# FCC PART 15.407

# TEST REPORT

For

# SZ DJI TECHNOLOGY CO., LTD

14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan, Shenzhen, Guangdong, China

## FCC ID: SS3-HG3101508

| Report Type: | Product Type: |
|---|---|
| Original Report | OSMO |

| | |
|---|---|
| **Test Engineer:** | Allen Qiao |
| **Report Number:** | RDG150818003-00B |
| **Report Date:** | 2015-08-31 |
| **Reviewed By:** | Jerry Zhang<br>EMC Manager |
| **Test Laboratory:** | Bay Area Compliance Laboratories Corp. (Dongguan)<br>No.69 Pulongcun, Puxinhu Industrial Zone,<br>Tangxia, Dongguan, Guangdong, China<br>Tel: +86-769-86858888<br>Fax: +86-769-86858891<br>www.baclcorp.com.cn |

# TABLE OF CONTENTS

# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

The *SZ DJI TECHNOLOGY CO., LTD*'s product, model number: *OM160 (FCC ID: SS3-HG3101508)* (the "EUT") in this report was a *OSMO*, which was measured approximately: 5.3 cm (L) x 4.4 cm (W) x 16.1 cm (H), rated input voltage: DC 11.1V from Li-ion battery.

** All measurement and test data in this report was gathered from production sample serial number: 150818003 (Assigned by BACL, Dongguan). The EUT was received on 2015-08-18.*

## Objective

This type approval report is prepared on behalf of *SZ DJI TECHNOLOGY 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 DTS submissions with FCC ID: SS3-HG3101508.

## Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

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

## Test Facility

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

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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

# SYSTEM TEST CONFIGURATION

## Description of Test Configuration

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

For 5150~5250 MHz band, channels are provided to test as fallows:

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

For 802.11a, 802.11n ht20, Channel 36, 40 and 48 were tested, for 802.11n ht40, Channel 38, 46 were tested.

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

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

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

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

## EUT Exercise Software

The software "IPOP" 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:

5150~5250 MHz band

| Test Mode | Test Software Version | IPOP | | |
|---|---|---|---|---|
| 802.11A | Test Frequency | 5180MHz | 5200MHz | 5240MHz |
| | Data Rate | (OFDM)6Mbps | (OFDM)6Mbps | (OFDM)6Mbps |
| | Power Level Setting | 20 | 19 | 19 |
| 802.11n ht20 | Test Frequency | 5180MHz | 5200MHz | 5240MHz |
| | Data Rate | (HT Mixmode)MCS0 | (HT Mixmode)MCS0 | (HT Mixmode)MCS0 |
| | Power Level Setting | 20 | 19 | 19 |
| 802.11n ht40 | Test Frequency | 5190MHz | 5230MHz | / |
| | Data Rate | (HT Mix mode)MCS0 | (HT Mix mode)MCS0 | / |
| | Power Level Setting | 17 | 17 | / |

5725~5850MHz band

| Test Mode | Test Software Version | IPOP | | |
|---|---|---|---|---|
| 802.11A | Test Frequency | 5745MHz | 5785MHz | 5825MHz |
| | Data Rate | (OFDM)6Mbps | (OFDM)6Mbps | (OFDM)6Mbps |
| | Power Level Setting | 21 | 17 | 12 |
| 802.11n ht20 | Test Frequency | 5745MHz | 5785MHz | 5825MHz |
| | Data Rate | (HT Mixmode)MCS0 | (HT Mixmode)MCS0 | (HT Mixmode)MCS0 |
| | Power Level Setting | 20 | 17 | 12 |
| 802.11n ht40 | Test Frequency | 5755MHz | 5795MHz | / |
| | Data Rate | (HT Mix mode)MCS0 | (HT Mix mode)MCS0 | / |
| | Power Level Setting | 16 | 14 | / |

## Equipment Modifications

No modification was made to the EUT.

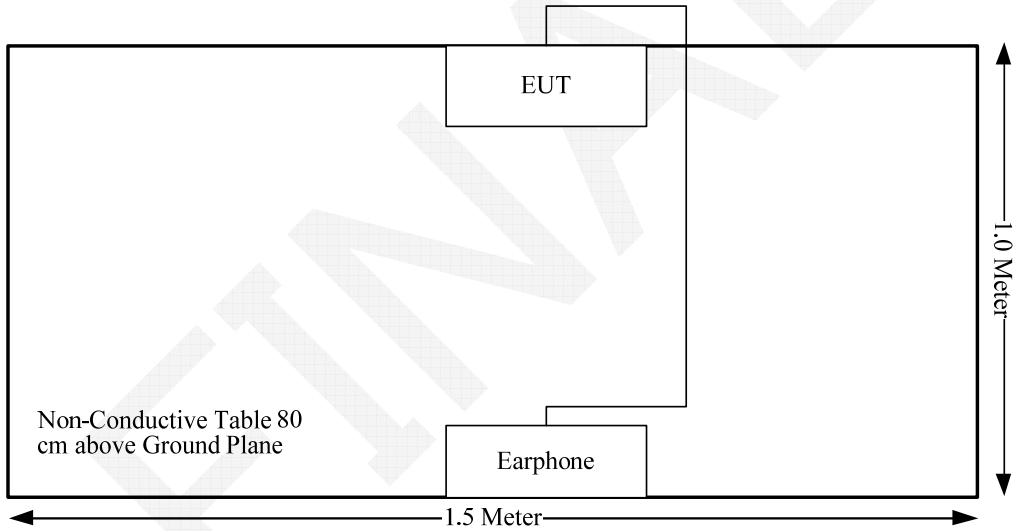
## Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| Meizu | Earphone | EP-21HD | N/A |
| DJI | OSMO | OM160 | N/A |

## External I/O Cable

| Cable Description | Shielding Type | Ferrite Core | Length (m) | From Port | To |
|---|---|---|---|---|---|
| Earphone | No | No | 1.5 | 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 | Not Applicable |
| §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 & §2.1093- 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 v05r02:

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**

The maximum output power= 7.57 dBm (5.71mW) at 5795 MHz
[(max. power of channel, mW)/(min. test separation distance, mm)][ √ f(GHz)]
= 5.71/5*( √ 5.795) = 2.75< 3.0

**So the stand-alone SAR evaluation 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 have one internal antenna, the gain is 1.37dBi for 5.2G and 2.31dBi for 5.8G, 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.

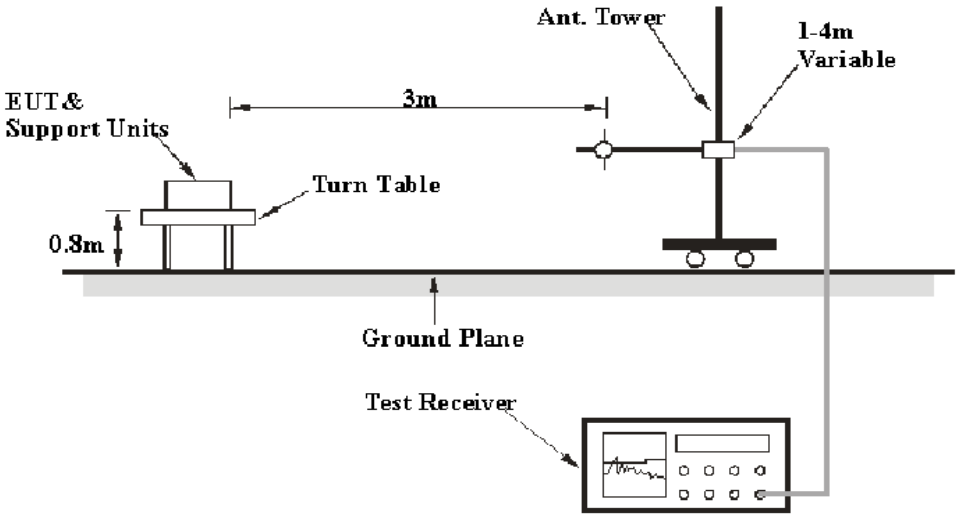
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 1 – Values of $U_{cispr}$

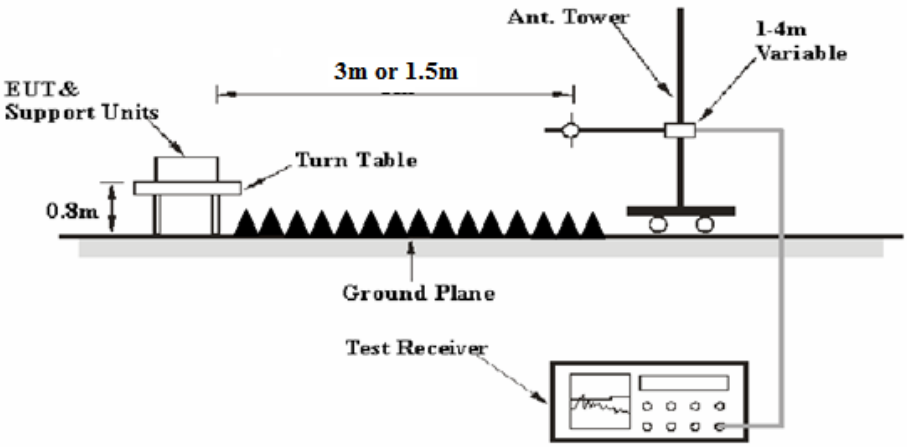
| Measurement | $U_{cispr}$ |
|---|---|
| Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz) | 6.3 dB |
| Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz) | 5.2 dB |
| Radiated disturbance (electric field strength in a FAR) (6 GHz to 18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

## EUT Setup

**Below 1 GHz:**




**Above 1 GHz:**



The radiated emission tests were performed in the 3 meters chamber, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.407 limits.

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

The spacing between the peripherals was 10 cm.

## EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

| 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

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 v01, emission shall be computed as: E [dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

According to C63.4, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m
Distance extrapolation factor =20 log (specific distance [3m]/test distance [1.5m]) dB
Extrapolation result = Corrected Amplitude (dBμV/m) - distance extrapolation factor (6dB)

## Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit –Extrapolation result

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | EMI Test Receiver | ESCI | 100224 | 2015-05-09 | 2016-05-09 |
| Sunol Sciences | Antenna | JB3 | A060611-3 | 2014-11-06 | 2017-11-05 |
| HP | Amplifier | 8447E | 2434A02181 | 2014-09-01 | 2015-09-01 |
| Agilent | Spectrum Analyzer | E4440A | SG43360054 | 2014-12-04 | 2015-12-04 |
| N/A | Coaxial Cable | 14m | N/A | 2015-05-06 | 2016-05-06 |
| N/A | Coaxial Cable | 8m | N/A | 2015-05-06 | 2016-05-06 |
| Sinoscite | Bandstop Filters | BSF5150-5850MN-0899-003 | N/A | 2015-05-06 | 2016-05-06 |
| ETS-Lindgren | Horn Antenna | 3115 | 000 527 35 | 2012-09-06 | 2015-09-06 |
| Mini-Circuit | Amplifier | ZVA-213-S+ | 054201245 | 2015-02-19 | 2016-02-19 |
| R&S | Spectrum Analyzer | FSEM | 831259/019 | 2015-05-09 | 2016-05-09 |
| Ducommun Technolagies | Horn Antenna | ARH-4223-02 | 1007726-01 1304 | 2014-06-16 | 2017-06-15 |
| Ducommun Technolagies | Horn Antenna | ARH-2823-02 | 1007726-01 1302 | 2014-06-16 | 2017-06-15 |
| Quinstar | Amplifier | QLW-18405536-JO | 15964001001 | 2014-09-06 | 2015-09-06 |

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

## Test 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 15.407, with the worst margin reading of:

**4.38 dB** at **600.36 MHz** in the **Vertical** polarization for 802.11n ht20 mode

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 28.5°C |
| **Relative Humidity:** | 46 % |
| **ATM Pressure:** | 100 kPa |

*The testing was performed by Allen Qiao from 2015-08-28.*

**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.*

Please refer to the following tables

*Mode: Transmitting*

5150MHz-5250MHz: 802.11a Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Extrapolation result (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5180 MHz | | | | | | | | | | |
| 5180 | 59.67 | PK | H | 31.46 | 5.40 | 0.00 | 96.53 | 90.53 | N/A | N/A |
| 5180 | 48.59 | AV | H | 31.46 | 5.40 | 0.00 | 85.45 | 79.45 | N/A | N/A |
| 5180 | 63.83 | PK | V | 31.46 | 5.40 | 0.00 | 100.69 | 94.69 | N/A | N/A |
| 5180 | 53.29 | AV | V | 31.46 | 5.40 | 0.00 | 90.15 | 84.15 | N/A | N/A |
| 5150 | 26.66 | PK | V | 31.40 | 5.26 | 0.00 | 63.32 | 57.32 | 74.00 | 16.68 |
| 5150 | 15.96 | AV | V | 31.40 | 5.26 | 0.00 | 52.62 | 46.62 | 54.00 | 7.38 |
| 10360 | 35.53 | PK | V | 36.97 | 8.36 | 25.52 | 55.34 | 49.34 | 74.00 | 24.66 |
| 10360 | 23.04 | AV | V | 36.97 | 8.36 | 25.52 | 42.85 | 36.85 | 54.00 | 17.15 |
| 15540 | 36.21 | PK | V | 37.43 | 14.94 | 24.98 | 63.60 | 57.60 | 74.00 | 16.40 |
| 15540 | 23.67 | AV | V | 37.43 | 14.94 | 24.98 | 51.06 | 45.06 | 54.00 | 8.94 |
| 6908 | 43.58 | PK | V | 33.36 | 6.33 | 26.44 | 56.83 | 50.83 | 74.69 | 23.86 |
| 6908 | 31.29 | AV | V | 33.36 | 6.33 | 26.44 | 44.54 | 38.54 | 64.15 | 25.61 |
| 4793 | 32.25 | PK | V | 30.56 | 5.13 | 27.41 | 40.53 | 34.53 | 74.00 | 39.47 |
| 4793 | 20.04 | AV | V | 30.56 | 5.13 | 27.41 | 28.32 | 22.32 | 54.00 | 31.68 |
| 468.44 | 42.10 | QP | V | 17.74 | 2.63 | 21.94 | 40.53 | 40.53 | 46.00 | 5.47 |
| Middle Channel:5200 MHz | | | | | | | | | | |
| 5200 | 60.87 | PK | H | 31.50 | 5.49 | 0.00 | 97.86 | 91.86 | N/A | N/A |
| 5200 | 49.44 | AV | H | 31.50 | 5.49 | 0.00 | 86.43 | 80.43 | N/A | N/A |
| 5200 | 62.35 | PK | V | 31.50 | 5.49 | 0.00 | 99.34 | 93.34 | N/A | N/A |
| 5200 | 50.60 | AV | V | 31.50 | 5.49 | 0.00 | 87.59 | 81.59 | N/A | N/A |
| 10400 | 35.26 | PK | V | 36.98 | 8.32 | 25.50 | 55.06 | 49.06 | 74.00 | 24.94 |
| 10400 | 22.62 | AV | V | 36.98 | 8.32 | 25.50 | 42.42 | 36.42 | 54.00 | 17.58 |
| 15600 | 35.89 | PK | V | 37.32 | 14.69 | 24.69 | 63.21 | 57.21 | 74.00 | 16.79 |
| 15600 | 23.37 | AV | V | 37.32 | 14.69 | 24.69 | 50.69 | 44.69 | 54.00 | 9.31 |
| 6931 | 41.58 | PK | V | 33.42 | 6.34 | 26.39 | 54.95 | 48.95 | 73.34 | 24.39 |
| 6931 | 29.14 | AV | V | 33.42 | 6.34 | 26.39 | 42.51 | 36.51 | 61.59 | 25.08 |
| 3280 | 31.28 | PK | V | 28.10 | 5.61 | 27.30 | 37.69 | 31.69 | 74.00 | 42.31 |
| 3280 | 18.96 | AV | V | 28.10 | 5.61 | 27.30 | 25.37 | 19.37 | 54.00 | 34.63 |
| 468.44 | 42.40 | QP | V | 17.74 | 2.63 | 21.94 | 40.83 | 40.83 | 46.00 | 5.17 |
| 600.36 | 41.30 | QP | V | 19.31 | 2.98 | 22.27 | 41.32 | 41.32 | 46.00 | 4.68 |
| High Channel:5240 MHz | | | | | | | | | | |
| 5240 | 59.62 | PK | H | 31.58 | 5.28 | 0.00 | 96.48 | 90.48 | N/A | N/A |
| 5240 | 48.27 | AV | H | 31.58 | 5.28 | 0.00 | 85.13 | 79.13 | N/A | N/A |
| 5240 | 61.95 | PK | V | 31.58 | 5.28 | 0.00 | 98.81 | 92.81 | N/A | N/A |
| 5240 | 50.28 | AV | V | 31.58 | 5.28 | 0.00 | 87.14 | 81.14 | N/A | N/A |
| 5350 | 25.96 | PK | V | 31.80 | 5.61 | 0.00 | 63.37 | 57.37 | 74.00 | 16.63 |
| 5350 | 14.35 | AV | V | 31.80 | 5.61 | 0.00 | 51.76 | 45.76 | 54.00 | 8.24 |
| 10480 | 35.42 | PK | V | 37.00 | 8.23 | 26.01 | 54.64 | 48.64 | 74.00 | 25.36 |
| 10480 | 22.64 | AV | V | 37.00 | 8.23 | 26.01 | 41.86 | 35.86 | 54.00 | 18.14 |
| 15720 | 35.77 | PK | V | 37.10 | 14.20 | 24.92 | 62.15 | 56.15 | 74.00 | 17.85 |
| 15720 | 23.33 | AV | V | 37.10 | 14.20 | 24.92 | 49.71 | 43.71 | 54.00 | 10.29 |
| 6984 | 41.44 | PK | V | 33.56 | 6.36 | 26.27 | 55.09 | 49.09 | 72.81 | 23.72 |
| 6984 | 28.66 | AV | V | 33.56 | 6.36 | 26.27 | 42.31 | 36.31 | 61.14 | 24.83 |
| 3280 | 30.81 | PK | V | 28.10 | 5.61 | 27.30 | 37.22 | 31.22 | 74.00 | 42.78 |
| 3280 | 18.54 | AV | V | 28.10 | 5.61 | 27.30 | 24.95 | 18.95 | 54.00 | 35.05 |
| 468.44 | 42.60 | QP | V | 17.74 | 2.63 | 21.94 | 41.03 | 41.03 | 46.00 | 4.97 |

*Within measurement uncertainty!

802.11n ht20 Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Extrapolation result (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5180 MHz | | | | | | | | | | |
| 5180 | 61.56 | PK | H | 31.46 | 5.40 | 0.00 | 98.42 | 92.42 | N/A | N/A |
| 5180 | 49.43 | AV | H | 31.46 | 5.40 | 0.00 | 86.29 | 80.29 | N/A | N/A |
| 5180 | 62.97 | PK | V | 31.46 | 5.40 | 0.00 | 99.83 | 93.83 | N/A | N/A |
| 5180 | 51.83 | AV | V | 31.46 | 5.40 | 0.00 | 88.69 | 82.69 | N/A | N/A |
| 5150 | 26.39 | PK | V | 31.40 | 5.26 | 0.00 | 63.05 | 57.05 | 74.00 | 16.95 |
| 5150 | 15.45 | AV | V | 31.40 | 5.26 | 0.00 | 52.11 | 46.11 | 54.00 | 7.89 |
| 10360 | 38.50 | PK | V | 36.97 | 8.36 | 25.52 | 58.31 | 52.31 | 74.00 | 21.69 |
| 10360 | 25.32 | AV | V | 36.97 | 8.36 | 25.52 | 45.13 | 39.13 | 54.00 | 14.87 |
| 15540 | 35.80 | PK | V | 37.43 | 14.94 | 24.98 | 63.19 | 57.19 | 74.00 | 16.81 |
| 15540 | 23.66 | AV | V | 37.43 | 14.94 | 24.98 | 51.05 | 45.05 | 54.00 | 8.95 |
| 6908 | 40.67 | PK | V | 33.36 | 6.33 | 26.44 | 53.92 | 47.92 | 73.83 | 25.91 |
| 6908 | 28.11 | AV | V | 33.36 | 6.33 | 26.44 | 41.36 | 35.36 | 62.69 | 27.33 |
| 4936 | 32.21 | PK | V | 30.93 | 5.35 | 27.43 | 41.06 | 35.06 | 74.00 | 38.94 |
| 4936 | 19.87 | AV | V | 30.93 | 5.35 | 27.43 | 28.72 | 22.72 | 54.00 | 31.28 |
| 468.44 | 42.30 | QP | V | 17.74 | 2.63 | 21.94 | 40.73 | 40.73 | 46.00 | 5.27 |
| Middle Channel:5200 MHz | | | | | | | | | | |
| 5200 | 60.82 | PK | H | 31.50 | 5.49 | 0.00 | 97.81 | 91.81 | N/A | N/A |
| 5200 | 49.03 | AV | H | 31.50 | 5.49 | 0.00 | 86.02 | 80.02 | N/A | N/A |
| 5200 | 62.15 | PK | V | 31.50 | 5.49 | 0.00 | 99.14 | 93.14 | N/A | N/A |
| 5200 | 50.62 | AV | V | 31.50 | 5.49 | 0.00 | 87.61 | 81.61 | N/A | N/A |
| 10400 | 38.69 | PK | V | 36.98 | 8.32 | 25.50 | 58.49 | 52.49 | 74.00 | 21.51 |
| 10400 | 25.71 | AV | V | 36.98 | 8.32 | 25.50 | 45.51 | 39.51 | 54.00 | 14.49 |
| 15600 | 36.23 | PK | V | 37.32 | 14.69 | 24.69 | 63.55 | 57.55 | 74.00 | 16.45 |
| 15600 | 24.10 | AV | V | 37.32 | 14.69 | 24.69 | 51.42 | 45.42 | 54.00 | 8.58 |
| 6935 | 41.45 | PK | V | 33.43 | 6.34 | 26.38 | 54.84 | 48.84 | 73.14 | 24.30 |
| 6935 | 28.82 | AV | V | 33.43 | 6.34 | 26.38 | 42.21 | 36.21 | 61.61 | 25.40 |
| 2786 | 32.07 | PK | V | 26.64 | 4.45 | 27.55 | 35.61 | 29.61 | 74.00 | 44.39 |
| 2786 | 19.71 | AV | V | 26.64 | 4.45 | 27.55 | 23.25 | 17.25 | 54.00 | 36.75 |
| 468.44 | 42.50 | QP | V | 17.74 | 2.63 | 21.94 | 40.93 | 40.93 | 46.00 | 5.07 |
| 600.36 | 41.60 | QP | V | 19.31 | 2.98 | 22.27 | 41.62 | 41.62 | 46.00 | 4.38 |
| High Channel:5240 MHz | | | | | | | | | | |
| 5240 | 59.21 | PK | H | 31.58 | 5.28 | 0.00 | 96.07 | 90.07 | N/A | N/A |
| 5240 | 48.03 | AV | H | 31.58 | 5.28 | 0.00 | 84.89 | 78.89 | N/A | N/A |
| 5240 | 61.88 | PK | V | 31.58 | 5.28 | 0.00 | 98.74 | 92.74 | N/A | N/A |
| 5240 | 50.41 | AV | V | 31.58 | 5.28 | 0.00 | 87.27 | 81.27 | N/A | N/A |
| 5350 | 25.82 | PK | V | 31.80 | 5.61 | 0.00 | 63.23 | 57.23 | 74.00 | 16.77 |
| 5350 | 14.21 | AV | V | 31.80 | 5.61 | 0.00 | 51.62 | 45.62 | 54.00 | 8.38 |
| 10480 | 38.44 | PK | V | 37.00 | 8.23 | 26.01 | 57.66 | 51.66 | 74.00 | 22.34 |
| 10480 | 25.38 | AV | V | 37.00 | 8.23 | 26.01 | 44.60 | 38.60 | 54.00 | 15.40 |
| 15720 | 35.79 | PK | V | 37.10 | 14.20 | 24.92 | 62.17 | 56.17 | 74.00 | 17.83 |
| 15720 | 23.63 | AV | V | 37.10 | 14.20 | 24.92 | 50.01 | 44.01 | 54.00 | 9.99 |
| 6984 | 40.42 | PK | V | 33.56 | 6.36 | 26.27 | 54.07 | 48.07 | 72.74 | 24.67 |
| 6984 | 27.76 | AV | V | 33.56 | 6.36 | 26.27 | 41.41 | 35.41 | 61.27 | 25.86 |
| 2786 | 31.68 | PK | V | 26.64 | 4.45 | 27.55 | 35.22 | 29.22 | 74.00 | 44.78 |
| 2786 | 19.57 | AV | V | 26.64 | 4.45 | 27.55 | 23.11 | 17.11 | 54.00 | 36.89 |
| 468.44 | 42.20 | QP | V | 17.74 | 2.63 | 21.94 | 40.63 | 40.63 | 46.00 | 5.37 |

*Within measurement uncertainty!

802.11n ht40 Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Extrapolation result (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5190 MHz | | | | | | | | | | |
| 5190 | 58.41 | PK | H | 31.48 | 5.44 | 0.00 | 95.33 | 89.33 | N/A | N/A |
| 5190 | 45.67 | AV | H | 31.48 | 5.44 | 0.00 | 82.59 | 76.59 | N/A | N/A |
| 5190 | 59.82 | PK | V | 31.48 | 5.44 | 0.00 | 96.74 | 90.74 | N/A | N/A |
| 5190 | 47.52 | AV | V | 31.48 | 5.44 | 0.00 | 84.44 | 78.44 | N/A | N/A |
| 5150 | 26.13 | PK | V | 31.40 | 5.26 | 0.00 | 62.79 | 56.79 | 74.00 | 17.21 |
| 5150 | 15.22 | AV | V | 31.40 | 5.26 | 0.00 | 51.88 | 45.88 | 54.00 | 8.12 |
| 10380 | 33.57 | PK | V | 36.98 | 8.34 | 25.51 | 53.38 | 47.38 | 74.00 | 26.62 |
| 10380 | 21.28 | AV | V | 36.98 | 8.34 | 25.51 | 41.09 | 35.09 | 54.00 | 18.91 |
| 15570 | 36.22 | PK | V | 37.37 | 14.81 | 24.83 | 63.57 | 57.57 | 74.00 | 16.43 |
| 15570 | 24.01 | AV | V | 37.37 | 14.81 | 24.83 | 51.36 | 45.36 | 54.00 | 8.64 |
| 6922 | 39.88 | PK | V | 33.40 | 6.33 | 26.41 | 53.20 | 47.20 | 76.74 | 29.54 |
| 6922 | 27.65 | AV | V | 33.40 | 6.33 | 26.41 | 40.97 | 34.97 | 64.44 | 29.47 |
| 2786 | 32.29 | PK | V | 26.64 | 4.45 | 27.55 | 35.83 | 29.83 | 74.00 | 44.17 |
| 2786 | 19.82 | AV | V | 26.64 | 4.45 | 27.55 | 23.36 | 17.36 | 54.00 | 36.64 |
| 468.44 | 42.60 | QP | V | 17.74 | 2.63 | 21.94 | 41.03 | 41.03 | 46.00 | 4.97 |
| High Channel:5230 MHz | | | | | | | | | | |
| 5230 | 57.25 | PK | H | 31.56 | 5.33 | 0.00 | 94.14 | 88.14 | N/A | N/A |
| 5230 | 45.06 | AV | H | 31.56 | 5.33 | 0.00 | 81.95 | 75.95 | N/A | N/A |
| 5230 | 58.57 | PK | V | 31.56 | 5.33 | 0.00 | 95.46 | 89.46 | N/A | N/A |
| 5230 | 46.23 | AV | V | 31.56 | 5.33 | 0.00 | 83.12 | 77.12 | N/A | N/A |
| 5350 | 25.34 | PK | V | 31.80 | 5.61 | 0.00 | 62.75 | 56.75 | 74.00 | 17.25 |
| 5350 | 14.06 | AV | V | 31.80 | 5.61 | 0.00 | 51.47 | 45.47 | 54.00 | 8.53 |
| 10460 | 33.30 | PK | V | 36.99 | 8.25 | 25.88 | 52.66 | 46.66 | 74.00 | 27.34 |
| 10460 | 20.93 | AV | V | 36.99 | 8.25 | 25.88 | 40.29 | 34.29 | 54.00 | 19.71 |
| 15690 | 35.84 | PK | V | 37.16 | 14.32 | 24.87 | 62.45 | 56.45 | 74.00 | 17.55 |
| 15690 | 23.69 | AV | V | 37.16 | 14.32 | 24.87 | 50.30 | 44.30 | 54.00 | 9.70 |
| 6973 | 39.39 | PK | V | 33.53 | 6.36 | 26.30 | 52.98 | 46.98 | 75.46 | 28.48 |
| 6973 | 27.20 | AV | V | 33.53 | 6.36 | 26.30 | 40.79 | 34.79 | 63.12 | 28.33 |
| 2786 | 32.05 | PK | V | 26.64 | 4.45 | 27.55 | 35.59 | 29.59 | 74.00 | 44.41 |
| 2786 | 19.74 | AV | V | 26.64 | 4.45 | 27.55 | 23.28 | 17.28 | 54.00 | 36.72 |
| 468.44 | 42.40 | QP | V | 17.74 | 2.63 | 21.94 | 40.83 | 40.83 | 46.00 | 5.17 |

*Within measurement uncertainty!

