



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

For

Wireless-N ADSL2+/Fibre Broadband Router

Model : BiPAC 7800VNOX

**Data Applies To : Please refer to section 2
(altogether 21 series models)**

Trade Name : BILLION ; BEC

Issued for

Billion Electric Co., Ltd.

**8F, No.192, Sec. 2, Zhongxing Rd., Xindian Dist.,
New Taipei City 231, Taiwan (R.O.C.)**

Issued by

**Compliance Certification Services Inc.
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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	03/20/2013	Initial Issue	All Page 139	Gloria Chang
01	04/03/2013	Revised the difference of the model	P.7 ~ P.10	Gloria Chang
02	04/23/2013	Deleted MPE & Test Photos and revised the difference of the model	All Page 133 , P.7, P.10	Gloria Chang



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1. TEST REPORT CERTIFICATION

Applicant : Billion Electric Co., Ltd.
Address : 8F, No.192, Sec. 2, Zhongxing Rd., Xindian Dist.,
 New Taipei City 231, Taiwan (R.O.C.)
Equipment Under Test : Wireless-N ADSL2+/Fibre Broadband Router
Model : BiPAC 7800VNOX
Data Applies To : Please refer to section 2 (altogether 21 series models)
Trade Name : BILLION ; BEC
Tested Date : January 28 ~ March 12, 2013

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:

Sb. Lu
Sr. Engineer

Reviewed by:

Gundam Lin
Sr. Engineer



2. EUT DESCRIPTION

Product Name	Wireless-N ADSL2+/Fibre Broadband Router
Model Number	BiPAC 7800VNOX
Data Applies To	Please refer to section 2 (altogether 21 series models)
Identify Number	T130226S03
Received Date	January 28, 2013
Frequency Range	IEEE 802.11b/g, 802.11n HT20 : 2412MHz ~ 2462MHz IEEE 802.11n HT40 : 2422MHz ~ 2452MHz
Transmit Power	IEEE 802.11b : 19.04dBm (0.0802W) (Chain 0) IEEE 802.11b : 19.87dBm (0.0971W) (Chain 1) IEEE 802.11g : 23.94dBm (0.2477W) (Chain 0) IEEE 802.11g : 25.82dBm (0.3819W) (Chain 1) IEEE 802.11n HT20 : 28.29dBm (0.6738W) IEEE 802.11n HT40 : 24.52dBm (0.2828W)
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 : 144.4, 130, 117, 115.6, 104, 86.7, 78, 72.2, 65, 58.5, 57.8, 52, 43.3, 39, 28.9, 26, 21.7, 19.5, 14.4, 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, 13.5 Mbps



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)
Frequency Selection	by software / firmware
Antenna Type	Dipole Antenna × 2 : Antenna 0 (Chain 0), Antenna Gain 4.48 dBi Antenna 1 (Chain 1), Antenna Gain 4.48 dBi
Power Rating	12Vdc
Test Voltage	120Vac, 60Hz
DC Power Cable Type	Non-shielded cable 1.5m (Non-detachable)
I/O Port	ADSL Port × 1, Line Port × 1, Telephone Port × 2, LAN Port × 4, Power Port × 1, USB Port × 1

Power Adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	EGB	PAW018A12UL	100-240Vac, 50/60Hz, 0.5A	12Vdc, 1.5A



The difference of the model :

Model Difference Item	BiPAC 7800VNOX	BiPAC 7800NX	BiPAC 7800N R2	BiPAC 7800NXL	BiPAC 7800VNPX
External Feature	Detachable- antenna	Detachable- antenna, w/o VoIP	Detachable -antenna, w/o VoIP & USB	Detachable -antenna, w/o VoIP	Detachable -antenna
Color	Upper/ lower casing: gray/ silver.	Upper/ lower casing: gray/ silver.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.
Housing Drawing	D3-1	D3-1	D3-1	D3-1	D3-1
Support WiFi 2.4G					
Support WiFi 5G					
Support VoIP					
NAND Flash					
USB Host					
Circuits Design					
Major Componet location					
VPN					
Power Adaptor	DC12V/ 1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/ 1.5A	DC12V/ 1.5A
Trade Name	BILLION				

Remark : "O" means within those functions ; "X" means without those functions.



Model Difference Item	BiPAC 7801VNP	BiPAC 7801VNPX	BiPAC 6800VNPX	BiPAC 6800VNP	BiPAC 6801VNPX	BiPAC 6801VNP
External Feature	Detachable -antenna, w / 1 port FXS+FXO, w/o USB	Detachable -antenna, w / 1 port FXS+FXO	Detachable -antenna, w/o DSL	Detachable -antenna, w/o DSL& USB	Detachable -antenna, w / 1 port FXS+FXO, w/o DSL	Detachable -antenna, w / 1 port FXS+FXO, w/o DSL & USB
Color	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.
Housing Drawing	D3-1	D3-1	D3-1	D3-1	D3-1	D3-1
Support WiFi 2.4G						
Support WiFi 5G						
Support VoIP						
NAND Flash						
USB Host						
Circuits Design						
Major Componet location						
VPN						
Power Adaptor	DC12V/ 1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/1.5A
Trade Name	BILLION					
<i>Remark : "O" means within those functions ; "X" means without those functions.</i>						



Model Difference Item	BEC 7800VNOX	BEC 7800VNPX	BEC 7801VNP	BEC 7801VNPX	BEC 6800VNPX	BEC 6800VNP
External Feature	Detachable -antenna	Detachable -antenna	Detachable -antenna, w / 1 port FXS+FXO, w/o USB	Detachable -antenna, w / 1 port FXS+FXO	Detachable -antenna, w/o DSL	Detachable -antenna, w/o DSL & USB
Color	Upper/ lower casing: gray/ silver.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.
Housing Drawing	D3-1	D3-1	D3-1	D3-1	D3-1	D3-1
Support WiFi 2.4G						
Support WiFi 5G						
Support VoIP						
NAND Flash						
USB Host						
Circuits Design						
Major Componet location						
VPN						
Power Adaptor	DC12V/ 1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/1.5A
Trade Name	BEC					
<i>Remark : "O" means within those functions ; "X" means without those functions.</i>						



Model Difference Item	BEC 6801VNPX	BEC 6801VNP	BEC 7800NX	BEC 7800NXL	BEC 7800N R2
External Feature	Detachable- antenna, w / 1 port FXS+FXO, w/o DSL	Detachable- antenna, w / 1 port FXS+FXO, w/o DSL & USB	Detachable -antenna, w/o VoIP	Detachable- antenna, w/o VoIP	Detachable -antenna, w/o VoIP & USB
Color	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.	Upper/ lower casing: gray/ silver.	Upper/ lower casing: blue/ white.	Upper/ lower casing: blue/ white.
Housing Drawing	D3-1	D3-1	D3-1	D3-1	D3-1
Support WiFi 2.4G					
Support WiFi 5G					
Support VoIP					
NAND Flash					
USB Host					
Circuits Design					
Major Componet location					
VPN					
Power Adaptor	DC12V/ 1.5A	DC12V/ 1.5A	DC12V/1.5A	DC12V/ 1.5A	DC12V/1.5A
Trade Name	BEC				

Remark : "O" means within those functions ; "X" means without those functions.

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. The models BiPAC 7800VNOX was considered the main model for testing.
4. This submittal(s) (test report) is intended for FCC ID: QI3BIL-7800VNOX filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. DESCRIPTION OF TEST MODES

The EUT is an 802.11n MIMO transceiver in Wireless-N ADSL2+/Fibre Broadband Router form factor.

IEEE 802.11 b/g mode : Chain 0 or Chain 1 can be use as transmitter.

IEEE 802.11n HT20/HT40 : Chain 0 / Ant 0 & Chain 1/ Ant 1 two transmitter.

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

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
	Conducted Emission	Normal Operating

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 : 11Mbps 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, 15.247, KDB558074 and KDB662911.

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
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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>



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.	FCC ID
1	Notebook PC	HP	ProBook 4421s	CNF03242PJ	DoC
2	Notebook PC	HP	ProBook 4421s	CNF03242PM	DoC
3	ADSL iDSLAM	TECOM	M801	HIJ00040	---
4	Dongle	Huawei	E353	---	---
5	Switch Hub	ASUS	GX1008B	90-Q872AN1N0NAM A0-88QSA1003522	---
6	Telephone	Sweetone	RS-802HF	0401018239	DoC
7	Telephone	Sweetone	RS-802HF	0401018237	DoC

No.	Power & Signal Cable Description
1	Non-shielded RJ-45 cable, 10m × 1
2	Non-shielded RJ-45 cable, 1m × 3
3	Non-shielded RJ-11 cable, 10m × 2
4	Non-shielded RJ-11 cable, 1m × 2

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. NB set fixed ip, 192.168.1.x
3. In MS-DOS : telnet 192.168.1.254
4. login: admin
5. password: admin
6. key in sh
7. key in command

```

wl -i wl0 pkteng_stop tx
wl -i wl0 down
wl -i wl0 country ALL
wl -i wl0 mpc 0
wl -i wl0 phy_watchdog 0
wl -i wl0 wsec 0

```



```
wl -i wl0 ampdu 1
wl -i wl0 frameburst 1
wl -i wl0 band xx      #a=5G,b=2.4G
wl -i wl0 interference 0
wl -i wl0 bi 65535
wl -i wl0 join ss imode infra
wl -i wl0 mimo_bw_cap 1
wl -i wl0 mimo_txbw xx  # xx=>2=20MHz,4=40MHz
wl -i wl0 chanspec xx  # xx=>1~13
wl -i wl0 txchain 2    #ant0 =>txchain 1,ant1 =>txchain 2,ant0+1 =>txchain 3
wl -i wl0 up
wl -i wl0 nrate -r xx  #b/g=>r xx,n=>1TX= mcs 0~7,2TX= mcs 8~15
wl -i wl0 phy_forcecal 1
wl -i wl0 ssid ""
wl -i wl0 pkteng_start 00:22:33:44:55:66 tx 50 1120 0
wl -i wl0 txpwr1 -o -q xx  # xx=>0~80
```

⇒ Power control mode

```
Output Power: IEEE 802.11b Channel Low (2412MHz) = 54 (Chain 0)
                IEEE 802.11b Channel Middle (2437MHz) = 56 (Chain 0)
                IEEE 802.11b Channel High (2462MHz) = 56 (Chain 0)
Output Power: IEEE 802.11b Channel Low (2412MHz) = 60 (Chain 1)
                IEEE 802.11b Channel Middle (2437MHz) = 60 (Chain 1)
                IEEE 802.11b Channel High (2462MHz) = 59 (Chain 1)
Output Power: IEEE 802.11g Channel Low (2412MHz) = 36 (Chain 0)
                IEEE 802.11g Channel Middle (2437MHz) = 50 (Chain 0)
                IEEE 802.11g Channel High (2462MHz) = 26 (Chain 0)
Output Power: IEEE 802.11g Channel Low (2412MHz) = 50 (Chain 1)
                IEEE 802.11g Channel Middle (2437MHz) = 64 (Chain 1)
                IEEE 802.11g Channel High (2462MHz) = 50 (Chain 1)
Output Power: IEEE 802.11n HT20 Channel Low (2412MHz) = 27
                IEEE 802.11n HT20 Channel Middle (2437MHz) = 60
                IEEE 802.11n HT20 Channel High (2462MHz) = 38
Output Power: IEEE 802.11n HT40 Channel Low (2422MHz) = 26
                IEEE 802.11n HT40 Channel Middle (2437MHz) = 40
                IEEE 802.11n HT40 Channel High (2452MHz) = 24
```

8. All of the functions are under run.

9. Start test.



Normal Mode :

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. Notebook PC ping 192.168.1.254 to EUT.
3. Notebook PC ping 192.168.1.254 to EUT.with WiFi.
4. Notebook PC 1~3 ping to each other and EUT.
5. ADSL port Link to ADSL iDSLAM.
6. Line port Link to outside phone line.
7. USB port link dongle load.
8. Phone1 and phone2 make a telephone calls.
9. All of the functions are under run.
10. Start 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

1. The transmitter output was connected to a spectrum analyzer.
2. Set resolution bandwidth (RBW) = 1-5% or DTS BW, not to exceed 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) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



TEST RESULTS

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	8.60	8.20	500	PASS
Middle	2437	8.67	8.20	500	PASS
High	2462	8.20	8.13	500	PASS

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	15.20	15.13	500	PASS
Middle	2437	14.53	15.47	500	PASS
High	2462	15.13	15.13	500	PASS

IEEE 802.11n HT20 Mode (Two TX)

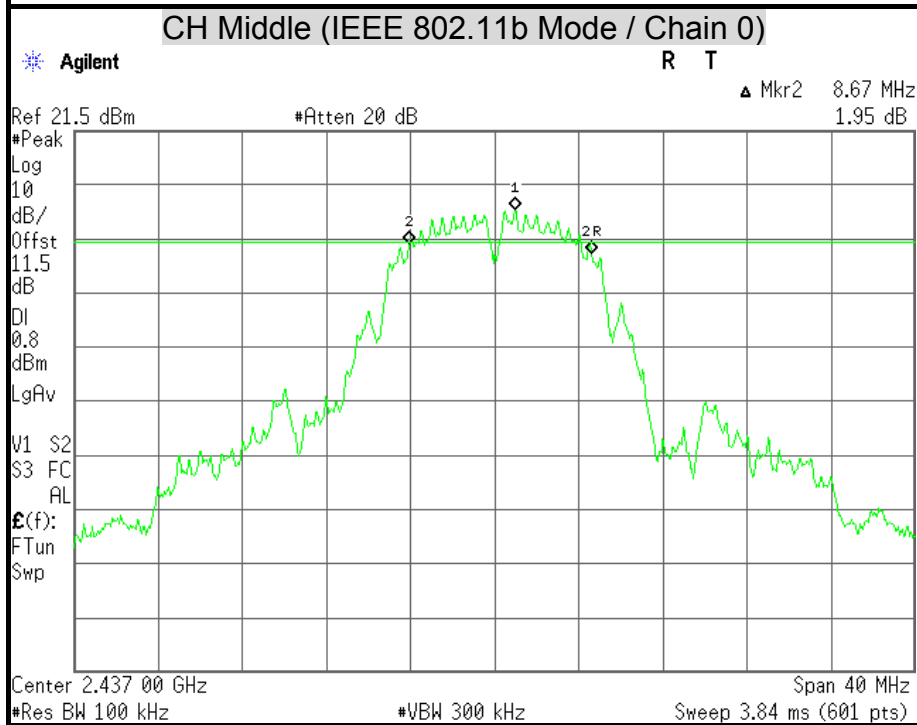
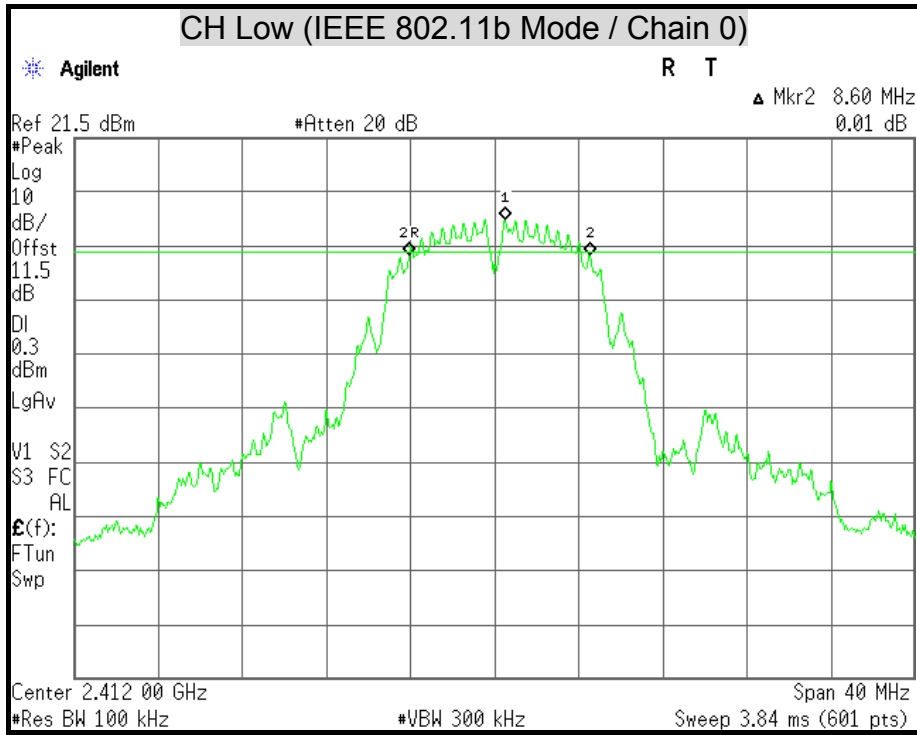
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	15.20	15.20	500	PASS
Middle	2437	15.27	15.73	500	PASS
High	2462	15.20	15.20	500	PASS

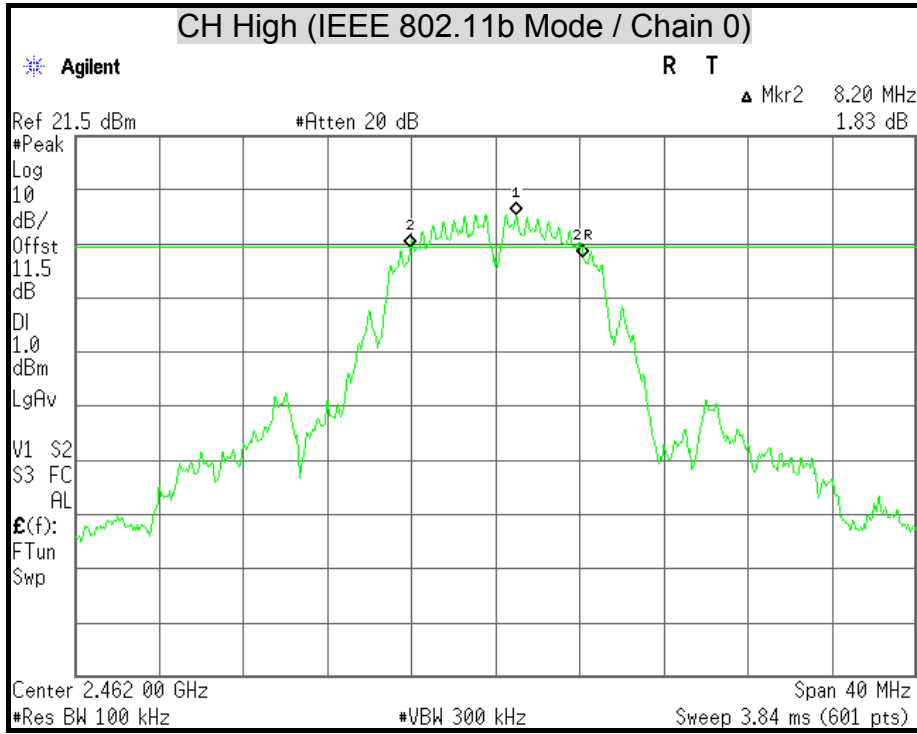
IEEE 802.11n HT40 Mode (Two TX)

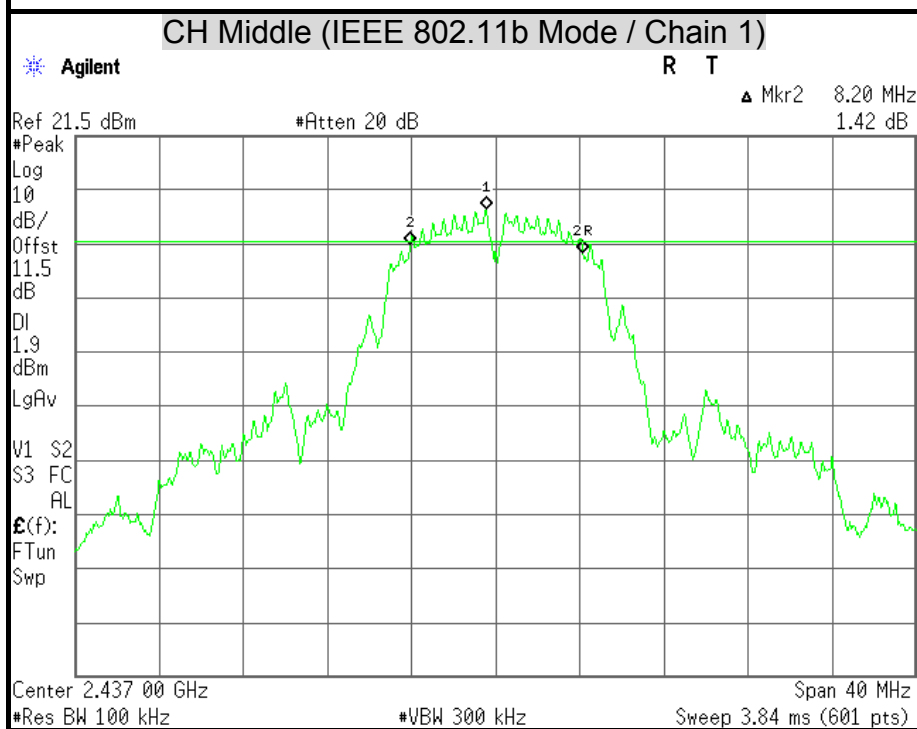
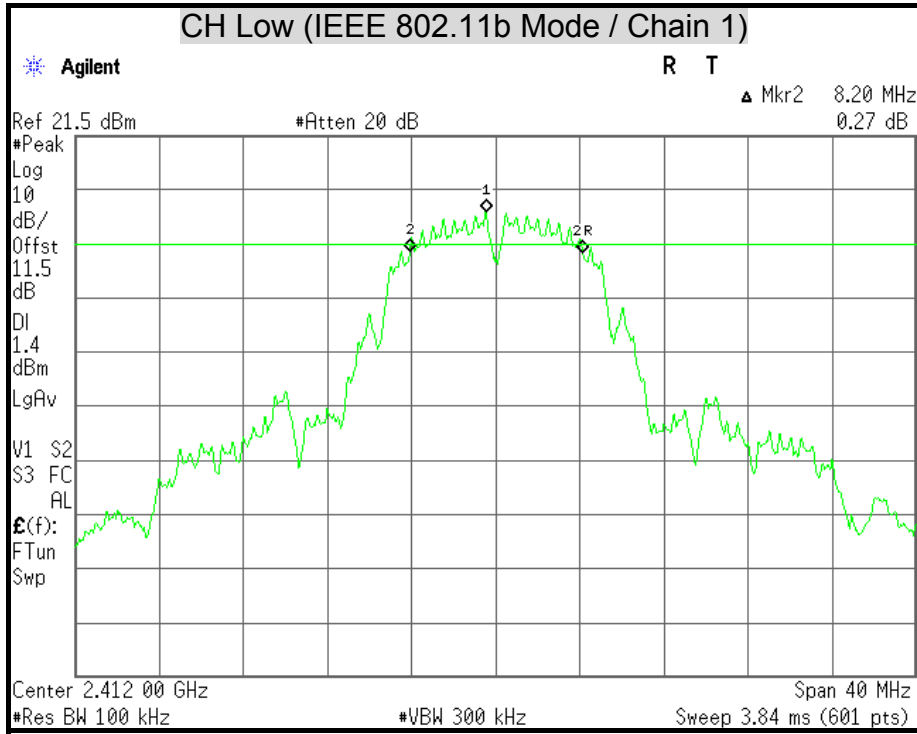
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2422	36.50	36.00	500	PASS
Middle	2437	36.00	35.90	500	PASS
High	2452	36.50	36.50	500	PASS

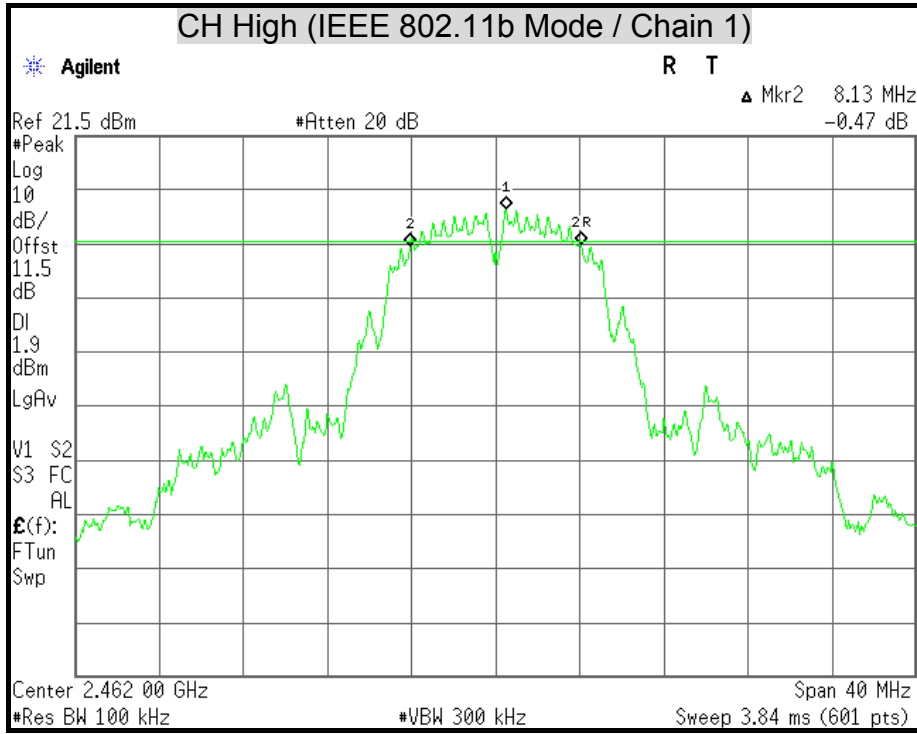


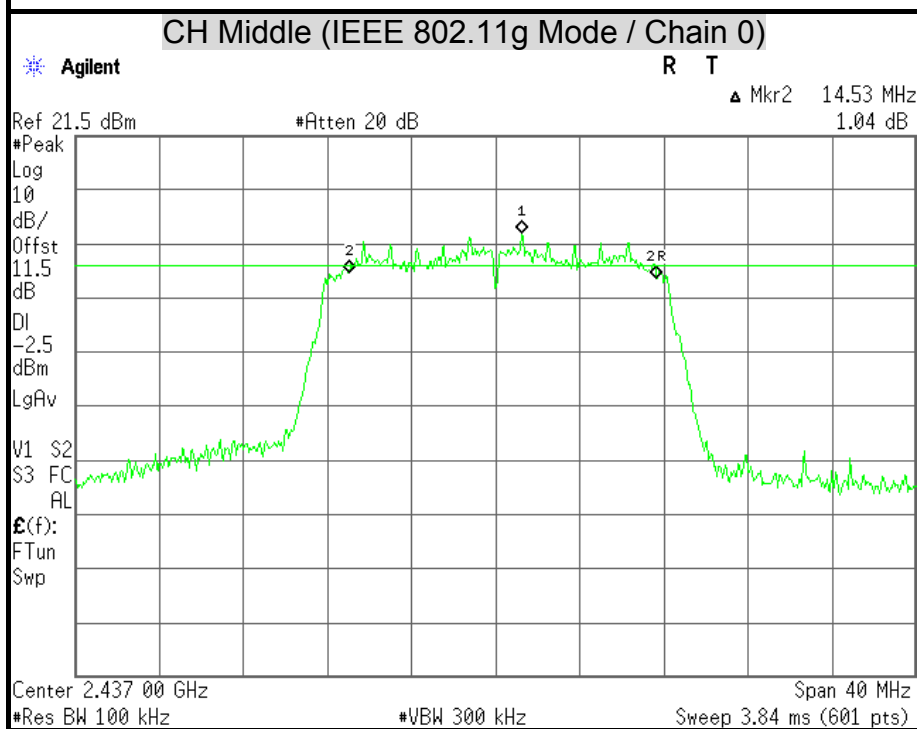
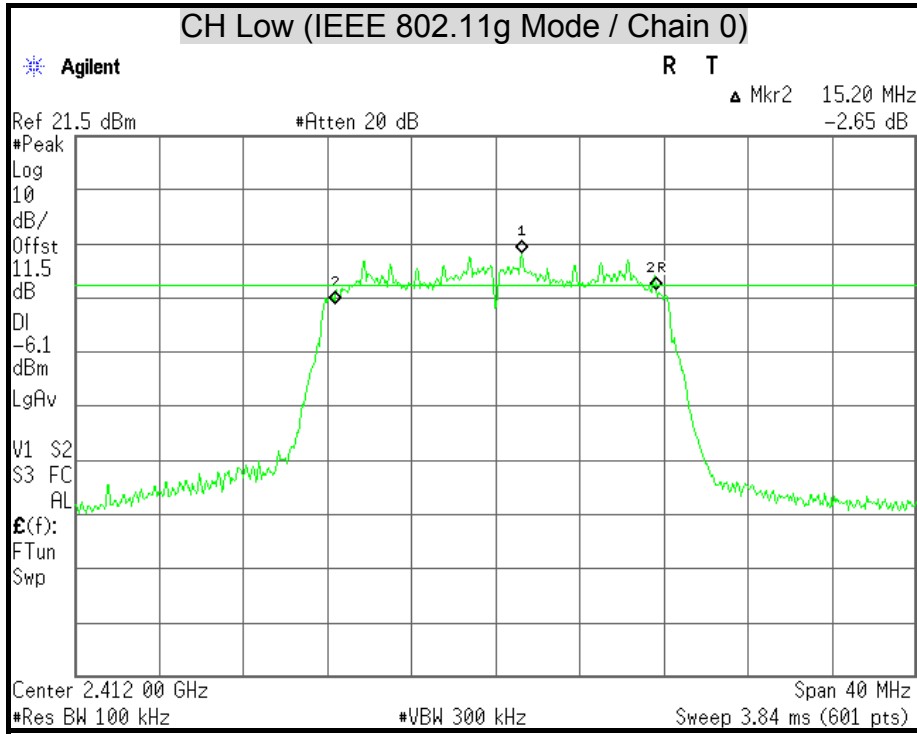
6dB BANDWIDTH

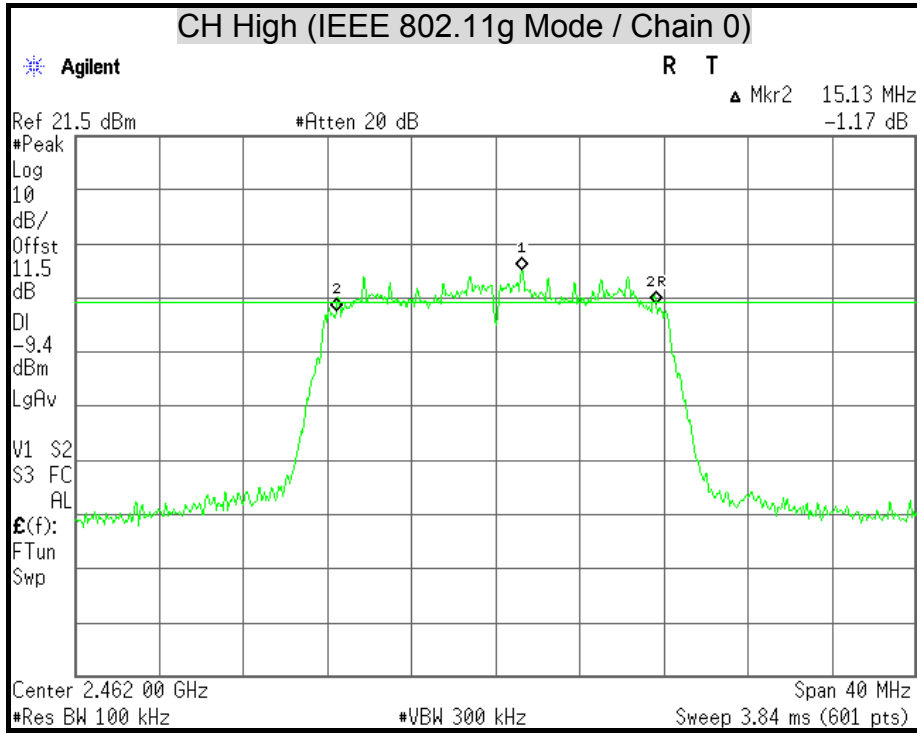


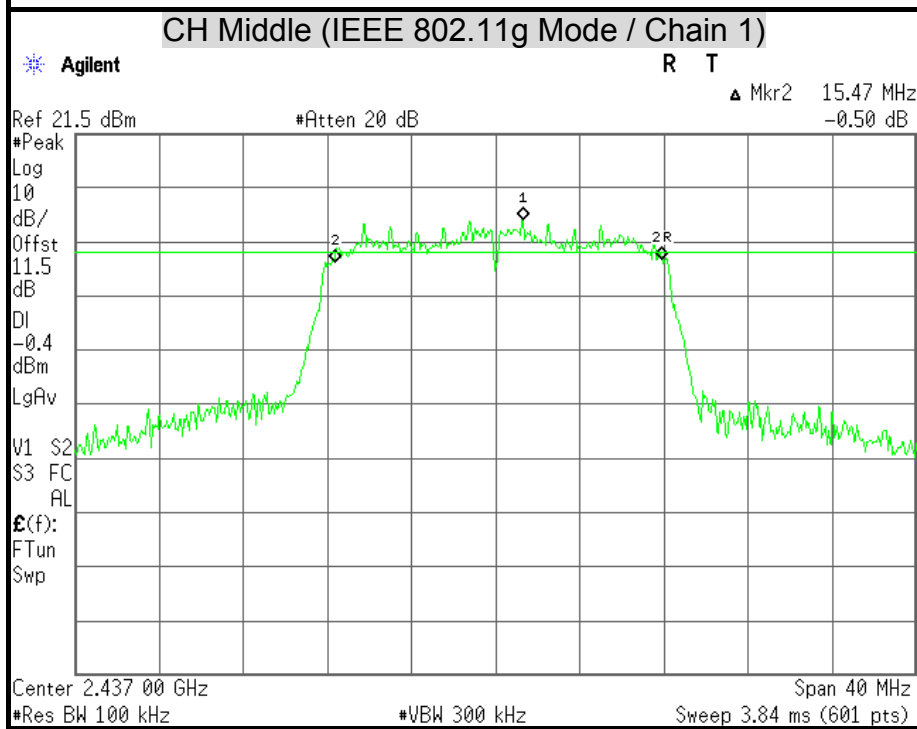
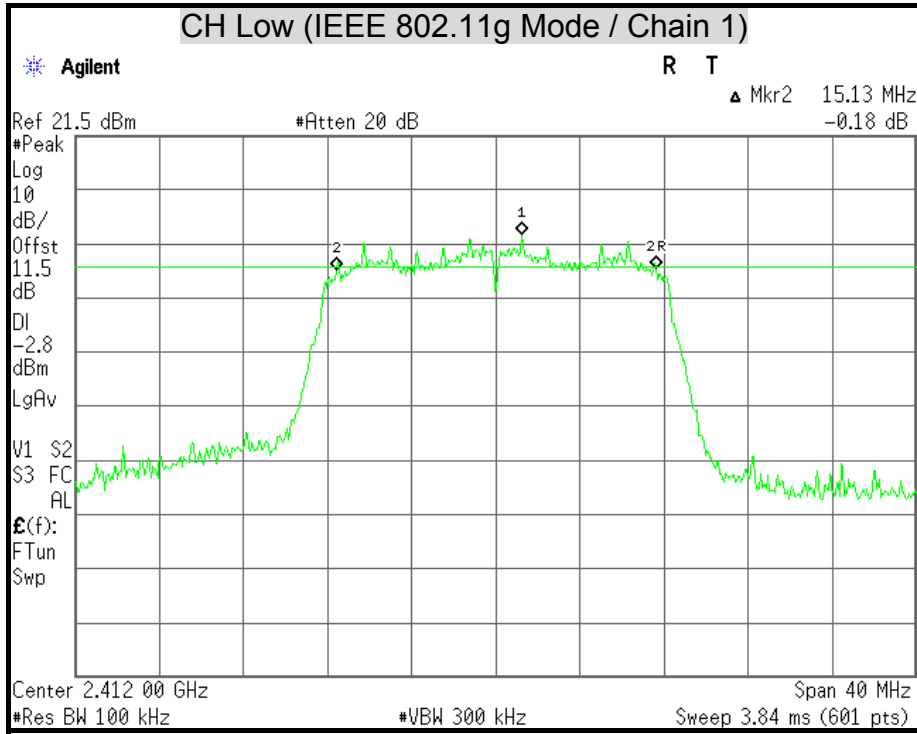


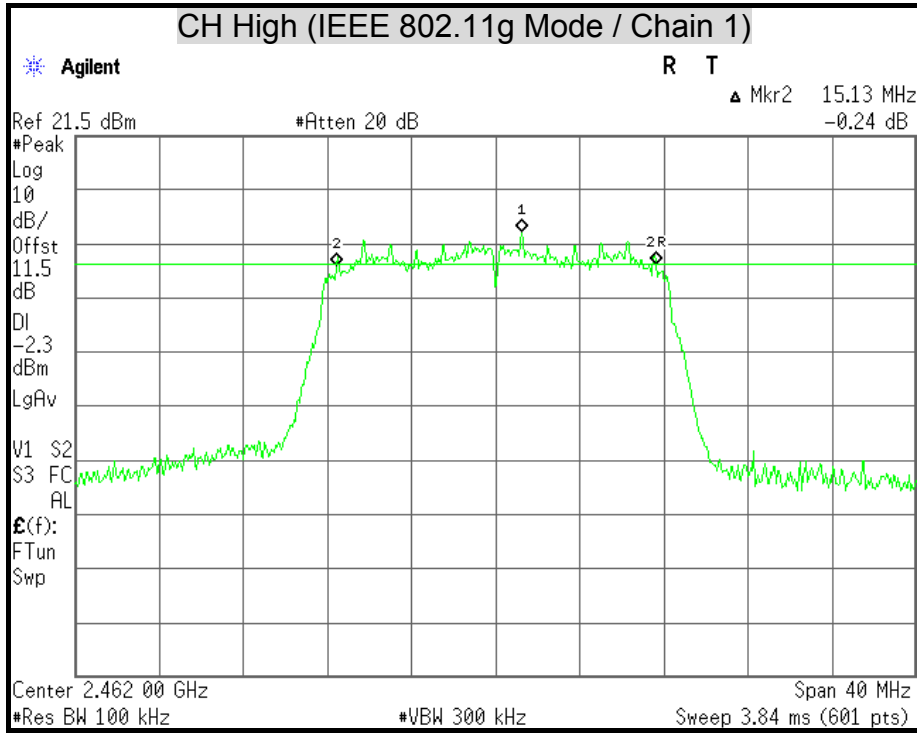


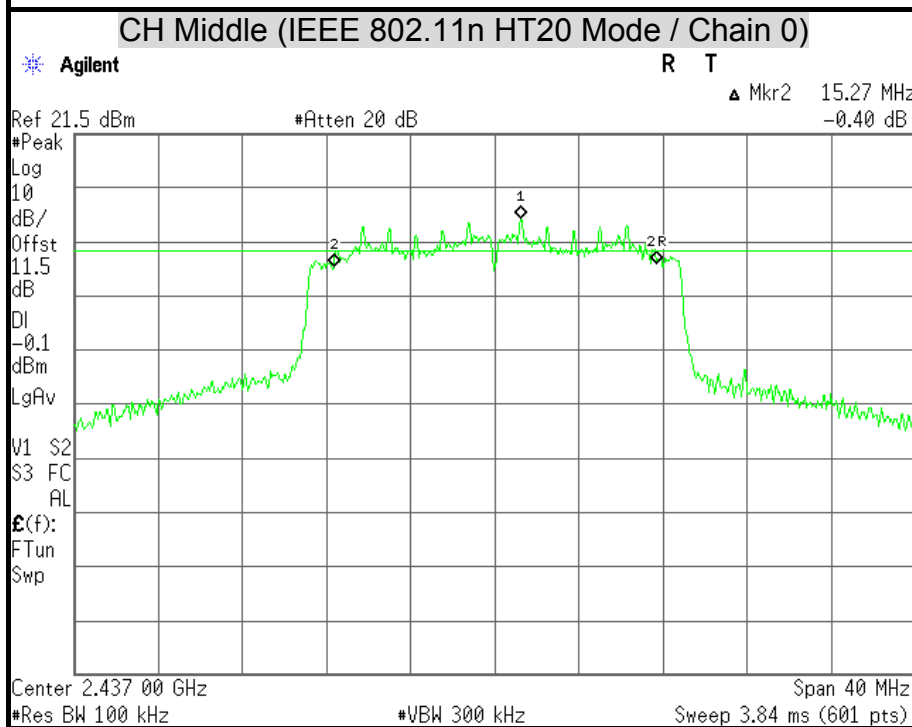
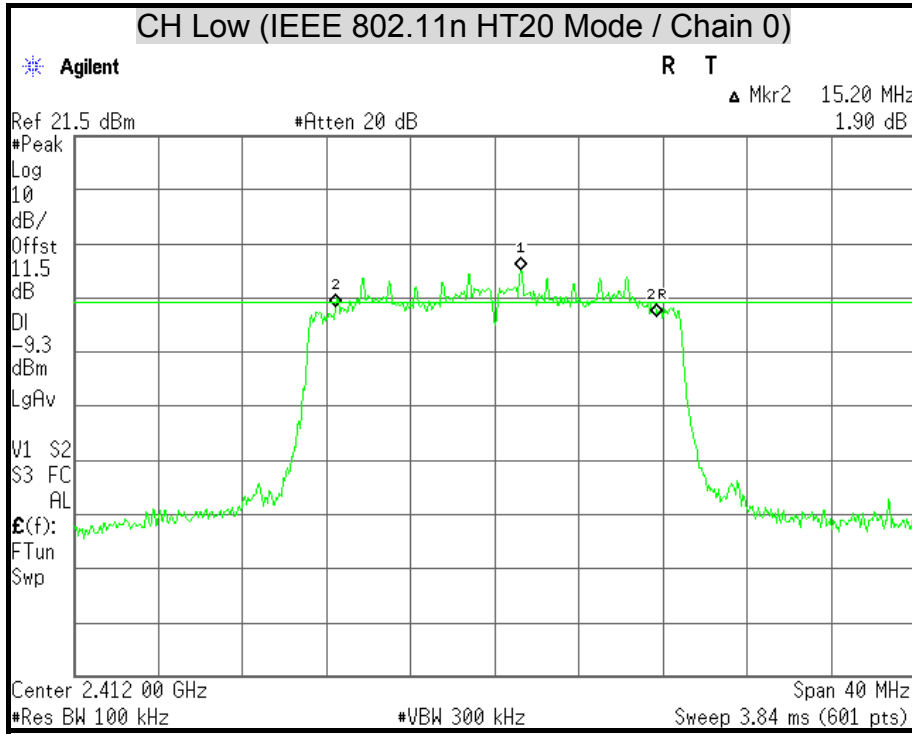


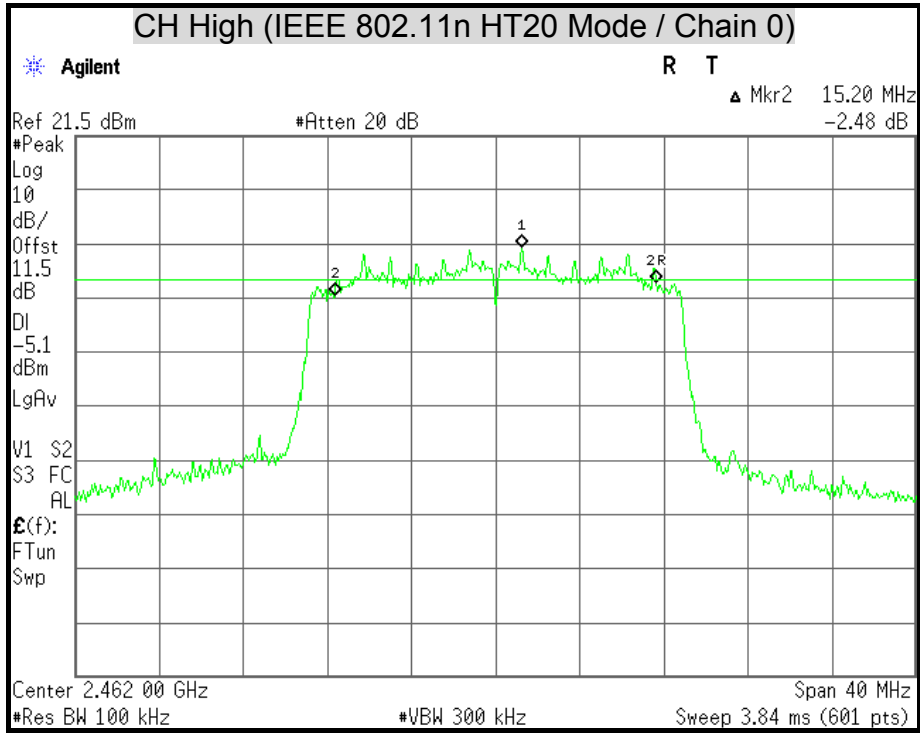


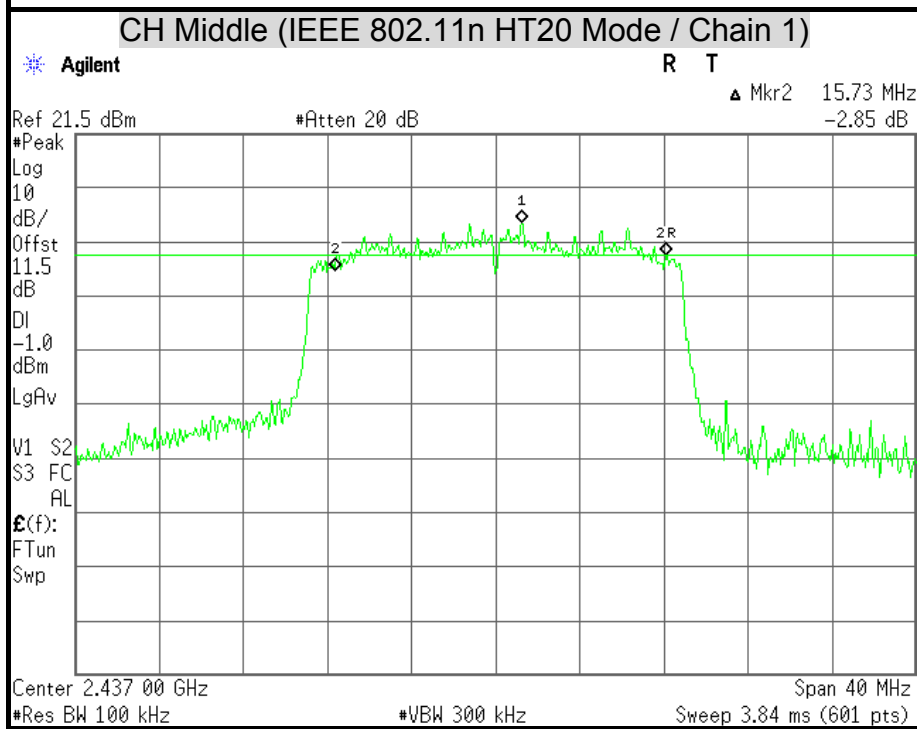
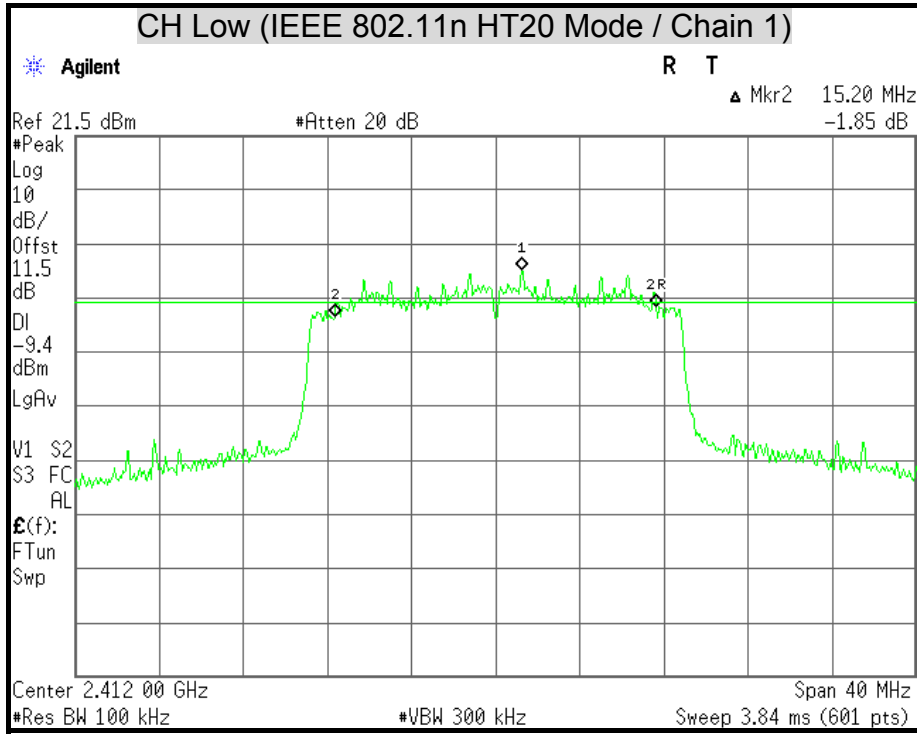


