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

For

Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router

Model: BiPAC 8920NX-600

Data Applies To: BiPAC 8920NXL-600 ; BiPAC 8900NX-600 ; BiPAC 8900NXL-600 ; BEC 8920NX ; BEC 8920NP

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

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Testing Laboratory
0240

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	06/21/2016	Initial Issue	All Page 129	Dola Hsieh

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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	：	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router
Model	：	BiPAC 8920NX-600
Data Applies To	：	BiPAC 8920NXL-600 ; BiPAC 8900NX-600 ; BiPAC 8900NXL-600 ; BEC 8920NX ; BEC 8920NP
Trade Name	：	Billion ; BEC
Tested Date	：	May 03 ~ June 16, 2016

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

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

Approved by:

Sb. Lu
Sr. Engineer

Reviewed by:

Gundam Lin
Sr. Engineer

2. EUT DESCRIPTION

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router
Model Number	BiPAC 8920NX-600
Data Applies To	BiPAC 8920NXL-600 ; BiPAC 8900NX-600 ; BiPAC 8900NXL-600 ; BEC 8920NX ; BEC 8920NP
Identify Number	T160503S01
Received Date	May 03, 2016
Frequency Range	IEEE 802.11b/g, 802.11gn HT20 Mode: 2412MHz ~ 2462MHz IEEE 802.11gn HT40 Mode: 2422MHz ~ 2452MHz
Transmit Power	IEEE 802.11b Mode: 26.77 dBm (0.4753 W) IEEE 802.11g Mode: 29.37 dBm (0.8650 W) IEEE 802.11n HT20 MCS0 Mode: 29.54 dBm (0.8995 W) IEEE 802.11n HT40 MCS0 Mode: 29.48 dBm (0.8872 W)
Channel Spacing	5MHz
Channel Number	IEEE 802.11b/g, 802.11gn HT20 Mode: 11 Channels IEEE 802.11gn HT40 Mode: 7 Channels
Transmit Data Rate	IEEE 802.11b Mode: up to 11 Mbps IEEE 802.11g Mode: up to 54 Mbps IEEE 802.11n HT20 Mode (800ns GI): up to 195.00 Mbps IEEE 802.11n HT20 Mode (400ns GI): up to 216.70 Mbps IEEE 802.11n HT40 (TurboQAM) Mode (800ns GI): up to 540.00 Mbps IEEE 802.11n HT40 (TurboQAM) Mode (400ns GI): up to 600.00 Mbps
Type of Modulation	IEEE 802.11b Mode: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g Mode: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40 Mode: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT40 (TurboQAM) Mode: OFDM (256QAM)
Antenna Type	Dipole Antenna × 2 Ant. 1 (Chain 0), Antenna Gain: 5 dBi Ant. 2 (Chain 1), Antenna Gain: 5 dBi PCB Antenna × 1 : Ant. 3 (Chain 2), Antenna Gain : 2.36dBi

Power Rating	15Vdc
Test Voltage	120Vac, 60Hz
DC Power Cable Type	Non-shielded cable, 1.5m (Non-detachable), with one ferrite core
I/O Port	RJ11(DSL) Port × 1, RJ-45(LAN) Port × 4, RJ-45(EWAN) Port × 1, USB Port × 1, Power Port × 1

Power Adapter:

No.	Manufacturer	Model No.	Power Input	Power Output
1	Ktec	KSAS0361500200HU	100-240Vac, 50/60Hz, 1.0A	15Vdc, 2.0A

The difference of the series models:

Model Number	Trade Name	xDSL Dual-lines	Wireless-N	USB	VPN
BiPAC 8920NX-600	Billion	V	V	V	V
BiPAC 8920NXL-600	Billion	V	V	V	X
BiPAC 8900NX-600	Billion	X	V	V	V
BiPAC 8900NXL-600	Billion	X	V	V	X
BEC 8920NX	BEC	V	V	V	X
BEC 8920NP	BEC	V	V	V	V

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *For more details, please refer to the User's manual of the EUT.*
3. *This submittal(s) (test report) is intended for FCC ID: QI3BIL-8920NX600 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*
4. *The model BiPAC 8920NX-600 was considered the main model for testing.*

3. DESCRIPTION OF TEST MODES

The EUT (Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router) is an 802.11b/g/n transceiver.
IEEE 802.11b/g Mode (1TX / 1RX) : Ant.1 / Chain 0 transmit/receive.
IEEE 802.11n HT20/40 Mode: (3TX / 3RX) :
Ant.1 / Chain 0 & Ant.2 / Chain 1 & Ant.3 / Chain 2 transmit/receive.

Conducted Emission / Radiated Emission Test (Below 1 GHz)

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

No.	Pre-Test mode
1	Normal Operating / Full Function / ADSL Mode / EUT Upright
2	Normal Operating / Full Function / VDSL Mode / EUT Upright

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

Final Test mode		
Emission	Radiated Emission	Mode 1 / Mode 2
	Conducted Emission	Mode 1 / Mode 2

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

Conducted / Radiated Emission Test (Above 1 GHz)

IEEE 802.11b/g, 802.11n HT20 Mode:

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b Mode: 1Mbps data rate (worst case) was chosen for full testing.
IEEE 802.11g Mode: 6Mbps data rate (worst case) was chosen for full testing.
IEEE 802.11n HT20 MCS0 Mode: 6.5Mbps data rate (worst case) was 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 MCS0 Mode: 13.5Mbps data rate (worst case) was chosen for full testing.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10:2013 and FCC CFR 47, 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

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

No.989-1, Wenshan Rd., Shangshan Village,
Qionglin Township, Hsinchu County 30741, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.10:2013 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4 and CISPR 16-1-5.

5.2 ACCREDITATIONS

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

Taiwan	TAF

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

Canada	INDUSTRY CANADA
Japan	VCCI
Taiwan	BSMI
USA	FCC MRA

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

Remark: *FCC Designation Number TW1027.*

5.3 MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 30 to 1000 MHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 1 to 18GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 26 to 40 GHz	+/- 3.82
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

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

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

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

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.
1	VDSL iDSLAM	Billion	BE6200GR5	-----
2	ADSL iDSLAM	ZyXEL	IES-1000	S2Z3322195
3	Notebook PC	TOSHIBA	PORTEGE R30-A	7F097011H
4	Notebook PC	TOSHIBA	PORTEGE R30-A	7F097009H
5	Notebook PC	TOSHIBA	PORTEGE R30-A	7F096978H
6	Notebook PC	HP	ProBook 4421s	CNF03242PJ
7	USB2.0 Flash Disk	Kingston	DTSE9H/8GB	-----

No.	Signal Cable Description
1	Non-shielded RJ-45 cable, 10m × 2
2	Non-shield RJ-11 cable 10m × 1
3	Non-shield RJ-45 cable 1.5m × 3

SETUP DIAGRAM FOR TESTS

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

EUT OPERATING CONDITION

Normal Mode :

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

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. Turn on the power of all equipments.
3. EUT WAN port link to Notebook PC
4. EUT LAN port link to Notebook PC.
5. EUT RJ-11 port link to ADSL/XDSL.
6. EUT 2.4G WiFi link to Notebook PC.
7. All of the functions are under run.
8. Start test.

RF Mode :

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. TX mode:
   ⇨ **Data Rate:** 1Mbps Bandwidth 20 (IEEE 802.11b Mode)
   6Mbps Bandwidth 20 (IEEE 802.11g Mode)
   6.5Mbps Bandwidth 20 (IEEE 802.11n HT20 MCS0 Mode)
   13.5Mbps Bandwidth 40 (IEEE 802.11n HT40 MCS0 Mode)
   ⇨ **Power control**

Mode	Channel	Frequency (MHz)	Chain	Power Set
IEEE 802.11b	Low	2412	0	74
	Middle	2437	0	92
	High	2462	0	75
IEEE 802.11g	Low	2412	0	85
	Middle	2437	0	83
	High	2462	0	80
IEEE 802.11n HT20 MCS0	Low	2412	0/1/2	59
	Middle	2437	0/1/2	59
	High	2462	0/1/2	61
IEEE 802.11n HT40 MCS0	Low	2422	0/1/2	59
	Middle	2437	0/1/2	60
	High	2452	0/1/2	54

3. All of the functions are under run.
4. Start test.

7. FCC PART 15.247 REQUIREMENTS

7.1 6dB BANDWIDTH

LIMITS

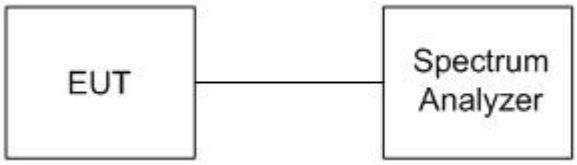
§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/15/2017
Test S/W	N/A			

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

TEST SETUP



TEST PROCEDURE

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

TEST RESULTS

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Crystal Wu
Test Model	BiPAC 8920NX-600	Test Date	2016/05/16
Test Mode	TX Mode	Temp. & Humidity	24°C, 60%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
		Chain 0		
Low	2412	9.03	500	PASS
Middle	2437	9.04	500	PASS
High	2462	8.57	500	PASS

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
		Chain 0		
Low	2412	16.30	500	PASS
Middle	2437	16.31	500	PASS
High	2462	15.94	500	PASS

IEEE 802.11n HT20 MCS0 Mode (3TX)

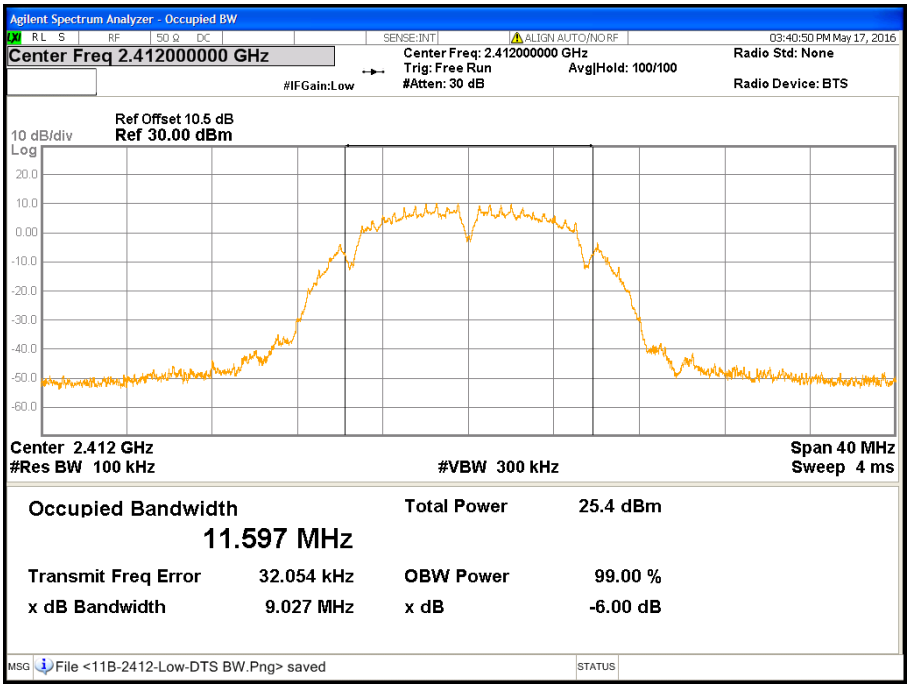
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (kHz)	Result
		Chain 0	Chain 1	Chain 2		
Low	2412	17.53	17.32	17.55	500	PASS
Middle	2437	17.14	17.57	17.58	500	PASS
High	2462	17.54	17.59	17.57	500	PASS

IEEE 802.11n HT40 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (kHz)	Result
		Chain 0	Chain 1	Chain 2		
Low	2422	36.16	35.88	36.27	500	PASS
Middle	2437	36.06	36.35	36.09	500	PASS
High	2452	36.04	36.34	36.30	500	PASS

6dB BANDWIDTH

CH Low (IEEE 802.11b Mode / Chain 0)



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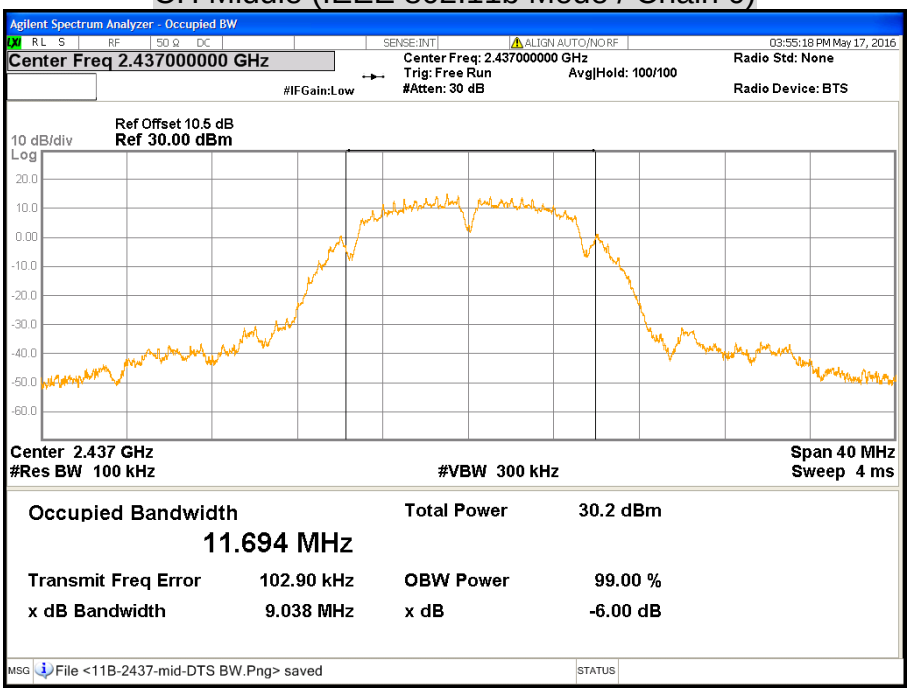

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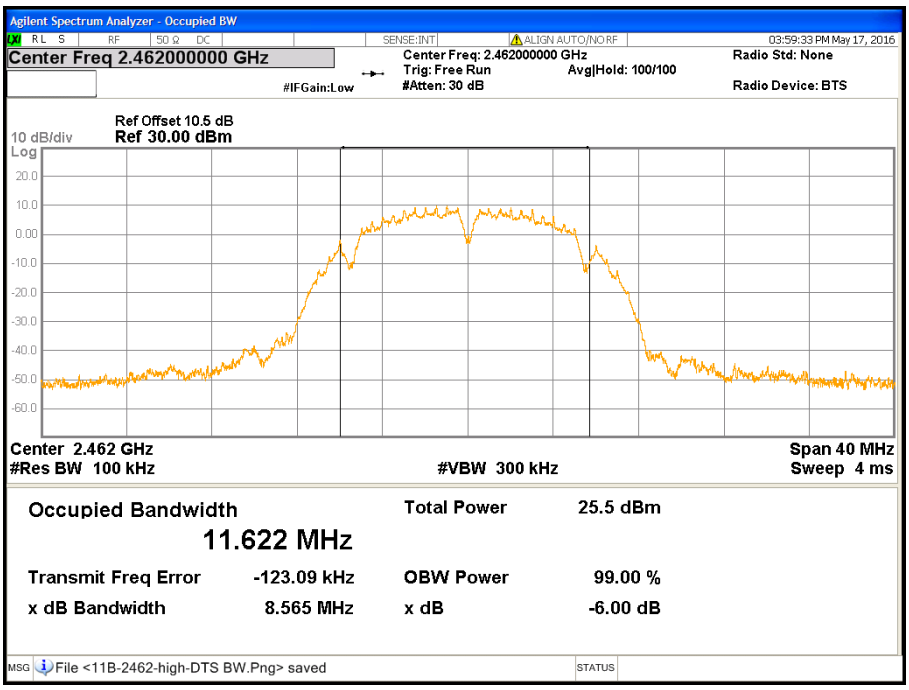

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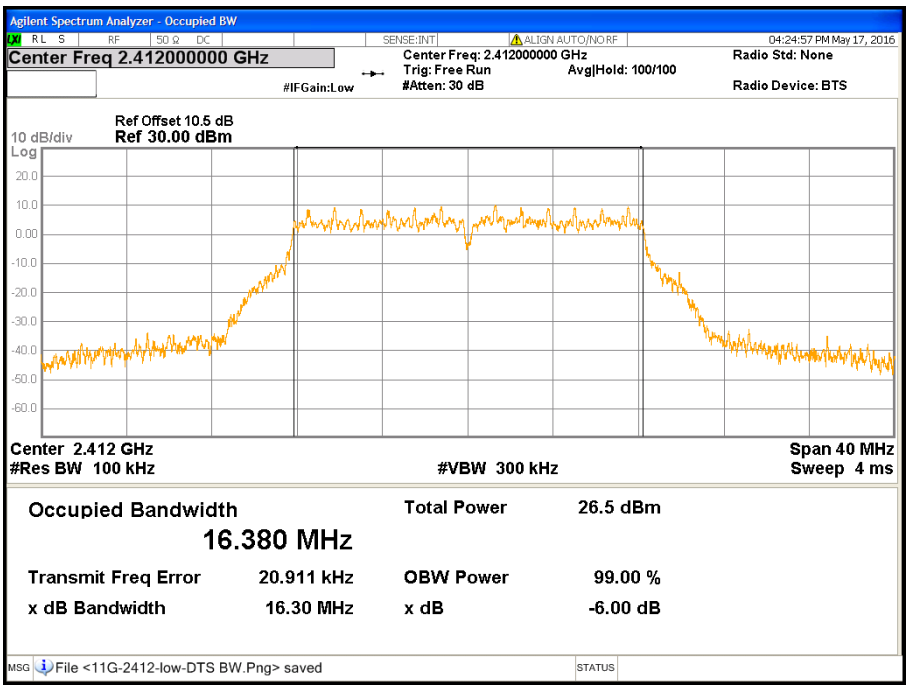

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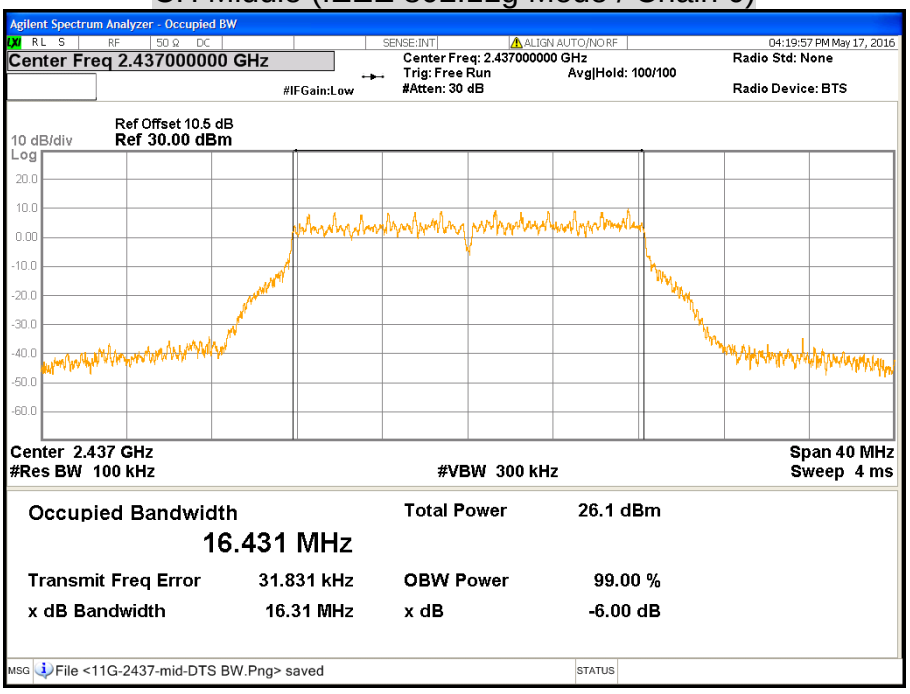

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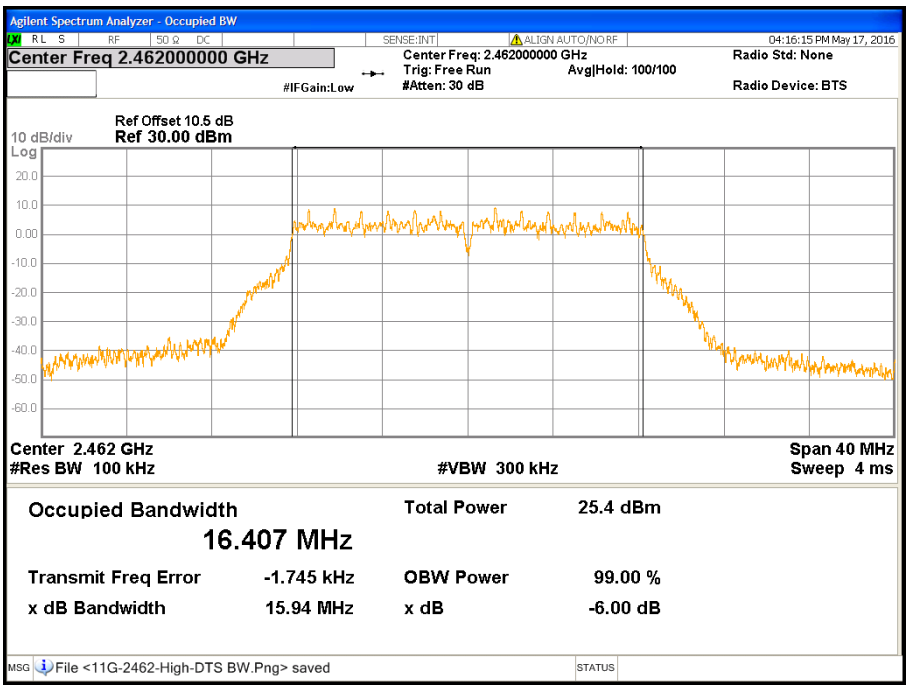

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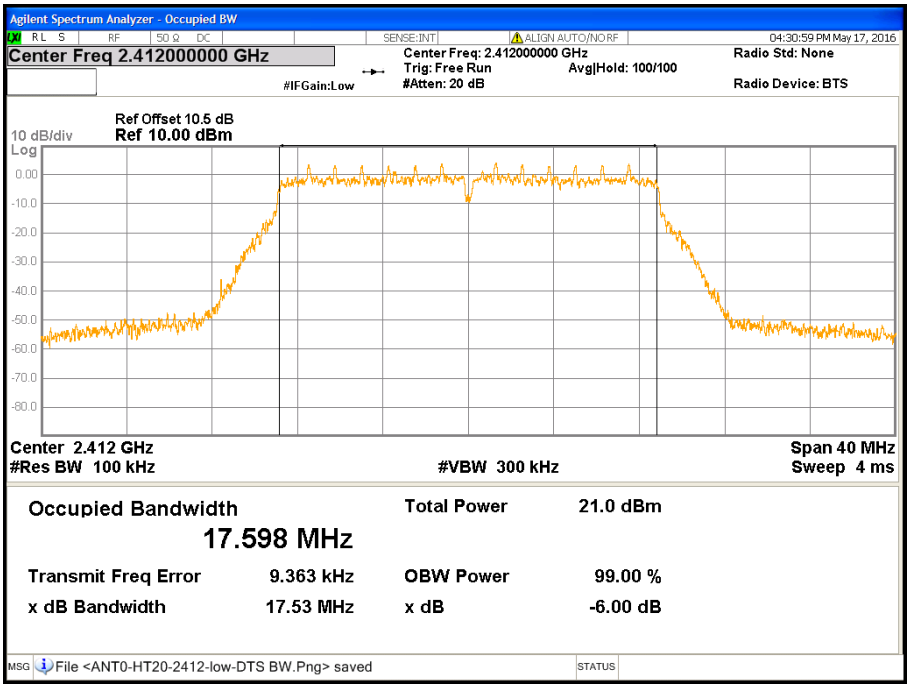

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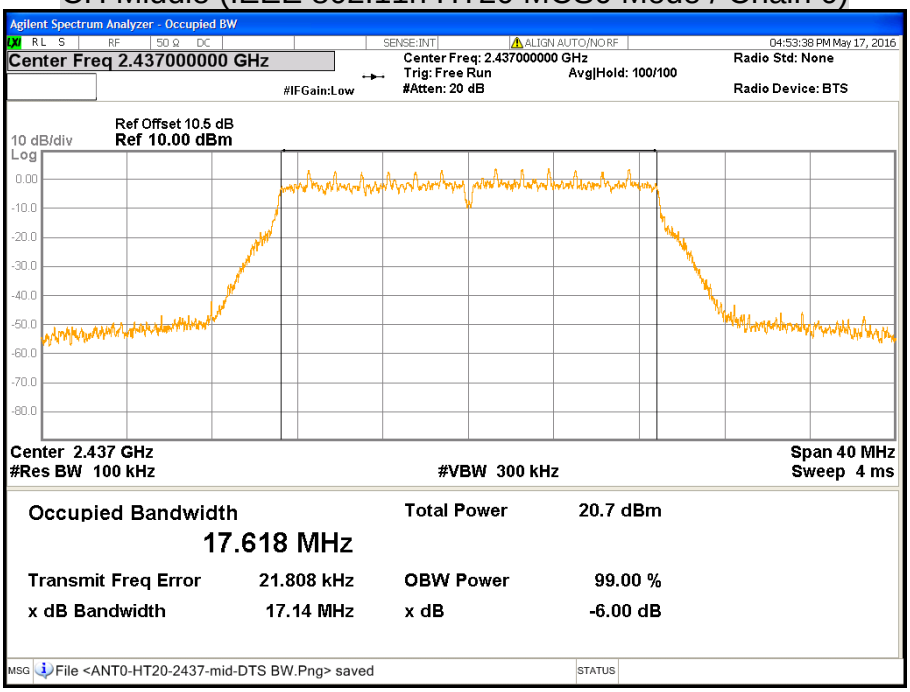

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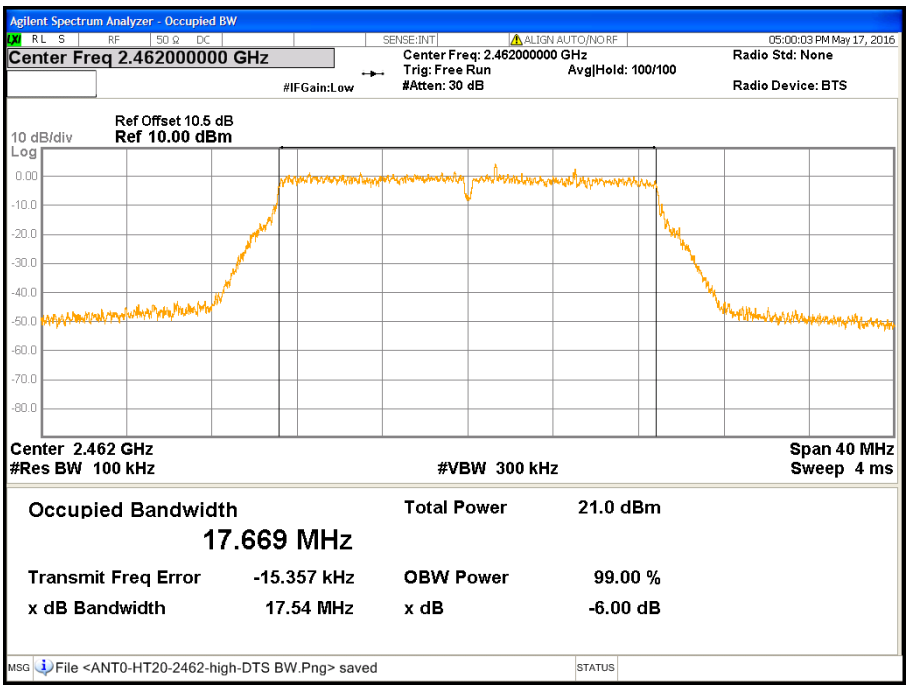

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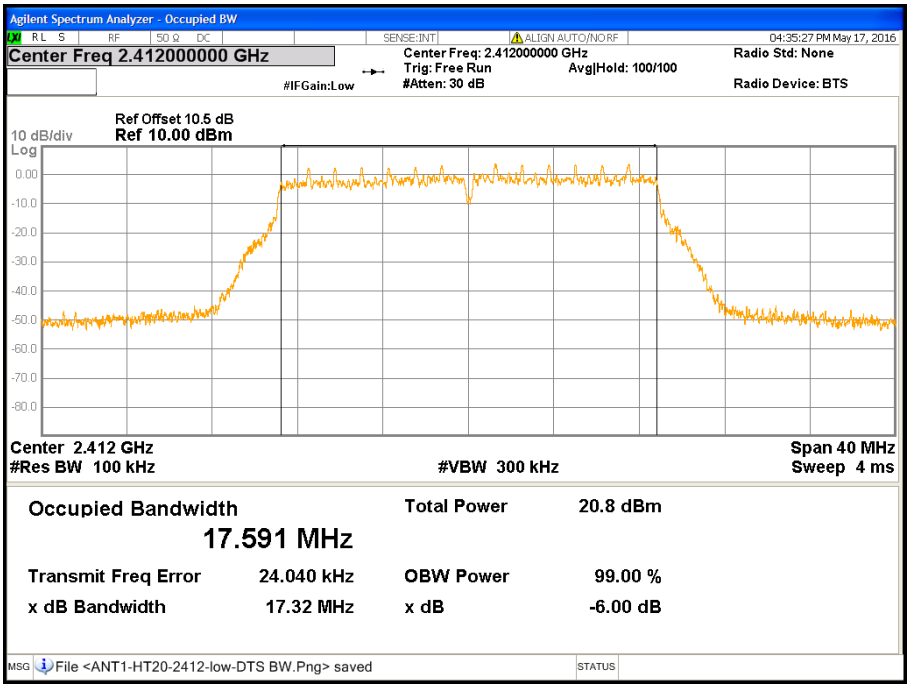

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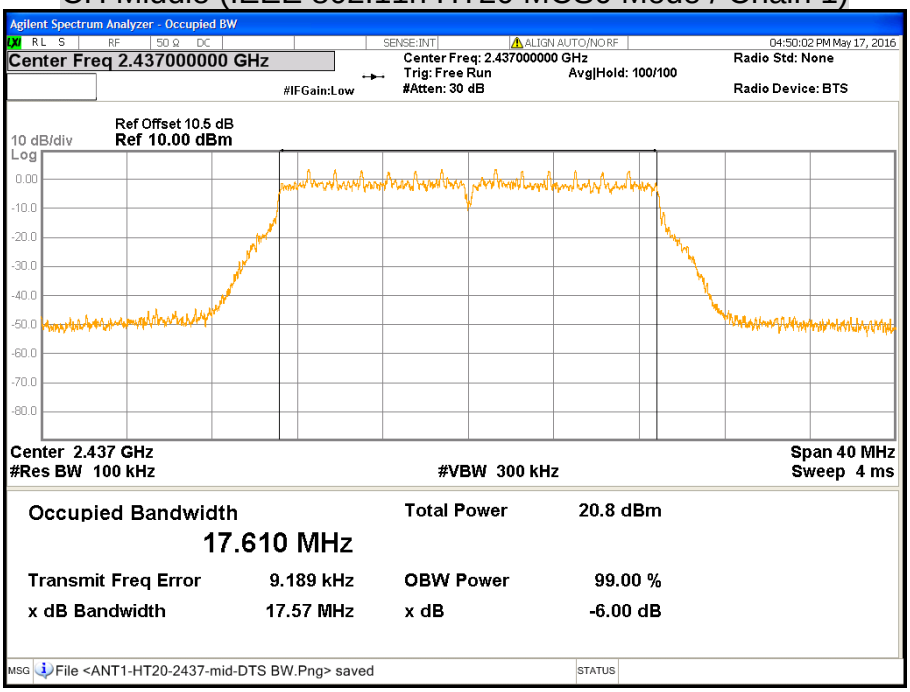

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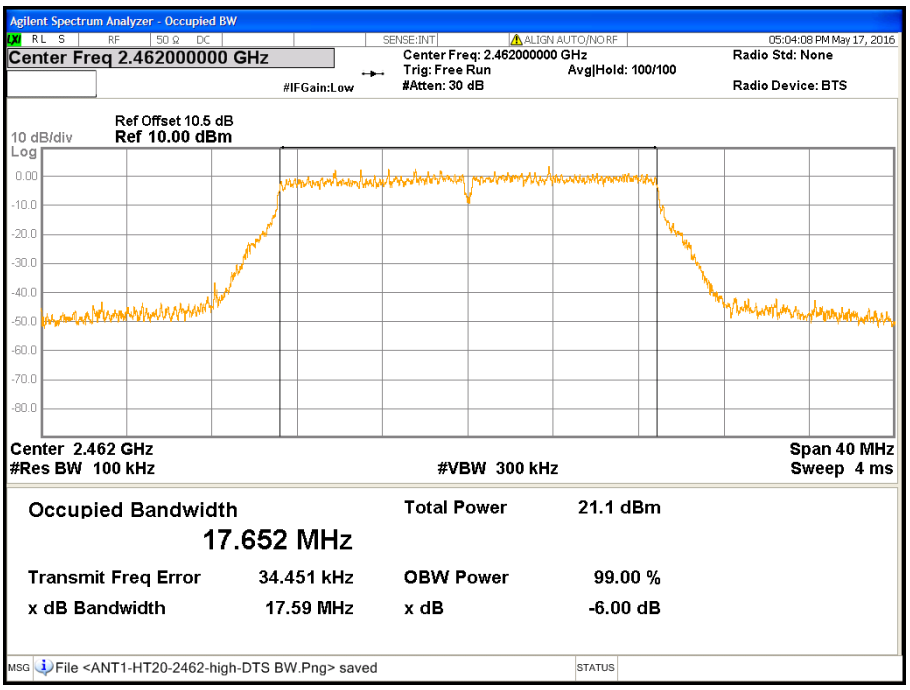

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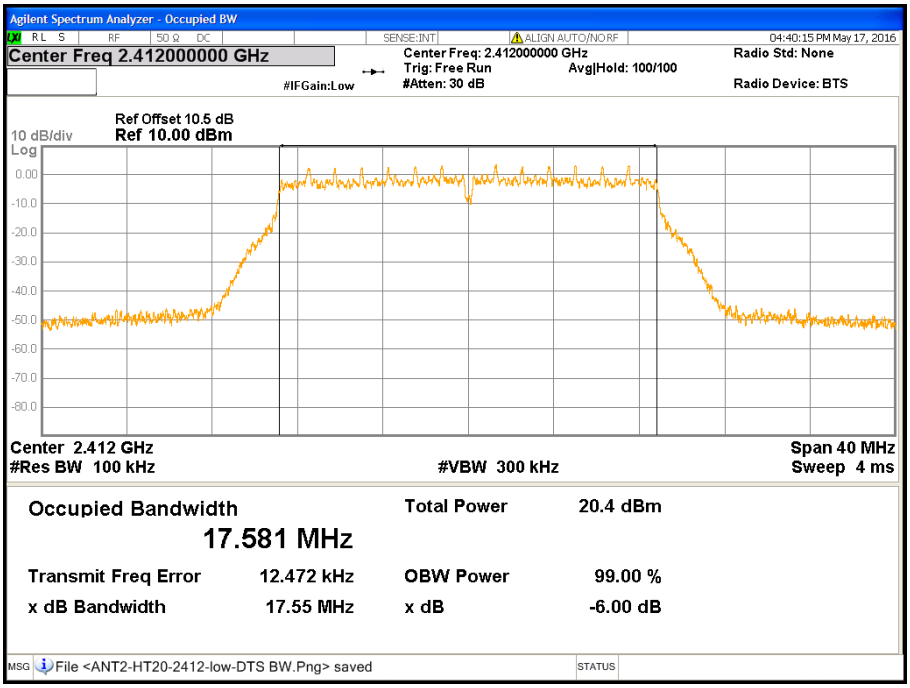

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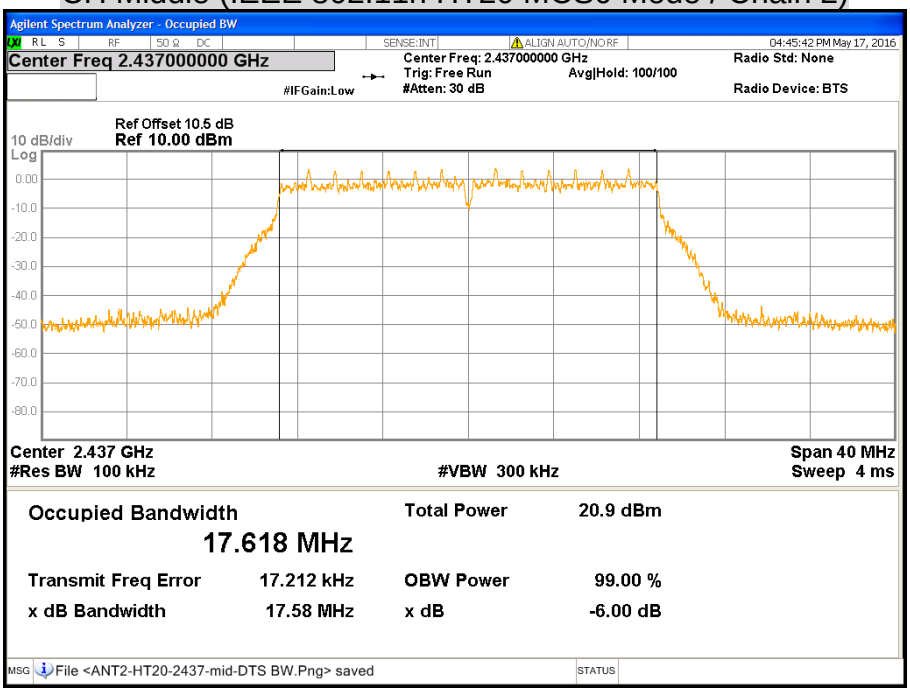

