

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E AND REQUIREMENT

OF

Product Name:	2x2 dual-band IEEE 802.11 a/b/g/n/ac and BT4.2 Combo Module
Brand Name:	Foxconn
Model No.:	WBU034
Model Difference:	N/A
FCC ID:	RX3-WBU034
Report No.:	ER/2016/80037
Issue Date:	Aug. 19, 2016
FCC Rule Part:	§15.407
	Hon Hai Precision Industry Co., Ltd.
Prepared for:	No.151, Sec. 1, Nankan Rd., Lujhu Town- ship, Taoyuan County, 33859, Taiwan (R.O.C)
	SGS Taiwan Ltd.
	Electronics & Communication Laboratory
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	City, Taiwan 24803
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Testing Laboratory 0513	Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.

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VERIFICATION OF COMPLIANCE

Applicant (FCC):	Hon Hai Precision Industry Co., Ltd. No.151, Sec. 1, Nankan Rd., Lujhu Township, Taoyuan County, 33859, Taiwan (R.O.C)
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FCC ID:	RX3-WBU034
File Number:	ER/2016/80037
Date of Test:	Aug. 05, 2016 ~ Aug. 16, 2016
Data of EUT Bossivadu	Aug. 05, 2016

Date of EUT Received: Aug. 05, 2016

We hereby certify that:

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

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

Test By:	Ton Lis	Date:	Aug. 19, 2016
Prepared By:	Tiffany Kao	Date:	Aug. 19, 2016
Approved By:	Tiffany Kao / Clerk Jim Chang Jim Chang / Asst. Manager	Date:	Aug. 19, 2016

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Revision History

Report Number	Revision	Description	Issue Date
ER/2016/80037 Rev.00 Initial creation of doc		Initial creation of document	Aug. 19, 2016

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1. GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	2x2 dual-band IEEE 802.11 a/b/g/n/ac and BT4.2 Combo Module
Brand Name:	Foxconn
Model No.:	WBU034
Model Difference:	N/A
Product SW/HW version:	N/A / DVT
Radio SW/HW version:	N/A / N/A
Test SW Version:	N/A
RF power setting in TEST SW:	N/A
Power Supply:	3.3Vdc from Test Kit

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WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.)	Modulation Technology	
	5150~5250	4	14.44 dBm (Avg.)		
11a	5250~5350	4	14.47 dBm (Avg.)	OFDM	
IId	5470~5725	12	14.49 dBm (Avg.)	OFDINI	
	5725-5850	5	14.49 dBm		
	HT / VHT20 5150~5250	4	HT: 14.48 dBm (Avg.) (Worst Case)		
11n /	HT / VHT20 5250~5350	4	HT: 14.49 dBm (Avg.) (Worst Case)	OFDM	
ac_20M	HT / VHT20 5470~5725	11	HT: 14.46 dBm (Avg.) (Worst Case)		
	HT / VHT20 5725-5850	5	HT: 14.46 dBm (Worst Case)		
	HT / VHT40 5150~5250	2	HT: 14.42 dBm (Avg.) (Worst Case)		
11n / ac_40M	HT / VHT40 5250~5350	2	HT: 14.49 dBm (Avg.) (Worst Case)	OFDM	
_	HT / VHT40 5470~5725	5	HT: 14.49 dBm (Avg.) (Worst Case)		
	HT / VHT40 5725-5850	2	HT: 14.45 dBm (Worst Case)		
	VHT80 5150~5250	1	14.21 dBm (Avg.)		
11ac_80M	VHT80 5250~5350	1	14.24 dBm (Avg.)	OFDM	
	VHT80 5470~5725	2	14.18 dBm (Avg.)	2. 2	
	VHT80 5725-5850	1	14.09 dBm		

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	PCB Antenna (Internal), 1. Main 5GHz Gain: 2.78dBi (5150MHz-5250MHz) 5GHz Gain: 2.78dBi (5250MHz-5350MHz) 5GHz Gain: 1.89dBi (5470MHz-5725MHz)
Antenna Designation	5GHz Gain: -0.57dBi (5725MHz-5850MHz)
	2. Aux
	5GHz Gain: 3.01dBi (5150MHz-5250MHz)
	5GHz Gain: 3.01dBi (5250MHz-5350MHz)
	5GHz Gain: 4.11dBi (5470MHz-5725MHz)
	5GHz Gain: 2.66dBi (5725MHz-5850MHz)
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM
	256QAM for OFDM in 802.11ac only
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300Mbps 802.11 ac_20MHz: 6.5 –144.4Mbps 802.11 ac_40MHz: 13.5 –300Mbps 802.11 ac_80MHz: 29.3 – 650Mbps

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1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is 2x2 dual-band IEEE 802.11 a/b/g/n/ac and BT4.2 Combo Module, supporting Wi-Fi 802.11abgn/ac, Bluetooth, features, and below is details of information.

Product Feature			
Product Name:	2x2 dual-band IEEE 802.11 a/b/g/n/ac and BT4.2 Combo Module		
Brand Name:	Foxconn		
Model No.:	WBU034		
Model Difference:	N/A		
FCC ID:	RX3-WBU034		
Bluetooth Version	V4.2 dual mode		
Wi-Fi- Specification	802.11a/b/g/n/ac		

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules

FCC KDB 662911 D01 Multiple Transmitter Output

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

ANSI C63.10:2013

Note:

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

1.4 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803. (TAF code 0513)

FCC Registration Numbers are: 509634

1.5 Special Accessories

There are no special accessories used while test was conducted.

1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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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. Following shows an offset computation example with cable loss 3.3dB, and 10dB attenuator. **SISO mode offset:** = RF cable loss (dB)+ attenuation factor(dB)=10.3(dB) MIMO mode offset

= RF cable loss (dB)+ attenuation factor(dB)+ 10 log(NANT) dB =13.3(dB)

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission & Conducted (Antenna Port) & Conduction (AC Power Line) Configuration

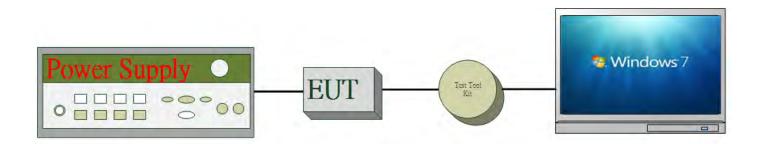


Table 2-1 Eq	uipment Used	in Tested	System
--------------	--------------	-----------	--------

lte m	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.	Notebook	Lenovo	L420	LR-7HXZA	Shielded	Un-shielded
3.	DC Power Supply	HP	E3640A	KR93300208	N/A	Un-shielded
4.	Test Kit	N/A	N/A	N/A	N/A	N/A

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SUMMARY OF TEST RESULT 3.

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
§15.407(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:

4 channels are provided for 802.11a, 802.11n_HT20, 802.11ac_VHT20

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

2 channels are provided for 802.11n_HT40, 802.11ac_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac_VHT80

CHANNEL	FREQUENCY
42	5210 MHz

Operated band in 5250 MHz ~5350 MHz:

4 channels are provided for 802.11a, 802.11n_HT20, 802.11ac_VHT20

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

2 channels are provided for 802.11n_HT40, 802.11ac_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac_VHT80

CHANNEL	FREQUENCY
58	5290 MHz

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Operated band in 5470 MHz ~5725 MHz:

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

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

5 channels are provided for 802.11n_HT40, 802.11ac_VHT40

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

2 channesl are provided for 802.11ac_VHT80

Ϊ	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
	106	5530 MHz	122	5610 MHz

Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a, 802.11n_HT20, 802.11ac VHT20

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

2 channels are provided for 802.11n_HT40, 802.11ac_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac_VHT80

CHANNEL	FREQUENCY
155	5775 MHz

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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 programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.
- 4. The given UE is pre-scanned among 802.11n and ac modes, and 802.11n yields the highest reading that generates the highest emission. Therefore, 802.11n as the mode of test configuration is chosen to carry out the relevantly mandatory test items.

	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	36,44,48	OFDM	1	MAIN					
802.11a	5260~5320	52 to 64	52,60,64	OFDM	1	MAIN					
802.11a	5500~5720	100 to 140	100,116,140	OFDM	1	MAIN					
802.11a	5745~5825	149 to 165	149,157,165	OFDM	1	MAIN					
	RADIATED EMISSION TEST (ABOVE 1 GHz)										
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT					
802.11a	5180~5240	36 to 48	26 11 10	OFDM	1	MAIN					
802.11n_HT20	5160~5240	30 10 40	36,44,48	OFDM	MCS8	MIMO					
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO					
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO					
802.11a	5260~5320	52 to 64		OFDM	1	MAIN					
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					

RADIATED EMISSION TEST:

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MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a		100 to 111	100 116 140	OFDM	1	MAIN
802.11n_HT20	5500~5720	100 to 144	100,116,140	OFDM	MCS8	MIMO
802.11n_HT40	5510~5710	102 to 142	102,110,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	MIMO
802.11a	5745~5825	140 to 165	140 157 165	OFDM	1	MAIN
802.11n_HT20	5745~5625	149 to 165	149,157,165	OFDM	MCS8	MIMO
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS8	MIMO
802.11ac_VHT80	5775	155	155	OFDM	MCS8	MIMO

Note:

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

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ANTENNA PORT CONDUCTED MEASUREMENT:

	CONDUCTED TEST								
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11a	5180~5240	00 to 10	26 44 49	OFDM	1	MAIN			
802.11n_HT20	5160~5240	36 to 48	36,44,48	OFDM	MCS8	MIMO			
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO			
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO			
802.11a	5260~5320	52 to 64	52 60 64	OFDM	1	MAIN			
802.11n_HT20	5200~5520	52 10 64	52,60,64	OFDM	MCS8	MIMO			
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO			
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO			
802.11a	5500~5700	100 to 140		OFDM	1	MAIN			
802.11n_HT20	5500~5700	100 10 140	100,116,140	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			
802.11a		4.40.1.405		OFDM	1	MAIN			
802.11n_HT20	5745~5825	149 to 165	149,157,165	OFDM	MCS8	MIMO			
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS8	MIMO			
802.11ac_VHT80	5775	155	155	OFDM	MCS8	MIMO			

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MEASUREMENT UNCERTAINTY 5.

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26dB & 6dB Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 0.96 dB
Peak Power Spectral Density Measurement	+/- 1.67 dB
Frequency Stability	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

Radiated Spurious Emission:

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

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

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

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CONDUCTED EMISSION TEST 6.

6.1. Standard Applicable

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

	Limits							
Frequency range	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 wit	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	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017				
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/16/2016	05/15/2017				
LISN	MESS TEC	FCC-LISN-50/250 -25-2-01	4034	05/16/2016	05/15/2017				
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2015	11/25/2016				

6.3. EUT Setup

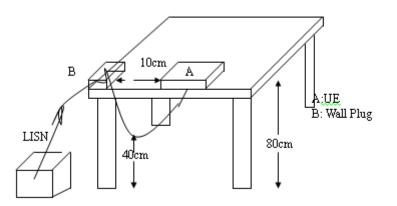
- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz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

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6.4. Test SET-UP



6.5. Measurement Procedure

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

6.6. Measurement Result

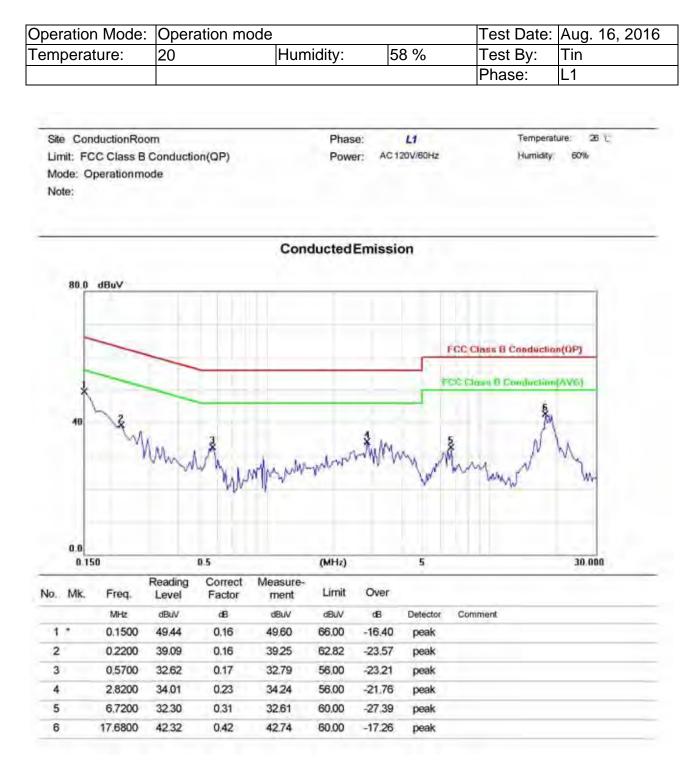
Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit

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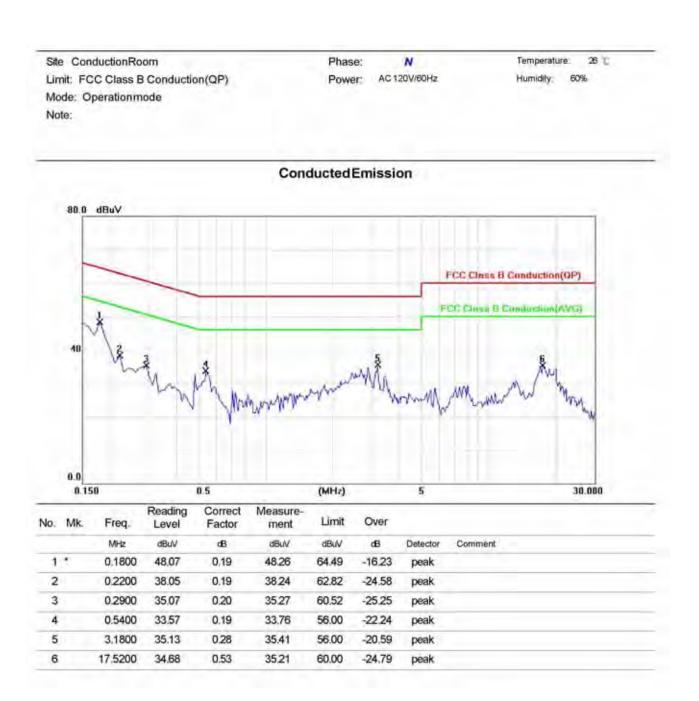
AC POWER LINE CONDUCTED EMISSION TEST DATA



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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
802.11a	99.99	0.00
802.11n_20	99.99	0.00
802.11ac_20	99.99	0.00
802.11n_40	99.99	0.00
802.11ac_40	99.99	0.00
802.11ac_80	99.99	0.00

Duty Cycle Factor: 10 * log(1/0.9999) = 0Duty Cycle Factor: 10 * log(1/0.9999) = 0

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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a

Frequency	TRACE 1 2 4 5 TRACE 1 2 4 5 TVPE WOMMONT	g Type: Log-Pwr	A	Trig: Free Ru	PNO: Fast	req 5.180000	enter Fi
Auto Tun	Mkr1 855.0 µs 19.72 dBm			#Atten: 30 dE	IFGain:Low	Ref Offset 10.3 Ref 30.00 dB	dBJdiv
Center Fre 5.180000000 GH	والموجود المراجع والمروحية	esselasgile rodoselase	ngi dhaqada;	Anderson and and a design of the second s	an the stand of the state of the	•1	10 10 10 10 10 10 10 10 10 10 10 10 10 1
Start Fre 5 18000000 GH							
Stop Fre 5 18000000 GH							
CF Ste 8.000000 MH	Span 0 Hz 00 ms (1001 pts)	Sweep 5.	FUNCTION	8.0 MHz			enter 5. es BW 8
Freq Offse 0 H	- CHICHON MADE		Porchos	19.72 dBm	855.0 us	t	
Scale Typ							

802.11n HT20

RL RL RL RI Center Freq 5,18	50 G DC	anes and	Avg Type: Log-Pwr	04:31:27 PM Aug 11, 2010	Frequency
enter Freq 5. re	PNO: Fast - IFGain:Low	#Atten: 30 dB		DET P NIN NUM	
Ref Offs 0 dB/div Ref 30.	et 13.3 dB .00 dBm			Mkr1 4,740 ms 20.31 dBm	Auto Tun
0.0 0.0 0.0	an a	Land Standard Standard		1 Hadaya Birang bag Ang Ang Ang Ang Ang Ang	Center Fre 5.180000000 GH
(PD) (PD) (PD) (PD)					Start Fre 5 180000000 GH
40 D					Stop Fre 5 18000000 GH
Center 5.1800000 Res BW 8 MHz		W 8.0 MHz	Sweep 5	Span 0 Hz .000 ms (1001 pts)	CF Ste 8.000000 Mit Auto Mo
NR MODE TRC. SOL	× 4.740 ms	9 FL 20.31 dBm	NCTION FUNCTION WEITH	FUNCTION VALUE ×	Auto: Me
2 3 4 5 6					Freq Offse
7 8 9					Scale Typ
					Log L
83			STATUS	-	_

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802.11n HT 40

Receipting Spectral and Annual Stars Swept SA RL All Surge De Center Freq 5.19000000	0 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB		Type: Log-Pwr	04:32:02 PM Aug 11, 201 TRACE 12, 2, 4, 7 TVPE OET P NO ROOM	Frequency
Ref Offset 13.3 dB					Mkr1 690.0 µs 17.97 dBm	AutoTune
	ana ang ang ang ang ang ang ang ang ang	worker, and	manen	امور بلمامز اور در باور <mark>ا</mark> مسال زم	างสารโอสิญารีที่ไปสร้างรู้เกิดระบ	Center Fred 5.190000000 GH;
(p)) (p)) (n))						Start Free 5 19000000 GH
40.0 150.0 40.0						Stop Free 5.19000000 GH
Center 5.190000000 GHz Res BW 8 MHz		W 8.0 MHz	FUNCTION	Sweep 5.	Span 0 H: 000 ms (1001 pts Function value	CF Step 8.000000 MH Auto Mar
1 N 1 t 2 3 4 5	690.0 µs	17.97 dBm				Freq Offse 0 H
6 7 8 9 10 11						Scale Type
<				STATUS		

802.11ac VHT 20

Keynight Spectreter Analyzer - Skept SA			10.00
Center Freq 5.18000000	PNO: Fast Trig: Free Run IFGain: Low #Atten: 30 dB	Avg Type: Log-Pwr THACE DE COLOR	Frequency
Ref Offset 13.3 dB	PosiniLow writeri or up	Mkr1 1.825 ms 20.41 dBm	Auto Tun
- 09 200	-1-24-26-25-25-26-27-27-27-27-27-27-27-27-27-27-27-27-27-	elik bada dini ang banan dini kada kada kada kada na ang ang ang magna ata ng b	Center Fre 5.180000000 GH
10 D			Start Fre 5 18000000 GH
40.0 20.0 60.0			Stop Fre 5 18000000 GH
Center 5.180000000 GHz Res BW 8 MHz MRR MODE TRC SCL X	#VBW 8.0 MHz	Span 0 Hz Sweep 5,000 ms (1001 pts)	CF Ste 8.000000 Mit Auto Ma
1 N 1 t 2 3 4 4 6	1.825 ms 20.41 dBm		Freq Offse
7 8 9 10 11			Scale Typ
80)		STATUS	

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802.11ac VHT 40

RL N Sector Freq 5.190	In G DC	Trig: Free Run	Avg Type: Log-Pwr	04 43131 PM Aug 11, 2010 TRADE 1 2 4 4 4 TIPE DET P NIN NIN	Frequency
Ref Offse	IFGein:Low	#Atten: 30 dB		Mkr1 1.655 ms 17.05 dBm	Auto Tuni
-09- 2010 1000 1000	1	and when the second	lang di mang mengengan di kebang di pang mengengan di pang mengengan di pang mengengan di pang mengengan di pan	ertert, ernestertwist, comme	Center Free 5.190000000 GH
(D)D					Start Fre 5 19000000 GH
0.0 0.0 0.0					Stop Fre 5.19000000 GH
enter 5.19000000 es BW 8 MHz		W 8.0 MHz	Sweep 5.	Span 0 Hz 000 ms (1001 pts) FUNCTION VALUE	CF Ste 8.000000 MH
1 N 1 t 23 4 5	1.655 ms	17.05 dBm		FORCTONVEDE	Freq Offse 0 H
6 7 8 9 0					Scale Typ
6		~	STATUS		Access of the

802.11 ac VHT 80

RL III enter Freq 5.2	210000000 GH	Z Ю: Fast → Sain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	04-44111 PM Aug 11, 2010 TRADE 11 2 3 4 3 TVPE Woodwoodw OET P N N R R N N	Frequency
dB/div Ref 3	fset 13.3 dB 0.00 dBm				Mkr1 825.0 µs 16.05 dBm	Auto Tuni
	and the second mediane	up when the	nontenana deservado	หลังทางกับรูปหลังสุดราย มาระบบร่าง	New York and the second se	Center Free 5 210000000 GH
						Start Fre 5 210000000 GH
00						Stop Fre 5.210000000 GH
enter 5.210000 es BW 8 MHz		#VBV	/ 8.0 MHz		Span 0 Hz .000 ms (1001 pts)	CF Ste 8.000000 MH
RR MODE TRC SCL	X 82	5.0 µs	16.05 dBm	UNCTION FUNCTION WETH	FUNCTION VALUE	Freq Offse 0 H
6 7 8 9 0						Scale Typ
a)			-	STATU	6	_

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8. 26dB & 6dB & 99% 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. Repeat above procedures until all test default channel measured were complete.

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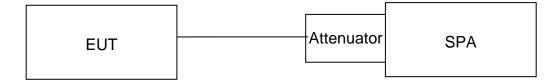
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Measurement Equipment Used 8.3

SGS Conducted Room						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016	
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017	
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017	

Test Set-up 8.4



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8.5 Measurement Result 26dB Bandwidth

802.11a_Main					
Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)			
5180	19.94	12.997			
5220	20.48	13.112			
5240	20.10	13.031			
5260	19.85	12.978			
5300	20.02	13.015			
5320	20.13	13.038			
5500	20.57	13.132			
5580	20.74	13.169			
5700	20.32	13.079			

802.11n HT20 Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.25	13.063
5220	20.05	13.022
5240	20.13	13.039
5260	20.34	13.082
5300	20.25	13.065
5320	20.12	13.035
5500	20.42	13.101
5580	20.38	13.092
5700	19.97	13.005

802.11n HT20 Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.23	13.061
5220	20.32	13.080
5240	20.31	13.076
5260	20.18	13.050
5300	19.75	12.955
5320	20.03	13.016
5500	20.41	13.099
5580	20.14	13.040
5700	20.34	13.084

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802.11n _HT40_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	40.56	16.081
5230	39.46	15.962
5270	41.04	16.132
5310	40.17	16.039
5510	40.52	16.076
5550	40.68	16.094
5670	40.30	16.053

802.11n _HT40_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	40.19	16.041
5230	40.49	16.073
5270	40.05	16.026
5310	40.57	16.082
5510	40.16	16.038
5550	40.70	16.096
5670	40.30	16.053

802.11 ac _VHT 80_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.82	19.234
5290	80.85	19.077
5530	80.37	19.051
5610	80.66	19.067

802.11 ac _VHT80_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	80.99	19.084
5290	80.83	19.076
5530	80.92	19.080
5610	81.06	19.088

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6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC

802.11a_N	lain
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Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.44	12.159
5785	16.40	12.149
5825	16.51	12.178

802.11n_HT20_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.63	12.463
5785	17.63	12.463
5825	17.63	12.462

802.11n_HT20_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.64	12.464
5785	17.63	12.461
5825	17.63	12.462

802.11n HT40 Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.36	15.606
5795	36.37	15.607

802.11n_HT40_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.35	15.605
5795	36.33	15.603

802.11 ac _VHT 80_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	F
5775	75.74	18.793	

802.11ac _VHT80_Aux1

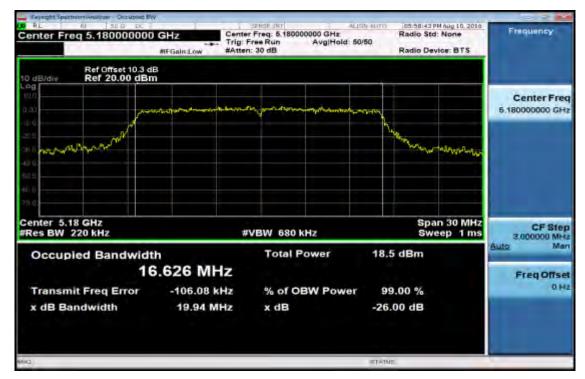
3)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
	5775	72.63	18.611

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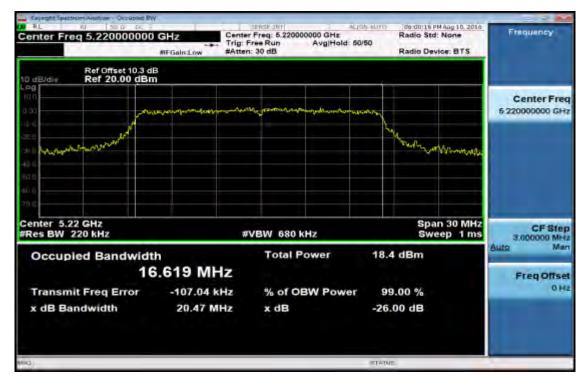
No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



802.11a, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5180MHz)



26dB Band Width Test Data CH-Mid (5220MHz)



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26dB Band Width Test Data CH-High (5240MHz)



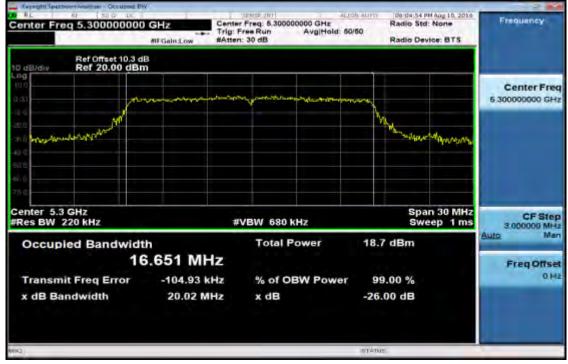
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802.11a, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260MHz)

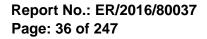
Evyleight Spectroler Analyzer - Occupied By	15 mm					. 2	2
Center Freq 5.26000000	- ing:	r Freq: 5.260000000 GHz Free Run AvgiHo 1: 30 dB	ALTON HUTO	Radio Std		Frequer	ncy.
10 dB/div Ref 20.00 dBm			ž.				
Log (0.7 раз 10 б)	an a	- janna an	many			Cente 5 2600000	
an II ang aging the provident				and make			
70.0							
Center 5.26 GHz Span 30 MHz #Res BW 220 kHz #VBW 680 kHz Sweep 1 ms			3,0000				
Occupied Bandwidth 16.651 MHz		Total Power 18.8 dBm			Auto Freq	Man Freq Offset	
Transmit Freq Error x dB Bandwidth	-107.74 kHz 19.85 MHz	% of OBW Por x dB		9.00 % .00 dB			0 H
E. Care			TAT	12		·	_

26dB Band Width Test Data CH-Mid (5300MHz



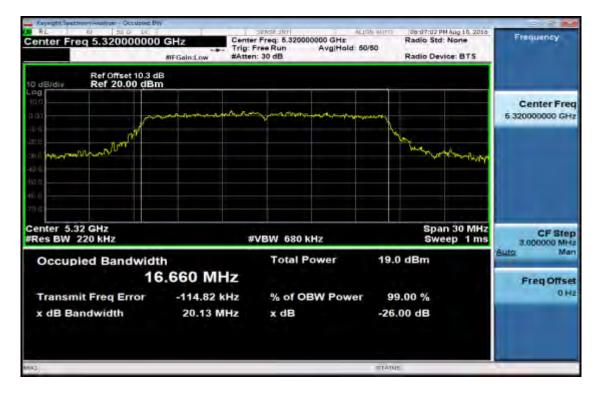
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26dB Band Width Test Data CH-High (5320MHz)



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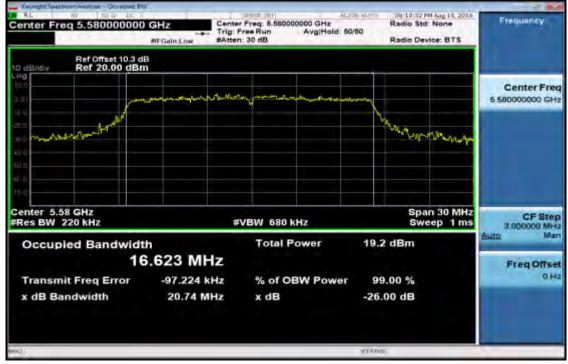


802.11a, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500MHz)

Center Freq 5.500000000	Center Freq: 5.5000 Trig: Free Run #Atten: 30 dB		Radio 50	47 PH Aug 10, 2016 Std: None Device: BTS	Frequency	
10 dE/div Ref 20.00 dBn						
100 101	مريقين وروني و وروني وروني ورون		and the second second	~~~~		Center Free 5 50000000 GH
manner				Mar Carley	Amminia	
40 0. 51 9 61 0						
Center 5.5 GHz		#VBW 6801	447		pan 30 MHz weep 1 ms	CF Step
Occupied Bandwidt	h 5.694 MH	Total F		19.1 dBm	acep 1 ms	3,000000 MH
Transmit Freq Error -111.78 x dB Bandwidth 20.57 I			BW Power	99.00 % -26.00 dB		0.84

TANS

26dB Band Width Test Data CH-Mid (5580MHz)



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26dB Band Width Test Data CH-High (5700MHz)

