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

For

300Mbps Wireless N VDSL2+ Modem Router

Model: DL4323U

Trade Name: netis

Issued for

NETIS SYSTEMS CO., LTD

4F & 5F, R&D Building, Oriental Cyberport, High-Tech Industrial Park, Nanshan, Shenzhen, China

Issued by

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Issued Date: October 28, 2015

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	10/28/2015	Initial Issue	All Page 108	Gloria Chang

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1. TEST REPORT CERTIFICATION

Applicant	:	NETIS SYSTEMS CO., LTD
Address	:	4F & 5F, R&D Building, Oriental Cyberport, High-Tech Industrial Park, Nanshan, Shenzhen, China
Equipment Under Test	:	300Mbps Wireless N VDSL2+ Modem Router
Model	:	DL4323U
Trade Name	:	netis
Tested Date	:	September 25 ~ October 28, 2015

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:

Jacky Chen
Section Manager

Reviewed by:

Sb. Lu
Sr. Engineer

2. EUT DESCRIPTION

Product Name	300Mbps Wireless N VDSL2+ Modem Router
Model Number	DL4323U
Identify Number	T150925D02
Received Date	September 25, 2015
Frequency Range	IEEE 802.11b/g, 802.11gn HT20: 2412MHz ~ 2462MHz IEEE 802.11gn HT40: 2422MHz ~ 2452MHz
Transmit Power	IEEE 802.11b mode: 19.59 dBm (0.0910 W) IEEE 802.11g mode: 25.66 dBm (0.3681 W) IEEE 802.11gn HT20 mode: 26.83 dBm (0.4819 W) IEEE 802.11gn HT40 mode: 25.06 dBm (0.3206 W)
Channel Spacing	5MHz
Channel Number	IEEE 802.11b/g, 802.11gn HT20: 11 Channels IEEE 802.11gn HT40: 7 Channels
Transmit Data Rate	IEEE 802.11b mode: up to 11 Mbps IEEE 802.11g mode: up to 54 Mbps IEEE 802.11gn HT20 mode (800ns GI): up to 130.00 Mbps IEEE 802.11gn HT20 mode (400ns GI): up to 144.40 Mbps IEEE 802.11gn HT40 mode (800ns GI): up to 270.00 Mbps IEEE 802.11gn HT40 mode (400ns GI): up to 300.00 Mbps
Type of Modulation	IEEE 802.11b mode: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g mode: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11gn HT20/40 mode: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	Dipole Antenna × 2(Fixed) : Antenna 1 / Chain 1, Antenna Gain : 5.26dBi Antenna 2 / Chain 2, Antenna Gain : 5.26dBi Dipole Antenna × 2(Detachable) : Antenna 1 / Chain 1, Antenna Gain : 5.19dBi Antenna 2 / Chain 2, Antenna Gain : 5.19dBi
Power Rating	12Vdc
Test Voltage	120Vac, 60Hz
DC Power Cable Type	Non-shielded cable, 1.2 m × 1 (Non-detachable)
I/O Port	RJ-45 Port × 4, RJ-11 Port × 1, USB Port × 1, Power Port × 1

Power Adapter:

No.	Manufacturer	Model No.	Power Input	Power Output
1	DongGuan tenpao Power co. LTD	NT120050UL	100-240Vac, 0.2A, 50/60Hz	12Vdc, 500mA

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: T58DL4323UR filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*

3. DESCRIPTION OF TEST MODES

The EUT is a 802.11b/g/n transceiver in 300Mbps Wireless N VDSL2+ Modem Router.
For IEEE 802.11b/g mode (1TX / 1RX) : Ant. 1 / Chain 1 transmit/receive.
For IEEE 802.11gn HT20/HT40 mode (2TX / 2RX) :
Ant. 1 / Chain 1 & Ant. 2 / Chain 2 transmit/receive.

The EUT comes with two types for sales, the detail information please refer the table as below :

No.	Antenna Type	Model (P/N)	Gain (dBi)	Test Item	
				Spurious	Conducted
1	Dipole Antenna × 2 (Fixed)	RF21C00364A	5.26	V	V
2	Dipole Antenna × 2 (Detachable)	RF21S00002A	5.19		

Conducted Emission / Radiated Emission Test (Below 1 GHz)

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

No.	Pre-Test mode
1	TX mode

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

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

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

Conducted / Radiated Emission Test (Above 1 GHz)

IEEE 802.11b/g, 802.11gn HT20 mode:

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing.
IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing.
IEEE 802.11gn HT20 mode: 6.5Mbps data rate (worst case) was chosen for full testing.

IEEE 802.11gn 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 802.11gn HT40 mode: 13.5Mbps data rate (worst case) was chosen for full testing.

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

4. TEST METHODOLOGY

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

5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

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

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

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

5.2 ACCREDITATIONS

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

Taiwan	TAF

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

Canada	INDUSTRY CANADA
Japan	VCCI
Taiwan	BSMI
USA	FCC MRA

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

Remark: *FCC Designation Number TW1027.*

5.3 MEASUREMENT UNCERTAINTY

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

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

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

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

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

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.
1	Notebook PC	HP	ProBook 4421s	CNF03242PJ

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

SETUP DIAGRAM FOR TESTS

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

EUT OPERATING CONDITION

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. TX mode:
   - ⇨ **TX Data Rate:** 1Mbps Bandwidth 20 (IEEE 802.11b mode)
     6Mbps Bandwidth 20 (IEEE 802.11g mode)
     6.5Mbps Bandwidth 20 (IEEE 802.11gn HT20 mode)
     13.5Mbps Bandwidth 40 (IEEE 802.11gn HT40 mode)
   - ⇨ **Power control**
     IEEE 802.11b Channel Low (2412MHz) Chain 1 Power set 41
     IEEE 802.11b Channel Mid (2437MHz) Chain 1 Power set 42
     IEEE 802.11b Channel High (2462MHz) Chain 1 Power set 45
     IEEE 802.11g Channel Low (2412MHz) Chain 1 Power set 46
     IEEE 802.11g Channel Mid (2437MHz) Chain 1 Power set 47
     IEEE 802.11g Channel High (2462MHz) Chain 1 Power set 47
     IEEE 802.11gn HT20 Channel Low (2412MHz) Chain 1/2 Power set 43/43
     IEEE 802.11gn HT20 Channel Mid (2437MHz) Chain 1/2 Power set 43/43
     IEEE 802.11gn HT20 Channel High (2462MHz) Chain 1/2 Power set 43/43
     IEEE 802.11gn HT40 Channel Low (2422MHz) Chain 1/2 Power set 41/41
     IEEE 802.11gn HT40 Channel Mid (2437MHz) Chain 1/2 Power set 41/41
     IEEE 802.11gn HT40 Channel High (2452MHz) Chain 1/2 Power set 41/41
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	03/19/2016

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

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
		Chain 1		
Low	2412	9.5880	500	PASS
Middle	2437	9.5490	500	PASS
High	2462	10.0400	500	PASS

IEEE 802.11gmode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
		Chain 1		
Low	2412	16.3500	500	PASS
Middle	2437	16.3200	500	PASS
High	2462	16.3600	500	PASS

IEEE 802.11gn HT20 mode (2TX)

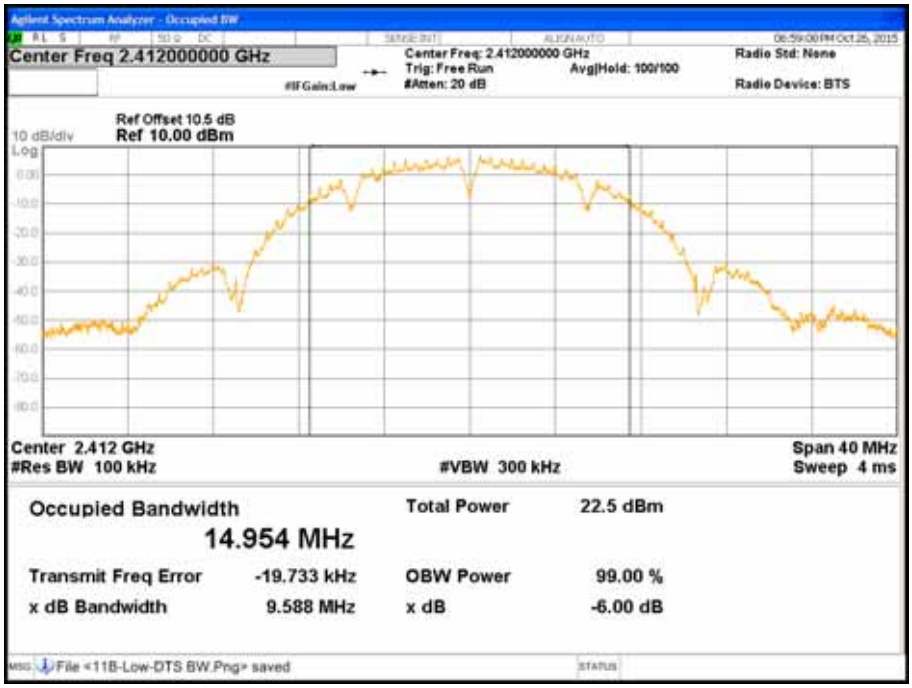
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 1	Chain 2		
Low	2412	17.5600	17.6600	500	PASS
Middle	2437	17.5700	17.5800	500	PASS
High	2462	17.6100	17.5800	500	PASS

IEEE 802.11gn HT40 mode (2TX)

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 1	Chain 2		
Low	2422	35.2700	35.6800	500	PASS
Middle	2437	35.1100	35.7900	500	PASS
High	2452	35.4300	35.5400	500	PASS

6dB BANDWIDTH

CH Low (IEEE 802.11b mode / Chain 1)



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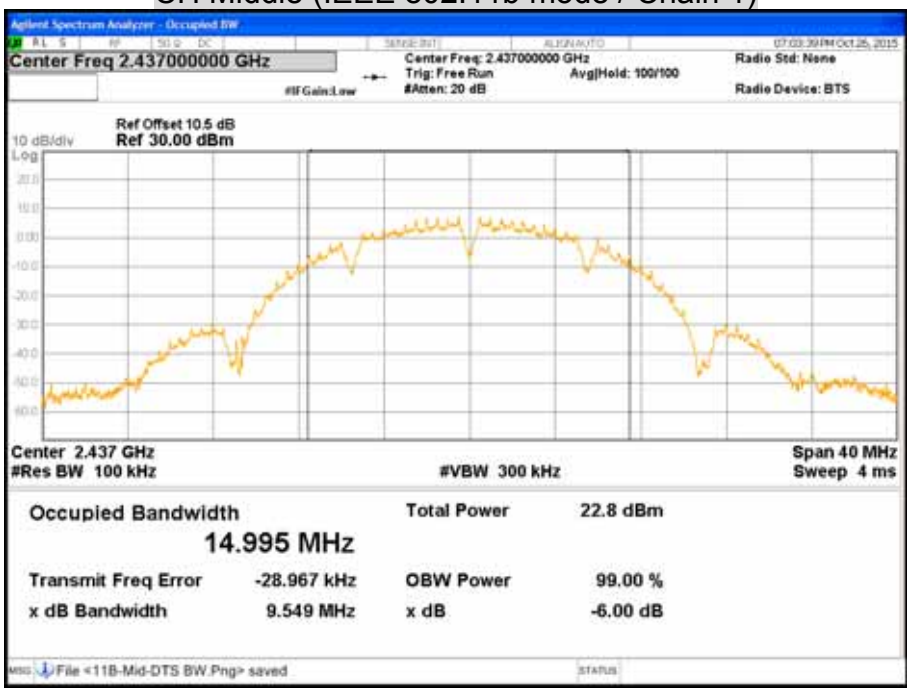

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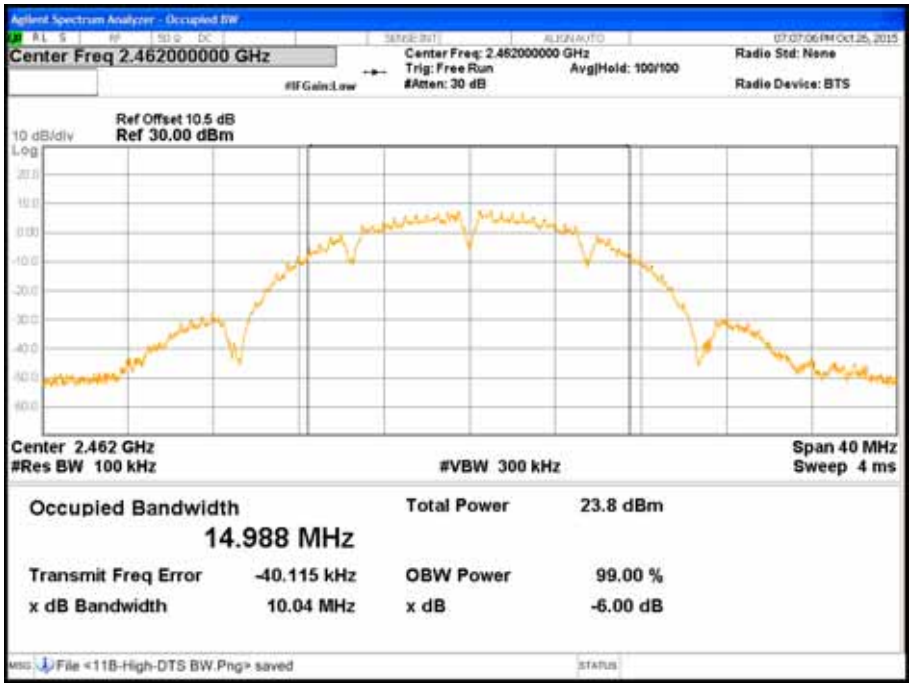

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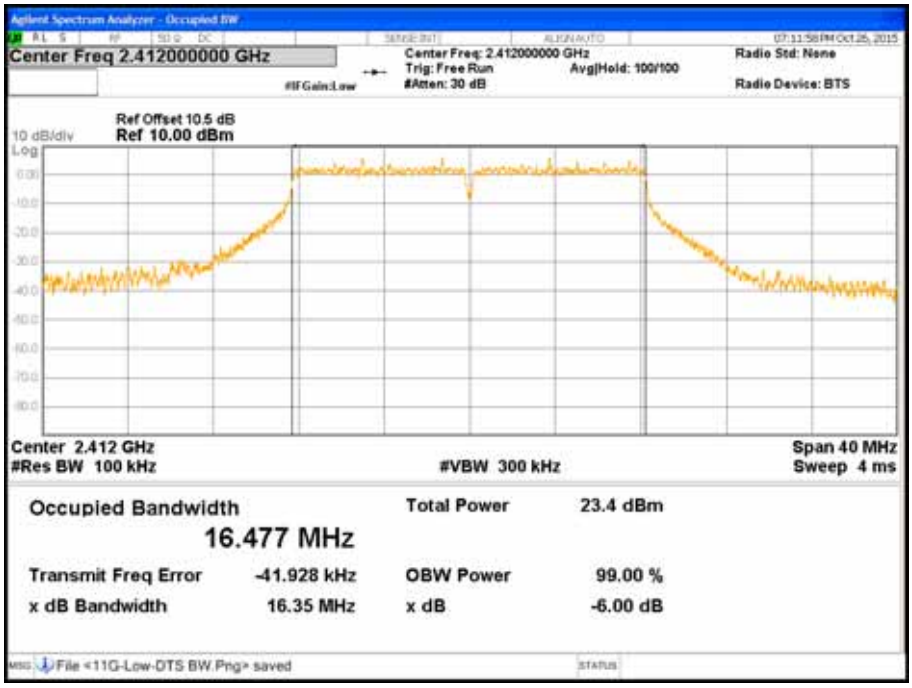
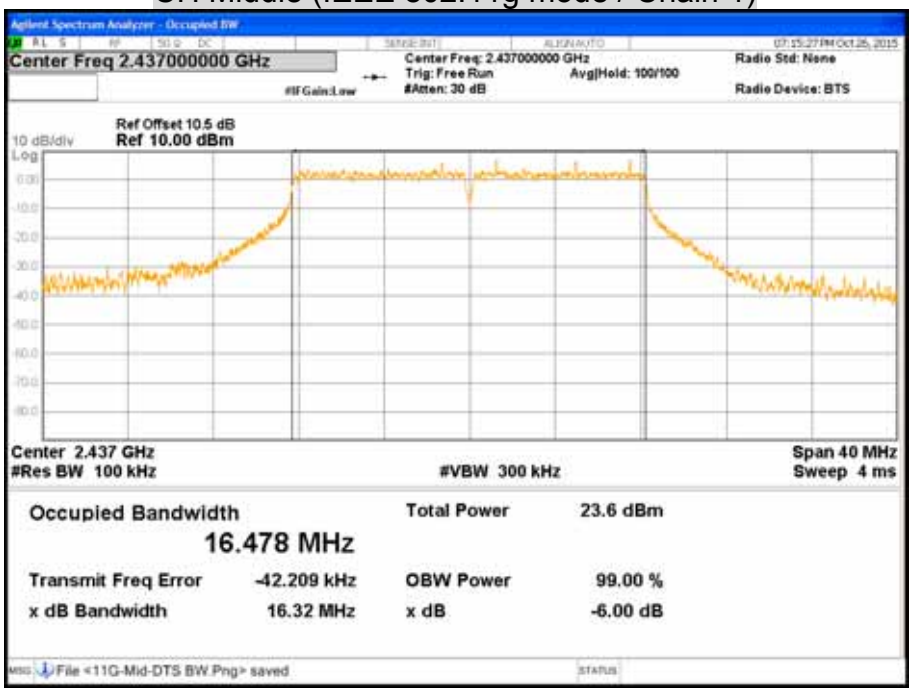


CH Middle (IEEE 802.11g mode / Chain 1)



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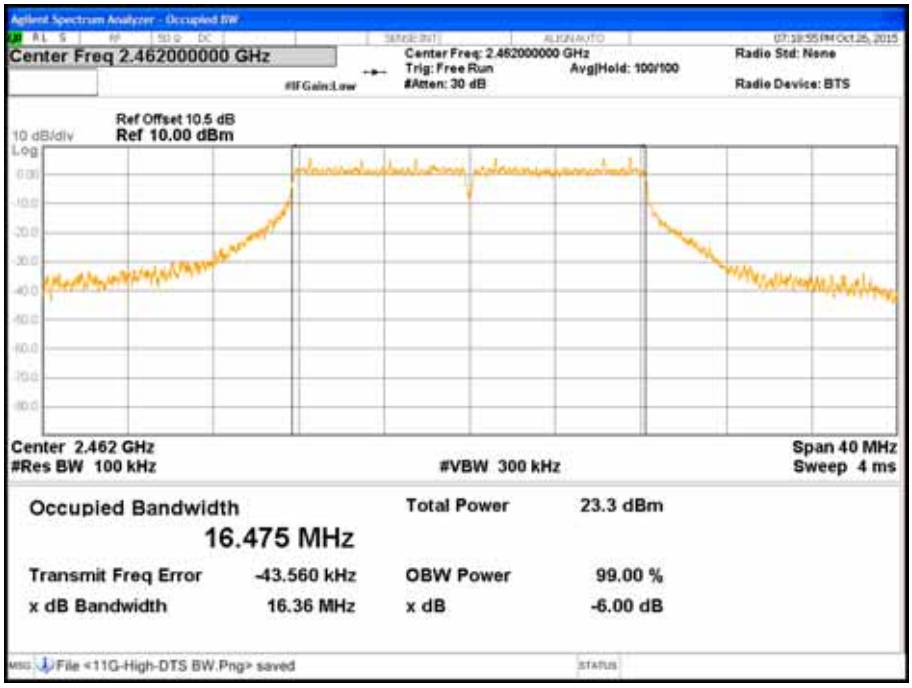
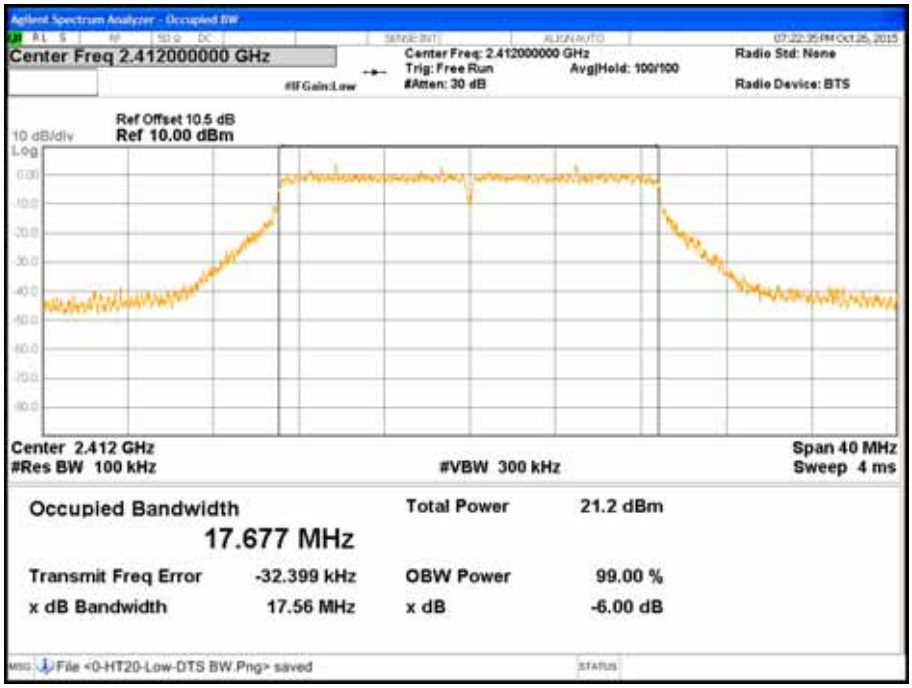


CH Low (IEEE 802.11gn HT20 mode / Chain 1)



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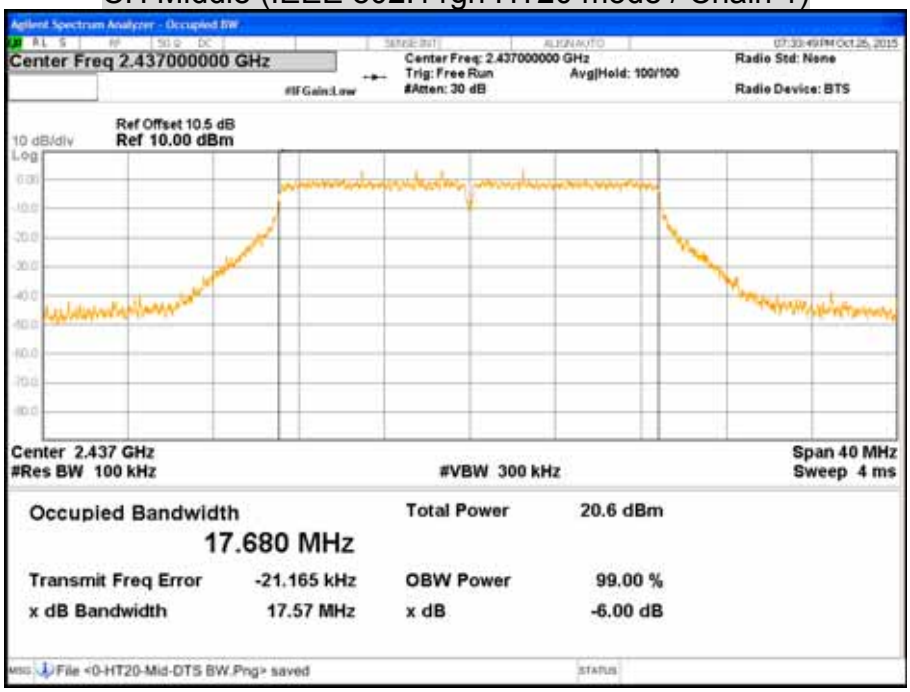

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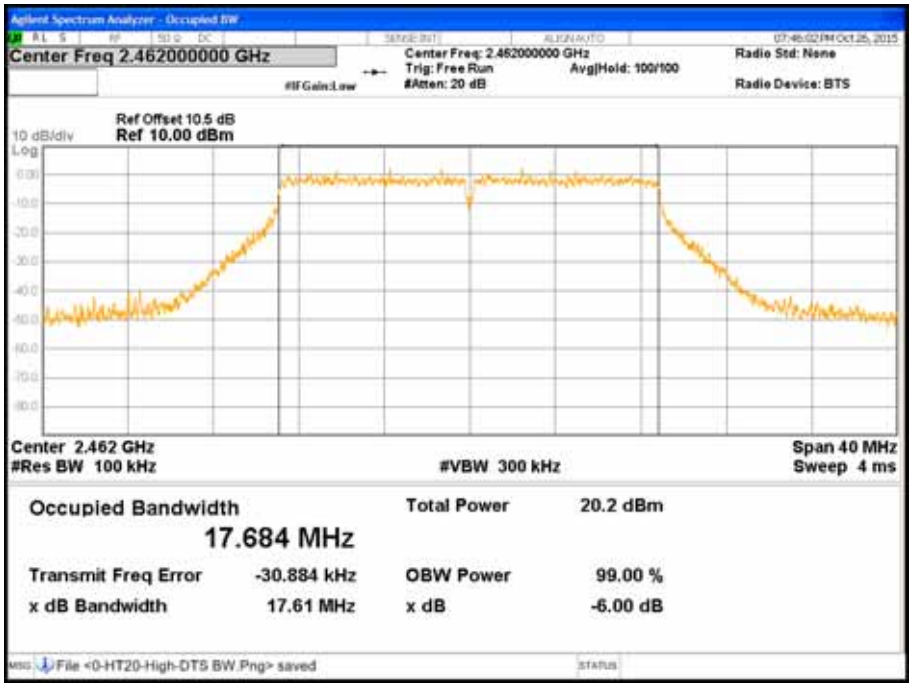
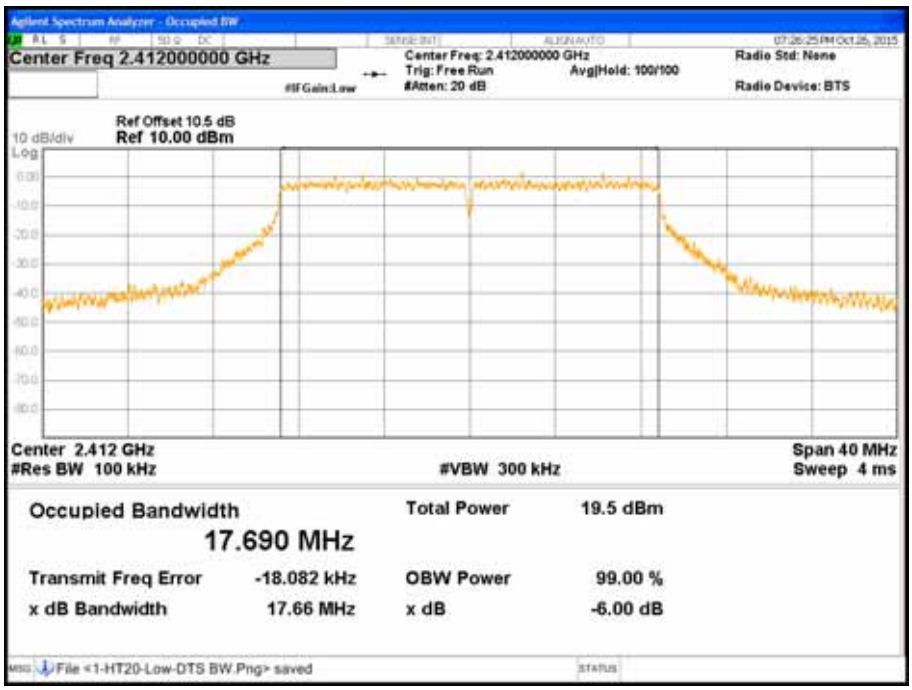
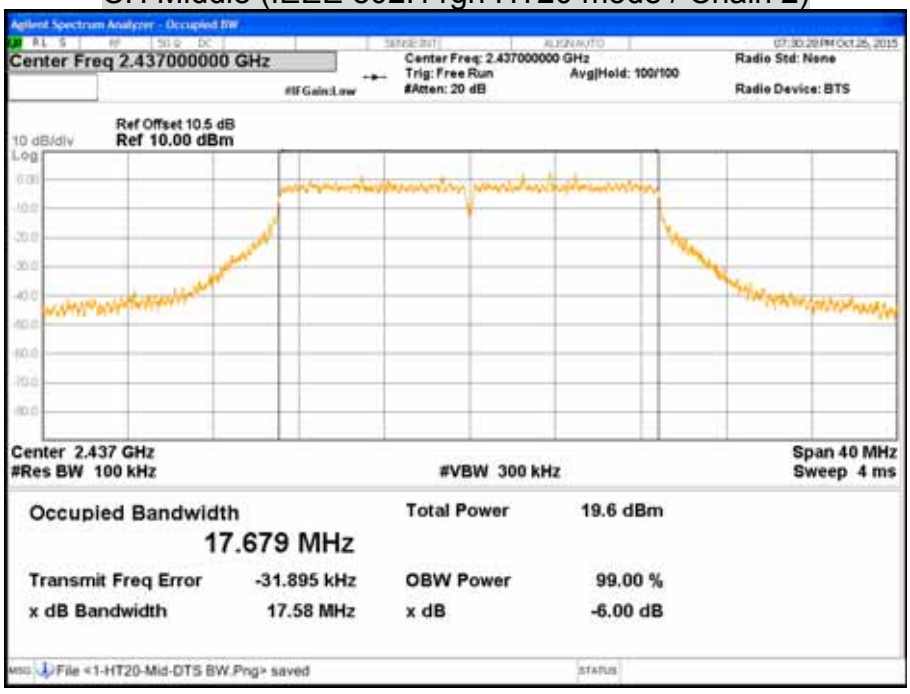


