FCC 47 CFR PART 15 SUBPART E: 2012 AND ANSI C63.4:2009 TEST REPORT

For

3G/4G Dual Band AC WiFi Router

Model: 4GM3W-01

Brand Name : NetComm Wireless

Issued for

NetComm Wireless Limited

Level 2, 18-20 Orion Road, Lane Cove, NSW 2066, Sydney, Australia

Issued by

Compliance Certification Services Inc.
Tainan Lab.
No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)
TEL: 886-6-580-2201
FAX: 886-6-580-2202

Issued Date: June 12, 2014

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 12, 2014	Initial Issue	ALL	Sunny Chang
01	June 27, 2014	Update data	Page 5; 32	Sunny Chang

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TITLE PAGE NO.

1. TEST REPORT CERTIFICATION

Applicant	：NetComm Wireless Limited
Address	：Level 2, 18-20 Orion Road, Lane Cove, NSW 2066, Sydney, Australia
Manufacturer	：NetComm Wireless Limited
Address	：Level 2, 18-20 Orion Road, Lane Cove, NSW 2066, Sydney, Australia
Equipment Under Test	：3G/4G Dual Band AC WiFi Router
Model	：4GM3W-01
Trade Name	：NetComm Wireless
Tested Date	：May 29, 2014 ~ June 06, 2014

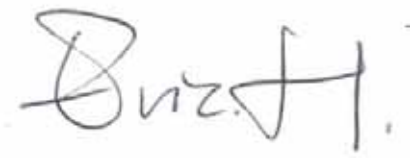
APPLICABLE STANDARD	
Standard	**Test Result**
FCC Part 15 Subpart E: 2012 AND ANSI C63.4: 2009	PASS

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:

Jeter Wu
Assistant Manager

Reviewed by:



Eric Huang
Assistant Section Manager

2. EUT DESCRIPTION

Product Name	3G/4G Dual Band AC WiFi Router
Model Number	4GM3W-01
Brand Name	NetComm Wireless
Identify Number	T140528N02
Received Date	May 28, 2014
Frequency Range	IEEE 802.11a, 802.11n HT20 : 5180MHz ~ 5240MHz; 5745 ~ 5825MHz IEEE 802.11n HT40 : 5190MHz ~ 5230MHz; 5755 ~ 5795MHz IEEE 802.11ac VHT80 : 5210MHz; 5775MHz
Transmit Power	IEEE 802.11a : 17.09dBm IEEE 802.11n HT20 : 17.05dBm IEEE 802.11n HT40 : 13.48dBm IEEE 802.11ac VHT80 : 12.62dBm
Channel Spacing	IEEE 802.11a, 802.11n HT20 : 20MHz IEEE 802.11n HT40, 11ac VHT80 : 20MHz
Channel Number	IEEE 802.11a, 802.11n HT20 : 5180MHz ~ 5825MHz : 9 Channels IEEE 802.11n HT40 : 5190MHz ~ 5795MHz : 4 Channels IEEE 802.11ac VHT80 : 5210MHz ~ 5775MHz : 2 Channels
Transmit Data Rate	IEEE 802.11a : 54, 48 ,36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 : 130 , 117 , 104 , 78 , 65 , 58.5 , 52 , 39 , 26 , 19.5 , 13 , 6.5 Mbps IEEE 802.11n HT40 : 300 , 270 , 243 , 216 , 162 , 150 , 135 , 121.5 , 108 , 81 , 54 , 40.5 , 27 , 13.5 Mbps IEEE 802.11ac (HT20): 78 , 65 , 58.5 , 52 , 39 , 26 , 19.5 , 13 , 6.5 Mbps (HT40): 180 , 162 , 150 , 135 , 121.5 , 108 , 81 , 54 , 40.5 , 27 , 13.5 Mbps (VHT80): 433.3, 390 , 351 , 292.5 , 263.5, 234 , 175.5 , 117, 87.8, 58.5, 29.3 Mbps
Type of Modulation	IEEE 802. 11n HT20/11n HT40: BPSK, QPSK, 16QAM, 64QAM, and OFDM IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11 ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM and OFDM
Antenna Type	**5GHz Antenna*1pcs (1T1R)** Manufacture: GainForce Technology Co., Ltd. Type: CHIP Antenna Model: AT3216-B5R5HAAT/LF Gain: 2dBi
Power Rating	5Vdc; 2A(Powered from Adapter)
Test Voltage	120Vac, 60Hz

Power Adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	AMIGO	AMS9-0502000FU2	100-240Vac~21-29VA, 50/60Hz, 0.5A	5Vdc, 2A

Operation Frequency:
IEEE 802.11a, 802.11n HT20

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)			
CHANNEL	**MHz**	**CHANNEL**	**MHz**
36	5180	44	5220
40	5200	48	5240
149	5745	153	5765
157	5785	161	5805
165	5825		

IEEE 802.11n HT40

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)			
CHANNEL	**MHz**	**CHANNEL**	**MHz**
38	5190	46	5230
151	5755	159	5795

IEEE 802.11ac VHT80

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)			
CHANNEL	**MHz**	**CHANNEL**	**MHz**
42	5210	155	5775

Remark :

1. Client consigns only one model sample to test (Model Number: 4GM3W-01).
2.The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
3. For more details, please refer to the User's manual of the EUT.
*4. This submittal(s) (test report) is intended for FCC ID: **XIA-4GM3W** filing to comply with Section 15.407, of the FCC Part 15, Subpart E Rules.*

3. DESCRIPTION OF TEST MODES

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	TX Mode
	Conducted Emission	TX Mode

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 802.11a, 802.11n HT20 mode / 5180MHz ~ 5240MHz; 5745MHz ~ 5825MHz

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5180
Middle	5200
High	5240

Channel	Frequency (MHz)
Low	5745
Middle	5785
High	5825

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

IEEE 802.11n HT20 mode : 6.5Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode / 5190MHz ~ 5230MHz; 5755MHz ~ 5795MHz

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5190
High	5230

Channel	Frequency (MHz)
Low	5755
High	5795

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

IEEE 802.11ac VHT80 mode / 5210MHz; 5775MHz

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Middle	5210

Channel	Frequency (MHz)
Middle	5775

IEEE 802.11n HT40 mode : 29.3Mbps data rate (worst case) were chosen for full testing.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47, 15.207, 15.209 and 15.407.

5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

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

No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 ACCREDITATIONS

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

Taiwan	TAF 1109

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

Canada	Industry Canada
Germany	TUV NORD
Taiwan	BSMI
USA	FCC TW1037

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

5.3 MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz Test Site : OATS-6	±3.38dB
Radiated Emission, 200 to 1000 MHz Test Site : OATS-6	±3.04dB
Radiated Emission, 1 to 26.5 GHz	± 3.20dB
Power Line Conducted Emission	± 2.01dB

Uncertainty figures are valid to a confidence level of 95%, K=2

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

For RF test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1.	Note Book	Acer	AS 3830TG	DOC	Power cable, unshd, 1.6m

No.	Signal cable description	
A	DC Power	Unshielded, 1.5m, 1pcs
B	LAN	Unshielded, 10m, 1pcs.

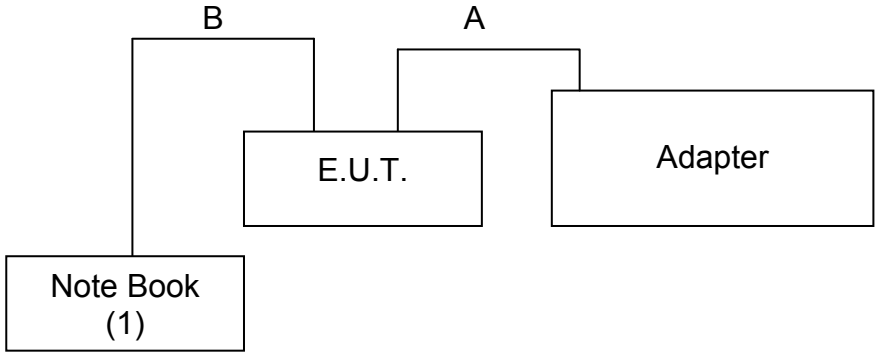
For EMI test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1	Notebook	TOSHIBA	Satellite L730	DOC	Power cable, unshd, 1.6m
2	Notebook	ASUS	X54C	DOC	Power cable, unshd, 1.6m
3	3G Modem	NOVATEL	Qualcomm 3G CDMA	PKRNVWMC727	N/A

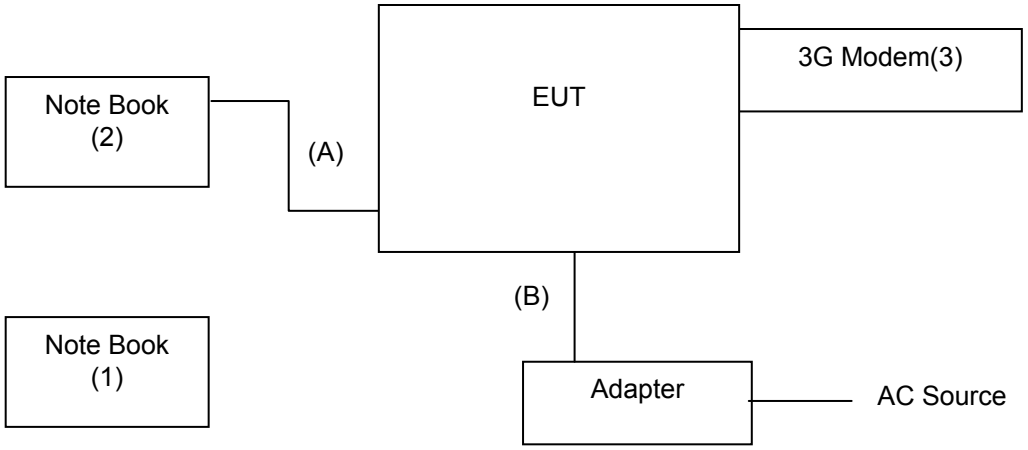
No.	Signal cable description	
A	LAN	Unshielded, 10m, 1pcs.
B	DC Power	Unshielded, 1.5m, 1pcs.

SETUP DIAGRAM FOR TESTS

For RF test



For EMI test



EUT OPERATING CONDITION

RF Setup

1. Set up all computers like the setup diagram.
2. The Ralink QA Test Program for “MT76xxE QA(AP) V2.0.10.3” software was used for testing

The EUT driver software installed in the host support equipment during testing was Ralink QA Test Program for “MT76xxE QA(AP) V2.0.10.3” Drive

TX Mode:

- ⇨ **Tx Mode:**
- ⇨ **OFDM、HT MixMode** (Bandwidth: 20、40)、**VHT Mode** (Bandwidth: 80)
- ⇨ **Tx Data Rate: 6Mbps** (IEEE 802.11a mode ,chain 0 TX)
  6.5Mbps (IEEE 802.11n HT20 mode ,chain 0 TX)
  13.5Mbps (IEEE 802.11n HT40 mode, chain 0 TX)
  29.3Mbps (IEEE 802.11ac VHT80 mode, chain 0 TX)

Power control mode
Target Power:
IEEE 802.11a Lower Sub-Band Channel Low (5180MHz) = 1E **(Chain 0)**
IEEE 802.11a Lower Sub-Band Channel Middle (5200MHz) = 1E **(Chain 0)**
IEEE 802.11a Lower Sub-Band Channel High (5240MHz) = 1E **(Chain 0)**
IEEE 802.11a Higher Sub-Band Channel Low (5745MHz) = 1C **(Chain 0)**
IEEE 802.11a Higher Sub-Band Channel Middle (5785MHz) = 1C **(Chain 0)**
IEEE 802.11a Higher Sub-Band Channel High (5825MHz) = 1D **(Chain 0)**
Target Power:
IEEE 802.11n HT20 Lower Sub-Band Channel Low (5180MHz) = 1E **(Chain 0)**
IEEE 802.11n HT20 Lower Sub-Band Channel Middle (5200MHz) = 1E **(Chain 0)**
IEEE 802.11n HT20 Lower Sub-Band Channel High (5240MHz) = 1E **(Chain 0)**
IEEE 802.11n HT20 Higher Sub-Band Channel Low (5745MHz) = 1C **(Chain 0)**
IEEE 802.11n HT20 Higher Sub-Band Channel Middle (5785MHz) = 1C **(Chain 0)**
IEEE 802.11n HT20 Higher Sub-Band Channel High (5825MHz) = 1C **(Chain 0)**
Target Power:
IEEE 802.11n HT40 Lower Sub-Band Channel Low (5190MHz) = 17 **(Chain 0)**
IEEE 802.11n HT40 Lower Sub-Band Channel High (5230MHz) = 17 **(Chain 0)**
IEEE 802.11n HT40 Higher Sub-Band Channel Low (5755MHz) = 12 **(Chain 0)**
IEEE 802.11n HT40 Higher Sub-Band Channel High (5795MHz) = 12 **(Chain 0)**
Target Power:
IEEE 802.11ac HT80 Lower Sub-Band Channel Middle (5210MHz) = 13 **(Chain 0)**
IEEE 802.11ac HT80 Higher Sub-Band Channel Middle (5775MHz) = 11 **(Chain 0)**

RX Mode：

MAC Address: FFFFFFFFFFFF

Start RX

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

Normal Link Setup

1. Setup a whole system for test as shown on setup diagram.
2. Turn on power and check function.
3. Start to test.

7. FCC PART 15.407 REQUIREMENTS

7.1 26dB BANDWIDTH

LIMITS

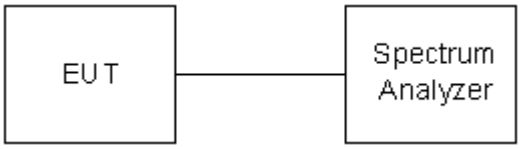
§ 15.303 (c) (2), For purposes of this subpart, the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP



TEST PROCEDURE

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

TEST RESULTS

IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5180	25.55	PASS
Middle	5200	25.15	PASS
High	5240	33.17	PASS

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5745	37.17	PASS
Middle	5785	37.68	PASS
High	5825	40.28	PASS

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5180	31.46	PASS
Middle	5200	30.76	PASS
High	5240	32.16	PASS

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5745	43.29	PASS
Middle	5785	43.29	PASS
High	5825	44.89	PASS

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5190	41.88	PASS
High	5230	41.68	PASS

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Low	5755	63.53	PASS
High	5795	64.33	PASS

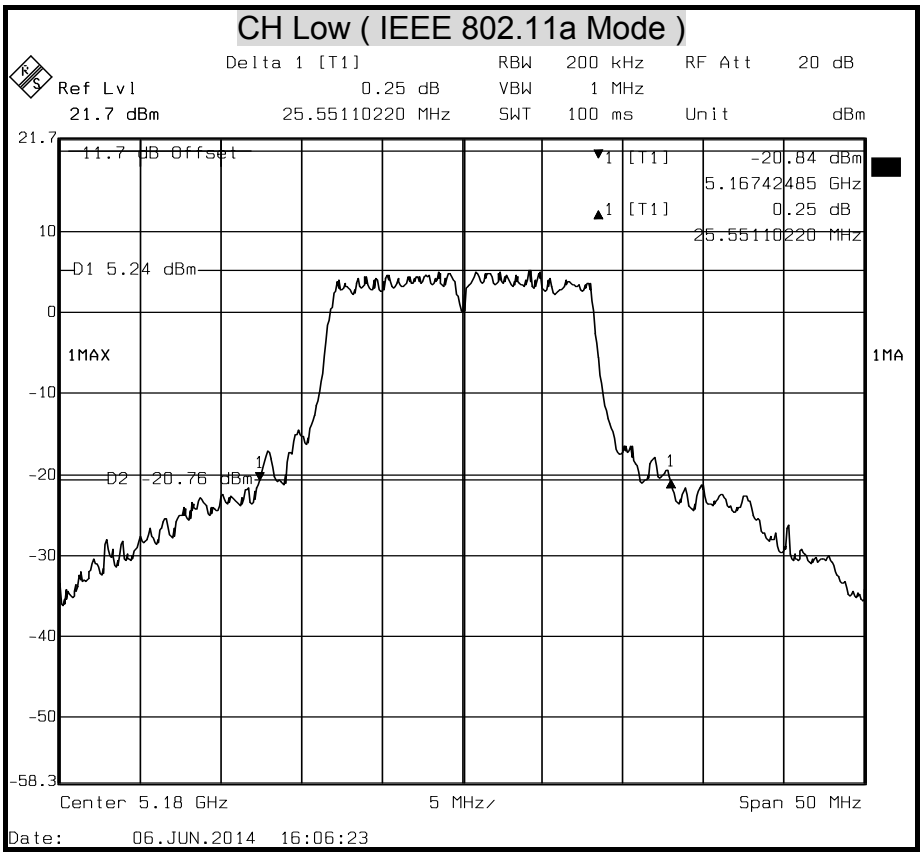
IEEE 802.11ac VHT80 Mode

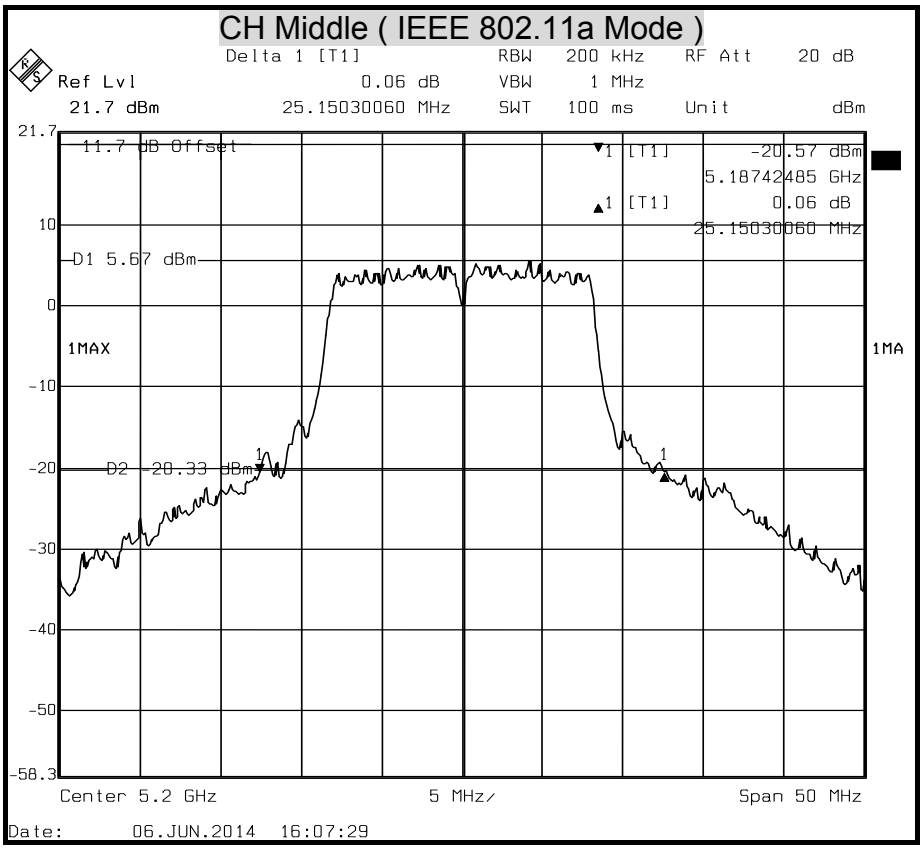
Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Middle	5210	111.58	PASS

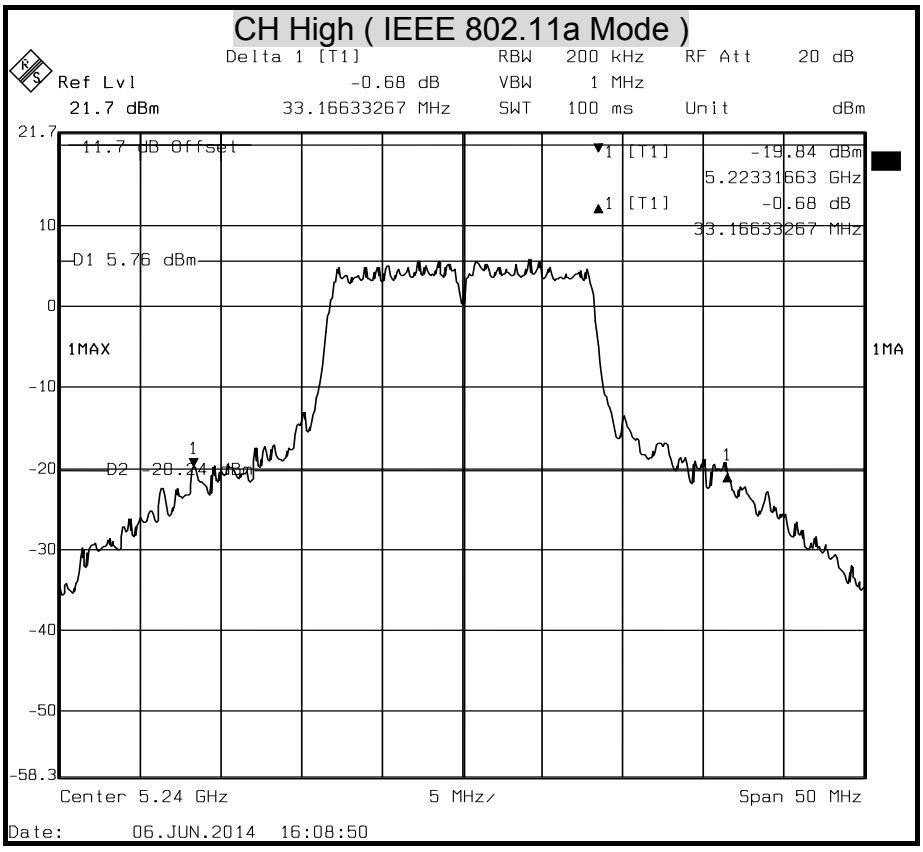
Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	Pass / Fail
Middle	5775	96.51	PASS

