm		<u>Auto</u> Ma
occup		 5.502 MH	7						Freg Offse
Transm	it Freq Error	-34.679 k		6 of OF	W Powe	r 90	9.00 %		0 H
	ndwidth	82.84 M		dB			00 dB		
х ав ва	nawiath	02.04 MI	nz x	aв		-20.	00 88		
s						STATU	8		

FCC 802.11ac 80MHz AUX1 5610MHz

Keysight Spec	trum Analyzer - Occupied BW	/					
	eq 5.610000000		sense:INT iter Freq: 5.61000	0000 GHz	Radio	5:22 PM Mar 08, 2019 Std: None	Frequency
	NFE	Trip	: Free Run ten: 20 dB	Avg Hold: 50		Device: BTS	1
0 dB/div	Ref Offset 10.7 dl Ref 20.00 dBm						
.og							
			have and the form	-			Center Fre
0.0	10000						5.61000000 G
0.0	1						
0.0	W					No.	
0.0						The second	
0.0							
0.0							
70.0							
enter 5.6 Res BW			#VBW 2.7 M	L.,		pan 100 MHz Sweep 1 ms	CF Ste
Kes DW	620 KH2		#4DV4 2.7 W	Πź		oweep rms	10.000000 Mi Auto Mi
Occup	ied Bandwidt	h	Total P	ower	20.7 dBn	n	CM12 111
	75	5.587 MHz					Freq Offs
T	it From From	00 525 144	N/ -1 05	W Power	99.00 %	,	01
	nit Freq Error	89.525 kHz		sw Power		-	
x dB Ba	andwidth	83.53 MHz	x dB		-26.00 di	3	
93					STATUS		

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9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

OPERZTION Band		EUT CATEGORY	LIMIT
		Access Point (Master device)	1 Watt(30dBm)
U-NII-1		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	anter	anas of directional gain greater than	6 dBi are used the Maximum transmit

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

Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

= $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N_{ANT}] dBi$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is not granter than 6 dBi. Therefore, reduction of power is not required.

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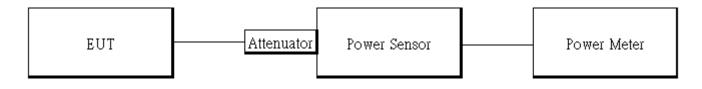
9.2 Measurement Procedure

- 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.

9.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1242004		10/22/2019
Power Sensor	Anritsu	MA2411B	1207365	10/23/2018	10/22/2019
Power Sensor	Anritsu	MA2411B	1207368	10/24/2018	10/23/2019
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019
Attenuator	Mini-Circuit	BW-S10W2+	1	02/26/2019	02/25/2020

9.4 Test Set-up



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9.5 Measurement Result

802.11a 2Tx

	Frequency	Data	Avg. POV	VER (dBm)		TOTAL		REQUIRED		
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
36	5180	6	11.96	11.82	14.98	31.485		23.98		PASS
44	5220	6	13.64	13.62	16.72	46.995		23.98		PASS
48	5240	6	13.95	13.54	16.84	48.310		23.98		PASS
52	5260	6	13.72	13.86	16.88	48.765	23.98	or 11+10log(B) =	24.46	PASS
60	5300	6	13.52	13.8	16.75	47.345	23.98	or 11+10log(B) =	24.56	PASS
64	5320	6	11.3	11.79	14.64	29.123	23.98	or 11+10log(B) =	24.55	PASS
100	5500	6	11.87	11.24	14.66	29.221	23.98	or 11+10log(B) =	24.62	PASS
116	5580	6	13.55	13.52	16.63	45.978	23.98	or 11+10log(B) =	24.69	PASS
140	5700	6	11.72	11.94	14.92	31.059	23.98	or 11+10log(B) =	24.65	PASS

802.11n_HT20_MIMO

СН	Frequency	Data	Avg. POW	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT (dBm)			RESULT
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)			RESULT	
36	5180	MCS8	11.84	11.62	14.83	30.405		23.98		PASS
44	5220	MCS8	13.76	13.94	16.95	49.533		23.98		PASS
48	5240	MCS8	13.62	14.12	16.98	49.834	23.98		PASS	
52	5260	MCS8	13.72	13.94	16.93	49.311	23.98	or 11+10log(B) =	24.67	PASS
60	5300	MCS8	13.68	13.88	16.88	48.744	23.98	or 11+10log(B) =	24.74	PASS
64	5320	MCS8	11.74	11.95	14.94	31.220	23.98	or 11+10log(B) =	24.47	PASS
100	5500	MCS8	12.16	11.57	14.97	31.427	23.98	or 11+10log(B) =	24.71	PASS
116	5580	MCS8	13.76	13.86	16.91	49.072	23.98	or 11+10log(B) =	24.74	PASS
140	5700	MCS8	11.72	11.68	14.80	30.186	23.98	or 11+10log(B) =	24.69	PASS

802.11n_HT40_MIMO

СН	Frequency	Data	Avg. POV	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT			RESULT
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		RESULI
38	5190	MCS8	11.57	11.48	14.71	29.593		23.98		PASS
46	5230	MCS8	13.69	13.87	16.97	49.746		23.98		PASS
54	5270	MCS8	13.61	13.72	16.85	48.440	23.98	or 11+10log(B) =	27.08	PASS
62	5310	MCS8	11.73	11.82	14.96	31.347	23.98	or 11+10log(B) =	27.11	PASS
102	5510	MCS8	11.89	11.39	14.83	30.436	23.98	or 11+10log(B) =	27.11	PASS
110	5550	MCS8	13.73	13.49	16.80	47.845	23.98	or 11+10log(B) =	27.05	PASS
134	5670	MCS8	11.96	11.37	14.86	30.632	23.98	or 11+10log(B) =	27.10	PASS

802.11ac VHT80 MIMO

СН	Frequency	Data	Avg. POW	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT		RESULT	
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)	(dBm)			RESOLI
42	5210	MCS0	11.24	11.48	14.37	27.365		23.98		PASS
58	5290	MCS0	11.21	11.61	14.42	27.701	23.98	or 11+10log(B) =	30.17	PASS
106	5530	MCS0	11.62	11.58	14.61	28.909	23.98	or 11+10log(B) =	30.18	PASS
122	5610	MCS0	13.31	13.37	16.35	43.156	23.98	or 11+10log(B) =	30.19	PASS

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10. POWER SPECTRAL DENSITY

10.1 Standard Applicable

OPERZTION Band		EUT CATEGORY	LIMIT
	Access Point (Master device)		17dBm/ MHz
U-NII-1		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	ante	ennas of directional gain greater that	an 6 dBi are used, the Maximum power

spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

= $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N_{ANT}] dBi$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is not grater than 6 dBi. Therefore, reduction of power is not required.

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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)

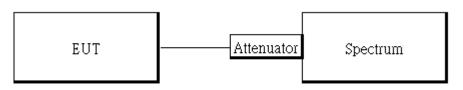
- 5. User the cursor on spectrum to peak search the highest level of trace
- 6. Record the max. reading and add 10 log(1/duty cycle).
- 7. Repeat above procedures until all default test channel (low, middle, and high) was complete.
- 8. 802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome

	Conducted Emission Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019				
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/09/2018	04/08/2019				
Thermostat- ic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	10/08/2018	10/07/2019				
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	02/26/2019	02/25/2020				
Attenuator	Mini-Circuit	BW-S10W2+	1	02/26/2019	02/25/2020				

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)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)		
5180	1.49	0.08	1.57	11	-9.43		
5220	2.42	0.08	2.50	11	-8.50		
5240	2.62	0.08	2.70	11	-8.30		
5260	2.72	0.08	2.80	11	-8.20		
5300	3.11	0.08	3.19	11	-7.81		
5320	1.06	0.08	1.14	11	-9.86		
5500	1.21	0.08	1.29	11	-9.71		
5580	3.32	0.08	3.40	11	-7.60		
5700	1.22	0.08	1.30	11	-9.70		

	POWER DENSITY 802.11n HT20 MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)			
5180	2.77	0.09	2.86	11	-8.14			
5220	5.18	0.09	5.27	11	-5.73			
5240	4.84	0.09	4.93	11	-6.07			
5260	4.54	0.09	4.63	11	-6.37			
5300	4.78	0.09	4.87	11	-6.13			
5320	2.54	0.09	2.63	11	-8.37			
5500	1.88	0.09	1.97	11	-9.03			
5580	3.62	0.09	3.71	11	-7.29			
5700	2.63	0.09	2.72	11	-8.28			

	POWER DENSITY 802.11n HT40 MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)			
5190	-1.35	0.18	-1.17	11	-12.17			
5230	2.1	0.18	2.28	11	-8.72			
5270	-2.25	0.18	-2.07	11	-13.07			
5310	-1.45	0.18	-1.27	11	-12.27			
5510	-0.91	0.18	-0.73	11	-11.73			
5550	0.53	0.18	0.71	11	-10.29			
5670	-0.22	0.18	-0.04	11	-11.04			

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POWER DENSITY 802.11ac VHT80 MODE							
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)		
5210	-5.09	0.00	-5.09	11	-16.09		
5290	-3.65	0.00	-3.65	11	-14.65		
5530	-5.18	0.00	-5.18	11	-16.18		
5610	-4.05	0.00	-4.05	11	-15.05		

Note: Cable Loss=

13.7 dB

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802.11a 20MHz 5180MHz



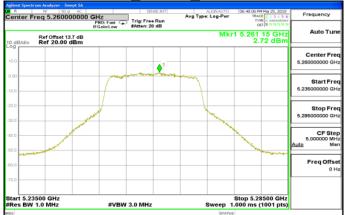
802.11a 20MHz 5220MHz



802.11a 20MHz 5240MHz



802.11a 20MHz 5260MHz



802.11a 20MHz 5300MHz



802.11a_20MHz_5320MHz



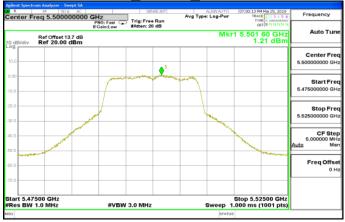
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802.11a 20MHz 5500MHz



802.11a 20MHz 5580MHz



802.11a 20MHz 5700MHz



802.11n 20MHz 5180MHz er Freq 5.180000000 GHz NFE PN0: Fast C Trig: Free Run MAtter: 20 dB Frequency Auto Tu Mkr1 5.181 90 GH Ref Offset 13.7 dB Ref 20.00 dBm Center Fre ٥ Start Fre Stop Fre CF Step 5.000000 MH 11 Freq Offs 0.H Scale Typ Stop 5.20500 GHz Sweep 1.000 ms (1001 pts) tart 5.15500 GHz Res BW 1.0 MHz ы #VBW 3.0 MHz



802.11n 20MHz 5240MHz



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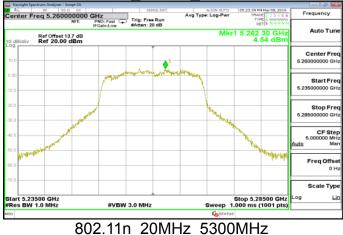
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802.11n 20MHz 5260MHz



AL 10 50 Ω DC hter Freq 5.300000000 GHz NFE PN0: Fest C Trig: Free Run WAtten: 20 dB 5.300 80 GH Auto Tu Ref Offset 13.7 dB Ref 20.00 dBm Center Fre ٥ Start Fr 5 27 CF Ste Freq Offs Scale Ty Stop 5.32500 GHz Sweep 1.000 ms (1001 pts) art 5.27500 GHz Res BW 1.0 MHz #VBW 3.0 MHz

802.11n 20MHz 5320MHz



802.11n 20MHz 5500MHz ter Freq 5.50000000 GHz NFE PN0: Fast C Trig: Free Run Frequer Auto Tu Ref Offset 13.7 dB Ref 20.00 dBm Center Fre ٠ Start Fre Stop Fr CF Ste Freq Offs Scale Typ 5.47500 GHz BW 1.0 MHz Stop 5.52500 GHz Sweep 1.000 ms (1001 pts) #VBW 3.0 MH

802.11n 20MHz 5580MHz



802.11n 20MHz 5700MHz



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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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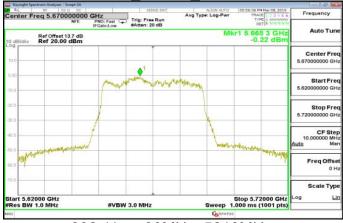
SGS Compliance Certification Services Inc.

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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 the band edge.

APPLICABLE TO	LI	MIT			
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m				
	ΡΚ: 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(b)(4)(i)	PK:10 (dBm/MHz) *2	PK:105.2 (dBµV/m) *2			
15.407 (b)(4)(1)	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.

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

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

Note:

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

2. Emission level (dBµV/m) = 20 log Emission level (dBµV/m)

11.2Measurement Equipment Used

966A Chamber								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019			
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	02/26/2019	02/25/2020			
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020			
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020			
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M0200 3	08/20/2018	08/19/2019			
High Pass Filter	WI	WHKX7.0/18 G-8SS	45	02/26/2019	02/25/2020			
Horn Antenna	ETS LINDGREN	3116	00026370	12/26/2018	12/25/2019			
Loop Antenna	ETS.LINDGREN	6502	148045	10/08/2018	10/07/2019			
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020			
Pre-Amplifier	MITEQ	AMF-6F-2604 00-40-8P	985646	02/26/2019	02/25/2020			
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020			
PSA Series Spec- trum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019			
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R			
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R			
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R			
Software		e3 V6.	11-20180413					

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

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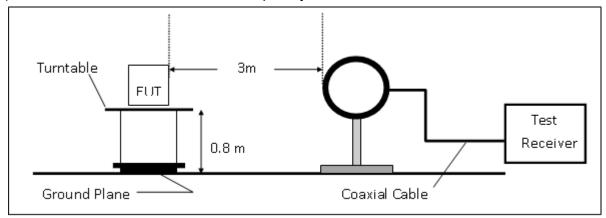
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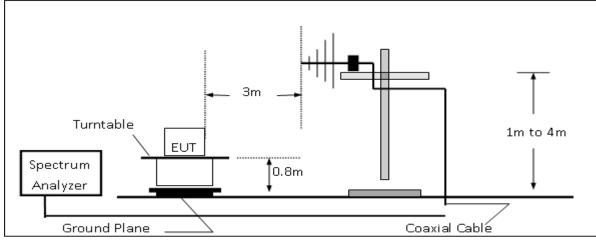


11.3Test SET-UP

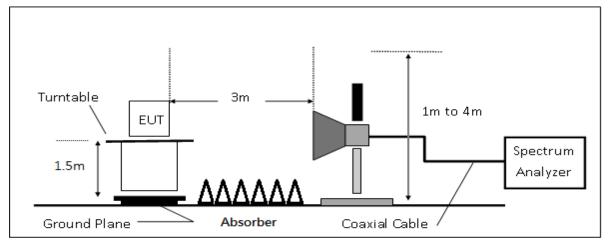
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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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.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 11. Repeat above procedures until all frequency measured were complete.