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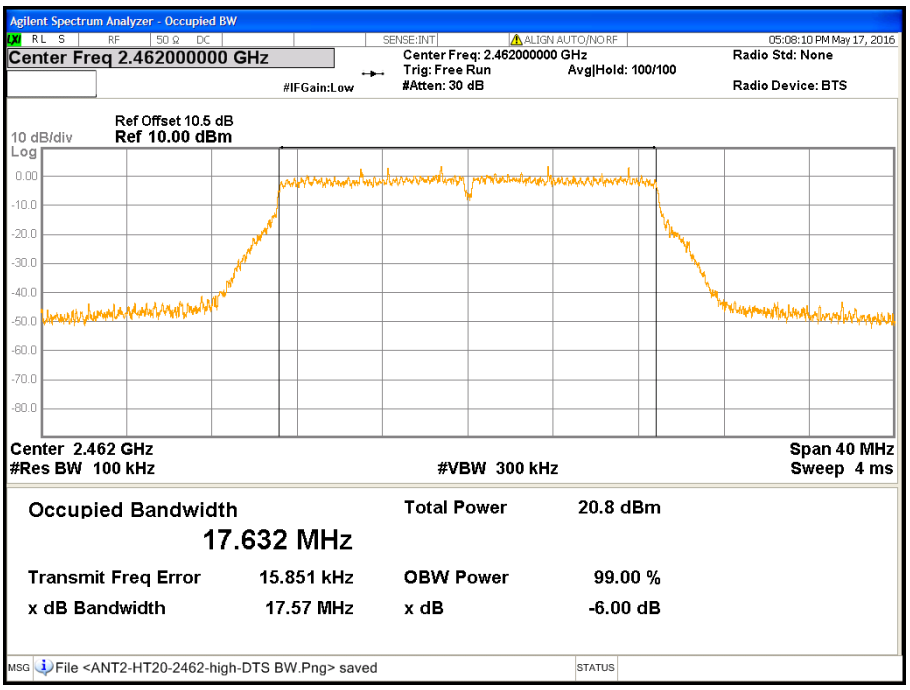

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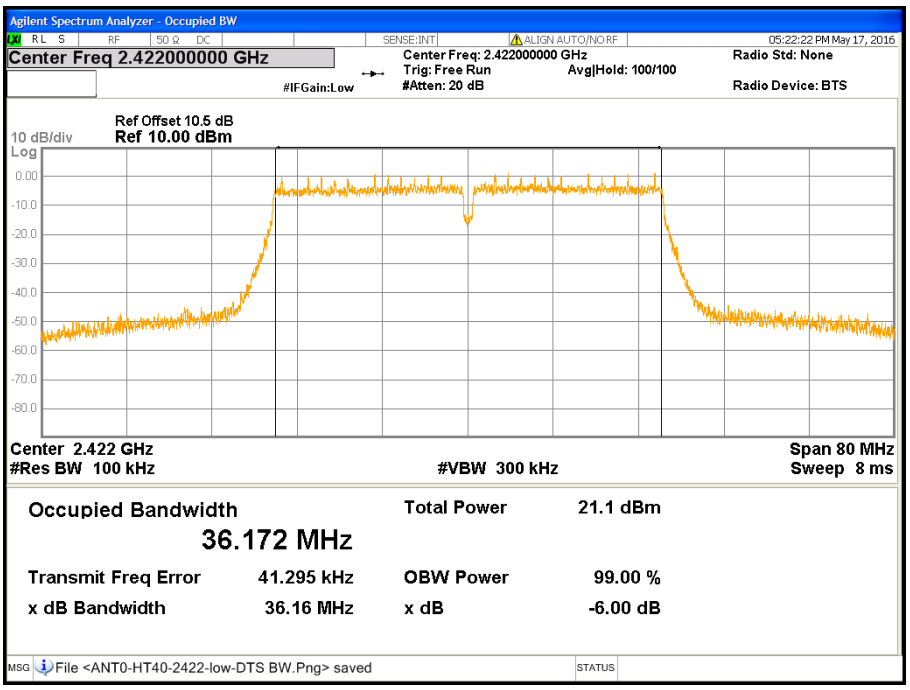

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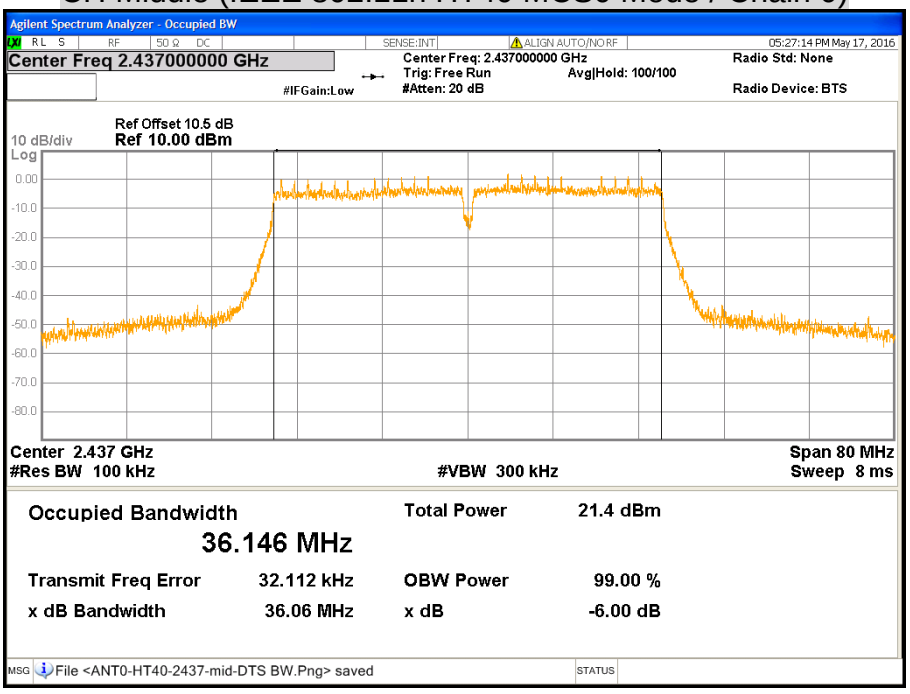

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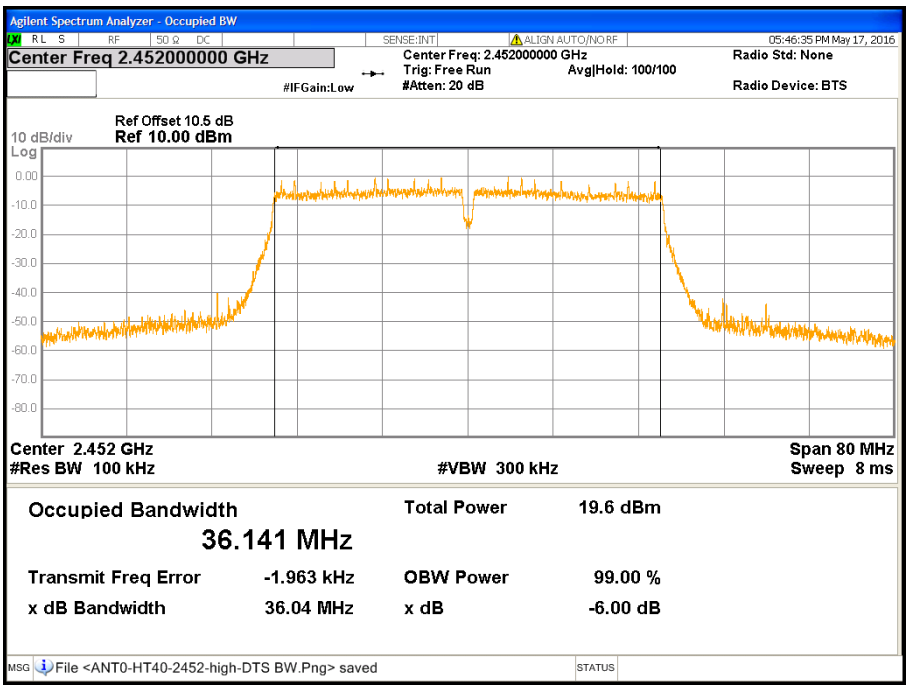

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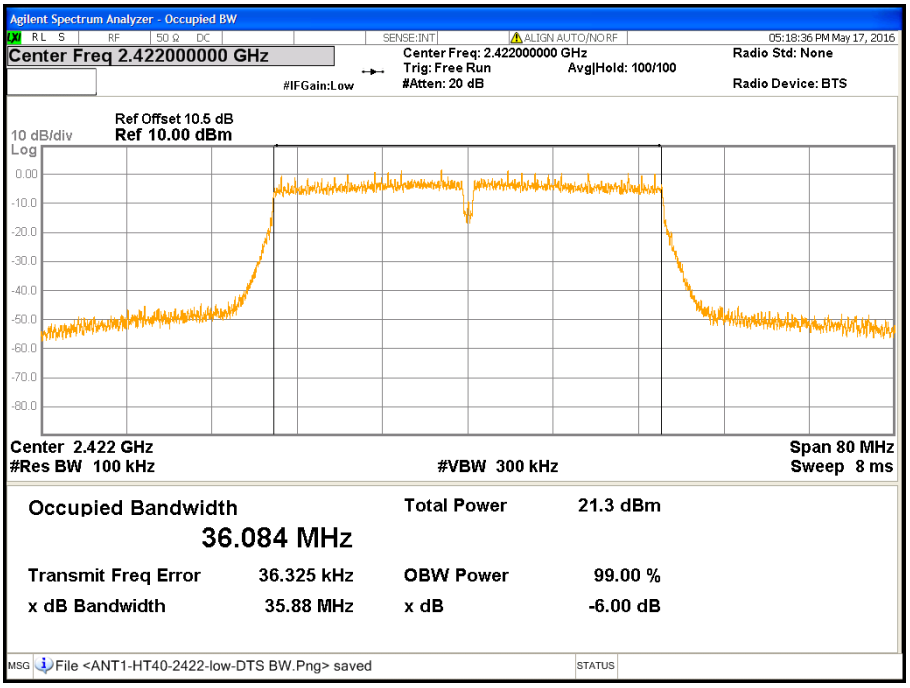

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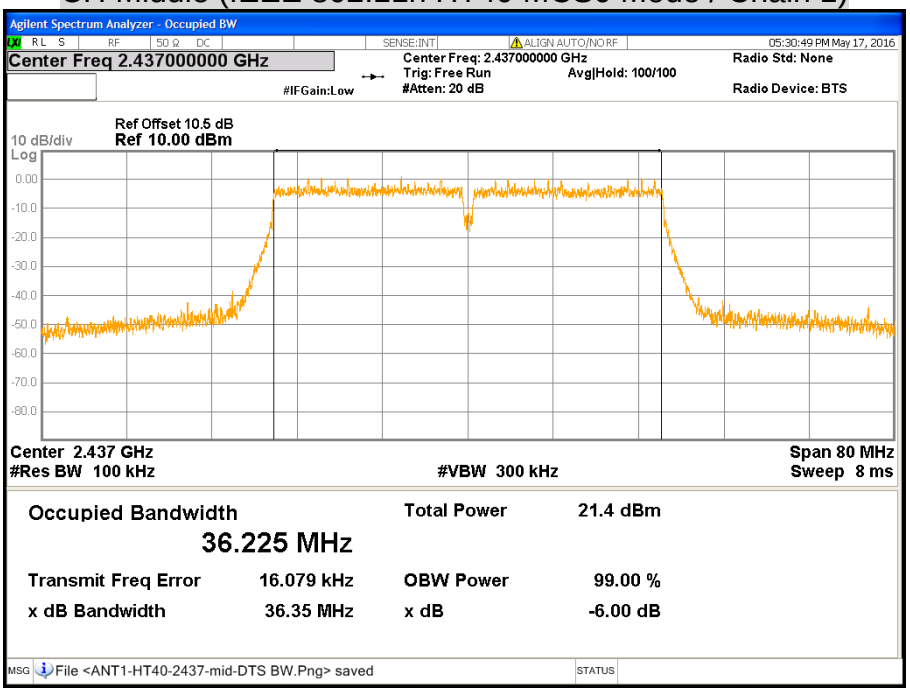

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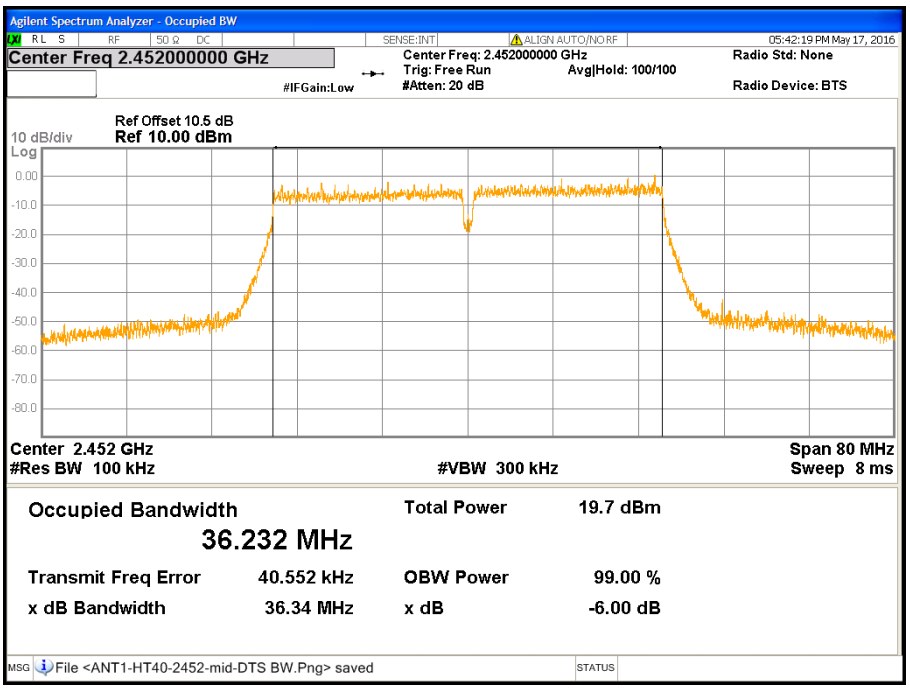

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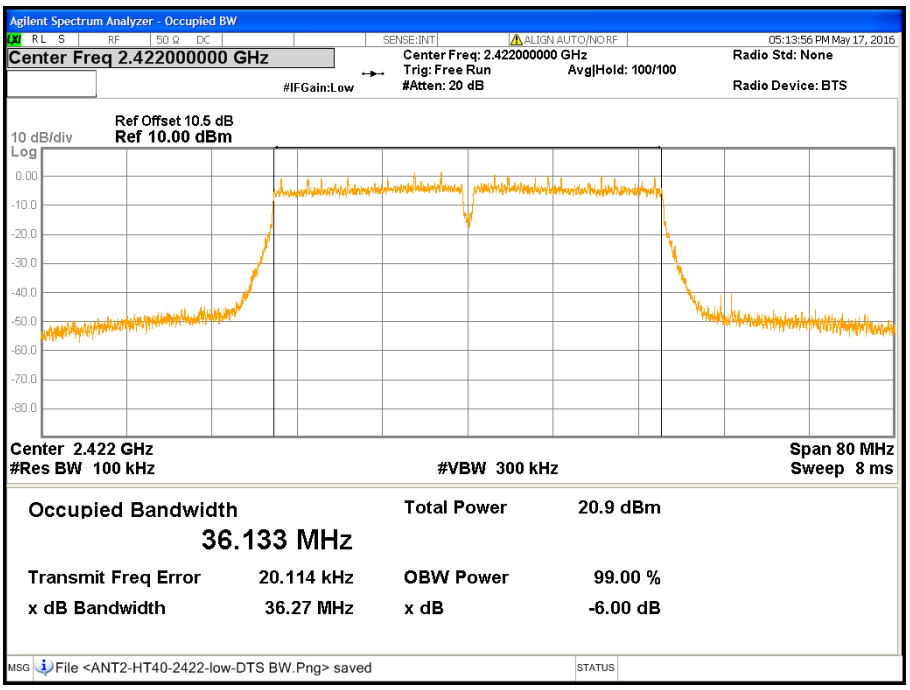
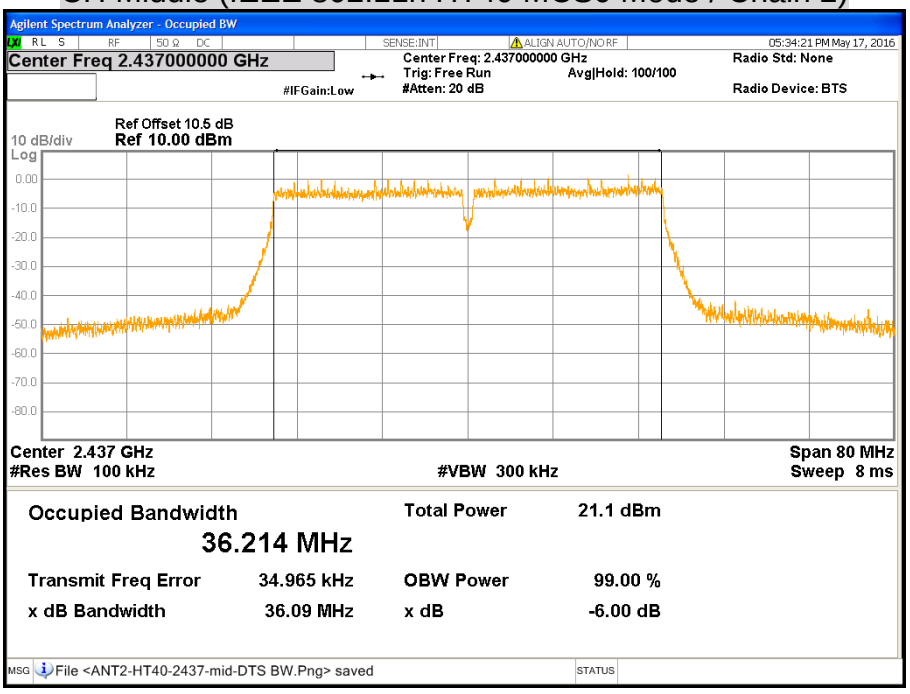
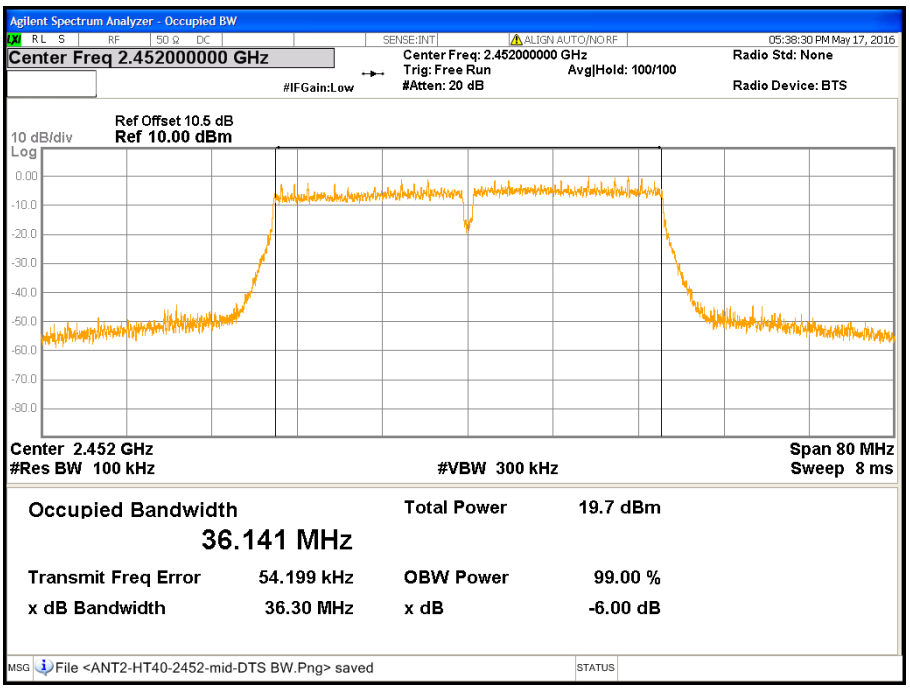


CH Middle (IEEE 802.11n HT40 MCS0 Mode / Chain 2)



CH High (IEEE 802.11n HT40 MCS0 Mode / Chain 2)



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.

§ KDB 662911:
If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.
If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:
Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain; or,

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

TEST EQUIPMENT

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

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

TEST SETUP

TEST PROCEDURE

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

TEST RESULTS

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Crystal Wu
Test Model	BiPAC 8920NX-600	Test Date	2016/05/16
Test Mode	TX Mode	Temp. & Humidity	24°C, 60%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power				Result
		Chain 0		Limit		
		(dBm)	(W)	(dBm)	(W)	
Low	2412	21.95	0.1567	30	1.000	PASS
Middle	2437	26.77	0.4753	30	1.000	PASS
High	2462	22.37	0.1726	30	1.000	PASS

Remark:

1. *At finial test to get the worst-case emission at 1Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.*
3. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 30 dBm.*

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power				Result
		Chain 0		Limit		
		(dBm)	(W)	(dBm)	(W)	
Low	2412	29.37	0.8650	30	1.000	PASS
Middle	2437	29.15	0.8222	30	1.000	PASS
High	2462	28.82	0.7621	30	1.000	PASS

Remark:

1. *At finial test to get the worst-case emission at 6Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.*
3. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 30 dBm.*

IEEE 802.11n HT20 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	Maximum Peak Output Power							Result
		Chain 0	Chain 1	Chain 2	Total		Limit		
		(dBm)	(dBm)	(dBm)	(dBm)	(W)	(dBm)	(W)	
Low	2412	24.06	24.55	24.72	29.22	0.8356	30	1.000	PASS
Middle	2437	24.84	24.42	24.39	29.33	0.8570	30	1.000	PASS
High	2462	24.71	25.01	24.58	29.54	0.8995	30	1.000	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.*
3. *Total peak power = Chain 0 + Chain 1 + Chain 2.*
4. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 30 dBm.*

IEEE 802.11n HT40 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	Maximum Peak Output Power							Result
		Chain 0	Chain 1	Chain 2	Total		Limit		
		(dBm)	(dBm)	(dBm)	(dBm)	(W)	(dBm)	(W)	
Low	2422	24.47	24.30	24.23	29.11	0.8147	30	1.000	PASS
Middle	2437	24.77	24.29	25.02	29.48	0.8872	30	1.000	PASS
High	2452	23.20	24.21	24.26	28.69	0.7396	30	1.000	PASS

Remark:

1. *At finial test to get the worst-case emission at 13.5Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.*
3. *Total peak power = Chain 0 + Chain 1 + Chain 2.*
4. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 30 dBm.*

7.3 AVERAGE POWER

LIMITS

None: For reporting purposes only.

TEST EQUIPMENT

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

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

TEST SETUP

TEST PROCEDURE

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

TEST RESULTS

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Crystal Wu
Test Model	BiPAC 8920NX-600	Test Date	2016/05/16
Test Mode	TX Mode	Temp. & Humidity	24°C, 60%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
		Chain 0
Low	2412	18.71
Middle	2437	23.47
High	2462	19.24

Remark:

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

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
		Chain 0
Low	2412	20.94
Middle	2437	20.39
High	2462	19.84

Remark:

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

IEEE 802.11n HT20 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	Average Power (dBm)		
		Chain 0	Chain 1	Chain 2
Low	2412	14.15	14.39	14.47
Middle	2437	14.39	14.62	14.31
High	2462	15.22	14.95	14.92

Remark:

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

IEEE 802.11n HT40 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	Average Power (dBm)		
		Chain 0	Chain 1	Chain 2
Low	2422	14.96	14.82	14.69
Middle	2437	14.94	15.02	14.97
High	2452	13.57	13.56	13.63

Remark:

1. *At finial test to get the worst-case emission at 13.5Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.*

7.4 POWER SPECTRAL DENSITY

LIMITS

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

§ KDB 662911:

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

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

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

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

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

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/15/2017
Test S/W	N/A			

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

TEST SETUP

TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
5. Set the VBW ≥ 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 within the RBW.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST RESULTS

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Crystal Wu
Test Model	BiPAC 8920NX-600	Test Date	2016/05/16
Test Mode	TX Mode	Temp. & Humidity	24°C, 60%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		Result
		Chain 0	Limit	
Low	2412	1.93	8	PASS
Middle	2437	6.26	8	PASS
High	2462	1.29	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 1Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.*
3. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 8 dBm.*

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		Result
		Chain 0	Limit	
Low	2412	0.47	8	PASS
Middle	2437	-0.09	8	PASS
High	2462	0.04	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.*
3. *The maximum antenna gain is 5 dBi which is less than 6dBi, the limit should be 8 dBm.*

IEEE 802.11n HT20 MCS0 Mode (3TX)

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)					Result
		Chain 0	Chain 1	Chain 2	Total	Limit	
Low	2412	-4.55	-4.48	-4.88	0.14	5.02	PASS
Middle	2437	-5.48	-4.51	-4.83	-0.15	5.02	PASS
High	2462	-4.54	-4.94	-4.54	0.10	5.02	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.*
3. *Total power spectral density = Chain 0 + Chain 1 + Chain 2.*
4. *The directional gain is 8.98 dBi which is more than 6dBi, the limit should be 5.02 dBm.*

IEEE 802.11n HT40 MCS0 Mode (3TX)

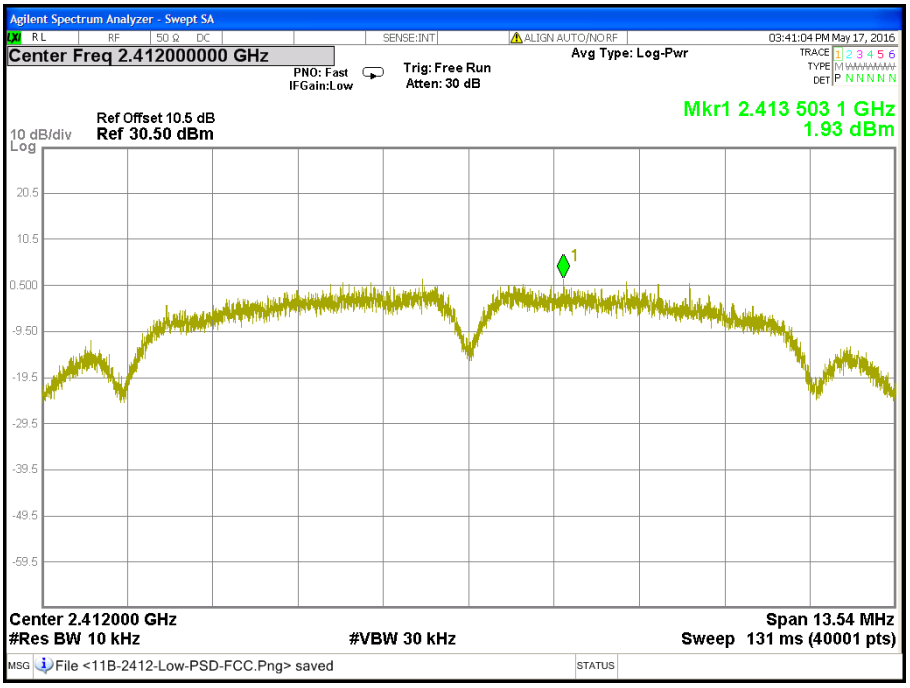
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)					Result
		Chain 0	Chain 1	Chain 2	Total	Limit	
Low	2422	-7.72	-6.86	-7.31	-2.51	5.02	PASS
Middle	2437	-7.99	-7.13	-7.50	-2.75	5.02	PASS
High	2452	-8.54	-9.10	-9.11	-4.14	5.02	PASS

Remark:

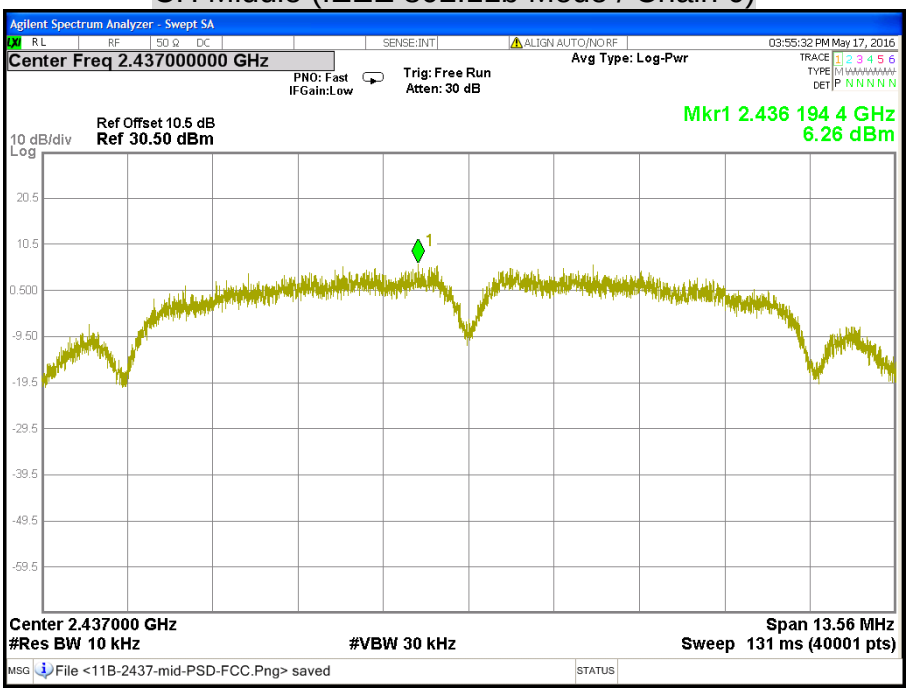
1. *At finial test to get the worst-case emission at 13.5Mbps.*
2. *The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.*
3. *Total power spectral density = Chain 0 + Chain 1 + Chain 2.*
4. *The directional gain is 8.98 dBi which is more than 6dBi, the limit should be 5.02 dBm.*

POWER SPECTRAL DENSITY

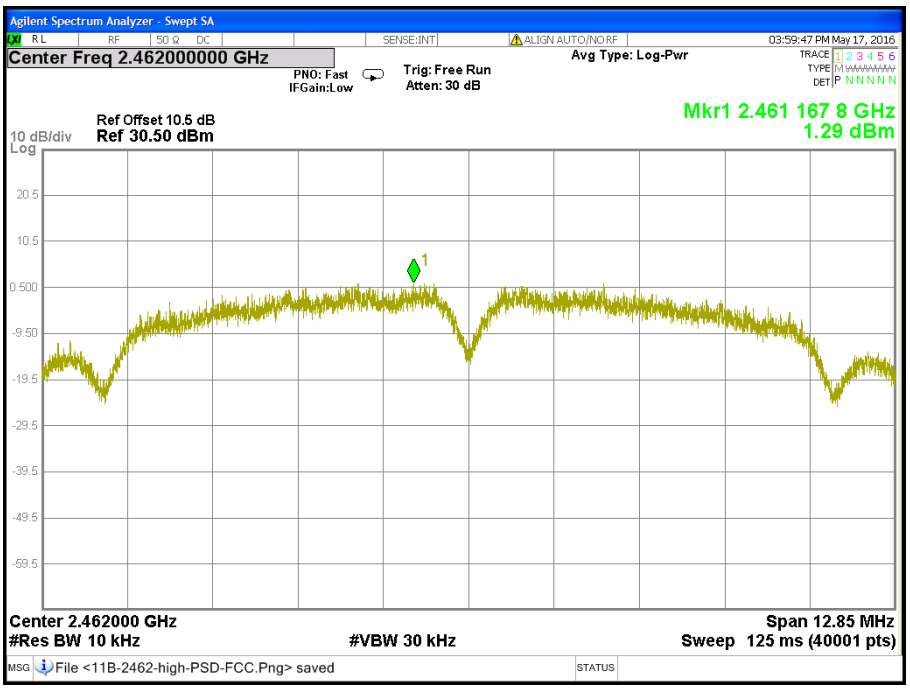
CH Low (IEEE 802.11b Mode / Chain 0)



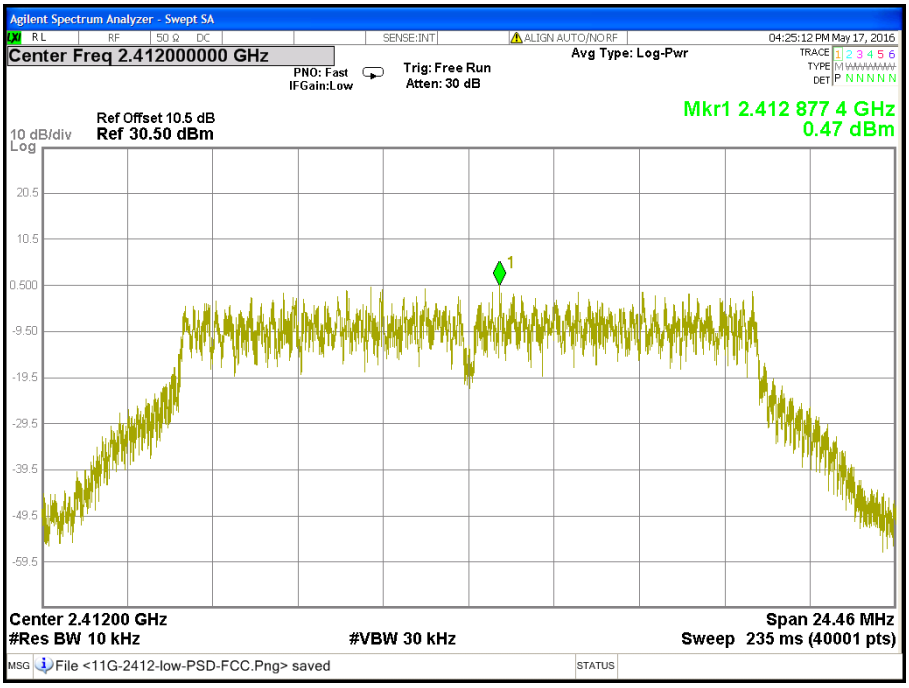
CH Middle (IEEE 802.11b Mode / Chain 0)



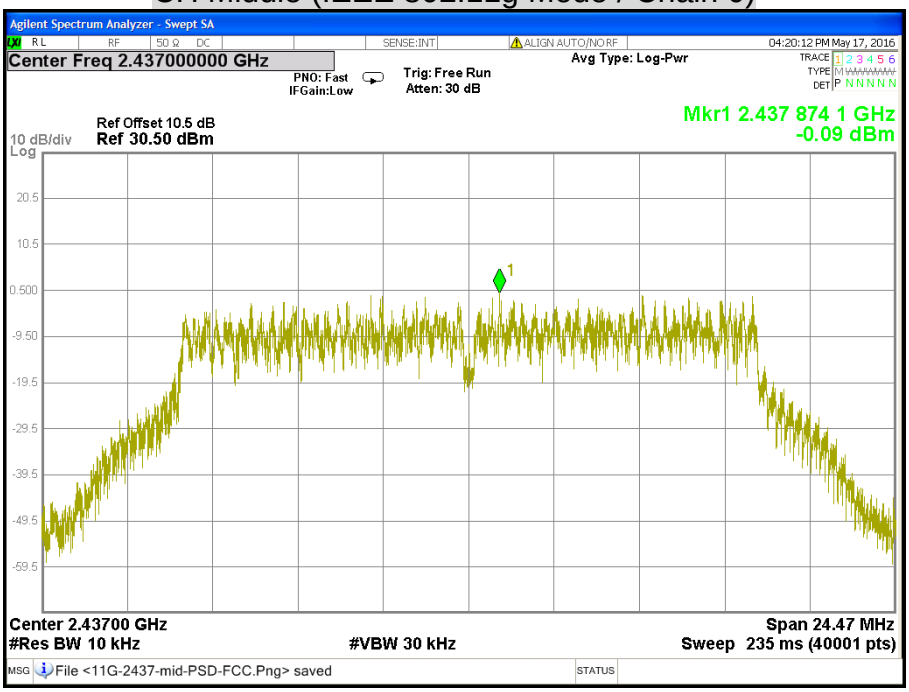
CH High (IEEE 802.11b Mode / Chain 0)



CH Low (IEEE 802.11g Mode / Chain 0)



CH Middle (IEEE 802.11g Mode / Chain 0)



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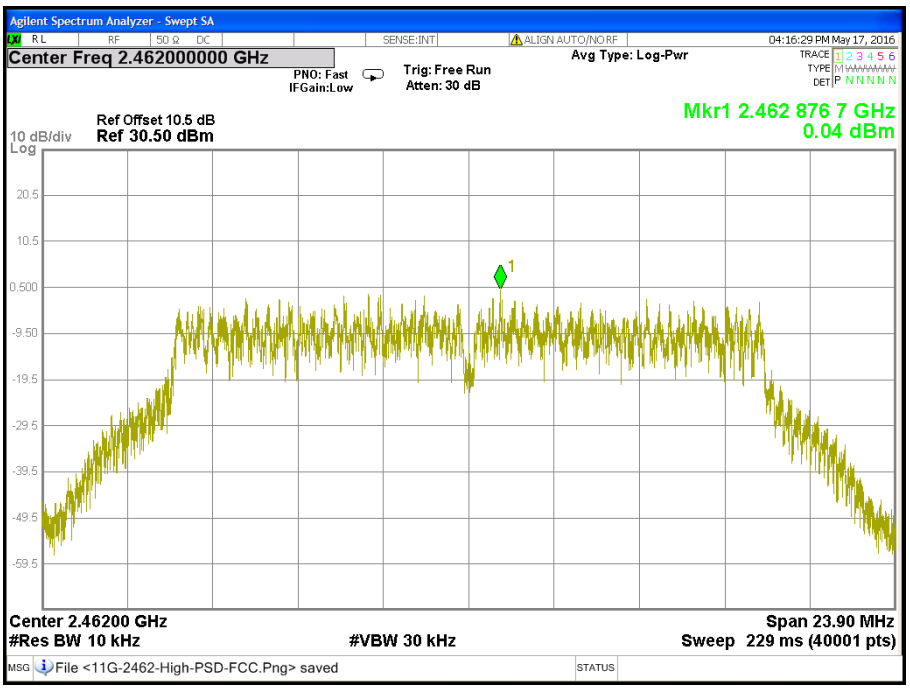