CH Low (IEEE 802.11gn HT20 mode / Chain 2)



CH Middle (IEEE 802.11gn HT20 mode / Chain 2)



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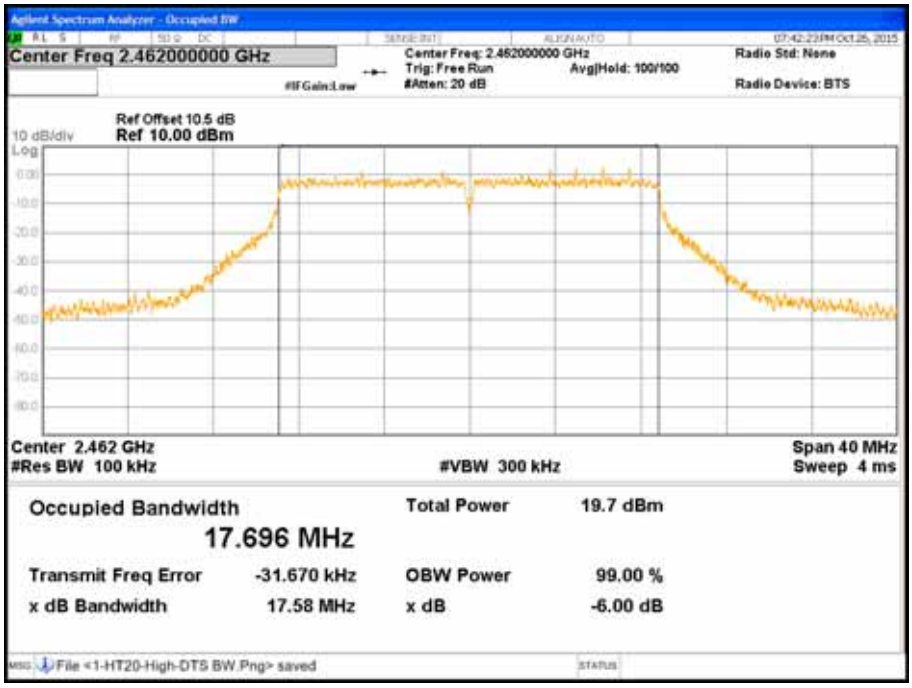
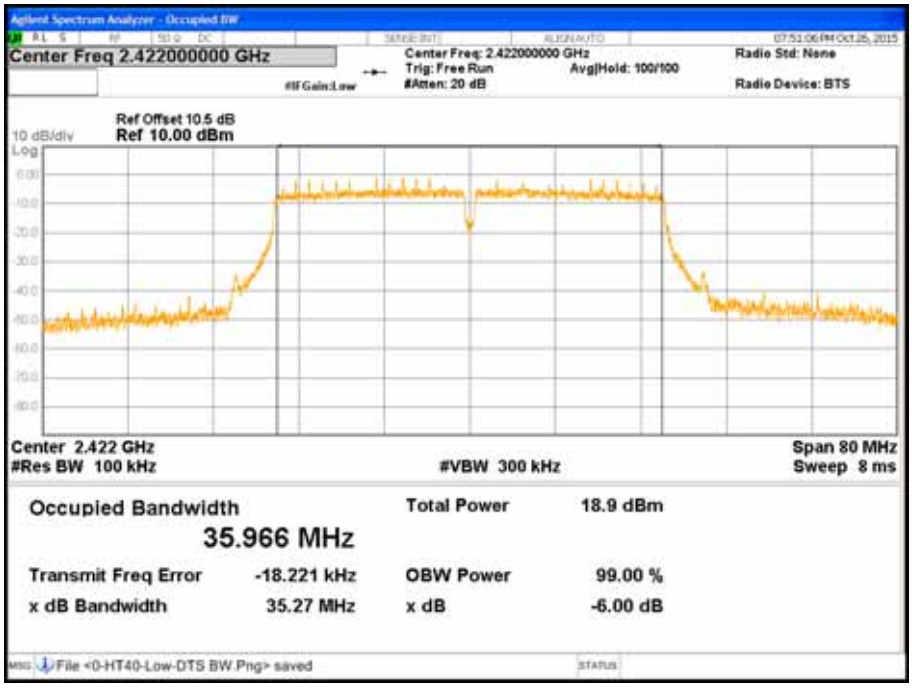
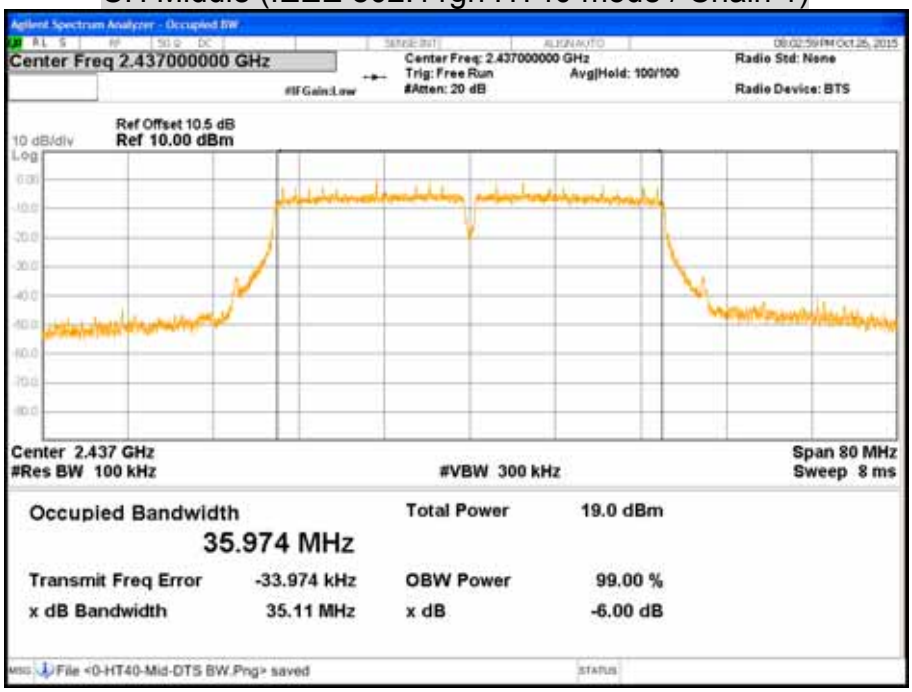


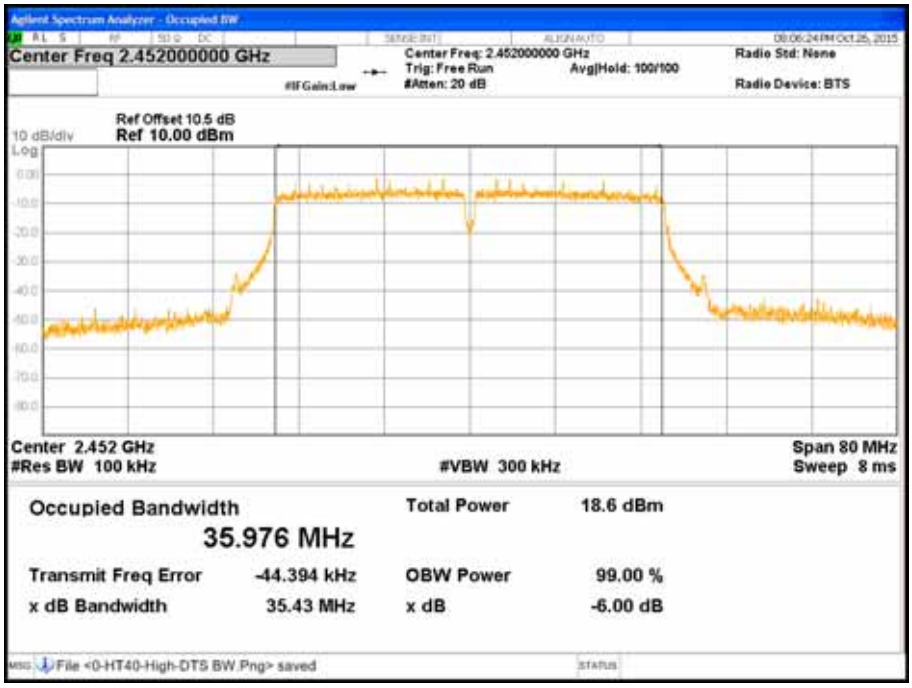
CH Low (IEEE 802.11gn HT40 mode / Chain 1)



CH Middle (IEEE 802.11gn HT40 mode / Chain 1)



CH High (IEEE 802.11gn HT40 mode / Chain 1)



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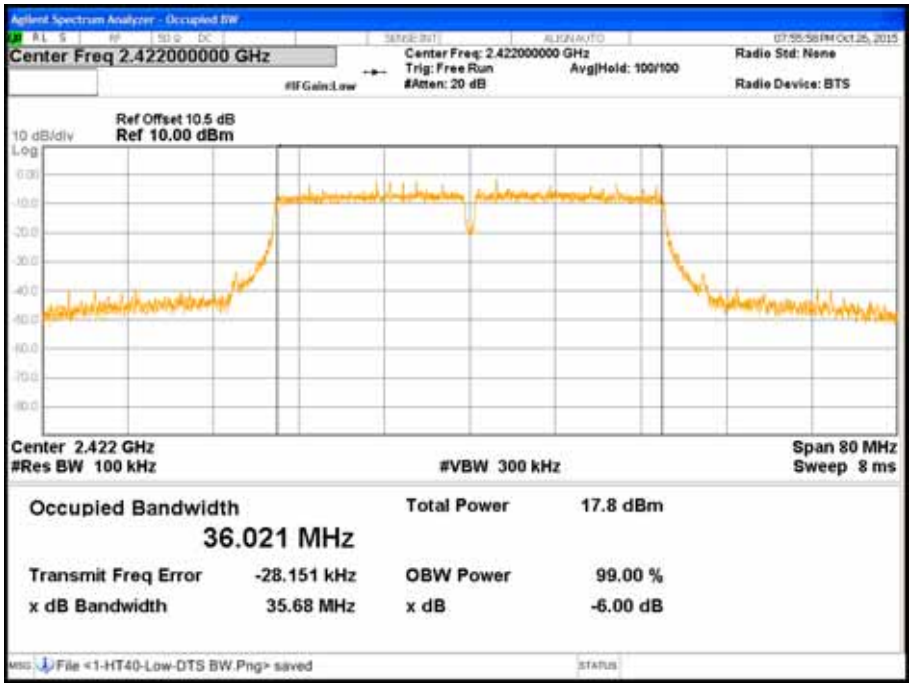
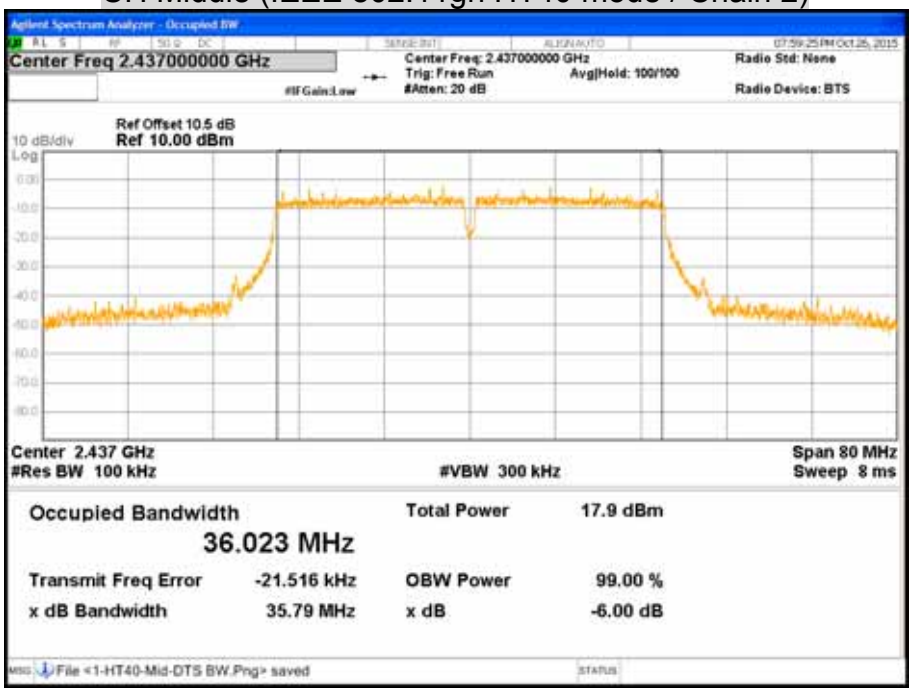
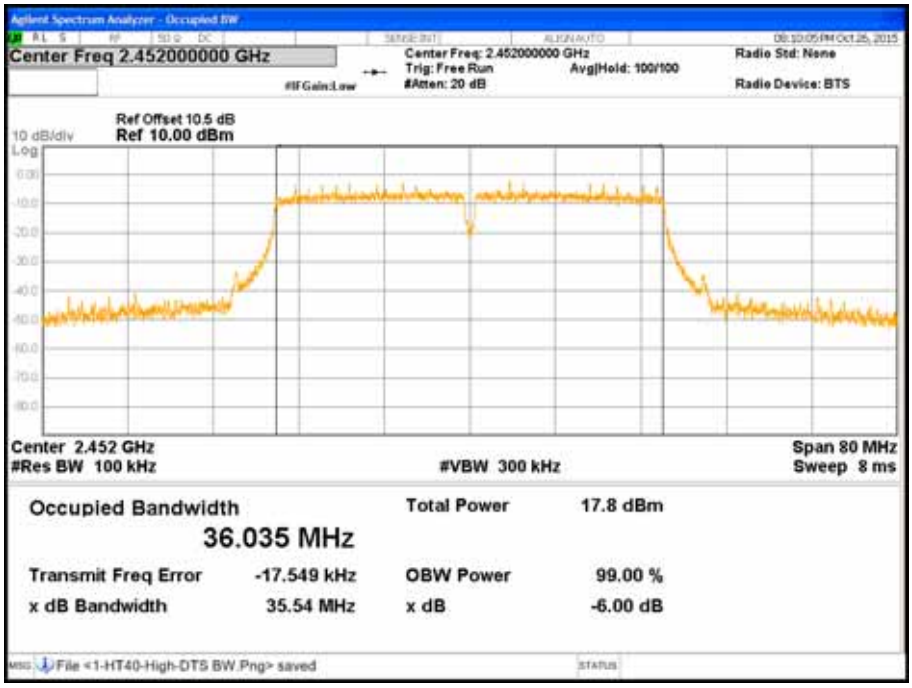


CH Middle (IEEE 802.11gn HT40 mode / Chain 2)



CH High (IEEE 802.11gn HT40 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: For power measurements on IEEE 802.11 devices
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 $N_{ANT} \geq 5$.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/11/2015
Power Sensor	Anritsu	MA2411B	1126148	12/11/2015

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

TEST SETUP

TEST PROCEDURE

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

TEST RESULTS

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Peak Power Chain 1		Peak Power Limit		Pass / Fail
		(dBm)	(W)	(dBm)	(W)	
Low	2412	18.31	0.0678	30	1	PASS
Middle	2437	18.55	0.0716	30	1	PASS
High	2462	19.59	0.0910	30	1	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.*

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Peak Power Chain 1		Peak Power Limit		Pass / Fail
		(dBm)	(W)	(dBm)	(W)	
Low	2412	25.17	0.3289	30	1	PASS
Middle	2437	25.66	0.3681	30	1	PASS
High	2462	25.61	0.3639	30	1	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.*

IEEE 802.11gn HT20 mode (2TX)

Channel	Channel Frequency (MHz)	Peak Power		Peak Power Total		Peak Power Limit		Pass / Fail
		Chain 1	Chain 2	(dBm)	(W)	(dBm)	(W)	
Low	2412	24.22	23.37	26.83	0.4819	30	1	PASS
Middle	2437	23.83	23.38	26.62	0.4592	30	1	PASS
High	2462	23.22	23.08	26.16	0.4130	30	1	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. *Array gain = 0 dB for $N_{ANT} \leq 4$, power limit do not reduce.*
4. *Total power = Chain 1 + Chain 2.*

IEEE 802.11gn HT40 mode (2TX)

Channel	Channel Frequency (MHz)	Peak Power		Peak Power Total		Peak Power Limit		Pass / Fail
		Chain 1	Chain 2	(dBm)	(W)	(dBm)	(W)	
Low	2422	22.63	21.37	25.06	0.3206	30	1	PASS
Middle	2437	22.48	20.72	24.70	0.2951	30	1	PASS
High	2452	21.31	20.56	23.96	0.2489	30	1	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. *Array gain = 0 dB for $N_{ANT} \leq 4$, power limit do not reduce.*
4. *Total power = Chain 1 + Chain 2.*

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	12/11/2015
Power Sensor	Anritsu	MA2411B	1126148	12/11/2015

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

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
		Chain 1
Low	2412	15.92
Middle	2437	16.16
High	2462	17.22

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 1
Low	2412	17.46
Middle	2437	17.85
High	2462	17.44

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 802.11gn HT20 mode (2TX)

Channel	Channel Frequency (MHz)	Average Power (dBm)	
		Chain 1	Chain 2
Low	2412	15.28	14.12
Middle	2437	14.68	13.96
High	2462	14.46	13.66

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 802.11gn HT40 mode (2TX)

Channel	Channel Frequency (MHz)	Average Power (dBm)	
		Chain 1	Chain 2
Low	2422	12.93	11.56
Middle	2437	12.78	11.84
High	2452	12.62	11.80

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.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/19/2016

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

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 1		
Low	2412	1.1390	8	PASS
Middle	2437	0.4970	8	PASS
High	2462	2.4100	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.*

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 1		
Low	2412	-3.0620	8	PASS
Middle	2437	-2.7850	8	PASS
High	2462	-3.1130	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.*

IEEE 802.11gn HT20 mode (2TX)

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PSD Total (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 1	Chain 2			
Low	2412	-5.72	-7.03	-3.32	5.73	PASS
Middle	2437	-6.45	-7.17	-3.79	5.73	PASS
High	2462	-6.57	-7.32	-3.92	5.73	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. *The maximum antenna gain is 8.27 dBi which is more than 6dBi, the limit should be 5.73 dBm.*
4. *Total power spectral density = Chain 1 + Chain 2.*

IEEE 802.11gn HT40 mode (2TX)

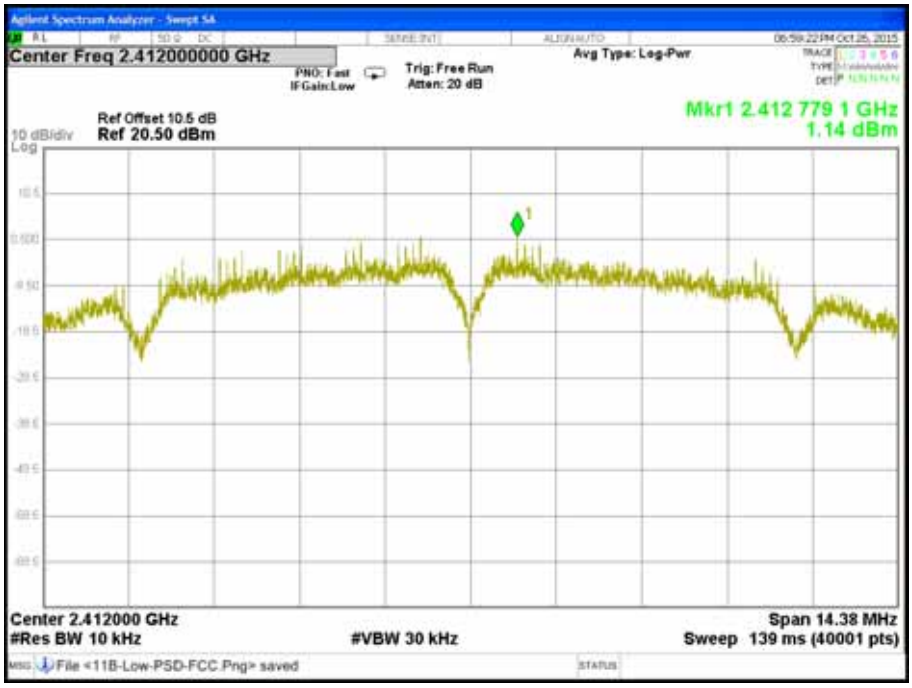
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PSD Total (dBm)	Minimum Limit (dBm)	Pass / Fail
		Chain 1	Chain 2			
Low	2422	-10.13	-10.31	-7.21	5.73	PASS
Middle	2437	-10.33	-10.37	-7.34	5.73	PASS
High	2452	-10.45	-11.22	-7.81	5.73	PASS

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. *The maximum antenna gain is 8.27 dBi which is more than 6dBi, the limit should be 5.73 dBm.*
4. *Total power spectral density = Chain 1 + Chain 2.*

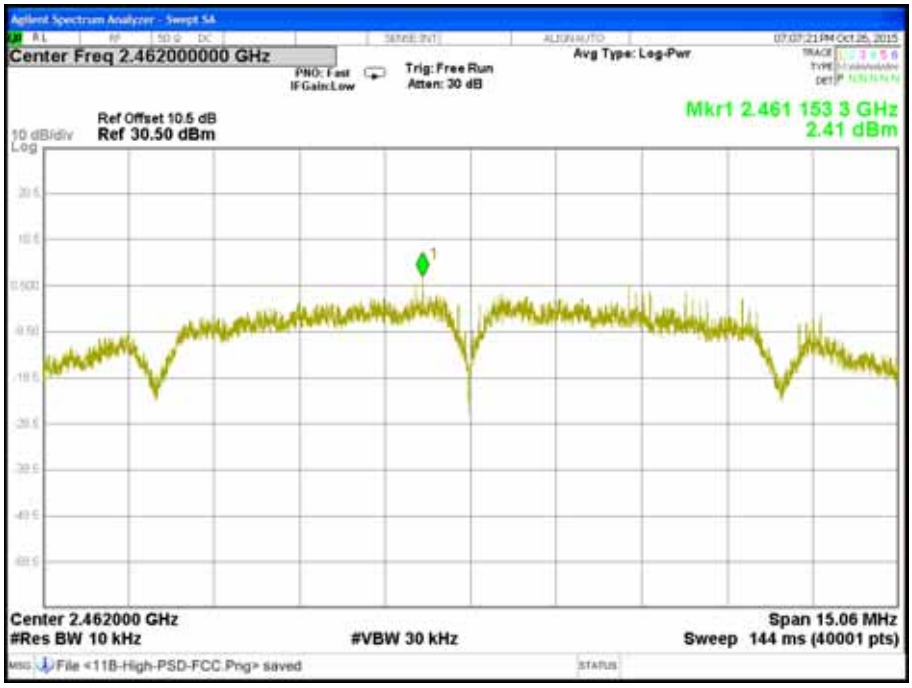
POWER SPECTRAL DENSITY

CH Low (IEEE 802.11b mode / Chain 1)

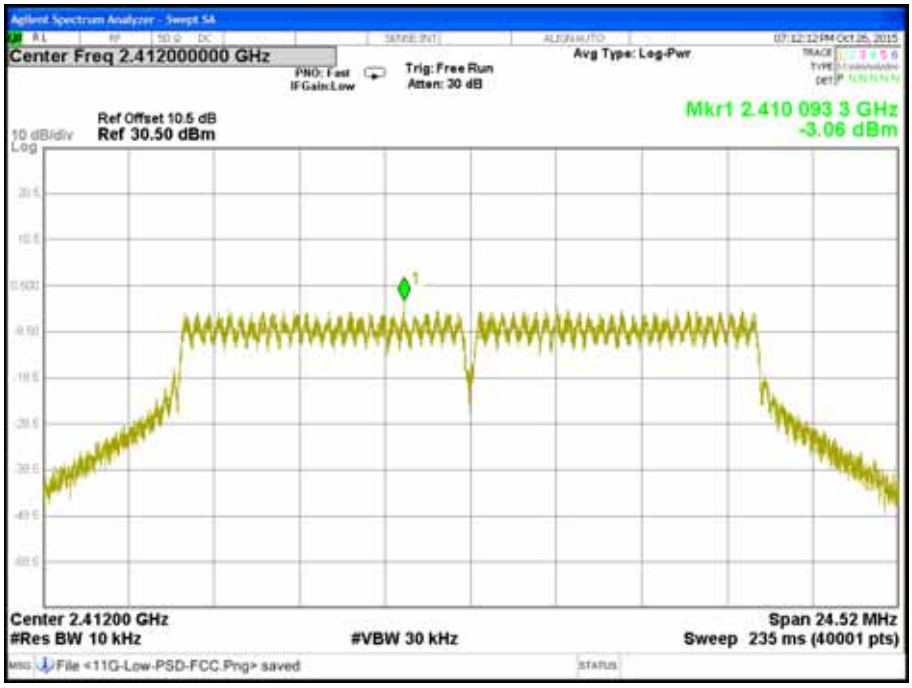


CH Middle (IEEE 802.11b mode / Chain 1)

CH High (IEEE 802.11b mode / Chain 1)