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.

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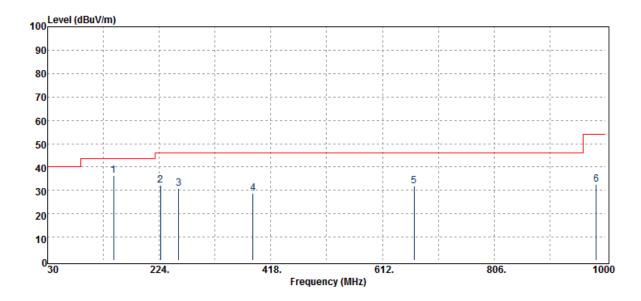
11.7Measurement Result

Radiated Spurious Emission Measurement Result

Below 1GHz Worst-Case Data:

802.11a 5150~5250 MHz

Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	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
144.46	Peak	45.73	-9.32	36.41	43.50	-7.09
225.94	Peak	42.59	-10.38	32.21	46.00	-13.79
257.95	Peak	40.11	-9.31	30.80	46.00	-15.20
386.96	Peak	34.17	-5.33	28.84	46.00	-17.16
667.29	Peak	30.86	1.04	31.90	46.00	-14.10
983.51	Peak	25.99	6.49	32.48	54.00	-21.52

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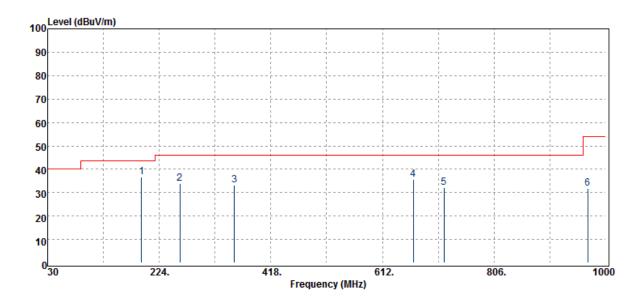
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Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
192.96	Peak	46.38	-9.82	36.56	43.50	-6.94
259.89	Peak	42.83	-9.09	33.74	46.00	-12.26
354.95	Peak	39.13	-5.94	33.19	46.00	-12.81
665.35	Peak	34.60	0.94	35.54	46.00	-10.46
718.70	Peak	31.07	1.28	32.35	46.00	-13.65
968.96	Peak	25.27	6.55	31.82	54.00	-22.18

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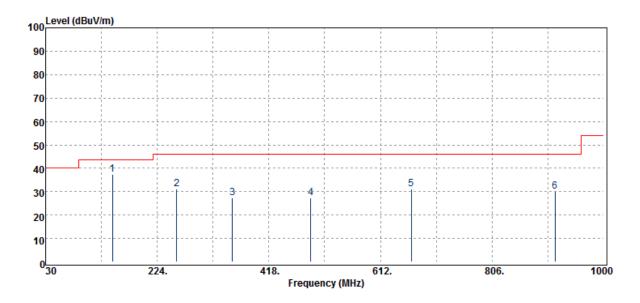
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802.11a 5250~5350 MHz

Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5300 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	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
146.40	Peak	46.79	-9.40	37.39	43.50	-6.11
257.95	Peak	40.30	-9.31	30.99	46.00	-15.01
354.95	Peak	33.39	-5.94	27.45	46.00	-18.55
490.75	Peak	29.69	-2.20	27.49	46.00	-18.51
665.35	Peak	30.35	0.94	31.29	46.00	-14.71
915.61	Peak	25.21	4.81	30.02	46.00	-15.98

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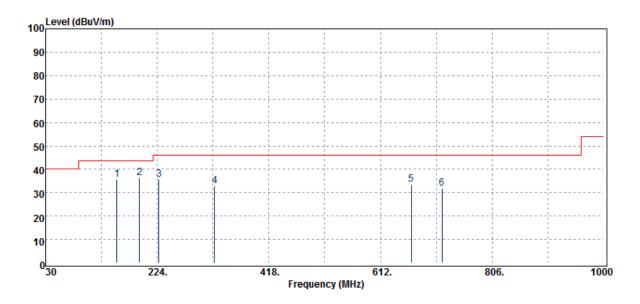
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Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5300 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
154.16	Peak	45.11	-9.41	35.70	43.50	-7.80
192.96	Peak	46.19	-9.82	36.37	43.50	-7.13
226.91	Peak	46.11	-10.31	35.80	46.00	-10.20
323.91	Peak	39.37	-6.59	32.78	46.00	-13.22
665.35	Peak	32.54	0.94	33.48	46.00	-12.52
718.70	Peak	30.60	1.28	31.88	46.00	-14.12

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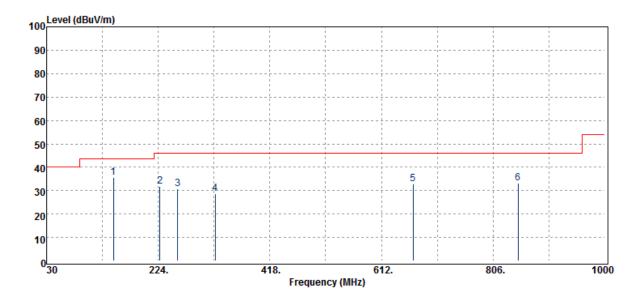
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802.11a, 5470~5725 MHz

Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	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
146.40	Peak	45.16	-9.40	35.76	43.50	-7.74
226.91	Peak	42.12	-10.31	31.81	46.00	-14.19
257.95	Peak	39.93	-9.31	30.62	46.00	-15.38
322.94	Peak	35.51	-6.62	28.89	46.00	-17.11
667.29	Peak	31.71	1.04	32.75	46.00	-13.25
849.65	Peak	29.00	4.16	33.16	46.00	-12.84

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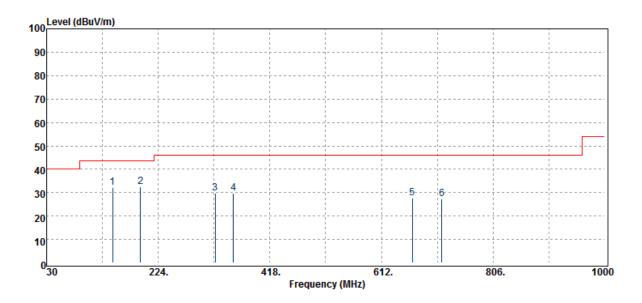
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Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.46	Peak	43.82	-11.53	32.29	43.50	-11.21
192.96	Peak	44.82	-12.28	32.54	43.50	-10.96
322.94	Peak	39.35	-9.74	29.61	46.00	-16.39
354.95	Peak	38.94	-9.30	29.64	46.00	-16.36
665.35	Peak	31.77	-3.94	27.83	46.00	-18.17
716.76	Peak	30.44	-3.17	27.27	46.00	-18.73

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Above 1GHz Worst-Case Data:

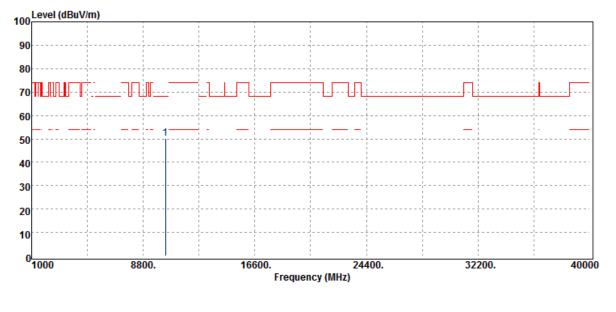
Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

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

:802.11aB1 :5180 MHz :Tx CH LOW :E1 Plane

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

:2019-03-09 :20 deg_C / 61 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
10360.00	Peak	35.77	14.41	50.18	74.00	-23.82

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SGS Compliance Certification Services Inc.

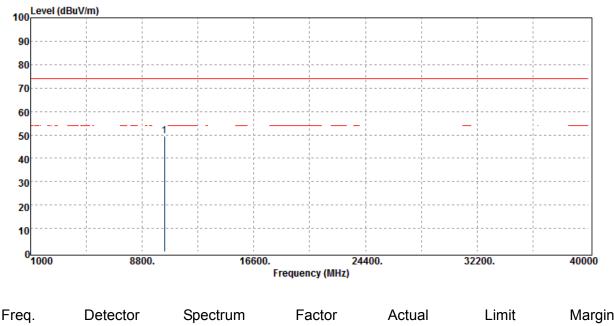
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Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



	Fieq.	Delector	Spectrum	Facilli	Actual		waryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	10360.00	Peak	35.03	14.41	49.44	74.00	-24.56	_

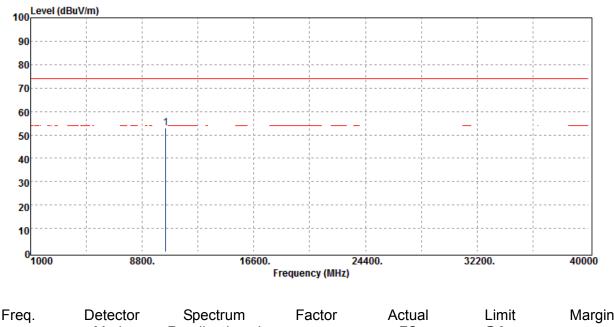
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Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



rieq.	Mode	Reading Level	T ACIUI	FS	@3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10440.00	Peak	37.48	15.58	53.06	74.00	-20.94

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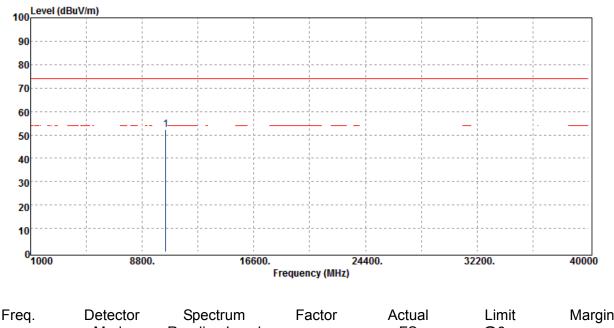
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Report No.: T190304W03-RP5 Page: 60 of 151



Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



i ieq.	Delector	opectium	racior	Actual	LIIIII	margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10440.00	Peak	36.80	15.58	52.38	74.00	-21.62	

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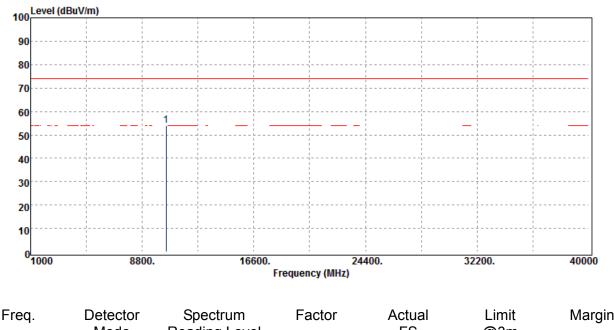
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Report No.: T190304W03-RP5 Page: 61 of 151



Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5240 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



	rieq.	Delector	opectium	racior	Actual		Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	10480.00	Peak	37.50	16.48	53.98	68.20	-14.22	_

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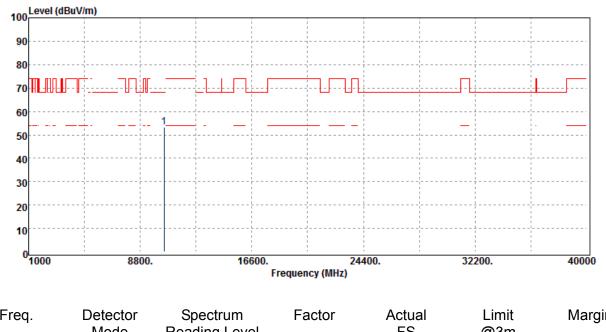
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Report No.: T190304W03-RP5 Page: 62 of 151



Operation Band	:802.11aB1	Test Date	:2019-03-09
Fundamental Frequency	:5240 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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
10480.00	Peak	36.73	16.48	53.21	68.20	-14.99

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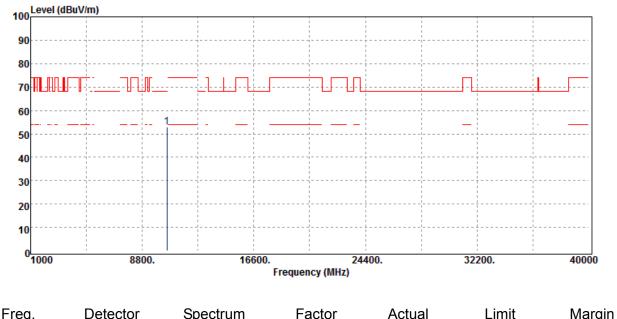
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Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

:802.11aB2
:5260 MHz
:Tx CH LOW
:E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Detector	Spectrum	Factor	Actual	Limit	wargin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
10520.00	Peak	37.36	15.57	52.93	68.20	-15.27	-

