FCC TEST REPORT

For

Lab42 LLC

TETRA

Test Model: MK5.8

Additional Model No.: Please refer to page 6.

Prepared for	:	Lab42 LLC
Address	:	340 S LEMON AVE #3231 WALNUT, CA 91789

Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
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Date of receipt of test sample	:	November 17, 2015
Number of tested samples	:	1
Sample number	:	1451666
Date of Test	:	November 17, 2015 - December 03, 2015
Date of Report	:	December 03, 2015

FCC TEST REPORT **FCC CFR 47 PART 15 E(15.407): 2015**	
Report Reference No. ..... :	**LCS1511171325E**
Date of Issue..... :	December 03, 2015
Testing Laboratory Name ..... :	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address..... :	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ..... :	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name..... :	**Lab42 LLC**
Address..... :	340 S LEMON AVE #3231 WALNUT, CA 91789
Test Specification	
Standard ..... :	FCC CFR 47 PART 15 E(15.407): 2015 / ANSI C63.10: 2013
Test Report Form No. ..... :	LCSEMC-1.0
TRF Originator..... :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF ..... :	Dated 2011-03

Test Item Description..... :	**TETRA**
Trade Mark..... :	TETRA
Test Model ..... :	MK5.8
Ratings ..... :	AC Input: 100-240V, 50/60Hz 0.5A Output: 12V/2.5A Micro USB input 5V/4A Recharged Voltage: DC 12V/2.5A
Result ..... :	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Kyle Yin/ File administrators	Glin Lu/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS1511171325E	December 03, 2015 Date of issue

Test Model.....	: MK5.8
EUT.....	: TETRA
Applicant.....	**: Lab42 LLC**
Address.....	: 340 S LEMON AVE #3231 WALNUT, CA 91789
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: GainStrong Industry Co.,Ltd.**
Address.....	: 3rd Floor, 1st Building, Block E, Minzhu West Industrial Zone, Bao'an Dist., Shenzhen
Telephone.....	: /
Fax.....	: /
Factory.....	**: GainStrong Industry Co.,Ltd.**
Address.....	: 3rd Floor, 1st Building, Block E, Minzhu West Industrial Zone, Bao'an Dist., Shenzhen
Telephone.....	: /
Fax.....	: /

Test Result	**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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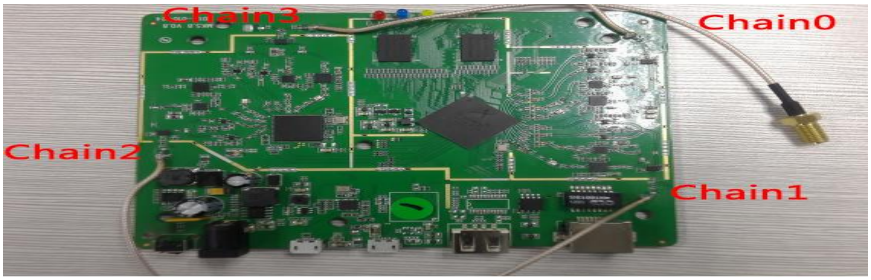
1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	TETRA
Test Model	:	MK5.8
Hardware Version	:	MK5.8
Software Version	:	MK5.8V0.2
Power Supply	:	AC Input: 100-240V, 50/60Hz 0.5A Output: 12V/2.5A Micro USB input 5V/4A Recharged Voltage: DC 12V/2.5A
EUT Support Radios Application	:	WIFI
5G WIFI Technology	:	
Operating Frequency	:	5180.00-5240.00MHz / 5745.00-5825.00MHz
Channel Number	:	9 Channel for 20MHz Bandwidth 4 channels for 40MHz Bandwidth
WIFI module		Module1: AR9344(Chain 0, Chain 1) Module2: AR9580(Chain 2, Chain 3)
Modulation Type	:	802.11a/n: OFDM
Antenna Description	:	External Antenna(Chain 0), 4.0dBi(Max.) For 5G Band External Antenna(Chain 1), 4.0dBi(Max.) For 5G Band External Antenna(Chain 0+ Chain 1), 7.0dBi(Max.) For 5G Band External Antenna(Chain 2), 4.0dBi(Max.) For 5G Band External Antenna(Chain 3), 4.0dBi(Max.) For 5G Band External Antenna(Chain 2+ Chain 3), 7.0dBi(Max.) For 5G Band



Note: MIMO is 2x2 MIMO and it does not do 2.4 and 5GHz at the same time.

And cross polarization is not used for this device.

Additional models No.			
--	--	--	--
Remark: PCB board, structure and internal of these model(s) are the same, So no additional models were tested.			

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
Phihong Technology Co., Ltd	CHARGER	PSM30C-120	--	DOC

1.3. External I/O

I/O Port Description	Quantity	Cable
RJ45	1	N/A
USB Port	3	N/A
DC 12V IN Port	1	N/A

1.4. Description of Test Facility

CNAS Registration Number. is L4595.

FCC Registration Number. is 899208.

Industry Canada Registration Number. is 9642A-1.

VCCI Registration Number. is C-4260 and R-3804.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

1.5. List Of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 18,2015	June 17,2016
Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	9kHz~40GHz	July 16,2015	July 15,2016
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 18,2015	June 17,2016
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	June 18,2015	June 17,2016
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 18,2015	June 17,2016
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 18,2015	June 17,2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	June 18,2015	June 17,2016
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	June 18,2015	June 17,2016
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	July 16,2015	July 15,2016
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	July 16,2015	July 15,2016
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	July 16,2015	July 15,2016
MAX Signal Analyzer	Agilent	N9020A	MY50510140	20Hz~26.5GHz	Oct. 27, 2015	Oct. 26, 2016
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	June 18,2015	June 17,2016
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	30MHz-1GHz	June 10,2015	June 09,2016
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	June 10,2015	June 09,2016
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	June 10,2015	June 09,2016
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 18,2015	June 17,2016
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 18,2015	June 17,2016
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	July 16,2015	July 15,2016
Power Meter	R&S	NRVS	100444	DC-40GHz	June 18,2015	June 17,2016
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	June 18,2015	June 17,2016
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	June 18,2015	June 17,2016
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 18,2015	June 17,2016
RF CABLE-2m	JYE Bao	RG142	CB035-2m	20MHz-1GHz	June 18,2015	June 17,2016
Note: All equipment through GRGT EST calibration						

1.6. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.7. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	3.10dB	(1)
		30MHz~200MHz	2.96dB	(1)
		200MHz~1000MHz	3.10dB	(1)
		1GHz~26.5GHz	3.80dB	(1)
		26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	1.63dB	(1)
Power disturbance	:	30MHz~300MHz	1.60dB	(1)

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

1.8. Description Of Test Modes

The EUT has been tested under operating condition.

The EUT was set to transmit at 100% duty cycle. This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in Y position.

There are one test configurations for the pre-testing:

Configuration 1: Configured with Switching Power Adapter (Used For power supply)

For pre-testing, the input Voltage/Frequency AC 120V/60Hz and AC 240V/60Hz were used. We found that the Input AC 120V/60Hz was the worst case and used for the full test and recorded in this report.

Worst-case mode and channel used for 150kHz-30 MHz power line conducted emissions was determined to be 802.11n(HT20) mode(Low Channel, Chain 0 + Chain 1, 5180-5240MHz Band).

Worst-case mode and channel used for 9kHz-1000 MHz radiated emissions was determined to be 802.11n(HT20) mode(Low Channel, Chain 0 + Chain 1, 5180-5240MHz Band).

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:
802.11a Mode: 6 Mbps, OFDM.
802.11n(HT20) Mode: MCS0, OFDM.
802.11n(HT40) Mode: MCS0, OFDM.

Antenna & Bandwidth For 5G WIFI Part:

Antenna	Chain 0		Chain 1	
Bandwidth Mode	20MHz	40MHz	20MHz	40MHz
802.11a	☑	☐	☑	☐
802.11n(HT20)	☑	☐	☑	☐
802.11n(HT40)	☐	☑	☐	☑

Antenna	Chain 2		Chain 3	
Bandwidth Mode	20MHz	40MHz	20MHz	40MHz
802.11a	☑	☐	☑	☐
802.11n(HT20)	☑	☐	☑	☐
802.11n(HT40)	☐	☑	☐	☑

Channel & Frequency:

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)
5180~5240MHz	36	5180	44	5220
	38	**5190**	**46**	**5230**
	40	5200	48	5240
	42	**5210**	/	/
For 802.11a/n(HT20), Channel 36, 40 and 48 were tested. For 802.11n(HT40), Channel 38 and 46 were tested.				
5745~5825MHz	149	5745	**155**	**5775**
	151	**5755**	159	**5795**
	153	5765	161	5805
	157	5785	165	5825
For 802.11a/n(HT20), Channel 149, 157 and 165 were tested. For 802.11n(HT40), Channel 151 and 159 were tested.				

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10: 2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd..

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 that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure 789033 D02 General UNII Test Procedures New Rules v01 and KDB 6622911 are required to be used for this kind of FCC 15.407 UII device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E

2.3. General Test Procedures

2.3.1 Conducted Emissions

According to the requirements in Section 6.2 of ANSI C63.10: 2013, AC power-line conducted emissions shall be measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table and the turntable 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 maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10: 2013

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmit condition.

3.2. EUT Exercise Software

N/A

3.3. Special Accessories

N/A

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 15 Subpart E		
FCC Rules	**Description of Test**	**Result**
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(e)	6dB & 26dB Bandwidth	Compliant
§15.205, §15.407(b)	Radiated Spurious Emissions and Band Edge	Compliant
§15.407(g)	Frequency Stability	N/A
§15.407(h)	Transmit Power Control (TPC)	N/A
§15.207(a)	Line Conducted Emissions	Compliant
§15.203	Antenna Requirements	Compliant

Note: The customer declared frequency stability is better than 20ppm which ensures that the signal remains in the allocated bands under all operational conditions stated in the user manual.