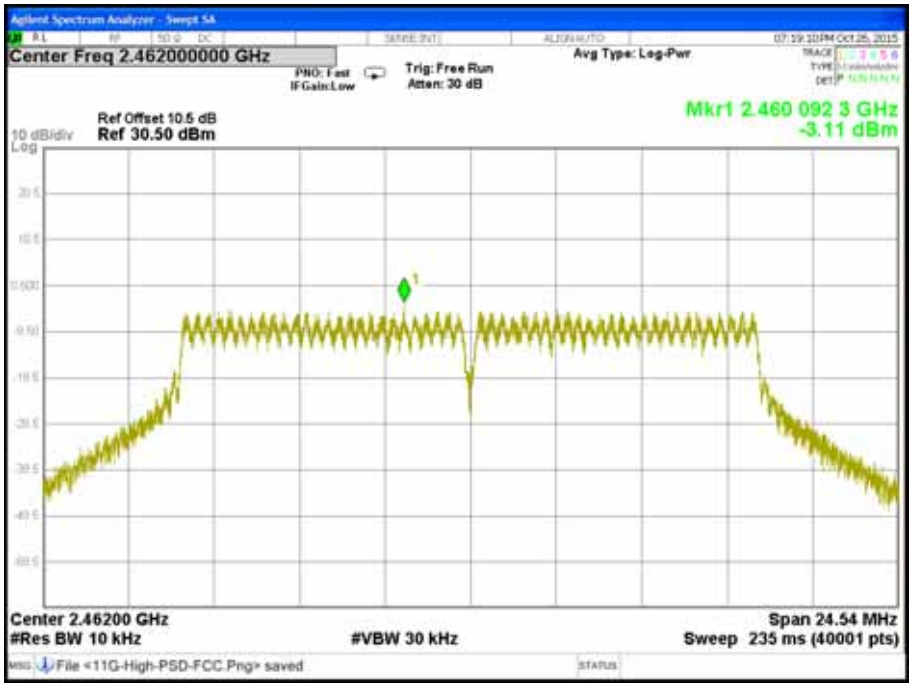


CH Low (IEEE 802.11g mode / Chain 1)

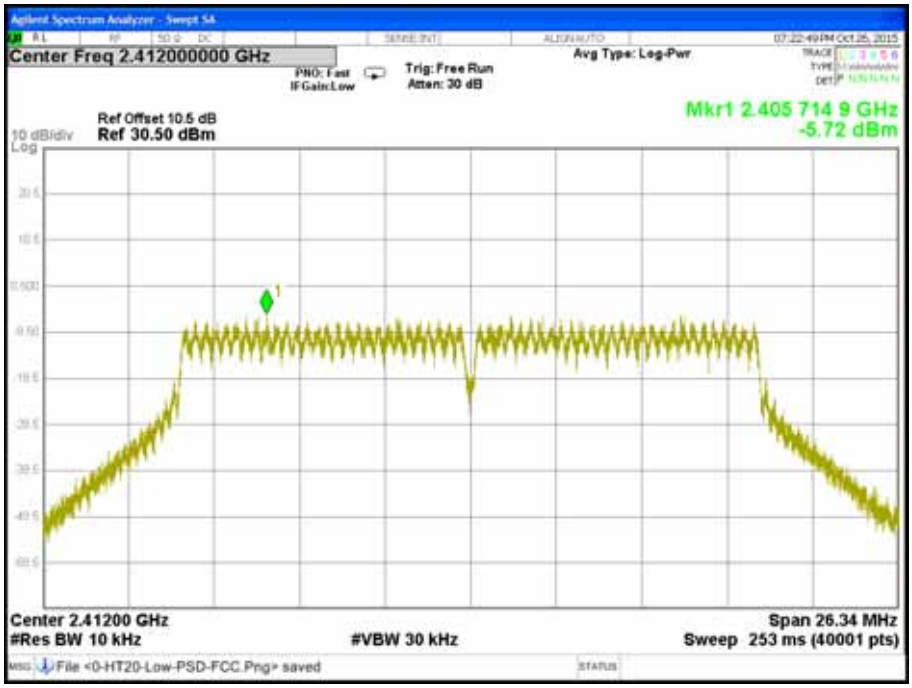


CH Middle (IEEE 802.11g mode / Chain 1)

CH High (IEEE 802.11g mode / Chain 1)

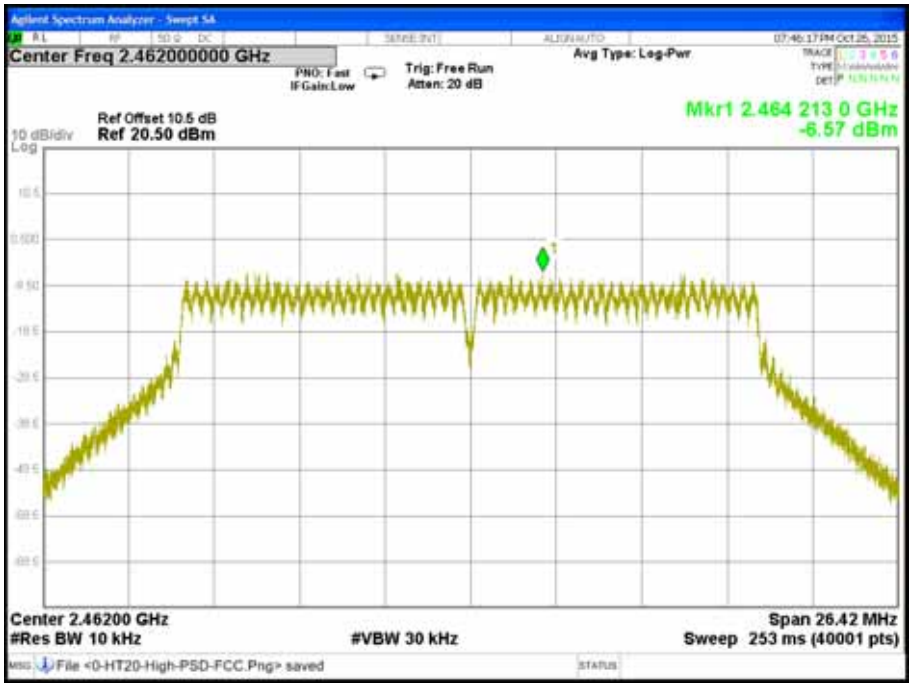


CH Low (IEEE 802.11gn HT20 mode / Chain 1)

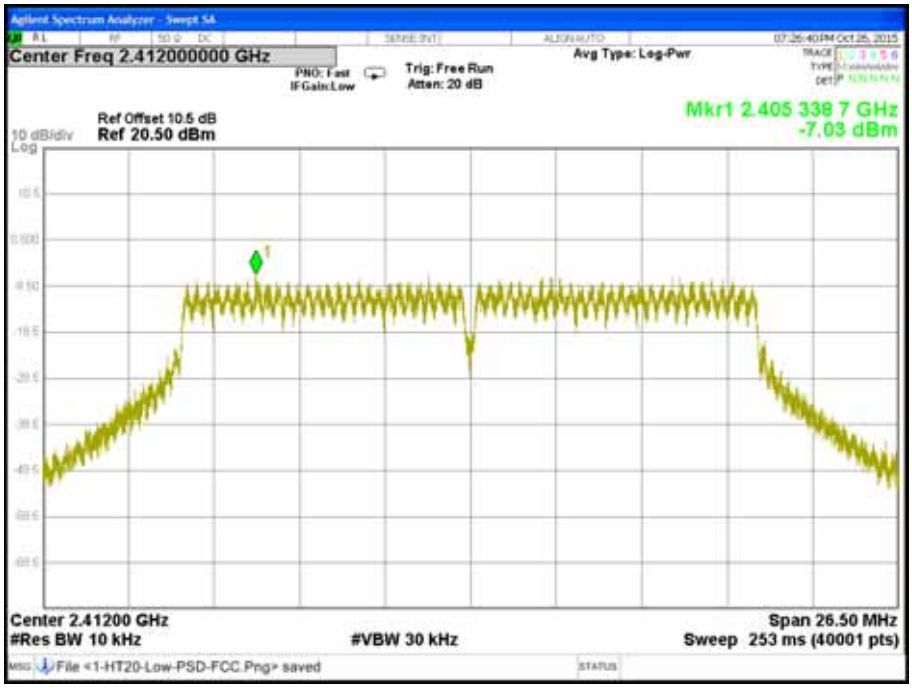


CH Middle (IEEE 802.11gn HT20 mode / Chain 1)

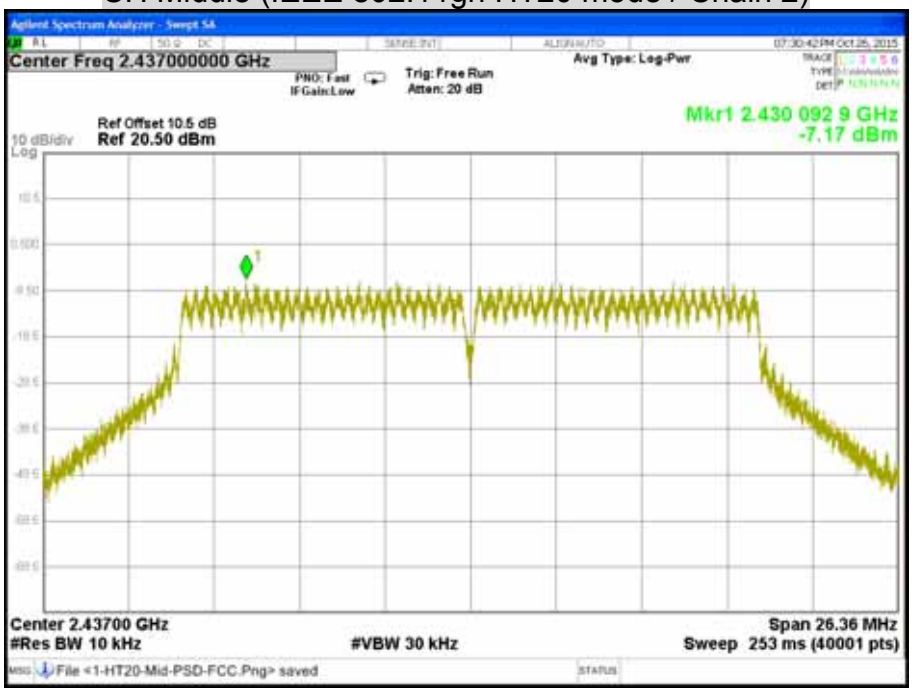
CH High (IEEE 802.11gn HT20 mode / Chain 1)



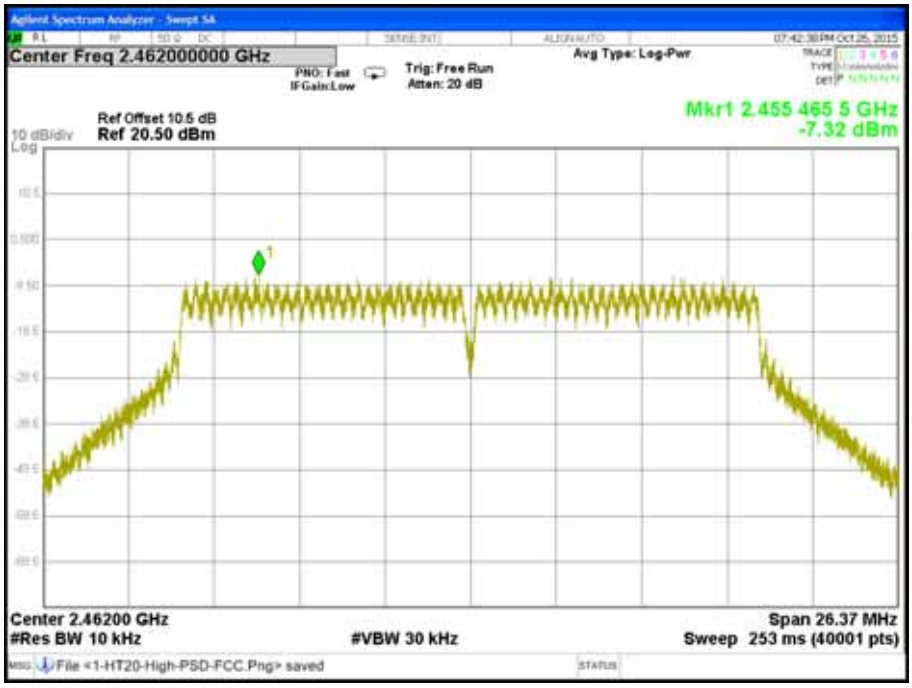
CH Low (IEEE 802.11gn HT20 mode / Chain 2)



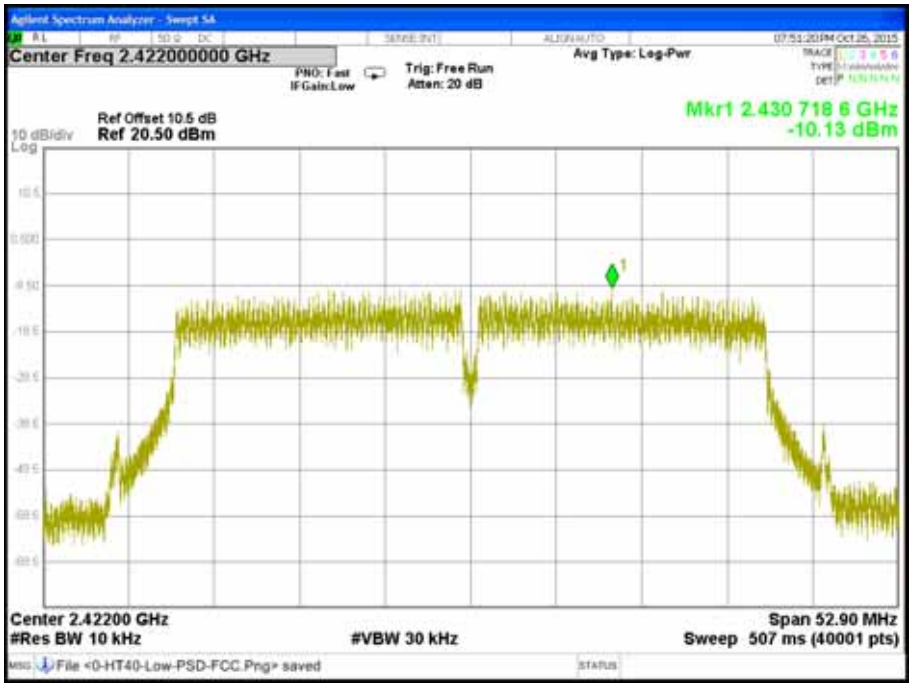
CH Middle (IEEE 802.11gn HT20 mode / Chain 2)



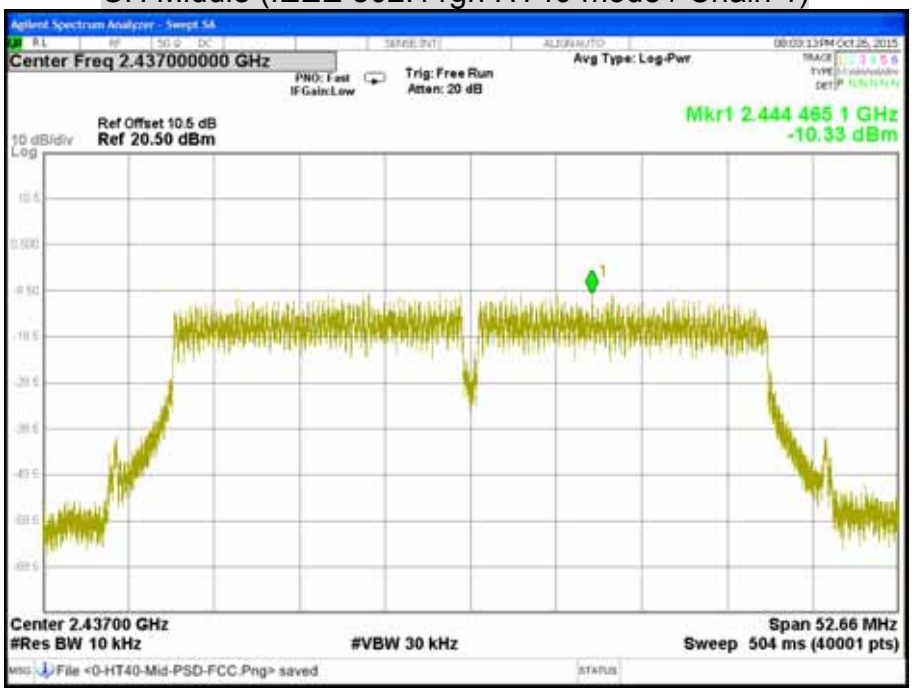
CH High (IEEE 802.11gn HT20 mode / Chain 2)



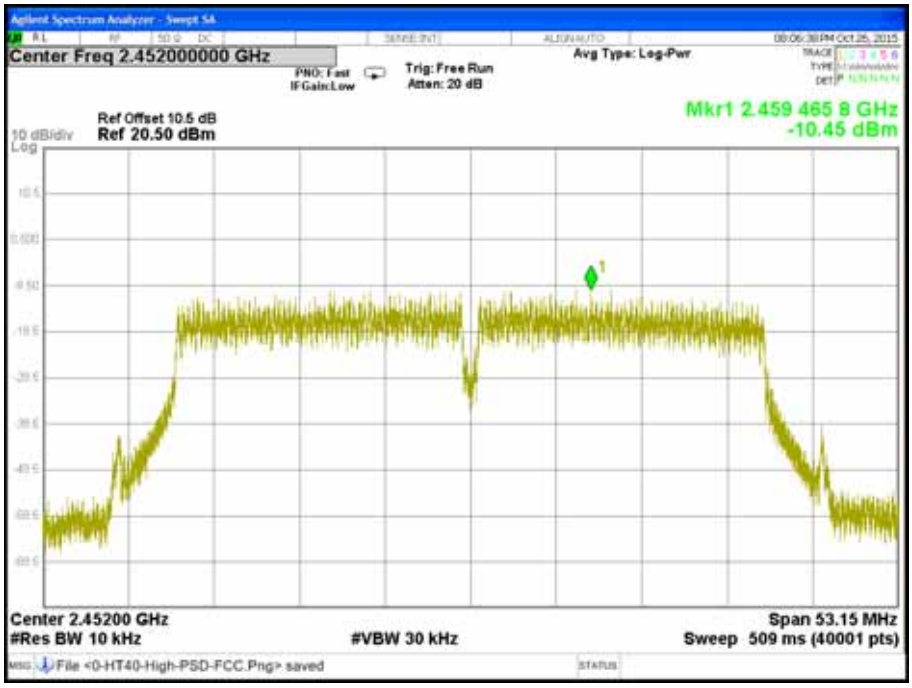
CH Low (IEEE 802.11gn HT40 mode / Chain 1)



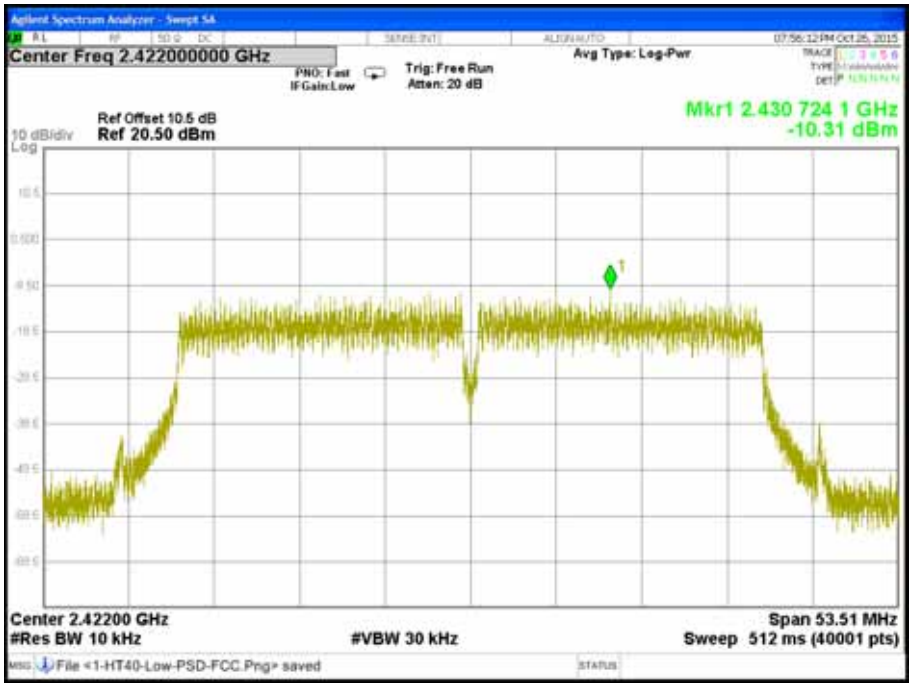
CH Middle (IEEE 802.11gn HT40 mode / Chain 1)



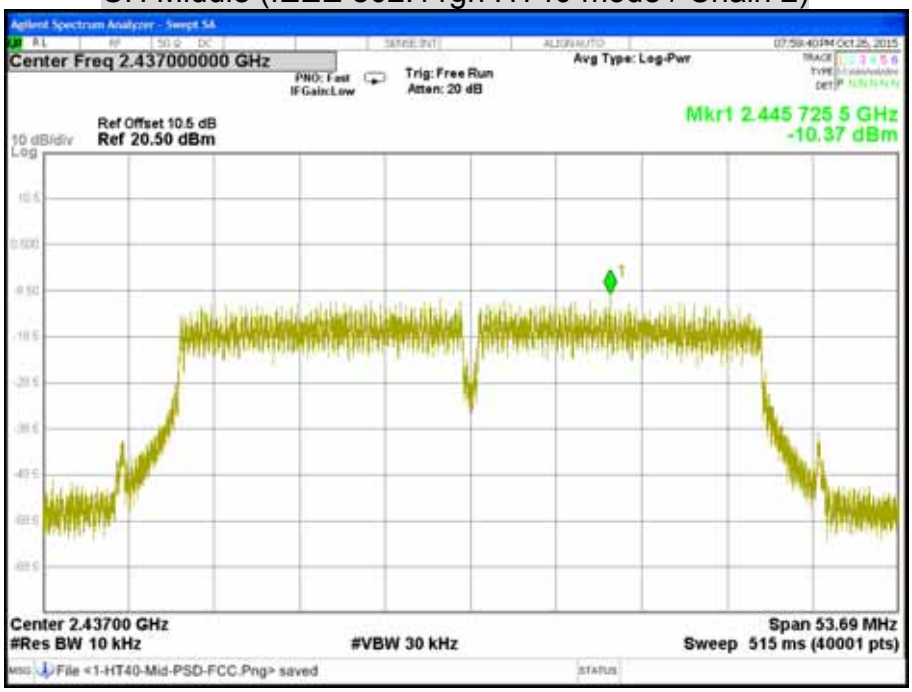
CH High (IEEE 802.11gn HT40 mode / Chain 1)



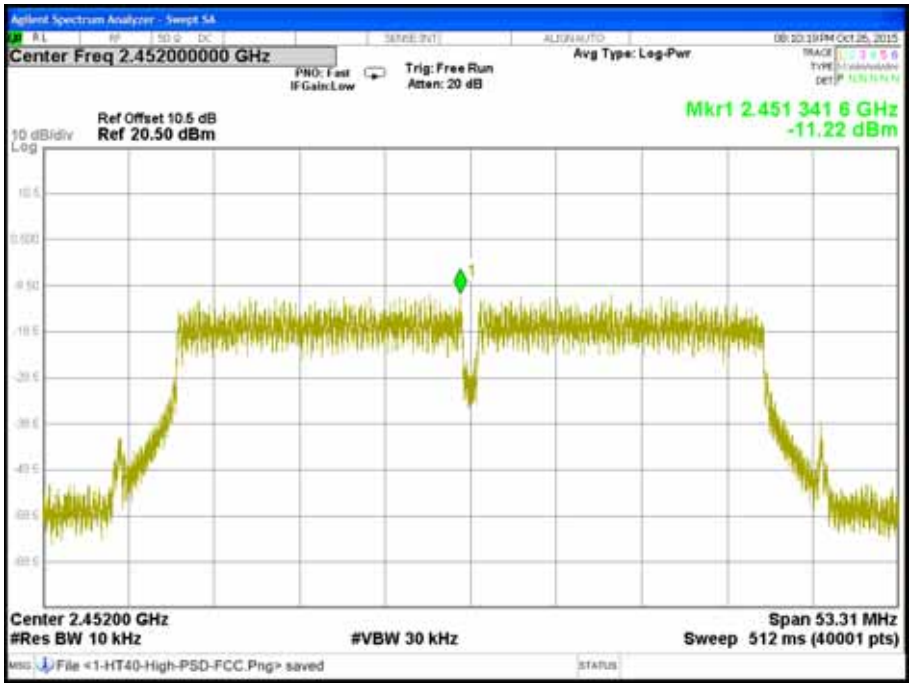
CH Low (IEEE 802.11gn HT40 mode / Chain 2)



CH Middle (IEEE 802.11gn HT40 mode / Chain 2)



CH High (IEEE 802.11gn HT40 mode / Chain 2)



7.5 CONDUCTED SPURIOUS EMISSION

LIMITS

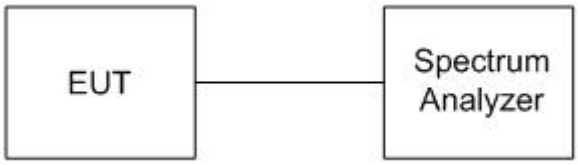
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level 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	03/19/2016

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

TEST SETUP



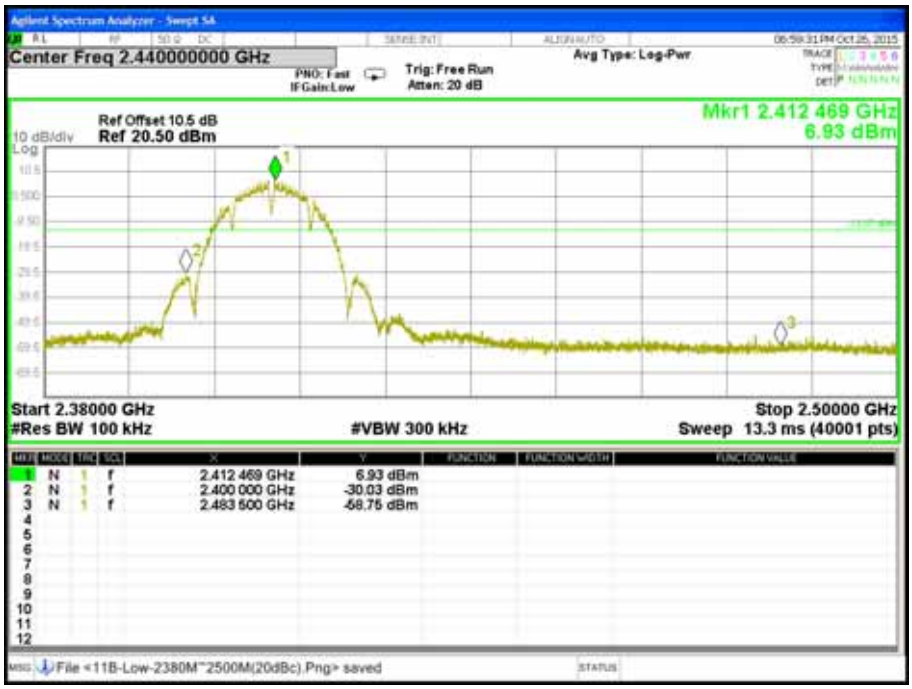
TEST PROCEDURE

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.