26dB BANDWIDTH

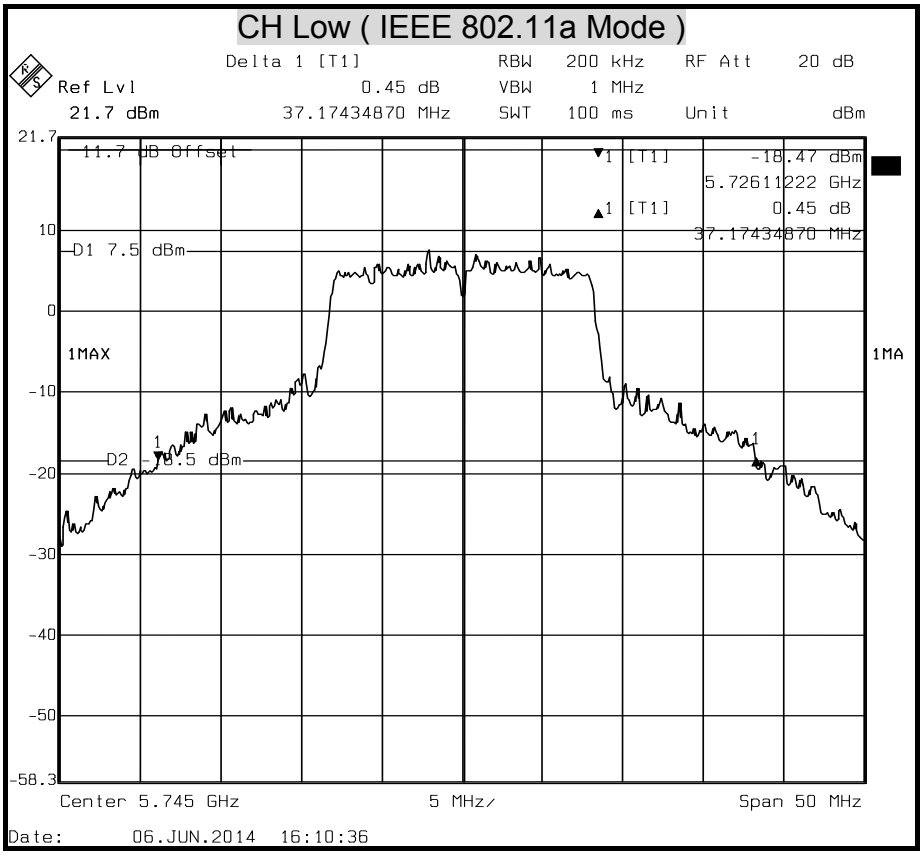
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz



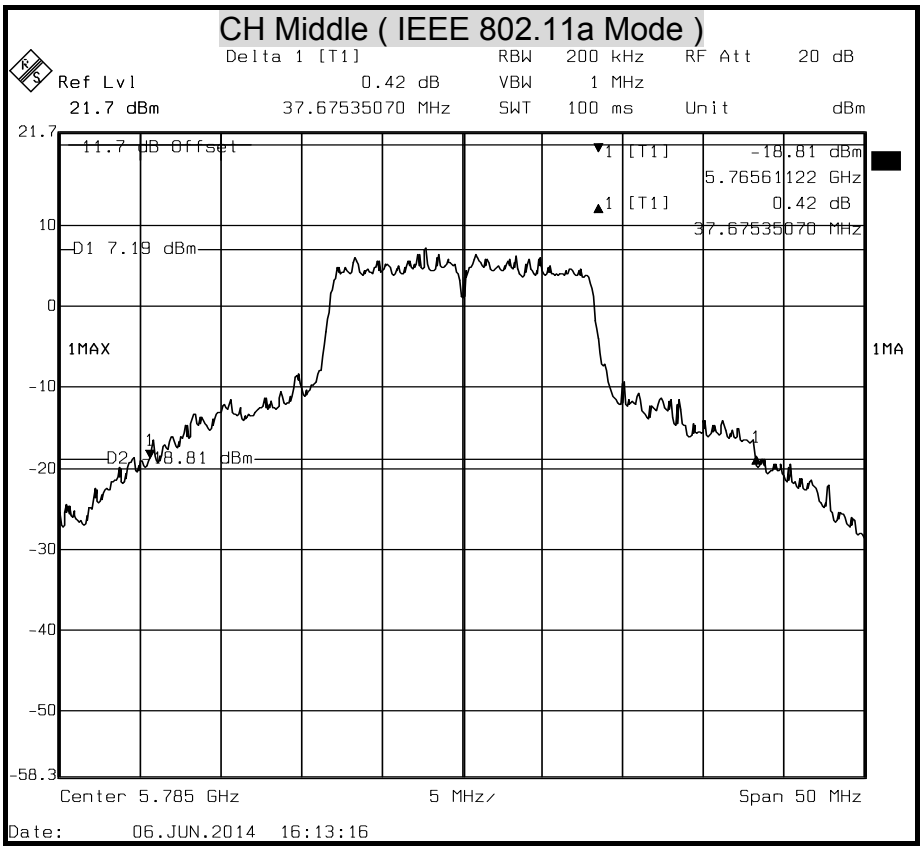




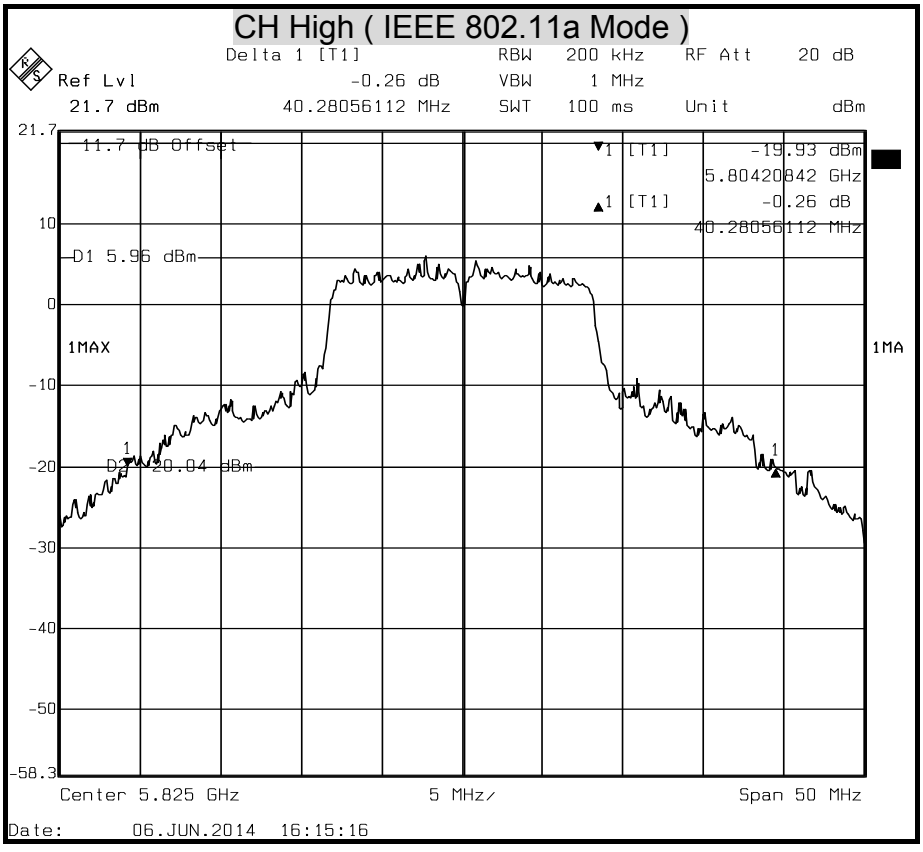
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

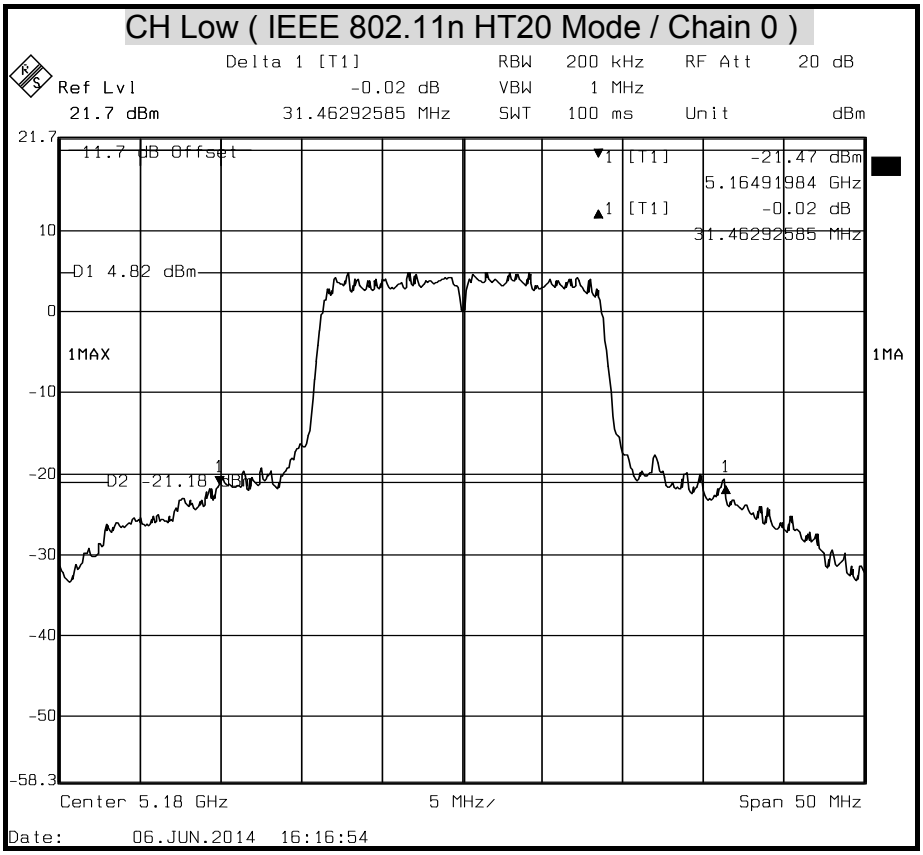


CH High (IEEE 802.11a Mode)

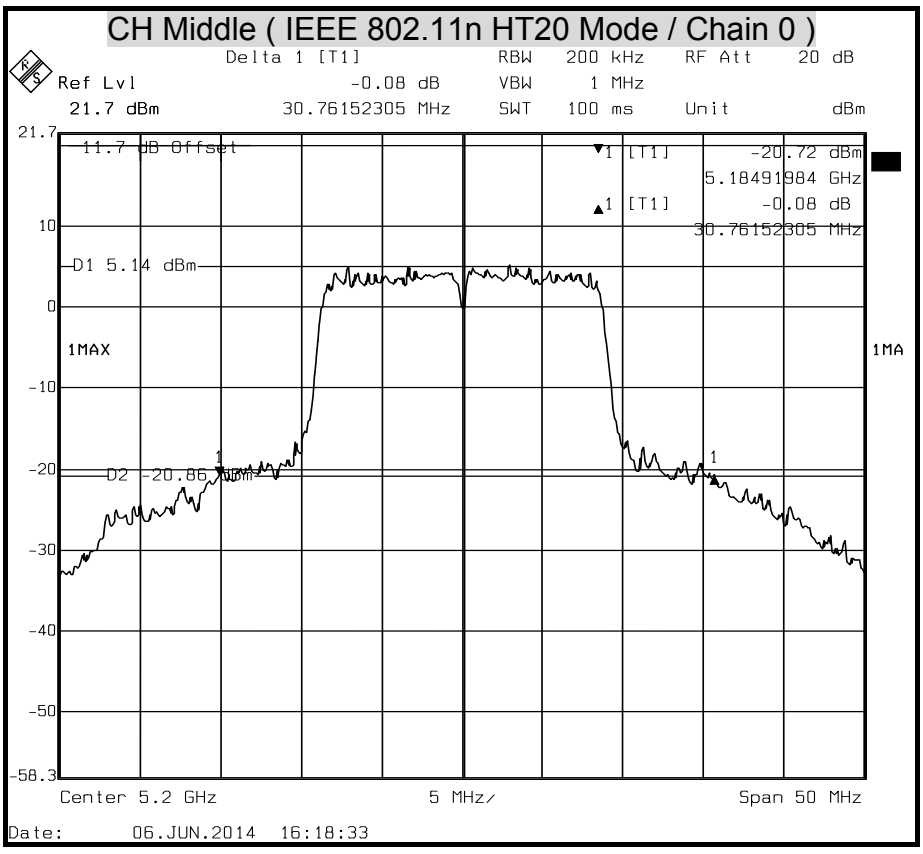


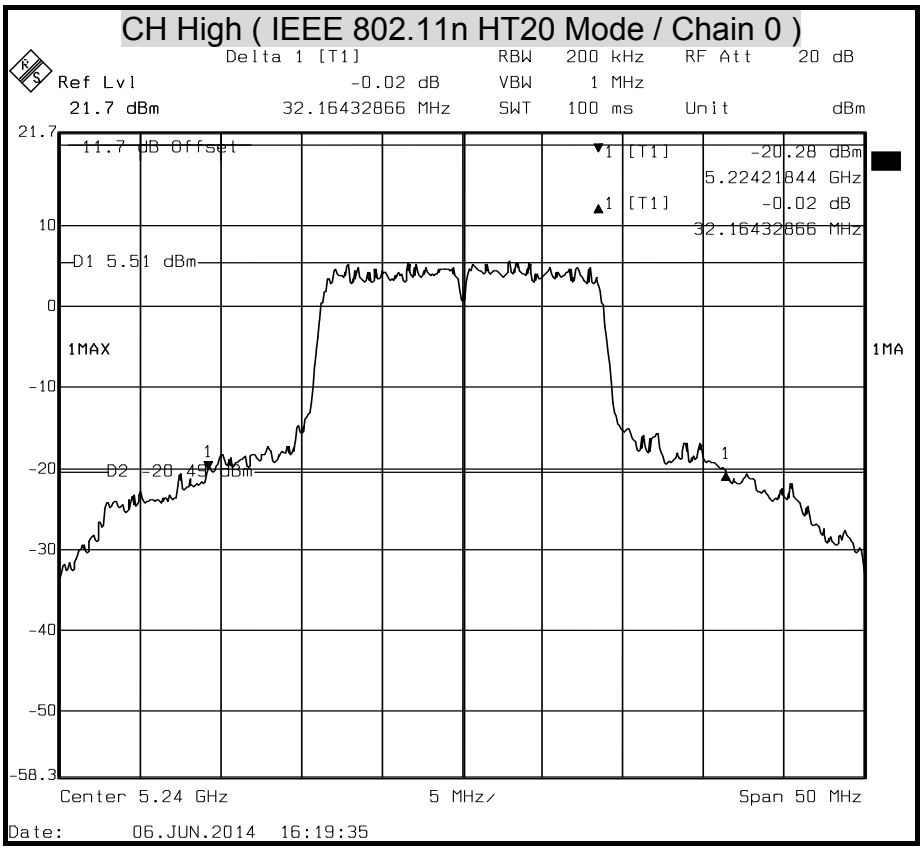
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

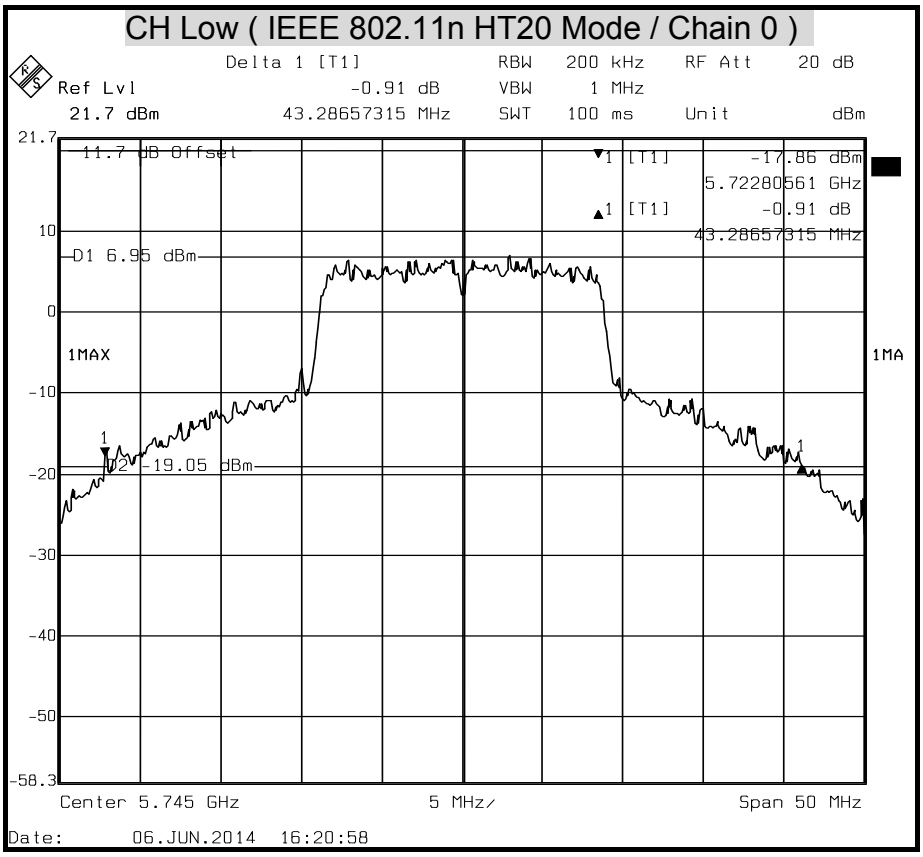


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

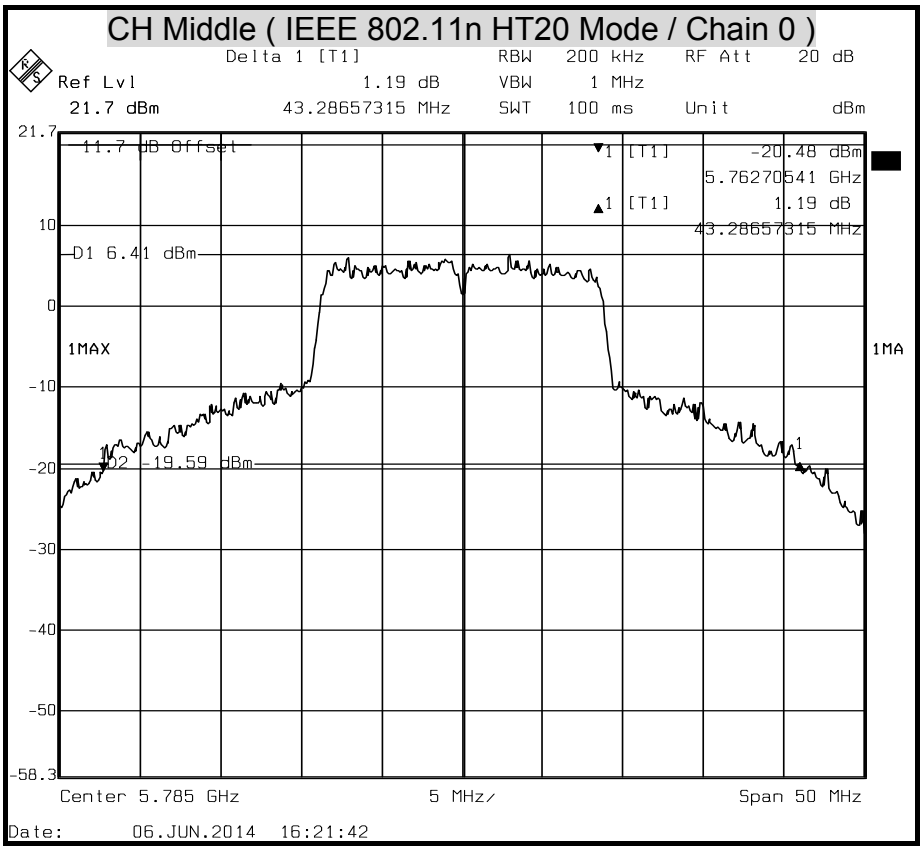




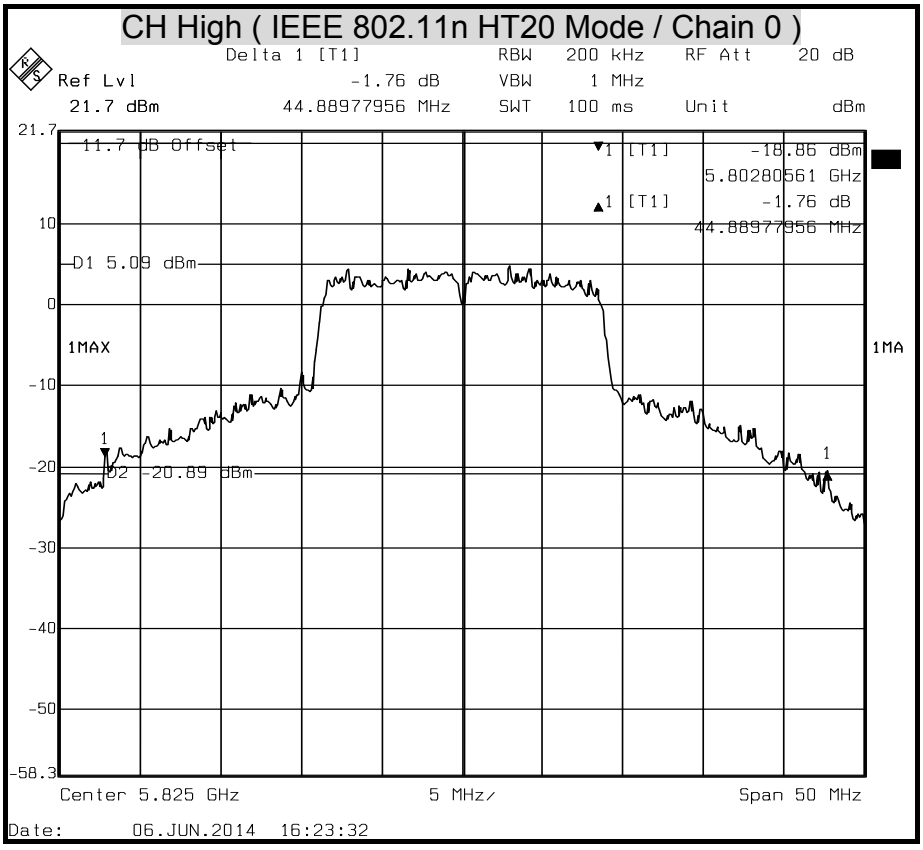
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