Center Freq 5.700000000	Trig: 1	r Freq: 5.700000000 GHz	Radio S	7 PH Aug 10, 2010 itd: None levice: BTS	Frequency
10 dB/div Ref Offset 10.3 d Ref 20.00 dBn					
Log 100 0 03 -100 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -000 -0				an a	Center Freq 5 700000000 GHz
Center 5.7 GHz #Res BW 220 kHz		VBW 680 kHz		oan 30 MHz weep 1 ms	CF Step 3.000000 MHz Auto Mar
Occupied Bandwidt	h 5.671 MHz	Total Power	19.4 dBm		FreqOffset
Transmit Freq Error x dB Bandwidth	-123.83 kHz 20.32 MHz	% of OBW Powe x dB	er 99.00 % -26.00 dB		0 Hz
(DRB			STATUS		1

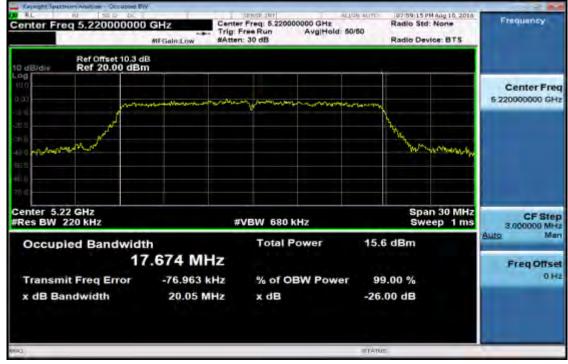
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802.11n HT20, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5180 MHz)



26dB Band Width Test Data CH-Mid (5220 MHz)



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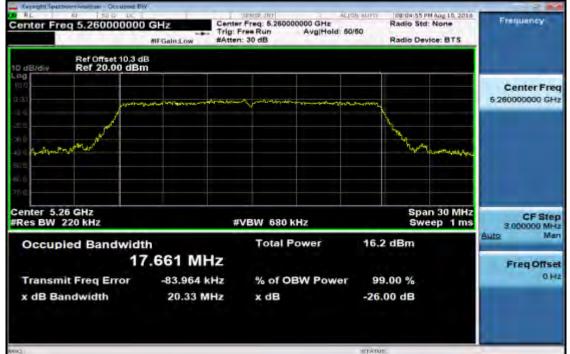
26dB Band Width Test Data CH-High (5240 MHz)



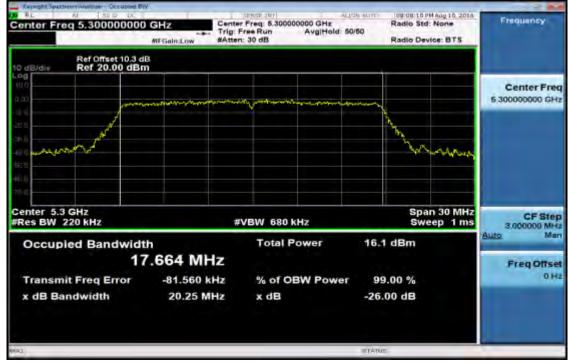
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802.11n HT20, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260 MHz)



26dB Band Width Test Data CH-Mid (5300 MHz)

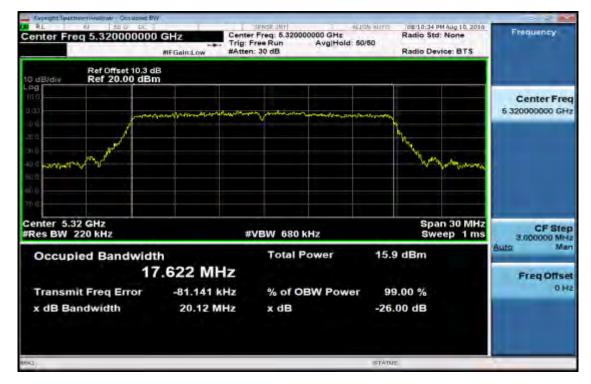


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26dB Band Width Test Data CH-High (5320 MHz)



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802.11n HT20, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500 MHz)



26dB Band Width Test Data CH-Mid (5580 MHz)



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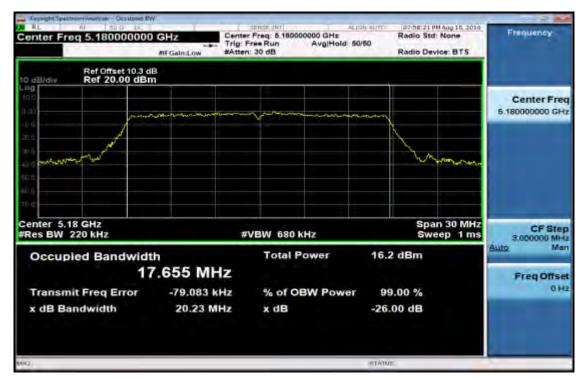
26dB Band Width Test Data CH-High (5700 MHz)

			Center Freq: 5.70000000 GHz Trig: Freq: 6.70000000 GHz Trig: Freq: Run AvgiHold: 50/50 #Atten: 30 dB		Radio Std: None Radio Device: BTS		Frequency		
10 dB/div Ref 20	set 10.3 dB 0.00 dBm						_	_	
100 000 - 100		an a	align words	باريم رور المقيمتي	-um				Center Fred 5 700000000 GHz
-310 -300 -400 -400							No alerando	hannonan	
Center 5.7 GHz #Res BW 220 kHz			#VB	W 680 k	Hz			an 30 MHz /eep 1 ms	CF Step 3.000000 MHz
Occupied Ba		644 MH	z	Total P	ower	16.) dBm		Auto Mar Freq Offset
Transmit Freq x dB Bandwidt		-111.70 k 19.97 M		% of Of x dB	BW Powe		9.00 % 00 dB		0.84
(FR)						STATU	e.		

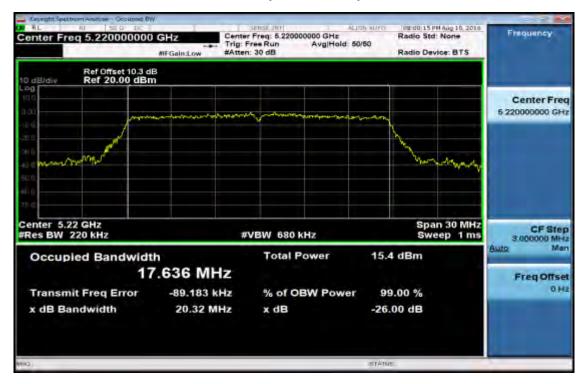
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802.11n HT20, 5150~5250 MHz (Aux1) 26dB Band Width Test Data CH-Low (5180 MHz)



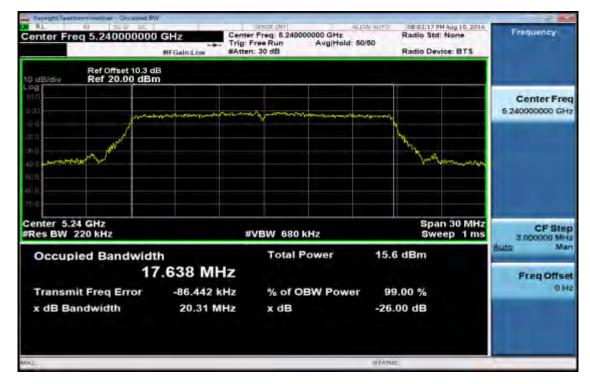
26dB Band Width Test Data CH-Mid (5220 MHz)



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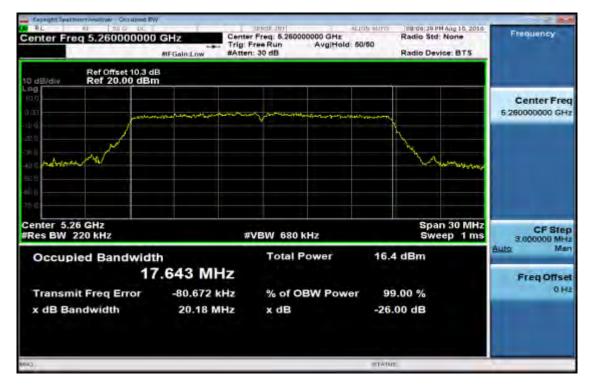
26dB Band Width Test Data CH-High (5240 MHz)



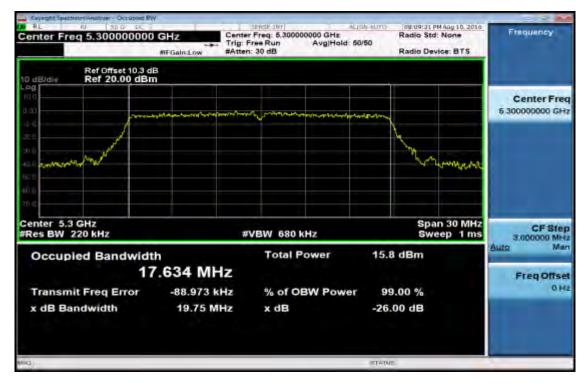
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802.11n HT20, 5250~5350 MHz (Aux1) 26dB Band Width Test Data CH-Low (5260 MHz)



26dB Band Width Test Data CH-Mid (5300 MHz)

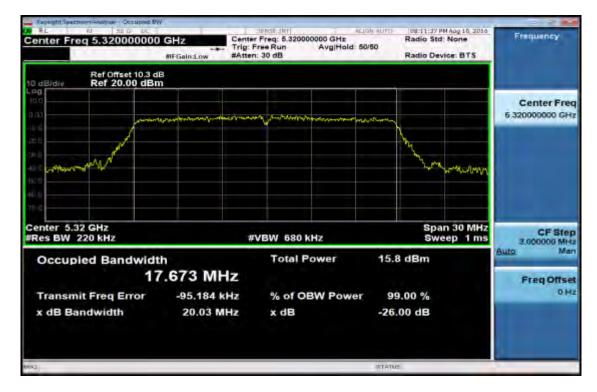


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26dB Band Width Test Data CH-High (5320 MHz)



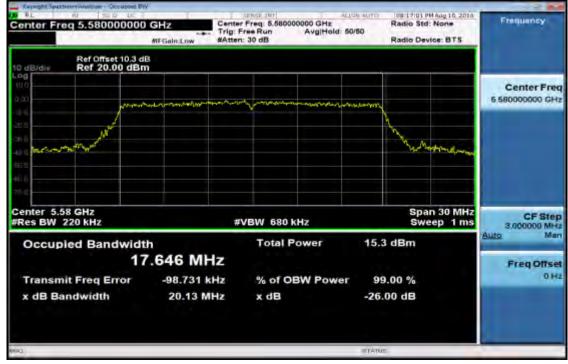
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802.11n HT20, 5470~5725 MHz (Aux1) 26dB Band Width Test Data CH-Low (5500 MHz)



26dB Band Width Test Data CH-Mid (5580 MHz)



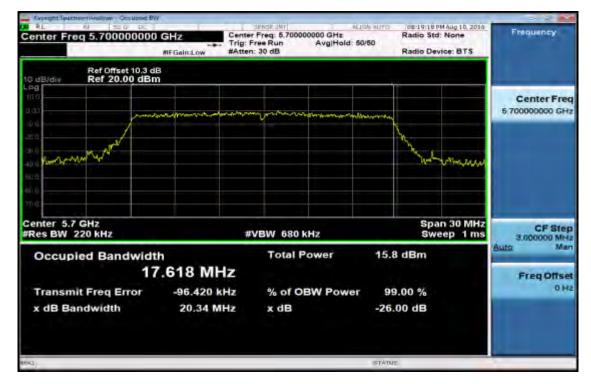
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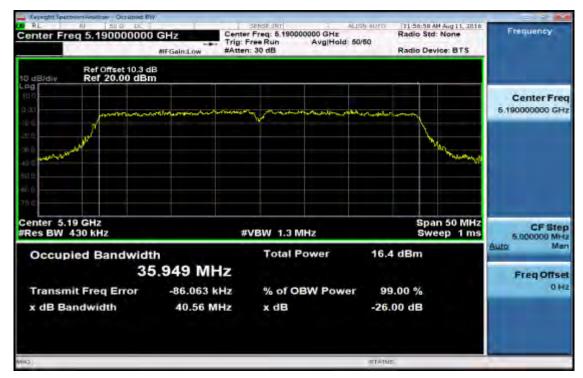
26dB Band Width Test Data CH-High (5700 MHz)



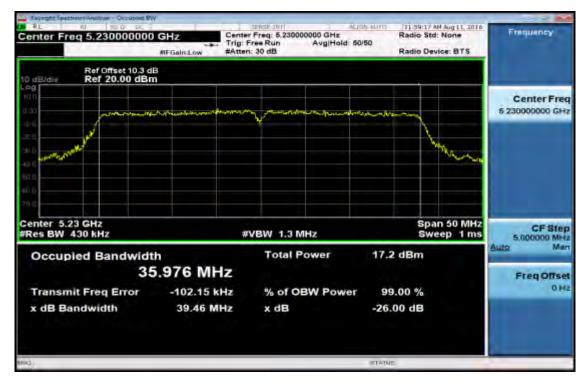
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802.11n HT40, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5190 MHz)



26dB Band Width Test Data CH-High (5230 MHz)



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802.11n HT40, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5270 MHz)



26dB Band Width Test Data CH-High (5310MHz)



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802.11n HT40, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5510 MHz)



26dB Band Width Test Data CH-Mid (5550 MHz)



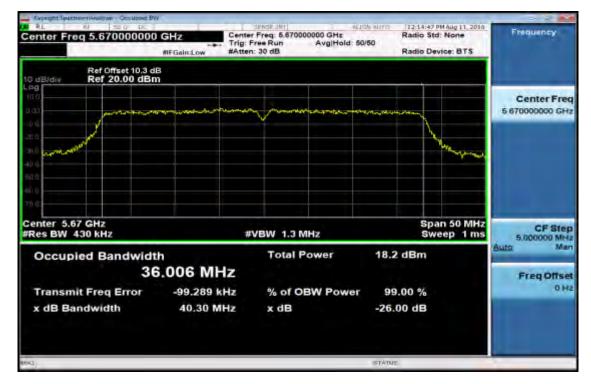
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26dB Band Width Test Data CH-High (5670 MHz)



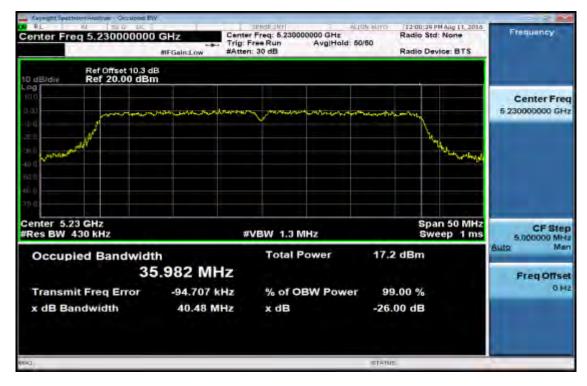
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802.11n HT40, 5150~5250 MHz (Aux1) 26dB Band Width Test Data CH-Low (5190 MHz)



26dB Band Width Test Data CH-High (5230 MHz)

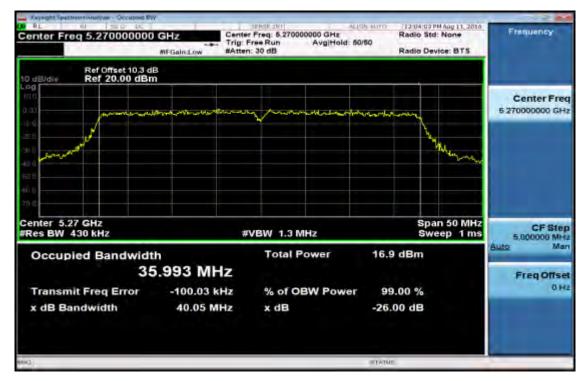


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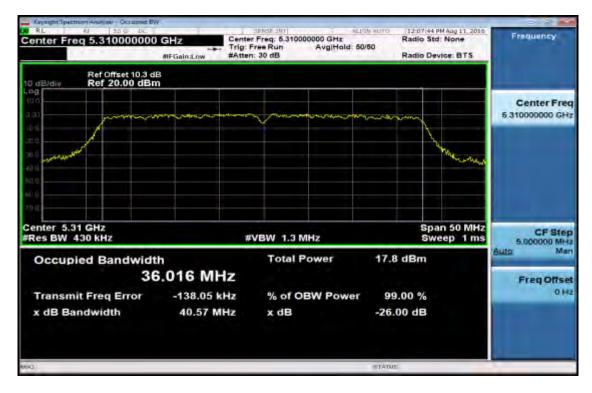
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802.11n HT40, 5250~5350 MHz (Aux1) 26dB Band Width Test Data CH-Low (5270 MHz)



26dB Band Width Test Data CH-High (5310MHz)



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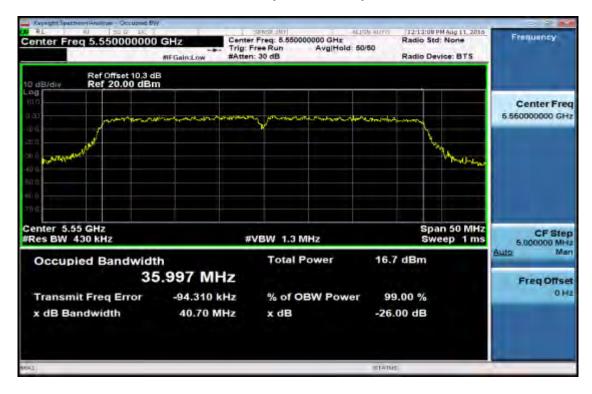
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802.11n HT40, 5470~5725 MHz (Aux1) 26dB Band Width Test Data CH-Low (5510 MHz)



26dB Band Width Test Data CH-Mid (5550 MHz)

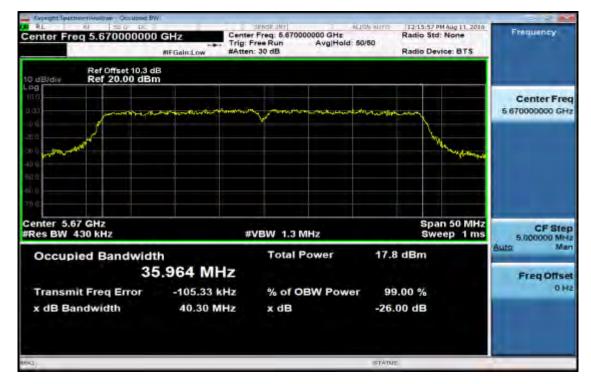


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26dB Band Width Test Data CH-High (5670 MHz)



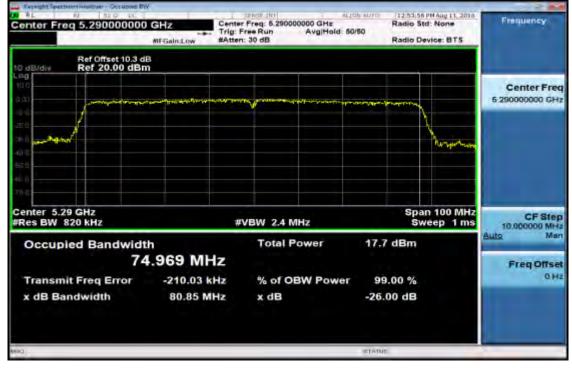
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802.11ac VHT80, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Mid (5210 MHz)



802.11ac VHT80, 5250~5350 MHz 26dB Band Width Test Data CH-Mid (5290 MHz)



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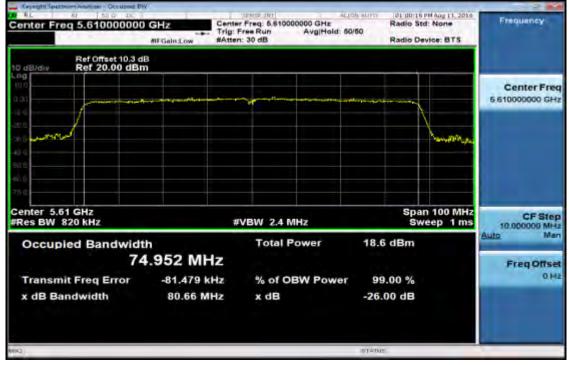
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802.11ac VHT80, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5530 MHz)



802.11ac VHT80, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-High (5610 MHz)



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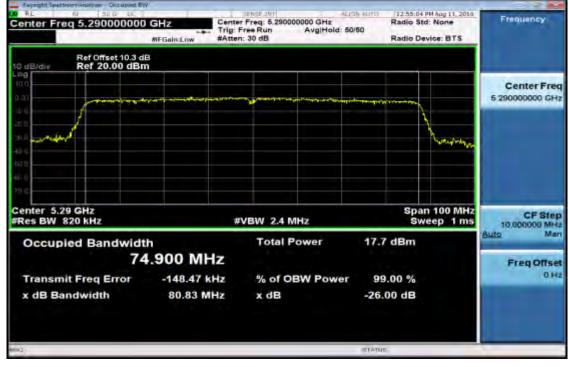
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802.11ac VHT80, 5150~5250 MHz (Aux1) 26dB Band Width Test Data CH-Mid (5210 MHz)



802.11ac VHT80, 5250~5350 MHz 26dB Band Width Test Data CH-Mid (5290 MHz)



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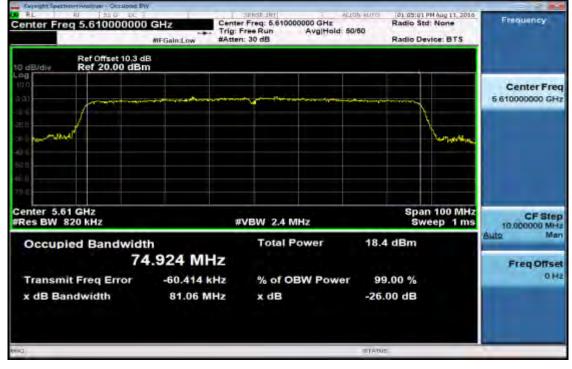
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802.11ac VHT80, 5470~5725 MHz (Aux1) 26dB Band Width Test Data CH-Low (5530 MHz)



802.11ac VHT80, 5470~5725 MHz (Aux1) 26dB Band Width Test Data CH-High (5610 MHz)



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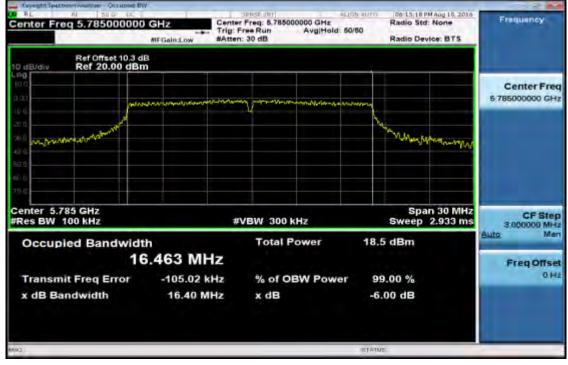
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6dB Band Width measure with Peak detector for FCC 802.11a, 5725~5850 MHz (Main) 6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



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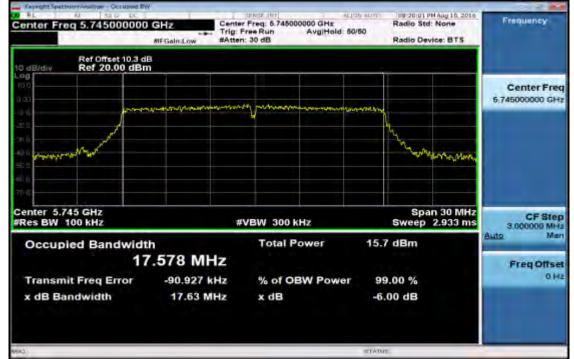
6dB Band Width Test Data CH-High (5825 MHz)

Center Freq 5.825000000	Center Freq: 5.825000000 GHz Trig: Free Run AvgiHold: 50/ #Atten: 30 dB			Content Conten		Frequency		
10 dB/div Ref 0ffset 10.3 d Ref 20.00 dBn								
-10-0 -it 0	all and a start of the second start	-unual V	-	**********	*****			Center Free 5 825000000 GH:
310 400 529 610 700						The Way	man	
Center 5.825 GHz #Res BW 100 kHz		#VB	W 300 k	Hz			an 30 MHz 2.933 ms	CF Step 3.000000 MH
Occupied Bandwidt	h 6.493 MH		Total P	ower	1	9.0 dBm		Auto Man Freq Offset
Transmit Freq Error x dB Bandwidth	-108.63 ki 16.51 Mi		% of OE x dB	3W Powe		99.00 % -6.00 dB		0 Ha
95)					111	ATME:		

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802.11n_HT20, 5725~5850 MHz (Main) 6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



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6dB Band Width Test Data CH-High (5825 MHz)

Consistent Spectroline Analyzer - Occupied B		SINSI JUT	ALIGN AUTO 100	23:24 PM Aug 10, 2010	
Center Freq 5.82500000	GHz Center Trig: F	Freq: 5.825000000 GHz	Rad 50/50	io Std: None Io Device: BTS	Frequency
Ref Offset 10.3 c 10 dB/div Ref 20.00 dB					
(a)	warden and a state of the second	n jihan manganagan	www.		Center Free 5 825000000 GH
and a second and a			- Kong	horn	
-50 0 					
Center 5.825 GHz #Res BW 100 kHz	#	VBW 300 kHz	SW	Span 30 MHz eep 2.933 ms	CF Ste 3.000000 MH
Occupied Bandwid	th 7.575 MHz	Total Power	15.4 dB	m	Auto Ma Freq Offse
Transmit Freq Error x dB Bandwidth	-88.279 kHz 17.63 MHz	% of OBW Powe x dB	er 99.00 -6.00 d		OH
Cele			STATUS		

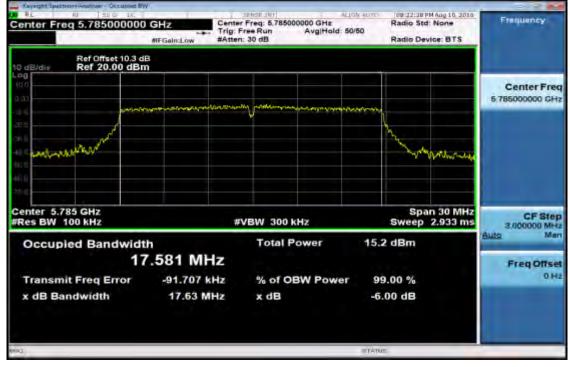
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802.11n_HT20, 5725~5850 MHz (Aux1) 6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



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6dB Band Width Test Data CH-High (5825 MHz)

Center Freq 5.82500000		Center Freq: 5.82500 Trig: Free Run #Atten: 30 dB		Radio Std		Frequency
10 dB/div Ref 20.00 dBr	в					
Log 000 -000 -000 -000	an an an an an an an an	names Incordenation		www		Center Fre 5 825000000 GH
300 400 500 600				a for	apolicity and	
Center 5.825 GHz #Res BW 100 kHz		#VBW 300 F	(Hz		n 30 MHz 2.933 ms	CF Step 3,000000 MH
Occupied Bandwidt	th 7.580 MHz	Total P	ower	15.1 dBm		Auto Mar Freq Offse
Transmit Freq Error x dB Bandwidth	-93.259 kH 17.63 MH		BW Power	99.00 % -6.00 dB		он
(A)				STATUS.		

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802.11n_HT40, 5725~5850 MHz (Main) 6dB Band Width Test Data CH-Low (5755 MHz)



6dB Band Width Test Data CH-Mid (5795 MHz)



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802.11n_HT40, 5725~5850 MHz (Aux1) 6dB Band Width Test Data CH-Low (5755 MHz)



6dB Band Width Test Data CH-Mid (5795 MHz)



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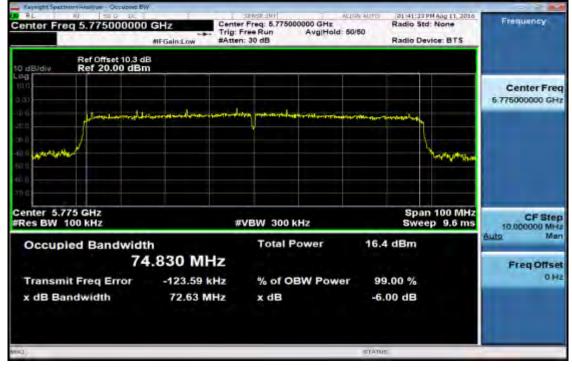
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802.11ac VHT80, 5725~5850 MHz (Main) 6dB Band Width Test Data CH-Low (5775 MHz)



802.11ac VHT80, 5725~5850 MHz (Aux1) 6dB Band Width Test Data CH-Low (5775 MHz)



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MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT 9.

9.1 **Standard Applicable**

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

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

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Note: 5.15-5.25G Antenna1 Gain: 2.78 dBi Antenna2 Gain: 3.01 dBi Number Antenna: 2 pcs Limit: 23.98 dBm The antenna gain is grater than 6dBi in MIMO mode the limit reduce as below: Directional gain = gain of antenna element + 10 log (# of TX antenna elements) Effective Legacy Gain (dBi) = 6.02 dBi Limit: 23.98dBm - (6.02-6dBi)=23.96 Note: 5.25-5.35G Antenna1 Gain: 2.78 dBi Antenna2 Gain: 3.01 dBi Number Antenna: 2 pcs Limit: 23.98 dBm The antenna gain is grater than 6dBi in MIMO mode the limit reduce as below: Directional gain = gain of antenna element + 10 log (# of TX antenna elements) Effective Legacy Gain (dBi) = 6.02 dBi Limit: 23.98dBm - (6.02-6dBi)=23.96 Note: 5.47-5.725G

Antenna1 Gain:	1.89 dBi	
Antenna2 Gain:	4.11 dBi	
Number Antenna:	2 pcs	
Limit:	23.98 dBm	
The antenna gain is g	grater than 6dBi in I	MIMO mode the limit reduce as below:
Directional gain = gai	in of antenna eleme	ent + 10 log (# of TX antenna elements)
Effective Legacy Gai	n (dBi) = 7.12 dBi	
Limit: 23.968dBm - (7.12–6dBi)=22.86	

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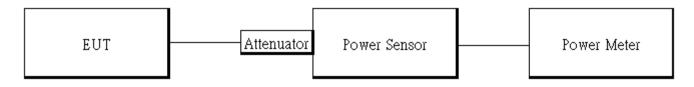
9.2 Measurement Procedure

- 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.

