



FCC PART 15.407

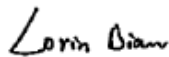
TEST REPORT

For

Huawei Technologies Co.,Ltd

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

Test Model: EchoLife HS8245W
FCC ID: QISHS8245W1

Report Type: Original Report	Product Name: GPON Terminal
Test Engineer:	<u>Lorin Bian</u> 
Report Number:	RDG170105002D
Report Date:	2017-01-20
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Huawei Technologies Co.,Ltd**'s product, model number: **EchoLife HS8245W** (**FCC ID: QISHS8245W1**) (the "EUT") in this report was a **GPON Terminal**, which was measured approximately: 295 mm (L) x 180 mm (W) x 82 mm (H), rated input voltage: DC 12V for adapter.

**All measurement and test data in this report was gathered from final production sample, serial number: 161027004 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-10-28, and EUT conformed to test requirement.*

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.

This is the second application for model number: **EchoLife HS8245W**, the first application was certified with FCC ID: **QISHS8245W**, granted on 2016-12-13, the difference between the original device and the current one is as follows:

- 1.Changed the 5GHz band antenna connector type from welded to IPEX type, cable and antenna have not changed.
2. Removed the heat sink of main chip SD5116T.
3. Increased the output power of 5.8GHz band 20MHz SISO mode middle channels.
4. Added U-NII 5150MHz-5250MHz band 20MHz mode channel 36,40, 44 and 40MHz mode channel 38.

The change made to the device affected the SISO mode data and band 5150-5250MHz all data, recorded in the report.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: QISHS8245W1.
FCC Part 15B JBP submissions with FCC ID: QISHS8245W1.

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. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ± 4.7 dB;

200M~1GHz: ± 6.0 dB;

1G-6GHz: ± 5.13 dB;

6G~25GHz: ± 5.47 dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL has been fully described in reports submitted to the Federal Communication 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 April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.407 (f) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§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	Compliance**
§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**

Compliance*: The change made to the device have not affected the results of 5725-5850MHz band, test results for this band please refer to the the original report: RDG161027004B, Issued on 2016-11-22, by Bay Area Compliance Laboratories Corp. (Chengdu).

Compliance**: Non-changed mode and channel's test results please refer to the original report: RDG161027004B, Issued on 2016-11-22, by Bay Area Compliance Laboratories Corp. (Chengdu).

Compliance***: The change made to the device have not affected the results, please refer to the the original report: RDG161027004B, Issued on 2016-11-22, by Bay Area Compliance Laboratories Corp. (Chengdu).

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the vh20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40. 802.11n and 802.11ac supports both beamforming and non-beamforming modes.

For 5150~5250MHz band, 4 channels are provided to testing as below table, other channels and 802.11ac80 were disabled:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200
38	5190	44	5220

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

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

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

Configurations	Test Mode	Data Rate	Channel	Antenna Chain
SISO	802.11a	6Mbps	36,40,44, 157	0, 1, 2, 3
	802.11n ht20	MCS0_20	36,40,44, 157	0, 1, 2, 3
	802.11n ht40	MCS0_40	38, 151	0, 1, 2, 3
2*2 MIMO Non-Beamforming	802.11a	6Mbps	36,40,44	0+1
	802.11n ht20	MCS0_20	36,40,44	0+1
	802.11n ht40	MCS0_40	38	0+1
3*3 MIMO Non-Beamforming	802.11a	6Mbps	36,40,44	0+1+2
	802.11n ht20	MCS0_20	36,40,44	0+1+2
	802.11n ht40	MCS0_40	38	0+1+2
4*4 MIMO Non-Beamforming	802.11a	6Mbps	36,40,44,	0+1+2+3
	802.11n ht20	MCS0_20	36,40,44	0+1+2+3
	802.11n ht40	MCS0_40	38	0+1+2+3
2*2 MIMO Beamforming	802.11n ht20	MCS0_20	36,40,44	0+1
	802.11n ht40	MCS0_40	38	0+1
3*3 MIMO Beamforming	802.11n ht20	MCS0_20	36,40,44	0+1+2
	802.11n ht40	MCS0_40	38	0+1+2
4*4 MIMO Beamforming	802.11n ht20	MCS0_20	36,40,44	0+1+2+3
	802.11n ht40	MCS0_40	38	0+1+2+3

EUT Exercise Software

The IPOR&QSPR was used for testing, and the commands were provided by manufacturer. The maximum power was set by commands as following table:

SISO:

Software and version				IPOR&QSPR				
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level			
					Chain 0	Chain 1	Chain 2	Chain 3
5150-5250 MHz	802.11a	Low	5180	6	22	22	22	22
		Middle	5200	6	25	25	25	25
		High	5220	6	25	25	25	25
	802.11n20	Low	5180	MCS0_20	22	22	22	22
		Middle	5200	MCS0_20	25	25	25	25
		High	5220	MCS0_20	25	25	25	25
	802.11n40	Low	5190	MCS0_40	20	20	20	20
5725-5850 MHz	802.11a	Middle	5785	6	27	27	27	27
	802.11n20	Middle	5785	MCS0_20	27	27	27	27

MIMO 2X2 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1
5150-5250 MHz	802.11 a	Low	5180	6	21
		Middle	5200	6	21
		High	5220	6	21
	802.11 n20	Low	5180	MCS0_20	21
		Middle	5200	MCS0_20	21
		High	5220	MCS0_20	21
	802.11 n40	Low	5190	MCS0_40	20

MIMO 3X3 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1&Chain 2
5150-5250 MHz	802.11 a	Low	5180	6	19
		Middle	5200	6	19
		High	5220	6	19
	802.11 n20	Low	5180	MCS0_20	19
		Middle	5200	MCS0_20	19
		High	5220	MCS0_20	19
	802.11 n40	Low	5190	MCS0_40	20

MIMO 4X4 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1&Chain 2&Chain 3
5150-5250 MHz	802.11 a	Low	5180	6	16
		Middle	5200	6	16
		High	5220	6	16
	802.11 n20	Low	5180	MCS0_20	16
		Middle	5200	MCS0_20	16
		High	5220	MCS0_20	16
	802.11 n40	Low	5190	MCS0_40	18

MIMO 2X2 with beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1
5150-5250 MHz	802.11 n20	Low	5180	MCS0_20	14
		Middle	5200	MCS0_20	14
		High	5220	MCS0_20	14
	802.11 n40	Low	5190	MCS0_40	15

MIMO 3X3 with beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
					Chain 0&Chain 1&Chain 2
5150-5250 MHz	802.11 n20	Low	5180	MCS0_20	13
		Middle	5200	MCS0_20	13
		High	5220	MCS0_20	13
	802.11 n40	Low	5190	MCS0_40	14

MIMO 4X4 with beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
					Chain 0&Chain 1&Chain 2&Chain 3
5150-5250 MHz	802.11 n20	Low	5180	MCS0_20	13
		Middle	5200	MCS0_20	13
		High	5220	MCS0_20	13
	802.11 n40	Low	5190	MCS0_40	14

Note: the duty cycle was only related with data rate and test mode, please refer to the original report: RDG161027004B.

Equipment Modifications

No modification was made to the EUT.

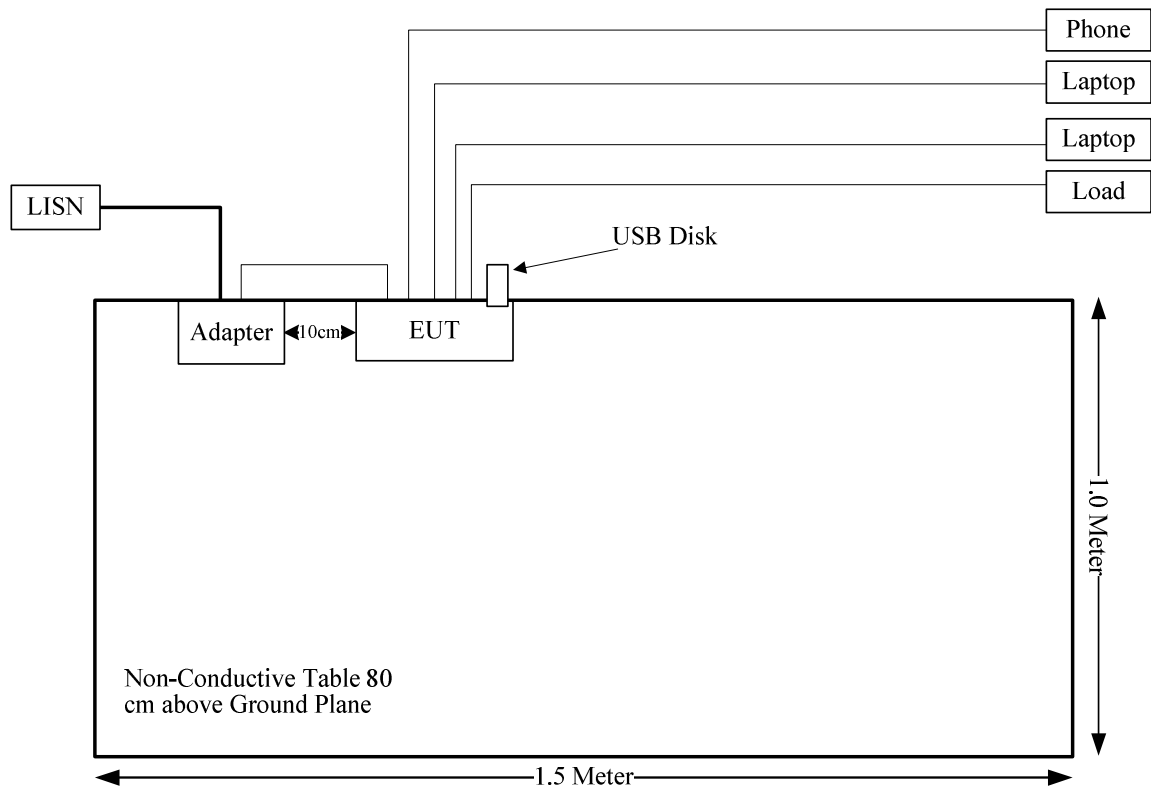
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Dell	Laptop	E6410	/
HUAWEI	Adapter	HW-120300U3W	/
Kingston	USB Disk	8G	/
Lusent	Phone	08D+	48589
DELL	Laptop	PP11L	QDS-BRCM1017

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable*2	No	Yes	10	RJ45 Port of Laptop	EUT
DC Power Line	No	No	1.2	Adapter	EUT
RJ45 Cable*2	No	Yes	10	EUT	Load
RJ11 Cable	No	No	10	EUT	phone

Block Diagram of Test Setup



FCC §15.407 (f) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.407(f) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

Frequency (MHz)	Antenna Gain		Output Power including Tune-up tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
2400- 2483.5	2	1.58	30	1000	20.00	0.31	1.0
5150-5850	2	1.58	30	1000	20.00	0.31	1.0

The 2.4GHz and 5GHz band can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$=S_{2.4}/S_{limit-2.4} + S_5/S_{limit-5}$$

$$=0.31/1+0.31/1$$

$$=0.62$$

$$< 1.0$$

Result: Compliance, The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ≥20 cm.

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 antennas for 2.4G WIFI and the gain of each antenna is 2.0 dBi, 4 internal antennas for 5G WIFI and the gain of each antenna is 2.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: 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 2, 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 2, 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. (Chengdu) is:

30M~200MHz: ± 4.7 dB;

200M~1GHz: ± 6.0 dB;

1G~6GHz: ± 5.13 dB;

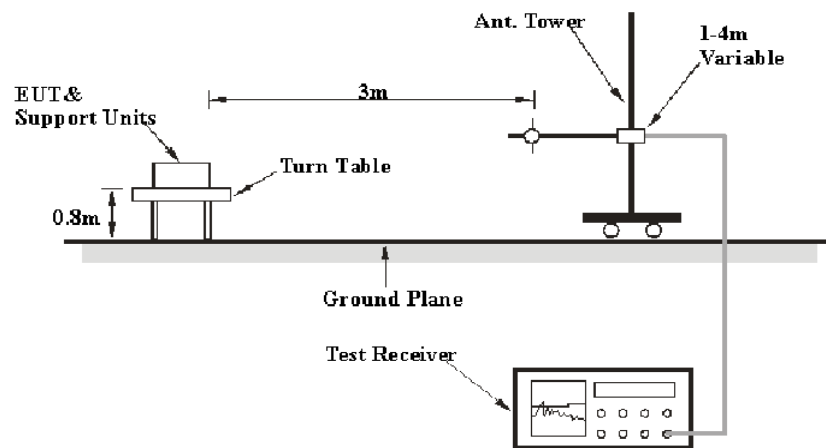
6G~25GHz: ± 5.47 dB;

Table 2 – Values of U_{CISPR}

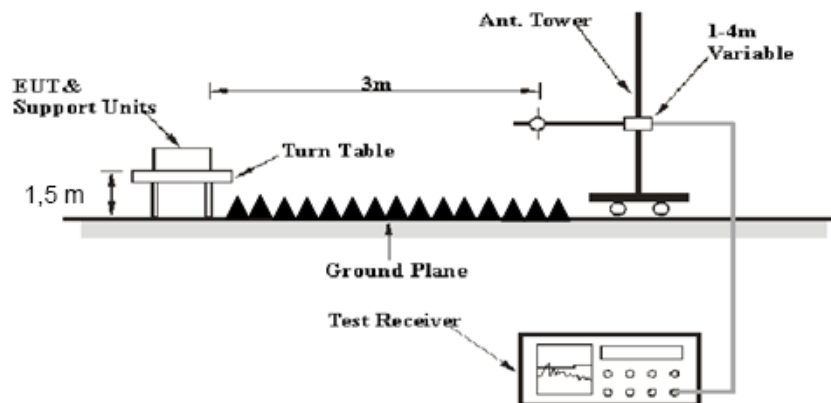
Measurement	U_{CISPR}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 adapter was connected to a 120 V/60 Hz AC 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:
30-1000MHz:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

1GHz- 40GHz:

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

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: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

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:

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1312	2016-08-18	2017-08-18
Quinstar	Amplifier	QLW-18405536-JO	15964001032	2016-08-18	2017-08-18
Agilent	Spectrum Analyzer	8564E	5943A01752	2016-08-18	2017-08-18

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101 kPa

** The testing was performed by Lorin Bian on 2017-01-07.*

Test Mode: Transmitting

5150MHz-5250MHz

SISO mode:

. 802.11a mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	71.44	PK	H	31.72	5.21	0.00	108.37	N/A	N/A
5180	60.40	AV	H	31.72	5.21	0.00	97.33	N/A	N/A
5180	78.81	PK	V	31.72	5.21	0.00	115.74	N/A	N/A
5180	67.48	AV	V	31.72	5.21	0.00	104.41	N/A	N/A
5150	27.16	PK	V	31.67	5.18	0.00	64.01	74.00	9.99
5150	15.25	AV	V	31.67	5.18	0.00	52.1	54.00	1.9
10360	31.41	PK	V	37.37	7.76	26.37	50.17	74.00	23.83
10360	21.16	AV	V	37.37	7.76	26.37	39.92	54.00	14.08
15540	33.12	PK	V	39.41	10.22	25.32	57.43	74.00	16.57
15540	22.59	AV	V	39.41	10.22	25.32	46.9	54.00	7.1
1495	43.70	PK	V	24.09	2.66	26.33	44.12	74.00	29.88
1495	33.26	AV	V	24.09	2.66	26.33	33.68	54.00	20.32
2485	43.56	PK	V	23.25	2.99	26.89	42.91	74.00	31.09
2485	37.95	AV	V	23.25	2.99	26.89	37.3	54.00	16.7
500.45	42.11	QP	V	18.10	1.61	28.82	33.00	46.00	13.00
Middle Channel:5200 MHz									
5200	74.88	PK	H	31.76	5.23	0.00	111.87	N/A	N/A
5200	64.13	AV	H	31.76	5.23	0.00	101.12	N/A	N/A
5200	80.02	PK	V	31.76	5.23	0.00	117.01	N/A	N/A
5200	69.24	AV	V	31.76	5.23	0.00	106.23	N/A	N/A
10400	31.55	PK	V	37.38	7.79	26.36	50.36	74.00	23.64
10400	21.57	AV	V	37.38	7.79	26.36	40.38	54.00	13.62
15600	33.33	PK	V	39.42	10.22	25.31	57.66	74.00	16.34
15600	22.58	AV	V	39.42	10.22	25.31	46.91	54.00	7.09
1214	33.30	PK	V	23.36	2.28	26.60	32.34	74.00	41.66
1214	22.47	AV	V	23.36	2.28	26.60	21.51	54.00	32.49
2096	33.68	PK	V	24.57	3.04	26.83	34.46	74.00	39.54
2096	21.81	AV	V	24.57	3.04	26.83	22.59	54.00	31.41
500.45	42.52	QP	V	18.10	1.61	28.82	33.41	46.00	12.59
High Channel:5220 MHz									
5220	74.44	PK	H	31.80	5.25	0.00	111.49	N/A	N/A
5220	63.62	AV	H	31.80	5.25	0.00	100.67	N/A	N/A
5220	79.72	PK	V	31.80	5.25	0.00	116.77	N/A	N/A
5220	69.11	AV	V	31.80	5.25	0.00	106.16	N/A	N/A
5350	24.27	PK	V	32.03	5.37	0.00	61.67	74.00	12.33
5350	13.55	AV	V	32.03	5.37	0.00	50.95	54.00	3.05
10480	31.17	PK	V	37.40	7.84	26.35	50.06	74.00	23.94
10480	20.82	AV	V	37.40	7.84	26.35	39.71	54.00	14.29
15720	32.40	PK	V	39.44	10.24	25.30	56.78	74.00	17.22
15720	21.97	AV	V	39.44	10.24	25.30	46.35	54.00	7.65
1265	33.34	PK	V	23.49	2.35	26.56	32.62	74.00	41.38
1265	21.47	AV	V	23.49	2.35	26.56	20.75	54.00	33.25
2334	35.42	PK	V	23.76	3.01	26.87	35.32	74.00	38.68
2334	24.19	AV	V	23.76	3.01	26.87	24.09	54.00	29.91
500.45	41.5	QP	V	18.10	1.61	28.82	32.39	46.00	13.61

802.11n ht20 mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	71.12	PK	H	31.72	5.21	0.00	108.05	N/A	N/A
5180	60.30	AV	H	31.72	5.21	0.00	97.23	N/A	N/A
5180	78.21	PK	V	31.72	5.21	0.00	115.14	N/A	N/A
5180	67.11	AV	V	31.72	5.21	0.00	104.04	N/A	N/A
5150	26.93	PK	V	31.67	5.18	0.00	63.78	74.00	10.22
5150	15.27	AV	V	31.67	5.18	0.00	52.12	54.00	1.88
10360	31.39	PK	V	37.37	7.76	26.37	50.15	74.00	23.85
10360	20.34	AV	V	37.37	7.76	26.37	39.1	54.00	14.9
15540	33.05	PK	V	39.41	10.22	25.32	57.36	74.00	16.64
15540	22.60	AV	V	39.41	10.22	25.32	46.91	54.00	7.09
1510	37.41	PK	V	24.12	2.68	26.34	37.87	74.00	36.13
1510	27.72	AV	V	24.12	2.68	26.34	28.18	54.00	25.82
2485	43.84	PK	V	23.25	2.99	26.89	43.19	74.00	30.81
2485	38.79	AV	V	23.25	2.99	26.89	38.14	54.00	15.86
500.45	41.67	QP	V	18.10	1.61	28.82	32.56	46.00	13.44
Middle Channel:5200 MHz									
5200	74.98	PK	H	31.76	5.23	0.00	111.97	N/A	N/A
5200	64.16	AV	H	31.76	5.23	0.00	101.15	N/A	N/A
5200	79.87	PK	V	31.76	5.23	0.00	116.86	N/A	N/A
5200	69.62	AV	V	31.76	5.23	0.00	106.61	N/A	N/A
10400	31.58	PK	V	37.38	7.79	26.36	50.39	74.00	23.61
10400	21.61	AV	V	37.38	7.79	26.36	40.42	54.00	13.58
15600	33.61	PK	V	39.42	10.22	25.31	57.94	74.00	16.06
15600	23.02	AV	V	39.42	10.22	25.31	47.35	54.00	6.65
1214	33.77	PK	V	23.36	2.28	26.60	32.81	74.00	41.19
1214	21.76	AV	V	23.36	2.28	26.60	20.8	54.00	33.2
2096	33.92	PK	V	24.57	3.04	26.83	34.7	74.00	39.3
2096	22.46	AV	V	24.57	3.04	26.83	23.24	54.00	30.76
500.45	42.06	QP	V	18.10	1.61	28.82	32.95	46.00	13.05
High Channel:5220 MHz									
5220	74.13	PK	H	31.80	5.25	0.00	111.18	N/A	N/A
5220	63.72	AV	H	31.80	5.25	0.00	100.77	N/A	N/A
5220	79.31	PK	V	31.80	5.25	0.00	116.36	N/A	N/A
5220	69.00	AV	V	31.80	5.25	0.00	106.05	N/A	N/A
5350	24.86	PK	V	32.03	5.37	0.00	62.26	74.00	11.74
5350	13.53	AV	V	32.03	5.37	0.00	50.93	54.00	3.07
10480	30.84	PK	V	37.40	7.84	26.35	49.73	74.00	24.27
10480	20.57	AV	V	37.40	7.84	26.35	39.46	54.00	14.54
15720	32.37	PK	V	39.44	10.24	25.30	56.75	74.00	17.25
15720	21.54	AV	V	39.44	10.24	25.30	45.92	54.00	8.08
1265	33.36	PK	V	23.49	2.35	26.56	32.64	74.00	41.36
1265	21.59	AV	V	23.49	2.35	26.56	20.87	54.00	33.13
2334	35.85	PK	V	23.76	3.01	26.87	35.75	74.00	38.25
2334	23.89	AV	V	23.76	3.01	26.87	23.79	54.00	30.21
500.45	42.24	QP	V	18.10	1.61	28.82	33.13	46.00	12.87

802.11n ht40 mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	66.80	PK	H	31.74	5.22	0.00	103.76	N/A	N/A
5190	56.37	AV	H	31.74	5.22	0.00	93.33	N/A	N/A
5190	72.36	PK	V	31.74	5.22	0.00	109.32	N/A	N/A
5190	62.22	AV	V	31.74	5.22	0.00	99.18	N/A	N/A
5150	26.47	PK	V	31.67	5.18	0.00	63.32	74.00	10.68
5150	15.82	AV	V	31.67	5.18	0.00	52.67	54.00	1.33
10380	31.34	PK	V	37.38	7.78	26.37	50.13	74.00	23.87
10380	20.70	AV	V	37.38	7.78	26.37	39.49	54.00	14.51
15570	33.89	PK	V	39.41	10.22	25.31	58.21	74.00	15.79
15570	23.44	AV	V	39.41	10.22	25.31	47.76	54.00	6.24
1510	44.08	PK	V	24.12	2.68	26.34	44.54	74.00	29.46
1510	33.52	AV	V	24.12	2.68	26.34	33.98	54.00	20.02
2485	43.94	PK	V	23.25	2.99	26.89	43.29	74.00	30.71
2485	38.65	AV	V	23.25	2.99	26.89	38	54.00	16
500.45	42.32	QP	V	18.10	1.61	28.82	33.21	46.00	12.79

MIMO mode (Chain 0 & Chain 1) without beamforming:
802.11a mode:

Frequency	Receiver		Rx Antenna		Cable	Amplifier	Corrected	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
Low Channel:5180 MHz									
5180	77.17	PK	H	31.72	5.21	0.00	114.1	N/A	N/A
5180	66.30	AV	H	31.72	5.21	0.00	103.23	N/A	N/A
5180	78.48	PK	V	31.72	5.21	0.00	115.41	N/A	N/A
5180	67.48	AV	V	31.72	5.21	0.00	104.41	N/A	N/A
5150	27.56	PK	V	31.67	5.18	0.00	64.41	74.00	9.59
5150	16.17	AV	V	31.67	5.18	0.00	53.02	54.00	0.98
10360	32.08	PK	V	37.37	7.76	26.37	50.84	74.00	23.16
10360	20.70	AV	V	37.37	7.76	26.37	39.46	54.00	14.54
15540	33.22	PK	V	39.41	10.22	25.32	57.53	74.00	16.47
15540	21.70	AV	V	39.41	10.22	25.32	46.01	54.00	7.99
1495	37.95	PK	V	24.09	2.66	26.33	38.37	74.00	35.63
1495	26.07	AV	V	24.09	2.66	26.33	26.49	54.00	27.51
2485	43.32	PK	V	23.25	2.99	26.89	42.67	74.00	31.33
2485	37.79	AV	V	23.25	2.99	26.89	37.14	54.00	16.86
500.45	43.37	QP	V	18.10	1.61	28.82	34.26	46.00	11.74
Middle Channel:5200 MHz									
5200	76.98	PK	H	31.76	5.23	0.00	113.97	N/A	N/A
5200	65.69	AV	H	31.76	5.23	0.00	102.68	N/A	N/A
5200	78.55	PK	V	31.76	5.23	0.00	115.54	N/A	N/A
5200	67.19	AV	V	31.76	5.23	0.00	104.18	N/A	N/A
10400	31.23	PK	V	37.38	7.79	26.36	50.04	74.00	23.96
10400	20.19	AV	V	37.38	7.79	26.36	39	54.00	15
15600	32.80	PK	V	39.42	10.22	25.31	57.13	74.00	16.87
15600	21.61	AV	V	39.42	10.22	25.31	45.94	54.00	8.06
1435	38.88	PK	V	23.93	2.58	26.39	39	74.00	35
1435	28.15	AV	V	23.93	2.58	26.39	28.27	54.00	25.73
2485	43.84	PK	V	23.25	2.99	26.89	43.19	74.00	30.81
2485	37.79	AV	V	23.25	2.99	26.89	37.14	54.00	16.86
500.45	43.45	QP	V	18.10	1.61	28.82	34.34	46.00	11.66
High Channel:5220 MHz									
5220	79.04	PK	H	31.80	5.25	0.00	116.09	N/A	N/A
5220	69.71	AV	H	31.80	5.25	0.00	106.76	N/A	N/A
5220	77.19	PK	V	31.80	5.25	0.00	114.24	N/A	N/A
5220	67.65	AV	V	31.80	5.25	0.00	104.7	N/A	N/A
5350	24.04	PK	H	32.03	5.37	0.00	61.44	74.00	12.56
5350	13.66	AV	H	32.03	5.37	0.00	51.06	54.00	2.94
10480	30.67	PK	H	37.40	7.84	26.35	49.56	74.00	24.44
10480	20.55	AV	H	37.40	7.84	26.35	39.44	54.00	14.56
15720	32.02	PK	H	39.44	10.24	25.30	56.4	74.00	17.6
15720	21.90	AV	H	39.44	10.24	25.30	46.28	54.00	7.72
1589	31.40	PK	H	24.24	2.74	26.42	31.96	74.00	42.04
1589	20.04	AV	H	24.24	2.74	26.42	20.6	54.00	33.4
3124	38.89	PK	H	24.89	3.62	26.45	40.95	74.00	33.05
3124	26.93	AV	H	24.89	3.62	26.45	28.99	54.00	25.01
500.45	41.28	QP	V	18.10	1.61	28.82	32.17	46.00	13.83

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5180 MHz									
5180	77.30	PK	H	31.72	5.21	0.00	114.23	N/A	N/A
5180	65.66	AV	H	31.72	5.21	0.00	102.59	N/A	N/A
5180	78.84	PK	V	31.72	5.21	0.00	115.77	N/A	N/A
5180	66.68	AV	V	31.72	5.21	0.00	103.61	N/A	N/A
5150	27.78	PK	V	31.67	5.18	0.00	64.63	74.00	9.37
5150	16.20	AV	V	31.67	5.18	0.00	53.05	54.00	0.95
10360	31.70	PK	V	37.37	7.76	26.37	50.46	74.00	23.54
10360	21.08	AV	V	37.37	7.76	26.37	39.84	54.00	14.16
15540	32.91	PK	V	39.41	10.22	25.32	57.22	74.00	16.78
15540	22.49	AV	V	39.41	10.22	25.32	46.8	54.00	7.2
1510	38.36	PK	V	24.12	2.68	26.34	38.82	74.00	35.18
1510	27.45	AV	V	24.12	2.68	26.34	27.91	54.00	26.09
2485	43.87	PK	V	23.25	2.99	26.89	43.22	74.00	30.78
2485	38.55	AV	V	23.25	2.99	26.89	37.9	54.00	16.1
500.45	41.69	QP	V	18.10	1.61	28.82	32.58	46.00	13.42
Middle Channel:5200 MHz									
5200	76.97	PK	H	31.76	5.23	0.00	113.96	N/A	N/A
5200	65.42	AV	H	31.76	5.23	0.00	102.41	N/A	N/A
5200	78.37	PK	V	31.76	5.23	0.00	115.36	N/A	N/A
5200	66.63	AV	V	31.76	5.23	0.00	103.62	N/A	N/A
10400	31.13	PK	V	37.38	7.79	26.36	49.94	74.00	24.06
10400	20.64	AV	V	37.38	7.79	26.36	39.45	54.00	14.55
15600	32.67	PK	V	39.42	10.22	25.31	57	74.00	17
15600	21.40	AV	V	39.42	10.22	25.31	45.73	54.00	8.27
1520	36.83	PK	V	24.13	2.69	26.35	37.3	74.00	36.7
1520	24.43	AV	V	24.13	2.69	26.35	24.9	54.00	29.1
2485	42.68	PK	V	23.25	2.99	26.89	42.03	74.00	31.97
2485	36.76	AV	V	23.25	2.99	26.89	36.11	54.00	17.89
500.45	40.67	QP	V	18.10	1.61	28.82	31.56	46.00	14.44
High Channel:5220 MHz									
5220	78.93	PK	H	31.80	5.25	0.00	115.98	N/A	N/A
5220	68.57	AV	H	31.80	5.25	0.00	105.62	N/A	N/A
5220	77.26	PK	V	31.80	5.25	0.00	114.31	N/A	N/A
5220	67.84	AV	V	31.80	5.25	0.00	104.89	N/A	N/A
5350	24.23	PK	H	32.03	5.37	0.00	61.63	74.00	12.37
5350	13.42	AV	H	32.03	5.37	0.00	50.82	54.00	3.18
10480	31.22	PK	H	37.40	7.84	26.35	50.11	74.00	23.89
10480	20.93	AV	H	37.40	7.84	26.35	39.82	54.00	14.18
15720	32.12	PK	H	39.44	10.24	25.30	56.5	74.00	17.5
15720	21.87	AV	H	39.44	10.24	25.30	46.25	54.00	7.75
1529	31.92	PK	H	24.15	2.69	26.36	32.4	74.00	41.6
1529	20.84	AV	H	24.15	2.69	26.36	21.32	54.00	32.68
2218	34.15	PK	H	24.16	3.02	26.85	34.48	74.00	39.52
2218	22.29	AV	H	24.16	3.02	26.85	22.62	54.00	31.38
500.45	40.84	QP	V	18.10	1.61	28.82	31.73	46.00	14.27

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	73.85	PK	H	31.74	5.22	0.00	110.81	N/A	N/A
5190	63.47	AV	H	31.74	5.22	0.00	100.43	N/A	N/A
5190	74.71	PK	V	31.74	5.22	0.00	111.67	N/A	N/A
5190	64.00	AV	V	31.74	5.22	0.00	100.96	N/A	N/A
5150	28.59	PK	V	31.67	5.18	0.00	65.44	74.00	8.56
5150	15.92	AV	V	31.67	5.18	0.00	52.77	54.00	1.23
10380	31.69	PK	V	37.38	7.78	26.37	50.48	74.00	23.52
10380	20.67	AV	V	37.38	7.78	26.37	39.46	54.00	14.54
15570	33.35	PK	V	39.41	10.22	25.31	57.67	74.00	16.33
15570	22.06	AV	V	39.41	10.22	25.31	46.38	54.00	7.62
1510	40.46	PK	V	24.12	2.68	26.34	40.92	74.00	33.08
1510	28.34	AV	V	24.12	2.68	26.34	28.8	54.00	25.2
2485	43.38	PK	V	23.25	2.99	26.89	42.73	74.00	31.27
2485	37.32	AV	V	23.25	2.99	26.89	36.67	54.00	17.33
500.45	41.23	QP	V	18.10	1.61	28.82	32.12	46.00	13.88

MIMO mode (Chain 0 & Chain 1 & Chain 2) without beamforming:
802.11a mode:

Frequency	Receiver		Rx Antenna		Cable	Amplifier	Corrected	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
Low Channel:5180 MHz									
5180	80.10	PK	H	31.72	5.21	0.00	117.03	N/A	N/A
5180	69.46	AV	H	31.72	5.21	0.00	106.39	N/A	N/A
5180	78.14	PK	V	31.72	5.21	0.00	115.07	N/A	N/A
5180	67.02	AV	V	31.72	5.21	0.00	103.95	N/A	N/A
5150	28.38	PK	H	31.67	5.18	0.00	65.23	74.00	8.77
5150	16.48	AV	H	31.67	5.18	0.00	53.33	54.00	0.67
10360	32.34	PK	H	37.37	7.76	26.37	51.1	74.00	22.9
10360	20.57	AV	H	37.37	7.76	26.37	39.33	54.00	14.67
15540	33.14	PK	H	39.41	10.22	25.32	57.45	74.00	16.55
15540	22.02	AV	H	39.41	10.22	25.32	46.33	54.00	7.67
1495	40.44	PK	H	24.09	2.66	26.33	40.86	74.00	33.14
1495	28.92	AV	H	24.09	2.66	26.33	29.34	54.00	24.66
2485	44.92	PK	H	23.25	2.99	26.89	44.27	74.00	29.73
2485	38.55	AV	H	23.25	2.99	26.89	37.9	54.00	16.1
500.45	42.26	QP	V	18.10	1.61	28.82	33.15	46.00	12.85
Middle Channel:5200 MHz									
5200	80.07	PK	H	31.76	5.23	0.00	117.06	N/A	N/A
5200	69.25	AV	H	31.76	5.23	0.00	106.24	N/A	N/A
5200	77.32	PK	V	31.76	5.23	0.00	114.31	N/A	N/A
5200	66.21	AV	V	31.76	5.23	0.00	103.2	N/A	N/A
10400	31.42	PK	H	37.38	7.79	26.36	50.23	74.00	23.77
10400	19.66	AV	H	37.38	7.79	26.36	38.47	54.00	15.53
15600	32.75	PK	H	39.42	10.22	25.31	57.08	74.00	16.92
15600	21.31	AV	H	39.42	10.22	25.31	45.64	54.00	8.36
1435	41.01	PK	H	23.93	2.58	26.39	41.13	74.00	32.87
1435	30.55	AV	H	23.93	2.58	26.39	30.67	54.00	23.33
2485	45.69	PK	H	23.25	2.99	26.89	45.04	74.00	28.96
2485	39.31	AV	H	23.25	2.99	26.89	38.66	54.00	15.34
500.45	42.7	QP	V	18.10	1.61	28.82	33.59	46.00	12.41
High Channel:5220 MHz									
5220	80.75	PK	H	31.80	5.25	0.00	117.8	N/A	N/A
5220	70.00	AV	H	31.80	5.25	0.00	107.05	N/A	N/A
5220	77.94	PK	V	31.80	5.25	0.00	114.99	N/A	N/A
5220	68.42	AV	V	31.80	5.25	0.00	105.47	N/A	N/A
5350	24.69	PK	H	32.03	5.37	0.00	62.09	74.00	11.91
5350	13.64	AV	H	32.03	5.37	0.00	51.04	54.00	2.96
10480	30.86	PK	H	37.40	7.84	26.35	49.75	74.00	24.25
10480	20.45	AV	H	37.40	7.84	26.35	39.34	54.00	14.66
15720	32.09	PK	H	39.44	10.24	25.30	56.47	74.00	17.53
15720	21.27	AV	H	39.44	10.24	25.30	45.65	54.00	8.35
1495	38.38	PK	H	24.09	2.66	26.33	38.8	74.00	35.2
1495	26.92	AV	H	24.09	2.66	26.33	27.34	54.00	26.66
2485	44.29	PK	H	23.25	2.99	26.89	43.64	74.00	30.36
2485	39.38	AV	H	23.25	2.99	26.89	38.73	54.00	15.27
500.45	42.95	QP	V	18.10	1.61	28.82	33.84	46.00	12.16

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5180 MHz									
5180	82.10	PK	H	31.72	5.21	0.00	119.03	N/A	N/A
5180	69.78	AV	H	31.72	5.21	0.00	106.71	N/A	N/A
5180	78.07	PK	V	31.72	5.21	0.00	115	N/A	N/A
5180	66.59	AV	V	31.72	5.21	0.00	103.52	N/A	N/A
5150	28.22	PK	H	31.67	5.18	0.00	65.07	74.00	8.93
5150	16.18	AV	H	31.67	5.18	0.00	53.03	54.00	0.97
10360	31.70	PK	H	37.37	7.76	26.37	50.46	74.00	23.54
10360	20.45	AV	H	37.37	7.76	26.37	39.21	54.00	14.79
15540	33.06	PK	H	39.41	10.22	25.32	57.37	74.00	16.63
15540	21.40	AV	H	39.41	10.22	25.32	45.71	54.00	8.29
1510	38.18	PK	H	24.12	2.68	26.34	38.64	74.00	35.36
1510	26.34	AV	H	24.12	2.68	26.34	26.8	54.00	27.2
2485	44.59	PK	H	23.25	2.99	26.89	43.94	74.00	30.06
2485	38.22	AV	H	23.25	2.99	26.89	37.57	54.00	16.43
500.45	42.95	QP	V	18.10	1.61	28.82	33.84	46.00	12.16
Middle Channel:5200 MHz									
5200	81.50	PK	H	31.76	5.23	0.00	118.49	N/A	N/A
5200	69.73	AV	H	31.76	5.23	0.00	106.72	N/A	N/A
5200	77.22	PK	V	31.76	5.23	0.00	114.21	N/A	N/A
5200	66.03	AV	V	31.76	5.23	0.00	103.02	N/A	N/A
10400	31.24	PK	H	37.38	7.79	26.36	50.05	74.00	23.95
10400	20.40	AV	H	37.38	7.79	26.36	39.21	54.00	14.79
15600	32.53	PK	H	39.42	10.22	25.31	56.86	74.00	17.14
15600	20.64	AV	H	39.42	10.22	25.31	44.97	54.00	9.03
1495	39.06	PK	H	24.09	2.66	26.33	39.48	74.00	34.52
1495	30.52	AV	H	24.09	2.66	26.33	30.94	54.00	23.06
2485	46.03	PK	H	23.25	2.99	26.89	45.38	74.00	28.62
2485	39.68	AV	H	23.25	2.99	26.89	39.03	54.00	14.97
500.45	41.88	QP	V	18.10	1.61	28.82	32.77	46.00	13.23
High Channel:5220 MHz									
5220	80.20	PK	H	31.80	5.25	0.00	117.25	N/A	N/A
5220	70.17	AV	H	31.80	5.25	0.00	107.22	N/A	N/A
5220	78.52	PK	V	31.80	5.25	0.00	115.57	N/A	N/A
5220	68.33	AV	V	31.80	5.25	0.00	105.38	N/A	N/A
5350	24.23	PK	H	32.03	5.37	0.00	61.63	74.00	12.37
5350	13.42	AV	H	32.03	5.37	0.00	50.82	54.00	3.18
10480	31.98	PK	H	37.40	7.84	26.35	50.87	74.00	23.13
10480	20.89	AV	H	37.40	7.84	26.35	39.78	54.00	14.22
15720	32.76	PK	H	39.44	10.24	25.30	57.14	74.00	16.86
15720	21.90	AV	H	39.44	10.24	25.30	46.28	54.00	7.72
1415	32.58	PK	H	23.88	2.55	26.41	32.6	74.00	41.4
1415	21.99	AV	H	23.88	2.55	26.41	22.01	54.00	31.99
2159	33.75	PK	H	24.36	3.03	26.84	34.3	74.00	39.7
2159	22.17	AV	H	24.36	3.03	26.84	22.72	54.00	31.28
500.45	42.29	QP	V	18.10	1.61	28.82	33.18	46.00	12.82

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	78.28	PK	H	31.74	5.22	0.00	115.24	N/A	N/A
5190	67.39	AV	H	31.74	5.22	0.00	104.35	N/A	N/A
5190	75.82	PK	V	31.74	5.22	0.00	112.78	N/A	N/A
5190	64.48	AV	V	31.74	5.22	0.00	101.44	N/A	N/A
5150	30.69	PK	H	31.67	5.18	0.00	67.54	74.00	6.46
5150	15.43	AV	H	31.67	5.18	0.00	52.28	54.00	1.72
10380	31.28	PK	H	37.38	7.78	26.37	50.07	74.00	23.93
10380	20.22	AV	H	37.38	7.78	26.37	39.01	54.00	14.99
15570	32.00	PK	H	39.41	10.22	25.31	56.32	74.00	17.68
15570	20.68	AV	H	39.41	10.22	25.31	45	54.00	9
1500	39.55	PK	H	24.10	2.67	26.33	39.99	74.00	34.01
1500	28.47	AV	H	24.10	2.67	26.33	28.91	54.00	25.09
2485	46.06	PK	H	23.25	2.99	26.89	45.41	74.00	28.59
2485	38.79	AV	H	23.25	2.99	26.89	38.14	54.00	15.86
500.45	41.27	QP	V	18.10	1.61	28.82	32.16	46.00	13.84

MIMO mode (Chain 0 & Chain 1 & Chain 2 & Chain 3) without beamforming:
802.11a mode:

Frequency	Receiver		Rx Antenna		Cable	Amplifier	Corrected	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
Low Channel:5180 MHz									
5180	80.37	PK	H	31.72	5.21	0.00	117.3	N/A	N/A
5180	69.02	AV	H	31.72	5.21	0.00	105.95	N/A	N/A
5180	78.93	PK	V	31.72	5.21	0.00	115.86	N/A	N/A
5180	67.43	AV	V	31.72	5.21	0.00	104.36	N/A	N/A
5150	27.65	PK	H	31.67	5.18	0.00	64.5	74.00	9.5
5150	16.05	AV	H	31.67	5.18	0.00	52.9	54.00	1.1
10360	31.90	PK	H	37.37	7.76	26.37	50.66	74.00	23.34
10360	19.41	AV	H	37.37	7.76	26.37	38.17	54.00	15.83
15540	33.19	PK	H	39.41	10.22	25.32	57.5	74.00	16.5
15540	21.41	AV	H	39.41	10.22	25.32	45.72	54.00	8.28
1495	42.06	PK	H	24.09	2.66	26.33	42.48	74.00	31.52
1495	29.82	AV	H	24.09	2.66	26.33	30.24	54.00	23.76
2485	45.79	PK	H	23.25	2.99	26.89	45.14	74.00	28.86
2485	39.08	AV	H	23.25	2.99	26.89	38.43	54.00	15.57
500.45	42	QP	V	18.10	1.61	28.82	32.89	46.00	13.11
Middle Channel:5200 MHz									
5200	79.39	PK	H	31.50	5.49	0.00	116.38	N/A	N/A
5200	68.33	AV	H	31.50	5.49	0.00	105.32	N/A	N/A
5200	78.09	PK	V	31.50	5.49	0.00	115.08	N/A	N/A
5200	67.21	AV	V	31.50	5.49	0.00	104.2	N/A	N/A
10400	31.02	PK	H	36.98	8.32	25.50	50.82	74.00	23.18
10400	19.35	AV	H	36.98	8.32	25.50	39.15	54.00	14.85
15600	30.52	PK	H	37.32	14.69	24.69	57.84	74.00	16.16
15600	19.44	AV	H	37.32	14.69	24.69	46.76	54.00	7.24
1435	43.85	PK	H	23.43	2.97	27.14	43.11	74.00	30.89
1435	31.41	AV	H	23.43	2.97	27.14	30.67	54.00	23.33
2485	43.14	PK	H	25.86	3.66	27.36	45.3	74.00	28.7
2485	36.55	AV	H	25.86	3.66	27.36	38.71	54.00	15.29
500.45	42.18	QP	V	18.10	1.61	28.82	33.07	46.00	12.93
High Channel:5220 MHz									
5220	80.75	PK	H	31.80	5.25	0.00	117.8	N/A	N/A
5220	70.00	AV	H	31.80	5.25	0.00	107.05	N/A	N/A
5220	78.94	PK	V	31.80	5.25	0.00	115.99	N/A	N/A
5220	68.47	AV	V	31.80	5.25	0.00	105.52	N/A	N/A
5350	24.69	PK	H	32.03	5.37	0.00	62.09	74.00	11.91
5350	13.64	AV	H	32.03	5.37	0.00	51.04	54.00	2.96
10480	31.01	PK	H	37.40	7.84	26.35	49.9	74.00	24.1
10480	21.09	AV	H	37.40	7.84	26.35	39.98	54.00	14.02
15720	31.78	PK	H	39.44	10.24	25.30	56.16	74.00	17.84
15720	21.35	AV	H	39.44	10.24	25.30	45.73	54.00	8.27
1336	33.04	PK	H	23.67	2.44	26.49	32.66	74.00	41.34
1336	22.01	AV	H	23.67	2.44	26.49	21.63	54.00	32.37
3045	38.46	PK	H	24.45	3.50	26.43	39.98	74.00	34.02
3045	27.88	AV	H	24.45	3.50	26.43	29.4	54.00	24.6
500.45	42.26	QP	V	18.10	1.61	28.82	33.15	46.00	12.85

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	81.03	PK	H	31.72	5.21	0.00	117.96	N/A	N/A
5180	69.57	AV	H	31.72	5.21	0.00	106.5	N/A	N/A
5180	79.10	PK	V	31.72	5.21	0.00	116.03	N/A	N/A
5180	68.00	AV	V	31.72	5.21	0.00	104.93	N/A	N/A
5150	27.49	PK	H	31.67	5.18	0.00	64.34	74.00	9.66
5150	16.05	AV	H	31.67	5.18	0.00	52.9	54.00	1.1
10360	32.29	PK	H	37.37	7.76	26.37	51.05	74.00	22.95
10360	21.09	AV	H	37.37	7.76	26.37	39.85	54.00	14.15
15540	33.78	PK	H	39.41	10.22	25.32	58.09	74.00	15.91
15540	23.11	AV	H	39.41	10.22	25.32	47.42	54.00	6.58
1510	40.62	PK	H	24.12	2.68	26.34	41.08	74.00	32.92
1510	28.42	AV	H	24.12	2.68	26.34	28.88	54.00	25.12
2485	45.17	PK	H	23.25	2.99	26.89	44.52	74.00	29.48
2485	39.28	AV	H	23.25	2.99	26.89	38.63	54.00	15.37
500.45	42.7	QP	V	18.10	1.61	28.82	33.59	46.00	12.41
Middle Channel:5200 MHz									
5200	80.22	PK	H	31.76	5.23	0.00	117.21	N/A	N/A
5200	68.56	AV	H	31.76	5.23	0.00	105.55	N/A	N/A
5200	78.33	PK	V	31.76	5.23	0.00	115.32	N/A	N/A
5200	67.34	AV	V	31.76	5.23	0.00	104.33	N/A	N/A
10400	33.00	PK	H	37.38	7.79	26.36	51.81	74.00	22.19
10400	21.46	AV	H	37.38	7.79	26.36	40.27	54.00	13.73
15600	32.53	PK	H	39.42	10.22	25.31	56.86	74.00	17.14
15600	21.19	AV	H	39.42	10.22	25.31	45.52	54.00	8.48
1495	43.62	PK	H	24.09	2.66	26.33	44.04	74.00	29.96
1495	31.13	AV	H	24.09	2.66	26.33	31.55	54.00	22.45
2485	44.40	PK	H	23.25	2.99	26.89	43.75	74.00	30.25
2485	38.59	AV	H	23.25	2.99	26.89	37.94	54.00	16.06
500.45	42.87	QP	V	18.10	1.61	28.82	33.76	46.00	12.24
High Channel:5220 MHz									
5220	80.31	PK	H	31.80	5.25	0.00	117.36	N/A	N/A
5220	70.52	AV	H	31.80	5.25	0.00	107.57	N/A	N/A
5220	78.97	PK	V	31.80	5.25	0.00	116.02	N/A	N/A
5220	68.44	AV	V	31.80	5.25	0.00	105.49	N/A	N/A
5350	24.73	PK	H	32.03	5.37	0.00	62.13	74.00	11.87
5350	13.67	AV	H	32.03	5.37	0.00	51.07	54.00	2.93
10480	30.68	PK	H	37.40	7.84	26.35	49.57	74.00	24.43
10480	20.45	AV	H	37.40	7.84	26.35	39.34	54.00	14.66
15720	32.61	PK	H	39.44	10.24	25.30	56.99	74.00	17.01
15720	21.18	AV	H	39.44	10.24	25.30	45.56	54.00	8.44
1336	33.54	PK	H	23.67	2.44	26.49	33.16	74.00	40.84
1336	22.56	AV	H	23.67	2.44	26.49	22.18	54.00	31.82
3045	37.12	PK	H	24.45	3.50	26.43	38.64	74.00	35.36
3045	26.50	AV	H	24.45	3.50	26.43	28.02	54.00	25.98
500.45	42.95	QP	V	18.10	1.61	28.82	33.84	46.00	12.16

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	76.29	PK	H	31.74	5.22	0.00	113.25	N/A	N/A
5190	65.47	AV	H	31.74	5.22	0.00	102.43	N/A	N/A
5190	75.54	PK	V	31.74	5.22	0.00	112.5	N/A	N/A
5190	65.45	AV	V	31.74	5.22	0.00	102.41	N/A	N/A
5150	29.20	PK	H	31.67	5.18	0.00	66.05	74.00	7.95
5150	15.50	AV	H	31.67	5.18	0.00	52.35	54.00	1.65
10380	31.87	PK	H	37.38	7.78	26.37	50.66	74.00	23.34
10380	20.26	AV	H	37.38	7.78	26.37	39.05	54.00	14.95
15570	33.27	PK	H	39.41	10.22	25.31	57.59	74.00	16.41
15570	26.68	AV	H	39.41	10.22	25.31	51	54.00	3.00
1510	38.86	PK	H	24.12	2.68	26.34	39.32	74.00	34.68
1510	27.72	AV	H	24.12	2.68	26.34	28.18	54.00	25.82
2485	45.77	PK	H	23.25	2.99	26.89	45.12	74.00	28.88
2485	40.33	AV	H	23.25	2.99	26.89	39.68	54.00	14.32
500.45	42.05	QP	V	18.10	1.61	28.82	32.94	46.00	13.06

MIMO mode (Chain 0 & Chain 1) with beamforming:

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	76.78	PK	H	31.72	5.21	0.00	113.71	N/A	N/A
5180	64.87	AV	H	31.72	5.21	0.00	101.8	N/A	N/A
5180	78.38	PK	V	31.72	5.21	0.00	115.31	N/A	N/A
5180	65.95	AV	V	31.72	5.21	0.00	102.88	N/A	N/A
5150	27.39	PK	V	31.67	5.18	0.00	64.24	74.00	9.76
5150	15.51	AV	V	31.67	5.18	0.00	52.36	54.00	1.64
10360	31.69	PK	V	37.37	7.76	26.37	50.45	74.00	23.55
10360	20.70	AV	V	37.37	7.76	26.37	39.46	54.00	14.54
15540	32.37	PK	V	39.41	10.22	25.32	56.68	74.00	17.32
15540	21.95	AV	V	39.41	10.22	25.32	46.26	54.00	7.74
1510	38.32	PK	V	24.12	2.68	26.34	38.78	74.00	35.22
1510	27.08	AV	V	24.12	2.68	26.34	27.54	54.00	26.46
2485	43.81	PK	V	23.25	2.99	26.89	43.16	74.00	30.84
2485	37.77	AV	V	23.25	2.99	26.89	37.12	54.00	16.88
500.45	43.01	QP	V	18.10	1.61	28.82	33.90	46.00	12.10
Middle Channel:5200 MHz									
5200	76.79	PK	H	31.76	5.23	0.00	113.78	N/A	N/A
5200	64.83	AV	H	31.76	5.23	0.00	101.82	N/A	N/A
5200	77.68	PK	V	31.76	5.23	0.00	114.67	N/A	N/A
5200	66.61	AV	V	31.76	5.23	0.00	103.6	N/A	N/A
10400	30.38	PK	V	37.38	7.79	26.36	49.19	74.00	24.81
10400	19.88	AV	V	37.38	7.79	26.36	38.69	54.00	15.31
15600	32.30	PK	V	39.42	10.22	25.31	56.63	74.00	17.37
15600	20.95	AV	V	39.42	10.22	25.31	45.28	54.00	8.72
1520	36.64	PK	V	24.13	2.69	26.35	37.11	74.00	36.89
1520	23.77	AV	V	24.13	2.69	26.35	24.24	54.00	29.76
2485	42.01	PK	V	23.25	2.99	26.89	41.36	74.00	32.64
2485	36.38	AV	V	23.25	2.99	26.89	35.73	54.00	18.27
500.45	43.42	QP	V	18.10	1.61	28.82	34.31	46.00	11.69
High Channel:5220 MHz									
5220	75.31	PK	H	31.80	5.25	0.00	112.36	N/A	N/A
5220	64.52	AV	H	31.80	5.25	0.00	101.57	N/A	N/A
5220	74.97	PK	V	31.80	5.25	0.00	112.02	N/A	N/A
5220	64.44	AV	V	31.80	5.25	0.00	101.49	N/A	N/A
5350	23.85	PK	H	32.03	5.37	0.00	61.25	74.00	12.75
5350	12.99	AV	H	32.03	5.37	0.00	50.39	54.00	3.61
10480	29.86	PK	H	37.40	7.84	26.35	48.75	74.00	25.25
10480	20.22	AV	H	37.40	7.84	26.35	39.11	54.00	14.89
15720	32.09	PK	H	39.44	10.24	25.30	56.47	74.00	17.53
15720	21.09	AV	H	39.44	10.24	25.30	45.47	54.00	8.53
1336	33.37	PK	H	23.67	2.44	26.49	32.99	74.00	41.01
1336	21.46	AV	H	23.67	2.44	26.49	21.08	54.00	32.92
3045	36.36	PK	H	24.45	3.50	26.43	37.88	74.00	36.12
3045	26.41	AV	H	24.45	3.50	26.43	27.93	54.00	26.07
500.45	42.4	QP	V	18.10	1.61	28.82	33.29	46.00	12.71

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	73.07	PK	H	31.74	5.22	0.00	110.03	N/A	N/A
5190	62.94	AV	H	31.74	5.22	0.00	99.9	N/A	N/A
5190	74.54	PK	V	31.74	5.22	0.00	111.5	N/A	N/A
5190	63.95	AV	V	31.74	5.22	0.00	100.91	N/A	N/A
5150	28.56	PK	V	31.67	5.18	0.00	65.41	74.00	8.59
5150	15.34	AV	V	31.67	5.18	0.00	52.19	54.00	1.81
10380	30.90	PK	V	37.38	7.78	26.37	49.69	74.00	24.31
10380	20.06	AV	V	37.38	7.78	26.37	38.85	54.00	15.15
15570	33.31	PK	V	39.41	10.22	25.31	57.63	74.00	16.37
15570	21.31	AV	V	39.41	10.22	25.31	45.63	54.00	8.37
1510	39.70	PK	V	24.12	2.68	26.34	40.16	74.00	33.84
1510	28.06	AV	V	24.12	2.68	26.34	28.52	54.00	25.48
2485	43.36	PK	V	23.25	2.99	26.89	42.71	74.00	31.29
2485	36.54	AV	V	23.25	2.99	26.89	35.89	54.00	18.11
500.45	42.57	QP	V	18.10	1.61	28.82	33.46	46.00	12.54

MIMO mode (Chain 0 & Chain 1 & Chain 2) with beamforming:

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	81.67	PK	H	31.72	5.21	0.00	118.6	N/A	N/A
5180	69.53	AV	H	31.72	5.21	0.00	106.46	N/A	N/A
5180	77.75	PK	V	31.72	5.21	0.00	114.68	N/A	N/A
5180	65.86	AV	V	31.72	5.21	0.00	102.79	N/A	N/A
5150	27.81	PK	H	31.67	5.18	0.00	64.66	74.00	9.34
5150	16.04	AV	H	31.67	5.18	0.00	52.89	54.00	1.11
10360	31.18	PK	H	37.37	7.76	26.37	49.94	74.00	24.06
10360	20.45	AV	H	37.37	7.76	26.37	39.21	54.00	14.79
15540	32.87	PK	H	39.41	10.22	25.32	57.18	74.00	16.82
15540	21.37	AV	H	39.41	10.22	25.32	45.68	54.00	8.32
1510	37.80	PK	H	24.12	2.68	26.34	38.26	74.00	35.74
1510	26.16	AV	H	24.12	2.68	26.34	26.62	54.00	27.38
2485	44.06	PK	H	23.25	2.99	26.89	43.41	74.00	30.59
2485	37.97	AV	H	23.25	2.99	26.89	37.32	54.00	16.68
500.45	42.16	QP	V	18.10	1.61	28.82	33.05	46.00	12.95
Middle Channel:5200 MHz									
5200	80.51	PK	H	31.76	5.23	0.00	117.5	N/A	N/A
5200	69.29	AV	H	31.76	5.23	0.00	106.28	N/A	N/A
5200	76.46	PK	V	31.76	5.23	0.00	113.45	N/A	N/A
5200	64.69	AV	V	31.76	5.23	0.00	101.68	N/A	N/A
10400	30.24	PK	H	37.38	7.79	26.36	49.05	74.00	24.95
10400	19.33	AV	H	37.38	7.79	26.36	38.14	54.00	15.86
15600	31.93	PK	H	39.42	10.22	25.31	56.26	74.00	17.74
15600	20.26	AV	H	39.42	10.22	25.31	44.59	54.00	9.41
1495	38.32	PK	H	24.09	2.66	26.33	38.74	74.00	35.26
1495	30.09	AV	H	24.09	2.66	26.33	30.51	54.00	23.49
2485	45.64	PK	H	23.25	2.99	26.89	44.99	74.00	29.01
2485	38.79	AV	H	23.25	2.99	26.89	38.14	54.00	15.86
500.45	42.33	QP	V	18.10	1.61	28.82	33.22	46.00	12.78
High Channel:5220 MHz									
5220	79.23	PK	H	31.80	5.25	0.00	116.28	N/A	N/A
5220	69.80	AV	H	31.80	5.25	0.00	106.85	N/A	N/A
5220	75.60	PK	V	31.80	5.25	0.00	112.65	N/A	N/A
5220	65.06	AV	V	31.80	5.25	0.00	102.11	N/A	N/A
5350	22.88	PK	H	32.03	5.37	0.00	60.28	74.00	13.72
5350	14.08	AV	H	32.03	5.37	0.00	51.48	54.00	2.52
10480	30.32	PK	H	37.40	7.84	26.35	49.21	74.00	24.79
10480	19.88	AV	H	37.40	7.84	26.35	38.77	54.00	15.23
15720	31.36	PK	H	39.44	10.24	25.30	55.74	74.00	18.26
15720	21.31	AV	H	39.44	10.24	25.30	45.69	54.00	8.31
1336	33.43	PK	H	23.67	2.44	26.49	33.05	74.00	40.95
1336	21.27	AV	H	23.67	2.44	26.49	20.89	54.00	33.11
3045	35.66	PK	H	24.45	3.50	26.43	37.18	74.00	36.82
3045	24.89	AV	H	24.45	3.50	26.43	26.41	54.00	27.59
500.45	42.72	QP	V	18.10	1.61	28.82	33.61	46.00	12.39

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	77.80	PK	H	31.74	5.22	0.00	114.76	N/A	N/A
5190	66.64	AV	H	31.74	5.22	0.00	103.6	N/A	N/A
5190	74.93	PK	V	31.74	5.22	0.00	111.89	N/A	N/A
5190	64.25	AV	V	31.74	5.22	0.00	101.21	N/A	N/A
5150	30.33	PK	H	31.67	5.18	0.00	67.18	74.00	6.82
5150	14.56	AV	H	31.67	5.18	0.00	51.41	54.00	2.59
10380	30.00	PK	H	37.38	7.78	26.37	48.79	74.00	25.21
10380	19.37	AV	H	37.38	7.78	26.37	38.16	54.00	15.84
15570	31.17	PK	H	39.41	10.22	25.31	55.49	74.00	18.51
15570	19.98	AV	H	39.41	10.22	25.31	44.3	54.00	9.7
1500	38.59	PK	H	24.10	2.67	26.33	39.03	74.00	34.97
1500	27.66	AV	H	24.10	2.67	26.33	28.1	54.00	25.9
2485	45.64	PK	H	23.25	2.99	26.89	44.99	74.00	29.01
2485	37.58	AV	H	23.25	2.99	26.89	36.93	54.00	17.07
500.45	42.9	QP	V	18.10	1.61	28.82	33.79	46.00	12.21

MIMO mode (Chain 0 & Chain 1 & Chain 2 & Chain 3) with beamforming:

802.11n ht20 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5180 MHz									
5180	80.83	PK	H	31.72	5.21	0.00	117.76	N/A	N/A
5180	69.35	AV	H	31.72	5.21	0.00	106.28	N/A	N/A
5180	78.42	PK	V	31.72	5.21	0.00	115.35	N/A	N/A
5180	67.69	AV	V	31.72	5.21	0.00	104.62	N/A	N/A
5150	27.09	PK	H	31.67	5.18	0.00	63.94	74.00	10.06
5150	15.52	AV	H	31.67	5.18	0.00	52.37	54.00	1.63
10360	32.16	PK	H	37.37	7.76	26.37	50.92	74.00	23.08
10360	20.79	AV	H	37.37	7.76	26.37	39.55	54.00	14.45
15540	33.63	PK	H	39.41	10.22	25.32	57.94	74.00	16.06
15540	22.79	AV	H	39.41	10.22	25.32	47.1	54.00	6.9
1510	40.24	PK	H	24.12	2.68	26.34	40.7	74.00	33.3
1510	27.85	AV	H	24.12	2.68	26.34	28.31	54.00	25.69
2485	44.67	PK	H	23.25	2.99	26.89	44.02	74.00	29.98
2485	39.24	AV	H	23.25	2.99	26.89	38.59	54.00	15.41
500.45	42.23	QP	V	18.10	1.61	28.82	33.12	46.00	12.88
Middle Channel:5200 MHz									
5200	79.80	PK	H	31.76	5.23	0.00	116.79	N/A	N/A
5200	67.87	AV	H	31.76	5.23	0.00	104.86	N/A	N/A
5200	77.84	PK	V	31.76	5.23	0.00	114.83	N/A	N/A
5200	66.76	AV	V	31.76	5.23	0.00	103.75	N/A	N/A
10400	32.35	PK	H	37.38	7.79	26.36	51.16	74.00	22.84
10400	21.42	AV	H	37.38	7.79	26.36	40.23	54.00	13.77
15600	32.21	PK	H	39.42	10.22	25.31	56.54	74.00	17.46
15600	20.99	AV	H	39.42	10.22	25.31	45.32	54.00	8.68
1495	43.33	PK	H	24.09	2.66	26.33	43.75	74.00	30.25
1495	31.03	AV	H	24.09	2.66	26.33	31.45	54.00	22.55
2485	44.03	PK	H	23.25	2.99	26.89	43.38	74.00	30.62
2485	38.51	AV	H	23.25	2.99	26.89	37.86	54.00	16.14
500.45	42.41	QP	V	18.10	1.61	28.82	33.30	46.00	12.70
High Channel:5220 MHz									
5220	77.80	PK	H	31.80	5.25	0.00	114.85	N/A	N/A
5220	65.57	AV	H	31.80	5.25	0.00	102.62	N/A	N/A
5220	76.03	PK	V	31.80	5.25	0.00	113.08	N/A	N/A
5220	65.90	AV	V	31.80	5.25	0.00	102.95	N/A	N/A
5350	25.65	PK	H	32.03	5.37	0.00	63.05	74.00	10.95
5350	13.38	AV	H	32.03	5.37	0.00	50.78	54.00	3.22
10480	30.06	PK	H	37.40	7.84	26.35	48.95	74.00	25.05
10480	20.58	AV	H	37.40	7.84	26.35	39.47	54.00	14.53
15720	30.64	PK	H	39.44	10.24	25.30	55.02	74.00	18.98
15720	19.21	AV	H	39.44	10.24	25.30	43.59	54.00	10.41
1336	34.63	PK	H	23.67	2.44	26.49	34.25	74.00	39.75
1336	22.37	AV	H	23.67	2.44	26.49	21.99	54.00	32.01
3045	37.02	PK	H	24.45	3.50	26.43	38.54	74.00	35.46
3045	23.66	AV	H	24.45	3.50	26.43	25.18	54.00	28.82
500.45	42.49	QP	V	18.10	1.61	28.82	33.38	46.00	12.62

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5190 MHz									
5190	76.00	PK	H	31.74	5.22	0.00	112.96	N/A	N/A
5190	65.33	AV	H	31.74	5.22	0.00	102.29	N/A	N/A
5190	75.22	PK	V	31.74	5.22	0.00	112.18	N/A	N/A
5190	64.77	AV	V	31.74	5.22	0.00	101.73	N/A	N/A
5150	28.60	PK	H	31.67	5.18	0.00	65.45	74.00	8.55
5150	15.06	AV	H	31.67	5.18	0.00	51.91	54.00	2.09
10380	31.82	PK	H	37.38	7.78	26.37	50.61	74.00	23.39
10380	19.48	AV	H	37.38	7.78	26.37	38.27	54.00	15.73
15570	32.57	PK	H	39.41	10.22	25.31	56.89	74.00	17.11
15570	31.38	AV	H	39.41	10.22	25.31	55.7	54.00	-1.7
1510	38.33	PK	H	24.12	2.68	26.34	38.79	74.00	35.21
1510	27.64	AV	H	24.12	2.68	26.34	28.1	54.00	25.9
2485	45.35	PK	H	23.25	2.99	26.89	44.7	74.00	29.3
2485	39.94	AV	H	23.25	2.99	26.89	39.29	54.00	14.71
500.45	42.23	QP	V	18.10	1.61	28.82	33.12	46.00	12.88

5725-5850MHz Band:

SISO mode:

802.11a mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Middle Channel:5785 MHz									
5785	68.90	PK	H	32.64	5.77	0.00	107.31	N/A	N/A
5785	57.95	AV	H	32.64	5.77	0.00	96.36	N/A	N/A
5785	78.85	PK	V	32.64	5.77	0.00	117.26	N/A	N/A
5785	68.08	AV	V	32.64	5.77	0.00	106.49	N/A	N/A
11570	31.37	PK	V	38.03	8.21	26.00	51.61	74	22.39
11570	20.00	AV	V	38.03	8.21	26.00	40.24	54	13.76
17355	30.88	PK	V	43.53	11.03	26.16	59.28	74	14.72
17355	19.76	AV	V	43.53	11.03	26.16	48.16	54	5.84
1287	33.72	PK	V	23.55	2.38	26.53	33.12	74	40.88
1287	21.89	AV	V	23.55	2.38	26.53	21.29	54	32.71
2336	35.97	PK	V	23.76	3.01	26.87	35.87	74	38.13
2336	24.55	AV	V	23.76	3.01	26.87	24.45	54	29.55
500.45	42.55	QP	V	18.10	1.61	28.82	33.44	46.00	12.56

802.11n ht20 mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Middle Channel:5785 MHz									
5785	68.46	PK	H	32.64	5.77	0.00	106.87	N/A	N/A
5785	57.79	AV	H	32.64	5.77	0.00	96.2	N/A	N/A
5785	78.33	PK	V	32.64	5.77	0.00	116.74	N/A	N/A
5785	67.65	AV	V	32.64	5.77	0.00	106.06	N/A	N/A
11570	31.46	PK	V	38.03	8.21	26.00	51.7	74	22.3
11570	21.12	AV	V	38.03	8.21	26.00	41.36	54	12.64
17355	31.16	PK	V	43.53	11.03	26.16	59.56	74	14.44
17355	19.95	AV	V	43.53	11.03	26.16	48.35	54	5.65
1287	34.17	PK	V	23.55	2.38	26.53	33.57	74	40.43
1287	23.49	AV	V	23.55	2.38	26.53	22.89	54	31.11
2336	35.15	PK	V	23.76	3.01	26.87	35.05	74	38.95
2336	23.56	AV	V	23.76	3.01	26.87	23.46	54	30.54
500.45	42.11	QP	V	18.10	1.61	28.82	33.00	46.00	13.00
500.45	42.5	QP	V	18.10	1.61	28.82	33.39	46.00	12.61

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested 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 v01r03

Test Data

Environmental Conditions

Temperature:	25.8~28.3 °C
Relative Humidity:	28~41 %
ATM Pressure:	100.9 kPa

The testing was performed by Lorin Bian from 2016-11-04 to 2017-01-10.