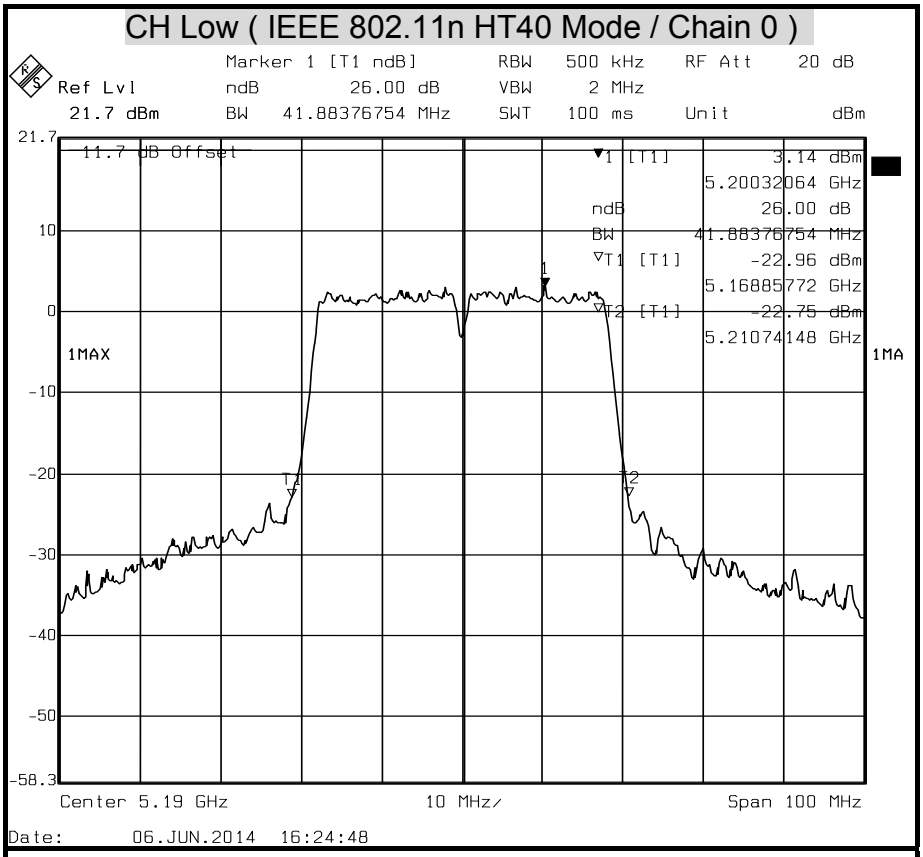


CH High (IEEE 802.11n HT20 Mode / Chain 0)

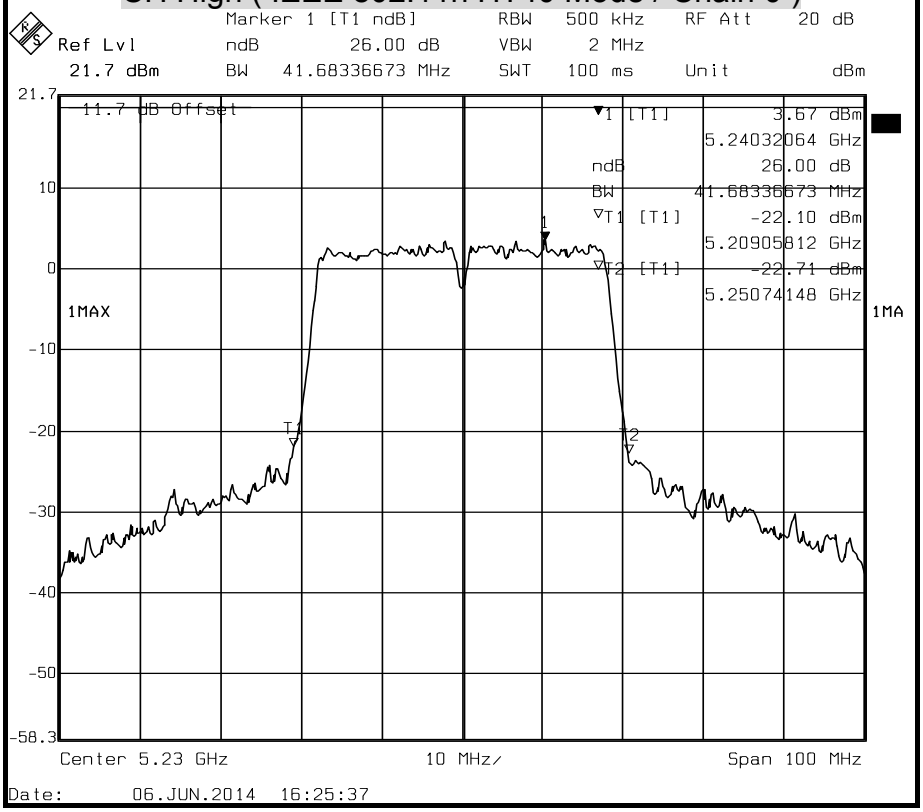


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

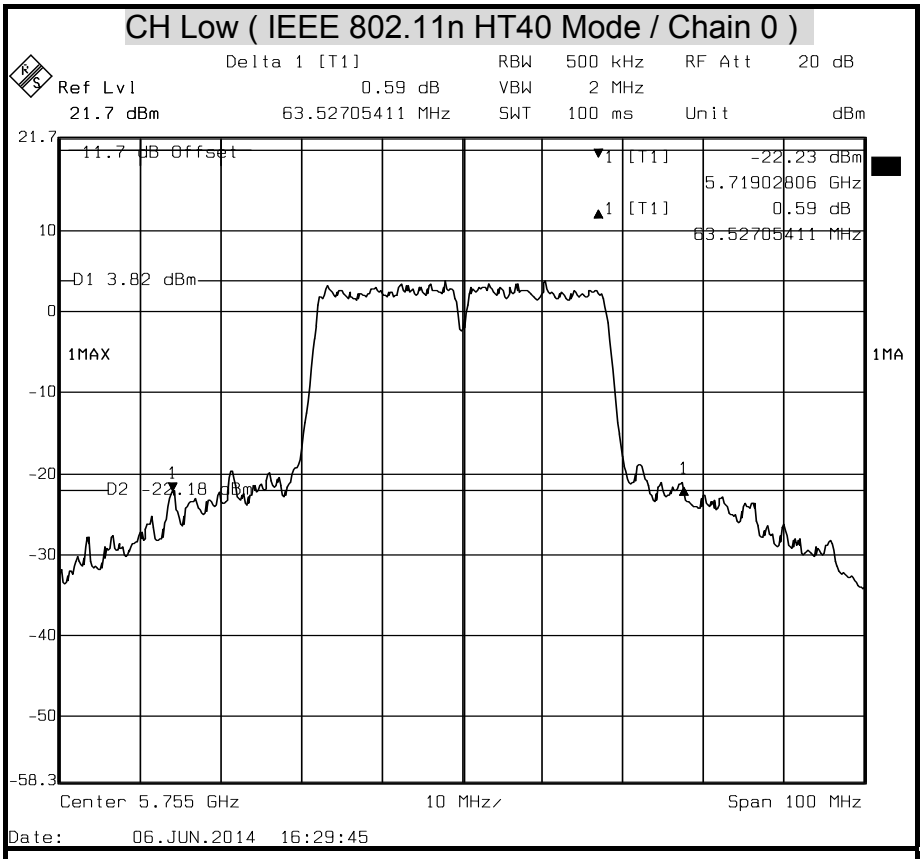


CH High (IEEE 802.11n HT40 Mode / Chain 0)

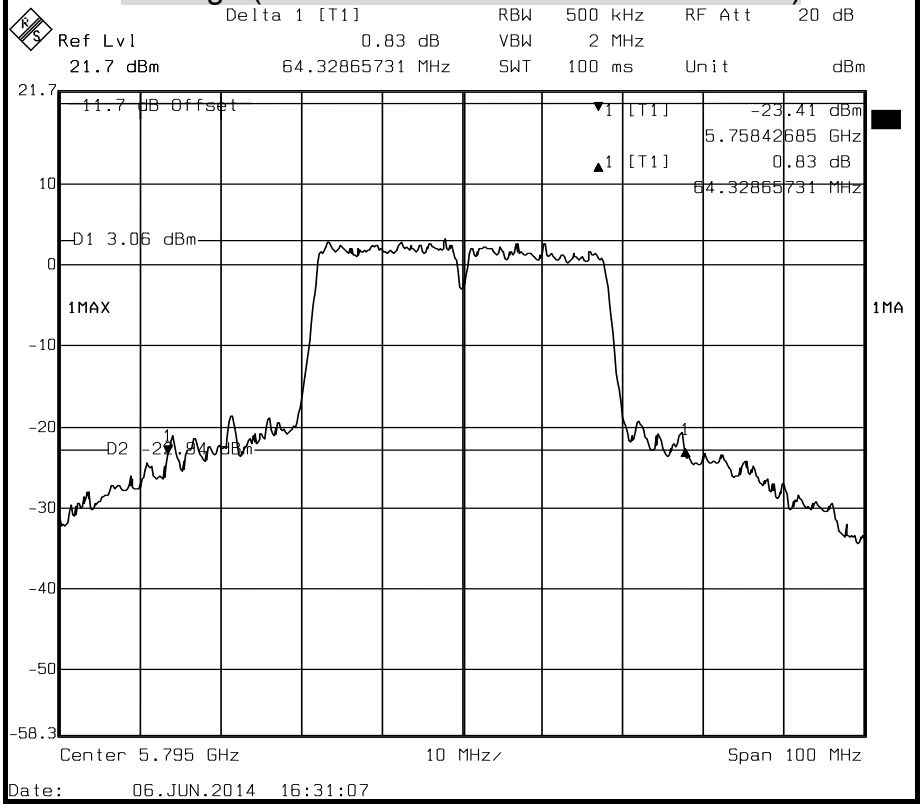


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

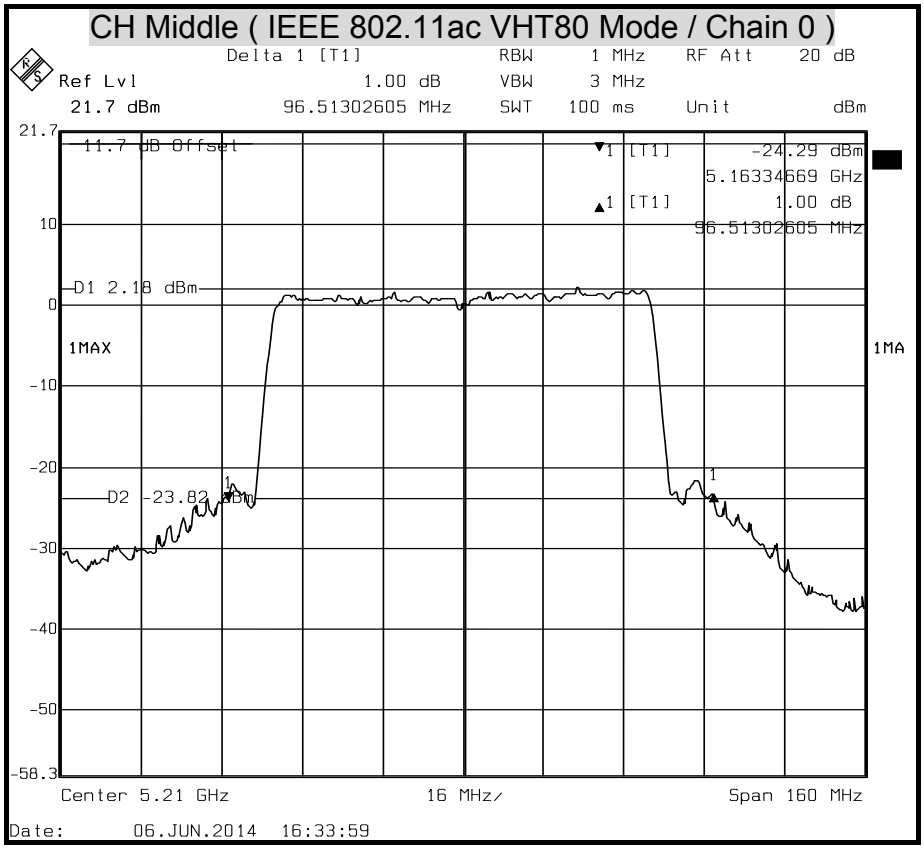
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



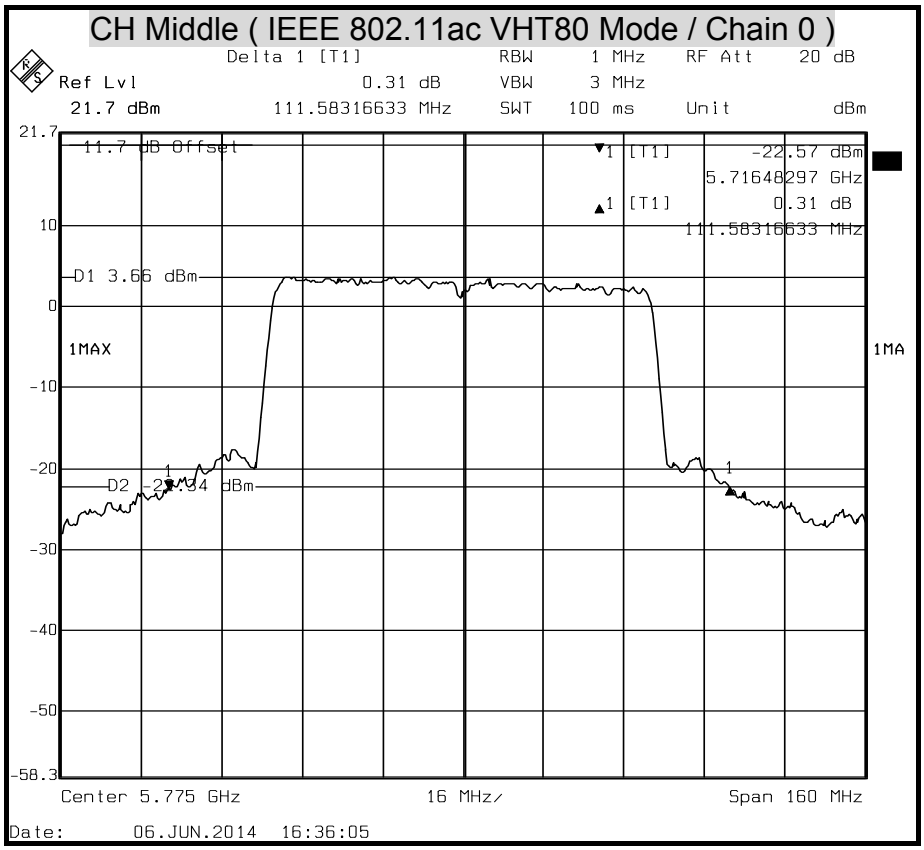
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.2 MAXIMUM CONDUCTED OUTPUT POWER

LIMITS

§ 15.407(a)

(1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W (30dBm) or 17dBm + 10log B, where B is the 26dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17dBm in any 1 MHz band.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

(3) For the band 5.725-5.85 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W (30dBm) or 17dBm + 10log B, where B is the 26dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17dBm in any 1 MHz band.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

The peak power shall not exceeded the limit as follows:

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	25.55	14.07	31.07	30.00
Middle	5200	25.15	14.01	31.01	30.00
High	5240	33.17	15.21	32.21	30.00

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5745	37.17	15.70	32.70	30.00
Middle	5785	37.68	15.76	32.76	30.00
High	5825	40.28	16.05	33.05	30.00

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	31.46	14.98	31.98	30.00
Middle	5200	30.76	14.88	31.88	30.00
High	5240	32.16	15.07	32.07	30.00

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5745	43.29	16.36	33.36	30.00
Middle	5785	43.29	16.36	33.36	30.00
High	5825	44.89	16.52	33.52	30.00

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5190	41.88	16.22	33.22	30.00
High	5230	41.68	16.20	33.20	30.00

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5755	63.53	18.03	35.03	30.00
High	5795	64.33	18.08	35.08	30.00

IEEE 802.11ac VHT80 mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Middle	5210	111.58	20.48	37.48	30.00

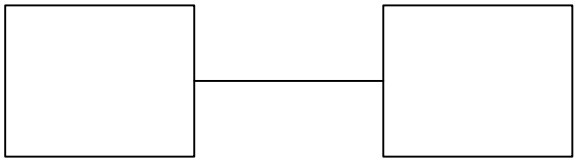
Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log B (dB)	17dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Middle	5775	96.51	19.85	36.85	30.00

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP



TEST PROCEDURE

1. Set span to encompass the entire 26-dB emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Set RBW = 1 MHz.
3. Set VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto.
6. Detector = RMS (*i.e.*, power averaging), if available. Otherwise, use sample detector mode.
7. If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (*i.e.,* with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
8. Trace average at least 100 traces in power averaging (*i.e.,* RMS) mode.
9. Compute power by integrating the spectrum across the 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

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TEST RESULTS

IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5180	15.72	30.00	PASS
Middle	5200	15.96	30.00	PASS
High	5240	16.28	30.00	PASS

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5745	17.09	30.00	PASS
Middle	5785	16.47	30.00	PASS
High	5825	15.23	30.00	PASS

Remark:

1. *At finial test to get the worst-case emission at 6Mbps.*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5180	12.64	30.00	PASS
Middle	5200	15.80	30.00	PASS
High	5240	16.18	30.00	PASS

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5745	17.05	30.00	PASS
Middle	5785	16.42	30.00	PASS
High	5825	14.93	30.00	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps.*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5190	12.73	30.00	PASS
High	5230	13.11	30.00	PASS

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5755	13.48	30.00	PASS
High	5795	12.72	30.00	PASS

Remark:

1. At finial test to get the worst-case emission at 13.5Mbps.

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11ac VHT80 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Middle	5210	11.00	30.00	PASS

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Middle	5775	12.62	30.00	PASS

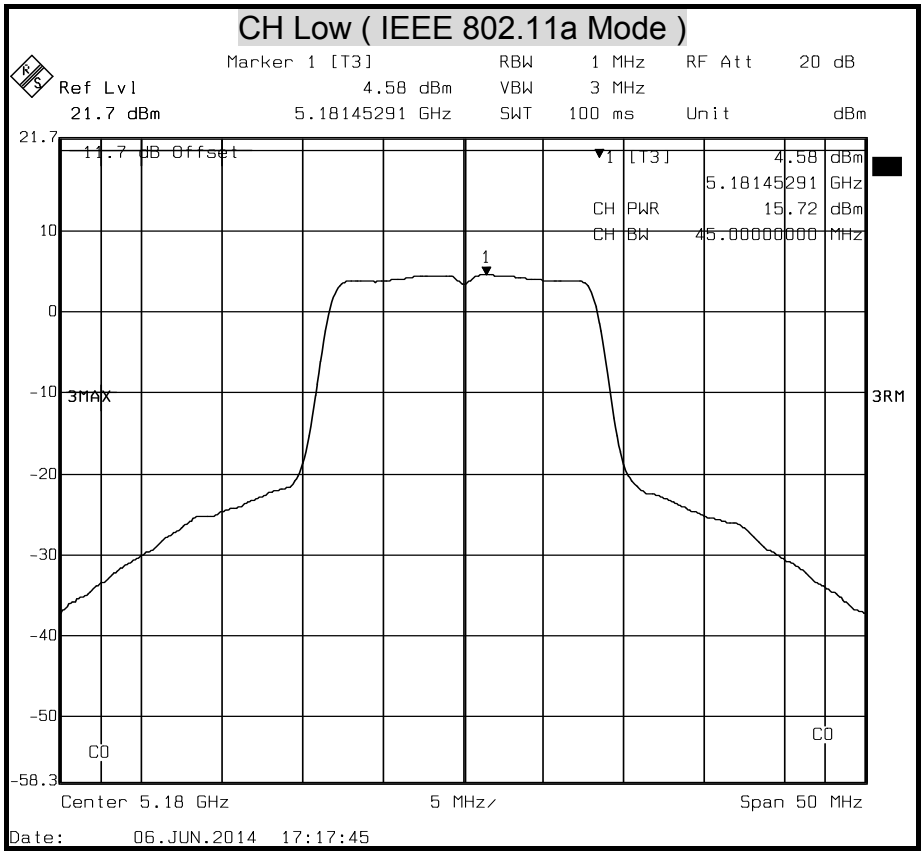
Remark:

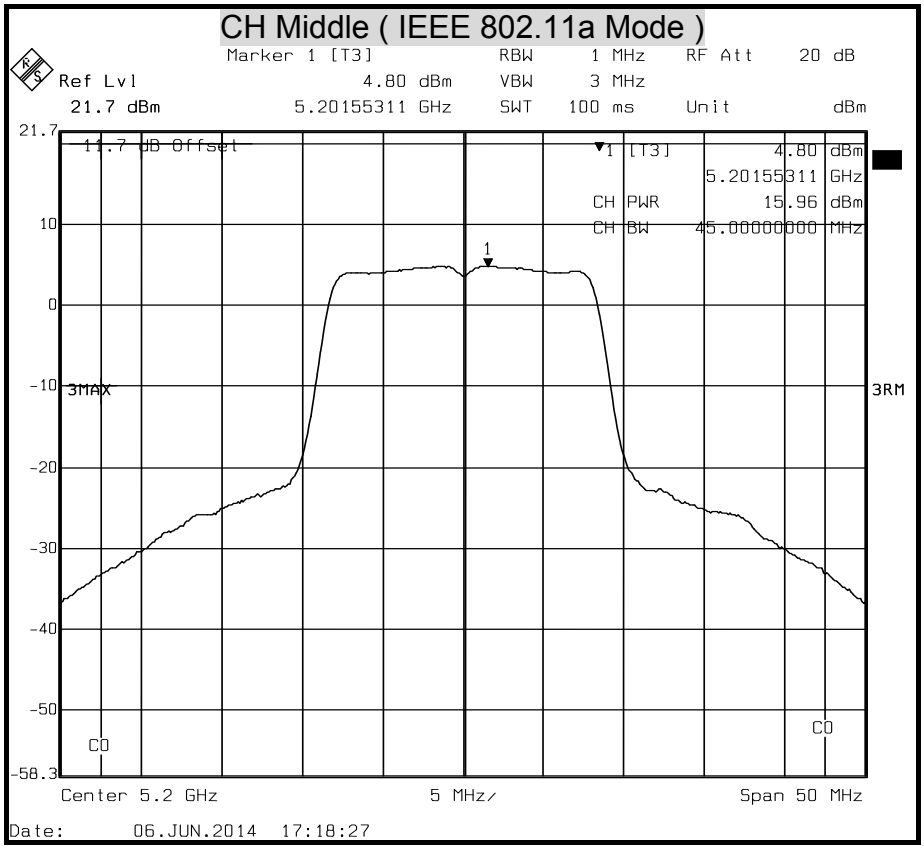
1. At finial test to get the worst-case emission at 29.3Mbps.