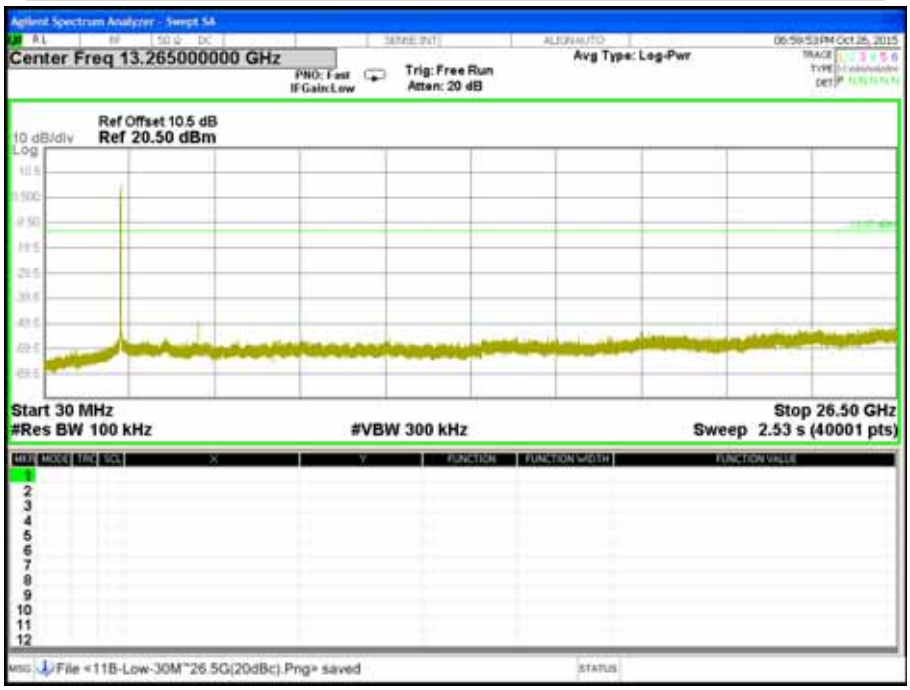
TEST RESULTS

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

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

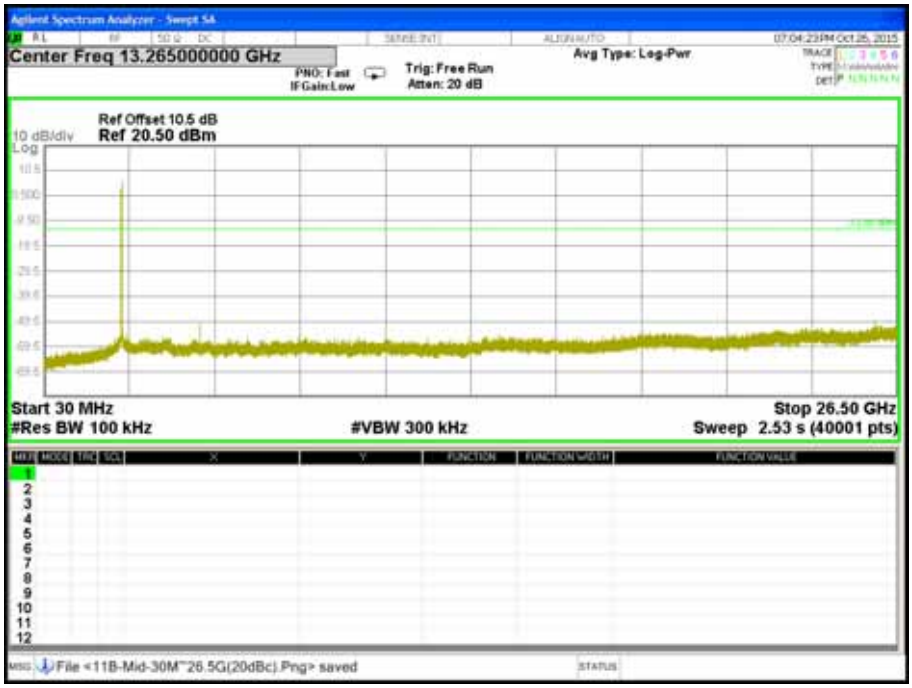


CH Low (30MHz ~ 26.5GHz / IEEE 802.11b mode / Chain 1)

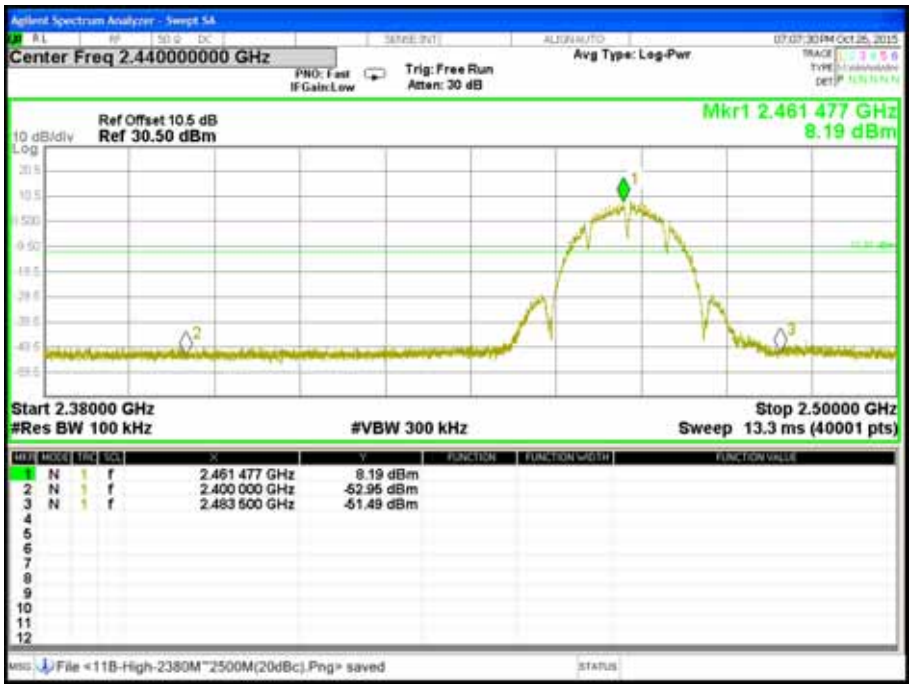


CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11b mode / Chain 1)

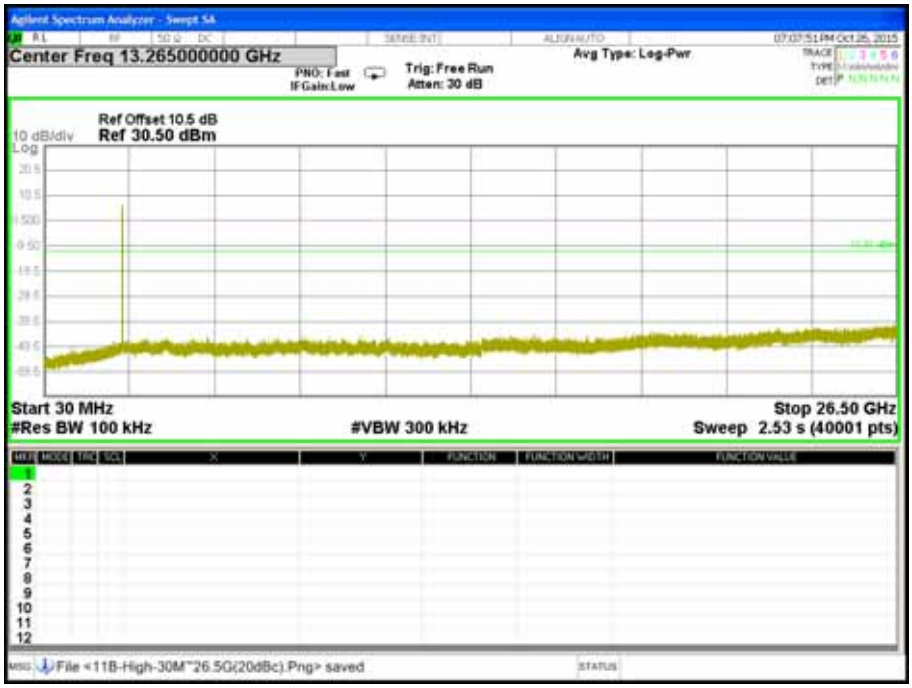
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11b mode / Chain 1)



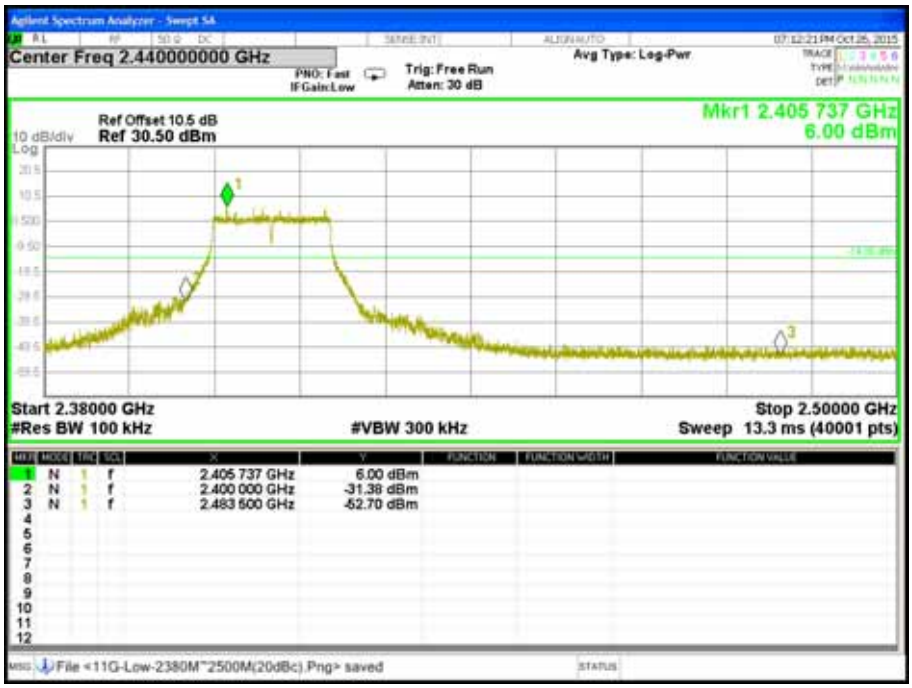
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11b mode / Chain 1)



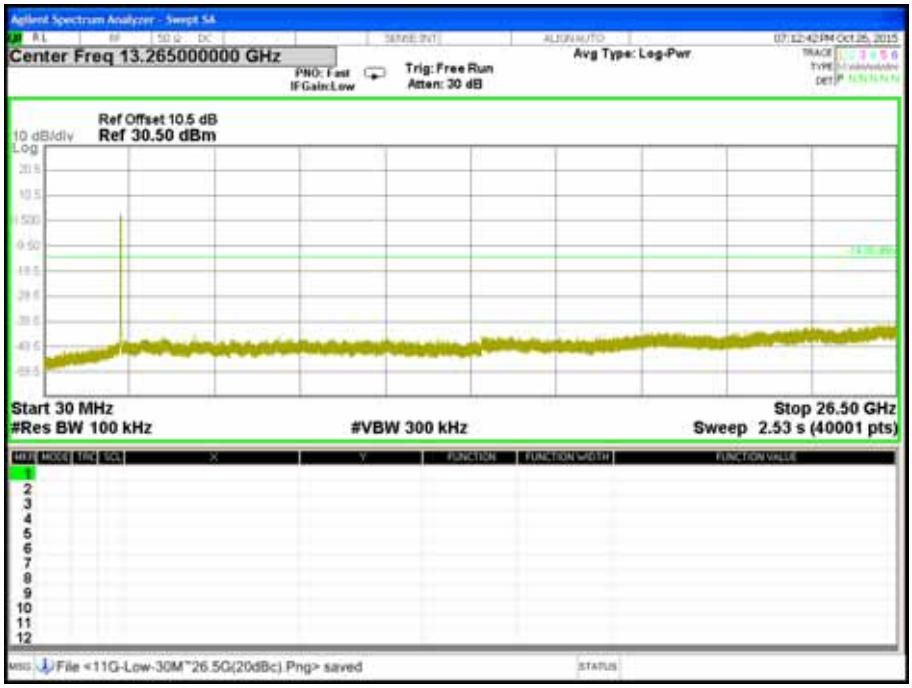
CH High (30MHz ~ 26.5GHz / IEEE 802.11b mode / Chain 1)



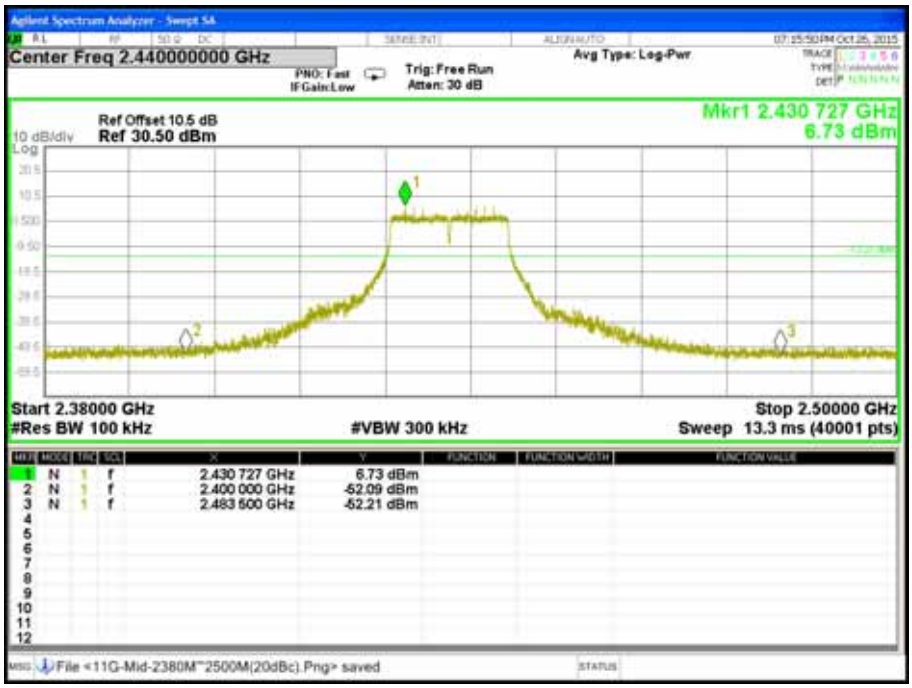
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11g mode / Chain 1)



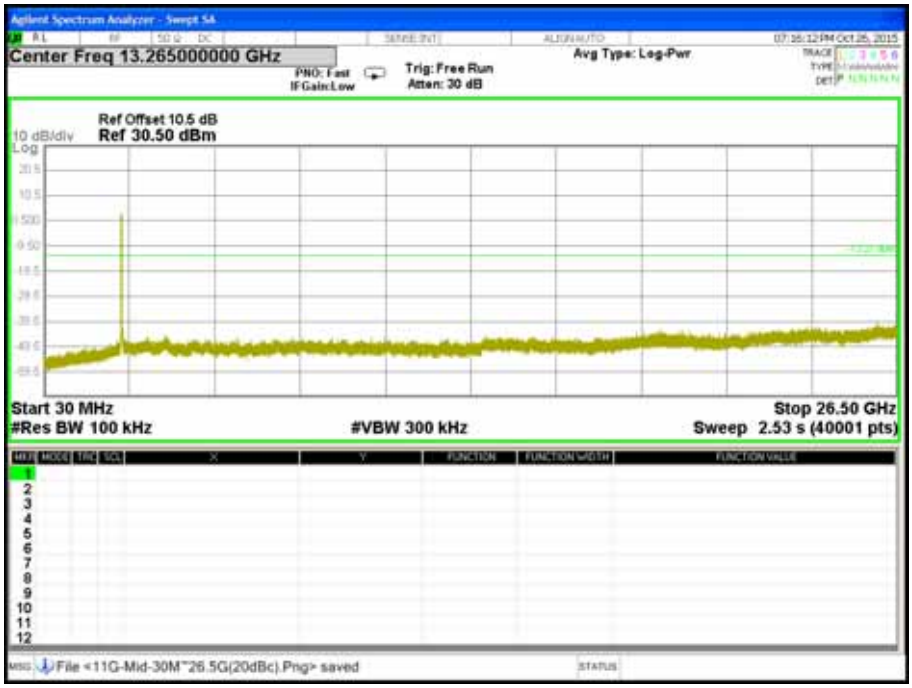
CH Low (30MHz ~ 26.5GHz / IEEE 802.11g mode / Chain 1)



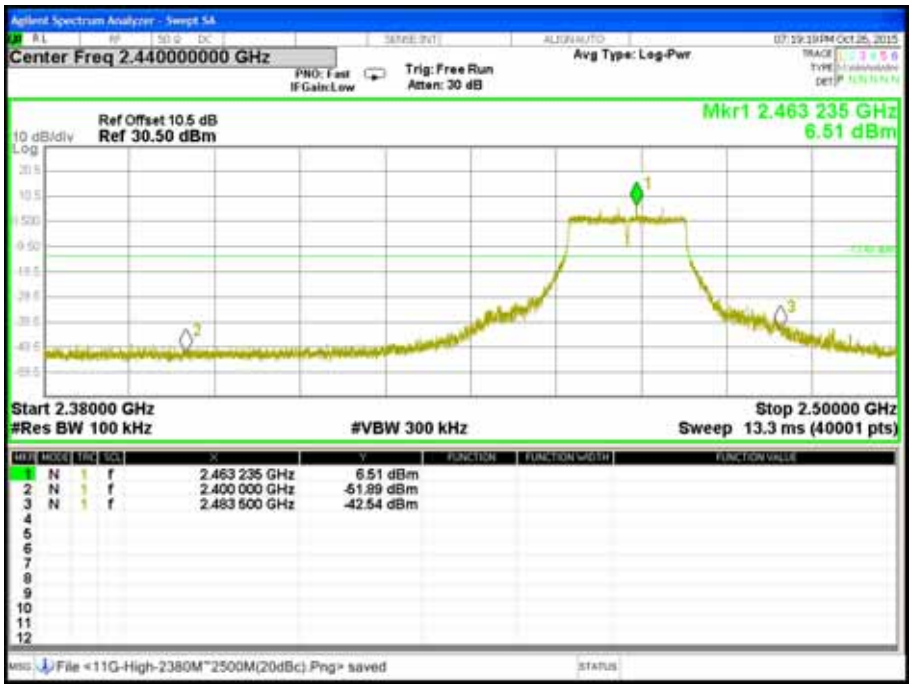
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11g mode / Chain 1)



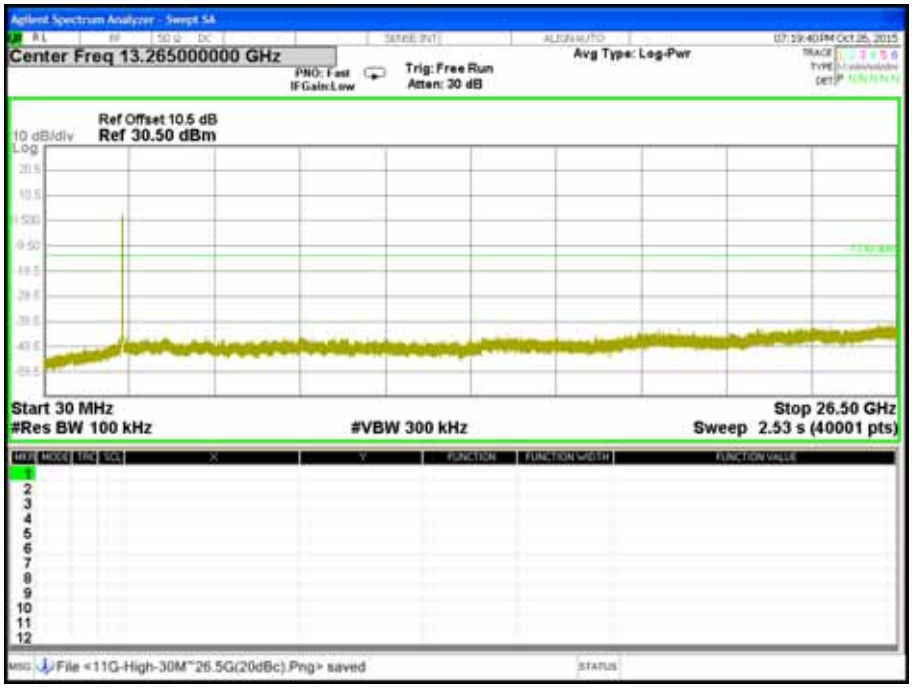
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11g mode / Chain 1)



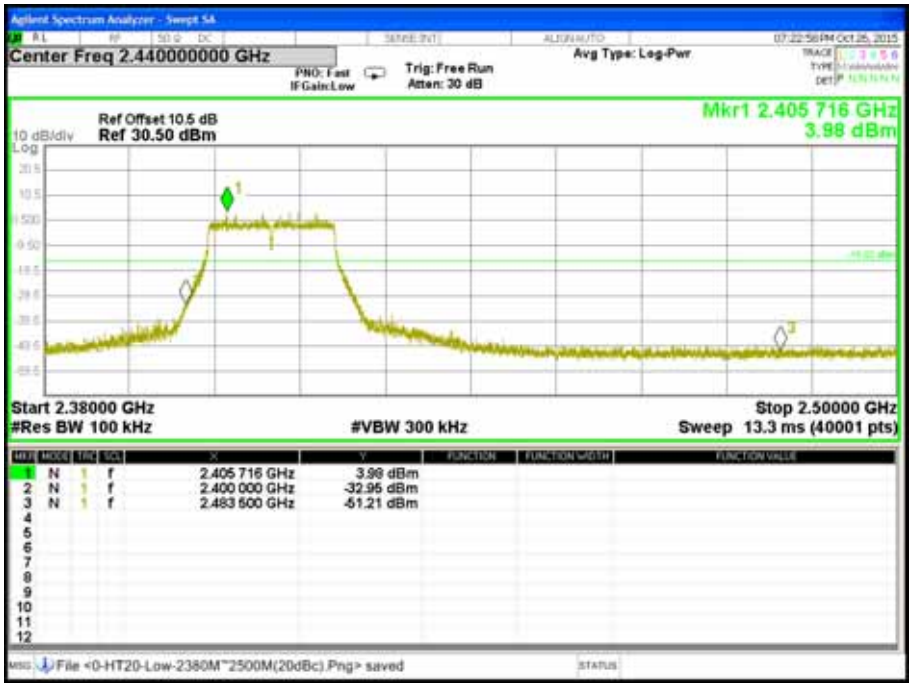
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11g mode / Chain 1)



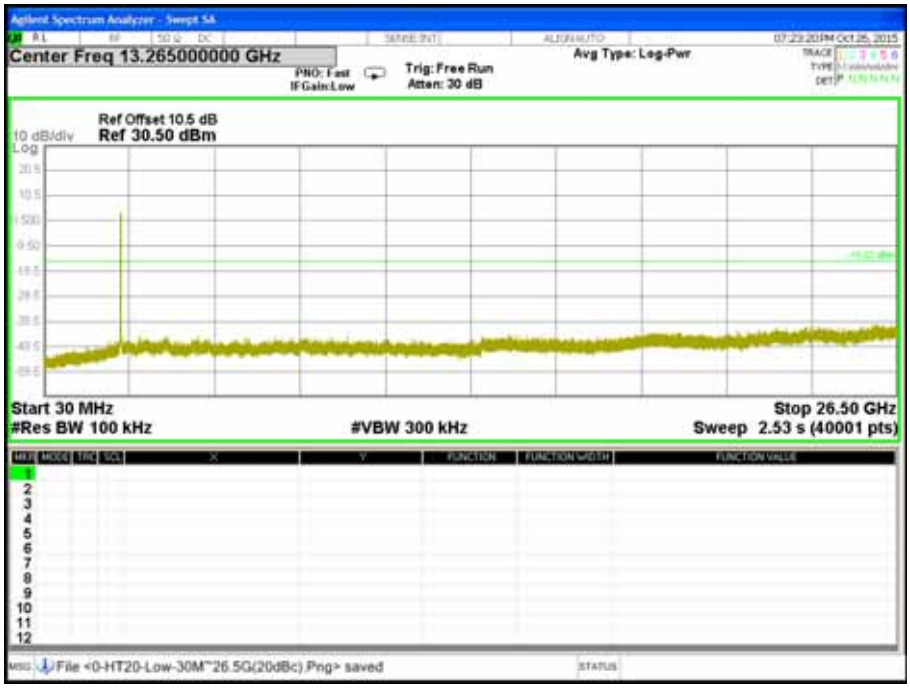
CH High (30MHz ~ 26.5GHz / IEEE 802.11g mode / Chain 1)



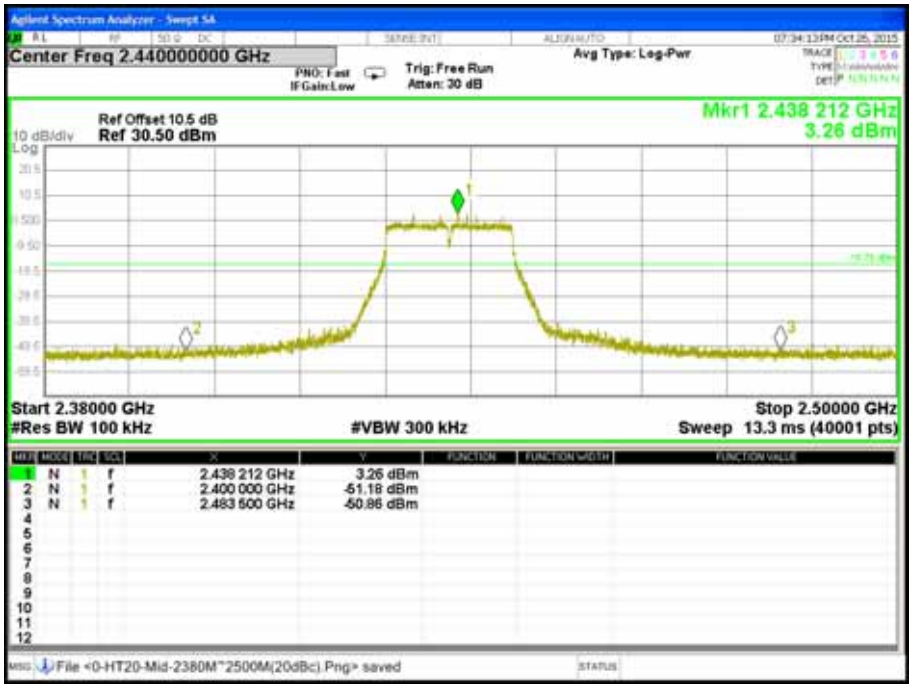
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



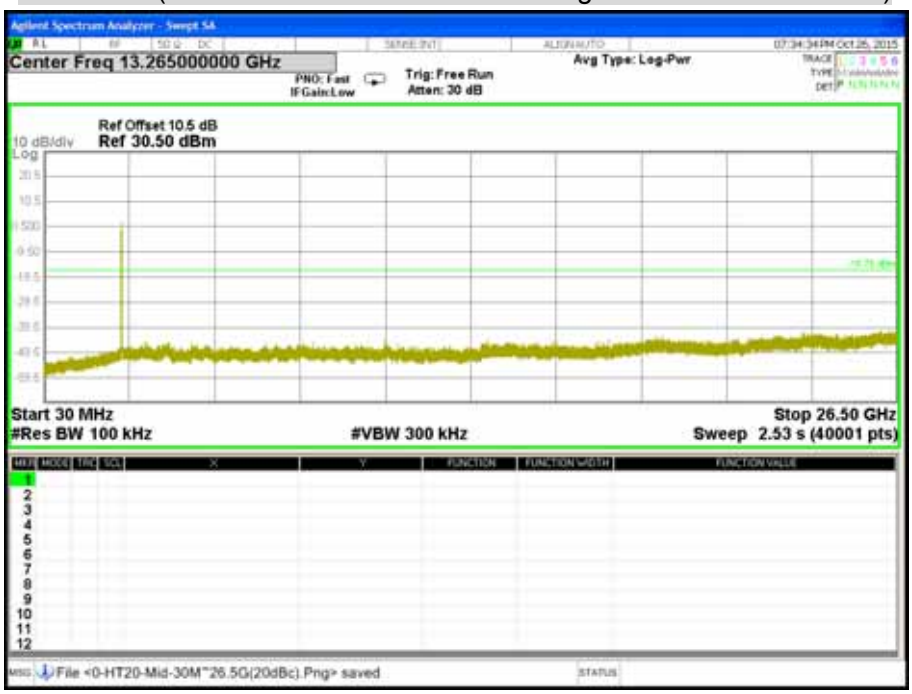
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



