

# FCC PART 15.407 TEST REPORT

For

**Fujian Newland Payment Technology Co.,Ltd.**

No.1,Rujiang XiRoad,Mawei District Newland, Fuzhou,Fujian,P.R.China

**FCC ID: 2AM6U-N910**

<b>Report Type:</b> Original Report	<b>Product Name:</b> Intelligent POS Terminal
<b>Report Number:</b> <u>RXM170815054-00E</u>	
<b>Report Date:</b> <u>2017-10-09</u>	
<b>Reviewed By:</b>	Jerry Zhang EMC Manager
<b>Test Laboratory:</b>	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	4
OBJECTIVE .....	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY .....	4
MEASUREMENT UNCERTAINTY .....	5
TEST FACILITY .....	5
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>6</b>
DESCRIPTION OF TEST CONFIGURATION .....	6
EUT EXERCISE SOFTWARE .....	7
EQUIPMENT MODIFICATIONS .....	10
SUPPORT CABLE LIST AND DETAILS .....	10
BLOCK DIAGRAM OF TEST SETUP .....	10
<b>SUMMARY OF TEST RESULTS .....</b>	<b>11</b>
<b>FCC §15.407 (f) &amp; §1.1310 &amp; §2.1093 - RF EXPOSURE .....</b>	<b>12</b>
APPLICABLE STANDARD .....	12
TEST RESULT .....	12
<b>FCC §15.203 – ANTENNA REQUIREMENT.....</b>	<b>13</b>
APPLICABLE STANDARD .....	13
ANTENNA CONNECTOR CONSTRUCTION .....	13
<b>FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS .....</b>	<b>14</b>
APPLICABLE STANDARD .....	14
EUT SETUP .....	14
EMI TEST RECEIVER SETUP.....	14
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	15
TEST EQUIPMENT LIST AND DETAILS.....	15
TEST PROCEDURE .....	15
TEST DATA .....	16
<b>FCC §15.209, §15.205 &amp; §15.407(b) –UNWANTED EMISSION.....</b>	<b>18</b>
APPLICABLE STANDARD .....	18
EUT SETUP .....	19
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	20
TEST PROCEDURE .....	20
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	20
TEST EQUIPMENT LIST AND DETAILS.....	21
TEST DATA .....	21
<b>FCC §15.407(b)–OUT- OF-BAND EMISSIONS .....</b>	<b>36</b>
APPLICABLE STANDARD .....	36
TEST PROCEDURE .....	36
TEST EQUIPMENT LIST AND DETAILS.....	37
TEST DATA .....	37
<b>FCC §15.407(a)(e) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH.....</b>	<b>50</b>
APPLICABLE STANDARD .....	50
TEST EQUIPMENT LIST AND DETAILS.....	50
TEST PROCEDURE .....	50

TEST DATA .....	50
<b>FCC §15.407(g)–FREQUENCY STABILITY.....</b>	<b>86</b>
APPLICABLE STANDARD .....	86
TEST PROCEDURE .....	86
TEST EQUIPMENT LIST AND DETAILS.....	86
TEST DATA .....	86
<b>FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER.....</b>	<b>90</b>
APPLICABLE STANDARD .....	90
TEST EQUIPMENT LIST AND DETAILS.....	91
TEST PROCEDURE .....	91
TEST DATA .....	91
<b>FCC §15.407(a) - POWER SPECTRAL DENSITY .....</b>	<b>93</b>
APPLICABLE STANDARD .....	93
TEST PROCEDURE .....	94
TEST EQUIPMENT LIST AND DETAILS.....	94
TEST DATA .....	94

## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>		Intelligent POS Terminal
<b>EUT Model:</b>		N910
<b>Rated Input Voltage:</b>		DC 7.2V from battery or DC 5V from adapter
<b>Nominal Adapter Information</b>	<b>Model:</b>	SW-0983
	<b>Input:</b>	100-240V~, 50/60Hz, 0.5A
	<b>Output:</b>	DC5.0V, 2.0A
<b>External Dimension:</b>		Length (19cm)*Width (8.1cm)*High (5.5cm)
<b>Serial Number:</b>		00000304N7NL00142955
<b>EUT Received Date:</b>		2017.08.15

### Objective

This type approval report is prepared on behalf of *Fujian Newland Payment Technology Co.,Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A, and E of the Federal Communications Commission's rules.

The tests were performed in order to determine compliance with FCC Rules Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

### Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AM6U-N910.  
FCC Part 15C DSS submissions with FCC ID: 2AM6U-N910.  
FCC Part 15C DTS submissions with FCC ID: 2AM6U-N910.  
FCC Part 15C DXX submissions with FCC ID: 2AM6U-N910.  
FCC Part 22H, 24E, 27, 90 PCB submissions with FCC ID: 2AM6U-N910.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

**Measurement Uncertainty**

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~40GHz: 5.23 dB
Unwanted Emissions,conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

**Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40, the vht20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40.

For 5150~5250 MHz band, 6 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240

For 5250~5350 MHz band, 6 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
54	5270	62	5310
56	5280	64	5320

For 5470~5725MHz band, 18 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	120	5600
102	5510	124	5620
104	5520	126	5630
108	5540	128	5640
110	5550	132	5660
112	5560	134	5670
116	5580	136	5680
118	5590	140	5700

For 5725~5850MHz band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	165	5825
157	5785	/	/

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations. Preliminary tests were performed in different data rate and all the possible configurations, the worst cases as below table and shown in the report.

Test Mode	Data Rate	Channel
802.11a	6Mbps	36, 40, 48, 52, 56, 64, 100, 116, 140, 149, 157, 165
802.11n ht20	MCS0	36, 40, 48, 52, 56, 64, 100, 116, 140, 149, 157, 165
802.11n ht40	MCS0	38, 46, 54, 62, 102, 110, 134, 151, 159

## EUT Exercise Software

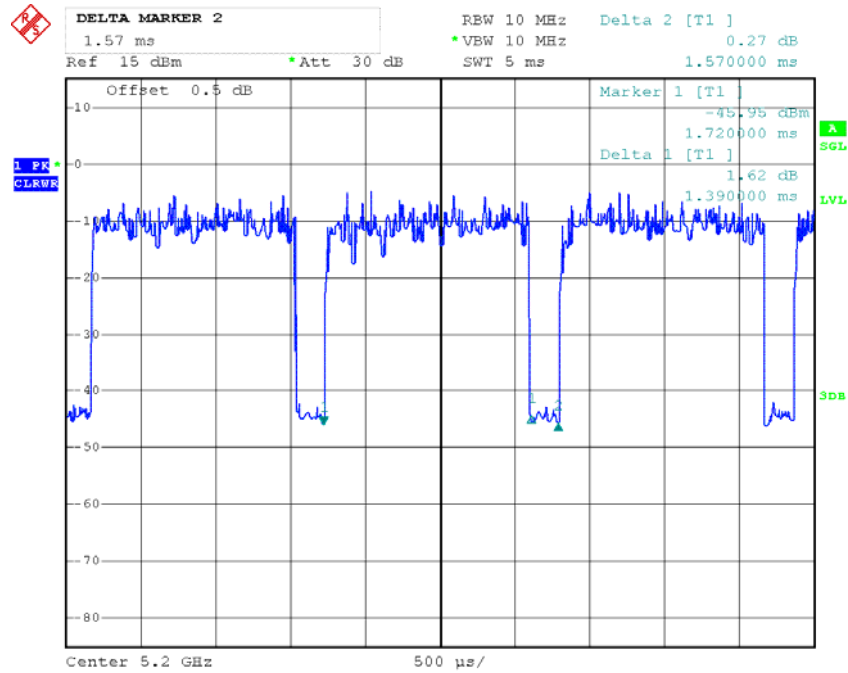
The software “IPOR&QSPR” was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
5150-5250MHz	802.11 a	Low	5180	6	16
		Middle	5200	6	16
		High	5240	6	16
	802.11 n20	Low	5180	MCS0	16
		Middle	5200	MCS0	16
		High	5240	MCS0	16
	802.11 n40	Low	5190	MCS0	13
		High	5230	MCS0	16
5250-5350MHz	802.11 a	Low	5260	6	16
		Middle	5280	6	16
		High	5320	6	16
	802.11 n20	Low	5260	MCS0	16
		Middle	5280	MCS0	16
		High	5320	MCS0	16
	802.11 n40	Low	5270	MCS0	16
		High	5310	MCS0	13
5470-5725MHz	802.11 a	Low	5500	6	20
		Middle	5580	6	19
		High	5700	6	16
	802.11 n20	Low	5500	MCS0	20
		Middle	5580	MCS0	19
		High	5700	MCS0	16
	802.11 n40	Low	5510	MCS0	16
		Middle	5550	MCS0	20
		High	5670	MCS0	20
5725-5850MHz	802.11 a	Low	5745	6	21
		Middle	5785	6	20
		High	5825	6	16
	802.11 n20	Low	5745	MCS0	21
		Middle	5785	MCS0	21
		High	5825	MCS0	16
	802.11 n40	Low	5755	MCS0	21
		High	5795	MCS0	21

The duty cycle as below:

Mode	T <sub>on</sub> (ms)	T <sub>on+off</sub> (ms)	Duty Cycle (%)
802.11 a	1.39	1.57	89
802.11n ht20	1.31	1.47	89
802.11n ht40	0.65	0.844	77

### 802.11a



Date: 11.SEP.2017 15:19:52



**DELTA MARKER 2**  
 1.47 ms  
 Ref 15 dBm \*Att 30 dB  
 RBW 10 MHz \*VBW 10 MHz  
 SWT 5 ms  
 Delta 2 [T1 ]  
 0.52 dB  
 1.470000 ms

Offset 0.5 dB  
 Marker 1 [T1 ]  
 -45.58 dBm  
 1.610000 ms  
 Delta 1 [T1 ]  
 -0.15 dB  
 1.310000 ms

1 PK  
 CLRWR

Center 5.2 GHz  
 500 μs/

Date: 11.SEP.2017 15:20:57

DELTA MARKER 2  
844.4  $\mu$ s  
Ref 20.5 dBm \*Att 30 dB  
RBW 10 MHz  
\*VBW 10 MHz  
SWT 3.2 ms  
Delta 2 [T1 ]  
-0.12 dB  
844.400000  $\mu$ s

20 Offset 0.5 dB  
Marker 1 [T1 ]  
-44.60 dBm  
Delta 1 [T1 ]  
1.143 ns  
0.03 dB  
840.000000  $\mu$ s

1 PK  
CLWR

Center 5.19 GHz  
320  $\mu$ s/

Date: 11.SEP.2017 15:32:56

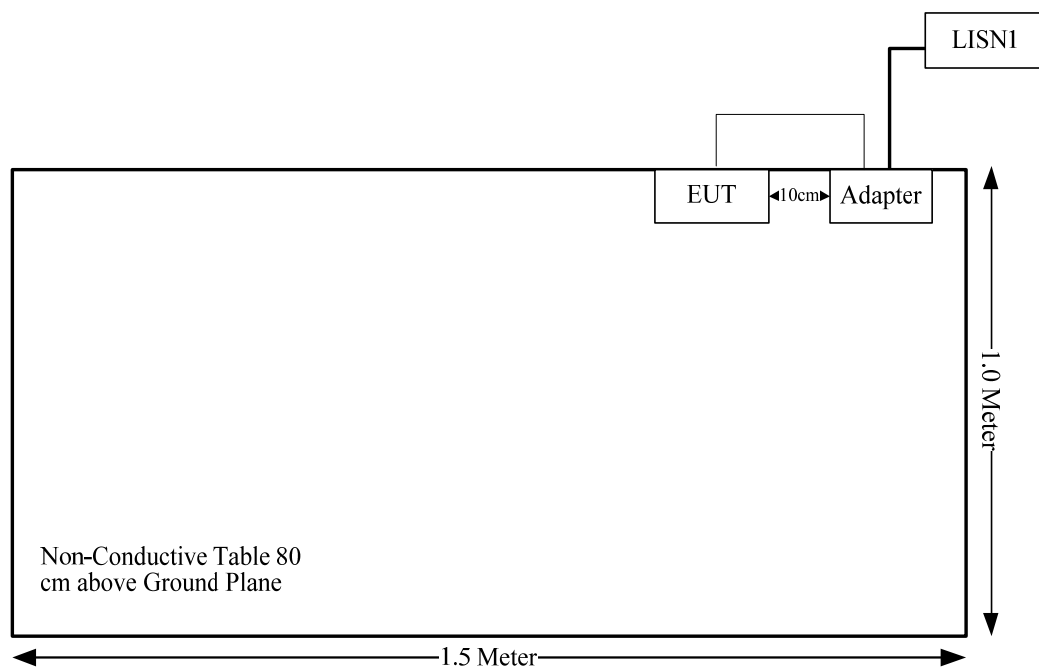
### Equipment Modifications

No modification was made to the EUT.

### Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	No	0.8	USB Port of adapter	EUT

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
FCC §15.407 (f) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b)	Out Of Band Emissions	Compliance
§15.407(a) (e)	Emission Bandwidth	Compliance
§15.407(g)	Frequency Stability	Compliance
§15.407(a)	Conducted Transmitter Output Power	Compliance
§15.407 (a)	Power Spectral Density	Compliance

---

## **FCC §15.407 (f) & §1.1310 & §2.1093 - RF EXPOSURE**

---

### **Applicable Standard**

According to subpart 15.407(f), §1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: RDG170815054-20.

---

## **FCC §15.203 – ANTENNA REQUIREMENT**

---

### **Applicable Standard**

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.407 (a)(1), 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.

### **Antenna Connector Construction**

The EUT has one internal antenna arrangement for WLAN, and the antenna gain is 2.3 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

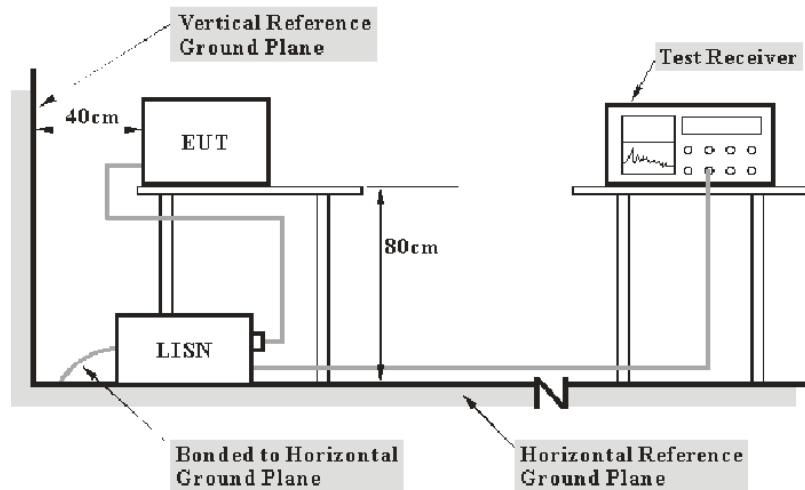
**Result:** Compliance.

## FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

### Applicable Standard

FCC §15.207(a), §15.407(b) (6).

### EUT Setup



Note: 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main lisn with a 120 V/60 Hz AC power source.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

## Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

$V_C$  (cord. Reading): corrected voltage amplitude

$V_R$ : reading voltage amplitude

$A_C$ : attenuation caused by cable loss

VDF: voltage division factor of AMN

$C_f$ : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2016-12-08	2017-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2017-09-01	2018-09-01
R&S	Two-line V-network	ENV 216	3560.6550.12	2016-12-08	2017-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
Unknown	Coaxial Cable	2m	Con-1	2017-09-05	2018-09-05

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

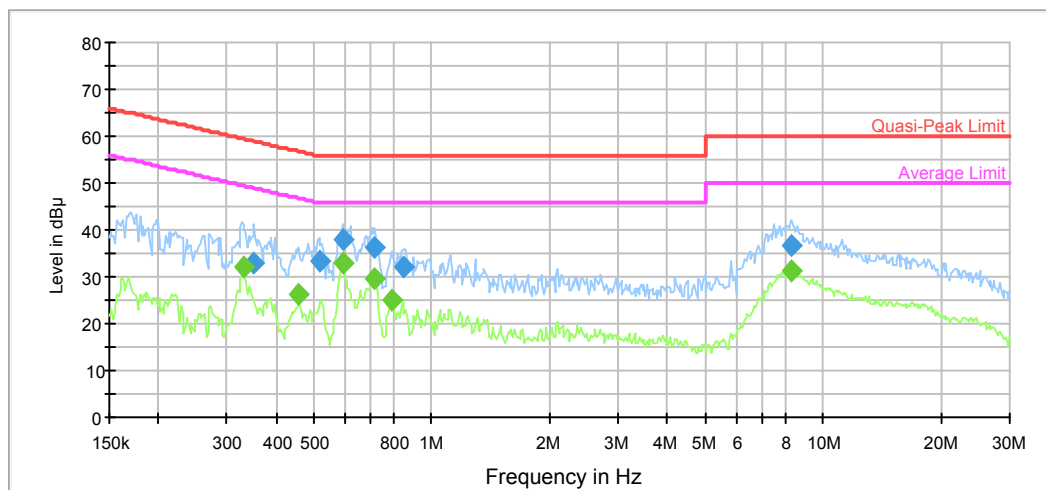
**Test Data****Environmental Conditions**

<b>Temperature:</b>	27.1 °C
<b>Relative Humidity:</b>	43 %
<b>ATM Pressure:</b>	100.2 kPa

The testing was performed by Gaochao Gong on 2017-09-05.

Test Mode: Transmitting

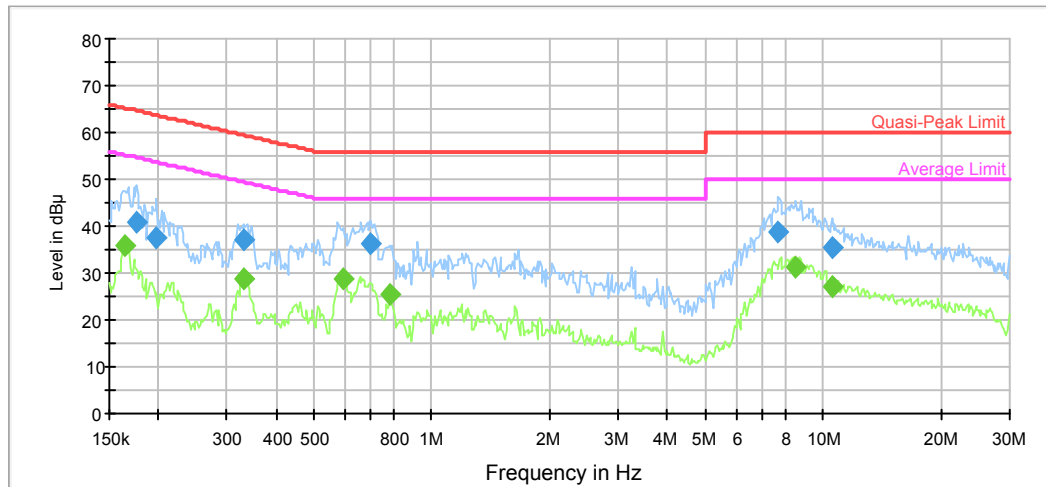
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.351859	32.8	9.000	L1	10.0	26.1	58.9	Compliance
0.515791	33.3	9.000	L1	9.9	22.7	56.0	Compliance
0.590613	38.0	9.000	L1	9.8	18.0	56.0	Compliance
0.715082	36.2	9.000	L1	9.8	19.8	56.0	Compliance
0.845331	32.3	9.000	L1	9.8	23.7	56.0	Compliance
8.321464	36.8	9.000	L1	9.8	23.2	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.330129	32.0	9.000	L1	10.1	17.4	49.4	Compliance
0.457684	26.1	9.000	L1	9.9	20.6	46.7	Compliance
0.590613	32.9	9.000	L1	9.8	13.1	46.0	Compliance
0.715082	29.7	9.000	L1	9.8	16.3	46.0	Compliance
0.786832	24.9	9.000	L1	9.8	21.1	46.0	Compliance
8.321464	31.2	9.000	L1	9.8	18.8	50.0	Compliance



**AC120 V, 60 Hz, Neutral:**

frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175915	40.7	9.000	N	10.8	24.0	64.7	Compliance
0.198249	37.5	9.000	N	10.6	26.2	63.7	Compliance
0.330129	36.9	9.000	N	10.1	22.5	59.4	Compliance
0.698191	36.3	9.000	N	9.8	19.7	56.0	Compliance
7.684125	38.6	9.000	N	9.8	21.4	60.0	Compliance
10.568557	35.5	9.000	N	9.9	24.5	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.163741	36.0	9.000	N	11.0	19.3	55.3	Compliance
0.330129	28.8	9.000	N	10.1	20.6	49.4	Compliance
0.590613	28.9	9.000	N	9.8	17.1	46.0	Compliance
0.780588	25.4	9.000	N	9.8	20.6	46.0	Compliance
8.455140	31.2	9.000	N	9.8	18.8	50.0	Compliance
10.568557	27.3	9.000	N	9.9	22.7	50.0	Compliance

---

**FCC §15.209, §15.205 & §15.407(b) –UNWANTED EMISSION**

---

**Applicable Standard**

FCC §15.407; §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, 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:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

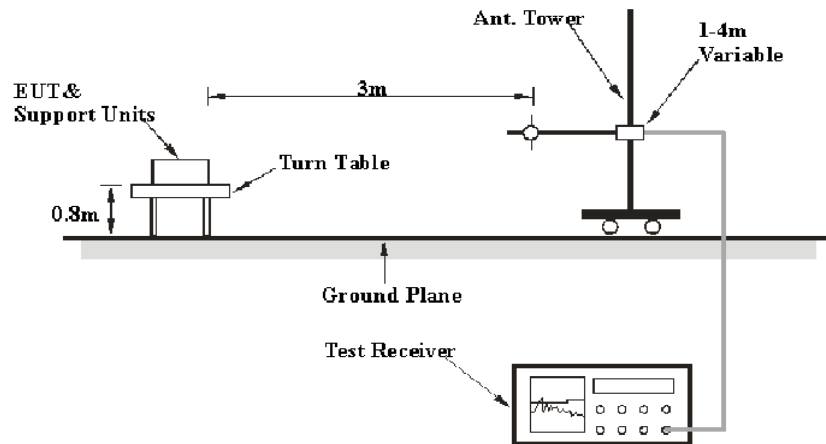
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

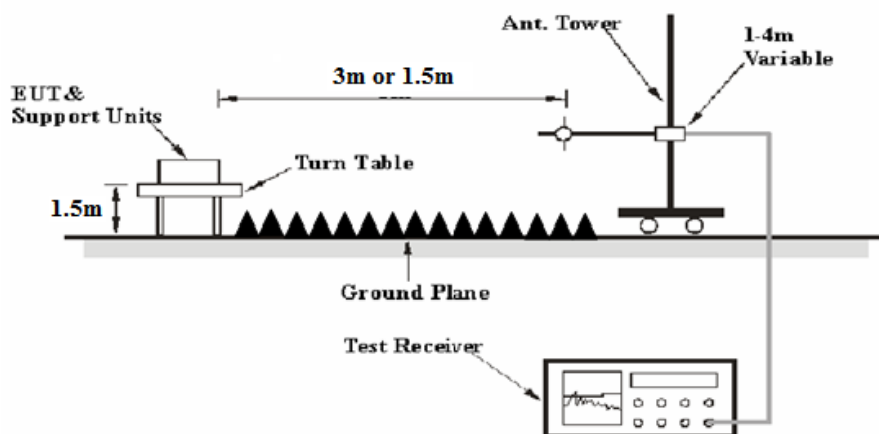
(7) The provisions of §15.205 apply to intentional radiators operating under this section.

## EUT Setup

### Below 1 GHz:



### Above 1 GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

## EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30-1000MHz:

Measurement	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 40GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

## Test Procedure

During the radiated emission test, the Adapter was connected to the first AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04, emission shall be computed as:  $E [dB\mu V/m] = EIRP[dBm] + 95.2$ , for  $d = 3$  meters.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m

Distance extrapolation factor =  $20 \log (\text{specific distance } [3m] / \text{test distance } [1.5m])$  dB

Extrapolation result = Corrected Amplitude (dB $\mu$ V/m) - distance extrapolation factor (6dB)

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Extrapolation result} - \text{Limit}$$

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
R&S	Spectrum Analyzer	FSP 38	100478	2016-12-08	2017-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
MITEQ	Amplifier	AFS42-00101800- 25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
Unknown	Coaxial Cable	Chamber A-1	4m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-1	0.75m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber A-2	10m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-2	8m	2017-09-05	2018-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

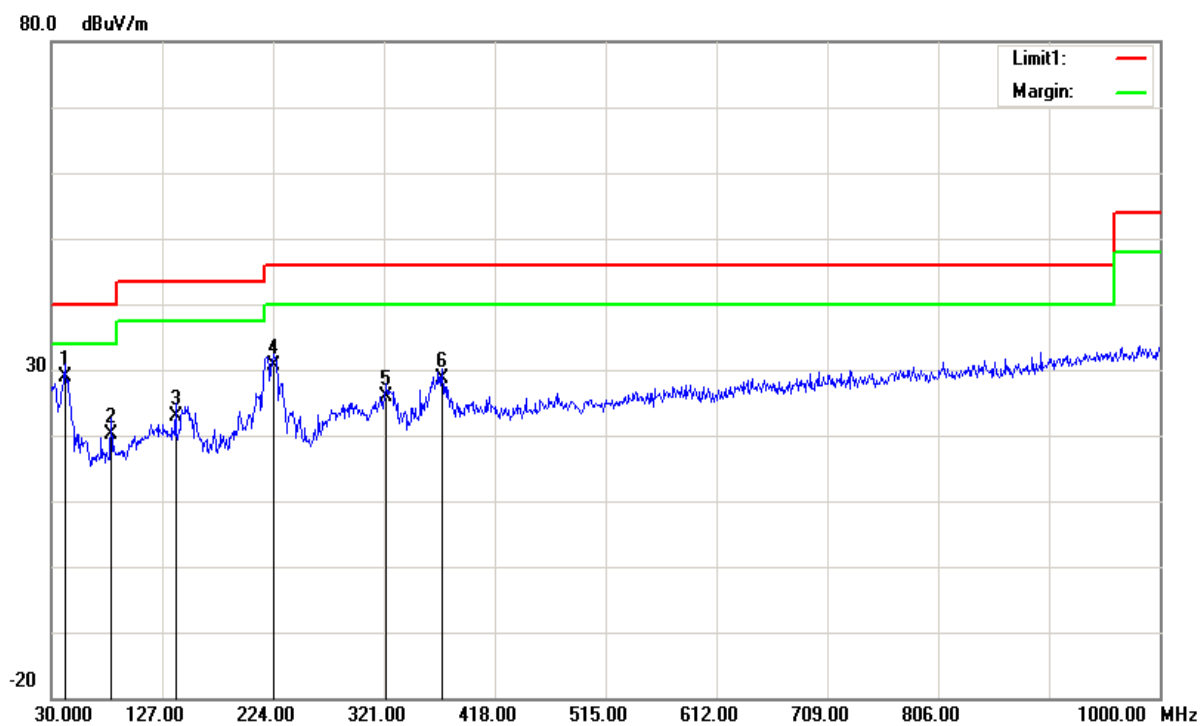
<b>Temperature:</b>	26.5 °C
<b>Relative Humidity:</b>	50%
<b>ATM Pressure:</b>	100.2 kPa

\* The testing was performed by Steven Zuo on 2017-09-06.

Test Mode: Transmitting(Above 1GHz test performed at distance 1.5m from EUT to Antenna)

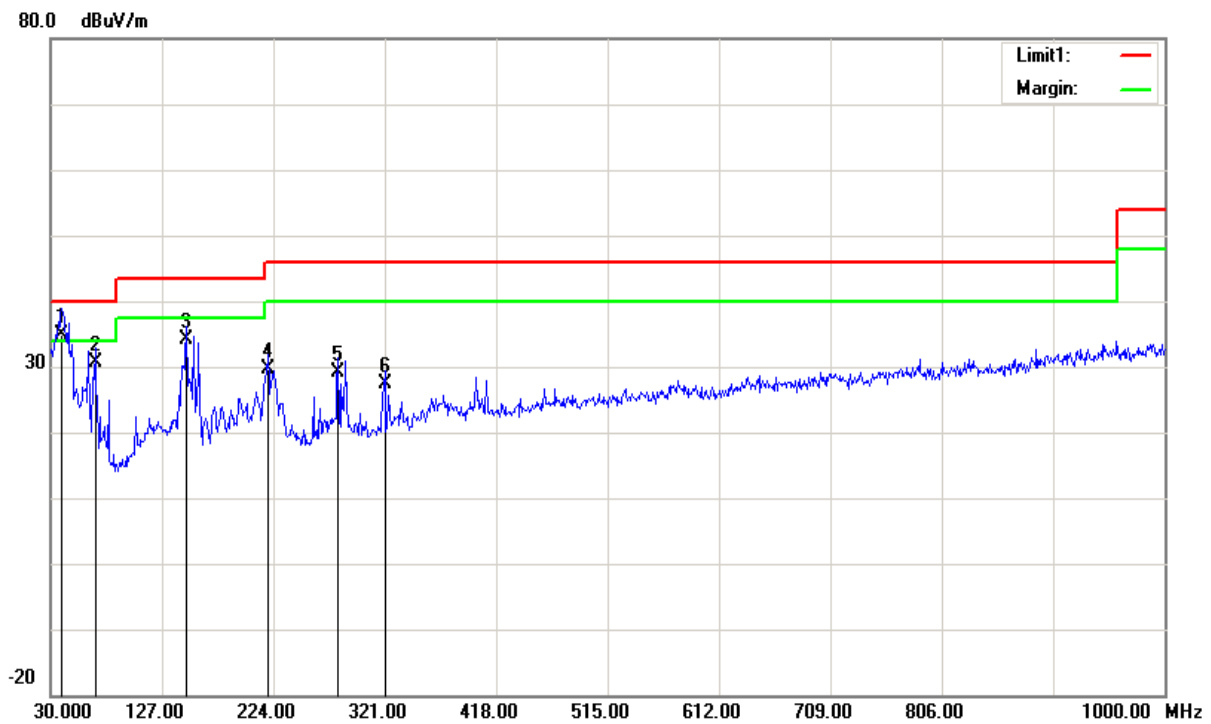
## 1) Below 1GHz(802.11a 5785MHz was the worst):

## Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
41.6400	36.40	QP	-7.60	28.80	40.00	11.20
82.3800	31.34	QP	-11.24	20.10	40.00	19.90
138.6400	29.03	QP	-6.13	22.90	43.50	20.60
224.0000	37.57	QP	-6.97	30.60	46.00	15.40
322.9400	30.04	QP	-4.14	25.90	46.00	20.10
371.4400	31.63	QP	-3.03	28.60	46.00	17.40

## Vertical



Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
39.7000	41.01	QP	-6.21	34.80	40.00	5.20
68.8000	42.26	QP	-11.56	30.70	40.00	9.30
148.3400	40.89	QP	-6.69	34.20	43.50	9.30
219.1500	36.92	QP	-7.22	29.70	46.00	16.30
280.2600	32.88	QP	-3.78	29.10	46.00	16.90
321.0000	31.50	QP	-4.20	27.30	46.00	18.70

**2) 1GHz-40GHz:****5150-5250MHz:**

802.11a mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	71.18	PK	H	33.59	4.78	0.00	109.55	103.55	N/A	N/A
5180	61.45	AV	H	33.59	4.78	0.00	99.82	93.82	N/A	N/A
5180	75.19	PK	V	33.59	4.78	0.00	113.56	107.56	N/A	N/A
5180	65.31	AV	V	33.59	4.78	0.00	103.68	97.68	N/A	N/A
5150	32.55	PK	V	33.54	4.67	0.00	70.76	64.76	74.00	9.24
5150	19.15	AV	V	33.54	4.67	0.00	57.36	51.36	54.00	2.64
10360	45.63	PK	V	38.17	6.56	36.38	53.98	47.98	74.00	26.02
10360	32.51	AV	V	38.17	6.56	36.38	40.86	34.86	54.00	19.14
15540	47.41	PK	V	38.06	8.67	38.13	56.01	50.01	74.00	23.99
15540	34.25	AV	V	38.06	8.67	38.13	42.85	36.85	54.00	17.15
7451	45.32	PK	V	36.37	5.61	35.99	51.31	45.31	74.00	28.69
7451	32.61	AV	V	36.37	5.61	35.99	38.60	32.60	54.00	21.40
Middle Channel:5200 MHz										
5200	71.16	PK	H	33.62	4.85	0.00	109.63	103.63	N/A	N/A
5200	61.36	AV	H	33.62	4.85	0.00	99.83	93.83	N/A	N/A
5200	74.59	PK	V	33.62	4.85	0.00	113.06	107.06	N/A	N/A
5200	64.67	AV	V	33.62	4.85	0.00	103.14	97.14	N/A	N/A
10400	46.32	PK	V	38.18	6.57	36.39	54.68	48.68	74.00	25.32
10400	33.21	AV	V	38.18	6.57	36.39	41.57	35.57	54.00	18.43
15600	46.31	PK	V	38.00	8.64	38.04	54.91	48.91	74.00	25.09
15600	33.17	AV	V	38.00	8.64	38.04	41.77	35.77	54.00	18.23
8745	45.36	PK	V	37.55	6.02	36.14	52.79	46.79	74.00	27.21
8745	32.15	AV	V	37.55	6.02	36.14	39.58	33.58	54.00	20.42
9635	45.67	PK	V	37.95	6.28	36.26	53.64	47.64	74.00	26.36
9635	32.45	AV	V	37.95	6.28	36.26	40.42	34.42	54.00	19.58
High Channel:5240 MHz										
5240	70.49	PK	H	33.68	4.71	0.00	108.88	102.88	N/A	N/A
5240	60.53	AV	H	33.68	4.71	0.00	98.92	92.92	N/A	N/A
5240	75.38	PK	V	33.68	4.71	0.00	113.77	107.77	N/A	N/A
5240	65.88	AV	V	33.68	4.71	0.00	104.27	98.27	N/A	N/A
5350	23.19	PK	V	33.86	4.52	0.00	61.57	55.57	74.00	18.43
5350	15.12	AV	V	33.86	4.52	0.00	53.50	47.50	54.00	6.50
10480	46.35	PK	V	38.20	6.59	36.40	54.74	48.74	74.00	25.26
10480	32.54	AV	V	38.20	6.59	36.40	40.93	34.93	54.00	19.07
15720	46.33	PK	V	37.88	8.57	37.86	54.92	48.92	74.00	25.08
15720	32.49	AV	V	37.88	8.57	37.86	41.08	35.08	54.00	18.92
9535	45.42	PK	V	37.91	6.23	36.25	53.31	47.31	74.00	26.69
9535	32.58	AV	V	37.91	6.23	36.25	40.47	34.47	54.00	19.53



802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	70.49	PK	H	33.59	4.78	0.00	108.86	102.86	N/A	N/A
5180	60.04	AV	H	33.59	4.78	0.00	98.41	92.41	N/A	N/A
5180	74.46	PK	V	33.59	4.78	0.00	112.83	106.83	N/A	N/A
5180	65.04	AV	V	33.59	4.78	0.00	103.41	97.41	N/A	N/A
5150	32.46	PK	V	33.54	4.67	0.00	70.67	64.67	74.00	9.33
5150	19.62	AV	V	33.54	4.67	0.00	57.83	51.83	54.00	2.17
10360	45.38	PK	V	38.17	6.56	36.38	53.73	47.73	74.00	26.27
10360	32.71	AV	V	38.17	6.56	36.38	41.06	35.06	54.00	18.94
15540	45.55	PK	V	38.06	8.67	38.13	54.15	48.15	74.00	25.85
15540	32.51	AV	V	38.06	8.67	38.13	41.11	35.11	54.00	18.89
9547	45.36	PK	V	37.92	6.23	36.25	53.26	47.26	74.00	26.74
9547	32.18	AV	V	37.92	6.23	36.25	40.08	34.08	54.00	19.92
Middle Channel:5200 MHz										
5200	70.44	PK	H	33.62	4.85	0.00	108.91	102.91	N/A	N/A
5200	60.25	AV	H	33.62	4.85	0.00	98.72	92.72	N/A	N/A
5200	73.97	PK	V	33.62	4.85	0.00	112.44	106.44	N/A	N/A
5200	64.11	AV	V	33.62	4.85	0.00	102.58	96.58	N/A	N/A
10400	45.59	PK	V	38.18	6.57	36.39	53.95	47.95	74.00	26.05
10400	32.47	AV	V	38.18	6.57	36.39	40.83	34.83	54.00	19.17
15600	45.66	PK	V	38.00	8.64	38.04	54.26	48.26	74.00	25.74
15600	32.97	AV	V	38.00	8.64	38.04	41.57	35.57	54.00	18.43
8541	45.67	PK	V	37.42	6.03	36.06	53.06	47.06	74.00	26.94
8541	32.41	AV	V	37.42	6.03	36.06	39.80	33.80	54.00	20.20
7594	45.57	PK	V	36.56	5.68	36.01	51.80	45.80	74.00	28.20
7594	32.61	AV	V	36.56	5.68	36.01	38.84	32.84	54.00	21.16
High Channel:5240 MHz										
5240	70.85	PK	H	33.68	4.71	0.00	109.24	103.24	N/A	N/A
5240	60.54	AV	H	33.68	4.71	0.00	98.93	92.93	N/A	N/A
5240	75.08	PK	V	33.68	4.71	0.00	113.47	107.47	N/A	N/A
5240	64.81	AV	V	33.68	4.71	0.00	103.20	97.20	N/A	N/A
5350	25.16	PK	V	33.86	4.52	0.00	63.54	57.54	74.00	16.46
5350	14.51	AV	V	33.86	4.52	0.00	52.89	46.89	54.00	7.11
10480	45.57	PK	V	38.20	6.59	36.40	53.96	47.96	74.00	26.04
10480	32.47	AV	V	38.20	6.59	36.40	40.86	34.86	54.00	19.14
15720	45.61	PK	V	37.88	8.57	37.86	54.20	48.20	74.00	25.80
15720	32.21	AV	V	37.88	8.57	37.86	40.80	34.80	54.00	19.20
7468	45.12	PK	V	36.42	5.62	35.99	51.17	45.17	74.00	28.83
7468	32.64	AV	V	36.42	5.62	35.99	38.69	32.69	54.00	21.31

802.11n ht40 mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5190 MHz										
5190	69.11	PK	H	33.60	4.81	0.00	107.52	101.52	N/A	N/A
5190	59.47	AV	H	33.60	4.81	0.00	97.88	91.88	N/A	N/A
5190	72.21	PK	V	33.60	4.81	0.00	110.62	104.62	N/A	N/A
5190	62.51	AV	V	33.60	4.81	0.00	100.92	94.92	N/A	N/A
5150	28.51	PK	V	33.54	4.67	0.00	66.72	60.72	74.00	13.28
5150	17.19	AV	V	33.54	4.67	0.00	55.40	49.40	54.00	4.60
10380	45.59	PK	V	38.18	6.57	36.38	53.96	47.96	74.00	26.04
10380	32.65	AV	V	38.18	6.57	36.38	41.02	35.02	54.00	18.98
15570	45.58	PK	V	38.03	8.65	38.09	54.17	48.17	74.00	25.83
15570	32.61	AV	V	38.03	8.65	38.09	41.20	35.20	54.00	18.80
6475	45.32	PK	V	34.21	5.24	35.75	49.02	43.02	74.00	30.98
6475	32.62	AV	V	34.21	5.24	35.75	36.32	30.32	54.00	23.68
High Channel:5230 MHz										
5230	70.48	PK	H	33.67	4.74	0.00	108.89	102.89	N/A	N/A
5230	60.13	AV	H	33.67	4.74	0.00	98.54	92.54	N/A	N/A
5230	74.43	PK	V	33.67	4.74	0.00	112.84	106.84	N/A	N/A
5230	64.57	AV	V	33.67	4.74	0.00	102.98	96.98	N/A	N/A
5350	25.46	PK	V	33.86	4.52	0.00	63.84	57.84	74.00	16.16
5350	14.59	AV	V	33.86	4.52	0.00	52.97	46.97	54.00	7.03
10460	45.27	PK	V	38.19	6.59	36.39	53.66	47.66	74.00	26.34
10460	32.61	AV	V	38.19	6.59	36.39	41.00	35.00	54.00	19.00
15690	45.74	PK	V	37.91	8.59	37.91	54.33	48.33	74.00	25.67
15690	32.54	AV	V	37.91	8.59	37.91	41.13	35.13	54.00	18.87
9471	45.87	PK	V	37.89	6.20	36.24	53.72	47.72	74.00	26.28
9471	32.55	AV	V	37.89	6.20	36.24	40.40	34.40	54.00	19.60

