

FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10:2013 TEST REPORT

For

Wireless Docsis Probe

Model: CGN-DP2(xxxx) (x= 0~9,A~Z or blank)

Trade Name: Hitron

Issued for

Hitron Technologies Inc.

No. 1-8, Lihsin 1st Rd., Hsinchu Science Park, Hsinchu 300, Taiwan

Issued by

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

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	11/25/2016	Initial Issue	All Page 103	Michelle Chiu
01	12/02/2016	Typing error revised.	Page 35 & 36 of 103	Vera Hsu

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1. TEST REPORT CERTIFICATION

Applicant : Hitron Technologies Inc.
Address : No. 1-8, Lihsin 1st Rd., Hsinchu Science Park, Hsinchu
300, Taiwan
Equipment Under Test : Wireless Docsis Probe
Model : CGN-DP2(xxxx) (x= 0~9,A~Z or blank)
Trade Name : Hitron
Tested Date : November 07~ 21, 2016

APPLICABLE STANDARD	
Standard	Test Result
FCC Part 15 Subpart C AND ANSI C63.10:2013	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:



Sb. Lu
Sr. Engineer

Reviewed by:



Gunden Lin
Sr. Engineer

2. EUT DESCRIPTION

Product Name	Wireless Docsis Probe
Model Number	CGN-DP2(xxxx) (x= 0~9,A~Z or blank)
Identify Number	T161107S03
Received Date	November 07, 2016
Frequency Range	IEEE 802.11b/g, 802.11gn HT20 Mode: 2412MHz ~ 2462MHz
Transmit Power	IEEE 802.11b Mode: 23.14 dBm (0.2061 W) IEEE 802.11g Mode: 29.18 dBm (0.8279 W) IEEE 802.11gn HT20 MCS0 Mode: 29.71 dBm (0.9354 W)
Channel Spacing	5MHz
Channel Number	IEEE 802.11b/g, 802.11gn HT20 Mode: 11 Channels
Transmit Data Rate	IEEE 802.11b Mode: up to 11 Mbps IEEE 802.11g Mode: up to 54 Mbps IEEE 802.11gn HT20 Mode (800ns GI): up to 130.00 Mbps IEEE 802.11gn HT20 Mode (400ns GI): up to 144.40 Mbps
Type of Modulation	IEEE 802.11b Mode: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g Mode: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11gn HT20 Mode: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	Airgain Embedded Antenna × 2 , Ant. 0 (Chain 0), Antenna Gain: 3 dBi Ant. 1 (Chain 1), Antenna Gain: 3 dBi
Power Rating	11.1Vdc, 5300mAh, 58.83WH (For Battery) 16Vdc, 2A (For Charging)
Test Voltage	120Vac, 60Hz
DC Power Cable Type	Non-shielded cable, 1.5m × 1 (Non-detachable)
I/O Port	RJ-45 Port × 1, USB Port × 1, Coaxial Port × 1, Power Port × 1

Power Adapter:

No.	Manufacturer	Model No.	Power Input	Power Output
1	AOEM	ADS036T-W160200	100-240Vac, 50-60Hz, 1.0A	16Vdc, 2.0A

The difference of the series model

Model Number	Difference
CGN-DP2(xxxx) (x= 0~9,A ~Z or blank)	The different models as for the marketing purpose.

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: 2AHKM-CGNDP2 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
4. The model CGN-DP2 (CCC) was considered the main model for testing.

3. DESCRIPTION OF TEST MODES

The EUT (Wireless Docsis Probe) is an 802.11b/g/n transceiver.

IEEE 802.11b/g, 802.11gn HT20 Mode: 2TX / 2RX

Ant. 0 / Chain 0 & Ant. 1 / Chain 1 transmit/receive.

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 Charge
2	Normal Operating / Single Mode

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

Final Test mode		
Emission	Radiated Emission	Mode 1
	Conducted Emission	Mode 1

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/g, 802.11gn 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) was chosen for full testing.

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

IEEE 802.11gn HT20 MCS0 Mode: 6.5Mbps data rate (worst case) was chosen for full testing.

Remark : The field strength of spurious emission was measured in the following position: EUT stand-up position(Y axis), lie-down position(X, Z axis). The worst emission was found in lie-down position(Z axis) and the worst case was recorded.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10:2013 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, Wenshan Rd., Shangshan Village,
Qionglin Township, Hsinchu County 30741, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.10:2013 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4 and 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
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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>

Remark: FCC Designation Number TW1027.

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, 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.
1	Notebook PC	TOSHIBA	PORTEGE R30-A	7F097011H
2	Notebook PC	TOSHIBA	PORTEGE R30-A	7F097009H
3	Notebook PC	TOSHIBA	M840	9C104267C
4	USB Flash Drive	Kingston	DTSE9 8G	---
5	CMTS	Hitron	RAC-500	S15070901-X0601

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

SETUP DIAGRAM FOR TESTS

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

EUT OPERATING CONDITION

RF Mode :

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. TX mode:

- ⇒ **Data Rate:** 1Mbps Bandwidth 20 (IEEE 802.11b Mode)
6Mbps Bandwidth 20 (IEEE 802.11g Mode)
6.5Mbps Bandwidth 20 (IEEE 802.11gn HT20 MCS0 Mode)

⇒ **Power control**

Mode	Channel	Frequency (MHz)	Chain	Power Set
IEEE 802.11b	Low	2412	0/1	0B/12
	Middle	2437	0/1	0F/15
	High	2462	0/1	11/15
IEEE 802.11g	Low	2412	0/1	0E / 15
	Middle	2437	0/1	1E / 24
	High	2462	0/1	1E / 22
IEEE 802.11gn HT20 MCS0	Low	2412	0/1	0C / 13
	Middle	2437	0/1	1C / 22
	High	2462	0/1	1C / 20

3. All of the functions are under run.
4. 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. EUT & peripherals setup diagram is shown in appendix setup photos.
2. Turn on the power of all equipment.
3. Coaxial port link Headend-CMTS.
4. Notebook PC link EUT by WiFi and ping 192.168.0.1 to EUT.
5. Notebook PC link EUT by LAN and ping 192.168.0.1 to EUT.
6. USB flash drive with load.
7. All of the functions are under run.
8. Start test.

7. FCC PART 15.247 REQUIREMENTS

7.1 DUTY CYCLE CORRECTION FACTOR

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	TX Mode	Temp. & Humidity	25°C, 50%

Mode	TX on (ms)	TX on + off (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11b	1.000	1.000	100.00%	0.00	0.010
IEEE 802.11g	1.000	1.000	100.00%	0.00	0.010
IEEE 802.11gn HT20	1.000	1.000	100.00%	0.00	0.010

7.2 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	05/31/2017
Test S/W	N/A			

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

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to a spectrum analyzer.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS

Product Name	Wireless Docsis Probe	Test By	Waternil Guan
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	TX Mode	Temp. & Humidity	25°C, 62%

IEEE 802.11b Mode (2TX)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	10.07	10.05	500	PASS
Middle	2437	10.07	10.05	500	PASS
High	2462	10.03	10.05	500	PASS

IEEE 802.11g Mode (2TX)

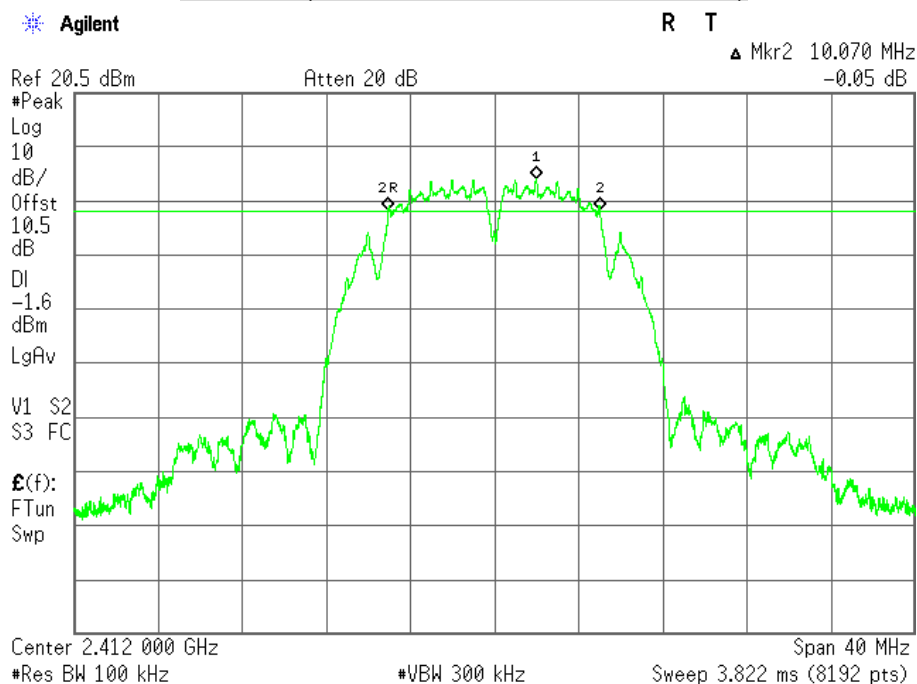
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	16.56	16.59	500	PASS
Middle	2437	16.57	16.56	500	PASS
High	2462	16.57	16.56	500	PASS

IEEE 802.11gn HT20 MCS0 Mode (2TX)

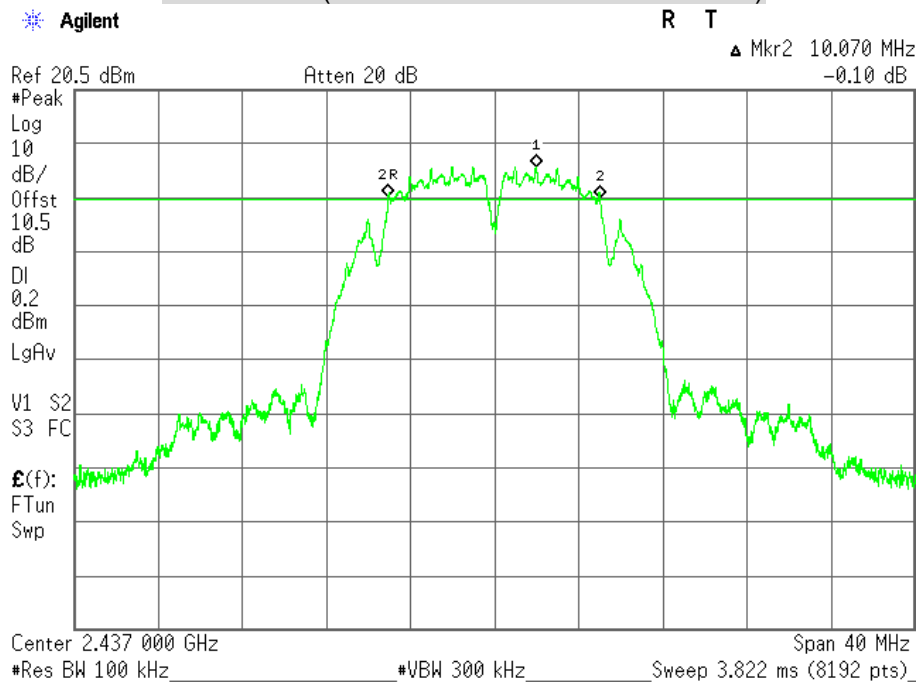
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	17.69	17.70	500	PASS
Middle	2437	17.74	17.69	500	PASS
High	2462	17.71	17.73	500	PASS

6dB BANDWIDTH

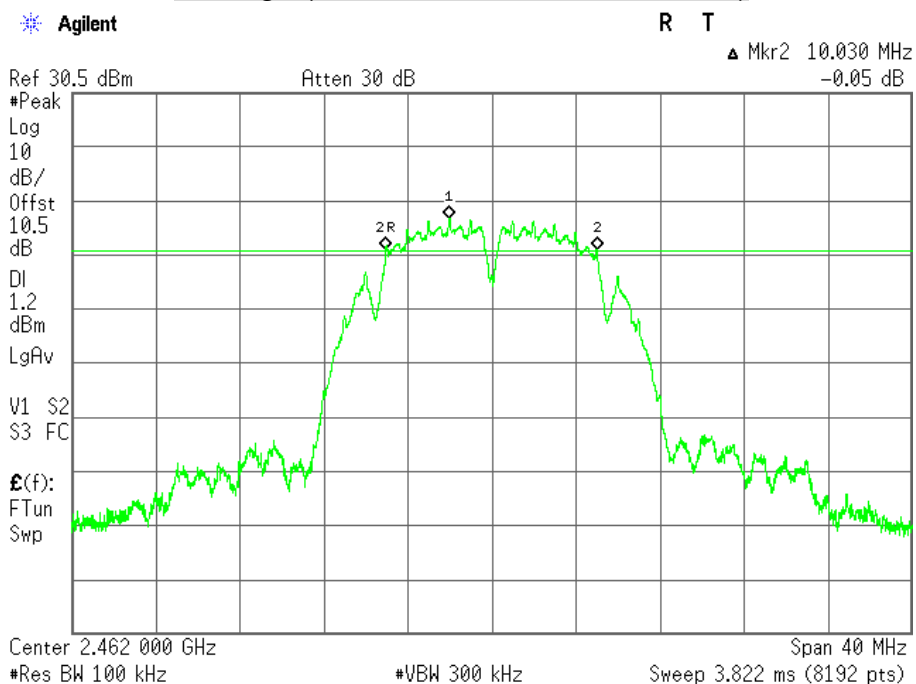
CH Low (IEEE 802.11b Mode / Chain 0)



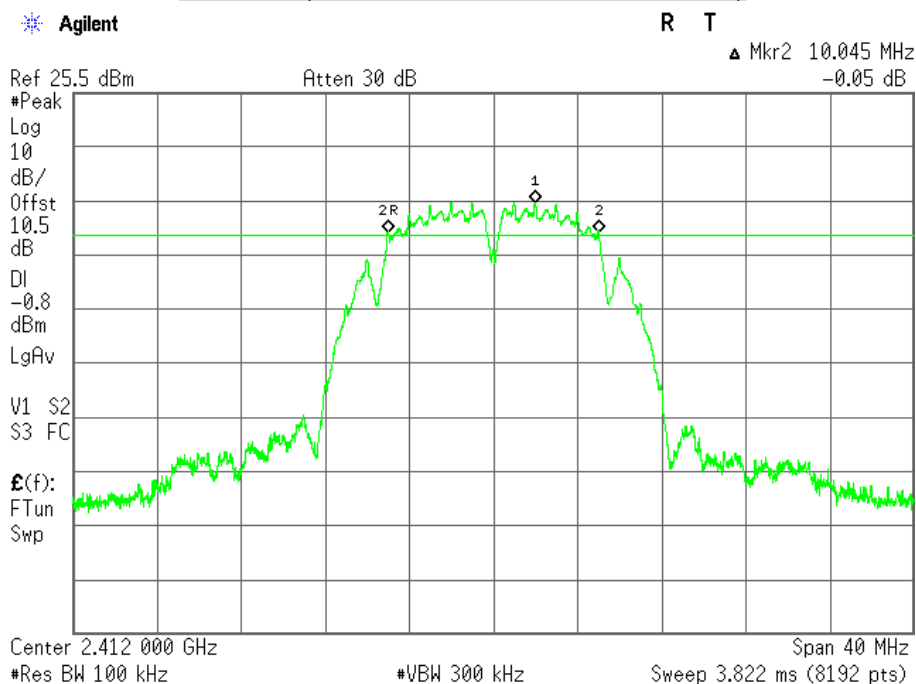
CH Middle (IEEE 802.11b Mode / Chain 0)



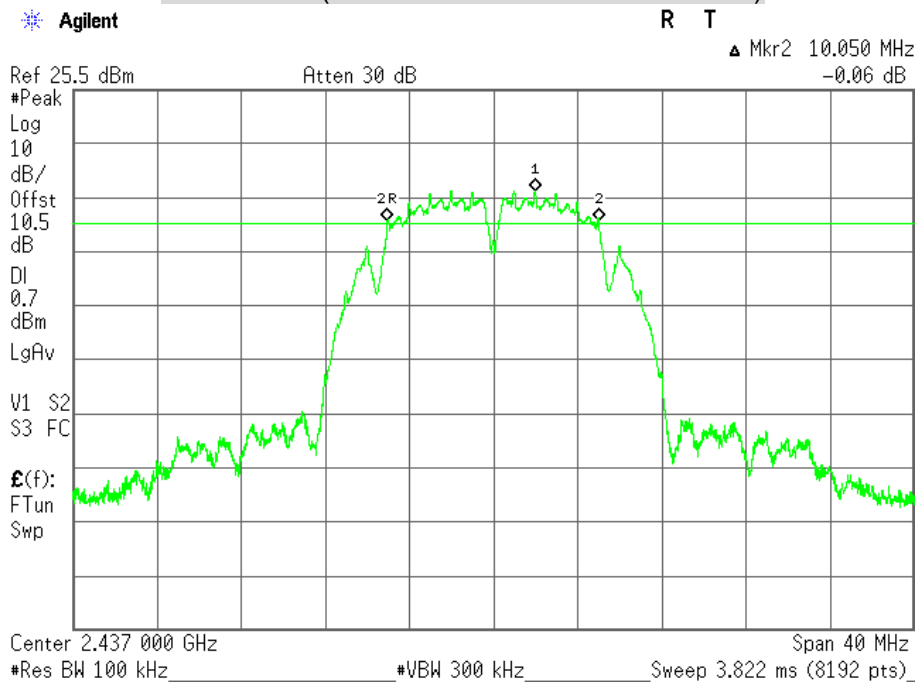
CH High (IEEE 802.11b Mode / Chain 0)



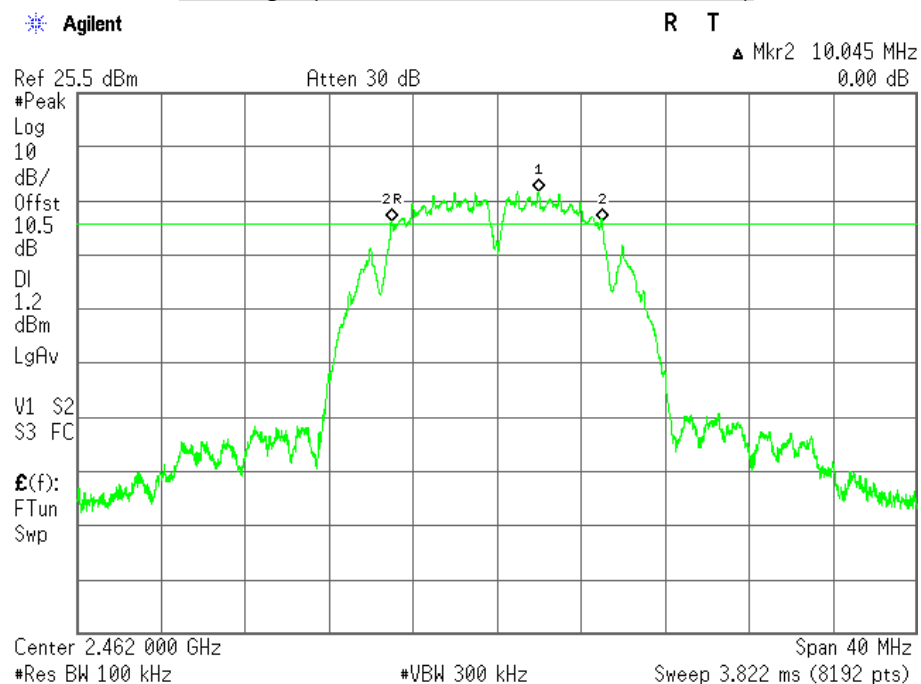
CH Low (IEEE 802.11b Mode / Chain 1)



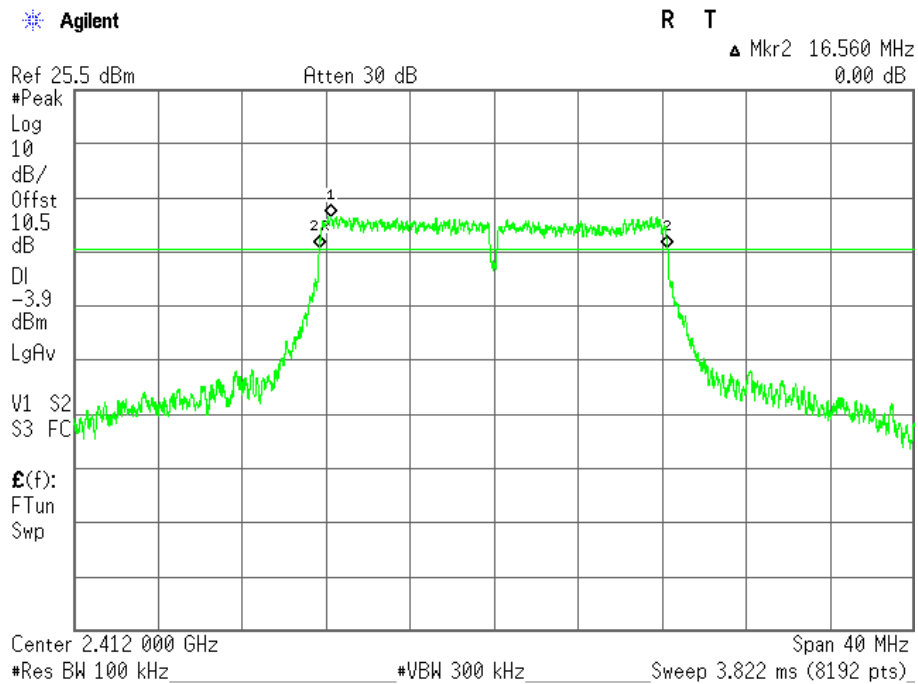
CH Middle (IEEE 802.11b Mode / Chain 1)



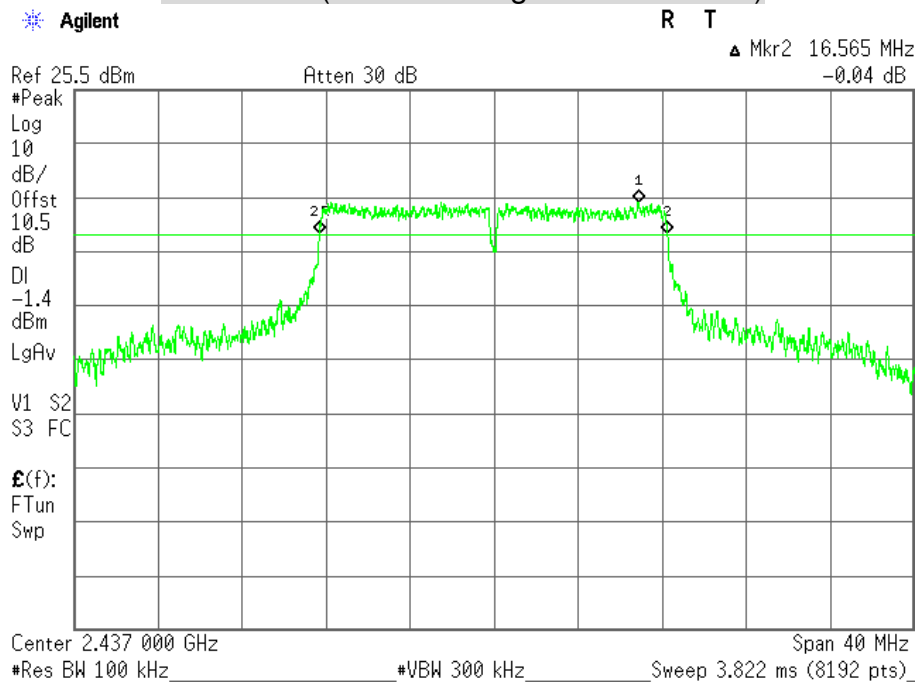
CH High (IEEE 802.11b Mode / Chain 1)



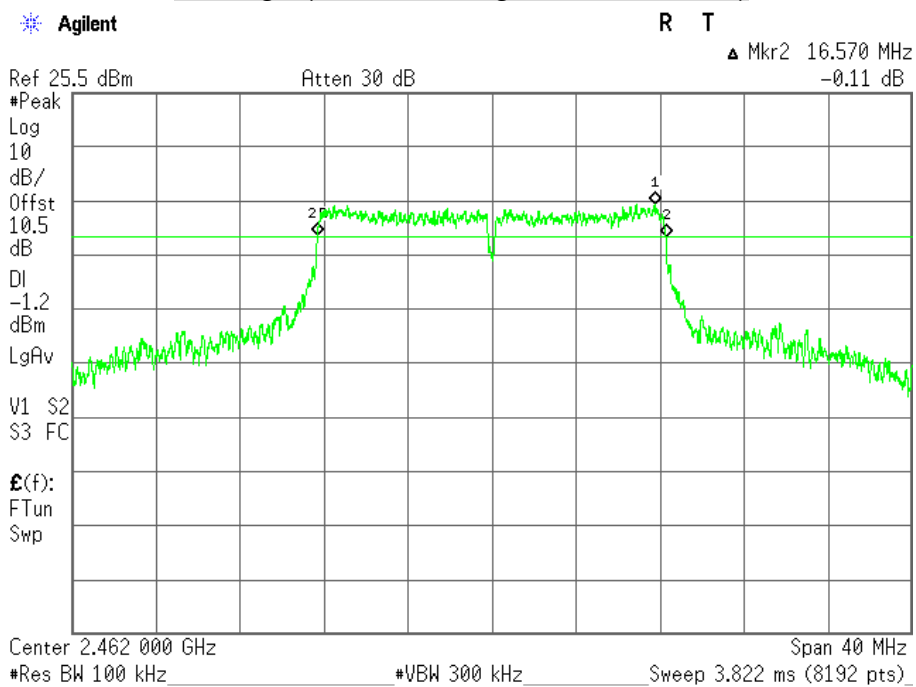
CH Low (IEEE 802.11g Mode / Chain 0)