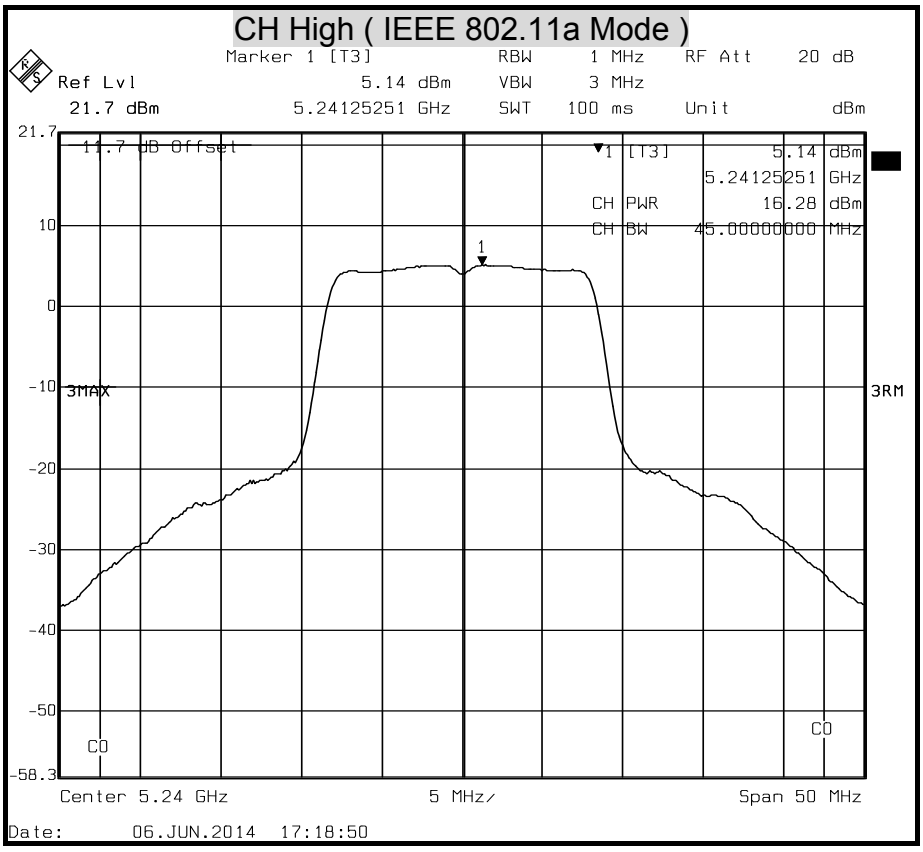
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

MAXIMUM CONDUCTED OUTPUT POWER

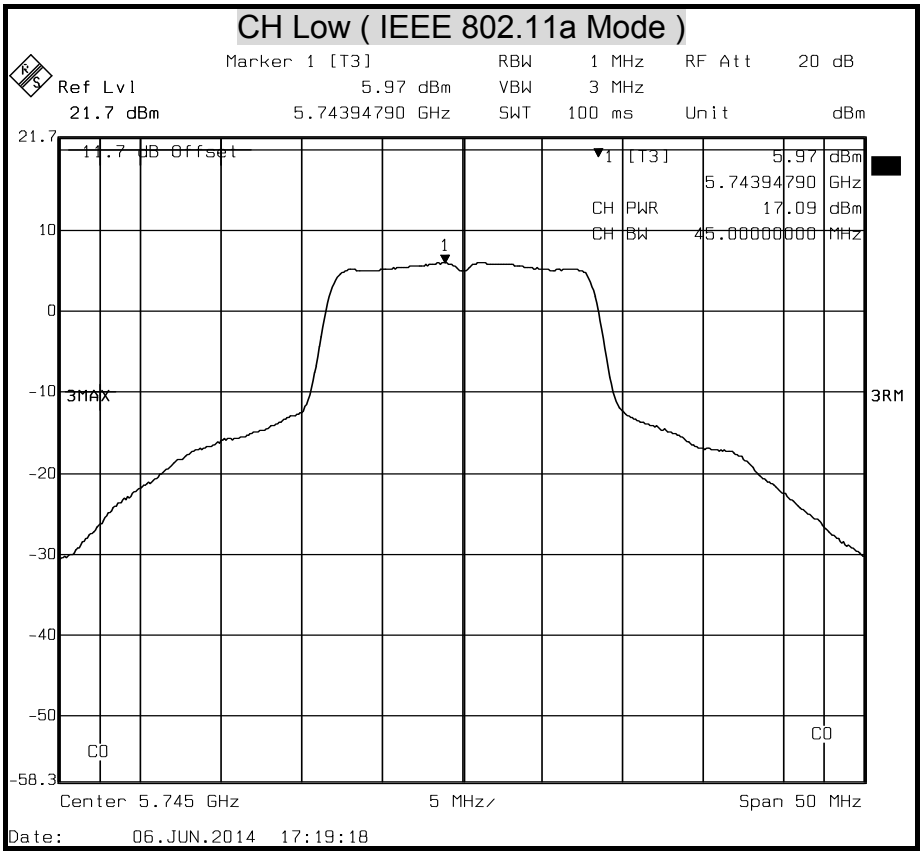
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz



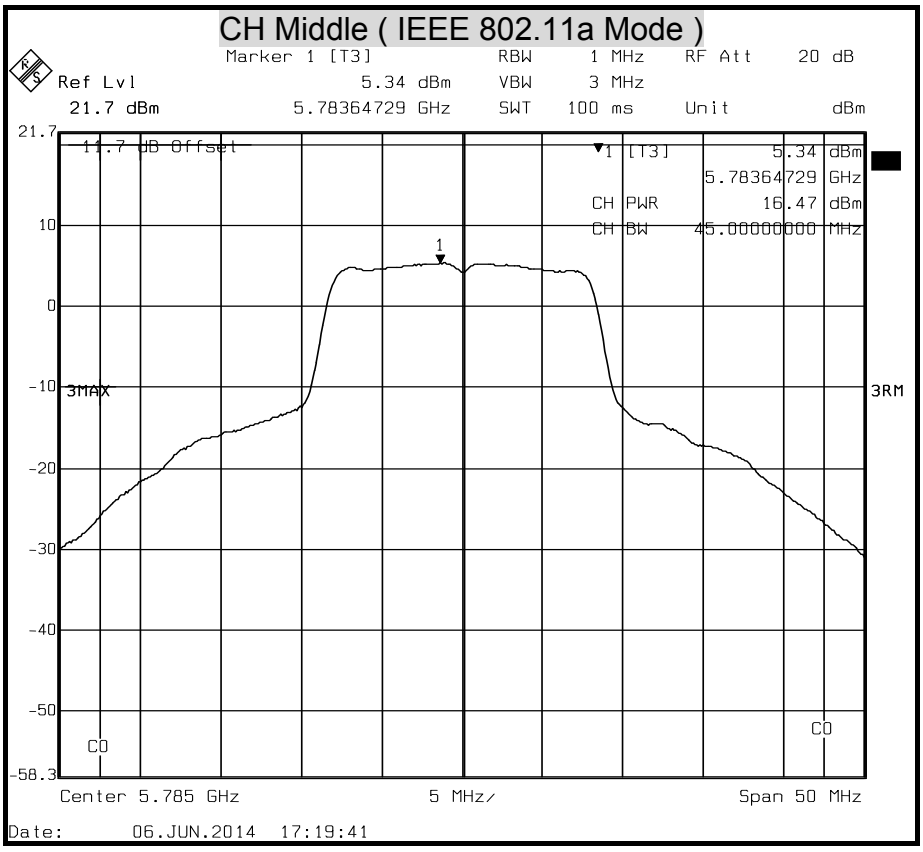




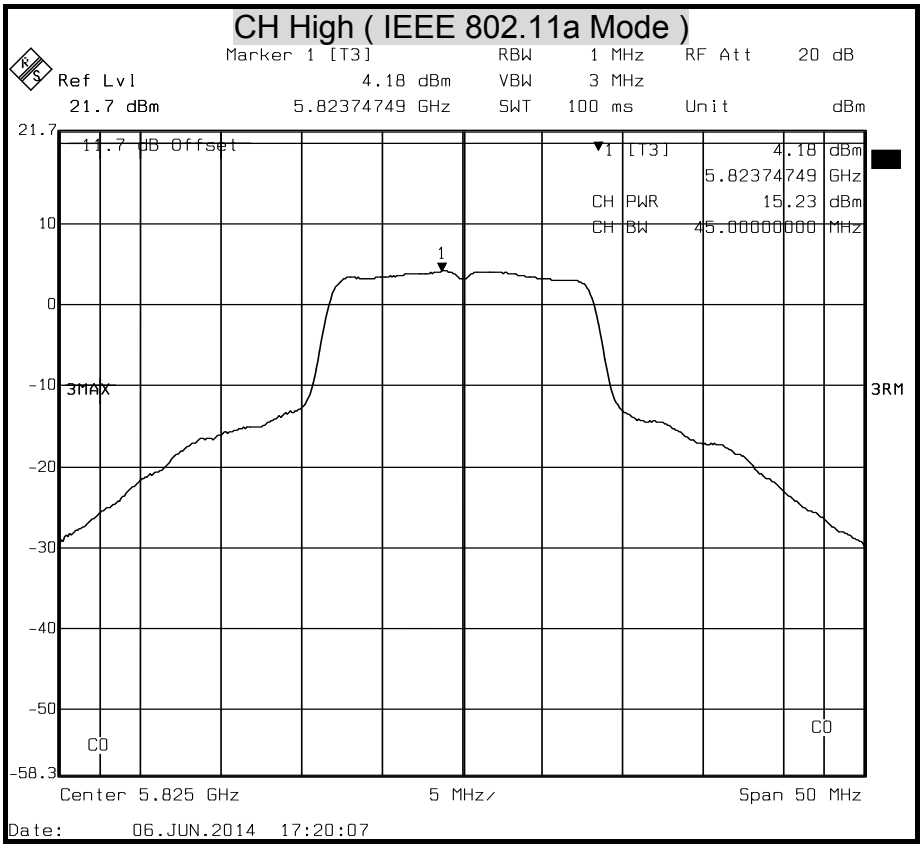
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

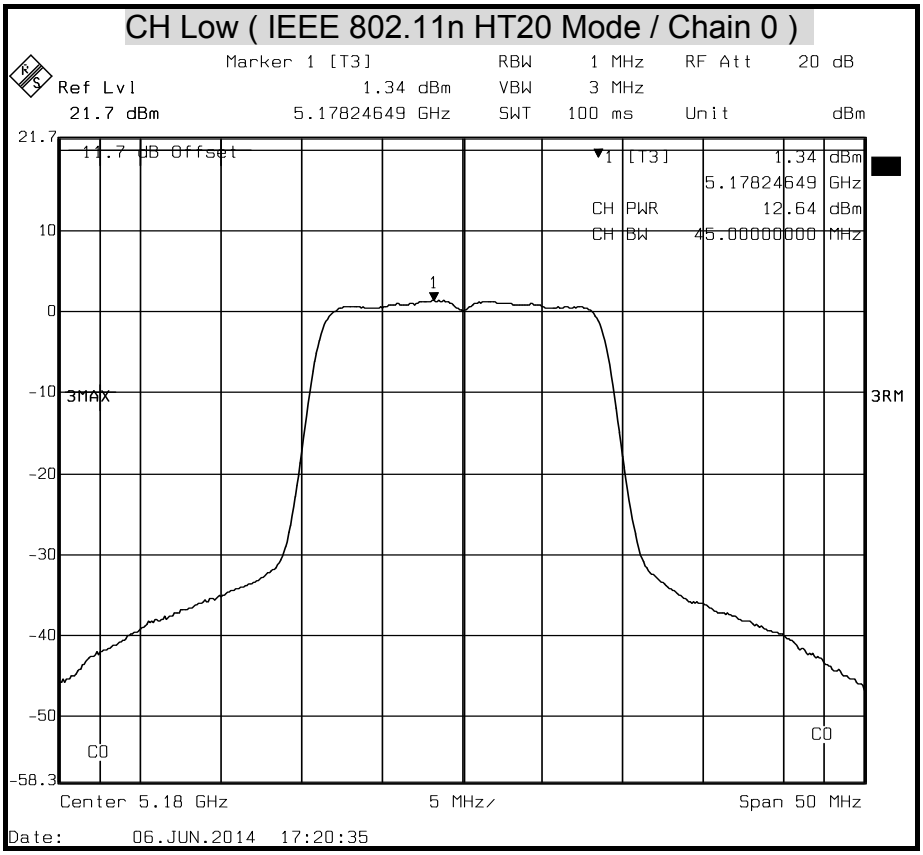


CH High (IEEE 802.11a Mode)

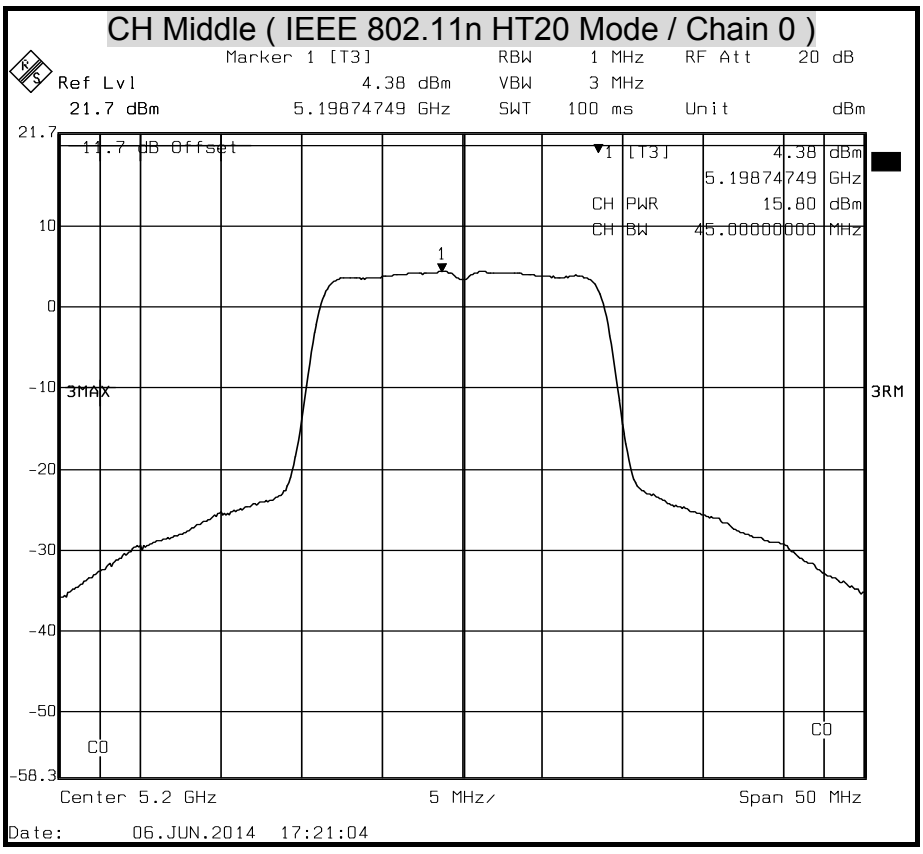


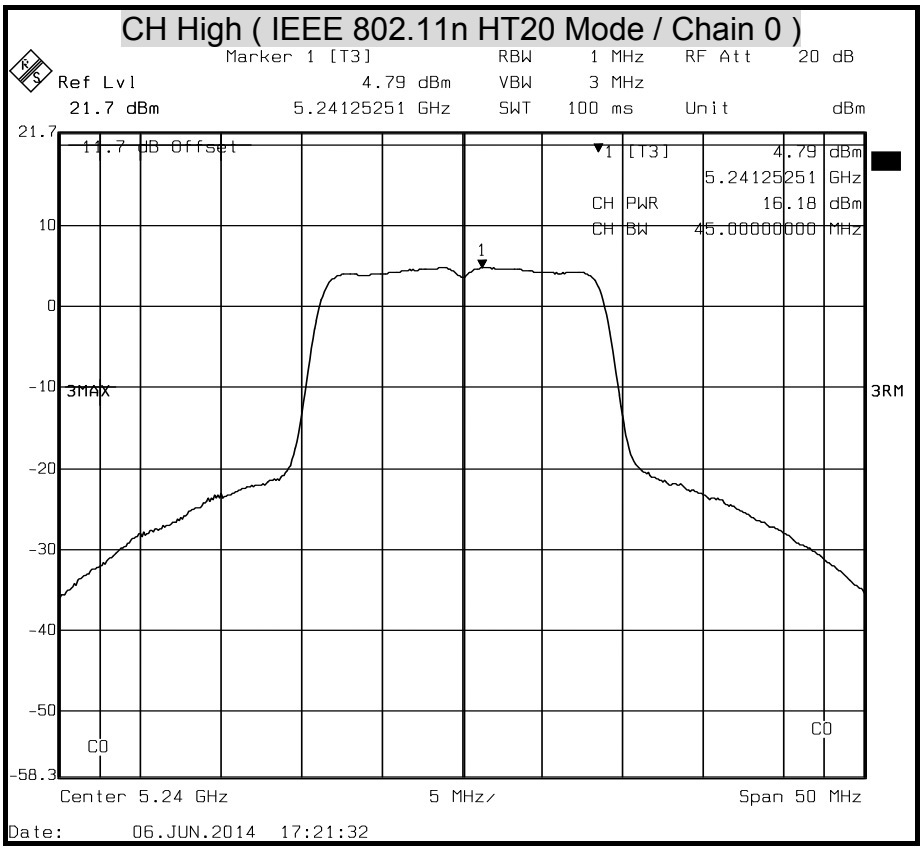
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

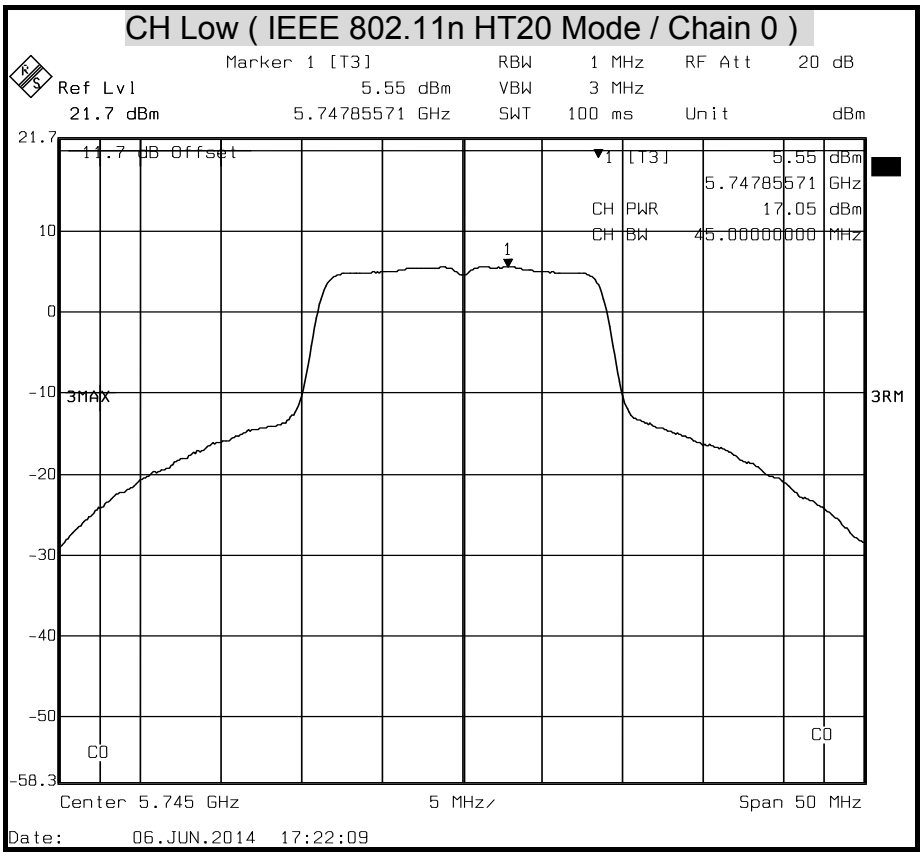


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

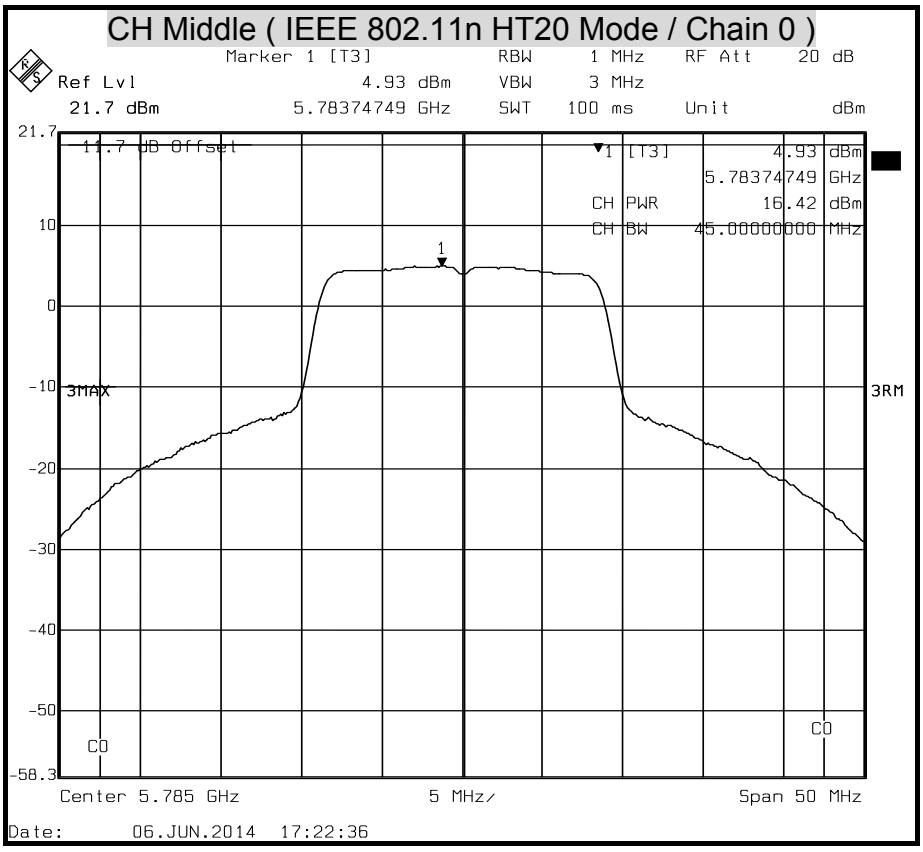




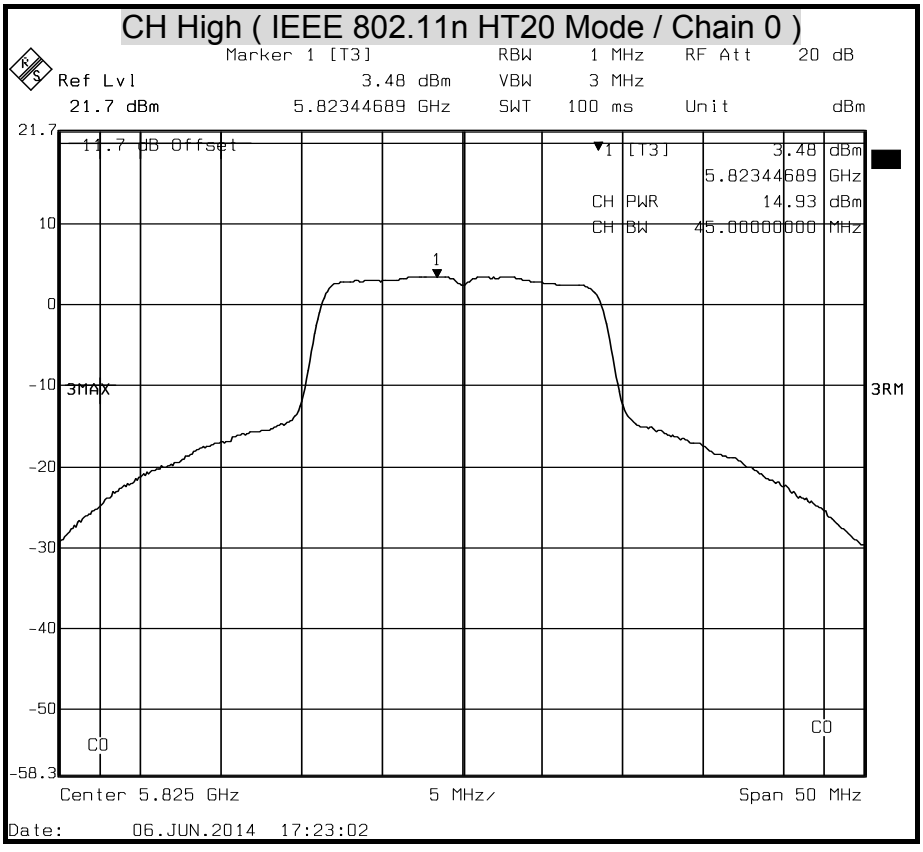
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