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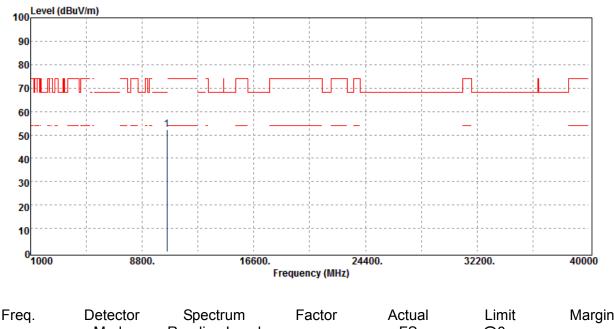
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Report No.: T190304W03-RP5 Page: 64 of 151



Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5260 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



	ricq.	Delector	opectium	i actor	Actual		margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10520.00	Peak	36.54	15.57	52.11	68.20	-16.09	_

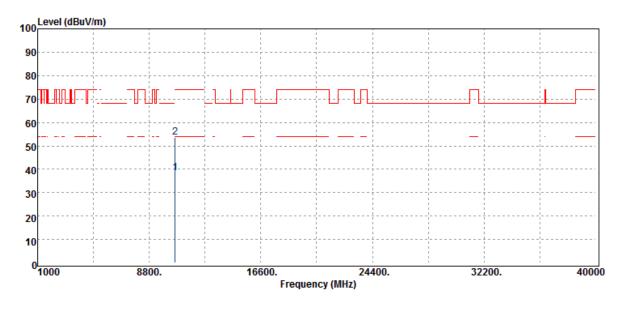
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Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5300 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



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	22.80	15.47	38.27	54.00	-15.73
10600.00	Peak	38.08	15.47	53.55	74.00	-20.45

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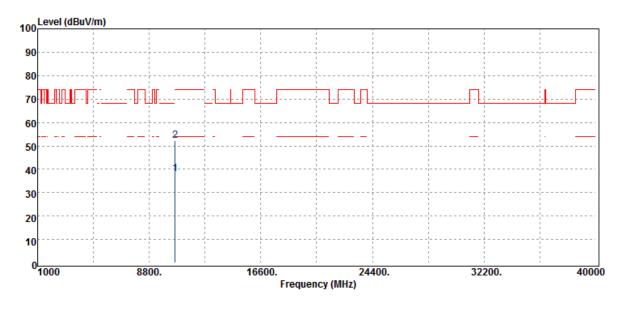
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Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5300 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



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	22.52	15.47	37.99	54.00	-16.01	•
10600.00	Peak	36.92	15.47	52.39	74.00	-21.61	

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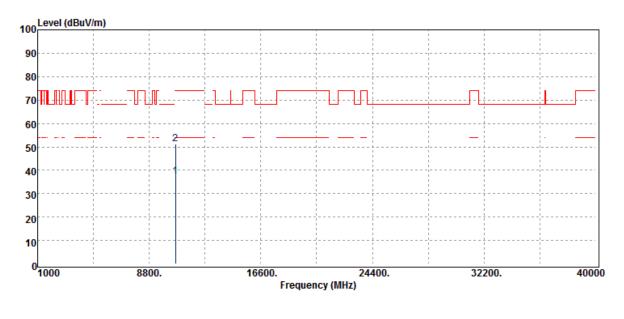
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Report No.: T190304W03-RP5 Page: 67 of 151



Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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	21.32	16.12	37.44	54.00	-16.56
10640.00	Peak	35.21	16.12	51.33	74.00	-22.67

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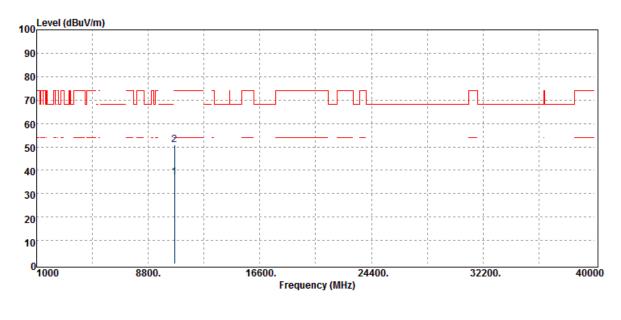
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Report No.: T190304W03-RP5 Page: 68 of 151



Operation Band	:802.11aB2	Test Date	:2019-03-09
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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	20.85	16.12	36.97	54.00	-17.03
Peak	34.83	16.12	50.95	74.00	-23.05
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage20.85	ModeReading LevelPK/QP/AVdBµVdBAverage20.8516.12	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage20.8516.1236.97	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 20.85 16.12 36.97 54.00

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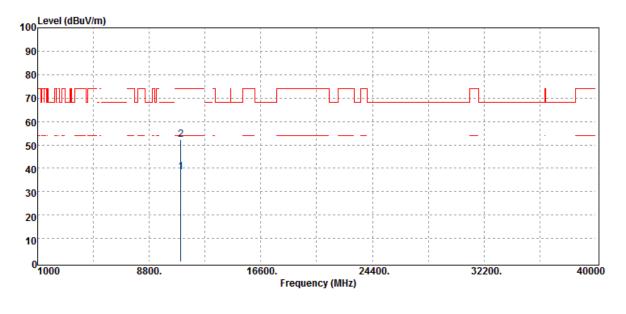
Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

Operation Band	
Fundamental Frequency	
Operation Mode	
EUT Pol.	

:802.11aB3 :5500 MHz :Tx CH LOW :E1 Plane

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

:2019-03-09 :20 deg_C / 61 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	20.55	17.75	38.30	54.00	-15.70	_
11000.00	Peak	34.65	17.75	52.40	74.00	-21.60	

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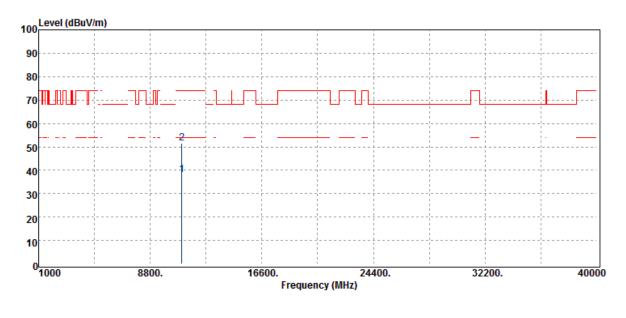
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Report No.: T190304W03-RP5 Page: 70 of 151



Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 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	20.43	17.75	38.18	54.00	-15.82
11000.00	Peak	33.93	17.75	51.68	74.00	-22.32

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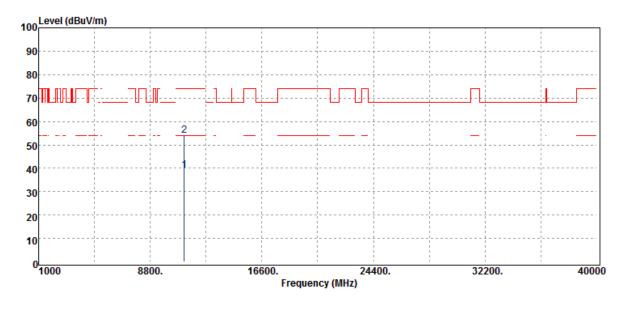
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Report No.: T190304W03-RP5 Page: 71 of 151



Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 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
11160.00	Average	22.62	16.53	39.15	54.00	-14.85
11160.00	Peak	37.58	16.53	54.11	74.00	-19.89

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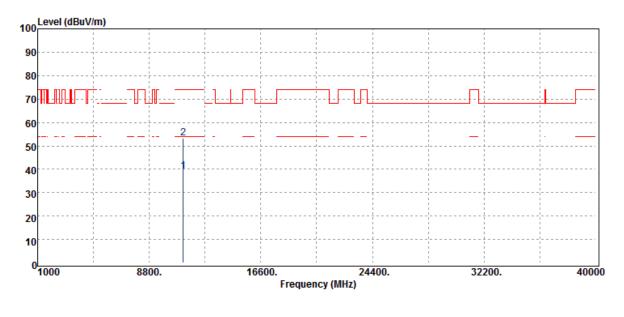
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Report No.: T190304W03-RP5 Page: 72 of 151



Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 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	22.44	16.53	38.97	54.00	-15.03
11160.00	Peak	36.68	16.53	53.21	74.00	-20.79

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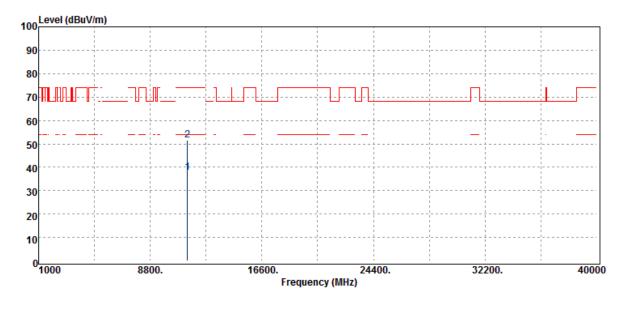
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Report No.: T190304W03-RP5 Page: 73 of 151



Operation Band Fundamental Frequency	:802.11aB3 :5700 MHz	Test Date Temp./Humi.	:2019-03-09 :20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Detector	Spectrum	Factor	Actual	Limit	Margin	
Mode	Reading Level		FS	@3m		
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
Average	21.22	16.48	37.70	54.00	-16.30	
Peak	35.17	16.48	51.65	74.00	-22.35	
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage21.22	ModeReading LevelPK/QP/AVdBµVdBAverage21.2216.48	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage21.2216.4837.70	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 21.22 16.48 37.70 54.00	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m dB Average 21.22 16.48 37.70 54.00 -16.30

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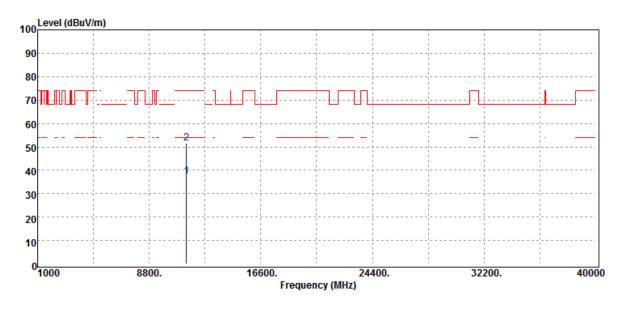
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Report No.: T190304W03-RP5 Page: 74 of 151



Operation Band	:802.11aB3	Test Date	:2019-03-09
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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
11400.00	Average	21.03	16.48	37.51	54.00	-16.49
11400.00	Peak	35.00	16.48	51.48	74.00	-22.52

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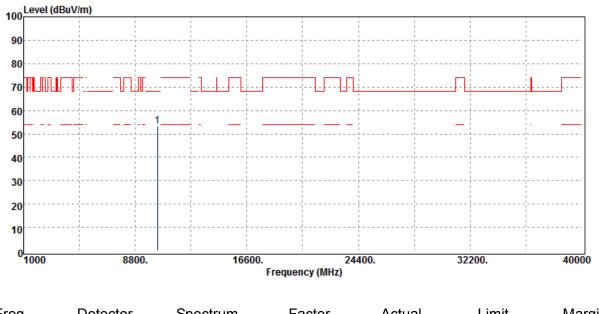


Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B1 :5180 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 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	_
10360.00	Peak	39.04	14.41	53.45	68.20	-14.75	

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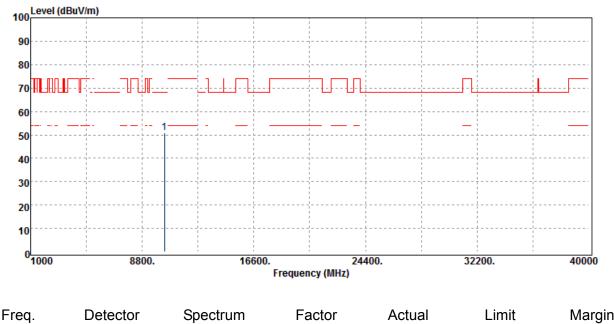
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Report No.: T190304W03-RP5 Page: 76 of 151



Operation Band	:802.11n20B1	Test Date	:2019-03-09
Fundamental Frequency	:5180 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



TTEY.	Delecioi	Spectrum	T actor	Actual		Maryin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10360.00	Peak	36.60	14.41	51.01	68.20	-17.19	_

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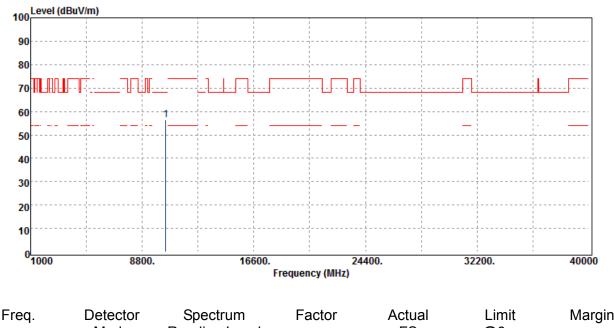
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Report No.: T190304W03-RP5 Page: 77 of 151



Operation Band	:802.11n20B1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



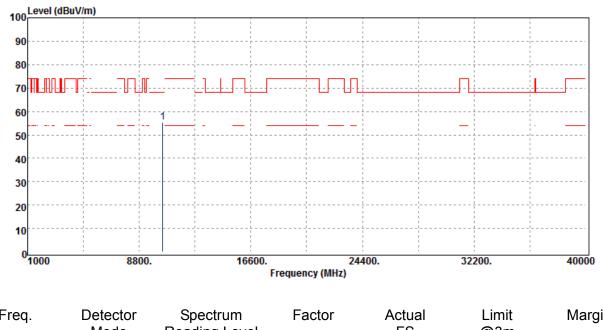
rieq.	Delector	Spectrum	i actor	Actual		Maryin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10440.00	Peak	40.88	15.58	56.46	68.20	-11.74	

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Report No.: T190304W03-RP5 Page: 78 of 151