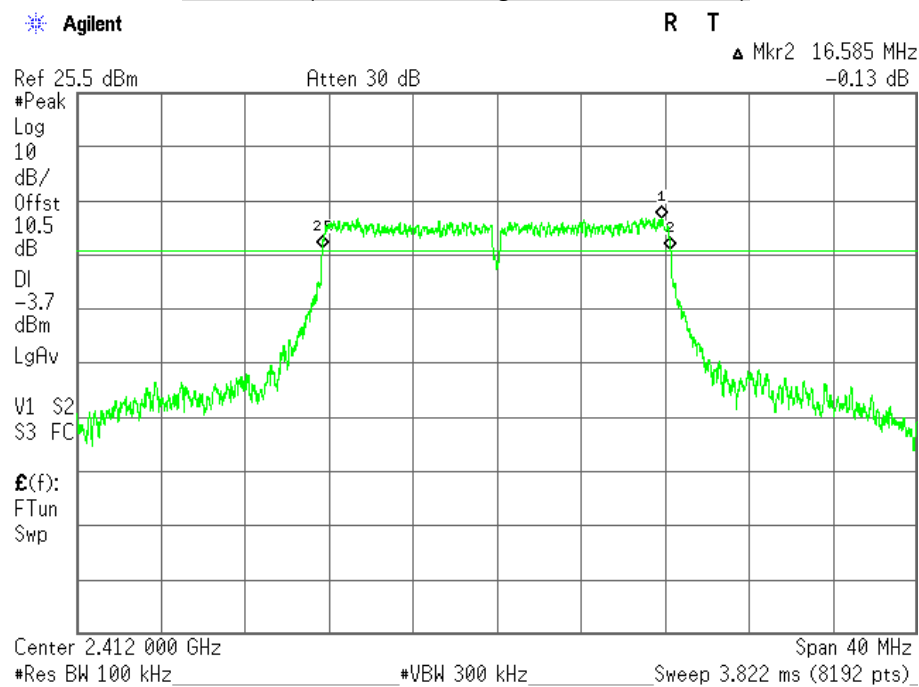
CH Middle (IEEE 802.11g Mode / Chain 0)



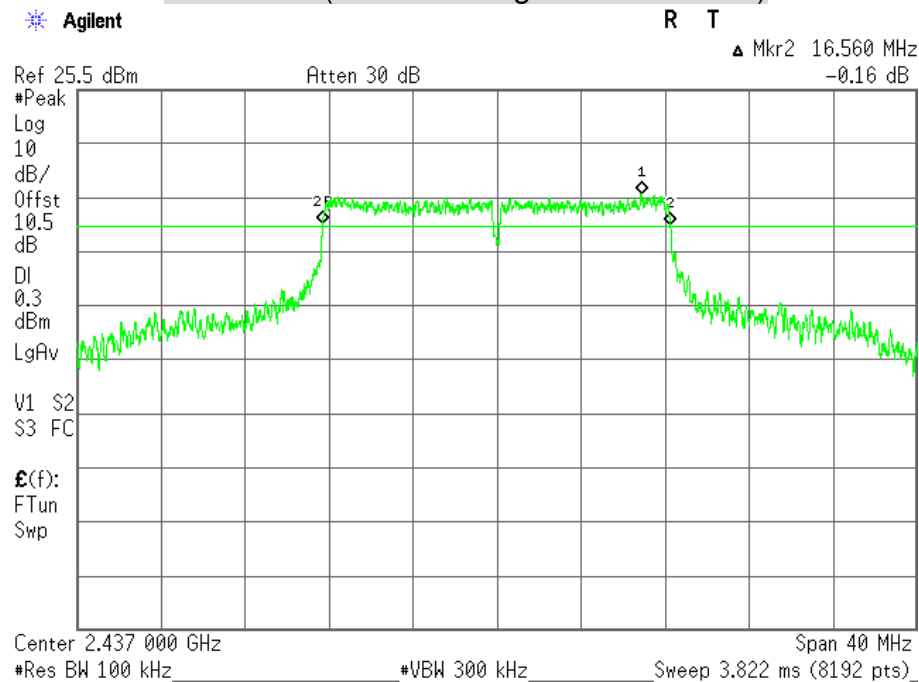
CH High (IEEE 802.11g Mode / Chain 0)



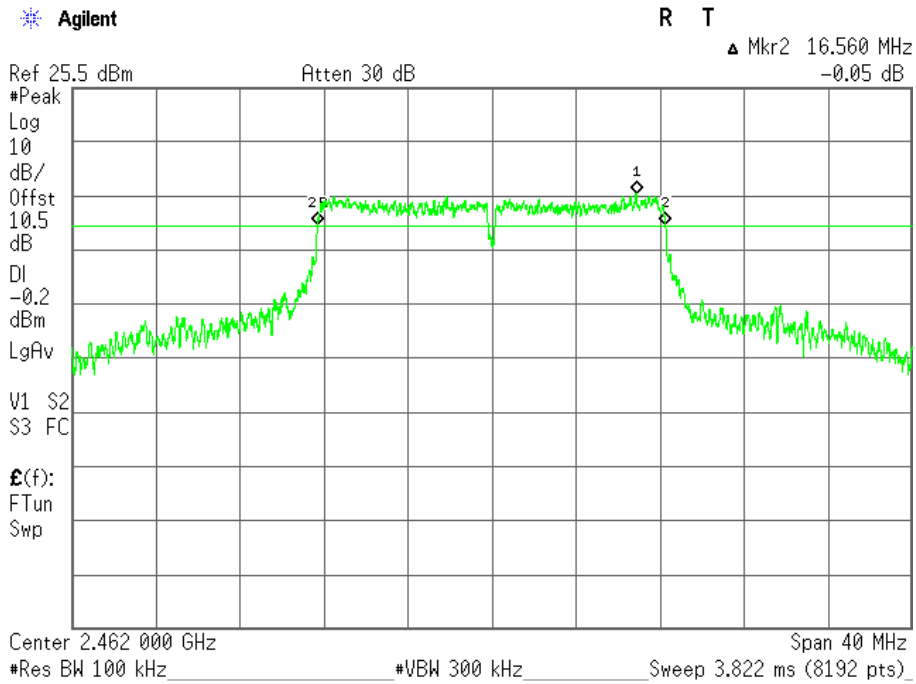
CH Low (IEEE 802.11g Mode / Chain 1)



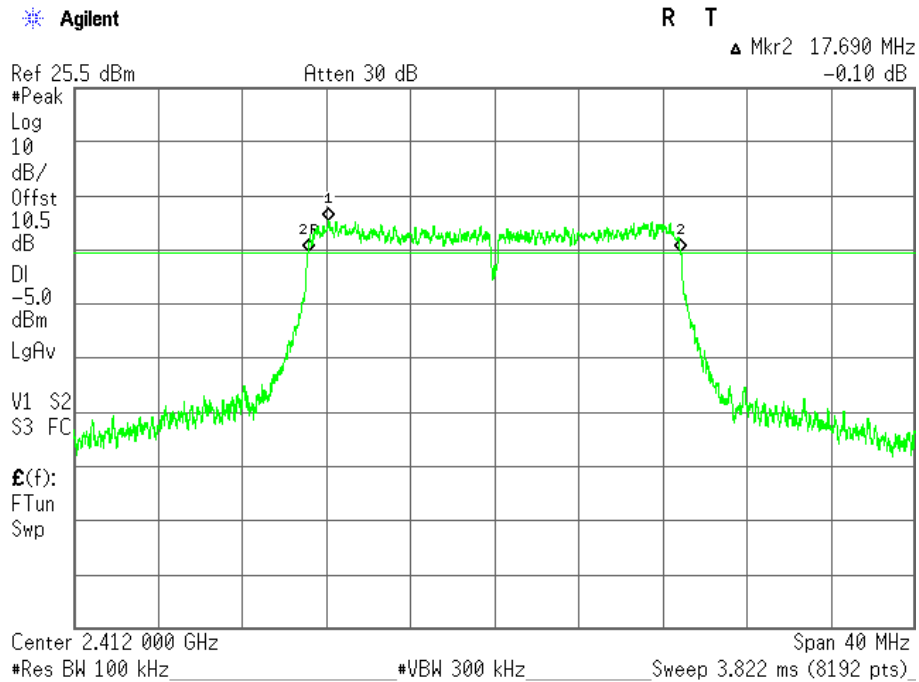
CH Middle (IEEE 802.11g Mode / Chain 1)



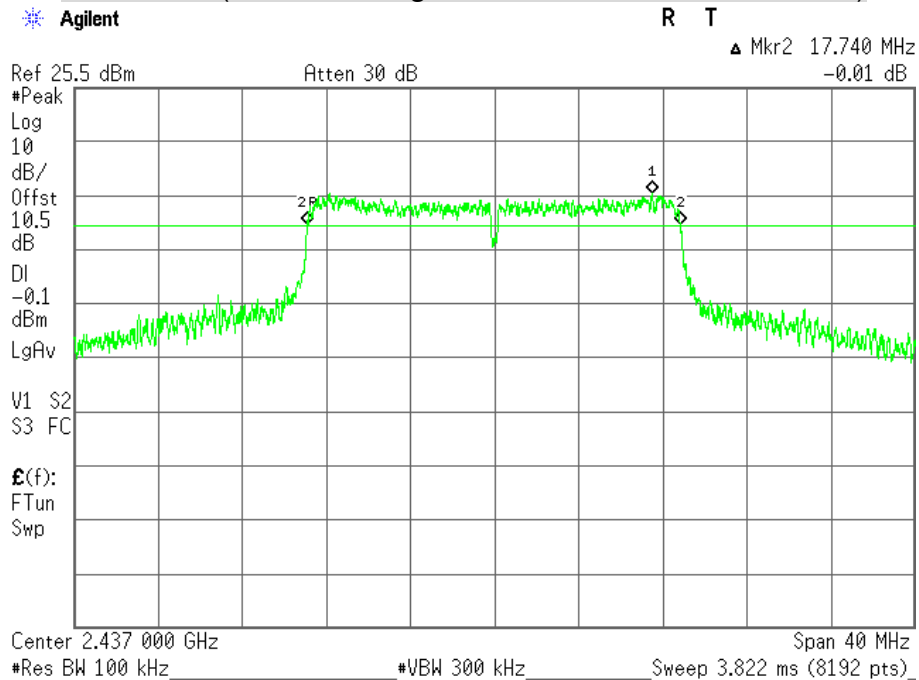
CH High (IEEE 802.11g Mode / Chain 1)

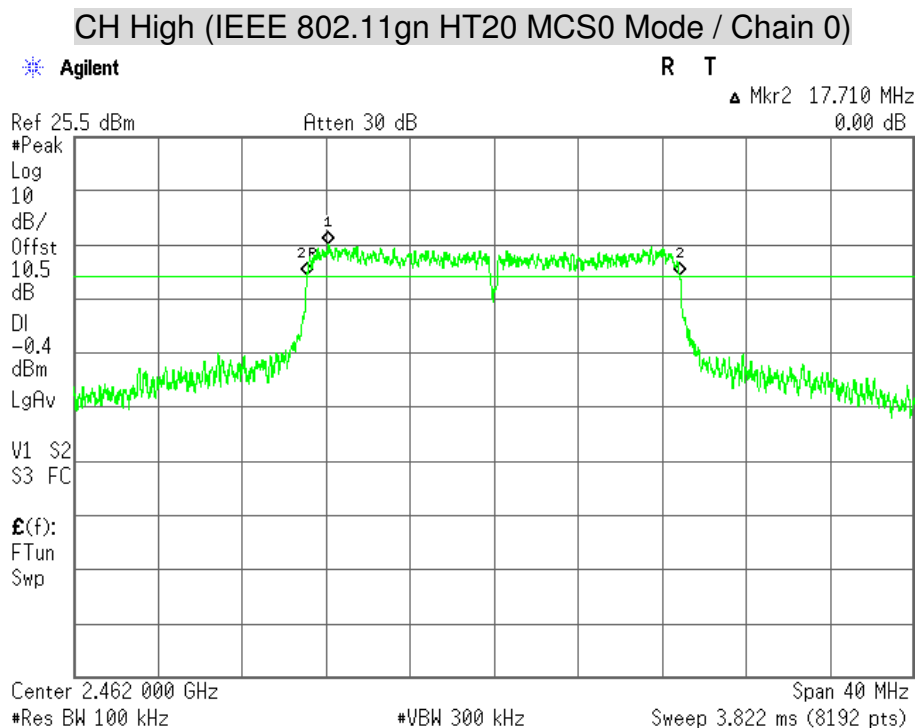


CH Low (IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

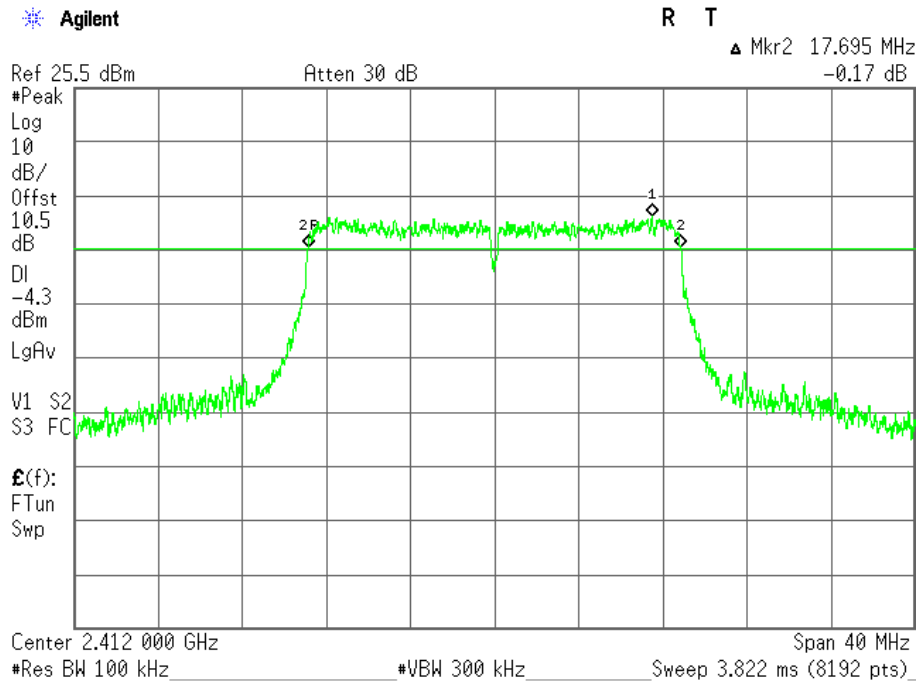


CH Middle (IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

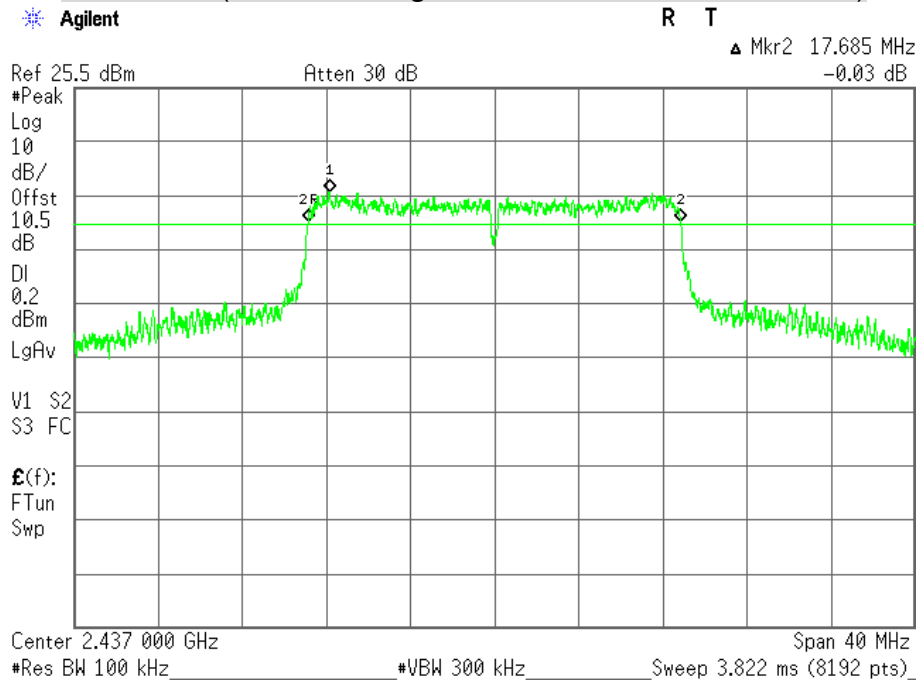


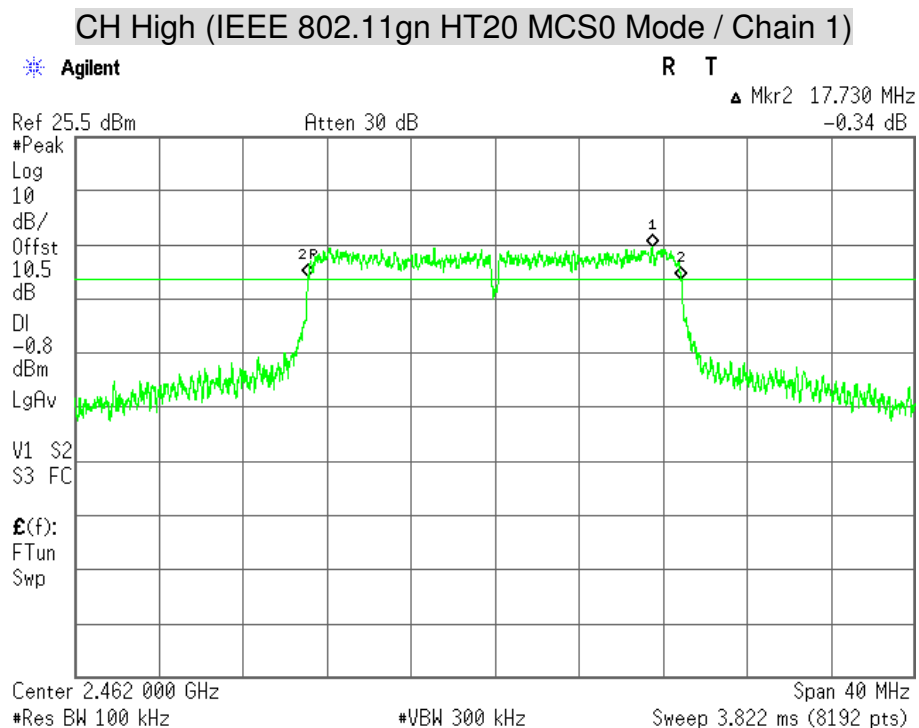


CH Low (IEEE 802.11gn HT20 MCS0 Mode / Chain 1)



CH Middle (IEEE 802.11gn HT20 MCS0 Mode / Chain 1)





7.3 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.

§ KDB 662911:

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain; or,

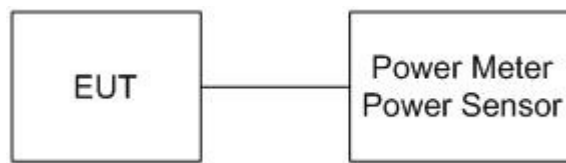
$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/08/2016
Power Sensor	Anritsu	MA2411B	1126148	12/08/2016
Test S/W	N/A			

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

Product Name	Wireless Docsis Probe	Test By	Waternil Guan
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	TX Mode	Temp. & Humidity	25°C, 62%

IEEE 802.11b Mode (2TX)

Channel	Channel Frequency (MHz)	Maximum Peak Output Power						Result
		Chain 0	Chain 1	Total		Limit		
		(dBm)	(dBm)	(dBm)	(W)	(dBm)	(W)	
Low	2412	17.49	18.30	20.92	0.1236	30	1.000	PASS
Middle	2437	19.28	19.94	22.64	0.1837	30	1.000	PASS
High	2462	20.01	20.24	23.14	0.2061	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 3 dBi which is less than 6dBi, the limit should be 30 dBm.
4. Total power = Chain 0 + Chain 1.

IEEE 802.11g Mode (2TX)

Channel	Channel Frequency (MHz)	Maximum Peak Output Power						Result
		Chain 0	Chain 1	Total		Limit		
		(dBm)	(dBm)	(dBm)	(W)	(dBm)	(W)	
Low	2412	22.56	23.18	25.89	0.3882	30	1.000	PASS
Middle	2437	25.67	26.61	29.18	0.8279	30	1.000	PASS
High	2462	25.75	26.32	29.06	0.8054	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 3 dBi which is less than 6dBi, the limit should be 30 dBm.
4. Total power = Chain 0 + Chain 1.

IEEE 802.11gn HT20 MCS0 Mode (2TX)

Channel	Channel Frequency (MHz)	Maximum Peak Output Power						Result
		Chain 0	Chain 1	Total		Limit		
		(dBm)	(dBm)	(dBm)	(W)	(dBm)	(W)	
Low	2412	21.71	22.73	25.26	0.3357	30	1.000	PASS
Middle	2437	26.10	27.23	29.71	0.9354	30	1.000	PASS
High	2462	25.80	26.26	29.05	0.8035	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 3 dBi which is less than 6dBi, the limit should be 30 dBm.
4. Total power = Chain 0 + Chain 1.

7.4 AVERAGE POWER

LIMITS

None: For reporting purposes only.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/08/2016
Power Sensor	Anritsu	MA2411B	1126148	12/08/2016
Test S/W	N/A			

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 average power detection.

TEST RESULTS

Product Name	Wireless Docsis Probe	Test By	Waternil Guan
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	TX Mode	Temp. & Humidity	25°C, 62%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)	
		Chain 0	Chain 1
Low	2412	14.60	15.39
Middle	2437	16.41	16.98
High	2462	17.11	17.35

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 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)	Average Power (dBm)	
		Chain 0	Chain 1
Low	2412	15.62	16.22
Middle	2437	18.70	19.62
High	2462	18.53	19.31

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11gn HT20 MCS0 Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)	
		Chain 0	Chain 1
Low	2412	14.50	15.48
Middle	2437	19.04	19.93
High	2462	18.76	19.07

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

7.5 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.

§ KDB 662911:

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain; or,

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	05/31/2017
Test S/W	N/A			

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

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
5. Set the VBW $\geq 3 \times \text{RBW}$.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level within the RBW.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST RESULTS

Product Name	Wireless Docsis Probe	Test By	Waternil Guan
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	TX Mode	Temp. & Humidity	25°C, 62%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)				Result
		Chain 0	Chain 1	Total	Limit	
Low	2412	-14.32	-13.48	-10.87	7.99	PASS
Middle	2437	-12.56	-11.86	-9.18	7.99	PASS
High	2462	-11.71	-11.54	-8.61	7.99	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The directional gain is 6.01dBi which is more than 6dBi, the limit should be 7.99 dBm.
4. Total power spectral density = Chain 0 + Chain 1.
- 5.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)				Result
		Chain 0	Chain 1	Total	Limit	
Low	2412	-12.43	-11.63	-9.00	7.99	PASS
Middle	2437	-9.90	-8.42	-6.08	7.99	PASS
High	2462	-9.37	-8.12	-5.69	7.99	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The directional gain is 6.01dBi which is more than 6dBi, the limit should be 7.99 dBm.
4. Total power spectral density = Chain 0 + Chain 1.

IEEE 802.11gn HT20 MCS0 Mode

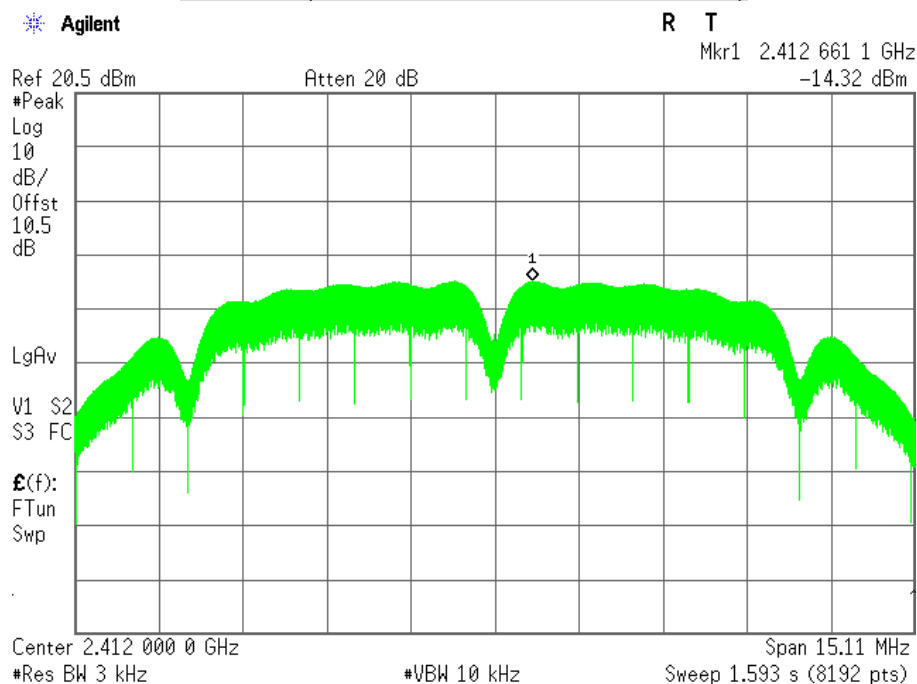
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)				Result
		Chain 0	Chain 1	Total	Limit	
Low	2412	-13.29	-12.24	-9.72	7.99	PASS
Middle	2437	-8.52	-7.24	-4.82	7.99	PASS
High	2462	-8.86	-8.91	-5.88	7.99	PASS

Remark:

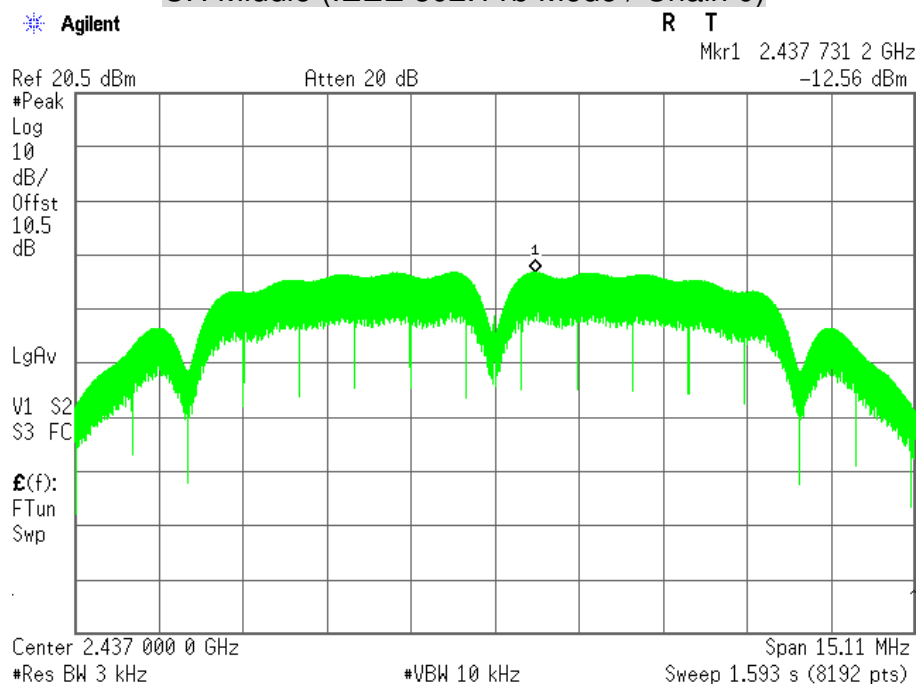
1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The directional gain is 6.01dBi which is more than 6dBi, the limit should be 7.99 dBm.
4. Total power spectral density = Chain 0 + Chain 1.