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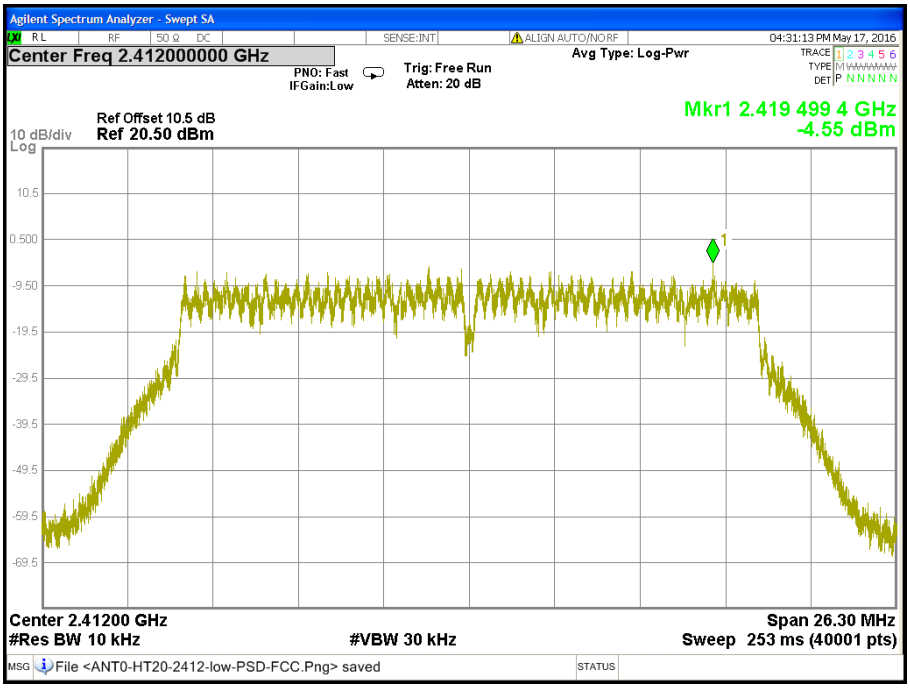

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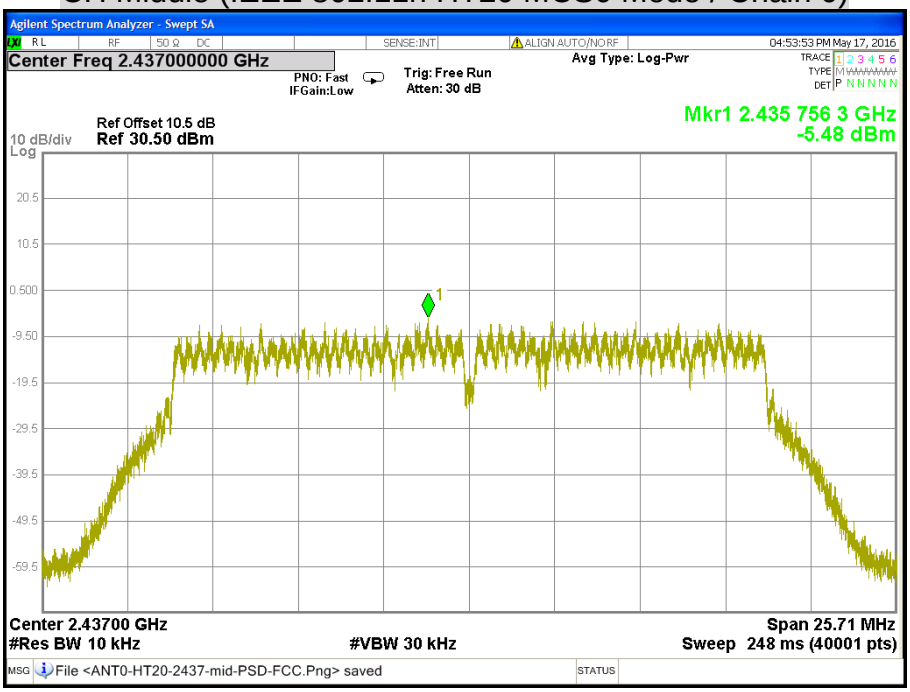

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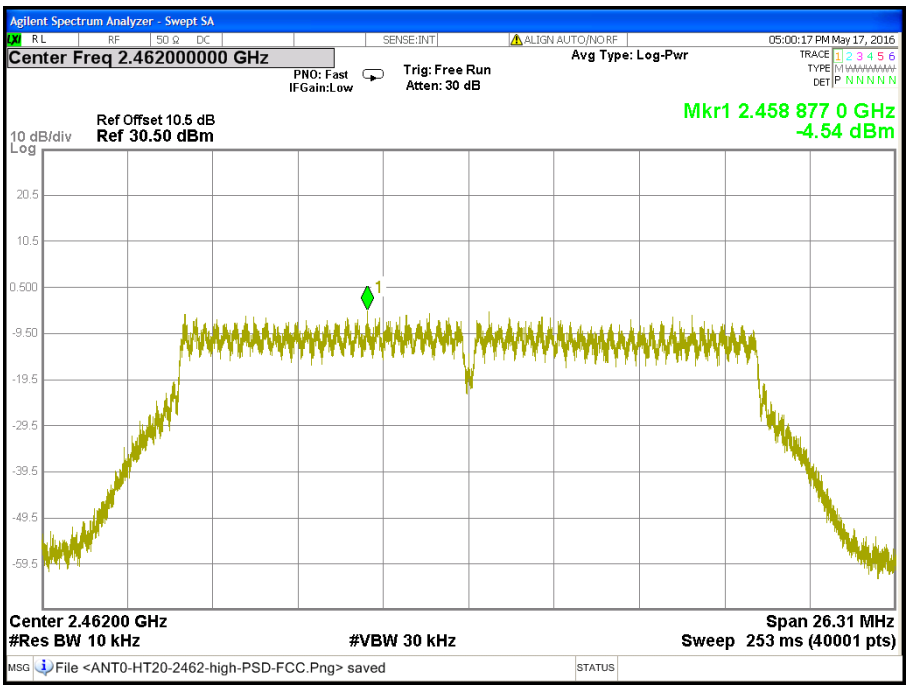
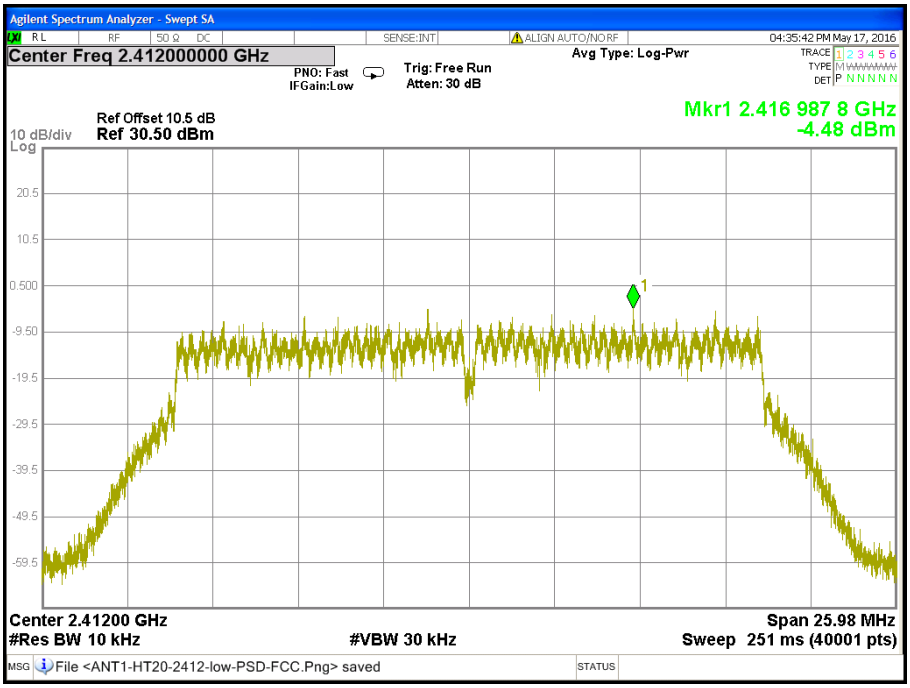


CH Low (IEEE 802.11n HT20 MCS0 Mode / Chain 1)



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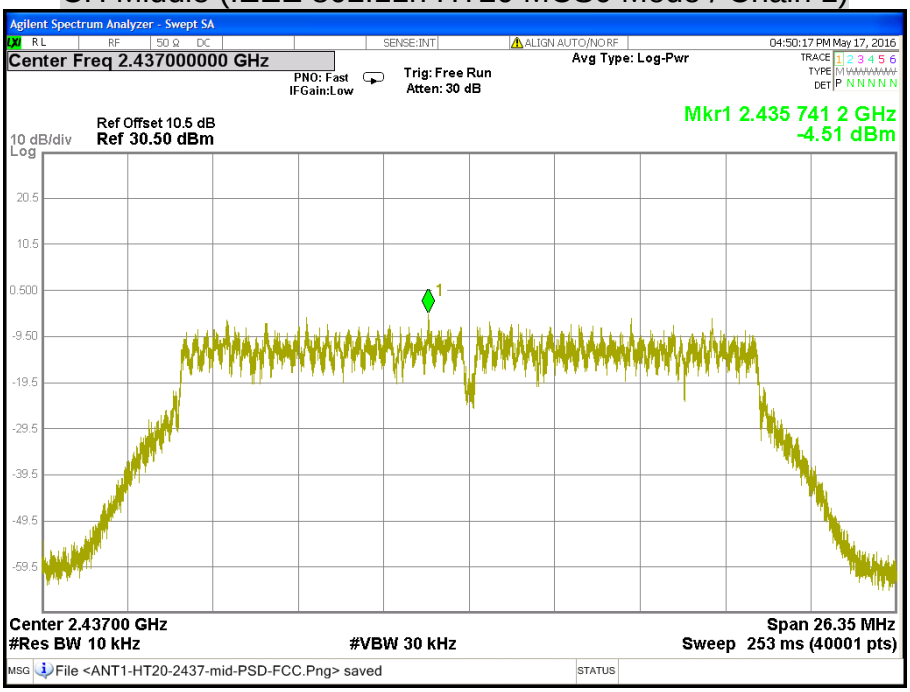

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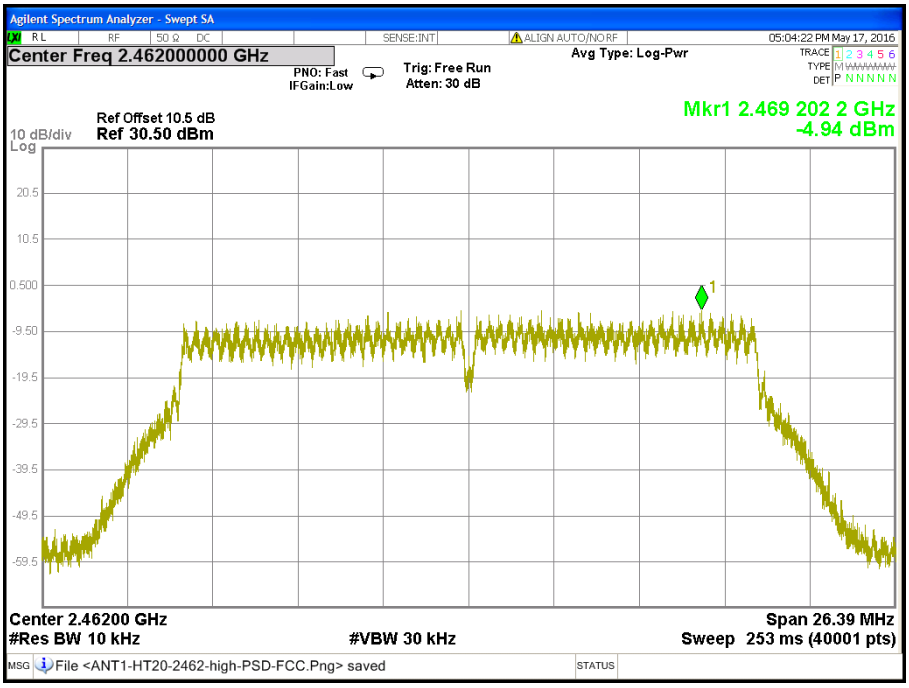
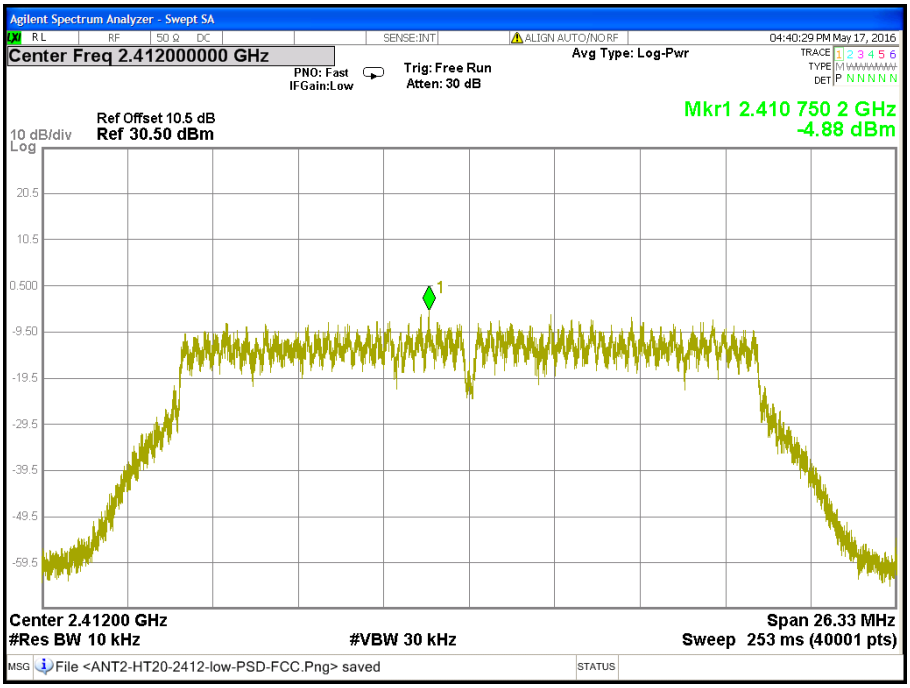


CH Low (IEEE 802.11n HT20 MCS0 Mode / Chain 2)



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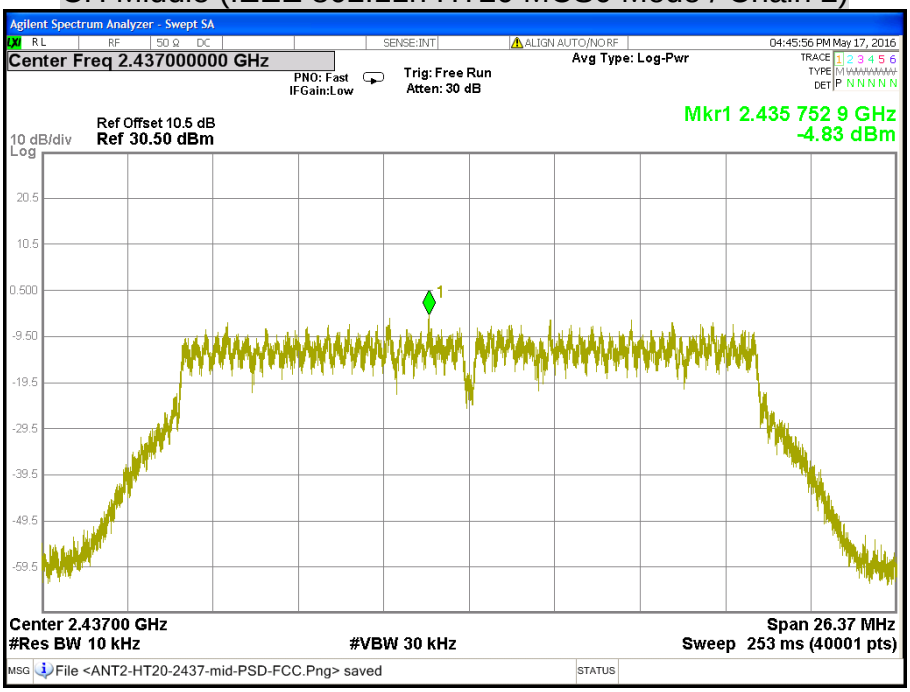
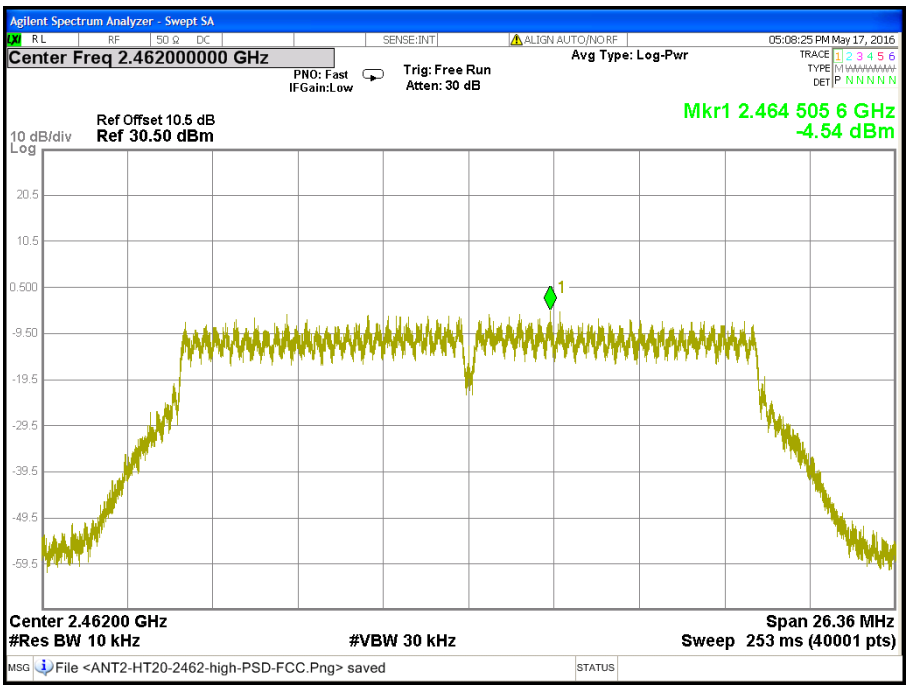
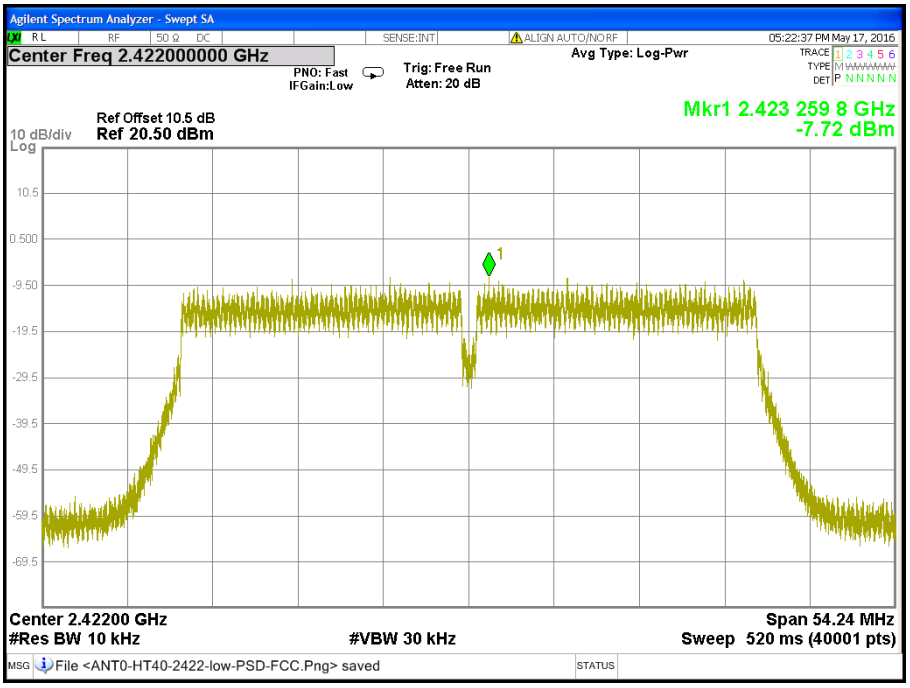


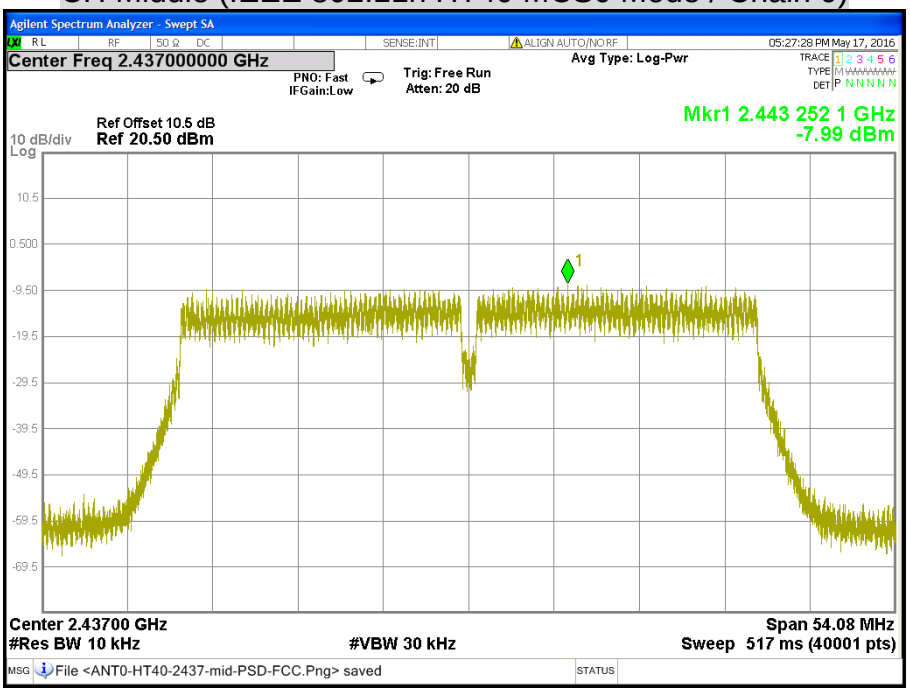
CH High (IEEE 802.11n HT20 MCS0 Mode / Chain 2)



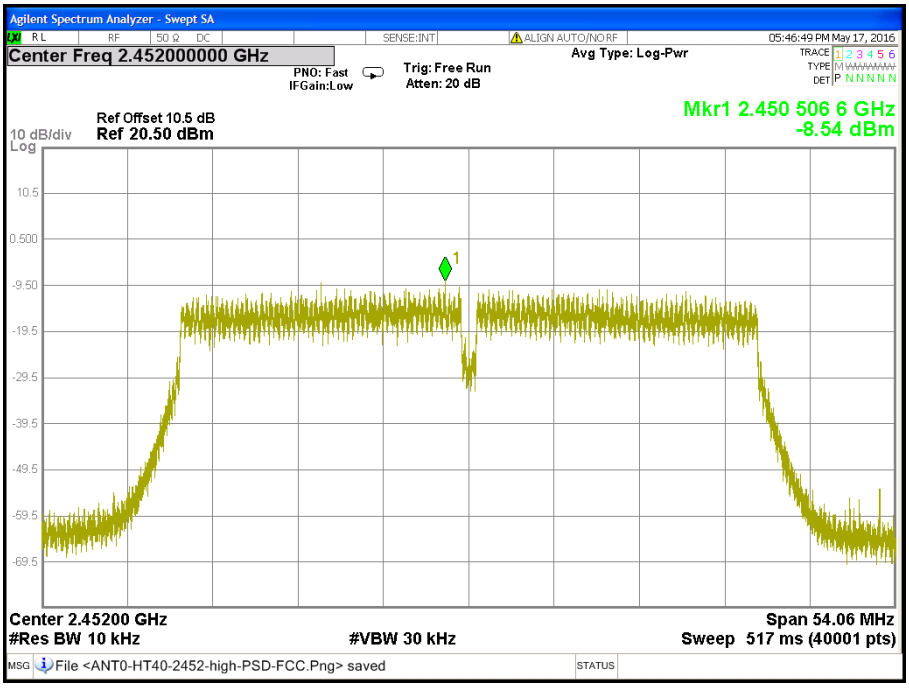
CH Low (IEEE 802.11n HT40 MCS0 Mode / Chain 0)



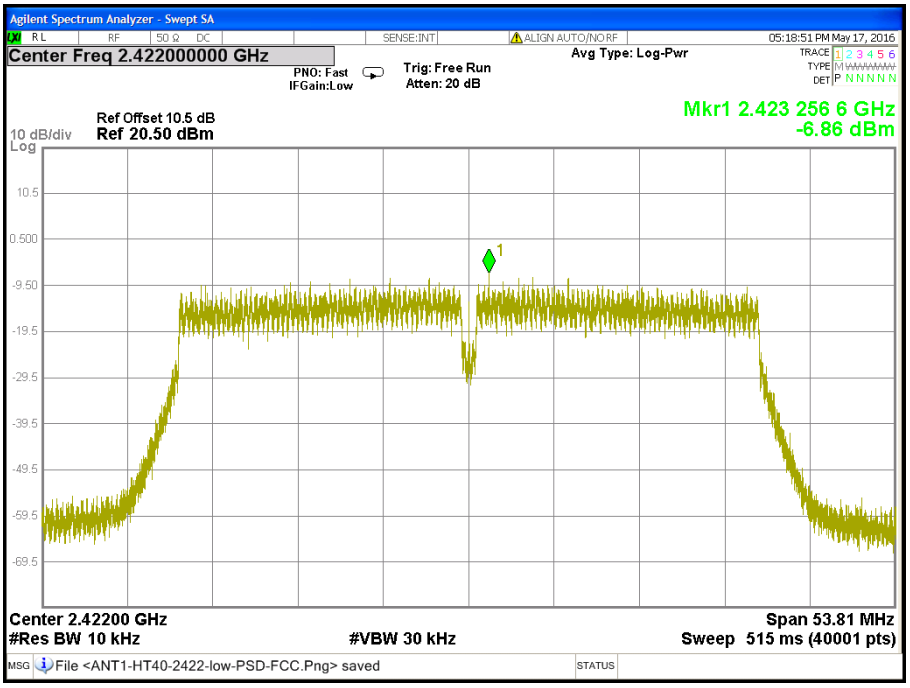
CH Middle (IEEE 802.11n HT40 MCS0 Mode / Chain 0)



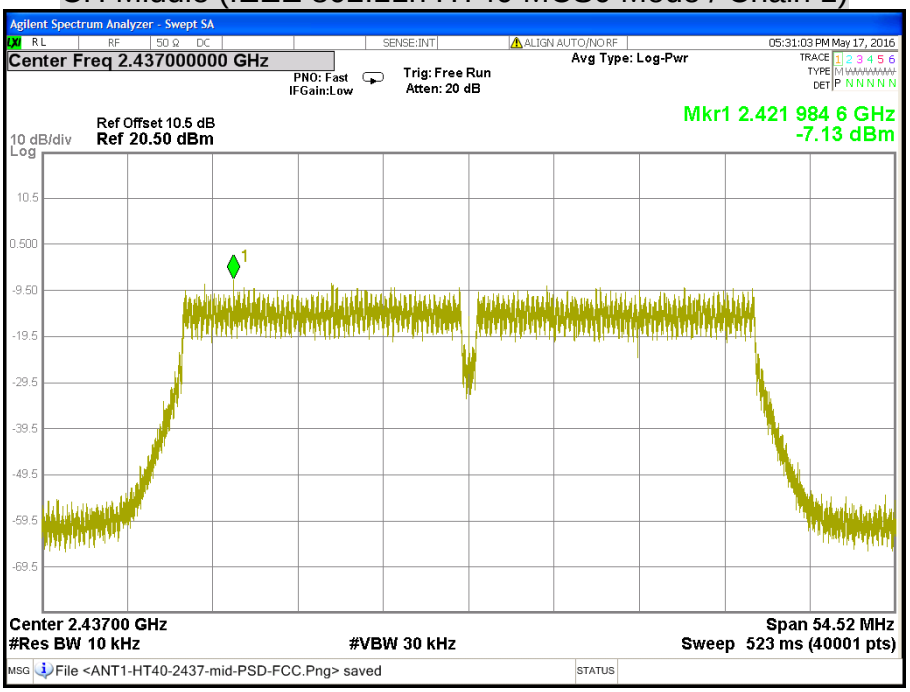
CH High (IEEE 802.11n HT40 MCS0 Mode / Chain 0)



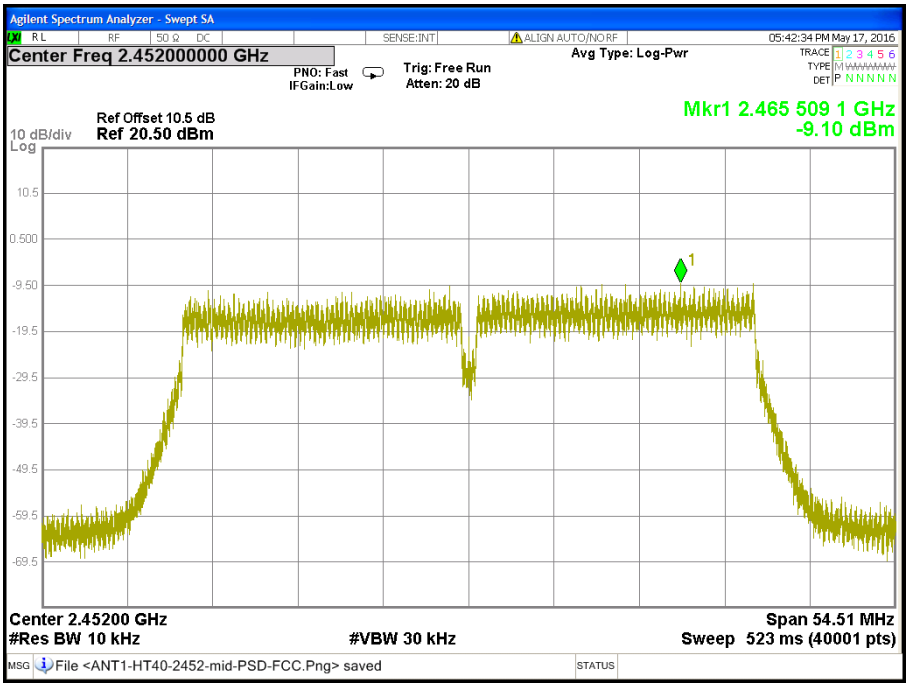
CH Low (IEEE 802.11n HT40 MCS0 Mode / Chain 1)



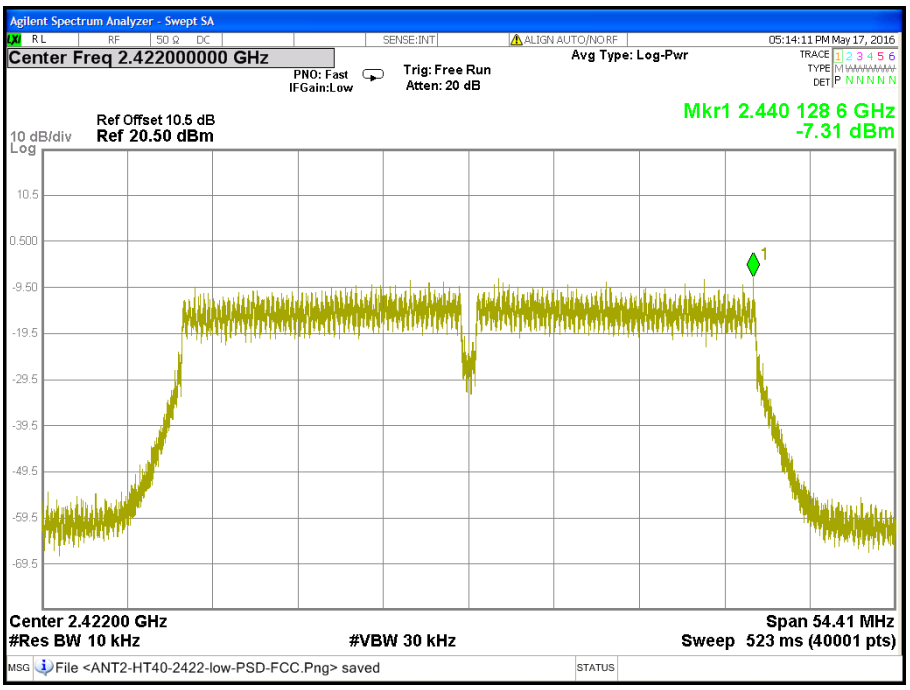
CH Middle (IEEE 802.11n HT40 MCS0 Mode / Chain 1)



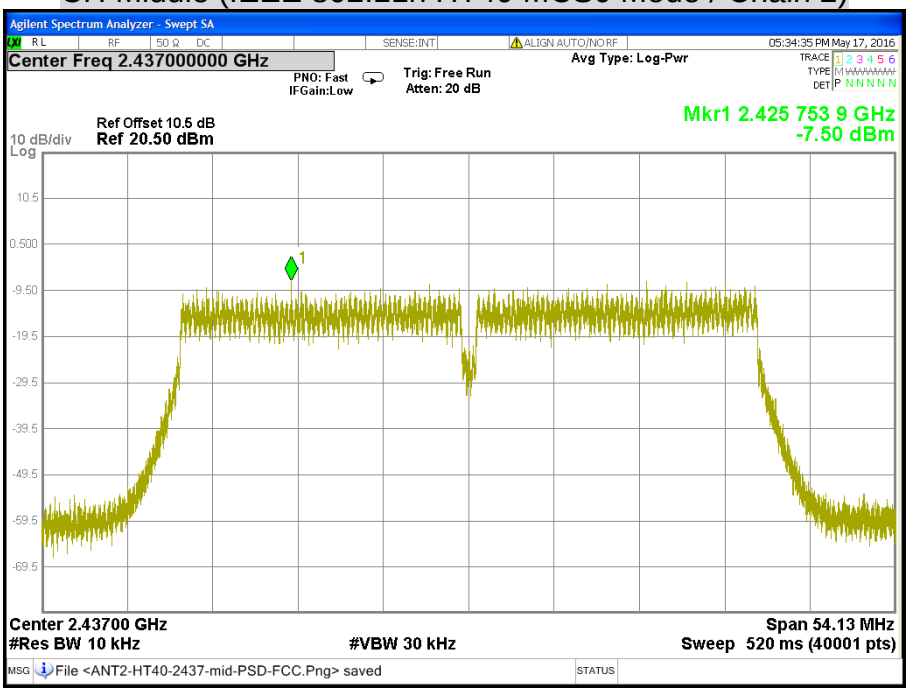
CH High (IEEE 802.11n HT40 MCS0 Mode / Chain 1)



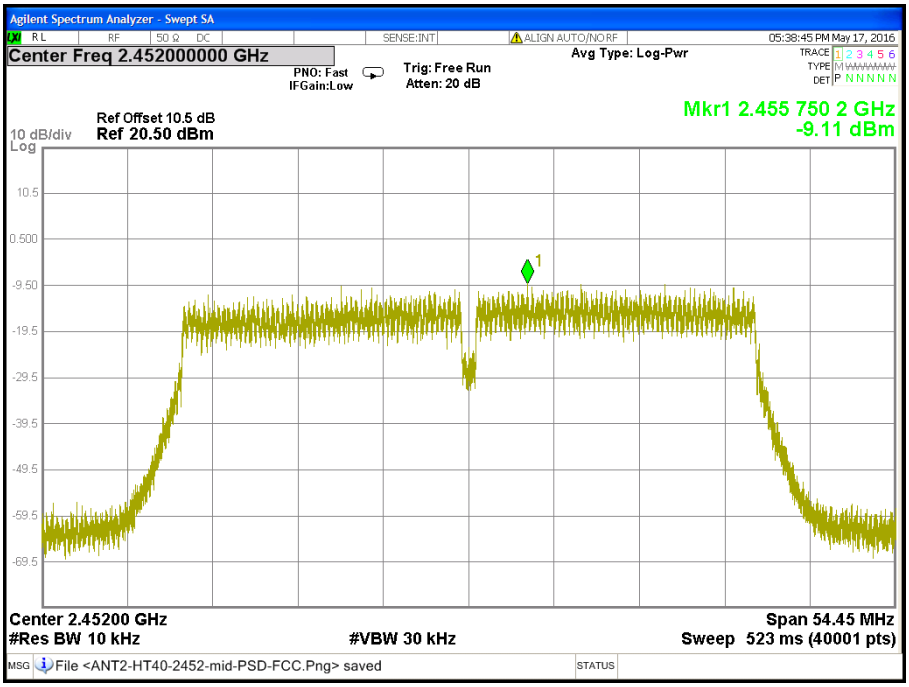
CH Low (IEEE 802.11n HT40 MCS0 Mode / Chain 2)



CH Middle (IEEE 802.11n HT40 MCS0 Mode / Chain 2)



CH High (IEEE 802.11n HT40 MCS0 Mode / Chain 2)



7.5 CONDUCTED SPURIOUS EMISSION

LIMITS

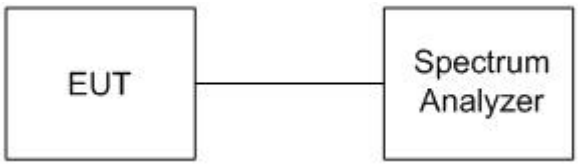
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level 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
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/15/2017
Test S/W	N/A			