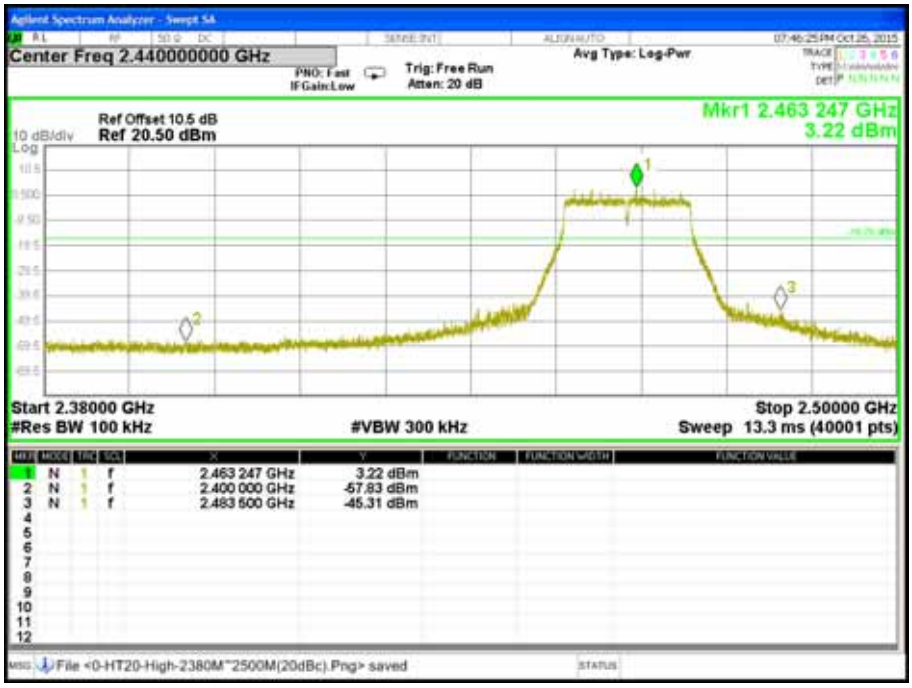
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



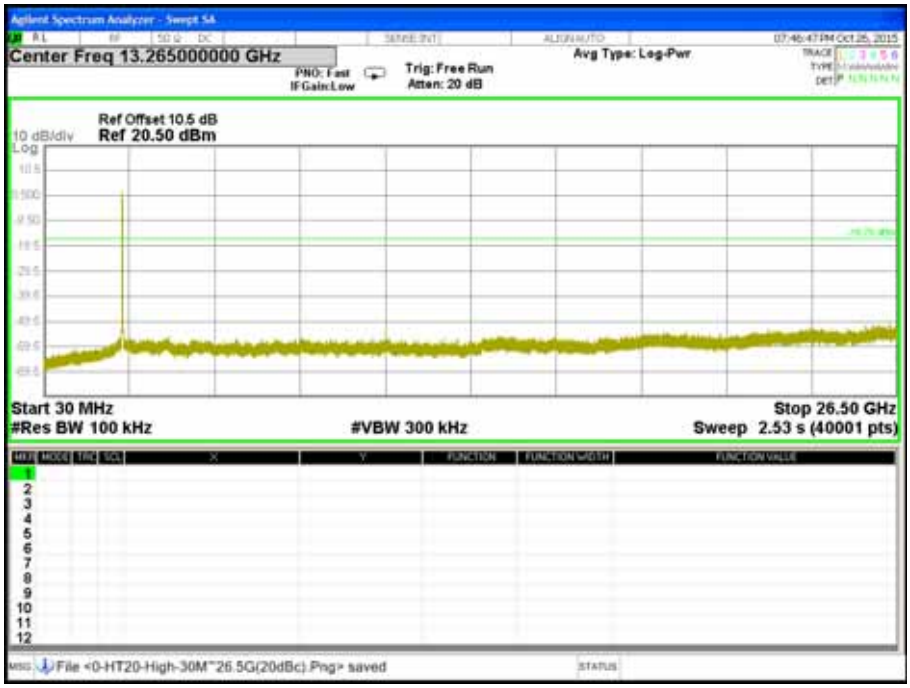
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



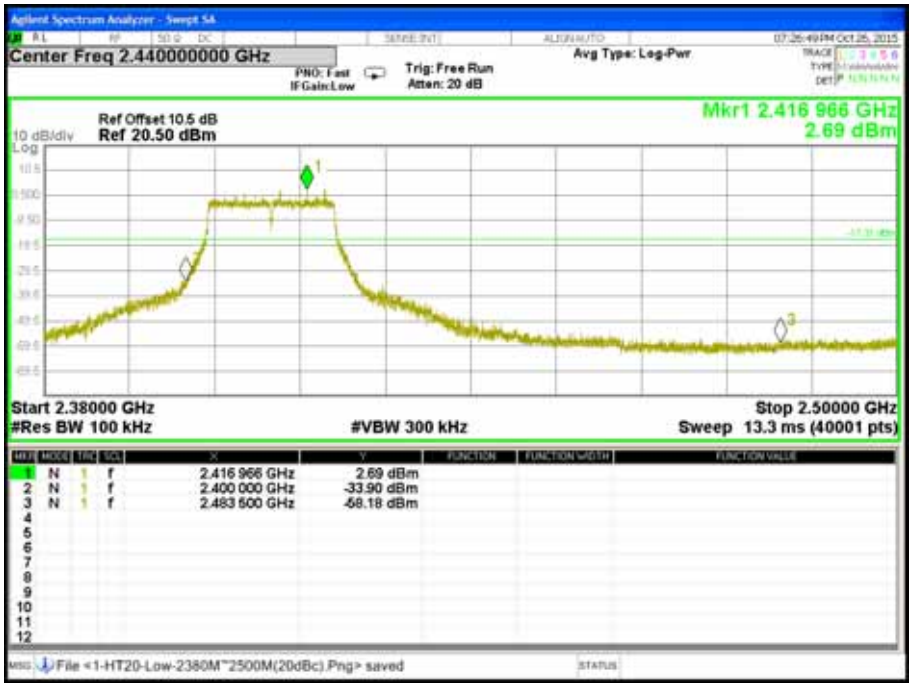
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



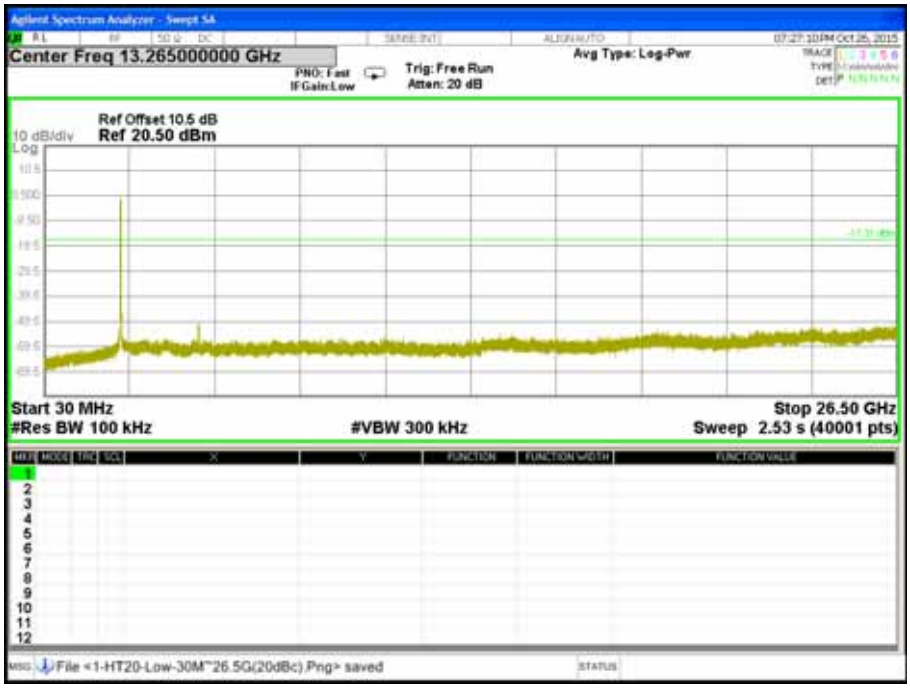
CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 1)



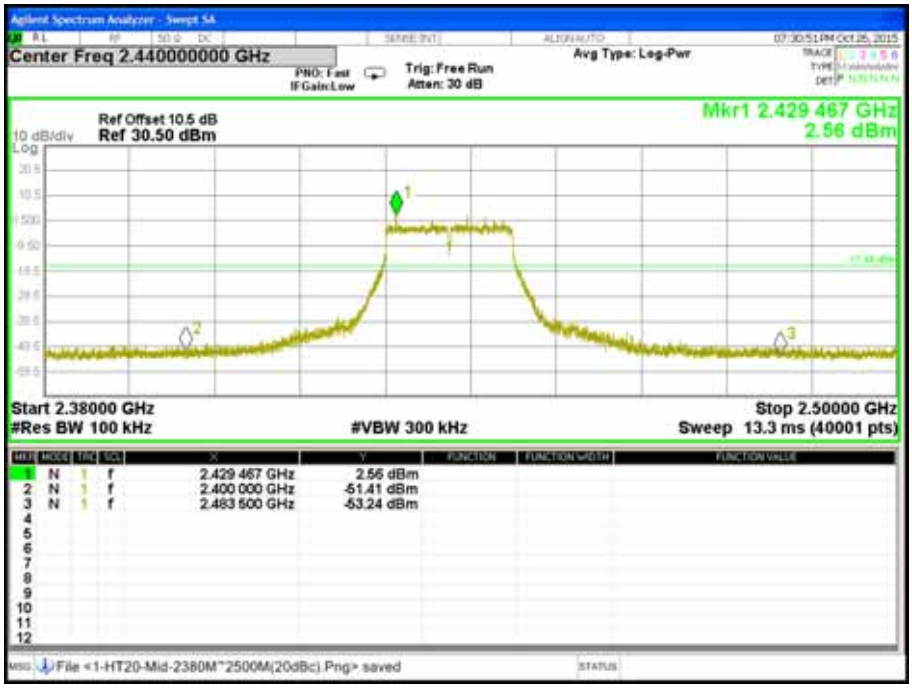
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 2)



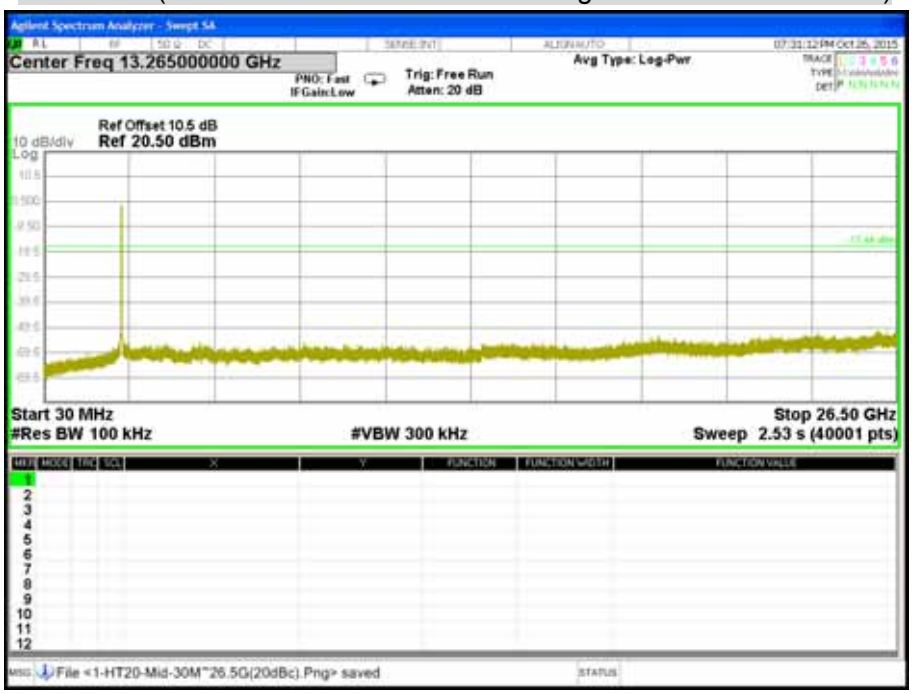
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 2)



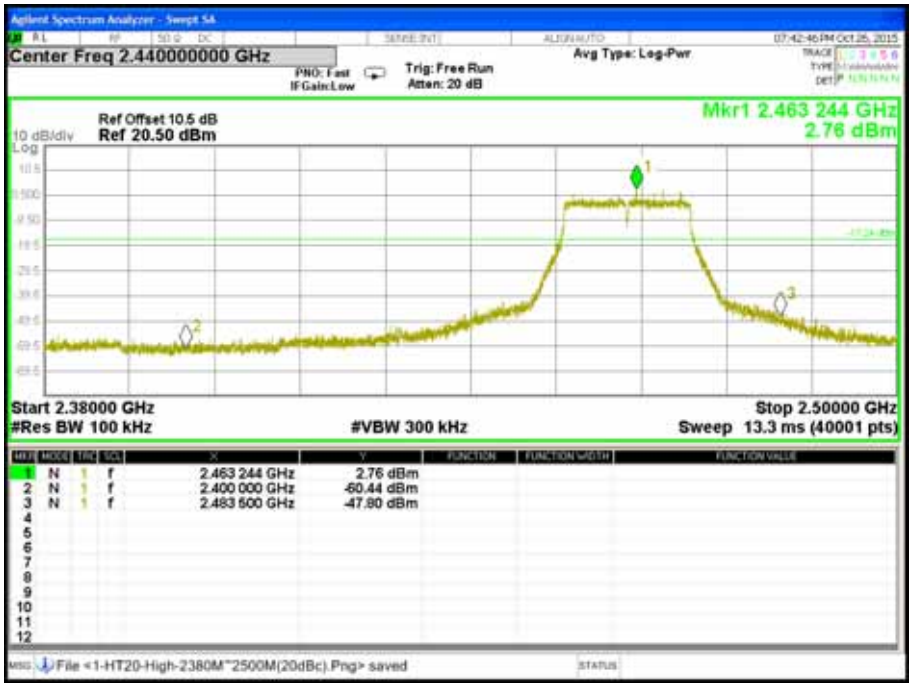
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 2)



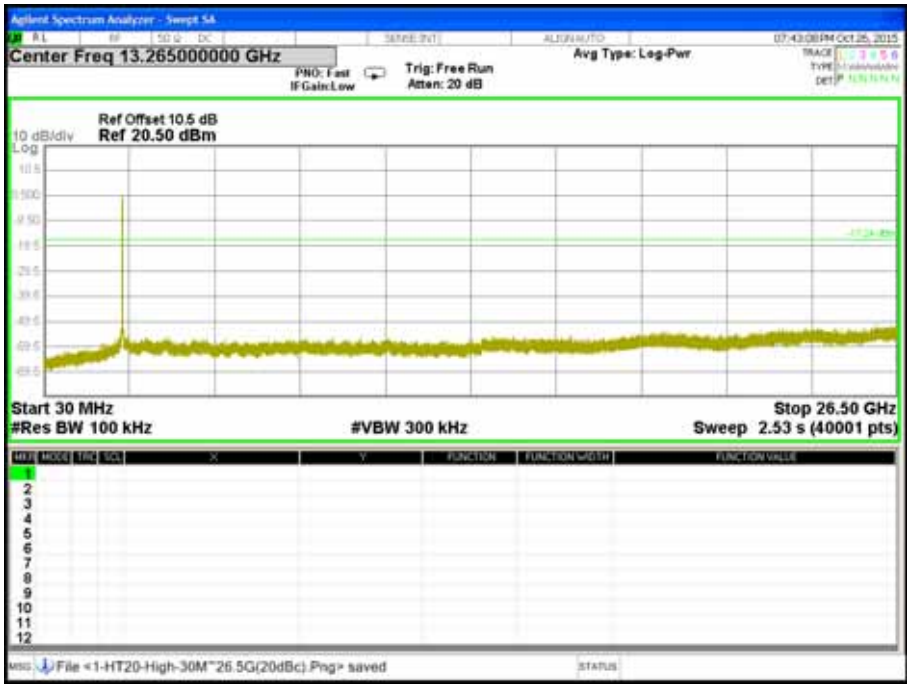
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 2)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 mode / Chain 2)

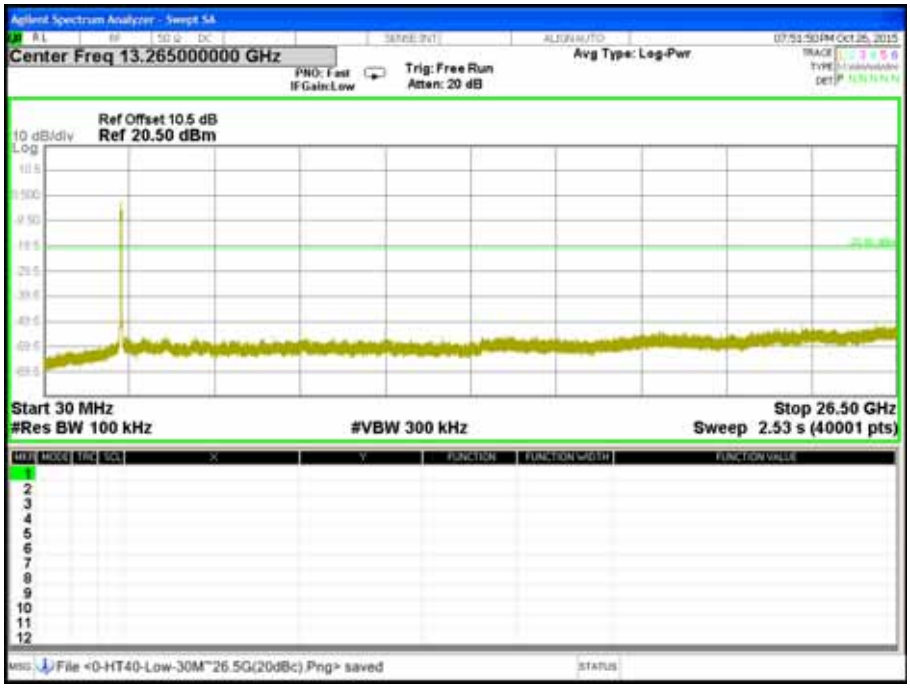


CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 mode / Chain 2)



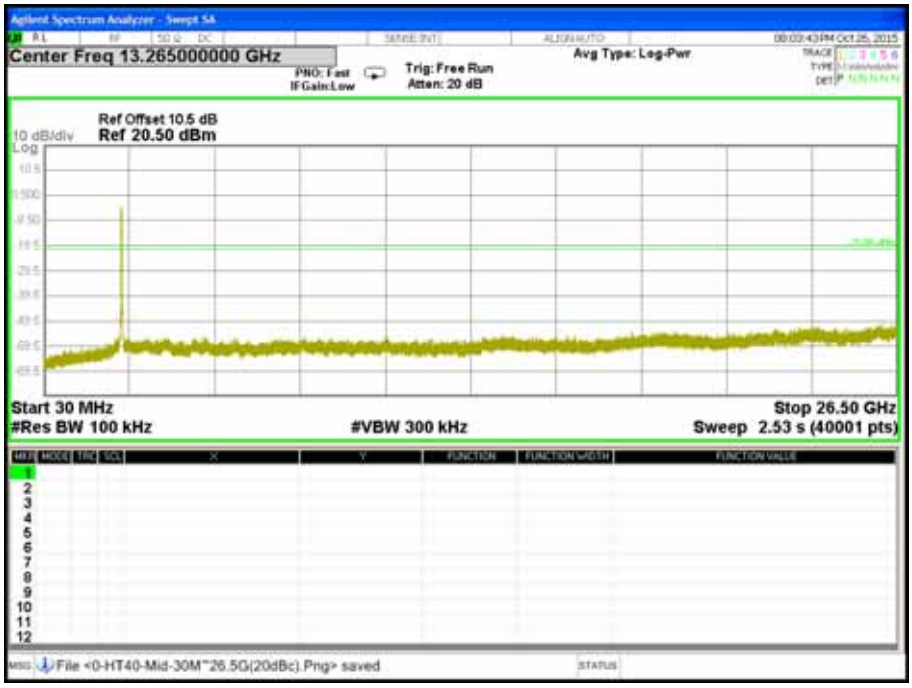
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 1)

CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 mode / Chain 1)

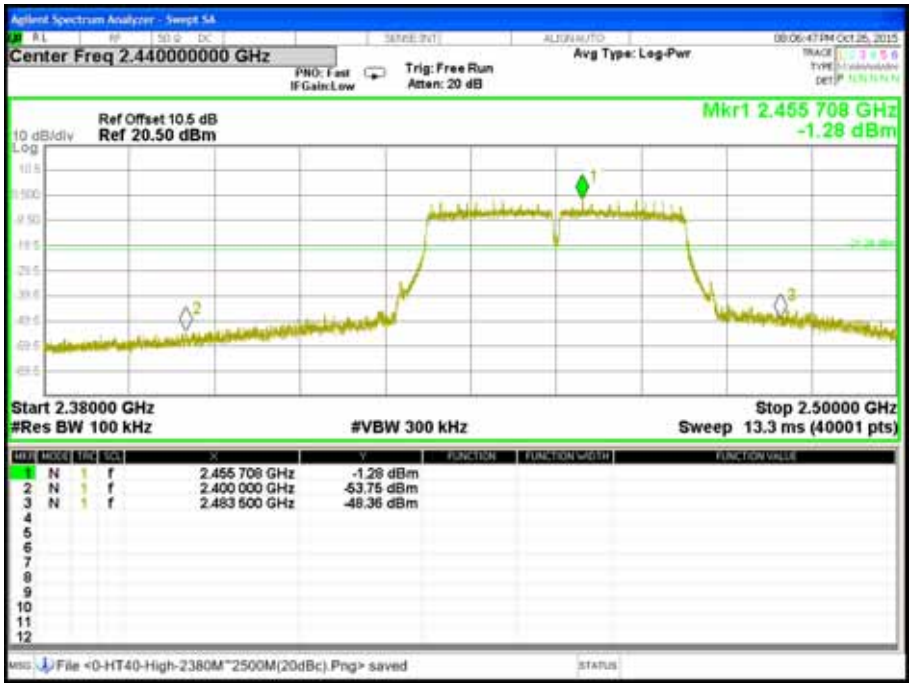


CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 1)

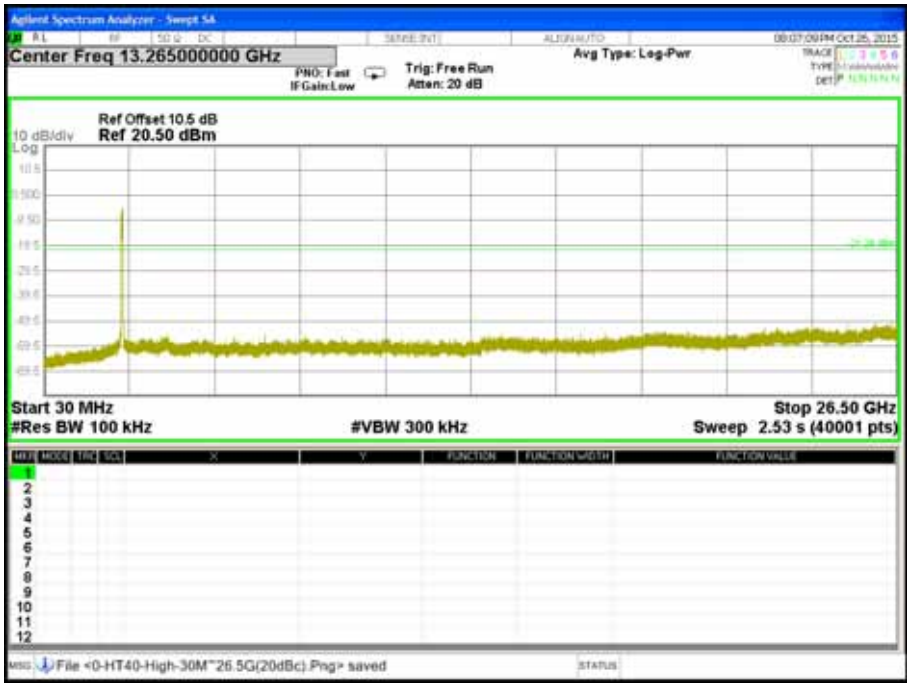
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 mode / Chain 1)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 1)

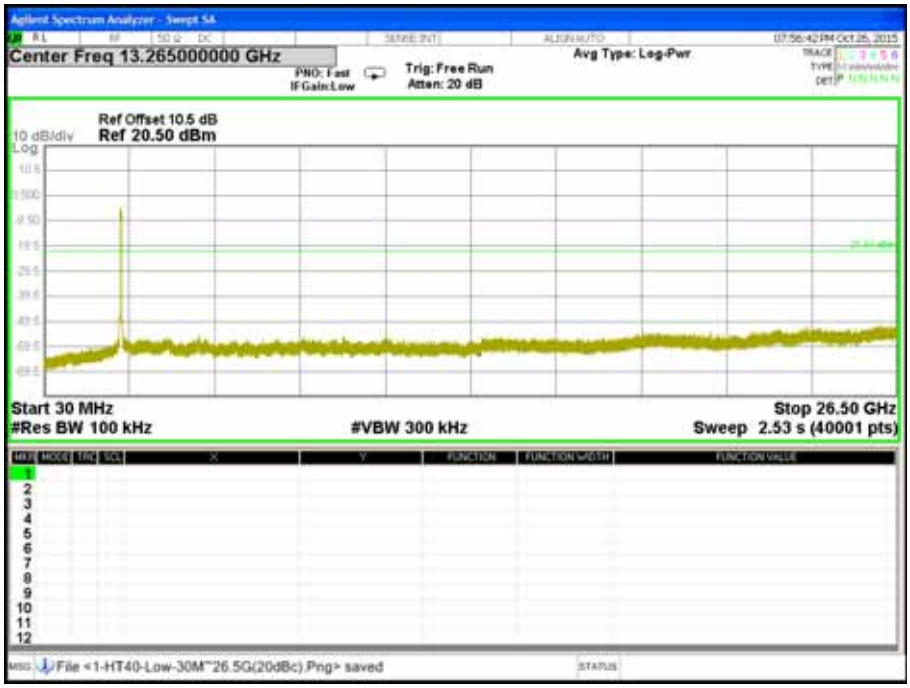


CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 mode / Chain 1)