POWER SPECTRAL DENSITY

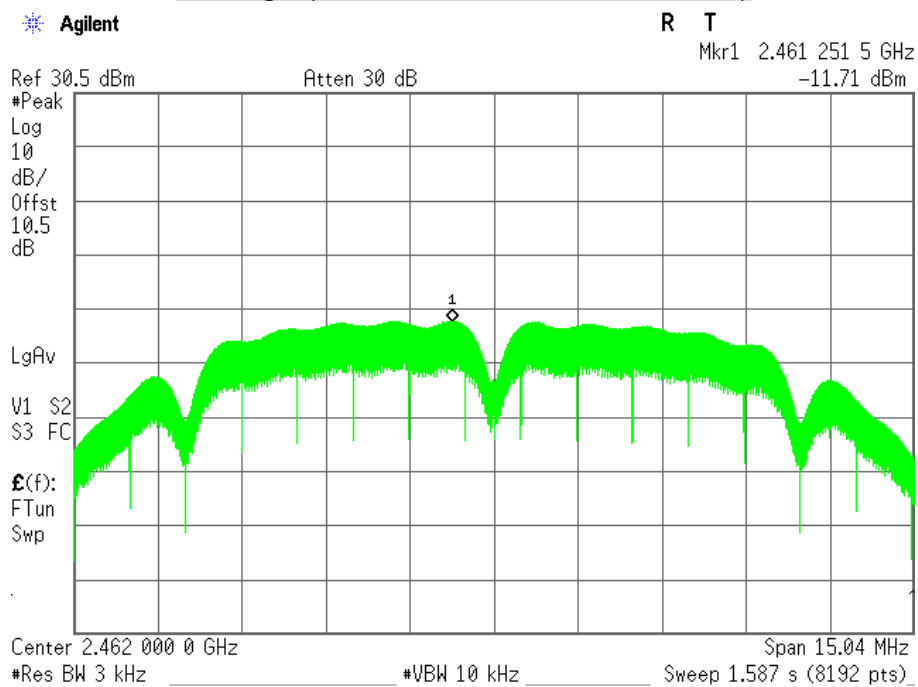
CH Low (IEEE 802.11b Mode / Chain 0)



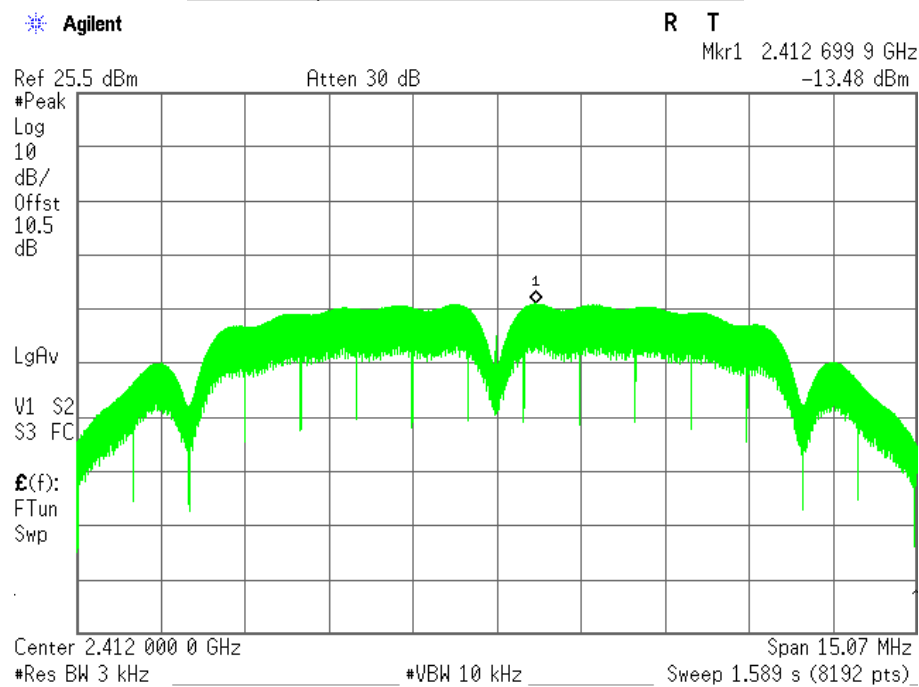
CH Middle (IEEE 802.11b Mode / Chain 0)



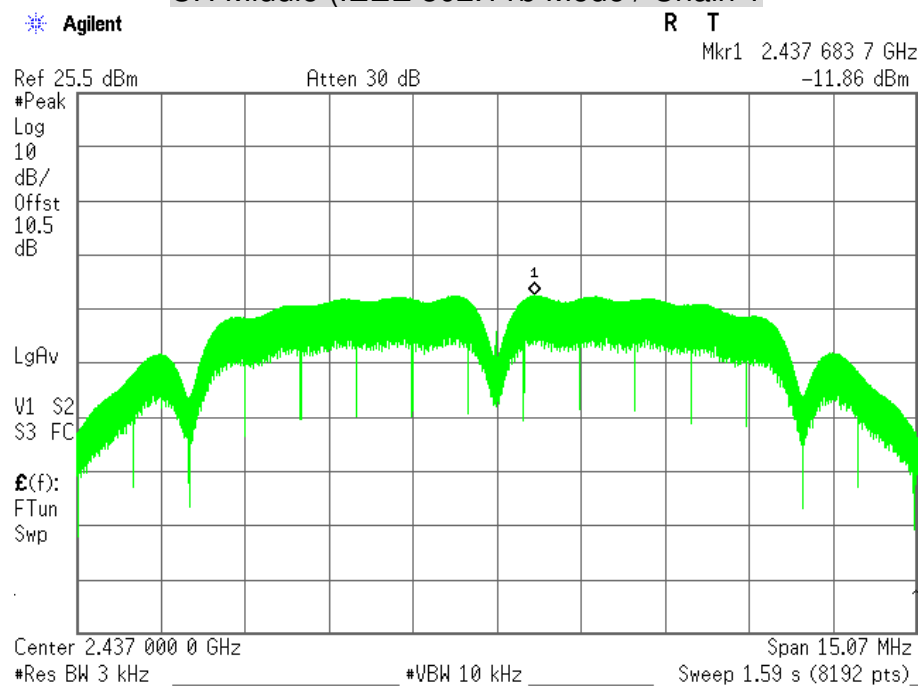
CH High (IEEE 802.11b Mode / Chain 0)

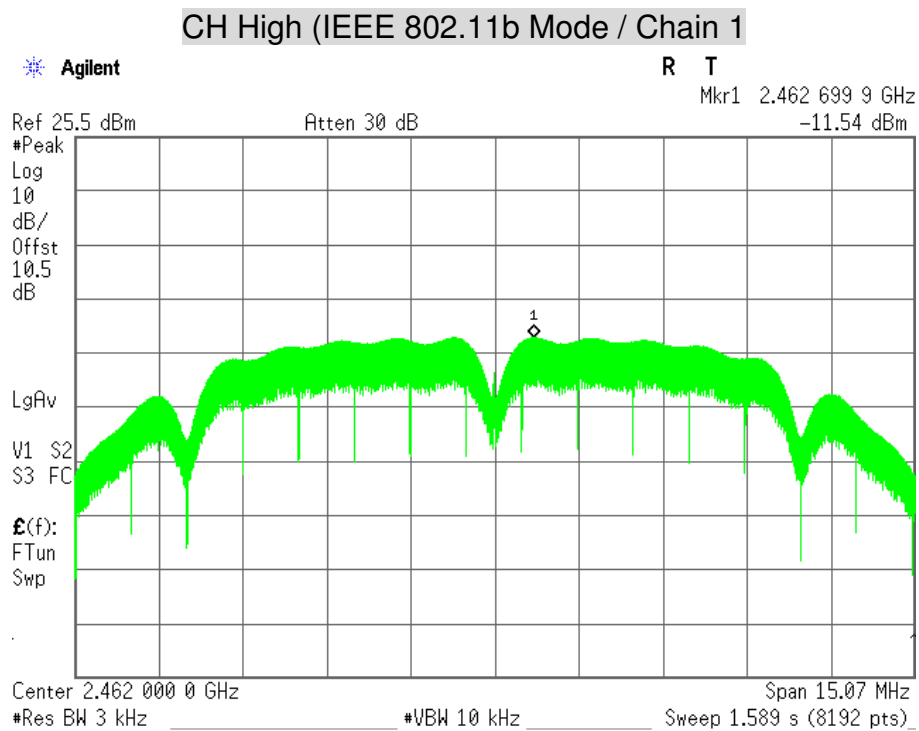


CH Low (IEEE 802.11b Mode / Chain 1)

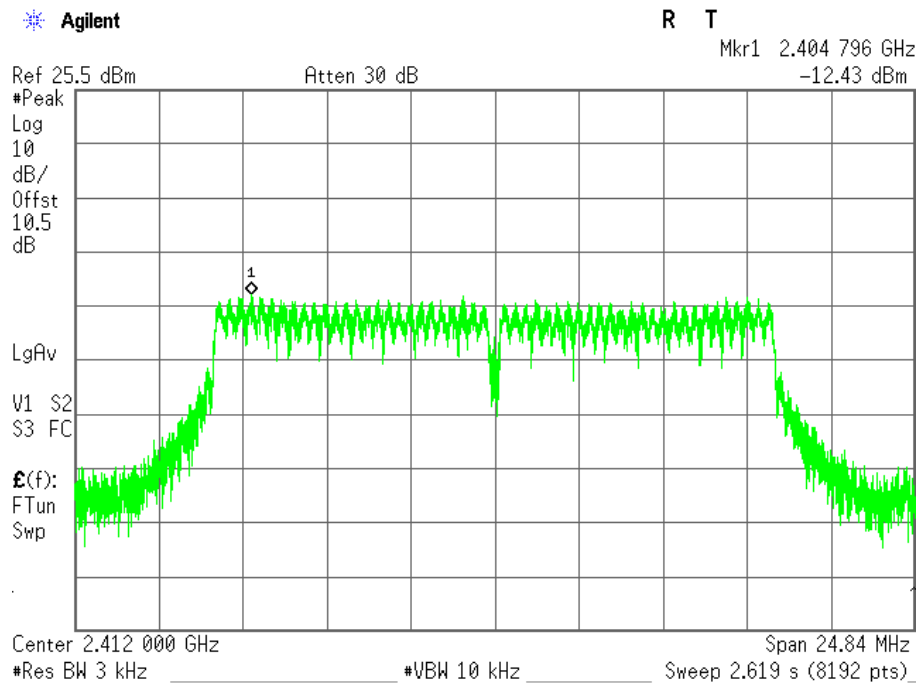


CH Middle (IEEE 802.11b Mode / Chain 1)

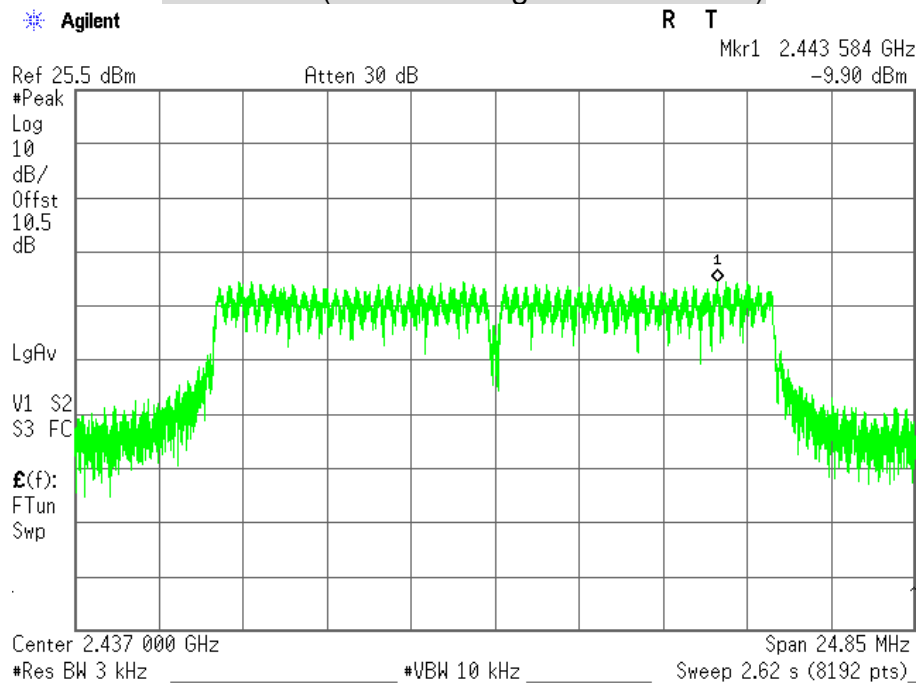


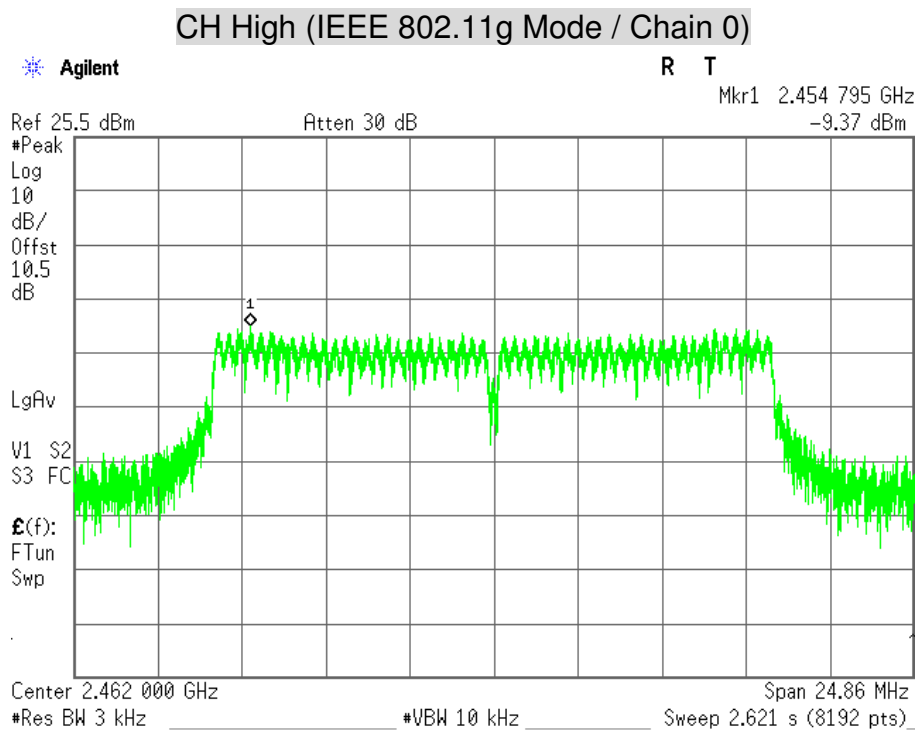


CH Low (IEEE 802.11g Mode / Chain 0)

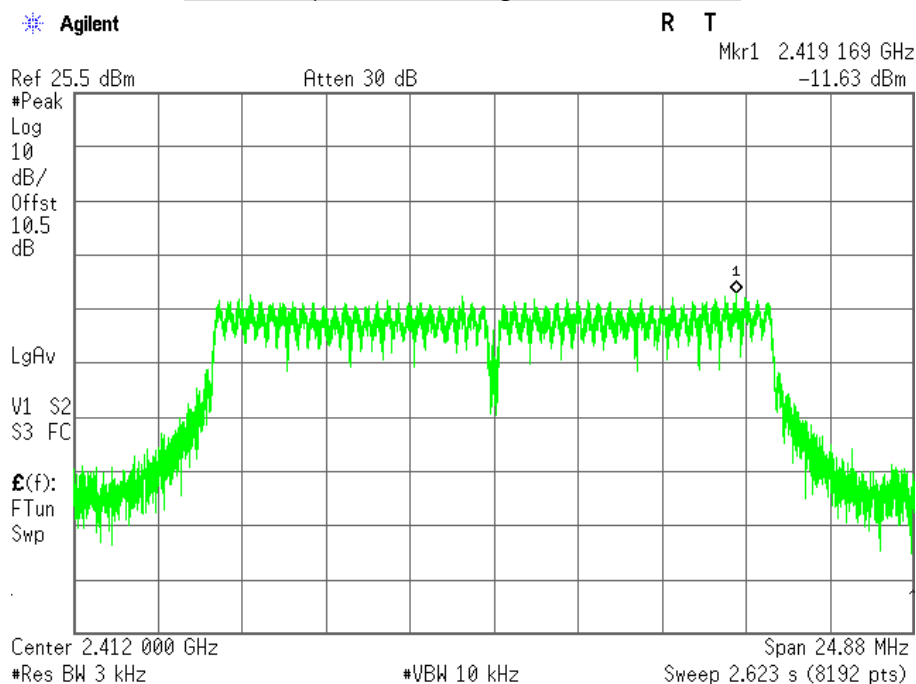


CH Middle (IEEE 802.11g Mode / Chain 0)

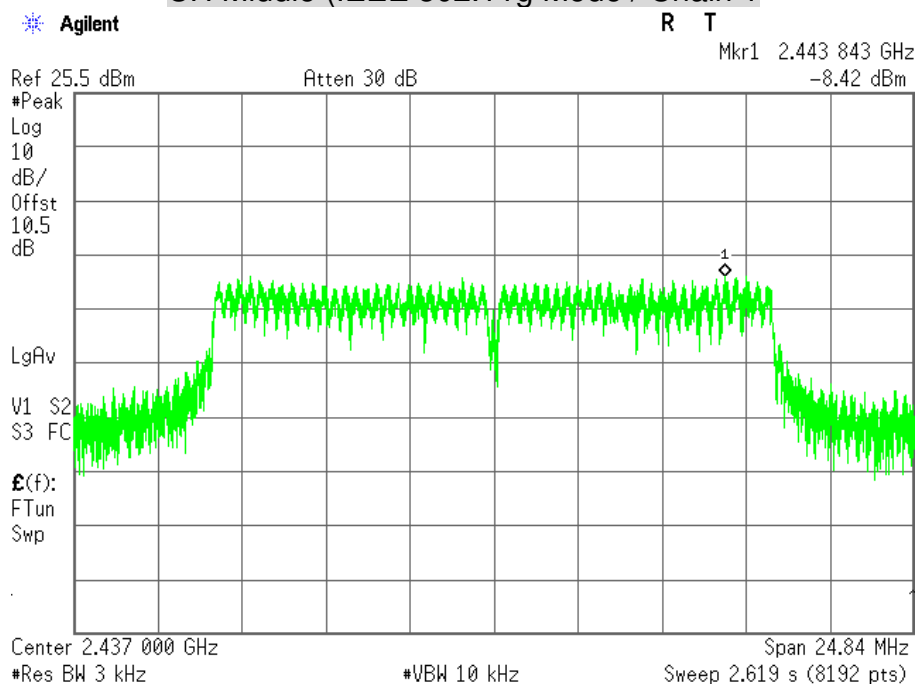


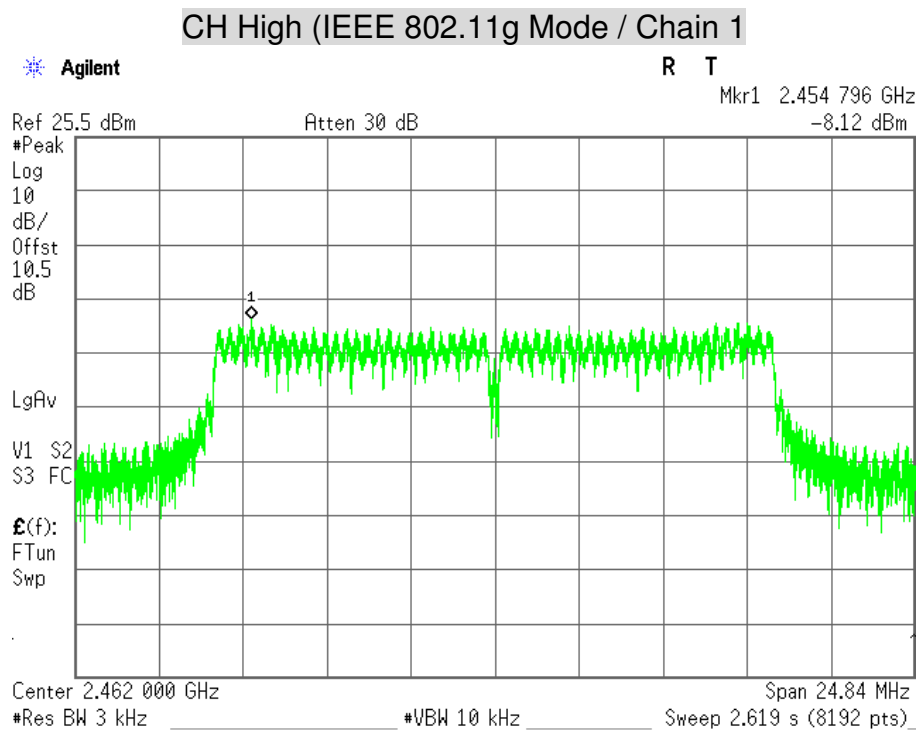


CH Low (IEEE 802.11g Mode / Chain 1)

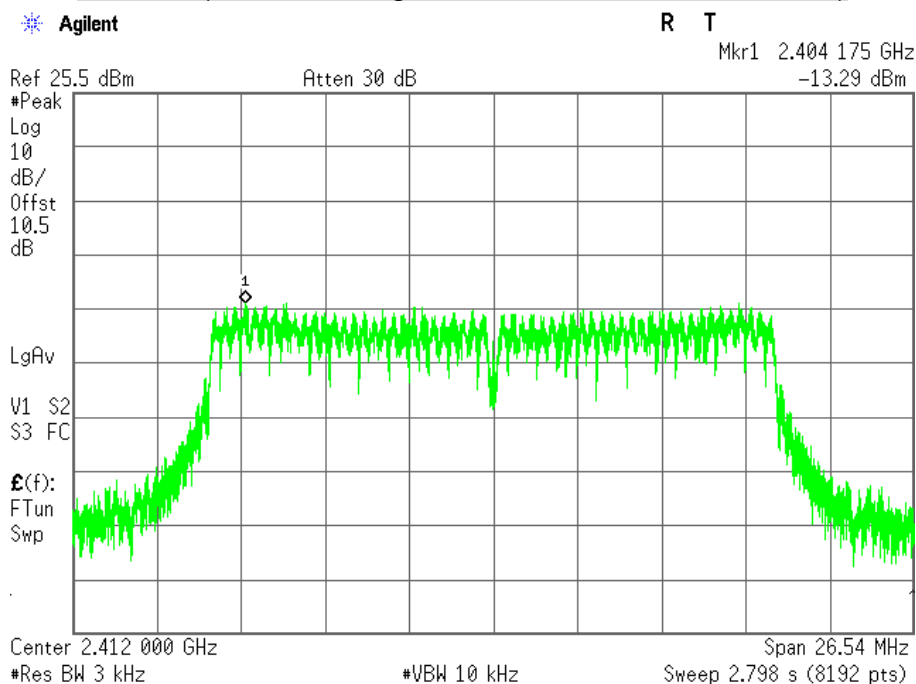


CH Middle (IEEE 802.11g Mode / Chain 1)

