



**FCC 47 CFR PART 15 SUBPART C AND ANSI C63.4:2003
TEST REPORT**

For

Cable Modem

Model : CG6640A

Trade Name : CBN

Issued for

COMPAL BROADBAND NETWORKS, INC.

**7F., No.500, Ruiguang Rd., Neihu, Taipei (11492),
Taiwan, R.O.C.**

Issued by

**Compliance Certification Services Inc.
Hsinchu Lab.**

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Issued Date: August 31, 2012



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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|------------|---------------|--------------|--------------|
| 00 | 08/31/2012 | Initial Issue | All Page 109 | Daphne Liang |
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1. TEST REPORT CERTIFICATION

Applicant : COMPAL BROADBAND NETWORKS, INC.
Address : 7F., No.500, Ruiguang Rd., Neihu, Taipei (11492),
 Taiwan, R.O.C.
Equipment Under Test : Cable Modem
Model : CG6640A
Trade Name : CBN
Tested Date : August 09 ~ 27, 2012

| APPLICABLE STANDARD | |
|--|-------------|
| Standard | Test Result |
| FCC Part 15 Subpart C AND ANSI C63.4:2003 | PASS |

WE HEREBY CERTIFY THAT: The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Reviewed by:

Sb. Lu
Sr. Engineer

Gundam Lin
Sr. Engineer



2. EUT DESCRIPTION

| | |
|----------------------------|---|
| Product Name | Cable Modem |
| Model Number | CG6640A |
| Identify Number | T120809S04 |
| Received Date | August 09, 2012 |
| Frequency Range | IEEE 802.11b/g, 802.11n HT20 : 2412MHz~2462MHz IEEE 802.11n HT40 : 2422MHz~2452MHz |
| Transmit Power | IEEE 802.11b : 21.36 dBm (0.1368W) IEEE 802.11g : 26.35 dBm (0.4315W) IEEE 802.11n HT20 : 28.52 dBm (0.7113W) IEEE 802.11n HT40 : 25.32 dBm (0.3400W) |
| Channel Spacing | IEEE 802.11b/g, 802.11n HT20/HT40 : 5MHz |
| Channel Number | IEEE 802.11b/g, 802.11n HT20 : 11 Channels IEEE 802.11n HT40 : 7 Channels |
| Transmit Data Rate | IEEE 802.11b : 11, 5.5, 2, 1 Mbps IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 : 144.44, 130, 117, 115.56, 104, 86.667, 78, 72.2, 65, 58.5, 57.778, 52, 43.333, 39, 28.889, 26, 21.7, 19.5, 14.444, 13, 7.2, 6.5 Mbps IEEE 802.11n HT40 : 300, 270, 243, 240, 216, 180, 162, 150, 135, 121.5, 120, 108, 90, 81, 60, 54, 45, 40.5, 30, 27, 15, 13.5Mbps |
| Type of Modulation | IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK) |
| Antenna Type | PCB Antenna × 2, Antenna 1 (Chain A) Gain 2.51 dBi, Antenna 2 (Chain B) Gain 2.82 dBi |
| Power Rating | 12Vdc |
| Test Voltage | 120Vac, 60Hz |
| DC Power Cable Type | Non-shielded cable 1.8m (Non-detachable) (For Power Adapter 1) Non-shielded cable 1.5m (Non-detachable) (For Power Adapter 2) |
| I/O Port | RJ-45 Port × 4, Power Port × 1, (Coaxial Cable) RF Port × 1 |



Power Adapter :

| No. | Manufacturer | Model No. | Power Input | Power Output |
|-----|--------------|-----------------|---------------------------|--------------|
| 1 | LEI | MT12-Y120100-A1 | 100-120Vac, 50/60Hz, 0.3A | 12Vdc, 1.0A |
| 2 | LEI | ML18-V120150-A1 | 120Vac, 60Hz, 0.5A | 12Vdc 1.5A |

Remark :

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. For more details, please refer to the User's manual of the EUT.
3. This submittal(s) (test report) is intended for FCC ID: O2UCG6640A filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
4. Client consigns only one sample to test (model number: CG6640A). Therefore, the testing Lab. just guarantees the unit, which has been tested.

3. DESCRIPTION OF TEST MODES

The EUT is an 802.11n transceiver in Cable Modem form factor.

IEEE 802.11b/g Mode : 1TX (Chain A).

IEEE 802.11n HT20/HT40 Mode : 2TX.

Conducted Emission / Radiated Emission Test (Below 1 GHz)

1. The following test modes were scanned during the preliminary test:

| No. | Pre-Test Mode |
|-----|------------------------------------|
| 1 | Normal Operating / Power Adapter 1 |
| 2 | Normal Operating / Power Adapter 2 |

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

| Final Test Mode | | |
|-----------------|--------------------|------------------------------------|
| Emission | Radiated Emission | Normal Operating / Power Adapter 1 |
| | | Normal Operating / Power Adapter 2 |
| | Conducted Emission | Normal Operating / Power Adapter 1 |
| | | Normal Operating / Power Adapter 2 |

Remark : Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.



Conducted / Radiated Emission Test (Above 1 GHz)

IEEE 802.11b, 802.11g, 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

| Channel | Frequency (MHz) |
|---------|-----------------|
| Low | 2412 |
| Middle | 2437 |
| High | 2462 |

IEEE 802.11b mode : 1Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11g mode : 6Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 13Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

| Channel | Frequency (MHz) |
|---------|-----------------|
| Low | 2422 |
| Middle | 2437 |
| High | 2452 |

IEEE 802.11n HT40 mode : 27Mbps data rate (worst case) were chosen for full testing.



4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47, 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

NO. 989-1 Wen Shan Rd., Shang Shan Village,
Qionglin Shiang Hsinchu County 30741, Taiwan, R.O.C

The sites are constructed in conformance with the requirements of ANSI C63.4:2003 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

| | |
|---------------|-----|
| Taiwan | TAF |
|---------------|-----|

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

| | |
|---------------|-----------------|
| Canada | INDUSTRY CANADA |
| Japan | VCCI |
| Taiwan | BSMI |
| USA | FCC MRA |

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>



5.3 MEASUREMENT UNCERTAINTY

The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2.

| PARAMETER | UNCERTAINTY |
|---|-------------|
| Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz | +/- 3.97 |
| Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz | +/- 3.58 |
| Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz | +/- 3.59 |
| Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz | +/- 3.81 |
| Conducted Emission (Mains Terminals), 9kHz to 30MHz | +/- 2.48 |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22: 2006, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.



6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

| No. | Product | Manufacturer | Model No. | Serial No. | FCC ID |
|-----|-------------|-------------------|---------------|------------------------------------|--------|
| 1 | Notebook PC | HP | ProBook 4421s | CNF03242PJ | DoC |
| 2 | Notebook PC | Lenovo ideaPad | S10e_4068-RZ1 | L3CEV2D | DoC |
| 3 | CMTS | MOTOROLA | BSR2000 | Q060351000087447 | --- |
| 4 | Switch Hub | ASUS | GX1008B | 90-Q872AN1N0NAM A0-88QSA1003522 | --- |

| No. | Signal Cable Description |
|-----|------------------------------------|
| 1 | Non-shielded RJ-45 cable, 12m × 1 |
| 2 | Non-shielded RJ-45 cable, 1.2m × 3 |
| 3 | Shielded coaxial cable, 10m × 1 |

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

EUT OPERATING CONDITION

RF Mode:

1. Set up whole system for test as shown on diagram.
2. Pc a fixed ip, into the Network Neighborhood to confirm EUT obtained ip
3. Run Putty software→IP address 192.168.1.100
4. analytes in advance of pressing the power button and hold panel WPS
5. analytes power after about five seconds, the computer will be connected to
6. execution put, to be DOS window is closed
7. Executive MP_TEST, press open, 1 ~ 2 times to control applications

TX Mode:

- Tx Data Rate: 1Mbps Bandwidth 20 (IEEE 802.11b mode) (chain A TX)
- 6Mbps Bandwidth 20 (IEEE 802.11g mode) (chain A TX)
- MSC8 Bandwidth 20 (IEEE 802.11n HT20 mode) (2 TX)
- MCS8 Bandwidth 40 (IEEE 802.11n HT40 mode) (2 TX)

Power control

- IEEE 802.11b Channel Low (2412MHz) TX PowerA 46 (chain A TX)
- IEEE 802.11b Channel Mid (2437MHz) TX PowerA 46 (chain A TX)
- IEEE 802.11b Channel High (2462MHz) TX PowerA 40 (chain A TX)



IEEE 802.11g Channel Low (2412MHz) TX PowerA 52 (chain A TX)
IEEE 802.11g Channel Mid (2437MHz) TX PowerA 61 (chain A TX)
IEEE 802.11g Channel High (2462MHz) TX PowerA 44 (chain A TX)
IEEE 802.11n HT20 Channel Low (2412MHz) TX PowerA 49 /TX PowerB 47
IEEE 802.11n HT20 Channel Mid (2437MHz) TX PowerA 57 /TX PowerB 55
IEEE 802.11n HT20 Channel High (2462MHz) TX PowerA 42 /TX PowerB 41
IEEE 802.11n HT40 Channel Low (2422MHz) TX PowerA 46 /TX PowerB 44
IEEE 802.11n HT40 Channel Mid (2437MHz) TX PowerA 45 /TX PowerB 43
IEEE 802.11n HT40 Channel High (2452MHz) TX PowerA 39 /TX PowerB 37

8. All of the functions are under run.

9. Start test.

Normal Mode:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

1. Setup whole system for test as shown on diagram.
2. Power on all equipments.
3. Coaxial cable link Headend-CMTS.
CMTS set DOWN STREAM : -10 dBmV, UP STREAM: + 40 dBmV.
4. Notebook PC ping EUT IP through LAN connected by RJ-45 cable.
5. Notebook PC ping EUT IP through wireless LAN.
6. EUT and laptop connection transfer rate appears as 1Gbps.
7. LAN 2~4 port link ethernet switch hub.
8. Start the test.



7. FCC PART 15.247 REQUIREMENTS

7.1 6dB BANDWIDTH

LIMITS

§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|--------|---------------|-----------------|
| Spectrum Analyzer | Agilent | E4446A | MY43360132 | 06/14/2013 |

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.



TEST RESULTS

IEEE 802.11b Mode

| Channel | Channel Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (kHz) | Pass / Fail |
|---------|-------------------------|---------------------|---------------------|-------------|
| Low | 2412 | 10.33 | 500 | PASS |
| Middle | 2437 | 10.33 | 500 | PASS |
| High | 2462 | 10.33 | 500 | PASS |

IEEE 802.11g Mode

| Channel | Channel Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (kHz) | Pass / Fail |
|---------|-------------------------|---------------------|---------------------|-------------|
| Low | 2412 | 16.58 | 500 | PASS |
| Middle | 2437 | 16.58 | 500 | PASS |
| High | 2462 | 16.58 | 500 | PASS |

IEEE 802.11n HT20 mode (Two TX)

| Channel | Channel Frequency (MHz) | 6dB Bandwidth (MHz) | | Minimum Limit (kHz) | Pass / Fail |
|---------|-------------------------|---------------------|---------|---------------------|-------------|
| | | Chain A | Chain B | | |
| Low | 2412 | 17.75 | 17.75 | 500 | PASS |
| Middle | 2437 | 17.83 | 17.83 | 500 | PASS |
| High | 2462 | 17.75 | 17.83 | 500 | PASS |

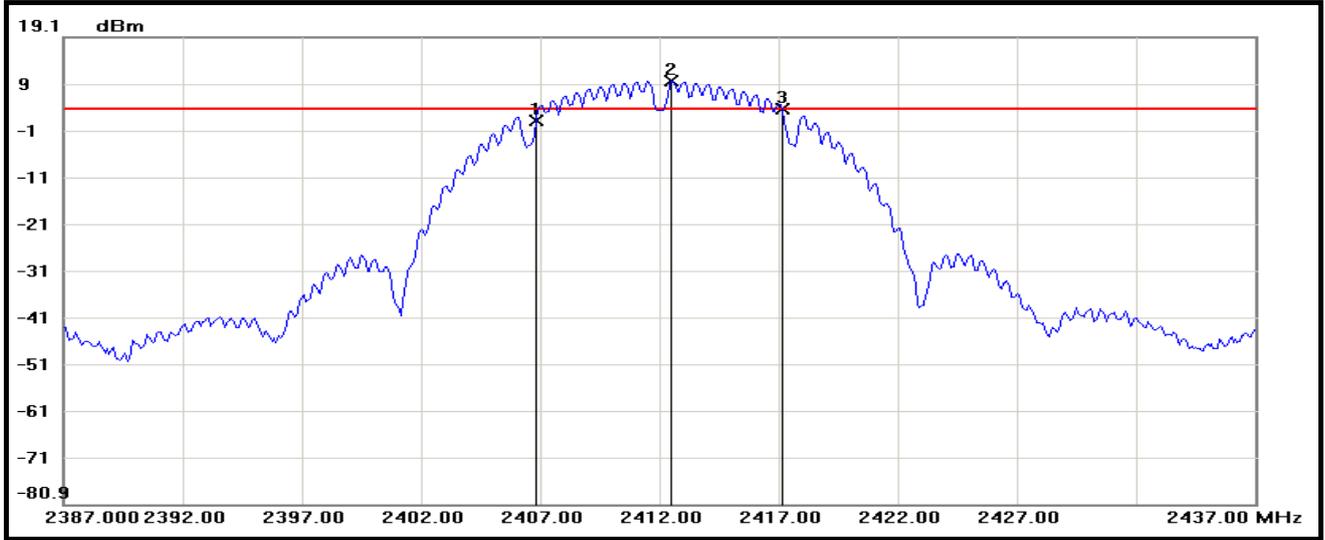
IEEE 802.11n HT40 Mode (Two TX)

| Channel | Channel Frequency (MHz) | 6dB Bandwidth (MHz) | | Minimum Limit (kHz) | Pass / Fail |
|---------|-------------------------|---------------------|---------|---------------------|-------------|
| | | Chain A | Chain B | | |
| Low | 2422 | 36.25 | 35.83 | 500 | PASS |
| Middle | 2437 | 36.17 | 35.83 | 500 | PASS |
| High | 2452 | 36.08 | 36.00 | 500 | PASS |



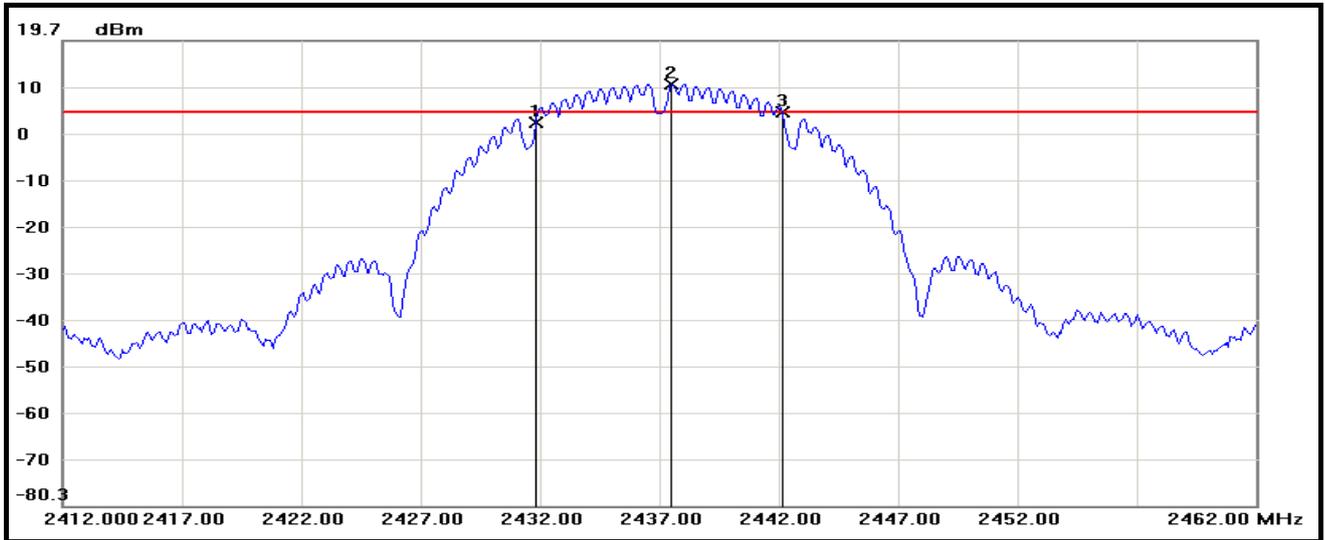
6dB BANDWIDTH

IEEE 802.11b Mode / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2406.8333 | 1.30 |
| 2 | 2412.5000 | 9.75 |
| 3 | 2417.1667 | 3.72 |

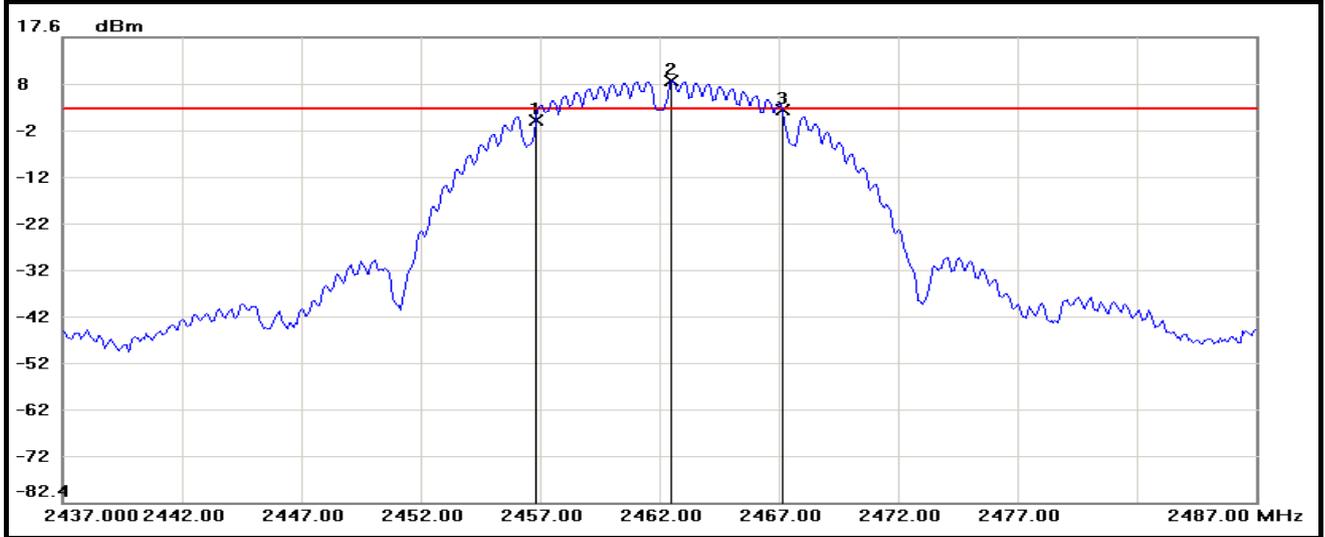
IEEE 802.11b Mode / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2431.8333 | 2.10 |
| 2 | 2437.5000 | 10.45 |
| 3 | 2442.1667 | 4.31 |



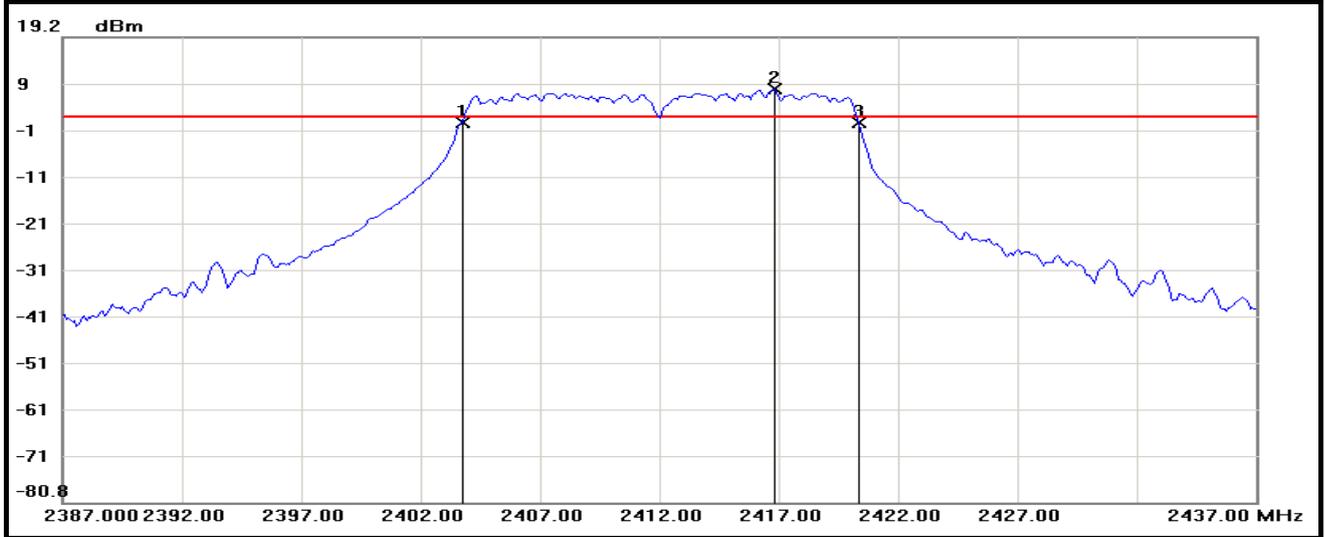
IEEE 802.11b Mode / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2456.8333 | -0.25 |
| 2 | 2462.5000 | 8.15 |
| 3 | 2467.1667 | 2.04 |

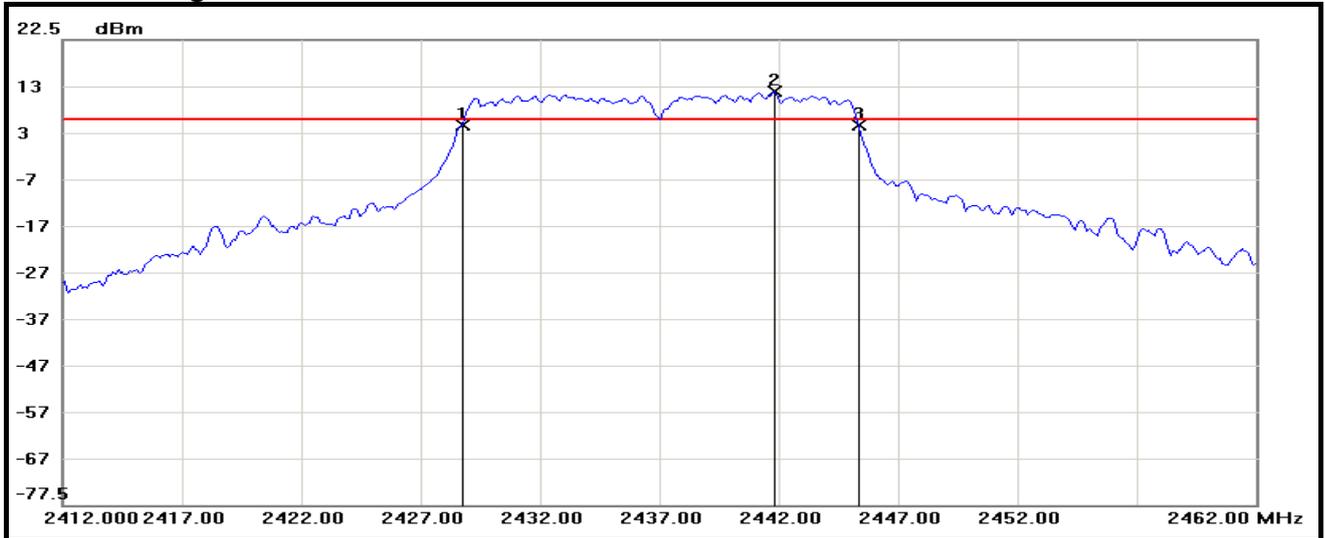


IEEE 802.11g Mode / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2403.7500 | 0.81 |
| 2 | 2416.8333 | 8.02 |
| 3 | 2420.3333 | 0.85 |

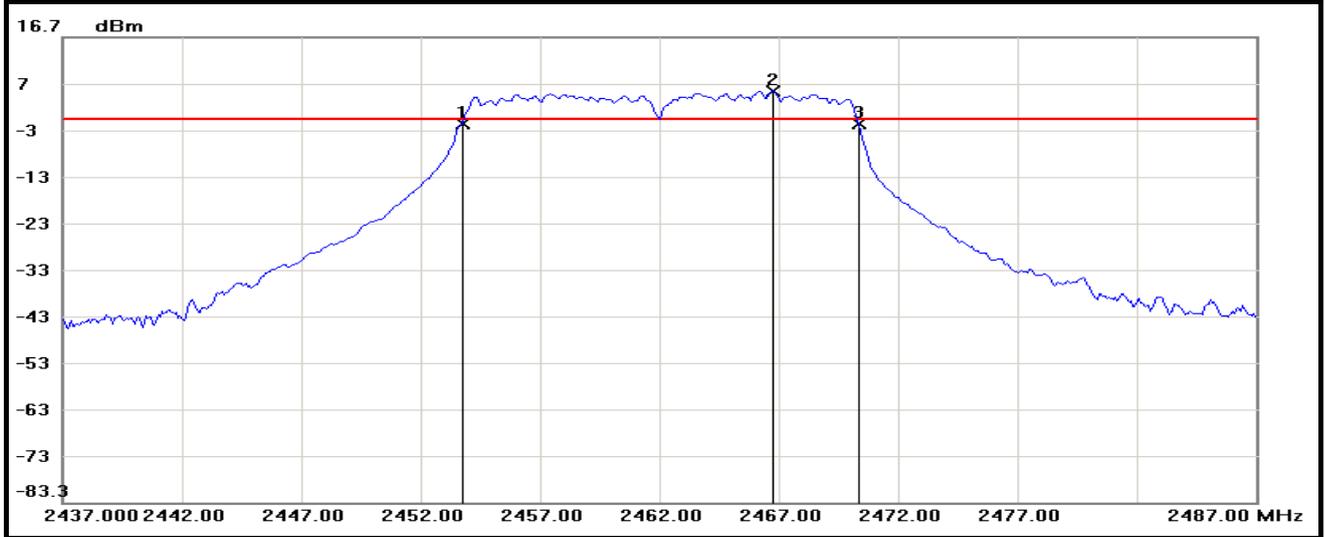
IEEE 802.11g Mode / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2428.7500 | 4.25 |
| 2 | 2441.8333 | 11.33 |
| 3 | 2445.3333 | 4.13 |



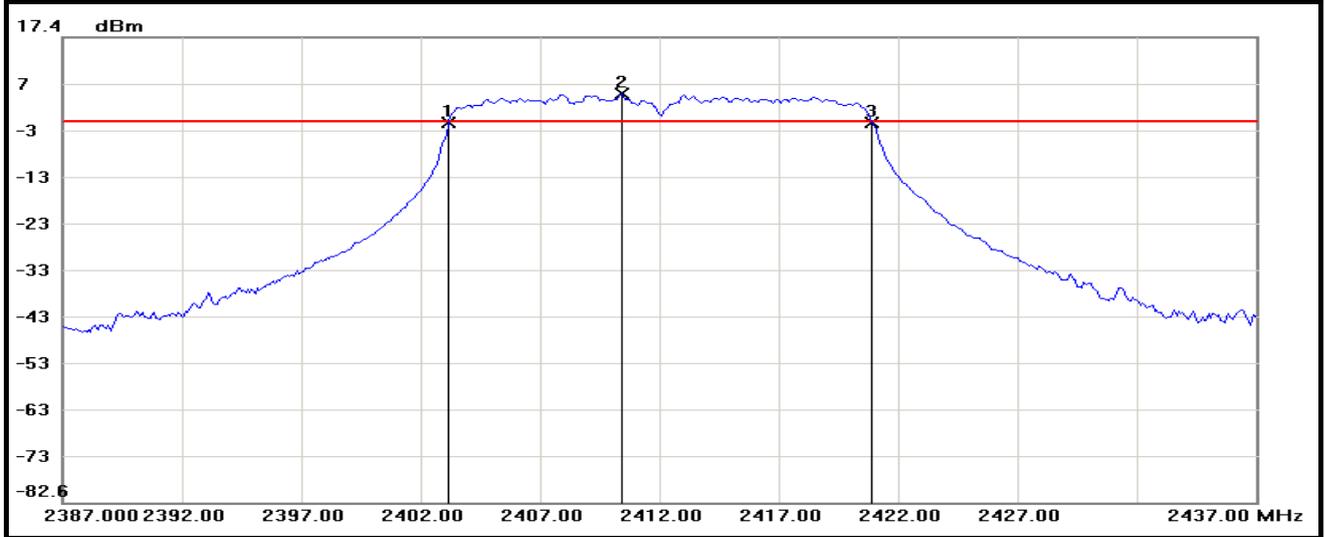
IEEE 802.11g Mode / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2453.7500 | -1.89 |
| 2 | 2466.7500 | 5.24 |
| 3 | 2470.3333 | -1.92 |

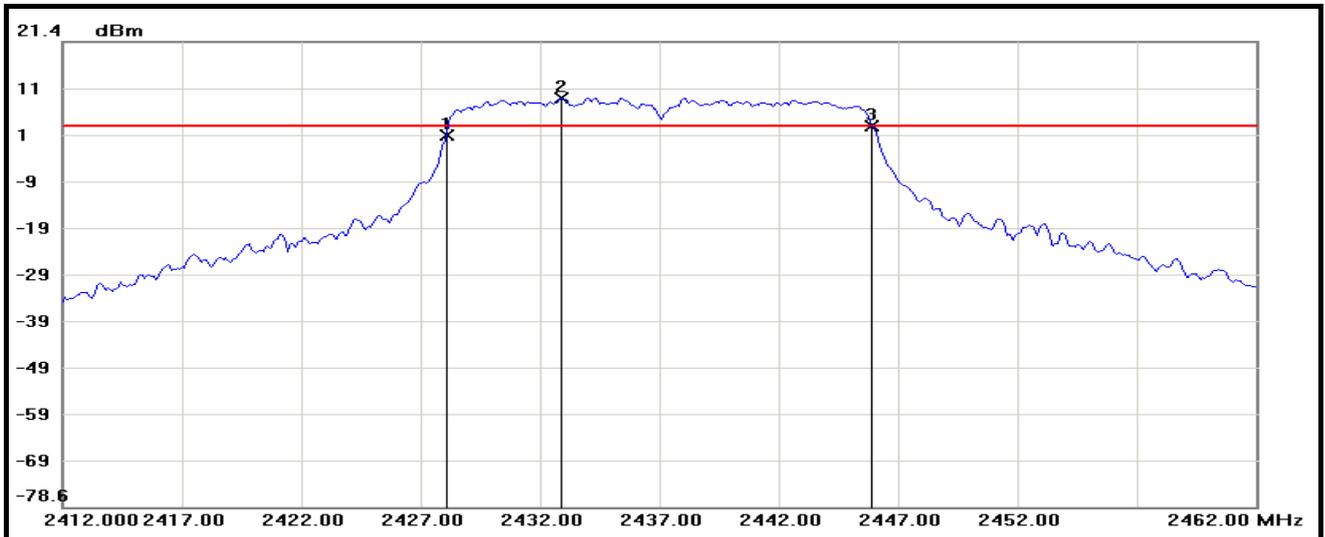


IEEE 802.11n HT20 Mode / Chain A / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2403.1667 | -0.99 |
| 2 | 2410.4167 | 5.16 |
| 3 | 2420.9167 | -1.01 |

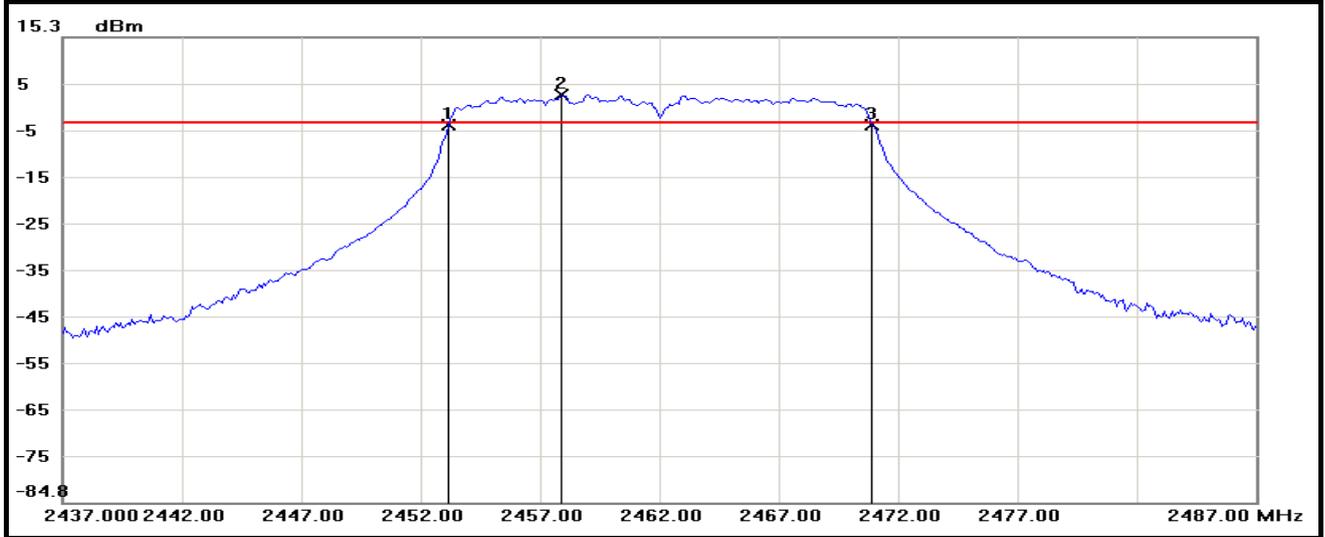
IEEE 802.11n HT20 Mode / Chain A / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2428.0833 | 1.24 |
| 2 | 2432.9167 | 9.33 |
| 3 | 2445.9167 | 3.25 |



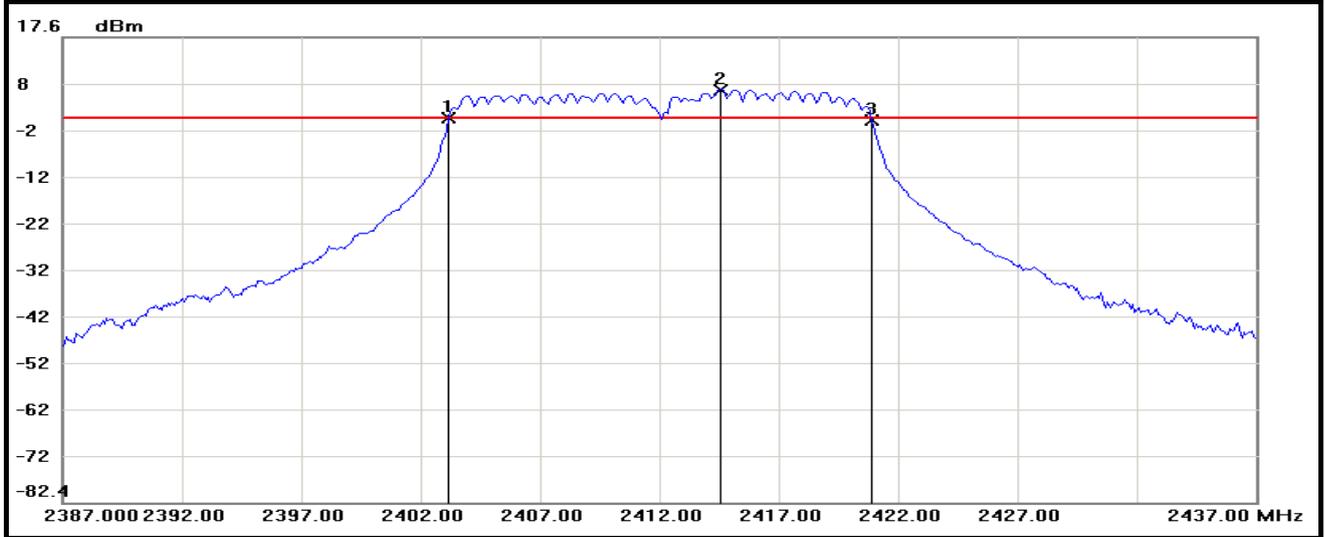
IEEE 802.11n HT20 Mode / Chain A / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2453.1667 | -3.63 |
| 2 | 2457.9167 | 2.79 |
| 3 | 2470.9167 | -3.73 |

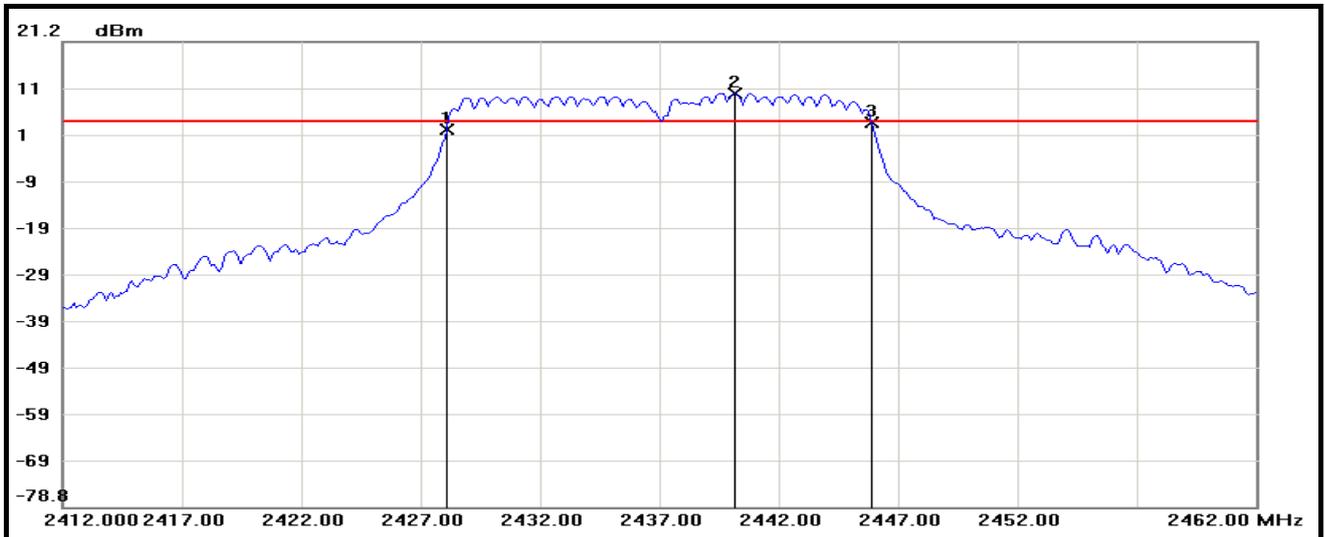


IEEE 802.11n HT20 Mode / Chain B / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2403.1667 | 0.31 |
| 2 | 2414.5833 | 6.35 |
| 3 | 2420.9167 | -0.29 |