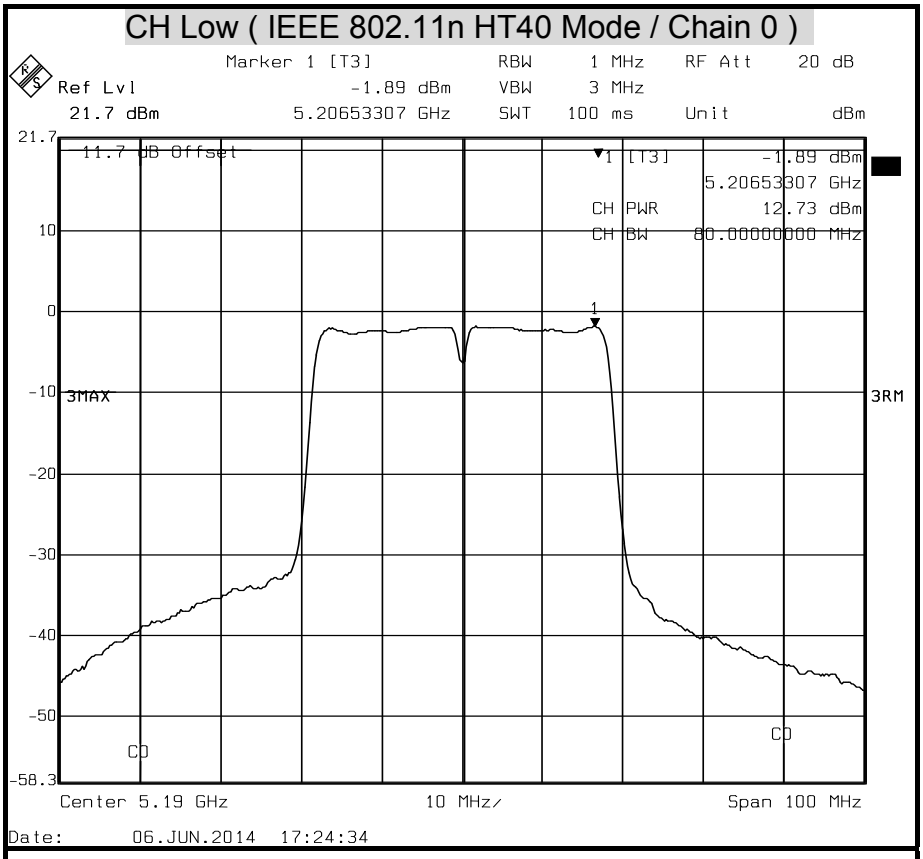


CH High (IEEE 802.11n HT20 Mode / Chain 0)

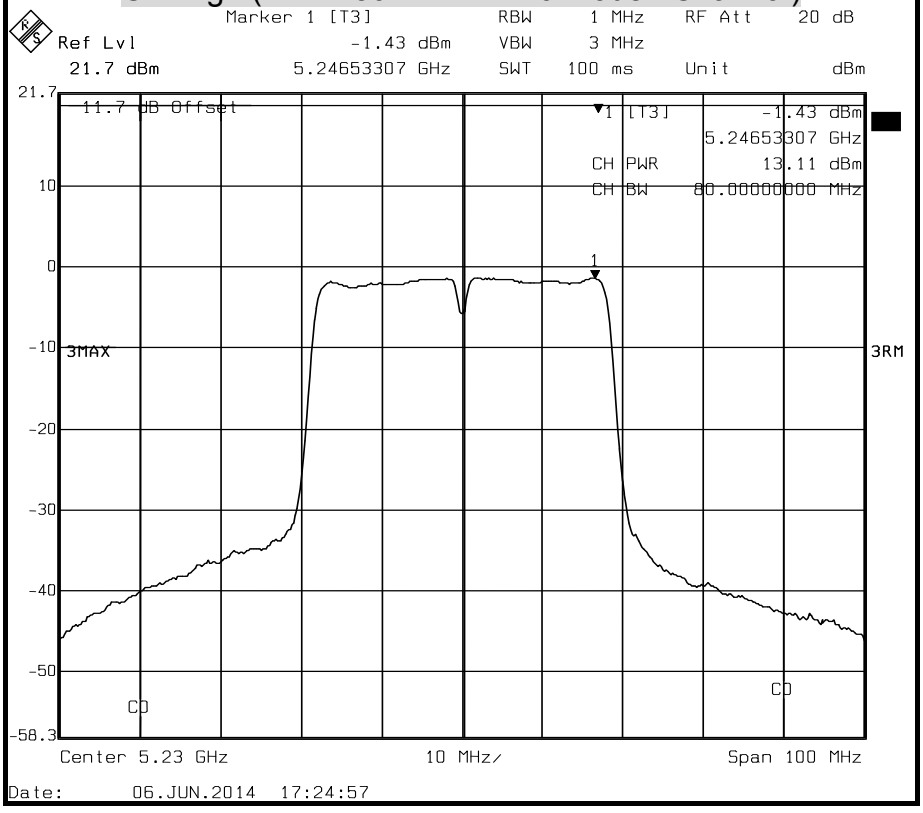


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

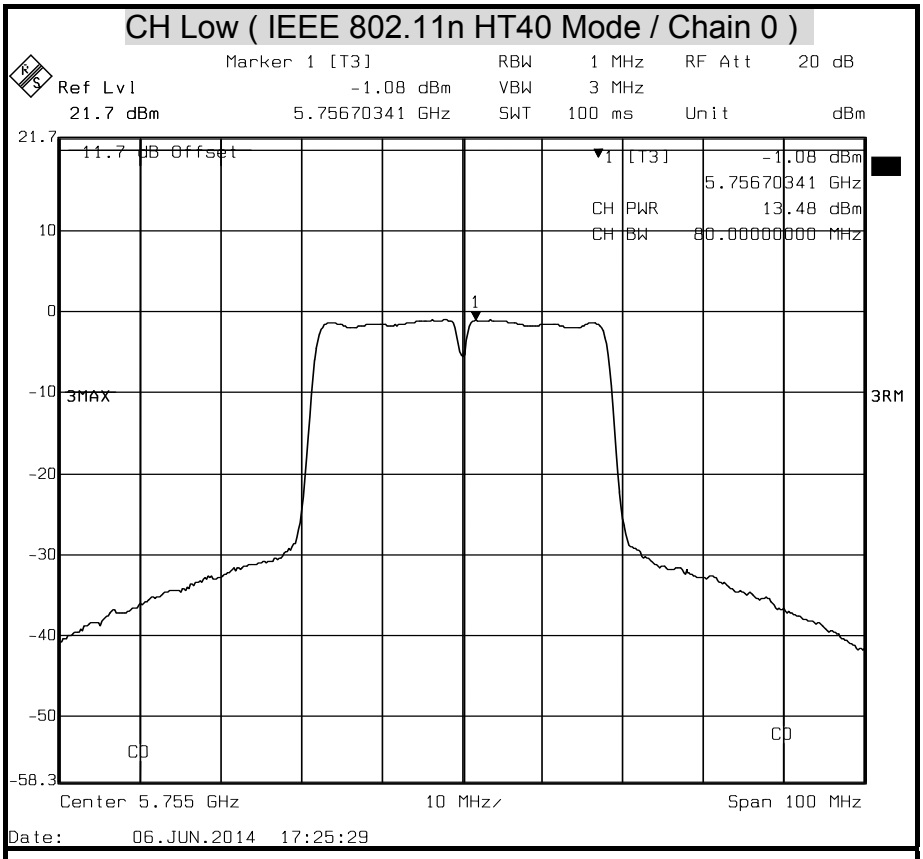


CH High (IEEE 802.11n HT40 Mode / Chain 0)

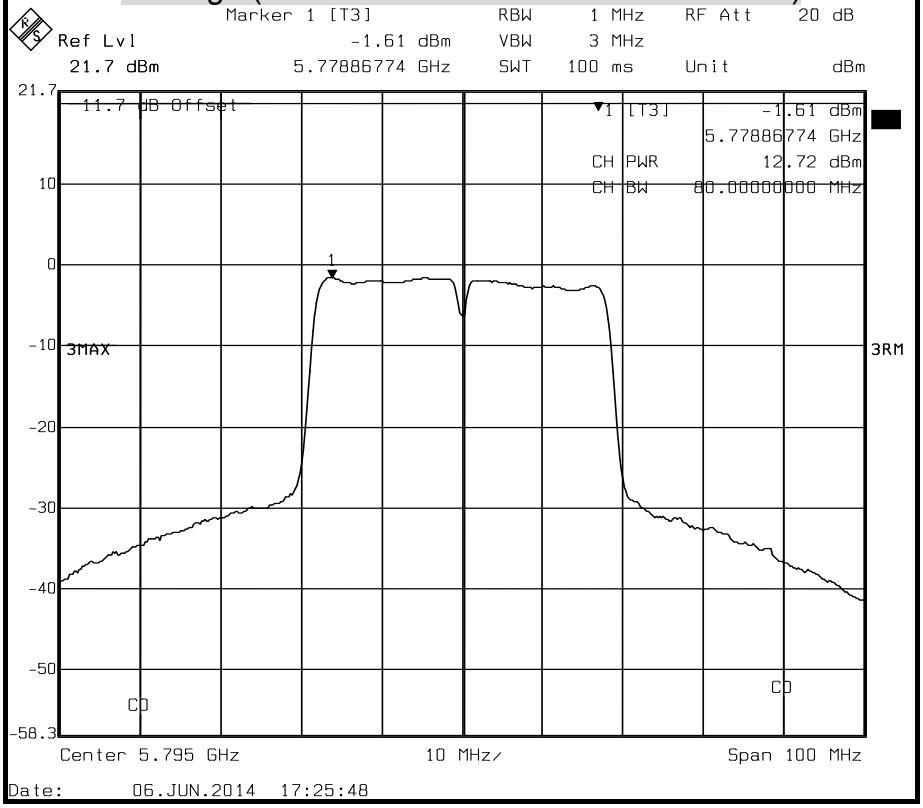


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

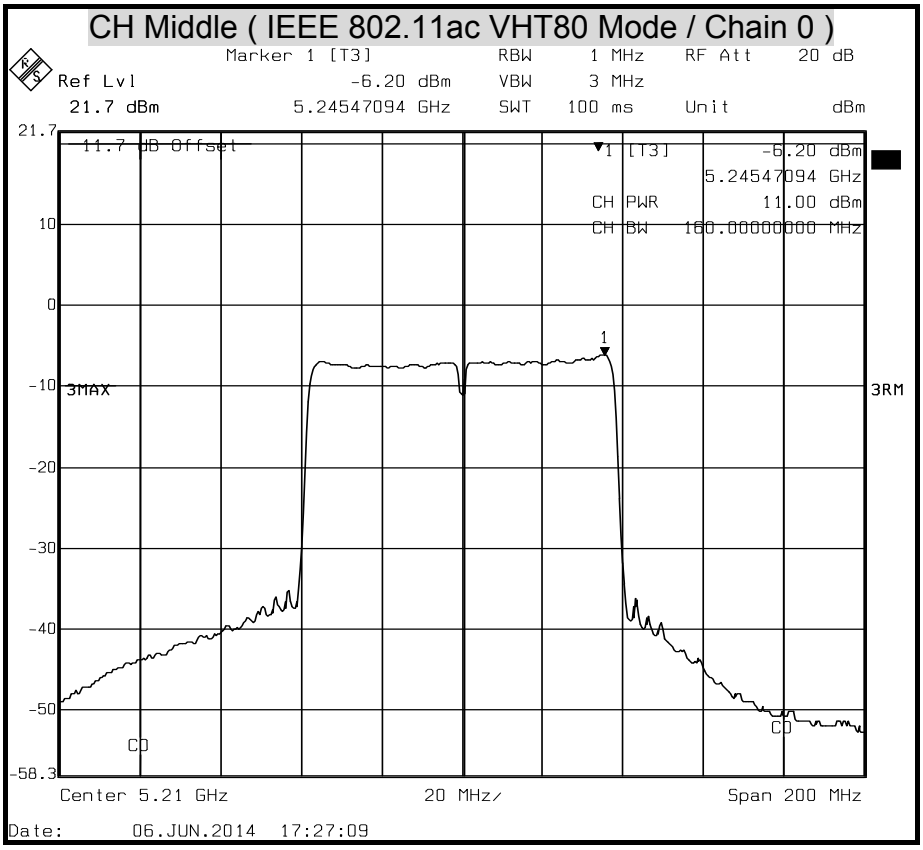
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



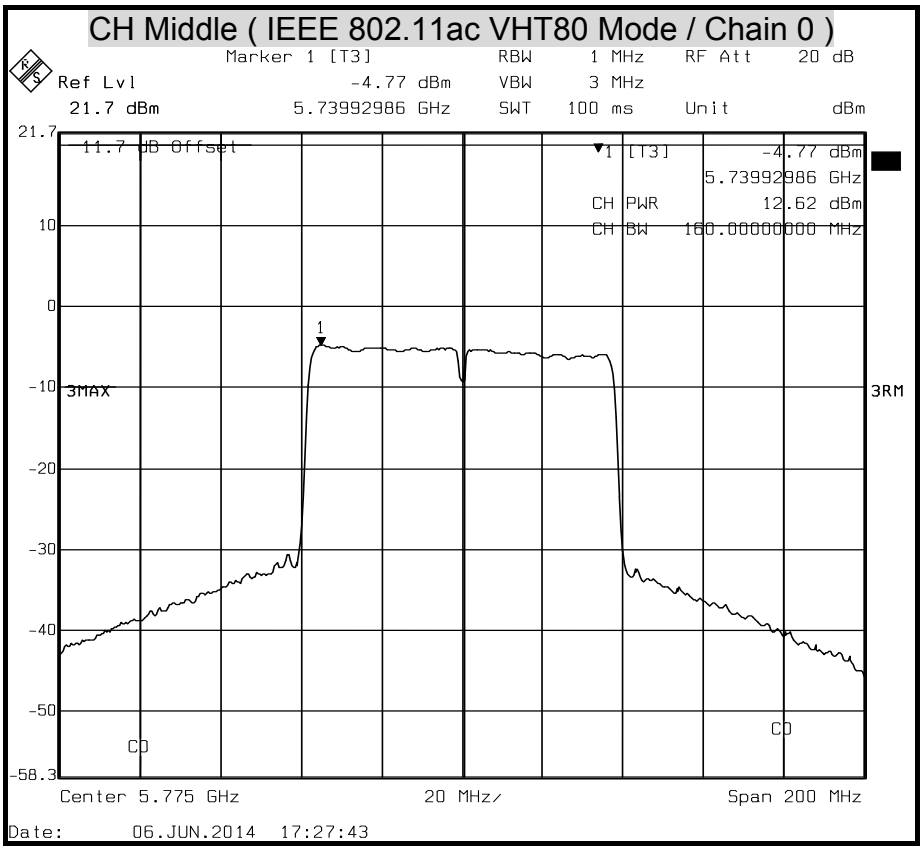
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.3 PEAK POWER SPECTRAL DENSITY

LIMITS

§ 15.407 (a)

(1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

(2) For the band 5.25-5.35 GHz and 5.47-5725 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

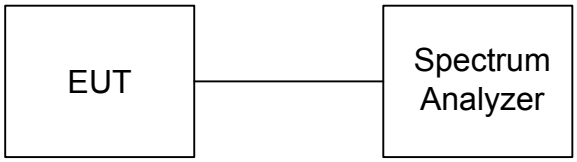
If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP



TEST PROCEDURE

1. Set span to encompass the entire 26-dB emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Set RBW = 1 MHz.
3. Set VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto.
6. Detector = RMS (*i.e.*, power averaging), if available. Otherwise, use sample detector mode.
7. If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (*i.e.,* with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
8. Trace average at least 100 traces in power averaging (*i.e.,* RMS) mode.
9. Use the peak search function on the instrument to find the peak of the spectrum.

TEST RESULTS

IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	4.58	17.00	-12.42	PASS
Middle	5200	4.80		-12.20	PASS
High	5240	5.14		-11.86	PASS

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5745	5.97	17.00	-11.03	PASS
Middle	5785	5.34		-11.66	PASS
High	5825	4.18		-12.82	PASS

Remark:

1. *At finial test to get the worst-case emission at 6Mbps.*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	1.34	17.00	-15.66	PASS
Middle	5200	4.38		-12.62	PASS
High	5240	4.79		-12.21	PASS

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5745	5.55	17.00	-11.45	PASS
Middle	5785	4.93		-12.07	PASS
High	5825	3.48		-13.52	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5190	-1.89	17.00	-18.89	PASS
High	5230	-1.43		-18.43	PASS

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5755	-1.08	17.00	-18.08	PASS
High	5795	-1.61		-18.61	PASS

Remark:

1. At finial test to get the worst-case emission at 13.5Mbps

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11ac VHT80 Mode

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Middle	5210	-6.20	17.00	-23.20	PASS

Channel	Channel Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Middle	5775	-4.77	17.00	-21.77	PASS

Remark:

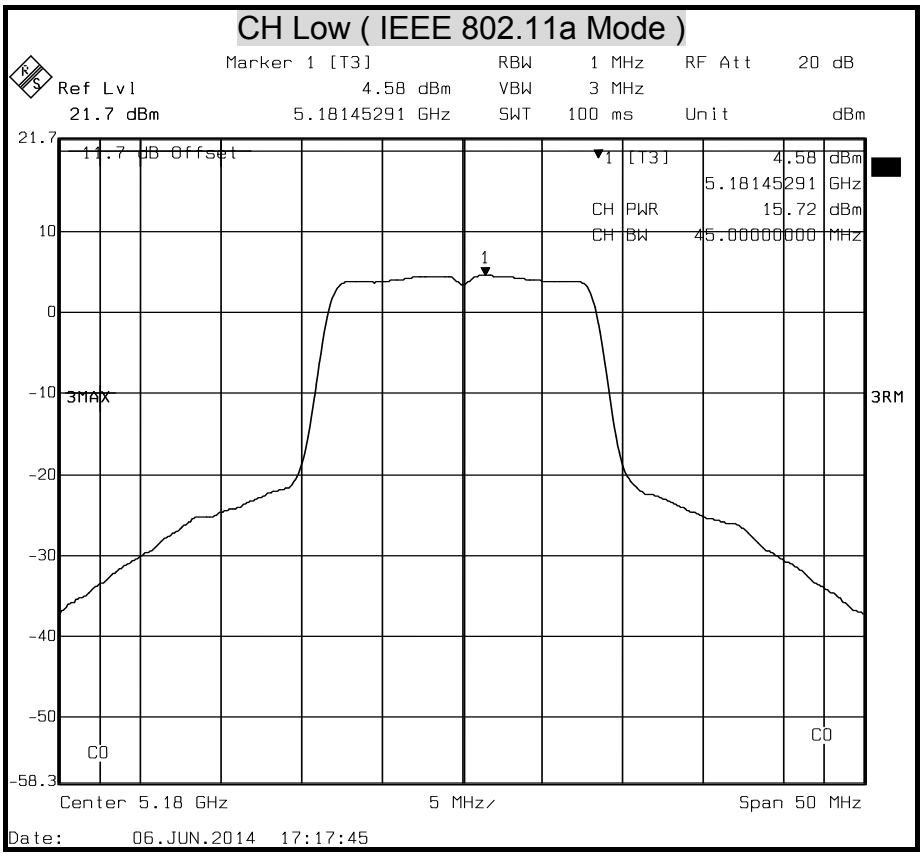
1. At finial test to get the worst-case emission at 29.3Mbps