5725MHz-5850MHz: 802.11a Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Extrapolation result (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5745 MHz | | | | | | | | | | |
| 5745 | 60.38 | PK | H | 32.15 | 5.53 | 0.00 | 98.06 | 92.06 | N/A | N/A |
| 5745 | 48.52 | AV | H | 32.15 | 5.53 | 0.00 | 86.20 | 80.20 | N/A | N/A |
| 5745 | 58.86 | PK | V | 32.15 | 5.53 | 0.00 | 96.54 | 90.54 | N/A | N/A |
| 5745 | 46.75 | AV | V | 32.15 | 5.53 | 0.00 | 84.43 | 78.43 | N/A | N/A |
| 5725 | 25.69 | PK | V | 32.15 | 5.60 | 0.00 | 63.44 | 57.44 | 78.20 | 20.76 |
| 5715 | 25.03 | PK | V | 32.14 | 5.63 | 0.00 | 62.80 | 56.80 | 68.20 | 11.40 |
| 11490 | 35.92 | PK | V | 37.89 | 8.94 | 26.14 | 56.61 | 50.61 | 74.00 | 23.39 |
| 11490 | 22.77 | AV | V | 37.89 | 8.94 | 26.14 | 43.46 | 37.46 | 54.00 | 16.54 |
| 17235 | 35.98 | PK | V | 40.91 | 13.69 | 25.63 | 64.95 | 58.95 | 74.00 | 15.05 |
| 17235 | 23.39 | AV | V | 40.91 | 13.69 | 25.63 | 52.36 | 46.36 | 54.00 | 7.64 |
| 4867 | 35.26 | PK | V | 30.75 | 5.09 | 27.42 | 43.68 | 37.68 | 74.00 | 36.32 |
| 4867 | 22.89 | AV | V | 30.75 | 5.09 | 27.42 | 31.31 | 25.31 | 54.00 | 28.69 |
| 7534 | 34.33 | PK | V | 34.83 | 6.94 | 26.23 | 49.87 | 43.87 | 74.00 | 30.13 |
| 7534 | 22.04 | AV | V | 34.83 | 6.94 | 26.23 | 37.58 | 31.58 | 54.00 | 22.42 |
| 468.44 | 42.10 | QP | V | 17.74 | 2.63 | 21.94 | 40.53 | 40.53 | 46.00 | 5.47 |
| Middle Channel:5785 MHz | | | | | | | | | | |
| 5785 | 61.18 | PK | H | 32.16 | 5.47 | 0.00 | 98.81 | 92.81 | N/A | N/A |
| 5785 | 48.87 | AV | H | 32.16 | 5.47 | 0.00 | 86.50 | 80.50 | N/A | N/A |
| 5785 | 59.22 | PK | V | 32.16 | 5.47 | 0.00 | 96.85 | 90.85 | N/A | N/A |
| 5785 | 47.08 | AV | V | 32.16 | 5.47 | 0.00 | 84.71 | 78.71 | N/A | N/A |
| 11570 | 35.96 | PK | V | 37.90 | 8.92 | 26.07 | 56.71 | 50.71 | 74.00 | 23.29 |
| 11570 | 22.74 | AV | V | 37.90 | 8.92 | 26.07 | 43.49 | 37.49 | 54.00 | 16.51 |
| 17355 | 35.87 | PK | V | 41.63 | 12.99 | 25.63 | 64.86 | 58.86 | 74.00 | 15.14 |
| 17355 | 23.36 | AV | V | 41.63 | 12.99 | 25.63 | 52.35 | 46.35 | 54.00 | 7.65 |
| 4867 | 34.92 | PK | V | 30.75 | 5.09 | 27.42 | 43.34 | 37.34 | 74.00 | 36.66 |
| 4867 | 22.48 | AV | V | 30.75 | 5.09 | 27.42 | 30.90 | 24.90 | 54.00 | 29.10 |
| 7534 | 36.09 | PK | V | 34.83 | 6.94 | 26.23 | 51.63 | 45.63 | 74.00 | 28.37 |
| 7534 | 23.98 | AV | V | 34.83 | 6.94 | 26.23 | 39.52 | 33.52 | 54.00 | 20.48 |
| 468.44 | 42.50 | QP | V | 17.74 | 2.63 | 21.94 | 40.93 | 40.93 | 46.00 | 5.07 |
| 600.36 | 41.60 | QP | V | 19.31 | 2.98 | 22.27 | 41.62 | 41.62 | 46.00 | 4.38 |
| High Channel:5825 MHz | | | | | | | | | | |
| 5825 | 60.56 | PK | H | 32.17 | 5.75 | 0.00 | 98.48 | 92.48 | N/A | N/A |
| 5825 | 58.74 | AV | H | 32.17 | 5.75 | 0.00 | 96.66 | 90.66 | N/A | N/A |
| 5825 | 59.01 | PK | V | 32.17 | 5.75 | 0.00 | 96.93 | 90.93 | N/A | N/A |
| 5825 | 47.12 | AV | V | 32.17 | 5.75 | 0.00 | 85.04 | 79.04 | N/A | N/A |
| 5850 | 26.34 | PK | V | 32.17 | 6.05 | 0.00 | 64.56 | 58.56 | 78.20 | 19.64 |
| 5860 | 25.86 | PK | V | 32.17 | 6.02 | 0.00 | 64.05 | 58.05 | 68.20 | 10.15 |
| 11650 | 35.98 | PK | V | 37.90 | 8.90 | 25.75 | 57.03 | 51.03 | 74.00 | 22.97 |
| 11650 | 22.92 | AV | V | 37.90 | 8.90 | 25.75 | 43.97 | 37.97 | 54.00 | 16.03 |
| 17475 | 35.97 | PK | V | 42.35 | 12.30 | 25.39 | 65.23 | 59.23 | 74.00 | 14.77 |
| 17475 | 23.21 | AV | V | 42.35 | 12.30 | 25.39 | 52.47 | 46.47 | 54.00 | 7.53 |
| 4867 | 34.97 | PK | V | 30.75 | 5.09 | 27.42 | 43.39 | 37.39 | 74.00 | 36.61 |
| 4867 | 22.38 | AV | V | 30.75 | 5.09 | 27.42 | 30.80 | 24.80 | 54.00 | 29.20 |
| 7534 | 36.00 | PK | V | 34.83 | 6.94 | 26.23 | 51.54 | 45.54 | 74.00 | 28.46 |
| 7534 | 23.92 | AV | V | 34.83 | 6.94 | 26.23 | 39.46 | 33.46 | 54.00 | 20.54 |
| 468.44 | 42.40 | QP | V | 17.74 | 2.63 | 21.94 | 40.83 | 40.83 | 46.00 | 5.17 |

*Within measurement uncertainty!

802.11n ht20 Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBµV/m) | Extrapolation result (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBµV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5745 MHz | | | | | | | | | | |
| 5745 | 59.86 | PK | H | 32.15 | 5.53 | 0.00 | 97.54 | 91.54 | N/A | N/A |
| 5745 | 47.92 | AV | H | 32.15 | 5.53 | 0.00 | 85.60 | 79.60 | N/A | N/A |
| 5745 | 58.94 | PK | V | 32.15 | 5.53 | 0.00 | 96.62 | 90.62 | N/A | N/A |
| 5745 | 46.8 | AV | V | 32.15 | 5.53 | 0.00 | 84.48 | 78.48 | N/A | N/A |
| 5725 | 25.12 | PK | V | 32.15 | 5.60 | 0.00 | 62.87 | 56.87 | 78.20 | 21.33 |
| 5715 | 24.56 | PK | V | 32.14 | 5.63 | 0.00 | 62.33 | 56.33 | 68.20 | 11.87 |
| 11490 | 35.88 | PK | V | 37.89 | 8.94 | 26.14 | 56.57 | 50.57 | 74.00 | 23.43 |
| 11490 | 22.93 | AV | V | 37.89 | 8.94 | 26.14 | 43.62 | 37.62 | 54.00 | 16.38 |
| 17235 | 35.91 | PK | V | 40.91 | 13.69 | 25.63 | 64.88 | 58.88 | 74.00 | 15.12 |
| 17235 | 23.37 | AV | V | 40.91 | 13.69 | 25.63 | 52.34 | 46.34 | 54.00 | 7.66 |
| 4867 | 35.02 | PK | V | 30.75 | 5.09 | 27.42 | 43.44 | 37.44 | 74.00 | 36.56 |
| 4867 | 22.43 | AV | V | 30.75 | 5.09 | 27.42 | 30.85 | 24.85 | 54.00 | 29.15 |
| 7534 | 36.10 | PK | V | 34.83 | 6.94 | 26.23 | 51.64 | 45.64 | 74.00 | 28.36 |
| 7534 | 24.00 | AV | V | 34.83 | 6.94 | 26.23 | 39.54 | 33.54 | 54.00 | 20.46 |
| 468.44 | 42.20 | QP | V | 17.74 | 2.63 | 21.94 | 40.63 | 40.63 | 46.00 | 5.37 |
| Middle Channel:5785 MHz | | | | | | | | | | |
| 5785 | 61.39 | PK | H | 32.16 | 5.47 | 0.00 | 99.02 | 93.02 | N/A | N/A |
| 5785 | 49.04 | AV | H | 32.16 | 5.47 | 0.00 | 86.67 | 80.67 | N/A | N/A |
| 5785 | 58.82 | PK | V | 32.16 | 5.47 | 0.00 | 96.45 | 90.45 | N/A | N/A |
| 5785 | 46.81 | AV | V | 32.16 | 5.47 | 0.00 | 84.44 | 78.44 | N/A | N/A |
| 11570 | 36.04 | PK | V | 37.90 | 8.92 | 26.07 | 56.79 | 50.79 | 74.00 | 23.21 |
| 11570 | 22.76 | AV | V | 37.90 | 8.92 | 26.07 | 43.51 | 37.51 | 54.00 | 16.49 |
| 17355 | 35.95 | PK | V | 41.63 | 12.99 | 25.63 | 64.94 | 58.94 | 74.00 | 15.06 |
| 17355 | 23.27 | AV | V | 41.63 | 12.99 | 25.63 | 52.26 | 46.26 | 54.00 | 7.74 |
| 4867 | 34.94 | PK | V | 30.75 | 5.09 | 27.42 | 43.36 | 37.36 | 74.00 | 36.64 |
| 4867 | 22.55 | AV | V | 30.75 | 5.09 | 27.42 | 30.97 | 24.97 | 54.00 | 29.03 |
| 7534 | 36.18 | PK | V | 34.83 | 6.94 | 26.23 | 51.72 | 45.72 | 74.00 | 28.28 |
| 7534 | 23.82 | AV | V | 34.83 | 6.94 | 26.23 | 39.36 | 33.36 | 54.00 | 20.64 |
| 468.44 | 42.10 | QP | V | 17.74 | 2.63 | 21.94 | 40.53 | 40.53 | 46.00 | 5.47 |
| 600.36 | 41.30 | QP | V | 19.31 | 2.98 | 22.27 | 41.32 | 41.32 | 46.00 | 4.68 |
| High Channel:5825 MHz | | | | | | | | | | |
| 5825 | 61.04 | PK | H | 32.17 | 5.75 | 0.00 | 98.96 | 92.96 | N/A | N/A |
| 5825 | 48.79 | AV | H | 32.17 | 5.75 | 0.00 | 86.71 | 80.71 | N/A | N/A |
| 5825 | 58.66 | PK | V | 32.17 | 5.75 | 0.00 | 96.58 | 90.58 | N/A | N/A |
| 5825 | 46.52 | AV | V | 32.17 | 5.75 | 0.00 | 84.44 | 78.44 | N/A | N/A |
| 5850 | 26.26 | PK | V | 32.17 | 6.05 | 0.00 | 64.48 | 58.48 | 78.20 | 19.72 |
| 5860 | 25.87 | PK | V | 32.17 | 6.02 | 0.00 | 64.06 | 58.06 | 68.20 | 10.14 |
| 11650 | 35.93 | PK | V | 37.90 | 8.90 | 25.75 | 56.98 | 50.98 | 74.00 | 23.02 |
| 11650 | 22.87 | AV | V | 37.90 | 8.90 | 25.75 | 43.92 | 37.92 | 54.00 | 16.08 |
| 17475 | 35.82 | PK | V | 42.35 | 12.30 | 25.39 | 65.08 | 59.08 | 74.00 | 14.92 |
| 17475 | 23.34 | AV | V | 42.35 | 12.30 | 25.39 | 52.60 | 46.60 | 54.00 | 7.40 |
| 4867 | 34.89 | PK | V | 30.75 | 5.09 | 27.42 | 43.31 | 37.31 | 74.00 | 36.69 |
| 4867 | 22.51 | AV | V | 30.75 | 5.09 | 27.42 | 30.93 | 24.93 | 54.00 | 29.07 |
| 7534 | 36.03 | PK | V | 34.83 | 6.94 | 26.23 | 51.57 | 45.57 | 74.00 | 28.43 |
| 7534 | 23.99 | AV | V | 34.83 | 6.94 | 26.23 | 39.53 | 33.53 | 54.00 | 20.47 |
| 468.44 | 42.50 | QP | V | 17.74 | 2.63 | 21.94 | 40.93 | 40.93 | 46.00 | 5.07 |

*Within measurement uncertainty!

802.11n ht40 Mode:

| Frequency | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Extrapolation result (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | | | |
| Low Channel:5755 MHz | | | | | | | | | | |
| 5755 | 58.62 | PK | H | 32.15 | 5.50 | 0.00 | 96.27 | 90.27 | N/A | N/A |
| 5755 | 46.58 | AV | H | 32.15 | 5.50 | 0.00 | 84.23 | 78.23 | N/A | N/A |
| 5755 | 56.45 | PK | V | 32.15 | 5.50 | 0.00 | 94.10 | 88.10 | N/A | N/A |
| 5755 | 44.32 | AV | V | 32.15 | 5.50 | 0.00 | 81.97 | 75.97 | N/A | N/A |
| 5725 | 25.74 | PK | V | 32.15 | 5.60 | 0.00 | 63.49 | 57.49 | 78.20 | 20.71 |
| 5715 | 25.28 | PK | V | 32.14 | 5.63 | 0.00 | 63.05 | 57.05 | 68.20 | 11.15 |
| 11510 | 35.56 | PK | V | 37.90 | 8.95 | 26.12 | 56.29 | 50.29 | 74.00 | 23.71 |
| 11510 | 22.63 | AV | V | 37.90 | 8.95 | 26.12 | 43.36 | 37.36 | 54.00 | 16.64 |
| 17265 | 35.68 | PK | V | 41.09 | 13.51 | 25.63 | 64.65 | 58.65 | 74.00 | 15.35 |
| 17265 | 23.11 | AV | V | 41.09 | 13.51 | 25.63 | 52.08 | 46.08 | 54.00 | 7.92 |
| 4867 | 34.72 | PK | V | 30.75 | 5.09 | 27.42 | 43.14 | 37.14 | 74.00 | 36.86 |
| 4867 | 22.25 | AV | V | 30.75 | 5.09 | 27.42 | 30.67 | 24.67 | 54.00 | 29.33 |
| 7534 | 35.88 | PK | V | 34.83 | 6.94 | 26.23 | 51.42 | 45.42 | 74.00 | 28.58 |
| 7534 | 23.71 | AV | V | 34.83 | 6.94 | 26.23 | 39.25 | 33.25 | 54.00 | 20.75 |
| 468.44 | 42.60 | QP | V | 17.74 | 2.63 | 21.94 | 41.03 | 41.03 | 46.00 | 4.97 |
| High Channel:5795 MHz | | | | | | | | | | |
| 5795 | 59.83 | PK | H | 32.16 | 5.46 | 0.00 | 97.45 | 91.45 | N/A | N/A |
| 5795 | 47.70 | AV | H | 32.16 | 5.46 | 0.00 | 85.32 | 79.32 | N/A | N/A |
| 5795 | 58.07 | PK | V | 32.16 | 5.46 | 0.00 | 95.69 | 89.69 | N/A | N/A |
| 5795 | 45.88 | AV | V | 32.16 | 5.46 | 0.00 | 83.50 | 77.50 | N/A | N/A |
| 5850 | 26.41 | PK | V | 32.17 | 6.05 | 0.00 | 64.63 | 58.63 | 78.20 | 19.57 |
| 5860 | 25.88 | PK | V | 32.17 | 6.02 | 0.00 | 64.07 | 58.07 | 68.20 | 10.13 |
| 11590 | 35.68 | PK | V | 37.90 | 8.92 | 26.06 | 56.44 | 50.44 | 74.00 | 23.56 |
| 11590 | 23.04 | AV | V | 37.90 | 8.92 | 26.06 | 43.80 | 37.80 | 54.00 | 16.20 |
| 17385 | 36.12 | PK | V | 41.81 | 12.82 | 25.63 | 65.12 | 59.12 | 74.00 | 14.88 |
| 17385 | 23.58 | AV | V | 41.81 | 12.82 | 25.63 | 52.58 | 46.58 | 54.00 | 7.42 |
| 4867 | 35.17 | PK | V | 30.75 | 5.09 | 27.42 | 43.59 | 37.59 | 74.00 | 36.41 |
| 4867 | 22.69 | AV | V | 30.75 | 5.09 | 27.42 | 31.11 | 25.11 | 54.00 | 28.89 |
| 7534 | 36.33 | PK | V | 34.83 | 6.94 | 26.23 | 51.87 | 45.87 | 74.00 | 28.13 |
| 7534 | 24.07 | AV | V | 34.83 | 6.94 | 26.23 | 39.61 | 33.61 | 54.00 | 20.39 |
| 468.44 | 42.40 | QP | V | 17.74 | 2.63 | 21.94 | 40.83 | 40.83 | 46.00 | 5.17 |

*Within measurement uncertainty!

# FCC§15.407(b) –CONDUCTED SPURIOUS EMISSION AT ANTENNA PORT

## Applicable Standard

FCC §15.407;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: 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.

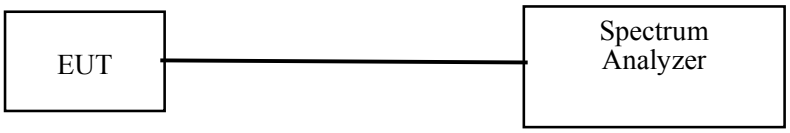
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(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.

## Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The Resolution bandwidth is set to 1MHz, The Video bandwidth is set to ≥ 1MHz, report the peak value out of the oprating band. Offset the antenna gain and cable loss.
3. Repeat above procedures until all frequencies measured were complete.



## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSEM | 831259/019 | 2015-05-09 | 2016-05-09 |
| Agilent | Spectrum Analyzer | 8564E | 3943A01781 | 2015-05-09 | 2016-05-09 |
| E-Microwave | DC Blocking | EMDCB-00036 | 0E01201047 | 2015-05-06 | 2016-05-06 |

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

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 27.3-27.4 °C |
| **Relative Humidity:** | 56-57 % |
| **ATM Pressure:** | 99.4-100 kPa |

*The testing was performed by Allen Qiao on 2015-08-24 and 2015-08-28.*

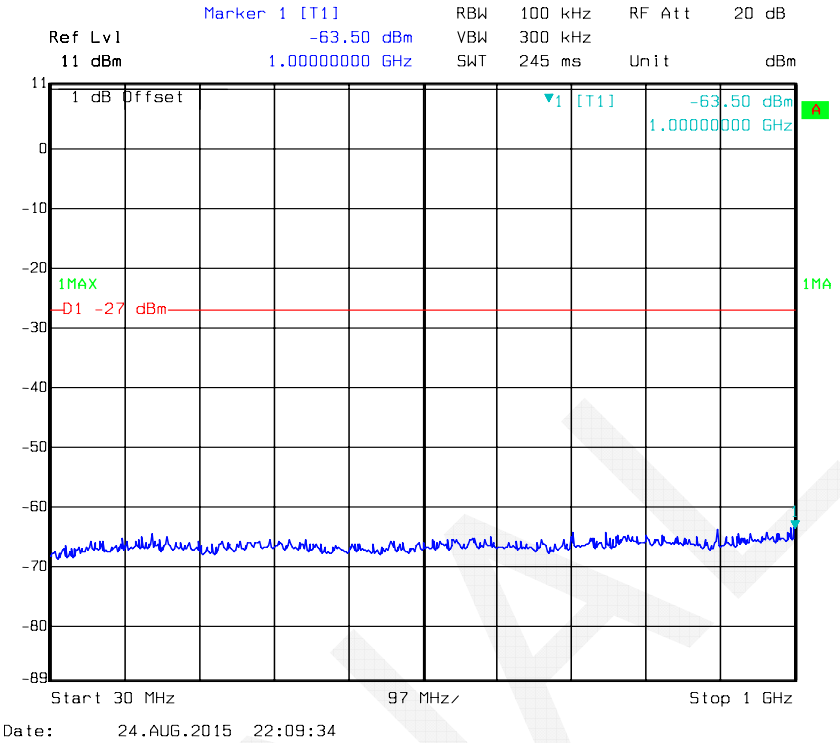
**Result:** Compliance.

Please refer to the following table and plots.

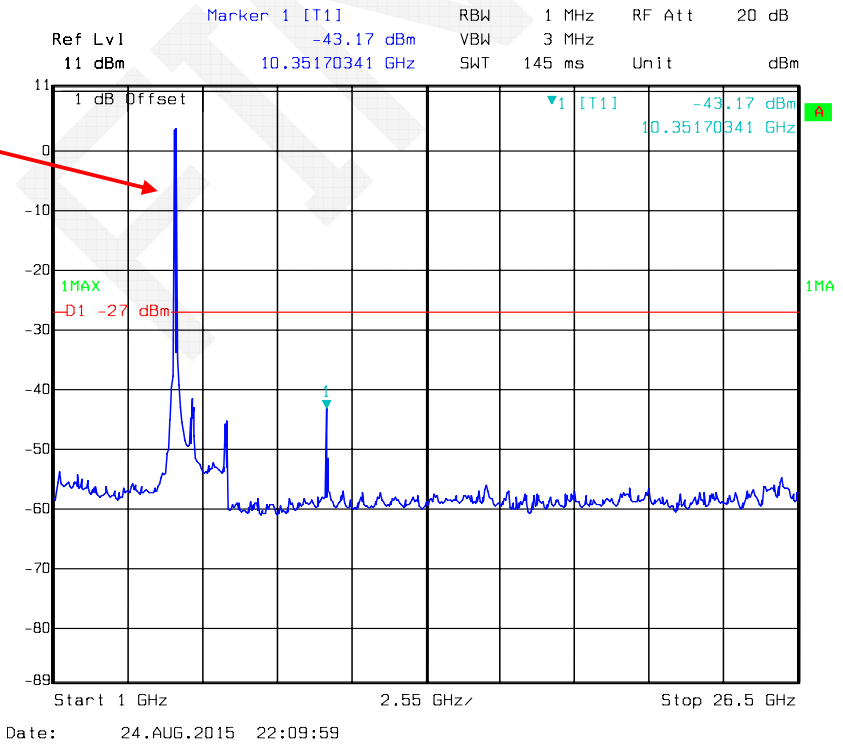
| Mode | Mode | Channel | Frequency | Conducted Spurious Emissions | | | |
|---|---|---|---|---|---|---|---|
| | | | MHz | Reading(dBm/MHz) | Antenna Gain(dBi) | EIRP(dBm/MHz) | Limits |
| 5150-5250MHz | 802.11a | Low | 5180 | -43.17 | 2.31 | -40.86 | -27 |
| | | Middle | 5200 | -42.44 | 2.31 | -40.13 | -27 |
| | | High | 5240 | -40.22 | 2.31 | -37.91 | -27 |
| | 802.11n20 | Low | 5180 | -43.99 | 2.31 | -41.68 | -27 |
| | | Middle | 5200 | -40.32 | 2.31 | -38.01 | -27 |
| | | High | 5240 | -39.72 | 2.31 | -37.41 | -27 |
| | 802.11n40 | Low | 5190 | -40.9 | 2.31 | -38.59 | -27 |
| | | High | 5230 | -42.52 | 2.31 | -40.21 | -27 |
| 5725-5850MHz | 802.11a | Low | 5745 | -53.66 | 2.31 | -51.35 | -27 |
| | | Middle | 5785 | -54.24 | 2.31 | -51.93 | -27 |
| | | High | 5825 | -53.28 | 2.31 | -50.97 | -27 |
| | 802.11n20 | Low | 5745 | -52.81 | 2.31 | -50.5 | -27 |
| | | Middle | 5785 | -53.46 | 2.31 | -51.15 | -27 |
| | | High | 5825 | -53.58 | 2.31 | -51.27 | -27 |
| | 802.11n40 | Low | 5755 | -45.02 | 2.31 | -42.71 | -27 |
| | | High | 5795 | -44.77 | 2.31 | -42.46 | -27 |

5150MHz-5250MHz:

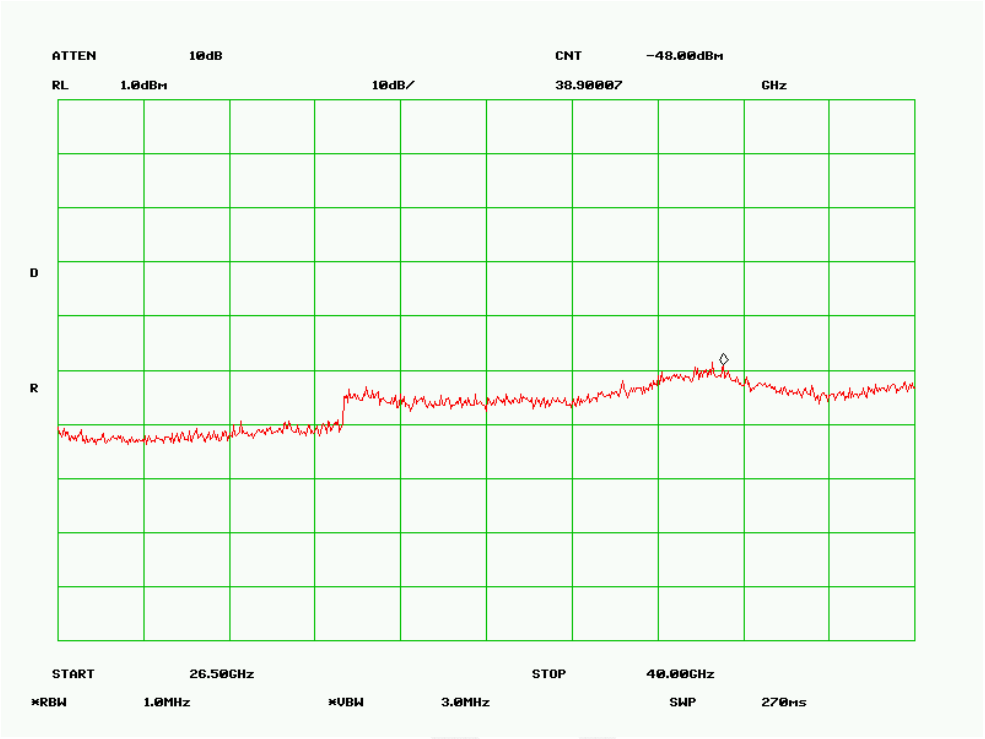
**802.11a Low Channel 30MHz-1GHz**



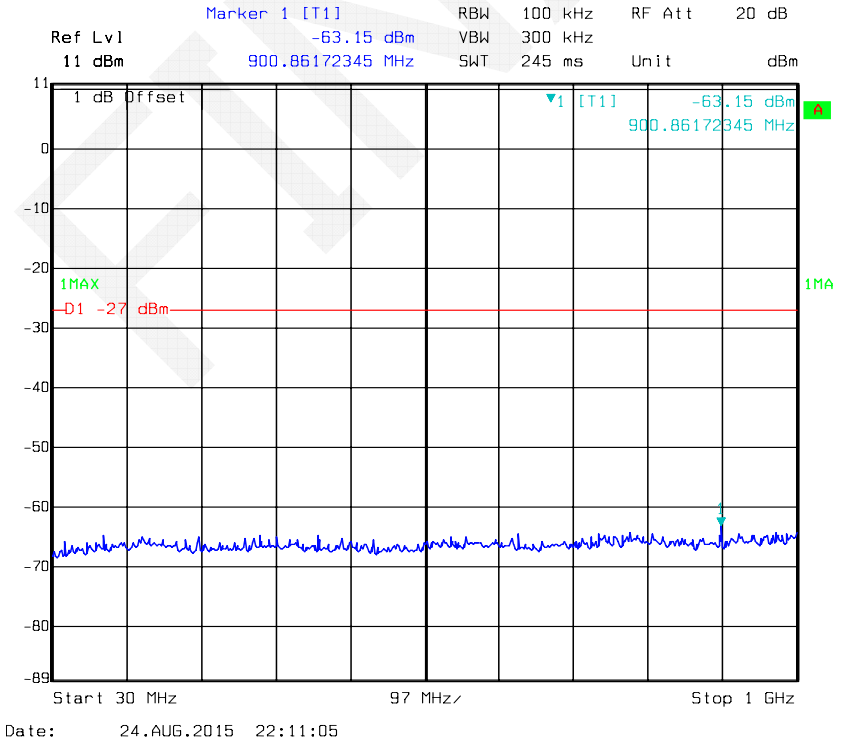

**802.11a Low Channel 1GHz-26.5GHz**



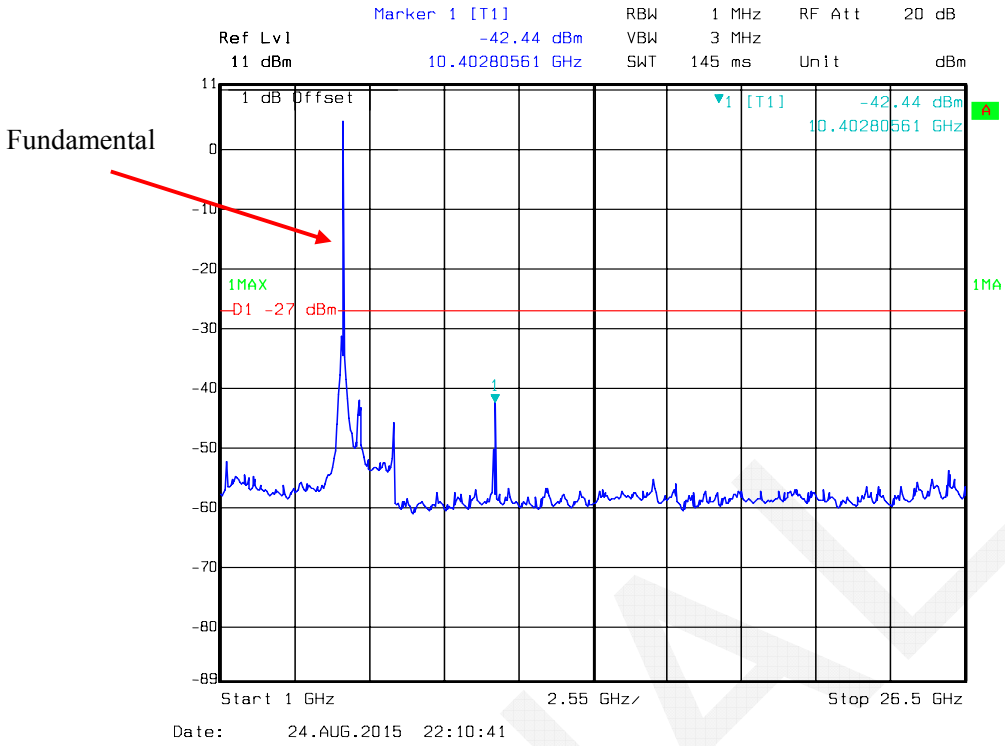

Fundamental

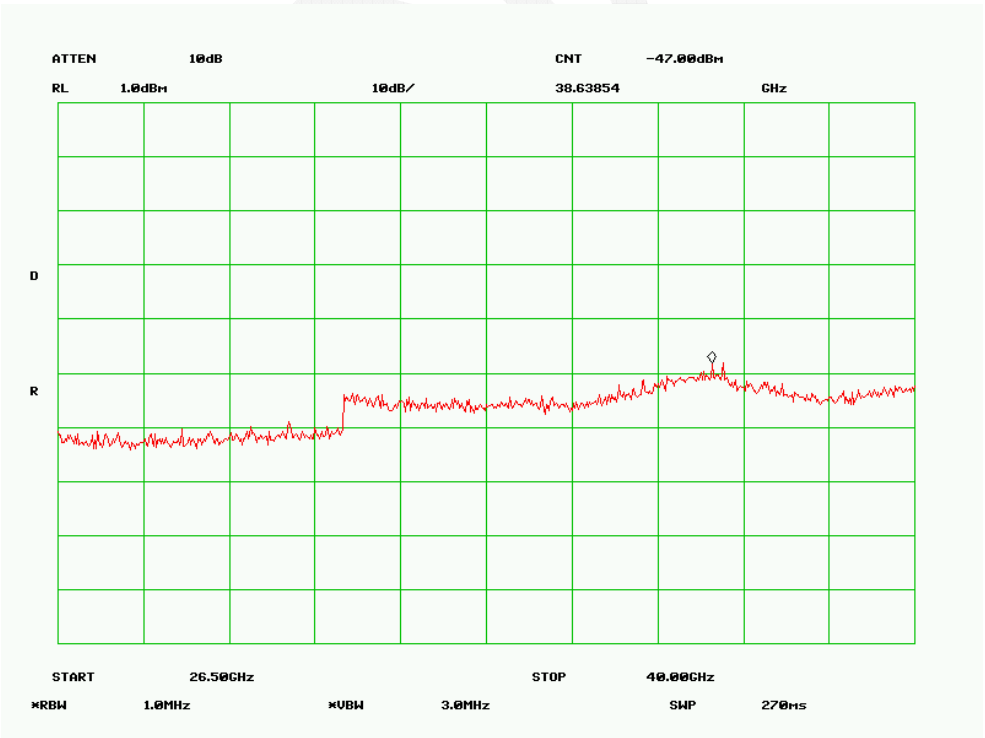



**802.11a Middle Channel 30MHz -1GHz**

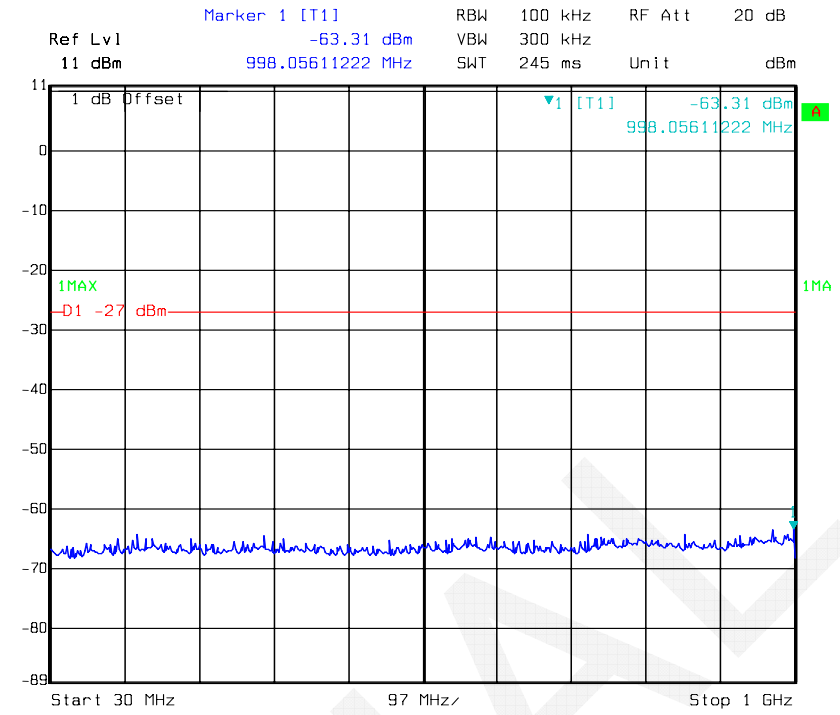


**802.11a Middle Channel 1GHz-26.5GHz**

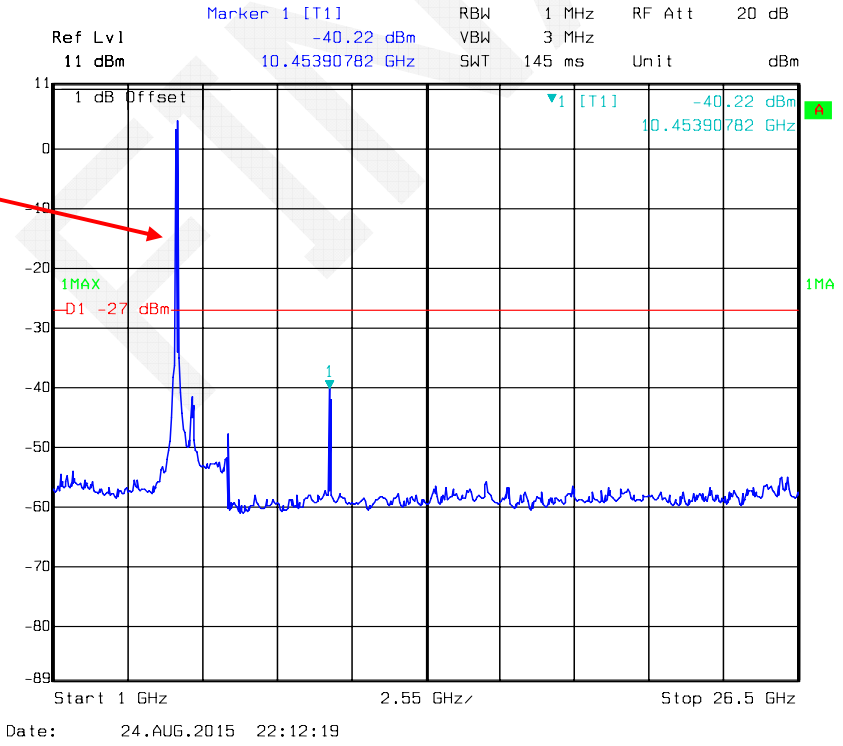


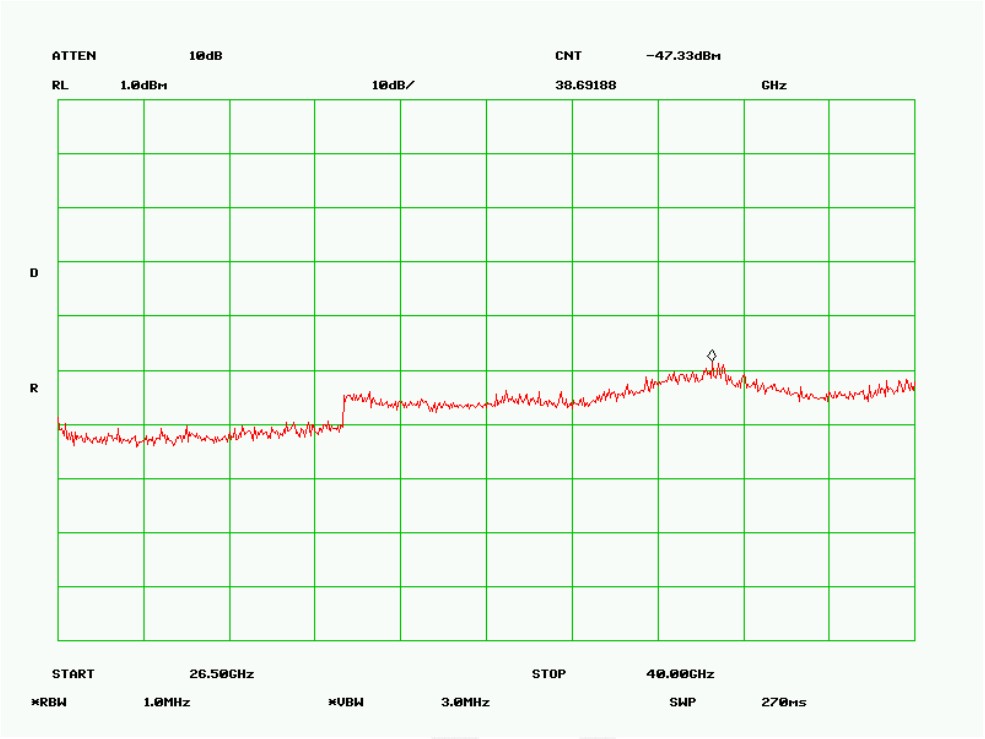
## 802.11a High Channel 30MHz-1GHz



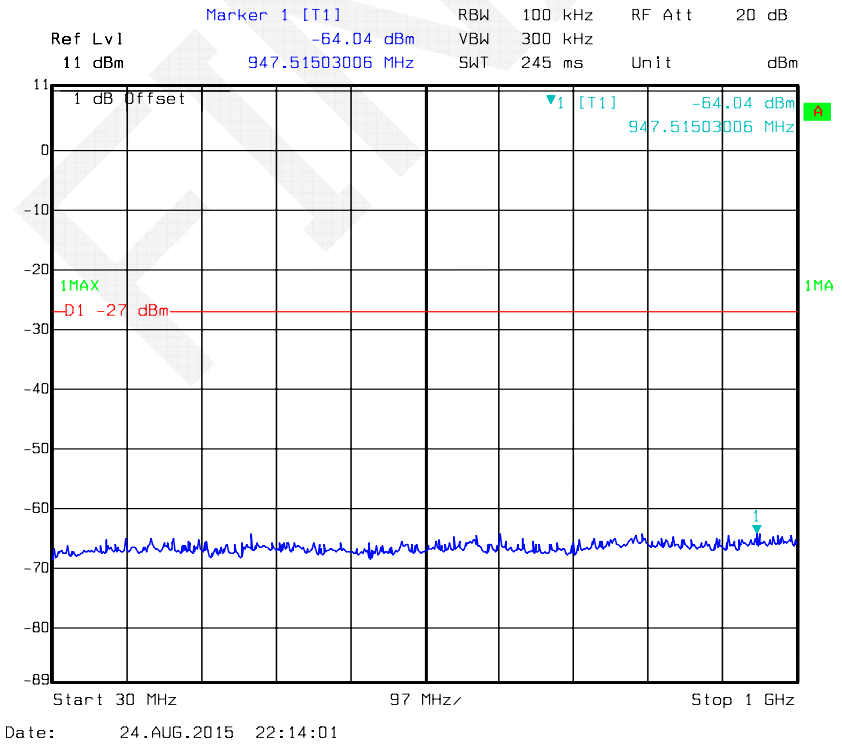

## 802.11a High Channel 1GHz-26.5GHz



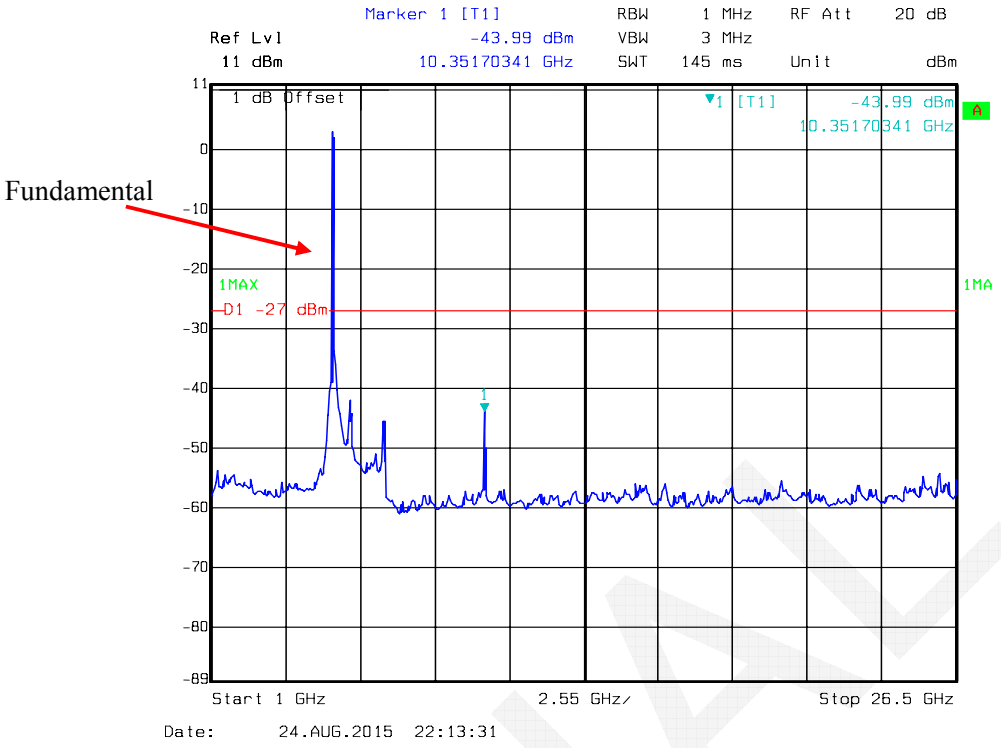

Fundamental

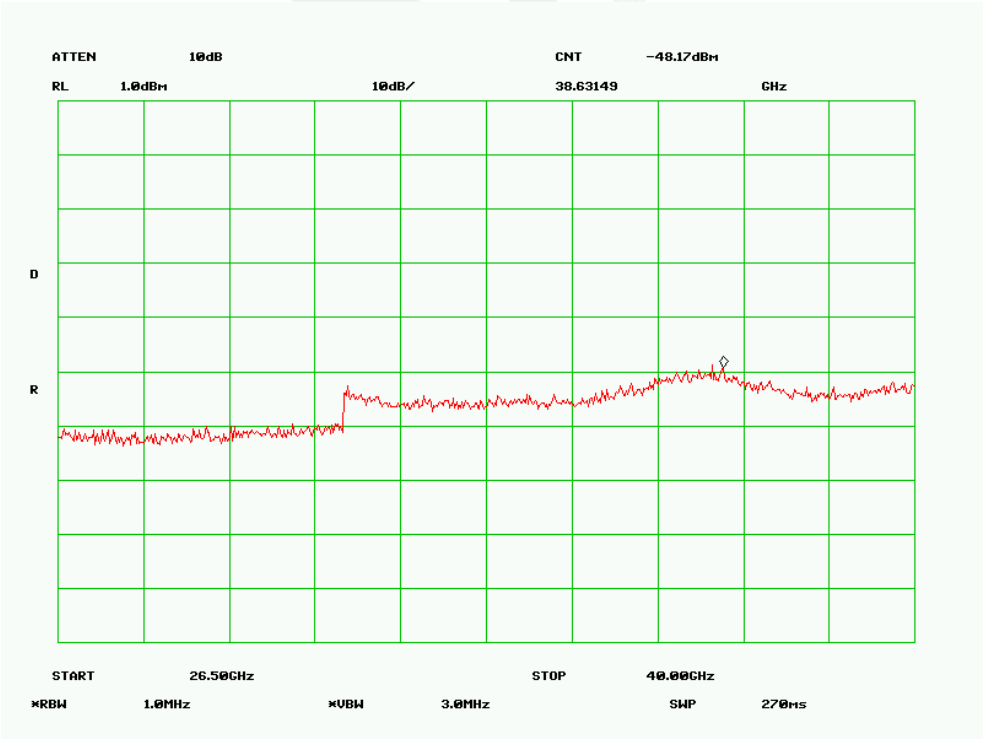



**802.11n ht20 Low Channel 30MHz-1GHz**

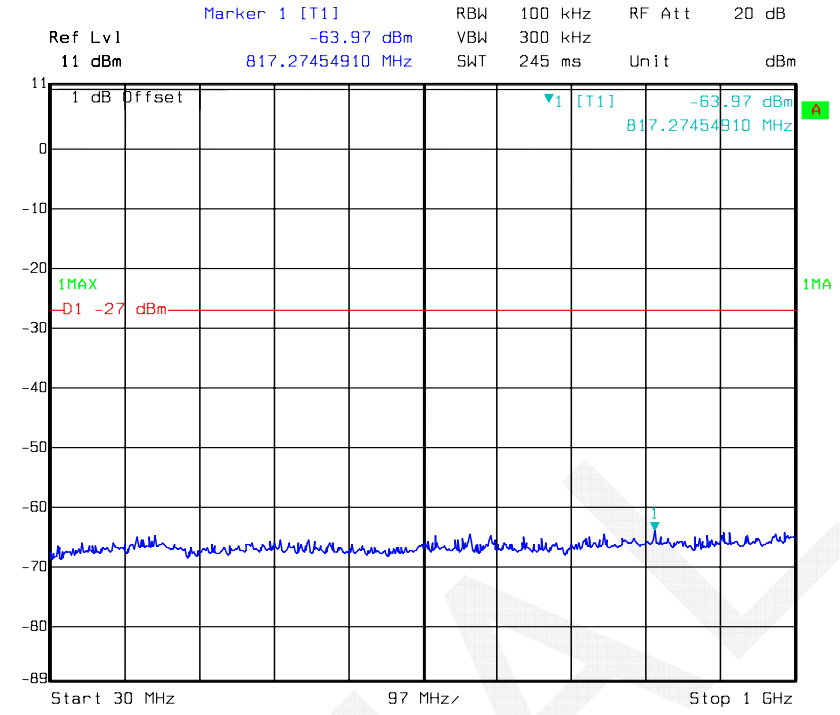


**802.11n ht20 Low Channel 1GHz-26.5GHz**

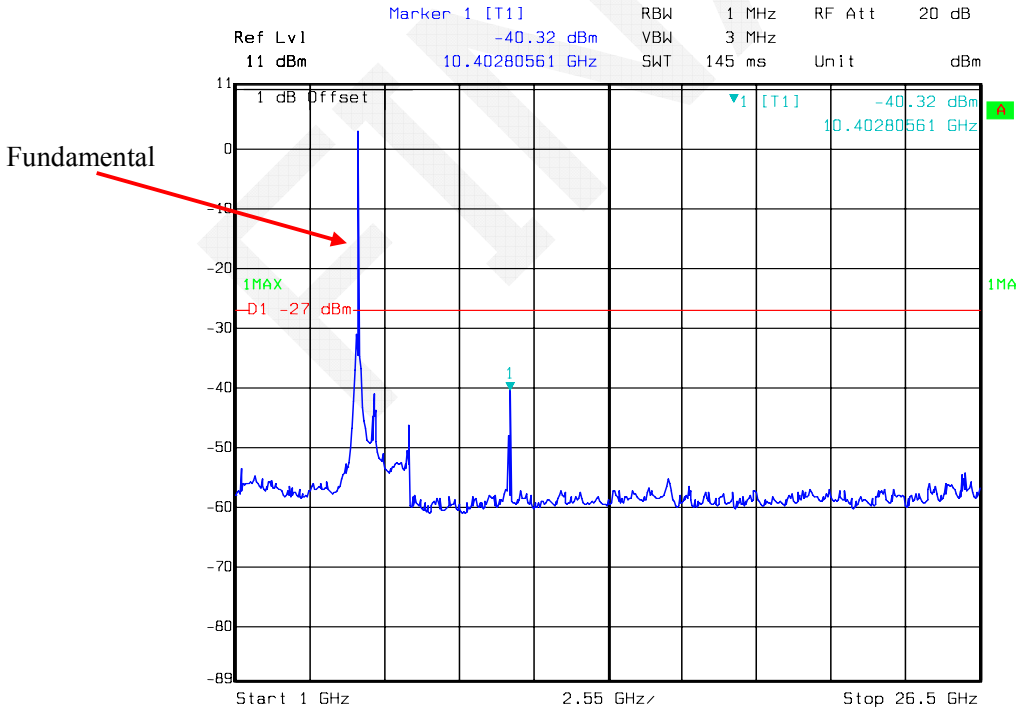


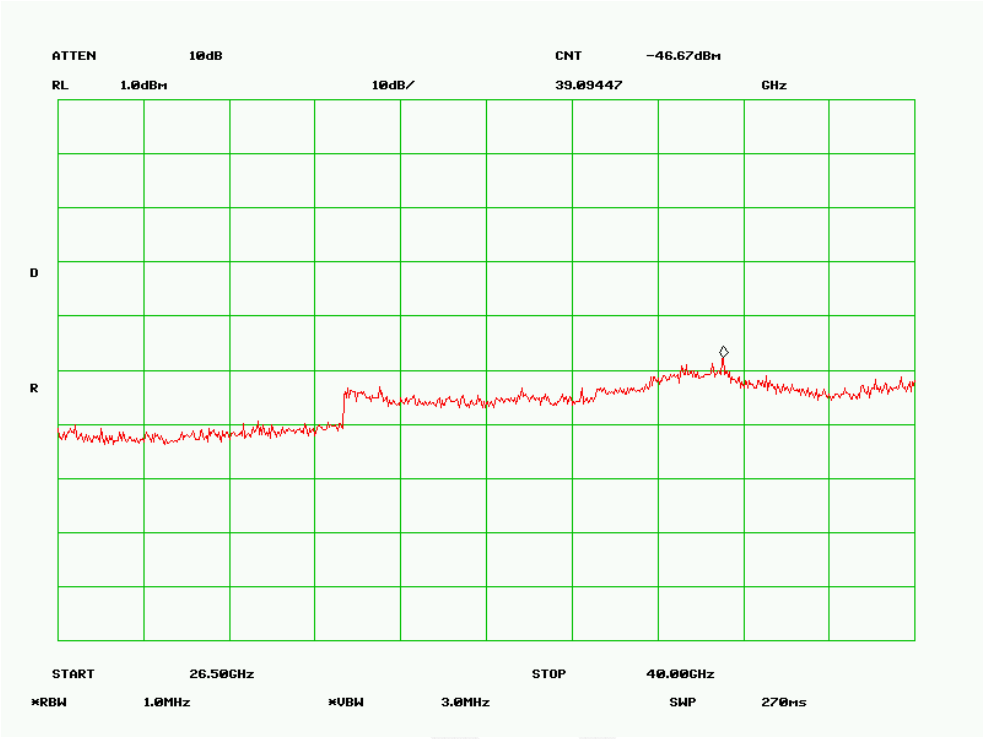



**802.11n ht20 Middle Channel 30MHz -1GHz**

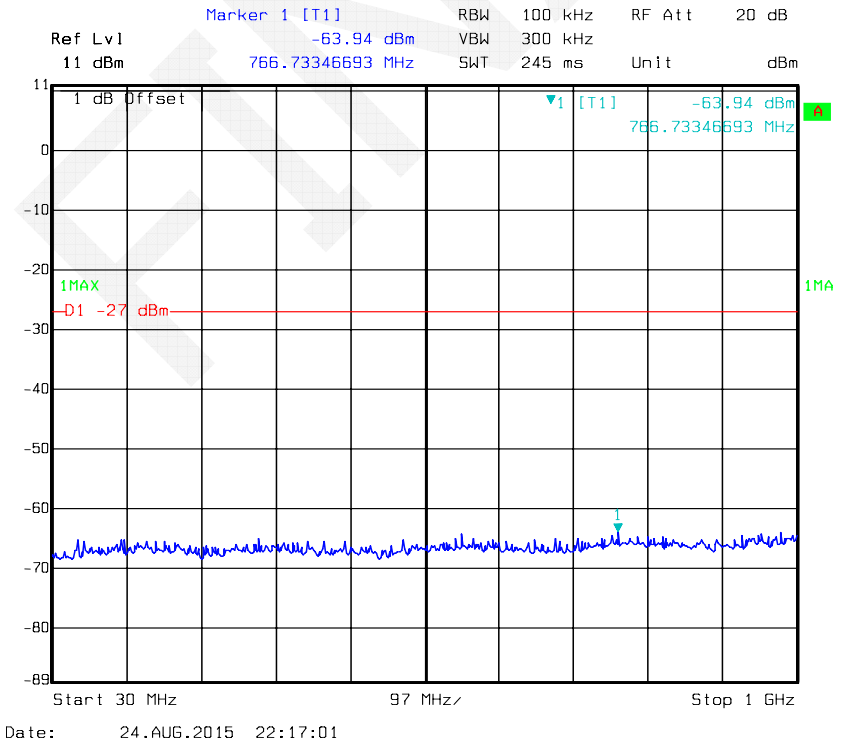



**802.11n ht20 Middle Channel 1GHz-26.5GHz**



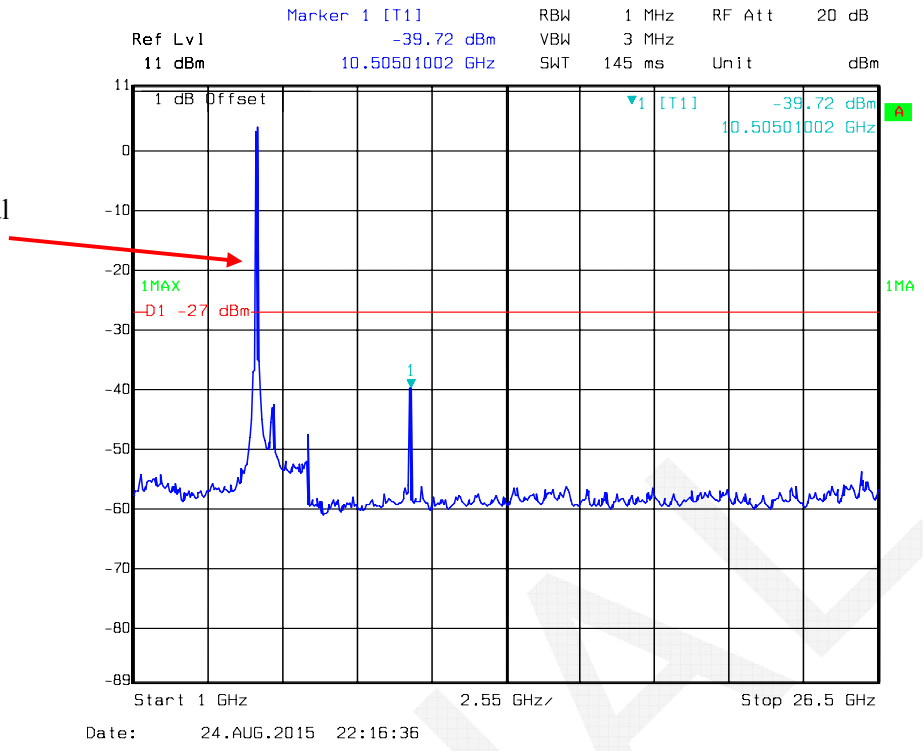


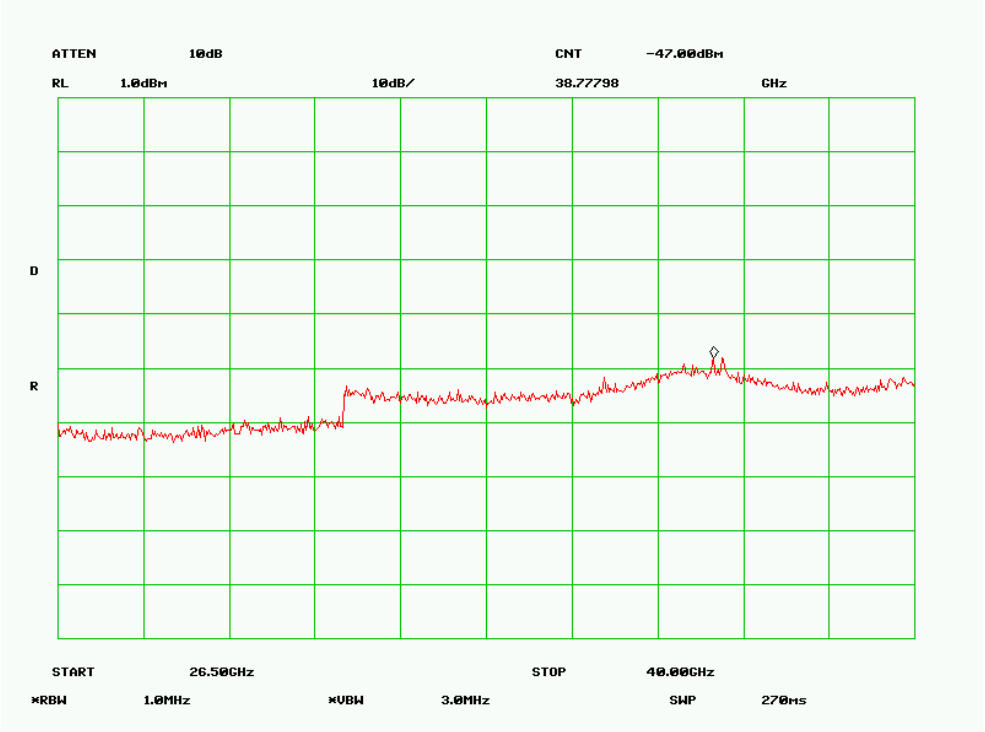

**802.11n ht20 High Channel 30MHz-1GHz**



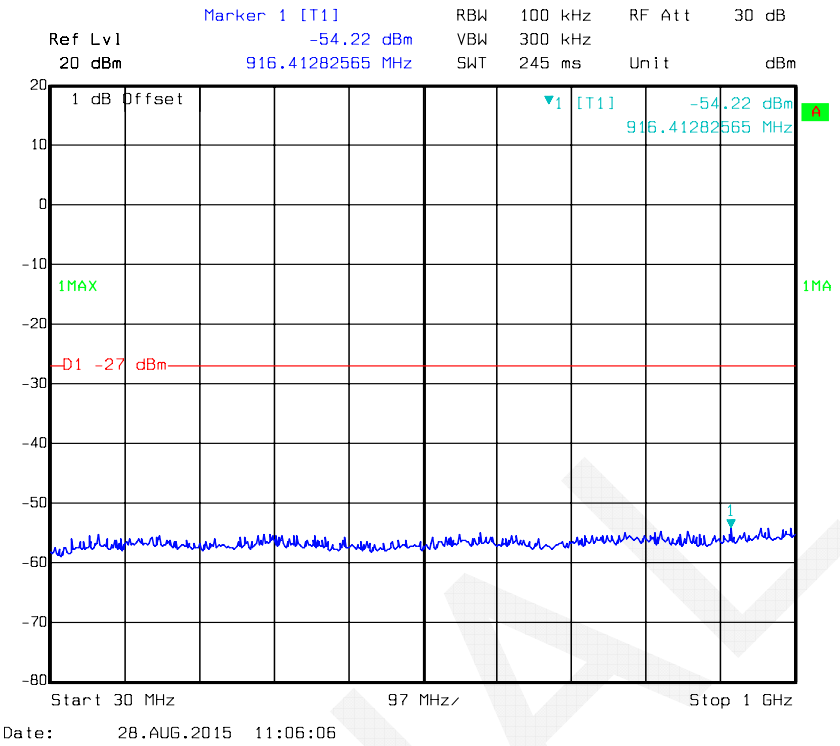
**802.11n ht20 High Channel 1GHz-26.5GHz**