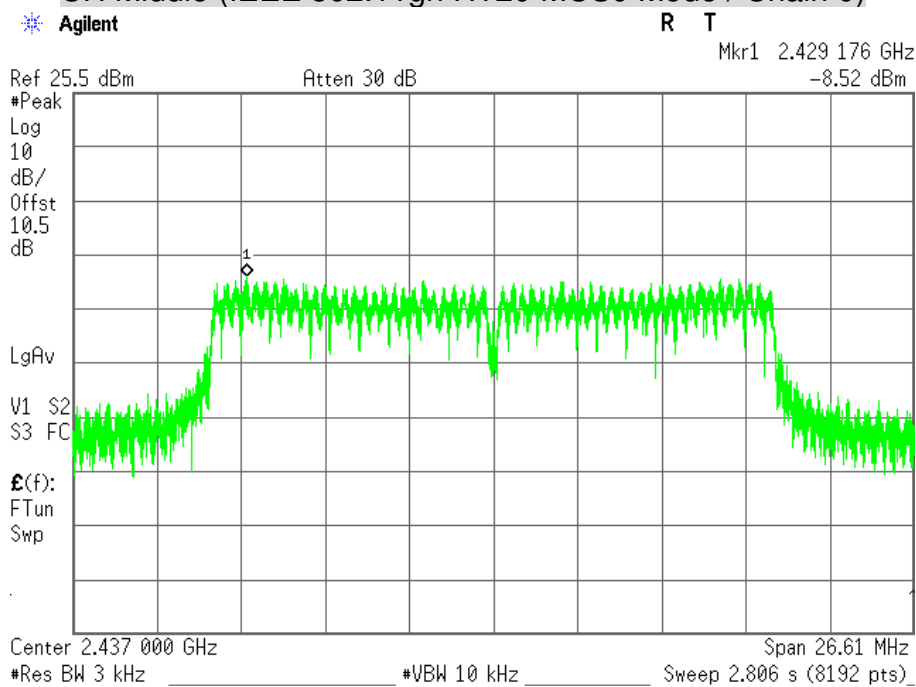


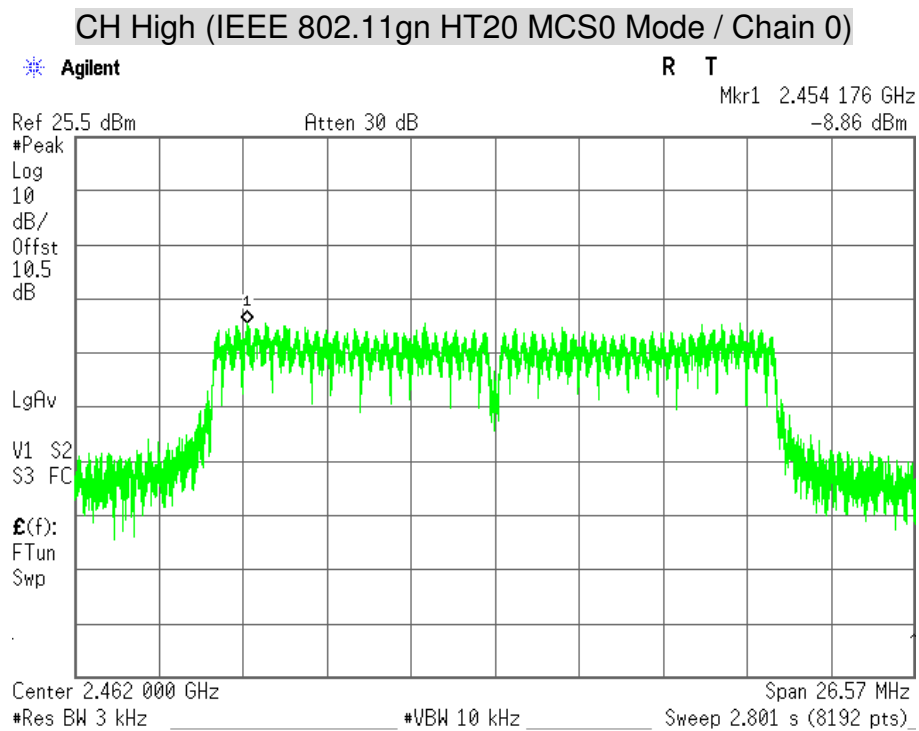


CH Low (IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

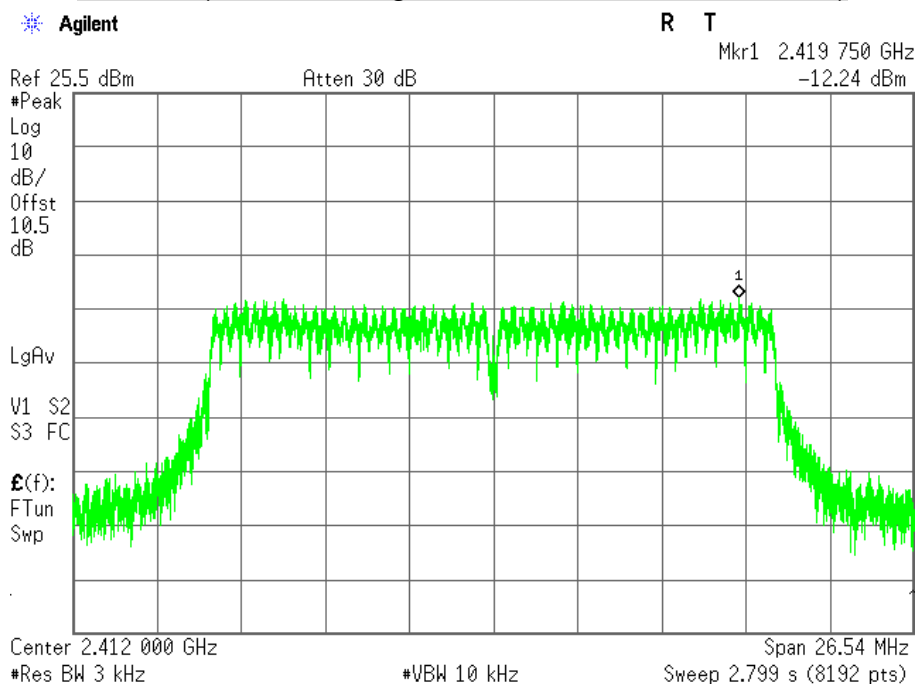


CH Middle (IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

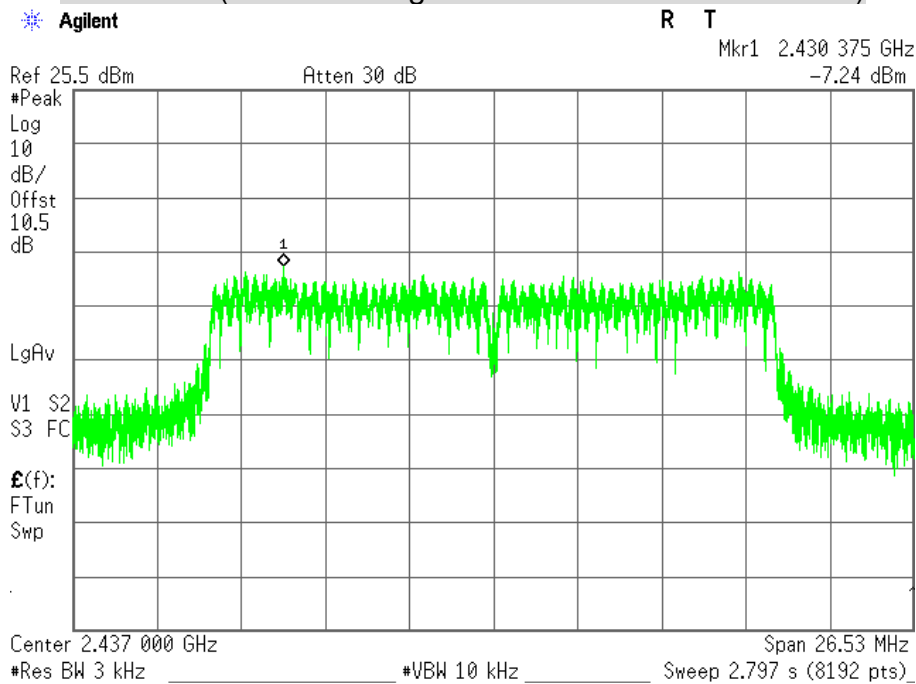


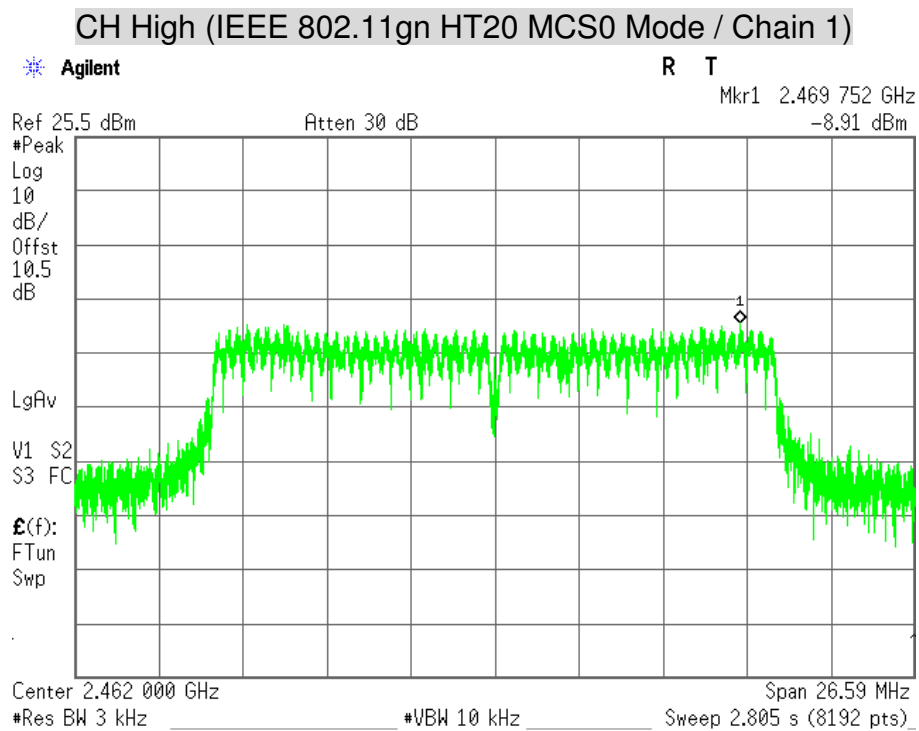


CH Low (IEEE 802.11gn HT20 MCS0 Mode / Chain 1)



CH Middle (IEEE 802.11gn HT20 MCS0 Mode / Chain 1)





7.6 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	05/31/2017
Test S/W	N/A			

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.

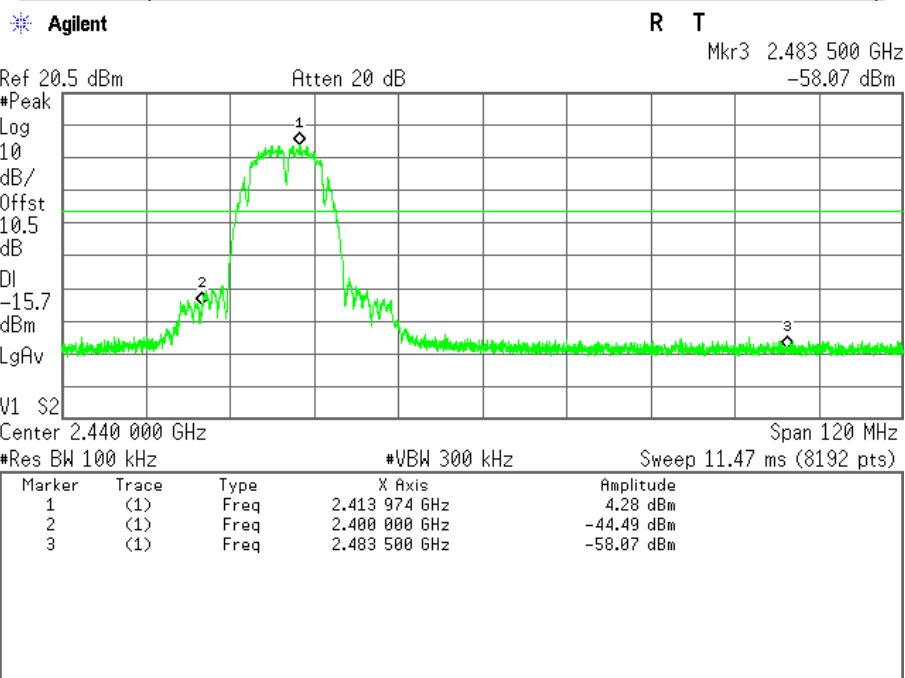
The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST RESULTS

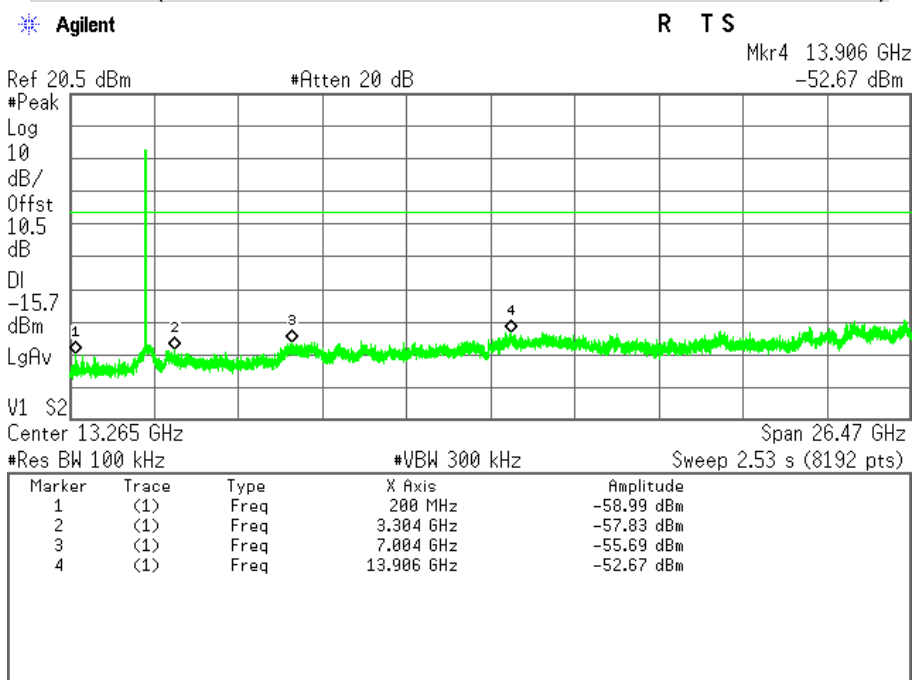
Product Name	Wireless Docsis Probe	Test By	Waternil Guan
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	TX Mode	Temp. & Humidity	25°C, 62%

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)



CH Low (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)

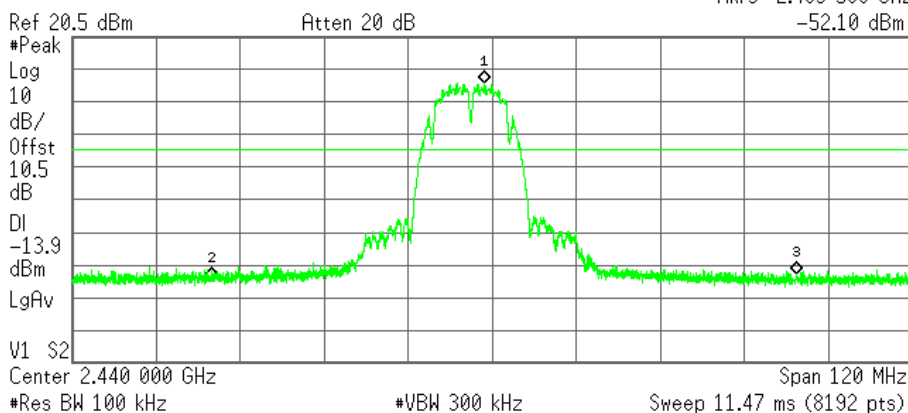


CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)

Agilent

R T

Mkr3 2.483 500 GHz
-52.10 dBm

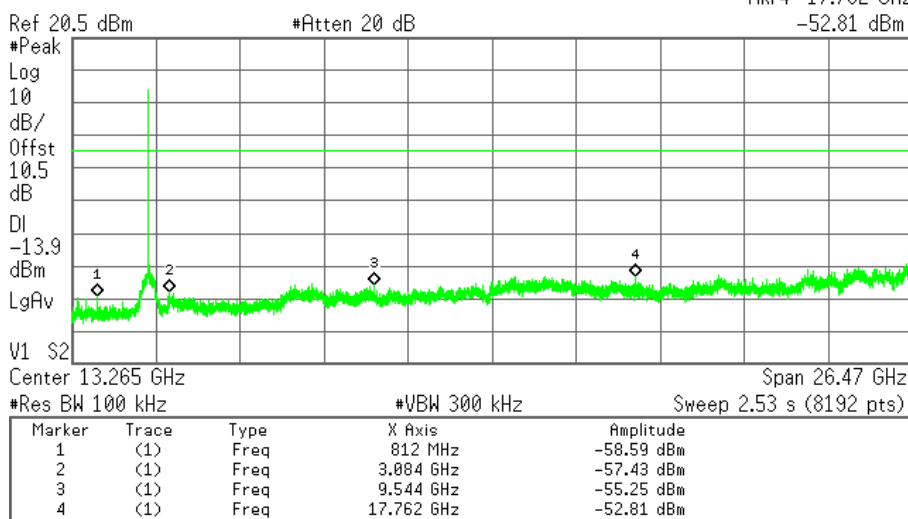


CH Middle (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)

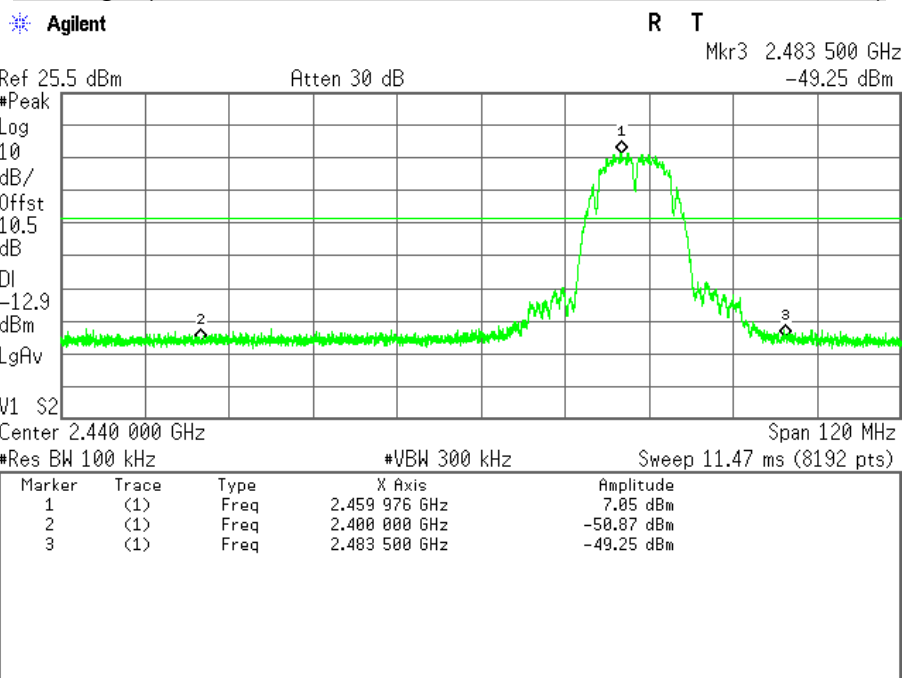
Agilent

R T S

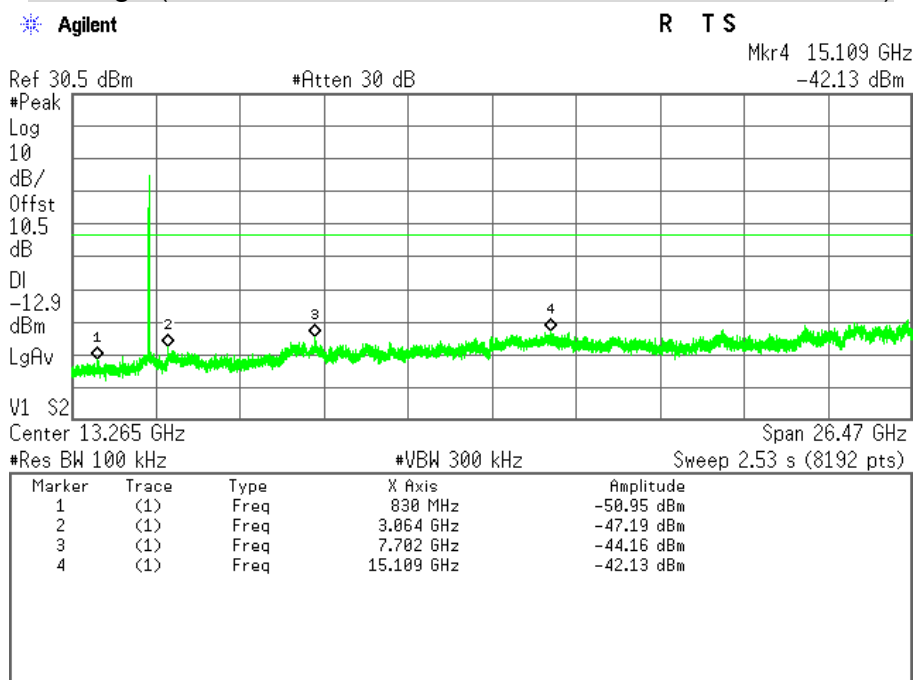
Mkr4 17.762 GHz
-52.81 dBm



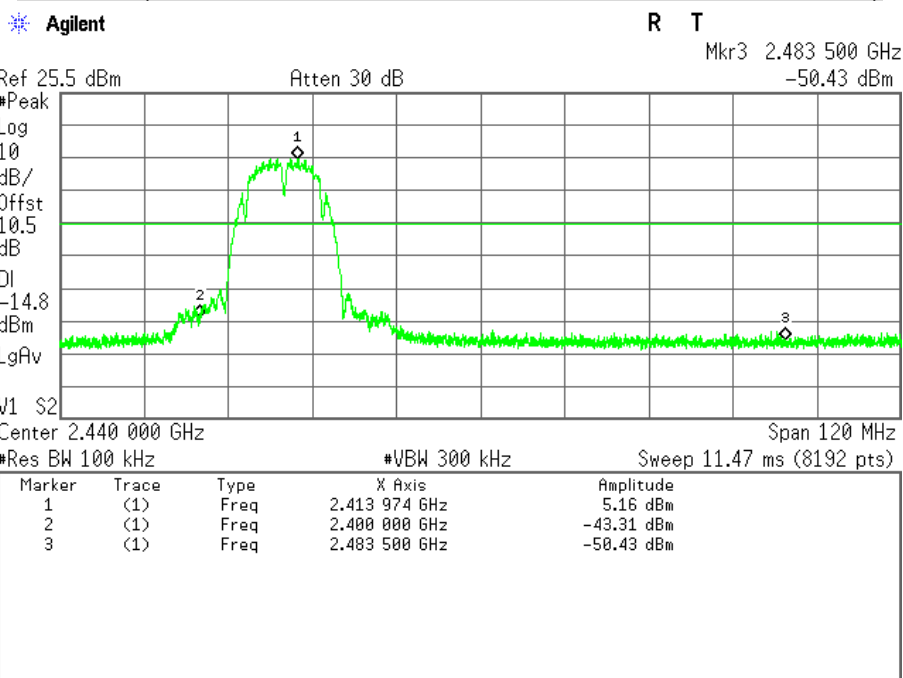
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)



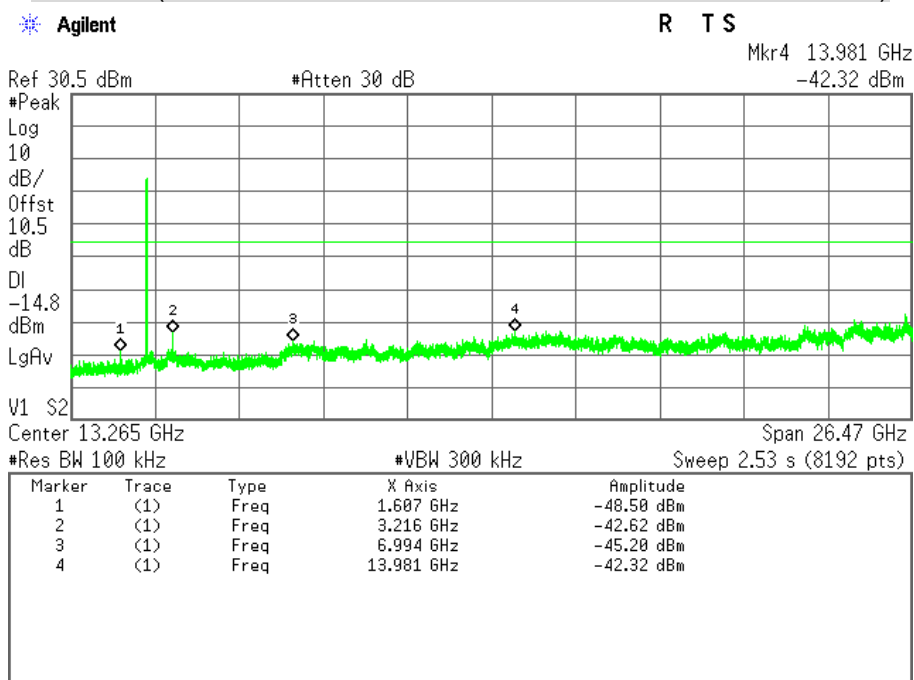
CH High (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)



CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 1)



CH Low (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 1)

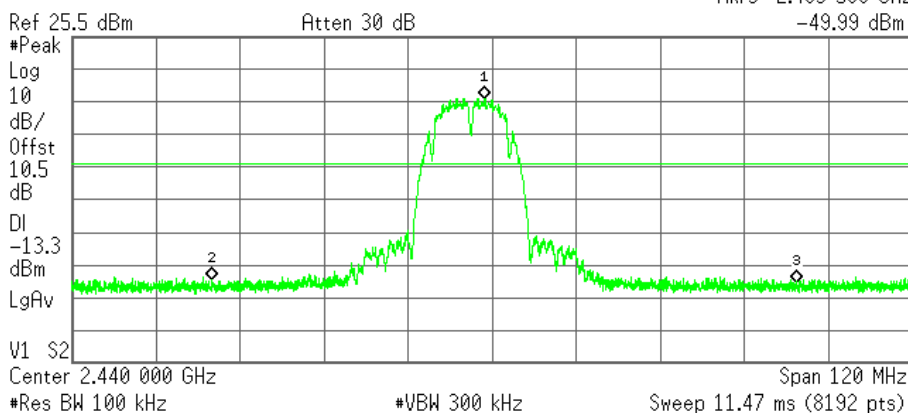


CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 1)

Agilent

R T

Mkr3 2.483 500 GHz
-49.99 dBm

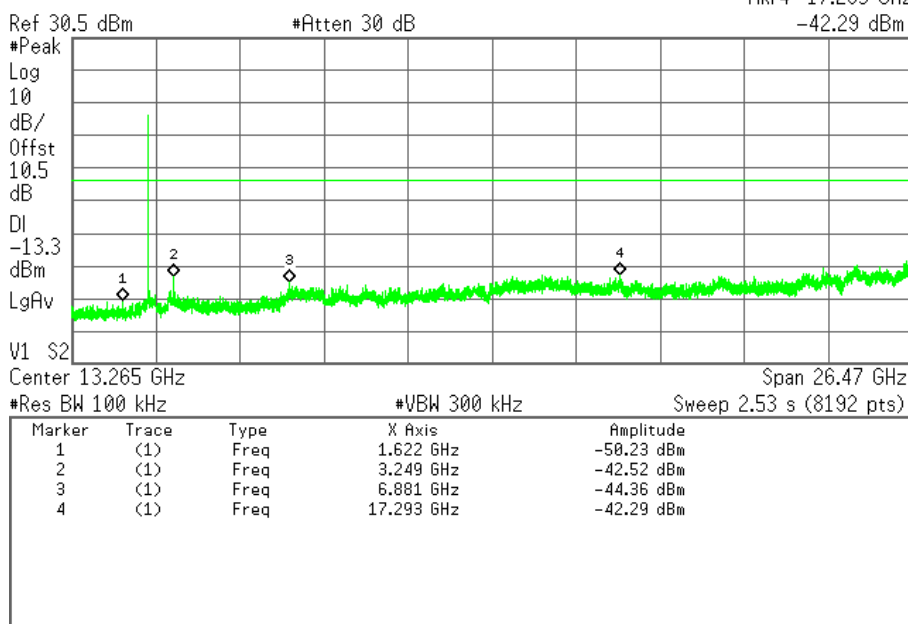


CH Middle (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 1)