	SGS	6 Conducted	Room		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016
EXA Spectrum					
Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017

9.3 Measurement Equipment Used

9.4 Test Set-up



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9.5 Measurement Result

Conducted output power

802.11a_Main

СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	14.44	27.797		23.98		PASS
44	5220	MCS0	14.37	27.353		23.98		PASS
48	5240	MCS0	14.24	26.546	23.98			PASS
52	5260	MCS0	14.16	26.062	23.98	or 11+10log(B) =	23.98	PASS
60	5300	MCS0	14.44	27.797	23.98	or 11+10log(B) =	24.02	PASS
64	5320	MCS0	14.47	27.990	23.98	or 11+10log(B) =	24.04	PASS
100	5500	MCS0	14.49	28.119	23.98	or 11+10log(B) =	24.13	PASS
116	5580	MCS0	14.49	28.119	23.98	or 11+10log(B) =	24.17	PASS
140	5700	MCS0	14.46	27.925	23.98	or 11+10log(B) =	24.08	PASS
149	5745	MCS0	14.49	28.119		30		PASS
157	5785	MCS0	14.48	28.054	30		PASS	
165	5825	MCS0	14.22	26.424		30		PASS

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802.11n_HT20_MIMO

СН	Frequency (MHz)	Data Rate		RAGE R (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT			RESULT
	(nuto	CH 0	CH 1	(dBm)	(mW)	(dBm)			
36	5180	MCS8	11.72	11.21	14.48	28.072		23.96		PASS
44	5220	MCS8	11.69	11.11	14.42	27.669		23.96		PASS
48	5240	MCS8	11.65	11.07	14.38	27.416		23.96		PASS
52	5260	MCS8	11.68	11.27	14.49	28.120	23.96	or 11+10log(B)	24.05	PASS
60	5300	MCS8	11.67	11.24	14.47	27.994	23.96	or 11+10log(B)	23.96	PASS
64	5320	MCS8	11.66	11.3	14.49	28.145	23.96	or 11+10log(B)	24.02	PASS
100	5500	MCS8	11.68	11.11	14.41	27.635	22.86	or 11+10log(B)	24.10	PASS
116	5580	MCS8	11.76	11.11	14.46	27.909	22.86	or 11+10log(B)	24.04	PASS
140	5700	MCS8	11.88	10.74	14.36	27.275	22.86	or 11+10log(B)	24.00	PASS
1 49	5745	MCS8	11.98	10.67	14.38	27.444		30		PASS
157	5785	MCS8	11.84	11.02	14.46	27.923		30		PASS
165	5825	MCS8	11.73	10.57	14.20	26.296		30		PASS

802.11n_HT40_MIMO

СН	Frequency (MHz)		AVERAGE POWER (dBm)			TOTAL POWER		REQUIRED LIMIT		RESULT
	(11172)	Kale	CH 0	CH 1	(dBm)	(mW)		(dBm)		
38	5190	MCS8	11.46	11.33	14.41	27.579		23.96		PASS
46	5230	MCS8	11.89	10.87	14.42	27.671		23.96		PASS
54	5270	MCS8	11.68	11.28	14.49	28.151	23.96	or 11+10log(B)	27.03	PASS
62	5310	MCS8	11.61	11.22	14.43	27.731	23.96	or 11+10log(B)	27.04	PASS
102	5510	MCS8	11.81	11.12	14.49	28.112	22.86	or 11+10log(B)	27.04	PASS
110	5550	MCS8	11.72	11.11	14.44	27.772	22.86	or 11+10log(B)	27.09	PASS
134	5670	MCS8	11.79	11.14	14.49	28.102	22.86	or 11+10log(B)	27.05	PASS
151	5755	MCS8	11.73	11.13	14.45	27.865		30		PASS
159	5795	MCS8	11.77	10.75	14.30	26.916		30		PASS

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802.11ac_VHT20_MIMO

СН	CH Frequency		AVERAGE POWER (dBm)		TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
	(MHz)	Rate	CH 0	CH 1	(dBm)	(dBm) (mW) (dBm)		(dBm)		
36	5180	MCS8	11.79	10.67	14.28	26.769		23.96		PASS
44	5220	MCS8	11.74	11.03	14.41	27.604		23.96		PASS
48	5240	MCS8	11.41	10.89	14.17	26.110		23.96		PASS
52	5260	MCS8	11.42	10.88	14.17	26.114	23.96	or 11+10log(B)	24.05	PASS
60	5300	MCS8	11.65	10.84	14.27	26.756	23.96	or 11+10log(B)	23.96	PASS
64	5320	MCS8	11.79	10.98	14.41	27.632	23.96	or 11+10log(B)	24.02	PASS
100	5500	MCS8	11.74	11.01	14.40	27.546	22.86	or 11+10log(B)	24.10	PASS
116	5580	MCS8	11.48	10.8	14.16	26.083	22.86	or 11+10log(B)	24.04	PASS
140	5700	MCS8	11.65	10.69	14.21	26.344	22.86	or 11+10log(B)	24.00	PASS
149	5745	MCS8	11.89	10.67	14.33	27.121		30		PASS
157	5785	MCS8	11.57	10.36	14.02	25.219		30		PASS
165	5825	MCS8	11.6	10.28	14.00	25.120		30		PASS

802.11ac_VHT40_MIMO

СН	Frequency	Data		RAGE R (dBm)	TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
	(MHz) Rate		CH 0	CH 1	(dBm)	(mW)		(dBm)		
38	5190	MCS8	11.49	11.1	14.31	26.975		23.96		PASS
46	5230	MCS8	11.65	11.12	14.40	27.564		23.96		PASS
54	5270	MCS8	11.55	10.99	14.29	26.849	23.96	or 11+10log(B)	27.03	PASS
62	5310	MCS8	11.46	10.9	14.20	26.299	23.96	or 11+10log(B)	27.04	PASS
102	5510	MCS8	11.75	10.9	14.36	27.265	22.86	or 11+10log(B)	27.04	PASS
110	5550	MCS8	11.38	10.65	14.04	25.355	22.86	or 11+10log(B)	27.09	PASS
134	5670	MCS8	12.05	10.65	14.42	27.647	22.86	or 11+10log(B)	27.05	PASS
151	5755	MCS8	11.44	10.5	14.01	25.152		30		PASS
159	5795	MCS8	11.57	10.58	14.11	25.784		30		PASS

802.11ac_VHT80_MIMO

СН	Frequency (MHz)	Data Rate		RAGE R (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT		RESULT	
	(1411 12)	Nale	CH 0	CH 1	(dBm)	(mW)		(dBm)		
42	5210	MCS8	11.1	11.3	14.21	26.372		23.96		PASS
58	5290	MCS8	11.28	11.18	14.24	26.550	23.96	or 11+10log(B)	30.08	PASS
106	5530	MCS8	11.75	10.27	14.08	25.604	22.86	or 11+10log(B)	30.05	PASS
122	5610	MCS8	11.11	11.23	14.18	26.186	22.86	or 11+10log(B)	30.07	PASS
155	5775	MCS8	11.26	10.89	14.09	25.640		30		PASS

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10. PEAK POWER SPECTRAL DENSITY

10.1 Standard Applicable

FCC

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

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

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Note: 5.15-5.25G	
Antenna1 Gain:	2.78 dBi
Antenna2 Gain:	3.01 dBi
Number Antenna:	2 pcs
Limit:	11 dBm
The antenna gain is grate	r than 6dBi in MIMO mode the limit reduce as below:
• •	antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dE	,
Limit: 11dBm – (6.02– 6dl	3i)=10.98
Note: 5.25-5.35G	
Antenna1 Gain:	2.78 dBi
Antenna2 Gain:	3.01 dBi
Number Antenna:	2 pcs
Limit:	11 dBm
The antenna gain is grate	r than 6dBi in MIMO mode the limit reduce as below:
Directional gain = gain of	antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dE	3i) = 6.02 dBi
Limit: 11dBm – (6.02– 6dl	3i)=10.98
Note: 5.47-5.725G	
Antenna1 Gain:	1.89 dBi
Antenna2 Gain:	4.11 dBi
Number Antenna:	2 pcs
Limit:	11 dBm

The antenna gain is grater than 6dBi in MIMO mode the limit reduce as below: Directional gain = gain of antenna element + 10 log (# of TX antenna elements) Effective Legacy Gain (dBi) = 7.12 dBi Limit: 118dBm - (7.12-6dBi)=9.88

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10.2 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- 4. For U-NII1, U-NII-2A, U-NII-2C Band: Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth) For U-NII-3 Band: Set RBW=500 kHz, VBW≥ 3RBW, 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)

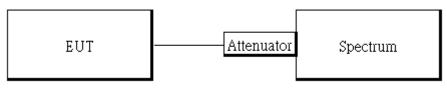
- 5. User the cursor on spectrum to peak search the highest level of trace
- 6. Record the max. reading and add 10 log(1/duty cycle).
- 7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

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

10.3 Measurement Equipment Used

SGS Conducted Room								
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due			
EXA Spectrum								
Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			

10.4 Test Set-up



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10.5 Measurement Result

POWER DENSITY 802.11a MODE									
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (d B)						
5180	2.87	11	-8.13						
5220	2.38	11	-8.62						
5240	2.75	11	-8.25						
5260	2.68	11	-8.32						
5300	1.92	11	-9.08						
5320	1.89	11	-9.11						
5500	2.37	11	-8.63						
5580	1.97	11	-9.03						
5700	2.51	11	-8.49						
5745	6.96	30	-23.04						
5785	7.27	30	-22.73						
5825	7.07	30	-22.93						

POWER DENSITY 802.11n HT20 MODE						
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (d B)			
5180	1.84	10.98	-9.14			
5220	2.08	10.98	-8.90			
5240	1.87	10.98	-9.11			
5260	2.81	10.98	-8.17			
5300	1.87	10.98	-9.11			
5320	1.87	10.98	-9.11			
5500	1.57	9.88	-8.31			
5580	1.32	9.88	-8.56			
5700	2.66	9.88	-7.22			
5745	6.44	30	-23.56			
5785	6.11	30	-23.89			
5825	6.10	30	-23.90			

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POWER DENSITY 802.11n HT40 MODE						
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (d B)			
5190	-2.21	10.98	-13.19			
5230	-0.88	10.98	-11.86			
5270	-1.46	10.98	-12.44			
5310	-1.25	10.98	-12.23			
5510	-0.92	9.88	-10.80			
5550	-1.02	9.88	-10.90			
5670	-0.43	9.88	-10.31			
5755	4.47	30	-25.53			
5795	3.54	30	-26.46			

POWER DENSITY 802.11ac VHT80 MODE						
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (d B)			
5210	-3.76	10.98	-14.74			
5290	-3.53	10.98	-14.51			
5530	-4.69	9.88	-14.57			
5610	-3.49	9.88	-13.37			
5775	1.59	30	-28.41			

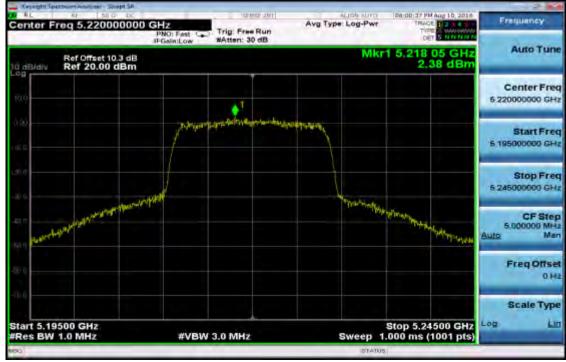
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802.11a 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)

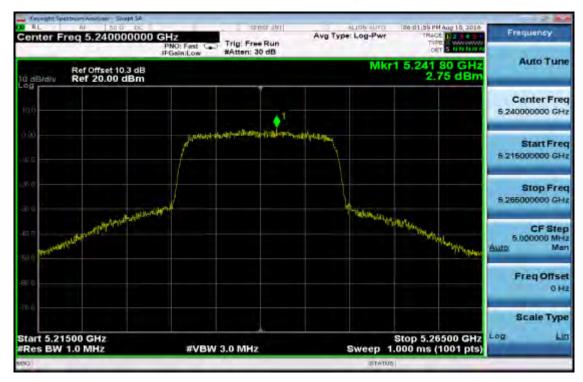


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Peak Power Spectral Density Data Plot (CH High 5240 MHz)



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802.11a 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Low 5260 MHz)



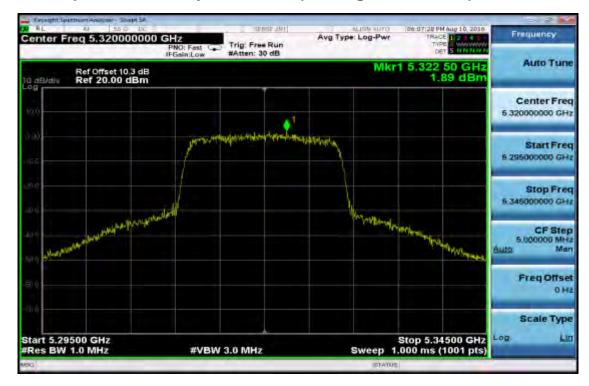
Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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Peak Power Spectral Density Data Plot (CH High 5320 MHz)



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802.11a 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5580 MHz)



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Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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802.11a 5725~5850 MHz Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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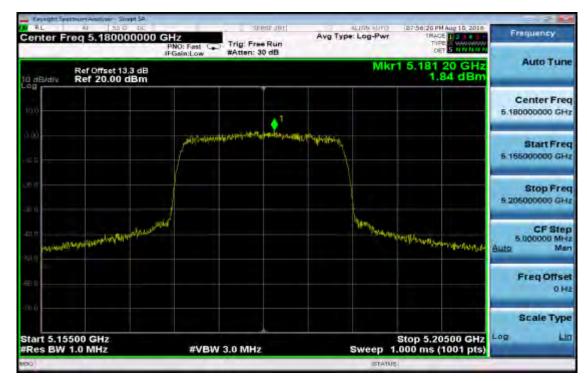
Peak Power Spectral Density Data Plot (CH High 5825 MHz)



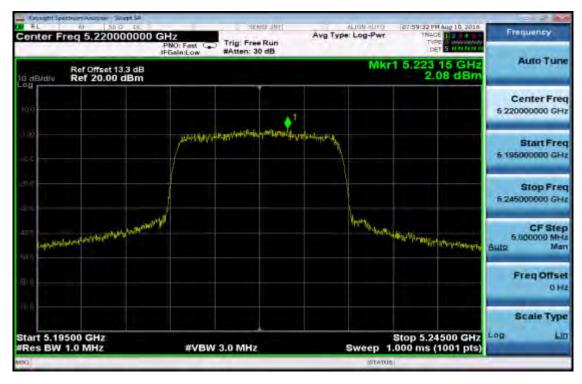
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802.11n HT20, 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



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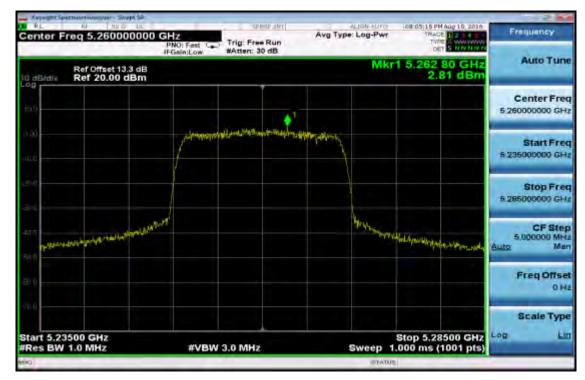
Peak Power Spectral Density Data Plot (CH High 5240 MHz)



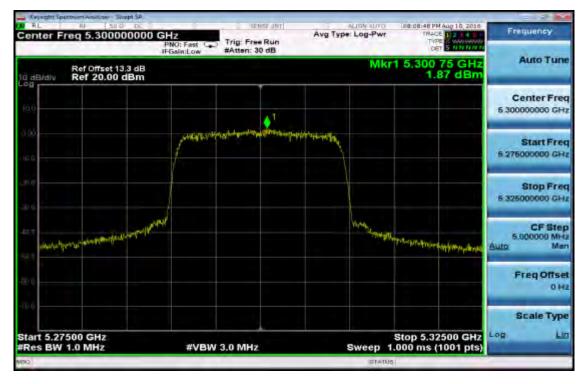
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802.11n HT20, 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Low 5260MHz)



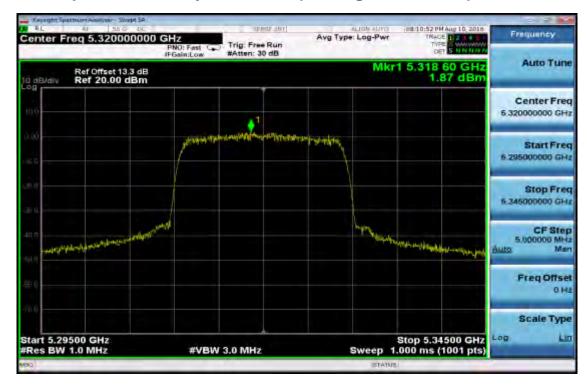
Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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Peak Power Spectral Density Data Plot (CH High 5320 MHz)



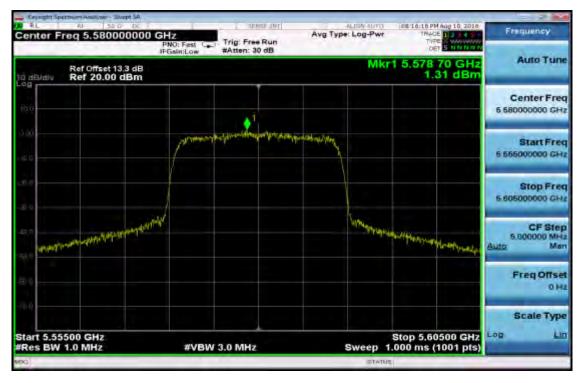
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802.11n HT20, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5500 MHz)

Keyleght Spectrum Analyzer - Skept SA				
Center Freq 5.500000000 G	NO: Fast C Irig: Free Po	Avg Type: Log-Pw		Frequency
Ref Offset 13,3 dB	Gain:Low #Atten: 30 d		kr1 5.502 30 GHz 1.57 dBm	Auto Tun
00 18.9		<u></u> 1		Center Fre 5 50000000 GH
0.00 (0.0	- annow and man	information of		Start Fre 5.475000000 GH
30)				Stop Fre 5.52500000 GH
2117 			eneristy white	СF Ste 5,000000 Мн Ашто Ма
-E0 0				Freq Offse
Start 5.47500 GHz			Stop 5.52500 GHz	
Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	1.000 ms (1001 pts)	

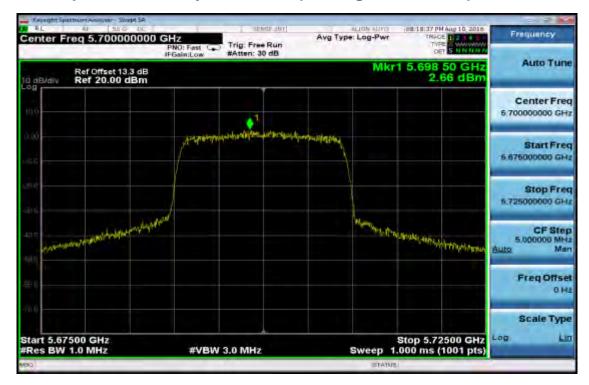
Peak Power Spectral Density Data Plot (CH Mid 5580MHz)



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Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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802.11n HT20, 5725~5850 MHz Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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Peak Power Spectral Density Data Plot (CH High 5825 MHz)

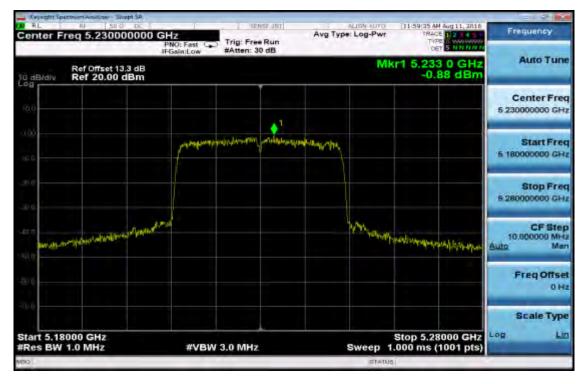


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802.11n HT40, 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Low 5190 MHz)

RL 10 500 Center Freq 5.19000	DC 1	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	11:57:34 AM Aug 11, 2016 TRACE 1 2 3 4 4 TYPE 0 OET 5 NIN NUM	Frequency
Ref Offset 13.			M	r1 5.185 8 GHz -2.21 dBm	Auto Tuni
10.0					Center Free 5.190000000 GH
100 u.u.	- mail frankly	nasolerie managerin	reference and		Start Fre 5.140000000 GH
300					Stop Fre 5 240000000 GH
10 10 10 - 10 - 10 - 10 - 10 - 10 - 10 -	and a strange		ALAN BLOWER	anophinethe spectra 18 an aige rainger	CF Ste 10.000000 MH Auto Ma
eo 0					Freq Offse 0 H
Start 5.14000 GHz				Stop 5.24000 GHz	Scale Type
#Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 1	.000 ms (1001 pts)	

Peak Power Spectral Density Data Plot (CH High 5230 MHz)

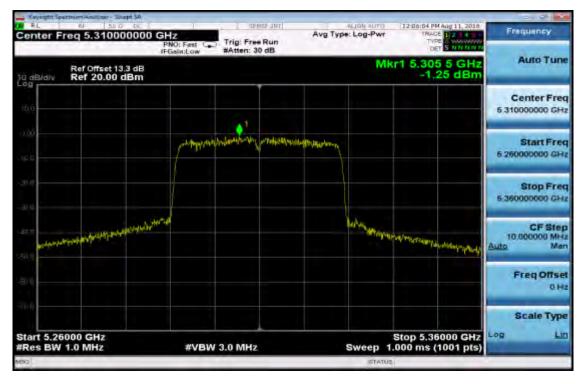


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802.11n HT40, 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Low 5270 MHz)

Frequency	12:03:00 PM Aug 11, 2016 TRACE 1 2:14:50 TYPE 6 OET 5 NN 14010	e: Log-Pwr	Avg Typ	Free Run			g 5.27000000	Center F
Auto Tune	r1 5.270 8 GHz -1.46 dBm	Mk					Ref Offset 13.3 dB Ref 20.00 dBm	i dB/div
Center Free 5 270000000 GH								10,0
Start Free 5 220000000 GH			many	arn, Madamany	a and the second second	ind		000 000
Stop Fre 5 32000000 GH								0 0 0 0
CF Ste 10.000000 MH Auto Ma	herry hadring an give herring a configure	for when he				M.M.M.	nand the property stands in the	inn airtemi
Freq Offse 0 H								EU ()
Scale Type	Stop 5.32000 GHz						00 GHz	itart 5.22
	.000 ms (1001 pts)	Sweep 1		Hz	VBW 3.0 M	#V8		Res BW

Peak Power Spectral Density Data Plot (CH High 5310 MHz)

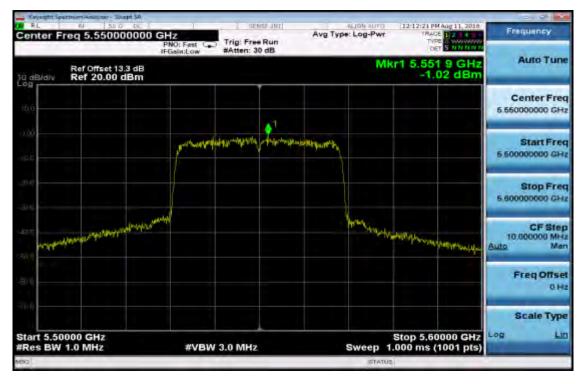


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802.11n HT40, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5510 MHz)

Center Freg 5.51000000	PNO: Fast	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	12:09:21 PM Aug 11, 2016 TRACE 11, 2014 TYPE 0 DET 5 NIN NUMBER	Frequency
Ref Offset 13.3 dB			M	-0.92 dBm	Auto Tuni
i0,0					Center Free 5.510000000 GH
100 100	Jan water and	water and the second second	annon		Start Fre 5 460000000 GH
n o					Stop Fre 5 56000000 GH
177 77 277 10 10 10 10 10 10 10 10 10 10 10 10 10	al when the		hingstrong	Aprilia Land and a start a	CF Ste 10,000000 MH Auto Ma
B) ()					Freq Offse 0 H
					Scale Typ
Start 5.46000 GHz Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 1	Stop 5.56000 GHz .000 ms (1001 pts)	Log Li

Peak Power Spectral Density Data Plot (CH Mid 5550 MHz)



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Peak Power Spectral Density Data Plot (CH High 5670 MHz)

Frequency	12:15:05 PM Aug 11, 2010 TRACE 1 2 3 4 5 TYPE & MANAGEMENT OFT 5 N N M R N	winter Log-Pwr	Run	Trig: Free #Atten: 30	Z WD: Fast	00000 GH	reg 5.6700	RL
Auto Tun	r1 5.668 1 GHz -0.43 dBm	M			Sent Cow	3 dB	Ref Offset 13 Ref 20.00	g dB/div
Center Fre 5 670000000 GH								16.0
Start Fre 5 620000000 GH			Angold And and Angold And And And And And And And And And An	antiper part	1 marine Har) 00 (10
Stop Fre 5,72000000 GH								90 90
CF Ste 10.000000 MH Auto Ma	Andalijajajajajajajajajajajajajajajajajajaj	When would				اللي المحمول في المنص	Real Property and party	ann Sphippi
Freq Offse 0 H								30 0
Scale Typ	Stop 5.72000 GHz						000 GHz	tart 5.6
141.0	.000 ms (1001 pts)	Sweep		3.0 MHz	#VBW		1.0 MHz	

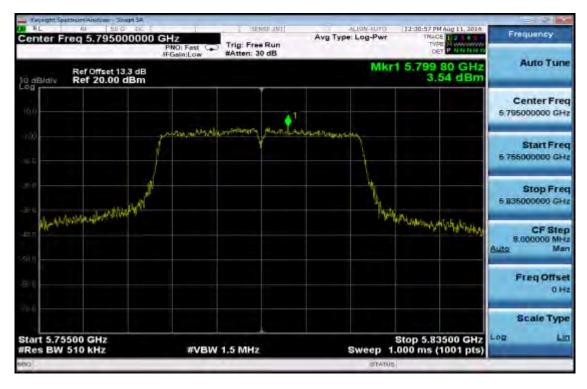
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802.11n HT40, 5725~5850 MHz Peak Power Spectral Density Data Plot (CH Low 5755 MHz)



Peak Power Spectral Density Data Plot (CH High 5795 MHz)

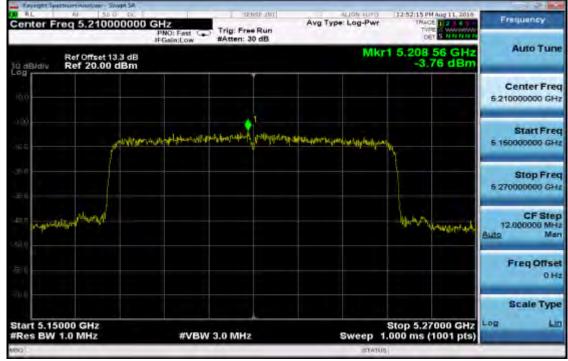


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802.11ac VHT80, 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Mid 5210 MHz)



802.11ac VHT80, 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Mid 5290 MHz)



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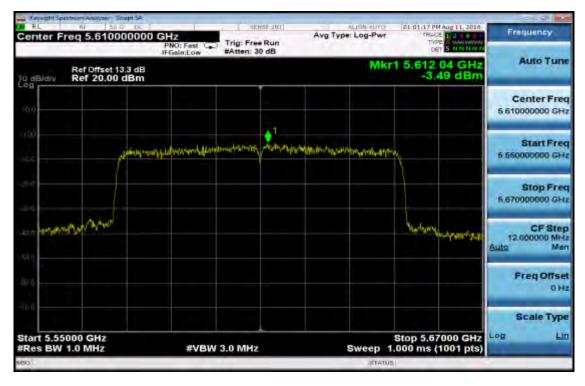
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802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5530 MHz)



802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH High 5610 MHz)



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802.11ac VHT80, 5725~5850 MHz Peak Power Spectral Density Data Plot (CH Mid 5775 MHz)

Frequency	01:14:47 PM Aug 11, 2010 TRACE 1 2 3 4 3 TYPE IN MOMMONY OFT P IN MILLION	Avg Type: Log-Pwr	Trig: Free Run #Atten: 30 dB	50 G DC	RL III III Center Freq 5.77500
	kr1 5.776 5 GHz 1.59 dBm	M	WALLER, SV US	t 13.3 dB	Ref Offset 13.
Center Fre 5.775000000 GH					10,0
Start Fre 5.725000000 GH	skreijane	an taka da taka da mana	zaddeenner formalierida	anoptimeter and a second real program in the second real second real second real second real second real second	0.00
Stop Fre 5.825000000 GH					an and the
CF Ste 10.000000 Mi Auto M					4T f)
Freq Offs 01					8) 0
	Stop 5.82500 GHz	Circan	(1.5 MHz		Start 5.72500 GHz
41	1.000 ms (1001 pts)	STATU	1.5 MINZ	#VB	Res BW 510 kHz

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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 5.25-5.35 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.
- 3. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
- 4. For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

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APPLICABLE TO	LIMIT			
FCC KDB 789033 D02 General UNII Test Procedures New Rules	FIELD STRENGTH AT 3m			
v01r01	PK: 74 (dBµV/m)	AV 54 (dBµV/m)		
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m		
15.407(b)(1)				
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.3 (dBµV/m)		
15.407(b)(3)				
15.407(b)(4)	PK: -27 (dBm/MHz) PK: -17 (dBm/MHz)	PK: 68.3 (dBμV/m) PK: 78.2 (dBμV/m)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBµV/m) *1 PK:105.2 (dBµV/m) *2 PK: 110.8(dBµV/m) *3 PK:122.2 (dBµV/m) *4		
*1 beyond 75 MHz or more above of t *2 below the band edge increasing lin	5			

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

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

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

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

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

Note:

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

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

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11.2 Measurement Equipment Used

	SGS SAC-III									
Name of Equipment	Manufacturer	Model	Serial Num- ber	Calibration Date	Calibration Due					
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017					
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2016	01/28/2017					
Loop Antenna	ETS.LINDGREN	6502	148045	09/07/2015	09/06/2016					
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/14/2015	12/13/2016					
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017					
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017					
Pre-Amplifier	EMC Instru- ments Corp.	EMC0126530	980038	01/02/2016	01/01/2017					
Turn Table	HD	DT420	N/A	N.C.R	N.C.R					
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R					
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R					
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2016	01/01/2017					
3m Site NSA	SGS	966 chamber	N/A	07/01/2016	06/30/2017					
Low Loss Cable	Huber Suhner	966 TX	1	01/02/2016	01/01/2017					
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2015	12/11/2016					
Pre-Amplifier	EMC Instru- ments Corp.	EMC184045	980135	01/02/2016	01/01/2017					

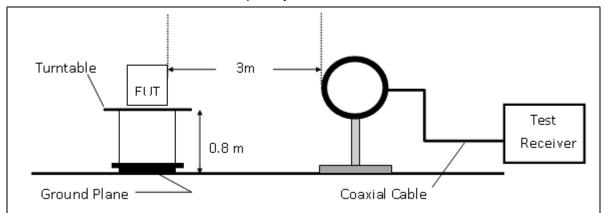
Note: N.C.R refers to Not Calibrated Required.