Test Result: Pass.

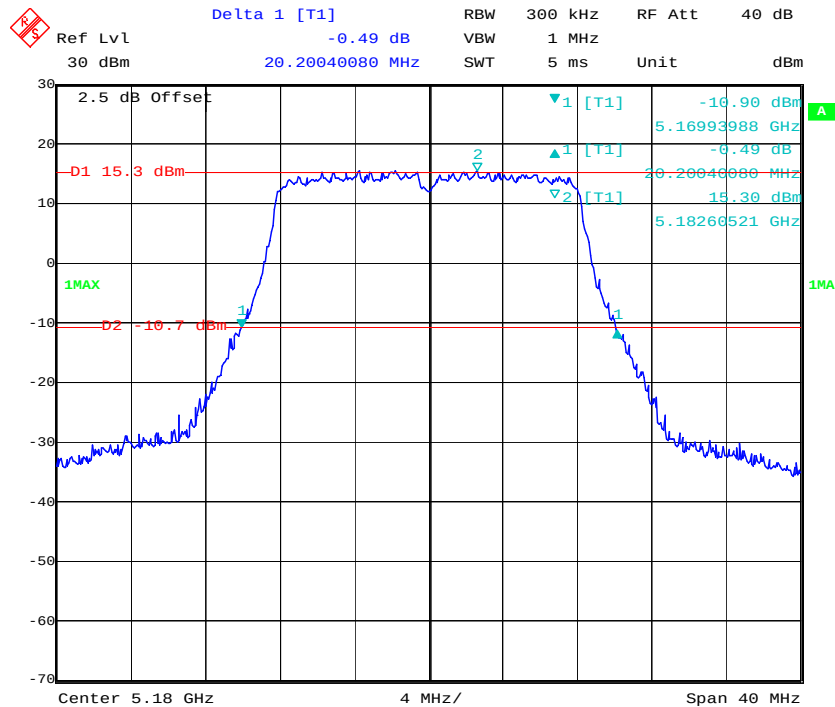
Please refer to the following tables and plots.

Test mode: Transmitting (Test performed at SISO mode Chain 0)

UNII Band	Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
5150-5250MHz	802.11 a	Low	5180	20.2
		Middle	5200	20.28
		High	5220	23.37
	802.11 n20	Low	5180	20.92
		Middle	5200	21.24
		High	5220	22.24
	802.11 n40	Low	5190	39.76

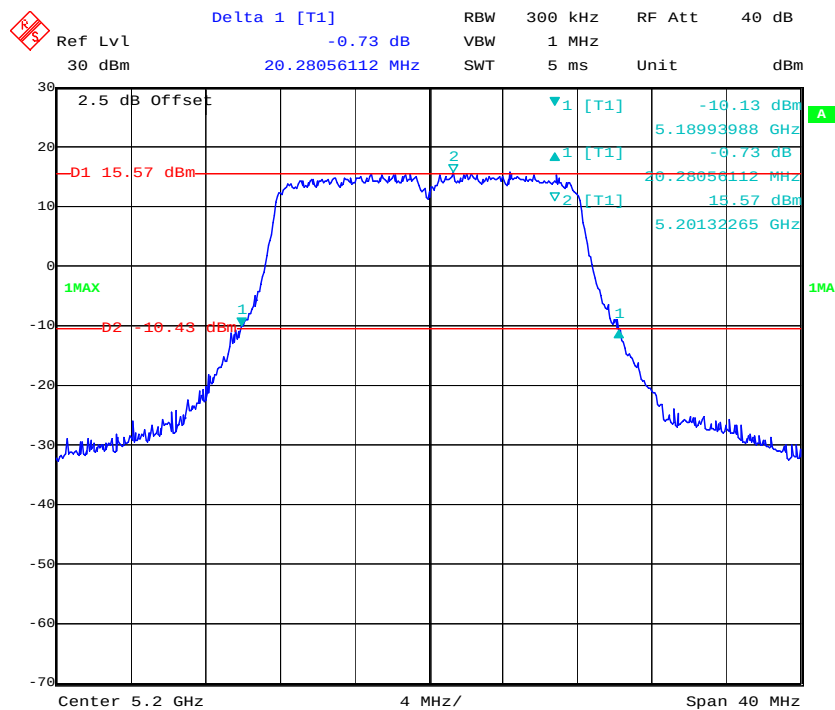
5150MHz-5250MHz:

802.11a Low Channel



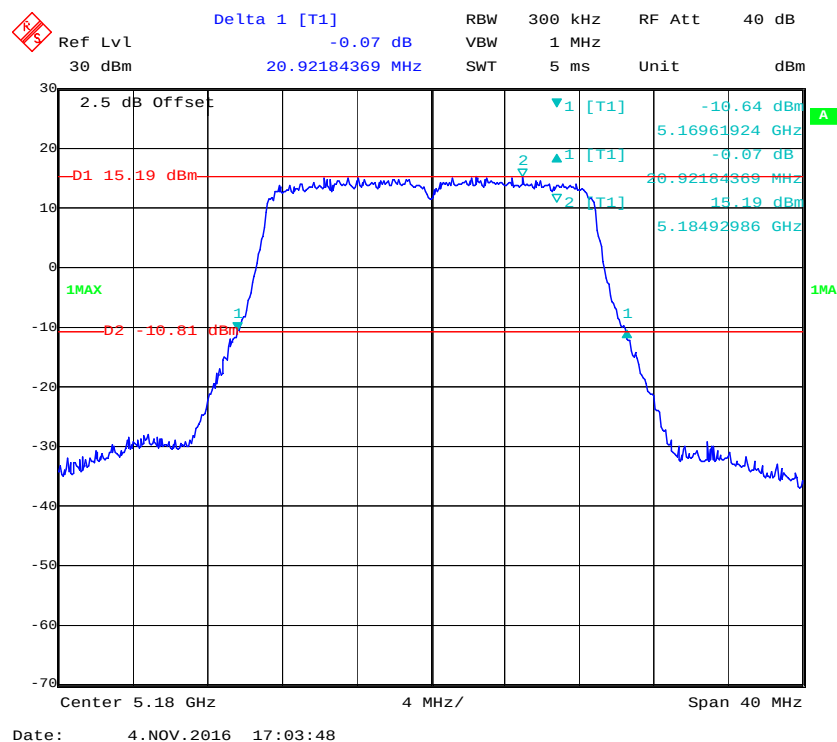
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802.11a Middle Channel

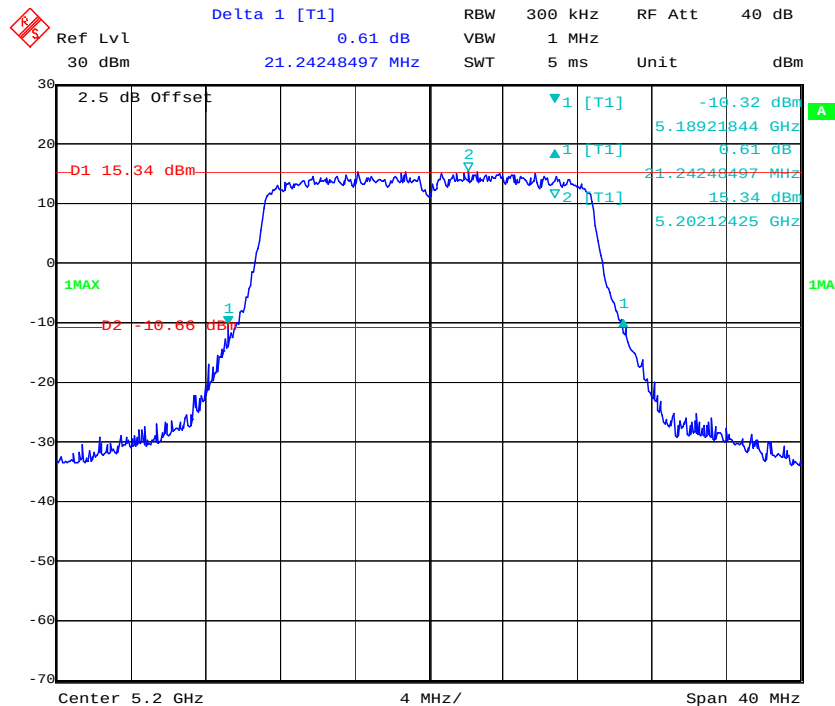


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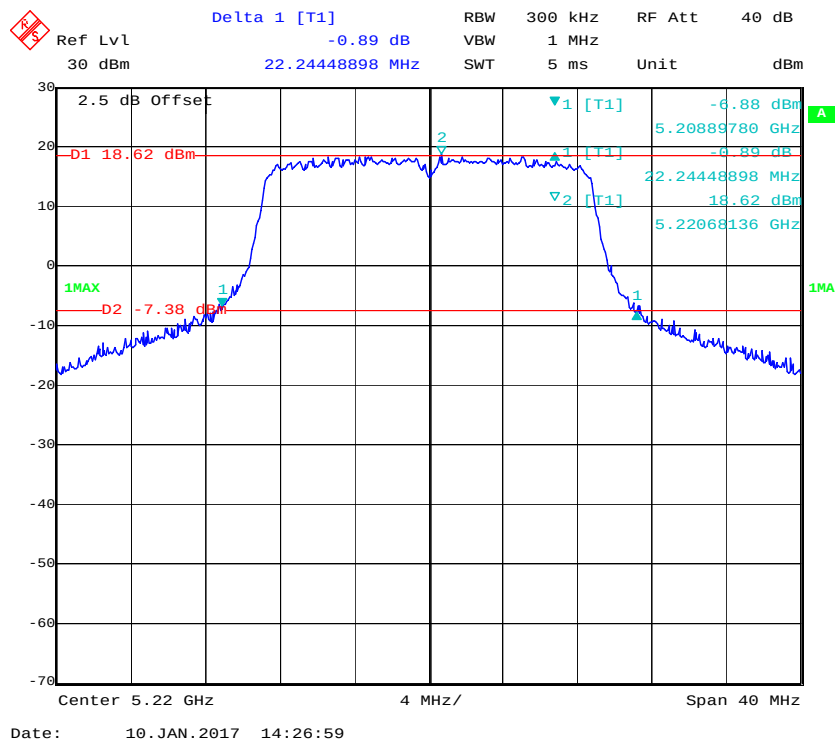
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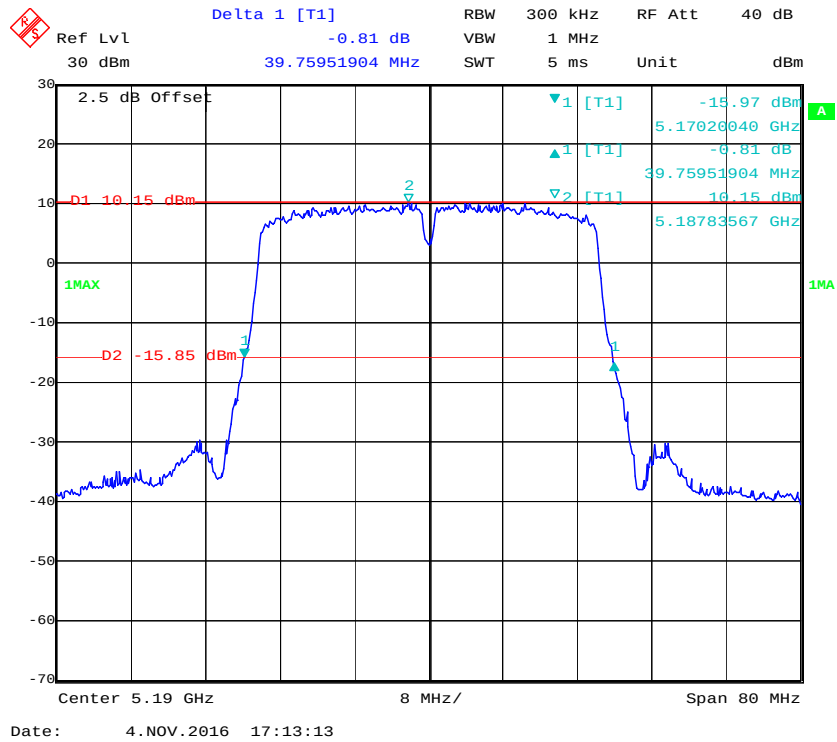
802.11n ht20 Middle Channel



802.11n ht20 High Channel



802.11n ht40 Low Channel



FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple 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 $10 \log B$ dBm, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

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

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(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	MY54170074	2016-01-03	2017-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2016-01-03	2017-01-03
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested 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 v01r03

Test Data

Environmental Conditions

Temperature:	28.6 °C
Relative Humidity:	46 %
ATM Pressure:	100.8 kPa

The testing was performed by Lorin Bian on 2016-11-04.

Test Mode: Transmitting

5150-5250MHz Band:

SISO:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	
802.11 a	Low	5180	24.53	24.16	24.53	24.99	30
	Middle	5200	27.49	27.8	27.63	27.56	30
	High	5220	27.72	27.67	27.56	27.64	30
802.11 n20	Low	5180	24.3	24.15	24.26	24.72	30
	Middle	5200	27.49	27.6	27.34	27.24	30
	High	5220	27.58	27.6	27.27	27.28	30
802.11 n40	Low	5190	22.93	22.78	22.81	22.82	30

MIMO-2X2- Without Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)			Limit (dBm)
			Chain 0	Chain 1	Total	
802.11 a	Low	5180	24.05	24.05	27.06	30
	Middle	5200	24.05	23.96	27.02	30
	High	5220	23.92	23.49	26.72	30
802.11 n20	Low	5180	23.8	23.6	26.71	30
	Middle	5200	23.83	23.54	26.7	30
	High	5220	24.45	23.93	27.21	30
802.11 n40	Low	5190	22.85	22.46	25.67	30

MIMO-3X3- Without Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Limit (dBm)
			Chain 0	Chain 1	Chain 2	Total	
802.11 a	Low	5180	21.7	21.42	21.89	26.45	30
	Middle	5200	21.65	21.32	21.83	26.38	30
	High	5220	21.9	21.9	22.07	26.73	30
802.11 n20	Low	5180	21.7	21.46	21.51	26.33	30
	Middle	5200	21.73	21.35	21.74	26.38	30
	High	5220	21.01	21.61	21.68	26.21	30
802.11 n40	Low	5190	22.52	22.14	22.5	27.16	30

MIMO-4X4-Without Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)					Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total	
802.11 a	Low	5180	18.57	18.05	18.37	19.14	24.57	30
	Middle	5200	18.45	17.93	18.32	19.15	24.51	30
	High	5220	18.16	18.4	18.39	18.69	24.43	30
802.11 n20	Low	5180	19.26	18.64	19.12	19.7	25.22	30
	Middle	5200	19.23	18.52	19.1	19.79	25.2	30
	High	5220	19.16	18.8	19.09	19.09	25.06	30
802.11 n40	Low	5190	20.53	20.17	20.73	21.16	26.68	30

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, 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 = 2dBi < 6dBi

MIMO-2X2- With Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)			Limit (dBm)
			Chain 0	Chain 1	Total	
802.11 a	Low	5180	24.05	24.05	27.06	30
	Middle	5200	24.05	23.96	27.02	30
	High	5220	24.05	23.61	26.85	30
802.11 n20	Low	5180	23.8	23.6	26.71	30
	Middle	5200	23.83	23.54	26.7	30
	High	5220	23.87	23.29	26.6	30
802.11 n40	Low	5190	22.85	22.46	25.67	30

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB};$$

So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(2) = 5\text{dBi} < 6\text{dBi}$$

MIMO-3X3- With Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Limit (dBm)
			Chain 0	Chain 1	Chain 2	Total	
802.11 a	Low	5180	21.7	21.42	21.89	26.45	29.23
	Middle	5200	21.65	21.32	21.83	26.38	29.23
	High	5220	21.35	21.08	21.43	26.06	29.23
802.11 n20	Low	5180	21.7	21.46	21.51	26.33	29.23
	Middle	5200	21.73	21.35	21.74	26.38	29.23
	High	5220	21.41	21.21	21.36	26.1	29.23
802.11 n40	Low	5190	22.52	22.14	22.5	27.16	29.23

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB};$$

So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(3) = 6.77\text{dBi} > 6\text{dBi}$$

$$\text{Power Limits} = 30 - (6.77-6) = 29.23\text{dBm}.$$

MIMO-4X4-With Beamforming:

Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)					Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total	
802.11 a	Low	5180	18.57	18.05	18.37	19.14	24.57	28
	Middle	5200	18.45	17.93	18.32	19.15	24.51	28
	High	5220	18.05	18.28	18.32	18.27	24.25	28
802.11 n20	Low	5180	19.26	18.64	19.12	19.7	25.22	28
	Middle	5200	19.23	18.52	19.1	19.79	25.2	28
	High	5220	19.15	18.97	19.14	19.07	25.1	28
802.11 n40	Low	5190	20.53	20.17	20.73	21.16	26.68	28

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB};$$

So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(4) = 8\text{dBi} > 6\text{dBi}$$

$$\text{Power Limits} = 30 - (8-6) = 28\text{dBm}.$$

5725-5850MHz Band:

SISO- Non-beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2	Chain 3		
5725-5850MHz	802.11 a	Middle	5785	29.28	29.69	29.08	29.71	30	PASS
	802.11 n20	Middle	5785	29.19	29.25	29.66	29.14	30	PASS

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 colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r03

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.8~28.3 °C
Relative Humidity:	28~41 %
ATM Pressure:	100.9 kPa

The testing was performed by Lorin Bian from 2016-11-04 to 2017-01-10.

Test Mode: Transmitting (the maximum power of non-beamforming is higher than beamforming mode, so test performed at non-beamforming mode)

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

**5150-5250MHz:
SISO:**

Mode	Channel	Frequency (MHz)	Power Spectral Density(dBm/MHz)				Limit (dBm/MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
802.11 a	Low	5180	13.84	13.73	13.8	14.5	17
	Middle	5200	16.89	16.77	16.81	16.7	17
	High	5220	17.08	16.98	16.73	16.7	17
802.11 n20	Low	5180	13.59	13.38	13.5	14.08	17
	Middle	5200	16.1	16.69	16.25	16.24	17
	High	5220	16.3	16.62	16.63	16.83	17
802.11	Low	5190	8.38	8.37	8.46	8.87	17

MIMO-2T2R:

Mode	Channel	Frequency (MHz)	Power Spectral Density(dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
			Chain 0	Chain 1		
802.11 a	Low	5180	13.47	13.67	16.58	17
	Middle	5200	13.12	13.49	16.32	17
	High	5220	13.16	14.35	16.81	17
802.11 n20	Low	5180	12.72	13.49	16.13	17
	Middle	5200	13.07	13.41	16.25	17
	High	5220	12.50	13.09	15.82	17
802.11 n40	Low	5190	8.9	9.02	11.97	17

Note: the device is a master device. the 3 antenna maximum antenna gain are 2.0dBi, 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 = $10 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB.

So:

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 2 + 10 \cdot \log(2) = 5 \text{ dBi} < 6 \text{ dBi}$

MIMO-3T3R:

Mode	Channel	Frequency (MHz)	Power Spectral Density(dBm/MHz)			Total (dBm/MHz)	Limit (dBm/MHz)
			Chain 0	Chain 1	Chain 2		
802.11 a	Low	5180	11.43	10.96	11.38	16.03	16.23
	Middle	5200	11.11	10.79	11.51	15.92	16.23
	High	5220	10.75	11.87	12.19	16.42	16.23
802.11 n20	Low	5180	11.46	11.02	10.96	15.92	16.23
	Middle	5200	10.59	10.55	11.25	15.58	16.23
	High	5220	10.47	10.84	11.82	15.85	16.23
802.11 n40	Low	5190	8.85	8.84	8.71	13.57	16.23

Note: the device is a master device. the 3 antenna maximum antenna gain are 2.0dBi, 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 = $2 + 10 \cdot \log(3) = 6.77$ dBi > 6dBi

Power density Limits = $17 - (6.77 - 6) = 16.23$ dBm

MIMO-4T4R:

Mode	Channel	Frequency (MHz)	Power Spectral Density(dBm/MHz)				Total (dBm/MHz)	Limit (dBm/MHz)
			Chain 0	Chain 1	Chain 2	Chain 3		
802.11 a	Low	5180	8.38	7.9	8	8.68	14.27	15
	Middle	5200	7.6	7.65	8.01	9.07	14.15	15
	High	5220	7.45	7.89	7.95	8.06	13.86	15
802.11 n20	Low	5180	8.28	8.63	8.41	8.91	14.58	15
	Middle	5200	8.05	8.37	8.71	9.46	14.7	15
	High	5220	8.35	8.16	8.49	8.46	14.39	15
802.11 n40	Low	5190	7.16	6.78	7.26	7.58	13.22	15

Note: the device is a master device. the 4 antenna maximum antenna gain are 2.0dBi, 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.

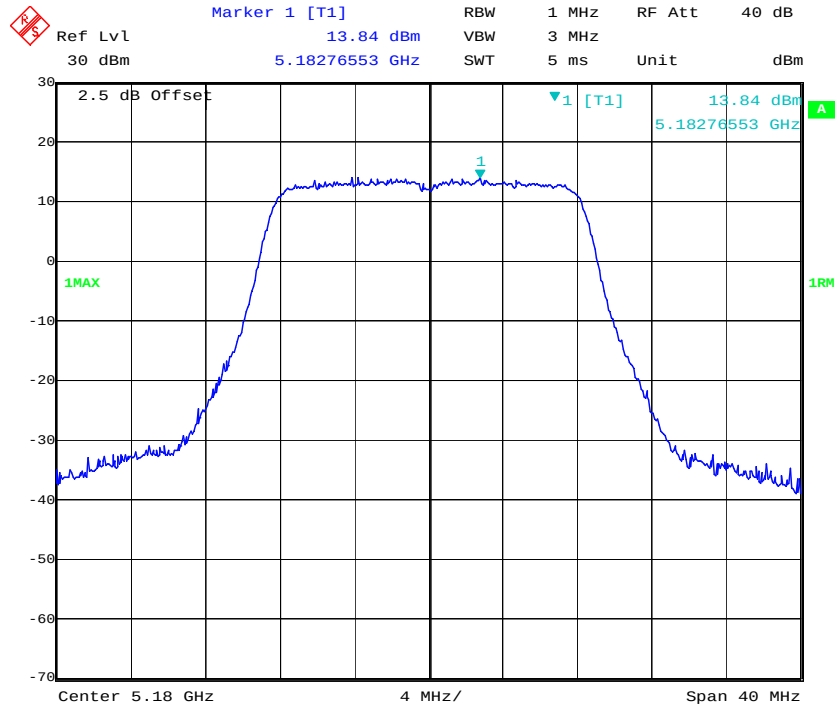
So:

Directional gain = GANT + Array Gain = $2 + 10 \cdot \log(4) = 8$ dBi > 6dBi

Power density Limits = $17 - (8 - 6) = 15$ dBm

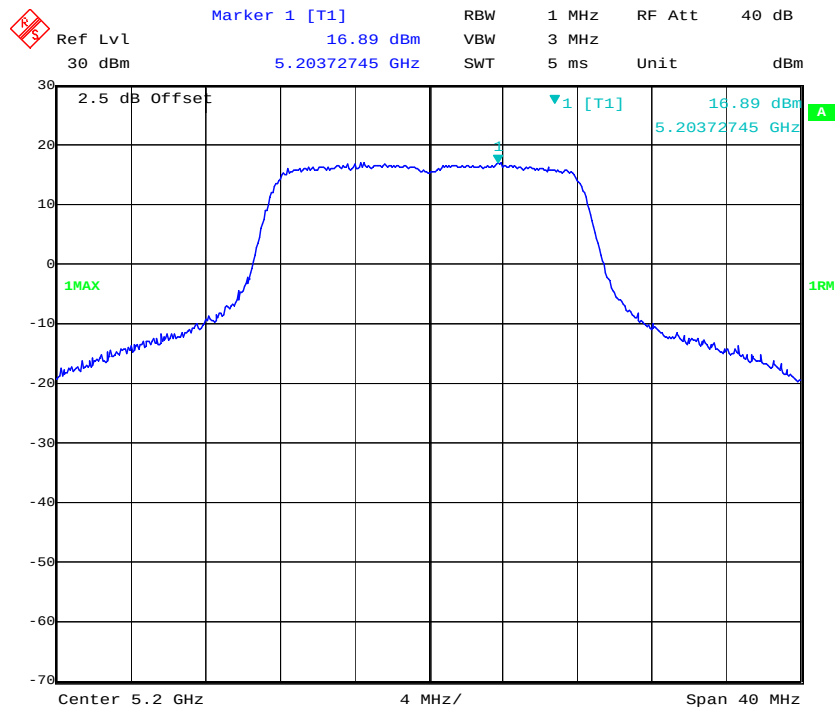
5150MHz-5250MHz:
SISO:

802.11a Low Channel – Chain0



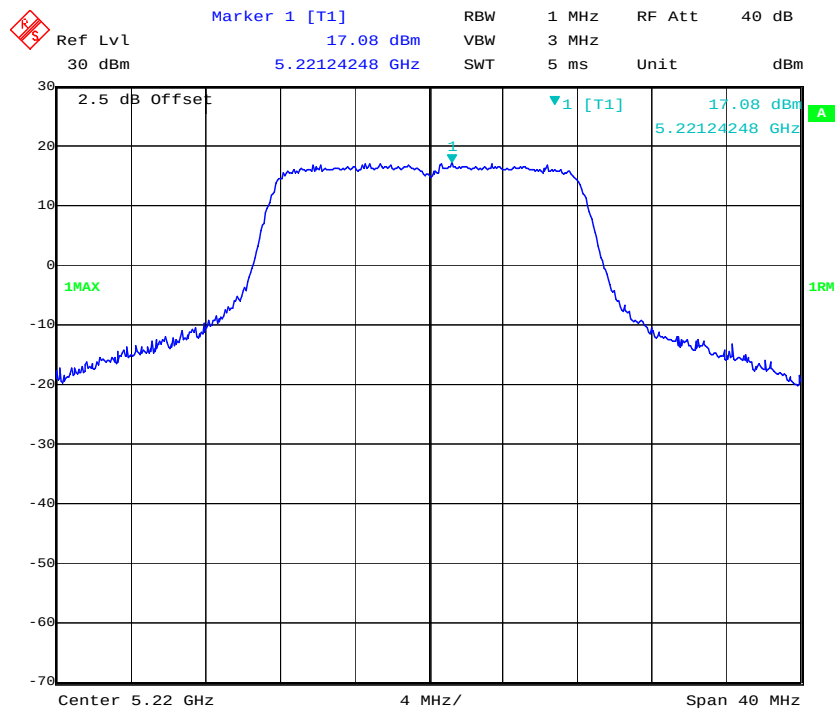
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802.11a Middle Channel – Chain0



