FCC PART 15.407

TEST REPORT

For

Huawei Technologies Co.,Ltd

Administration Building,Headquarters of Huawei Technologies Co.,Ltd., Bantian,Longgang District, Shenzhen, 518129, P.R.C

FCC ID: QISPRU11WIFI

Report Type:	Product Type:
Original Report	pico Remote Radio Unit

Test Engineer:	Dean Liu
Report Number:	RDG160503005-00B
Report Date:	2016-05-16
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Huawei Technologies Co.,Ltd* 's product, model number: *pRRU3911+WIFI(FCC ID: QISPRU11WIFI)* (the "EUT") in this report was a *pico Remote Radio Unit* , which was measured approximately: 200 mm (W) x 200 mm (D) x 40 mm (H), rated input voltage: -48V DC powered by POE.

All measurement and test data in this report was gathered from production sample serial number: 160503005 (Assigned by BACL, Dongguan). The EUT was received on 2016-05-03.

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15C DTS and part 22/24/27 PCB submissions with FCC ID: QISPRU11WIFI.

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).

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 Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

For 5GHz bands, the device support 3 x 3 MIMO at 802.11a,n and ac system, for 5150~5250 MHz band, 7 channels are provided to test:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a, 802.11n ht20, Channel 36, 40 and 48 were tested, for 802.11n ht40, Channel 38, 46 were tested. For 802.11AC 80, channel 42 was tested.

For 5725~5850MHz band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	165	5825
155	5775	/	/
157	5785	/	/

For 802.11a, 802.11n ht20, Channel 149, 157 and 165 was tested, for 802.11n ht40, Channel 151, 159 was tested. For 802.11AC 80, channel 155 was tested.

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.

EUT Exercise Software

The CMD Command was used for testing, and the commands were provided by manufacturer. The worst condition (maximum power with 100% dutycycle) was setting by the software as following table:

Software and version				CMD Command					
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)			Power Level		
				Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2
5150-5250MHz	802.11 a	Low	5180	54	54	54	16	16	16
		Middle	5200	54	54	54	16	16	16
		High	5240	54	54	54	16	16	16
	802.11 n20	Low	5180	t7	t7	t7	16	16	16
		Middle	5200	t7	t7	t7	16	16	16
		High	5240	t7	t7	t7	16	16	16
	802.11 n40	Low	5190	f7	f7	f7	16	16	16
		High	5230	f7	f7	f7	16	16	16
	802.11 ac80	Middle	5210	ve7	ve7	ve7	16	16	16
5725-5850MHz	802.11 a	Low	5745	54	54	54	16	16	16
		Middle	5785	54	54	54	16	16	16
		High	5825	54	54	54	16	16	16
	802.11 n20	Low	5745	t7	t7	t7	16	16	16
		Middle	5785	t7	t7	t7	16	16	16
		High	5825	t7	t7	t7	16	16	16
	802.11 n40	Low	5755	f7	f7	f7	16	16	16
		High	5795	f7	f7	f7	16	16	16
	802.11 ac80	Middle	5775	ve7	ve7	ve7	16	16	16

Equipment Modifications

No modification was made to the EUT.

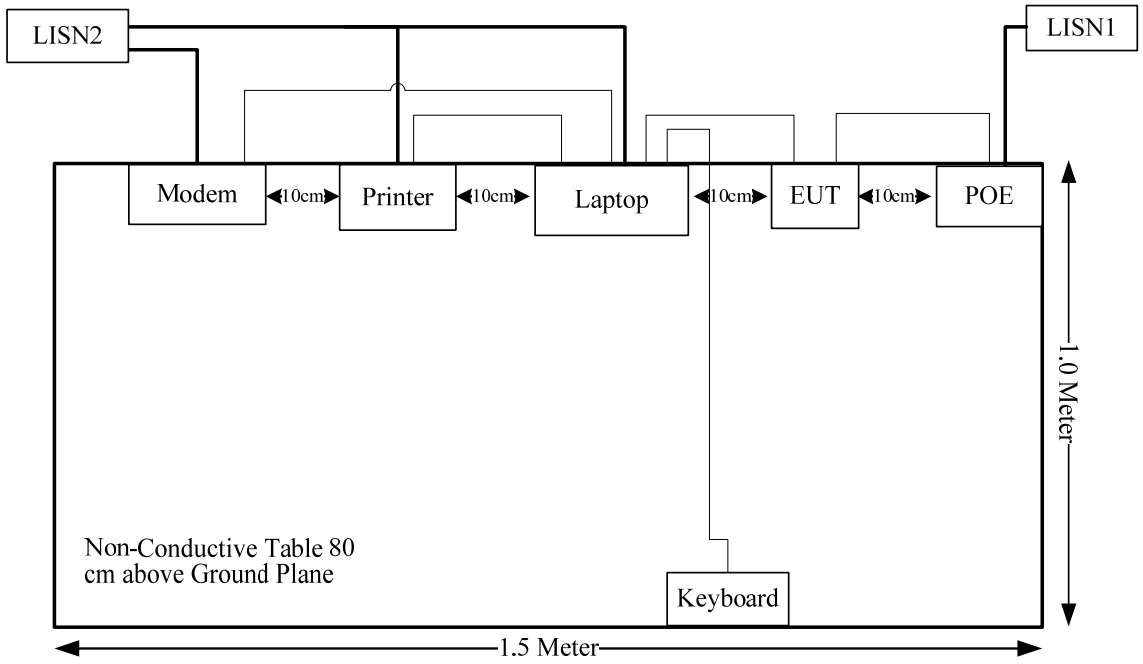
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	G510	CB30920865
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293
HUAWEI	POE Adapter	PoE35-54A	2102220369ARF7000631

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	No	1.5	RJ45 Port of POE	EUT
RJ45 Cable	No	No	1.5	RJ45 Port of Laptop	EUT
Printer Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Keyboard Cable	Yes	No	1.5	Keyboard Port of Laptop	Keyboard

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Not Applicable
§15.407(b) (1),(2),(3),(4)	Out Of Band Emissions	Compliance
§15.407(a) (1)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance
FCC §15.407 (f) & §1.1310 & §2.1091	RF Exposure	Compliance*

Compliance*: pleaser refer to the RF exposure report: SYBH(R)02376164EB-2. Which iussed by Global Compliance and Testing Center of Huawei Technologies Co., Ltd. On 2016-5-18.

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 have 3 internal antenna and all the antenna gain is 9 dBi at 5G bands. 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, §15.407(b) (6).

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

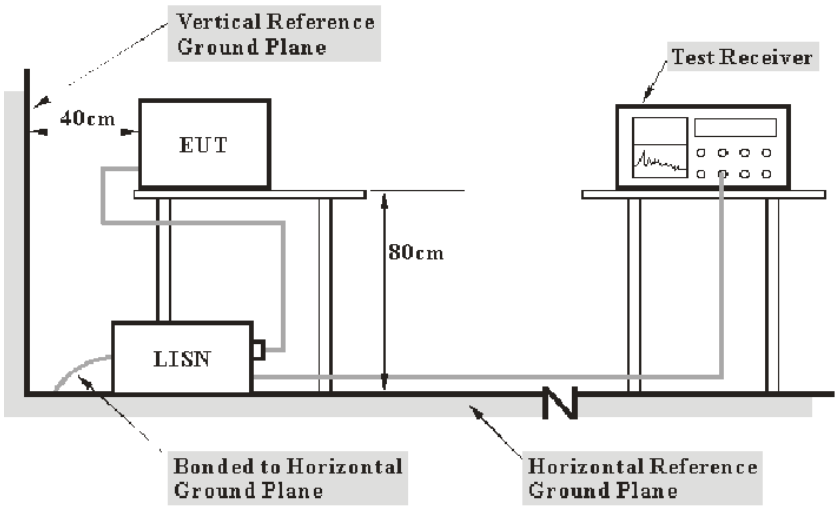
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
– compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
– non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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 POE was connected to a 120 VAC/60 Hz 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 maximum limit. The equation for margin calculation is as follows:

Margin = Limit – 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	2015-12-10	2016-12-09
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
N/A	Coaxial Cable	1.8m	N/A	2016-05-06	2017-05-06
R&S	Test Software	EMC32	Version8.53.0	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 Procedure

During the conducted emission test, the adapter was connected to thefirst LISN and the other support equipments were connected to the outlet of the second 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 Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

7.1 dB at **0.409372 MHz** in the **Line** conducted mode.

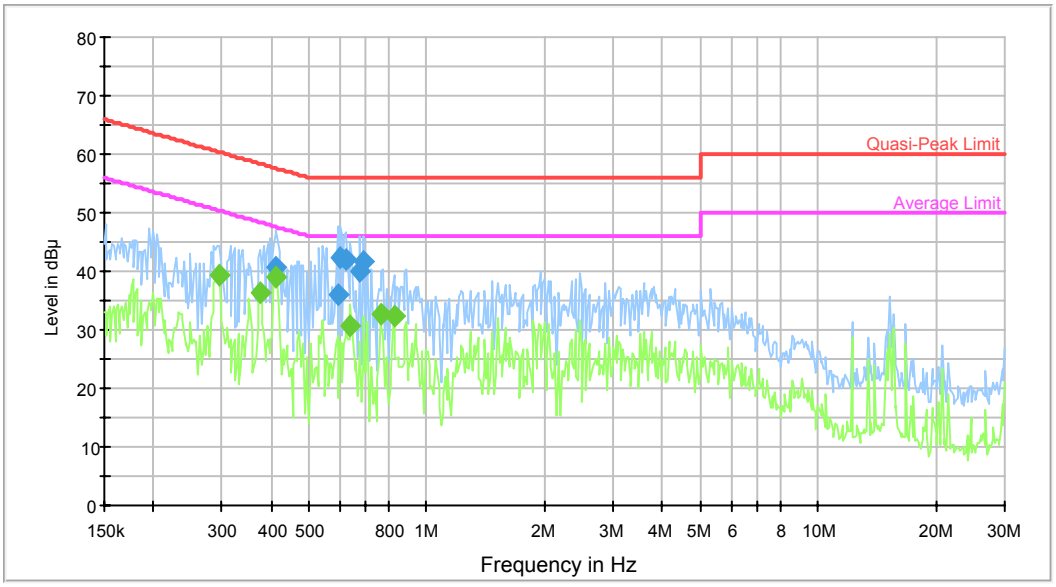
Test Data

Environmental Conditions

Temperature:	28.7°C
Relative Humidity:	50 %
ATM Pressure:	100.4 kPa

The testing was performed by Dean Liu on 2016-05-12.

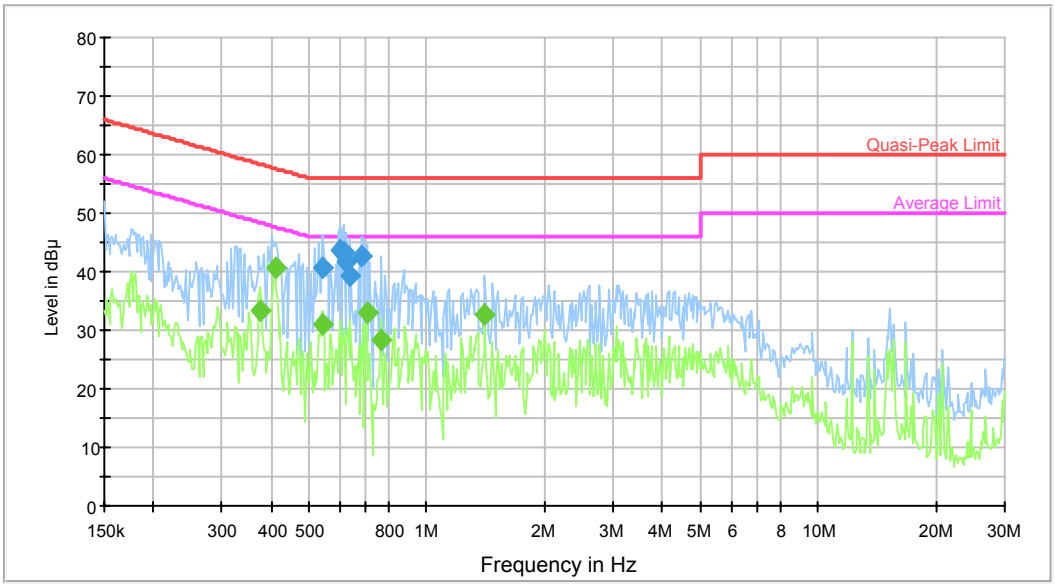
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.412647	40.6	9.000	L1	10.2	17.0	57.6	Compliance
0.590613	36.1	9.000	L1	10.2	19.9	56.0	Compliance
0.600101	42.4	9.000	L1	10.2	13.6	56.0	Compliance
0.619536	42.1	9.000	L1	10.3	13.9	56.0	Compliance
0.676289	39.9	9.000	L1	10.4	16.1	56.0	Compliance
0.692650	41.8	9.000	L1	10.4	14.2	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.295282	39.2	9.000	L1	10.2	11.2	50.4	Compliance
0.375019	36.2	9.000	L1	10.3	12.2	48.4	Compliance
0.409372	39.1	9.000	L1	10.2	8.6	47.7	Compliance
0.639600	30.7	9.000	L1	10.3	15.3	46.0	Compliance
0.762149	32.8	9.000	L1	10.4	13.2	46.0	Compliance
0.825364	32.4	9.000	L1	10.4	13.6	46.0	Compliance

AC120 V, 60 Hz, Neutral:



requency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.541050	40.7	9.000	N	10.1	15.3	56.0	Compliance
0.600101	43.5	9.000	N	10.2	12.5	56.0	Compliance
0.614619	43.2	9.000	N	10.3	12.8	56.0	Compliance
0.624492	41.8	9.000	N	10.3	14.2	56.0	Compliance
0.639600	39.2	9.000	N	10.3	16.8	56.0	Compliance
0.681699	42.8	9.000	N	10.4	13.2	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	33.5	9.000	N	10.2	14.9	48.4	Compliance
0.409372	40.6	9.000	N	10.2	7.1	47.7	Compliance
0.541050	31.0	9.000	N	10.1	15.0	46.0	Compliance
0.703777	32.9	9.000	N	10.4	13.1	46.0	Compliance
0.768247	28.5	9.000	N	10.4	17.5	46.0	Compliance
1.407671	32.6	9.000	N	10.4	13.4	46.0	Compliance

FCC §15.209, §15.205 & §15.407(b) (1) (6) (7) –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: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(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.

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

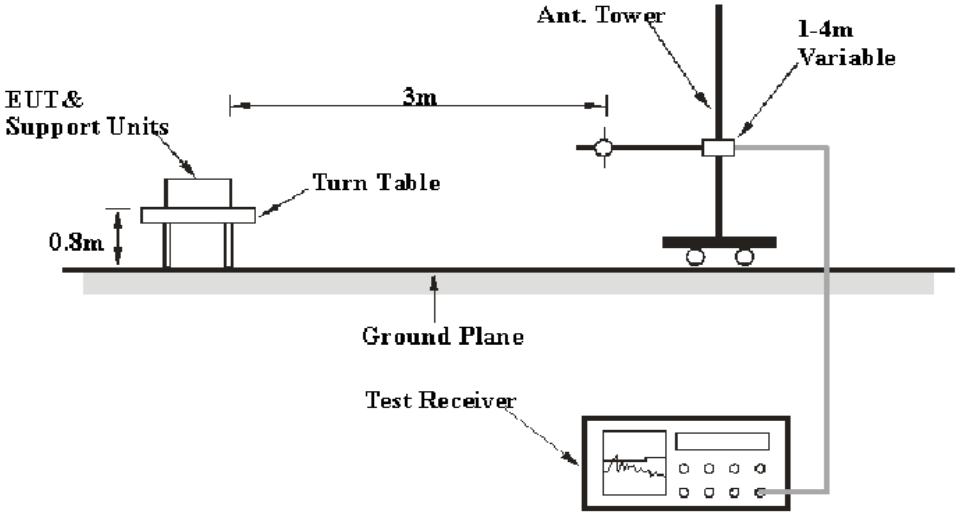
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

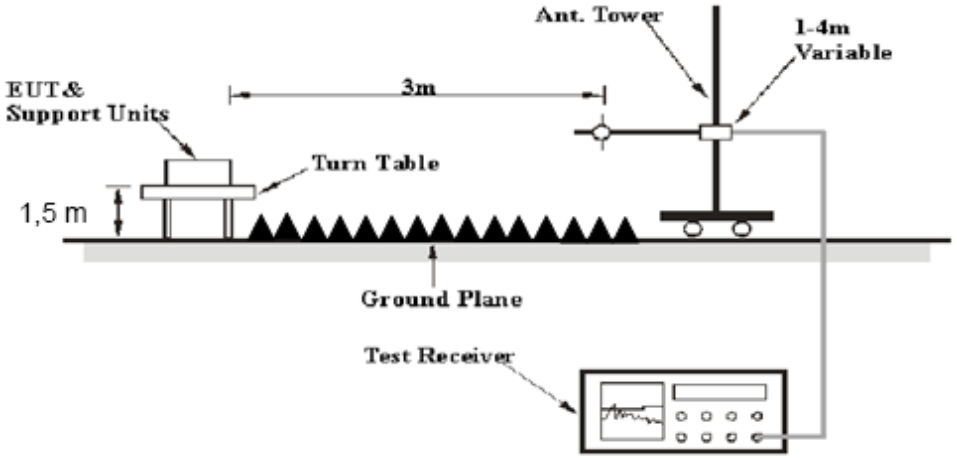
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters chamber, 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.

The POE was connected to a 120 VAC/60 Hz power source

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:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

During the radiated emission test, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second 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 v01r02, emission shall be computed as: E [dBμV/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 (specific distance [3m]/test distance [1.5m]) dB
Extrapolation result = Corrected Amplitude (dBμV/m) - distance extrapolation factor (6dB)

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - 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:

Margin = Limit –Extrapolation result

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
Sinoscite	Bandstop Filters	BSF5150-5850MN-0899-003	N/A	2016-05-06	2017-05-06
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
Agilent	Spectrum Analyzer	8564E	3943A01781	2016-05-08	2017-05-08
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Ducommun Technolagies	Horn Antenna	ARH-2823-02	1007726-01 1302	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2015-09-06	2016-09-06

*** 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

Temperature:	25.1 °C
Relative Humidity:	65 %
ATM Pressure:	101.2kPa

** The testing was performed by Dean Liu on 2016-05-14.*

Test Mode: Transmitting

5150MHz-5250MHz: 802.11a mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	88.01	PK	H	31.46	5.40	0.00	124.87	118.87	N/A	N/A
5180	77.24	AV	H	31.46	5.40	0.00	114.10	108.10	N/A	N/A
5180	81.73	PK	V	31.46	5.40	0.00	118.59	112.59	N/A	N/A
5180	70.55	AV	V	31.46	5.40	0.00	107.41	101.41	N/A	N/A
5150	37.31	PK	V	31.40	5.26	0.00	73.97	67.97	74.00	6.03
5150	17.00	AV	V	31.40	5.26	0.00	53.66	47.66	54.00	6.34
10360	33.64	PK	V	36.97	8.36	25.52	53.45	47.45	74.00	26.55
10360	18.01	AV	V	36.97	8.36	25.52	37.82	31.82	54.00	22.18
15540	35.19	PK	V	37.43	14.94	24.98	62.58	56.58	74.00	17.42
15540	20.49	AV	V	37.43	14.94	24.98	47.88	41.88	54.00	12.12
6906	53.24	PK	V	33.36	6.33	26.44	66.49	60.49	68.20	7.71
4859	38.15	PK	V	30.73	5.04	27.42	46.50	40.50	74.00	33.50
4859	24.53	AV	V	30.73	5.04	27.42	32.88	26.88	54.00	27.12
405.39	33.1	QP	H	16.37	2.44	21.78	30.13	30.13	46.00	15.87
	Middle Channel:5200 MHz									
5200	88.16	PK	H	31.50	5.49	0.00	125.15	119.15	N/A	N/A
5200	77.39	AV	H	31.50	5.49	0.00	114.38	108.38	N/A	N/A
5200	81.99	PK	V	31.50	5.49	0.00	118.98	112.98	N/A	N/A
5200	70.76	AV	V	31.50	5.49	0.00	107.75	101.75	N/A	N/A
10400	33.79	PK	V	36.98	8.32	25.50	53.59	47.59	74.00	26.41
10400	18.18	AV	V	36.98	8.32	25.50	37.98	31.98	54.00	22.02
15600	35.24	PK	V	37.32	14.69	24.69	62.56	56.56	74.00	17.44
15600	20.51	AV	V	37.32	14.69	24.69	47.83	41.83	54.00	12.17
6933	50.82	PK	V	33.43	6.34	26.38	64.21	58.21	68.20	9.99
4859	38.03	PK	V	30.73	5.04	27.42	46.38	40.38	74.00	33.62
4859	24.71	AV	V	30.73	5.04	27.42	33.06	27.06	54.00	26.94
405.39	32.6	QP	H	16.37	2.44	21.78	29.63	29.63	46.00	16.37
	High Channel:5240 MHz									
5240	88.20	PK	H	31.58	5.28	0.00	125.06	119.06	N/A	N/A
5240	77.30	AV	H	31.58	5.28	0.00	114.16	108.16	N/A	N/A
5240	81.91	PK	V	31.58	5.28	0.00	118.77	112.77	N/A	N/A
5240	70.76	AV	V	31.58	5.28	0.00	107.62	101.62	N/A	N/A
5350	29.19	PK	V	31.80	5.61	0.00	66.60	60.60	74.00	13.40
5350	15.41	AV	V	31.80	5.61	0.00	52.82	46.82	54.00	7.18
10480	33.93	PK	H	37.00	8.23	26.01	53.15	47.15	74.00	26.85
10480	18.34	AV	H	37.00	8.23	26.01	37.56	31.56	54.00	22.44
15720	35.26	PK	H	37.10	14.20	24.92	61.64	55.64	74.00	18.36
15720	20.52	AV	H	37.10	14.20	24.92	46.90	40.90	54.00	13.10
6986	48.18	PK	H	33.56	6.36	26.27	61.83	55.83	68.20	12.37
4859	38.23	PK	H	30.73	5.04	27.42	46.58	40.58	74.00	33.42
4859	24.67	AV	H	30.73	5.04	27.42	33.02	27.02	54.00	26.98
405.39	32.4	QP	H	16.37	2.44	21.78	29.43	29.43	46.00	16.57

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	86.75	PK	H	31.46	5.40	0.00	123.61	117.61	N/A	N/A
5180	75.11	AV	H	31.46	5.40	0.00	111.97	105.97	N/A	N/A
5180	80.49	PK	V	31.46	5.40	0.00	117.35	111.35	N/A	N/A
5180	68.91	AV	V	31.46	5.40	0.00	105.77	99.77	N/A	N/A
5150	38.26	PK	H	31.40	5.26	0.00	74.92	68.92	74.00	5.08
5150	17.00	AV	H	31.40	5.26	0.00	53.66	47.66	54.00	6.34
10360	33.23	PK	H	36.97	8.36	25.52	53.04	47.04	74.00	26.96
10360	17.58	AV	H	36.97	8.36	25.52	37.39	31.39	54.00	22.61
15540	35.02	PK	H	37.43	14.94	24.98	62.41	56.41	74.00	17.59
15540	20.33	AV	H	37.43	14.94	24.98	47.72	41.72	54.00	12.28
6906	52.44	PK	H	33.36	6.33	26.44	65.69	59.69	68.20	8.51
4859	38.45	PK	H	30.73	5.04	27.42	46.80	40.80	74.00	33.20
4859	24.55	AV	H	30.73	5.04	27.42	32.90	26.90	54.00	27.10
405.39	31.9	QP	H	16.37	2.44	21.78	28.93	28.93	46.00	17.07
Middle Channel:5200 MHz										
5200	86.92	PK	H	31.50	5.49	0.00	123.91	117.91	N/A	N/A
5200	75.42	AV	H	31.50	5.49	0.00	112.41	106.41	N/A	N/A
5200	80.67	PK	V	31.50	5.49	0.00	117.66	111.66	N/A	N/A
5200	69.14	AV	V	31.50	5.49	0.00	106.13	100.13	N/A	N/A
10400	33.38	PK	H	36.98	8.32	25.50	53.18	47.18	74.00	26.82
10400	17.69	AV	H	36.98	8.32	25.50	37.49	31.49	54.00	22.51
15600	35.05	PK	H	37.32	14.69	24.69	62.37	56.37	74.00	17.63
15600	20.41	AV	H	37.32	14.69	24.69	47.73	41.73	54.00	12.27
6933	50.76	PK	H	33.43	6.34	26.38	64.15	58.15	68.20	10.05
4859	38.29	PK	H	30.73	5.04	27.42	46.64	40.64	74.00	33.36
4859	24.47	AV	H	30.73	5.04	27.42	32.82	26.82	54.00	27.18
405.39	32.3	QP	H	16.37	2.44	21.78	29.33	29.33	46.00	16.67
High Channel:5240 MHz										
5240	87.01	PK	H	31.58	5.28	0.00	123.87	117.87	N/A	N/A
5240	75.52	AV	H	31.58	5.28	0.00	112.38	106.38	N/A	N/A
5240	80.73	PK	V	31.58	5.28	0.00	117.59	111.59	N/A	N/A
5240	69.26	AV	V	31.58	5.28	0.00	106.12	100.12	N/A	N/A
5350	28.35	PK	H	31.80	5.61	0.00	65.76	59.76	74.00	14.24
5350	15.41	AV	H	31.80	5.61	0.00	52.82	46.82	54.00	7.18
10480	33.53	PK	H	37.00	8.23	26.01	52.75	46.75	74.00	27.25
10480	17.84	AV	H	37.00	8.23	26.01	37.06	31.06	54.00	22.94
15720	35.11	PK	H	37.10	14.20	24.92	61.49	55.49	74.00	18.51
15720	20.45	AV	H	37.10	14.20	24.92	46.83	40.83	54.00	13.17
6986	48.23	PK	H	33.56	6.36	26.27	61.88	55.88	68.20	12.32
4859	38.31	PK	H	30.73	5.04	27.42	46.66	40.66	74.00	33.34
4859	24.64	AV	H	30.73	5.04	27.42	32.99	26.99	54.00	27.01
405.39	33.5	QP	H	16.37	2.44	21.78	30.53	30.53	46.00	15.47

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5190 MHz										
5190	85.40	PK	H	31.48	5.44	0.00	122.32	116.32	N/A	N/A
5190	73.84	AV	H	31.48	5.44	0.00	110.76	104.76	N/A	N/A
5190	81.00	PK	V	31.48	5.44	0.00	117.92	111.92	N/A	N/A
5190	69.42	AV	V	31.48	5.44	0.00	106.34	100.34	N/A	N/A
5150	41.70	PK	H	31.40	5.26	0.00	78.36	72.36	74.00	1.64
5150	21.43	AV	H	31.40	5.26	0.00	58.09	52.09	54.00	1.91
10380	33.99	PK	H	36.98	8.34	25.51	53.80	47.80	74.00	26.20
10380	19.62	AV	H	36.98	8.34	25.51	39.43	33.43	54.00	20.57
15570	36.49	PK	H	37.37	14.81	24.83	63.84	57.84	74.00	16.16
15570	21.65	AV	H	37.37	14.81	24.83	49.00	43.00	54.00	11.00
6919	51.34	PK	H	33.39	6.33	26.41	64.65	58.65	68.20	9.55
4859	38.39	PK	H	30.73	5.04	27.42	46.74	40.74	74.00	33.26
4859	24.48	AV	H	30.73	5.04	27.42	32.83	26.83	54.00	27.17
405.39	33.3	QP	H	16.37	2.44	21.78	30.33	30.33	46.00	15.67
High Channel:5230 MHz										
5230	83.83	PK	H	31.56	5.33	0.00	120.72	114.72	N/A	N/A
5230	72.21	AV	H	31.56	5.33	0.00	109.10	103.10	N/A	N/A
5230	79.41	PK	V	31.56	5.33	0.00	116.30	110.30	N/A	N/A
5230	67.87	AV	V	31.56	5.33	0.00	104.76	98.76	N/A	N/A
5350	29.71	PK	H	31.80	5.61	0.00	67.12	61.12	74.00	12.88
5350	15.41	AV	H	31.80	5.61	0.00	52.82	46.82	54.00	7.18
10460	33.83	PK	H	36.99	8.25	25.88	53.19	47.19	74.00	26.81
10460	19.49	AV	H	36.99	8.25	25.88	38.85	32.85	54.00	21.15
15690	36.45	PK	H	37.16	14.32	24.87	63.06	57.06	74.00	16.94
15690	21.57	AV	H	37.16	14.32	24.87	48.18	42.18	54.00	11.82
6963	49.47	PK	H	33.50	6.35	26.32	63.00	57.00	68.20	11.20
4859	38.54	PK	H	30.73	5.04	27.42	46.89	40.89	74.00	33.11
4859	24.67	AV	H	30.73	5.04	27.42	33.02	27.02	54.00	26.98
405.39	33.4	QP	H	16.37	2.44	21.78	30.43	30.43	46.00	15.57

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Middle Channel:5210 MHz										
5210	75.71	PK	H	31.52	5.44	0.00	112.67	106.67	N/A	N/A
5210	62.06	AV	H	31.52	5.44	0.00	99.02	93.02	N/A	N/A
5210	71.32	PK	V	31.52	5.44	0.00	108.28	102.28	N/A	N/A
5210	59.64	AV	V	31.52	5.44	0.00	96.60	90.60	N/A	N/A
5150	37.87	PK	H	31.40	5.26	0.00	74.53	68.53	74.00	5.47
5150	21.47	AV	H	31.40	5.26	0.00	58.13	52.13	54.00	1.87
5350	26.94	PK	H	31.80	5.61	0.00	64.35	58.35	74.00	15.65
5350	14.80	AV	H	31.80	5.61	0.00	52.21	46.21	54.00	7.79
10420	33.73	PK	H	36.98	8.30	25.63	53.38	47.38	74.00	26.62
10420	19.50	AV	H	36.98	8.30	25.63	39.15	33.15	54.00	20.85
15630	36.21	PK	H	37.27	14.57	24.75	63.30	57.30	74.00	16.70
15630	21.43	AV	H	37.27	14.57	24.75	48.52	42.52	54.00	11.48
6946	50.82	PK	H	33.46	6.35	26.36	64.27	58.27	68.20	9.93
405.39	31.9	QP	H	16.37	2.44	21.78	28.93	28.93	46.00	17.07

5725MHz-5850MHz:
802.11a mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	85.28	PK	H	32.15	5.53	0.00	122.96	116.96	N/A	N/A
5745	74.86	AV	H	32.15	5.53	0.00	112.54	106.54	N/A	N/A
5745	81.55	PK	V	32.15	5.53	0.00	119.23	113.23	N/A	N/A
5745	70.27	AV	V	32.15	5.53	0.00	107.95	101.95	N/A	N/A
5725	44.17	PK	H	32.15	5.60	0.00	81.92	75.92	78.20	2.28
5715	33.02	PK	H	32.14	5.63	0.00	70.79	64.79	68.20	3.41
11490	34.38	PK	H	37.89	8.94	26.14	55.07	49.07	74.00	24.93
11490	20.35	AV	H	37.89	8.94	26.14	41.04	35.04	54.00	18.96
17235	34.90	PK	H	40.91	13.69	25.63	63.87	57.87	74.00	16.13
17235	19.19	AV	H	40.91	13.69	25.63	48.16	42.16	54.00	11.84
4917	40.80	PK	H	30.88	5.33	27.43	49.58	43.58	74.00	30.42
4917	26.40	AV	H	30.88	5.33	27.43	35.18	29.18	54.00	24.82
6151	42.20	PK	H	32.23	5.95	26.84	53.54	47.54	74.00	26.46
6151	29.97	AV	H	32.23	5.95	26.84	41.31	35.31	54.00	18.69
405.39	33.10	QP	H	16.37	2.44	21.78	30.13	30.13	46.00	15.87
Middle Channel:5785 MHz										
5785	85.50	PK	H	32.16	5.47	0.00	123.13	117.13	N/A	N/A
5785	75.47	AV	H	32.16	5.47	0.00	113.10	107.10	N/A	N/A
5785	81.88	PK	V	32.16	5.47	0.00	119.51	113.51	N/A	N/A
5785	71.30	AV	V	32.16	5.47	0.00	108.93	102.93	N/A	N/A
11570	35.01	PK	V	37.90	8.92	26.07	55.76	49.76	74.00	24.24
11570	20.89	AV	V	37.90	8.92	26.07	41.64	35.64	54.00	18.36
17355	35.04	PK	V	41.63	12.99	25.63	64.03	58.03	74.00	15.97
17355	19.36	AV	V	41.63	12.99	25.63	48.35	42.35	54.00	11.65
4917	41.14	PK	V	30.88	5.33	27.43	49.92	43.92	74.00	30.08
4917	26.40	AV	V	30.88	5.33	27.43	35.18	29.18	54.00	24.82
6151	42.46	PK	V	32.23	5.95	26.84	53.80	47.80	74.00	26.20
6151	29.87	AV	V	32.23	5.95	26.84	41.21	35.21	54.00	18.79
405.39	33.20	QP	H	16.37	2.44	21.78	30.23	30.23	46.00	15.77
High Channel:5825 MHz										
5825	85.75	PK	H	32.17	5.75	0.00	123.67	117.67	N/A	N/A
5825	75.98	AV	H	32.17	5.75	0.00	113.90	107.90	N/A	N/A
5825	82.01	PK	V	32.17	5.75	0.00	119.93	113.93	N/A	N/A
5825	72.22	AV	V	32.17	5.75	0.00	110.14	104.14	N/A	N/A
5850	42.27	PK	V	32.17	6.05	0.00	80.49	74.49	78.20	3.71
5860	32.14	PK	V	32.17	6.02	0.00	70.33	64.33	68.20	3.87
11650	35.68	PK	V	37.90	8.90	25.75	56.73	50.73	74.00	23.27
11650	21.43	AV	V	37.90	8.90	25.75	42.48	36.48	54.00	17.52
17475	35.17	PK	V	42.35	12.30	25.39	64.43	58.43	74.00	15.57
17475	19.50	AV	V	42.35	12.30	25.39	48.76	42.76	54.00	11.24
4917	40.97	PK	V	30.88	5.33	27.43	49.75	43.75	74.00	30.25
4917	26.37	AV	V	30.88	5.33	27.43	35.15	29.15	54.00	24.85
6151	42.41	PK	V	32.23	5.95	26.84	53.75	47.75	74.00	26.25
6151	30.06	AV	V	32.23	5.95	26.84	41.40	35.40	54.00	18.60
405.39	33.40	QP	H	16.37	2.44	21.78	30.43	30.43	46.00	15.57