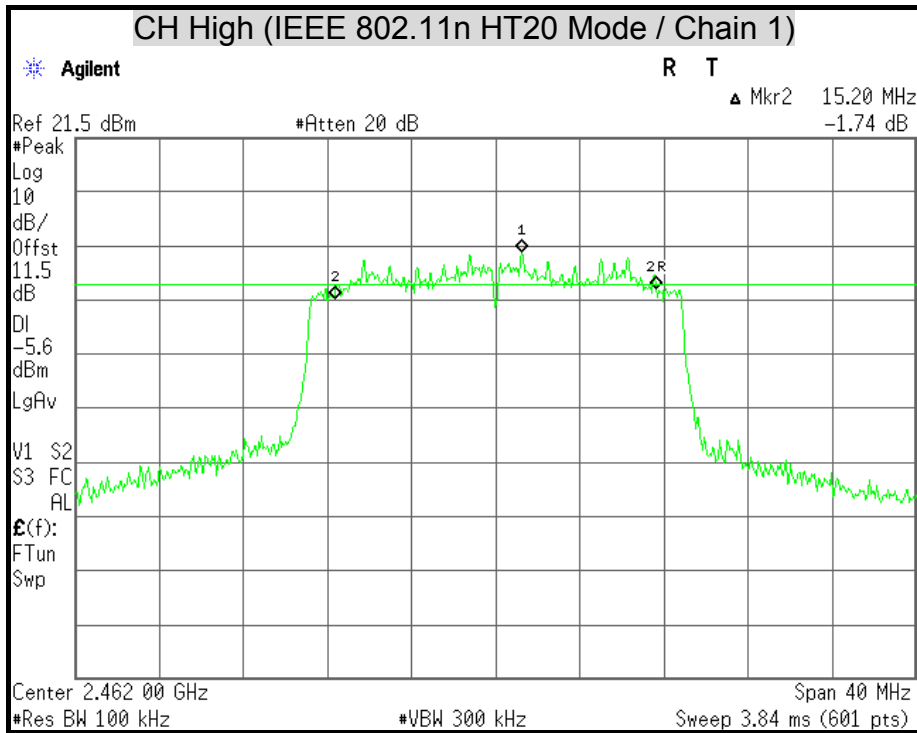


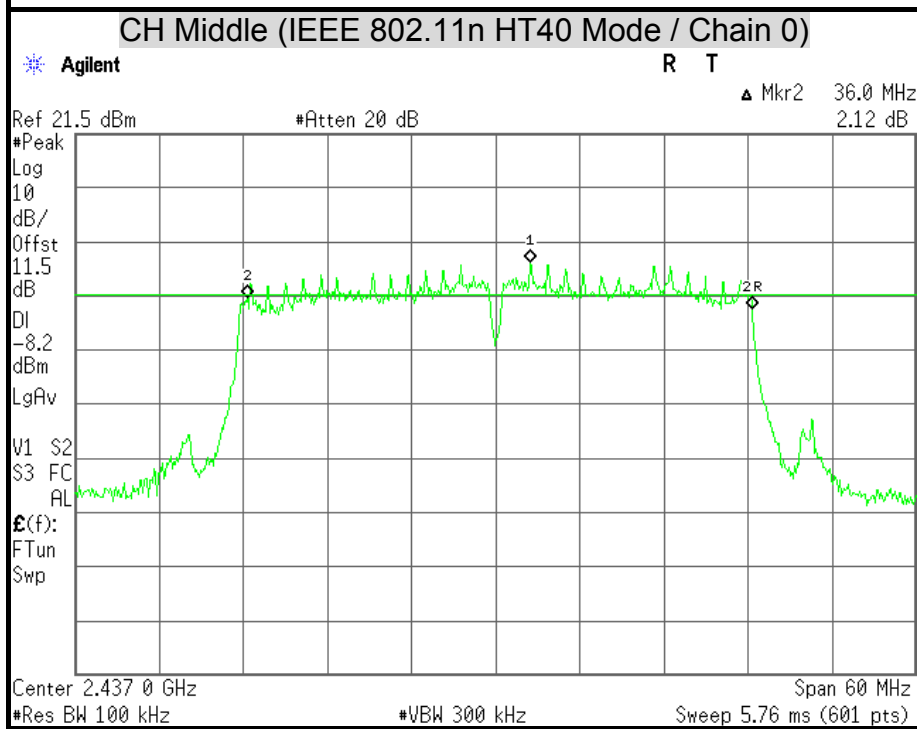
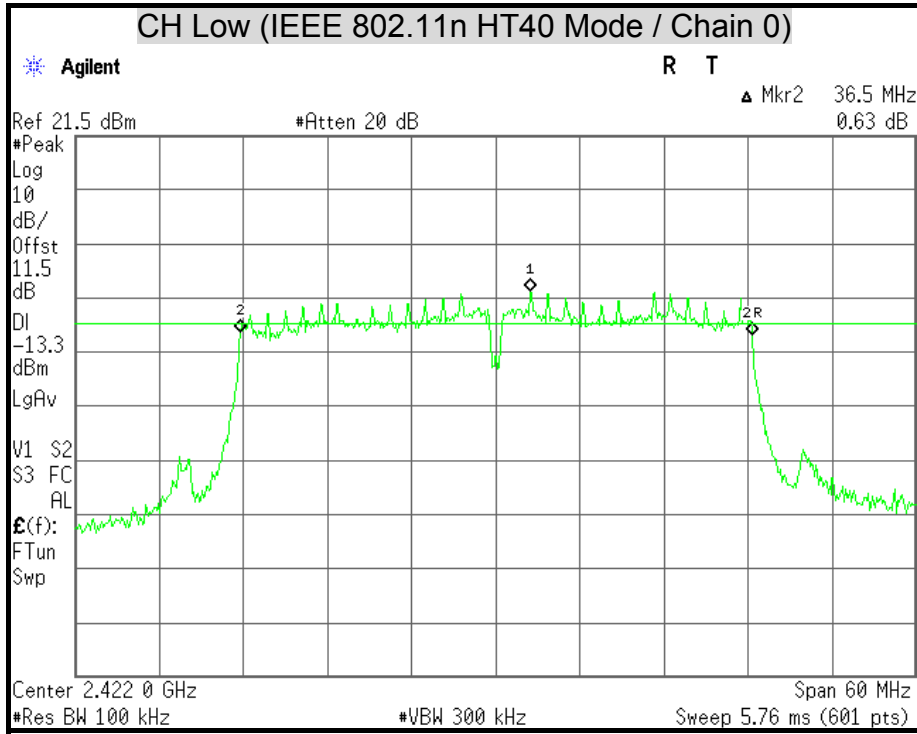


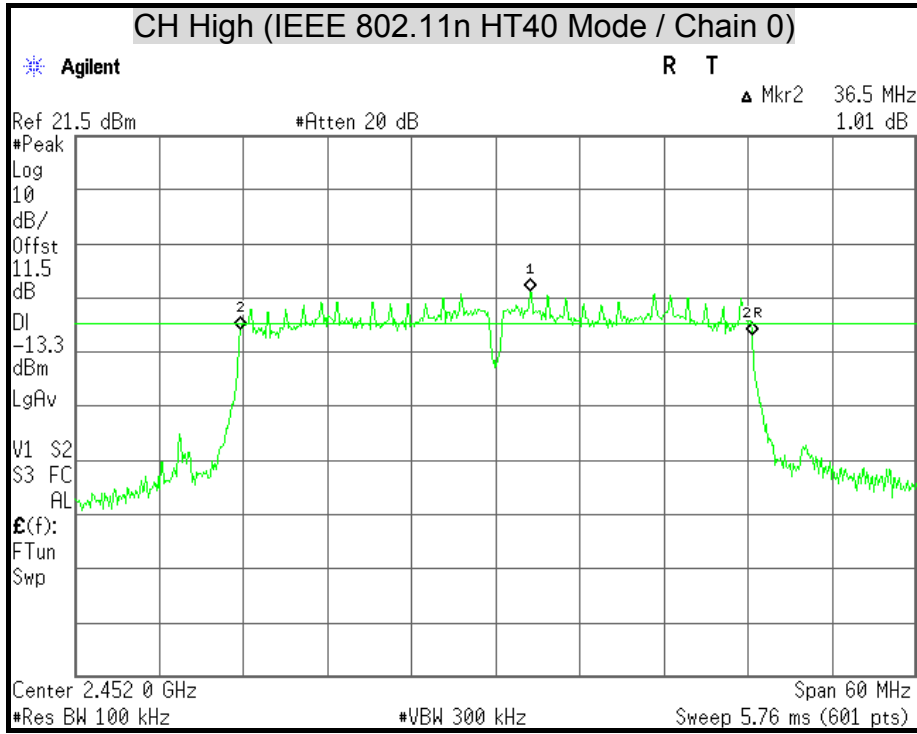


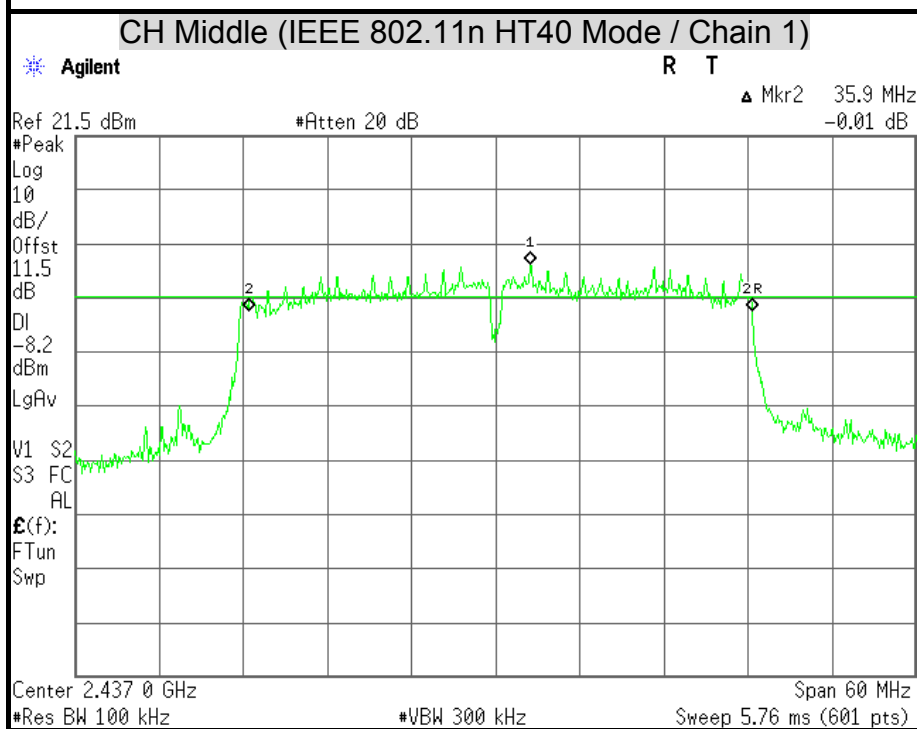
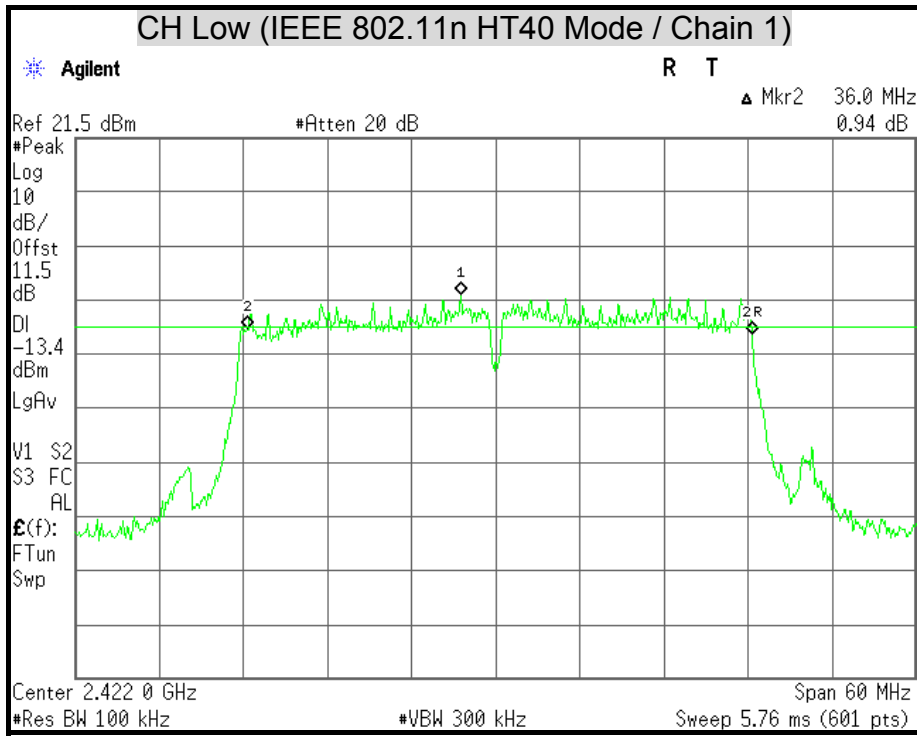


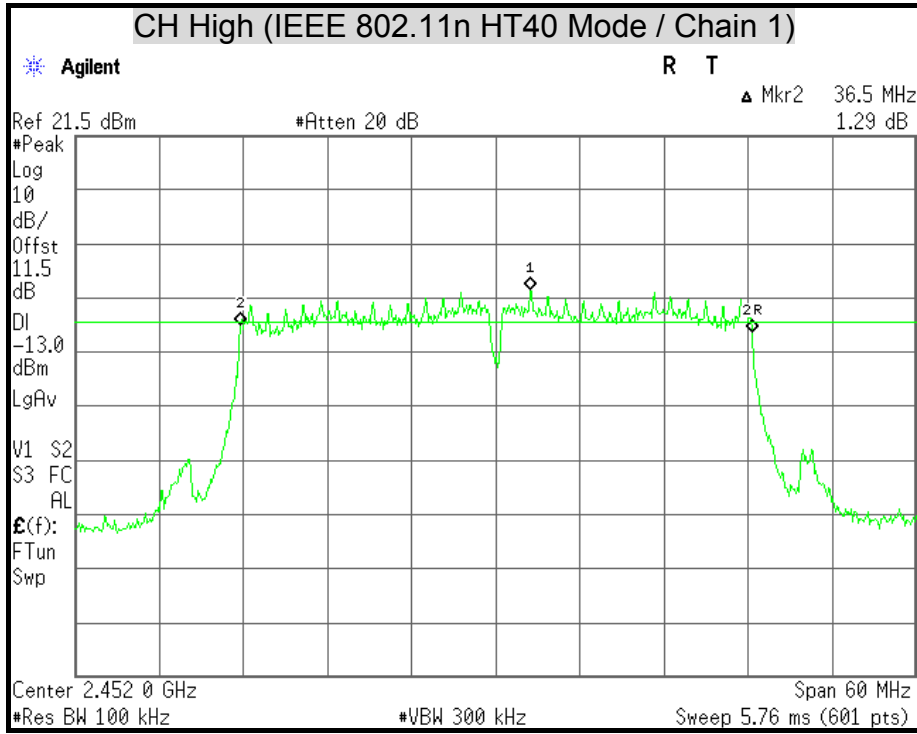














7.2 MAXIMUM PEAK OUTPUT POWER

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	12/06/2013
Power Sensor	ANRITSU	MA2411B	1126148	12/07/2013

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 (dBm)		Peak Power (W)		Peak Power Limit		Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1	(dBm)	(W)	
Low	2412	18.17	19.74	0.0656	0.0942	30	1	PASS
Middle	2437	19.03	19.87	0.0800	0.0971	30	1	PASS
High	2462	19.04	19.57	0.0802	0.0906	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 (dBm)		Peak Power (W)		Peak Power Limit		Pass / Fail
		Chain 0	Chain 1	Chain 0	Chain 1	(dBm)	(W)	
Low	2412	20.52	23.77	0.1127	0.2382	30	1	PASS
Middle	2437	23.94	25.82	0.2477	0.3819	30	1	PASS
High	2462	17.02	23.94	0.0504	0.2477	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 0	Chain 1	(dBm)	(W)	(dBm)	(W)	
Low	2412	17.32	17.64	20.49	0.1120	30	1	PASS
Middle	2437	25.25	25.30	28.29	0.6738	30	1	PASS
High	2462	21.48	21.30	24.40	0.2755	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. Total peak power = Chain 0 + Chain 1.

IEEE 802.11n HT40 Mode (Two TX)

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total		Peak Power Limit		Pass / Fail
		Chain 0	Chain 1	(dBm)	(W)	(dBm)	(W)	
Low	2422	16.34	17.40	19.91	0.0980	30	1	PASS
Middle	2437	21.47	21.54	24.52	0.2828	30	1	PASS
High	2452	15.93	16.71	19.35	0.0861	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. Total peak power = Chain 0 + Chain 1.



7.3 POWER SPECTRAL DENSITY

LIMITS

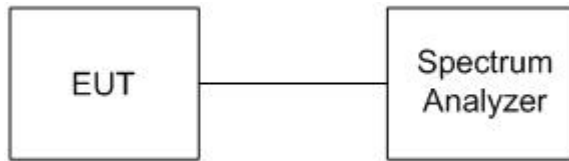
§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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. 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 \geq 3 kHz.
5. Set the VBW \geq 3 x 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.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



TEST RESULTS

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		Minimum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	-9.42	-5.93	8	PASS
Middle	2437	-7.18	-6.80	8	PASS
High	2462	-6.27	-6.53	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
		Chain 0	Chain 1		
Low	2412	-14.01	-11.24	8	PASS
Middle	2437	-9.89	-7.49	8	PASS
High	2462	-17.60	-10.99	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)		PSD Total (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2412	-17.33	-18.24	-14.75	8	PASS
Middle	2437	-9.65	-8.65	-6.11	8	PASS
High	2462	-12.88	-12.84	-9.85	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 0 + Chain 1.

IEEE 802.11n HT40 Mode (Two TX)

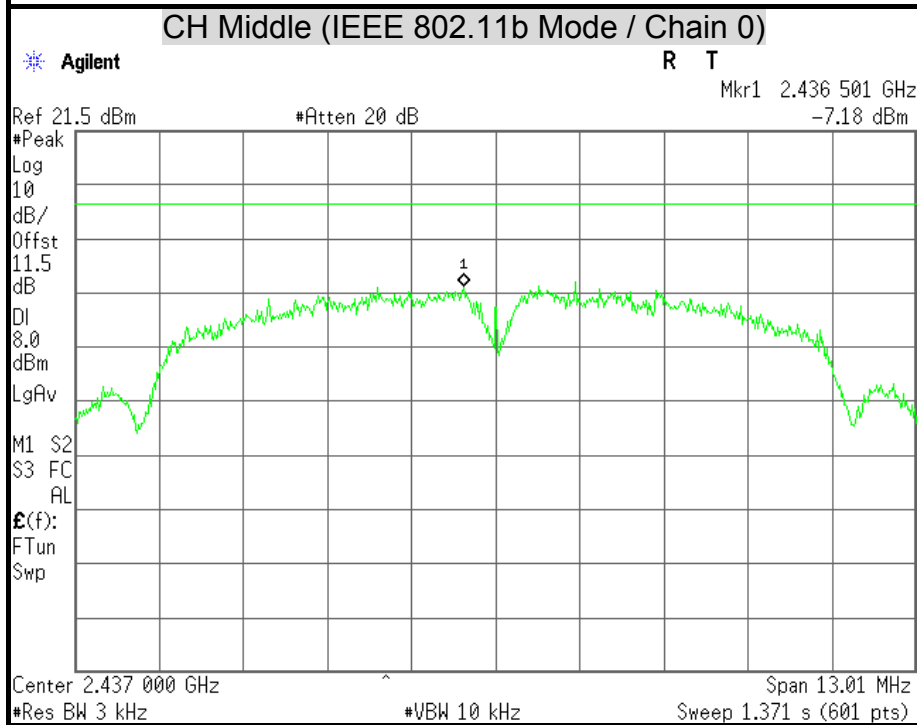
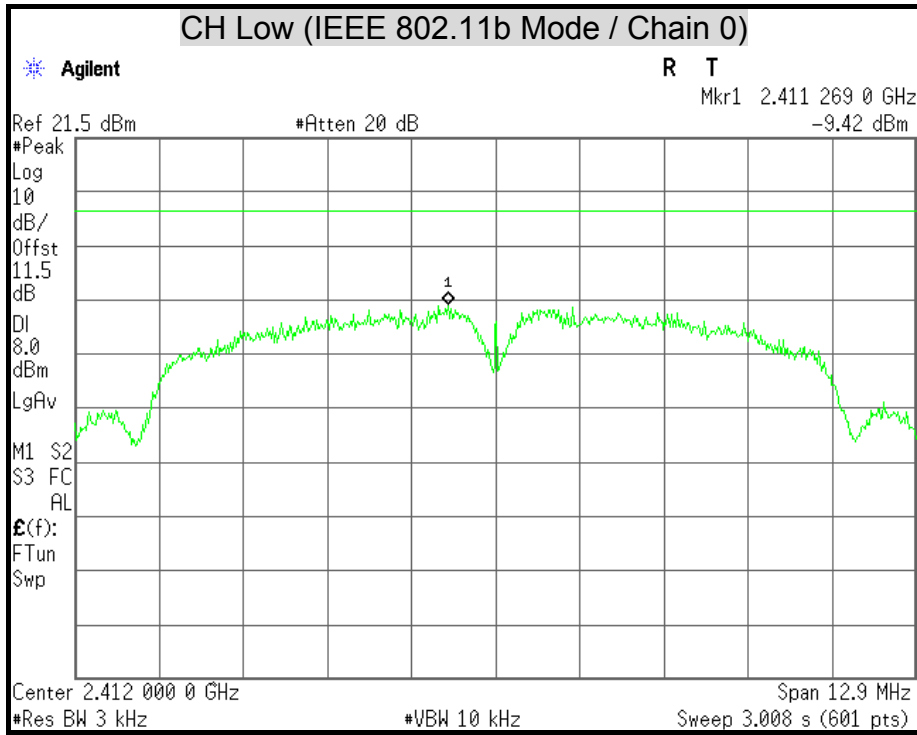
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PSD Total (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2422	-20.08	-20.83	-17.86	8	PASS
Middle	2437	-16.40	-15.59	-12.97	8	PASS
High	2452	-22.20	-21.70	-18.93	8	PASS

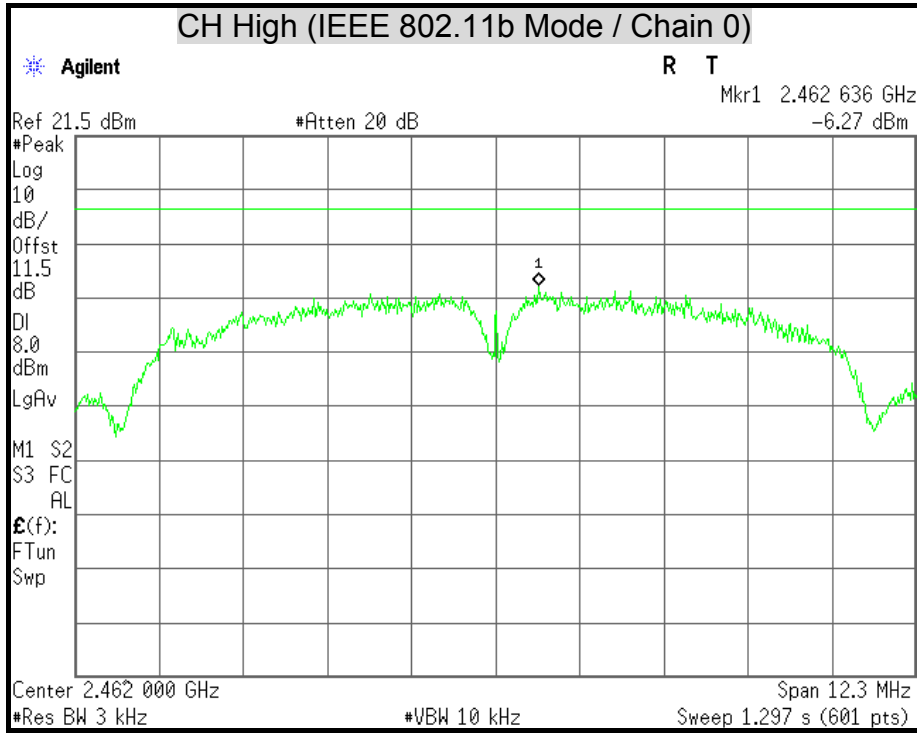
Remark:

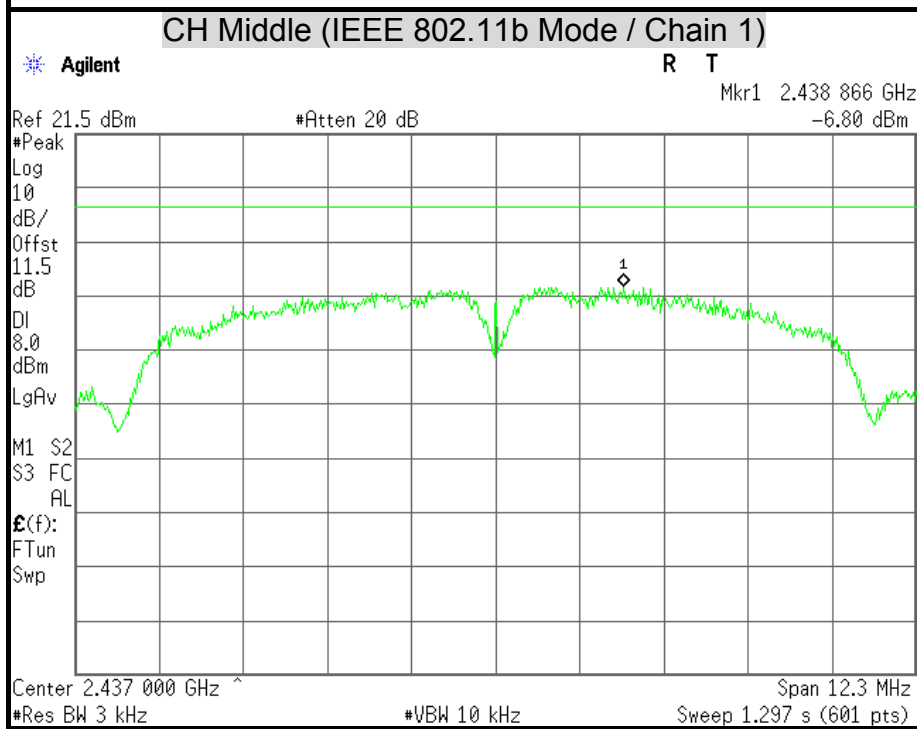
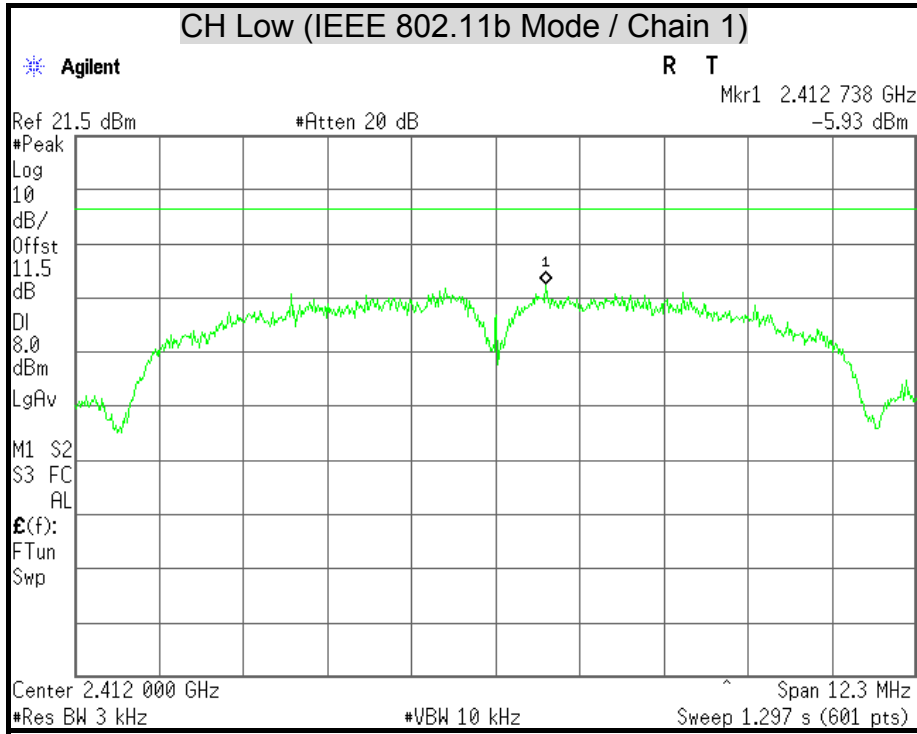
1. At final test to get the worst-case emission at 27Mbps.
2. The cable assembly insertion loss of 11.5dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. Total power spectral density = Chain 0 + Chain 1.

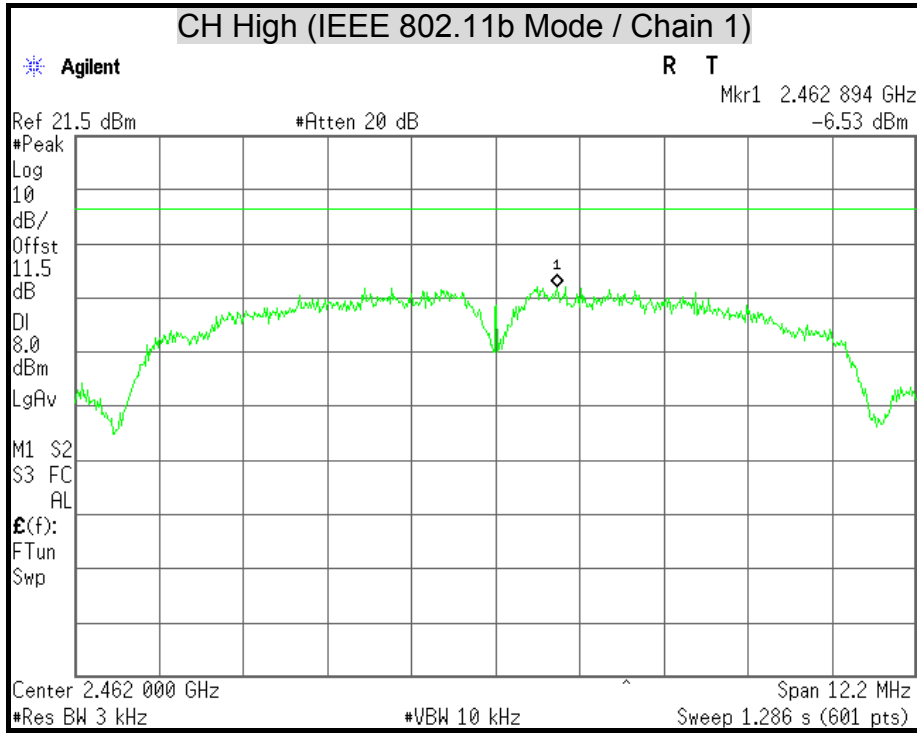


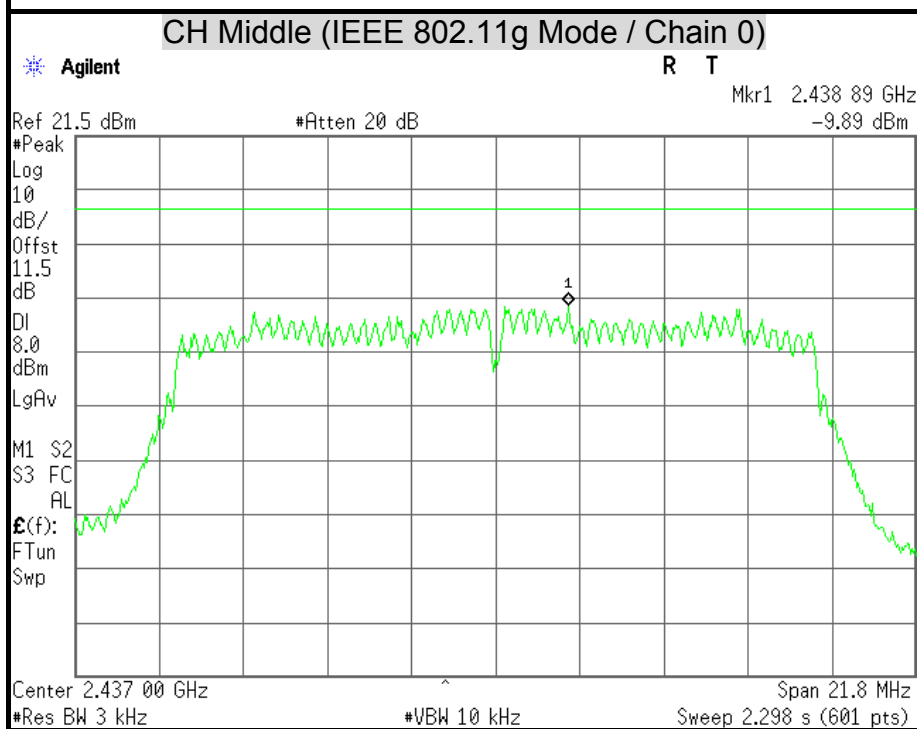
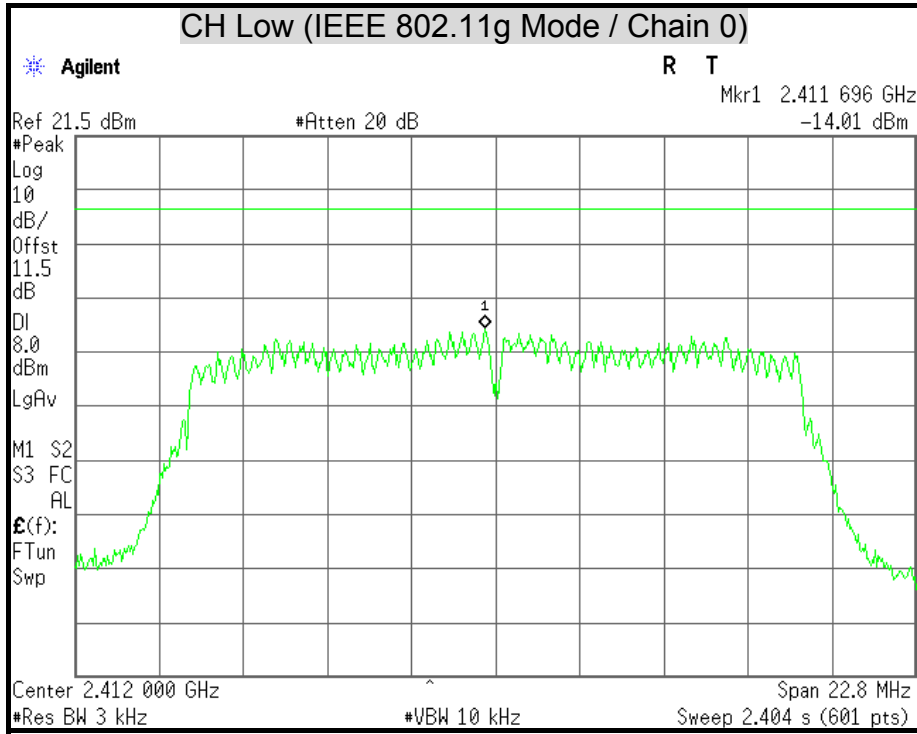
POWER SPECTRAL DENSITY

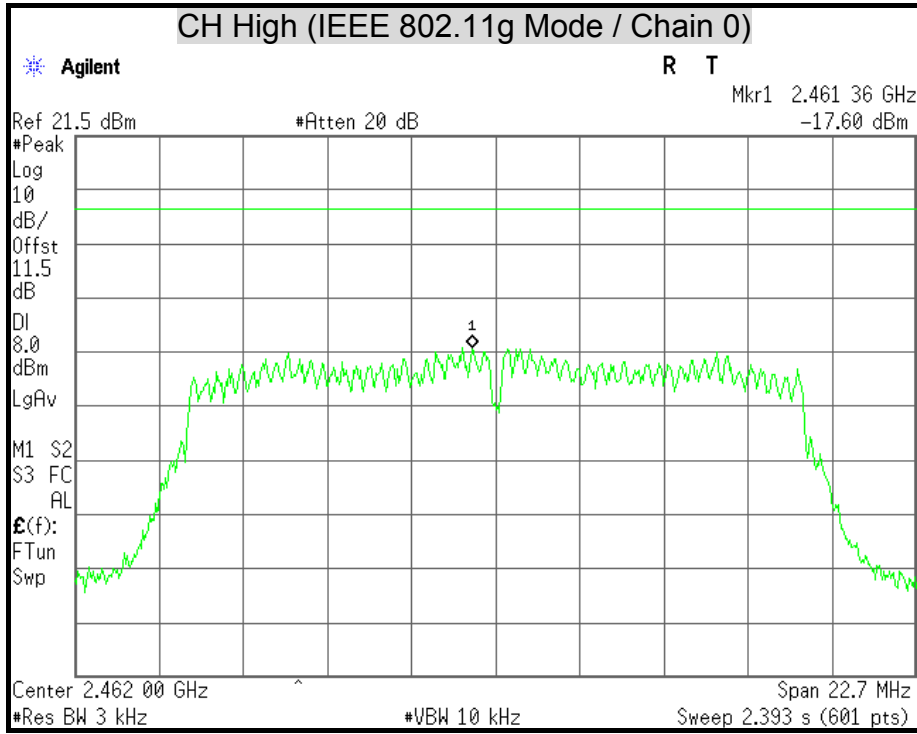


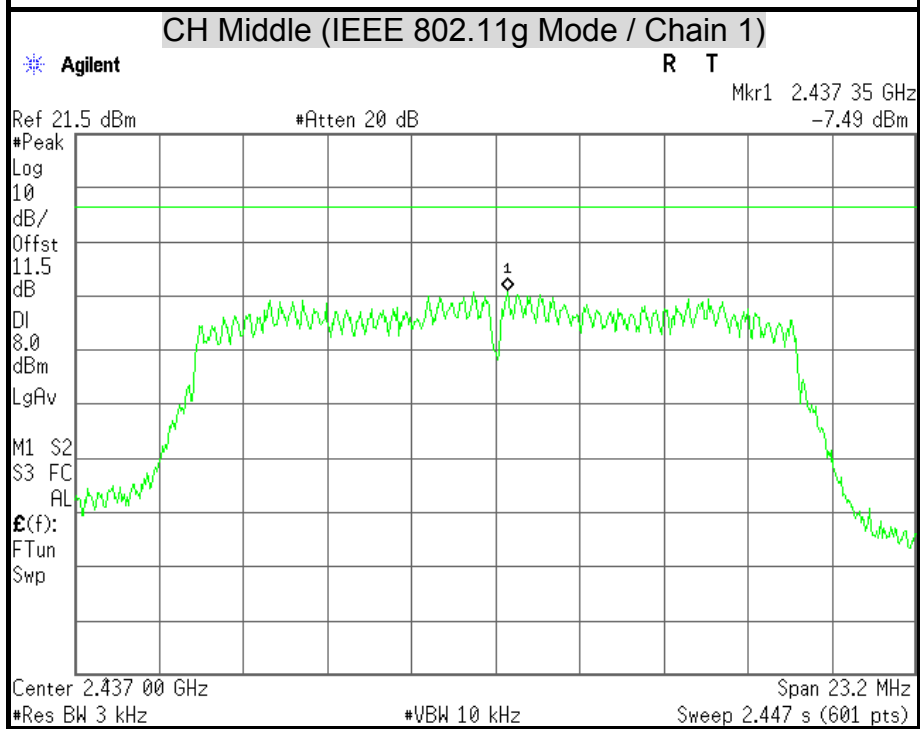
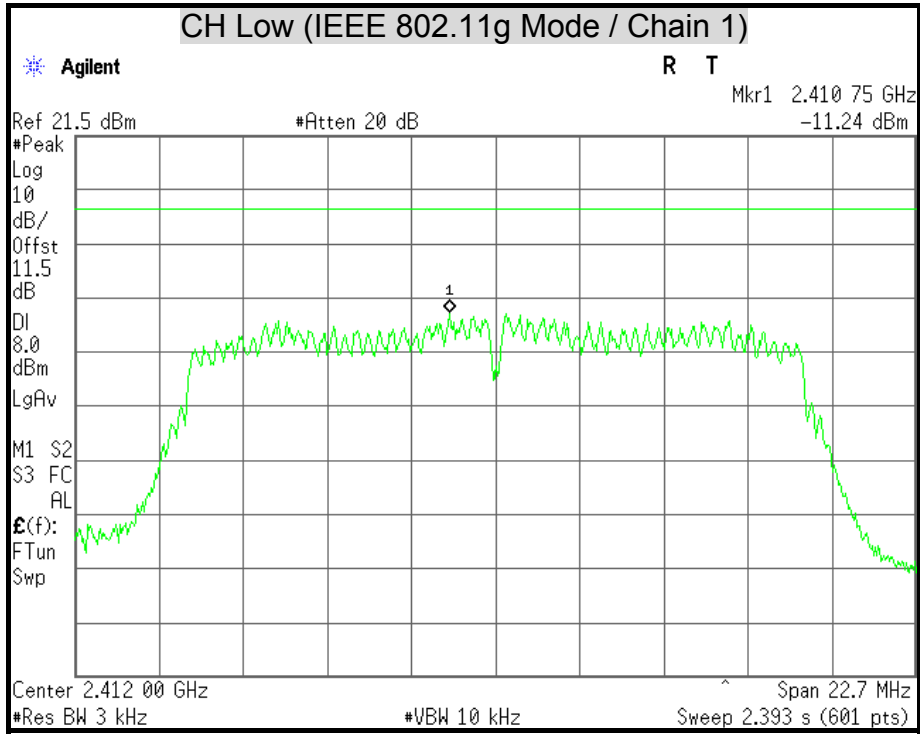