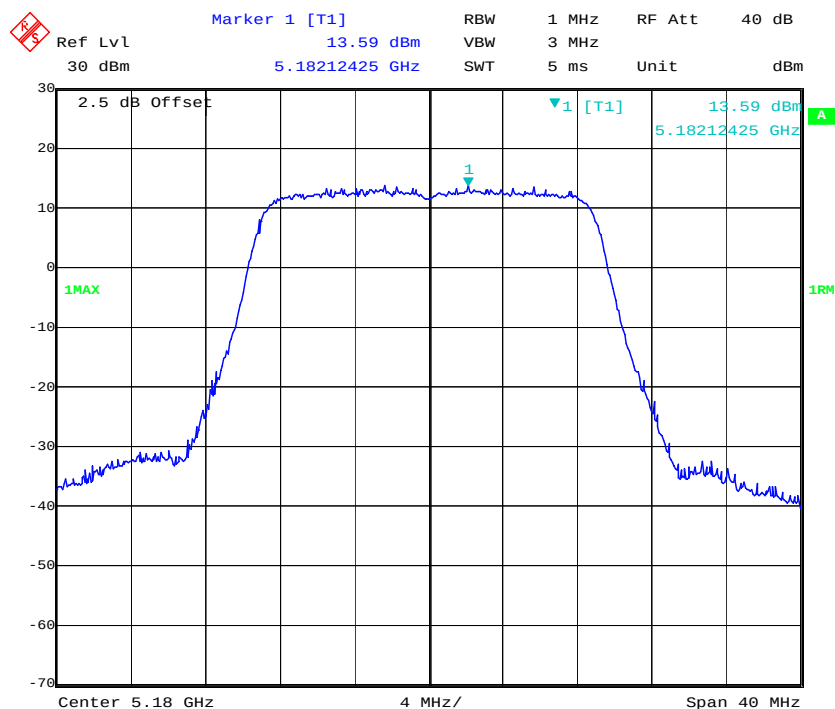
Date: 10.JAN.2017 13:59:00

802.11a High Channel – Chain0



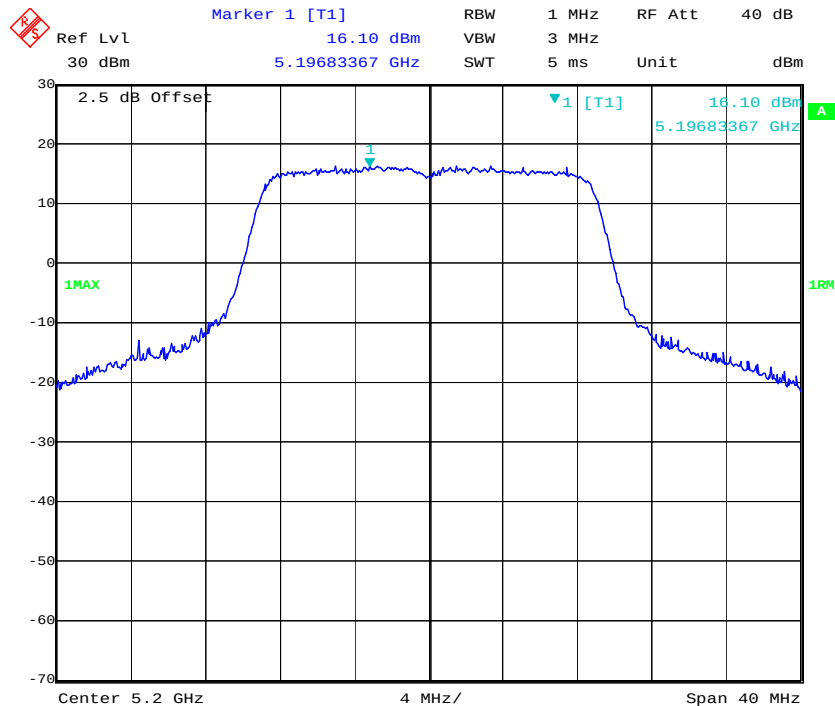
Date: 10.JAN.2017 13:59:31

802.11n ht20 Low Channel – Chain0



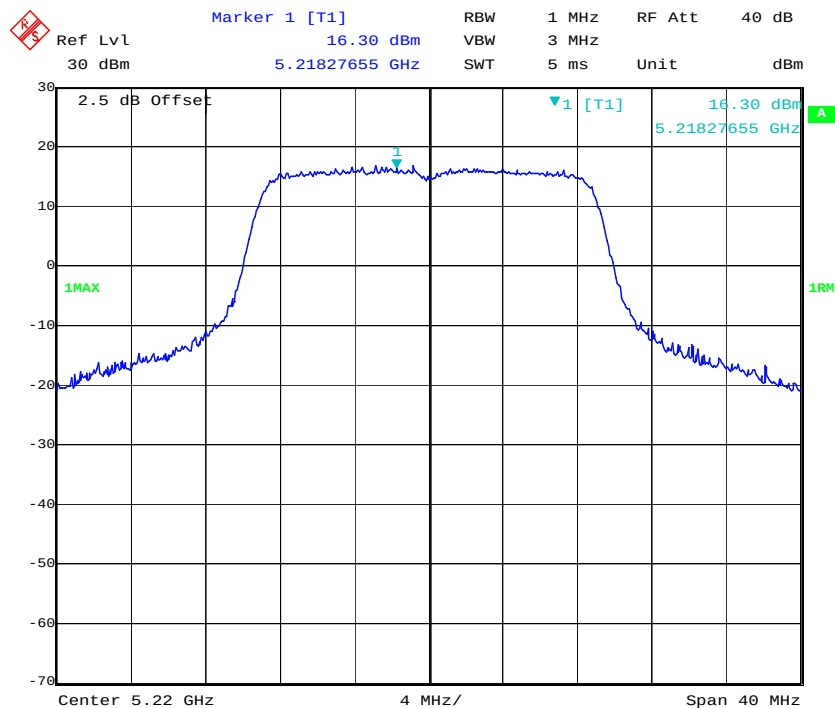
Date: 4.NOV.2016 17:04:27

802.11n ht20 Middle Channel – Chain0



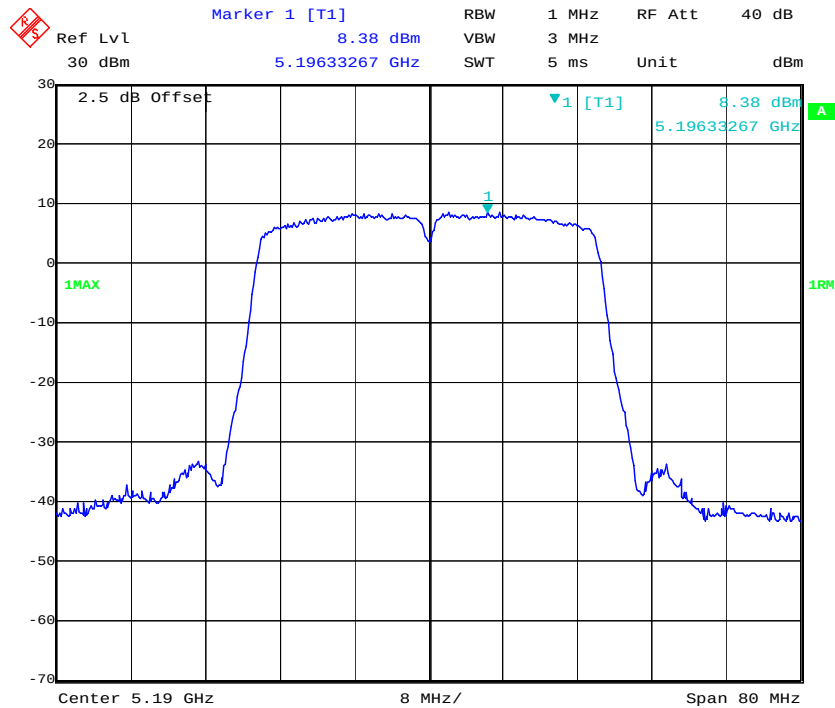
Date: 10.JAN.2017 14:13:44

802.11n ht20 High Channel – Chain0

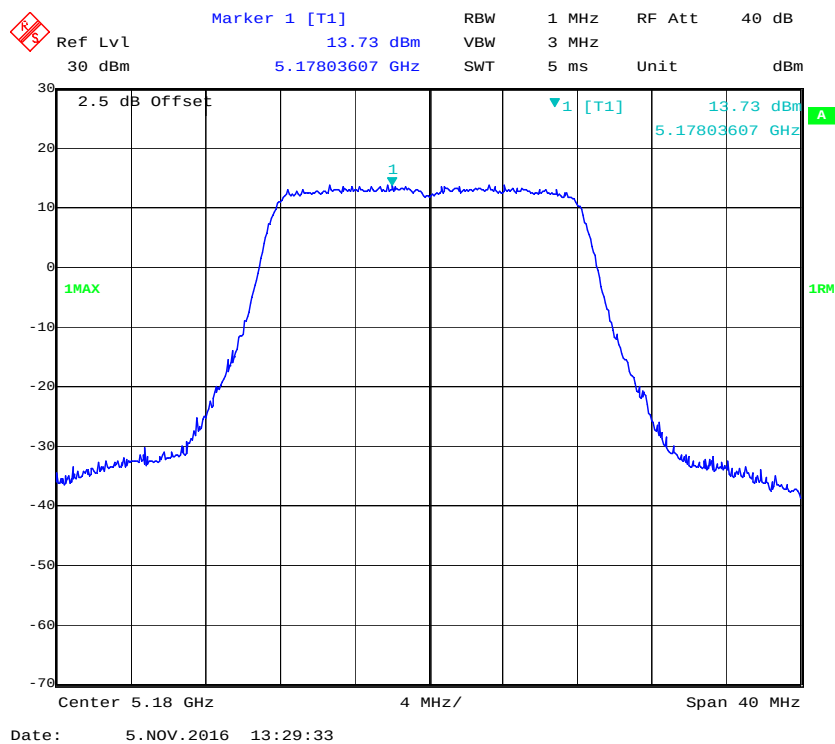


Date: 10.JAN.2017 14:13:20

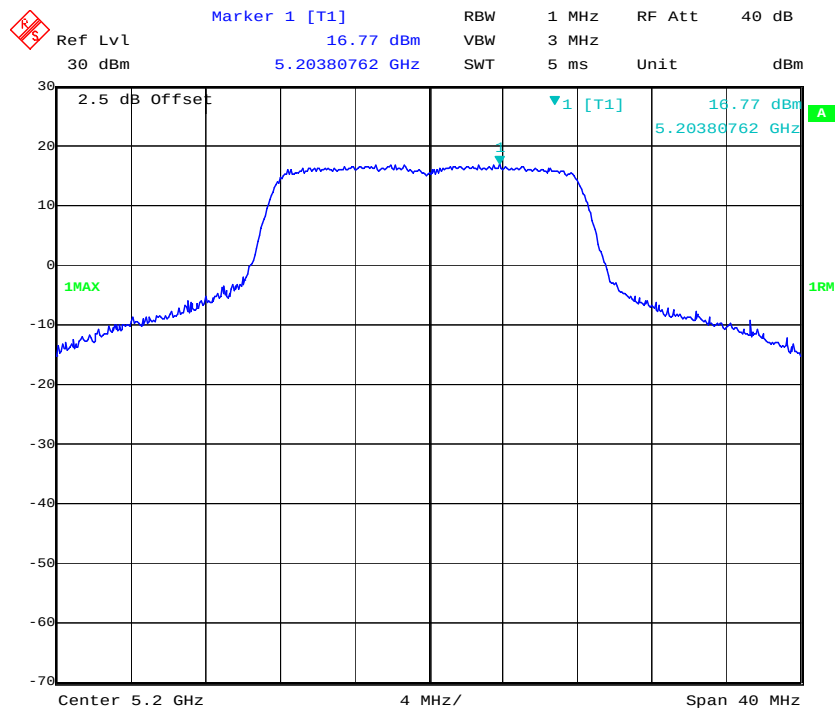
802.11n ht40 Low Channel – Chain0



802.11a Low Channel – Chain1

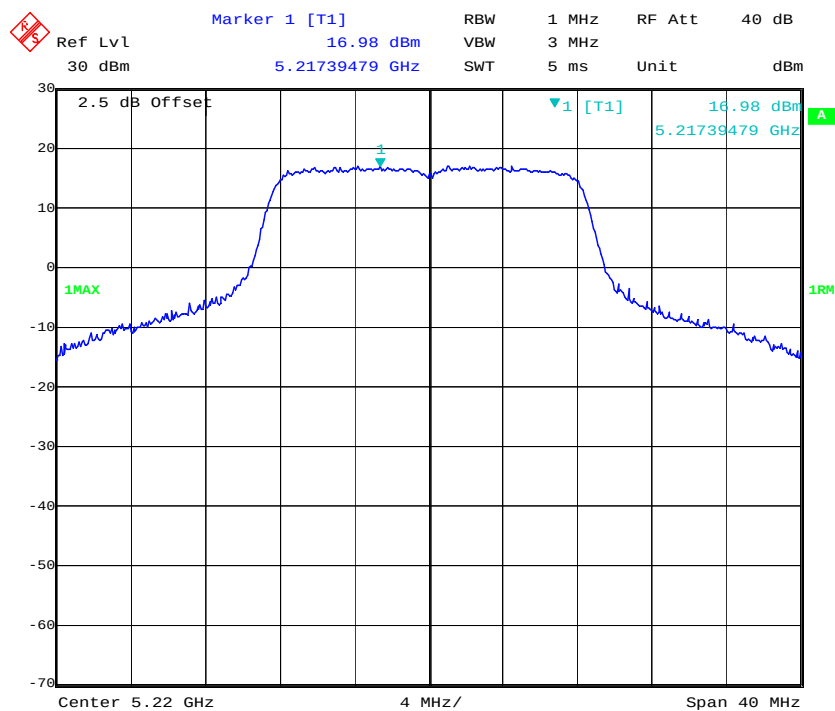


802.11a Middle Channel – Chain1



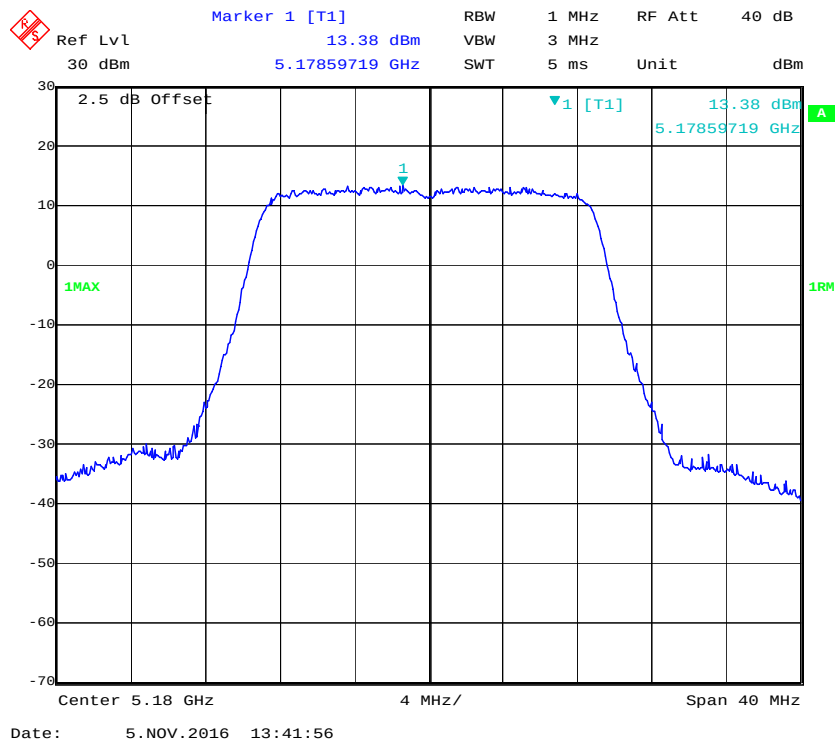
Date: 10.JAN.2017 15:30:20

802.11a High Channel – Chain1

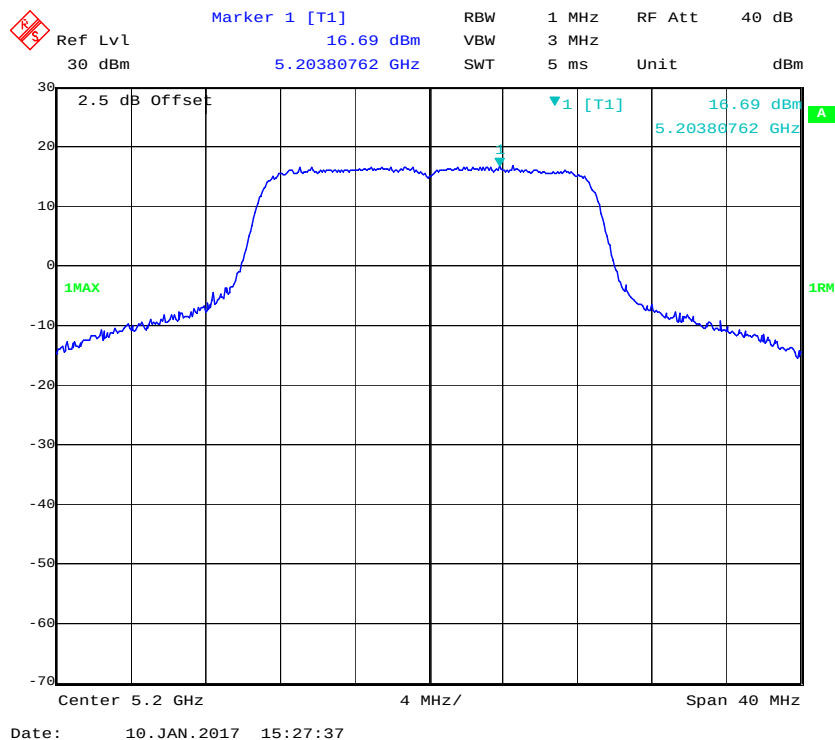


Date: 10.JAN.2017 15:29:48

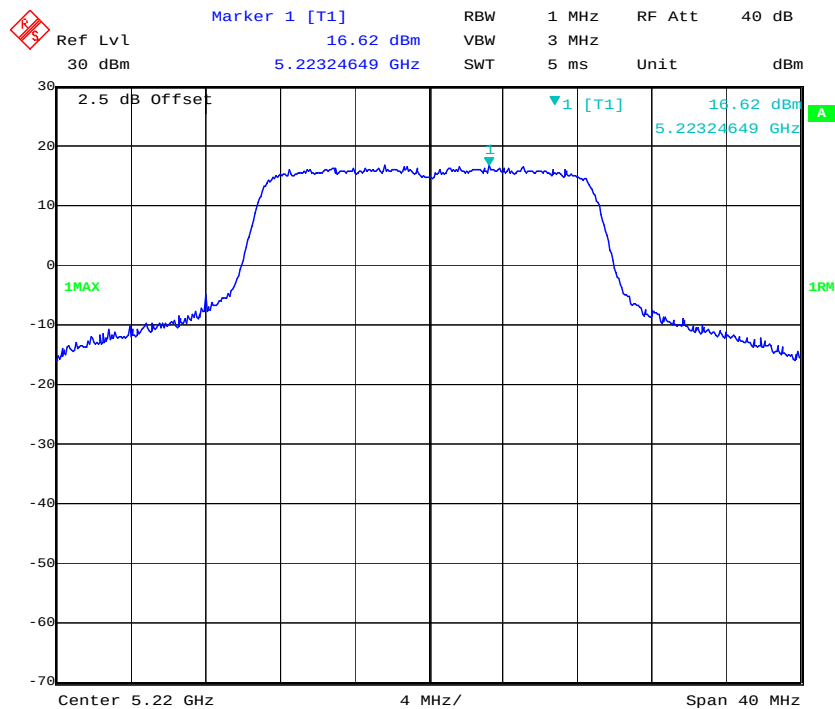
802.11n ht20 Low Channel – Chain1



802.11n ht20 Middle Channel – Chain1

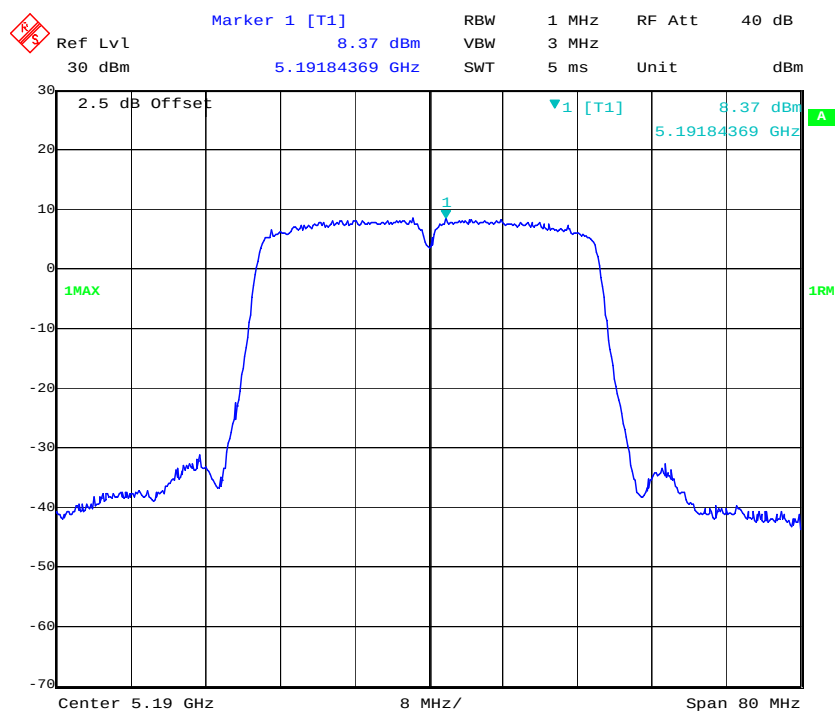


802.11n ht20 High Channel – Chain1



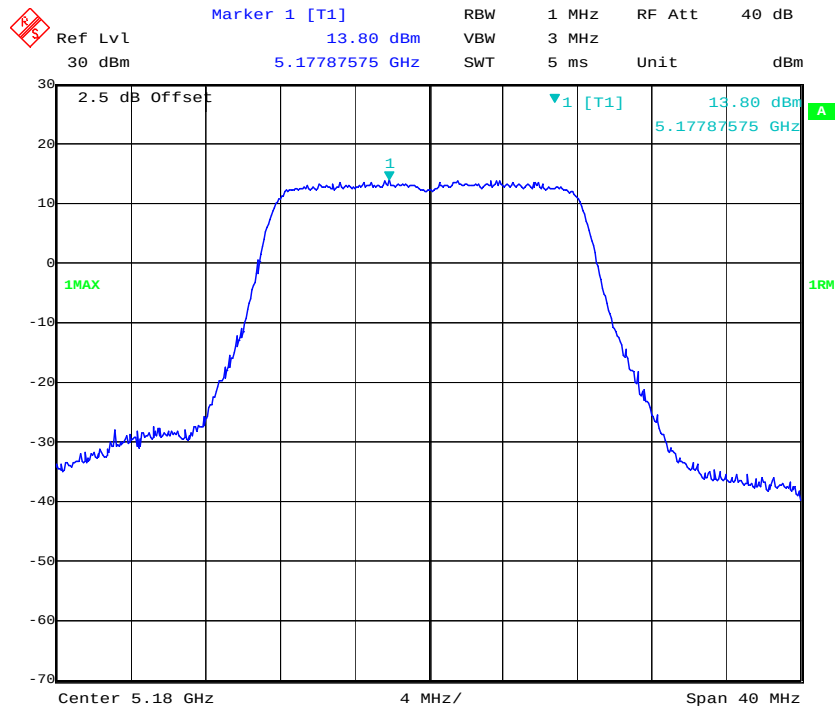
Date: 10.JAN.2017 15:28:13

802.11n ht40 Low Channel – Chain1

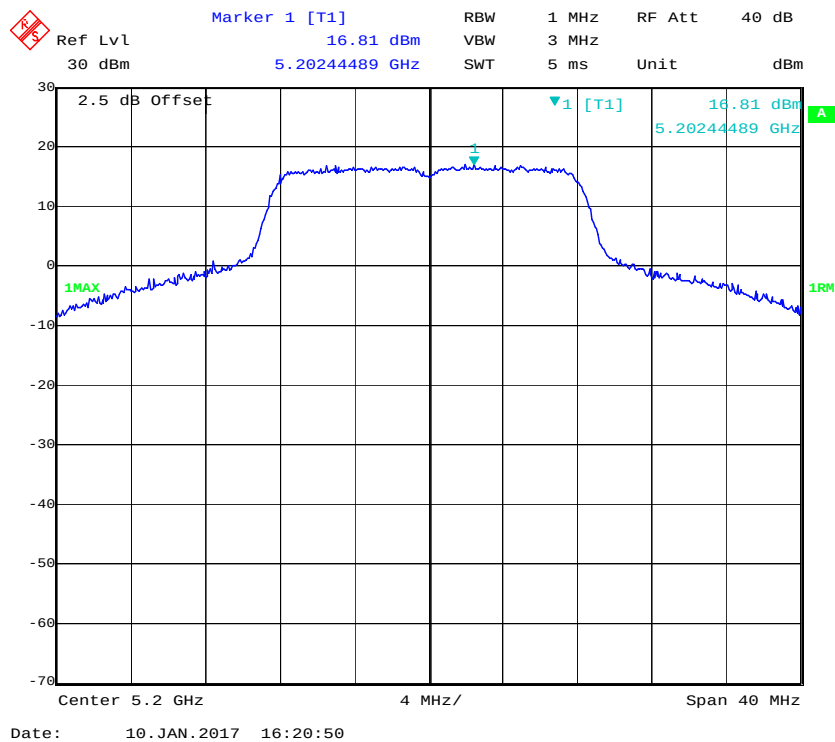


Date: 5.NOV.2016 13:47:15

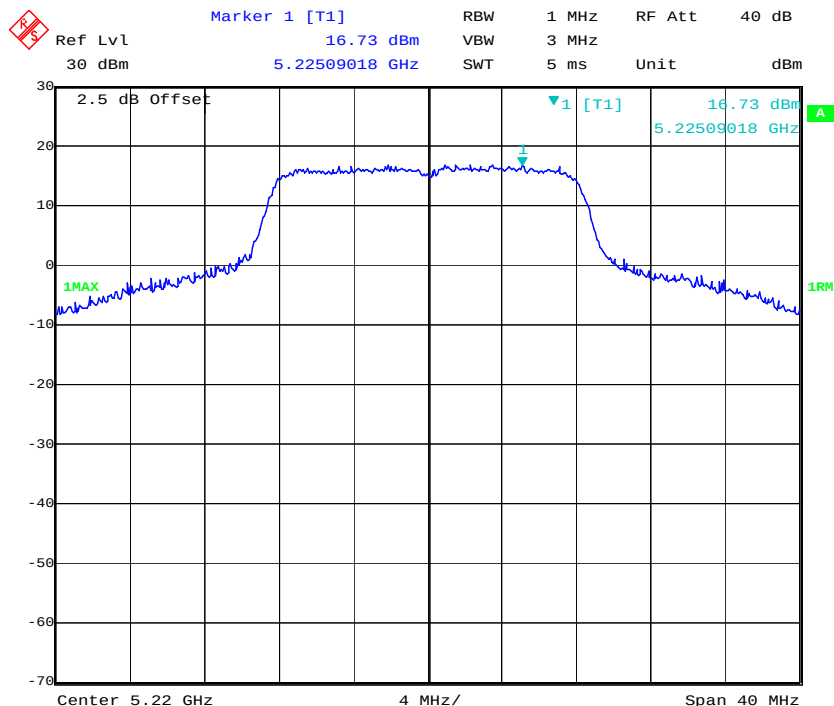
802.11a Low Channel – Chain2



802.11a Middle Channel – Chain2

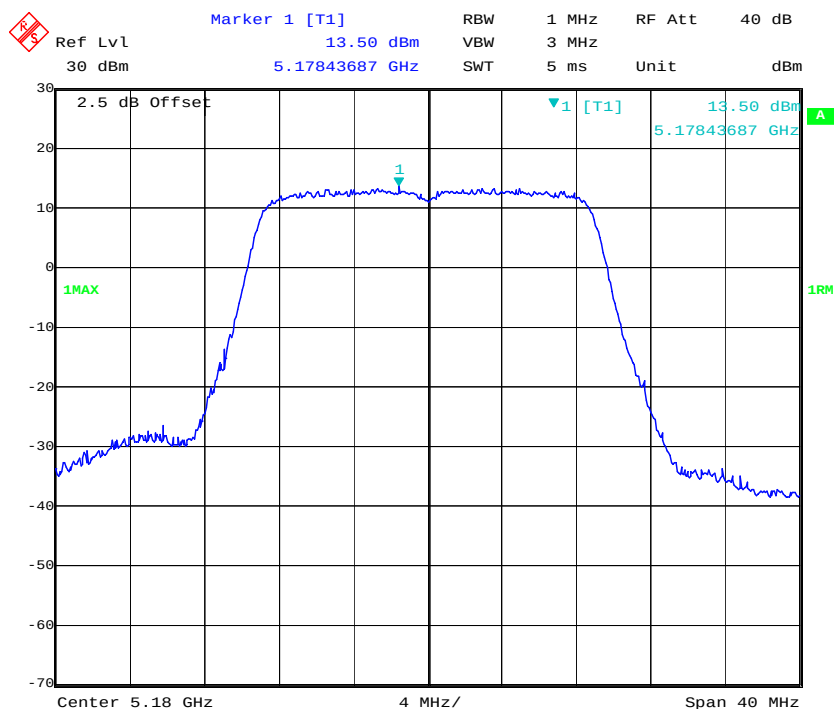


802.11a High Channel – Chain2



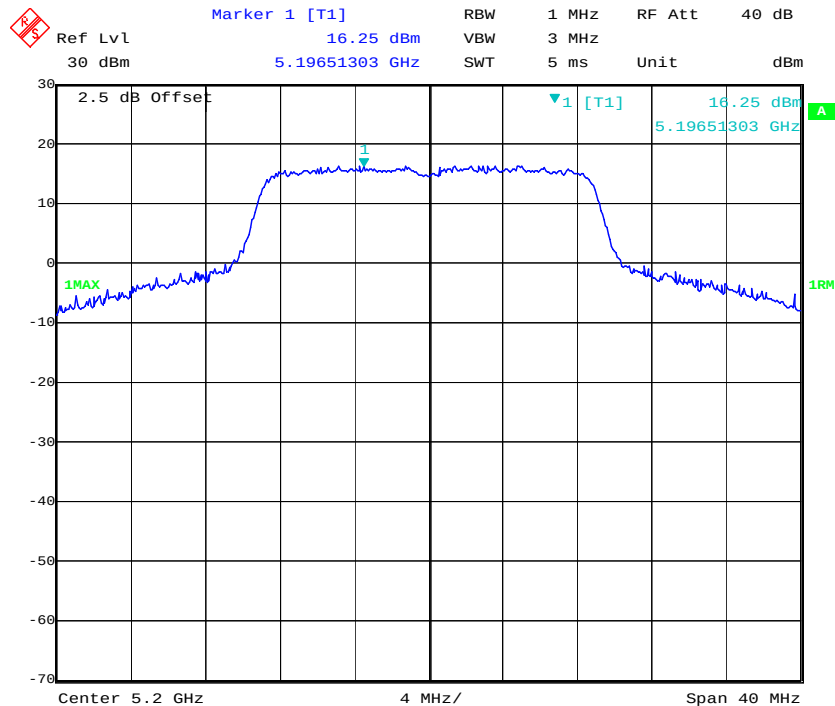
Date: 10.JAN.2017 16:22:16

802.11n ht20 Low Channel – Chain2

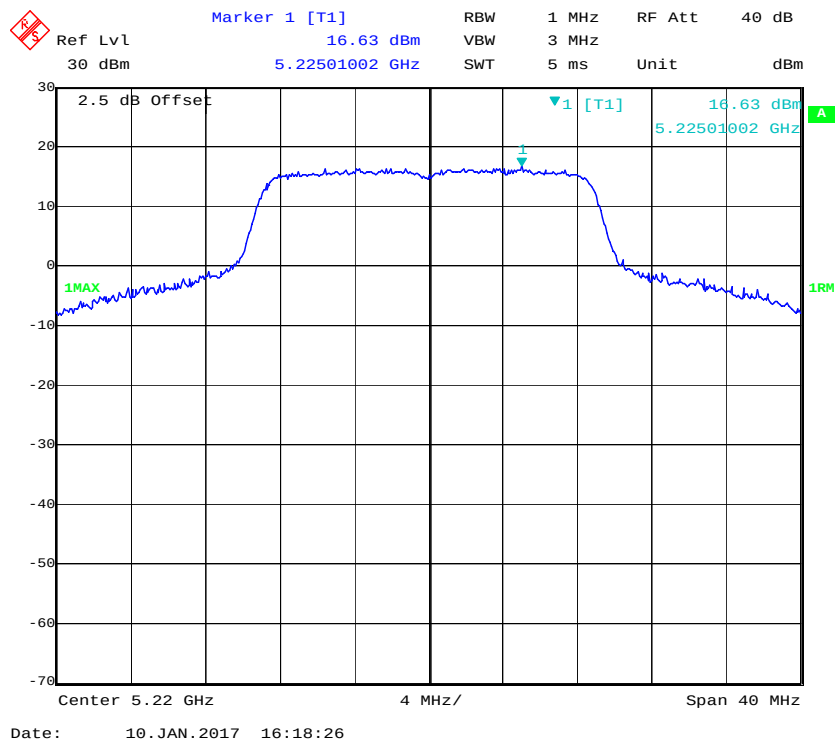


Date: 5.NOV.2016 14:35:25

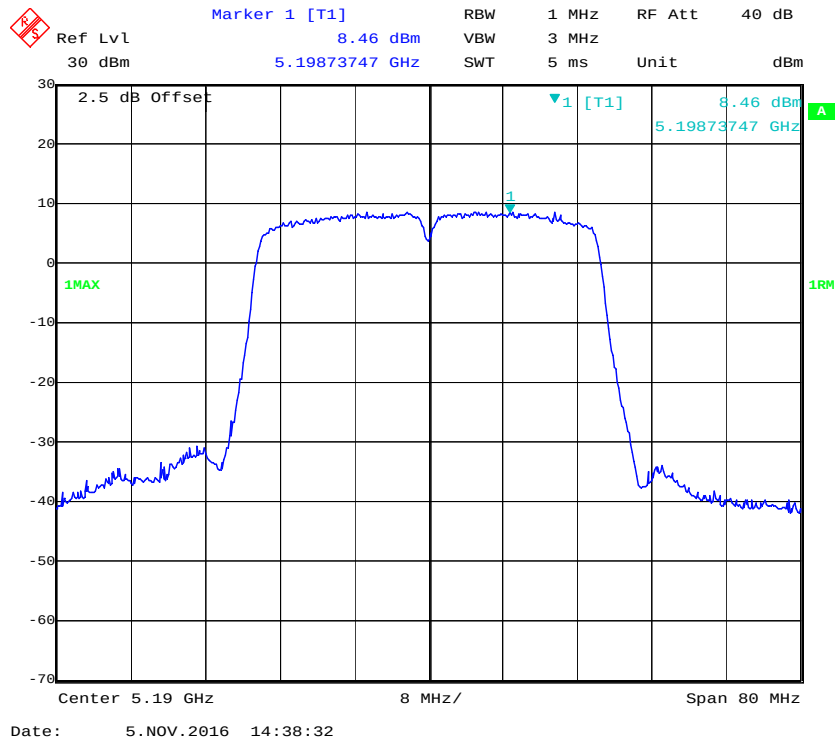
802.11n ht20 Middle Channel – Chain2



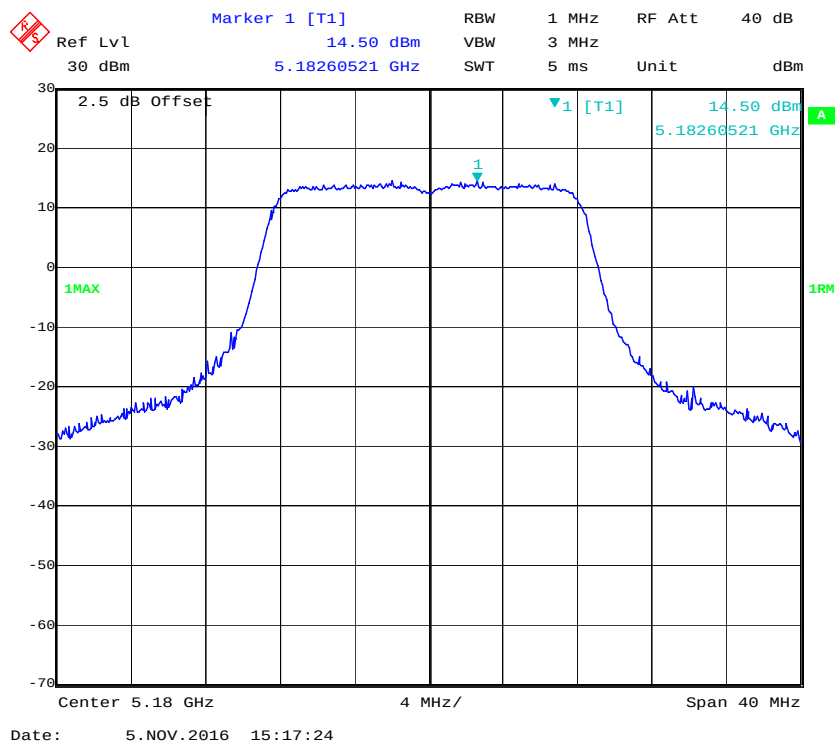
802.11n ht20 High Channel – Chain2



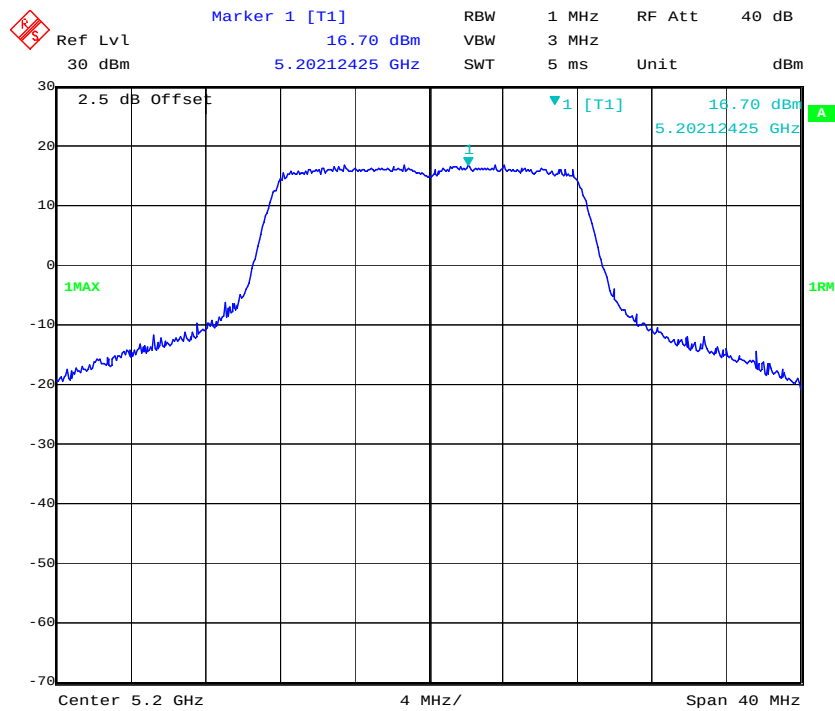
802.11n ht40 Low Channel – Chain2



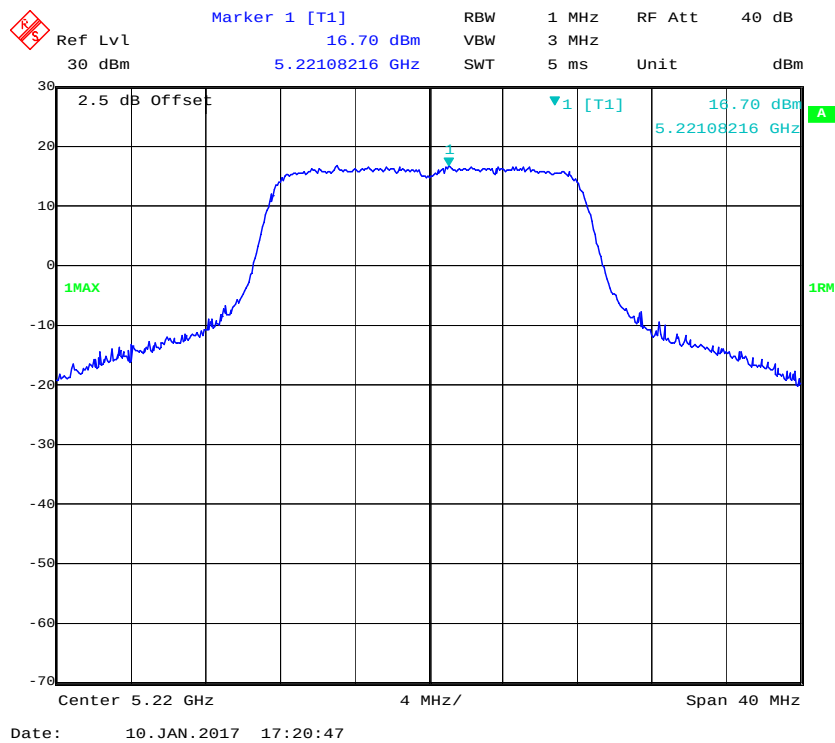
802.11a Low Channel – Chain3



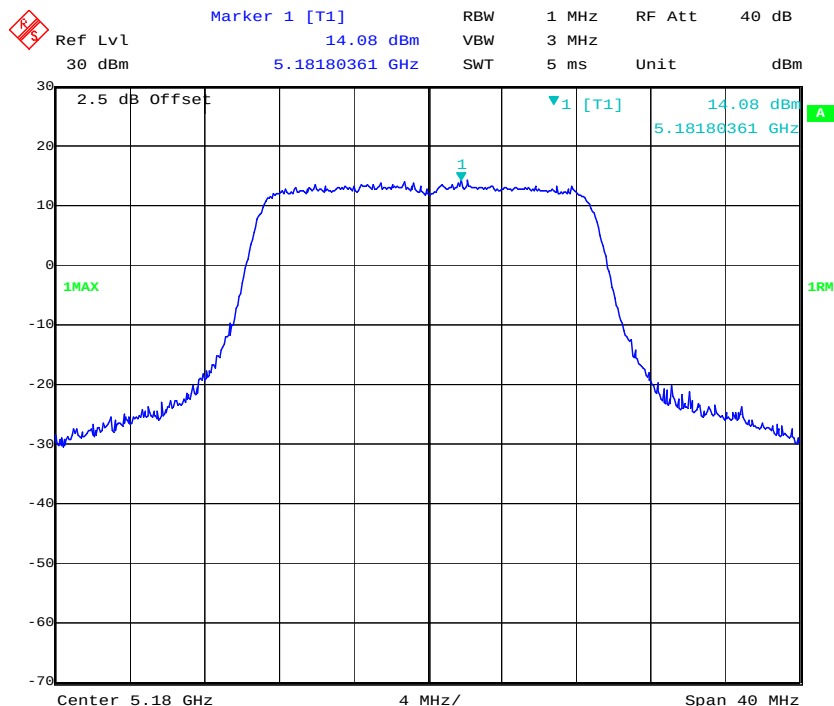
802.11a Middle Channel – Chain3



802.11a High Channel – Chain3

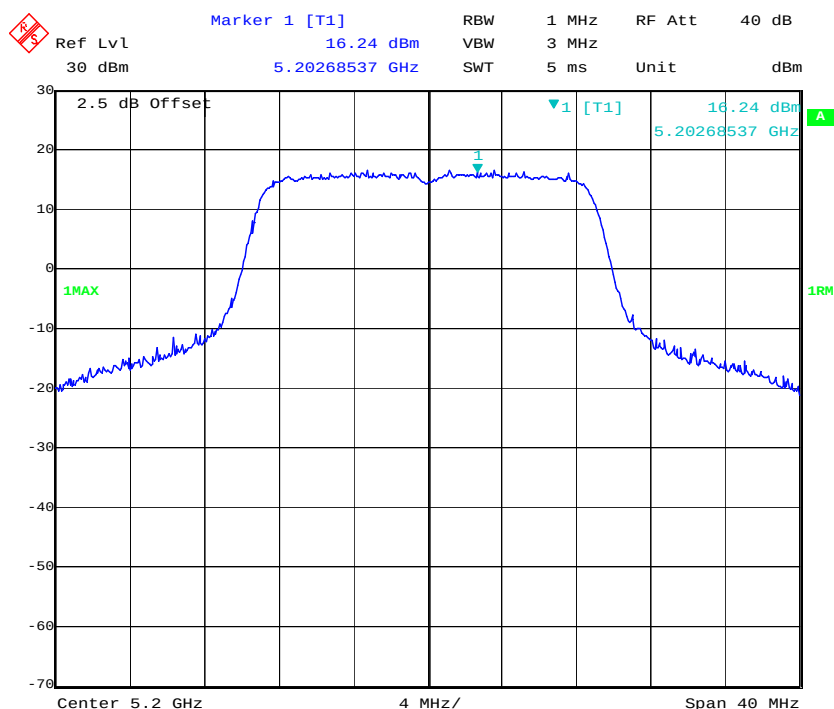


802.11n ht20 Low Channel – Chain3



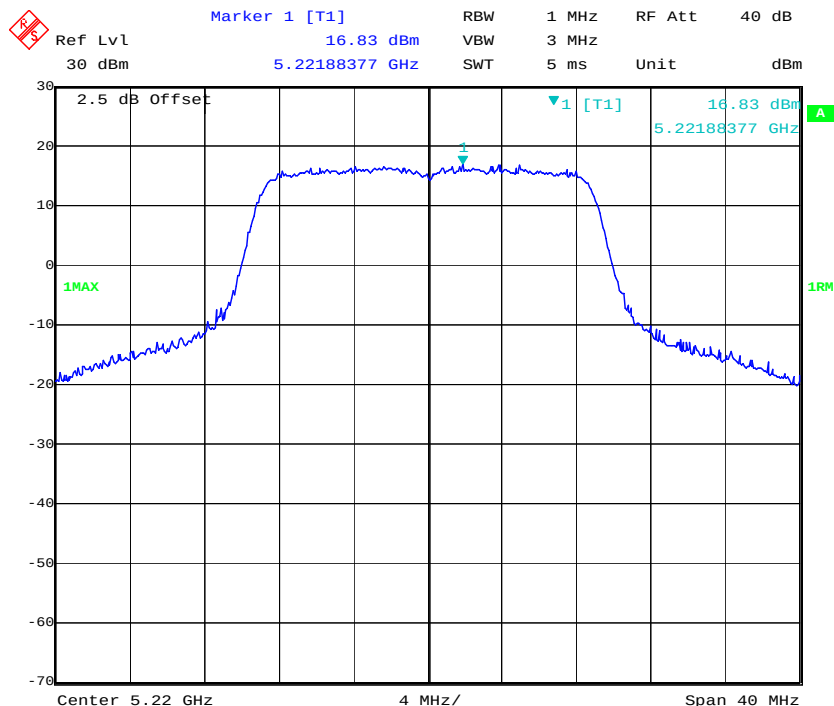
Date: 5.NOV.2016 15:28:05

802.11n ht20 Middle Channel – Chain3



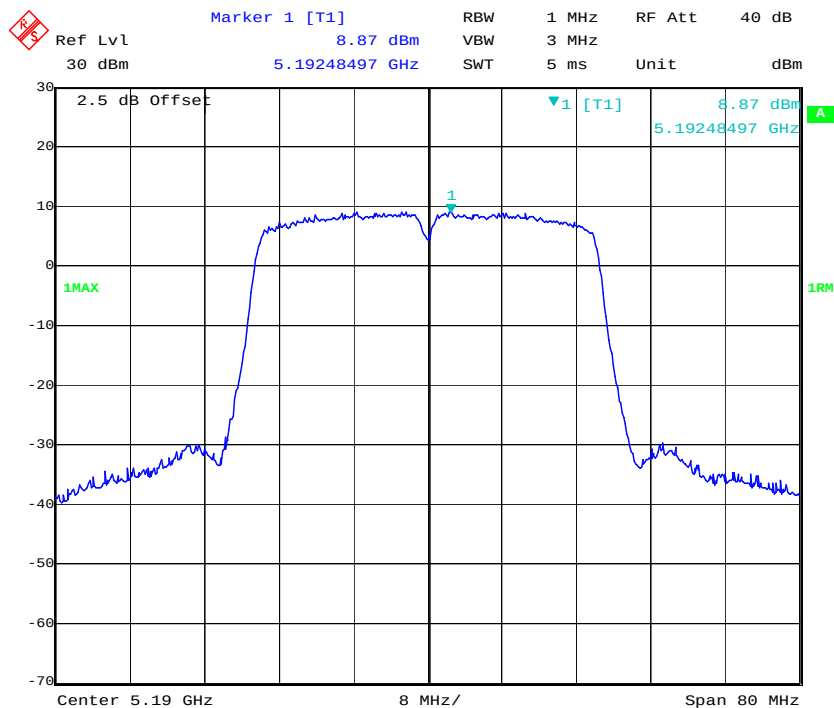
Date: 10.JAN.2017 17:19:58

802.11n ht20 High Channel – Chain3



Date: 10.JAN.2017 17:19:36

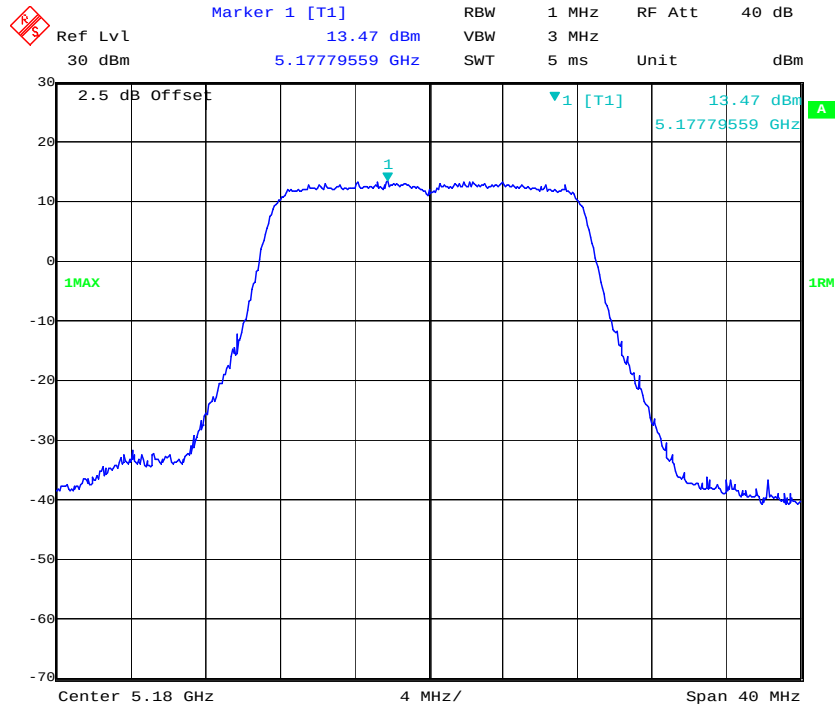
802.11n ht40 Low Channel – Chain3



Date: 5.NOV.2016 15:30:20

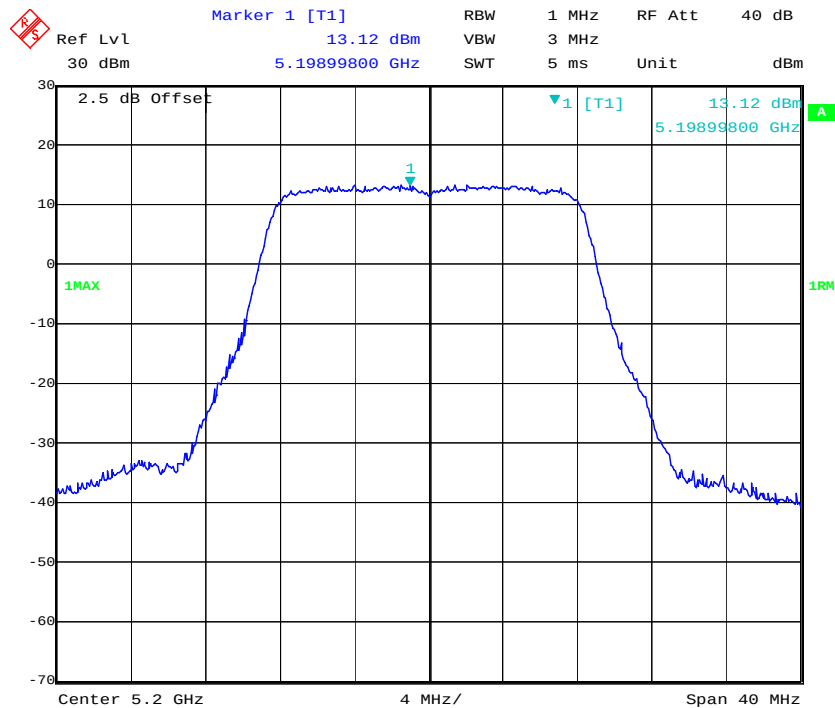
MIMO-2TX:

802.11a Low Channel – Chain0



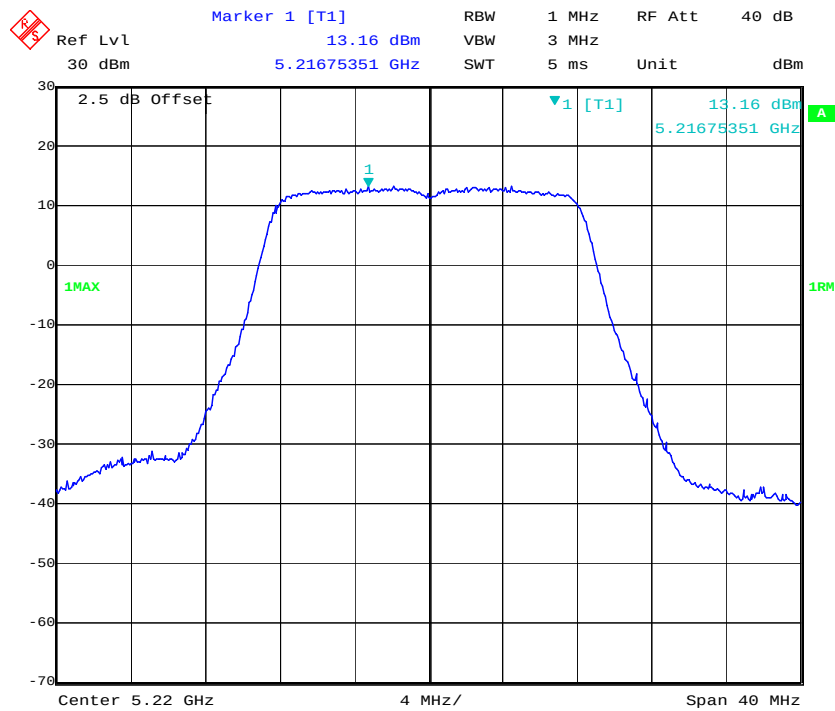
Date: 8.NOV.2016 11:02:16

802.11a Middle Channel – Chain0

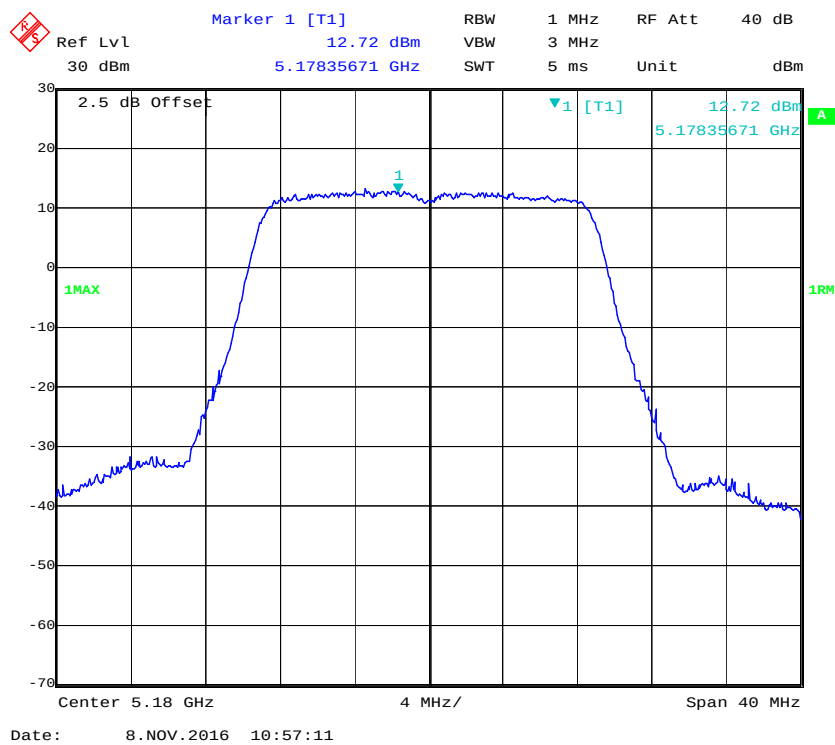


Date: 8.NOV.2016 11:00:46

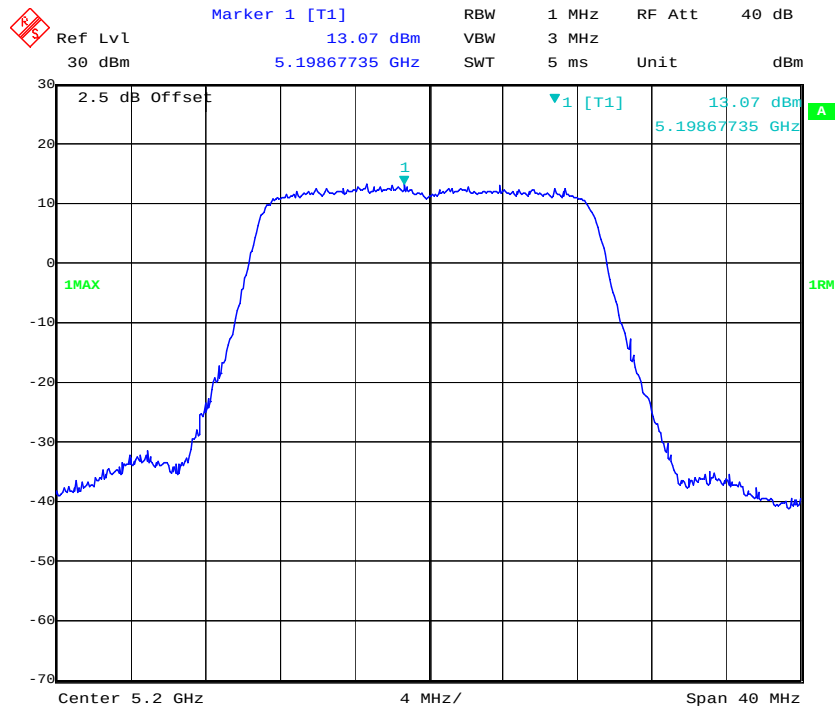
802.11a High Channel – Chain0



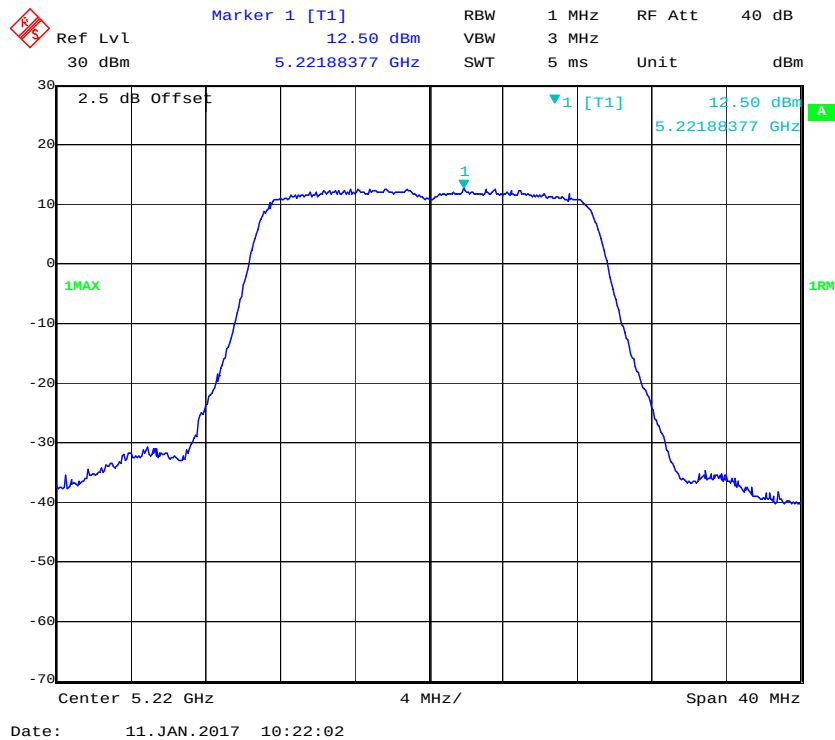
802.11n ht20 Low Channel – Chain0



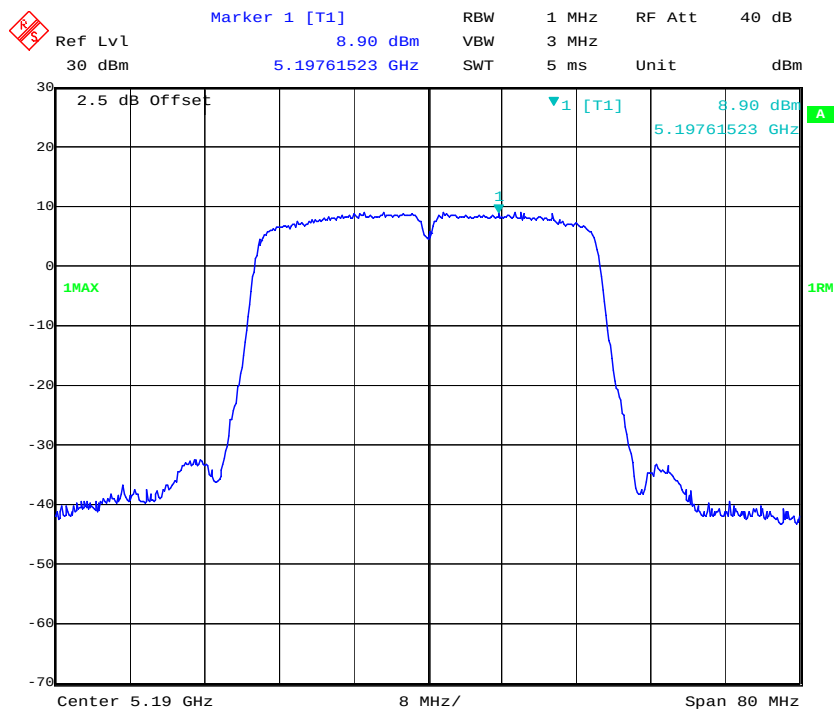
802.11n ht20 Middle Channel – Chain0



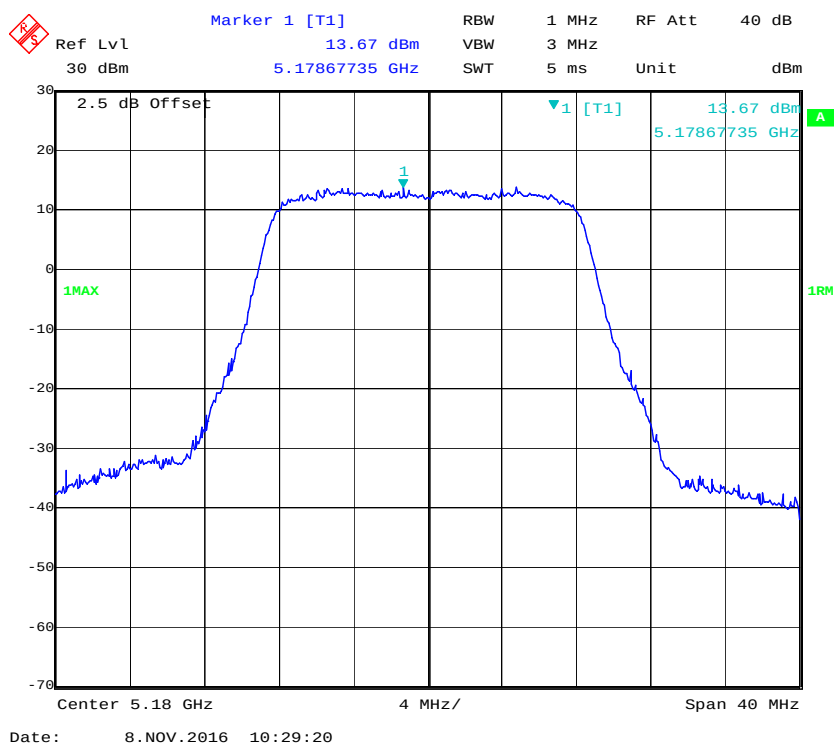
802.11n ht20 High Channel – Chain0



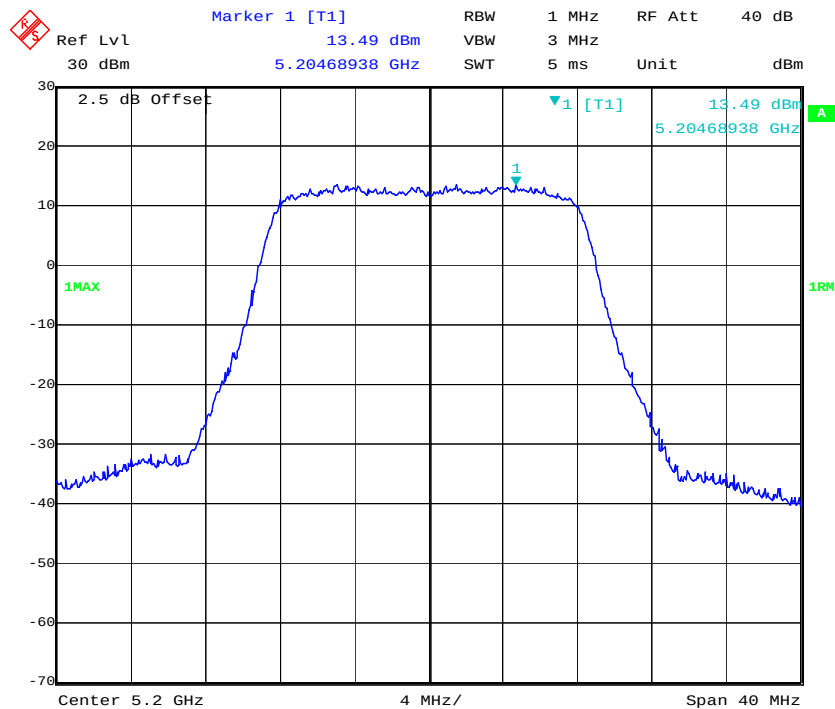
802.11n ht40 Low Channel – Chain0



802.11a Low Channel – Chain1

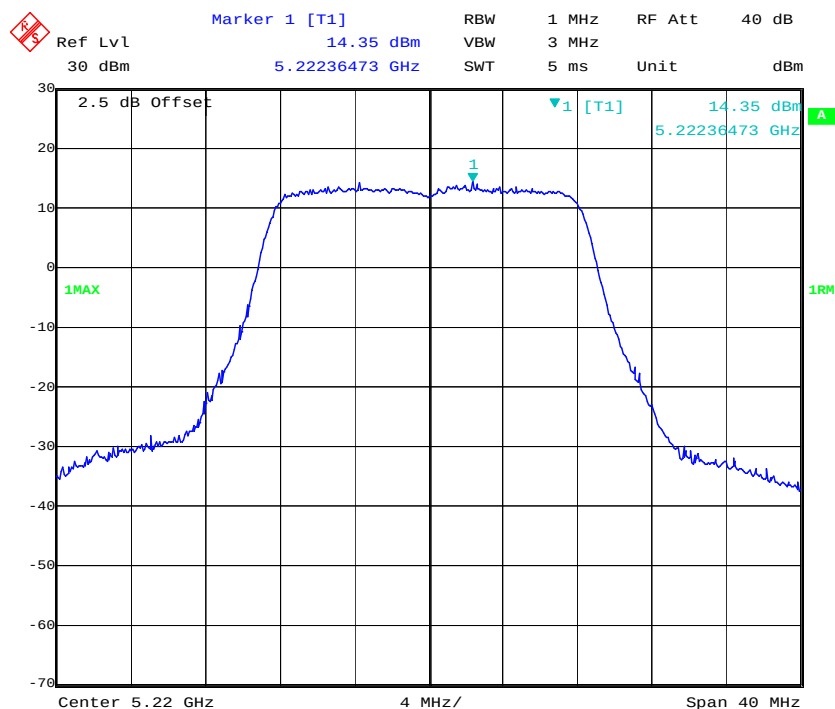


802.11a Middle Channel – Chain1



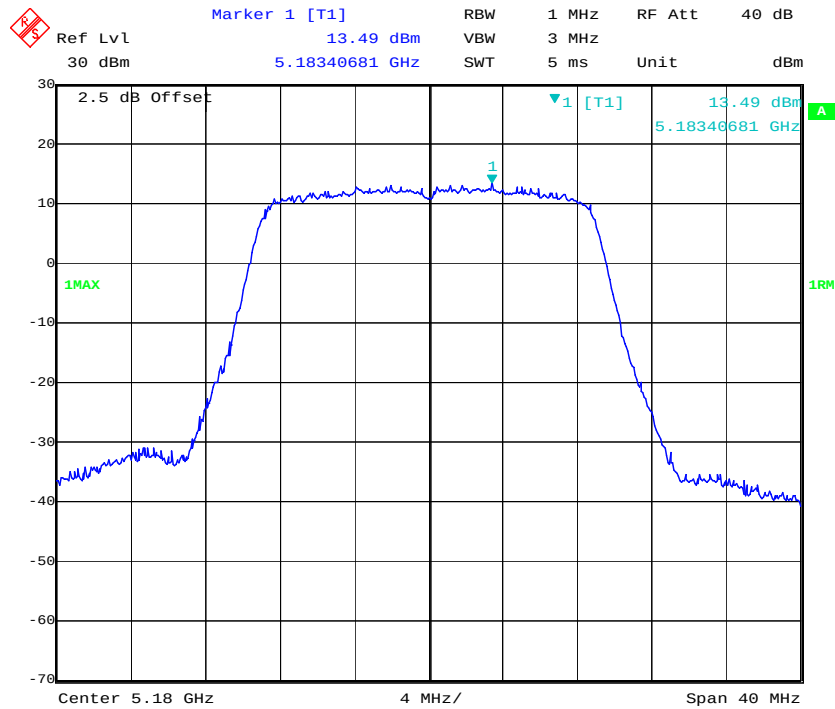
Date: 8.NOV.2016 10:32:01

802.11a High Channel – Chain1



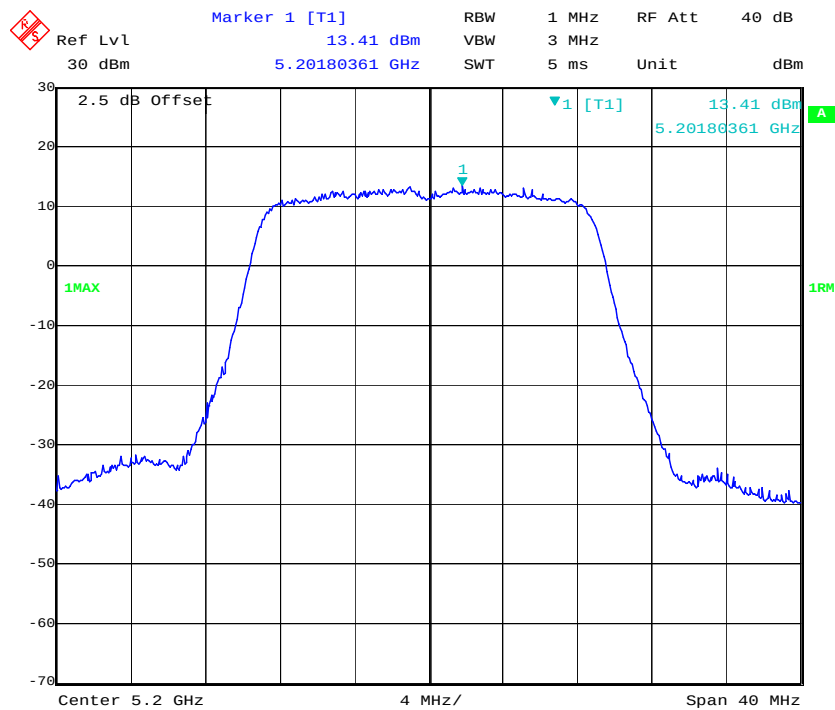
Date: 11.JAN.2017 10:19:02

802.11n ht20 Low Channel – Chain1



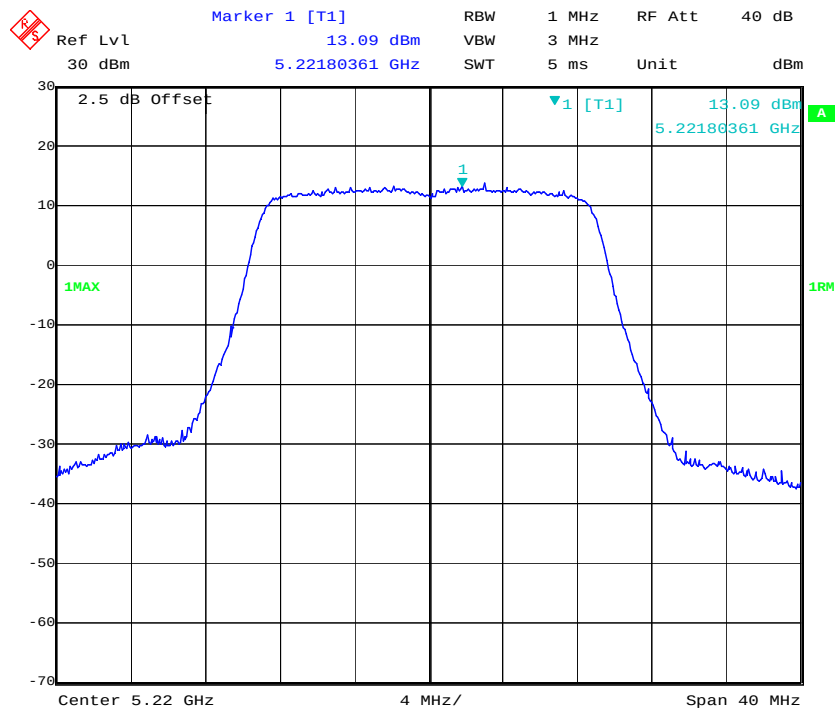
Date: 8.NOV.2016 10:55:00

802.11n ht20 Middle Channel – Chain1



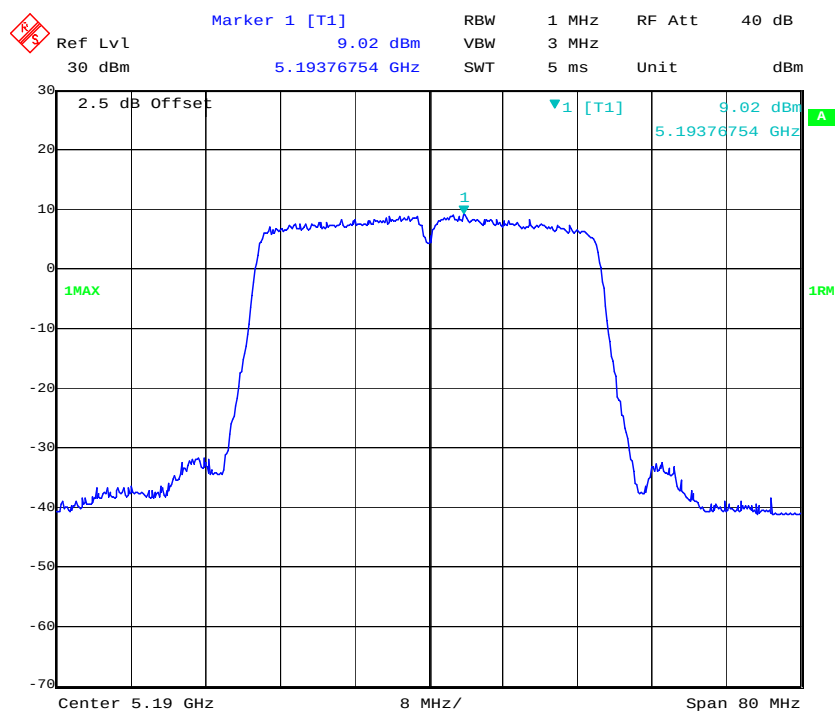
Date: 8.NOV.2016 10:53:13

802.11n ht20 High Channel – Chain1



Date: 11.JAN.2017 10:18:18

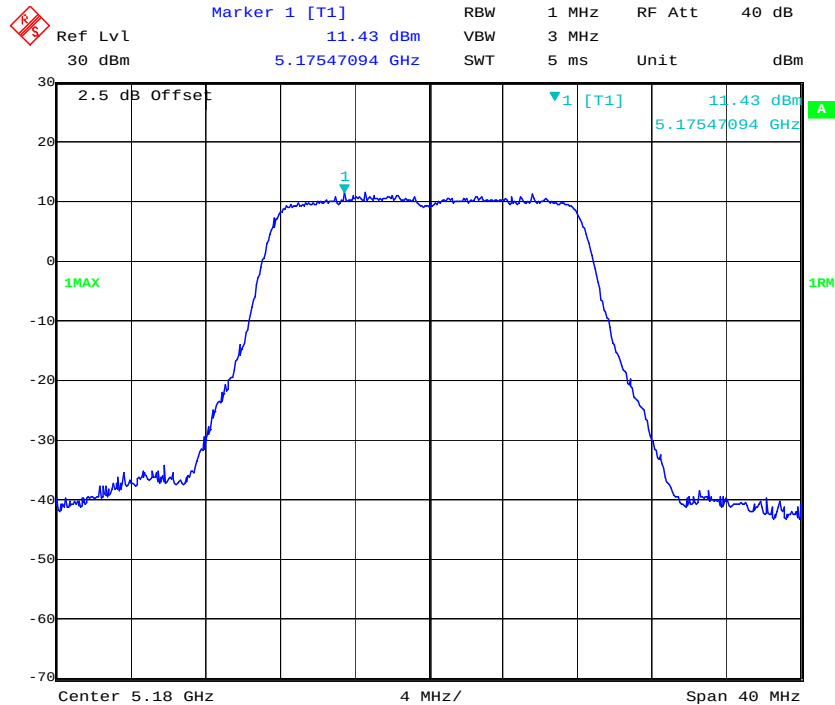
802.11n ht40 Low Channel – Chain1



Date: 8.NOV.2016 10:23:20

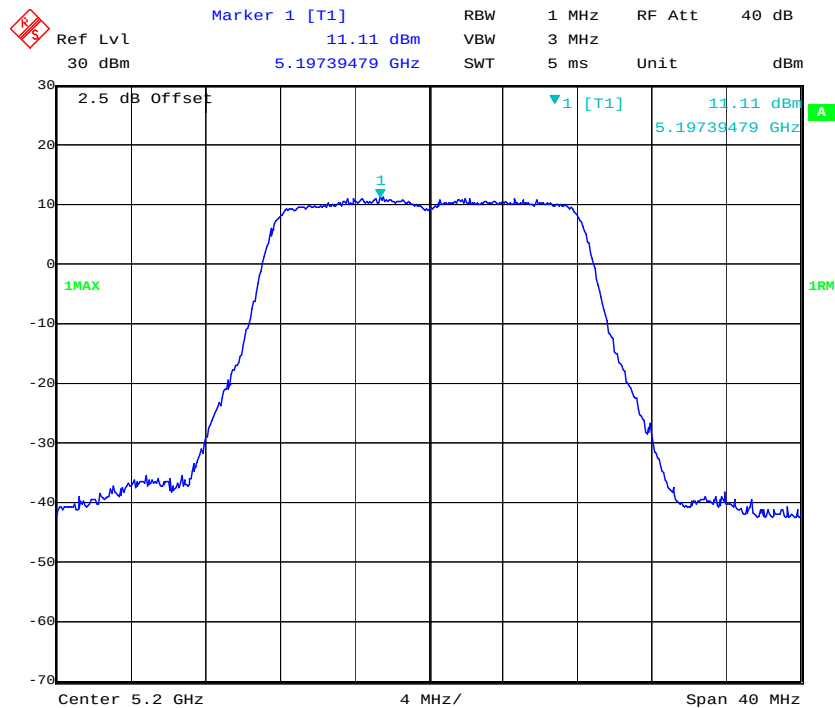
MIMO-3TX:

802.11a Low Channel – Chain0



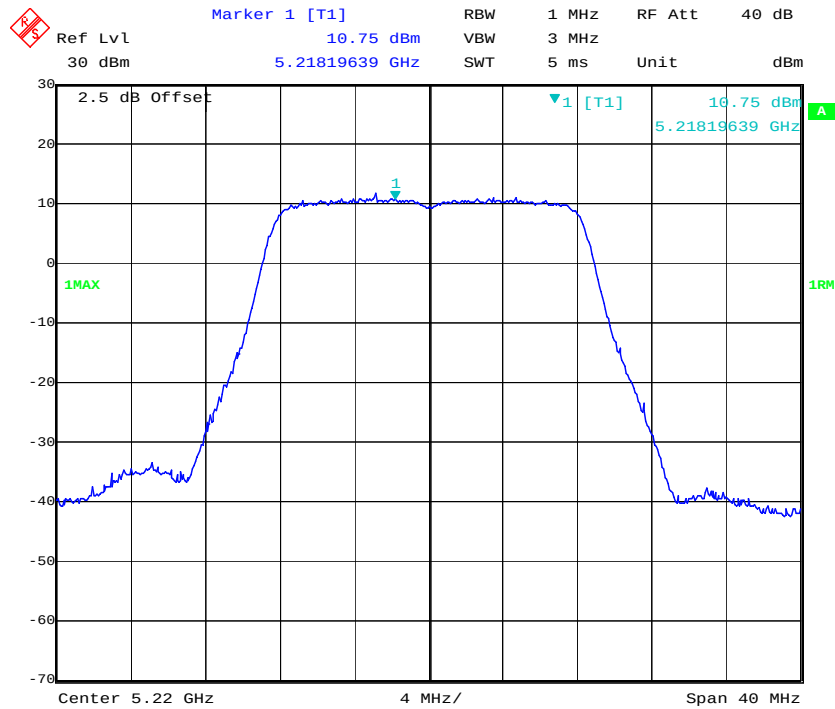
Date: 8.NOV.2016 14:10:42

802.11a Middle Channel – Chain0

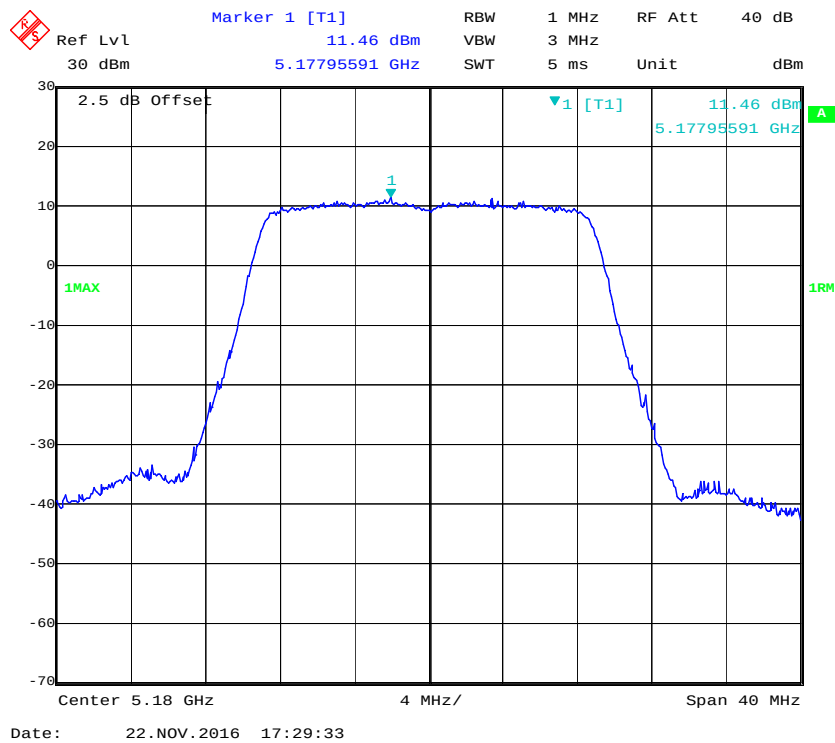


Date: 8.NOV.2016 14:11:32

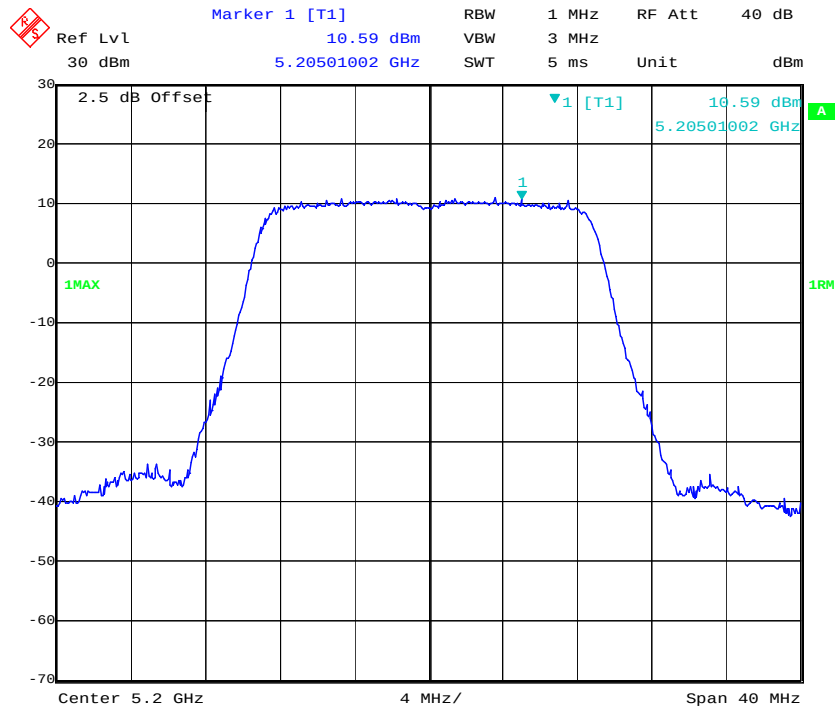
802.11a High Channel – Chain0



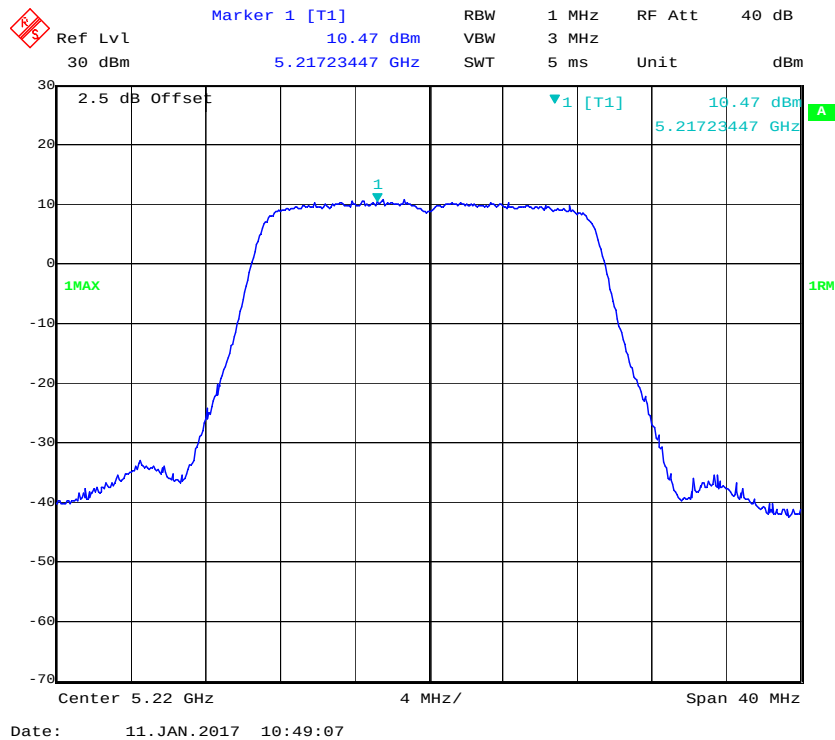
802.11n ht20 Low Channel – Chain0



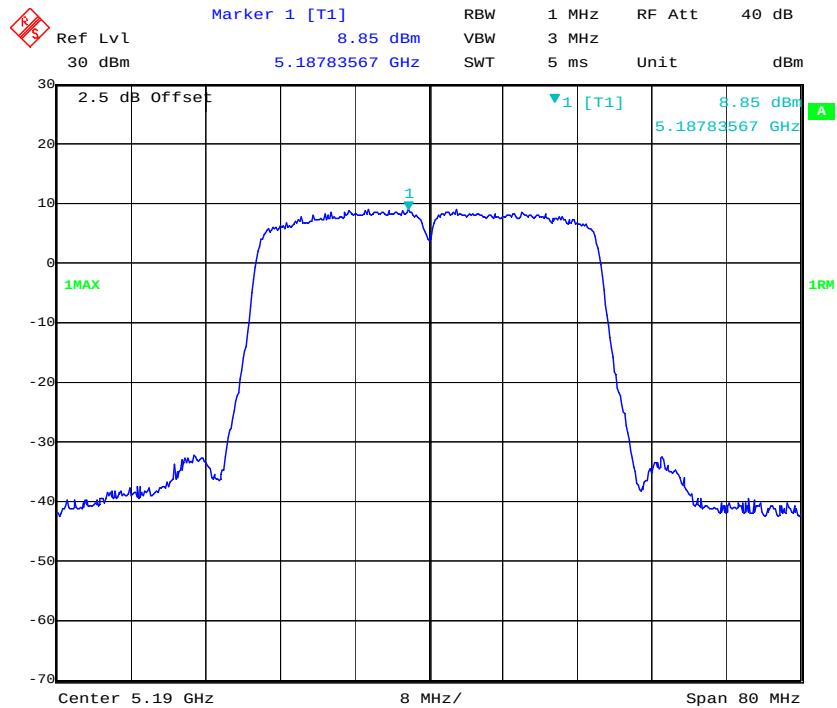
802.11n ht20 Middle Channel – Chain0



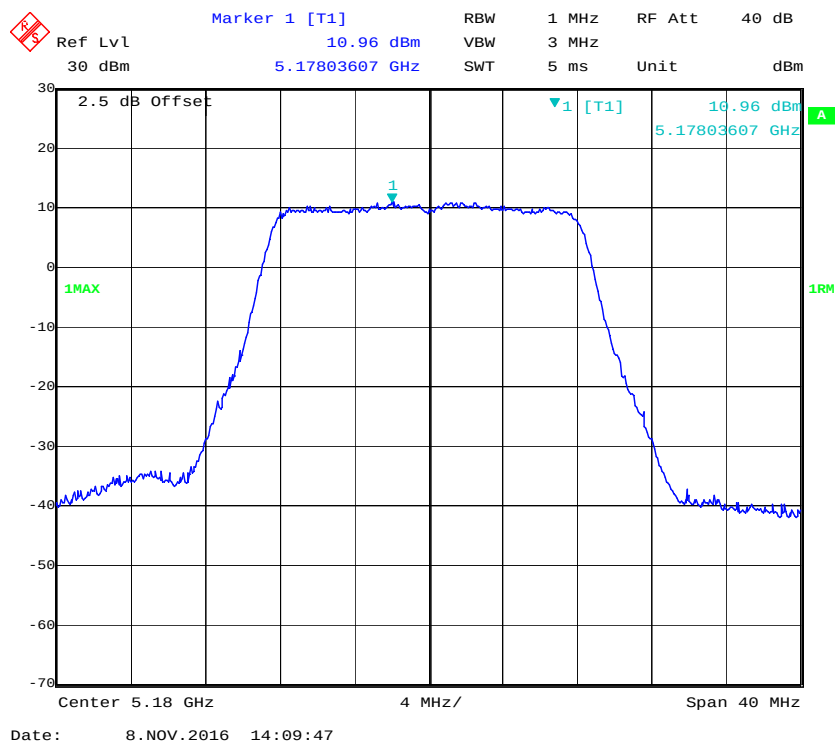
802.11n ht20 High Channel – Chain0



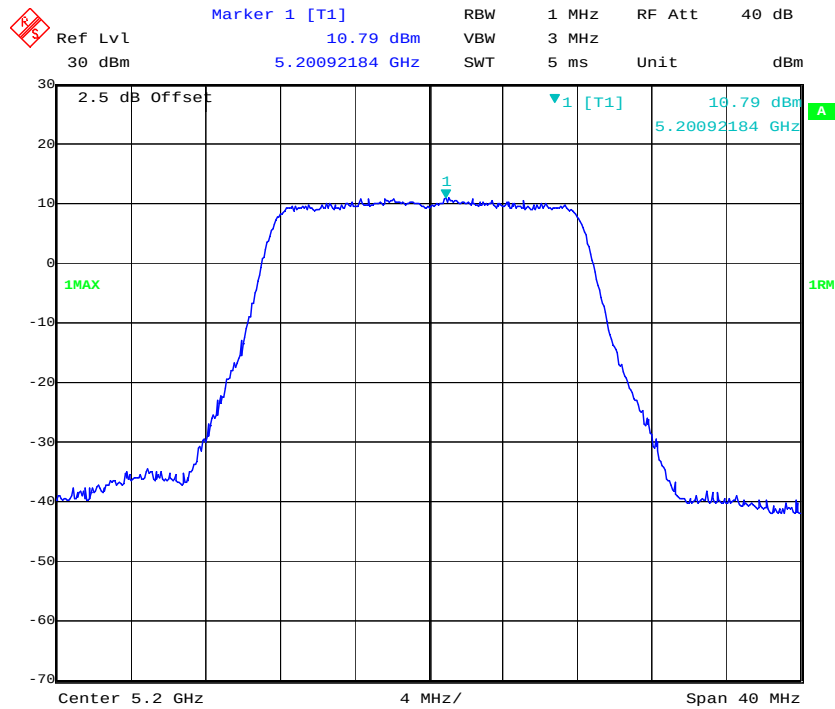
802.11n ht40 Low Channel – Chain0



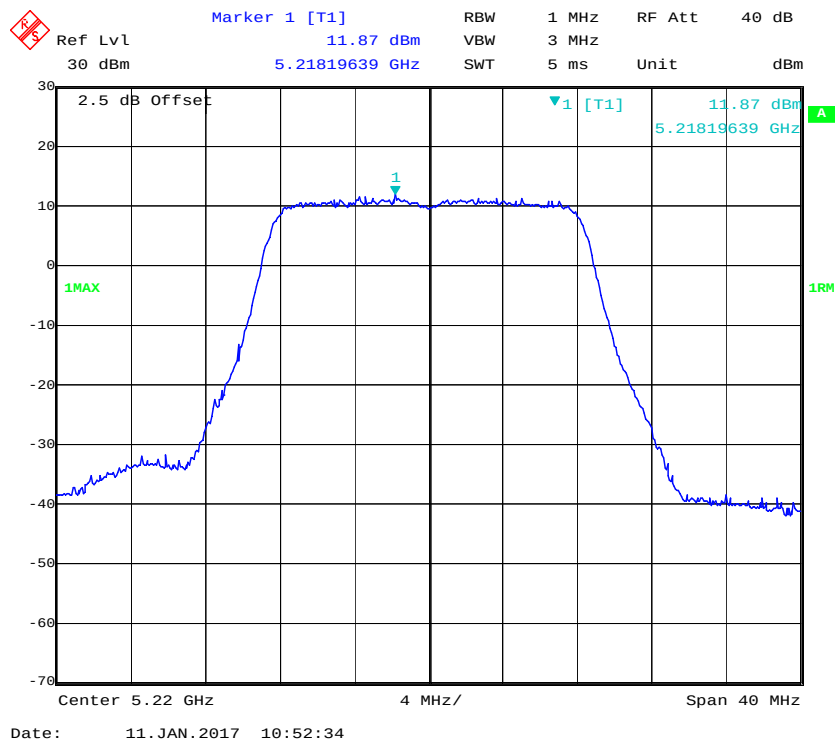
802.11a Low Channel – Chain1



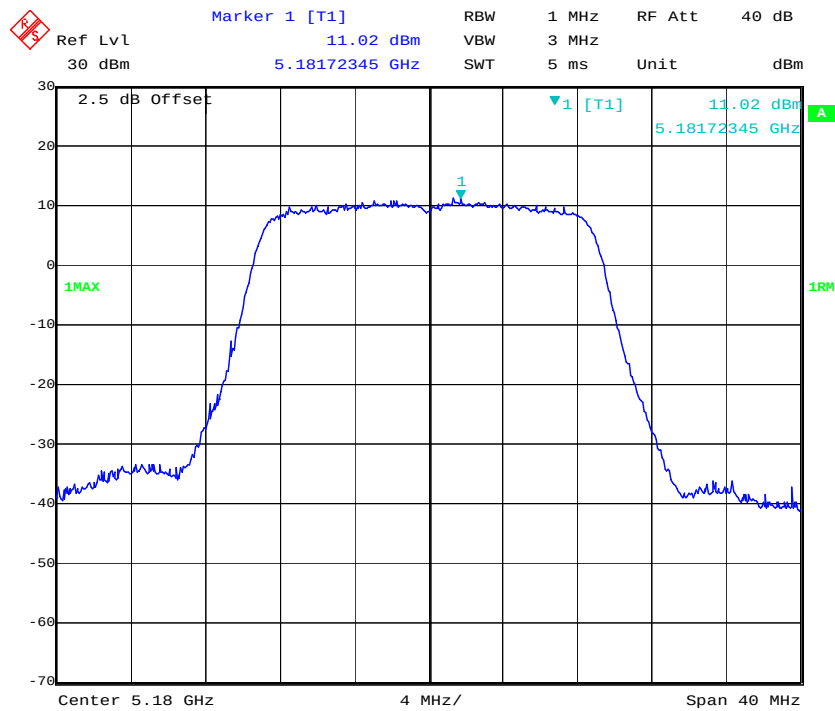
802.11a Middle Channel – Chain1



802.11a High Channel – Chain1

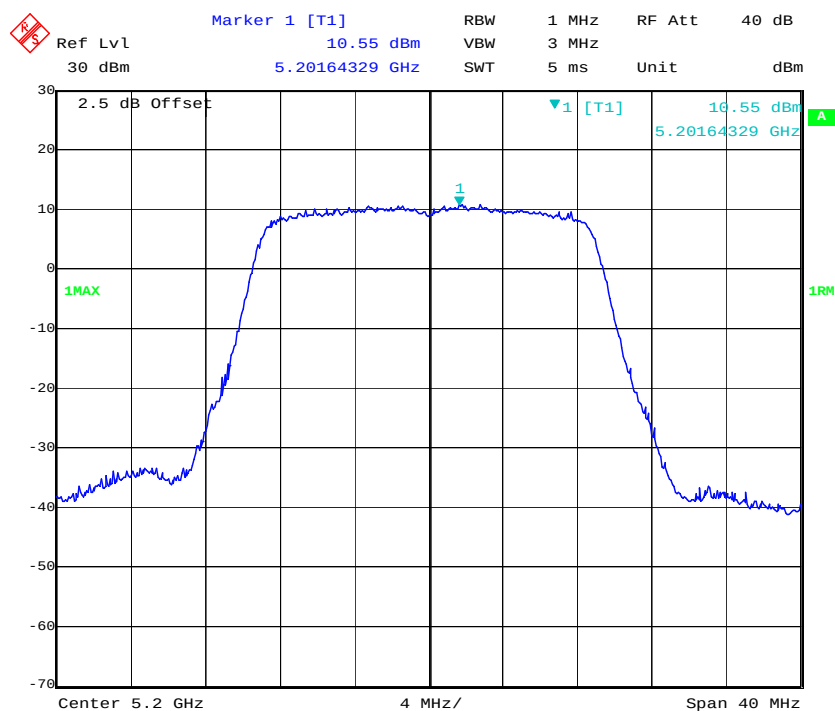


802.11n ht20 Low Channel – Chain1



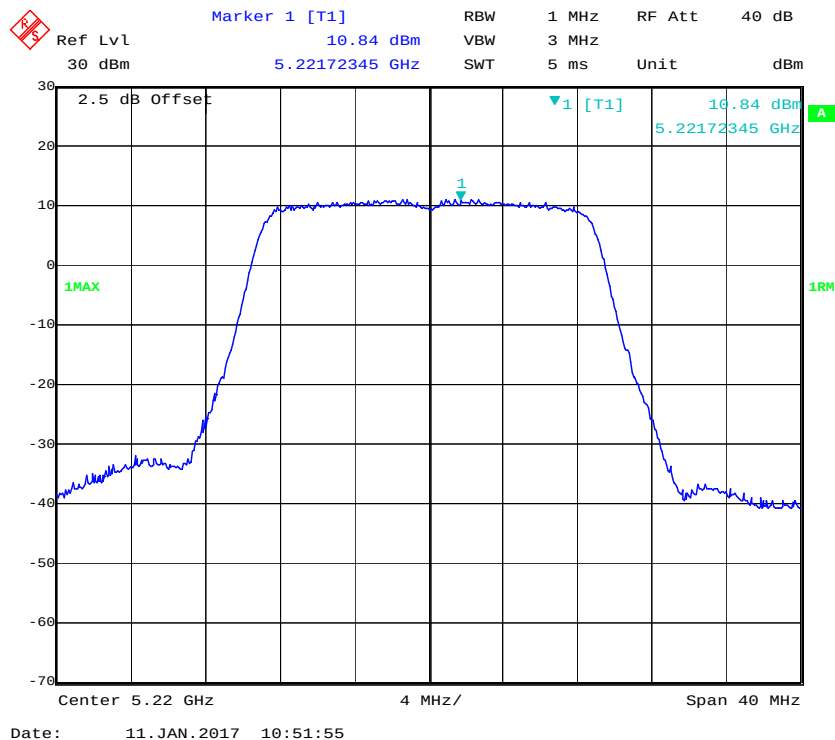
Date: 22.NOV.2016 17:28:15

802.11n ht20 Middle Channel – Chain1

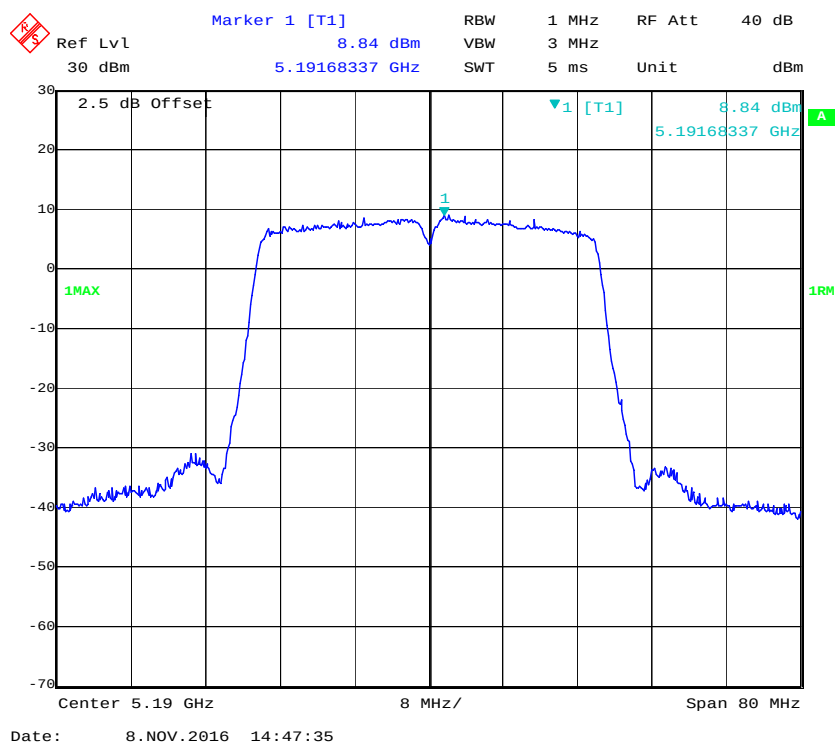


Date: 22.NOV.2016 17:32:36

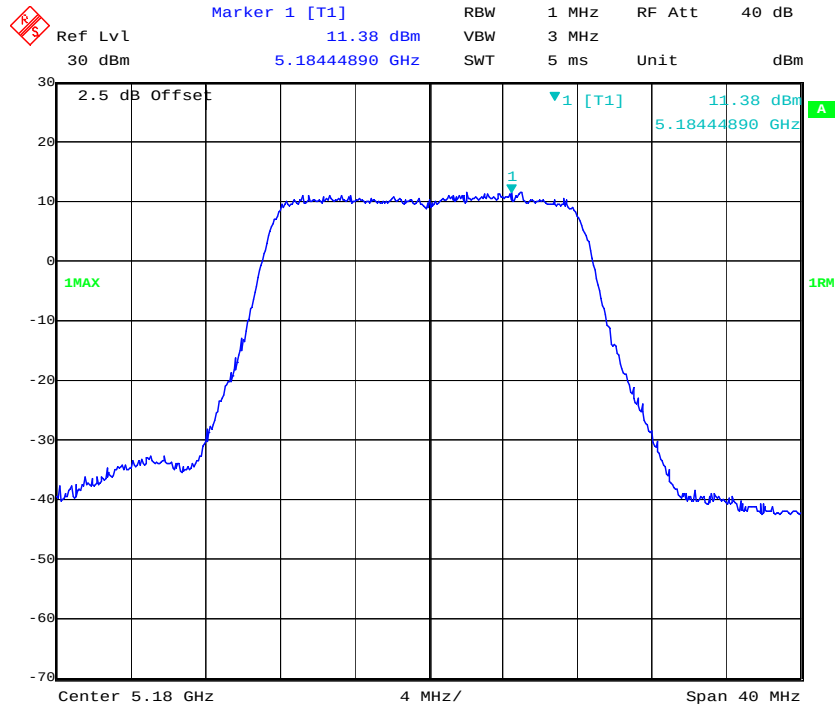
802.11n ht20 High Channel – Chain1



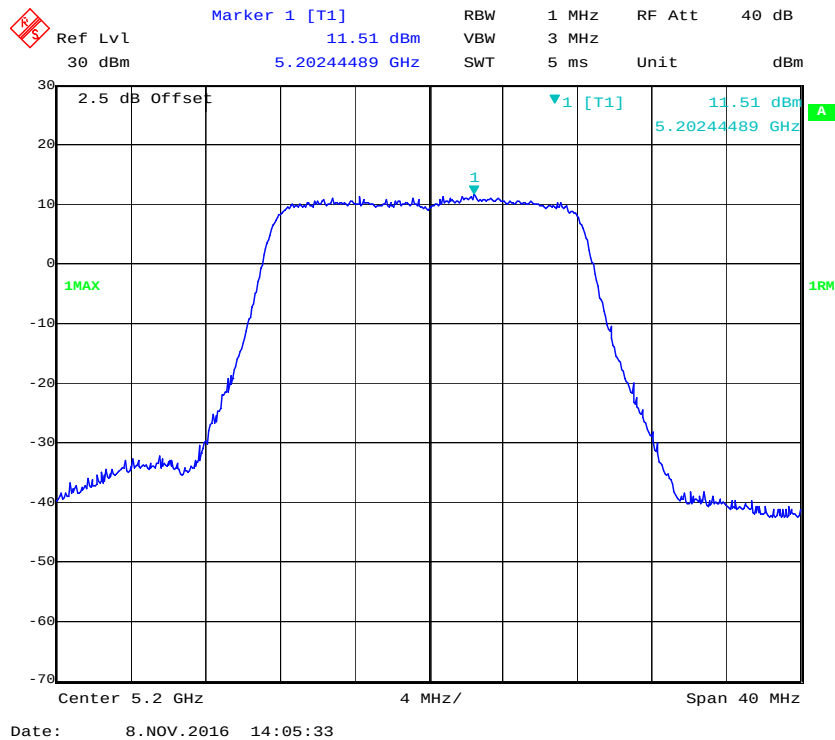
802.11n ht40 Low Channel – Chain1



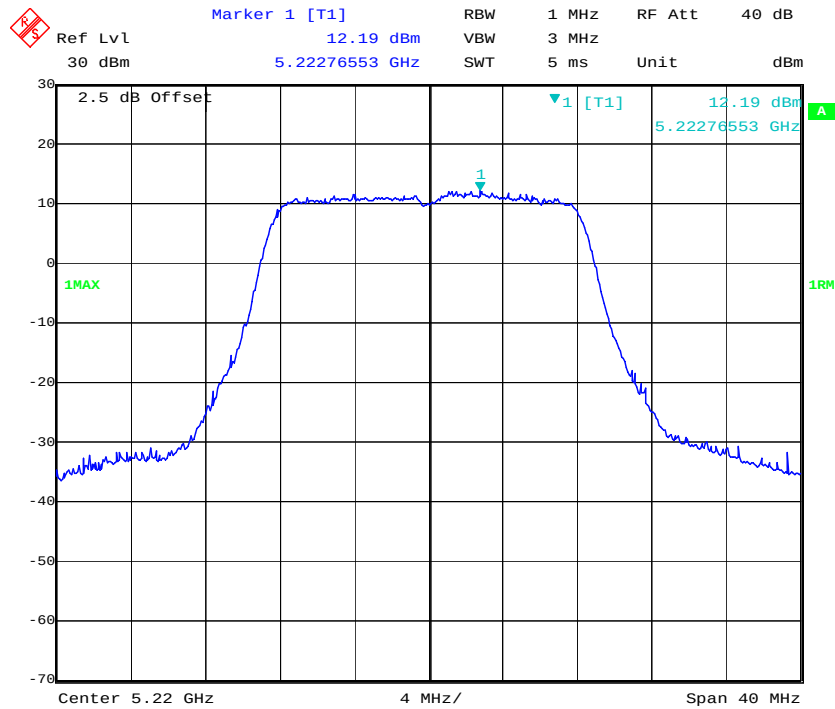
802.11a Low Channel – Chain2



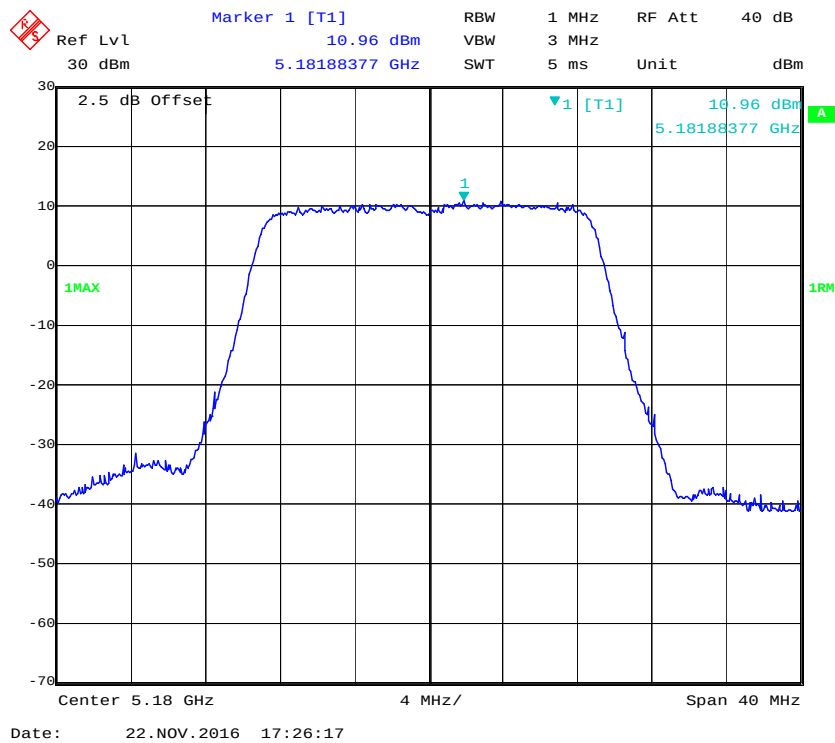
802.11a Middle Channel – Chain2



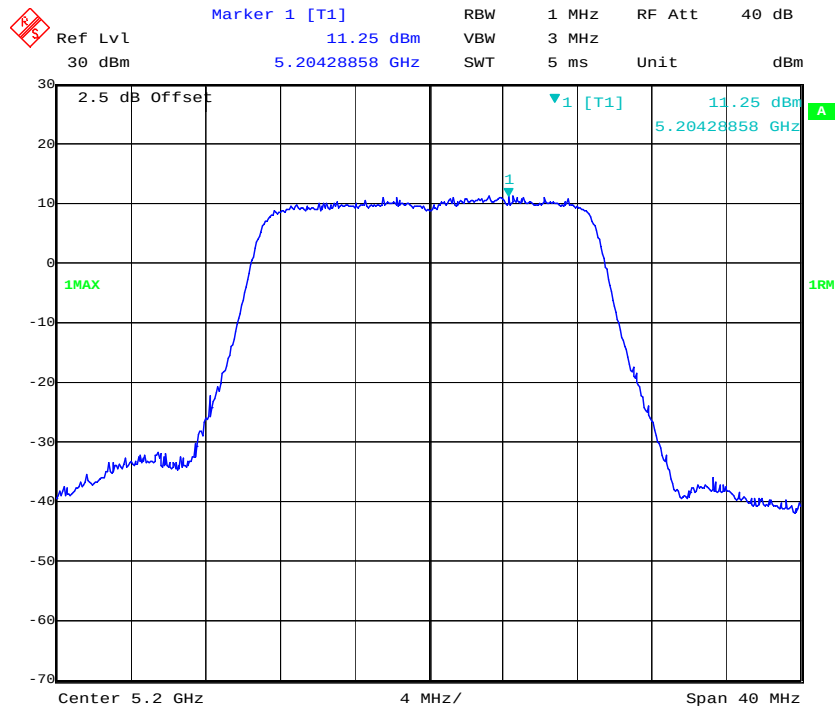
802.11a High Channel – Chain2



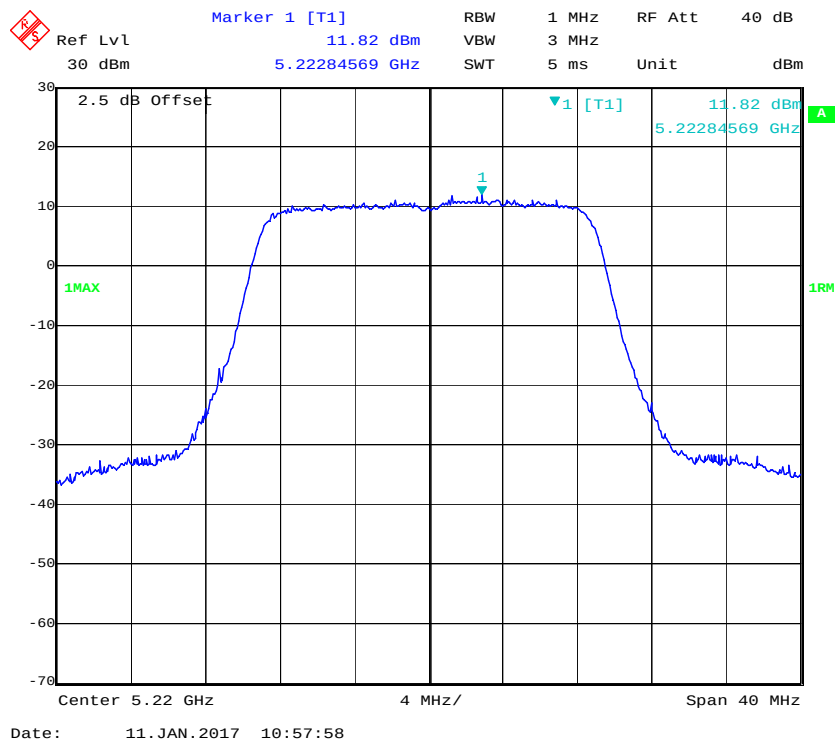
802.11n ht20 Low Channel – Chain2



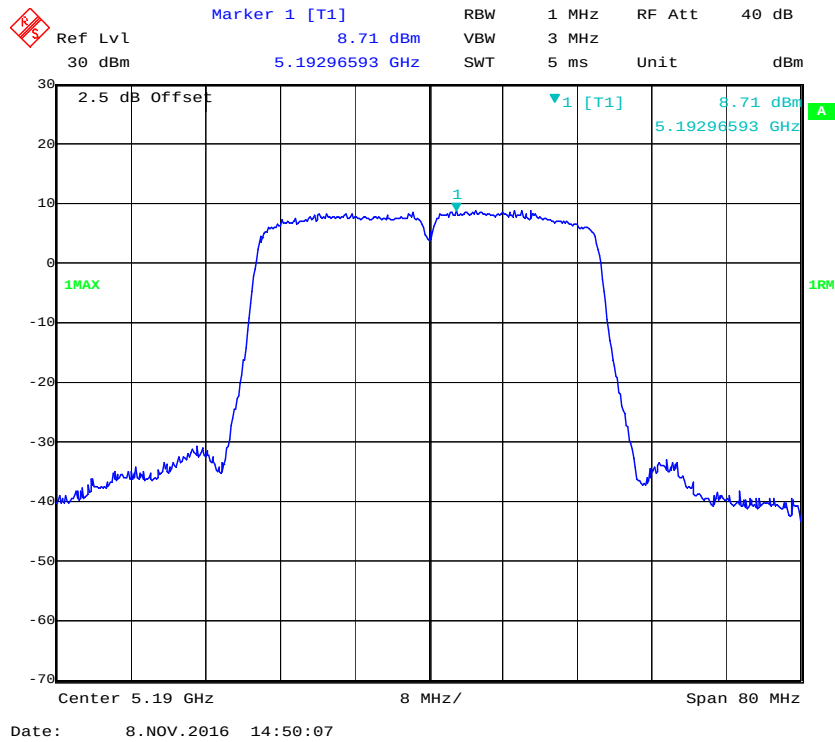
802.11n ht20 Middle Channel – Chain2



802.11n ht20 High Channel – Chain2

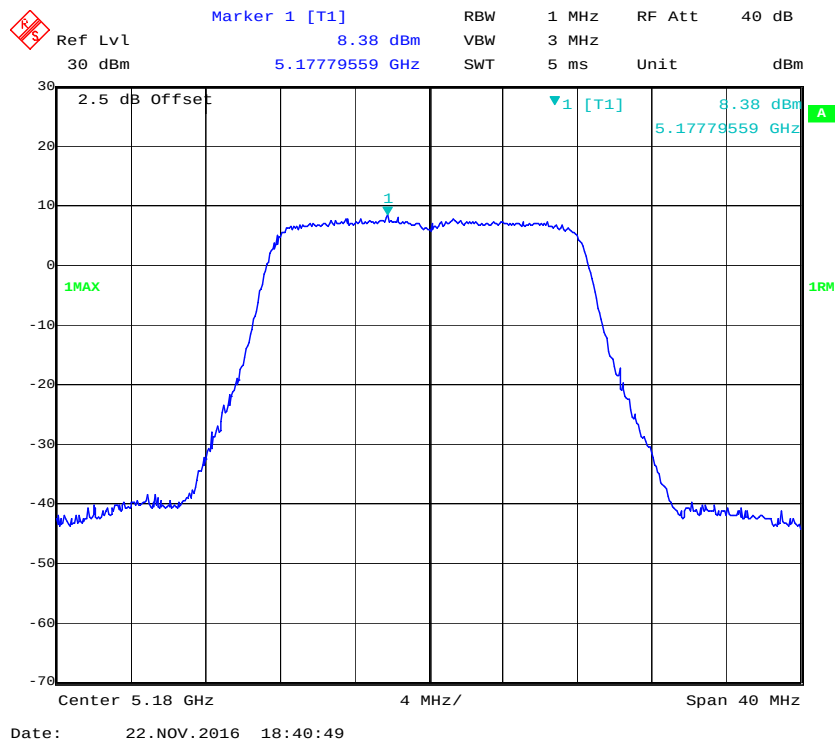


802.11n ht40 Low Channel – Chain2

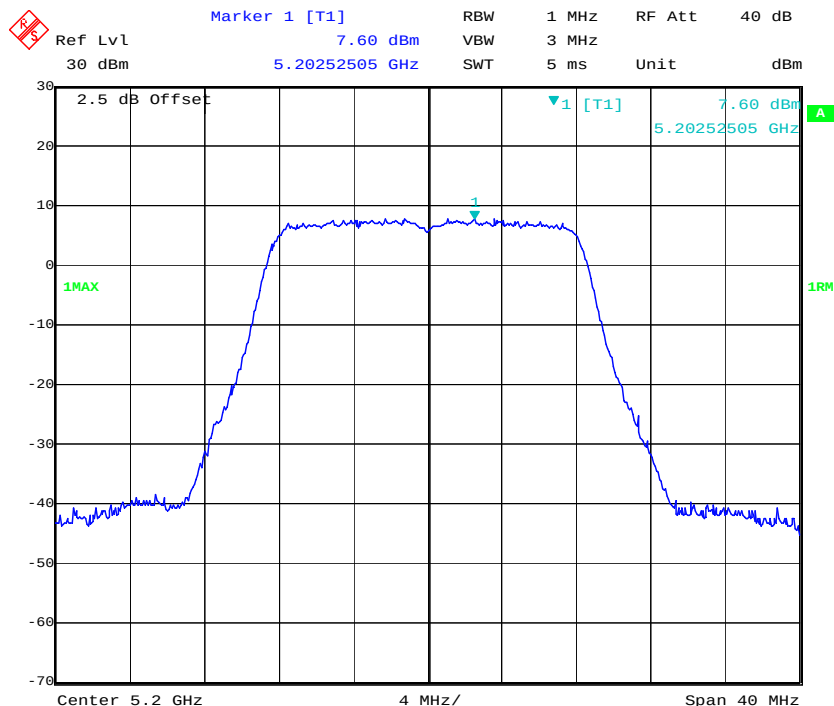


MIMO-4T4R:

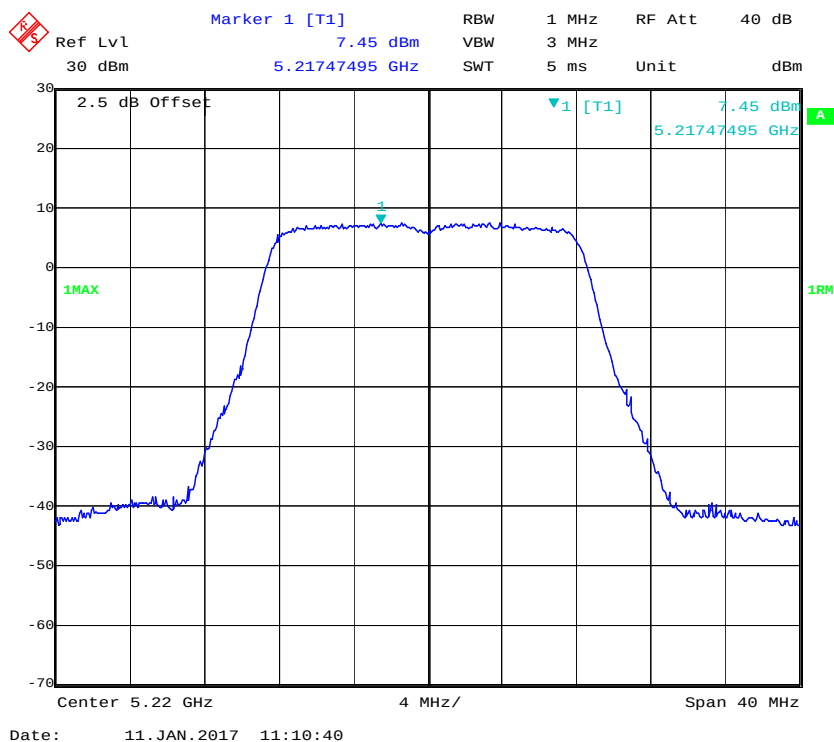
802.11a Low Channel – Chain0



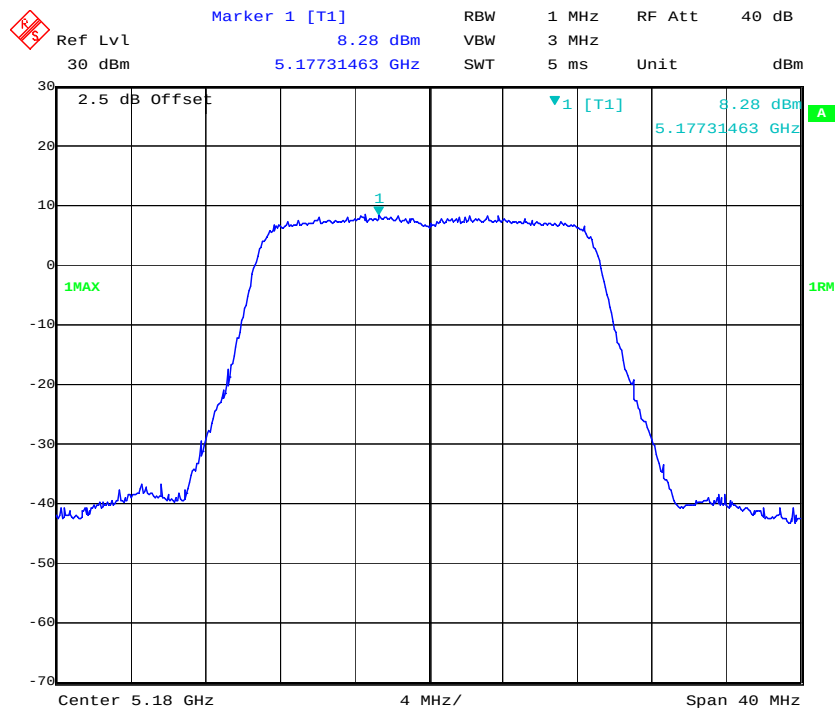
802.11a Middle Channel – Chain0



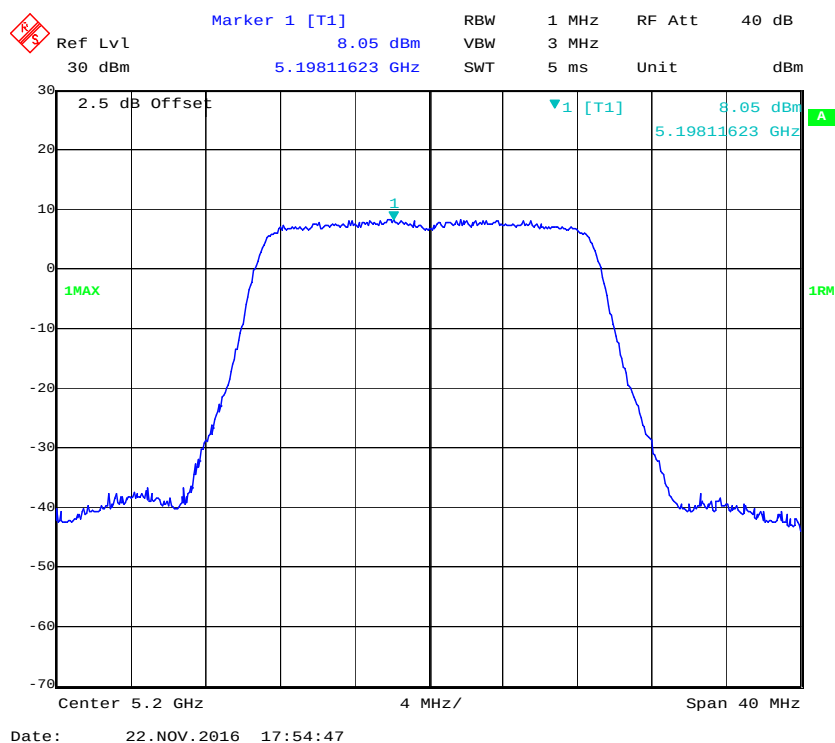
802.11a High Channel – Chain0



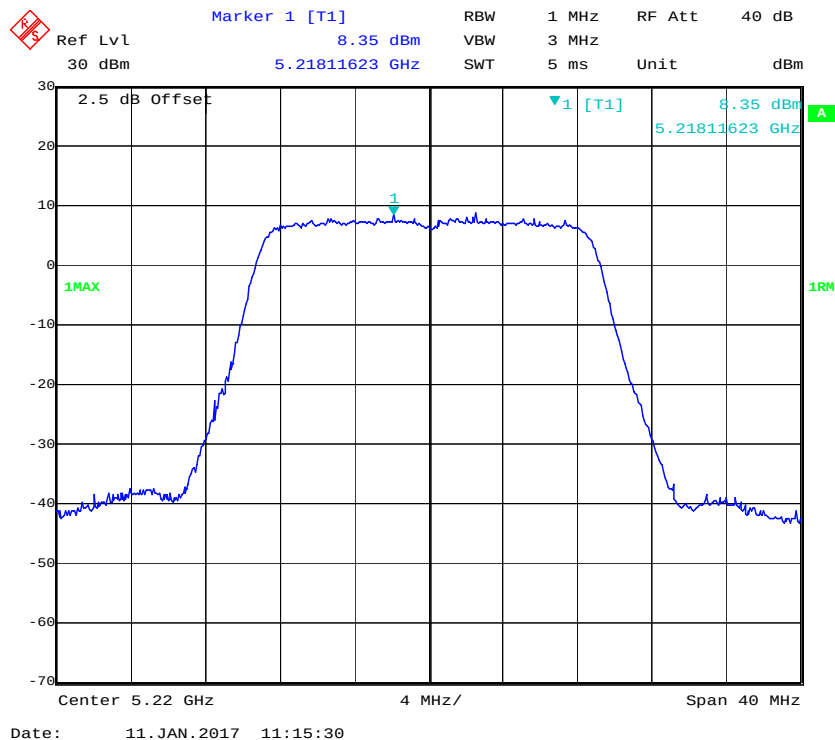
802.11n ht20 Low Channel – Chain0



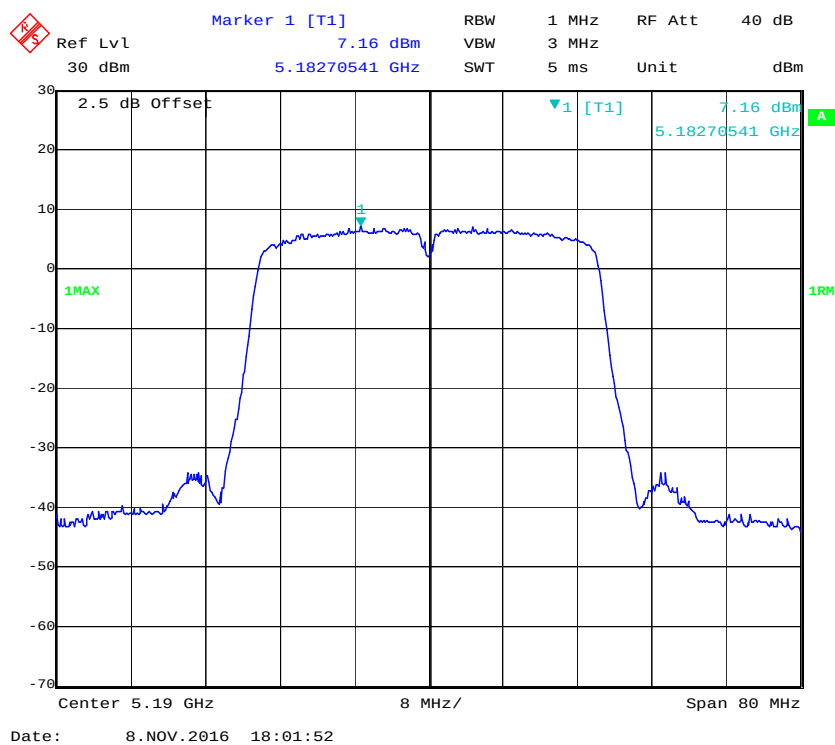
802.11n ht20 Middle Channel – Chain0



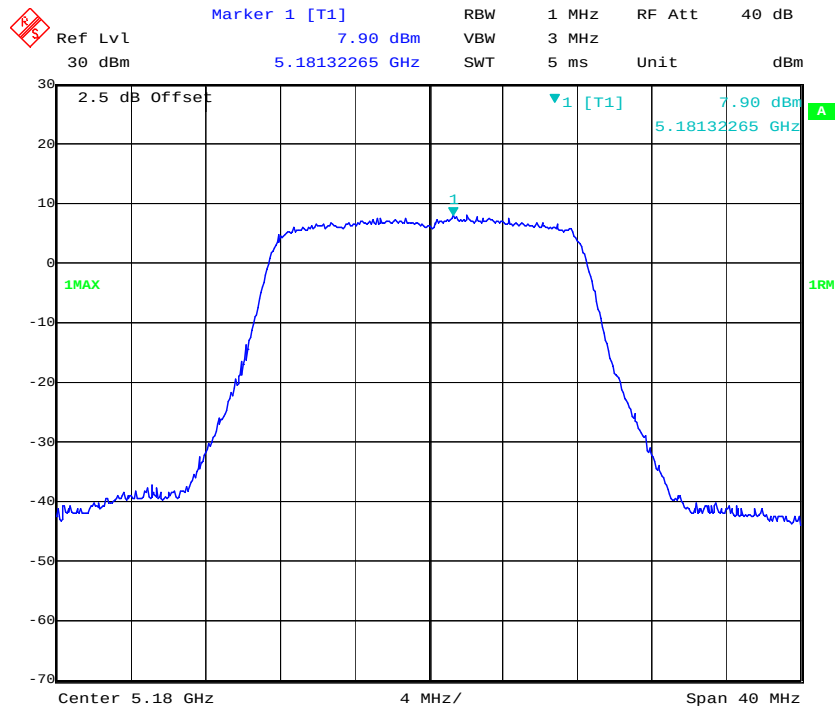
802.11n ht20 High Channel – Chain0



802.11n ht40 Low Channel – Chain0

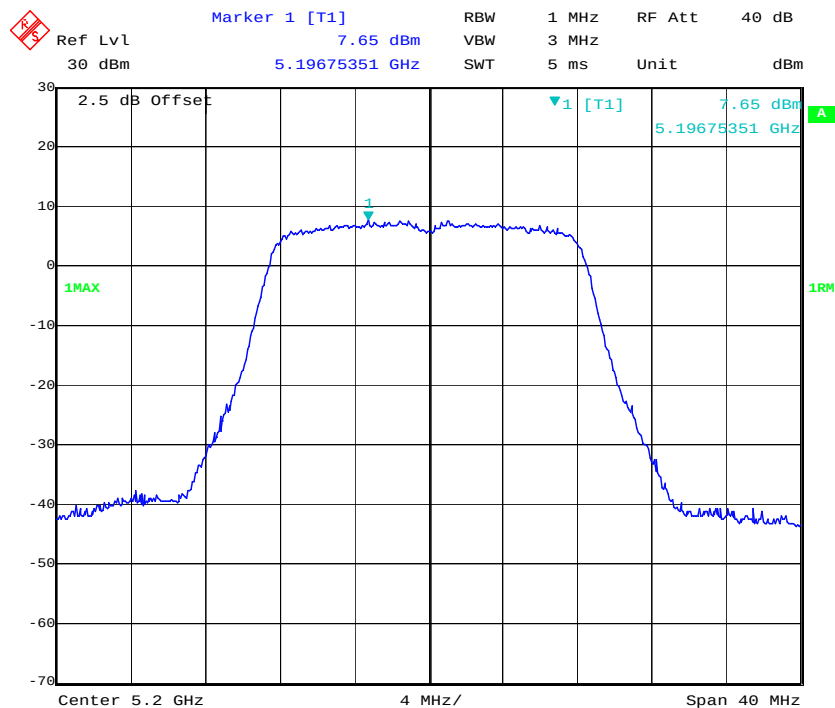


802.11a Low Channel – Chain1



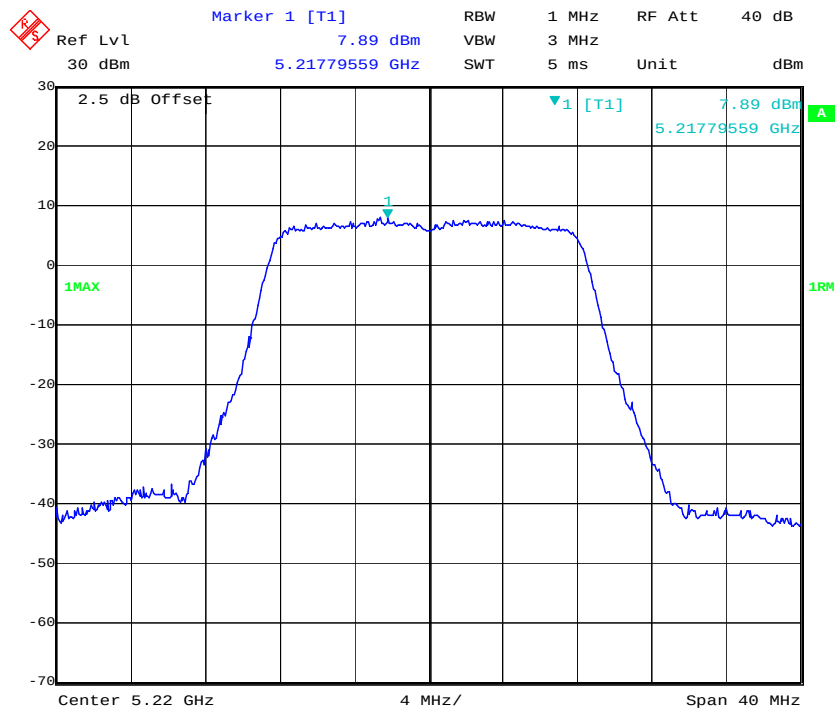
Date: 22.NOV.2016 18:39:26

802.11a Middle Channel – Chain1



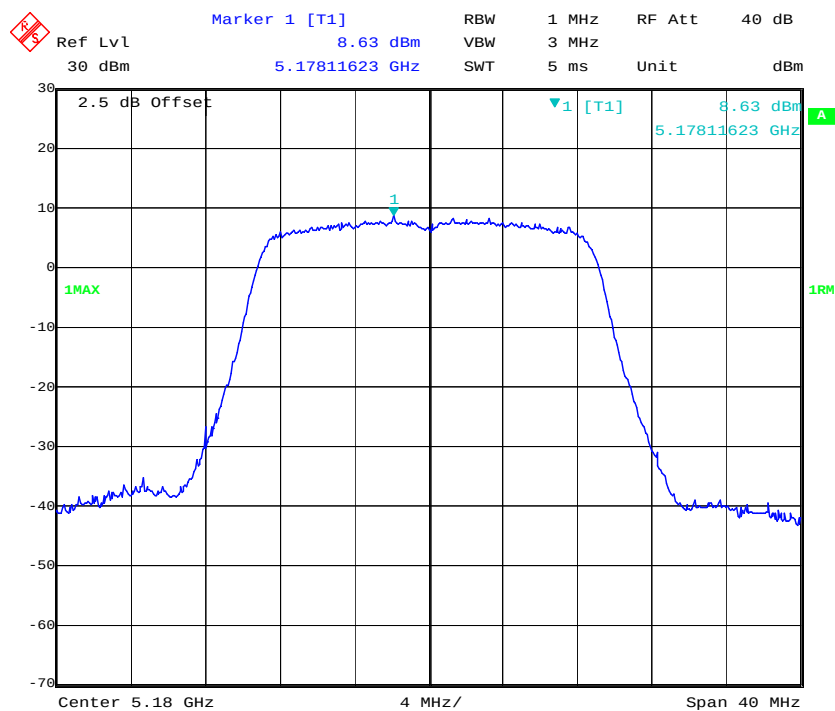
Date: 22.NOV.2016 18:30:21

802.11a High Channel – Chain1



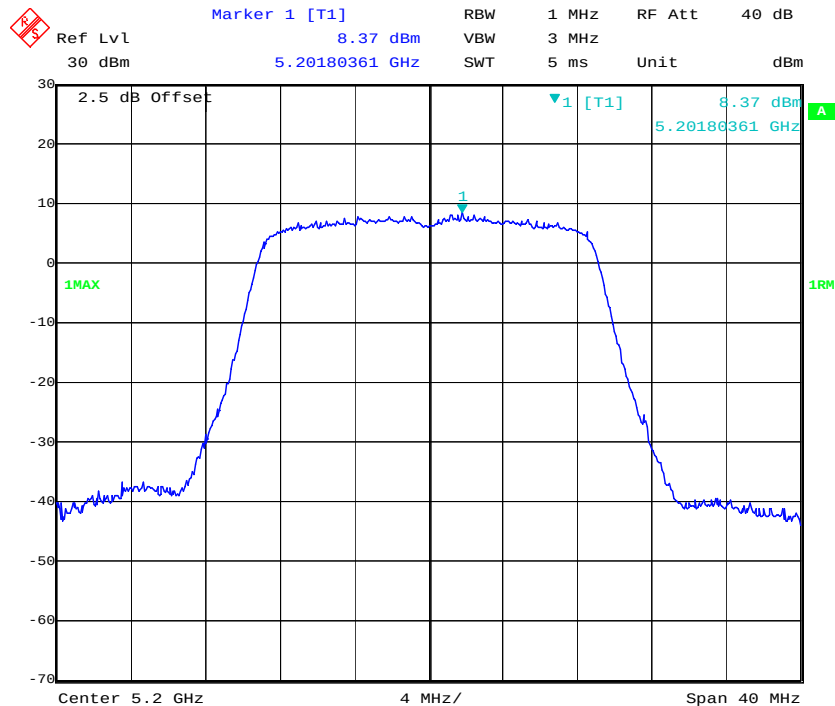
Date: 11.JAN.2017 11:11:13

802.11n ht20 Low Channel – Chain1

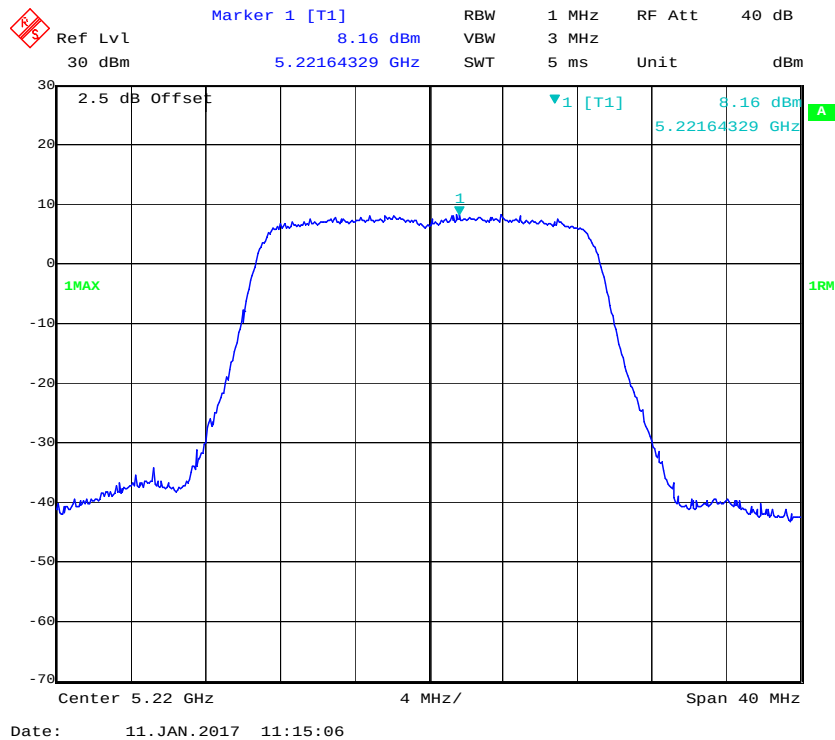


Date: 22.NOV.2016 17:52:12

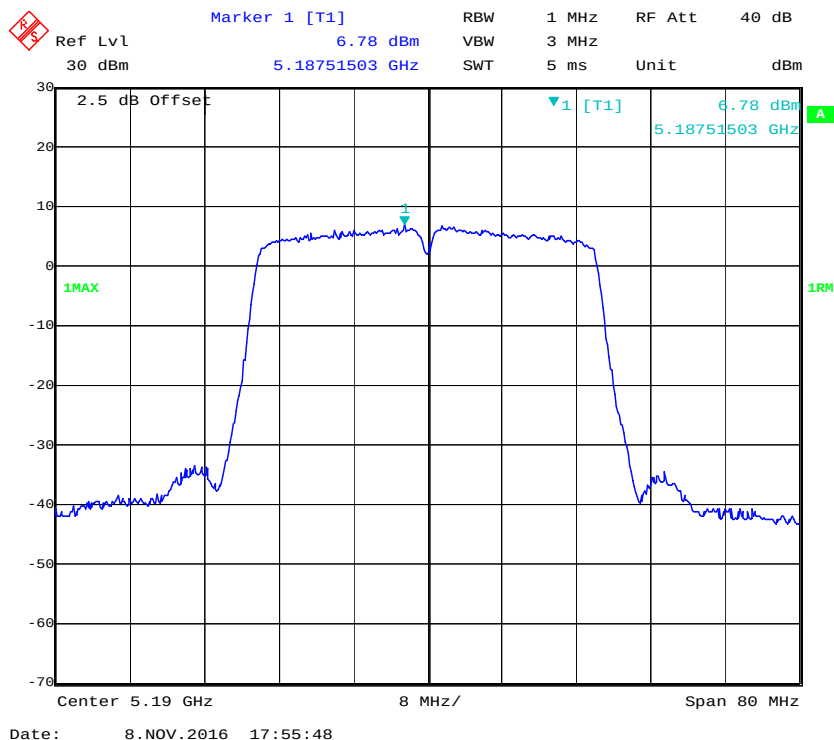
802.11n ht20 Middle Channel – Chain1



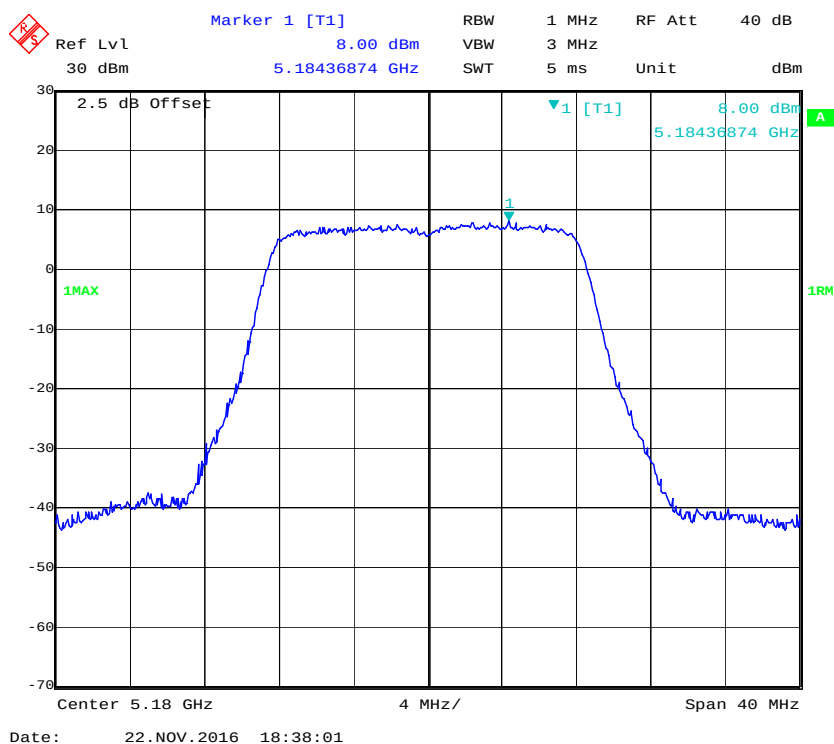
802.11n ht20 High Channel – Chain1



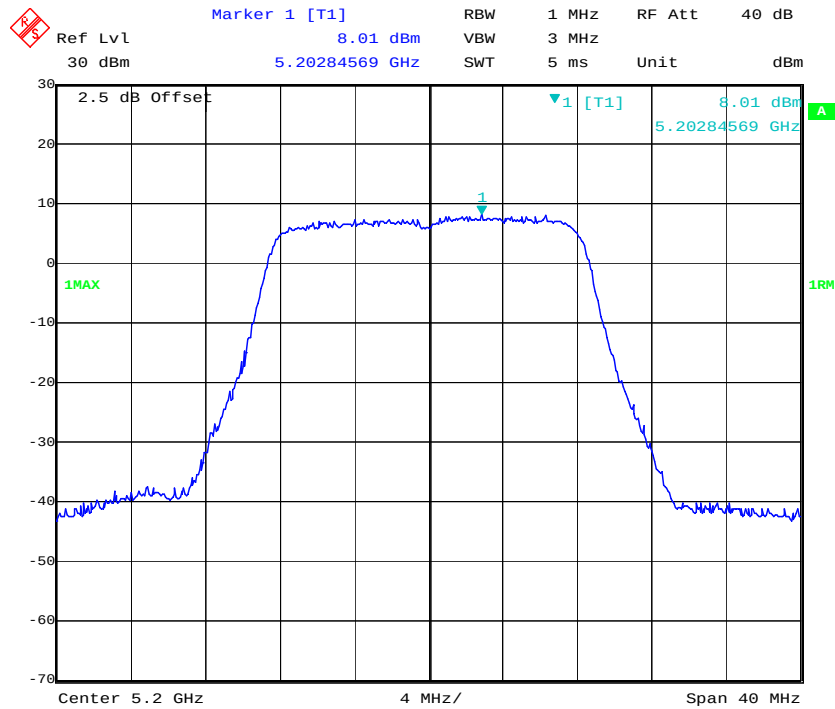
802.11n ht40 Low Channel – Chain1



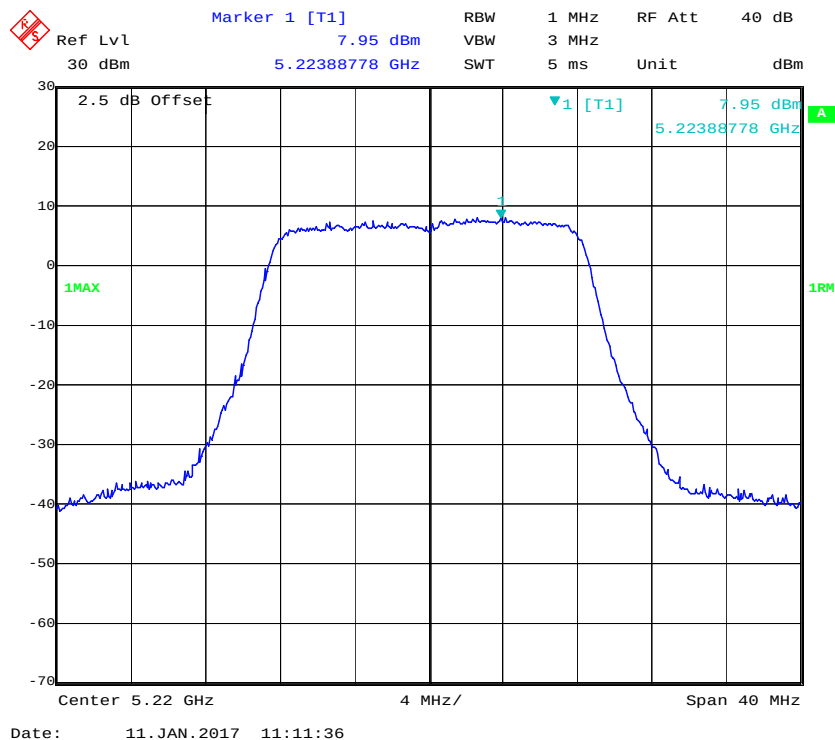
802.11a Low Channel – Chain2



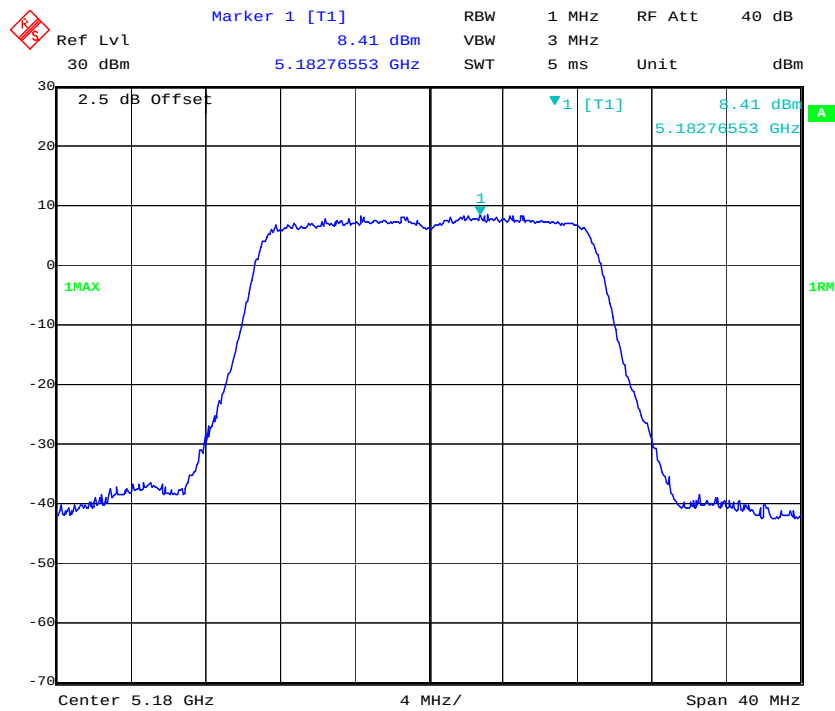
802.11a Middle Channel – Chain2



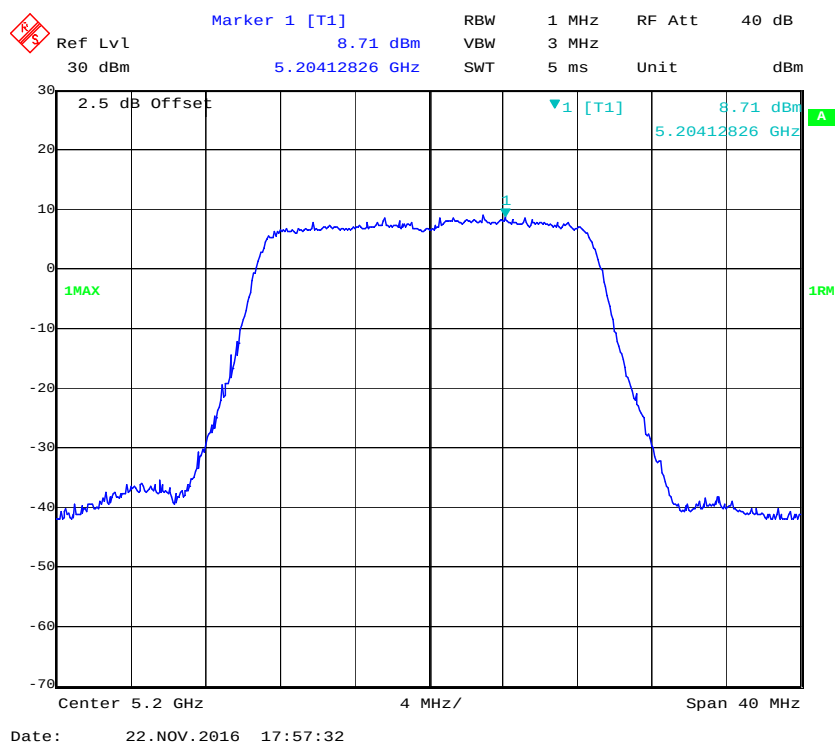
802.11a High Channel – Chain2



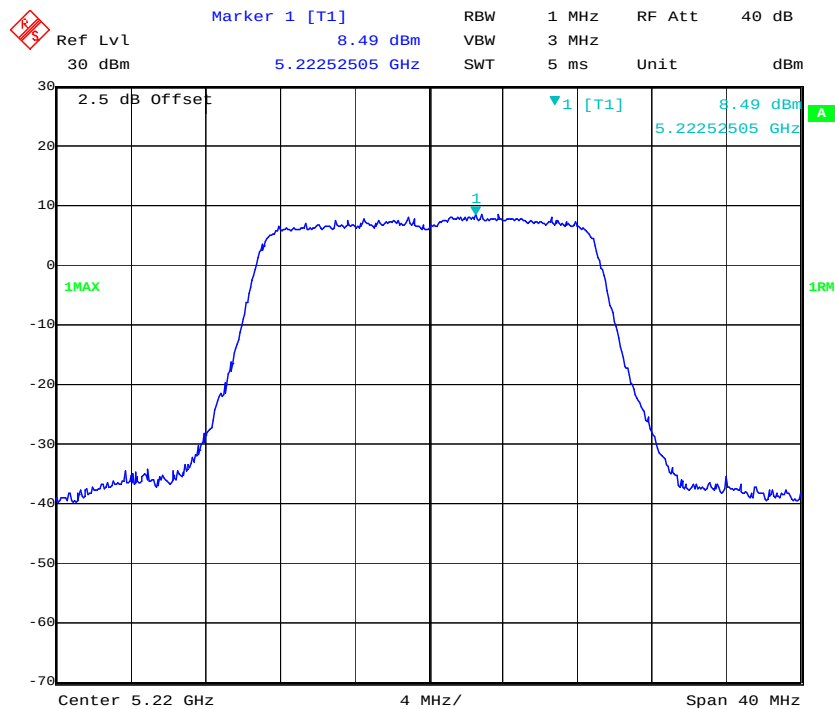
802.11n ht20 Low Channel – Chain2



802.11n ht20 Middle Channel – Chain2

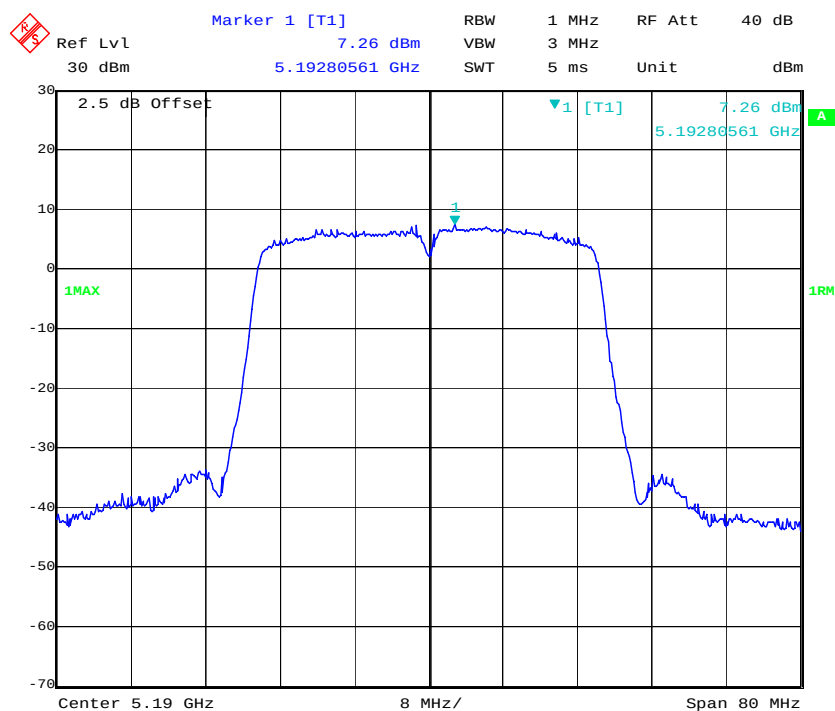


802.11n ht20 High Channel – Chain2



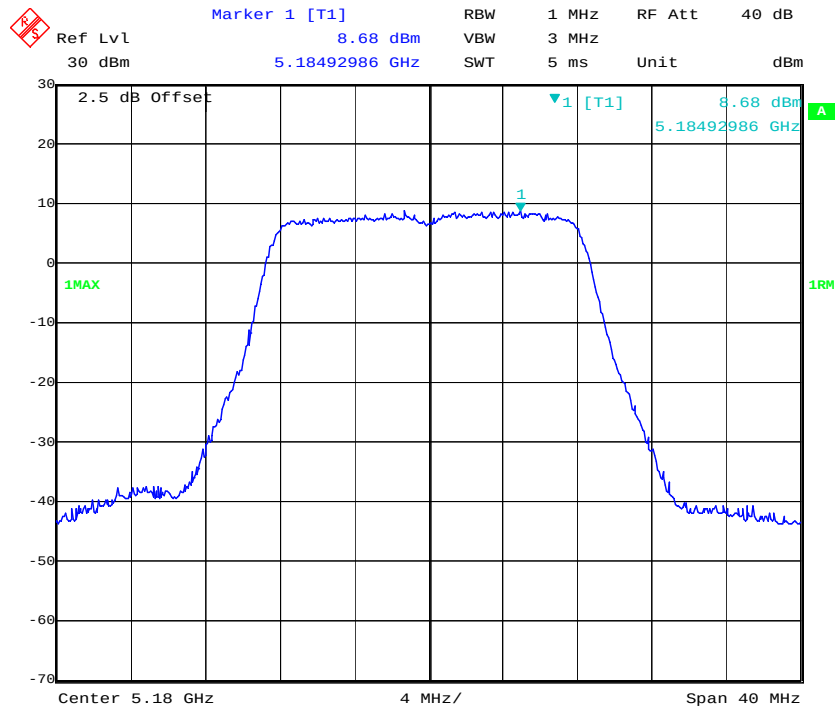
Date: 11.JAN.2017 11:14:45

802.11n ht40 Low Channel – Chain2

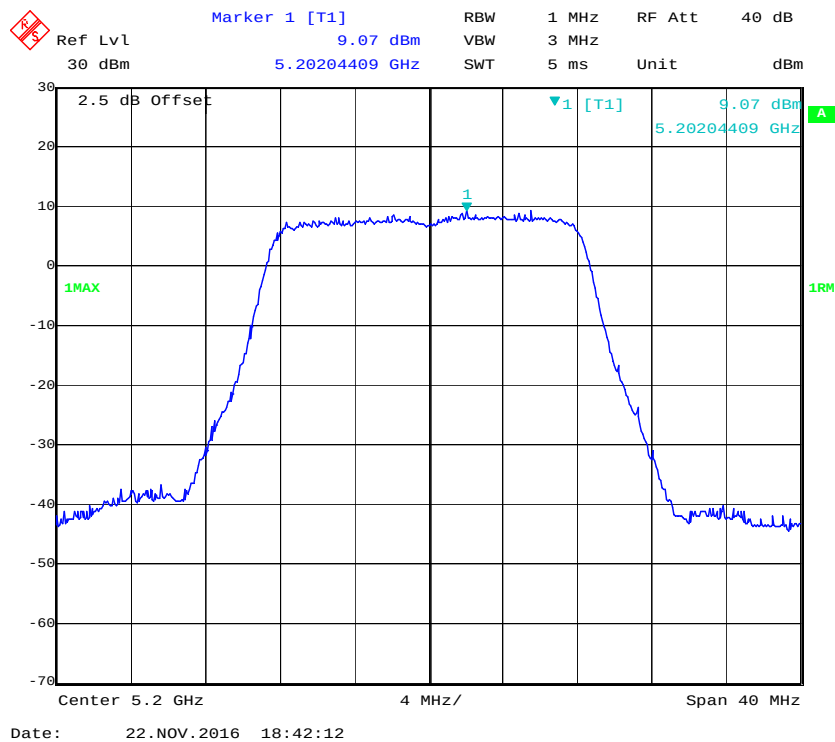


Date: 8.NOV.2016 17:48:16

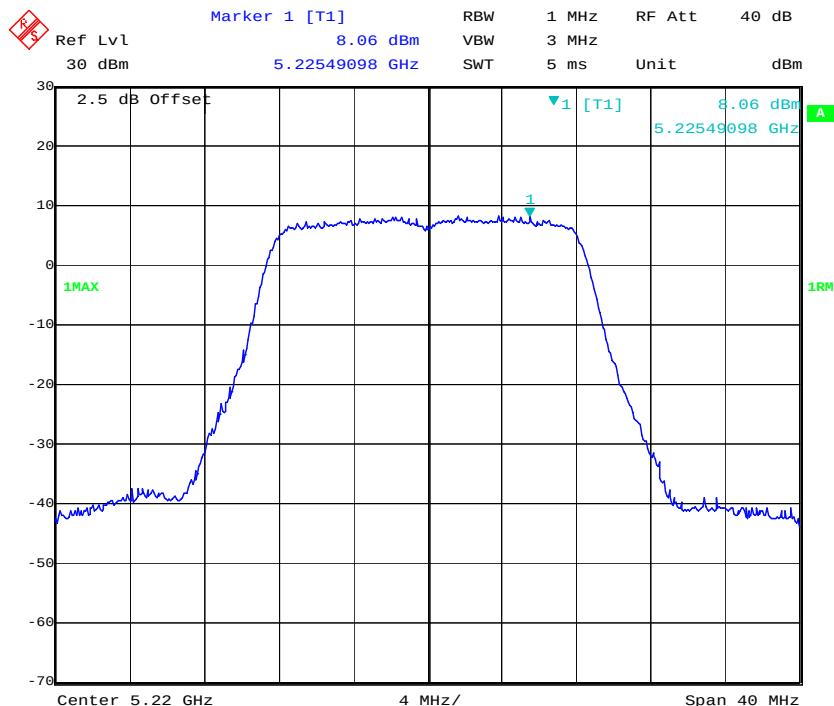
802.11a Low Channel – Chain3



802.11a Middle Channel – Chain3

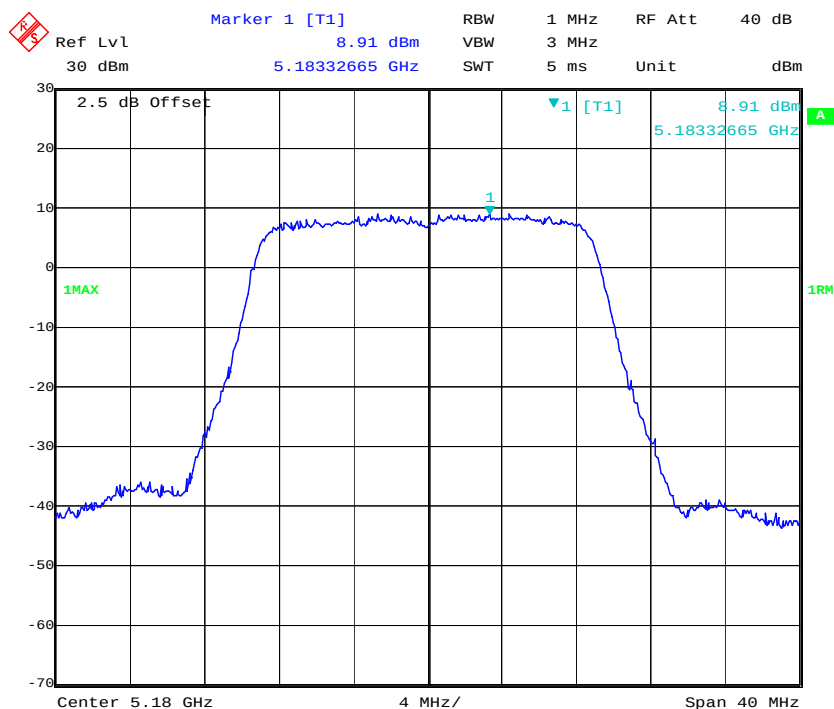


802.11a High Channel – Chain3



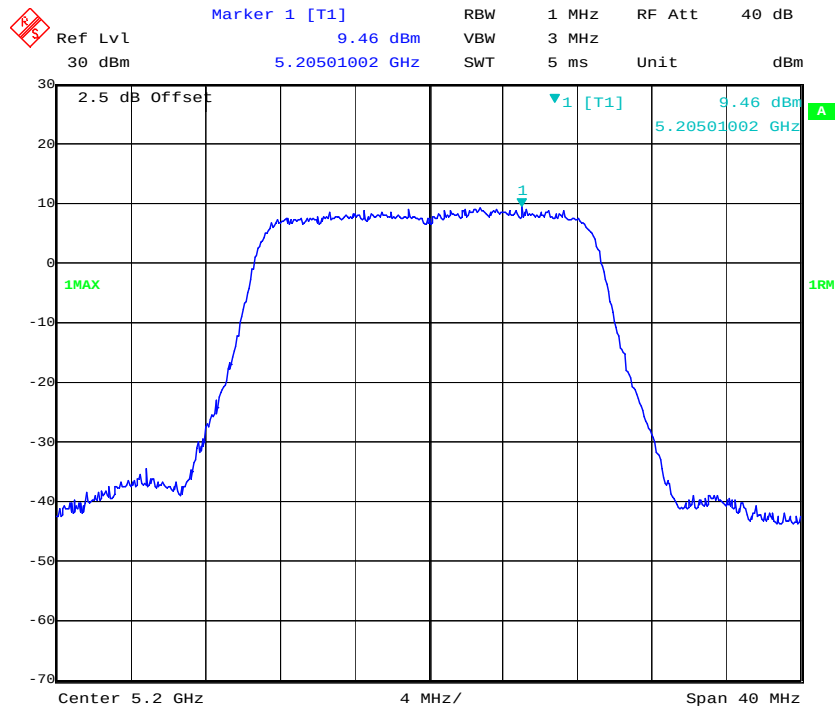
Date: 11.JAN.2017 11:11:57

802.11n ht20 Low Channel – Chain3

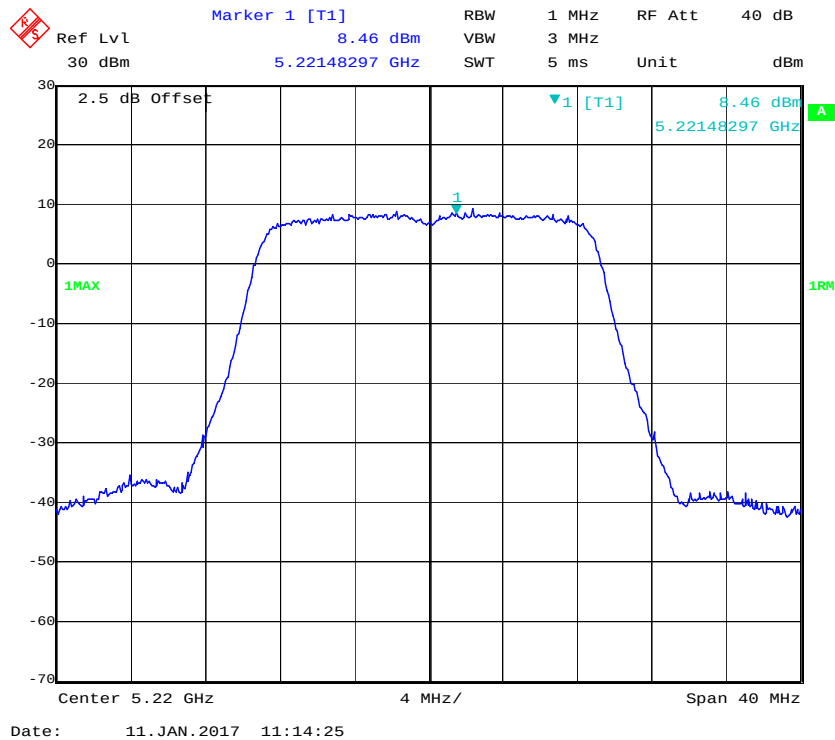


Date: 22.NOV.2016 17:49:25

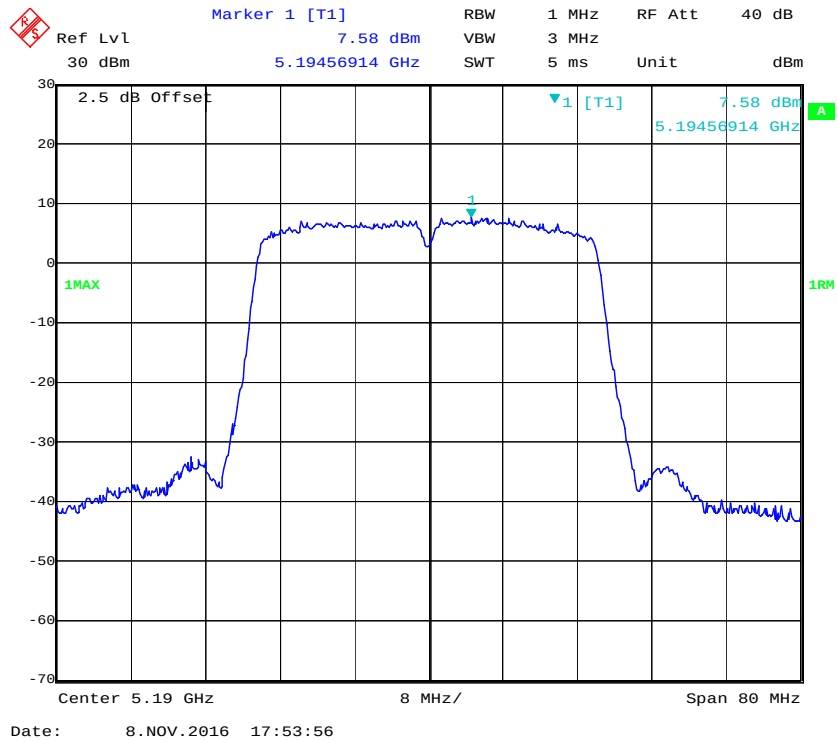
802.11n ht20 Middle Channel – Chain3



802.11n ht20 High Channel – Chain3



802.11n ht40 Low Channel – Chain3



5725-5850MHz (SISO mode was tested since SISO mode was the maximum power mode per chain, so the MIMO modes PSD is less than SISO mode per chain)

Mode	Frequency (MHz)	Power Spectral Density (dBm/300kHz)				Power Spectral Density (dBm/500kHz)				Total (dBm/500kHz)	Limits
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3		
802.11a	5785	16.3	17.3	16.74	16.71	18.52	19.52	18.96	18.93	22.89	28
802.11n ht20	5785	17.41	16.69	15.98	16.64	19.63	18.91	18.2	18.86	22.50	28

Note 1: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

Note 2: the device is a master device. the 4 antenna maximum antenna gain are 2dBi, 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 = $10 \log(\text{NANT}/\text{NSS})$ dB.

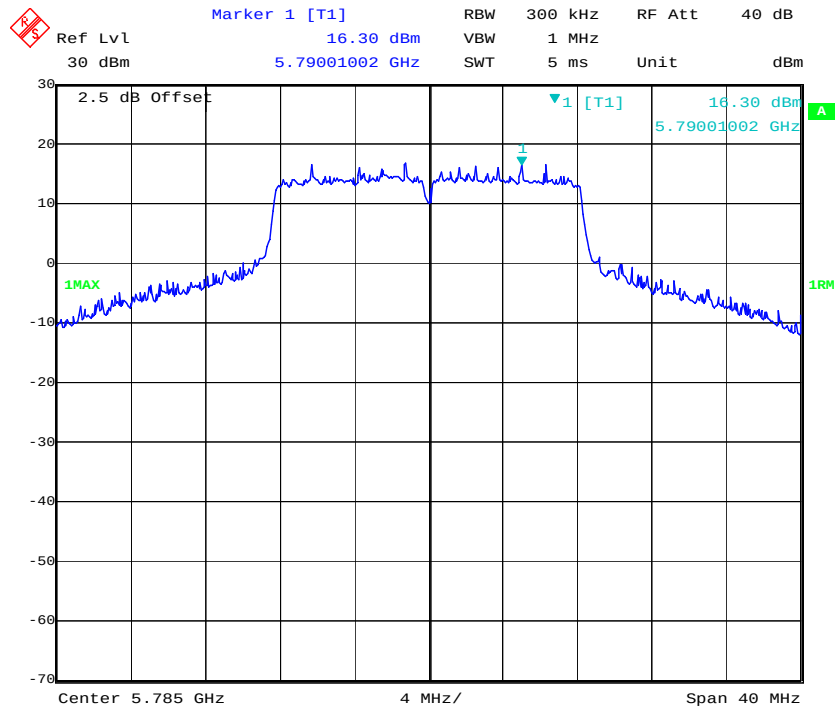
So:

Directional gain = GANT + Array Gain = $2 + 10 \cdot \log(4) = 8 \text{ dBi} > 6 \text{ dBi}$

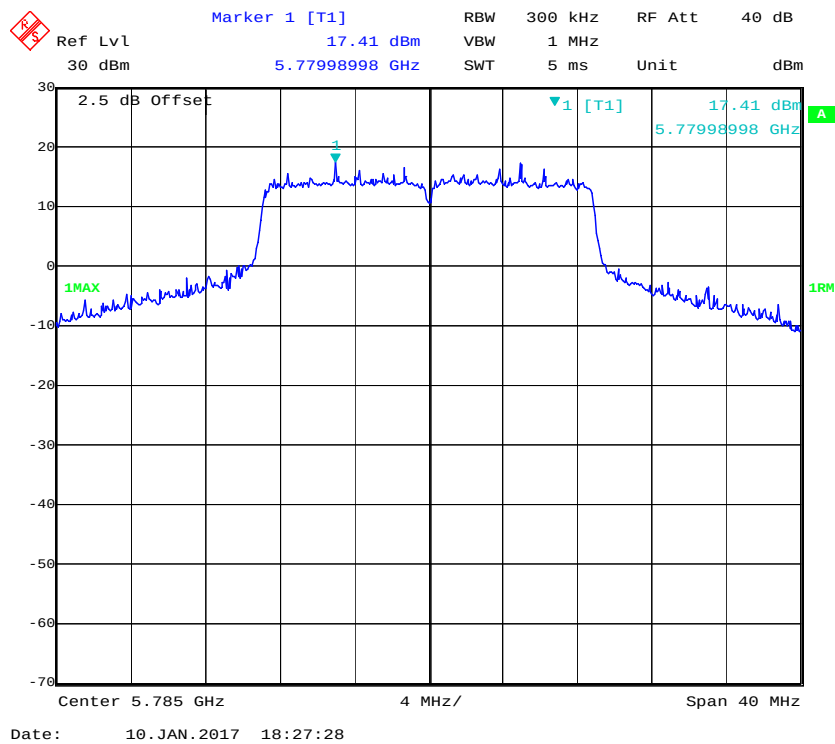
Power density Limit = $30 - (8 - 6) = 28 \text{ dBm}$

5725MHz-5850MHz:

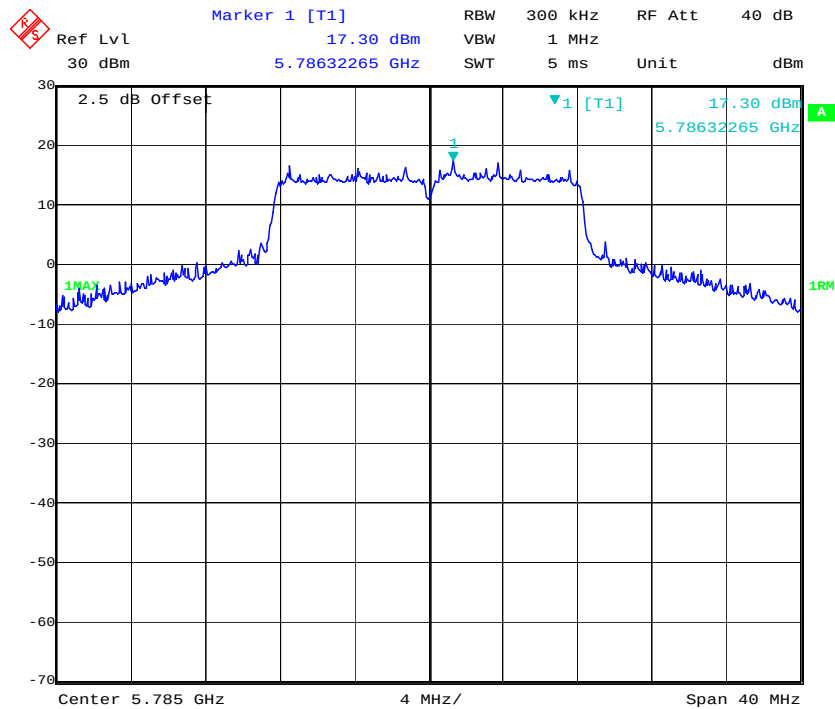
802.11a Middle Channel – Chain0



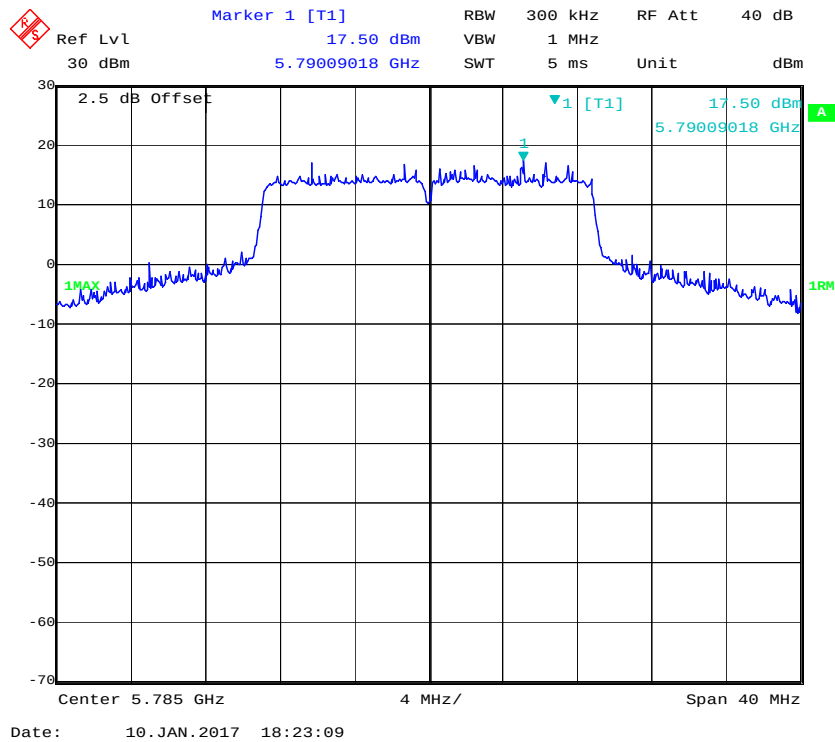
802.11n ht20 Middle Channel – Chain0



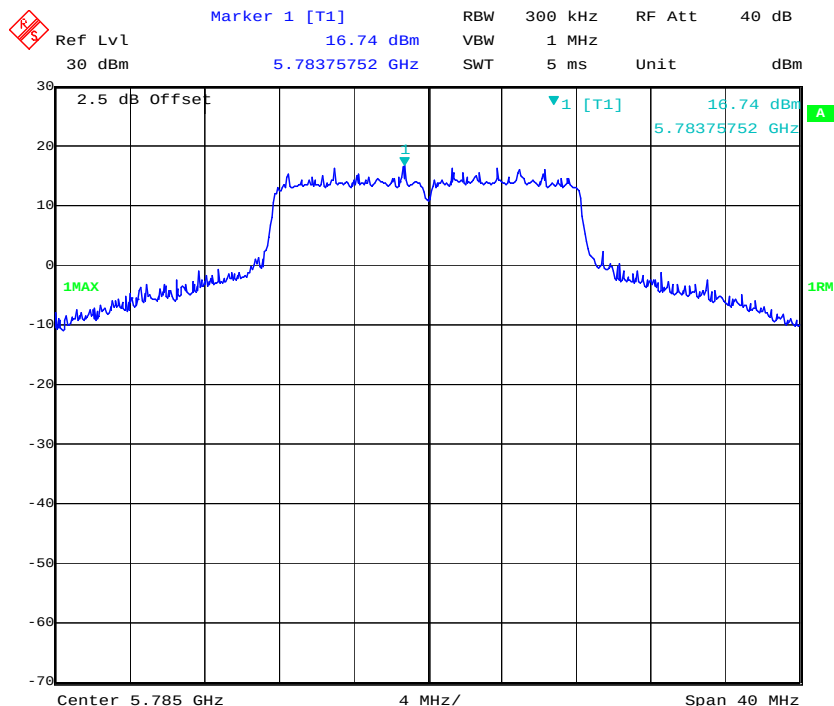
802.11a Middle Channel – Chain1



802.11n ht20 Middle Channel – Chain1

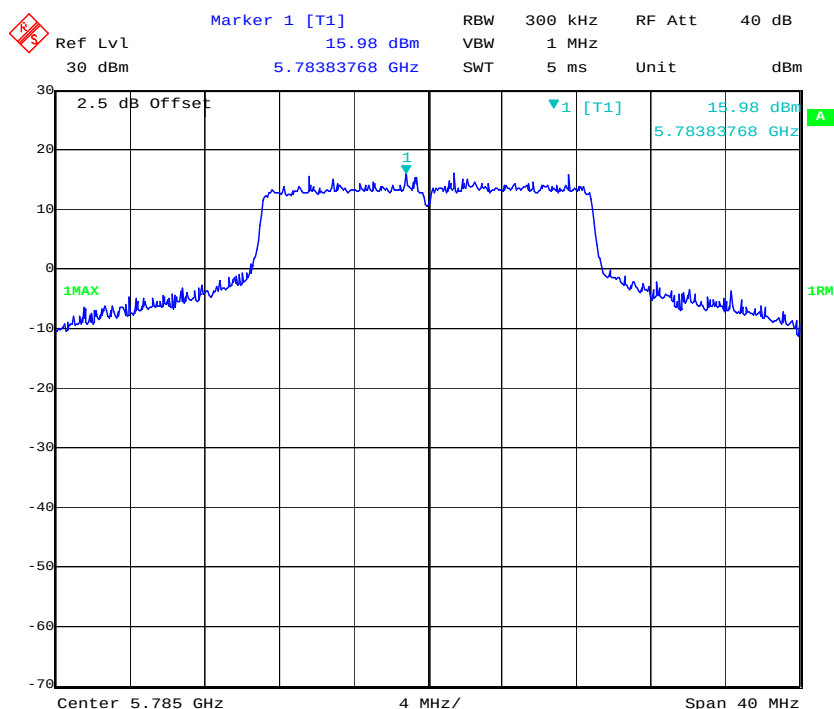


802.11a Middle Channel – Chain2



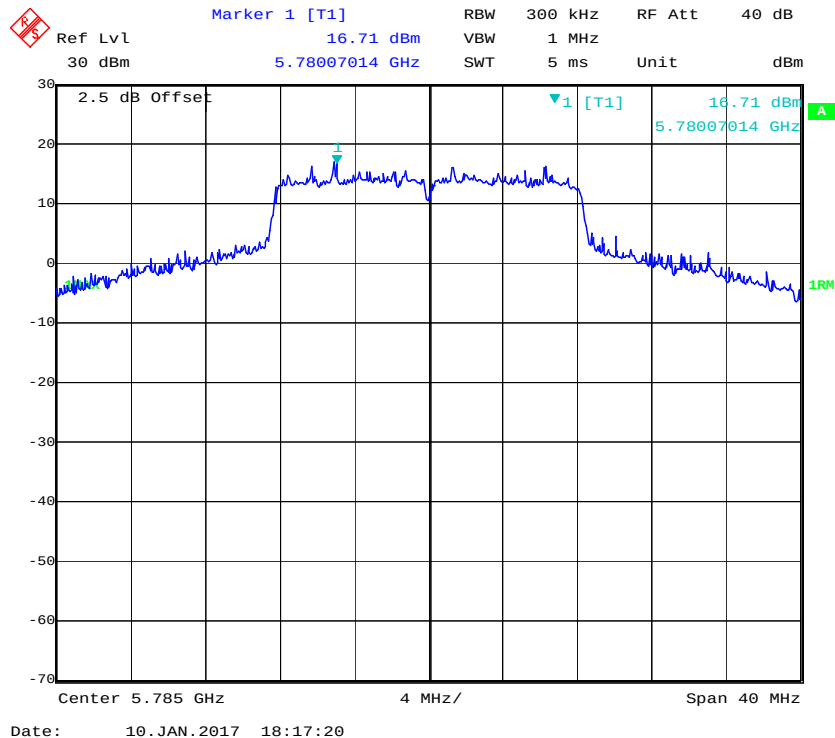
Date: 10.JAN.2017 18:19:50

802.11n ht20 Middle Channel – Chain2

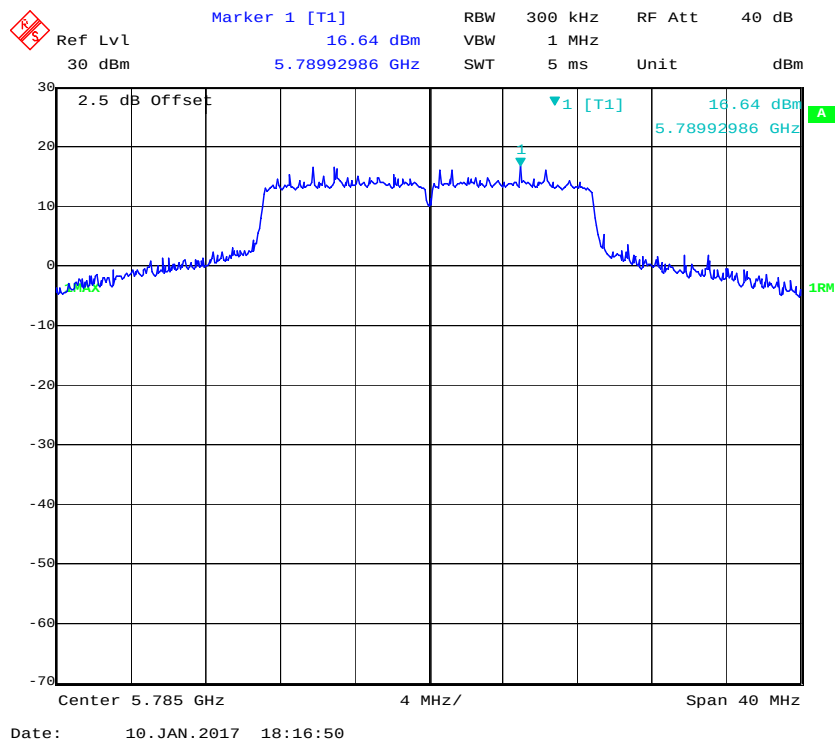


Date: 10.JAN.2017 18:19:16

802.11a Middle Channel – Chain3



802.11n ht20 Middle Channel – Chain3



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



FCC PART 15.407

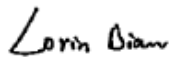
TEST REPORT

For

Huawei Technologies Co.,Ltd

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

Test Model: EchoLife HS8245W
FCC ID: QISHS8245W

Report Type: Original Report	Product Name: GPON Terminal
Test Engineer: <u>Lorin Bian</u>	
Report Number: <u>RDG161027004B</u>	
Report Date: <u>2016-11-22</u>	
Reviewed By: <u>Henry Ding</u> EMC Leader	
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

Note: This test report was prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Chengdu). Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. This report was valid only with a valid digital signature.

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FINAL

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Huawei Technologies Co.,Ltd**'s product, model number: **EchoLife HS8245W** (**FCC ID: QISHS8245W**) (the "EUT") in this report was a **GPON Terminal**, which was measured approximately: 295 mm (L) x 180 mm (W) x 82 mm (H), rated input voltage: DC 12V for adapter.

**All measurement and test data in this report was gathered from final production sample, serial number: 161027004 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-10-28, and EUT conformed to test requirement.*

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 submissions with FCC ID: QISHS8245W.
FCC Part 15B JBP submissions with FCC ID: QISHS8245W.

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. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ± 4.7 dB;
200M~1GHz: ± 6.0 dB;
1G-6GHz: ± 5.13 dB;
6G~25GHz: ± 5.47 dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL has been fully described in reports submitted to the Federal Communication 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 April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

FINAL

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the vh20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40. 802.11n and 802.11ac supports both beamforming and non-beamforming modes.

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

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

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

Configurations	Test Mode	Data Rate	Channel	Antenna Chain
SISO	802.11a	6Mbps	149, 157, 165	0, 1, 2, 3
	802.11n ht20	MCS0_20	149, 157, 165	0, 1, 2, 3
	802.11n ht40	MCS0_40	151, 159	0, 1, 2, 3
	802.11ac 80	AC-MCS0_80	155	0, 1, 2, 3
2*2 MIMO Non-Beamforming	802.11a	6Mbps	149, 157, 165	0+1
	802.11n ht20	MCS0_20	149, 157, 165	0+1
	802.11n ht40	MCS0_40	151, 159	0+1
	802.11ac 80	AC-MCS0_80	155	0+1
3*3 MIMO Non-Beamforming	802.11a	6Mbps	149, 157, 165	0+1+2
	802.11n ht20	MCS0_20	149, 157, 165	0+1+2
	802.11n ht40	MCS0_40	151, 159	0+1+2
	802.11ac 80	AC-MCS0_80	155	0+1+2
4*4 MIMO Non-Beamforming	802.11a	6Mbps	149, 157, 165	0+1+2+3
	802.11n ht20	MCS0_20	149, 157, 165	0+1+2+3
	802.11n ht40	MCS0_40	151, 159	0+1+2+3
	802.11ac 80	AC-MCS0_80	155	0+1+2+3

Configurations	Test Mode	Data Rate	Channel	Antenna Chain
2*2 MIMO Beamforming	802.11n ht20	MCS0_20	149, 157, 165	0+1
	802.11n ht40	MCS0_40	151, 159	0+1
	802.11ac 80	AC-MCS0_80	155	0+1
3*3 MIMO Beamforming	802.11n ht20	MCS0_20	149, 157, 165	0+1+2
	802.11n ht40	MCS0_40	151, 159	0+1+2
	802.11ac 80	AC-MCS0_80	155	0+1+2
4*4 MIMO Beamforming	802.11n ht20	MCS0_20	149, 157, 165	0+1+2+3
	802.11n ht40	MCS0_40	151, 159	0+1+2+3
	802.11ac 80	AC-MCS0_80	155	0+1+2+3

EUT Exercise Software

The IPOR&QSPR was used for testing, and the commands were provided by manufacturer. The maximum power and duty cycle was set by commands as following table:

SISO:

Software and version				IPOR&QSPR				
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level			
					Chain 0	Chain 1	Chain 2	Chain 3
5725-5850M Hz	802.11 a	Low	5745	6	24	24	24	24
		Middle	5785	6	24	24	24	24
		High	5825	6	24	24	24	24
	802.11 n20	Low	5745	MCS0_20	24	24	24	24
		Middle	5785	MCS0_20	24	24	24	24
		High	5825	MCS0_20	24	24	24	24
	802.11 n40	Low	5755	MCS0_40	24	24	24	24
		High	5795	MCS0_40	24	24	24	24
	802.11 ac80	Middle	5775	AC-MCS0_80	21	21	21	21

MIMO 2X2 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
					Chain 0&Chain 1
5725-5850MHz	802.11 a	Low	5745	6	22
		Middle	5785	6	22
		High	5825	6	22
	802.11 n20	Low	5745	MCS0_20	22
		Middle	5785	MCS0_20	22
		High	5825	MCS0_20	22
	802.11 n40	Low	5755	MCS0_40	22
		High	5795	MCS0_40	22
	802.11 ac80	Middle	5775	AC-MCS0_80	21

MIMO 3X3 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
					Chain 0&Chain 1&Chain 2
5725-5850MHz	802.11 a	Low	5745	6	21
		Middle	5785	6	21
		High	5825	6	21
	802.11 n20	Low	5745	MCS0_20	21
		Middle	5785	MCS0_20	21
		High	5825	MCS0_20	21
	802.11 n40	Low	5755	MCS0_40	21
		High	5795	MCS0_40	21
	802.11 ac80	Middle	5775	AC-MCS0_80	21

MIMO 4X4 Non-beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level
					Chain 0&Chain 1&Chain 2&Chain 3
5725-5850MHz	802.11 a	Low	5745	6	20
		Middle	5785	6	20
		High	5825	6	20
	802.11 n20	Low	5745	MCS0_20	20
		Middle	5785	MCS0_20	20
		High	5825	MCS0_20	20
	802.11 n40	Low	5755	MCS0_40	20
		High	5795	MCS0_40	20
	802.11 ac80	Middle	5775	AC-MCS0_80	20

MIMO 2X2 with beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1
5725-5850MHz	802.11 n20	Low	5745	MCS0_20	16
		Middle	5785	MCS0_20	16
		High	5825	MCS0_20	16
	802.11 n40	Low	5755	MCS0_40	16
		High	5795	MCS0_40	16
	802.11 ac80	Middle	5775	AC-MCS0_80	15

MIMO 3X3 with beamforming:

Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1&Chain 2
5725-5850MHz	802.11 n20	Low	5745	MCS0_20	15
		Middle	5785	MCS0_20	15
		High	5825	MCS0_20	15
	802.11 n40	Low	5755	MCS0_40	15
		High	5795	MCS0_40	15
	802.11 ac80	Middle	5775	AC-MCS0_80	15

MIMO 4X4 with beamforming:

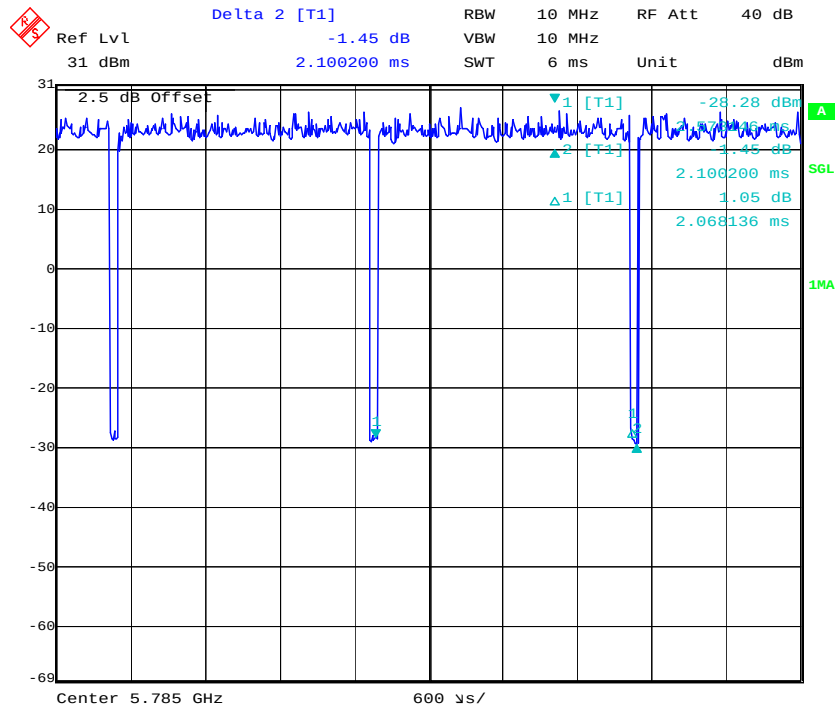
Software and version				IPOR&QSPR	
UNII Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Power Level Chain 0&Chain 1&Chain 2&Chain 3
5725-5850MHz	802.11 n20	Low	5745	MCS0_20	14
		Middle	5785	MCS0_20	14
		High	5825	MCS0_20	14
	802.11 n40	Low	5755	MCS0_40	14
		High	5795	MCS0_40	14
	802.11 ac80	Middle	5775	AC-MCS0_80	14

The duty cycle as below:

UNII Band	Mode	T _{on} (ms)	T _{on+off} (ms)	Duty Cycle (%)	Minimum Transmission Duration (T) (ms)
5725-5850MHz	802.11a	2.07	2.10	98.57	2.07
	802.11n ht20	5.00	5.02	99.60	5.00
	802.11n ht40	2.44	2.46	99.19	2.44
	802.11 ac80	1.16	1.20	96.67	1.16

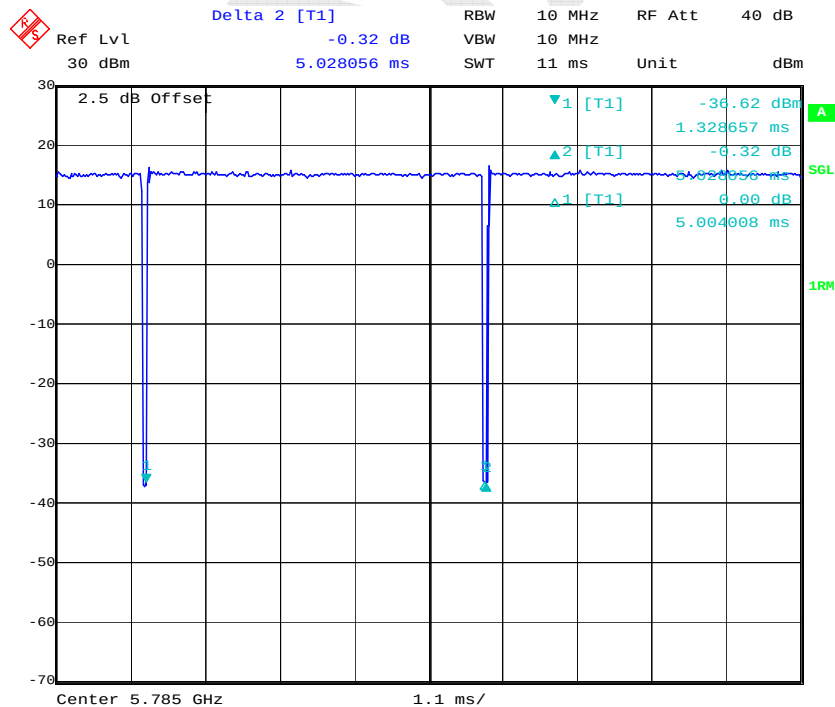
5725-5850MHz:

802.11a



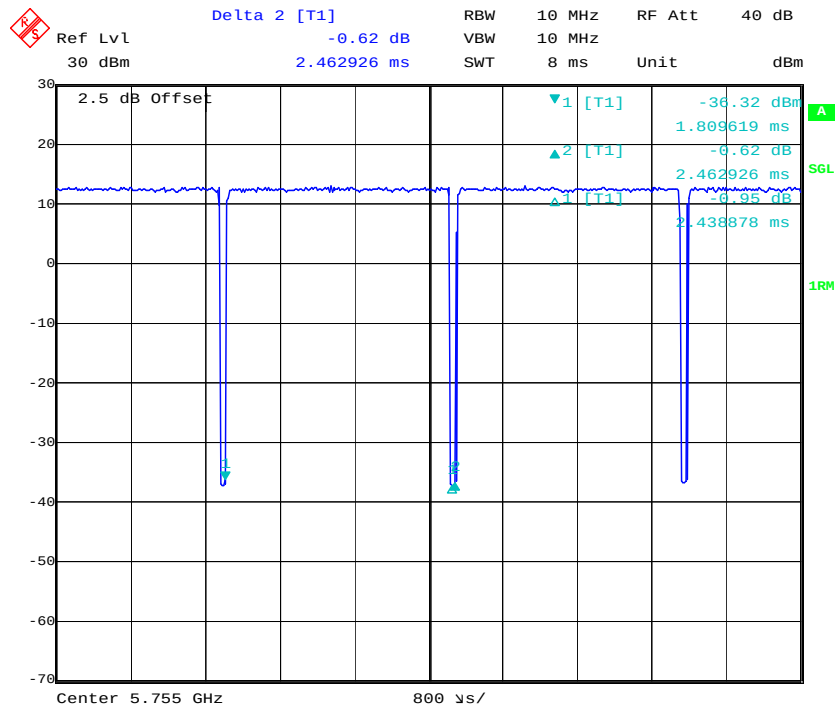
Date: 22.NOV.2016 11:50:58

802.11n ht20



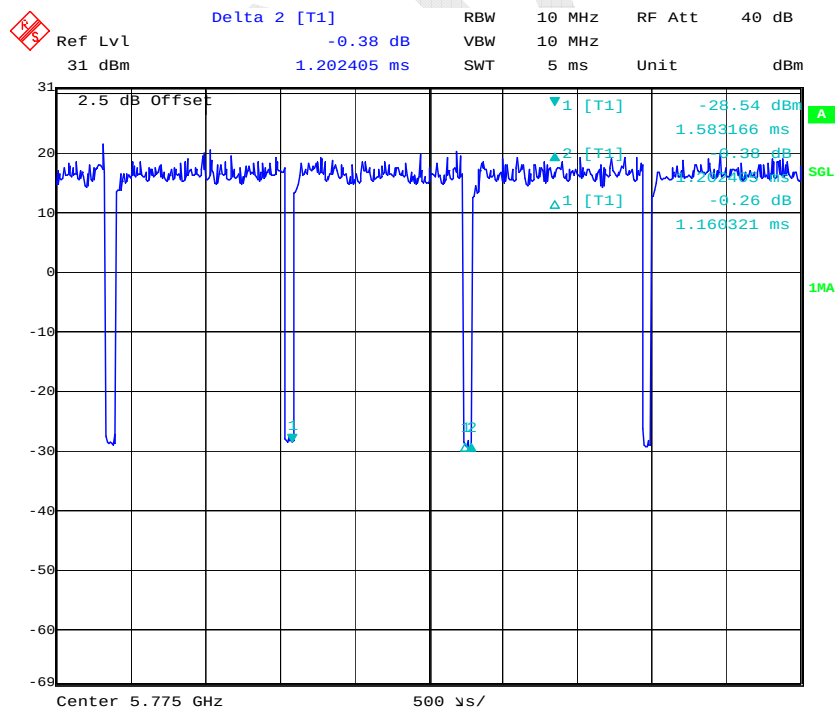
Date: 22.NOV.2016 18:48:20

802.11n ht40



Date: 22.NOV.2016 18:50:06

802.11ac80



Date: 22.NOV.2016 12:04:43

Equipment Modifications

No modification was made to the EUT.

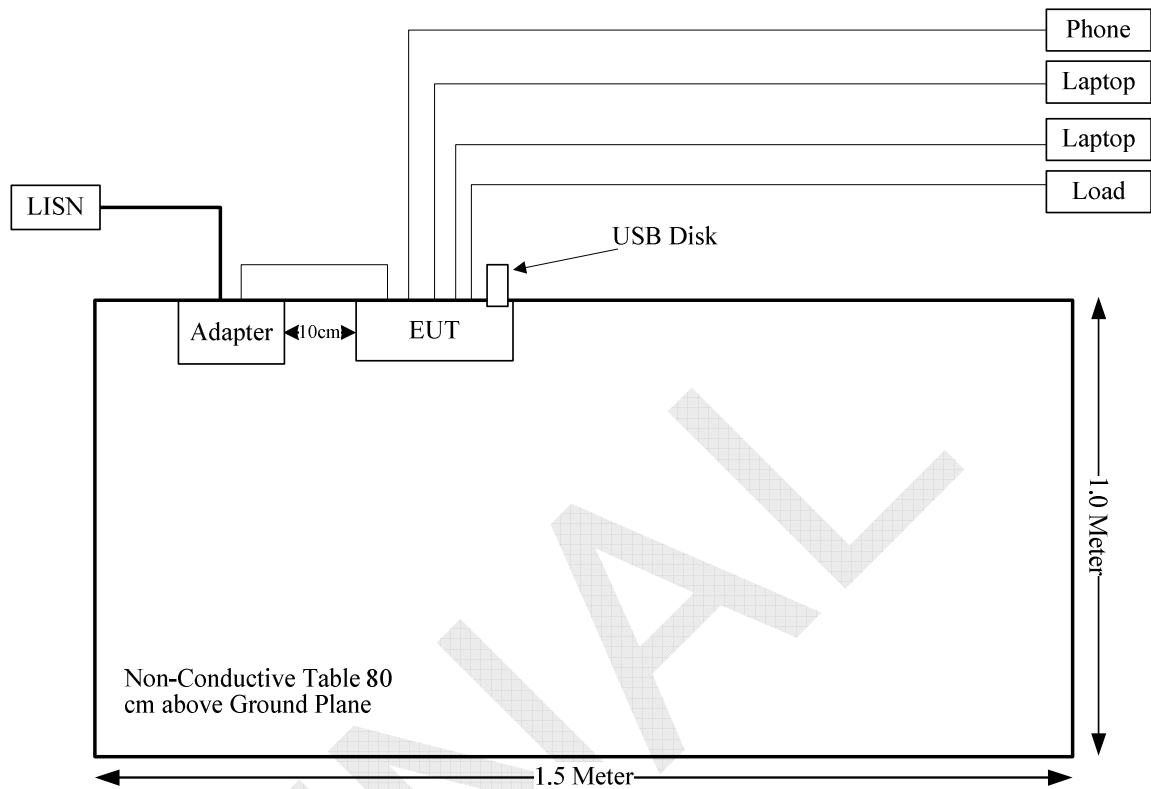
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Dell	Laptop	E6410	/
HUAWEI	Adapter	HW-120300U3W	/
Kingston	USB Disk	8G	/
Lusent	Phone	08D+	48589
DELL	Laptop	PP11L	QDS-BRCM1017

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable*2	No	Yes	10	RJ45 Port of Laptop	EUT
DC Power Line	No	No	1.2	Adapter	EUT
RJ45 Cable*2	No	Yes	10	EUT	Load
RJ11 Cable	No	No	10	EUT	phone

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.407 (f) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§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	Compliance
§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- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.407(f) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

Frequency (MHz)	Antenna Gain		Output Power including Tune-up tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
2400- 2483.5	2	1.58	30	1000	20.00	0.31	1.0
5725-5850	2	1.58	30	1000	20.00	0.31	1.0

The 2.4GHz and 5GHz band can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$= S_{2.4}/S_{limit-2.4} + S_5/S_{limit-5}$$

$$= 0.31/1 + 0.31/1$$

$$= 0.62$$

$$< 1.0$$

Result: Compliance, The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ≥20 cm.

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 antennas for 2.4G WIFI and the gain of each antenna is 2.0 dBi, 4 internal antennas for 5G WIFI and the gain of each antenna is 2.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

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

Applicable Standard

FCC §15.207, §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:

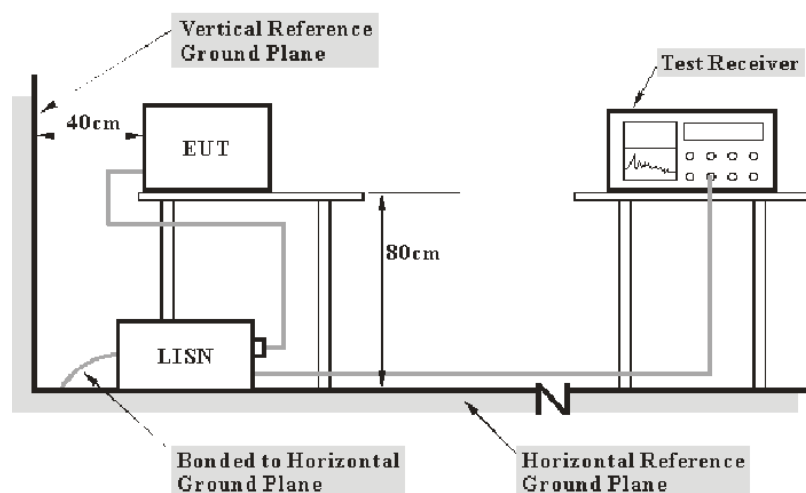
–compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
 –non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is ± 3.17 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 adapter was connected to a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

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

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2015-12-02	2016-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	357.8810.52	2016-10-31	2017-10-30
N/A	Conducted Cable	NO.5	N/A	2015-11-10	2016-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

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

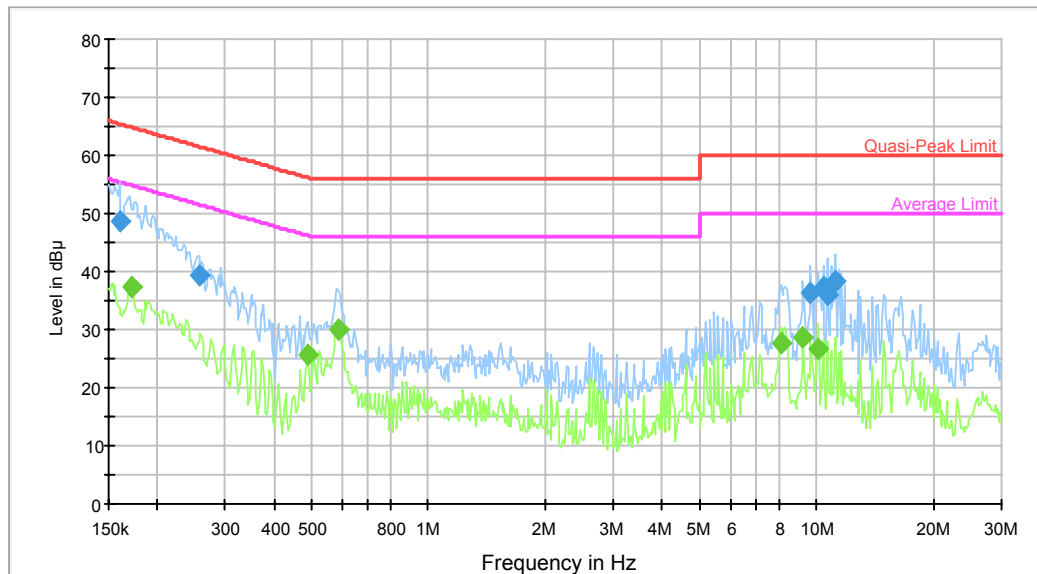
Test Data

Environmental Conditions

Temperature:	28.6 °C
Relative Humidity:	40 %
ATM Pressure:	101.2 kPa

The testing was performed by Lorin Bian on 2016-11-08.

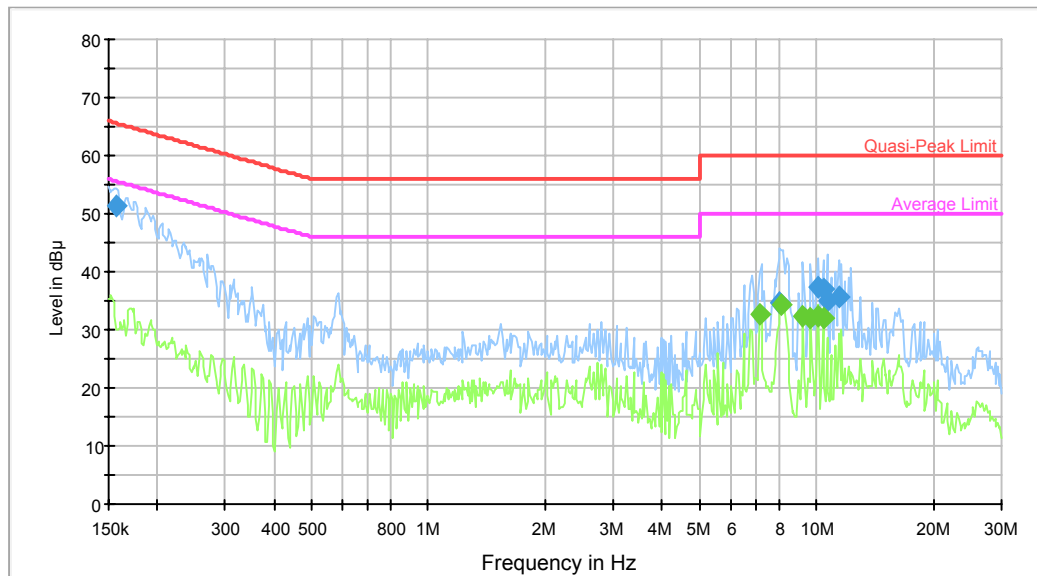
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.159873	48.7	9.000	L1	18.79	16.8	65.5	Compliance
0.255827	39.3	9.000	L1	18.9	22.3	61.6	Compliance
9.681660	36.5	9.000	L1	19.74	23.5	60.0	Compliance
10.401468	37.4	9.000	L1	19.76	22.6	60.0	Compliance
10.653105	36.1	9.000	L1	19.77	23.9	60.0	Compliance
11.174791	38.5	9.000	L1	19.79	21.5	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171759	37.2	9.000	L1	18.79	17.7	54.9	Compliance
0.487810	25.7	9.000	L1	19.38	20.5	46.2	Compliance
0.585926	29.9	9.000	L1	19.4	16.1	46.0	Compliance
8.124902	27.6	9.000	L1	19.7	22.4	50.0	Compliance
9.229680	28.8	9.000	L1	19.73	21.2	50.0	Compliance
10.075173	26.8	9.000	L1	19.75	23.2	50.0	Compliance

AC120 V, 60 Hz, Neutral:



frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.157346	51.4	9.000	N	18.77	14.2	65.6	Compliance
8.060419	34.6	9.000	N	19.69	25.4	60.0	Compliance
10.075173	37.5	9.000	N	19.75	22.5	60.0	Compliance
10.401468	37.2	9.000	N	19.76	22.8	60.0	Compliance
10.653105	35.1	9.000	N	19.77	24.9	60.0	Compliance
11.445138	35.7	9.000	N	19.8	24.3	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
7.152364	32.7	9.000	N	19.66	17.3	50.0	Compliance
8.124902	34.2	9.000	N	19.69	15.8	50.0	Compliance
9.229680	32.5	9.000	N	19.72	17.5	50.0	Compliance
9.681660	31.9	9.000	N	19.74	18.1	50.0	Compliance
10.075173	32.5	9.000	N	19.75	17.5	50.0	Compliance
10.401468	31.9	9.000	N	19.76	18.1	50.0	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_{cisprr} 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_{cisprr} of Table 1, then:

–compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisprr})$, exceeds the disturbance limit;
–non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisprr})$, 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. (Chengdu) is:

30M~200MHz: ± 4.7 dB ;

200M~1GHz: ± 6.0 dB ;

1G-6GHz: ± 5.13 dB;

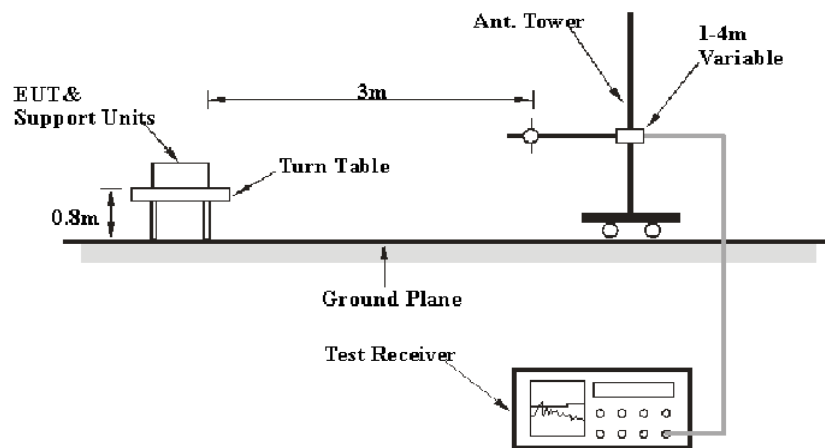
6G~25GHz: ± 5.47 dB;

Table 1 – Values of U_{CISPR}

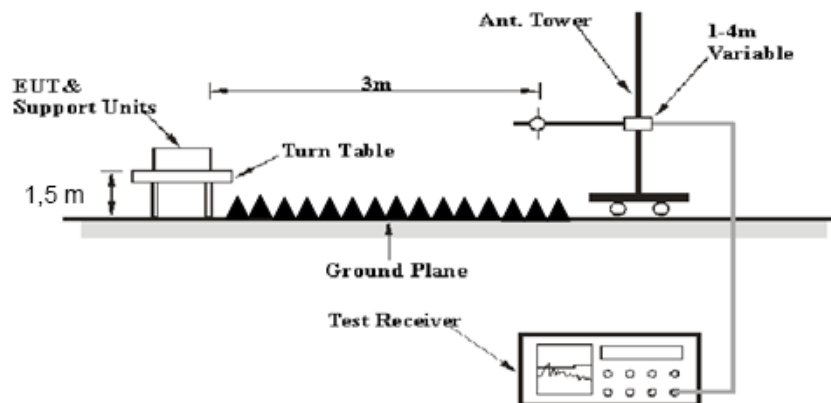
Measurement	U_{CISPR}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 adapter was connected to a 120 V/60 Hz AC 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:
30-1000MHz:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

1GHz- 40GHz:

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

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: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

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

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

Extrapolation result = Corrected Amplitude (dB μ V/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:

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2015-12-02	2016-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2015-12-02	2016-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
ETS	Horn Antenna	3115	003-6076	2015-12-02	2016-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2015-11-10	2016-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2015-11-10	2016-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2015-11-10	2016-11-09
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1312	2016-08-18	2017-08-18
Quinstar	Amplifier	QLW-18405536-JO	15964001032	2016-08-18	2017-08-18
Agilent	Spectrum Analyzer	8564E	5943A01752	2016-08-18	2017-08-18

* **Statement of Traceability:** BACL (Chengdu) attested 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:	63 %
ATM Pressure:	101.5 kPa

* The testing was performed by Lorin Bian on 2016-11-02.