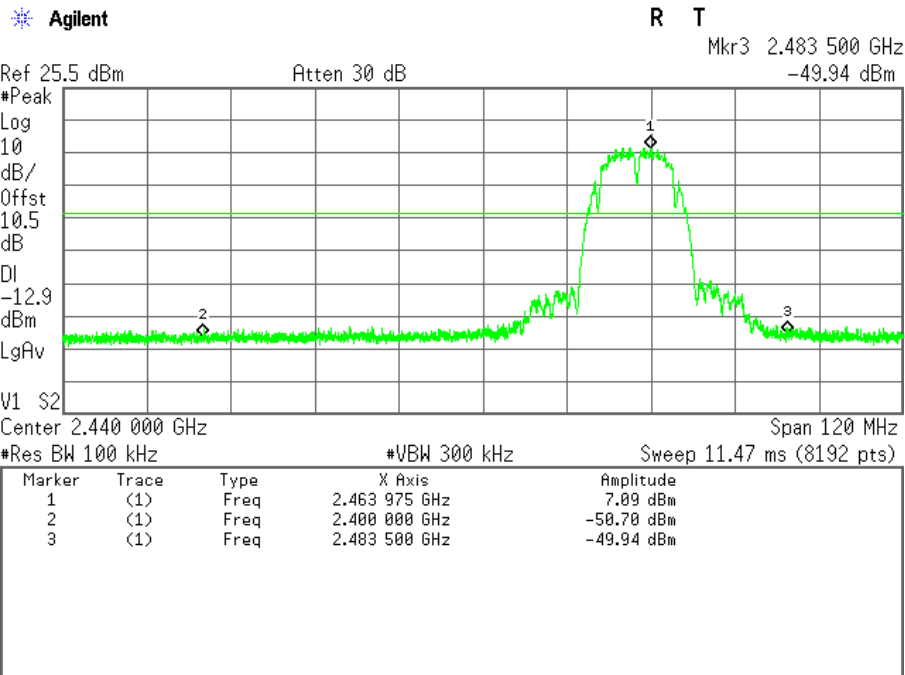
Agilent

R T S

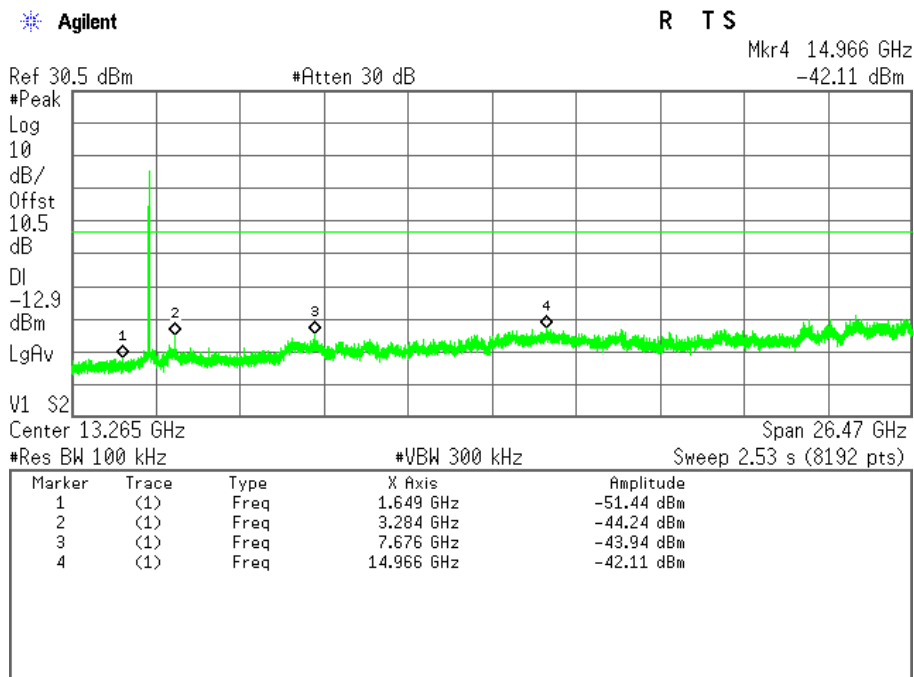
Mkr4 17.293 GHz
-42.29 dBm



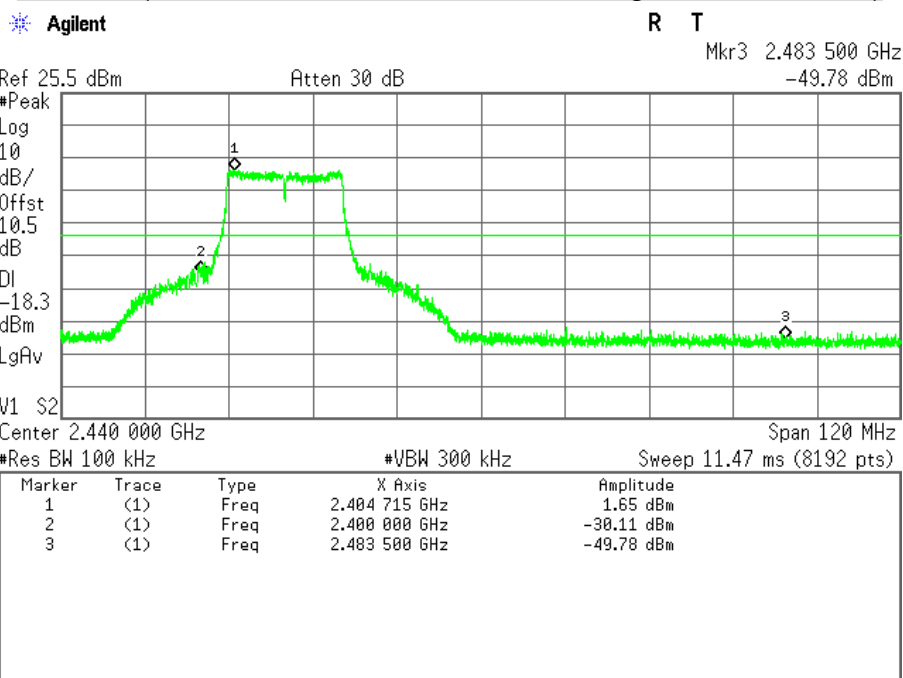
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 1)



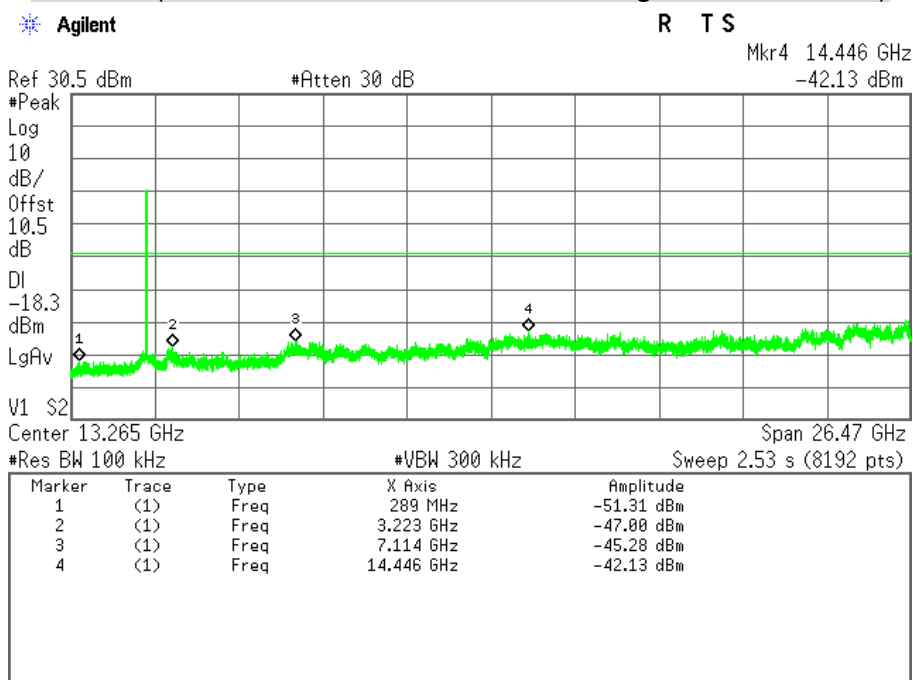
CH High (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 1)



CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)



CH Low (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)

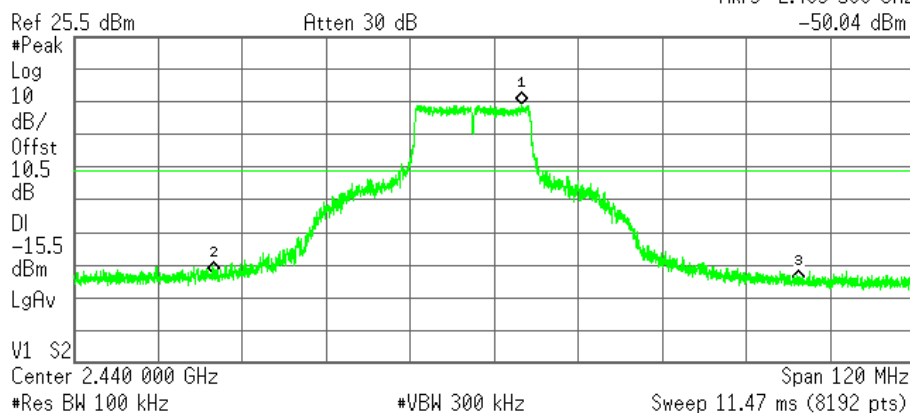


CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)

Agilent

R T

Mkr3 2.483 500 GHz
-50.04 dBm

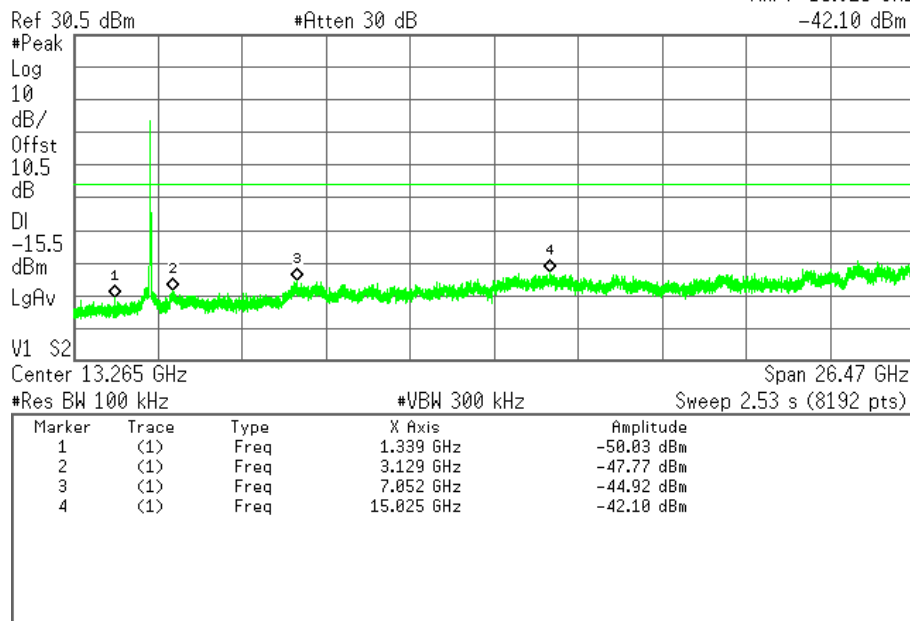


CH Middle (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)

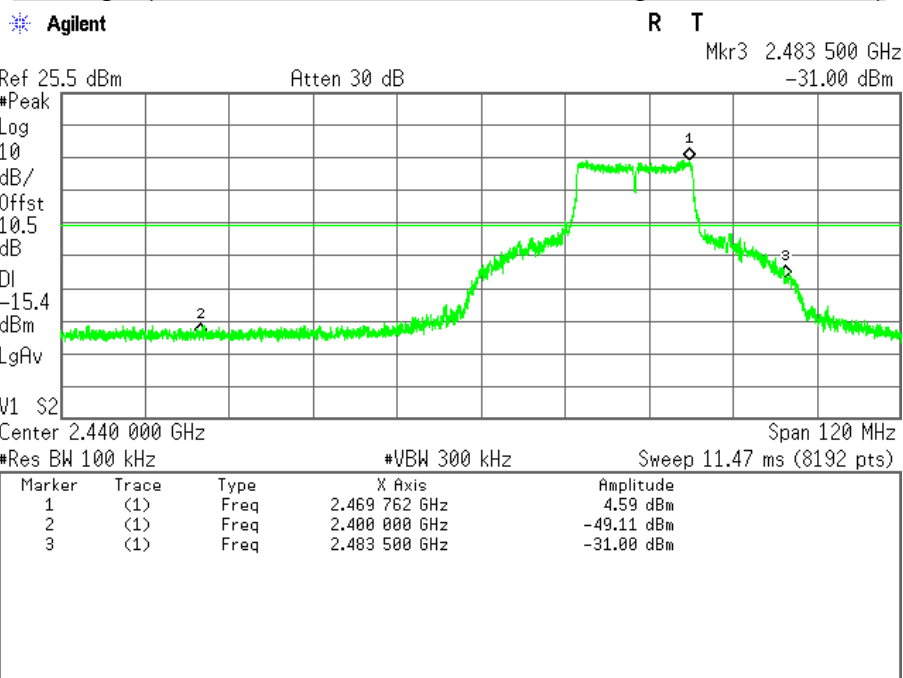
Agilent

R T S

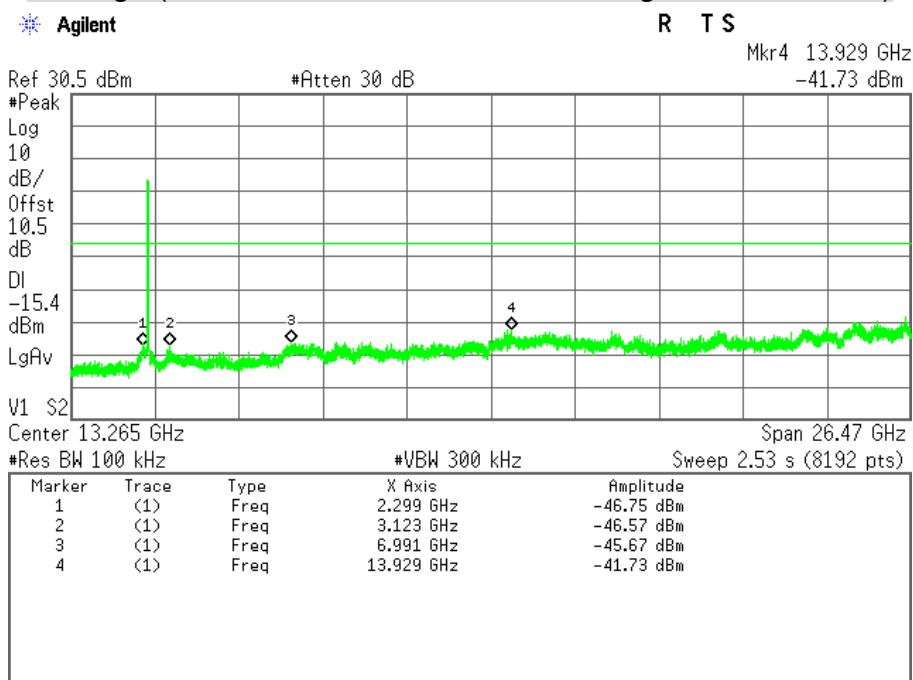
Mkr4 15.025 GHz
-42.10 dBm



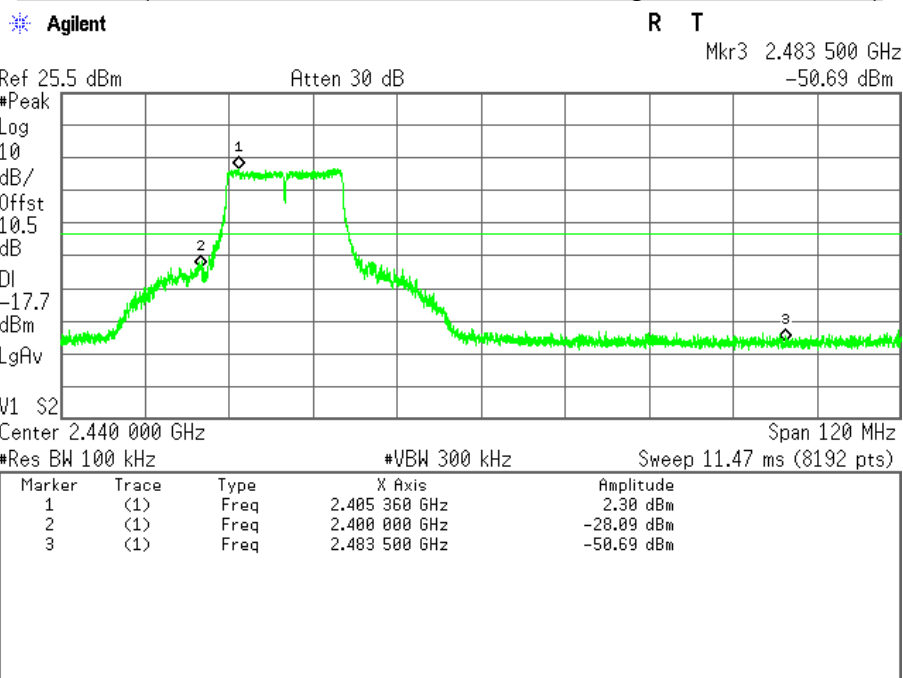
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)



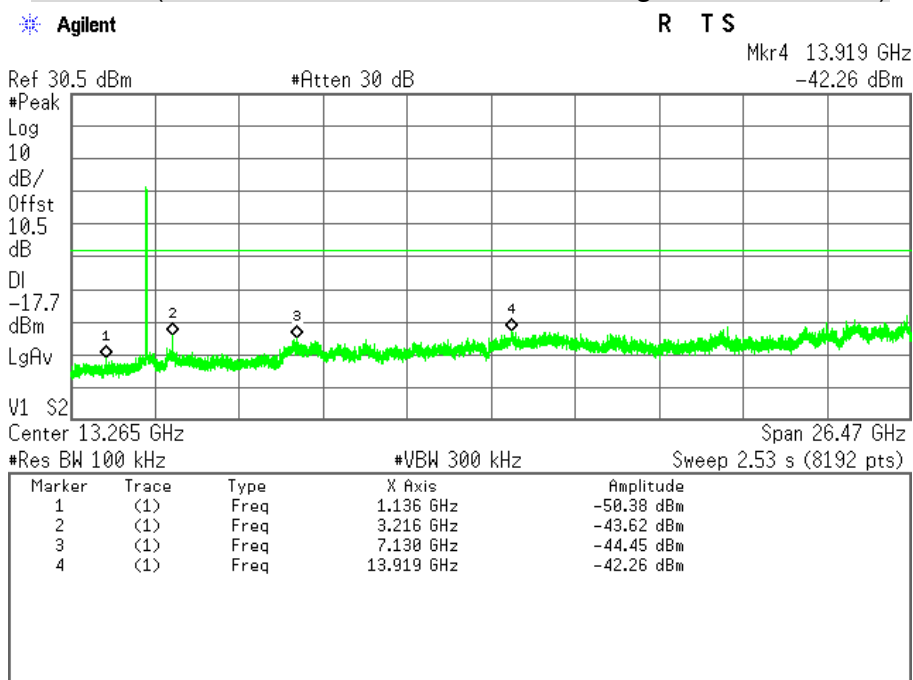
CH High (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)



CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 1)



CH Low (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 1)



CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 1)

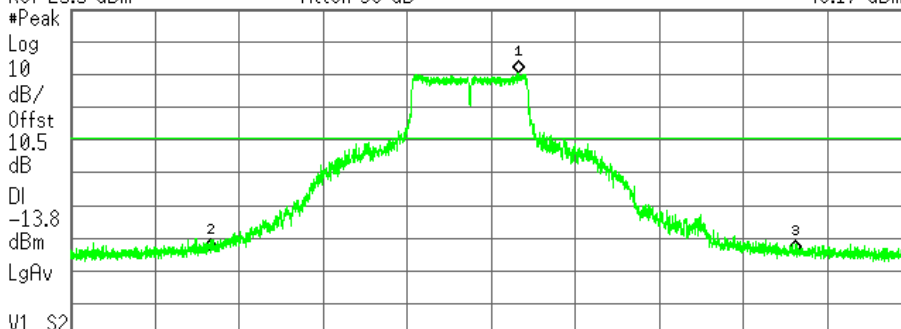
Agilent

R T

Mkr3 2.483 500 GHz
-49.17 dBm

Ref 25.5 dBm

Atten 30 dB



Center 2.440 000 GHz

Span 120 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 11.47 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.443 860 GHz	6.21 dBm
2	(1)	Freq	2.400 000 GHz	-48.38 dBm
3	(1)	Freq	2.483 500 GHz	-49.17 dBm

CH Middle (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 1)

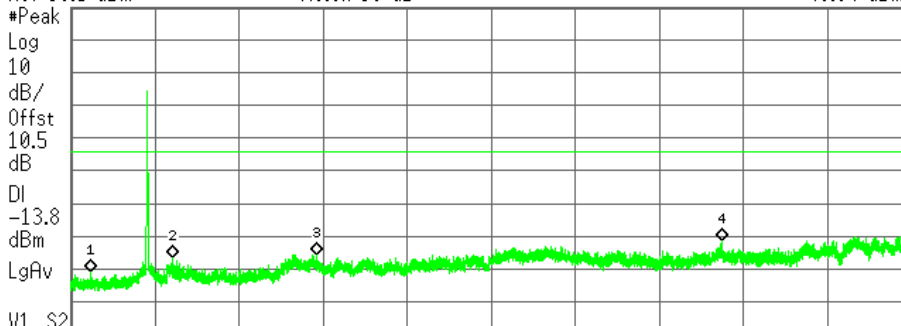
Agilent

R T S

Mkr4 20.534 GHz
-40.94 dBm

Ref 30.5 dBm

#Atten 30 dB



Center 13.265 GHz

Span 26.47 GHz

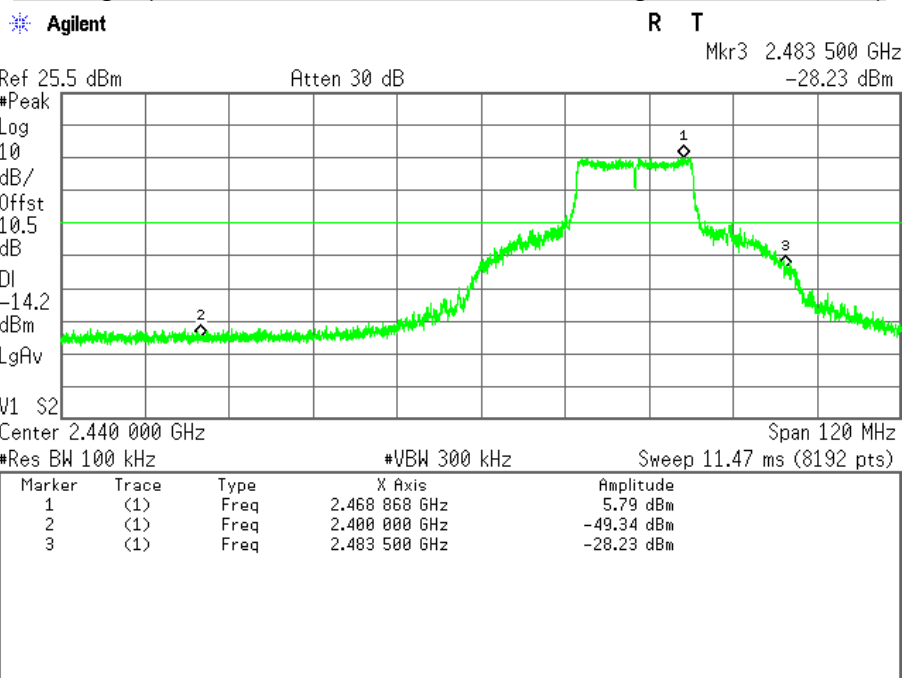
#Res BW 100 kHz

#VBW 300 kHz

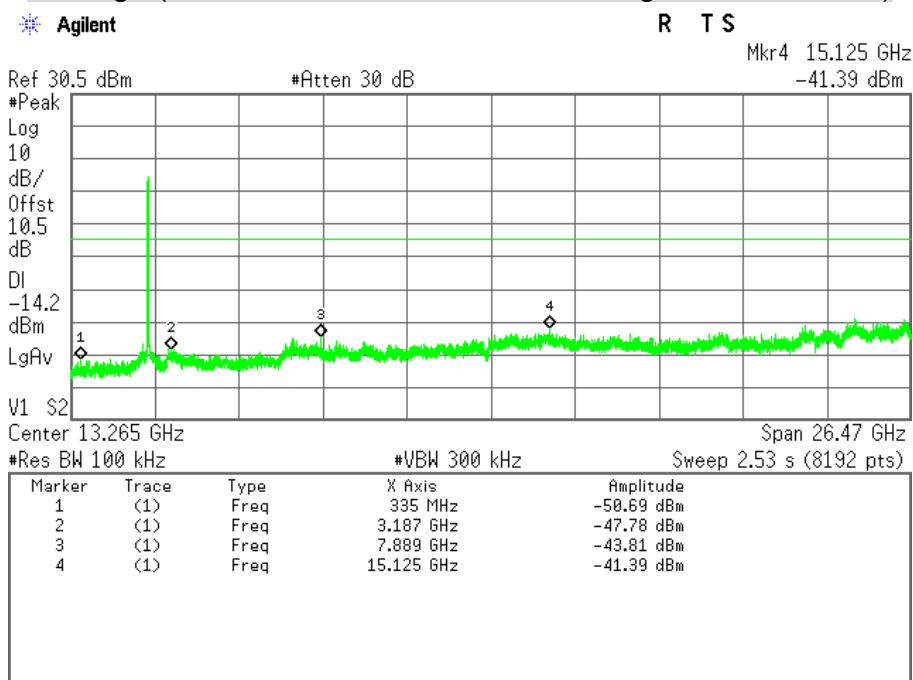
Sweep 2.53 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	668 MHz	-50.48 dBm
2	(1)	Freq	3.249 GHz	-46.17 dBm
3	(1)	Freq	7.750 GHz	-45.13 dBm
4	(1)	Freq	20.534 GHz	-40.94 dBm

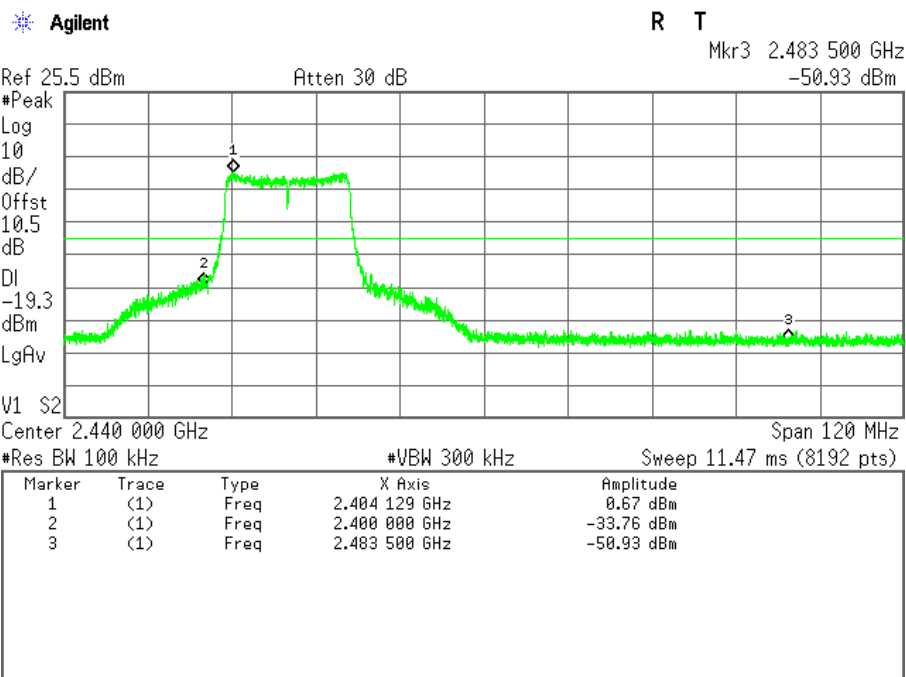
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 1)