Operation Band	:802.11n20B1	Test Date	:2019-03-09
Fundamental Frequency	:5220 MHz	Temp./Humi.	:20 deg C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



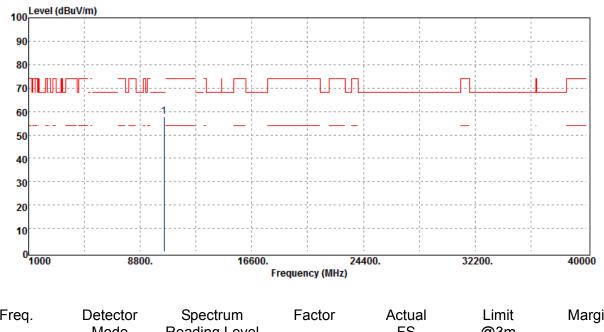
Freq.	Detector	Spectrum	Factor	Actual	Limit	wargin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10440.00	Peak	39.70	15.58	55.28	68.20	-12.92	

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Operation Band	:802.11n20B1	Test Date	:2019-03-09
Fundamental Frequency	:5240 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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	
10480.00	Peak	41.30	16.48	57.78	68.20	-10.42	-

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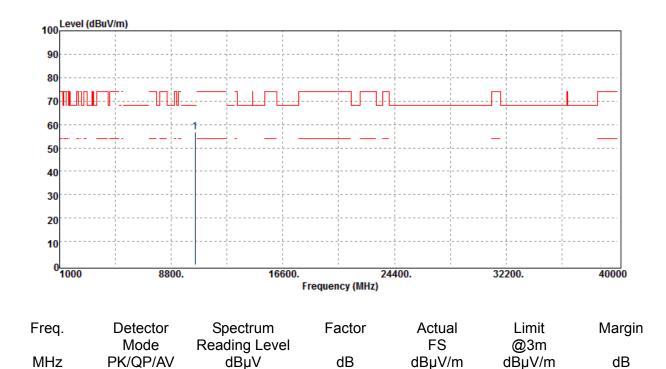
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Report No.: T190304W03-RP5 Page: 80 of 151



Fundamental Frequency : Operation Mode :	:802.11n20B1 :5240 MHz :Tx CH HIGH :E1 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2019-03-09 :20 deg_C / 61 RH :Wei :HORIZONTAL
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16.48

56.90

68.20

-11.30

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40.42

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SGS Compliance Certification Services Inc.

10480.00

Peak

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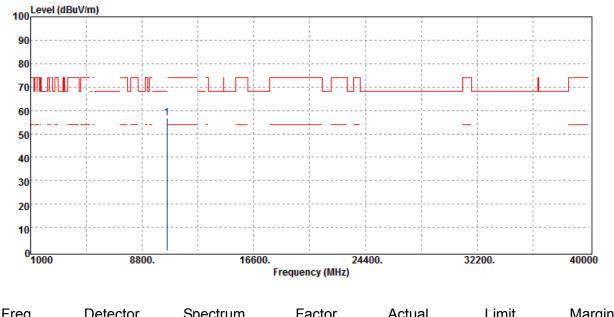


Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B2 :5260 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Fieq.	Delector	Spectrum	Factor	Actual		Maryin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10520.00	Peak	41.16	15.57	56.73	68.20	-11.47

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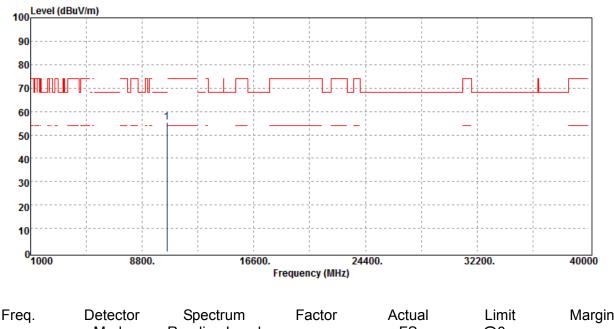
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Report No.: T190304W03-RP5 Page: 82 of 151



Operation Band	:802.11n20B2	Test Date	:2019-03-09
Fundamental Frequency	:5260 MHz	Temp./Humi.	:20 deg C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



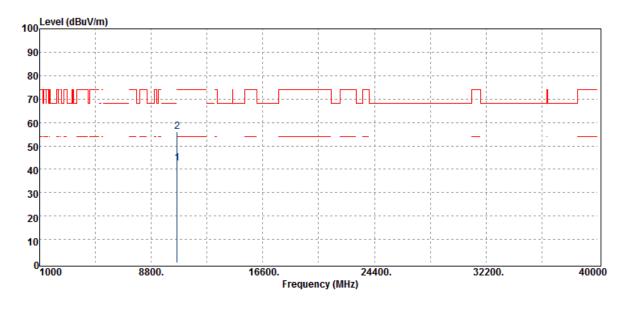
rieq.	Delector	opectium	racior	Actual		margin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10520.00	Peak	39.92	15.57	55.49	68.20	-12.71	

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

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EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL	Fundamental Frequency Operation Mode	:802.11n20B2 :5300 MHz :Tx CH MID :E1 Plane	Engineer	:2019-03-09 :20 deg_C / 61 RH :Wei :VERTICAL
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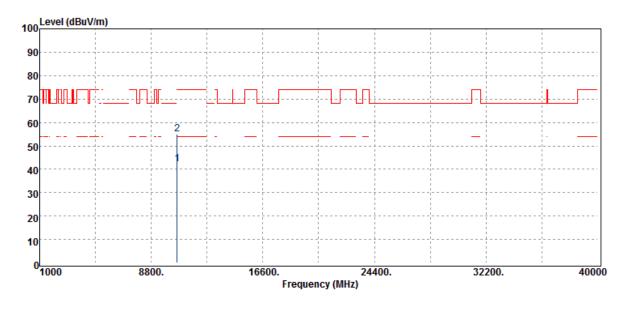
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	27.25	15.47	42.72	54.00	-11.28
10600.00	Peak	40.66	15.47	56.13	74.00	-17.87

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Report No.: T190304W03-RP5 Page: 84 of 151



Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11n20B2 :5300 MHz :Tx CH MID :E1 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2019-03-09 :20 deg_C / 61 RH :Wei :HORIZONTAL



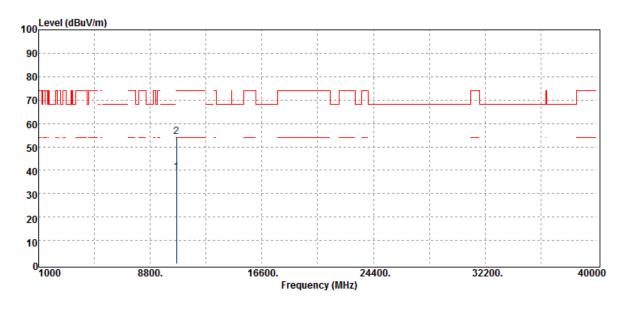
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10600.00	Average	26.80	15.47	42.27	54.00	-11.73
10600.00	Peak	39.51	15.47	54.98	74.00	-19.02

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Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11n20B2 :5320 MHz :Tx CH HIGH :E1 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2019-03-09 :20 deg_C / 61 RH :Wei :VERTICAL
		Measurement Antenna i ol.	



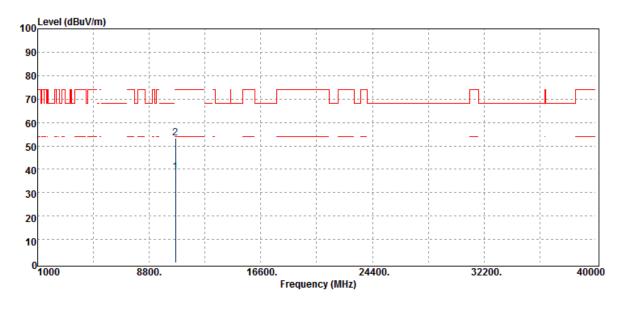
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.00	Average	22.92	16.12	39.04	54.00	-14.96
10640.00	Peak	38.17	16.12	54.29	74.00	-19.71

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Operation Band	:802.11n20B2	Test Date	:2019-03-09
Fundamental Frequency	:5320 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 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	22.58	16.12	38.70	54.00	-15.30
10640.00	Peak	37.26	16.12	53.38	74.00	-20.62

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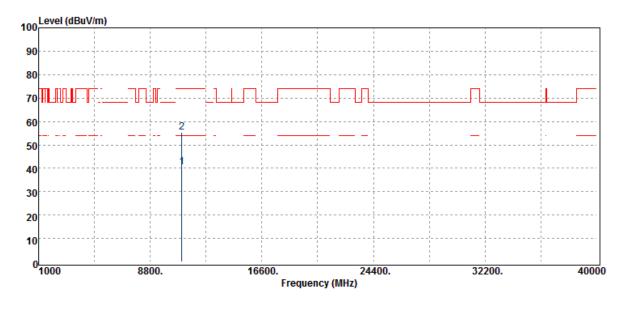


Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n20B3 :5500 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 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	22.71	17.75	40.46	54.00	-13.54
11000.00	Peak	37.75	17.75	55.50	74.00	-18.50

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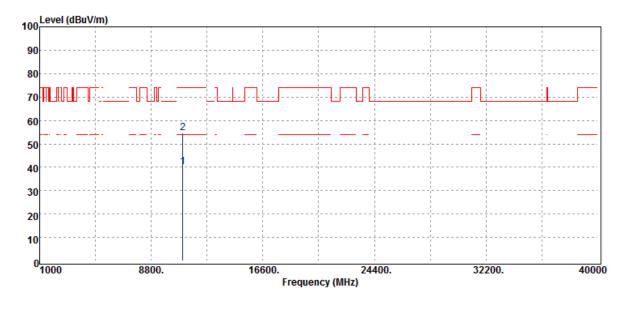
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Report No.: T190304W03-RP5 Page: 88 of 151



Operation Band	:802.11n20B3	Test Date	:2019-03-09
Fundamental Frequency	:5500 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 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	22.24	17.75	39.99	54.00	-14.01
Peak	37.08	17.75	54.83	74.00	-19.17
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage22.24	ModeReading LevelPK/QP/AVdBµVdBAverage22.2417.75	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage22.2417.7539.99	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 22.24 17.75 39.99 54.00

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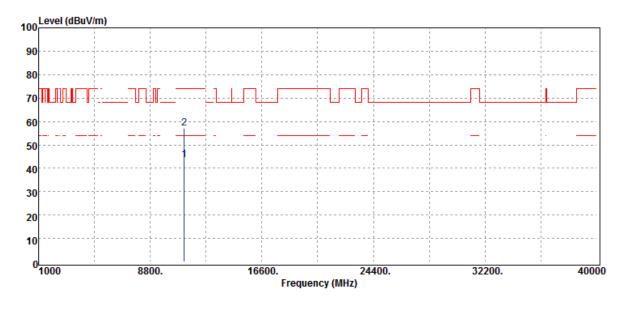
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Report No.: T190304W03-RP5 Page: 89 of 151



Operation Band	:802.11n20B3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 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
11160.00	Average	27.22	16.53	43.75	54.00	-10.25
11160.00	Peak	40.46	16.53	56.99	74.00	-17.01

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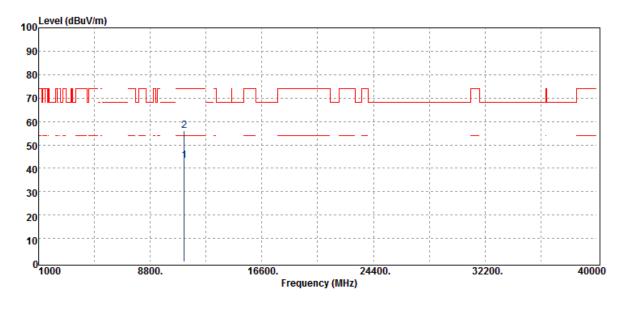
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Report No.: T190304W03-RP5 Page: 90 of 151



Operation Band	:802.11n20B3	Test Date	:2019-03-09
Fundamental Frequency	:5580 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



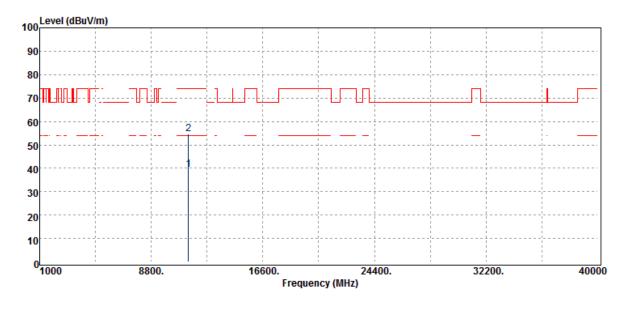
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	26.88	16.53	43.41	54.00	-10.59
11160.00	Peak	39.69	16.53	56.22	74.00	-17.78

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.

Report No.: T190304W03-RP5 Page: 91 of 151



Operation Band	:802.11n20B3	Test Date	:2019-03-09
Fundamental Frequency	:5700 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



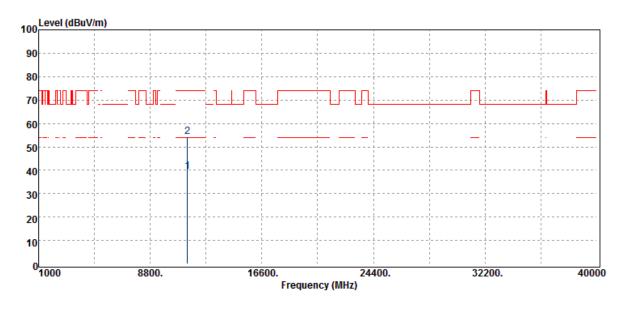
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m	-	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
11400.00	Average	23.10	16.48	39.58	54.00	-14.42	
11400.00	Peak	38.31	16.48	54.79	74.00	-19.21	

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.