5. TEST RESULT

5.1. Maximum Conducted Output Power Measurement

5.1.1. Standard Applicable

According to §15.407(a)(1)(i), For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

According to §15.407(a)(1)(ii), For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

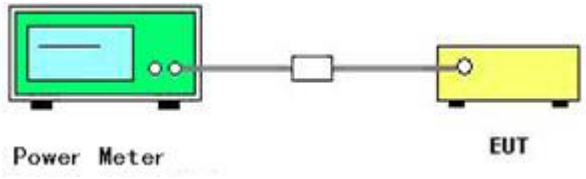
According to §15.407(a)(1)(iv), For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

According to §15.407(a)(3), For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

5.1.2. Test Procedures

The transmitter output (antenna port) was connected to the power meter.

5.1.3. Test Setup Layout



5.1.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.5. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Kyle	Configurations	802.11a/n

Maximum Conducted Output Power Measurement Result For 5180~5240MHz Band

802.11a

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
36	5180	25.05	25.77	30	Complies
40	5200	25.08	25.88	30	Complies
48	5240	25.10	25.22	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
36	5180	25.79	25.34	30	Complies
40	5200	25.12	25.96	30	Complies
48	5240	25.48	25.77	30	Complies

802.11n(HT20)

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
36	5180	25.40	25.80	30	Complies
40	5200	25.55	25.77	30	Complies
48	5240	25.61	25.18	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
36	5180	25.28	25.53	30	Complies
40	5200	25.84	25.03	30	Complies
48	5240	25.56	25.55	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
36	5180	28.61	28.42	29	Complies
40	5200	28.67	28.46	29	Complies
48	5240	28.41	28.57	29	Complies

802.11n(HT40)

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
38	5190	25.67	25.42	30	Complies
46	5230	25.33	25.53	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
38	5190	25.47	25.52	30	Complies
46	5230	25.07	25.94	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
38	5190	28.56	28.51	29	Complies
46	5230	28.44	28.54	29	Complies

Note: The EUT was set to transmit at 100% duty cycle.

Maximum Conducted Output Power Measurement Result For 5745~5825MHz Band

802.11a

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
149	5745	25.39	25.96	30	Complies
157	5785	25.88	25.39	30	Complies
165	5825	25.58	25.08	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
149	5745	25.00	25.49	30	Complies
157	5785	25.79	25.72	30	Complies
165	5825	25.03	25.56	30	Complies

802.11n(HT20)

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
149	5745	25.27	25.58	30	Complies
157	5785	25.15	25.13	30	Complies
165	5825	25.40	25.87	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
149	5745	25.30	25.86	30	Complies
157	5785	25.21	25.34	30	Complies
165	5825	25.99	25.45	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
149	5745	28.44	28.60	29	Complies
157	5785	28.15	28.29	29	Complies
165	5825	28.65	28.74	29	Complies

802.11n(HT40)

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0	Chain 1		
151	5755	24.95	24.15	30	Complies
159	5795	24.70	24.95	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 2	Chain 3		
151	5755	24.12	24.98	30	Complies
159	5795	24.73	24.39	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm, Peak)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
151	5755	27.58	27.58	29	Complies
159	5795	27.84	27.57	29	Complies

Note: The EUT was set to transmit at 100% duty cycle.

5.2. Power Spectral Density Measurement

5.2.1. Standard Applicable

According to §15.407(a)(1)(i), For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

According to §15.407(a)(1)(ii), For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

According to §15.407(a)(1)(iv), For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

According to §15.407(a)(3), For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

5.2.2. Test Procedures

1) The transmitter was connected directly to a Spectrum Analyzer through a directional couple.

2) The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.

3) Set the RBW = 1MHz.

4) Set the VBW ≥ 3MHz.

5) Set the span to encompass the entire emission bandwidth of the signal.

6) Detector = RMS.

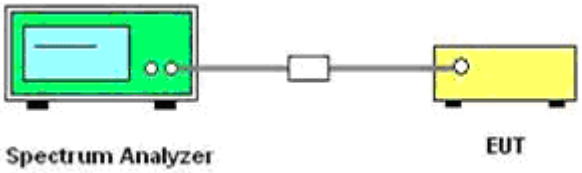
7) Sweep time = auto couple.

8) Trace mode = max hold.

9) Allow trace to fully stabilize.

10) Use the peak marker function to determine the maximum amplitude level.

5.2.3. Test Setup Layout



5.2.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.5. Test Result of Power Spectral Density

Temperature	25°C	Humidity	60%
Test Engineer	Kyle	Configurations	802.11a/n

Power Spectral Density Measurement Result For 5180~5240MHz Band

802.11a

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 0	Chain 1		
36	5180	6.609	6.466	11	Complies
40	5200	5.364	6.813	11	Complies
48	5240	6.024	6.590	11	Complies

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 2	Chain 3		
36	5180	6.574	8.842	11	Complies
40	5200	6.141	6.447	11	Complies
48	5240	6.074	5.750	11	Complies

802.11n(HT20)

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 0	Chain 1		
36	5180	5.570	6.149	11	Complies
40	5200	6.162	4.920	11	Complies
48	5240	6.282	6.279	11	Complies

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 2	Chain 3		
36	5180	4.654	5.864	11	Complies
40	5200	4.619	6.191	11	Complies
48	5240	4.584	5.480	11	Complies

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
36	5180	8.879	8.311	10	Complies
40	5200	8.596	8.486	10	Complies
48	5240	9.291	8.065	10	Complies

802.11n(HT40)

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 0	Chain 1		
38	5190	3.526	2.552	11	Complies
46	5230	4.371	4.509	11	Complies

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm/MHz)	Result
		Chain 2	Chain 3		
38	5190	3.443	3.575	11	Complies
46	5230	3.461	4.032	11	Complies

Channel	Frequency (MHz)	Power Density(dBm/MHz)		Max. Limit (dBm)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
38	5190	6.077	6.520	10	Complies
46	5230	7.451	6.766	10	Complies

Power Spectral Density Measurement Result For 5745~5825MHz Band

802.11a

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 0	Chain 1		
149	5745	9.361	9.593	30	Complies
157	5785	9.793	9.761	30	Complies
165	5825	9.420	8.642	30	Complies

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 2	Chain 3		
149	5745	6.001	9.592	30	Complies
157	5785	3.612	8.683	30	Complies
165	5825	1.303	8.518	30	Complies

802.11n(HT20)

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 0	Chain 1		
149	5745	8.435	9.066	30	Complies
157	5785	9.836	8.975	30	Complies
165	5825	8.030	7.149	30	Complies

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 2	Chain 3		
149	5745	4.694	8.577	30	Complies
157	5785	2.448	8.817	30	Complies
165	5825	1.967	7.975	30	Complies

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
149	5745	11.772	10.066	29	Complies
157	5785	12.437	9.719	29	Complies
165	5825	10.622	8.947	29	Complies

802.11n(HT40)

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 0	Chain 1		
151	5755	8.743	9.274	30	Complies
159	5795	8.662	7.940	30	Complies

Channel	Frequency (MHz)	Power Density(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 2	Chain 3		
151	5755	2.739	8.665	30	Complies
159	5795	5.069	8.475	30	Complies

Channel	Frequency (MHz)	Conducted Power(dBm/500KHz)		Max. Limit (dBm/500KHz)	Result
		Chain 0+ Chain 1	Chain 2 + Chain 3		
151	5755	12.027	9.653	29	Complies
159	5795	11.326	10.108	29	Complies

Note:

Duty cycle factor = 10log(Ton/Tperiod)= 0

10log(500kHz/RBW) factor=10log(500KHz/300KHz)dB=2.22dB

PSD(dBm/500kHz)= PSD(dBm/300kHz)+ Duty cycle factor+10log(500kHz/RBW) factor

The measured power density (dBm) for 5745~5825MHz Band has the offset with cable loss already.