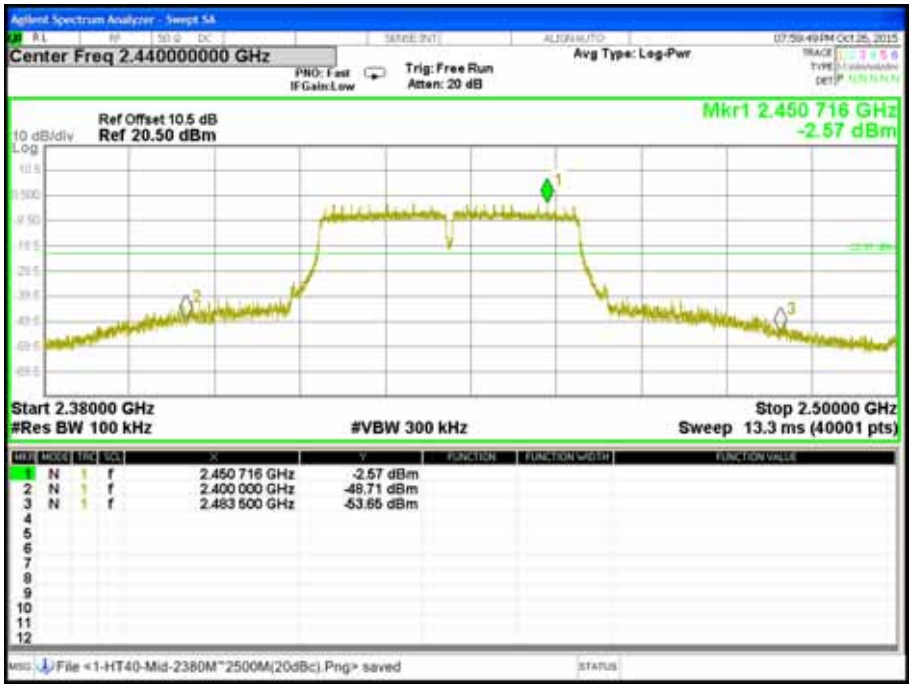


CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 2)

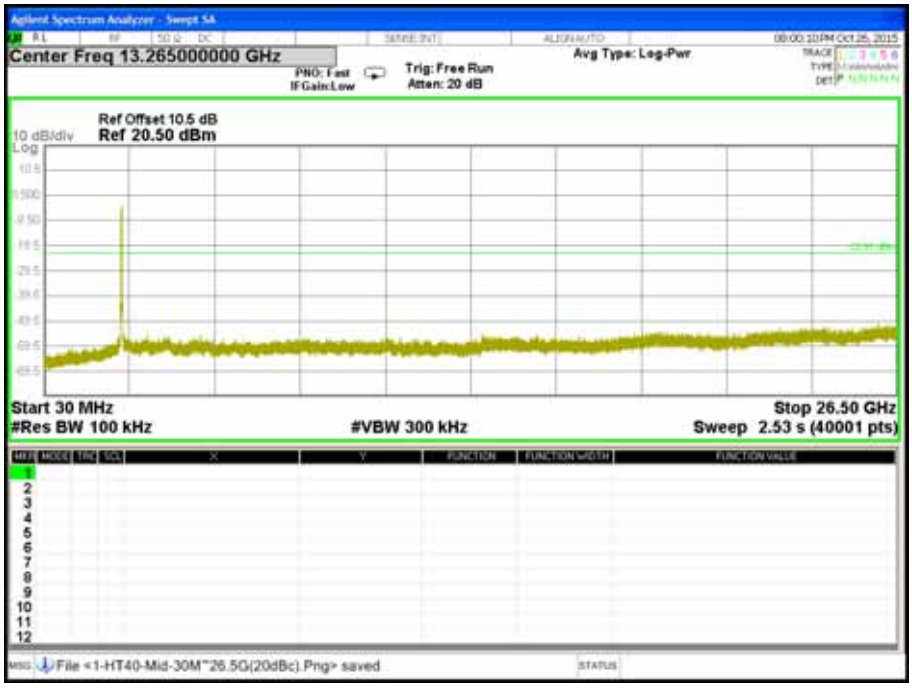
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 mode / Chain 2)



CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 2)

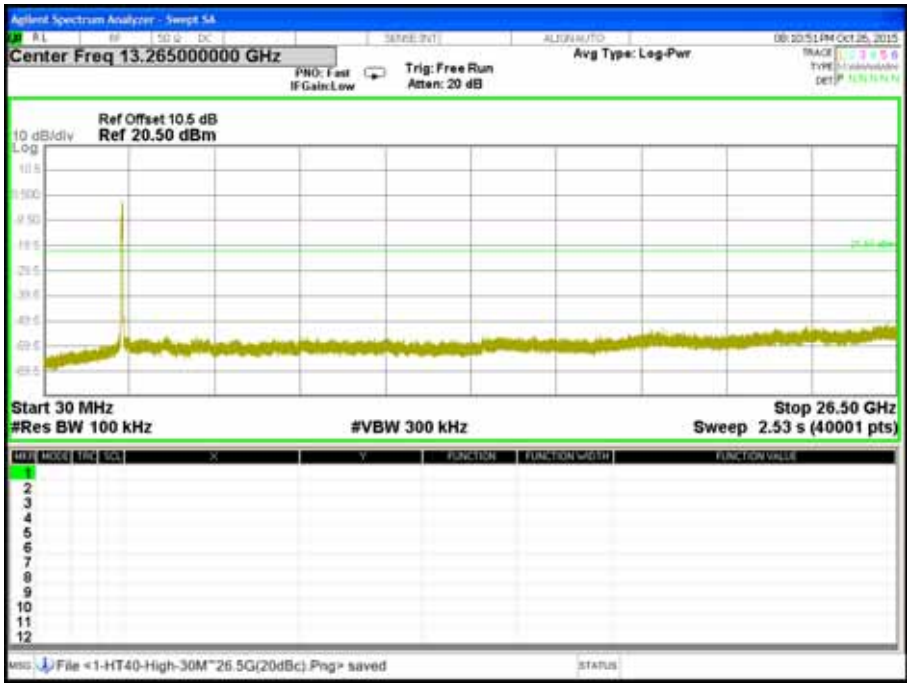


CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 mode / Chain 2)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 mode / Chain 2)

CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 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_B

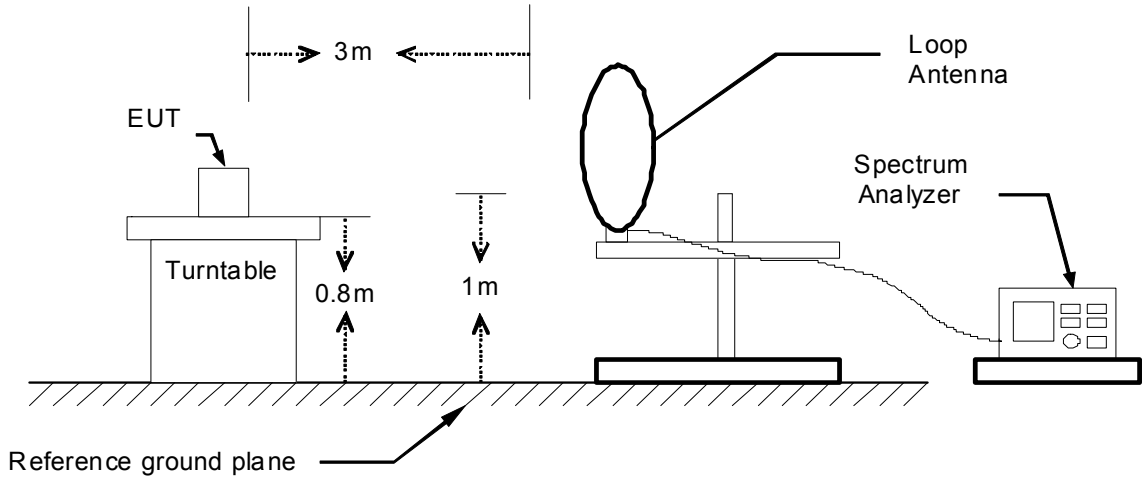
Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/14/2016
EMI Test Receiver	Rohde & Schwarz	ESCI	100221	04/22/2016
Bi-log Antenna	TESEQ	CBL6112D	35403	08/04/2016
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-285	04/19/2016
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	12/02/2015
Horn Antenna	COM-POWER	AH-840	03077	12/17/2015
Pre-Amplifier	Agilent	8447D	2944A10052	07/14/2016
Pre-Amplifier	Agilent	8449B	3008A01916	07/14/2016
LOOP Antenna	COM-POWER	AL-130	121060	05/24/2016

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

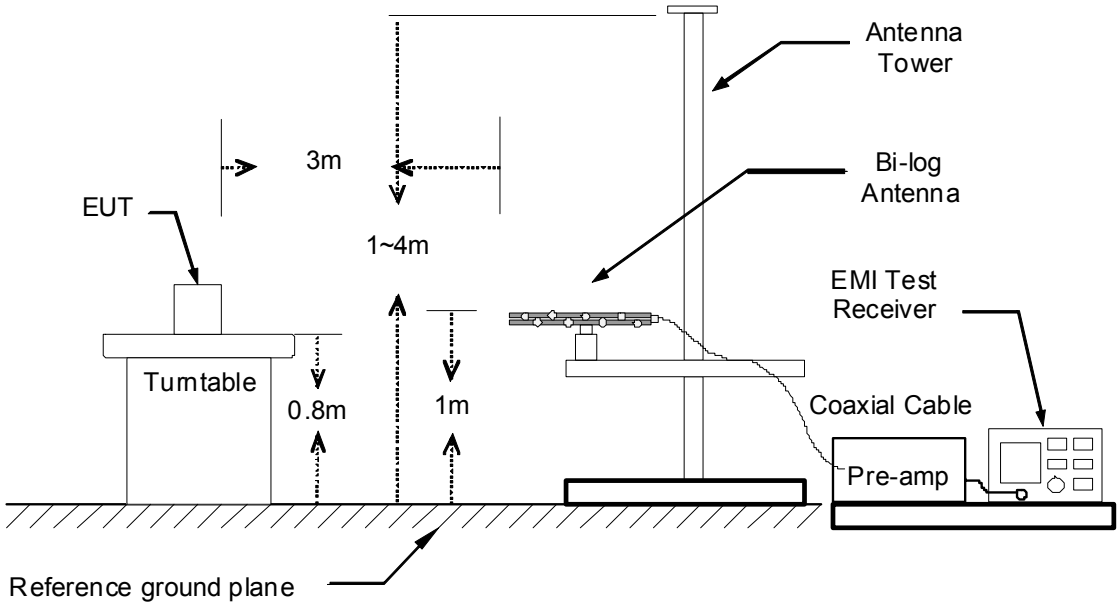
TEST SETUP

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

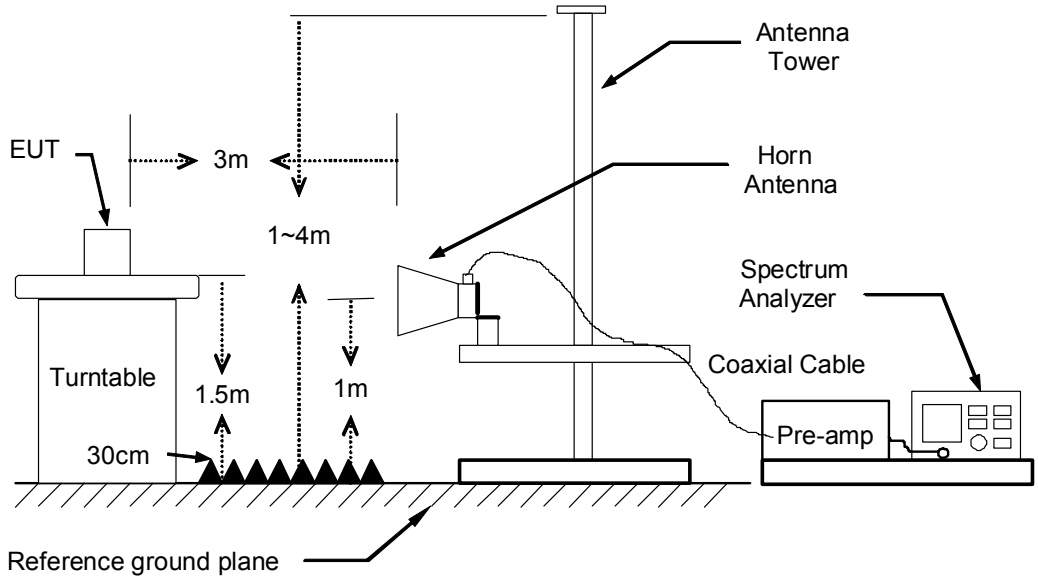
9kHz ~ 30MHz



30MHz ~ 1GHz



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



TEST PROCEDURE

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

Remark：

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

TEST RESULTS

Below 1 GHz (9kHz ~ 30MHz)

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

Below 1 GHz (30MHz ~ 1GHz)

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	Mode 1	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
156.10	49.75	-15.78	33.97	43.50	-9.53	253	200	Peak
250.19	44.59	-12.67	31.92	46.00	-14.08	118	100	Peak
337.49	53.20	-10.55	42.65	46.00	-3.35	314	100	Peak
355.92	47.51	-10.10	37.41	46.00	-8.59	300	100	Peak
393.75	45.36	-9.25	36.11	46.00	-9.89	260	100	Peak
644.98	42.88	-6.18	36.70	46.00	-9.30	92	100	Peak
900.09	40.26	-2.89	37.37	46.00	-8.63	197	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
37.76	47.89	-12.53	35.36	40.00	-4.64	97	100	Peak
159.01	51.47	-15.95	35.52	43.50	-7.98	269	100	Peak
312.27	48.20	-11.20	37.00	46.00	-9.00	78	100	Peak
393.75	44.66	-9.25	35.41	46.00	-10.59	148	100	Peak
435.46	43.89	-8.83	35.06	46.00	-10.94	136	100	Peak
570.29	40.59	-7.08	33.51	46.00	-12.49	92	200	Peak
734.22	39.10	-5.23	33.87	46.00	-12.13	353	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11b TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2052.00	47.24	1.85	49.09	74.00	-24.91	43	100	Peak
2300.00	49.38	2.57	51.95	74.00	-22.05	270	100	Peak
2550.00	47.95	3.25	51.20	74.00	-22.80	260	200	Peak
4830.00	44.89	8.42	53.31	54.00	-0.69	306	100	Average
4830.00	46.04	8.42	54.46	74.00	-19.54	306	100	Peak
7200.00	37.07	12.30	49.37	74.00	-24.63	253	100	Peak
9615.00	36.15	14.90	51.05	74.00	-22.95	19	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
2132.00	47.60	2.08	49.68	74.00	-24.32	124	200	Peak
2274.00	47.45	2.49	49.94	74.00	-24.06	108	200	Peak
2532.00	47.29	3.21	50.50	74.00	-23.50	298	200	Peak
4830.00	38.67	8.42	47.09	74.00	-26.91	110	100	Peak
7425.00	37.74	12.36	50.10	74.00	-23.90	72	100	Peak
9855.00	36.49	15.23	51.72	74.00	-22.28	270	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11b TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2152.00	47.58	2.14	49.72	74.00	-24.28	88	200	Peak
2362.00	47.40	2.75	50.15	74.00	-23.85	97	200	Peak
2492.00	48.16	3.13	51.29	74.00	-22.71	74	200	Peak
4875.00	45.03	8.53	53.56	54.00	-0.44	300	100	Average
4875.00	48.41	8.53	56.94	74.00	-17.06	300	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
2234.00	47.66	2.38	50.04	74.00	-23.96	9	200	Peak
2338.00	47.09	2.68	49.77	74.00	-24.23	276	100	Peak
2550.00	47.59	3.25	50.84	74.00	-23.16	51	200	Peak
4965.00	38.43	8.74	47.17	74.00	-26.83	192	100	Peak
7305.00	37.25	12.33	49.58	74.00	-24.42	343	100	Peak
9780.00	36.12	15.13	51.25	74.00	-22.75	92	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11b TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2290.00	49.06	2.54	51.60	74.00	-22.40	250	100	Peak
2384.00	48.76	2.81	51.57	74.00	-22.43	92	200	Peak
2602.00	47.98	3.35	51.33	74.00	-22.67	284	100	Peak
4920.00	44.96	8.63	53.59	54.00	-0.41	301	200	Average
4920.00	46.48	8.63	55.11	74.00	-18.89	301	200	Peak
7035.00	37.86	12.26	50.12	74.00	-23.88	1	100	Peak
9855.00	37.28	15.23	52.51	74.00	-21.49	360	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
2234.00	46.92	2.38	49.30	74.00	-24.70	71	100	Peak
2348.00	47.86	2.71	50.57	74.00	-23.43	172	100	Peak
2514.00	47.52	3.18	50.70	74.00	-23.30	354	200	Peak
4920.00	39.79	8.63	48.42	74.00	-25.58	25	100	Peak
7380.00	39.95	12.35	52.30	74.00	-21.70	336	100	Peak
10455.00	35.91	16.67	52.58	74.00	-21.42	3	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11g TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2062.00	47.46	1.88	49.34	74.00	-24.66	0	200	Peak
2248.00	48.14	2.42	50.56	74.00	-23.44	246	100	Peak
2494.00	49.04	3.13	52.17	74.00	-21.83	78	100	Peak
4815.00	36.90	8.39	45.29	54.00	-8.71	316	100	Average
4815.00	45.30	8.39	53.69	74.00	-20.31	316	100	Peak
7245.00	37.93	12.31	50.24	74.00	-23.76	12	200	Peak
9645.00	36.37	14.94	51.31	74.00	-22.69	36	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
2012.00	47.86	1.73	49.59	74.00	-24.41	0	100	Peak
2256.00	47.51	2.44	49.95	74.00	-24.05	72	200	Peak
2568.00	46.99	3.28	50.27	74.00	-23.73	165	100	Peak
4830.00	39.72	8.42	48.14	74.00	-25.86	12	100	Peak
7230.00	33.50	12.31	45.81	54.00	-8.19	360	100	Average
7230.00	42.47	12.31	54.78	74.00	-19.22	360	100	Peak
9585.00	37.71	14.86	52.57	74.00	-21.43	76	200	Peak

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11g TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2248.00	47.87	2.42	50.29	74.00	-23.71	22	100	Peak
2390.00	49.77	2.83	52.60	74.00	-21.40	261	200	Peak
2490.00	42.20	3.12	45.32	54.00	-8.68	89	200	Average
2490.00	50.21	3.12	53.33	74.00	-20.67	89	200	Peak
4875.00	36.60	8.53	45.13	54.00	-8.87	308	100	Average
4875.00	45.42	8.53	53.95	74.00	-20.05	308	100	Peak
7305.00	37.50	12.33	49.83	74.00	-24.17	283	100	Peak
9750.00	36.27	15.09	51.36	74.00	-22.64	20	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
2048.00	47.74	1.84	49.58	74.00	-24.42	319	200	Peak
2168.00	48.40	2.19	50.59	74.00	-23.41	7	200	Peak
2648.00	47.36	3.44	50.80	74.00	-23.20	36	200	Peak
4875.00	38.69	8.53	47.22	74.00	-26.78	37	100	Peak
7305.00	36.50	12.33	48.83	54.00	-5.17	335	100	Average
7305.00	45.37	12.33	57.70	74.00	-16.30	335	100	Peak
9660.00	37.49	14.96	52.45	74.00	-21.55	252	200	Peak

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11g TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2200.00	48.05	2.28	50.33	74.00	-23.67	36	200	Peak
2334.00	47.89	2.67	50.56	74.00	-23.44	358	100	Peak
2506.00	48.98	3.16	52.14	74.00	-21.86	76	200	Peak
4920.00	42.05	8.63	50.68	74.00	-23.32	301	100	Peak
7380.00	40.09	12.35	52.44	74.00	-21.56	325	200	Peak
10620.00	35.52	17.00	52.52	74.00	-21.48	214	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
2022.00	47.10	1.76	48.86	74.00	-25.14	144	200	Peak
2226.00	47.59	2.36	49.95	74.00	-24.05	335	200	Peak
2666.00	47.00	3.48	50.48	74.00	-23.52	315	200	Peak
4920.00	38.18	8.63	46.81	74.00	-27.19	297	100	Peak
7380.00	33.60	12.35	45.95	54.00	-8.05	326	100	Average
7380.00	43.65	12.35	56.00	74.00	-18.00	326	100	Peak
10200.00	36.53	15.97	52.50	74.00	-21.50	17	200	Peak

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT20 TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2122.00	47.97	2.05	50.02	74.00	-23.98	193	100	Peak
2288.00	47.92	2.54	50.46	74.00	-23.54	268	100	Peak
2496.00	40.50	3.14	43.64	54.00	-10.36	273	100	Average
2496.00	50.13	3.14	53.27	74.00	-20.73	273	100	Peak
4830.00	43.50	8.42	51.92	54.00	-2.08	295	100	Average
4830.00	49.99	8.42	58.41	74.00	-15.59	295	100	Peak
7215.00	38.23	12.31	50.54	74.00	-23.46	350	200	Peak
9585.00	36.23	14.86	51.09	74.00	-22.91	360	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
2048.00	47.94	1.84	49.78	74.00	-24.22	160	200	Peak
2186.00	47.15	2.24	49.39	74.00	-24.61	165	100	Peak
2494.00	48.18	3.13	51.31	74.00	-22.69	359	200	Peak
4830.00	37.10	8.42	45.52	54.00	-8.48	50	100	Average
4830.00	45.41	8.42	53.83	74.00	-20.17	50	100	Peak
7230.00	38.91	12.31	51.22	74.00	-22.78	326	100	Peak
9615.00	36.95	14.90	51.85	74.00	-22.15	340	200	Peak

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT20 TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2100.00	48.95	1.99	50.94	74.00	-23.06	62	100	Peak
2390.00	49.66	2.83	52.49	74.00	-21.51	85	100	Peak
2490.00	41.20	3.12	44.32	54.00	-9.68	84	200	Average
2490.00	50.24	3.12	53.36	74.00	-20.64	84	200	Peak
4860.00	41.03	8.49	49.52	54.00	-4.48	296	100	Average
4860.00	48.51	8.49	57.00	74.00	-17.00	296	100	Peak
6975.00	37.70	12.22	49.92	74.00	-24.08	128	200	Peak
9750.00	37.10	15.09	52.19	74.00	-21.81	307	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
2090.00	47.63	1.96	49.59	74.00	-24.41	96	200	Peak
2284.00	47.62	2.52	50.14	74.00	-23.86	222	100	Peak
2602.00	47.80	3.35	51.15	74.00	-22.85	359	200	Peak
4875.00	42.82	8.53	51.35	74.00	-22.65	274	100	Peak
7320.00	33.90	12.33	46.23	54.00	-7.77	340	100	Average
7320.00	41.63	12.33	53.96	74.00	-20.04	340	100	Peak
9690.00	36.75	15.00	51.75	74.00	-22.25	223	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT20 TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2216.00	48.08	2.33	50.41	74.00	-23.59	346	200	Peak
2386.00	43.50	2.82	46.32	54.00	-7.68	92	200	Average
2386.00	50.67	2.82	53.49	74.00	-20.51	92	200	Peak
2502.00	41.50	3.15	44.65	54.00	-9.35	94	100	Average
2502.00	50.27	3.15	53.42	74.00	-20.58	94	100	Peak
4920.00	38.31	8.63	46.94	54.00	-7.06	304	100	Average
4920.00	47.66	8.63	56.29	74.00	-17.71	304	100	Peak
7080.00	37.02	12.27	49.29	74.00	-24.71	260	100	Peak
9870.00	36.85	15.25	52.10	74.00	-21.90	70	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
2050.00	48.47	1.85	50.32	74.00	-23.68	22	100	Peak
2304.00	48.43	2.58	51.01	74.00	-22.99	190	200	Peak
2506.00	47.65	3.16	50.81	74.00	-23.19	15	200	Peak
4920.00	40.30	8.63	48.93	74.00	-25.07	67	200	Peak
7380.00	32.10	12.35	44.45	54.00	-9.55	338	100	Average
7380.00	40.87	12.35	53.22	74.00	-20.78	338	100	Peak
9585.00	36.66	14.86	51.52	74.00	-22.48	313	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT40 TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1986.00	47.68	1.58	49.26	74.00	-24.74	93	200	Peak
2282.00	47.27	2.52	49.79	74.00	-24.21	238	200	Peak
2496.00	49.49	3.14	52.63	74.00	-21.37	76	100	Peak
4815.00	39.10	8.39	47.49	54.00	-6.51	305	100	Average
4815.00	47.31	8.39	55.70	74.00	-18.30	305	100	Peak
7740.00	37.74	12.71	50.45	74.00	-23.55	244	200	Peak
9690.00	36.21	15.00	51.21	74.00	-22.79	329	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
1974.00	48.26	1.47	49.73	74.00	-24.27	13	100	Peak
2220.00	47.13	2.34	49.47	74.00	-24.53	93	200	Peak
2528.00	47.46	3.21	50.67	74.00	-23.33	287	200	Peak
4845.00	39.26	8.46	47.72	74.00	-26.28	274	100	Peak
7245.00	37.58	12.31	49.89	74.00	-24.11	73	200	Peak
9615.00	36.30	14.90	51.20	74.00	-22.80	162	200	Peak

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT40 TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	46.97	2.83	49.80	54.00	-4.20	27	100	Average
2390.00	56.49	2.83	59.32	74.00	-14.68	27	100	Peak
2484.00	48.00	3.10	51.10	54.00	-2.90	94	100	Average
2484.00	57.68	3.10	60.78	74.00	-13.22	94	100	Peak
2642.00	48.68	3.43	52.11	74.00	-21.89	71	100	Peak
4875.00	43.01	8.53	51.54	74.00	-22.46	305	100	Peak
7200.00	37.39	12.30	49.69	74.00	-24.31	213	200	Peak
9480.00	36.97	14.68	51.65	74.00	-22.35	176	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
2242.00	48.12	2.40	50.52	74.00	-23.48	360	100	Peak
2390.00	48.57	2.83	51.40	74.00	-22.60	261	100	Peak
2484.00	49.43	3.10	52.53	74.00	-21.47	208	100	Peak
4860.00	39.53	8.49	48.02	74.00	-25.98	264	200	Peak
7230.00	37.69	12.31	50.00	74.00	-24.00	214	100	Peak
9585.00	36.71	14.86	51.57	74.00	-22.43	256	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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Rex Chiu
Test Model	DL4323U	Test Date	2015/10/20
Test mode	IEEE 802.11gn HT40 TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2090.00	47.82	1.96	49.78	74.00	-24.22	346	100	Peak
2374.00	48.51	2.78	51.29	74.00	-22.71	82	100	Peak
2502.00	42.30	3.15	45.45	54.00	-8.55	98	100	Average
2502.00	51.95	3.15	55.10	74.00	-18.90	98	100	Peak
4905.00	42.51	8.60	51.11	74.00	-22.89	305	100	Peak
7890.00	37.27	12.91	50.18	74.00	-23.82	316	100	Peak
9810.00	36.80	15.17	51.97	74.00	-22.03	249	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
1902.00	48.14	0.85	48.99	74.00	-25.01	276	100	Peak
2208.00	48.71	2.30	51.01	74.00	-22.99	360	100	Peak
2756.00	47.87	3.66	51.53	74.00	-22.47	52	100	Peak
4905.00	39.38	8.60	47.98	74.00	-26.02	43	200	Peak
7455.00	37.31	12.37	49.68	74.00	-24.32	0	100	Peak
9435.00	37.00	14.55	51.55	74.00	-22.45	158	100	Peak