Report No.: T190304W03-RP5 Page: 92 of 151



Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11n20B3 :5700 MHz :Tx CH HIGH :E1 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2019-03-09 :20 deg_C / 61 RH :Wei :HORIZONTAL
		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
11400.00	Average	22.90	16.48	39.38	54.00	-14.62
11400.00	Peak	37.82	16.48	54.30	74.00	-19.70

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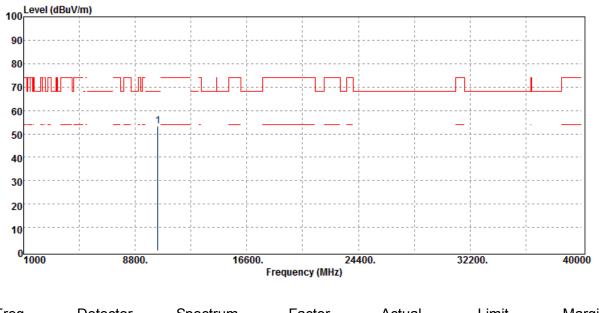


Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n40B1 :5190 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 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	38.63	14.58	53.21	68.20	-14.99	_

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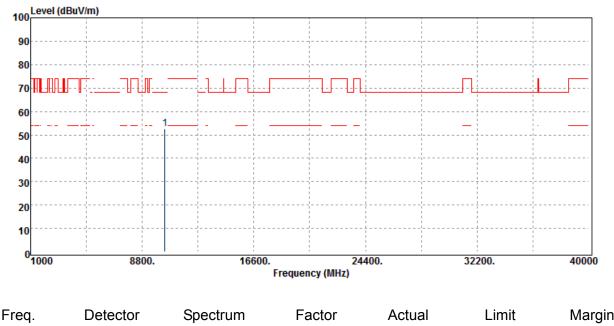
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Report No.: T190304W03-RP5 Page: 94 of 151



Operation Band:802.11n40B1Test DateFundamental Frequency:5190 MHzTemp./Humi.Operation Mode:Tx CH LOWEngineerEUT Pol.:E1 PlaneMeasurement And	:2019-03-09 :20 deg_C / 61 RH :Wei ntenna Pol. :HORIZONTAL
--	---



TTEY.	Delecioi	Spectrum	T actor	Actual		Maryin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
 10380.00	Peak	38.03	14.58	52.61	68.20	-15.59	-

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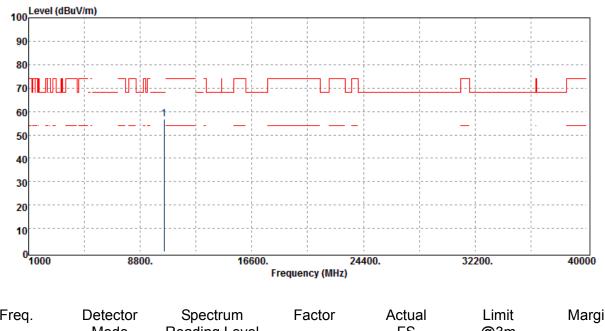
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Operation Band	:802.11n40B1	Test Date	:2019-03-09
Fundamental Frequency	:5230 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL
	.ET Plane	Measurement Antenna Pol.	VERTICAL



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10460.00	Peak	40.83	15.97	56.80	68.20	-11.40

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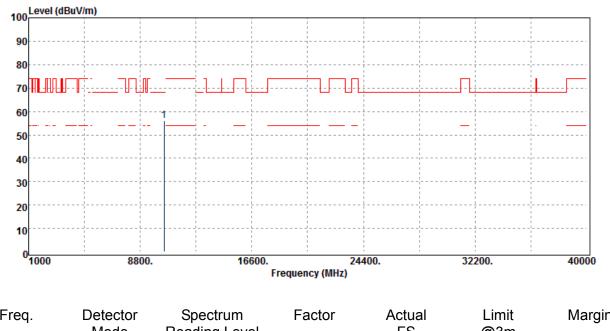
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Operation Band Fundamental Frequency	:802.11n40B1 :5230 MHz	Test Date Temp./Humi.	:2019-03-09 :20 deg_C / 61 RH
Operation Mode	:Tx CH HIGH	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq.	Delector	Spectrum	Factor	Actual		wargin	
	Mode	Reading Level		FS	@3m		
 MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10460.00	Peak	40.02	15.97	55.99	68.20	-12.21	_

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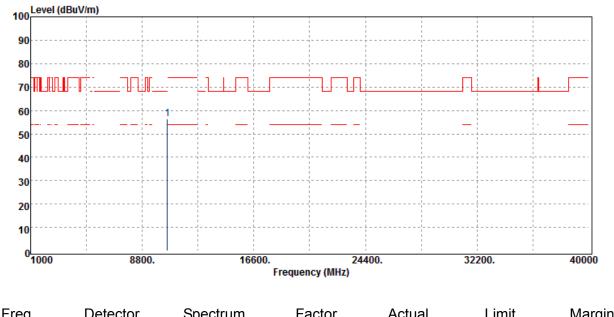


Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n40B2 :5270 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



ГІ	eq.	Delector	Spectrum	Facilli	Actual		waryin
		Mode	Reading Level		FS	@3m	
Μ	lHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
105	40.00	Peak	40.80	15.67	56.47	68.20	-11.73

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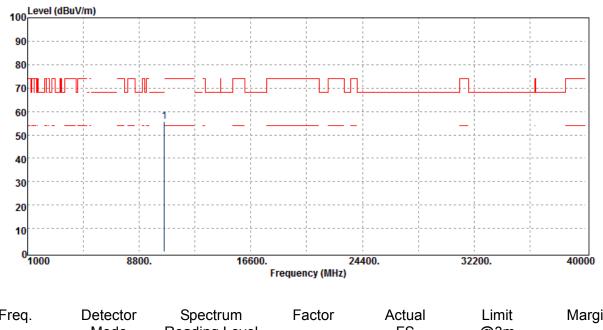
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Operation Band	:802.11n40B2	Test Date	:2019-03-09
Fundamental Frequency	:5270 MHz	Temp./Humi.	:20 deg C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



⊢req.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10540.00	Peak	40.01	15.67	55.68	68.20	-12.52	_

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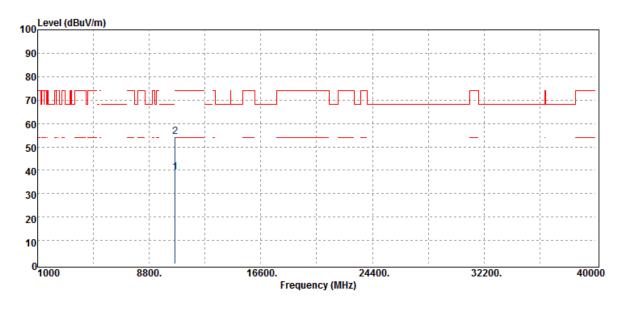
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Operation Band Fundamental Frequency Operation Mode EUT Pol.	:802.11n40B2 :5310 MHz :Tx CH HIGH :E1 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2019-03-09 :20 deg_C / 61 RH :Wei :VERTICAL

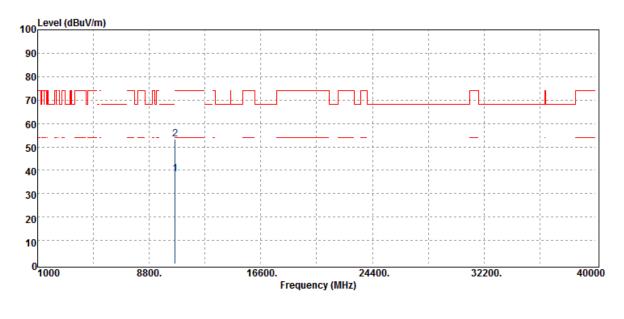


Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10620.00	Average	23.33	15.78	39.11	54.00	-14.89
10620.00	Peak	38.38	15.78	54.16	74.00	-19.84

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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	22.78	15.78	38.56	54.00	-15.44	
10620.00	Peak	37.67	15.78	53.45	74.00	-20.55	

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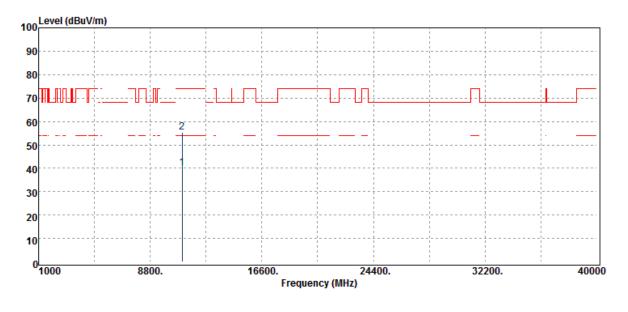


Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11n40B3 :5510 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 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	22.30	17.87	40.17	54.00	-13.83
11020.00	Peak	37.48	17.87	55.35	74.00	-18.65

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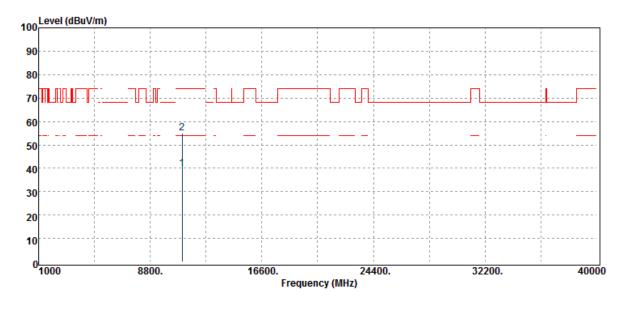
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Operation Band	:802.11n40B3	Test Date	:2019-03-09
Fundamental Frequency	:5510 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



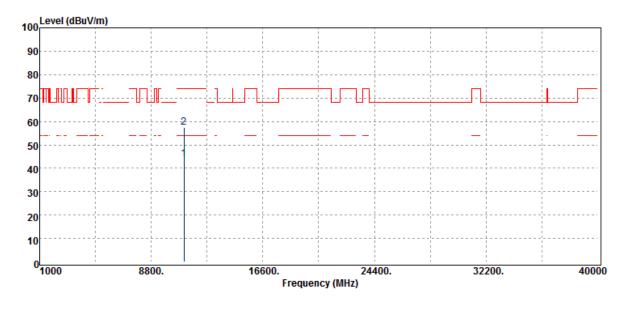
Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Average	21.94	17.87	39.81	54.00	-14.19
Peak	36.97	17.87	54.84	74.00	-19.16
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage21.94	ModeReading LevelPK/QP/AVdBµVdBAverage21.9417.87	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage21.9417.8739.81	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 21.94 17.87 39.81 54.00

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Operation Band	:802.11n40B3	Test Date	:2019-03-09
Fundamental Frequency	:5550 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Detector	Spectrum	Factor	Actual	Limit	Margin	
Mode	Reading Level		FS	@3m	_	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
Average	26.85	17.25	44.10	54.00	-9.90	-
Peak	40.24	17.25	57.49	74.00	-16.51	
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage26.85	ModeReading LevelPK/QP/AVdBµVdBAverage26.8517.25	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage26.8517.2544.10	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 26.85 17.25 44.10 54.00	Mode Reading Level FS @3m PK/QP/AV dBµV dB dBµV/m dB Average 26.85 17.25 44.10 54.00 -9.90

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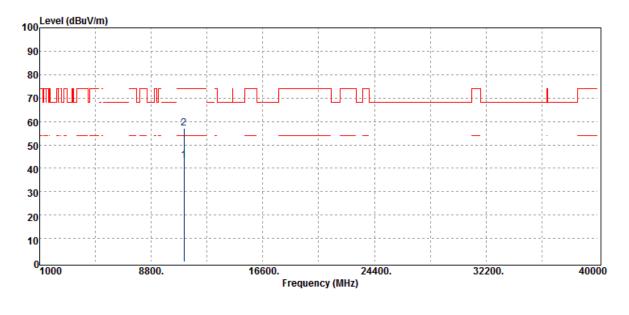
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Operation Band	:802.11n40B3	Test Date	:2019-03-09
Fundamental Frequency	:5550 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



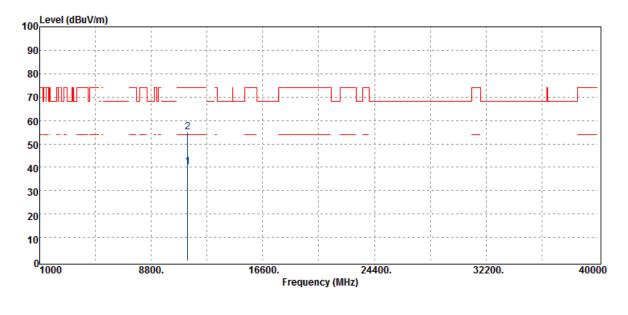
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
11100.00	Average	25.95	17.25	43.20	54.00	-10.80	-
11100.00	Peak	39.72	17.25	56.97	74.00	-17.03	

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EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL	Operation Band	:802.11n40B3	Test Date	:2019-03-09
	Fundamental Frequency	:5670 MHz	Temp./Humi.	:20 deg_C / 61 RH
	Operation Mode	:Tx CH HIGH	Engineer	:Wei
	EUT Pol.	:E1 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	23.66	16.36	40.02	54.00	-13.98
11340.00	Peak	38.72	16.36	55.08	74.00	-18.92

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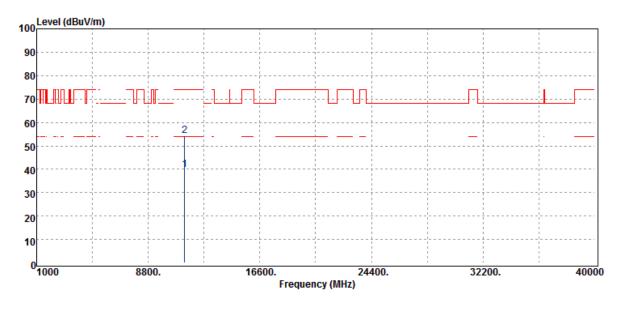
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Fundamental Frequency:5670 MHzTerOperation Mode:Tx CH HIGHEn	ngineer	:2019-03-09 :20 deg_C / 61 RH :Wei :HORIZONTAL
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	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	11340.00	Average	23.29	16.36	39.65	54.00	-14.35	
	11340.00	Peak	38.06	16.36	54.42	74.00	-19.58	