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

TEST SETUP



TEST PROCEDURE

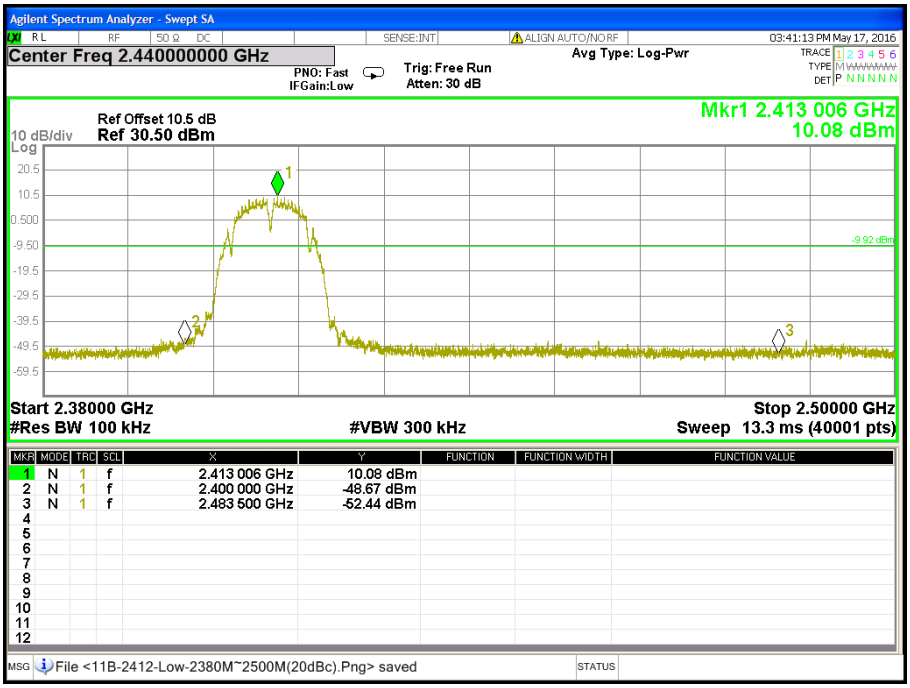
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.
The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST RESULTS

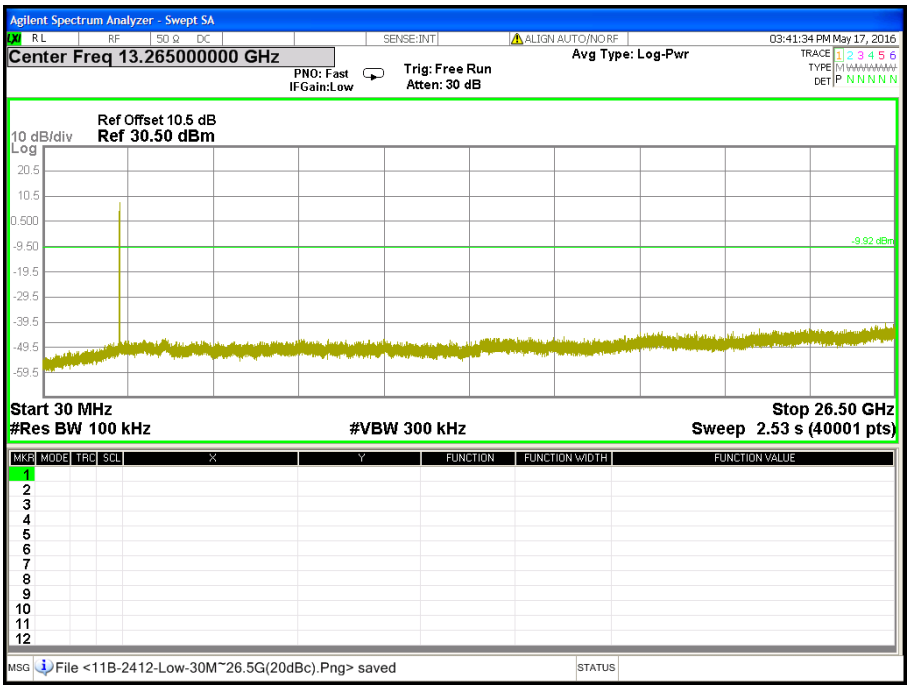
Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Crystal Wu
Test Model	BiPAC 8920NX-600	Test Date	2016/05/16
Test Mode	TX Mode	Temp. & Humidity	24˚C, 60%

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

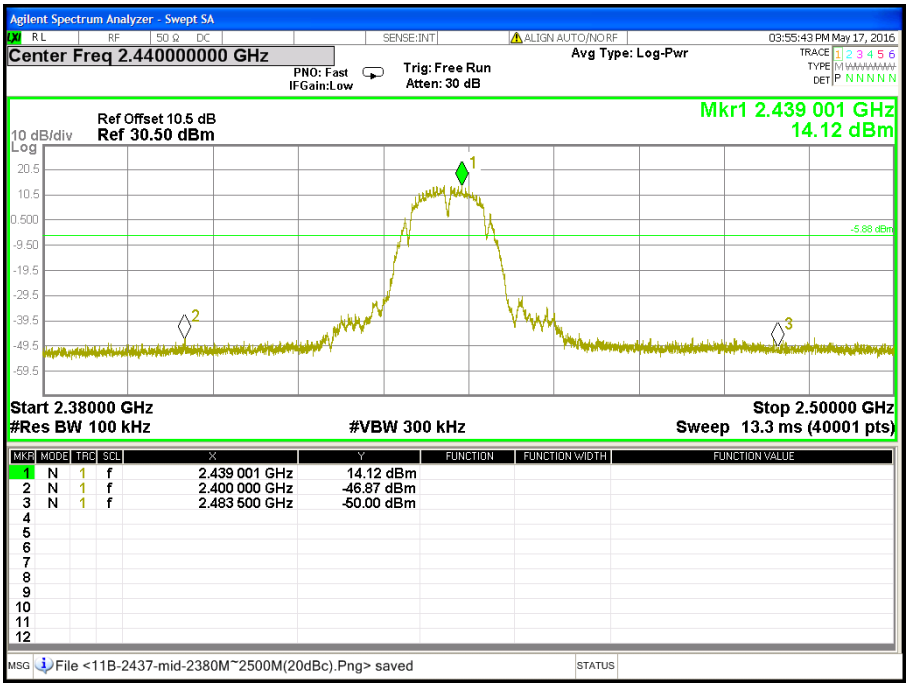
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)



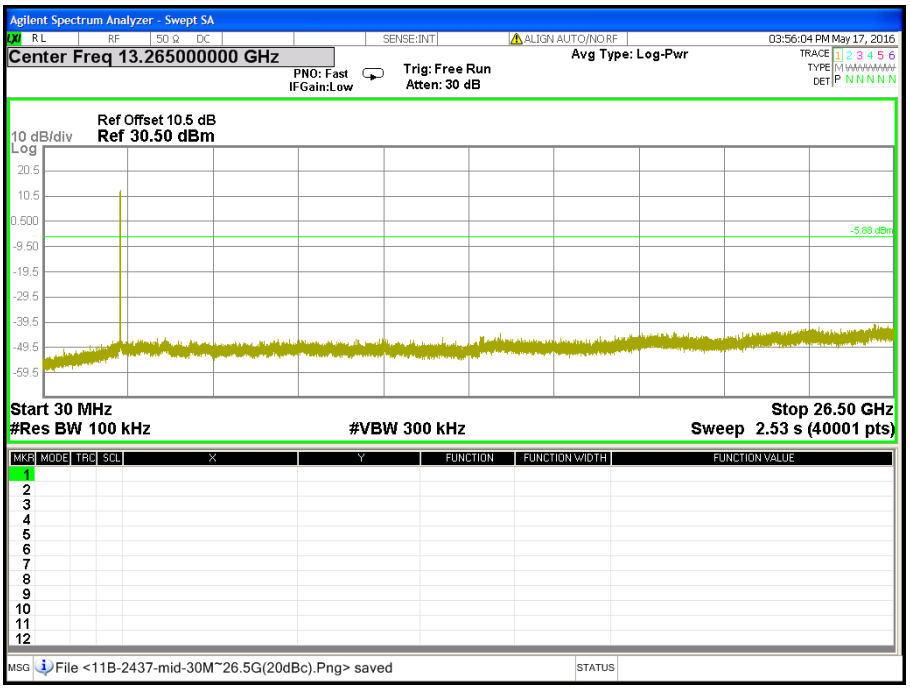
CH Low (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)



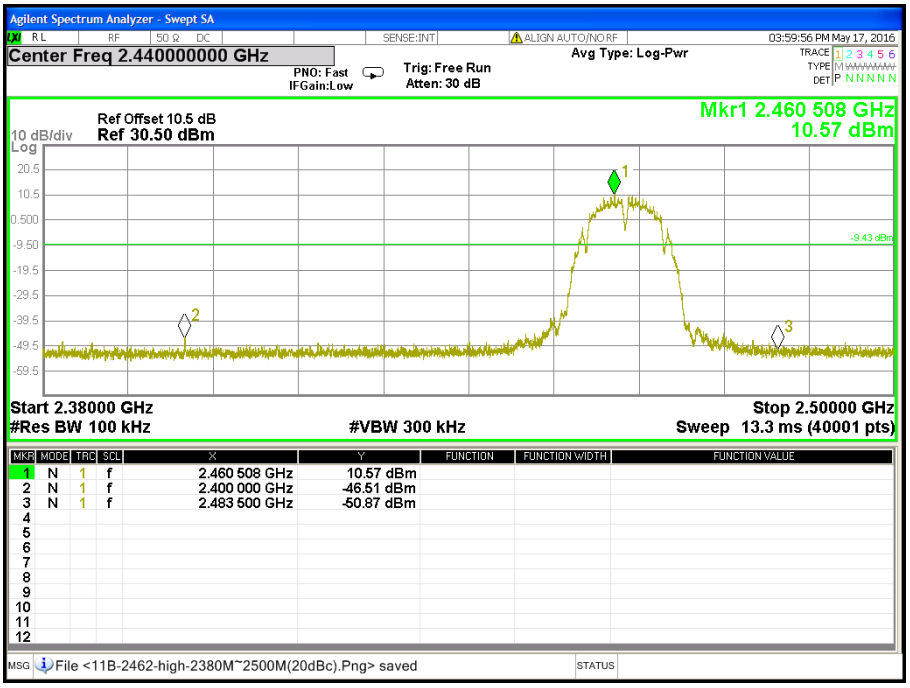
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)



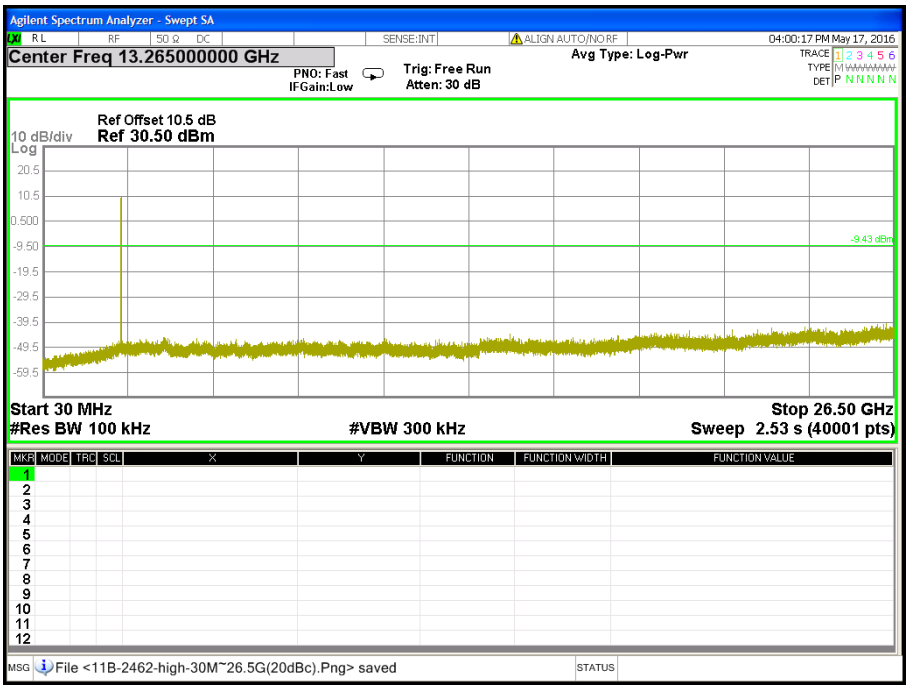
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)



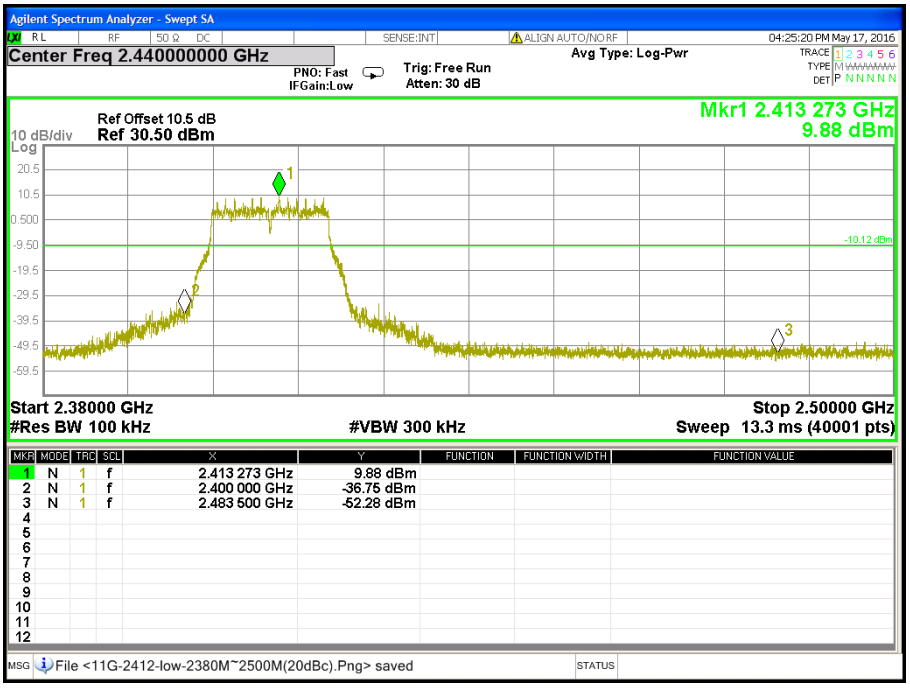
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode / Chain 0)



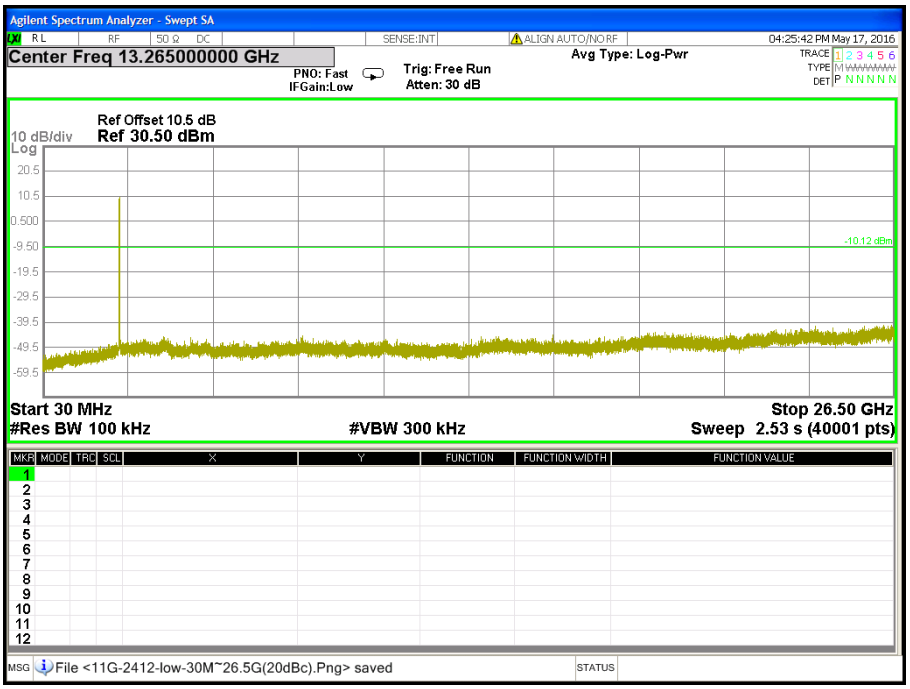
CH High (30MHz ~ 26.5GHz / IEEE 802.11b Mode / Chain 0)



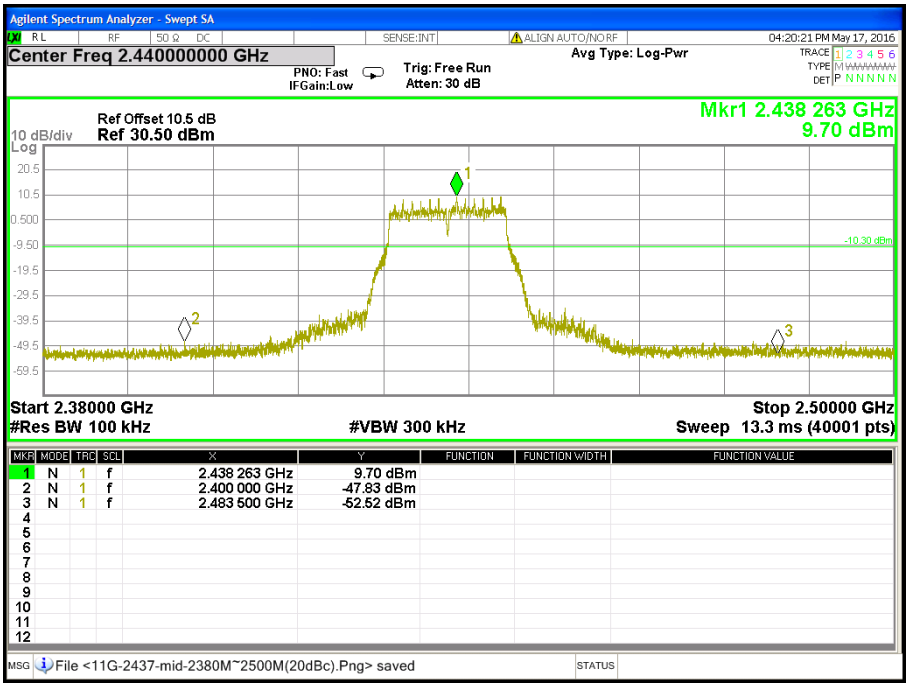
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)



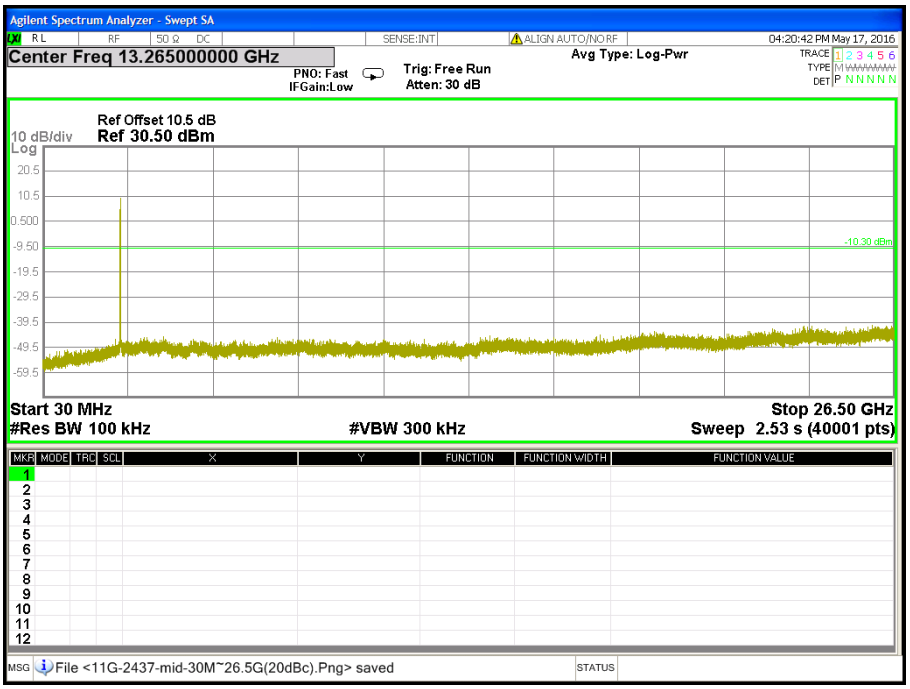
CH Low (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)



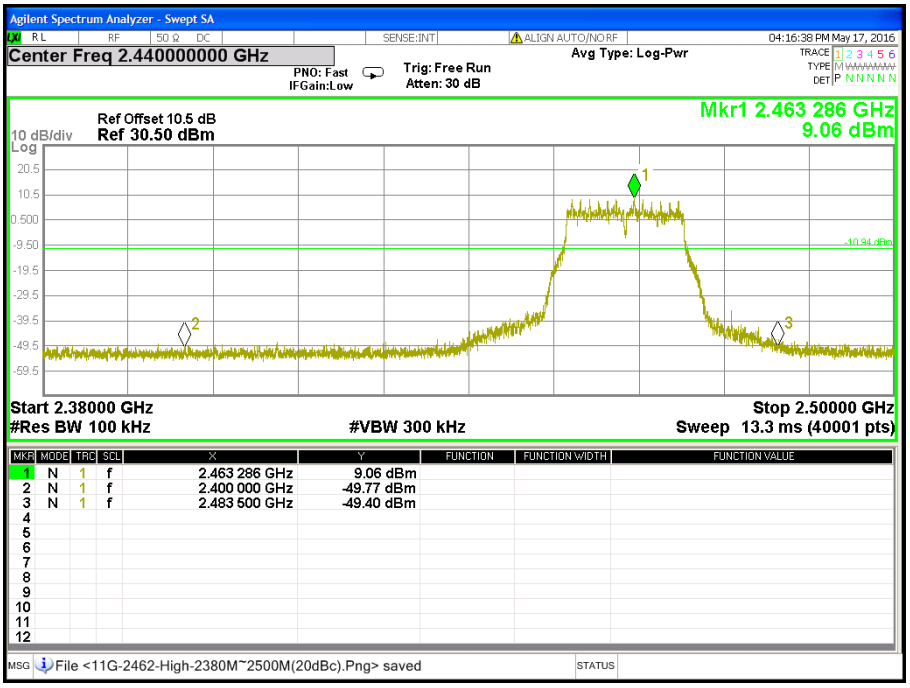
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)



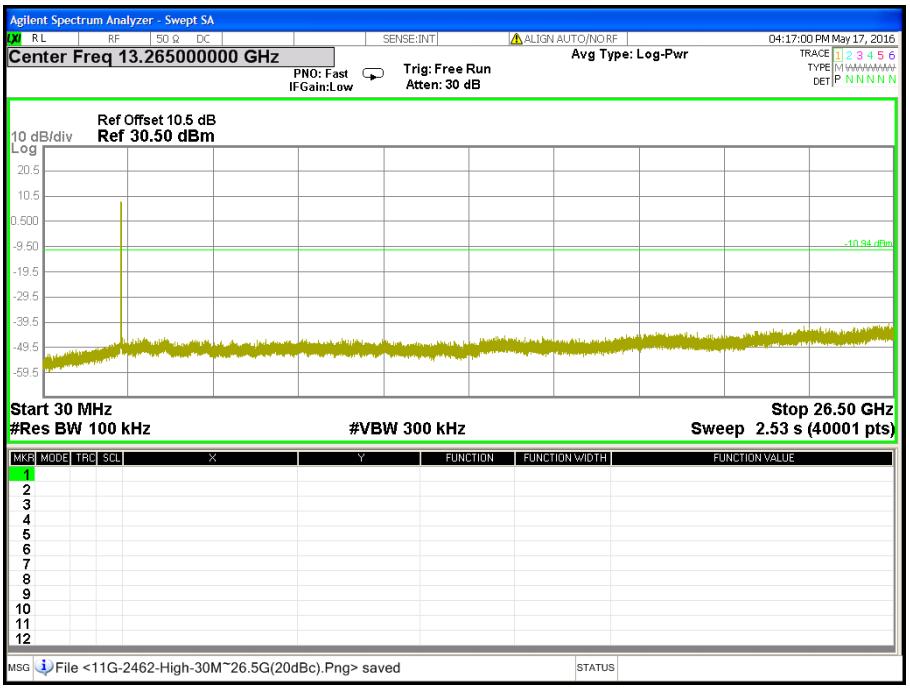
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)



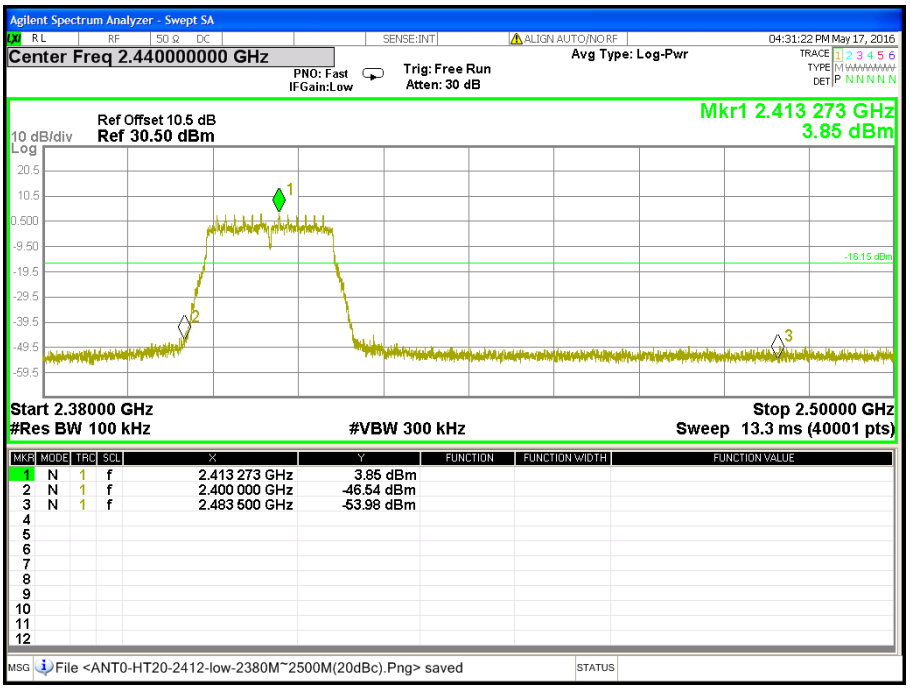
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode / Chain 0)



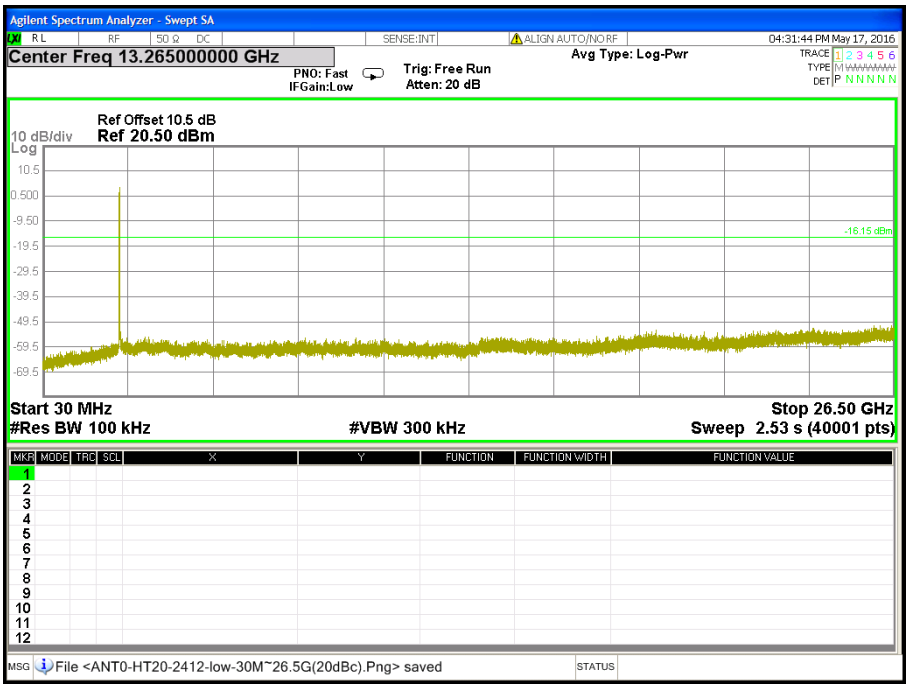
CH High (30MHz ~ 26.5GHz / IEEE 802.11g Mode / Chain 0)



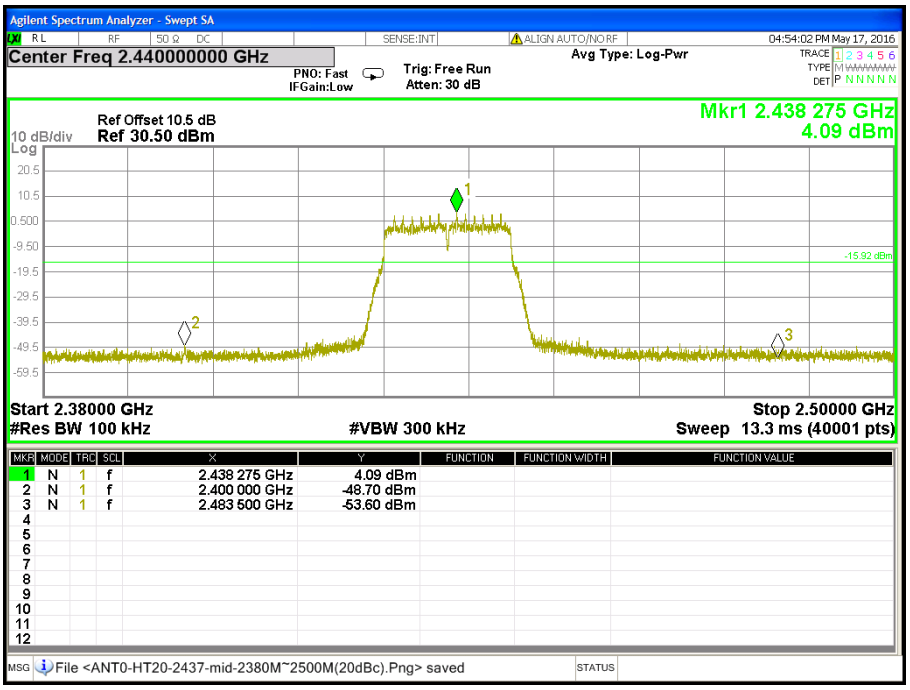
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



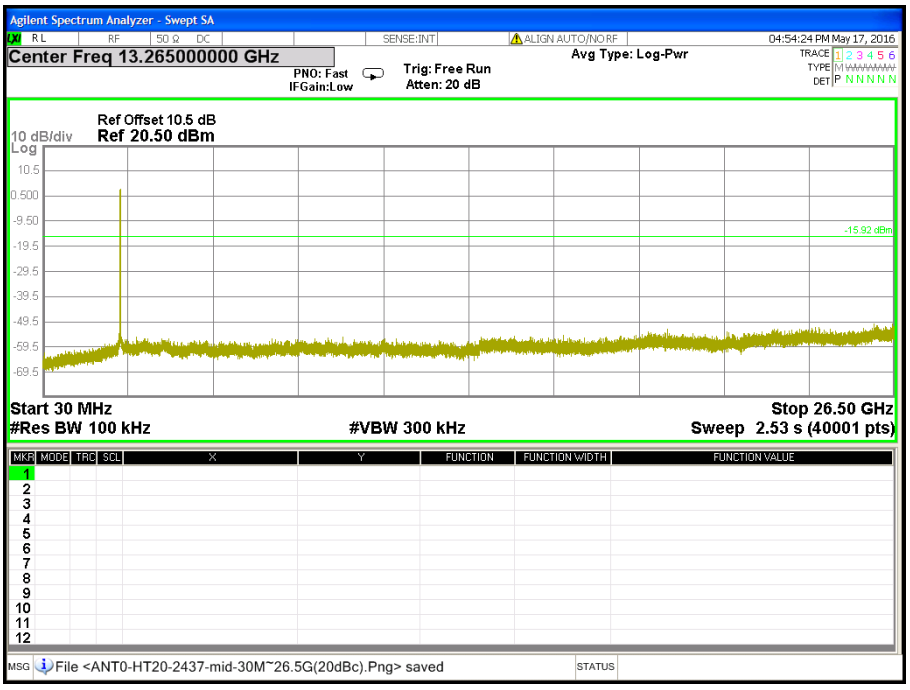
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



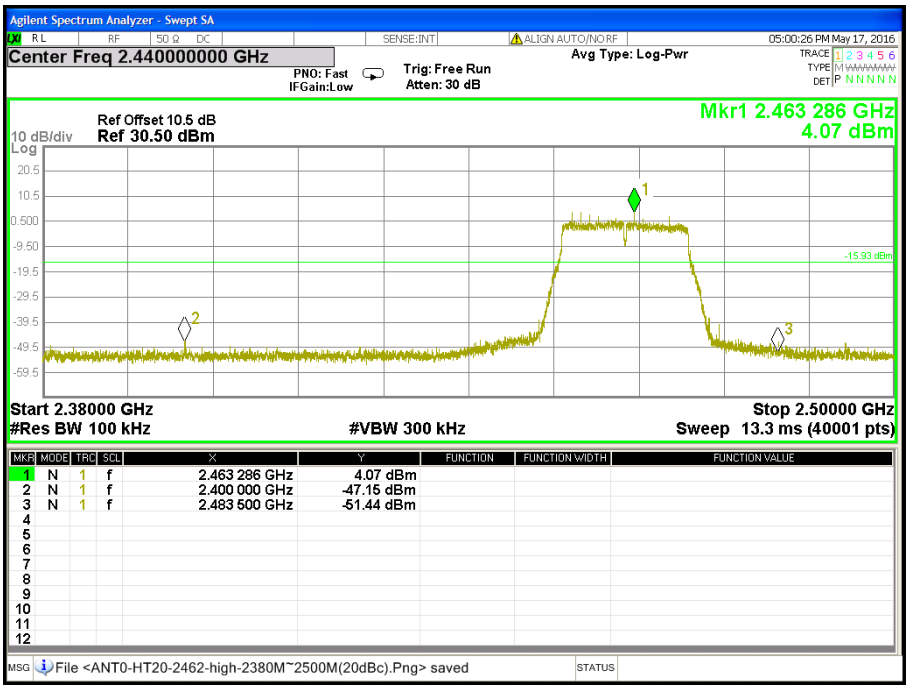
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



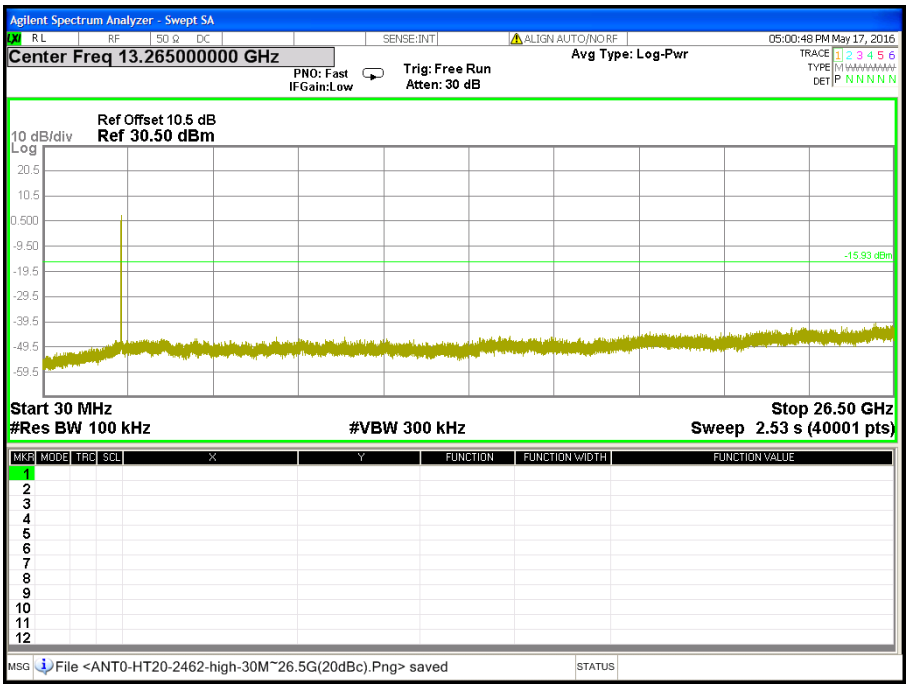
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



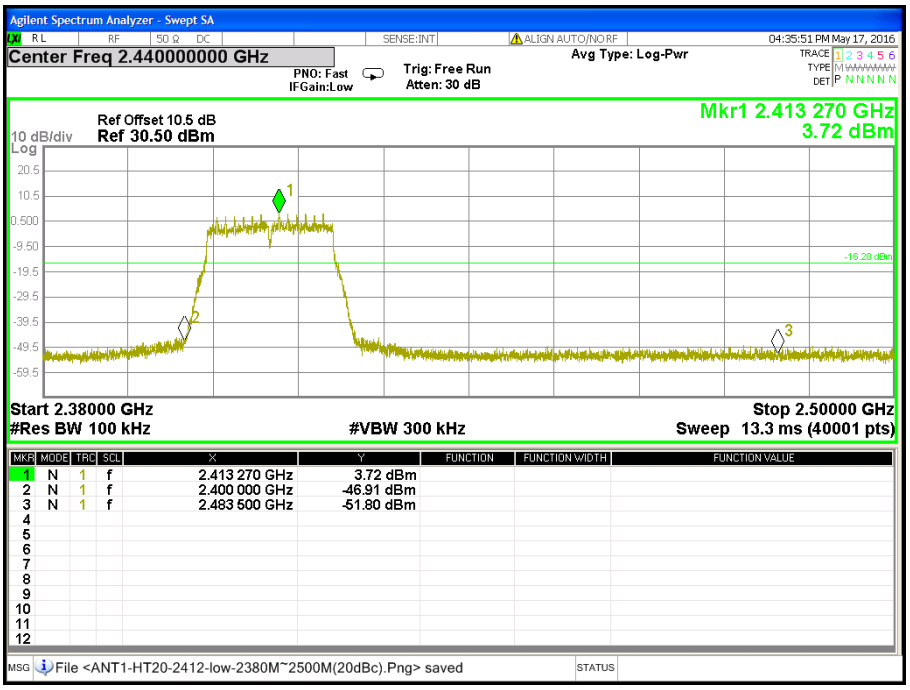
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