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

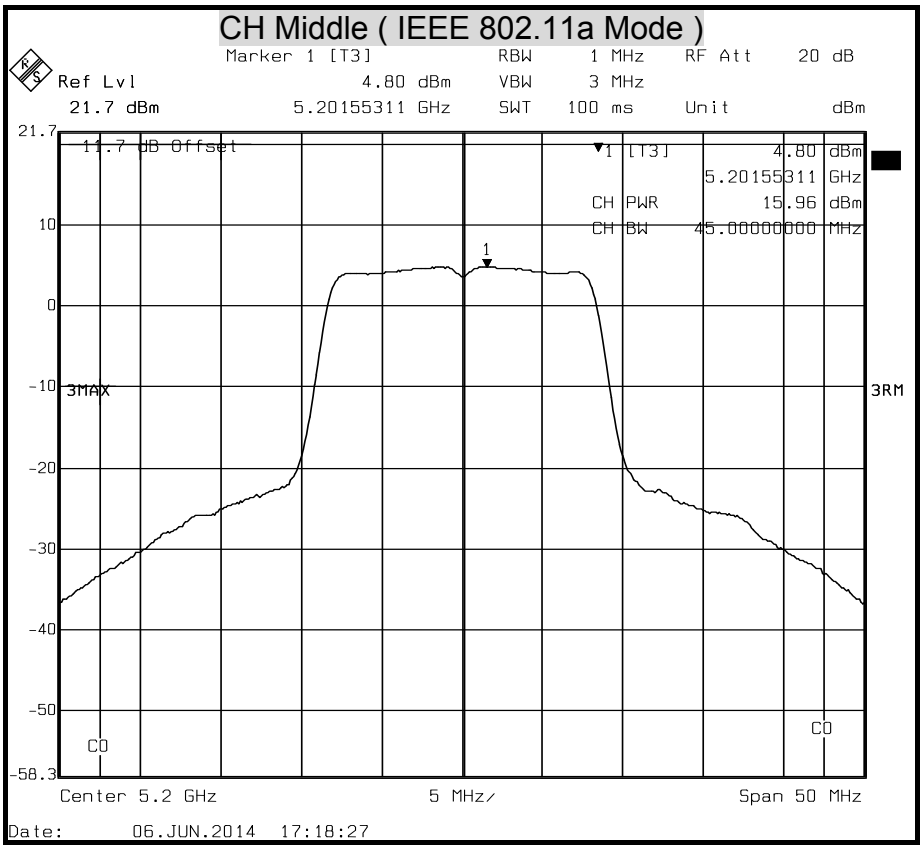
PEAK POWER SPECTRAL DENSITY

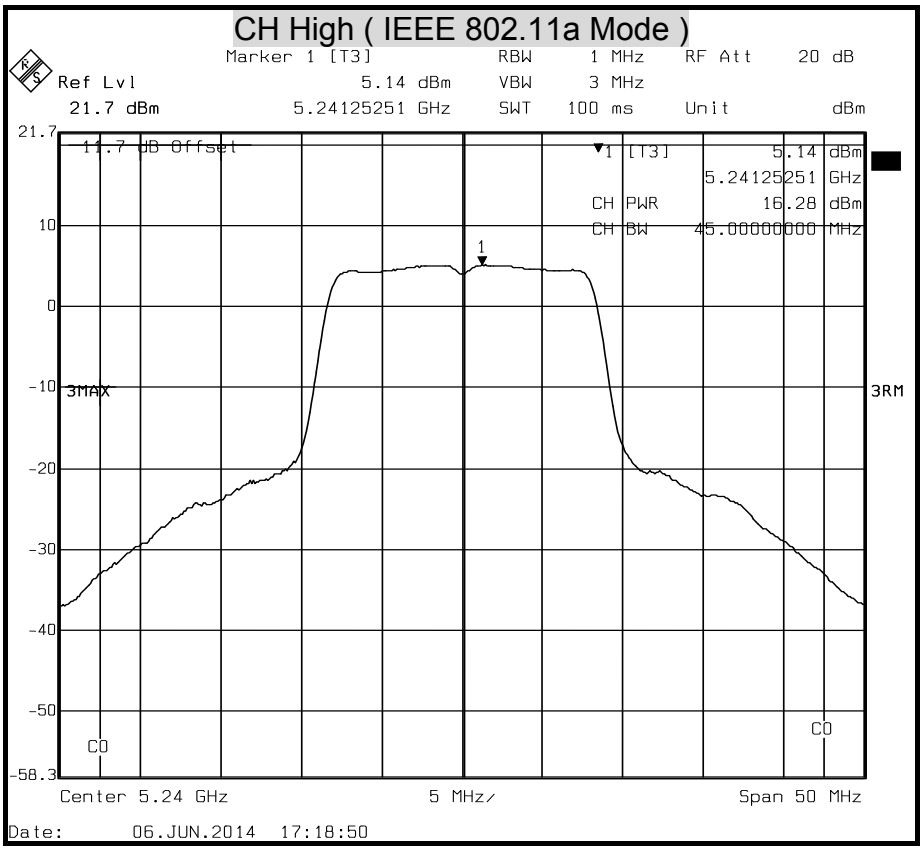
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11a Mode)

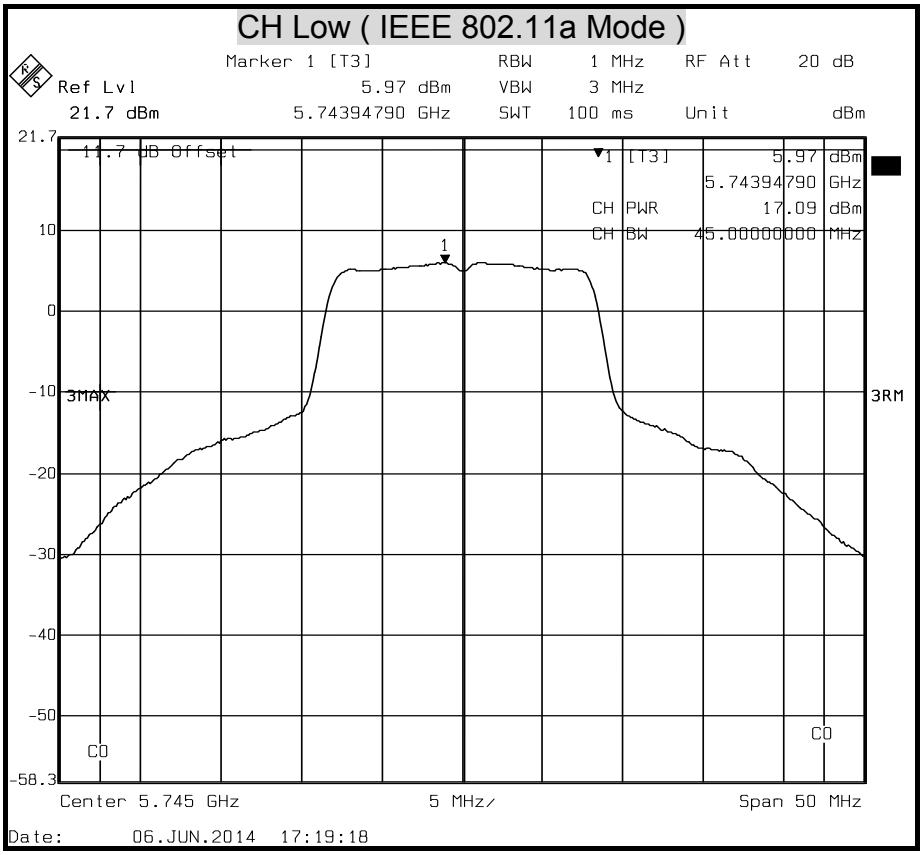


CH Middle (IEEE 802.11a Mode)

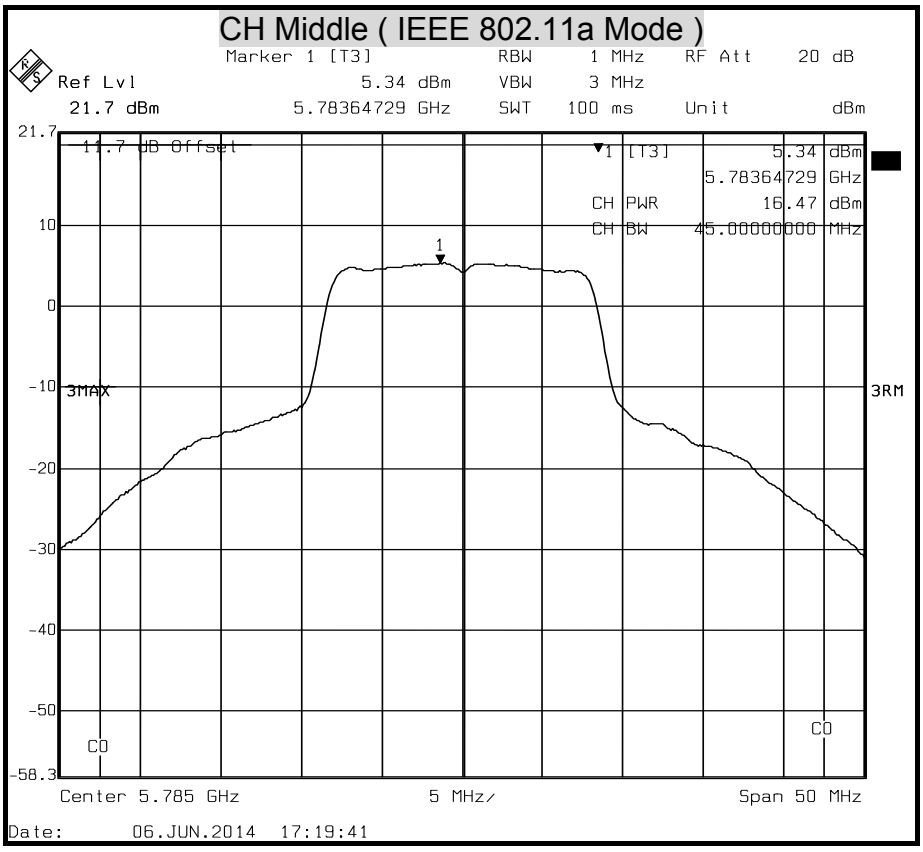




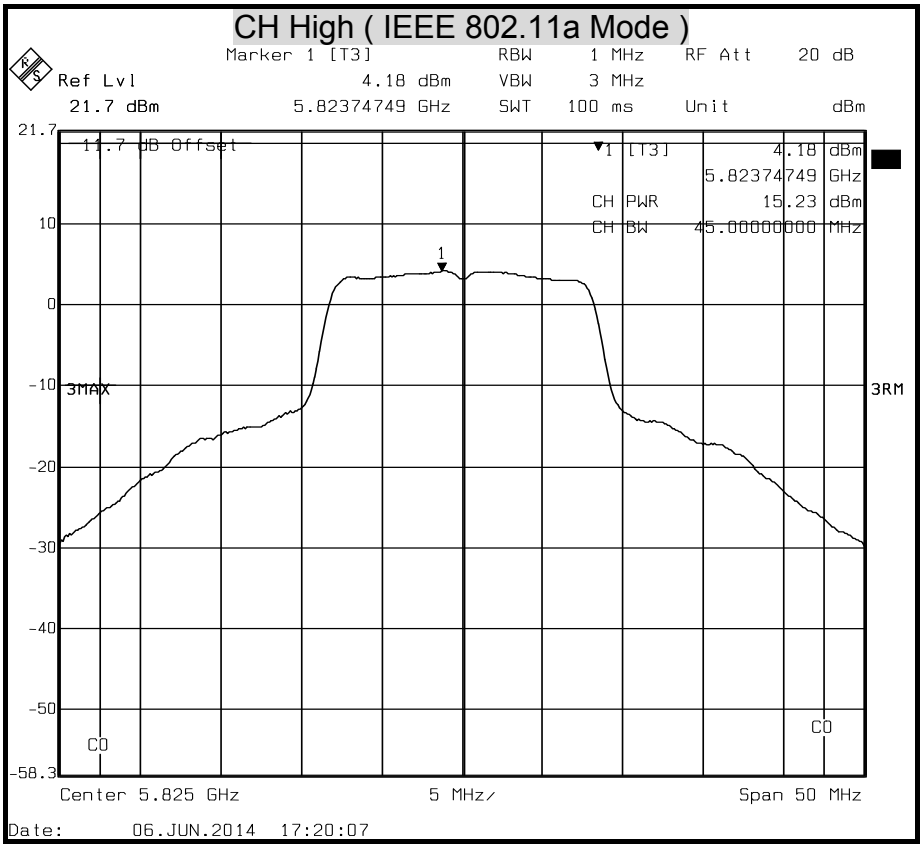
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

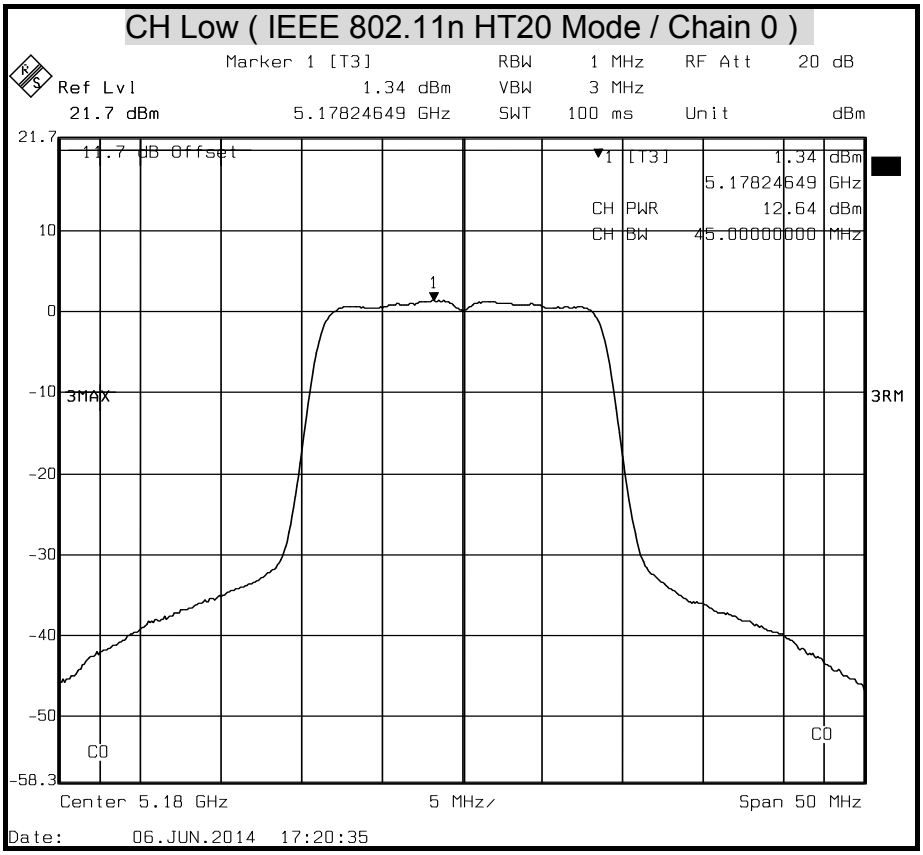


CH High (IEEE 802.11a Mode)

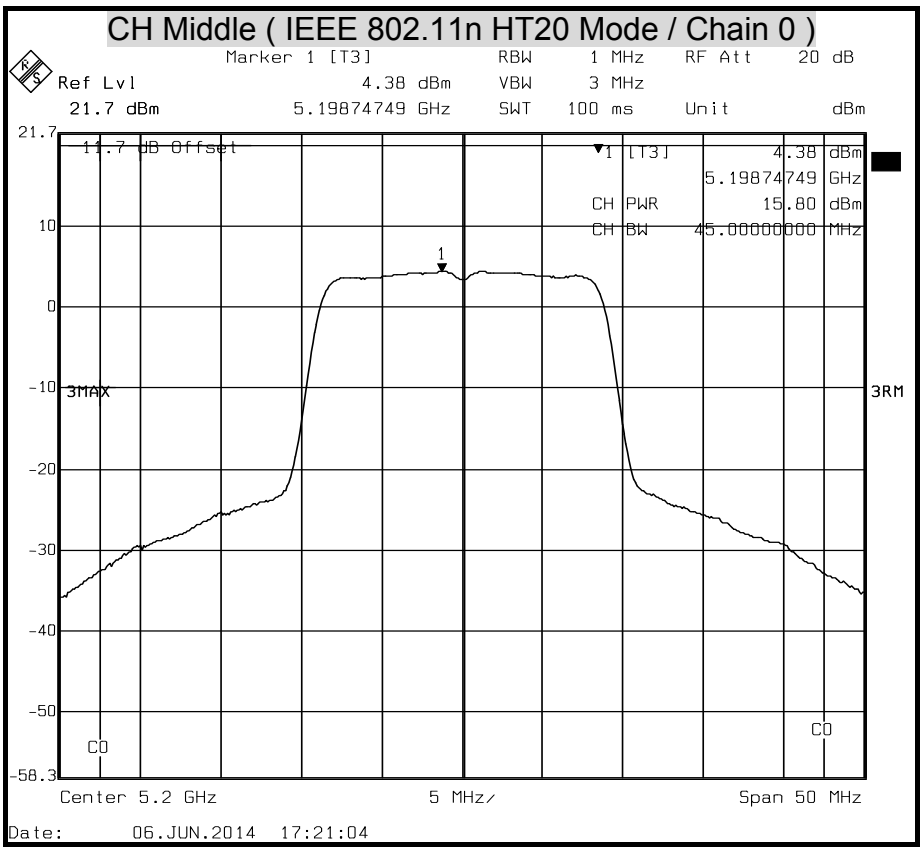


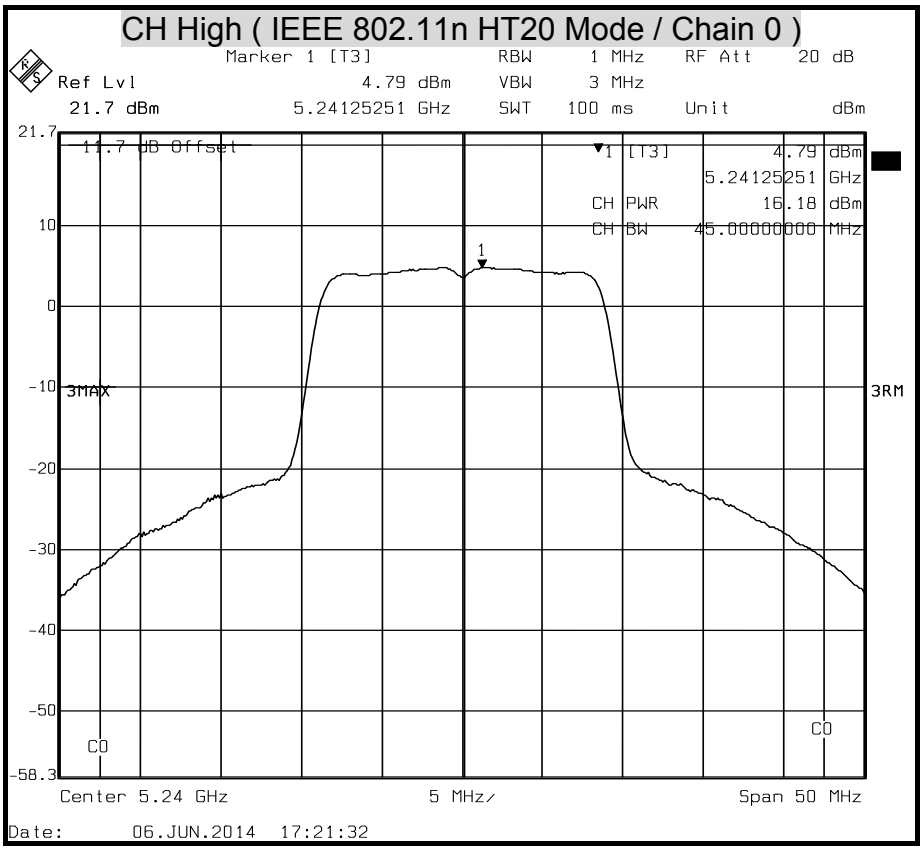
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