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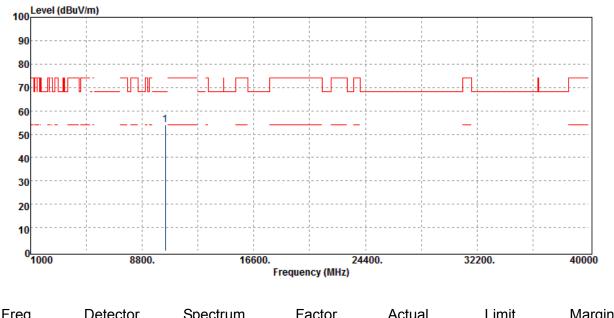


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B1 :5210 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei Measurement Antenna Pol. :VERTICAL



rieq.	Delector	opectium	T actor	Actual		margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
10420.00	Peak	38.85	15.12	53.97	68.20	-14.23	

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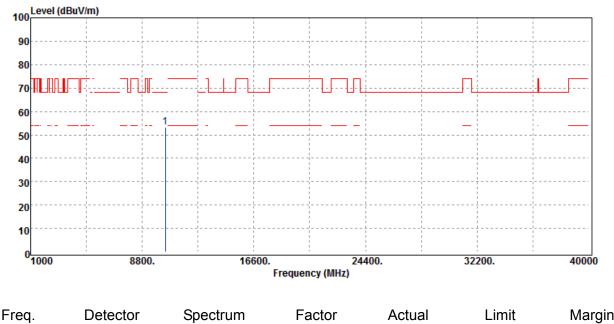
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Operation Band	:802.11ac80B1	Test Date	:2019-03-09
Fundamental Frequency	:5210 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



	печ.	Delecioi	Spectrum	T actor	Actual		maryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10420.00	Peak	38.20	15.12	53.32	68.20	-14.88	

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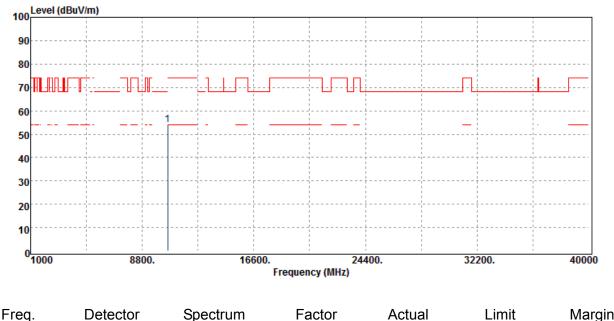


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B2 :5290 MHz :Tx CH HIGH :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei Measurement Antenna Pol. :VERTICAL



	Fleq.	Delector	Spectrum	Facili	Actual	LIIIII	wargin	
		Mode	Reading Level		FS	@3m		
	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
_	10580.00	Peak	38.56	15.43	53.99	68.20	-14.21	

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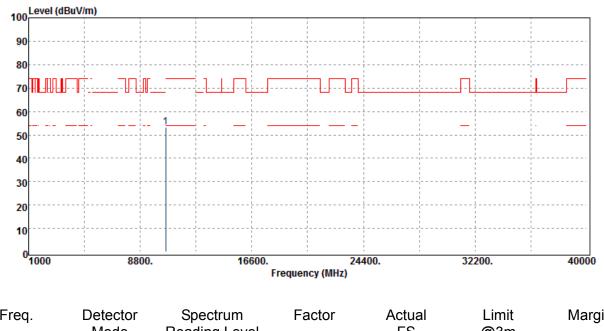
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Operation Band:802.11ac80B2Test DateFundamental Frequency:5290 MHzTemp./Humi.Operation Mode:Tx CH HIGHEngineerEUT Pol.:E1 PlaneMeasurement An	:2019-03-09 :20 deg_C / 61 RH :Wei tenna Pol. :HORIZONTAL
---	--



Freq.	Detector	Spectrum	Factor	Actual	Limit	iviargin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10580.00	Peak	37.91	15.43	53.34	68.20	-14.86

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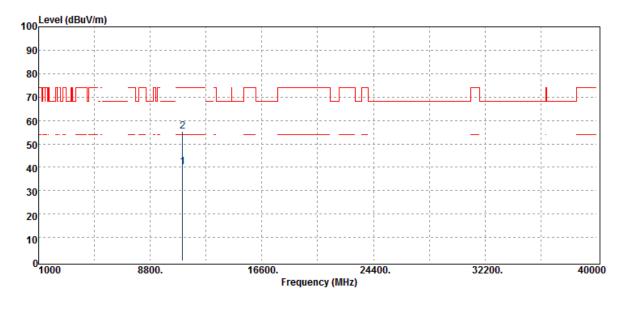


Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

Operation Band
Fundamental Frequency
Operation Mode
EUT Pol.

:802.11ac80B3 :5530 MHz :Tx CH LOW :E1 Plane

Test Date :2019-03-09 Temp./Humi. :20 deg_C / 61 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	22.68	17.50	40.18	54.00	-13.82
11060.00	Peak	37.91	17.50	55.41	74.00	-18.59

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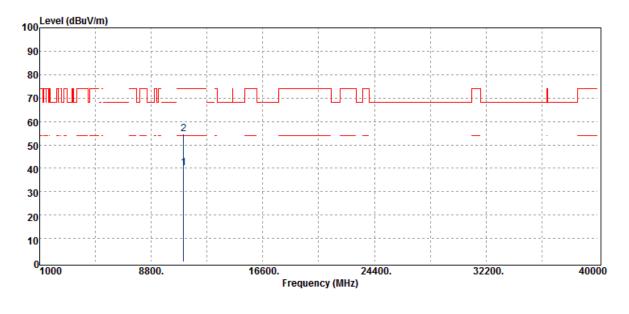
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Operation Band	:802.11ac80B3	Test Date	:2019-03-09
Fundamental Frequency	:5530 MHz	Temp./Humi.	:20 deg C / 61 RH
Operation Mode	:Tx CH LOW	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



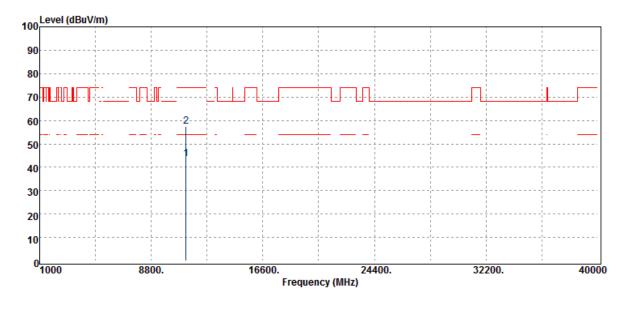
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11060.00	Average	22.47	17.50	39.97	54.00	-14.03
11060.00	Peak	37.33	17.50	54.83	74.00	-19.17

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Operation Band	:802.11ac80B3	Test Date	:2019-03-09
Fundamental Frequency	:5610 MHz	Temp./Humi.	:20 deg_C / 61 RH
Operation Mode	:Tx CH MID	Engineer	:Wei
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



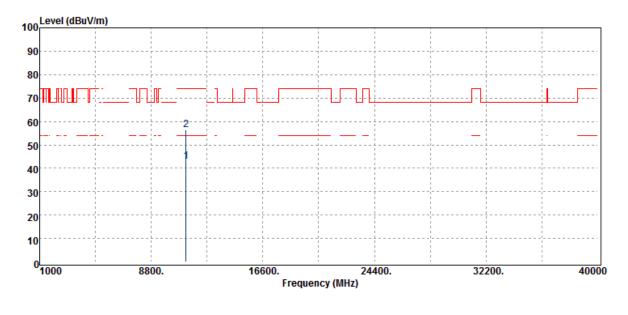
Free	q. Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MH	z PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11220	.00 Average	26.93	16.53	43.46	54.00	-10.54
11220	.00 Peak	40.88	16.53	57.41	74.00	-16.59

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Operation Band	:802.11ac80B3	Engineer	:2019-03-09
Fundamental Frequency	:5610 MHz		:20 deg_C / 61 RH
Operation Mode	:Tx CH MID		:Wei
FUT Pol	:F1 Plane		:HORIZONTAI
EUT Pol.	:E1 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	26.34	16.53	42.87	54.00	-11.13
11220.00	Peak	40.02	16.53	56.55	74.00	-17.45

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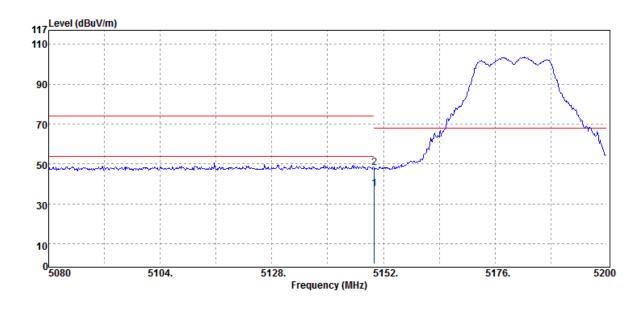


Band Edge falling to restricted band

802.11a mode

Operation Band	:802.11aB1
Fundamental Frequency	:5180 MHz
Operation Mode	:Bandedge CH LOW
EUT Pol.	:E1 Plane

Test Date :2019-03-26 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	32.92	4.54	37.46	54.00	-16.54
5150.00	Peak	43.45	4.54	47.99	74.00	-26.01

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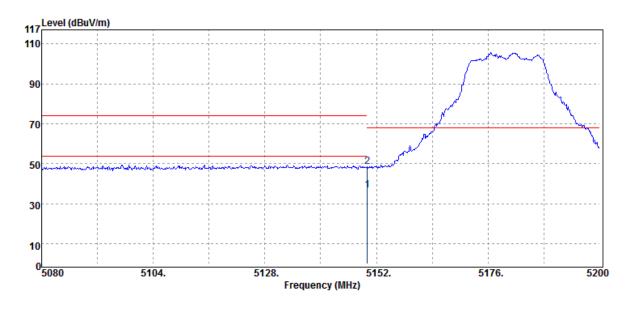
Report No.: T190304W03-RP5 Page: 116 of 151



Operation Band :802.11aB1 Fundamental Frequency :5180 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :E1 Plane

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

:2019-03-26 :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	32.41	4.54	36.95	54.00	-17.05
5150.00	Peak	43.93	4.54	48.47	74.00	-25.53

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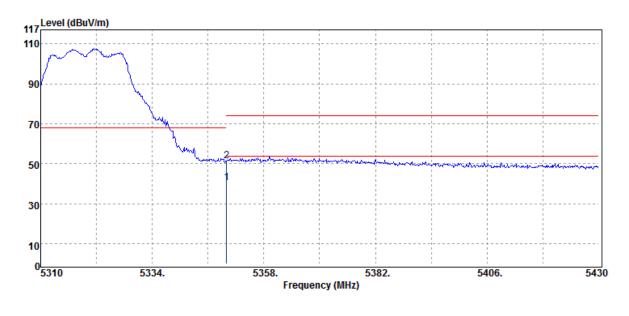
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Operation Band :802.11aB2 Fundamental Frequency :5320 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :E1 Plane

Test Date :2019-03-26 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
5350.00	Average	35.17	5.19	40.36	54.00	-13.64
5350.00	Peak	46.39	5.19	51.58	74.00	-22.42

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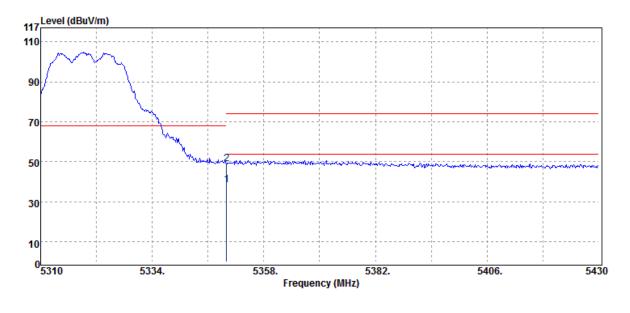
Report No.: T190304W03-RP5 Page: 118 of 151



Operation Band :802.11aB2 Fundamental Frequency :5320 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :E1 Plane

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

:2019-03-26 :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
5350.00	Average	33.31	5.19	38.50	54.00	-15.50
5350.00	Peak	43.84	5.19	49.03	74.00	-24.97

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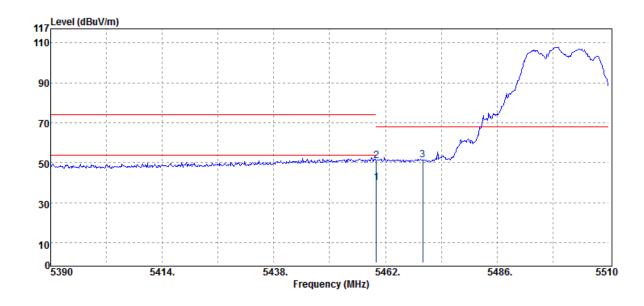
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz :Bandedge CH LOW :E1 Plane

Test Date :2019-03-26 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
5460.00	Average	34.69	5.54	40.23	54.00	-13.77
5460.00	Peak	45.58	5.54	51.12	74.00	-22.88
5470.00	Peak	45.81	5.52	51.33	68.20	-16.87
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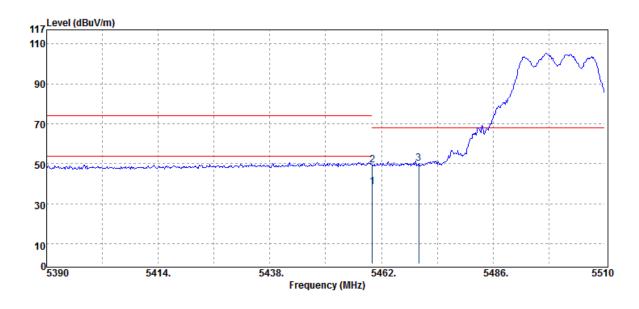