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	85.69	PK	H	32.15	5.53	0.00	123.37	117.37	N/A	N/A
5745	74.58	AV	H	32.15	5.53	0.00	112.26	106.26	N/A	N/A
5745	82.11	PK	V	32.15	5.53	0.00	119.79	113.79	N/A	N/A
5745	71.30	AV	V	32.15	5.53	0.00	108.98	102.98	N/A	N/A
5725	43.25	PK	H	32.15	5.60	0.00	81.00	75.00	78.20	3.20
5715	33.06	PK	H	32.14	5.63	0.00	70.83	64.83	68.20	3.37
11490	35.38	PK	H	37.89	8.94	26.14	56.07	50.07	74.00	23.93
11490	21.11	AV	H	37.89	8.94	26.14	41.80	35.80	54.00	18.20
17235	35.19	PK	H	40.91	13.69	25.63	64.16	58.16	74.00	15.84
17235	19.53	AV	H	40.91	13.69	25.63	48.50	42.50	54.00	11.50
4917	41.01	PK	H	30.88	5.33	27.43	49.79	43.79	74.00	30.21
4917	26.12	AV	H	30.88	5.33	27.43	34.90	28.90	54.00	25.10
6151	42.64	PK	H	32.23	5.95	26.84	53.98	47.98	74.00	26.02
6151	30.11	AV	H	32.23	5.95	26.84	41.45	35.45	54.00	18.55
405.39	33.60	QP	H	16.37	2.44	21.78	30.63	30.63	46.00	15.37
5745	85.69	PK	H	32.15	5.53	0.00	123.37	117.37	N/A	N/A
Middle Channel:5785 MHz										
5785	86.12	PK	H	32.16	5.47	0.00	123.75	117.75	N/A	N/A
5785	74.80	AV	H	32.16	5.47	0.00	112.43	106.43	N/A	N/A
5785	82.56	PK	V	32.16	5.47	0.00	120.19	114.19	N/A	N/A
5785	71.29	AV	V	32.16	5.47	0.00	108.92	102.92	N/A	N/A
11570	35.87	PK	V	37.90	8.92	26.07	56.62	50.62	74.00	23.38
11570	21.44	AV	V	37.90	8.92	26.07	42.19	36.19	54.00	17.81
17355	35.35	PK	V	41.63	12.99	25.63	64.34	58.34	74.00	15.66
17355	19.65	AV	V	41.63	12.99	25.63	48.64	42.64	54.00	11.36
4917	40.86	PK	V	30.88	5.33	27.43	49.64	43.64	74.00	30.36
4917	26.66	AV	V	30.88	5.33	27.43	35.44	29.44	54.00	24.56
6151	42.40	PK	V	32.23	5.95	26.84	53.74	47.74	74.00	26.26
6151	29.92	AV	V	32.23	5.95	26.84	41.26	35.26	54.00	18.74
405.39	33.70	QP	H	16.37	2.44	21.78	30.73	30.73	46.00	15.27
High Channel:5825 MHz										
5825	86.40	PK	H	32.17	5.75	0.00	124.32	118.32	N/A	N/A
5825	74.75	AV	H	32.17	5.75	0.00	112.67	106.67	N/A	N/A
5825	82.87	PK	V	32.17	5.75	0.00	120.79	114.79	N/A	N/A
5825	71.24	AV	V	32.17	5.75	0.00	109.16	103.16	N/A	N/A
5850	44.21	PK	V	32.17	6.05	0.00	82.43	76.43	78.20	1.77
5860	34.02	PK	V	32.17	6.02	0.00	72.21	66.21	68.20	1.99
11650	36.30	PK	V	37.90	8.90	25.75	57.35	51.35	74.00	22.65
11650	21.81	AV	V	37.90	8.90	25.75	42.86	36.86	54.00	17.14
17475	35.51	PK	V	42.35	12.30	25.39	64.77	58.77	74.00	15.23
17475	19.79	AV	V	42.35	12.30	25.39	49.05	43.05	54.00	10.95
4917	40.76	PK	V	30.88	5.33	27.43	49.54	43.54	74.00	30.46
4917	26.56	AV	V	30.88	5.33	27.43	35.34	29.34	54.00	24.66
6151	42.35	PK	V	32.23	5.95	26.84	53.69	47.69	74.00	26.31
6151	30.26	AV	V	32.23	5.95	26.84	41.60	35.60	54.00	18.40
405.39	33.20	QP	H	16.37	2.44	21.78	30.23	30.23	46.00	15.77

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5755 MHz										
5755	82.16	PK	H	32.15	5.50	0.00	119.81	113.81	N/A	N/A
5755	71.17	AV	H	32.15	5.50	0.00	108.82	102.82	N/A	N/A
5755	76.76	PK	V	32.15	5.50	0.00	114.41	108.41	N/A	N/A
5755	65.22	AV	V	32.15	5.50	0.00	102.87	96.87	N/A	N/A
5725	44.36	PK	V	32.15	5.60	0.00	82.11	76.11	78.20	2.09
5715	32.98	PK	V	32.14	5.63	0.00	70.75	64.75	68.20	3.45
11510	34.65	PK	V	37.90	8.95	26.12	55.38	49.38	74.00	24.62
11510	18.71	AV	V	37.90	8.95	26.12	39.44	33.44	54.00	20.56
17265	35.02	PK	V	41.09	13.51	25.63	63.99	57.99	74.00	16.01
17265	20.67	AV	V	41.09	13.51	25.63	49.64	43.64	54.00	10.36
4917	41.06	PK	V	30.88	5.33	27.43	49.84	43.84	74.00	30.16
4917	26.50	AV	V	30.88	5.33	27.43	35.28	29.28	54.00	24.72
6151	42.51	PK	V	32.23	5.95	26.84	53.85	47.85	74.00	26.15
6151	30.11	AV	V	32.23	5.95	26.84	41.45	35.45	54.00	18.55
405.39	32.60	QP	H	16.37	2.44	21.78	29.63	29.63	46.00	16.37
High Channel:5795 MHz										
5795	82.56	PK	H	32.16	5.46	0.00	120.18	114.18	N/A	N/A
5795	70.66	AV	H	32.16	5.46	0.00	108.28	102.28	N/A	N/A
5795	76.53	PK	V	32.16	5.46	0.00	114.15	108.15	N/A	N/A
5795	64.65	AV	V	32.16	5.46	0.00	102.27	96.27	N/A	N/A
5850	42.69	PK	H	32.17	6.05	0.00	80.91	74.91	78.20	3.29
5860	33.29	PK	H	32.17	6.02	0.00	71.48	65.48	68.20	2.72
11590	35.02	PK	H	37.90	8.92	26.06	55.78	49.78	74.00	24.22
11590	19.10	AV	H	37.90	8.92	26.06	39.86	33.86	54.00	20.14
17385	35.15	PK	H	41.81	12.82	25.63	64.15	58.15	74.00	15.85
17385	20.83	AV	H	41.81	12.82	25.63	49.83	43.83	54.00	10.17
4917	41.17	PK	H	30.88	5.33	27.43	49.95	43.95	74.00	30.05
4917	26.41	AV	H	30.88	5.33	27.43	35.19	29.19	54.00	24.81
6151	42.62	PK	H	32.23	5.95	26.84	53.96	47.96	74.00	26.04
6151	30.03	AV	H	32.23	5.95	26.84	41.37	35.37	54.00	18.63
405.39	32.90	QP	H	16.37	2.44	21.78	29.93	29.93	46.00	16.07

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Middle Channel:5775 MHz										
5775	77.94	PK	H	32.16	5.48	0.00	115.58	109.58	N/A	N/A
5775	66.35	AV	H	32.16	5.48	0.00	103.99	97.99	N/A	N/A
5775	73.78	PK	V	32.16	5.48	0.00	111.42	105.42	N/A	N/A
5775	62.18	AV	V	32.16	5.48	0.00	99.82	93.82	N/A	N/A
5725	42.15	PK	H	32.15	5.60	0.00	79.90	73.90	78.20	4.30
5715	32.96	PK	H	32.14	5.63	0.00	70.73	64.73	68.20	3.47
5860	33.29	PK	H	32.17	6.02	0.00	71.48	65.48	68.20	2.72
5850	34.39	PK	H	32.17	6.05	0.00	72.61	66.61	78.20	11.59
11550	34.20	PK	H	37.90	8.93	26.09	54.94	48.94	74.00	25.06
11550	18.34	AV	H	37.90	8.93	26.09	39.08	33.08	54.00	20.92
17325	34.90	PK	H	41.45	13.17	25.63	63.89	57.89	74.00	16.11
17325	20.52	AV	H	41.45	13.17	25.63	49.51	43.51	54.00	10.49
4917	40.87	PK	H	30.88	5.33	27.43	49.65	43.65	74.00	30.35
4917	26.54	AV	H	30.88	5.33	27.43	35.32	29.32	54.00	24.68
405.39	32.70	QP	H	16.37	2.44	21.78	29.73	29.73	46.00	16.27

FCC §15.407(a) –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	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

*** 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 v01r02

Test Data

Environmental Conditions

Temperature:	30.4 °C
Relative Humidity:	62 %
ATM Pressure:	100.4 kPa

The testing was performed by Dean Liu on 2016-05-07.

Test Result: Pass.

Please refer to the following tables and plots.

Test mode: Transmitting

5150MHz-5250MHz:

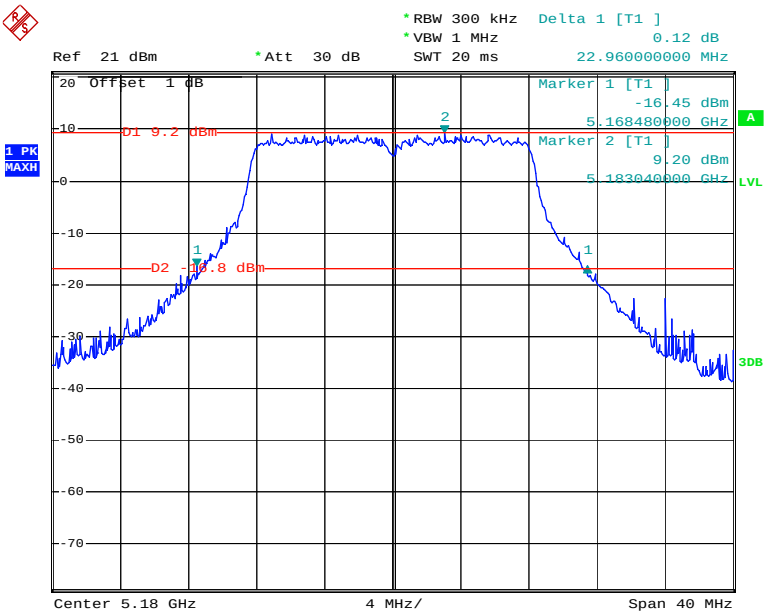
Mode	Channel	Frequency MHz	26 dB Emission Bandwidth (MHz)			Result
			Chain0	Chain1	Chain2	
802.11a	Low	5180	22.96	22.56	22.56	PASS
	Middle	5200	22.96	23.44	22.88	PASS
	High	5240	21.56	22.2	22.88	PASS
802.11n20	Low	5180	23.6	24	23.52	PASS
	Middle	5200	23.28	23.6	23.6	PASS
	High	5240	22.76	22.6	22.76	PASS
802.11n40	Low	5190	43.52	43.2	43.04	PASS
	High	5230	42.04	42.36	42.36	PASS
802.11ac80	Middle	5210	86.32	86.96	86.96	PASS

5725MHz-5850MHz:

Mode	Channel	Frequency MHz	6dB Emission Bandwidth (MHz)			Result
			Chain0	Chain1	Chain2	
802.11a	Low	5745	16.64	16.64	16.64	PASS
	Middle	5785	16.64	16.64	16.64	PASS
	High	5825	16.64	16.64	16.64	PASS
802.11n20	Low	5745	17.92	17.76	17.84	PASS
	Middle	5785	17.92	17.92	17.84	PASS
	High	5825	17.76	17.76	17.76	PASS
802.11n40	Low	5755	36.48	36.64	36.48	PASS
	High	5795	36.64	36.64	36.64	PASS
802.11ac80	Middle	5775	76.8	76.8	76.8	PASS