**5250-5350MHz:**

802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5260 MHz										
5260	72.58	PK	H	33.72	4.63	0.00	110.93	104.93	N/A	N/A
5260	62.38	AV	H	33.72	4.63	0.00	100.73	94.73	N/A	N/A
5260	71.48	PK	V	33.72	4.63	0.00	109.83	103.83	N/A	N/A
5260	62.04	AV	V	33.72	4.63	0.00	100.39	94.39	N/A	N/A
5150	26.31	PK	H	33.54	4.67	0.00	64.52	58.52	74.00	15.48
5150	14.57	AV	H	33.54	4.67	0.00	52.78	46.78	54.00	7.22
10520	45.36	PK	H	38.21	6.61	36.41	53.77	47.77	74.00	26.23
10520	32.25	AV	H	38.21	6.61	36.41	40.66	34.66	54.00	19.34
15780	45.29	PK	H	37.82	8.54	37.78	53.87	47.87	74.00	26.13
15780	32.33	AV	H	37.82	8.54	37.78	40.91	34.91	54.00	19.09
8542	45.59	PK	H	37.43	6.03	36.06	52.99	46.99	74.00	27.01
8542	32.64	AV	H	37.43	6.03	36.06	40.04	34.04	54.00	19.96
6859	45.59	PK	H	34.92	5.31	35.89	49.93	43.93	74.00	30.07
6859	32.64	AV	H	34.92	5.31	35.89	36.98	30.98	54.00	23.02
Middle Channel:5280 MHz										
5280	72.34	PK	H	33.75	4.56	0.00	110.65	104.65	N/A	N/A
5280	62.18	AV	H	33.75	4.56	0.00	100.49	94.49	N/A	N/A
5280	71.59	PK	V	33.75	4.56	0.00	109.90	103.90	N/A	N/A
5280	61.86	AV	V	33.75	4.56	0.00	100.17	94.17	N/A	N/A
10560	45.59	PK	H	38.24	6.63	36.44	54.02	48.02	74.00	25.98
10560	32.64	AV	H	38.24	6.63	36.44	41.07	35.07	54.00	18.93
15840	45.59	PK	H	37.76	8.51	37.69	54.17	48.17	74.00	25.83
15840	32.67	AV	H	37.76	8.51	37.69	41.25	35.25	54.00	18.75
7468	45.37	PK	H	36.42	5.62	35.99	51.42	45.42	74.00	28.58
7468	32.17	AV	H	36.42	5.62	35.99	38.22	32.22	54.00	21.78
7847	45.55	PK	H	36.71	5.80	36.06	52.00	46.00	74.00	28.00
7847	32.26	AV	H	36.71	5.80	36.06	38.71	32.71	54.00	21.29
High Channel:5320 MHz										
5320	72.35	PK	H	33.81	4.50	0.00	110.66	104.66	N/A	N/A
5320	62.41	AV	H	33.81	4.50	0.00	100.72	94.72	N/A	N/A
5320	71.42	PK	V	33.81	4.50	0.00	109.73	103.73	N/A	N/A
5320	61.82	AV	V	33.81	4.50	0.00	100.13	94.13	N/A	N/A
5350	26.15	PK	H	33.86	4.52	0.00	64.53	58.53	74.00	15.47
5350	15.35	AV	H	33.86	4.52	0.00	53.73	47.73	54.00	6.27
10640	45.61	PK	H	38.28	6.66	36.50	54.05	48.05	74.00	25.95
10640	32.14	AV	H	38.28	6.66	36.50	40.58	34.58	54.00	19.42
15960	45.47	PK	H	37.64	8.44	37.51	54.04	48.04	74.00	25.96
15960	32.18	AV	H	37.64	8.44	37.51	40.75	34.75	54.00	19.25
8532	45.55	PK	H	37.42	6.03	36.05	52.95	46.95	74.00	27.05
8532	32.29	AV	H	37.42	6.03	36.05	39.69	33.69	54.00	20.31
8752	45.57	PK	H	37.55	6.02	36.15	52.99	46.99	74.00	27.01
8752	32.61	AV	H	37.55	6.02	36.15	40.03	34.03	54.00	19.97

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5260 MHz										
5260	72.35	PK	H	33.72	4.63	0.00	110.70	104.70	N/A	N/A
5260	62.16	AV	H	33.72	4.63	0.00	100.51	94.51	N/A	N/A
5260	71.48	PK	V	33.72	4.63	0.00	109.83	103.83	N/A	N/A
5260	61.43	AV	V	33.72	4.63	0.00	99.78	93.78	N/A	N/A
5150	26.33	PK	H	33.54	4.67	0.00	64.54	58.54	74.00	15.46
5150	14.27	AV	H	33.54	4.67	0.00	52.48	46.48	54.00	7.52
10520	45.58	PK	H	38.21	6.61	36.41	53.99	47.99	74.00	26.01
10520	32.64	AV	H	38.21	6.61	36.41	41.05	35.05	54.00	18.95
15780	45.74	PK	H	37.82	8.54	37.78	54.32	48.32	74.00	25.68
15780	32.29	AV	H	37.82	8.54	37.78	40.87	34.87	54.00	19.13
8457	45.18	PK	H	37.35	6.02	36.04	52.51	46.51	74.00	27.49
8457	32.74	AV	H	37.35	6.02	36.04	40.07	34.07	54.00	19.93
7465	45.59	PK	H	36.41	5.62	35.99	51.63	45.63	74.00	28.37
7465	32.61	AV	H	36.41	5.62	35.99	38.65	32.65	54.00	21.35
Middle Channel:5280 MHz										
5280	72.44	PK	H	33.75	4.56	0.00	110.75	104.75	N/A	N/A
5280	62.53	AV	H	33.75	4.56	0.00	100.84	94.84	N/A	N/A
5280	71.69	PK	V	33.75	4.56	0.00	110.00	104.00	N/A	N/A
5280	61.55	AV	V	33.75	4.56	0.00	99.86	93.86	N/A	N/A
10560	45.57	PK	H	38.24	6.63	36.44	54.00	48.00	74.00	26.00
10560	32.66	AV	H	38.24	6.63	36.44	41.09	35.09	54.00	18.91
15840	45.29	PK	H	37.76	8.51	37.69	53.87	47.87	74.00	26.13
15840	32.58	AV	H	37.76	8.51	37.69	41.16	35.16	54.00	18.84
6595	45.55	PK	H	34.39	5.28	35.78	49.44	43.44	74.00	30.56
6595	32.11	AV	H	34.39	5.28	35.78	36.00	30.00	54.00	24.00
7429	45.68	PK	H	36.32	5.59	35.98	51.61	45.61	74.00	28.39
7429	32.48	AV	H	36.32	5.59	35.98	38.41	32.41	54.00	21.59
High Channel:5320 MHz										
5320	72.49	PK	H	33.81	4.50	0.00	110.80	104.80	N/A	N/A
5320	62.09	AV	H	33.81	4.50	0.00	100.40	94.40	N/A	N/A
5320	71.47	PK	V	33.81	4.50	0.00	109.78	103.78	N/A	N/A
5320	61.67	AV	V	33.81	4.50	0.00	99.98	93.98	N/A	N/A
5350	26.32	PK	H	33.86	4.52	0.00	64.70	58.70	74.00	15.30
5350	15.28	AV	H	33.86	4.52	0.00	53.66	47.66	54.00	6.34
10640	45.59	PK	H	38.28	6.66	36.50	54.03	48.03	74.00	25.97
10640	32.26	AV	H	38.28	6.66	36.50	40.70	34.70	54.00	19.30
15960	45.28	PK	H	37.64	8.44	37.51	53.85	47.85	74.00	26.15
15960	32.74	AV	H	37.64	8.44	37.51	41.31	35.31	54.00	18.69
8952	45.36	PK	H	37.67	6.01	36.23	52.81	46.81	74.00	27.19
8952	32.28	AV	H	37.67	6.01	36.23	39.73	33.73	54.00	20.27
7433	45.29	PK	H	36.33	5.60	35.98	51.24	45.24	74.00	28.76
7433	32.77	AV	H	36.33	5.60	35.98	38.72	32.72	54.00	21.28

802.11n ht40 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5270 MHz										
5270	70.39	PK	H	33.73	4.60	0.00	108.72	102.72	N/A	N/A
5270	60.25	AV	H	33.73	4.60	0.00	98.58	92.58	N/A	N/A
5270	69.89	PK	V	33.73	4.60	0.00	108.22	102.22	N/A	N/A
5270	59.45	AV	V	33.73	4.60	0.00	97.78	91.78	N/A	N/A
5150	27.15	PK	H	33.54	4.67	0.00	65.36	59.36	74.00	14.64
5150	14.72	AV	H	33.54	4.67	0.00	52.93	46.93	54.00	7.07
10540	45.58	PK	H	38.22	6.62	36.43	53.99	47.99	74.00	26.01
10540	32.26	AV	H	38.22	6.62	36.43	40.67	34.67	54.00	19.33
15810	45.57	PK	H	37.79	8.52	37.73	54.15	48.15	74.00	25.85
15810	32.17	AV	H	37.79	8.52	37.73	40.75	34.75	54.00	19.25
6967	45.47	PK	H	35.13	5.32	35.94	49.98	43.98	74.00	30.02
6967	32.64	AV	H	35.13	5.32	35.94	37.15	31.15	54.00	22.85
7528	45.97	PK	H	36.52	5.65	36.00	52.14	46.14	74.00	27.86
7528	32.86	AV	H	36.52	5.65	36.00	39.03	33.03	54.00	20.97
High Channel:5310 MHz										
5310	67.48	PK	H	33.80	4.50	0.00	105.78	99.78	N/A	N/A
5310	57.29	AV	H	33.80	4.50	0.00	95.59	89.59	N/A	N/A
5310	66.34	PK	V	33.80	4.50	0.00	104.64	98.64	N/A	N/A
5310	56.28	AV	V	33.80	4.50	0.00	94.58	88.58	N/A	N/A
5350	26.32	PK	H	33.86	4.52	0.00	64.70	58.70	74.00	15.30
5350	14.22	AV	H	33.86	4.52	0.00	52.60	46.60	54.00	7.40
10620	45.48	PK	H	38.27	6.65	36.49	53.91	47.91	74.00	26.09
10620	32.65	AV	H	38.27	6.65	36.49	41.08	35.08	54.00	18.92
15930	45.59	PK	H	37.67	8.46	37.55	54.17	48.17	74.00	25.83
15930	32.17	AV	H	37.67	8.46	37.55	40.75	34.75	54.00	19.25
5948	45.27	PK	H	34.28	4.64	35.85	48.34	42.34	74.00	31.66
5948	32.66	AV	H	34.28	4.64	35.85	35.73	29.73	54.00	24.27
7638	45.85	PK	H	36.58	5.70	36.02	52.11	46.11	74.00	27.89
7638	32.17	AV	H	36.58	5.70	36.02	38.43	32.43	54.00	21.57

**5470-5725MHz:**

802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5500 MHz										
5500	72.45	PK	H	34.10	4.48	0.00	111.03	105.03	N/A	N/A
5500	62.39	AV	H	34.10	4.48	0.00	100.97	94.97	N/A	N/A
5500	71.69	PK	V	34.10	4.48	0.00	110.27	104.27	N/A	N/A
5500	60.98	AV	V	34.10	4.48	0.00	99.56	93.56	N/A	N/A
5470	28.47	PK	H	34.05	4.50	0.00	67.02	61.02	74.00	12.98
5470	17.75	AV	H	34.05	4.50	0.00	56.30	50.30	54.00	3.70
11000	45.62	PK	H	38.50	6.82	36.77	54.17	48.17	74.00	25.83
11000	32.45	AV	H	38.50	6.82	36.77	41.00	35.00	54.00	19.00
16500	46.25	PK	H	38.20	8.19	37.10	55.54	49.54	74.00	24.46
16500	32.18	AV	H	38.20	8.19	37.10	41.47	35.47	54.00	18.53
6647	45.19	PK	H	34.49	5.28	35.80	49.16	43.16	74.00	30.84
6647	32.47	AV	H	34.49	5.28	35.80	36.44	30.44	54.00	23.56
Middle Channel:5580 MHz										
5580	71.28	PK	H	34.13	4.53	0.00	109.94	103.94	N/A	N/A
5580	61.41	AV	H	34.13	4.53	0.00	100.07	94.07	N/A	N/A
5580	70.54	PK	V	34.13	4.53	0.00	109.20	103.20	N/A	N/A
5580	60.32	AV	V	34.13	4.53	0.00	98.98	92.98	N/A	N/A
11160	45.26	PK	H	38.66	6.83	36.72	54.03	48.03	74.00	25.97
11160	32.29	AV	H	38.66	6.83	36.72	41.06	35.06	54.00	18.94
16740	45.59	PK	H	39.16	8.44	37.20	55.99	49.99	74.00	24.01
16740	32.22	AV	H	39.16	8.44	37.20	42.62	36.62	54.00	17.38
6978	45.59	PK	H	35.16	5.32	35.94	50.13	44.13	74.00	29.87
6978	32.27	AV	H	35.16	5.32	35.94	36.81	30.81	54.00	23.19
7638	45.59	PK	H	36.58	5.70	36.02	51.85	45.85	74.00	28.15
7638	32.47	AV	H	36.58	5.70	36.02	38.73	32.73	54.00	21.27
High Channel:5700 MHz										
5700	69.25	PK	H	34.18	4.65	0.00	108.08	102.08	N/A	N/A
5700	59.24	AV	H	34.18	4.65	0.00	98.07	92.07	N/A	N/A
5700	68.47	PK	V	34.18	4.65	0.00	107.30	101.30	N/A	N/A
5700	58.43	AV	V	34.18	4.65	0.00	97.26	91.26	N/A	N/A
5725	30.15	PK	H	34.19	4.67	0.00	69.01	63.01	74.00	10.99
5725	20.06	AV	H	34.19	4.67	0.00	58.92	52.92	54.00	1.08
11400	45.61	PK	H	38.90	6.84	36.63	54.72	48.72	74.00	25.28
11400	32.58	AV	H	38.90	6.84	36.63	41.69	35.69	54.00	18.31
17100	45.59	PK	H	40.78	8.70	37.16	57.91	51.91	74.00	22.09
17100	32.64	AV	H	40.78	8.70	37.16	44.96	38.96	54.00	15.04
8334	45.57	PK	H	37.20	5.98	36.06	52.69	46.69	74.00	27.31
8334	32.61	AV	H	37.20	5.98	36.06	39.73	33.73	54.00	20.27
7659	45.29	PK	H	36.60	5.71	36.02	51.58	45.58	74.00	28.42
7659	32.28	AV	H	36.60	5.71	36.02	38.57	32.57	54.00	21.43

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5500 MHz										
5500	72.32	PK	H	34.10	4.48	0.00	110.90	104.90	N/A	N/A
5500	62.15	AV	H	34.10	4.48	0.00	100.73	94.73	N/A	N/A
5500	71.43	PK	V	34.10	4.48	0.00	110.01	104.01	N/A	N/A
5500	61.18	AV	V	34.10	4.48	0.00	99.76	93.76	N/A	N/A
5470	30.65	PK	H	34.05	4.50	0.00	69.20	63.20	74.00	10.80
5470	18.24	AV	H	34.05	4.50	0.00	56.79	50.79	54.00	3.21
11000	45.33	PK	H	38.50	6.82	36.77	53.88	47.88	74.00	26.12
11000	32.61	AV	H	38.50	6.82	36.77	41.16	35.16	54.00	18.84
16500	45.29	PK	H	38.20	8.19	37.10	54.58	48.58	74.00	25.42
16500	32.62	AV	H	38.20	8.19	37.10	41.91	35.91	54.00	18.09
6329	45.74	PK	H	34.23	5.06	35.78	49.25	43.25	74.00	30.75
6329	32.21	AV	H	34.23	5.06	35.78	35.72	29.72	54.00	24.28
6849	45.58	PK	H	34.90	5.30	35.89	49.89	43.89	74.00	30.11
6849	32.19	AV	H	34.90	5.30	35.89	36.50	30.50	54.00	23.50
Middle Channel:5580 MHz										
5580	70.24	PK	H	34.13	4.53	0.00	108.90	102.90	N/A	N/A
5580	60.35	AV	H	34.13	4.53	0.00	99.01	93.01	N/A	N/A
5580	69.58	PK	V	34.13	4.53	0.00	108.24	102.24	N/A	N/A
5580	59.47	AV	V	34.13	4.53	0.00	98.13	92.13	N/A	N/A
11160	45.38	PK	H	38.66	6.83	36.72	54.15	48.15	74.00	25.85
11160	32.74	AV	H	38.66	6.83	36.72	41.51	35.51	54.00	18.49
16740	45.27	PK	H	39.16	8.44	37.20	55.67	49.67	74.00	24.33
16740	32.18	AV	H	39.16	8.44	37.20	42.58	36.58	54.00	17.42
7251	45.21	PK	H	35.85	5.48	35.97	50.57	44.57	74.00	29.43
7251	32.61	AV	H	35.85	5.48	35.97	37.97	31.97	54.00	22.03
8422	45.18	PK	H	37.31	6.01	36.05	52.45	46.45	74.00	27.55
8422	32.66	AV	H	37.31	6.01	36.05	39.93	33.93	54.00	20.07
High Channel:5700 MHz										
5700	68.45	PK	H	34.18	4.65	0.00	107.28	101.28	N/A	N/A
5700	58.16	AV	H	34.18	4.65	0.00	96.99	90.99	N/A	N/A
5700	67.42	PK	V	34.18	4.65	0.00	106.25	100.25	N/A	N/A
5700	57.89	AV	V	34.18	4.65	0.00	96.72	90.72	N/A	N/A
5725	30.25	PK	H	34.19	4.67	0.00	69.11	63.11	74.00	10.89
5725	20.08	AV	H	34.19	4.67	0.00	58.94	52.94	54.00	1.06
11400	45.47	PK	H	38.90	6.84	36.63	54.58	48.58	74.00	25.42
11400	32.69	AV	H	38.90	6.84	36.63	41.80	35.80	54.00	18.20
17100	45.58	PK	H	40.78	8.70	37.16	57.90	51.90	74.00	22.10
17100	32.67	AV	H	40.78	8.70	37.16	44.99	38.99	54.00	15.01
6953	45.18	PK	H	35.11	5.32	35.93	49.68	43.68	74.00	30.32
6953	32.66	AV	H	35.11	5.32	35.93	37.16	31.16	54.00	22.84
7435	45.76	PK	H	36.33	5.60	35.98	51.71	45.71	74.00	28.29
7435	32.48	AV	H	36.33	5.60	35.98	38.43	32.43	54.00	21.57

802.11n ht40 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5510 MHz										
5510	66.96	PK	H	34.10	4.49	0.00	105.55	99.55	N/A	N/A
5510	56.37	AV	H	34.10	4.49	0.00	94.96	88.96	N/A	N/A
5510	65.38	PK	V	34.10	4.49	0.00	103.97	97.97	N/A	N/A
5510	55.73	AV	V	34.10	4.49	0.00	94.32	88.32	N/A	N/A
5470	30.24	PK	H	34.05	4.50	0.00	68.79	62.79	74.00	11.21
5470	19.05	AV	H	34.05	4.50	0.00	57.60	51.60	54.00	2.40
11020	45.29	PK	H	38.52	6.82	36.76	53.87	47.87	74.00	26.13
11020	32.51	AV	H	38.52	6.82	36.76	41.09	35.09	54.00	18.91
16530	45.59	PK	H	38.32	8.22	37.11	55.02	49.02	74.00	24.98
16530	32.41	AV	H	38.32	8.22	37.11	41.84	35.84	54.00	18.16
7982	45.42	PK	H	36.79	5.86	36.09	51.98	45.98	74.00	28.02
7982	32.61	AV	H	36.79	5.86	36.09	39.17	33.17	54.00	20.83
6439	45.72	PK	H	34.21	5.20	35.75	49.38	43.38	74.00	30.62
6439	32.64	AV	H	34.21	5.20	35.75	36.30	30.30	54.00	23.70
High Channel:5550 MHz										
5550	67.85	PK	H	34.12	4.51	0.00	106.48	100.48	N/A	N/A
5550	56.94	AV	H	34.12	4.51	0.00	95.57	89.57	N/A	N/A
5550	66.24	PK	V	34.12	4.51	0.00	104.87	98.87	N/A	N/A
5550	56.41	AV	V	34.12	4.51	0.00	95.04	89.04	N/A	N/A
11100	54.25	PK	H	38.60	6.83	36.74	62.94	56.94	74.00	17.06
11100	43.19	AV	H	38.60	6.83	36.74	51.88	45.88	54.00	8.12
16650	50.11	PK	H	38.80	8.35	37.16	60.10	54.10	74.00	19.90
16650	39.57	AV	H	38.80	8.35	37.16	49.56	43.56	54.00	10.44
6895	42.69	PK	H	34.99	5.31	35.91	47.08	41.08	74.00	32.92
6895	31.07	AV	H	34.99	5.31	35.91	35.46	29.46	54.00	24.54
7452	43.28	PK	H	36.38	5.61	35.99	49.28	43.28	74.00	30.72
7452	31.84	AV	H	36.38	5.61	35.99	37.84	31.84	54.00	22.16
High Channel:5670 MHz										
5670	68.54	PK	H	34.17	4.62	0.00	107.33	101.33	N/A	N/A
5670	57.89	AV	H	34.17	4.62	0.00	96.68	90.68	N/A	N/A
5670	67.41	PK	V	34.17	4.62	0.00	106.20	100.20	N/A	N/A
5670	57.48	AV	V	34.17	4.62	0.00	96.27	90.27	N/A	N/A
5725	30.24	PK	H	34.19	4.67	0.00	69.10	63.10	74.00	10.90
5725	18.59	AV	H	34.19	4.67	0.00	57.45	51.45	54.00	2.55
11340	55.29	PK	H	38.84	6.84	36.65	64.32	58.32	74.00	15.68
11340	44.71	AV	H	38.84	6.84	36.65	53.74	47.74	54.00	6.26
17010	50.21	PK	H	40.26	8.71	37.30	61.88	55.88	74.00	18.12
17010	40.15	AV	H	40.26	8.71	37.30	51.82	45.82	54.00	8.18
6895	45.32	PK	H	34.99	5.31	35.91	49.71	43.71	74.00	30.29
6895	32.61	AV	H	34.99	5.31	35.91	37.00	31.00	54.00	23.00
7452	45.18	PK	H	36.38	5.61	35.99	51.18	45.18	74.00	28.82
7452	32.47	AV	H	36.38	5.61	35.99	38.47	32.47	54.00	21.53



**5725-5850MHz:**

802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	70.32	PK	H	34.20	4.68	0.00	109.20	103.20	N/A	N/A
5745	61.01	AV	H	34.20	4.68	0.00	99.89	93.89	N/A	N/A
5745	71.67	PK	V	34.20	4.68	0.00	110.55	104.55	N/A	N/A
5745	62.26	AV	V	34.20	4.68	0.00	101.14	95.14	N/A	N/A
5725	42.31	PK	V	34.19	4.67	0.00	81.17	75.17	122.20	47.03
5720	33.26	PK	V	34.19	4.66	0.00	72.11	66.11	110.80	44.69
5700	26.71	PK	V	34.18	4.65	0.00	65.54	59.54	105.20	45.66
5650	27.12	PK	V	34.16	4.60	0.00	65.88	59.88	68.20	8.32
11490	57.78	PK	V	38.99	6.85	36.60	67.02	61.02	74.00	12.98
11490	47.12	AV	V	38.99	6.85	36.60	56.36	50.36	54.00	3.64
17235	47.28	PK	V	41.56	8.68	36.97	60.55	54.55	74.00	19.45
17235	34.12	AV	V	41.56	8.68	36.97	47.39	41.39	54.00	12.61
8562	45.65	PK	V	37.44	6.03	36.07	53.05	47.05	74.00	26.95
8562	32.14	AV	V	37.44	6.03	36.07	39.54	33.54	54.00	20.46
Middle Channel:5785 MHz										
5785	69.52	PK	H	34.21	4.71	0.00	108.44	102.44	N/A	N/A
5785	59.78	AV	H	34.21	4.71	0.00	98.70	92.70	N/A	N/A
5785	72.19	PK	V	34.21	4.71	0.00	111.11	105.11	N/A	N/A
5785	62.95	AV	V	34.21	4.71	0.00	101.87	95.87	N/A	N/A
11570	56.03	PK	V	39.00	6.87	36.61	65.29	59.29	74.00	14.71
11570	46.14	AV	V	39.00	6.87	36.61	55.40	49.40	54.00	4.60
17355	47.35	PK	V	42.26	8.67	36.79	61.49	55.49	74.00	18.51
17355	34.62	AV	V	42.26	8.67	36.79	48.76	42.76	54.00	11.24
7536	45.36	PK	V	36.52	5.66	36.00	51.54	45.54	74.00	28.46
7536	32.28	AV	V	36.52	5.66	36.00	38.46	32.46	54.00	21.54
8625	45.61	PK	V	37.48	6.03	36.09	53.03	47.03	74.00	26.97
8625	32.74	AV	V	37.48	6.03	36.09	40.16	34.16	54.00	19.84
High Channel:5825 MHz										
5825	66.12	PK	H	34.23	4.69	0.00	105.04	99.04	N/A	N/A
5825	56.34	AV	H	34.23	4.69	0.00	95.26	89.26	N/A	N/A
5825	68.58	PK	V	34.23	4.69	0.00	107.50	101.50	N/A	N/A
5825	57.93	AV	V	34.23	4.69	0.00	96.85	90.85	N/A	N/A
5850	36.26	PK	V	34.24	4.67	0.00	75.17	69.17	122.20	53.03
5855	33.32	PK	V	34.24	4.66	0.00	72.22	66.22	110.80	44.58
5875	26.99	PK	V	34.25	4.64	0.00	65.88	59.88	105.20	45.32
5925	26.52	PK	V	34.27	4.63	0.00	65.42	59.42	68.20	8.78
11650	62.58	PK	V	39.00	6.89	36.63	71.84	65.84	74.00	8.16
11650	48.31	AV	V	39.00	6.89	36.63	57.57	51.57	54.00	2.43
17475	56.47	PK	V	42.96	8.65	36.62	71.46	65.46	74.00	8.54
17475	42.21	AV	V	42.96	8.65	36.62	57.20	51.20	54.00	2.80
8425	45.33	PK	V	37.31	6.01	36.05	52.60	46.60	74.00	27.40
8425	32.67	AV	V	37.31	6.01	36.05	39.94	33.94	54.00	20.06

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	70.14	PK	H	34.20	4.68	0.00	109.02	103.02	N/A	N/A
5745	60.88	AV	H	34.20	4.68	0.00	99.76	93.76	N/A	N/A
5745	71.13	PK	V	34.20	4.68	0.00	110.01	104.01	N/A	N/A
5745	60.18	AV	V	34.20	4.68	0.00	99.06	93.06	N/A	N/A
5725	42.19	PK	V	34.19	4.67	0.00	81.05	75.05	122.20	47.15
5720	31.84	PK	V	34.19	4.66	0.00	70.69	64.69	110.80	46.11
5700	26.73	PK	V	34.18	4.65	0.00	65.56	59.56	105.20	45.64
5650	26.27	PK	V	34.16	4.60	0.00	65.03	59.03	68.20	9.17
11490	57.82	PK	V	38.99	6.85	36.60	67.06	61.06	74.00	12.94
11490	47.24	AV	V	38.99	6.85	36.60	56.48	50.48	54.00	3.52
17235	47.28	PK	V	41.56	8.68	36.97	60.55	54.55	74.00	19.45
17235	33.42	AV	V	41.56	8.68	36.97	46.69	40.69	54.00	13.31
7425	45.36	PK	V	36.31	5.59	35.98	51.28	45.28	74.00	28.72
7425	32.65	AV	V	36.31	5.59	35.98	38.57	32.57	54.00	21.43
Middle Channel:5785 MHz										
5785	69.18	PK	H	34.21	4.71	0.00	108.10	102.10	N/A	N/A
5785	59.45	AV	H	34.21	4.71	0.00	98.37	92.37	N/A	N/A
5785	71.21	PK	V	34.21	4.71	0.00	110.13	104.13	N/A	N/A
5785	61.25	AV	V	34.21	4.71	0.00	100.17	94.17	N/A	N/A
11570	56.09	PK	V	39.00	6.87	36.61	65.35	59.35	74.00	14.65
11570	46.31	AV	V	39.00	6.87	36.61	55.57	49.57	54.00	4.43
17355	47.12	PK	V	42.26	8.67	36.79	61.26	55.26	74.00	18.74
17355	33.65	AV	V	42.26	8.67	36.79	47.79	41.79	54.00	12.21
9543	45.58	PK	V	37.92	6.23	36.25	53.48	47.48	74.00	26.52
9543	32.61	AV	V	37.92	6.23	36.25	40.51	34.51	54.00	19.49
8657	45.97	PK	V	37.49	6.02	36.11	53.37	47.37	74.00	26.63
8657	32.47	AV	V	37.49	6.02	36.11	39.87	33.87	54.00	20.13
High Channel:5825 MHz										
5825	67.14	PK	H	34.23	4.69	0.00	106.06	100.06	N/A	N/A
5825	57.21	AV	H	34.23	4.69	0.00	96.13	90.13	N/A	N/A
5825	68.47	PK	V	34.23	4.69	0.00	107.39	101.39	N/A	N/A
5825	58.47	AV	V	34.23	4.69	0.00	97.39	91.39	N/A	N/A
5850	39.39	PK	V	34.24	4.67	0.00	78.30	72.30	122.20	49.90
5855	33.71	PK	V	34.24	4.66	0.00	72.61	66.61	110.80	44.19
5875	27.14	PK	V	34.25	4.64	0.00	66.03	60.03	105.20	45.17
5925	27.16	PK	V	34.27	4.63	0.00	66.06	60.06	68.20	8.14
11650	62.35	PK	V	39.00	6.89	36.63	71.61	65.61	74.00	8.39
11650	48.45	AV	V	39.00	6.89	36.63	57.71	51.71	54.00	2.29
17475	57.45	PK	V	42.96	8.65	36.62	72.44	66.44	74.00	7.56
17475	42.32	AV	V	42.96	8.65	36.62	57.31	51.31	54.00	2.69
8457	45.36	PK	V	37.35	6.02	36.04	52.69	46.69	74.00	27.31
8457	32.51	AV	V	37.35	6.02	36.04	39.84	33.84	54.00	20.16

802.11n ht40 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation Result dBμV/m	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5755 MHz										
5755	70.04	PK	H	34.20	4.69	0.00	108.93	102.93	N/A	N/A
5755	60.12	AV	H	34.20	4.69	0.00	99.01	93.01	N/A	N/A
5755	71.73	PK	V	34.20	4.69	0.00	110.62	104.62	N/A	N/A
5755	61.75	AV	V	34.20	4.69	0.00	100.64	94.64	N/A	N/A
5725	44.08	PK	V	34.19	4.67	0.00	82.94	76.94	122.20	45.26
5720	38.48	PK	V	34.19	4.66	0.00	77.33	71.33	110.80	39.47
5700	26.38	PK	V	34.18	4.65	0.00	65.21	59.21	105.20	45.99
5650	26.74	PK	V	34.16	4.60	0.00	65.50	59.50	68.20	8.70
11510	57.67	PK	V	39.00	6.85	36.60	66.92	60.92	74.00	13.08
11510	47.21	AV	V	39.00	6.85	36.60	56.46	50.46	54.00	3.54
17265	45.32	PK	V	41.74	8.68	36.92	58.82	52.82	74.00	21.18
17265	33.26	AV	V	41.74	8.68	36.92	46.76	40.76	54.00	13.24
7584	45.59	PK	V	36.55	5.68	36.01	51.81	45.81	74.00	28.19
7584	33.25	AV	V	36.55	5.68	36.01	39.47	33.47	54.00	20.53
High Channel:5795 MHz										
5795	69.44	PK	H	34.22	4.72	0.00	108.38	102.38	N/A	N/A
5795	59.75	AV	H	34.22	4.72	0.00	98.69	92.69	N/A	N/A
5795	73.21	PK	V	34.22	4.72	0.00	112.15	106.15	N/A	N/A
5795	63.41	AV	V	34.22	4.72	0.00	102.35	96.35	N/A	N/A
5850	27.06	PK	V	34.24	4.67	0.00	65.97	59.97	122.20	62.23
5855	27.12	PK	V	34.24	4.66	0.00	66.02	60.02	110.80	50.78
5875	26.38	PK	V	34.25	4.64	0.00	65.27	59.27	105.20	45.93
5925	26.14	PK	V	34.27	4.63	0.00	65.04	59.04	68.20	9.16
11590	59.38	PK	V	39.00	6.88	36.62	68.64	62.64	74.00	11.36
11590	46.11	AV	V	39.00	6.88	36.62	55.37	49.37	54.00	4.63
17385	47.51	PK	V	42.43	8.66	36.75	61.85	55.85	74.00	18.15
17385	35.26	AV	V	42.43	8.66	36.75	49.60	43.60	54.00	10.40
6259	45.25	PK	V	34.25	4.98	35.79	48.69	42.69	74.00	31.31
6259	32.65	AV	V	34.25	4.98	35.79	36.09	30.09	54.00	23.91

---

**FCC §15.407(b)–OUT- OF-BAND EMISSIONS**

---

**Applicable Standard**

FCC §15.407

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, 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:

(i) All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

**Test Procedure**

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESPI	100120	2016-12-08	2017-12-08
Unknown	RF Cable	Unknown	C-4	Each Time	/

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

<b>Temperature:</b>	27.8-29.7°C
<b>Relative Humidity:</b>	43-53 %
<b>ATM Pressure:</b>	100.3-100.5 kPa

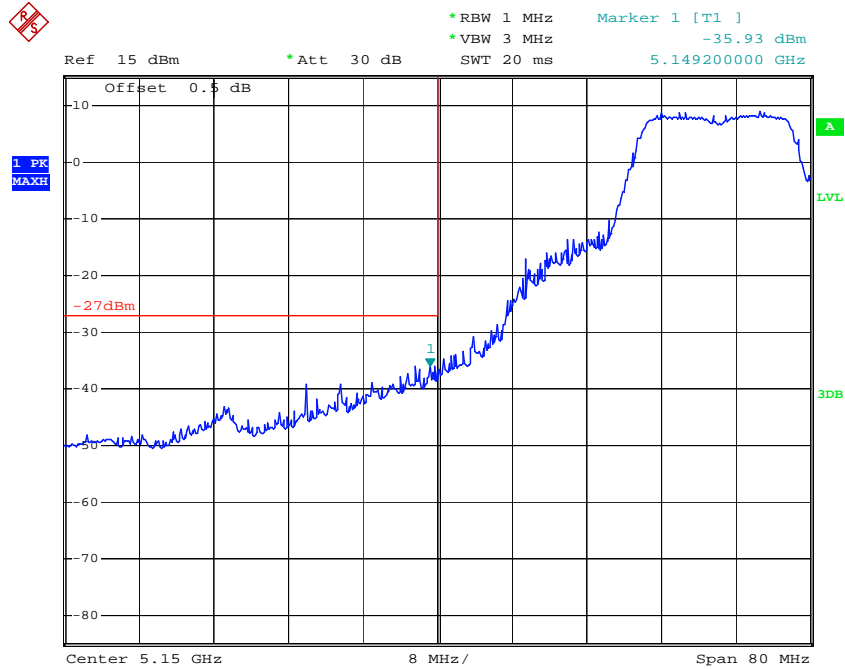
*The testing was performed by Davin Huang from 2017-09-11 to 2017-10-15.*

**Test Result:** Pass.

Please refer to the following plots.