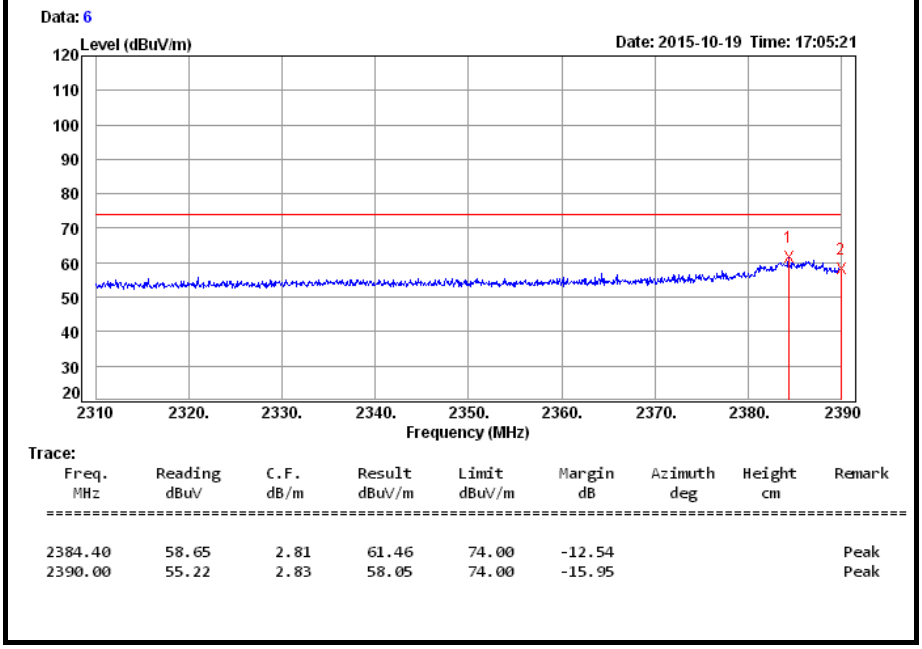
Remark:

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

Restricted Band Edges

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11b mode)

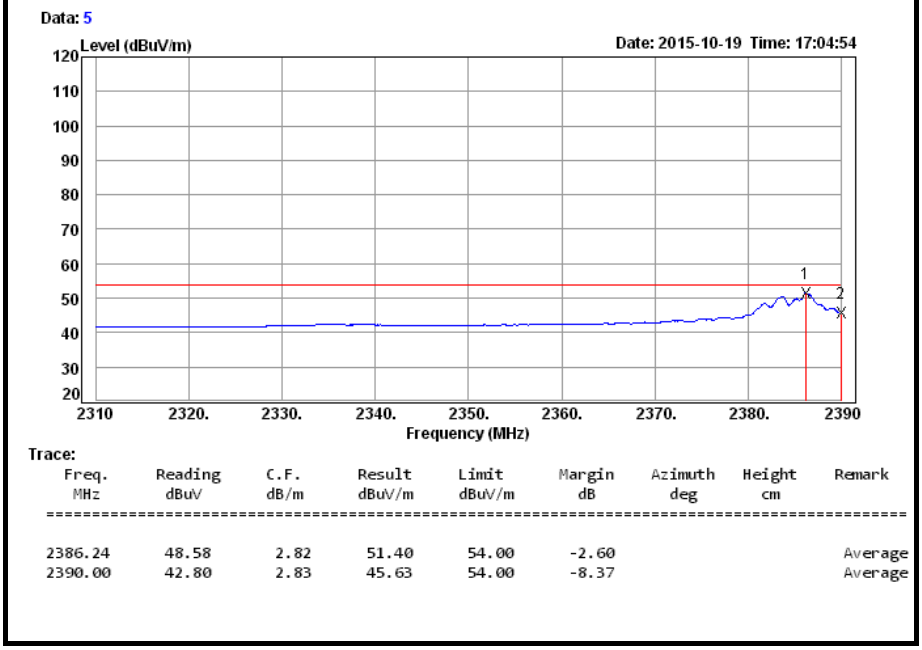


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2384.40	58.65	2.81	61.46	74.00	-12.54			Peak
2390.00	55.22	2.83	58.05	74.00	-15.95			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11b mode)

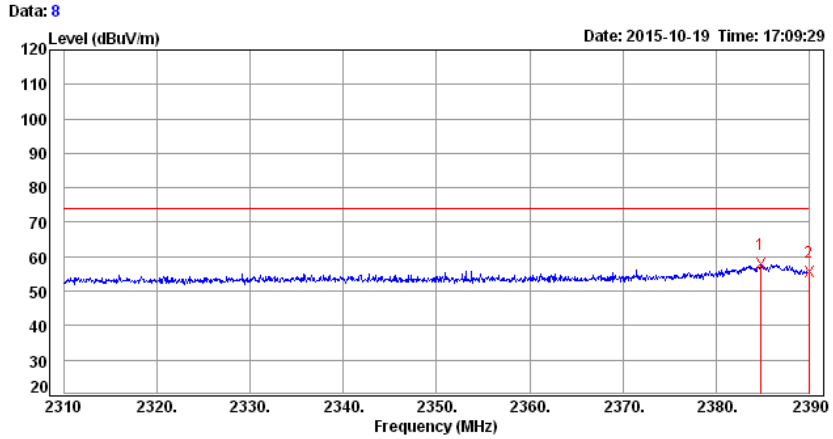


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2386.24	48.58	2.82	51.40	54.00	-2.60			Average
2390.00	42.80	2.83	45.63	54.00	-8.37			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11b mode)

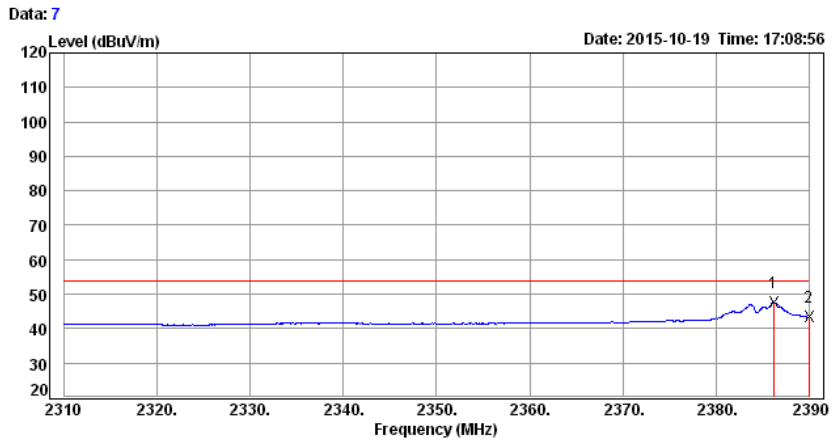


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2384.80	54.94	2.82	57.76	74.00	-16.24			Peak
2390.00	52.55	2.83	55.38	74.00	-18.62			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11b mode)

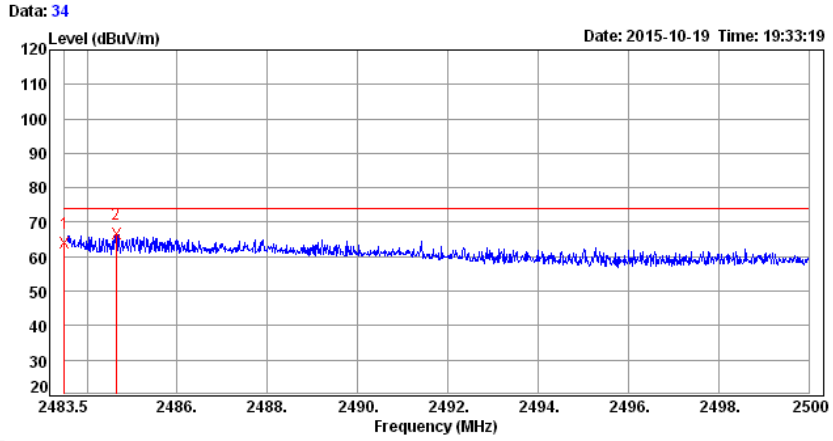


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2386.24	44.79	2.82	47.61	54.00	-6.39			Average
2390.00	40.45	2.83	43.28	54.00	-10.72			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11b mode)

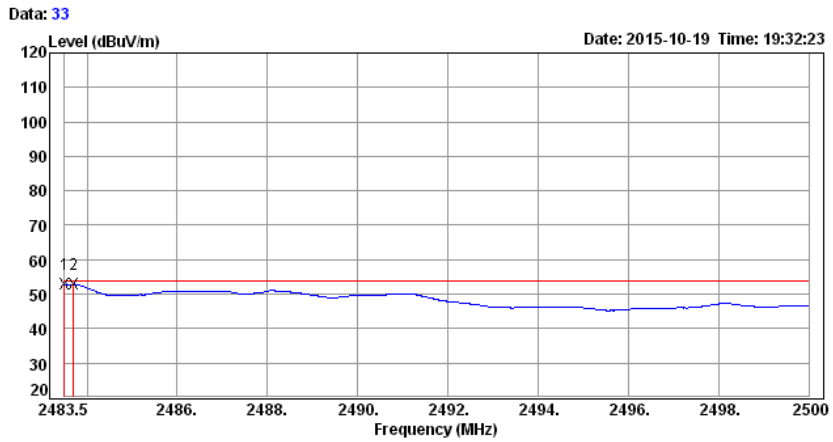


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	60.82	3.10	63.92	74.00	-10.08			Peak
2484.64	63.57	3.11	66.68	74.00	-7.32			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11b mode)

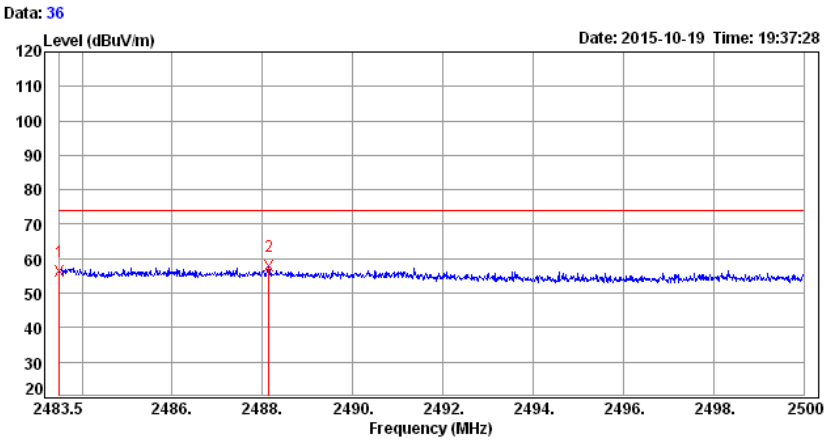


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	49.68	3.10	52.78	54.00	-1.22			Average
2483.70	49.80	3.10	52.90	54.00	-1.10			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11b mode)

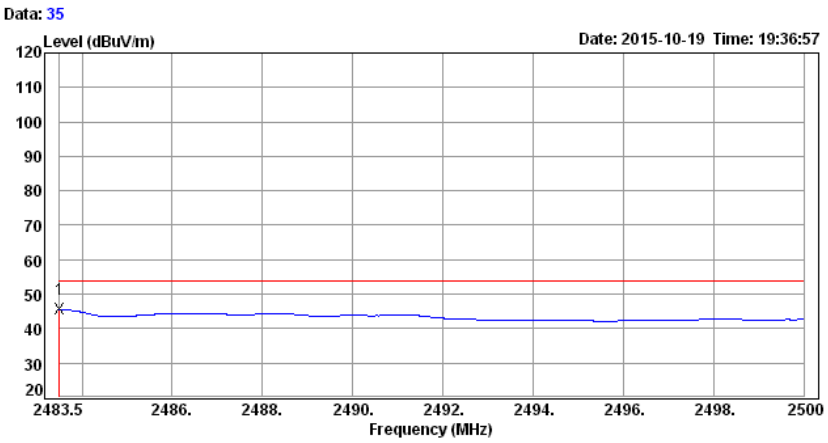


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	53.18	3.10	56.28	74.00	-17.72			Peak
2488.14	54.68	3.12	57.80	74.00	-16.20			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11b mode)

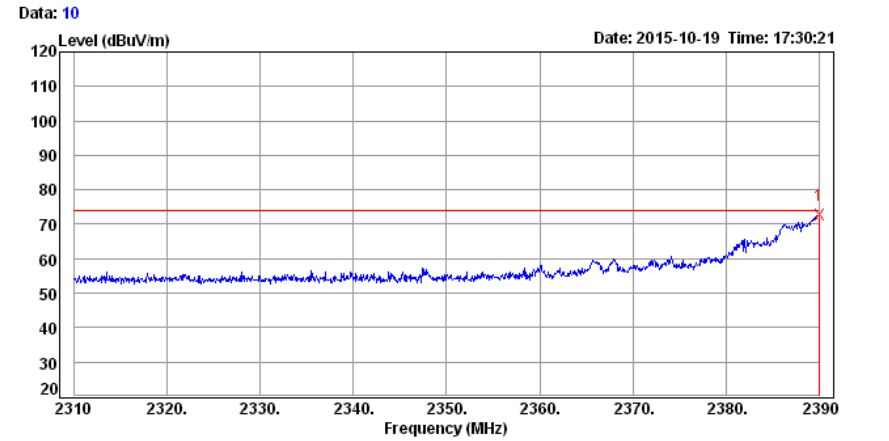


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	42.41	3.10	45.51	54.00	-8.49			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11g mode)

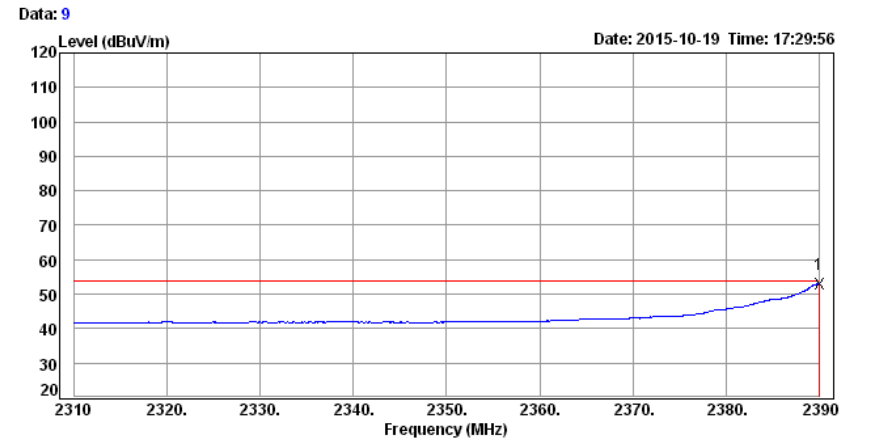


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	69.69	2.83	72.52	74.00	-1.48			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11g mode)

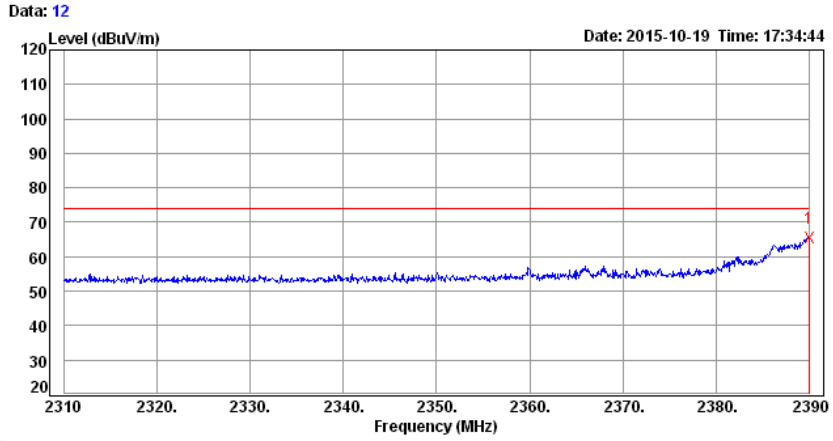


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	50.23	2.83	53.06	54.00	-0.94			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11g mode)

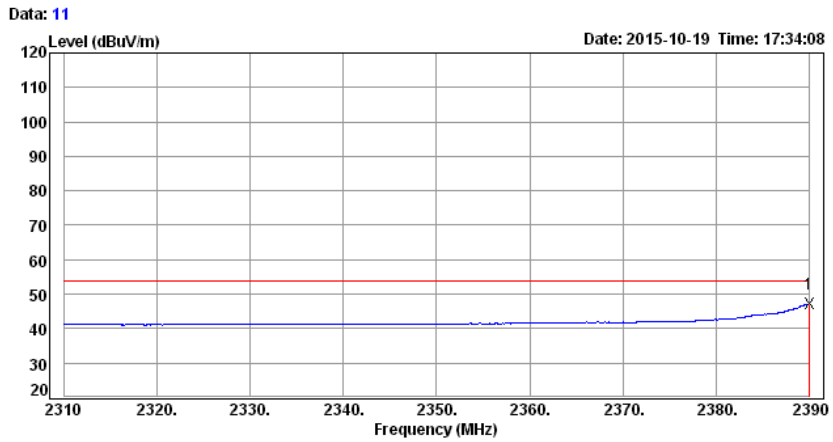


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	62.70	2.83	65.53	74.00	-8.47			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11g mode)

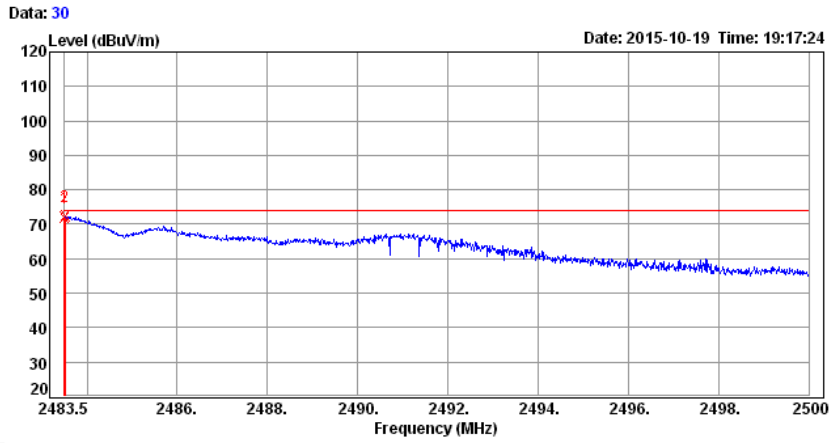


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	44.19	2.83	47.02	54.00	-6.98			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11g mode)

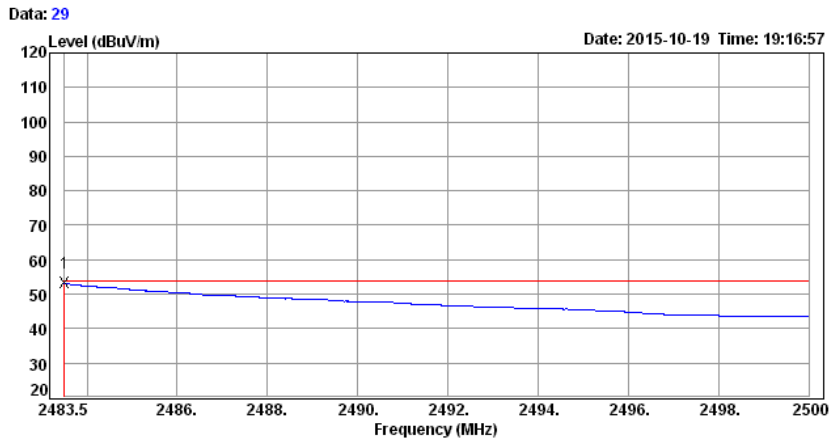


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	68.85	3.10	71.95	74.00	-2.05			Peak
2483.52	69.11	3.10	72.21	74.00	-1.79			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11g mode)

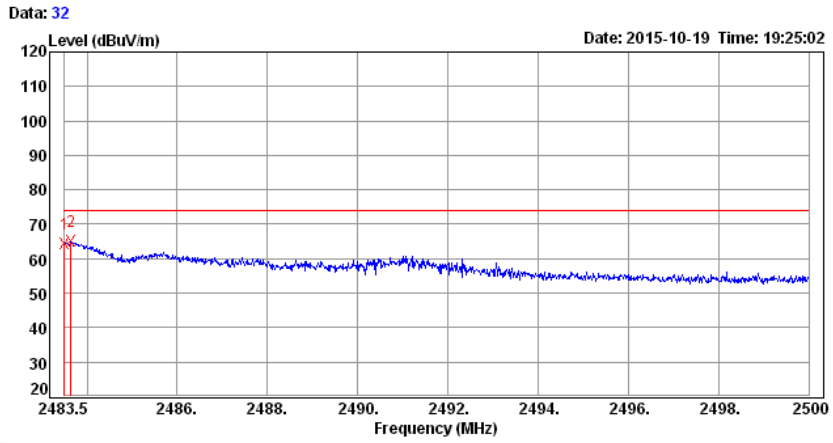


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	50.13	3.10	53.23	54.00	-0.77			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11g mode)

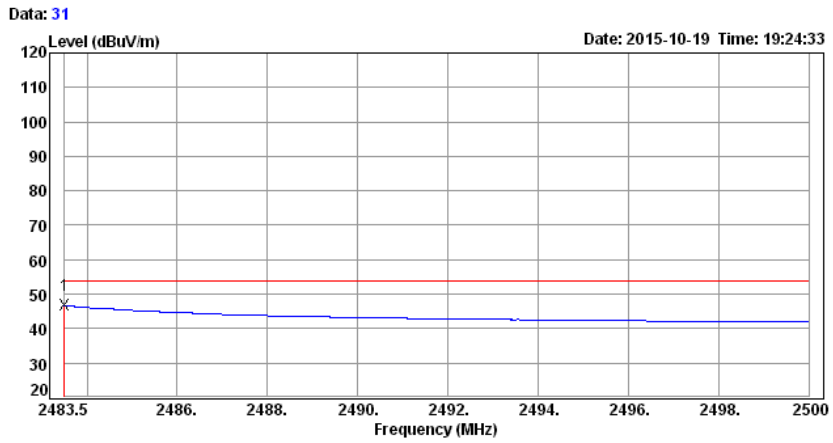


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	61.36	3.10	64.46	74.00	-9.54			Peak
2483.65	61.82	3.10	64.92	74.00	-9.08			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11g mode)

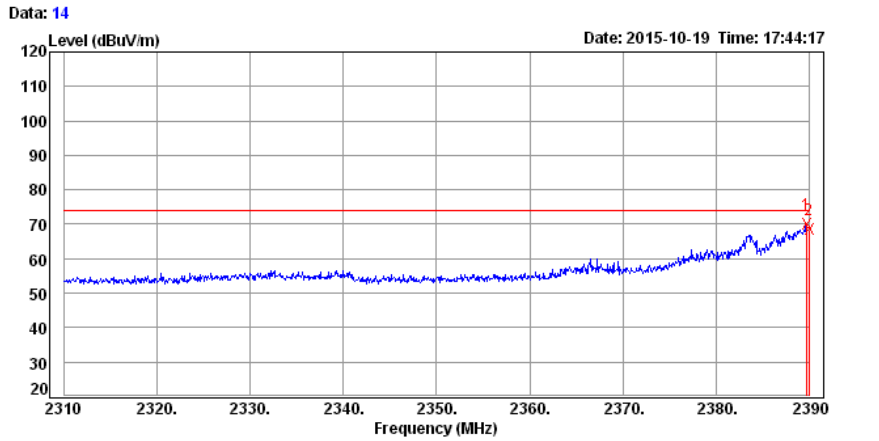


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	43.67	3.10	46.77	54.00	-7.23			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11gn HT20 mode)

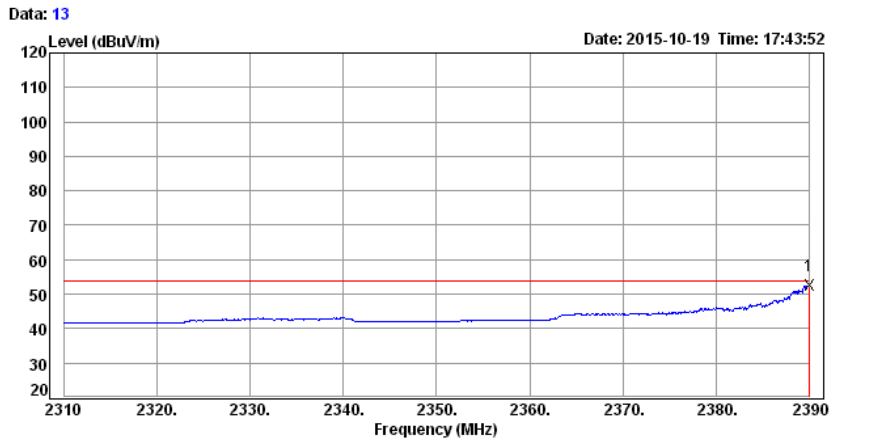


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.76	67.01	2.83	69.84	74.00	-4.16			Peak
2390.00	65.63	2.83	68.46	74.00	-5.54			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11gn HT20 mode)

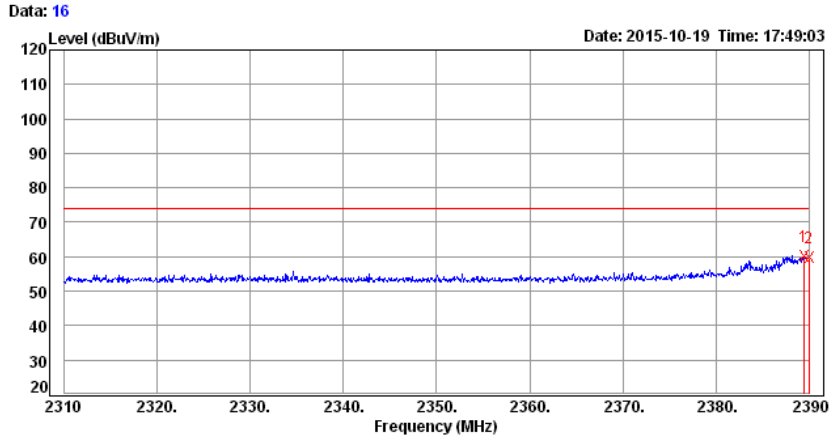


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	49.56	2.83	52.39	54.00	-1.61			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11gn HT20 mode)

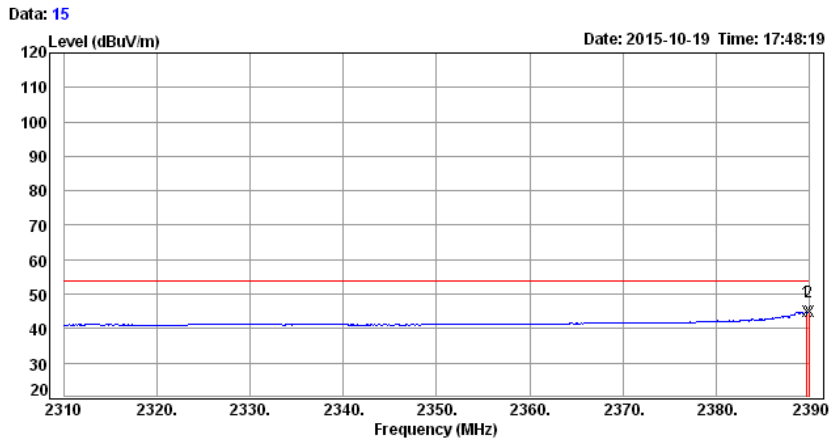


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.44	57.43	2.83	60.26	74.00	-13.74			Peak
2390.00	56.77	2.83	59.60	74.00	-14.40			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11gn HT20 mode)