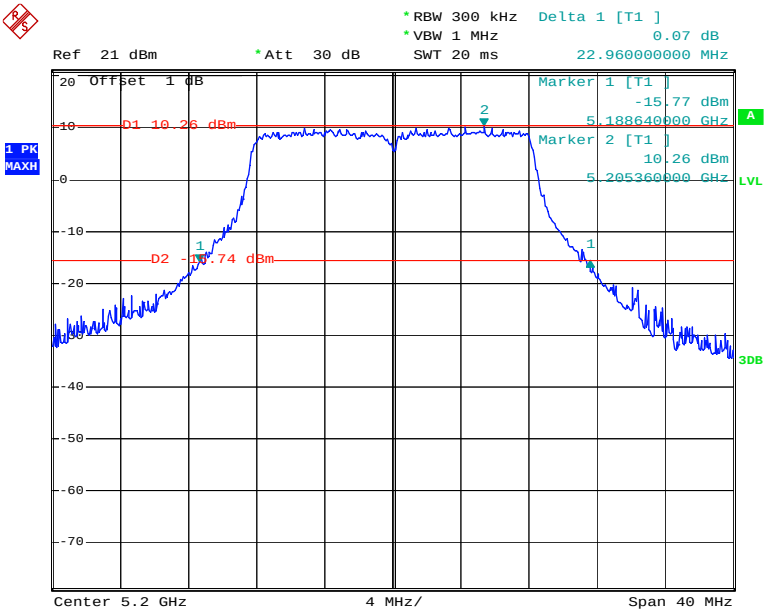
5150MHz-5250MHz: **26dB Bandwidth**

802.11a Low Channel – Chain0



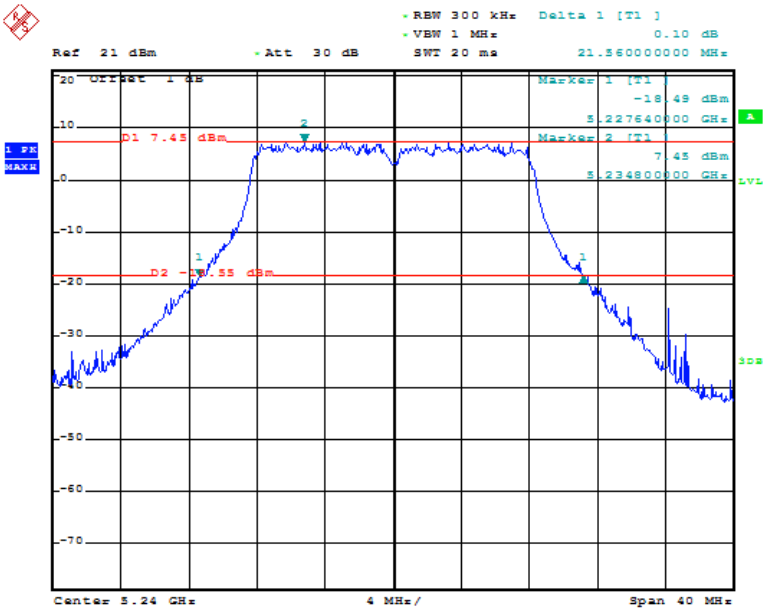
Date: 7.MAY.2016 15:01:08

802.11a Middle Channel – Chain0



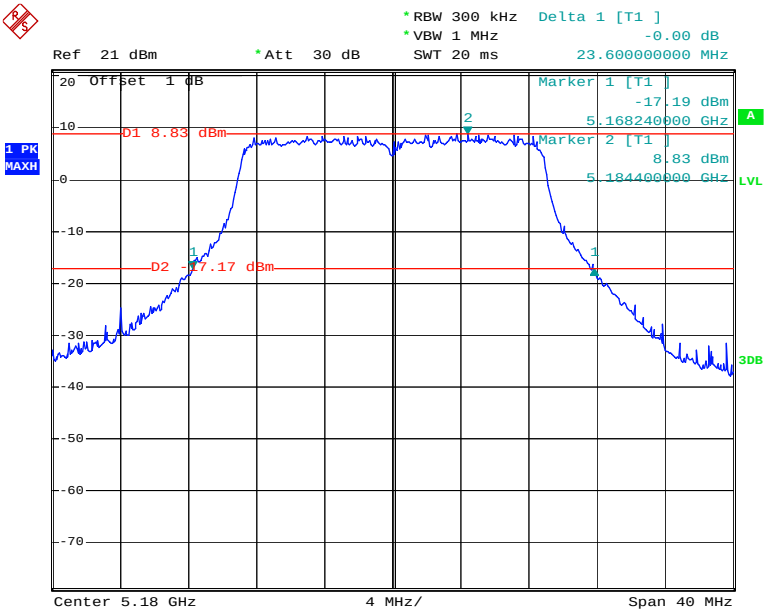
Date: 7.MAY.2016 14:53:13

802.11a High Channel – Chain0



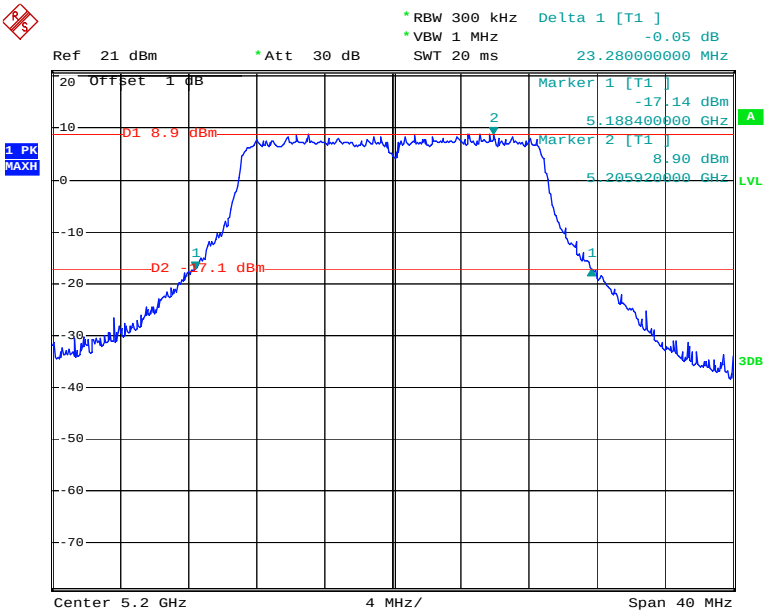
Date: 7.MAY.2016 14:55:14

802.11n ht20 Low Channel – Chain0



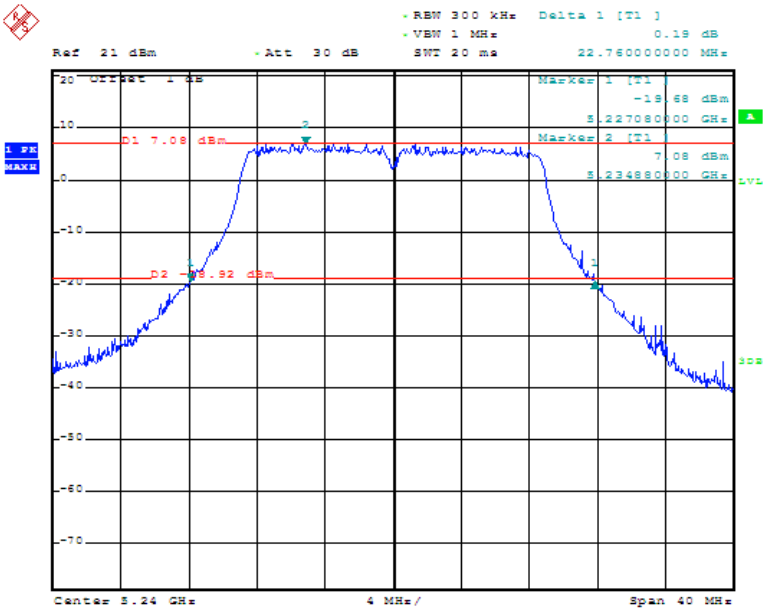
Date: 7.MAY.2016 15:03:31

802.11n ht20 Middle Channel – Chain0



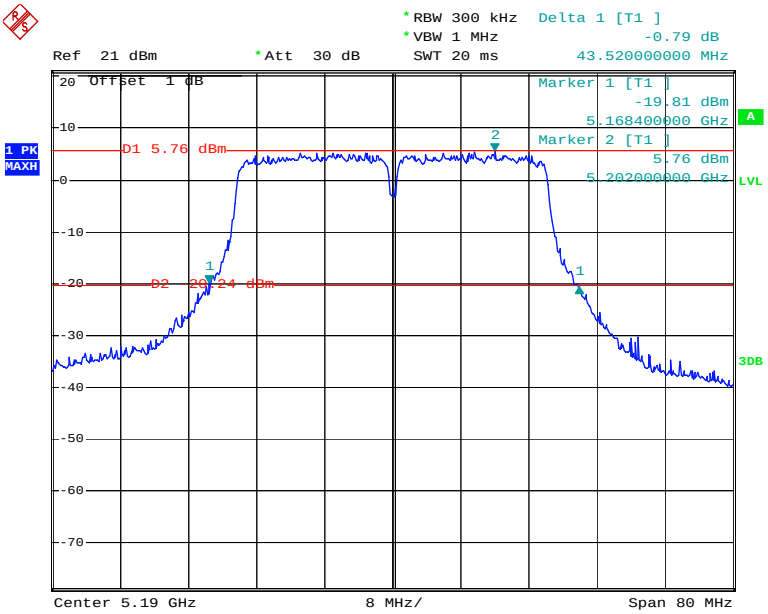
Date: 7.MAY.2016 15:05:17

802.11n ht20 High Channel – Chain0



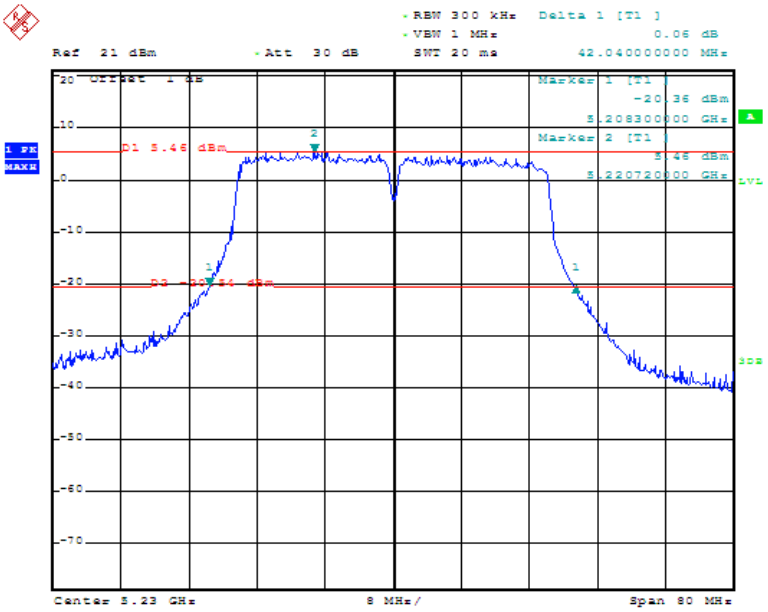
Date: 7.MAY.2016 15:07:00

802.11n ht40 Low Channel – Chain0



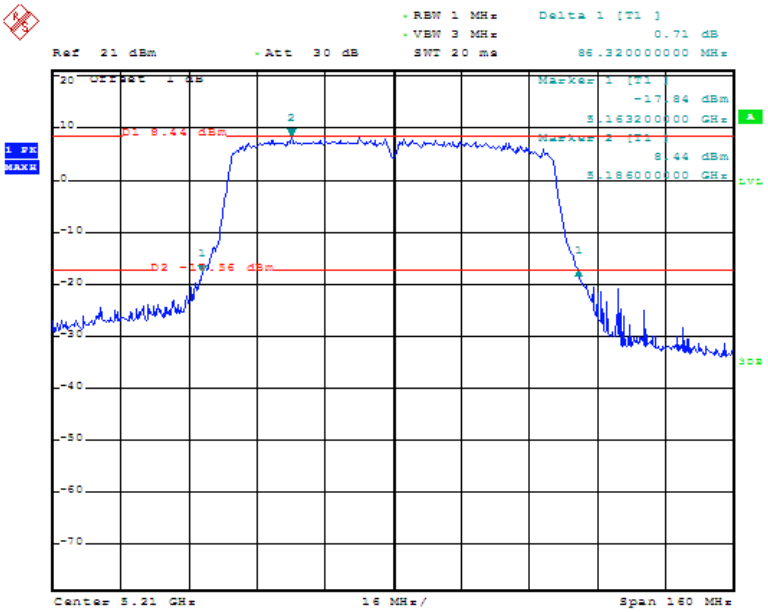
Date: 7.MAY.2016 15:08:48

802.11n ht40 High Channel – Chain0



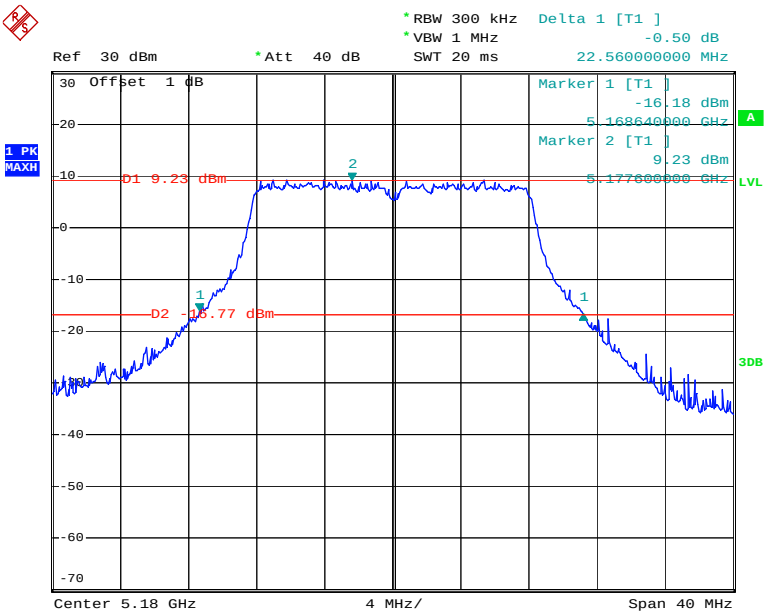
Date: 7.MAY.2016 15:11:06

802.11ac80 Middle Channel – Chain0



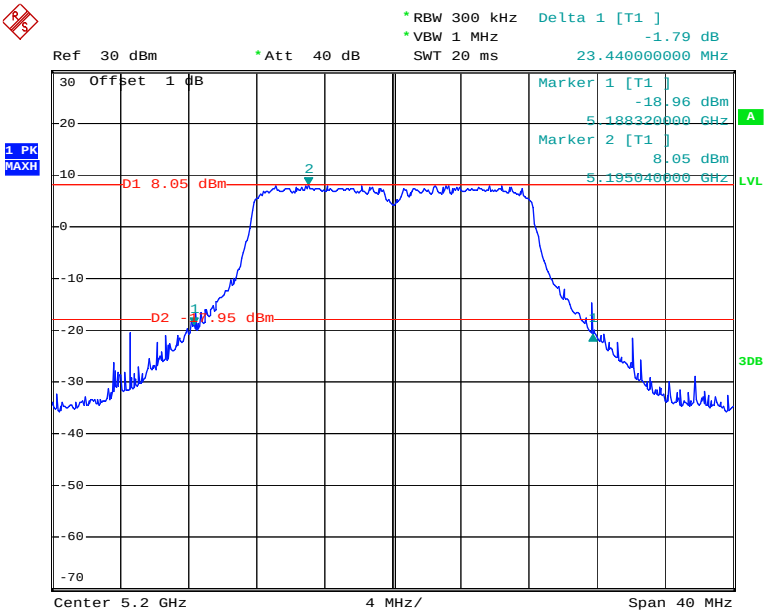
Date: 7.MAY.2016 15:15:03

802.11a Low Channel – Chain1



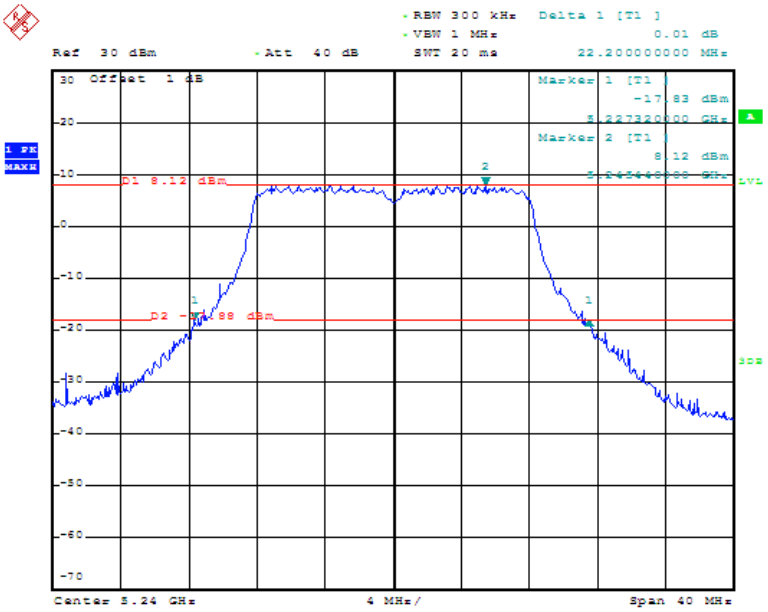
Date: 5.MAY.2016 22:08:16

802.11a Middle Channel – Chain1



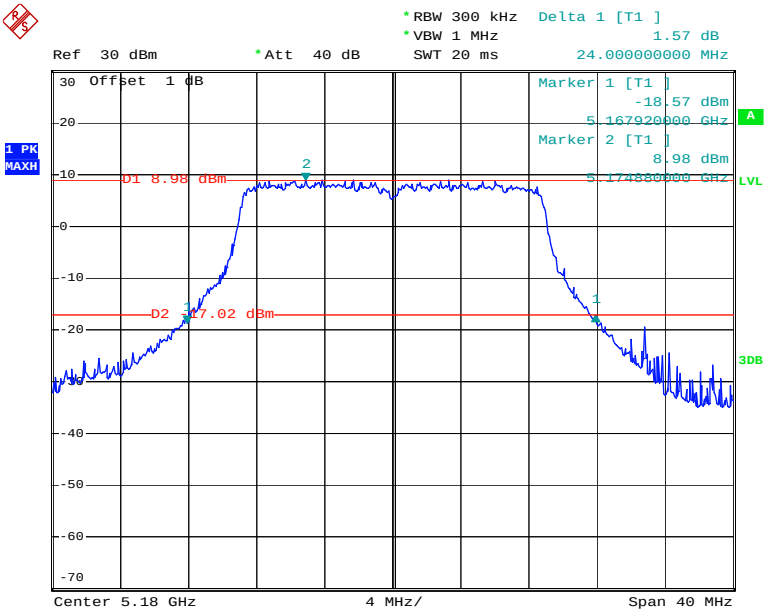
Date: 5.MAY.2016 22:10:28

802.11a High Channel – Chain1



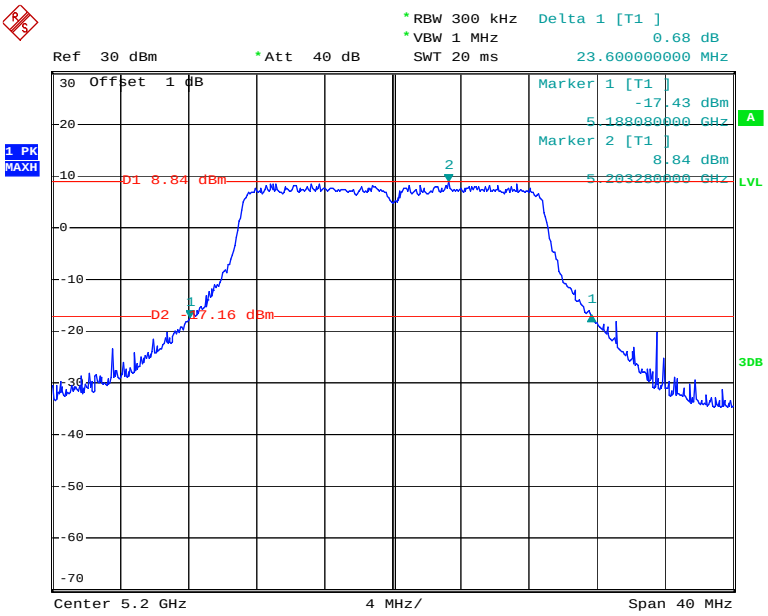
Date: 5.MAY.2016 22:34:46

802.11n ht20 Low Channel – Chain1



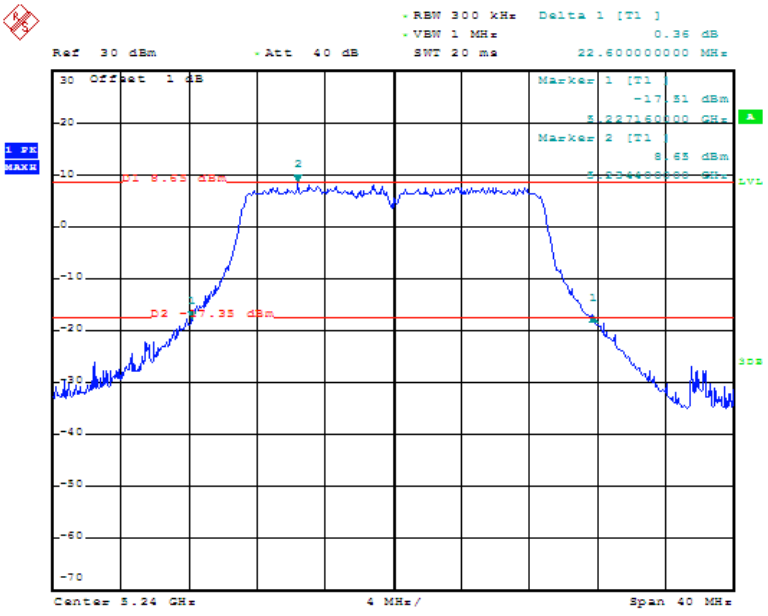
Date: 5.MAY.2016 22:41:27

802.11n ht20 Middle Channel – Chain1



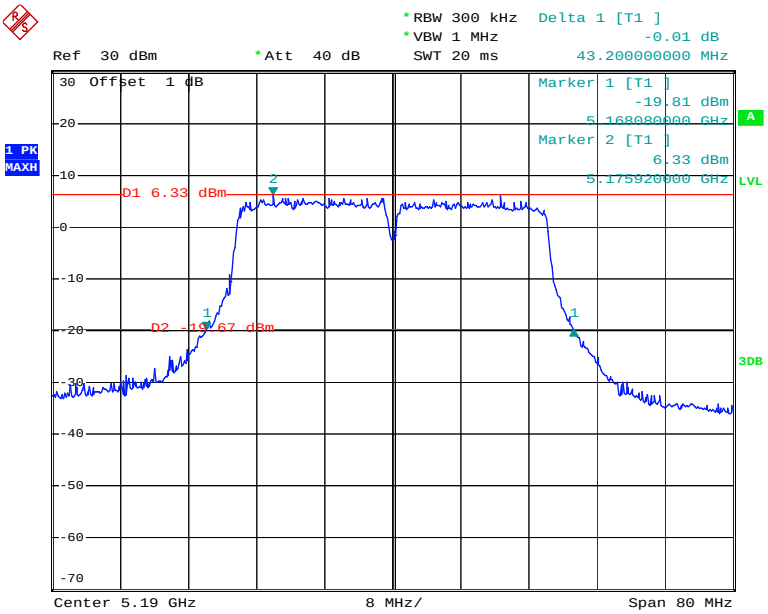
Date: 5.MAY.2016 22:39:37

802.11n ht20 High Channel – Chain1



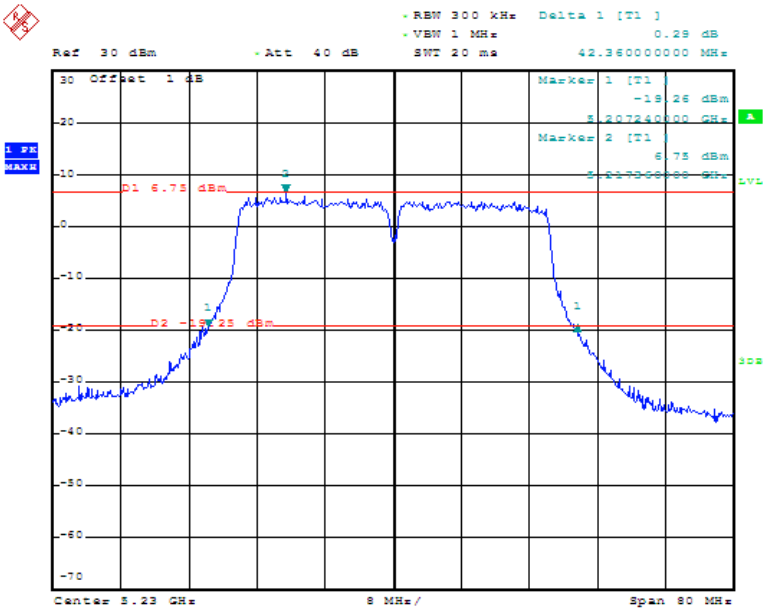
Date: 5.MAY.2016 22:43:59

802.11n ht40 Low Channel – Chain1



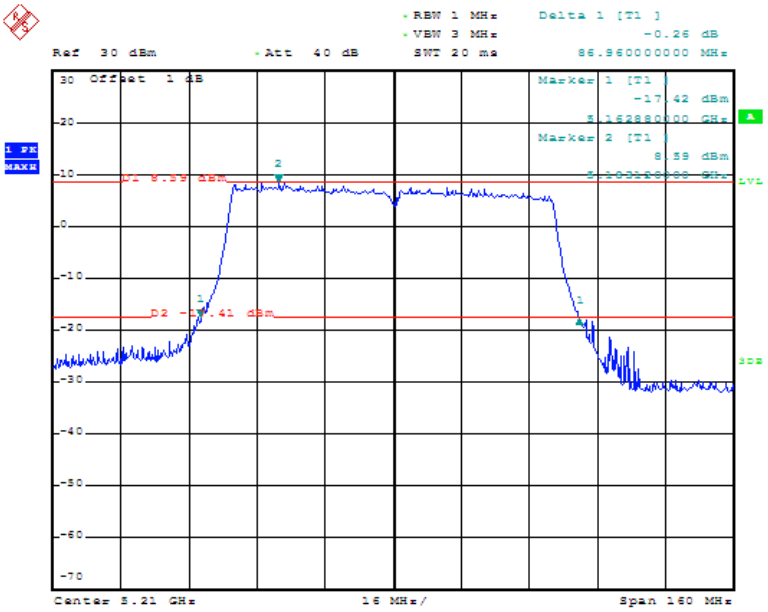
Date: 5.MAY.2016 22:47:10

802.11n ht40 High Channel – Chain1



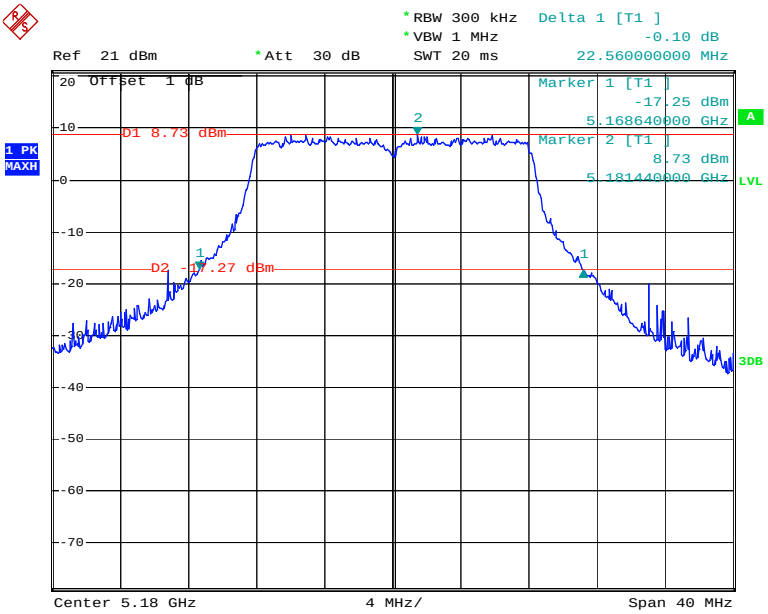
Date: 5.MAY.2016 22:56:05

802.11n ac80 Middle Channel – Chain1



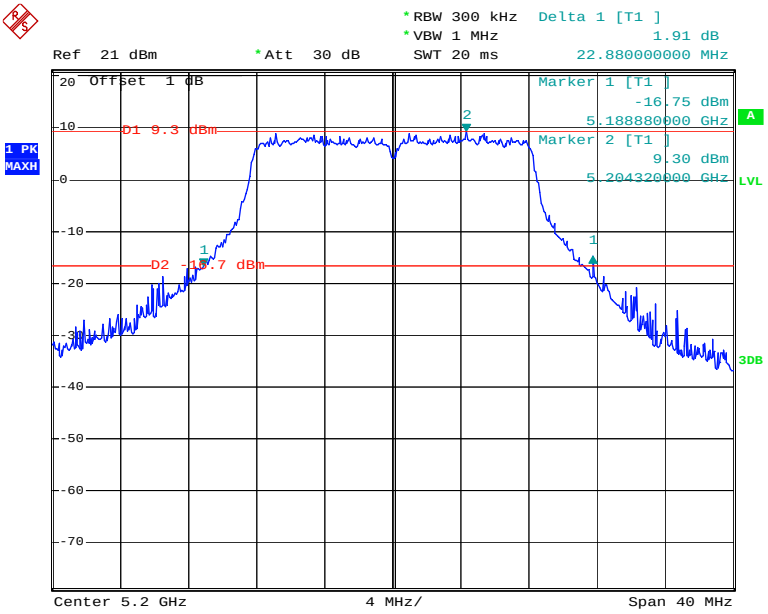
Date: 5.MAY.2016 23:06:52

802.11a Low Channel – Chain2



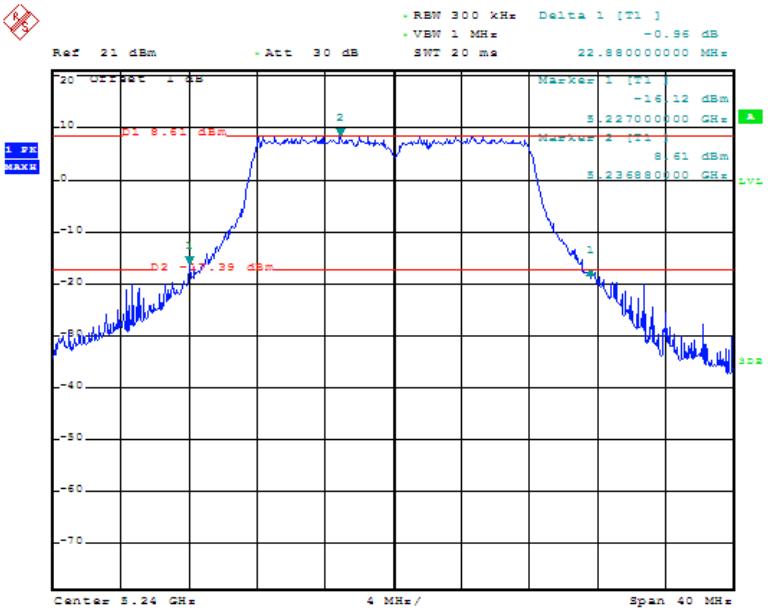
Date: 7.MAY.2016 14:44:14

802.11a Middle Channel – Chain2



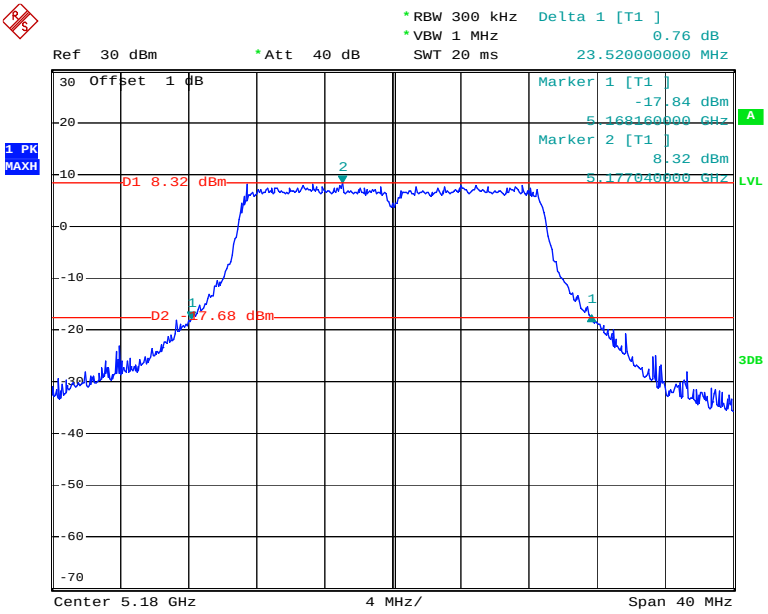
Date: 7.MAY.2016 14:47:11

802.11a High Channel – Chain2



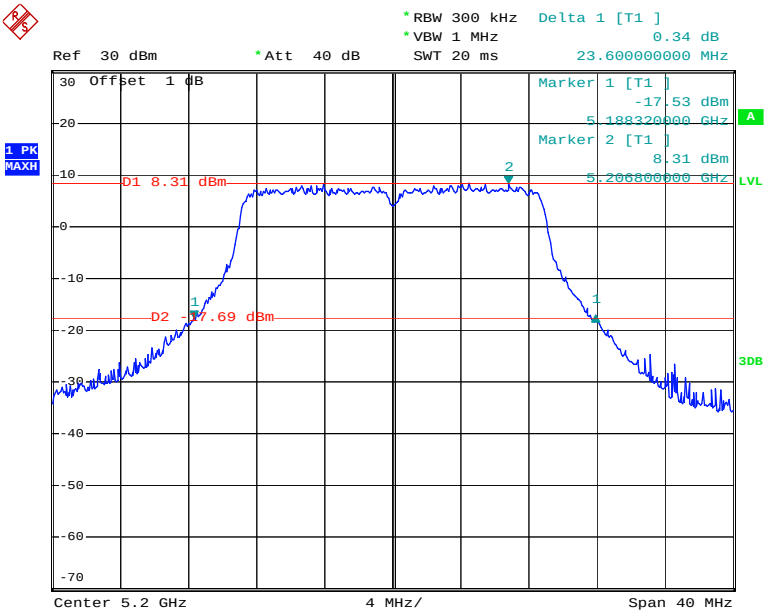
Date: 7.MAY.2016 14:48:57

802.11n ht20 Low Channel – Chain2



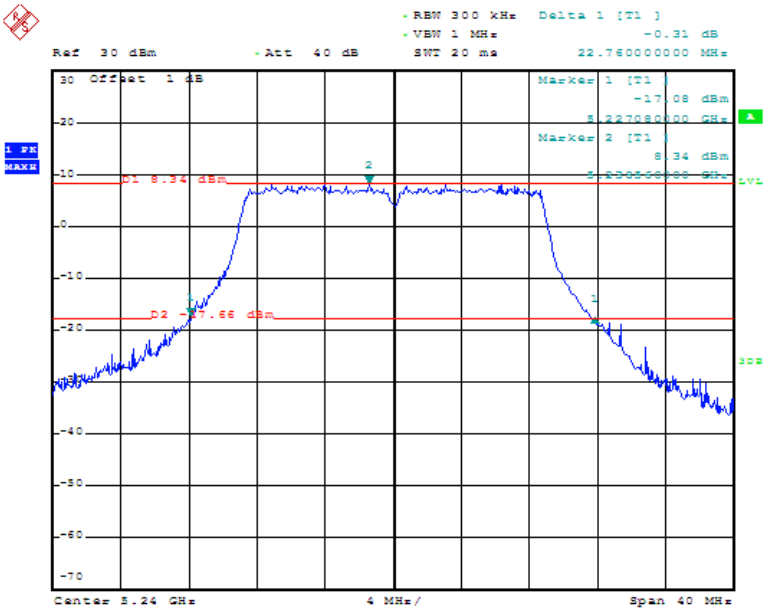
Date: 7.MAY.2016 14:40:41

802.11n ht20 Middle Channel – Chain2



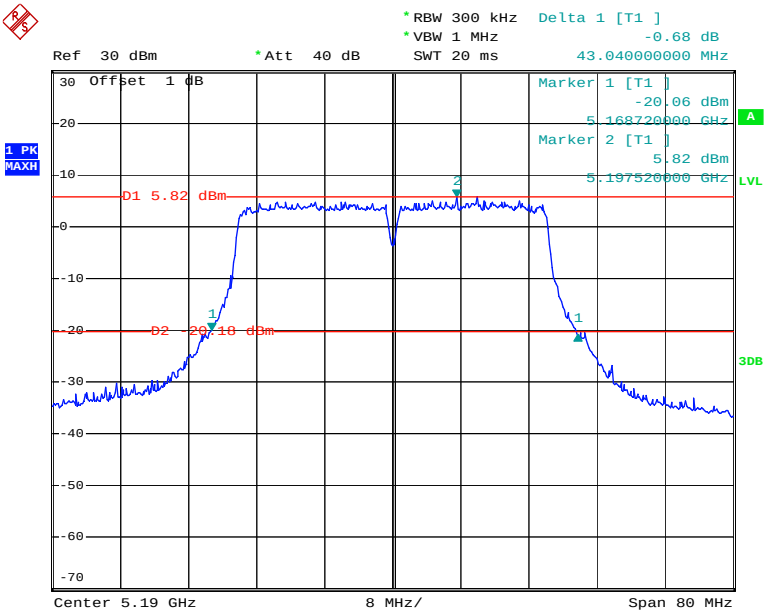
Date: 5.MAY.2016 23:20:17

802.11n ht20 High Channel – Chain2



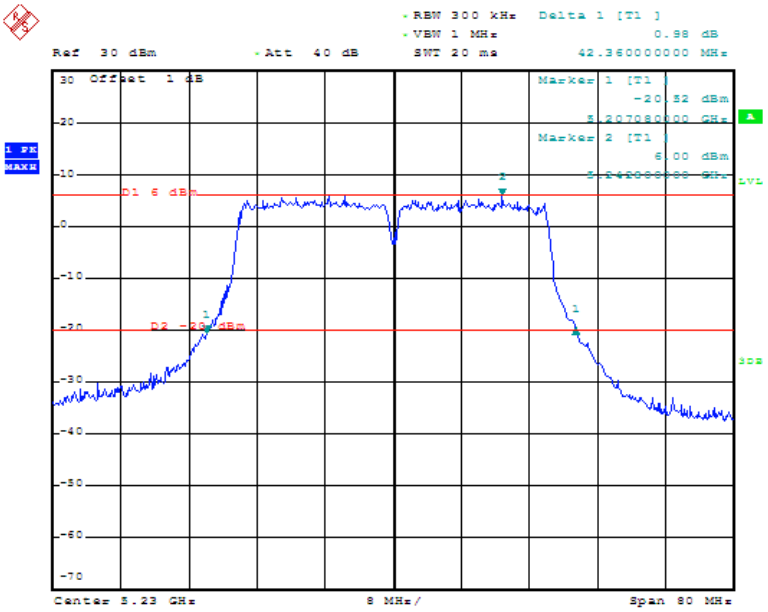
Date: 5.MAY.2016 23:18:35

802.11n ht40 Low Channel – Chain2



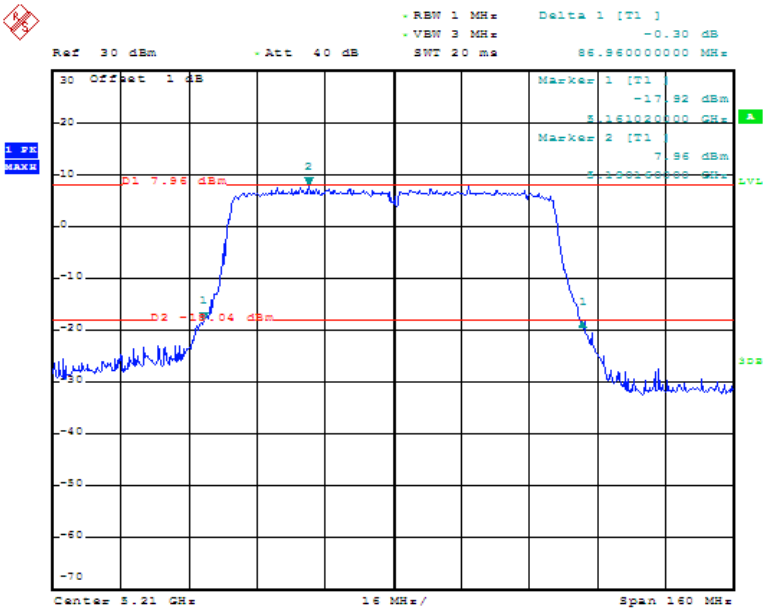
Date: 5.MAY.2016 23:16:13

802.11n ht40 High Channel – Chain2



Date: 5.MAY.2016 23:14:34

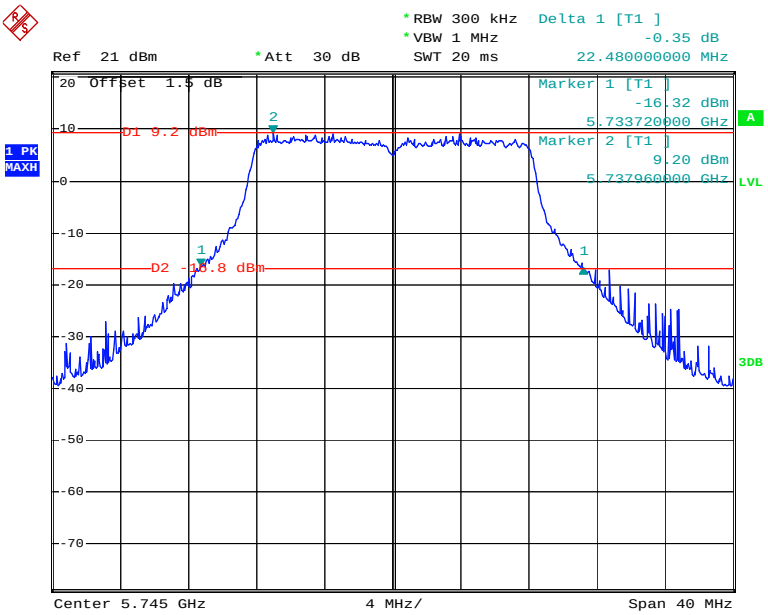
802.11n ac80 Middle Channel – Chain2



Date: 5.MAY.2016 23:11:30

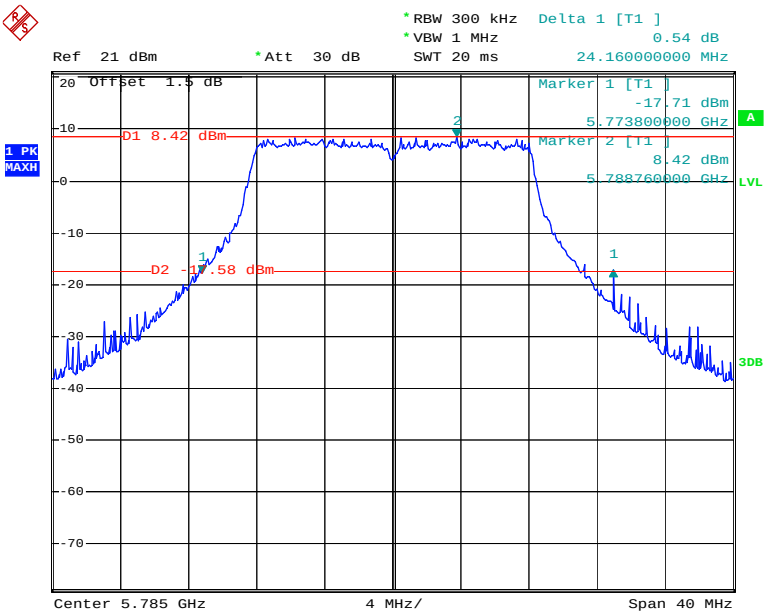
5725MHz-5850MHz:

802.11a Low Channel – Chain0



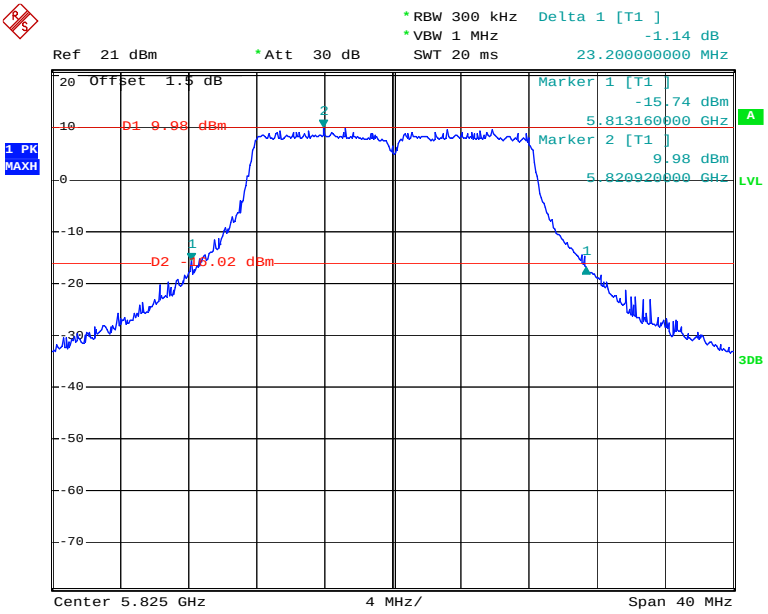
Date: 7.MAY.2016 15:25:24

802.11a Middle Channel – Chain0



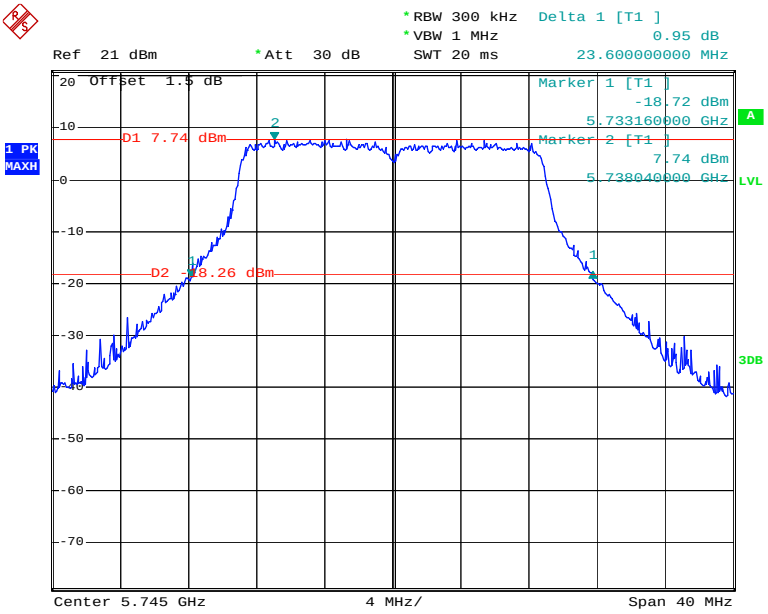
Date: 7.MAY.2016 15:27:36

802.11a High Channel – Chain0



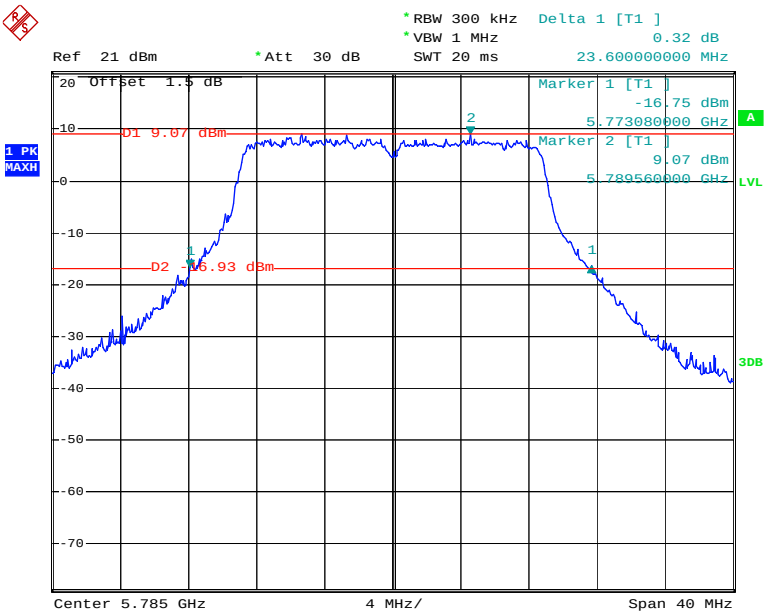
Date: 7.MAY.2016 15:33:49

802.11n ht20 Low Channel – Chain0



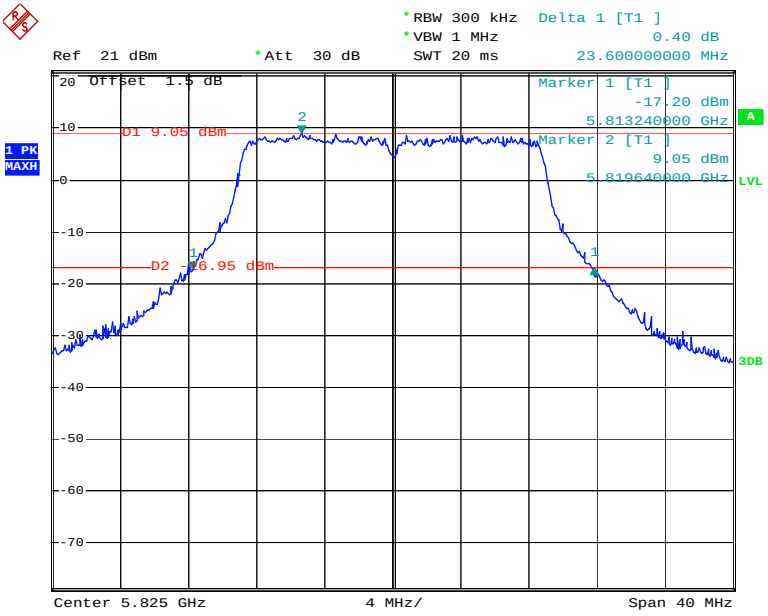
Date: 7.MAY.2016 15:38:34

802.11n ht20 Middle Channel – Chain0



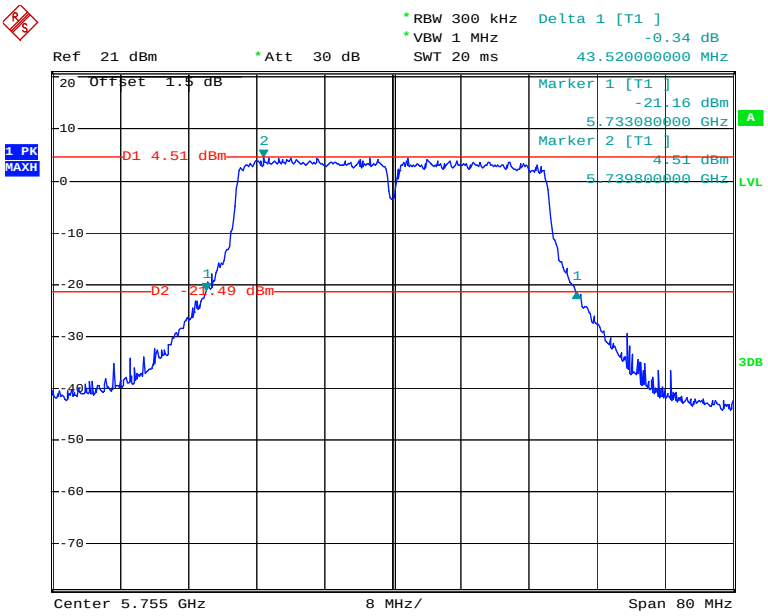
Date: 7.MAY.2016 15:36:08

802.11n ht20 High Channel – Chain0



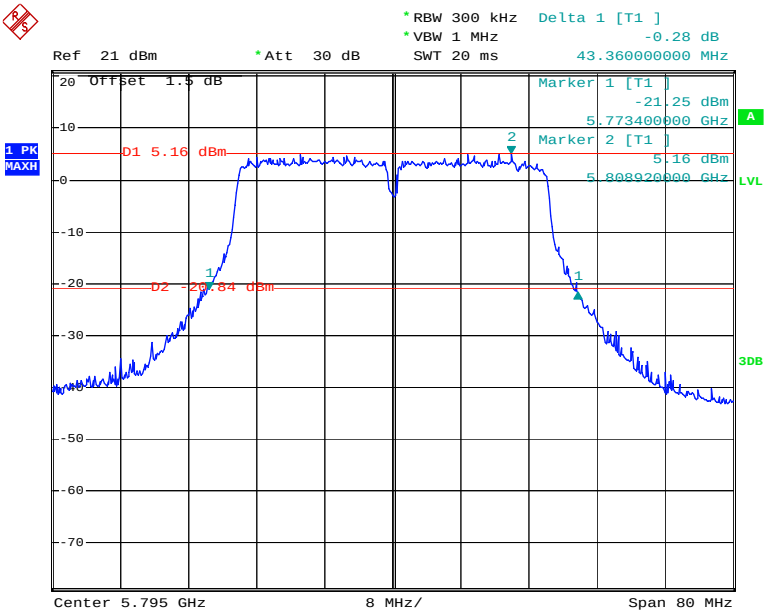
Date: 7.MAY.2016 15:41:24

802.11n ht40 Low Channel – Chain0



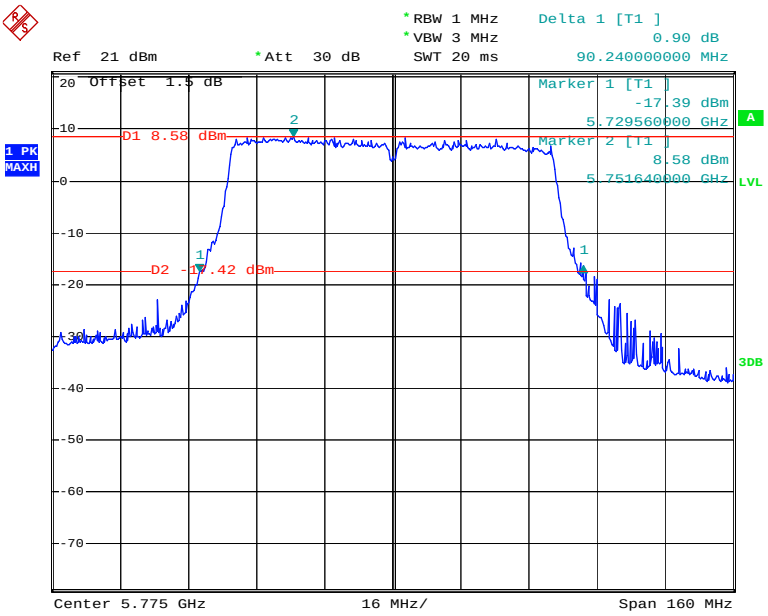
Date: 7.MAY.2016 15:46:23

802.11n ht40 High Channel – Chain0



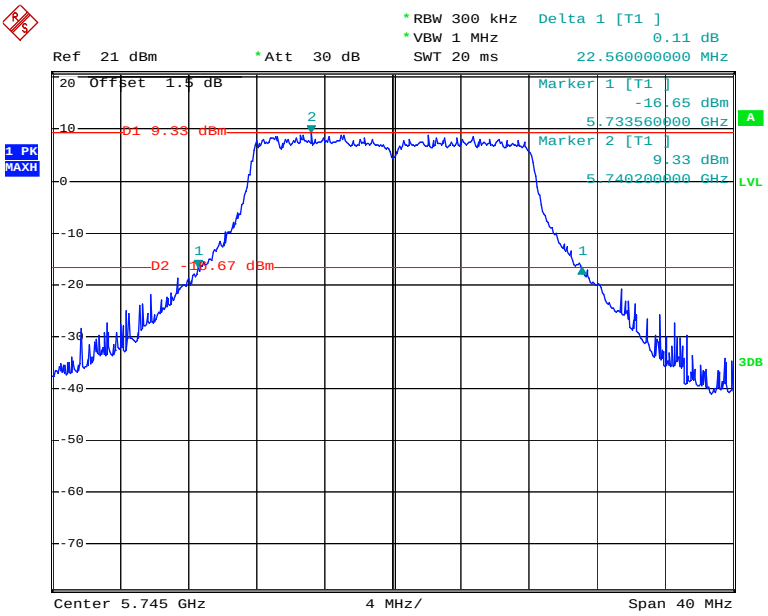
Date: 7.MAY.2016 15:43:41

802.11ac80 Middle Channel – Chain0



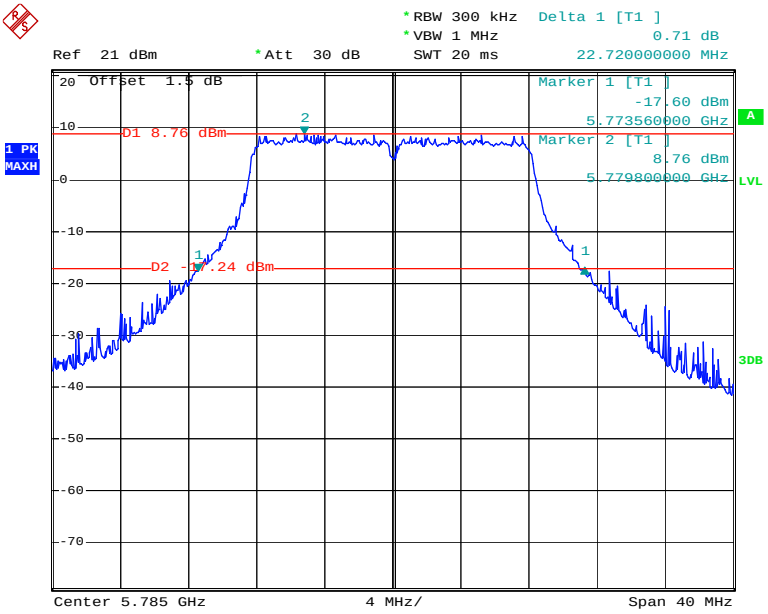
Date: 7.MAY.2016 15:48:57

802.11a Low Channel – Chain1



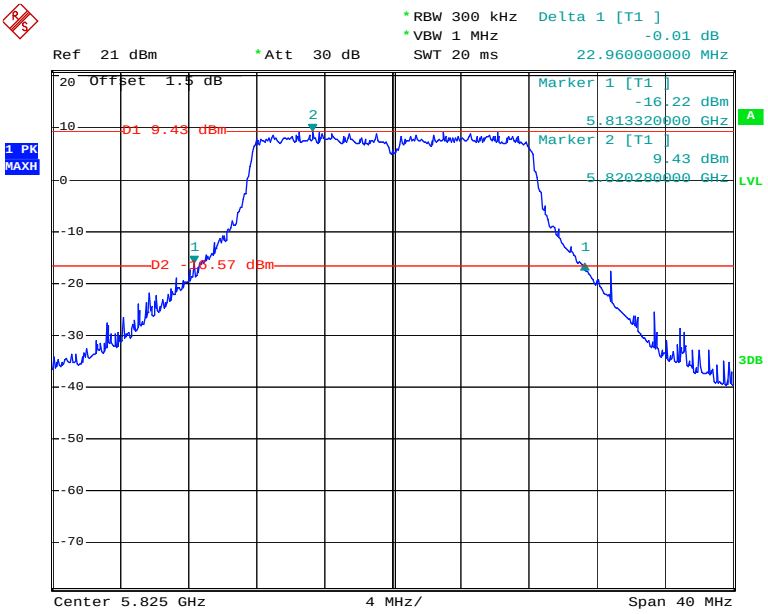
Date: 7.MAY.2016 16:18:43

802.11a Middle Channel – Chain1



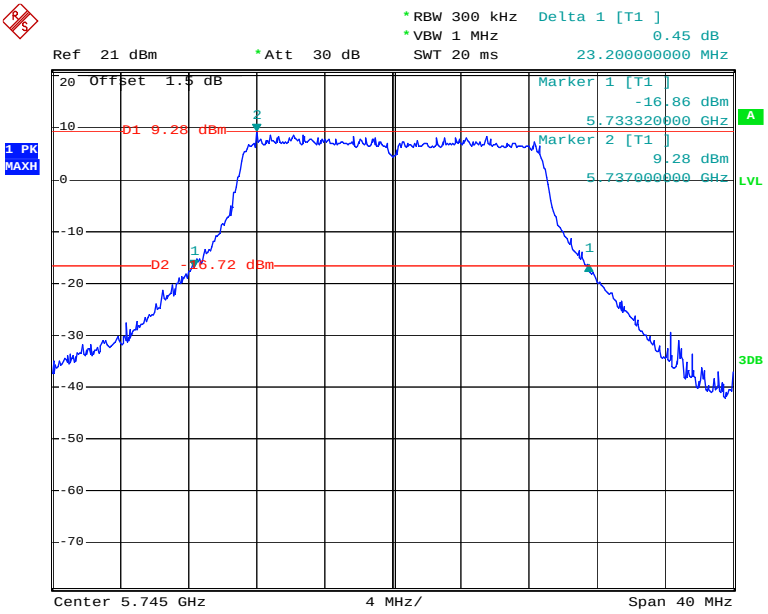
Date: 7.MAY.2016 16:16:13

802.11a High Channel – Chain1



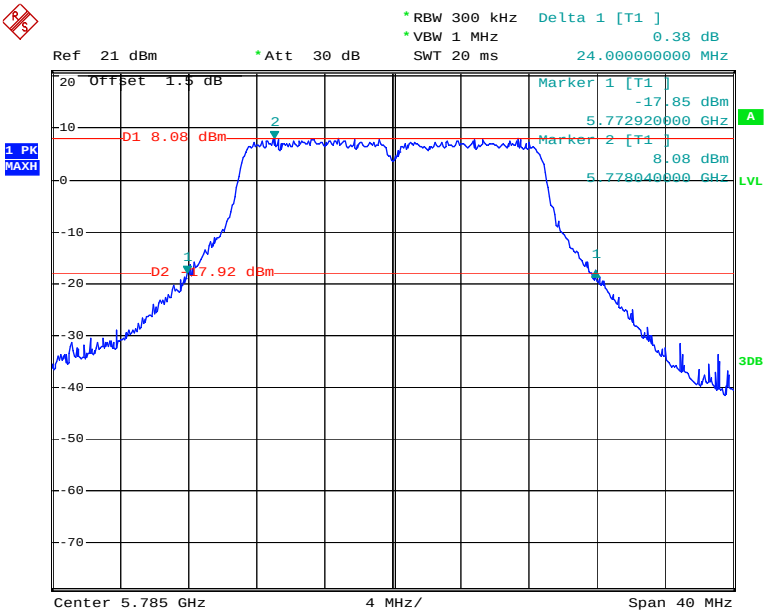
Date: 7.MAY.2016 16:11:14

802.11n ht20 Low Channel – Chain1



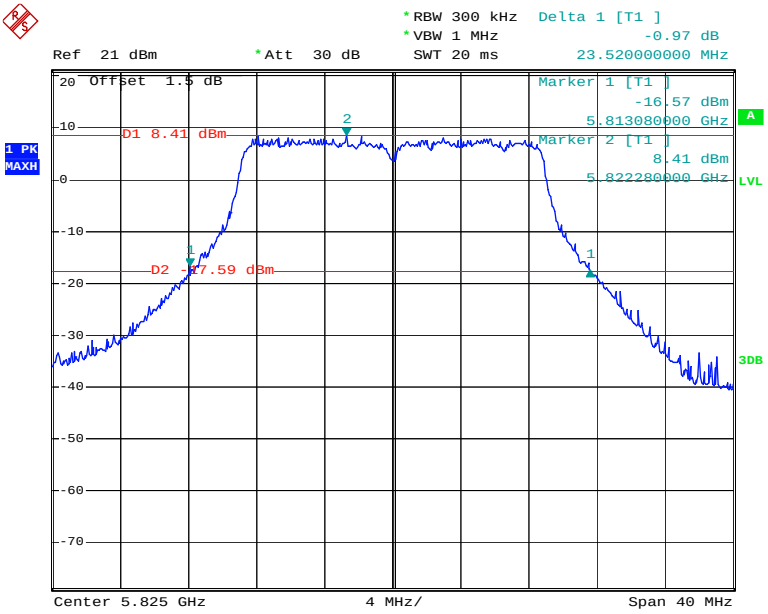
Date: 7.MAY.2016 16:07:31

802.11n ht20 Middle Channel – Chain1



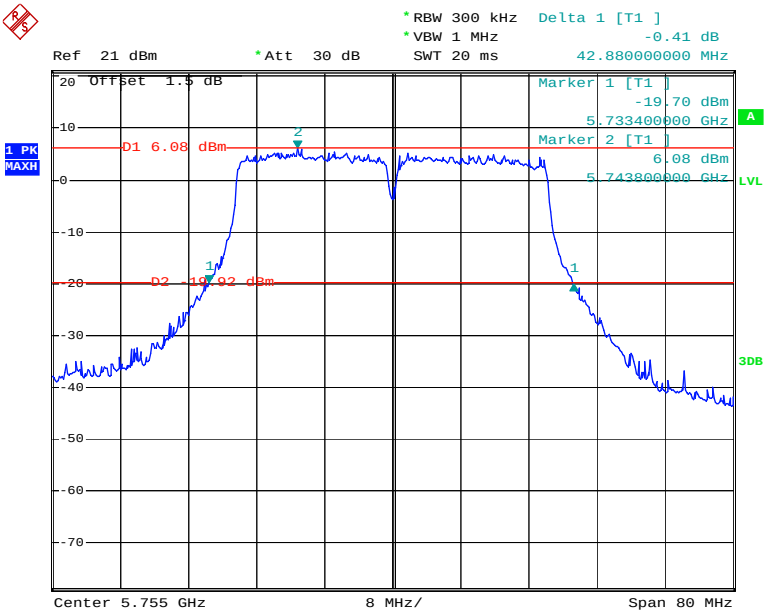
Date: 7.MAY.2016 16:05:11

802.11n ht20 High Channel – Chain1



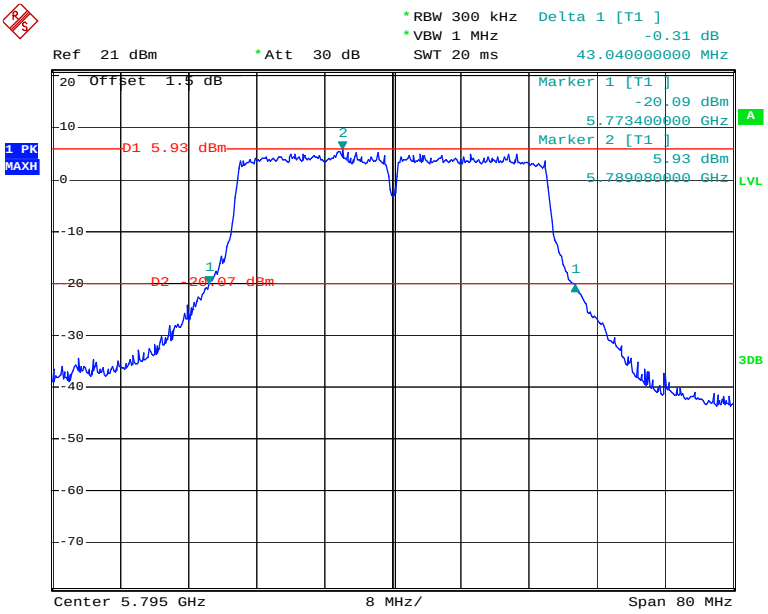
Date: 7.MAY.2016 16:02:35

802.11n ht40 Low Channel – Chain1



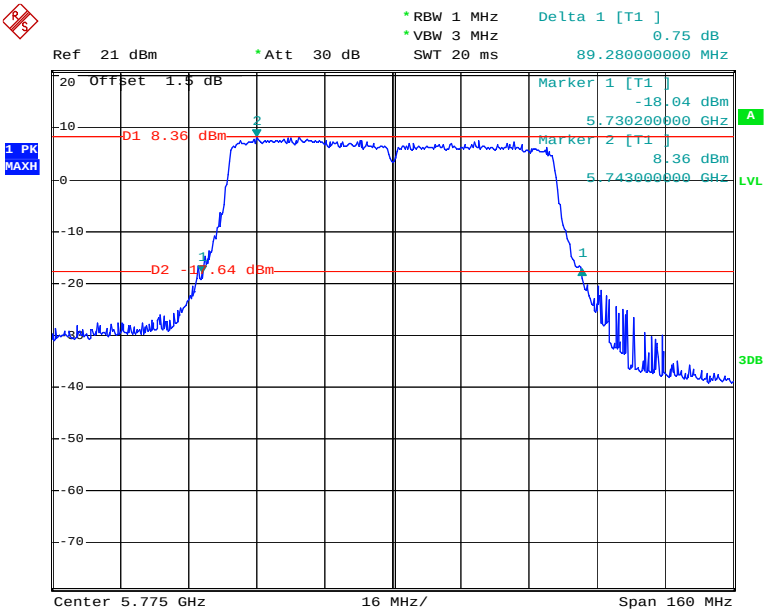
Date: 7.MAY.2016 15:55:51

802.11n ht40 High Channel – Chain1



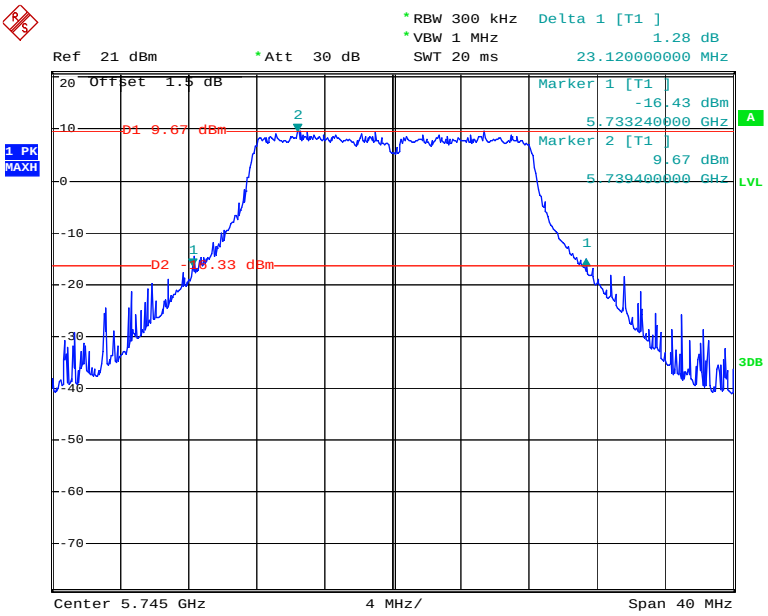
Date: 7.MAY.2016 15:59:57

802.11n ac80 Middle Channel – Chain1



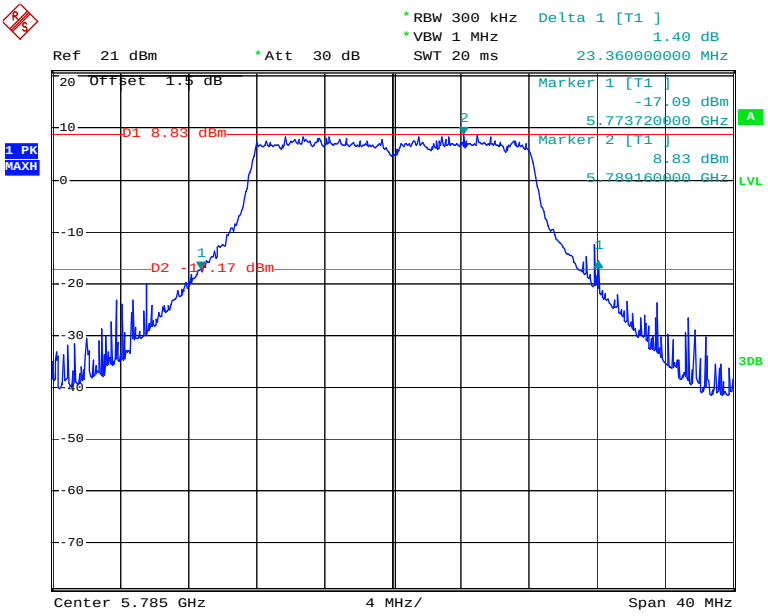
Date: 7.MAY.2016 15:51:16

802.11a Low Channel – Chain2



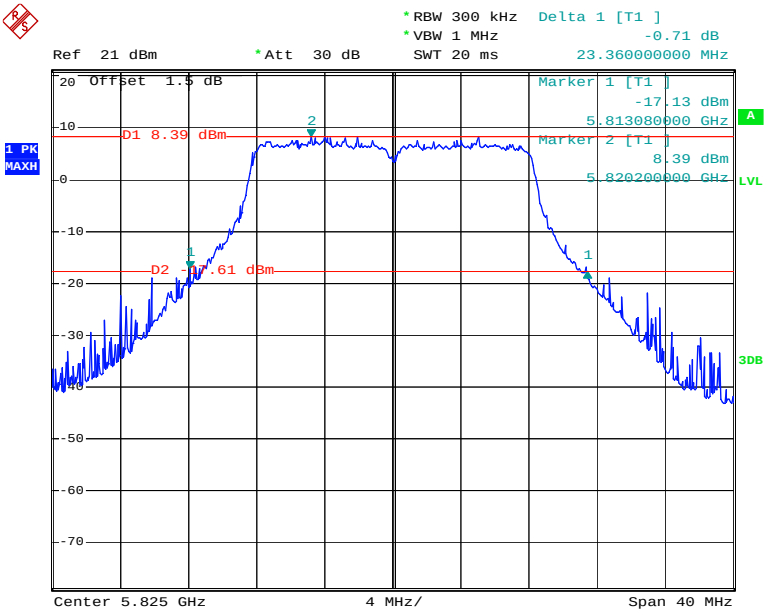
Date: 7.MAY.2016 16:22:52

802.11a Middle Channel – Chain2



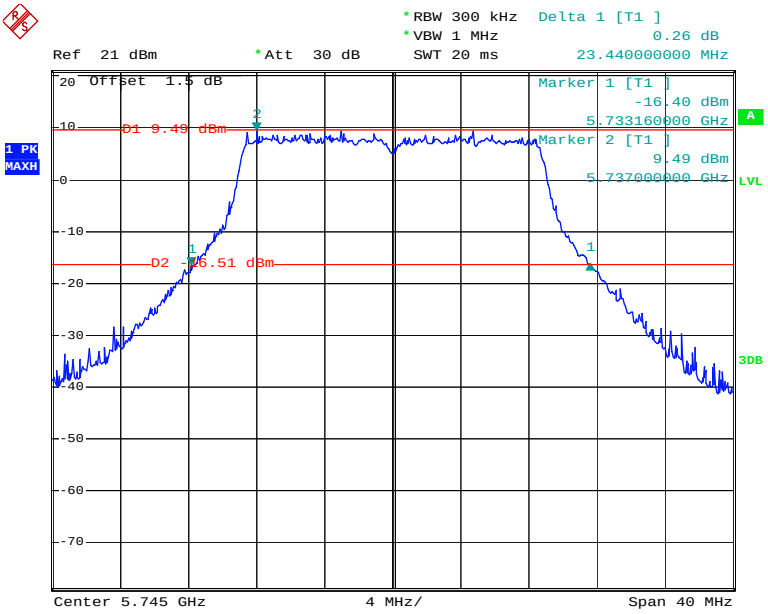
Date: 7.MAY.2016 16:25:45

802.11a High Channel – Chain2



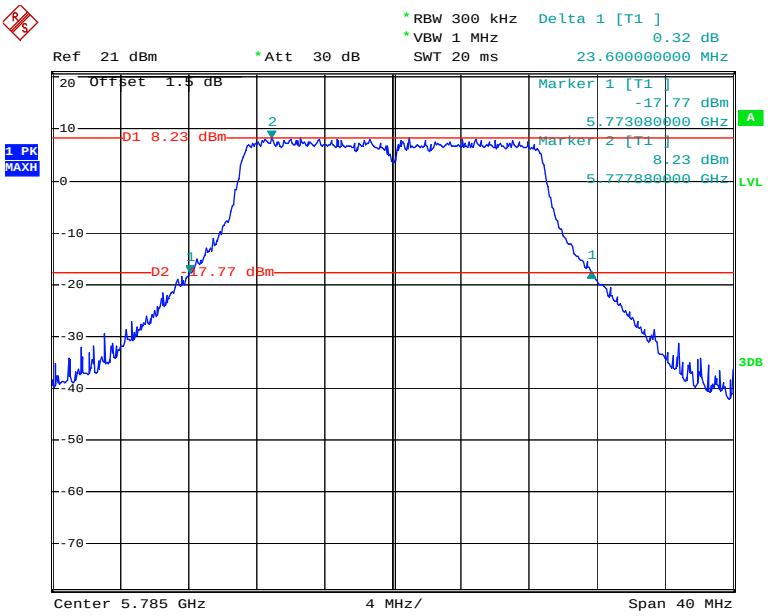
Date: 7.MAY.2016 16:27:55

802.11n ht20 Low Channel – Chain2



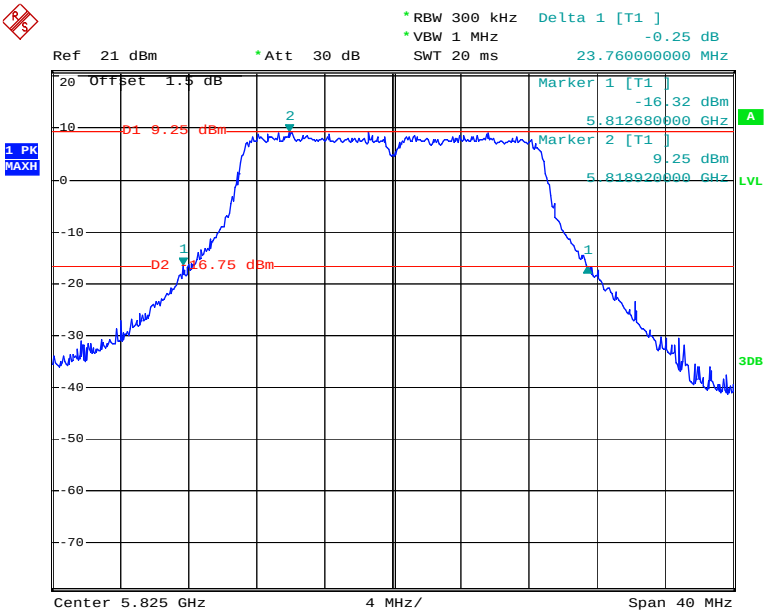
Date: 7.MAY.2016 16:35:31

802.11n ht20 Middle Channel – Chain2



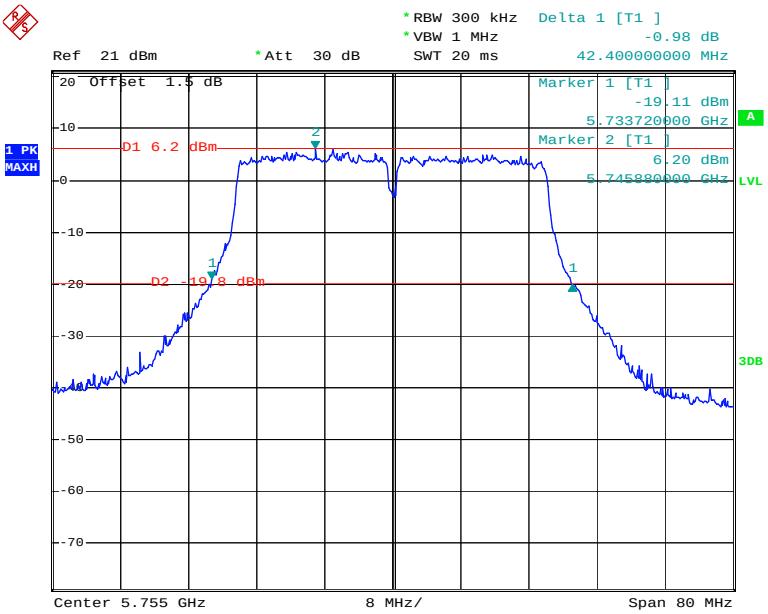
Date: 7.MAY.2016 16:32:45

802.11n ht20 High Channel – Chain2



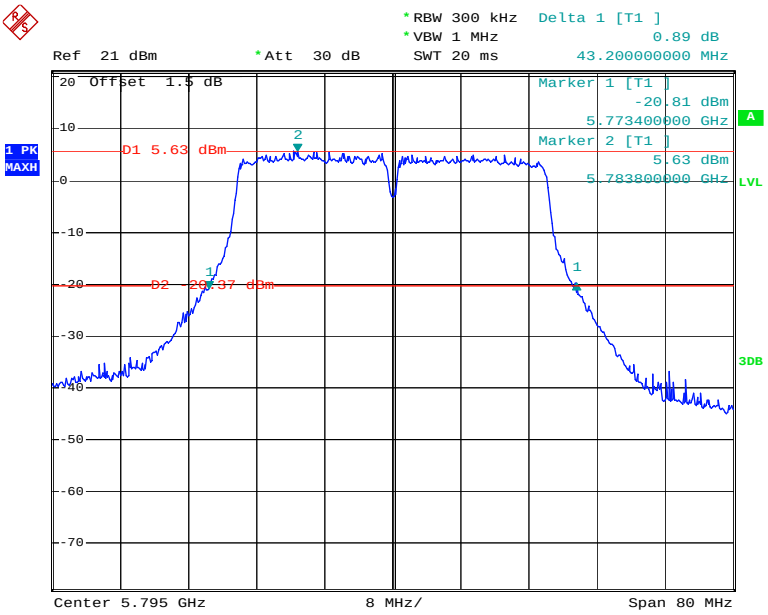
Date: 7.MAY.2016 16:30:21

802.11n ht40 Low Channel – Chain2



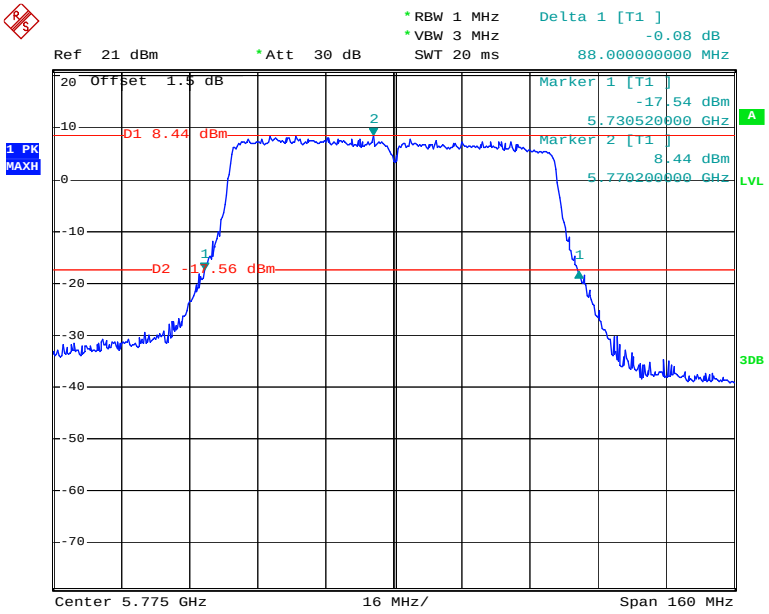
Date: 7.MAY.2016 16:37:55

802.11n ht40 High Channel – Chain2



Date: 7.MAY.2016 16:42:17

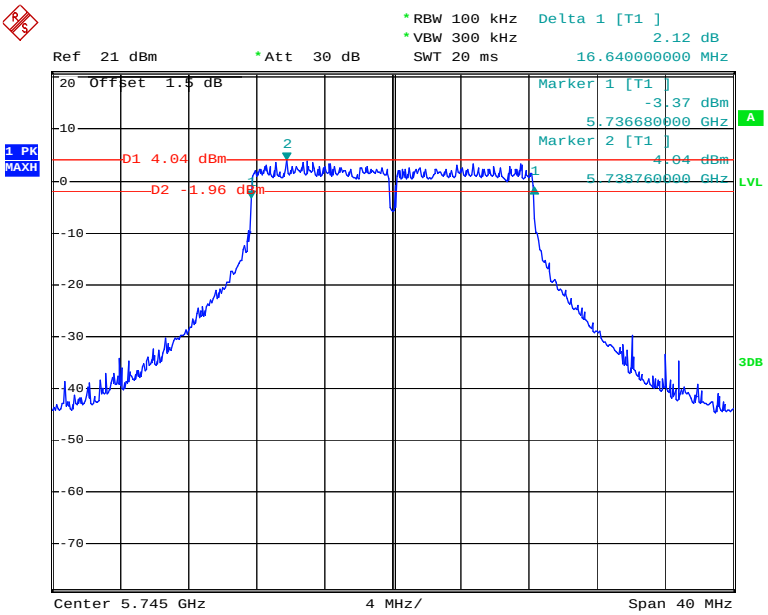
802.11n ac80 Middle Channel – Chain2



Date: 7.MAY.2016 16:44:38

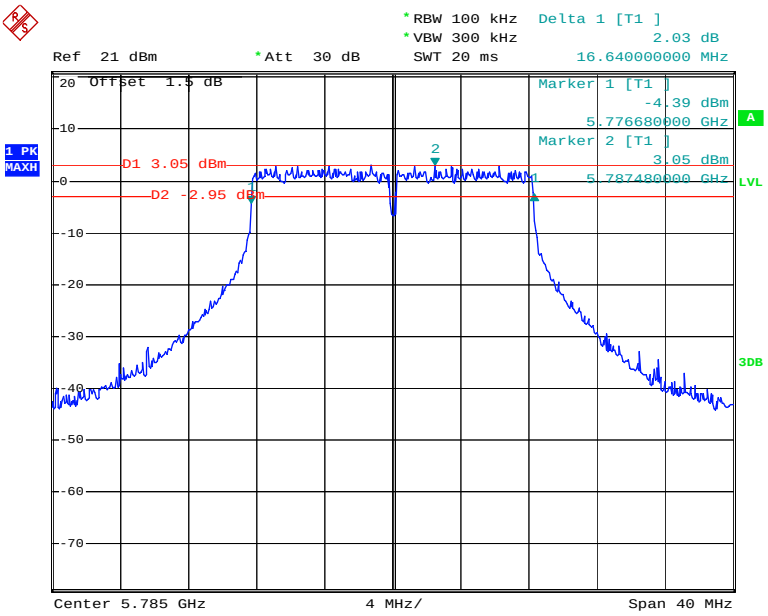
5725MHz-5850MHz: 6 dB Bandwidth

802.11a Low Channel – Chain0



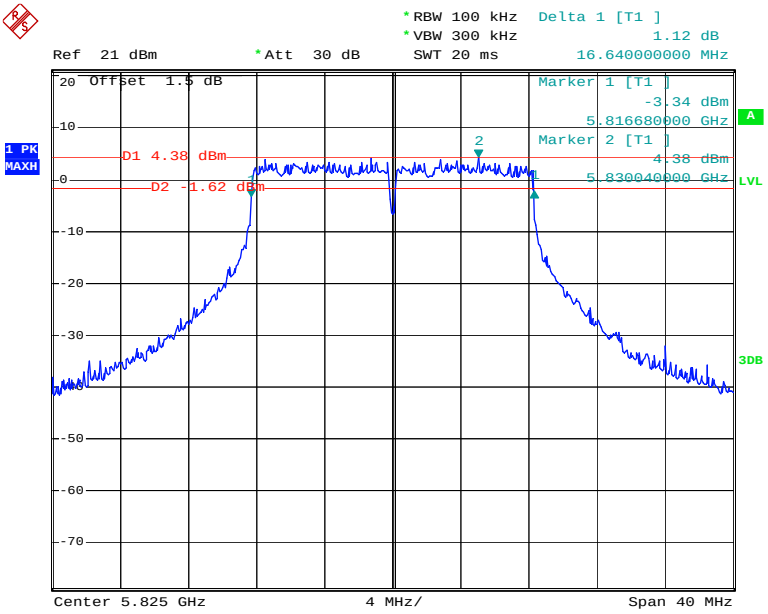
Date: 7.MAY.2016 15:25:48

802.11a Middle Channel – Chain0



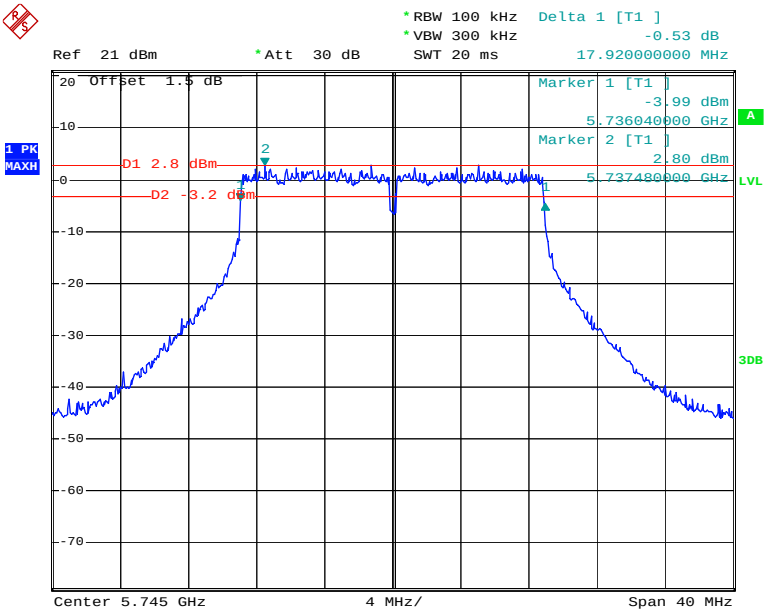
Date: 7.MAY.2016 15:28:00

802.11a High Channel – Chain0



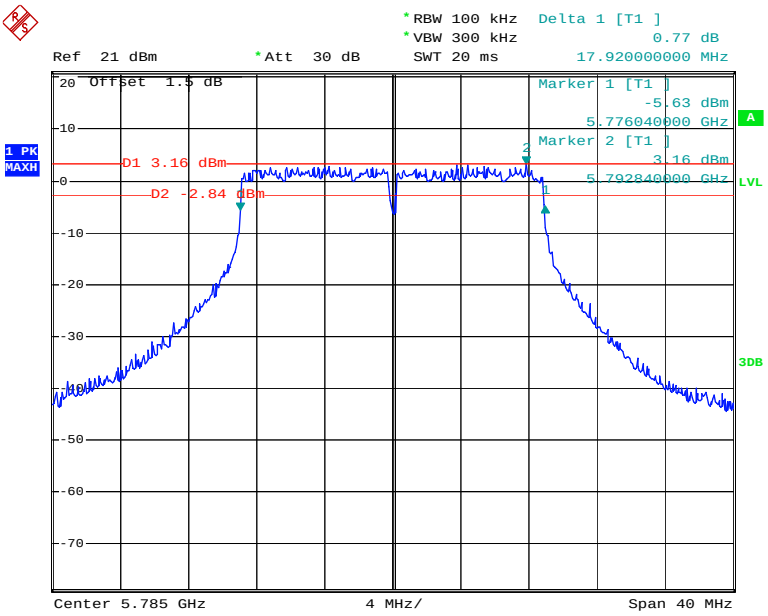
Date: 7.MAY.2016 15:34:14

802.11n ht20 Low Channel – Chain0



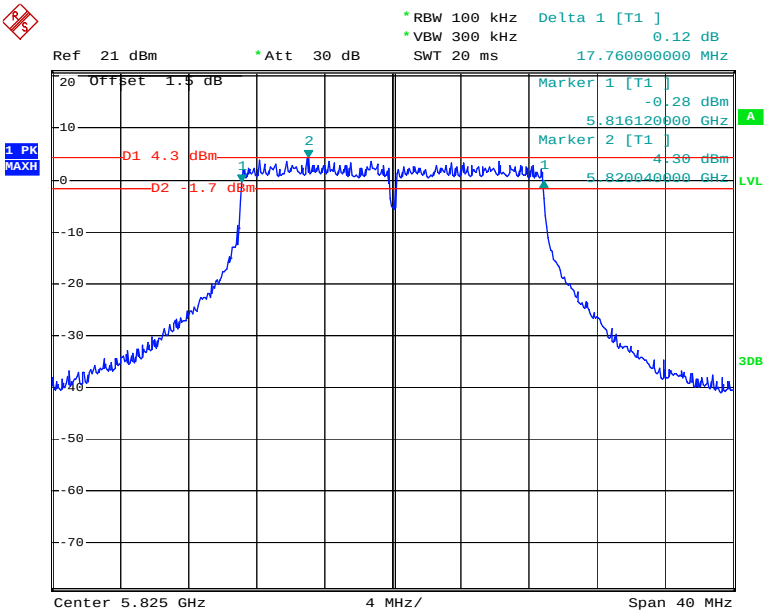
Date: 7.MAY.2016 15:38:54

802.11n ht20 Middle Channel – Chain0



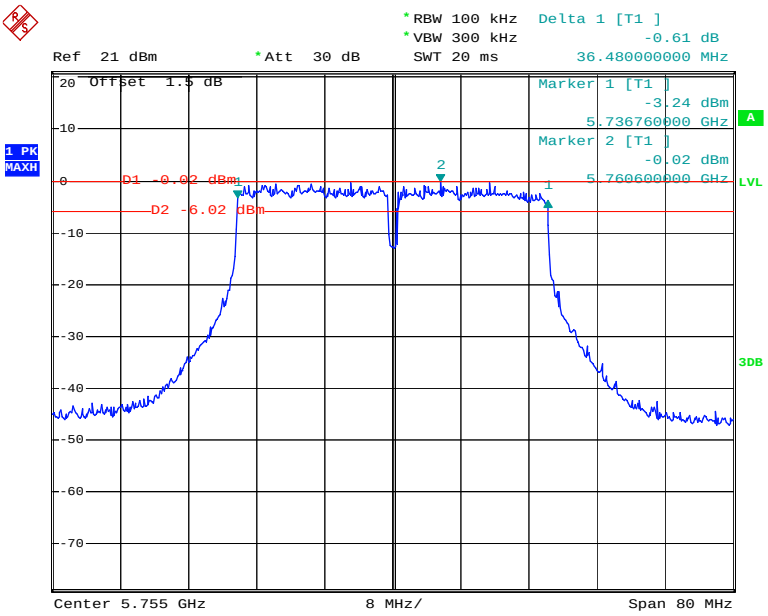
Date: 7.MAY.2016 15:36:29

802.11n ht20 High Channel – Chain0



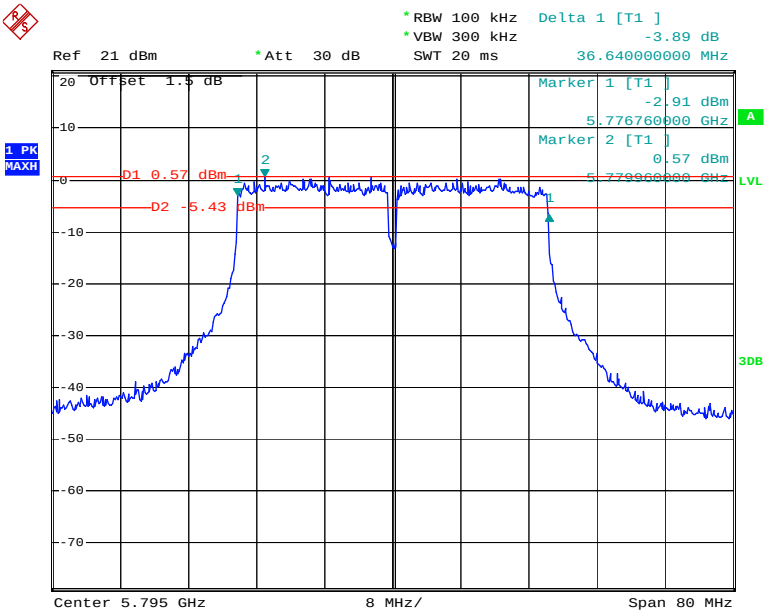
Date: 7.MAY.2016 15:41:50

802.11n ht40 Low Channel – Chain0



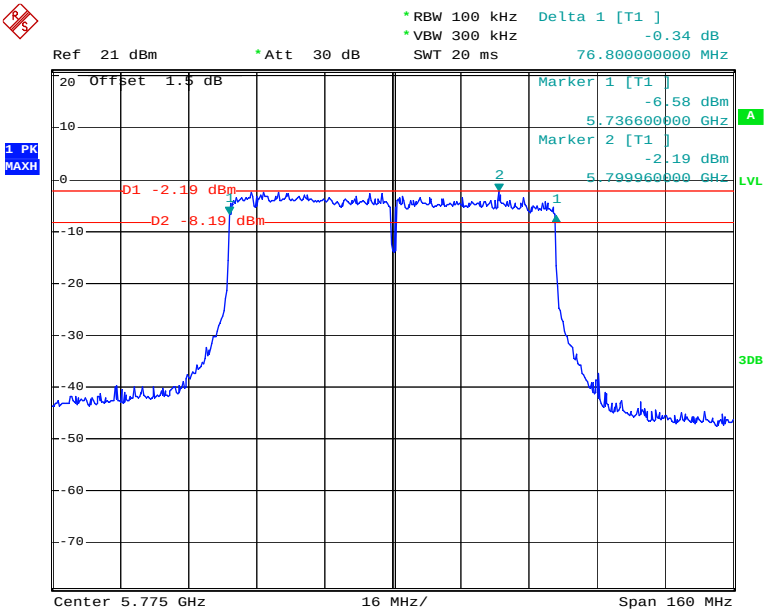
Date: 7.MAY.2016 15:46:46

802.11n ht40 High Channel – Chain0



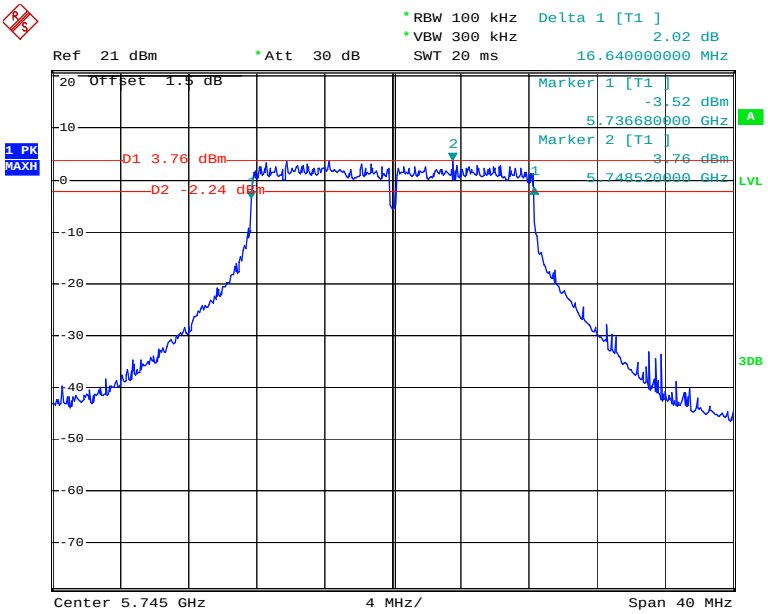