Test Plot For 802.11a-5180M-Chain 0

Test Plot For 802.11a-5180M-Chain 1

Test Plot For 802.11a-5180M-Chain 2

Test Plot For 802.11a-5180M-Chain 3

Test Plot For 802.11a-5200M-Chain 0

Test Plot For 802.11a-5200M-Chain 1

Test Plot For 802.11a-5200M-Chain 2

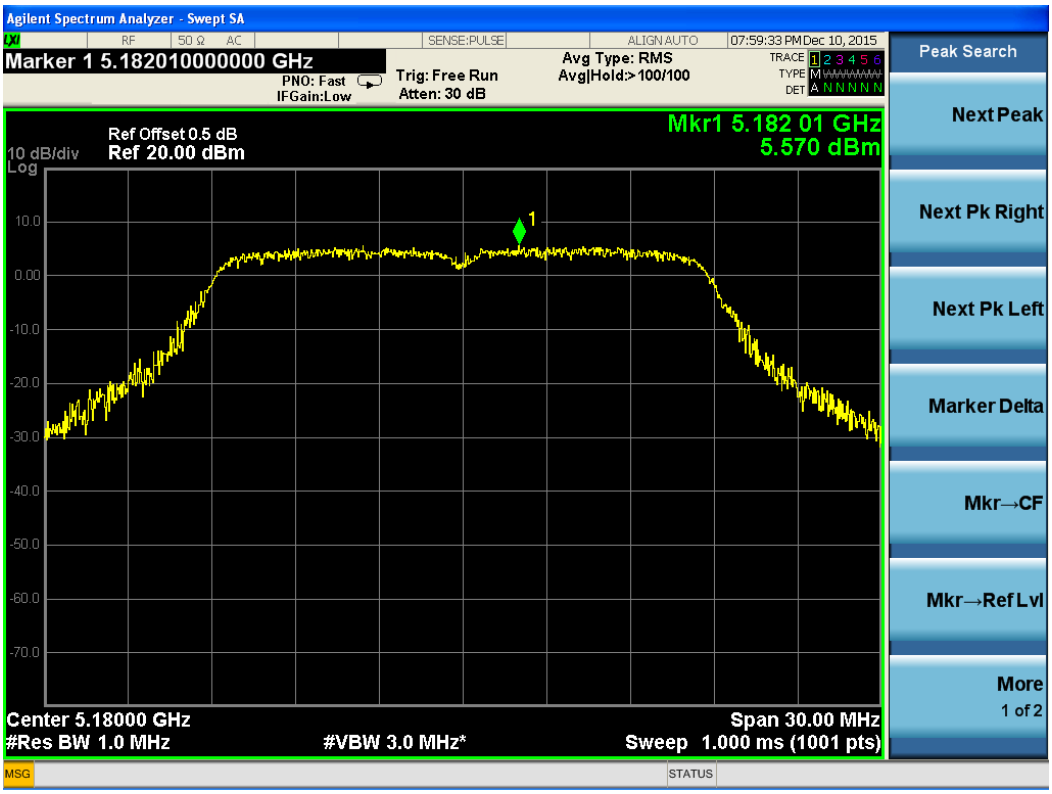
Test Plot For 802.11a-5200M-Chain 3

Test Plot For 802.11a-5240M-Chain 0

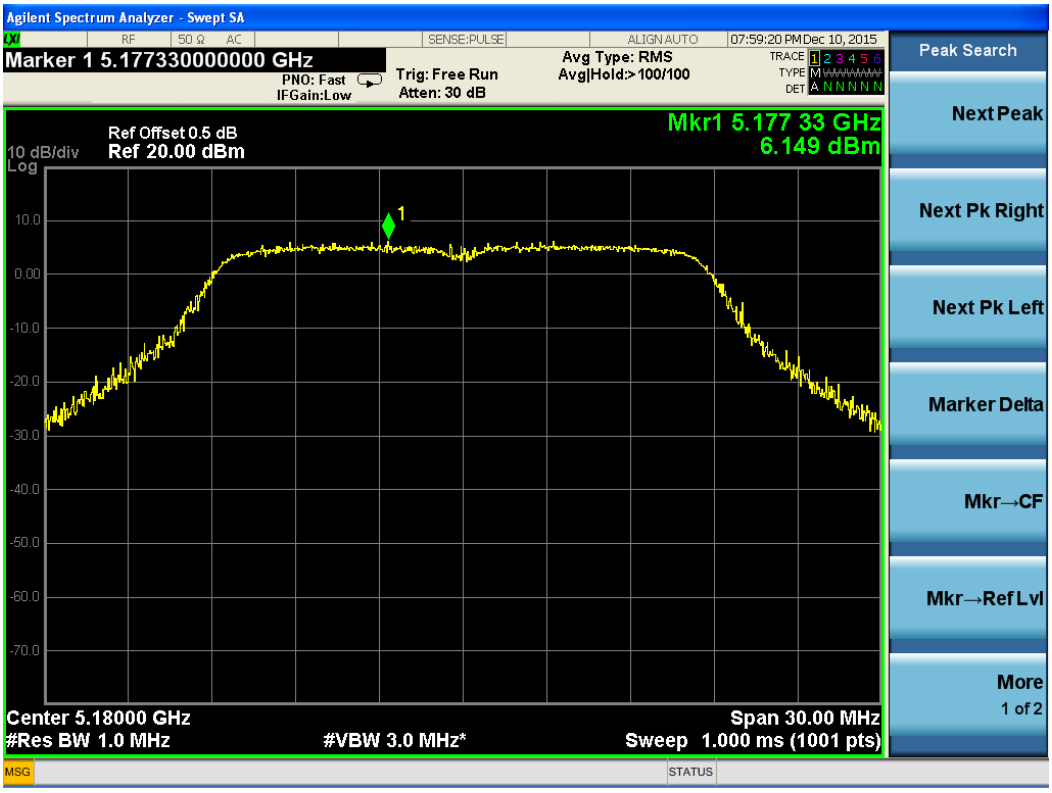
Test Plot For 802.11a-5240M-Chain 1

Test Plot For 802.11a-5240M-Chain 2

Test Plot For 802.11a-5240M-Chain 3

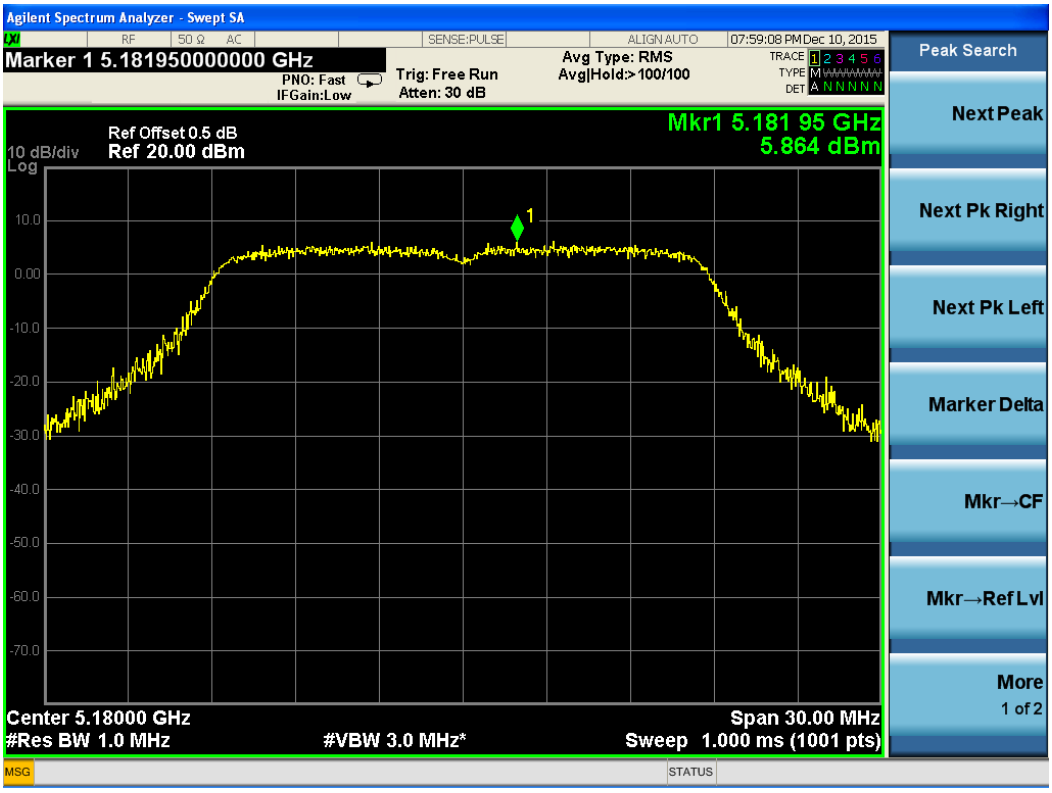


Test Plot For 802.11n(HT20)-5180M-Chain 0

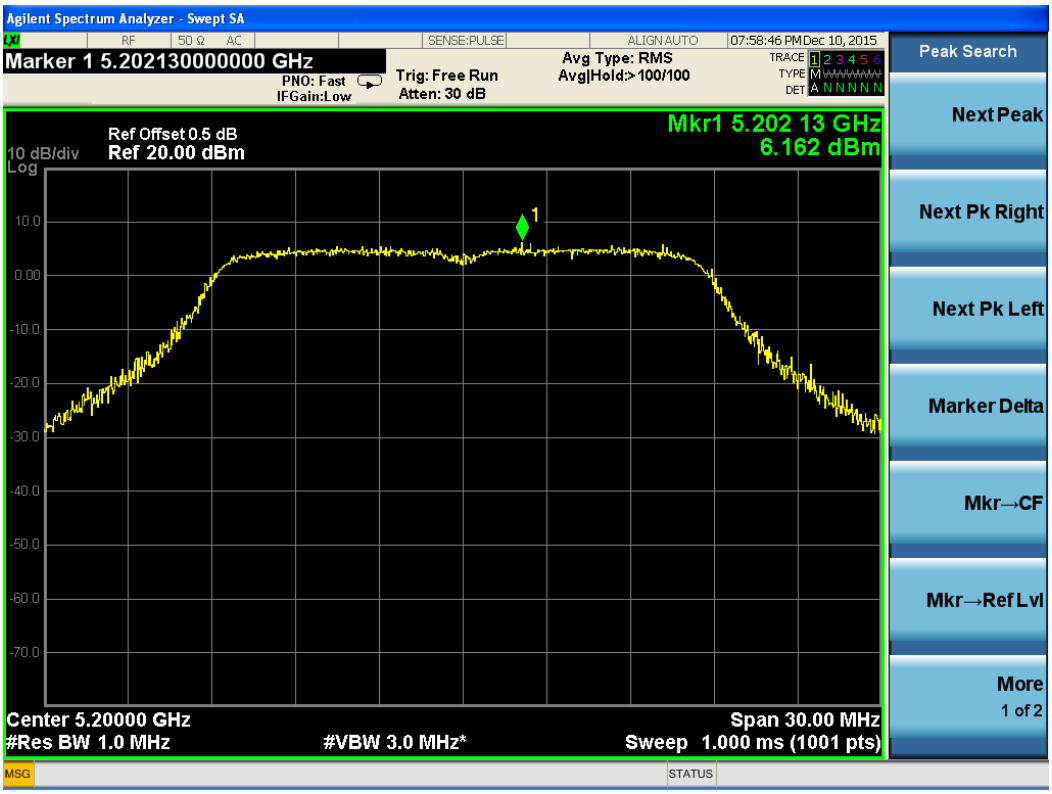


Test Plot For 802.11n(HT20)-5180M-Chain 1

Test Plot For 802.11n(HT20)-5180M-Chain 2