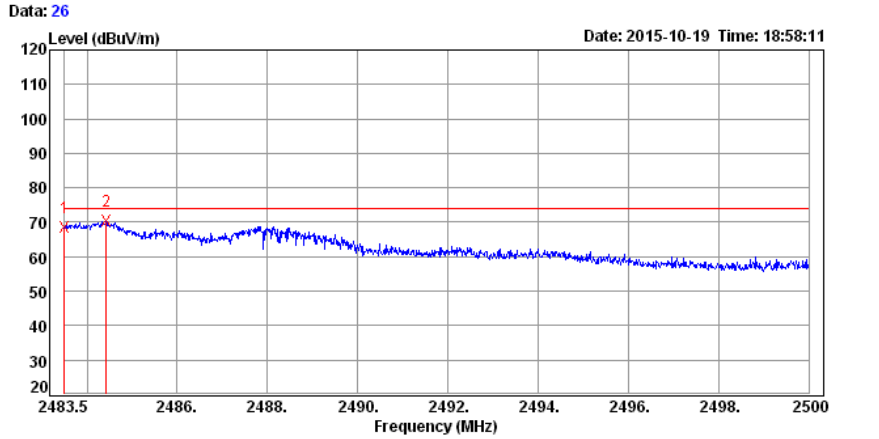


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.76	42.07	2.83	44.90	54.00	-9.10			Average
2390.00	42.02	2.83	44.85	54.00	-9.15			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11gn HT20 mode)

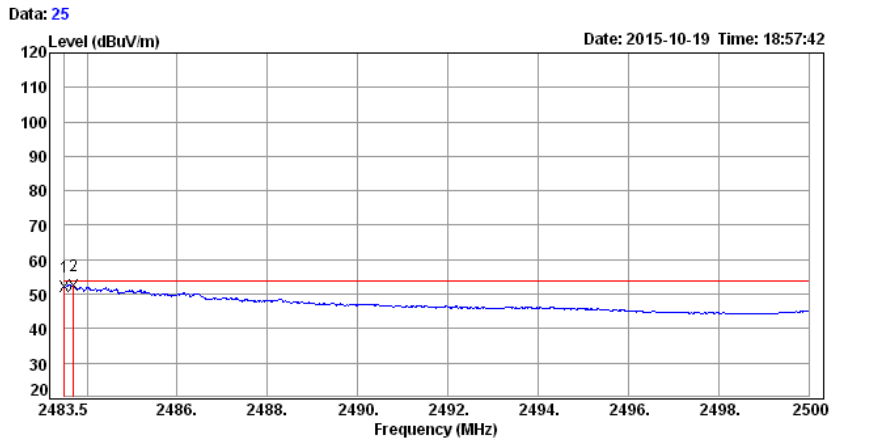


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	65.24	3.10	68.34	74.00	-5.66			Peak
2484.42	67.28	3.10	70.38	74.00	-3.62			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11gn HT20 mode)

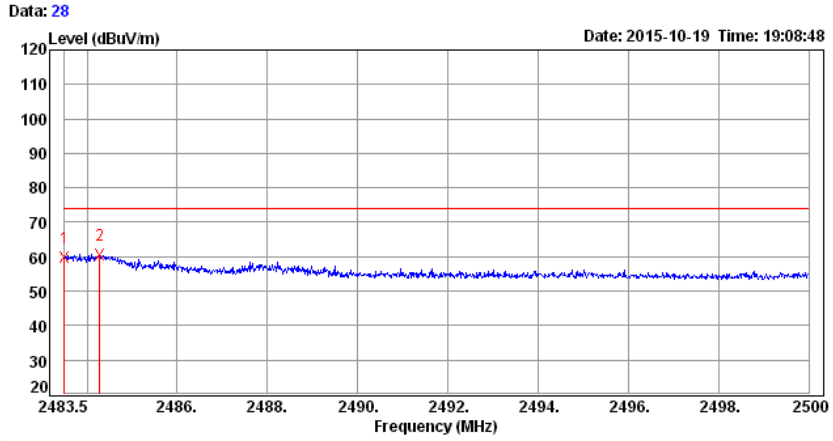


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	48.93	3.10	52.03	54.00	-1.97			Average
2483.70	49.58	3.10	52.68	54.00	-1.32			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11gn HT20 mode)

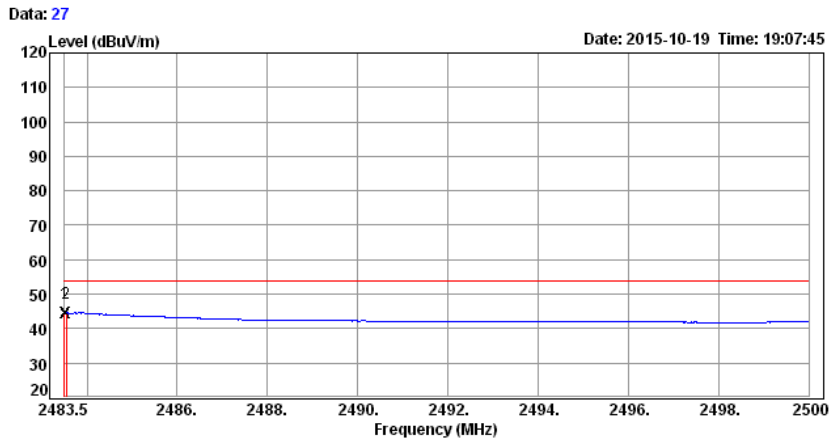


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	56.54	3.10	59.64	74.00	-14.36			Peak
2484.28	57.54	3.10	60.64	74.00	-13.36			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11gn HT20 mode)

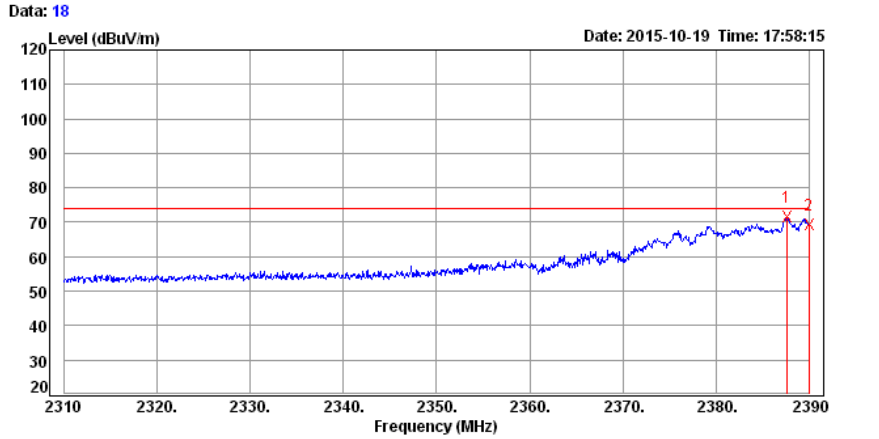


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	41.54	3.10	44.64	54.00	-9.36			Average
2483.53	41.61	3.10	44.71	54.00	-9.29			Average

Detector mode: Peak **Polarity: Horizontal**

CH Low (IEEE 802.11gn HT40 mode)

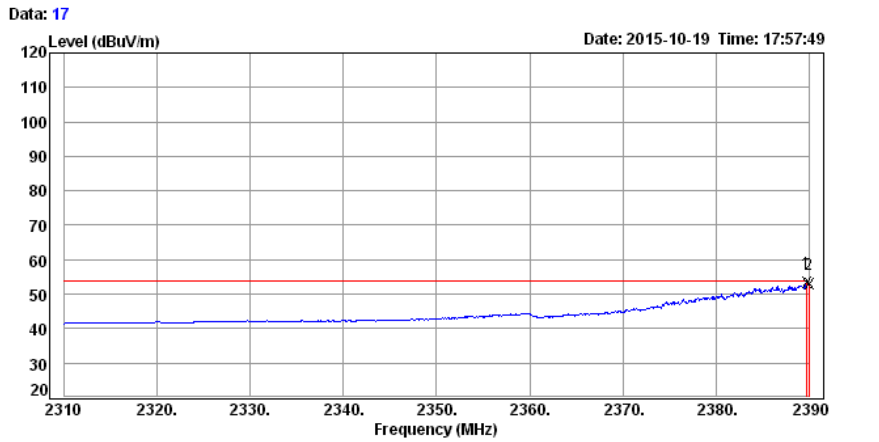


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2387.60	68.75	2.82	71.57	74.00	-2.43			Peak
2390.00	66.45	2.83	69.28	74.00	-4.72			Peak

Detector mode: Average **Polarity: Horizontal**

CH Low (IEEE 802.11gn HT40 mode)

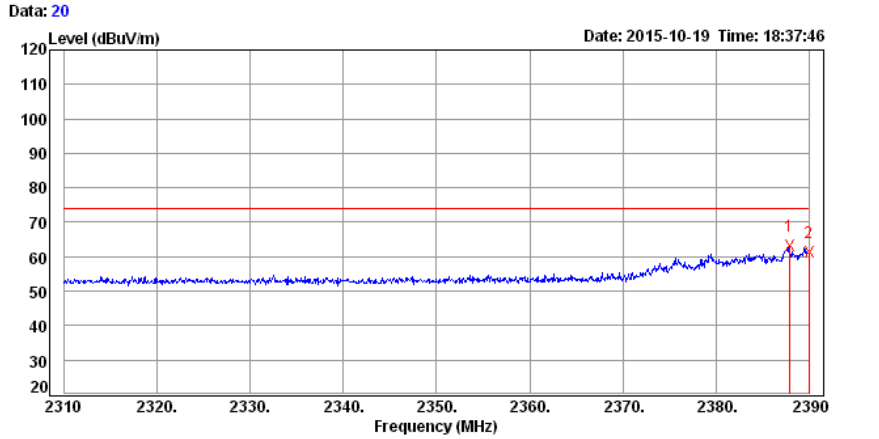


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.76	50.49	2.83	53.32	54.00	-0.68			Average
2390.00	49.90	2.83	52.73	54.00	-1.27			Average

Detector mode: Peak **Polarity: Vertical**

CH Low (IEEE 802.11gn HT40 mode)

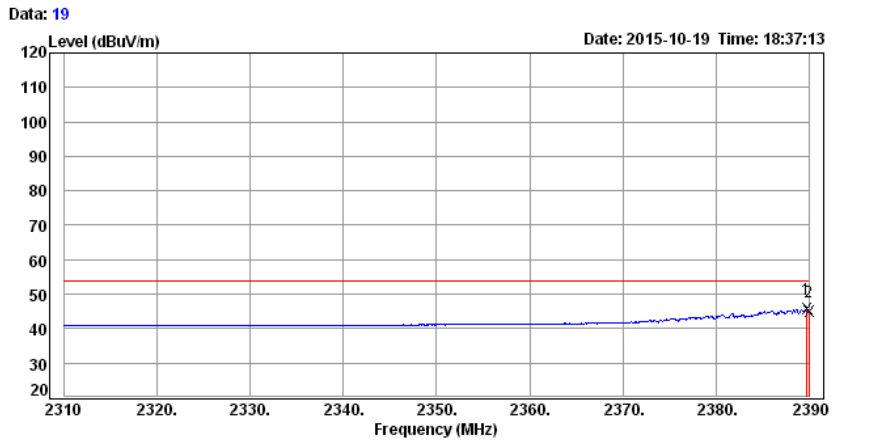


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2387.92	60.18	2.82	63.00	74.00	-11.00			Peak
2390.00	58.25	2.83	61.08	74.00	-12.92			Peak

Detector mode: Average **Polarity: Vertical**

CH Low (IEEE 802.11gn HT40 mode)

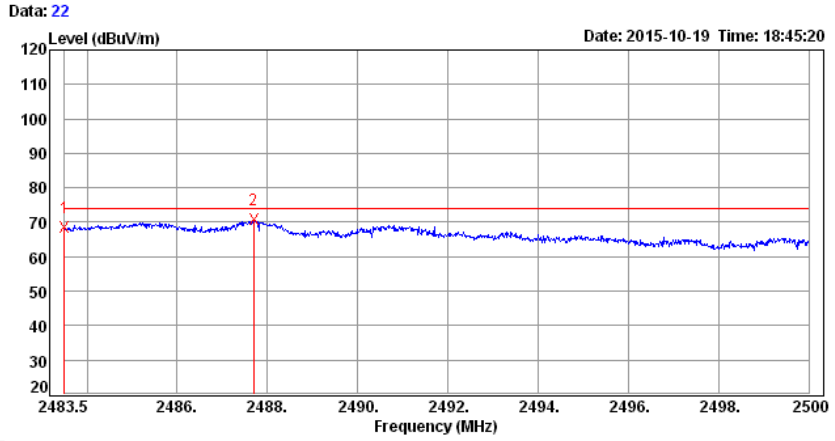


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.76	42.77	2.83	45.60	54.00	-8.40			Average
2390.00	42.25	2.83	45.08	54.00	-8.92			Average

Detector mode: Peak **Polarity: Horizontal**

CH High (IEEE 802.11gn HT40 mode)

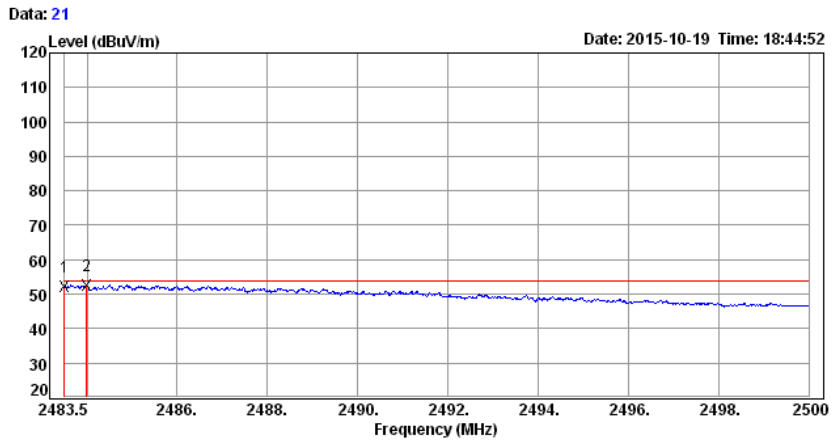


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	65.47	3.10	68.57	74.00	-5.43			Peak
2487.69	67.69	3.11	70.80	74.00	-3.20			Peak

Detector mode: Average **Polarity: Horizontal**

CH High (IEEE 802.11gn HT40 mode)

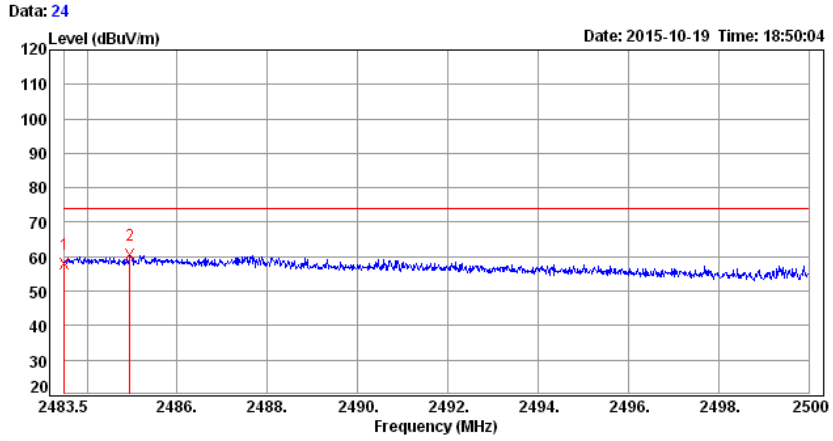


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	48.92	3.10	52.02	54.00	-1.98			Average
2484.00	49.49	3.10	52.59	54.00	-1.41			Average

Detector mode: Peak **Polarity: Vertical**

CH High (IEEE 802.11gn HT40 mode)

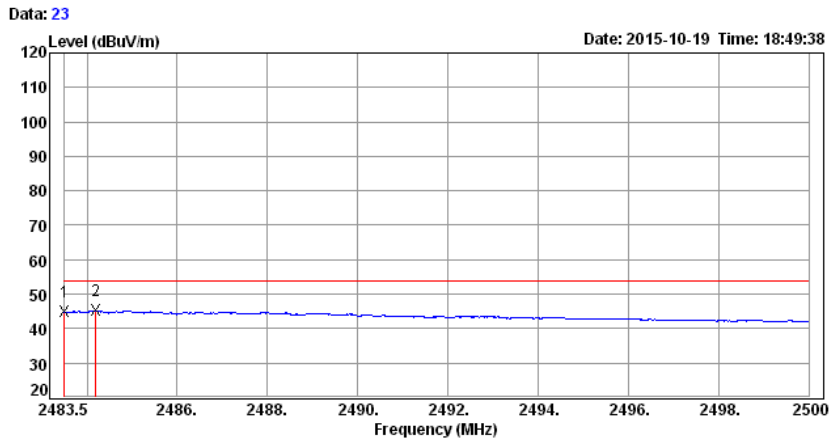


Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2483.50	54.84	3.10	57.94	74.00	-16.06			Peak
2484.95	57.38	3.11	60.49	74.00	-13.51			Peak

Detector mode: Average **Polarity: Vertical**

CH High (IEEE 802.11gn HT40 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	41.77	3.10	44.87	54.00	-9.13			Average
2484.19	42.13	3.10	45.23	54.00	-8.77			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.

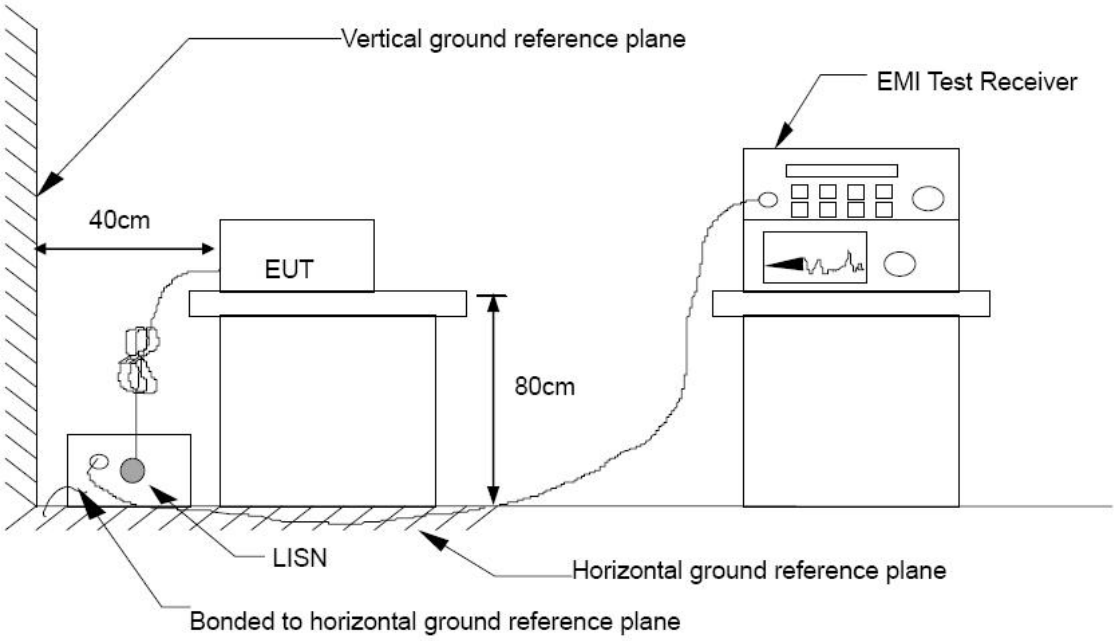
Frequency Range (MHz)	Conducted Limit (dBμv)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

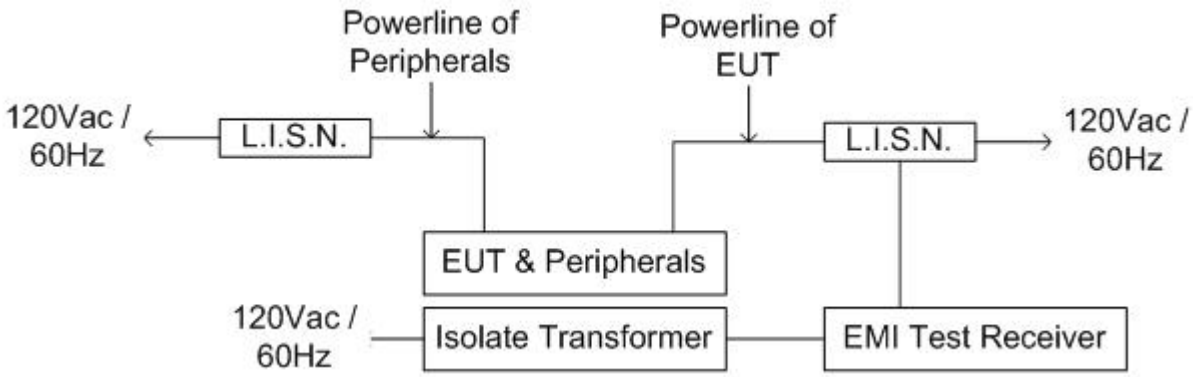
TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	Schwarzbeck	NSLK 8127	8127465	08/05/2016
L.I.S.N	Schwarzbeck	NSLK 8127	8127473	03/09/2016
EMI Test Receiver	Rohde & Schwarz	ESHS 30	838550/003	11/02/2015
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100111	06/28/2016

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

TEST SETUP





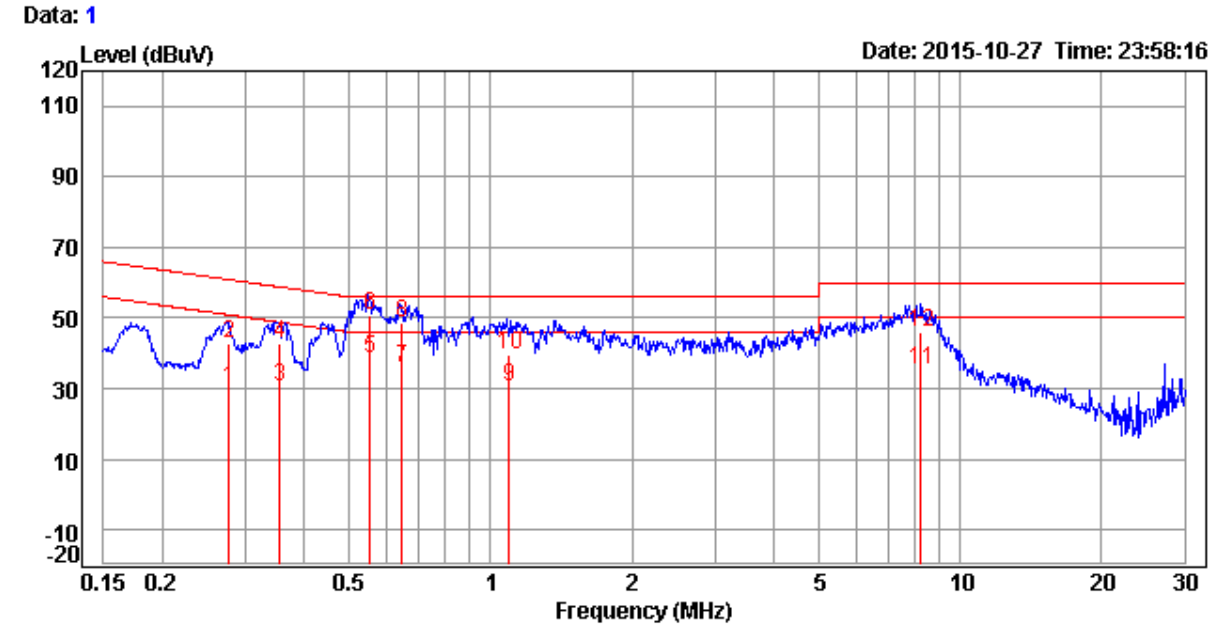
TEST PROCEDURE

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	300Mbps Wireless N VDSL2+ Modem Router	Test By	Crystal Wu
Test Model	DL4323U	Test Date	2015/10/27
Test mode	Mode 1	Temp. & Humidity	23°C, 46%

LINE



Trace:

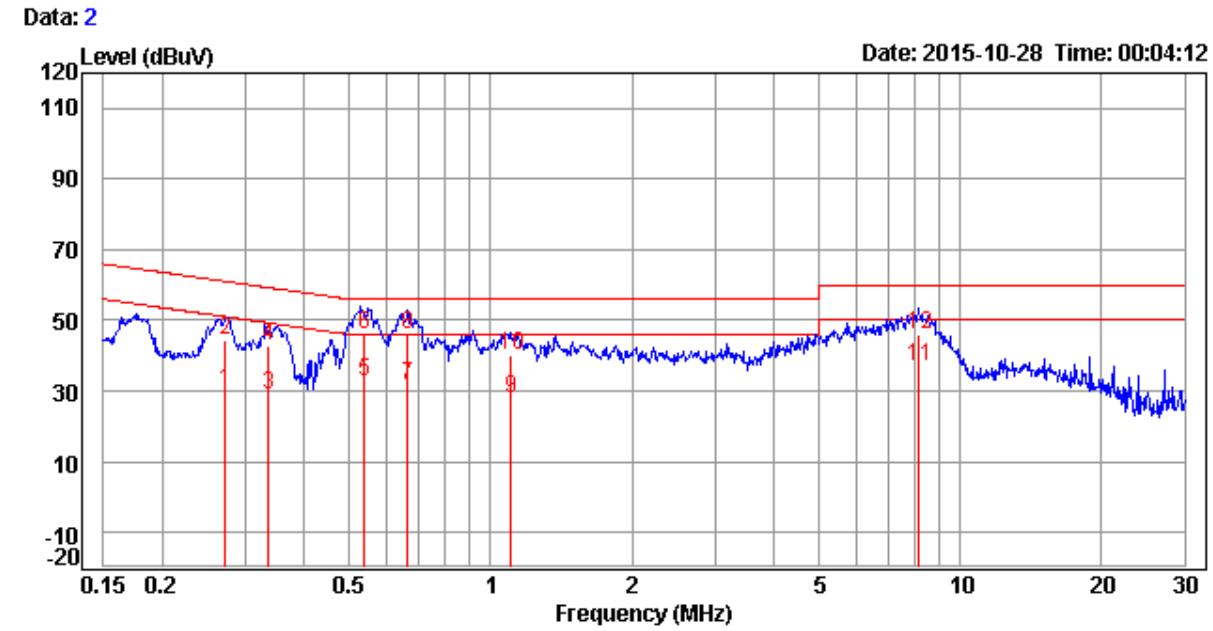
Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.276	32.98	20.23	9.98	42.96	30.21	60.94	50.94	-17.98	-20.73
0.354	32.72	20.69	9.99	42.71	30.68	58.87	48.87	-16.16	-18.19
0.552	40.77	28.64	10.00	50.77	38.64	56.00	46.00	-5.23	-7.36
0.644	38.71	26.06	10.00	48.71	36.06	56.00	46.00	-7.29	-9.94
1.092	29.78	20.60	10.02	39.80	30.62	56.00	46.00	-16.20	-15.38
8.236	35.74	25.18	10.33	46.07	35.51	60.00	50.00	-13.93	-14.49

Remark:

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

Product Name	300Mbps Wireless N VDSL2+ Modem Router	Test By	Crystal Wu
Test Model	DL4323U	Test Date	2015/10/27
Test Mode	Mode 1	Temp. & Humidity	23°C, 46%

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.
0.272	34.60	20.25	10.00	44.60	30.25	61.04	51.04	-16.44	-20.79
0.335	32.81	19.04	10.01	42.82	29.05	59.31	49.31	-16.49	-20.26
0.539	35.78	22.88	10.02	45.80	32.90	56.00	46.00	-10.20	-13.10
0.667	36.00	21.64	10.02	46.02	31.66	56.00	46.00	-9.98	-14.34
1.105	30.20	18.03	10.05	40.25	28.08	56.00	46.00	-15.75	-17.92
8.149	35.46	26.90	10.28	45.74	37.18	60.00	50.00	-14.26	-12.82

Remark:

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