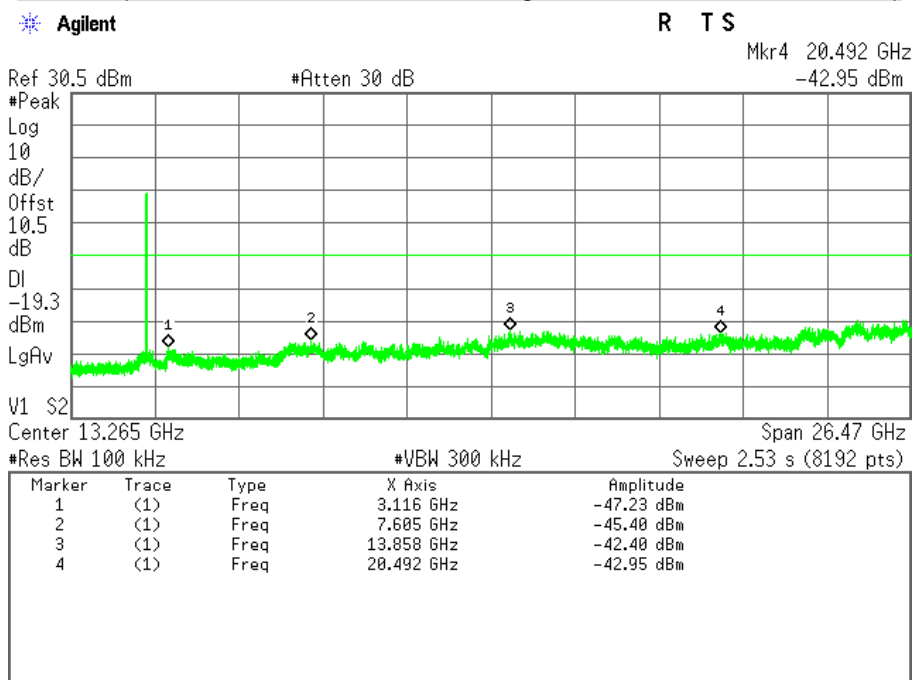
CH High (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 1)



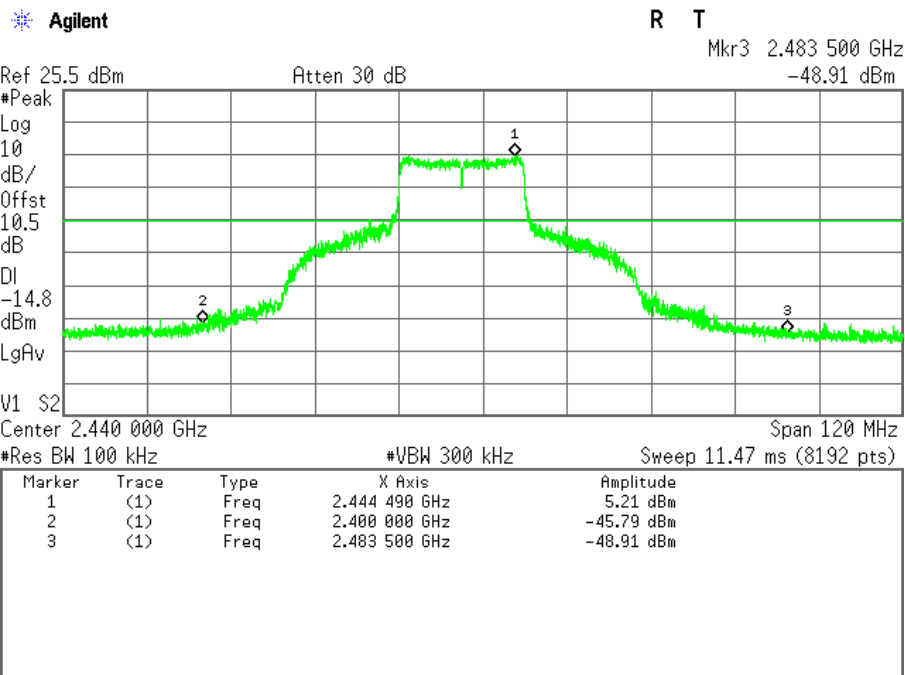
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)



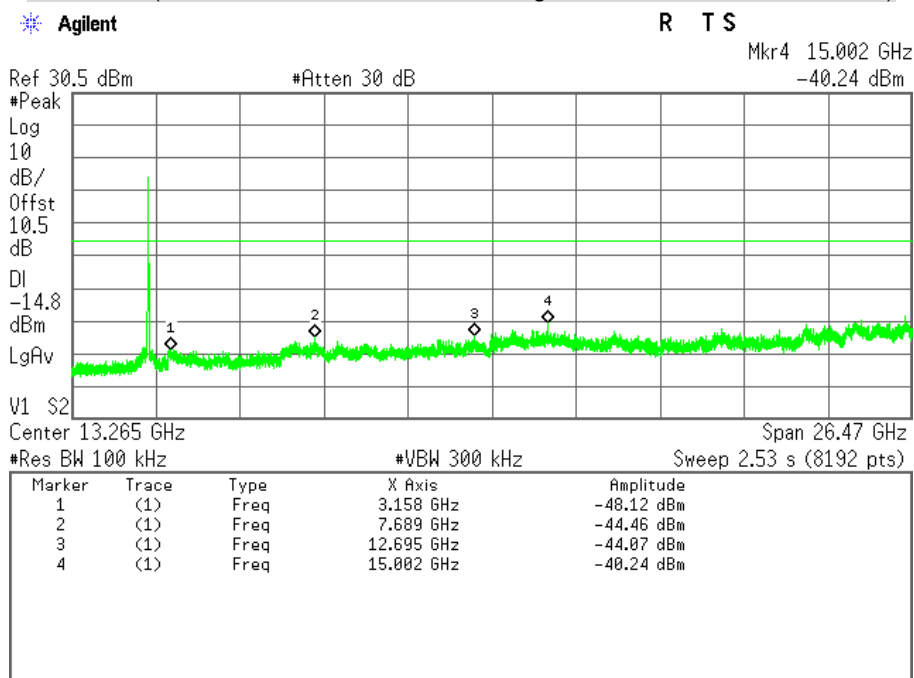
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)



CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)



CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

Agilent

R T

Mkr3 2.483 500 GHz
-26.63 dBm

Ref 25.5 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-14.5

dBm

LgAv

V1 S2

Center 2.440 000 GHz

Span 120 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 11.47 ms (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.454 130 GHz	5.49 dBm
2	(1)	Freq	2.400 000 GHz	-49.66 dBm
3	(1)	Freq	2.483 500 GHz	-26.63 dBm

CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 0)

Agilent

R T S

Mkr4 12.691 GHz
-44.45 dBm

Ref 30.5 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-14.5

dBm

LgAv

V1 S2

Center 13.265 GHz

Span 26.47 GHz

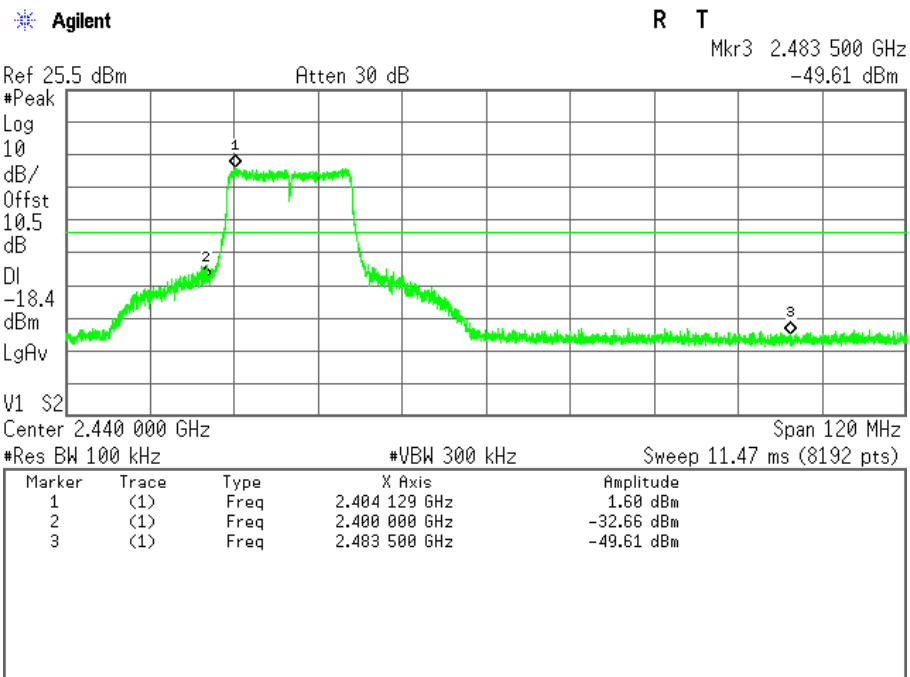
#Res BW 100 kHz

#VBW 300 kHz

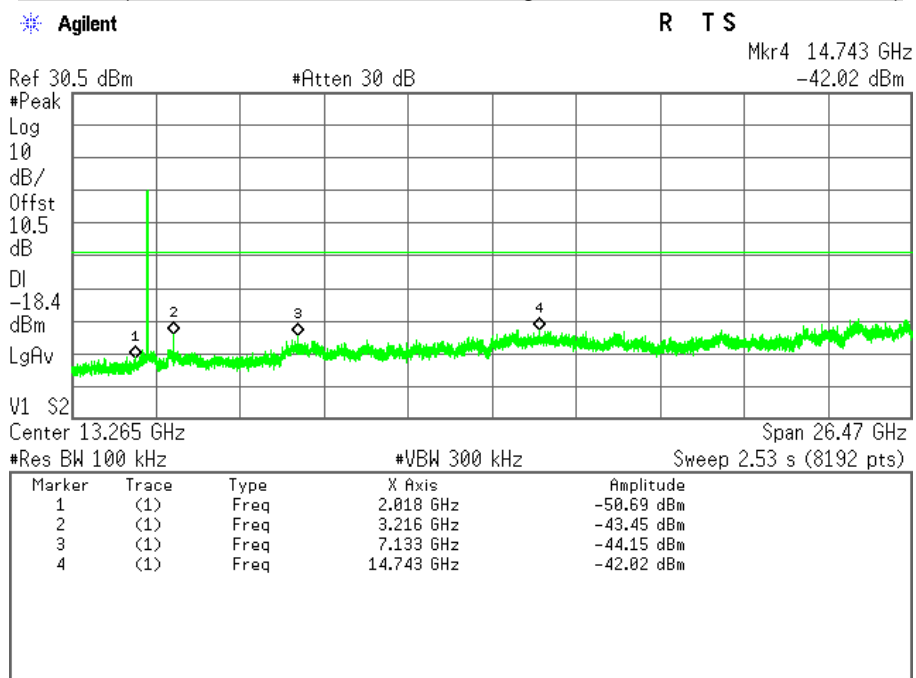
Sweep 2.53 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	1.991 GHz	-50.96 dBm
2	(1)	Freq	3.194 GHz	-47.92 dBm
3	(1)	Freq	7.007 GHz	-45.25 dBm
4	(1)	Freq	12.691 GHz	-44.45 dBm

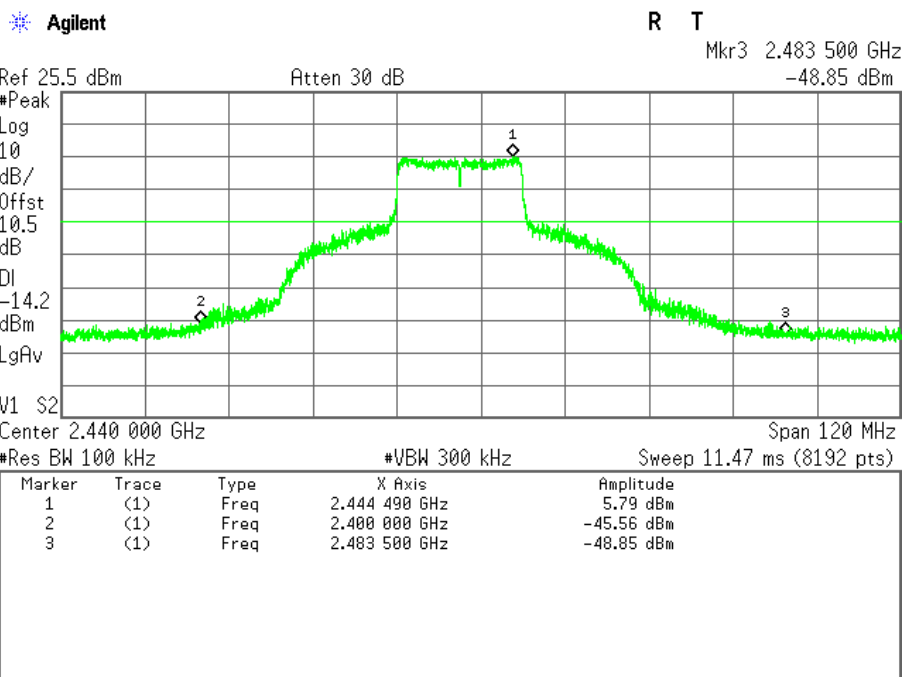
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)



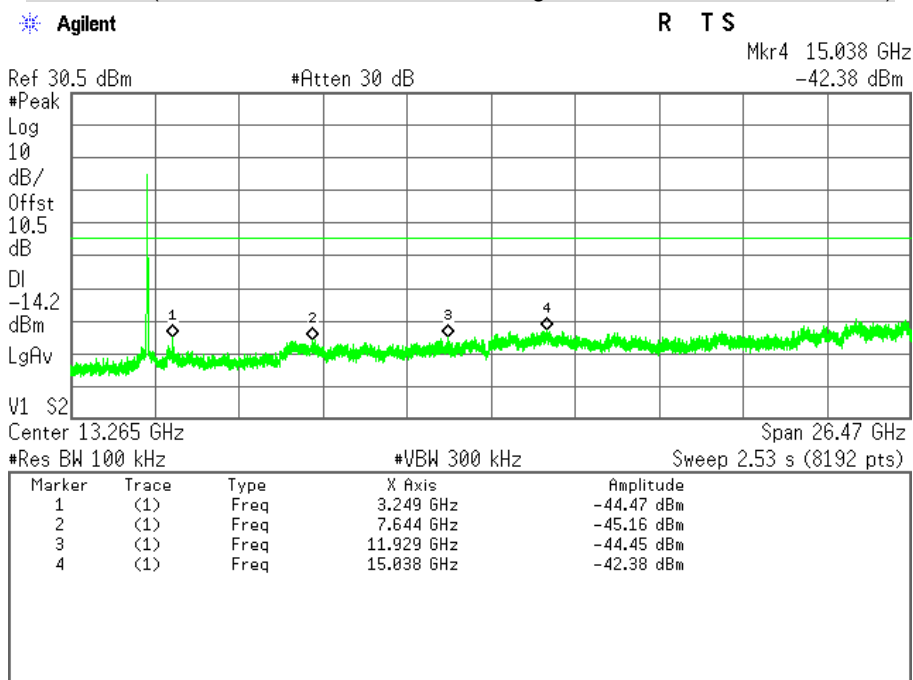
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)



CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)



CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)

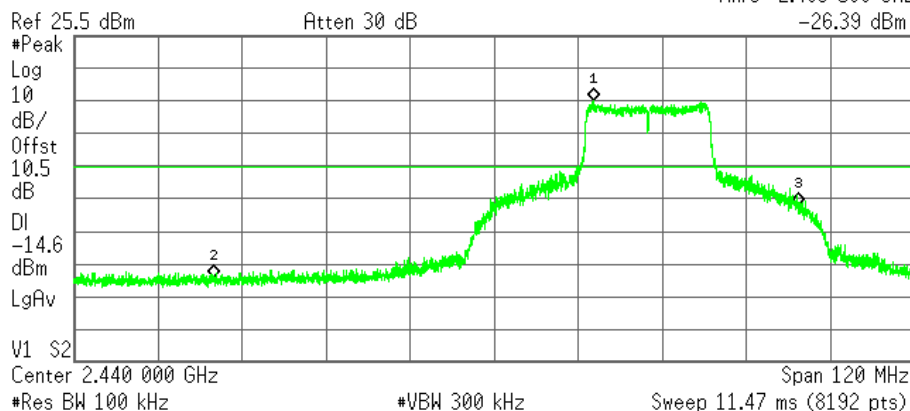


CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)

Agilent

R T

Mkr3 2.483 500 GHz
-26.39 dBm

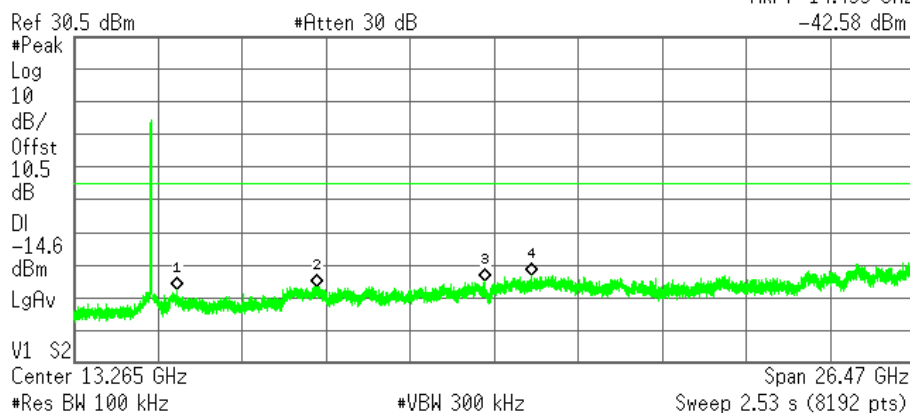


CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode / Chain 1)

Agilent

R T S

Mkr4 14.433 GHz
-42.58 dBm



7.7 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

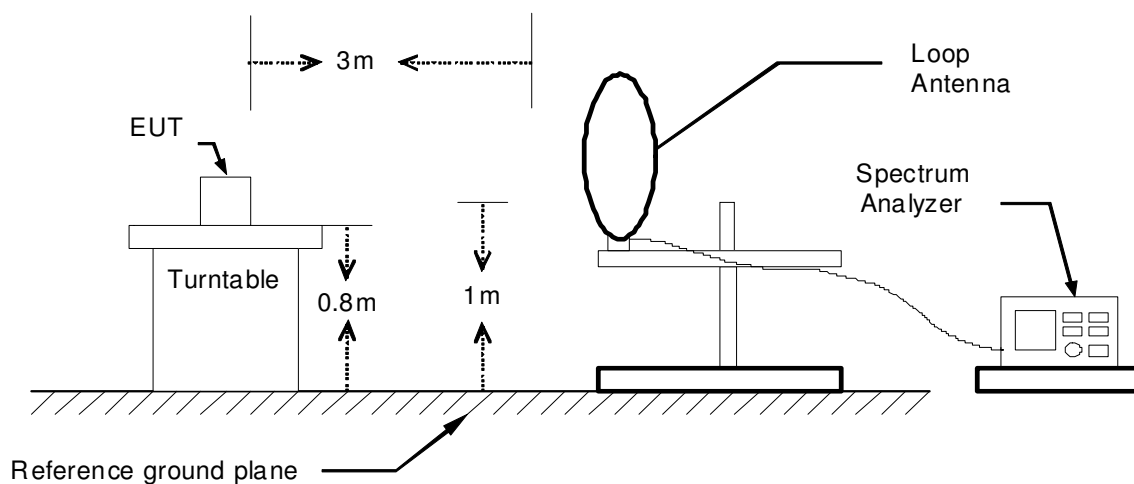
Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/12/2017
EMI Test Receiver	Rohde & Schwarz	ESCI	100221	04/26/2017
Bi-log Antenna	TESEQ	CBL 6112D	35403	07/02/2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-778	07/14/2017
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	11/25/2016
Horn Antenna	COM-POWER	AH-840	03077	12/08/2016
Pre-Amplifier	Agilent	8447D	2944A10052	07/12/2017
Pre-Amplifier	Agilent	8449B	3008A01916	07/12/2017
LOOP Antenna	COM-POWER	AL-130	121060	05/23/2017
Test S/W	E3.815206a			

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

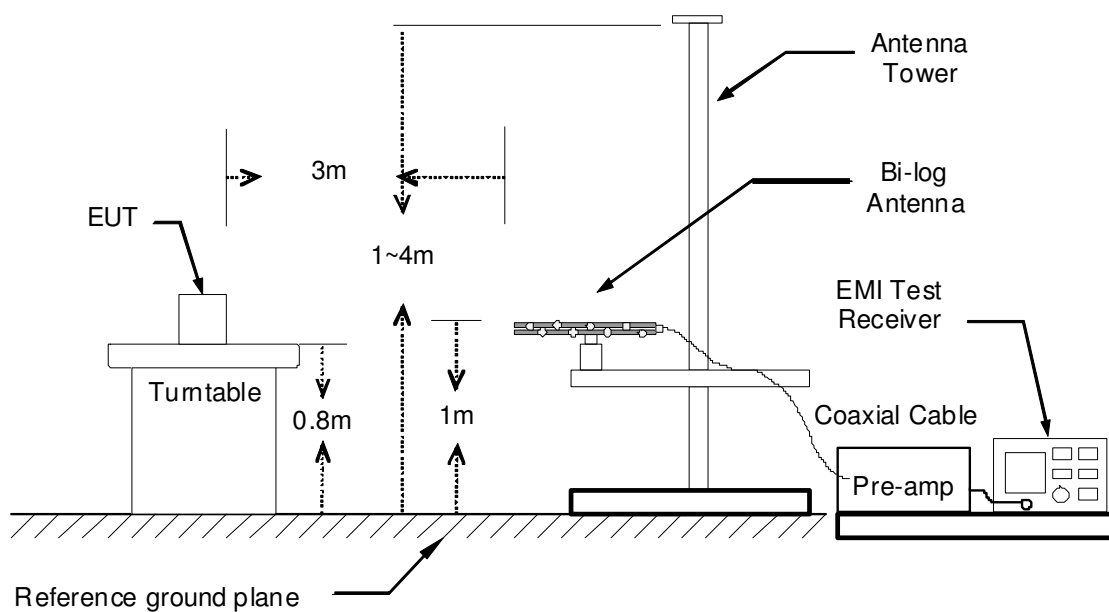
TEST SETUP

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

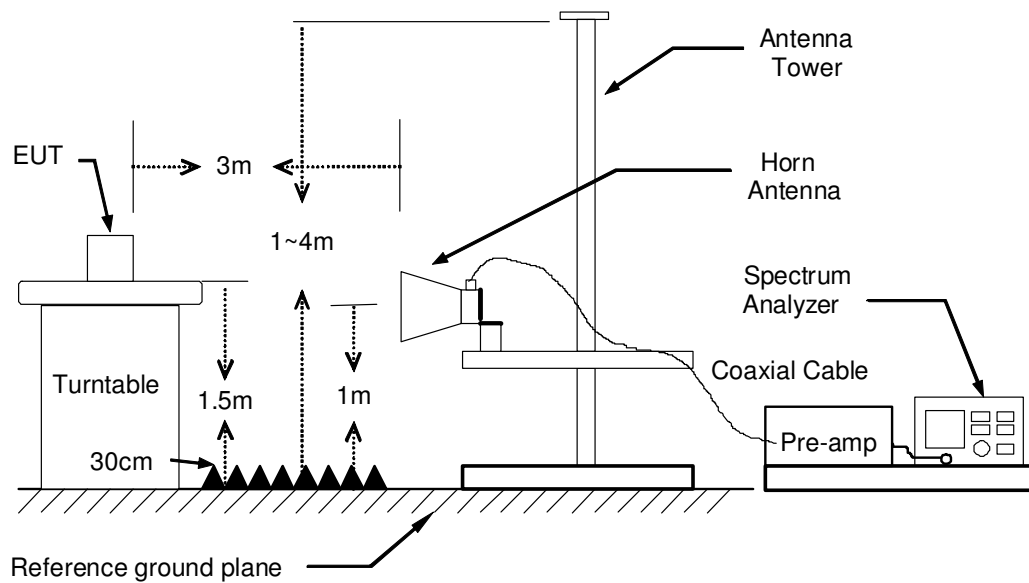
9kHz ~ 30MHz



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 and 1.5 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	Wireless Docsis Probe	Test By	Allen Liu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	Mode 1	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
239.52	52.08	-13.65	38.43	46.00	-7.57	314	150	Peak
299.66	52.14	-11.53	40.61	46.00	-5.39	270	100	Peak
359.80	51.57	-10.01	41.56	46.00	-4.44	182	100	Peak
419.94	50.46	-8.95	41.51	46.00	-4.49	65	100	Peak
600.36	52.10	-6.78	45.32	46.00	-0.68	247	150	QP
1000.00	49.74	-1.77	47.97	54.00	-6.03	305	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
53.28	54.50	-19.74	34.76	40.00	-5.24	201	100	QP
74.62	54.00	-20.20	33.80	40.00	-6.20	159	150	QP
106.63	54.94	-15.14	39.80	43.50	-3.70	1	100	Peak
140.58	54.96	-14.84	40.12	43.50	-3.38	344	100	Peak
600.36	47.20	-6.78	40.42	46.00	-5.58	236	200	QP
1000.00	50.65	-1.77	48.88	54.00	-5.12	335	100	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
3. Result (dBuV/m) = Reading (dBuV) + Correction Factor (dB/m)
4. Margin (dB) = Remark result (dBuV/m) - Quasi-peak limit (dBuV/m).