Date: 7.MAY.2016 15:44:06

802.11n ac80 Middle Channel – Chain0



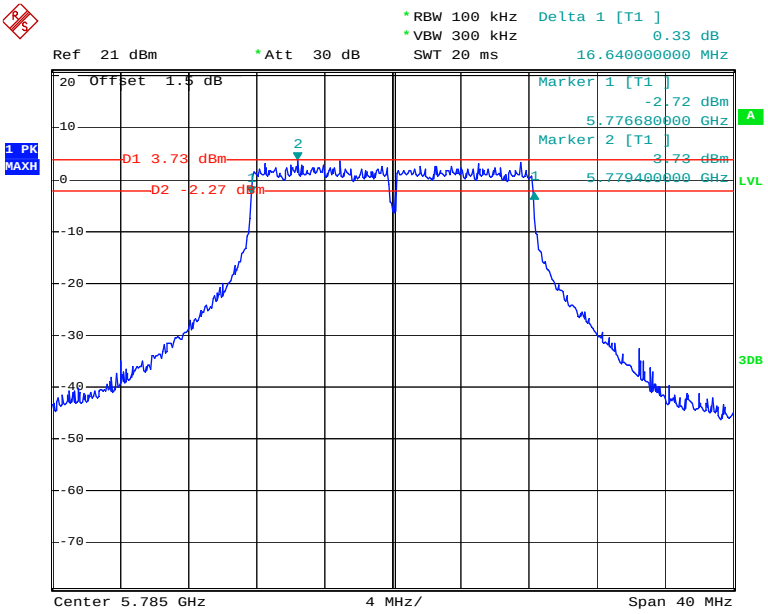
Date: 7.MAY.2016 15:49:22

802.11a Low Channel – Chain1



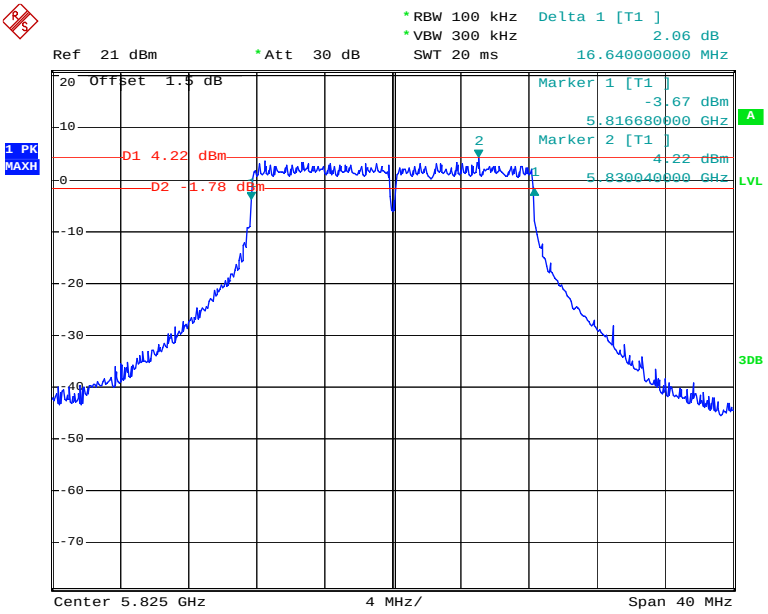
Date: 7.MAY.2016 16:19:06

802.11a Middle Channel – Chain1



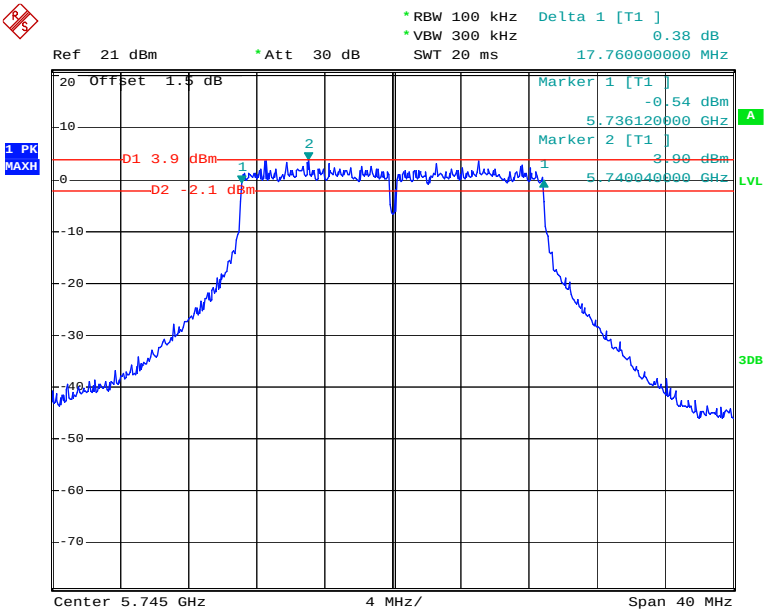
Date: 7.MAY.2016 16:16:34

802.11a High Channel – Chain1



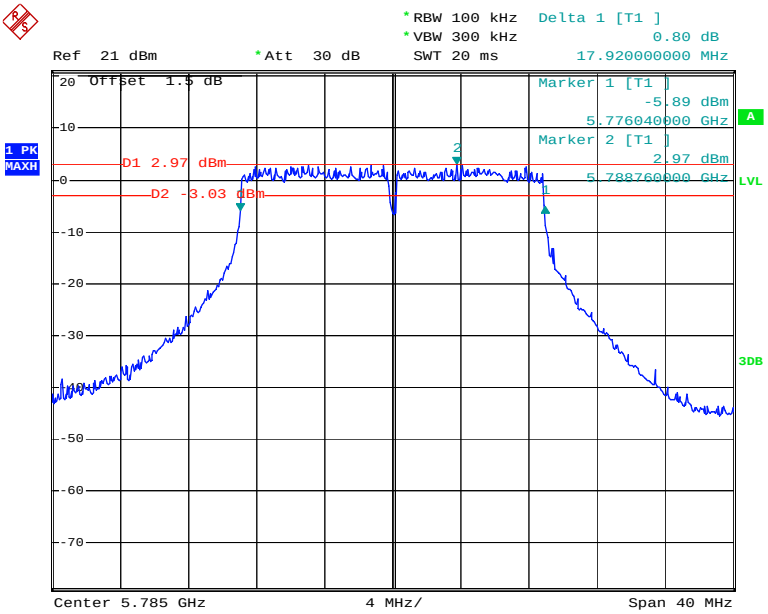
Date: 7.MAY.2016 16:11:34

802.11n ht20 Low Channel – Chain1



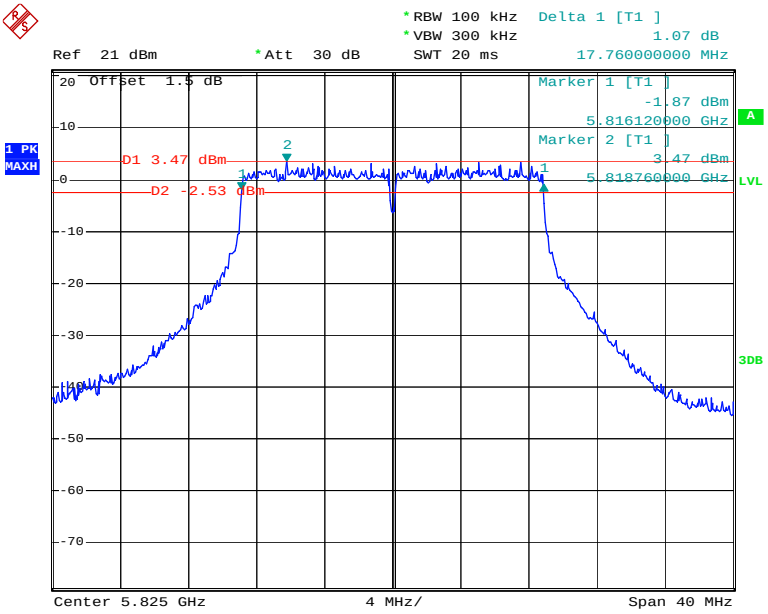
Date: 7.MAY.2016 16:07:50

802.11n ht20 Middle Channel – Chain1



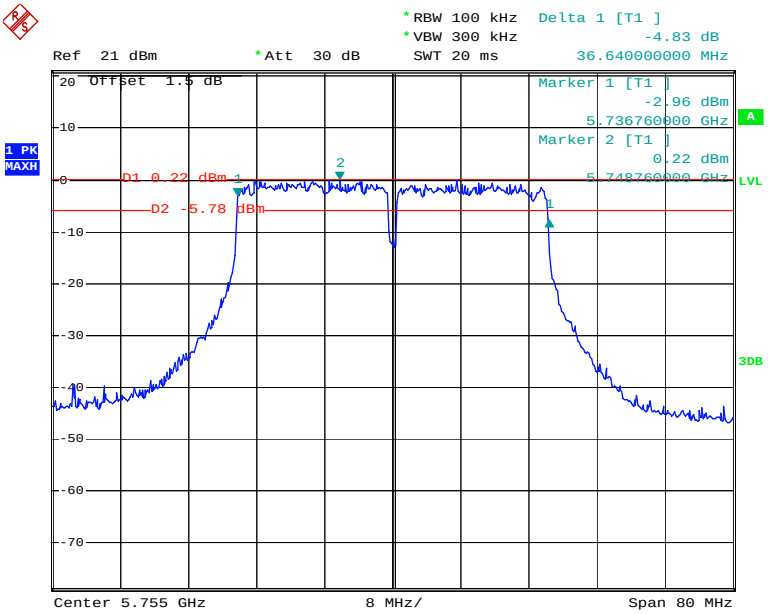
Date: 7.MAY.2016 16:05:37

802.11n ht20 High Channel – Chain1



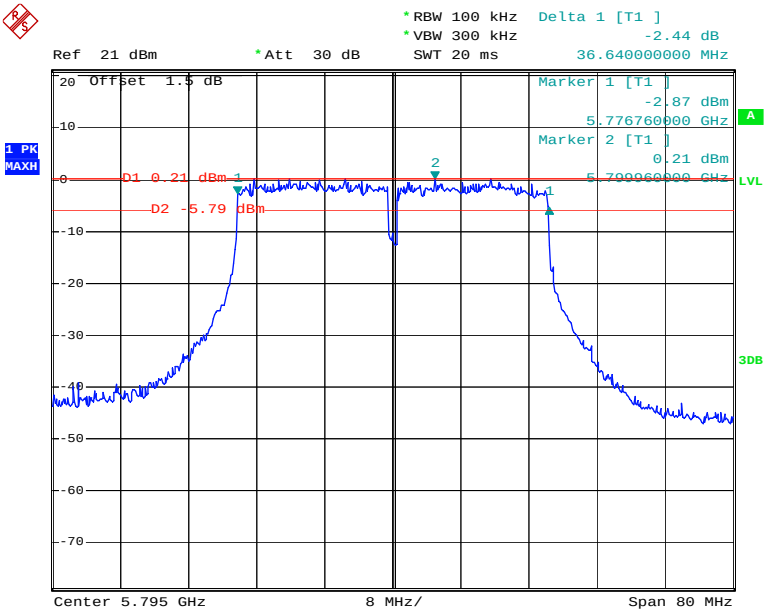
Date: 7.MAY.2016 16:03:01

802.11n ht40 Low Channel – Chain1



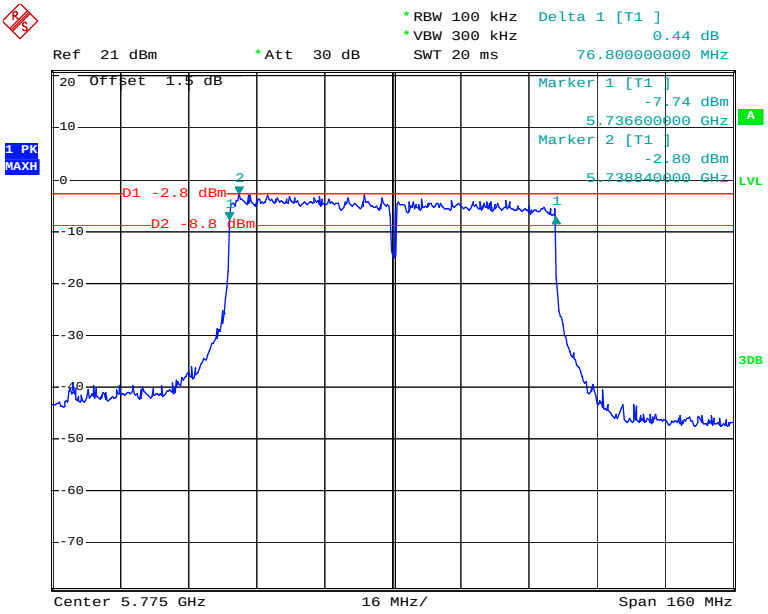
Date: 7.MAY.2016 15:56:11

802.11n ht40 High Channel – Chain1



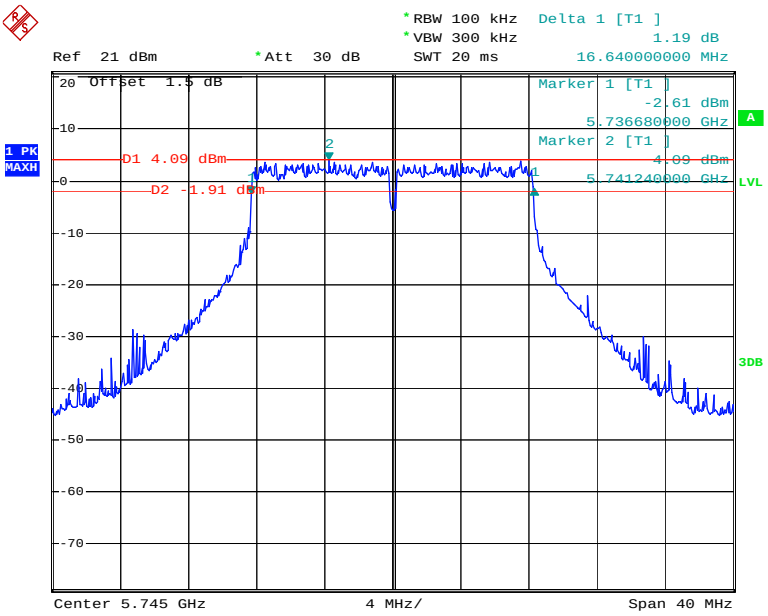
Date: 7.MAY.2016 16:00:20

802.11 ac80 Middle Channel – Chain1



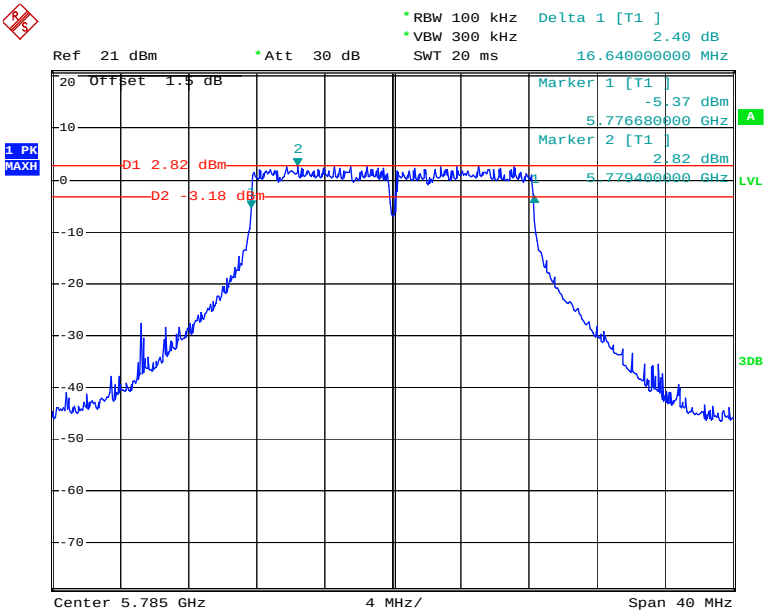
Date: 7.MAY.2016 15:51:37

802.11a Low Channel – Chain2



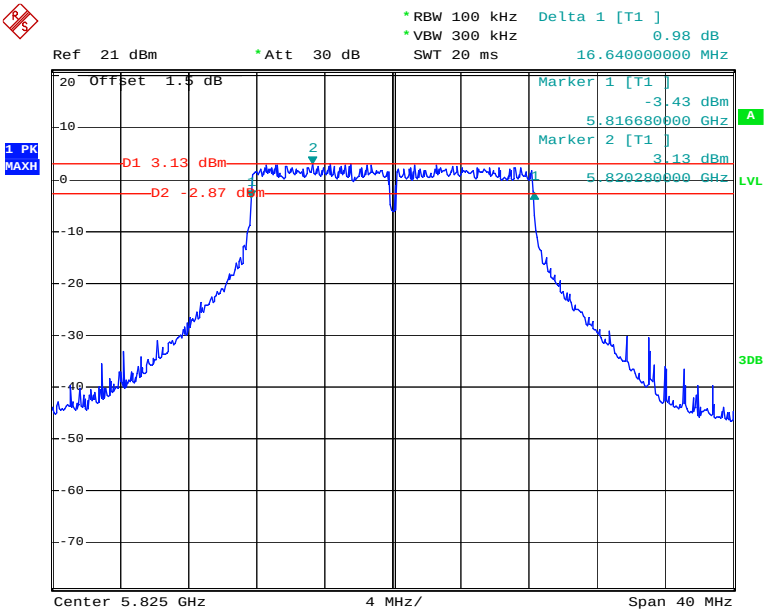
Date: 7.MAY.2016 16:23:15

802.11a Middle Channel – Chain2



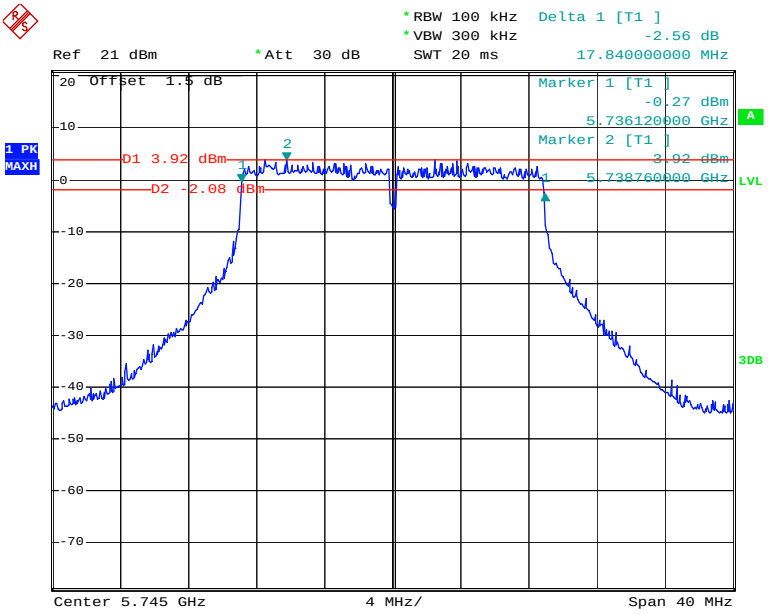
Date: 7.MAY.2016 16:26:06

802.11a High Channel – Chain2



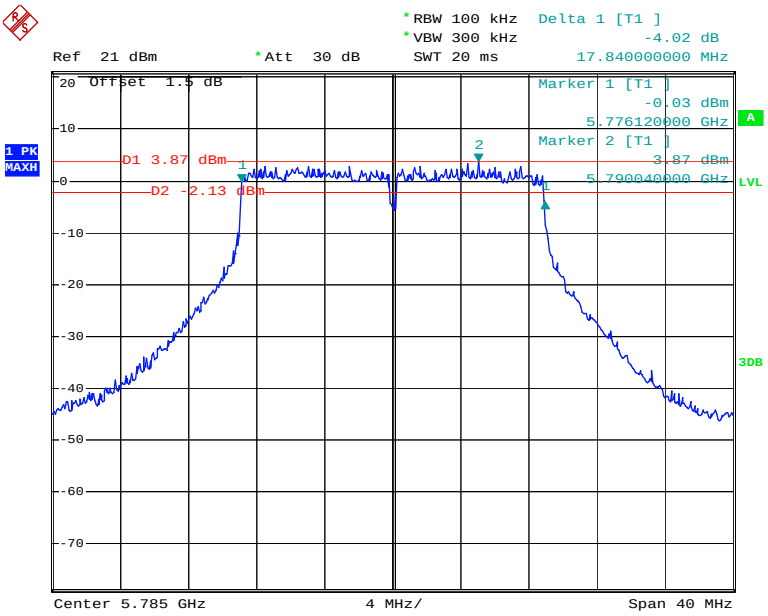
Date: 7.MAY.2016 16:28:16

802.11n ht20 Low Channel – Chain2



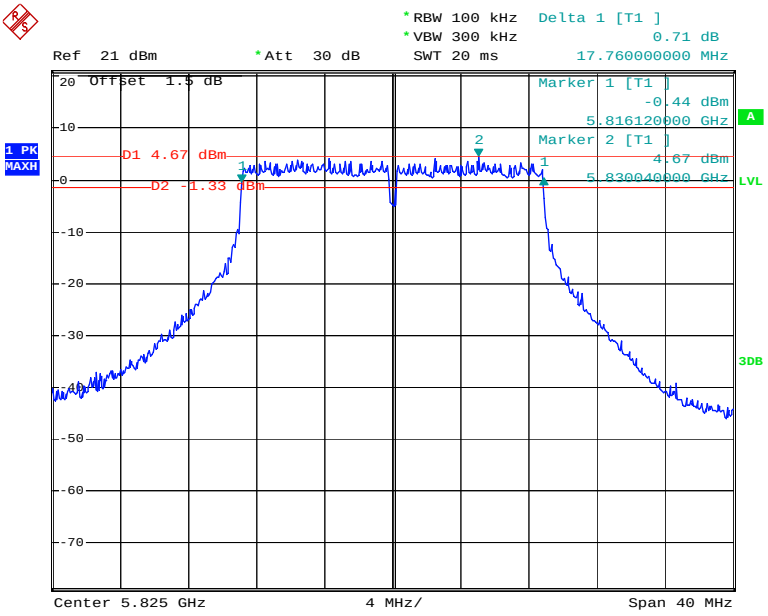
Date: 7.MAY.2016 16:35:50

802.11n ht20 Middle Channel – Chain2



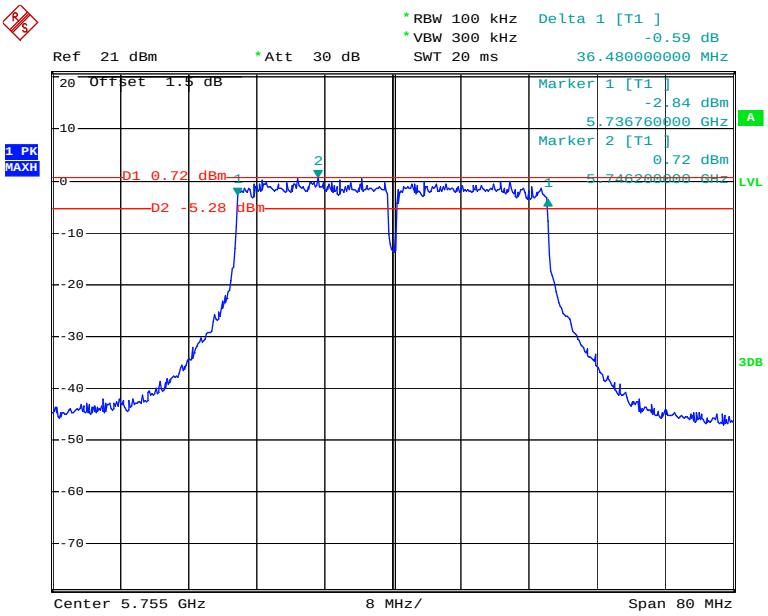
Date: 7.MAY.2016 16:33:08

802.11n ht20 High Channel – Chain2



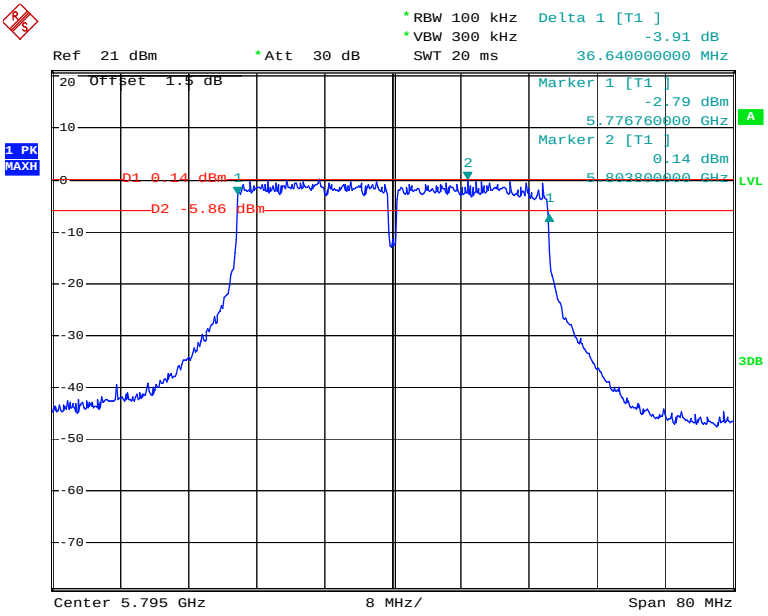
Date: 7.MAY.2016 16:30:44

802.11n ht40 Low Channel – Chain2



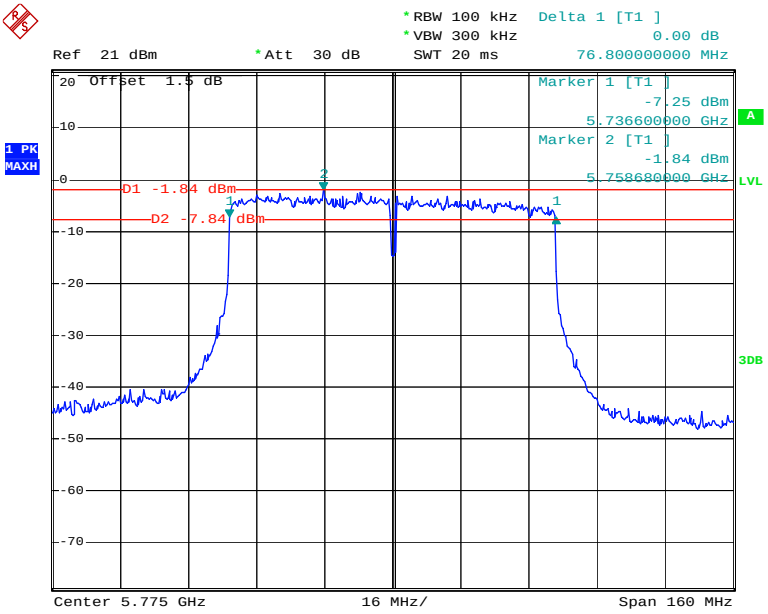
Date: 7.MAY.2016 16:38:15

802.11n ht40 High Channel – Chain2



Date: 7.MAY.2016 16:42:40

802.11 ac80 Middle Channel – Chain2



Date: 7.MAY.2016 16:45:03

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 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 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	2015-11-03	2016-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2015-11-03	2016-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2015-11-03	2016-11-03
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

*** 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 v01r02

Test Data

Environmental Conditions

Temperature:	30.4 °C
Relative Humidity:	62 %
ATM Pressure:	100.4 kPa

The testing was performed by Dean Liu on 2016-05-07.

Test Mode: Transmitting

5150-5250 MHz band

Mode	Channel	Frequency	Maximum Conducted Output Power (dBm)					Result
		MHz	Chain 0	Chain 1	Chain 2	Total	Limits	
802.11a	Low	5180	16.43	16.56	16.01	21.11	27	PASS
	Middle	5200	16.45	16.16	16.07	21.00	27	PASS
	High	5240	16.13	16.27	16.17	20.96	27	PASS
802.11n20	Low	5180	16.34	16.64	15.93	21.08	27	PASS
	Middle	5200	16.37	16.41	15.91	21.01	27	PASS
	High	5240	16.03	15.93	16	20.76	27	PASS
802.11n40	Low	5190	16.26	16.36	15.81	20.92	27	PASS
	High	5230	15.88	16.38	16.14	20.91	27	PASS
802.11ac80	Middle	5210	13.38	13.6	13.34	18.21	27	PASS

5725-5850 MHz band

Mode	Channel	Frequency	Maximum Conducted Output Power (dBm)					Result
		MHz	Chain 0	Chain 1	Chain 2	Total	Limits	
802.11a	Low	5745	16.32	16.16	16.67	21.16	27	PASS
	Middle	5785	15.88	16.01	15.76	20.66	27	PASS
	High	5825	16.61	16.49	16.07	21.17	27	PASS
802.11n20	Low	5745	15.43	16.15	16.65	20.88	27	PASS
	Middle	5785	16.28	16.01	16.09	20.90	27	PASS
	High	5825	16.58	15.93	16.83	21.23	27	PASS
802.11n40	Low	5755	15.91	16.14	16.23	20.87	27	PASS
	High	5795	16.08	16.1	16.09	20.86	27	PASS