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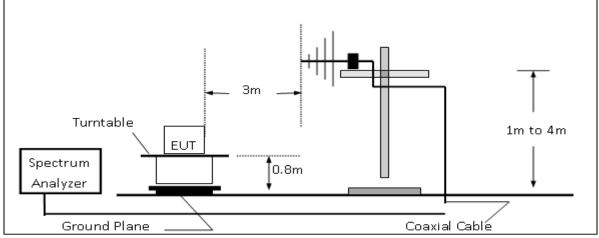


11.3 Test SET-UP

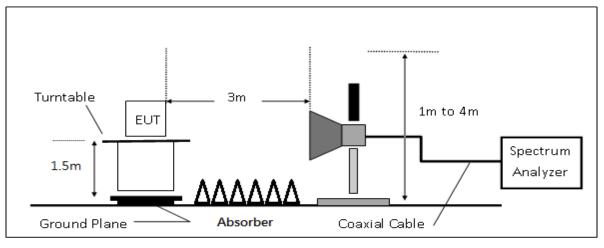
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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11.4 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
- 3. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 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.

11.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

FS = RA + AF + CL - AG

Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB)

Factor(dB) = Antenna Factor(dB μ V/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

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Note :

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency."E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

11.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

11.7 Measurement Result

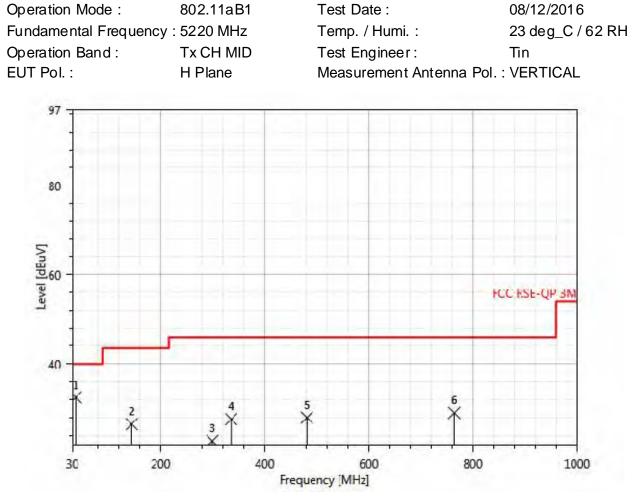
Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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Radiated Spurious Emission Measurement Result Below 1GHz Worst-Case Data: 802.11a 5150~5250 MHz



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
36.79	S	Peak	32.48	41.31	-8.84	40.00	-7.52
144.46	S	Peak	26.50	34.57	-8.07	43.50	-17.00
299.66	S	Peak	22.72	28.65	-5.93	46.00	-23.28
335.55	S	Peak	27.59	32.91	-5.32	46.00	-18.41
481.05	S	Peak	27.96	30.33	-2.37	46.00	-18.04
764.29	S	Peak	29.02	26.05	2.97	46.00	-16.98

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Operation Mode: 802.11aB1 Test Date : 08/12/2016 Fundamental Frequency : 5220 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 Δ 6 2 5 ж 400 600 30 200 800 1000 Frequency [MHz]

Freq.	Note	Decetor Mode	Actual Reading Level	Spectrum FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
90.14	S	Peak	22.82	36.54	-13.72	43.50	-20.68
216.24	S	Peak	28.69	38.12	-9.43	46.00	-17.31
243.40	S	Peak	33.76	41.79	-8.03	46.00	-12.24
359.80	S	Peak	34.16	38.96	-4.80	46.00	-11.84
481.05	S	Peak	28.13	30.50	-2.37	46.00	-17.87
773.99	S	Peak	29.84	27.07	2.77	46.00	-16.16

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802.11a 5250~5350 MHz

Operation Mode : Fundamental Free Operation Band : EUT Pol. :	802.11aB quency : 5300 MHz Tx CH MII H Plane	Temp. / Humi. D Test Engineer	: 23 c		
97					
80 -					
Level [dBuV]			FCC ESE	-QP 3M	
40					
	2 X 3 X 3 X	\$ *	6 X		
30	200	400 600 Frequency [MHz]	800	1000	

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
36.79	S	Peak	33.27	42.11	-8.84	40.00	-6.73
144.46	S	Peak	27.01	35.08	-8.07	43.50	-16.49
299.66	S	Peak	22.72	28.65	-5.93	46.00	-23.28
335.55	S	Peak	27.88	33.20	-5.32	46.00	-18.12
498.51	S	Peak	26.07	28.59	-2.52	46.00	-19.93
770.11	S	Peak	29.21	26.53	2.69	46.00	-16.79

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MHz

90.14

216.24

240.49

359.80

479.11

774.96

F/H/E/S

S

S

S

S

S

S

Operation Mode: 802.11aB2 Test Date : 08/12/2016 Fundamental Frequency : 5300 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC ESE-QP 3M 40 X 4 6 2 5 400 600 30 200 800 1000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin FS Mode **Reading Level** @3m

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.

QP/AV/PK

Peak

Peak

Peak

Peak

Peak

Peak

dBµV/m

22.09

28.15

35.22

33.67

27.72

29.98

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dBµV/m

35.81

37.58

43.26

38.47

30.11

27.22

dBuV/m

43.50

46.00

46.00

46.00

46.00

46.00

dB

-21.41

-17.85

-10.78

-12.33

-18.28

-16.02

dB

-13.72

-9.43

-8.03

-4.80

-2.39

2.76



802.11a, 5470~5725 MHz

Operation Mode : Fundamental Freque Operation Band : EUT Pol. :		ency : 5580 MHz		st Date : mp. / Humi. : st Engineer : asurement An	08/12/2016 23 deg_C / 62 RH Tin : VERTICAL	
97 - - - - - - - - - - - - - - - - - - -						
[Angp] 60 40 - 40					FC	C RSE-QP 3M
3		3 3 1 200	400 Frequency	600 [MHz]	800	1000

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
36.79	S	Peak	32.22	41.05	-8.84	40.00	-7.78
144.46	S	Peak	27.85	35.92	-8.07	43.50	-15.65
293.84	S	Peak	22.41	28.45	-6.05	46.00	-23.59
335.55	S	Peak	27.01	32.34	-5.32	46.00	-18.99
479.11	S	Peak	26.29	28.69	-2.39	46.00	-19.71
774.96	S	Peak	28.71	25.95	2.76	46.00	-17.29

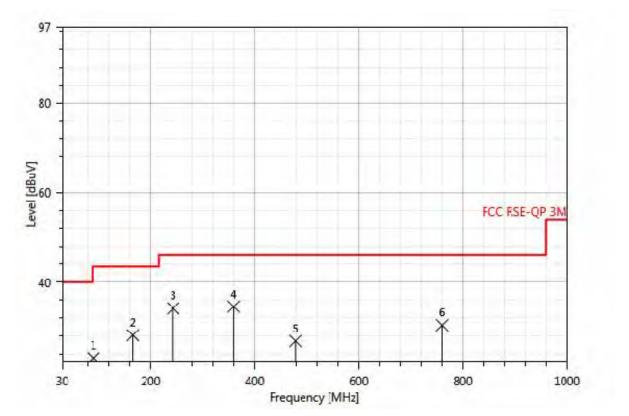
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Operation Mode: 802.11aB3 Fundamental Frequency : 5580 MHz **Operation Band:** Tx CH MID EUT Pol. : H Plane

Test Date : 08/12/2016 Temp. / Humi. : 23 deg_C / 62 RH Test Engineer: Tin Measurement Antenna Pol. : HORIZONTAL



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
90.14	S	Peak	23.05	36.77	-13.72	43.50	-20.45
165.80	S	Peak	28.18	35.57	-7.39	43.50	-15.32
243.40	S	Peak	34.18	42.21	-8.03	46.00	-11.82
359.80	S	Peak	34.57	39.37	-4.80	46.00	-11.43
478.14	S	Peak	26.86	29.30	-2.43	46.00	-19.14
760.41	S	Peak	30.42	27.47	2.95	46.00	-15.58

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802.11a, 5725~5850 MHz

Operation Mode Fundamental Fre Operation Band EUT Pol. :	equency : 57 : Tr	02.11aB4 785 MHz k CH MID Plane	Test Date : Temp. / Humi. Test Engineer Measurement	:	08/12/2016 23 deg_C / 62 RH Tin VERTICAL	
97 						
40				FCC	CRSE-QP 3M	
	2 X	4 X 3 X	5	6 *		
30	200	400 Fr	600 equency [MHz]	800	1000	

	Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
			Mode	Reading Level	FS		@ 3m		
_	MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
	36.79	S	Peak	34.48	43.31	-8.84	40.00	-5.52	
	144.46	S	Peak	27.53	35.60	-8.07	43.50	-15.97	
	299.66	S	Peak	21.93	27.86	-5.93	46.00	-24.07	
	335.55	S	Peak	28.73	34.05	-5.32	46.00	-17.27	
	534.40	S	Peak	26.39	28.05	-1.67	46.00	-19.61	
	769.14	S	Peak	29.82	27.05	2.77	46.00	-16.18	

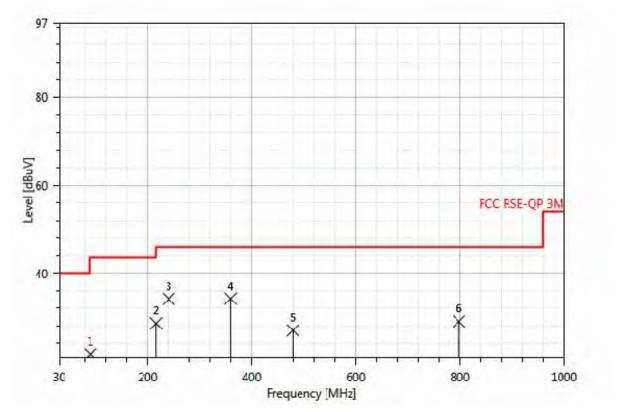
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Operation Mode: 802.11aB4 Fundamental Frequency : 5785 MHz **Operation Band:** Tx CH MID EUT Pol. : H Plane

Test Date : 08/12/2016 Temp. / Humi. : 23 deg C / 62 RH Test Engineer: Tin Measurement Antenna Pol. : HORIZONTAL



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
90.14	S	Peak	21.50	35.22	-13.72	43.50	-22.00
216.24	S	Peak	28.52	37.95	-9.43	46.00	-17.48
240.49	S	Peak	34.11	42.15	-8.03	46.00	-11.89
359.80	S	Peak	34.17	38.96	-4.80	46.00	-11.83
479.11	S	Peak	26.93	29.33	-2.39	46.00	-19.07
798.24	S	Peak	28.99	25.88	3.11	46.00	-17.01

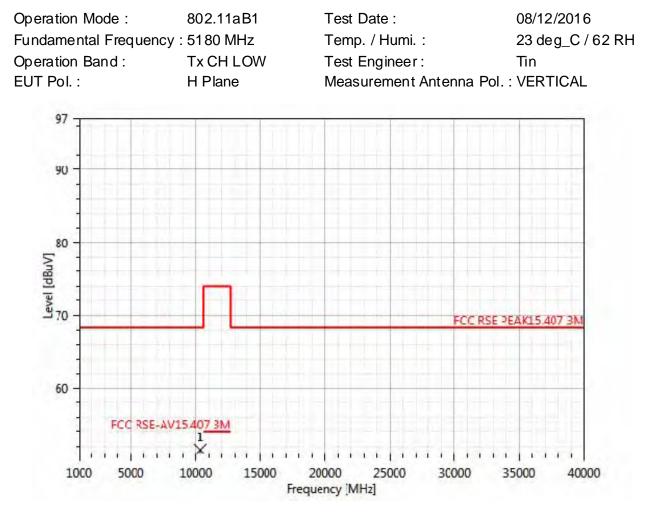
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Above 1GHz Worst-Case Data:

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

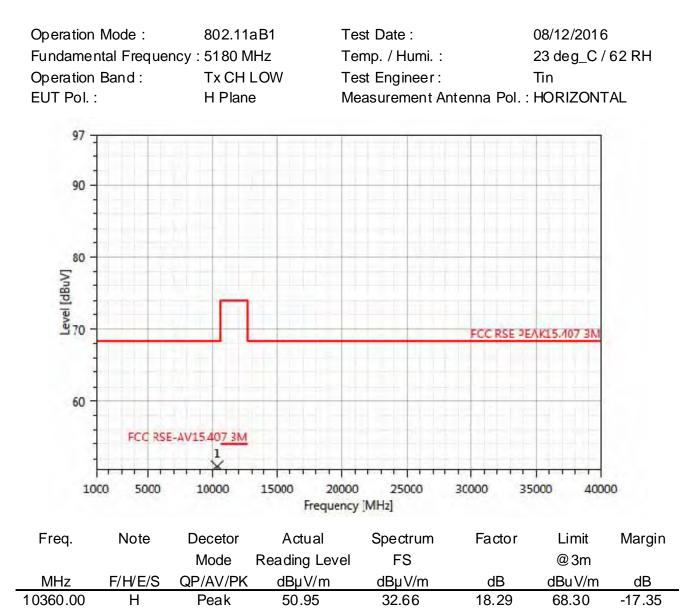


Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
10360.00	Н	Peak	51.55	33.26	18.29	68.30	-16.75

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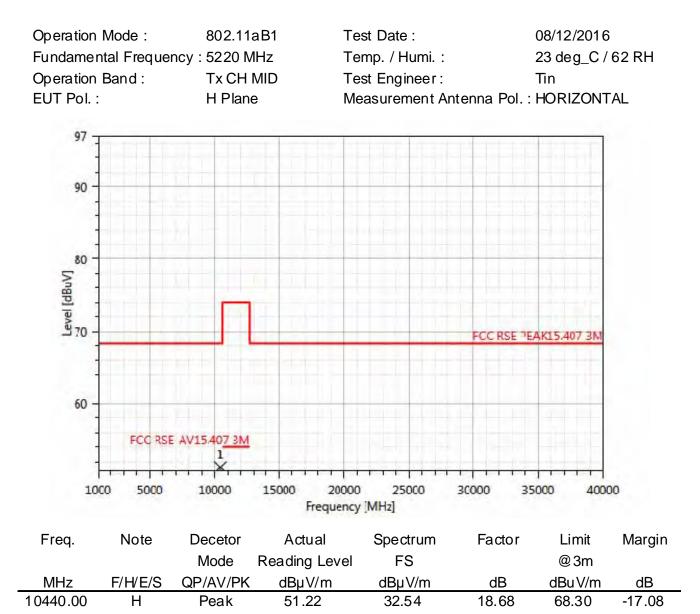
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Operation Mode: 802.11aB1 Test Date : 08/12/2016 Fundamental Frequency : 5220 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 90 80 Level [dBuV] TEAK15,407 3 DCE 60 FCC RSE-AV15.407 3M 1 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Note Actual Spectrum Limit Margin Freq. Decetor Factor Mode **Reading Level** FS @3m QP/AV/PK dBuV/m F/H/E/S dBµV/m dBµV/m dB dB MHz 10440.00 Н Peak 51.05 32.37 18.68 68.30 -17.25

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Operation Mode: 802.11aB1 Test Date : 08/12/2016 Fundamental Frequency : 5240 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 90 80 Level [dBuV] RSF JEAK15.407 60 FCC RSF-AV15.407 3M 1 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Note Actual Limit Margin Freq. Decetor Spectrum Factor Mode **Reading Level** FS @3m QP/AV/PK dBµV/m dBuV/m F/H/E/S dBµV/m dB dB MHz 10480.00 н Peak 50.88 32.59 18.29 68.30 -17.42

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Operation Mode: 802.11aB1 Test Date : 08/12/2016 Fundamental Frequency : 5240 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 90 80 Level [dBuV] DEA K15,407 3 60 FCC RSE-AV15.407 3M 1 50 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Note Actual Spectrum Limit Margin Freq. Decetor Factor Mode **Reading Level** FS @3m QP/AV/PK dBµV/m dBuV/m F/H/E/S dBµV/m dB dB MHz 10480.00 Н Peak 49.94 31.65 18.29 68.30 -18.36

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

Operation Fundame Operation EUT Pol.	ntal Freque Band :	802.11 ncy : 5260 M Tx CH H Plan	1Hz ⁻ LOW ⁻	Γest Date : Γemp. / Humi. : Γest Engineer : Measurement A		08/12/2016 23 deg_C / Tin : VERTICAL	
97 -							
90 -	-						
80		7				1	
[Vu8]							
Level [dBuV]					FCC RSE 7	EAK15.407 3M	
60 -							
	FCC RSI	AV15.407 3M					
10	00 500	10000	15000 200	00 25000	3C000 3	35000 4000	10
1		10000		cy [MHz]	5000	4000	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK		dBµV/m	dB	dBu V/m	dB
10520.00	Н	Peak	51.62	32.25	19.37	68.30	-16.68

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Н

Peak

51.69

Operation Mode: 802.11aB2 Test Date : 08/12/2016 Fundamental Frequency : 5260 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH LOW Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 90 80 Level [dBuV] FCC RSE PEAK15.407 3M 60 FCC RSE-AV15.407 3M 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Note Actual Spectrum Limit Margin Freq. Decetor Factor Mode **Reading Level** FS @3m QP/AV/PK dBµV/m dBuV/m F/H/E/S dBµV/m dB dB MHz

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32.32

19.37

68.30

-16.61



Operation Mode: 802.11aB2 Test Date : 08/12/2016 Fundamental Frequency : 5300 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15.407 3M 40 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB 10600.00 Η 40.02 21.11 18.91 -13.98 54.00 Average 10600.00 Н Peak 50.90 31.99 18.91 74.00 -23.10

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10600.00

Η

Н

Operation Mode: 802.11aB2 Test Date : 08/12/2016 Fundamental Frequency : 5300 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15.407 3M 2 40 15000 20000 25000 1000 5000 10000 30000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB

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40.14

49.76

Average

Peak

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21.23

30.85

18.91

18.91

-13.86

-24.24

54.00

74.00



10640.00

Η

Н

Operation Mode: 802.11aB2 Test Date : 08/12/2016 Fundamental Frequency : 5320 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15.407 3M 2 40 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m MHz F/H/E/S QP/AV/PK dBuV/m dBµV/m dBµV/m dB dB

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40.27

50.48

Average

Peak

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21.09

31.30

19.18

19.18

-13.73

-23.52

54.00

74.00



Н

Operation Fundamen Operation EUT Pol. :	ntal Freque Band :	802.11a ncy : 5320 MI Tx CH F H Plane	Hz To HGH To	est Date : emp. / Humi. : est Engineer : leasurement A	ntenna Pol. :	08/12/2016 23 deg_C / Tin HORIZONT	
97 - 97 80 - 08 60 08	FCC RSE	-AV15.40 <u>7 3M</u> *			FCC RSE PE	AK15.407 3M	
40 - 100	0 5000	10000	15000 2000 Frequenc		30000 3	5000 4000	0
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
			Reading Level			@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
10640.00	Н	Average	40.36	21.18	19.18	54.00	-13.64

Peak

52.21

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33.03

19.18

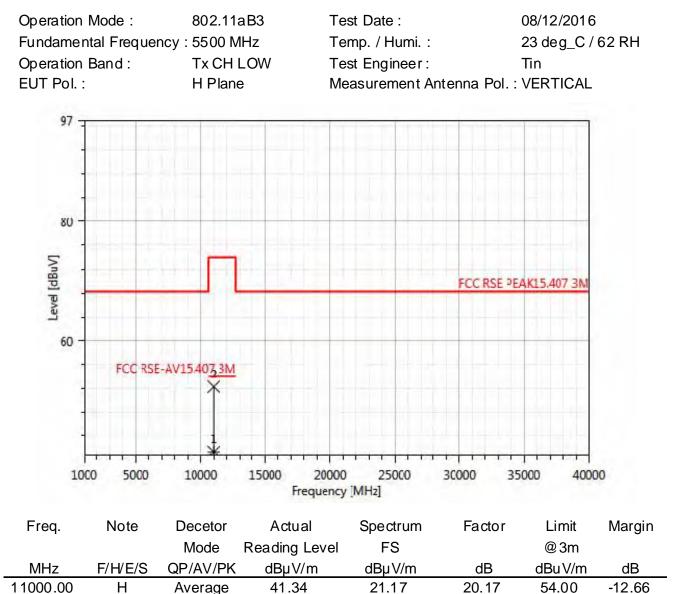
74.00

-21.79



Н

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



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Peak

52.29

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32.12

20.17

74.00

-21.71



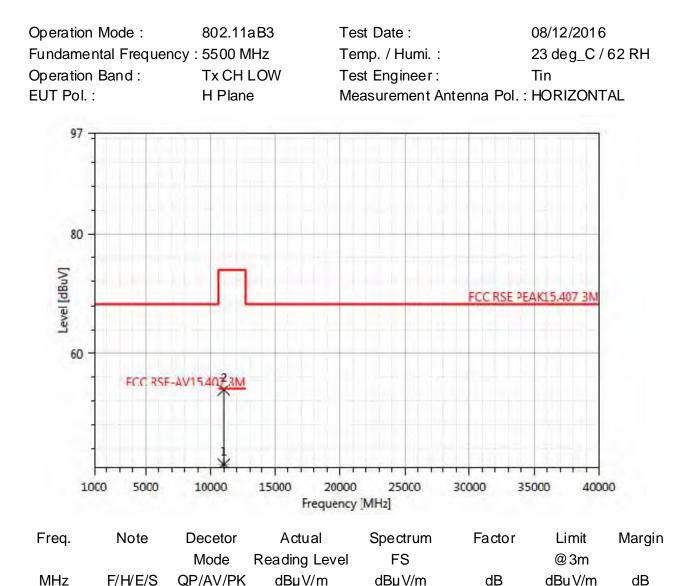
MHz

11000.00

11000.00

Η

Н



dBµV/m

41.37

53.84

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Average

Peak

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dBµV/m

21.20

33.67

dB

20.17

20.17

dB

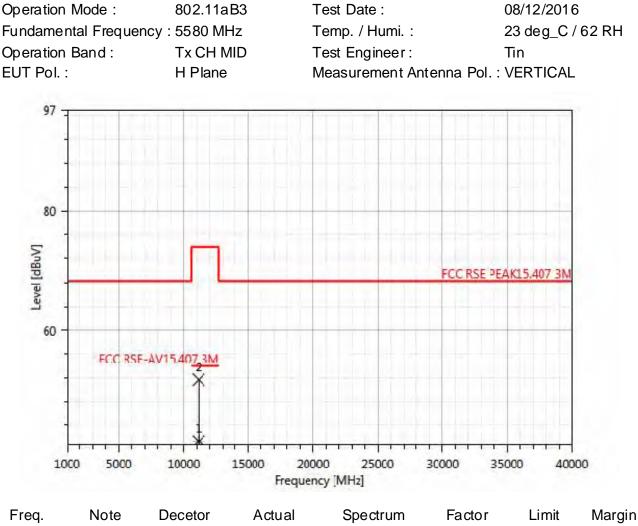
-12.63

-20.16

54.00

74.00





		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
11160.00	Н	Average	41.36	20.91	20.45	54.00	-12.64
11160.00	Н	Peak	51.71	31.26	20.45	74.00	-22.29

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Operation Mode: 802.11aB3 Test Date : 08/12/2016 Fundamental Frequency : 5580 MHz Temp. / Humi. : 23 deg_C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15407,3M

15000 25000 1000 5000 10000 20000 30000 35000 40000 Frequency [MHz]

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11160.00	Н	Average	41.62	21.17	20.45	54.00	-12.38
11160.00	Н	Peak	52.03	31.59	20.45	74.00	-21.97

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Operation Mode: 802.11aB3 Test Date : 08/12/2016 Fundamental Frequency : 5700 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] CC RSE PEAK15.407 3N 60 FCC RSE-AV15407 3M 15000 25000 1000 5000 10000 20000 30000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m

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.

QP/AV/PK

Average

Peak

dBµV/m

41.42

51.71

F/H/E/S

Н

Н

MHz

11400.00

11400.00

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dBµV/m

20.86

31.15

dBuV/m

54.00

74.00

dB

-12.58

-22.29

dB

20.56

20.56



11400.00

Η

Н

Operation Mode: 802.11aB3 Test Date : 08/12/2016 Fundamental Frequency : 5700 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15407 3M 15000 25000 1000 5000 10000 20000 30000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB

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.

