FCC PART 15.407

TEST REPORT

For

INGENICO

9 Avenue de la Gare-Rolvatain TGV, BP 25156, Valence Cedex 9,France

FCC ID: XKB-L2500CL3GWIBT

Report Type:	Product Name:
Class II permissive change	Link/2500

Test Engineer:	*Lorin Bian*
Report Number:	RXM161124051-A1
Report Date:	2017-02-15
Reviewed By:	Henry Ding 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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***INGENICO***'s product, model number: ***LINK/2500 CL/3G/WiFi/BT (FCC ID: XKB-L2500C L3GWIBT)*** (*or* "EUT") in this report is a ***Link/2500****,* which was measured approximately: 12.8 cm (L) x 7.0 cm (W) x 1.7cm (H), rated input voltage: DC 3.7V from rechargeable Li-ion battery or DC 5V from adapter.

Adapter information:
MODEL: PSA105R-050QL6
INPUT: 100-240V ~ 0.3A 50-60Hz 11-15VA
OUTPUT: DC 5V, 1.0A MAX

**All measurement and test data in this report was gathered from final production sample, serial number: 161124051 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-11-25, and EUT conformed to test requirement.*

Objective

This type approval report is prepared on behalf of ***INGENICO*** 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 Class II Permissive Change application of the device. The difference between the original device and the current one is as follows:

1. Add the frequency band: 5250~5350 MHz, 5470~5725 MHz.

The change made to the device affected all the test results except conducted emissions, so we updated related test datas.

Related Submittal(s)/Grant(s)

Original submission with FCC ID: XKB-L2500CL3GWIBT which was granted on 2016-10-04.

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.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.62dB
Power Spectral Density, conducted	±0.62 dB
Unwanted Emissions, radiated	±1.5 dB
Unwanted Emissions	30M~200MHz: 4.7 dB for Horizontal, 4.7 dB for Vertical 200M~1GHz:6.0 dB for Horizontal, 6.0 for Vertical 1G~6GHz: 5.13 dB, 6G~18GHz: 5.47 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.17 dB (150 kHz to 30 MHz)

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

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

For 802.11a, 802.11n ht20, Channel 52, 56 and 64 were tested, for 802.11n ht40, Channel 54, 62 were tested.

For 5470~5725 MHz band, 16 channels are provided:

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

For 802.11a, 802.11n ht20, Channel 100, 120 and 140 were tested, for 802.11n ht40, Channel 102, 118 and 134 were tested.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

EUT Exercise Software

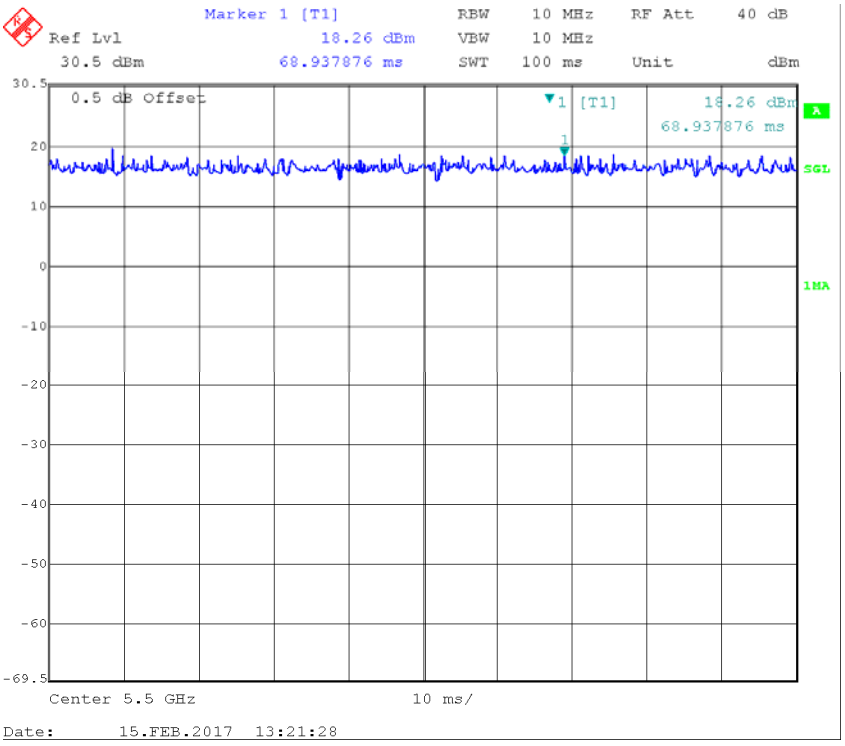
The “start 8782.bat” was used for testing, and the commands were provided by manufacturer. The worst condition (maximum power with 100% dutycycle) was setting by the software as following table:

UNII Band	Test Mode	Test Software Version	start 8782.bat		
5250-5350MHz	802.11a	Test Frequency	5260MHz	5280MHz	5320MHz
		Data Rate	6Mbps	6Mbps	6Mbps
		Power Level Setting	14	13	12
	802.11n ht20	Test Frequency	5260MHz	5280MHz	5320MHz
		Data Rate	MCS0	MCS0	MCS0
		Power Level Setting	14	13	12
	802.11n ht40	Test Frequency	5270MHz	/	5310MHz
		Data Rate	MCS0	/	MCS0
		Power Level Setting	14	/	12
5470-5725MHz	802.11a	Test Frequency	5500MHz	5600MHz	5700MHz
		Data Rate	6Mbps	6Mbps	6Mbps
		Power Level Setting	10	10	10
	802.11n ht20	Test Frequency	5500MHz	5600MHz	5700MHz
		Data Rate	MCS0	MCS0	MCS0
		Power Level Setting	10	10	10
	802.11n ht40	Test Frequency	5510MHz	5590MHz	5670MHz
		Data Rate	MCS0	MCS0	MCS0
		Power Level Setting	10	10	10

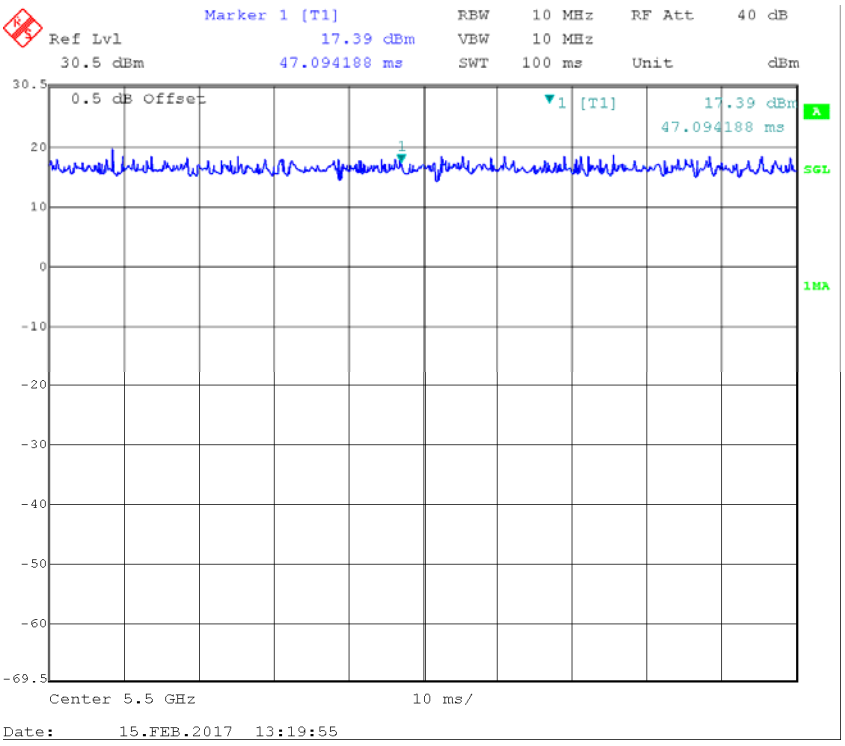
The maximum duty cycle was setting in engineering mode as following table:

Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11 a	100	100	100%
802.11 n20	100	100	100%
802.11 n40	100	100	100%

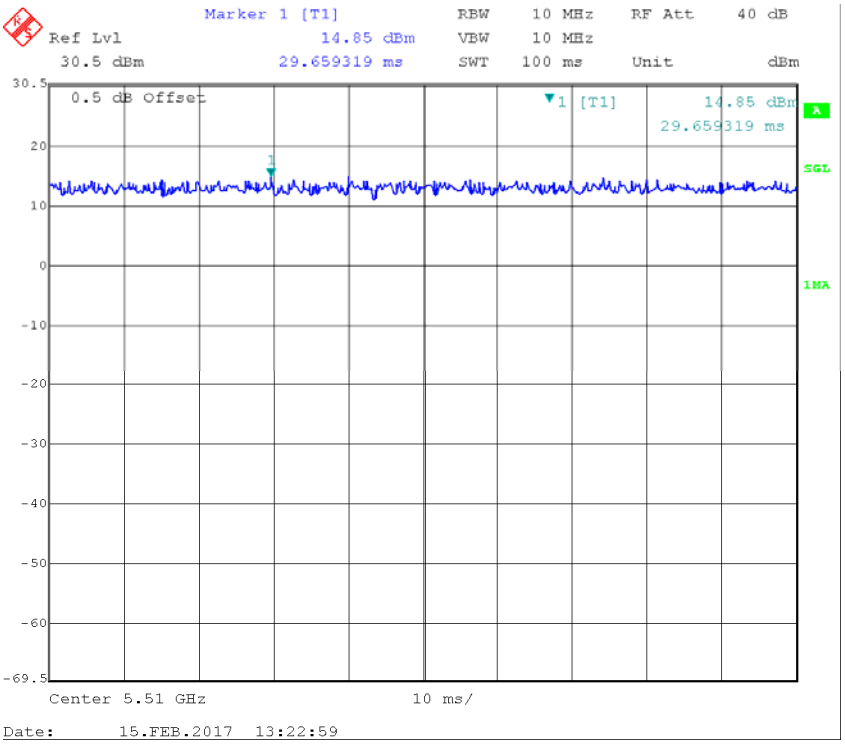
802.11 a



802.11 n20



802.11 n40



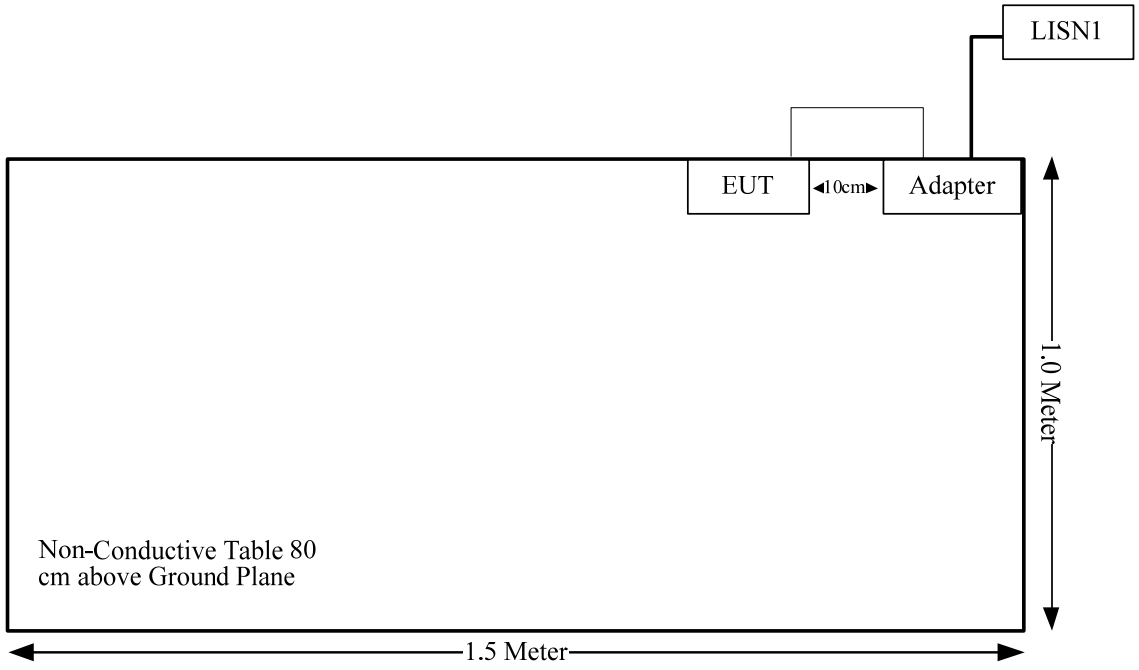
Equipment Modifications

No modification was made to the EUT.

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	no	no	1.08	Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.407 (f) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance*
§15.205& §15.209 &§15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
&§15.407(b) (1),(6),(7)	Spurious Emission Attenna Ports	Compliance
§15.407(a) (1) & §15.407(e)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance
§15.407(H)	Dynamic Frequency Selection (DFS)	Compliance**

Compliance*: The test result is compliance, please refer to the original grant test report No. RXM160823052-00F with FCC ID: XKB-L2500CL3GWIBT, which was issued on 2016-09-27.
Compliance**: please refer to the DFS test report: RXM161124051-00A1.