802.11ac80	Middle	5775	16.56	16.24	16.38	21.17	27	PASS

Note: the device is a indoor master device. the 3 antenna maximum atenna gains are 9dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

So:

Directional gain = GANT + Array Gain = 9dBi > 6dBi

The power limit need reduce 3dB.

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 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.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r02

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

*** 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

Temperature:	30.4 °C
Relative Humidity:	62 %
ATM Pressure:	100.4 kPa

The testing was performed by Dean Liu on 2016-05-07.

Test Mode: Transmitting

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

5150MHz-5250MHz:

Mode	Channel	Frequency MHz	PSD (dBm/MHz)				Limit (dBm/MHz)
			Chain0	Chain1	Chain2	Total	
802.11a	Low	5180	3.97	4.01	4.66	9.00	9.23
	Middle	5200	4.07	4.29	4.32	9.00	9.23
	High	5240	4.02	4.36	4.18	8.96	9.23
802.11n20	Low	5180	4.44	4.08	4.17	9.00	9.23
	Middle	5200	3.96	4.59	4.12	9.00	9.23
	High	5240	4.35	3.87	4.63	9.07	9.23
802.11n40	Low	5190	2.06	2.51	1.68	6.87	9.23
	High	5230	2.11	2.42	2.12	6.99	9.23
802.11ac80	Middle	5210	-3.77	-4.08	-3.94	0.84	9.23

Note: the device is a master device. the 3 antenna maximum atenna gain are 9dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

So:

Directional gain = GANT + Array Gain = 9+10*log(3) =13.77 dBi

The Power density Limits was reduce 7.77dB

5725MHz-5850MHz:

Mode	Channel	Frequency	Power Spectral Density (dBm/300kHz)			Power Spectral Density (dBm/500kHz)	
		MHz	Chain 0	Chain 1	Chain 2	Total	Limits
802.11a	Low	5745	1.63	1.42	1.69	8.57	22.23
	Middle	5785	1.08	0.93	0.82	7.93	22.23
	High	5825	1.78	1.45	1.87	8.69	22.23
802.11n20	Low	5745	0.58	1.08	1.57	8.09	22.23
	Middle	5785	1.26	0.82	0.83	7.96	22.23
	High	5825	1.33	0.9	1.84	8.36	22.23
802.11n40	Low	5755	-1.98	-2.11	-1.61	5.09	22.23
	High	5795	-1.66	-1.52	-1.94	5.29	22.23
802.11 ac80	Middle	5775	-4.6	-4.7	-4.9	2.26	22.23

Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

Note: the device is a master device. the 3 antenna maximum atenna gain are 9dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

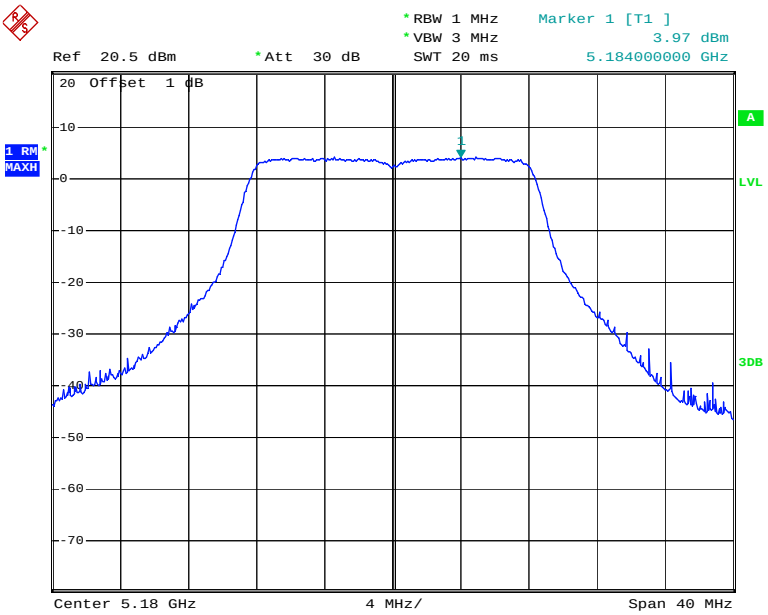
So:

Directional gain = GANT + Array Gain = 9+10*log(3) =13.77 dBi

The Power density Limits was reduce 7.77dB

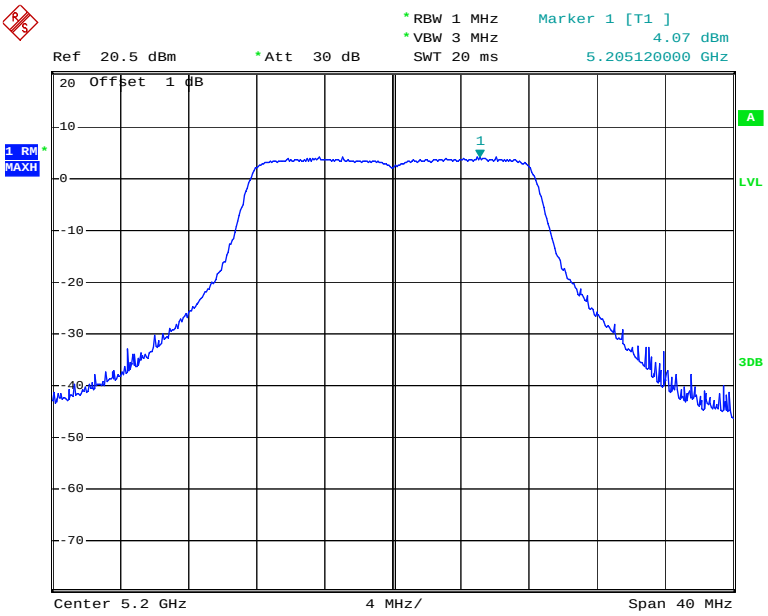
5150MHz-5250MHz:

802.11a Low Channel – Chain0



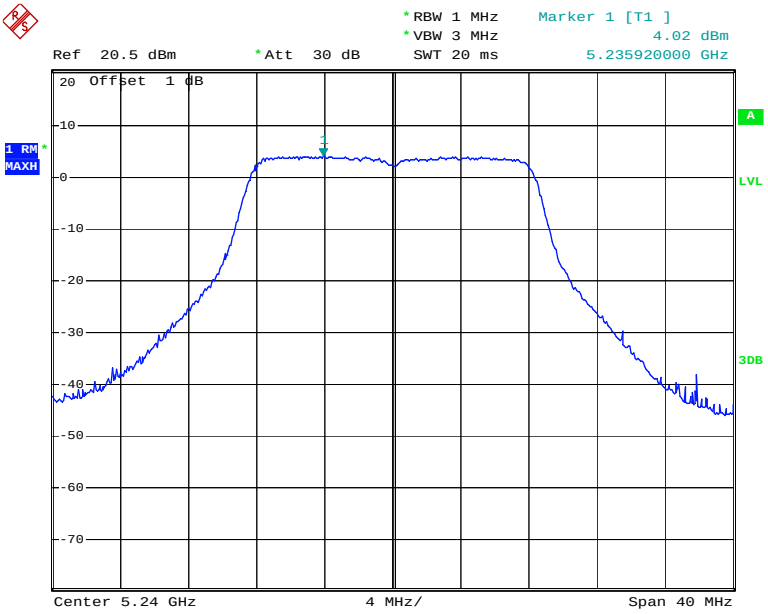
Date: 18.MAY.2016 21:37:21

802.11a Middle Channel – Chain0



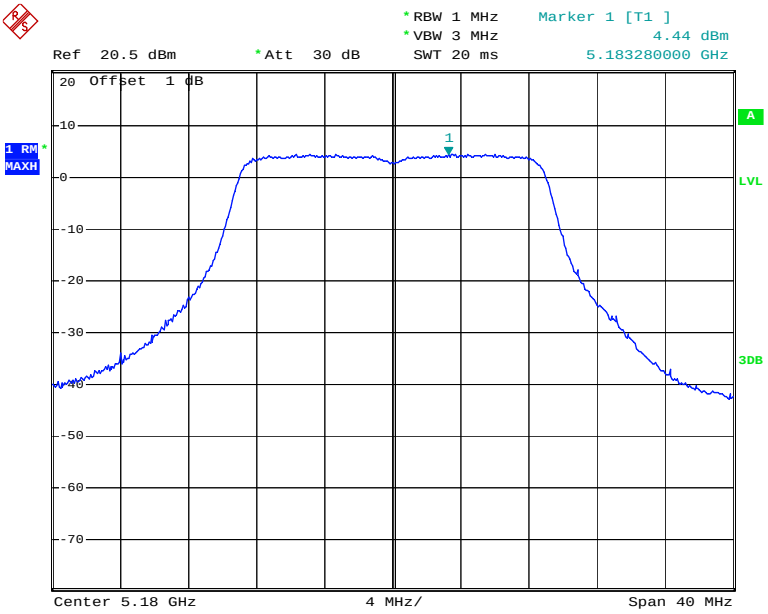
Date: 18.MAY.2016 21:36:36

802.11a High Channel – Chain0



Date: 18.MAY.2016 21:31:37

802.11n ht20 Low Channel – Chain0



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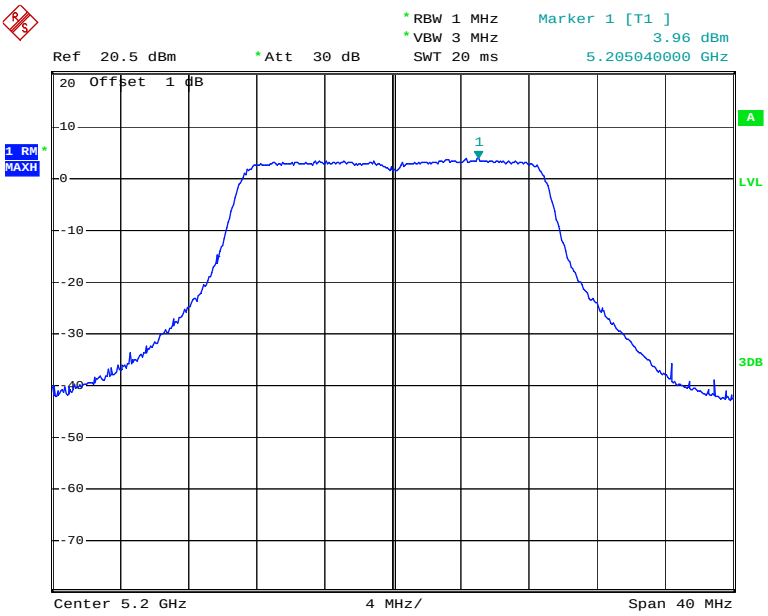
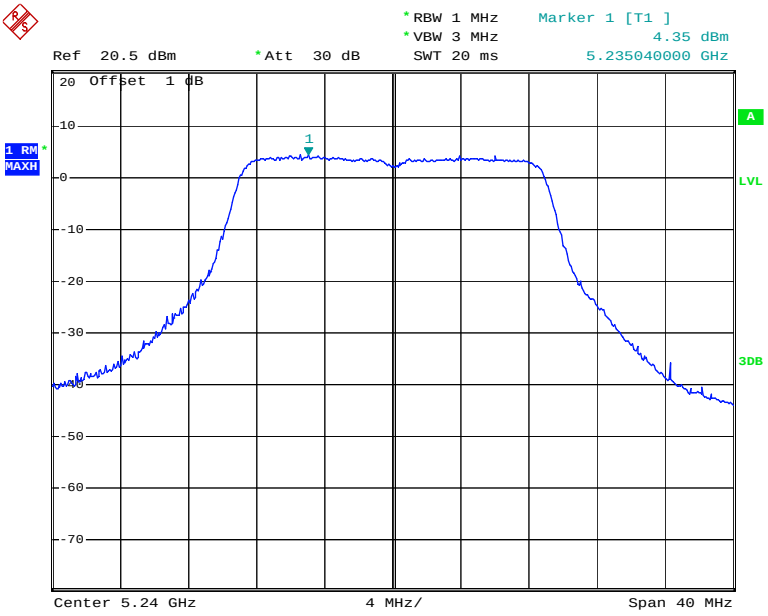


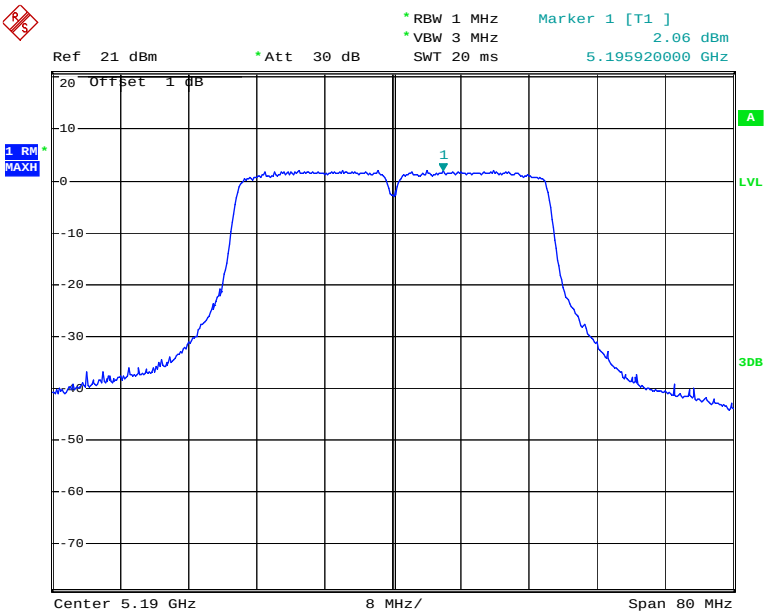
Date: 18.MAY.2016 21:51:05

802.11n ht20 High Channel – Chain0



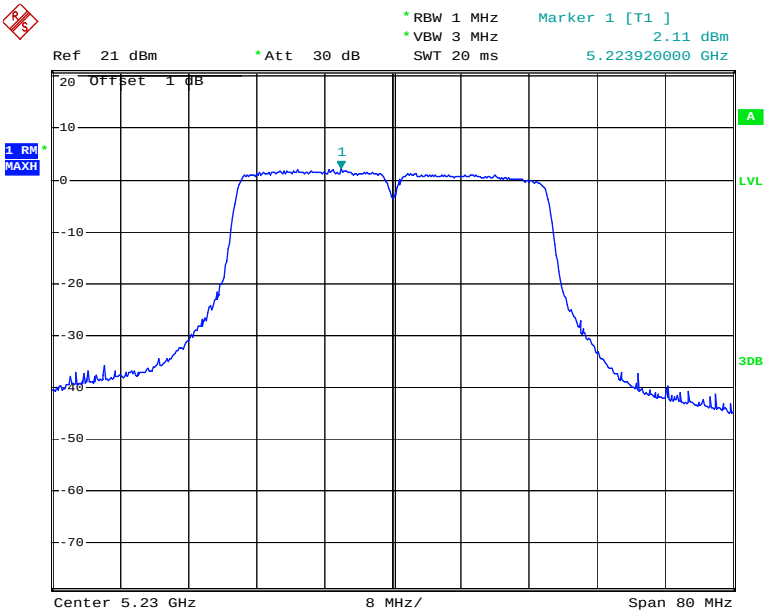
Date: 18.MAY.2016 21:55:08

802.11n ht40 Low Channel – Chain0



Date: 7.MAY.2016 15:09:31

802.11n ht40 High Channel – Chain0



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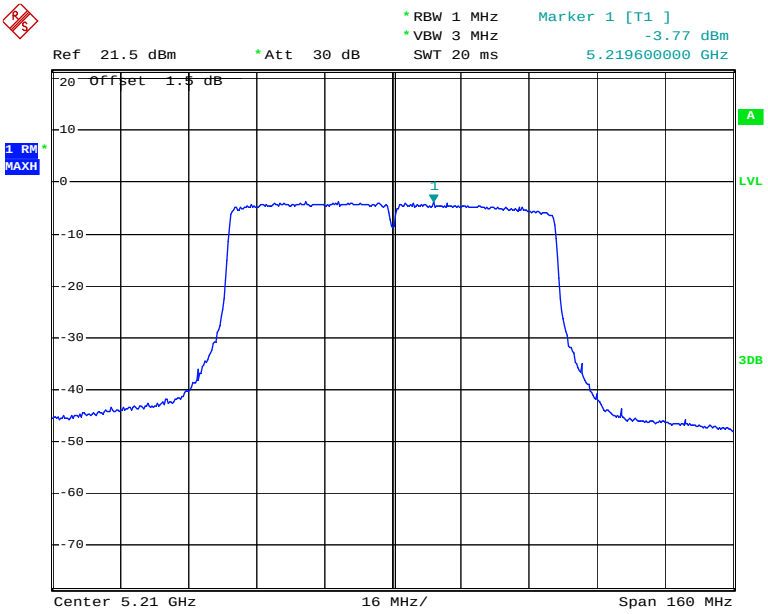
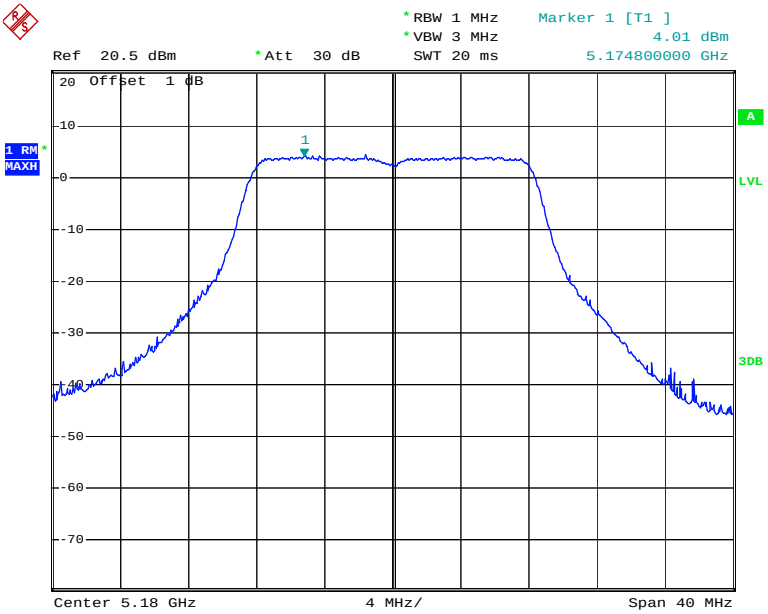
802.11 ac80 Middle Channel – Chain0



Date: 14.MAY.2016 21:17:22

802.11a Low Channel – Chain1



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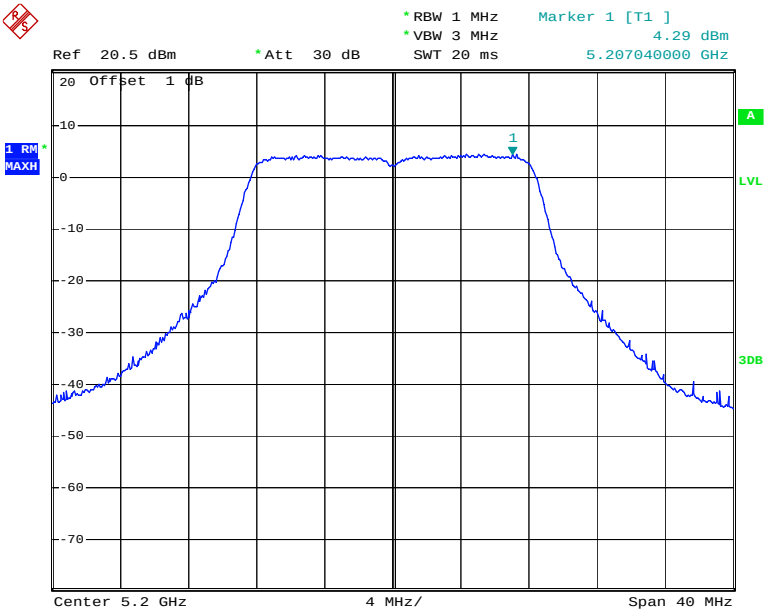
802.11a Middle Channel – Chain1



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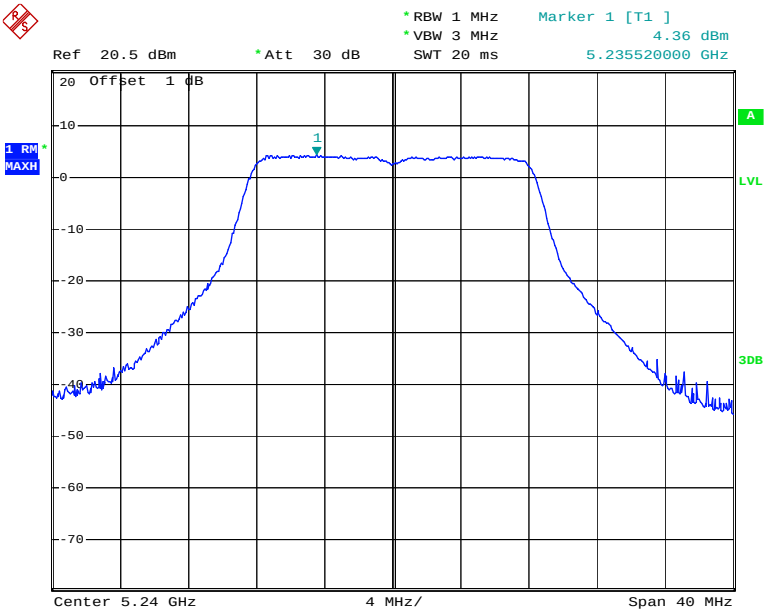
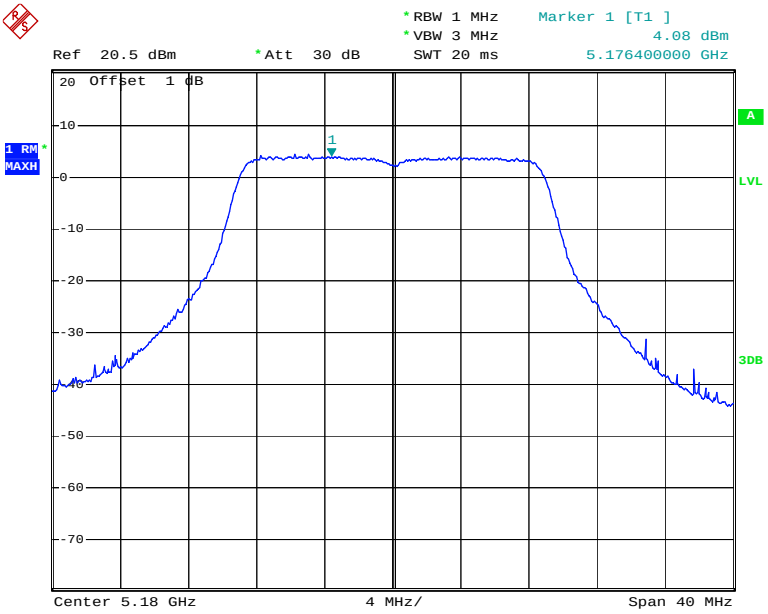
802.11a High Channel – Chain1