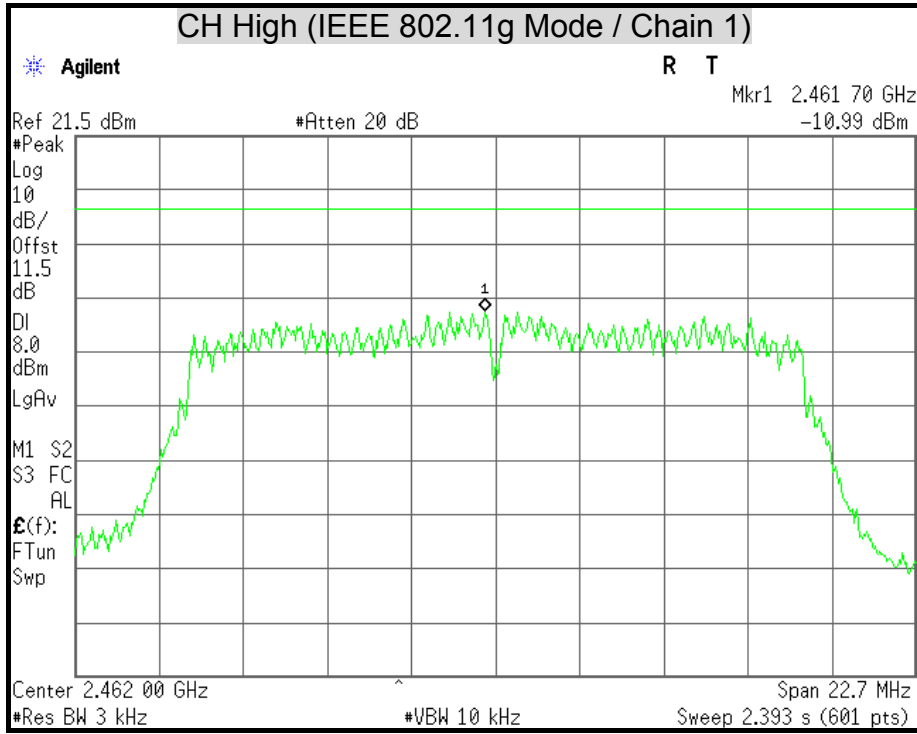


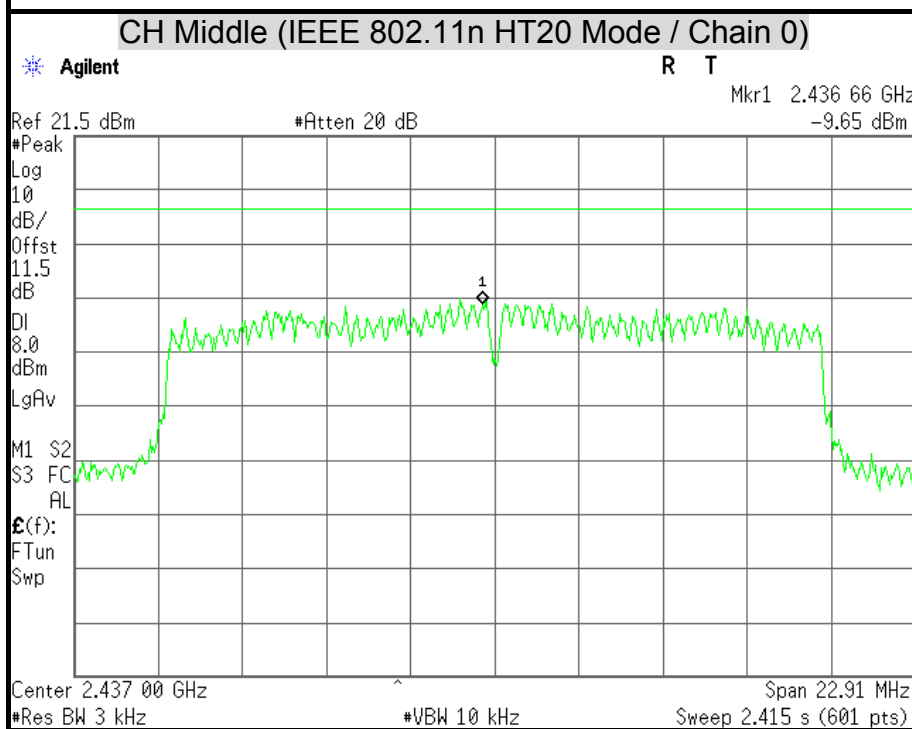
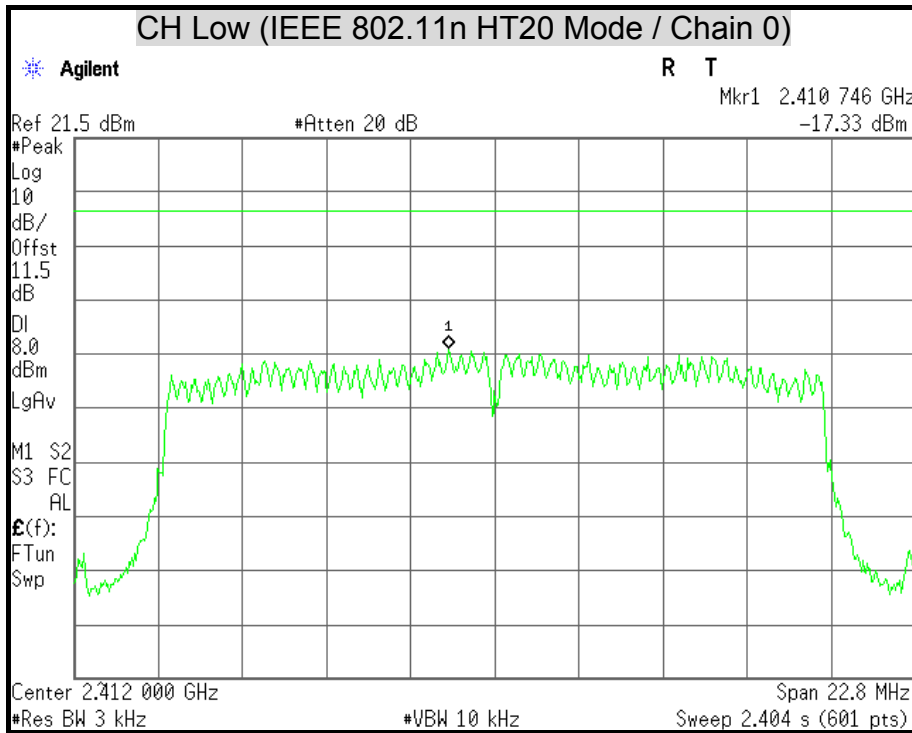


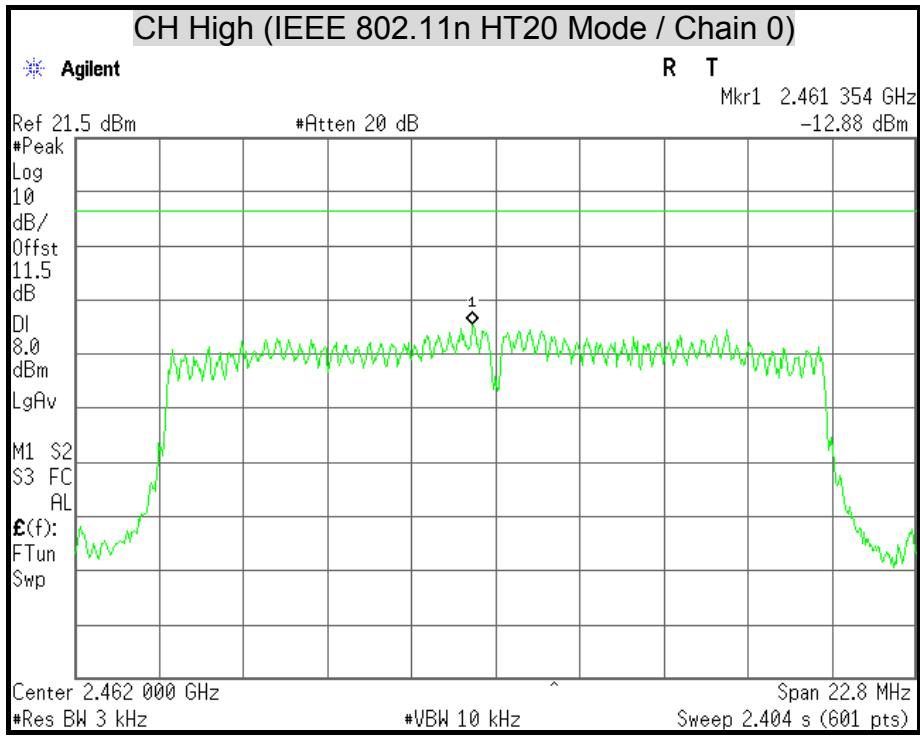


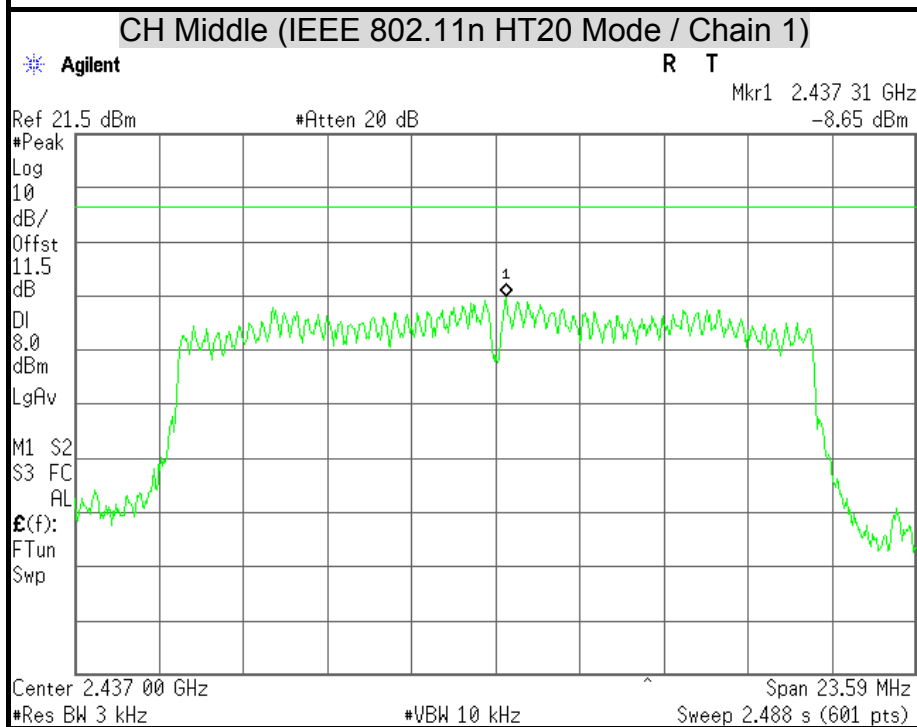
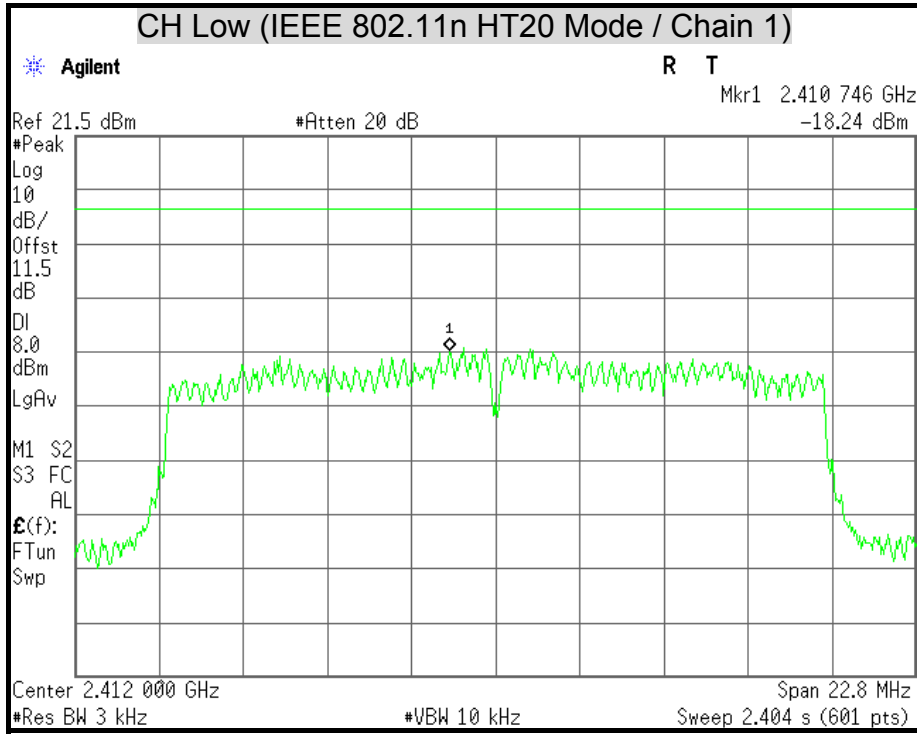


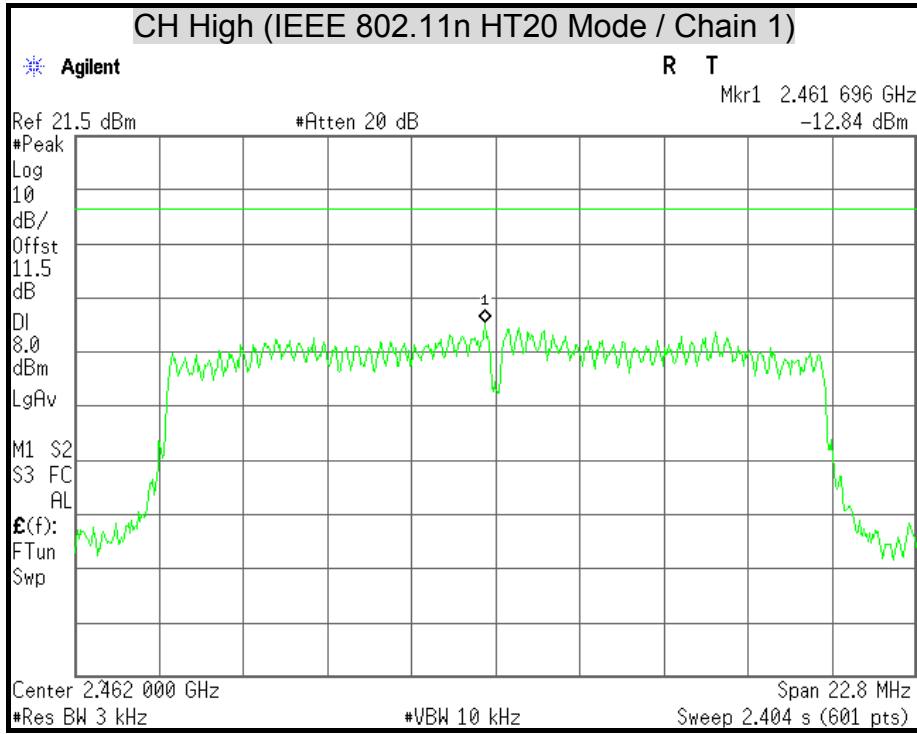


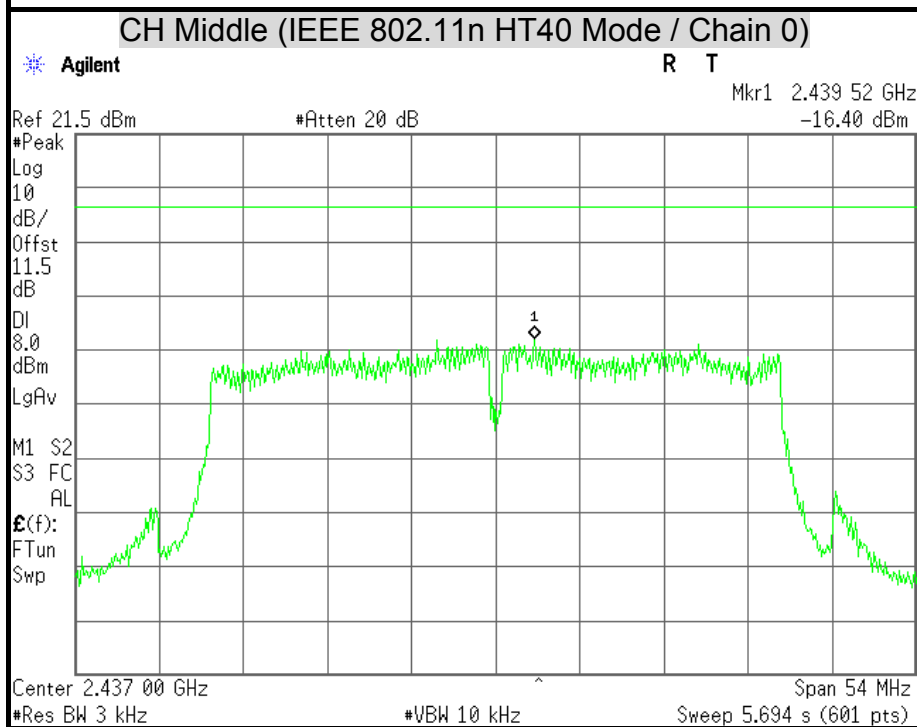
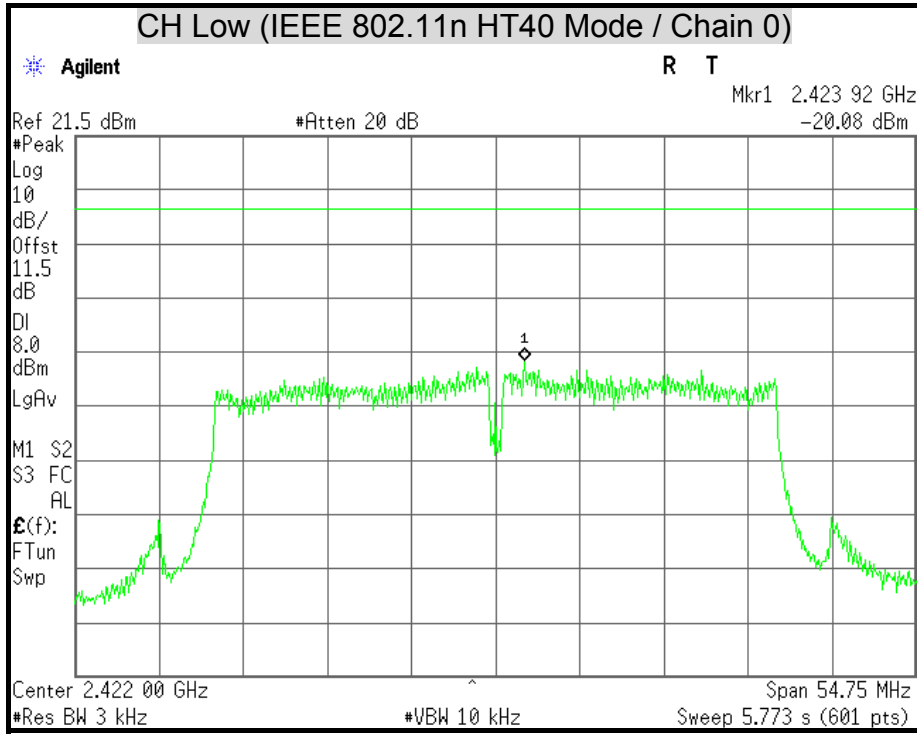


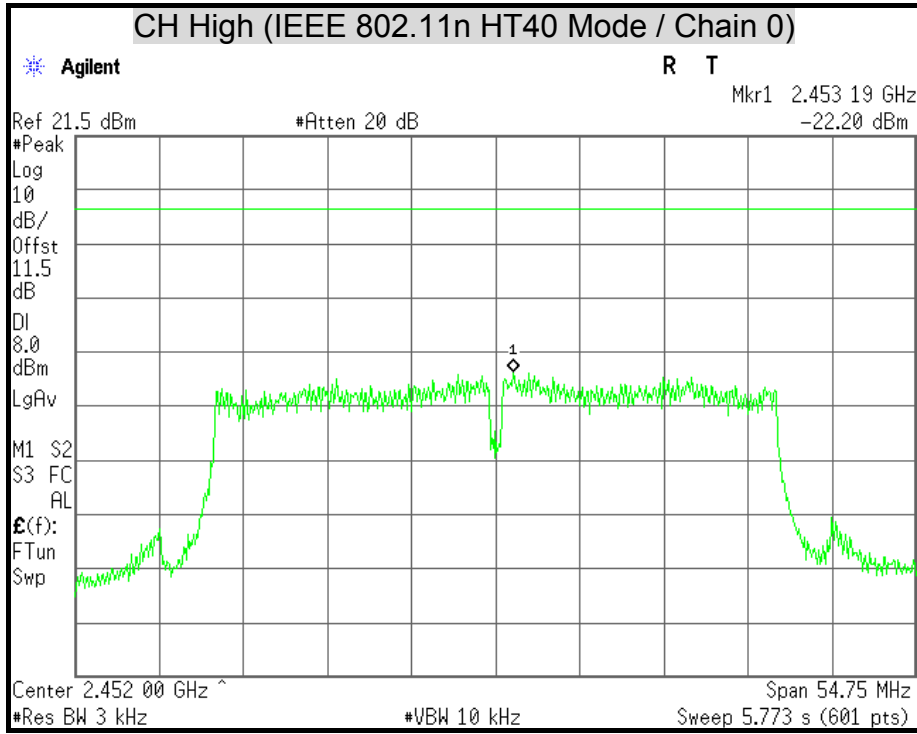


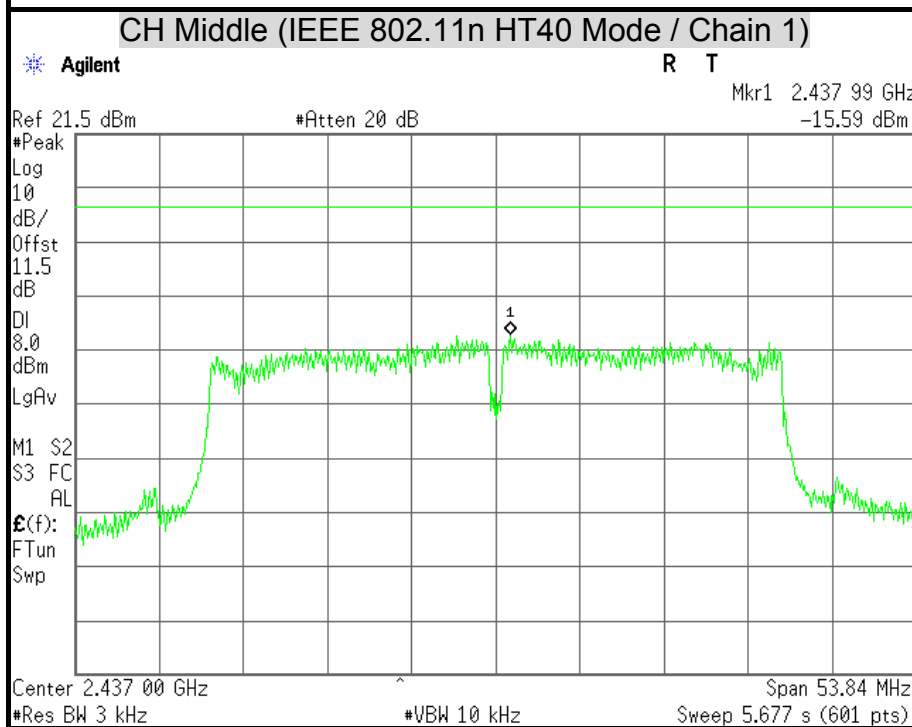
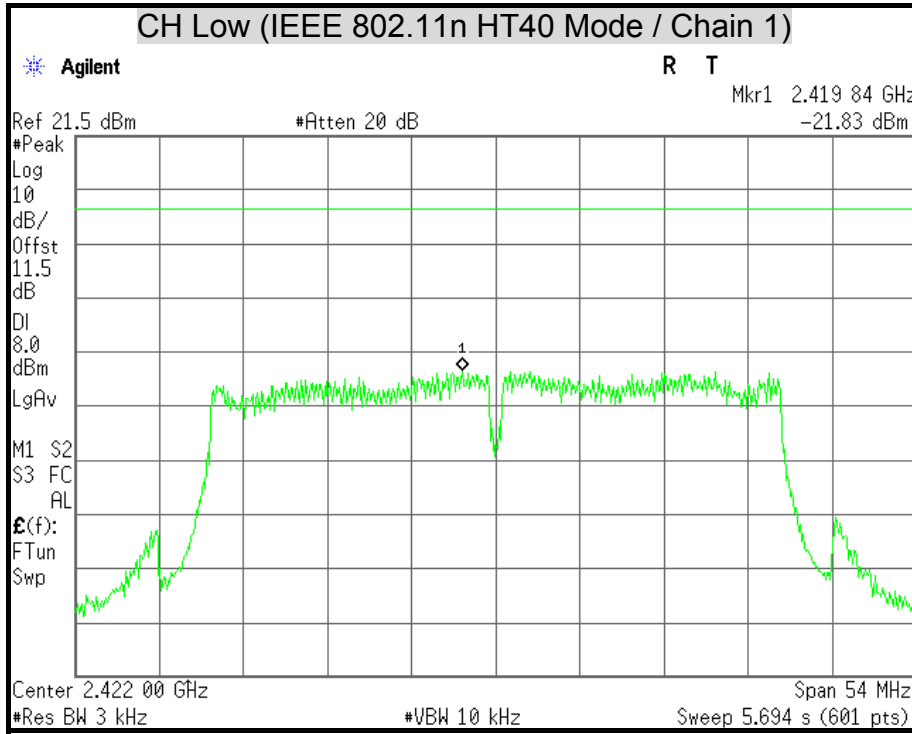


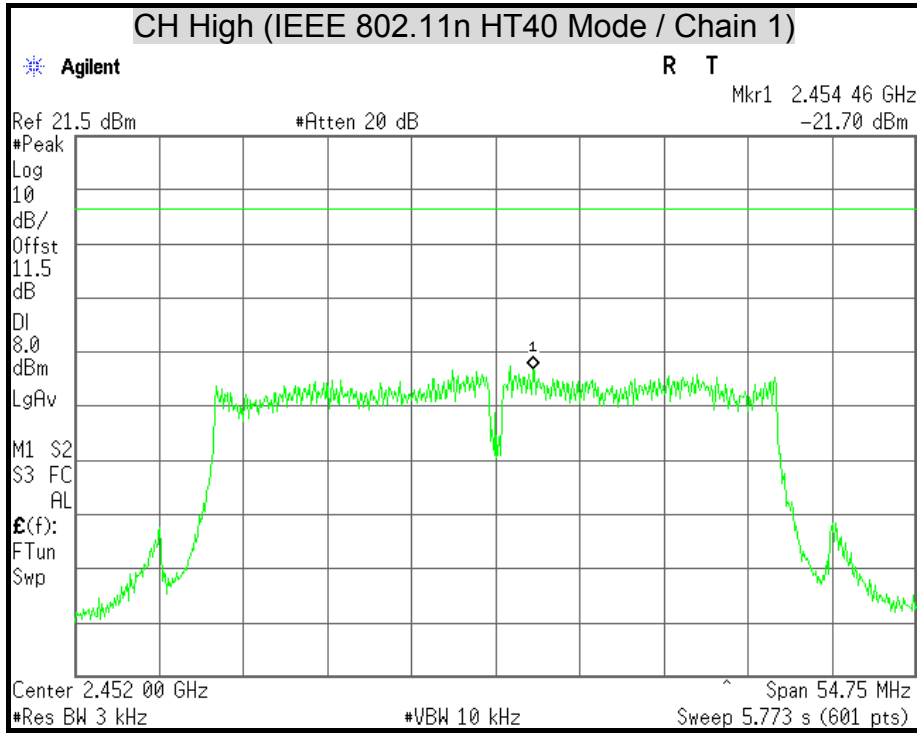














7.4 CONDUCTED SPURIOUS EMISSION

LIMITS

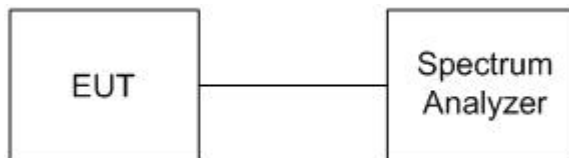
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest 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

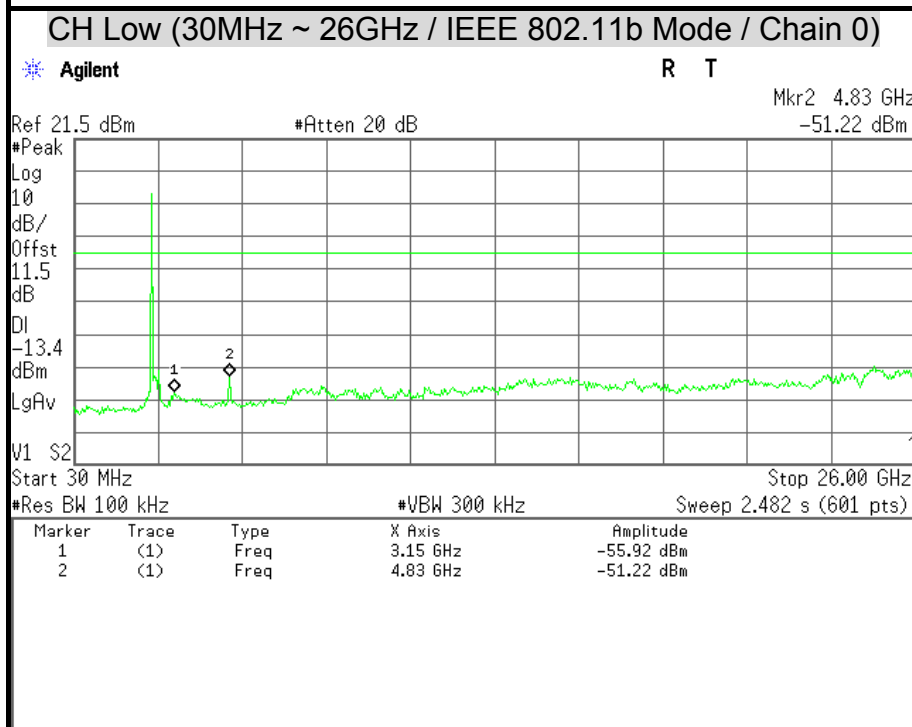
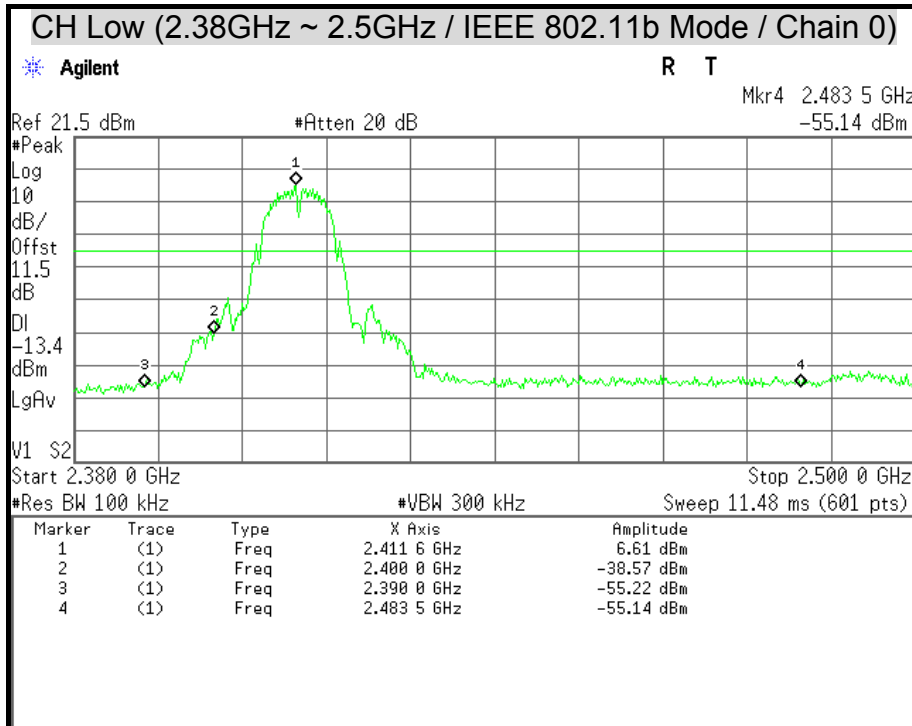
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

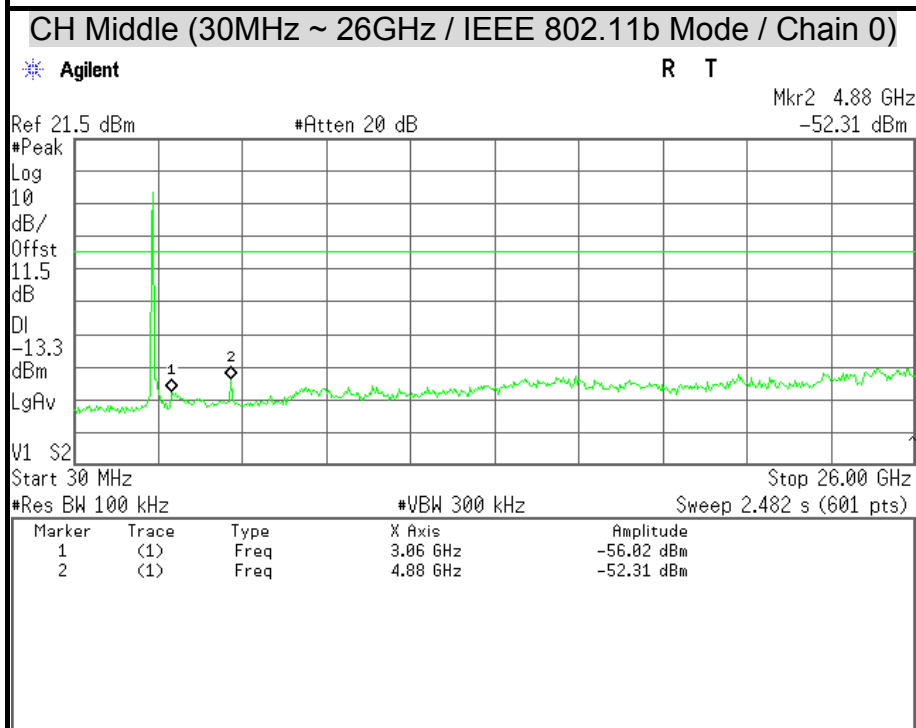
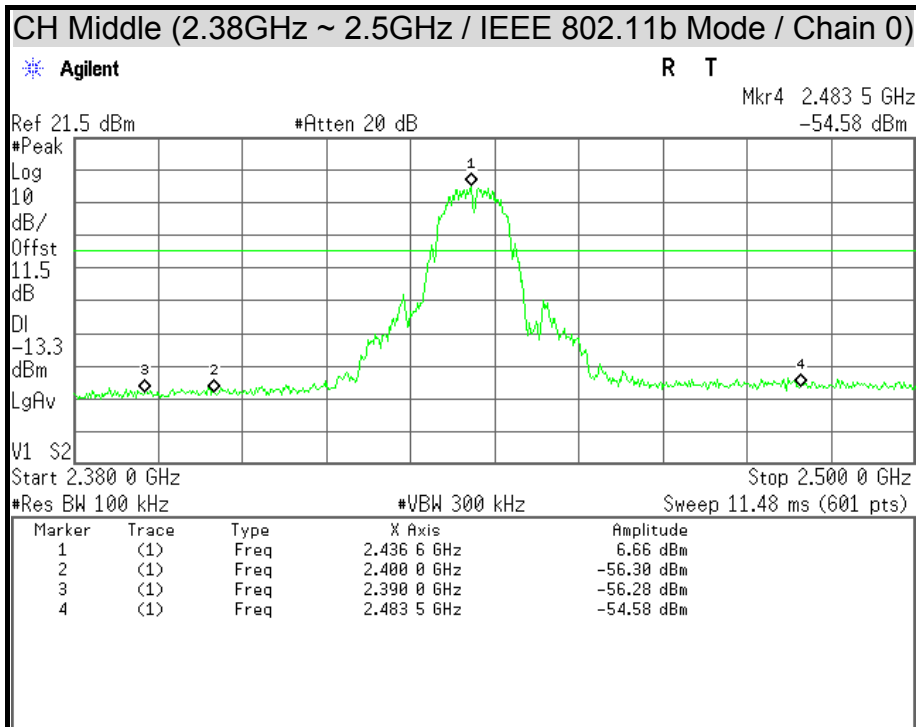
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

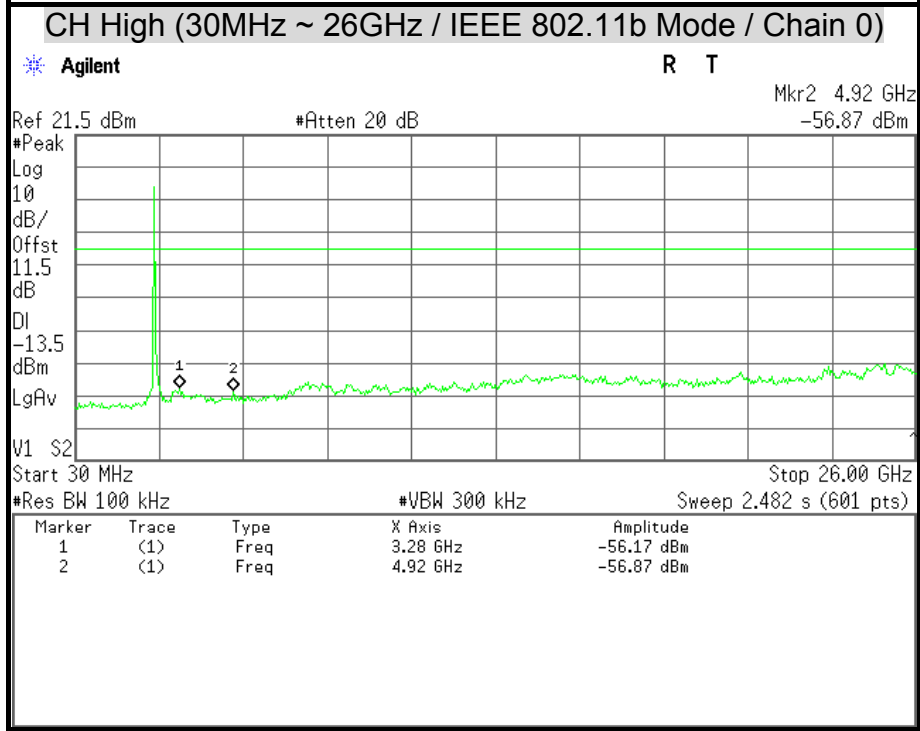
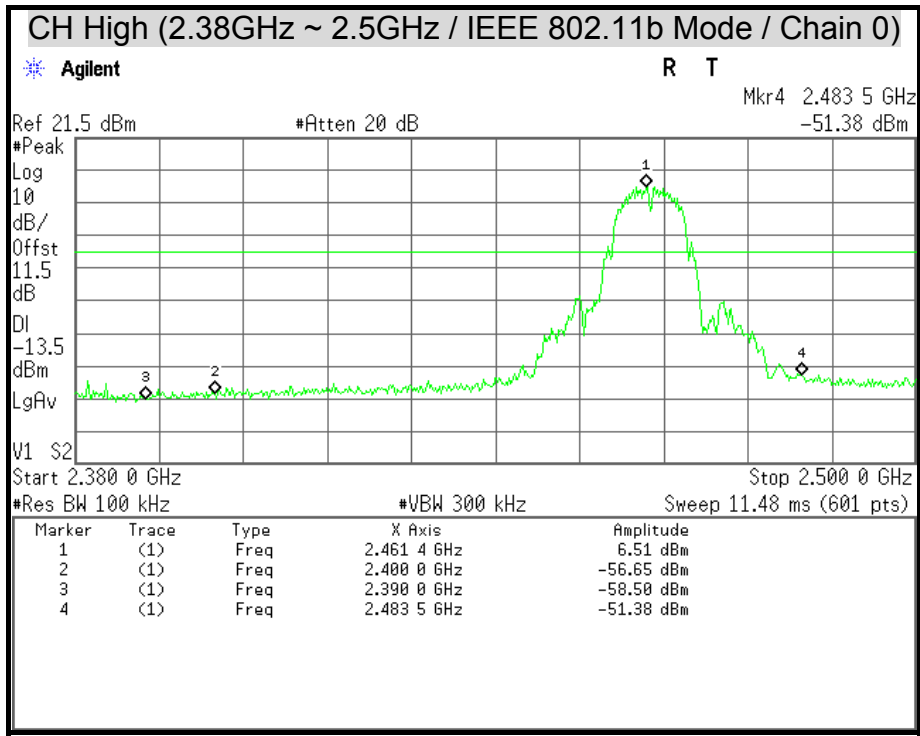


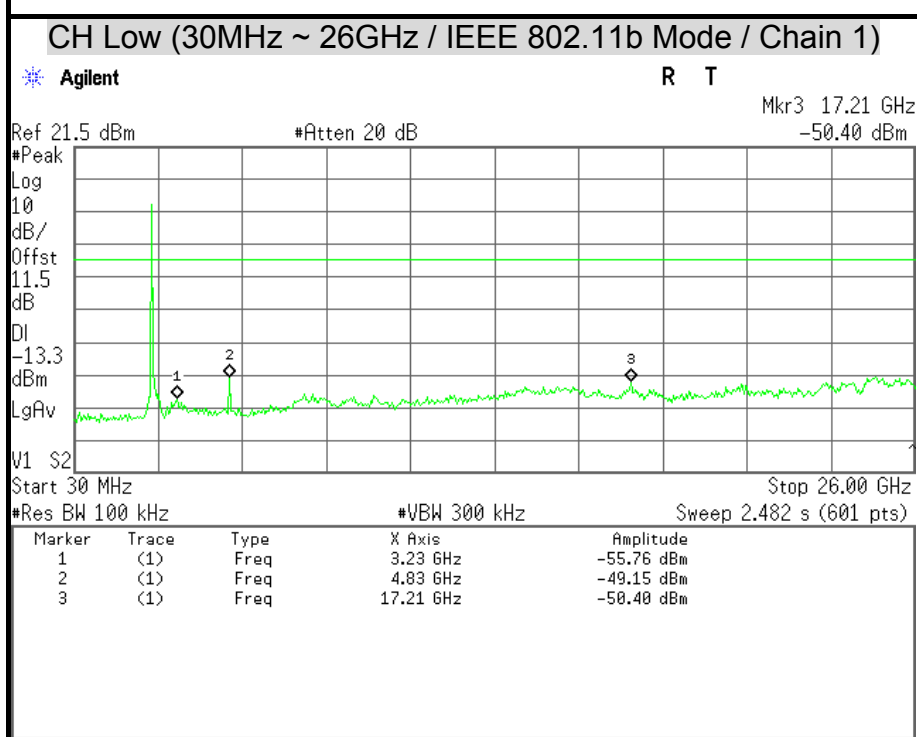
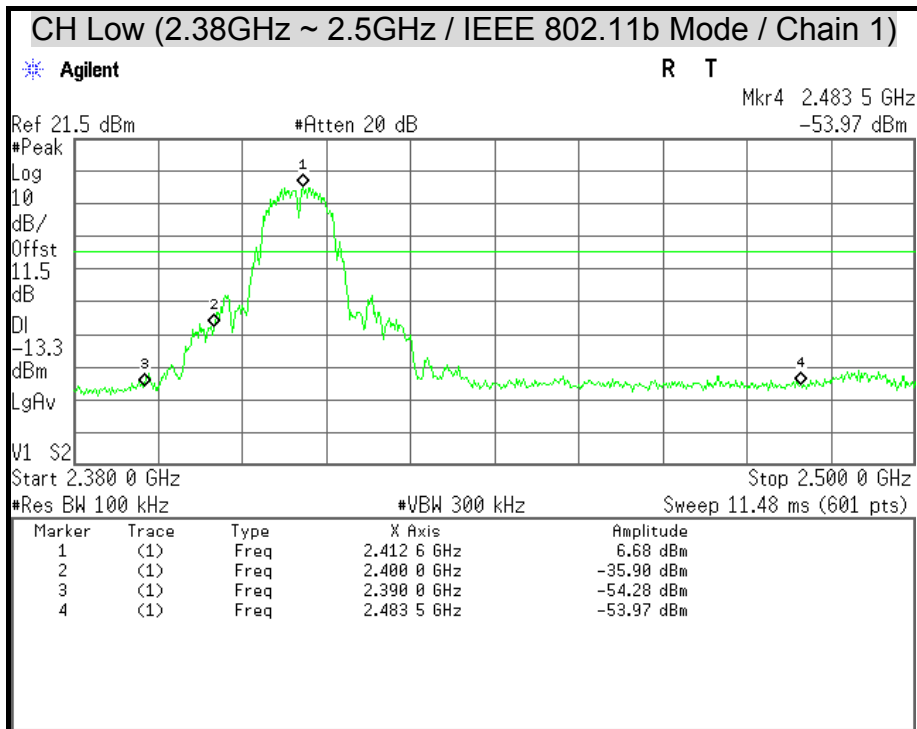
TEST RESULTS

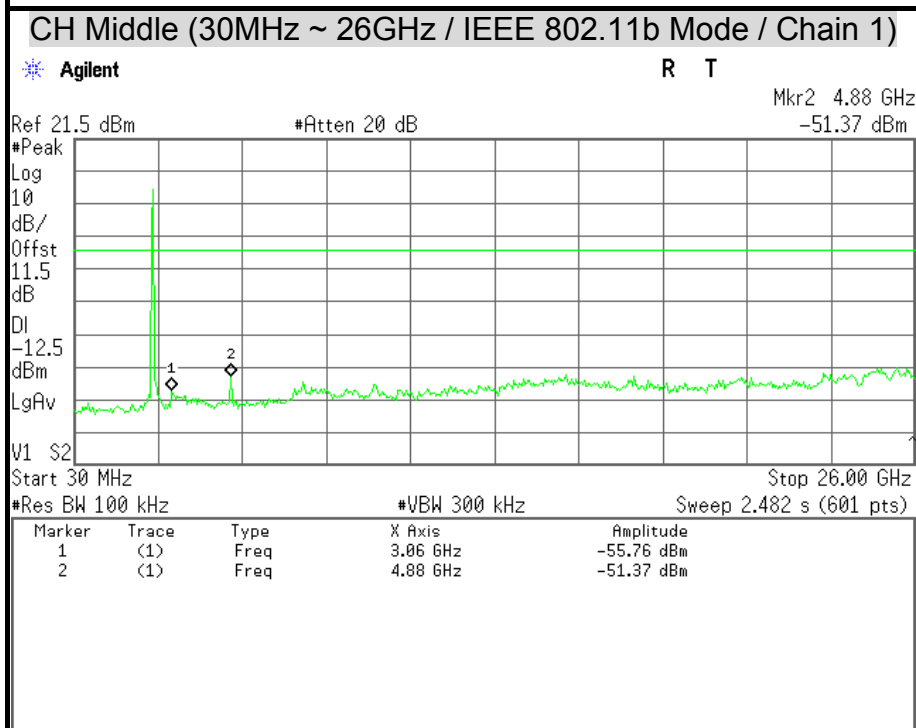
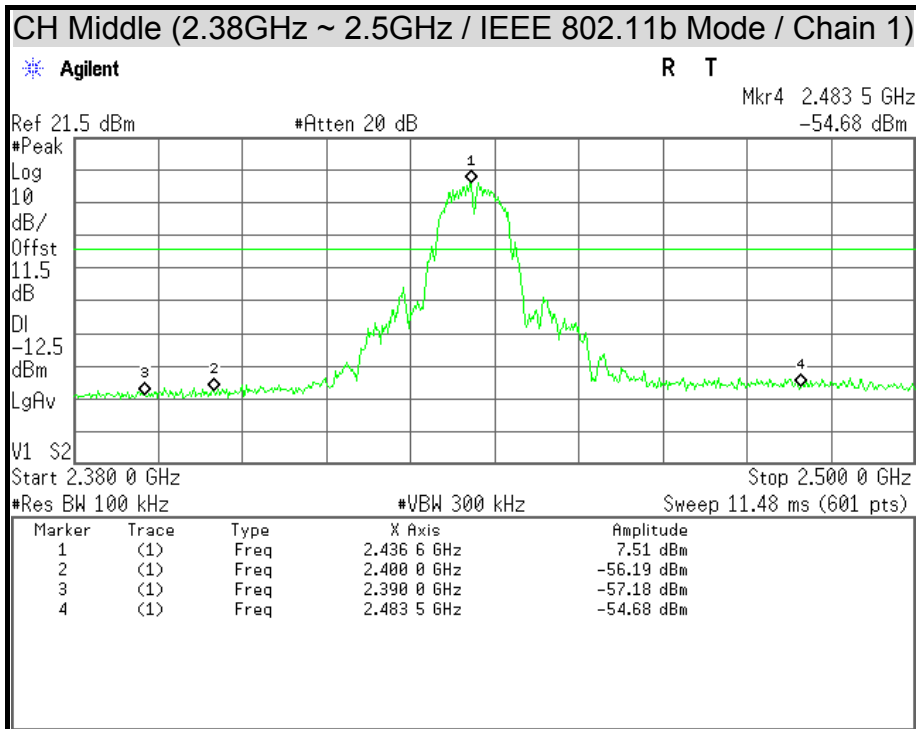
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