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

FINAL

SISO mode:

802.11a mode(chain 0 was the worst):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	70.86	PK	H	32.59	5.74	0.00	109.19	N/A	N/A
5745	60.55	AV	H	32.59	5.74	0.00	98.88	N/A	N/A
5745	76.58	PK	V	32.59	5.74	0.00	114.91	N/A	N/A
5745	65.89	AV	V	32.59	5.74	0.00	104.22	N/A	N/A
5725	43.24	PK	V	32.57	5.72	0.00	81.53	122.2	40.67
5720	35.13	PK	V	32.56	5.71	0.00	73.4	110.8	37.4
5700	26.22	PK	V	32.54	5.70	0.00	64.46	105.2	40.74
5650	25.85	PK	V	32.48	5.65	0.00	63.98	68.2	4.22
11490	31.49	PK	V	37.99	8.22	26.02	51.68	74.00	22.32
11490	21.01	AV	V	37.99	8.22	26.02	41.2	54.00	12.8
17235	30.90	PK	V	42.98	10.82	25.99	58.71	74.00	15.29
17235	19.83	AV	V	42.98	10.82	25.99	47.64	54.00	6.36
1530	37.55	PK	V	24.15	2.69	26.36	38.03	74.00	35.97
1530	27.82	AV	V	24.15	2.69	26.36	28.3	54.00	25.7
2485	44.16	PK	V	23.25	2.99	26.89	43.51	74.00	30.49
2485	39.32	AV	V	23.25	2.99	26.89	38.67	54.00	15.33
500.45	43.01	QP	V	18.10	1.61	28.82	33.90	46.00	12.10
Middle Channel:5785 MHz									
5785	71.47	PK	H	32.64	5.77	0.00	109.88	N/A	N/A
5785	61.35	AV	H	32.64	5.77	0.00	99.76	N/A	N/A
5785	77.81	PK	V	32.64	5.77	0.00	116.22	N/A	N/A
5785	67.03	AV	V	32.64	5.77	0.00	105.44	N/A	N/A
11570	31.12	PK	V	38.03	8.21	26.00	51.36	74.00	22.64
11570	20.70	AV	V	38.03	8.21	26.00	40.94	54.00	13.06
17355	30.71	PK	V	43.53	11.03	26.16	59.11	74.00	14.89
17355	20.43	AV	V	43.53	11.03	26.16	48.83	54.00	5.17
2485	43.95	PK	V	23.25	2.99	26.89	43.3	74.00	30.7
2485	39.32	AV	V	23.25	2.99	26.89	38.67	54.00	15.33
1500	37.67	PK	V	24.10	2.67	26.33	38.11	74.00	35.89
1500	26.84	AV	V	24.10	2.67	26.33	27.28	54.00	26.72
500.45	42.55	QP	V	18.10	1.61	28.82	33.44	46.00	12.56
High Channel:5825 MHz									
5825	72.07	PK	H	32.69	5.81	0.00	110.57	N/A	N/A
5825	62.43	AV	H	32.69	5.81	0.00	100.93	N/A	N/A
5825	79.05	PK	V	32.69	5.81	0.00	117.55	N/A	N/A
5825	68.38	AV	V	32.69	5.81	0.00	106.88	N/A	N/A
5850	36.20	PK	V	32.72	5.83	0.00	74.75	122.2	47.45
5855	33.92	PK	V	32.73	5.83	0.00	72.48	110.8	38.32
5875	27.58	PK	V	32.75	5.85	0.00	66.18	105.2	39.02
5925	26.02	PK	V	32.81	5.89	0.00	64.72	68.2	3.48
11650	32.08	PK	V	38.06	8.20	25.98	52.36	74.00	21.64
11650	21.62	AV	V	38.06	8.20	25.98	41.9	54.00	12.1
17475	31.27	PK	V	44.09	11.23	26.33	60.26	74.00	13.74
17475	20.78	AV	V	44.09	11.23	26.33	49.77	54.00	4.23
1495	39.13	PK	V	24.09	2.66	26.33	39.55	74.00	34.45
1495	29.46	AV	V	24.09	2.66	26.33	29.88	54.00	24.12
2485	43.77	PK	V	23.25	2.99	26.89	43.12	74.00	30.88
2485	38.82	AV	V	23.25	2.99	26.89	38.17	54.00	15.83
500.45	42.96	QP	V	18.10	1.61	28.82	33.85	46.00	12.15

802.11n ht20 mode(chain 0 was the worst):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz									
5745	69.86	PK	H	32.59	5.74	0.00	108.19	N/A	N/A
5745	60.46	AV	H	32.59	5.74	0.00	98.79	N/A	N/A
5745	76.32	PK	V	32.59	5.74	0.00	114.65	N/A	N/A
5745	65.50	AV	V	32.59	5.74	0.00	103.83	N/A	N/A
5725	42.08	PK	V	32.57	5.72	0.00	80.37	122.2	41.83
5720	36.01	PK	V	32.56	5.71	0.00	74.28	110.8	36.52
5700	27.22	PK	V	32.54	5.70	0.00	65.46	105.2	39.74
5650	25.91	PK	V	32.48	5.65	0.00	64.04	68.2	4.16
11490	32.56	PK	V	37.99	8.22	26.02	52.75	74.00	21.25
11490	22.07	AV	V	37.99	8.22	26.02	42.26	54.00	11.74
17235	31.12	PK	V	42.98	10.82	25.99	58.93	74.00	15.07
17235	20.67	AV	V	42.98	10.82	25.99	48.48	54.00	5.52
1495	39.64	PK	V	24.09	2.66	26.33	40.06	74.00	33.94
1495	30.55	AV	V	24.09	2.66	26.33	30.97	54.00	23.03
2485	44.11	PK	V	23.25	2.99	26.89	43.46	74.00	30.54
2485	29.64	AV	V	23.25	2.99	26.89	28.99	54.00	25.01
500.45	41.94	QP	V	18.10	1.61	28.82	32.83	46.00	13.17
Middle Channel:5785 MHz									
5785	71.10	PK	H	32.64	5.77	0.00	109.51	N/A	N/A
5785	61.08	AV	H	32.64	5.77	0.00	99.49	N/A	N/A
5785	78.12	PK	V	32.64	5.77	0.00	116.53	N/A	N/A
5785	66.63	AV	V	32.64	5.77	0.00	105.04	N/A	N/A
11570	31.01	PK	V	38.03	8.21	26.00	51.25	74.00	22.75
11570	20.62	AV	V	38.03	8.21	26.00	40.86	54.00	13.14
17355	30.73	PK	V	43.53	11.03	26.16	59.13	74.00	14.87
17355	19.94	AV	V	43.53	11.03	26.16	48.34	54.00	5.66
1495	42.75	PK	V	24.09	2.66	26.33	43.17	74.00	30.83
1495	31.26	AV	V	24.09	2.66	26.33	31.68	54.00	22.32
2485	44.25	PK	V	23.25	2.99	26.89	43.6	74.00	30.4
2485	38.80	AV	V	23.25	2.99	26.89	38.15	54.00	15.85
500.45	42.11	QP	V	18.10	1.61	28.82	33.00	46.00	13.00
High Channel:5825 MHz									
5825	72.34	PK	H	32.69	5.81	0.00	110.84	N/A	N/A
5825	61.97	AV	H	32.69	5.81	0.00	100.47	N/A	N/A
5825	78.98	PK	V	32.69	5.81	0.00	117.48	N/A	N/A
5825	67.99	AV	V	32.69	5.81	0.00	106.49	N/A	N/A
5850	35.20	PK	V	32.72	5.83	0.00	73.75	122.2	48.45
5855	33.27	PK	V	32.73	5.83	0.00	71.83	110.8	38.97
5875	27.16	PK	V	32.75	5.85	0.00	65.76	105.2	39.44
5925	26.59	PK	V	32.81	5.89	0.00	65.29	68.2	2.91
11650	31.83	PK	V	38.06	8.20	25.98	52.11	74.00	21.89
11650	21.62	AV	V	38.06	8.20	25.98	41.9	54.00	12.1
17475	31.42	PK	V	44.09	11.23	26.33	60.41	74.00	13.59
17475	20.29	AV	V	44.09	11.23	26.33	49.28	54.00	4.72
2485	43.18	PK	V	23.25	2.99	26.89	42.53	74.00	31.47
2485	38.42	AV	V	23.25	2.99	26.89	37.77	54.00	16.23
1510	37.55	PK	V	24.12	2.68	26.34	38.01	74.00	35.99
1510	24.86	AV	V	24.12	2.68	26.34	25.32	54.00	28.68
500.45	42.5	QP	V	18.10	1.61	28.82	33.39	46.00	12.61

802.11n ht40 mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	69.52	PK	H	32.61	5.74	0.00	107.87	N/A	N/A
5755	59.44	AV	H	32.61	5.74	0.00	97.79	N/A	N/A
5755	75.11	PK	V	32.61	5.74	0.00	113.46	N/A	N/A
5755	64.45	AV	V	32.61	5.74	0.00	102.8	N/A	N/A
5725	48.50	PK	V	32.57	5.72	0.00	86.79	122.2	35.41
5720	45.83	PK	V	32.56	5.71	0.00	84.1	110.8	26.7
5700	34.01	PK	V	32.54	5.70	0.00	72.25	105.2	32.95
5650	26.30	PK	V	32.48	5.65	0.00	64.43	68.2	3.77
11510	31.27	PK	V	38.00	8.22	26.02	51.47	74.00	22.53
11510	20.67	AV	V	38.00	8.22	26.02	40.87	54.00	13.13
17265	30.68	PK	V	43.12	10.88	26.04	58.64	74.00	15.36
17265	20.34	AV	V	43.12	10.88	26.04	48.3	54.00	5.7
1495	43.62	PK	V	24.09	2.66	26.33	44.04	74.00	29.96
1495	30.96	AV	V	24.09	2.66	26.33	31.38	54.00	22.62
2485	43.66	PK	V	23.25	2.99	26.89	43.01	74.00	30.99
2485	38.79	AV	V	23.25	2.99	26.89	38.14	54.00	15.86
500.45	42.68	QP	V	18.10	1.61	28.82	33.57	46.00	12.43
High Channel:5795 MHz									
5795	69.70	PK	H	32.65	5.78	0.00	108.13	N/A	N/A
5795	60.21	AV	H	32.65	5.78	0.00	98.64	N/A	N/A
5795	75.69	PK	V	32.65	5.78	0.00	114.12	N/A	N/A
5795	65.31	AV	V	32.65	5.78	0.00	103.74	N/A	N/A
5850	33.73	PK	V	32.72	5.83	0.00	72.28	122.2	49.92
5855	32.06	PK	V	32.73	5.83	0.00	70.62	110.8	40.18
5875	26.93	PK	V	32.75	5.85	0.00	65.53	105.2	39.67
5925	26.91	PK	V	32.81	5.89	0.00	65.61	68.2	2.59
11590	31.33	PK	V	38.04	8.21	25.99	51.59	74.00	22.41
11590	21.05	AV	V	38.04	8.21	25.99	41.31	54.00	12.69
17385	30.89	PK	V	43.67	11.08	26.21	59.43	74.00	14.57
17385	20.15	AV	V	43.67	11.08	26.21	48.69	54.00	5.31
1495	43.08	PK	V	24.09	2.66	26.33	43.5	74.00	30.5
1495	31.22	AV	V	24.09	2.66	26.33	31.64	54.00	22.36
2485	43.98	PK	V	23.25	2.99	26.89	43.33	74.00	30.67
2485	39.40	AV	V	23.25	2.99	26.89	38.75	54.00	15.25
500.45	42.76	QP	V	18.10	1.61	28.82	33.65	46.00	12.35

802.11n ac80 mode(chain 0 was the worst):

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	63.83	PK	H	32.63	5.76	0.00	102.22	N/A	N/A
5775	54.06	AV	H	32.63	5.76	0.00	92.45	N/A	N/A
5775	68.42	PK	V	32.63	5.76	0.00	106.81	N/A	N/A
5775	58.05	AV	V	32.63	5.76	0.00	96.44	N/A	N/A
5725	33.98	PK	V	32.57	5.72	0.00	72.27	122.2	49.93
5720	34.06	PK	V	32.56	5.71	0.00	72.33	110.8	38.47
5700	33.44	PK	V	32.54	5.70	0.00	71.68	105.2	33.52
5650	26.45	PK	V	32.48	5.65	0.00	64.58	68.2	3.62
5850	32.56	PK	V	32.72	5.83	0.00	71.11	122.2	51.09
5855	31.09	PK	V	32.73	5.83	0.00	69.65	110.8	41.15
5875	28.06	PK	V	32.75	5.85	0.00	66.66	105.2	38.54
5925	26.70	PK	V	32.81	5.89	0.00	65.4	68.2	2.8
11550	31.39	PK	V	38.02	8.21	26.01	51.61	74.00	22.39
11550	22.37	AV	V	38.02	8.21	26.01	42.59	54.00	11.41
17325	30.97	PK	V	43.40	10.98	26.12	59.23	74.00	14.77
17325	21.24	AV	V	43.40	10.98	26.12	49.5	54.00	4.5
2485	43.18	PK	V	23.25	2.99	26.89	42.53	74.00	31.47
2485	39.33	AV	V	23.25	2.99	26.89	38.68	54.00	15.32
500.45	43.2	QP	V	18.10	1.61	28.82	34.09	46.00	11.91

MIMO mode (Chain 0 & Chain 1) Non-beamforming:
802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	70.86	PK	H	32.59	5.74	0.00	109.19	N/A	N/A
5745	60.55	AV	H	32.59	5.74	0.00	98.88	N/A	N/A
5745	75.30	PK	V	32.59	5.74	0.00	113.63	N/A	N/A
5745	60.87	AV	V	32.59	5.74	0.00	99.2	N/A	N/A
5725	30.29	PK	V	32.57	5.72	0.00	68.58	122.2	53.62
5720	29.57	PK	V	32.56	5.71	0.00	67.84	110.8	42.96
5700	30.18	PK	V	32.54	5.70	0.00	68.42	105.2	36.78
5650	28.22	PK	V	32.48	5.65	0.00	66.35	68.2	1.85
11490	31.73	PK	V	37.99	8.22	26.02	51.92	74.00	22.08
11490	22.08	AV	V	37.99	8.22	26.02	42.27	54.00	11.73
17235	30.25	PK	V	42.98	10.82	25.99	58.06	74.00	15.94
17235	19.53	AV	V	42.98	10.82	25.99	47.34	54.00	6.66
1490	36.45	PK	V	24.07	2.66	26.34	36.84	74.00	37.16
1490	25.92	AV	V	24.07	2.66	26.34	26.31	54.00	27.69
2485	41.96	PK	V	23.25	2.99	26.89	41.31	74.00	32.69
2485	35.28	AV	V	23.25	2.99	26.89	34.63	54.00	19.37
500.45	41.93	QP	V	18.10	1.61	28.82	32.82	46.00	13.18
Middle Channel:5785 MHz									
5785	71.47	PK	H	32.64	5.77	0.00	109.88	N/A	N/A
5785	61.35	AV	H	32.64	5.77	0.00	99.76	N/A	N/A
5785	77.81	PK	V	32.64	5.77	0.00	116.22	N/A	N/A
5785	67.03	AV	V	32.64	5.77	0.00	105.44	N/A	N/A
11570	31.12	PK	V	38.03	8.21	26.00	51.36	74.00	22.64
11570	20.70	AV	V	38.03	8.21	26.00	40.94	54.00	13.06
17355	30.71	PK	V	43.53	11.03	26.16	59.11	74.00	14.89
17355	20.43	AV	V	43.53	11.03	26.16	48.83	54.00	5.17
2485	43.95	PK	V	23.25	2.99	26.89	43.3	74.00	30.7
2485	39.32	AV	V	23.25	2.99	26.89	38.67	54.00	15.33
1500	37.67	PK	V	24.10	2.67	26.33	38.11	74.00	35.89
1500	26.84	AV	V	24.10	2.67	26.33	27.28	54.00	26.72
500.45	42.1	QP	V	18.10	1.61	28.82	32.99	46.00	13.01
High Channel:5825 MHz									
5825	72.07	PK	H	32.69	5.81	0.00	110.57	N/A	N/A
5825	62.43	AV	H	32.69	5.81	0.00	100.93	N/A	N/A
5825	78.13	PK	V	32.69	5.81	0.00	116.63	N/A	N/A
5825	63.54	AV	V	32.69	5.81	0.00	102.04	N/A	N/A
5850	39.93	PK	V	32.72	5.83	0.00	78.48	122.2	43.72
5855	34.55	PK	V	32.73	5.83	0.00	73.11	110.8	37.69
5875	29.74	PK	V	32.75	5.85	0.00	68.34	105.2	36.86
5925	27.56	PK	V	32.81	5.89	0.00	66.26	68.2	1.94
11650	31.05	PK	V	38.06	8.20	25.98	51.33	74.00	22.67
11650	20.90	AV	V	38.06	8.20	25.98	41.18	54.00	12.82
17475	31.24	PK	V	44.09	11.23	26.33	60.23	74.00	13.77
17475	20.52	AV	V	44.09	11.23	26.33	49.51	54.00	4.49
1187	35.77	PK	V	23.29	2.24	26.63	34.67	74.00	39.33
1187	25.34	AV	V	23.29	2.24	26.63	24.24	54.00	29.76
2485	43.17	PK	V	23.25	2.99	26.89	42.52	74.00	31.48
2485	37.39	AV	V	23.25	2.99	26.89	36.74	54.00	17.26
500.45	42.18	QP	V	18.10	1.61	28.82	33.07	46.00	12.93

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz									
5745	71.68	PK	H	32.59	5.74	0.00	110.01	N/A	N/A
5745	60.20	AV	H	32.59	5.74	0.00	98.53	N/A	N/A
5745	74.22	PK	V	32.59	5.74	0.00	112.55	N/A	N/A
5745	61.73	AV	V	32.59	5.74	0.00	100.06	N/A	N/A
5725	29.06	PK	V	32.57	5.72	0.00	67.35	122.2	54.85
5720	28.69	PK	V	32.56	5.71	0.00	66.96	110.8	43.84
5700	29.15	PK	V	32.54	5.70	0.00	67.39	105.2	37.81
5650	27.85	PK	V	32.48	5.65	0.00	65.98	68.2	2.22
11490	32.56	PK	V	37.99	8.22	26.02	52.75	74.00	21.25
11490	22.07	AV	V	37.99	8.22	26.02	42.26	54.00	11.74
17235	31.12	PK	V	42.98	10.82	25.99	58.93	74.00	15.07
17235	20.67	AV	V	42.98	10.82	25.99	48.48	54.00	5.52
3152	41.10	PK	V	25.05	3.66	26.46	43.35	74.00	30.65
3152	31.39	AV	V	25.05	3.66	26.46	33.64	54.00	20.36
2471	43.07	PK	V	23.30	2.99	26.89	42.47	74.00	31.53
2471	37.29	AV	V	23.30	2.99	26.89	36.69	54.00	17.31
500.45	42.05	QP	V	18.10	1.61	28.82	32.94	46.00	13.06
Middle Channel:5785 MHz									
5785	71.10	PK	H	32.64	5.77	0.00	109.51	N/A	N/A
5785	61.08	AV	H	32.64	5.77	0.00	99.49	N/A	N/A
5785	78.12	PK	V	32.64	5.77	0.00	116.53	N/A	N/A
5785	66.63	AV	V	32.64	5.77	0.00	105.04	N/A	N/A
11570	31.01	PK	V	38.03	8.21	26.00	51.25	74.00	22.75
11570	20.62	AV	V	38.03	8.21	26.00	40.86	54.00	13.14
17355	30.73	PK	V	43.53	11.03	26.16	59.13	74.00	14.87
17355	19.94	AV	V	43.53	11.03	26.16	48.34	54.00	5.66
2471	43.62	PK	V	23.30	2.99	26.89	43.02	74.00	30.98
2471	37.50	AV	V	23.30	2.99	26.89	36.9	54.00	17.1
3152	40.38	PK	V	25.05	3.66	26.46	42.63	74.00	31.37
3152	30.24	AV	V	25.05	3.66	26.46	32.49	54.00	21.51
500.45	42.46	QP	V	18.10	1.61	28.82	33.35	46.00	12.65
High Channel:5825 MHz									
5825	76.21	PK	H	32.69	5.81	0.00	114.71	N/A	N/A
5825	63.04	AV	H	32.69	5.81	0.00	101.54	N/A	N/A
5825	78.35	PK	V	32.69	5.81	0.00	116.85	N/A	N/A
5825	64.81	AV	V	32.69	5.81	0.00	103.31	N/A	N/A
5850	39.76	PK	V	32.72	5.83	0.00	78.31	122.2	43.89
5855	35.79	PK	V	32.73	5.83	0.00	74.35	110.8	36.45
5875	29.20	PK	V	32.75	5.85	0.00	67.8	105.2	37.4
5925	26.89	PK	V	32.81	5.89	0.00	65.59	68.2	2.61
11650	33.73	PK	V	38.06	8.20	25.98	54.01	74.00	19.99
11650	22.35	AV	V	38.06	8.20	25.98	42.63	54.00	11.37
17475	30.05	PK	V	44.09	11.23	26.33	59.04	74.00	14.96
17475	19.64	AV	V	44.09	11.23	26.33	48.63	54.00	5.37
2471	42.28	PK	V	23.30	2.99	26.89	41.68	74.00	32.32
2471	35.49	AV	V	23.30	2.99	26.89	34.89	54.00	19.11
1599	33.15	PK	V	24.26	2.75	26.43	33.73	74.00	40.27
1599	22.82	AV	V	24.26	2.75	26.43	23.4	54.00	30.6
500.45	41.44	QP	V	18.10	1.61	28.82	32.33	46.00	13.67

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	71.65	PK	H	32.61	5.74	0.00	110	N/A	N/A
5755	58.94	AV	H	32.61	5.74	0.00	97.29	N/A	N/A
5755	73.92	PK	V	32.61	5.74	0.00	112.27	N/A	N/A
5755	60.24	AV	V	32.61	5.74	0.00	98.59	N/A	N/A
5725	31.33	PK	V	32.57	5.72	0.00	69.62	122.2	52.58
5720	30.95	PK	V	32.56	5.71	0.00	69.22	110.8	41.58
5700	29.28	PK	V	32.54	5.70	0.00	67.52	105.2	37.68
5650	28.43	PK	V	32.48	5.65	0.00	66.56	68.2	1.64
11510	31.86	PK	V	38.00	8.22	26.02	52.06	74.00	21.94
11510	22.07	AV	V	38.00	8.22	26.02	42.27	54.00	11.73
17265	31.11	PK	V	43.12	10.88	26.04	59.07	74.00	14.93
17265	20.84	AV	V	43.12	10.88	26.04	48.8	54.00	5.2
2471	43.06	PK	V	23.30	2.99	26.89	42.46	74.00	31.54
2471	36.64	AV	V	23.30	2.99	26.89	36.04	54.00	17.96
3152	40.90	PK	V	25.05	3.66	26.46	43.15	74.00	30.85
3152	29.62	AV	V	25.05	3.66	26.46	31.87	54.00	22.13
500.45	41.61	QP	V	18.10	1.61	28.82	32.50	46.00	13.50
High Channel:5795 MHz									
5795	72.25	PK	H	32.65	5.78	0.00	110.68	N/A	N/A
5795	59.68	AV	H	32.65	5.78	0.00	98.11	N/A	N/A
5795	73.27	PK	V	32.65	5.78	0.00	111.7	N/A	N/A
5795	60.76	AV	V	32.65	5.78	0.00	99.19	N/A	N/A
5850	35.40	PK	V	32.72	5.83	0.00	73.95	122.2	48.25
5855	32.99	PK	V	32.73	5.83	0.00	71.55	110.8	39.25
5875	30.36	PK	V	32.75	5.85	0.00	68.96	105.2	36.24
5925	26.62	PK	V	32.81	5.89	0.00	65.32	68.2	2.88
11590	31.07	PK	V	38.04	8.21	25.99	51.33	74.00	22.67
11590	20.63	AV	V	38.04	8.21	25.99	40.89	54.00	13.11
17385	30.39	PK	V	43.67	11.08	26.21	58.93	74.00	15.07
17385	19.92	AV	V	43.67	11.08	26.21	48.46	54.00	5.54
1495	43.08	PK	V	24.09	2.66	26.33	43.5	74.00	30.5
1495	31.22	AV	V	24.09	2.66	26.33	31.64	54.00	22.36
2485	43.98	PK	V	23.25	2.99	26.89	43.33	74.00	30.67
2485	39.40	AV	V	23.25	2.99	26.89	38.75	54.00	15.25
500.45	42	QP	V	18.10	1.61	28.82	32.89	46.00	13.11

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	65.83	PK	H	32.63	5.76	0.00	104.22	N/A	N/A
5775	54.06	AV	H	32.63	5.76	0.00	92.45	N/A	N/A
5775	68.53	PK	V	32.63	5.76	0.00	106.92	N/A	N/A
5775	56.04	AV	V	32.63	5.76	0.00	94.43	N/A	N/A
5725	30.29	PK	V	32.57	5.72	0.00	68.58	122.2	53.62
5720	29.57	PK	V	32.56	5.71	0.00	67.84	110.8	42.96
5700	30.18	PK	V	32.54	5.70	0.00	68.42	105.2	36.78
5650	27.56	PK	V	32.48	5.65	0.00	65.69	68.2	2.51
5850	66.68	PK	V	32.72	5.83	0.00	105.23	122.2	16.97
5855	64.75	PK	V	32.73	5.83	0.00	103.31	110.8	7.49
5875	33.71	PK	V	32.75	5.85	0.00	72.31	105.2	32.89
5925	26.15	PK	V	32.81	5.89	0.00	64.85	68.2	3.35
11550	31.94	PK	V	38.02	8.21	26.01	52.16	74.00	21.84
11550	22.06	AV	V	38.02	8.21	26.01	42.28	54.00	11.72
17325	30.95	PK	V	43.40	10.98	26.12	59.21	74.00	14.79
17325	20.60	AV	V	43.40	10.98	26.12	48.86	54.00	5.14
2471	43.14	PK	V	23.30	2.99	26.89	42.54	74.00	31.46
2471	37.53	AV	V	23.30	2.99	26.89	36.93	54.00	17.07
500.45	42.18	QP	V	18.10	1.61	28.82	33.07	46.00	12.93

MIMO mode (Chain 0 & Chain 1 & Chain 2) Non-beamforming:
802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	80.07	PK	H	32.59	5.74	0.00	118.4	N/A	N/A
5745	68.61	AV	H	32.59	5.74	0.00	106.94	N/A	N/A
5745	76.58	PK	V	32.59	5.74	0.00	114.91	N/A	N/A
5745	65.89	AV	V	32.59	5.74	0.00	104.22	N/A	N/A
5725	29.55	PK	H	32.57	5.72	0.00	67.84	122.2	54.36
5720	29.03	PK	H	32.56	5.71	0.00	67.3	110.8	43.5
5700	29.56	PK	H	32.54	5.70	0.00	67.8	105.2	37.4
5650	27.57	PK	H	32.48	5.65	0.00	65.7	68.2	2.5
11490	32.25	PK	H	37.99	8.22	26.02	52.44	74.00	21.56
11490	22.16	AV	H	37.99	8.22	26.02	42.35	54.00	11.65
17235	30.80	PK	H	42.98	10.82	25.99	58.61	74.00	15.39
17235	20.31	AV	H	42.98	10.82	25.99	48.12	54.00	5.88
1599	35.21	PK	H	24.26	2.75	26.43	35.79	74.00	38.21
1599	25.08	AV	H	24.26	2.75	26.43	25.66	54.00	28.34
2471	42.95	PK	H	23.30	2.99	26.89	42.35	74.00	31.65
2471	37.03	AV	H	23.30	2.99	26.89	36.43	54.00	17.57
500.45	42.01	QP	V	18.10	1.61	28.82	32.90	46.00	13.10
Middle Channel:5785 MHz									
5785	79.84	PK	H	32.64	5.77	0.00	118.25	N/A	N/A
5785	68.58	AV	H	32.64	5.77	0.00	106.99	N/A	N/A
5785	76.76	PK	V	32.64	5.77	0.00	115.17	N/A	N/A
5785	65.75	AV	V	32.64	5.77	0.00	104.16	N/A	N/A
11570	32.12	PK	H	38.03	8.21	26.00	52.36	74.00	21.64
11570	21.60	AV	H	38.03	8.21	26.00	41.84	54.00	12.16
17355	30.05	PK	H	43.53	11.03	26.16	58.45	74.00	15.55
17355	19.72	AV	H	43.53	11.03	26.16	48.12	54.00	5.88
2485	43.95	PK	H	23.25	2.99	26.89	43.3	74.00	30.7
2485	39.32	AV	H	23.25	2.99	26.89	38.67	54.00	15.33
1500	37.67	PK	H	24.10	2.67	26.33	38.11	74.00	35.89
1500	26.84	AV	H	24.10	2.67	26.33	27.28	54.00	26.72
500.45	42.09	QP	V	18.10	1.61	28.82	32.98	46.00	13.02
High Channel:5825 MHz									
5825	81.14	PK	H	32.69	5.81	0.00	119.64	N/A	N/A
5825	69.70	AV	H	32.69	5.81	0.00	108.2	N/A	N/A
5825	76.98	PK	V	32.69	5.81	0.00	115.48	N/A	N/A
5825	66.24	AV	V	32.69	5.81	0.00	104.74	N/A	N/A
5850	50.54	PK	H	32.72	5.83	0.00	89.09	122.2	33.11
5855	38.73	PK	H	32.73	5.83	0.00	77.29	110.8	33.51
5875	29.61	PK	H	32.75	5.85	0.00	68.21	105.2	36.99
5925	28.50	PK	H	32.81	5.89	0.00	67.2	68.2	1
11650	32.54	PK	H	38.06	8.20	25.98	52.82	74.00	21.18
11650	21.51	AV	H	38.06	8.20	25.98	41.79	54.00	12.21
17475	30.04	PK	H	44.09	11.23	26.33	59.03	74.00	14.97
17475	19.51	AV	H	44.09	11.23	26.33	48.5	54.00	5.5
1599	34.23	PK	H	24.26	2.75	26.43	34.81	74.00	39.19
1599	23.74	AV	H	24.26	2.75	26.43	24.32	54.00	29.68
2471	42.89	PK	H	23.30	2.99	26.89	42.29	74.00	31.71
2471	37.05	AV	H	23.30	2.99	26.89	36.45	54.00	17.55
500.45	42.53	QP	V	18.10	1.61	28.82	33.42	46.00	12.58

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz									
5745	80.21	PK	H	32.59	5.74	0.00	118.54	N/A	N/A
5745	66.60	AV	H	32.59	5.74	0.00	104.93	N/A	N/A
5745	75.70	PK	V	32.59	5.74	0.00	114.03	N/A	N/A
5745	62.93	AV	V	32.59	5.74	0.00	101.26	N/A	N/A
5725	28.63	PK	H	32.57	5.72	0.00	66.92	122.2	55.28
5720	28.78	PK	H	32.56	5.71	0.00	67.05	110.8	43.75
5700	29.37	PK	H	32.54	5.70	0.00	67.61	105.2	37.59
5650	27.55	PK	H	32.48	5.65	0.00	65.68	68.2	2.52
11490	32.20	PK	H	37.99	8.22	26.02	52.39	74.00	21.61
11490	22.11	AV	H	37.99	8.22	26.02	42.3	54.00	11.7
17235	30.65	PK	H	42.98	10.82	25.99	58.46	74.00	15.54
17235	20.78	AV	H	42.98	10.82	25.99	48.59	54.00	5.41
1599	34.06	PK	H	24.26	2.75	26.43	34.64	74.00	39.36
1599	23.41	AV	H	24.26	2.75	26.43	23.99	54.00	30.01
2471	43.67	PK	H	23.30	2.99	26.89	43.07	74.00	30.93
2471	36.99	AV	H	23.30	2.99	26.89	36.39	54.00	17.61
500.45	42.7	QP	V	18.10	1.61	28.82	33.59	46.00	12.41
Middle Channel:5785 MHz									
5785	80.45	PK	H	32.64	5.77	0.00	118.86	N/A	N/A
5785	66.47	AV	H	32.64	5.77	0.00	104.88	N/A	N/A
5785	75.63	PK	V	32.64	5.77	0.00	114.04	N/A	N/A
5785	63.25	AV	V	32.64	5.77	0.00	101.66	N/A	N/A
11570	31.85	PK	H	38.03	8.21	26.00	52.09	74.00	21.91
11570	21.80	AV	H	38.03	8.21	26.00	42.04	54.00	11.96
17355	30.69	PK	H	43.53	11.03	26.16	59.09	74.00	14.91
17355	20.17	AV	H	43.53	11.03	26.16	48.57	54.00	5.43
2471	43.03	PK	H	23.30	2.99	26.89	42.43	74.00	31.57
2471	36.31	AV	H	23.30	2.99	26.89	35.71	54.00	18.29
1599	35.66	PK	H	24.26	2.75	26.43	36.24	74.00	37.76
1599	24.79	AV	H	24.26	2.75	26.43	25.37	54.00	28.63
500.45	42.78	QP	V	18.10	1.61	28.82	33.67	46.00	12.33
High Channel:5825 MHz									
5825	80.68	PK	H	32.69	5.81	0.00	119.18	N/A	N/A
5825	67.85	AV	H	32.69	5.81	0.00	106.35	N/A	N/A
5825	77.99	PK	V	32.69	5.81	0.00	116.49	N/A	N/A
5825	64.70	AV	V	32.69	5.81	0.00	103.2	N/A	N/A
5850	53.20	PK	H	32.72	5.83	0.00	91.75	122.2	30.45
5855	37.04	PK	H	32.73	5.83	0.00	75.6	110.8	35.2
5875	29.69	PK	H	32.75	5.85	0.00	68.29	105.2	36.91
5925	27.06	PK	H	32.81	5.89	0.00	65.76	68.2	2.44
11650	32.02	PK	H	38.06	8.20	25.98	52.3	74.00	21.7
11650	21.96	AV	H	38.06	8.20	25.98	42.24	54.00	11.76
17475	30.32	PK	H	44.09	11.23	26.33	59.31	74.00	14.69
17475	19.72	AV	H	44.09	11.23	26.33	48.71	54.00	5.29
2471	42.53	PK	H	23.30	2.99	26.89	41.93	74.00	32.07
2471	36.19	AV	H	23.30	2.99	26.89	35.59	54.00	18.41
1599	34.77	PK	H	24.26	2.75	26.43	35.35	74.00	38.65
1599	24.43	AV	H	24.26	2.75	26.43	25.01	54.00	28.99
500.45	42.05	QP	V	18.10	1.61	28.82	32.94	46.00	13.06

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	76.67	PK	H	32.61	5.74	0.00	115.02	N/A	N/A
5755	64.73	AV	H	32.61	5.74	0.00	103.08	N/A	N/A
5755	74.72	PK	V	32.61	5.74	0.00	113.07	N/A	N/A
5755	63.15	AV	V	32.61	5.74	0.00	101.5	N/A	N/A
5725	30.36	PK	H	32.57	5.72	0.00	68.65	122.2	53.55
5720	29.57	PK	H	32.56	5.71	0.00	67.84	110.8	42.96
5700	28.98	PK	H	32.54	5.70	0.00	67.22	105.2	37.98
5650	26.95	PK	H	32.48	5.65	0.00	65.08	68.2	3.12
11510	32.09	PK	H	38.00	8.22	26.02	52.29	74.00	21.71
11510	21.72	AV	H	38.00	8.22	26.02	41.92	54.00	12.08
17265	30.74	PK	H	43.12	10.88	26.04	58.7	74.00	15.3
17265	21.01	AV	H	43.12	10.88	26.04	48.97	54.00	5.03
2471	41.24	PK	H	23.30	2.99	26.89	40.64	74.00	33.36
2471	35.31	AV	H	23.30	2.99	26.89	34.71	54.00	19.29
1899	39.42	PK	H	24.74	2.97	26.72	40.41	74.00	33.59
1899	29.10	AV	H	24.74	2.97	26.72	30.09	54.00	23.91
500.45	42.46	QP	V	18.10	1.61	28.82	33.35	46.00	12.65
High Channel:5795 MHz									
5795	76.53	PK	H	32.65	5.78	0.00	114.96	N/A	N/A
5795	64.47	AV	H	32.65	5.78	0.00	102.9	N/A	N/A
5795	74.35	PK	V	32.65	5.78	0.00	112.78	N/A	N/A
5795	62.73	AV	V	32.65	5.78	0.00	101.16	N/A	N/A
5850	37.50	PK	H	32.72	5.83	0.00	76.05	122.2	46.15
5855	34.68	PK	H	32.73	5.83	0.00	73.24	110.8	37.56
5875	30.70	PK	H	32.75	5.85	0.00	69.3	105.2	35.9
5925	27.51	PK	H	32.81	5.89	0.00	66.21	68.2	1.99
11590	32.62	PK	H	38.04	8.21	25.99	52.88	74.00	21.12
11590	21.43	AV	H	38.04	8.21	25.99	41.69	54.00	12.31
17385	30.32	PK	H	43.67	11.08	26.21	58.86	74.00	15.14
17385	19.61	AV	H	43.67	11.08	26.21	48.15	54.00	5.85
1599	36.02	PK	H	24.26	2.75	26.43	36.6	74.00	37.4
1599	26.10	AV	H	24.26	2.75	26.43	26.68	54.00	27.32
2471	43.21	PK	H	23.30	2.99	26.89	42.61	74.00	31.39
2471	37.00	AV	H	23.30	2.99	26.89	36.4	54.00	17.6
500.45	41.44	QP	V	18.10	1.61	28.82	32.33	46.00	13.67

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	74.33	PK	H	32.63	5.76	0.00	112.72	N/A	N/A
5775	61.60	AV	H	32.63	5.76	0.00	99.99	N/A	N/A
5775	70.74	PK	V	32.63	5.76	0.00	109.13	N/A	N/A
5775	57.88	AV	V	32.63	5.76	0.00	96.27	N/A	N/A
5725	36.80	PK	H	32.57	5.72	0.00	75.09	122.2	47.11
5720	36.98	PK	H	32.56	5.71	0.00	75.25	110.8	35.55
5700	34.78	PK	H	32.54	5.70	0.00	73.02	105.2	32.18
5650	27.57	PK	H	32.48	5.65	0.00	65.7	68.2	2.5
5850	68.01	PK	H	32.72	5.83	0.00	106.56	122.2	15.64
5855	60.41	PK	H	32.73	5.83	0.00	98.97	110.8	11.83
5875	39.19	PK	H	32.75	5.85	0.00	77.79	105.2	27.41
5925	24.76	PK	H	32.81	5.89	0.00	63.46	68.2	4.74
11550	32.25	PK	H	38.02	8.21	26.01	52.47	74.00	21.53
11550	21.76	AV	H	38.02	8.21	26.01	41.98	54.00	12.02
17325	30.56	PK	H	43.40	10.98	26.12	58.82	74.00	15.18
17325	20.27	AV	H	43.40	10.98	26.12	48.53	54.00	5.47
2471	43.14	PK	H	23.30	2.99	26.89	42.54	74.00	31.46
2471	37.53	AV	H	23.30	2.99	26.89	36.93	54.00	17.07
500.45	41.61	QP	V	18.10	1.61	28.82	32.50	46.00	13.50

MIMO mode (Chain 0 & Chain 1 & Chain 2 & Chain 3) Non-beamforming:

802.11a mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	79.93	PK	H	32.59	5.74	0.00	118.26	N/A	N/A
5745	66.07	AV	H	32.59	5.74	0.00	104.4	N/A	N/A
5745	77.42	PK	V	32.59	5.74	0.00	115.75	N/A	N/A
5745	63.63	AV	V	32.59	5.74	0.00	101.96	N/A	N/A
5725	30.65	PK	H	32.57	5.72	0.00	68.94	122.2	53.26
5720	29.53	PK	H	32.56	5.71	0.00	67.8	110.8	43
5700	29.62	PK	H	32.54	5.70	0.00	67.86	105.2	37.34
5650	27.94	PK	H	32.48	5.65	0.00	66.07	68.2	2.13
11490	31.87	PK	H	37.99	8.22	26.02	52.06	74.00	21.94
11490	22.08	AV	H	37.99	8.22	26.02	42.27	54.00	11.73
17235	31.06	PK	H	42.98	10.82	25.99	58.87	74.00	15.13
17235	19.65	AV	H	42.98	10.82	25.99	47.46	54.00	6.54
1490	36.30	PK	H	24.07	2.66	26.34	36.69	74.00	37.31
1490	23.72	AV	H	24.07	2.66	26.34	24.11	54.00	29.89
2485	43.33	PK	H	23.25	2.99	26.89	42.68	74.00	31.32
2485	37.06	AV	H	23.25	2.99	26.89	36.41	54.00	17.59
500.45	42.57	QP	V	18.10	1.61	28.82	33.46	46.00	12.54
Middle Channel:5785 MHz									
5785	79.90	PK	H	32.64	5.77	0.00	118.31	N/A	N/A
5785	66.07	AV	H	32.64	5.77	0.00	104.48	N/A	N/A
5785	76.97	PK	V	32.64	5.77	0.00	115.38	N/A	N/A
5785	63.63	AV	V	32.64	5.77	0.00	102.04	N/A	N/A
11570	32.34	PK	H	38.03	8.21	26.00	52.58	74.00	21.42
11570	21.79	AV	H	38.03	8.21	26.00	42.03	54.00	11.97
17355	30.69	PK	H	43.53	11.03	26.16	59.09	74.00	14.91
17355	19.50	AV	H	43.53	11.03	26.16	47.9	54.00	6.1
2471	43.53	PK	H	23.30	2.99	26.89	42.93	74.00	31.07
2471	36.98	AV	H	23.30	2.99	26.89	36.38	54.00	17.62
1735	35.81	PK	H	24.48	2.85	26.56	36.58	74.00	37.42
1735	26.22	AV	H	24.48	2.85	26.56	26.99	54.00	27.01
500.45	42.98	QP	V	18.10	1.61	28.82	33.87	46.00	12.13
High Channel:5825 MHz									
5825	79.92	PK	H	32.69	5.81	0.00	118.42	N/A	N/A
5825	66.00	AV	H	32.69	5.81	0.00	104.5	N/A	N/A
5825	76.70	PK	V	32.69	5.81	0.00	115.2	N/A	N/A
5825	63.99	AV	V	32.69	5.81	0.00	102.49	N/A	N/A
5850	34.24	PK	H	32.72	5.83	0.00	72.79	122.2	49.41
5855	31.61	PK	H	32.73	5.83	0.00	70.17	110.8	40.63
5875	29.37	PK	H	32.75	5.85	0.00	67.97	105.2	37.23
5925	28.18	PK	H	32.81	5.89	0.00	66.88	68.2	1.32
11650	31.80	PK	H	38.06	8.20	25.98	52.08	74.00	21.92
11650	22.76	AV	H	38.06	8.20	25.98	43.04	54.00	10.96
17475	30.37	PK	H	44.09	11.23	26.33	59.36	74.00	14.64
17475	19.20	AV	H	44.09	11.23	26.33	48.19	54.00	5.81
1504	37.53	PK	H	24.11	2.67	26.33	37.98	74.00	36.02
1504	27.17	AV	H	24.11	2.67	26.33	27.62	54.00	26.38
2485	42.66	PK	H	23.25	2.99	26.89	42.01	74.00	31.99
2485	36.35	AV	H	23.25	2.99	26.89	35.7	54.00	18.3
500.45	41.96	QP	V	18.10	1.61	28.82	32.85	46.00	13.15

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz									
5745	79.27	PK	H	32.59	5.74	0.00	117.6	N/A	N/A
5745	66.60	AV	H	32.59	5.74	0.00	104.93	N/A	N/A
5745	75.73	PK	V	32.59	5.74	0.00	114.06	N/A	N/A
5745	63.62	AV	V	32.59	5.74	0.00	101.95	N/A	N/A
5725	29.53	PK	H	32.57	5.72	0.00	67.82	122.2	54.38
5720	29.30	PK	H	32.56	5.71	0.00	67.57	110.8	43.23
5700	30.24	PK	H	32.54	5.70	0.00	68.48	105.2	36.72
5650	27.28	PK	H	32.48	5.65	0.00	65.41	68.2	2.79
11490	32.56	PK	H	37.99	8.22	26.02	52.75	74.00	21.25
11490	22.07	AV	H	37.99	8.22	26.02	42.26	54.00	11.74
17235	31.12	PK	H	42.98	10.82	25.99	58.93	74.00	15.07
17235	20.67	AV	H	42.98	10.82	25.99	48.48	54.00	5.52
1599	34.06	PK	H	24.26	2.75	26.43	34.64	74.00	39.36
1599	23.41	AV	H	24.26	2.75	26.43	23.99	54.00	30.01
2471	43.67	PK	H	23.30	2.99	26.89	43.07	74.00	30.93
2471	36.99	AV	H	23.30	2.99	26.89	36.39	54.00	17.61
500.45	42.13	QP	V	18.10	1.61	28.82	33.02	46.00	12.98
Middle Channel:5785 MHz									
5785	79.12	PK	H	32.64	5.77	0.00	117.53	N/A	N/A
5785	66.83	AV	H	32.64	5.77	0.00	105.24	N/A	N/A
5785	75.33	PK	V	32.64	5.77	0.00	113.74	N/A	N/A
5785	63.12	AV	V	32.64	5.77	0.00	101.53	N/A	N/A
11570	32.89	PK	H	38.03	8.21	26.00	53.13	74.00	20.87
11570	21.85	AV	H	38.03	8.21	26.00	42.09	54.00	11.91
17355	30.08	PK	H	43.53	11.03	26.16	58.48	74.00	15.52
17355	20.03	AV	H	43.53	11.03	26.16	48.43	54.00	5.57
2471	43.43	PK	H	23.30	2.99	26.89	42.83	74.00	31.17
2471	36.97	AV	H	23.30	2.99	26.89	36.37	54.00	17.63
1735	37.42	PK	H	24.48	2.85	26.56	38.19	74.00	35.81
1735	26.90	AV	H	24.48	2.85	26.56	27.67	54.00	26.33
500.45	42.52	QP	V	18.10	1.61	28.82	33.41	46.00	12.59
High Channel:5825 MHz									
5825	79.18	PK	H	32.69	5.81	0.00	117.68	N/A	N/A
5825	66.80	AV	H	32.69	5.81	0.00	105.3	N/A	N/A
5825	77.65	PK	H	32.69	5.81	0.00	116.15	N/A	N/A
5825	65.96	AV	V	32.69	5.81	0.00	104.46	N/A	N/A
5850	37.37	PK	V	32.72	5.83	0.00	75.92	122.2	46.28
5855	31.42	PK	H	32.73	5.83	0.00	69.98	110.8	40.82
5875	29.56	PK	H	32.75	5.85	0.00	68.16	105.2	37.04
5925	26.98	PK	H	32.81	5.89	0.00	65.68	68.2	2.52
11650	33.17	PK	H	38.06	8.20	25.98	53.45	74.00	20.55
11650	22.41	AV	H	38.06	8.20	25.98	42.69	54.00	11.31
17475	30.39	PK	H	44.09	11.23	26.33	59.38	74.00	14.62
17475	20.64	AV	H	44.09	11.23	26.33	49.63	54.00	4.37
2471	42.98	PK	H	23.30	2.99	26.89	42.38	74.00	31.62
2471	37.15	AV	H	23.30	2.99	26.89	36.55	54.00	17.45
1599	35.41	PK	H	24.26	2.75	26.43	35.99	74.00	38.01
1599	24.20	AV	H	24.26	2.75	26.43	24.78	54.00	29.22
500.45	42.7	QP	V	18.10	1.61	28.82	33.59	46.00	12.41

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	76.56	PK	H	32.61	5.74	0.00	114.91	N/A	N/A
5755	63.03	AV	H	32.61	5.74	0.00	101.38	N/A	N/A
5755	75.11	PK	V	32.61	5.74	0.00	113.46	N/A	N/A
5755	60.89	AV	V	32.61	5.74	0.00	99.24	N/A	N/A
5725	30.51	PK	H	32.57	5.72	0.00	68.8	122.2	53.4
5720	28.65	PK	H	32.56	5.71	0.00	66.92	110.8	43.88
5700	29.00	PK	H	32.54	5.70	0.00	67.24	105.2	37.96
5650	28.70	PK	H	32.48	5.65	0.00	66.83	68.2	1.37
11510	32.33	PK	H	38.00	8.22	26.02	52.53	74.00	21.47
11510	21.07	AV	H	38.00	8.22	26.02	41.27	54.00	12.73
17265	30.36	PK	H	43.12	10.88	26.04	58.32	74.00	15.68
17265	20.35	AV	H	43.12	10.88	26.04	48.31	54.00	5.69
2471	43.26	PK	H	23.30	2.99	26.89	42.66	74.00	31.34
2471	37.50	AV	H	23.30	2.99	26.89	36.9	54.00	17.1
1599	35.58	PK	H	24.26	2.75	26.43	36.16	74.00	37.84
1599	23.79	AV	H	24.26	2.75	26.43	24.37	54.00	29.63
500.45	42.78	QP	V	18.10	1.61	28.82	33.67	46.00	12.33
High Channel:5795 MHz									
5795	76.56	PK	H	32.65	5.78	0.00	114.99	N/A	N/A
5795	64.60	AV	H	32.65	5.78	0.00	103.03	N/A	N/A
5795	74.53	PK	V	32.65	5.78	0.00	112.96	N/A	N/A
5795	62.68	AV	V	32.65	5.78	0.00	101.11	N/A	N/A
5850	32.89	PK	H	32.72	5.83	0.00	71.44	122.2	50.76
5855	31.97	PK	H	32.73	5.83	0.00	70.53	110.8	40.27
5875	29.08	PK	H	32.75	5.85	0.00	67.68	105.2	37.52
5925	26.50	PK	H	32.81	5.89	0.00	65.2	68.2	3
11590	32.14	PK	H	38.04	8.21	25.99	52.4	74.00	21.6
11590	20.65	AV	H	38.04	8.21	25.99	40.91	54.00	13.09
17385	29.86	PK	H	43.67	11.08	26.21	58.4	74.00	15.6
17385	20.03	AV	H	43.67	11.08	26.21	48.57	54.00	5.43
1599	36.02	PK	H	24.26	2.75	26.43	36.6	74.00	37.4
1599	26.10	AV	H	24.26	2.75	26.43	26.68	54.00	27.32
2471	43.21	PK	H	23.30	2.99	26.89	42.61	74.00	31.39
2471	37.00	AV	H	23.30	2.99	26.89	36.4	54.00	17.6
500.45	43.22	QP	V	18.10	1.61	28.82	34.11	46.00	11.89

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	74.70	PK	H	32.63	5.76	0.00	113.09	N/A	N/A
5775	61.66	AV	H	32.63	5.76	0.00	100.05	N/A	N/A
5775	71.94	PK	V	32.63	5.76	0.00	110.33	N/A	N/A
5775	59.09	AV	V	32.63	5.76	0.00	97.48	N/A	N/A
5725	36.59	PK	H	32.57	5.72	0.00	74.88	122.2	47.32
5720	34.19	PK	H	32.56	5.71	0.00	72.46	110.8	38.34
5700	33.33	PK	H	32.54	5.70	0.00	71.57	105.2	33.63
5650	29.37	PK	H	32.48	5.65	0.00	67.5	68.2	0.7
5850	70.87	PK	H	32.72	5.83	0.00	109.42	122.2	12.78
5855	67.85	PK	H	32.73	5.83	0.00	106.41	110.8	4.39
5875	36.74	PK	H	32.75	5.85	0.00	75.34	105.2	29.86
5925	26.34	PK	H	32.81	5.89	0.00	65.04	68.2	3.16
11550	31.99	PK	H	38.02	8.21	26.01	52.21	74.00	21.79
11550	20.67	AV	H	38.02	8.21	26.01	40.89	54.00	13.11
17325	30.12	PK	H	43.40	10.98	26.12	58.38	74.00	15.62
17325	19.99	AV	H	43.40	10.98	26.12	48.25	54.00	5.75
2471	43.14	PK	H	23.30	2.99	26.89	42.54	74.00	31.46
2471	37.53	AV	H	23.30	2.99	26.89	36.93	54.00	17.07
500.45	43.47	QP	V	18.10	1.61	28.82	34.36	46.00	11.64

MIMO mode (Chain 0 & Chain 1) with beamforming:
802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	71.31	PK	H	32.59	5.74	0.00	109.64	N/A	N/A
5745	59.46	AV	H	32.59	5.74	0.00	97.79	N/A	N/A
5745	73.96	PK	V	32.59	5.74	0.00	112.29	N/A	N/A
5745	61.42	AV	V	32.59	5.74	0.00	99.75	N/A	N/A
5725	28.70	PK	V	32.57	5.72	0.00	66.99	122.2	55.21
5720	27.99	PK	V	32.56	5.71	0.00	66.26	110.8	44.54
5700	28.39	PK	V	32.54	5.70	0.00	66.63	105.2	38.57
5650	27.81	PK	V	32.48	5.65	0.00	65.94	68.2	2.26
11490	32.15	PK	V	37.99	8.22	26.02	52.34	74.00	21.66
11490	21.99	AV	V	37.99	8.22	26.02	42.18	54.00	11.82
17235	30.52	PK	V	42.98	10.82	25.99	58.33	74.00	15.67
17235	20.01	AV	V	42.98	10.82	25.99	47.82	54.00	6.18
3152	40.68	PK	V	25.05	3.66	26.46	42.93	74.00	31.07
3152	30.80	AV	V	25.05	3.66	26.46	33.05	54.00	20.95
2471	42.94	PK	V	23.30	2.99	26.89	42.34	74.00	31.66
2471	36.57	AV	V	23.30	2.99	26.89	35.97	54.00	18.03
500.45	43.22	QP	V	18.10	1.61	28.82	34.11	46.00	11.89
Middle Channel:5785 MHz									
5785	70.50	PK	H	32.64	5.77	0.00	108.91	N/A	N/A
5785	60.49	AV	H	32.64	5.77	0.00	98.9	N/A	N/A
5785	77.75	PK	V	32.64	5.77	0.00	116.16	N/A	N/A
5785	66.47	AV	V	32.64	5.77	0.00	104.88	N/A	N/A
11570	30.34	PK	V	38.03	8.21	26.00	50.58	74.00	23.42
11570	20.25	AV	V	38.03	8.21	26.00	40.49	54.00	13.51
17355	30.69	PK	V	43.53	11.03	26.16	59.09	74.00	14.91
17355	19.85	AV	V	43.53	11.03	26.16	48.25	54.00	5.75
2471	43.14	PK	V	23.30	2.99	26.89	42.54	74.00	31.46
2471	37.01	AV	V	23.30	2.99	26.89	36.41	54.00	17.59
3152	39.70	PK	V	25.05	3.66	26.46	41.95	74.00	32.05
3152	29.56	AV	V	25.05	3.66	26.46	31.81	54.00	22.19
500.45	43.66	QP	V	18.10	1.61	28.82	34.55	46.00	11.45
High Channel:5825 MHz									
5825	76.18	PK	H	32.69	5.81	0.00	114.68	N/A	N/A
5825	62.93	AV	H	32.69	5.81	0.00	101.43	N/A	N/A
5825	77.92	PK	V	32.69	5.81	0.00	116.42	N/A	N/A
5825	64.71	AV	V	32.69	5.81	0.00	103.21	N/A	N/A
5850	39.54	PK	V	32.72	5.83	0.00	78.09	122.2	44.11
5855	35.09	PK	V	32.73	5.83	0.00	73.65	110.8	37.15
5875	28.79	PK	V	32.75	5.85	0.00	67.39	105.2	37.81
5925	26.79	PK	V	32.81	5.89	0.00	65.49	68.2	2.71
11650	33.07	PK	V	38.06	8.20	25.98	53.35	74.00	20.65
11650	22.22	AV	V	38.06	8.20	25.98	42.5	54.00	11.5
17475	29.59	PK	V	44.09	11.23	26.33	58.58	74.00	15.42
17475	19.38	AV	V	44.09	11.23	26.33	48.37	54.00	5.63
2471	42.26	PK	V	23.30	2.99	26.89	41.66	74.00	32.34
2471	34.96	AV	V	23.30	2.99	26.89	34.36	54.00	19.64
1599	32.95	PK	V	24.26	2.75	26.43	33.53	74.00	40.47
1599	22.63	AV	V	24.26	2.75	26.43	23.21	54.00	30.79
500.45	43.83	QP	V	18.10	1.61	28.82	34.72	46.00	11.28

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	71.32	PK	H	32.61	5.74	0.00	109.67	N/A	N/A
5755	58.70	AV	H	32.61	5.74	0.00	97.05	N/A	N/A
5755	73.41	PK	V	32.61	5.74	0.00	111.76	N/A	N/A
5755	60.17	AV	V	32.61	5.74	0.00	98.52	N/A	N/A
5725	30.82	PK	V	32.57	5.72	0.00	69.11	122.2	53.09
5720	30.26	PK	V	32.56	5.71	0.00	68.53	110.8	42.27
5700	29.15	PK	V	32.54	5.70	0.00	67.39	105.2	37.81
5650	28.40	PK	V	32.48	5.65	0.00	66.53	68.2	1.67
11510	31.41	PK	V	38.00	8.22	26.02	51.61	74.00	22.39
11510	22.01	AV	V	38.00	8.22	26.02	42.21	54.00	11.79
17265	30.83	PK	V	43.12	10.88	26.04	58.79	74.00	15.21
17265	20.30	AV	V	43.12	10.88	26.04	48.26	54.00	5.74
2471	42.49	PK	V	23.30	2.99	26.89	41.89	74.00	32.11
2471	35.94	AV	V	23.30	2.99	26.89	35.34	54.00	18.66
3152	40.41	PK	V	25.05	3.66	26.46	42.66	74.00	31.34
3152	28.89	AV	V	25.05	3.66	26.46	31.14	54.00	22.86
500.45	43.91	QP	V	18.10	1.61	28.82	34.80	46.00	11.20
High Channel:5795 MHz									
5795	72.17	PK	H	32.65	5.78	0.00	110.6	N/A	N/A
5795	59.56	AV	H	32.65	5.78	0.00	97.99	N/A	N/A
5795	72.58	PK	V	32.65	5.78	0.00	111.01	N/A	N/A
5795	59.99	AV	V	32.65	5.78	0.00	98.42	N/A	N/A
5850	35.35	PK	V	32.72	5.83	0.00	73.9	122.2	48.3
5855	32.34	PK	V	32.73	5.83	0.00	70.9	110.8	39.9
5875	29.88	PK	V	32.75	5.85	0.00	68.48	105.2	36.72
5925	26.01	PK	V	32.81	5.89	0.00	64.71	68.2	3.49
11590	30.62	PK	V	38.04	8.21	25.99	50.88	74.00	23.12
11590	20.56	AV	V	38.04	8.21	25.99	40.82	54.00	13.18
17385	30.24	PK	V	43.67	11.08	26.21	58.78	74.00	15.22
17385	19.52	AV	V	43.67	11.08	26.21	48.06	54.00	5.94
1495	42.42	PK	V	24.09	2.66	26.33	42.84	74.00	31.16
1495	31.17	AV	V	24.09	2.66	26.33	31.59	54.00	22.41
2485	43.75	PK	V	23.25	2.99	26.89	43.1	74.00	30.9
2485	39.28	AV	V	23.25	2.99	26.89	38.63	54.00	15.37
500.45	42.77	QP	V	18.10	1.61	28.82	33.66	46.00	12.34

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	65.62	PK	H	32.63	5.76	0.00	104.01	N/A	N/A
5775	53.55	AV	H	32.63	5.76	0.00	91.94	N/A	N/A
5775	68.38	PK	V	32.63	5.76	0.00	106.77	N/A	N/A
5775	55.56	AV	V	32.63	5.76	0.00	93.95	N/A	N/A
5725	30.13	PK	V	32.57	5.72	0.00	68.42	122.2	53.78
5720	29.53	PK	V	32.56	5.71	0.00	67.8	110.8	43
5700	29.61	PK	V	32.54	5.70	0.00	67.85	105.2	37.35
5650	26.79	PK	V	32.48	5.65	0.00	64.92	68.2	3.28
5850	66.40	PK	V	32.72	5.83	0.00	104.95	122.2	17.25
5855	64.36	PK	V	32.73	5.83	0.00	102.92	110.8	7.88
5875	33.07	PK	V	32.75	5.85	0.00	71.67	105.2	33.53
5925	25.79	PK	V	32.81	5.89	0.00	64.49	68.2	3.71
11550	31.93	PK	V	38.02	8.21	26.01	52.15	74.00	21.85
11550	21.75	AV	V	38.02	8.21	26.01	41.97	54.00	12.03
17325	30.81	PK	V	43.40	10.98	26.12	59.07	74.00	14.93
17325	20.41	AV	V	43.40	10.98	26.12	48.67	54.00	5.33
2471	42.65	PK	V	23.30	2.99	26.89	42.05	74.00	31.95
2471	37.31	AV	V	23.30	2.99	26.89	36.71	54.00	17.29
500.45	43.18	QP	V	18.10	1.61	28.82	34.07	46.00	11.93