Test Plot For 802.11n(HT20)-5180M-Chain 3



Test Plot For 802.11n(HT20)-5200M-Chain 0

Test Plot For 802.11n(HT20)-5200M-Chain 1

Test Plot For 802.11n(HT20)-5200M-Chain 2

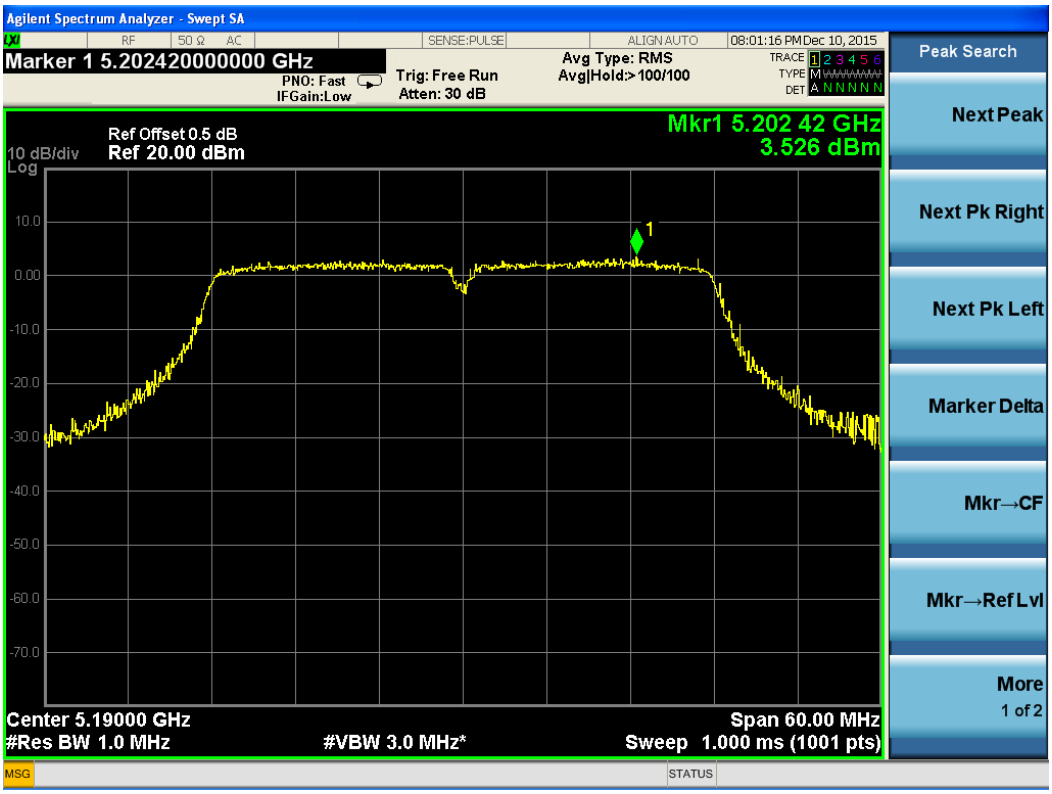
Test Plot For 802.11n(HT20)-5200M-Chain 3

Test Plot For 802.11n(HT20)-5240M-Chain 0

Test Plot For 802.11n(HT20)-5240M-Chain 1

Test Plot For 802.11n(HT20)-5240M-Chain 2

Test Plot For 802.11n(HT20)-5240M-Chain 3



Test Plot For 802.11n(HT40)-5190M-Chain 0

Test Plot For 802.11n(HT40)-5190M-Chain 1

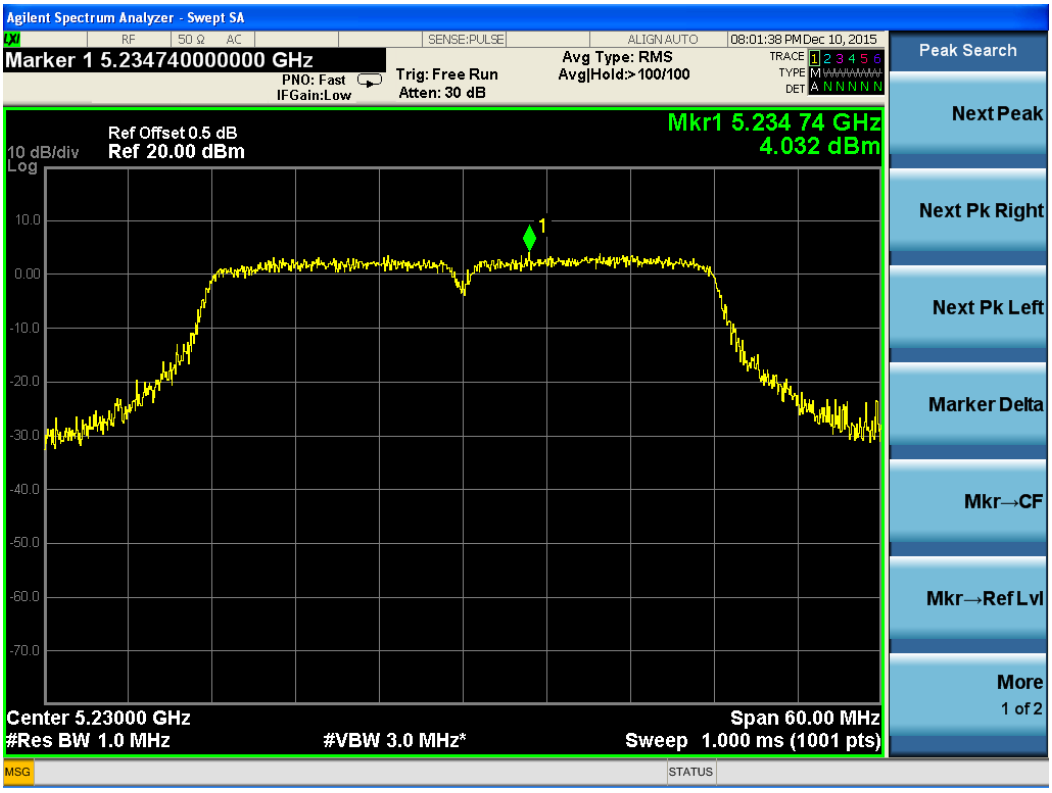
Test Plot For 802.11n(HT40)-5190M-Chain 2

Test Plot For 802.11n(HT40)-5190M-Chain 3

Test Plot For 802.11n(HT40)-5230M-Chain 0

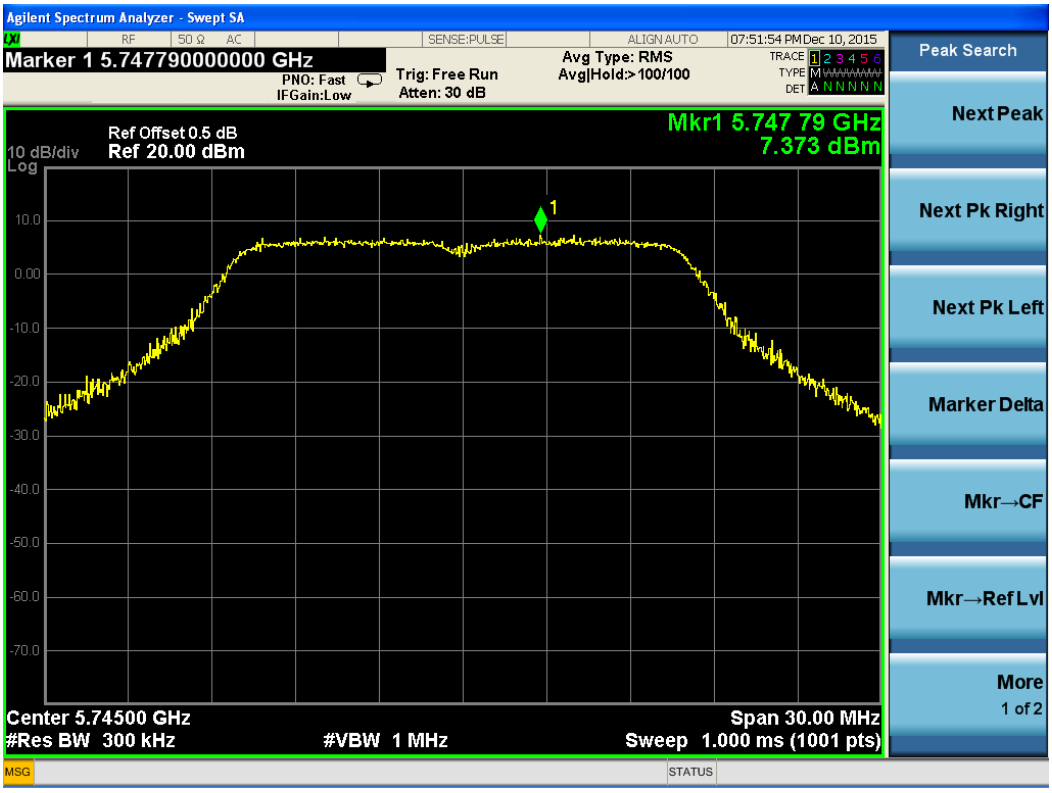
Test Plot For 802.11n(HT40)-5230M-Chain 1