Fundamental

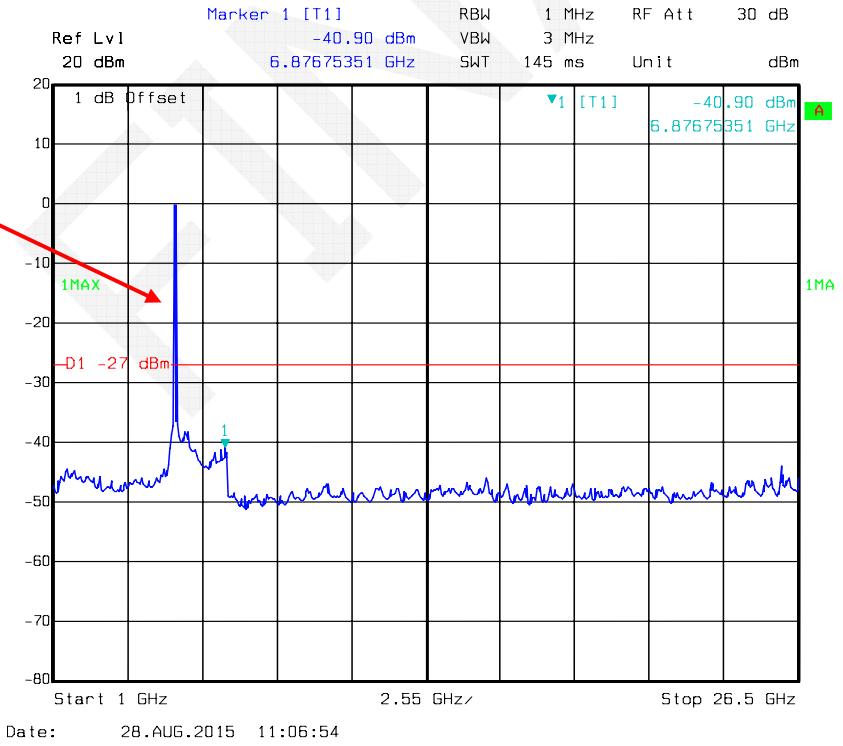


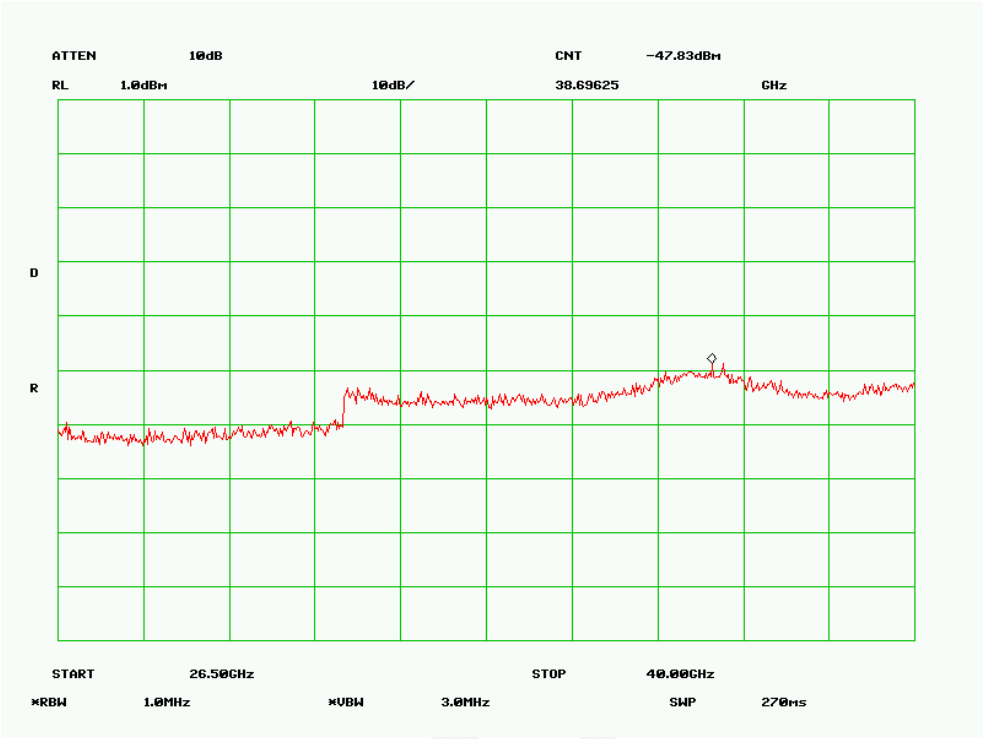
**802.11n ht40 Low Channel 30MHz-1GHz**



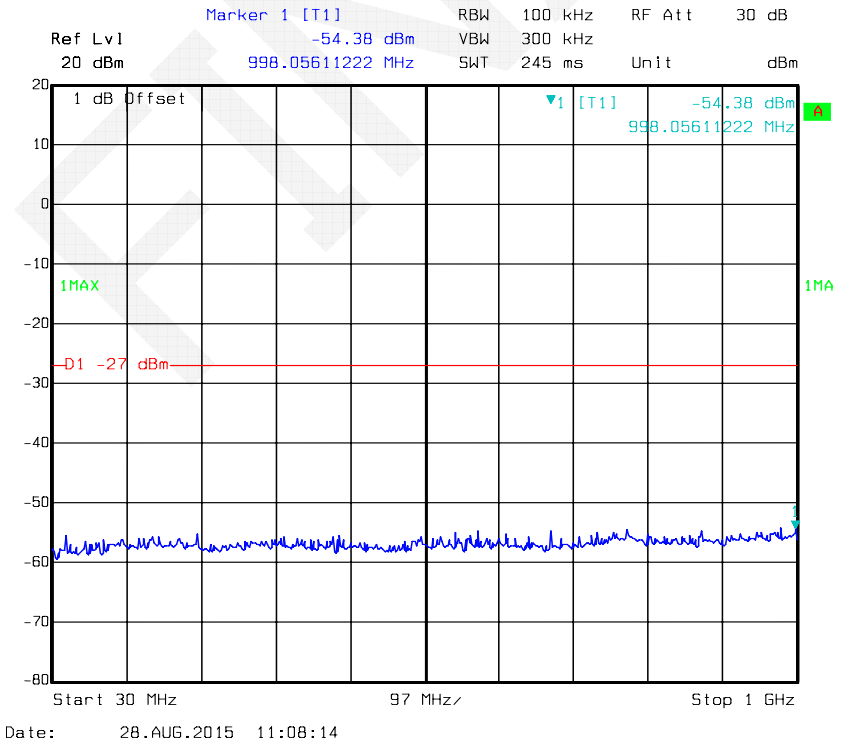

**802.11n ht40 Low Channel 1GHz-26.5GHz**



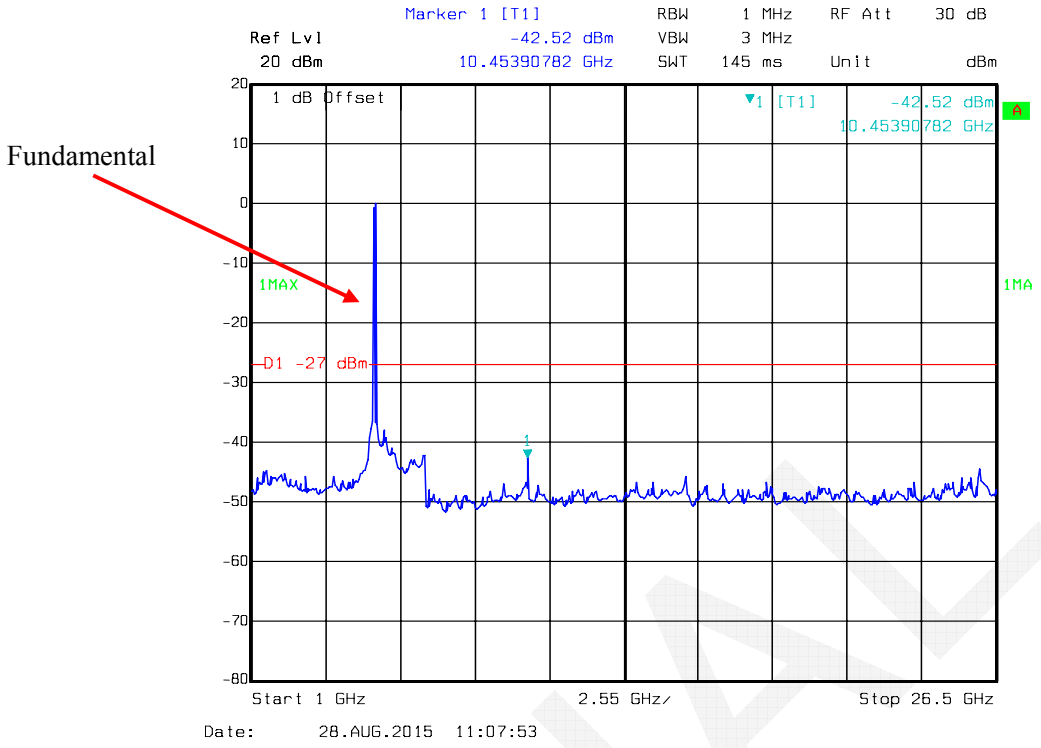

Fundamental

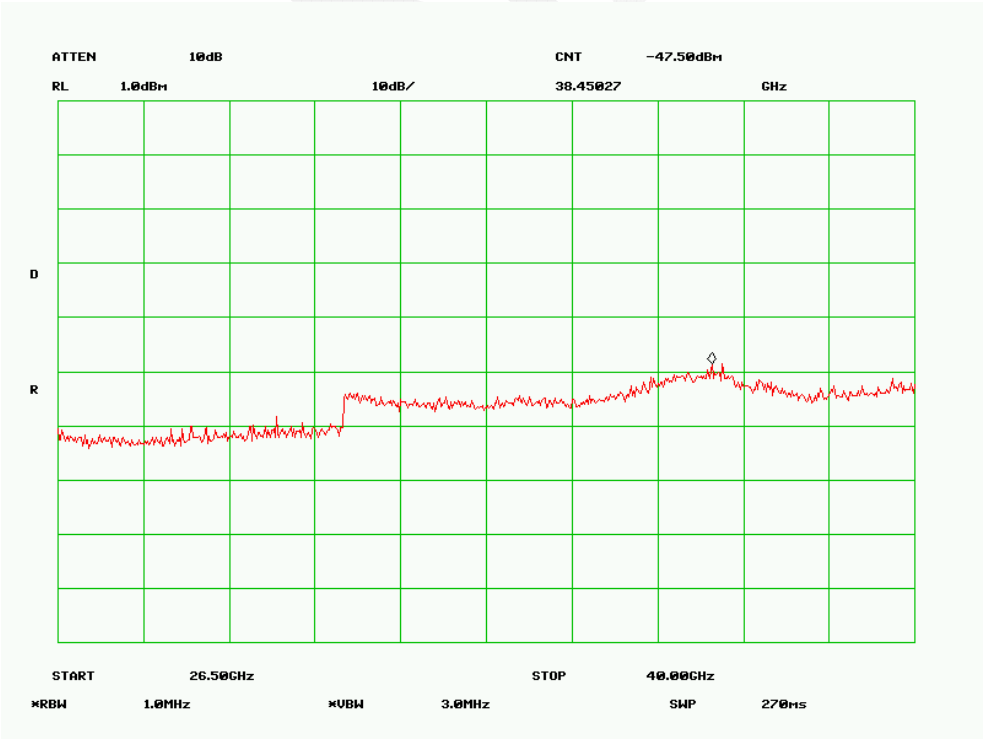



**802.11n ht40 High Channel 30MHz-1GHz**



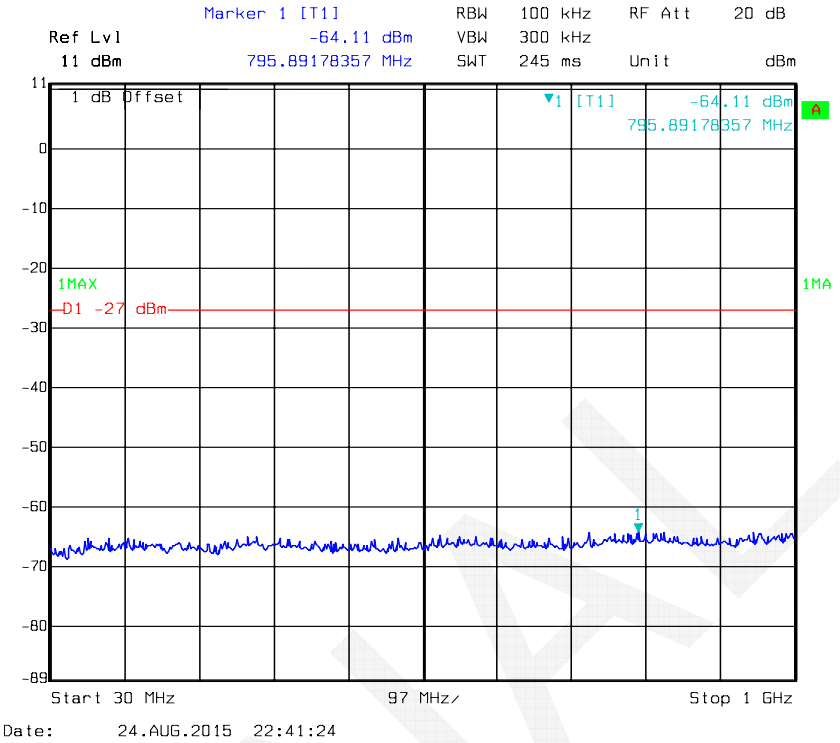
**802.11n ht40 High Channel 1GHz-26.5GHz**



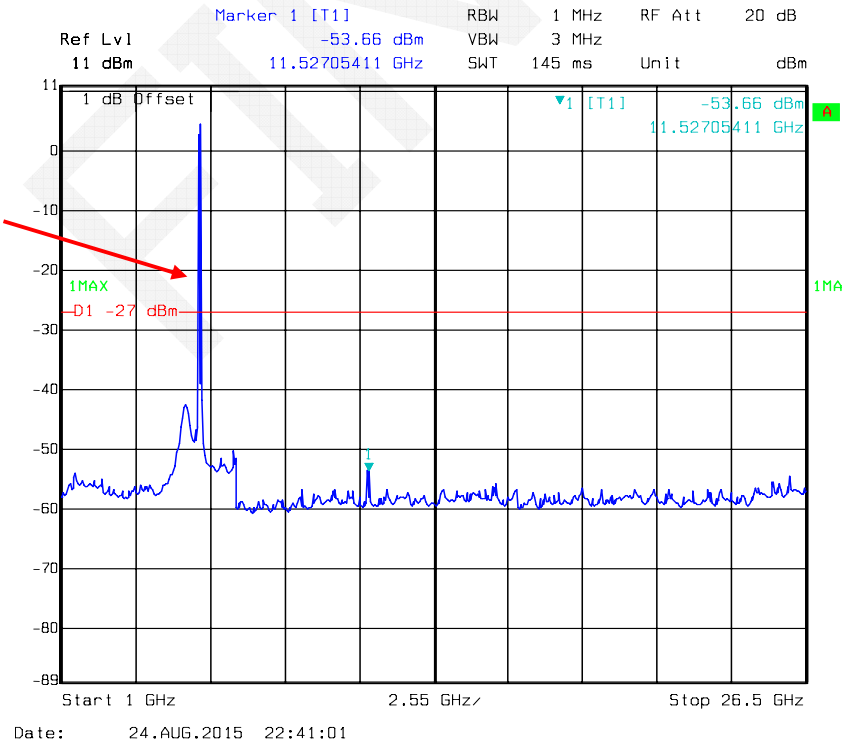



5725MHz-5850MHz:

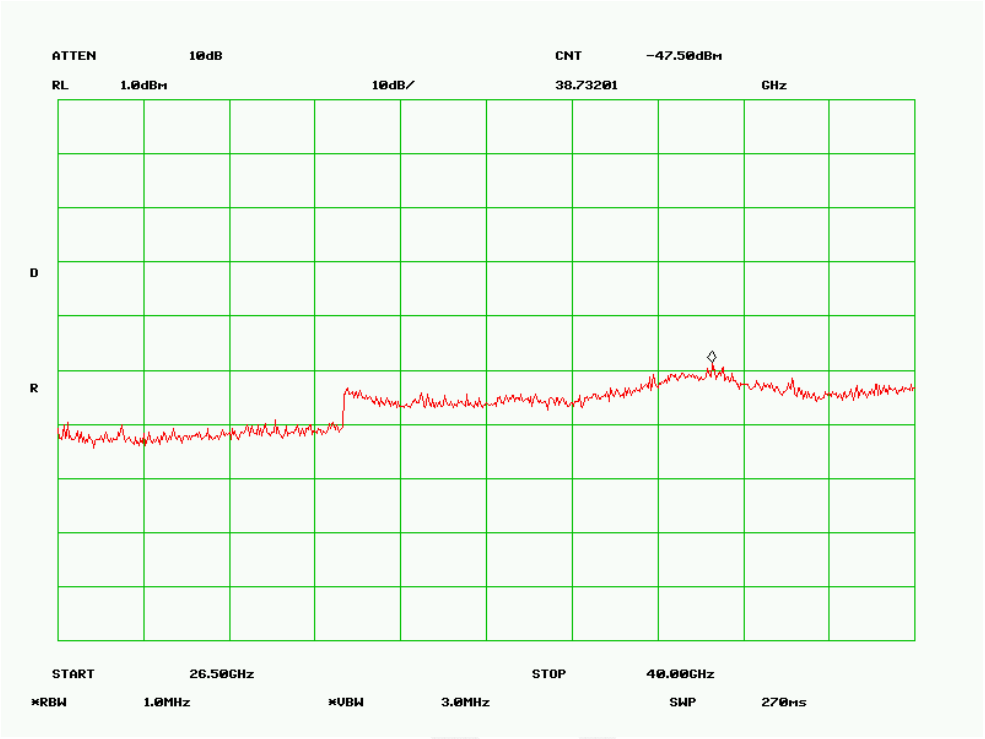
**802.11a Low Channel 30MHz-1GHz**



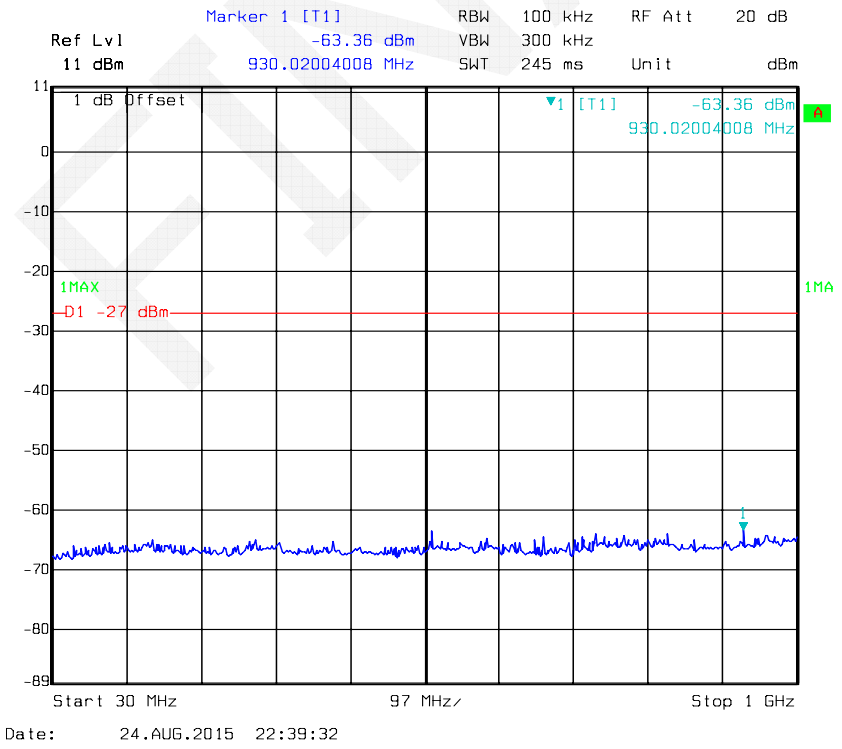

**802.11a Low Channel 1GHz-26.5GHz**



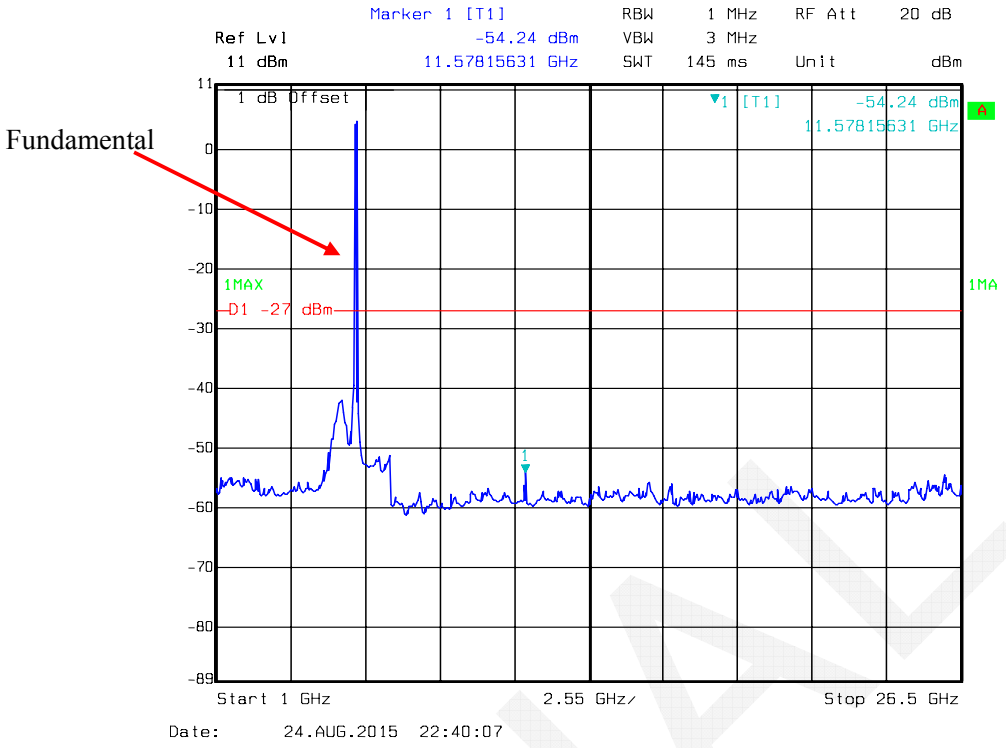

Fundamental

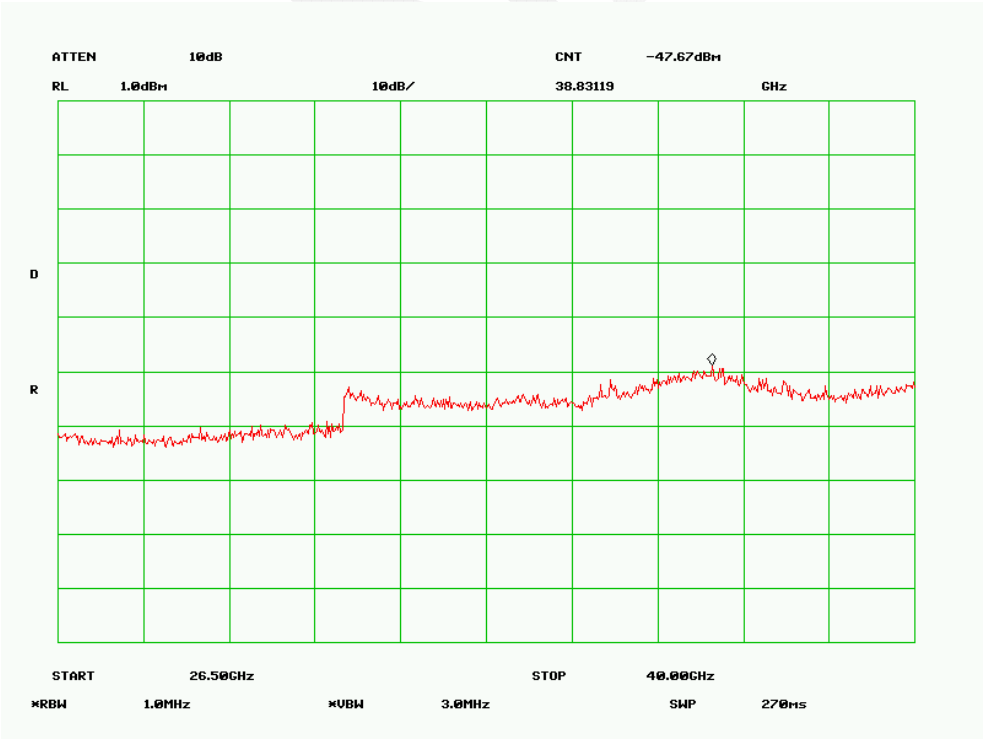



**802.11a Middle Channel 30MHz -1GHz**

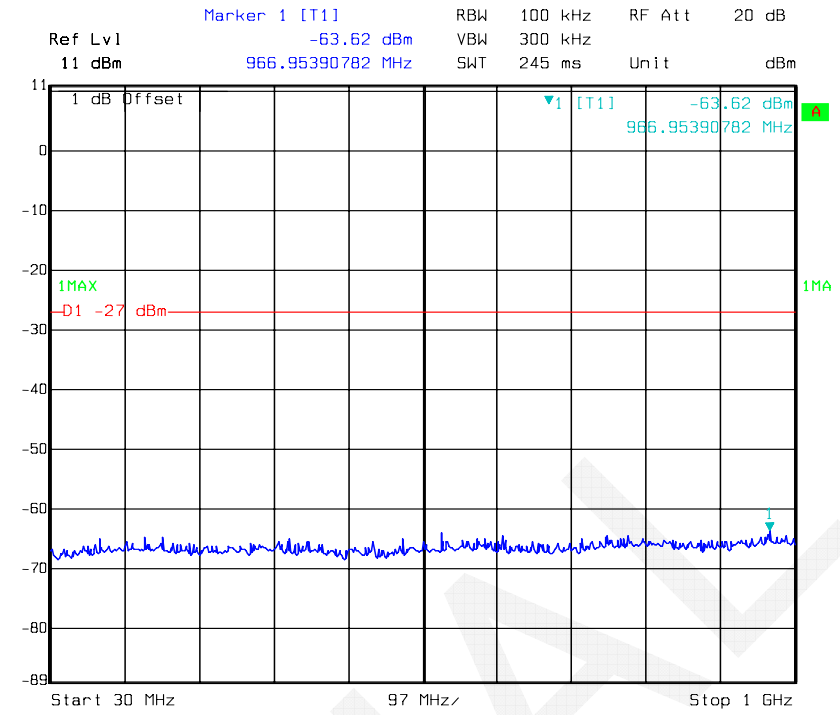


**802.11a Middle Channel 1GHz-26.5GHz**



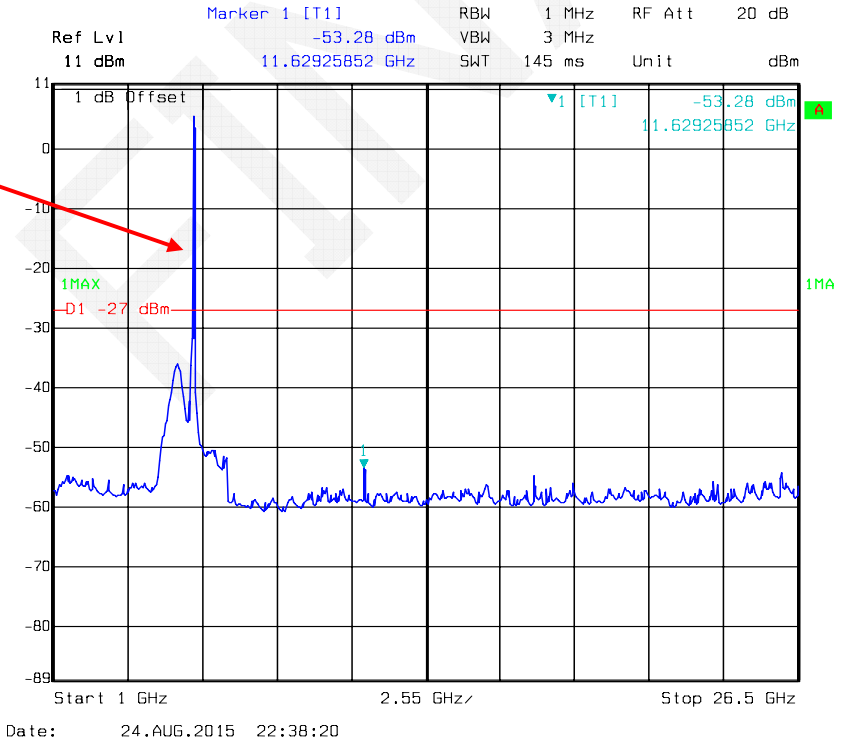



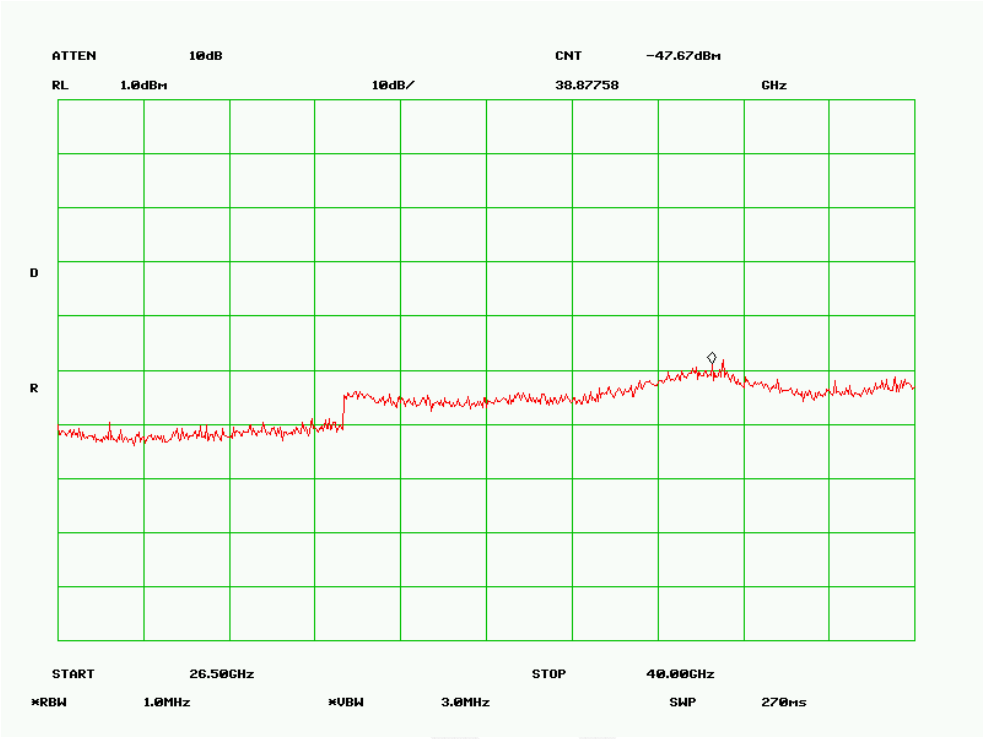
**802.11a High Channel 30MHz-1GHz**



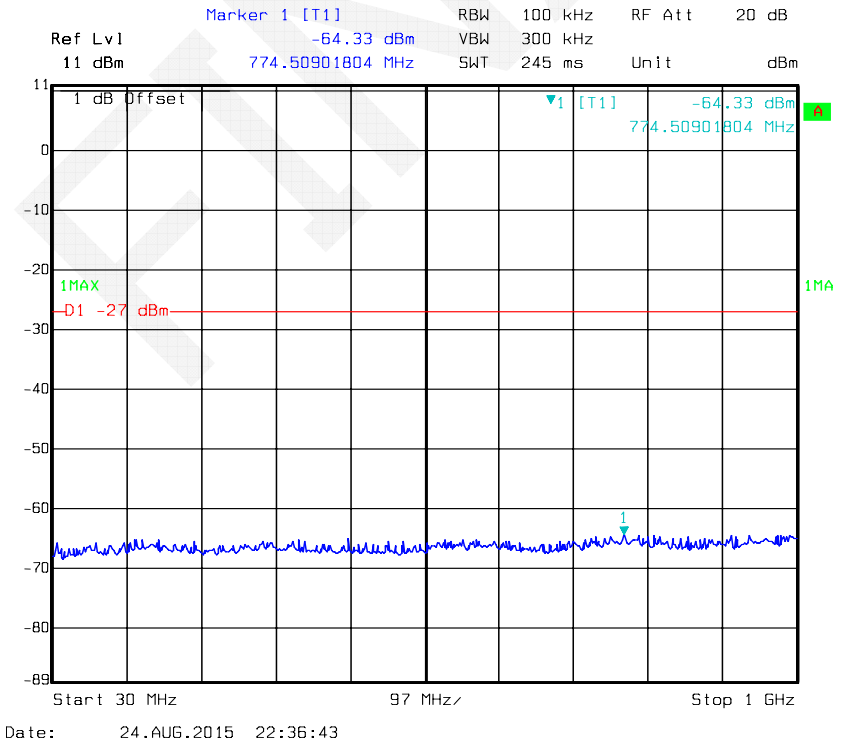

**802.11a High Channel 1GHz-26.5GHz**

Fundamental



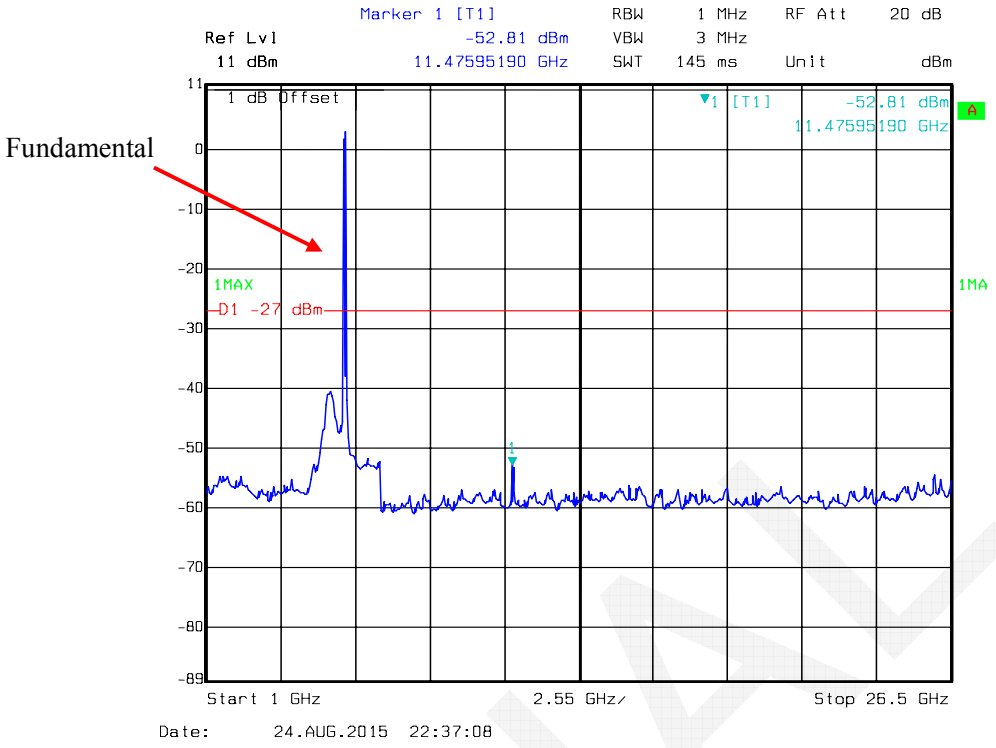


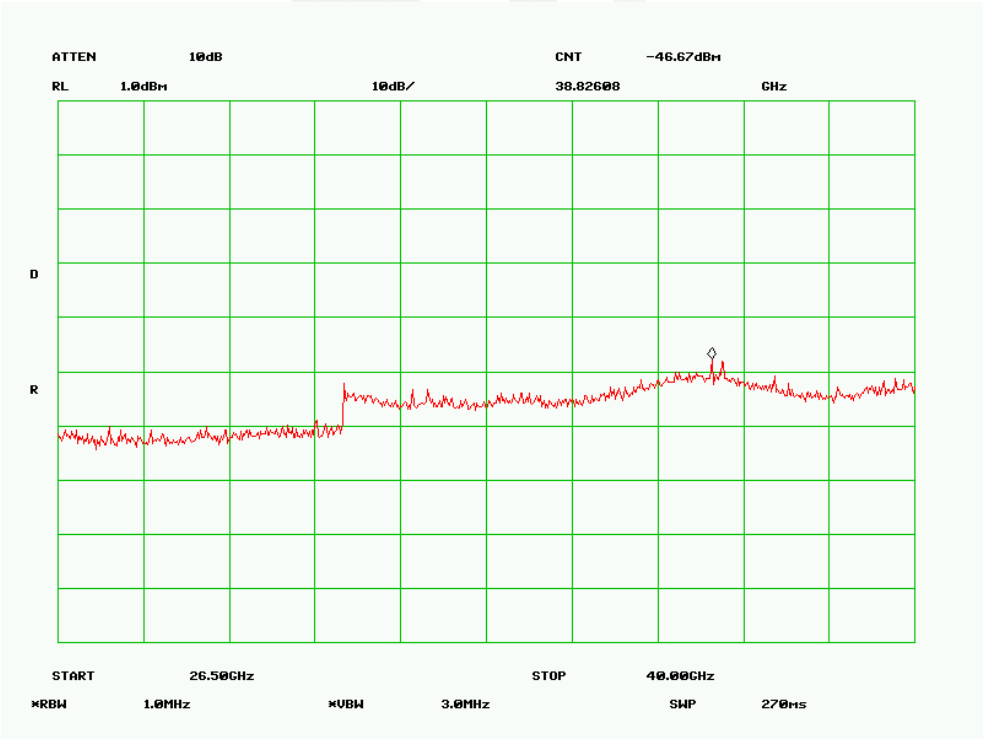

**802.11n ht20 Low Channel 30MHz-1GHz**



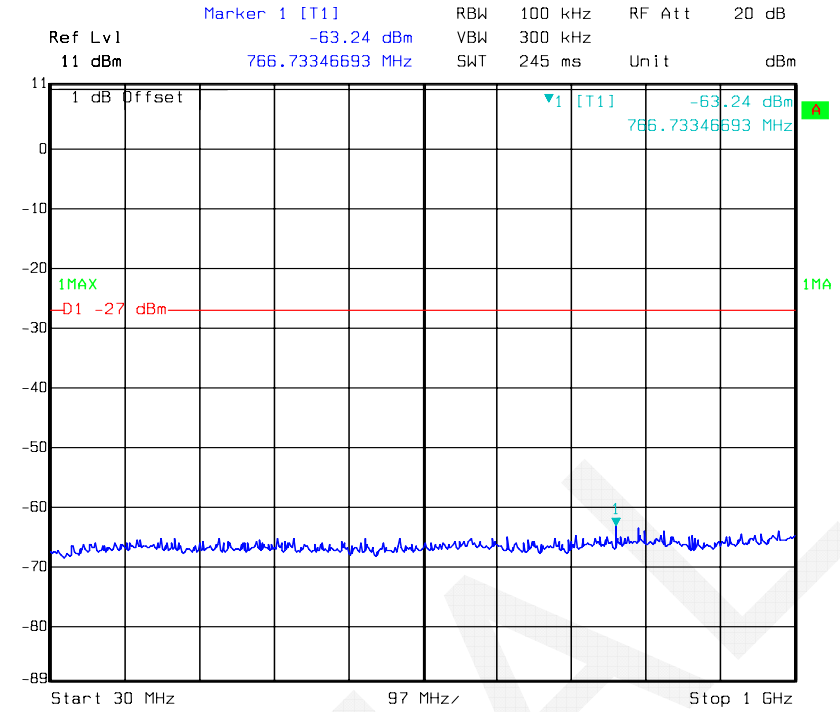

Date: 24.AUG.2015 22:36:43

**802.11n ht20 Low Channel 1GHz-26.5GHz**



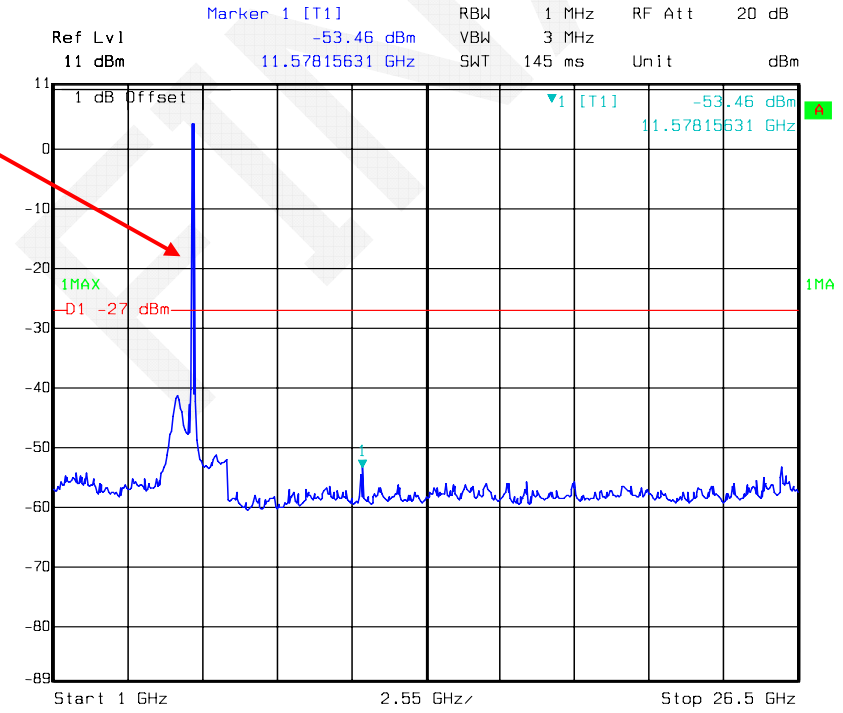
**802.11n ht20 Middle Channel 30MHz -1GHz**



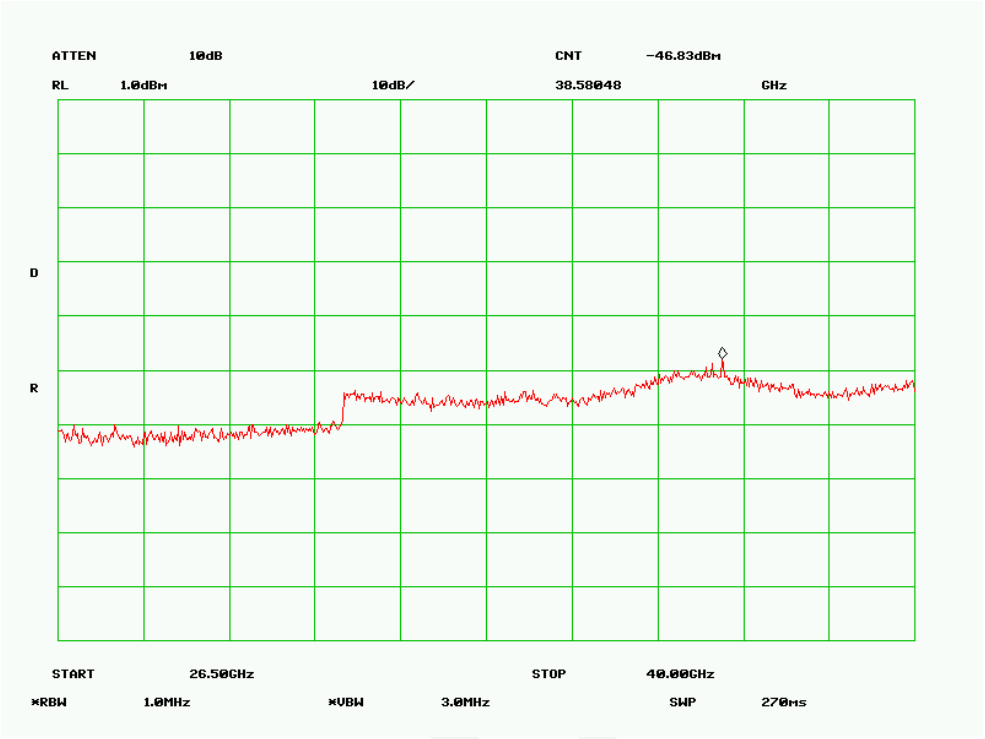

Date: 24.AUG.2015 22:35:57

**802.11n ht20 Middle Channel 1GHz-26.5GHz**

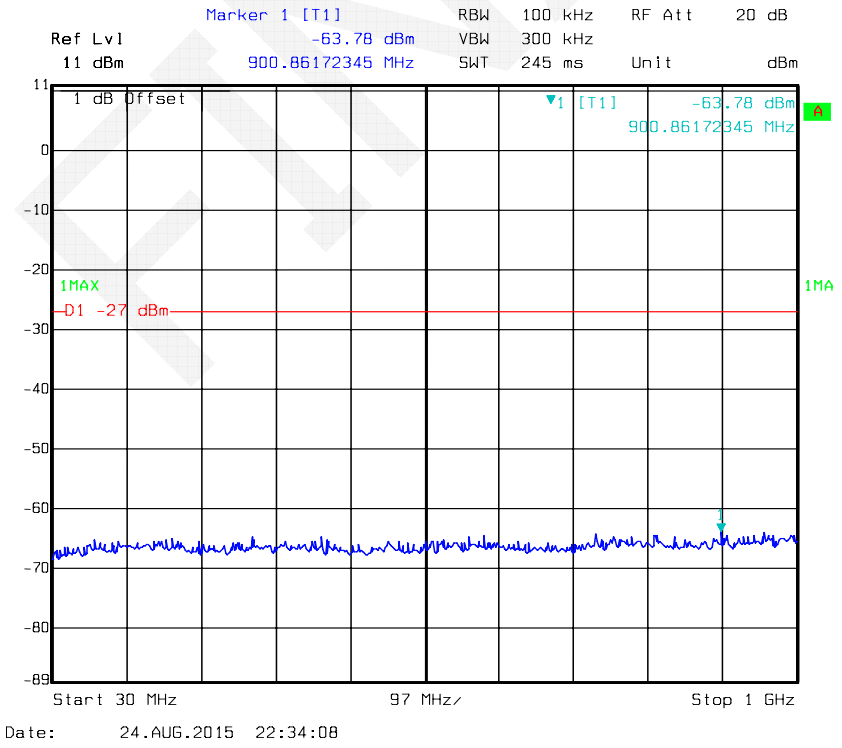
Fundamental



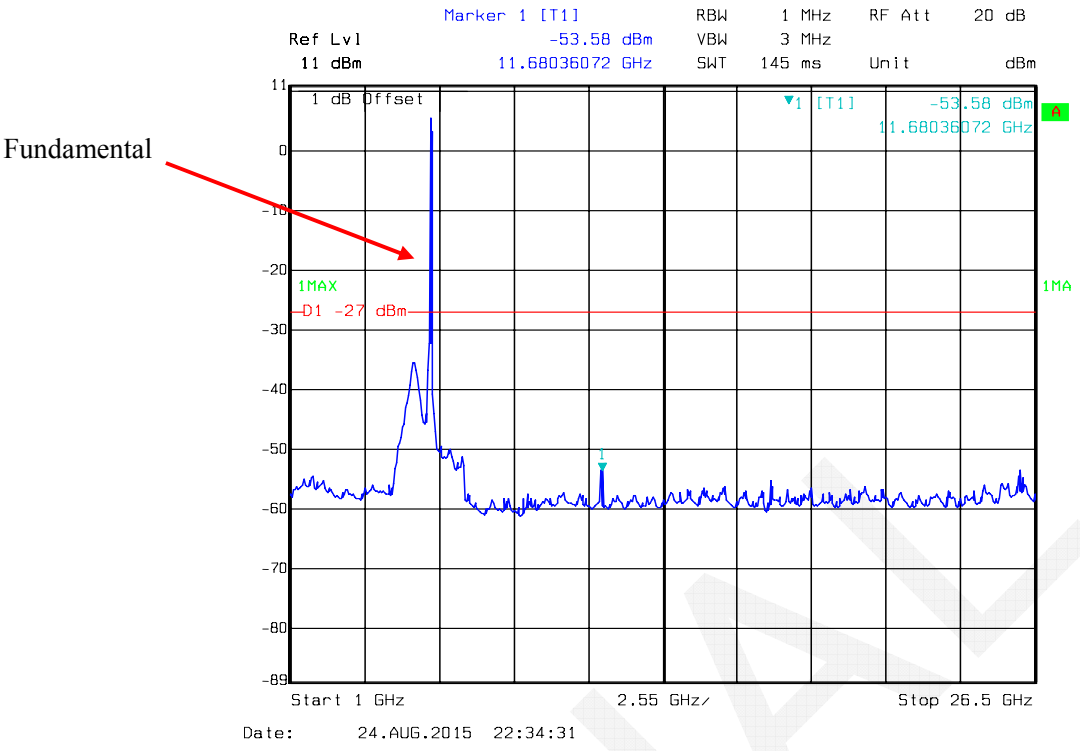

Date: 24.AUG.2015 22:35:35

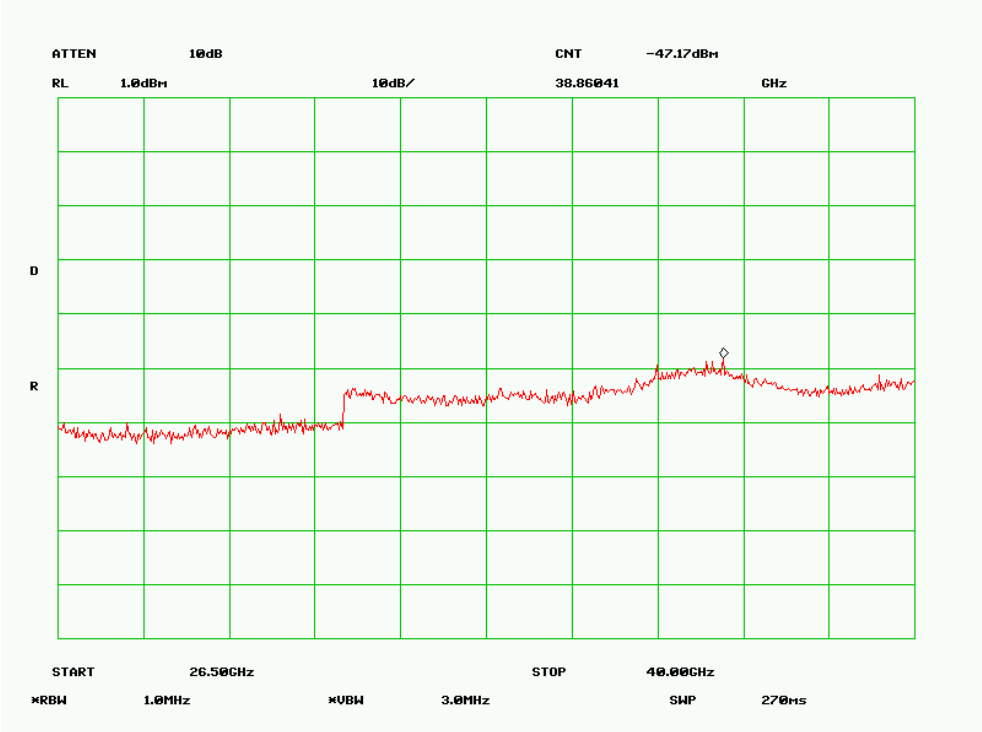



**802.11n ht20 High Channel 30MHz-1GHz**

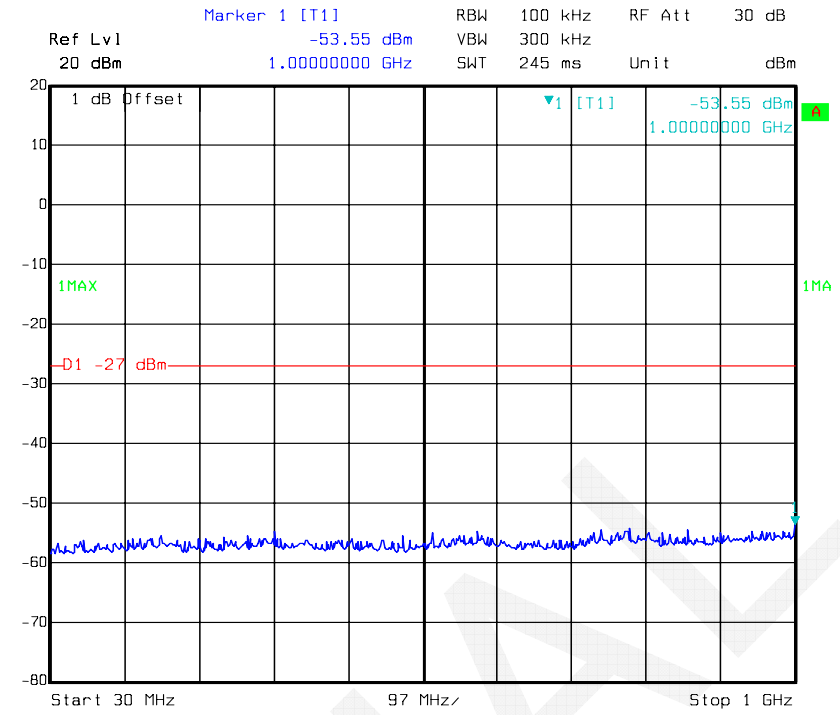


**802.11n ht20 High Channel 1GHz-26.5GHz**



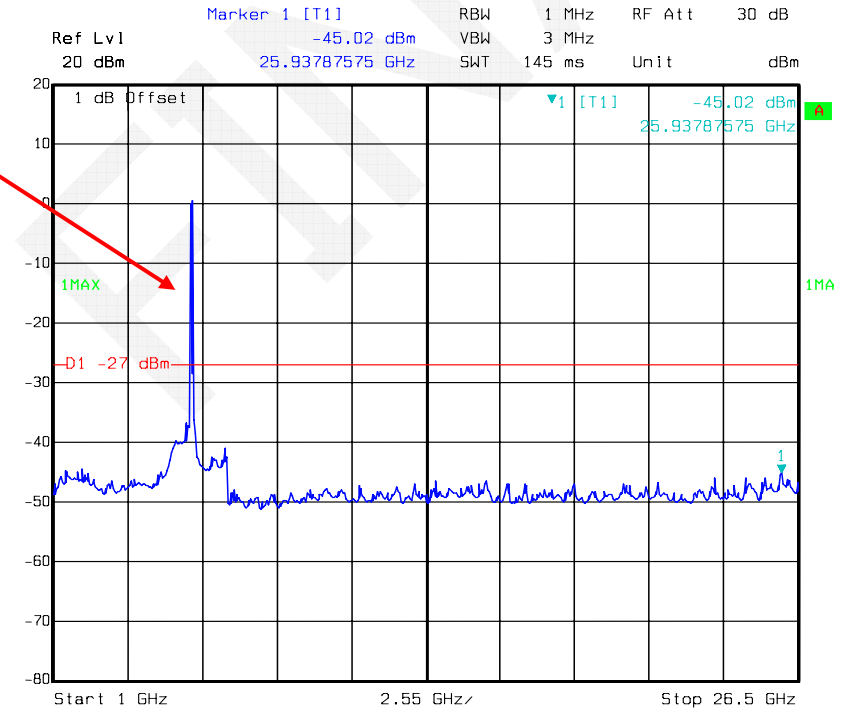



**802.11n ht40 Low Channel 30MHz-1GHz**



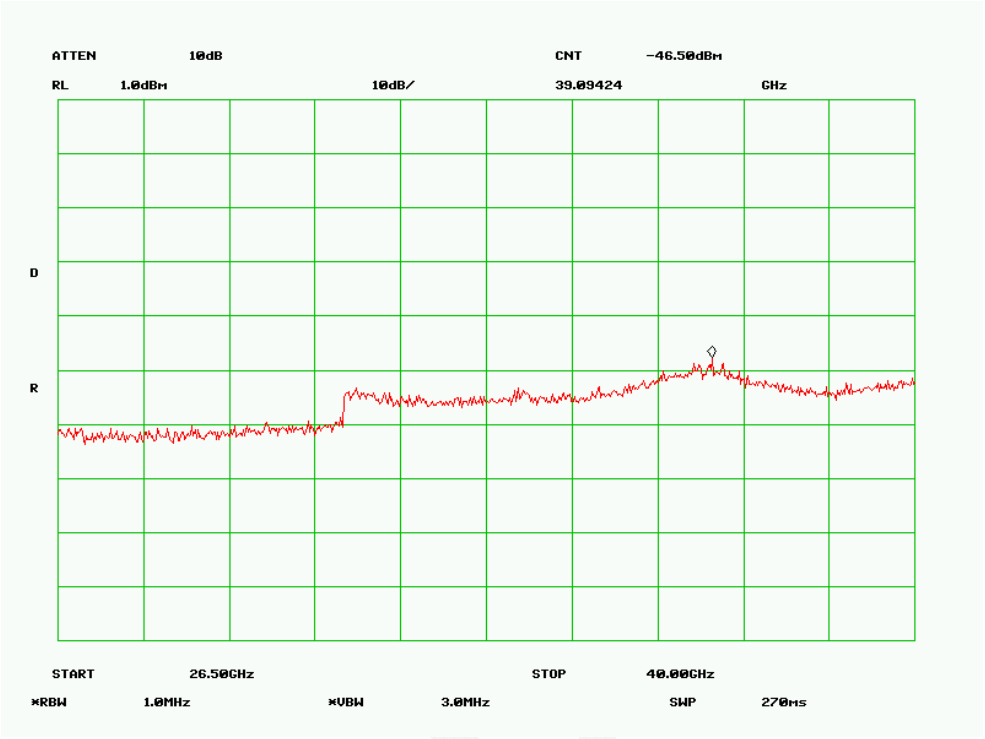

Date: 28.AUG.2015 11:10:56

**802.11n ht40 Low Channel 1GHz-26.5GHz**

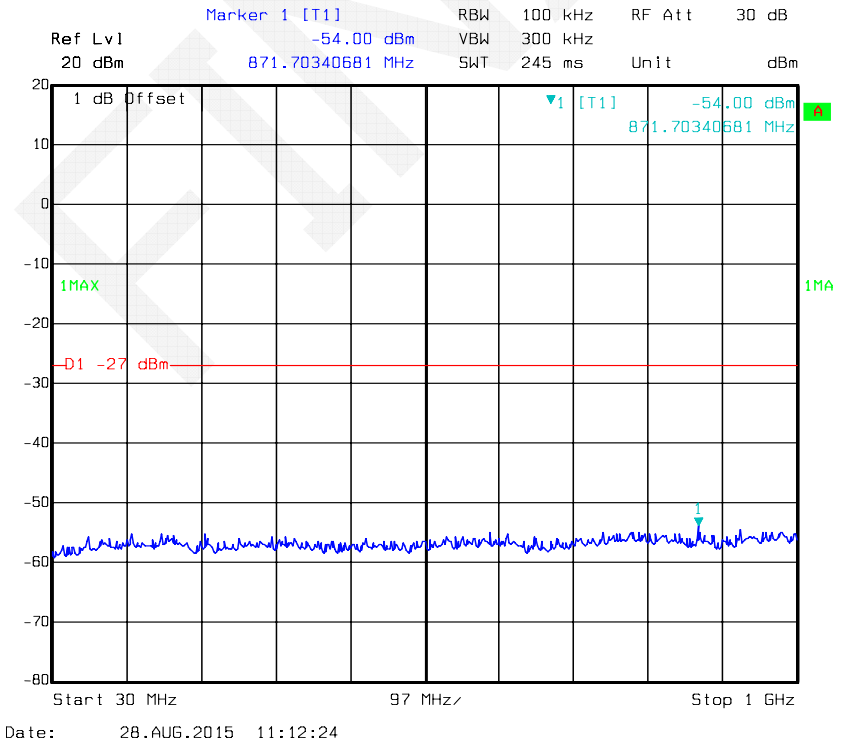



Fundamental

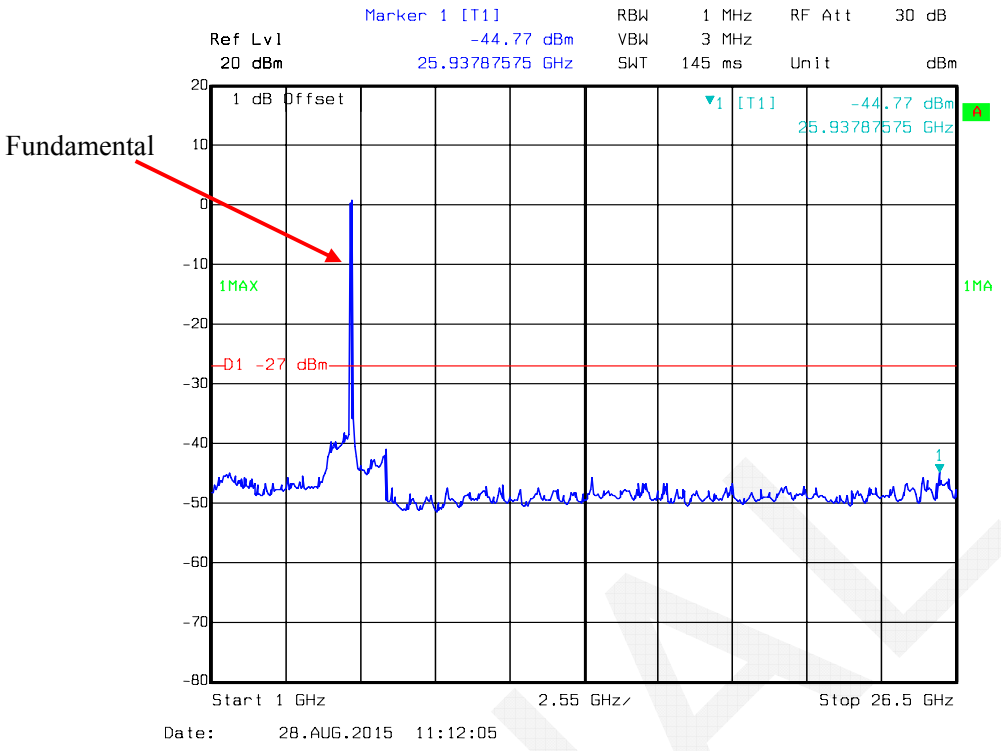
Date: 28.AUG.2015 11:11:25

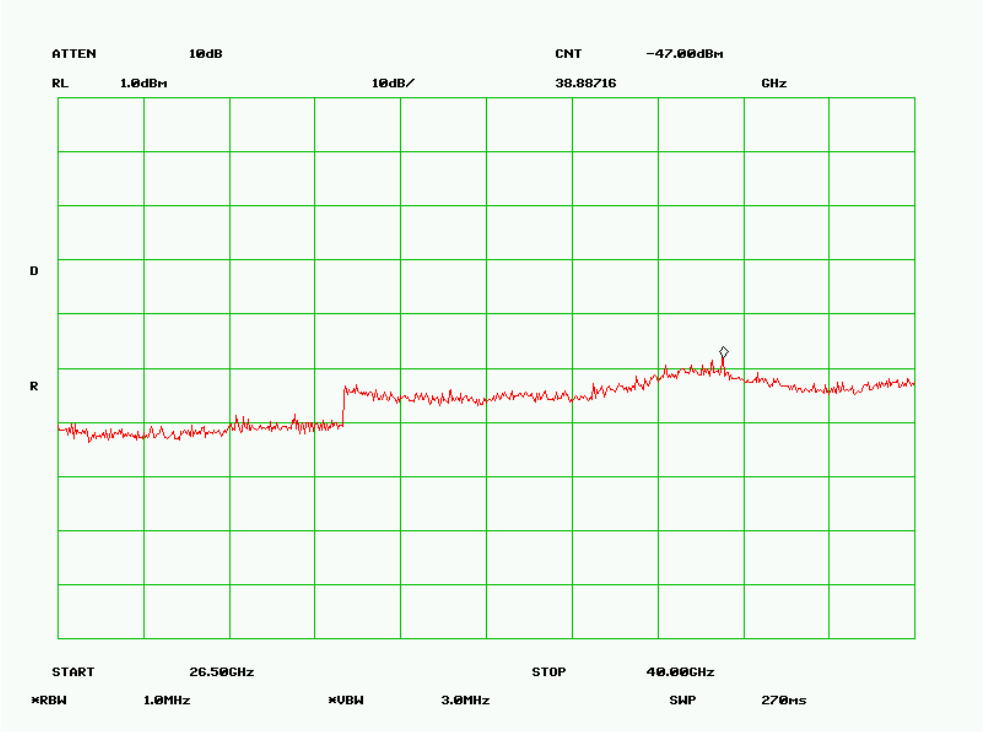



**802.11n ht40 High Channel 30MHz-1GHz**



**802.11n ht40 High Channel 1GHz-26.5GHz**



# FCC §15.407(b) (1) –BAND EDGE

## Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4);

(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.

## Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01.