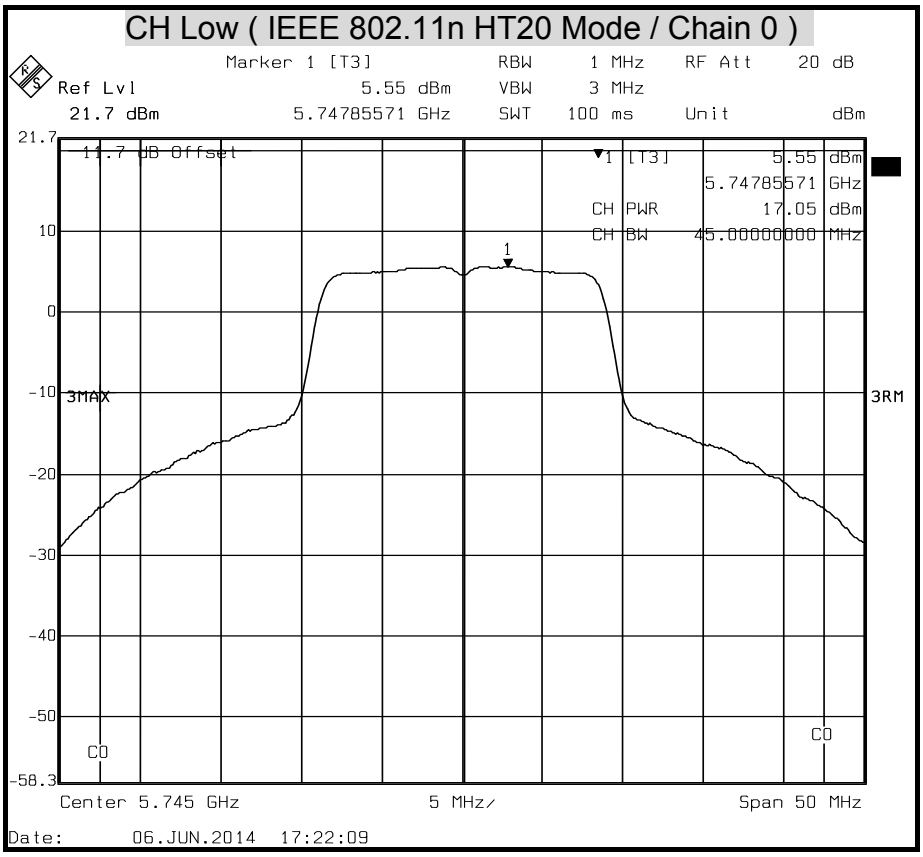


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

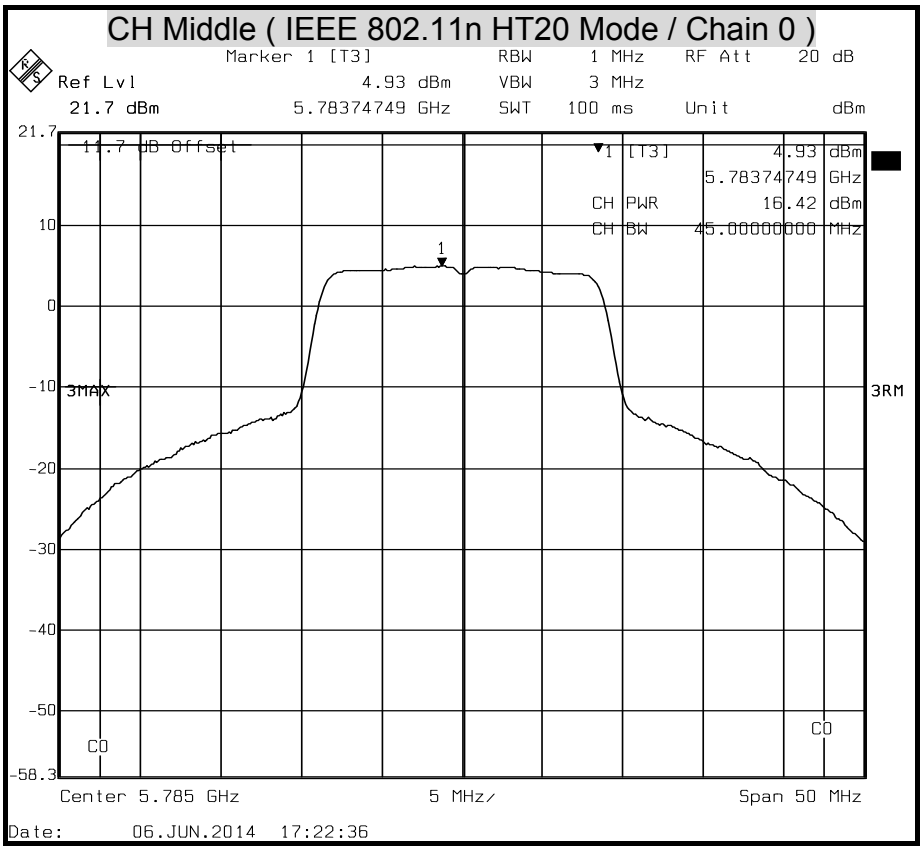




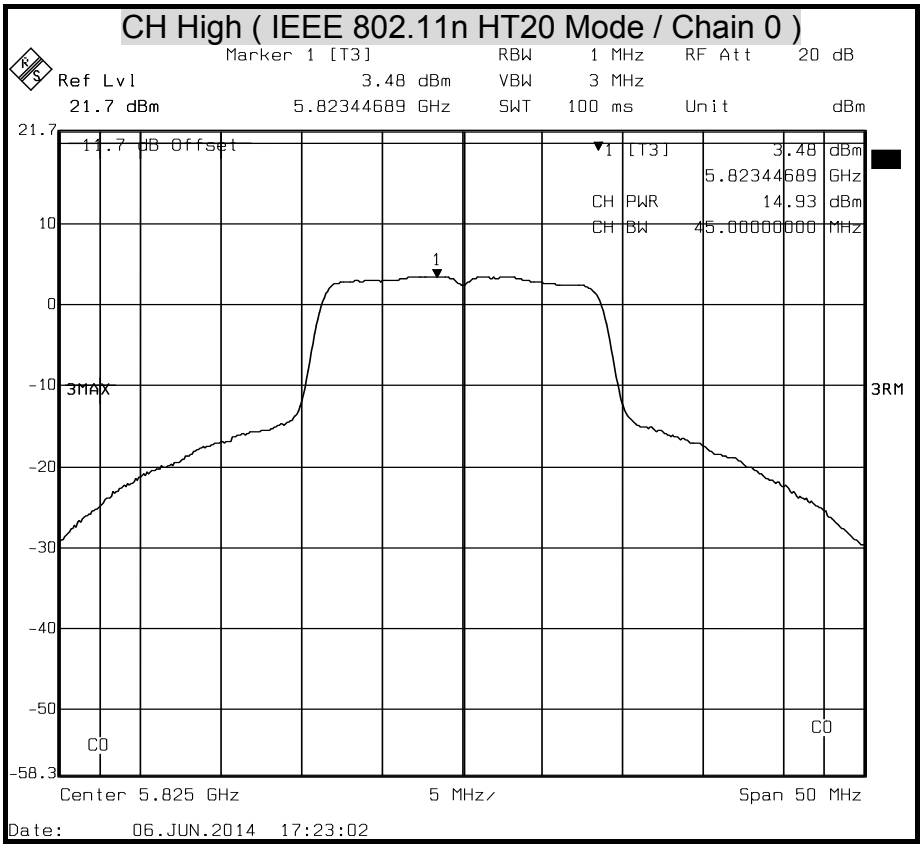
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

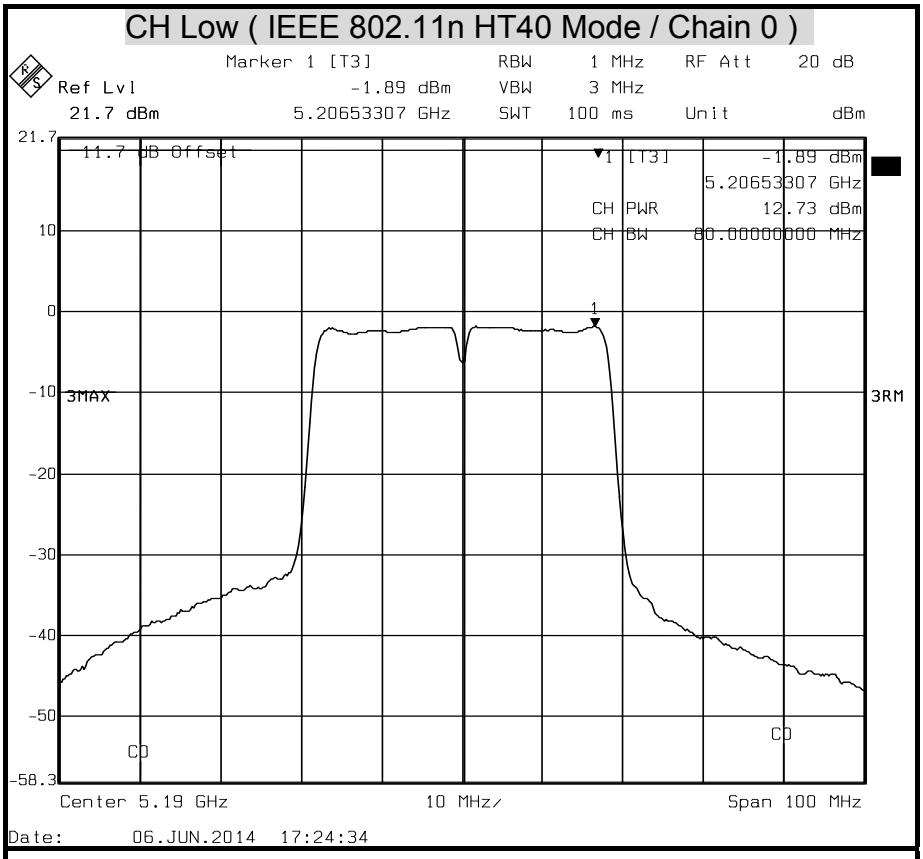


CH High (IEEE 802.11n HT20 Mode / Chain 0)

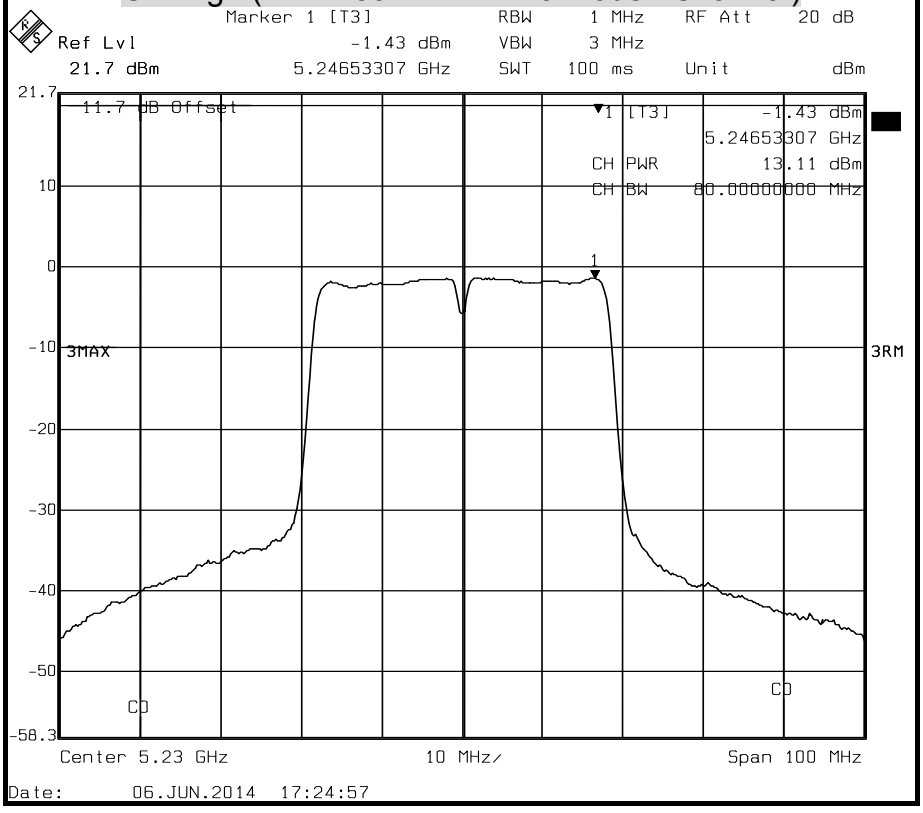


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

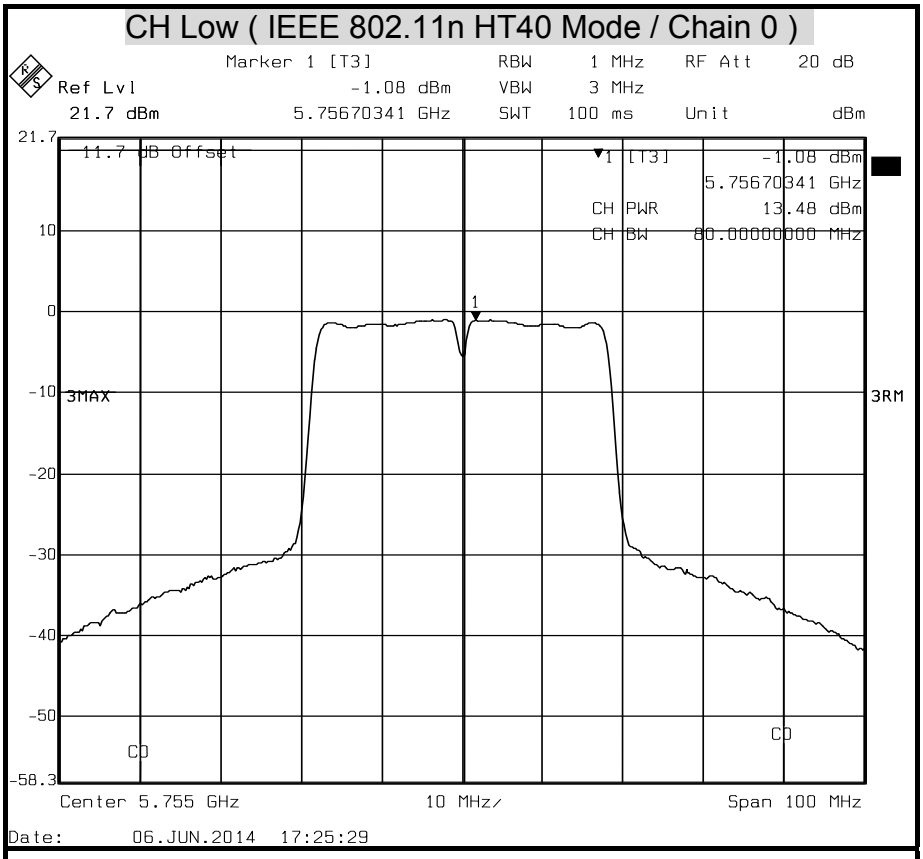


CH High (IEEE 802.11n HT40 Mode / Chain 0)

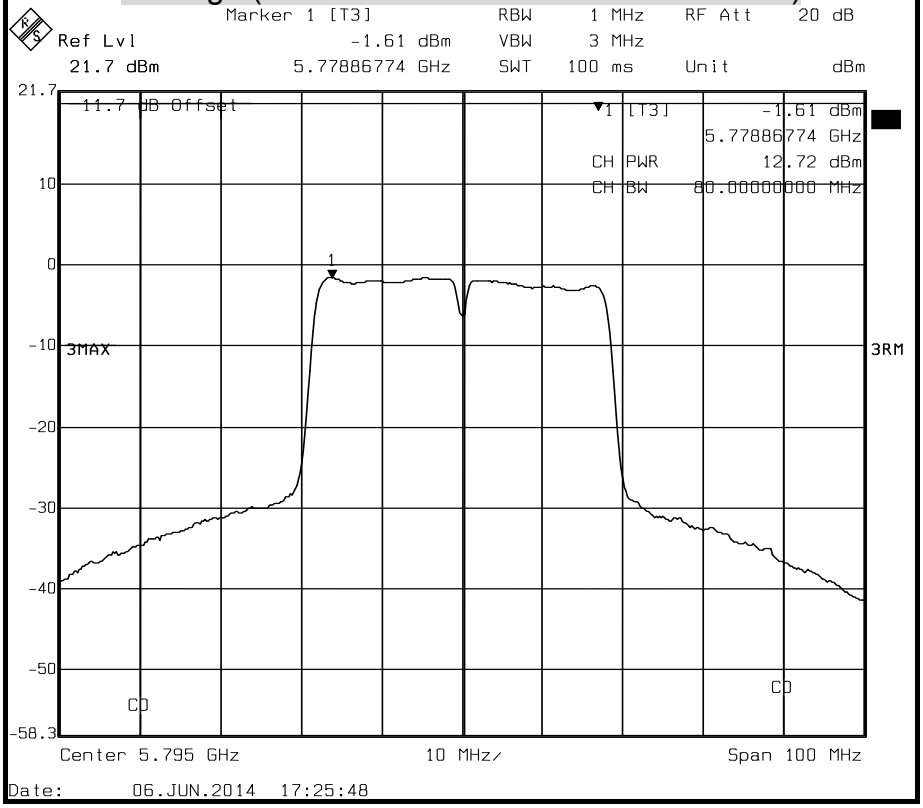


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

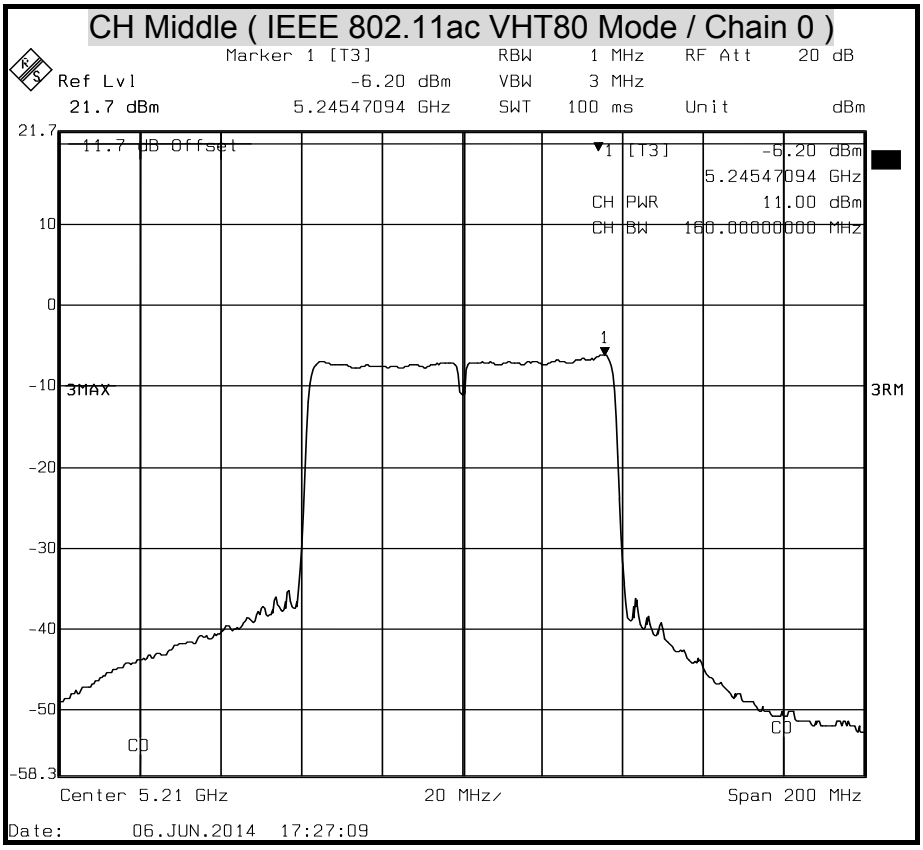
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



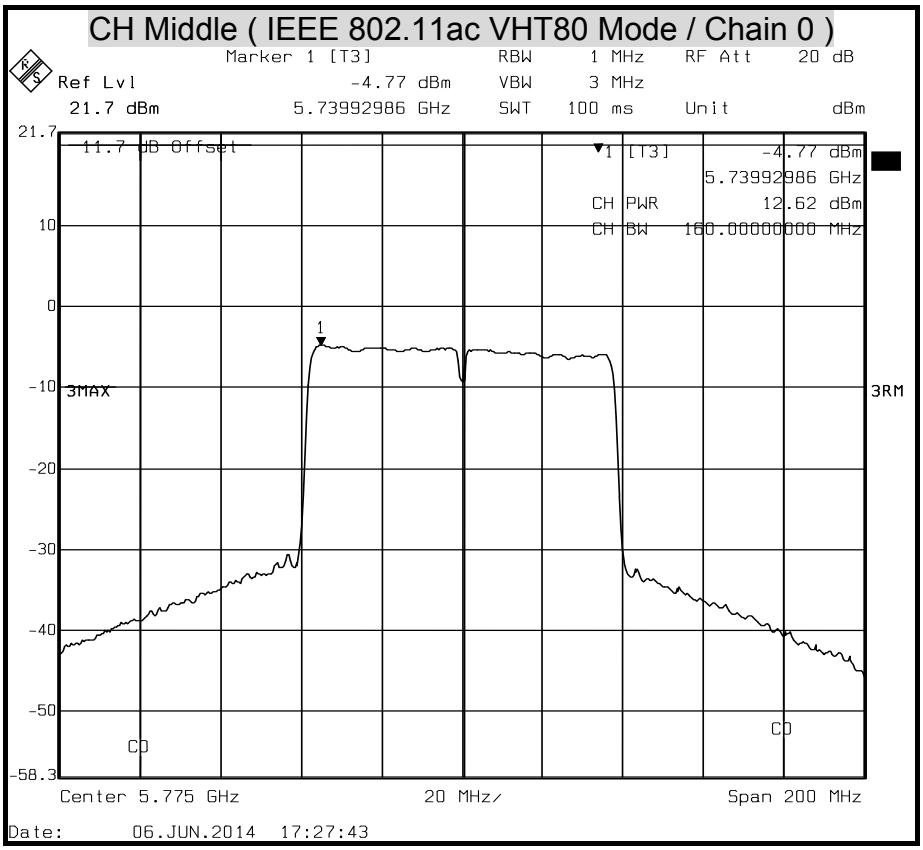
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.4 PEAK EXCURSION

LIMITS

§ 15.407 (a) (6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP

TEST PROCEDURE

The test is performed in accordance with <FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices> – Part 15, Subpart E, August 2002.

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
3. Trace A, Set RBW =1MHz, VBW = 3MHz, Span > 26dB Bandwidth, Max. hold.
   Trace B, Set RBW =1MHz, VBW = 3MHz, Span > 26dB Bandwidth, Setup RMS detector and power average mode, to scan 100 times with average.
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

TEST RESULTS

IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	8.76	13.00	-4.24	PASS
Middle	5200	8.51		-4.49	PASS
High	5240	8.56		-4.44	PASS

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5745	8.89	13.00	-4.11	PASS
Middle	5785	8.92		-4.08	PASS
High	5825	9.01		-3.99	PASS

Remark:

1. *At finial test to get the worst-case emission at 6Mbps.*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 Mode / Chain 0

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	8.66	13.00	-4.34	PASS
Middle	5200	8.78		-4.22	PASS
High	5240	8.64		-4.36	PASS

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5745	8.81	13.00	-4.19	PASS
Middle	5785	9.03		-3.97	PASS
High	5825	8.87		-4.13	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps.*
2. *The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 Mode / Chain 0

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5190	8.74	13.00	-4.26	PASS
High	5230	8.67		-4.33	PASS

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5755	8.90	13.00	-4.10	PASS
High	5795	8.69		-4.31	PASS

Remark:

1. At finial test to get the worst-case emission at 13.5Mbps.

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11ac VHT80 Mode / Chain 0

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Middle	5210	9.37	13.00	-3.63	PASS

Channel	Channel Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)	Pass / Fail
Middle	5775	8.66	13.00	-4.34	PASS

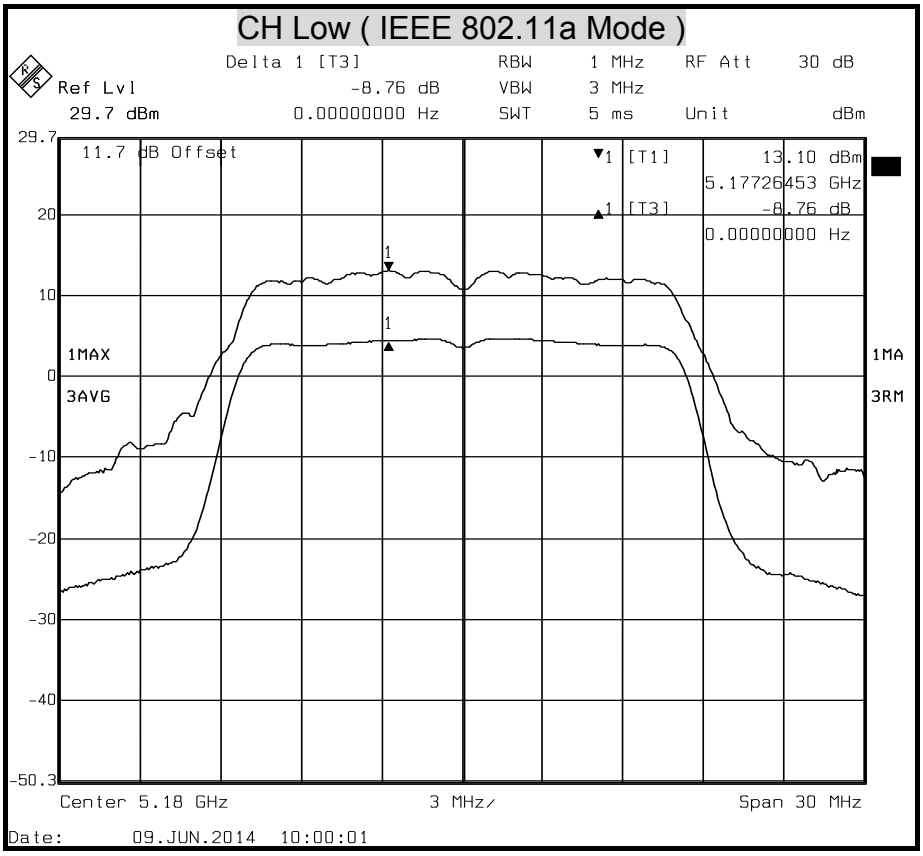
Remark:

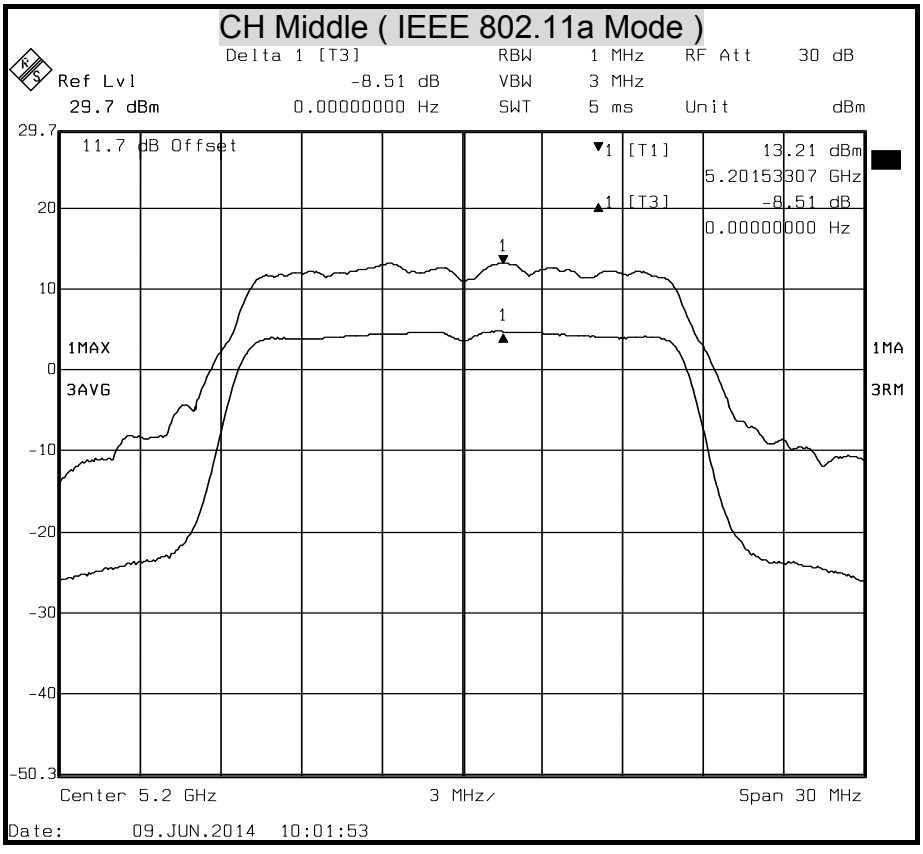
1. At finial test to get the worst-case emission at 29.3Mbps.