Above 1 GHz

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11b Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
1560.00	55.41	-5.85	49.56	74.00	-24.44	33	100	Peak
2782.00	50.41	-1.38	49.03	74.00	-24.97	278	100	Peak
3216.00	47.45	-0.18	47.27	74.00	-26.73	240	200	Peak
4824.00	47.18	5.24	52.42	74.00	-21.58	321	200	Peak
7236.00	37.48	12.39	49.87	74.00	-24.13	219	100	Peak
9624.00	36.79	14.51	51.30	74.00	-22.70	4	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
2308.00	53.17	-2.97	50.20	74.00	-23.80	225	100	Peak
2540.00	51.12	-2.07	49.05	74.00	-24.95	61	100	Peak
3216.00	45.85	-0.18	45.67	74.00	-28.33	174	200	Peak
4824.00	47.84	5.24	53.08	54.00	-0.92	360	152	Average
4824.00	47.09	5.24	52.33	74.00	-21.67	360	100	Peak
7236.00	33.50	12.39	45.89	54.00	-8.11	60	100	Average
7236.00	41.88	12.39	54.27	74.00	-19.73	60	100	Peak
9360.00	36.56	14.13	50.69	74.00	-23.31	1	200	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. 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.
4. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11b Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1560.00	57.29	-5.85	51.44	74.00	-22.56	298	100	Peak
2356.00	52.70	-2.77	49.93	74.00	-24.07	321	200	Peak
2656.00	50.96	-1.74	49.22	74.00	-24.78	334	100	Peak
3249.00	48.35	-0.09	48.26	74.00	-25.74	247	200	Peak
4875.00	46.79	5.38	52.17	74.00	-21.83	319	200	Peak
7020.00	37.40	12.25	49.65	74.00	-24.35	31	200	Peak
9672.00	37.42	14.59	52.01	74.00	-21.99	58	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1560.00	56.46	-5.85	50.61	74.00	-23.39	149	100	Peak
2372.00	55.25	-2.71	52.54	74.00	-21.46	30	100	Peak
2622.00	52.44	-1.84	50.60	74.00	-23.40	224	100	Peak
3249.00	45.95	-0.09	45.86	74.00	-28.14	164	200	Peak
4875.00	47.86	5.38	53.24	54.00	-0.76	1	140	Average
4875.00	47.08	5.38	52.46	74.00	-21.54	1	100	Peak
7308.00	39.80	12.44	52.24	74.00	-21.76	74	100	Peak
9744.00	37.80	14.72	52.52	74.00	-21.48	72	200	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11b Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1560.00	55.28	-5.85	49.43	74.00	-24.57	294	100	Peak
2368.00	53.88	-2.72	51.16	74.00	-22.84	177	100	Peak
2958.00	50.33	-0.87	49.46	74.00	-24.54	296	200	Peak
3282.00	48.89	0.00	48.89	74.00	-25.11	247	200	Peak
4923.00	45.43	5.50	50.93	74.00	-23.07	323	200	Peak
7776.00	36.90	12.86	49.76	74.00	-24.24	257	200	Peak
9924.00	36.22	15.04	51.26	74.00	-22.74	119	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1400.00	57.70	-6.72	50.98	74.00	-23.02	157	200	Peak
2376.00	54.78	-2.69	52.09	74.00	-21.91	32	100	Peak
2926.00	50.13	-0.96	49.17	74.00	-24.83	149	100	Peak
3282.00	47.06	0.00	47.06	74.00	-26.94	165	200	Peak
4923.00	47.54	5.50	53.04	54.00	-0.96	360	152	Average
4923.00	45.19	5.50	50.69	74.00	-23.31	360	100	Peak
7392.00	39.05	12.49	51.54	74.00	-22.46	43	100	Peak
9792.00	36.72	14.80	51.52	74.00	-22.48	199	100	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11g Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1560.00	56.09	-5.85	50.24	74.00	-23.76	291	200	Peak
2928.00	50.50	-0.96	49.54	74.00	-24.46	31	200	Peak
3216.00	47.43	-0.18	47.25	74.00	-26.75	243	200	Peak
4821.00	44.42	5.23	49.65	74.00	-24.35	292	200	Peak
7236.00	39.68	12.39	52.07	74.00	-21.93	42	200	Peak
10140.00	36.93	15.54	52.47	74.00	-21.53	112	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2308.00	54.10	-2.97	51.13	74.00	-22.87	41	100	Peak
2574.00	51.55	-1.98	49.57	74.00	-24.43	215	200	Peak
3399.00	44.58	0.31	44.89	74.00	-29.11	31	200	Peak
4821.00	46.67	5.23	51.90	74.00	-22.10	349	100	Peak
7236.00	33.80	12.39	46.19	54.00	-7.81	92	200	Average
7236.00	42.55	12.39	54.94	74.00	-19.06	92	200	Peak
9636.00	36.50	14.53	51.03	74.00	-22.97	107	200	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11g Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2370.00	45.60	-2.72	42.88	54.00	-11.12	136	100	Average
2370.00	55.42	-2.72	52.70	74.00	-21.30	136	100	Peak
2640.00	50.41	-1.79	48.62	74.00	-25.38	132	200	Peak
3399.00	42.67	0.31	42.98	74.00	-31.02	2	200	Peak
4875.00	46.47	5.38	51.85	74.00	-22.15	313	200	Peak
7308.00	39.17	12.44	51.61	74.00	-22.39	225	100	Peak
9384.00	36.80	14.16	50.96	74.00	-23.04	343	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2338.00	47.20	-2.84	44.36	54.00	-9.64	24	100	Average
2338.00	57.01	-2.84	54.17	74.00	-19.83	24	100	Peak
2524.00	52.59	-2.12	50.47	74.00	-23.53	22	100	Peak
4200.00	42.07	3.31	45.38	74.00	-28.62	209	200	Peak
4863.00	46.43	5.34	51.77	74.00	-22.23	356	100	Peak
7308.00	35.30	12.44	47.74	54.00	-6.26	264	100	Average
7308.00	46.51	12.44	58.95	74.00	-15.05	264	100	Peak
10116.00	36.18	15.47	51.65	74.00	-22.35	250	200	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11g Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
1560.00	55.31	-5.85	49.46	74.00	-24.54	297	100	Peak
2352.00	46.10	-2.79	43.31	54.00	-10.69	141	100	Average
2352.00	56.08	-2.79	53.29	74.00	-20.71	141	100	Peak
2978.00	49.93	-0.81	49.12	74.00	-24.88	88	200	Peak
3282.00	44.85	0.00	44.85	74.00	-29.15	252	200	Peak
4932.00	45.00	5.52	50.52	74.00	-23.48	317	200	Peak
7380.00	38.26	12.48	50.74	74.00	-23.26	85	200	Peak
9864.00	35.90	14.93	50.83	74.00	-23.17	226	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
1560.00	55.90	-5.85	50.05	74.00	-23.95	286	200	Peak
2364.00	47.60	-2.74	44.86	54.00	-9.14	28	100	Average
2364.00	57.78	-2.74	55.04	74.00	-18.96	28	100	Peak
2964.00	50.01	-0.85	49.16	74.00	-24.84	321	100	Peak
3399.00	45.43	0.31	45.74	74.00	-28.26	37	200	Peak
4917.00	44.52	5.48	50.00	74.00	-24.00	165	200	Peak
7392.00	32.10	12.49	44.59	54.00	-9.41	267	100	Average
7392.00	40.99	12.49	53.48	74.00	-20.52	267	100	Peak
9624.00	36.60	14.51	51.11	74.00	-22.89	9	200	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2294.00	52.15	-3.02	49.13	74.00	-24.87	107	100	Peak
2714.00	50.44	-1.57	48.87	74.00	-25.13	145	200	Peak
3216.00	47.81	-0.18	47.63	74.00	-26.37	242	200	Peak
4827.00	43.43	5.25	48.68	74.00	-25.32	312	200	Peak
7248.00	37.37	12.40	49.77	74.00	-24.23	90	100	Peak
9492.00	36.94	14.28	51.22	74.00	-22.78	196	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2306.00	53.96	-2.97	50.99	74.00	-23.01	60	100	Peak
2562.00	52.39	-2.01	50.38	74.00	-23.62	4	200	Peak
4200.00	42.36	3.31	45.67	74.00	-28.33	169	100	Peak
4824.00	45.64	5.24	50.88	74.00	-23.12	171	100	Peak
7236.00	39.49	12.39	51.88	74.00	-22.12	182	200	Peak
9672.00	36.31	14.59	50.90	74.00	-23.10	360	100	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	42.30	-2.63	39.67	54.00	-14.33	319	200	Average
2390.00	59.61	-2.63	56.98	74.00	-17.02	319	200	Peak
2484.00	51.17	-2.25	48.92	74.00	-25.08	186	200	Peak
3249.00	44.98	-0.09	44.89	74.00	-29.11	250	200	Peak
4878.00	46.51	5.38	51.89	74.00	-22.11	318	200	Peak
7320.00	38.56	12.44	51.00	74.00	-23.00	42	100	Peak
10068.00	36.21	15.35	51.56	74.00	-22.44	335	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	46.50	-2.63	43.87	54.00	-10.13	256	172	Average
2390.00	64.02	-2.63	61.39	74.00	-12.61	256	200	Peak
2484.00	43.20	-2.25	40.95	54.00	-13.05	44	200	Average
2484.00	55.76	-2.25	53.51	74.00	-20.49	44	200	Peak
3249.00	46.05	-0.09	45.96	74.00	-28.04	182	200	Peak
4881.00	46.63	5.39	52.02	74.00	-21.98	359	100	Peak
7320.00	33.20	12.44	45.64	54.00	-8.36	79	100	Average
7320.00	42.51	12.44	54.95	74.00	-19.05	79	100	Peak
9840.00	36.36	14.89	51.25	74.00	-22.75	88	100	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. 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.
4. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	Wireless Docsis Probe	Test By	Rex Chiu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/14
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
1560.00	56.47	-5.85	50.62	74.00	-23.38	295	100	Peak
2344.00	45.90	-2.82	43.08	54.00	-10.92	141	100	Average
2344.00	55.83	-2.82	53.01	74.00	-20.99	141	100	Peak
2996.00	49.81	-0.76	49.05	74.00	-24.95	144	100	Peak
3282.00	46.03	0.00	46.03	74.00	-27.97	246	200	Peak
4935.00	44.11	5.53	49.64	74.00	-24.36	316	200	Peak
7392.00	37.58	12.49	50.07	74.00	-23.93	89	200	Peak
9348.00	37.38	14.11	51.49	74.00	-22.51	356	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
2324.00	47.60	-2.90	44.70	54.00	-9.30	250	100	Average
2324.00	57.58	-2.90	54.68	74.00	-19.32	250	100	Peak
2960.00	50.29	-0.87	49.42	74.00	-24.58	302	200	Peak
3399.00	44.76	0.31	45.07	74.00	-28.93	33	200	Peak
4917.00	46.99	5.48	52.47	74.00	-21.53	165	100	Peak
7380.00	33.10	12.48	45.58	54.00	-8.42	65	200	Average
7380.00	41.88	12.48	54.36	74.00	-19.64	65	200	Peak
9840.00	36.91	14.89	51.80	74.00	-22.20	343	100	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. 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.
4. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(PK)
Remark AVG = Result(AV) - Limit(AV)

Restricted Band Edges

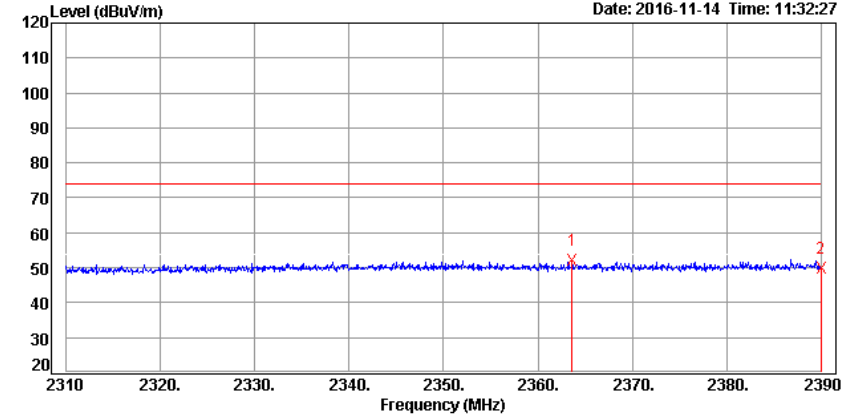
Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11b Mode)

Data: 38

Date: 2016-11-14 Time: 11:32:27



Trace:

Freq. MHz	Reading dBUV	C.F. dB/m	Result dBUV/m	Limit dBUV/m	Margin dB	Azimuth deg	Height cm	Remark
2363.60	54.99	-2.74	52.25	74.00	-21.75			Peak
2390.00	52.54	-2.63	49.91	74.00	-24.09			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

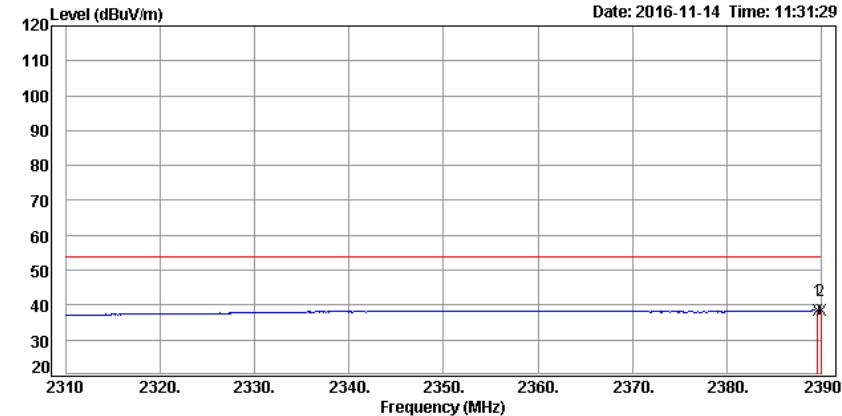
Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11b Mode)

Data: 37

Date: 2016-11-14 Time: 11:31:29



Trace:

Freq. MHz	Reading dBUV	C.F. dB/m	Result dBUV/m	Limit dBUV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.68	41.13	-2.64	38.49	54.00	-15.51			Average
2390.00	41.11	-2.63	38.48	54.00	-15.52			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

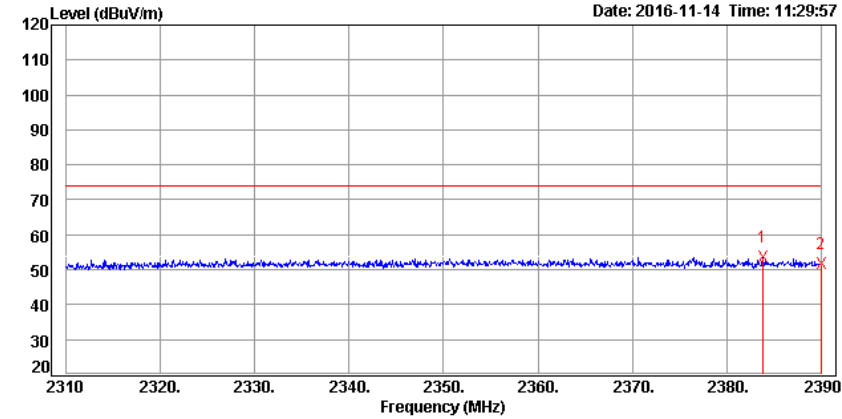
Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11b Mode)

Data: 36

Date: 2016-11-14 Time: 11:29:57



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2383.84	56.28	-2.66	53.62	74.00	-20.38			Peak
2390.00	54.27	-2.63	51.64	74.00	-22.36			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

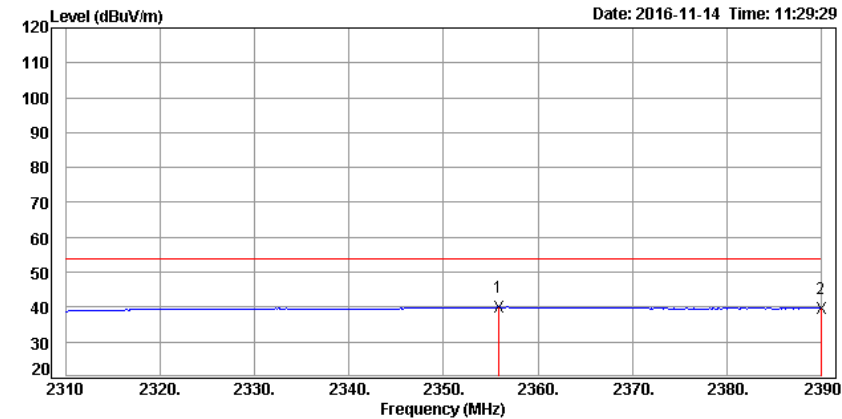
Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11b Mode)

Data: 35

Date: 2016-11-14 Time: 11:29:29



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2355.84	42.77	-2.77	40.00	54.00	-14.00			Average
2390.00	42.40	-2.63	39.77	54.00	-14.23			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

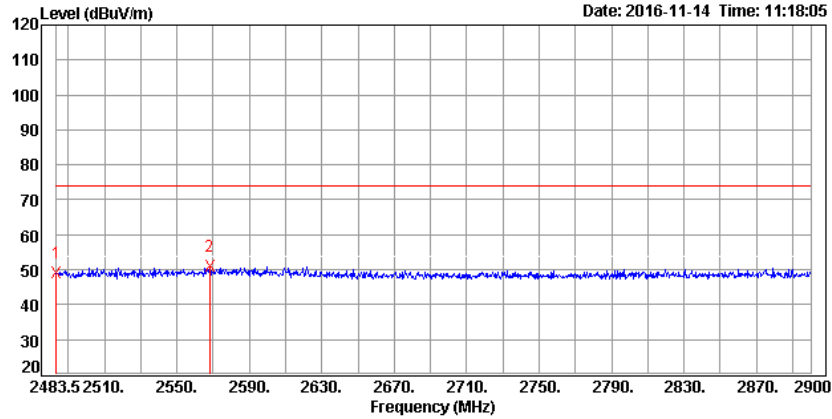
Detector Mode: Peak

Polarity: Horizontal

CH High (IEEE 802.11b Mode)

Data: 34

Date: 2016-11-14 Time: 11:18:05



Trace:

Freq. MHz	Reading dBUV	C.F. dB/m	Result dBUV/m	Limit dBUV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	51.23	-2.26	48.97	74.00	-25.03			Peak
2568.05	53.09	-1.99	51.10	74.00	-22.90			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

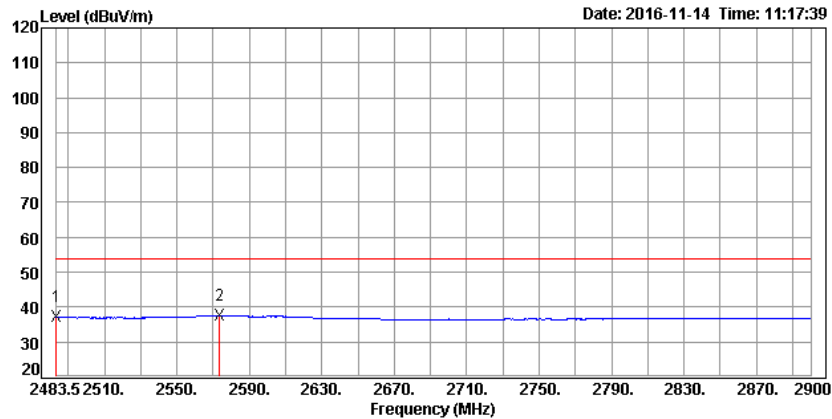
Detector Mode: Average

Polarity: Horizontal

CH High (IEEE 802.11b Mode)

Data: 33

Date: 2016-11-14 Time: 11:17:39



Trace:

Freq. MHz	Reading dBUV	C.F. dB/m	Result dBUV/m	Limit dBUV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	39.46	-2.26	37.20	54.00	-16.80			Average
2573.46	39.58	-1.98	37.60	54.00	-16.40			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

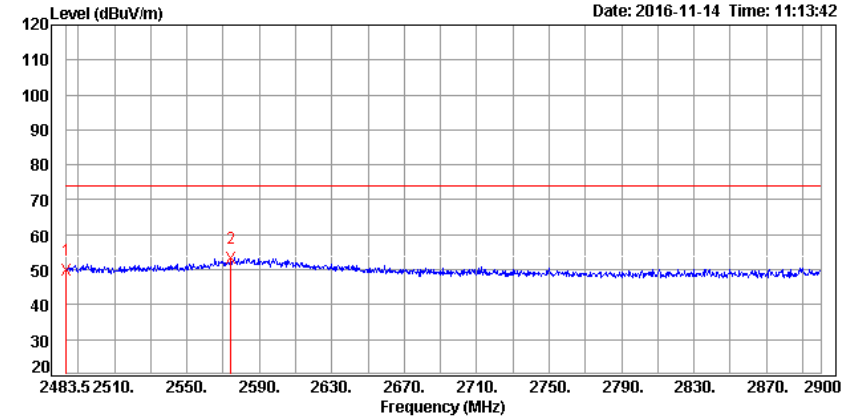
Detector Mode: Peak

Polarity: Vertical

CH High (IEEE 802.11b Mode)

Data: 32

Date: 2016-11-14 Time: 11:13:42



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	52.28	-2.26	50.02	74.00	-23.98			Peak
2574.30	55.43	-1.98	53.45	74.00	-20.55			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

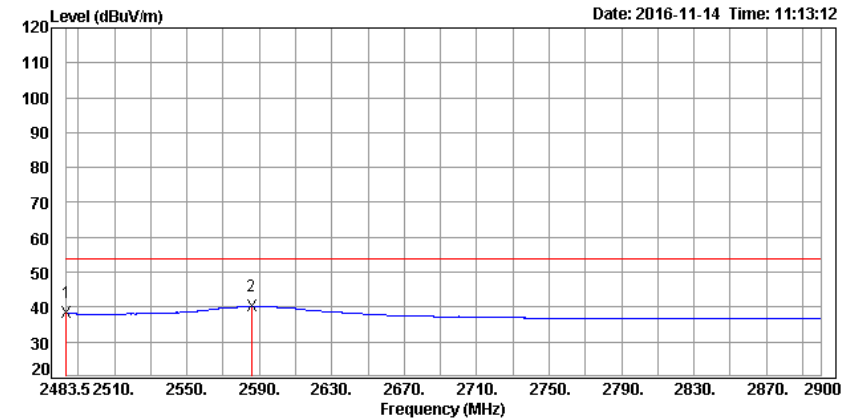
Detector Mode: Average

Polarity: Vertical

CH High (IEEE 802.11b Mode)

Data: 31

Date: 2016-11-14 Time: 11:13:12



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	40.75	-2.26	38.49	54.00	-15.51			Average
2585.54	42.26	-1.94	40.32	54.00	-13.68			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

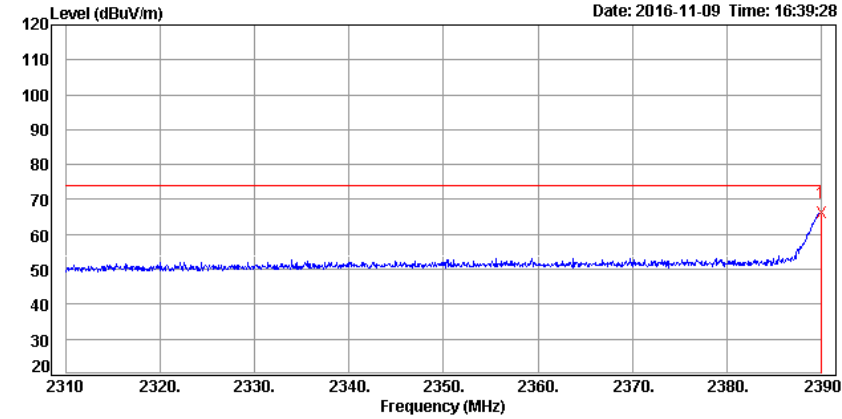
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11g Mode)

Data: 10



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	68.80	-2.63	66.17	74.00	-7.83			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

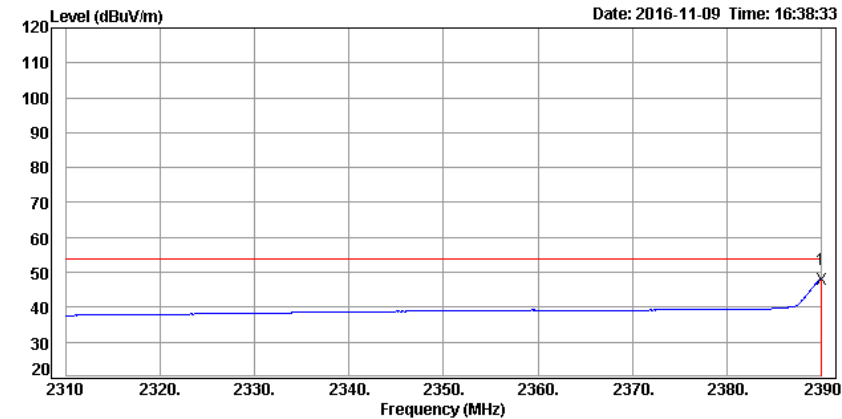
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11g Mode)

Data: 9



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	50.75	-2.63	48.12	54.00	-5.88			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

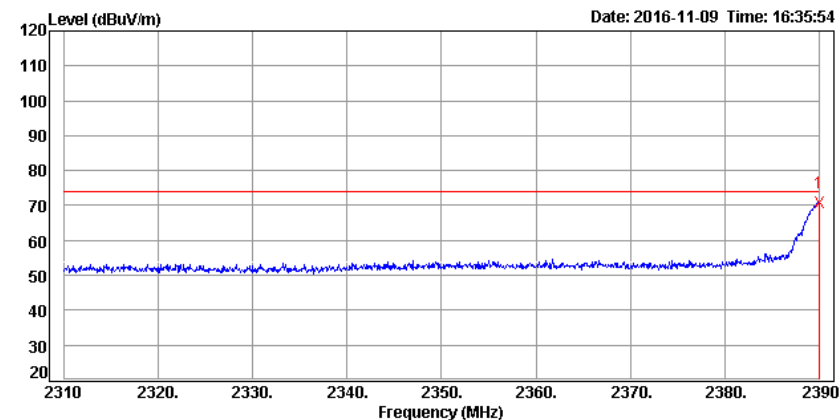
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11g Mode)

Data: 8



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	73.44	-2.63	70.81	74.00	-3.19			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

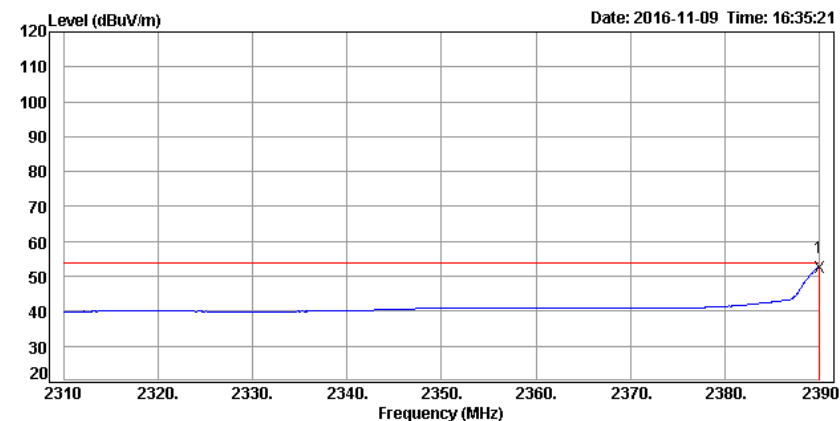
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11g Mode)

Data: 7



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	55.27	-2.63	52.64	54.00	-1.36			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