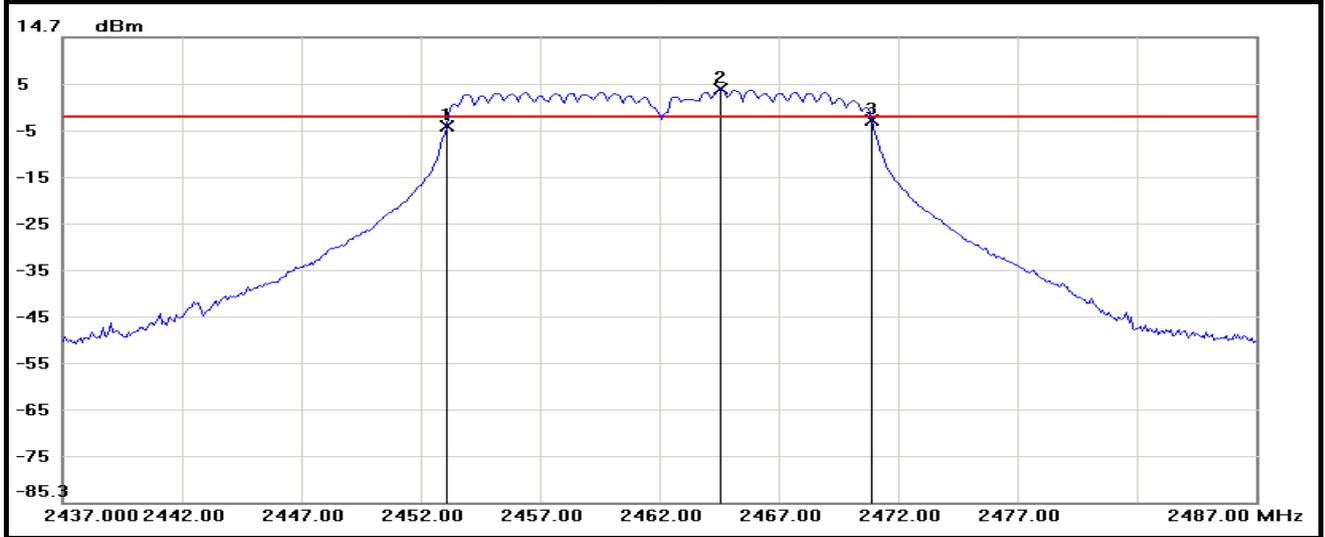
IEEE 802.11n HT20 Mode / Chain B / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2428.0833 | 2.22 |
| 2 | 2440.1667 | 10.11 |
| 3 | 2445.9167 | 3.77 |



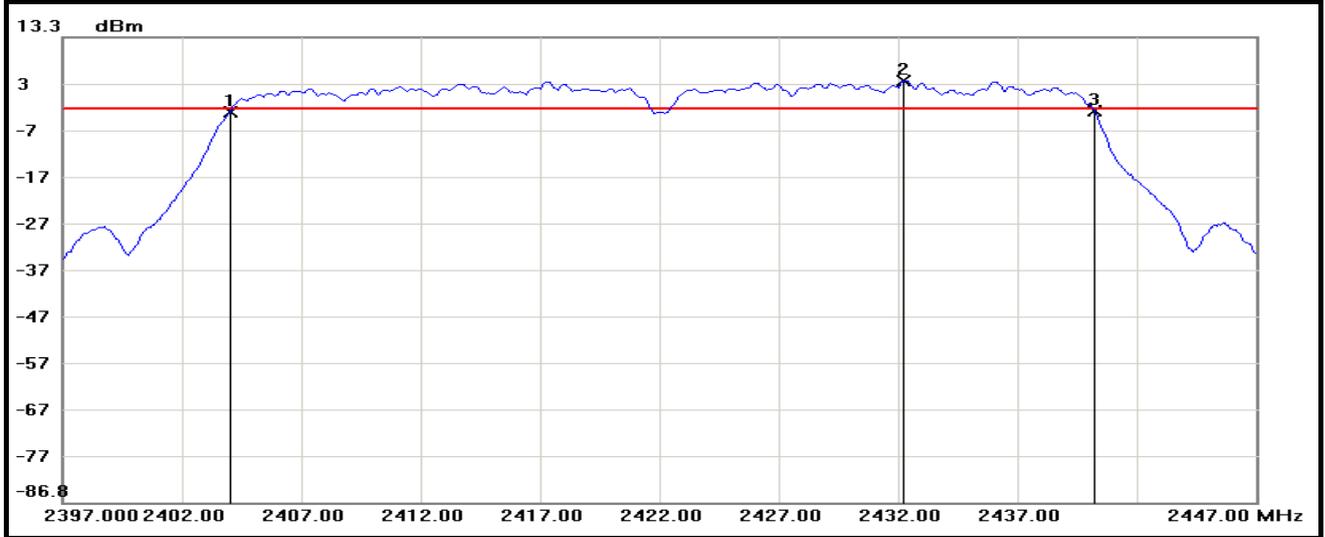
IEEE 802.11n HT20 Mode / Chain B / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2453.0833 | -4.35 |
| 2 | 2464.5833 | 3.50 |
| 3 | 2470.9167 | -3.06 |

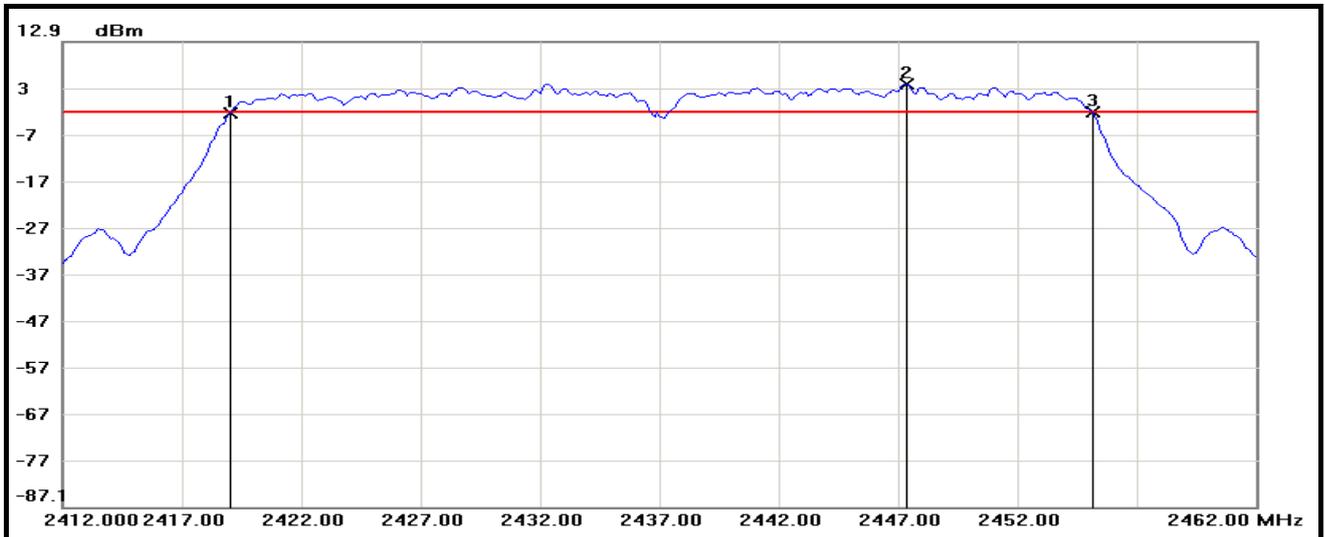


IEEE 802.11n HT40 Mode / Chain A / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2404.0000 | -2.75 |
| 2 | 2432.2500 | 3.96 |
| 3 | 2440.2500 | -2.54 |

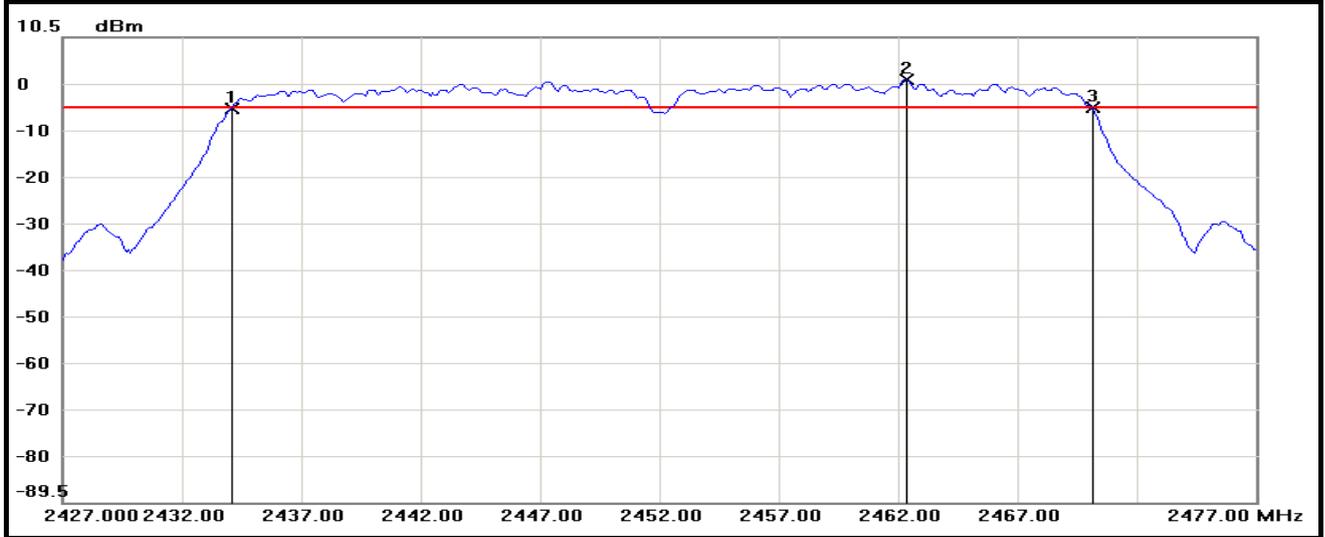
IEEE 802.11n HT40 Mode / Chain A / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2419.0000 | -2.52 |
| 2 | 2447.3333 | 3.90 |
| 3 | 2455.1667 | -2.13 |



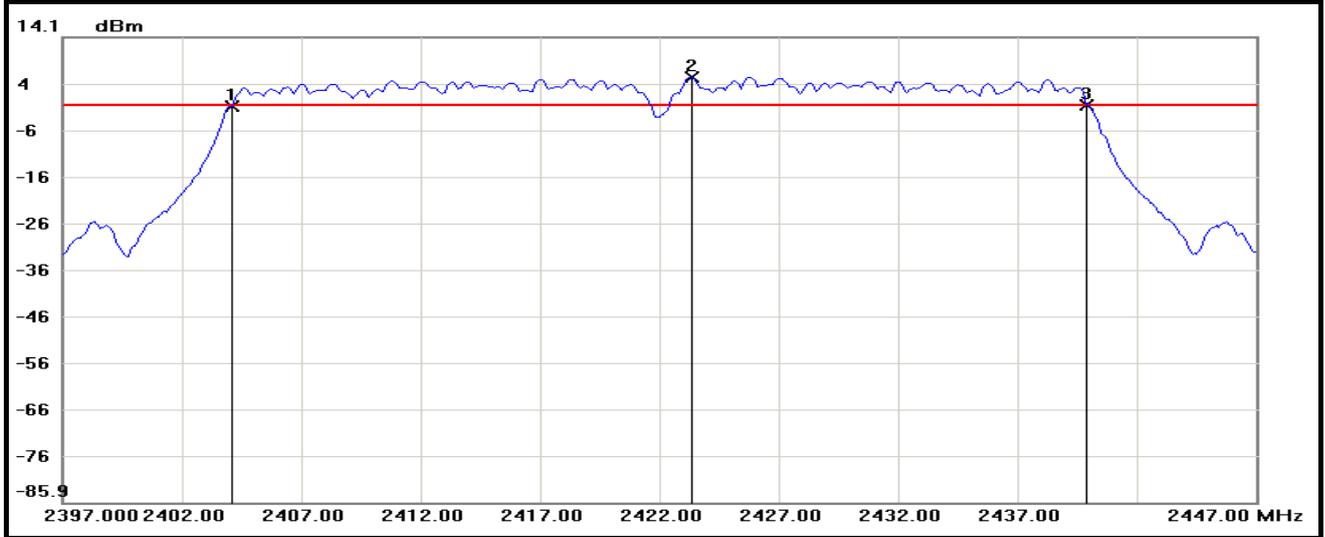
IEEE 802.11n HT40 Mode / Chain A / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2434.0833 | -4.79 |
| 2 | 2462.3333 | 1.29 |
| 3 | 2470.1667 | -4.78 |

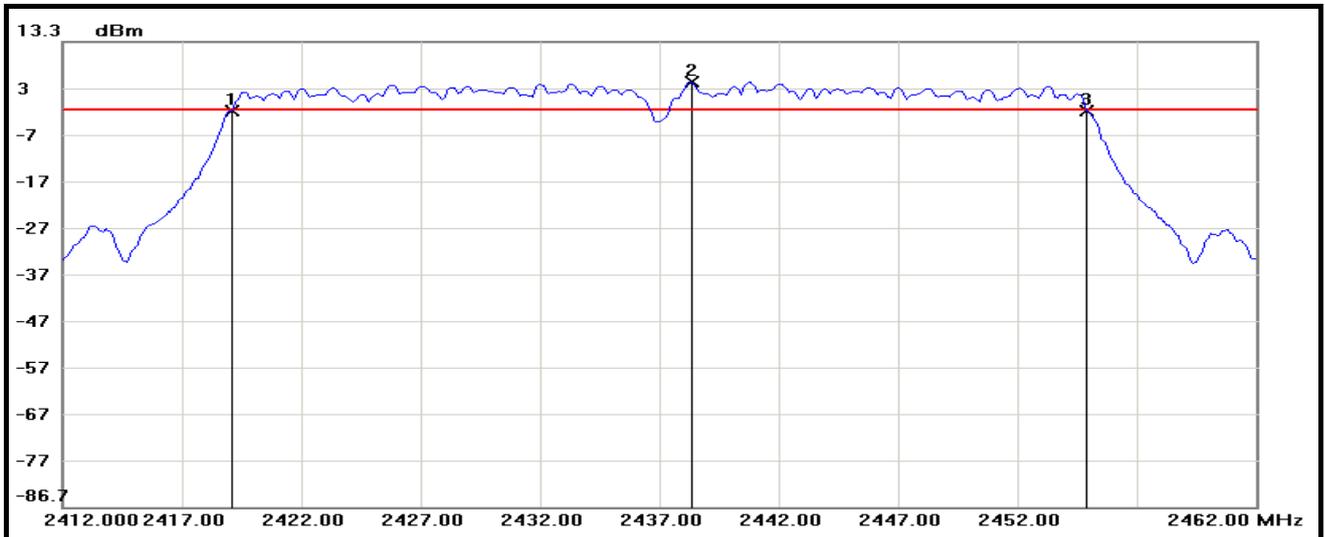


IEEE 802.11n HT40 Mode / Chain B / CH Low



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2404.0833 | -0.85 |
| 2 | 2423.3333 | 5.56 |
| 3 | 2439.9167 | -0.50 |

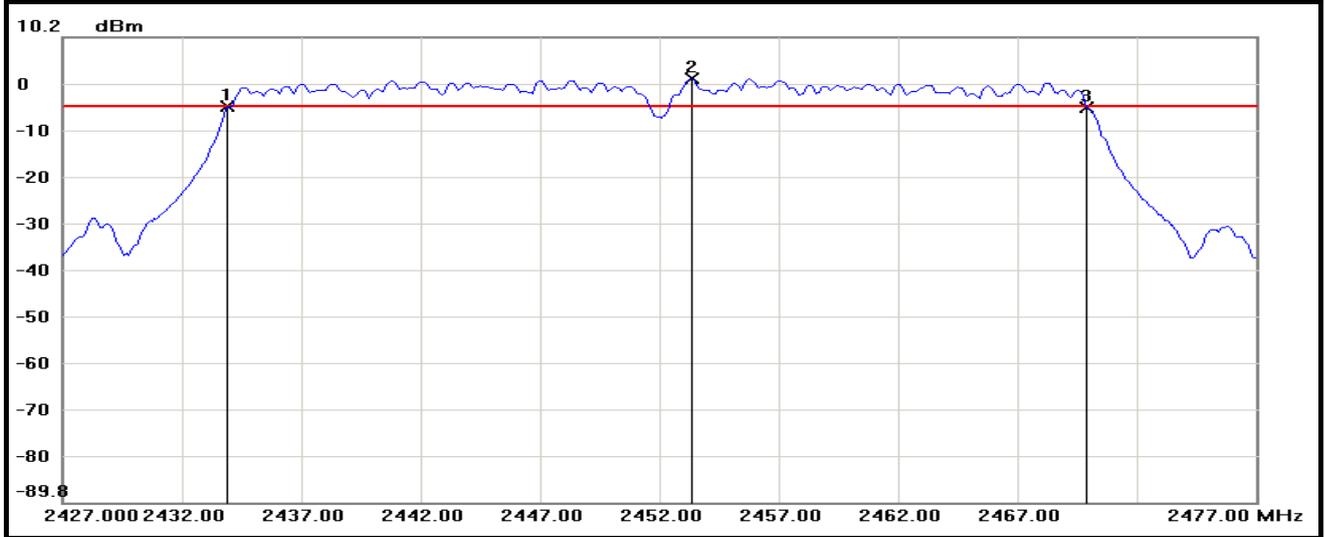
IEEE 802.11n HT40 Mode / Chain B / CH Middle



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2419.0833 | -1.50 |
| 2 | 2438.3333 | 4.67 |
| 3 | 2454.9167 | -1.61 |



IEEE 802.11n HT40 Mode / Chain B / CH High



| No. | Frequency(MHz) | Result(dBm) |
|-----|----------------|-------------|
| 1 | 2433.9167 | -4.75 |
| 2 | 2453.3333 | 1.29 |
| 3 | 2469.9167 | -4.90 |



7.2 MAXIMUM PEAK OUTPUT POWER

LIMITS

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

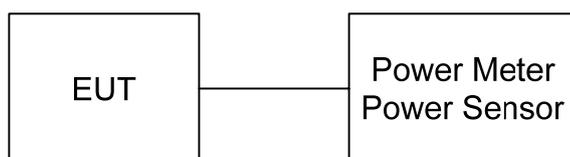
§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|---------|---------------|-----------------|
| Power Meter | Anritsu | ML2495A | 1149001 | 12/07/2012 |
| Power Sensor | Anritsu | MA2411B | 1126148 | 12/14/2012 |

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to the peak power detection.



TEST RESULTS

IEEE 802.11b Mode

| Channel | Channel Frequency (MHz) | Peak Power | | Peak Power Limit | | Pass / Fail |
|---------|-------------------------|------------|--------|------------------|-----|-------------|
| | | (dBm) | (W) | (dBm) | (W) | |
| Low | 2412 | 20.88 | 0.1225 | 30 | 1 | PASS |
| Middle | 2437 | 21.36 | 0.1368 | 30 | 1 | PASS |
| High | 2462 | 18.98 | 0.0791 | 30 | 1 | PASS |

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the [power meter](#) to allow for direct reading of power.

IEEE 802.11g Mode

| Channel | Channel Frequency (MHz) | Peak Power | | Peak Power Limit | | Pass / Fail |
|---------|-------------------------|------------|--------|------------------|-----|-------------|
| | | (dBm) | (W) | (dBm) | (W) | |
| Low | 2412 | 25.17 | 0.3289 | 30 | 1 | PASS |
| Middle | 2437 | 26.35 | 0.4315 | 30 | 1 | PASS |
| High | 2462 | 23.06 | 0.2023 | 30 | 1 | PASS |

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.



IEEE 802.11n HT20 Mode (Two TX)

| Channel | Channel Frequency (MHz) | Peak Power (dBm) | | Peak Power Total | | Peak Power Limit | | Pass / Fail |
|---------|-------------------------|------------------|---------|------------------|--------|------------------|-----|-------------|
| | | Chain A | Chain B | (dBm) | (W) | (dBm) | (W) | |
| Low | 2412 | 23.66 | 23.53 | 26.61 | 0.4577 | 30 | 1 | PASS |
| Middle | 2437 | 25.52 | 25.50 | 28.52 | 0.7113 | 30 | 1 | PASS |
| High | 2462 | 21.45 | 20.70 | 24.10 | 0.2571 | 30 | 1 | PASS |

Remark:

1. At final test to get the worst-case emission at 13Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain for the MIMO mode is 5.68dBi which is less than 6dBi, the limit should be 1W.
4. Total peak power = Chain A + Chain B.

IEEE 802.11n HT40 Mode (Two TX)

| Channel | Channel Frequency (MHz) | Peak Power (dBm) | | Peak Power Total | | Peak Power Limit | | Pass / Fail |
|---------|-------------------------|------------------|---------|------------------|--------|------------------|-----|-------------|
| | | Chain A | Chain B | (dBm) | (W) | (dBm) | (W) | |
| Low | 2422 | 22.32 | 22.29 | 25.32 | 0.3400 | 30 | 1 | PASS |
| Middle | 2437 | 22.30 | 22.29 | 25.31 | 0.3393 | 30 | 1 | PASS |
| High | 2452 | 19.45 | 18.70 | 22.10 | 0.1622 | 30 | 1 | PASS |

Remark:

1. At final test to get the worst-case emission at 27Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain for the MIMO mode is 5.68dBi which is less than 6dBi, the limit should be 1W.
4. Total peak power = Chain A + Chain B.



7.3 POWER SPECTRAL DENSITY

LIMITS

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|--------|---------------|-----------------|
| Spectrum Analyzer | Agilent | E4446A | MY43360132 | 06/14/2013 |

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW ≥ 300 kHz.
4. Set the span to 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{kHz} = -15.2\text{ dB})$.



TEST RESULTS

IEEE 802.11b Mode

| Channel | Channel Frequency (MHz) | Final RF Power Level In 3kHz BW (dBm) | Minimum Limit (dBm) | Pass / Fail |
|---------|-------------------------|---------------------------------------|---------------------|-------------|
| Low | 2412 | -6.79 | 8 | PASS |
| Middle | 2437 | -6.15 | 8 | PASS |
| High | 2462 | -8.40 | 8 | PASS |

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g Mode

| Channel | Channel Frequency (MHz) | Final RF Power Level In 3kHz BW (dBm) | Minimum Limit (dBm) | Pass / Fail |
|---------|-------------------------|---------------------------------------|---------------------|-------------|
| Low | 2412 | -12.82 | 8 | PASS |
| Middle | 2437 | -9.54 | 8 | PASS |
| High | 2462 | -15.56 | 8 | PASS |

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



IEEE 802.11n HT20 Mode (Two TX)

| Channel | Channel Frequency (MHz) | Final RF Power Level In 3kHz BW (dBm) | | Total Power Spectral Density (dBm) | Minimum Limit (dBm) | Pass / Fail |
|---------|-------------------------|---------------------------------------|---------|------------------------------------|---------------------|-------------|
| | | Chain A | Chain B | | | |
| Low | 2412 | -15.03 | -13.68 | -11.29 | 8 | PASS |
| Middle | 2437 | -11.01 | -9.96 | -7.44 | 8 | PASS |
| High | 2462 | -17.29 | -16.46 | -13.84 | 8 | PASS |

Remark:

1. At final test to get the worst-case emission at 13Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. Total power spectral density = Chain A + Chain B.

IEEE 802.11n HT40 Mode (Two TX)

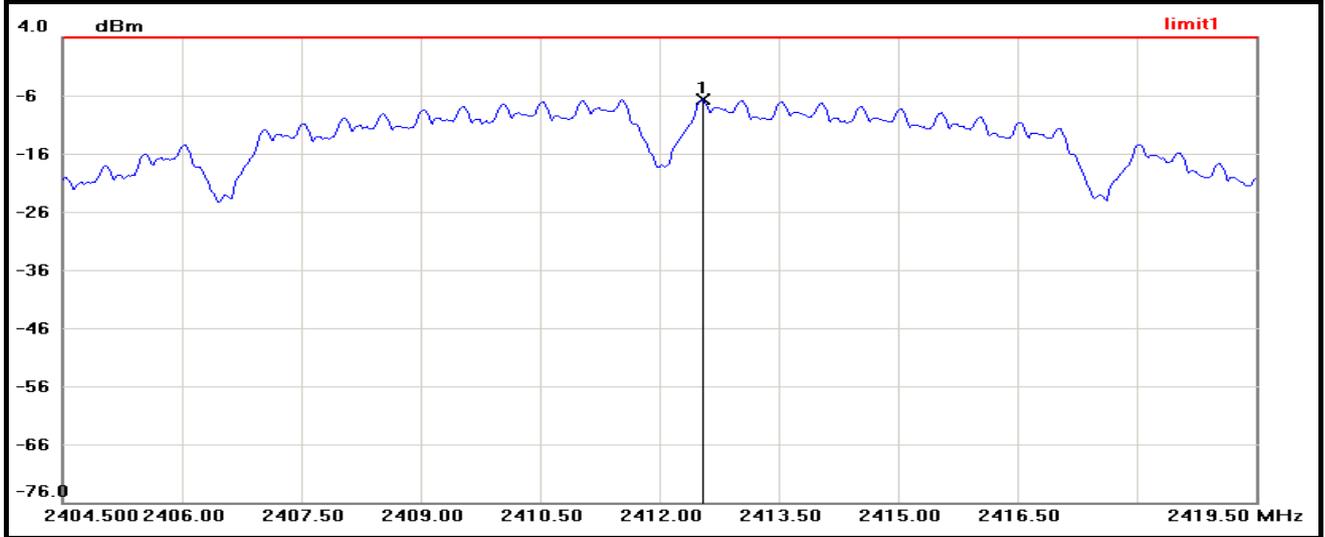
| Channel | Channel Frequency (MHz) | Final RF Power Level In 3kHz BW (dBm) | | Total Power Spectral Density (dBm) | Minimum Limit (dBm) | Pass / Fail |
|---------|-------------------------|---------------------------------------|---------|------------------------------------|---------------------|-------------|
| | | Chain A | Chain B | | | |
| Low | 2422 | -19.23 | -17.33 | -15.17 | 8 | PASS |
| Middle | 2437 | -19.37 | -18.63 | -15.97 | 8 | PASS |
| High | 2452 | -21.90 | -21.76 | -18.82 | 8 | PASS |

Remark:

1. At final test to get the worst-case emission at 27Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. Total power spectral density = Chain A + Chain B.

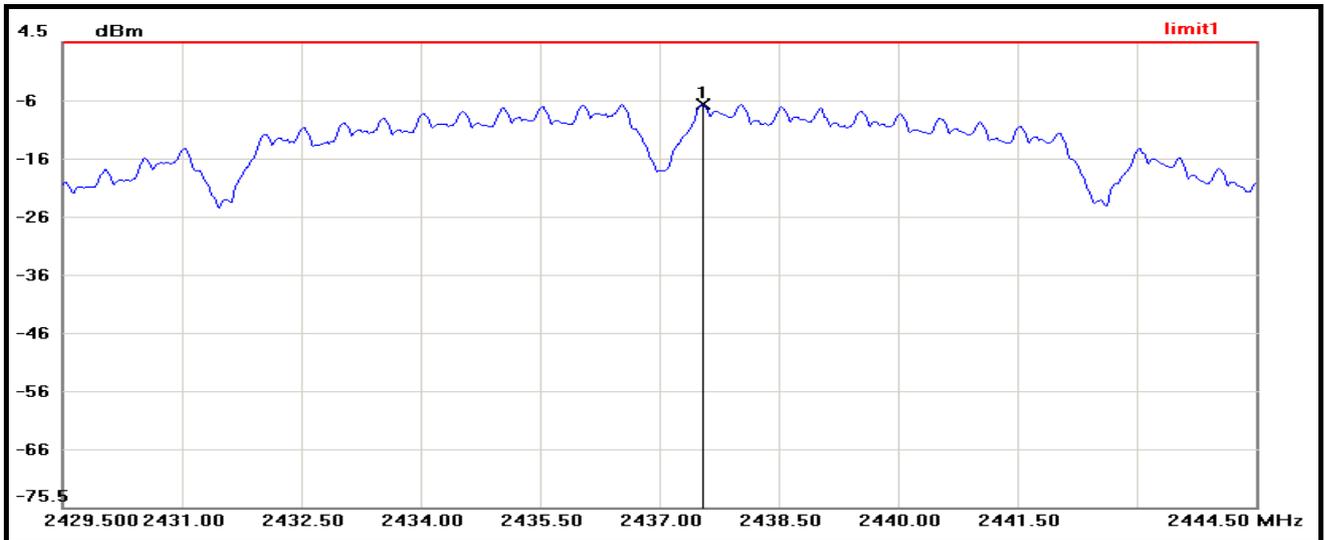


IEEE 802.11b Mode / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2412.5500 | -6.79 | 8.00 | -14.79 |

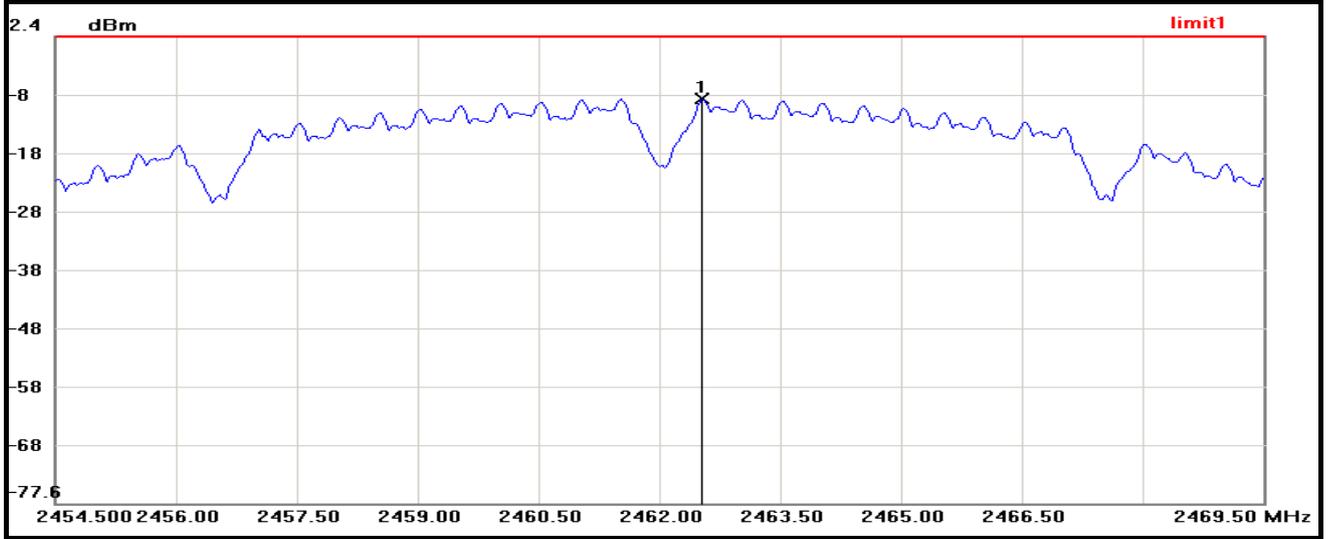
IEEE 802.11b Mode / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2437.5500 | -6.15 | 8.00 | -14.15 |



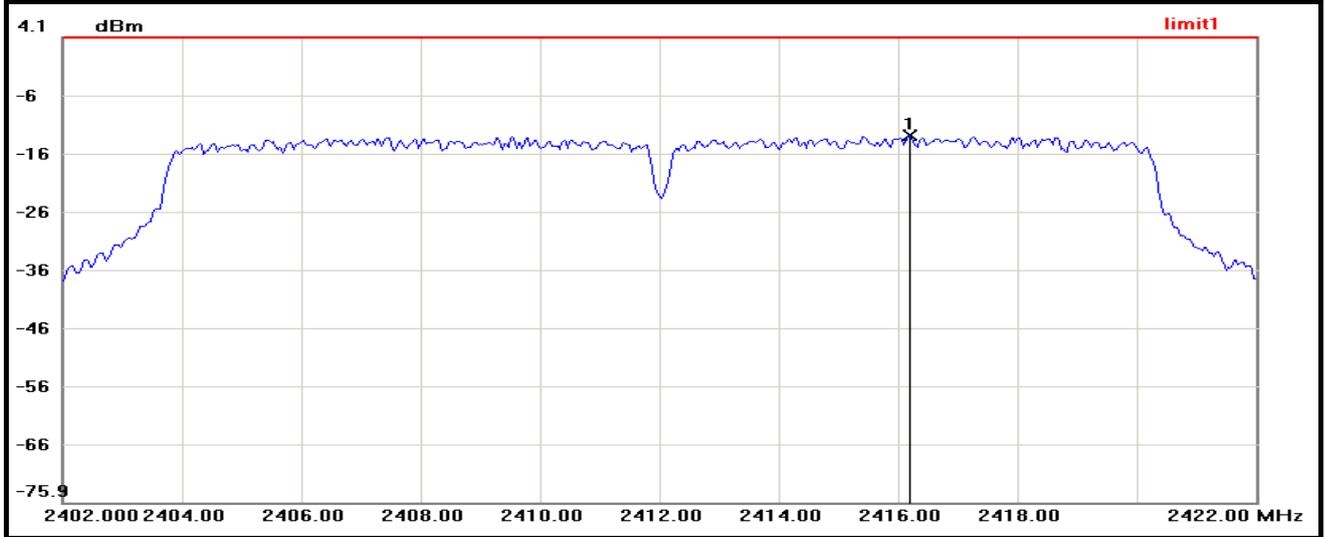
IEEE 802.11b Mode / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2462.5250 | -8.40 | 8.00 | -16.40 |

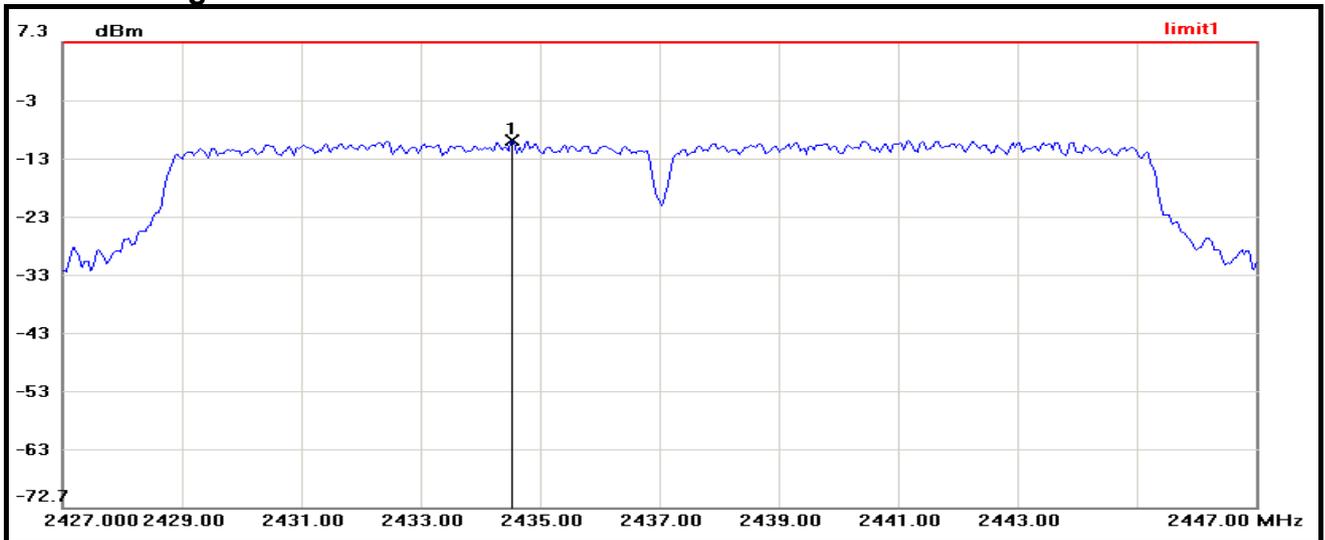


IEEE 802.11g Mode / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2416.2000 | -12.82 | 8.00 | -20.82 |