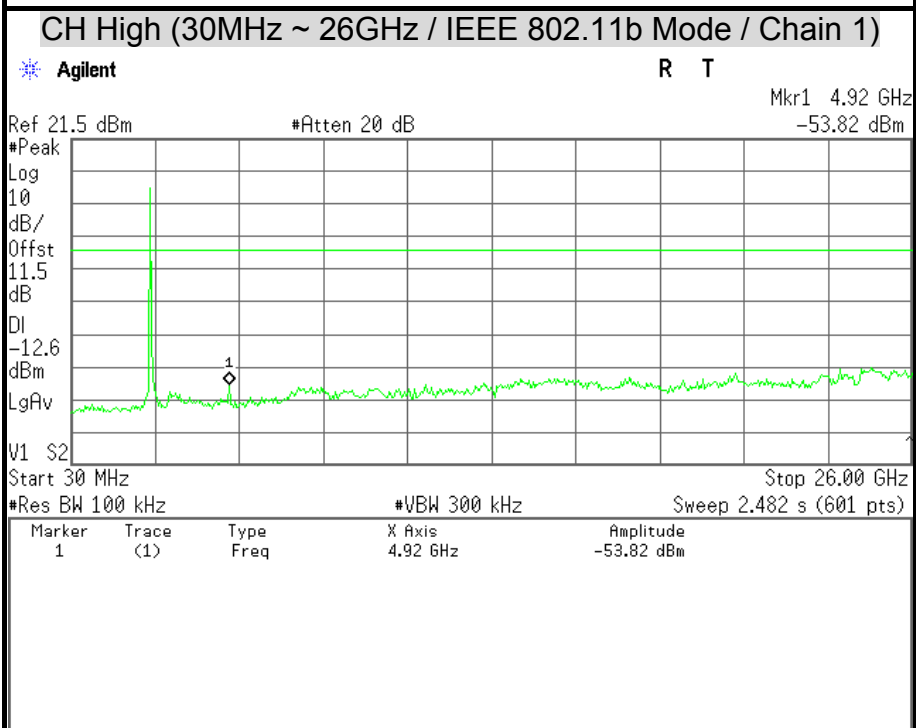
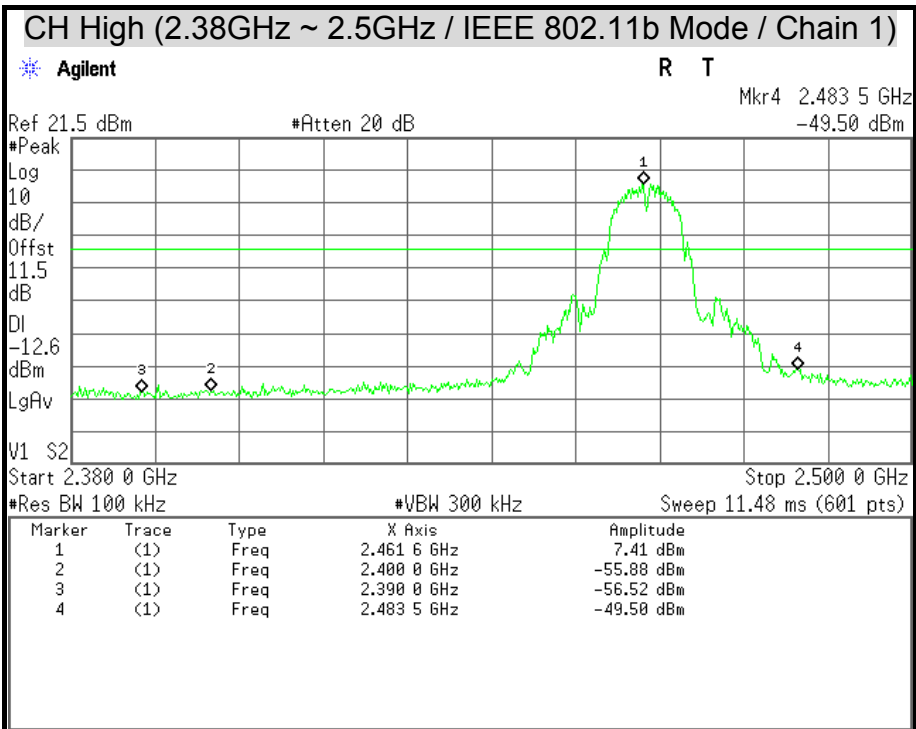


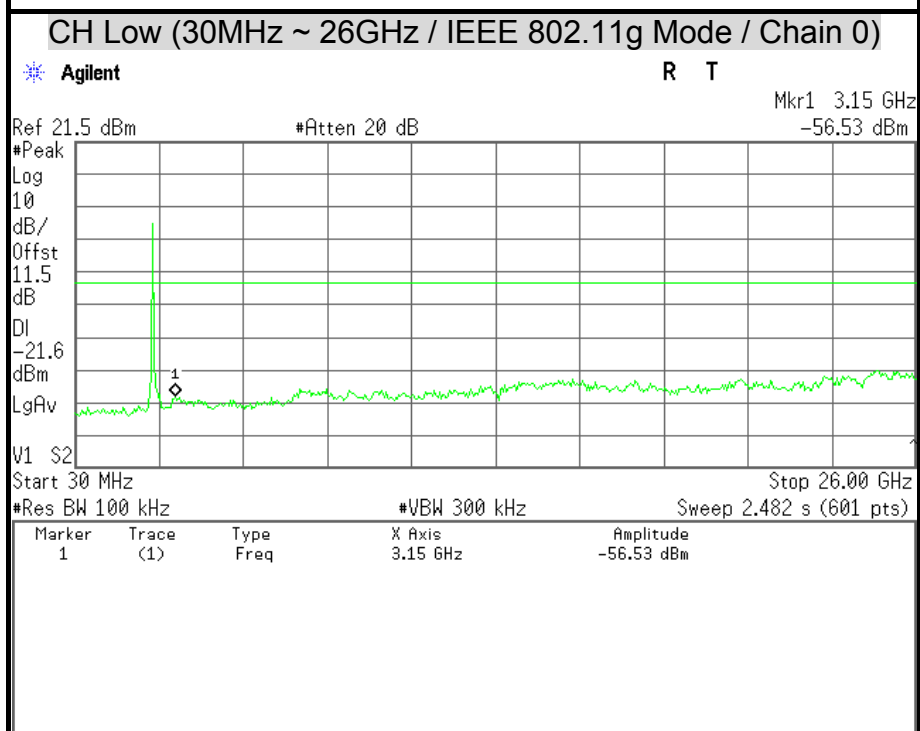
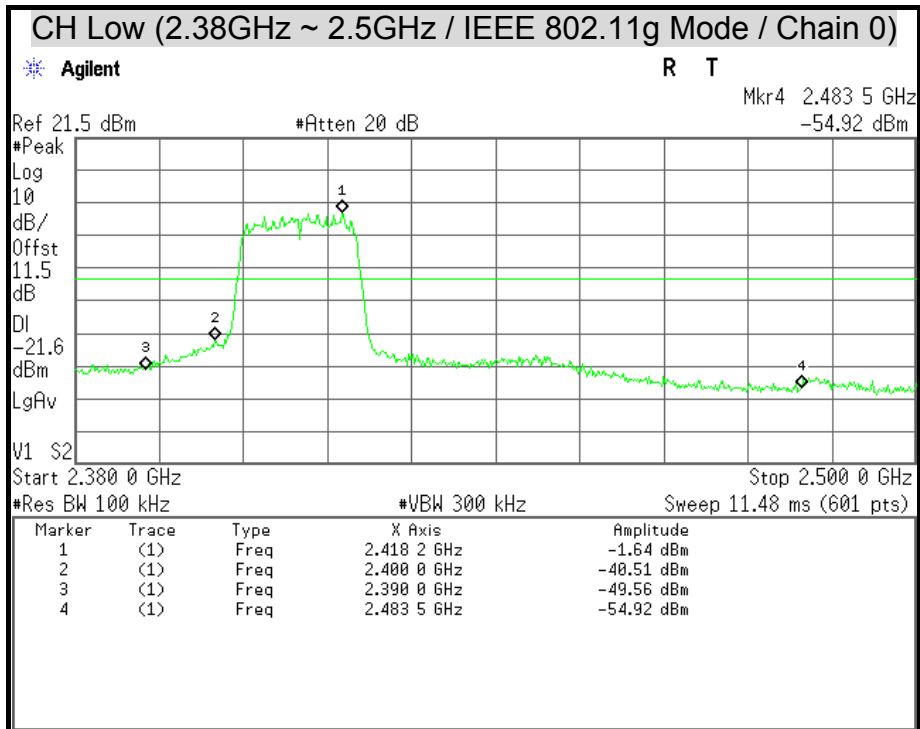


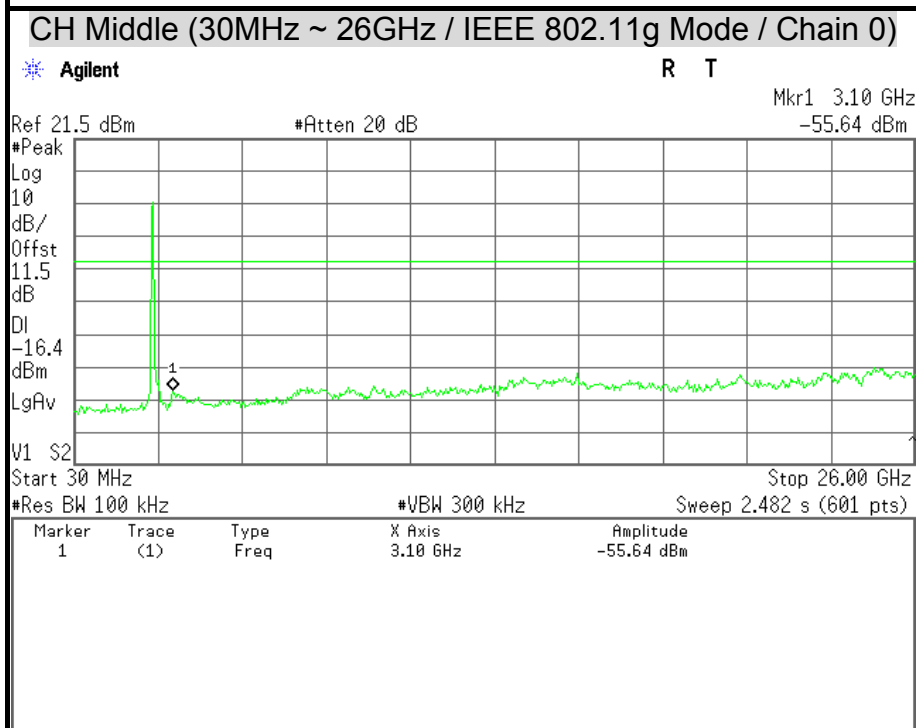
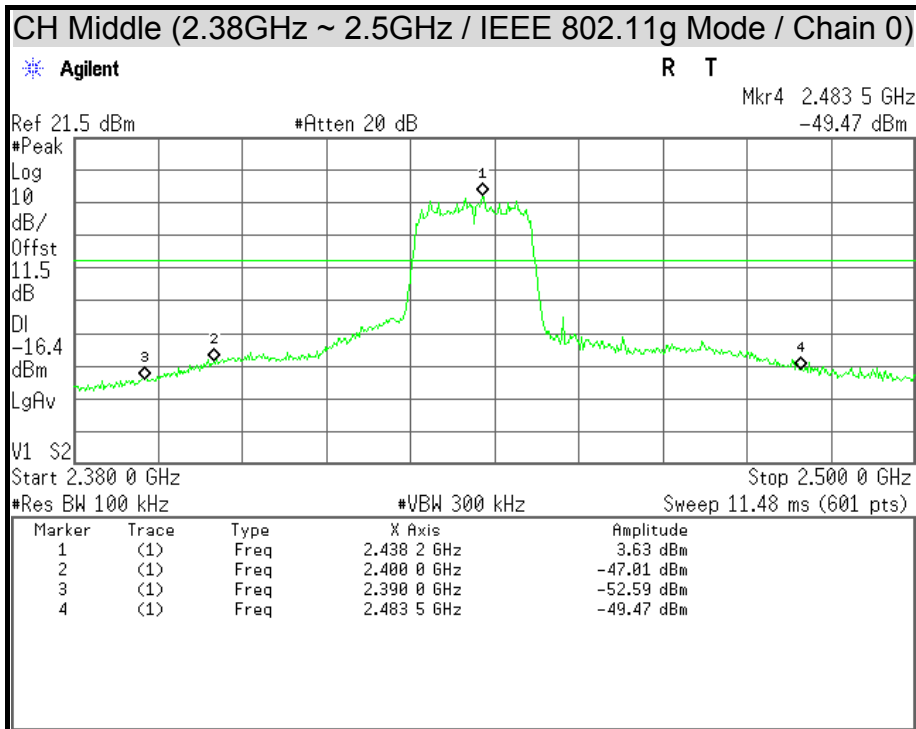


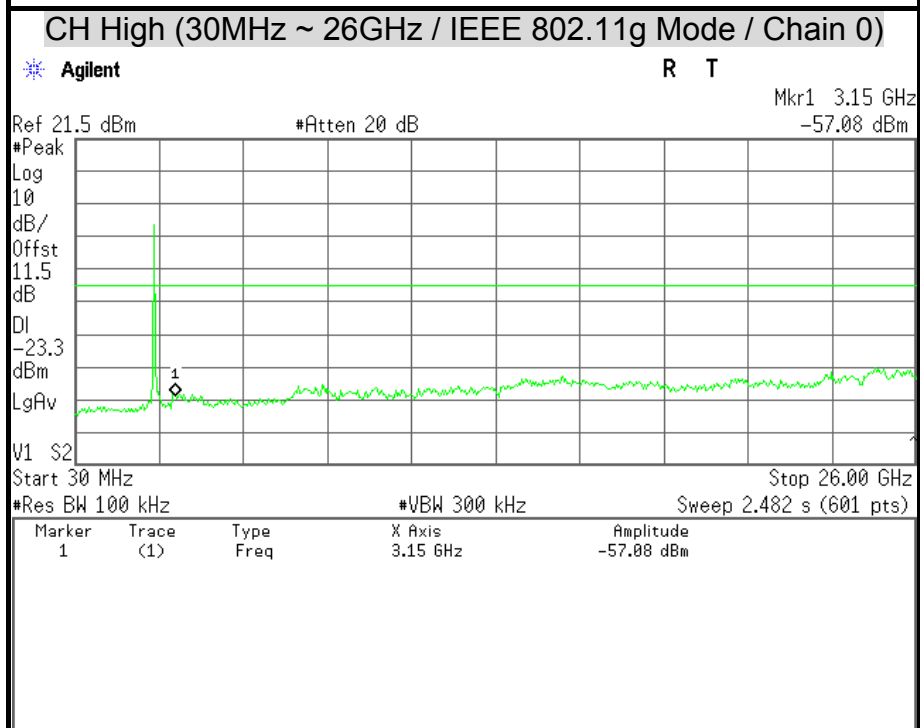
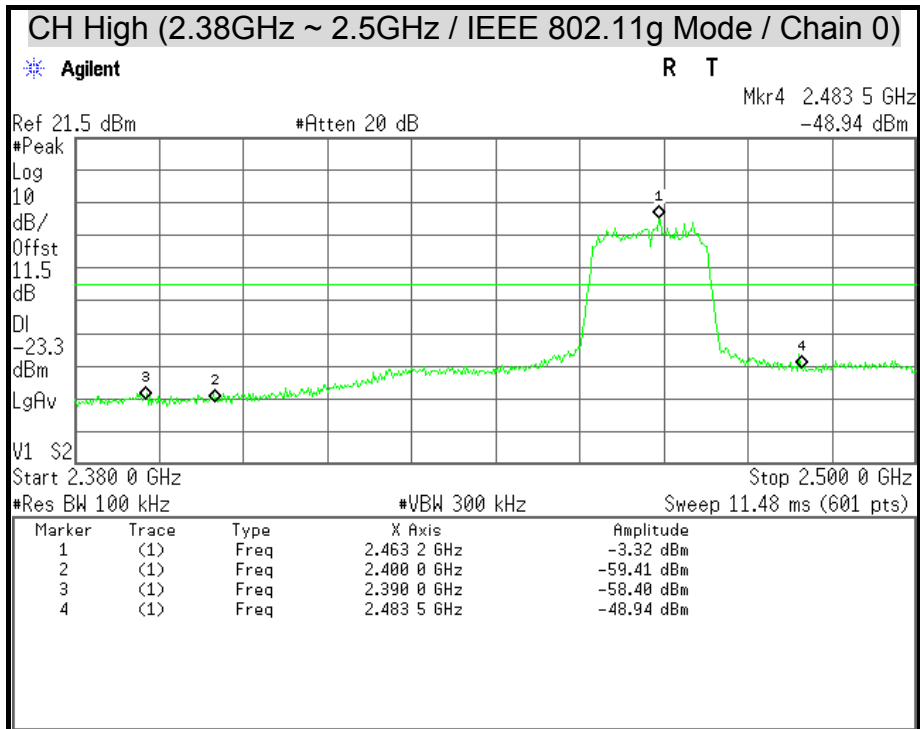


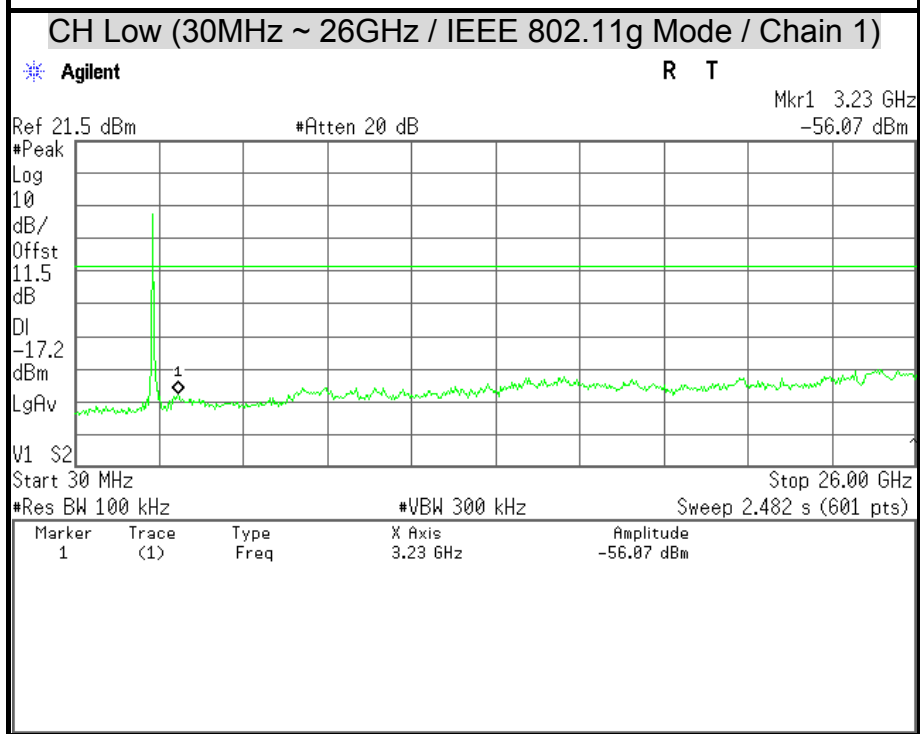
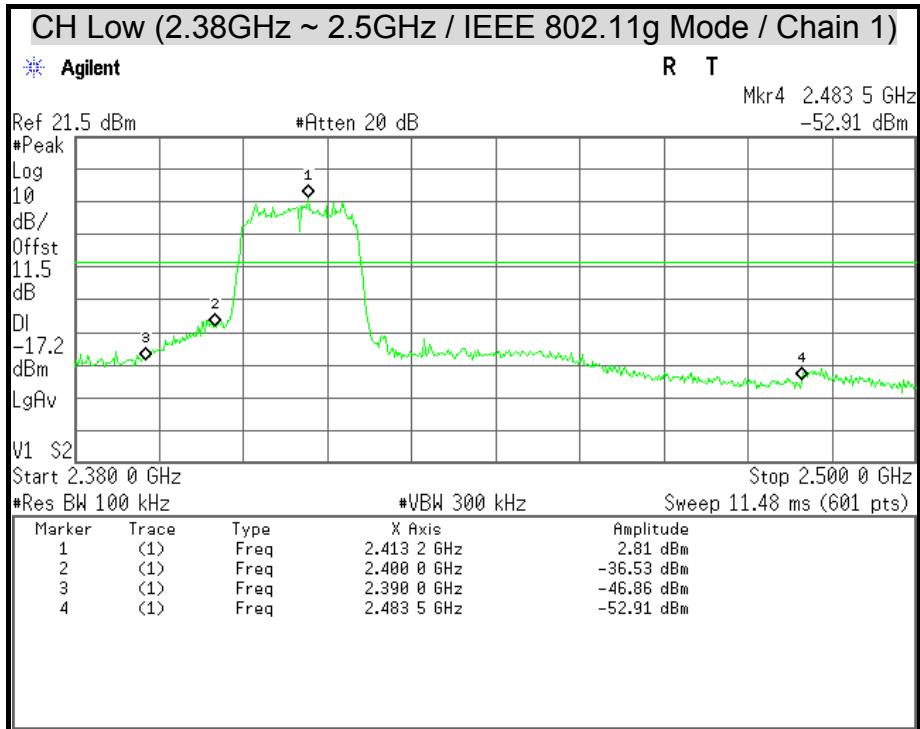


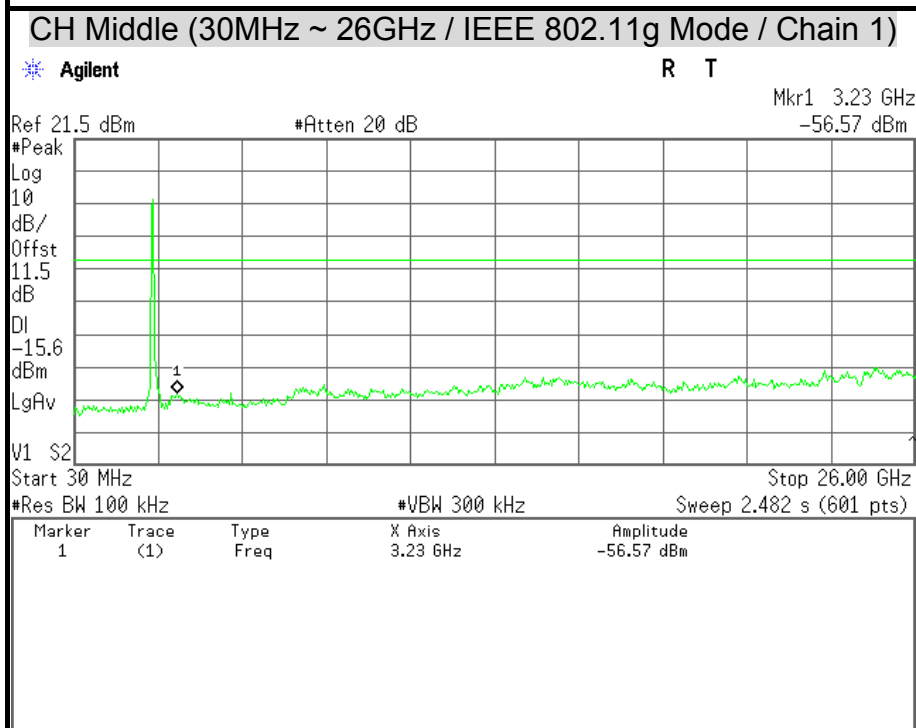
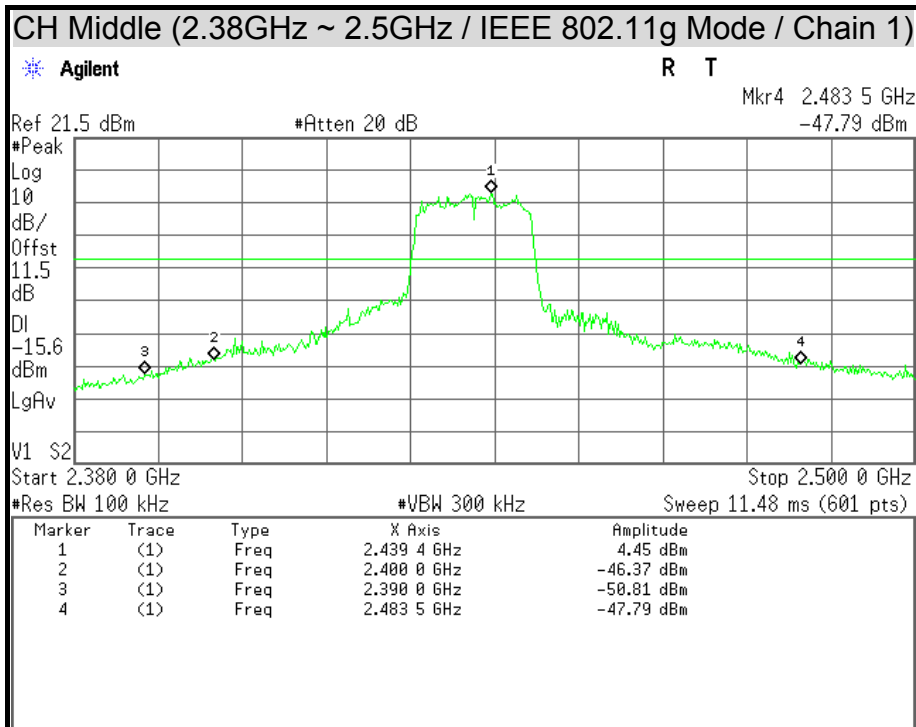


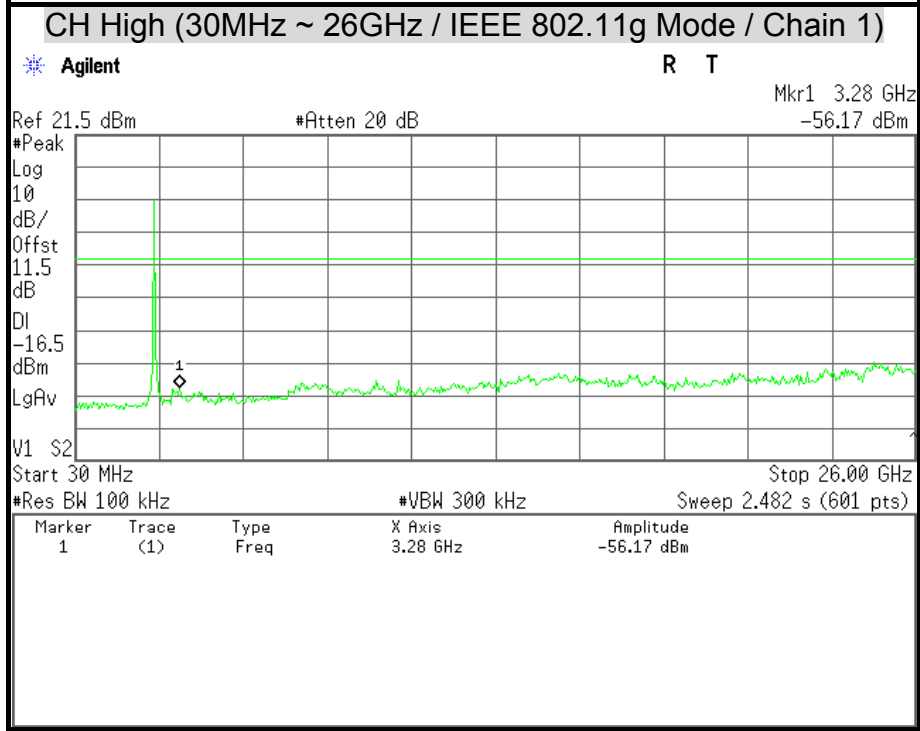
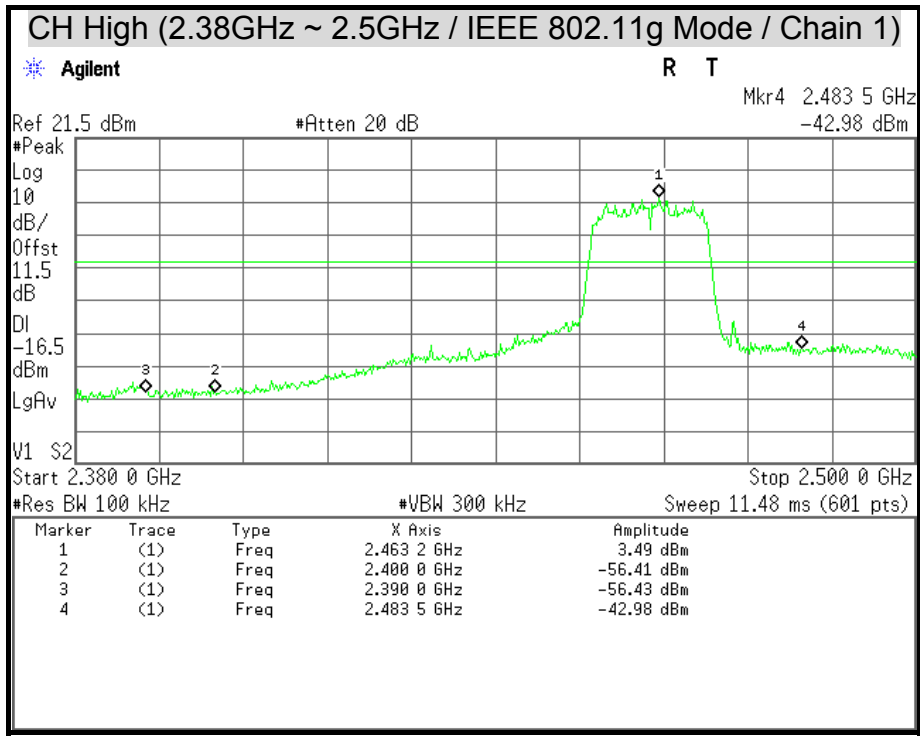


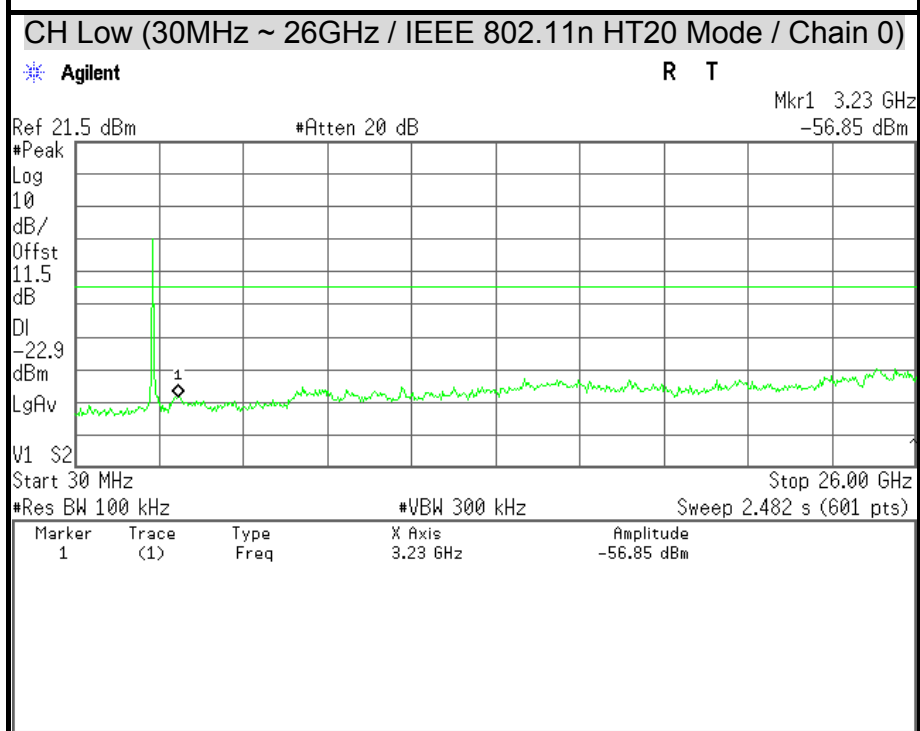
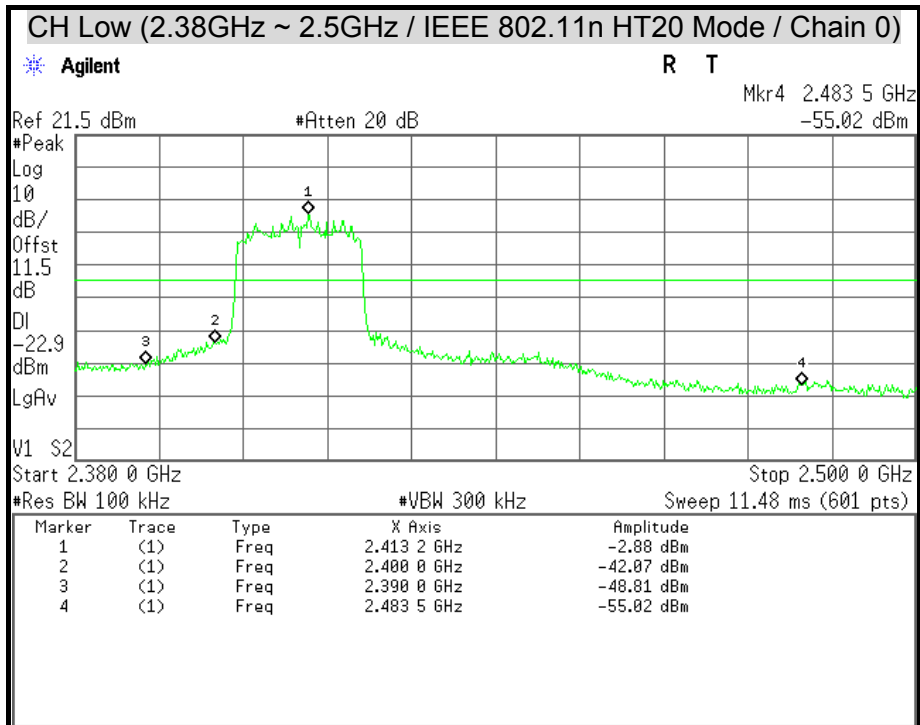


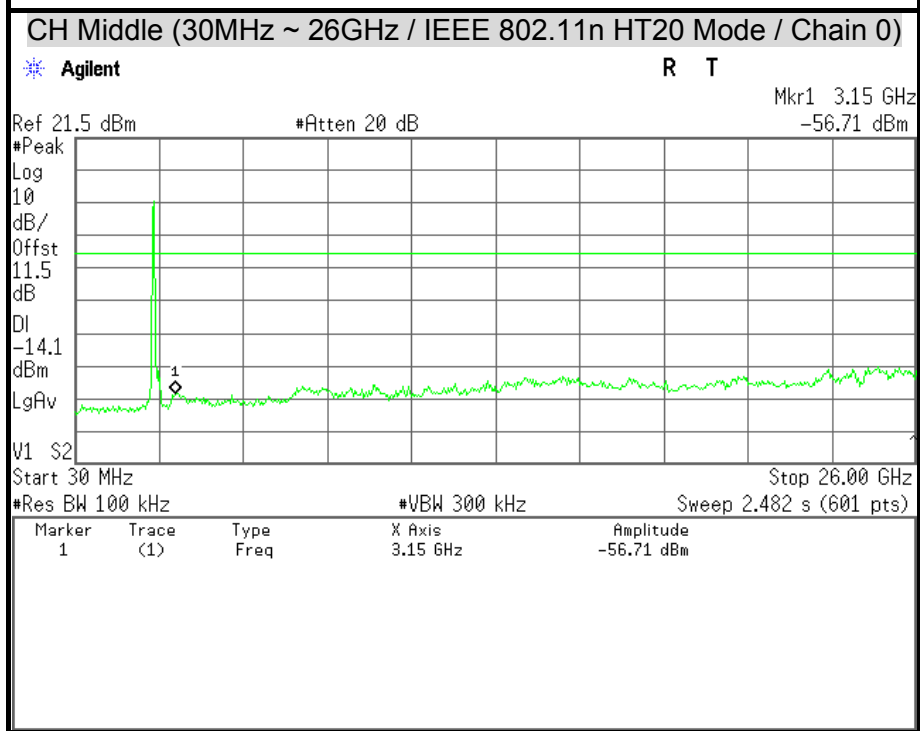
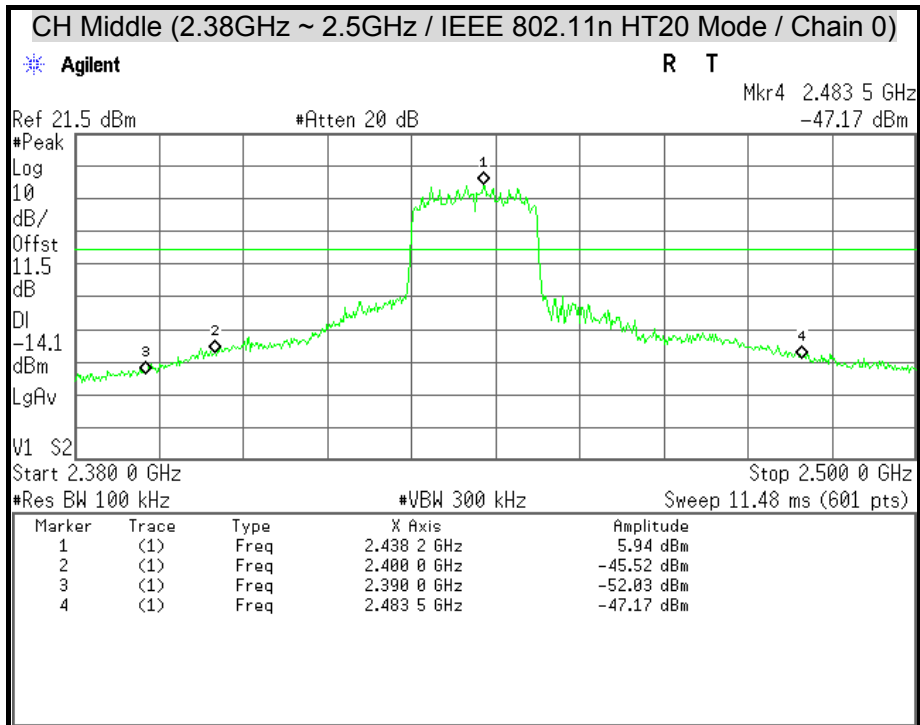


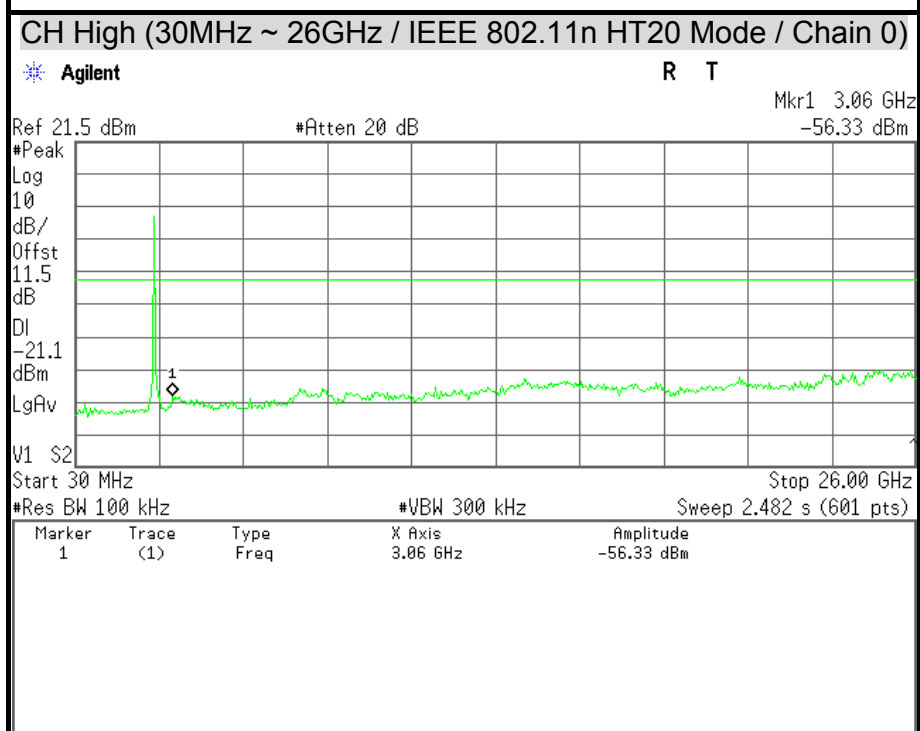
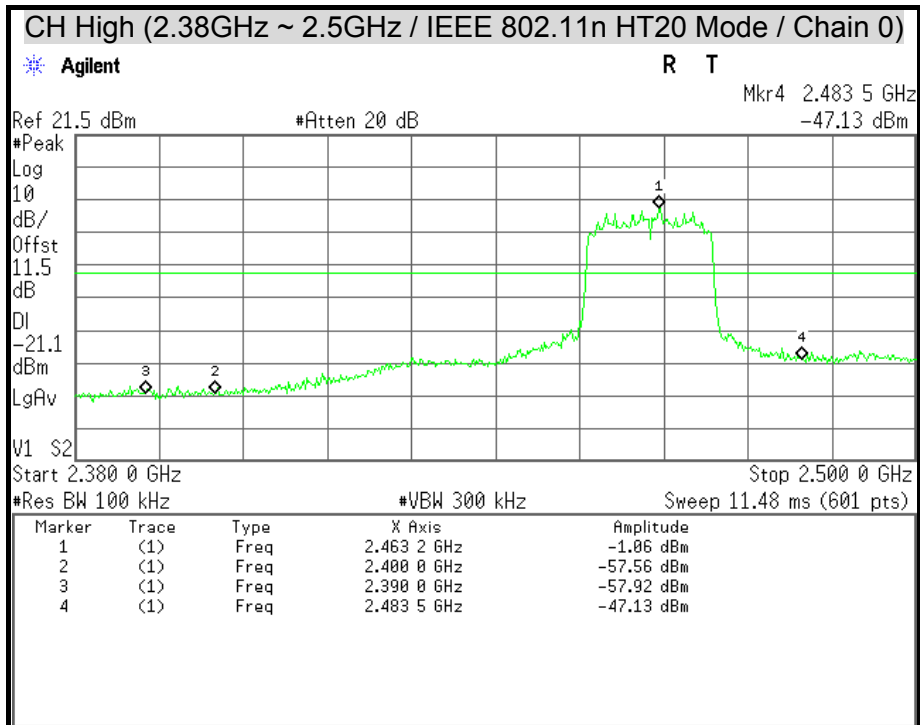


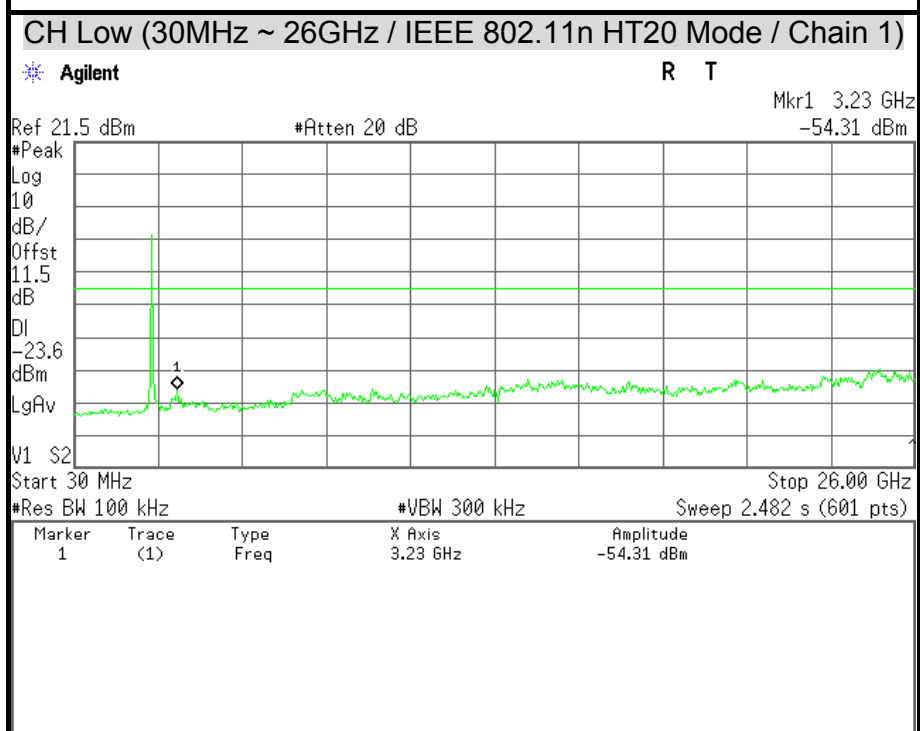
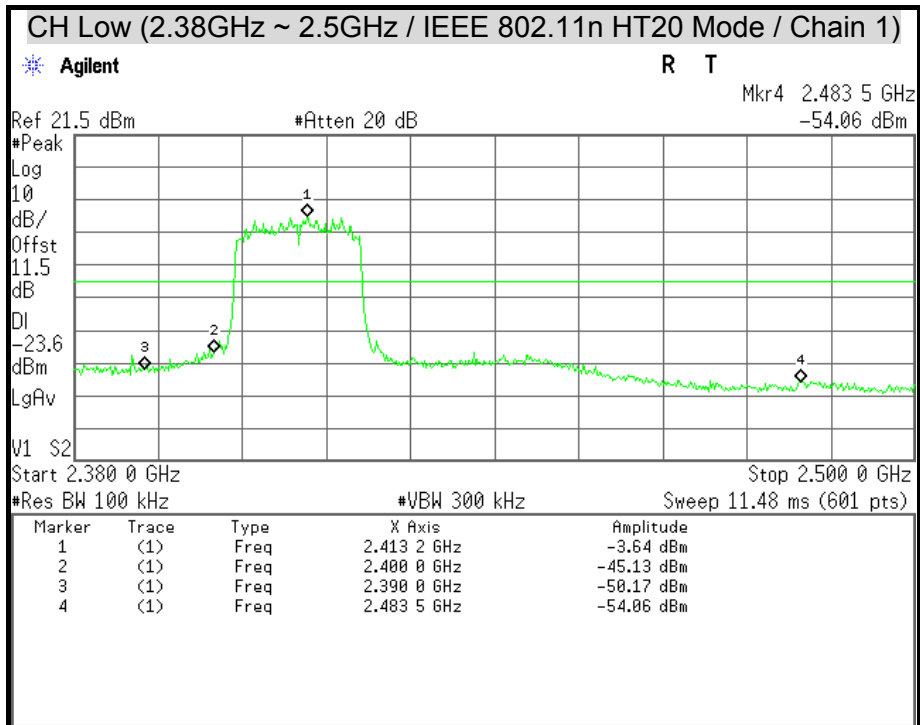