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

Applicable Standard

According to§15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

This device is for handheld:

The tune-up power is 11.9 dBm (15.49 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
= 15.49/5*(√5.7) =7.4< 7.5

So the stand-alone SAR evaluation for extremity (hand) is not necessary.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
And according to FCC 47 CFR section 15.407 (a)(1),if transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal antenna arrangement for WLAN, and the max antenna gain is 1dBi, 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 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

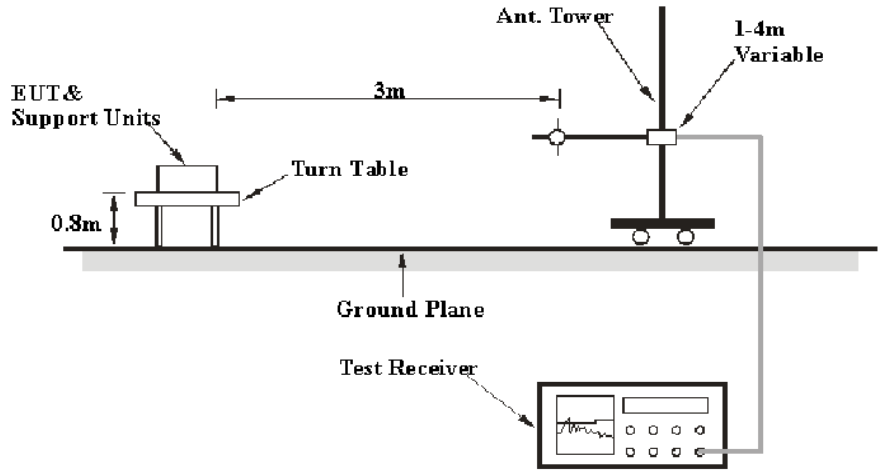
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47 dB;

Table 1 – Values of U_{cispr}

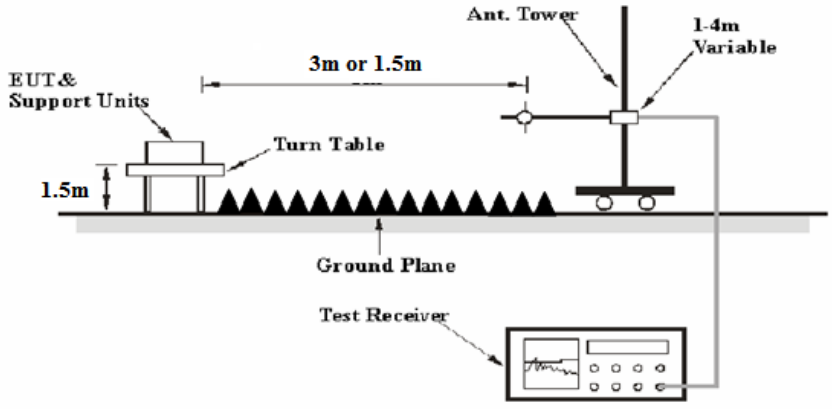
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 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:

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

Test Procedure

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

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

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

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r02, emission shall be computed as: E [dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m
Distance extrapolation factor =20 log (specific distance [3m]/test distance [1.5m]) dB
Extrapolation result = Corrected Amplitude (dBμV/m) - distance extrapolation factor (6dB)

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

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

Margin = Limit –Extrapolation result

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
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 Technolagies	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 Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, Section 15.205, 15.209 and Subpart E, section 15.407.

Test Data

Environmental Conditions

Temperature:	24.4 °C
Relative Humidity:	60 %
ATM Pressure:	101 kPa

The testing was performed by Lorin Bian on 2016-12-05.

Result: Compliance.

Note 1: For above 1GHz, the test distance is 1.5m.
Note 2: the emission compliance 15.209 general requirements,or compliance the outside band emission limits in the un-restricted bands.

30MHz-40GHz:

5250MHz-5350MHz: 802.11a Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5260 MHz										
5260	73.25	PK	H	31.87	5.28	0.00	110.4	104.4	N/A	N/A
5260	64.95	AV	H	31.87	5.28	0.00	102.1	96.1	N/A	N/A
5260	70.79	PK	V	31.87	5.28	0.00	107.94	101.94	N/A	N/A
5260	62.06	AV	V	31.87	5.28	0.00	99.21	93.21	N/A	N/A
5150	26.70	PK	H	31.67	5.18	0.00	63.55	57.55	74	16.45
5150	14.87	AV	H	31.67	5.18	0.00	51.72	45.72	54	8.28
10520	32.23	PK	H	37.41	7.86	26.34	51.16	45.16	74	28.84
10520	21.11	AV	H	37.41	7.86	26.34	40.04	34.04	54	19.96
15780	32.07	PK	H	39.46	10.25	25.30	56.48	50.48	74	23.52
15780	22.73	AV	H	39.46	10.25	25.30	47.14	41.14	54	12.86
7050	33.36	PK	H	34.40	6.09	26.28	47.57	41.57	74	32.43
7050	21.55	AV	H	34.40	6.09	26.28	35.76	29.76	54	24.24
3030	38.74	PK	H	24.37	3.48	26.42	40.17	34.17	74	39.83
3030	30.31	AV	H	24.37	3.48	26.42	31.74	25.74	54	28.26
349.13	45.08	QP	V	15.21	1.30	27.81	33.78	33.78	46.00	12.22
Middle Channel:5280 MHz										
5280	72.77	PK	H	31.90	5.30	0.00	109.97	103.97	N/A	N/A
5280	64.33	AV	H	31.90	5.30	0.00	101.53	95.53	N/A	N/A
5280	69.91	PK	V	31.90	5.30	0.00	107.11	101.11	N/A	N/A
5280	61.43	AV	V	31.90	5.30	0.00	98.63	92.63	N/A	N/A
10560	31.86	PK	H	37.42	7.89	26.32	50.85	44.85	74	29.15
10560	20.91	AV	H	37.42	7.89	26.32	39.9	33.9	54	20.1
15840	32.18	PK	H	39.47	10.26	25.29	56.62	50.62	74	23.38
15840	22.70	AV	H	39.47	10.26	25.29	47.14	41.14	54	12.86
7330	34.04	PK	H	34.96	6.22	26.41	48.81	42.81	74	31.19
7330	22.68	AV	H	34.96	6.22	26.41	37.45	31.45	54	22.55
2740	36.99	PK	H	23.68	3.20	26.66	37.21	31.21	74	42.79
2740	28.34	AV	H	23.68	3.20	26.66	28.56	22.56	54	31.44
349.13	45.36	QP	V	15.21	1.30	27.81	34.06	34.06	46.00	11.94
High Channel:5320 MHz										
5320	71.19	PK	H	31.98	5.34	0.00	108.51	102.51	N/A	N/A
5320	62.16	AV	H	31.98	5.34	0.00	99.48	93.48	N/A	N/A
5320	68.55	PK	V	31.98	5.34	0.00	105.87	99.87	N/A	N/A
5320	59.50	AV	V	31.98	5.34	0.00	96.82	90.82	N/A	N/A
5350	26.84	PK	H	32.03	5.37	0.00	64.24	58.24	74	15.76
5350	15.43	AV	H	32.03	5.37	0.00	52.83	46.83	54	7.17
10640	31.58	PK	H	37.46	7.95	26.27	50.72	44.72	74	29.28
10640	19.45	AV	H	37.46	7.95	26.27	38.59	32.59	54	21.41
15960	31.09	PK	H	39.49	10.27	25.28	55.57	49.57	74	24.43
15960	23.05	AV	H	39.49	10.27	25.28	47.53	41.53	54	12.47
7400	33.25	PK	H	35.10	6.25	26.44	48.16	42.16	74	31.84
7400	22.39	AV	H	35.10	6.25	26.44	37.3	31.3	54	22.7
2550	37.13	PK	H	23.30	3.03	26.84	36.62	30.62	74	43.38
2550	28.02	AV	H	23.30	3.03	26.84	27.51	21.51	54	32.49
349.13	45.19	QP	V	15.21	1.30	27.81	33.89	33.89	46.00	12.11

802.11n ht20 Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5260 MHz										
5260	71.96	PK	H	31.87	5.28	0.00	109.11	103.11	N/A	N/A
5260	63.05	AV	H	31.87	5.28	0.00	100.2	94.2	N/A	N/A
5260	68.92	PK	V	31.87	5.28	0.00	106.07	100.07	N/A	N/A
5260	59.39	AV	V	31.87	5.28	0.00	96.54	90.54	N/A	N/A
5150	25.29	PK	H	31.67	5.18	0.00	62.14	56.14	74	17.86
5150	14.33	AV	H	31.67	5.18	0.00	51.18	45.18	54	8.82
10520	31.61	PK	H	37.41	7.86	26.34	50.54	44.54	74	29.46
10520	20.50	AV	H	37.41	7.86	26.34	39.43	33.43	54	20.57
15780	32.03	PK	H	39.46	10.25	25.30	56.44	50.44	74	23.56
15780	23.18	AV	H	39.46	10.25	25.30	47.59	41.59	54	12.41
7490	33.11	PK	H	35.28	6.30	26.48	48.21	42.21	74	31.79
7490	22.25	AV	H	35.28	6.30	26.48	37.35	31.35	54	22.65
2770	36.55	PK	H	23.74	3.23	26.63	36.89	30.89	74	43.11
2770	28.08	AV	H	23.74	3.23	26.63	28.42	22.42	54	31.58
349.13	43.02	QP	V	15.21	1.30	27.81	31.72	31.72	46.00	14.28
Middle Channel:5280 MHz										
5280	72.47	PK	H	31.90	5.30	0.00	109.67	103.67	N/A	N/A
5280	63.53	AV	H	31.90	5.30	0.00	100.73	94.73	N/A	N/A
5280	69.89	PK	V	31.90	5.30	0.00	107.09	101.09	N/A	N/A
5280	61.13	AV	V	31.90	5.30	0.00	98.33	92.33	N/A	N/A
10560	30.98	PK	H	37.42	7.89	26.32	49.97	43.97	74	30.03
10560	19.76	AV	H	37.42	7.89	26.32	38.75	32.75	54	21.25
15840	31.51	PK	H	39.47	10.26	25.29	55.95	49.95	74	24.05
15840	23.26	AV	H	39.47	10.26	25.29	47.7	41.7	54	12.3
7400	34.28	PK	H	35.10	6.25	26.44	49.19	43.19	74	30.81
7400	22.81	AV	H	35.10	6.25	26.44	37.72	31.72	54	22.28
2990	38.31	PK	H	24.18	3.42	26.42	39.49	33.49	74	40.51
2990	30.69	AV	H	24.18	3.42	26.42	31.87	25.87	54	28.13
349.13	46.28	QP	V	15.21	1.30	27.81	34.98	34.98	46.00	11.02
High Channel:5320 MHz										
5320	71.09	PK	H	31.98	5.34	0.00	108.41	102.41	N/A	N/A
5320	62.20	AV	H	31.98	5.34	0.00	99.52	93.52	N/A	N/A
5320	69.08	PK	V	31.98	5.34	0.00	106.4	100.4	N/A	N/A
5320	58.79	AV	V	31.98	5.34	0.00	96.11	90.11	N/A	N/A
5350	26.98	PK	H	32.03	5.37	0.00	64.38	58.38	74	15.62
5350	15.57	AV	H	32.03	5.37	0.00	52.97	46.97	54	7.03
10640	30.76	PK	H	37.46	7.95	26.27	49.9	43.9	74	30.1
10640	20.28	AV	H	37.46	7.95	26.27	39.42	33.42	54	20.58
15960	31.09	PK	H	39.49	10.27	25.28	55.57	49.57	74	24.43
15960	22.32	AV	H	39.49	10.27	25.28	46.8	40.8	54	13.2
7089	32.48	PK	H	34.48	6.11	26.30	46.77	40.77	74	33.23
7089	21.37	AV	H	34.48	6.11	26.30	35.66	29.66	54	24.34
2786	36.25	PK	H	23.77	3.24	26.62	36.64	30.64	74	43.36
2786	28.29	AV	H	23.77	3.24	26.62	28.68	22.68	54	31.32
349.13	46.56	QP	V	15.21	1.30	27.81	35.26	35.26	46.00	10.74

802.11n ht40 Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5270 MHz										
5270	69.81	PK	H	31.89	5.29	0.00	106.99	100.99	N/A	N/A
5270	60.42	AV	H	31.89	5.29	0.00	97.6	91.6	N/A	N/A
5270	66.99	PK	V	31.89	5.29	0.00	104.17	98.17	N/A	N/A
5270	56.74	AV	V	31.89	5.29	0.00	93.92	87.92	N/A	N/A
5150	25.67	PK	H	31.67	5.18	0.00	62.52	56.52	74	17.48
5150	14.32	AV	H	31.67	5.18	0.00	51.17	45.17	54	8.83
10540	31.34	PK	H	37.42	7.88	26.33	50.31	44.31	74	29.69
10540	20.13	AV	H	37.42	7.88	26.33	39.1	33.1	54	20.9
15810	32.38	PK	H	39.46	10.25	25.30	56.79	50.79	74	23.21
15810	22.64	AV	H	39.46	10.25	25.30	47.05	41.05	54	12.95
6582	31.19	PK	H	33.55	6.12	26.49	44.37	38.37	74	35.63
6582	20.27	AV	H	33.55	6.12	26.49	33.45	27.45	54	26.55
3562	34.95	PK	H	27.25	4.27	26.59	39.88	33.88	74	40.12
3562	26.80	AV	H	27.25	4.27	26.59	31.73	25.73	54	28.27
349.13	46.39	QP	V	15.21	1.30	27.81	35.09	35.09	46.00	10.91
High Channel:5310 MHz										
5310	67.79	PK	H	31.96	5.33	0.00	105.08	99.08	N/A	N/A
5310	58.82	AV	H	31.96	5.33	0.00	96.11	90.11	N/A	N/A
5310	65.08	PK	V	31.96	5.33	0.00	102.37	96.37	N/A	N/A
5310	55.94	AV	V	31.96	5.33	0.00	93.23	87.23	N/A	N/A
5350	32.99	PK	H	32.03	5.37	0.00	70.39	64.39	74	9.61
5350	20.15	AV	H	32.03	5.37	0.00	57.55	51.55	54	2.45
10620	31.56	PK	H	37.45	7.93	26.28	50.66	44.66	74	29.34
10620	19.57	AV	H	37.45	7.93	26.28	38.67	32.67	54	21.33
15930	31.20	PK	H	39.49	10.27	25.29	55.67	49.67	74	24.33
15930	22.35	AV	H	39.49	10.27	25.29	46.82	40.82	54	13.18
6058	31.89	PK	H	32.96	5.98	26.64	44.19	38.19	74	35.81
6058	20.46	AV	H	32.96	5.98	26.64	32.76	26.76	54	27.24
3276	36.81	PK	H	25.75	3.84	26.51	39.89	33.89	74	40.11
3276	28.25	AV	H	25.75	3.84	26.51	31.33	25.33	54	28.67
349.13	44.22	QP	V	15.21	1.30	27.81	32.92	32.92	46.00	13.08

5470MHz-5725MHz:

802.11a Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5500 MHz										
5500	69.97	PK	H	32.30	5.52	0.00	107.79	101.79	N/A	N/A
5500	60.74	AV	H	32.30	5.52	0.00	98.56	92.56	N/A	N/A
5500	66.89	PK	V	32.30	5.52	0.00	104.71	98.71	N/A	N/A
5500	57.27	AV	V	32.30	5.52	0.00	95.09	89.09	N/A	N/A
5470	27.11	PK	H	32.25	5.49	0.00	64.85	58.85	74	15.15
5470	15.16	AV	H	32.25	5.49	0.00	52.9	46.9	54	7.1
11000	32.15	PK	H	37.60	8.20	26.06	51.89	45.89	74	28.11
11000	21.20	AV	H	37.60	8.20	26.06	40.94	34.94	54	19.06
16500	33.57	PK	H	40.30	10.44	25.48	58.83	52.83	74	21.17
16500	22.13	AV	H	40.30	10.44	25.48	47.39	41.39	54	12.61
3458	35.28	PK	H	26.76	4.12	26.57	39.59	33.59	74	40.41
3458	24.77	AV	H	26.76	4.12	26.57	29.08	23.08	54	30.92
6367	31.76	PK	H	33.27	6.08	26.56	44.55	38.55	74	35.45
6367	20.52	AV	H	33.27	6.08	26.56	33.31	27.31	54	26.69
349.13	46.82	QP	V	15.21	1.30	27.81	35.52	35.52	46.00	10.48
Middle Channel:5600 MHz										
5600	68.22	PK	H	32.42	5.61	0.00	106.25	100.25	N/A	N/A
5600	59.03	AV	H	32.42	5.61	0.00	97.06	91.06	N/A	N/A
5600	65.85	PK	V	32.42	5.61	0.00	103.88	97.88	N/A	N/A
5600	56.72	AV	V	32.42	5.61	0.00	94.75	88.75	N/A	N/A
11200	32.01	PK	H	37.76	8.21	26.04	51.94	45.94	74	28.06
11200	21.83	AV	H	37.76	8.21	26.04	41.76	35.76	54	18.24
16800	35.59	PK	H	41.26	10.43	25.59	61.69	55.69	74	18.31
16800	23.32	AV	H	41.26	10.43	25.59	49.42	43.42	54	10.58
3326	35.99	PK	H	26.03	3.92	26.53	39.41	33.41	74	40.59
3326	24.68	AV	H	26.03	3.92	26.53	28.1	22.1	54	31.9
6459	31.70	PK	H	33.36	6.12	26.54	44.64	38.64	74	35.36
6459	20.77	AV	H	33.36	6.12	26.54	33.71	27.71	54	26.29
349.13	47.1	QP	V	15.21	1.30	27.81	35.80	35.80	46.00	10.20
High Channel:5700 MHz										
5700	66.40	PK	H	32.54	5.70	0.00	104.64	98.64	N/A	N/A
5700	56.70	AV	H	32.54	5.70	0.00	94.94	88.94	N/A	N/A
5700	62.63	PK	V	32.54	5.70	0.00	100.87	94.87	N/A	N/A
5700	53.26	AV	V	32.54	5.70	0.00	91.5	85.5	N/A	N/A
5725	25.74	PK	H	32.57	5.72	0.00	64.03	58.03	74	15.97
5725	14.84	AV	H	32.57	5.72	0.00	53.13	47.13	54	6.87
11400	33.07	PK	H	37.92	8.22	26.03	53.18	47.18	74	26.82
11400	22.50	AV	H	37.92	8.22	26.03	42.61	36.61	54	17.39
17100	34.54	PK	H	42.36	10.60	25.80	61.7	55.7	74	18.3
17100	22.37	AV	H	42.36	10.60	25.80	49.53	43.53	54	10.47
3840	33.88	PK	H	28.36	4.68	26.56	40.36	34.36	74	39.64
3840	23.24	AV	H	28.36	4.68	26.56	29.72	23.72	54	30.28
7035	32.30	PK	H	34.37	6.09	26.28	46.48	40.48	74	33.52
7035	20.91	AV	H	34.37	6.09	26.28	35.09	29.09	54	24.91
349.13	46.93	QP	V	15.21	1.30	27.81	35.63	35.63	46.00	10.37

802.11n ht20 Mode:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Extrapolation result	Limit	Margin
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel:5500 MHz										
5500	69.59	PK	H	32.30	5.52	0.00	107.41	101.41	N/A	N/A
5500	60.51	AV	H	32.30	5.52	0.00	98.33	92.33	N/A	N/A
5500	66.67	PK	V	32.30	5.52	0.00	104.49	98.49	N/A	N/A
5500	57.80	AV	V	32.30	5.52	0.00	95.62	89.62	N/A	N/A
5470	28.01	PK	H	32.25	5.49	0.00	65.75	59.75	74	14.25
5470	15.27	AV	H	32.25	5.49	0.00	53.01	47.01	54	6.99
11000	32.51	PK	H	37.60	8.20	26.06	52.25	46.25	74	27.75
11000	21.67	AV	H	37.60	8.20	26.06	41.41	35.41	54	18.59
16500	34.22	PK	H	40.30	10.44	25.48	59.48	53.48	74	20.52
16500	22.61	AV	H	40.30	10.44	25.48	47.87	41.87	54	12.13
3358	35.29	PK	H	26.20	3.97	26.54	38.92	32.92	74	41.08
3358	24.90	AV	H	26.20	3.97	26.54	28.53	22.53	54	31.47
6765	31.43	PK	H	33.88	6.10	26.39	45.02	39.02	74	34.98
6765	20.61	AV	H	33.88	6.10	26.39	34.2	28.2	54	25.8
349.13	44.76	QP	V	15.21	1.30	27.81	33.46	33.46	46.00	12.54
Middle Channel:5600 MHz										
5600	68.46	PK	H	32.42	5.61	0.00	106.49	100.49	N/A	N/A
5600	59.53	AV	H	32.42	5.61	0.00	97.56	91.56	N/A	N/A
5600	64.8	PK	V	32.42	5.61	0.00	102.83	96.83	N/A	N/A
5600	55.98	AV	V	32.42	5.61	0.00	94.01	88.01	N/A	N/A
11200	33.09	PK	H	37.76	8.21	26.04	53.02	47.02	74	26.98
11200	21.86	AV	H	37.76	8.21	26.04	41.79	35.79	54	18.21
16800	34.68	PK	H	41.26	10.43	25.59	60.78	54.78	74	19.22
16800	23.43	AV	H	41.26	10.43	25.59	49.53	43.53	54	10.47
4056	33.67	PK	H	29.09	4.96	26.58	41.14	35.14	74	38.86
4056	22.29	AV	H	29.09	4.96	26.58	29.76	23.76	54	30.24
6536	31.96	PK	H	33.46	6.13	26.51	45.04	39.04	74	34.96
6536	20.42	AV	H	33.46	6.13	26.51	33.5	27.5	54	26.5
349.13	46.71	QP	V	15.21	1.30	27.81	35.41	35.41	46.00	10.59
High Channel:5700 MHz										
5700	65.87	PK	H	32.54	5.70	0.00	104.11	98.11	N/A	N/A
5700	57.19	AV	H	32.54	5.70	0.00	95.43	89.43	N/A	N/A
5700	62.82	PK	V	32.54	5.70	0.00	101.06	95.06	N/A	N/A
5700	54.29	AV	V	32.54	5.70	0.00	92.53	86.53	N/A	N/A
5725	27.91	PK	H	32.57	5.72	0.00	66.2	60.2	74	13.8
5725	15.70	AV	H	32.57	5.72	0.00	53.99	47.99	54	6.01
11400	33.19	PK	H	37.92	8.22	26.03	53.3	47.3	74	26.7
11400	21.94	AV	H	37.92	8.22	26.03	42.05	36.05	54	17.95
17100	33.94	PK	H	42.36	10.60	25.80	61.1	55.1	74	18.9
17100	22.86	AV	H	42.36	10.60	25.80	50.02	44.02	54	9.98
4052	33.57	PK	H	29.08	4.96	26.58	41.03	35.03	74	38.97
4052	22.96	AV	H	29.08	4.96	26.58	30.42	24.42	54	29.58
6495	31.38	PK	H	33.40	6.13	26.53	44.38	38.38	74	35.62
6495	20.34	AV	H	33.40	6.13	26.53	33.34	27.34	54	26.66
349.13	46.99	QP	V	15.21	1.30	27.81	35.69	35.69	46.00	10.31

802.11n ht40 Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5510 MHz										
5510	66.79	PK	H	32.31	5.53	0.00	104.63	98.63	N/A	N/A
5510	57.50	AV	H	32.31	5.53	0.00	95.34	89.34	N/A	N/A
5510	63.83	PK	V	32.31	5.53	0.00	101.67	95.67	N/A	N/A
5510	54.75	AV	V	32.31	5.53	0.00	92.59	86.59	N/A	N/A
5470	32.38	PK	H	32.25	5.49	0.00	70.12	64.12	74	9.88
5470	19.32	AV	H	32.25	5.49	0.00	57.06	51.06	54	2.94
11020	32.62	PK	H	37.62	8.20	26.06	52.38	46.38	74	27.62
11020	20.79	AV	H	37.62	8.20	26.06	40.55	34.55	54	19.45
16530	34.44	PK	H	40.40	10.44	25.49	59.79	53.79	74	20.21
16530	22.67	AV	H	40.40	10.44	25.49	48.02	42.02	54	11.98
6122	32.09	PK	H	33.02	6.00	26.63	44.48	38.48	74	35.52
6122	21.46	AV	H	33.02	6.00	26.63	33.85	27.85	54	26.15
6194	31.36	PK	H	33.09	6.03	26.61	43.87	37.87	74	36.13
6194	20.21	AV	H	33.09	6.03	26.61	32.72	26.72	54	27.28
349.13	46.82	QP	V	15.21	1.30	27.81	35.52	35.52	46.00	10.48
Middle Channel:5590 MHz										
5590	65.18	PK	H	32.41	5.60	0.00	103.19	97.19	N/A	N/A
5590	56.25	AV	H	32.41	5.60	0.00	94.26	88.26	N/A	N/A
5590	62.67	PK	V	32.41	5.60	0.00	100.68	94.68	N/A	N/A
5590	53.78	AV	V	32.41	5.60	0.00	91.79	85.79	N/A	N/A
11180	32.73	PK	H	37.74	8.21	26.05	52.63	46.63	74	27.37
11180	21.81	AV	H	37.74	8.21	26.05	41.71	35.71	54	18.29
16770	35.44	PK	H	41.16	10.43	25.58	61.45	55.45	74	18.55
16770	23.30	AV	H	41.16	10.43	25.58	49.31	43.31	54	10.69
4917	33.01	PK	H	31.13	5.07	26.88	42.33	36.33	74	37.67
4917	22.78	AV	H	31.13	5.07	26.88	32.1	26.1	54	27.9
6194	31.61	PK	H	33.09	6.03	26.61	44.12	38.12	74	35.88
6194	20.26	AV	H	33.09	6.03	26.61	32.77	26.77	54	27.23
349.13	44.65	QP	V	15.21	1.30	27.81	33.35	33.35	46.00	12.65
High Channel:5670 MHz										
5670	63.41	PK	H	32.50	5.67	0.00	101.58	95.58	N/A	N/A
5670	54.56	AV	H	32.50	5.67	0.00	92.73	86.73	N/A	N/A
5670	60.63	PK	V	32.50	5.67	0.00	98.8	92.8	N/A	N/A
5670	51.47	AV	V	32.50	5.67	0.00	89.64	83.64	N/A	N/A
5725	26.79	PK	H	32.57	5.72	0.00	65.08	59.08	74	14.92
5725	14.38	AV	H	32.57	5.72	0.00	52.67	46.67	54	7.33
11340	32.36	PK	H	37.87	8.21	26.03	52.41	46.41	74	27.59
11340	21.69	AV	H	37.87	8.21	26.03	41.74	35.74	54	18.26
17010	35.36	PK	H	41.95	10.45	25.67	62.09	56.09	74	17.91
17010	23.50	AV	H	41.95	10.45	25.67	50.23	44.23	54	9.77
4917	32.79	PK	H	31.13	5.07	26.88	42.11	36.11	74	37.89
4917	21.98	AV	H	31.13	5.07	26.88	31.3	25.3	54	28.7
6194	31.16	PK	H	33.09	6.03	26.61	43.67	37.67	74	36.33
6194	20.65	AV	H	33.09	6.03	26.61	33.16	27.16	54	26.84
349.13	47.01	QP	V	15.21	1.30	27.81	35.71	35.71	46.00	10.29

FCC §15.407(a) & §15.407 (e)–EMISSION BANDWIDTH

Applicable Standard

15.407(a) 15.407(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

1. According to KDB789033 D02 General U-NII Test Procedures New Rules v01r03.

Test Data

Environmental Conditions

Temperature:	26.7~27 °C
Relative Humidity:	34~36 %
ATM Pressure:	101.3~101.5 kPa

The testing was performed by Lorin Bian from 2016-12-01 to 2016-12-02.

Test Result: Pass.

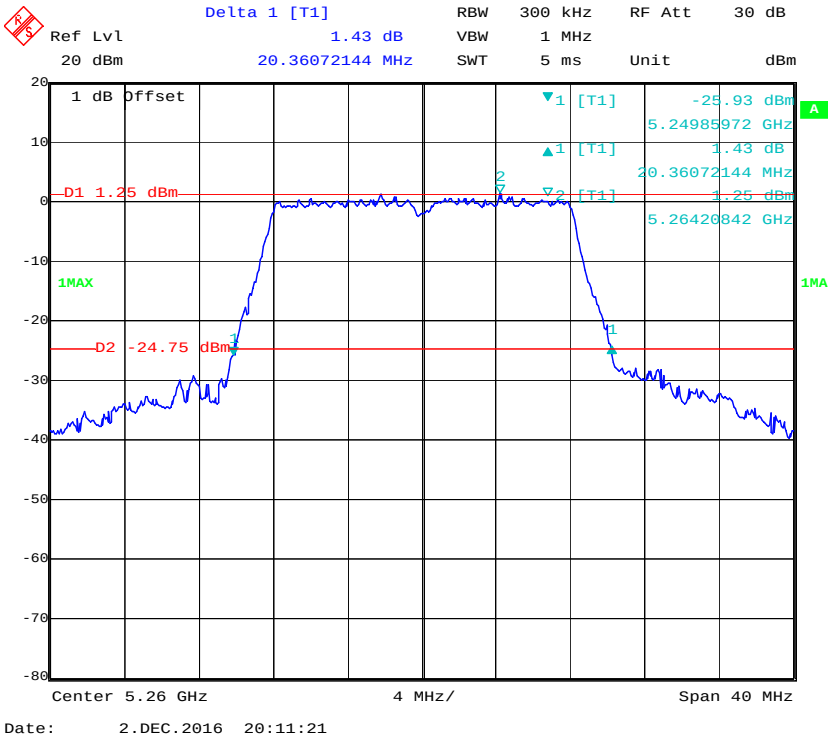
Please refer to the following tables and plots.