Test Plot For 802.11n(HT40)-5230M-Chain 2



Test Plot For 802.11n(HT40)-5230M-Chain 3

Test Plot For 802.11a-5745M-Chain 0



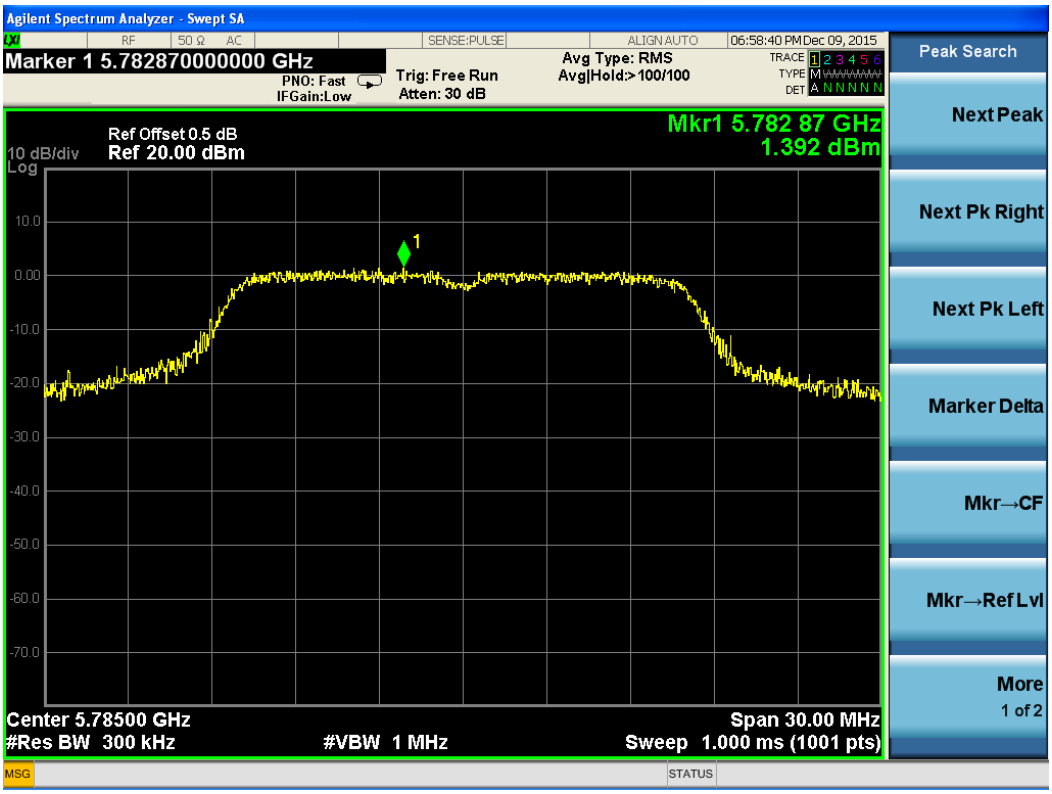
Test Plot For 802.11a-5745M-Chain 1

Test Plot For 802.11a-5745M-Chain 2

Test Plot For 802.11a-5745M-Chain 3

Test Plot For 802.11a-5785M-Chain 0

Test Plot For 802.11a-5785M-Chain 1



Test Plot For 802.11a-5785M-Chain 2

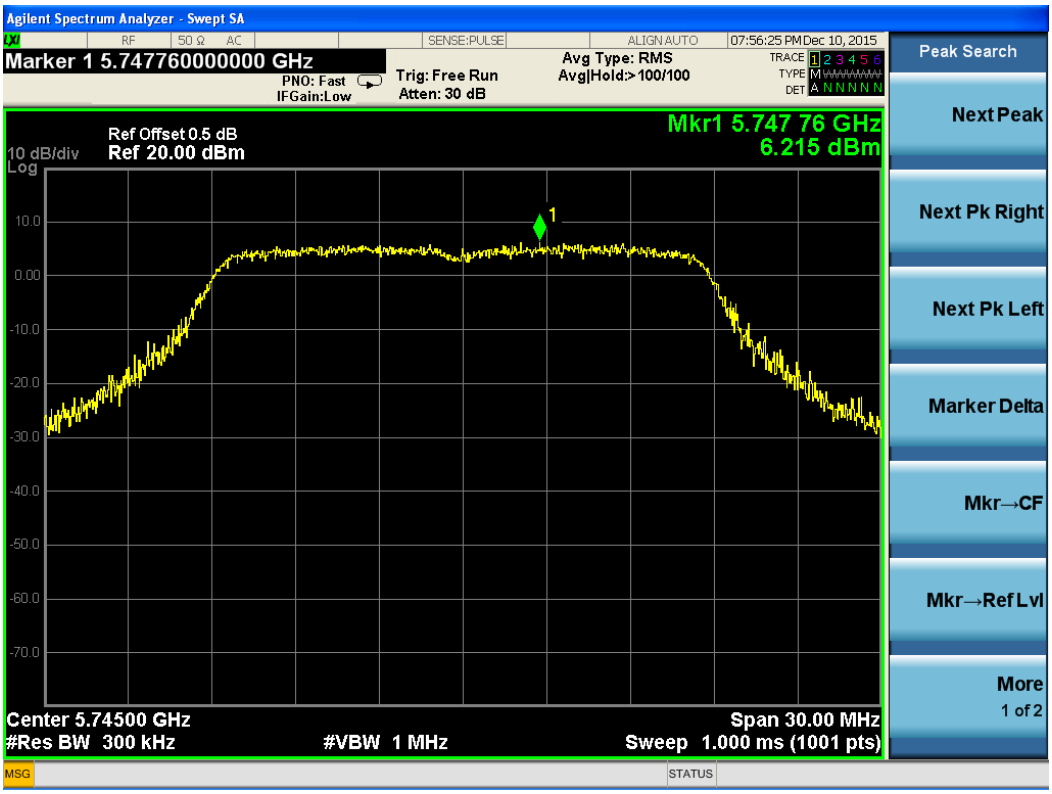
Test Plot For 802.11a-5785M-Chain 3

Test Plot For 802.11a-5825M-Chain 0

Test Plot For 802.11a-5825M-Chain 1

Test Plot For 802.11a-5825M-Chain 2

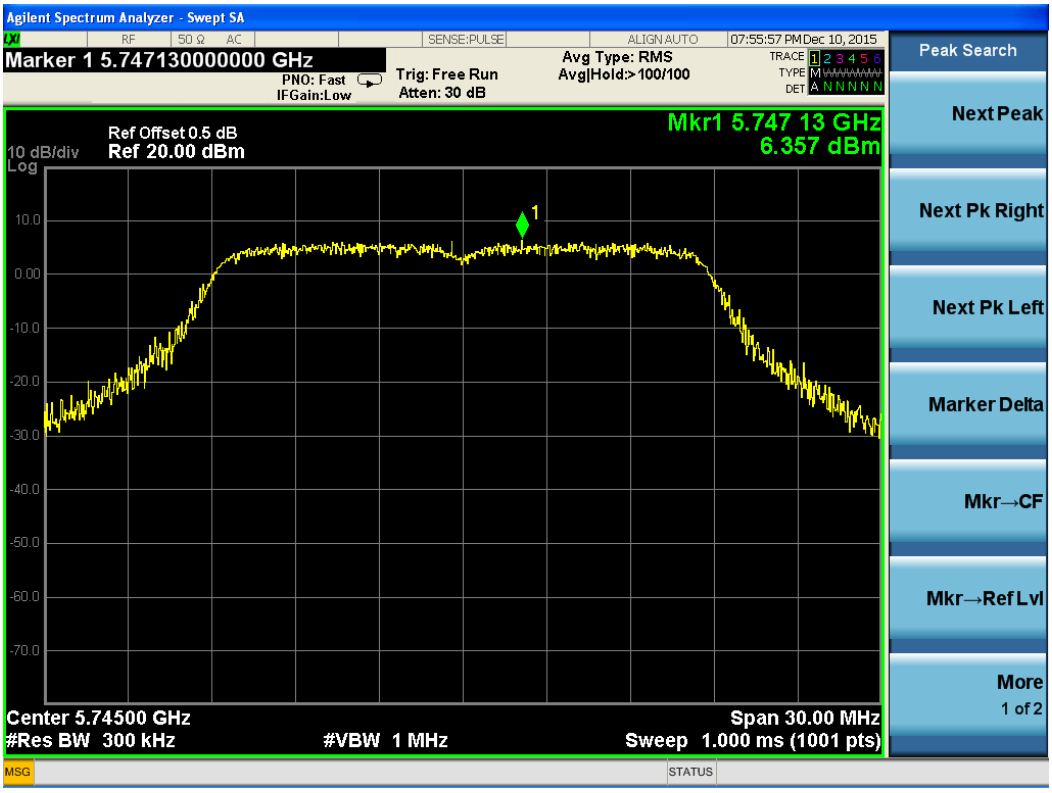
Test Plot For 802.11a-5825M-Chain 3



Test Plot For 802.11n(HT20)-5745M-Chain 0

Test Plot For 802.11n(HT20)-5745M-Chain 1

Test Plot For 802.11n(HT20)-5745M-Chain 2



Test Plot For 802.11n(HT20)-5745M-Chain 3

Test Plot For 802.11n(HT20)-5785M-Chain 0

Test Plot For 802.11n(HT20)-5785M-Chain 1

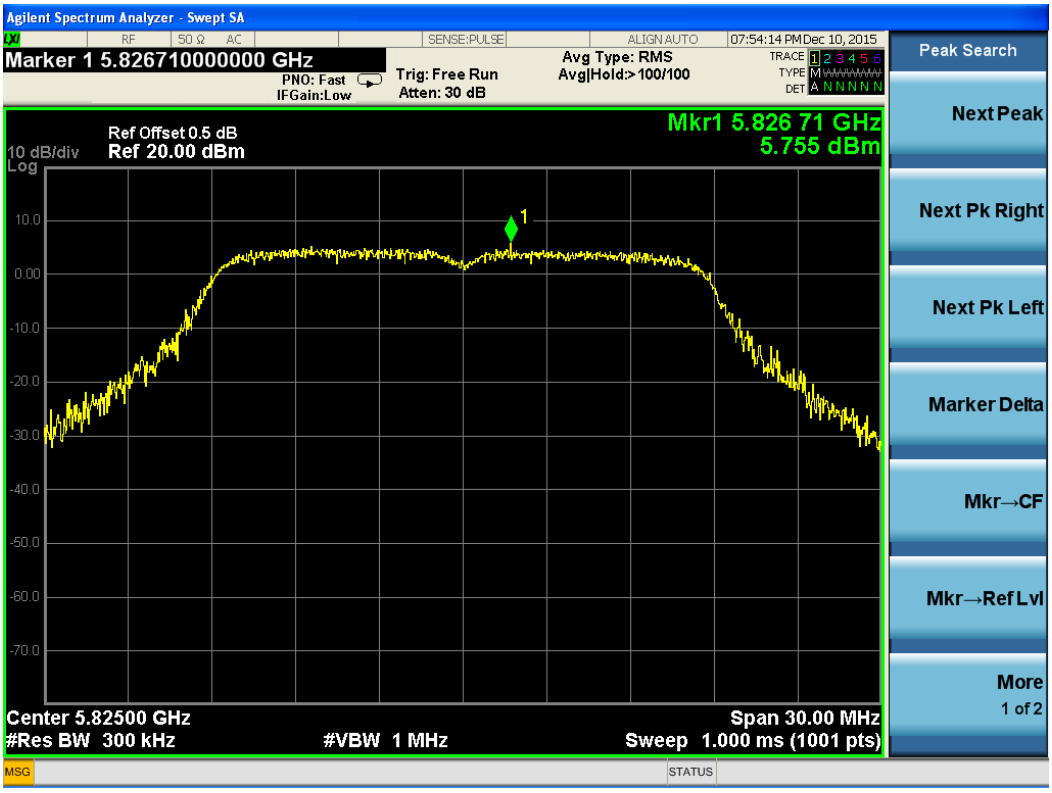
Test Plot For 802.11n(HT20)-5785M-Chain 2