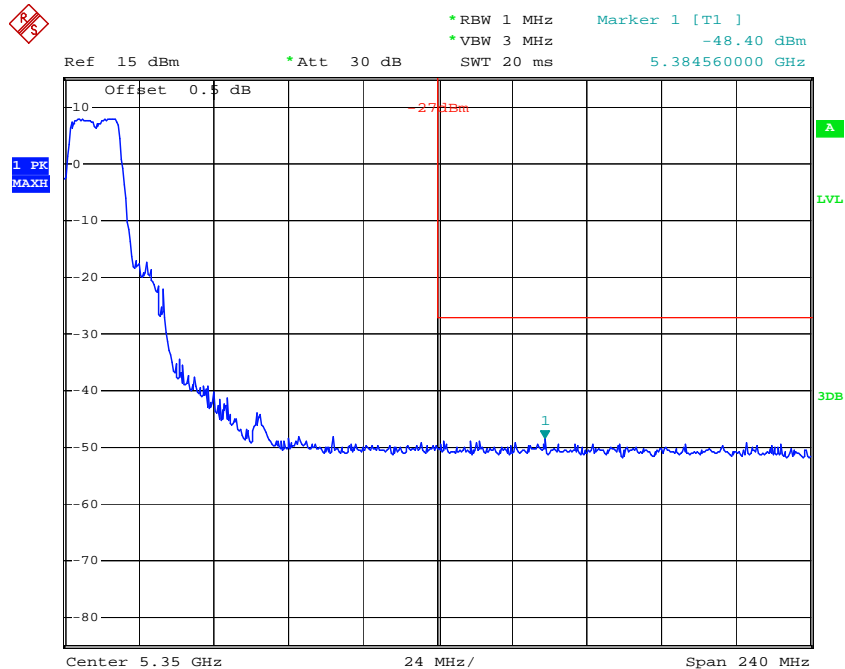
5150-5250MHz(all emission under limit more than 2.3dBc)

## 802.11a Low Channel



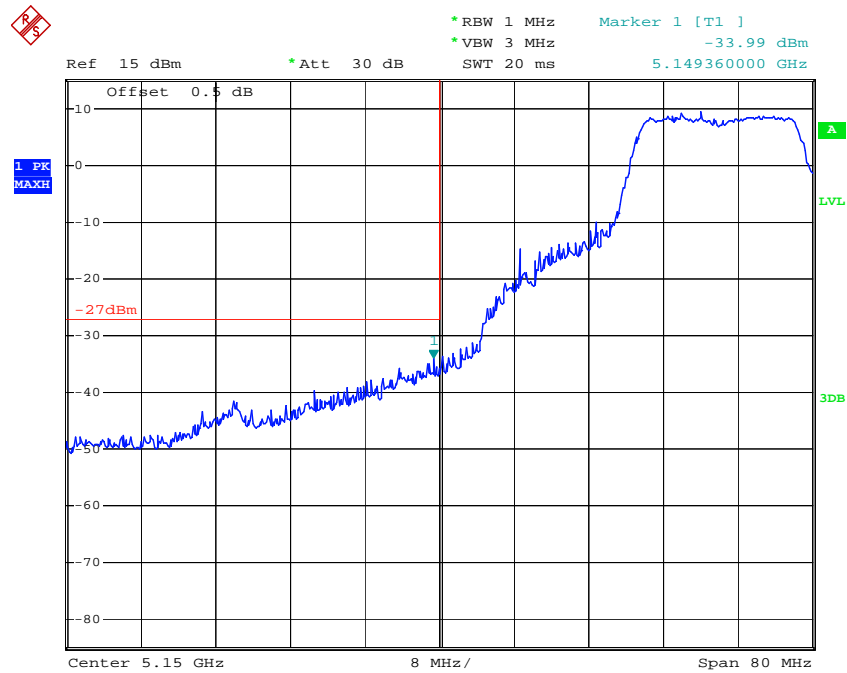
Date: 11.SEP.2017 09:25:33

## 802.11a High Channel



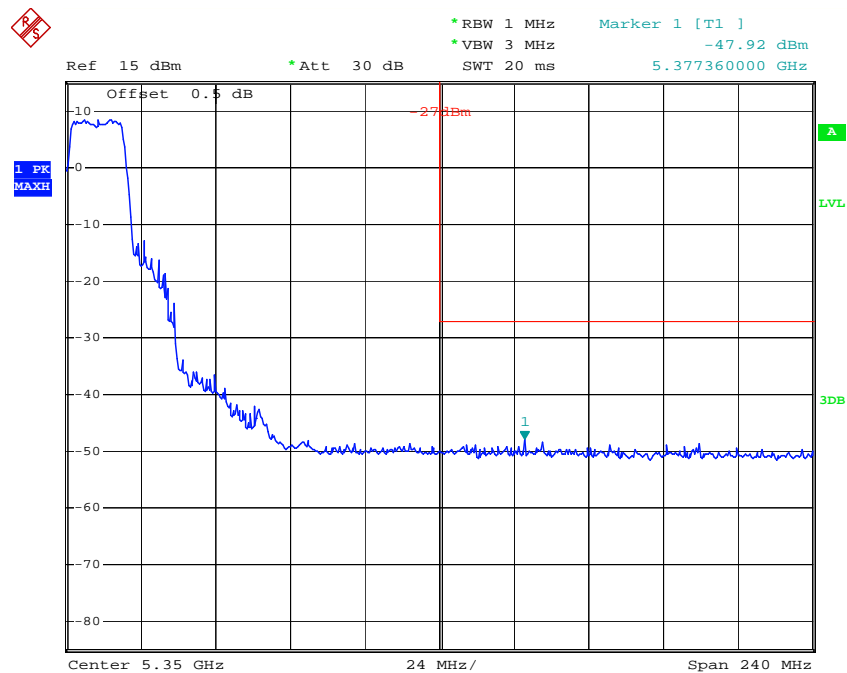
Date: 11.SEP.2017 09:15:47

### 802.11n ht20 Low Channel



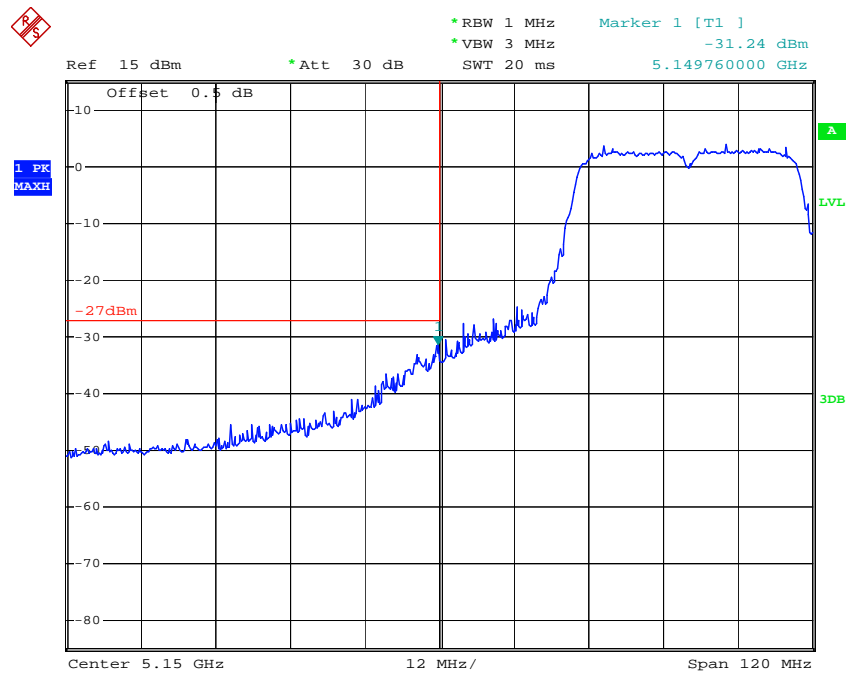
Date: 11.SEP.2017 09:10:28

### 802.11n ht20 High Channel



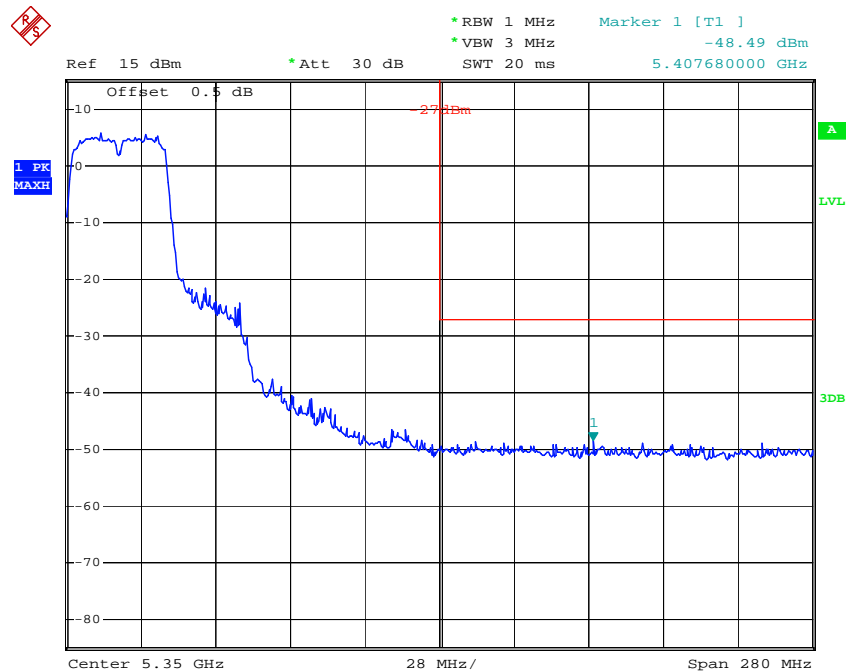
Date: 11.SEP.2017 09:13:53

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:02:29

### 802.11n ht40 High Channel

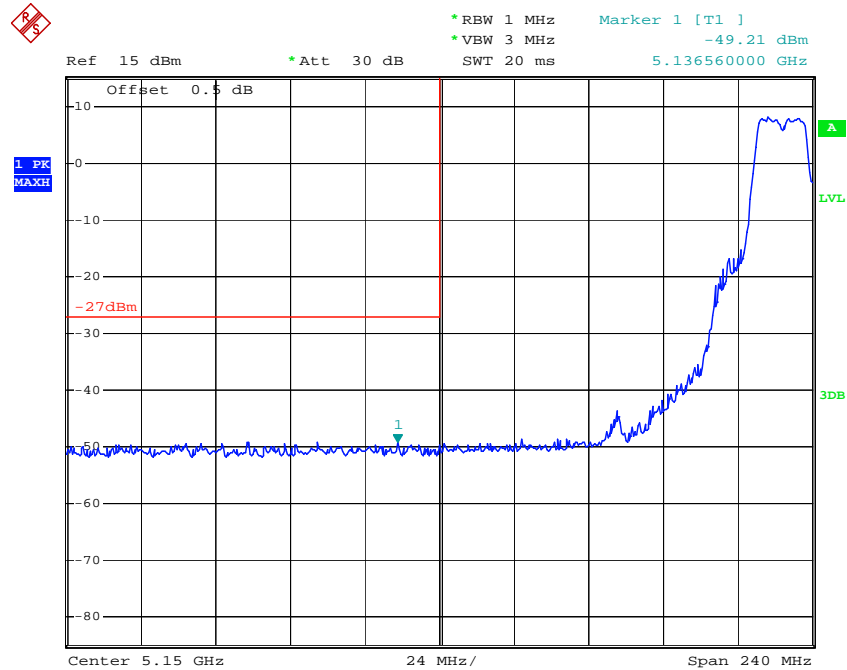


Date: 11.SEP.2017 09:08:02



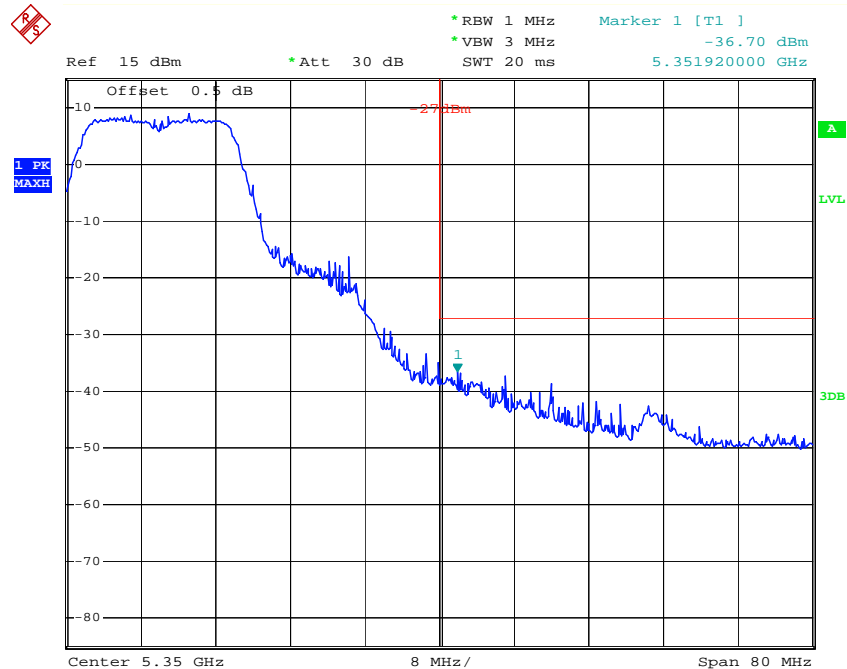
5250-5350MHz:

## 802.11a Low Channel



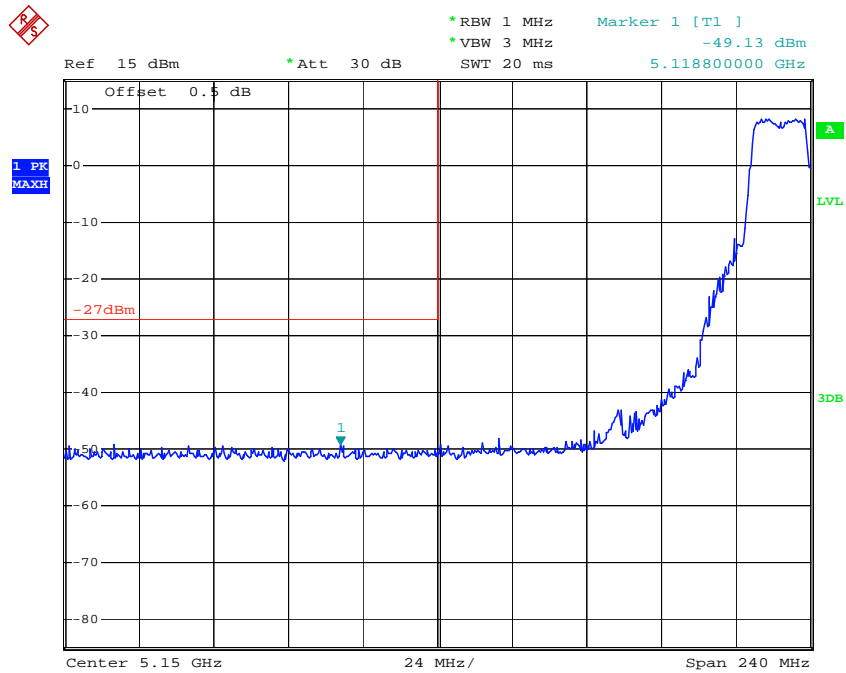
Date: 11.SEP.2017 09:27:30

## 802.11a High Channel



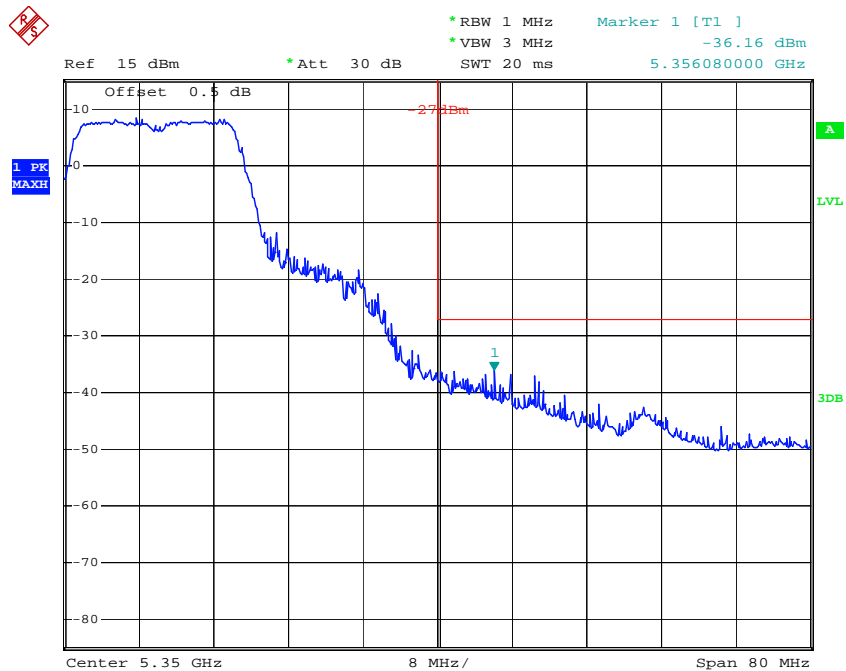
Date: 11.SEP.2017 09:30:26

### 802.11n ht20 Low Channel



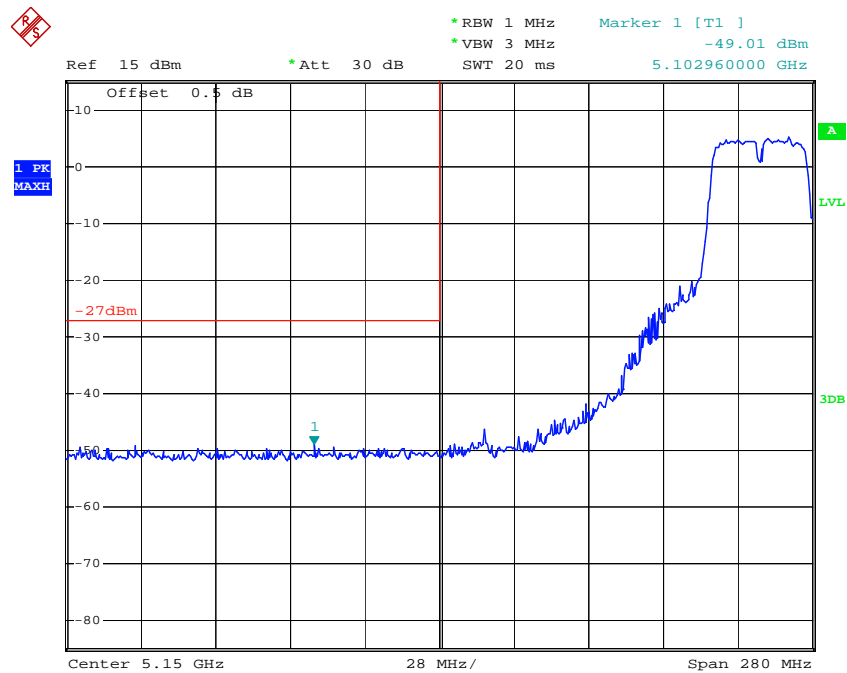
Date: 11.SEP.2017 09:36:30

### 802.11n ht20 High Channel



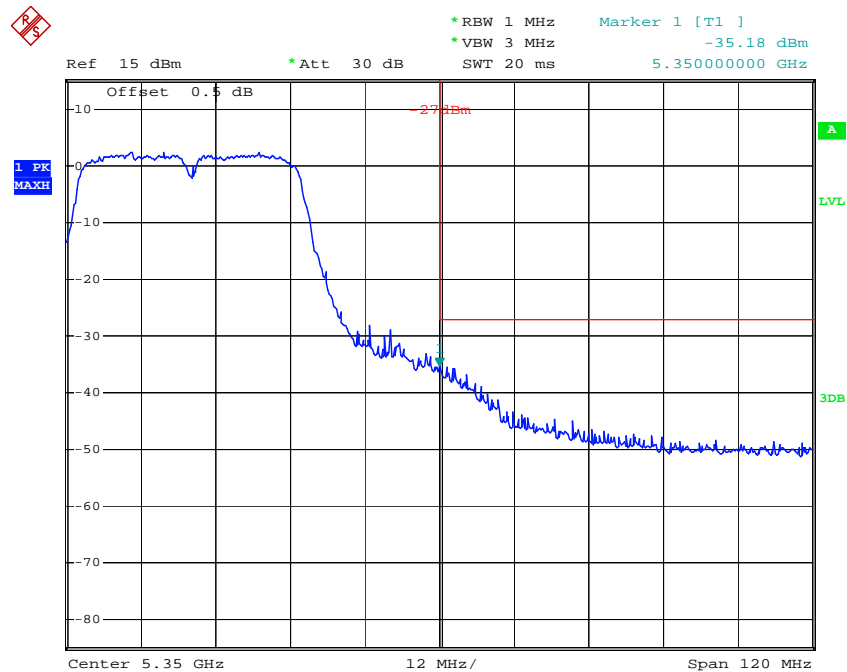
Date: 11.SEP.2017 09:33:20

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:38:32

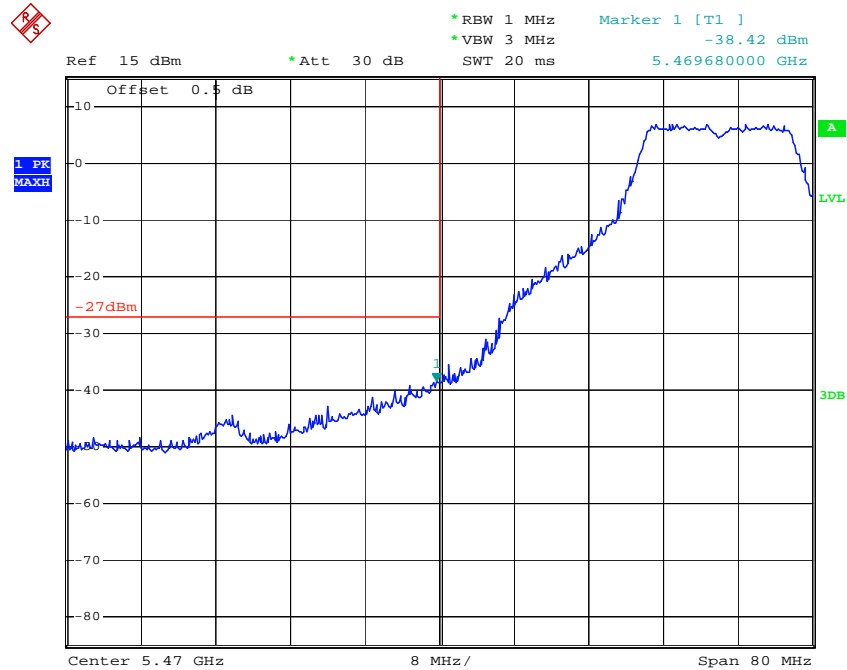
### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:43:06

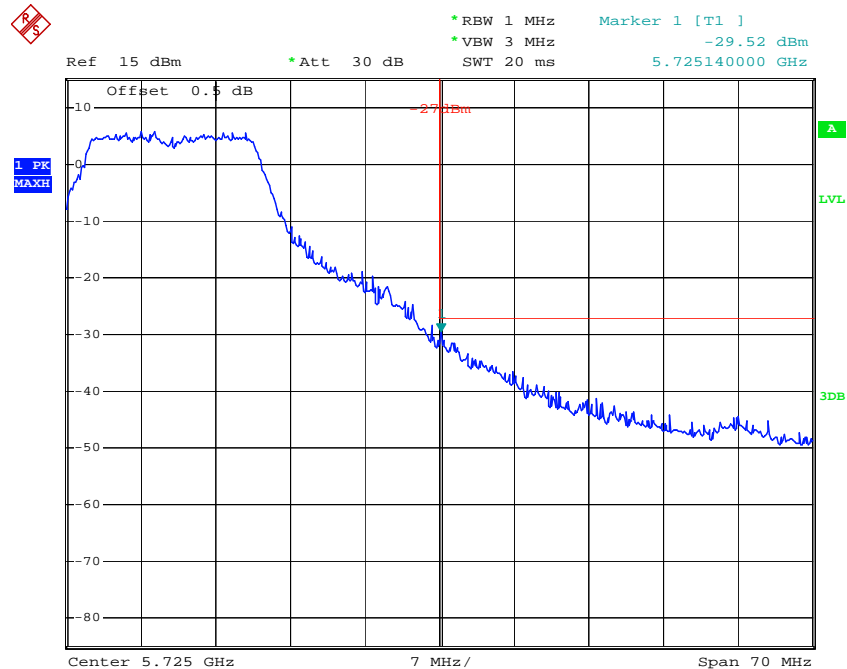
5470-5725MHz:

### 802.11a Low Channel



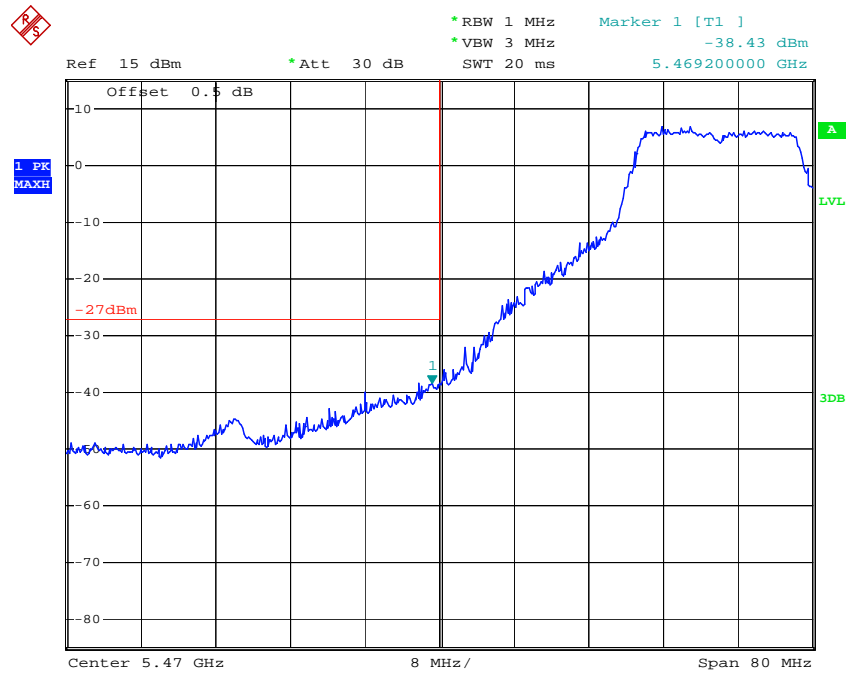
Date: 11.SEP.2017 11:12:31

### 802.11a High Channel



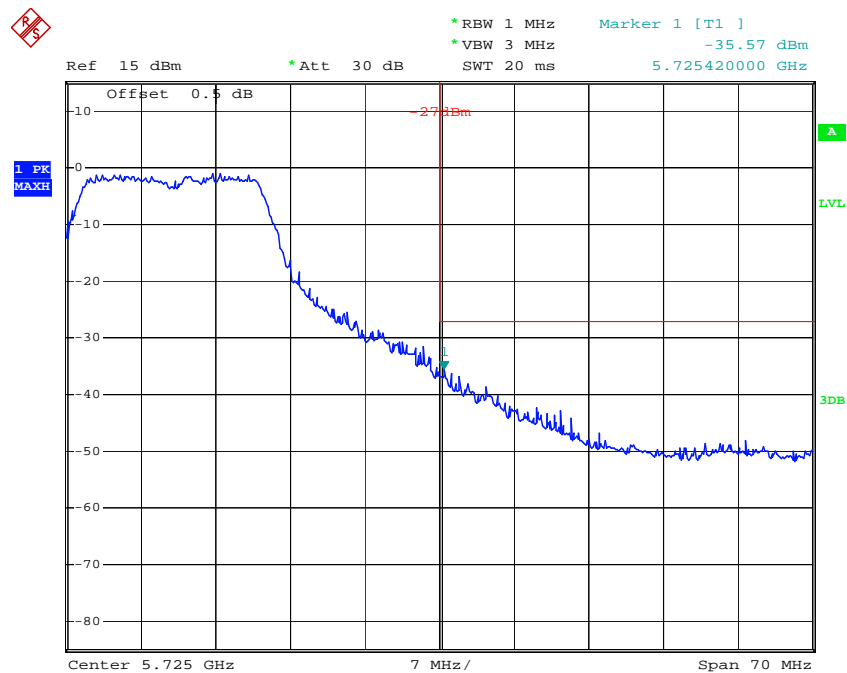
Date: 15.OCT.2017 19:04:55

## 802.11n ht20 Low Channel



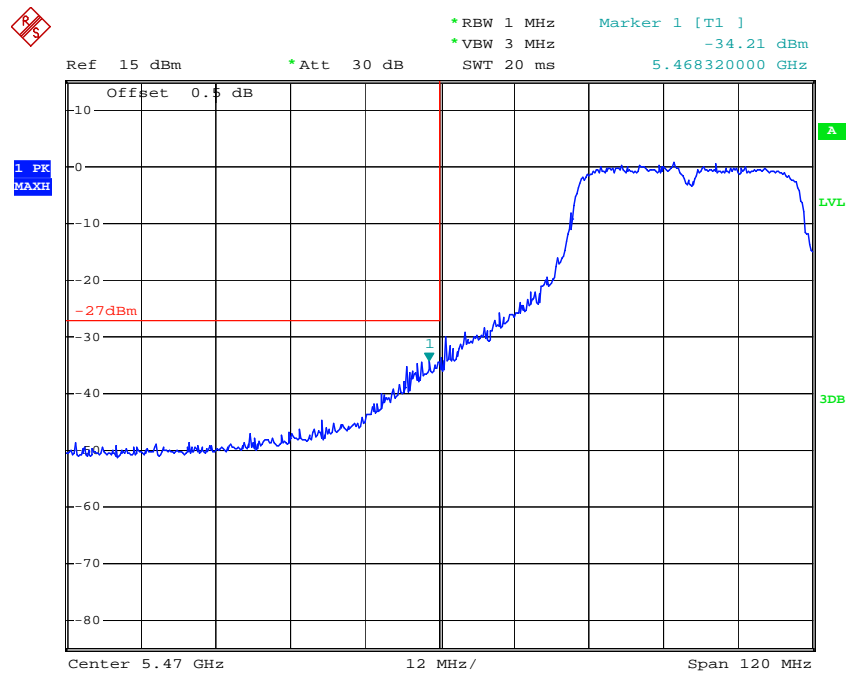
Date: 11.SEP.2017 11:14:47

## 802.11n ht20 High Channel



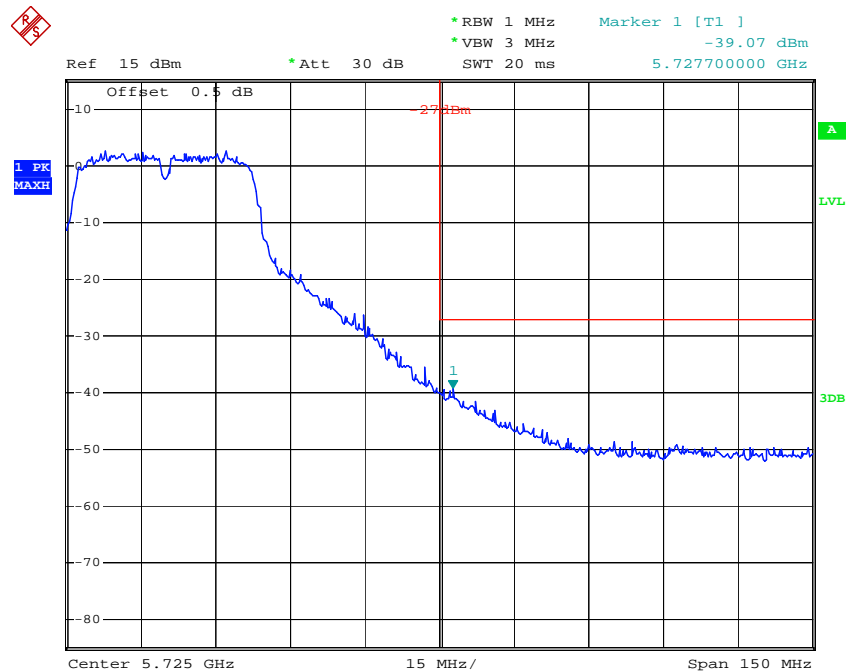
Date: 15.OCT.2017 19:06:41

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:53:26

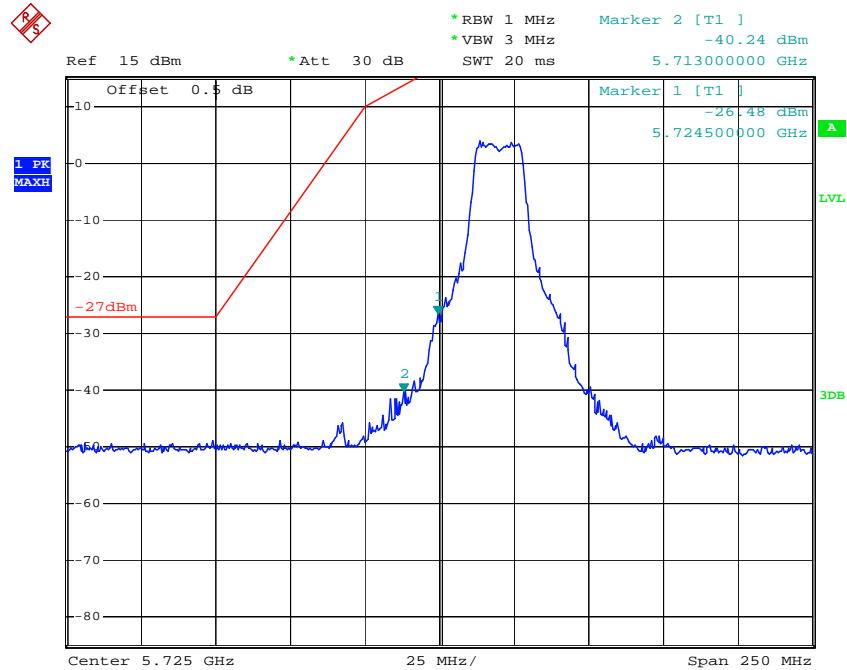
### 802.11n ht40 High Channel



Date: 11.SEP.2017 11:23:35

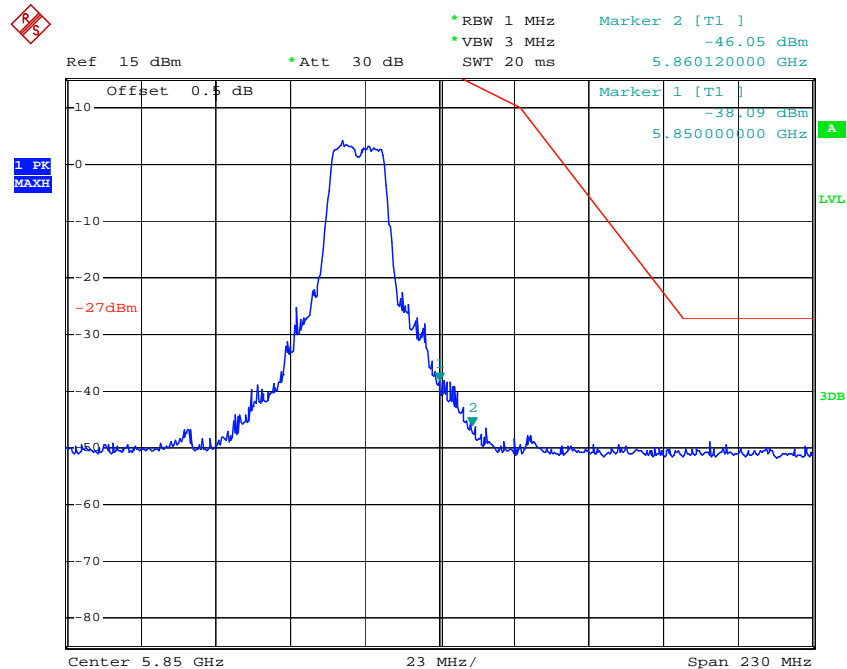
5725-5850MHz:

### 802.11a Low Channel



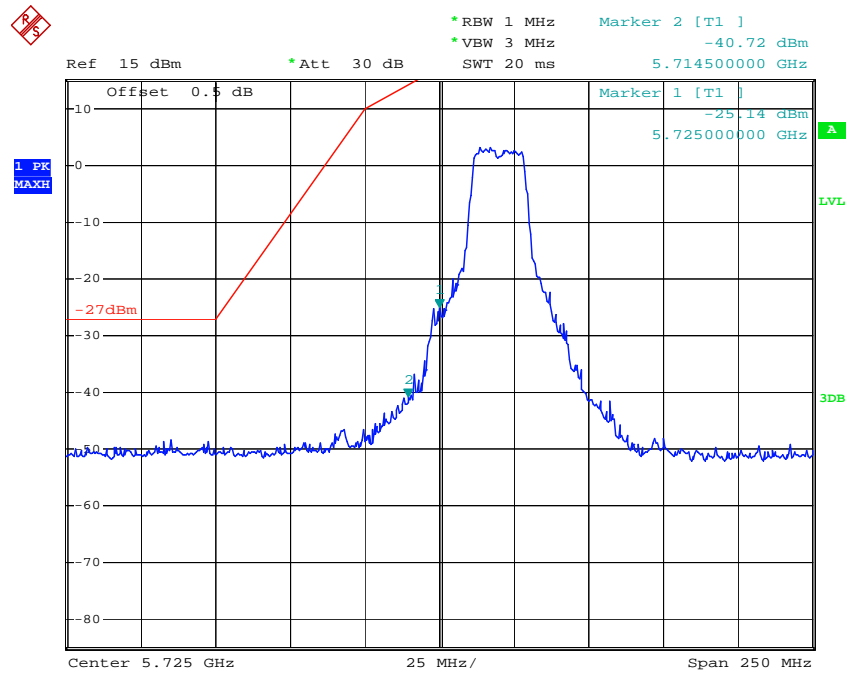
Date: 11.SEP.2017 10:22:53

### 802.11a High Channel



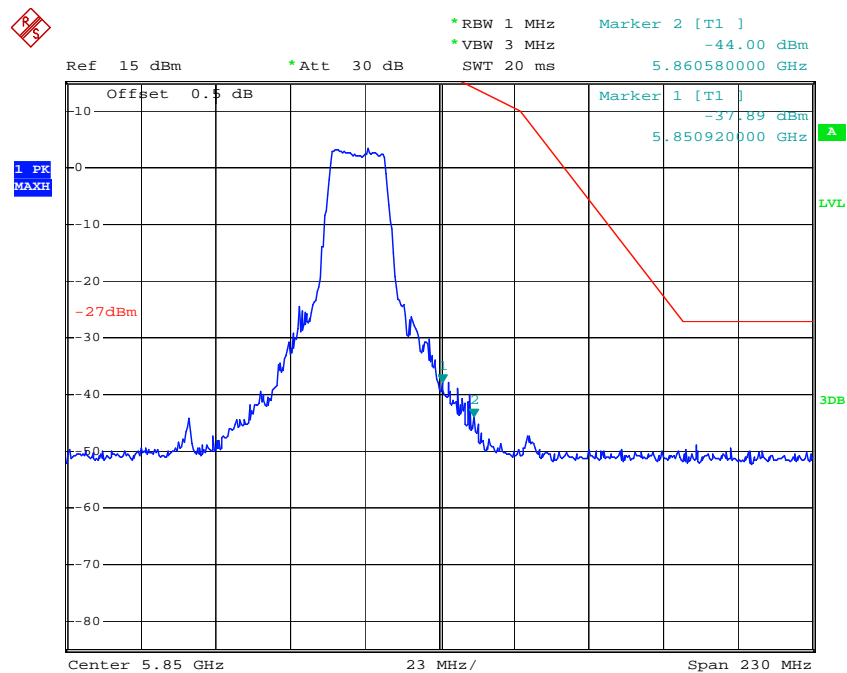
Date: 13.SEP.2017 23:51:06

## 802.11n ht20 Low Channel



Date: 11.SEP.2017 10:47:43

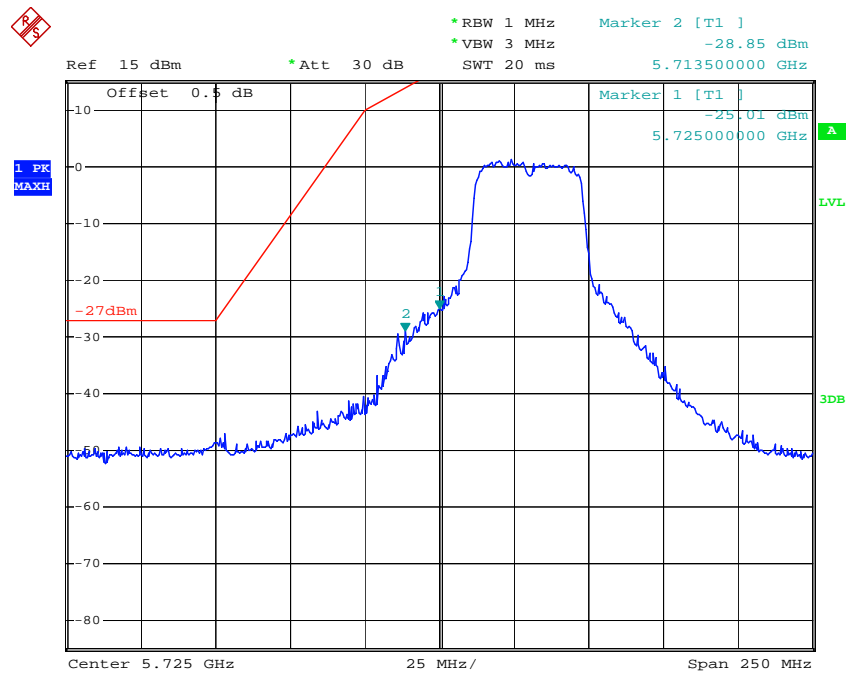
## 802.11n ht20 High Channel



Date: 13.SEP.2017 23:48:44

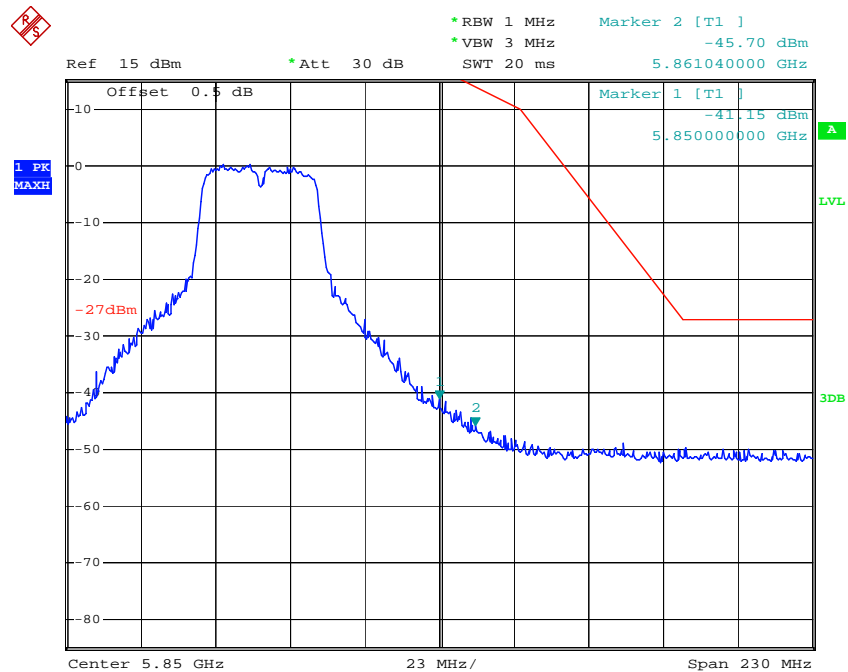


### 802.11n ht40 Low Channel



Date: 11.SEP.2017 11:02:02

### 802.11n ht40 High Channel



Date: 11.SEP.2017 11:00:00

**FCC §15.407(a)(e) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH****Applicable Standard**

15.407(a) (e)

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESPI	100120	2016-12-08	2017-12-08
Unknown	RF Cable	Unknown	C-4	Each Time	/

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Procedure**

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04

**Test Data****Environmental Conditions**

<b>Temperature:</b>	27.8-29.7°C
<b>Relative Humidity:</b>	43-53 %
<b>ATM Pressure:</b>	100.3-100.5 kPa

*The testing was performed by Davin Huang from 2017-09-11 to 2017-09-17.*

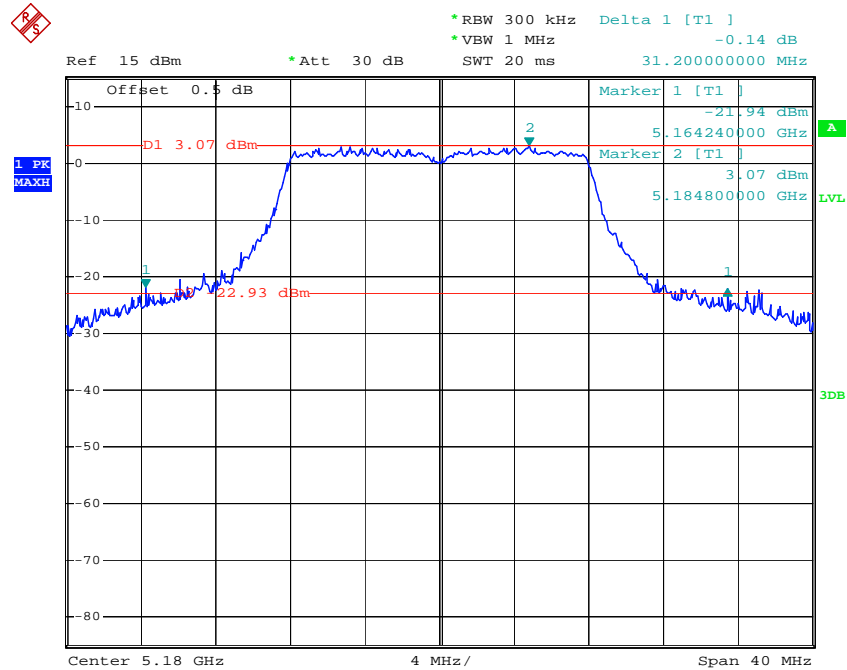
**Test Result:** Pass.