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5500 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-26 :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	33.07	5.54	38.61	54.00	-15.39
Peak	43.91	5.54	49.45	74.00	-24.55
Peak	44.54	5.52	50.06	68.20	-18.14
	Mode PK/QP/AV Average Peak	ModeReading LevelPK/QP/AVdBµVAverage33.07Peak43.91	ModeReading LevelPK/QP/AVdBµVdBAverage33.075.54Peak43.915.54	Mode Reading Level FS PK/QP/AV dBμV dB dBμV/m Average 33.07 5.54 38.61 Peak 43.91 5.54 49.45	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 33.07 5.54 38.61 54.00 Peak 43.91 5.54 49.45 74.00

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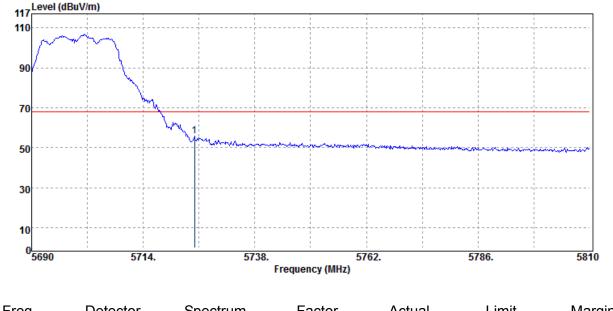
Report No.: T190304W03-RP5 Page: 121 of 151



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

:802.11aB3 :5700 MHz :Bandedge CH HIGH :E1 Plane

Test Date :2019-03-26 Temp./Humi. :23 deg_C / 62 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Delector	Spectrum	Factor	Actual		Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	49.37	6.54	55.91	68.20	-12.29

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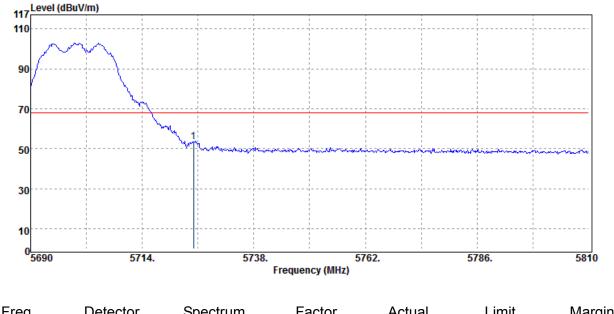


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11aB3 :5700 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-26 :23 deg_C / 62 RH :Wei :HORIZONTAL



	Fleq.	Delector	Spectrum	Factor	Actual		waryin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
	5725.00	Peak	47.06	6.54	53.60	68.20	-14.60	_

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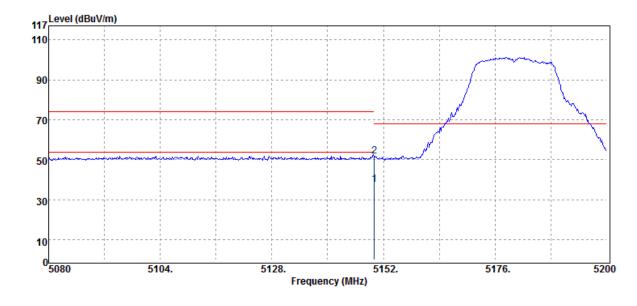


802.11n20 HT mode

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

:802.11n20B1 :5180 MHz :Bandedge CH LOW :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 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	33.22	4.55	37.77	54.00	-16.23
5150.00	Peak	47.33	4.55	51.88	74.00	-22.12

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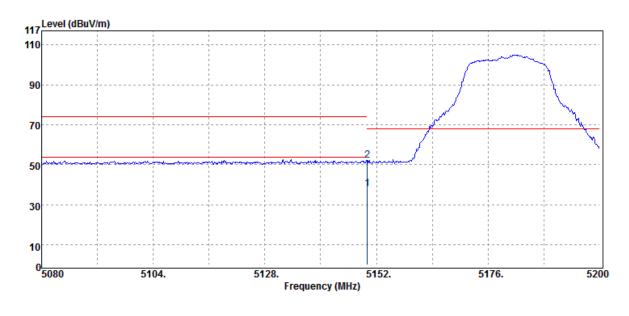


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B1 :5180 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	33.57	4.55	38.12	54.00	-15.88
5150.00	Peak	47.85	4.55	52.40	74.00	-21.60

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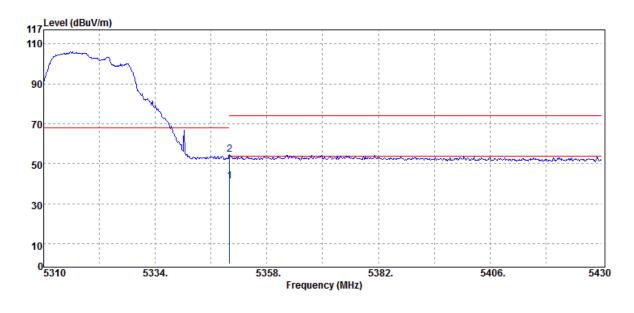
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Operation Band :802.11n20B2 Fundamental Frequency :5320 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 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
5350.00	Average	36.12	5.19	41.31	54.00	-12.69
5350.00	Peak	49.61	5.19	54.80	74.00	-19.20

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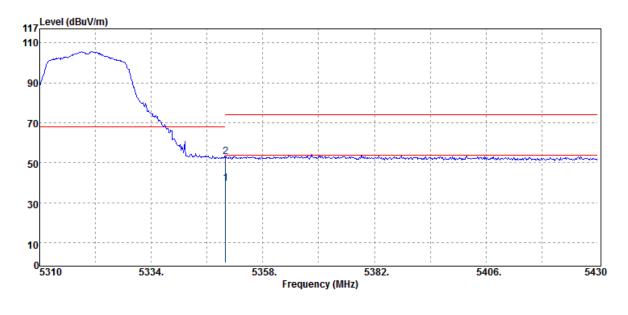


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B2 :5320 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 RH :HORIZONTAL



Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Average	34.33	5.19	39.52	54.00	-14.48
Peak	47.68	5.19	52.87	74.00	-21.13
	Mode PK/QP/AV Average	ModeReading LevelPK/QP/AVdBµVAverage34.33	ModeReading LevelPK/QP/AVdBμVdBAverage34.335.19	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mAverage34.335.1939.52	Mode Reading Level FS @3m PK/QP/AV dBμV dB dBμV/m dBμV/m Average 34.33 5.19 39.52 54.00

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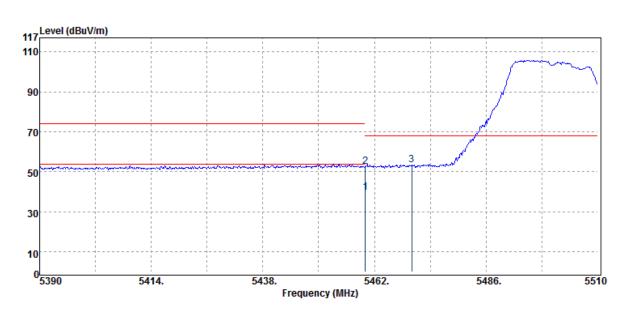
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Bandedge CH LOW :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



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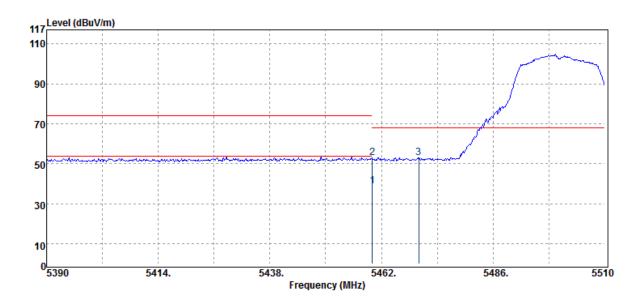


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5500 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	33.51	5.54	39.05	54.00	-14.95
5460.00	Peak	47.49	5.54	53.03	74.00	-20.97
5470.00	Peak	47.46	5.52	52.98	68.20	-15.22

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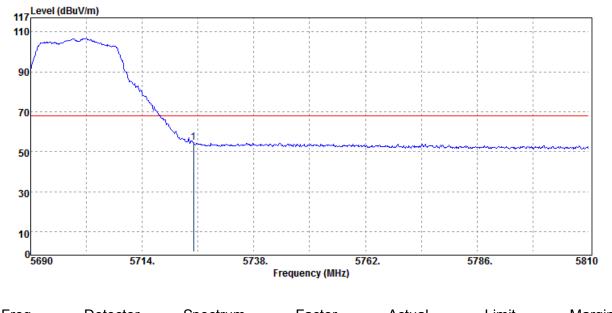
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Operation Band :802.11n20B3 Fundamental Frequency :5700 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 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	
5725.00	Peak	48.20	6.55	54.75	68.20	-13.45	—

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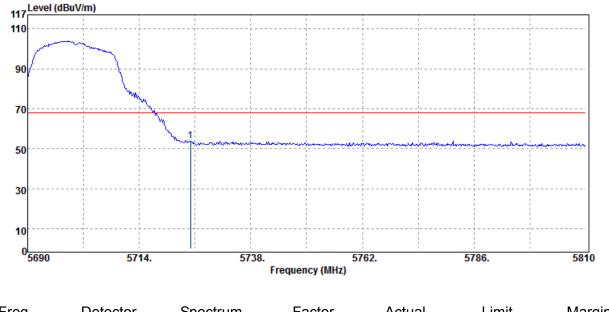


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20B3 :5700 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 RH :Wei :HORIZONTAL



Freq.	Delector	Spectrum	Factor	Actual	LIMIL	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	47.23	6.55	53.78	68.20	-14.42

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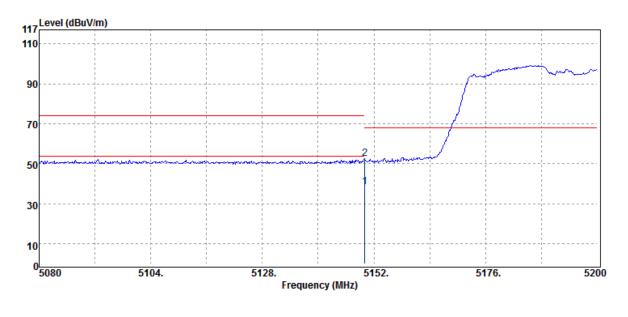


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B1 :5190 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	33.94	4.55	38.49	54.00	-15.51
5150.00	Peak	47.95	4.55	52.50	74.00	-21.50

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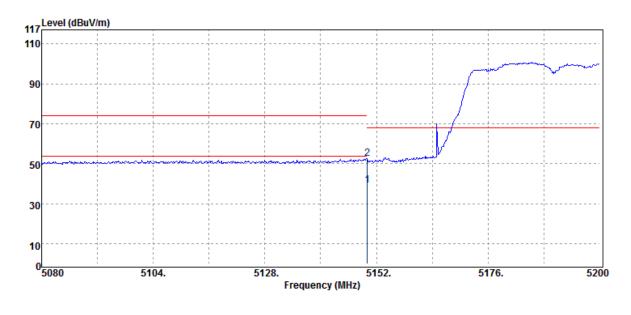
802.11n40 HT mode

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

:802.11n40B1 :5190 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	34.65	4.55	39.20	54.00	-14.80
5150.00	Peak	48.04	4.55	52.59	74.00	-21.41

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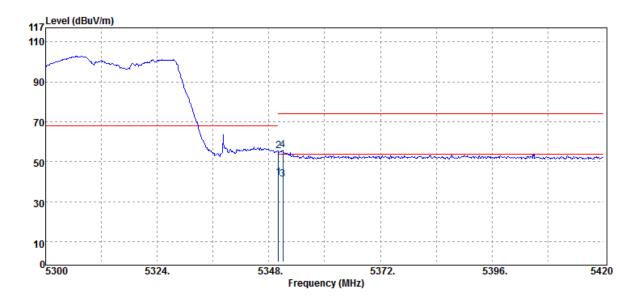


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 RH



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5350.04	Average	36.87	5.19	42.06	54.00	-11.94
5350.04	Peak	50.13	5.19	55.32	74.00	-18.68
5351.00	Average	36.02	5.20	41.22	54.00	-12.78
5351.00	Peak	50.57	5.20	55.77	74.00	-18.23

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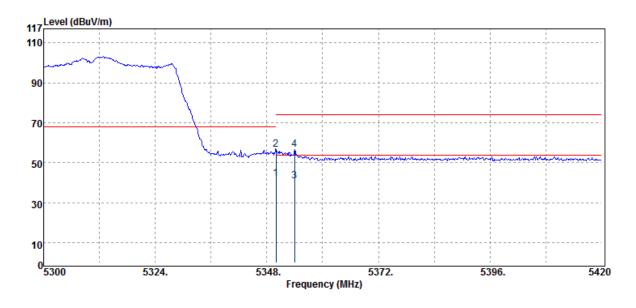


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B2 :5310 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	37.11	5.19	42.30	54.00	-11.70
5350.00	Peak	51.48	5.19	56.67	74.00	-17.33
5354.00	Average	35.72	5.20	40.92	54.00	-13.08
5354.00	Peak	51.34	5.20	56.54	74.00	-17.46

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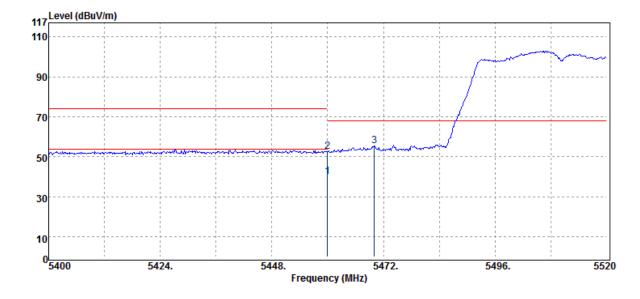
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Bandedge CH LOW :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 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	34.66	5.54	40.20	54.00	-13.80
5460.00	Peak	46.92	5.54	52.46	74.00	-21.54
5470.00	Peak	49.80	5.52	55.32	68.20	-12.88

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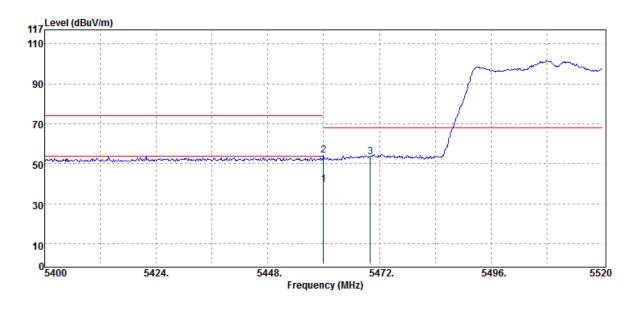


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5510 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	34.22	5.54	39.76	54.00	-14.24
5460.00	Peak	48.55	5.54	54.09	74.00	-19.91
5470.00	Peak	47.82	5.52	53.34	68.20	-14.86

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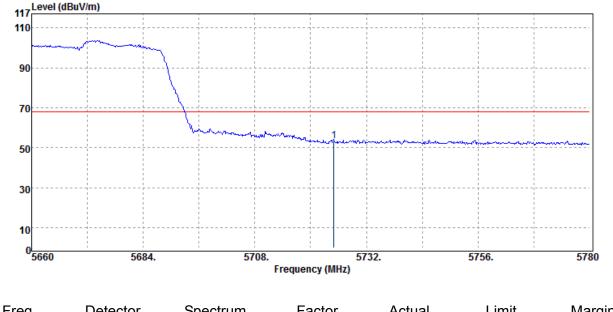
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Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz :Bandedge CH HIGH :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 RH Engineer :Wei :VERTICAL Measurement Antenna Pol.