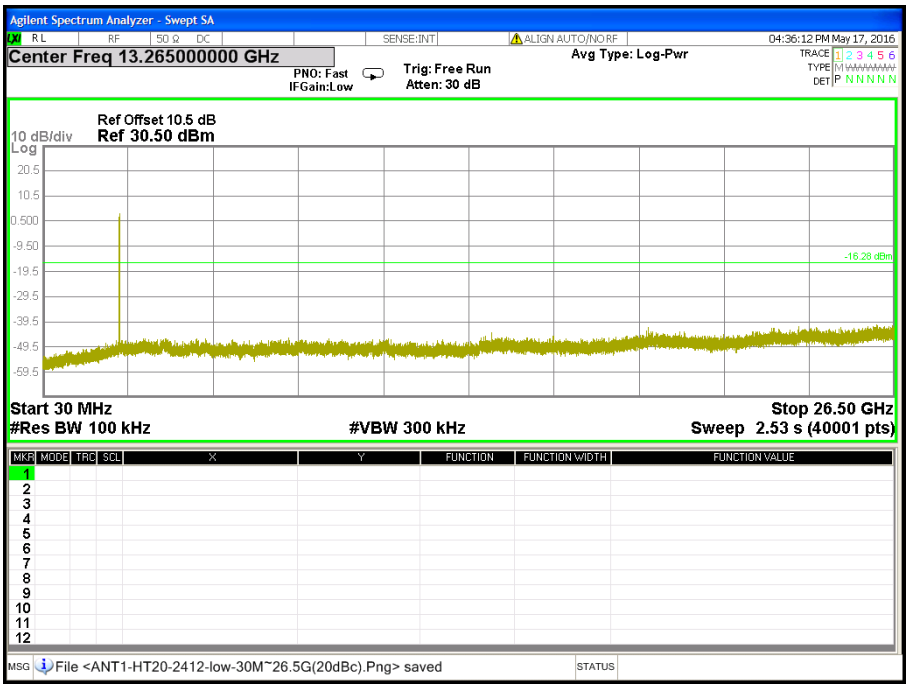
CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 0)



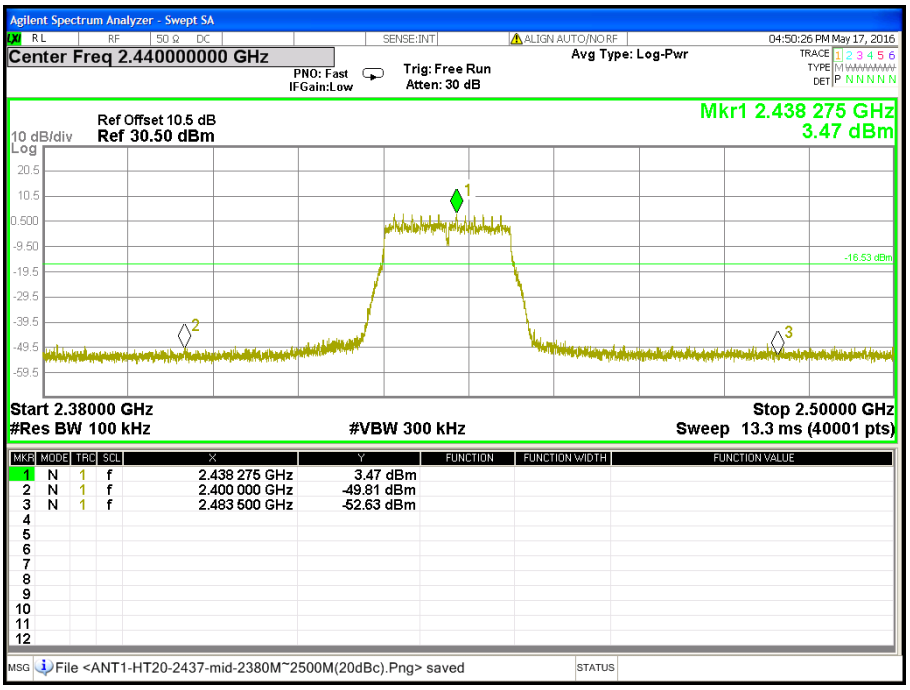
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



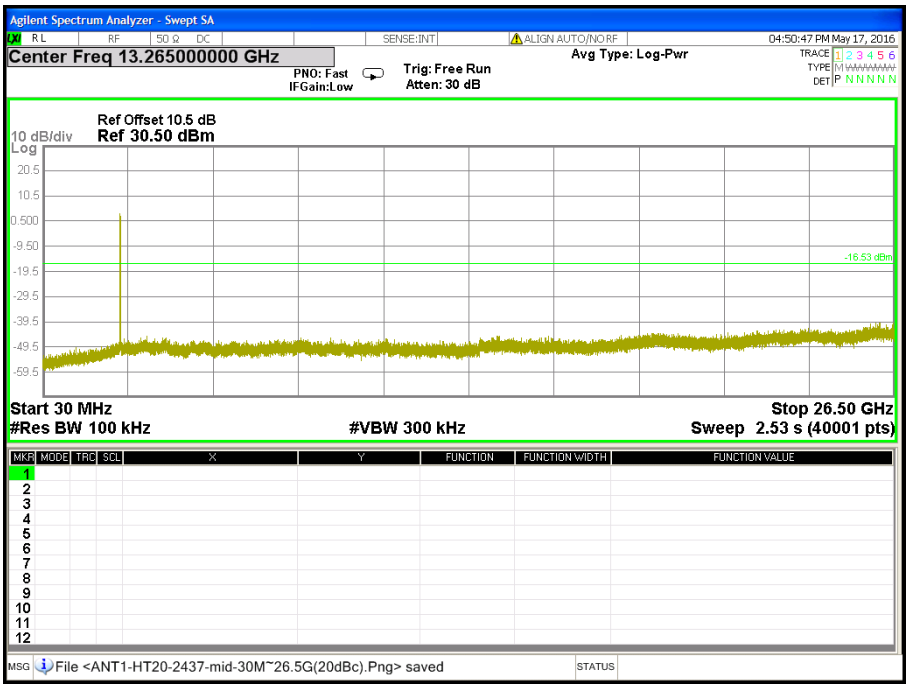
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



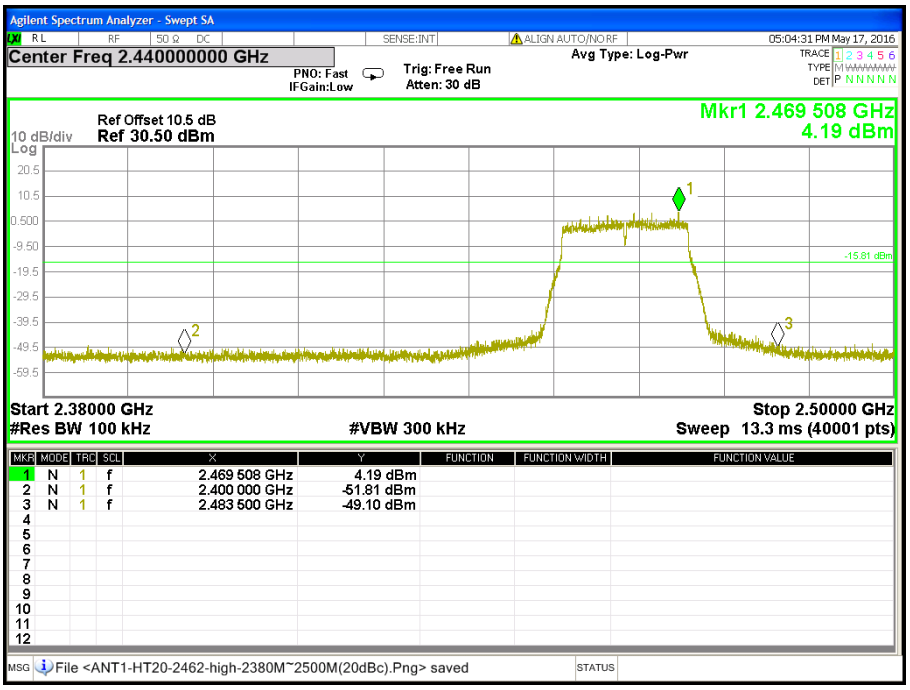
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



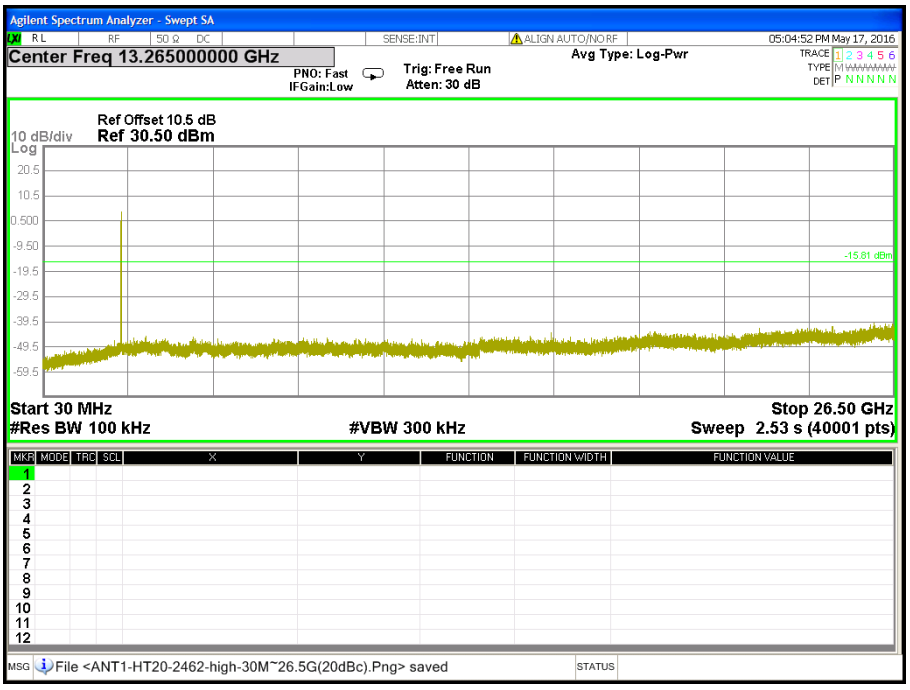
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



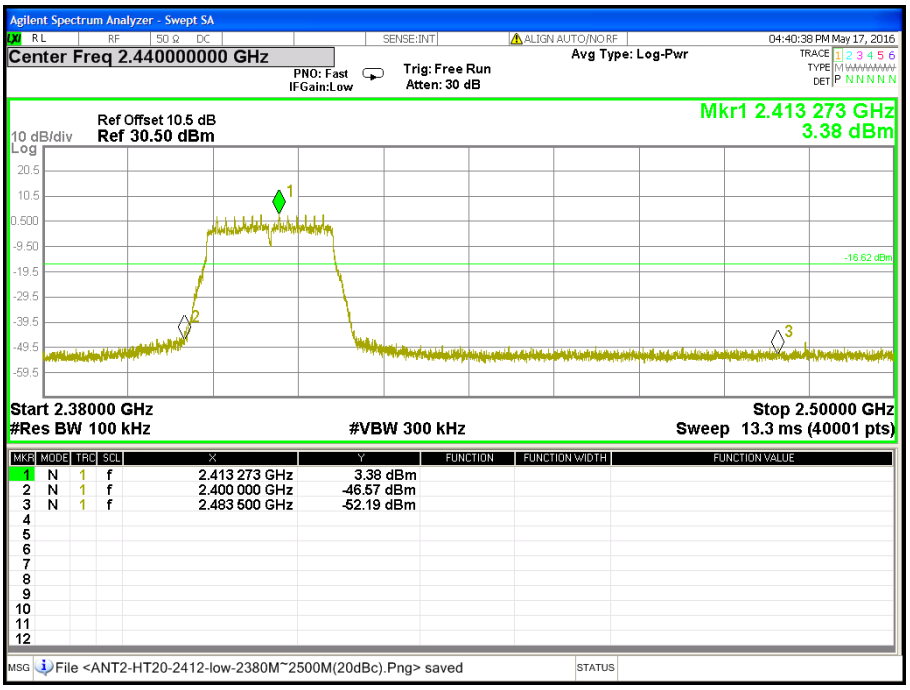
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



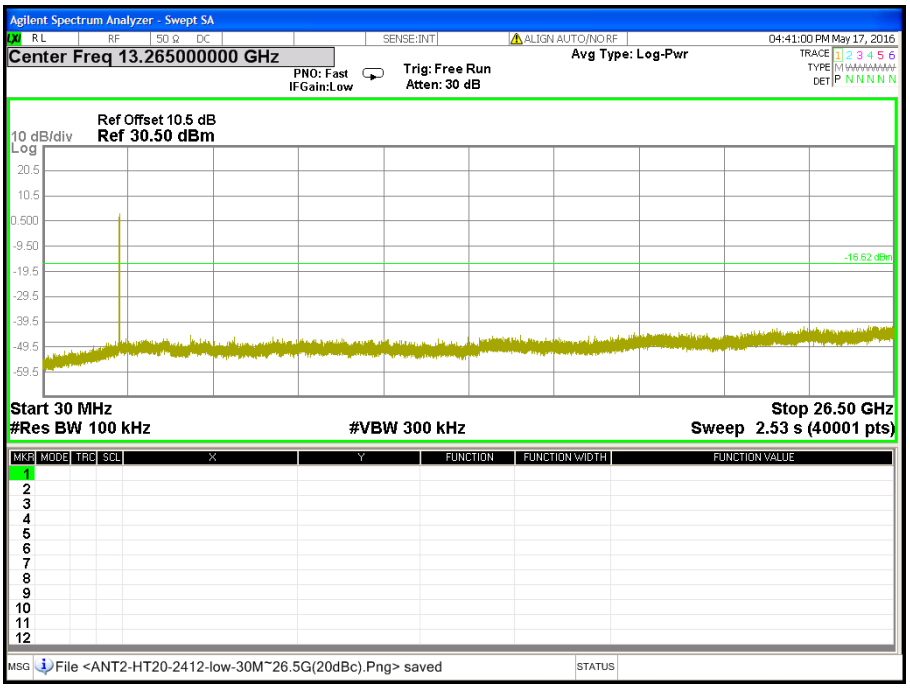
CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 1)



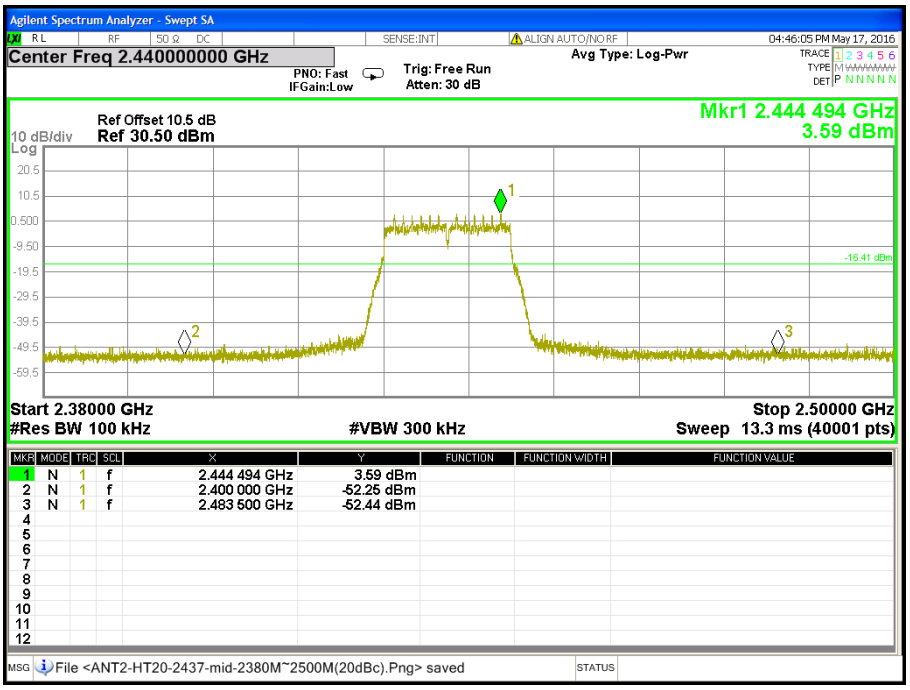
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



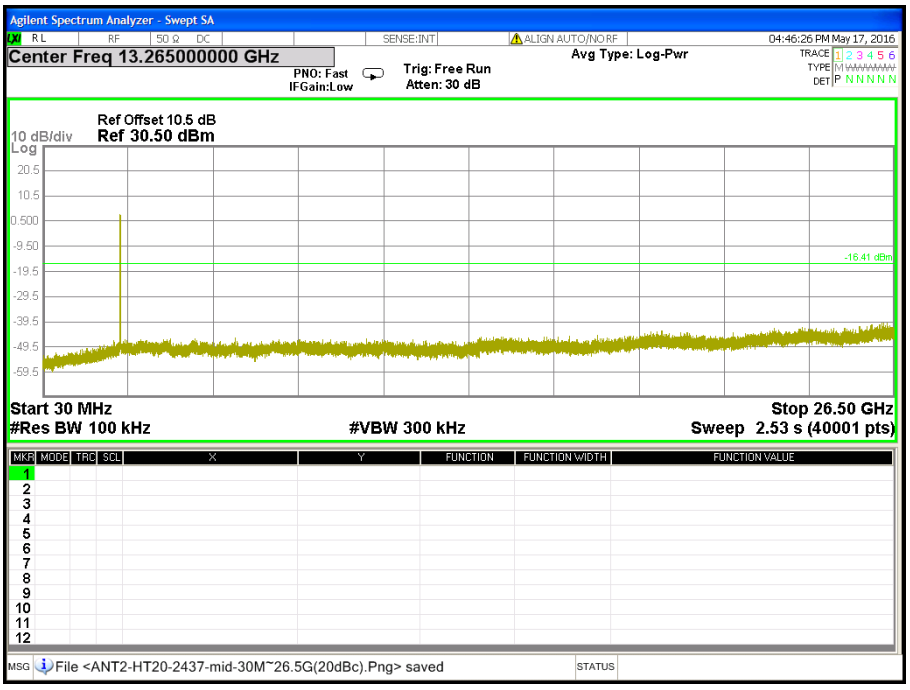
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



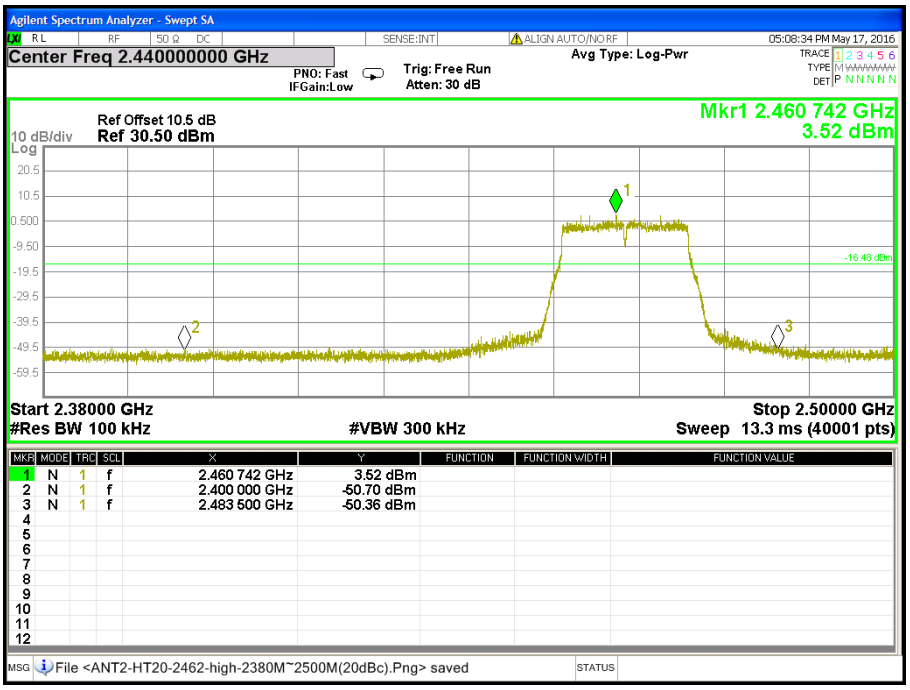
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



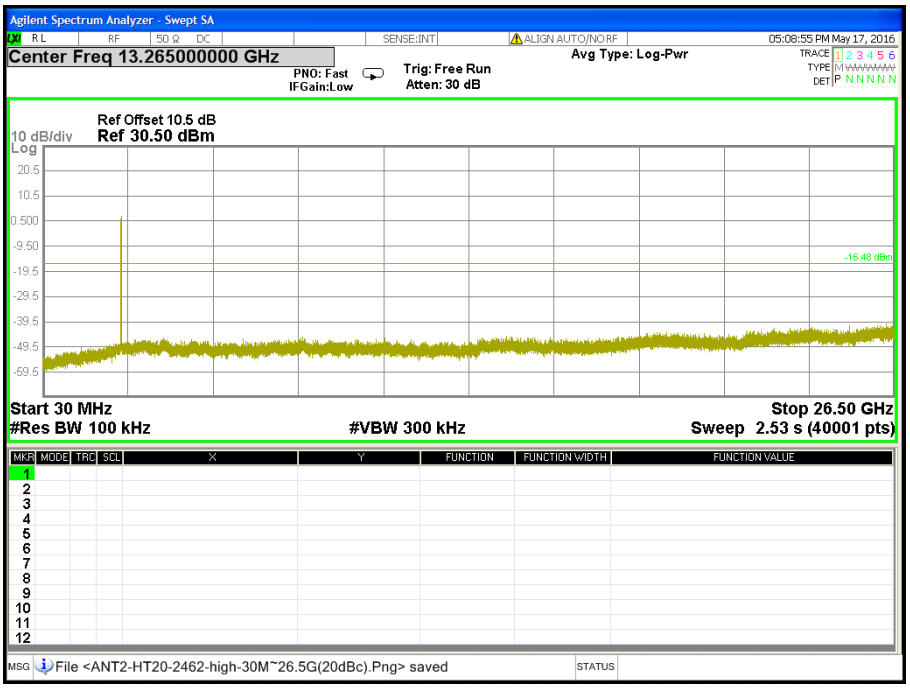
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



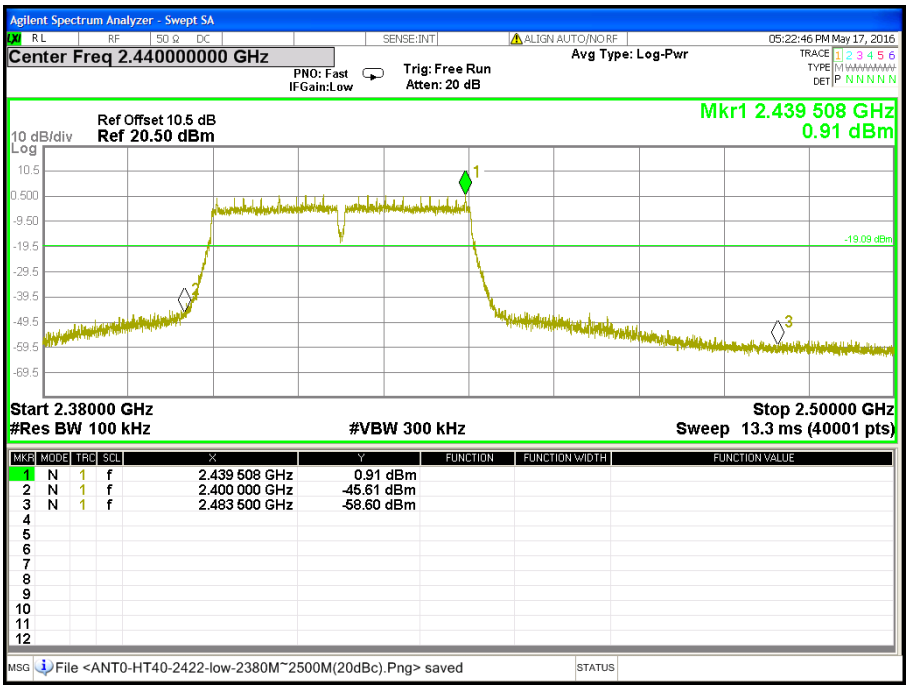
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



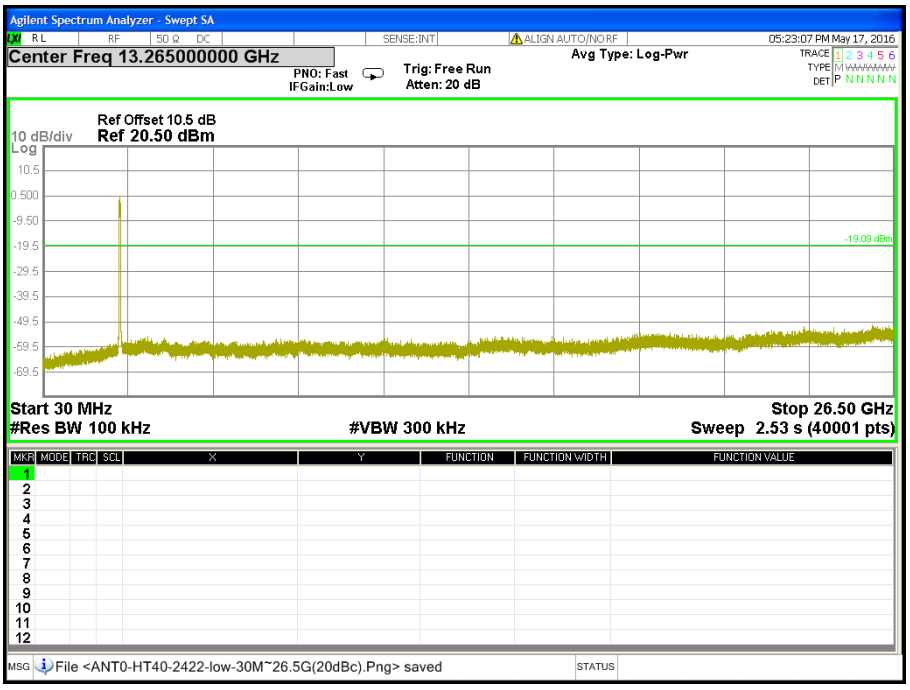
CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT20 MCS0 Mode / Chain 2)



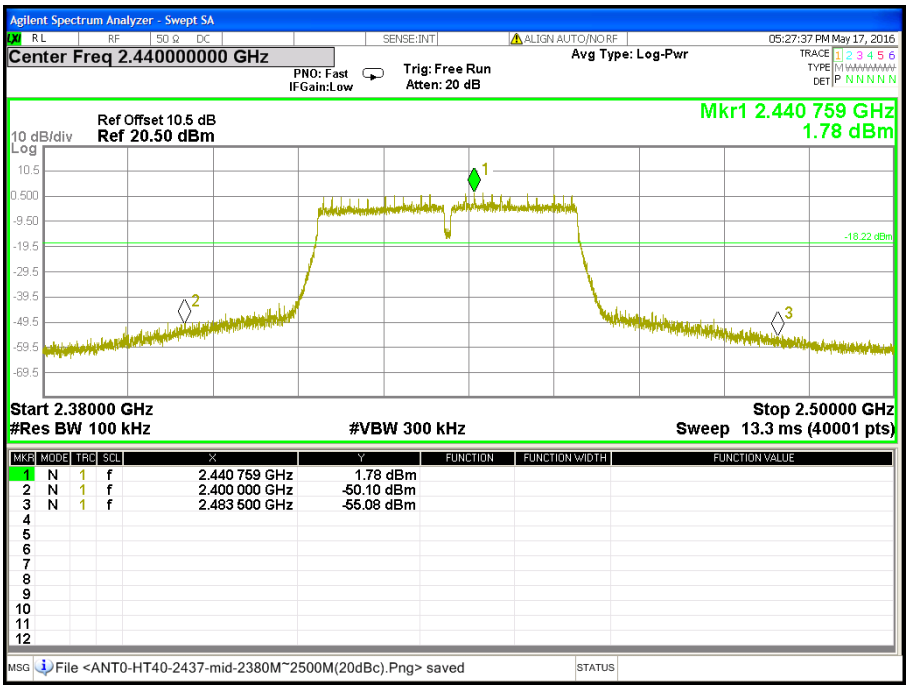
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



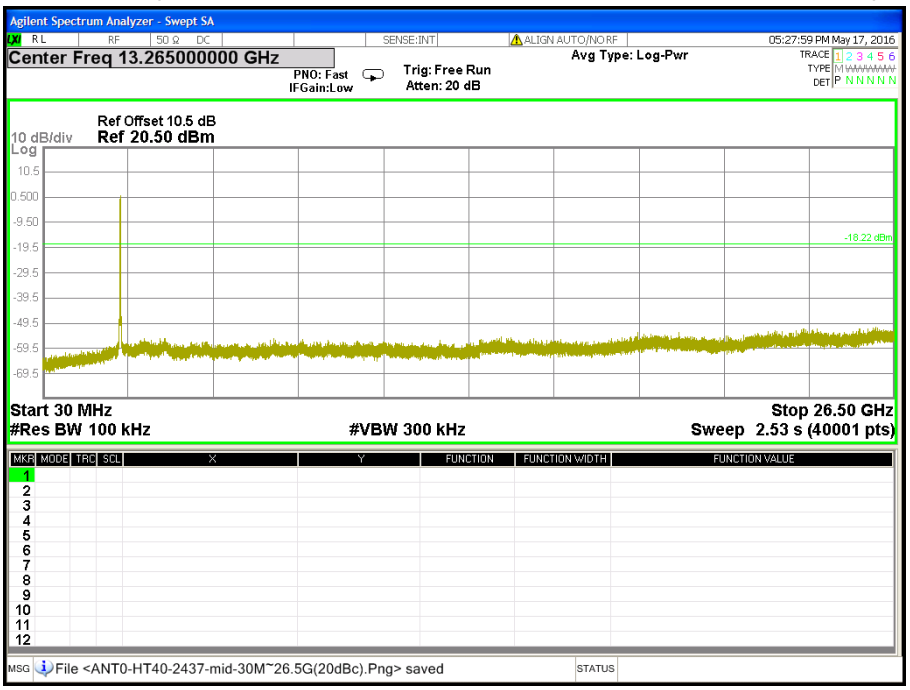
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



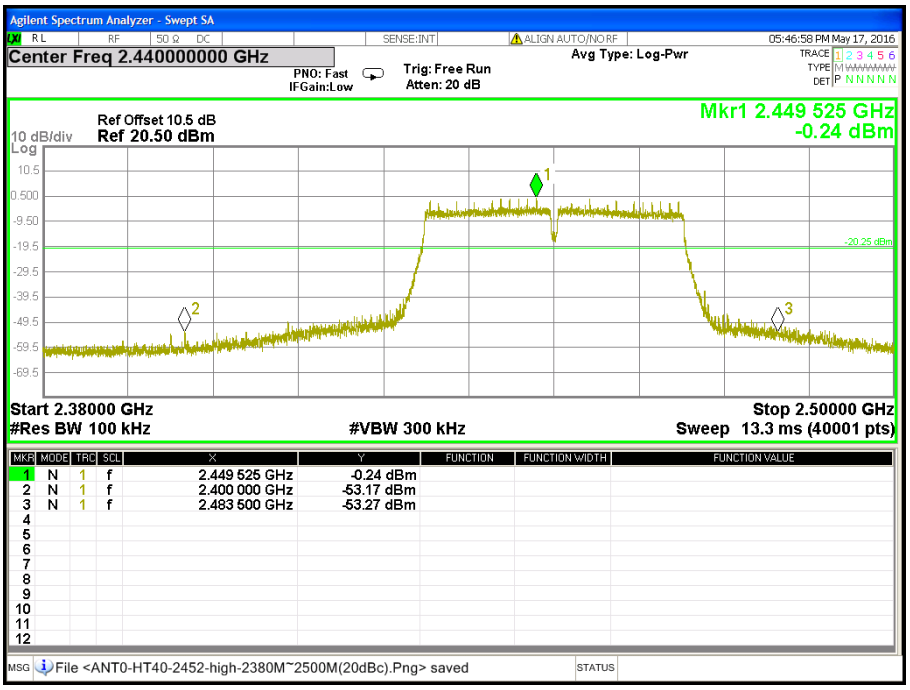
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



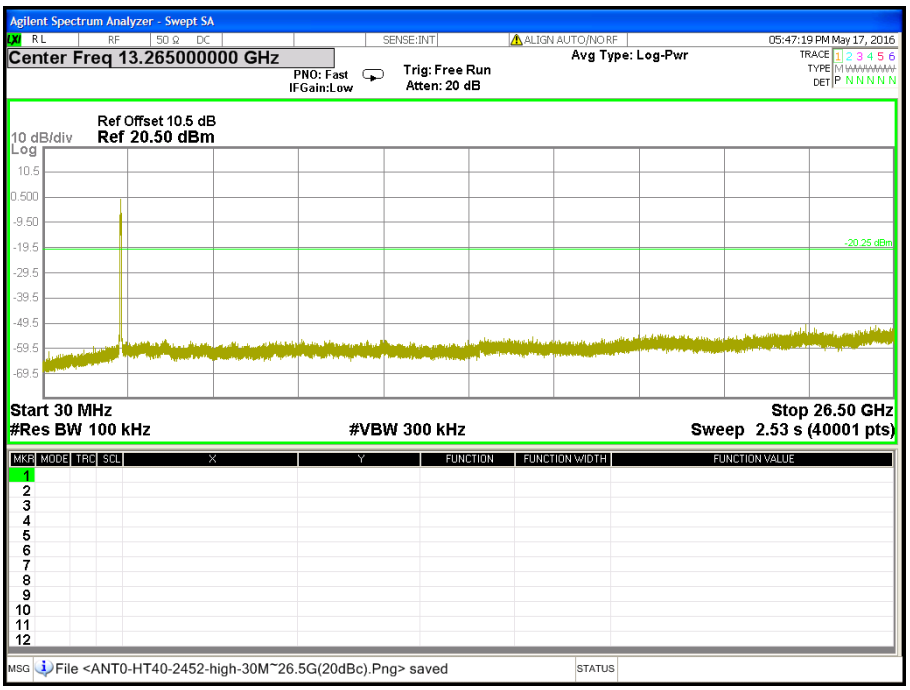
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



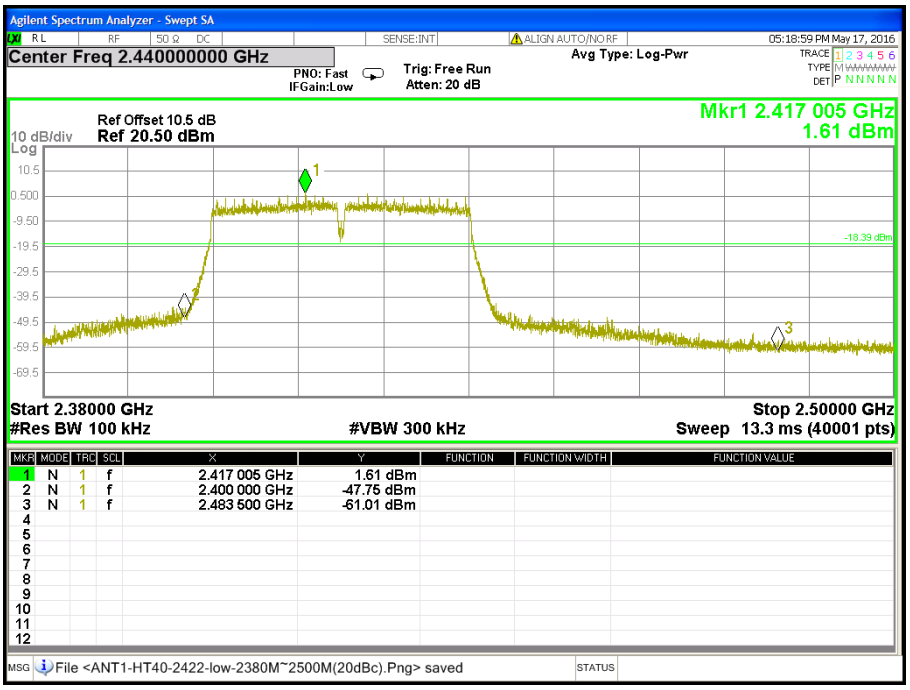
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



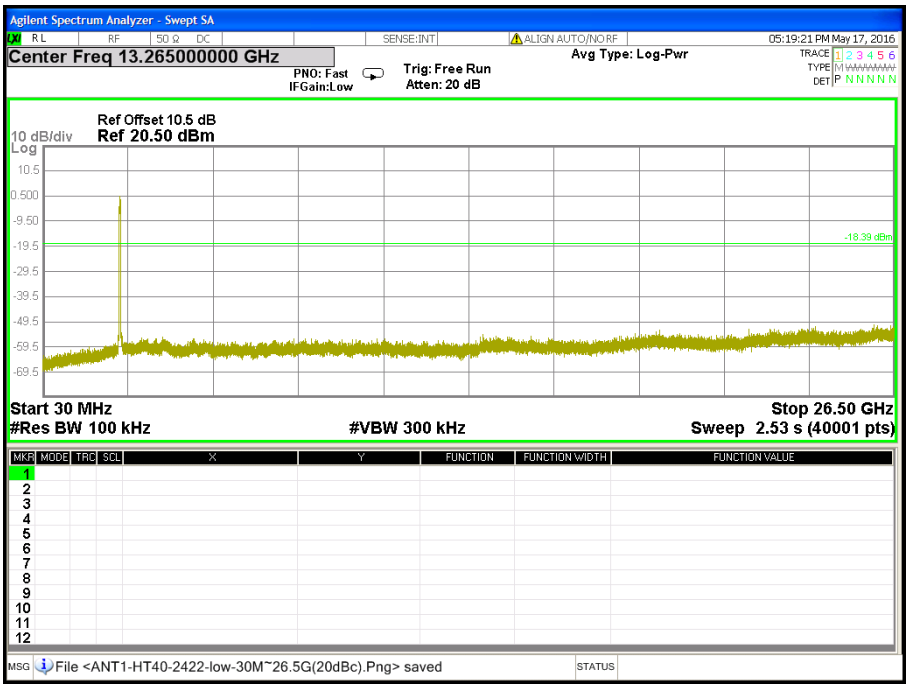
CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 0)