Average

Peak

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21.06

31.64

41.62

52.19

20.56

20.56

-12.38

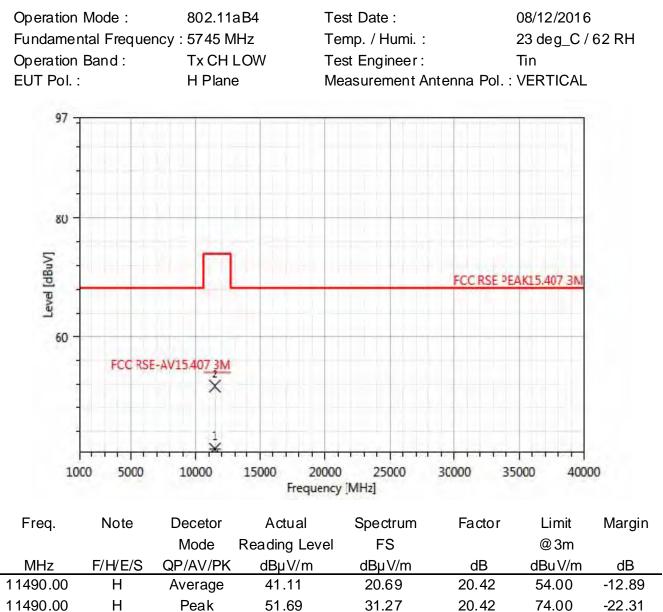
-21.81

54.00

74.00



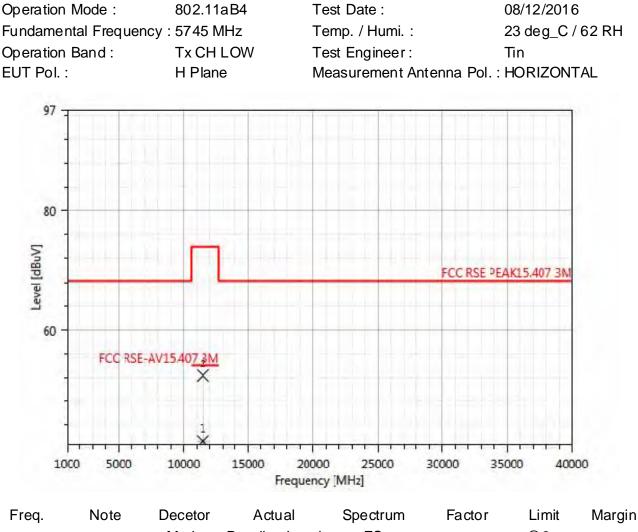
Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz



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		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11490.00	Н	Average	41.31	20.89	20.42	54.00	-12.69
11490.00	Н	Peak	52.35	31.93	20.42	74.00	-21.65

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Operation Mode: 802.11aB4 Test Date : 08/12/2016 Fundamental Frequency : 5785 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15407 3M 15000 25000 30000 1000 5000 10000 20000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin

		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11570.00	Н	Average	41.54	20.95	20.59	54.00	-12.46
11570.00	Н	Peak	52.36	31.78	20.59	74.00	-21.64

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Operation Mode: 802.11aB4 Test Date : 08/12/2016 Fundamental Frequency : 5785 MHz Temp. / Humi. : 23 deg_C / 62 RH **Operation Band:** Tx CH MID Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3M 60 FCC RSE-AV15407 3M 15000 25000 1000 5000 10000 20000 30000 35000 40000 Frequency [MHz]

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11570.00	Н	Average	41.65	21.07	20.59	54.00	-12.35
11570.00	Н	Peak	51.77	31.18	20.59	74.00	-22.23

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Operation Mode : 802.11aB4 Test Date : 08/12/2016 Fundamental Frequency : 5825 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3M 60 FCC RSF-AV15407 3M 15000 25000 30000 1000 5000 10000 20000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin

		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
11650.00	Н	Average	41.55	21.12	20.43	54.00	-12.45	_
11650.00	Н	Peak	50.96	30.53	20.43	74.00	-23.04	

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11650.00

11650.00

Н

Н

Operation Mode: 802.11aB4 Test Date : 08/12/2016 Fundamental Frequency : 5825 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15407 3M 15000 20000 25000 30000 1000 5000 10000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB

41.65

50.95

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---------------------------------------------------------------------------------------------------------------------	--------------------------------

Average

Peak

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21.22

30.52

20.43

20.43

-12.35

-23.05

54.00

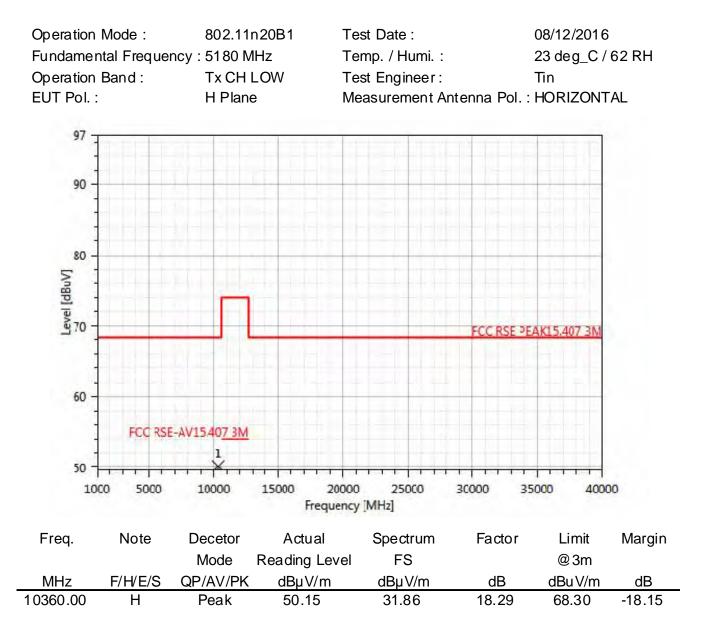
74.00



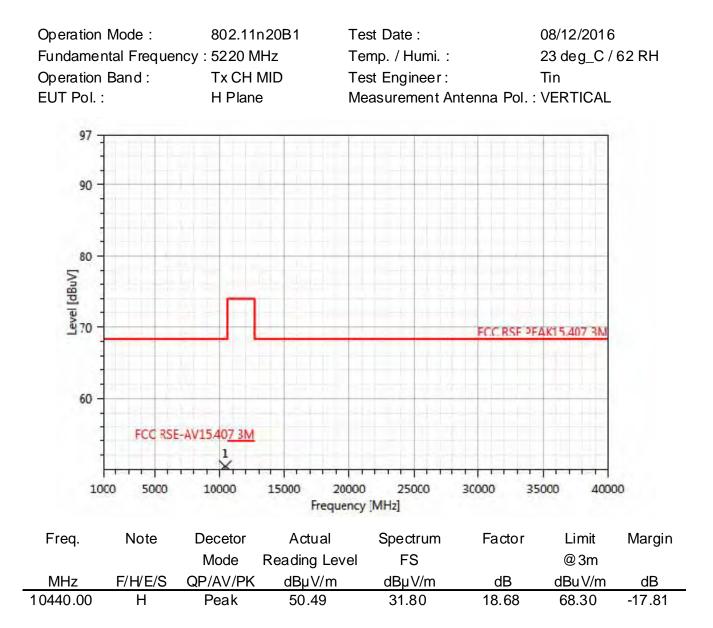
Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Fundame Operation EUT Pol. :	ntal Freque Band :	802.11 ncy : 5180 M Tx CH H Pland	1Hz T LOW T	est Date : emp. / Humi. : est Engineer : leasurement <i>F</i>		08/12/2016 23 deg_C / 62 RH Tin : VERTICAL		
97 -	a rela							
- 90 -								
Level [dBuV]					FCC RSF 2	EAK15.407 3M		
60 -								
	FCC RSI	E-AV15.40 <u>7 3M</u>						
10	co <u>500</u> 0	10000	15000 2000 Frequence		30000 3	5000 4000	00	
Freq.	Note	Decetor Mode	Actual Reading Level	Spectrum FS	Factor	Limit @3m	Margin	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
10360.00	Н	Peak	50.83	32.54	18.29	68.30	-17.47	

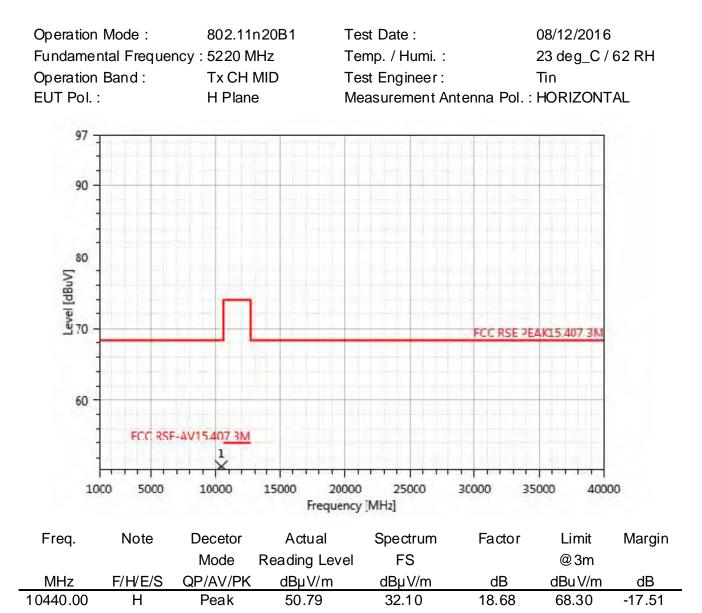




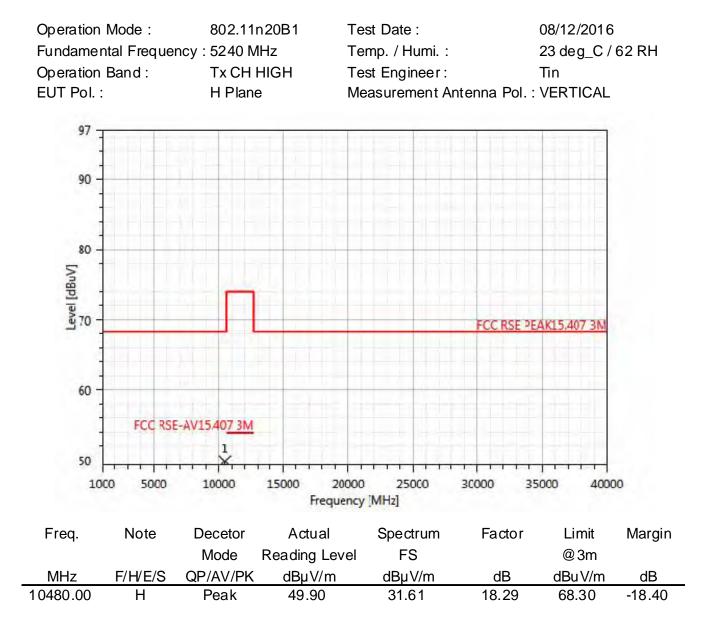






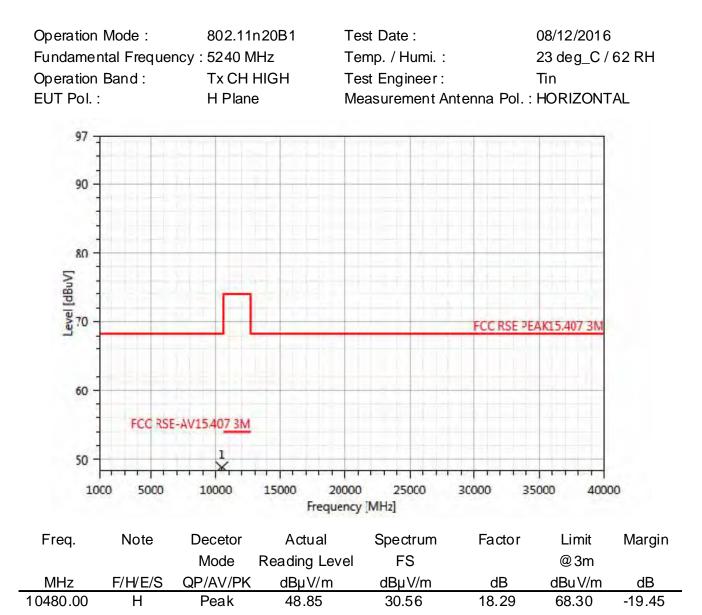






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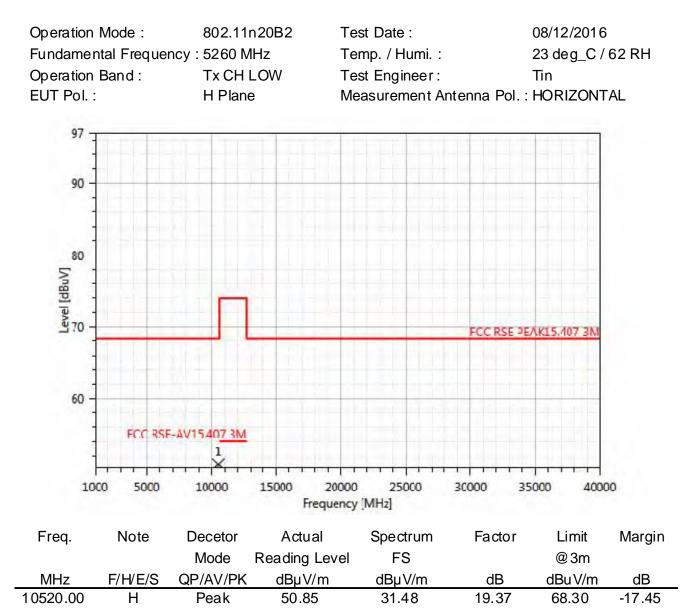




Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Mode : Fundamental Freque Operation Band : EUT Pol. :		802.11 ncy : 5260 M Tx CH H Pland	1Hz LOW	Test Date : Temp. / Humi. : Test Engineer : Measurement A		08/12/2016 23 deg_C / Tin : VERTICAL	
97 -			1.1.1.1.1			-	
90 -							
80 -							
- 08 - 07 - 07 - 07							
J 70 -					FCC RSE P	EAK15.407 3M	
60 -							
	FCC RSE	-AV1540 <u>7 3M</u>					
	++++++	· · · · × · ·					
10	00 5000	10000		000 25000 ncy [MHz]	30000 3	35000 4000	0
Freq.	Note	Decetor Mode	Actual Reading Lev	Spectrum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
10520.00	Н	Peak	50.67	31.29	19.37	68.30	-17.63





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10600.00

10600.00

Н

Н

Operation Mode : Fundamental Freque Operation Band : EUT Pol. :	802.11 ncy : 5300 M Tx CH H Plane	1Hz Te MID Te	st Date : mp. / Humi. : st Engineer : easurement A		08/12/2016 23 deg_C / Tin : VERTICAL	62 RH
97 				FCC RSE 2	EAK15.407 3M	
FCC RS	E-AV15.40 <u>7 3M</u>					
40	10000	15000 20000 Frequency		30000 3	5000 4000	0
Freq. Note	Decetor Mode	Actual Reading Level	Spectrum FS	Factor	Limit @3m	Margin
MHz F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB

39.78

50.06

Average

Peak

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20.87

31.15

18.91

18.91

-14.22

-23.94

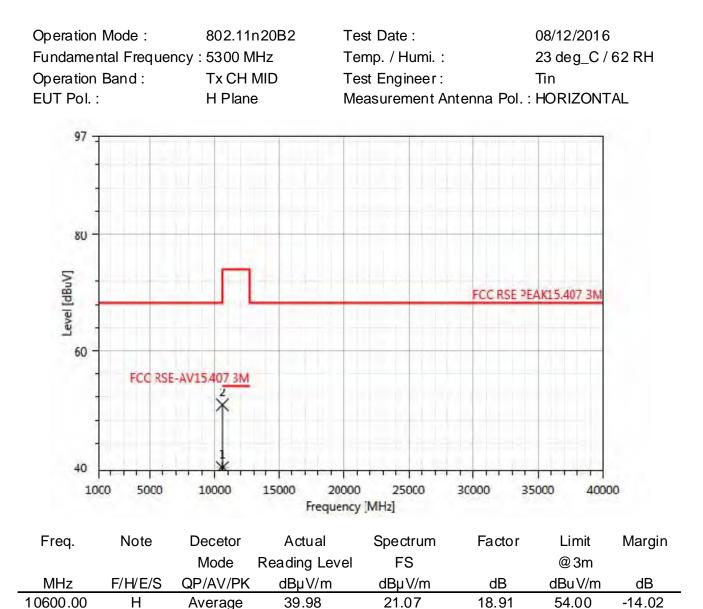
54.00

74.00



10600.00

Н



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Peak

50.74

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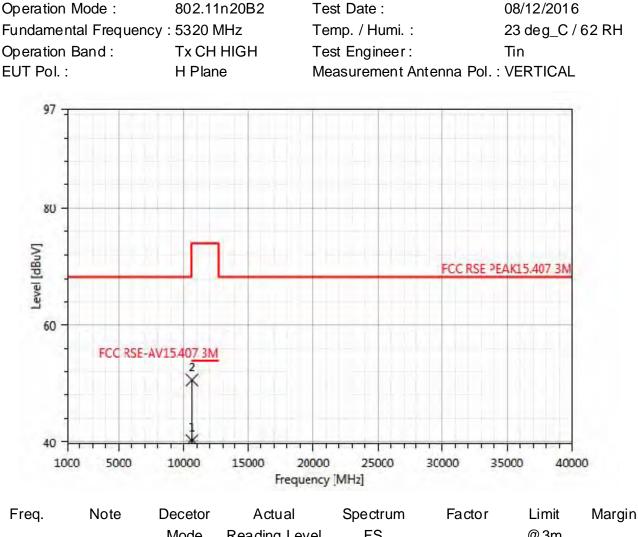
S Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134號

31.83

18.91

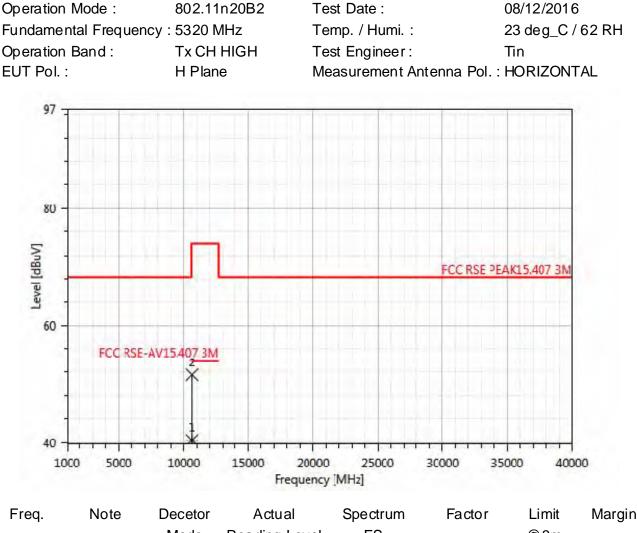
74.00

-23.26



		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
10640.00	Н	Average	40.32	21.14	19.18	54.00	-13.68
10640.00	Н	Peak	50.66	31.47	19.18	74.00	-23.34





NOIC	Decetor	Actual	Opeculum	racior		margin
	Mode	Reading Level	FS		@ 3m	
F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
Н	Average	40.41	21.23	19.18	54.00	-13.59
Н	Peak	51.60	32.41	19.18	74.00	-22.40
	F/H/E/S H	Mode F/H/E/S QP/AV/PK H Average	ModeReading LevelF/H/E/SQP/AV/PKdBµV/mHAverage40.41	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mHAverage40.4121.23	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mdBHAverage40.4121.2319.18	Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBµV/m dBµV/m dB dBuV/m H Average 40.41 21.23 19.18 54.00

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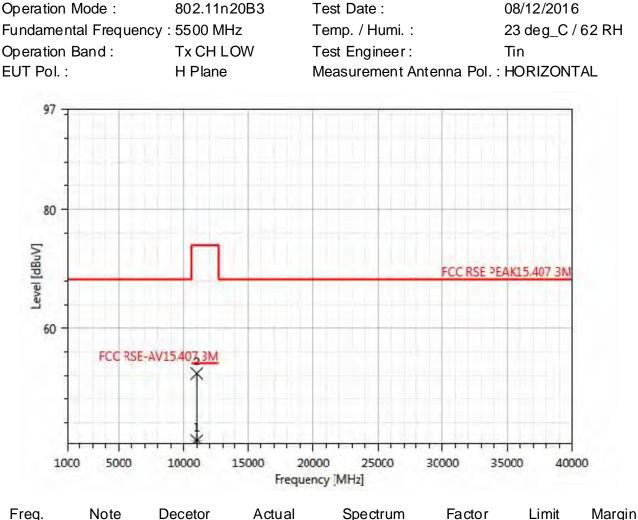
Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Fundamer Operation EUT Pol. :	ntal Freque Band :	802.11r ncy : 5500 M Tx CH L H Plane	Hz T _OW T	⁻ est Date : ⁻ emp. / Humi. : ⁻ est Engineer : <i>I</i> leasurement Ai	ntenna Pol. :	08/12/2016 23 deg_C / Tin VERTICAL	
97 - - - 80 -							
Level [dBuV]	FCC RSE	-AV1540 <u>7 3M</u>			FCC RSE PE	AK15,407 3M	
10		10000		cy [MHz]		5000 4000	
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum I FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11000.00	Н	Average	40.81	20.64	20.17	54.00	-13.19
11000.00	Н	Peak	51.95	31.78	20.17	74.00	-22.05

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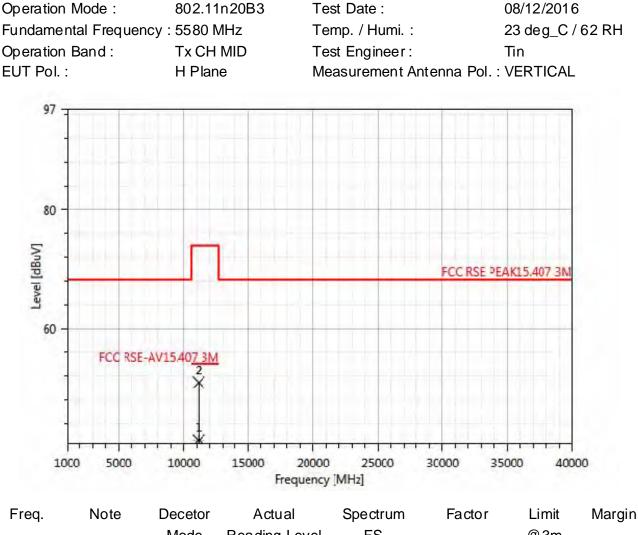
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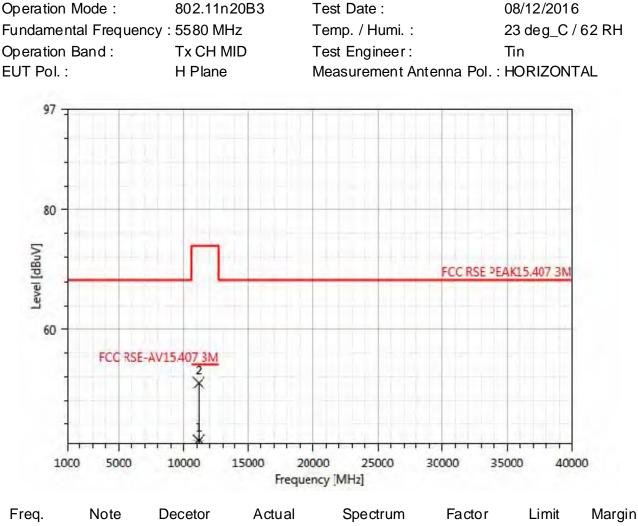
	Mode	Reading Level	FS		@ 3m	
F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
Н	Average	41.10	20.93	20.17	54.00	-12.90
Н	Peak	52.33	32.17	20.17	74.00	-21.67
	Н	F/H/E/S QP/AV/PK H Average	F/H/E/SQP/AV/PKdBµV/mHAverage41.10	F/H/E/S QP/AV/PK dBµV/m dBµV/m H Average 41.10 20.93	F/H/E/S QP/AV/PK dBµV/m dBµV/m dBµ H Average 41.10 20.93 20.17	F/H/E/S QP/AV/PK dBµV/m dBµV/m dBµV/m dBuV/m H Average 41.10 20.93 20.17 54.00





		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11160.00	Н	Average	41.20	20.76	20.45	54.00	-12.80
11160.00	Н	Peak	50.92	30.48	20.45	74.00	-23.08

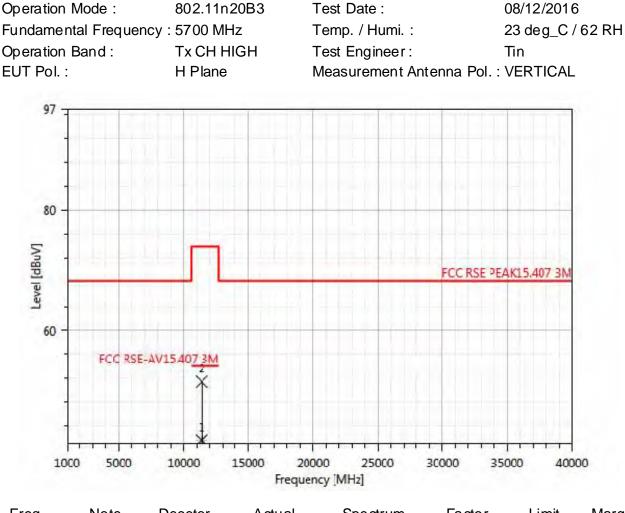




		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11160.00	Н	Average	41.33	20.89	20.45	54.00	-12.67
11160.00	Н	Peak	50.97	30.53	20.45	74.00	-23.03

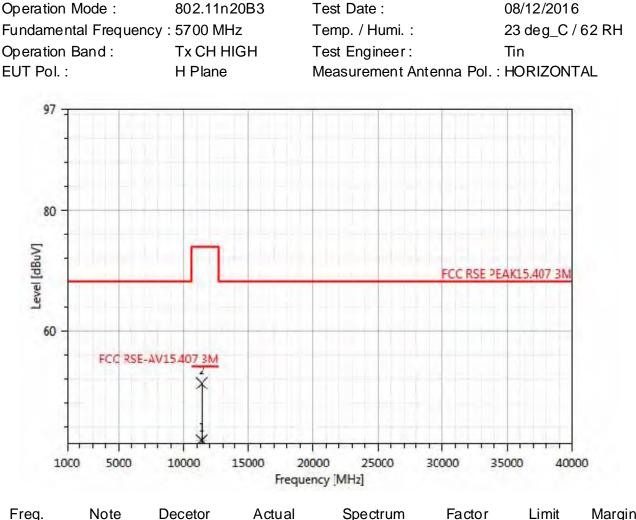
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Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11400.00	Н	Average	41.62	21.06	20.56	54.00	-12.38
11400.00	Н	Peak	51.46	30.90	20.56	74.00	-22.54





Freq.	note	Decetor	Actual	Spectrum	Factor	Limit	wargin	
		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	_
11400.00	Н	Average	41.74	21.18	20.56	54.00	-12.26	
11400.00	Н	Peak	51.26	30.70	20.56	74.00	-22.74	

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60

1000

5000

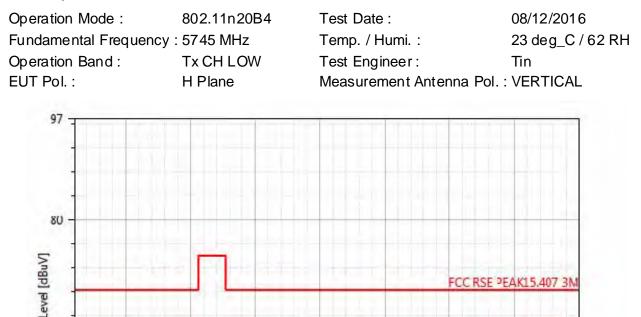
FCC RSE-AV15.407 3M

Х

15000

10000

Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11490.00	Н	Average	41.46	21.04	20.42	54.00	-12.54
11490.00	Н	Peak	51.19	30.77	20.42	74.00	-22.81

20000

Frequency [MHz]

25000

30000

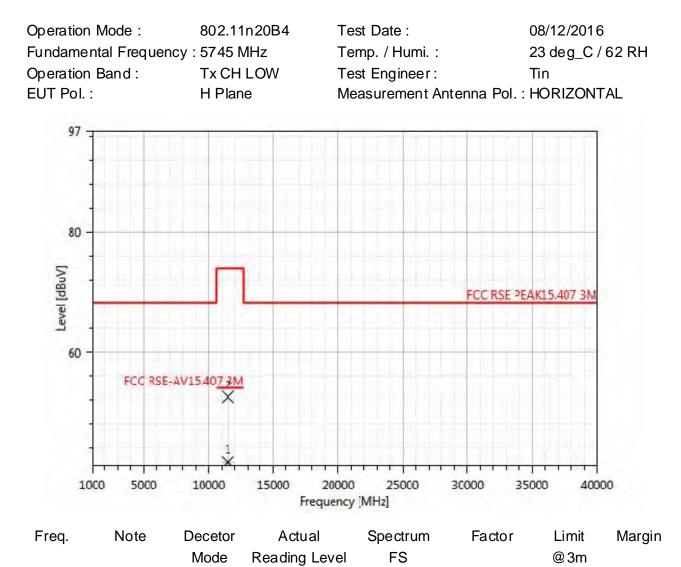
35000

40000

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--------------------------------------------------------------------------------------------------------------------------------------------	-----------

QP/AV/PK

Average

Peak

dBµV/m

41.59

52.50

F/H/E/S

Н

Н

MHz

11490.00

11490.00

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dBµV/m

21.16

32.08

dBuV/m

54.00

74.00

dB

-12.41

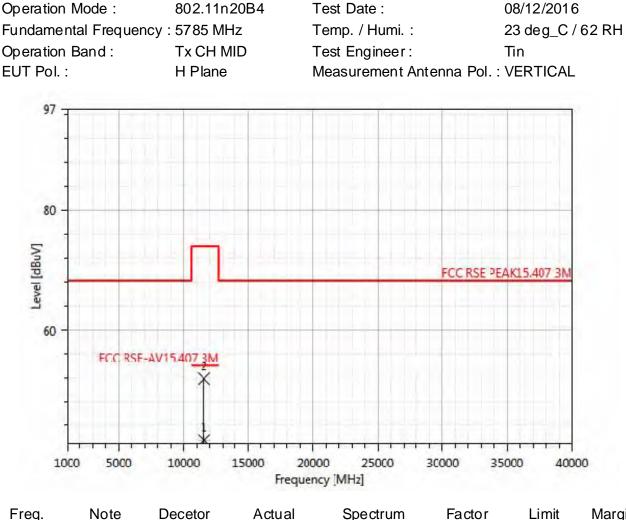
-21.50

dB

20.42

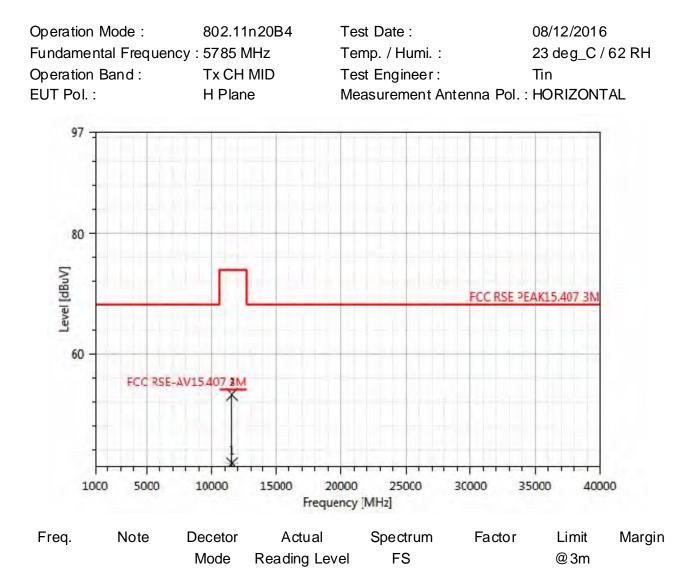
20.42





Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11570.00	Н	Average	41.53	20.94	20.59	54.00	-12.47
11570.00	Н	Peak	51.85	31.26	20.59	74.00	-22.15





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QP/AV/PK

Average

Peak

dBµV/m

41.76

53.20

F/H/E/S

Н

Н

MHz

11570.00

11570.00

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dBµV/m

21.18

32.61

dBuV/m

54.00

74.00

dB

-12.24

-20.80

dB

20.59

20.59



Operation Mode: 802.11n20B4 Test Date : 08/12/2016 Fundamental Frequency : 5825 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSF-AV15407 3M 15000 25000 30000 1000 5000 10000 20000 35000 40000 Frequency [MHz] Freq. Note Spectrum Factor Limit Margin Decetor Actual . . . $\sim \sim$

		Iviode	Reading Level	F2		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
11650.00	Н	Average	41.52	21.09	20.43	54.00	-12.48	
11650.00	Н	Peak	52.10	31.66	20.43	74.00	-21.90	

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1000

5000

10000

Operation Mode: 802.11n20B4 Test Date : 08/12/2016 Fundamental Frequency : 5825 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15.407 31

Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode **Reading Level** FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB 11650.00 Н 21.18 20.43 -12.38 41.62 54.00 Average 11650.00 Н Peak 51.44 31.01 20.43 74.00 -22.56

20000

25000

30000

35000

40000

15000

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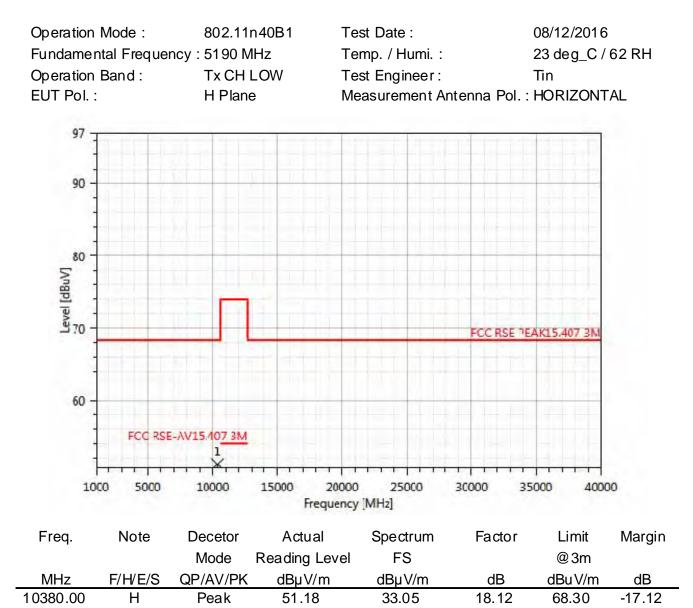
Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