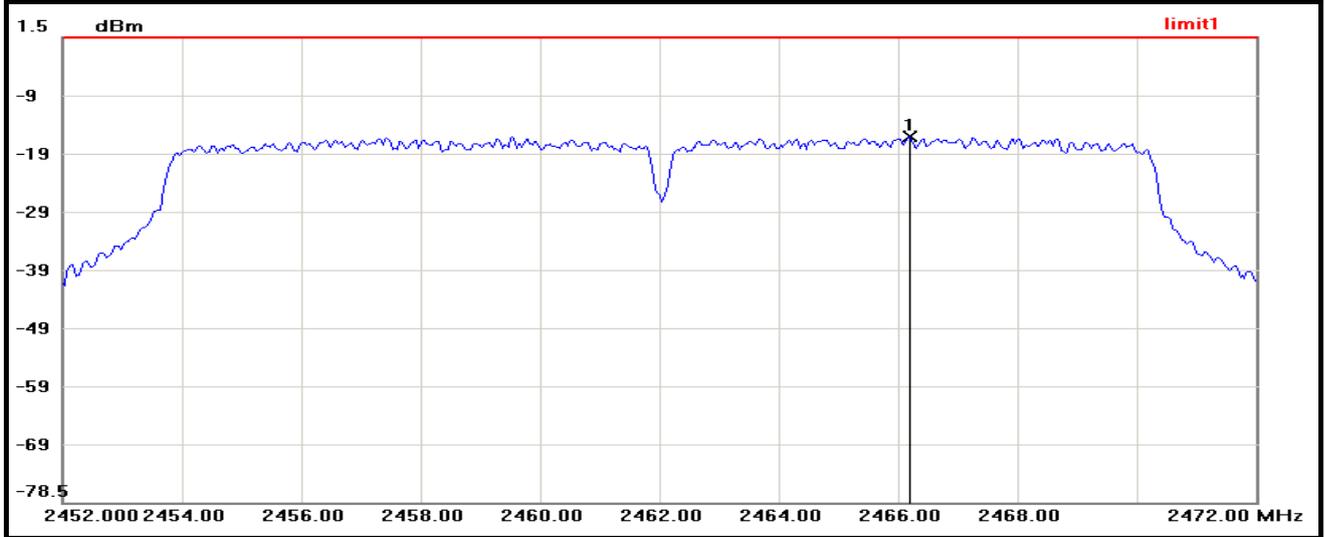
IEEE 802.11g Mode / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2434.5333 | -9.54 | 8.00 | -17.54 |



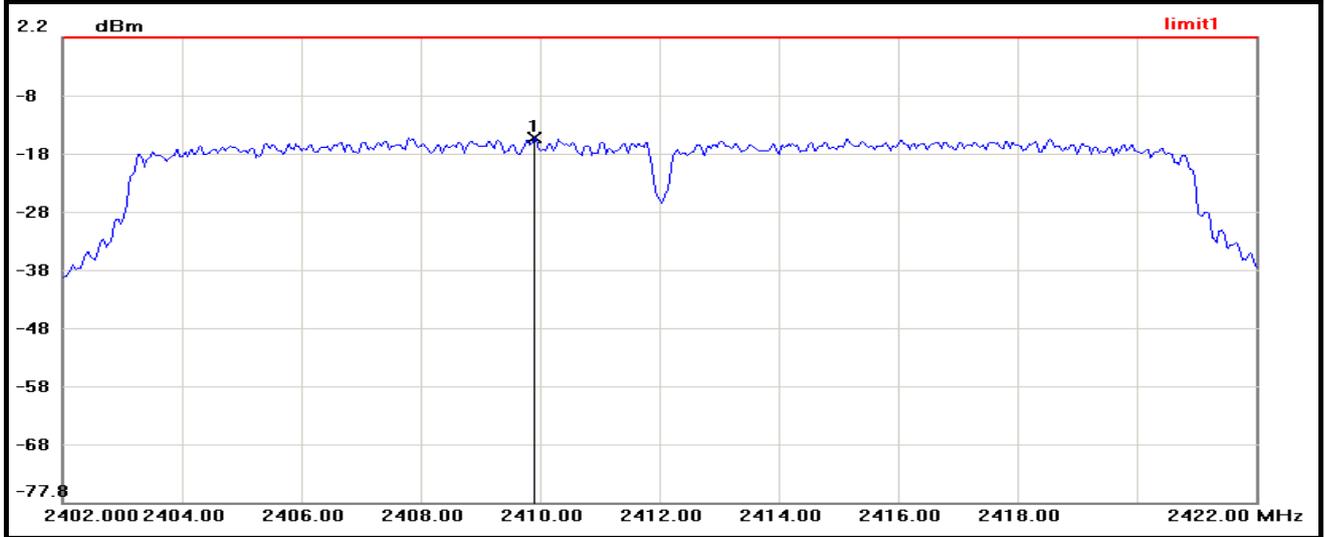
IEEE 802.11g Mode / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2466.2000 | -15.56 | 8.00 | -23.56 |

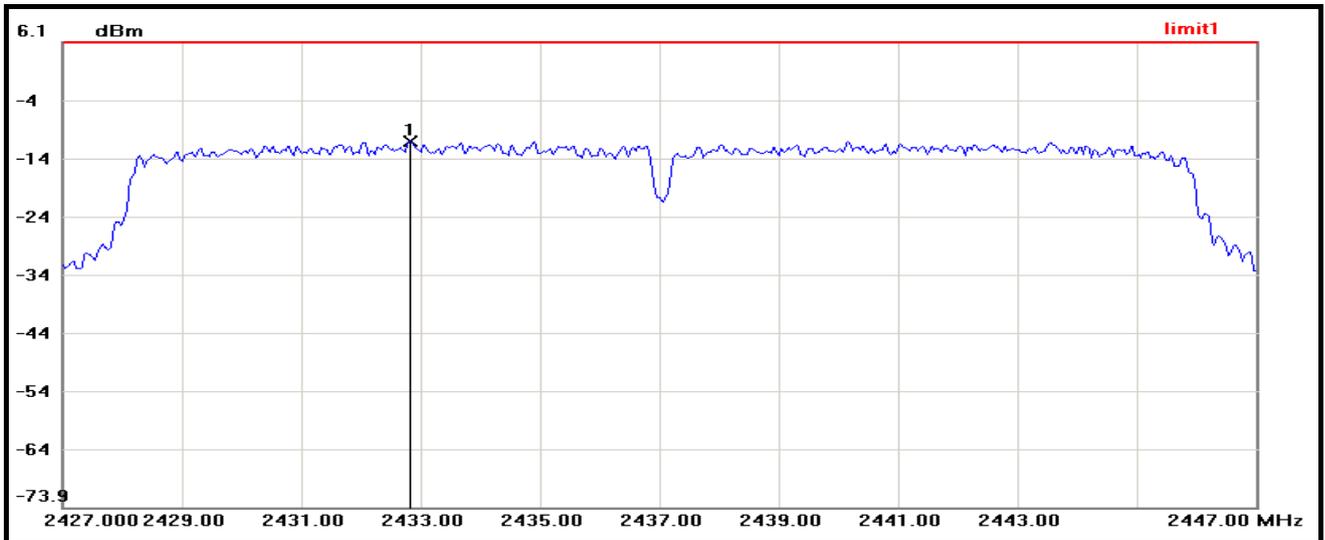


IEEE 802.11n HT20 Mode / Chain A / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2409.9000 | -15.03 | 8.00 | -23.03 |

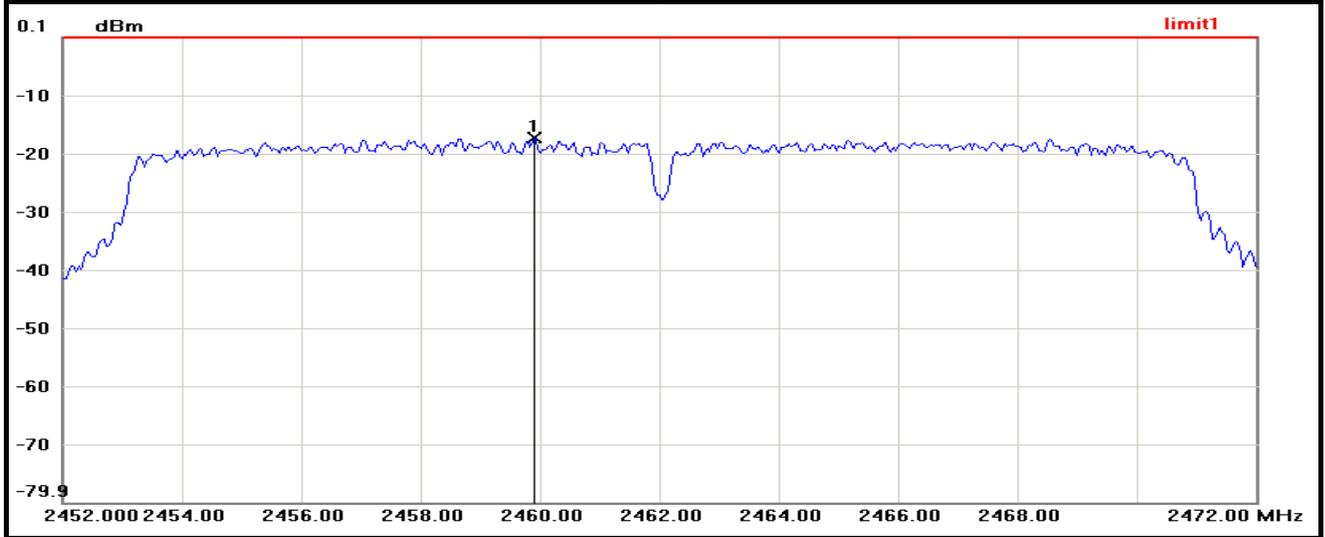
IEEE 802.11n HT20 Mode / Chain A / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2432.8333 | -11.01 | 8.00 | -19.01 |



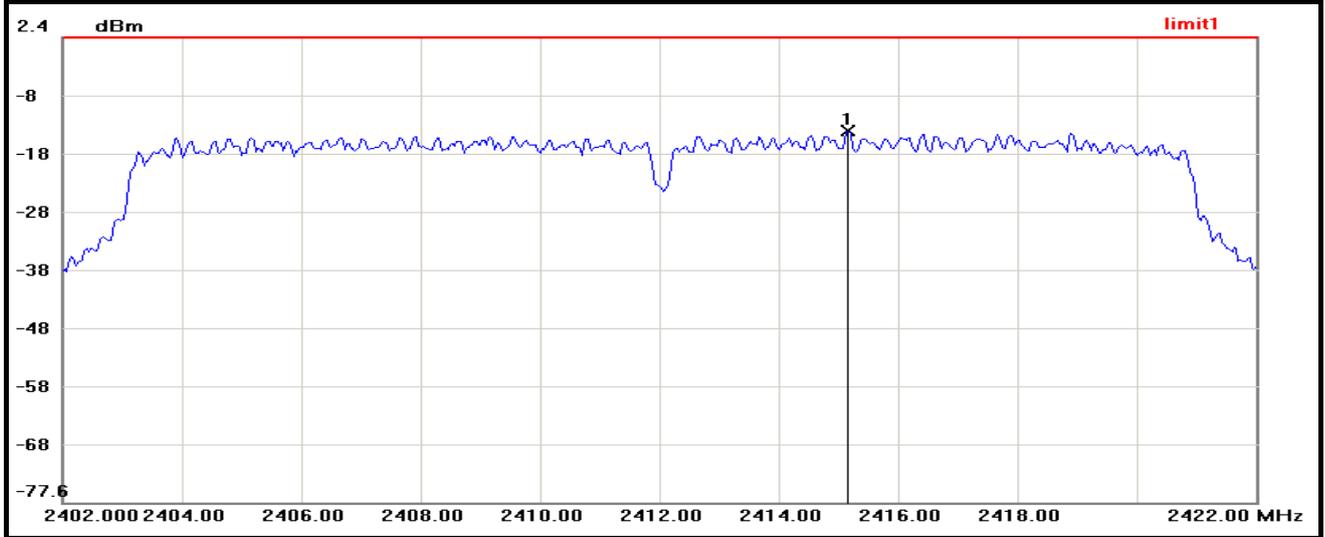
IEEE 802.11n HT20 Mode / Chain A / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2459.9000 | -17.29 | 8.00 | -25.29 |

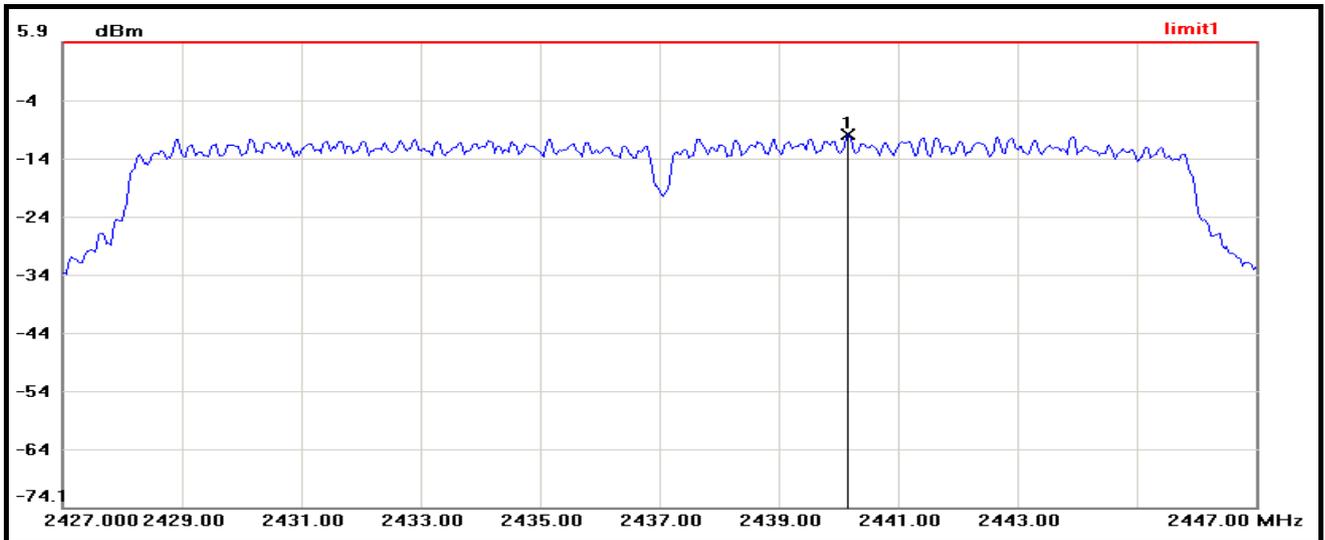


IEEE 802.11n HT20 Mode / Chain B / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2415.1667 | -13.68 | 8.00 | -21.68 |

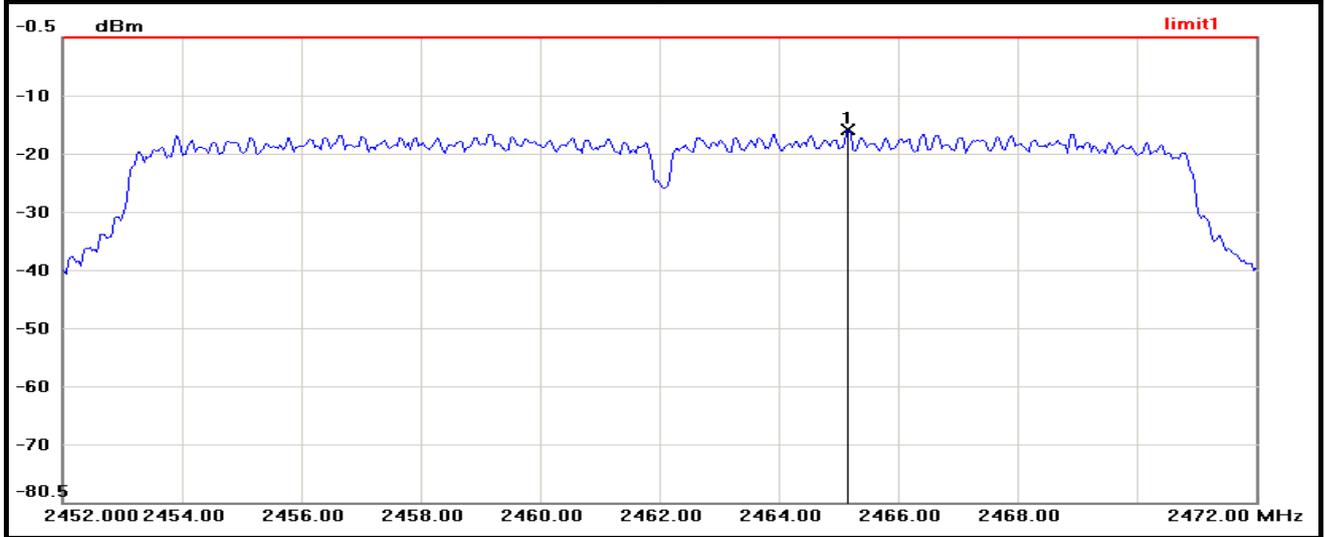
IEEE 802.11n HT20 Mode / Chain B / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2440.1667 | -9.96 | 8.00 | -17.96 |



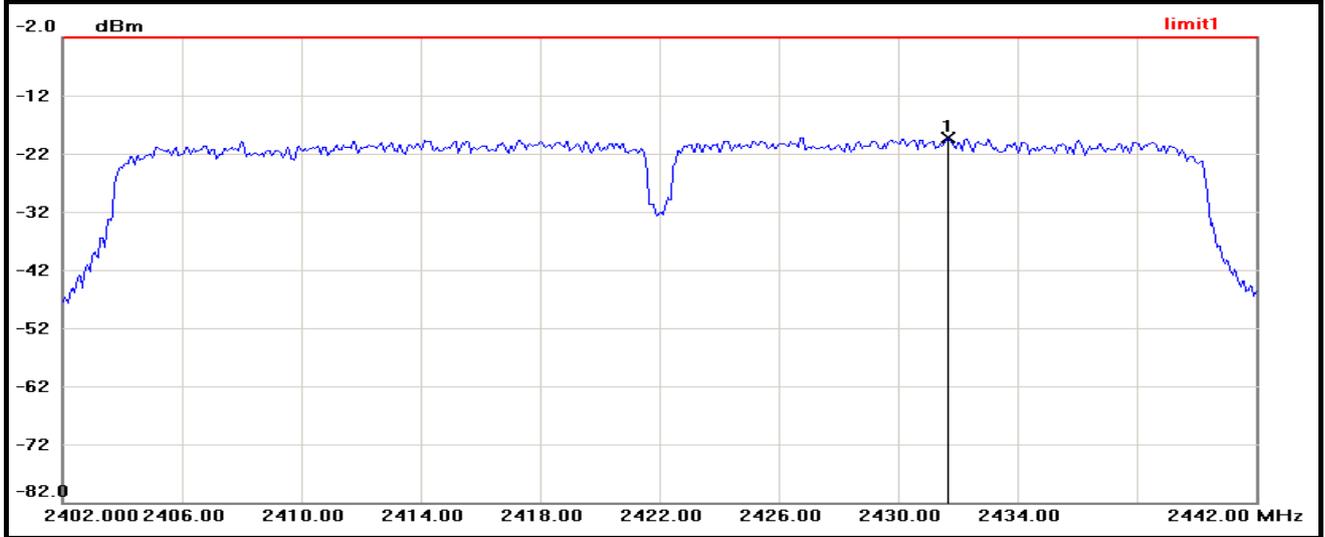
IEEE 802.11n HT20 Mode / Chain B / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2465.1667 | -16.46 | 8.00 | -24.46 |

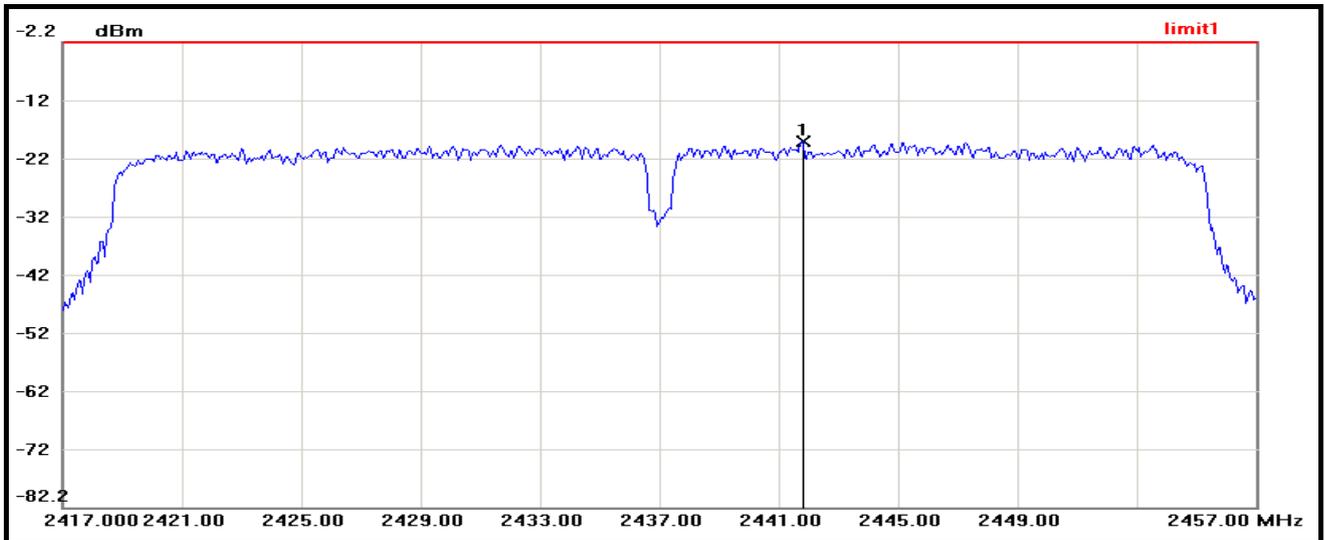


IEEE 802.11n HT40 Mode / Chain A / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2431.6667 | -19.23 | 8.00 | -27.23 |

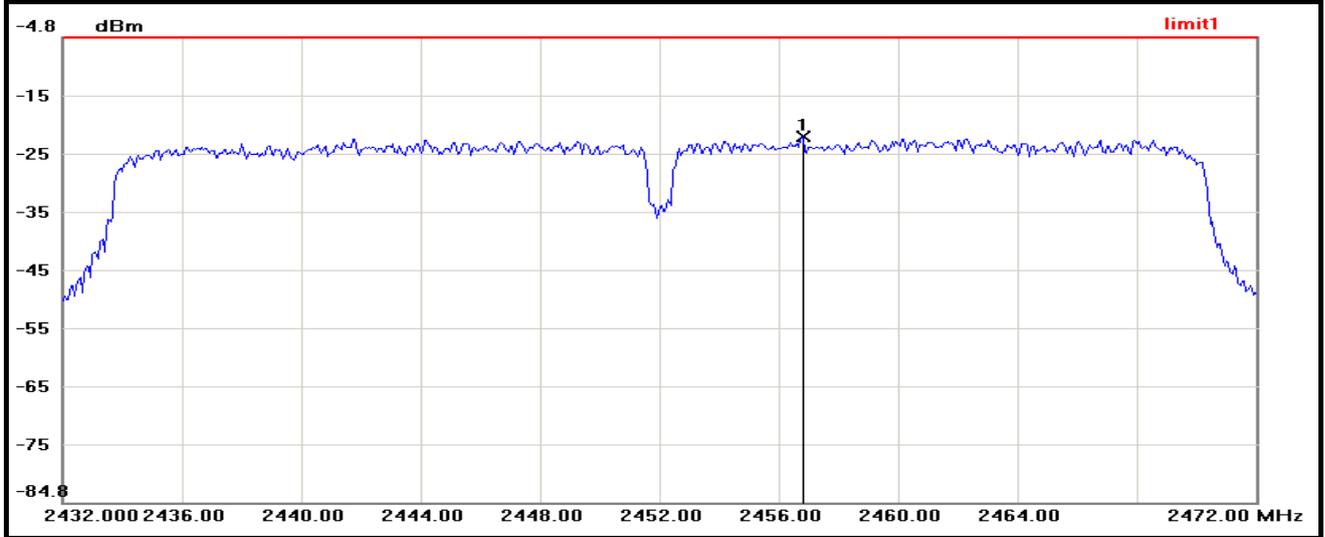
IEEE 802.11n HT40 Mode / Chain A / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2441.8000 | -19.37 | 8.00 | -27.37 |



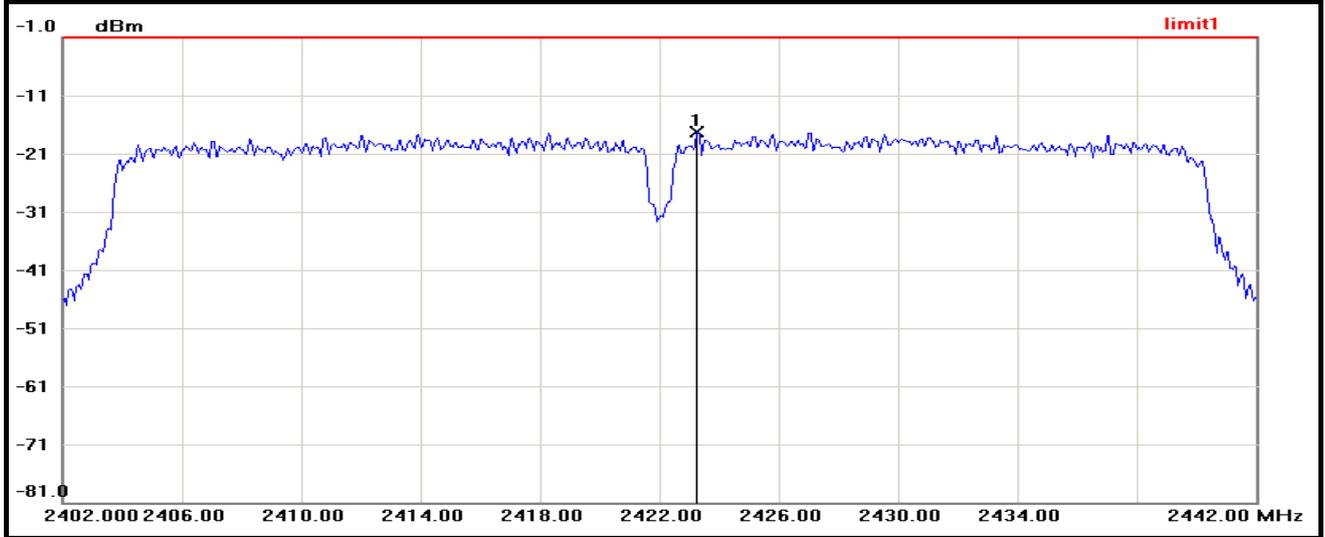
IEEE 802.11n HT40 Mode / Chain A / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2456.8000 | -21.90 | 8.00 | -29.90 |

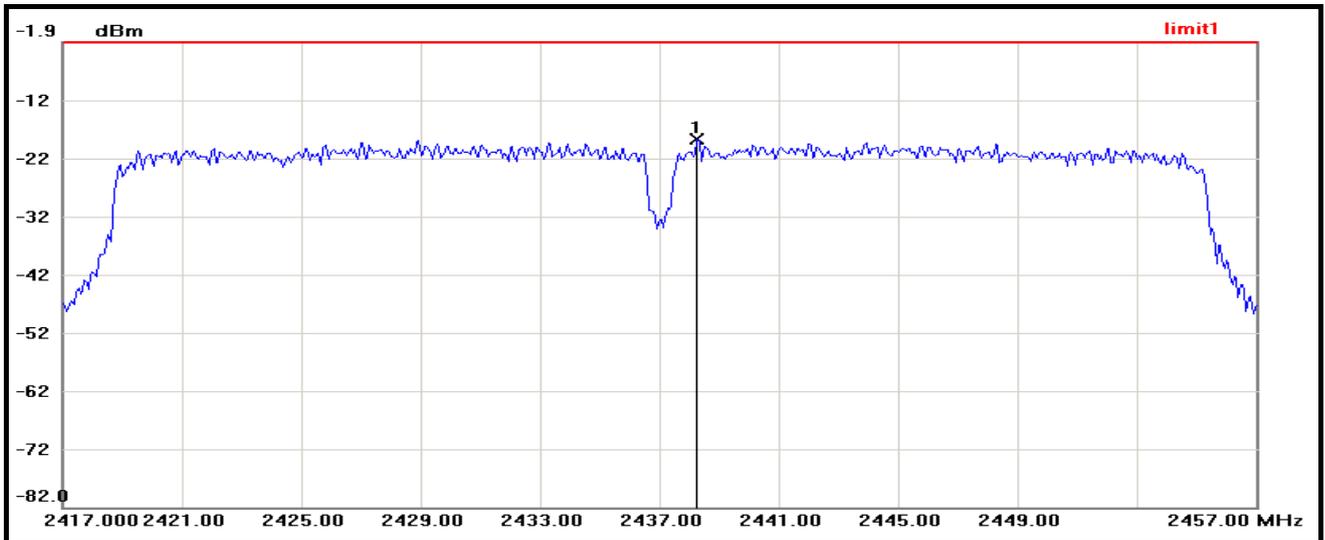


IEEE 802.11n HT40 Mode / Chain B / CH Low



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2423.2667 | -17.33 | 8.00 | -25.33 |

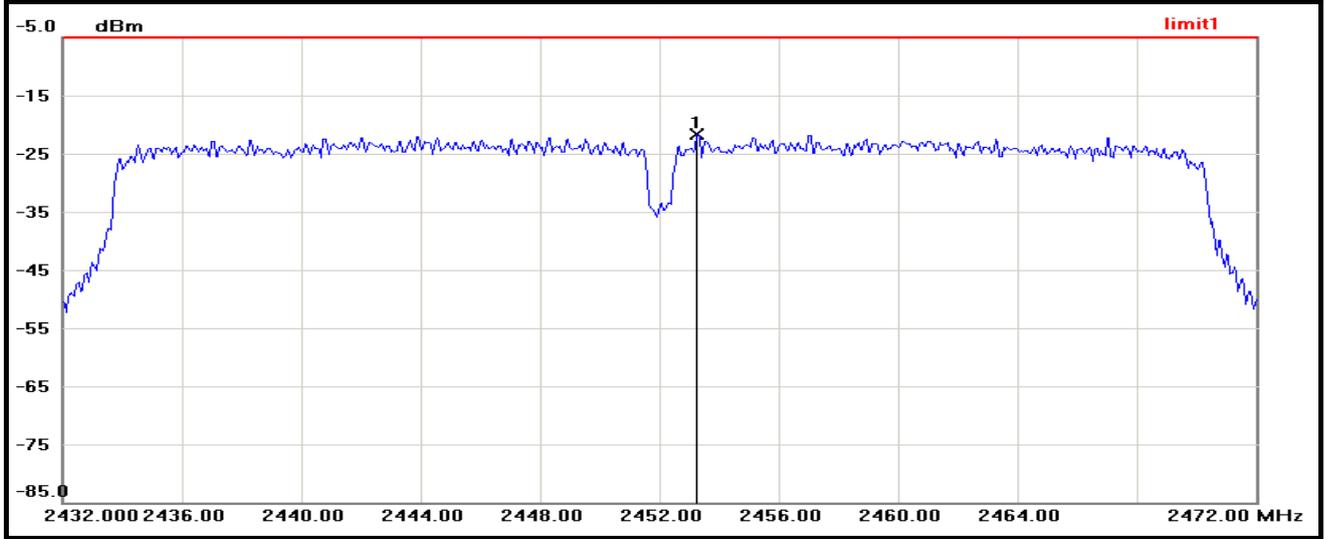
IEEE 802.11n HT40 Mode / Chain B / CH Middle



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2438.2667 | -18.63 | 8.00 | -26.63 |



IEEE 802.11n HT40 Mode / Chain B / CH High



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2453.2667 | -21.76 | 8.00 | -29.76 |



7.5 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|--------|---------------|-----------------|
| Spectrum Analyzer | Agilent | E4446A | MY43360132 | 06/14/2013 |

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

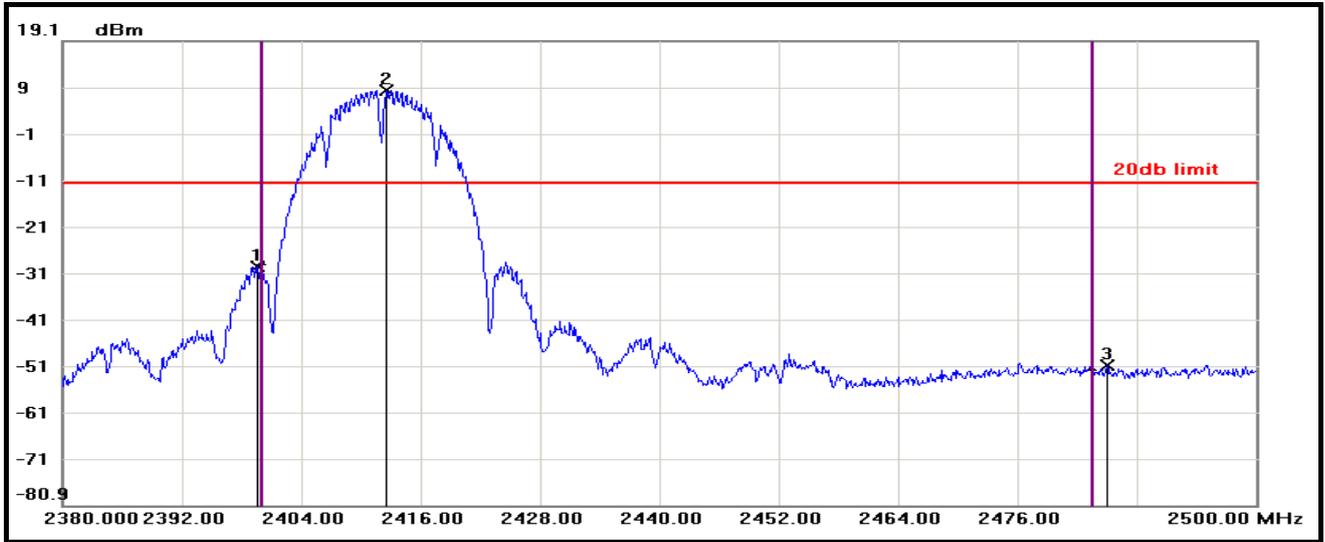
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.