Freq.	Mode	Reading Level	Factor	FS	@3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	47.03	6.55	53.58	68.20	-14.62

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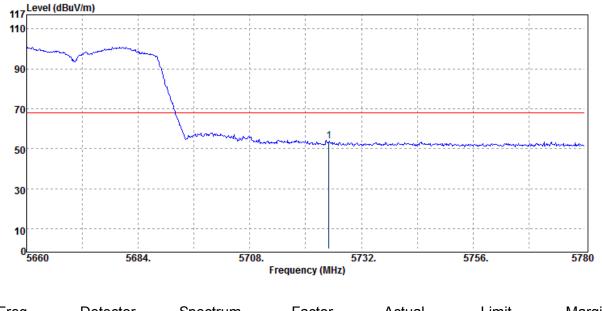


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40B3 :5670 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 RH :Wei :HORIZONTAL



⊢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	47.18	6.55	53.73	68.20	-14.47

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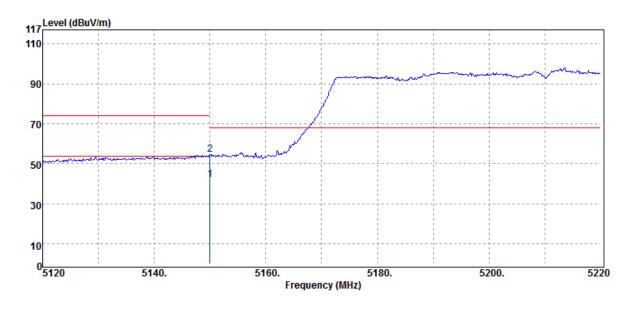
802.11ac VHT80 mode

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

:802.11ac80B1 :5210 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	37.63	4.55	42.18	54.00	-11.82
5150.00	Peak	50.09	4.55	54.64	74.00	-19.36

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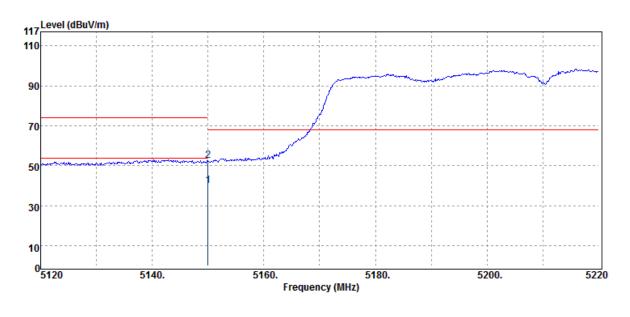


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B1 :5210 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	35.54	4.55	40.09	54.00	-13.91
5150.00	Peak	48.14	4.55	52.69	74.00	-21.31

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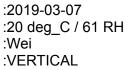
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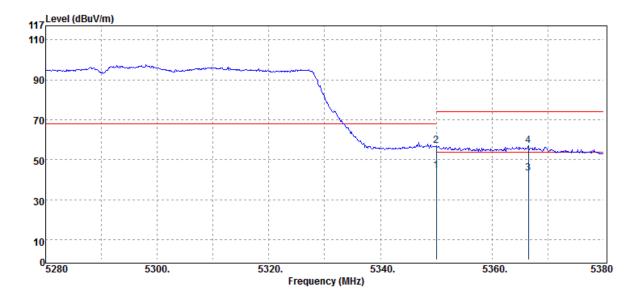


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Bandedge CH HIGH :E1 Plane

Test Date Temp./Humi. Engineer :Wei 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
5350.00	Average	39.39	5.19	44.58	54.00	-9.42
5350.00	Peak	51.93	5.19	57.12	74.00	-16.88
5366.50	Average	38.09	5.27	43.36	54.00	-10.64
5366.50	Peak	51.71	5.27	56.98	74.00	-17.02

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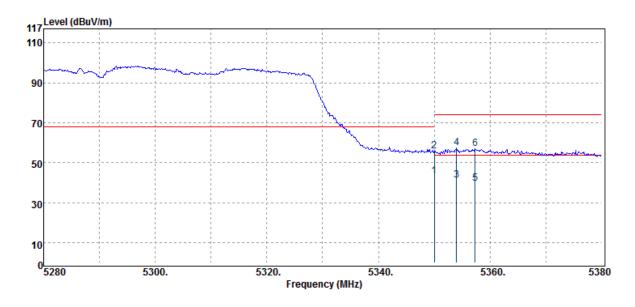


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B2 :5290 MHz :Bandedge CH HIGH :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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	38.22	5.19	43.41	54.00	-10.59
5350.00	Peak	50.74	5.19	55.93	74.00	-18.07
5354.00	Average	36.02	5.20	41.22	54.00	-12.78
5354.00	Peak	52.20	5.20	57.40	74.00	-16.60
5357.30	Average	34.66	5.21	39.87	54.00	-14.13
5357.30	Peak	51.79	5.21	57.00	74.00	-17.00

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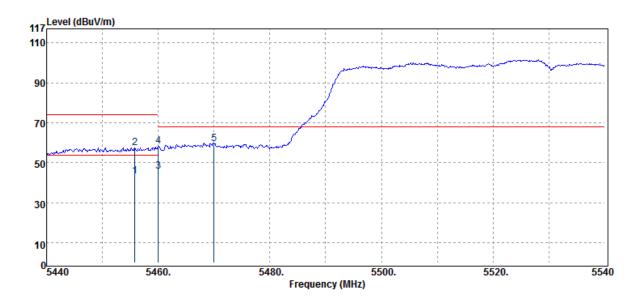


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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
5455.80	Average	37.74	5.54	43.28	54.00	-10.72
5455.80	Peak	51.95	5.54	57.49	74.00	-16.51
5460.00	Average	40.05	5.54	45.59	54.00	-8.41
5460.00	Peak	52.69	5.54	58.23	74.00	-15.77
5470.00	Peak	54.16	5.52	59.68	68.20	-8.52

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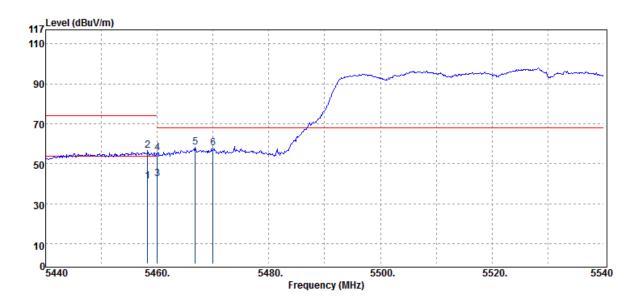


Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11ac80B3 :5530 MHz :Bandedge CH LOW :E1 Plane

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

:2019-03-07 :20 deg_C / 61 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
5458.30	Average	35.91	5.53	41.44	54.00	-12.56
5458.30	Peak	51.19	5.53	56.72	74.00	-17.28
5460.00	Average	36.90	5.54	42.44	54.00	-11.56
5460.00	Peak	49.99	5.54	55.53	74.00	-18.47
5466.80	Peak	52.57	5.53	58.10	68.20	-10.10
5470.00	Peak	52.22	5.52	57.74	68.20	-10.46

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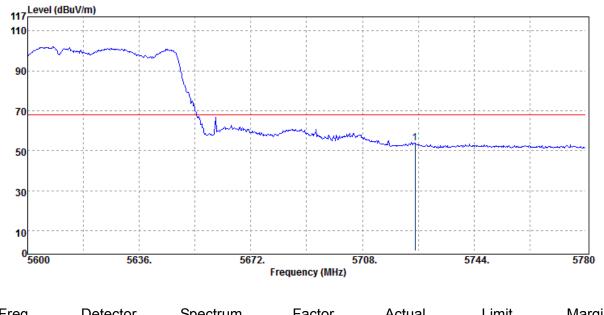
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Operation Band :802.11ac80B3 Fundamental Frequency :5610 MHz **Operation Mode** :Bandedge CH MID EUT Pol. :E1 Plane

Test Date :2019-03-07 Temp./Humi. :20 deg_C / 61 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	
5725.00	Peak	47.15	6.55	53.70	68.20	-14.50	-

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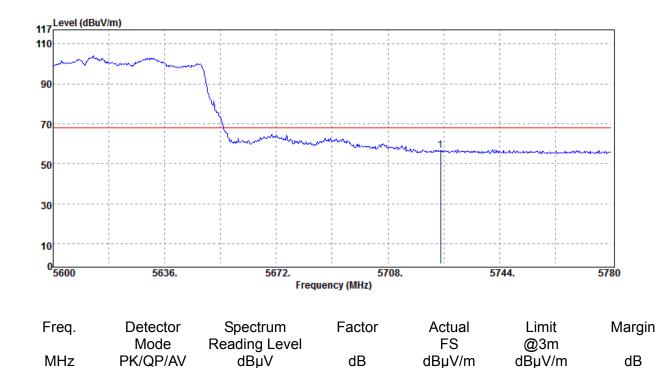
Report No.: T190304W03-RP5 Page: 146 of 151



Operation Band:802.11ac80B3Fundamental Frequency:5610 MHzOperation Mode:Bandedge CH MIDEUT Pol.:E1 Plane

Test Date:20Temp./Humi.:20Engineer:WeMeasurement Antenna Pol.:HO

:2019-03-07 :20 deg_C / 61 RH :Wei :HORIZONTAL



6.55

56.80

68.20

-11.40

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50.25

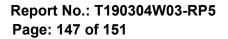
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5725.00

Peak

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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

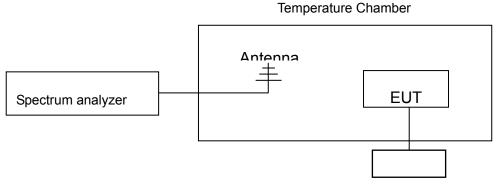
13.1 Standard Applicable

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:

	Conducted Emission Test Site							
EQUIPMENT	EQUIPMENT MFR MODEL SERIAL LAST CAL							
TYPE		NUMBER	NUMBER	CAL.				
DC Power Supply	Agilent	E3640A	KR93300208	08/15/2018	08/14/2019			
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/09/2018	04/08/2019			
Thermostat- ic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	10/08/2018	10/07/2019			
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	02/26/2019	02/25/2020			
Attenuator	Mini-Circuit	BW-S10W2+	1	02/26/2019	02/25/2020			

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13.5Measurement Result

Startup:

Operation Mode	802.11 a	Test Date	2019.03.08
Temperature	:22.6 °C	Test By	Peter
Humidity	: 55%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4	36	5180	5,179.98439	0.00000301
-10	3.7	36	5180	5,179.98176	0.00000352
25	3.85	36	5180	5,179.99402	0.00000115
55	4	36	5180	5,179.98472	0.00000295
00	3.7	36	5180	5,179.98962	0.00000200

2 Minutes:

Operation Mode	802.11 a	Test Date	2019.03.08
Temperature	:22.6 °C	Test By	Peter
Humidity	: 55%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4	36	5180	5,179.99698	0.0000058
	3.7	36	5180	5,179.99920	0.00000015
25	3.85	36	5180	5,179.99740	0.00000050
55	4	36	5180	5,179.99455	0.00000105
	3.7	36	5180	5,179.99884	0.00000022

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5 Minutes:

Operation Mode	802.11 a	Test Date	2019.03.08
Temperature	:22.6 °C	Test By	Peter
Humidity	: 55%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4	36	5180	5,179.98280	0.00000332
	3.7	36	5180	5,179.99377	0.00000120
25	3.85	36	5180	5,179.98223	0.00000343
55	4	36	5180	5,179.99197	0.00000155
	3.7	36	5180	5,179.98822	0.00000227

10 Minutes:

Operation Mode	802.11 a	Test Date	2019.03.08
Temperature	:22.6 °C	Test By	Peter
Humidity	: 55%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4	36	5180	5,179.99796	0.0000039
	3.7	36	5180	5,179.98679	0.00000255
25	3.85	36	5180	5,179.99186	0.00000157
55	4	36	5180	5,179.98398	0.00000309
	3.7	36	5180	5,179.98771	0.0000237

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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.

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