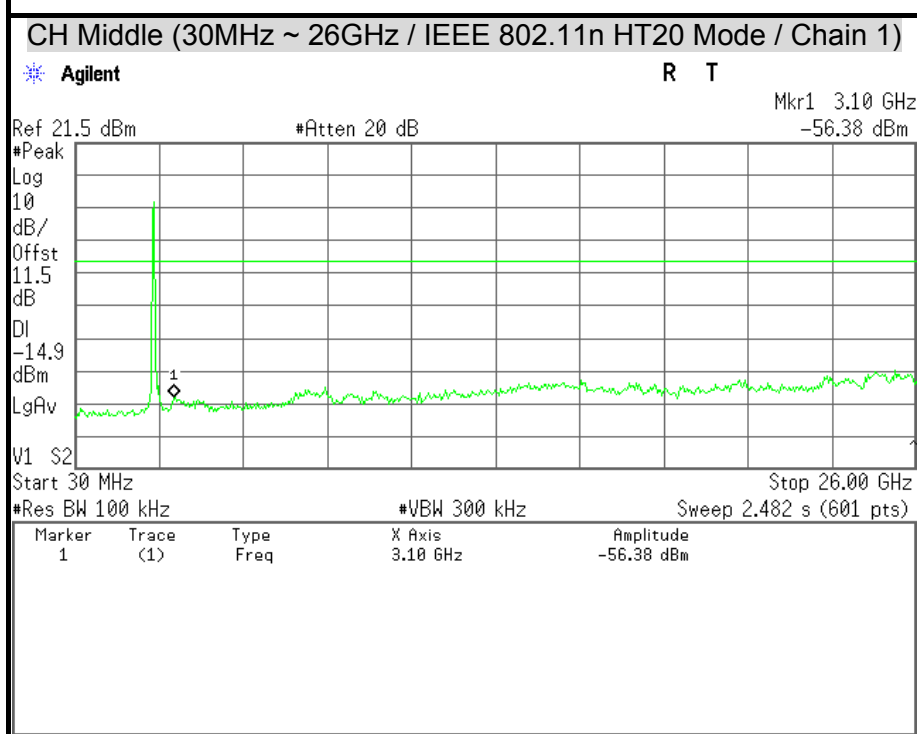
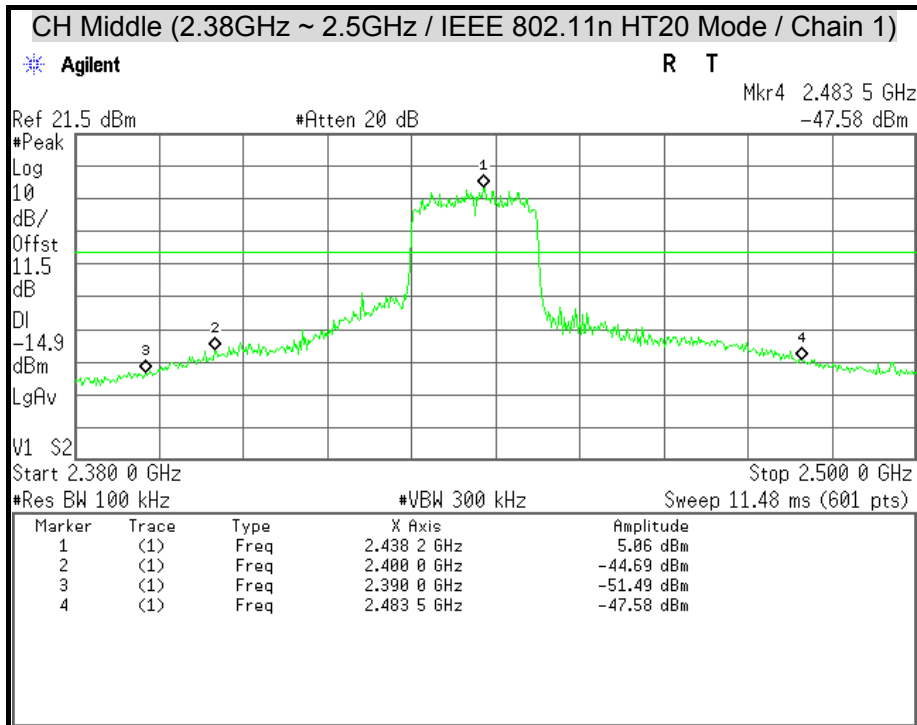


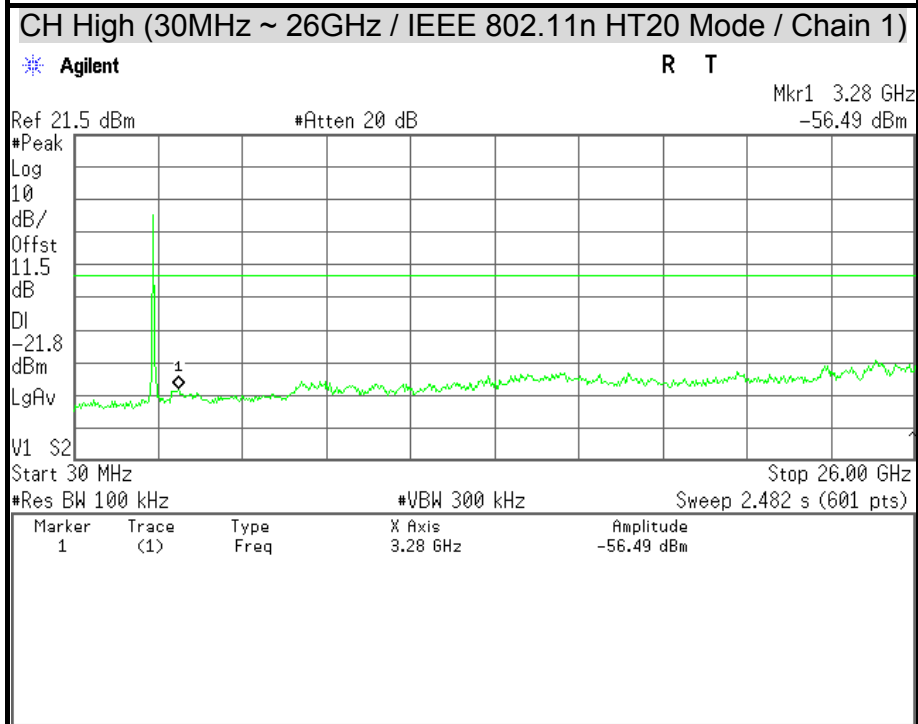
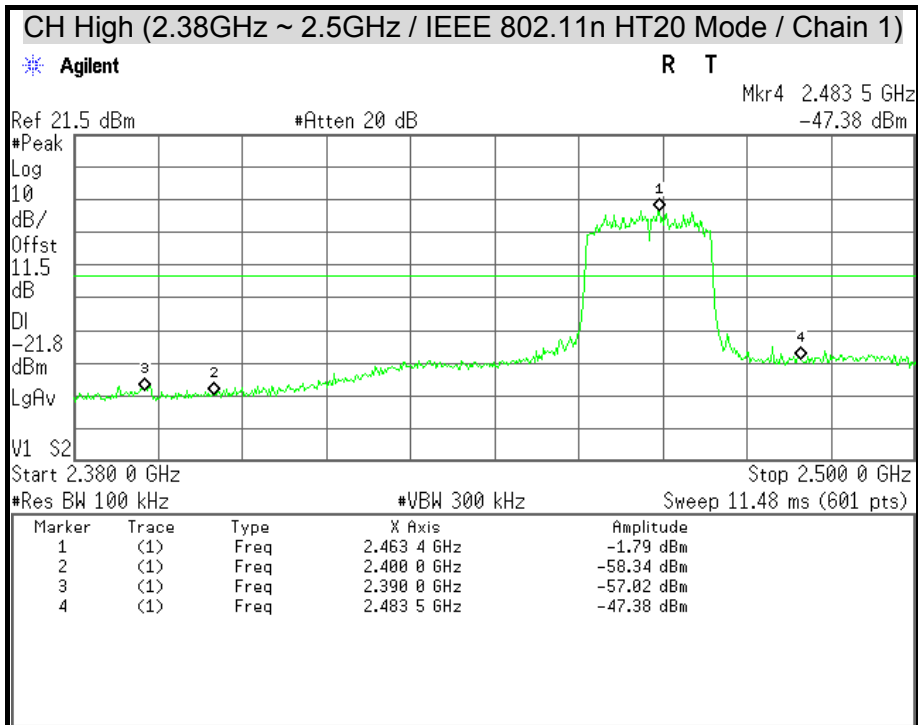


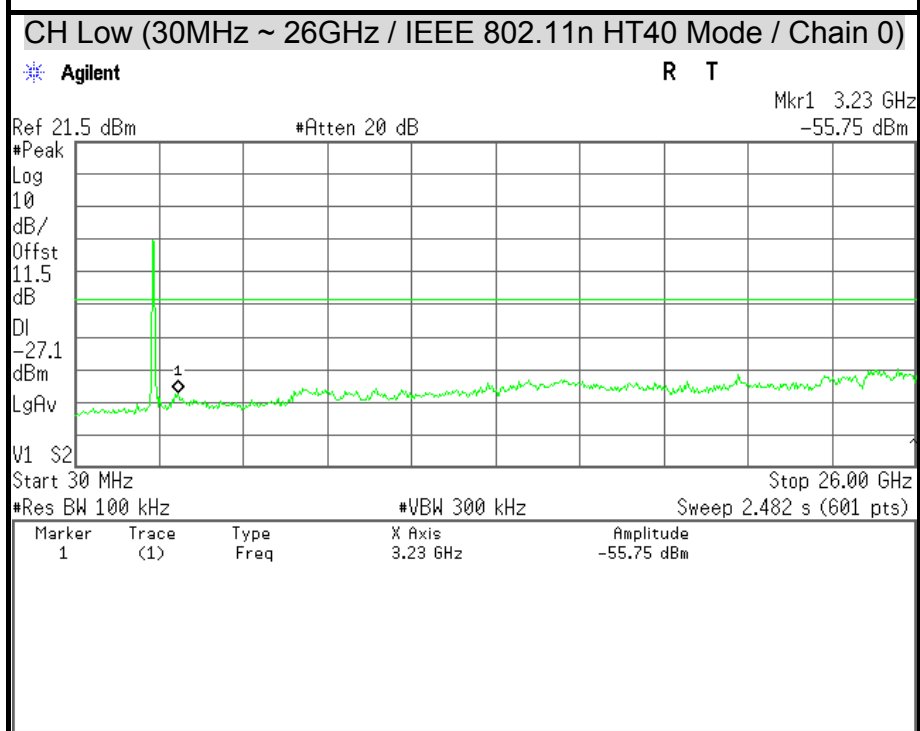
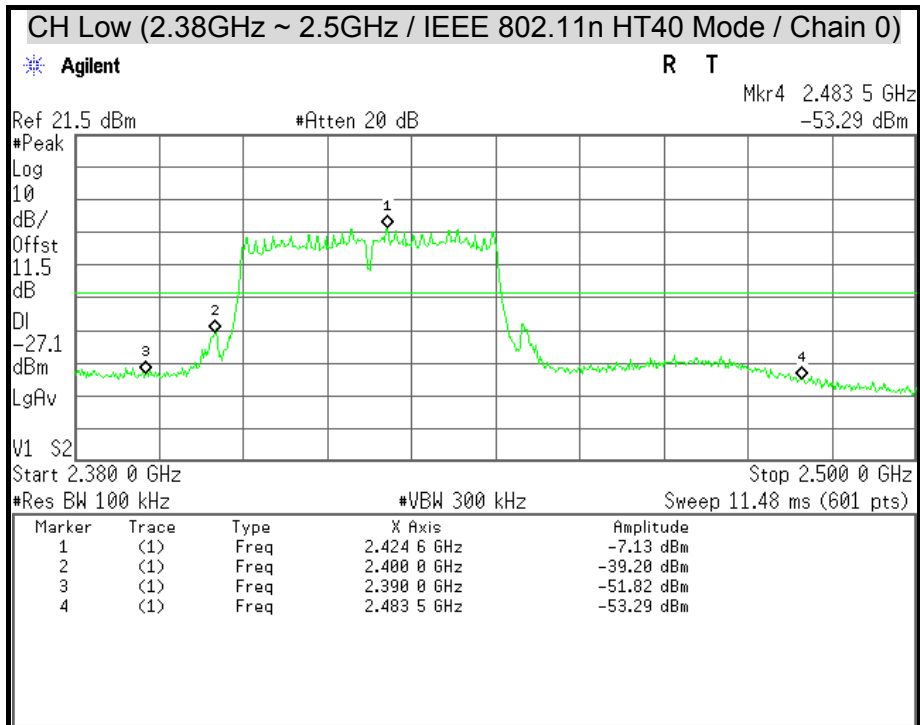


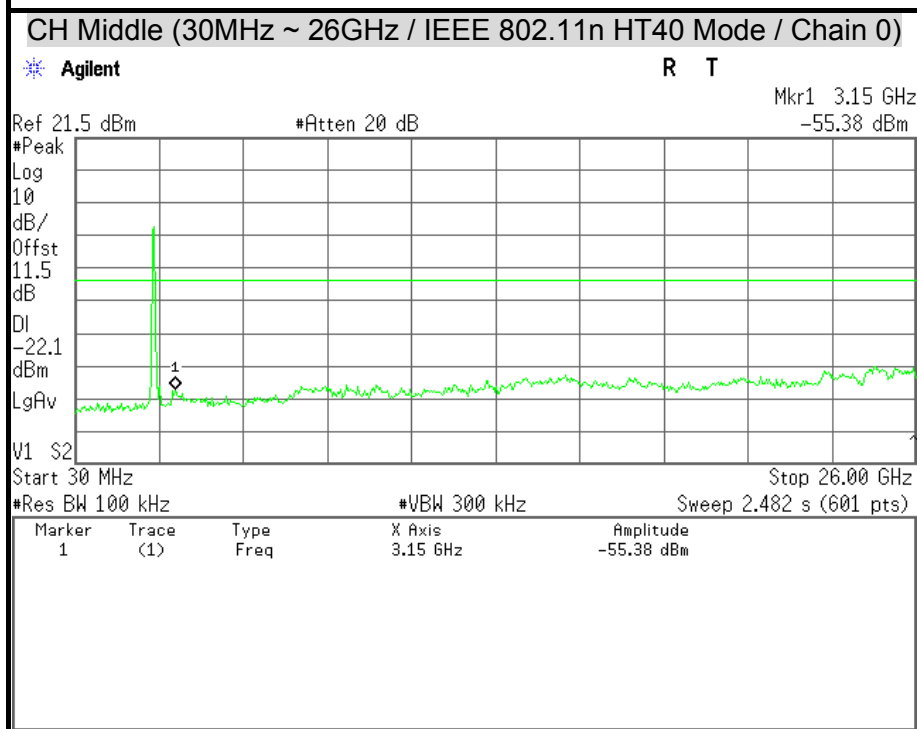
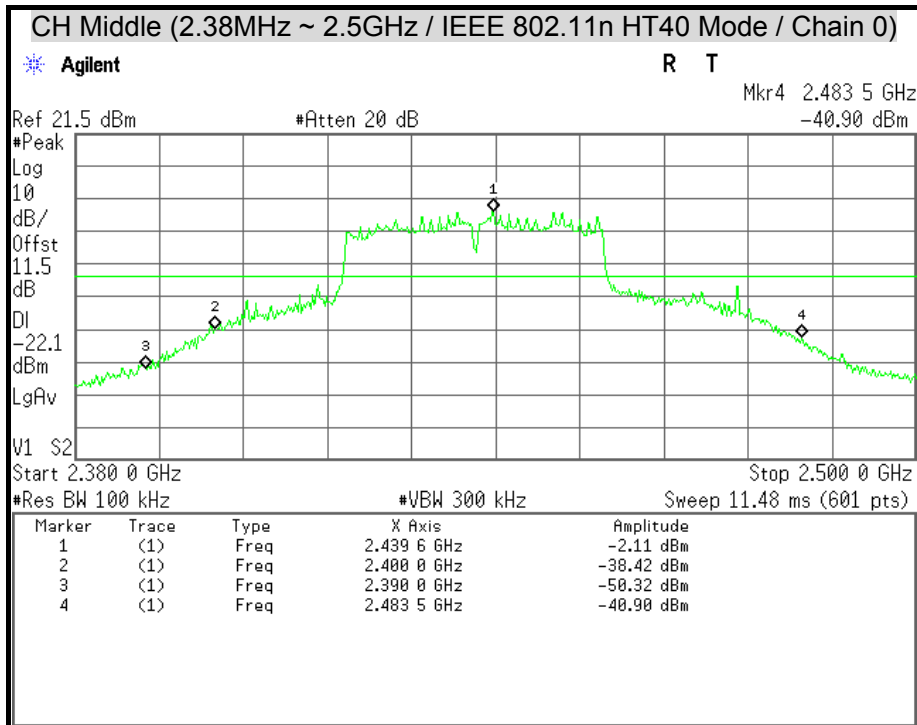


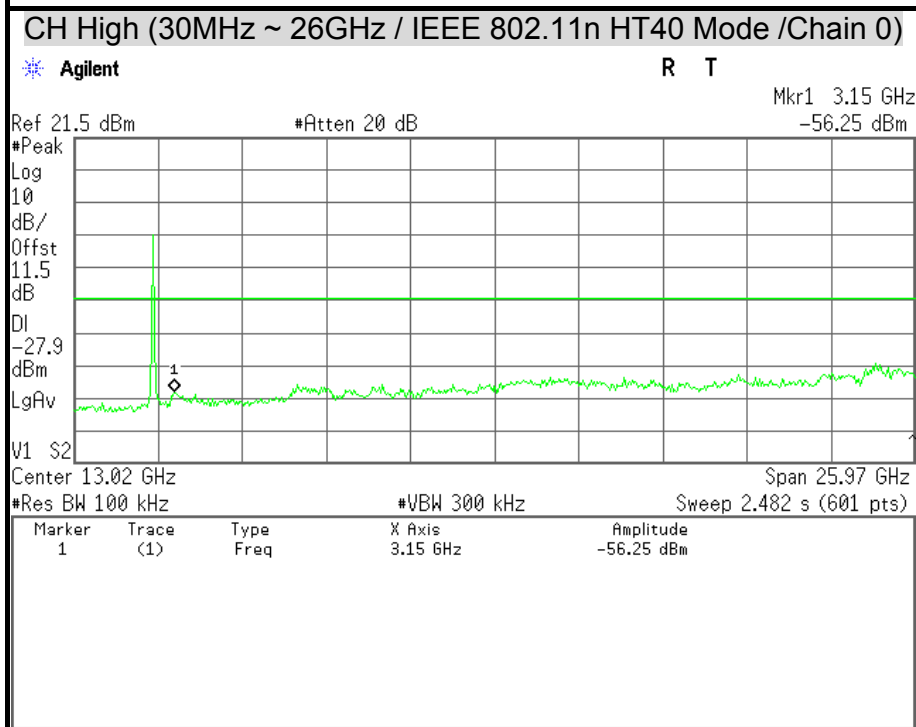
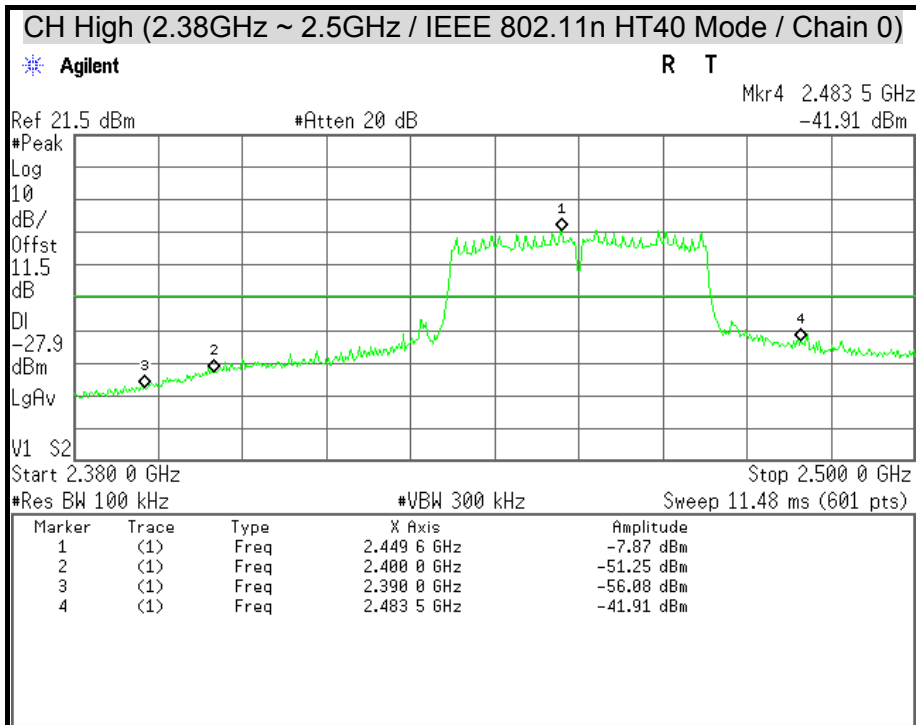


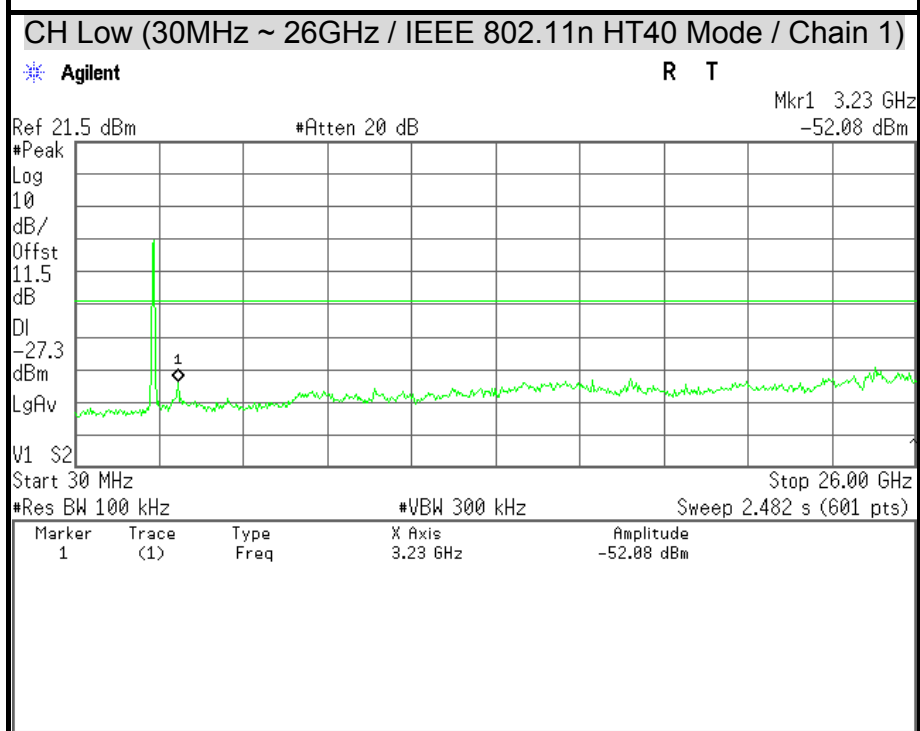
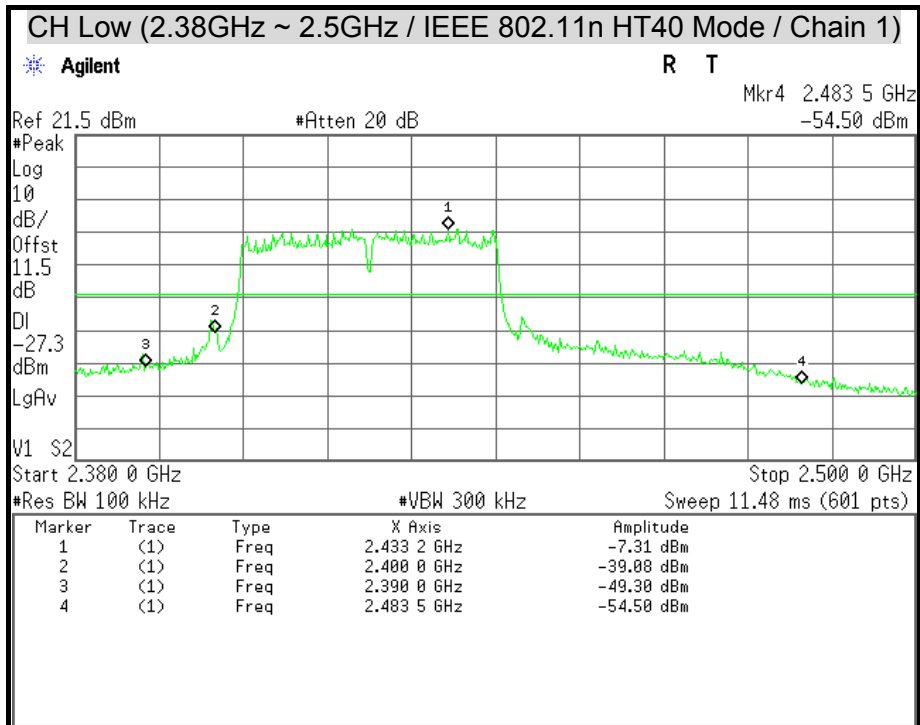


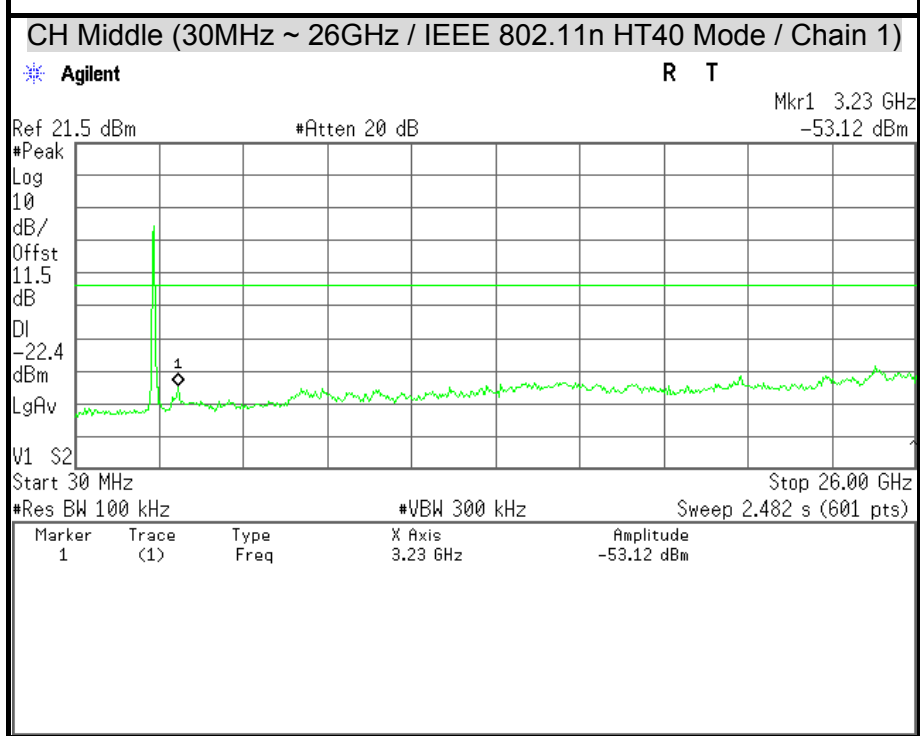
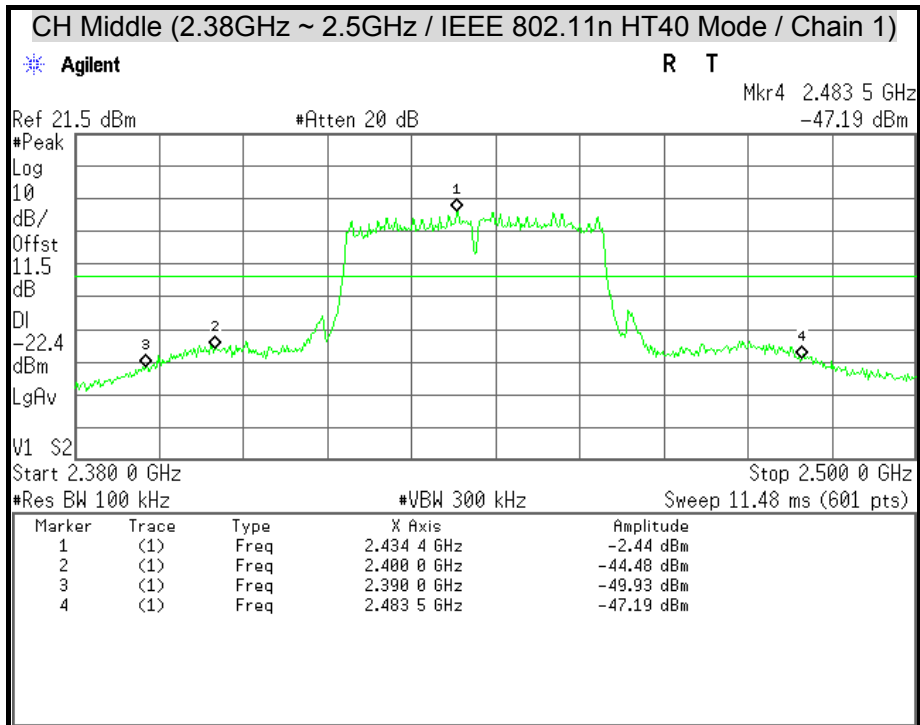


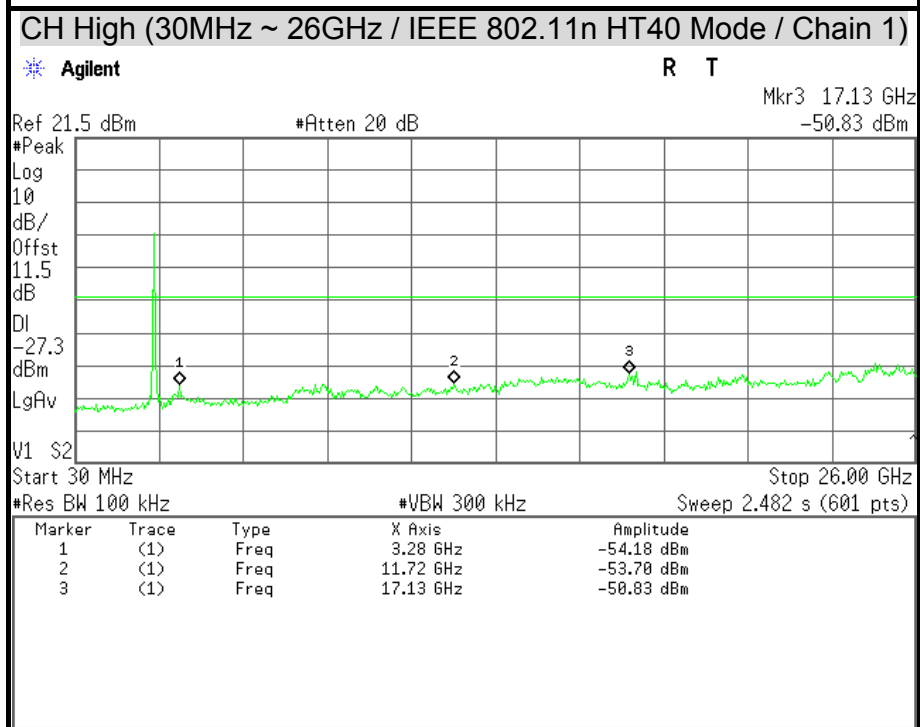
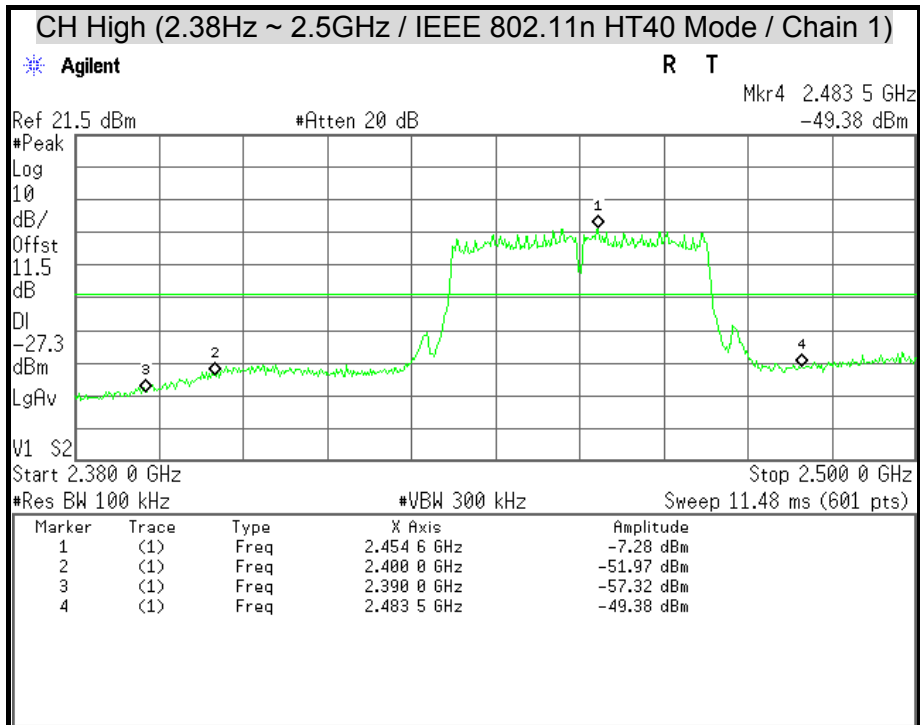














7.5 RADIATED EMISSION

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

966Chamber_B

Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/22/2013
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101131	01/14/2014
Bi-log Antenna	SCHWARZBECK	VULB 9168	9168-250	09/26/2013
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	12/11/2013
Horn Antenna	COM-POWER	AH-840	03077	12/20/2013
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.

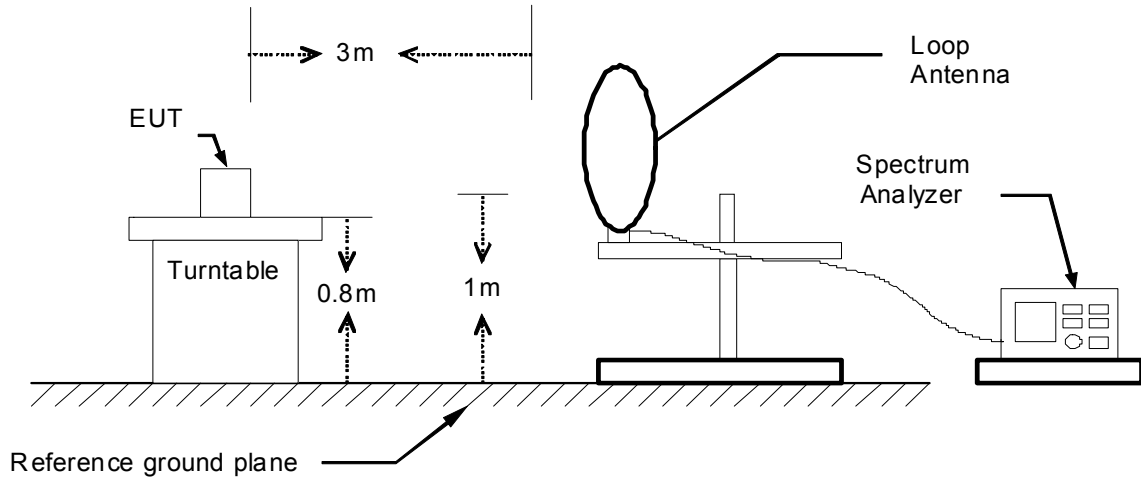
Remark: 1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R = No Calibration Request.



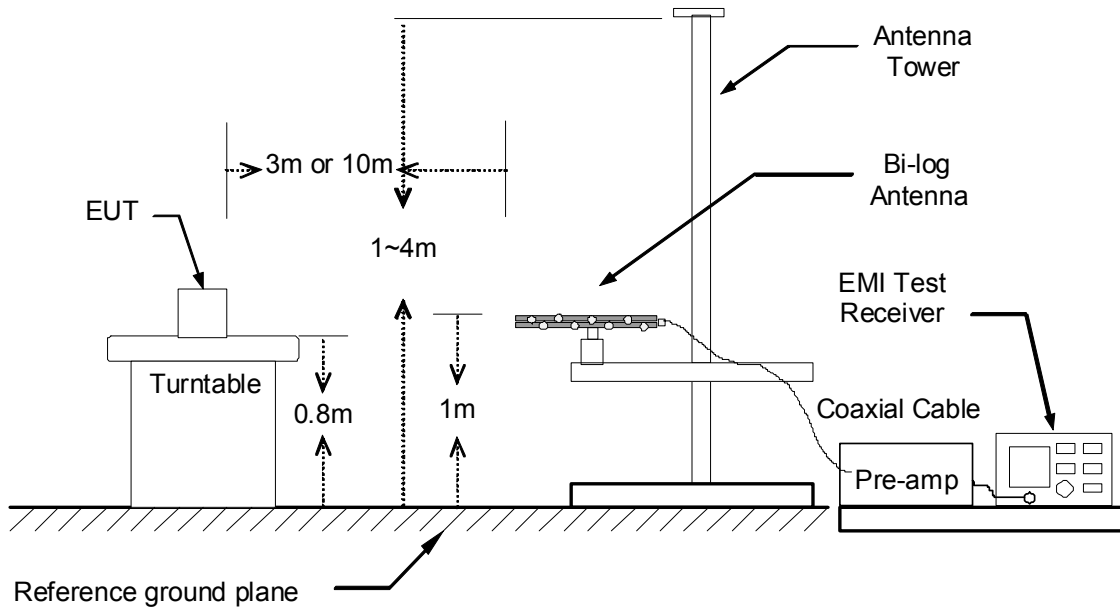
TEST SETUP

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

9kHz ~ 30MHz

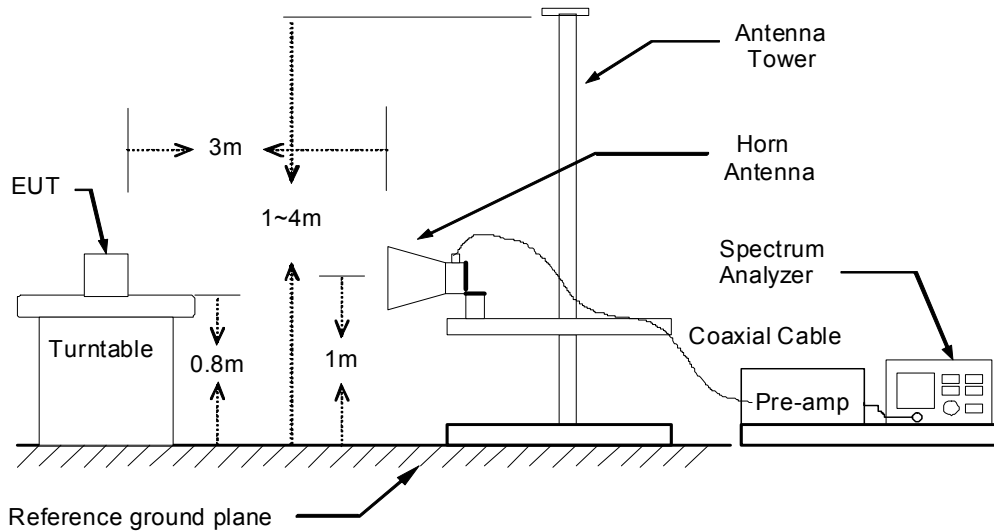


30MHz ~ 1GHz





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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Waternil Guan
Test Model	BiPAC 7800VNOX	Test Date	2013/01/28
Test Mode	Normal Operating	Temp. & Humidity	21°C, 48%

966 Chamber_B at 3Meter / Horizontal						
Frequency (MHz)	Reading (dBµV)	Correction Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
38.73	39.81	-13.84	25.97	40.00	-14.03	Peak
125.06	47.53	-15.29	32.25	43.50	-11.25	Peak
234.67	52.90	-14.00	38.90	46.00	-7.10	Peak
375.32	44.32	-9.92	34.40	46.00	-11.60	Peak
624.61	44.92	-5.18	39.75	46.00	-6.25	Peak
749.74	40.24	-2.98	37.26	46.00	-8.74	Peak
874.87	38.90	-0.97	37.92	46.00	-8.08	Peak
960.23	37.66	0.06	37.72	54.00	-16.28	Peak

966 Chamber_B at 3Meter / Vertical						
Frequency (MHz)	Reading (dBµV)	Correction Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
39.70	47.50	-13.67	33.83	40.00	-6.17	QP
125.06	47.12	-15.29	31.83	43.50	-11.67	Peak
375.32	44.69	-9.92	34.78	46.00	-11.22	Peak
624.61	41.14	-5.18	35.97	46.00	-10.03	Peak
666.32	37.15	-4.76	32.39	46.00	-13.61	Peak
749.74	36.38	-2.98	33.40	46.00	-12.60	Peak
874.87	39.55	-0.97	38.57	46.00	-7.43	Peak
960.23	37.58	0.06	37.64	54.00	-16.36	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11b TX / CH Low / ANT 0	Temp. & Humidity	23°C, 52%

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
1124.00	47.15	---	-3.57	43.58	---	74.00	54.00	-10.42	Peak
1514.00	45.76	---	-2.12	43.64	---	74.00	54.00	-10.36	Peak
1714.00	45.22	---	-0.32	44.90	---	74.00	54.00	-9.10	Peak
2606.00	57.55	42.92	4.17	61.72	47.09	74.00	54.00	-6.91	AVG
3165.00	42.63	---	5.34	47.97	---	74.00	54.00	-6.03	Peak
3840.00	41.39	---	6.81	48.19	---	74.00	54.00	-5.81	Peak
4290.00	40.45	---	7.87	48.32	---	74.00	54.00	-5.68	Peak
4830.00	40.96	---	9.24	50.20	---	74.00	54.00	-3.80	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
1122.00	47.00	---	-3.57	43.42	---	74.00	54.00	-10.58	Peak
1552.00	45.91	---	-1.78	44.13	---	74.00	54.00	-9.87	Peak
2390.00	55.36	41.69	3.58	58.94	45.27	74.00	54.00	-8.73	AVG
2604.00	64.23	49.58	4.17	68.40	53.75	74.00	54.00	-0.25	AVG
3510.00	41.58	---	6.04	47.62	---	74.00	54.00	-6.38	Peak
4395.00	40.96	---	8.12	49.08	---	74.00	54.00	-4.92	Peak
4830.00	46.25	32.95	9.24	55.49	42.19	74.00	54.00	-11.81	AVG
7230.00	44.32	34.12	13.28	57.60	47.40	74.00	54.00	-6.60	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/27
Test Mode	IEEE 802.11b TX / CH Middle / ANT 0	Temp. & Humidity	23°C, 52%

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
1210.00	46.54	---	-3.27	43.28	---	74.00	54.00	-10.72	Peak
1414.00	45.34	---	-2.55	42.79	---	74.00	54.00	-11.21	Peak
2390.00	45.85	---	3.58	49.43	---	74.00	54.00	-4.57	Peak
2602.00	59.33	46.28	4.16	63.49	50.44	74.00	54.00	-3.56	AVG
3630.00	41.52	---	6.32	47.84	---	74.00	54.00	-6.16	Peak
3990.00	41.19	---	7.16	48.35	---	74.00	54.00	-5.65	Peak
4860.00	40.50	---	9.32	49.82	---	74.00	54.00	-4.18	Peak
5355.00	40.59	---	10.17	50.76	---	74.00	54.00	-3.24	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
1240.00	46.42	---	-3.16	43.26	---	74.00	54.00	-10.74	Peak
1534.00	45.83	---	-1.94	43.89	---	74.00	54.00	-10.11	Peak
2378.00	52.31	38.64	3.54	55.85	42.18	74.00	54.00	-11.82	AVG
2604.00	63.10	48.43	4.17	67.27	52.60	74.00	54.00	-1.40	AVG
3225.00	42.35	---	5.46	47.81	---	74.00	54.00	-6.19	Peak
4005.00	40.68	---	7.19	47.87	---	74.00	54.00	-6.13	Peak
4875.00	46.23	33.52	9.36	55.59	42.88	74.00	54.00	-11.12	AVG
7305.00	45.33	34.08	13.33	58.66	47.41	74.00	54.00	-6.59	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/27
Test Mode	IEEE 802.11b TX / CH High / ANT 0	Temp. & Humidity	23°C, 52%