TEST RESULTS

IEEE 802.11b Mode / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.5600 | -29.59 | -11.48 | -18.11 |
| 2 | 2412.5200 | 8.52 | -11.48 | 20.00 |
| 3 | 2485.0000 | -50.76 | -11.48 | -39.28 |

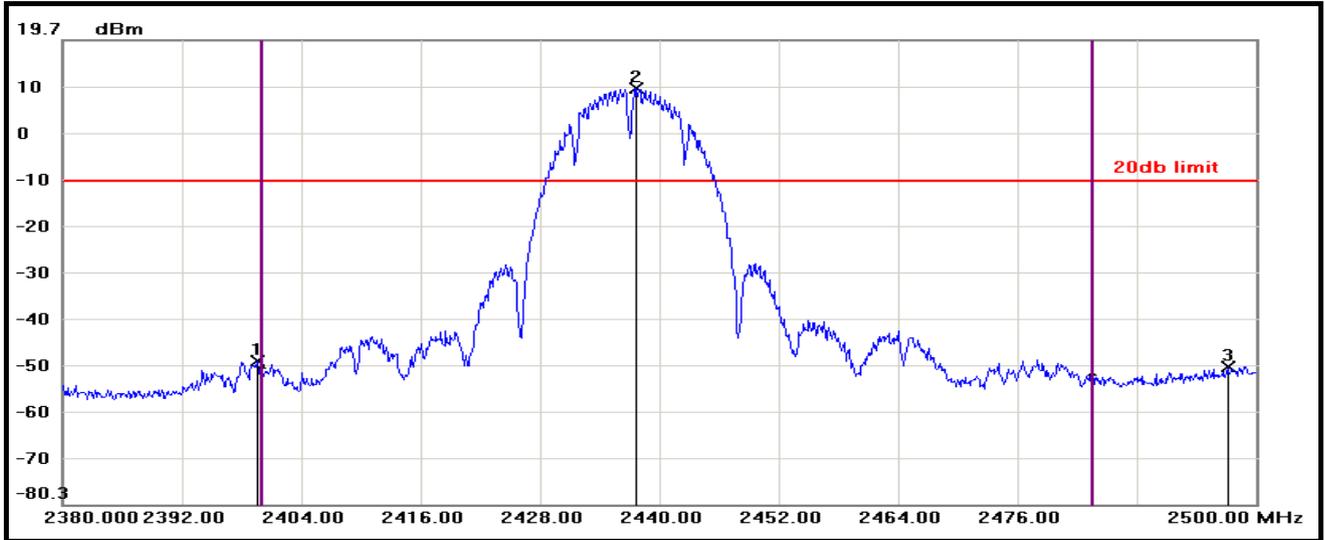
IEEE 802.11b Mode / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -46.04 | -11.48 | -34.56 |
| 2 | 24775.2700 | -48.16 | -11.48 | -36.68 |



IEEE 802.11b Mode / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.5600 | -49.38 | -10.78 | -38.60 |
| 2 | 2437.6000 | 9.22 | -10.78 | 20.00 |
| 3 | 2497.1200 | -50.66 | -10.78 | -39.88 |

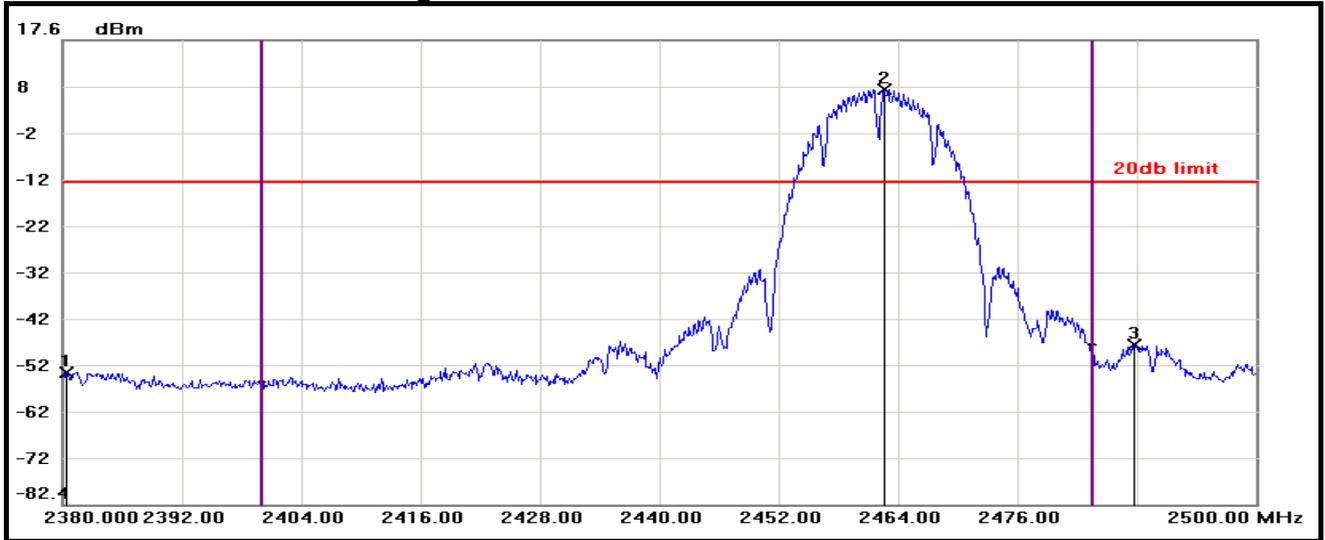
IEEE 802.11b Mode / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2352.2100 | -53.56 | -10.78 | -42.78 |
| 2 | 4874.1800 | -45.48 | -10.78 | -34.70 |



IEEE 802.11b Mode / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2380.3600 | -54.10 | -13.12 | -40.98 |
| 2 | 2462.5600 | 6.88 | -13.12 | 20.00 |
| 3 | 2487.7600 | -48.06 | -13.12 | -34.94 |

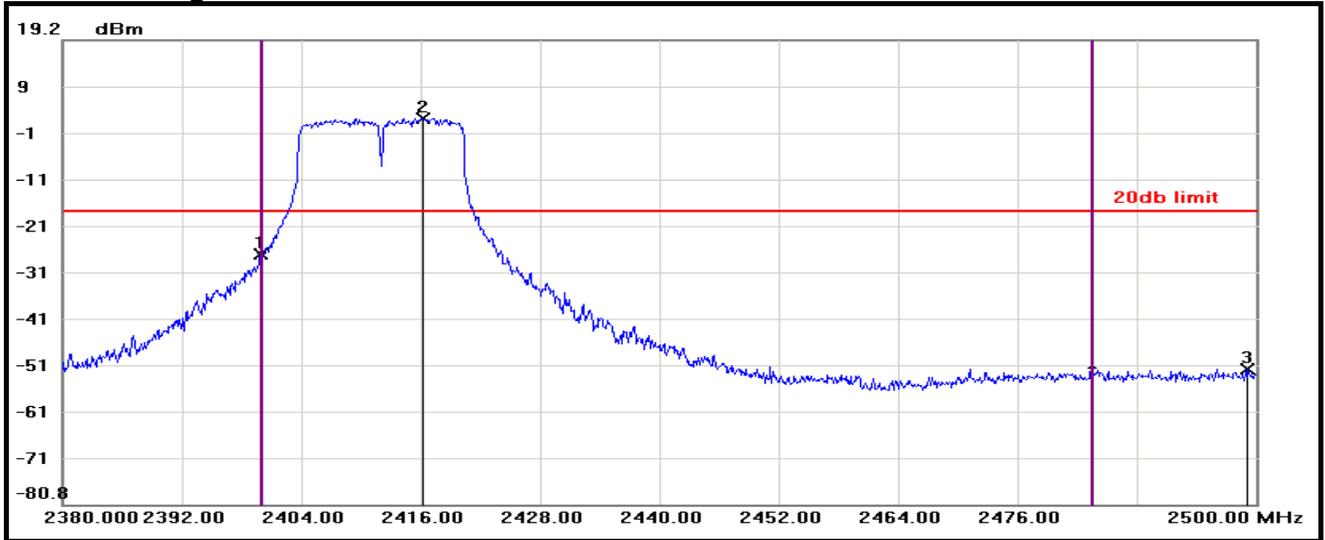
IEEE 802.11b Mode / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2352.2100 | -56.25 | -13.12 | -43.13 |
| 2 | 24800.2400 | -47.75 | -13.12 | -34.63 |



IEEE 802.11g Mode / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.9200 | -26.82 | -17.53 | -9.29 |
| 2 | 2416.2400 | 2.47 | -17.53 | 20.00 |
| 3 | 2499.0400 | -51.62 | -17.53 | -34.09 |

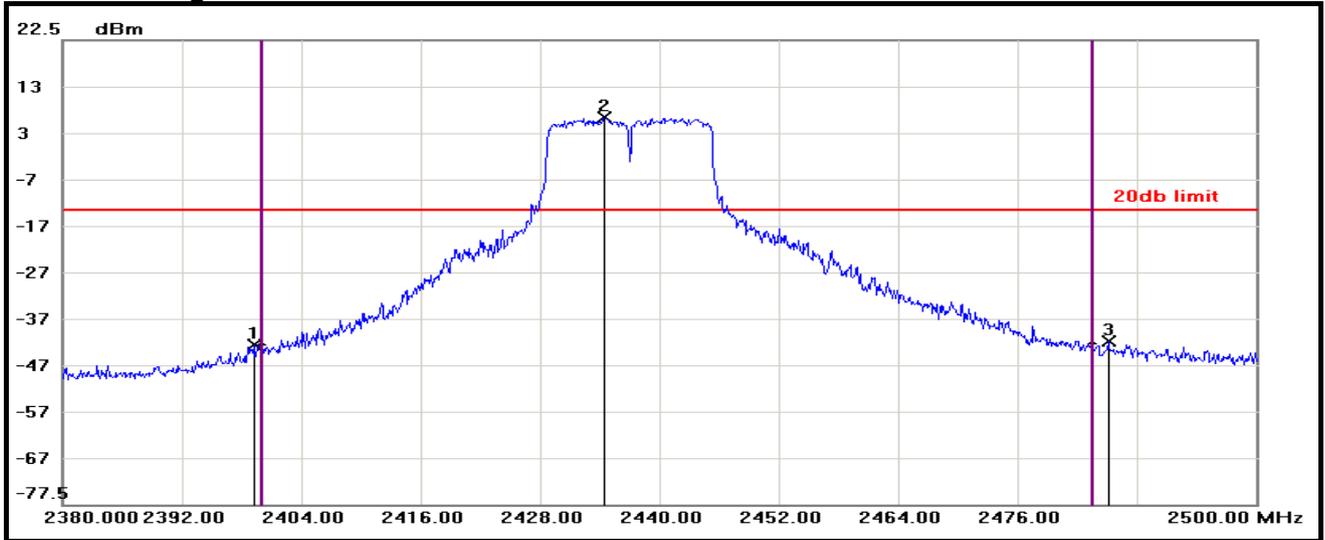
IEEE 802.11g Mode / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -47.06 | -17.53 | -29.53 |
| 2 | 24725.3300 | -47.34 | -17.53 | -29.81 |

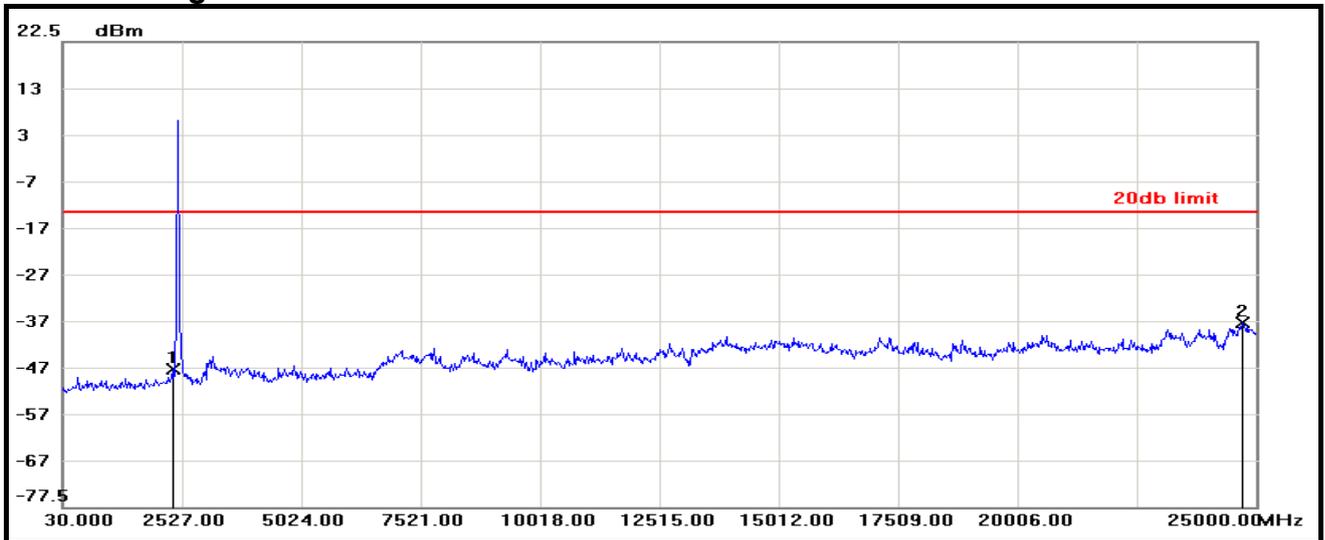


IEEE 802.11g Mode / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.2000 | -43.04 | -14.17 | -28.87 |
| 2 | 2434.4800 | 5.83 | -14.17 | 20.00 |
| 3 | 2485.1200 | -42.35 | -14.17 | -28.18 |

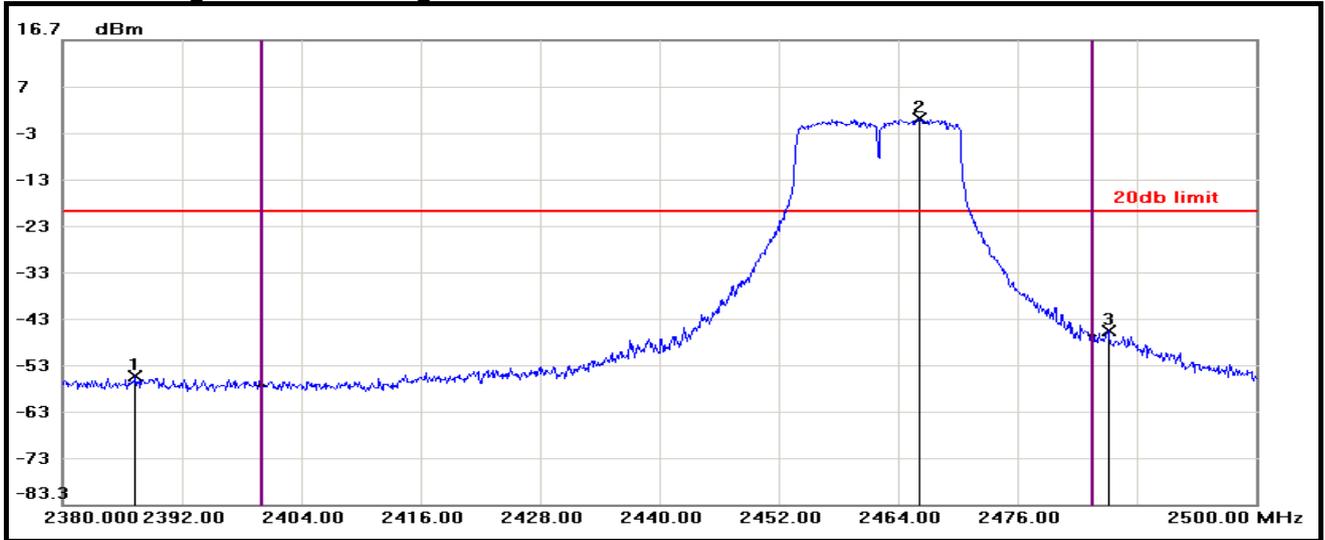
IEEE 802.11g Mode / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2327.2400 | -47.73 | -14.17 | -33.56 |
| 2 | 24700.3600 | -37.81 | -14.17 | -23.64 |



IEEE 802.11g Mode / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2387.3200 | -55.71 | -20.23 | -35.48 |
| 2 | 2466.1600 | -0.23 | -20.23 | 20.00 |
| 1 | 2485.1200 | -45.96 | -20.23 | -25.73 |

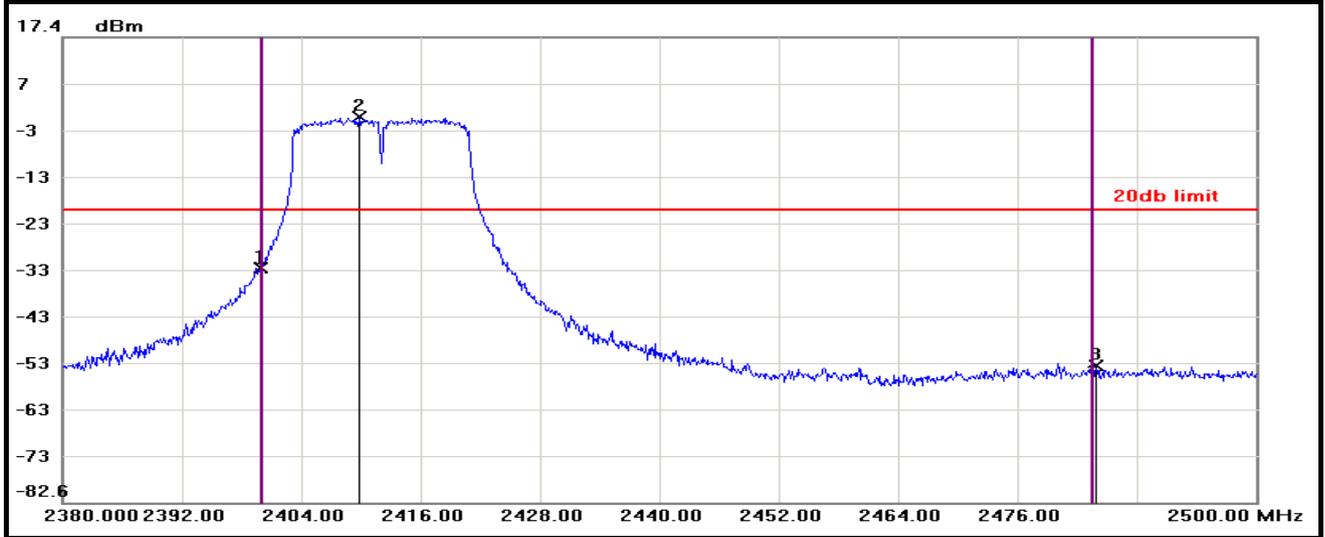
IEEE 802.11g Mode / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2327.2400 | -57.14 | -20.23 | -36.91 |
| 2 | 24750.3000 | -47.20 | -20.23 | -26.97 |

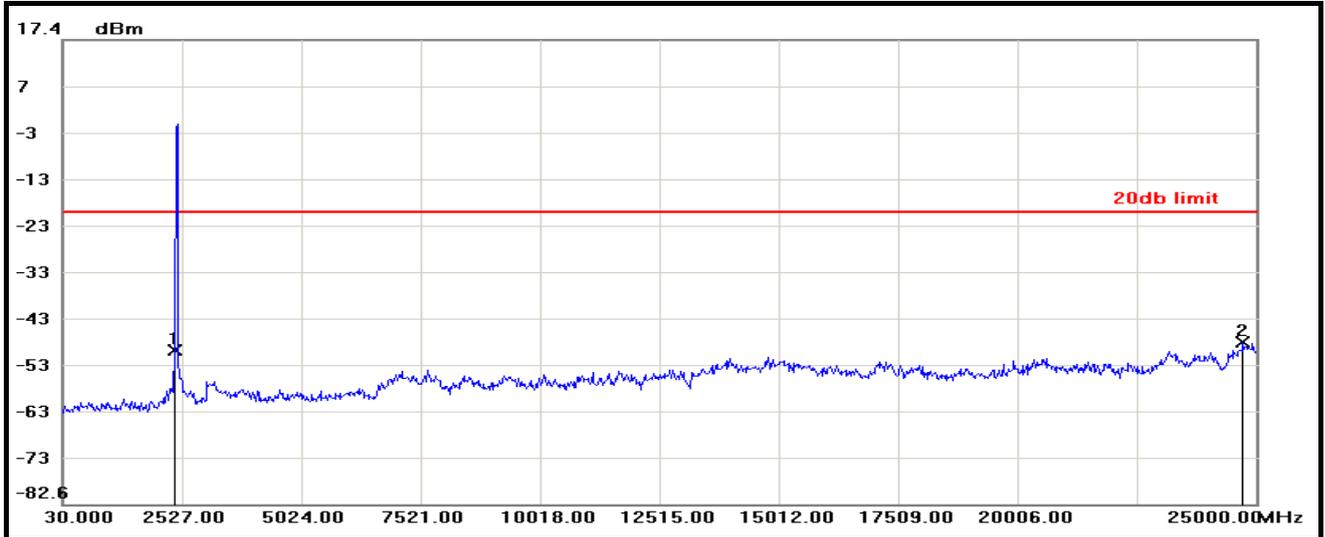


IEEE 802.11n HT20 Mode / Chain A / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.9200 | -32.10 | -19.74 | -12.36 |
| 2 | 2409.8800 | 0.26 | -19.74 | 20.00 |
| 3 | 2483.9200 | -53.24 | -19.74 | -33.50 |

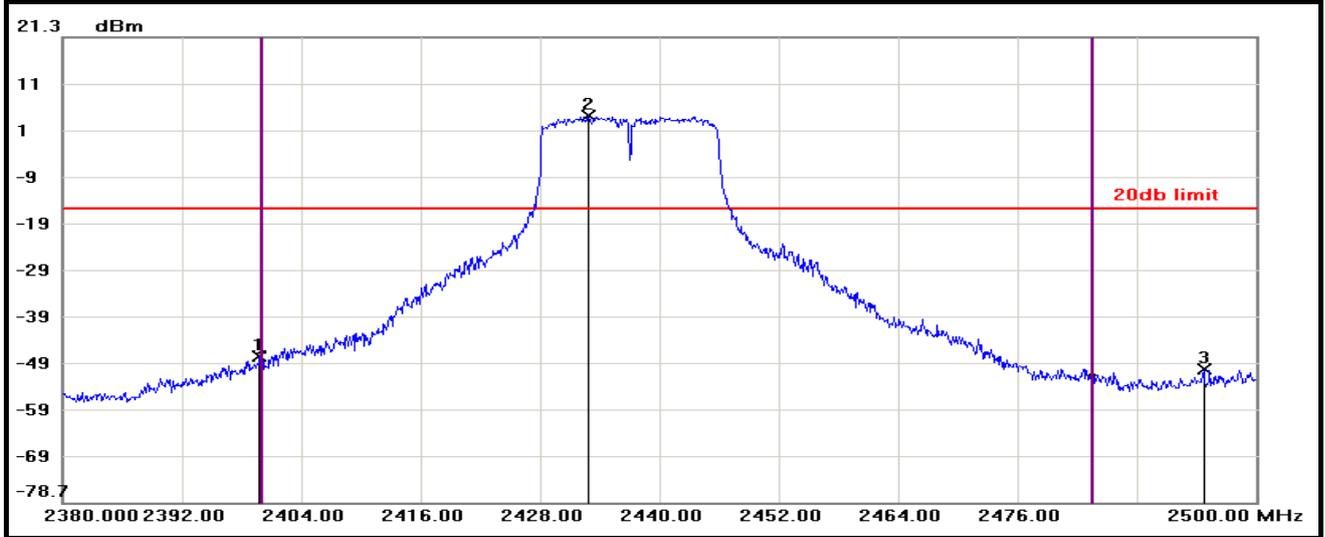
IEEE 802.11n HT20 Mode / Chain A / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -49.46 | -19.74 | -29.72 |
| 2 | 24725.3300 | -47.62 | -19.74 | -27.88 |

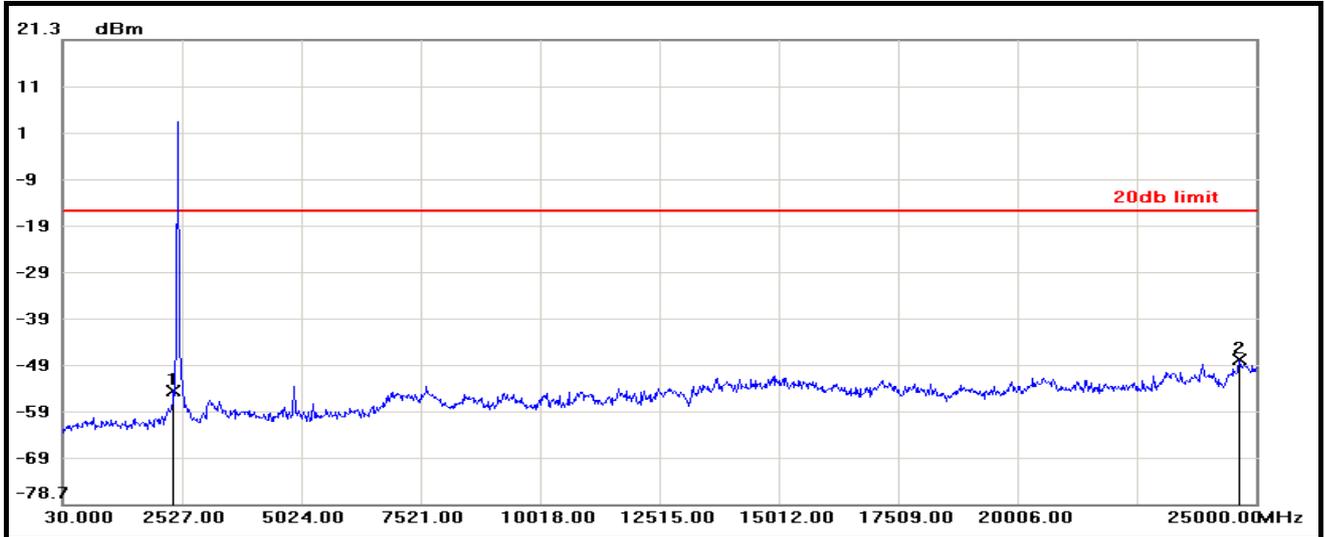


IEEE 802.11n HT20 Mode / Chain A / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.8000 | -47.42 | -15.56 | -31.86 |
| 2 | 2432.8000 | 4.44 | -15.56 | 20.00 |
| 3 | 2494.7200 | -50.16 | -15.56 | -34.60 |

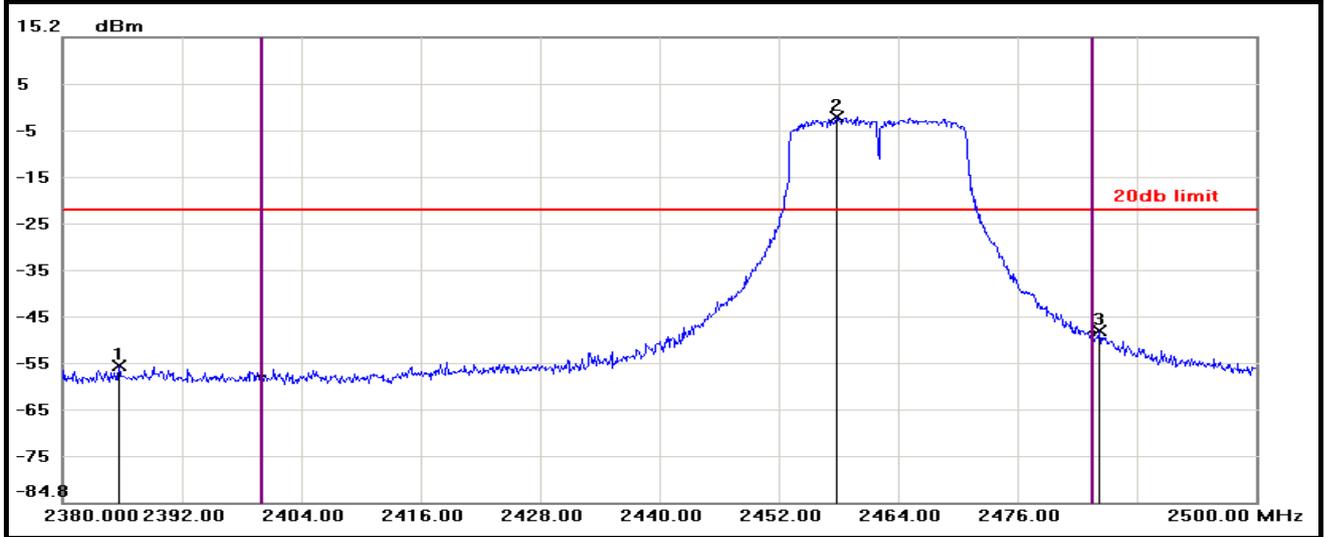
IEEE 802.11n HT20 Mode / Chain A / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2352.2100 | -54.30 | -15.56 | -38.74 |
| 2 | 24650.4200 | -47.65 | -15.56 | -32.09 |



IEEE 802.11n HT20 Mode / Chain A / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2385.6400 | -55.55 | -21.94 | -33.61 |
| 2 | 2457.8800 | -1.94 | -21.94 | 20.00 |
| 3 | 2484.2800 | -47.98 | -21.94 | -26.04 |

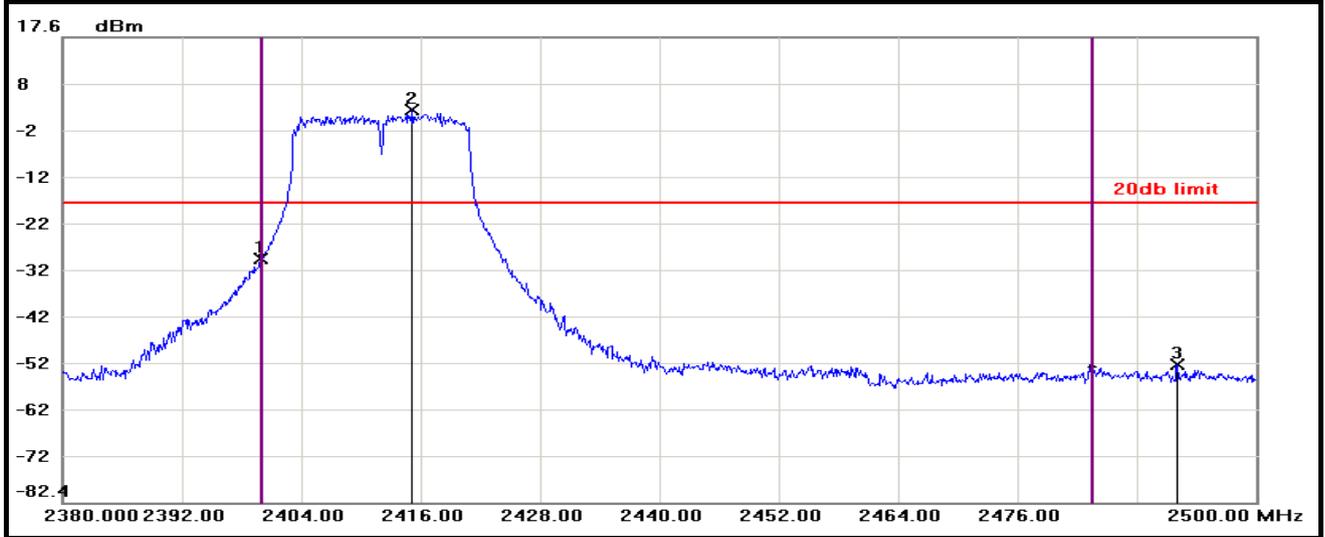
IEEE 802.11n HT20 Mode / Chain A / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -57.99 | -21.94 | -36.05 |
| 2 | 24875.1500 | -47.81 | -21.94 | -25.87 |

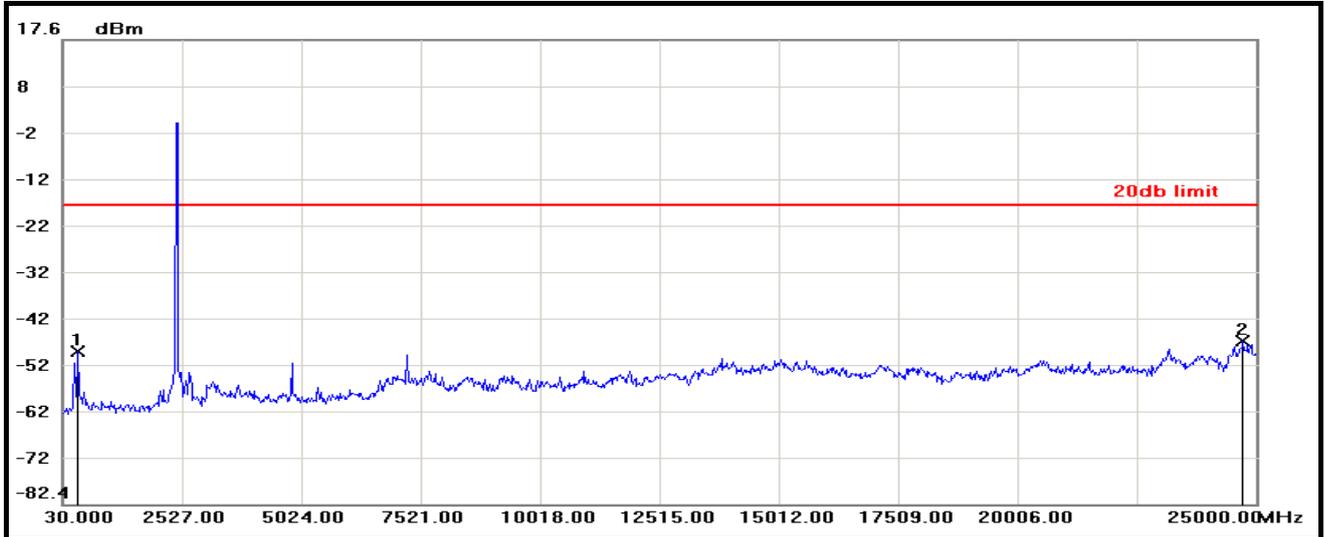


IEEE 802.11n HT20 Mode / Chain B / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.9200 | -30.04 | -18.04 | -12.00 |
| 2 | 2415.1600 | 1.96 | -18.04 | 20.00 |
| 3 | 2492.0800 | -52.86 | -18.04 | -34.82 |

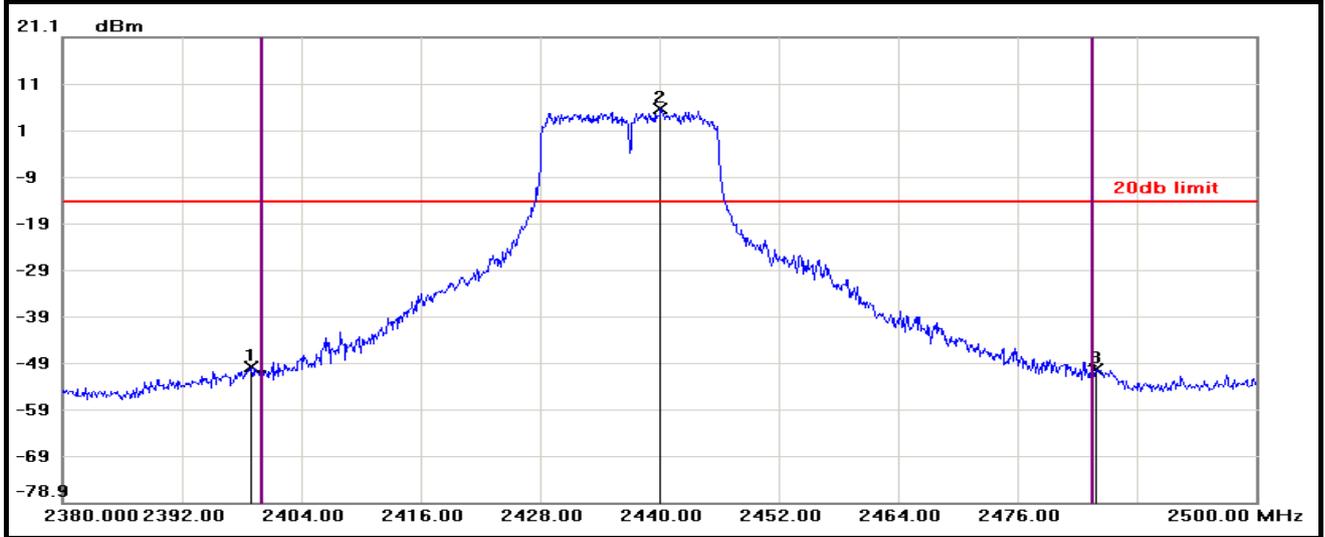
IEEE 802.11n HT20 Mode / Chain B / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 354.6100 | -49.44 | -18.04 | -31.40 |
| 2 | 24725.3300 | -47.29 | -18.04 | -29.25 |

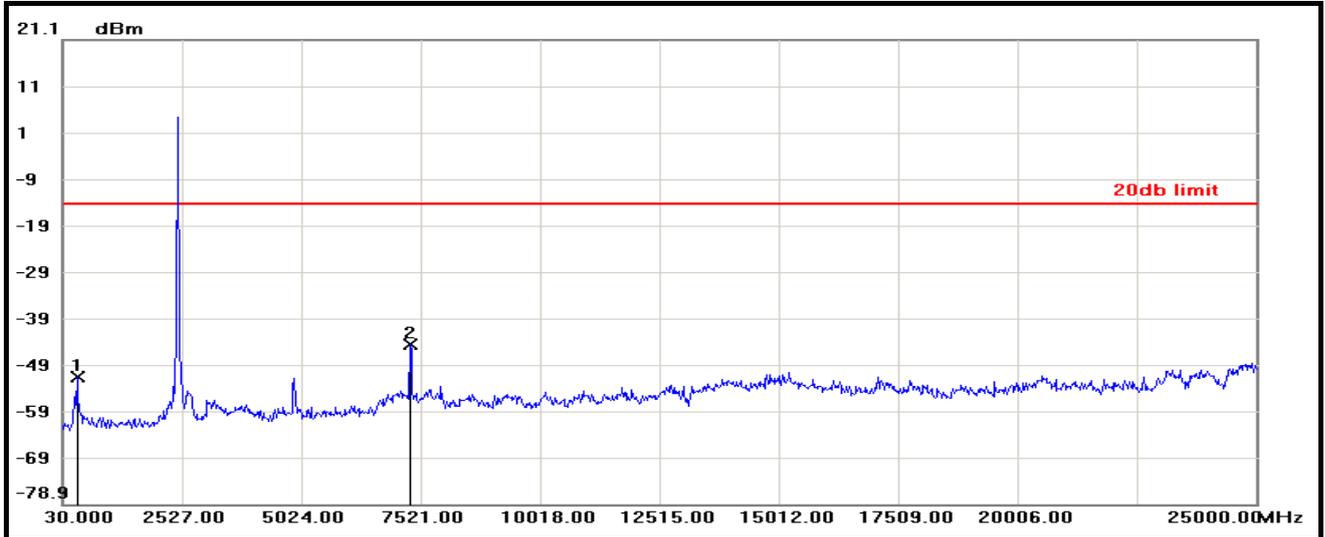


IEEE 802.11n HT20 Mode / Chain B / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2398.9600 | -49.67 | -14.16 | -35.51 |
| 2 | 2440.1200 | 5.84 | -14.16 | 20.00 |
| 3 | 2483.9200 | -50.11 | -14.16 | -35.95 |

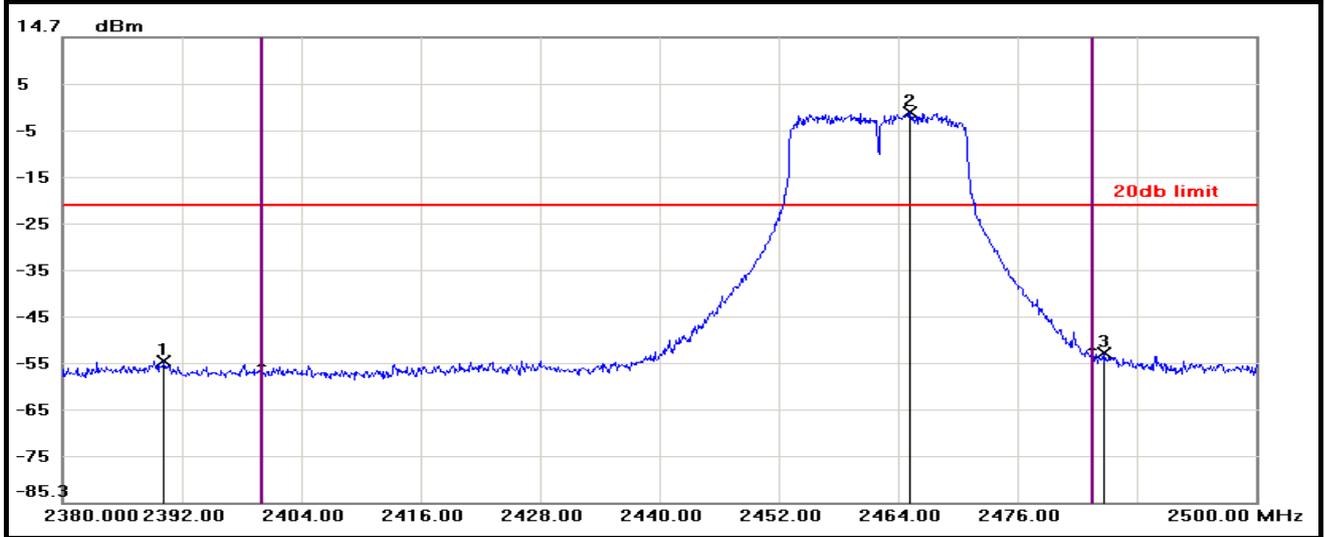
IEEE 802.11n HT20 Mode / Chain B / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 329.6400 | -51.47 | -14.16 | -37.31 |
| 2 | 7296.2700 | -44.59 | -14.16 | -30.43 |