MIMO mode (Chain 0 & Chain 1 & Chain 2) with beamforming:
802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	79.70	PK	H	32.59	5.74	0.00	118.03	N/A	N/A
5745	66.44	AV	H	32.59	5.74	0.00	104.77	N/A	N/A
5745	75.43	PK	V	32.59	5.74	0.00	113.76	N/A	N/A
5745	62.14	AV	V	32.59	5.74	0.00	100.47	N/A	N/A
5725	27.94	PK	H	32.57	5.72	0.00	66.23	122.2	55.97
5720	28.37	PK	H	32.56	5.71	0.00	66.64	110.8	44.16
5700	29.15	PK	H	32.54	5.70	0.00	67.39	105.2	37.81
5650	26.85	PK	H	32.48	5.65	0.00	64.98	68.2	3.22
11490	31.58	PK	H	37.99	8.22	26.02	51.77	74.00	70.43
11490	21.74	AV	H	37.99	8.22	26.02	41.93	54.00	68.87
17235	30.21	PK	H	42.98	10.82	25.99	58.02	74.00	47.18
17235	20.37	AV	H	42.98	10.82	25.99	48.18	54.00	20.02
1599	33.82	PK	H	24.26	2.75	26.43	34.4	74.00	39.6
1599	22.92	AV	H	24.26	2.75	26.43	23.5	54.00	30.5
2471	43.59	PK	H	23.30	2.99	26.89	42.99	74.00	31.01
2471	36.95	AV	H	23.30	2.99	26.89	36.35	54.00	17.65
500.45	43.59	QP	V	18.10	1.61	28.82	34.48	46.00	11.52
Middle Channel:5785 MHz									
5785	79.72	PK	H	32.64	5.77	0.00	118.13	N/A	N/A
5785	65.91	AV	H	32.64	5.77	0.00	104.32	N/A	N/A
5785	75.52	PK	V	32.64	5.77	0.00	113.93	N/A	N/A
5785	62.91	AV	V	32.64	5.77	0.00	101.32	N/A	N/A
11570	31.08	PK	H	38.03	8.21	26.00	51.32	74.00	22.68
11570	21.27	AV	H	38.03	8.21	26.00	41.51	54.00	12.49
17355	30.13	PK	H	43.53	11.03	26.16	58.53	74.00	15.47
17355	19.89	AV	H	43.53	11.03	26.16	48.29	54.00	5.71
2471	42.57	PK	H	23.30	2.99	26.89	41.97	74.00	32.03
2471	35.77	AV	H	23.30	2.99	26.89	35.17	54.00	18.83
1599	35.31	PK	H	24.26	2.75	26.43	35.89	74.00	38.11
1599	24.56	AV	H	24.26	2.75	26.43	25.14	54.00	28.86
500.45	43.67	QP	V	18.10	1.61	28.82	34.56	46.00	11.44
High Channel:5825 MHz									
5825	80.52	PK	H	32.69	5.81	0.00	119.02	N/A	N/A
5825	67.63	AV	H	32.69	5.81	0.00	106.13	N/A	N/A
5825	77.33	PK	V	32.69	5.81	0.00	115.83	N/A	N/A
5825	64.49	AV	V	32.69	5.81	0.00	102.99	N/A	N/A
5850	52.44	PK	H	32.72	5.83	0.00	90.99	122.2	31.21
5855	36.26	PK	H	32.73	5.83	0.00	74.82	110.8	35.98
5875	29.60	PK	H	32.75	5.85	0.00	68.2	105.2	37
5925	26.46	PK	H	32.81	5.89	0.00	65.16	68.2	3.04
11650	31.32	PK	H	38.06	8.20	25.98	51.6	74.00	70.6
11650	21.75	AV	H	38.06	8.20	25.98	42.03	54.00	68.77
17475	29.68	PK	H	44.09	11.23	26.33	58.67	74.00	46.53
17475	19.13	AV	H	44.09	11.23	26.33	48.12	54.00	20.08
2471	42.22	PK	H	23.30	2.99	26.89	41.62	74.00	32.38
2471	35.58	AV	H	23.30	2.99	26.89	34.98	54.00	19.02
1599	34.70	PK	H	24.26	2.75	26.43	35.28	74.00	38.72
1599	24.17	AV	H	24.26	2.75	26.43	24.75	54.00	29.25
500.45	42.28	QP	V	18.10	1.61	28.82	33.17	46.00	12.83

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	76.05	PK	H	32.61	5.74	0.00	114.4	N/A	N/A
5755	64.12	AV	H	32.61	5.74	0.00	102.47	N/A	N/A
5755	74.57	PK	V	32.61	5.74	0.00	112.92	N/A	N/A
5755	62.50	AV	V	32.61	5.74	0.00	100.85	N/A	N/A
5725	30.22	PK	H	32.57	5.72	0.00	68.51	122.2	53.69
5720	29.50	PK	H	32.56	5.71	0.00	67.77	110.8	43.03
5700	28.89	PK	H	32.54	5.70	0.00	67.13	105.2	38.07
5650	26.83	PK	H	32.48	5.65	0.00	64.96	68.2	3.24
11510	31.55	PK	H	38.00	8.22	26.02	51.75	74.00	70.45
11510	21.36	AV	H	38.00	8.22	26.02	41.56	54.00	69.24
17265	30.21	PK	H	43.12	10.88	26.04	58.17	74.00	47.03
17265	20.83	AV	H	43.12	10.88	26.04	48.79	54.00	19.41
2471	40.50	PK	H	23.30	2.99	26.89	39.9	74.00	34.1
2471	34.75	AV	H	23.30	2.99	26.89	34.15	54.00	19.85
1899	38.77	PK	H	24.74	2.97	26.72	39.76	74.00	34.24
1899	28.92	AV	H	24.74	2.97	26.72	29.91	54.00	24.09
500.45	42.69	QP	V	18.10	1.61	28.82	33.58	46.00	12.42
High Channel:5795 MHz									
5795	75.77	PK	H	32.65	5.78	0.00	114.2	N/A	N/A
5795	64.44	AV	H	32.65	5.78	0.00	102.87	N/A	N/A
5795	74.14	PK	V	32.65	5.78	0.00	112.57	N/A	N/A
5795	62.21	AV	V	32.65	5.78	0.00	100.64	N/A	N/A
5850	36.98	PK	H	32.72	5.83	0.00	75.53	122.2	46.67
5855	34.08	PK	H	32.73	5.83	0.00	72.64	110.8	38.16
5875	30.51	PK	H	32.75	5.85	0.00	69.11	105.2	36.09
5925	27.13	PK	H	32.81	5.89	0.00	65.83	68.2	2.37
11590	32.38	PK	H	38.04	8.21	25.99	52.64	74.00	69.56
11590	20.99	AV	H	38.04	8.21	25.99	41.25	54.00	69.55
17385	29.57	PK	H	43.67	11.08	26.21	58.11	74.00	47.09
17385	19.11	AV	H	43.67	11.08	26.21	47.65	54.00	20.55
1599	35.42	PK	H	24.26	2.75	26.43	36	74.00	38
1599	25.67	AV	H	24.26	2.75	26.43	26.25	54.00	27.75
2471	42.96	PK	H	23.30	2.99	26.89	42.36	74.00	31.64
2471	36.99	AV	H	23.30	2.99	26.89	36.39	54.00	17.61
500.45	41.67	QP	V	18.10	1.61	28.82	32.56	46.00	13.44

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel:5775 MHz									
5775	73.69	PK	H	32.63	5.76	0.00	112.08	N/A	N/A
5775	61.22	AV	H	32.63	5.76	0.00	99.61	N/A	N/A
5775	70.01	PK	V	32.63	5.76	0.00	108.4	N/A	N/A
5775	57.18	AV	V	32.63	5.76	0.00	95.57	N/A	N/A
5725	36.12	PK	H	32.57	5.72	0.00	74.41	122.2	47.79
5720	36.55	PK	H	32.56	5.71	0.00	74.82	110.8	35.98
5700	34.26	PK	H	32.54	5.70	0.00	72.5	105.2	32.7
5650	27.21	PK	H	32.48	5.65	0.00	65.34	68.2	2.86
5850	67.33	PK	H	32.72	5.83	0.00	105.88	122.2	16.32
5855	59.94	PK	H	32.73	5.83	0.00	98.5	110.8	12.3
5875	38.62	PK	H	32.75	5.85	0.00	77.22	105.2	27.98
5925	24.47	PK	H	32.81	5.89	0.00	63.17	68.2	5.03
11550	32.19	PK	H	38.02	8.21	26.01	52.41	74.00	21.59
11550	21.26	AV	H	38.02	8.21	26.01	41.48	54.00	12.52
17325	29.90	PK	H	43.40	10.98	26.12	58.16	74.00	15.84
17325	20.09	AV	H	43.40	10.98	26.12	48.35	54.00	5.65
2471	42.84	PK	H	23.30	2.99	26.89	42.24	74.00	31.76
2471	36.95	AV	H	23.30	2.99	26.89	36.35	54.00	17.65
500.45	41.84	QP	V	18.10	1.61	28.82	32.73	46.00	13.27

MIMO mode (Chain 0 & Chain 1 & Chain 2 & Chain 3) with beamforming:
802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel:5745 MHz									
5745	79.22	PK	H	32.59	5.74	0.00	117.55	N/A	N/A
5745	66.18	AV	H	32.59	5.74	0.00	104.51	N/A	N/A
5745	75.70	PK	V	32.59	5.74	0.00	114.03	N/A	N/A
5745	63.56	AV	V	32.59	5.74	0.00	101.89	N/A	N/A
5725	29.46	PK	H	32.57	5.72	0.00	67.75	122.2	54.45
5720	28.61	PK	H	32.56	5.71	0.00	66.88	110.8	43.92
5700	30.02	PK	H	32.54	5.70	0.00	68.26	105.2	36.94
5650	26.81	PK	H	32.48	5.65	0.00	64.94	68.2	3.26
11490	32.06	PK	H	37.99	8.22	26.02	52.25	74.00	69.95
11490	21.28	AV	H	37.99	8.22	26.02	41.47	54.00	69.33
17235	30.72	PK	H	42.98	10.82	25.99	58.53	74.00	46.67
17235	20.61	AV	H	42.98	10.82	25.99	48.42	54.00	19.78
1599	33.40	PK	H	24.26	2.75	26.43	33.98	74.00	40.02
1599	23.12	AV	H	24.26	2.75	26.43	23.7	54.00	30.3
2471	43.23	PK	H	23.30	2.99	26.89	42.63	74.00	31.37
2471	36.24	AV	H	23.30	2.99	26.89	35.64	54.00	18.36
500.45	43.18	QP	V	18.10	1.61	28.82	34.07	46.00	11.93
Middle Channel:5785 MHz									
5785	78.73	PK	H	32.64	5.77	0.00	117.14	N/A	N/A
5785	66.10	AV	H	32.64	5.77	0.00	104.51	N/A	N/A
5785	74.89	PK	V	32.64	5.77	0.00	113.3	N/A	N/A
5785	63.10	AV	V	32.64	5.77	0.00	101.51	N/A	N/A
11570	32.61	PK	H	38.03	8.21	26.00	52.85	74.00	21.15
11570	21.30	AV	H	38.03	8.21	26.00	41.54	54.00	12.46
17355	29.37	PK	H	43.53	11.03	26.16	57.77	74.00	16.23
17355	19.63	AV	H	43.53	11.03	26.16	48.03	54.00	5.97
2471	42.85	PK	H	23.30	2.99	26.89	42.25	74.00	31.75
2471	36.82	AV	H	23.30	2.99	26.89	36.22	54.00	17.78
1735	37.29	PK	H	24.48	2.85	26.56	38.06	74.00	35.94
1735	26.55	AV	H	24.48	2.85	26.56	27.32	54.00	26.68
500.45	41.28	QP	V	18.10	1.61	28.82	32.17	46.00	13.83
High Channel:5825 MHz									
5825	78.93	PK	H	32.69	5.81	0.00	117.43	N/A	N/A
5825	66.40	AV	H	32.69	5.81	0.00	104.9	N/A	N/A
5825	77.42	PK	V	32.69	5.81	0.00	115.92	N/A	N/A
5825	65.82	AV	V	32.69	5.81	0.00	104.32	N/A	N/A
5850	36.94	PK	H	32.72	5.83	0.00	75.49	122.2	46.71
5855	30.85	PK	H	32.73	5.83	0.00	69.41	110.8	41.39
5875	28.86	PK	H	32.75	5.85	0.00	67.46	105.2	37.74
5925	26.92	PK	H	32.81	5.89	0.00	65.62	68.2	2.58
11650	32.85	PK	H	38.06	8.20	25.98	53.13	74.00	69.07
11650	21.67	AV	H	38.06	8.20	25.98	41.95	54.00	68.85
17475	30.34	PK	H	44.09	11.23	26.33	59.33	74.00	45.87
17475	20.12	AV	H	44.09	11.23	26.33	49.11	54.00	19.09
2471	42.94	PK	H	23.30	2.99	26.89	42.34	74.00	31.66
2471	36.63	AV	H	23.30	2.99	26.89	36.03	54.00	17.97
1599	35.19	PK	H	24.26	2.75	26.43	35.77	74.00	38.23
1599	23.48	AV	H	24.26	2.75	26.43	24.06	54.00	29.94
500.45	40.67	QP	V	18.10	1.61	28.82	31.56	46.00	14.44

802.11n ht40 mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5755 MHz									
5755	75.99	PK	H	32.61	5.74	0.00	114.34	N/A	N/A
5755	62.50	AV	H	32.61	5.74	0.00	100.85	N/A	N/A
5755	74.86	PK	V	32.61	5.74	0.00	113.21	N/A	N/A
5755	60.44	AV	V	32.61	5.74	0.00	98.79	N/A	N/A
5725	29.81	PK	H	32.57	5.72	0.00	68.1	122.2	54.1
5720	27.93	PK	H	32.56	5.71	0.00	66.2	110.8	44.6
5700	28.40	PK	H	32.54	5.70	0.00	66.64	105.2	38.56
5650	27.99	PK	H	32.48	5.65	0.00	66.12	68.2	2.08
11510	31.89	PK	H	38.00	8.22	26.02	52.09	74.00	70.11
11510	21.05	AV	H	38.00	8.22	26.02	41.25	54.00	69.55
17265	30.22	PK	H	43.12	10.88	26.04	58.18	74.00	47.02
17265	19.93	AV	H	43.12	10.88	26.04	47.89	54.00	20.31
2471	42.86	PK	H	23.30	2.99	26.89	42.26	74.00	31.74
2471	36.96	AV	H	23.30	2.99	26.89	36.36	54.00	17.64
1599	34.86	PK	H	24.26	2.75	26.43	35.44	74.00	38.56
1599	23.67	AV	H	24.26	2.75	26.43	24.25	54.00	29.75
500.45	41.23	QP	V	18.10	1.61	28.82	32.12	46.00	13.88
High Channel:5795 MHz									
5795	75.86	PK	H	32.65	5.78	0.00	114.29	N/A	N/A
5795	64.56	AV	H	32.65	5.78	0.00	102.99	N/A	N/A
5795	74.07	PK	V	32.65	5.78	0.00	112.5	N/A	N/A
5795	62.59	AV	V	32.65	5.78	0.00	101.02	N/A	N/A
5850	32.76	PK	H	32.72	5.83	0.00	71.31	122.2	50.89
5855	31.78	PK	H	32.73	5.83	0.00	70.34	110.8	40.46
5875	28.74	PK	H	32.75	5.85	0.00	67.34	105.2	37.86
5925	26.18	PK	H	32.81	5.89	0.00	64.88	68.2	3.32
11590	32.12	PK	H	38.04	8.21	25.99	52.38	74.00	69.82
11590	19.88	AV	H	38.04	8.21	25.99	40.14	54.00	70.66
17385	29.42	PK	H	43.67	11.08	26.21	57.96	74.00	47.24
17385	19.48	AV	H	43.67	11.08	26.21	48.02	54.00	20.18
1599	35.95	PK	H	24.26	2.75	26.43	36.53	74.00	37.47
1599	25.92	AV	H	24.26	2.75	26.43	26.5	54.00	27.5
2471	42.79	PK	H	23.30	2.99	26.89	42.19	74.00	31.81
2471	36.92	AV	H	23.30	2.99	26.89	36.32	54.00	17.68
500.45	41.93	QP	V	18.10	1.61	28.82	32.82	46.00	13.18

802.11n ac80 mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Middle Channel:5775 MHz									
5775	74.00	PK	H	32.63	5.76	0.00	112.39	N/A	N/A
5775	61.08	AV	H	32.63	5.76	0.00	99.47	N/A	N/A
5775	71.19	PK	V	32.63	5.76	0.00	109.58	N/A	N/A
5775	58.90	AV	V	32.63	5.76	0.00	97.29	N/A	N/A
5725	36.31	PK	H	32.57	5.72	0.00	74.6	122.2	47.6
5720	33.40	PK	H	32.56	5.71	0.00	71.67	110.8	39.13
5700	32.78	PK	H	32.54	5.70	0.00	71.02	105.2	34.18
5650	28.86	PK	H	32.48	5.65	0.00	66.99	68.2	1.21
5850	70.38	PK	H	32.72	5.83	0.00	108.93	122.2	13.27
5855	67.68	PK	H	32.73	5.83	0.00	106.24	110.8	4.56
5875	36.27	PK	H	32.75	5.85	0.00	74.87	105.2	30.33
5925	25.63	PK	H	32.81	5.89	0.00	64.33	68.2	3.87
11550	31.51	PK	H	38.02	8.21	26.01	51.73	74.00	22.27
11550	20.51	AV	H	38.02	8.21	26.01	40.73	54.00	13.27
17325	29.89	PK	H	43.40	10.98	26.12	58.15	74.00	15.85
17325	19.61	AV	H	43.40	10.98	26.12	47.87	54.00	6.13
2471	42.78	PK	H	23.30	2.99	26.89	42.18	74.00	31.82
2471	37.48	AV	H	23.30	2.99	26.89	36.88	54.00	17.12
500.45	42.1	QP	V	18.10	1.61	28.82	32.99	46.00	13.01

2.4GHz band and 5.8GHz band transmit simultaneously

(2.4GHz 3x3 N40 2452MHz + 5.8GHz 4x4 AC80 5775MHz with beamforming was the worst):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
11550	32.58	PK	H	38.02	8.21	26.01	52.80	74.00	21.20
11550	21.22	AV	H	38.02	8.21	26.01	41.44	54.00	12.56
17325	29.99	PK	H	43.40	10.98	26.12	58.25	74.00	15.75
17325	20.47	AV	H	43.40	10.98	26.12	48.73	54.00	5.27
4904	33.25	PK	V	31.09	5.08	26.87	42.55	74.00	31.45
4904	21.58	AV	V	31.09	5.08	26.87	30.88	54.00	23.12
7356	33.96	PK	V	35.01	6.23	26.42	48.78	74.00	25.22
7356	20.78	AV	V	35.01	6.23	26.42	35.60	54.00	18.40
2471	43.69	PK	H	23.30	2.99	26.89	43.09	74.00	30.91
2471	38.85	AV	H	23.30	2.99	26.89	38.25	54.00	15.75
500.45	46.69	QP	V	18.10	1.61	28.82	37.58	46.00	8.42

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested 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 v01r03

Test Data

Environmental Conditions

Temperature:	28.6~29.3 °C
Relative Humidity:	46~47 %
ATM Pressure:	100.8~101.1 kPa

The testing was performed by Lorin Bian from 2016-11-04.

Test Result: Pass.

Please refer to the following tables and plots.

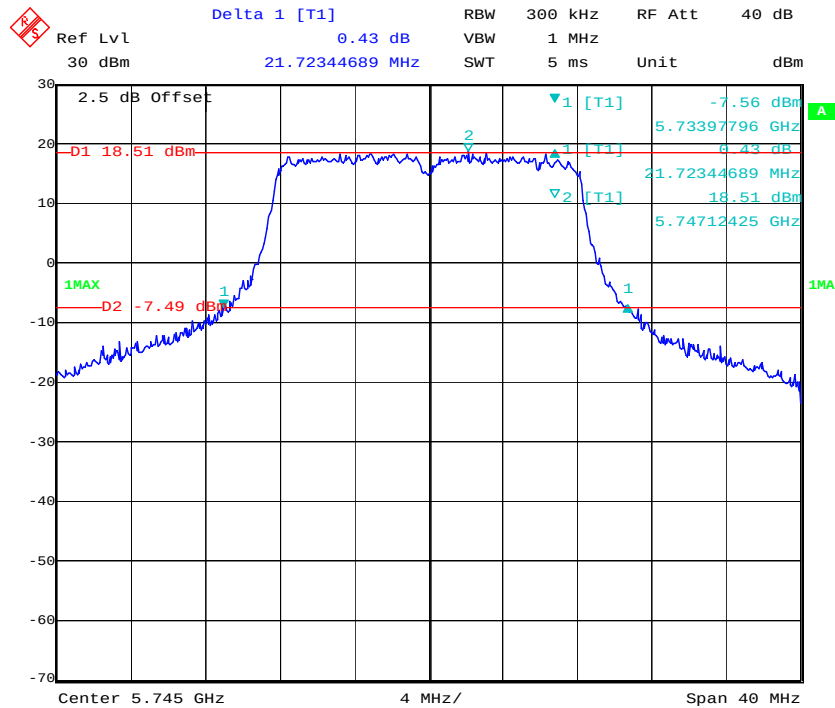
Test mode: Transmitting (Test performed at SISO mode Chain 0)

UNII Band	Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
5725-5850MHz	802.11 a	Low	5745	21.72
		Middle	5785	21.24
		High	5825	21.24
	802.11 n20	Low	5745	21.72
		Middle	5785	21.72
		High	5825	21.48
	802.11 n40	Low	5755	41.20
		High	5795	41.04
	802.11 ac80	Middle	5775	84.97

Note: 26dB bandwidth only for reporting.

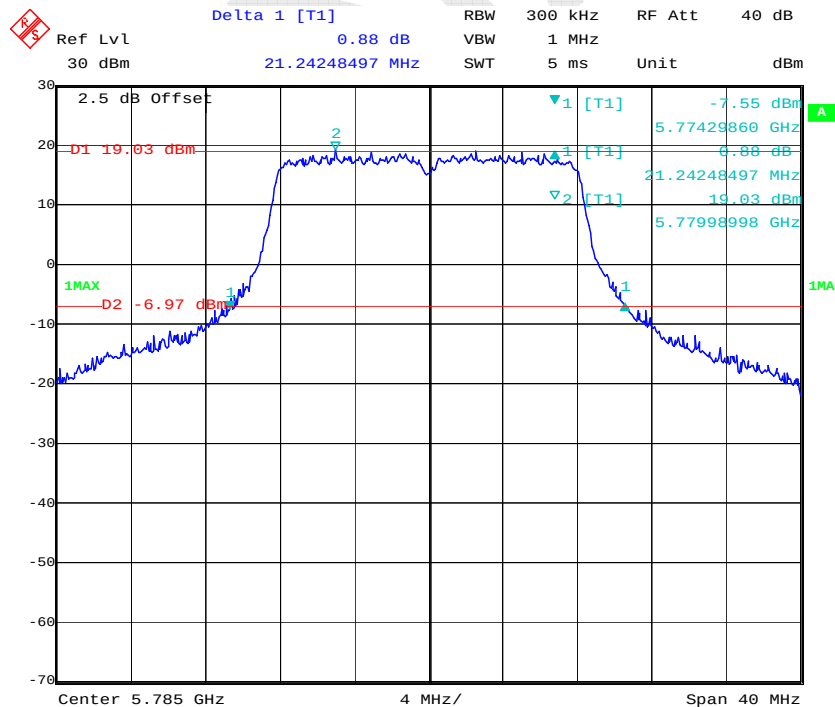
UNII Band	Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Result
5725-5850MHz	802.11 a	Low	5745	16.43	PASS
		Middle	5785	16.43	PASS
		High	5825	16.43	PASS
	5G 802.11 n20	Low	5745	17.56	PASS
		Middle	5785	17.23	PASS
		High	5825	17.56	PASS
	5G 802.11 n40	Low	5755	35.43	PASS
		High	5795	35.43	PASS
	802.11 ac80	Middle	5775	76.63	PASS

802.11a Low Channel



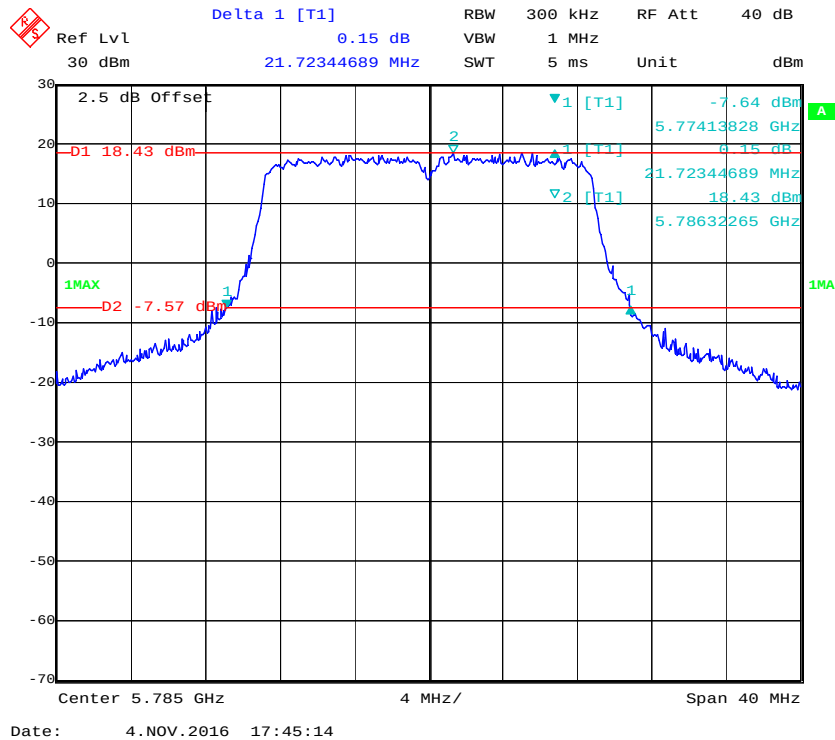
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802.11a Middle Channel

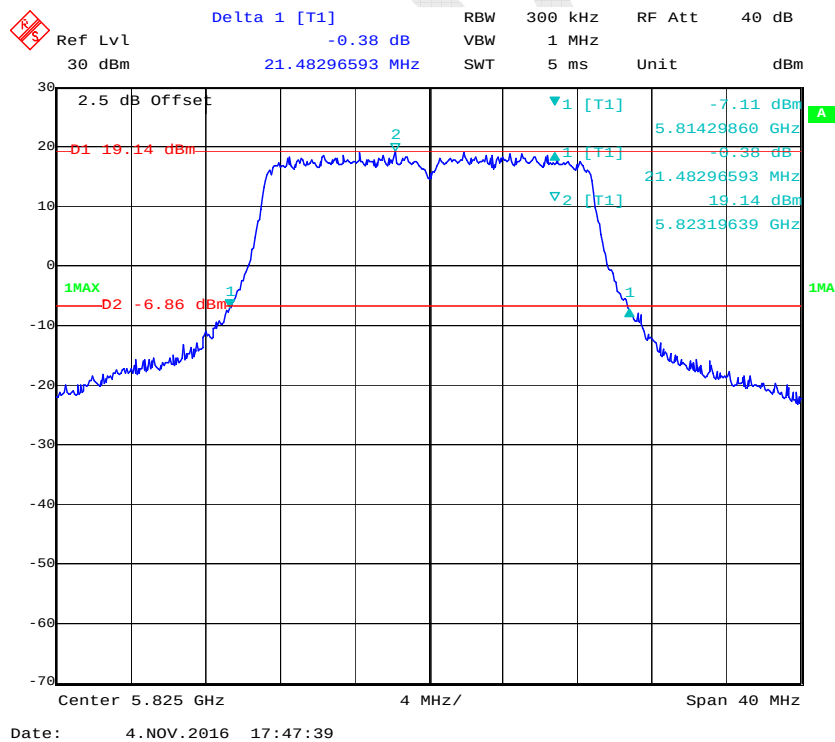


Date: 4.NOV.2016 17:27:18

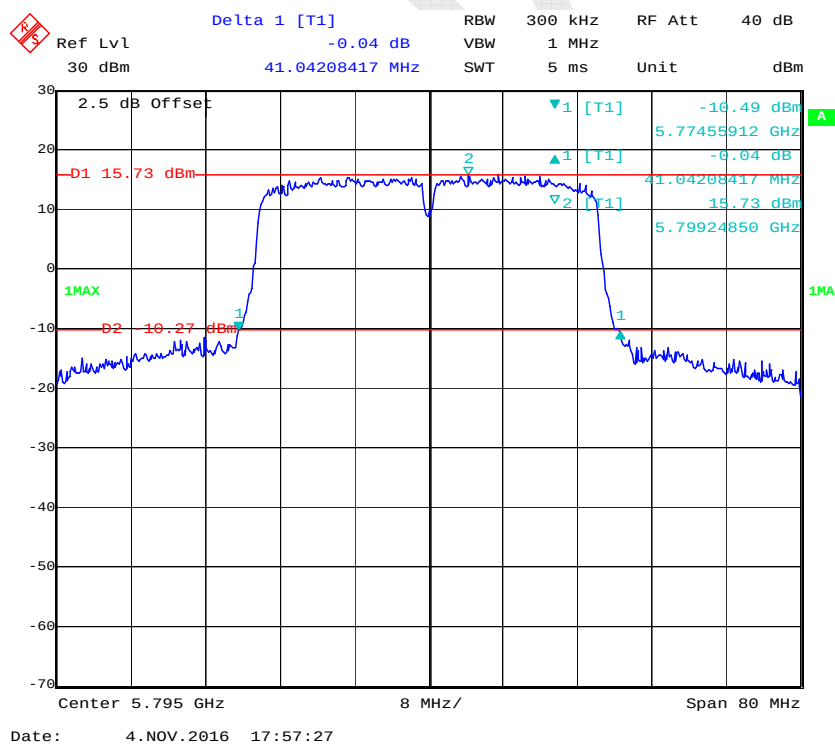
802.11n ht20 Middle Channel



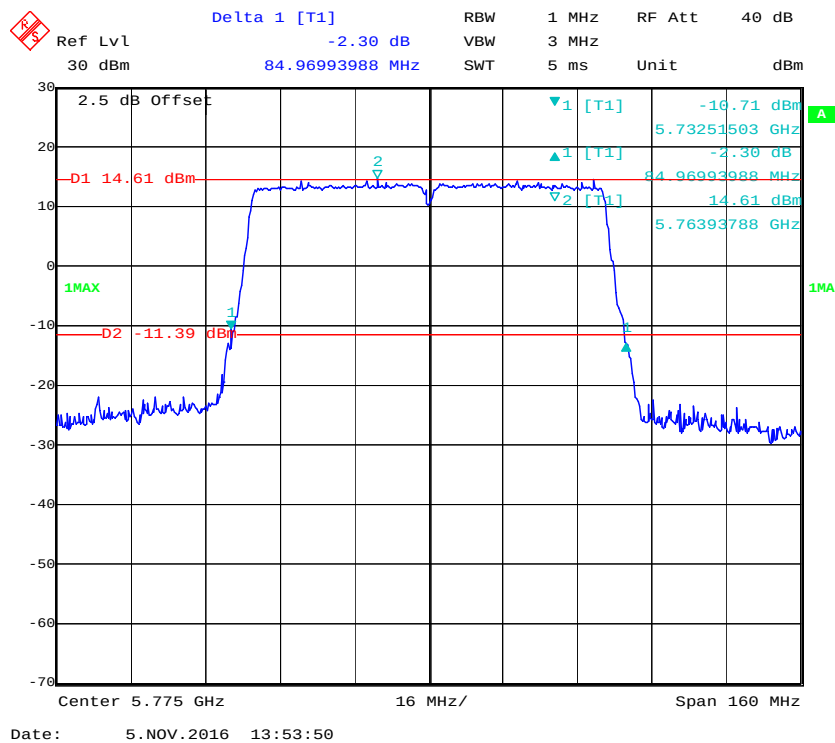
802.11n ht20 High Channel



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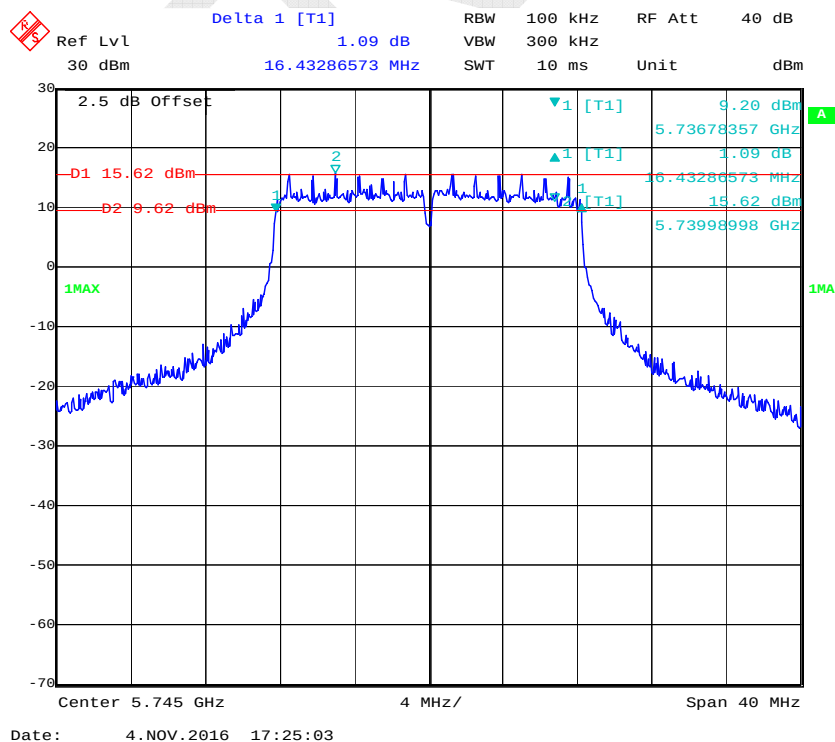


802.11ac80 Middle Channel

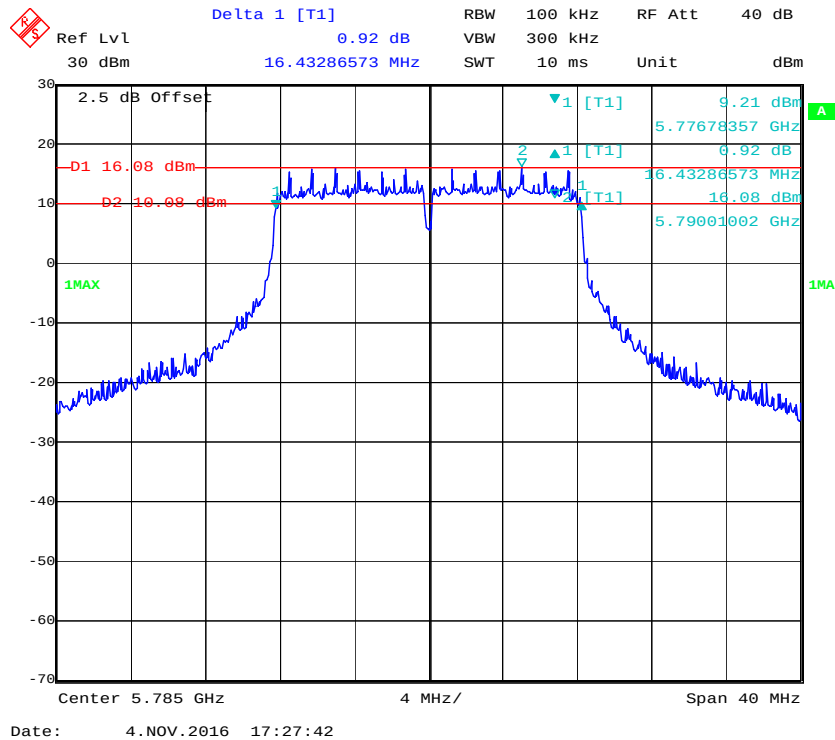


6dB Bandwidth:

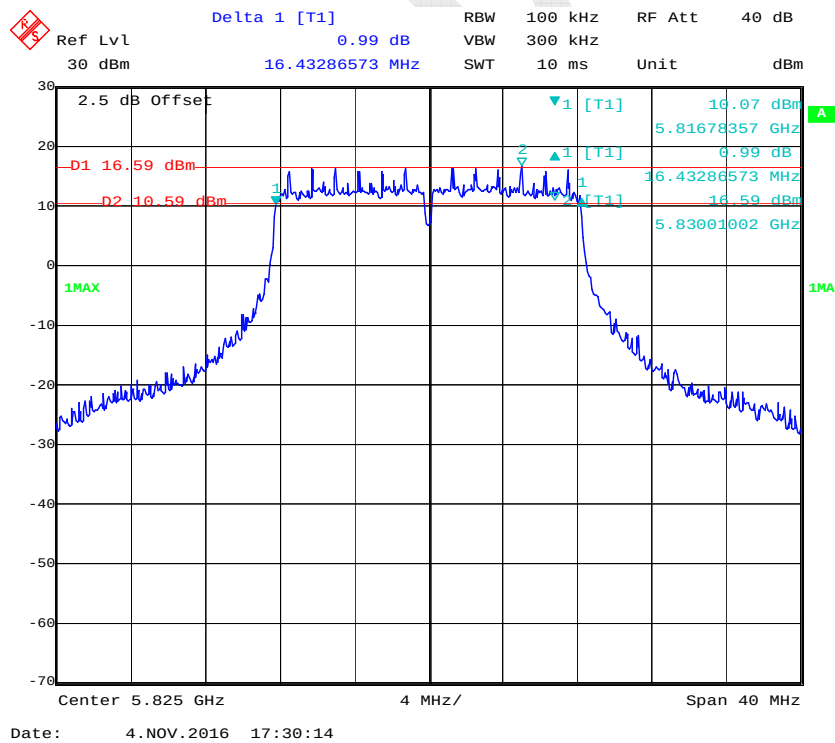
802.11a Low Channel



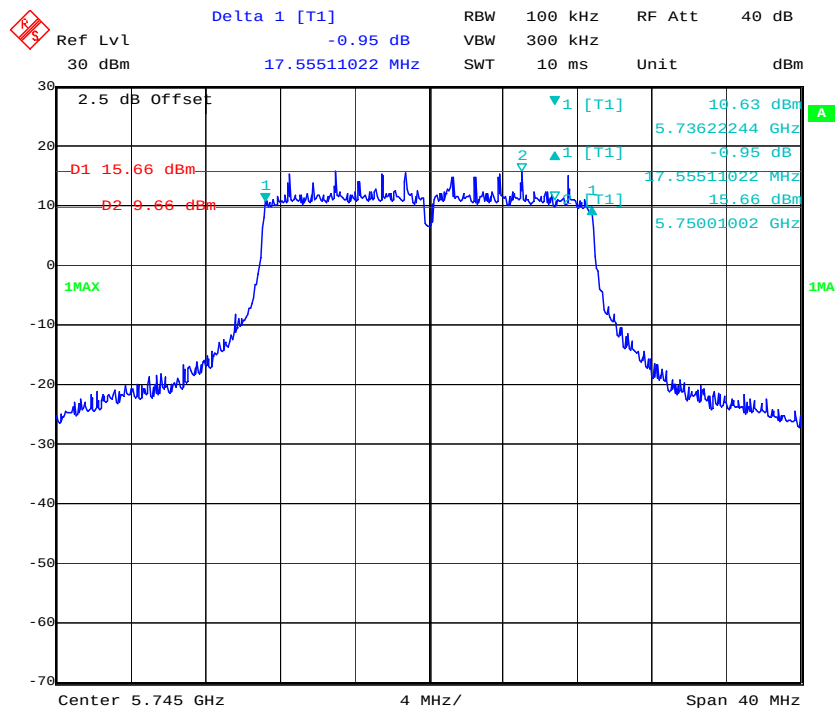
802.11a Middle Channel



802.11a High Channel

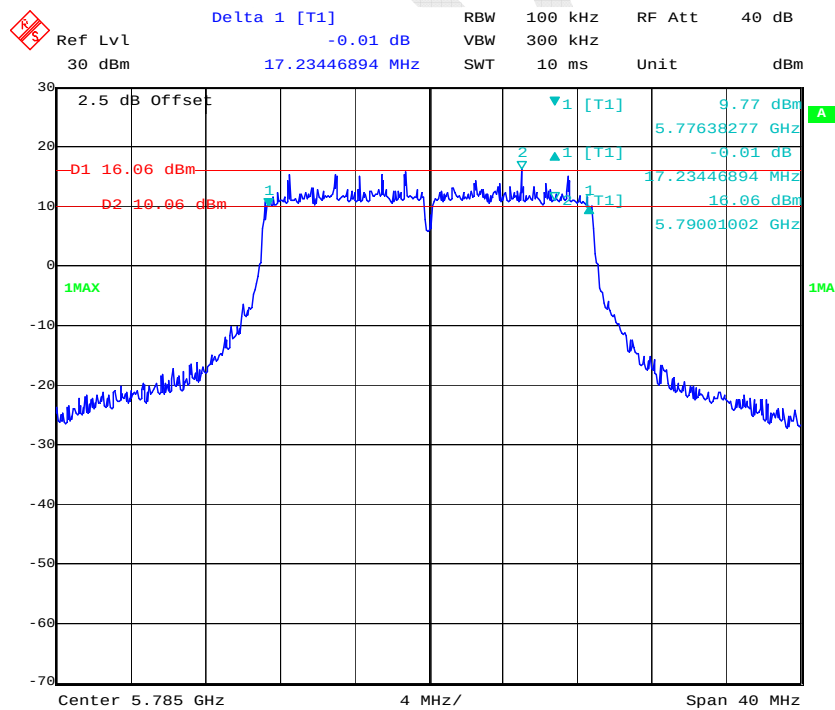


802.11n ht20 Low Channel



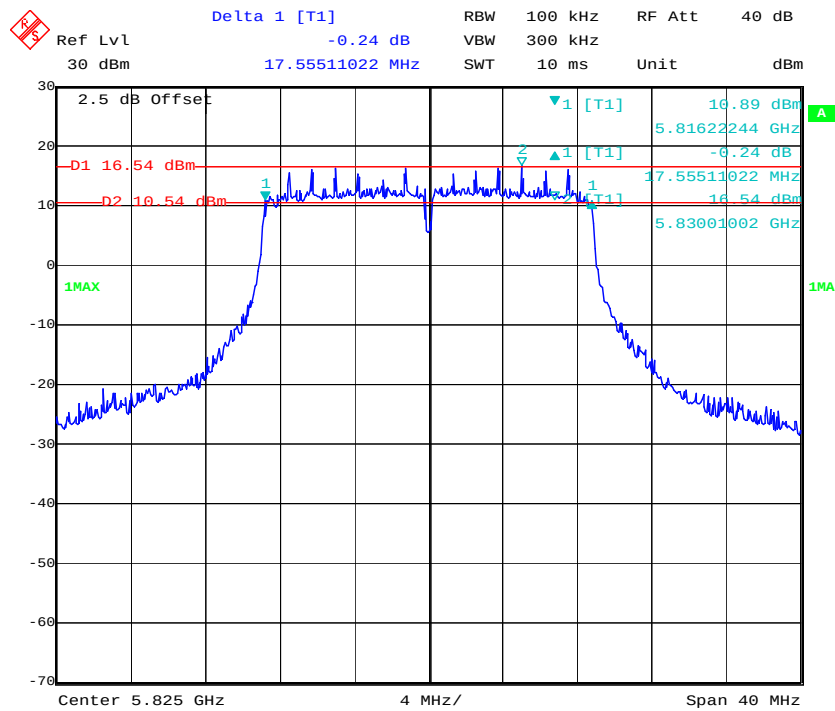
Date: 4.NOV.2016 17:43:08

802.11n ht20 Middle Channel



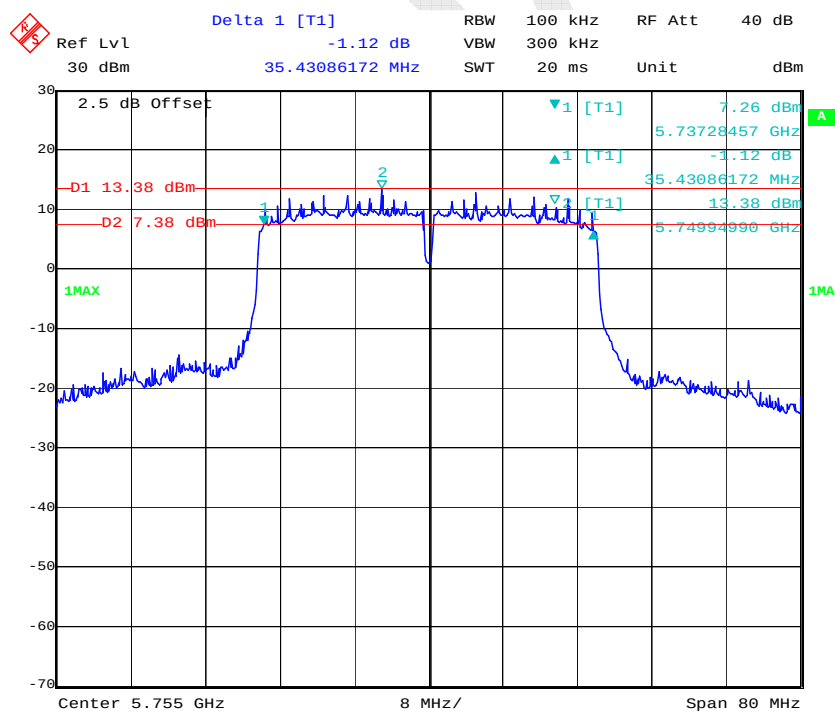
Date: 4.NOV.2016 17:45:37

802.11n ht20 High Channel



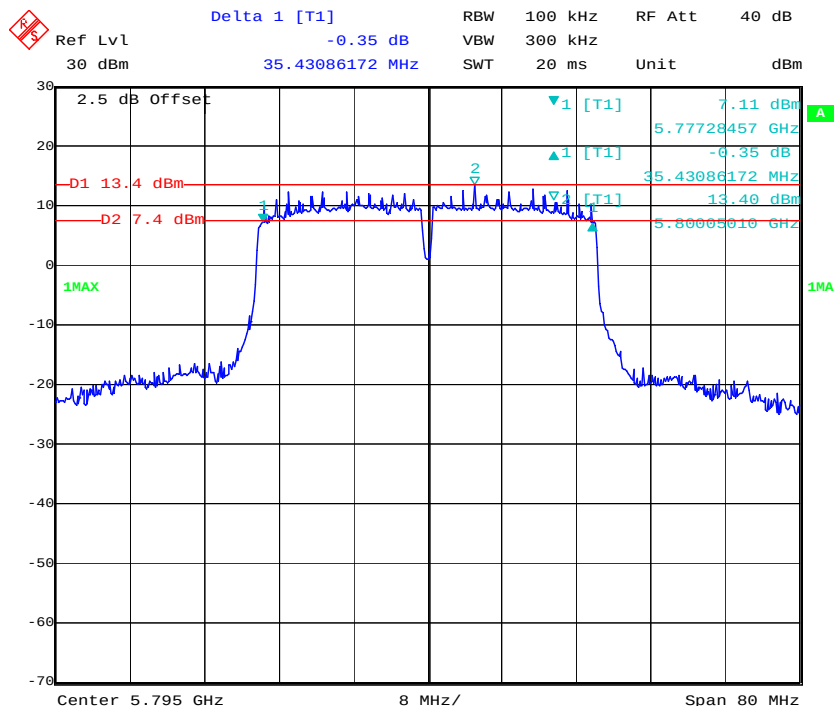
Date: 4.NOV.2016 17:48:02

802.11n ht40 Low Channel

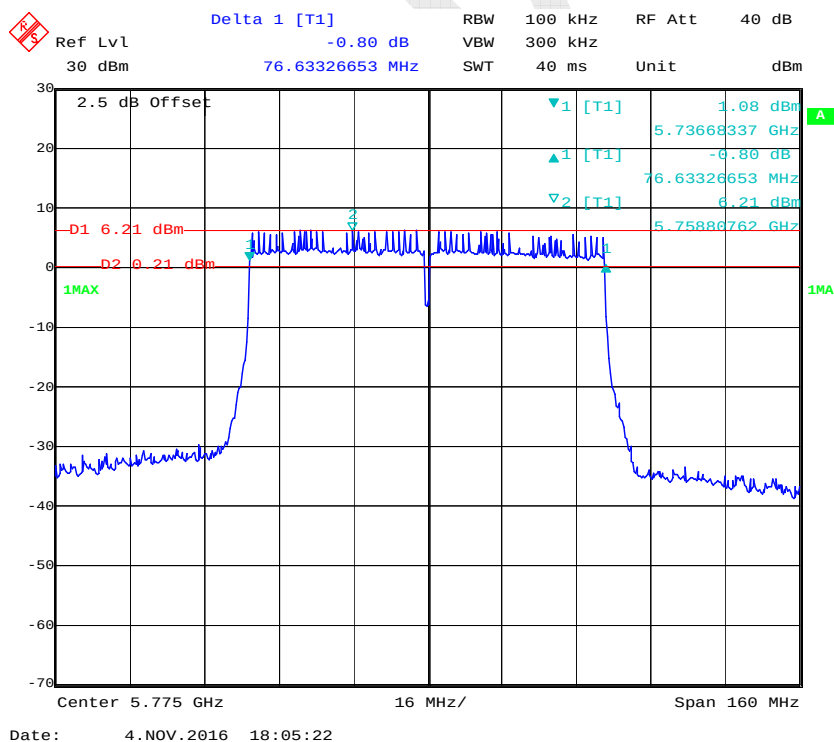


Date: 4.NOV.2016 17:54:17

802.11n ht40 High Channel



802.11n ac80 Middle Channel



FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple 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 $10 \log B$ dBm, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

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

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(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	MY54170074	2016-01-03	2017-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2016-01-03	2017-01-03
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested 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:	28.6 °C
Relative Humidity:	46 %
ATM Pressure:	100.8 kPa

The testing was performed by Lorin Bian on 2016-11-04.

Test Mode: Transmitting
SISO- Non-beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2	Chain 3		
5725-5850MHz	802.11 a	Low	5745	27.39	26.88	26.93	27.23	30	PASS
		Middle	5785	27.7	27.06	27.25	26.96	30	PASS
		High	5825	28.11	27.43	27.87	26.85	30	PASS
	5G 802.11 n20	Low	5745	27.26	26.63	26.76	27.08	30	PASS
		Middle	5785	27.44	26.79	27.12	26.82	30	PASS
		High	5825	27.93	27.22	27.7	26.81	30	PASS
	5G 802.11 n40	Low	5755	27.41	26.76	26.95	27.13	30	PASS
		High	5795	27.84	27.05	27.65	26.88	30	PASS
	802.11 ac80	Middle	5775	24.59	24.43	24.45	24.39	30	PASS

MIMO-2X2- Non-beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)		Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1			
5725-5850MHz	802.11 a	Low	5745	25.35	24.86	28.12	30	PASS
		Middle	5785	25.57	25.06	28.33	30	PASS
		High	5825	26.17	25.81	29	30	PASS
	5G 802.11 n20	Low	5745	25.14	24.68	27.93	30	PASS
		Middle	5785	25.33	24.76	28.06	30	PASS
		High	5825	25.96	25.57	28.78	30	PASS
	5G 802.11 n40	Low	5755	25.31	24.82	28.08	30	PASS
		High	5795	25.57	25.17	28.38	30	PASS
	802.11 ac80	Middle	5775	24.5	24.06	27.3	30	PASS

MIMO-3X3- Non-beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)			Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2			
5725-5850MHz	802.11 a	Low	5745	23.98	23.55	23.92	28.59	30	PASS
		Middle	5785	24.16	23.77	24.45	28.91	30	PASS
		High	5825	24.69	24.5	25.3	29.61	30	PASS
	5G 802.11 n20	Low	5745	23.78	23.28	23.55	28.31	30	PASS
		Middle	5785	23.88	23.51	24.09	28.6	30	PASS
		High	5825	24.47	24.1	25.01	29.31	30	PASS
	5G 802.11 n40	Low	5755	23.7	23.31	23.53	28.29	30	PASS
		High	5795	24.08	23.69	24.53	28.88	30	PASS
	802.11 ac80	Middle	5775	24.03	23.73	24.22	28.77	30	PASS

MIMO-4X4-Non-beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2	Chain 3			
5725-5850MHz	802.11 a	Low	5745	23.13	22.53	22.84	23.71	29.1	30	PASS
		Middle	5785	23.23	22.76	23.48	23.49	29.27	30	PASS
		High	5825	23.84	23.47	24.12	23.44	29.75	30	PASS
	5G 802.11 n20	Low	5745	22.94	22.26	22.45	23.46	28.82	30	PASS
		Middle	5785	22.94	22.51	23.11	23.11	28.94	30	PASS
		High	5825	23.57	23.25	23.96	23.15	29.51	30	PASS
	5G 802.11 n40	Low	5755	22.95	22.47	22.76	23.28	28.9	30	PASS
		High	5795	23.26	22.91	23.47	23.1	29.21	30	PASS
	802.11 ac80	Middle	5775	23.15	22.88	23.32	23.44	29.22	30	PASS

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, 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 $N_{ANT} \leq 4$;

So:

Directional gain = $G_{ANT} + \text{Array Gain} = 2\text{dBi} < 6\text{dBi}$

MIMO-2X2- With Beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)		Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1			
5725-5850MHz	5G 802.11 n20	Low	5745	22.61	21.74	25.23	30	PASS
		Middle	5785	22.64	22.11	25.42	30	PASS
		High	5825	23.34	23	26.20	30	PASS
	5G 802.11 n40	Low	5755	22.33	22.1	25.25	30	PASS
		High	5795	22.96	22.26	25.66	30	PASS
	802.11 ac80	Middle	5775	21.91	21.11	24.57	30	PASS

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT/NSS}) \text{ dB};$$

So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(2) = 5\text{dBi} < 6\text{dBi}$$

MIMO-3X3- With Beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)			Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2			
5725-5850MHz	5G 802.11 n20	Low	5745	19.4	18.68	18.99	23.82	29.23	PASS
		Middle	5785	19.32	19.03	19.55	24.09	29.23	PASS
		High	5825	19.94	19.63	20.33	24.76	29.23	PASS
	5G 802.11 n40	Low	5755	19.02	18.88	18.86	23.71	29.23	PASS
		High	5795	19.59	19.25	19.99	24.41	29.23	PASS
	802.11 ac80	Middle	5775	19.43	19.26	19.83	24.30	29.23	PASS

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT/NSS}) \text{ dB};$$

So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(3) = 6.77\text{dBi} > 6\text{dBi}$$

$$\text{Power Limits} = 30 - (6.77-6) = 29.23\text{dBm}.$$

MIMO-4X4- With Beamforming:

UNII Band	Mode	Channel	Frequency (MHz)	RMS Channel Power (dBm)				Total (dBm)	Limit (dBm)	Result
				Chain 0	Chain 1	Chain 2	Chain 3			
5725-5850MHz	5G 802.11 n20	Low	5745	17.22	16.3	16.77	17.64	23.03	28	PASS
		Middle	5785	17.17	16.58	17.16	17.51	23.14	28	PASS
		High	5825	17.9	17.63	18.05	17.29	23.75	28	PASS
	5G 802.11 n40	Low	5755	17.27	16.85	16.87	17.6	23.18	28	PASS
		High	5795	17.65	17.41	17.91	17.36	23.61	28	PASS
	802.11 ac80	Middle	5775	17.59	17.17	17.69	17.52	23.52	28	PASS

Note: the device is a indoor master device. the 4 antenna maximum antenna gains are 2dBi, and employed beamforming for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB};$$

So:

$$\begin{aligned} \text{Directional gain} &= \text{GANT} + \text{Array Gain} = 2\text{dBi} + 10 \log(4) = 8\text{dBi} > 6\text{dBi} \\ \text{Power Limits} &= 30 - (8-6) = 28\text{dBm}. \end{aligned}$$

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 colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $10 \log B$, 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 colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	28.6~29.3 °C
Relative Humidity:	46~47 %
ATM Pressure:	100.8~101.1 kPa

The testing was performed by Lorin Bian from 2016-11-04 to 2016-11-22.