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
1100.00	46.56	---	-3.65	42.91	---	74.00	54.00	-11.09	Peak
1522.00	46.31	---	-2.05	44.26	---	74.00	54.00	-9.74	Peak
2306.00	45.57	---	3.29	48.86	---	74.00	54.00	-5.14	Peak
2600.00	58.66	43.84	4.16	62.82	48.00	74.00	54.00	-6.00	AVG
3105.00	42.26	---	5.21	47.48	---	74.00	54.00	-6.52	Peak
3990.00	41.32	---	7.16	48.48	---	74.00	54.00	-5.52	Peak
4800.00	39.40	---	9.16	48.57	---	74.00	54.00	-5.43	Peak
5520.00	39.64	---	10.42	50.06	---	74.00	54.00	-3.94	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
1146.00	46.63	---	-3.49	43.14	---	74.00	54.00	-10.86	Peak
1686.00	46.06	---	-0.58	45.48	---	74.00	54.00	-8.52	Peak
2380.00	52.10	39.64	3.54	55.64	43.18	74.00	54.00	-10.82	AVG
2608.00	63.20	49.43	4.18	67.38	53.61	74.00	54.00	-0.39	AVG
3510.00	41.33	---	6.04	47.38	---	74.00	54.00	-6.62	Peak
3915.00	41.46	---	6.98	48.45	---	74.00	54.00	-5.55	Peak
4395.00	40.20	---	8.12	48.32	---	74.00	54.00	-5.68	Peak
4920.00	40.51	---	9.48	49.99	---	74.00	54.00	-4.01	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/27
Test Mode	IEEE 802.11b TX / CH Low / ANT 1	Temp. & Humidity	23°C, 52%

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
1270.00	47.15	---	-3.06	44.10	---	74.00	54.00	-9.90	Peak
1660.00	45.69	---	-0.81	44.88	---	74.00	54.00	-9.12	Peak
1840.00	45.80	---	0.81	46.61	---	74.00	54.00	-7.39	Peak
2560.00	50.13	37.31	4.08	54.21	41.39	74.00	54.00	-12.61	AVG
3435.00	41.39	---	5.89	47.28	---	74.00	54.00	-6.72	Peak
3960.00	40.67	---	7.09	47.76	---	74.00	54.00	-6.24	Peak
4500.00	40.01	---	8.37	48.38	---	74.00	54.00	-5.62	Peak
4830.00	47.77	44.31	9.24	57.01	53.55	74.00	54.00	-0.45	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
1288.00	46.29	---	-2.99	43.30	---	74.00	54.00	-10.70	Peak
1582.00	45.41	---	-1.51	43.89	---	74.00	54.00	-10.11	Peak
2048.00	46.25	---	2.41	48.67	---	74.00	54.00	-5.33	Peak
2562.00	58.63	42.26	4.08	62.71	46.34	74.00	54.00	-7.66	AVG
3210.00	43.40	---	5.43	48.83	---	74.00	54.00	-5.17	Peak
3825.00	42.05	---	6.77	48.82	---	74.00	54.00	-5.18	Peak
4830.00	48.90	44.45	9.24	58.14	53.69	74.00	54.00	-0.31	AVG
7230.00	41.99	33.66	13.28	55.27	46.94	74.00	54.00	-7.06	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/27
Test Mode	IEEE 802.11b TX / CH Middle / ANT 1	Temp. & Humidity	23°C, 52%

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
1082.00	46.60	---	-3.71	42.89	---	74.00	54.00	-11.11	Peak
1656.00	45.65	---	-0.85	44.80	---	74.00	54.00	-9.20	Peak
1940.00	44.84	---	1.71	46.55	---	74.00	54.00	-7.45	Peak
2566.00	52.30	38.81	4.09	56.39	42.90	74.00	54.00	-11.10	AVG
3300.00	41.66	---	5.61	47.27	---	74.00	54.00	-6.73	Peak
3855.00	41.53	---	6.84	48.38	---	74.00	54.00	-5.62	Peak
4320.00	39.89	---	7.94	47.83	---	74.00	54.00	-6.17	Peak
4875.00	41.48	---	9.36	50.84	---	74.00	54.00	-3.16	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
1018.00	47.81	---	-3.94	43.87	---	74.00	54.00	-10.13	Peak
1116.00	46.64	---	-3.59	43.04	---	74.00	54.00	-10.96	Peak
2390.00	52.35	39.46	3.58	55.93	43.04	74.00	54.00	-10.96	AVG
2570.00	59.59	46.47	4.10	63.69	50.57	74.00	54.00	-3.43	AVG
3255.00	43.69	---	5.52	49.21	---	74.00	54.00	-4.79	Peak
4875.00	49.96	43.18	9.36	59.32	52.54	74.00	54.00	-1.46	AVG
6075.00	38.59	---	11.73	50.32	---	74.00	54.00	-3.68	Peak
7305.00	44.91	36.34	13.33	58.24	49.67	74.00	54.00	-4.33	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/27
Test Mode	IEEE 802.11b TX / CH High / ANT 1	Temp. & Humidity	23°C, 52%

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
1192.00	46.23	---	-3.33	42.90	---	74.00	54.00	-11.10	Peak
1562.00	45.67	---	-1.69	43.98	---	74.00	54.00	-10.02	Peak
2384.00	50.81	37.50	3.56	54.37	41.06	74.00	54.00	-12.94	AVG
2550.00	54.30	41.50	4.05	58.35	45.55	74.00	54.00	-8.45	AVG
3705.00	42.08	---	6.50	48.58	---	74.00	54.00	-5.42	Peak
4920.00	40.11	---	9.48	49.59	---	74.00	54.00	-4.41	Peak
5655.00	39.32	---	10.75	50.06	---	74.00	54.00	-3.94	Peak
6015.00	38.40	---	11.61	50.01	---	74.00	54.00	-3.99	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
1130.00	47.69	---	-3.55	44.14	---	74.00	54.00	-9.86	Peak
1936.00	45.59	---	1.67	47.26	---	74.00	54.00	-6.74	Peak
2384.00	51.59	39.26	3.56	55.15	42.82	74.00	54.00	-11.18	AVG
2568.00	59.85	46.42	4.09	63.94	50.51	74.00	54.00	-3.49	AVG
3285.00	42.33	---	5.58	47.91	---	74.00	54.00	-6.09	Peak
3870.00	42.93	---	6.88	49.81	---	74.00	54.00	-4.19	Peak
4920.00	47.98	32.60	9.48	57.46	42.08	74.00	54.00	-11.92	AVG
7380.00	44.36	33.23	13.38	57.74	46.61	74.00	54.00	-7.39	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH Low / ANT 0	Temp. & Humidity	23°C, 52%

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
1168.00	46.70	---	-3.41	43.29	---	74.00	54.00	-10.71	Peak
1416.00	46.28	---	-2.54	43.74	---	74.00	54.00	-10.26	Peak
1694.00	45.35	---	-0.50	44.85	---	74.00	54.00	-9.15	Peak
2612.00	53.21	37.53	4.19	57.40	41.72	74.00	54.00	-12.28	AVG
3225.00	41.50	---	5.46	46.96	---	74.00	54.00	-7.04	Peak
3855.00	41.44	---	6.84	48.28	---	74.00	54.00	-5.72	Peak
4620.00	39.12	---	8.69	47.80	---	74.00	54.00	-6.20	Peak
5055.00	39.28	---	9.76	49.05	---	74.00	54.00	-4.95	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
1224.00	46.77	---	-3.22	43.55	---	74.00	54.00	-10.45	Peak
1538.00	45.78	---	-1.91	43.87	---	74.00	54.00	-10.13	Peak
1828.00	45.69	---	0.70	46.39	---	74.00	54.00	-7.61	Peak
2604.00	57.23	44.26	4.17	61.40	48.43	74.00	54.00	-5.57	AVG
3315.00	41.45	---	5.64	47.09	---	74.00	54.00	-6.91	Peak
4230.00	40.20	---	7.73	47.93	---	74.00	54.00	-6.07	Peak
4890.00	39.39	---	9.40	48.79	---	74.00	54.00	-5.21	Peak
5595.00	38.75	---	10.60	49.35	---	74.00	54.00	-4.65	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH Middle / ANT 0	Temp. & Humidity	23°C, 52%

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
1168.00	46.51	---	-3.41	43.10	---	74.00	54.00	-10.90	Peak
1668.00	45.76	---	-0.74	45.02	---	74.00	54.00	-8.98	Peak
2390.00	51.33	38.24	3.58	54.91	41.82	74.00	54.00	-12.18	AVG
2608.00	58.42	46.23	4.18	62.60	50.41	74.00	54.00	-3.59	AVG
3405.00	41.67	---	5.83	47.49	---	74.00	54.00	-6.51	Peak
3900.00	41.12	---	6.95	48.06	---	74.00	54.00	-5.94	Peak
4410.00	40.17	---	8.16	48.32	---	74.00	54.00	-5.68	Peak
5550.00	38.52	---	10.49	49.01	---	74.00	54.00	-4.99	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
1146.00	46.54	---	-3.49	43.05	---	74.00	54.00	-10.95	Peak
1364.00	46.21	---	-2.73	43.49	---	74.00	54.00	-10.51	Peak
2390.00	57.36	44.18	3.58	60.94	47.76	74.00	54.00	-6.24	AVG
2606.00	68.12	49.10	4.17	72.29	53.27	74.00	54.00	-0.73	AVG
3210.00	42.53	---	5.43	47.96	---	74.00	54.00	-6.04	Peak
4875.00	40.94	---	9.36	50.30	---	74.00	54.00	-3.70	Peak
6510.00	44.33	31.25	12.62	56.95	43.87	74.00	54.00	-10.13	AVG
7305.00	45.90	32.40	13.33	59.23	45.73	74.00	54.00	-8.27	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH High / ANT 0	Temp. & Humidity	23°C, 52%

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
1258.00	47.23	---	-3.10	44.13	---	74.00	54.00	-9.87	Peak
1626.00	47.18	---	-1.12	46.07	---	74.00	54.00	-7.93	Peak
1938.00	46.15	---	1.69	47.84	---	74.00	54.00	-6.16	Peak
2390.00	44.83	---	3.58	48.41	---	74.00	54.00	-5.59	Peak
3180.00	42.46	---	5.37	47.83	---	74.00	54.00	-6.17	Peak
3705.00	40.96	---	6.50	47.45	---	74.00	54.00	-6.55	Peak
4065.00	40.47	---	7.33	47.80	---	74.00	54.00	-6.20	Peak
4905.00	39.44	---	9.44	48.88	---	74.00	54.00	-5.12	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
1114.00	47.07	---	-3.60	43.47	---	74.00	54.00	-10.53	Peak
1240.00	47.22	---	-3.16	44.06	---	74.00	54.00	-9.94	Peak
1938.00	45.64	---	1.69	47.33	---	74.00	54.00	-6.67	Peak
2390.00	46.03	---	3.58	49.61	---	74.00	54.00	-4.39	Peak
3180.00	42.85	---	5.37	48.22	---	74.00	54.00	-5.78	Peak
3900.00	41.99	---	6.95	48.94	---	74.00	54.00	-5.06	Peak
4470.00	39.99	---	8.30	48.28	---	74.00	54.00	-5.72	Peak
5310.00	39.68	---	10.11	49.79	---	74.00	54.00	-4.21	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH Low / ANT 1	Temp. & Humidity	23°C, 52%

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
1242.00	46.95	---	-3.15	43.80	---	74.00	54.00	-10.20	Peak
1624.00	45.94	---	-1.13	44.81	---	74.00	54.00	-9.19	Peak
1810.00	45.82	---	0.54	46.36	---	74.00	54.00	-7.64	Peak
2546.00	50.04	36.44	4.05	54.09	40.49	74.00	54.00	-13.51	AVG
3555.00	41.35	---	6.15	47.50	---	74.00	54.00	-6.50	Peak
4170.00	40.48	---	7.58	48.06	---	74.00	54.00	-5.94	Peak
4830.00	40.75	---	9.24	49.99	---	74.00	54.00	-4.01	Peak
7245.00	45.23	32.14	13.29	58.52	45.43	74.00	54.00	-8.57	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
1226.00	46.56	---	-3.21	43.35	---	74.00	54.00	-10.65	Peak
1612.00	45.60	---	-1.24	44.36	---	74.00	54.00	-9.64	Peak
1870.00	45.42	---	1.08	46.50	---	74.00	54.00	-7.50	Peak
2568.00	57.38	45.45	4.09	61.47	49.54	74.00	54.00	-4.46	AVG
3750.00	41.15	---	6.60	47.75	---	74.00	54.00	-6.25	Peak
4815.00	46.12	31.82	9.20	55.32	41.02	74.00	54.00	-12.98	AVG
5820.00	38.78	---	11.14	49.92	---	74.00	54.00	-4.08	Peak
7230.00	45.70	33.18	13.28	58.98	46.46	74.00	54.00	-7.54	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH Middle / ANT 1	Temp. & Humidity	23°C, 52%

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
1146.00	46.32	---	-3.49	42.83	---	74.00	54.00	-11.17	Peak
1620.00	45.45	---	-1.17	44.28	---	74.00	54.00	-9.72	Peak
2390.00	60.12	38.04	3.58	63.70	41.62	74.00	54.00	-12.38	AVG
2494.00	57.25	39.39	3.93	61.18	43.32	74.00	54.00	-10.68	AVG
3150.00	42.29	---	5.31	47.60	---	74.00	54.00	-6.40	Peak
4395.00	40.64	---	8.12	48.76	---	74.00	54.00	-5.24	Peak
4860.00	49.14	36.15	9.32	58.46	45.47	74.00	54.00	-8.53	AVG
7320.00	55.76	32.61	13.34	69.10	45.95	74.00	54.00	-8.05	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
1256.00	47.01	---	-3.10	43.91	---	74.00	54.00	-10.09	Peak
1598.00	45.13	---	-1.37	43.77	---	74.00	54.00	-10.23	Peak
2390.00	64.77	46.76	3.58	68.35	50.34	74.00	54.00	-3.66	AVG
2484.00	65.19	45.63	3.90	69.09	49.53	74.00	54.00	-4.47	AVG
3255.00	42.86	---	5.52	48.38	---	74.00	54.00	-5.62	Peak
4875.00	49.06	36.40	9.36	58.42	45.76	74.00	54.00	-8.24	AVG
5730.00	39.42	---	10.93	50.35	---	74.00	54.00	-3.65	Peak
7320.00	61.23	37.23	13.34	74.57	50.57	74.00	54.00	-3.43	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11g TX / CH High / ANT 1	Temp. & Humidity	23°C, 52%

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
1184.00	45.98	---	-3.36	42.63	---	74.00	54.00	-11.37	Peak
1458.00	46.17	---	-2.40	43.78	---	74.00	54.00	-10.22	Peak
1780.00	45.56	---	0.27	45.83	---	74.00	54.00	-8.17	Peak
2390.00	53.38	41.86	3.58	56.96	45.44	74.00	54.00	-8.56	AVG
3255.00	42.63	---	5.52	48.15	---	74.00	54.00	-5.85	Peak
3630.00	41.59	---	6.32	47.91	---	74.00	54.00	-6.09	Peak
4260.00	41.42	---	7.80	49.22	---	74.00	54.00	-4.78	Peak
4920.00	39.89	---	9.48	49.37	---	74.00	54.00	-4.63	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
1016.00	46.83	---	-3.94	42.89	---	74.00	54.00	-11.11	Peak
1612.00	45.08	---	-1.24	43.84	---	74.00	54.00	-10.16	Peak
2388.00	54.64	42.81	3.57	58.21	46.38	74.00	54.00	-7.62	AVG
2566.00	59.86	46.59	4.09	63.95	50.68	74.00	54.00	-3.32	AVG
3105.00	43.01	---	5.21	48.23	---	74.00	54.00	-5.77	Peak
3600.00	42.04	---	6.25	48.29	---	74.00	54.00	-5.71	Peak
4410.00	40.16	---	8.16	48.32	---	74.00	54.00	-5.68	Peak
5610.00	39.83	---	10.64	50.46	---	74.00	54.00	-3.54	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT20 TX / CH Low	Temp. & Humidity	23°C, 52%

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
1144.00	46.45	---	-3.50	42.95	---	74.00	54.00	-11.05	Peak
1326.00	45.75	---	-2.86	42.89	---	74.00	54.00	-11.11	Peak
1640.00	46.32	---	-0.99	45.33	---	74.00	54.00	-8.67	Peak
2484.00	45.34	---	3.90	49.24	---	74.00	54.00	-4.76	Peak
3660.00	41.08	---	6.39	47.47	---	74.00	54.00	-6.53	Peak
4050.00	40.52	---	7.30	47.82	---	74.00	54.00	-6.18	Peak
4485.00	40.03	---	8.33	48.36	---	74.00	54.00	-5.64	Peak
5385.00	39.57	---	10.21	49.79	---	74.00	54.00	-4.21	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
1354.00	46.07	---	-2.76	43.31	---	74.00	54.00	-10.69	Peak
1506.00	46.02	---	-2.20	43.82	---	74.00	54.00	-10.18	Peak
1744.00	44.87	---	-0.05	44.81	---	74.00	54.00	-9.19	Peak
2582.00	53.50	39.15	4.12	57.62	43.27	74.00	54.00	-10.73	AVG
3165.00	41.43	---	5.34	46.77	---	74.00	54.00	-7.23	Peak
3945.00	40.78	---	7.05	47.83	---	74.00	54.00	-6.17	Peak
4950.00	39.71	---	9.56	49.27	---	74.00	54.00	-4.73	Peak
5670.00	37.98	---	10.78	48.76	---	74.00	54.00	-5.24	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT20 TX / CH Middle	Temp. & Humidity	23°C, 52%

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
1158.00	46.76	---	-3.45	43.31	---	74.00	54.00	-10.69	Peak
1856.00	45.51	---	0.95	46.47	---	74.00	54.00	-7.53	Peak
2390.00	60.33	43.91	3.58	63.91	47.49	74.00	54.00	-6.51	AVG
2604.00	61.20	44.16	4.17	65.37	48.33	74.00	54.00	-5.67	AVG
3210.00	42.10	---	5.43	47.52	---	74.00	54.00	-6.48	Peak
3705.00	41.72	---	6.50	48.22	---	74.00	54.00	-5.78	Peak
4485.00	40.04	---	8.33	48.37	---	74.00	54.00	-5.63	Peak
4890.00	40.00	---	9.40	49.40	---	74.00	54.00	-4.60	Peak
7305.00	45.32	31.21	13.33	58.65	44.54	74.00	54.00	-9.46	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
1176.00	46.75	---	-3.38	43.36	---	74.00	54.00	-10.64	Peak
1698.00	45.55	---	-0.47	45.08	---	74.00	54.00	-8.92	Peak
2390.00	62.42	45.03	3.58	66.00	48.61	74.00	54.00	-5.39	AVG
2604.00	65.31	48.29	4.17	69.48	52.46	74.00	54.00	-1.54	AVG
3255.00	42.33	---	5.52	47.85	---	74.00	54.00	-6.15	Peak
3885.00	41.38	---	6.91	48.29	---	74.00	54.00	-5.71	Peak
4875.00	46.93	32.53	9.36	56.29	41.89	74.00	54.00	-12.11	AVG
7320.00	46.09	32.16	13.34	59.43	45.50	74.00	54.00	-8.50	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT20 TX / CH High	Temp. & Humidity	23°C, 52%

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
1034.00	47.27	---	-3.88	43.39	---	74.00	54.00	-10.61	Peak
1496.00	46.06	---	-2.26	43.80	---	74.00	54.00	-10.20	Peak
1878.00	45.16	---	1.15	46.32	---	74.00	54.00	-7.68	Peak
2390.00	51.30	33.60	3.58	54.88	37.18	74.00	54.00	-16.82	AVG
3225.00	42.10	---	5.46	47.56	---	74.00	54.00	-6.44	Peak
3705.00	41.56	---	6.50	48.06	---	74.00	54.00	-5.94	Peak
3945.00	42.21	---	7.05	49.27	---	74.00	54.00	-4.73	Peak
4770.00	39.20	---	9.08	48.29	---	74.00	54.00	-5.71	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
1276.00	46.66	---	-3.03	43.62	---	74.00	54.00	-10.38	Peak
1428.00	46.12	---	-2.50	43.62	---	74.00	54.00	-10.38	Peak
1848.00	45.14	---	0.88	46.02	---	74.00	54.00	-7.98	Peak
2390.00	54.38	40.32	3.58	57.96	43.90	74.00	54.00	-10.10	AVG
3180.00	41.66	---	5.37	47.03	---	74.00	54.00	-6.97	Peak
3600.00	41.57	---	6.25	47.82	---	74.00	54.00	-6.18	Peak
4275.00	39.95	---	7.83	47.78	---	74.00	54.00	-6.22	Peak
4785.00	40.59	---	9.12	49.71	---	74.00	54.00	-4.29	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT40 TX / CH Low	Temp. & Humidity	23°C, 52%

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	45.80	---	-2.99	42.80	---	74.00	54.00	-11.20	Peak
1798.00	46.61	---	0.43	47.04	---	74.00	54.00	-6.96	Peak
2030.00	45.67	---	2.35	48.02	---	74.00	54.00	-5.98	Peak
2484.00	51.95	38.35	3.90	55.85	42.25	74.00	54.00	-11.75	AVG
3315.00	42.19	---	5.64	47.83	---	74.00	54.00	-6.17	Peak
4050.00	41.20	---	7.30	48.50	---	74.00	54.00	-5.50	Peak
4800.00	39.60	---	9.16	48.76	---	74.00	54.00	-5.24	Peak
5415.00	39.11	---	10.25	49.37	---	74.00	54.00	-4.63	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
1144.00	47.01	---	-3.50	43.52	---	74.00	54.00	-10.48	Peak
1426.00	46.51	---	-2.51	44.00	---	74.00	54.00	-10.00	Peak
1716.00	45.15	---	-0.31	44.85	---	74.00	54.00	-9.15	Peak
2484.00	55.88	42.32	3.90	59.78	46.22	74.00	54.00	-7.78	AVG
3225.00	41.94	---	5.46	47.40	---	74.00	54.00	-6.60	Peak
4035.00	41.51	---	7.26	48.78	---	74.00	54.00	-5.22	Peak
4845.00	39.48	---	9.28	48.76	---	74.00	54.00	-5.24	Peak
5505.00	39.56	---	10.38	49.94	---	74.00	54.00	-4.06	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT40 TX / CH Middle	Temp. & Humidity	23°C, 52%

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
1366.00	46.01	---	-2.72	43.29	---	74.00	54.00	-10.71	Peak
1840.00	45.68	---	0.81	46.49	---	74.00	54.00	-7.51	Peak
2390.00	65.89	46.11	3.58	69.47	49.69	74.00	54.00	-4.31	AVG
2484.00	62.44	43.00	3.90	66.34	46.90	74.00	54.00	-7.10	AVG
3330.00	41.69	---	5.67	47.36	---	74.00	54.00	-6.64	Peak
4020.00	41.06	---	7.23	48.28	---	74.00	54.00	-5.72	Peak
4860.00	39.94	---	9.32	49.26	---	74.00	54.00	-4.74	Peak
6000.00	39.41	---	11.58	50.99	---	74.00	54.00	-3.01	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
1442.00	45.04	---	-2.45	42.59	---	74.00	54.00	-11.41	Peak
1734.00	44.90	---	-0.14	44.76	---	74.00	54.00	-9.24	Peak
2390.00	68.56	49.80	3.58	72.14	53.38	74.00	54.00	-0.62	AVG
2484.00	65.86	47.58	3.90	69.76	51.48	74.00	54.00	-2.52	AVG
3255.00	41.70	---	5.52	47.22	---	74.00	54.00	-6.78	Peak
3945.00	40.95	---	7.05	48.01	---	74.00	54.00	-5.99	Peak
4860.00	40.45	---	9.32	49.77	---	74.00	54.00	-4.23	Peak
7305.00	45.15	28.48	13.33	58.48	41.81	74.00	54.00	-12.19	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	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Allen Liu
Test Model	BiPAC 7800VNOX	Test Date	2013/02/28
Test Mode	IEEE 802.11n HT40 TX / CH High	Temp. & Humidity	23°C, 52%

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
1146.00	46.60	---	-3.49	43.11	---	74.00	54.00	-10.89	Peak
1238.00	46.58	---	-3.17	43.41	---	74.00	54.00	-10.59	Peak
1334.00	46.77	---	-2.83	43.94	---	74.00	54.00	-10.06	Peak
2390.00	51.30	36.00	3.58	54.88	39.58	74.00	54.00	-14.42	AVG
3225.00	40.85	---	5.46	46.31	---	74.00	54.00	-7.69	Peak
3780.00	41.04	---	6.67	47.71	---	74.00	54.00	-6.29	Peak
4380.00	40.82	---	8.08	48.90	---	74.00	54.00	-5.10	Peak
4785.00	40.18	---	9.12	49.30	---	74.00	54.00	-4.70	Peak

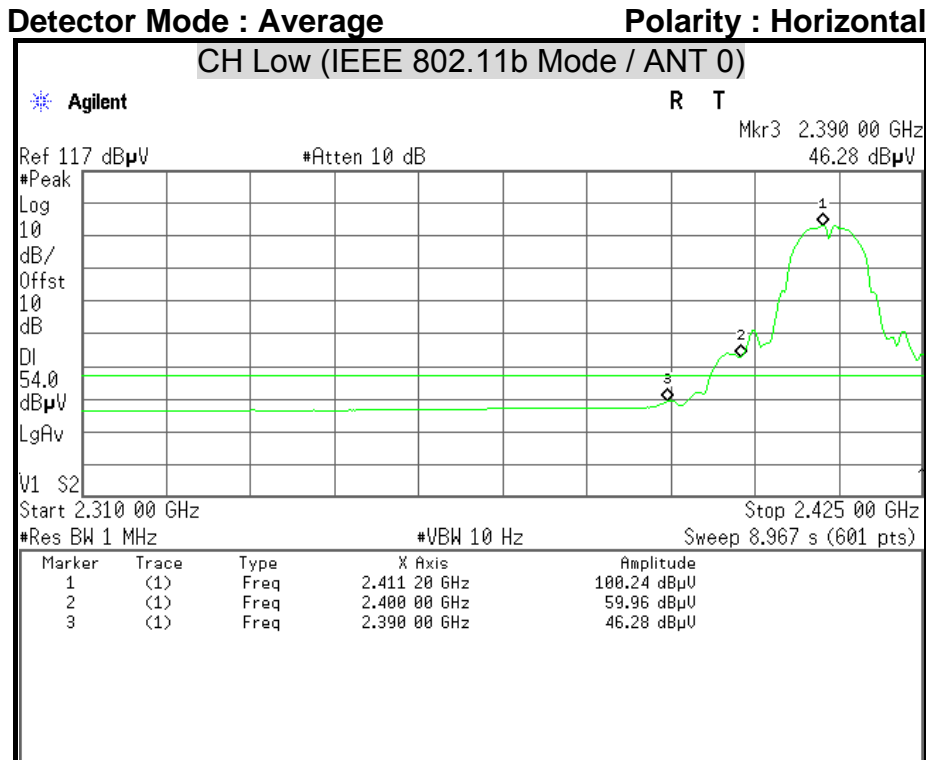
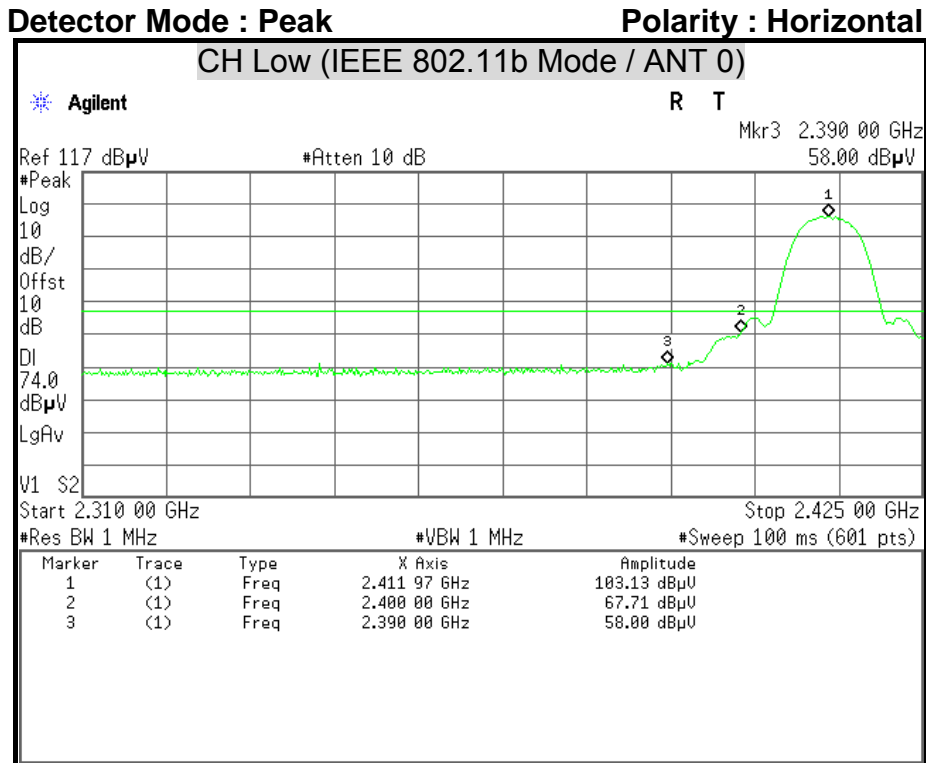
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1320.00	47.07	---	-2.88	44.19	---	74.00	54.00	-9.81	Peak
1734.00	45.70	---	-0.14	45.56	---	74.00	54.00	-8.44	Peak
2128.00	45.22	---	2.69	47.91	---	74.00	54.00	-6.09	Peak
2390.00	53.22	39.58	3.58	56.80	43.16	74.00	54.00	-10.84	AVG
3270.00	42.97	---	5.55	48.52	---	74.00	54.00	-5.48	Peak
3855.00	42.45	---	6.84	49.30	---	74.00	54.00	-4.70	Peak
4785.00	39.89	---	9.12	49.01	---	74.00	54.00	-4.99	Peak
5625.00	39.16	---	10.67	49.84	---	74.00	54.00	-4.16	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)



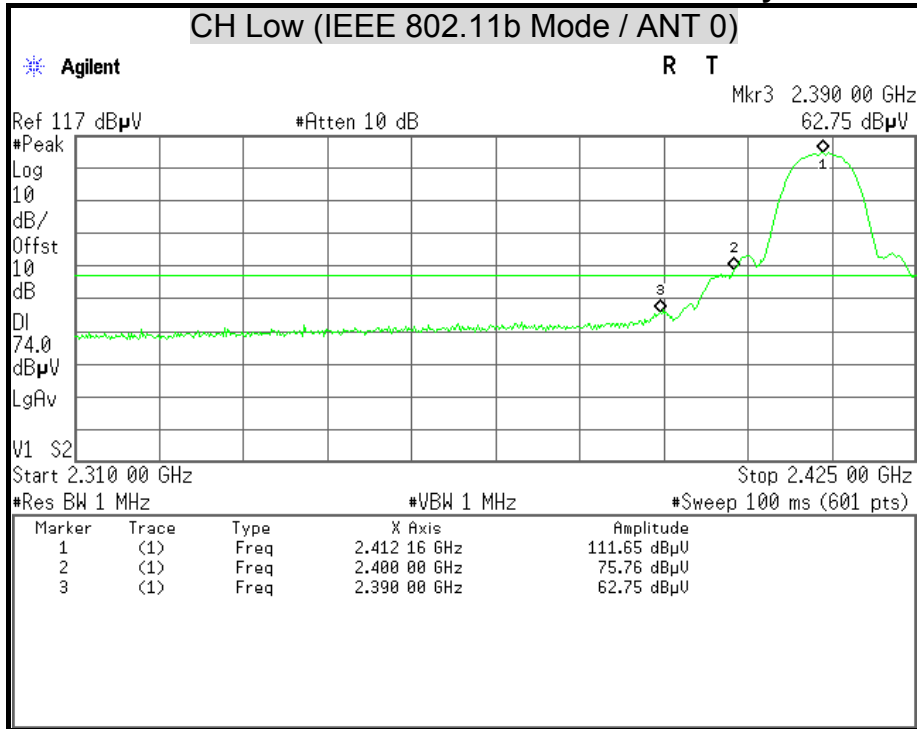
Restricted Band Edges





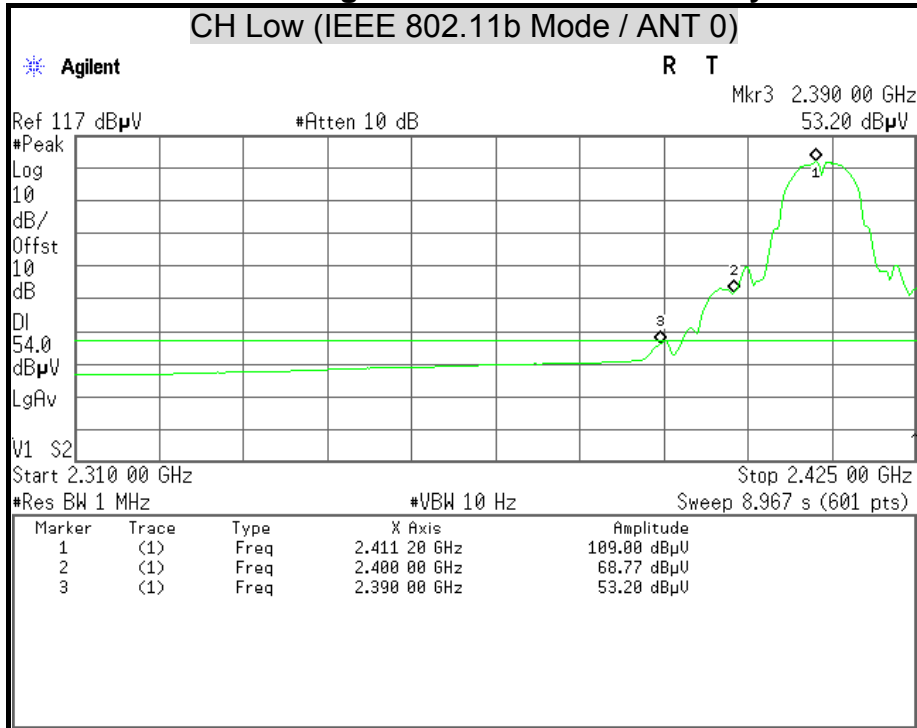
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

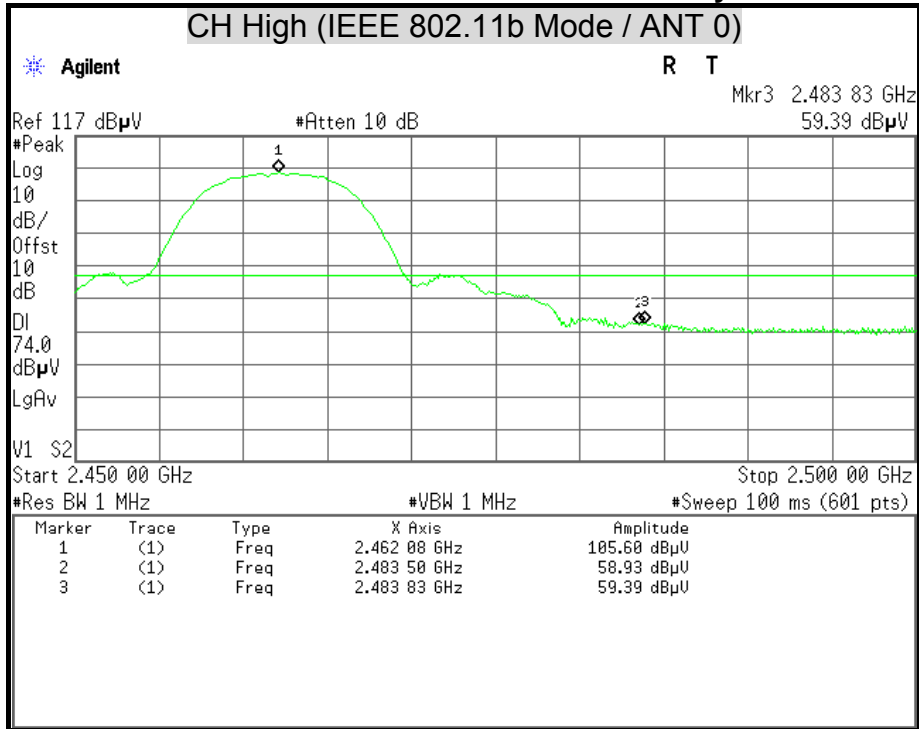
Polarity : Vertical





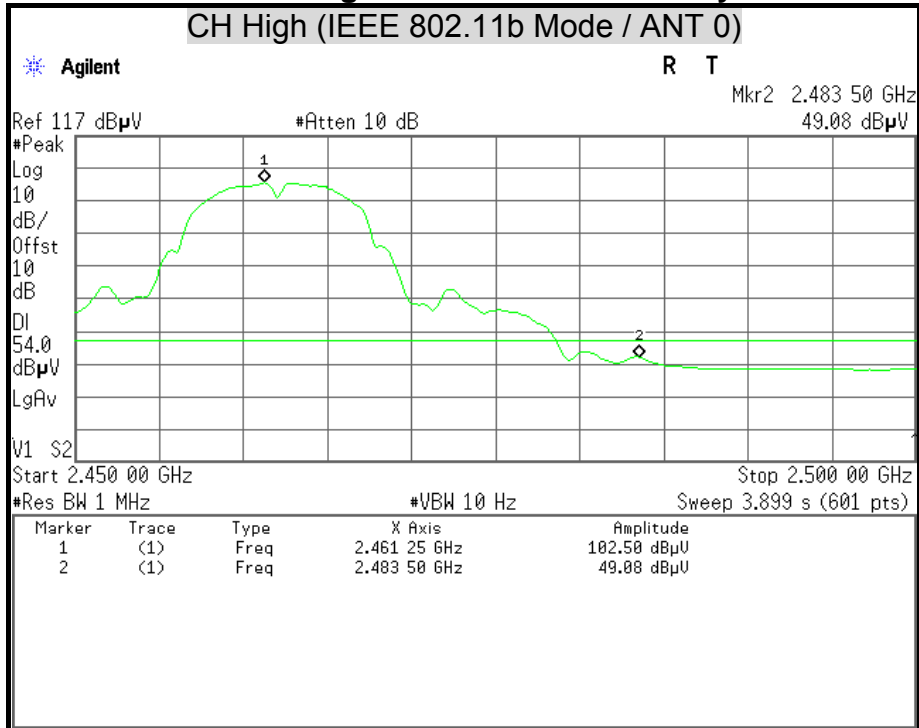
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

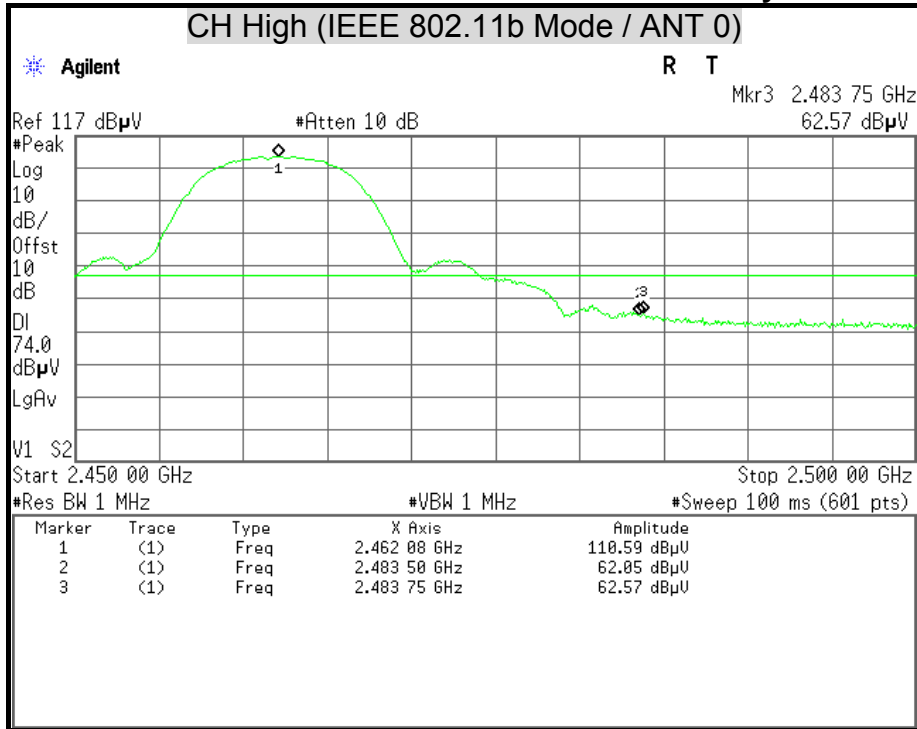
Polarity : Horizontal





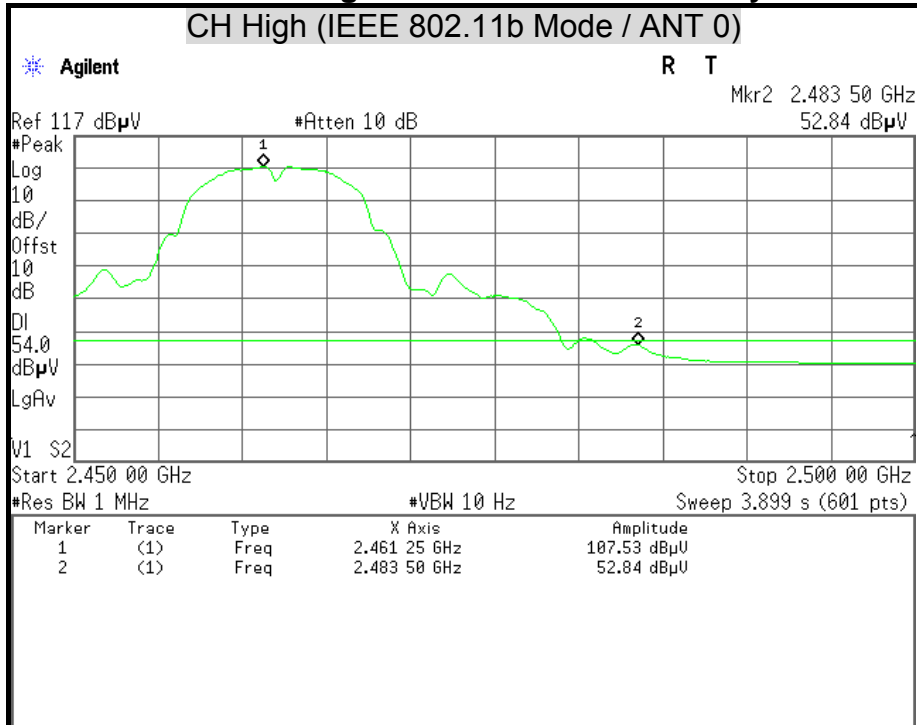
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

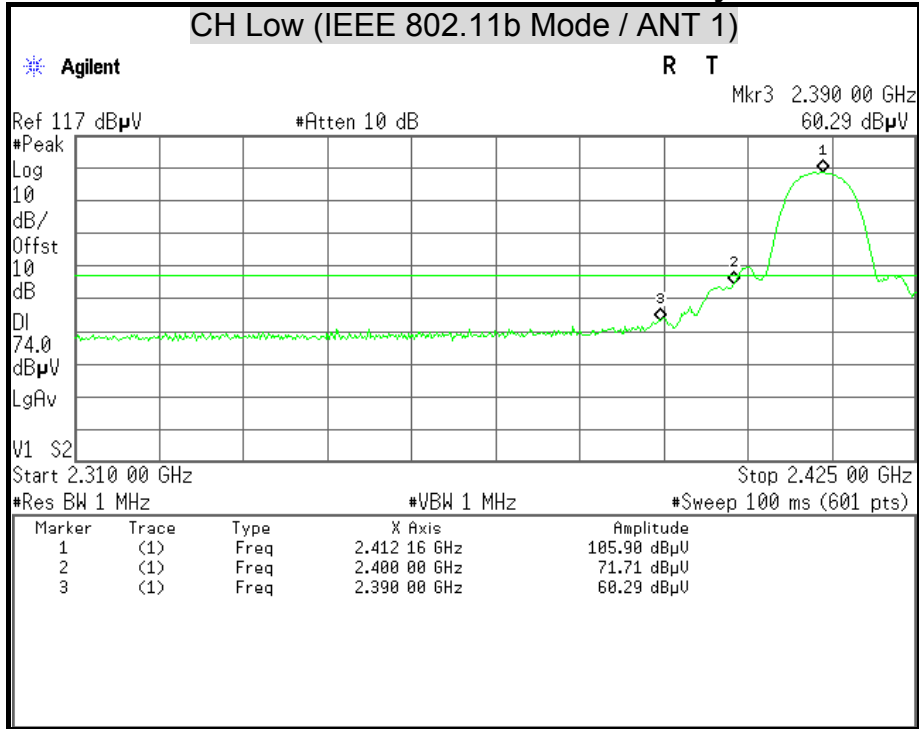
Polarity : Vertical





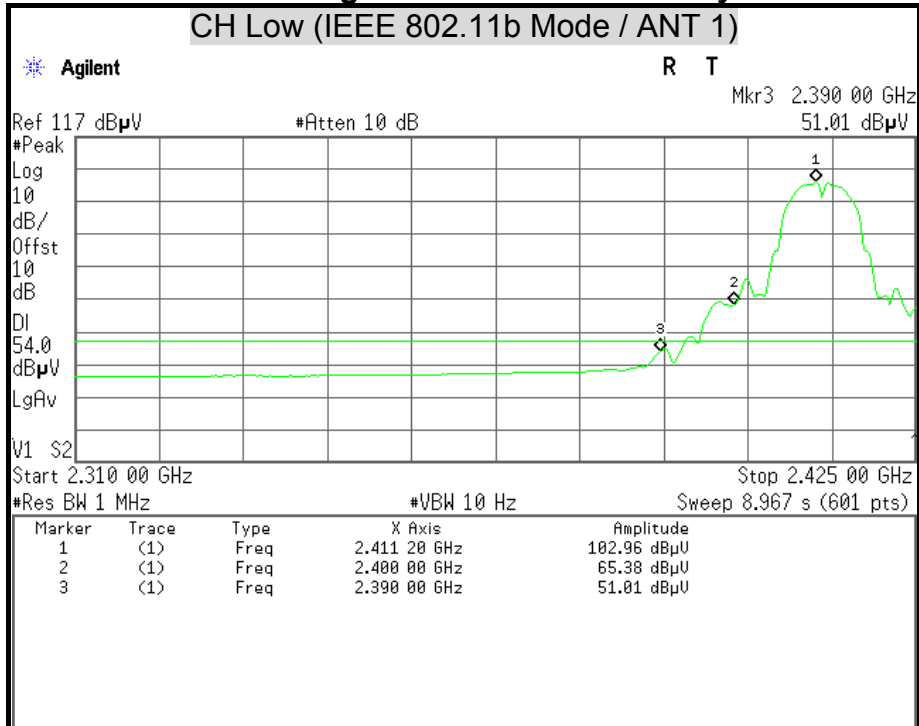
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