Operation Fundame Operation EUT Pol.	ntal Freque Band :	802.11 ncy : 5190 M Tx CH H Plane	IHz LOW	Tem Test	Date : p. / Humi. : Engineer : surement A		08/12/2016 23 deg_C / Tin : VERTICAL	
97 -		ret - 1 million		-				
90 -								
80 -				-				
Level [dBuV]						FCC RSE 3	PEAK15.407 3M	
60 -								
	FCC RSE	-AV1540 <u>7 3M</u> 1						
50 -	t t t t t				1111		. <u></u>	
10	000 5000	10000	15000 Fre	20000 equency [N	25000 //Hz]	30000	35000 4000	00
Freq.	Note	Decetor Mode	Actua Reading		Spectrum FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/	'n	dBµV/m	dB	dBu V/m	dB
10380.00	Н	Peak	49.19)	31.07	18.12	68.30	-19.11

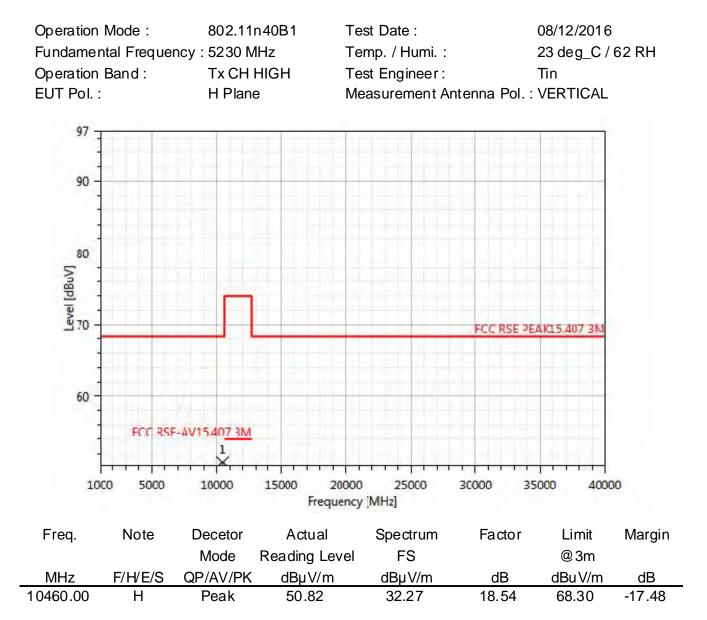
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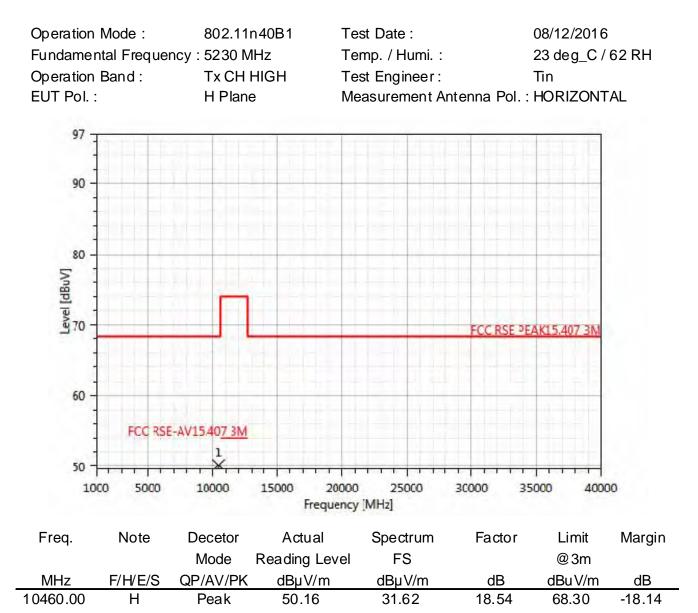






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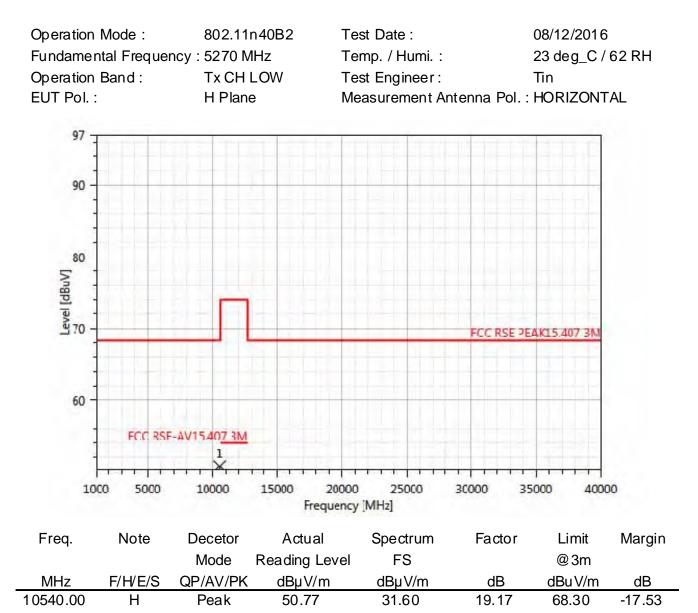




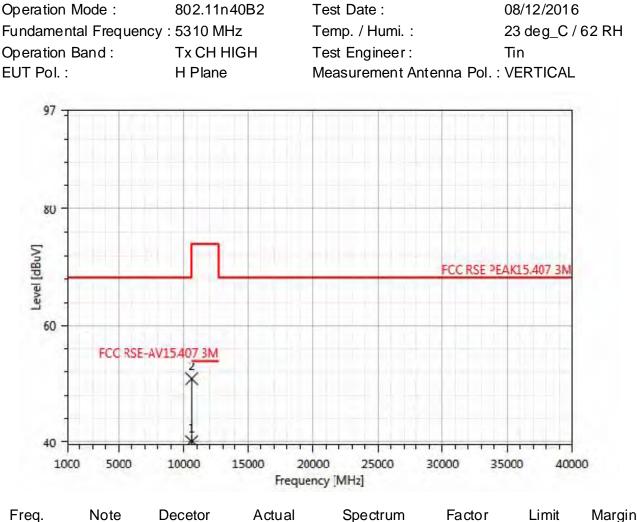
Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz

Operation Fundamer Operation EUT Pol. :	ntal Freque Band :	802.11 ncy : 5270 M Tx CH H Plane	1Hz LOW	Test Date : Temp. / Humi. Test Engineer Measurement /	:	08/12/2016 23 deg_C / Tin : VERTICAL	
97 -			1 2112	Free Free		TITIT	
90 -							
- 08							
Level [dBuV]					ECC DEE 3	FAK15.407 3M	
					PAA- NoF -	HR.1 2.407 100	
60 -							
-	FCC RSI	E-AV15.40 <u>7 3M</u>					
	ETTT	1 1 X 1					
10	co 5000	10000		0000 25000 ency [MHz]	30000 3	5000 4000	00
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
10540.00	Н	Peak	50.86	31.69	19.17	68.30	-17.44



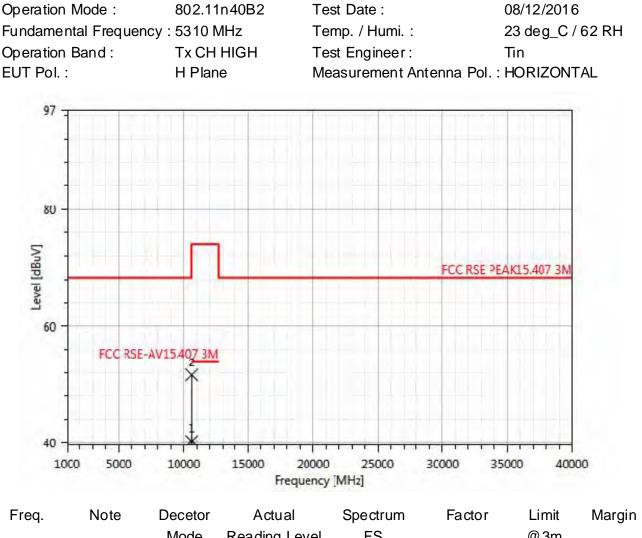






NOLE	Decelui	Actual	Specifulli	Tacion		Margin	
	Mode	Reading Level	FS		@ 3m		
F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
Н	Average	40.20	21.09	19.11	54.00	-13.80	
Н	Peak	50.93	31.82	19.11	74.00	-23.07	
	F/H/E/S H	Mode F/H/E/S QP/AV/PK H Average	ModeReading LevelF/H/E/SQP/AV/PKdBµV/mHAverage40.20	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mHAverage40.2021.09	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mdBHAverage40.2021.0919.11	Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBµV/m dBµV/m dB dBuV/m H Average 40.20 21.09 19.11 54.00	Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBμV/m dBμV/m dB dBuV/m dB H Average 40.20 21.09 19.11 54.00 -13.80





		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
10620.00	Н	Average	40.28	21.17	19.11	54.00	-13.72
10620.00	Н	Peak	51.64	32.54	19.11	74.00	-22.36

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11020.00

Н

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

Operation Fundame Operation EUT Pol. :	ntal Frequei Band :	802.11n40 ncy : 5510 MHz Tx CH LOV H Plane	Te V Te	st Date : mp. / Humi. : st Engineer : asurement Ai	ntenna Pol.:	08/12/2016 23 deg_C / 62 RH Tin : VERTICAL	
- 79 - 08 - 08 - 00 - 00	ECCISE	-AV15.407 3M			FCC RSE PE	AK15.407 3M	
		2 X					
10	co 5000	10000 150	000 20000 Frequency	25000 [MHz]	30000 3	5000 4000	0
Freq.	Note	Decetor Mode Rea	Actual ading Level	Spectrum FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11020.00	Н	Average	41.12	20.96	20.16	54.00	-12.88

Peak

50.60

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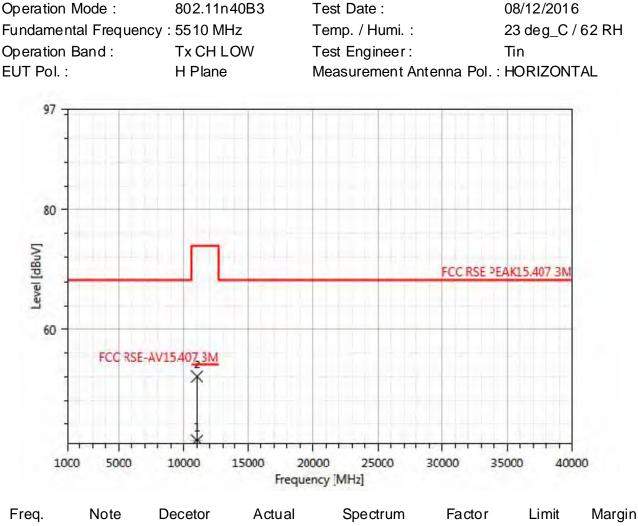
30.44

74.00

-23.40

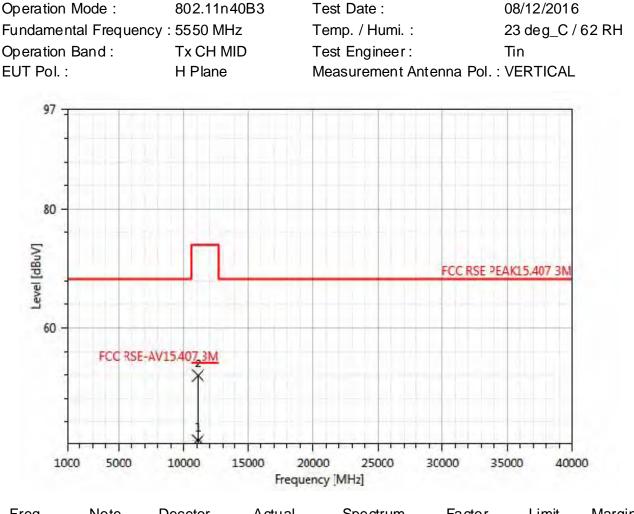
20.16





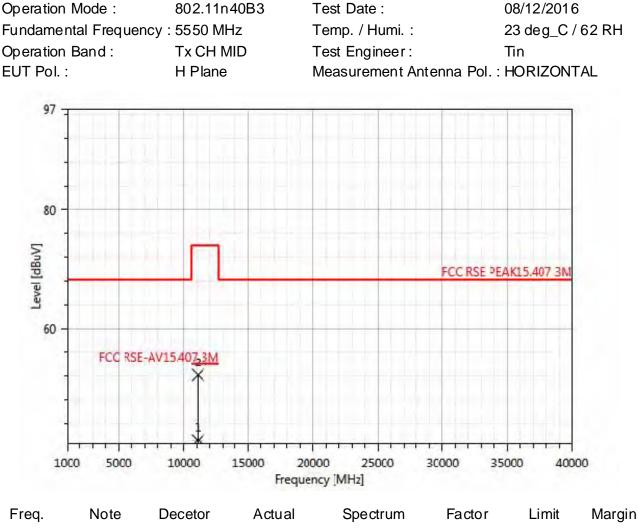
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
11020.00	Н	Average	41.34	21.18	20.16	54.00	-12.66
11020.00	Н	Peak	52.05	31.89	20.16	74.00	-21.95





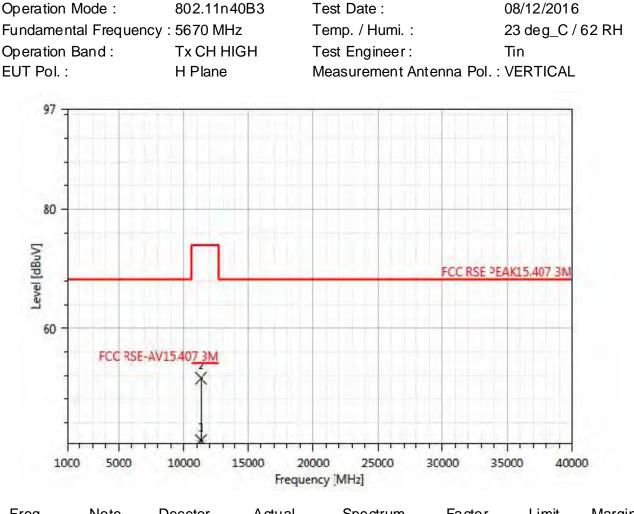
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11100.00	Н	Average	40.98	20.66	20.32	54.00	-13.02
11100.00	Н	Peak	51.92	31.60	20.32	74.00	-22.08





		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
11100.00	Н	Average	41.19	20.87	20.32	54.00	-12.81
11100.00	Н	Peak	52.20	31.88	20.32	74.00	-21.80

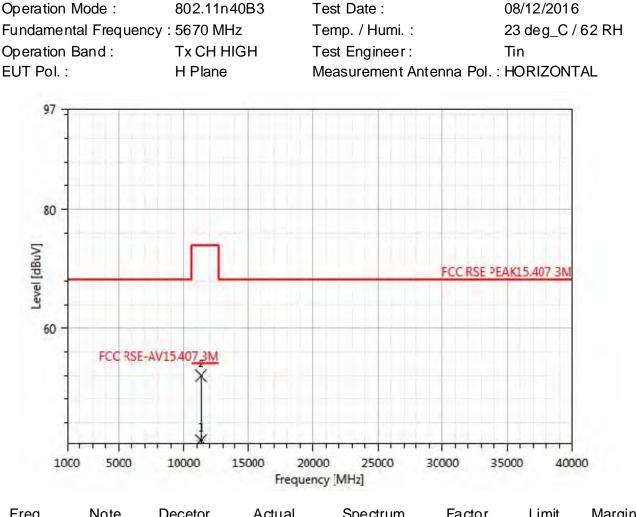




⊢req.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	_
11340.00	Н	Average	41.07	20.69	20.38	54.00	-12.93	-
11340.00	Н	Peak	51.57	31.18	20.38	74.00	-22.43	

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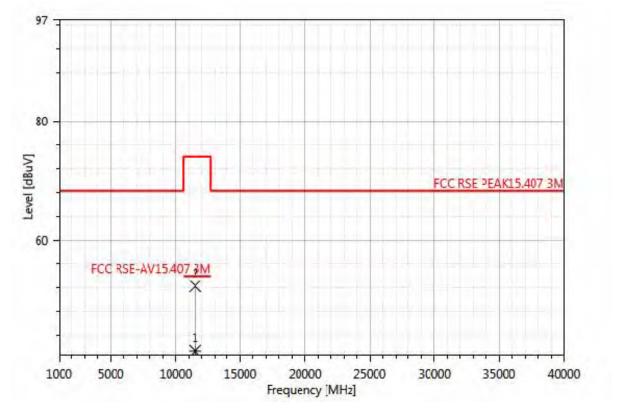


note	Decelor	Actual	Spectrum	Factor	LITTIL	wargin
	Mode	Reading Level	FS		@ 3m	
F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
Н	Average	41.10	20.72	20.38	54.00	-12.90
Н	Peak	51.99	31.61	20.38	74.00	-22.01
	Н	Mode F/H/E/S QP/AV/PK H Average	ModeReading LevelF/H/E/SQP/AV/PKdBµV/mHAverage41.10	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mHAverage41.1020.72	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mdBHAverage41.1020.7220.38	Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBµV/m dBµV/m dB dBuV/m H Average 41.10 20.72 20.38 54.00



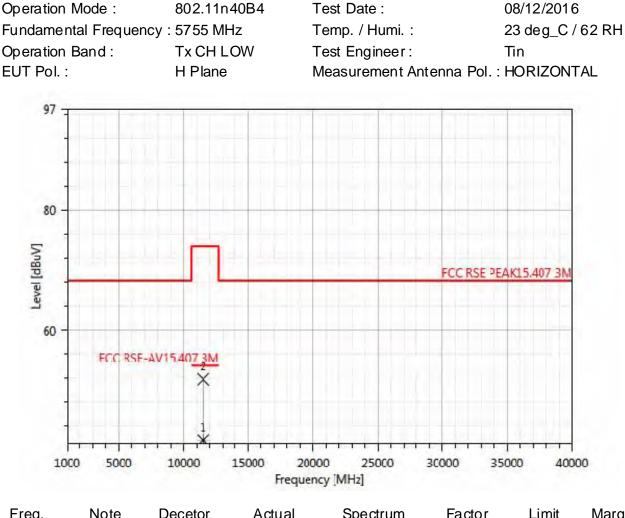
Radiated Spurious Emission Measurement Result 802.11n HT40, 5725~5850 MHz

802.11n40B4	Test Date :	08/12/2016
: 5755 MHz	Temp. / Humi. :	23 deg_C / 62 RH
Tx CH LOW	Test Engineer:	Tin
H Plane	Measurement Antenna Pol.	VERTICAL
	: 5755 MHz Tx CH LOW	: 5755 MHz Temp. / Humi. : Tx CH LOW Test Engineer :



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11510.00	Н	Average	41.42	21.03	20.39	54.00	-12.58
11510.00	Н	Peak	52.32	31.93	20.39	74.00	-21.68





Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11510.00	Н	Average	41.54	21.15	20.39	54.00	-12.46
11510.00	Н	Peak	51.77	31.38	20.39	74.00	-22.23



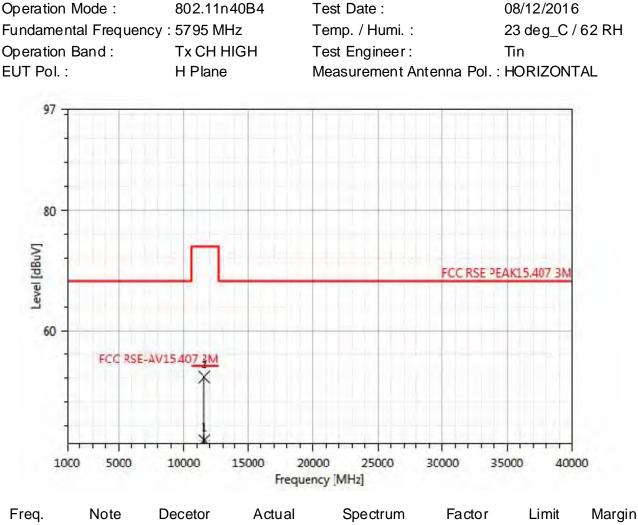
Operation Mode: 802.11n40B4 Test Date : 08/12/2016 Fundamental Frequency : 5795 MHz Temp. / Humi. : 23 deg C / 62 RH **Operation Band: Tx CH HIGH** Test Engineer: Tin EUT Pol. : H Plane Measurement Antenna Pol. : VERTICAL 97 80 Level [dBuV] FCC RSE PEAK15.407 3N 60 FCC RSE-AV15407 3M 15000 25000 30000 1000 5000 10000 20000 35000 40000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin

		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	_
11590.00	Н	Average	41.54	21.11	20.43	54.00	-12.46	
11590.00	Н	Peak	52.52	32.09	20.43	74.00	-21.48	

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		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
11590.00	Н	Average	41.64	21.21	20.43	54.00	-12.36
11590.00	Н	Peak	52.21	31.78	20.43	74.00	-21.79



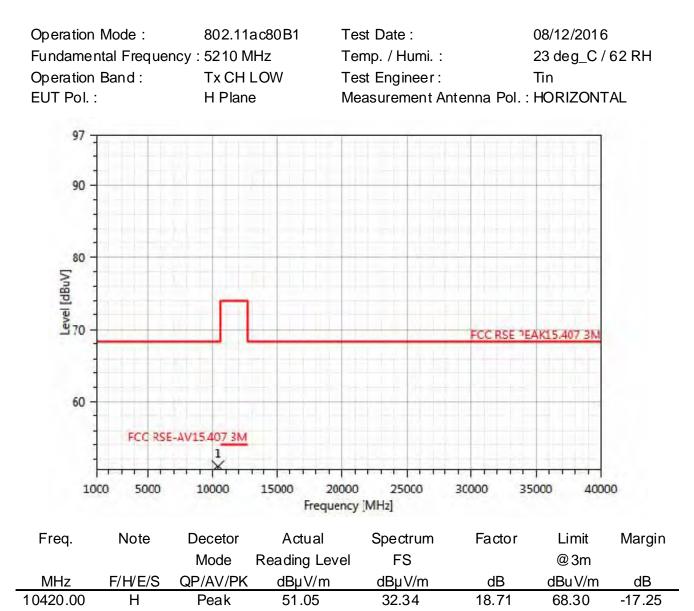
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz

Operation Fundamer Operation EUT Pol. :	ntal Frequer Band :	802.11a ncy : 5210 M Tx CH I H Plane	lHz LOW	Test Date : Temp. / Humi. : Test Engineer : Measurement A		08/12/2016 23 deg_C / Tin VERTICAL	
97 -			1			1213.15	
90 -							
80 -							
Level [dBuV]		П			FCC RSE PI	AK15.407 3M	
60 -							
-	FCC RSE	-AV15.40 <u>7 3M</u>					
10	0 5000	10000		0000 25000 ency [MHz]	30000 3	5000 4000	0
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
MHz	F/H/E/S	Mode QP/AV/PK	Reading Lev dBµV/m	∕el FS dBµV/m	dB	@ 3m dBu V/m	dB
10420.00	H	Peak	50.67	31.96	18.71	68.30	-17.63

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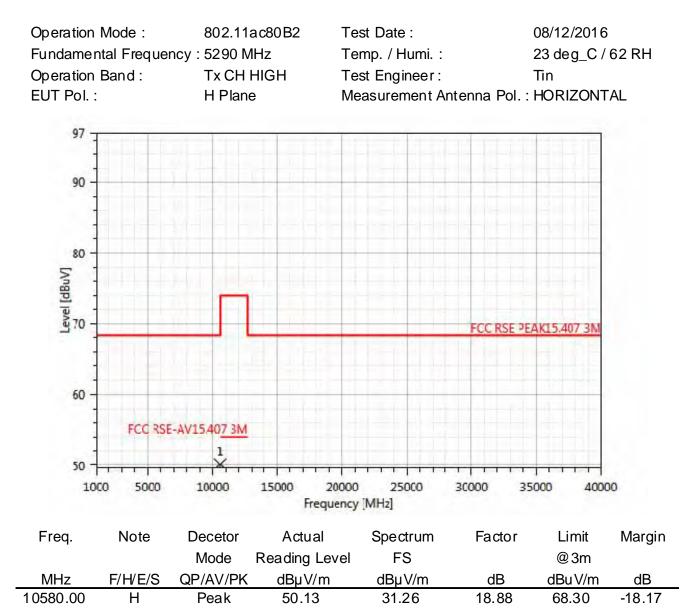




Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz

Operation Mode : Fundamental Frequenc Operation Band : EUT Pol. :		802.11a ncy : 5290 M Tx CH I H Plane	Hz HIGH	Test Date : Temp. / Humi. : Test Engineer : Measurement A		08/12/2016 23 deg_C / Tin VERTICAL	62 RH
97 -							
90 -	-						
Level [dBuV]	-						
370-					FCC RSE PI	AK15.407 3M	
60 -		-AV15.407 3M					
	FCC KSE	-AVISA07 SM					
10	000 5000	10000		000 25000 ncy [MHz]	30000 3	5000 4000	0
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
10580.00	Н	Peak	51.90	33.03	18.88	68.30	-16.40





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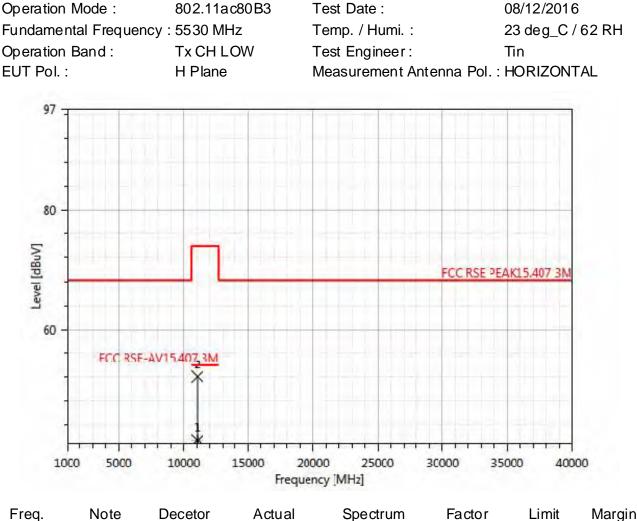
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

Operation Fundamer Operation EUT Pol. :	ntal Freque Band :	802.11a ncy : 5530 Mi Tx CH L H Plane	Hz ₋OW	Test Date : Temp. / Humi. : Test Engineer : Measurement A	ntenna Pol. :	08/12/2016 23 deg_C / Tin VERTICAL	
- 79 - 00 - 00 - 00 - 00 - 00 - 00 - 00 - 0	to interest	-AV15.407 <u>3M</u>	15000 20	000 25000		AK15.407 3M	0
				ncy [MHz]			
Freq.	Note	Decetor Mode	Actual Reading Lov	Spectrum el FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	Reading Lev dBµV/m	dBµV/m	dB	dBu V/m	dB
11060.00	H	Average	41.20	20.94	20.26	54.00	-12.80
11060.00	Н	Peak	51.91	31.65	20.26	74.00	-22.09

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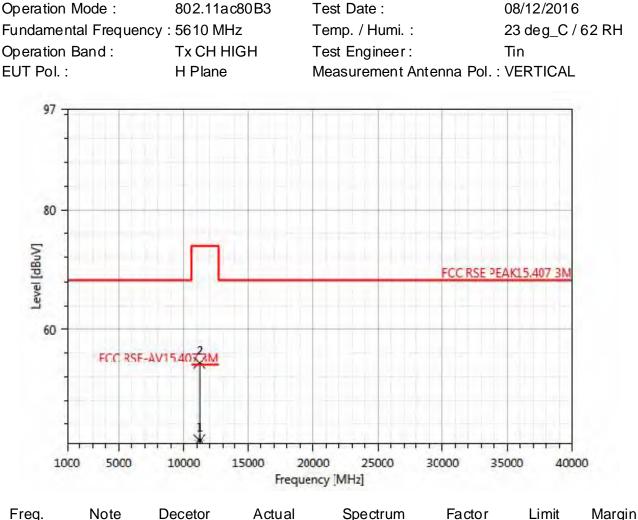
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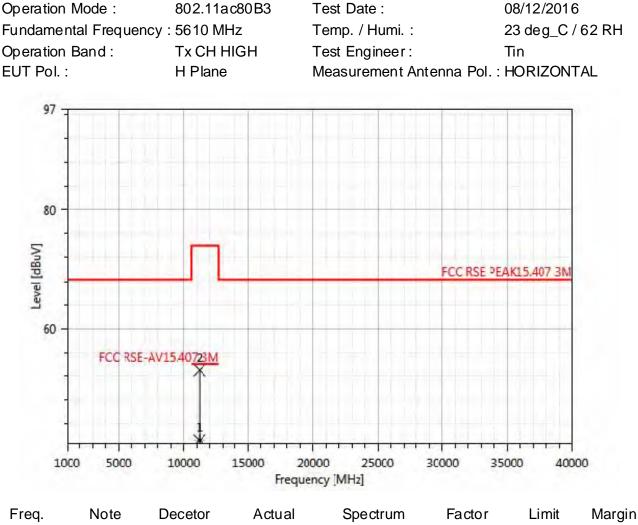
ricq.	NOIC	Decetor	notual	Opeonani	1 4 6 6 1	Linne	margin	
		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	_
11060.00	Н	Average	41.41	21.15	20.26	54.00	-12.59	
11060.00	Н	Peak	52.09	31.83	20.26	74.00	-21.91	





dB
2.75
3.11





•				•			0	
		Mode	Reading Level	FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
11220.00	Н	Average	41.47	20.99	20.48	54.00	-12.53	-
11220.00	Н	Peak	51.22	30.74	20.48	74.00	-22.78	