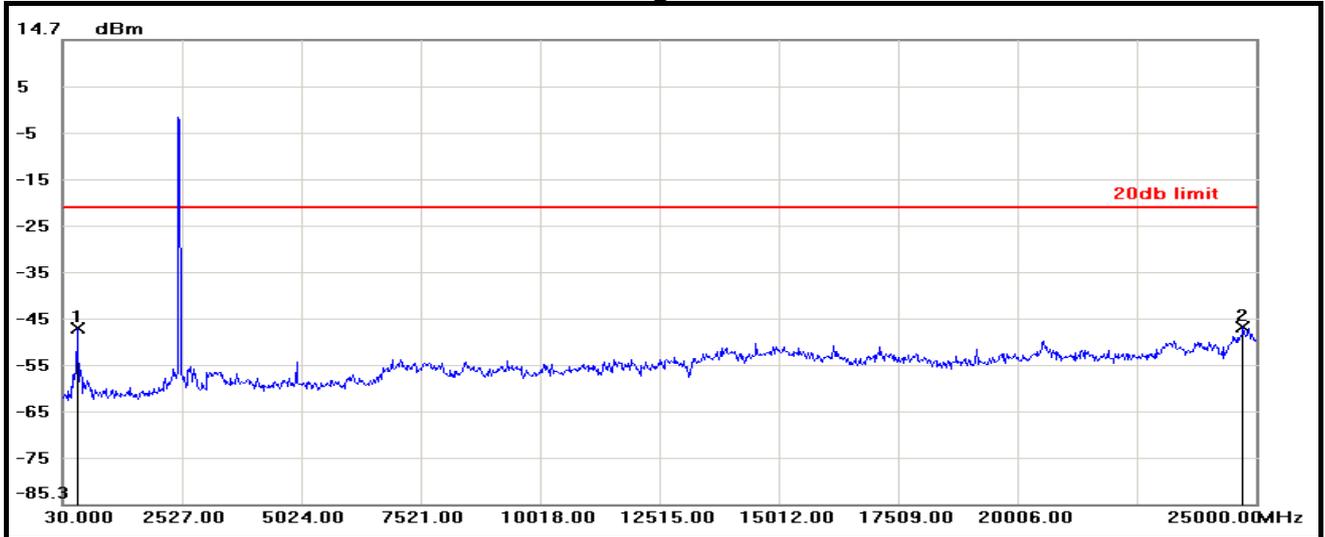


IEEE 802.11n HT20 Mode / Chain B / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2390.2000 | -54.89 | -21.41 | -33.48 |
| 2 | 2465.2000 | -1.41 | -21.41 | 20.00 |
| 3 | 2484.7600 | -53.06 | -21.41 | -31.65 |

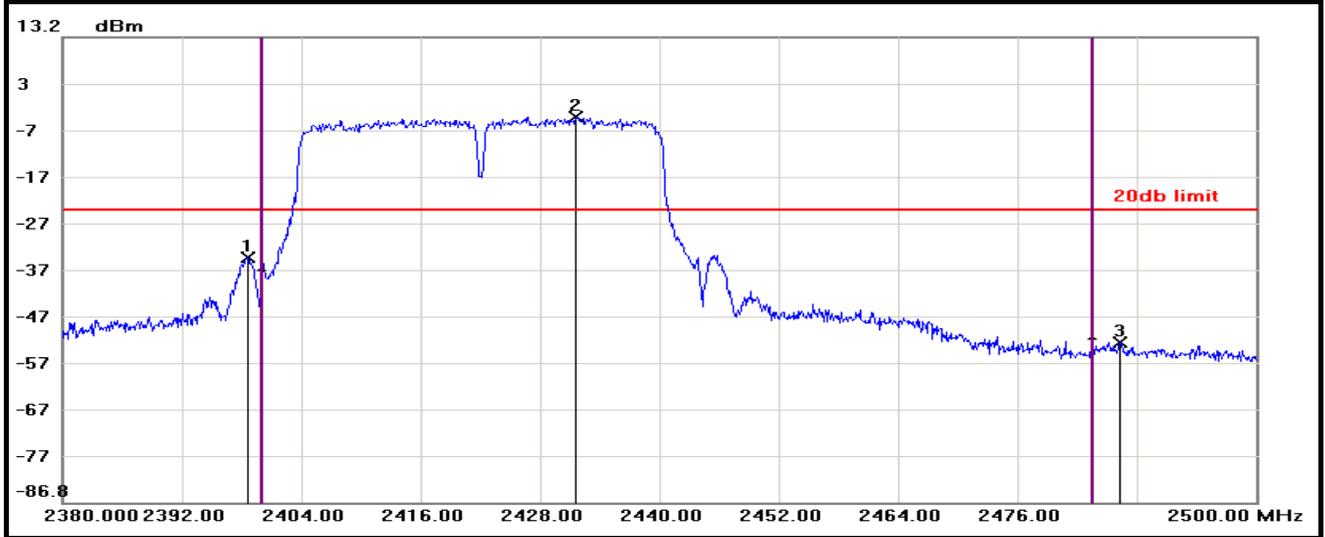
IEEE 802.11n HT20 Mode / Chain B / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 329.6400 | -47.43 | -21.41 | -26.02 |
| 2 | 24725.3300 | -47.25 | -21.41 | -25.84 |

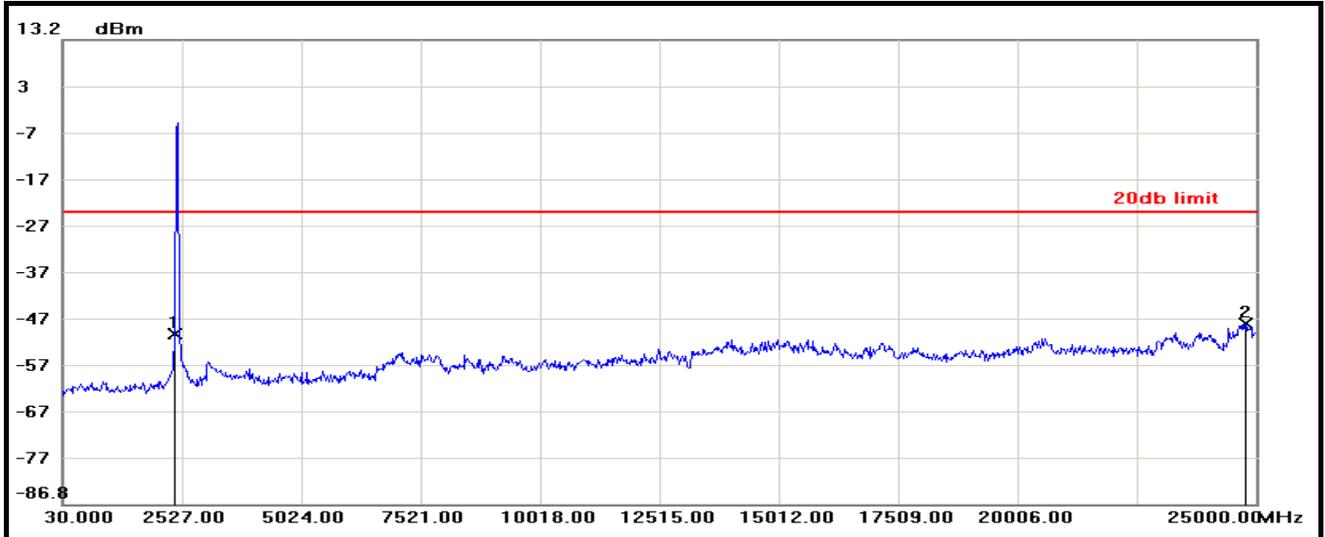


IEEE 802.11n HT40 Mode / Chain A / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2398.6000 | -34.08 | -23.89 | -10.19 |
| 2 | 2431.6000 | -3.89 | -23.89 | 20.00 |
| 3 | 2486.3200 | -52.45 | -23.89 | -28.56 |

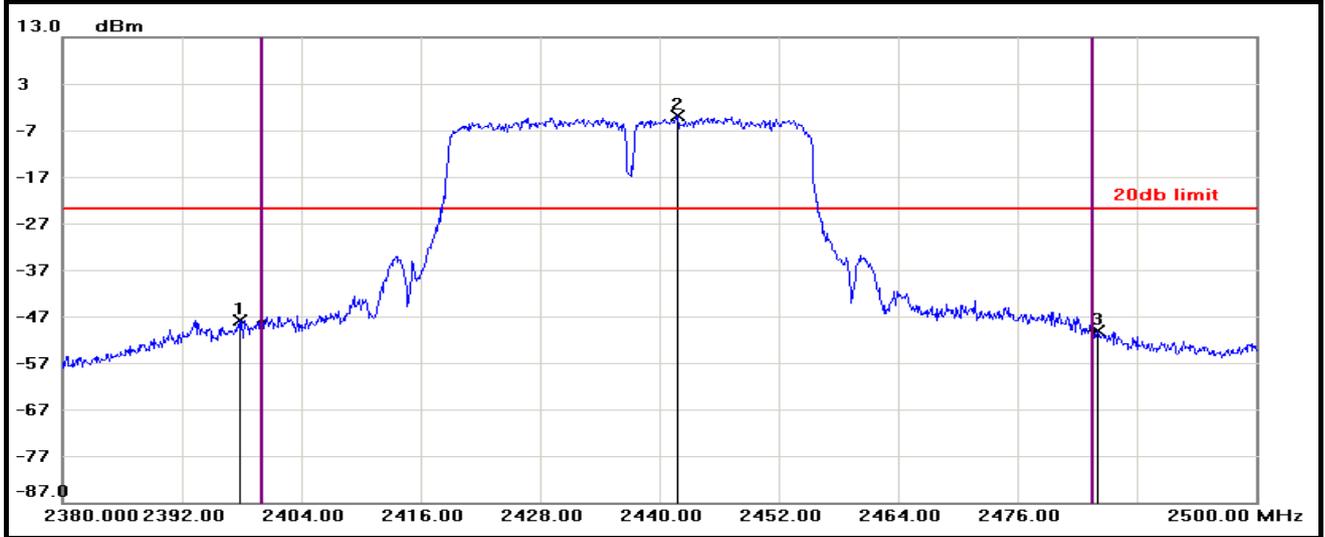
IEEE 802.11n HT40 Mode / Chain A / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -50.10 | -23.89 | -26.21 |
| 2 | 24775.2700 | -47.93 | -23.89 | -24.04 |

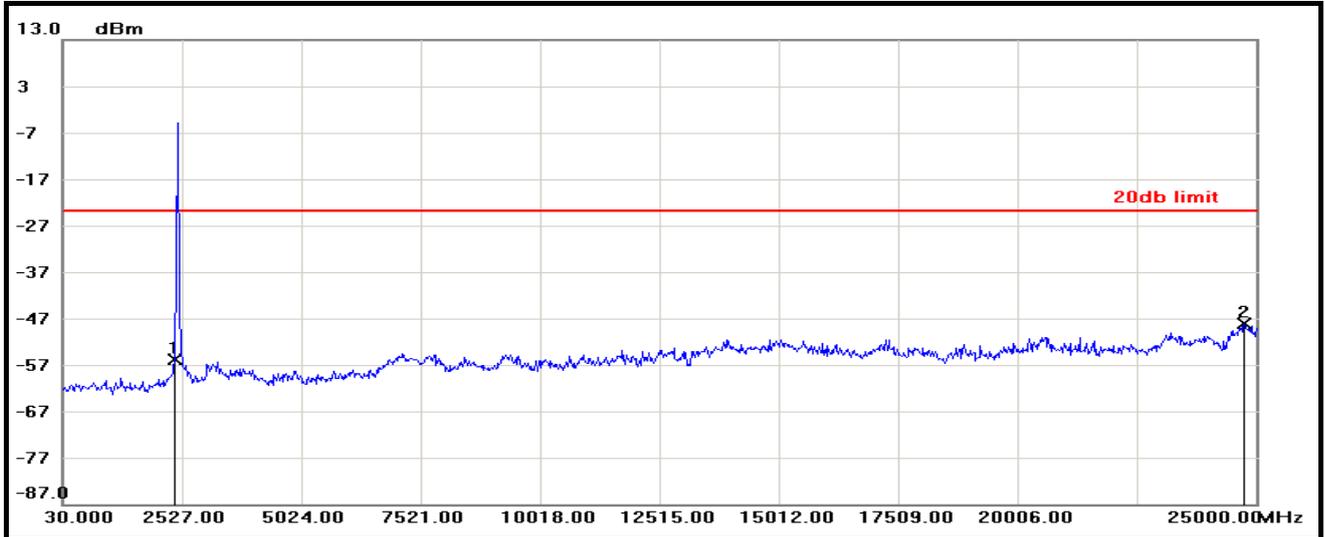


IEEE 802.11n HT40 Mode / Chain A / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2397.8800 | -47.78 | -24.00 | -23.78 |
| 2 | 2441.8000 | -4.00 | -24.00 | 20.00 |
| 3 | 2484.0400 | -50.02 | -24.00 | -26.02 |

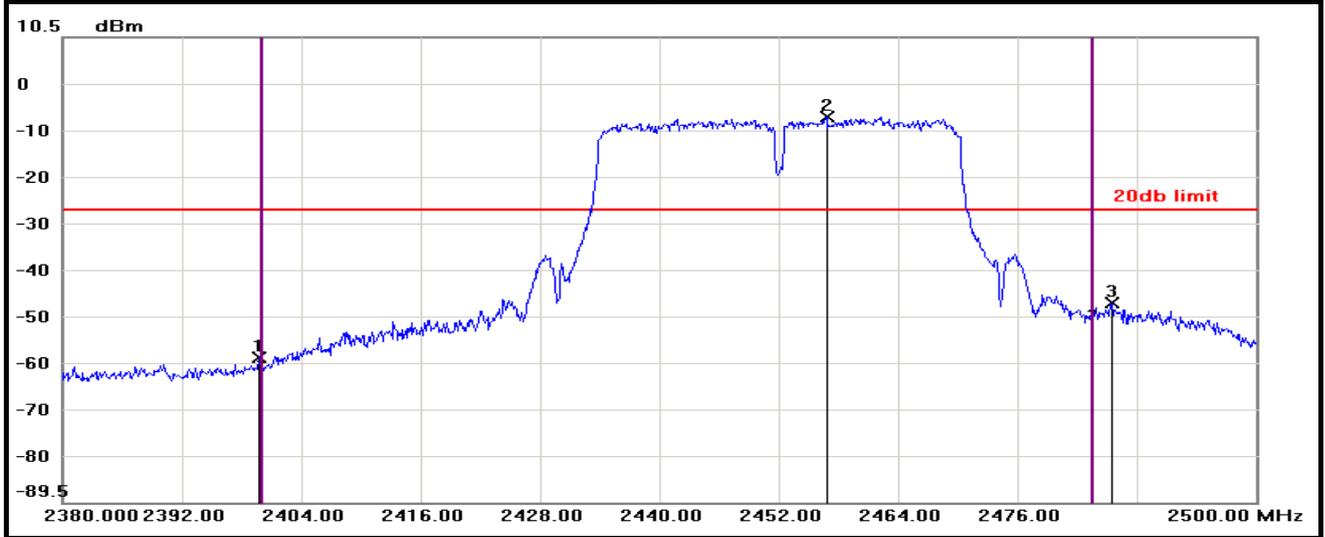
IEEE 802.11n HT40 Mode / Chain A / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2377.1800 | -55.79 | -24.00 | -31.79 |
| 2 | 24750.3000 | -48.26 | -24.00 | -24.26 |

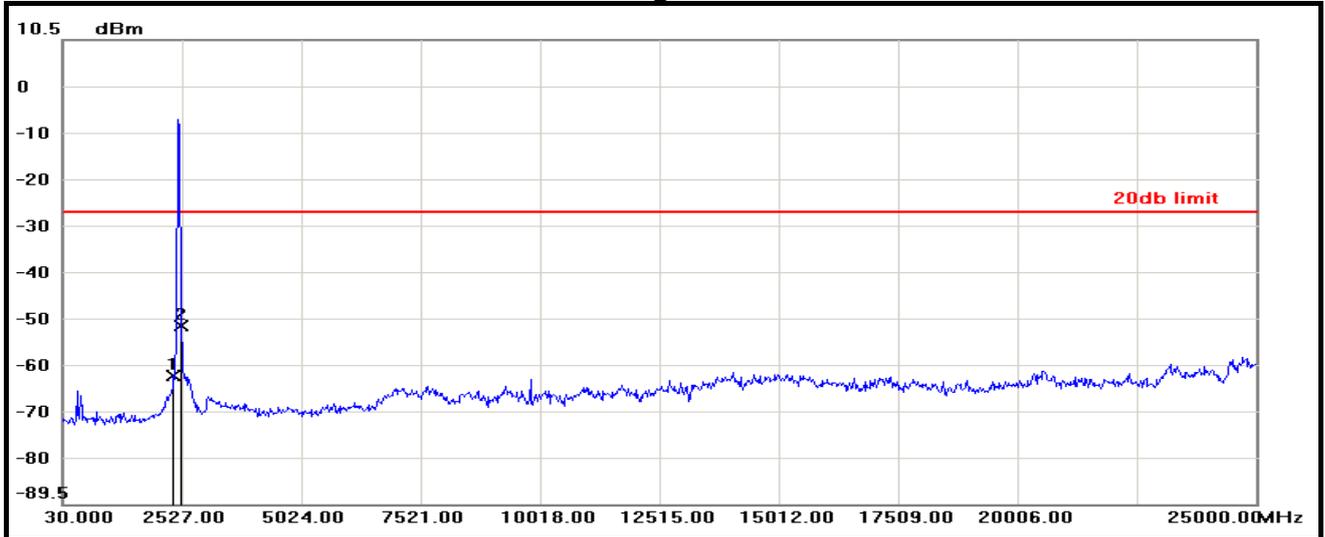


IEEE 802.11n HT40 Mode / Chain A / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.8000 | -58.41 | -26.61 | -31.80 |
| 2 | 2456.8000 | -6.61 | -26.61 | 20.00 |
| 3 | 2485.4800 | -46.71 | -26.61 | -20.10 |

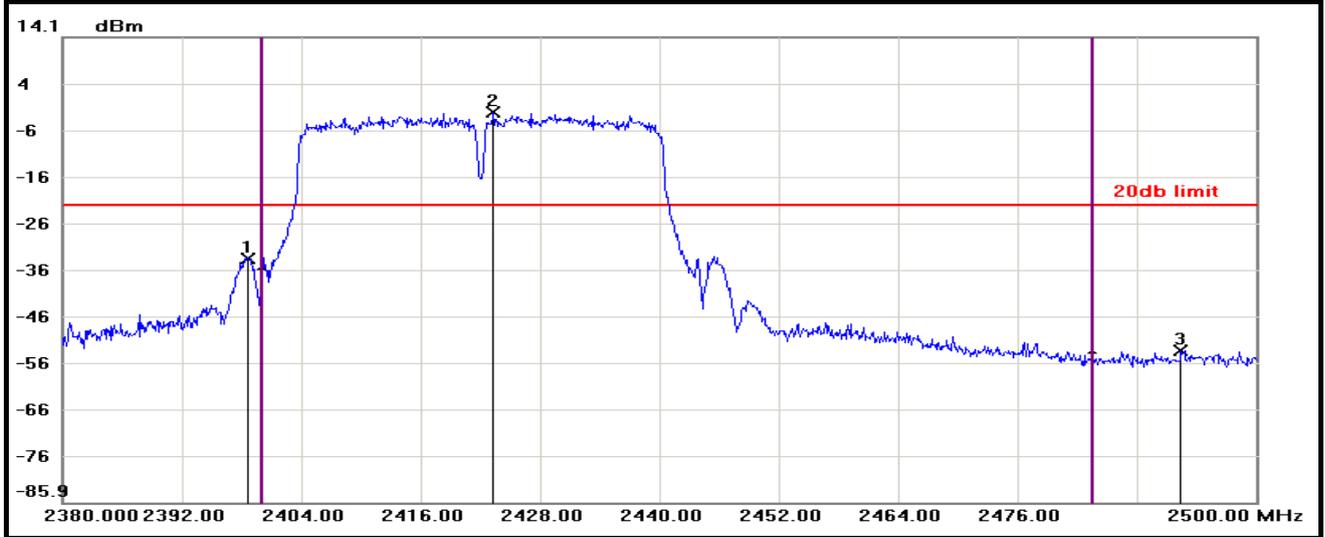
IEEE 802.11n HT40 Mode / Chain A / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2352.2100 | -61.98 | -26.61 | -35.37 |
| 2 | 2502.0300 | -51.23 | -26.61 | -24.62 |

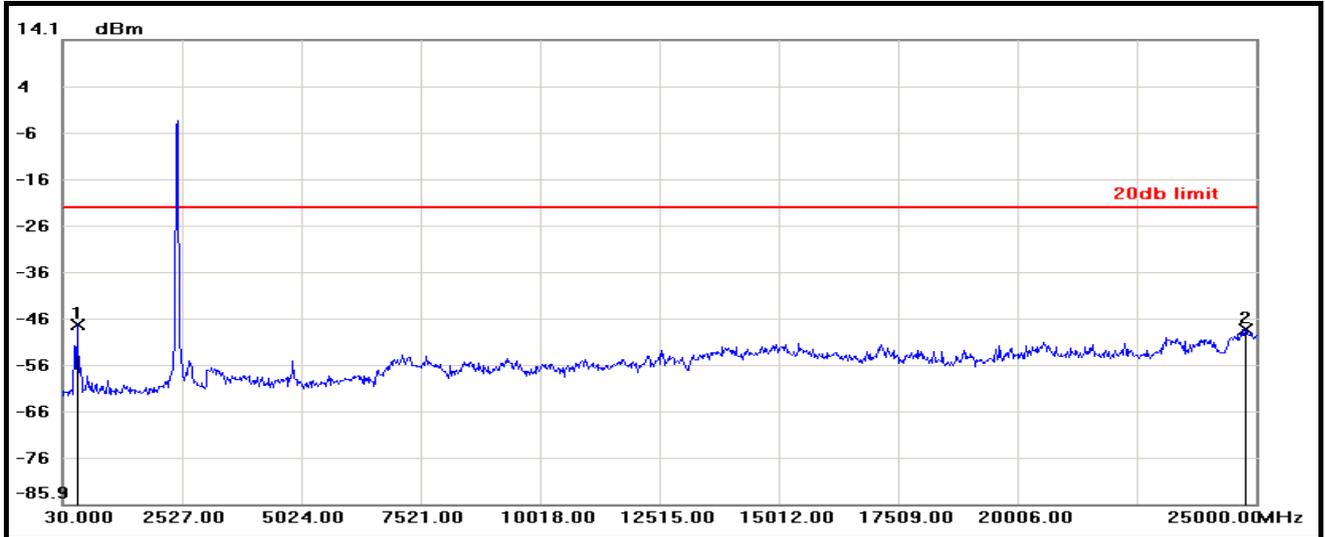


IEEE 802.11n HT40 Mode / Chain B / CH Low / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2398.6000 | -33.38 | -22.11 | -11.27 |
| 2 | 2423.3200 | -2.11 | -22.11 | 20.00 |
| 3 | 2492.4400 | -53.30 | -22.11 | -31.19 |

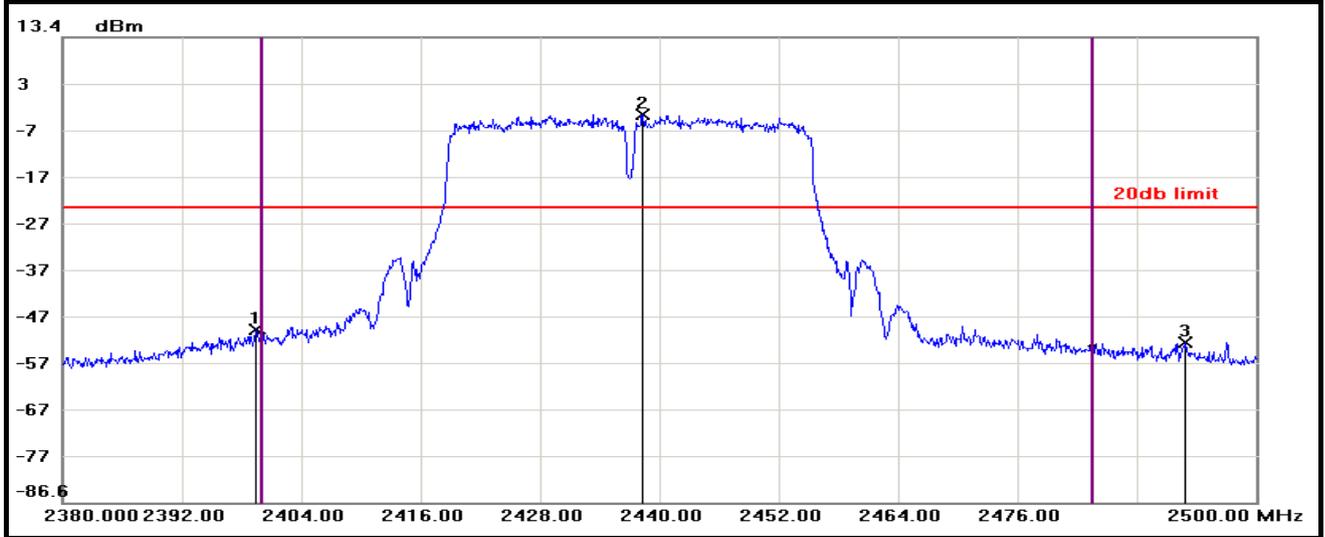
IEEE 802.11n HT40 Mode / Chain B / CH Low / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 329.6400 | -47.25 | -22.11 | -25.14 |
| 2 | 24775.2700 | -48.13 | -22.11 | -26.02 |

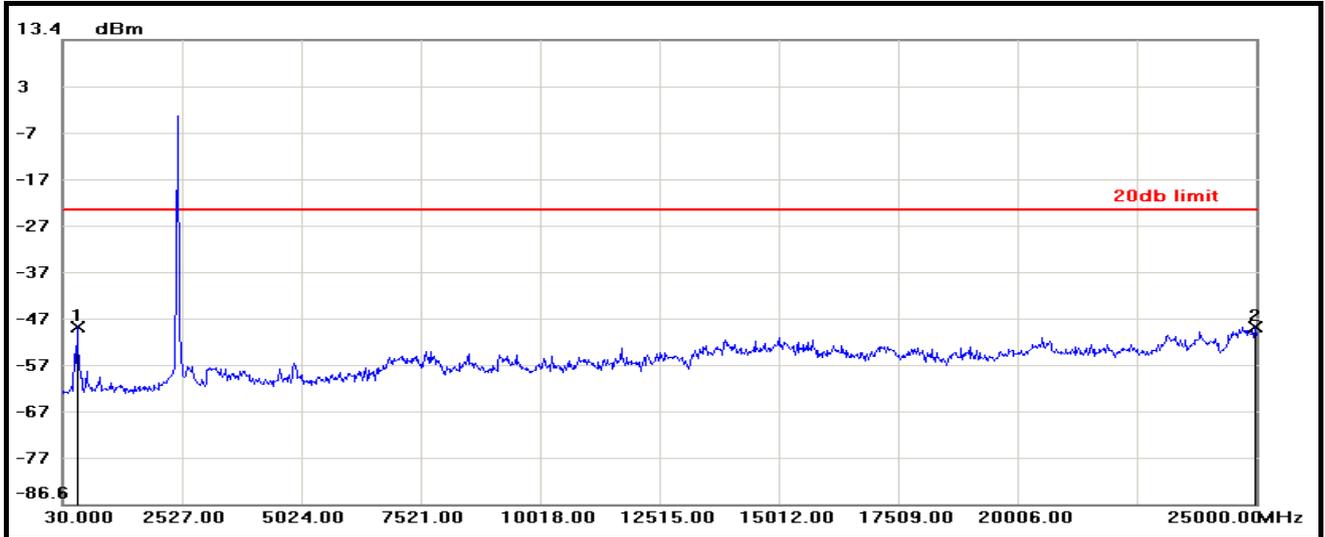


IEEE 802.11n HT40 Mode / Chain B / CH Middle / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2399.4400 | -49.53 | -23.21 | -26.32 |
| 2 | 2438.3200 | -3.21 | -23.21 | 20.00 |
| 3 | 2492.9200 | -52.31 | -23.21 | -29.10 |

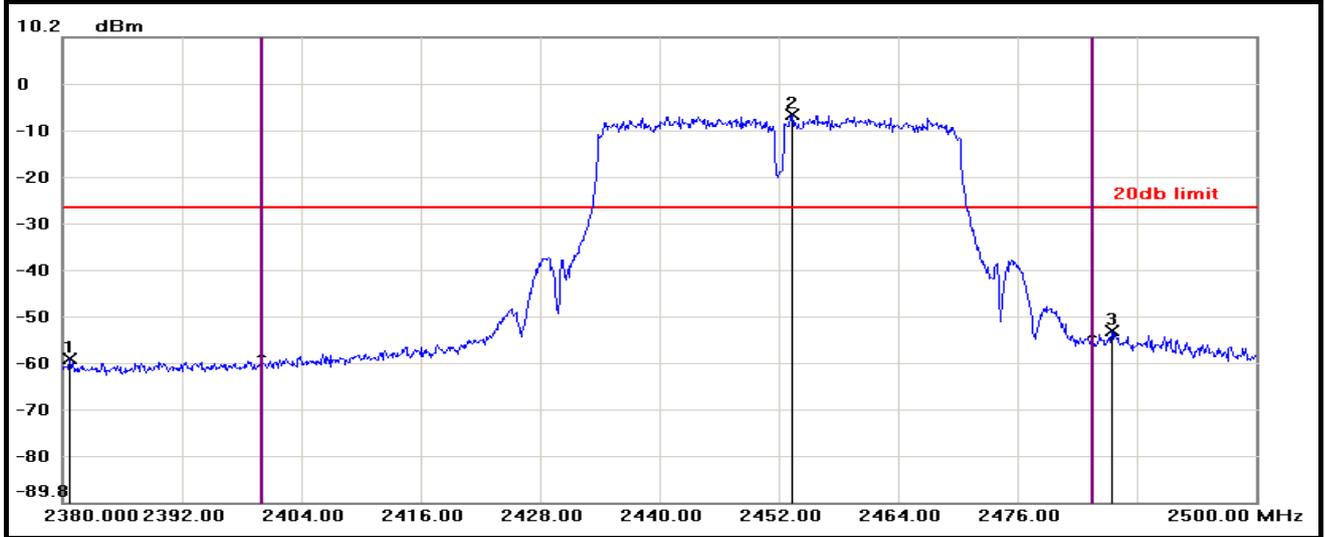
IEEE 802.11n HT40 Mode / Chain B / CH Middle / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 329.6400 | -48.44 | -23.21 | -25.23 |
| 2 | 24975.0300 | -48.41 | -23.21 | -25.20 |



IEEE 802.11n HT40 Mode / Chain B / CH High / 2.38GHz ~ 2.5GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 2380.7200 | -58.89 | -26.50 | -32.39 |
| 2 | 2453.3200 | -6.50 | -26.50 | 20.00 |
| 3 | 2485.4800 | -52.91 | -26.50 | -26.41 |

IEEE 802.11n HT40 Mode / Chain B / CH High / 30MHz ~ 25GHz



| No. | Frequency(MHz) | Result(dBm) | Limit(dBm) | Margin(dBm) |
|-----|----------------|-------------|------------|-------------|
| 1 | 329.6400 | -46.76 | -26.50 | -20.26 |
| 2 | 2502.0300 | -55.42 | -26.50 | -28.92 |



7.5 RADIATED EMISSION

LIMITS

(1) According to § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3338 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 - 13.41 | | | |

Remark:

1. ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2. ² Above 38.6

(2) According to § 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



(3) According to § 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009 – 0.490 | 2400/F(KHz) | 300 |
| 0.490 – 1.705 | 24000/F(KHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 - 88 | 100 ** | 3 |
| 88 - 216 | 150 ** | 3 |
| 216 - 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

Remark: **Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(4) According to § 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST EQUIPMENT

Radiated Emission / 966Chamber_B

| Name of Equipment | Manufacture | Model | Serial Number | Calibration Due |
|---------------------------------|-----------------|-------------|---------------|-----------------|
| Spectrum Analyzer | Agilent | E4446A | MY46180323 | 04/22/2013 |
| EMI Receiver | ROHDE & SCHWARZ | ESCS 30 | 826547/004 | 10/27/2012 |
| Broadband Hybrid Bi-Log Antenna | Sunol Sciences | JB1 | A100209-4 | 10/05/2012 |
| Double-Ridged Waveguide Horn | ETS-LINDGREN | 3117 | 00078733 | 12/06/2012 |
| Horn Antenna | COM-POWER | AH-840 | 03077 | 12/06/2012 |
| Pre-Amplifier | Agilent | 8447D | 2944A10052 | 07/17/2013 |
| Pre-Amplifier | Agilent | 8449B | 3008A01916 | 07/17/2013 |
| LOOP Antenna | EMCO | 6502 | 8905-2356 | 06/10/2013 |
| Notch Filters Band Reject | Micro-Tronics | BRM05702-01 | 026 | N.C.R |

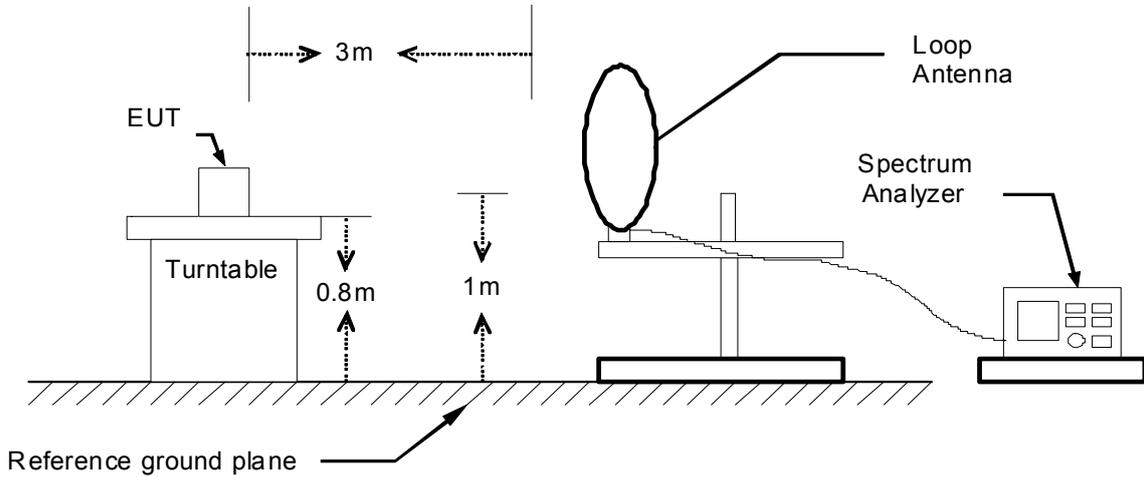
Remark: 1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R = No Calibration Request.



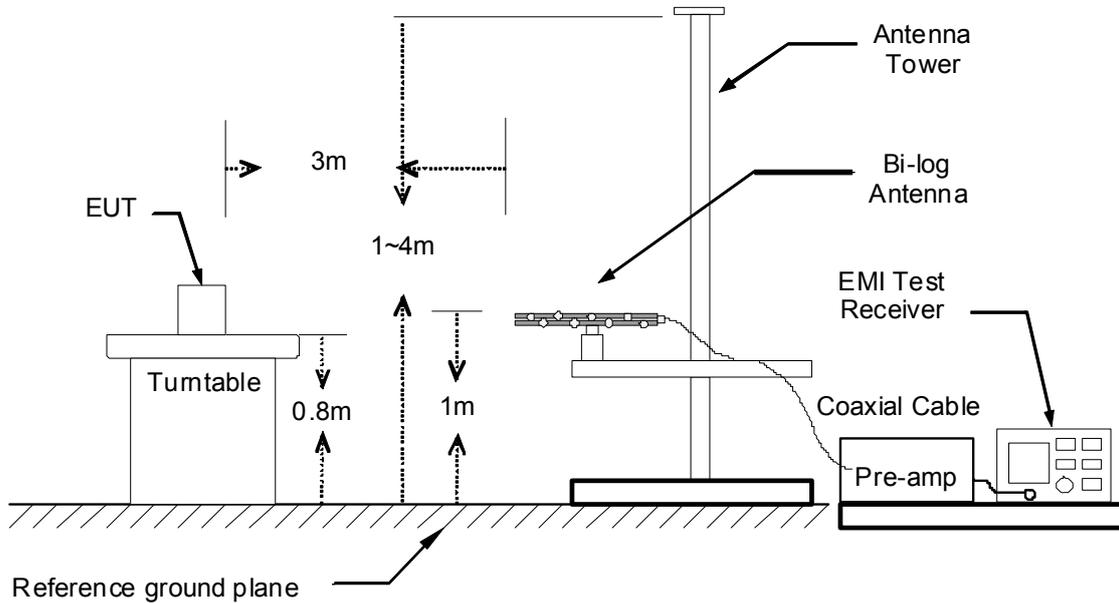
TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from below 1GHz.

9kHz ~ 30MHz

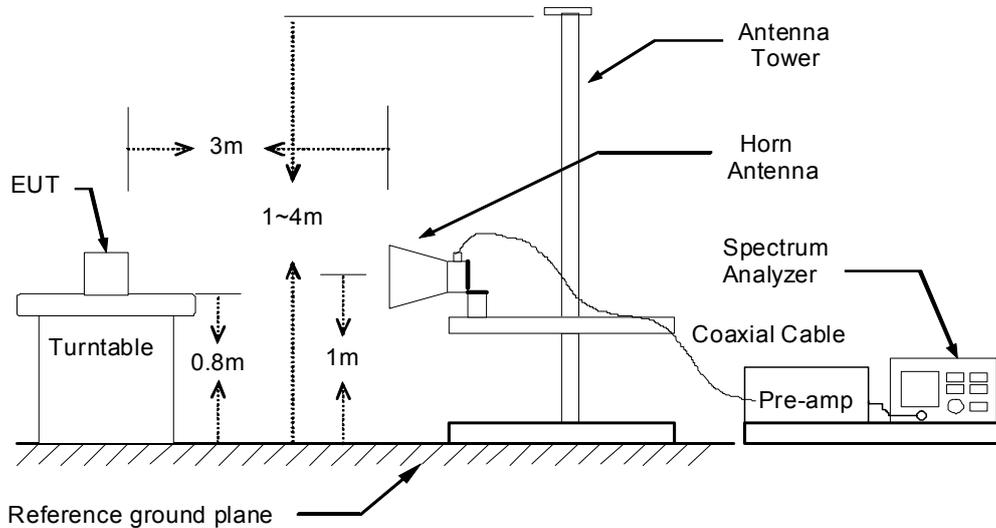


30MHz ~ 1GHz





The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. While measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. While measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Remark :

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.



TEST RESULTS

Below 1 GHz (9kHz ~ 30MHz)

No emission found between lowest internal used/generated frequency to 30MHz.