Test Plot For 802.11n(HT20)-5785M-Chain 3

Test Plot For 802.11n(HT20)-5825M-Chain 0

Test Plot For 802.11n(HT20)-5825M-Chain 1

Test Plot For 802.11n(HT20)-5825M-Chain 2

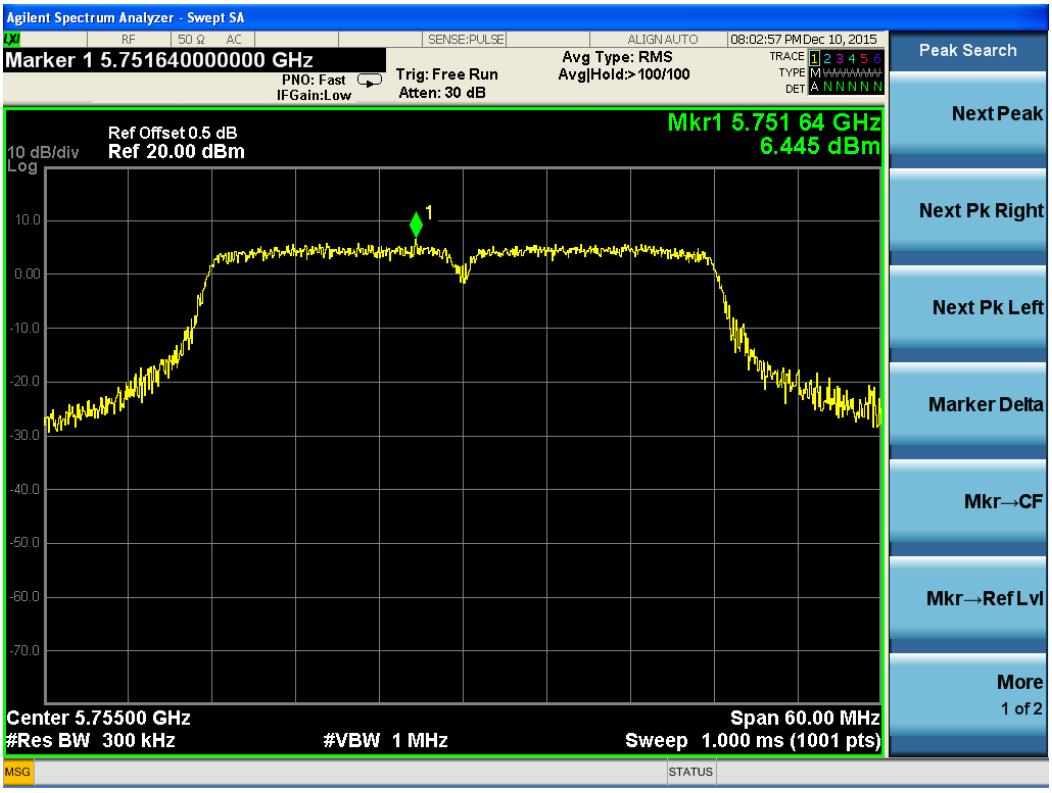


Test Plot For 802.11n(HT20)-5825M-Chain 3

Test Plot For 802.11n(HT40)-5755M-Chain 0

Test Plot For 802.11n(HT40)-5755M-Chain 1

Test Plot For 802.11n(HT40)-5755M-Chain 2



Test Plot For 802.11n(HT40)-5755M-Chain 3

Test Plot For 802.11n(HT40)-5795M-Chain 0

Test Plot For 802.11n(HT40)-5795M-Chain 1

Test Plot For 802.11n(HT40)-5795M-Chain 2

Test Plot For 802.11n(HT40)-5795M-Chain 3

5.3. 6dB & 26dB Bandwidth Measurement

5.3.1. Standard Applicable

According to §15.407(e): Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

There is no restriction limits for 26dB & 99% occupied bandwidth, report only for reference.

5.3.2. Instruments Setting

The following table is the setting of the Spectrum Analyzer.

6dB Bandwidth Measurement (Only For 5745~5825MHz Band)	
Spectrum Parameter	Setting
Attenuation	Auto
RBW	100KHz
VBW	⩾ 3 x RBW
Detector	Peak
Trace	Max Hold

26dB & 99%Bandwidth Measurement (Only For 5180~5240MHz Band)	
Spectrum Parameter	Setting
Attenuation	Auto
RBW	approximately 1% of the emission bandwidth
VBW	⩾ RBW
Detector	Peak
Trace	Max Hold

5

5.3.3. Test Procedures

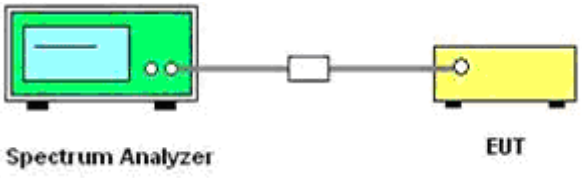
1) The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.

2) The resolution bandwidth and the video bandwidth were set according to KDB 789033 D02 General UNII Test Procedures New Rules v01

3) For 5745~5825MHz Band, Measured the maximum width of the emission that is 6dB down from the peak of the emission.

4) For 5180~5240MHz Band, Measured the maximum width of the emission that is 26dB down from the peak of the emission. Record the 26dB & 99% Bandwidth.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of Spectrum Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Kyle	Configurations	802.11a/n

802.11a

Channel	Frequency	6dB Bandwidth (MHz, Chain 0)	6dB Bandwidth (MHz, Chain 1)	Min. Limit (kHz)	Result
149	5745	16.41	16.38	500	Complies
157	5785	16.39	16.38	500	Complies
165	5825	16.35	16.36	500	Complies

Channel	Frequency	6dB Bandwidth (MHz, Chain 2)	6dB Bandwidth (MHz, Chain 3)	Min. Limit (kHz)	Result
149	5745	16.38	16.38	500	Complies
157	5785	16.39	16.38	500	Complies
165	5825	16.42	16.37	500	Complies

802.11n(HT20)

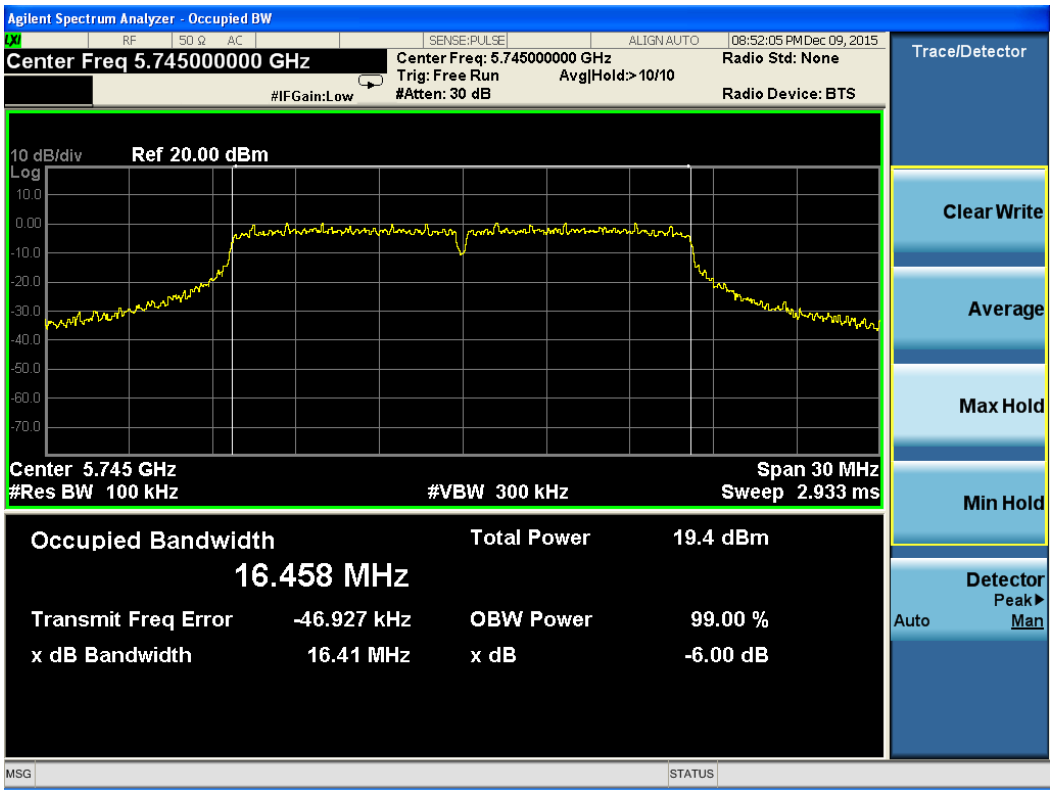
Channel	Frequency	6dB Bandwidth (MHz, Chain 0)	6dB Bandwidth (MHz, Chain 1)	Min. Limit (kHz)	Result
149	5745	17.59	17.58	500	Complies
157	5785	17.59	17.59	500	Complies
165	5825	17.34	17.23	500	Complies

Channel	Frequency	6dB Bandwidth (MHz, Chain 2)	6dB Bandwidth (MHz, Chain 3)	Min. Limit (kHz)	Result
149	5745	17.52	17.58	500	Complies
157	5785	17.58	17.59	500	Complies
165	5825	17.34	17.34	500	Complies