Test mode: Transmitting

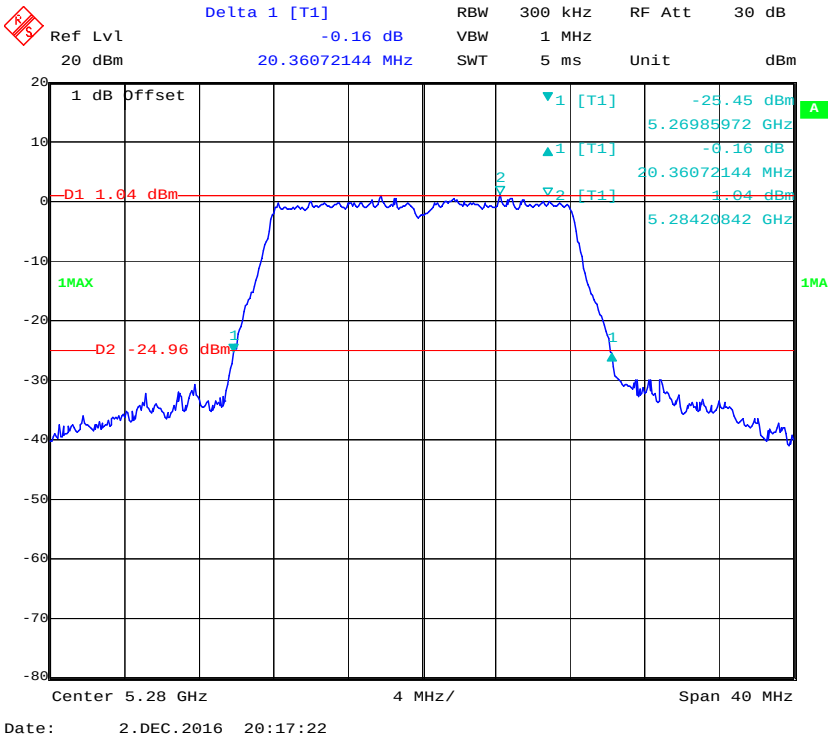
UNII Band	Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)
5250-5350MHz	802.11 a	Low	5260	20.36
		Middle	5280	20.36
		High	5320	20.36
	802.11 n20	Low	5260	20.76
		Middle	5280	20.68
		High	5320	20.6
	802.11 n40	Low	5270	41.2
		High	5310	41.2
5470-5725MHz	802.11 a	Low	5500	20.36
		Middle	5600	20.44
		High	5700	23.25
	802.11 n20	Low	5500	20.76
		Middle	5600	20.68
		High	5700	20.84
	802.11 n40	Low	5510	40.4
		Middle	5590	41.36
		High	5670	40.88

5250Hz-5350MHz:

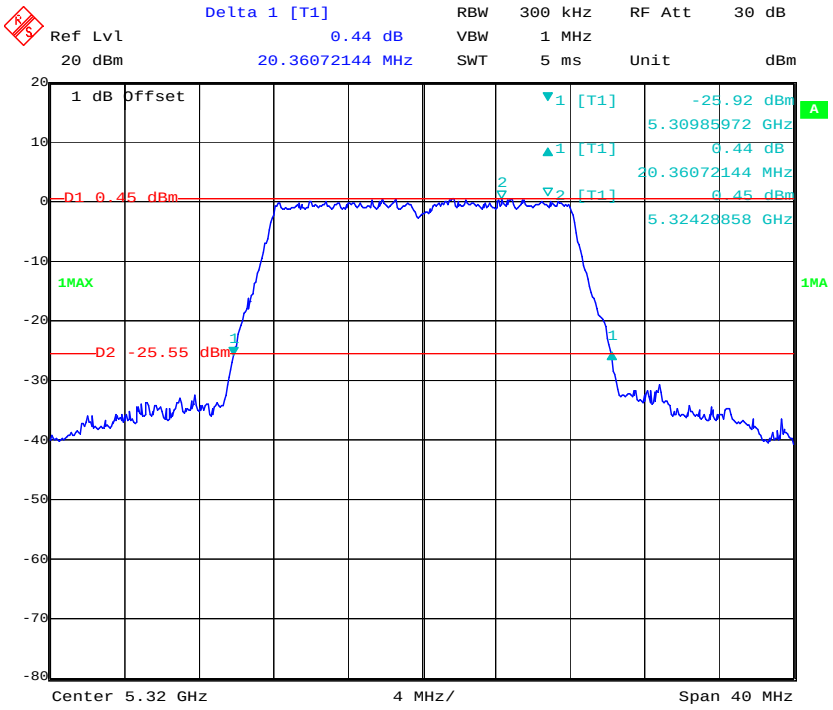
Chain 0:802.11a Low Channel



Chain 0:802.11a Middle Channel

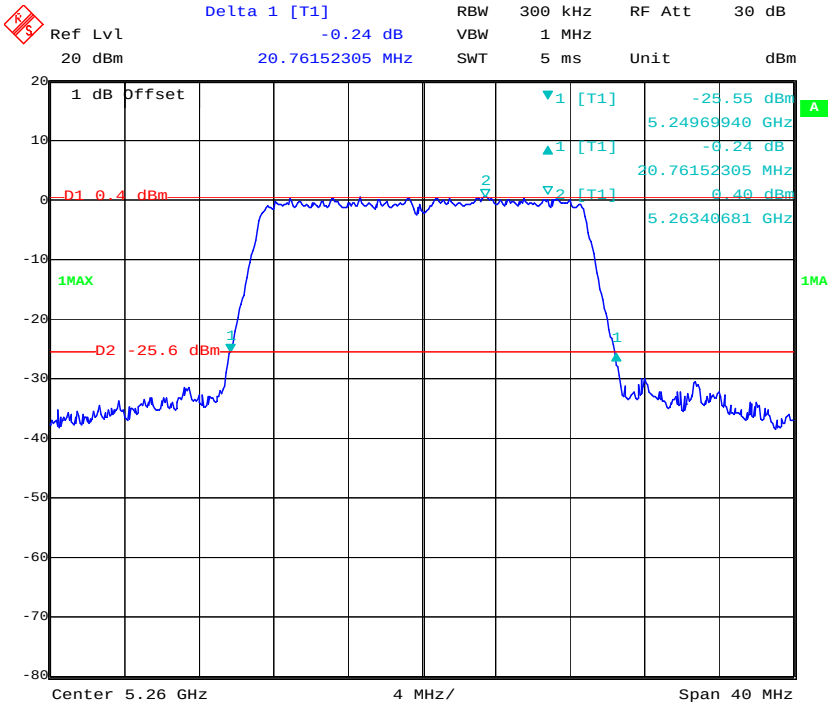


Chain 0:802.11a High Channel



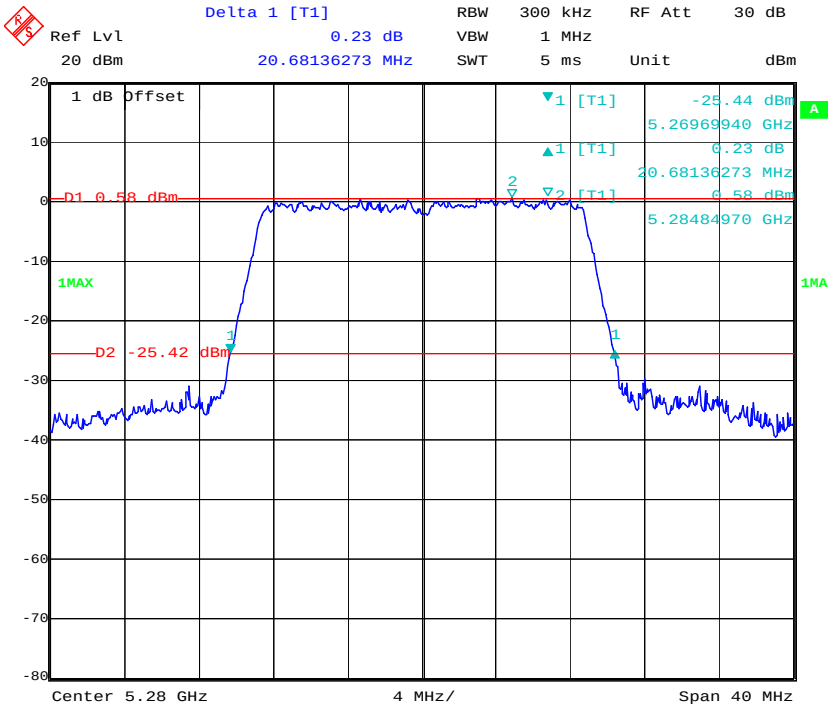
Date: 2.DEC.2016 20:22:38

Chain 0:802.11n ht20 Low Channel



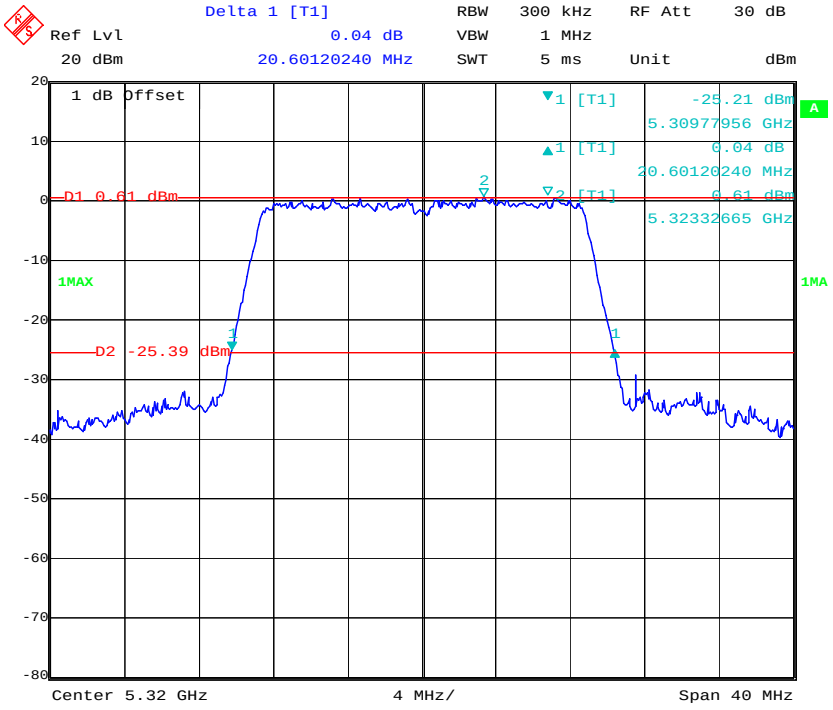
Date: 2.DEC.2016 20:26:58

Chain 0:802.11n ht20 Middle Channel



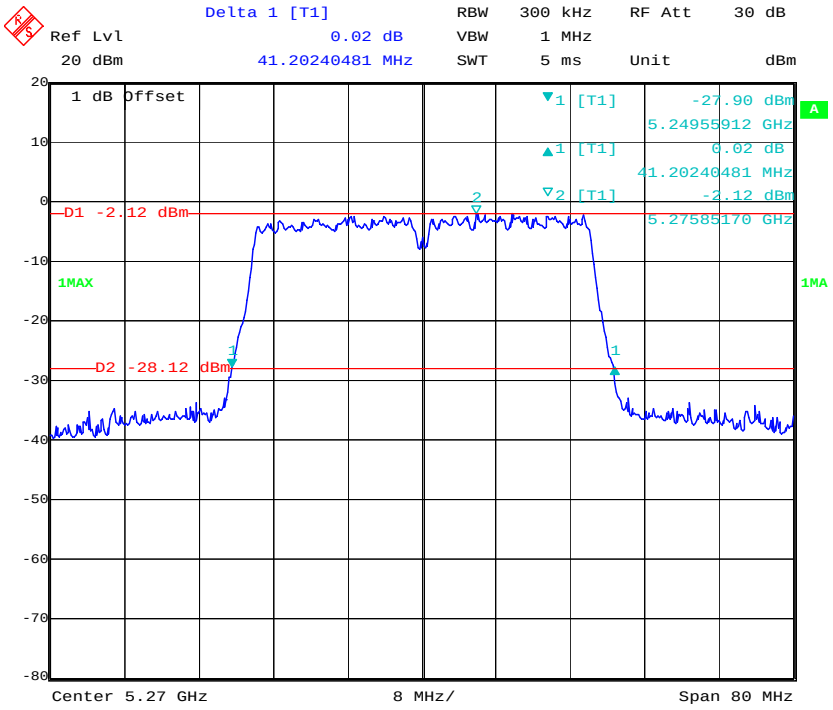
Date: 2.DEC.2016 20:32:51

Chain 0:802.11n ht20 High Channel



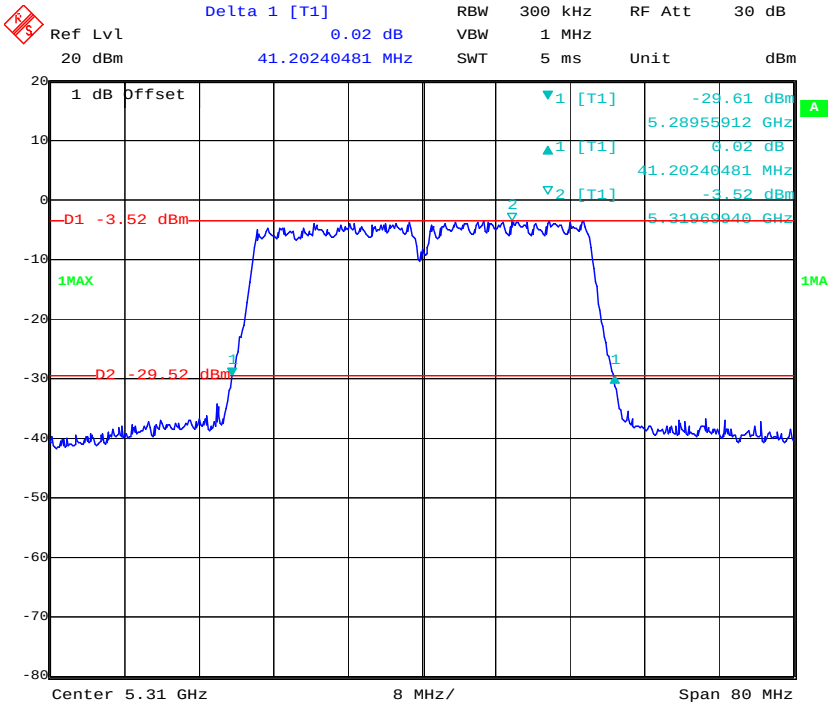
Date: 2.DEC.2016 20:36:05

Chain 0:802.11n ht40 Low Channel



Date: 2.DEC.2016 20:42:57

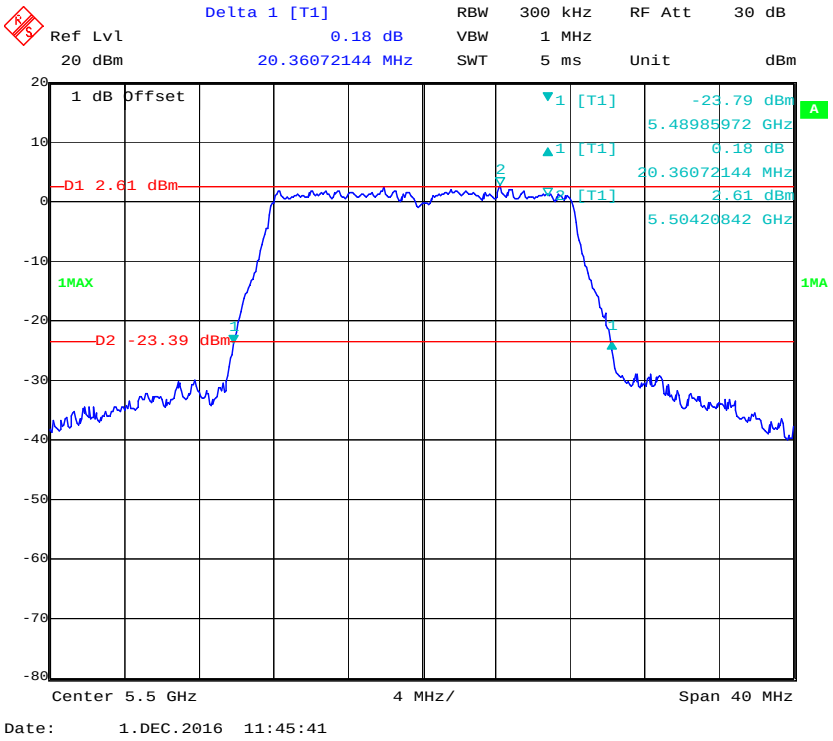
Chain 0:802.11n ht40 High Channel



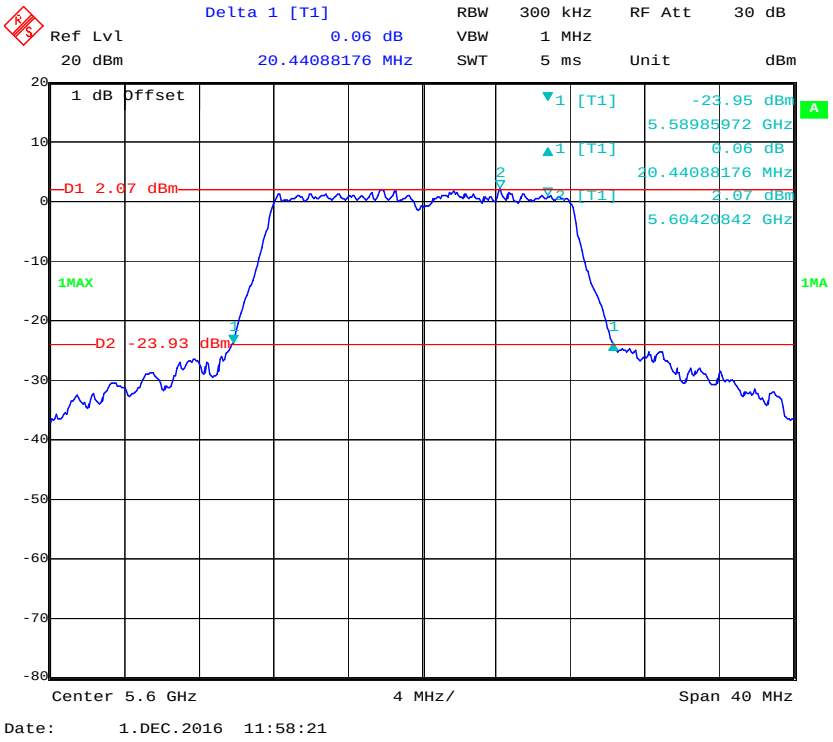
Date: 2.DEC.2016 20:53:39

5470MHz-5725MHz:

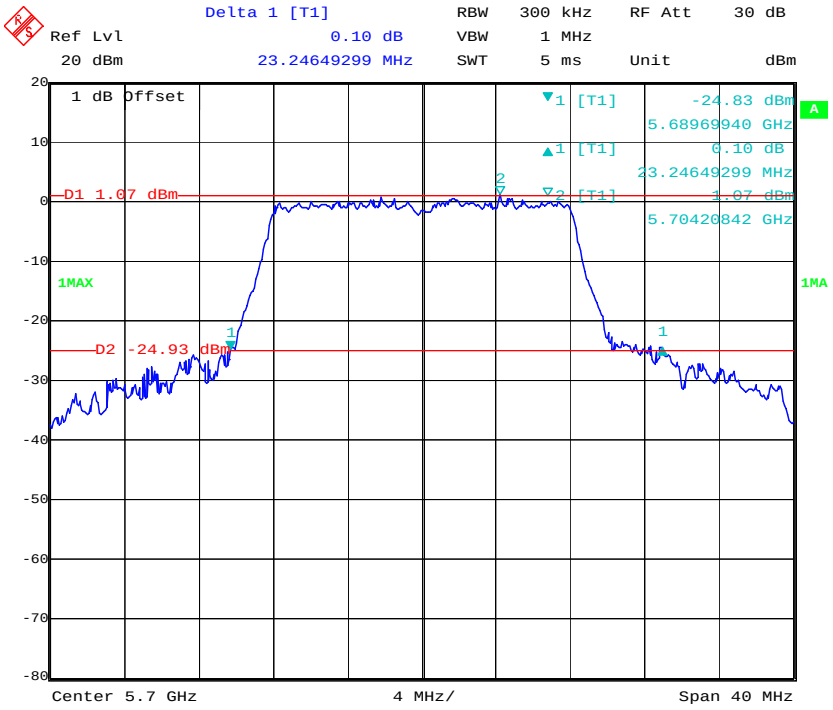
Chain 0:802.11a Low Channel



Chain 0:802.11a Middle Channel

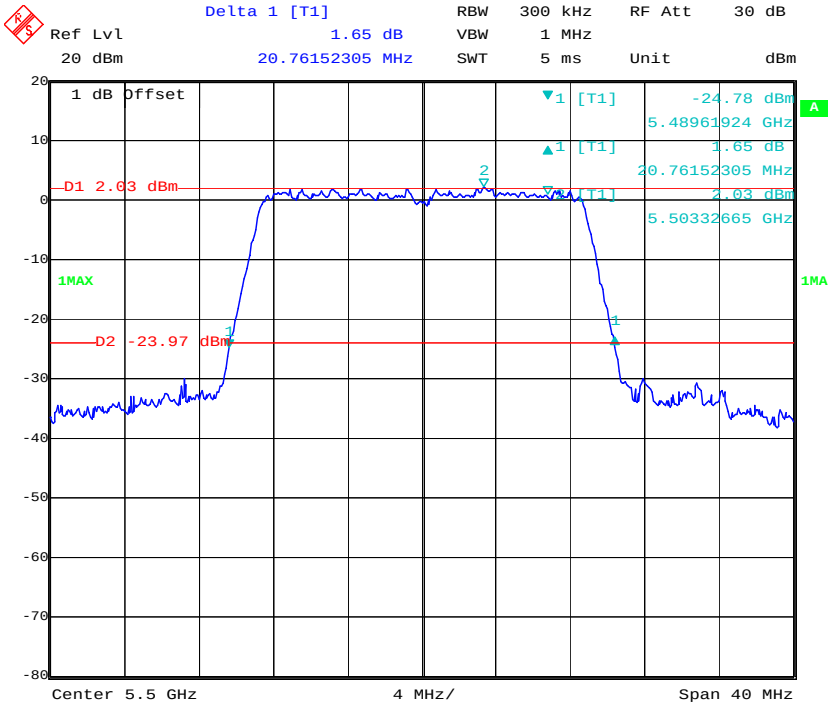


Chain 0:802.11a High Channel



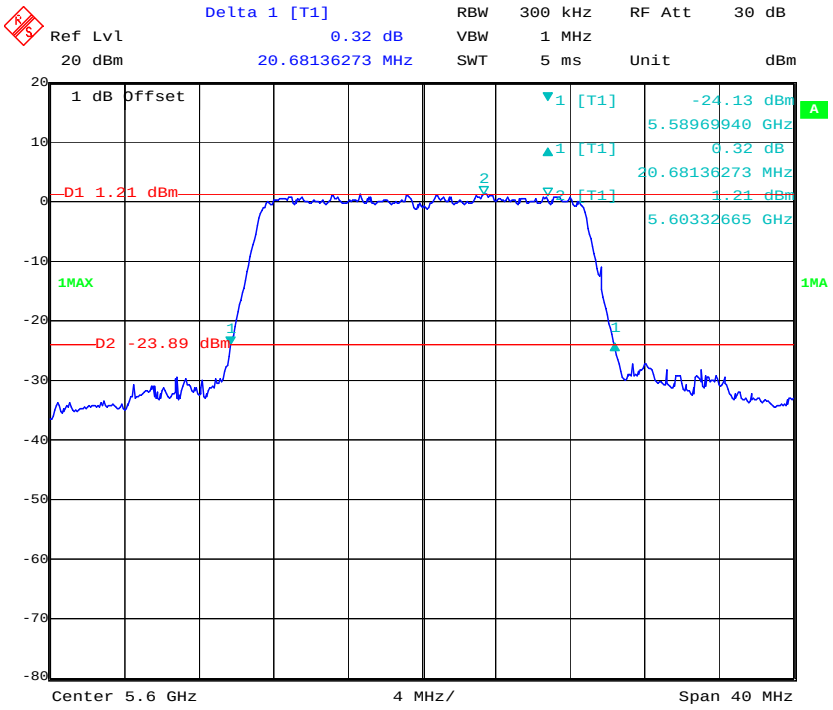
Date: 1.DEC.2016 11:42:27

Chain 0:802.11n ht20 Low Channel



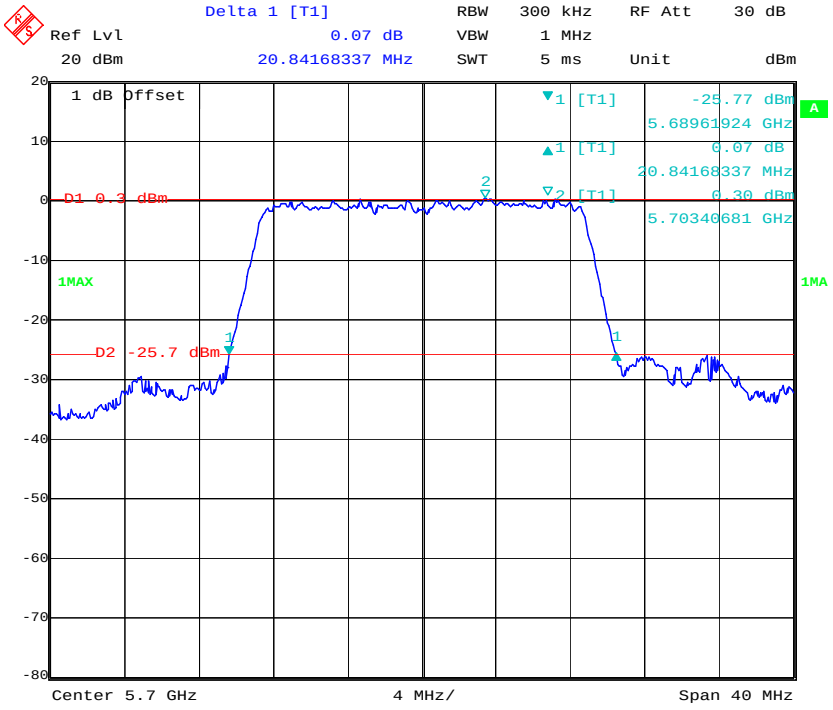
Date: 1.DEC.2016 11:35:55

Chain 0:802.11n ht20 Middle Channel



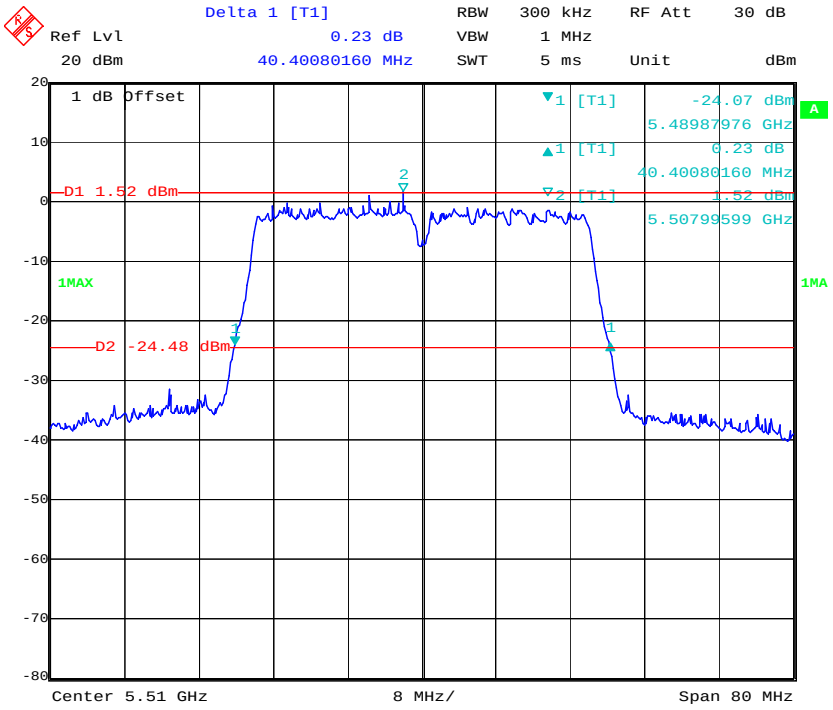
Date: 1.DEC.2016 13:24:09

Chain 0:802.11n ht20 High Channel



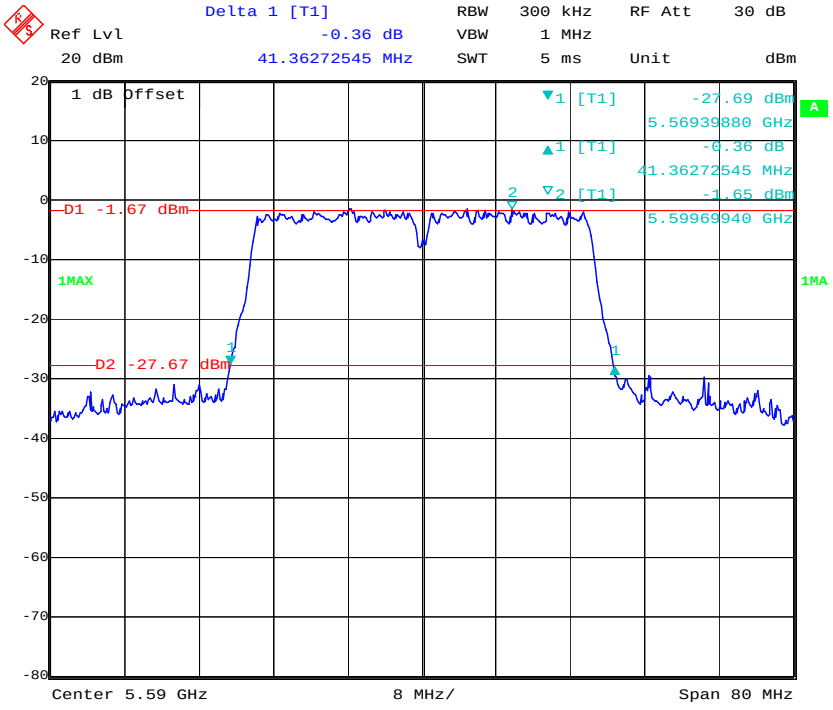
Date: 1.DEC.2016 11:39:29

Chain 0:802.11n ht40 Low Channel



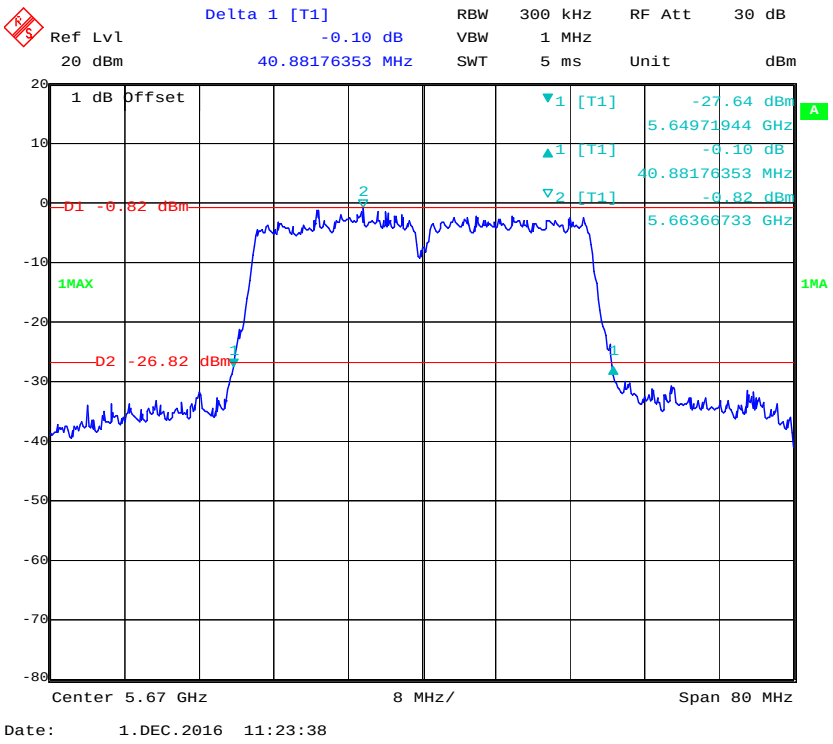
Date: 1.DEC.2016 11:32:51

Chain 0:802.11n ht40 Middle Channel



Date: 1.DEC.2016 13:59:46

Chain 0:802.11n ht40 High Channel



FCC §15.407(a) (1) (ii) (4) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

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

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

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

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

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum

power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

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

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

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

(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.

(5) The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

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 KDB789033 D02 General U-NII Test Procedures New Rules v01r03.

Test Data

Environmental Conditions

Temperature:	27 °C
Relative Humidity:	34 %
ATM Pressure:	101.3 kPa

The testing was performed by Lorin Bian on 2016-12-01.

Test Mode: Transmitting

UNII Band	Mode	Channel	Frequency (MHz)	RMS Power (dBm)	Limit (dBm)
5250-5350MHz	802.11 a	Low	5260	10.44	24
		Middle	5280	10.47	24
		High	5320	10.26	24
	802.11 n20	Low	5260	10.47	24
		Middle	5280	10.53	24
		High	5320	10.48	24
	802.11 n40	Low	5270	10.49	24
		High	5310	9.47	24
5470-5725MHz	802.11 a	Low	5500	11.71	24
		Middle	5600	11.21	24
		High	5700	10.1	24
	802.11 n20	Low	5500	11.83	24
		Middle	5600	11.31	24
		High	5700	10.13	24
	802.11 n40	Low	5510	11.61	24
		Middle	5590	11	24
		High	5670	10.28	24

FCC §15.407(a) - POWER SPECTRAL DENSITY

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

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

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

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

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

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum

power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

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

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

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

(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.

(5) The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

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:	26.7~27 °C
Relative Humidity:	34~36 %
ATM Pressure:	101.3~101.5 kPa

The testing was performed by Lorin Bian from 2016-12-01 to 2016-12-02.

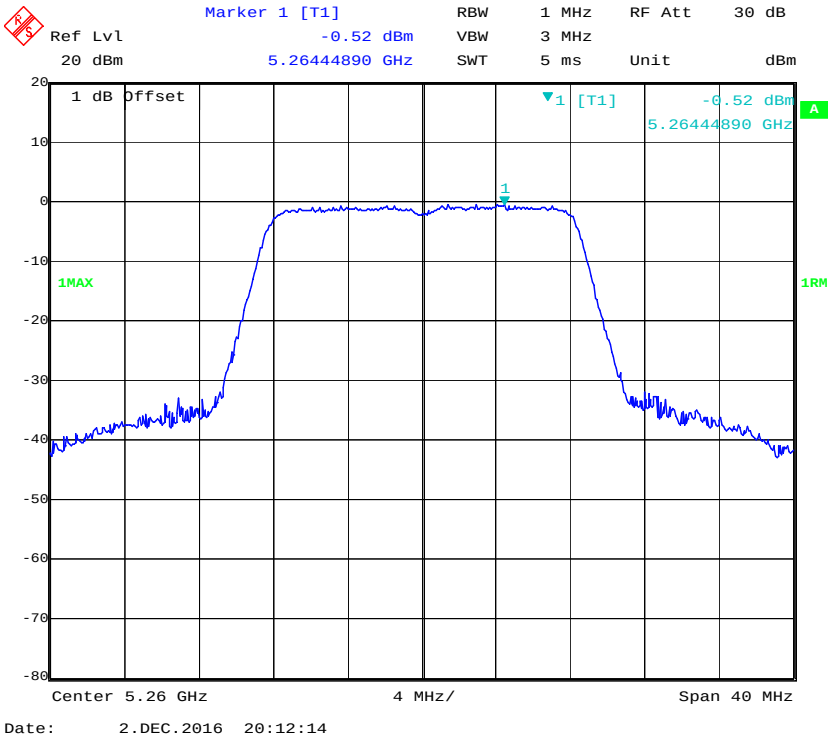
Test Mode: Transmitting

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

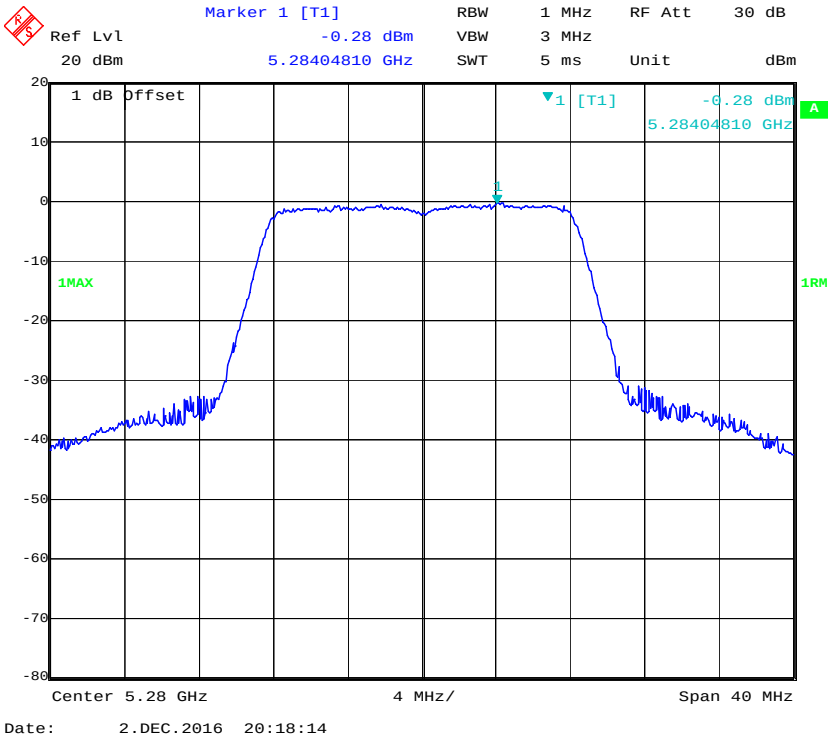
UNII Band	Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
5250-5350MHz	802.11 a	Low	5260	-0.52	11
		Middle	5280	-0.28	11
		High	5320	-0.6	11
	802.11 n20	Low	5260	-0.98	11
		Middle	5280	-0.67	11
		High	5320	-0.61	11
	802.11 n40	Low	5270	-3.7	11
		High	5310	-4.63	11
5470-5725MHz	802.11 a	Low	5500	0.57	11
		Middle	5600	0.04	11
		High	5700	-0.91	11
	802.11 n20	Low	5500	0.59	11
		Middle	5600	-0.31	11
		High	5700	-1.07	11
	802.11 n40	Low	5510	-2.63	11
		Middle	5590	-3.41	11
		High	5670	-3.82	11

5250MHz-5350MHz:

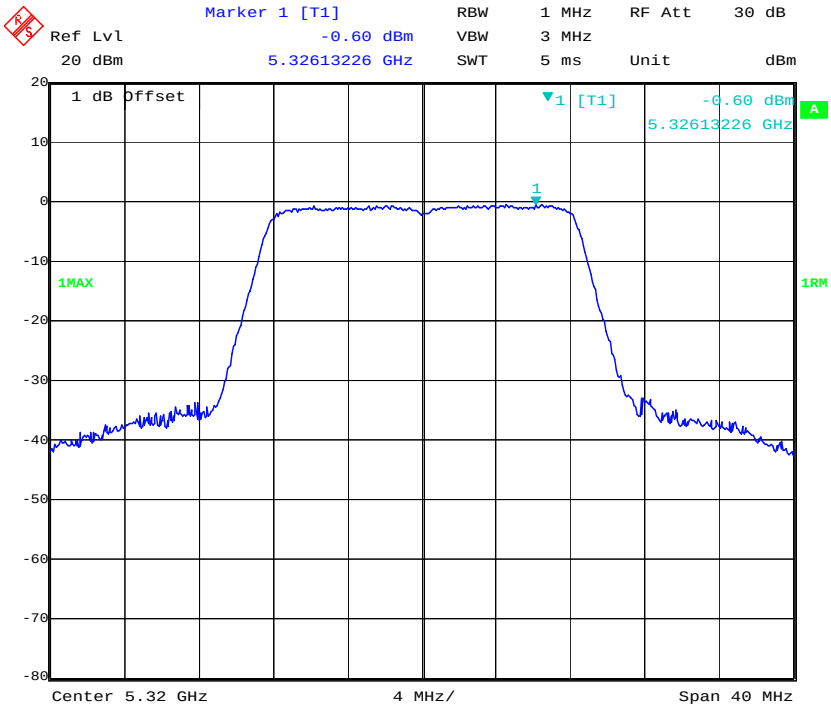
Chain 0: Power Spectral Density, 802.11a Low Channel