Below 1 GHz (30MHz ~ 1GHz)

| | | | |
|---------------------|---------------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/16 |
| Test Mode | Normal Operating / Power Adapter 1 | Temp. & Humidity | 26°C, 49% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | |
|--------------------------------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| Frequency (MHz) | Reading (dBµV) | Correction Factor (dB/m) | Result (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Remark |
| 250.19 | 56.20 | -13.24 | 42.96 | 46.00 | -3.04 | QP |
| 375.32 | 52.87 | -10.01 | 42.86 | 46.00 | -3.14 | Peak |
| 500.45 | 49.81 | -7.69 | 42.12 | 46.00 | -3.88 | Peak |
| 600.36 | 44.51 | -6.26 | 38.24 | 46.00 | -7.76 | Peak |
| 624.61 | 47.79 | -5.88 | 41.91 | 46.00 | -4.09 | Peak |
| 675.05 | 43.25 | -5.15 | 38.10 | 46.00 | -7.90 | Peak |
| 749.74 | 40.84 | -3.88 | 36.96 | 46.00 | -9.04 | Peak |
| 874.87 | 44.63 | -1.88 | 42.74 | 46.00 | -3.26 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | |
|------------------------------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| Frequency (MHz) | Reading (dBµV) | Correction Factor (dB/m) | Result (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Remark |
| 52.31 | 55.30 | -19.47 | 35.83 | 40.00 | -4.17 | QP |
| 125.06 | 53.50 | -13.27 | 40.23 | 43.50 | -3.27 | QP |
| 250.19 | 57.10 | -13.24 | 43.86 | 46.00 | -2.14 | QP |
| 375.32 | 55.00 | -10.01 | 44.99 | 46.00 | -1.01 | QP |
| 500.45 | 50.45 | -7.69 | 42.77 | 46.00 | -3.23 | Peak |
| 624.61 | 46.98 | -5.88 | 41.11 | 46.00 | -4.89 | Peak |
| 874.87 | 41.01 | -1.88 | 39.13 | 46.00 | -6.87 | Peak |

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBµV/m) = Reading (dBµV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBµV/m) - Quasi-peak limit (dBµV/m).



| | | | |
|---------------------|------------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | Normal Operating / Power Adapter 2 | Temp. & Humidity | 24 °C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | |
|--------------------------------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| Frequency (MHz) | Reading (dBµV) | Correction Factor (dB/m) | Result (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Remark |
| 172.59 | 49.93 | -14.63 | 35.30 | 43.50 | -8.20 | Peak |
| 250.19 | 54.68 | -13.24 | 41.44 | 46.00 | -4.56 | Peak |
| 375.32 | 49.37 | -10.01 | 39.36 | 46.00 | -6.64 | Peak |
| 500.45 | 48.09 | -7.69 | 40.41 | 46.00 | -5.59 | Peak |
| 624.61 | 46.97 | -5.88 | 41.09 | 46.00 | -4.91 | Peak |
| 675.05 | 43.83 | -5.15 | 38.68 | 46.00 | -7.32 | Peak |
| 749.74 | 39.74 | -3.88 | 35.85 | 46.00 | -10.15 | Peak |
| 874.87 | 45.00 | -1.88 | 43.12 | 46.00 | -2.88 | QP |

| 966 Chamber_B at 3Meter / Vertical | | | | | | |
|------------------------------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| Frequency (MHz) | Reading (dBµV) | Correction Factor (dB/m) | Result (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Remark |
| 43.58 | 51.63 | -15.48 | 36.15 | 40.00 | -3.85 | Peak |
| 55.22 | 55.40 | -19.59 | 35.81 | 40.00 | -4.19 | QP |
| 125.06 | 52.92 | -13.27 | 39.66 | 43.50 | -3.84 | Peak |
| 250.19 | 55.51 | -13.24 | 42.27 | 46.00 | -3.73 | Peak |
| 375.32 | 51.86 | -10.01 | 41.86 | 46.00 | -4.14 | Peak |
| 500.45 | 49.96 | -7.69 | 42.27 | 46.00 | -3.73 | Peak |
| 624.61 | 45.78 | -5.88 | 39.90 | 46.00 | -6.10 | Peak |
| 874.87 | 39.92 | -1.88 | 38.04 | 46.00 | -7.96 | Peak |

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBµV/m) = Reading (dBµV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBµV/m) - Quasi-peak limit (dBµV/m).



Above 1 GHz

| | | | |
|---------------------|--------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11b TX / CH Low | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1800.00 | 44.13 | --- | 0.45 | 44.58 | --- | 74.00 | 54.00 | -9.42 | Peak |
| 2516.00 | 46.73 | --- | 3.98 | 50.71 | --- | 74.00 | 54.00 | -3.29 | Peak |
| 2600.00 | 44.63 | --- | 4.16 | 48.79 | --- | 74.00 | 54.00 | -5.21 | Peak |
| 3225.00 | 41.74 | --- | 5.46 | 47.20 | --- | 74.00 | 54.00 | -6.80 | Peak |
| 3870.00 | 40.92 | --- | 6.88 | 47.80 | --- | 74.00 | 54.00 | -6.20 | Peak |
| 4830.00 | 45.46 | 42.63 | 9.24 | 54.70 | 51.87 | 74.00 | 54.00 | -2.13 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 45.27 | --- | -0.27 | 45.00 | --- | 74.00 | 54.00 | -9.00 | Peak |
| 1880.00 | 46.40 | --- | 1.17 | 47.57 | --- | 74.00 | 54.00 | -6.43 | Peak |
| 2490.00 | 54.69 | 44.08 | 3.92 | 58.61 | 48.00 | 74.00 | 54.00 | -6.00 | AVG |
| 3285.00 | 41.71 | --- | 5.58 | 47.29 | --- | 74.00 | 54.00 | -6.71 | Peak |
| 3990.00 | 40.78 | --- | 7.16 | 47.94 | --- | 74.00 | 54.00 | -6.06 | Peak |
| 4830.00 | 45.38 | 40.32 | 9.24 | 54.62 | 49.56 | 74.00 | 54.00 | -4.44 | AVG |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|-----------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11b TX / CH Middle | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 45.20 | --- | -0.27 | 44.93 | --- | 74.00 | 54.00 | -9.07 | Peak |
| 2342.00 | 46.74 | --- | 3.41 | 50.15 | --- | 74.00 | 54.00 | -3.85 | Peak |
| 2526.00 | 47.50 | --- | 4.00 | 51.50 | --- | 74.00 | 54.00 | -2.50 | Peak |
| 4200.00 | 40.30 | --- | 7.66 | 47.96 | --- | 74.00 | 54.00 | -6.04 | Peak |
| 4875.00 | 40.79 | --- | 9.36 | 50.15 | --- | 74.00 | 54.00 | -3.85 | Peak |
| 7305.00 | 44.16 | 39.01 | 13.33 | 57.49 | 52.34 | 74.00 | 54.00 | -1.66 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 48.78 | --- | -0.27 | 48.51 | --- | 74.00 | 54.00 | -5.49 | Peak |
| 2356.00 | 48.41 | --- | 3.46 | 51.88 | --- | 74.00 | 54.00 | -2.12 | Peak |
| 2530.00 | 54.32 | 44.53 | 4.01 | 58.33 | 48.54 | 74.00 | 54.00 | -5.46 | AVG |
| 3270.00 | 42.80 | --- | 5.55 | 48.35 | --- | 74.00 | 54.00 | -5.65 | Peak |
| 4200.00 | 40.31 | --- | 7.66 | 47.97 | --- | 74.00 | 54.00 | -6.03 | Peak |
| 4875.00 | 40.60 | --- | 9.36 | 49.96 | --- | 74.00 | 54.00 | -4.04 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|---------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/17 |
| Test Mode | IEEE 802.11b TX / CH High | Temp. & Humidity | 25°C, 50% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 45.00 | --- | -0.27 | 44.73 | --- | 74.00 | 54.00 | -9.27 | Peak |
| 2380.00 | 47.13 | --- | 3.54 | 50.67 | --- | 74.00 | 54.00 | -3.33 | Peak |
| 2854.00 | 43.69 | --- | 4.69 | 48.38 | --- | 74.00 | 54.00 | -5.62 | Peak |
| 4200.00 | 41.39 | --- | 7.66 | 49.05 | --- | 74.00 | 54.00 | -4.95 | Peak |
| 4635.00 | 39.60 | --- | 8.73 | 48.33 | --- | 74.00 | 54.00 | -5.67 | Peak |
| 4920.00 | 40.29 | --- | 9.48 | 49.77 | --- | 74.00 | 54.00 | -4.23 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 47.71 | --- | -0.27 | 47.44 | --- | 74.00 | 54.00 | -6.56 | Peak |
| 2530.00 | 50.55 | 40.32 | 4.01 | 54.56 | 44.33 | 74.00 | 54.00 | -9.67 | AVG |
| 2558.00 | 50.38 | 40.39 | 4.07 | 54.45 | 44.46 | 74.00 | 54.00 | -9.54 | AVG |
| 3360.00 | 41.67 | --- | 5.73 | 47.40 | --- | 74.00 | 54.00 | -6.60 | Peak |
| 4815.00 | 40.82 | --- | 9.20 | 50.02 | --- | 74.00 | 54.00 | -3.98 | Peak |
| 4920.00 | 41.20 | --- | 9.48 | 50.68 | --- | 74.00 | 54.00 | -3.32 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|--------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11g TX / CH Low | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1288.00 | 45.18 | --- | -2.99 | 42.19 | --- | 74.00 | 54.00 | -11.81 | Peak |
| 1808.00 | 44.87 | --- | 0.52 | 45.39 | --- | 74.00 | 54.00 | -8.61 | Peak |
| 1984.00 | 43.15 | --- | 2.11 | 45.26 | --- | 74.00 | 54.00 | -8.74 | Peak |
| 3330.00 | 41.52 | --- | 5.67 | 47.19 | --- | 74.00 | 54.00 | -6.81 | Peak |
| 4410.00 | 39.94 | --- | 8.16 | 48.10 | --- | 74.00 | 54.00 | -5.90 | Peak |
| 4830.00 | 40.51 | --- | 9.24 | 49.75 | --- | 74.00 | 54.00 | -4.25 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1698.00 | 47.06 | --- | -0.47 | 46.59 | --- | 74.00 | 54.00 | -7.41 | Peak |
| 1800.00 | 47.89 | --- | 0.45 | 48.34 | --- | 74.00 | 54.00 | -5.66 | Peak |
| 2488.00 | 54.67 | 42.62 | 3.91 | 58.58 | 46.53 | 74.00 | 54.00 | -7.47 | AVG |
| 3375.00 | 41.12 | --- | 5.76 | 46.88 | --- | 74.00 | 54.00 | -7.12 | Peak |
| 4275.00 | 40.07 | --- | 7.83 | 47.91 | --- | 74.00 | 54.00 | -6.09 | Peak |
| 4830.00 | 39.21 | --- | 9.24 | 48.45 | --- | 74.00 | 54.00 | -5.55 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|-----------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11g TX / CH Middle | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 46.14 | --- | -0.27 | 45.87 | --- | 74.00 | 54.00 | -8.13 | Peak |
| 2364.00 | 48.05 | --- | 3.49 | 51.54 | --- | 74.00 | 54.00 | -2.46 | Peak |
| 2390.00 | 45.60 | --- | 3.58 | 49.17 | --- | 74.00 | 54.00 | -4.83 | Peak |
| 2483.50 | 57.81 | 43.69 | 3.90 | 61.71 | 47.59 | 74.00 | 54.00 | -6.41 | AVG |
| 3240.00 | 41.32 | --- | 5.49 | 46.81 | --- | 74.00 | 54.00 | -7.19 | Peak |
| 4875.00 | 54.85 | 42.51 | 9.36 | 64.21 | 51.87 | 74.00 | 54.00 | -2.13 | AVG |
| 7305.00 | 52.15 | 39.00 | 13.33 | 65.48 | 52.33 | 74.00 | 54.00 | -1.67 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1880.00 | 47.13 | --- | 1.17 | 48.30 | --- | 74.00 | 54.00 | -5.70 | Peak |
| 2390.00 | 54.20 | 42.56 | 3.58 | 57.78 | 46.14 | 74.00 | 54.00 | -7.86 | AVG |
| 2483.50 | 61.82 | 46.46 | 3.90 | 65.72 | 50.36 | 74.00 | 54.00 | -3.64 | AVG |
| 4200.00 | 40.49 | --- | 7.66 | 48.15 | --- | 74.00 | 54.00 | -5.85 | Peak |
| 4875.00 | 50.33 | 36.60 | 9.36 | 59.69 | 45.96 | 74.00 | 54.00 | -8.04 | AVG |
| 7320.00 | 49.78 | 36.83 | 13.34 | 63.12 | 50.17 | 74.00 | 54.00 | -3.83 | AVG |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|---------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | IEEE 802.11g TX / CH High | Temp. & Humidity | 25°C, 50% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1360.00 | 46.56 | --- | -2.74 | 43.82 | --- | 74.00 | 54.00 | -10.18 | Peak |
| 1720.00 | 45.90 | --- | -0.27 | 45.63 | --- | 74.00 | 54.00 | -8.37 | Peak |
| 2546.00 | 45.73 | --- | 4.05 | 49.78 | --- | 74.00 | 54.00 | -4.22 | Peak |
| 3390.00 | 41.45 | --- | 5.80 | 47.24 | --- | 74.00 | 54.00 | -6.76 | Peak |
| 4200.00 | 40.68 | --- | 7.66 | 48.34 | --- | 74.00 | 54.00 | -5.66 | Peak |
| 4950.00 | 39.23 | --- | 9.56 | 48.79 | --- | 74.00 | 54.00 | -5.21 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1476.00 | 45.64 | --- | -2.33 | 43.31 | --- | 74.00 | 54.00 | -10.69 | Peak |
| 1720.00 | 47.54 | --- | -0.27 | 47.27 | --- | 74.00 | 54.00 | -6.73 | Peak |
| 1880.00 | 45.91 | --- | 1.17 | 47.08 | --- | 74.00 | 54.00 | -6.92 | Peak |
| 3915.00 | 41.24 | --- | 6.98 | 48.22 | --- | 74.00 | 54.00 | -5.78 | Peak |
| 4920.00 | 38.98 | --- | 9.48 | 48.46 | --- | 74.00 | 54.00 | -5.54 | Peak |
| 5325.00 | 40.46 | --- | 10.13 | 50.59 | --- | 74.00 | 54.00 | -3.41 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|-------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11n HT20 TX / CH Low | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1320.00 | 46.89 | --- | -2.88 | 44.01 | --- | 74.00 | 54.00 | -9.99 | Peak |
| 2494.00 | 55.20 | 45.48 | 3.93 | 59.13 | 49.41 | 74.00 | 54.00 | -4.59 | AVG |
| 2684.00 | 53.76 | 44.29 | 4.34 | 58.10 | 48.63 | 74.00 | 54.00 | -5.37 | AVG |
| 3420.00 | 42.07 | --- | 5.86 | 47.93 | --- | 74.00 | 54.00 | -6.07 | Peak |
| 4815.00 | 52.00 | 42.33 | 9.20 | 61.20 | 51.53 | 74.00 | 54.00 | -2.47 | AVG |
| 7230.00 | 44.79 | 35.78 | 13.28 | 58.07 | 49.06 | 74.00 | 54.00 | -4.94 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1408.00 | 48.92 | --- | -2.57 | 46.35 | --- | 74.00 | 54.00 | -7.65 | Peak |
| 2508.00 | 57.48 | 46.38 | 3.97 | 61.45 | 50.35 | 74.00 | 54.00 | -3.65 | AVG |
| 2608.00 | 50.75 | 42.75 | 4.18 | 54.93 | 46.93 | 74.00 | 54.00 | -7.07 | AVG |
| 3180.00 | 41.75 | --- | 5.37 | 47.12 | --- | 74.00 | 54.00 | -6.88 | Peak |
| 3990.00 | 40.57 | --- | 7.16 | 47.72 | --- | 74.00 | 54.00 | -6.28 | Peak |
| 4815.00 | 46.59 | 35.57 | 9.20 | 55.79 | 44.77 | 74.00 | 54.00 | -9.23 | AVG |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|----------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11n HT20 TX / CH Middle | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 2364.00 | 52.38 | 42.36 | 3.49 | 55.87 | 45.85 | 74.00 | 54.00 | -8.15 | AVG |
| 2390.00 | 47.48 | --- | 3.58 | 51.05 | --- | 74.00 | 54.00 | -2.95 | Peak |
| 2483.50 | 56.99 | 44.66 | 3.90 | 60.89 | 48.56 | 74.00 | 54.00 | -5.44 | AVG |
| 2640.00 | 54.62 | 42.76 | 4.24 | 58.86 | 47.00 | 74.00 | 54.00 | -7.00 | AVG |
| 4200.00 | 40.95 | --- | 7.66 | 48.61 | --- | 74.00 | 54.00 | -5.39 | Peak |
| 4875.00 | 54.20 | 40.30 | 9.36 | 63.56 | 49.66 | 74.00 | 54.00 | -4.34 | AVG |
| 7320.00 | 52.59 | 39.32 | 13.34 | 65.93 | 52.66 | 74.00 | 54.00 | -1.34 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 2390.00 | 58.51 | 48.74 | 3.58 | 62.09 | 52.32 | 74.00 | 54.00 | -1.68 | AVG |
| 2483.50 | 60.06 | 48.95 | 3.90 | 63.96 | 52.85 | 74.00 | 54.00 | -1.15 | AVG |
| 2642.00 | 52.53 | 42.05 | 4.25 | 56.78 | 46.30 | 74.00 | 54.00 | -7.70 | AVG |
| 4230.00 | 40.72 | --- | 7.73 | 48.45 | --- | 74.00 | 54.00 | -5.55 | Peak |
| 4875.00 | 52.81 | 40.16 | 9.36 | 62.17 | 49.52 | 74.00 | 54.00 | -4.48 | AVG |
| 7305.00 | 48.13 | 36.48 | 13.33 | 61.46 | 49.81 | 74.00 | 54.00 | -4.19 | AVG |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|--------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | IEEE 802.11n HT20 TX / CH High | Temp. & Humidity | 25°C, 50% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1572.00 | 44.94 | --- | -1.60 | 43.33 | --- | 74.00 | 54.00 | -10.67 | Peak |
| 1920.00 | 43.54 | --- | 1.53 | 45.07 | --- | 74.00 | 54.00 | -8.93 | Peak |
| 2698.00 | 50.65 | 42.03 | 4.37 | 55.02 | 46.40 | 74.00 | 54.00 | -7.60 | AVG |
| 3285.00 | 41.33 | --- | 5.58 | 46.91 | --- | 74.00 | 54.00 | -7.09 | Peak |
| 4170.00 | 40.95 | --- | 7.58 | 48.54 | --- | 74.00 | 54.00 | -5.46 | Peak |
| 4920.00 | 42.06 | --- | 9.48 | 51.54 | --- | 74.00 | 54.00 | -2.46 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1704.00 | 44.97 | --- | -0.41 | 44.56 | --- | 74.00 | 54.00 | -9.44 | Peak |
| 1880.00 | 47.43 | --- | 1.17 | 48.60 | --- | 74.00 | 54.00 | -5.40 | Peak |
| 2696.00 | 50.58 | 41.50 | 4.36 | 54.94 | 45.86 | 74.00 | 54.00 | -8.14 | AVG |
| 4035.00 | 40.27 | --- | 7.26 | 47.54 | --- | 74.00 | 54.00 | -6.46 | Peak |
| 4575.00 | 39.90 | --- | 8.57 | 48.46 | --- | 74.00 | 54.00 | -5.54 | Peak |
| 4965.00 | 39.88 | --- | 9.60 | 49.48 | --- | 74.00 | 54.00 | -4.52 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|-------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/22 |
| Test Mode | IEEE 802.11n HT40 TX / CH Low | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1984.00 | 43.43 | --- | 2.11 | 45.54 | --- | 74.00 | 54.00 | -8.46 | Peak |
| 2483.50 | 45.31 | --- | 3.90 | 49.21 | --- | 74.00 | 54.00 | -4.79 | Peak |
| 2494.00 | 47.33 | --- | 3.93 | 51.26 | --- | 74.00 | 54.00 | -2.74 | Peak |
| 2692.00 | 50.43 | 42.08 | 4.35 | 54.78 | 46.43 | 74.00 | 54.00 | -7.57 | AVG |
| 3405.00 | 41.55 | --- | 5.83 | 47.37 | --- | 74.00 | 54.00 | -6.63 | Peak |
| 4065.00 | 40.89 | --- | 7.33 | 48.22 | --- | 74.00 | 54.00 | -5.78 | Peak |
| 4845.00 | 48.31 | 39.86 | 9.28 | 57.59 | 49.14 | 74.00 | 54.00 | -4.86 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1800.00 | 47.93 | --- | 0.45 | 48.38 | --- | 74.00 | 54.00 | -5.62 | Peak |
| 2483.50 | 57.79 | 46.09 | 3.90 | 61.69 | 49.99 | 74.00 | 54.00 | -4.01 | AVG |
| 2634.00 | 46.95 | --- | 4.23 | 51.18 | --- | 74.00 | 54.00 | -2.82 | Peak |
| 3150.00 | 42.52 | --- | 5.31 | 47.83 | --- | 74.00 | 54.00 | -6.17 | Peak |
| 4245.00 | 40.40 | --- | 7.76 | 48.16 | --- | 74.00 | 54.00 | -5.84 | Peak |
| 4830.00 | 40.27 | --- | 9.24 | 49.51 | --- | 74.00 | 54.00 | -4.49 | Peak |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
 Margin = Result - Limit
 Remark Peak = Result(PK) - Limit(AV)
 Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|----------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/23 |
| Test Mode | IEEE 802.11n HT40 TX / CH Middle | Temp. & Humidity | 24°C, 58% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 2390.00 | 45.22 | --- | 3.58 | 48.80 | --- | 74.00 | 54.00 | -5.20 | Peak |
| 2483.50 | 54.14 | 42.98 | 3.90 | 58.04 | 46.88 | 74.00 | 54.00 | -7.12 | AVG |
| 2652.00 | 47.65 | --- | 4.27 | 51.92 | --- | 74.00 | 54.00 | -2.08 | Peak |
| 3435.00 | 40.97 | --- | 5.89 | 46.86 | --- | 74.00 | 54.00 | -7.14 | Peak |
| 4860.00 | 52.46 | 41.48 | 9.32 | 61.78 | 50.80 | 74.00 | 54.00 | -3.20 | AVG |
| 7305.00 | 48.50 | 36.92 | 13.33 | 61.83 | 50.25 | 74.00 | 54.00 | -3.75 | AVG |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 2390.00 | 66.36 | 47.43 | 3.58 | 69.94 | 51.01 | 74.00 | 54.00 | -2.99 | AVG |
| 2483.50 | 66.94 | 48.70 | 3.90 | 70.84 | 52.60 | 74.00 | 54.00 | -1.40 | AVG |
| 2638.00 | 45.61 | --- | 4.24 | 49.85 | --- | 74.00 | 54.00 | -4.15 | Peak |
| 3075.00 | 43.79 | --- | 5.15 | 48.94 | --- | 74.00 | 54.00 | -5.06 | Peak |
| 4860.00 | 51.10 | 37.30 | 9.32 | 60.42 | 46.62 | 74.00 | 54.00 | -7.38 | AVG |
| 7320.00 | 46.80 | 35.98 | 13.34 | 60.14 | 49.32 | 74.00 | 54.00 | -4.68 | AVG |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



| | | | |
|---------------------|--------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | IEEE 802.11n HT40 TX / CH High | Temp. & Humidity | 25°C, 50% |

| 966 Chamber_B at 3Meter / Horizontal | | | | | | | | | |
|--------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 46.82 | --- | -0.27 | 46.55 | --- | 74.00 | 54.00 | -7.45 | Peak |
| 2662.00 | 46.50 | --- | 4.29 | 50.79 | --- | 74.00 | 54.00 | -3.21 | Peak |
| 2762.00 | 45.58 | --- | 4.50 | 50.08 | --- | 74.00 | 54.00 | -3.92 | Peak |
| 3285.00 | 42.36 | --- | 5.58 | 47.94 | --- | 74.00 | 54.00 | -6.06 | Peak |
| 4215.00 | 39.98 | --- | 7.69 | 47.67 | --- | 74.00 | 54.00 | -6.33 | Peak |
| 4905.00 | 40.61 | --- | 9.44 | 50.05 | --- | 74.00 | 54.00 | -3.95 | Peak |

| 966 Chamber_B at 3Meter / Vertical | | | | | | | | | |
|------------------------------------|-------------------|-------------------|--------------------------|--------------------|--------------------|-------------------|-------------------|-------------|--------|
| Frequency (MHz) | Reading-PK (dBuV) | Reading-AV (dBuV) | Correction Factor (dB/m) | Result-PK (dBuV/m) | Result-AV (dBuV/m) | Limit-PK (dBuV/m) | Limit-AV (dBuV/m) | Margin (dB) | Remark |
| 1720.00 | 46.67 | --- | -0.27 | 46.40 | --- | 74.00 | 54.00 | -7.60 | Peak |
| 1880.00 | 47.19 | --- | 1.17 | 48.36 | --- | 74.00 | 54.00 | -5.64 | Peak |
| 2600.00 | 50.00 | 40.01 | 4.16 | 54.16 | 44.17 | 74.00 | 54.00 | -9.83 | AVG |
| 3270.00 | 42.17 | --- | 5.55 | 47.72 | --- | 74.00 | 54.00 | -6.28 | Peak |
| 4125.00 | 40.45 | --- | 7.48 | 47.93 | --- | 74.00 | 54.00 | -6.07 | Peak |
| 4890.00 | 39.04 | --- | 9.40 | 48.44 | --- | 74.00 | 54.00 | -5.56 | Peak |

Remark:

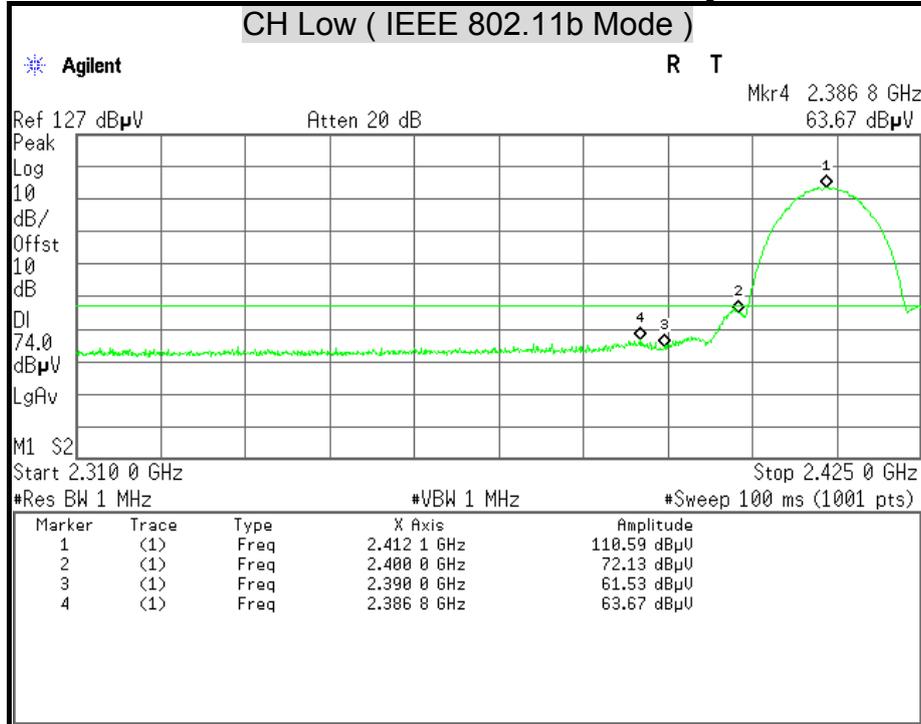
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2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Restricted Band Edges

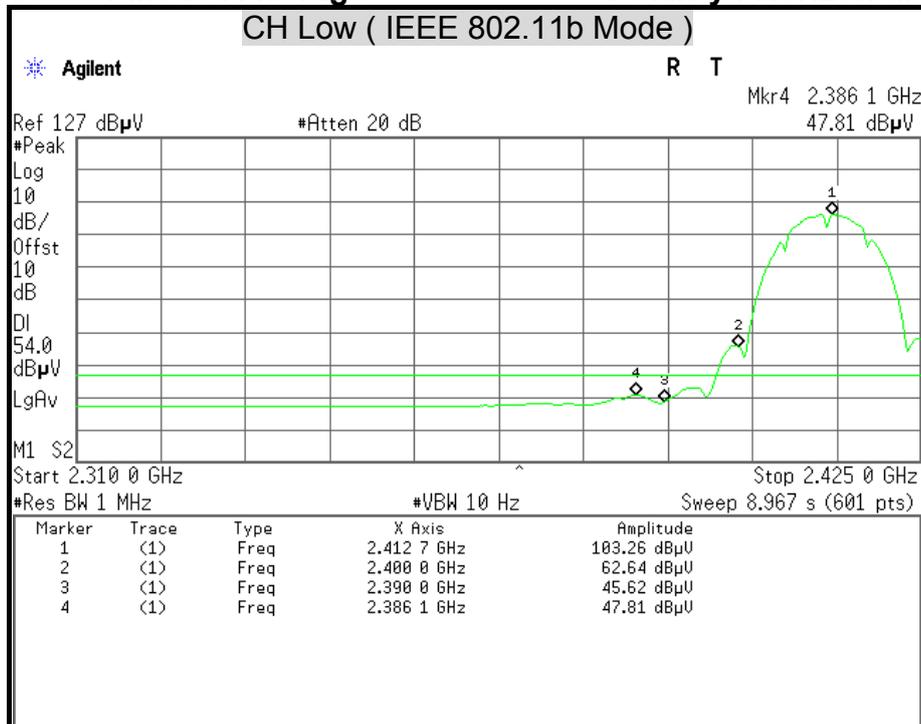
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Polarity : Horizontal



Detector Mode : Average

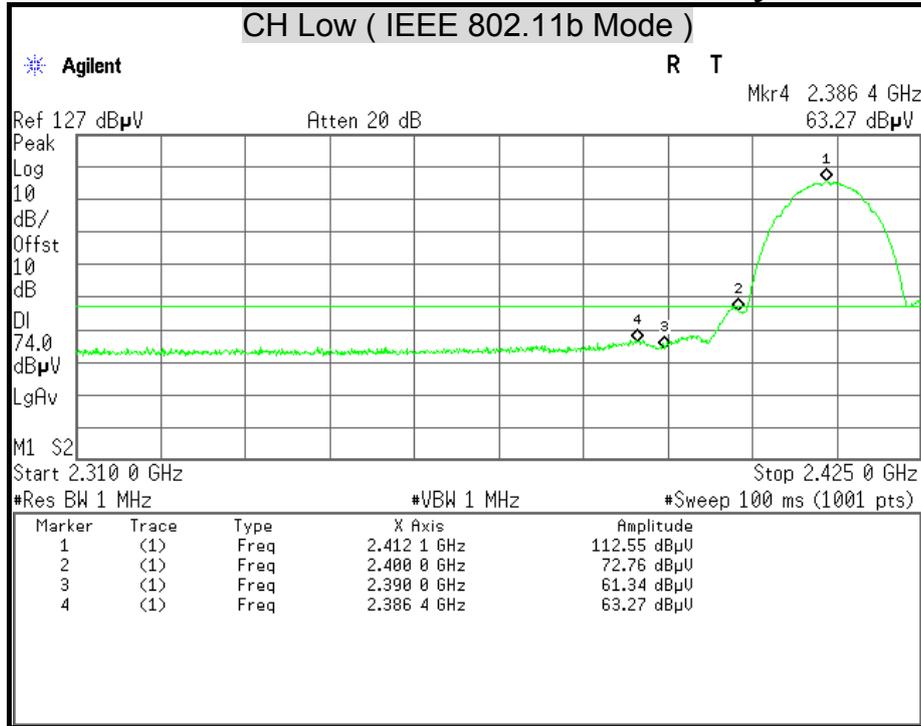
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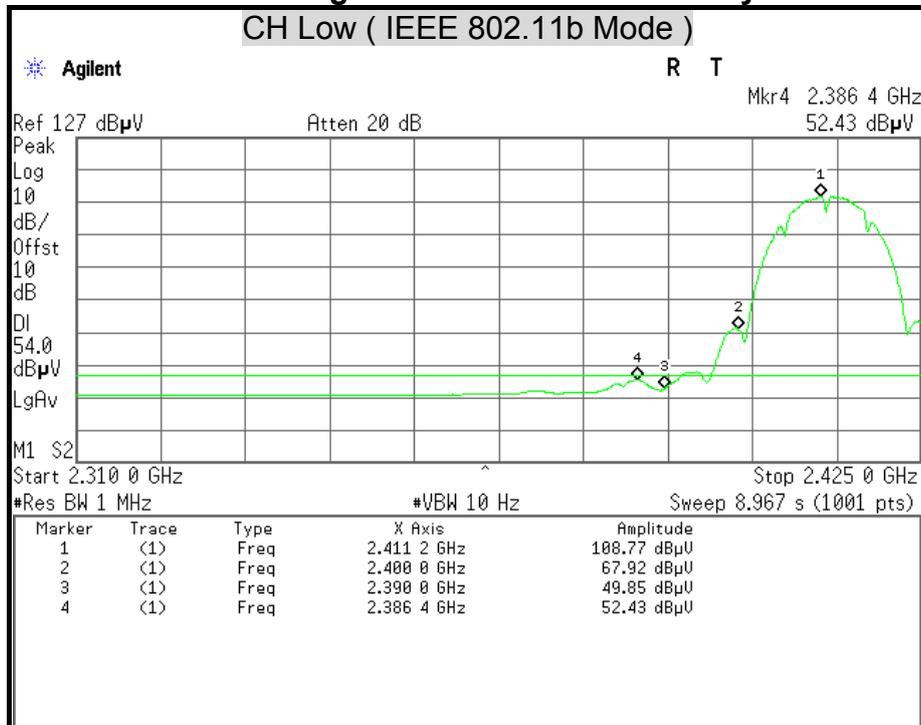
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

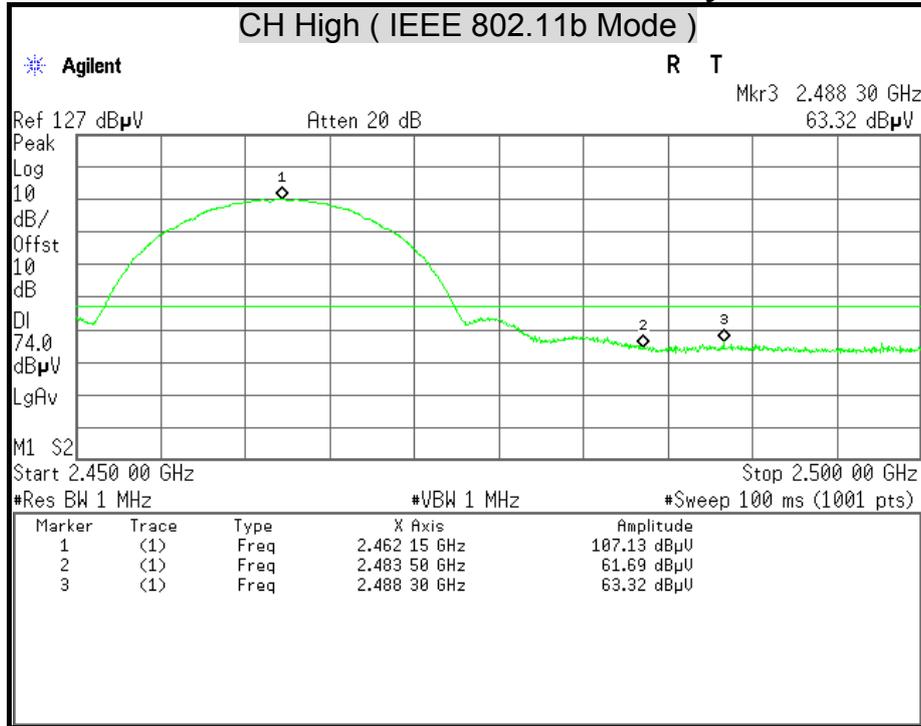
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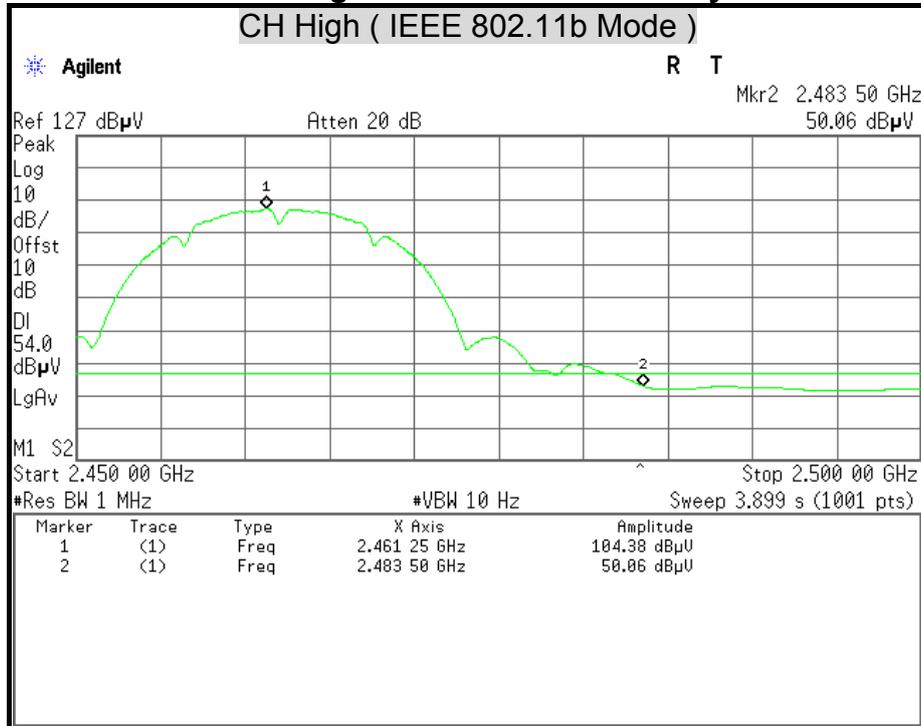
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