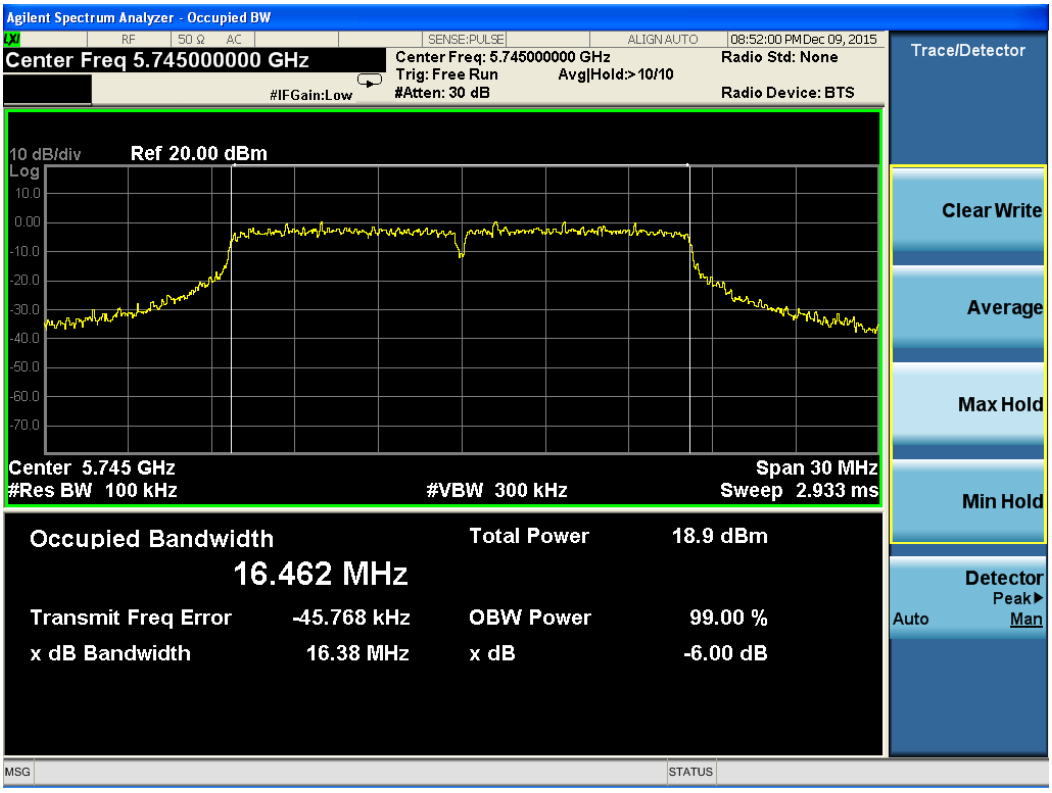
802.11n(HT40)

Channel	Frequency	6dB Bandwidth (MHz, Chain 0)	6dB Bandwidth (MHz, Chain 1)	Min. Limit (kHz)	Result
151	5755	36.36	36.36	500	Complies
159	5795	36.09	35.09	500	Complies

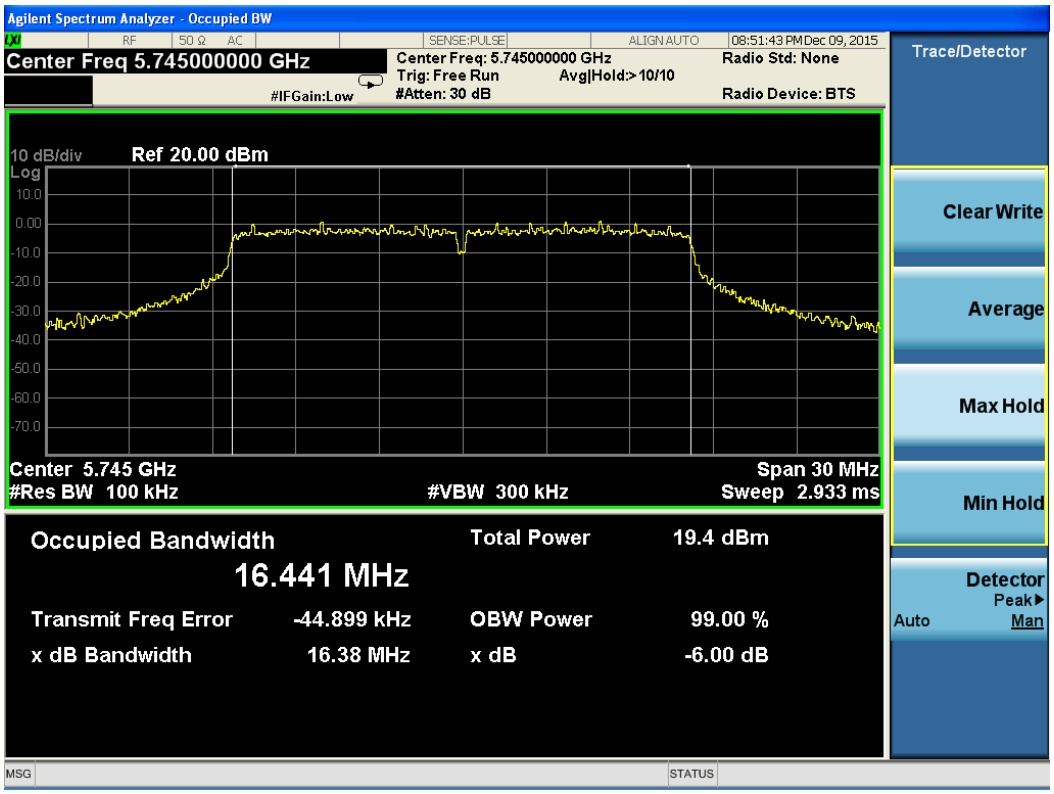
Channel	Frequency	6dB Bandwidth (MHz, Chain 2)	6dB Bandwidth (MHz, Chain 3)	Min. Limit (kHz)	Result
151	5755	36.37	36.35	500	Complies
159	5795	35.96	35.98	500	Complies



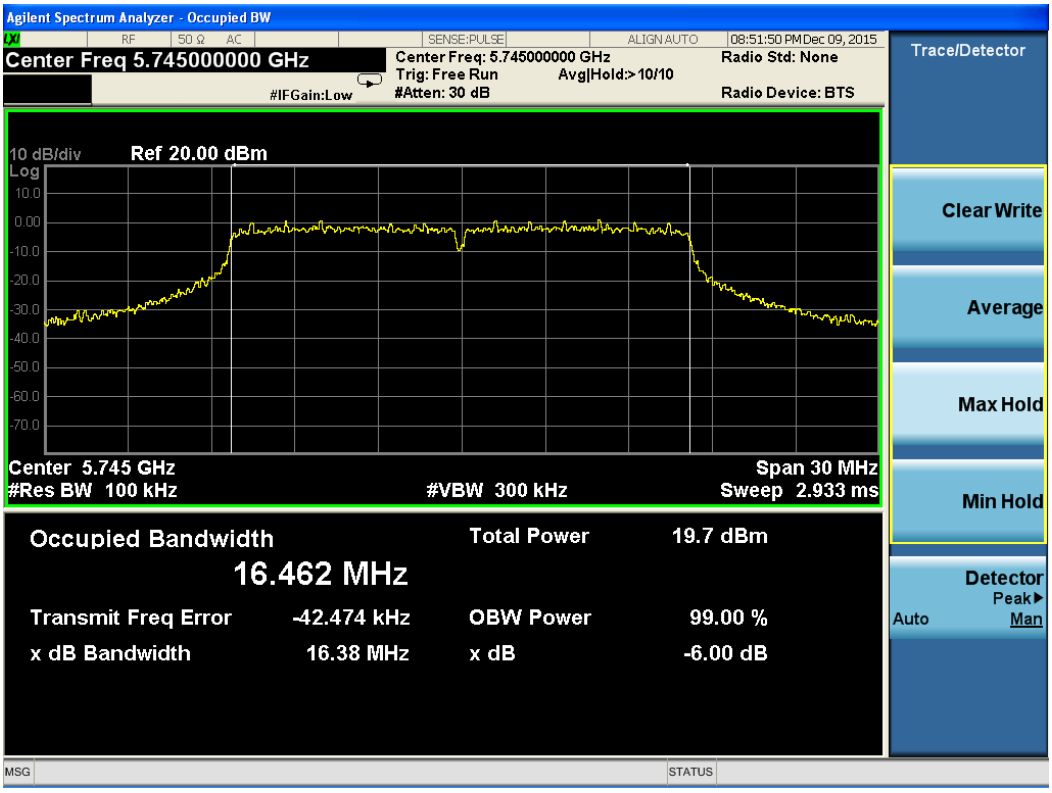
Test Plot For 802.11a-6dB BW-5745M-Chain 0