Please refer to the following tables and plots.

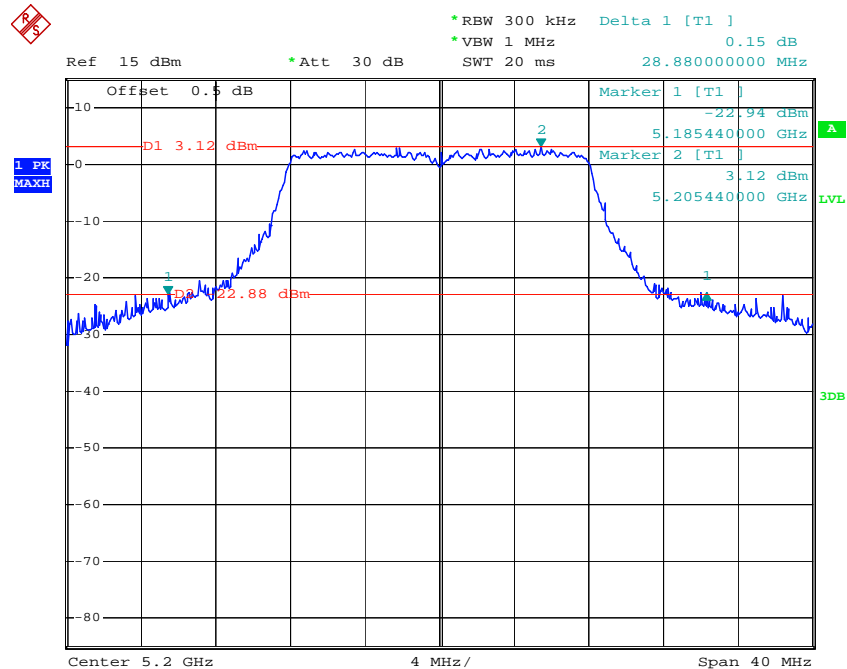
*Test mode: Transmitting*

UNII Band	Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5150-5250MHz	802.11 a	Low	5180	31.2	17.52
		Middle	5200	28.88	17.68
		High	5240	29.04	17.44
	802.11n ht20	Low	5180	31.68	18.56
		Middle	5200	31.04	18.48
		High	5240	29.04	18.32
	802.11n ht40	Low	5190	44.16	36.8
		High	5230	47.84	37.12
5250-5350MHz	802.11 a	Low	5260	27.52	17.44
		Middle	5280	28.72	17.52
		High	5320	29.92	17.44
	802.11n ht20	Low	5260	27.2	18.32
		Middle	5280	29.2	18.48
		High	5320	29.92	18.48
	802.11n ht40	Low	5270	44.64	37.28
		High	5310	43.84	36.8
5470-5725MHz	802.11 a	Low	5500	32.56	19.92
		Middle	5580	31.92	19.60
		High	5700	32.24	20.8
	802.11n ht20	Low	5500	32.64	20.08
		Middle	5580	32.8	19.76
		High	5700	32.16	20.88
	802.11n ht40	Low	5510	52.16	37.44
		Middle	5550	65.12	38.56
		High	5670	65.28	38.72

UNII Band	Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	6 dB Bandwidth Limit (MHz)
5725-5850MHz	802.11 a	Low	5745	16.4	18.48	≥0.5
		Middle	5785	16.4	18	≥0.5
		High	5825	16.48	17.36	≥0.5
	802.11n ht20	Low	5745	17.36	18.96	≥0.5
		Middle	5785	17.6	18.72	≥0.5
		High	5825	17.6	18.32	≥0.5
	802.11n ht40	Low	5755	35.52	37.6	≥0.5
		High	5795	35.52	37.6	≥0.5

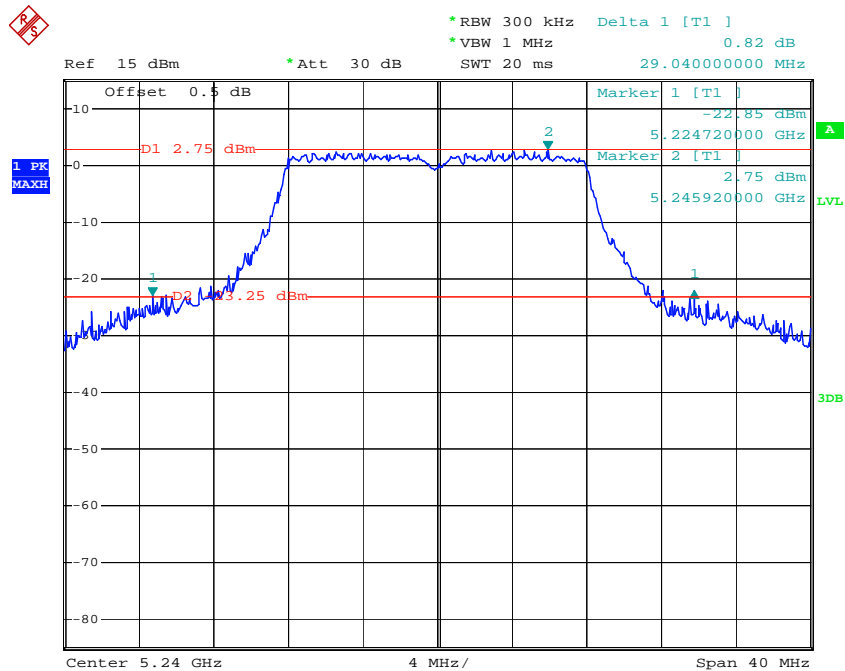
**5150-5250MHz, 26dB Emission Bandwidth:****802.11a Low Channel**

Date: 11.SEP.2017 09:24:43

**802.11a Middle Channel**

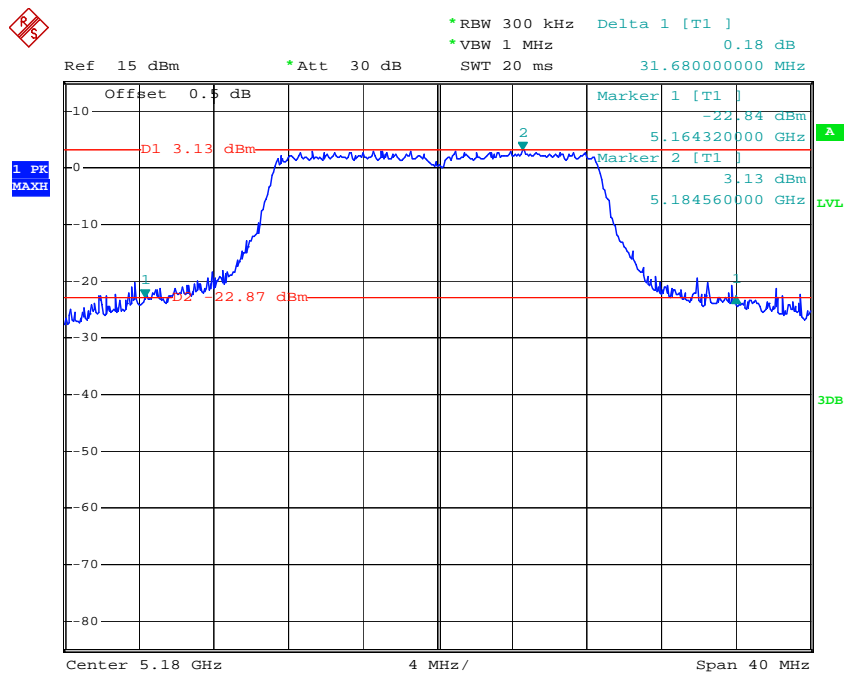
Date: 11.SEP.2017 09:16:34

## 802.11a High Channel



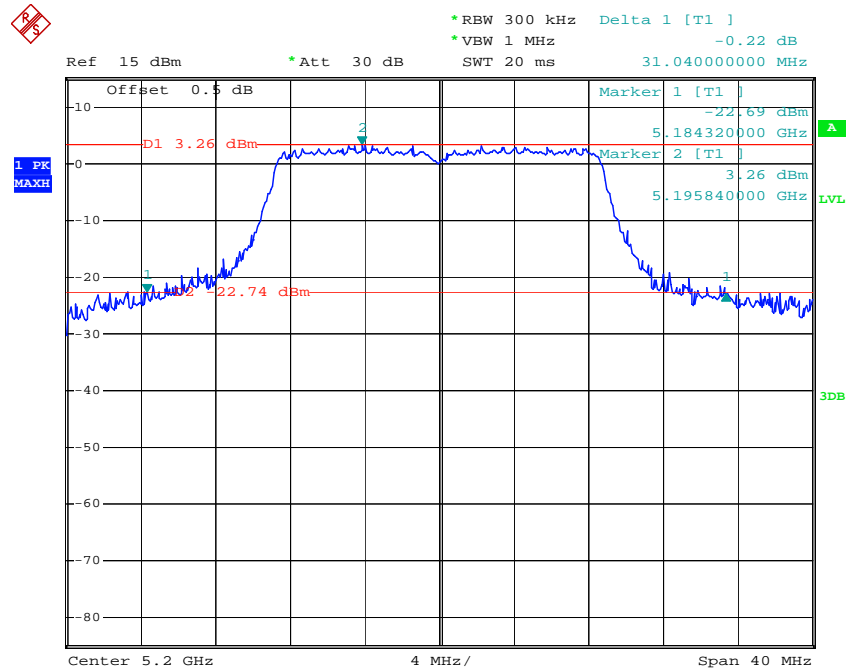
Date: 11.SEP.2017 09:15:07

## 802.11n ht20 Low Channel



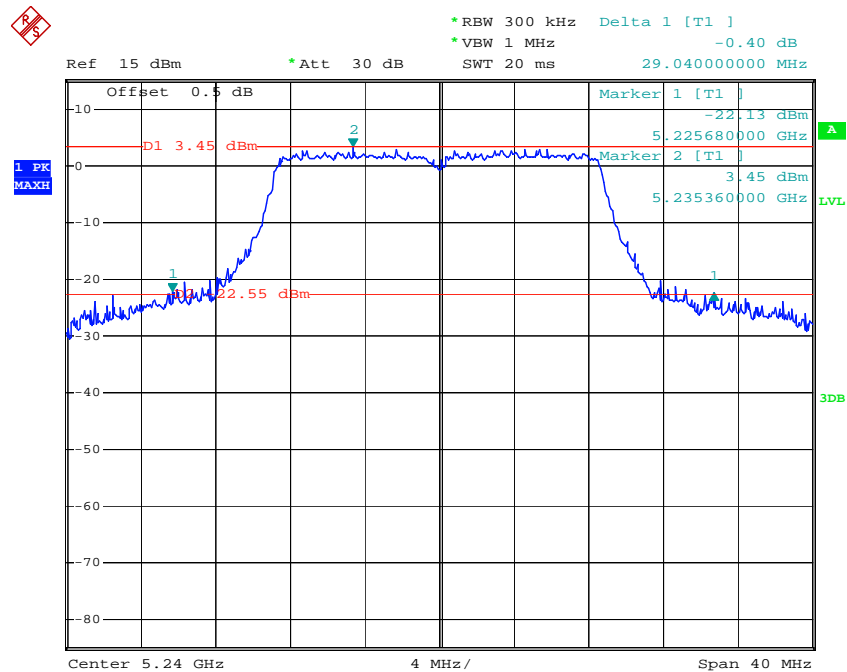
Date: 11.SEP.2017 09:09:35

### 802.11n ht20 Middle Channel



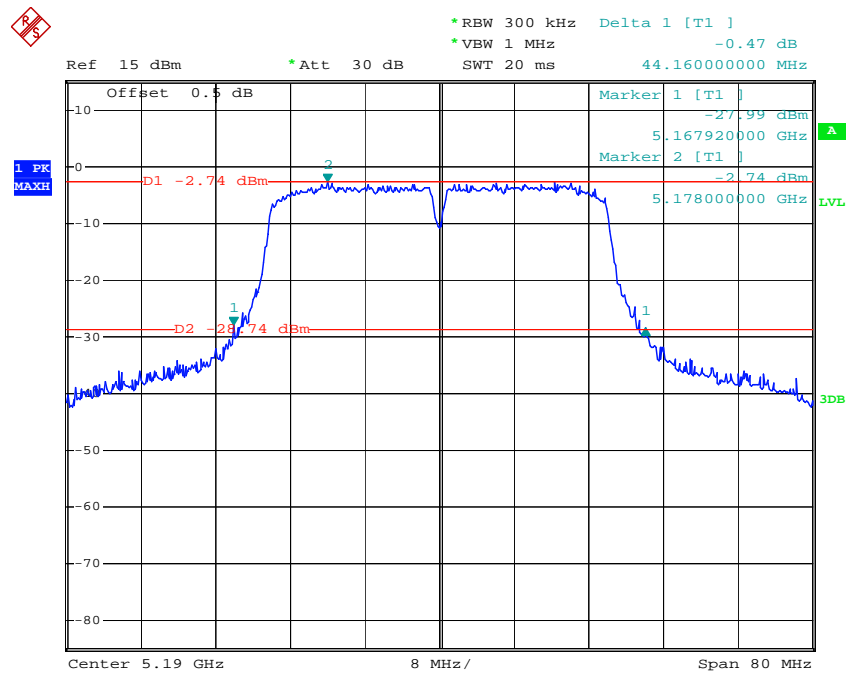
Date: 11.SEP.2017 09:11:26

### 802.11n ht20 High Channel



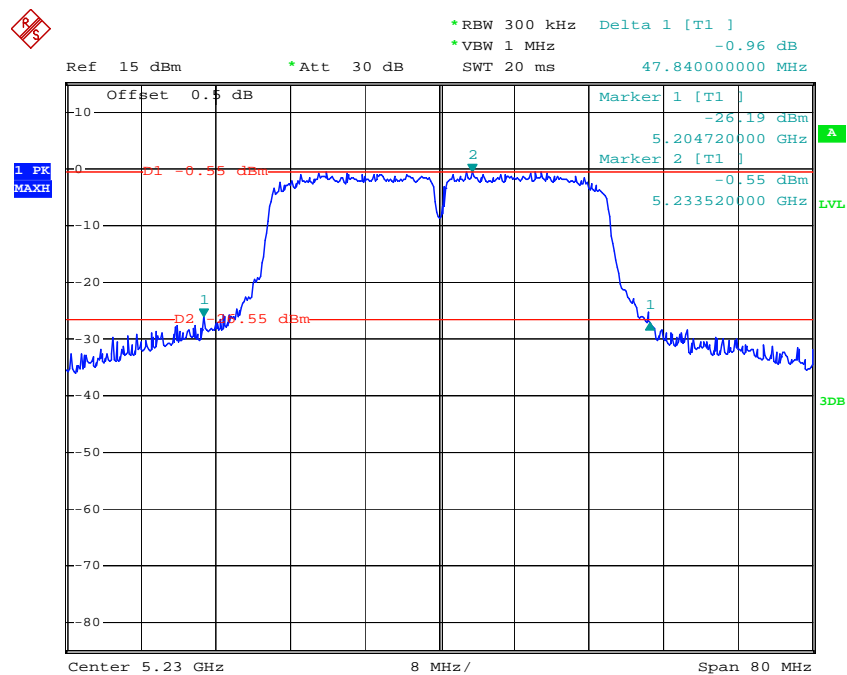
Date: 11.SEP.2017 09:13:08

## 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:01:44

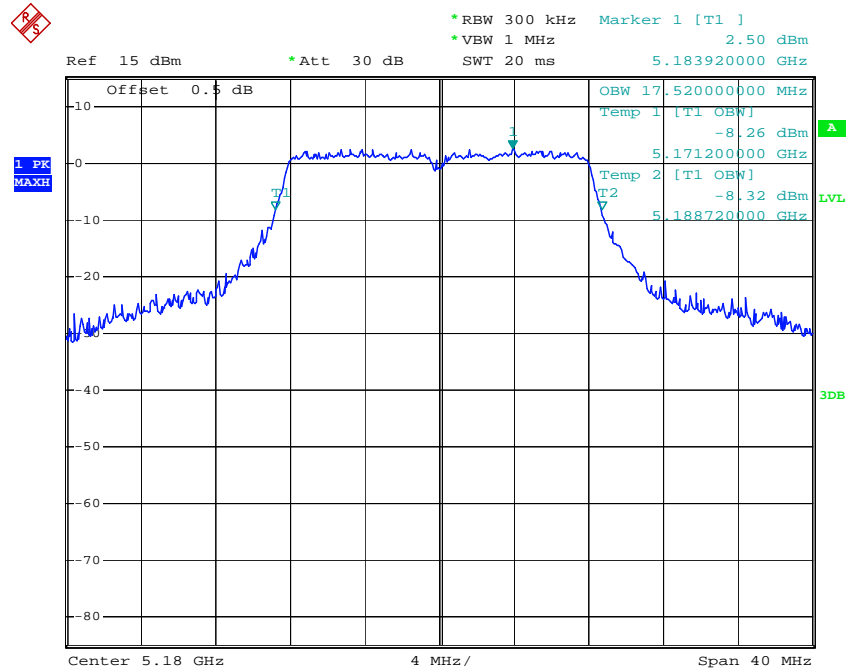
## 802.11n ht40 High Channel



Date: 11.SEP.2017 09:07:18

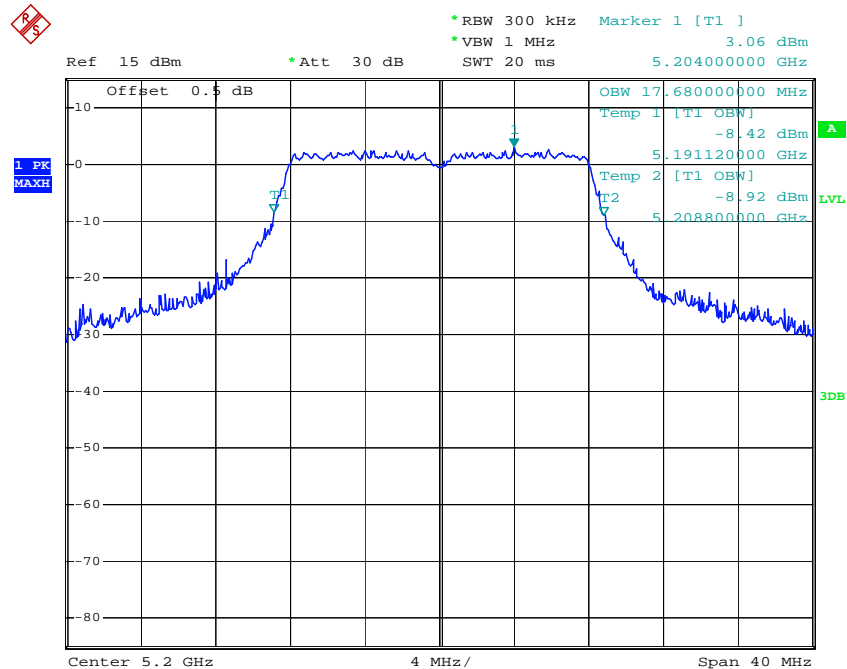
## 99% Occupied Bandwidth

## 802.11a Low Channel



Date: 11.SEP.2017 09:24:55

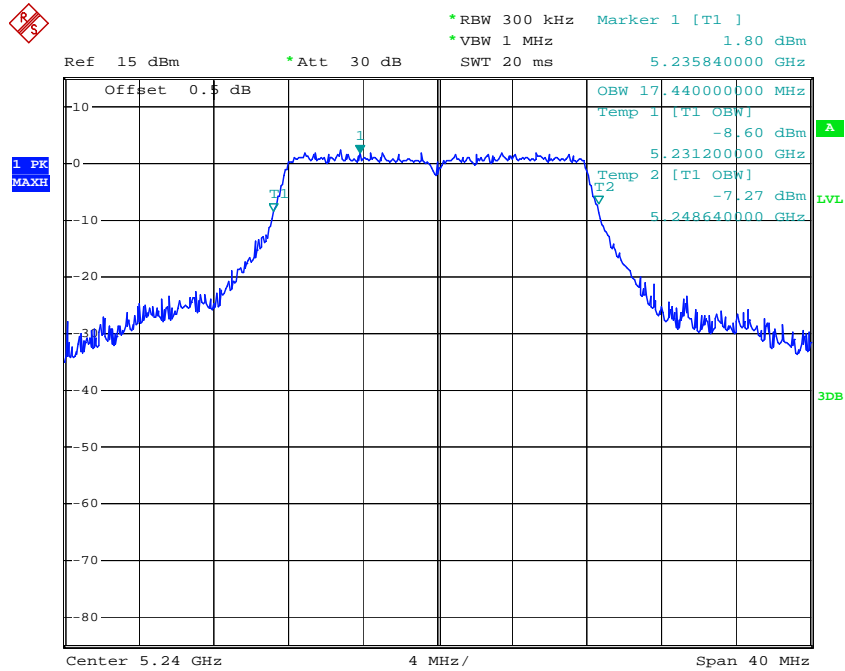
## 802.11a Middle Channel



Date: 11.SEP.2017 09:16:48

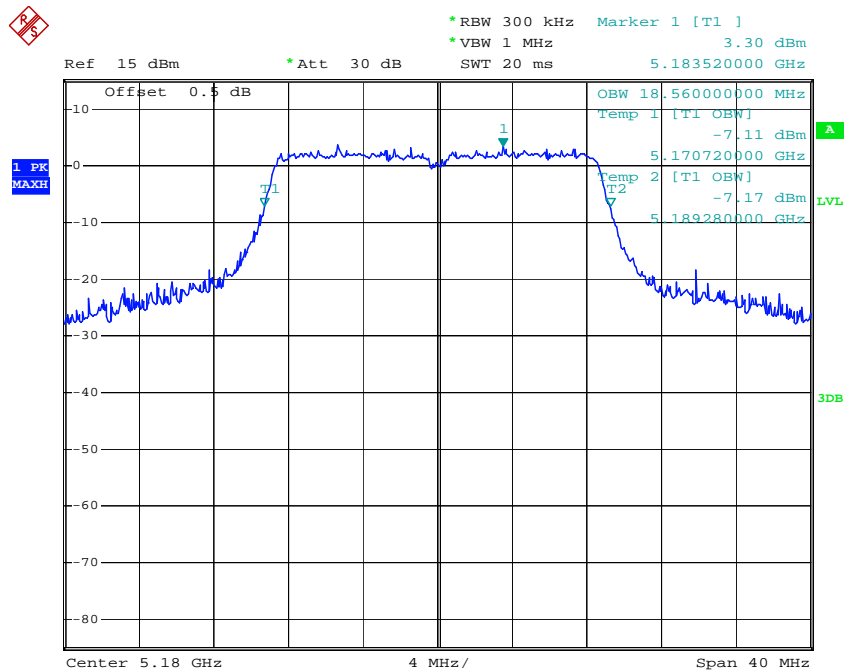


### 802.11a High Channel



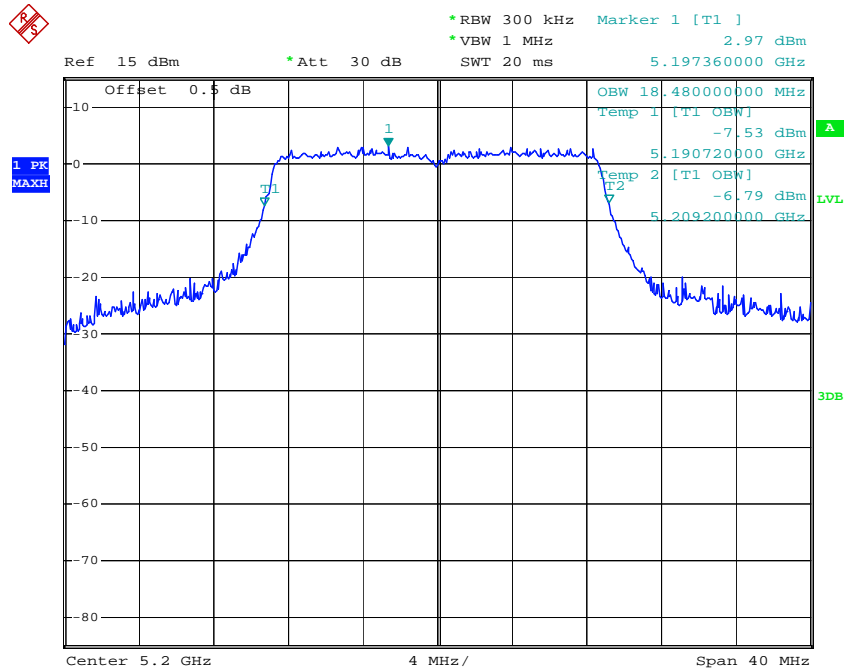
Date: 11.SEP.2017 09:15:19

### 802.11n ht20 Low Channel



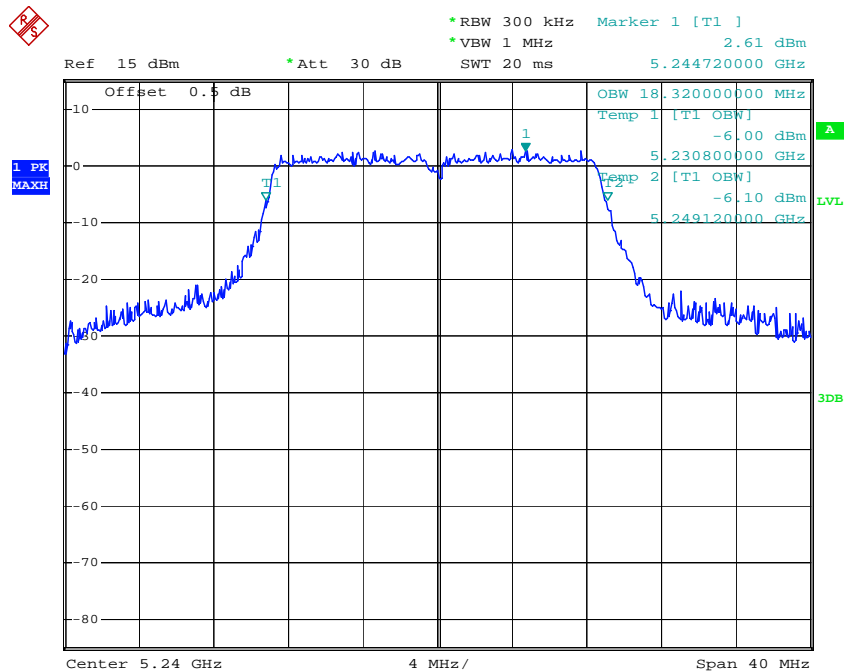
Date: 11.SEP.2017 09:09:48

### 802.11n ht20 Middle Channel



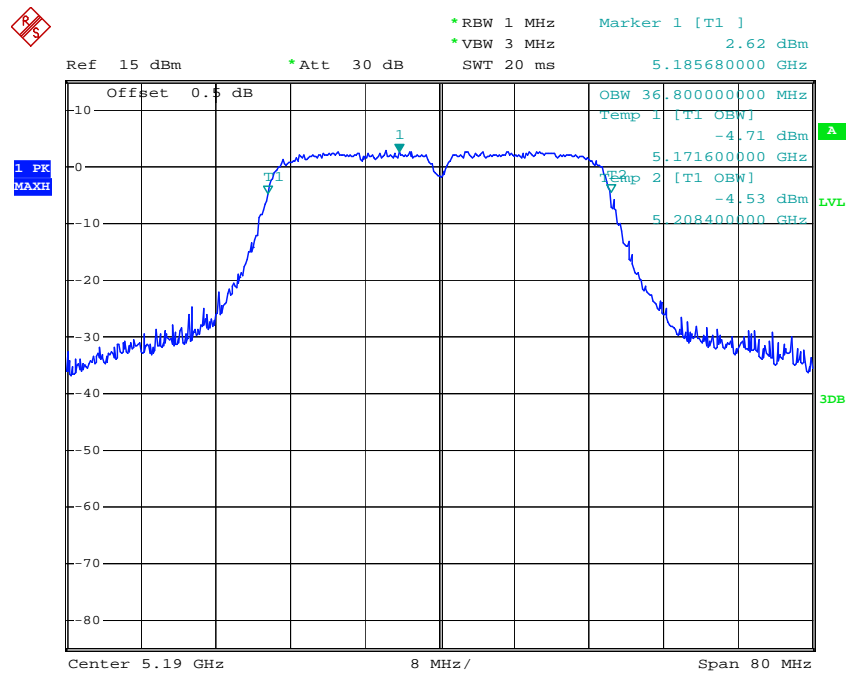
Date: 11.SEP.2017 09:11:38

### 802.11n ht20 High Channel



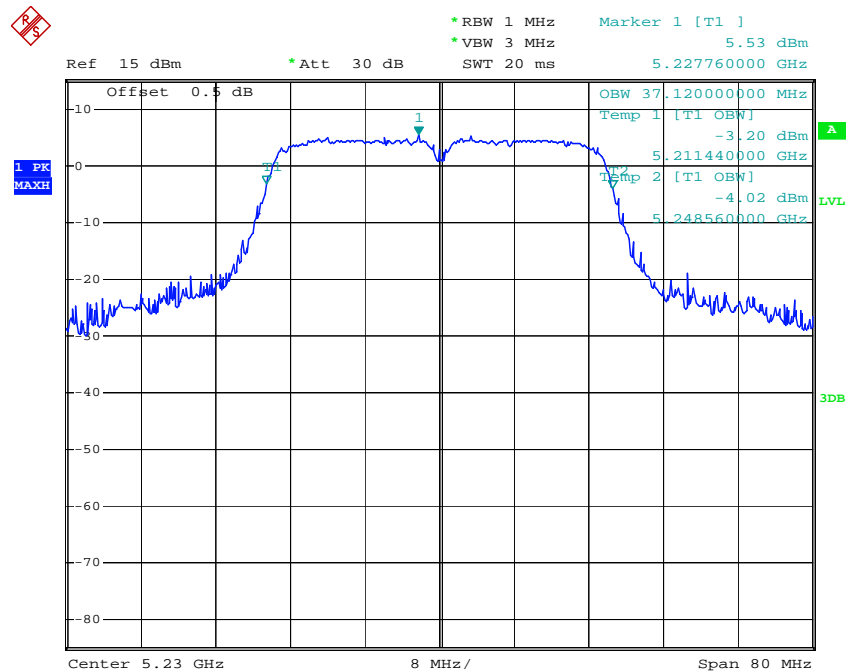
Date: 11.SEP.2017 09:13:21

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:01:56

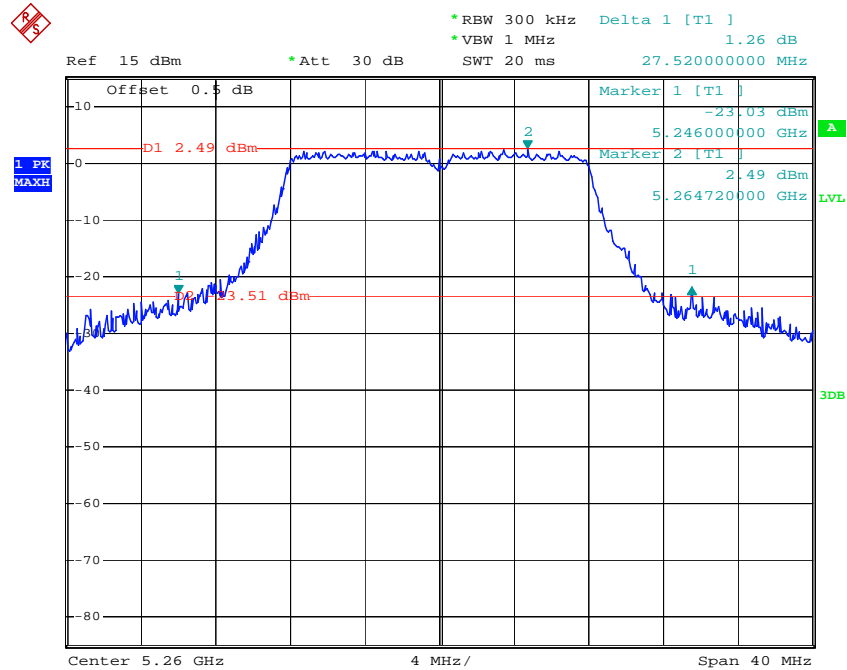
### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:07:30

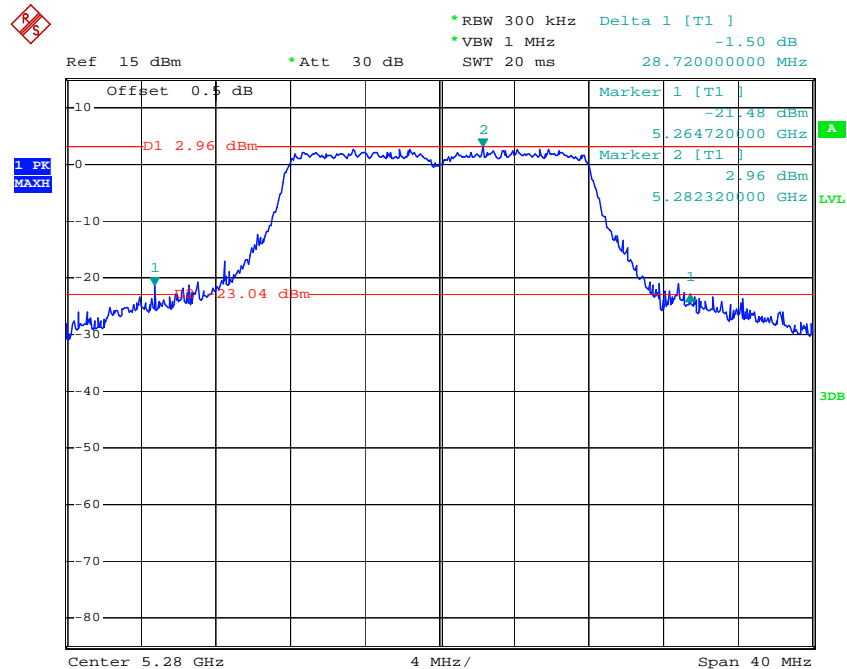
# 5250-5350MHz: 26dB Emission Bandwidth:

## 802.11a Low Channel



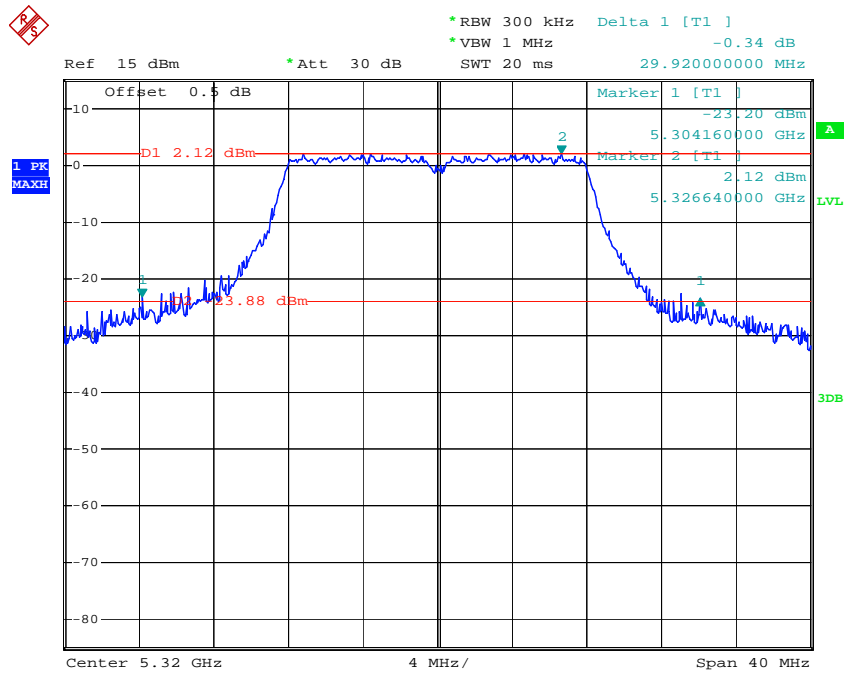
Date: 11.SEP.2017 09:26:46

## 802.11a Middle Channel



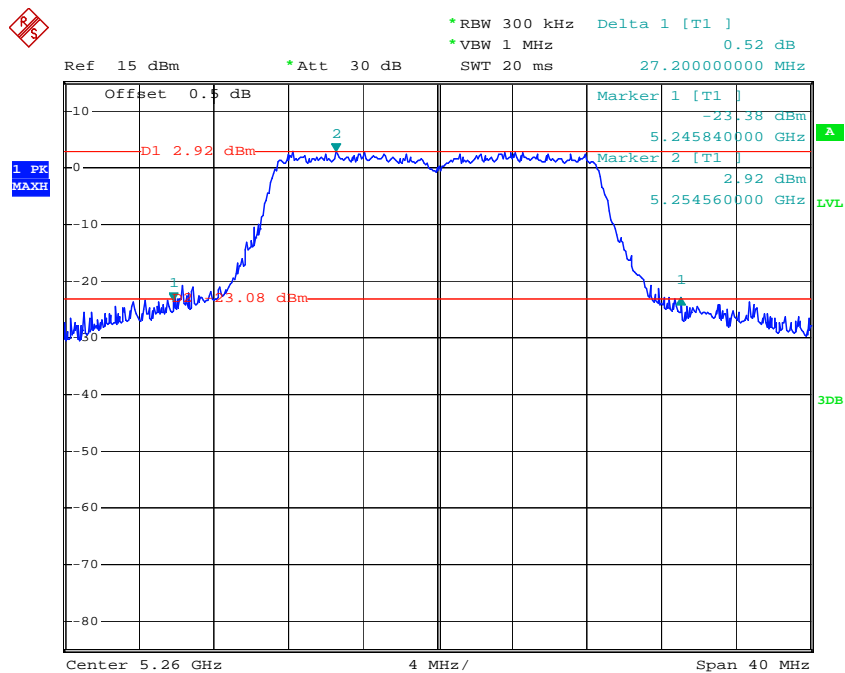
Date: 11.SEP.2017 09:28:17

### 802.11a High Channel



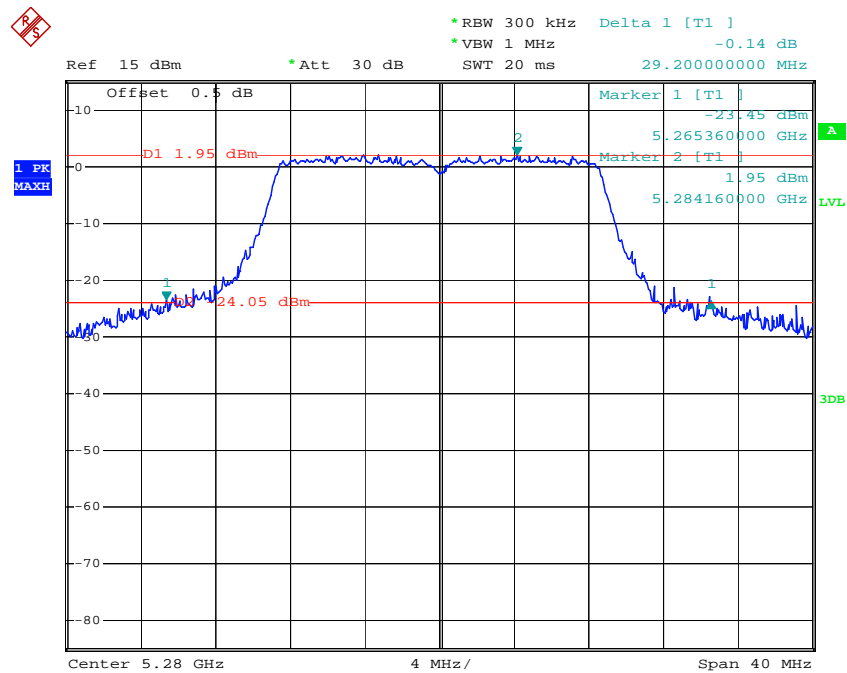
Date: 11.SEP.2017 09:29:27

### 802.11n ht20 Low Channel



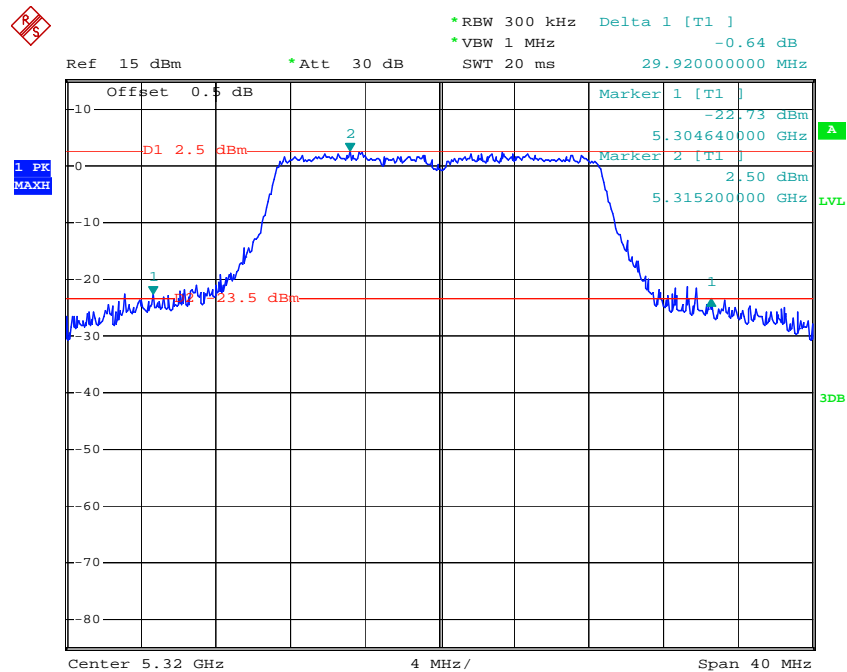
Date: 11.SEP.2017 09:35:50

## 802.11n ht20 Middle Channel



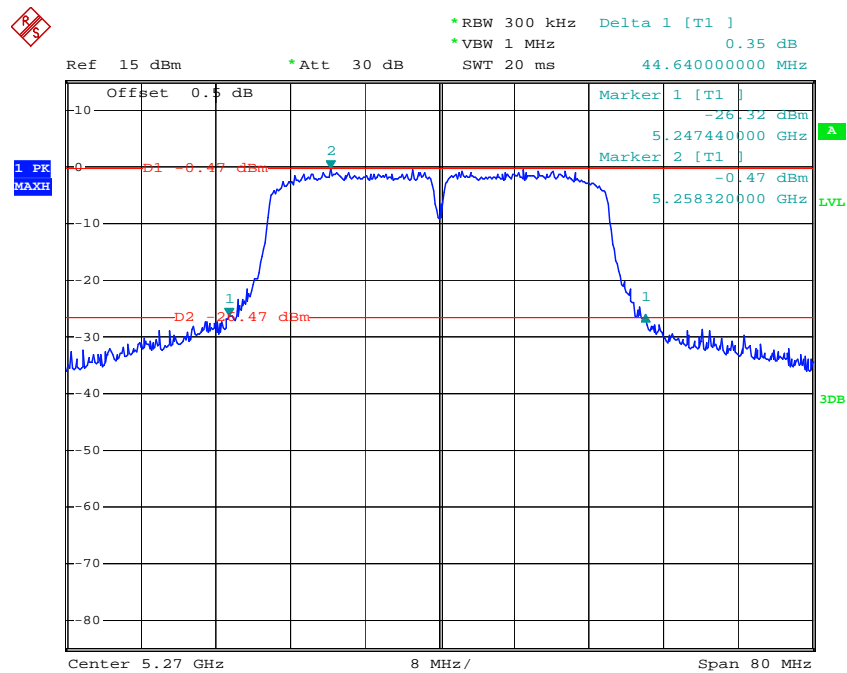
Date: 11.SEP.2017 09:34:25

## 802.11n ht20 High Channel



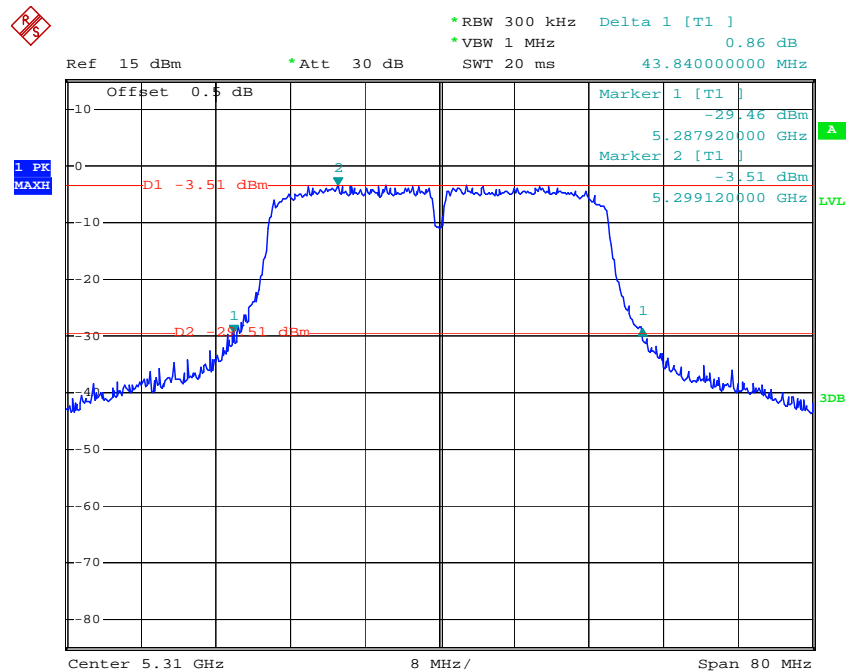
Date: 11.SEP.2017 09:32:34

### 802.11n ht40 Low Channel



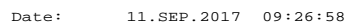
Date: 11.SEP.2017 09:37:50

### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:42:28

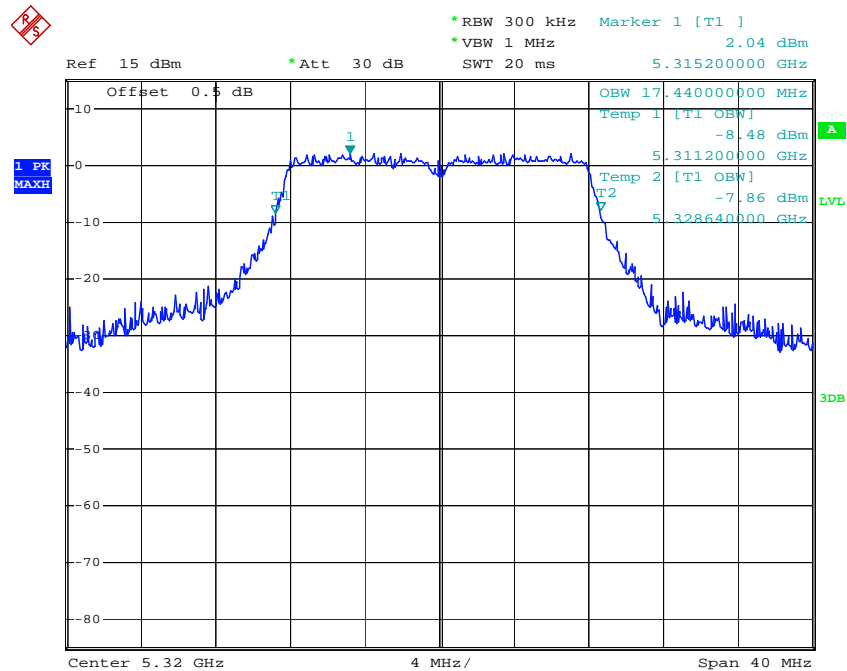
## 802.11a Low Channel



Date: 11.SEP.2017 09:28:29

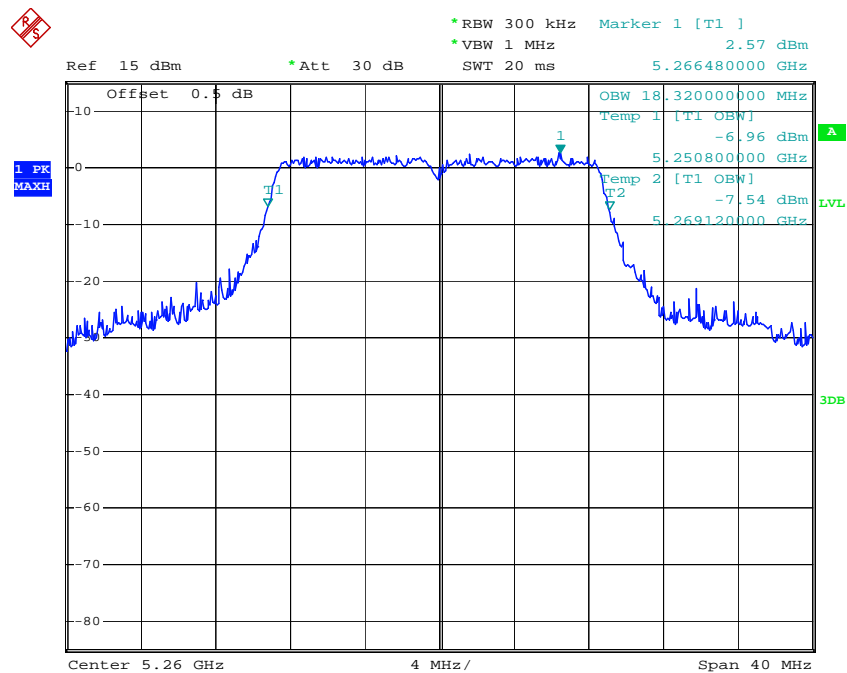


## 802.11a High Channel



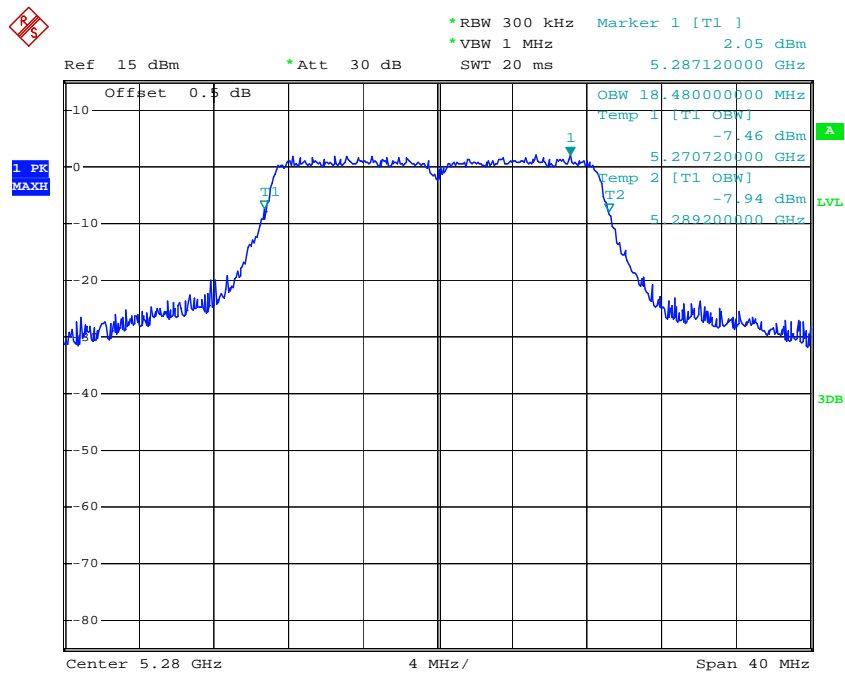
Date: 11.SEP.2017 09:29:40

## 802.11n ht20 Low Channel



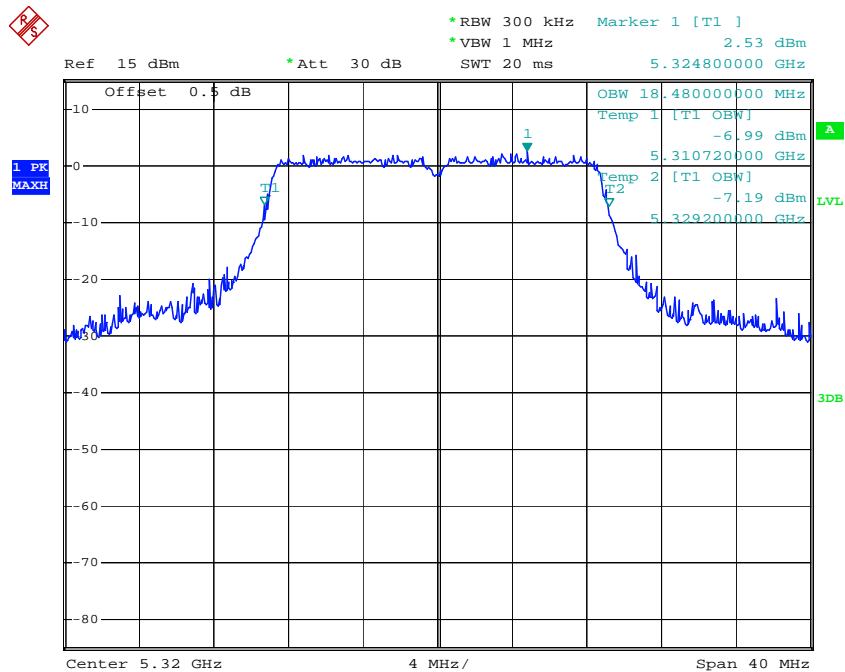
Date: 11.SEP.2017 09:36:03

### 802.11n ht20 Middle Channel



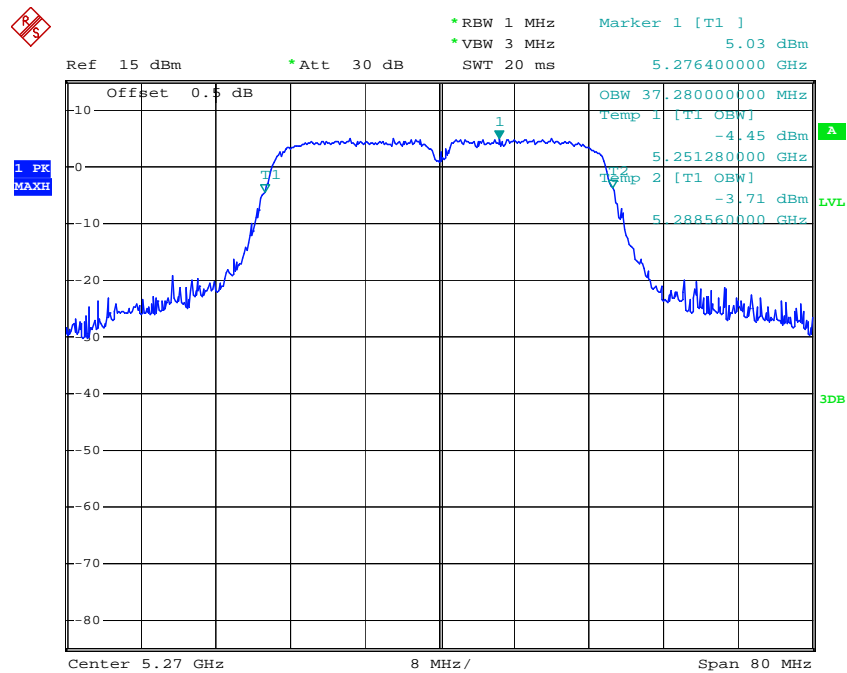
Date: 11.SEP.2017 09:34:37

### 802.11n ht20 High Channel



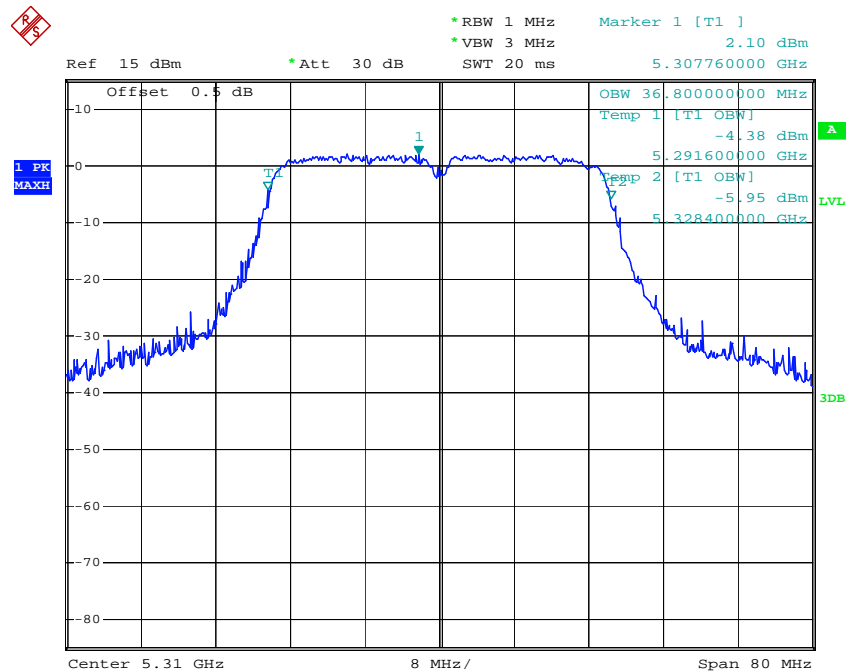
Date: 11.SEP.2017 09:32:47

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:38:04

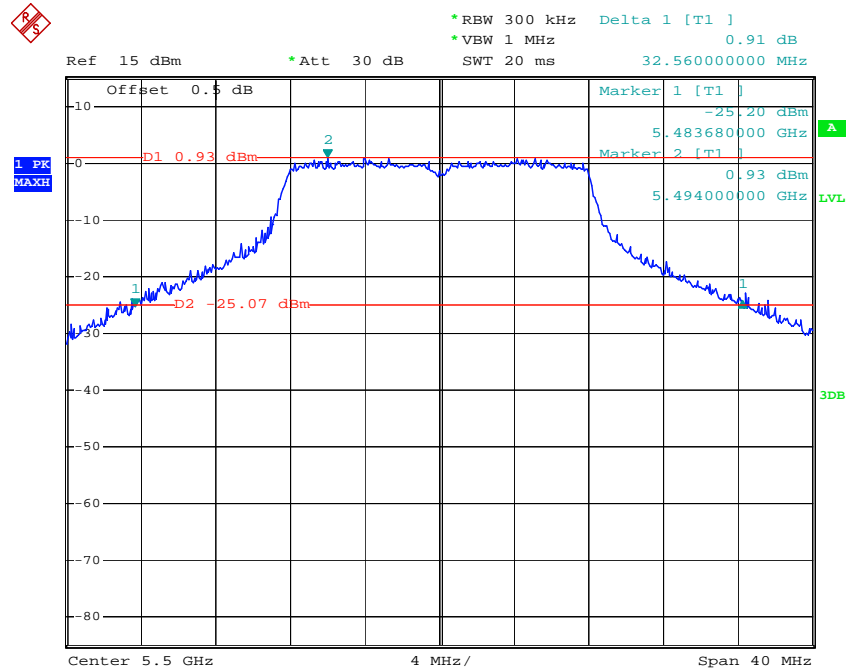
### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:42:40

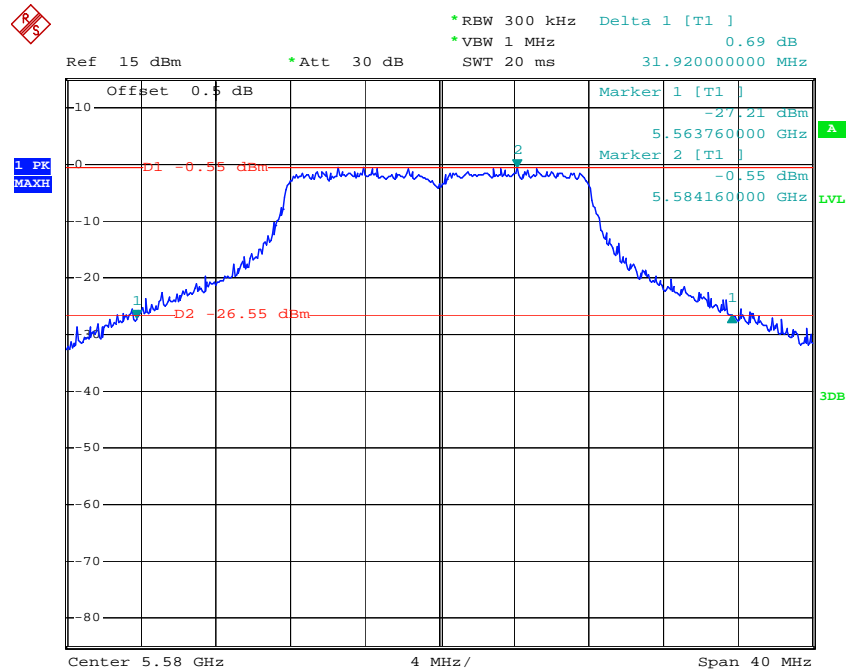
5470-5725MHz: 26dB Emission Bandwidth:

802.11a Low Channel



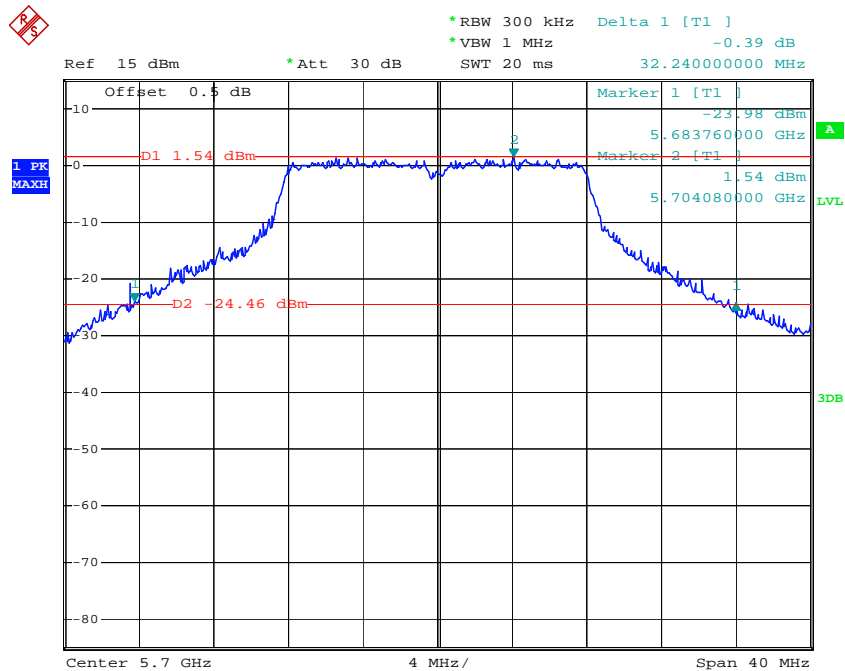
Date: 11.SEP.2017 11:13:00

802.11a Middle Channel



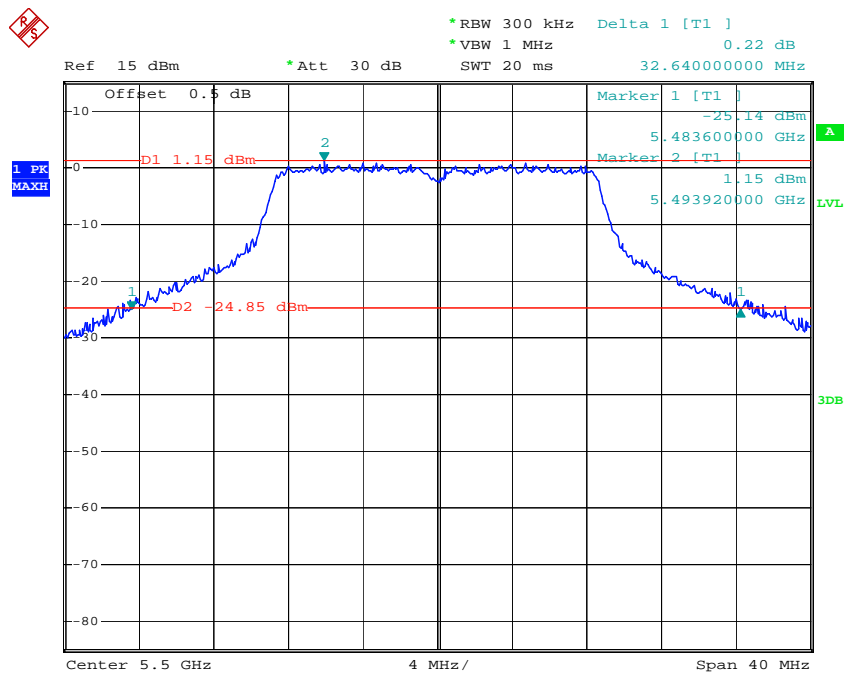
Date: 11.SEP.2017 10:17:38

## 802.11a High Channel



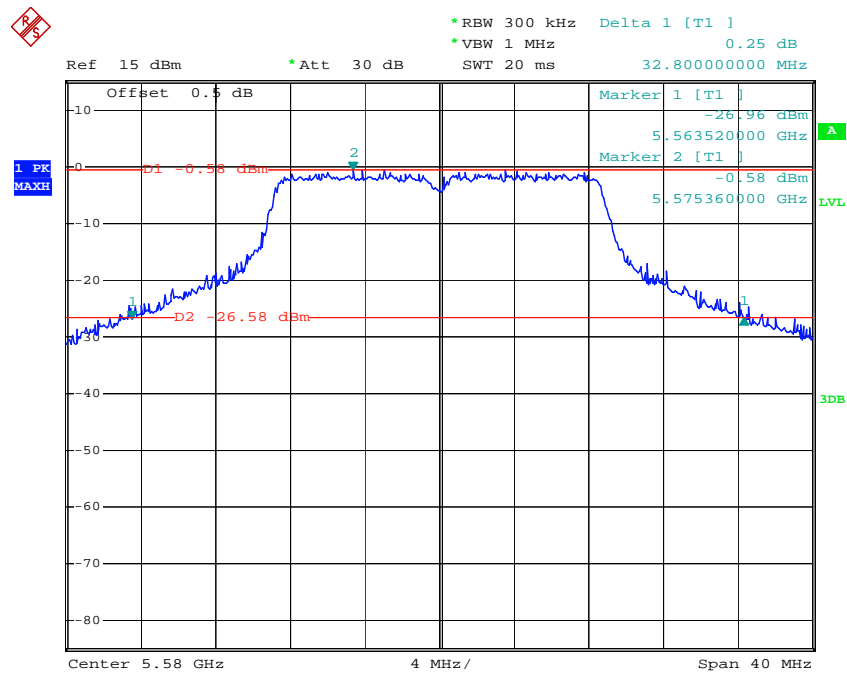
Date: 17.SEP.2017 17:51:20

## 802.11n ht20 Low Channel



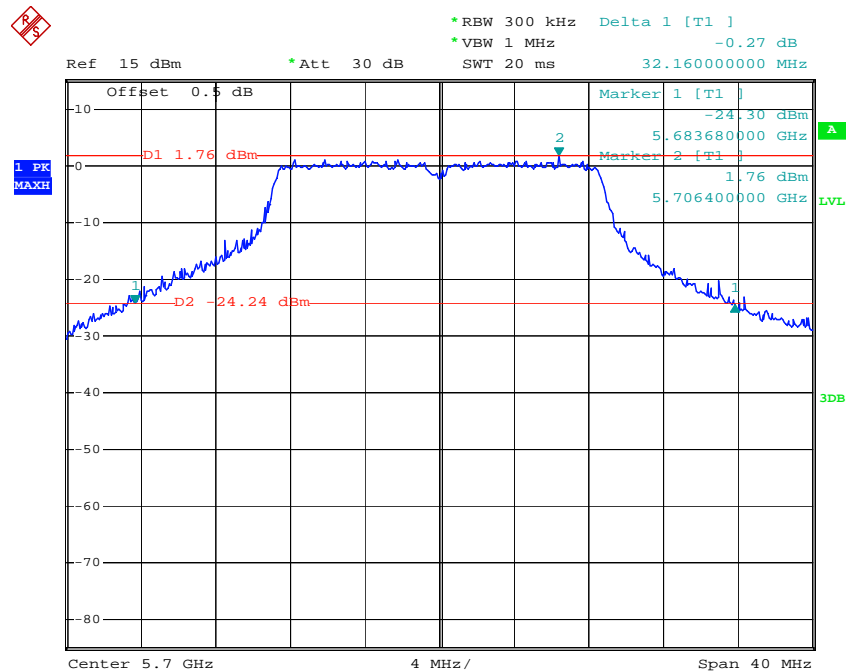
Date: 11.SEP.2017 11:13:56

## 802.11n ht20 Middle Channel



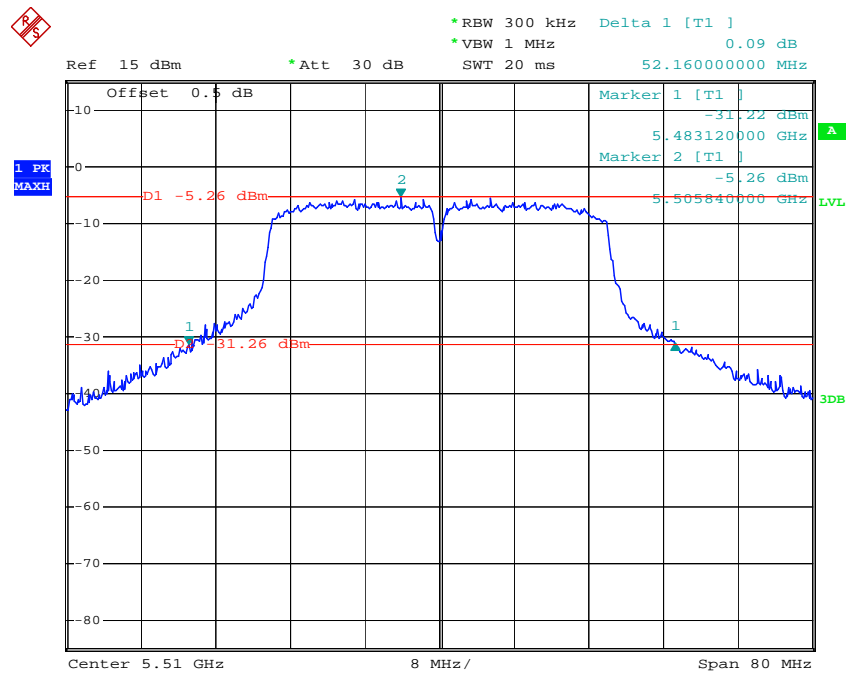
Date: 11.SEP.2017 11:17:06

## 802.11n ht20 High Channel



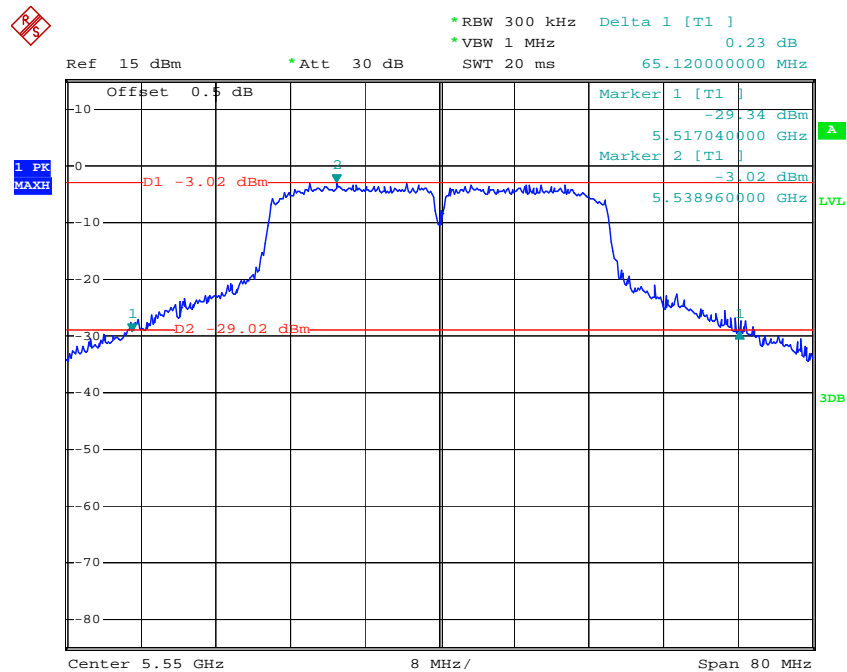
Date: 17.SEP.2017 17:52:26

## 802.11n ht40 Low Channel



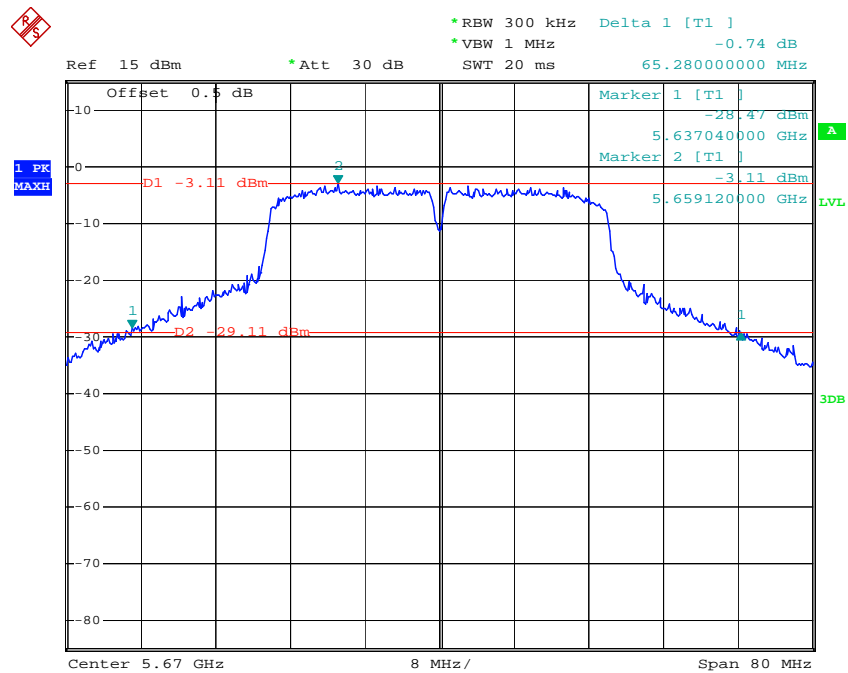
Date: 11.SEP.2017 09:52:39

## 802.11n ht40 Middle Channel



Date: 11.SEP.2017 11:19:28

# 802.11n ht40 High Channel

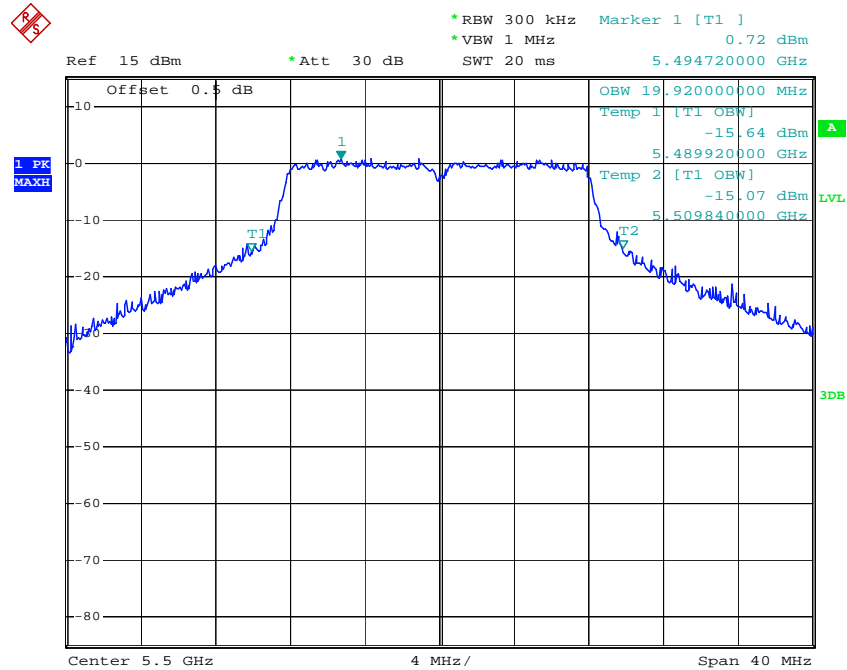


Date: 11.SEP.2017 11:22:43



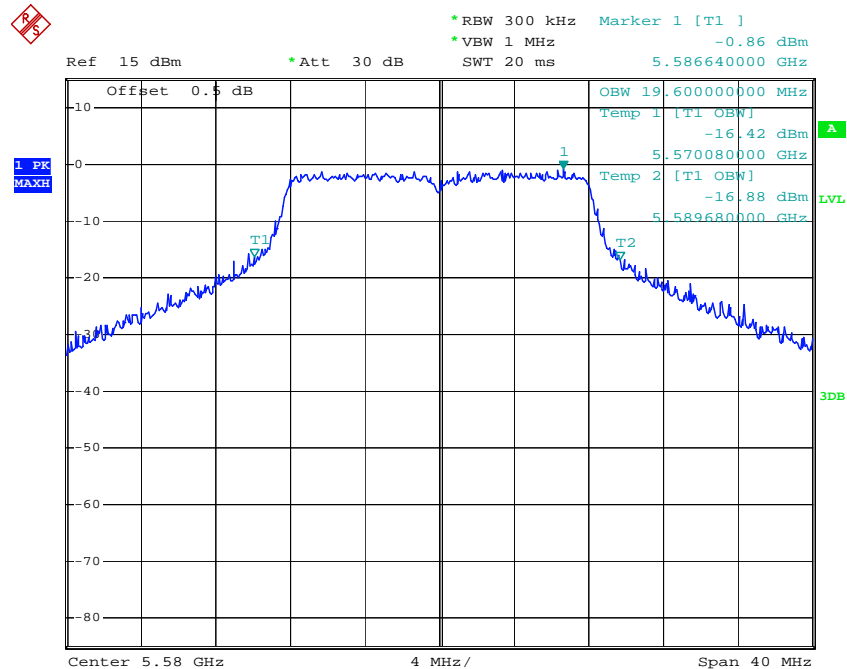
## 99% Occupied Bandwidth

## 802.11a Low Channel



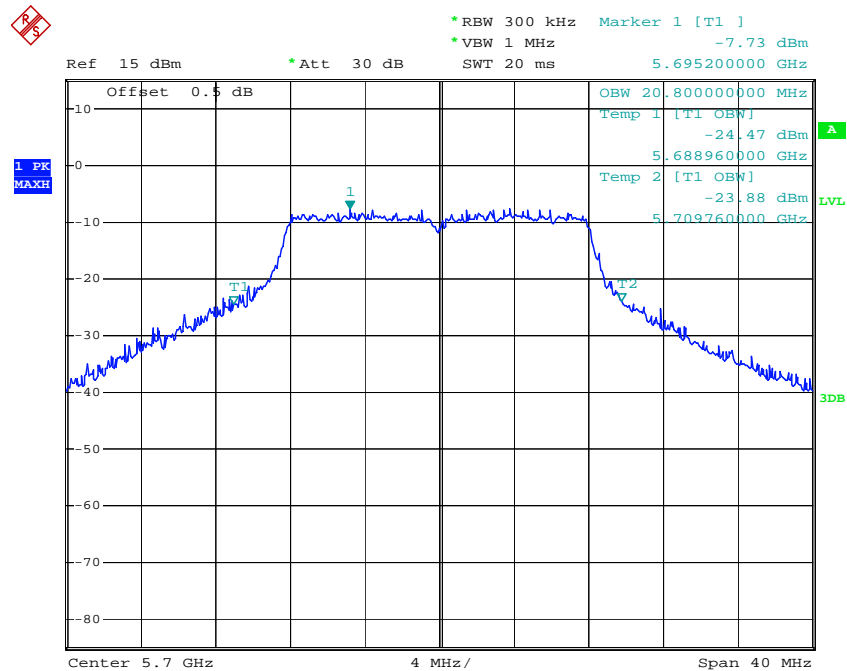
Date: 11.SEP.2017 11:11:52

## 802.11a Middle Channel



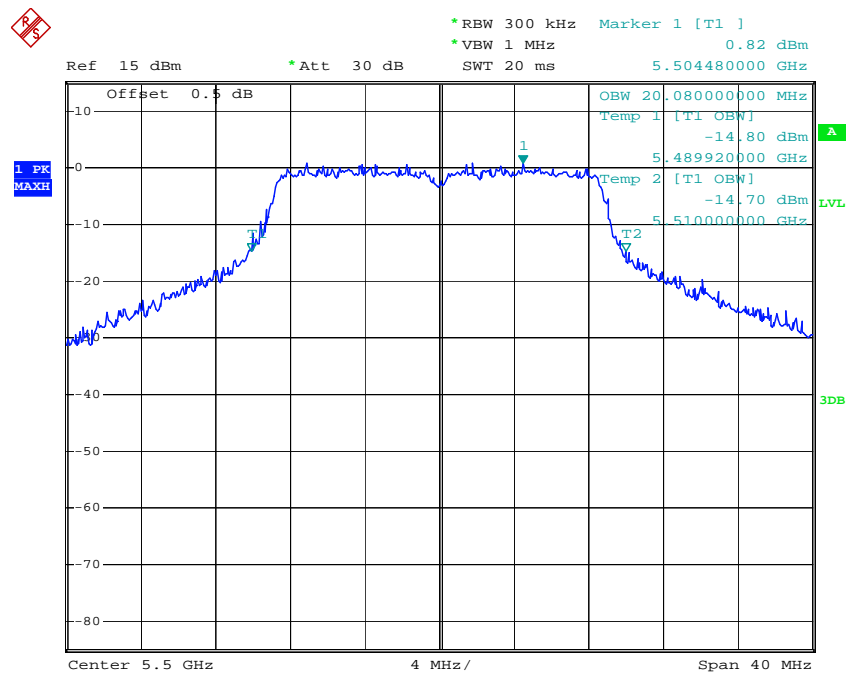
Date: 11.SEP.2017 10:17:50

### 802.11a High Channel



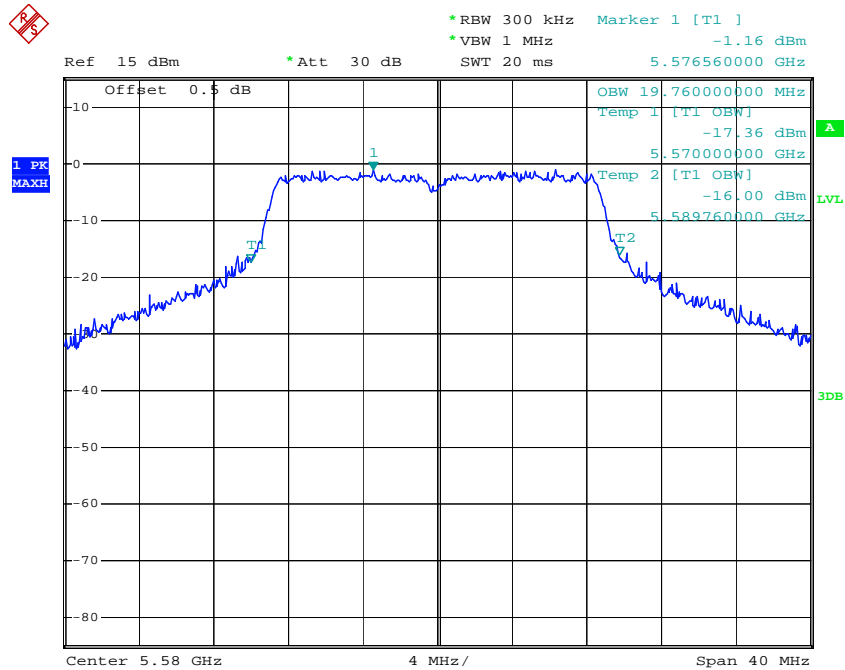
Date: 17.SEP.2017 17:35:52

### 802.11n ht20 Low Channel



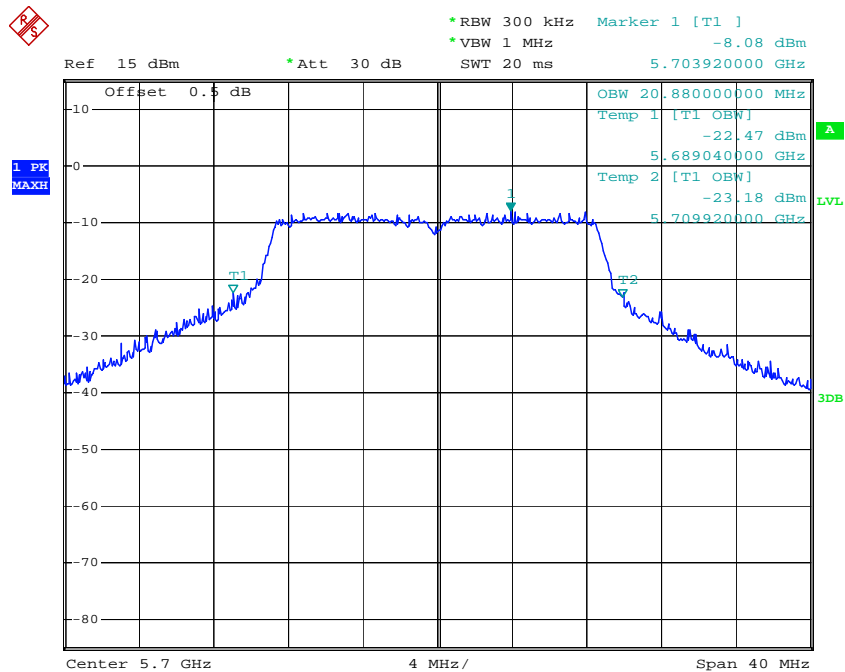
Date: 11.SEP.2017 11:14:20

### 802.11n ht20 Middle Channel



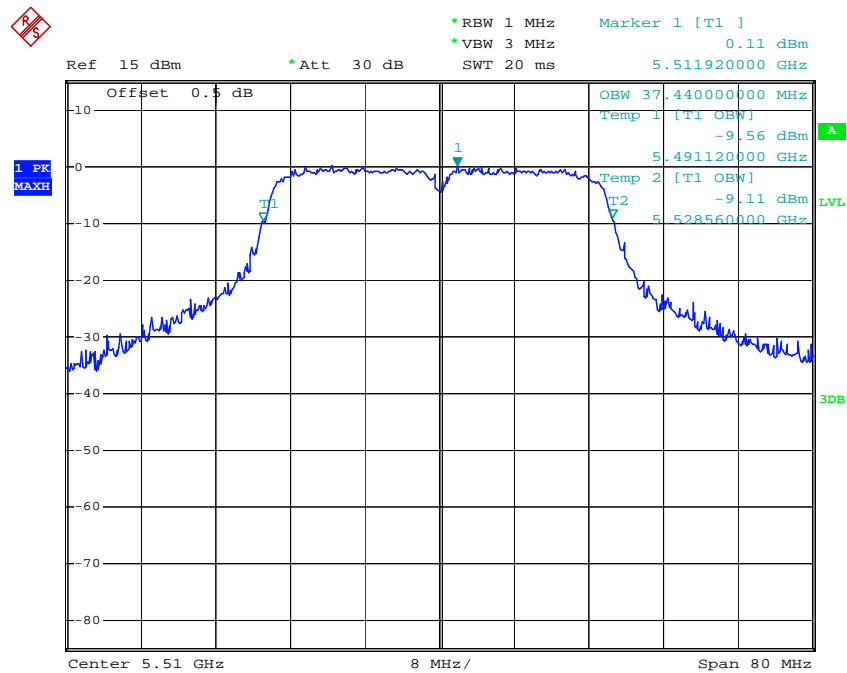
Date: 11.SEP.2017 10:01:23

### 802.11n ht20 High Channel



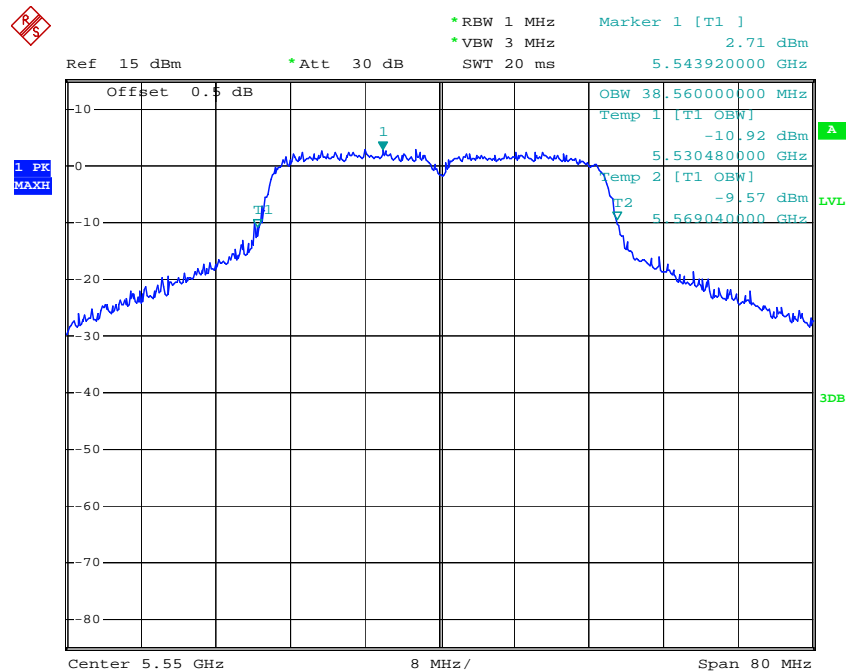
Date: 17.SEP.2017 17:37:22

### 802.11n ht40 Low Channel



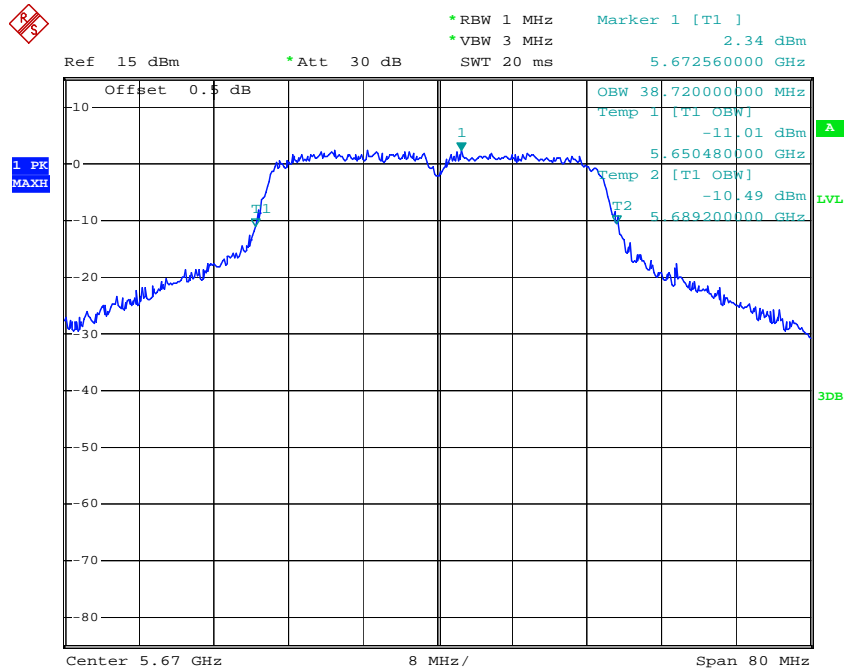
Date: 11.SEP.2017 09:52:53

### 802.11n ht40 Middle Channel



Date: 11.SEP.2017 11:20:01

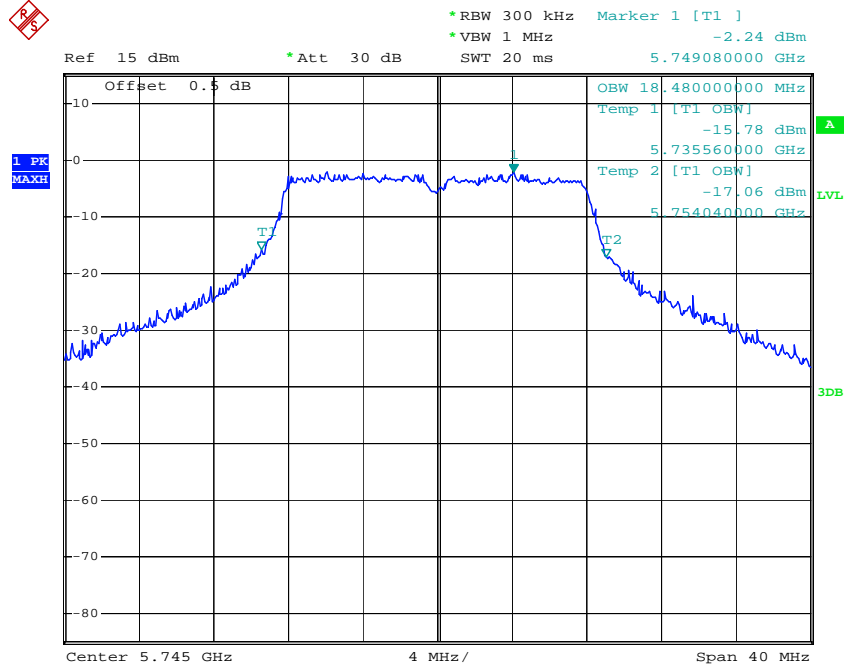
# 802.11n ht40 High Channel



Date: 11.SEP.2017 11:23:07

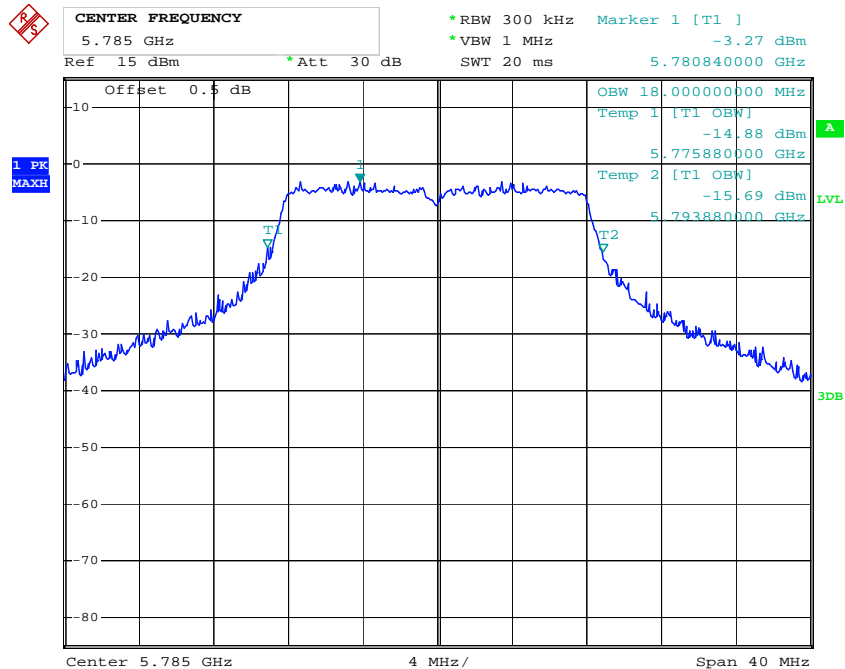
**5725-5850MHz:  
99% Occupied Bandwidth**

**802.11a Low Channel**



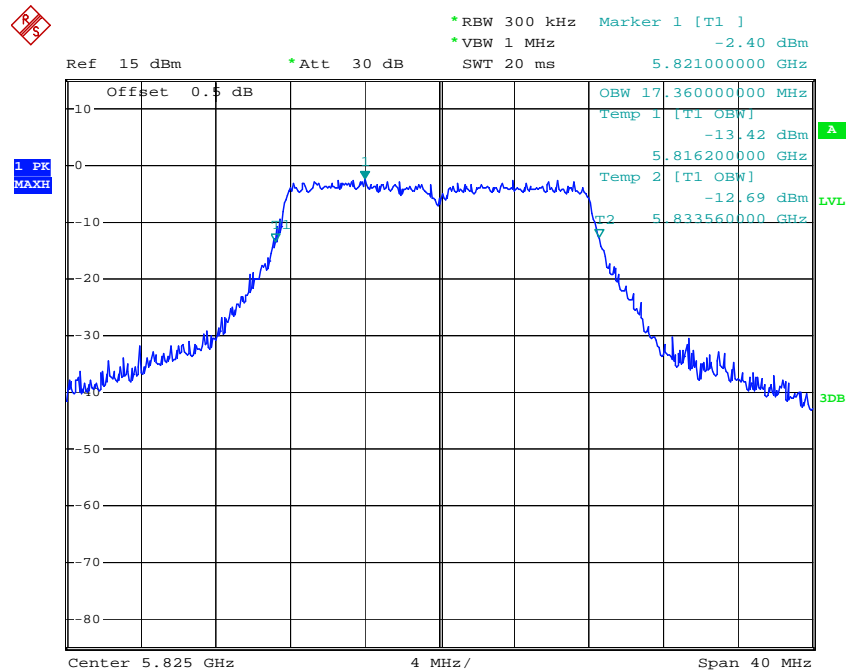
Date: 11.SEP.2017 10:22:14

**802.11a Middle Channel**



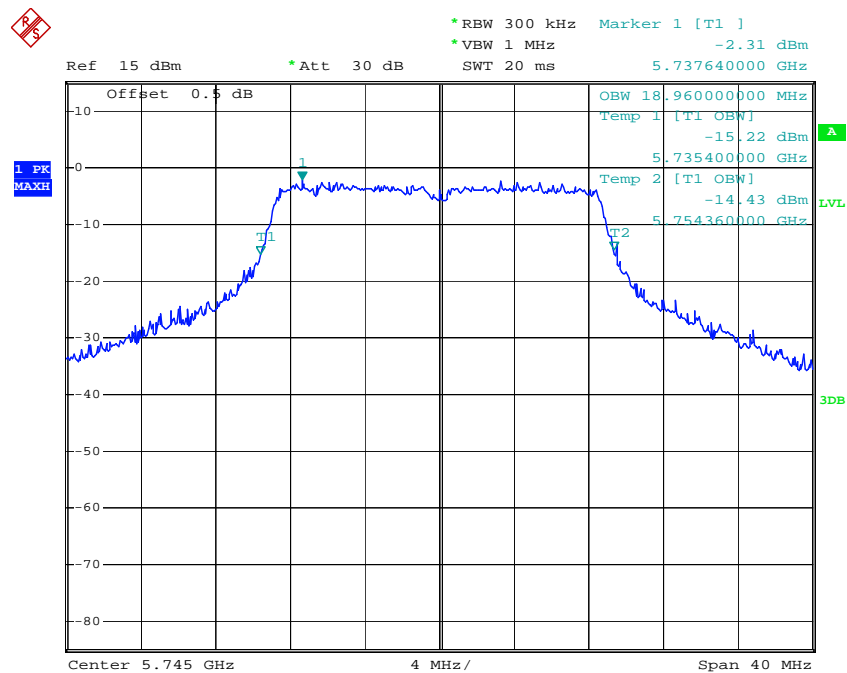
Date: 11.SEP.2017 10:34:22

## 802.11a High Channel



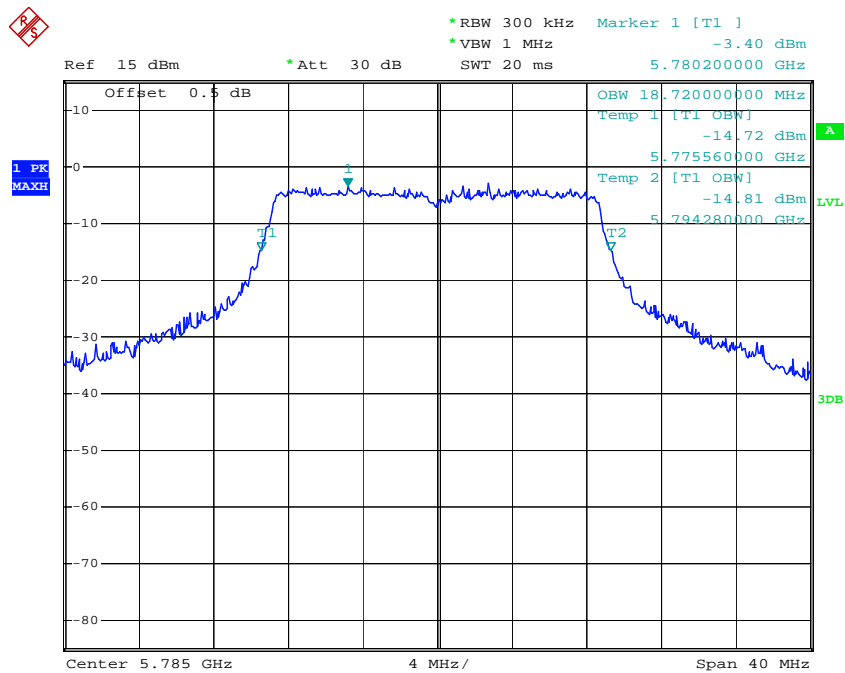
Date: 13.SEP.2017 23:50:32

## 802.11n ht20 Low Channel



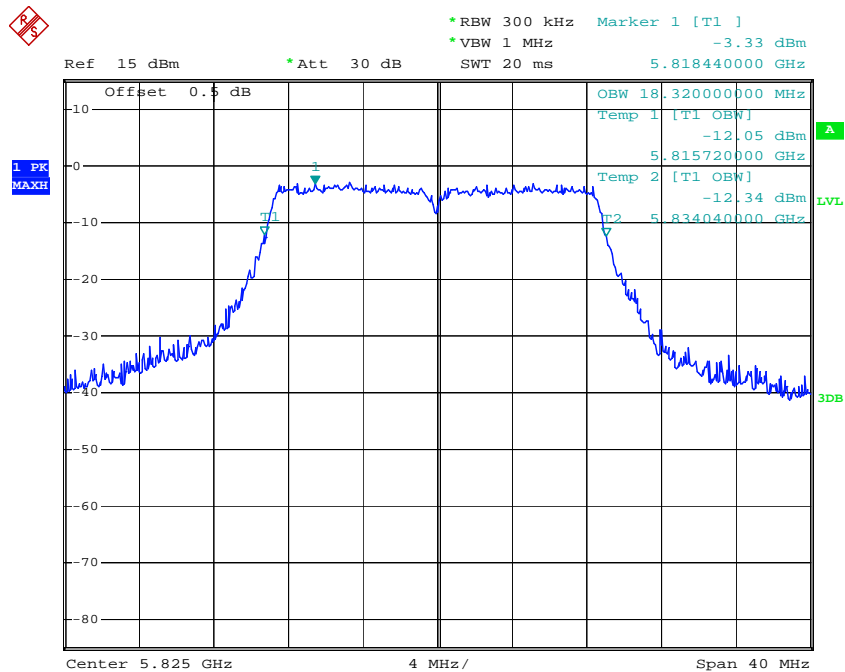
Date: 11.SEP.2017 10:47:15

## 802.11n ht20 Middle Channel



Date: 11.SEP.2017 10:49:09

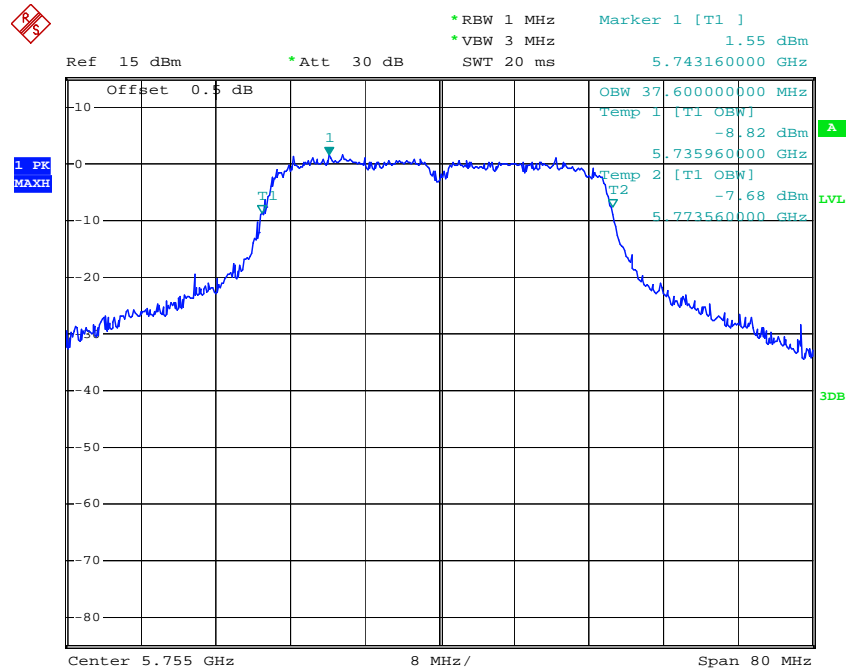
## 802.11n ht20 High Channel



Date: 13.SEP.2017 23:48:17

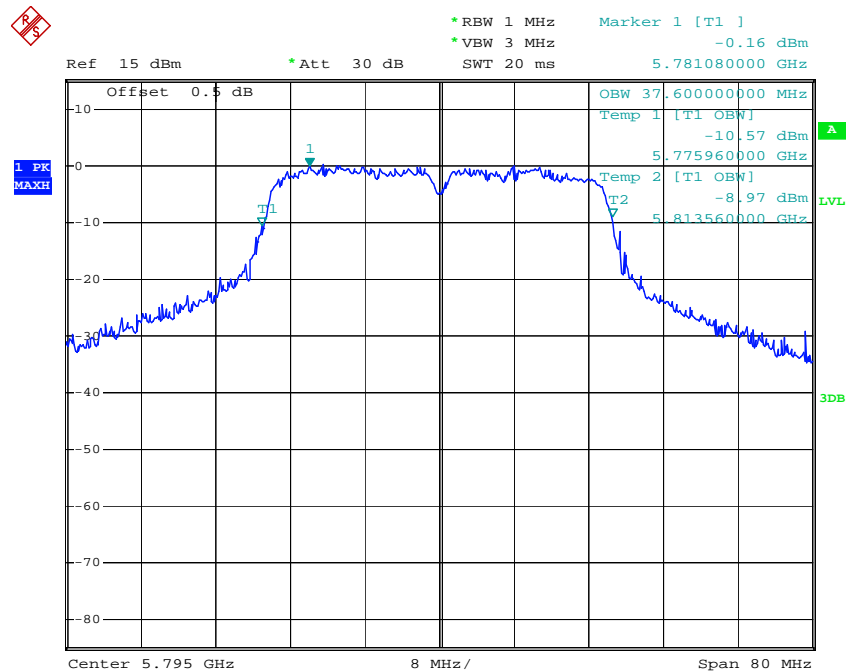


### 802.11n ht40 Low Channel

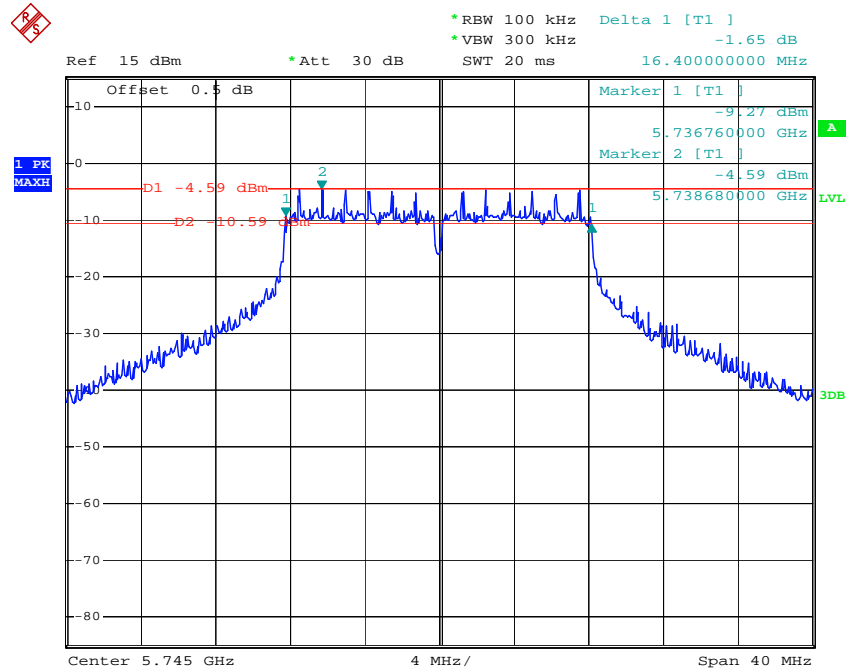


Date: 11.SEP.2017 11:01:35

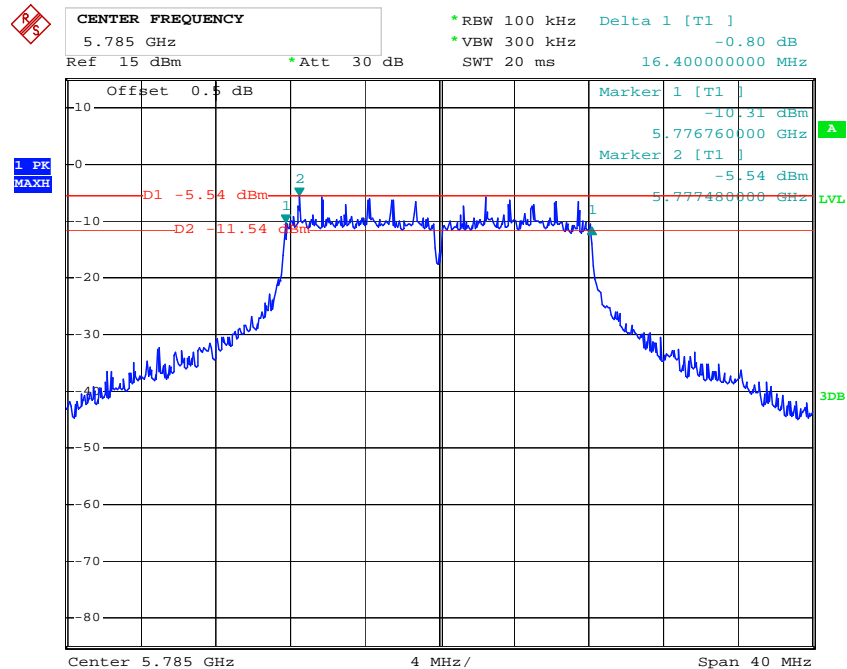
### 802.11n ht40 High Channel



Date: 11.SEP.2017 10:59:32

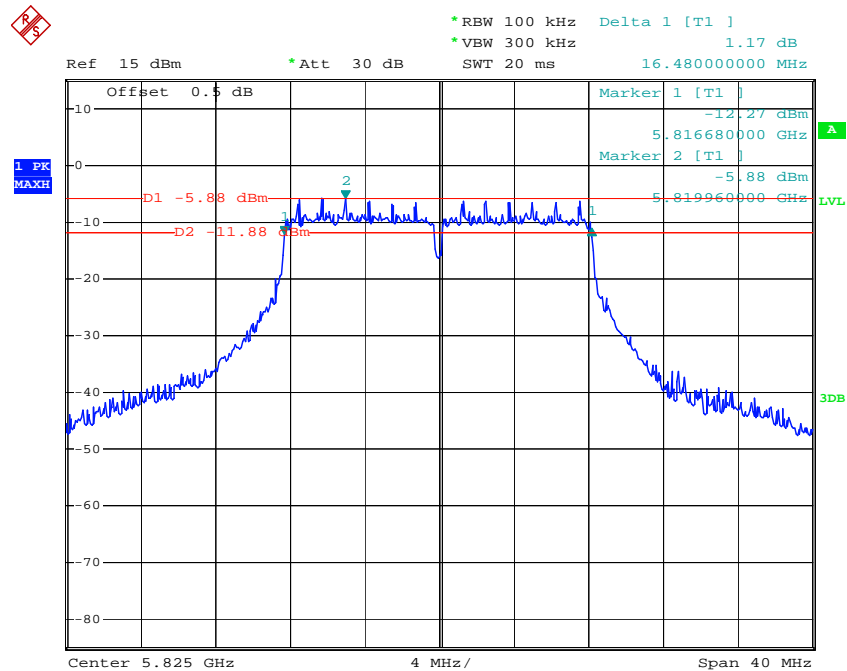
**6dB Bandwidth:****802.11a Low Channel**

Date: 11.SEP.2017 10:22:00

**802.11a Middle Channel**

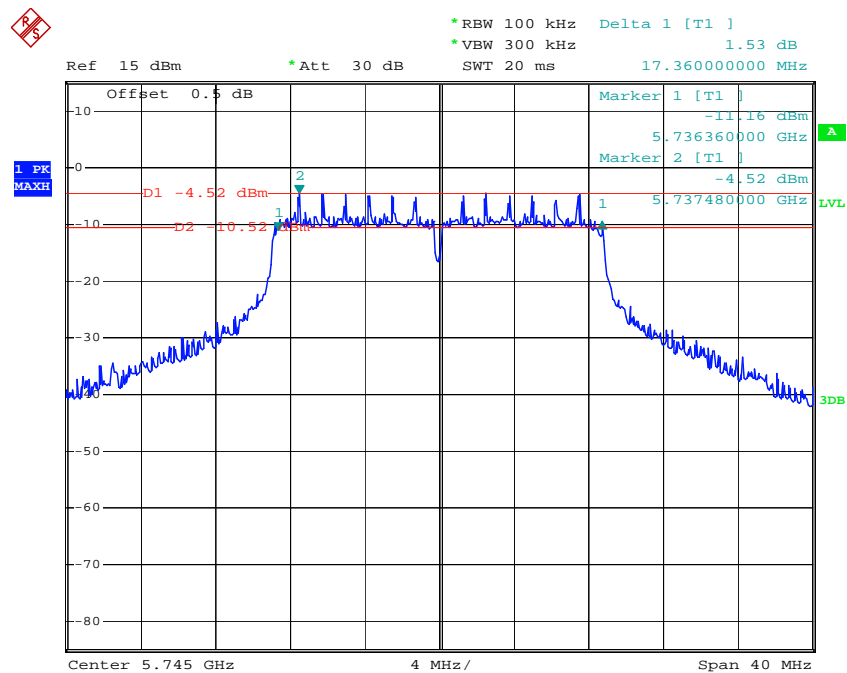
Date: 11.SEP.2017 10:34:03

## 802.11a High Channel



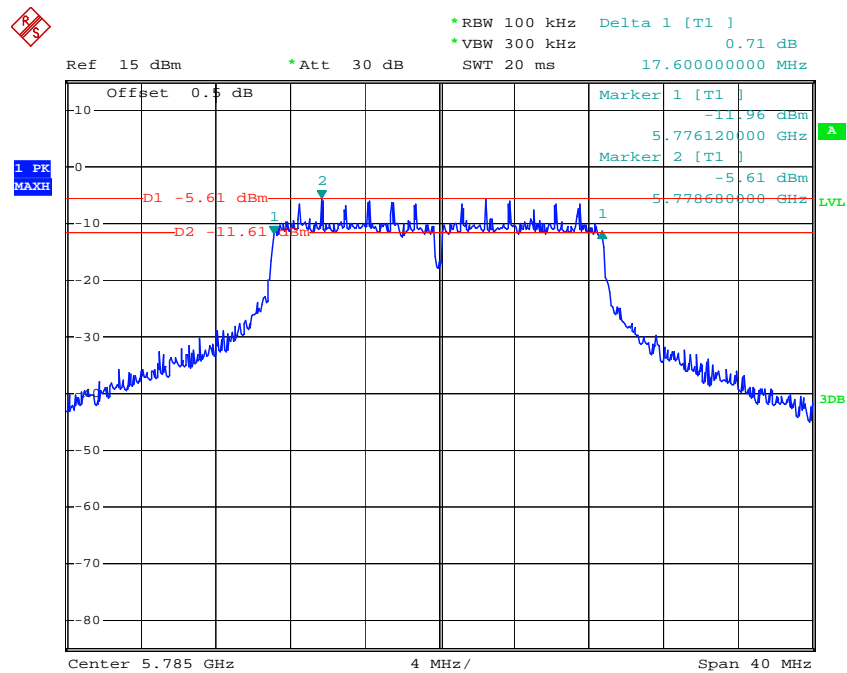
Date: 13.SEP.2017 23:50:19

## 802.11ht20 Low Channel



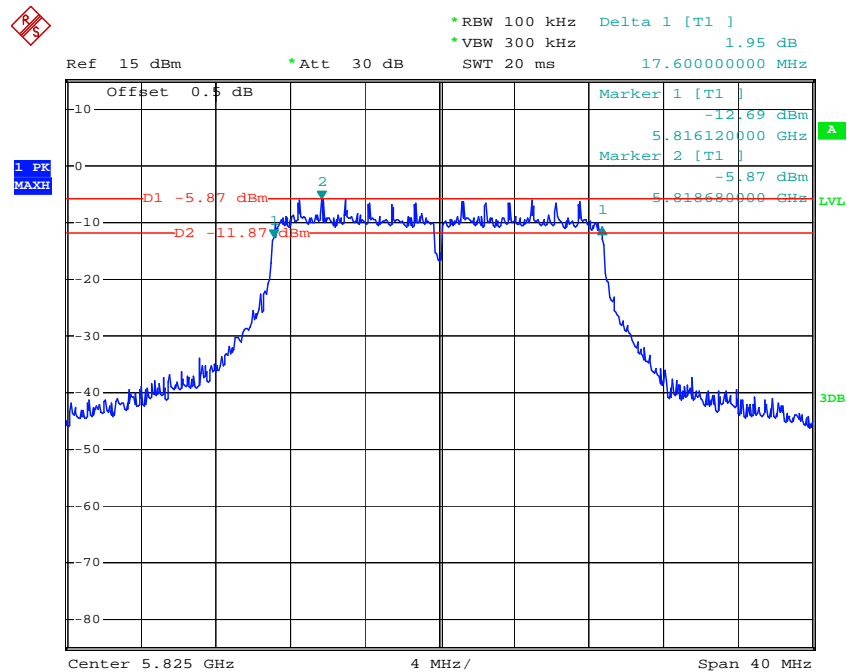
Date: 11.SEP.2017 10:47:02

## 802.11ht20 Middle Channel



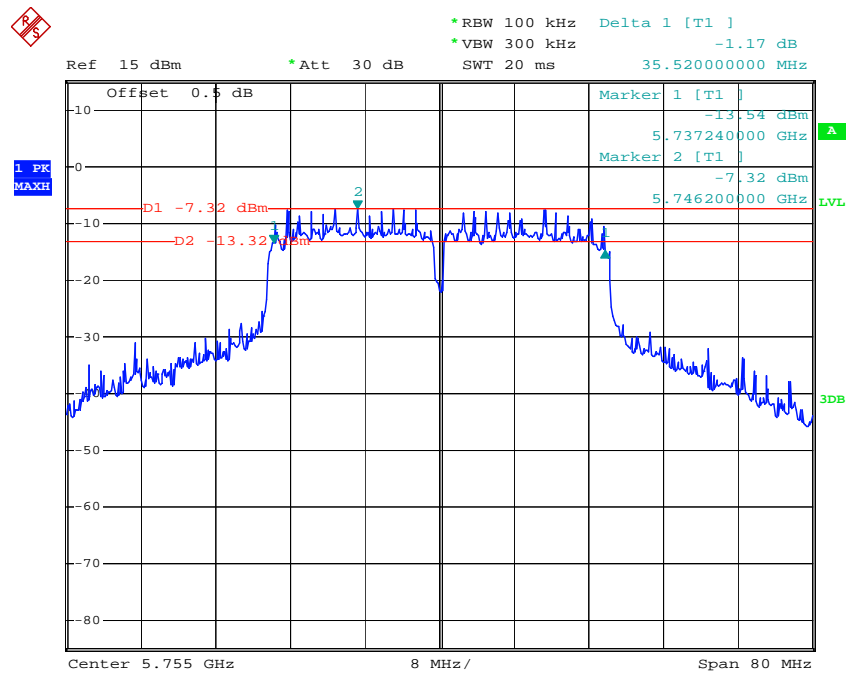
Date: 11.SEP.2017 10:48:56

## 802.11ht20 High Channel



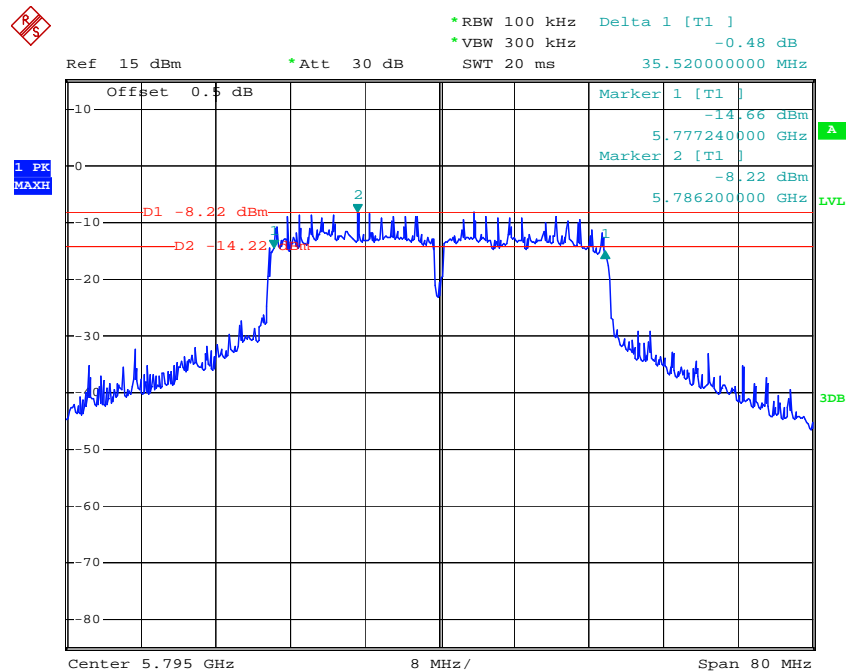
Date: 13.SEP.2017 23:48:05

## 802.11ht40 Low Channel



Date: 11.SEP.2017 11:01:22

## 802.11ht40 High Channel



Date: 11.SEP.2017 10:59:20

**FCC §15.407(g)–FREQUENCY STABILITY****Applicable Standard**

FCC §15.407(g)

(g) 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 users manual.