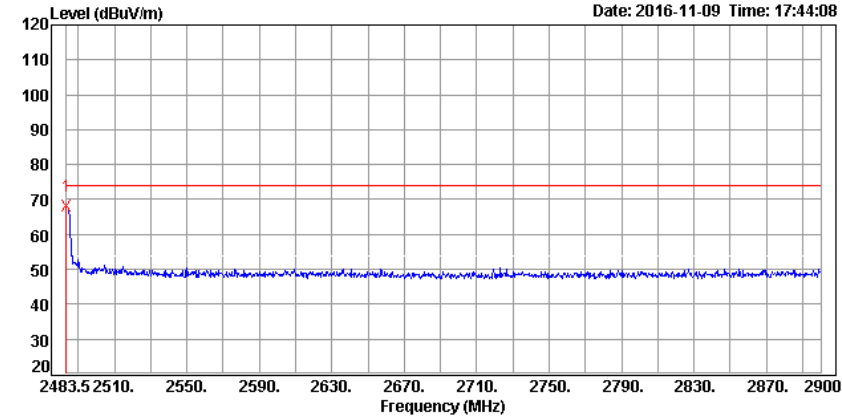
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH High (IEEE 802.11g Mode)

Data: 22



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	70.40	-2.26	68.14	74.00	-5.86			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

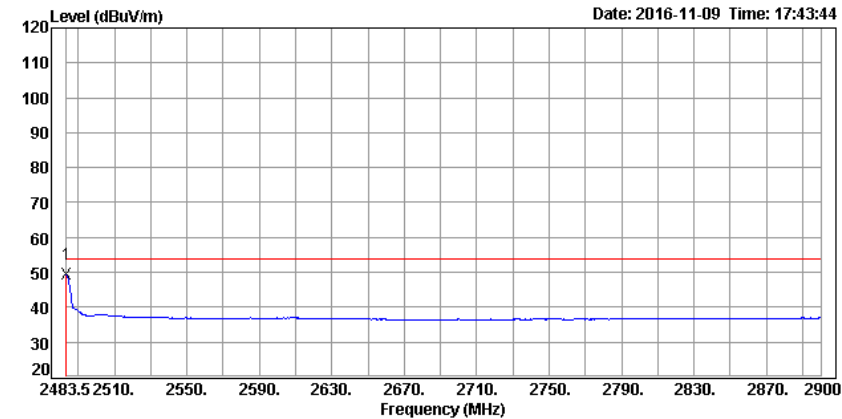
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH High (IEEE 802.11g Mode)

Data: 21



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	51.64	-2.26	49.38	54.00	-4.62			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

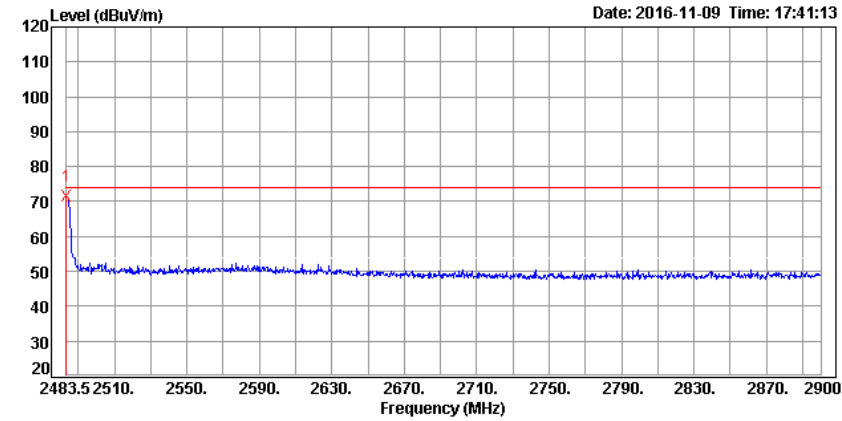
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH High (IEEE 802.11g Mode)

Data: 20



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	73.79	-2.26	71.53	74.00	-2.47			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

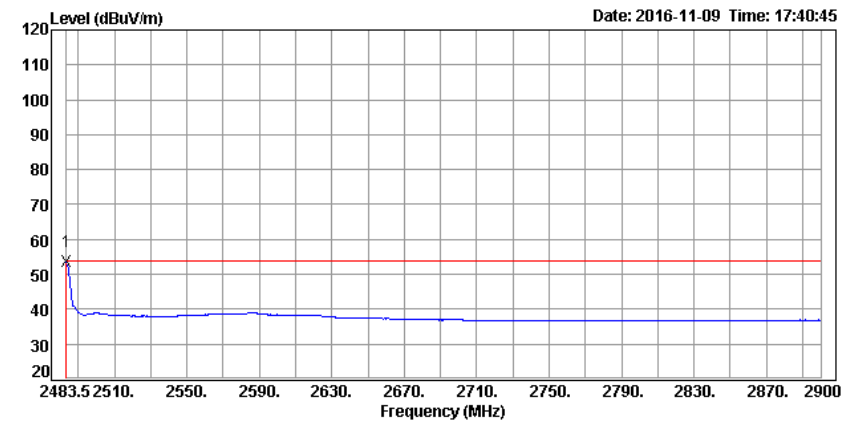
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH High (IEEE 802.11g Mode)

Data: 19



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	55.87	-2.26	53.61	54.00	-0.39			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

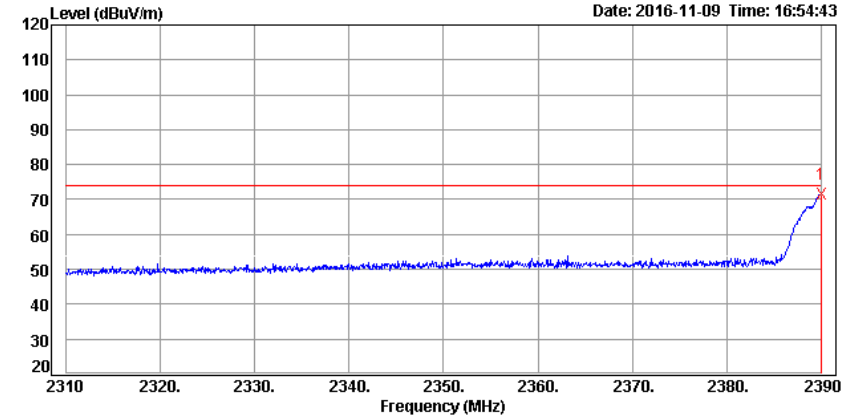
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 14



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	74.00	-2.63	71.37	74.00	-2.63			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

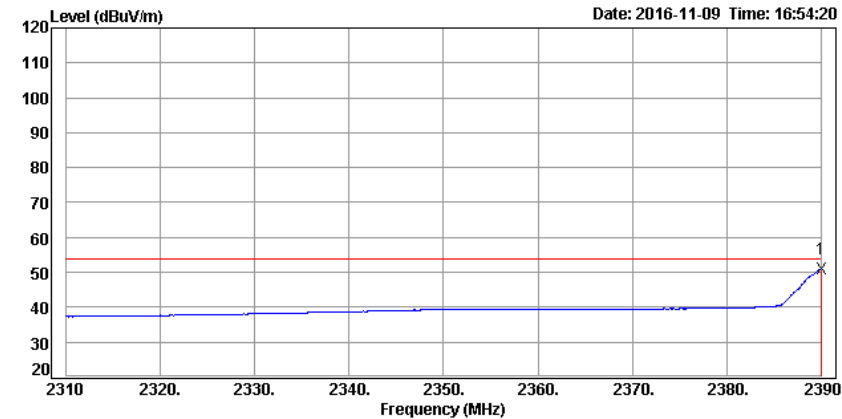
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 13



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	53.57	-2.63	50.94	54.00	-3.06			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

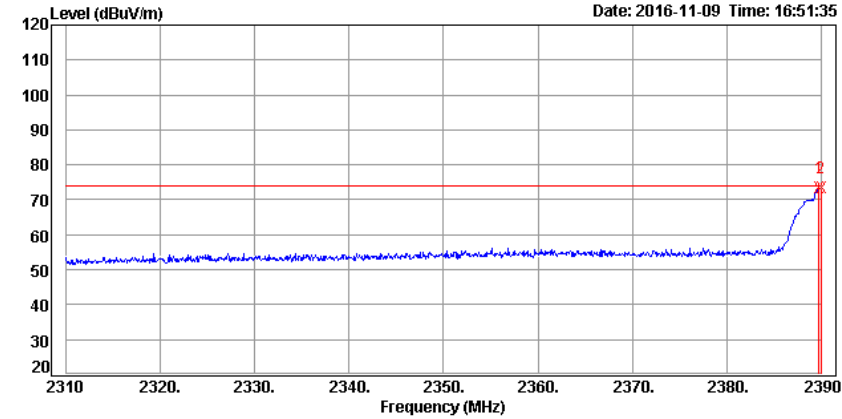
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 12



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.84	76.10	-2.64	73.46	74.00	-0.54			Peak
2390.00	76.02	-2.63	73.39	74.00	-0.61			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

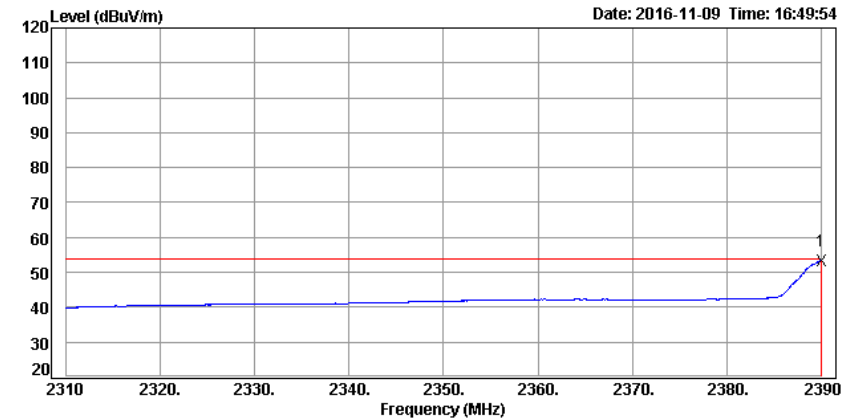
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 11



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	56.02	-2.63	53.39	54.00	-0.61			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

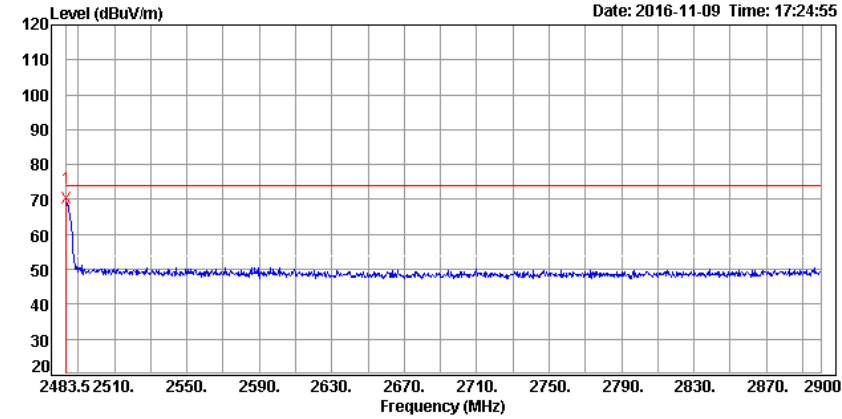
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH High (IEEE 802.11gn HT20 MCS0 Mode)

Data: 18



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	72.50	-2.26	70.24	74.00	-3.76			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

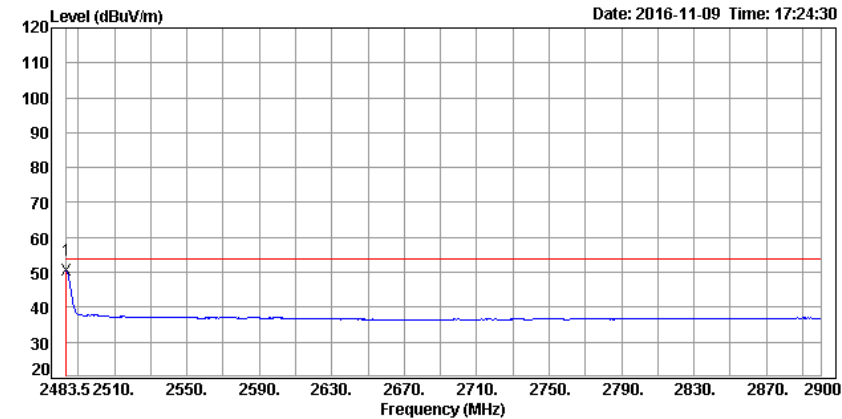
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH High (IEEE 802.11gn HT20 MCS0 Mode)

Data: 17



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	52.75	-2.26	50.49	54.00	-3.51			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

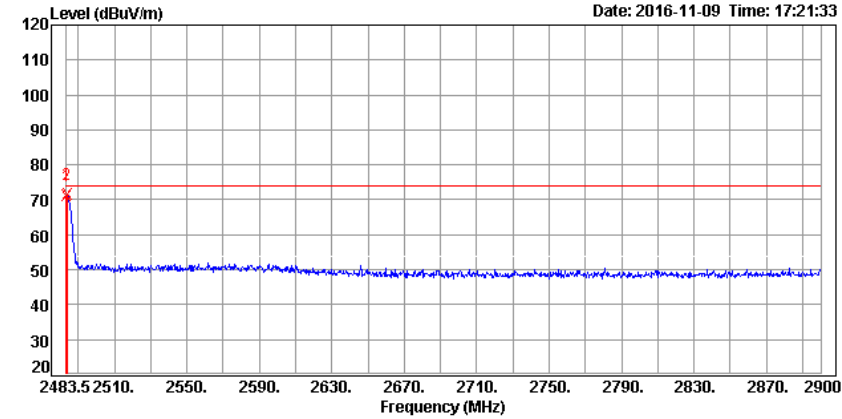
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH High (IEEE 802.11gn HT20 MCS0 Mode)

Data: 16



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	73.59	-2.26	71.33	74.00	-2.67			Peak
2483.92	73.84	-2.25	71.59	74.00	-2.41			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

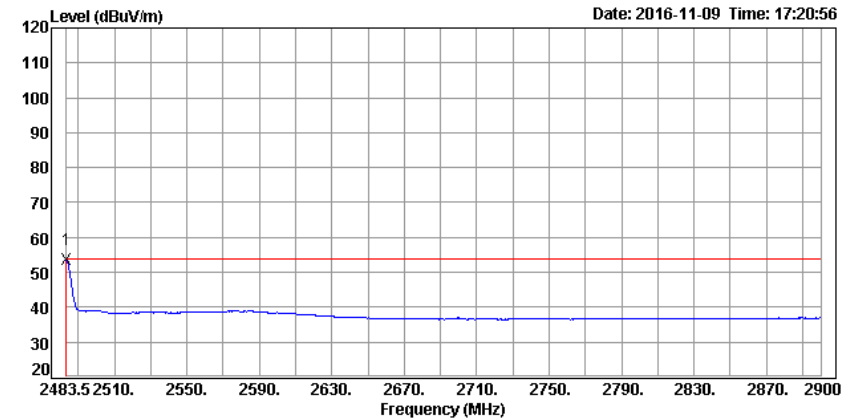
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH High (IEEE 802.11gn HT20 MCS0 Mode)

Data: 15



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	55.74	-2.26	53.48	54.00	-0.52			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

7.8 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 μ H/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.

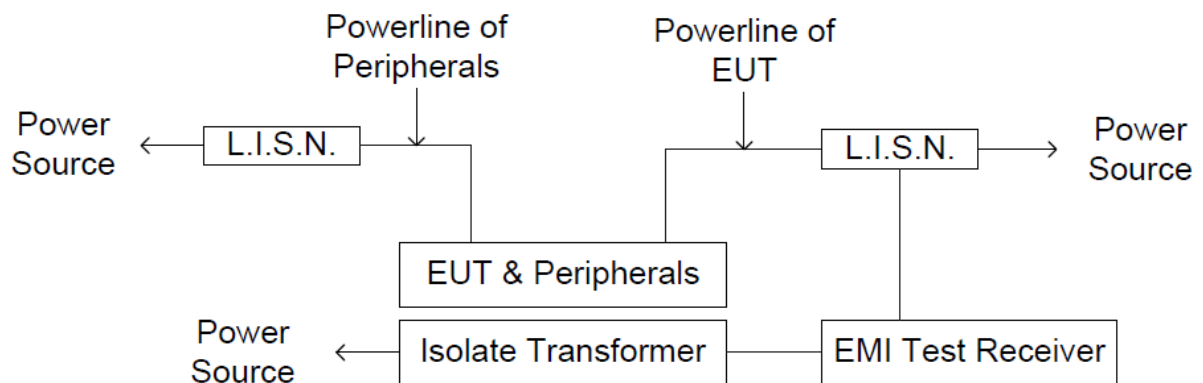
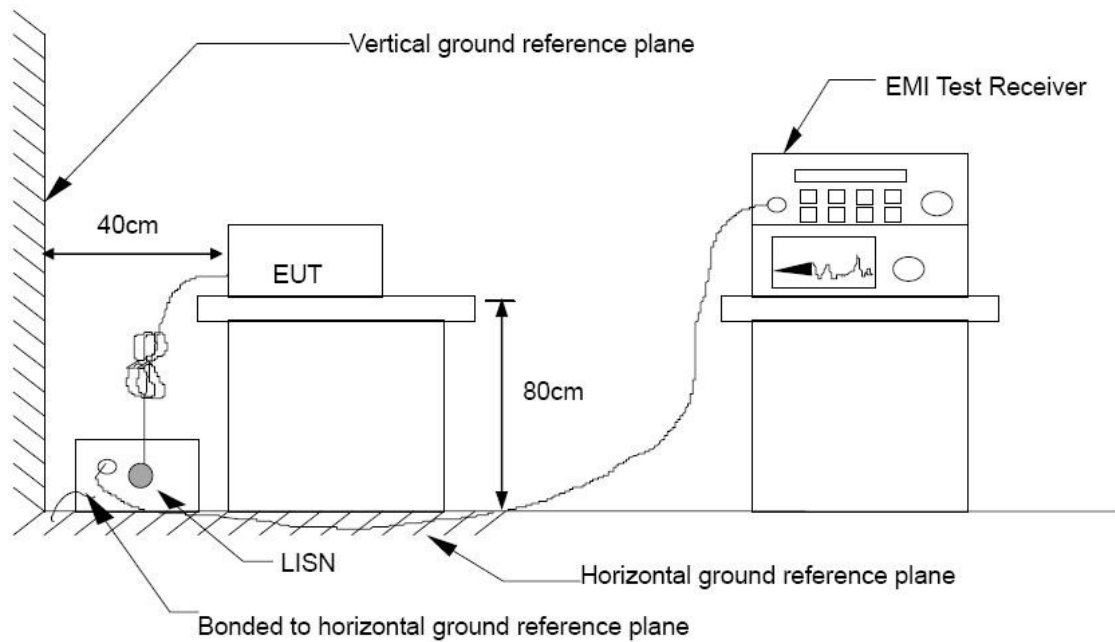
Frequency Range (MHz)	Conducted Limit (dB μ v)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	Schwarzbeck	NSLK 8127	8127465	07/28/2017
L.I.S.N	Schwarzbeck	NSLK 8127	8127473	03/10/2017
EMI Test Receiver	Rohde & Schwarz	ESHS 30	838550/003	10/25/2017
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100111	06/27/2017
Test S/W	E3.815206a			

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 C63.10:2013.

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.

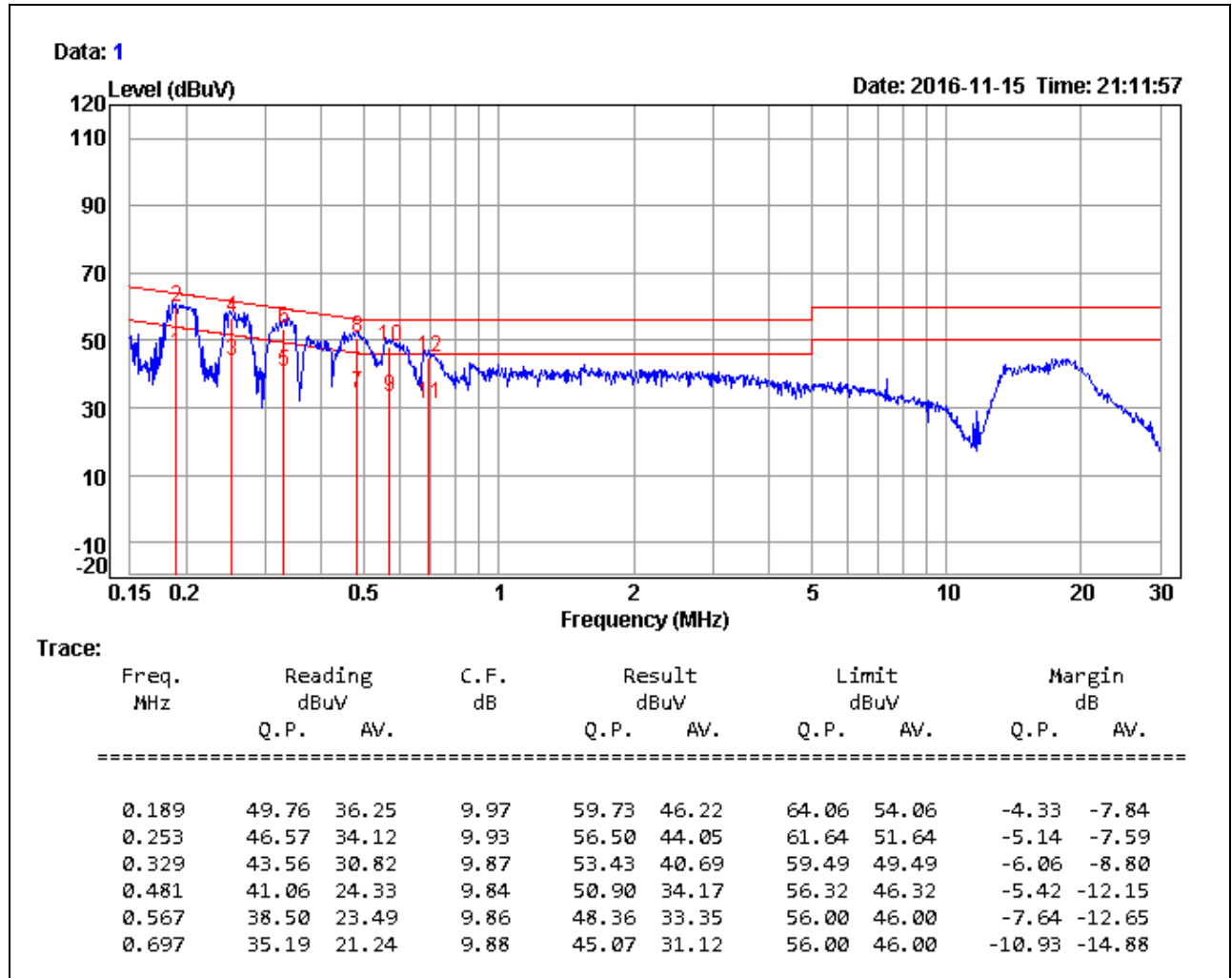
The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis 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	Wireless Docsis Probe	Test By	Allen Liu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	Mode 1	Temp. & Humidity	22°C, 62%

LINE

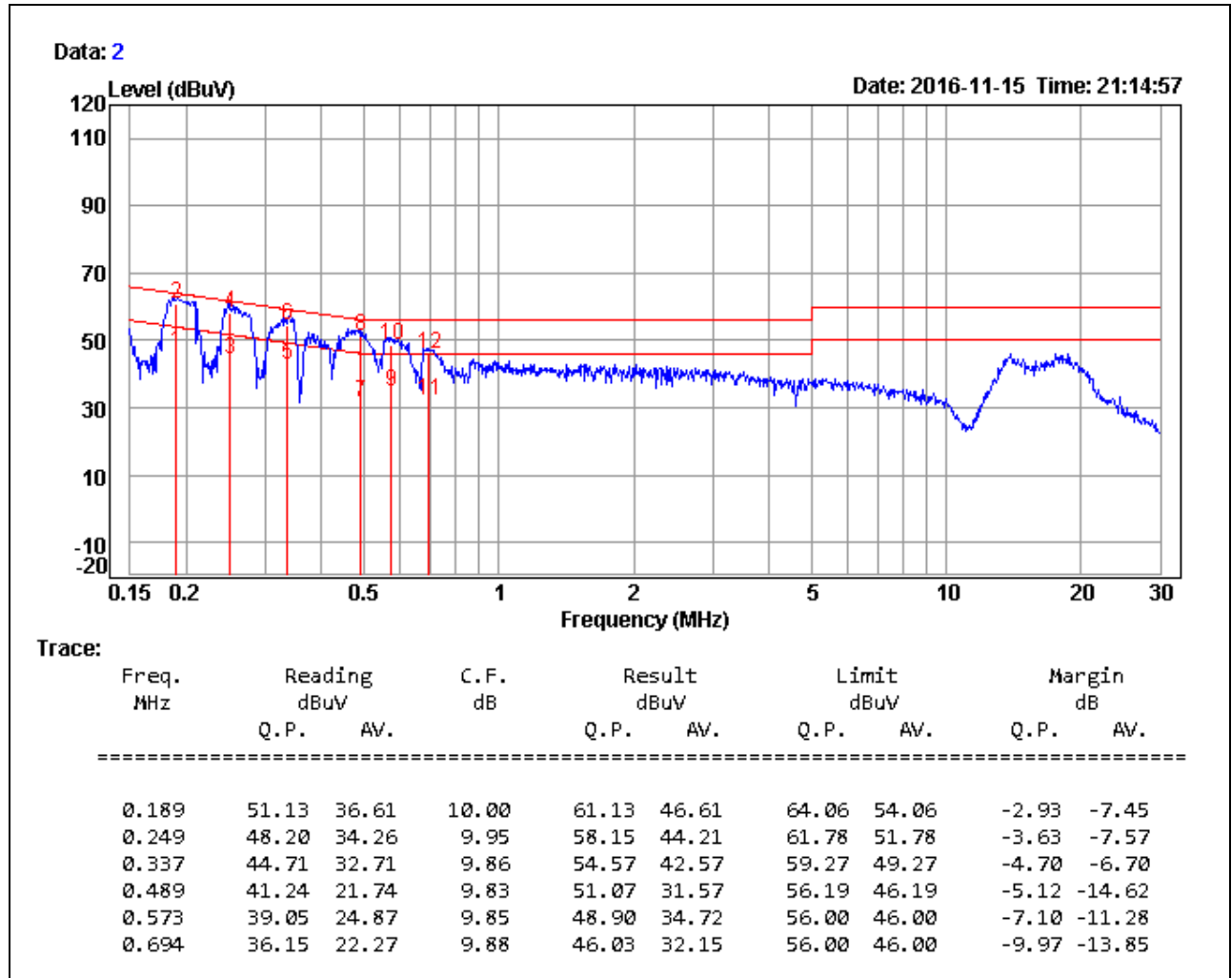


Remark:

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

Product Name	Wireless Docsis Probe	Test By	Allen Liu
Test Model	CGN-DP2 (CCC)	Test Date	2016/11/15
Test Mode	Mode 1	Temp. & Humidity	22°C, 62%

NEUTRAL



Remark:

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