Test Mode: Transmitting (the maximum power of non-beamforming is higher than beamforming mode, so test performed at non-beamforming mode)

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

5725-5850MHz (SISO mode was tested since SISO mode was the maximum power mode per chain, so the MIMO modes PSD is less than SISO mode per chain)

Mode	Frequency (MHz)	Power Spectral Density (dBm/300kHz)				Power Spectral Density (dBm/500kHz)				Total (dBm/500kHz)	Limits
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3		
802.11a	5745	14.64	14.06	13.65	13.57	16.86	16.28	15.87	15.79	22.24	28
	5785	13.79	14.7	15.3	14.67	16.01	16.92	17.52	16.89	22.89	28
	5825	15.13	14.44	14.85	14.45	17.35	16.66	17.07	16.67	22.97	28
802.11n20	5745	14.32	14.35	13.6	13.81	16.54	16.57	15.82	16.03	22.27	28
	5785	13.56	14.84	13.96	14.58	15.78	17.06	16.18	16.8	22.50	28
	5825	14.6	14.42	15.67	14.42	16.82	16.64	17.89	16.64	23.05	28
802.11n40	5755	11.81	10.16	10.11	10.46	14.03	12.38	12.33	12.68	18.93	28
	5795	12.34	10.13	12.15	12.08	14.56	12.35	14.37	14.3	20.00	28
802.11ac80	5775	4.33	4.83	4.99	5.87	6.55	7.05	7.21	8.09	13.28	28

Note 1: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

Note 2: the device is a master device. the 4 antenna maximum antenna gain are 2dBi, 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:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB.}$$

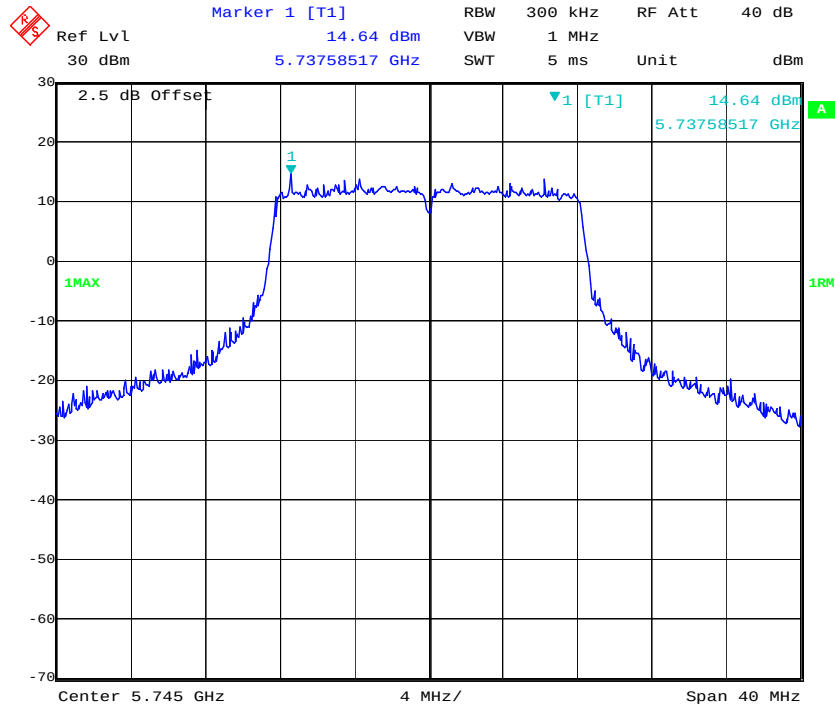
So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 2 + 10 \cdot \log(4) = 8 \text{ dBi} > 6 \text{ dBi}$$

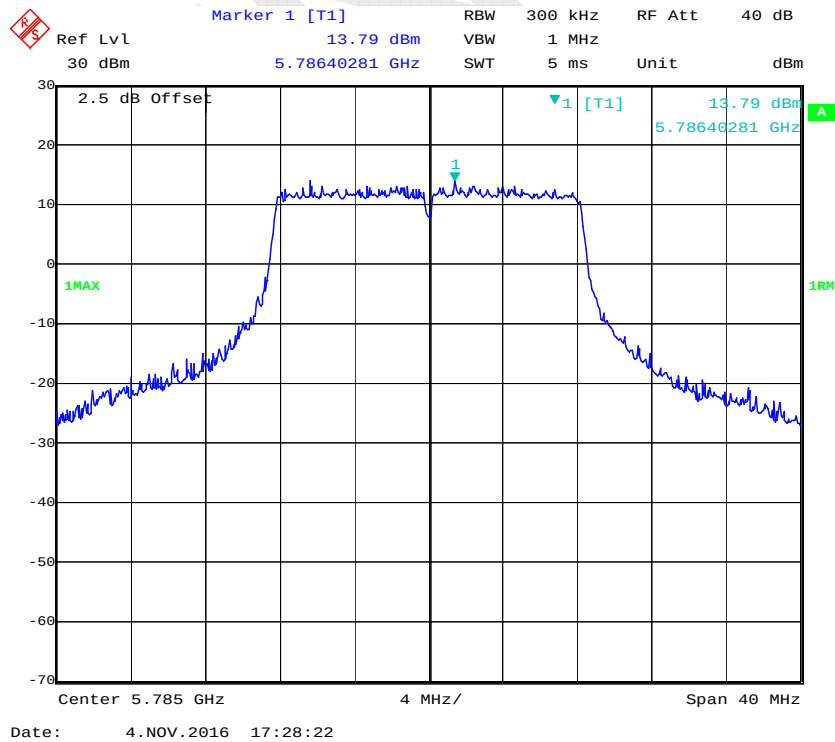
$$\text{Power density Limit} = 30 - (8 - 6) = 28 \text{ dBm}$$

5725MHz-5850MHz:

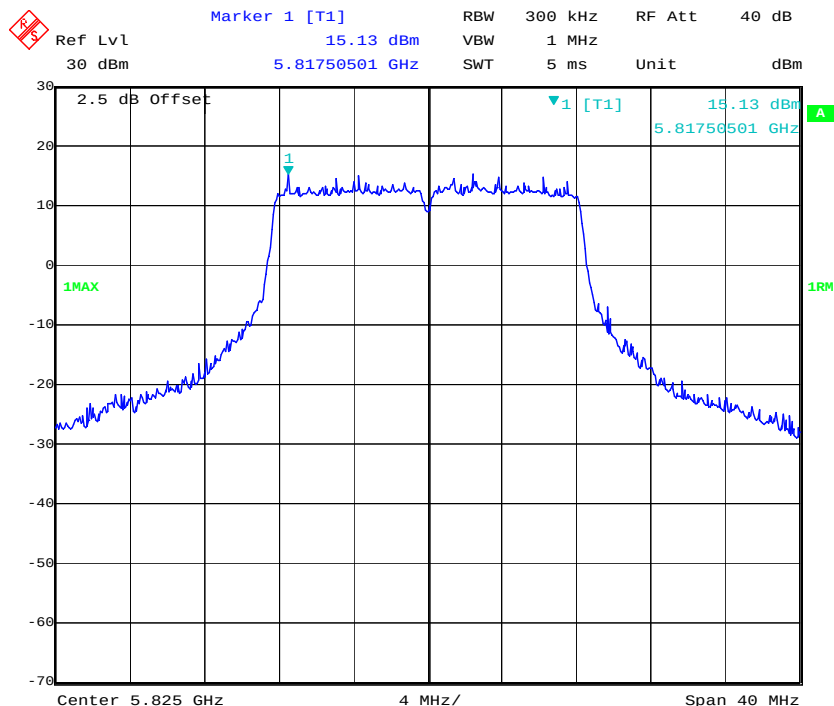
802.11a Low Channel – Chain0



802.11a Middle Channel – Chain0

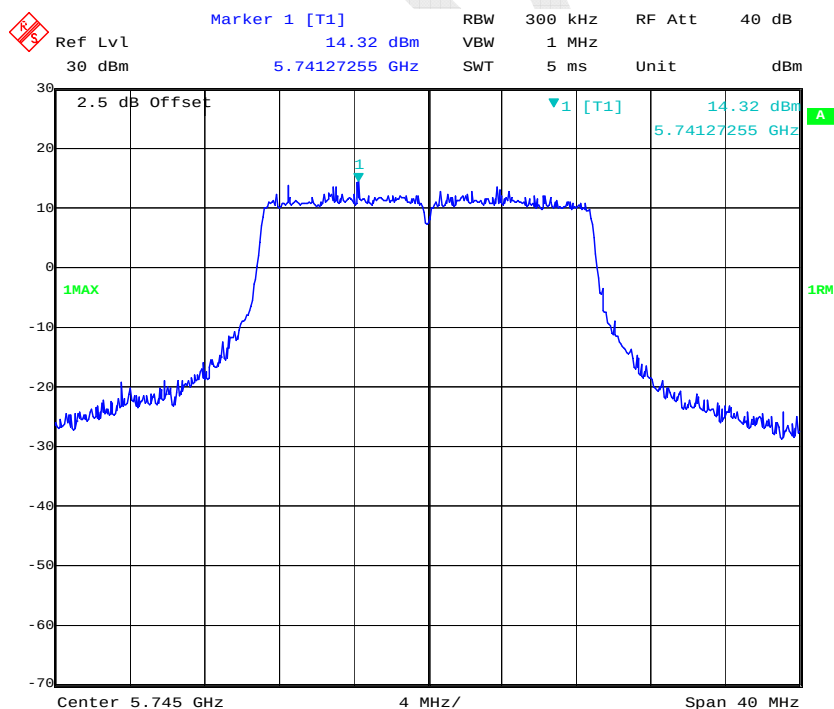


802.11a High Channel – Chain0



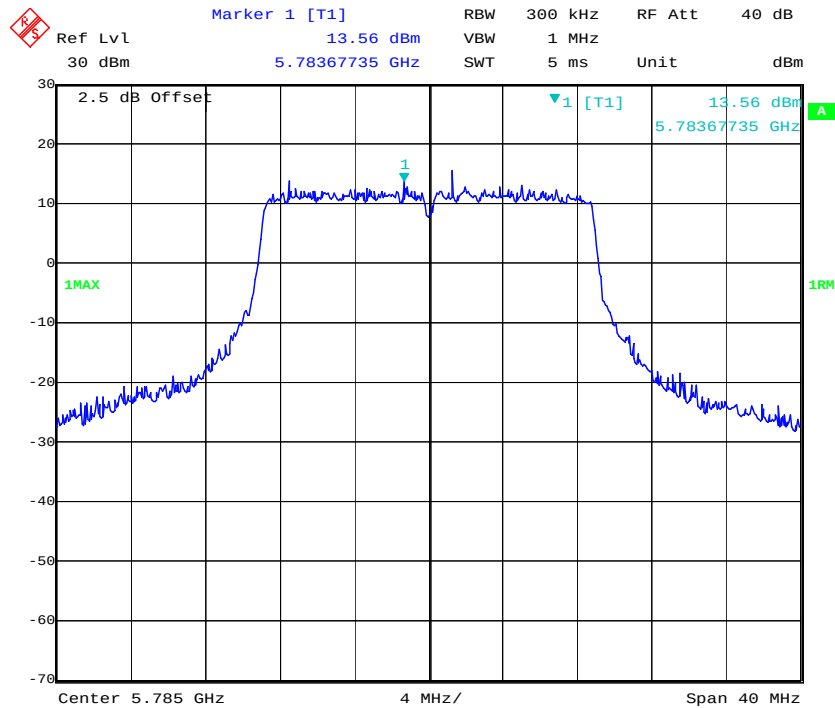
Date: 4.NOV.2016 17:30:57

802.11n ht20 Low Channel – Chain0



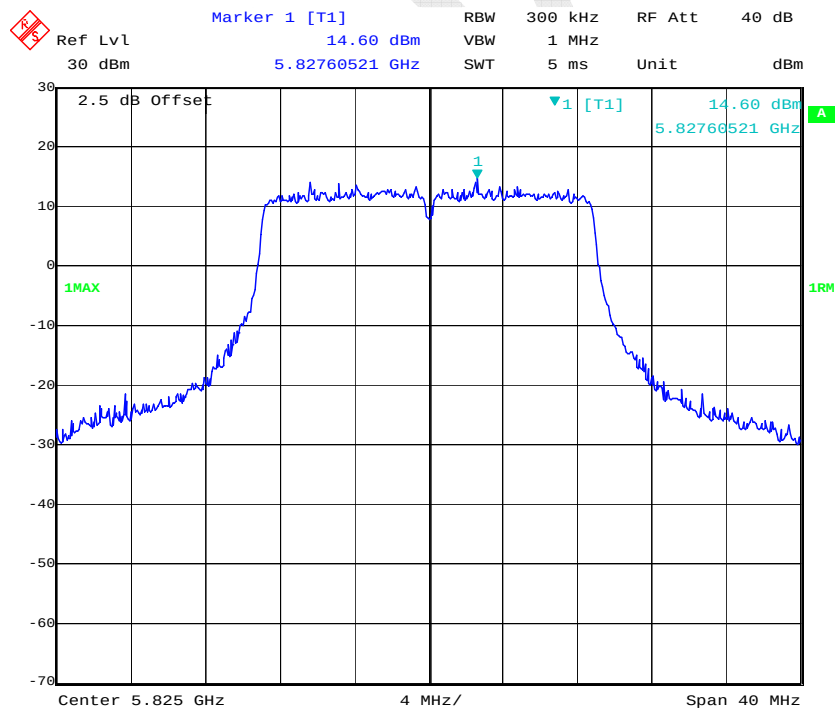
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802.11n ht20 Middle Channel – Chain0



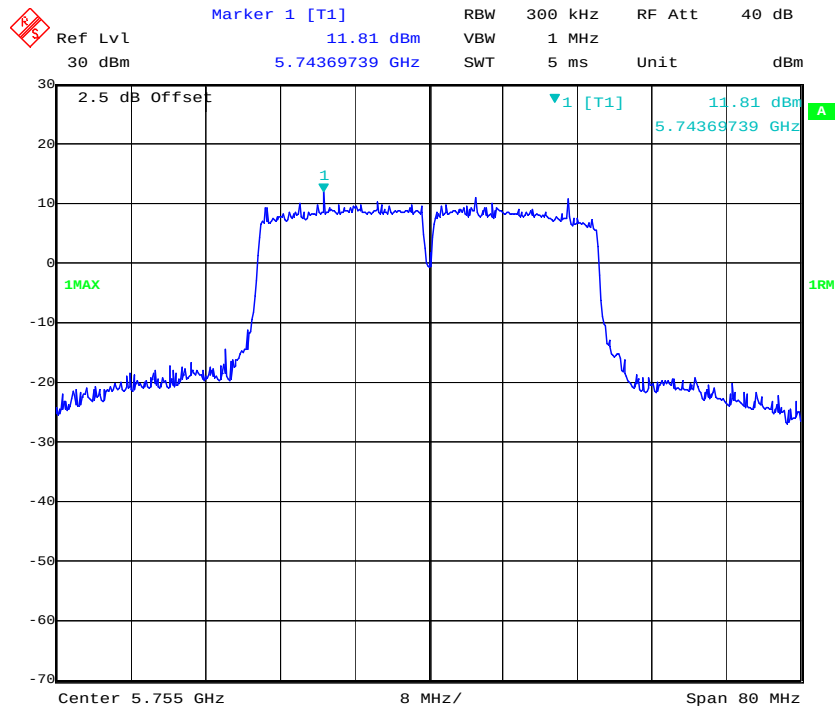
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802.11n ht20 High Channel – Chain0



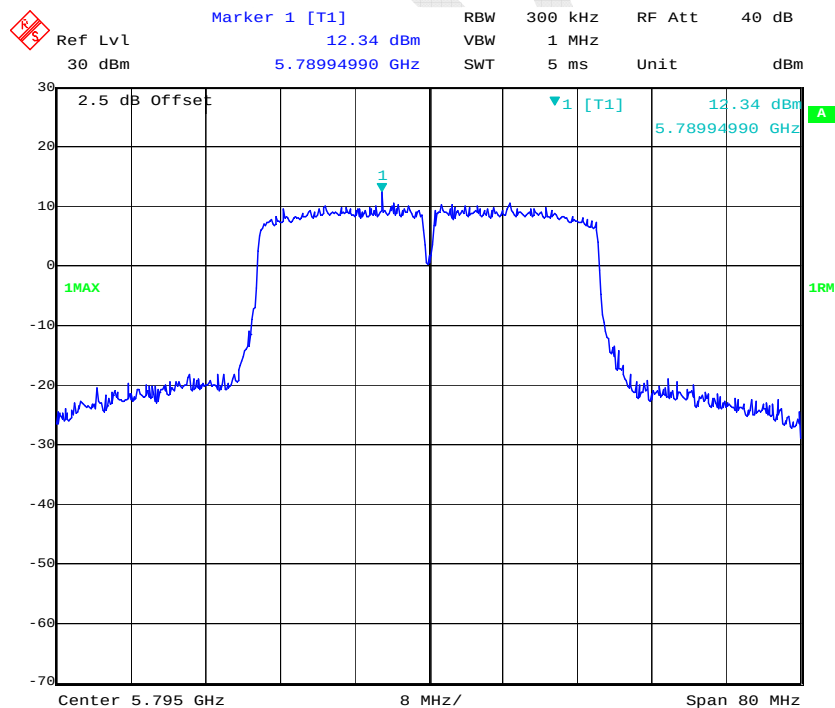
Date: 4.NOV.2016 17:48:42

802.11n ht40 Low Channel – Chain0



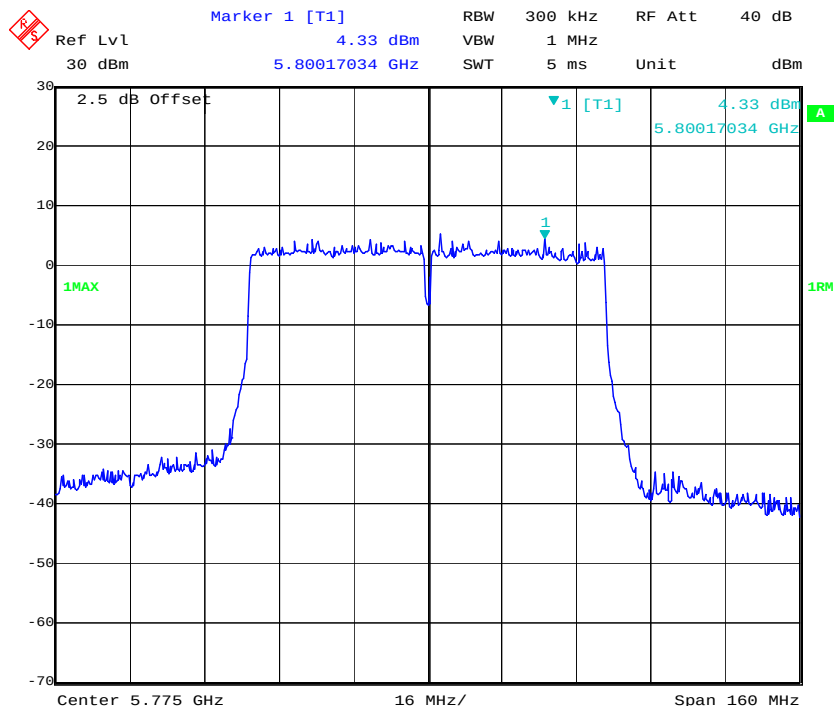
Date: 4.NOV.2016 17:54:58

802.11n ht40 High Channel – Chain0

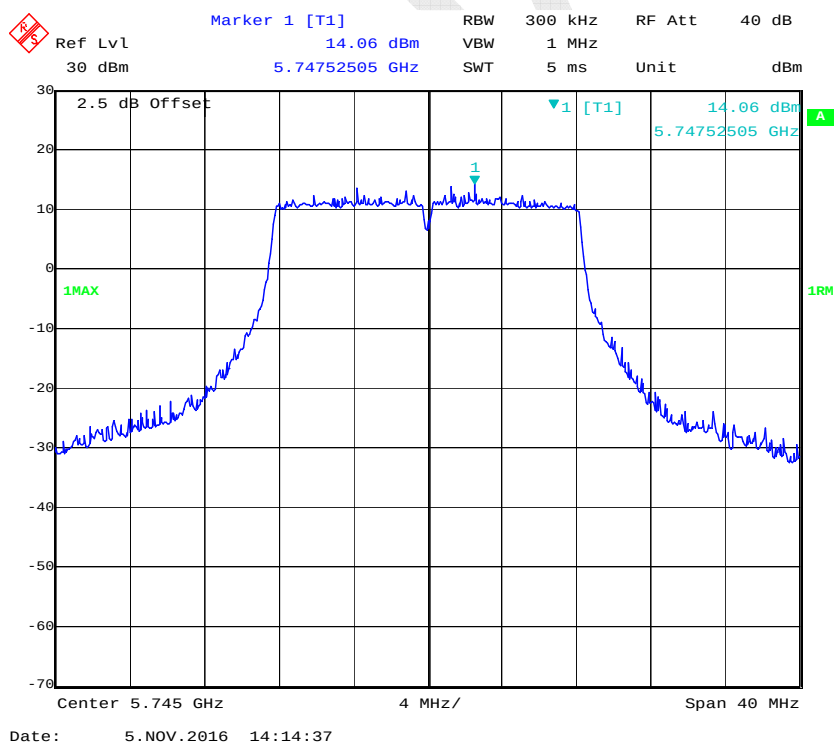


Date: 4.NOV.2016 17:58:33

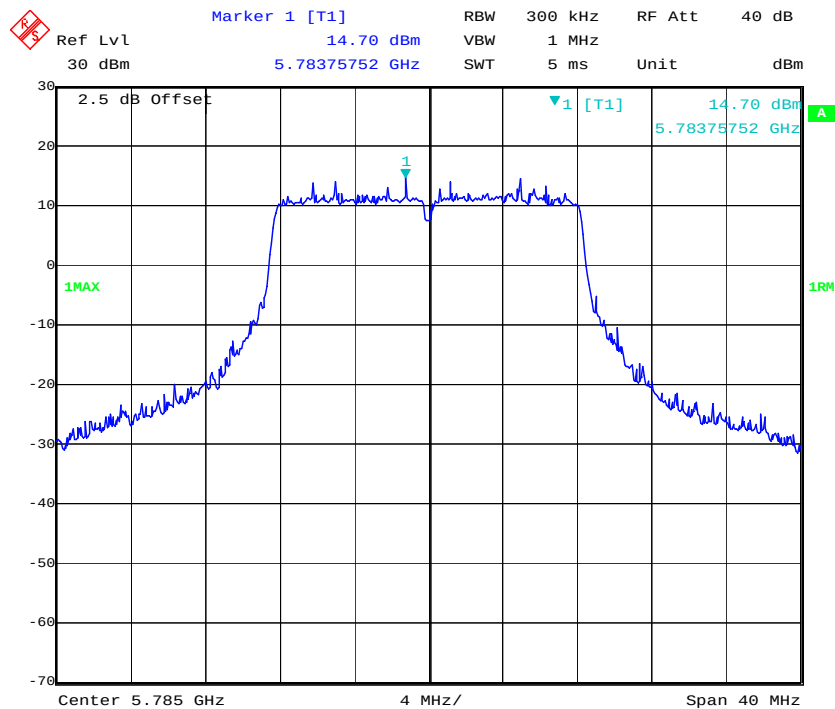
802.11 ac80 Middle Channel – Chain0



802.11a Low Channel – Chain1

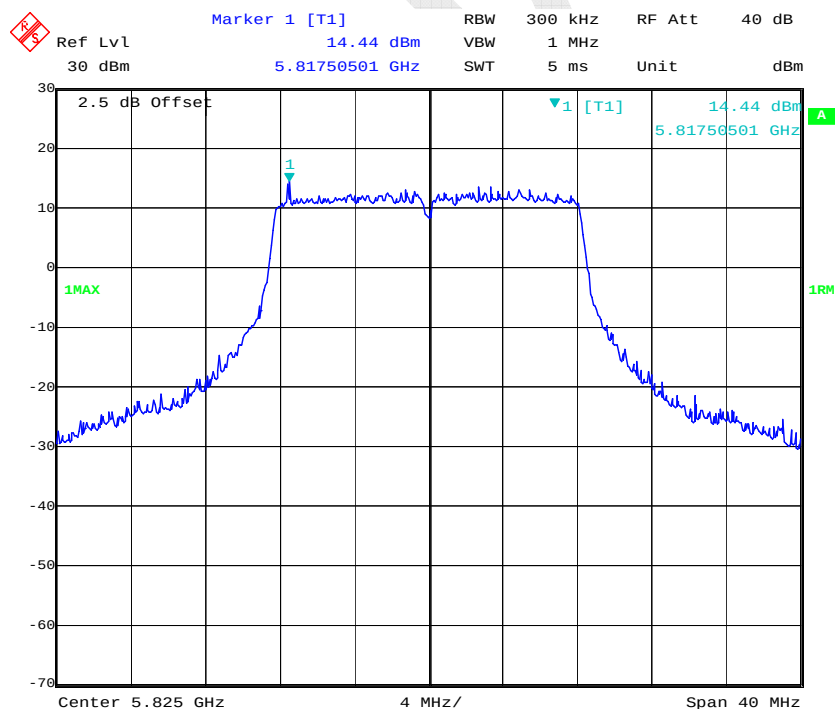


802.11a Middle Channel – Chain1



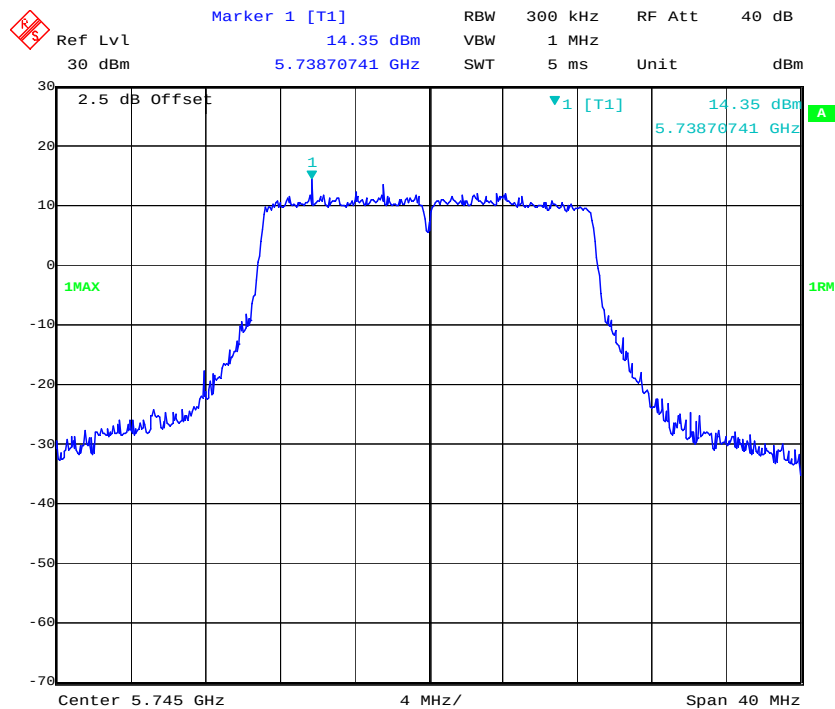
Date: 5.NOV.2016 14:17:23

802.11a High Channel – Chain1



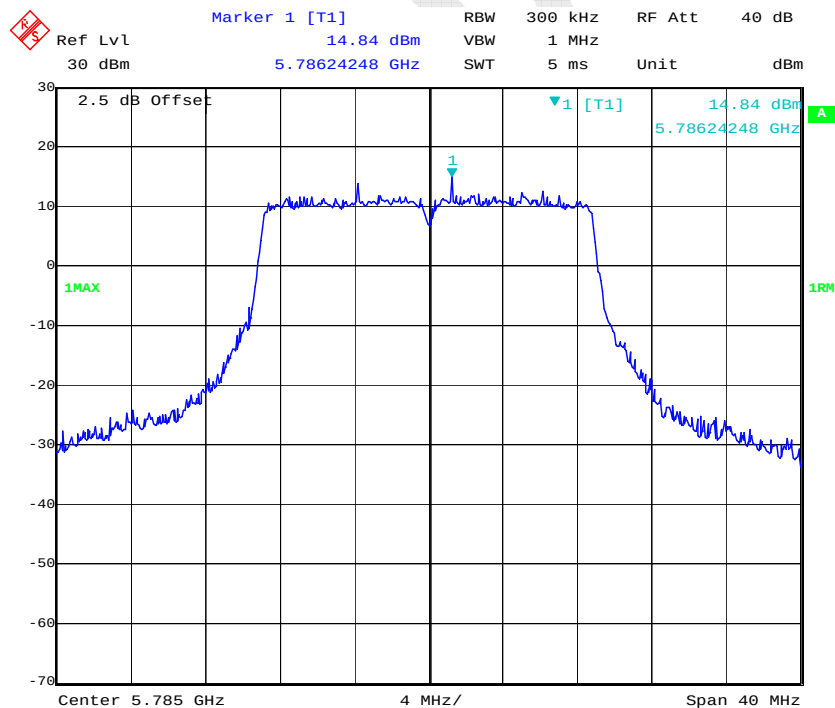
Date: 5.NOV.2016 14:19:58

802.11n ht20 Low Channel – Chain1



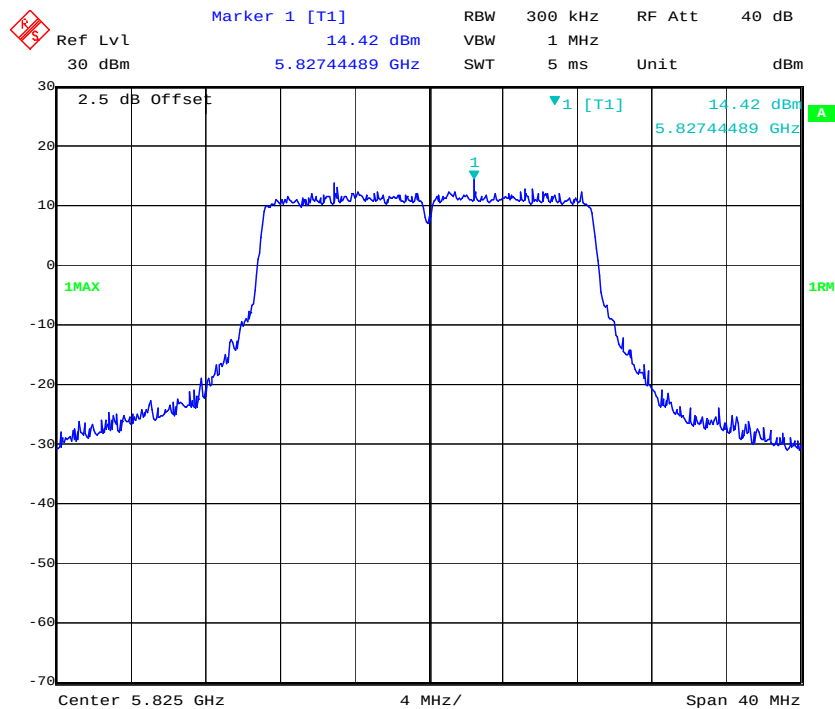
Date: 5.NOV.2016 14:12:04

802.11n ht20 Middle Channel – Chain1



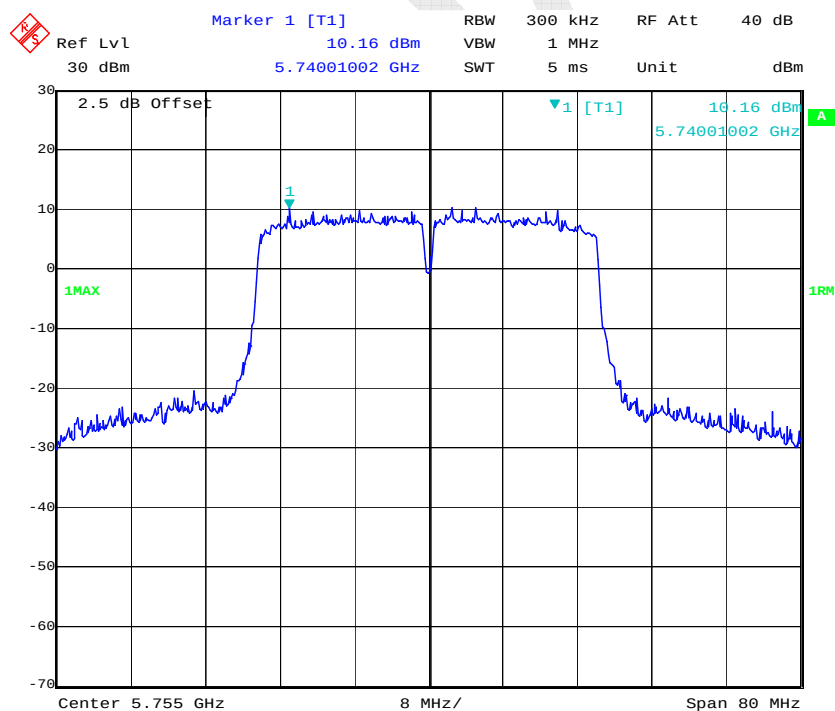
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802.11n ht20 High Channel – Chain1



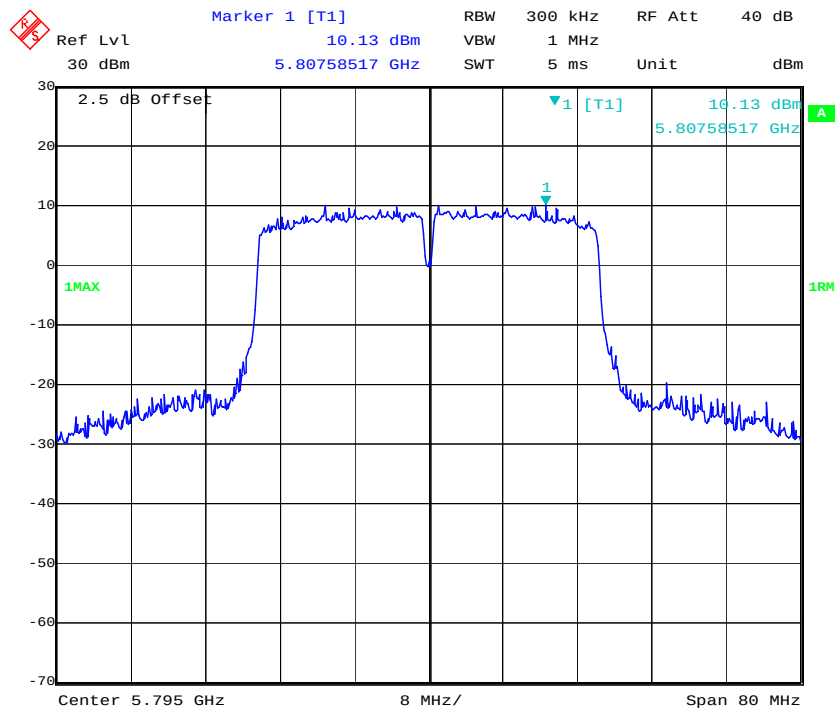
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802.11n ht40 Low Channel – Chain1



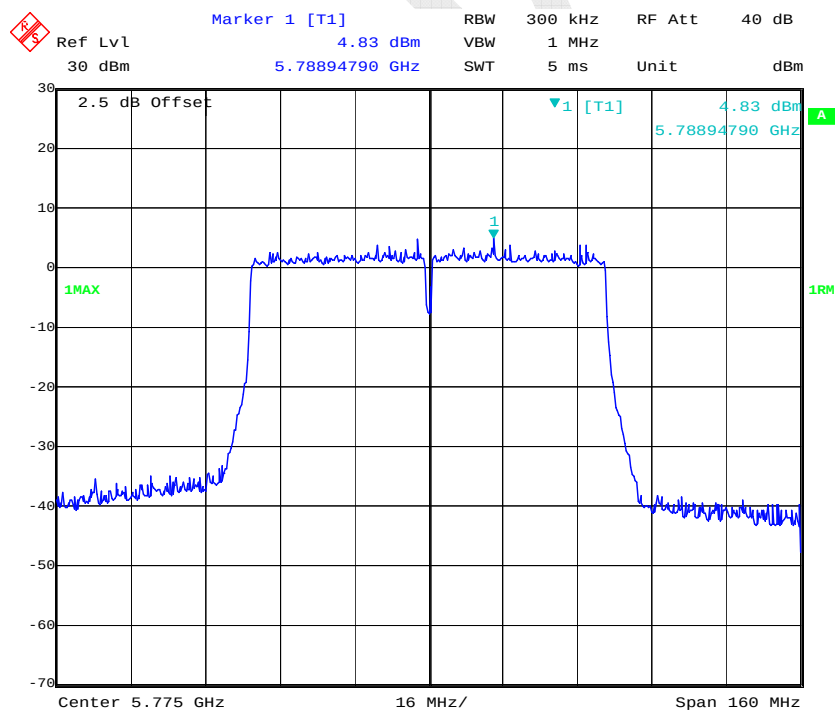
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802.11n ht40 High Channel – Chain1



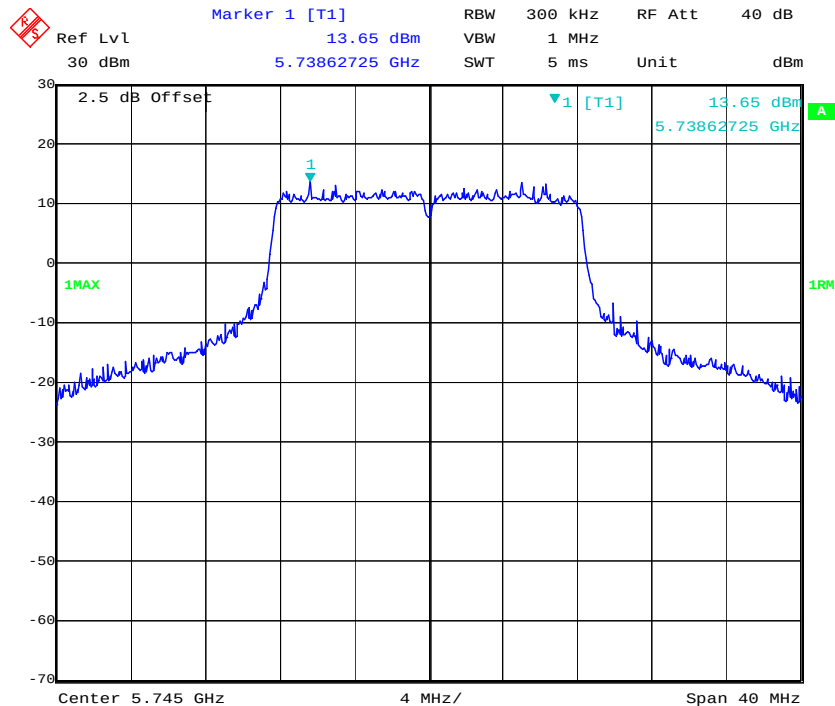
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802.11 ac80 Middle Channel – Chain1

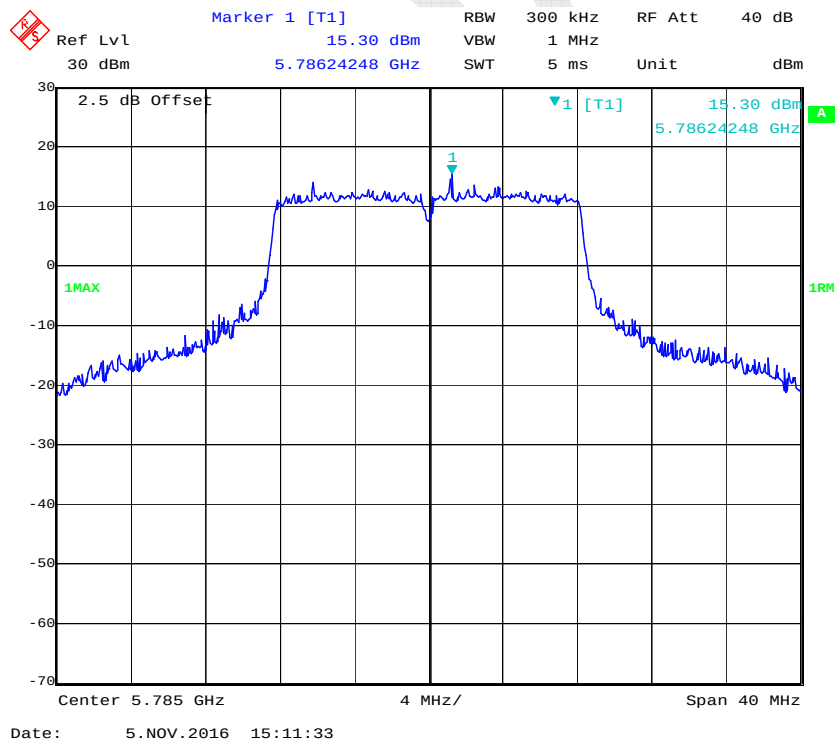


Date: 5.NOV.2016 13:54:53

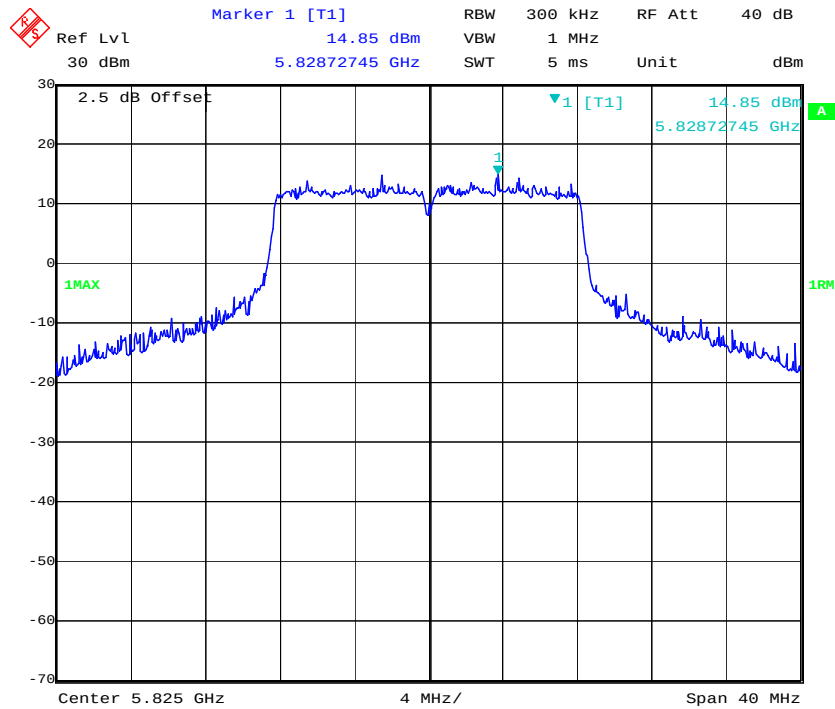
802.11a Low Channel – Chain2



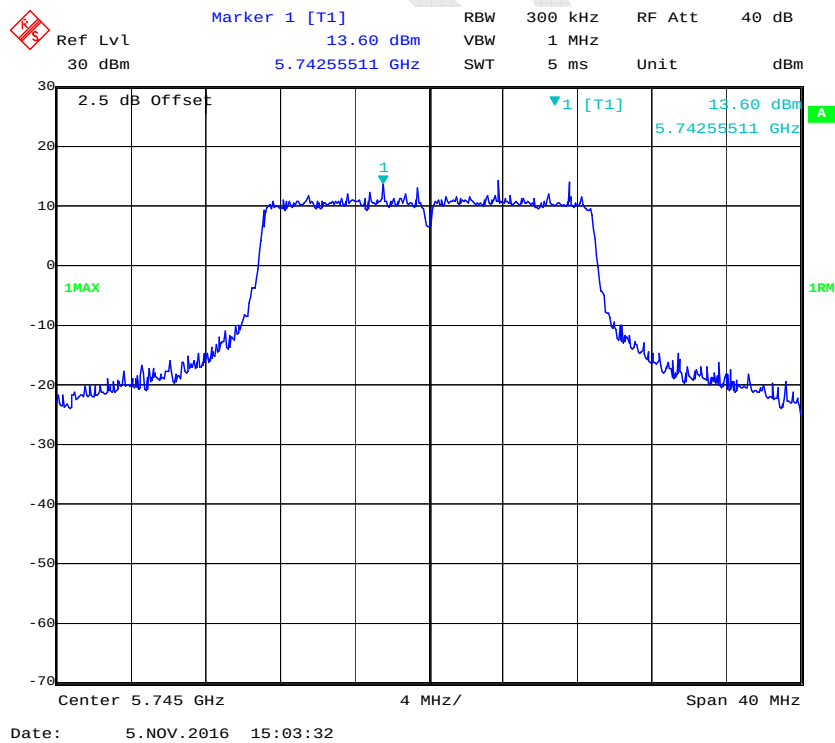
802.11a Middle Channel – Chain2



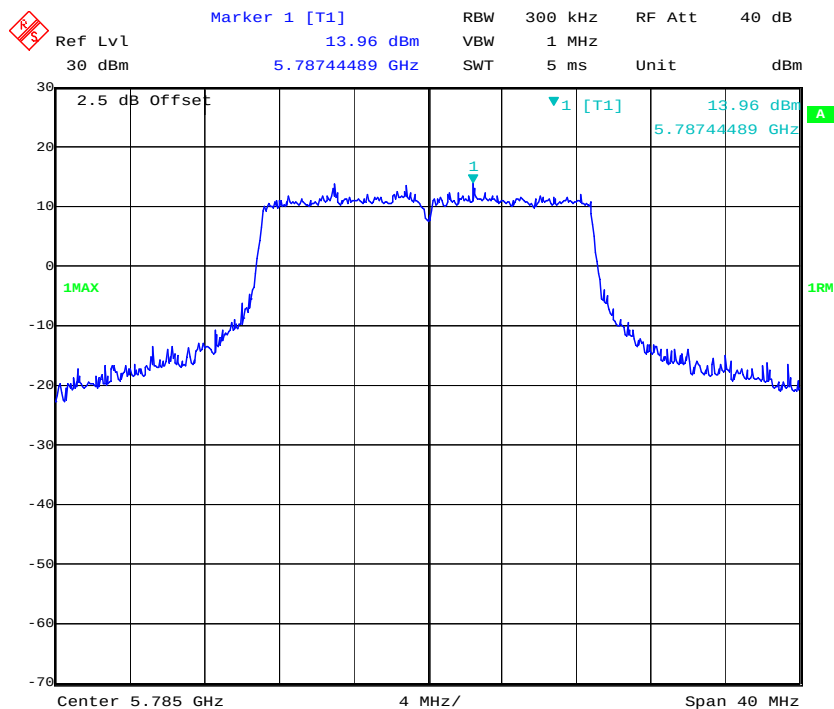
802.11a High Channel – Chain2



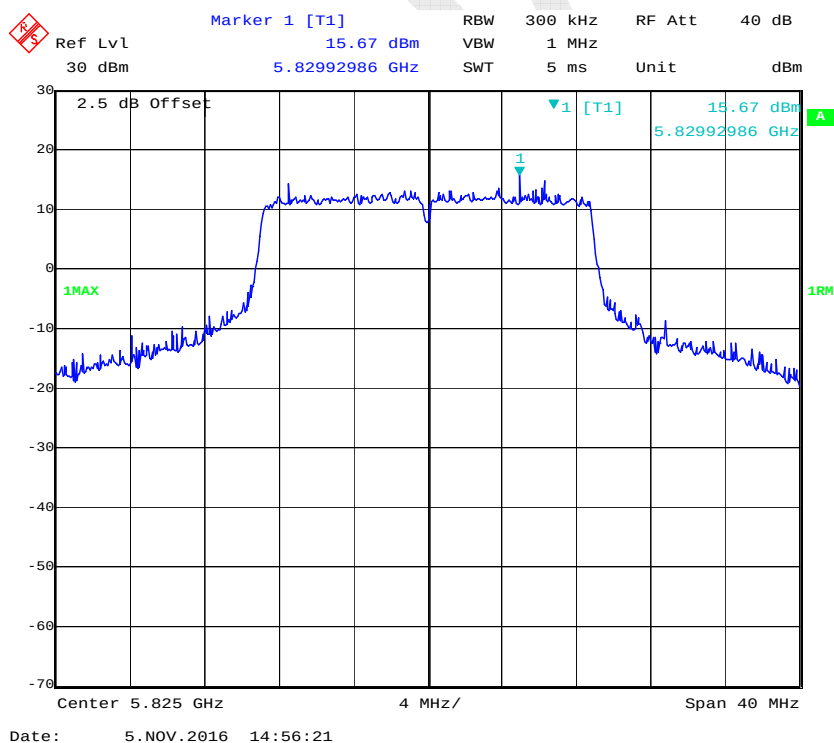
802.11n ht20 Low Channel – Chain2



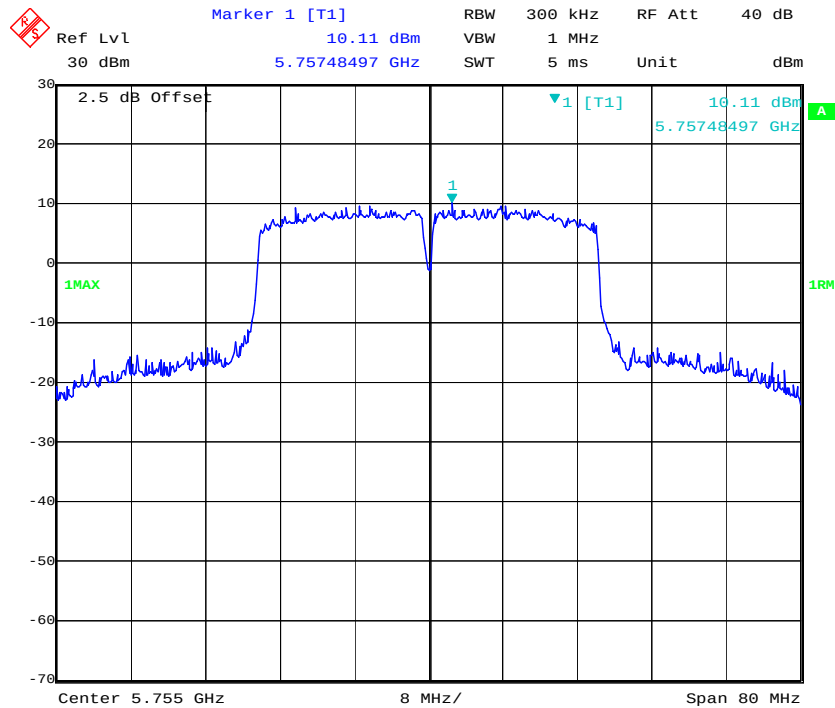
802.11n ht20 Middle Channel – Chain2



802.11n ht20 High Channel – Chain2

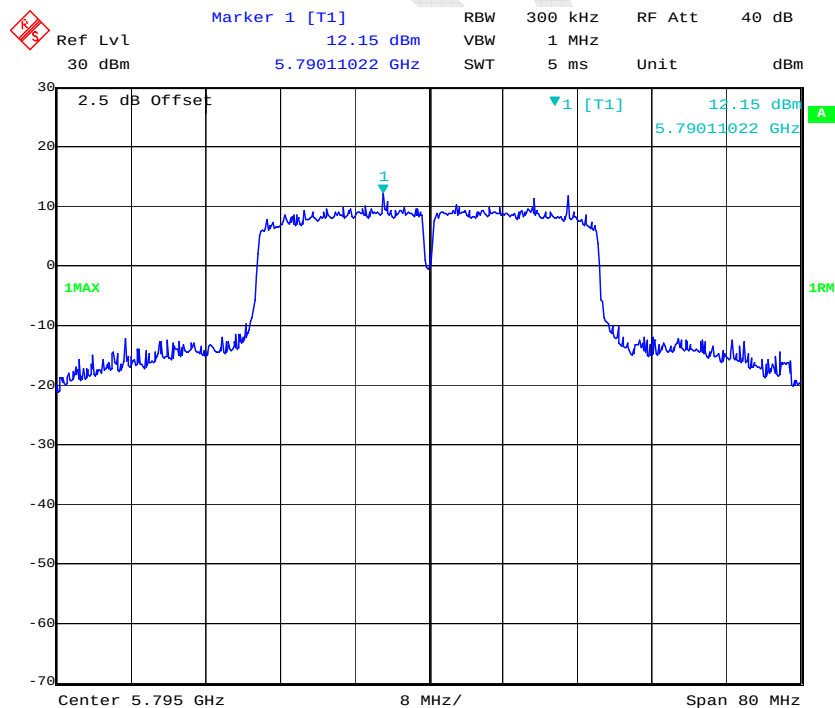


802.11n ht40 Low Channel – Chain2



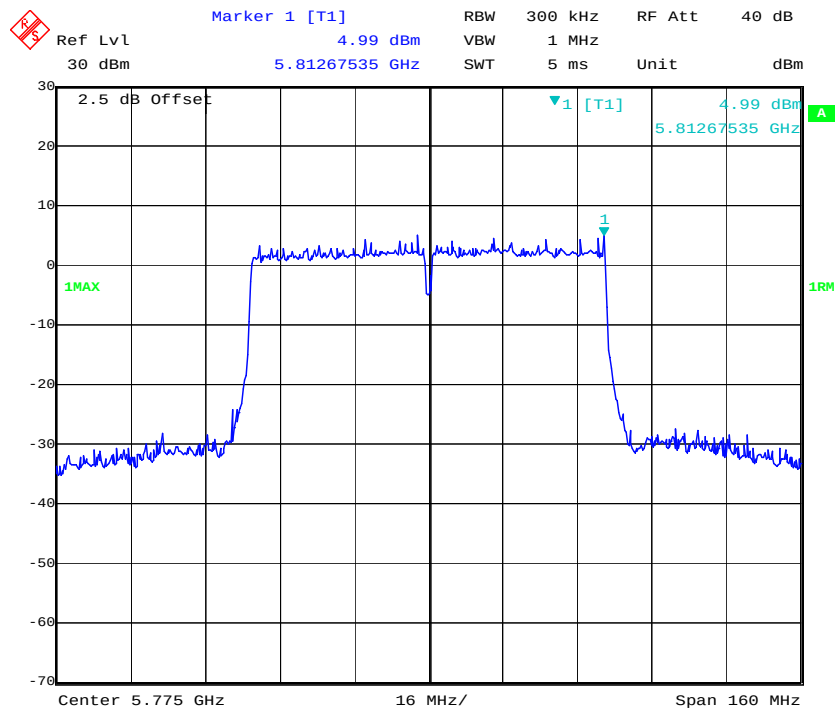
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802.11n ht40 High Channel – Chain2



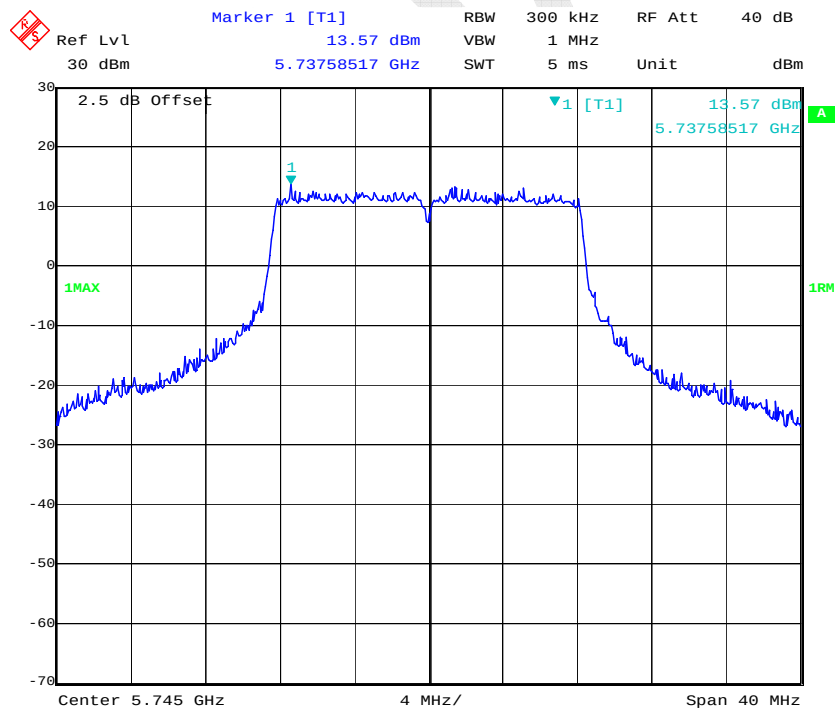
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802.11 ac80 Middle Channel – Chain2



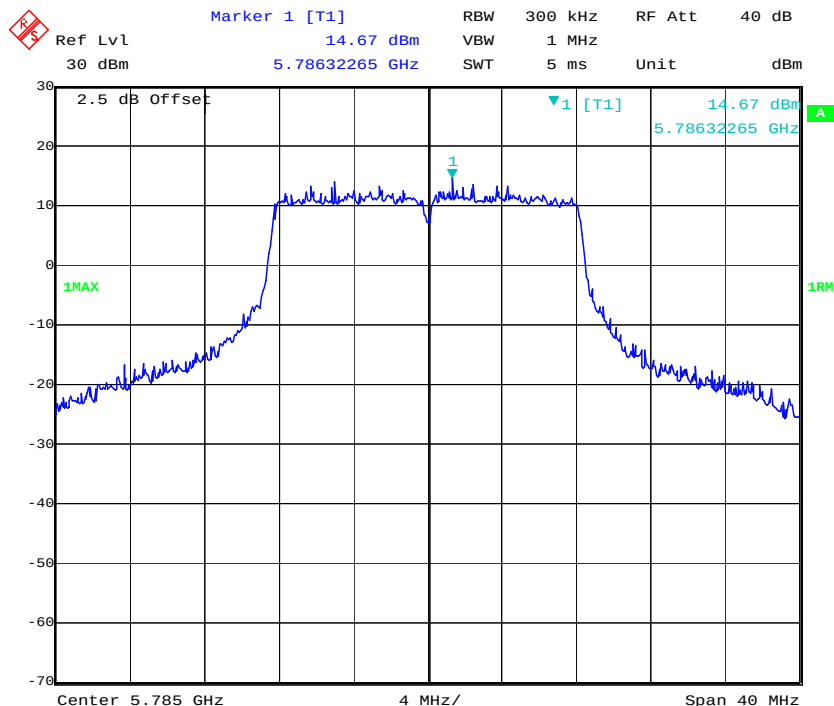
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802.11a Low Channel – Chain3



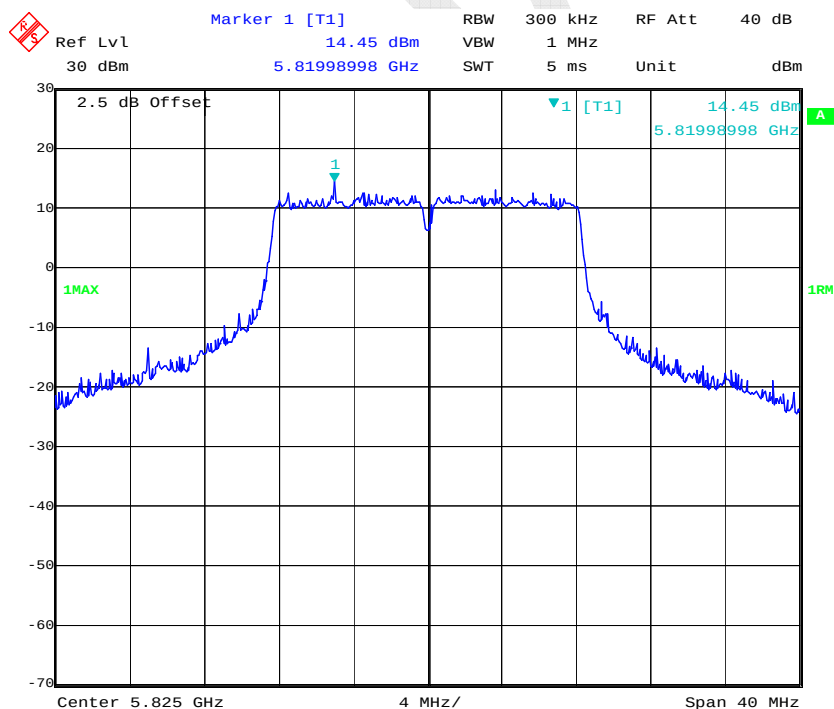
Date: 5.NOV.2016 15:54:33

802.11a Middle Channel – Chain3



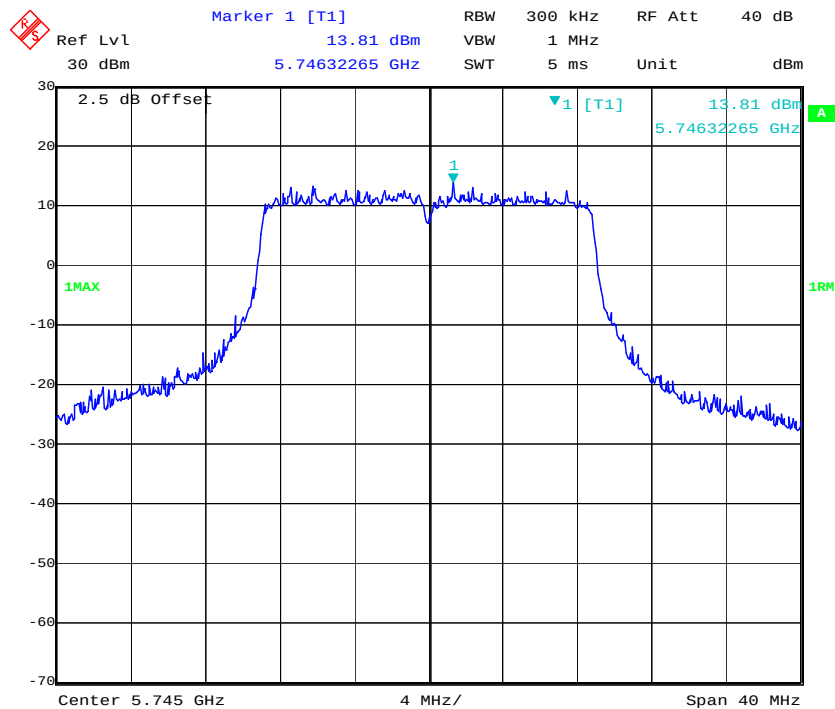
Date: 5.NOV.2016 15:57:02

802.11a High Channel – Chain3



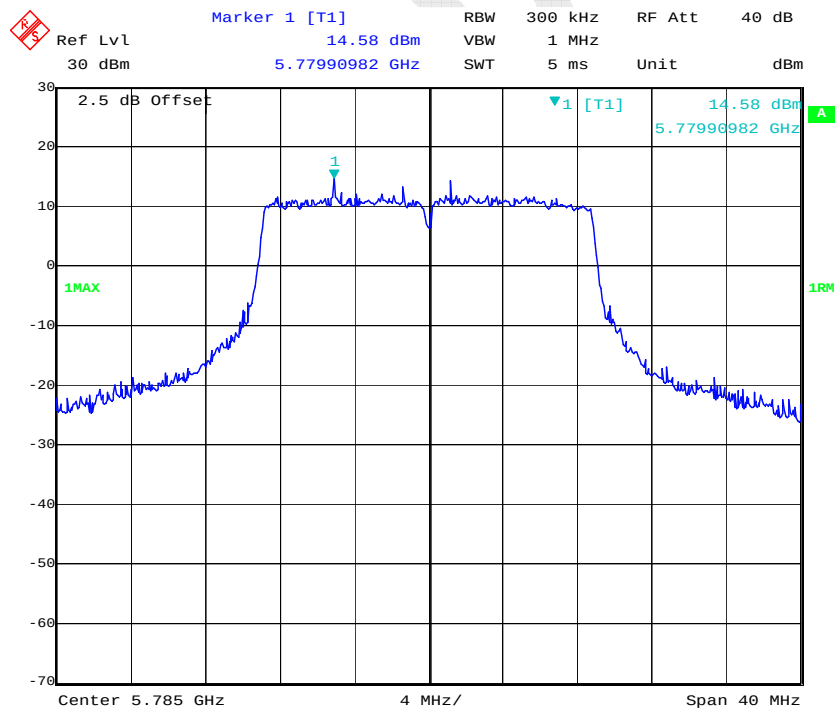
Date: 5.NOV.2016 15:59:14

802.11n ht20 Low Channel – Chain3



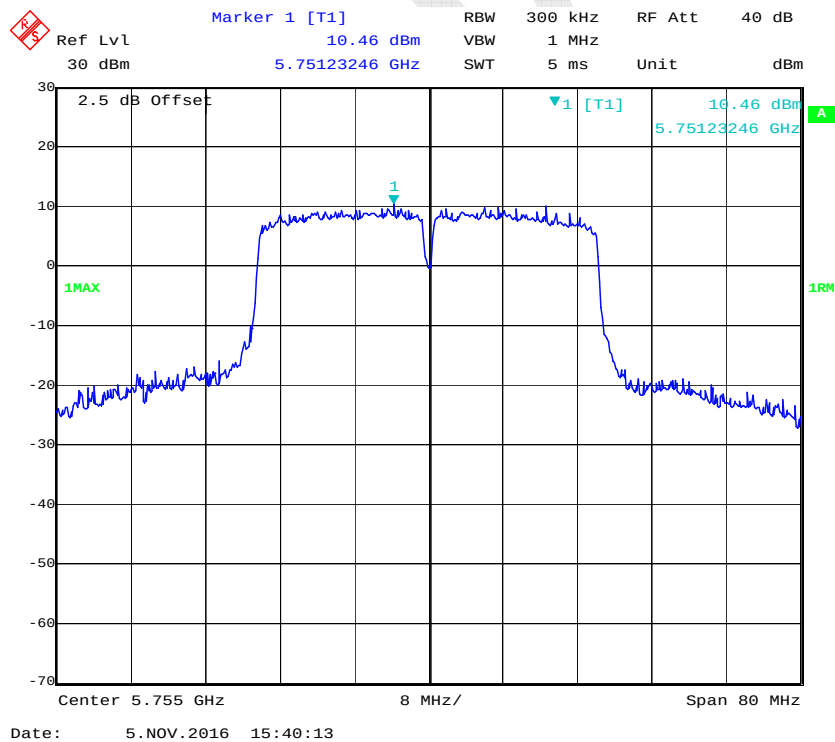
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802.11n ht20 Middle Channel – Chain3

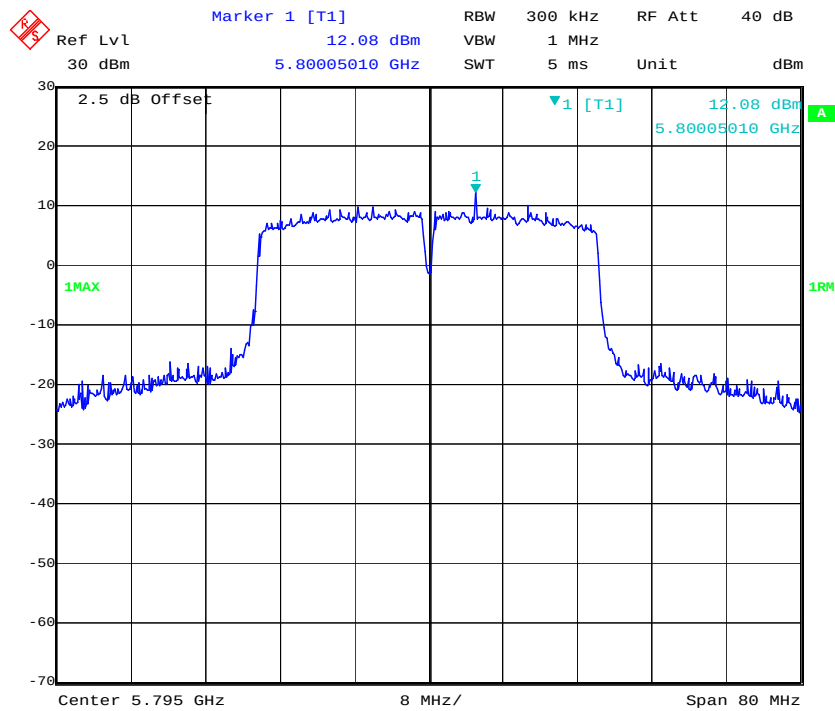


Date: 5.NOV.2016 15:49:04

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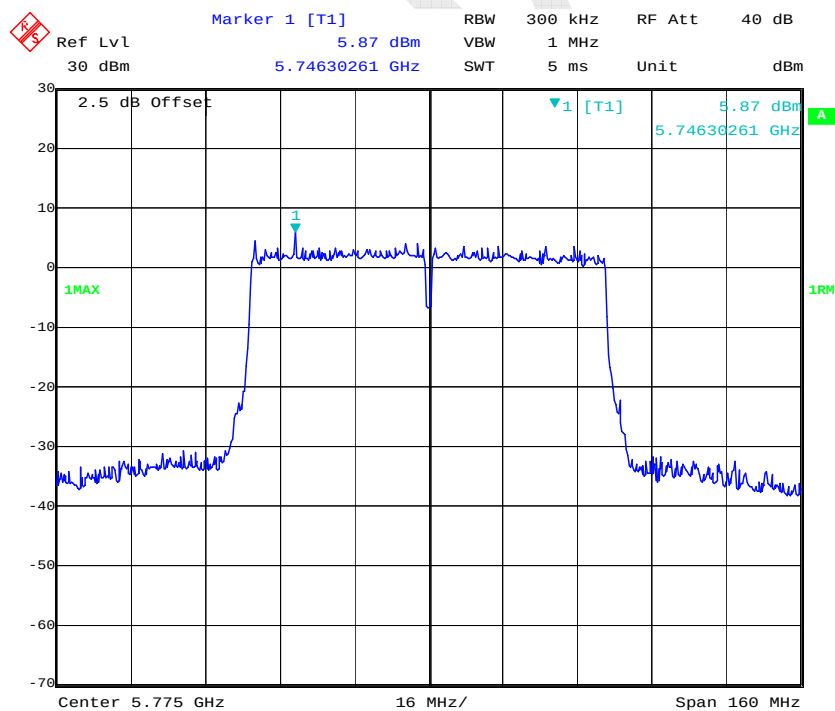


802.11n ht40 High Channel – Chain3



Date: 5.NOV.2016 15:43:13

802.11 ac80 Middle Channel – Chain3



Date: 5.NOV.2016 15:37:21

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