**Test Procedure**

According to ANSI C63.10-2013 “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices”.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE23437	2016-11-22	2017-11-22
Unknown	RF Cable	Unknown	C-4	Each Time	/
UNI-T	Multimeter	UT39A	M130199938	2017-04-10	2018-04-10
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-4	2017-09-10	2018-09-09

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

<b>Temperature:</b>	27.8-29.7°C
<b>Relative Humidity:</b>	43-53 %
<b>ATM Pressure:</b>	100.3-100.5 kPa

*The testing was performed by Davin Huang from 2017-09-11 to 2017-09-17.*

**Test Mode: Transmitting**(Test was performed at Chain 0)

**Test Result:** Pass.

**5150-5250MHz:**

802.11a

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5171.2001	5248.6401	f <sub>L</sub> and f <sub>H</sub> Within 5150~5250MHz range
10		5171.2002	5248.6402	
20		5171.2000	5248.6400	
30		5171.1999	5248.6403	
40		5171.1998	5248.6398	
25	6.6	5171.2000	5248.6402	
25	8.4	5171.2003	5248.6399	

802.11n ht20:

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5170.7202	5249.1203	f <sub>L</sub> and f <sub>H</sub> Within 5150~5250MHz range
10		5170.7201	5249.1202	
20		5170.7200	5249.1200	
30		5170.7205	5249.1201	
40		5170.7203	5249.1206	
25	6.6	5170.7200	5249.1202	
25	8.4	5170.7199	5249.1201	

802.11n ht40:

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5171.6001	5248.5604	f <sub>L</sub> and f <sub>H</sub> Within 5150~5250MHz range
10		5171.5999	5248.5606	
20		5171.6000	5248.5600	
30		5171.5998	5248.5596	
40		5171.6003	5248.5599	
25	6.6	5171.6005	5248.5605	
25	8.4	5171.5997	5248.5602	

**5250-5350MHz:**

802.11a

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5251.2001	5328.6401	f <sub>L</sub> and f <sub>H</sub> Within 5250~5350MHz range
10		5251.2003	5328.6395	
20		5251.2000	5328.6400	
30		5251.1996	5328.6398	
40		5251.1998	5328.0200	
25	6.6	5251.2005	5328.6408	
25	8.4	5251.2003	5328.6405	

802.11n ht20:

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5250.8003	5329.1997	f <sub>L</sub> and f <sub>H</sub> Within 5250~5350MHz range
10		5250.8001	5329.2002	
20		5250.8000	5329.2000	
30		5250.8000	5329.2001	
40		5250.7999	5329.1999	
25	6.6	5250.7998	5329.1996	
25	8.4	5250.8002	5329.2004	

802.11n ht40:

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5251.2803	5328.4001	f <sub>L</sub> and f <sub>H</sub> Within 5250~5350MHz range
10		5251.2800	5328.4000	
20		5251.2800	5328.4000	
30		5251.2800	5328.3999	
40		5251.2799	5328.3996	
25	6.6	5251.2800	5328.4005	
25	8.4	5251.2796	5328.4002	

5470-5725MHz:

802.11a

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5489.9205	5709.7605	f <sub>L</sub> and f <sub>H</sub> Within 5470~5725MHz range
10		5489.9203	5709.7602	
20		5489.9200	5709.7600	
30		5489.9199	5709.7599	
40		5489.9195	5709.7602	
25	6.6	5489.9203	5709.7598	
25	8.4	5489.9205	5709.7601	

802.11n ht20:

Temperature	Voltage	f <sub>L</sub> at Low Test Channel	F <sub>H</sub> at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5489.9200	5709.9200	f <sub>L</sub> and f <sub>H</sub> Within 5470~5725MHz range
10		5489.9202	5709.9201	
20		5489.9204	5709.9200	
30		5489.9205	5709.9203	
40		5489.9201	5709.9201	
25	6.6	5489.9203	5709.9198	
25	8.4	5489.9202	5709.9199	



802.11n ht40:

Temperature	Voltage	$f_L$ at Low Test Channel	$F_H$ at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5491.1201	5689.2003	$f_L$ and $f_H$ Within 5470~5725MHz range
10		5491.1203	5689.2001	
20		5491.1200	5689.2000	
30		5491.1202	5689.1999	
40		5491.1199	5689.2000	
25	6.6	5491.1200	5689.2003	
25	8.4	5491.1201	5689.1997	

5725-5850MHz:

802.11a

Temperature	Voltage	$f_L$ at Low Test Channel	$F_H$ at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5735.5600	5833.5601	$f_L$ and $f_H$ Within 5725~5850MHz range
10		5735.5602	5833.5602	
20		5735.5600	5833.5600	
30		5735.5600	5833.5596	
40		5735.5599	5833.5599	
25	6.6	5735.5596	5833.5601	
25	8.4	5735.5598	5833.5602	

802.11n ht20:

Temperature	Voltage	$f_L$ at Low Test Channel	$F_H$ at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5735.4003	5834.0403	$f_L$ and $f_H$ Within 5725~5850MHz range
10		5735.4001	5834.0402	
20		5735.4000	5834.0400	
30		5735.3999	5834.0397	
40		5735.3995	5834.0399	
25	6.6	5735.4002	5834.0401	
25	8.4	5735.4003	5834.0402	

802.11n ht40:

Temperature	Voltage	$f_L$ at Low Test Channel	$F_H$ at High Test Channel	Limit
°C	V <sub>DC</sub>	MHz	MHz	
0	7.2	5735.9600	5813.5600	$f_L$ and $f_H$ Within 5725~5850MHz range
10		5735.9602	5813.5602	
20		5735.9600	5813.5600	
30		5735.9605	5813.5598	
40		5735.9594	5813.5602	
25	6.6	5735.9602	5813.5604	
25	8.4	5735.9601	5813.5597	

Note: the  $f_L$  and  $f_H$  determined by 99% Occupied bandwidth low edge at Low test channel and High edge at High test channel.

---

**FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER**

---

**Applicable Standard**

## (a) Power limits:

## (1) For the band 5.15-5.25 GHz.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 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).

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points 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. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm  $10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2016-11-03	2017-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2016-11-03	2017-11-03
Unknown	RF Cable	Unknown	C-4	Each Time	/

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04

### Test Data

#### Environmental Conditions

Temperature:	27.8-29.7°C
Relative Humidity:	43-53 %
ATM Pressure:	100.3-100.5 kPa

*The testing was performed by Davin Huang from 2017-09-11 to 2017-09-17.*

*Test Mode: Transmitting*

UNII Band	Mode	Channel	Frequency (MHz)	Conducted Average Output Power	Limit (dBm)	Result
5150-5250MHz	802.11 a	Low	5180	13.59	24	PASS
		Middle	5200	13.68	24	PASS
		High	5240	13.6	24	PASS
	802.11ht20	Low	5180	13.68	24	PASS
		Middle	5200	13.45	24	PASS
		High	5240	13.62	24	PASS
	802.11ht40	Low	5190	9.16	24	PASS
		High	5230	13.41	24	PASS
5250-5350MHz	802.11 a	Low	5260	13.76	24	PASS
		Middle	5280	13.64	24	PASS
		High	5320	13.37	24	PASS
	802.11ht20	Low	5260	13.71	24	PASS
		Middle	5280	13.87	24	PASS
		High	5320	13.3	24	PASS
	802.11ht40	Low	5270	13.15	24	PASS
		High	5310	10.2	24	PASS
5470-5725MHz	802.11 a	Low	5500	9.41	24	PASS
		Middle	5580	10.11	24	PASS
		High	5700	7.87	24	PASS
	802.11ht20	Low	5500	10.97	24	PASS
		Middle	5580	9.52	24	PASS
		High	5700	7.84	24	PASS
	802.11ht40	Low	5510	7.27	24	PASS
		Middle	5550	9.79	24	PASS
		High	5670	9.13	24	PASS
5725-5850MHz	802.11 a	Low	5745	9.22	30	PASS
		Middle	5785	9.09	30	PASS
		High	5825	7.14	30	PASS
	802.11ht20	Low	5745	9.4	30	PASS
		Middle	5785	9.22	30	PASS
		High	5825	6.89	30	PASS
	802.11ht40	Low	5755	8.9	30	PASS
		High	5795	9.35	30	PASS

Note: the duty cycle factor have been added in the result.

---

**FCC §15.407(a) - POWER SPECTRAL DENSITY**

---

**Applicable Standard**

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 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).

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points 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. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 + 10 \log B$  dBm, where B is the 26 dB emission bandwidth in megahertz. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(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. In addition, 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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESPI	100120	2016-12-08	2017-12-08
Unknown	RF Cable	Unknown	C-4	Each Time	/

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

<b>Temperature:</b>	27.8-29.7°C
<b>Relative Humidity:</b>	43-53 %
<b>ATM Pressure:</b>	100.3-100.5 kPa

*The testing was performed by Davin Huang from 2017-09-11 to 2017-09-17.*

*Test Mode: Transmitting*

*Test Result: Compliance. Please refer to the following table and plot.*

**5150-5250MHz**

UNII Band	Mode	Channel	Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor (dB)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
5150 - 5250 MHz	a	Low	5180	0.4	0.53	0.93	11
		Middle	5200	0.17	0.53	0.7	11
		High	5240	-0.02	0.53	0.51	11
	n20	Low	5180	0.57	0.50	1.07	11
		Middle	5200	0.45	0.50	0.95	11
		High	5240	0.44	0.50	0.94	11
	n40	Low	5190	-5.01	1.13	-3.88	11
		High	5230	-3.22	1.13	-2.09	11
5250 - 5350 MHz	a	Low	5260	-0.24	0.53	0.29	11
		Middle	5280	-0.01	0.53	0.52	11
		High	5320	-0.16	0.53	0.37	11
	n20	Low	5260	0.06	0.50	0.56	11
		Middle	5280	-0.28	0.50	0.22	11
		High	5320	-0.29	0.50	0.21	11
	n40	Low	5270	-3.27	1.13	-2.14	11
		High	5310	-6.01	1.13	-4.88	11
5470 - 5725 MHz	a	Low	5500	-1.65	0.53	-1.12	11
		Middle	5580	-3.24	0.53	-2.71	11
		High	5700	-3.62	0.53	-9.87	11
	n20	Low	5500	-1.55	0.50	-1.05	11
		Middle	5580	-3.18	0.50	-2.68	11
		High	5700	-3.84	0.50	-10.3	11
	n40	Low	5510	-8.42	1.13	-7.29	11
		Middle	5550	-5.93	1.13	-4.8	11
		High	5670	-5.81	1.13	-4.68	11

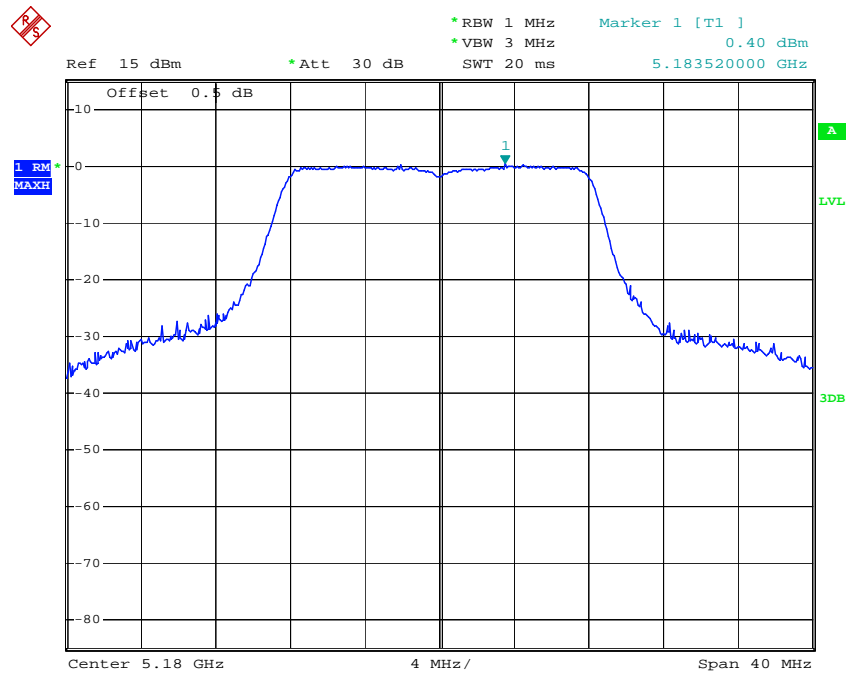
**5725-5850MHz**

UNII Band	Mode	Channel	Frequency (MHz)	Reading (dBm/300kHz)	Duty Cycle Factor	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
5725 -5850 MHz	a	Low	5745	-7.3	0.53	-4.57	30
		Middle	5785	-9.1	0.53	-6.37	30
		High	5825	-8.93	0.53	-6.2	30
	n20	Low	5745	-7.57	0.50	-4.87	30
		Middle	5785	-8.8	0.50	-6.1	30
		High	5825	-9.4	0.50	-6.7	30
	n40	Low	5755	-10.4	1.13	-7.07	30
		High	5795	-11.81	1.13	-8.48	30

Note 2: For 5.8GHz band, If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10\log(500\text{kHz}/\text{RBW})$  to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

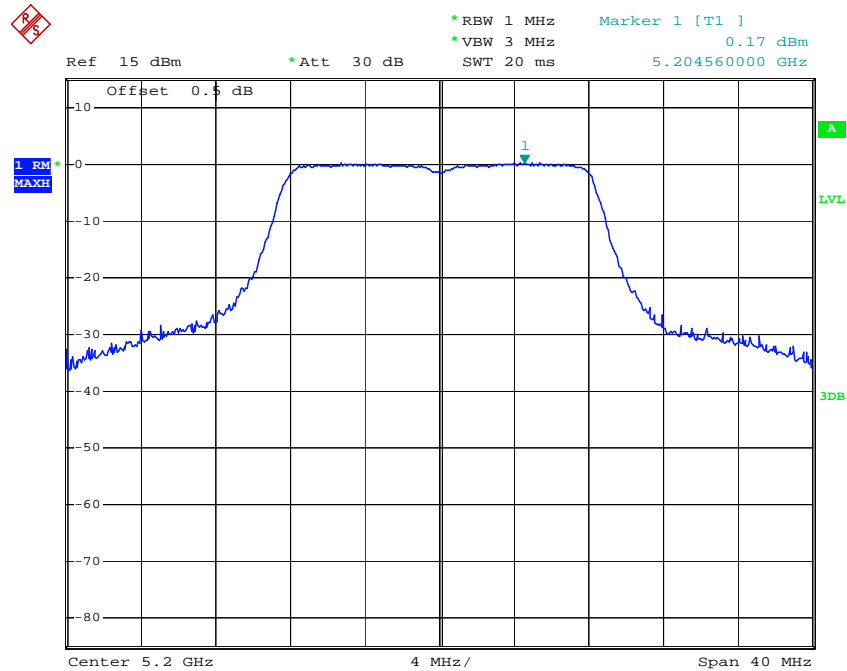
5150-5250MHz

802.11a Low Channel



Date: 11.SEP.2017 09:25:04

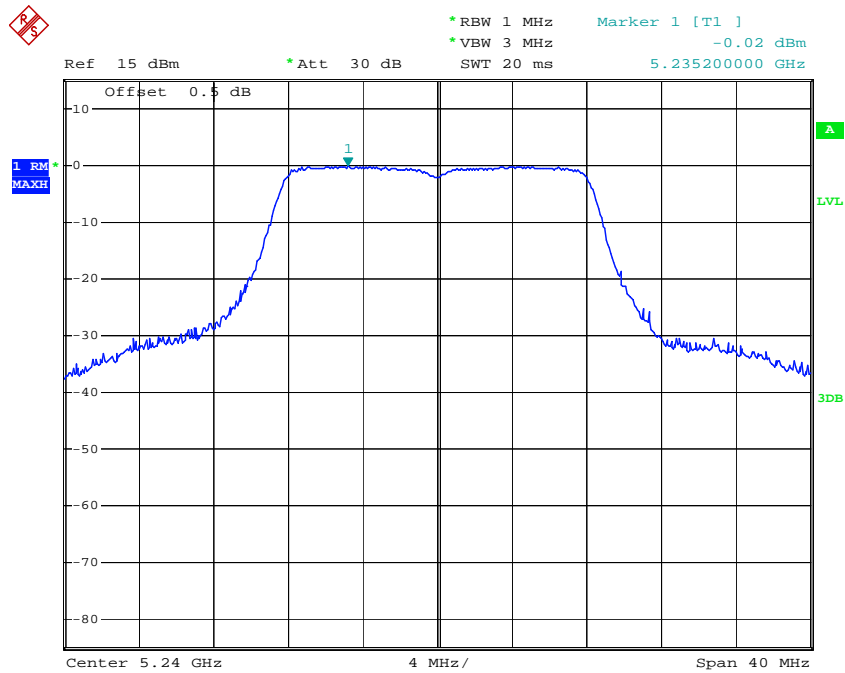
802.11a Middle Channel



Date: 11.SEP.2017 09:16:59

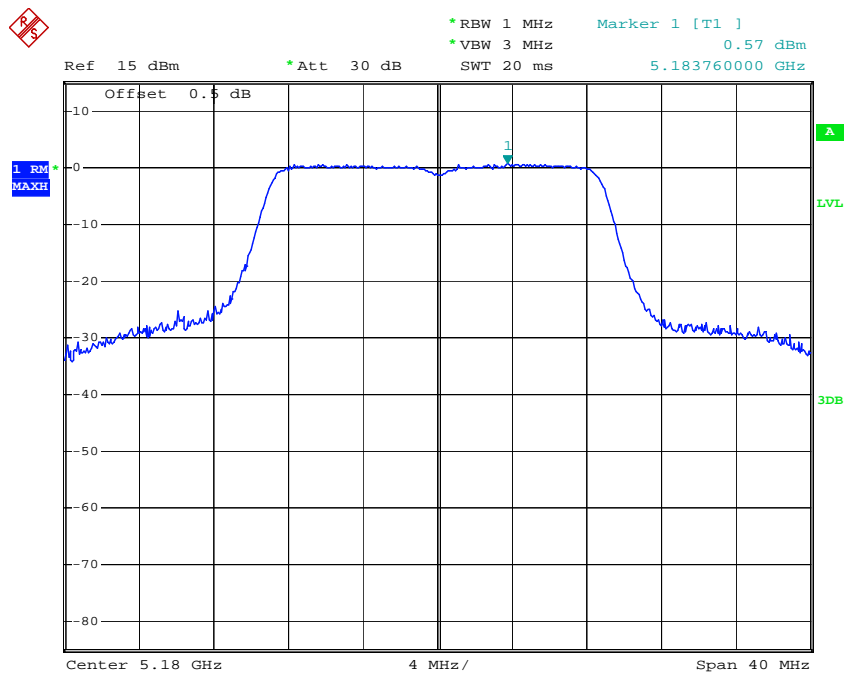


### 802.11a High Channel



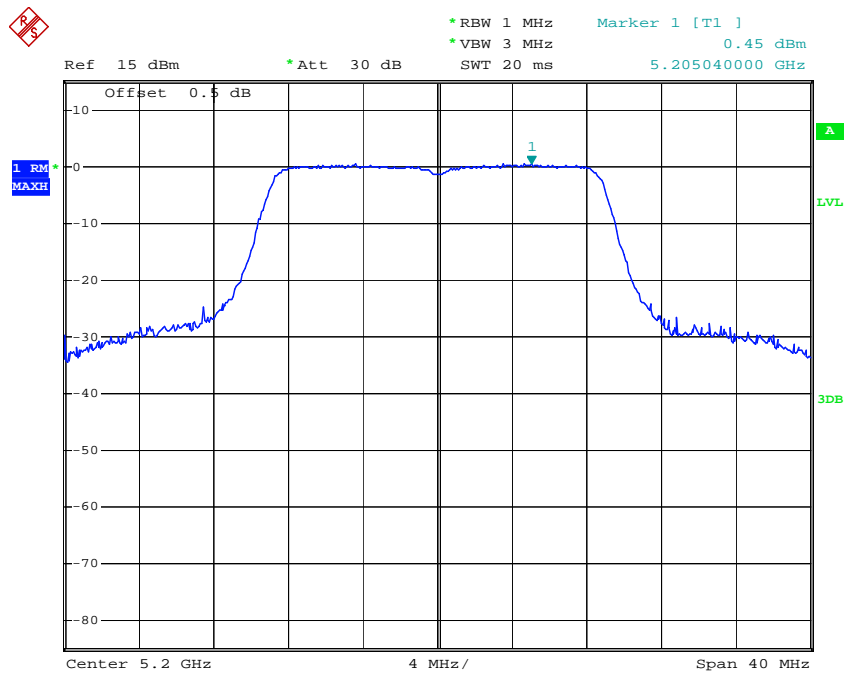
Date: 11.SEP.2017 09:15:30

### 802.11n ht20 Low Channel



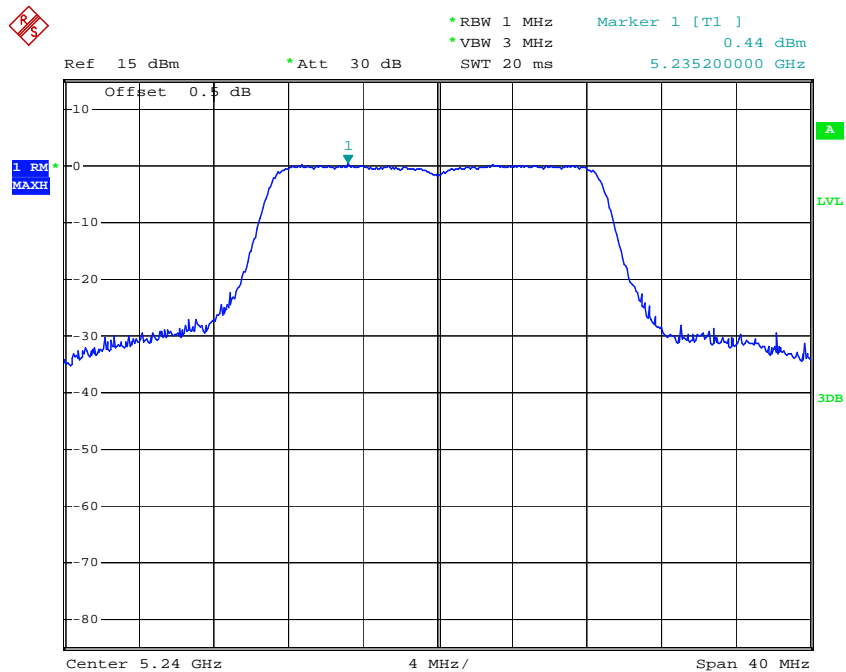
Date: 11.SEP.2017 09:09:58

### 802.11n ht20 Middle Channel



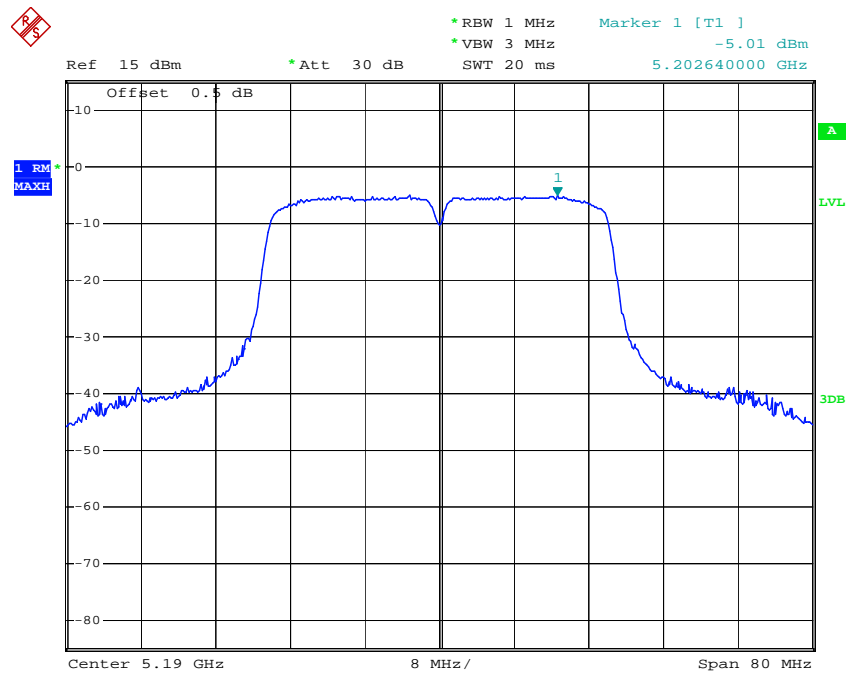
Date: 11.SEP.2017 09:11:48

### 802.11n ht20 High Channel



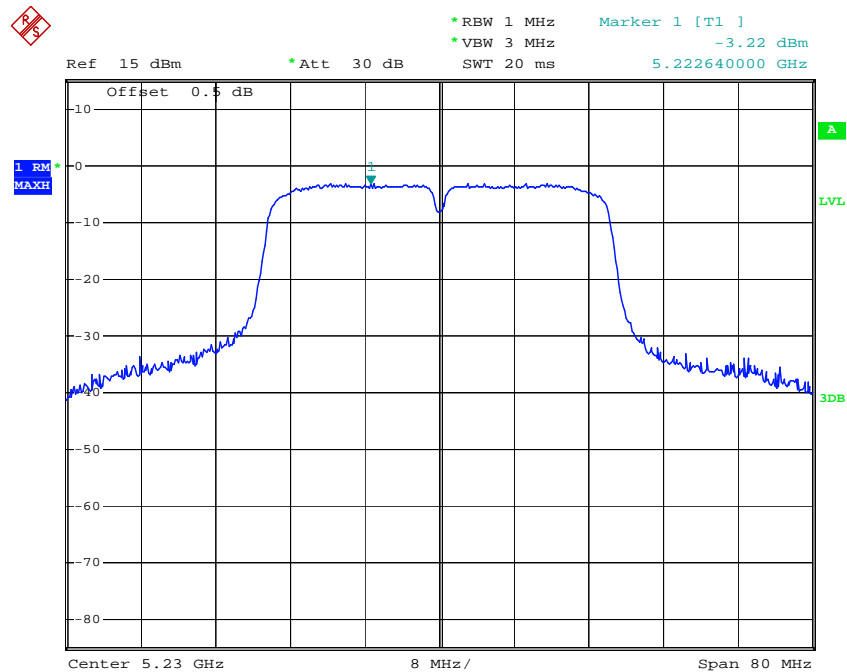
Date: 11.SEP.2017 09:13:31

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:02:06

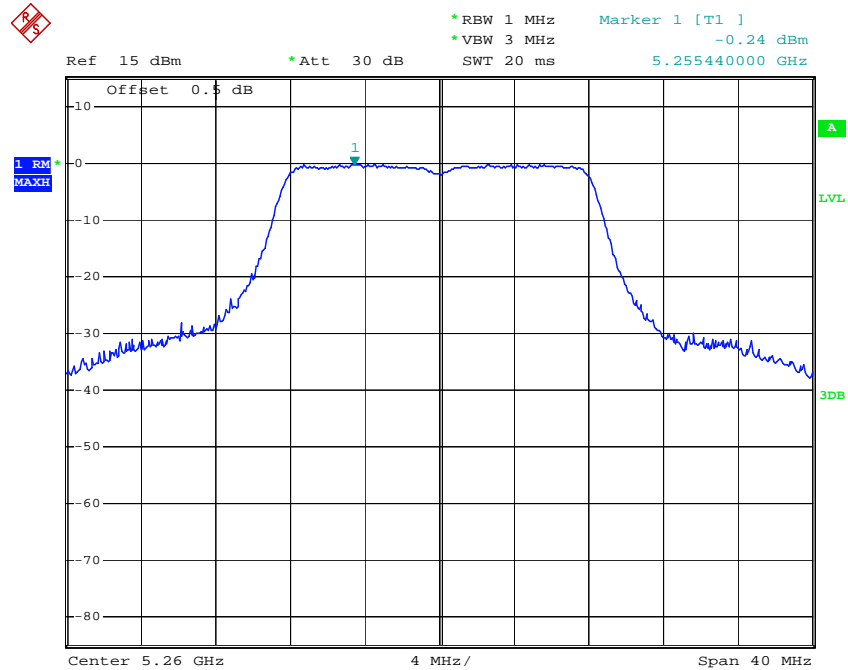
### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:07:40