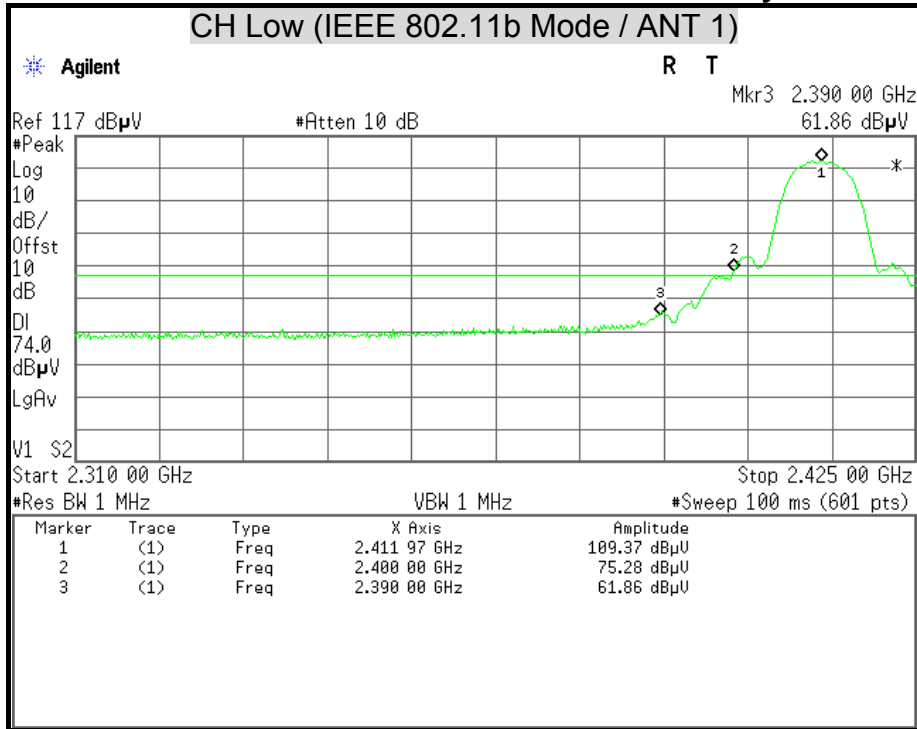
Polarity : Horizontal





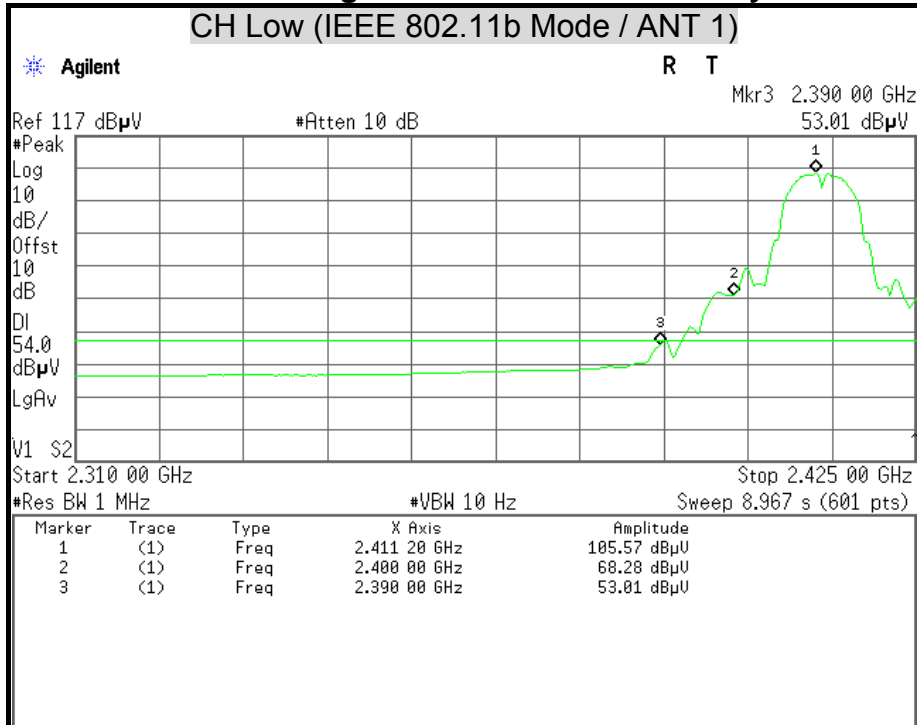
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

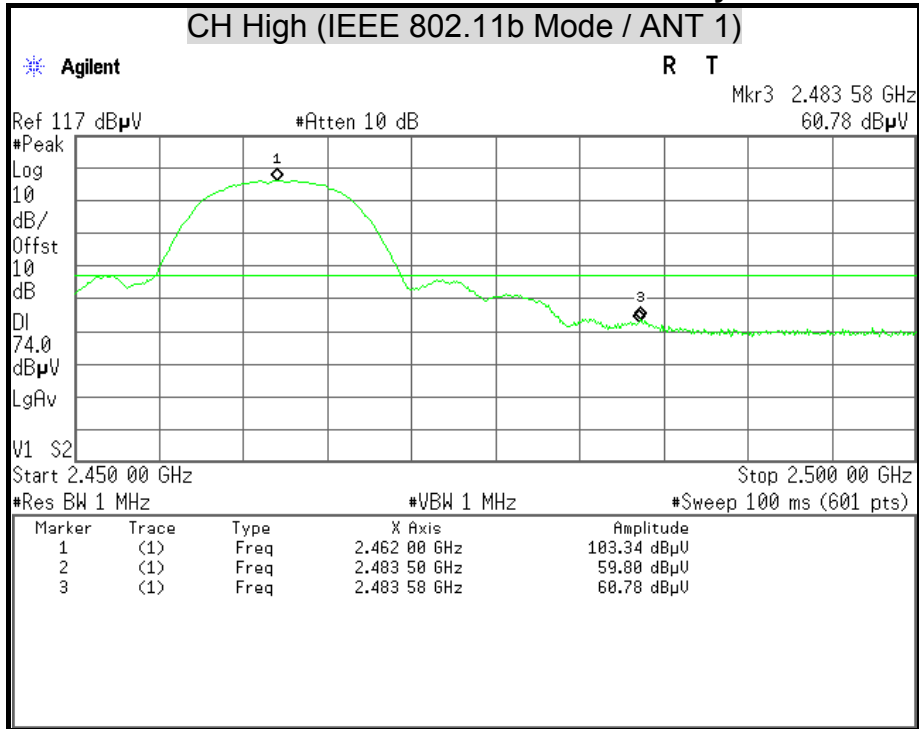
Polarity : Vertical





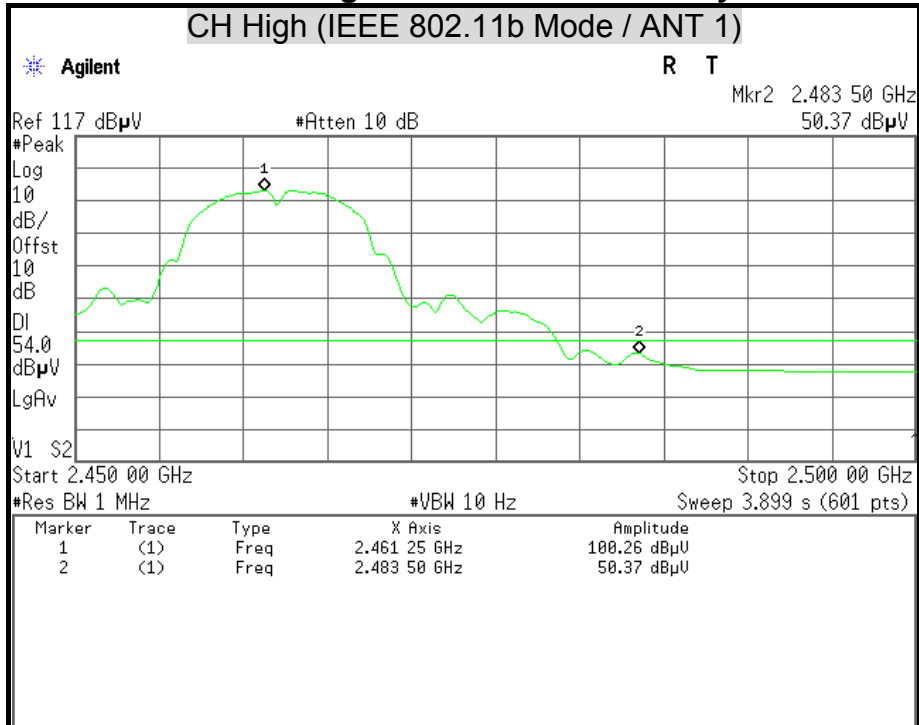
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

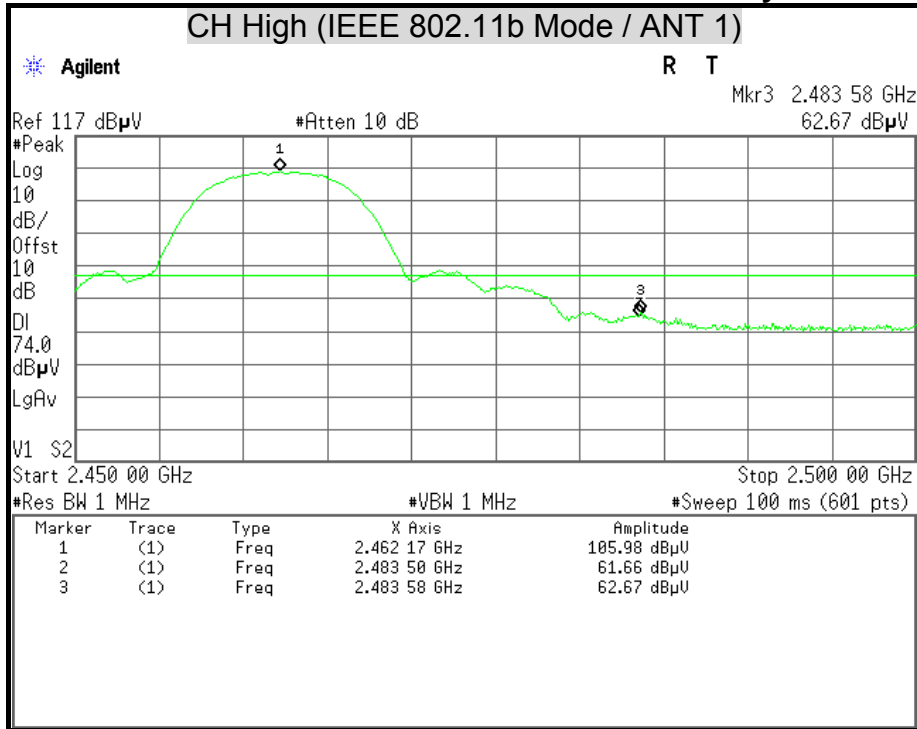
Polarity : Horizontal





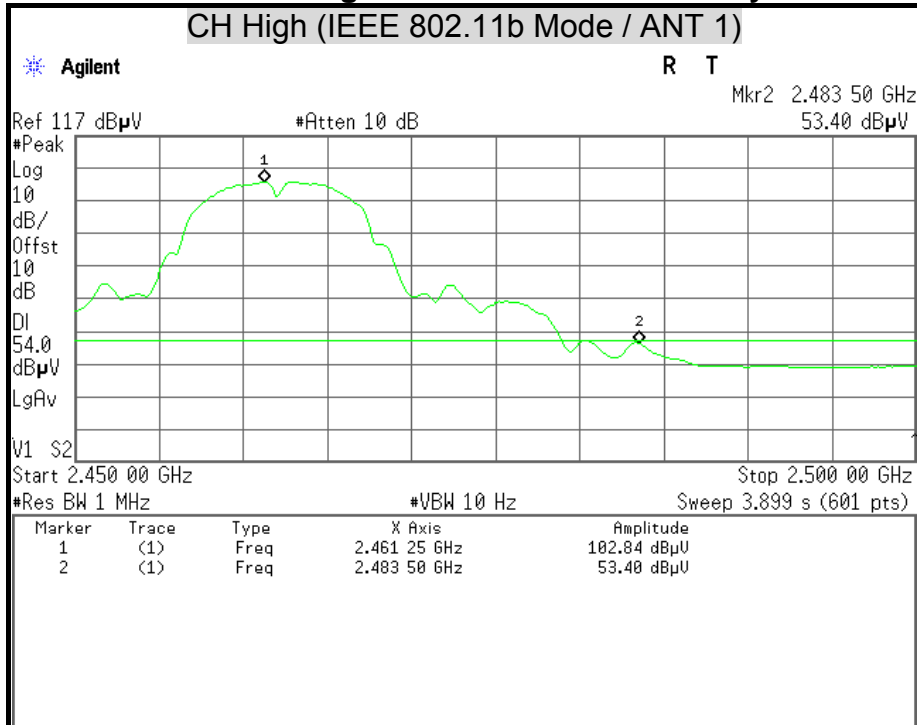
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

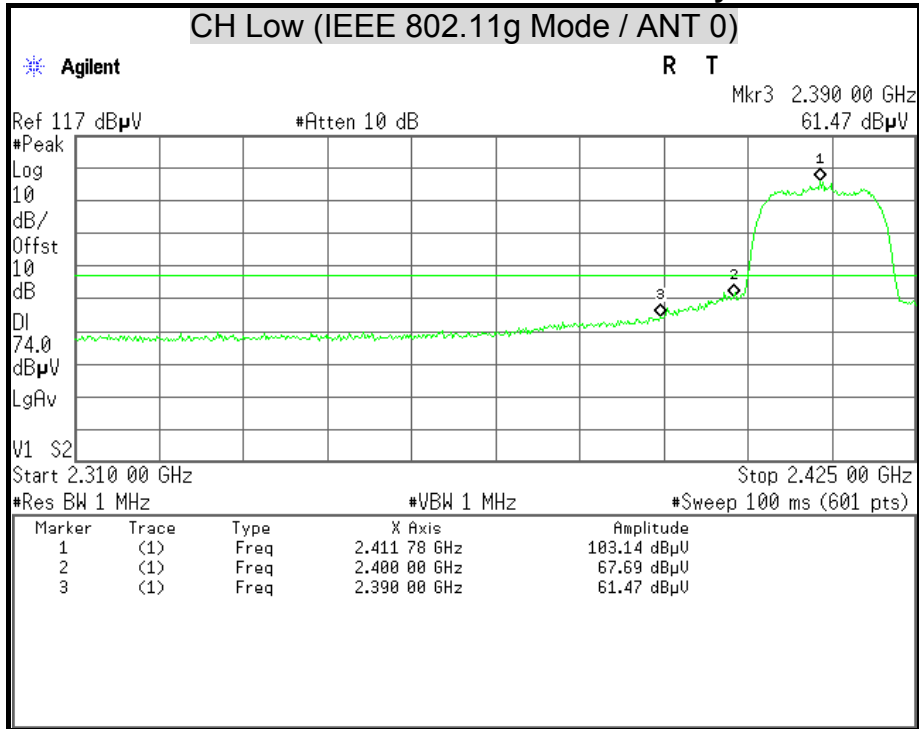
Polarity : Vertical





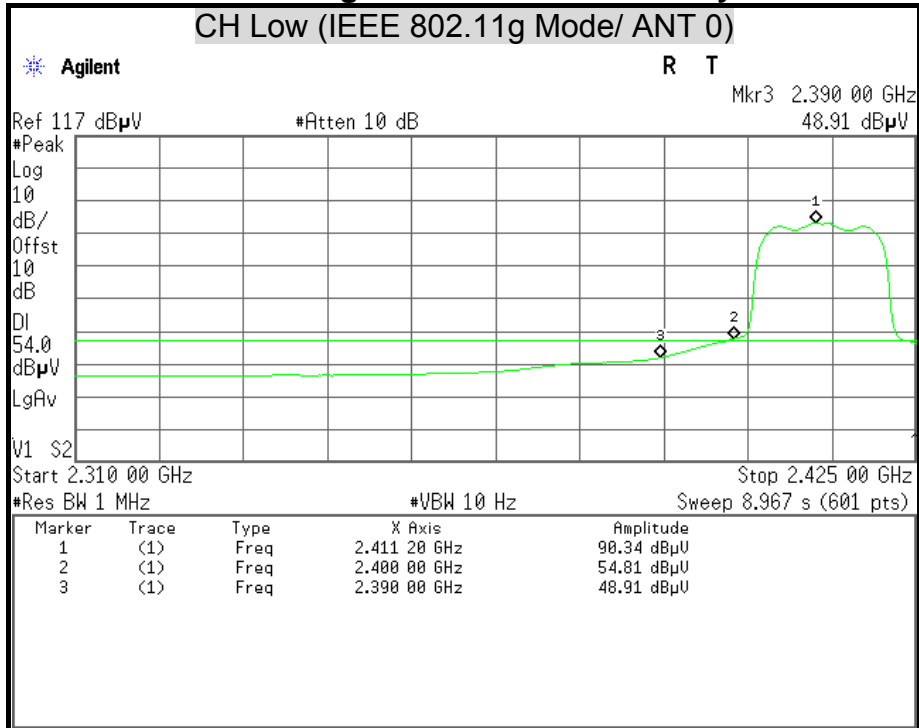
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

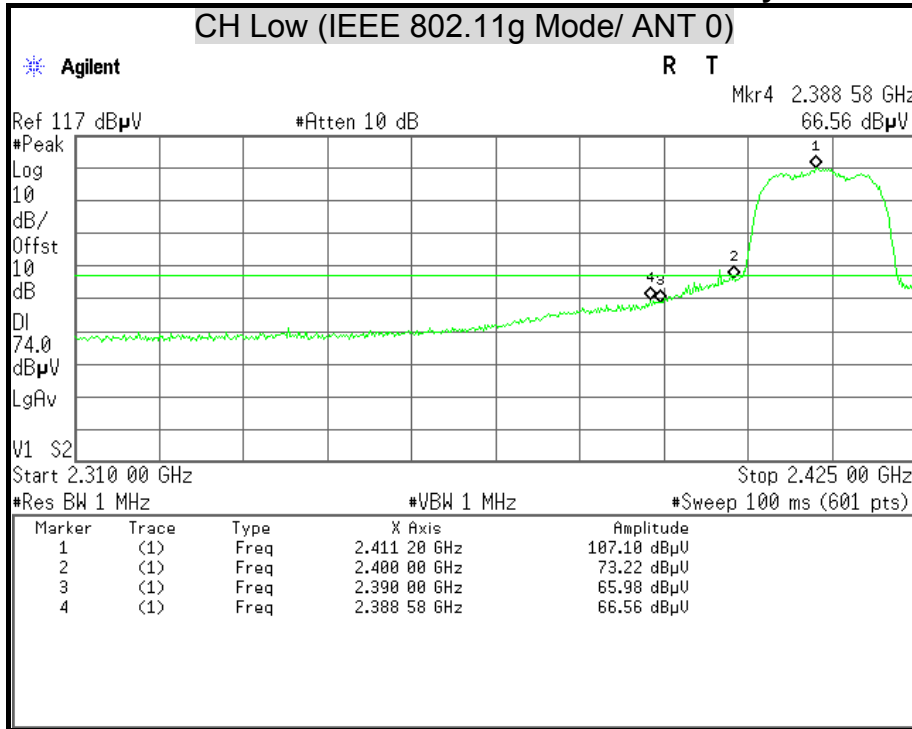
Polarity : Horizontal





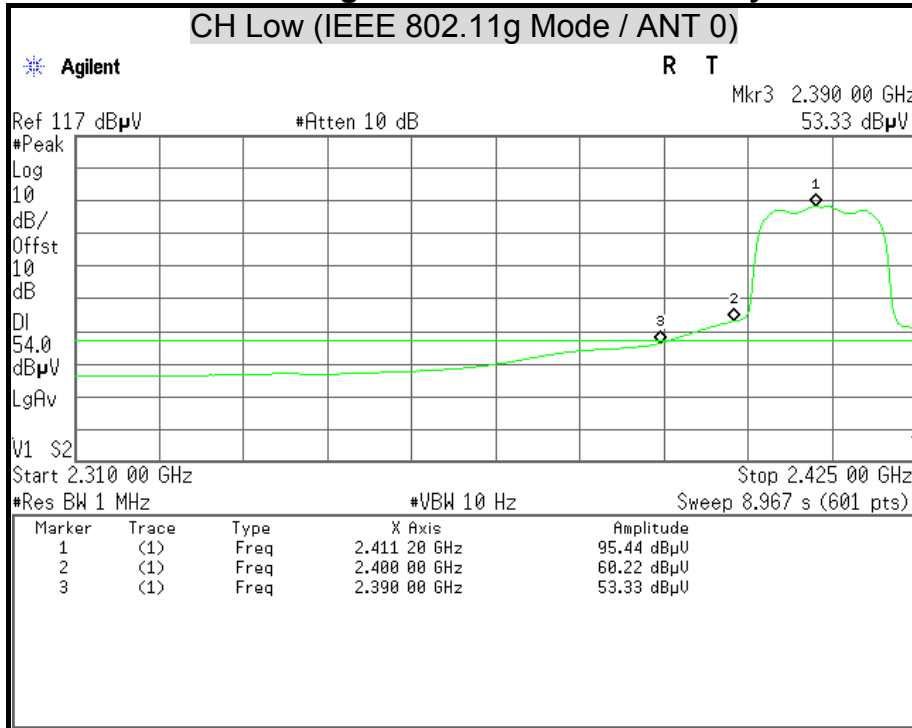
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

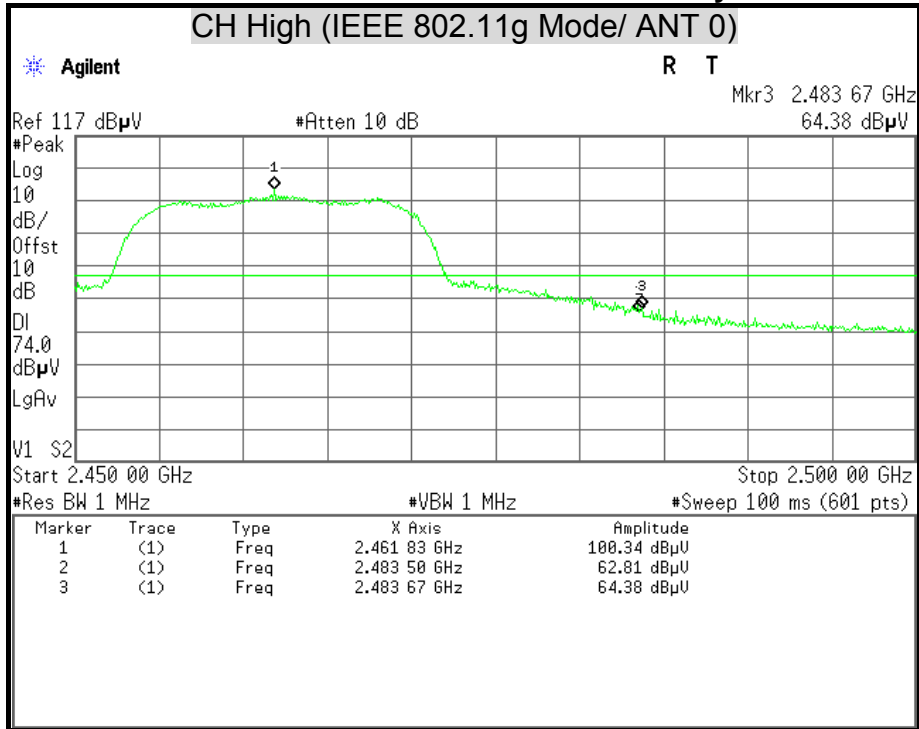
Polarity : Vertical





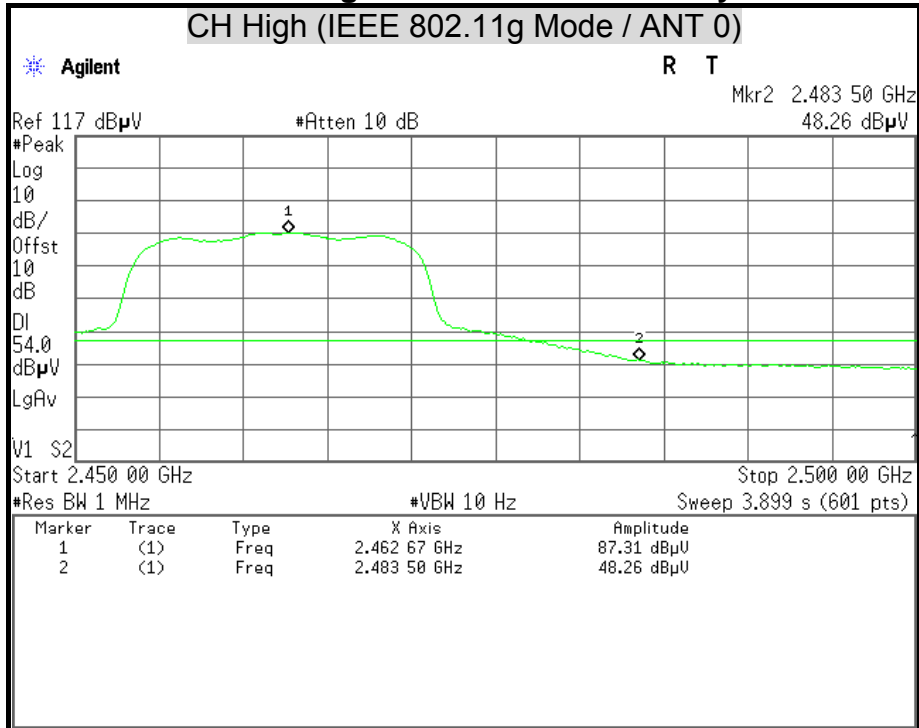
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

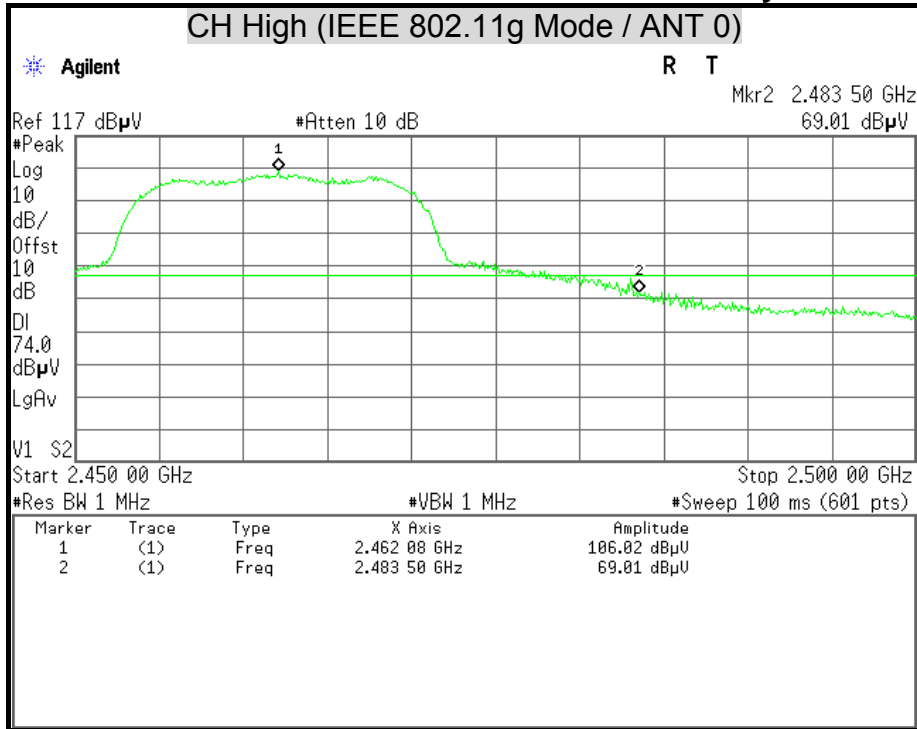
Polarity : Horizontal





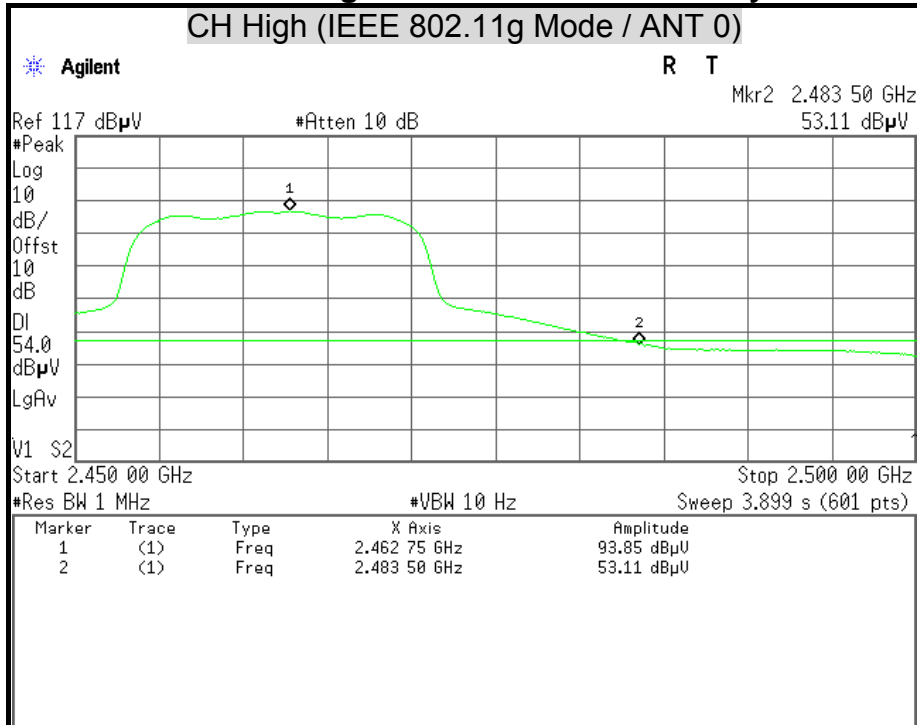
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

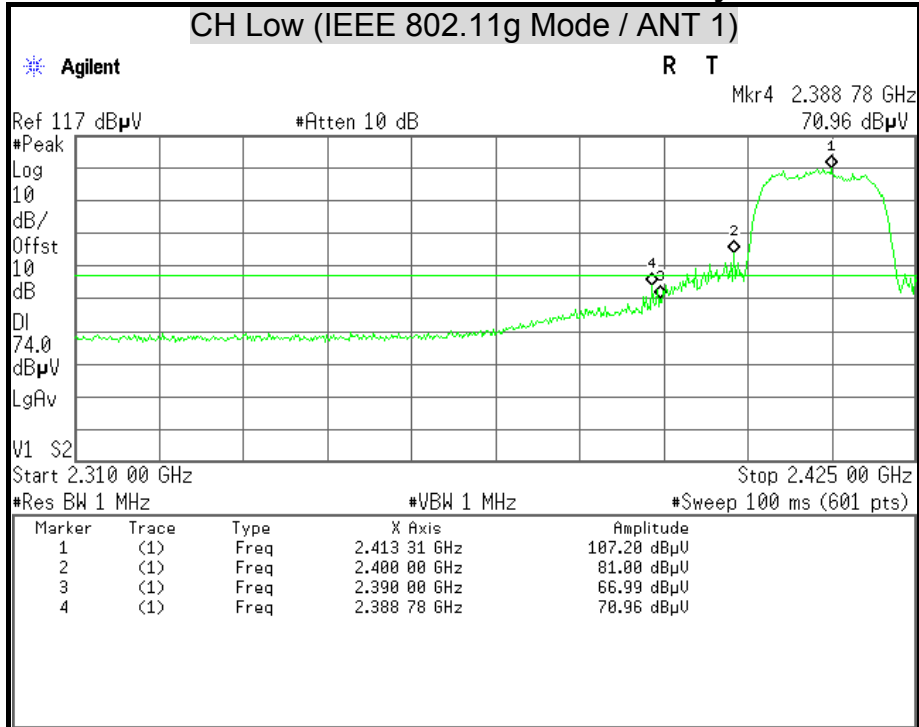
Polarity : Vertical





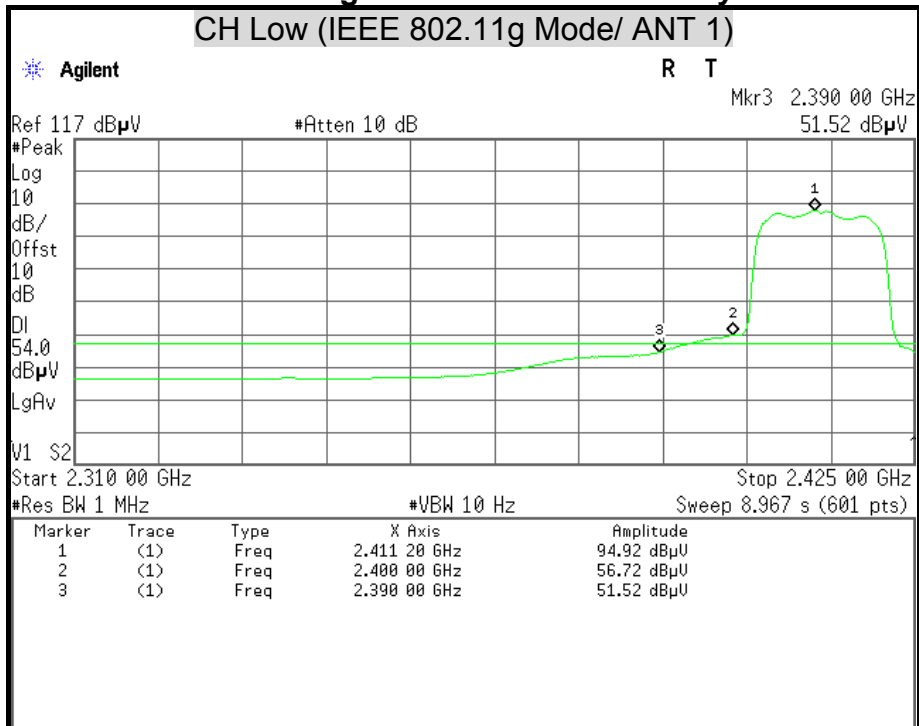
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

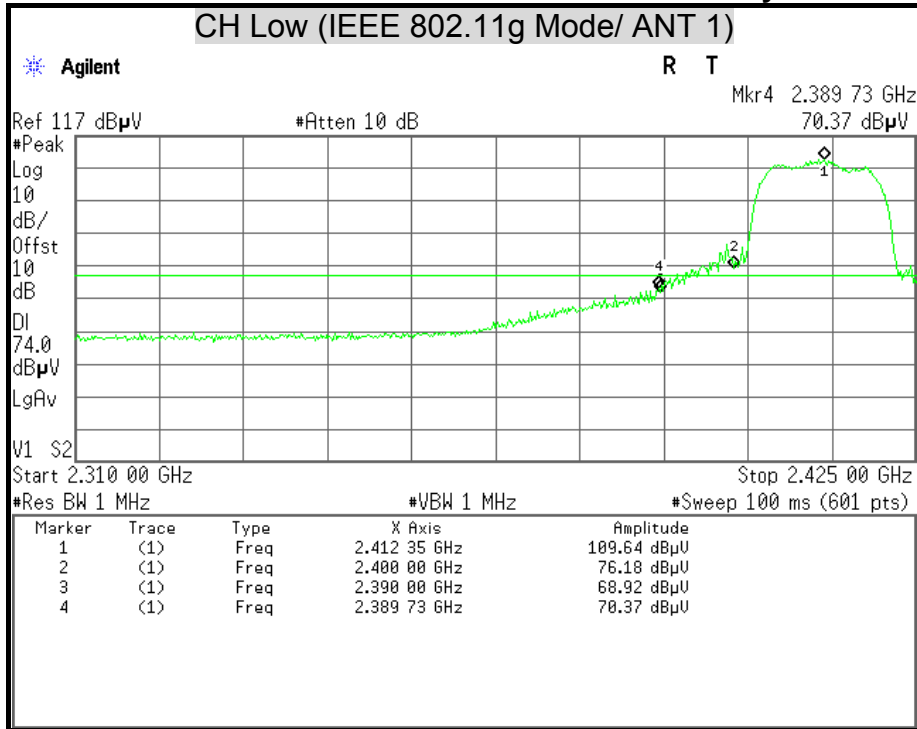
Polarity : Horizontal





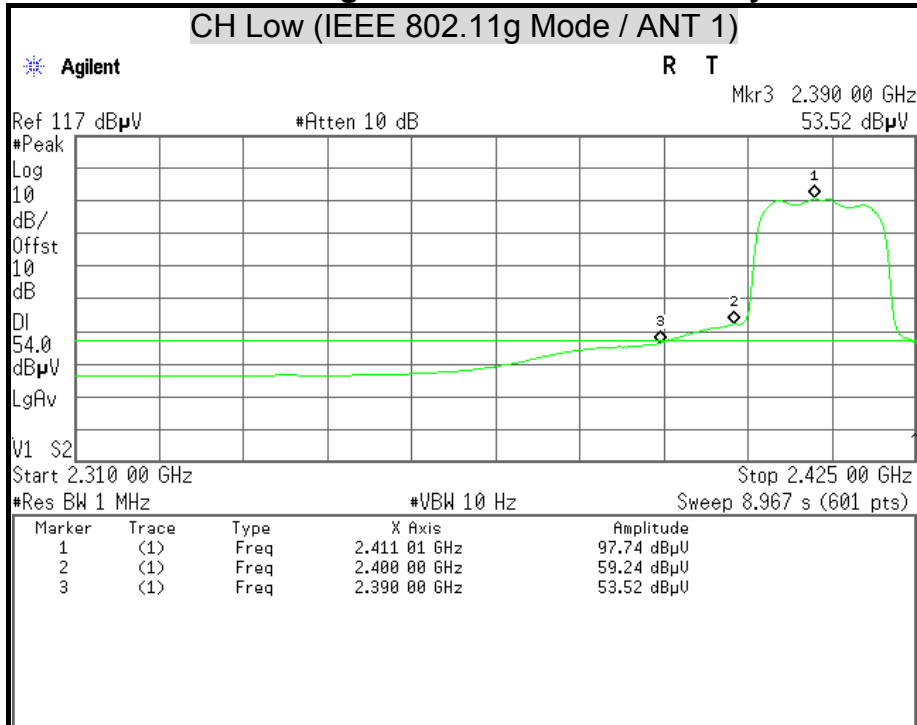
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

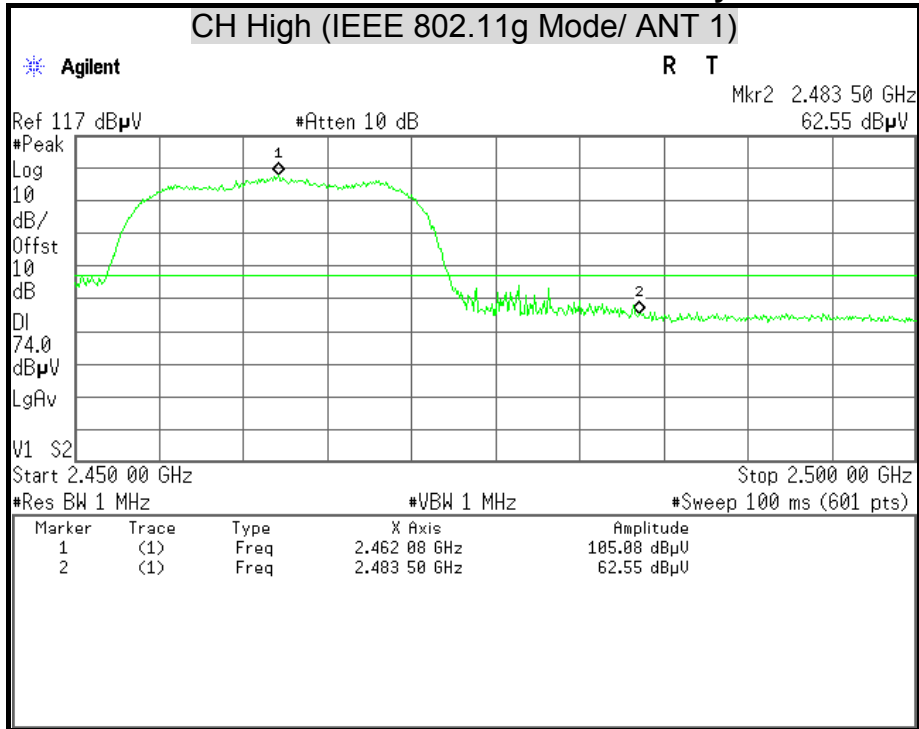
Polarity : Vertical





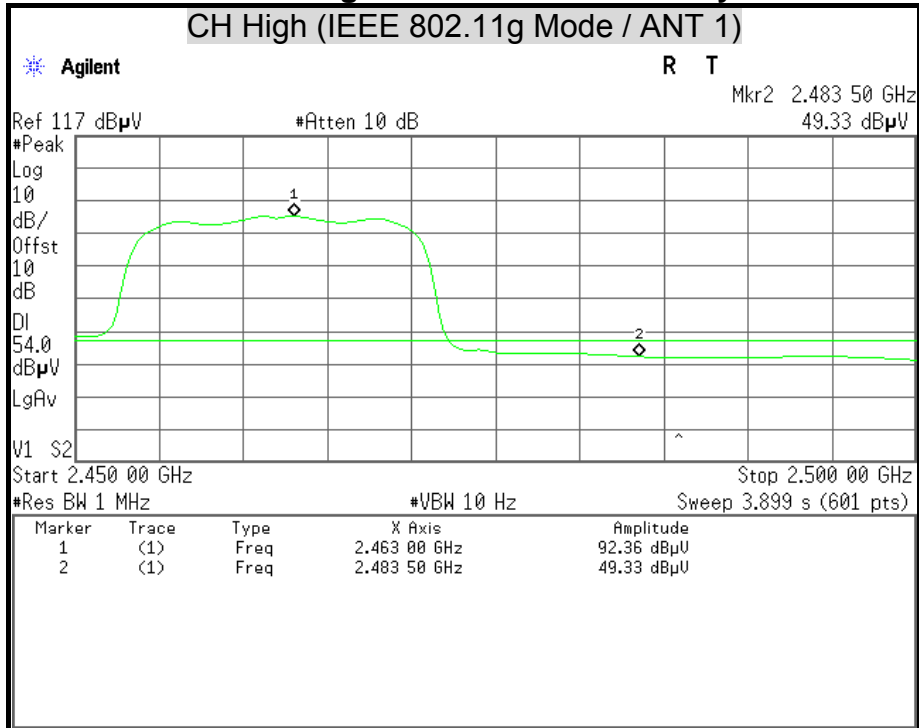
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

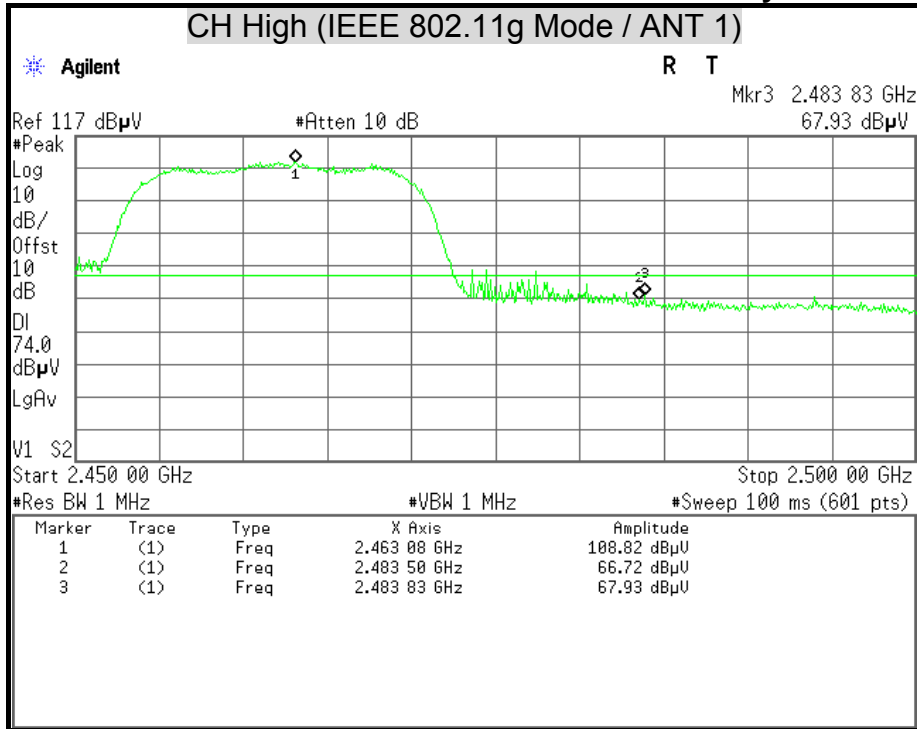
Polarity : Horizontal





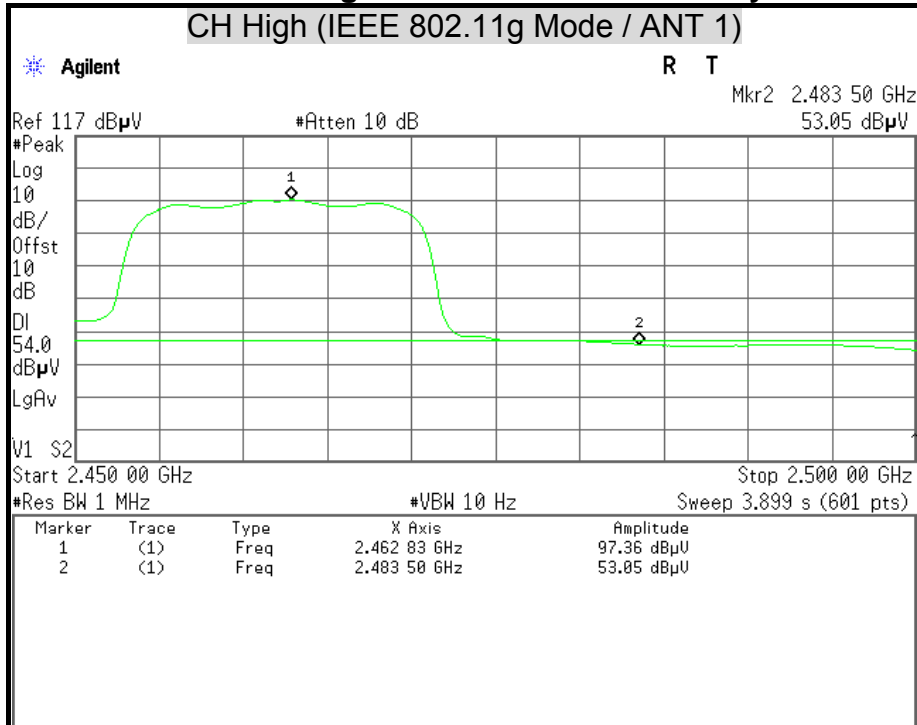
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