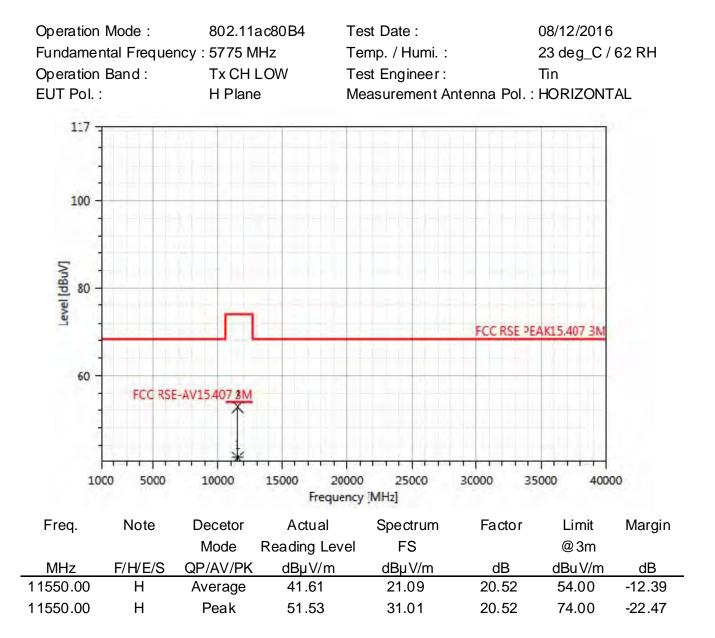
Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5725~5850 MHz

Operation Mode :		802.11	ac80B4 Te	est Date :		08/12/2016		
Fundamen	tal Frequer	ncy : 5775 N	1Hz Te	emp. / Humi. :		23 deg_C /	62 RH	
Operation	Band :	Tx CH	LOW Te	est Engineer:		Tin		
EUT Pol. :		H Plane	e Me	easurement A	VERTICAL			
1.7								
100 -								
Level [dEuV]								
Level					FCC RSE PE	AK15.407 3M		
60	FCC RSE	-AV1540 <u>7.3M</u>						
100	0 5000	10000	15000 20000		3C000 3	5000 4000	00	
			Frequency	[MHz]				
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
11550.00	Н	Average	41.58	21.06	20.52	54.00	-12.42	
11550.00	Н	Peak	52.14	31.62	20.52	74.00	-21.86	

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Band edge falling to restricted band

802.11a mode

Operation Mode :		802.11aB1		Test Date :		08/10/2016		
Fundamental	Frequen	cy : 5180 M	lHz	Temp. / Humi. :		23 deg_C /	62 RH	
Operation Ba	nd :	Bandeo	ndedge CH LOW Test Engineer:		Tin			
EUT Pol. :		H Plane	H Plane Measurement Antenna		enna Pol. :	Pol. : VERTICAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Lev	el FS		@ 3m		
MHz F	/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
5150.00	Е	Average	43.67	37.79	5.88	54.00	-10.33	
5150.00	Е	Peak	56.07	50.19	5.88	74.00	-17.93	

Operation Mode :		802.11a	B1 -	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5180 Mł	Hz -	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Operation Band :		dge CH LOW Test Engineer :		Tin		
EUT Pol. :	:	H Plane		Measurement Ant	enna Pol.:	HORIZONT	AL
Freq.	Note	Decetor Mode	Actual Reading Leve	Spe <i>c</i> trum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5150.00	E	Average	44.21	38.33	5.88	54.00	-9.79
5150.00	Е	Peak	56.14	50.26	5.88	74.00	-17.86



Operation Mode :		802.11a		Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5320 M	Hz	Temp. / Humi. :		23 deg_C /	62 RH
Operation	Band :	Banded	Bandedge CH HIGH Test Engineer:			Tin	
EUT Pol. :		H Plane)	Measurement Ant	enna Pol.:	VERTICAL	
F	N I a Ca	Deseter	Astral		Es stan	1	Manual 11
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5350.00	Е	Average	43.46	37.31	6.15	54.00	-10.54
5350.00	Е	Peak	55.53	49.38	6.15	74.00	-18.47

Operation Mode :		802.11	aB2	Test Date :	est Date :		
Fundame	ntal Freque	ncy : 5320 M	IHz ·	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Operation Band :		Bandedge CH HIGH Test Engineer:			Tin	
EUT Pol. :		H Plane	H Plane Measurement Antenna Pol. :		HORIZONTAL		
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5350.00	E	Average	44.56	38.41	6.15	54.00	-9.44
5350.00	Е	Peak	57.22	51.07	6.15	74.00	-16.78



Operation Mode :		802.11a	aB3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5500 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation Band :		Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane)	Measurement Ant	leasurement Antenna Pol. :		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5460.00	Е	Average	45.09	38.86	6.23	54.00	-8.91
5460.00	Е	Peak	55.21	48.97	6.23	74.00	-18.79

Operation Mode :		802.11a	aB3 -	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5500 M	Hz -	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Operation Band :		Bandedge CH LOW Test Engineer:		Tin		
EUT Pol. :		H Plane	e l	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5460.00	E	Average	43.78	37.55	6.23	54.00	-10.22
5460.00	Е	Peak	55.71	49.48	6.23	74.00	-18.29



Operation Mode :		802.11a	1B3 -	Test Date :		08/10/2016		
Fundame	ntal Freque	ncy : 5500 Ml	Hz -	Temp. / Humi. :		23 deg_C / 62 RH		
Operation	Band :	Banded	Bandedge CH LOW Test Engineer:			Tin		
EUT Pol. :		H Plane	H Plane Measurement A			tenna Pol. : VERTICAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5470.00	E	Peak	54.83	48.57	6.26	68.30	-13.47	

Operation Mode :		802.11a	aB3 -	Test Date :		08/10/2016		
Fundamer	ntal Freque	ncy : 5500 M	Hz ⁻	Temp. / Humi. :		23 deg_C / 62 RH		
Operation	Band :	Banded	lge CH LOW 1	Test Engineer:		Tin		
EUT Pol. :		H Plane	H Plane Measurement Antenn			a Pol. : HORIZONTAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5470.00	Е	Peak	57.76	51.49	6.26	68.30	-10.54	



Operation Mode :		802.11a	802.11aB3 Te		Test Date :		
Fundame	ntal Freque	ncy : 5700 M	IHz ⁻	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH HIGH	Test Engineer:		Tin	
EUT Pol. :	:	H Plane	H Plane Measurement Antenna Pol. : VERTICAL				
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5725.00	E	Peak	56.14	49.55	6.59	68.30	-12.16

Operation	Mode :	802.11a	aB3	Test Date :	08/10/2016			
Fundamental Frequency : 5700 MH			IHz -	Temp. / Humi. :		23 deg_C / 62 RH		
Operation Band : Bar			ndedge CH HIGH Test Engineer :			Tin		
EUT Pol. : H Plane			e l	Measurement Ant	tenna Pol.:	HORIZONT	AL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5725.00	Е	Peak	57.98	51.39	6.59	68.30	-10.32	

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to is Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. SGS Taiwan Ltd. No.134, WuckungRoad, NewTaipeiIndustrialPark, WukuDistrict, NewTaipeiCity, Taiwan24803/新北市五股區新北產業園區五工路 134 號



5725.00

Е

Operation Mode : 802 Fundamental Frequency : 574				Test Date : Temp. / Humi. :		08/10/2016 23 deg_C /	
Operation	•	Bandedge CH LOW		•		Tin	
EUT Pol. : H Plane			-	Measurement Ant	enna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5650.00	E	Peak	55.85	49.37	6.48	68.23	-12.38
5700.00	Е	Peak	55.43	48.75	6.68	105.23	-49.80
5720.00	Е	Peak	58.16	51.56	6.60	110.83	-52.67
5725.00	E	Peak	64.73	58.14	6.59	122.23	-57.50

Operation Mode : 802.11aB4			aB4	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5745 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :	:	H Plane	9	Measurement Ant	enna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5650.00	E	Peak	55.28	48.79	6.48	68.23	-12.95
5700.00	Е	Peak	55.48	48.80	6.68	105.23	-49.75
5720.00	Е	Peak	60.81	54.21	6.60	110.83	-50.02

63.04

6.59

122.23

-52.60

69.63

Peak



Operation Mode :

08/10/2016

Operation Mode: 802.11aB4			aB4	Test Date : 08/10/2016			
Fundamental Frequency : 5825 MHz			IHz	Temp. / Humi. : 23 deg_C / 62			62 RH
Operation	Band :	Bandeo	dge CH HIGH	Test Engineer:		Tin	
EUT Pol. :	:	H Plane	e	Measurement Ant	tenna Pol.:	VERTICAL	
F ire et	Nata	Deceter	Astrol		Es sta a	I insit	Manain
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	Е	Peak	56.20	48.92	7.28	122.23	-66.03
5855.00	Е	Peak	56.72	49.40	7.32	110.83	-54.11
5875.00	E	Peak	56.45	49.08	7.37	105.23	-48.78
5925.00	Е	Peak	57.00	49.61	7.39	68.23	-11.23

Fundamer	ntal Freque	ncy : 5825 N	1Hz 7	Temp. / Humi. : 23 deg_C / 6			62 RH
Operation Band : Bandedge CH HIG				GHTest Engineer: Tin			
EUT Pol.: H Plane Measurement Anten					enna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	l FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	Е	Peak	59.00	51.72	7.28	122.23	-63.23
5855.00	Е	Peak	56.68	49.36	7.32	110.83	-54.15
5875.00	Е	Peak	56.79	49.42	7.37	105.23	-48.44
5925.00	Е	Peak	56.33	48.94	7.39	68.23	-11.90

Test Date :

802.11aB4



802.11n20 HT mode

Operation Mode :		802.11r	n20B1	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5180 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	9	Measurement Ant	enna Pol.:	VERTICAL	
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5150.00	Е	Average	36.66	30.78	5.88	54.00	-17.34
5150.00	Е	Peak	50.74	44.86	5.88	74.00	-23.26

Operation Mode: 802			n20B1	Test Date :		08/10/2016	
Fundamental Frequency : 5180			MHz Temp. / Humi. :		23 deg_C / 62 RH		
Operation	Band :	Bandeo	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	9	Measurement Ant	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5150.00	Е	Average	40.30	34.42	5.88	54.00	-13.70
5150.00	Е	Peak	52.33	46.45	5.88	74.00	-21.67



Operation Mode : Fundamental Frequency :		802.11r ncv : 5320 M	-	Test Date : Temp. / Humi. :		08/10/2016 23 deg_C / 62 RH	
Operation		•		Test Engineer:	•		02101
EUT Pol. :		H Plane	9	Measurement Ant	enna Pol. :	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5350.00	E	Average	38.04	31.89	6.15	54.00	-15.96
5350.00	Е	Peak	50.86	44.71	6.15	74.00	-23.14

Operation Mode : 802.11n20B2			n20B2	Test Date :		08/10/2016		
Fundamental Frequency : 5320			IHz	Hz Temp. / Humi. :		23 deg_C / 62 RH		
Operation	Band :	Bandeo	Bandedge CH HIGH Test Engineer :			Tin		
EUT Pol. :	EUT Pol. : H Plane Measuremen			Measurement Ant	tenna Pol.:	HORIZONT	AL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
5350.00	E	Average	40.95	34.80	6.15	54.00	-13.05	
5350.00	Е	Peak	54.19	48.03	6.15	74.00	-19.81	

Operation Mode : 802.11n20E			120B3	Test Date :		08/10/2016	
Fundamental Frequency : 5500 MHz			Hz	Temp. / Humi. : 23 deg_C			62 RH
Operation Band :		Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. : H Plane)	Measurement Ant	enna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5460.00	Е	Average	38.21	31.98	6.23	54.00	-15.79
5460.00	Е	Peak	50.94	44.71	6.23	74.00	-23.06

Operation Mode: 80			n20B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5500 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation Band :		Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane)	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum el FS	Factor	Limit @ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5460.00	E	Average	38.19	31.96	6.23	54.00	-15.81
5460.00	Е	Peak	49.84	43.60	6.23	74.00	-24.16



Operation	Mode :	802.11n	20B3	Test Date :	08/10/2016			
Fundamental Frequency : 5500 MHz Temp. / Humi. :				23 deg_C / 62 RH				
Operation	Band :	Banded	ge CH LOW	Test Engineer:		Tin		
EUT Pol. :	:	H Plane		Measurement Antenna Pol. : VERTICAL				
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5470.00	E	Peak	52.15	45.88	6.26	68.30	-16.15	

Operation	Mode :	802.11r	n20B3	Test Date :				
Fundamer	ntal Freque	ncy : 5500 M	00 MHz Temp. / Humi. :			23 deg_C / 62 RH		
Operation	Band :	Banded	lge CH LOW [·]	Test Engineer:	est Engineer: Tin			
EUT Pol. :		H Plane	e	Measurement Antenna Pol. :		HORIZONTAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5470.00	Е	Peak	52.72	46.45	6.26	68.30	-15.58	



Operation	Mode :	802.11r	n20B3	Test Date :					
Fundame	ntal Freque	ncy : 5700 M	Hz	Temp. / Humi. :		23 deg_C /	62 RH		
Operation	Band :	Bandeo	Bandedge CH HIGH Test Engineer:			Tin			
EUT Pol. :				VERTICAL					
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin		
		Mode	Reading Leve	el FS		@ 3m			
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB		
5725.00	E	Peak	48.67	42.08	6.59	68.30	-19.63		

Operation	Mode :	802.11	n20B3	Test Date :				
Fundamer	ntal Freque	ncy : 5700 M	IHz -	Temp. / Humi. : 23 deg_C /			62 RH	
Operation	Band :	Bandeo	Bandedge CH HIGH Test Engineer :			Tin		
EUT Pol. :		H Plane	Plane Measurement Ante		enna Pol.:	HORIZONT	AL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5725.00	Е	Peak	56.59	50.00	6.59	68.30	-11.71	



Operation Mode :

Fundamental Frequency: 5745 MHz

08/10/2016

23 deg C / 62 RH

Operation Mode :		802.11n20B4 7		Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5745 M	1Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. :	:	H Plane	Э	Measurement Antenna Pol. : VERTICAL			
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
·		Mode	Reading Lev	el FS		@ 3m	U
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5650.00	E	Peak	45.77	39.28	6.48	68.23	-22.46
5700.00	Е	Peak	45.85	39.17	6.68	105.23	-59.38
5720.00	E	Peak	51.87	45.27	6.60	110.83	-58.96
5725.00	Е	Peak	58.15	51.56	6.59	122.23	-64.08

802.11n20B4

	Operation	Band :	Bandeo	dge CH LOW T	est Engineer:		Tin		
	EUT Pol. :		H Plane	H Plane Measurement Antenna Pol. : HORIZONTAL					
	Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
			Mode	Reading Level	FS		@ 3m		
	MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
	5650.00	Е	Peak	49.15	42.67	6.48	68.23	-19.08	
	5700.00	Е	Peak	50.09	43.42	6.68	105.23	-55.14	
	5720.00	Е	Peak	60.11	53.51	6.60	110.83	-50.72	
	5725.00	Е	Peak	67.93	61.34	6.59	122.23	-54.30	

Test Date :

Temp. / Humi. :



Operation Mode :

08/10/2016

Operation Mode :		802.11	n20B4	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5825 M	IHz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH HIGH	Test Engineer:		Tin	
EUT Pol. :		H Plane	e	Measurement Ant	tenna Pol.:	VERTICAL	
F	N I a Ca	Deceter	A	0	F elsen	1.5	N
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	E	Peak	50.58	43.30	7.28	122.23	-71.65
5855.00	Е	Peak	47.69	40.37	7.32	110.83	-63.14
5875.00	Е	Peak	47.00	39.63	7.37	105.23	-58.23
5925.00	Е	Peak	46.59	39.20	7.39	68.23	-21.64

Fundamer	ntal Freque	ncy : 5825 N	1Hz [–]	Temp. / Humi. : 23 deg_C / 62 F			62 RH
Operation	Band :	Bandeo	dge CH HIGH T	H HIGH Test Engineer : Tin			
EUT Pol. :		H Plane	e ľ	Measurement Antenna Pol. :		HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
I		Mode	Reading Leve	I		@ 3m	5
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	E	Peak	56.71	49.42	7.28	122.23	-65.52
5855.00	Е	Peak	51.12	43.80	7.32	110.83	-59.71
5875.00	E	Peak	49.15	41.78	7.37	105.23	-56.08
5925.00	Е	Peak	48.51	41.12	7.39	68.23	-19.72

Test Date :

802.11n20B4



802.11n40 HT mode

Operation Mode :		802.11r	n40B1	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5190 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol.	:	H Plane	e	Measurement Antenna Pol. :		VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5150.00	E	Average	41.92	36.04	5.88	54.00	-12.08
5150.00	Е	Peak	57.96	52.08	5.88	74.00	-16.04

Operation Mode :		802.11n	40B1	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5190 Ml	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	•	Measurement Antenna Pol. :		HORIZONTAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
			Reading Leve			@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5150.00	Е	Average	46.60	40.72	5.88	54.00	-7.40
5150.00	Е	Peak	60.57	54.69	5.88	74.00	-13.43



5350.00

Е

Peak

61.09

Operation Fundame Operation EUT Pol. :	ntal Freque Band :	802.11n40B2 ency : 5310 MHz Bandedge CH HIGH H Plane		Test Date : Temp. / Humi. : Test Engineer : Measurement Antenna Pol.		08/10/2016 23 deg_C / 62 RH Tin : VERTICAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Lev	vel FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
5350.00	E	Average	43.45	37.30	6.15	54.00	-10.55	
5350.00	Е	Peak	56.14	49.99	6.15	74.00	-17.86	
Operation Mode : 802.11n40B2 Test Date : 08/10/2010					08/10/2016			
Fundame	ntal Freque	ncy : 5310 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH		
Operation	Band :	Bandeo	dge CH HIGF	Test Engineer:		Tin		
EUT Pol. : H Plane Measurement Antenna Pol. : HORIZONTA				AL				
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Lev	vel FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
5350.00	E	Average	47.71	41.56	6.15	54.00	-6.29	

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6.15

74.00

-12.91

54.94



Operation Mode: 8		802.11	n40B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5510 M	lHz	Temp. / Humi. :		23 deg_C /	62 RH
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. : H Plar			Э	Measurement Ant	enna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5460.00	Е	Average	37.49	31.26	6.23	54.00	-16.51
5460.00	Е	Peak	50.25	44.02	6.23	74.00	-23.75

Operation	Mode :	802.11n	140B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5510 Ml	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane)	Measurement Antenna Pol. :		HORIZONTAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5460.00	Е	Average	43.79	37.56	6.23	54.00	-10.21
5460.00	Е	Peak	55.99	49.76	6.23	74.00	-18.01



Operation Mode :		802.11n40B3		Test Date :		08/10/2016	
Fundamental Frequency : 5510 MHz			Ηz	Temp. / Humi. :	23 deg_C / 62 RH		
Operation Band:		Bandedge CH LOW		Test Engineer: Ti		Tin	
EUT Pol. :		H Plane M		Measurement Antenna Pol. : VERTICAL			
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5470.00	E	Peak	57.48	51.22	6.26	68.30	-10.82

Operation Mode :		802.11r	n40B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5510 M	Hz -	Temp. / Humi. :		23 deg_C / 62 RH	
Operation Band:		Bandedge CH LOW T		Test Engineer:		Tin	
EUT Pol. :		H Plane N		Measurement Antenna Pol. : HORIZONTAL		AL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5470.00	Е	Peak	62.97	56.70	6.26	68.30	-5.33



Operation Mode :		802.11r	n40B3	Test Date :		08/10/2016		
Fundamental Frequency : 56			Hz	Temp. / Humi. :		23 deg_C / 62 RH		
Operation Band :		Bandeo	Bandedge CH HIGH Test Enginee		Tin			
EUT Pol. :		H Plane	H Plane Measurement Antenna		enna Pol.:	na Pol. : VERTICAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Leve	el FS		@ 3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB	
5725.00	E	Peak	45.52	38.93	6.59	68.30	-22.78	

Operation Mode: 8		802.11	n40B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5670 M	IHz -	Temp. / Humi. :		23 deg_C / 62 RH	
Operation Band :		Bandedge CH HIGH Test Er		Test Engineer:		Tin	
EUT Pol. :		H Plane	H Plane Measurement A		ntenna Pol.: HORIZONTAL		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5725.00	Е	Peak	53.69	47.10	6.59	68.30	-14.61



Operation Mode :

08/10/2016

Operation	Mode :	802.11	n40B4	Test Date :		08/10/2016	
Fundame	ntal Freque	ncy : 5755 M	lHz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	Э	Measurement An	tenna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5650.00	E	Peak	45.86	39.38	6.48	68.23	-22.37
5700.00	Е	Peak	46.68	40.01	6.68	105.23	-58.55
5720.00	E	Peak	56.25	49.65	6.60	110.83	-54.58
5725.00	Е	Peak	58.23	51.64	6.59	122.23	-64.00

Fundamer	ntal Freque	ncy : 5755 M	IHz Te	Temp. / Humi. : 23 deg_C / 62 RH			62 RH
Operation	Band :	Bandeo	dge CH LOW Te	est Engineer:		Tin	
EUT Pol. : H Plane Measurem					tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5650.00	E	Peak	49.51	43.03	6.48	68.23	-18.72
5700.00	Е	Peak	51.90	45.22	6.68	105.23	-53.33
5720.00	Е	Peak	67.02	60.42	6.60	110.83	-43.81
5725.00	Е	Peak	67.87	61.28	6.59	122.23	-54.36

Test Date :

802.11n40B4

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Operation Mode :

08/10/2016

Operation	Mode :	802.11	n40B4	Test Date :		08/10/2016	
Fundamental Frequency : 5795 MHz				Temp. / Humi. : 23 deg_C			62 RH
Operation	Band :	Bandeo	dge CH HIGH	Test Engineer:		Tin	
EUT Pol. :		H Plane	H Plane Measurement Antenna Pol. : VERTICAL				
Frog	Noto	Deastar	A atu al	Spactrum	Footor	Limit	Morgin
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5850.00	E	Peak	48.61	41.32	7.28	122.23	-73.62
5855.00	Е	Peak	47.45	40.13	7.32	110.83	-63.38
5875.00	E	Peak	46.64	39.27	7.37	105.23	-58.59
5925.00	Е	Peak	46.67	39.28	7.39	68.23	-21.56

Fundamer	ntal Freque	ncy : 5795 M	IHz 7	Temp. / Humi. : 23 deg_C / 62 F			62 RH
Operation Band : Bandedge CH HIC				Fest Engineer:		Tin	
EUT Pol. : H Plane Meas			Measurement Ant	enna Pol.:	HORIZONT	AL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	I FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	Е	Peak	52.06	44.77	7.28	122.23	-70.17
5855.00	Е	Peak	50.83	43.51	7.32	110.83	-60.00
5875.00	Е	Peak	49.28	41.91	7.37	105.23	-55.95
5925.00	Е	Peak	50.11	42.72	7.39	68.23	-18.12

Test Date :

802.11n40B4

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802.11ac80 VHT mode

Operation Mode : 802.11ac80			ac80B1	Test Date :		08/10/2016		
Fundamental Frequency : 5210 MH			IHz	Temp. / Humi. :		23 deg_C /	62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin		
EUT Pol. :	EUT Pol. : H Plane			Measurement Antenna Pol.: VERTICAL				
Freq.	Note	Decetor Mode	Actual Reading Leve	Spectrum el FS	Factor	Limit @ 3m	Margin	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB	
5150.00	Е	Average	44.22	38.33	5.88	54.00	-9.78	
5150.00	Е	Peak	58.26	52.38	5.88	74.00	-15.74	

Operation Mode: 802.1			ac80B1	Test Date :		08/10/2016	
Fundamental Frequency : 521			IHz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	e	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5150.00	Е	Average	47.78	41.90	5.88	54.00	-6.22
5150.00	Е	Peak	61.72	55.84	5.88	74.00	-12.28

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Operation Mode :		802.11a	ac80B2	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5290 M	Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Banded	lge CH HIGH	Test Engineer:		Tin	
EUT Pol. :		H Plane	H Plane Measu		asurement Antenna Pol.: \		
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
ricq.	Note		Reading Leve		1 4 6 6 1	@ 3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5350.00	E	Average	41.90	35.75	6.15	54.00	-12.10
5350.00	Е	Peak	54.63	48.47	6.15	74.00	-19.37

Operation Mode: 802.12			ac80B2	Test Date :		08/10/2016	
Fundamental Frequency : 5290 MI			Hz	Hz Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	lge CH HIGH	Test Engineer:		Tin	
EUT Pol. : H Plane			9	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5350.00	Е	Average	48.54	42.39	6.15	54.00	-5.46
5350.00	Е	Peak	64.03	57.88	6.15	74.00	-9.97



Operation Mode :		802.11a	ac80B3	Test Date :		08/10/2016	
Fundamental Frequency: 5530			Hz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation Band :		Banded	lge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane)	Measurement Antenna Pol. :		VERTICAL	
Freq.	Note	Decetor Mode	Actual Reading Lev	Spectrum el FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5460.00	E	Average	45.87	39.64	6.23	54.00	-8.13
5460.00	Е	Peak	59.50	53.27	6.23	74.00	-14.50

Operation Mode: 802.11			ac80B3	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5530 M	lHz	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
EUT Pol. :		H Plane	e	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5460.00	Е	Average	48.79	42.56	6.23	54.00	-5.21
5460.00	Е	Peak	62.68	56.44	6.23	74.00	-11.32



Operation	Mode :	802.11a	c80B3	Test Date :	08/10/2016		
Fundamer	Fundamental Frequency: 5530 MHz Temp. / Humi.: 23 de			23 deg_C /	62 RH		
Operation	Operation Band : Bandedge CH LO			/ Test Engineer : Tin			
EUT Pol. :		H Plane Measurement Antenna Pol. : VERTICAL					
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode F	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5470.00	E	Peak	60.43	54.16	6.26	68.30	-7.87

Operation	Mode :	802.11a	ac80B3	Test Date :	08/10/2016		
Fundamental Frequency : 5530 M			Hz -	z Temp. / Humi. :			62 RH
Operation	Band :	Banded	lge CH LOW ⁻	Test Engineer:		Tin	
EUT Pol. :				Measurement Ant	enna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
5470.00	Е	Peak	63.21	56.94	6.26	68.30	-5.09



5725.00

Е

Operation Mode : Fundamental Frequency				Test Date : Temp. / Humi. :		08/10/2016 23 deg_C / 62 RH	
Operation	Band :	Banded	ge CH LOW ⁻	Test Engineer:		Tin	
EUT Pol. :	:	H Plane	ſ	Measurement Ant	enna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode I	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5650.00	E	Peak	54.35	47.87	6.48	68.23	-13.88
5700.00	Е	Peak	56.60	49.93	6.68	105.23	-48.63
5720.00	Е	Peak	58.32	51.72	6.60	110.83	-52.51
5725.00	Е	Peak	60.99	54.40	6.59	122.23	-61.24

Operation Mode :		802.11ac80B4		Test Date :		08/10/2016		
	Fundamen	tal Freque	ncy : 5775 M	lHz	Temp. / Humi. :		23 deg_C / 62 RH	
	Operation	Band :	Bandeo	dge CH LOW	Test Engineer:		Tin	
	EUT Pol. :		H Plane	Ð	Measurement Ant	tenna Pol. :	HORIZONTAL	
	Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
	- 1		Mode	Reading Lev	•		@ 3m	3
_	MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBu V/m	dB
	5650.00	Е	Peak	58.09	51.61	6.48	68.23	-10.14
	5700.00	Е	Peak	62.87	56.19	6.68	105.23	-42.36
	5720.00	Е	Peak	64.30	57.70	6.60	110.83	-46.53

60.10

6.59

122.23

-55.54

66.69

Peak

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Operation Mode :

5925.00

Е

08/10/2016

68.23

-17.86

Operation Mode :		802.11a	ac80B4 -	Test Date :		08/10/2016	
Fundamer	ntal Freque	ncy : 5775 M	IHz -	Temp. / Humi. :		23 deg_C / 62 RH	
Operation	Band :	Bandeo	dge CH HIGH ⁻	Test Engineer:		Tin	
EUT Pol. :		H Plane	e l	Measurement Ant	tenna Pol.:	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
·		Mode	Reading Leve	el FS		@ 3m	Ū
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	E	Peak	52.38	45.10	7.28	122.23	-69.85
5855.00	Е	Peak	49.64	42.32	7.32	110.83	-61.19
5875.00	Е	Peak	49.09	41.72	7.37	105.23	-56.14
5925.00	Е	Peak	46.83	39.44	7.39	68.23	-21.40

Fundamer	Fundamental Frequency : 5775 MHz					23 deg_C / 62 RH	
Operation	Band :	Bandeo	ndedge CH HIGH Test Enginee			Tin	
EUT Pol. :		H Plane	e N	Measurement An	tenna Pol.:	HORIZONT	AL
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve	el FS		@ 3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµ V/m	dB	dBu V/m	dB
5850.00	Е	Peak	56.69	49.41	7.28	122.23	-65.54
5855.00	Е	Peak	54.87	47.55	7.32	110.83	-55.96
5875.00	Е	Peak	52.62	45.25	7.37	105.23	-52.61

50.37

Test Date :

42.98

7.39

802.11ac80B4

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.

12.2 Result

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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13. FREQUENCY STABILITY

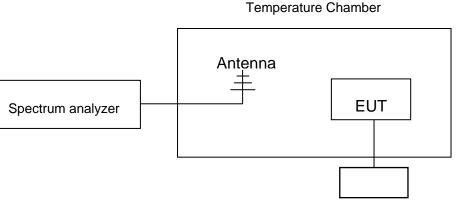
13.1 Standard Applicable

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.