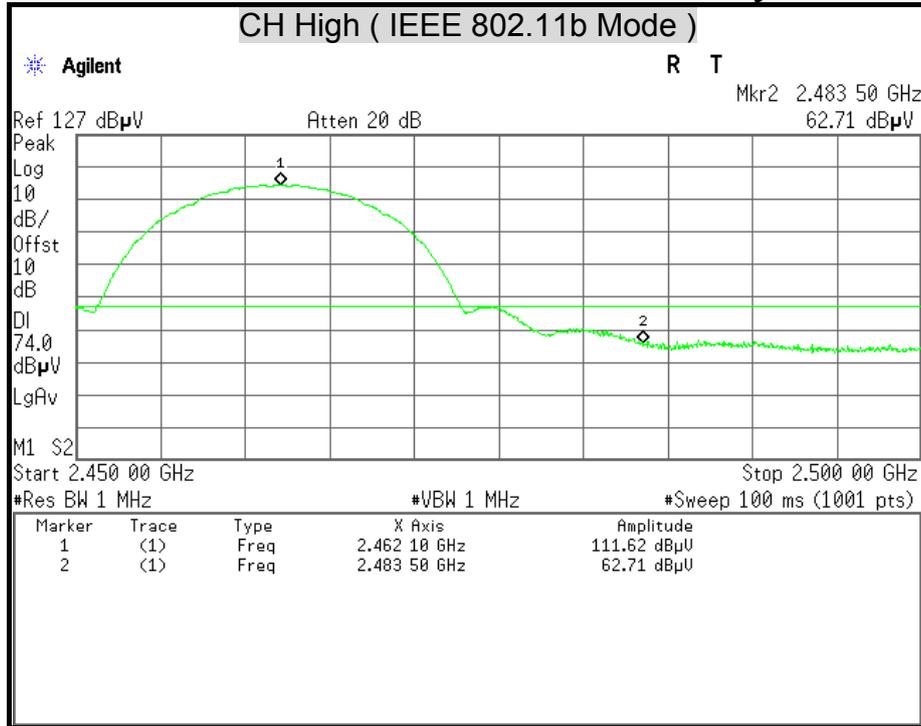
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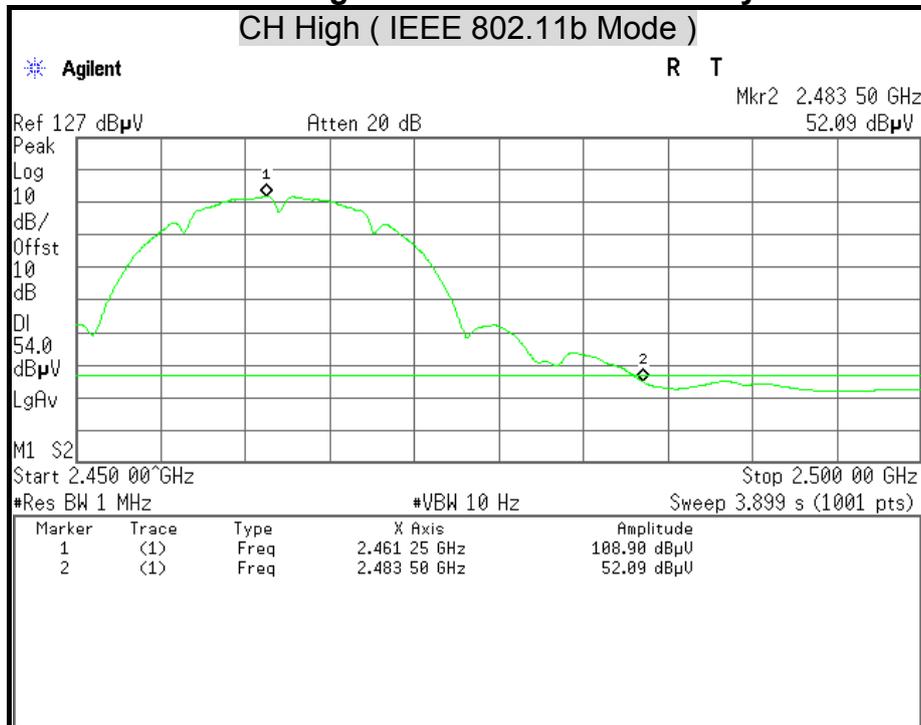
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

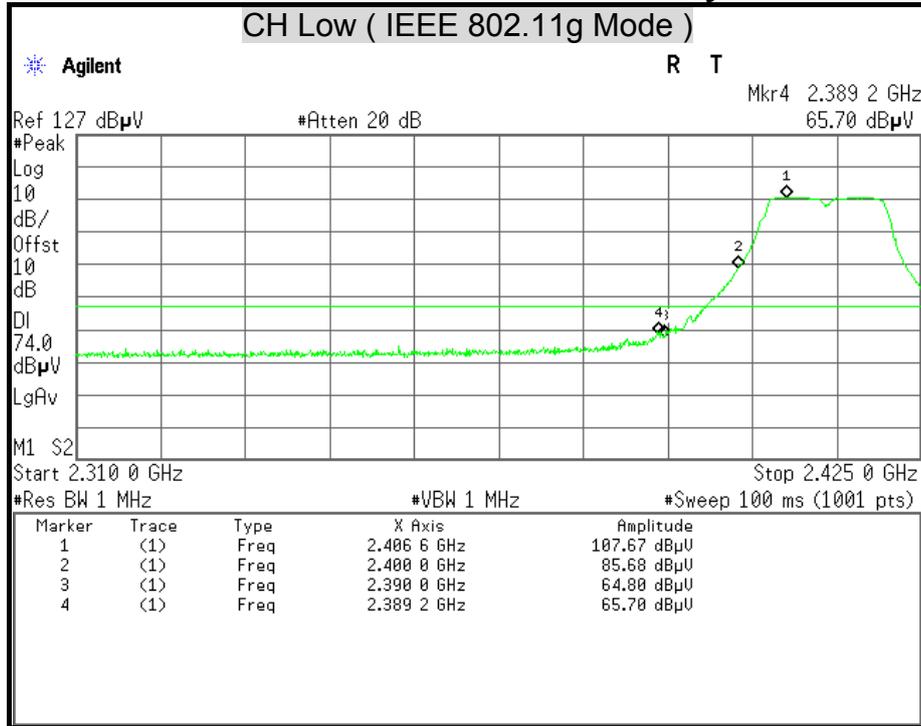
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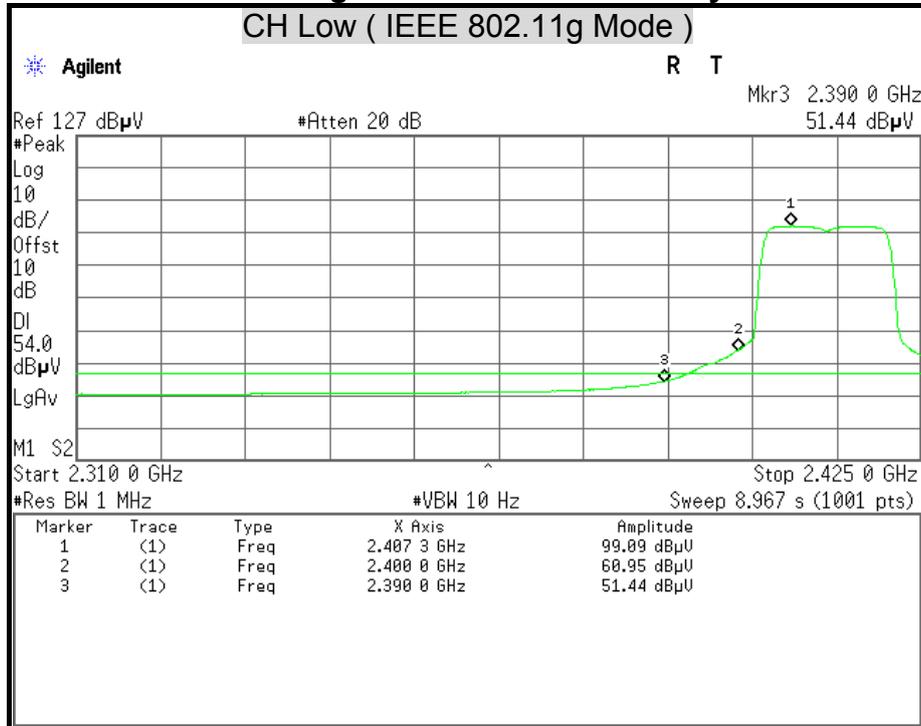
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

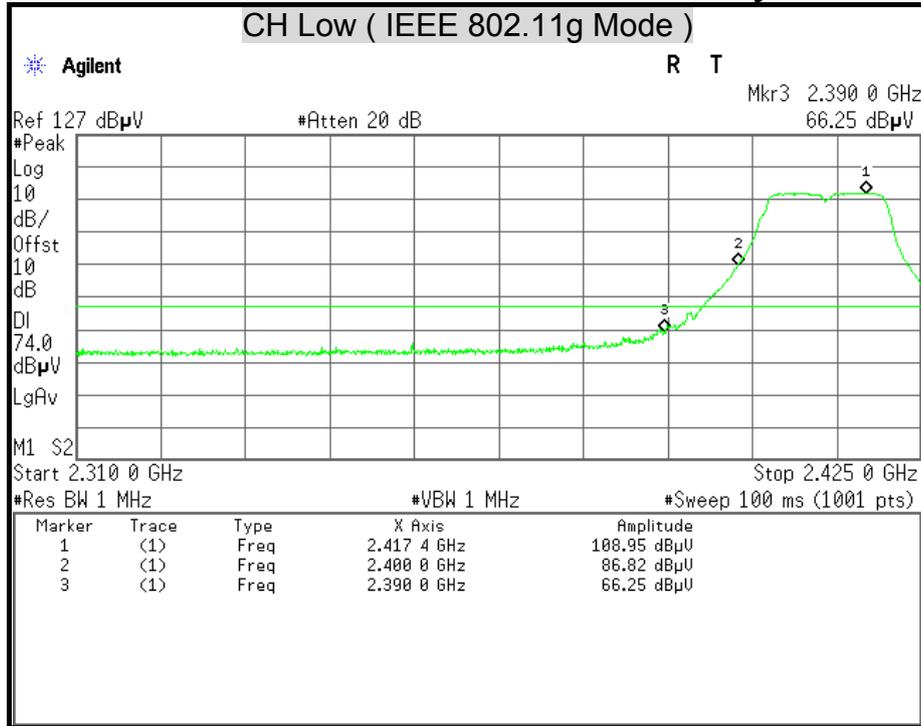
Polarity : Horizontal





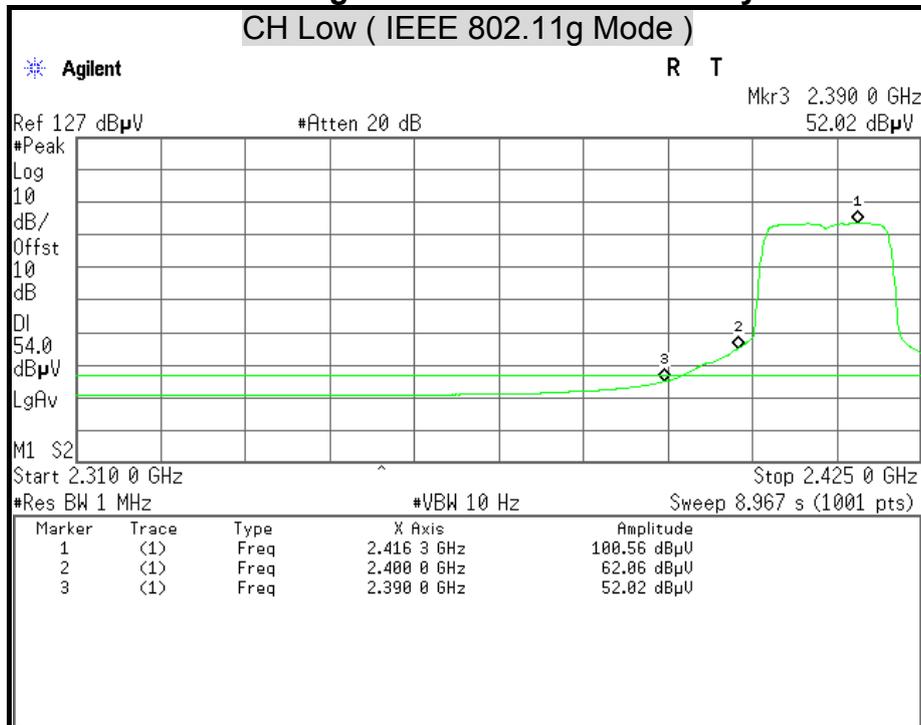
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

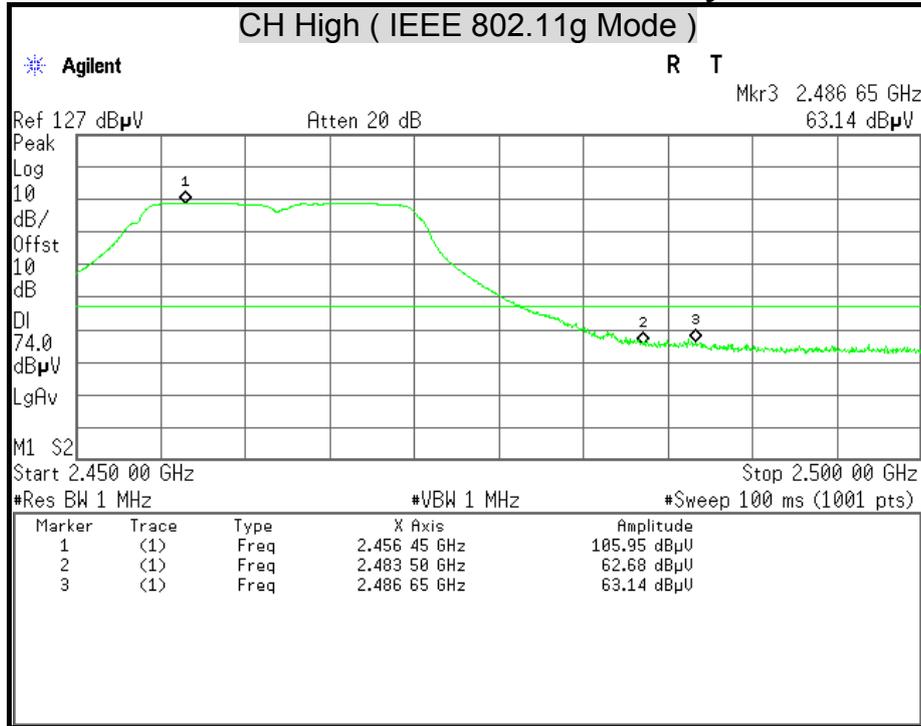
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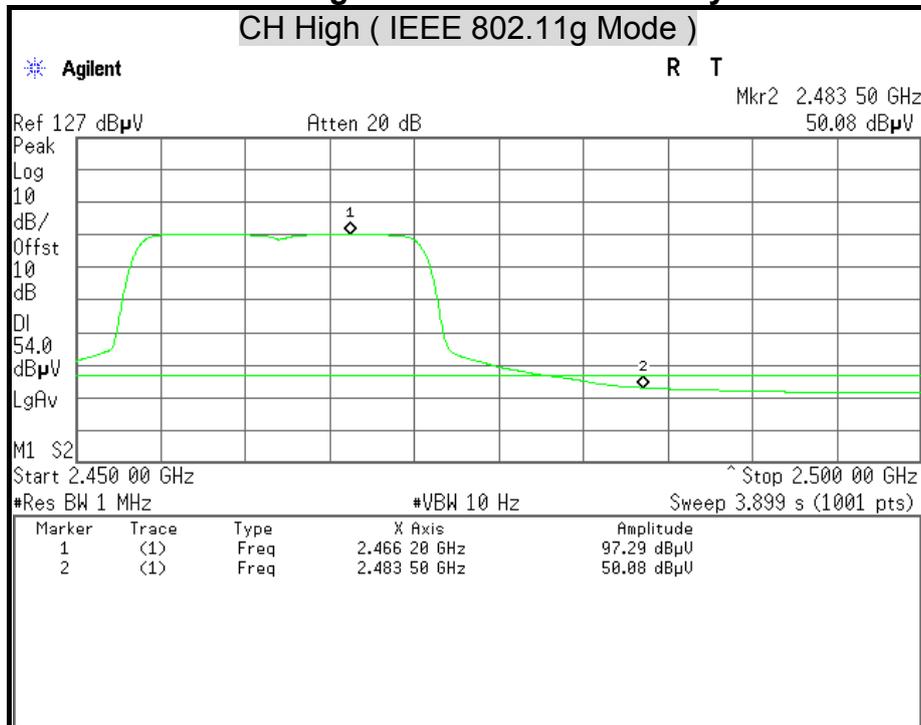
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

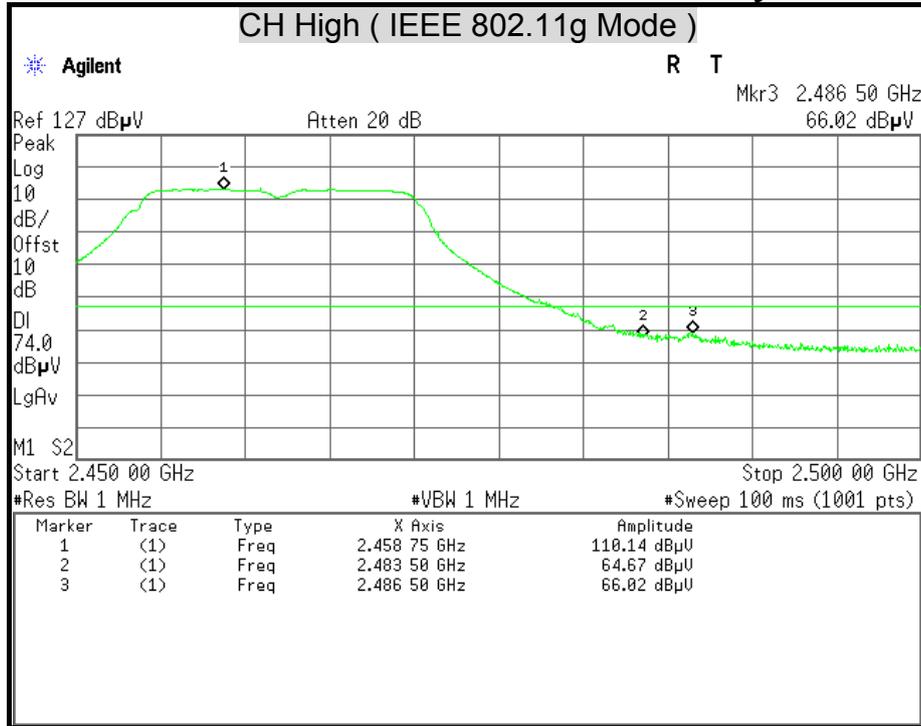
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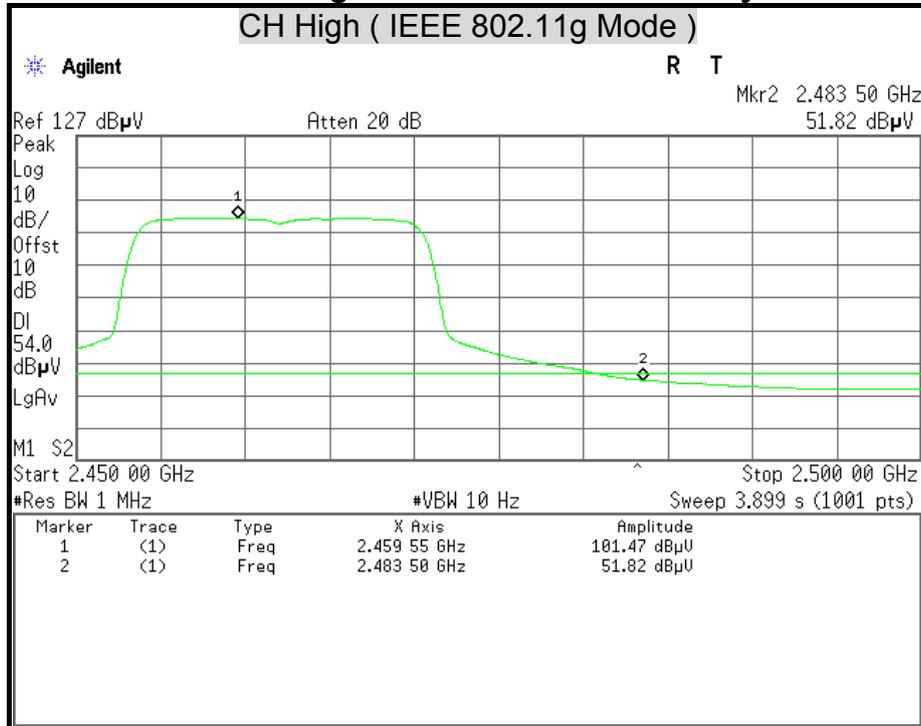
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

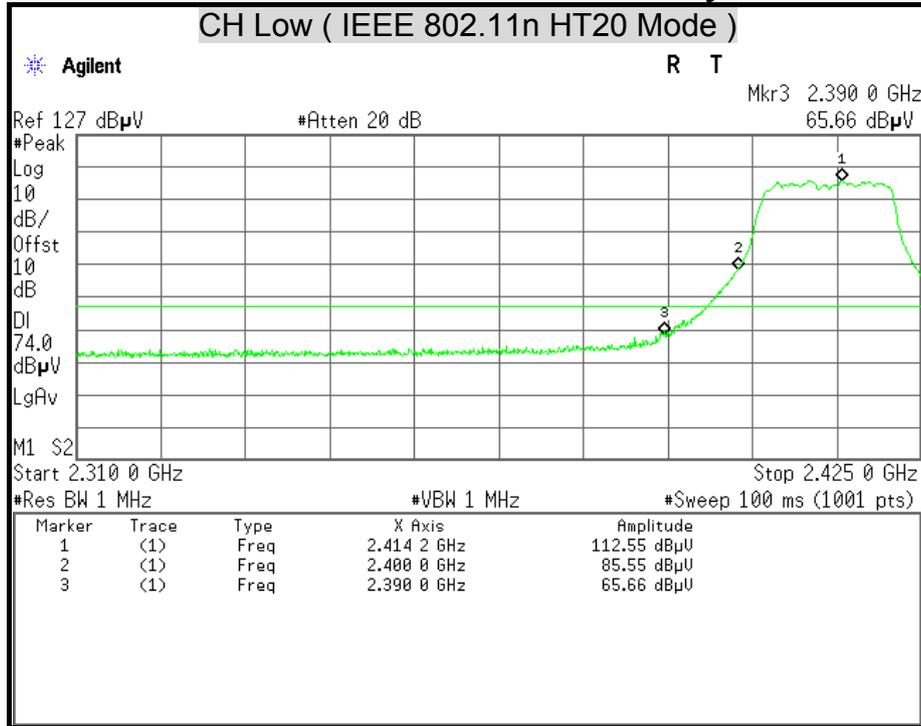
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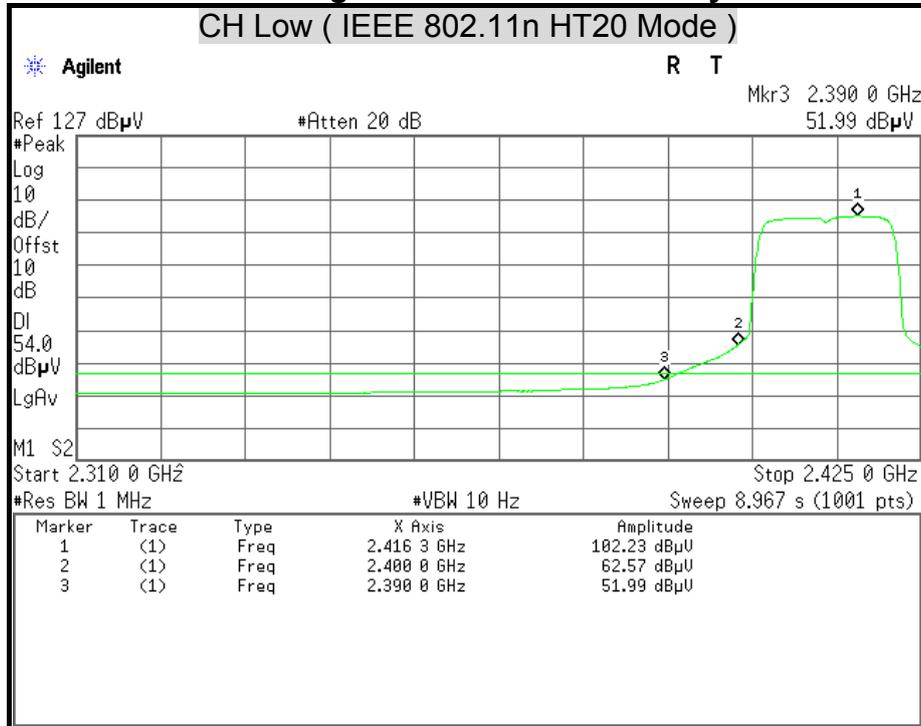
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

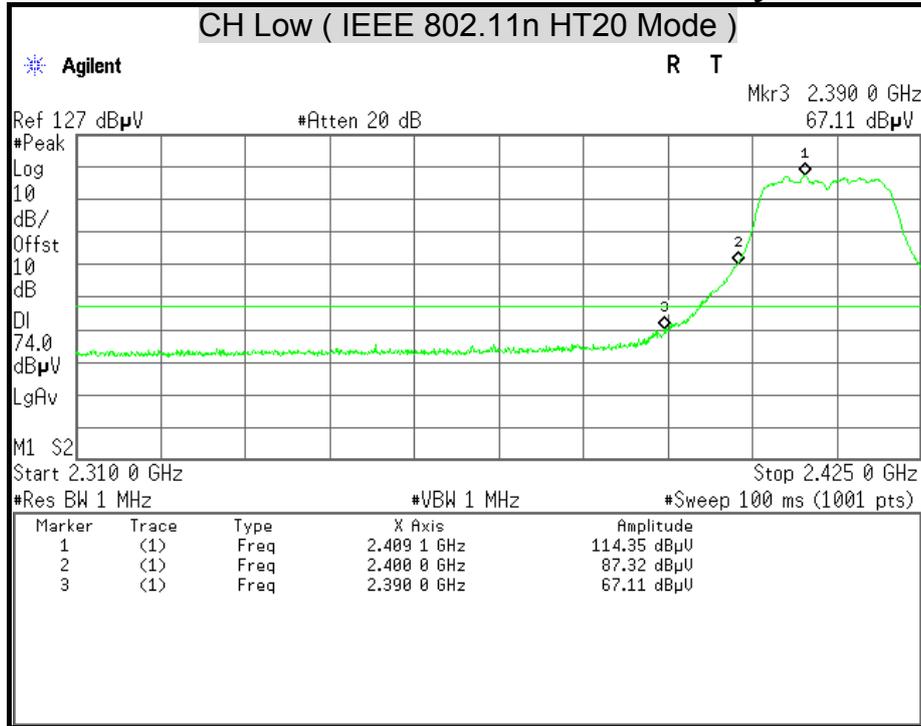
Polarity : Horizontal





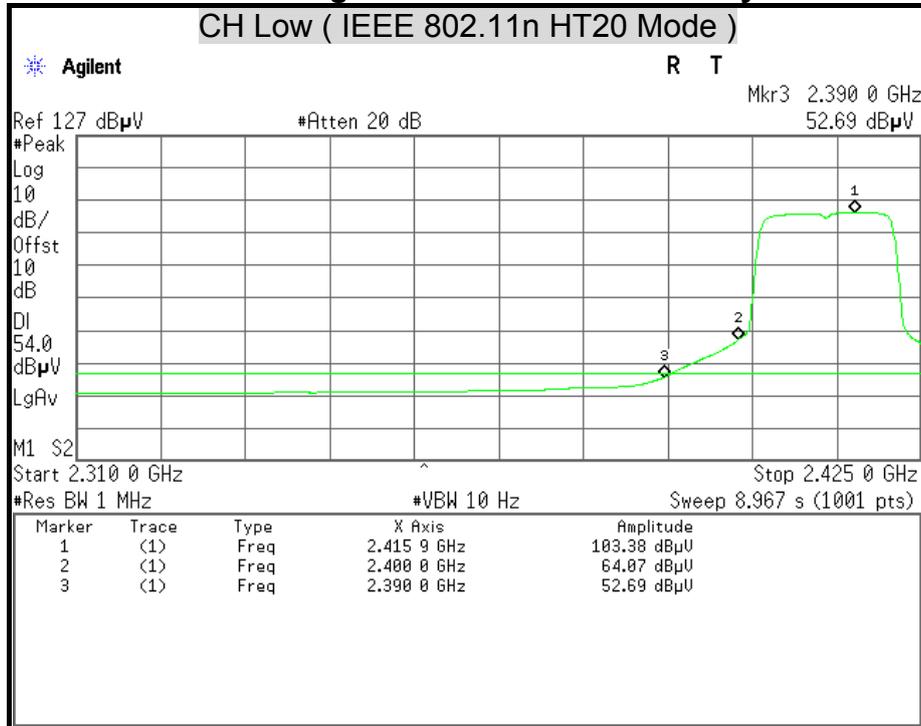
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

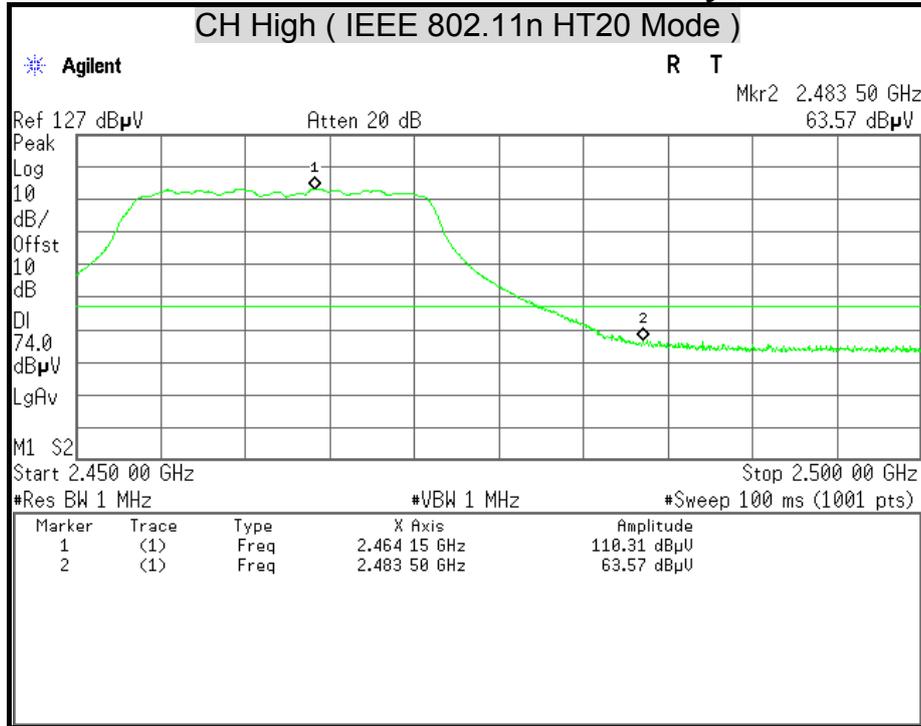
Polarity : Vertical





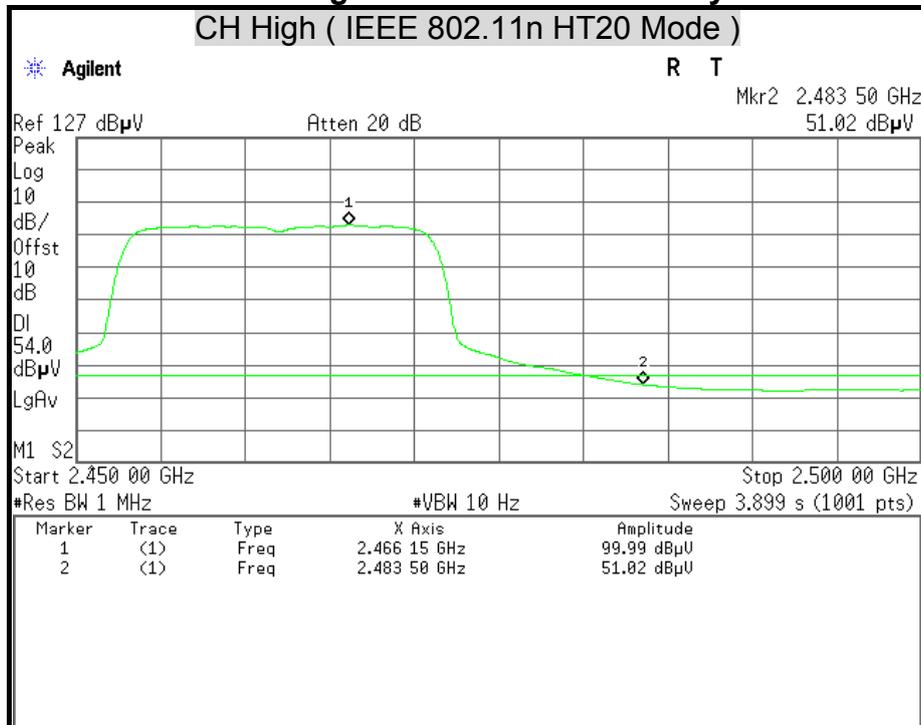
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

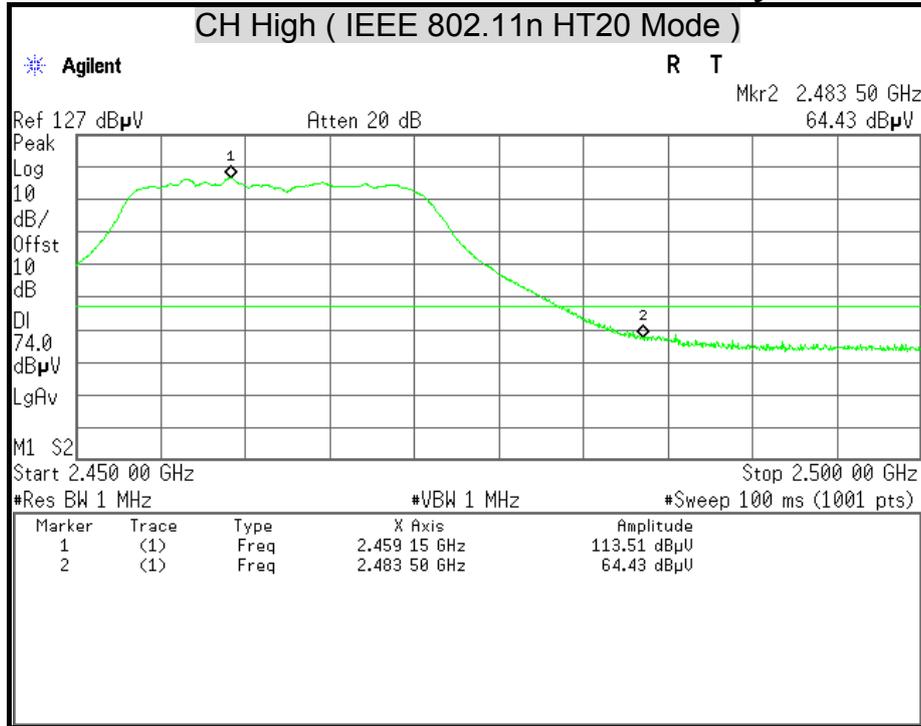
Polarity : Horizontal





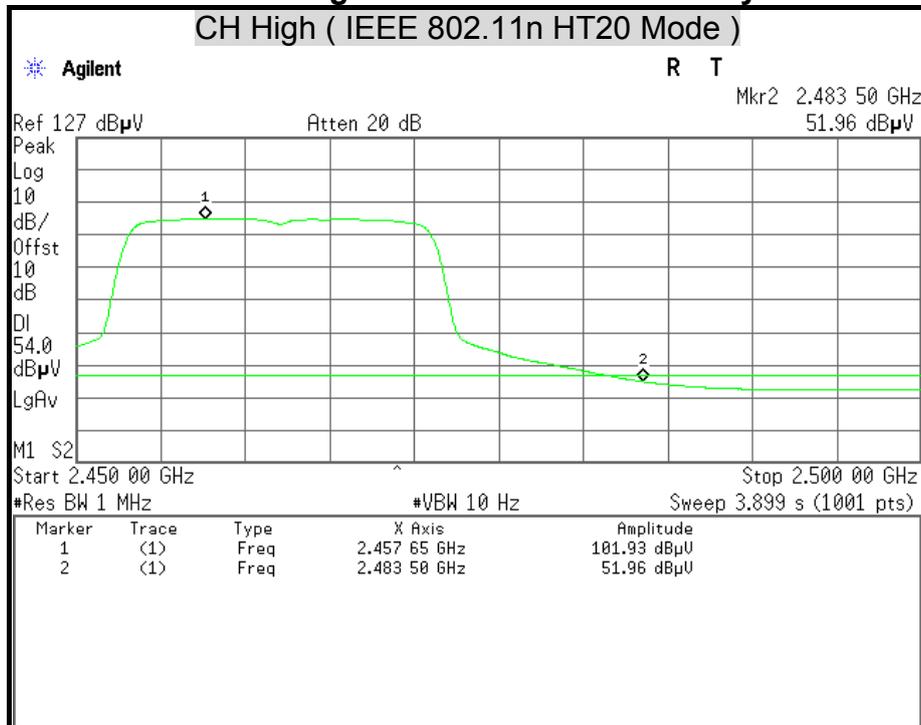
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