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSP 38 | 100478 | 2015-05-09 | 2016-05-09 |
| E-Microwave | DC Blocking | EMDCB-00036 | 0E01201047 | 2015-05-06 | 2016-05-06 |

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

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 26.9~27.3 °C |
| **Relative Humidity:** | 57~59 % |
| **ATM Pressure:** | 99.4~100.2 kPa |

*The testing was performed by Allen Qiao from 2015-08-26 to 2015-08-27.*

Please refer to the following table and plots:

5150-5250 MHz band

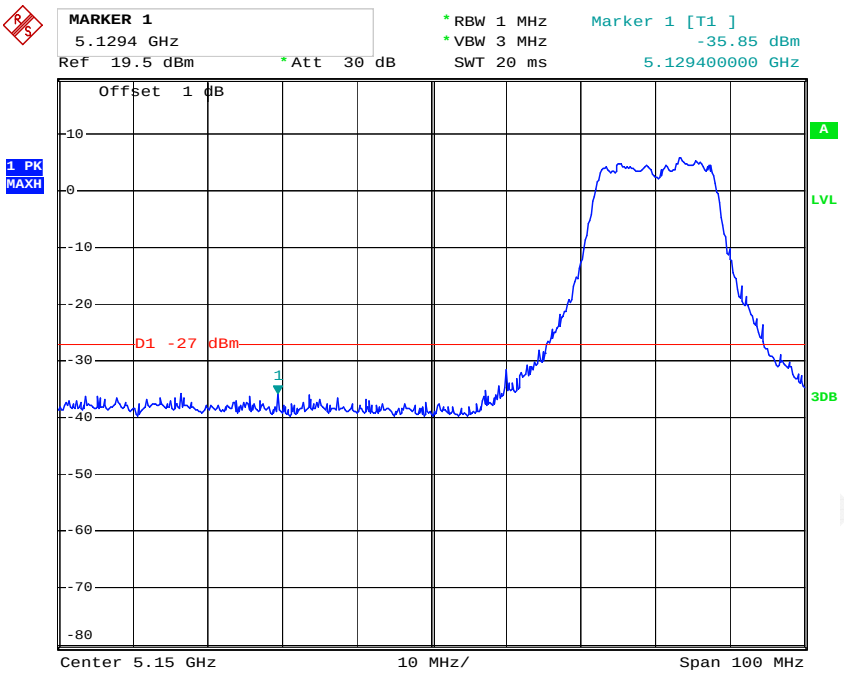
| Mode | Channel | Frequency | Band edge Emissions | | | | |
|---|---|---|---|---|---|---|---|
| | | MHz | Reading(dBm/MHz) | Antenna Gain(dBi) | EIRP(dBm/MHz) | Limits | Result |
| 802.11a | Low | 5180 | -35.85 | 2.31 | -33.54 | -27 | Compliant |
| | High | 5240 | -36.15 | 2.31 | -33.84 | -27 | Compliant |
| 802.11n20 | Low | 5180 | -37.24 | 2.31 | -34.93 | -27 | Compliant |
| | High | 5240 | -37.49 | 2.31 | -35.18 | -27 | Compliant |
| 802.11n40 | Low | 5190 | -35.32 | 2.31 | -33.01 | -27 | Compliant |
| | High | 5230 | -37.72 | 2.31 | -35.41 | -27 | Compliant |

5725-5850 MHz band

| Mode | Channel | Frequency | Band edge Emissions | | | | |
|---|---|---|---|---|---|---|---|
| | | MHz | Reading(dBm/MHz) | Antenna Gain(dBi) | EIRP(dBm/MHz) | Limits | Result |
| 802.11a | Low | 5745 | -35.77 | 2.31 | -33.46 | -17 | Compliant |
| | High | 5825 | -36.94 | 2.31 | -34.63 | -17 | Compliant |
| 802.11n20 | Low | 5745 | -36.93 | 2.31 | -34.62 | -17 | Compliant |
| | High | 5785 | -34.94 | 2.31 | -32.63 | -17 | Compliant |
| 802.11n40 | Low | 5755 | -32 | 2.31 | -29.69 | -17 | Compliant |
| | High | 5795 | -37.83 | 2.31 | -35.52 | -17 | Compliant |

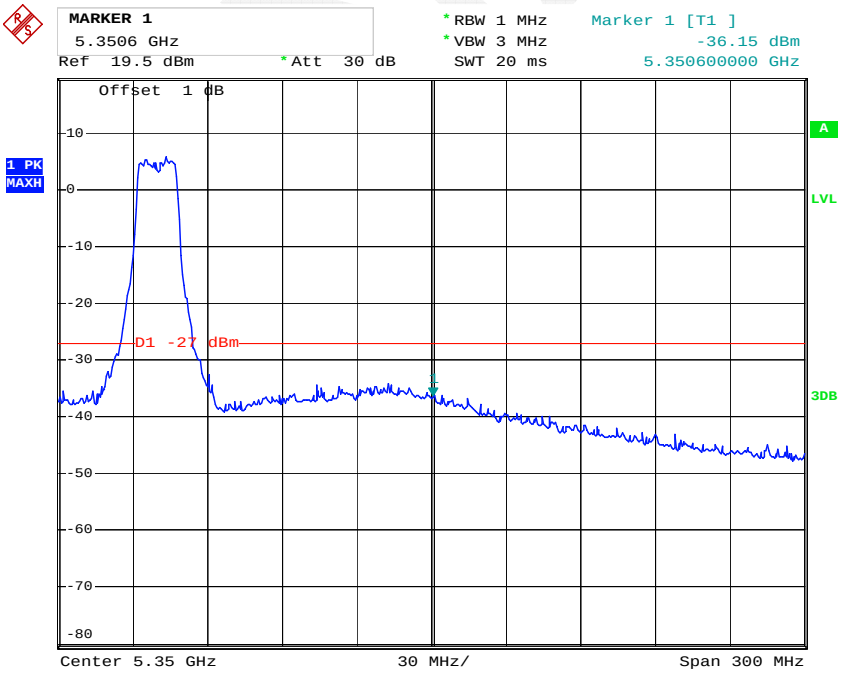
5150MHz-5250MHz:

**802.11a Band Edge, Left Side**



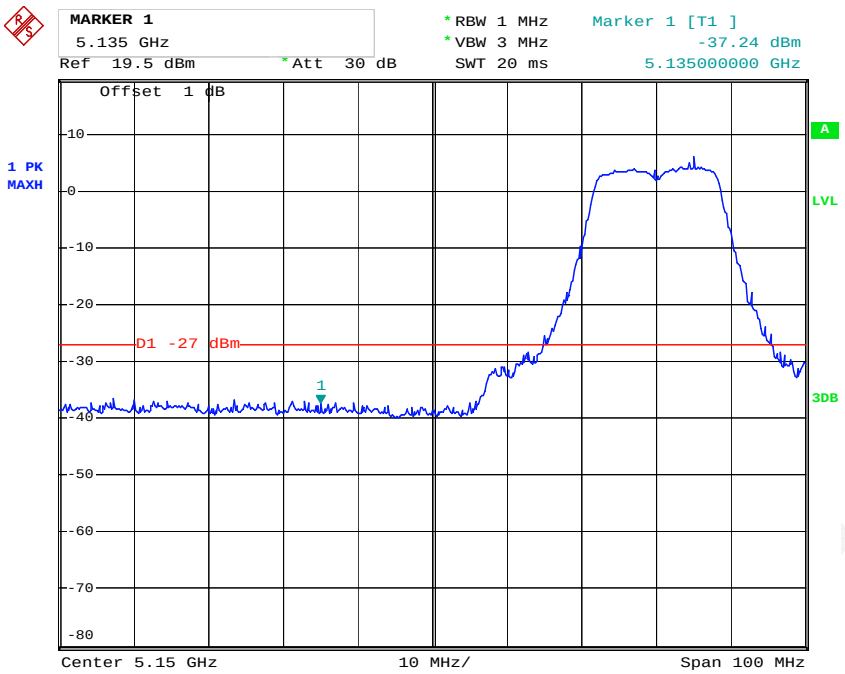

Date: 26.AUG.2015 20:14:12

**802.11a Band Edge, Right Side**



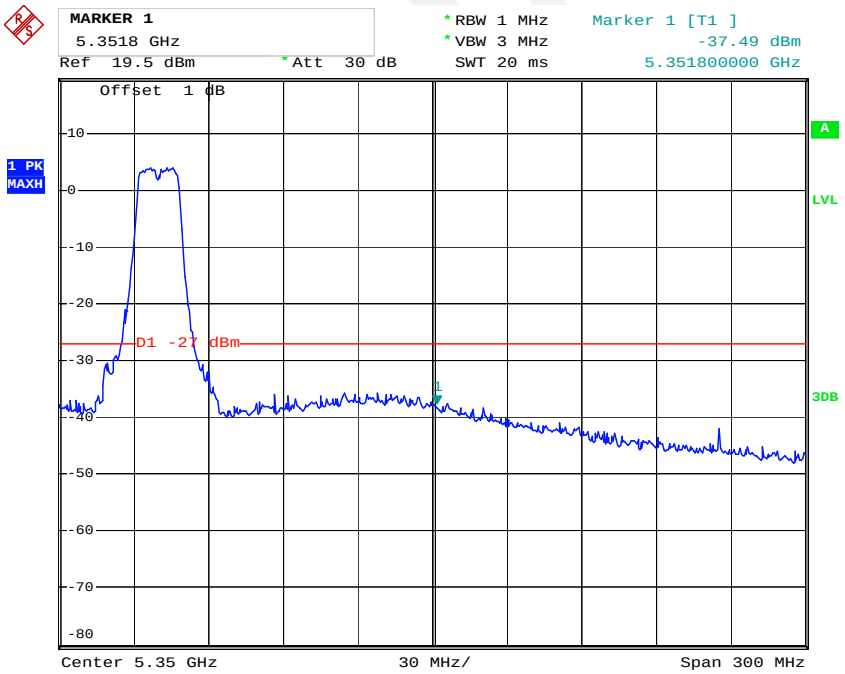

Date: 26.AUG.2015 20:15:31

## 802.11n ht20 Band Edge, Left Side



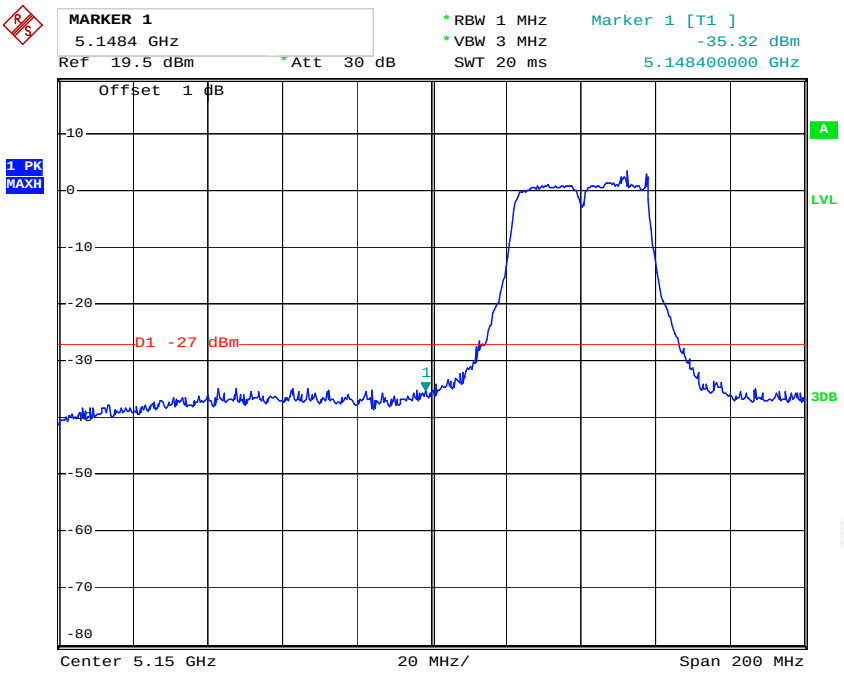

Date: 26.AUG.2015 20:24:52

## 802.11n ht20 Band Edge, Right Side



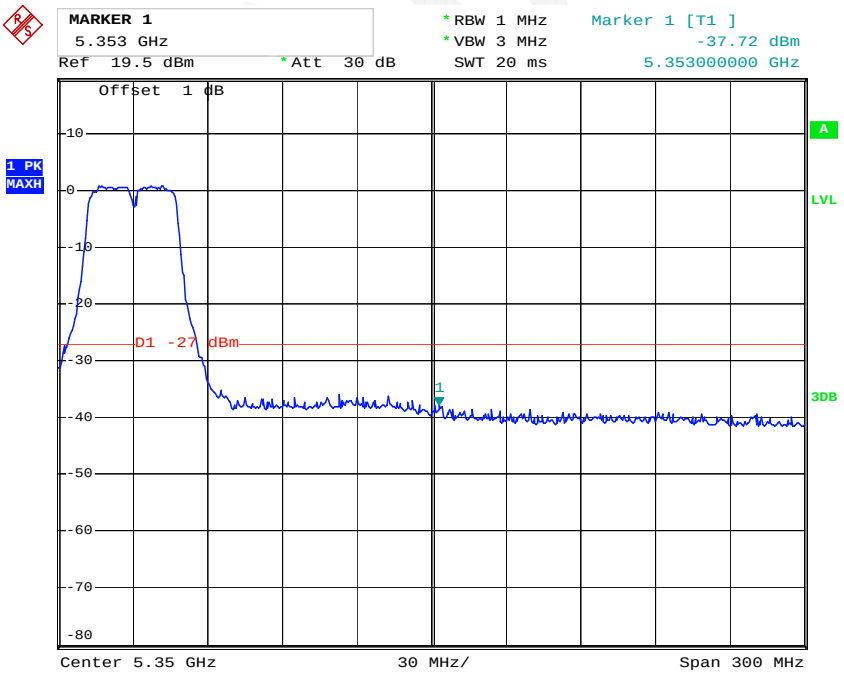

Date: 26.AUG.2015 20:17:22

## 802.11n ht40 Band Edge, Left Side




Date: 26.AUG.2015 21:05:36

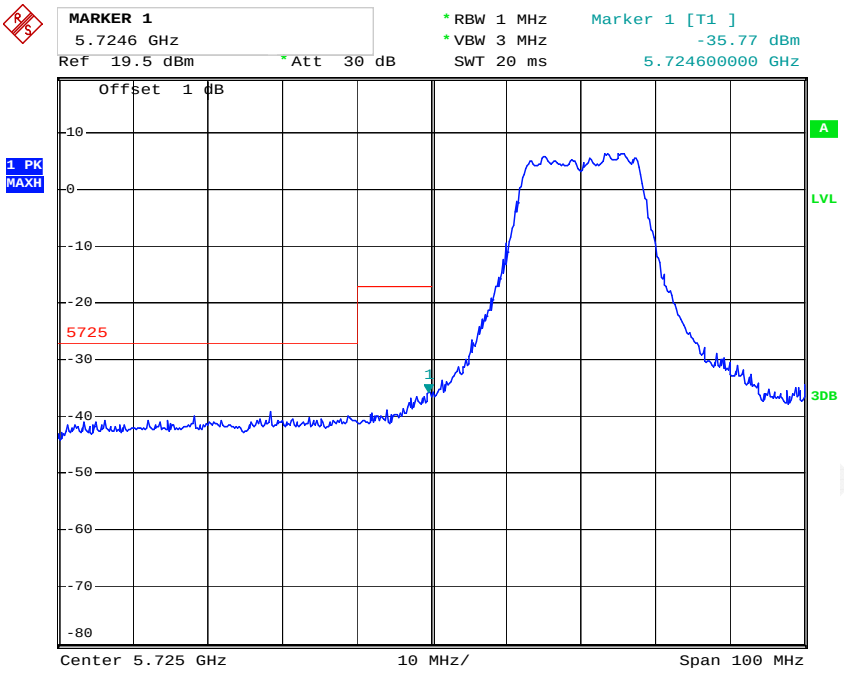
## 802.11n ht40 Band Edge, Right Side




Date: 26.AUG.2015 21:18:33

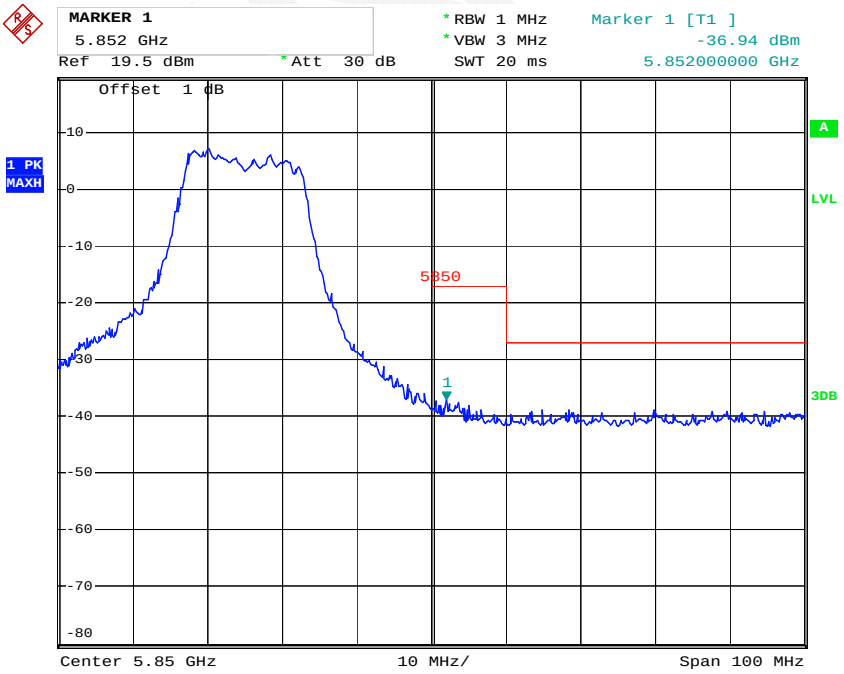
5725MHz-5850MHz:

**802.11a Band Edge, Left Side**



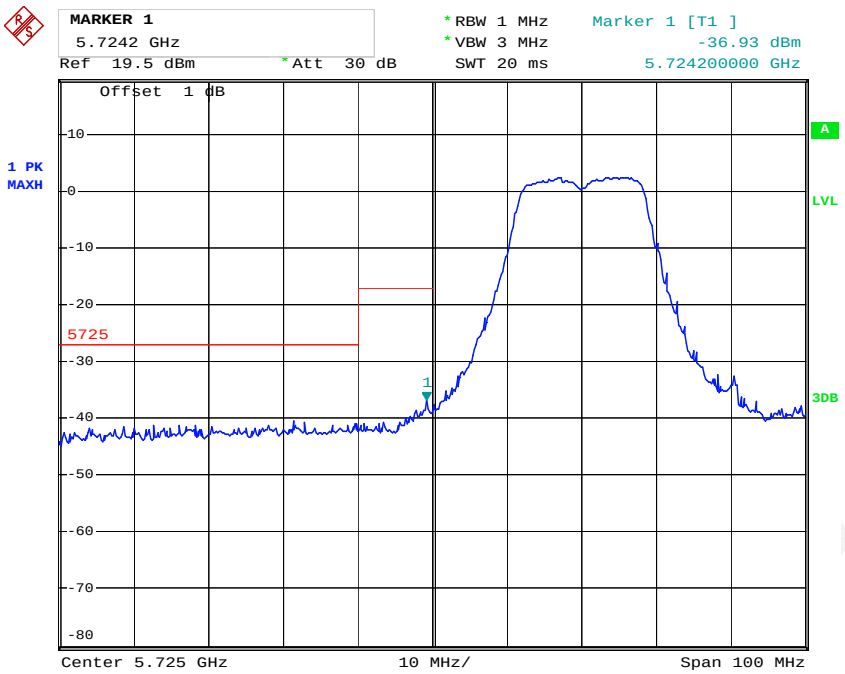

Date: 26.AUG.2015 20:56:37

**802.11a Band Edge, Right Side**

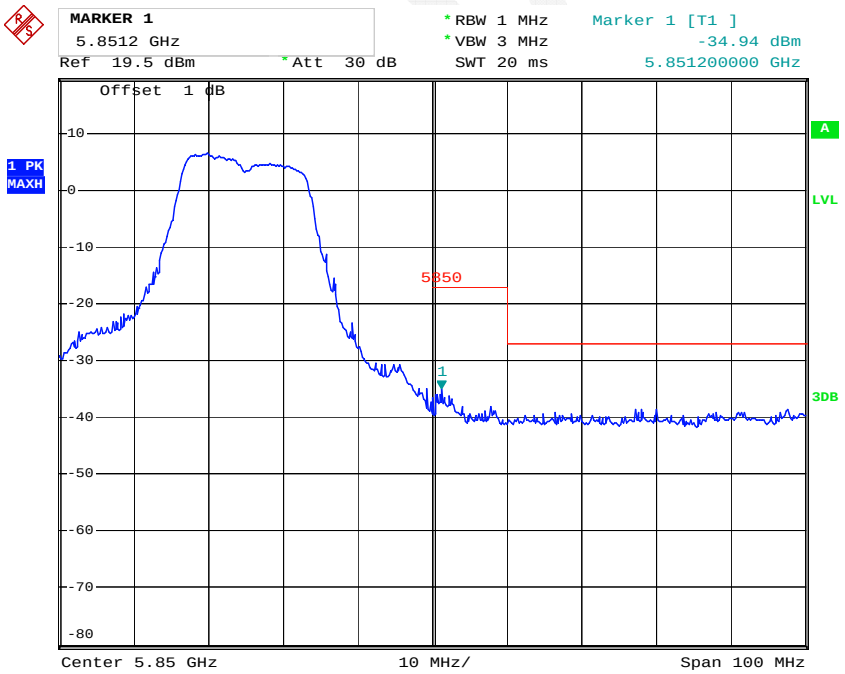



Date: 26.AUG.2015 20:34:51

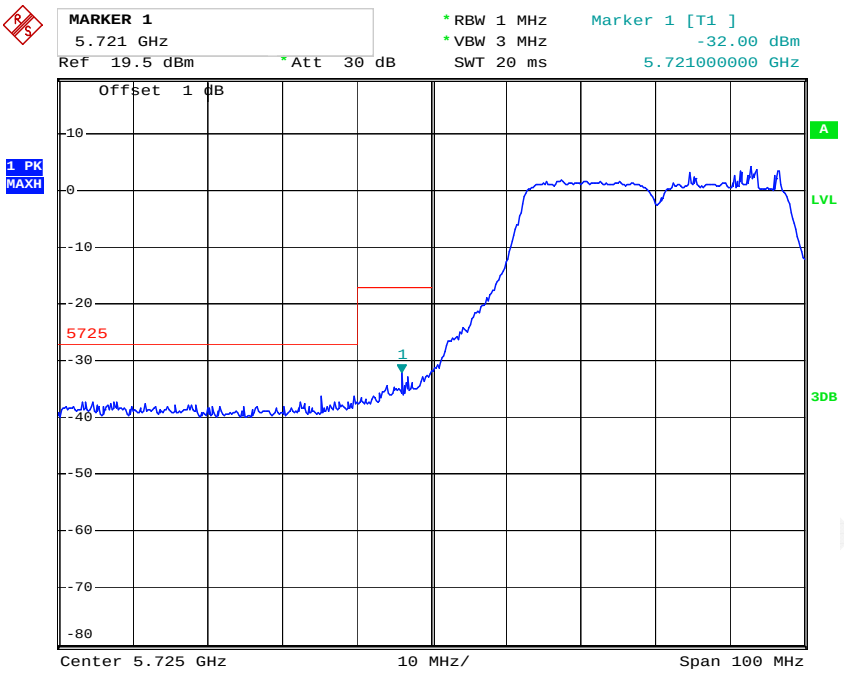
## 802.11n ht20 Band Edge, Left Side




## 802.11n ht20 Band Edge, Right Side

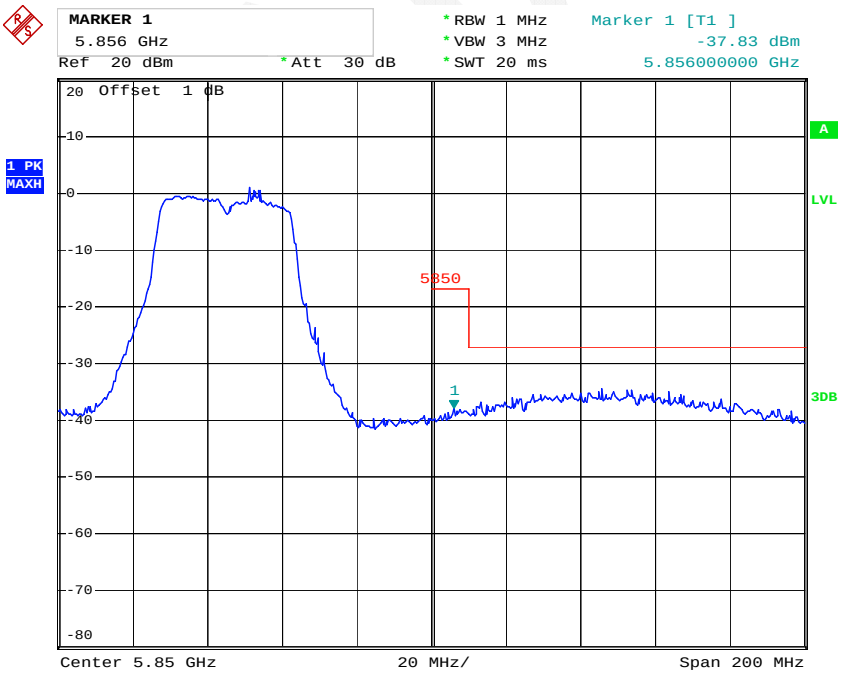


## 802.11n ht40 Band Edge, Left Side




Date: 26.AUG.2015 21:41:07

## 802.11n ht40 Band Edge, Right Side




Date: 27.AUG.2015 16:23:03

# FCC §15.407(a) –EMISSION BANDWIDTH

## Applicable Standard

15.407(a)

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSP 38 | 100478 | 2015-05-09 | 2016-05-09 |
| E-Microwave | DC Blocking | EMDCB-00036 | 0E01201047 | 2015-05-06 | 2016-05-06 |

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

## Test Procedure

1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 27.3-27.6 °C |
| **Relative Humidity:** | 56-59 % |
| **ATM Pressure:** | 99.4-100.2 kPa |

*The testing was performed by Allen Qiao on 2015-08-24 and 2015-08-26.*

**Test Result:** Pass.

Please refer to the following tables and plots.

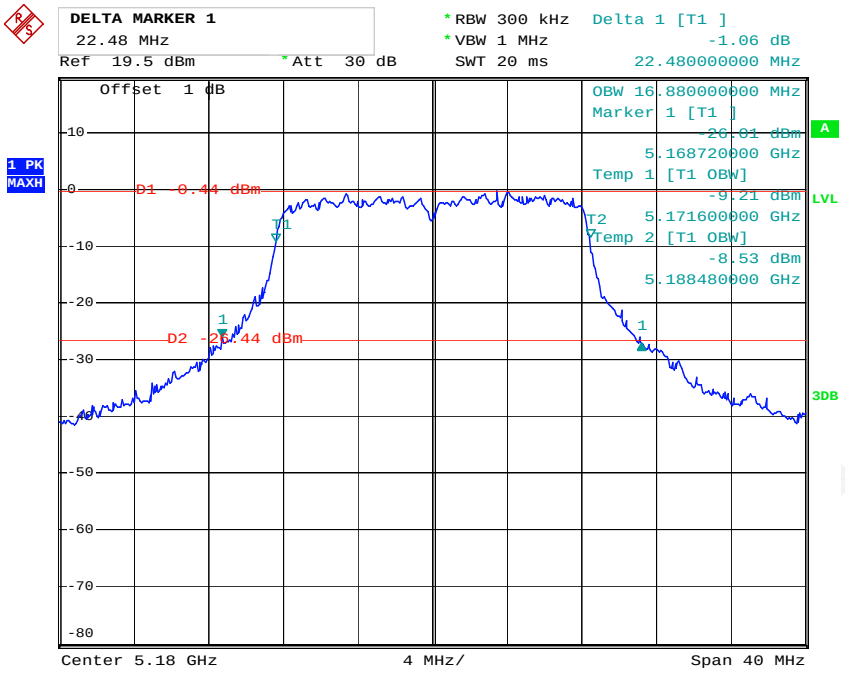
*Test mode: Transmitting*

| UNII Band | Mode | Channel | Frequency (MHz) | 26dB EBW(MHz) |
|---|---|---|---|---|
| 5150-5250MHz | 802.11 a | Low | 5180 | 22.48 |
| | | Middle | 5200 | 22.16 |
| | | High | 5240 | 22 |
| | 802.11 n20 | Low | 5180 | 24.4 |
| | | Middle | 5200 | 24.4 |
| | | High | 5240 | 24.08 |
| | 802.11 n40 | Low | 5190 | 47.68 |
| | | High | 5230 | 47.68 |

| UNII Band | Mode | Channel | Frequency (MHz) | 6dB EBW(MHz) | Limit (MHz) |
|---|---|---|---|---|---|
| 5725-5850MHz | 802.11 a | Low | 5745 | 16.4 | 0.5 |
| | | Middle | 5785 | 16.16 | 0.5 |
| | | High | 5825 | 16.4 | 0.5 |
| | 802.11 n20 | Low | 5745 | 16.72 | 0.5 |
| | | Middle | 5785 | 16.4 | 0.5 |
| | | High | 5825 | 16.56 | 0.5 |
| | 802.11 n40 | Low | 5755 | 36.32 | 0.5 |
| | | High | 5795 | 36 | 0.5 |

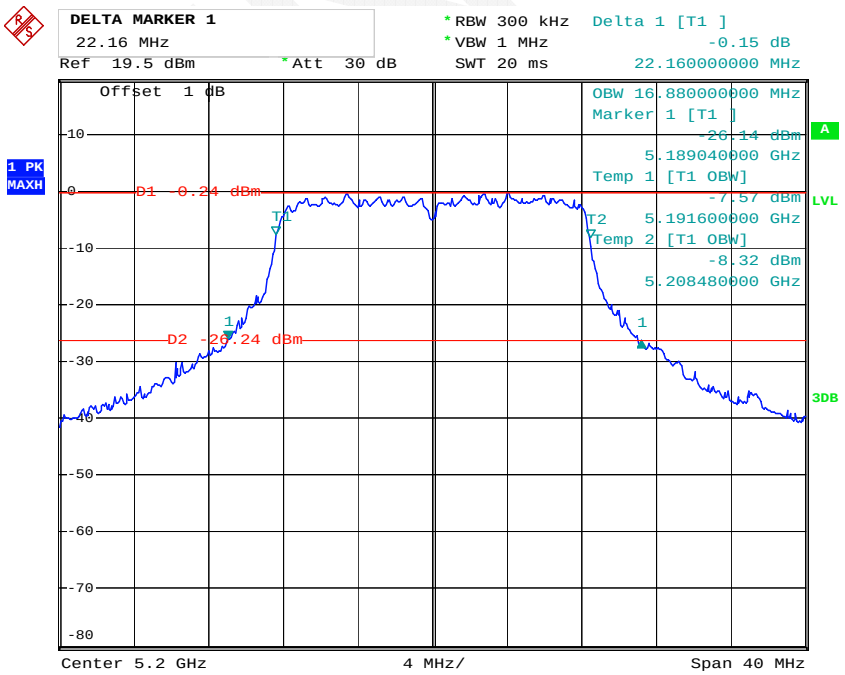
**26dB EBW:**
5150MHz-5250MHz:

**802.11a Low Channel**



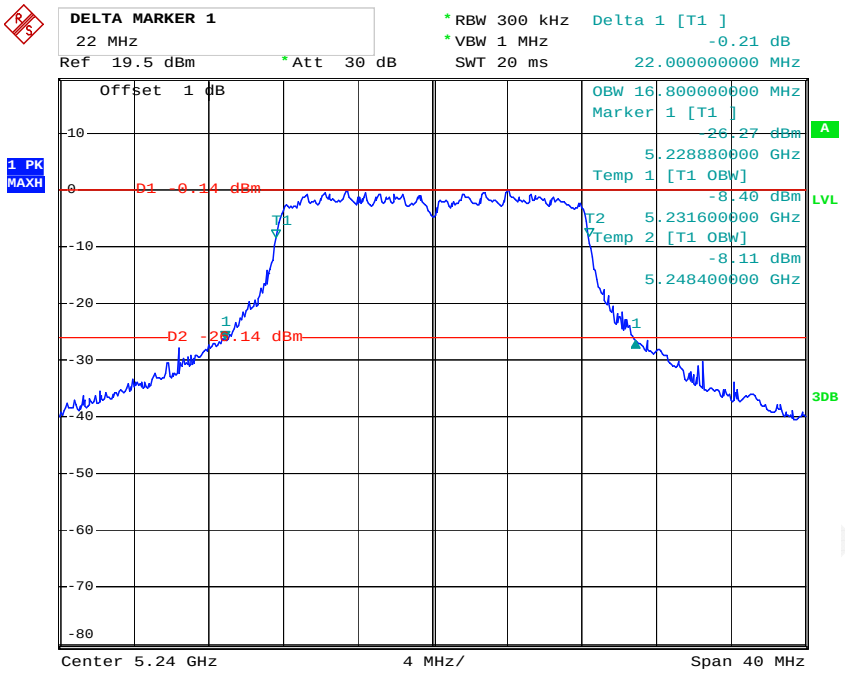

Date: 24.AUG.2015 15:57:29

**802.11a Middle Channel**



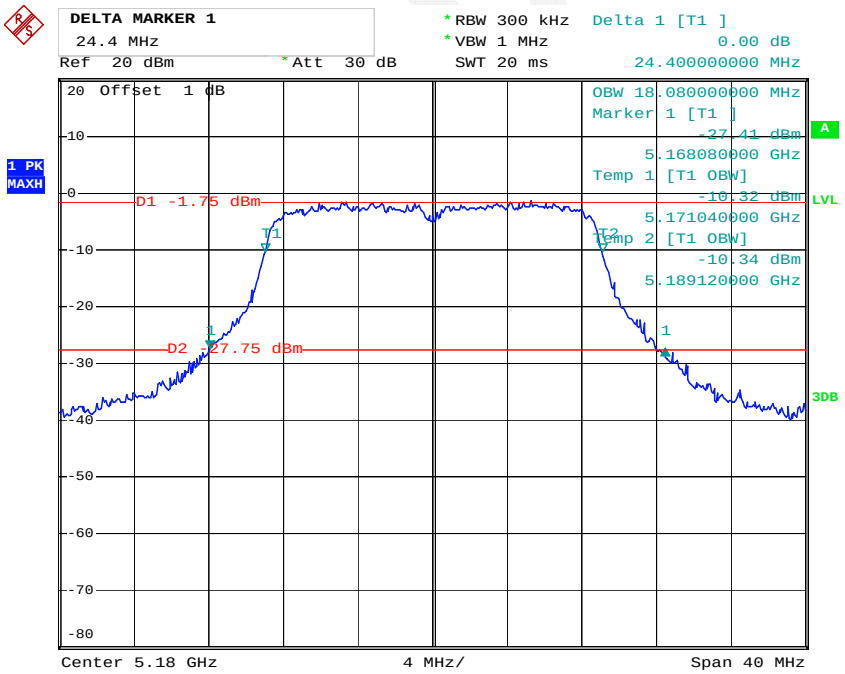

Date: 24.AUG.2015 16:22:42

## 802.11a High Channel



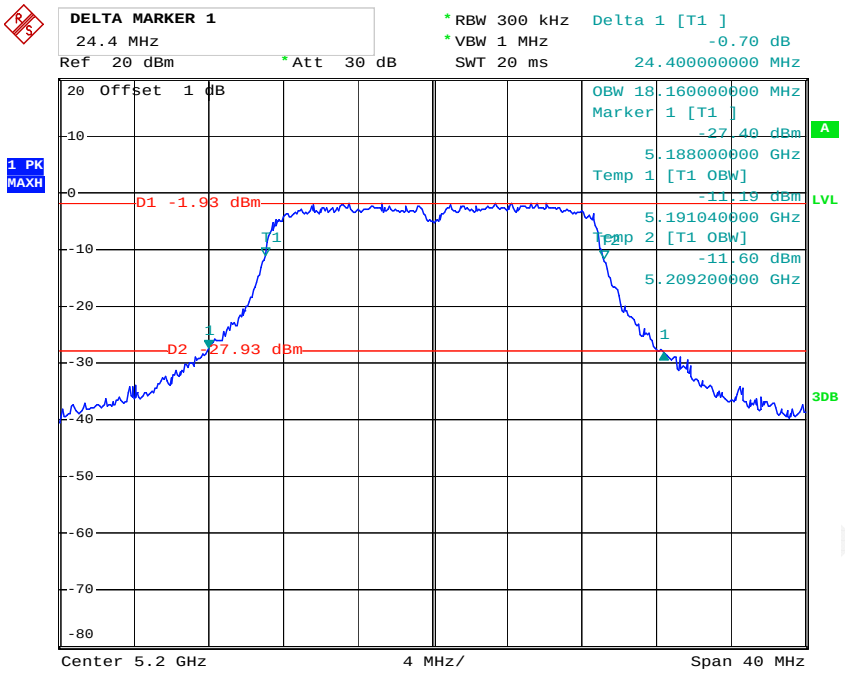

Date: 24.AUG.2015 16:24:35

## 802.11n ht20 Low Channel



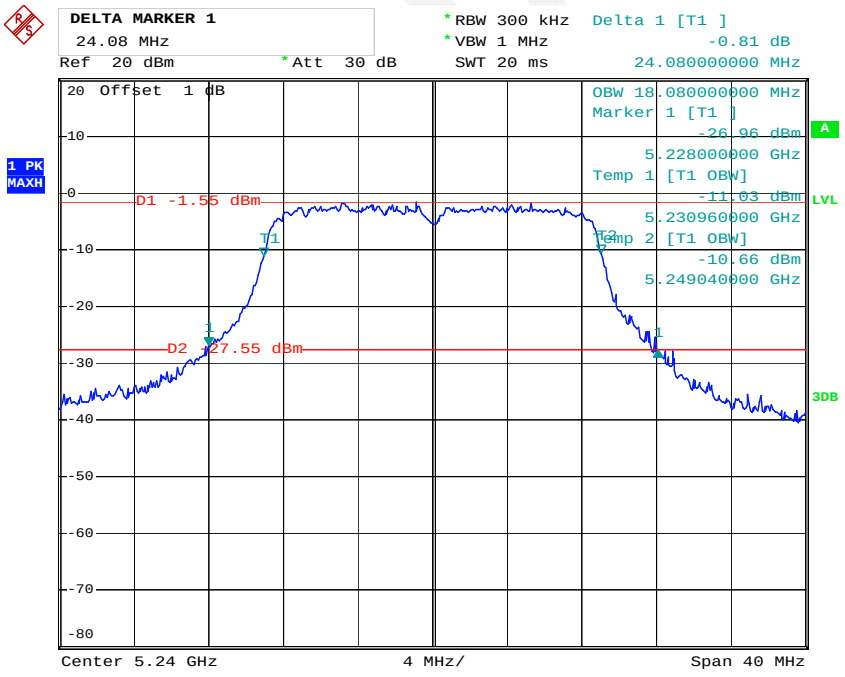

Date: 24.AUG.2015 16:58:43

## 802.11n ht20 Middle Channel



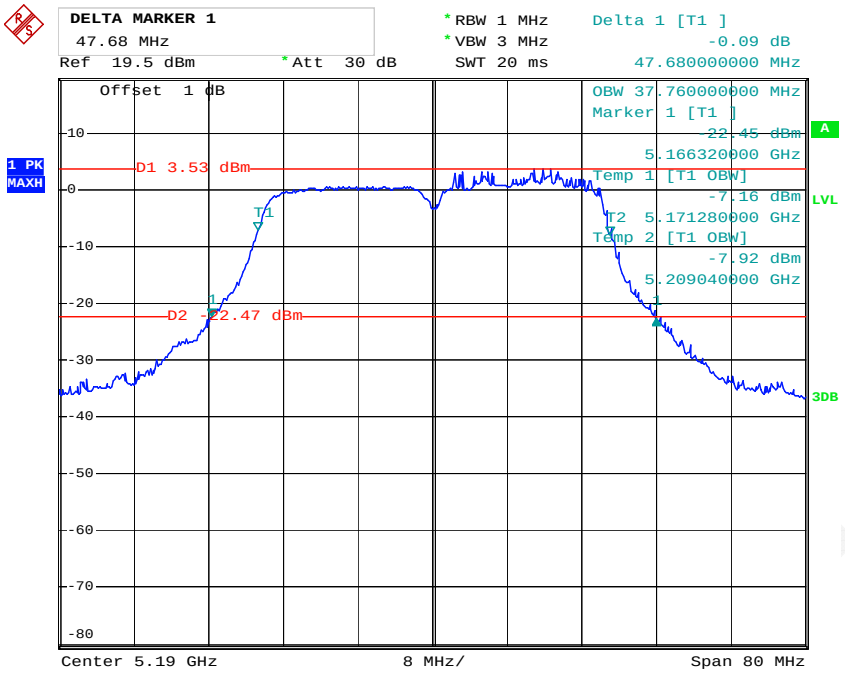

Date: 24.AUG.2015 16:57:08

## 802.11n ht20 High Channel



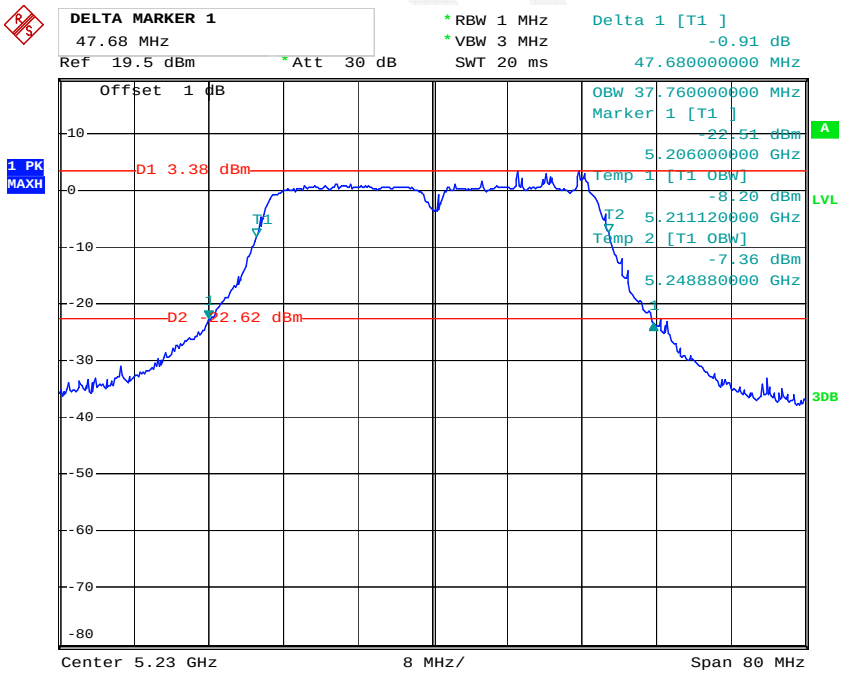

Date: 24.AUG.2015 16:44:29

## 802.11n ht40 Low Channel




Date: 26.AUG.2015 21:02:00

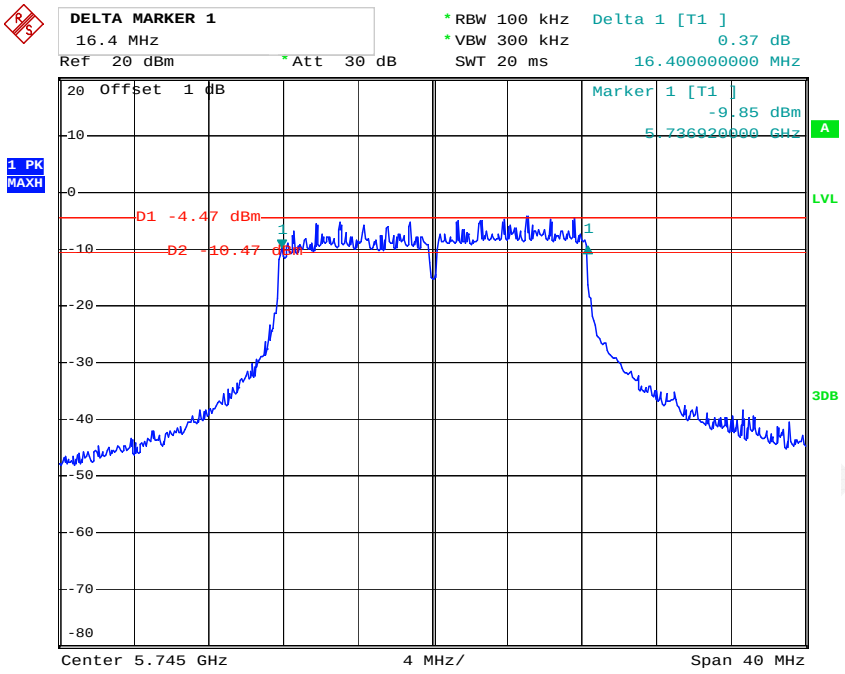
## 802.11n ht40 High Channel




Date: 26.AUG.2015 21:11:41

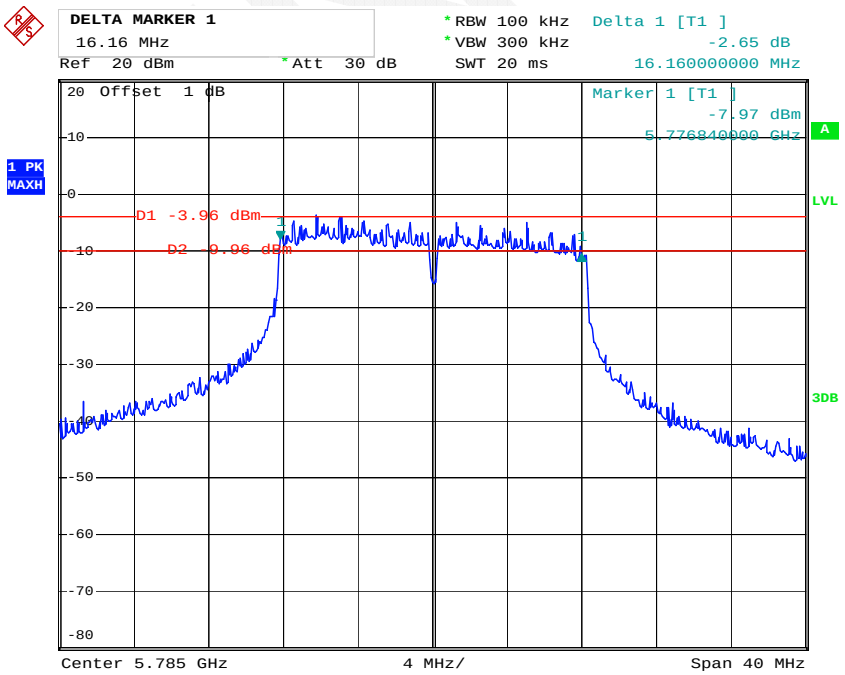
**6dB EBW:**
5725MHz-5850MHz:

**802.11a Low Channel**



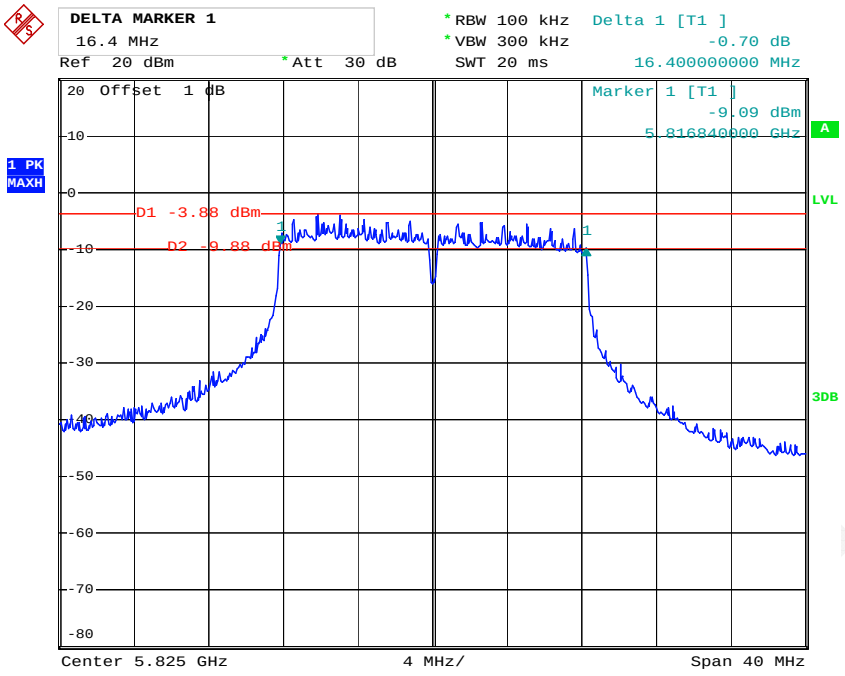

Date: 24.AUG.2015 17:06:58

**802.11a Middle Channel**



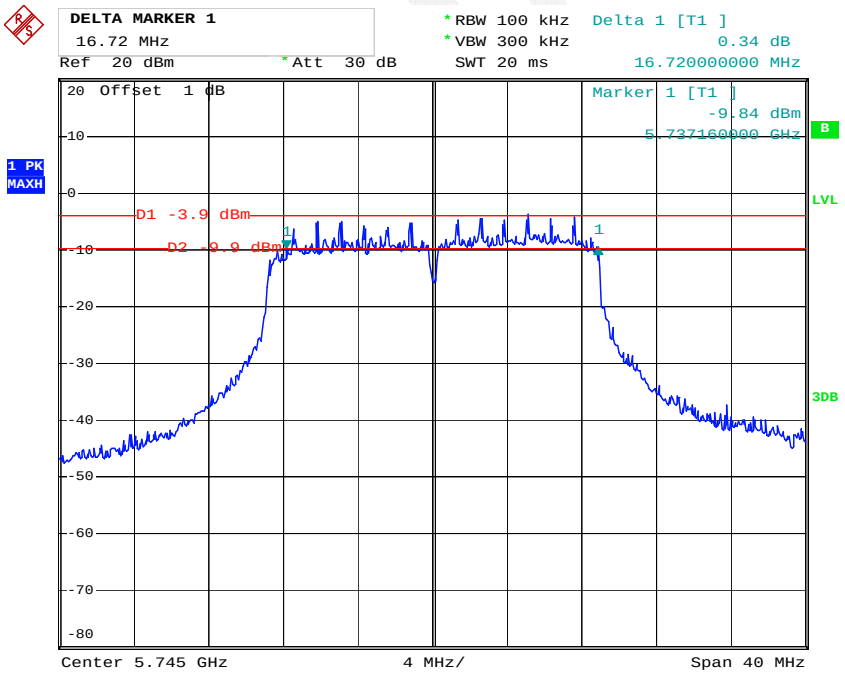

Date: 24.AUG.2015 17:16:04

## 802.11a High Channel



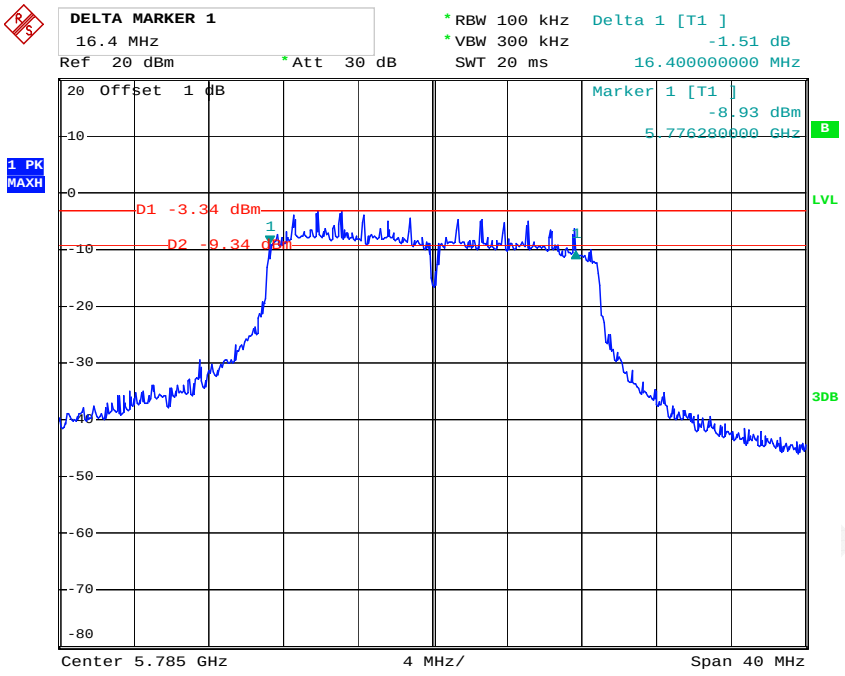

Date: 24.AUG.2015 17:21:08

## 802.11n ht20 Low Channel



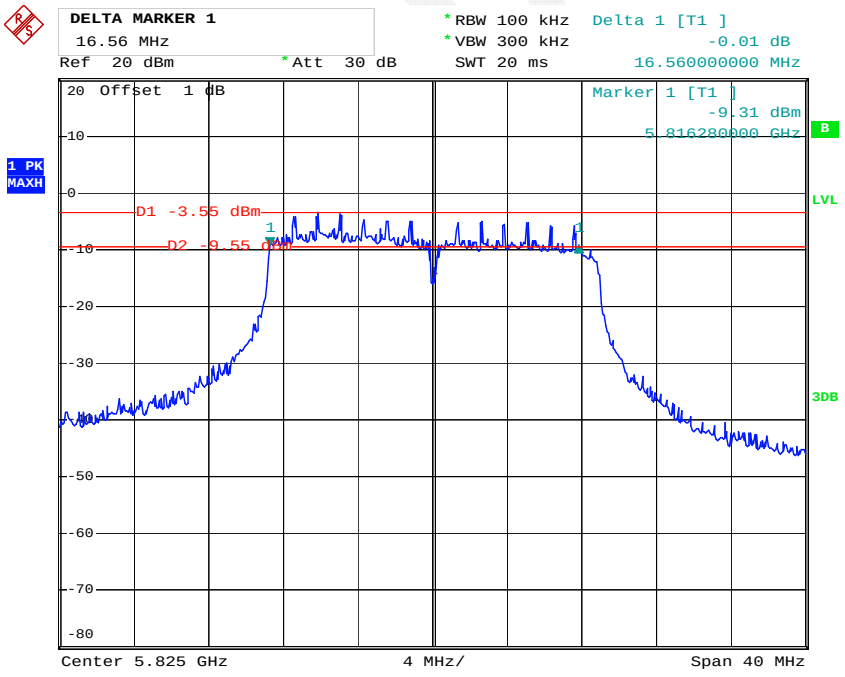

Date: 24.AUG.2015 17:55:41

## 802.11n ht20 Middle Channel



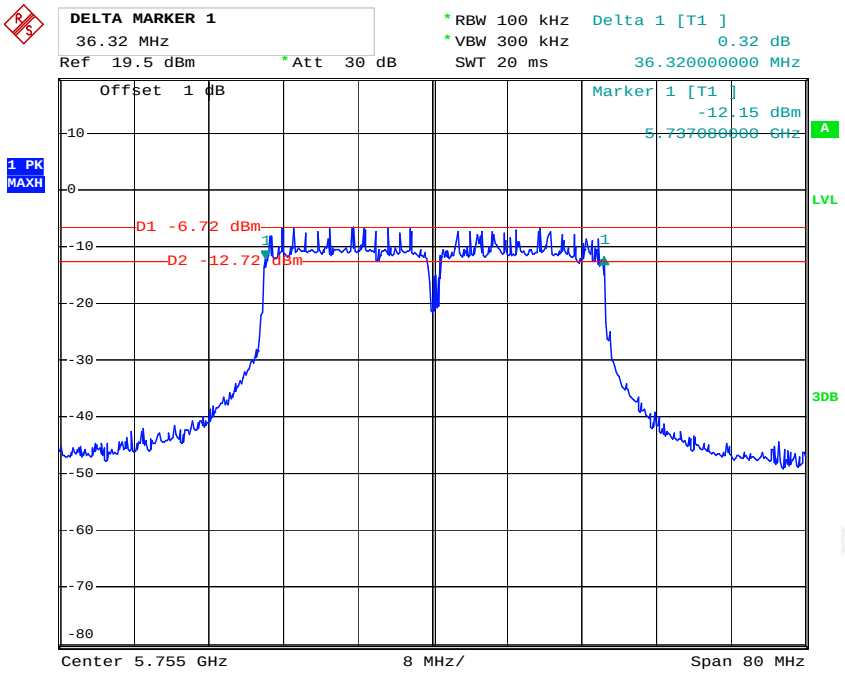

Date: 24.AUG.2015 18:18:18

## 802.11n ht20 High Channel



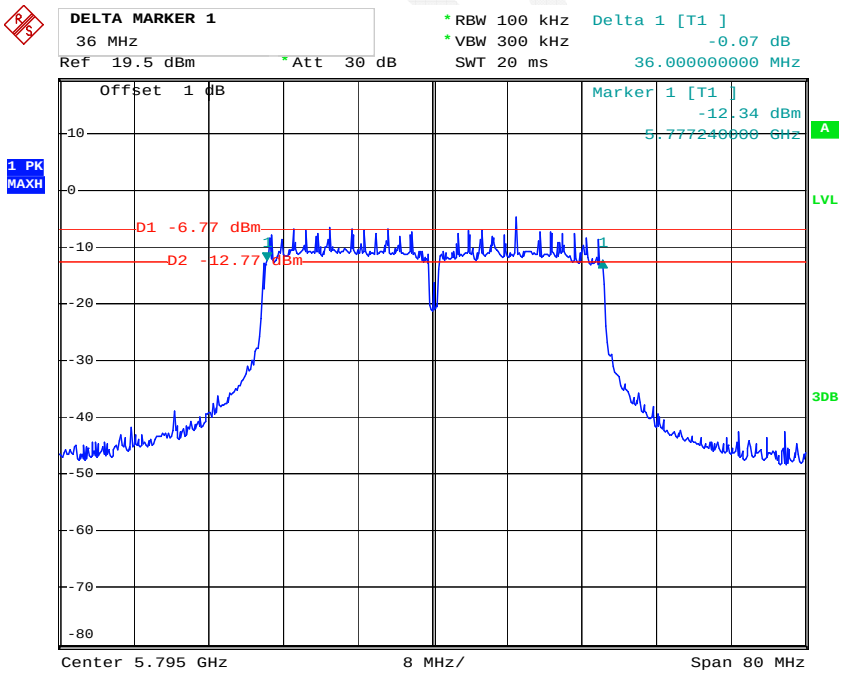

Date: 24.AUG.2015 18:22:05

## 802.11n ht40 Low Channel




Date: 26.AUG.2015 21:38:26

## 802.11n ht40 High Channel




Date: 26.AUG.2015 21:25:53

# 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.

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

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| Agilent | Wideband Power Sensor | N1921A | MY54210016 | 2014-11-03 | 2015-11-03 |
| Agilent | Wideband Power Sensor | N1921A | MY54170013 | 2014-11-03 | 2015-11-03 |
| Agilent | P-Series Power Meter | N1912A | MY5000448 | 2014-11-03 | 2015-11-03 |

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

## Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 27.3-27.6 °C |
| **Relative Humidity:** | 56-59 % |
| **ATM Pressure:** | 99.4-100.2 kPa |

*The testing was performed by Allen Qiao on 2015-08-24 and 2015-08-26.*

*Test Mode: Transmitting*

| UNII Band | Mode | Channel | Frequency(MHz) | RMS Power(dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| 5150-5250MHz | 802.11 a | Low | 5180 | 7.2 | 30 |
| | | Middle | 5200 | 7.24 | 30 |
| | | High | 5240 | 7.42 | 30 |
| | 802.11 n20 | Low | 5180 | 7.04 | 30 |
| | | Middle | 5200 | 6.84 | 30 |
| | | High | 5240 | 6.81 | 30 |
| | 802.11 n40 | Low | 5190 | 7.5 | 30 |
| | | High | 5230 | 7.21 | 30 |
| 5725-5850MHz | 802.11 a | Low | 5745 | 6.84 | 30 |
| | | Middle | 5785 | 6.95 | 30 |
| | | High | 5825 | 6.84 | 30 |
| | 802.11 n20 | Low | 5745 | 6.81 | 30 |
| | | Middle | 5785 | 7.19 | 30 |
| | | High | 5825 | 7.11 | 30 |
| | 802.11 n40 | Low | 5755 | 7.54 | 30 |
| | | High | 5795 | 7.57 | 30 |

# FCC §15.407(a) - POWER SPECTRAL DENSITY

## Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

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

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

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

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

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

## Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSP 38 | 100478 | 2015-05-09 | 2016-05-09 |
| E-Microwave | DC Blocking | EMDCB-00036 | 0E01201047 | 2015-05-06 | 2016-05-06 |

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

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 27.3-27.6 °C |
| **Relative Humidity:** | 56-59 % |
| **ATM Pressure:** | 99.4-100.2 kPa |

*The testing was performed by Allen Qiao on 2015-08-24 and 2015-08-26.*

*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) |
|---|---|---|---|---|---|
| 5150-5250MHz | 802.11 a | Low | 5180 | -3.17 | 17 |
| | | Middle | 5200 | -3.75 | 17 |
| | | High | 5240 | -3.74 | 17 |
| | 802.11 n20 | Low | 5180 | -3.9 | 17 |
| | | Middle | 5200 | -4.32 | 17 |
| | | High | 5240 | -4.35 | 17 |
| | 802.11 n40 | Low | 5190 | -6.49 | 17 |
| | | High | 5230 | -7.26 | 17 |

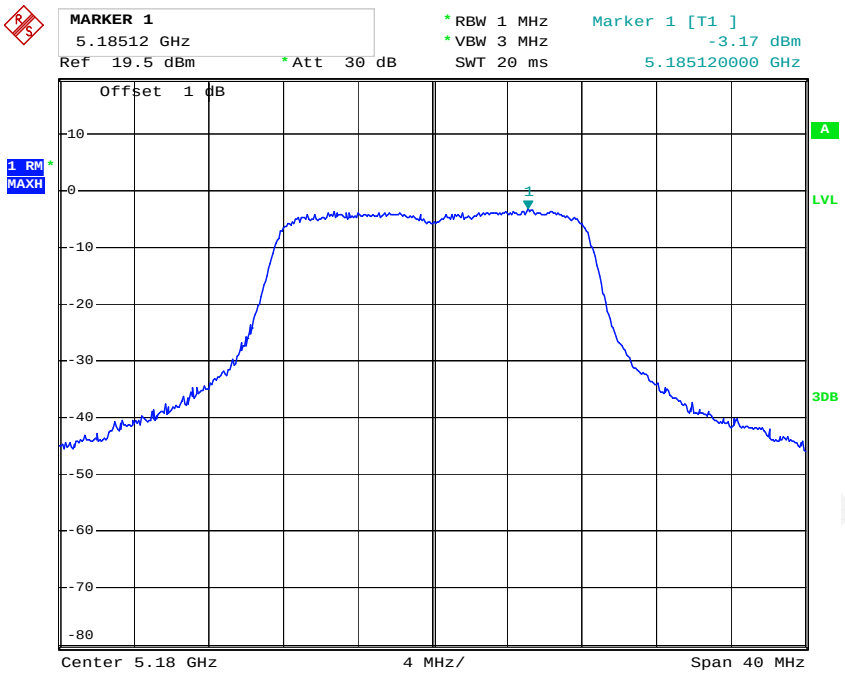
| UNII Band | Mode | Channel | Frequency (MHz) | Power Spectral Density(dBm/300kHz) | Power Spectral Density (dBm/500kHz) | Limit (dBm/500kHz) |
|---|---|---|---|---|---|---|
| 5725-5850MHz | 802.11 a | Low | 5745 | -6.97 | -4.77 | 30 |
| | | Middle | 5785 | -6.63 | -4.43 | 30 |
| | | High | 5825 | -6.49 | -4.29 | 30 |
| | 802.11 n20 | Low | 5745 | -7.43 | -5.23 | 30 |
| | | Middle | 5785 | -7.31 | -5.11 | 30 |
| | | High | 5825 | -7.01 | -4.81 | 30 |
| | 802.11 n40 | Low | 5755 | -9.91 | -7.71 | 30 |
| | | High | 5795 | -10.32 | -8.12 | 30 |

Note: According to 789033 D02 General UNII Test Procedures New Rules v01, the test value for 5725-5850 MHz should add 10*log(500kHz/RBW) to the measured result.