Date: 18.MAY.2016 21:31:14

802.11n ht20 Low Channel – Chain1



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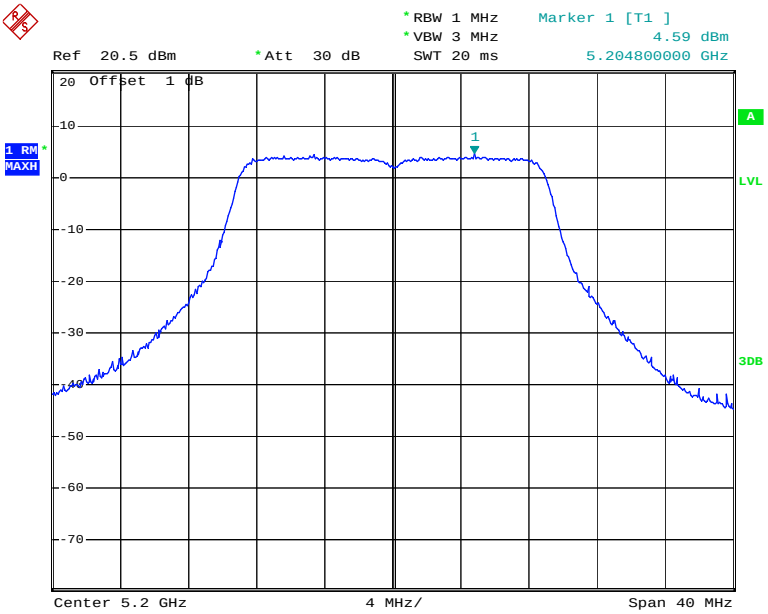
802.11n ht20 Middle Channel – Chain1



Date: 18.MAY.2016 21:50:07

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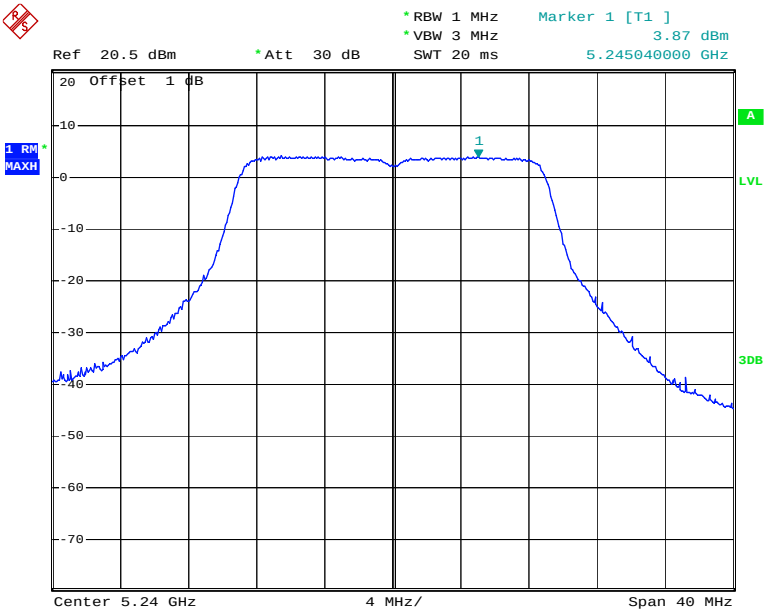

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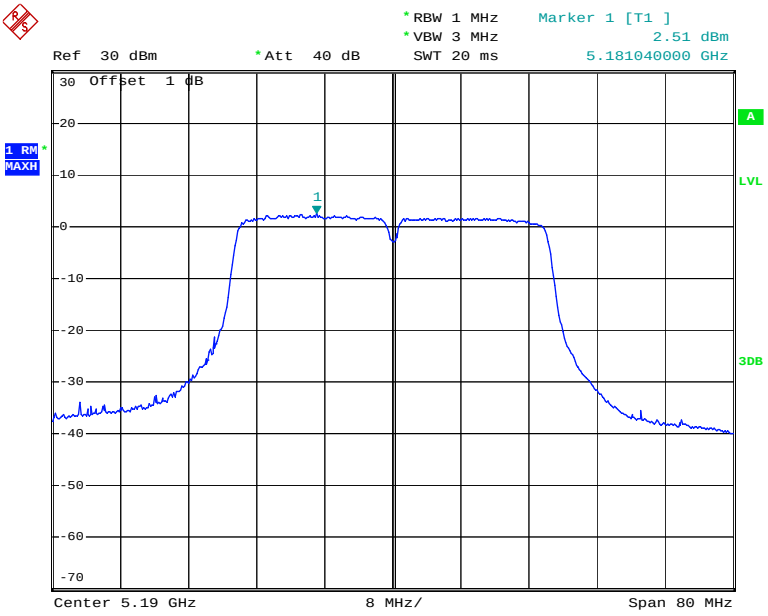
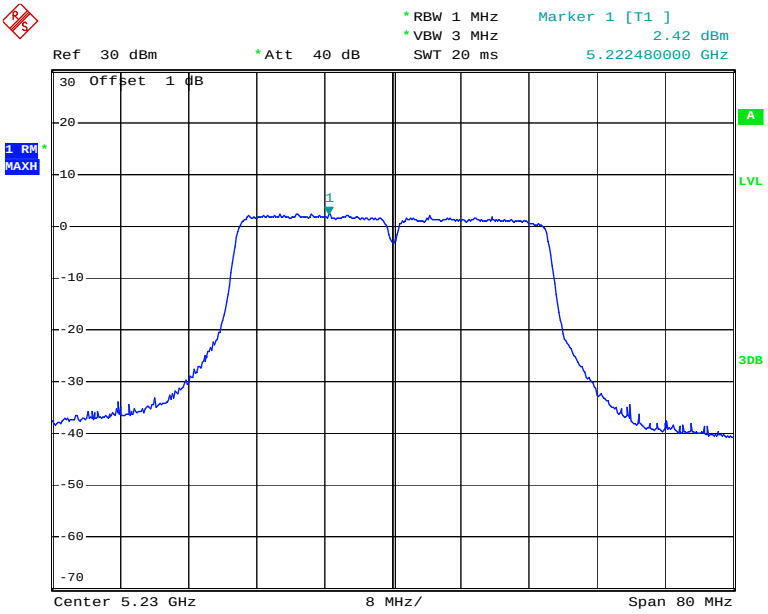
802.11n ht40 Low Channel – Chain1



Date: 5.MAY.2016 22:47:53

802.11n ht40 High Channel – Chain1



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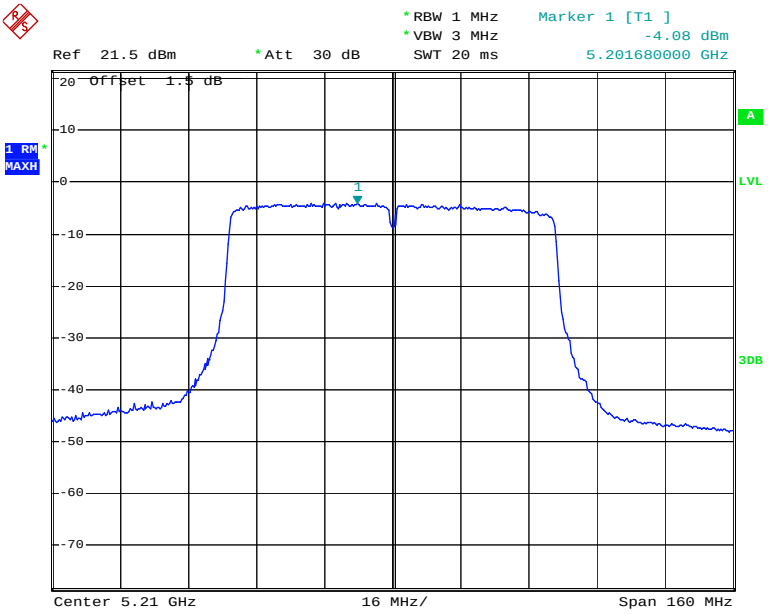
802.11 ac80 Middle Channel – Chain1



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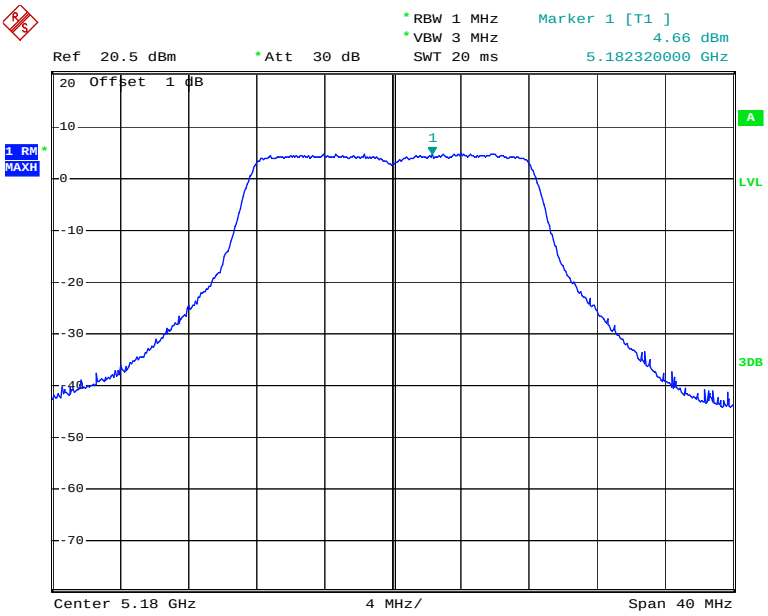
802.11a Low Channel – Chain2



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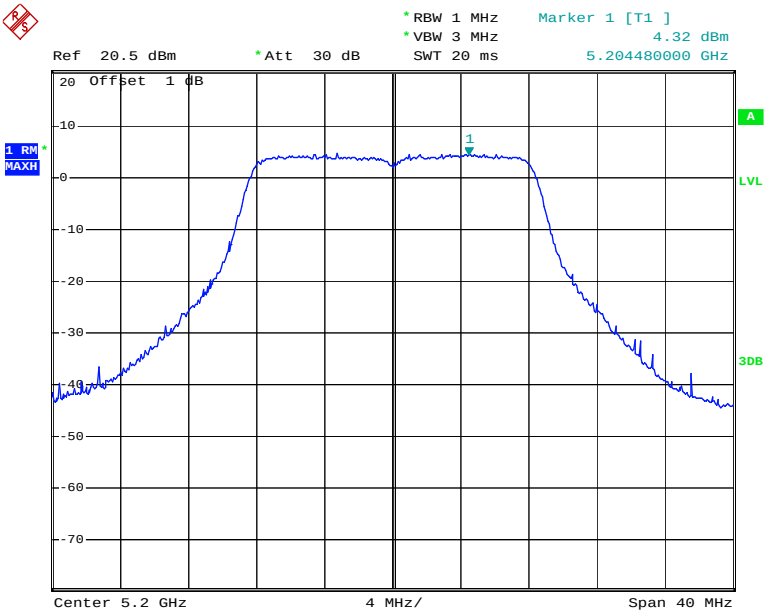
802.11a Middle Channel – Chain2



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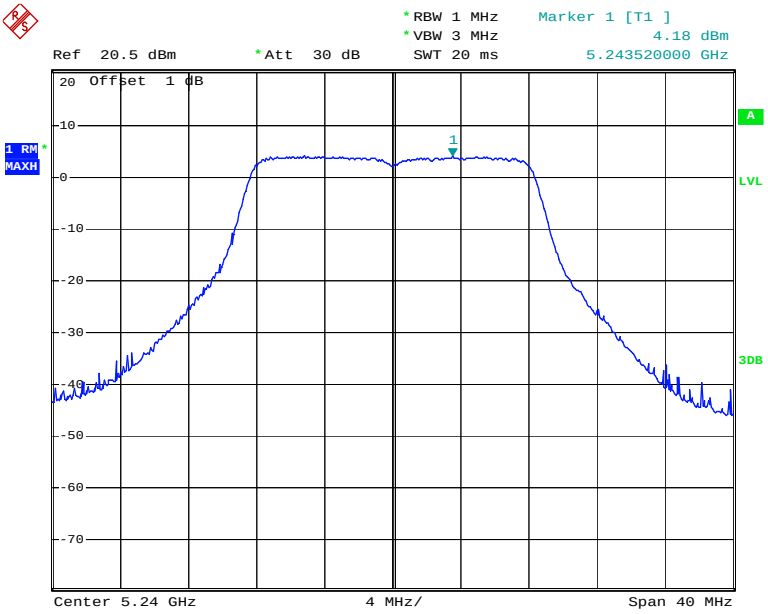
802.11a High Channel – Chain2



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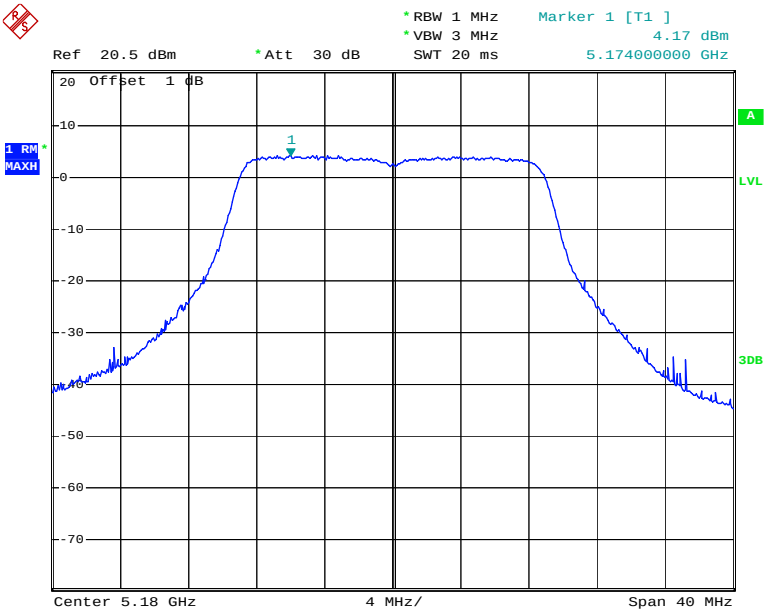
802.11n ht20 Low Channel – Chain2



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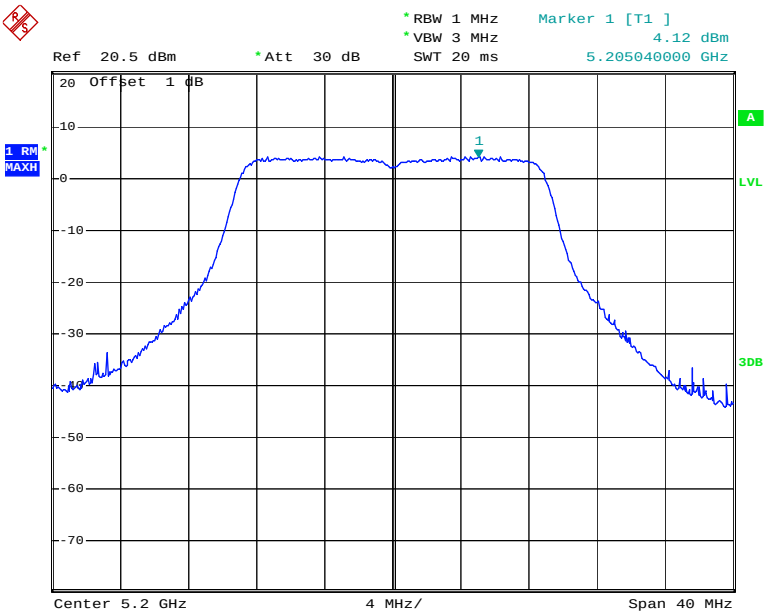
802.11n ht20 Middle Channel – Chain2



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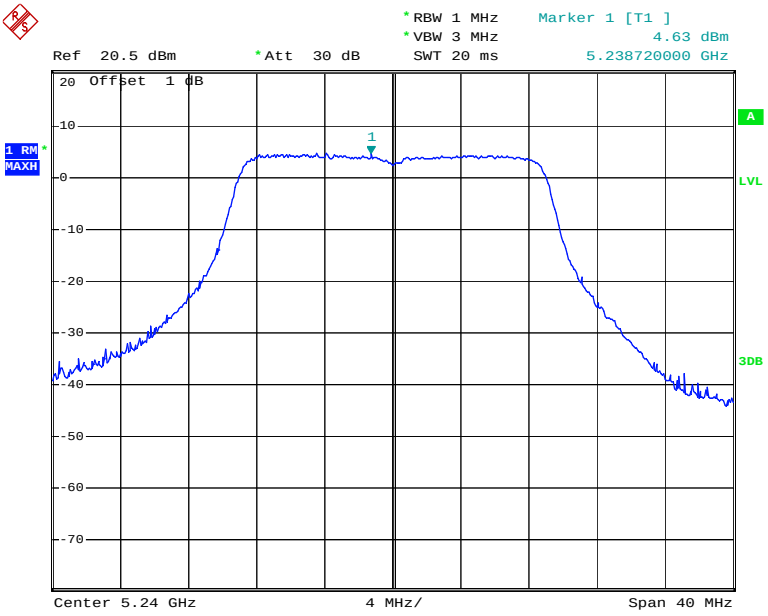
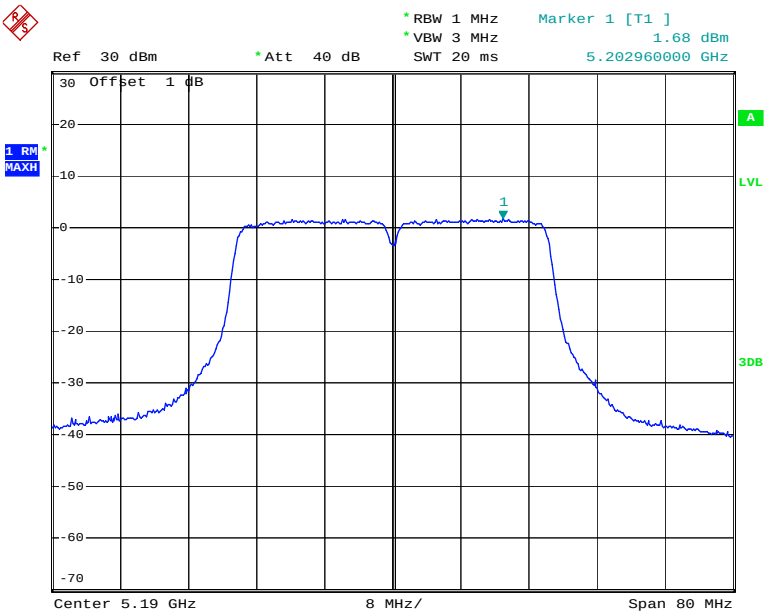
802.11n ht20 High Channel – Chain2



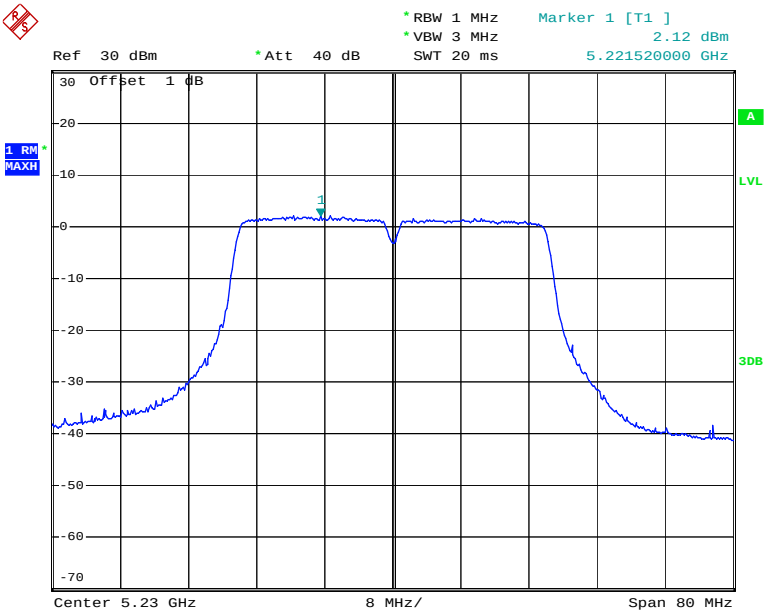
Date: 18.MAY.2016 21:54:29

802.11n ht40 Low Channel – Chain2



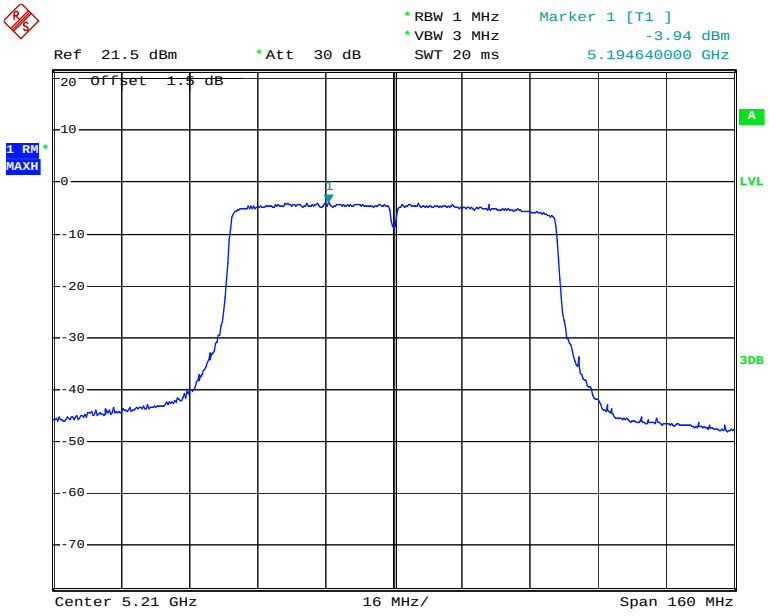
Date: 5.MAY.2016 23:16:57

802.11n ht40 High Channel – Chain2



Date: 5.MAY.2016 23:15:15

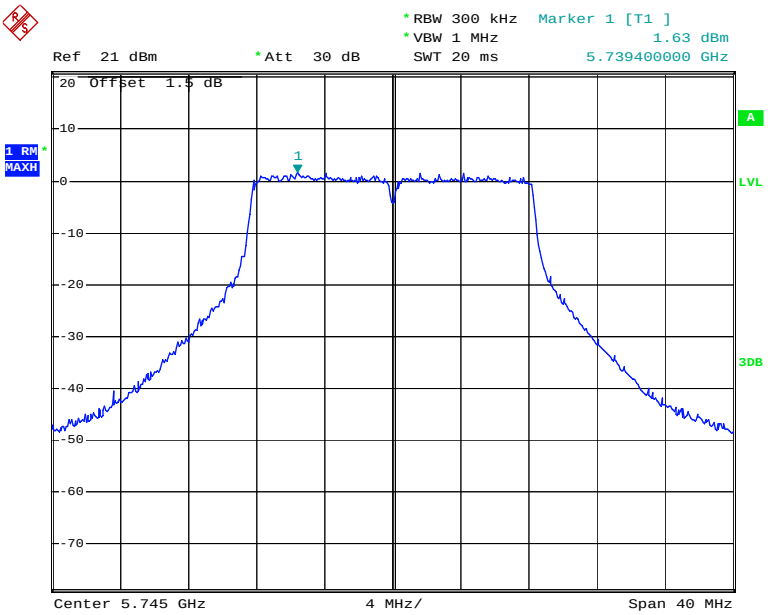
802.11 ac80 Middle Channel – Chain2



Date: 14.MAY.2016 21:17:34

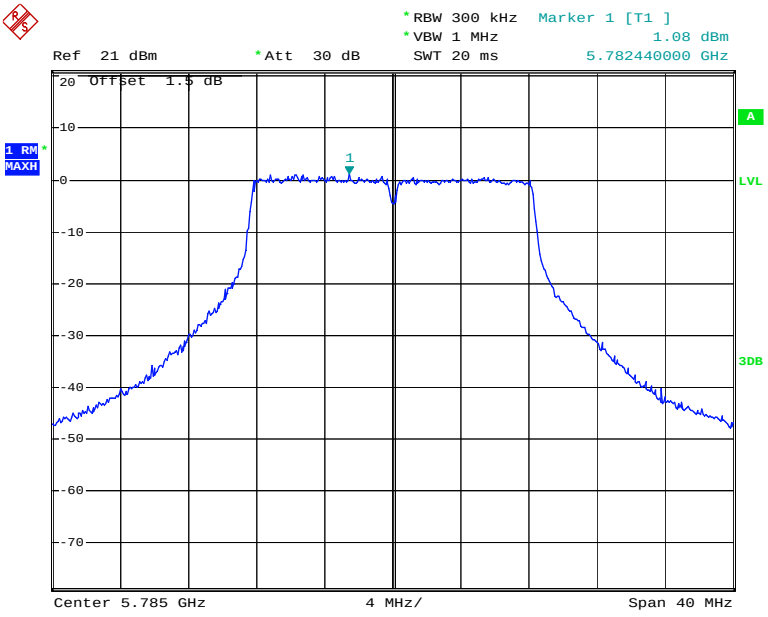
5725MHz-5850MHz:

802.11a Low Channel – Chain0



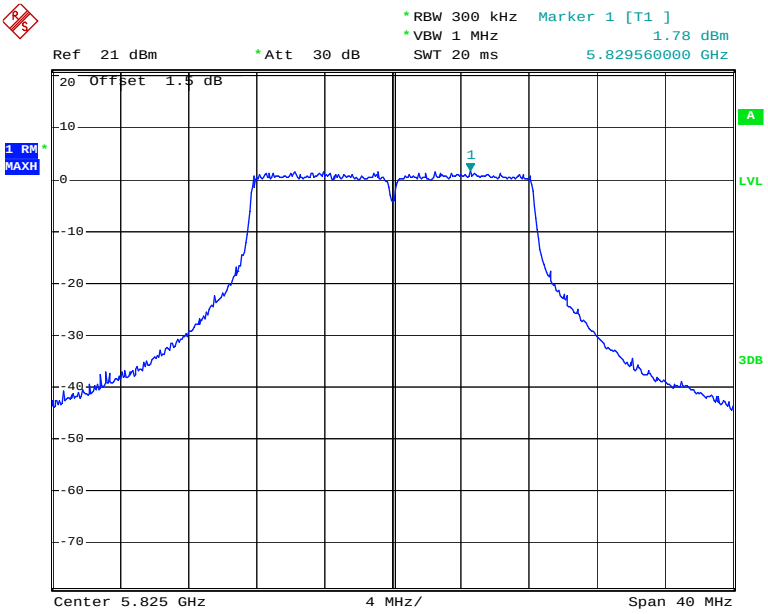
Date: 7.MAY.2016 15:26:33

802.11a Middle Channel – Chain0



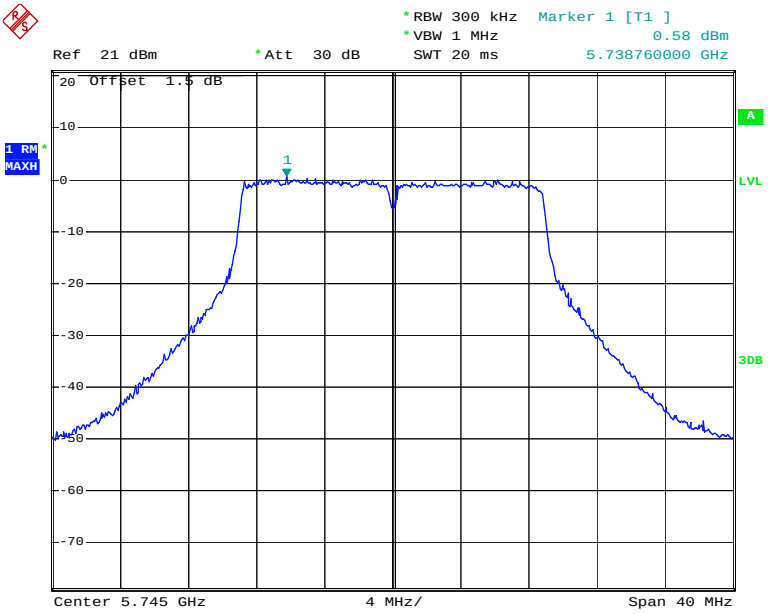
Date: 7.MAY.2016 15:28:46

802.11a High Channel – Chain0



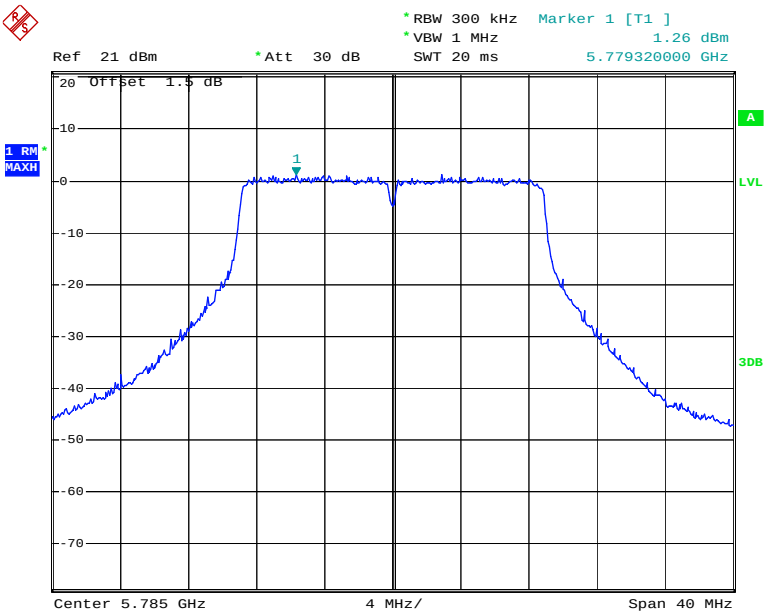
Date: 7.MAY.2016 15:34:56

802.11n ht20 Low Channel – Chain0



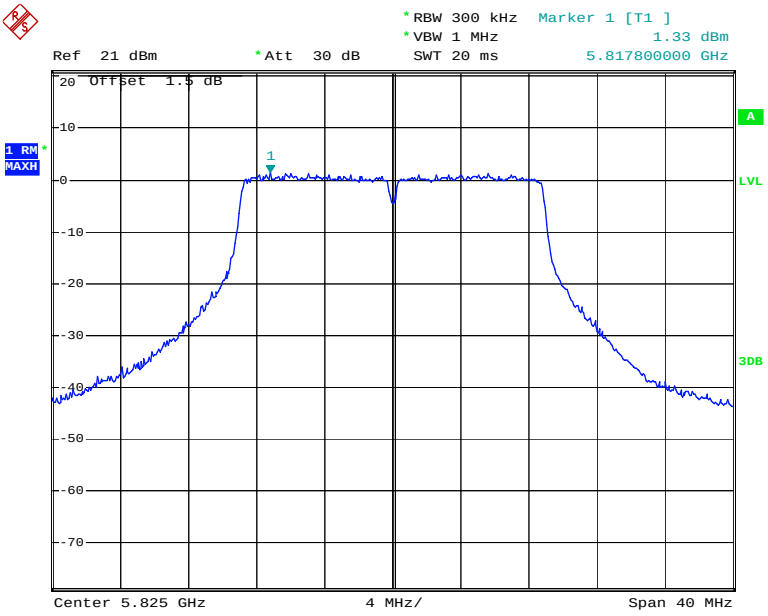
Date: 7.MAY.2016 15:39:38

802.11n ht20 Middle Channel – Chain0



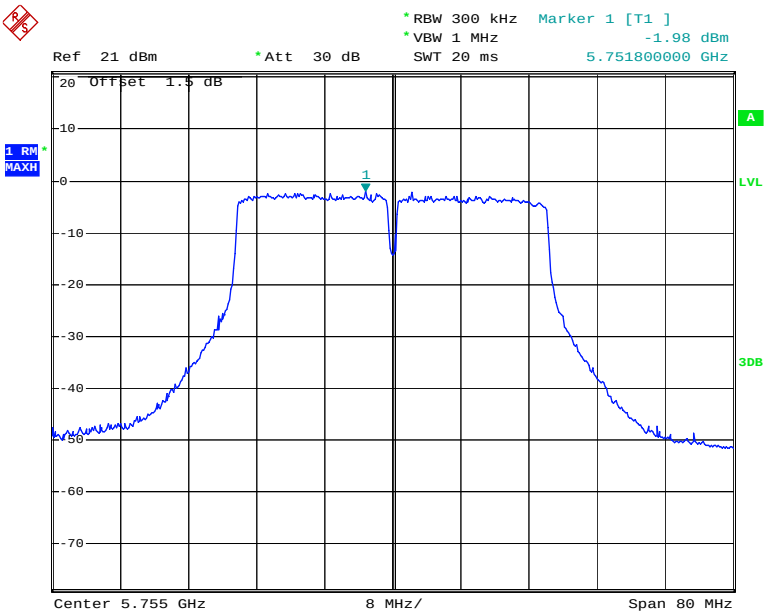
Date: 7.MAY.2016 15:37:13

802.11n ht20 High Channel – Chain0



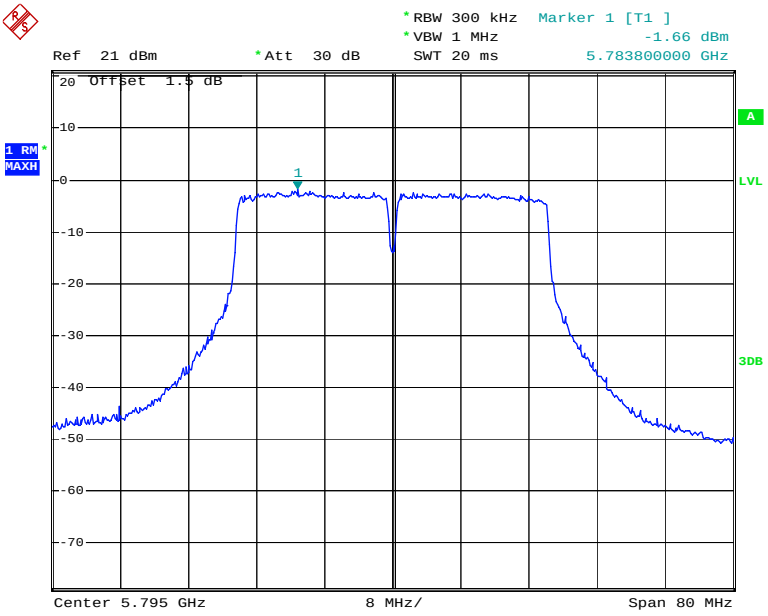
Date: 7.MAY.2016 15:42:33

802.11n ht40 Low Channel – Chain0



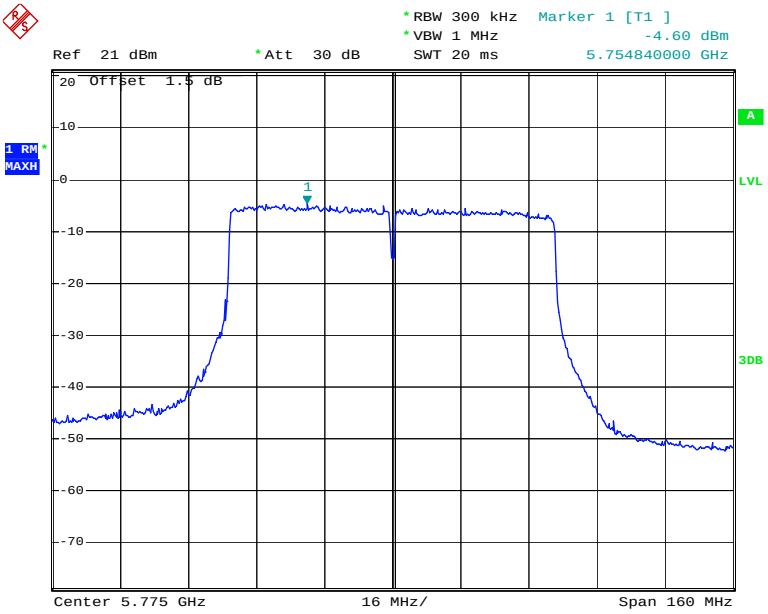
Date: 7.MAY.2016 15:47:33

802.11n ht40 High Channel – Chain0



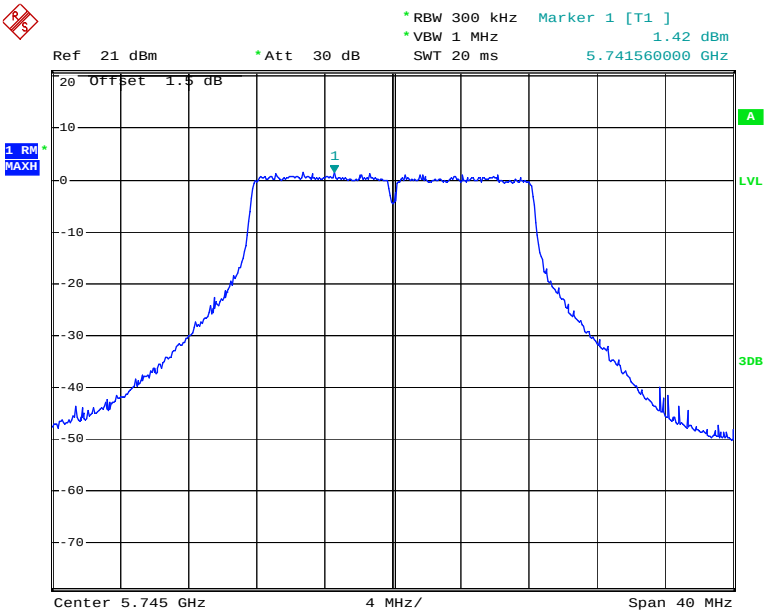
Date: 7.MAY.2016 15:44:50

802.11 ac80 Middle Channel – Chain0



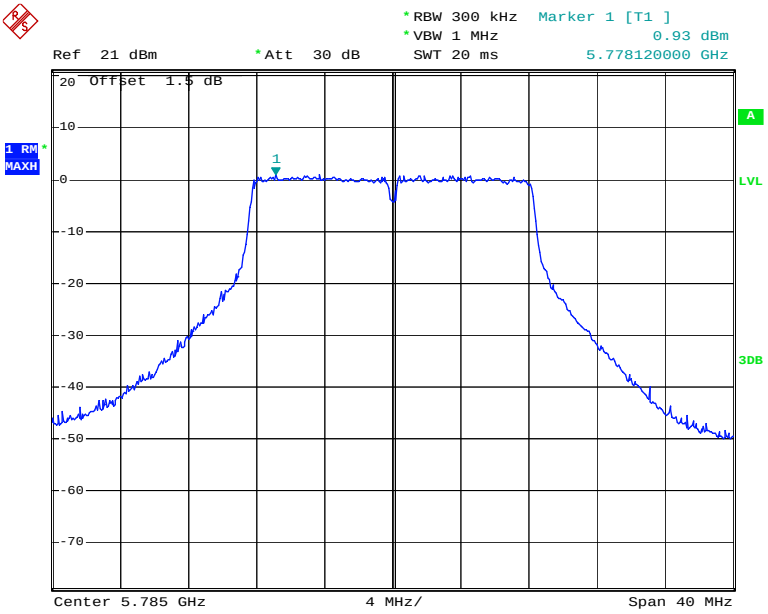
Date: 7.MAY.2016 15:50:05

802.11a Low Channel – Chain1



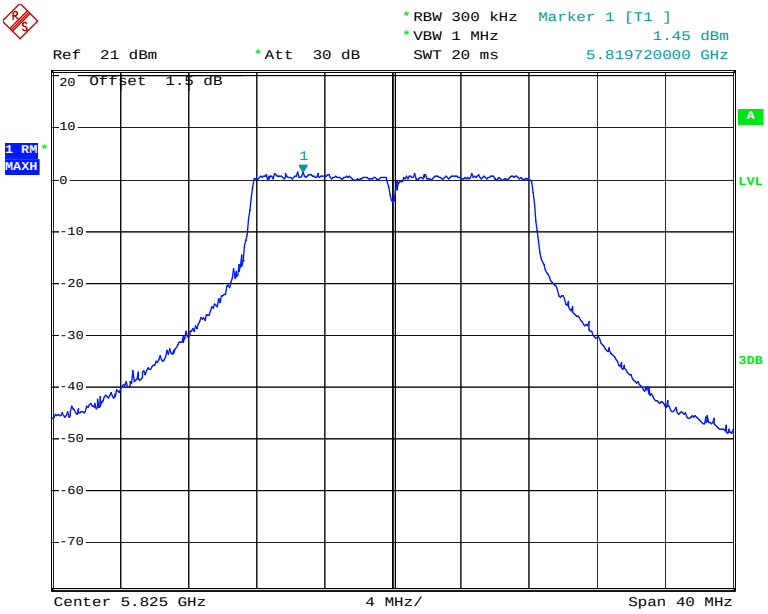
Date: 7.MAY.2016 16:19:50

802.11a Middle Channel – Chain1



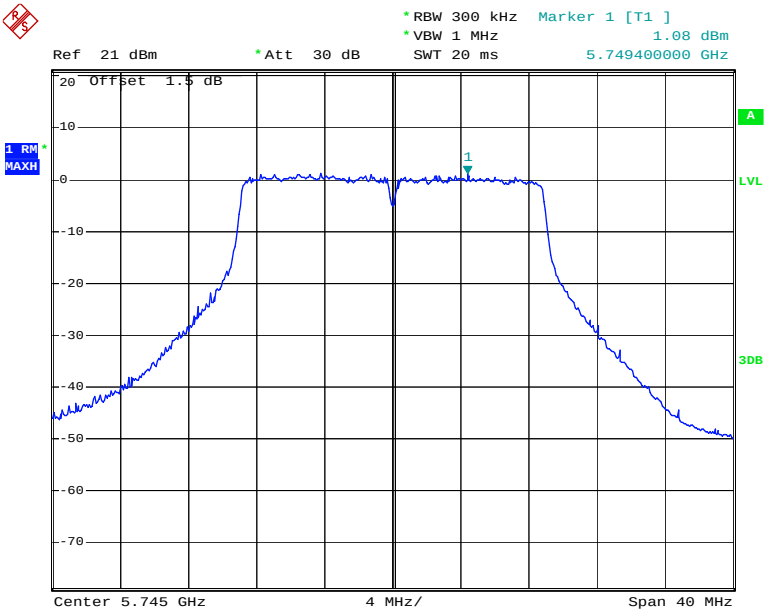
Date: 7.MAY.2016 16:17:17

802.11a High Channel – Chain1



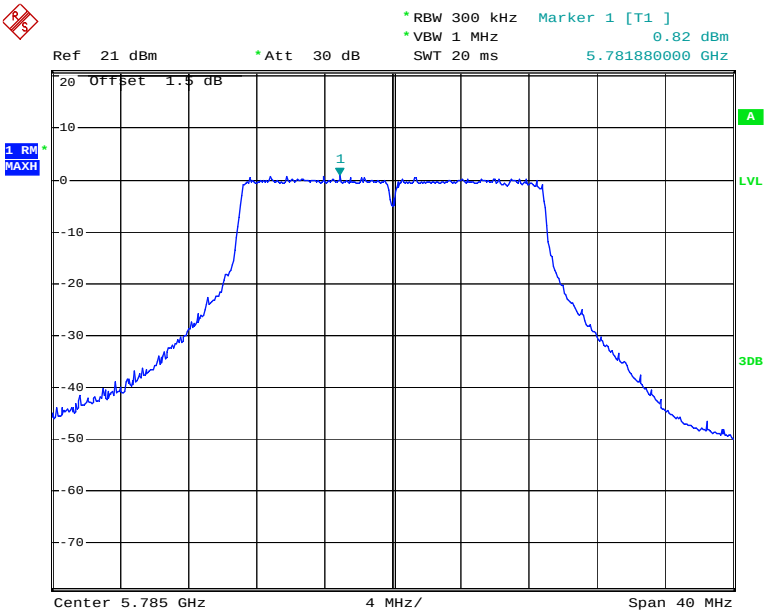
Date: 7.MAY.2016 16:12:19

802.11n ht20 Low Channel – Chain1



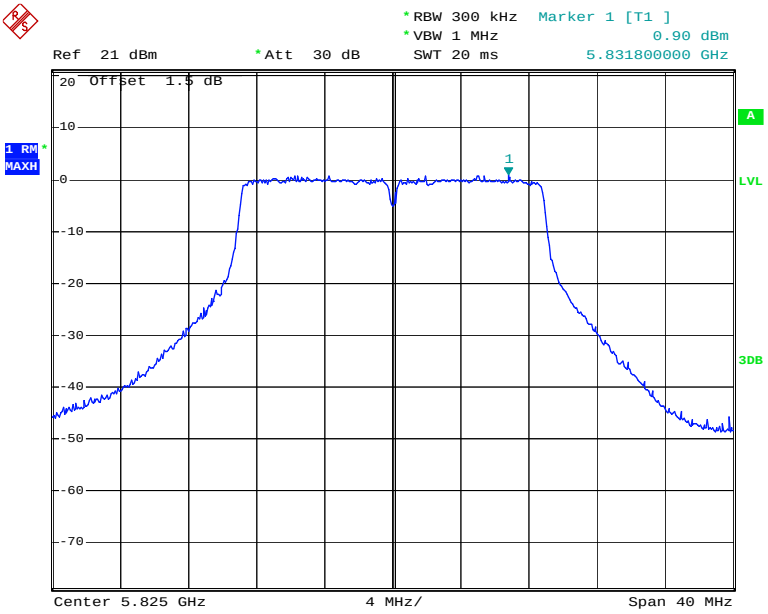
Date: 7.MAY.2016 16:08:36

802.11n ht20 Middle Channel – Chain1



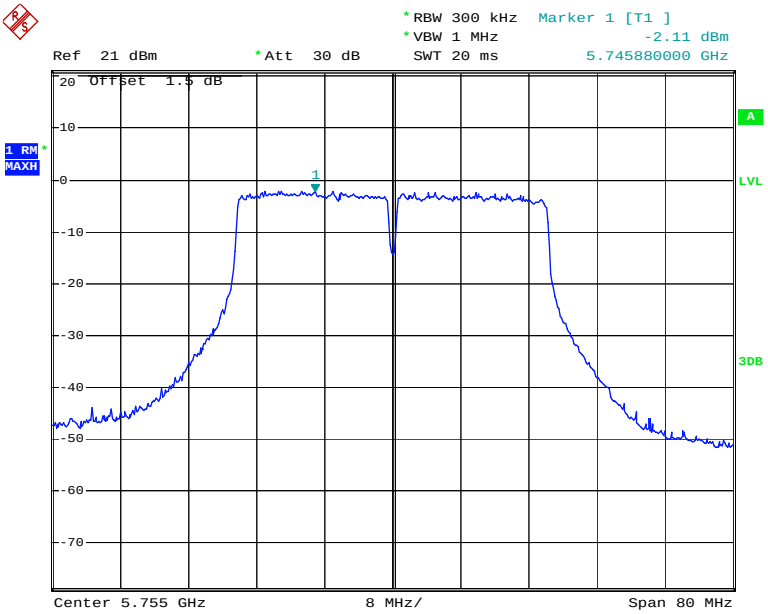
Date: 7.MAY.2016 16:06:22

802.11n ht20 High Channel – Chain1



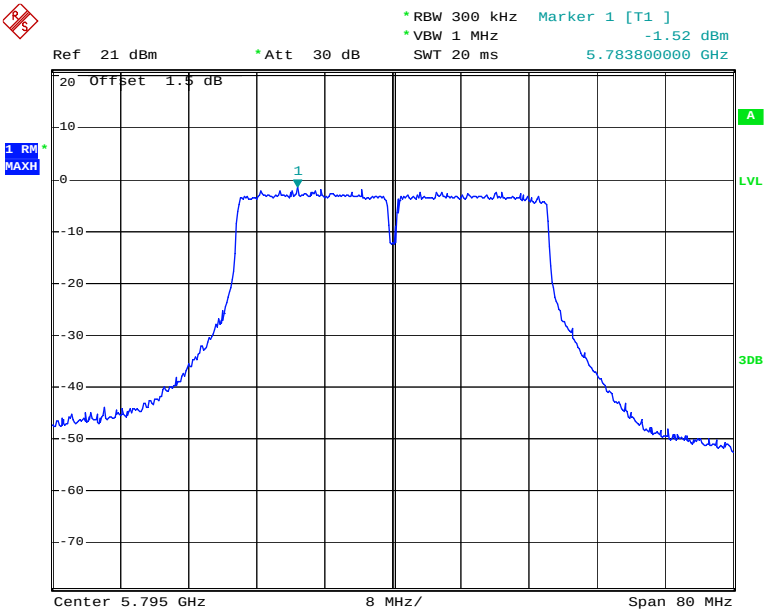
Date: 7.MAY.2016 16:03:46

802.11n ht40 Low Channel – Chain1



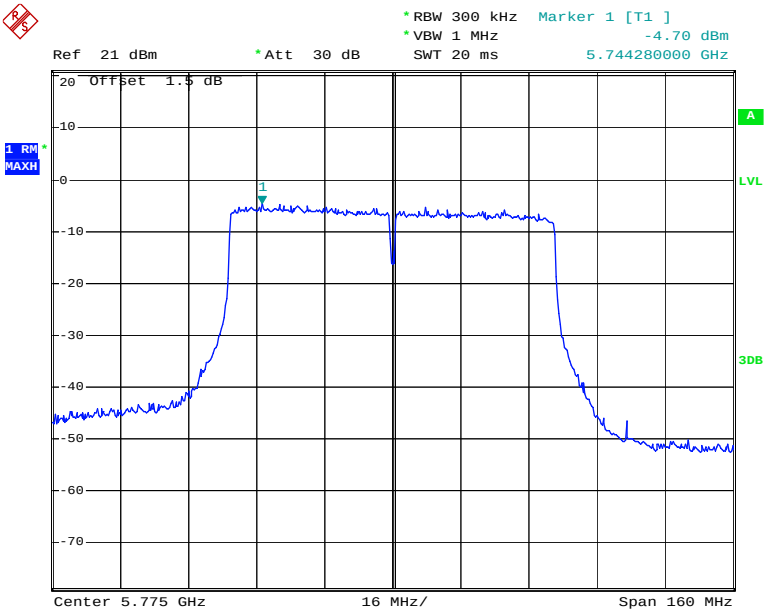
Date: 7.MAY.2016 15:56:54

802.11n ht40 High Channel – Chain1



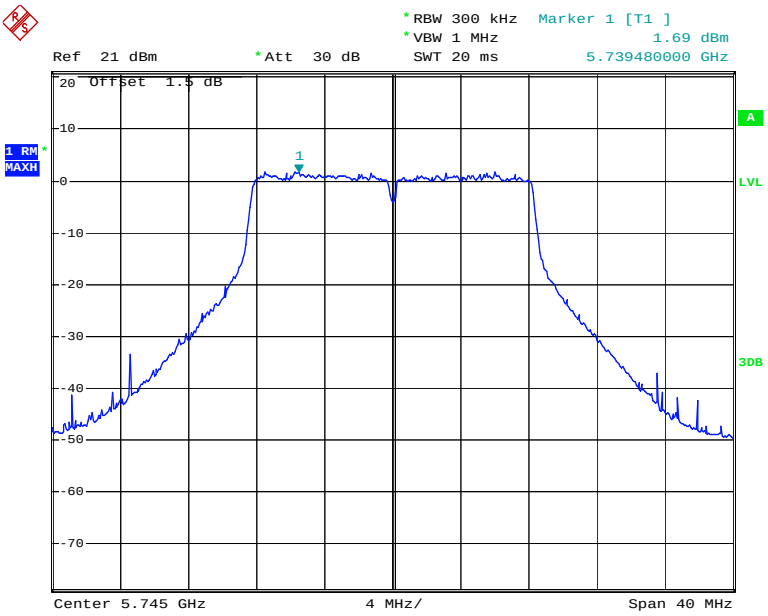
Date: 7.MAY.2016 16:01:02

802.11 ac80 Middle Channel – Chain1



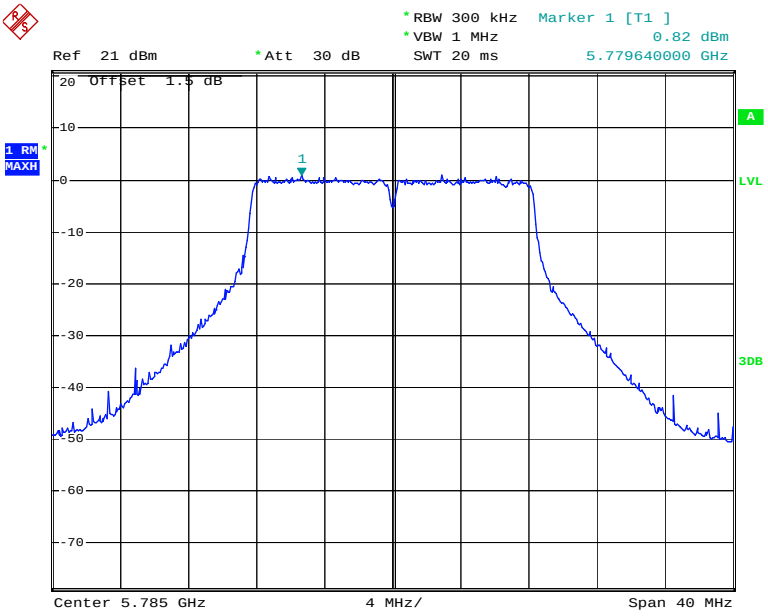
Date: 7.MAY.2016 15:52:21

802.11a Low Channel – Chain2



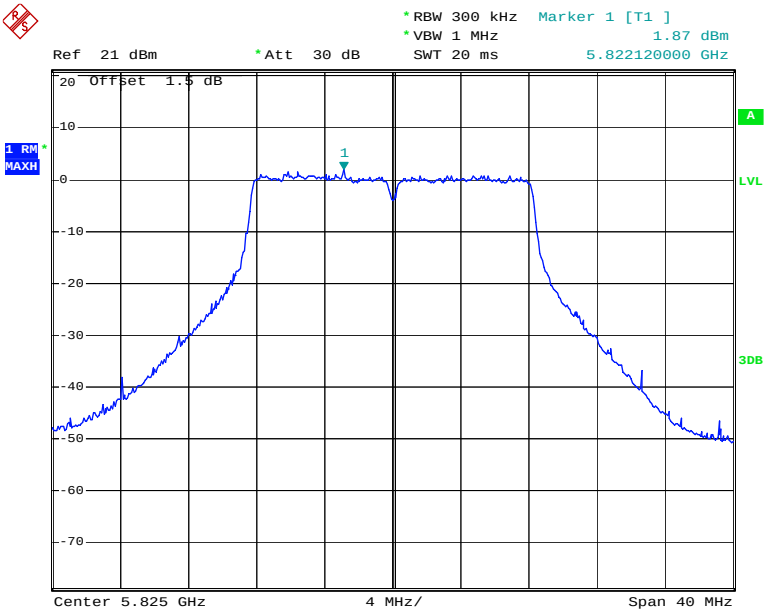
Date: 7.MAY.2016 16:23:58

802.11a Middle Channel – Chain2



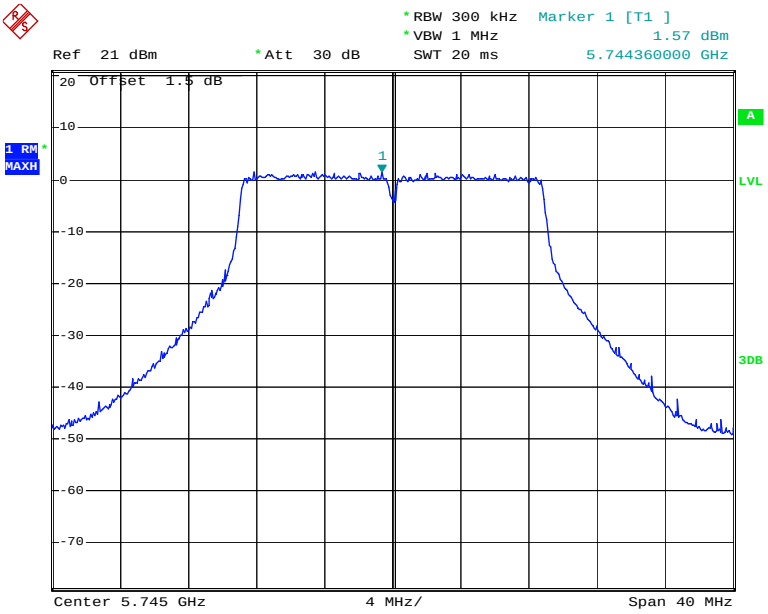
Date: 7.MAY.2016 16:26:50

802.11a High Channel – Chain2



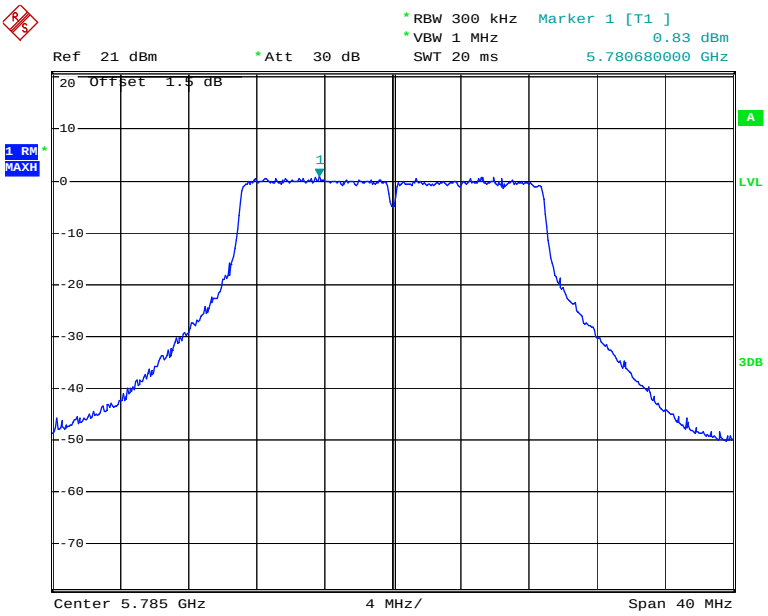
Date: 7.MAY.2016 16:28:59

802.11n ht20 Low Channel – Chain2



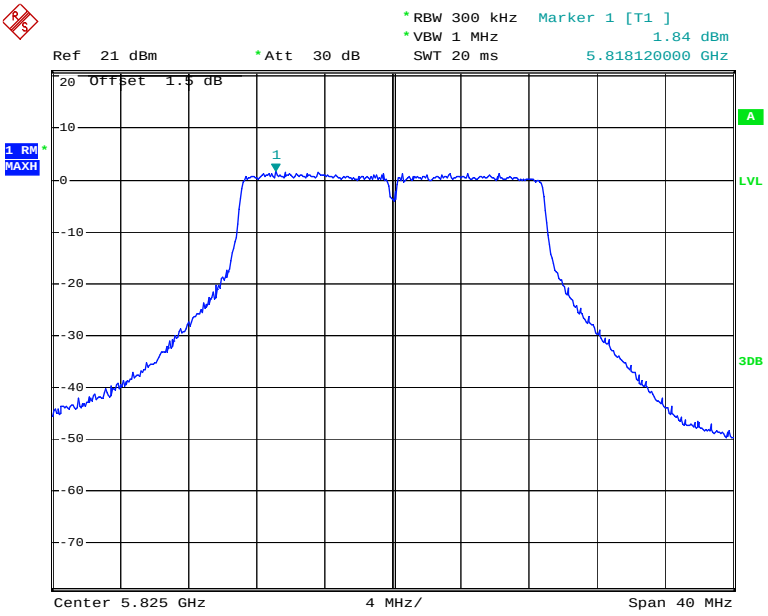
Date: 7.MAY.2016 16:36:35

802.11n ht20 Middle Channel – Chain2



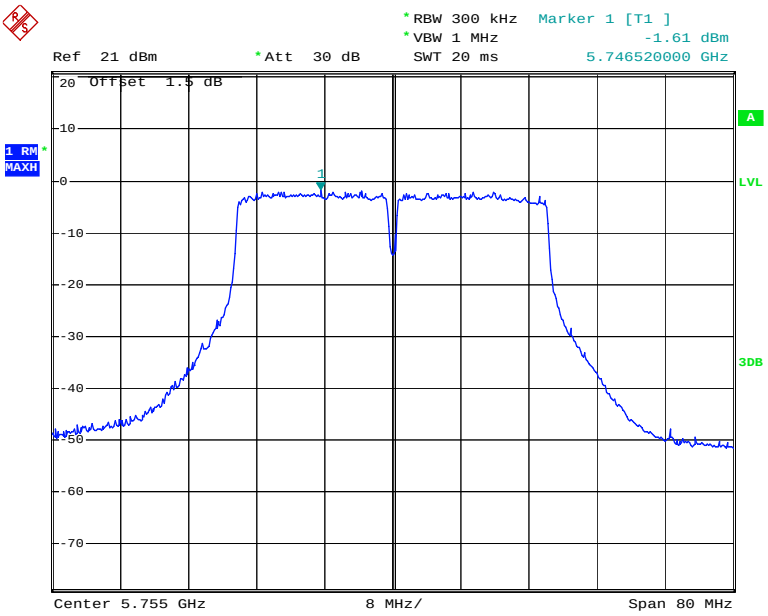
Date: 7.MAY.2016 16:33:52

802.11n ht20 High Channel – Chain2



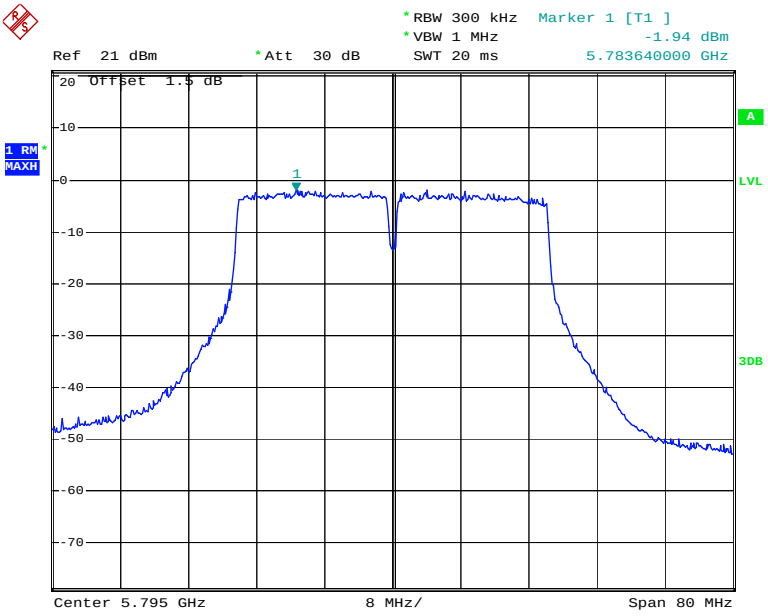
Date: 7.MAY.2016 16:31:27

802.11n ht40 Low Channel – Chain2



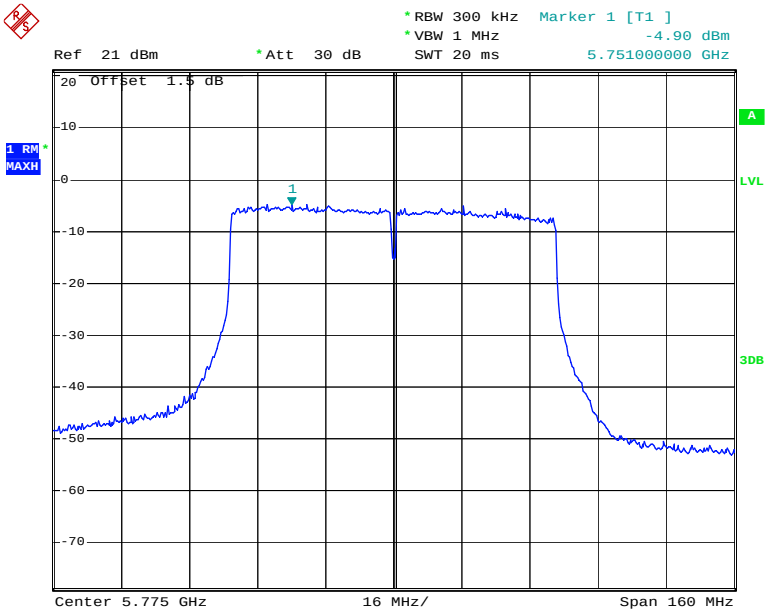
Date: 7.MAY.2016 16:38:58

802.11n ht40 High Channel – Chain2



Date: 7.MAY.2016 16:43:25

802.11 ac80 Middle Channel – Chain2



Date: 7.MAY.2016 16:45:48

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