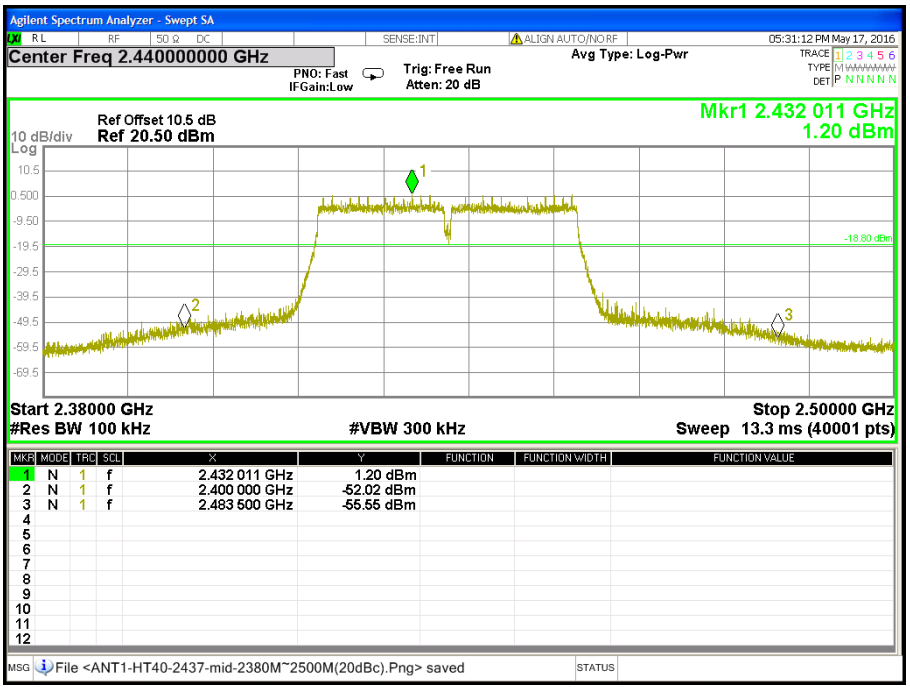
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



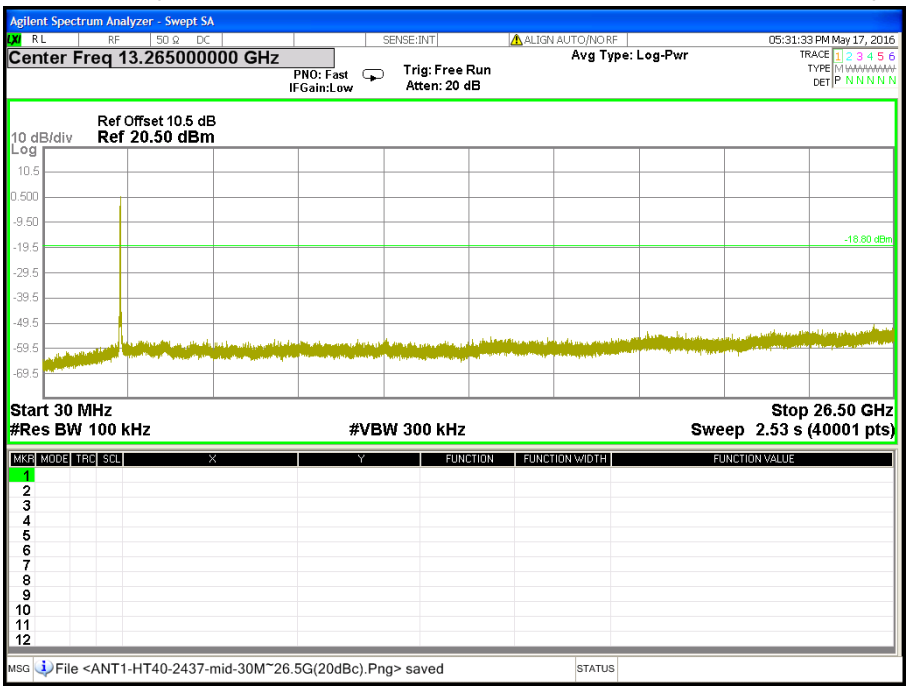
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



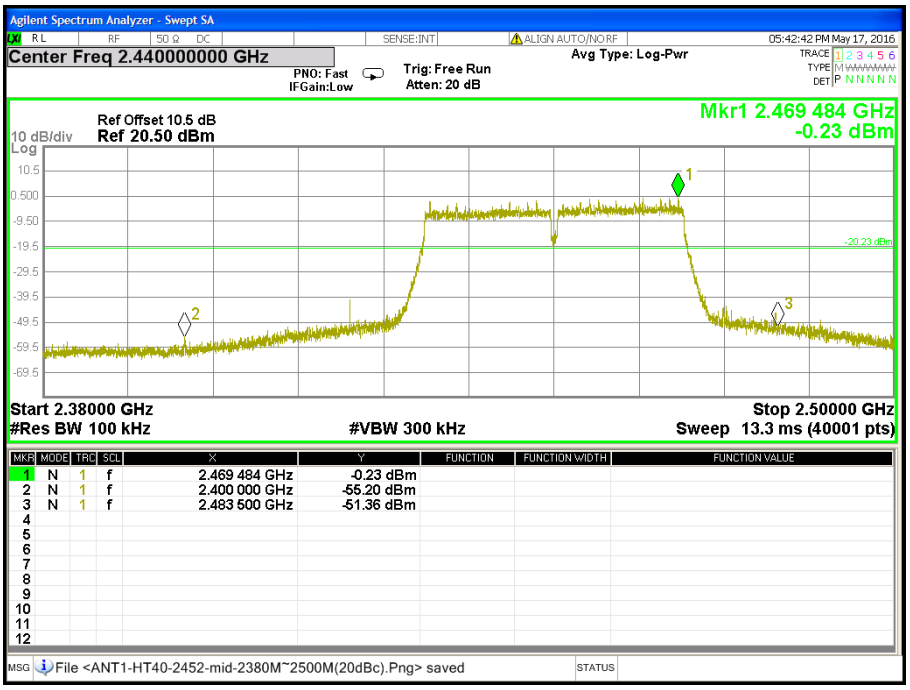
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



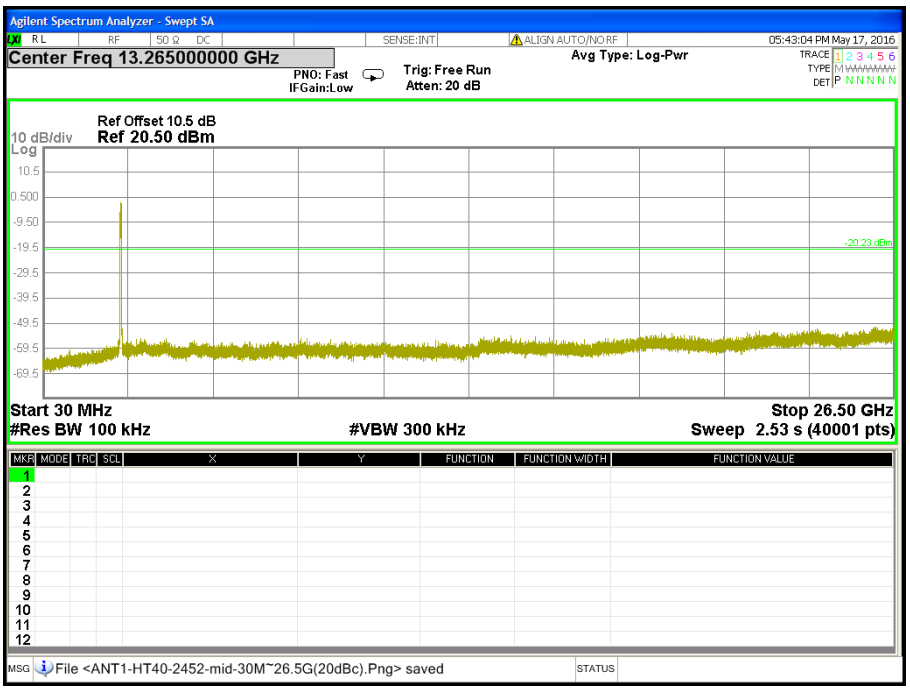
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



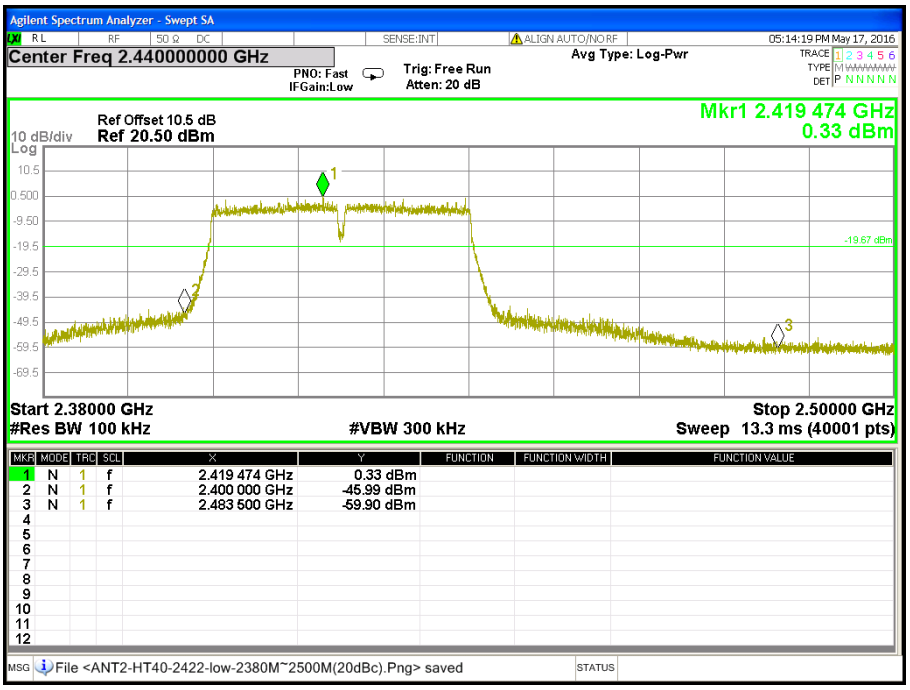
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



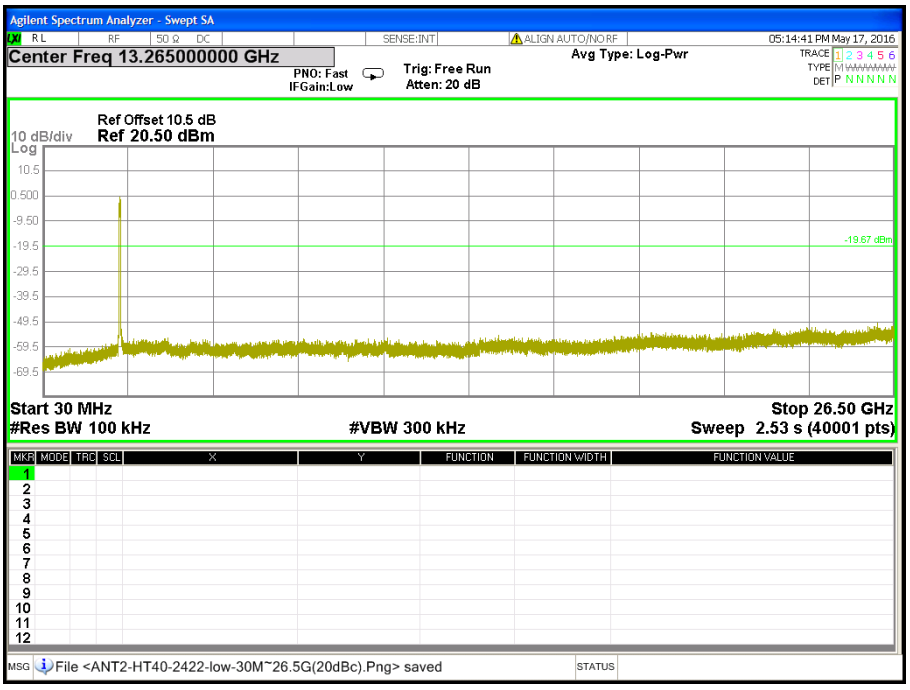
CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 1)



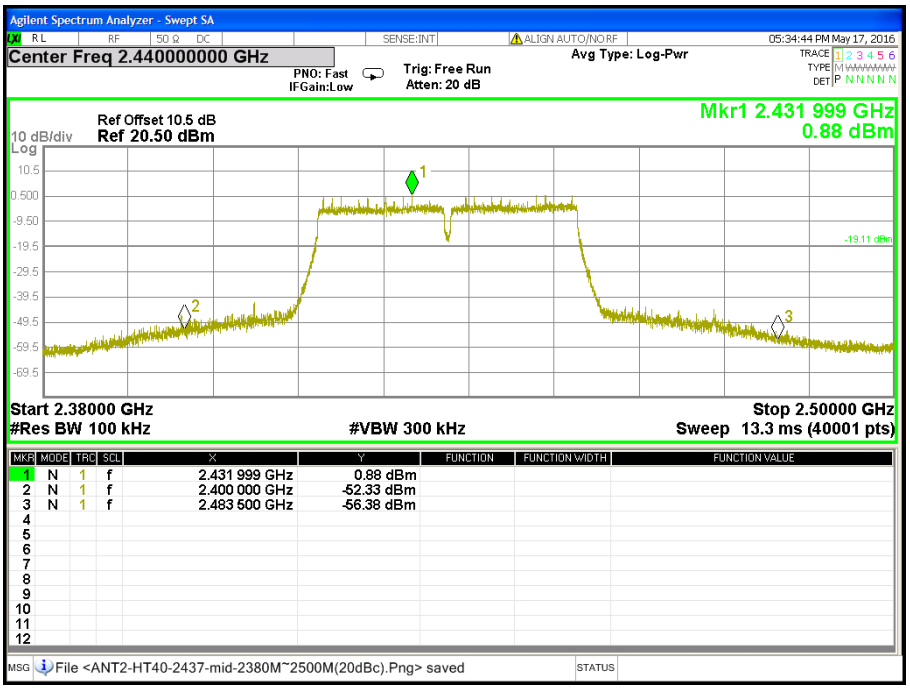
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



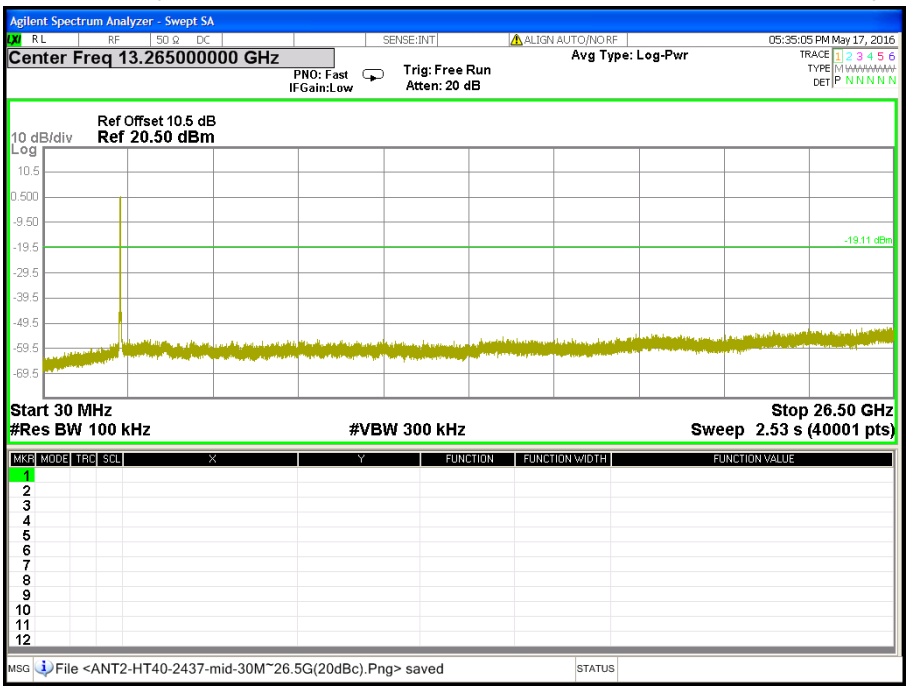
CH Low (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



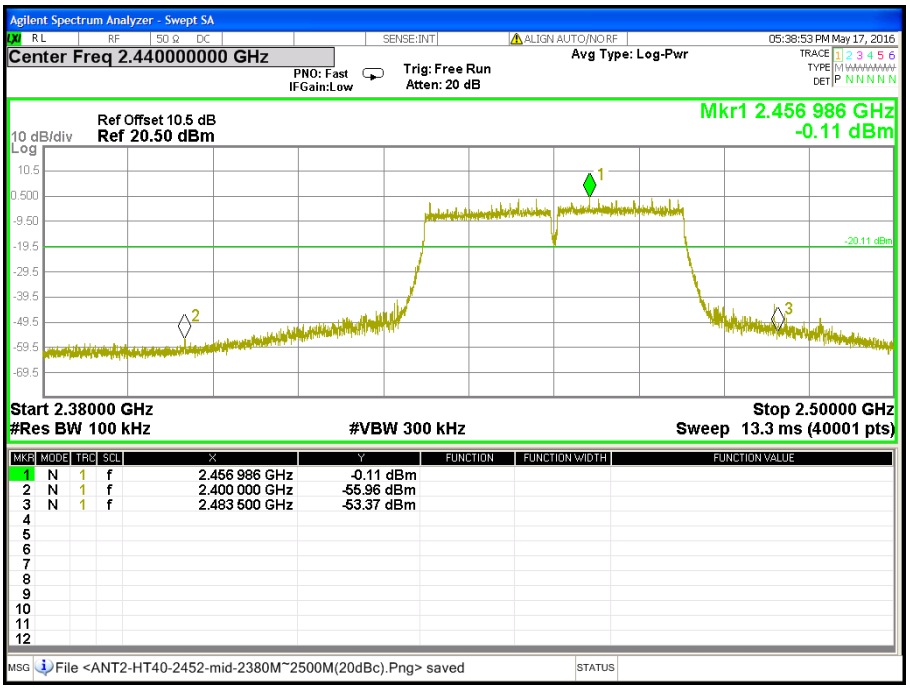
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



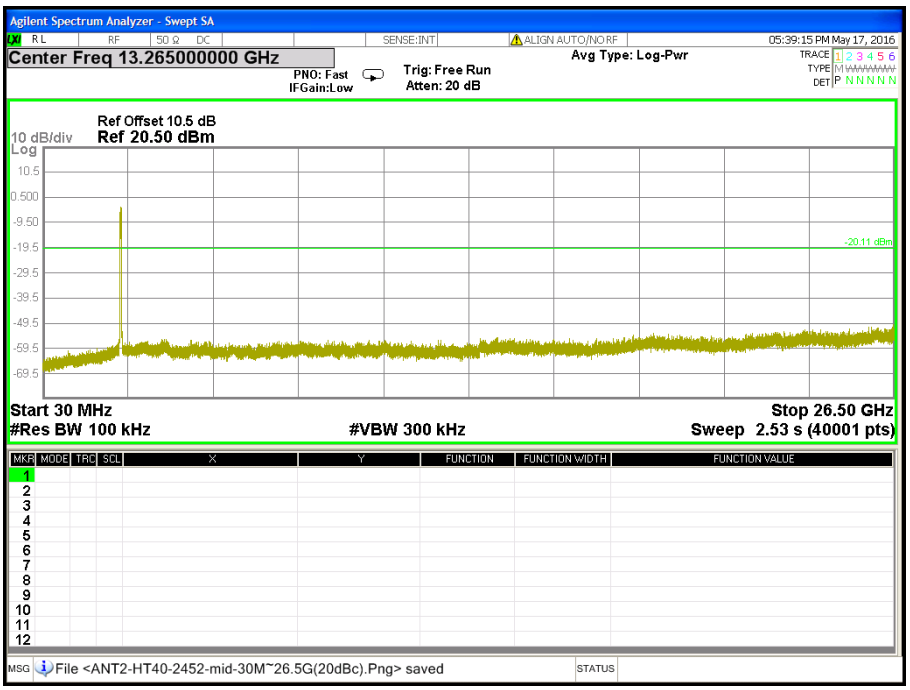
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



CH High (30MHz ~ 26.5GHz / IEEE 802.11n HT40 MCS0 Mode / Chain 2)



7.6 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 is Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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

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

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

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

TEST EQUIPMENT

Radiated Emission / 966Chamber_A

Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	05/31/2017
EMI Test Receiver	Rohde & Schwarz	ESCI	101131	03/15/2017
Bi-log Antenna	TESEQ	CBL 6112D	35409	08/02/2016
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-778	08/09/2016
Pre-Amplifier	Agilent	8449B	3008A01471	07/14/2016
Pre-Amplifier	HP	8447F	2944A03748	07/14/2016
Test S/W	E3.815206a			

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

Radiated Emission / 966Chamber_B

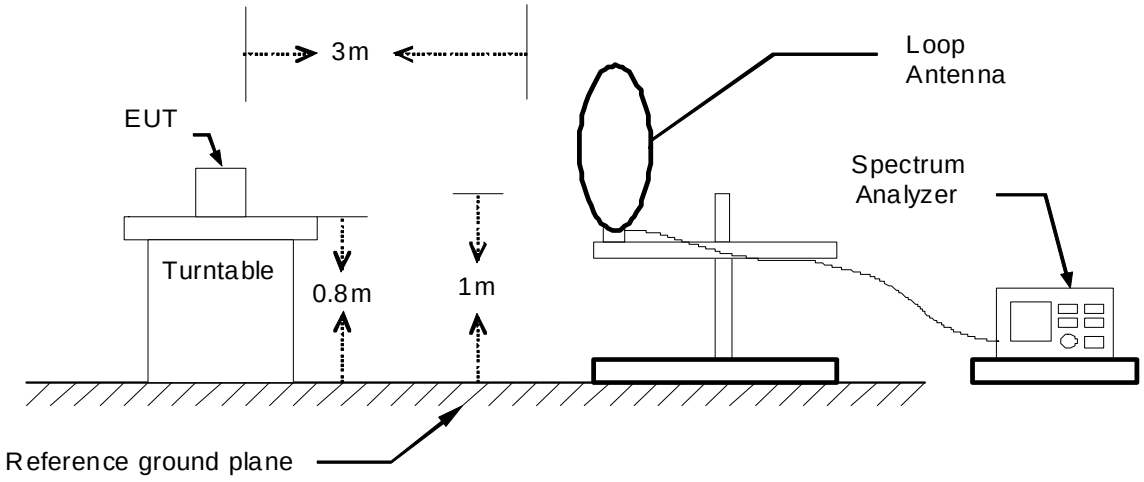
Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/12/2017
EMI Test Receiver	Rohde & Schwarz	ESCI	100221	04/26/2017
Bi-log Antenna	TESEQ	CBL6112D	35403	08/04/2016
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-778	08/09/2016
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	11/25/2016
Horn Antenna	COM-POWER	AH-840	03077	12/08/2016
Pre-Amplifier	Agilent	8447D	2944A10052	07/14/2016
Pre-Amplifier	Agilent	8449B	3008A01916	07/14/2016
LOOP Antenna	COM-POWER	AL-130	121060	05/23/2017
Test S/W	E3.815206a			

Remark: *1. Each piece of equipment is scheduled for calibration once a year.*
2. The IC Site Registration number is 2324K-3.

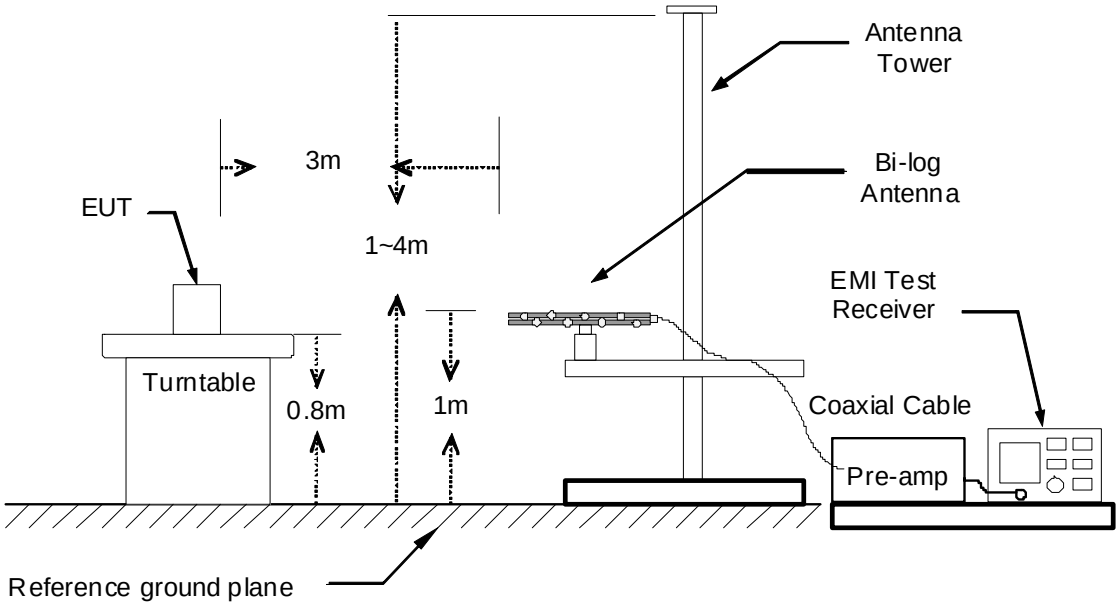
TEST SETUP

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

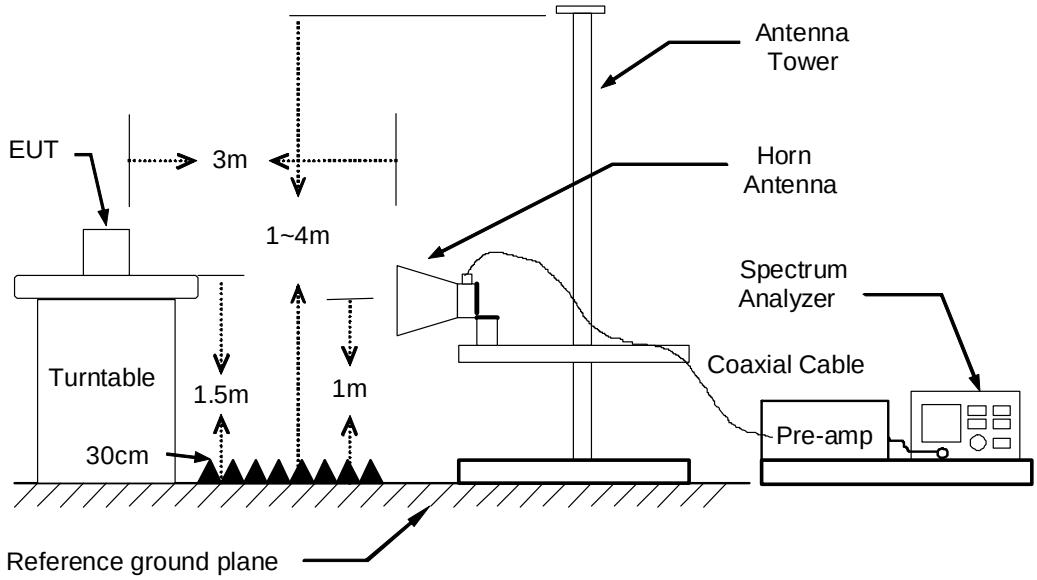
9kHz ~ 30MHz



30MHz ~ 1GHz



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



TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 and 1.5 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. While measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. While measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Remark:

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

TEST RESULTS

Below 1 GHz (9kHz ~ 30MHz)

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

Below 1 GHz (30MHz ~ 1GHz)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Gill Yeh
Test Model	BiPAC 8920NX-600	Test Date	2016/05/31
Test Mode	Mode 1	Temp. & Humidity	20°C, 50%

966Chamber_A at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
90.14	40.25	-15.09	25.16	43.50	-18.34	300	100	Peak
218.18	45.16	-13.36	31.80	46.00	-14.20	110	100	Peak
233.70	44.41	-12.12	32.29	46.00	-13.71	141	100	Peak
625.58	39.11	-2.89	36.22	46.00	-9.78	124	100	Peak
875.84	36.45	0.49	36.94	46.00	-9.06	47	100	Peak
960.23	30.83	1.35	32.18	54.00	-21.82	283	100	Peak

966Chamber_A at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
46.49	49.82	-14.73	35.09	40.00	-4.91	343	100	Peak
218.18	46.37	-13.36	33.01	46.00	-12.99	332	100	Peak
316.15	40.95	-9.15	31.80	46.00	-14.20	152	100	Peak
500.45	41.77	-4.90	36.87	46.00	-9.13	292	100	Peak
625.58	39.89	-2.89	37.00	46.00	-9.00	274	100	Peak
875.84	33.11	0.49	33.60	46.00	-12.40	259	100	Peak

Remark:

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

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Gill Yeh
Test Model	BiPAC 8920NX-600	Test Date	2016/05/31
Test Mode	Mode 2	Temp. & Humidity	20°C, 50%

966Chamber_A at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
233.70	45.44	-12.12	33.32	46.00	-12.68	127	100	Peak
320.03	41.95	-9.02	32.93	46.00	-13.07	308	100	Peak
519.85	37.61	-4.52	33.09	46.00	-12.91	168	100	Peak
625.58	40.78	-2.89	37.89	46.00	-8.11	92	100	Peak
750.71	36.23	-1.63	34.60	46.00	-11.40	250	100	Peak
875.84	35.93	0.49	36.42	46.00	-9.58	85	100	Peak

966Chamber_A at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
30.00	44.92	-5.20	39.72	40.00	-0.28	129	100	QP
51.34	53.77	-16.42	37.35	40.00	-2.65	198	100	Peak
125.06	47.94	-11.76	36.18	43.50	-7.32	154	100	Peak
320.03	45.94	-9.02	36.92	46.00	-9.08	154	100	Peak
510.15	43.33	-4.71	38.62	46.00	-7.38	94	100	Peak
530.52	42.98	-4.31	38.67	46.00	-7.33	110	100	Peak

Remark:

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

Above 1 GHz

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11b Mode / TX / CH Low	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1966.00	45.88	1.77	47.65	74.00	-26.35	142	100	Peak
2292.00	46.68	2.65	49.33	74.00	-24.67	103	250	Peak
2628.00	46.42	3.33	49.75	74.00	-24.25	29	100	Peak
4830.00	40.27	8.19	48.46	74.00	-25.54	132	250	Peak
7230.00	38.11	12.36	50.47	74.00	-23.53	78	150	Peak
9648.00	36.88	14.81	51.69	54.00	-2.31	139	100	Average
9648.00	39.39	14.81	54.20	74.00	-19.80	139	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1728.00	45.56	-0.53	45.03	74.00	-28.97	125	200	Peak
2052.00	45.51	2.20	47.71	74.00	-26.29	146	150	Peak
2494.00	48.04	3.04	51.08	74.00	-22.92	4	200	Peak
4824.00	45.36	8.18	53.54	54.00	-0.46	24	200	Average
4824.00	45.75	8.18	53.93	74.00	-20.07	24	200	Peak
7230.00	37.23	12.36	49.59	74.00	-24.41	116	250	Peak
9645.00	36.75	14.81	51.56	74.00	-22.44	58	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11b Mode / TX / CH Middle	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2206.00	40.10	2.49	42.59	54.00	-11.41	200	300	Average
2206.00	52.43	2.49	54.92	74.00	-19.08	200	300	Peak
2390.00	50.51	2.84	53.35	74.00	-20.65	252	300	Peak
2483.50	40.20	3.02	43.22	54.00	-10.78	176	100	Average
2483.50	51.08	3.02	54.10	74.00	-19.90	176	100	Peak
2862.00	39.30	3.84	43.14	54.00	-10.86	359	200	Average
2862.00	52.20	3.84	56.04	74.00	-17.96	359	200	Peak
4874.00	38.73	8.25	46.98	54.00	-7.02	184	150	Average
4874.00	47.16	8.25	55.41	74.00	-18.59	184	150	Peak
7311.00	41.24	12.37	53.61	74.00	-20.39	43	150	Peak
9750.00	41.90	14.93	56.83	74.00	-17.17	62	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1198.00	54.99	-2.73	52.26	74.00	-21.74	174	300	Peak
2282.00	39.76	2.64	42.40	54.00	-11.60	310	150	Average
2282.00	52.00	2.64	54.64	74.00	-19.36	310	150	Peak
2390.00	41.11	2.84	43.95	54.00	-10.05	271	150	Average
2390.00	51.51	2.84	54.35	74.00	-19.65	271	150	Peak
2483.50	43.87	3.02	46.89	54.00	-7.11	275	150	Average
2483.50	54.38	3.02	57.40	74.00	-16.60	275	150	Peak
4874.00	45.56	8.25	53.81	54.00	-0.19	87	200	Average
4874.00	46.74	8.25	54.99	74.00	-19.01	87	200	Peak
7311.00	38.82	12.37	51.19	54.00	-2.81	114	250	Average
7311.00	43.53	12.37	55.90	74.00	-18.10	114	250	Peak
9750.00	39.44	14.93	54.37	74.00	-19.63	95	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11b Mode / TX / CH High	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2162.00	46.31	2.41	48.72	74.00	-25.28	290	250	Peak
2352.00	46.12	2.77	48.89	74.00	-25.11	282	100	Peak
2626.00	46.24	3.32	49.56	74.00	-24.44	194	300	Peak
4924.00	43.02	8.32	51.34	54.00	-2.66	139	300	Average
4924.00	43.84	8.32	52.16	74.00	-21.84	139	300	Peak
7380.00	37.45	12.37	49.82	74.00	-24.18	83	200	Peak
9848.00	36.78	15.05	51.83	54.00	-2.17	133	150	Average
9848.00	39.07	15.05	54.12	74.00	-19.88	133	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2090.00	45.92	2.27	48.19	74.00	-25.81	164	300	Peak
2384.00	46.17	2.83	49.00	74.00	-25.00	109	150	Peak
2648.00	46.05	3.37	49.42	74.00	-24.58	161	100	Peak
4924.00	45.35	8.32	53.67	54.00	-0.33	94	200	Average
4924.00	46.72	8.32	55.04	74.00	-18.96	94	200	Peak
7380.00	36.99	12.37	49.36	74.00	-24.64	100	250	Peak
9848.00	36.68	15.05	51.73	74.00	-22.27	102	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11g Mode / TX / CH Low	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1920.00	45.59	1.33	46.92	74.00	-27.08	336	300	Peak
2228.00	45.61	2.53	48.14	74.00	-25.86	264	250	Peak
2502.00	46.49	3.05	49.54	74.00	-24.46	173	150	Peak
4830.00	39.67	8.19	47.86	74.00	-26.14	159	150	Peak
7230.00	37.64	12.36	50.00	74.00	-24.00	87	150	Peak
9645.00	38.64	14.81	53.45	74.00	-20.55	110	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1784.00	45.68	0.01	45.69	74.00	-28.31	295	200	Peak
2090.00	45.65	2.27	47.92	74.00	-26.08	158	250	Peak
2486.00	48.34	3.02	51.36	74.00	-22.64	322	250	Peak
4830.00	39.01	8.19	47.20	74.00	-26.80	22	250	Peak
7245.00	36.96	12.36	49.32	74.00	-24.68	148	100	Peak
9645.00	37.06	14.81	51.87	74.00	-22.13	126	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11g Mode / TX / CH Middle	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2072.00	37.12	2.24	39.36	54.00	-14.64	270	100	Average
2072.00	53.99	2.24	56.23	74.00	-17.77	270	100	Peak
2390.00	39.72	2.84	42.56	54.00	-11.44	207	150	Average
2390.00	54.49	2.84	57.33	74.00	-16.67	207	150	Peak
2483.50	39.67	3.02	42.69	54.00	-11.31	185	150	Average
2483.50	52.06	3.02	55.08	74.00	-18.92	185	150	Peak
2504.00	38.35	3.06	41.41	54.00	-12.59	270	150	Average
2504.00	54.48	3.06	57.54	74.00	-16.46	270	150	Peak
4874.00	39.51	8.25	47.76	54.00	-6.24	162	250	Average
4874.00	53.83	8.25	62.08	74.00	-11.92	162	250	Peak
7311.00	32.89	12.37	45.26	54.00	-8.74	38	100	Average
7311.00	44.50	12.37	56.87	74.00	-17.13	38	100	Peak
9735.00	39.55	14.92	54.47	74.00	-19.53	90	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2134.00	38.66	2.35	41.01	54.00	-12.99	306	250	Average
2134.00	53.48	2.35	55.83	74.00	-18.17	306	250	Peak
2390.00	47.92	2.84	50.76	54.00	-3.24	166	250	Average
2390.00	61.03	2.84	63.87	74.00	-10.13	166	250	Peak
2483.50	50.61	3.02	53.63	54.00	-0.37	220	250	Average
2483.50	61.53	3.02	64.55	74.00	-9.45	220	250	Peak
2806.00	37.53	3.72	41.25	54.00	-12.75	155	250	Average
2806.00	54.07	3.72	57.79	74.00	-16.21	155	250	Peak
4874.00	45.65	8.25	53.90	54.00	-0.10	117	200	Average
4874.00	61.90	8.25	70.15	74.00	-3.85	117	200	Peak
7311.00	36.93	12.37	49.30	54.00	-4.70	172	200	Average
7311.00	47.97	12.37	60.34	74.00	-13.66	172	200	Peak
9750.00	38.29	14.93	53.22	74.00	-20.78	56	100	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11g Mode / TX / CH High	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1384.00	46.66	-2.74	43.92	74.00	-30.08	291	100	Peak
2206.00	46.07	2.49	48.56	74.00	-25.44	173	250	Peak
2548.00	46.55	3.15	49.70	74.00	-24.30	358	300	Peak
3690.00	42.35	5.30	47.65	74.00	-26.35	85	150	Peak
4920.00	41.08	8.31	49.39	74.00	-24.61	35	100	Peak
7380.00	39.21	12.37	51.58	74.00	-22.42	76	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1916.00	46.72	1.29	48.01	74.00	-25.99	49	250	Peak
2386.00	46.49	2.83	49.32	74.00	-24.68	101	250	Peak
2938.00	46.32	4.00	50.32	74.00	-23.68	347	100	Peak
4924.00	32.89	8.32	41.21	54.00	-12.79	83	200	Average
4924.00	45.53	8.32	53.85	74.00	-20.15	83	200	Peak
7380.00	39.07	12.37	51.44	74.00	-22.56	114	300	Peak
9855.00	36.62	15.06	51.68	74.00	-22.32	92	250	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/12
Test Mode	IEEE 802.11n HT20 MCS0 Mode / TX / CH Low	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2004.00	46.22	2.11	48.33	74.00	-25.67	0	300	Peak
2270.00	45.99	2.61	48.60	74.00	-25.40	277	100	Peak
2634.00	46.51	3.34	49.85	74.00	-24.15	34	200	Peak
4830.00	39.15	8.19	47.34	74.00	-26.66	29	250	Peak
7230.00	36.44	12.36	48.80	74.00	-25.20	0	250	Peak
9645.00	44.38	14.81	59.19	74.00	-14.81	102	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2036.00	45.94	2.17	48.11	74.00	-25.89	49	100	Peak
2252.00	46.33	2.58	48.91	74.00	-25.09	19	100	Peak
2488.00	48.47	3.03	51.50	74.00	-22.50	80	250	Peak
4815.00	44.10	8.17	52.27	74.00	-21.73	108	200	Peak
7245.00	38.68	12.36	51.04	74.00	-22.96	112	200	Peak
9645.00	44.38	14.81	59.19	74.00	-14.81	112	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11n HT20 MCS0 Mode / TX / CH Middle	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1674.00	53.68	-1.06	52.62	74.00	-21.38	228	100	Peak
2390.00	39.09	2.84	41.93	54.00	-12.07	282	100	Average
2390.00	52.15	2.84	54.99	74.00	-19.01	282	100	Peak
2483.50	39.26	3.02	42.28	54.00	-11.72	186	300	Average
2483.50	51.92	3.02	54.94	74.00	-19.06	186	300	Peak
4874.00	40.41	8.25	48.66	54.00	-5.34	24	200	Average
4874.00	52.70	8.25	60.95	74.00	-13.05	24	200	Peak
7311.00	34.83	12.37	47.20	54.00	-6.80	42	150	Average
7311.00	45.00	12.37	57.37	74.00	-16.63	42	150	Peak
9750.00	44.77	14.93	59.70	74.00	-14.30	121	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1662.00	54.01	-1.17	52.84	74.00	-21.16	76	150	Peak
2390.00	50.78	2.84	53.62	54.00	-0.38	315	250	Average
2390.00	61.86	2.84	64.70	74.00	-9.30	315	250	Peak
2483.50	49.92	3.02	52.94	54.00	-1.06	205	200	Average
2483.50	59.32	3.02	62.34	74.00	-11.66	205	200	Peak
4874.00	45.64	8.25	53.89	54.00	-0.11	54	200	Average
4874.00	59.07	8.25	67.32	74.00	-6.68	54	200	Peak
7311.00	38.74	12.37	51.11	54.00	-2.89	80	250	Average
7320.00	49.94	12.37	62.31	74.00	-11.69	80	250	Peak
9750.00	43.80	14.93	58.73	74.00	-15.27	104	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/12
Test Mode	IEEE 802.11n HT20 MCS0 Mode / TX / CH High	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2160.00	45.79	2.40	48.19	74.00	-25.81	94	200	Peak
2390.00	44.58	2.84	47.42	74.00	-26.58	13	100	Peak
2726.00	46.81	3.54	50.35	74.00	-23.65	0	150	Peak
4920.00	38.79	8.31	47.10	74.00	-26.90	141	250	Peak
7380.00	37.51	12.37	49.88	74.00	-24.12	82	150	Peak
9855.00	43.04	15.06	58.10	74.00	-15.90	118	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1230.00	49.99	-2.73	47.26	74.00	-26.74	354	200	Peak
2390.00	46.04	2.84	48.88	74.00	-25.12	311	100	Peak
2916.00	45.85	3.96	49.81	74.00	-24.19	340	100	Peak
4920.00	41.61	8.31	49.92	74.00	-24.08	96	150	Peak
7395.00	38.59	12.37	50.96	74.00	-23.04	232	150	Peak
9855.00	43.67	15.06	58.73	74.00	-15.27	103	100	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/12
Test Mode	IEEE 802.11n HT40 MCS0 Mode / TX / CH Low	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1918.00	41.56	1.31	42.87	74.00	-31.13	132	150	Peak
2088.00	41.93	2.27	44.20	74.00	-29.80	279	300	Peak
2730.00	41.91	3.55	45.46	74.00	-28.54	340	150	Peak
4845.00	37.88	8.21	46.09	74.00	-27.91	332	100	Peak
7260.00	36.51	12.37	48.88	74.00	-25.12	121	250	Peak
9690.00	44.24	14.86	59.10	74.00	-14.90	114	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1870.00	45.99	0.84	46.83	74.00	-27.17	224	300	Peak
2110.00	42.07	2.31	44.38	74.00	-29.62	1	150	Peak
2920.00	41.69	3.97	45.66	74.00	-28.34	85	150	Peak
4845.00	39.83	8.21	48.04	74.00	-25.96	108	150	Peak
7185.00	38.91	12.36	51.27	74.00	-22.73	89	300	Peak
9690.00	43.99	14.86	58.85	74.00	-15.15	121	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/13
Test Mode	IEEE 802.11n HT40 MCS0 Mode / TX / CH Middle	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1658.00	53.51	-1.21	52.30	74.00	-21.70	337	250	Peak
2390.00	39.72	2.84	42.56	54.00	-11.44	147	100	Average
2390.00	51.78	2.84	54.62	74.00	-19.38	147	100	Peak
2483.50	39.95	3.02	42.97	54.00	-11.03	287	200	Average
2483.50	50.17	3.02	53.19	74.00	-20.81	287	200	Peak
4800.00	39.52	8.15	47.67	74.00	-26.33	92	150	Peak
7305.00	37.03	12.37	49.40	74.00	-24.60	98	100	Peak
9750.00	42.19	14.93	57.12	74.00	-16.88	130	150	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1998.00	51.85	2.08	53.93	74.00	-20.07	297	100	Peak
2390.00	47.61	2.84	50.45	54.00	-3.55	69	150	Average
2390.00	61.94	2.84	64.78	74.00	-9.22	69	150	Peak
2483.50	50.47	3.02	53.49	54.00	-0.51	206	200	Average
2483.50	61.97	3.02	64.99	74.00	-9.01	206	200	Peak
4875.00	40.83	8.25	49.08	74.00	-24.92	109	200	Peak
7305.00	37.00	12.37	49.37	74.00	-24.63	92	100	Peak
9750.00	43.04	14.93	57.97	74.00	-16.03	113	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Kenneth Huang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/12
Test Mode	IEEE 802.11n HT40 MCS0 Mode / TX / CH High	Temp. & Humidity	20°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1856.00	47.66	0.71	48.37	74.00	-25.63	257	150	Peak
2104.00	48.05	2.30	50.35	74.00	-23.65	241	100	Peak
2942.00	47.30	4.01	51.31	74.00	-22.69	73	100	Peak
4905.00	37.97	8.29	46.26	74.00	-27.74	4	250	Peak
7350.00	37.50	12.37	49.87	74.00	-24.13	70	150	Peak
9810.00	43.15	15.01	58.16	74.00	-15.84	119	100	Peak