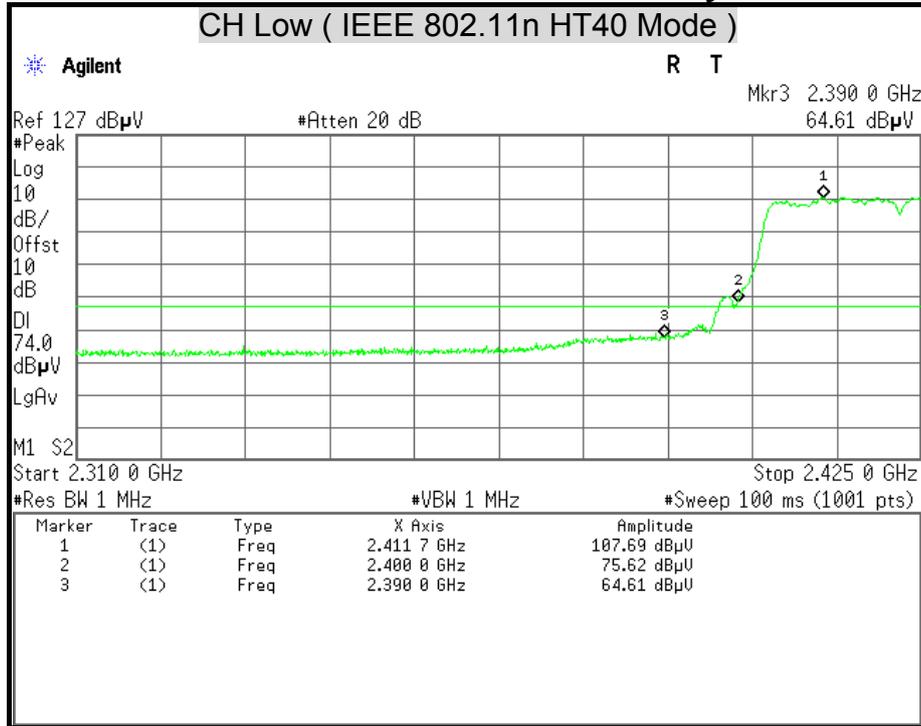
Polarity : Vertical





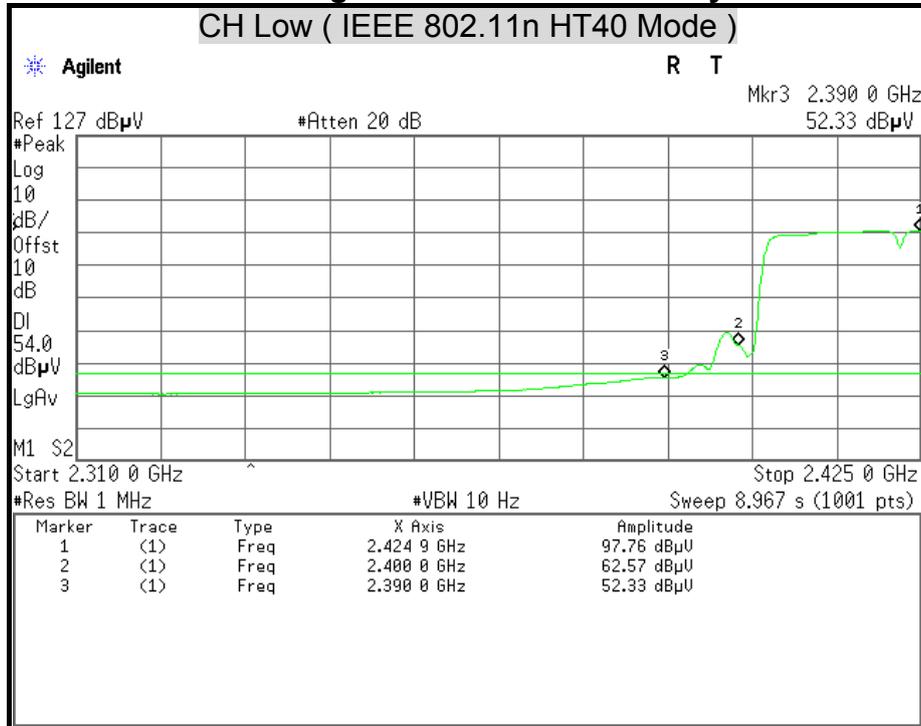
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

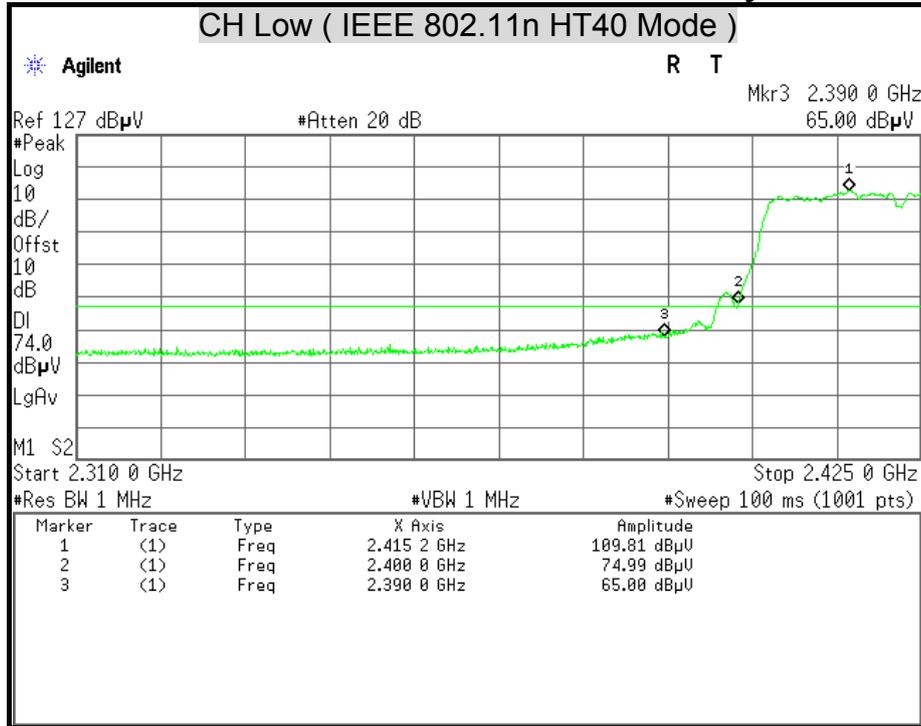
Polarity : Horizontal





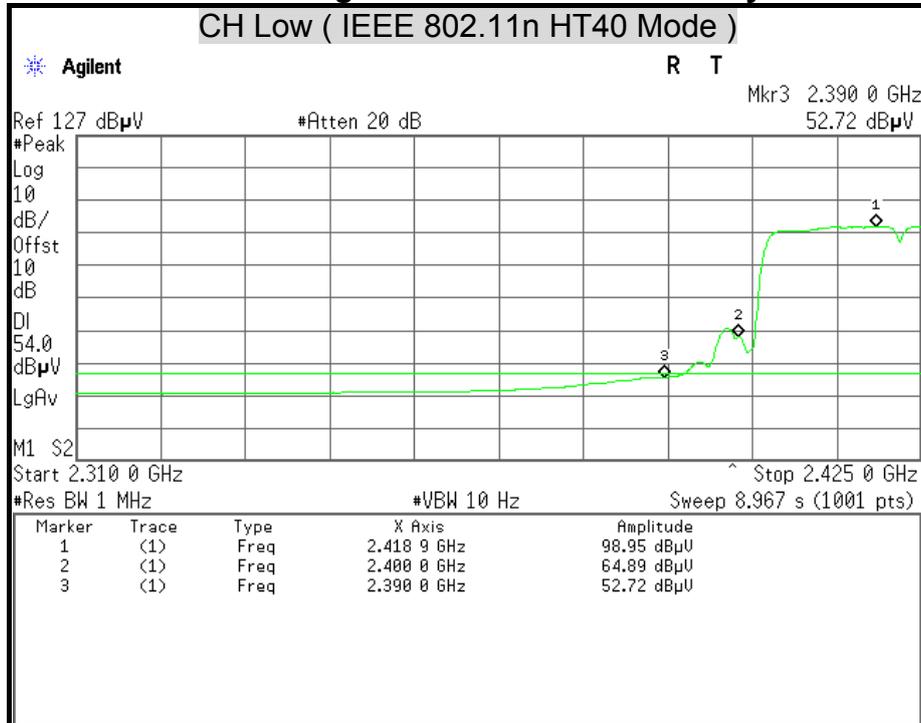
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

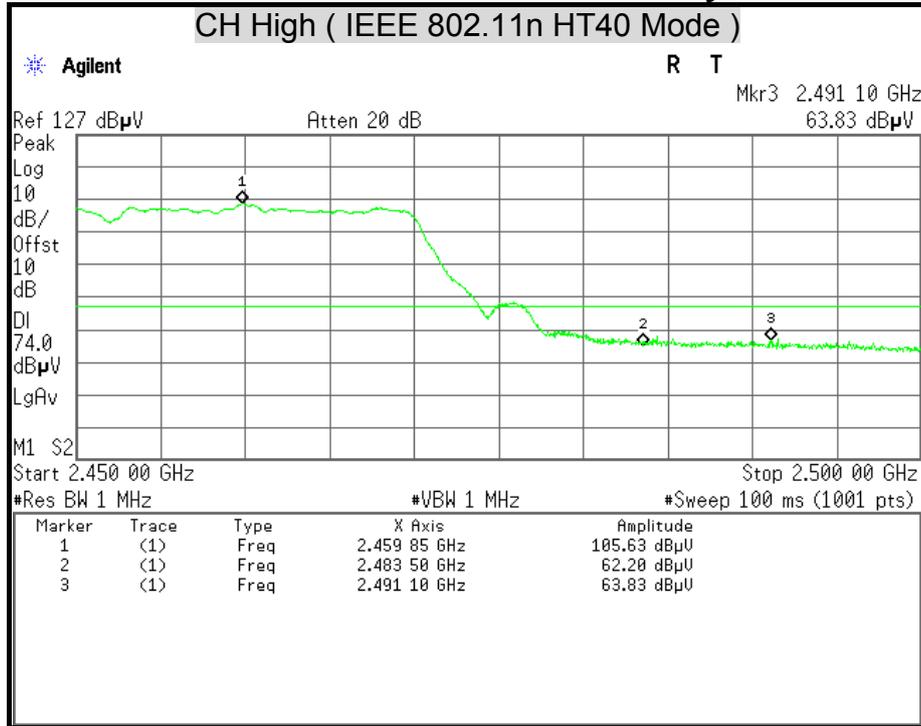
Polarity : Vertical





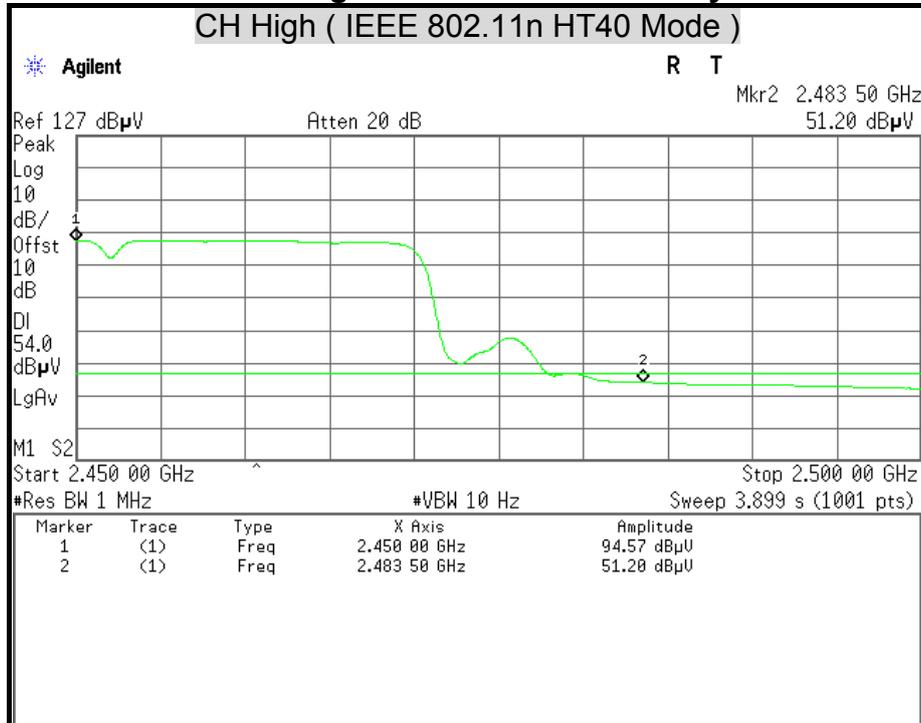
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

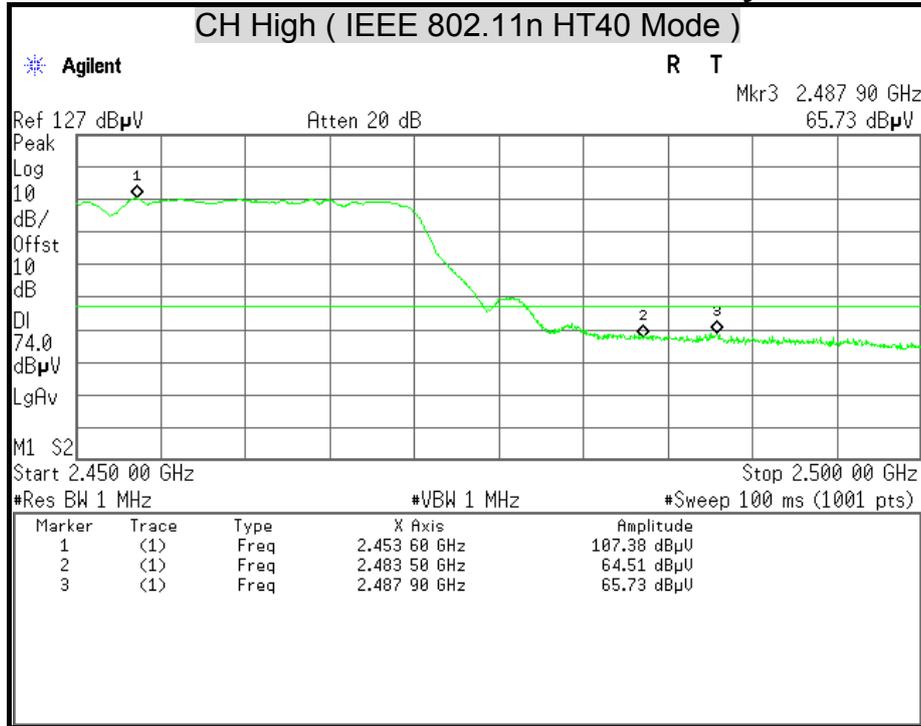
Polarity : Horizontal





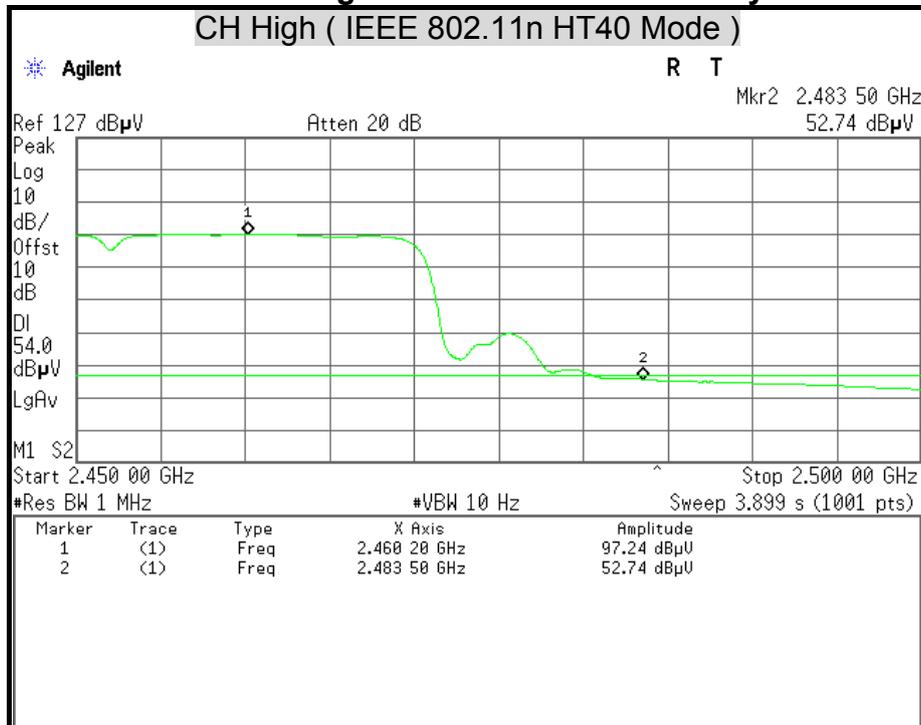
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

Polarity : Vertical





7.7 CONDUCTED EMISSION

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency Range (MHz) | Conducted Limit (dBμv) | |
|--------------------------|------------------------|----------|
| | Quasi-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5.00 | 56 | 46 |
| 5.00 - 30.0 | 60 | 50 |

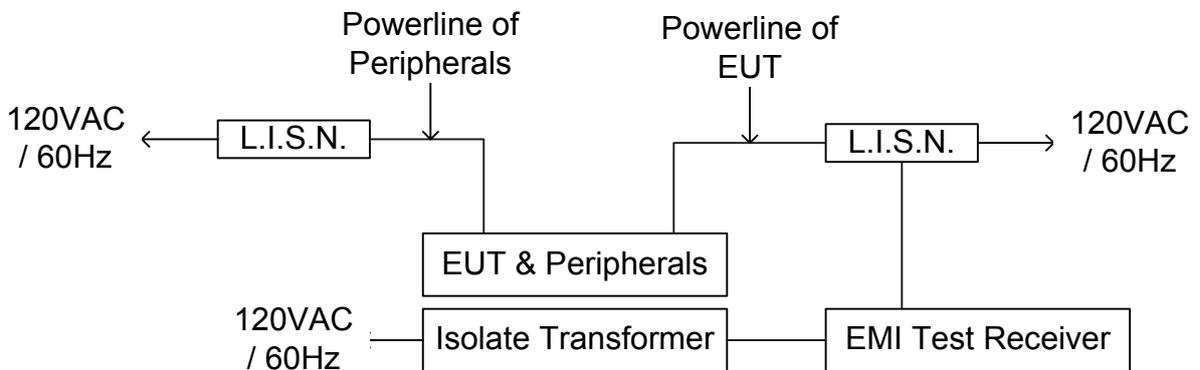
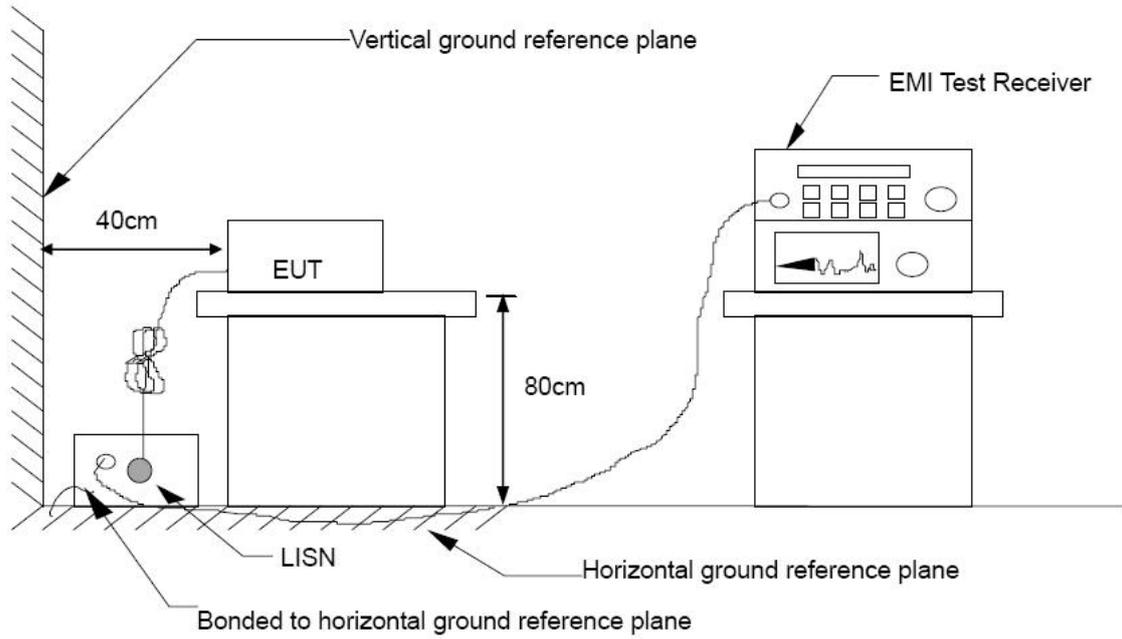
TEST EQUIPMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|-----------------|-----------|---------------|-----------------|
| L.I.S.N | SCHWARZBECK | NSLK 8127 | 8127-465 | 08/07/2013 |
| L.I.S.N | SCHWARZBECK | NSLK 8127 | 8127-473 | 03/12/2013 |
| EMI Receiver | ROHDE & SCHWARZ | ESCS 30 | 835418/008 | 10/20/2012 |
| Pulse Limiter | ROHDE & SCHWARZ | ESH3-Z2 | 100117 | 07/03/2013 |

Remark: Each piece of equipment is scheduled for calibration once a year.



TEST SETUP





TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2003.

The test procedure is performed in a 4m × 3m × 2.4m (L×W×H) shielded room.

The EUT along with its peripherals were placed on a 1.0m (W) × 1.5m (L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.

The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.

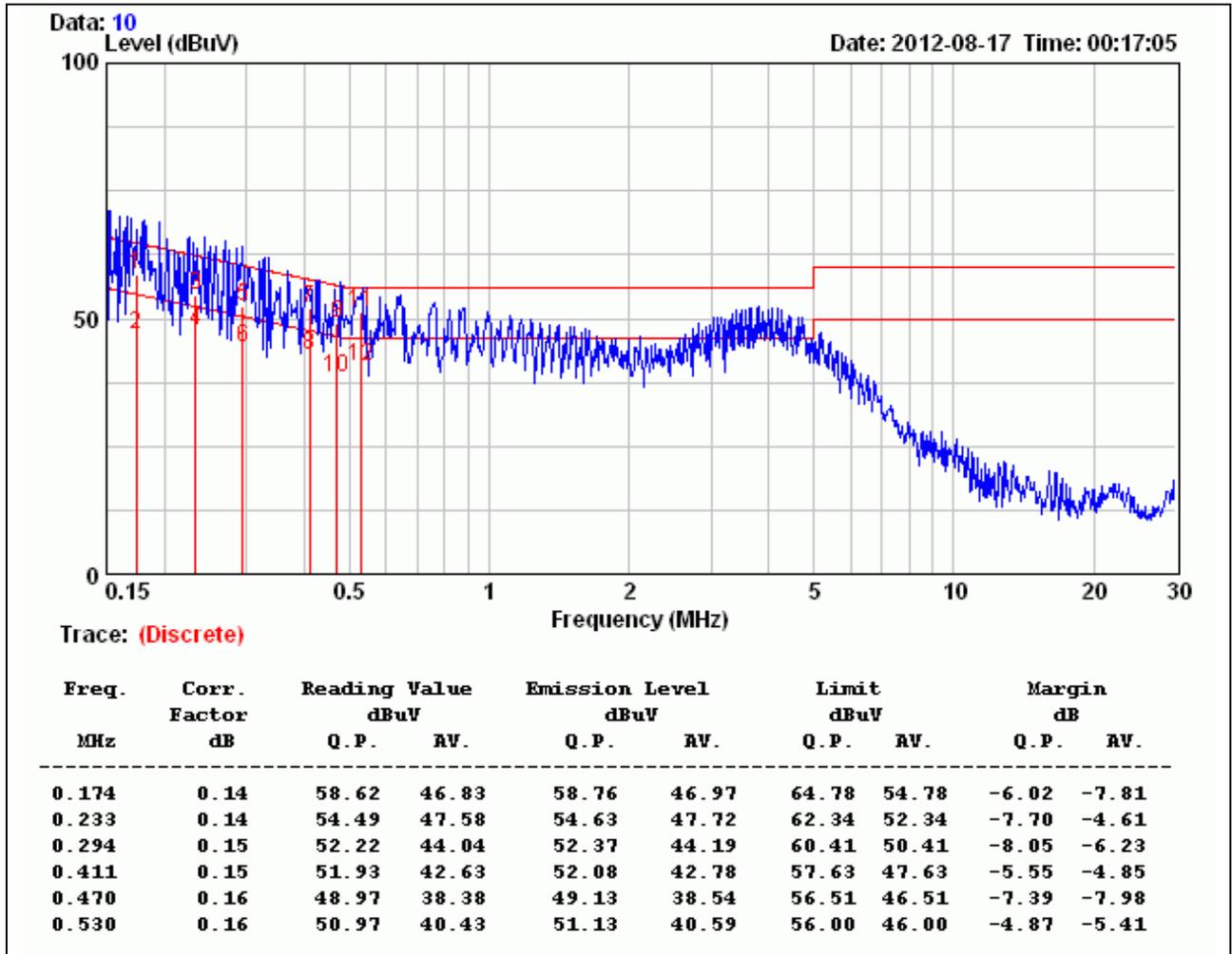
The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.



TEST RESULTS

| | | | |
|--------------|------------------------------------|------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/17 |
| Test Mode | Normal Operating / Power Adapter 1 | Temp. & Humidity | 23 °C, 55% |

LINE



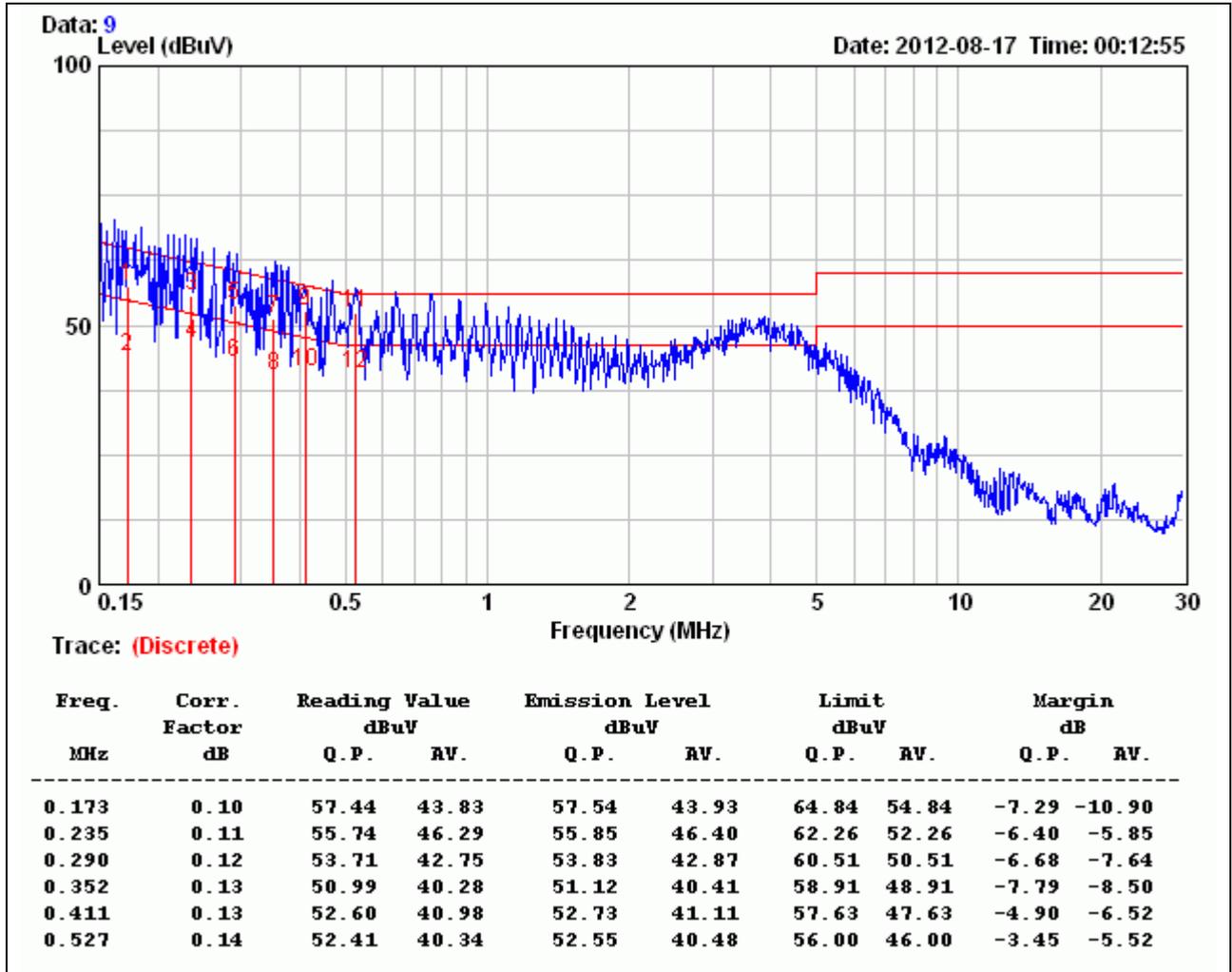
Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level - Limit value



| | | | |
|---------------------|------------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/17 |
| Test Mode | Normal Operating / Power Adapter 1 | Temp. & Humidity | 23 °C, 55% |

NEUTRAL



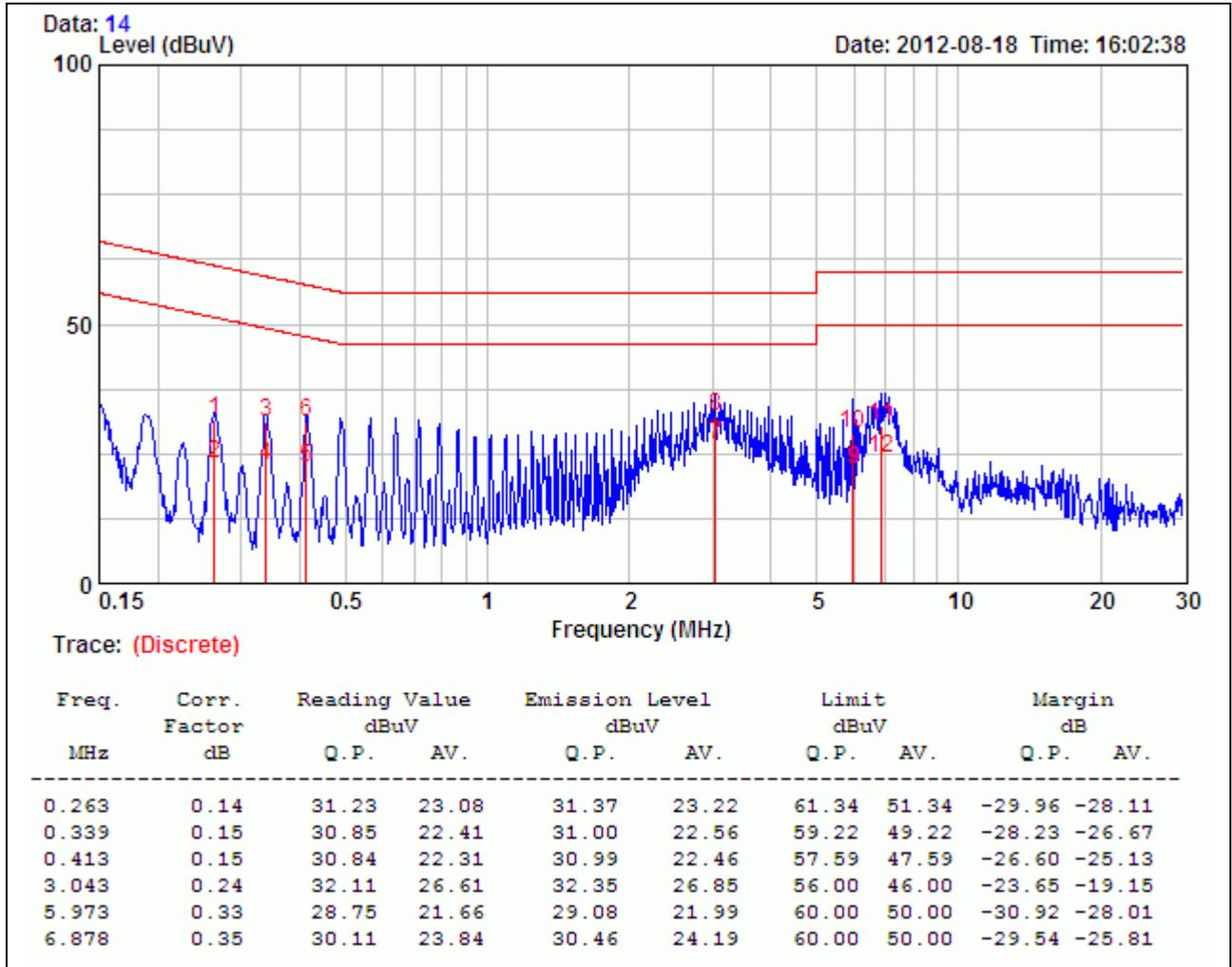
Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value



| | | | |
|---------------------|------------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | Normal Operating / Power Adapter 2 | Temp. & Humidity | 23°C, 55% |

LINE



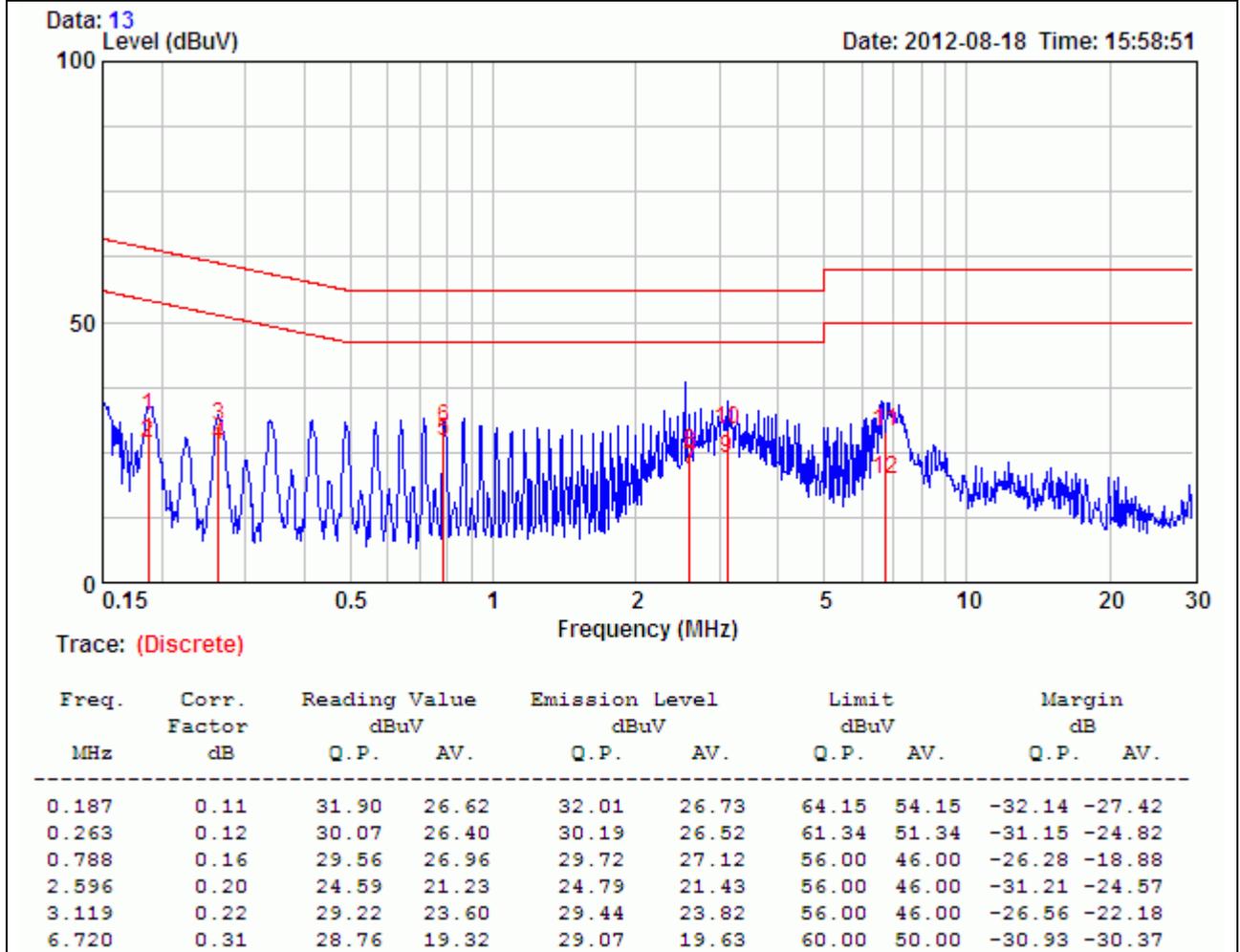
Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value



| | | | |
|---------------------|------------------------------------|-----------------------------|---------------|
| Product Name | Cable Modem | Test By | Waternil Guan |
| Test Model | CG6640A | Test Date | 2012/08/18 |
| Test Mode | Normal Operating / Power Adapter 2 | Temp. & Humidity | 23 °C, 55% |

NEUTRAL



Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value



APPENDIX I MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Average Time |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------|
| (A) Limits for Occupational / Control Exposures | | | | |
| 300-1,500 | -- | -- | F/300 | 6 |
| 1,500-100,000 | -- | -- | 5 | 6 |
| (B) Limits for General Population / Uncontrol Exposures | | | | |
| 300-1,500 | -- | -- | F/1500 | 6 |
| 1,500-100,000 | -- | -- | 1 | 30 |

CALCULATIONS

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where *E* = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = d(m) / 100$$

Yields

$$S = \frac{30 \times (P / 1000) \times G}{3770 \times (d / 100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

Where *d* = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²



LIMIT

Power Density Limit, S=1.0mW/cm²

TEST RESULTS

| Mode | Antenna Gain (dBi) | Minimum separation distance (cm) | Output Power (dBm) | Numeric antenna gain (mW) | Power Density Limit (mW/cm ²) | Power Density at 20cm (mW/cm ²) |
|-------------------|--------------------|----------------------------------|--------------------|---------------------------|---|---|
| IEEE 802.11b | 2.51 | 20 | 21.36 | 1.78 | 1.00 | 0.048498 |
| IEEE 802.11g | 2.51 | 20 | 26.35 | 1.78 | 1.00 | 0.153010 |
| IEEE 802.11n HT20 | 2.51 | 20 | 25.52 | 1.78 | 1.00 | 0.261512 |
| | 2.82 | | 25.50 | 1.91 | | |
| IEEE 802.11n HT40 | 2.51 | 20 | 22.32 | 1.78 | 1.00 | 0.125019 |
| | 2.82 | | 22.29 | 1.91 | | |

Remark: For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.