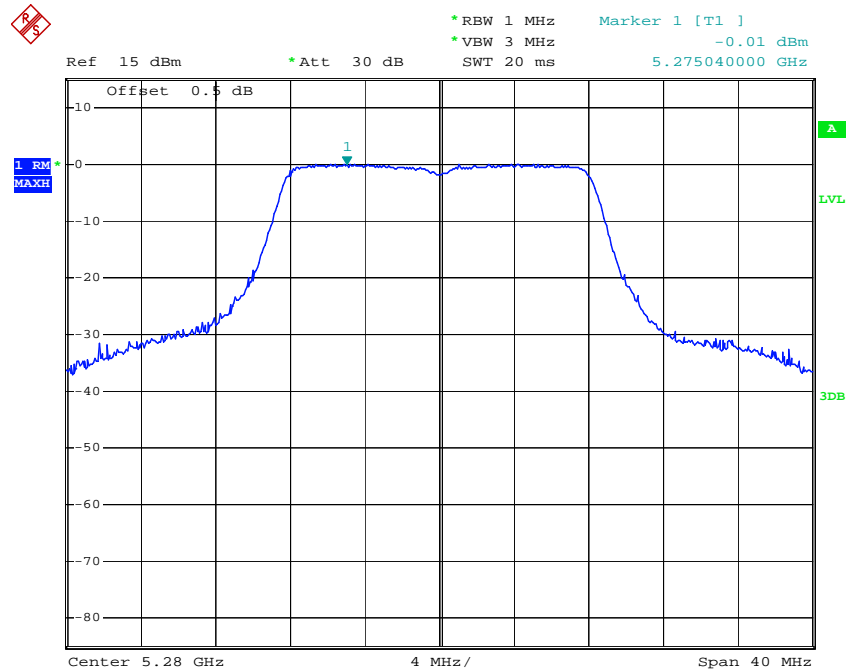
5250-5350MHz

802.11a Low Channel



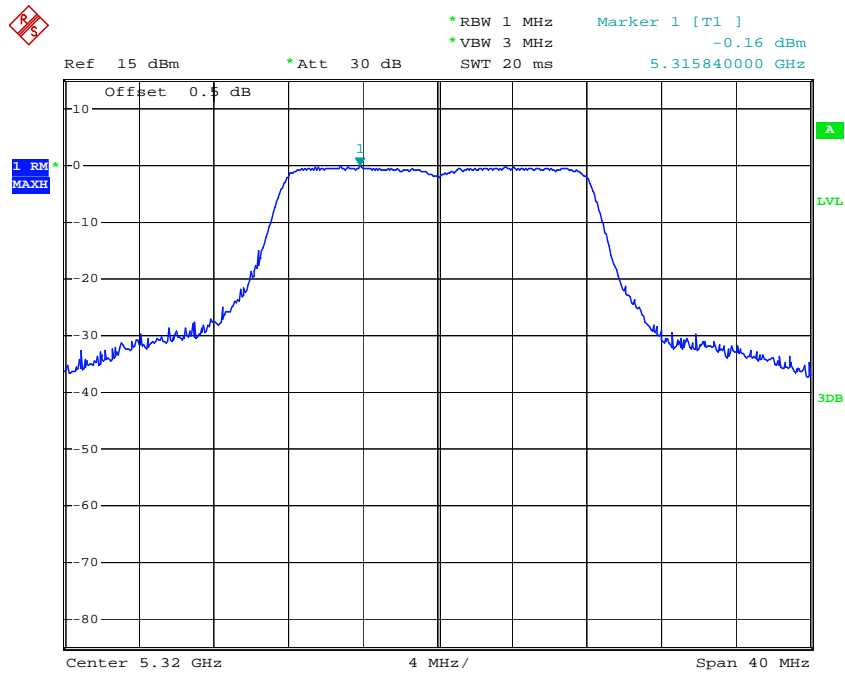
Date: 11.SEP.2017 09:27:07

802.11a Middle Channel



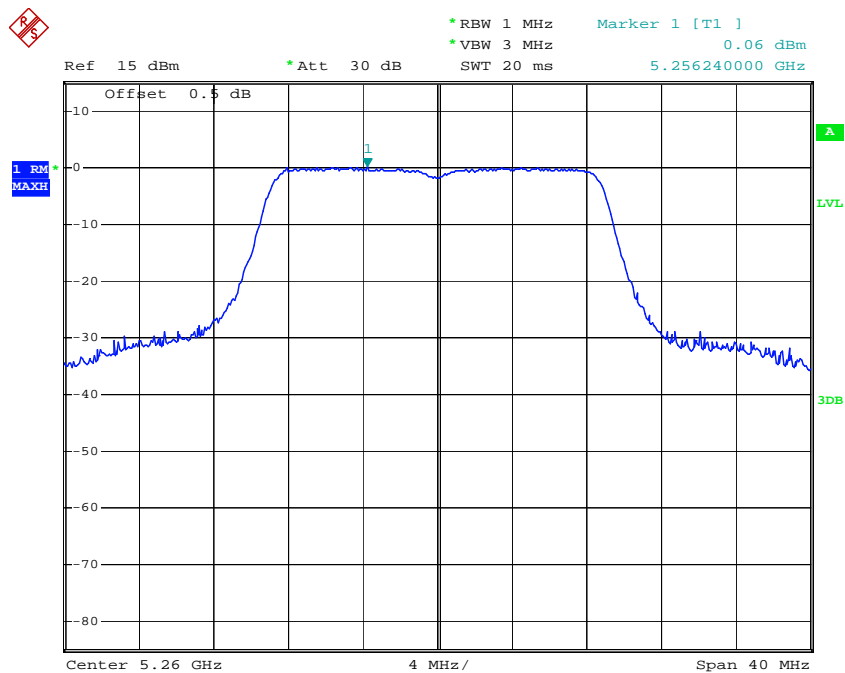
Date: 11.SEP.2017 09:28:38

### 802.11a High Channel



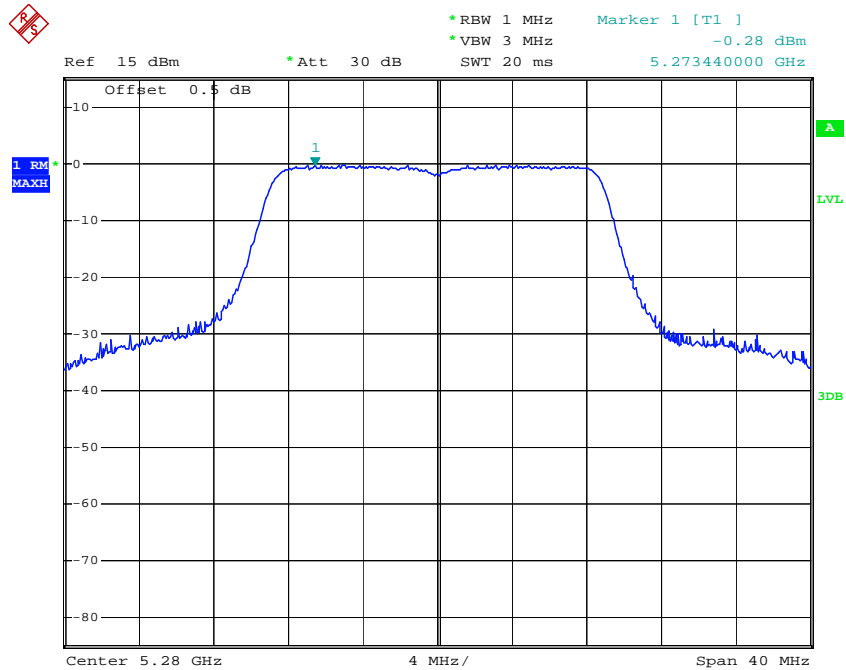
Date: 11.SEP.2017 09:29:50

### 802.11n ht20 Low Channel



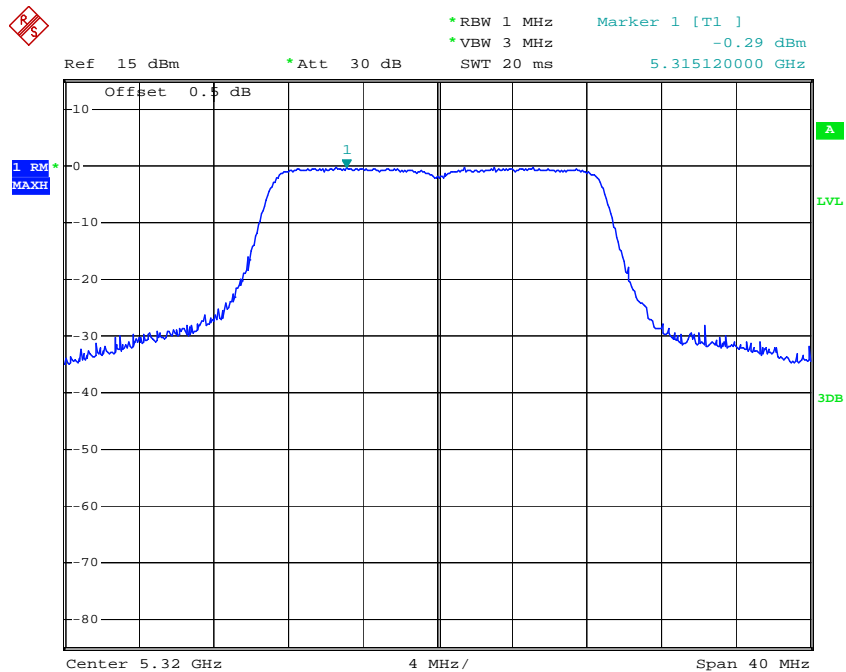
Date: 11.SEP.2017 09:36:13

### 802.11n ht20 Middle Channel



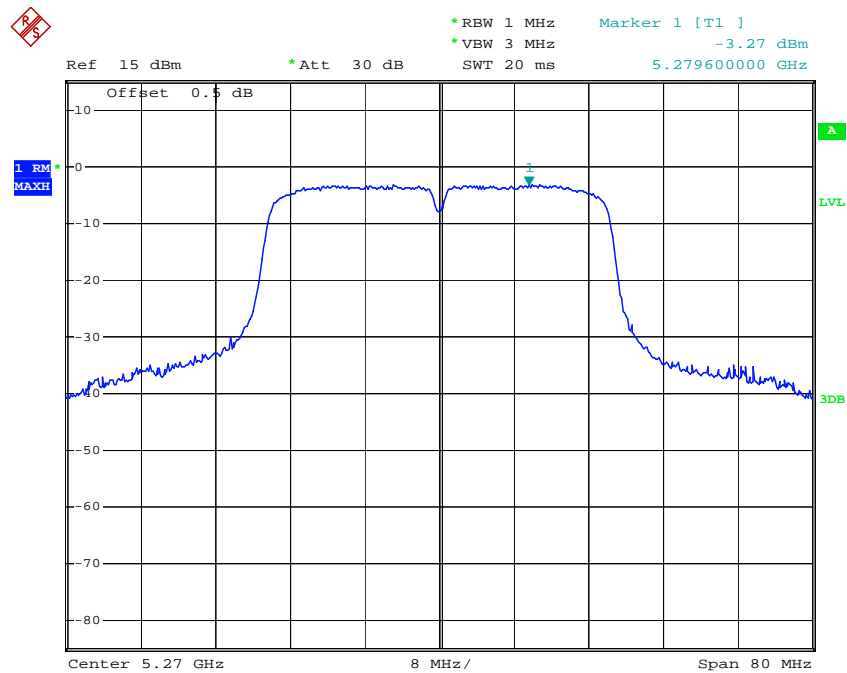
Date: 11.SEP.2017 09:34:48

### 802.11n ht20 High Channel



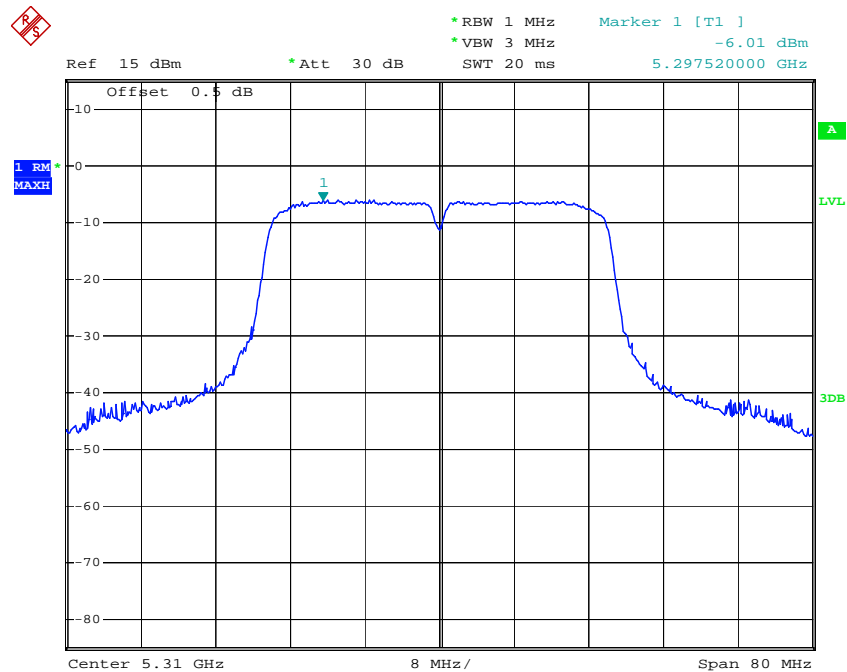
Date: 11.SEP.2017 09:32:57

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 09:38:15

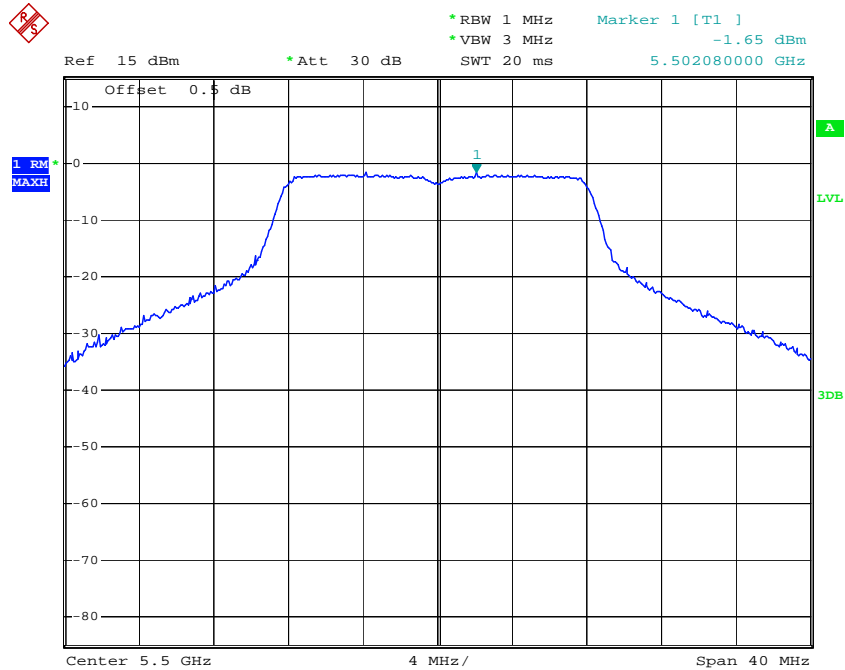
### 802.11n ht40 High Channel



Date: 11.SEP.2017 09:42:49

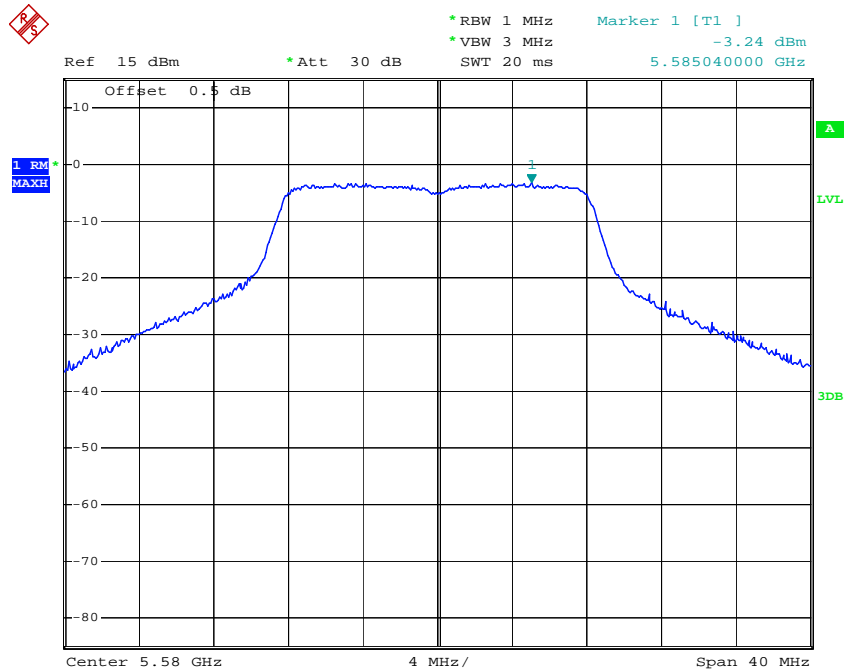
5470-5725MHz

### 802.11a Low Channel



Date: 11.SEP.2017 11:12:03

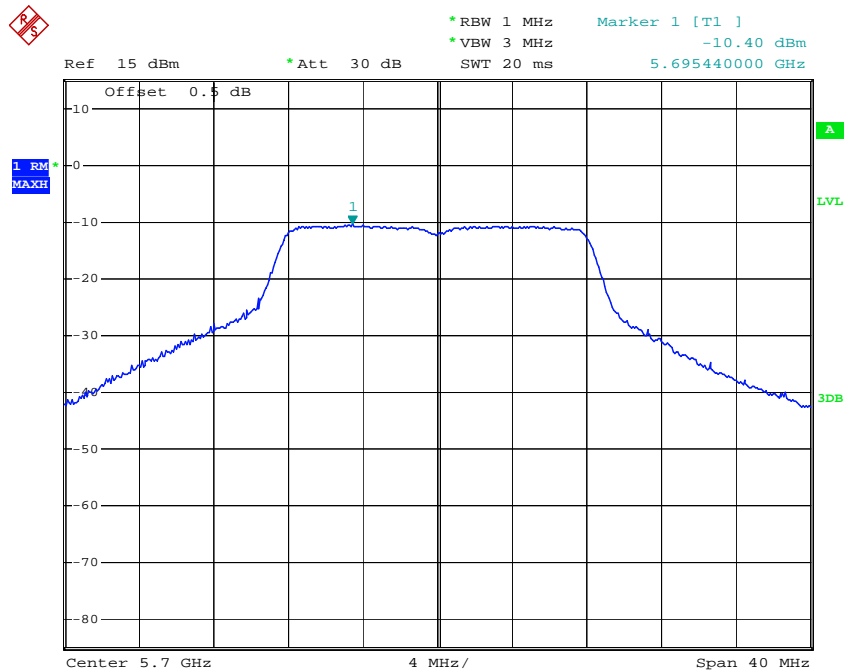
### 802.11a Middle Channel



Date: 11.SEP.2017 10:18:00

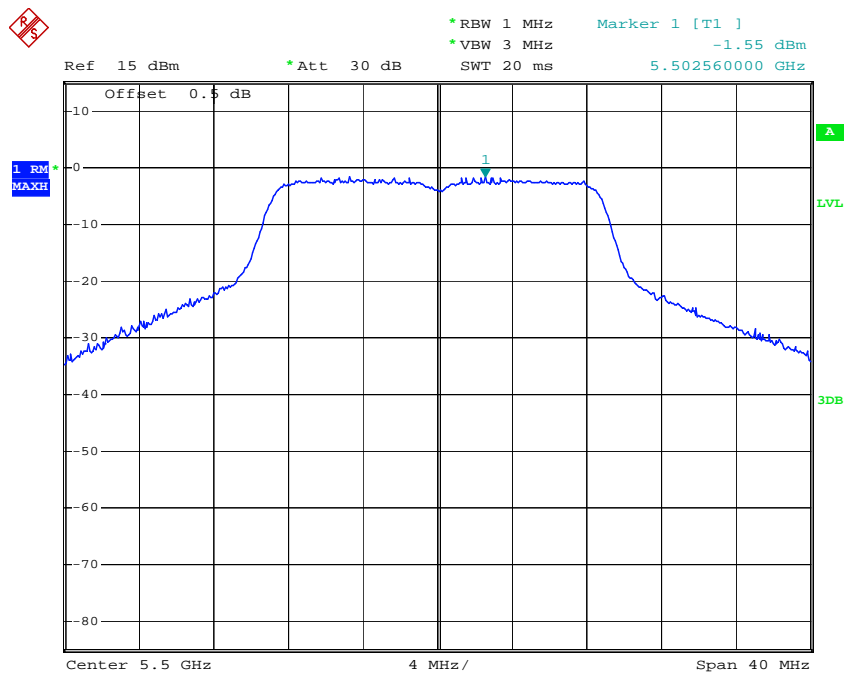


### 802.11a High Channel



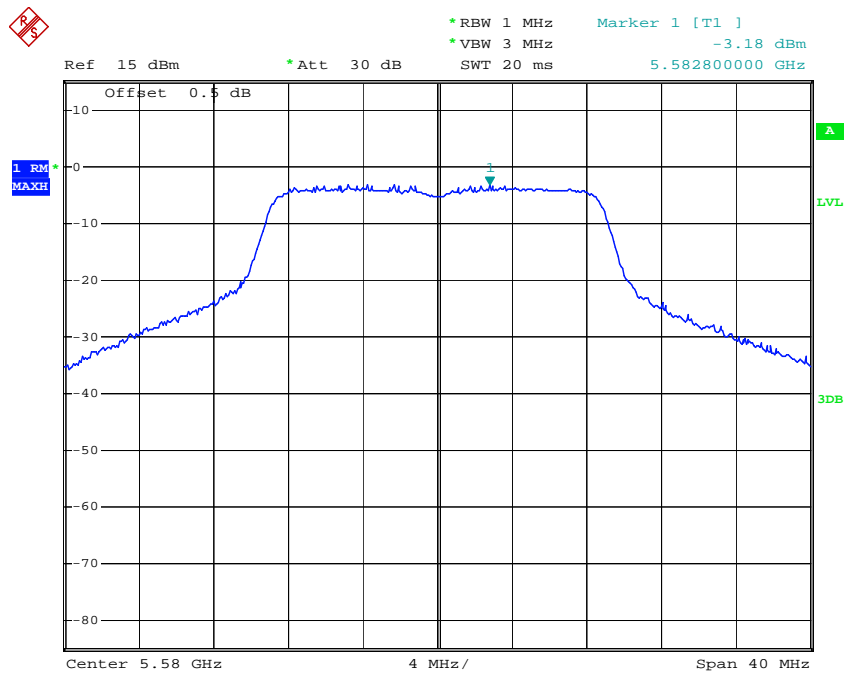
Date: 17.SEP.2017 17:36:02

### 802.11n ht20 Low Channel



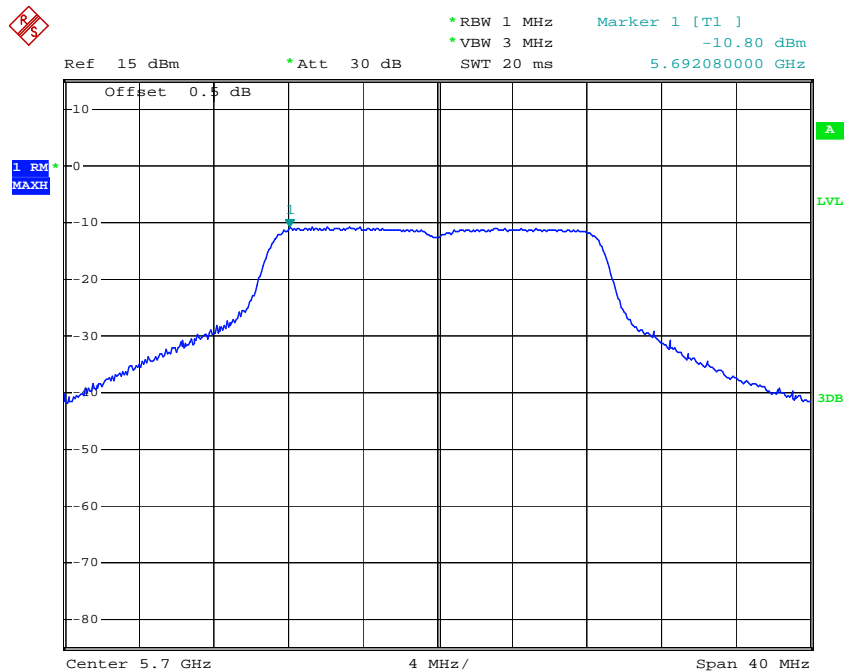
Date: 11.SEP.2017 11:14:30

### 802.11n ht20 Middle Channel



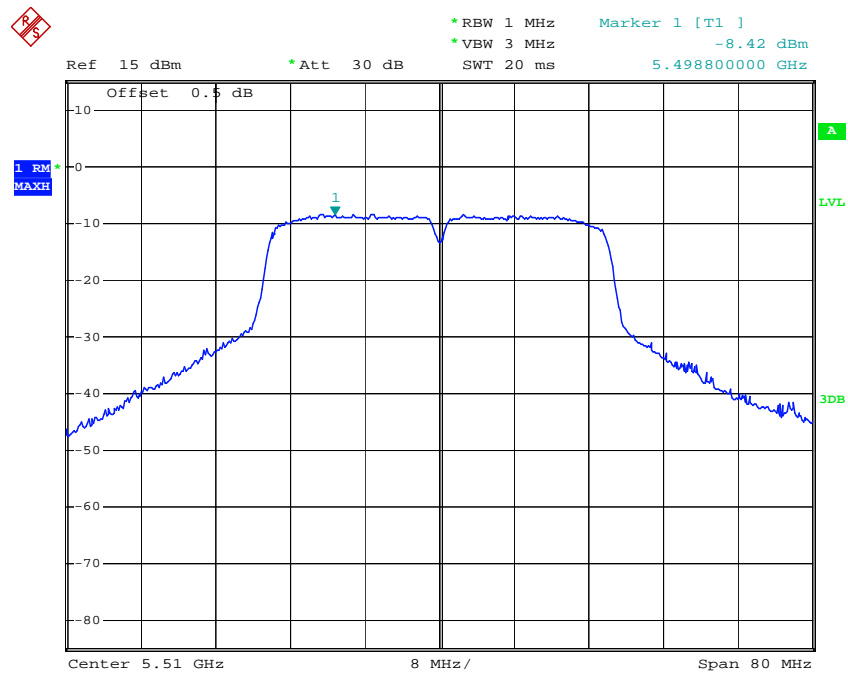
Date: 11.SEP.2017 10:01:32

### 802.11n ht20 High Channel



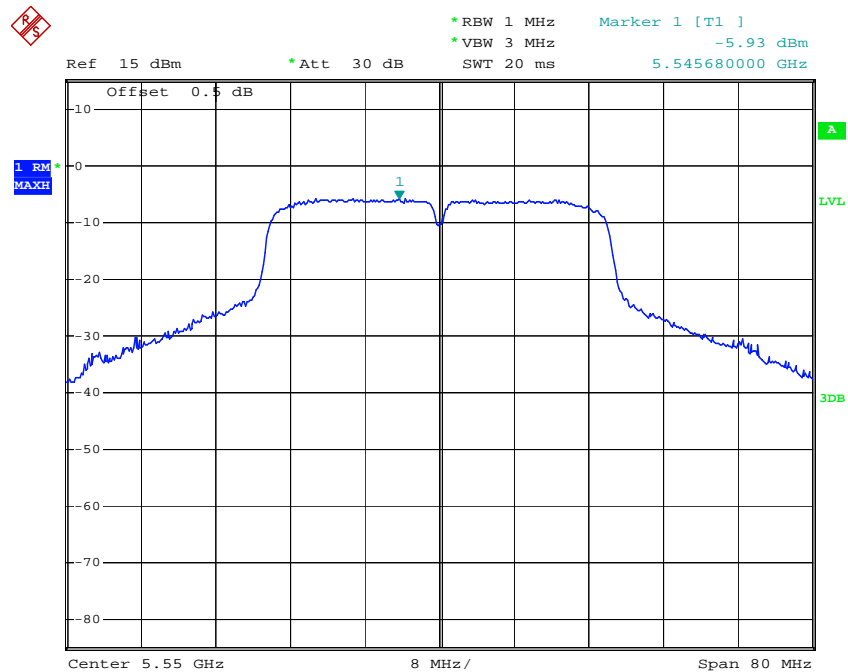
Date: 17.SEP.2017 17:37:31

### 802.11n ht40 Low Channel



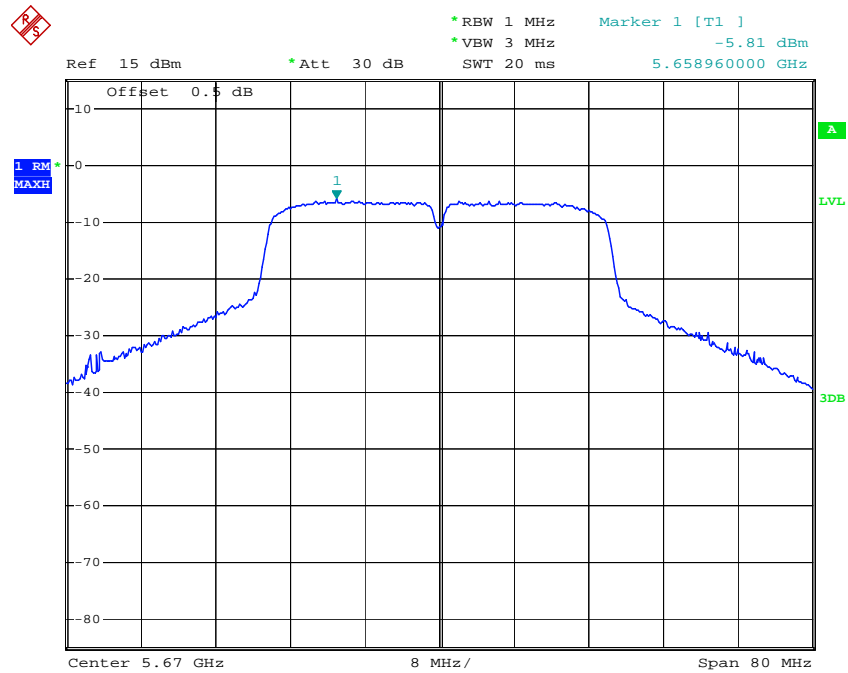
Date: 11.SEP.2017 09:53:03

### 802.11n ht40 Middle Channel



Date: 11.SEP.2017 11:20:12

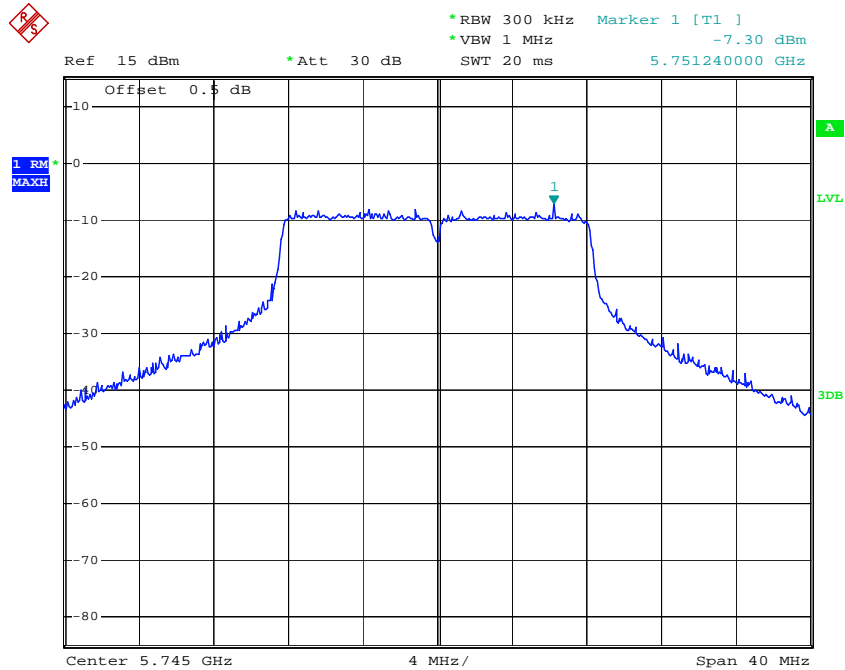
### 802.11n ht40 High Channel



Date: 11.SEP.2017 11:23:17

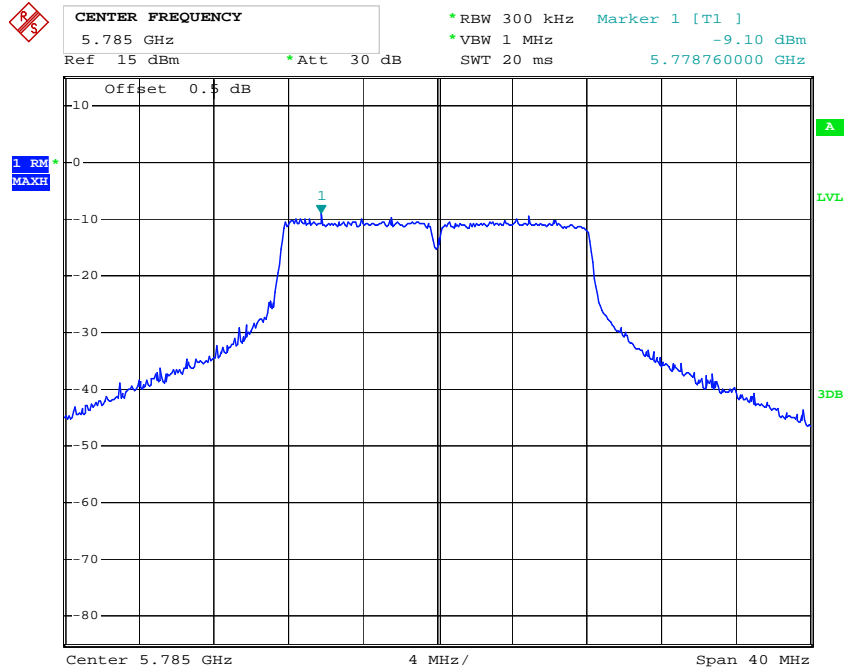
5725-5850MHz

### 802.11a Low Channel



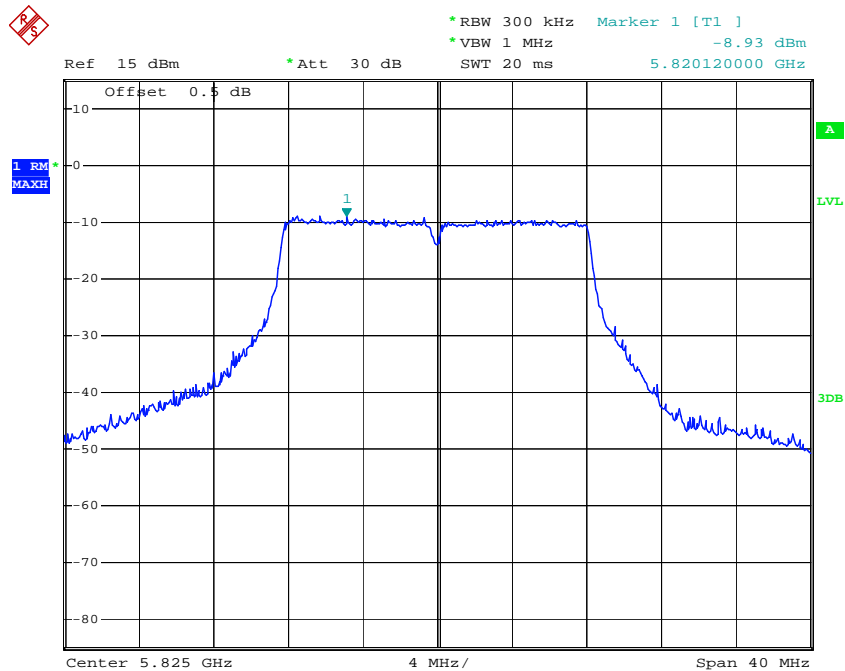
Date: 11.SEP.2017 11:25:13

### 802.11a Middle Channel



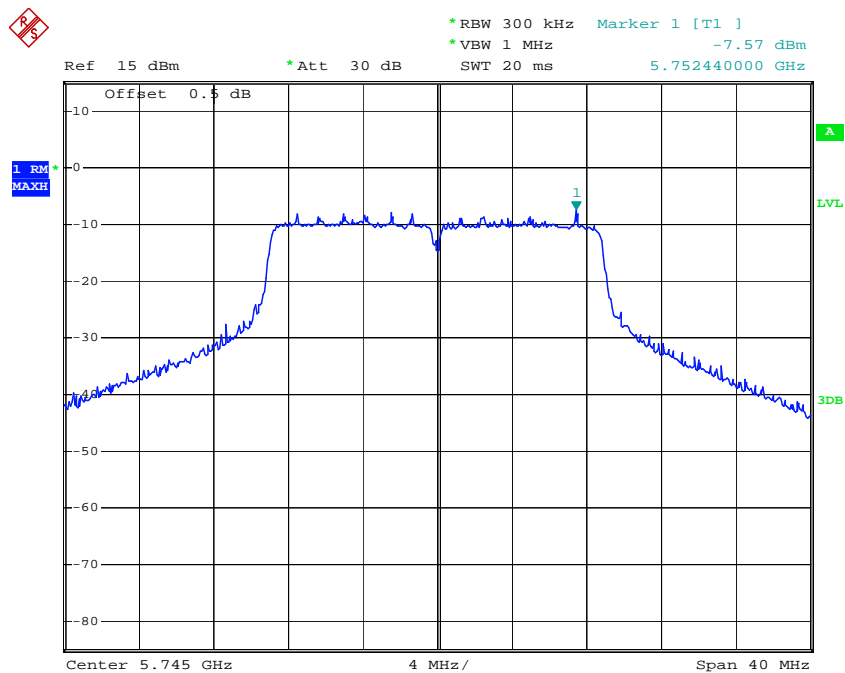
Date: 11.SEP.2017 10:34:36

### 802.11a High Channel



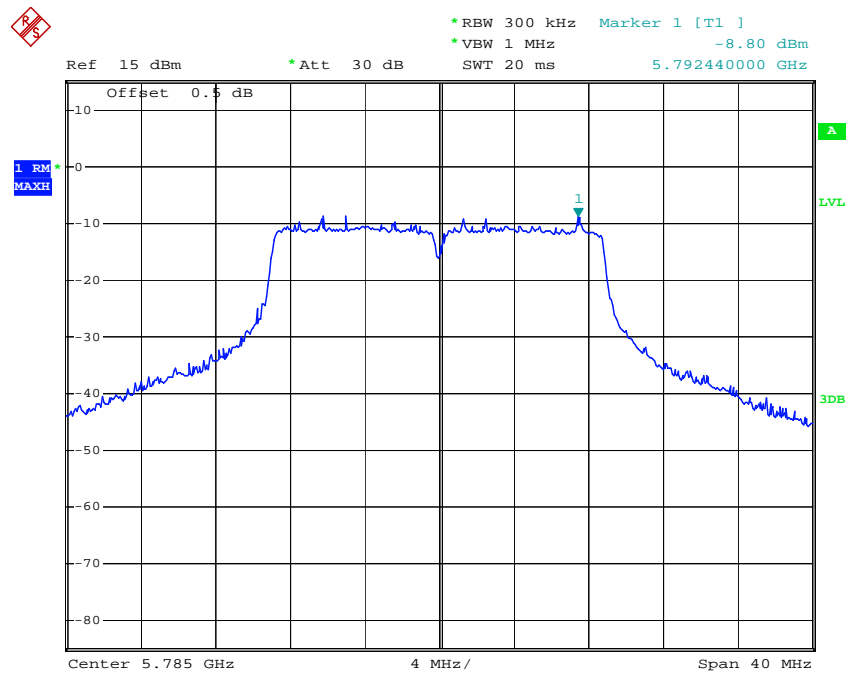
Date: 13.SEP.2017 23:50:41

### 802.11n ht20 Low Channel



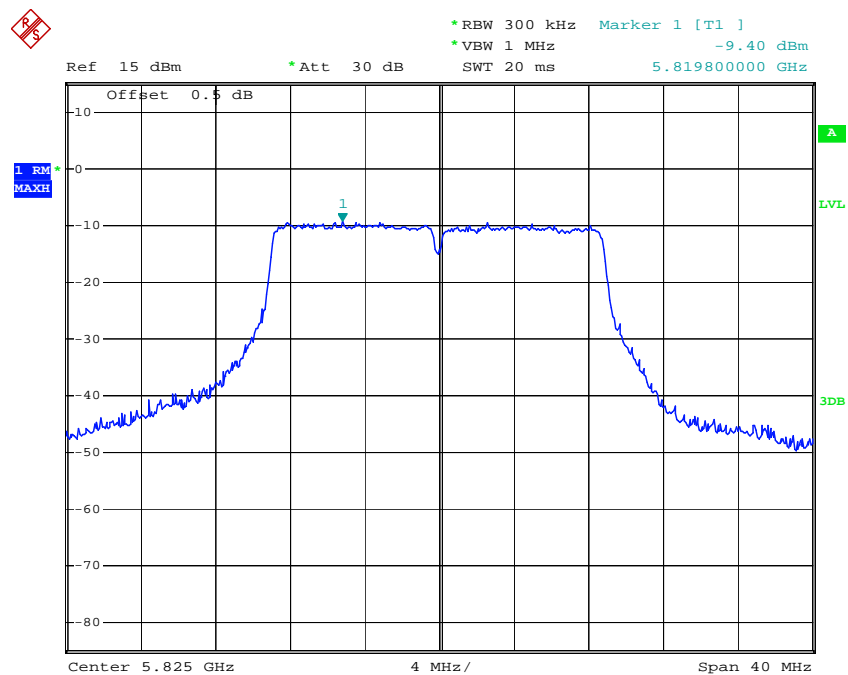
Date: 11.SEP.2017 10:47:25

### 802.11n ht20 Middle Channel



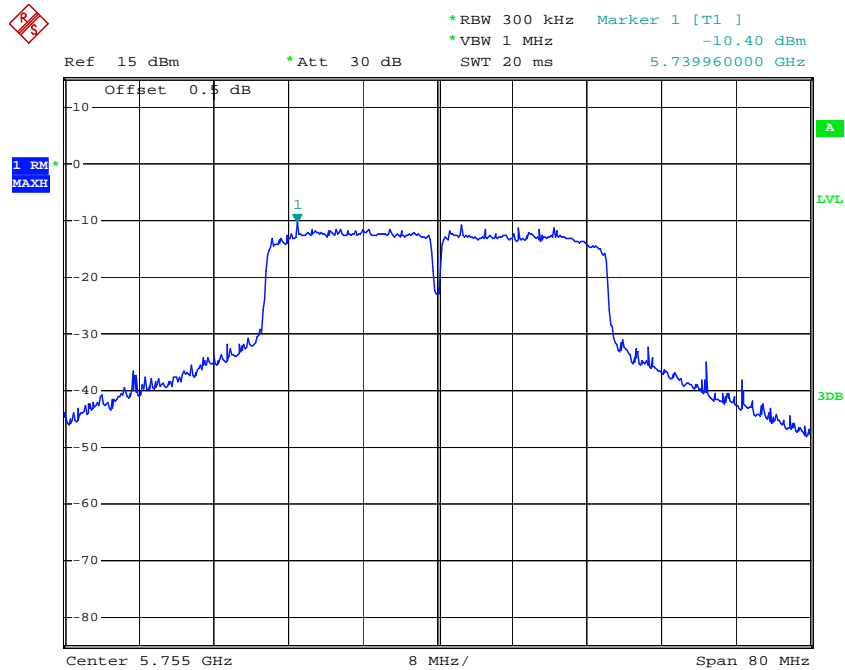
Date: 11.SEP.2017 10:49:19

### 802.11n ht20 High Channel



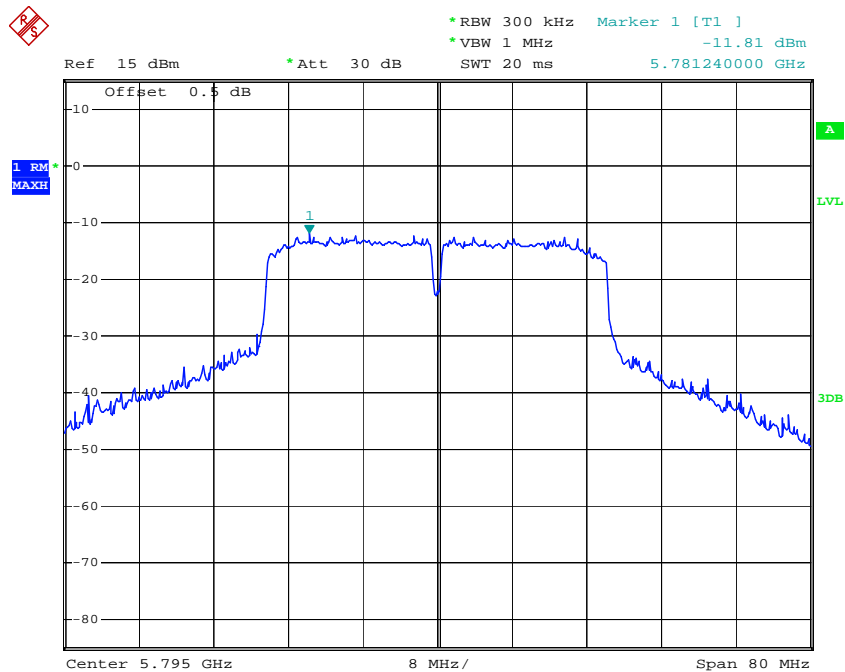
Date: 13.SEP.2017 23:48:26

### 802.11n ht40 Low Channel



Date: 11.SEP.2017 11:01:44

### 802.11n ht40 High Channel



Date: 11.SEP.2017 10:59:42

\*\*\*\*\* END OF REPORT \*\*\*\*\*