966Chamber_B at 3Meter / Vertical

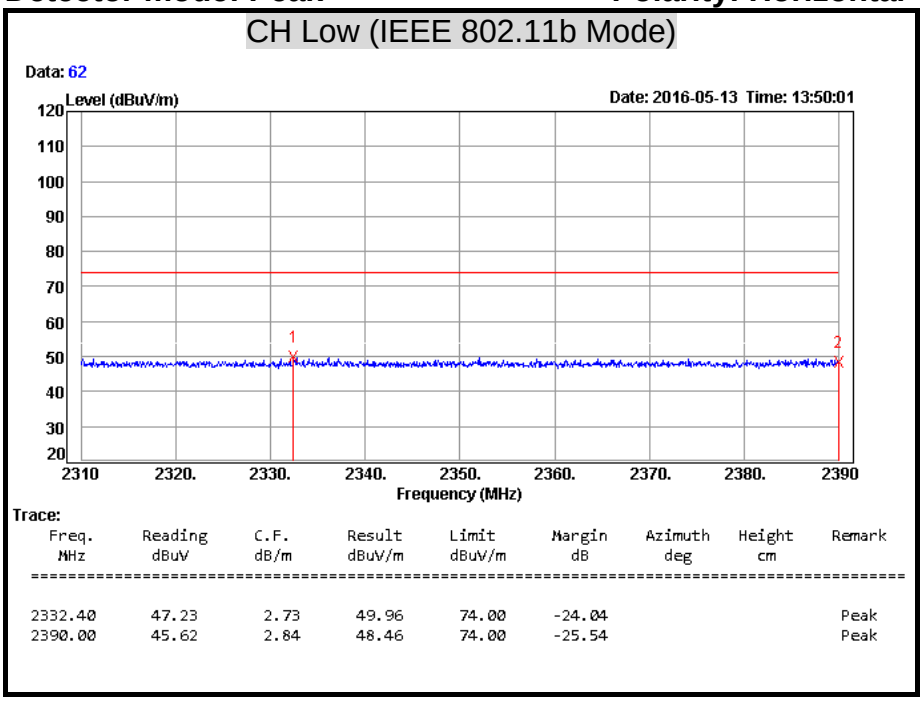
Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1996.00	47.11	2.06	49.17	74.00	-24.83	85	100	Peak
2150.00	46.90	2.38	49.28	74.00	-24.72	15	100	Peak
2736.00	46.66	3.56	50.22	74.00	-23.78	0	300	Peak
4905.00	38.66	8.29	46.95	74.00	-27.05	80	200	Peak
7350.00	36.13	12.37	48.50	74.00	-25.50	12	200	Peak
9810.00	43.34	15.01	58.35	74.00	-15.65	105	150	Peak

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(PK)
   Remark AVG = Result(AV) – Limit(AV)

Restricted Band Edges

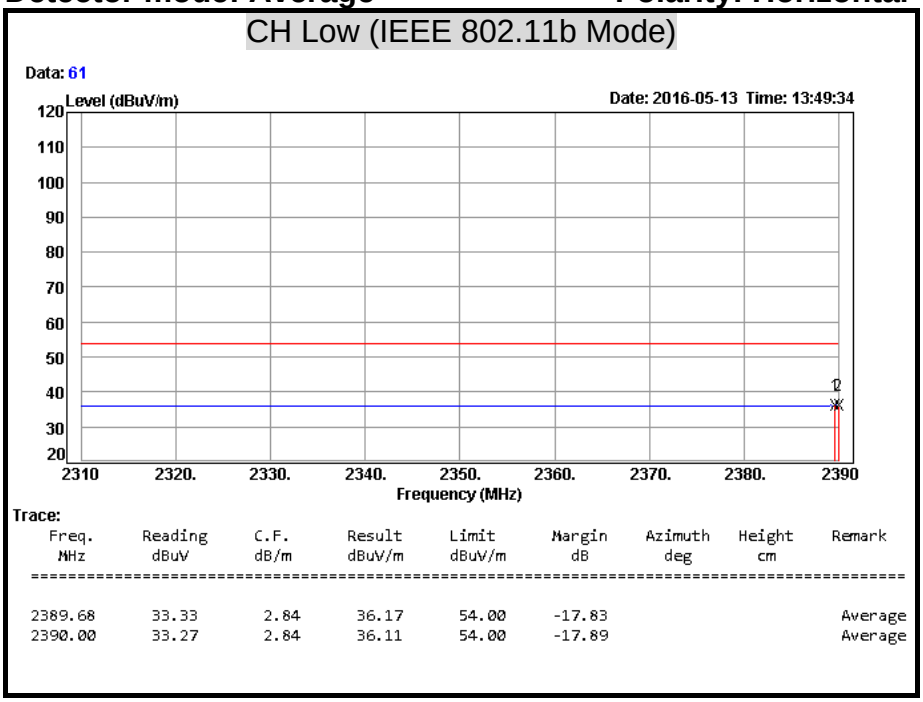
Detector mode: Peak **Polarity: Horizontal**



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2332.40	47.23	2.73	49.96	74.00	-24.04			Peak
2390.00	45.62	2.84	48.46	74.00	-25.54			Peak

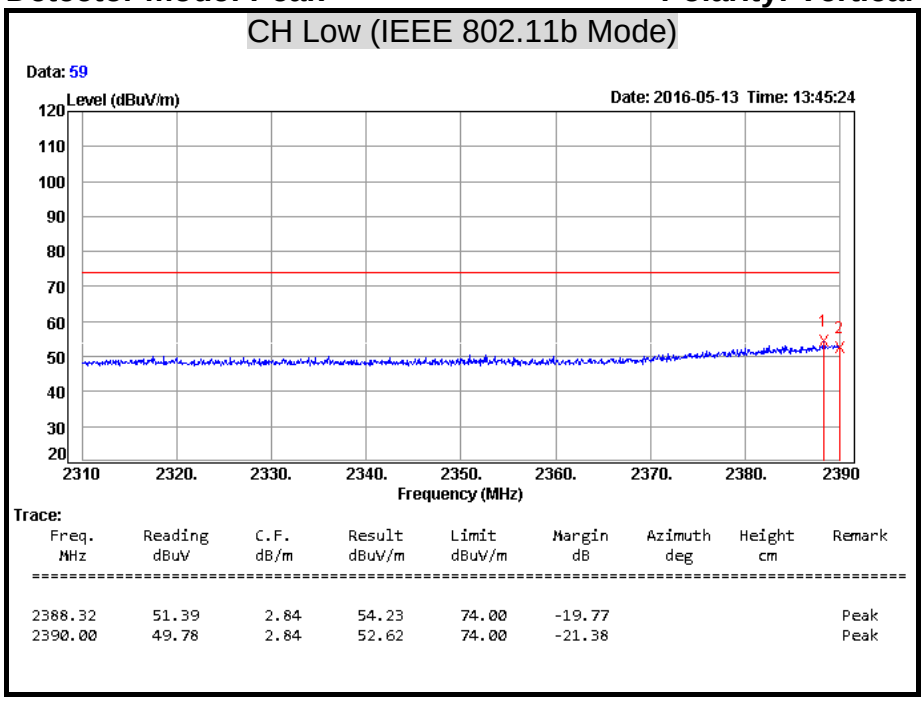
Detector mode: Average **Polarity: Horizontal**



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.68	33.33	2.84	36.17	54.00	-17.83			Average
2390.00	33.27	2.84	36.11	54.00	-17.89			Average

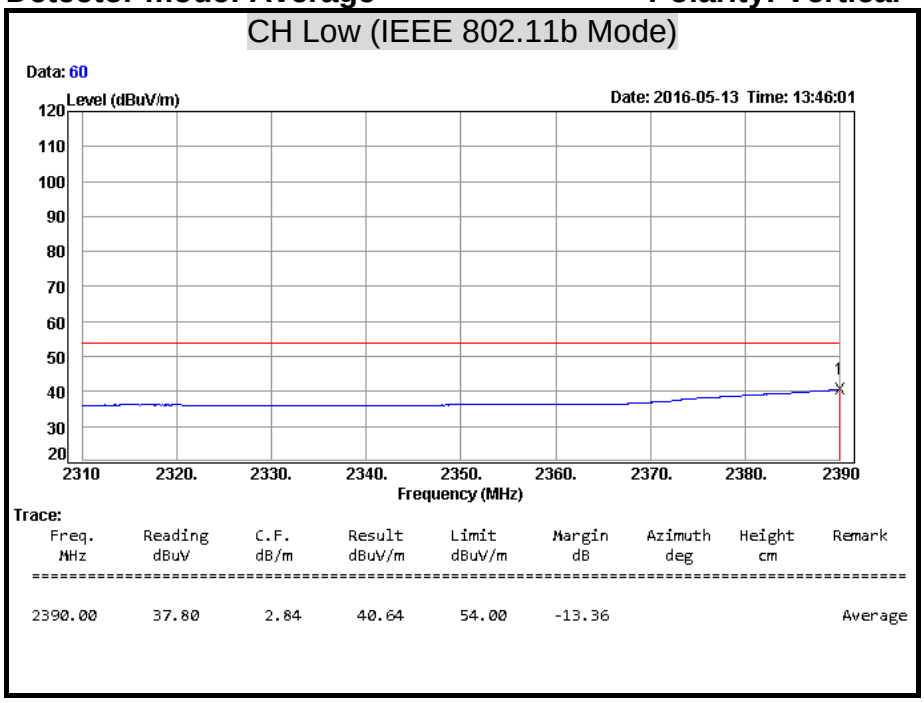
Detector mode: Peak **Polarity: Vertical**



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2388.32	51.39	2.84	54.23	74.00	-19.77			Peak
2390.00	49.78	2.84	52.62	74.00	-21.38			Peak

Detector mode: Average **Polarity: Vertical**

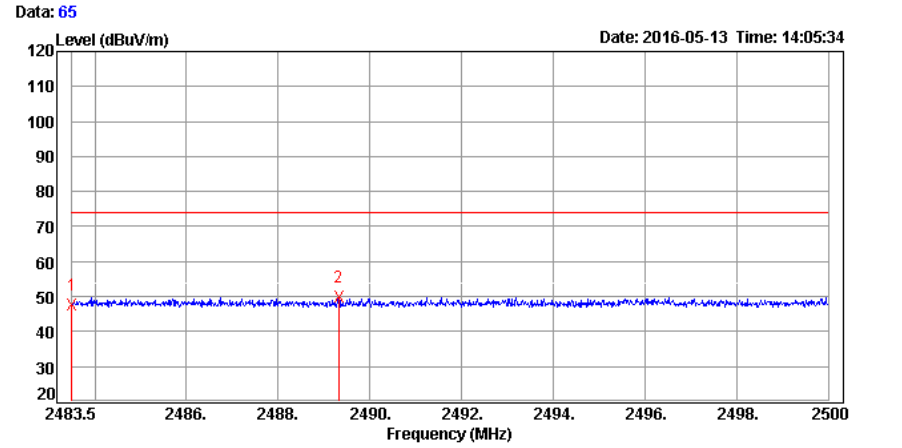


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	37.80	2.84	40.64	54.00	-13.36			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11b Mode)

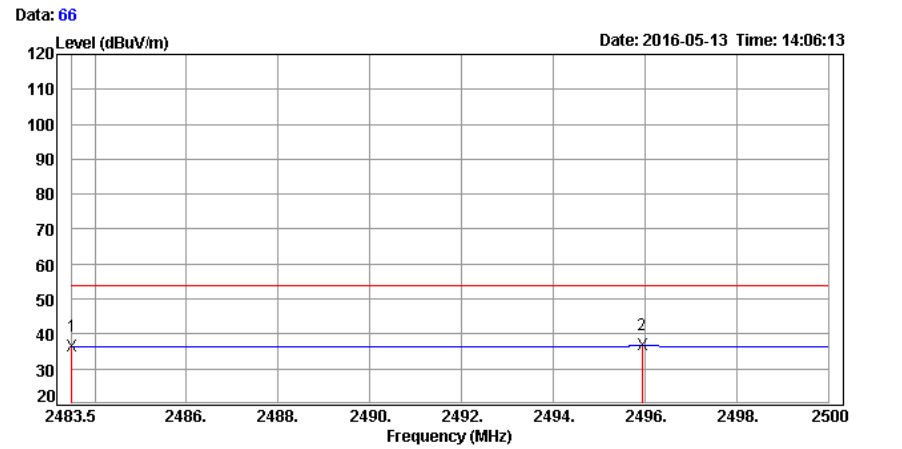


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	44.59	3.02	47.61	74.00	-26.39			Peak
2489.32	46.89	3.03	49.92	74.00	-24.08			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11b Mode)

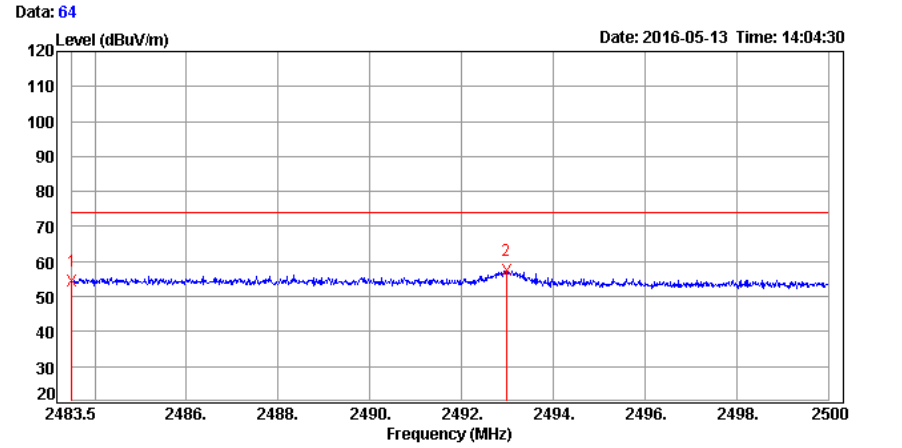


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	33.33	3.02	36.35	54.00	-17.65			Average
2495.94	33.76	3.04	36.80	54.00	-17.20			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11b Mode)

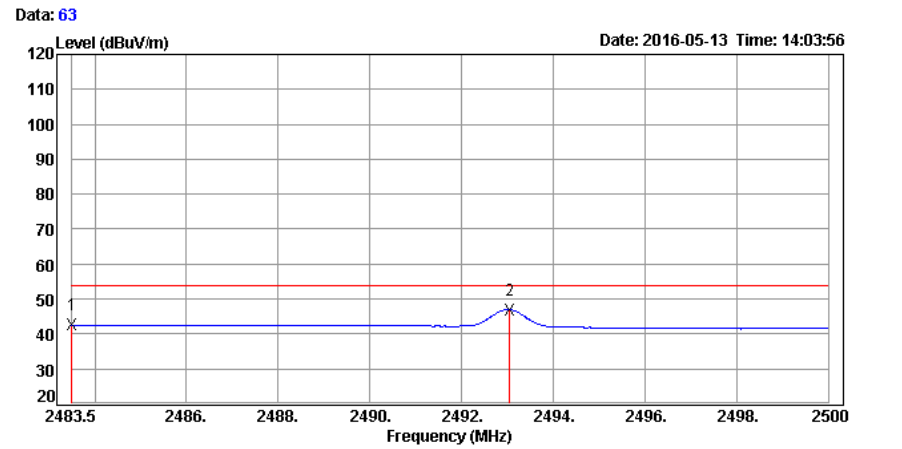


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	51.30	3.02	54.32	74.00	-19.68			Peak
2492.97	54.55	3.04	57.59	74.00	-16.41			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11b Mode)

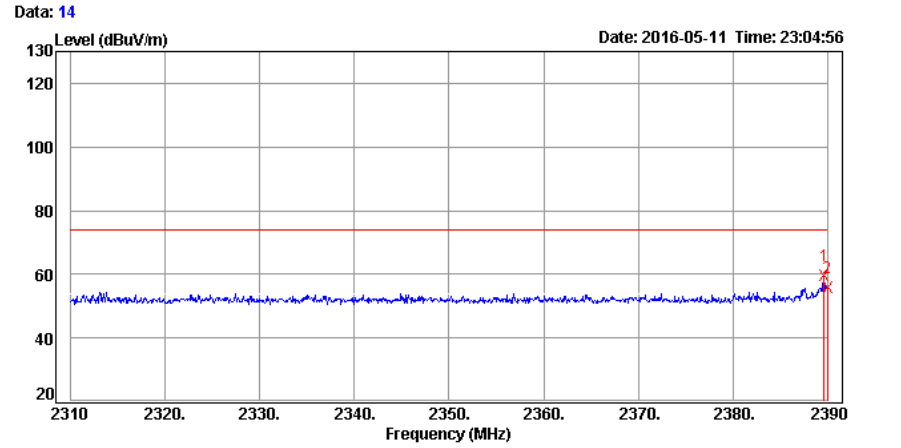


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	39.49	3.02	42.51	54.00	-11.49			Average
2493.05	43.91	3.04	46.95	54.00	-7.05			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11g Mode)

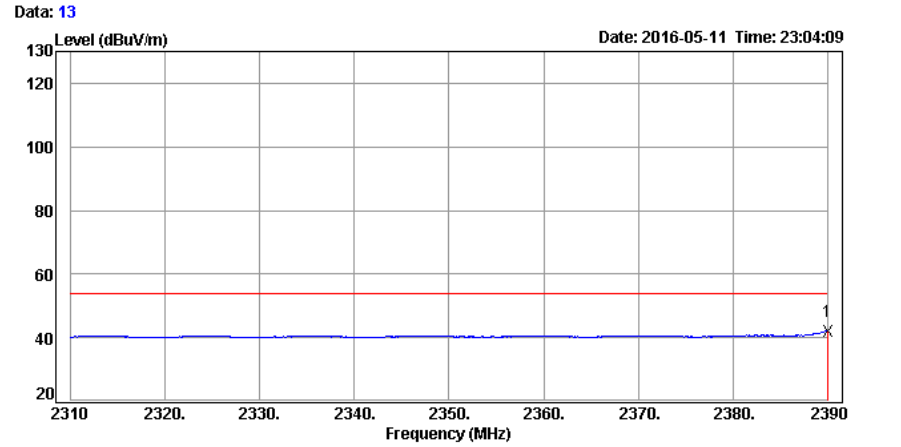


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.68	56.88	2.84	59.72	74.00	-14.28			Peak
2390.00	52.92	2.84	55.76	74.00	-18.24			Peak

Detector mode: Average **Polarity: Horizontal**

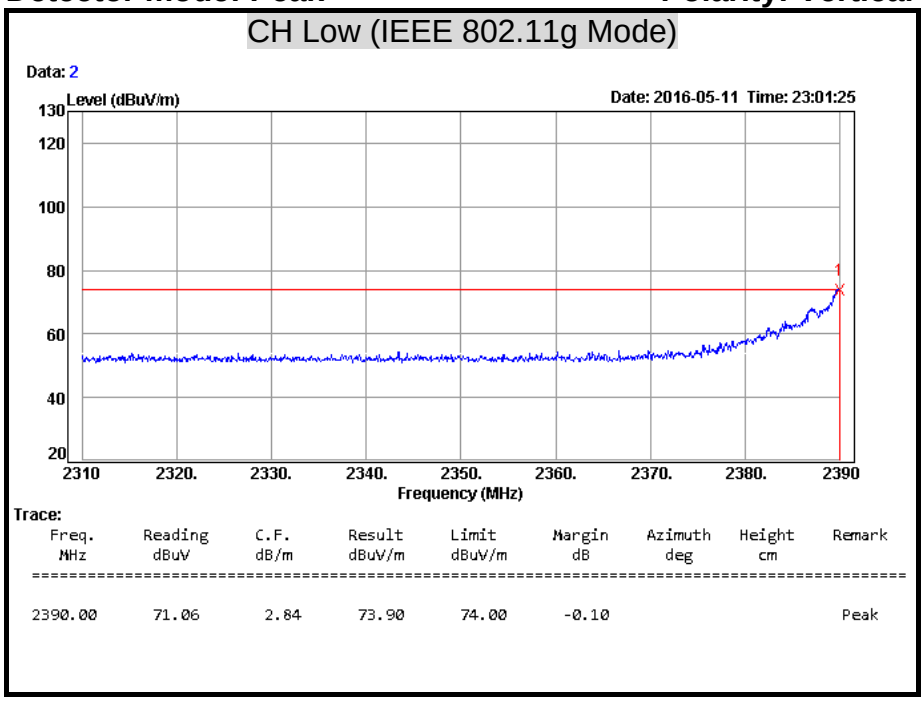
CH Low (IEEE 802.11g Mode)



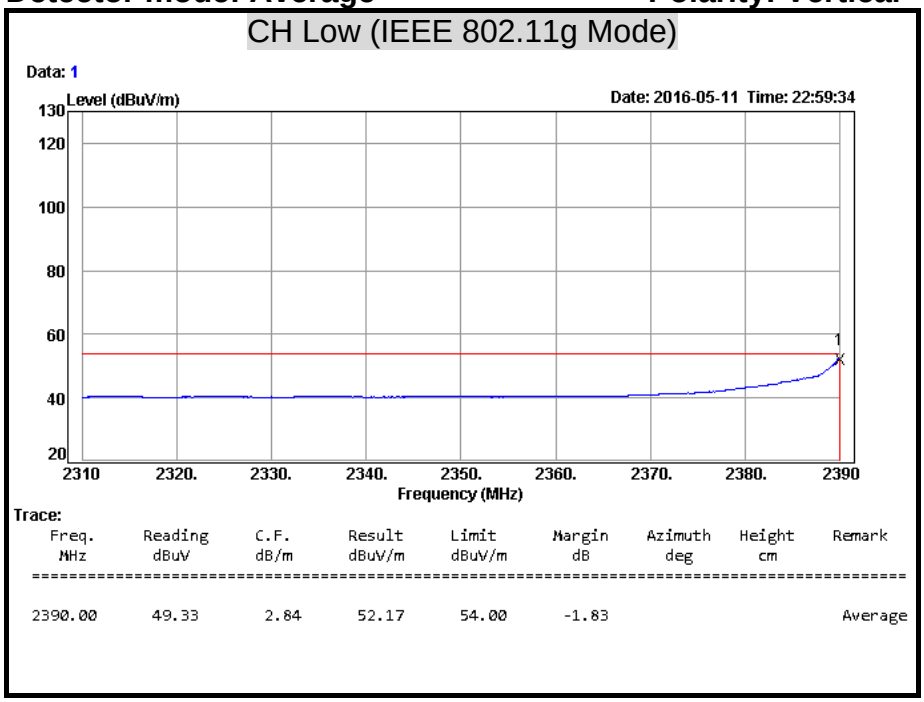
Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	39.21	2.84	42.05	54.00	-11.95			Average

Detector mode: Peak **Polarity: Vertical**

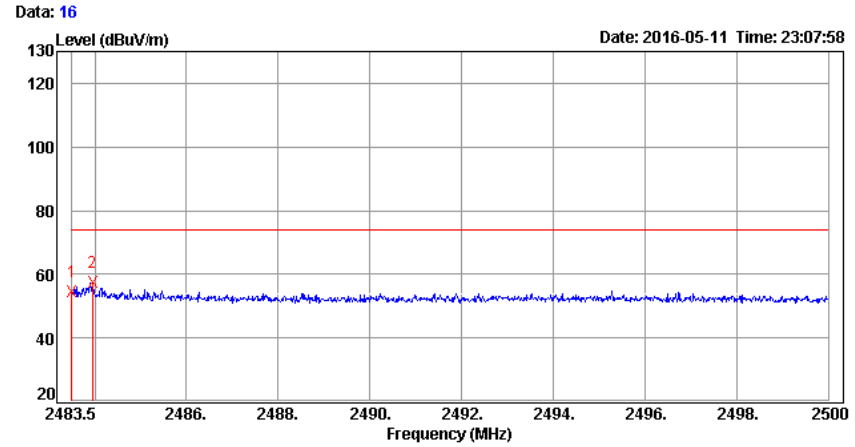


Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11g Mode)

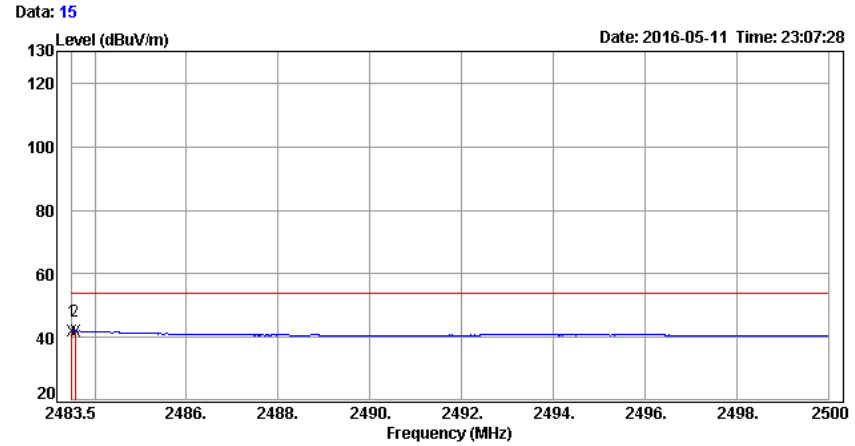


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	51.68	3.02	54.70	74.00	-19.30			Peak
2483.95	54.59	3.02	57.61	74.00	-16.39			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11g Mode)

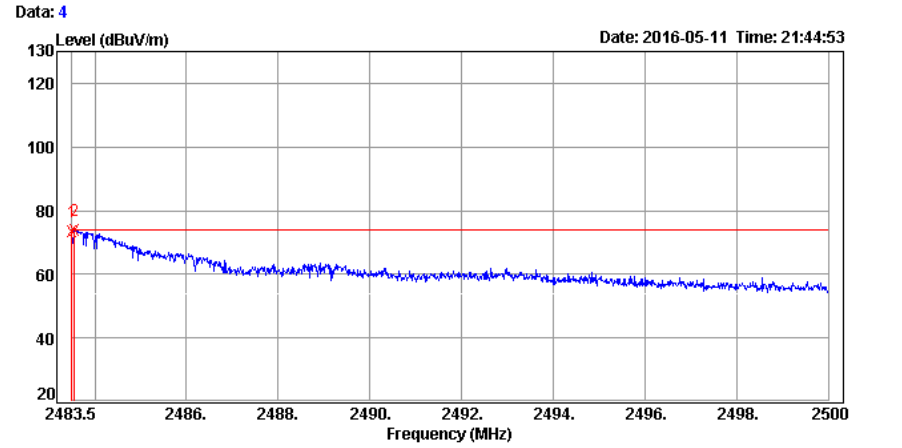


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	39.00	3.02	42.02	54.00	-11.98			Average
2483.57	39.04	3.02	42.06	54.00	-11.94			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11g Mode)

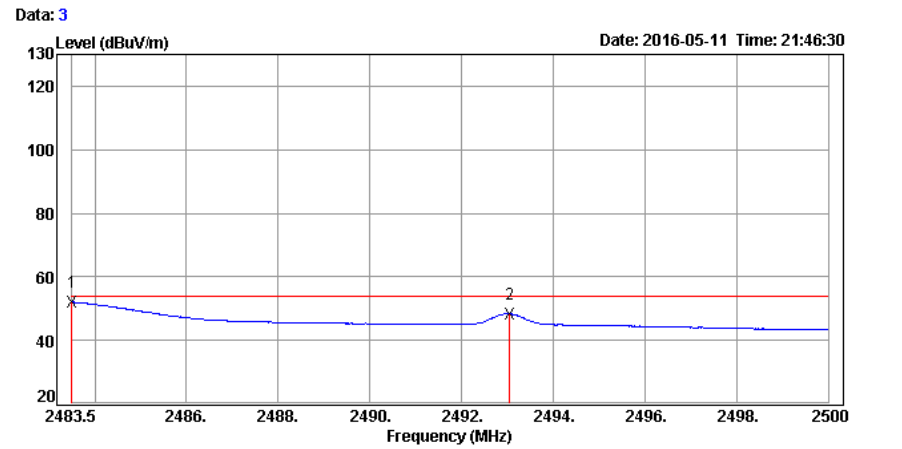


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	70.36	3.02	73.38	74.00	-0.62			Peak
2483.55	70.53	3.02	73.55	74.00	-0.45			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11g Mode)

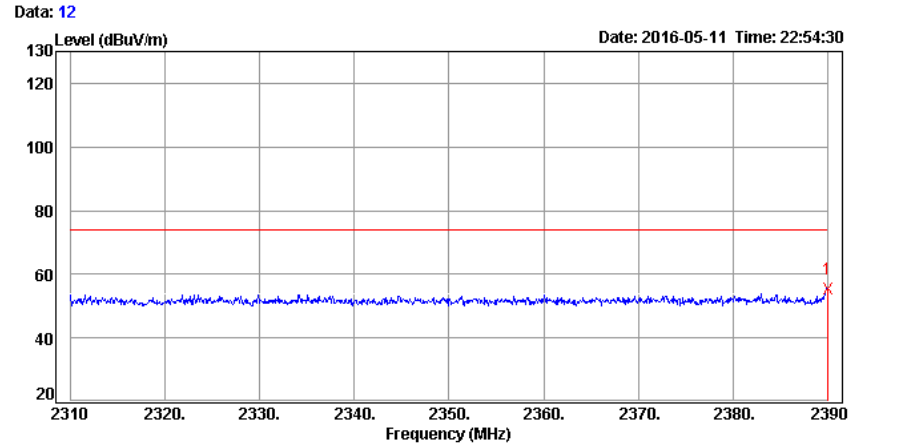


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	49.08	3.02	52.10	54.00	-1.90			Average
2493.05	45.37	3.04	48.41	54.00	-5.59			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11n HT20 MCS0 Mode)

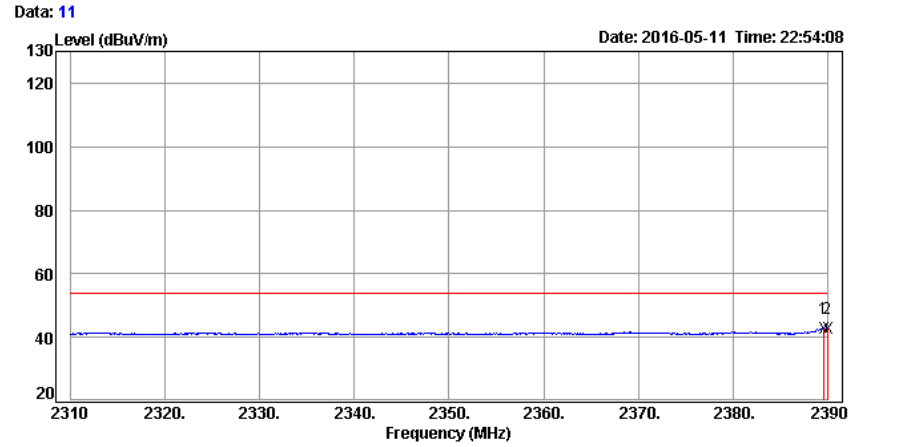


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	52.67	2.84	55.51	74.00	-18.49			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11n HT20 MCS0 Mode)