Please refer to the following plots

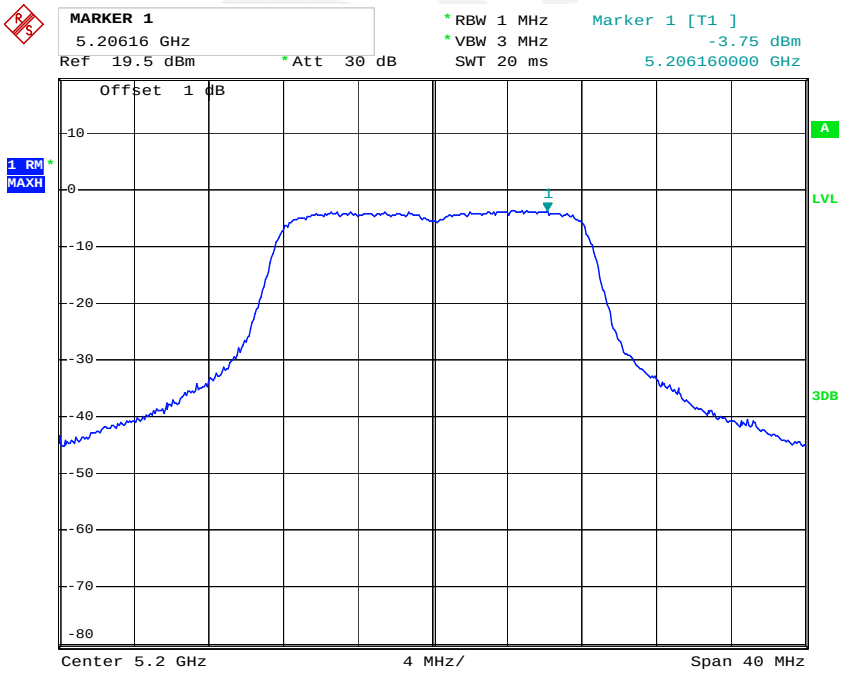
5150MHz-5250MHz:

**Power Spectral Density, 802.11a Low Channel**



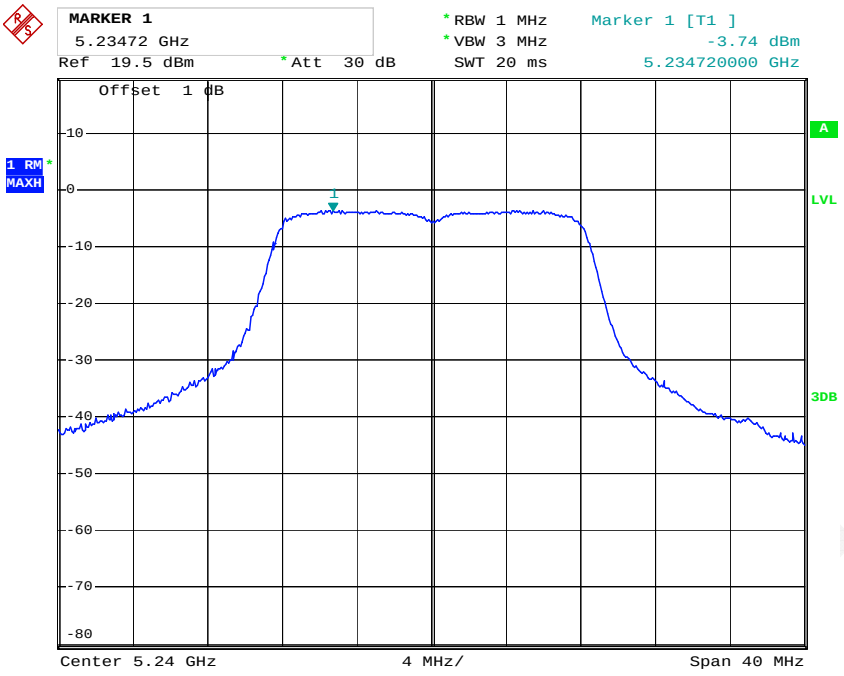

Date: 24.AUG.2015 15:59:57

**Power Spectral Density, 802.11a Middle Channel**



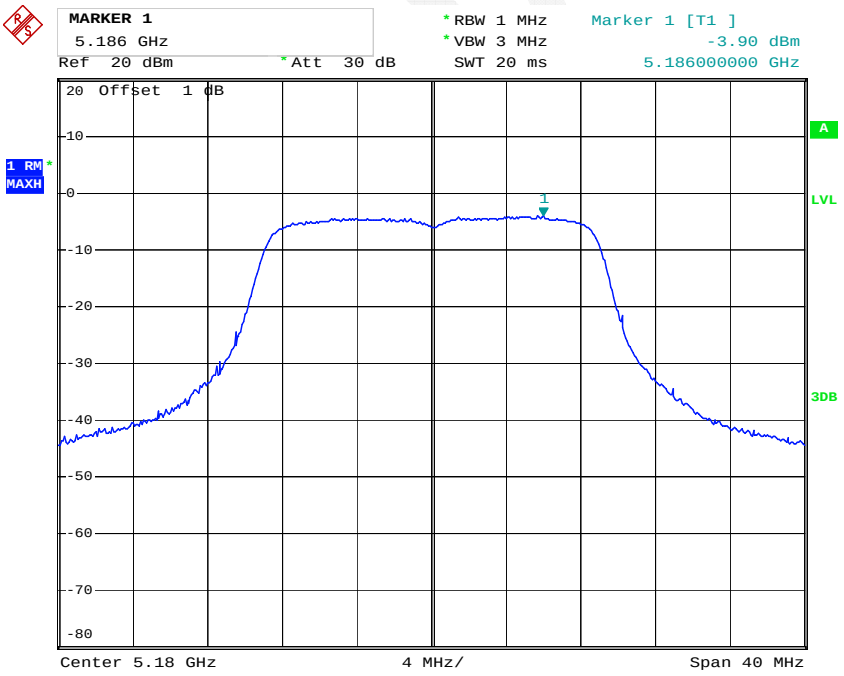

Date: 24.AUG.2015 16:23:12

## Power Spectral Density, 802.11a High Channel



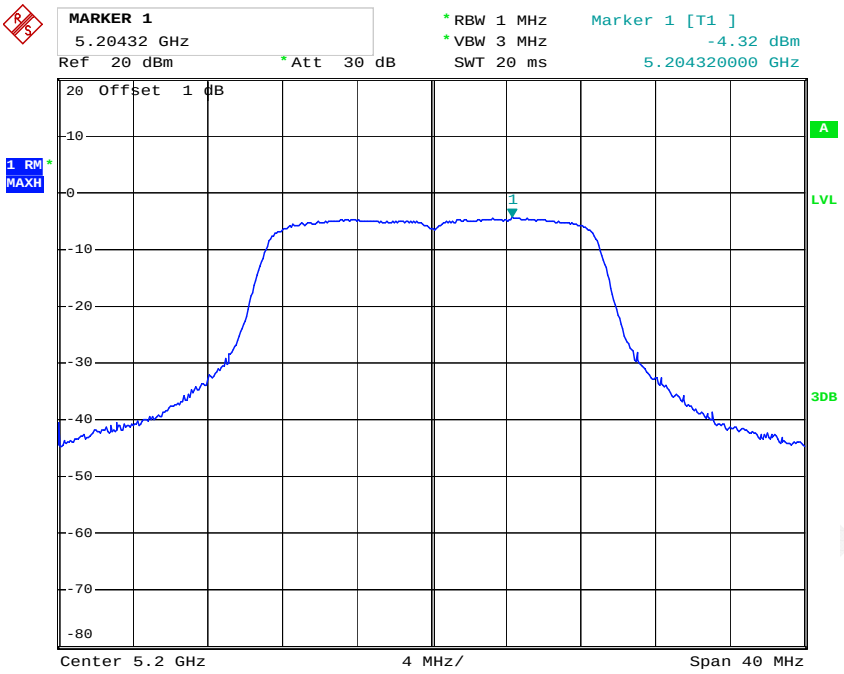

Date: 24.AUG.2015 16:25:32

## Power Spectral Density, 802.11n ht20 Low Channel



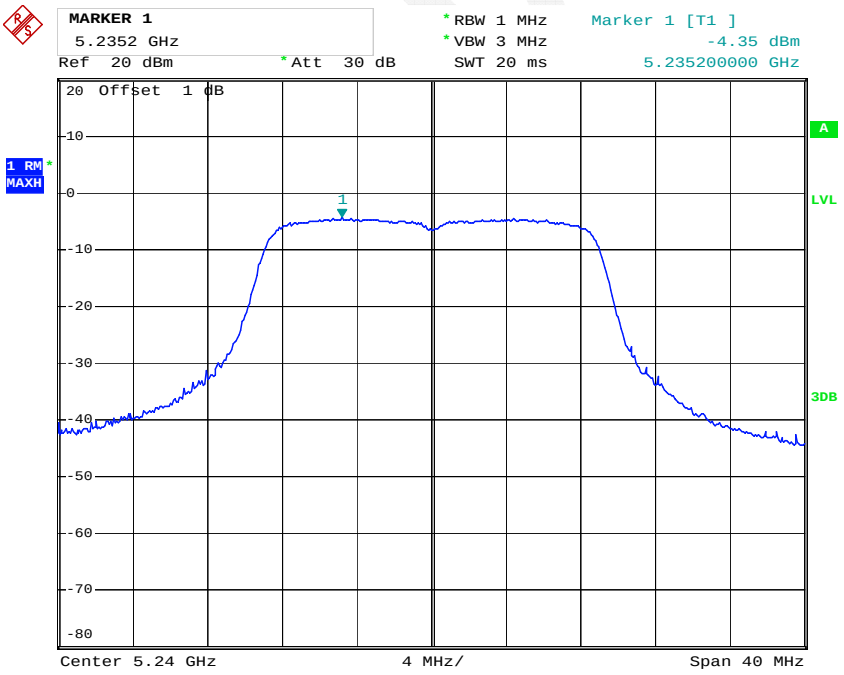

Date: 24.AUG.2015 17:00:10

## Power Spectral Density, 802.11n ht20 Middle Channel



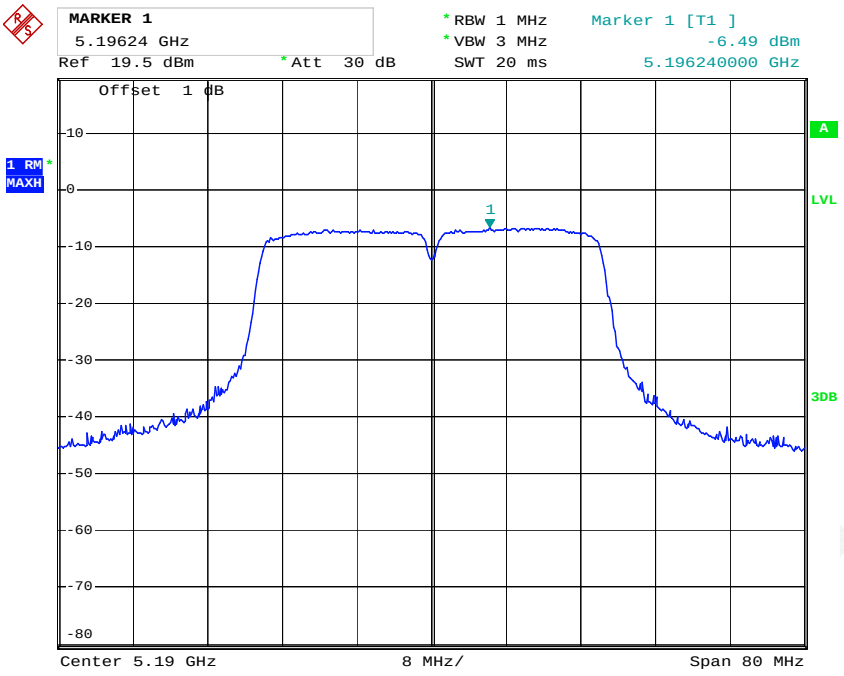

Date: 24.AUG.2015 16:57:34

## Power Spectral Density, 802.11n ht20 High Channel



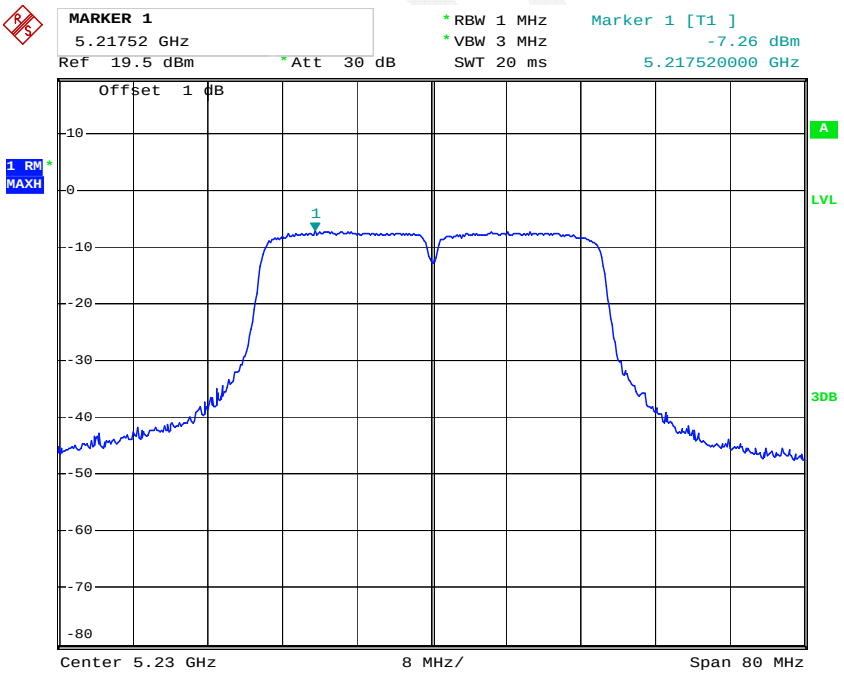

Date: 24.AUG.2015 16:45:14

## Power Spectral Density, 802.11n ht40 Low Channel




Date: 26.AUG.2015 21:03:27

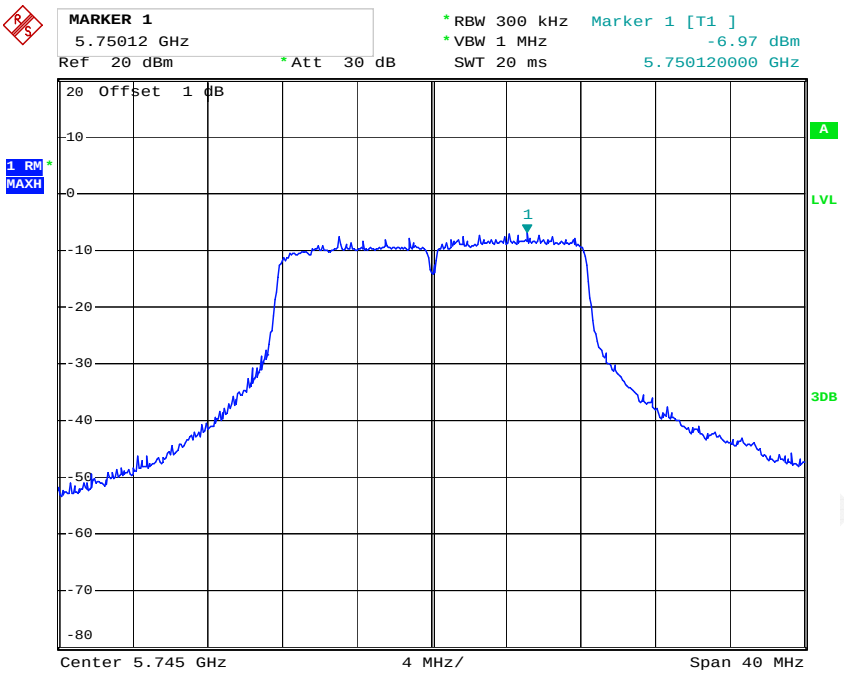
## Power Spectral Density, 802.11n ht40 High Channel




Date: 26.AUG.2015 21:12:25

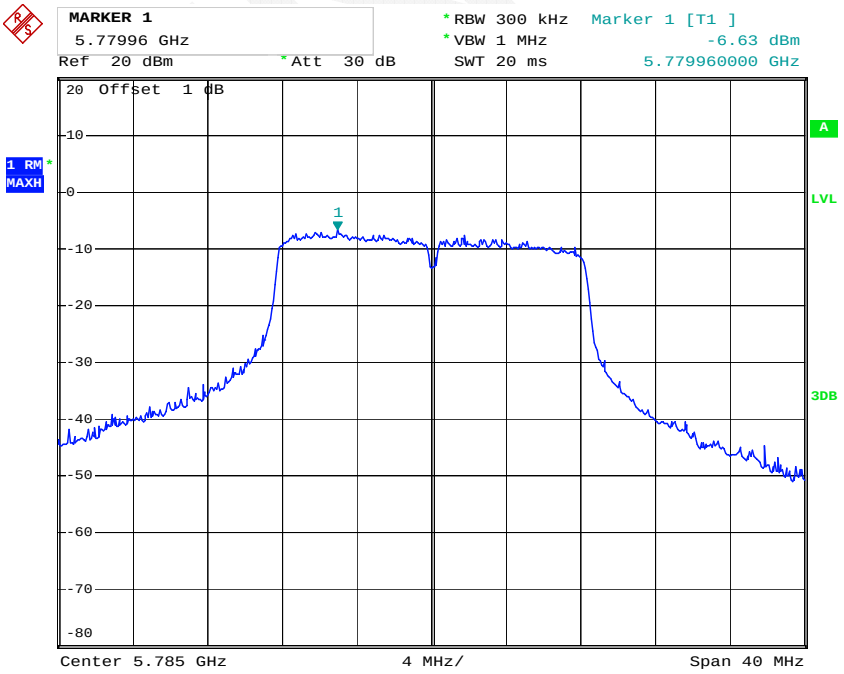
5725MHz-5850MHz:

**Power Spectral Density, 802.11a Low Channel**



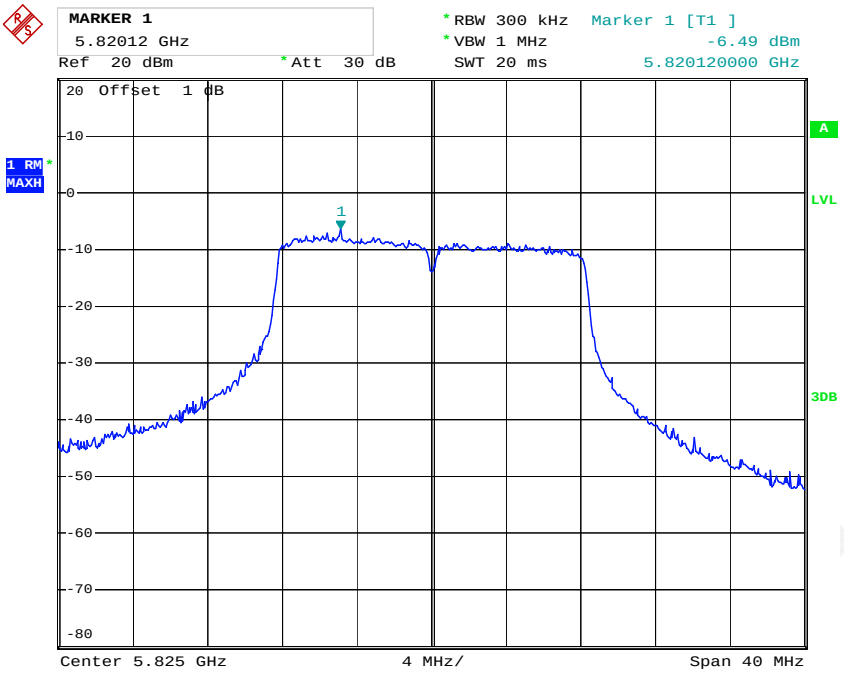

Date: 24.AUG.2015 17:06:10

**Power Spectral Density, 802.11a Middle Channel**



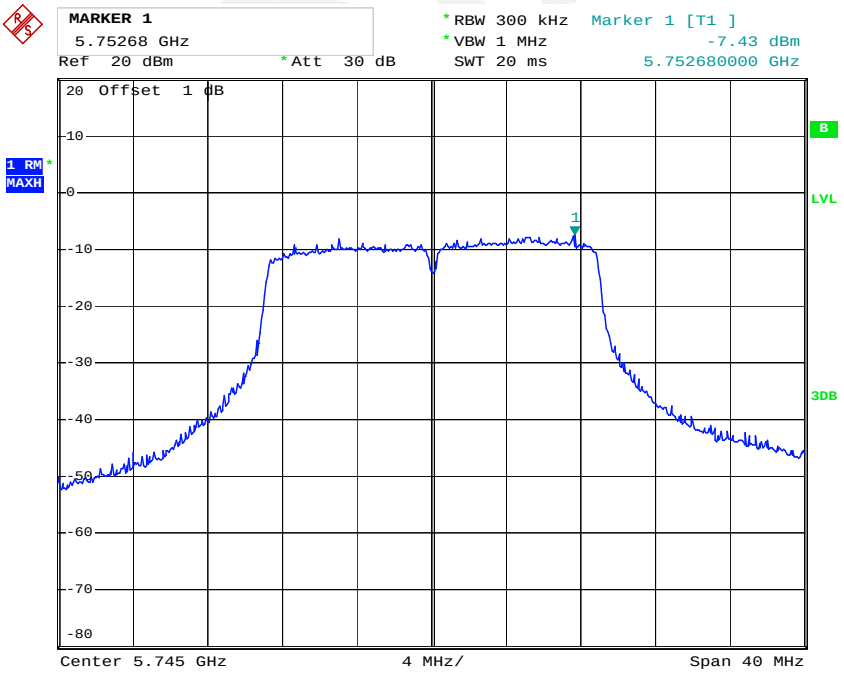

Date: 24.AUG.2015 17:15:23

## Power Spectral Density, 802.11a High Channel



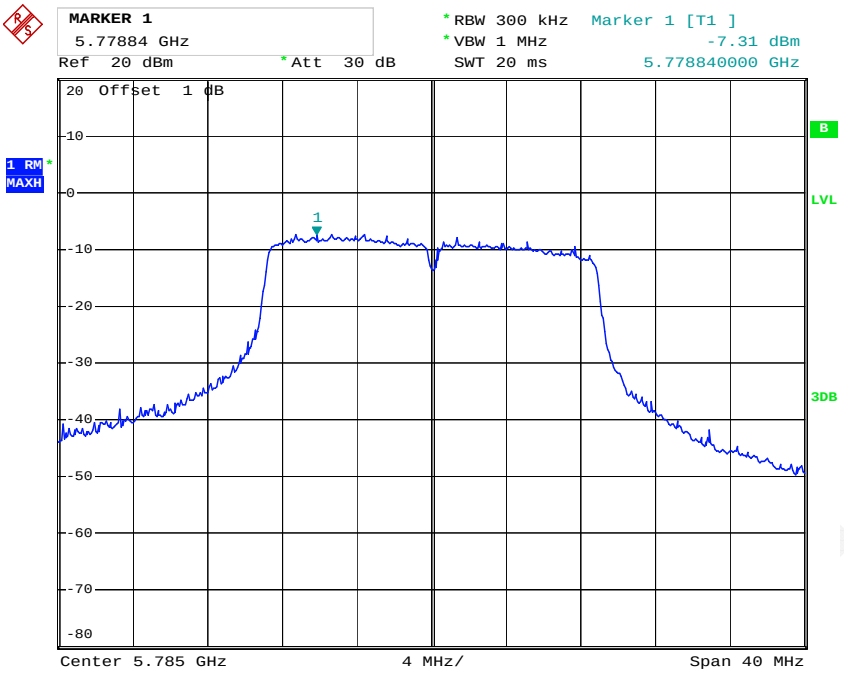

Date: 24.AUG.2015 17:20:21

## Power Spectral Density, 802.11n ht20 Low Channel



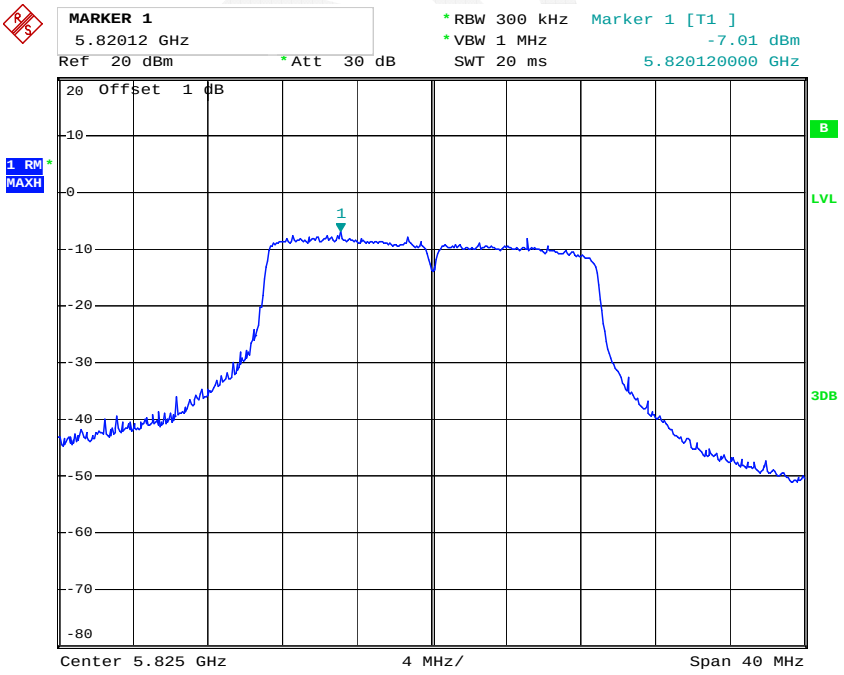

Date: 24.AUG.2015 17:54:57

## Power Spectral Density, 802.11n ht20 Middle Channel



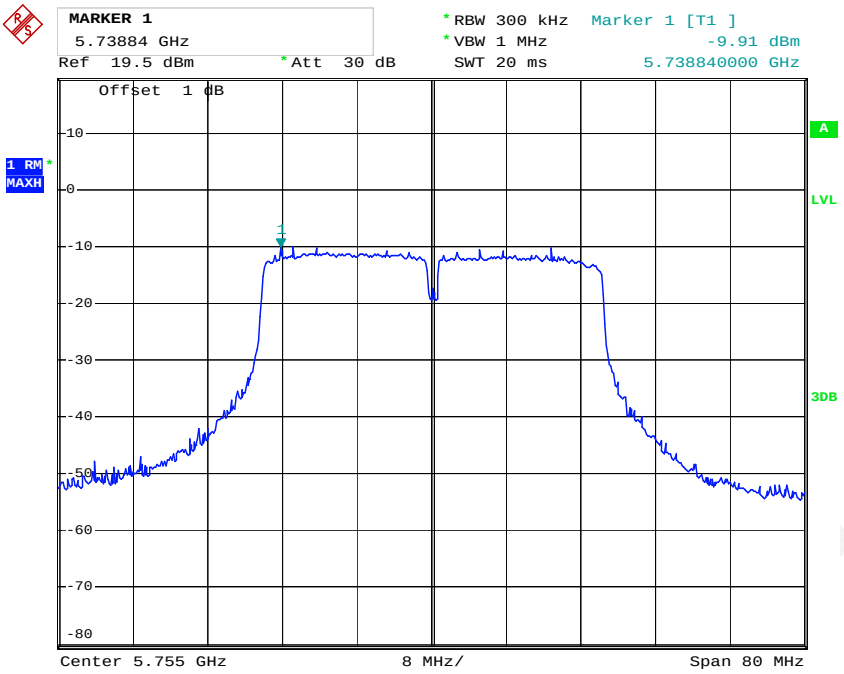

Date: 24.AUG.2015 18:17:32

## Power Spectral Density, 802.11n ht20 High Channel



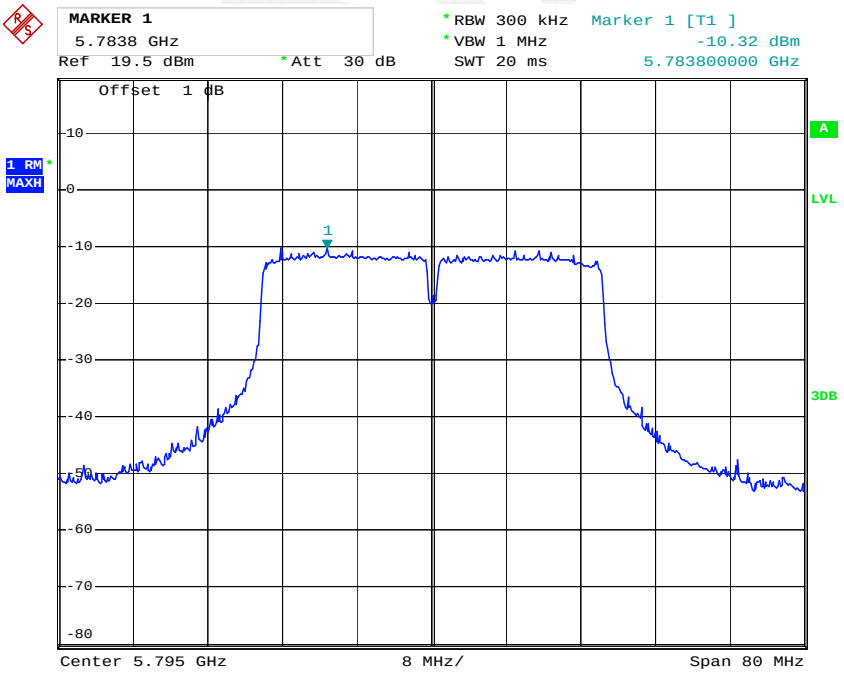

Date: 24.AUG.2015 18:21:20

## Power Spectral Density, 802.11n ht40 Low Channel




Date: 26.AUG.2015 21:36:55

## Power Spectral Density, 802.11n ht40 High Channel




Date: 26.AUG.2015 21:24:16

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