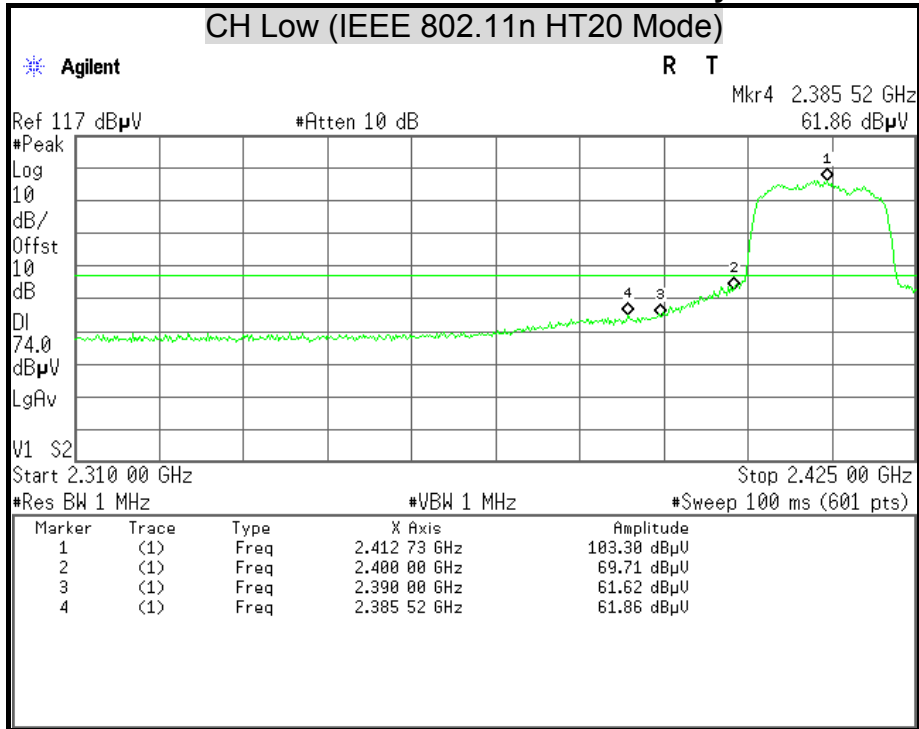
Polarity : Vertical





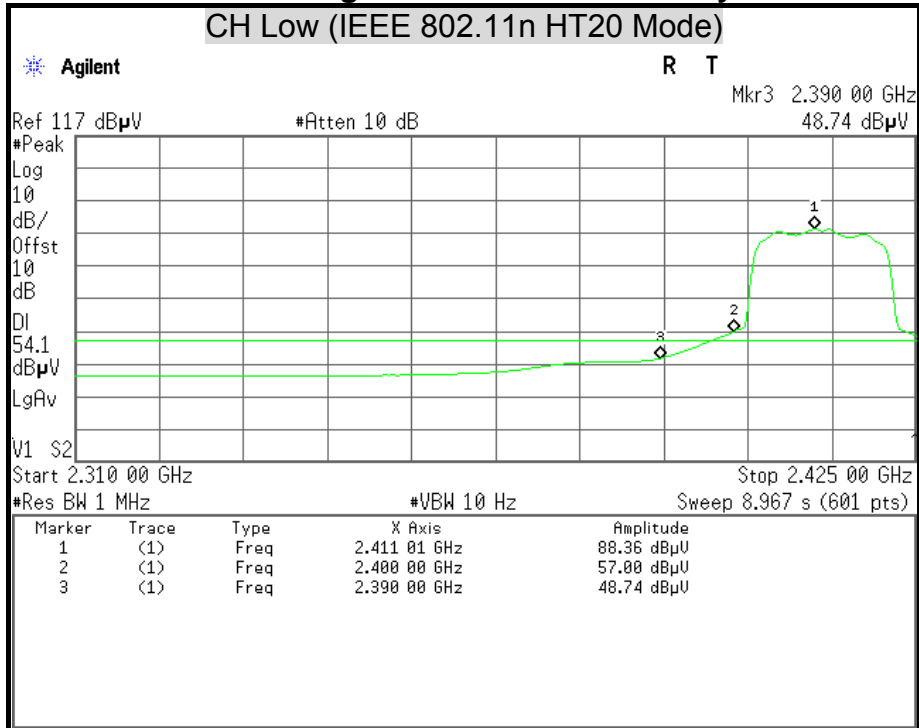
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

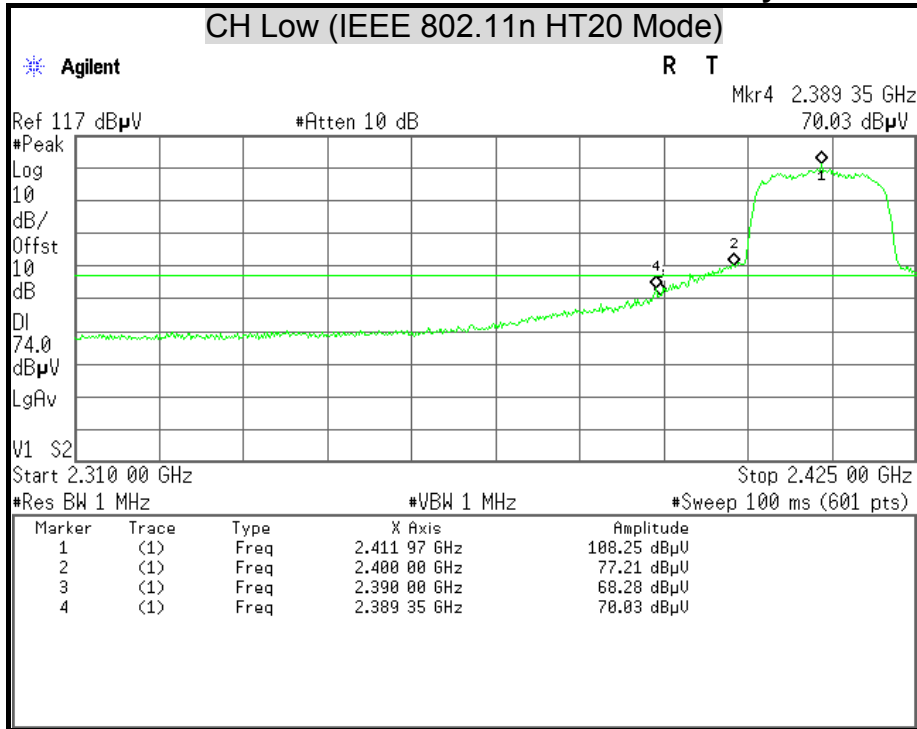
Polarity : Horizontal





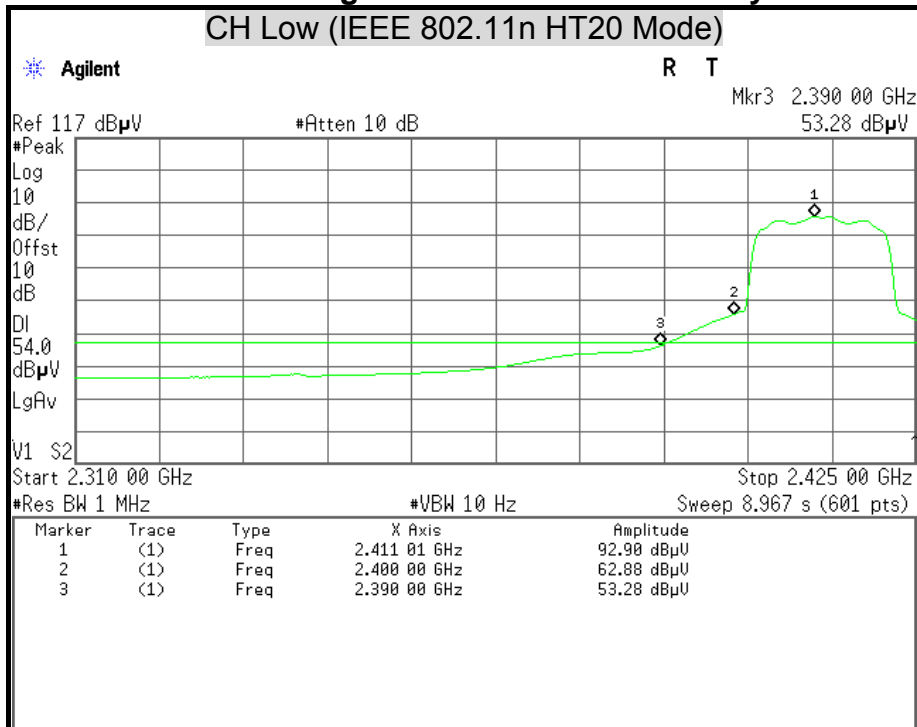
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

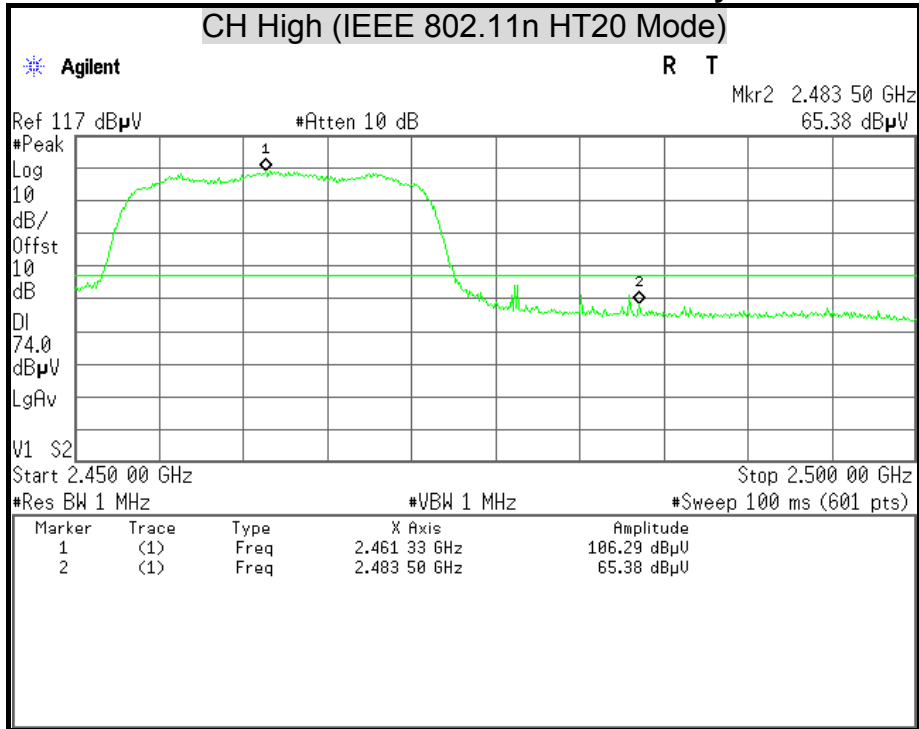
Polarity : Vertical





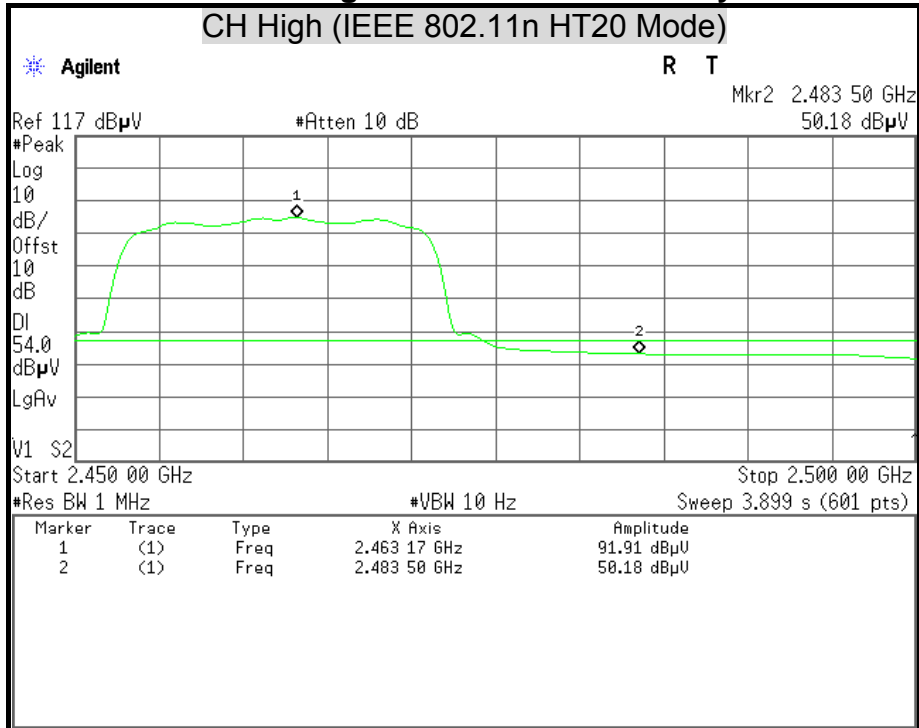
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

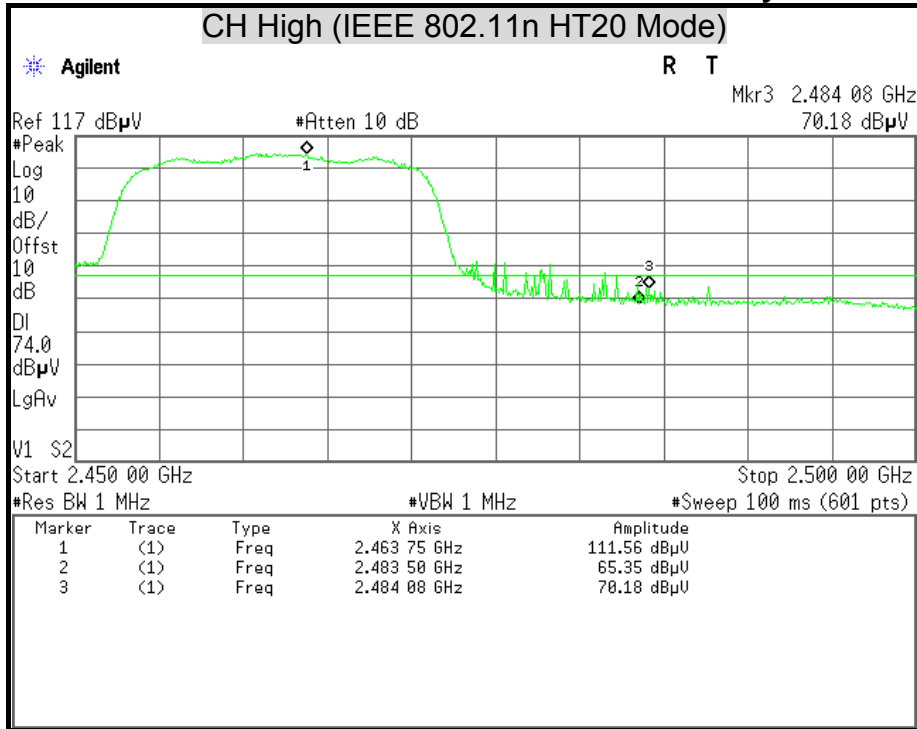
Polarity : Horizontal





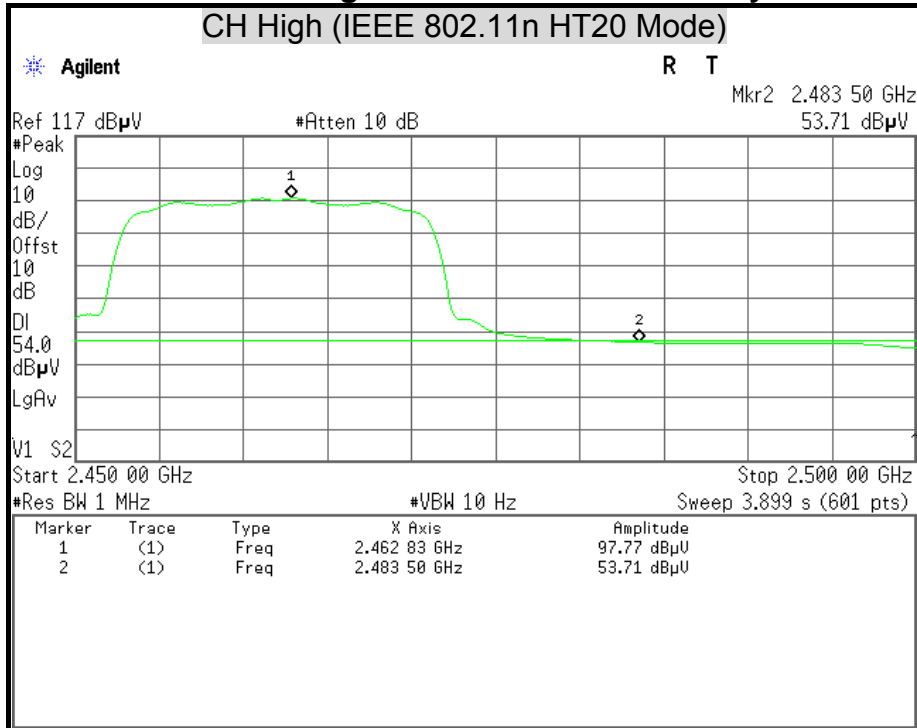
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

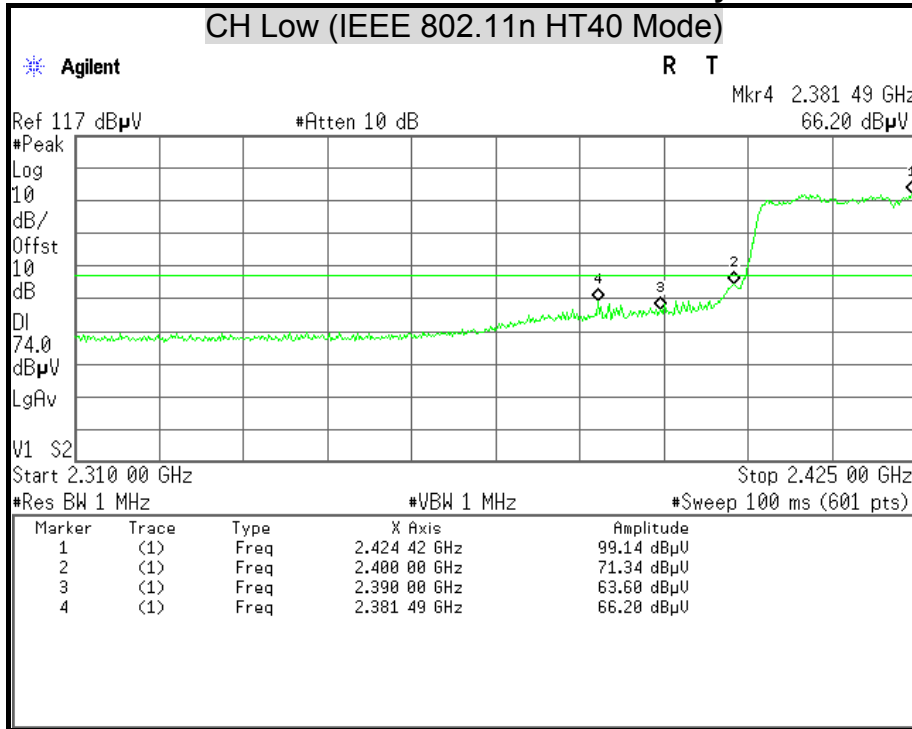
Polarity : Vertical





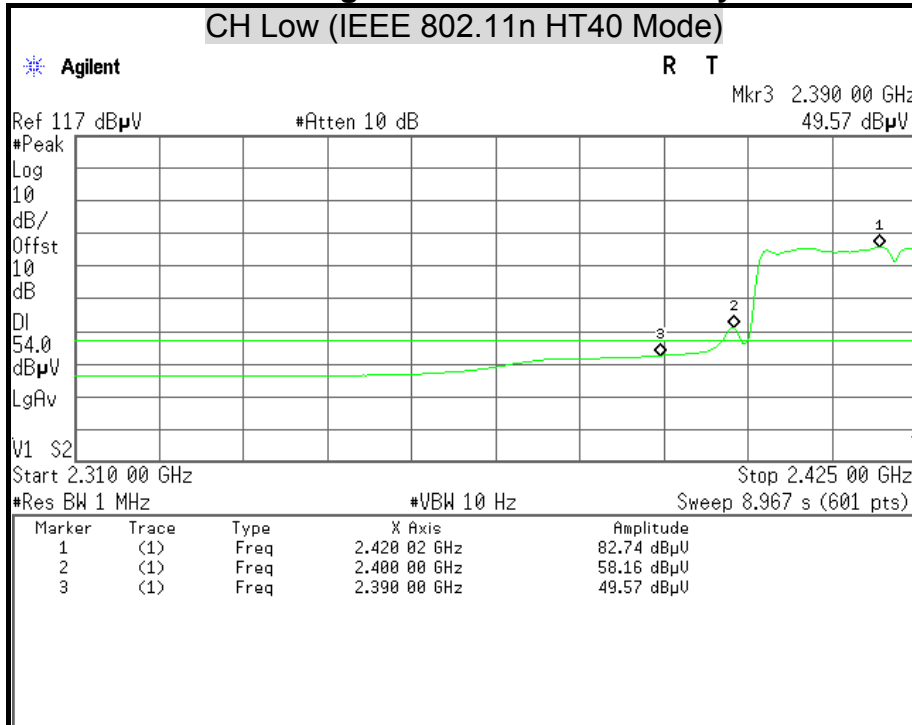
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

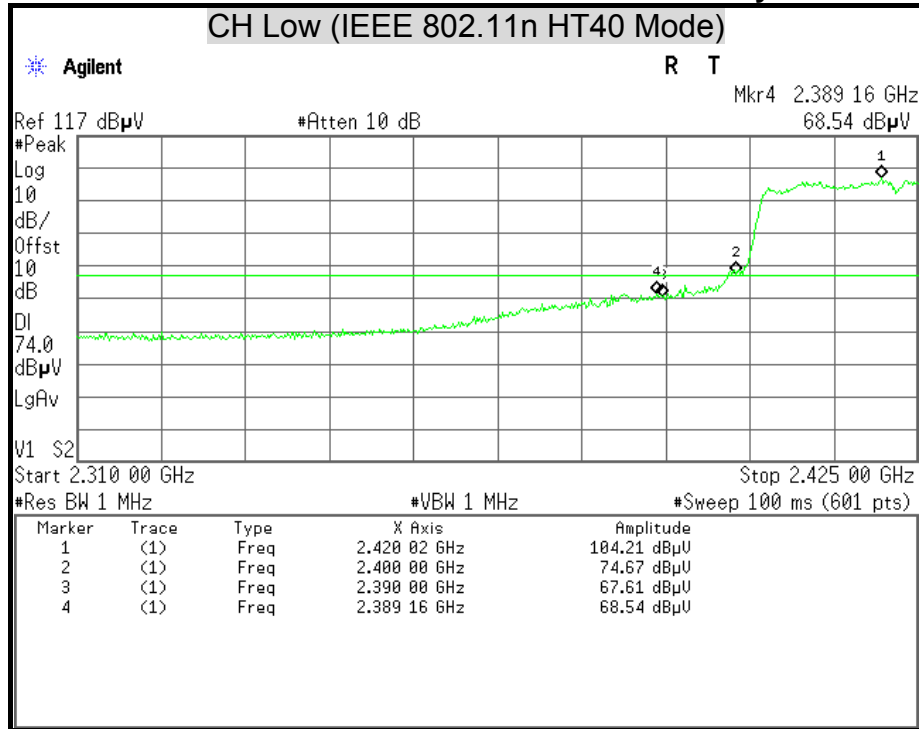
Polarity : Horizontal





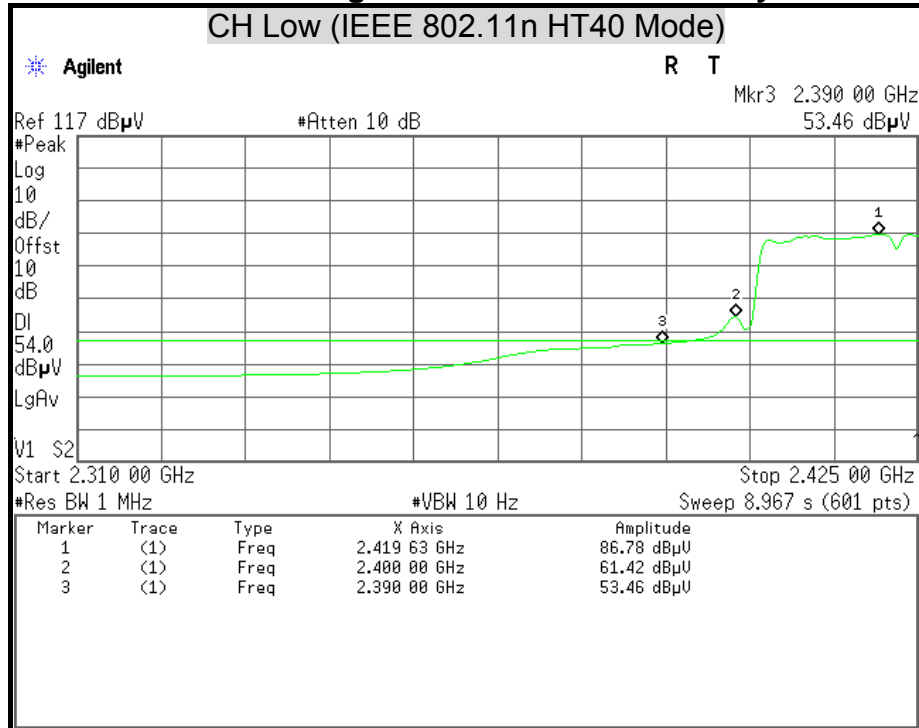
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

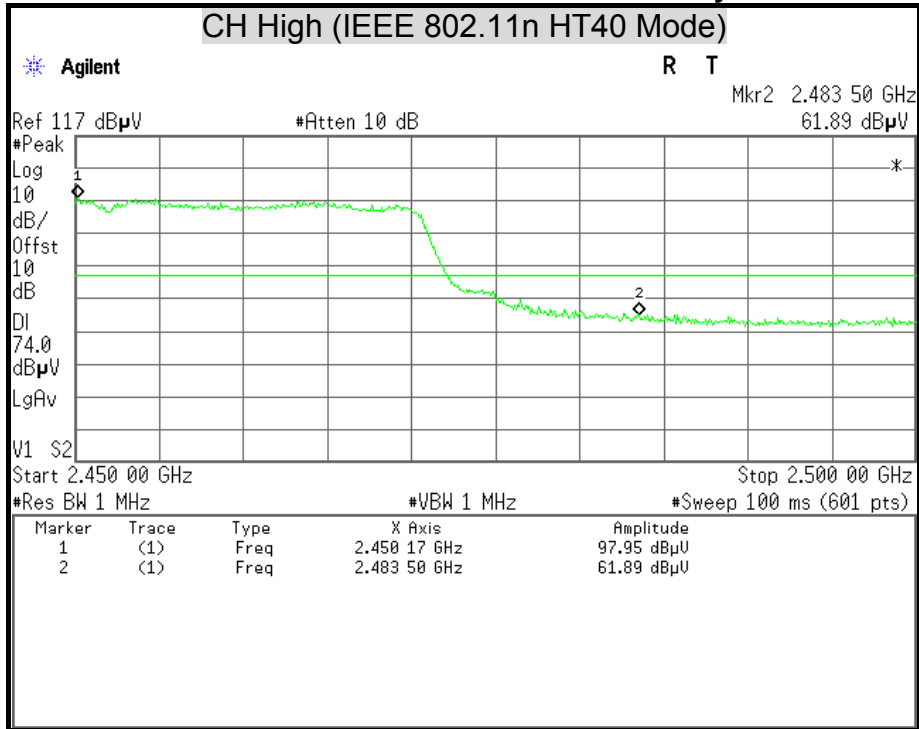
Polarity : Vertical





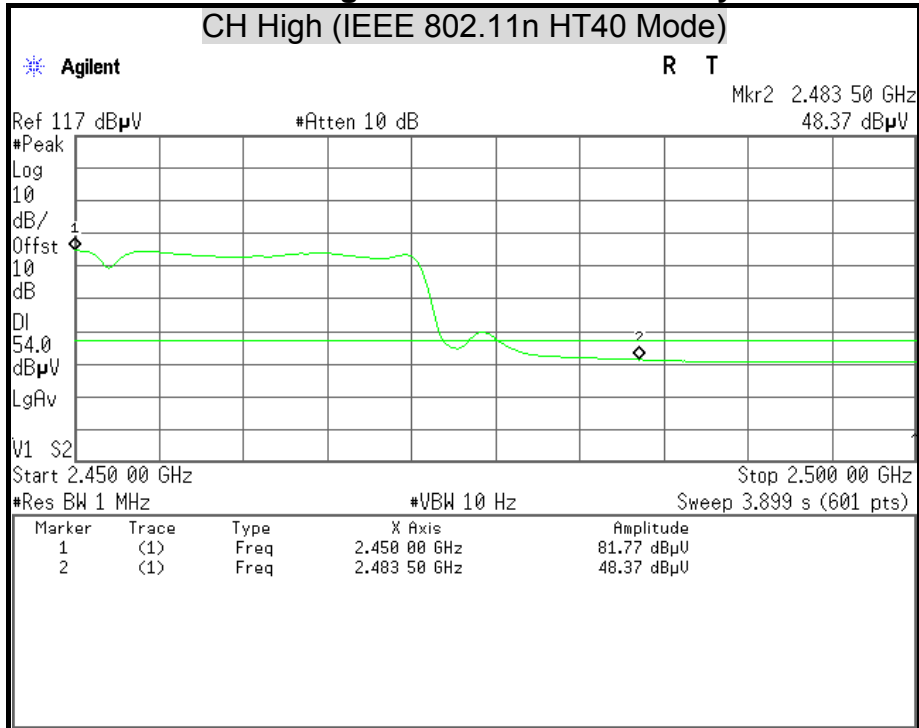
Detector Mode : Peak

Polarity : Horizontal



Detector Mode : Average

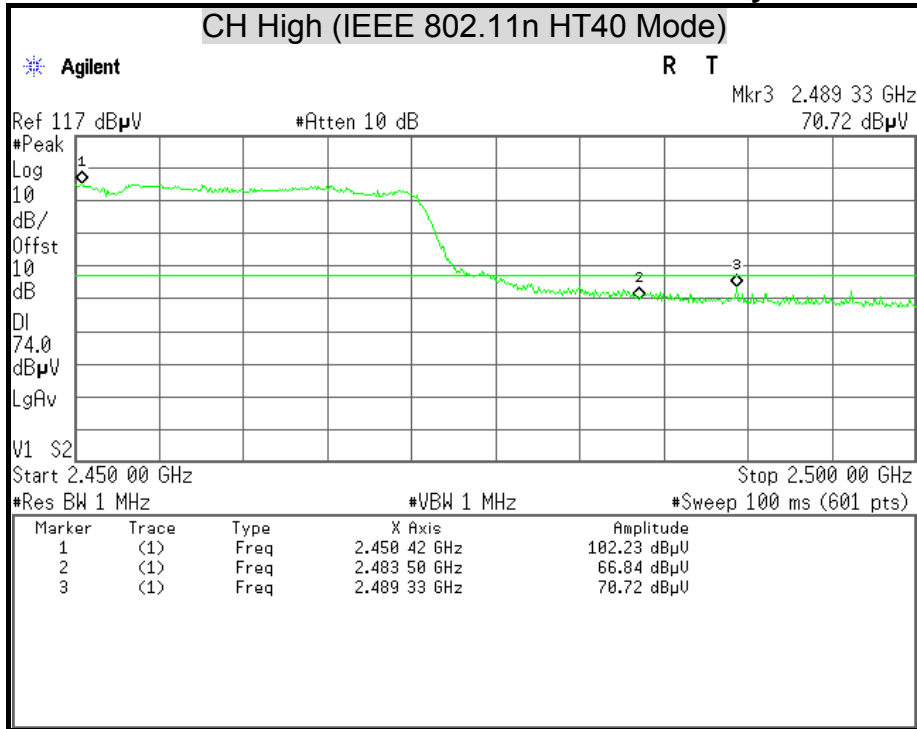
Polarity : Horizontal





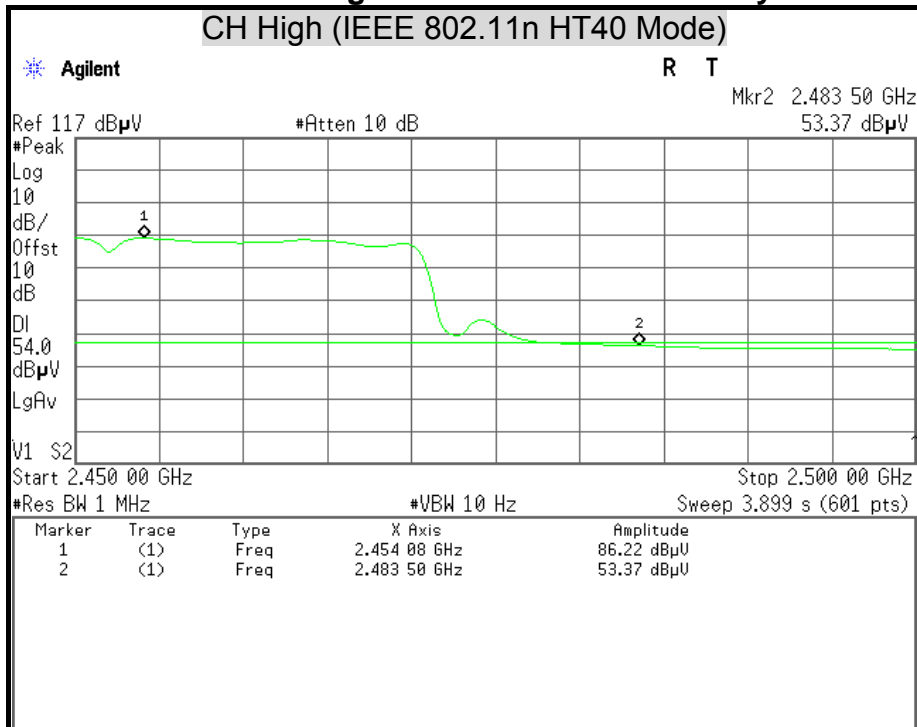
Detector Mode : Peak

Polarity : Vertical



Detector Mode : Average

Polarity : Vertical





7.6 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

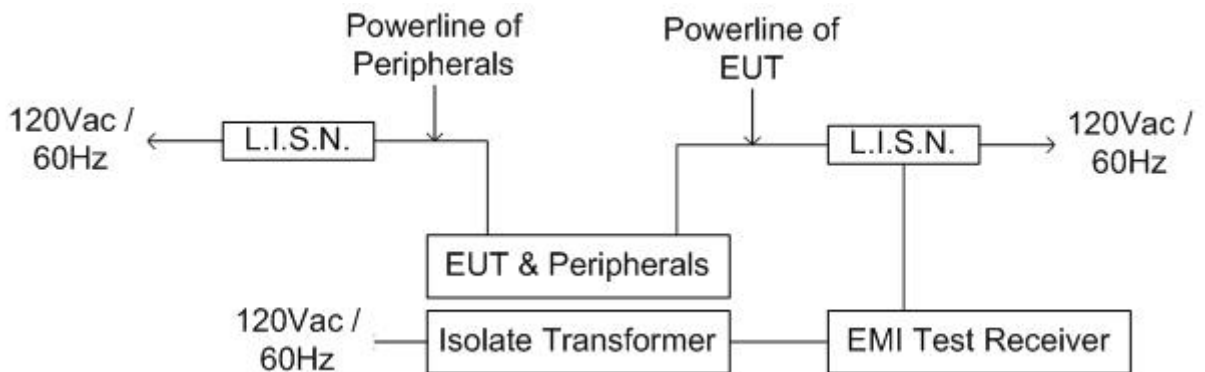
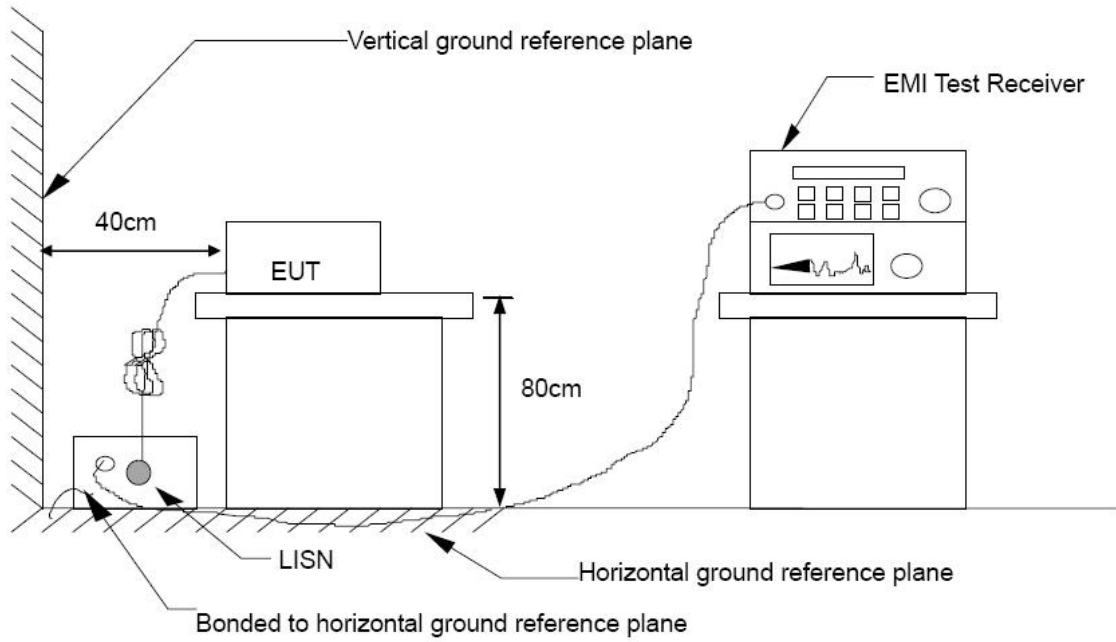
TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-465	08/07/2013
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-473	03/07/2014
EMI Receiver	ROHDE & SCHWARZ	ESCS 30	835418/008	10/16/2013
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.

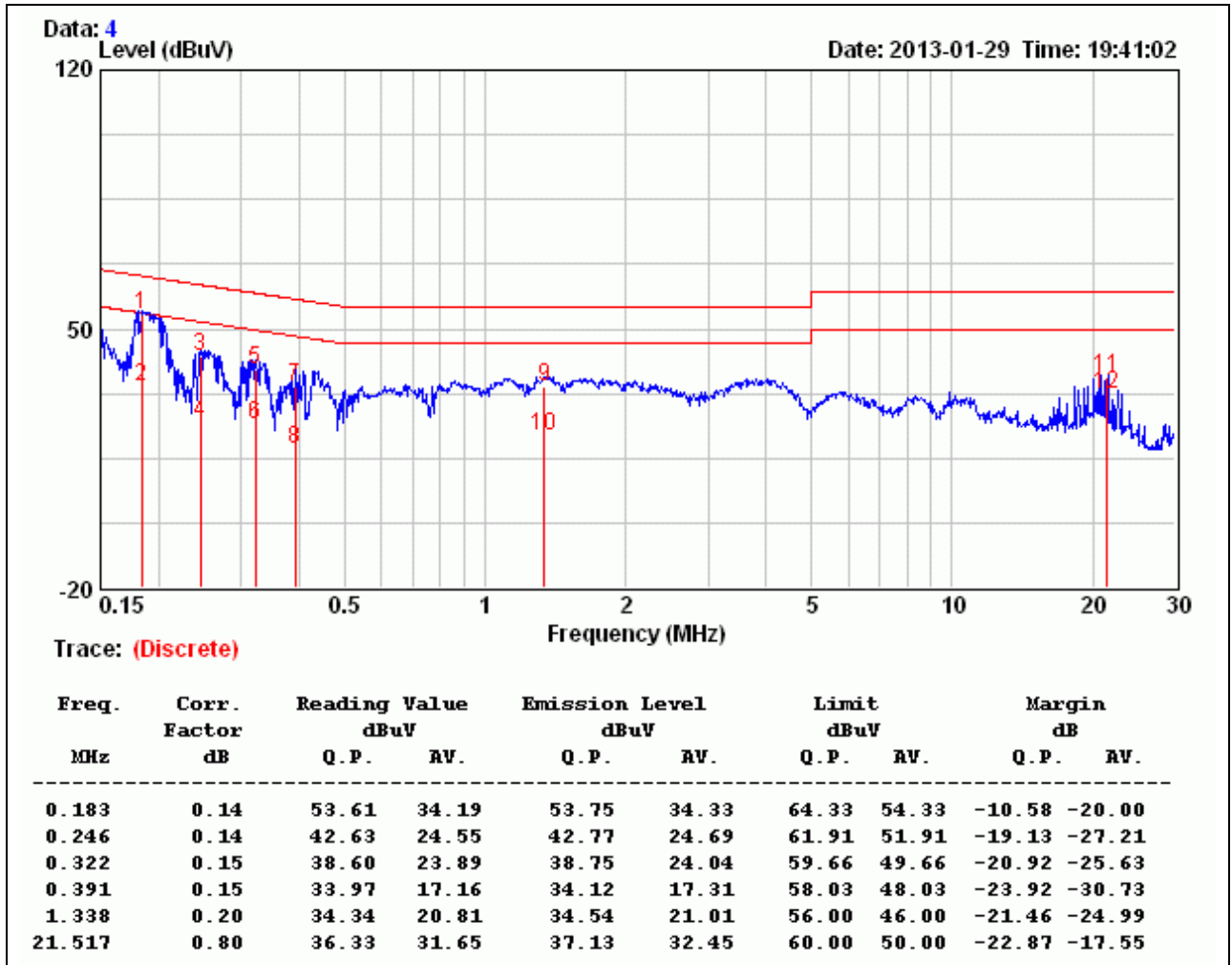
The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a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



TEST RESULTS

Product Name	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Waternil Guan
Test Model	BiPAC 7800VNOX	Test Date	2013/01/29
Test Mode	Normal Operating	Temp. & Humidity	21°C, 60%

LINE



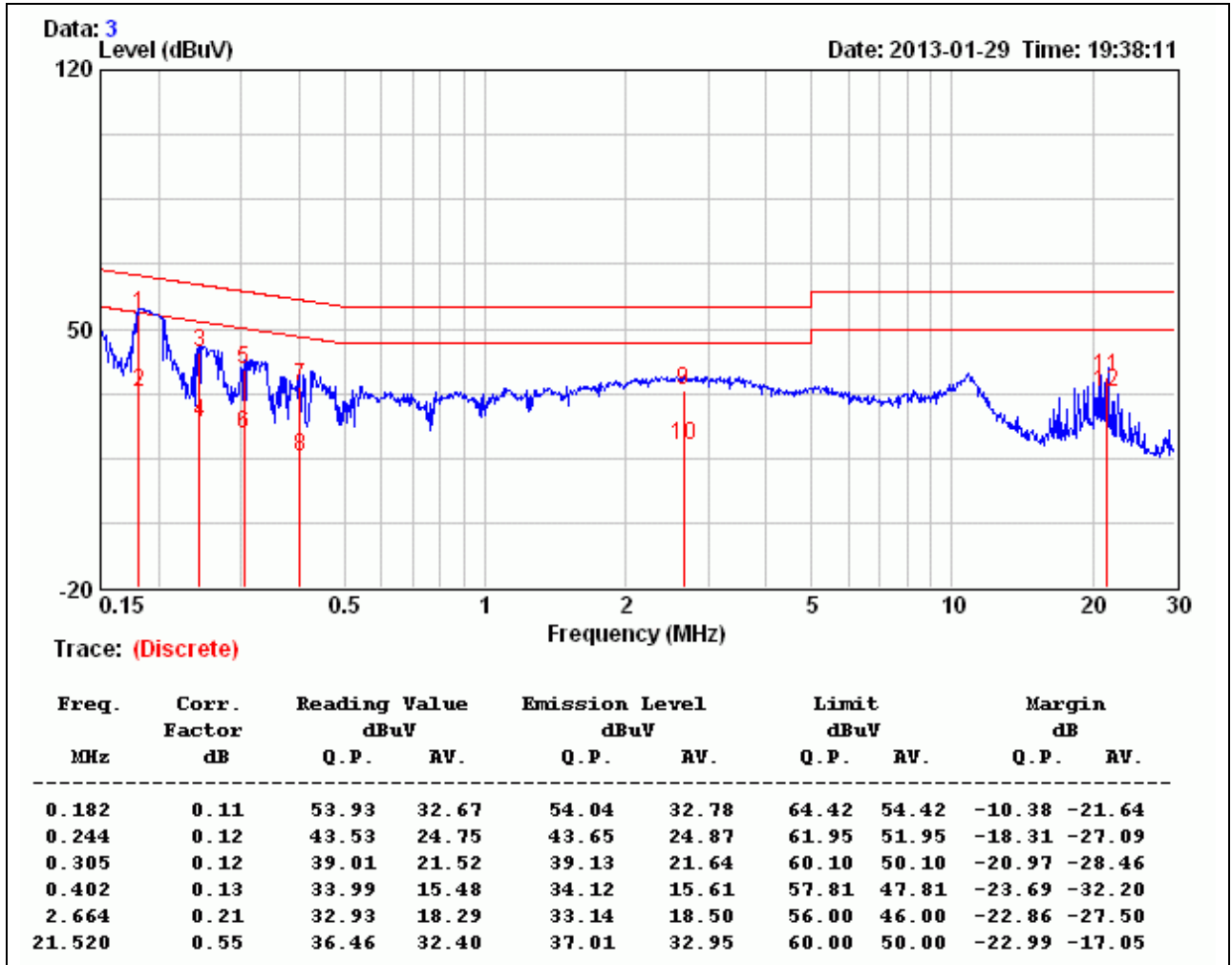
Remark:

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



Product Name	Wireless-N ADSL2+/Fibre Broadband Router	Test By	Waternil Guan
Test Model	BiPAC 7800VNOX	Test Date	2013/01/29
Test Mode	Normal Operating	Temp. & Humidity	21°C, 60%

NEUTRAL



Remark:

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