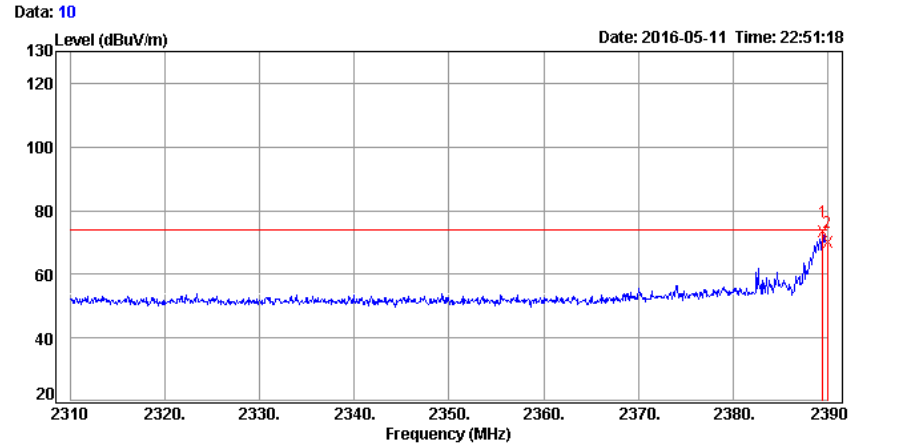


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.60	40.06	2.84	42.90	54.00	-11.10			Average
2390.00	39.98	2.84	42.82	54.00	-11.18			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11n HT20 MCS0 Mode)

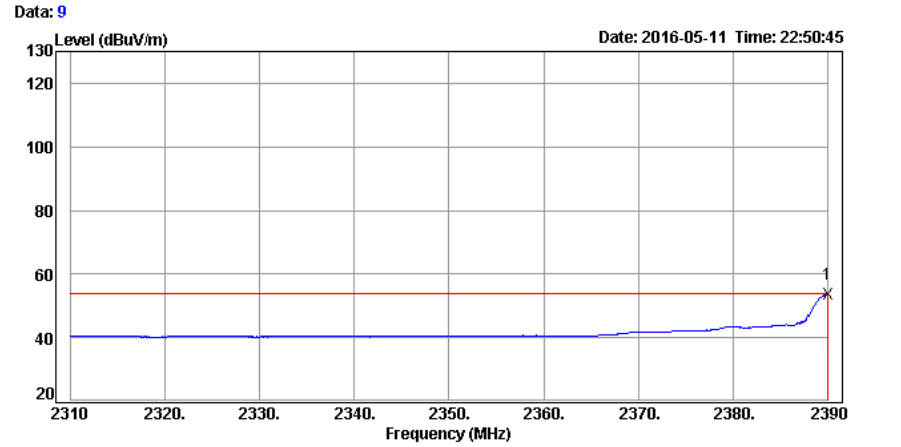


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.52	70.59	2.84	73.43	74.00	-0.57			Peak
2390.00	67.04	2.84	69.88	74.00	-4.12			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11n HT20 MCS0 Mode)

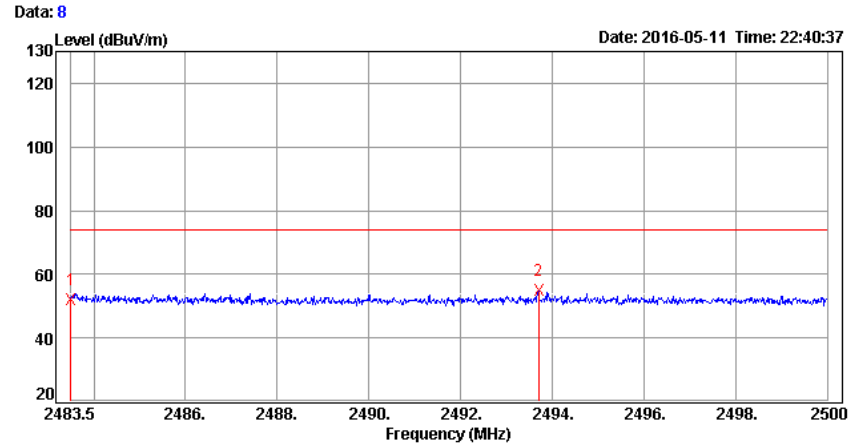


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	51.03	2.84	53.87	54.00	-0.13			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11n HT20 MCS0 Mode)

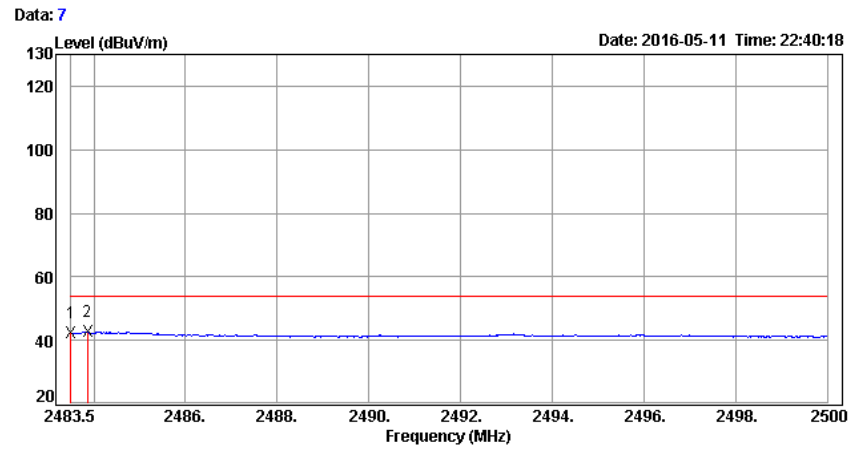


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	49.02	3.02	52.04	74.00	-21.96			Peak
2493.70	51.74	3.04	54.78	74.00	-19.22			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11n HT20 MCS0 Mode)

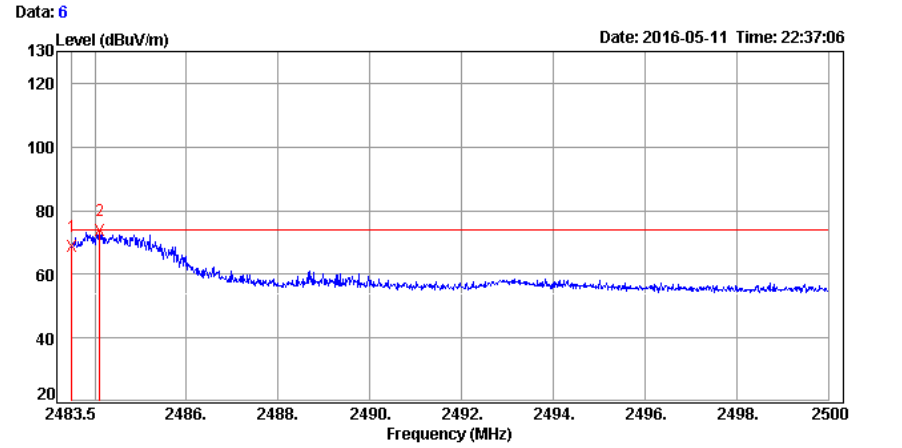


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	39.36	3.02	42.38	54.00	-11.62			Average
2483.86	39.62	3.02	42.64	54.00	-11.36			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11n HT20 MCS0 Mode)

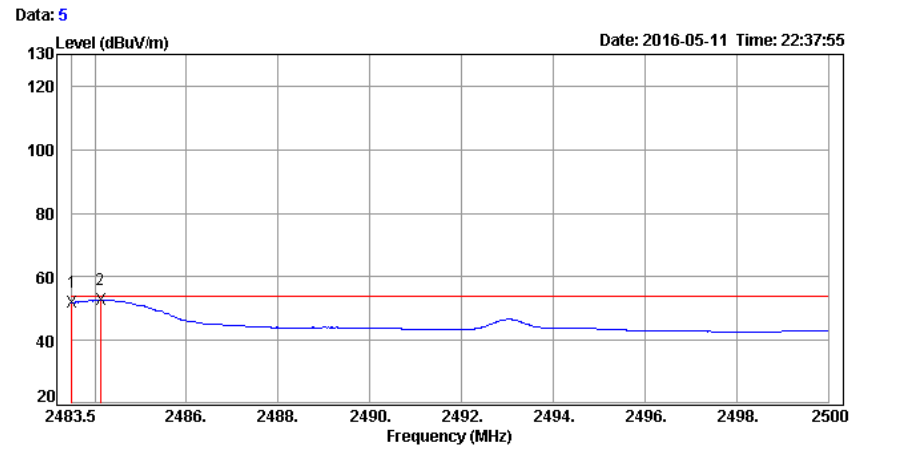


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	65.68	3.02	68.70	74.00	-5.30			Peak
2484.11	70.87	3.02	73.89	74.00	-0.11			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11n HT20 MCS0 Mode)

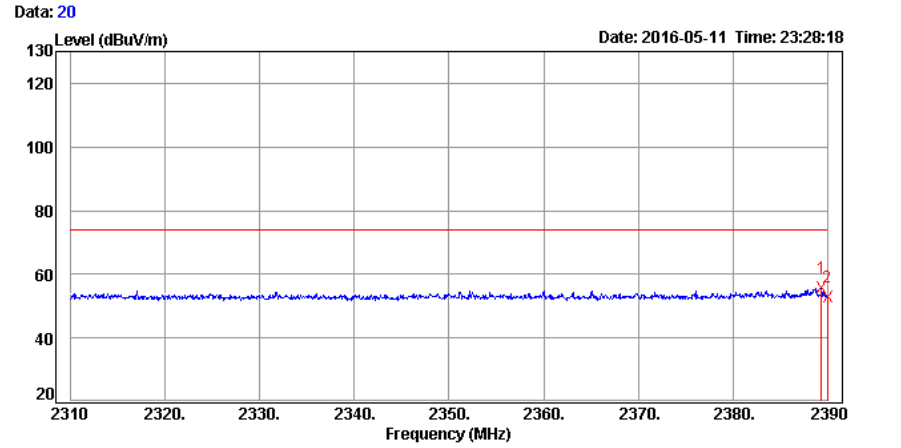


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	48.90	3.02	51.92	54.00	-2.08			Average
2484.13	49.67	3.02	52.69	54.00	-1.31			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11n HT40 MCS0 Mode)

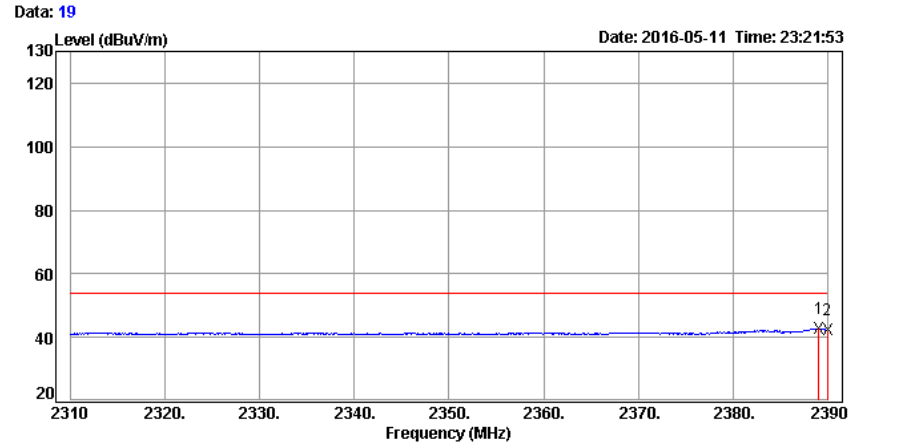


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.36	52.76	2.84	55.60	74.00	-18.40			Peak
2390.00	50.19	2.84	53.03	74.00	-20.97			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11n HT40 MCS0 Mode)

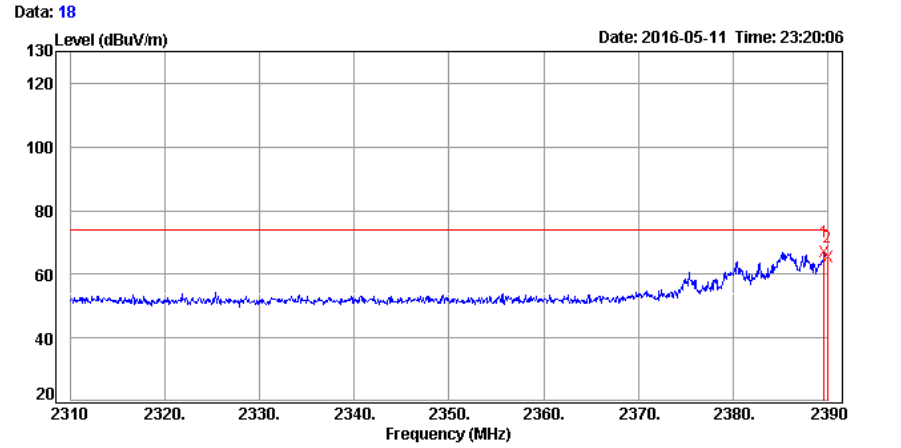


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.12	40.00	2.84	42.84	54.00	-11.16			Average
2390.00	39.37	2.84	42.21	54.00	-11.79			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11n HT40 MCS0 Mode)

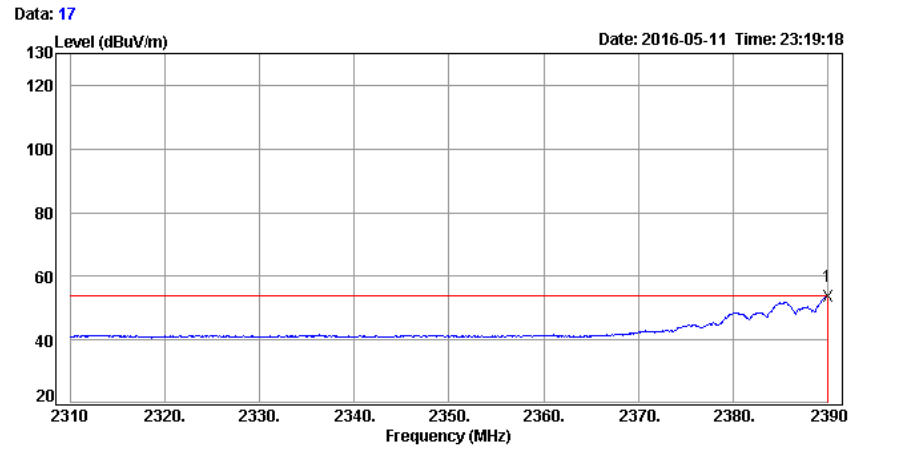


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.68	64.15	2.84	66.99	74.00	-7.01			Peak
2390.00	62.35	2.84	65.19	74.00	-8.81			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11n HT40 MCS0 Mode)

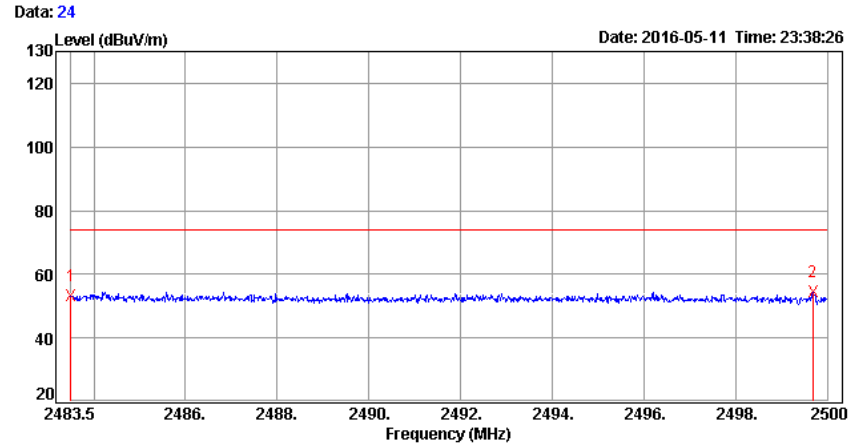


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	50.82	2.84	53.66	54.00	-0.34			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11n HT40 MCS0 Mode)

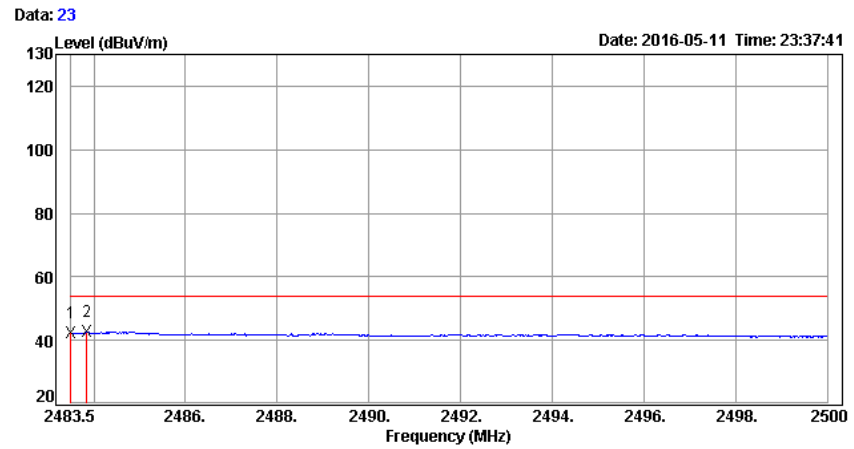


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	50.15	3.02	53.17	74.00	-20.83			Peak
2499.69	51.30	3.05	54.35	74.00	-19.65			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11n HT40 MCS0 Mode)

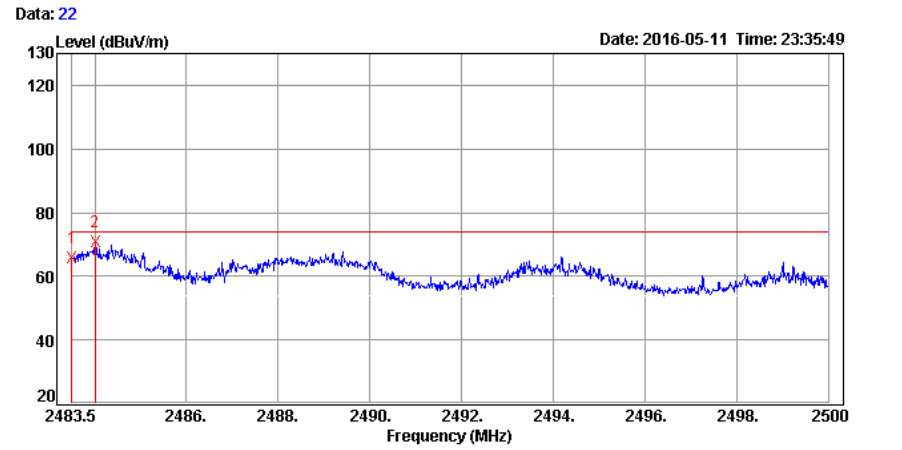


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	39.39	3.02	42.41	54.00	-11.59			Average
2483.85	39.57	3.02	42.59	54.00	-11.41			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11n HT40 MCS0 Mode)

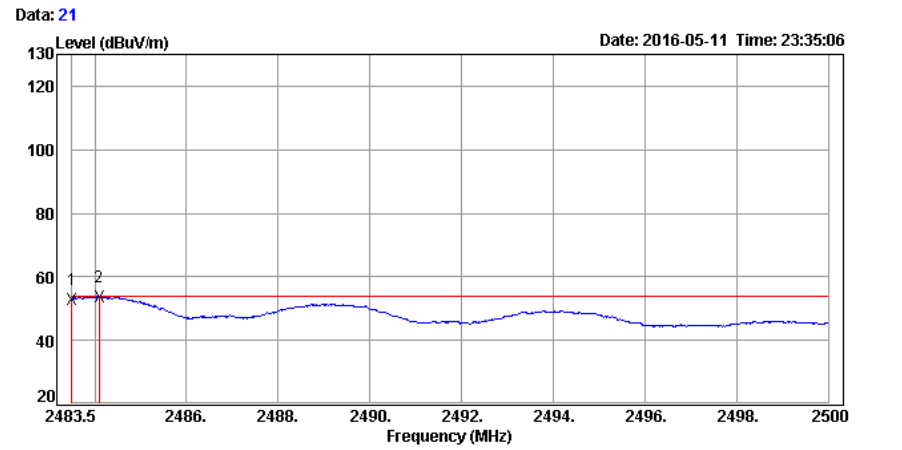


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	62.82	3.02	65.84	74.00	-8.16			Peak
2484.01	67.91	3.02	70.93	74.00	-3.07			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11n HT40 MCS0 Mode)



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	49.78	3.02	52.80	54.00	-1.20			Average
2484.09	50.80	3.02	53.82	54.00	-0.18			Average

7.7 CONDUCTED EMISSION

LIMITS

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

The lower limit applies at the boundary between the frequency ranges.

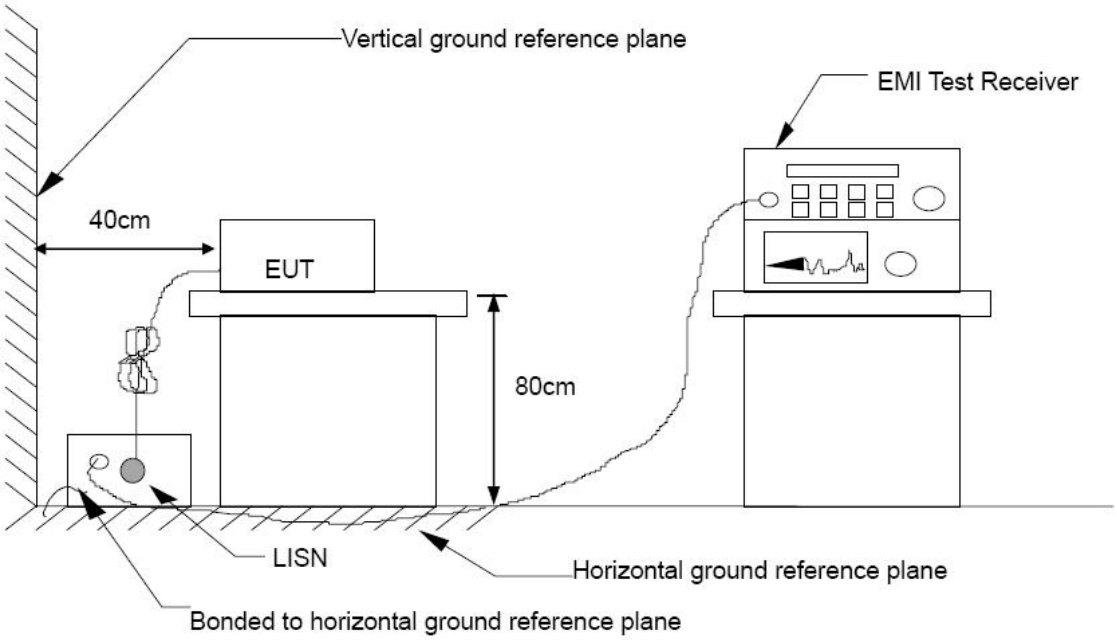
Frequency Range (MHz)	Conducted Limit (dBμv)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

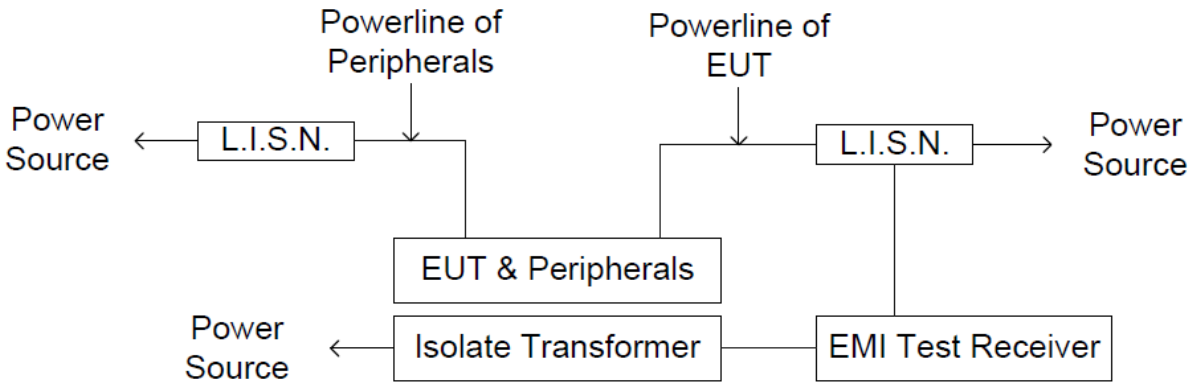
TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	Schwarzbeck	NSLK 8127	8127 465	08/05/2016
L.I.S.N	Schwarzbeck	NSLK 8127	8127 473	03/10/2017
EMI Test Receiver	Rohde & Schwarz	ESHS 30	838550/003	10/31/2016
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100111	06/28/2016
Test S/W	E3.815206a			

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

TEST SETUP





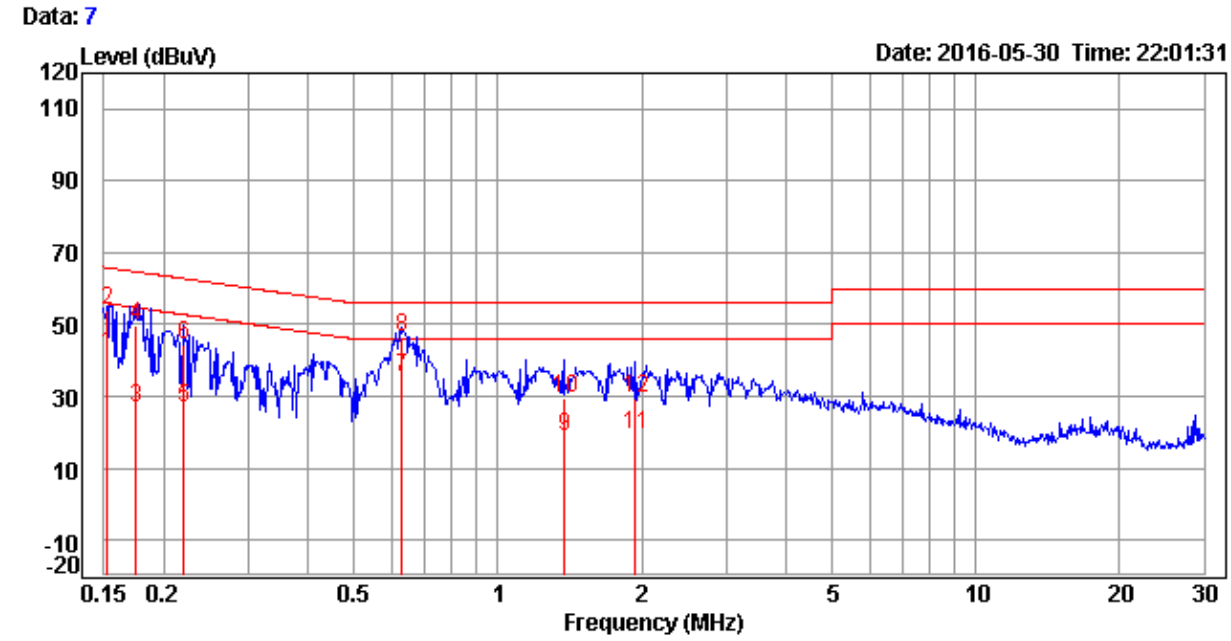
TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.10:2013.
The test procedure is performed in a 4m × 3m × 2.4m (L×W×H) shielded room.
The EUT along with its peripherals were placed on a 1.0m (W) × 1.5m (L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

TEST RESULTS

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Audi Chang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/30
Test Mode	Mode 1	Temp. & Humidity	25°C, 60%

LINE



Trace:

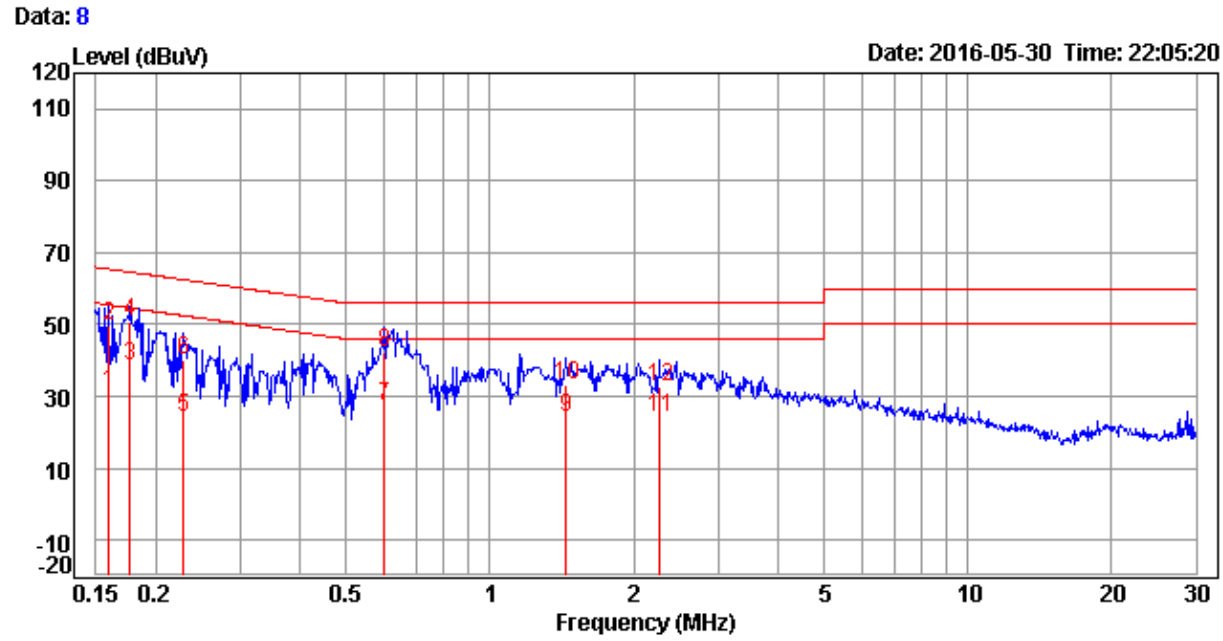
Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.152	44.21	31.71	10.04	54.25	41.75	65.87	55.87	-11.62	-14.12
0.174	39.70	16.58	10.04	49.74	26.62	64.77	54.77	-15.03	-28.15
0.220	34.44	16.97	10.04	44.48	27.01	62.83	52.83	-18.35	-25.82
0.627	36.51	25.51	10.07	46.58	35.58	56.00	46.00	-9.42	-10.42
1.374	19.31	8.70	10.10	29.41	18.80	56.00	46.00	-26.59	-27.20
1.928	19.25	9.49	10.13	29.38	19.62	56.00	46.00	-26.62	-26.38

Remark:

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

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Audi Chang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/30
Test Mode	Mode 1	Temp. & Humidity	25°C, 60%

NEUTRAL



Trace:

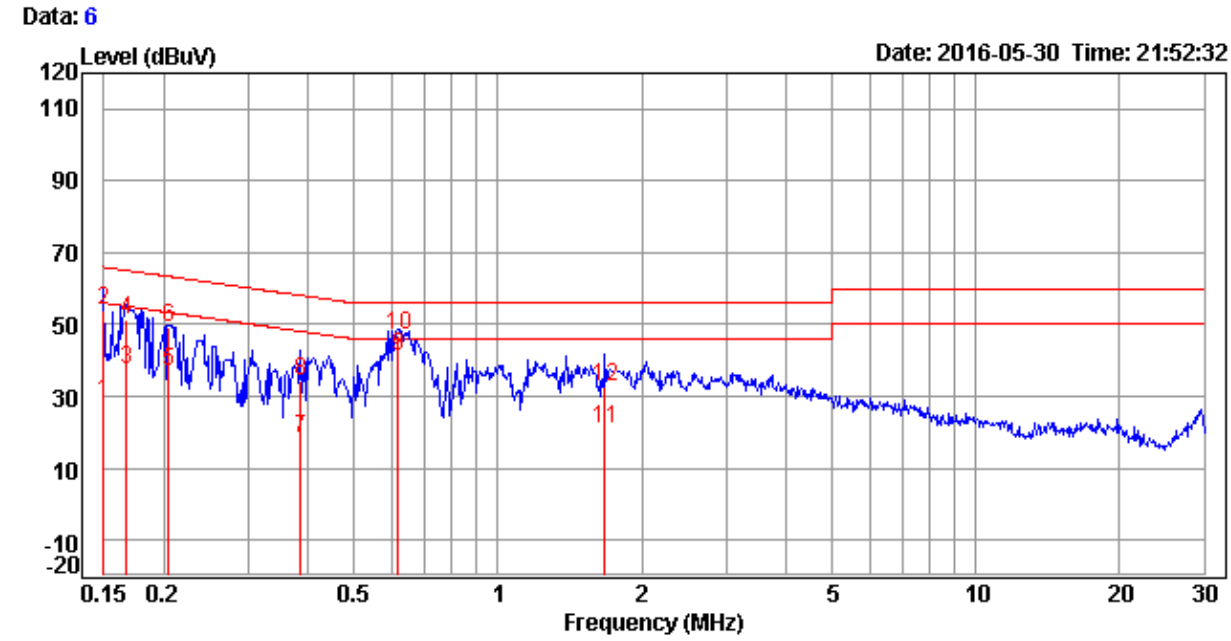
Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.159	39.92	21.01	10.04	49.96	31.05	65.52	55.52	-15.56	-24.47
0.177	40.62	28.41	10.05	50.67	38.46	64.64	54.64	-13.97	-16.18
0.229	30.22	14.15	10.07	40.29	24.22	62.48	52.48	-22.19	-28.26
0.601	32.36	17.13	10.06	42.42	27.19	56.00	46.00	-13.58	-18.81
1.441	23.14	14.00	10.10	33.24	24.10	56.00	46.00	-22.76	-21.90
2.261	22.71	13.79	10.13	32.84	23.92	56.00	46.00	-23.16	-22.08

Remark:

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

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Audi Chang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/30
Test Mode	Mode 2	Temp. & Humidity	25°C, 60%

LINE



Trace:

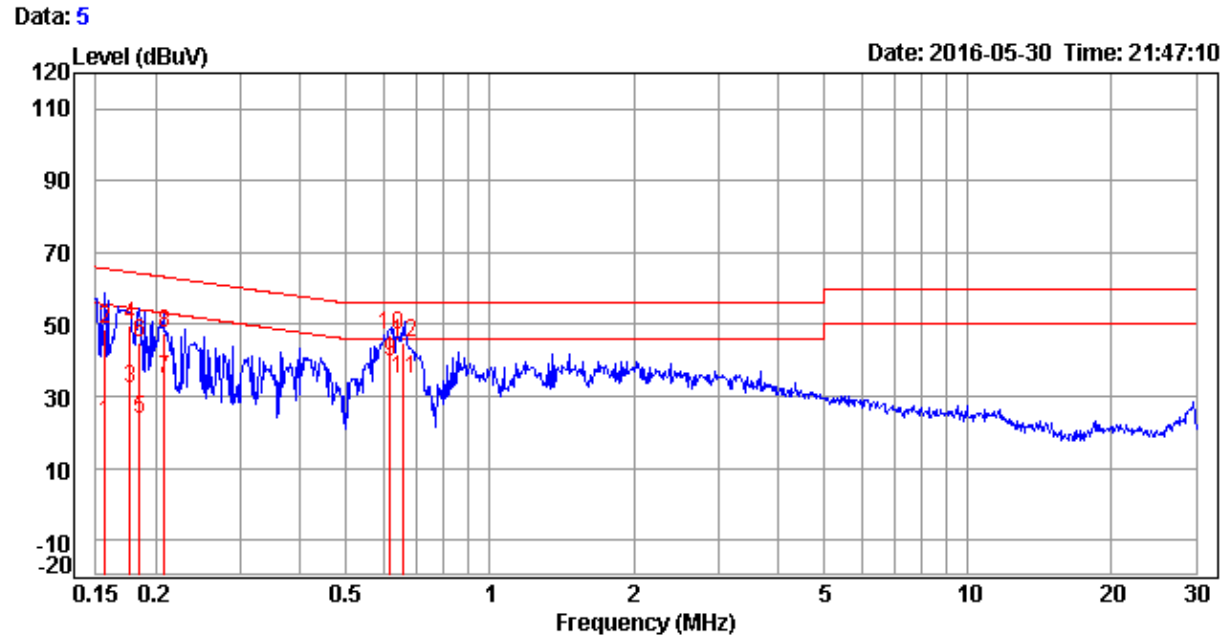
Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.150	43.87	18.21	10.04	53.91	28.25	66.00	56.00	-12.09	-27.75
0.167	41.55	27.28	10.04	51.59	37.32	65.12	55.12	-13.53	-17.80
0.205	38.94	27.03	10.04	48.98	37.07	63.40	53.40	-14.42	-16.33
0.387	24.02	8.27	10.07	34.09	18.34	58.12	48.12	-24.03	-29.78
0.617	37.13	30.94	10.07	47.20	41.01	56.00	46.00	-8.80	-4.99
1.671	22.76	11.08	10.12	32.88	21.20	56.00	46.00	-23.12	-24.80

Remark:

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

Product Name	Dual-lines VDSL2/ADSL2+ Wireless-N 600Mbps 3G/4G LTE VPN Firewall Router	Test By	Audi Chang
Test Model	BiPAC 8920NX-600	Test Date	2016/05/30
Test Mode	Mode 2	Temp. & Humidity	25°C, 60%

NEUTRAL



Trace:

Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.156	38.42	12.47	10.04	48.46	22.51	65.65	55.65	-17.19	-33.14
0.176	39.58	21.96	10.05	49.63	32.01	64.67	54.67	-15.04	-22.66
0.184	34.97	13.54	10.06	45.03	23.60	64.28	54.28	-19.25	-30.68
0.207	37.57	24.84	10.07	47.64	34.91	63.32	53.32	-15.68	-18.41
0.615	37.09	29.35	10.06	47.15	39.41	56.00	46.00	-8.85	-6.59
0.661	35.09	24.72	10.07	45.16	34.79	56.00	46.00	-10.84	-11.21

Remark:

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