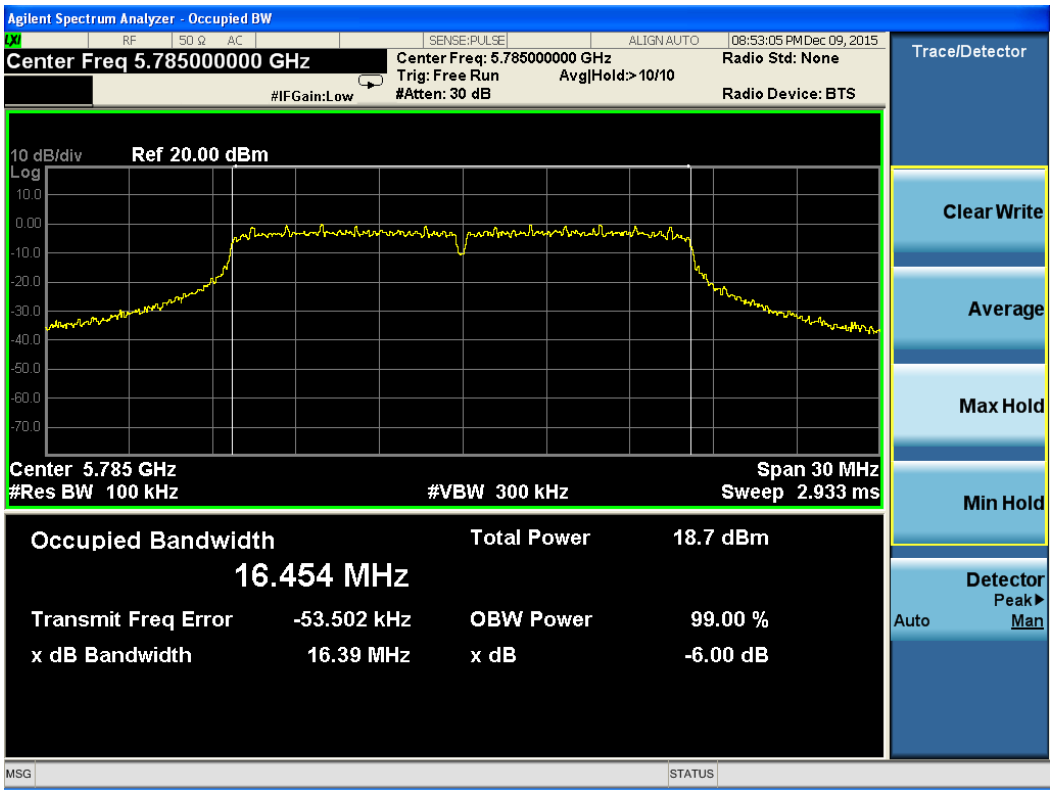
Test Plot For 802.11a-6dB BW-5745M-Chain 1



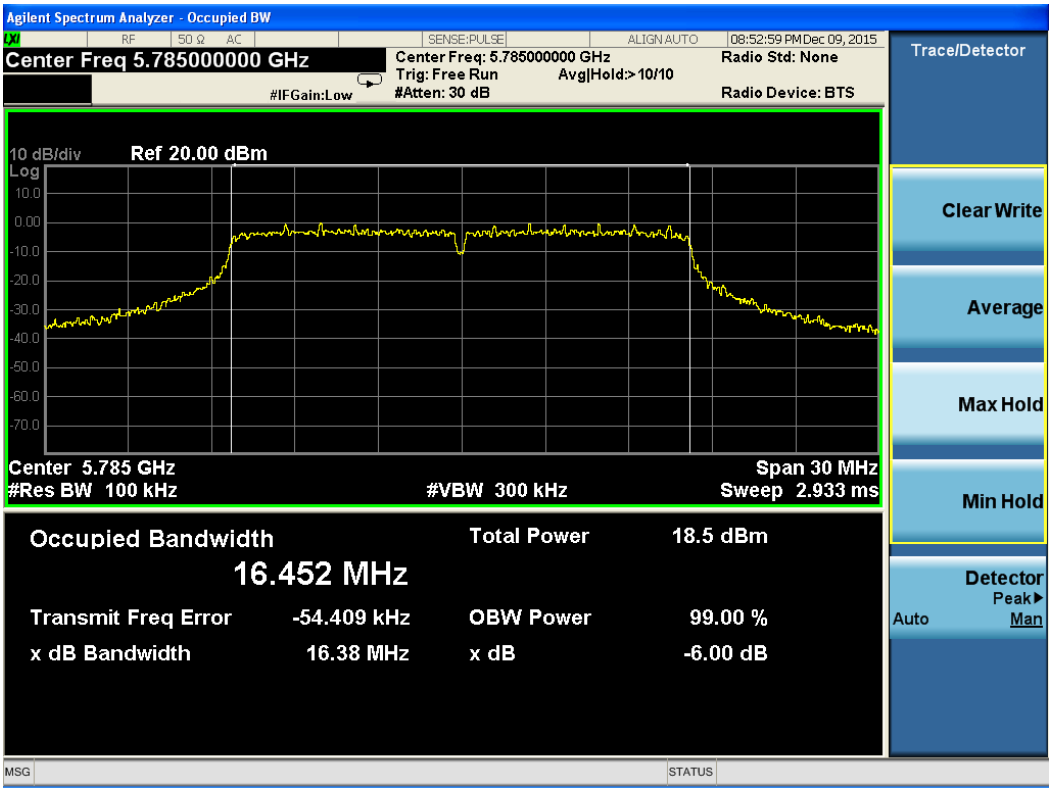
Test Plot For 802.11a-6dB BW-5745M-Chain 2



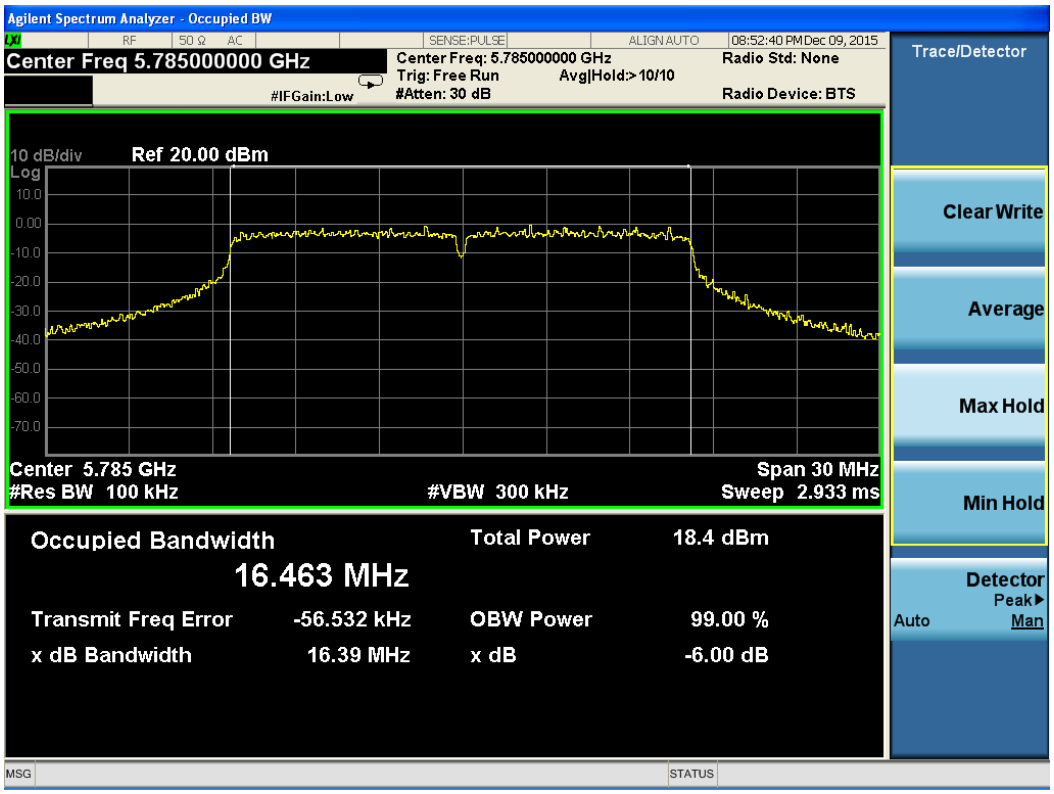
Test Plot For 802.11a-6dB BW-5745M-Chain 3



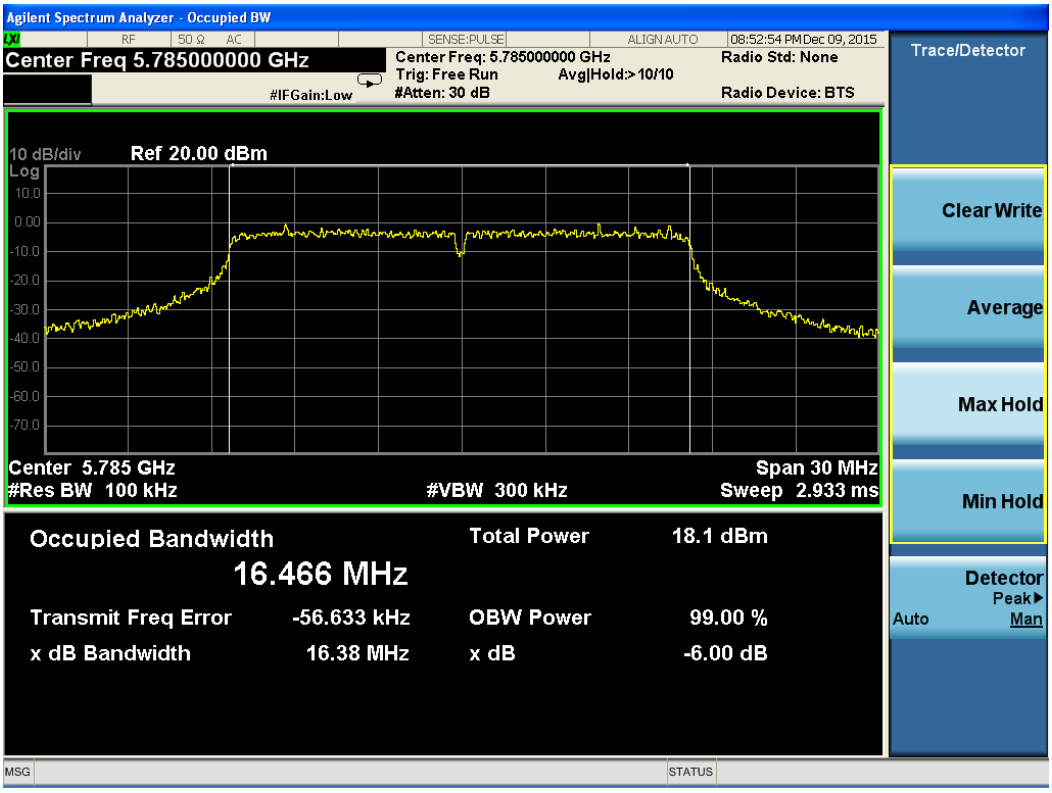
Test Plot For 802.11a-6dB BW-5785M-Chain 0



Test Plot For 802.11a-6dB BW-5785M-Chain 1



Test Plot For 802.11a-6dB BW-5785M-Chain 2



Test Plot For 802.11a-6dB BW-5785M-Chain 3