Chain 0: Power Spectral Density, 802.11a Middle Channel

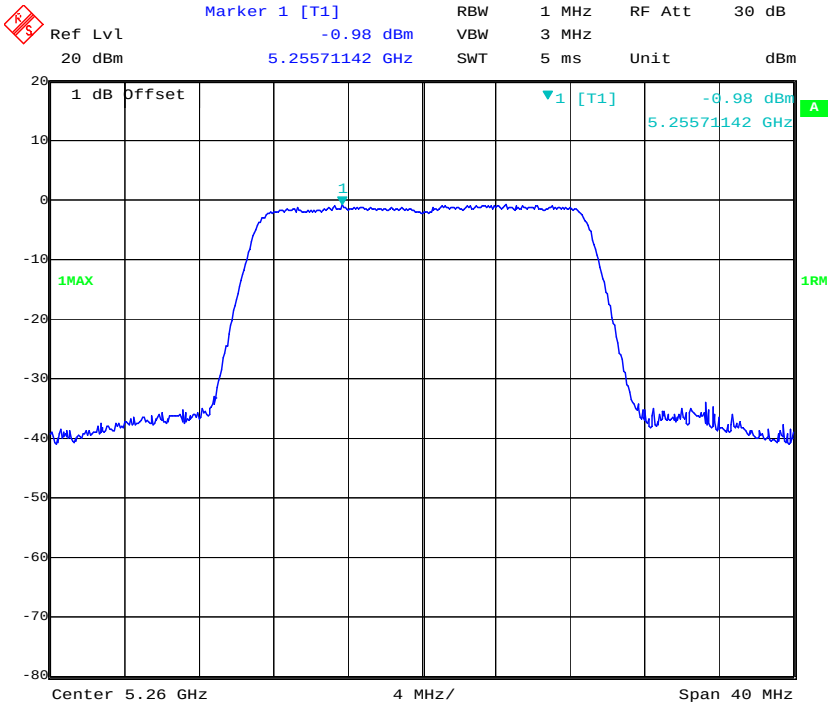


Chain 0: Power Spectral Density, 802.11a High Channel



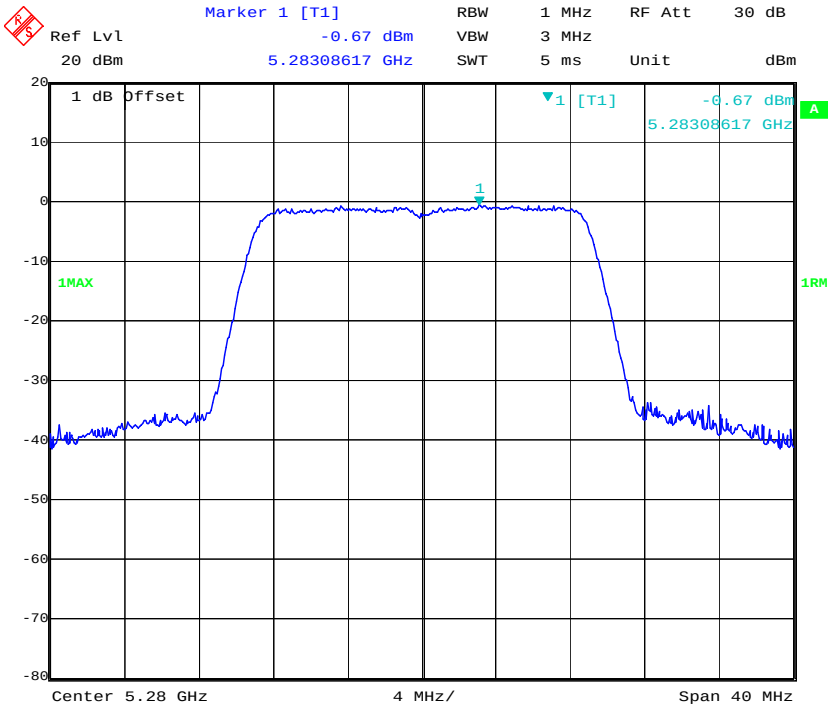
Date: 2.DEC.2016 20:23:33

Chain 0: Power Spectral Density, 802.11n ht20 Low Channel



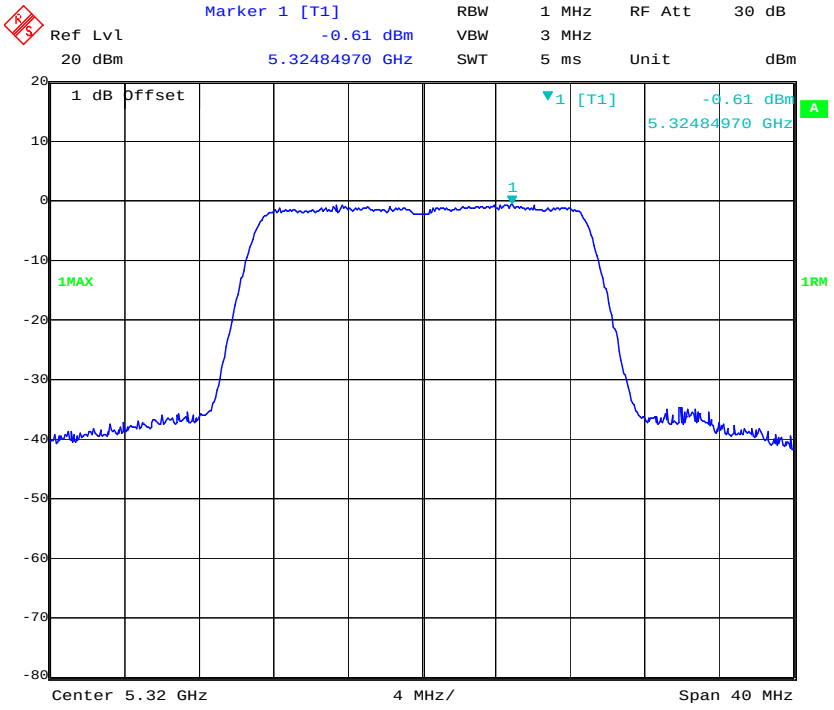
Date: 2.DEC.2016 20:27:59

Chain 0: Power Spectral Density, 802.11n ht20 Middle Channel



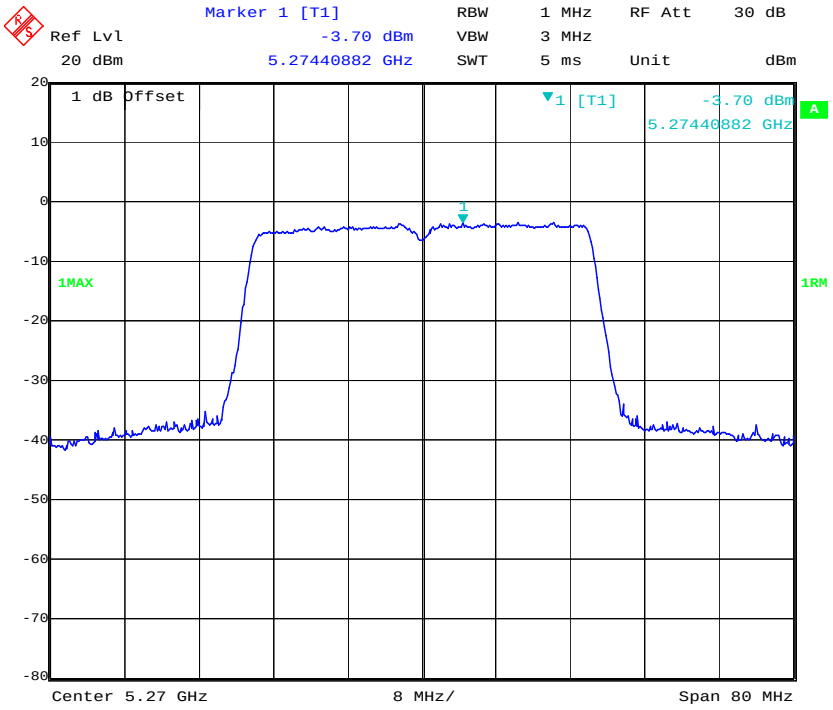
Date: 2.DEC.2016 20:33:51

Chain 0: Power Spectral Density, 802.11n ht20 High Channel



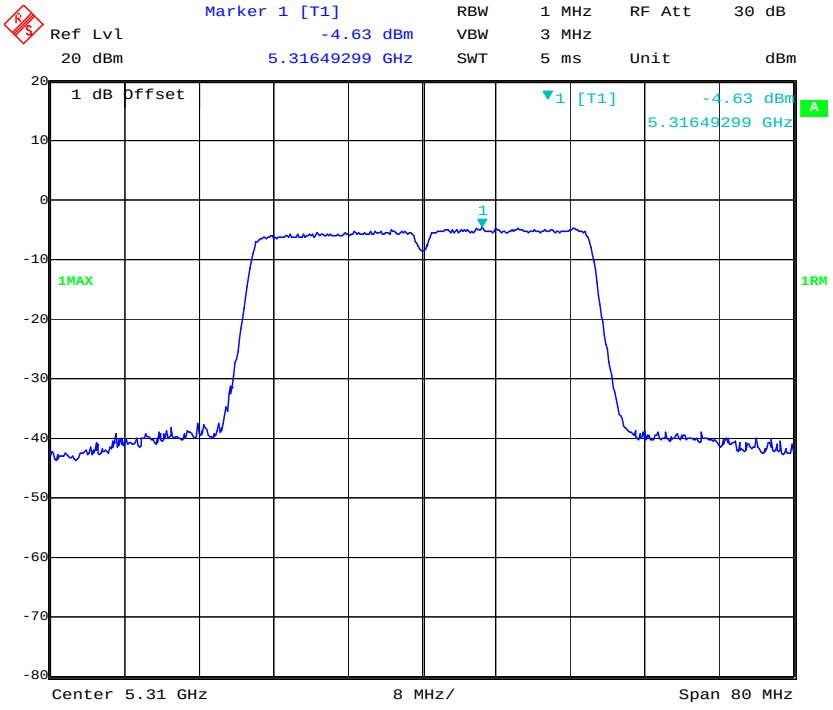
Date: 2.DEC.2016 20:37:06

Chain 0: Power Spectral Density, 802.11n ht40 Low Channel



Date: 2.DEC.2016 20:44:00

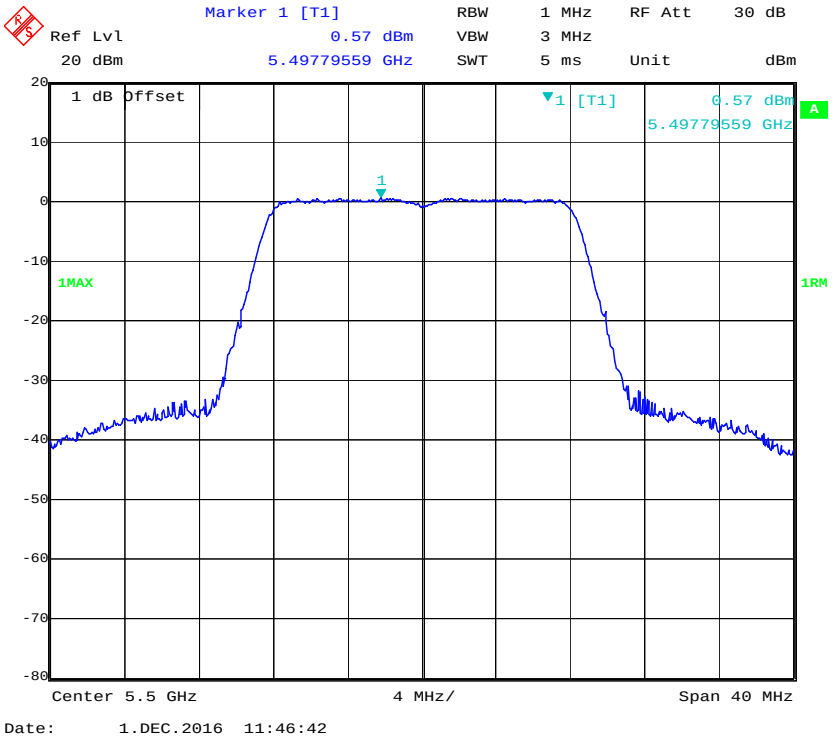
Chain 0: Power Spectral Density, 802.11n ht40 High Channel



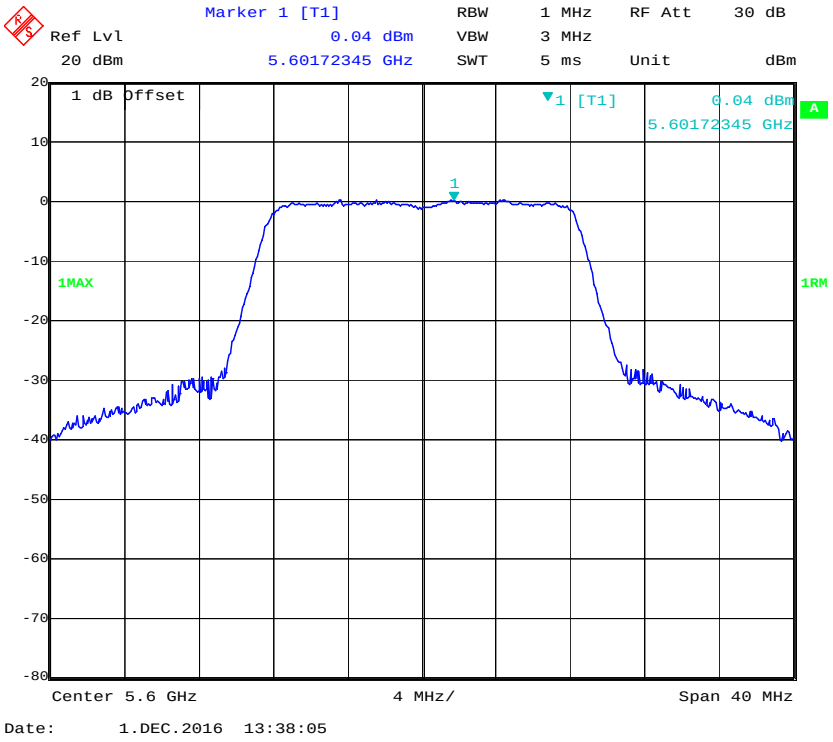
Date: 2.DEC.2016 20:54:40

5470MHz-5725MHz:

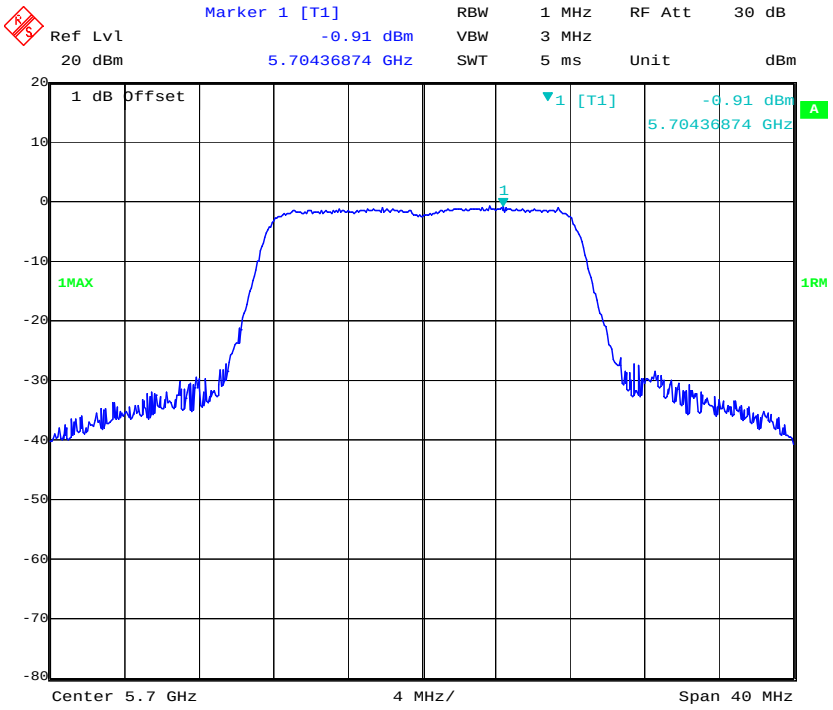
Chain 0: Power Spectral Density, 802.11a Low Channel



Chain 0: Power Spectral Density, 802.11a Middle Channel

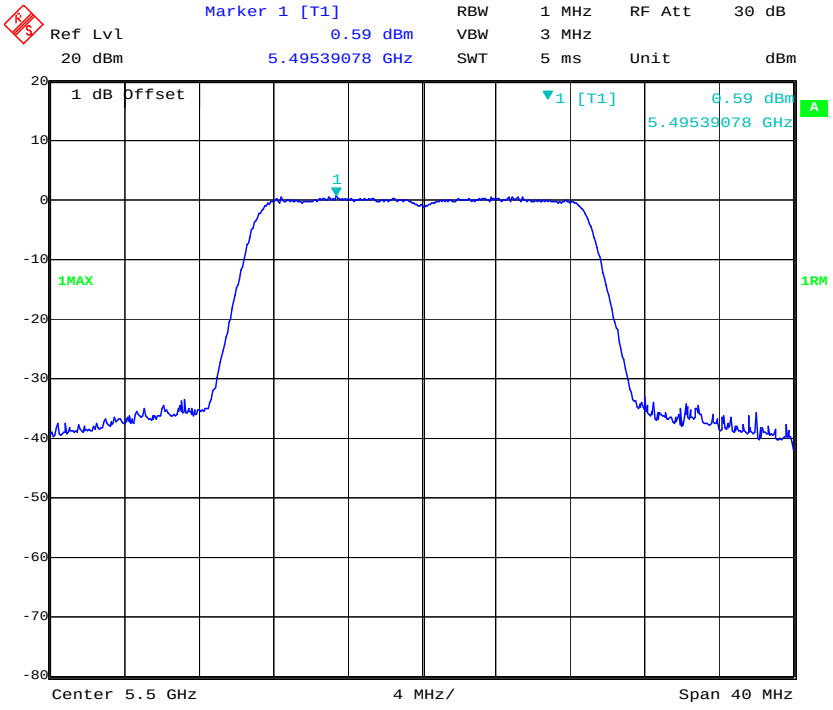


Chain 0: Power Spectral Density, 802.11a High Channel



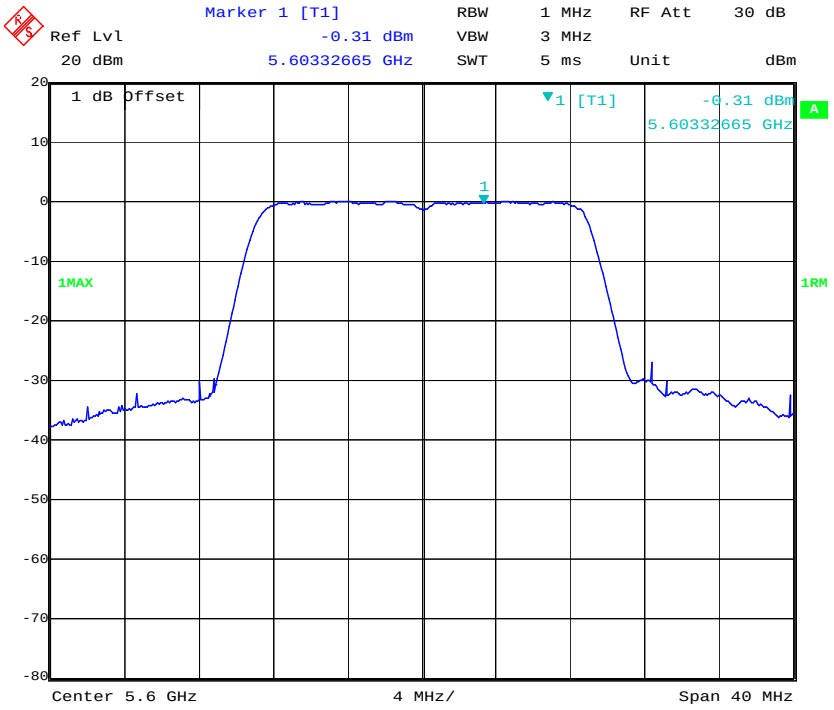
Date: 1.DEC.2016 11:43:19

Chain 0: Power Spectral Density, 802.11n ht20 Low Channel



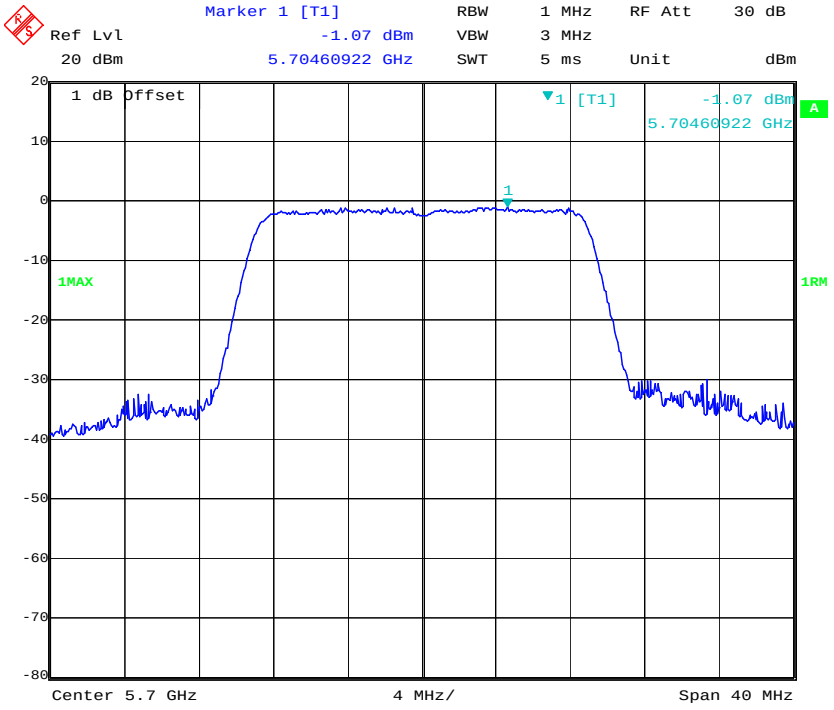
Date: 1.DEC.2016 11:36:55

Chain 0: Power Spectral Density, 802.11n ht20 Middle Channel



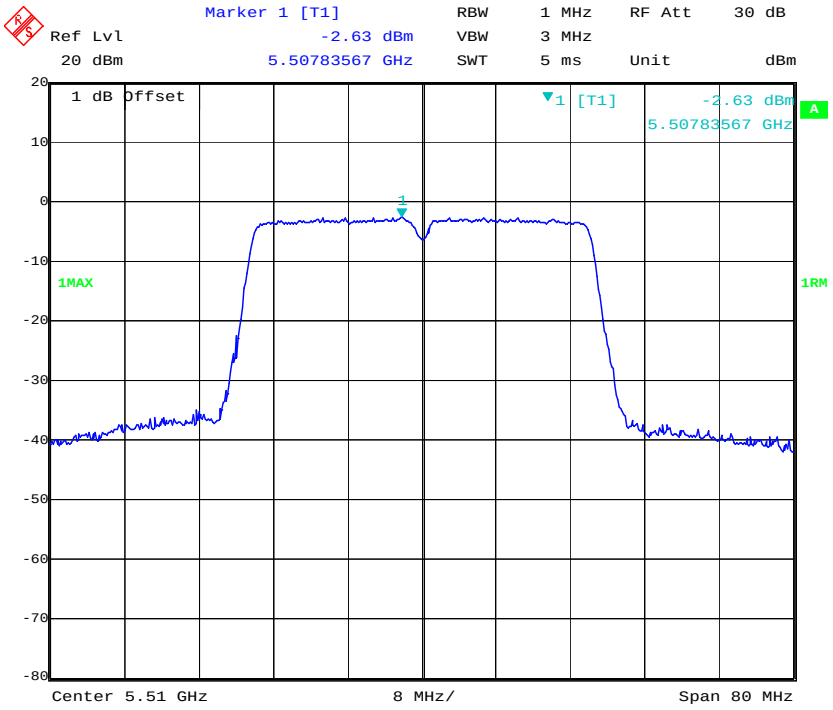
Date: 1.DEC.2016 13:34:54

Chain 0: Power Spectral Density, 802.11n ht20 High Channel



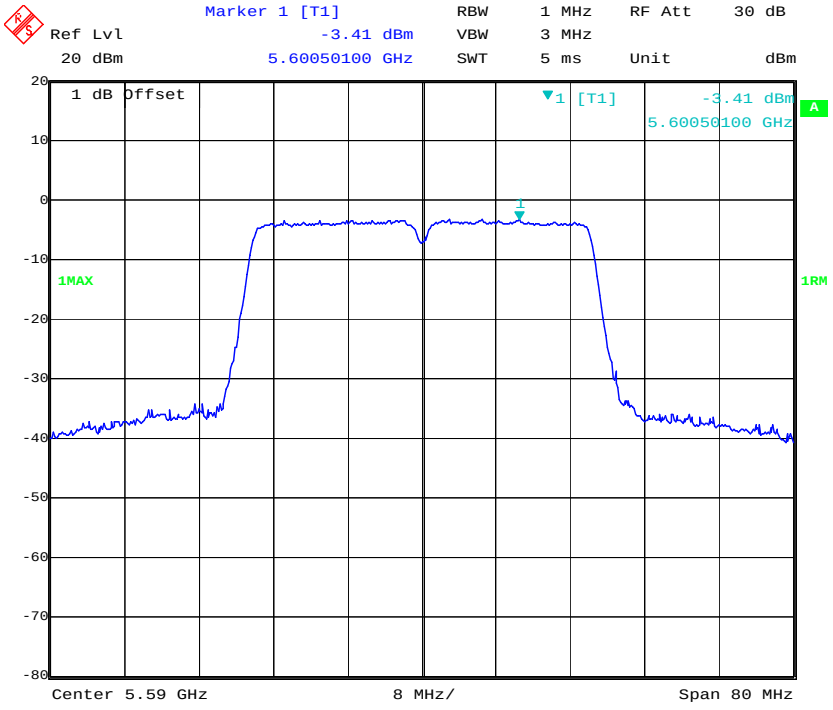
Date: 1.DEC.2016 11:40:21

Chain 0: Power Spectral Density, 802.11n ht40 Low Channel



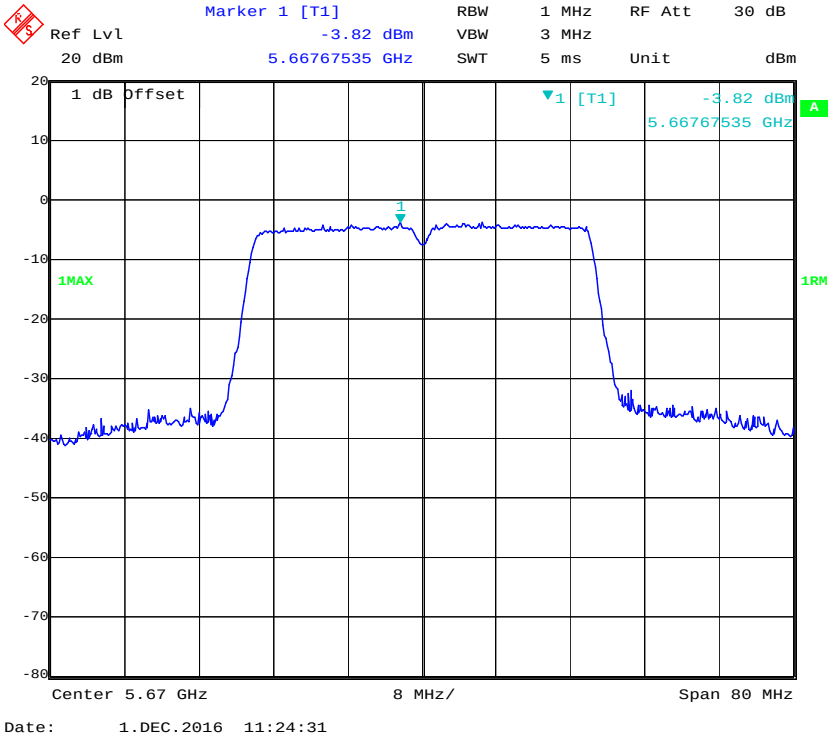
Date: 1.DEC.2016 11:33:44

Chain 0: Power Spectral Density, 802.11n ht40 Middle Channel



Date: 1.DEC.2016 13:53:52

Chain 0: Power Spectral Density, 802.11n ht40 High Channel



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