13.2 Measurement Procedure

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

13.3 Test SET-UP



Variable AC Power Supply

13.4 **Measurement Equipment Used:** SGS Conducted Room Calibration Calibration Name of Serial Manufacturer Model Equipment Number Date Due EXA Spectrum Analyzer Agilent N9030A MY53120760 02/26/2016 02/25/2017 DC Block **Mini-Circuits** BLK-18-S+ 01/02/2016 01/01/2017 1 Temperature TERCHY MHG-120LF 911009 05/17/2016 05/16/2017 Chamber

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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13.5 **Measurement Result**

Operation Mode	802.11 a	Test Date	2016.08.10
Temperature	:17	Test By	Cooper
Humidity	:65 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180	5,179.90991	0.00001739
		44	5220	5,219.88013	0.00002296
		48	5240	5,239.90991	0.00001719
		52	5260	5,259.91016	0.00001708
		60	5300	5,299.91016	0.00001695
	3.63V	64	5320	5,319.88013	0.00002253
		100	5500	5,499.91016	0.00001634
		116	5580	5,579.92505	0.00001343
		140	5700	5,699.89502	0.00001842
		149	5745	5,744.85010	0.00002609
		157	5785	5,784.84985	0.00002595
		165	5825	5,824.92505	0.00001287
- 10		36	5180	5,179.93994	0.00001159
		44	5220	5,219.89502	0.00002011
		48	5240	5,239.91016	0.00001715
		52	5260	5,259.92505	0.00001425
		60	5300	5,299.89502	0.00001981
	2.97V	64	5320	5,319.89502	0.00001973
		100	5500	5,499.90991	0.00001638
		116	5580	5,579.91016	0.00001610
	[140	5700	5,699.90991	0.00001580
		149	5745	5,744.83496	0.00002873
	[157	5785	5,784.89502	0.00001815
		165	5825	5,824.88013	0.00002058

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		36	5180	5,179.93994	0.00001159
		44	5220	5,219.89502	0.00002011
		48	5240	5,239.90991	0.00001719
		52	5260	5,259.85010	0.00002850
		60	5300	5,299.87988	0.00002266
25	3.3V	64	5320	5,319.91016	0.00001689
		100	5500	5,499.90991	0.00001638
		116	5580	5,579.90991	0.00001614
		140	5700	5,699.88013	0.00002103
		149	5745	5,744.92505	0.00001305
		157	5785	5,784.91016	0.00001553
		165	5825	5,824.86499	0.00002318
		36	5180	5,179.89502	0.00002027
		44	5220	5,219.86499	0.00002586
		48	5240	5,239.92505	0.00001430
		52	5260	5,259.87988	0.00002284
		60	5300	5,299.91016	0.00001695
		64	5320	5,319.81982	0.00003387
	3.63V	100	5500	5,499.91016	0.00001634
		116	5580	5,579.91016	0.00001610
		140	5700	5,699.91016	0.00001576
		149	5745	5,744.89502	0.00001827
		157	5785	5,784.90991	0.00001557
		165	5825	5,824.88013	0.00002058
55		36	5180	5,179.91016	0.00001734
		44	5220	5,219.84985	0.00002876
		48	5240	5,239.91016	0.00001715
		52	5260	5,259.91016	0.00001708
		60	5300	5,299.88013	0.00002262
	2.97V	64	5320	5,319.88013	0.00002253
		100	5500	5,499.94019	0.00001088
		116	5580	5,579.84985	0.00002691
		140	5700	5,699.91016	0.00001576
		149	5745	5,744.89502	0.00001827
		157	5785	5,784.89502	0.00001815
		165	5825	5,824.91016	0.00001542

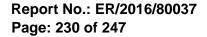
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Operation Mode	802.11 n_HT40	Test Date	2016.08.10
Temperature	:17	Test By	Cooper
Humidity	:65 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		38	5190	5,189.87500	0.00002408
		46	5230	5,229.87500	0.00002390
		54	5270	5,269.87500	0.00002372
		62	5310	5,309.89990	0.00001885
	3.63V	102	5510	5,509.77490	0.00004085
		110	5550	5,549.87500	0.00002252
		134	5670	5,669.95020	0.0000878
		151	5755	5,754.90015	0.00001735
-10		159	5795	5,794.82520	0.00003016
		38	5190	5,189.82495	0.00003373
		46	5230	5,229.87500	0.00002390
		54	5270	5,269.82495	0.00003322
		62	5310	5,309.82495	0.00003297
	2.97V	102	5510	5,509.87500	0.00002269
		110	5550	5,549.92505	0.00001350
		134	5670	5,669.87500	0.00002205
		151	5755	5,754.82495	0.00003042
		159	5795	5,794.82495	0.00003021

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25 38 5190 5,189.90015 0.00001924 46 5230 5,229.84985 0.00002871 54 5270 5,269.87500 0.00002372 62 5310 5,309.87500 0.00002354 102 5510 5,509.82495 0.00003177 110 5550 5,549.92505 0.00003087 151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,569.85010 0.00002372 134 5670 5,669.85010 0.00002372 1410 5550 5,794.87500 0.00002252 134 5670 5,669.85010 0.00002372 159 5795 5,794.87500 0.00002372<						
25 3.3V 54 5270 5,269.87500 0.00002372 62 5310 5,309.87500 0.00002354 102 5510 5,509.82495 0.00003177 110 5550 5,549.92505 0.00003087 151 5755 5,754.82495 0.00003087 151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00002372 62 5310 5,309.90015 0.00002372 62 5310 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002264 151 5755 5,74.87500 0.00002871 54 5270 5,269.97015 0.00002871 55 38 5190 5,189.82495			38	5190	5,189.90015	0.00001924
25 3.3V 62 5310 5,309.87500 0.00002354 102 5510 5,509.82495 0.00003177 110 5550 5,549.92505 0.0000387 151 5755 5,754.82495 0.0000342 159 5795 5,794.80005 0.00003450 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00002372 62 5310 5,509.85010 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,699.85010 0.000022172 159 5795 5,794.82495 0.00003373 46 5230 5,229.84985 0.000032172 159 5795 5,794.82495 0.00002871 54 5270 5,269.90015 0.00002871 <td></td> <td></td> <td>46</td> <td>5230</td> <td>5,229.84985</td> <td>0.00002871</td>			46	5230	5,229.84985	0.00002871
25 3.3V 102 5510 5,509.82495 0.00003177 110 5550 5,549.92505 0.00001350 134 5670 5,669.82495 0.00003087 151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00002252 134 5670 5,509.85010 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,669.85010 0.000022172 159 5795 5,794.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00001895 62 5310 5,309.85010 0.00002823<			54	5270	5,269.87500	0.00002372
55 110 5550 5,549.92505 0.00001350 134 5670 5,669.82495 0.00003087 151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00002252 134 5670 5,569.85010 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,669.85010 0.000022172 159 5795 5,794.82495 0.0000321 55 38 5190 5,189.82495 0.0000321 54 5270 5,269.90015 0.00002871 54 5270 5,269.90015 0.00002823 2.97V 102 5510 5,309.85010			62	5310	5,309.87500	0.00002354
134 5670 5,669.82495 0.00003087 151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00002372 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002252 134 5670 5,669.85010 0.000022172 159 5795 5,794.82495 0.0000321 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 2.97V 102 5510 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002252 134 5670 5,669.87500	25	3.3V	102	5510	5,509.82495	0.00003177
151 5755 5,754.82495 0.00003042 159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00002372 62 5310 5,309.90015 0.00002372 62 5310 5,509.87500 0.00002372 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.000022644 151 5755 5,754.87500 0.00002211 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.0000321 159 5795 5,74.87500 0.00002823 46 5230 5,229.84985 0.00003873 46 5230 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002823 2.97V 102 5510 5,509.87500			110	5550	5,549.92505	0.00001350
159 5795 5,794.80005 0.00003450 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,509.85010 0.00002252 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002211 159 5795 5,794.82495 0.0000321 55 38 5190 5,189.82495 0.0000321 54 5230 5,229.84985 0.0000321 55 38 5190 5,189.82495 0.0000373 46 5230 5,229.84985 0.00002823 2.97V 102 5510 5,509.87500 0.00002823 2.97V 102 5510 5,509.87500 0.00002252 134 5670 5,669.87500 0.00002252 134 5			134	5670	5,669.82495	0.00003087
55 38 5190 5,189.92505 0.00001444 46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,509.85010 0.00002721 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002244 151 5755 5,754.87500 0.000022172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002823 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002252 134 5670 5,669.87500 0.00002252 134 5670 <			151	5755	5,754.82495	0.00003042
46 5230 5,229.92505 0.00001433 54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,509.85010 0.00002721 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002244 151 5755 5,754.87500 0.000022172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003271 54 5270 5,269.90015 0.0000321 54 5270 5,269.90015 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002265 134 5670 5,669.87500 0.00002252 134 5670 5,669.87500			159	5795	5,794.80005	0.00003450
54 5270 5,269.87500 0.00002372 62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,509.85010 0.00002721 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002244 151 5755 5,754.87500 0.000022172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002821 54 5270 5,269.90015 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 62 5310 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002252 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002205			38	5190	5,189.92505	0.00001444
62 5310 5,309.90015 0.00001880 3.63V 102 5510 5,509.85010 0.00002721 110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002244 151 5755 5,754.87500 0.00002172 159 5795 5,794.82495 0.0000321 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002269 134 5670 5,669.87500 0.00002269 134 5670 5,549.87500 0.00002205 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002205			46	5230	5,229.92505	0.00001433
3.63V 102 5510 5,509,85010 0.00002721 110 5550 5,549,87500 0.00002252 134 5670 5,669,85010 0.000022644 151 5755 5,754,87500 0.00002172 159 5795 5,794,82495 0.00003021 55 38 5190 5,189,82495 0.00003373 46 5230 5,229,84985 0.00002871 54 5270 5,269,90015 0.00002823 62 5310 5,309,85010 0.00002823 102 5550 5,549,87500 0.00002823 110 5550 5,549,87500 0.00002269 110 5550 5,549,87500 0.00002252 134 5670 5,669,87500 0.00002205 151 5755 5,754,87500 0.00002205		3.63V	54	5270	5,269.87500	0.00002372
110 5550 5,549.87500 0.00002252 134 5670 5,669.85010 0.00002644 151 5755 5,754.87500 0.00002172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002821 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 2.97V 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002252 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002205			62	5310	5,309.90015	0.00001880
134 5670 5,669.85010 0.00002644 151 5755 5,754.87500 0.00002172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 110 5550 5,549.87500 0.00002269 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002205			102	5510	5,509.85010	0.00002721
151 5755 5,754.87500 0.00002172 159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002269 110 5550 5,549.87500 0.00002252 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002172			110	5550	5,549.87500	0.00002252
159 5795 5,794.82495 0.00003021 55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002205 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002172			134	5670	5,669.85010	0.00002644
55 38 5190 5,189.82495 0.00003373 46 5230 5,229.84985 0.00002871 54 5270 5,269.90015 0.00002823 62 5310 5,309.85010 0.00002823 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002205 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002172			151	5755	5,754.87500	0.00002172
4652305,229.849850.000028715452705,269.900150.000018956253105,309.850100.0000282310255105,509.875000.0000226911055505,549.875000.0000225213456705,669.875000.0000220515157555,754.875000.00002172			159	5795	5,794.82495	0.00003021
54 5270 5,269.90015 0.00001895 62 5310 5,309.85010 0.00002823 2.97∨ 102 5510 5,509.87500 0.00002269 110 5550 5,549.87500 0.00002252 134 5670 5,669.87500 0.00002205 151 5755 5,754.87500 0.00002172	55		38	5190	5,189.82495	0.00003373
6253105,309.850100.000028232.97V10255105,509.875000.0000226911055505,549.875000.0000225213456705,669.875000.0000220515157555,754.875000.00002172			46	5230	5,229.84985	0.00002871
2.97∨10255105,509.875000.0000226911055505,549.875000.0000225213456705,669.875000.0000220515157555,754.875000.00002172			54	5270	5,269.90015	0.00001895
11055505,549.875000.0000225213456705,669.875000.0000220515157555,754.875000.00002172			62	5310	5,309.85010	0.00002823
13456705,669.875000.0000220515157555,754.875000.00002172		2.97V	102	5510	5,509.87500	0.00002269
151 5755 5,754.87500 0.00002172			110	5550	5,549.87500	0.00002252
			134	5670	5,669.87500	0.00002205
159 5795 5,794.87500 0.00002157			151	5755	5,754.87500	0.00002172
			159	5795	5,794.87500	0.00002157



Operation Mode	802.11 ac_VHT80	Test Date	2016.08.10
Temperature	:17	Test By	Cooper
Humidity	:65 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		42	5210	5,209.80005	0.00003838
		58	5290	5,289.90015	0.00001888
	3.63V	106	5530	5,529.80005	0.00003616
		122	5610	5,609.80005	0.00003564
-10		155	5775	5,774.69995	0.00005196
		42	5210	5,209.90015	0.00001917
		58	5290	5,289.75000	0.00004726
	2.97V	106	5530	5,529.80005	0.00003616
		122	5610	5,609.90015	0.00001780
		155	5775	5,774.90015	0.00001729
		42	5210	5,209.90015	0.00001917
		58	5290	5,289.85010	0.00002834
25	3.3V	106	5530	5,529.85010	0.00002711
		122	5610	5,609.59985	0.00007133
		155	5775	5,774.75000	0.00004329
		42	5210	5,209.90015	0.00001917
		58	5290	5,289.94995	0.00000946
	3.63V	106	5530	5,529.80005	0.00003616
		122	5610	5,609.80005	0.00003564
55	Ι	155	5775	5,774.85010	0.00002596
		42	5210	5,209.80005	0.00003838
	[58	5290	5,289.90015	0.00001888
	2.97V	106	5530	5,529.75000	0.00004521
		122	5610	5,609.75000	0.00004456
		155	5775	5,774.75000	0.00004329

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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.

14.2 Antenna Connected Construction

PIFA antenna designs are used.

The antenna is designed with permanent attached and no consideration of replacement. Please see EUT photo and antenna spec. for details.

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

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15. FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

15.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(minute)
	Limits for Genera	al Population/Uncon	trolled Exposure	
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	1	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

Prediction of MPE limit at a given distance Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S = PG/4\pi R^2$

Where: S = *Power density*

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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15.2 Maximum Permissible Exposure (MPE) Evaluation

802.11a Max. output power

СН	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)		REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	14.44	27.797		23.98		PASS
44	5220	MCS0	14.37	27.353		23.98		PASS
48	5240	MCS0	14.24	26.546	23.98			PASS
52	5260	MCS0	14.16	26.062	23.98	or 11+10log(B) =	23.98	PASS
60	5300	MCS0	14.44	27.797	23.98	or 11+10log(B) =	24.02	PASS
64	5320	MCS0	14.47	27.990	23.98	or 11+10log(B) =	24.04	PASS
100	5500	MCS0	14.49	28.119	23.98	or 11+10log(B) =	24.13	PASS
116	5580	MCS0	14.49	28.119	23.98	or 11+10log(B) =	24.17	PASS
140	5700	MCS0	14.46	27.925	23.98	or 11+10log(B) =	24.08	PASS
149	5745	MCS0	14.49	28.119		30		PASS
157	5785	MCS0	14.48	28.054		30		PASS
165	5825	MCS0	14.22	26.424		30		PASS

802.11a Main

MPE Prediction (802.11a 5150~5250)

Average output power at antenna input terminal:	14.44	(dBm)				
Average output power at antenna input terminal:	27.797133	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	27.797133	(mW)				
Peak Antenna gain (Maximum):	3.01	(dBi)				
Peak Antenna gain (linear):	1.9998619	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5180	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.011	(mW/cm^2)				
Measurement Result						
The predicted power density level at 20 cm is 0.011 mW/cm2.						
This is below the uncontrolled exposure limit of 1	mW/cm2 a	t 5180MHz.				

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MPE Prediction (802.11a 5250~5350)

Average output power at antenna input terminal:	14.47	(dBm)				
Average output power at antenna input terminal:	27.989813	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	27.989813	(mW)				
Peak Antenna gain (Maximum):	3.01	(dBi)				
Peak Antenna gain (linear):	1.9998619	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5320	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.011	(mW/cm^2)				
Measurement Result						
The predicted power density level at 20 cm is 0.011 mW/cm2.						
This is below the uncontrolled exposure limit of 1	mW/cm2 a	t 5320MHz.				

MPE Prediction (802.11a 5470~5725)

Average output power at antenna input terminal:	14.49	(dBm)				
Average output power at antenna input terminal:	28.119008	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	28.119008	(mW)				
Peak Antenna gain (Maximum):	4.11	(dBi)				
Peak Antenna gain (linear):	2.5763212	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5500	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.014	(mW/cm^2)				
Measurement Result						
The predicted power density level at 20 cm is 0.014 mW/cm2.						
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5500MHz.						

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MPE Prediction (802.11a 5725~5850)

Average output power at antenna input terminal:	14.49	(dBm)				
Average output power at antenna input terminal:	28.119008	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	28.119008	(mW)				
Peak Antenna gain (Maximum):	2.66	(dBi)				
Peak Antenna gain (linear):	1.8450154	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5745	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.010	(mW/cm^2)				
Measurement Result						
The predicted power density level at 20 cm is 0.01 mW/cm2.						
This is below the uncontrolled exposure limit of 1	mW/cm2 a	t 5745MHz.				

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802.11n_HT20M Max. output power

802.11n_HT20_MIMO

СН	Frequency (MHz)	Data Rate	AVEF POWEF	RAGE R (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT			RESULT
	(11112)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		
36	5180	MCS8	11.72	11.21	14.48	28.072		23.96		PASS
44	5220	MCS8	11.69	11.11	14.42	27.669		23.96		PASS
48	5240	MCS8	11.65	11.07	14.38	27.416		23.96		PASS
52	5260	MCS8	11.68	11.27	14.49	28.120	23.96	or 11+10log(B)	24.05	PASS
60	5300	MCS8	11.67	11.24	14.47	27.994	23.96	or 11+10log(B)	23.96	PASS
64	5320	MCS8	11.66	11.3	14.49	28.145	23.96	or 11+10log(B)	24.02	PASS
100	5500	MCS8	11.68	11.11	14.41	27.635	22.86	or 11+10log(B)	24.10	PASS
116	5580	MCS8	11.76	11.11	14.46	27.909	22.86	or 11+10log(B)	24.04	PASS
1 40	5700	MCS8	11.88	10.74	14.36	27.275	22.86	or 11+10log(B)	24.00	PASS
1 49	5745	MCS8	11.98	10.67	14.38	27.444		30		PASS
157	5785	MCS8	11.84	11.02	14.46	27.923		30		PASS
165	5825	MCS8	11.73	10.57	14.20	26.296		30		PASS

MPE Prediction (802.11n_HT20 5150~5250)

MIMO gain= G+(10 logN)= 3.01+3.01=6.025dBm

Max. output power including tune-up tolerancel:	14.48	(dBm)				
Max. output power including tune-up tolerancel:	28.05433638	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	28.05433638	(mW)				
Peak Antenna gain (Maximum):	6.02	(dBi)				
Peak Antenna gain (linear):	3.999447498	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5180	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm) 0.022 (mW/cm/						
Measurement Result						
The predicted power density level at 20 cm is 0.022 mW/cm2.						
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5180MHz.						

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MPE Prediction (802.11n_HT20 5250~5350)

MIMO gain= G+(10 logN)= 3.01+3.01= 6.02dBm

Max. output power including tune-up tolerancel:	14.49	(dBm)			
Max. output power including tune-up tolerancel:	28.119008	(mW)			
Duty cycle:	100	(%)			
Maximum Pav :	28.119008	(mW)			
Peak Antenna gain (Maximum):	6.02	(dBi)			
Peak Antenna gain (linear):	3.9994475	(numeric)			
Prediction distance:	20	(cm)			
Prediction frequency:	5320	(MHz)			
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)			
Power density at predication frequency at 20 (cm)	0.022	(mW/cm^2)			
Measurement Result The predicted power density level at 20 cm is 0.022 mW/cm2.					

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5320MHz.

MPE Prediction (802.11n_HT20 5470~5725)

MIMO gain= G+(10 logN)= 4.11+3.01= 7.12dBm

Max. output power including tune-up tolerancel:	14.46	(dBm)			
Max. output power including tune-up tolerancel:	27.925438	(mW)			
Duty cycle:	100	(%)			
Maximum Pav :	27.925438	(mW)			
Peak Antenna gain (Maximum):	7.12	(dBi)			
Peak Antenna gain (linear):	5.1522864	(numeric)			
Prediction distance:	20	(cm)			
Prediction frequency:	5580	(MHz)			
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)			
Power density at predication frequency at 20 (cm)	0.029	(mW/cm^2)			
Measurement Result The predicted power density level at 20 cm is 0.029 mW/cm2.					

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5580MHz.

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MPE Prediction (802.11n_HT20 5725~5850)

MIMO gain= G+(10 logN)= 2.66+3.01= 5.67dBm

Max. output power including tune-up tolerancel:	14.46	(dBm)				
Max. output power including tune-up tolerancel:	27.925438	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	27.925438	(mW)				
Peak Antenna gain (Maximum):	5.67	(dBi)				
Peak Antenna gain (linear):	3.689776	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5785	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.021	(mW/cm^2)				
Measurement Result						
The predicted power density level at 20 cm is 0.021 mW/cm2.						
This is below the uncontrolled exposure limit of 1	mW/cm2 at	t 5785MHz.				

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802.11n_HT40M Max. output power

802.11n_HT40_MIMO

СН	Frequency (MHz)	Data Rate	AVEF POWEF	RAGE R (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT			RESULT
		Rale	CH 0	CH 1	(dBm)	(mW)		(dBm)		
38	5190	MCS8	11.46	11.33	14.41	27.579		23.96		PASS
46	5230	MCS8	11.89	10.87	14.42	27.671		23.96		PASS
54	5270	MCS8	11.68	11.28	14.49	28.151	23.96	or 11+10log(B)	27.03	PASS
62	5310	MCS8	11.61	11.22	14.43	27.731	23.96	or 11+10log(B)	27.04	PASS
102	5510	MCS8	11.81	11.12	14.49	28.112	22.86	or 11+10log(B)	27.04	PASS
110	5550	MCS8	11.72	11.11	14.44	27.772	22.86	or 11+10log(B)	27.09	PASS
134	5670	MCS8	11.79	11.14	14.49	28.102	22.86	or 11+10log(B)	27.05	PASS
151	5755	MCS8	11.73	11.13	14.45	27.865		30		PASS
159	5795	MCS8	11.77	10.75	14.30	26.916		30		PASS

MPE Prediction (802.11n_HT40 5150~5250)

MIMO gain= G+(10 logN)= 3.01+3.01= 6.02dBm

Average output power at antenna input terminal:	14.42	(dBm)					
Average output power at antenna input terminal:	27.669416	(mW)					
Duty cycle:	100	(%)					
Maximum Pav :	27.669416	(mW)					
Peak Antenna gain (Maximum):	6.02	(dBi)					
Peak Antenna gain (linear):	3.9994475	(numeric)					
Prediction distance:	20	(cm)					
Prediction frequency:	5230	(MHz)					
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)					
Power density at predication frequency at 20 (cm)	0.022	(mW/cm^2)					
Measurement Result							
The predicted power density level at 20 cm is 0.022 mW/cm2.							
This is below the uncontrolled exposure limit of 1	mW/cm2 a	t 5230MHz.					

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MPE Prediction (802.11n_HT40 5250~5350)

MIMO gain= G+(10 logN)= 3.01+3.01= 6.02dBm

Average output power at antenna input terminal:	14.49	(dBm)				
Average output power at antenna input terminal:	28.119008	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	28.119008	(mW)				
Peak Antenna gain (Maximum):	6.02	(dBi)				
Peak Antenna gain (linear):	3.9994475	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5270	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.022	(mW/cm^2)				
Measurement Result The predicted power density level at 20 cm is 0.022 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 5270MHz.						

MPE Prediction (802.11n_HT40 5470~5725)

MIMO gain= G+(10 logN)= 4.11+3.01= 7.12dBm

Average output power at antenna input terminal:	14.49	(dBm)
Average output power at antenna input terminal:	28.119008	(mW)
Duty cycle:	100	(%)
Maximum Pav :	28.119008	(mW)
Peak Antenna gain (Maximum):	7.12	(dBi)
Peak Antenna gain (linear):	5.1522864	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5510	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.029	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.029 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5510MHz.

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MPE Prediction (802.11n_HT40 5725~5850)

MIMO gain= G+(10 logN)= 2.66+3.01= 5.67dBm

Average output power at antenna input terminal:	14.45	(dBm)
Average output power at antenna input terminal:	27.861212	(mW)
Duty cycle:	100	(%)
Maximum Pav :	27.861212	(mW)
Peak Antenna gain (Maximum):	5.67	(dBi)
Peak Antenna gain (linear):	3.689776	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5755	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.020	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.02 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5755MHz.

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802.11ac VHT80M Max. output power

802.11ac_VHT80_MIMO

СН	Frequency (MHz)	Data Rate	AVER POWER	RAGE R (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT (dBm)		RESULT	
	(10112)	Rale	CH 0	CH 1	(dBm)	(mW)				
42	5210	MCS8	11.1	11.3	14.21	26.372		23.96		PASS
58	5290	MCS8	11.28	11.18	14.24	26.550	23.96	or 11+10log(B)	30.08	PASS
106	5530	MCS8	11.75	10.27	14.08	25.604	22.86	or 11+10log(B)	30.05	PASS
122	5610	MCS8	11.11	11.23	14.18	26.186	22.86	or 11+10log(B)	30.07	PASS
155	5775	MCS8	11.26	10.89	14.09	25.640		30		PASS

MPE Prediction (802.11ac_VHT80 5150~5250)

MIMO gain= G+(10 logN)= 3.01+3.01= 6.02dBm

Average output power at antenna input terminal:	14.21	(dBm)					
Average output power at antenna input terminal:	26.363314	(mW)					
Duty cycle:	100	(%)					
Maximum Pav :	26.363314	(mW)					
Peak Antenna gain (Maximum):	6.02	(dBi)					
Peak Antenna gain (linear):	3.9994475	(numeric)					
Prediction distance:	20	(cm)					
Prediction frequency:	5210	(MHz)					
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)					
Power density at predication frequency at 20 (cm)	0.021	(mW/cm^2)					
Measurement Result							
The predicted power density level at 20 cm is 0.021 mW/cm2.							
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5210MHz.							

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MPE Prediction (802.11ac_VHT80 5250~5350)

MIMO gain= G+(10 logN)= 3.01+3.01= 6.02dBm

Average output power at antenna input terminal:	14.24	(dBm)				
Average output power at antenna input terminal:	26.546056	(mW)				
Duty cycle:	100	(%)				
Maximum Pav :	26.546056	(mW)				
Peak Antenna gain (Maximum):	6.02	(dBi)				
Peak Antenna gain (linear):	3.9994475	(numeric)				
Prediction distance:	20	(cm)				
Prediction frequency:	5290	(MHz)				
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)				
Power density at predication frequency at 20 (cm)	0.021	(mW/cm^2)				
Measurement Result The predicted power density level at 20 cm is 0.021 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 5290MHz.						

MPE Prediction (802.11ac_VHT80 5470~5725)

MIMO gain= G+(10 logN)= 4.11+3.01= 7.12dBm

Average output power at antenna input terminal:	14.18	(dBm)
Average output power at antenna input terminal:	26.18183	(mW)
Duty cycle:	100	(%)
Maximum Pav :	26.18183	(mW)
Peak Antenna gain (Maximum):	7.12	(dBi)
Peak Antenna gain (linear):	5.1522864	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5610	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.027	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.027 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5610MHz.

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MPE Prediction (802.11ac_VHT80 5725~5850)

MIMO gain= G+(10 logN)= 2.66+3.01= 5.67dBm

Average output power at antenna input terminal:	14.09	(dBm)
Average output power at antenna input terminal:	25.64484	(mW)
Duty cycle:	100	(%)
Maximum Pav :	25.64484	(mW)
Peak Antenna gain (Maximum):	5.67	(dBi)
Peak Antenna gain (linear):	3.689776	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5775	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.019	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.019 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 5775MHz.

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Collocated MPE Analysis:

The modem may transmit simultaneously with other collocated radio transmitters within a host device, provided the following conditions are met:

- Each collocated radio transmitter has been certified by FCC for mobile application (that will be met since SQNS module will have its own FCC ID and host device will have its own FCC ID)
- At least 20 cm separation distance between the antennas of the collocated transmitters and the user's body must be maintained at all times (host installation should taking care of that)

The output power and antenna gain in a collocated configuration must not exceed the limits and configurations stipulated in the following table 1. The power density calculations for the individual transmitters per wireless technology at an exposure minimum separation distance of 20cm.

Exclusion of test condition:

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is ≤ 1.0 .

MPE ratio1 + *MPE ratio2*+*MPE ration* <=1.0 *The spreadsheet as FCC deduces, and releases is employed to conduct the measurement:*

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Table 1: Collocated MPE Calculation (Worst-case table)

Technology	Frequency (MHz)	Max Con- ducted Power (dBm)	Max Gain (dBi)	Duty Cycle	FCC Power Density @20cm (mW/cm^2)	FCC MPE Limit (mW/cm^2)
BT (BR)	2480	1.28	3.11	0.58	0.000	1.000
WLAN (802.11n 20)	2452	16.46	6.37	1	0.038	1.000
UNII (802.11 n 20)	5320	14.49	6.02	1	0.022	1.000

Scenario 1:

BT +WLAN +UNII

	FCC	(BT)		FCC	(WLAN)		FCC		(BT	FCC
вт	MPE	/ MPE	WLAN	MPE	/ MPE	UNII	MPE	(UNII) /	+WLAN	Limit
(mW/c	Limit	Result	(mW/c	Limit	Result	(mW/c	Limit	MPE	+UNII)	(mW/c
m^2)	(mW/c		m^2)	(mW/c		m^2)	(mW/c	Result		m^2)
	m^2)			m^2)			m^2)			
0.000	1.000	0	0.038	1.000	0.038	0.022	1.000	0.022	0.06	1.000

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