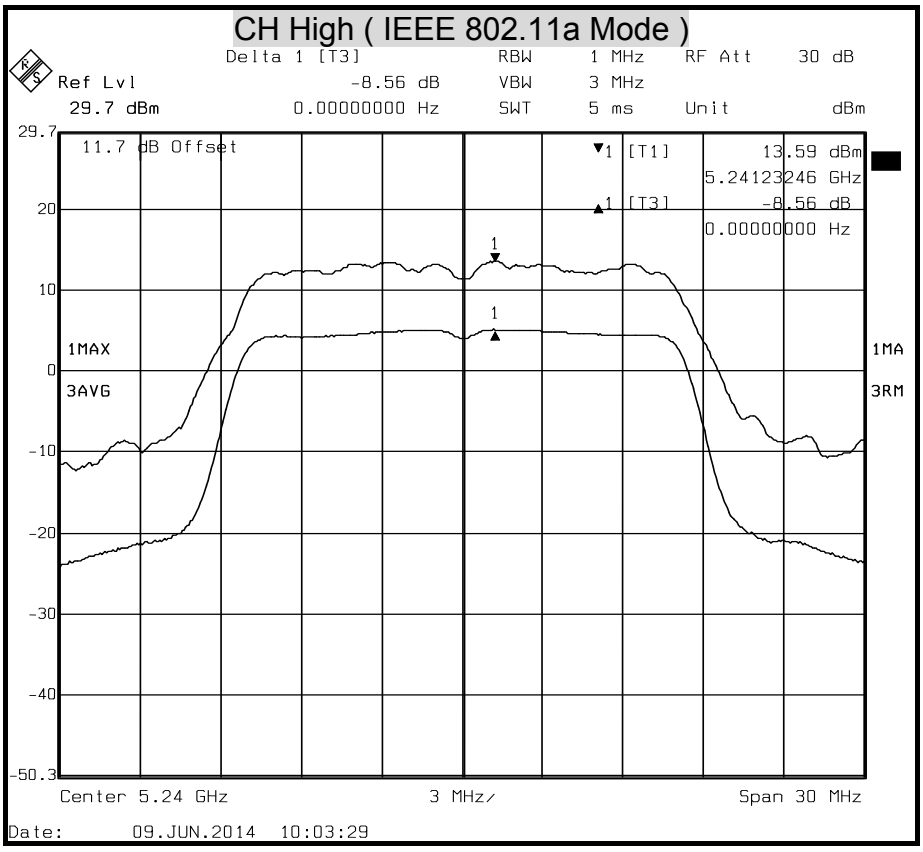
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

PEAK EXCURSION

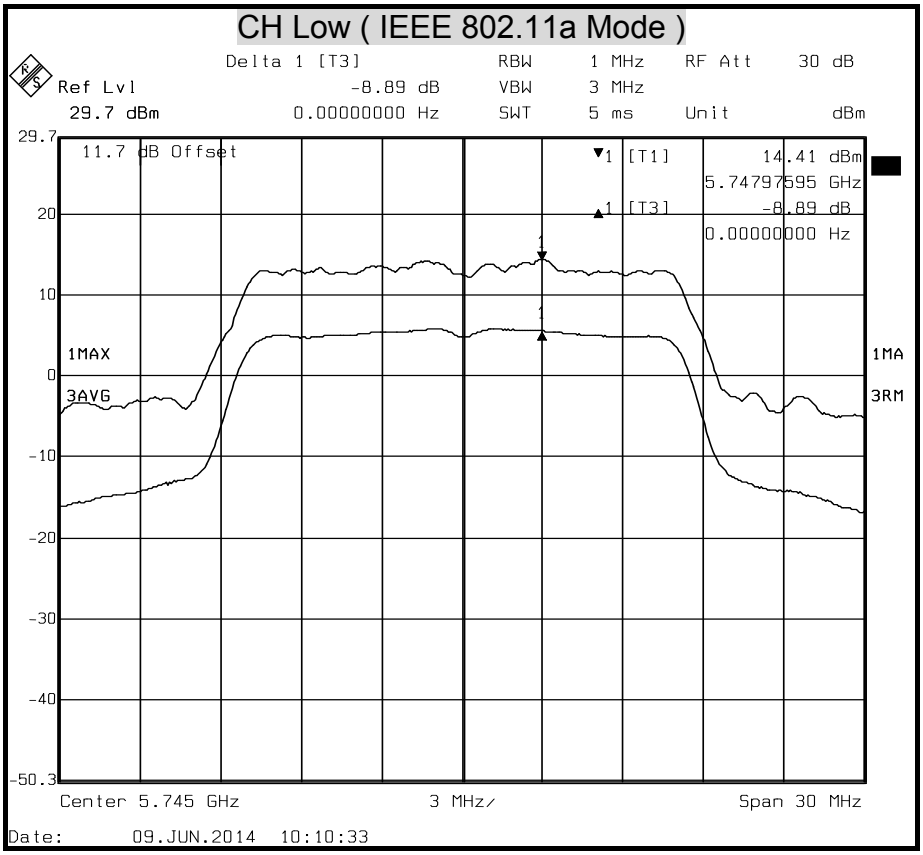
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz



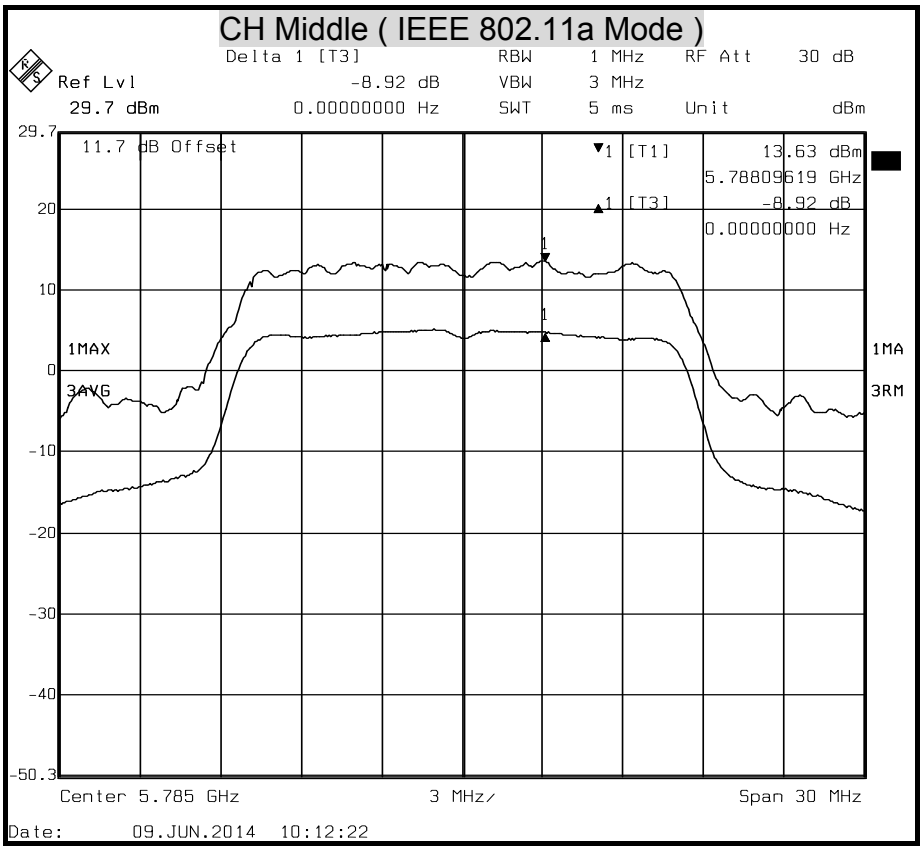




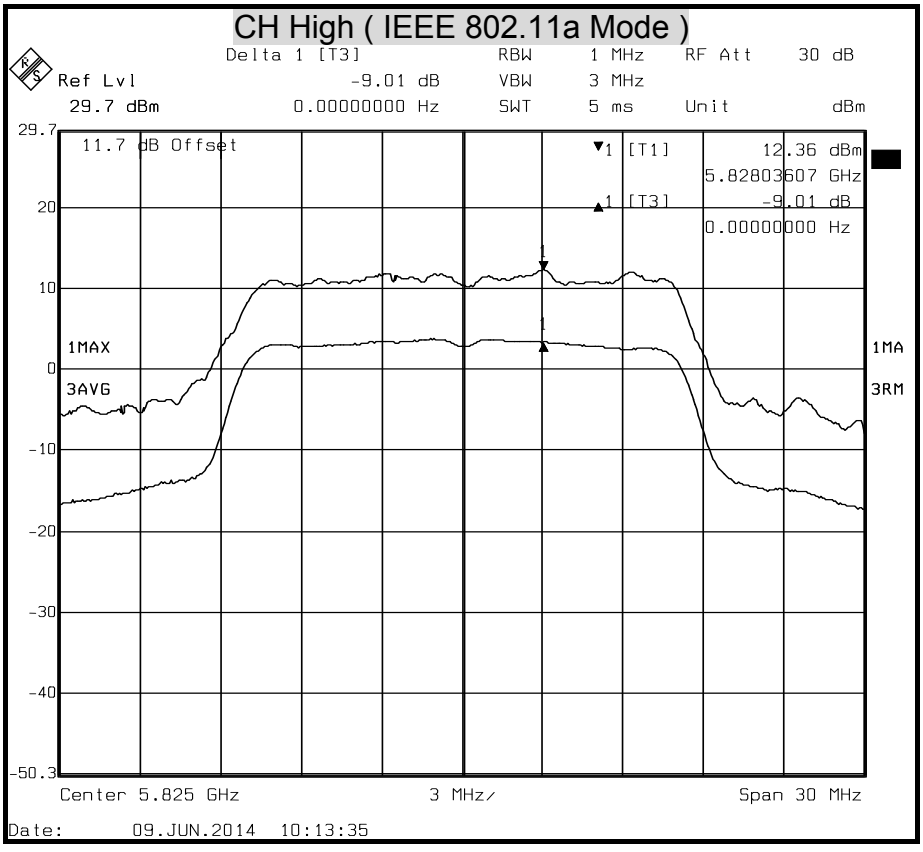
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

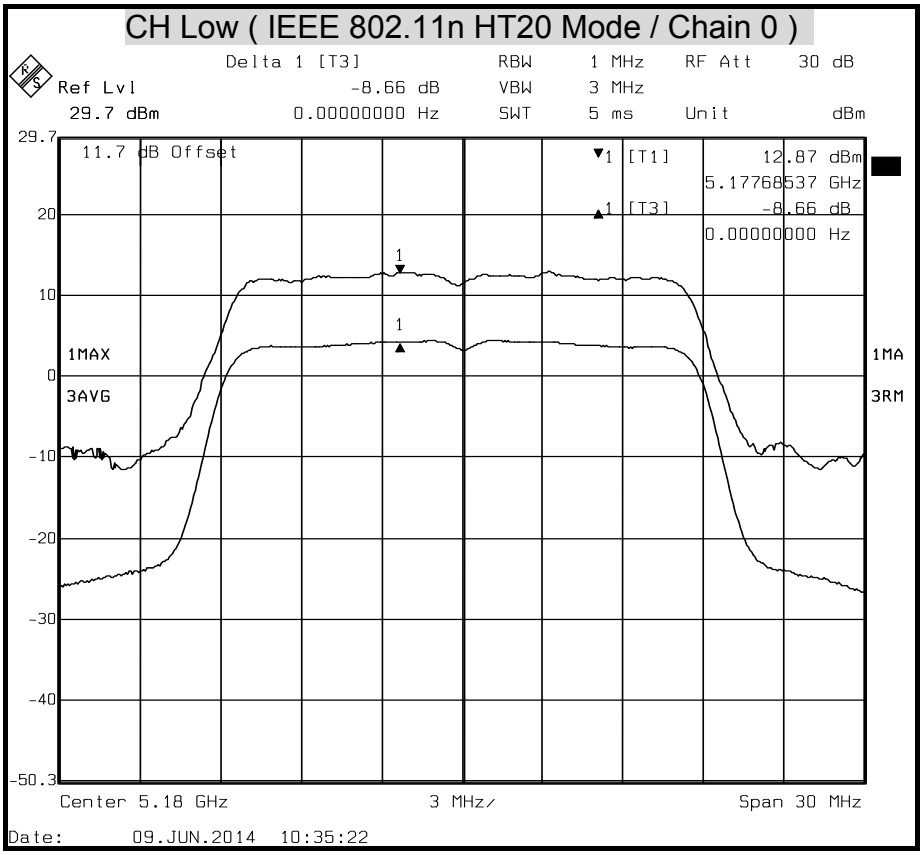


CH High (IEEE 802.11a Mode)

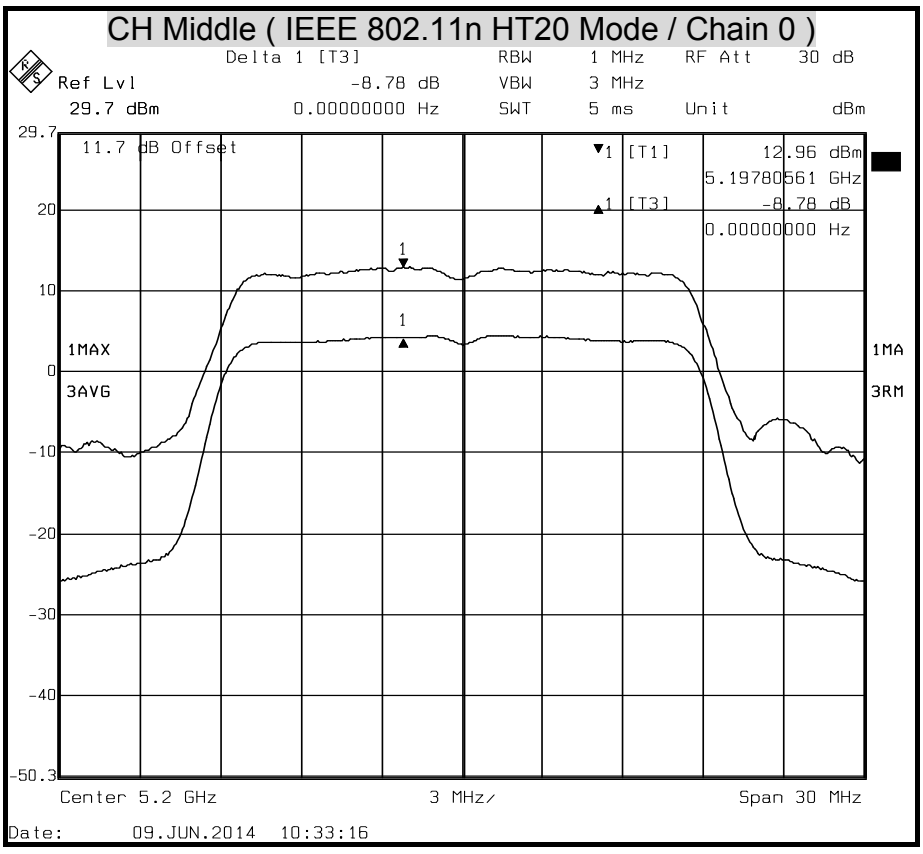


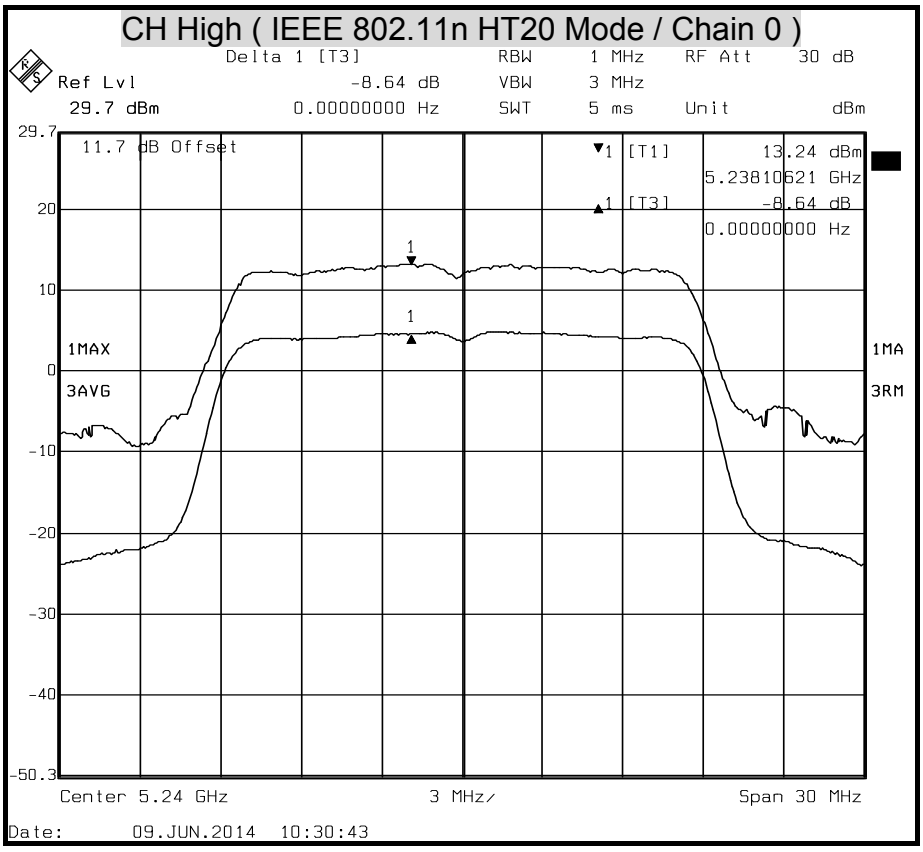
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

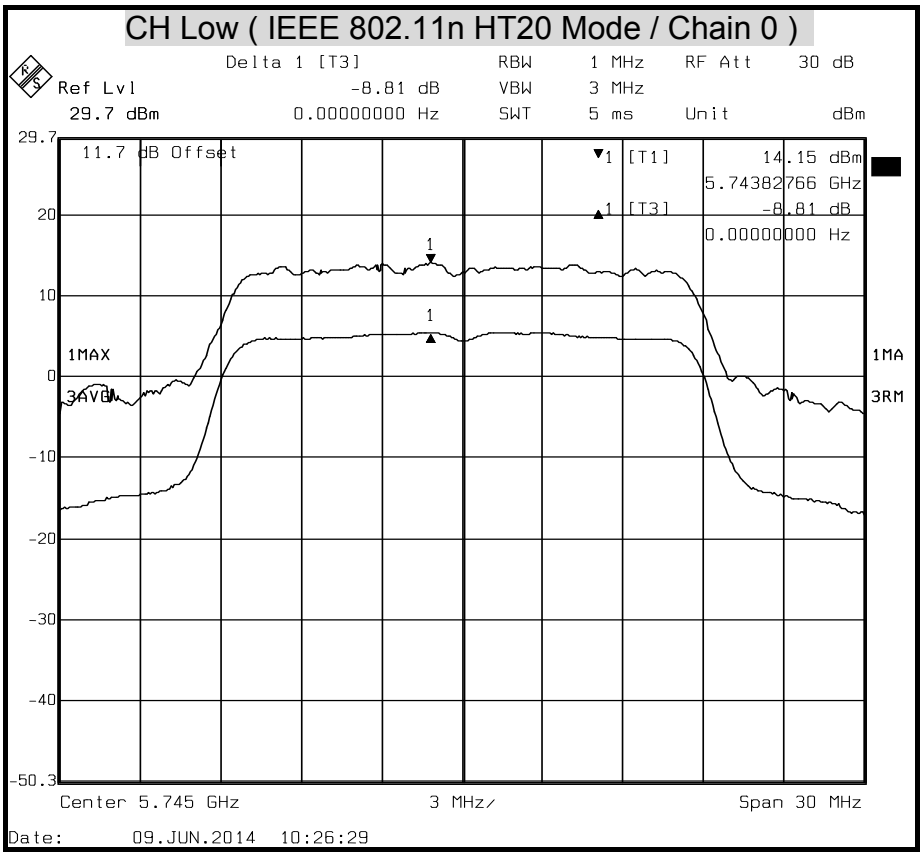


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

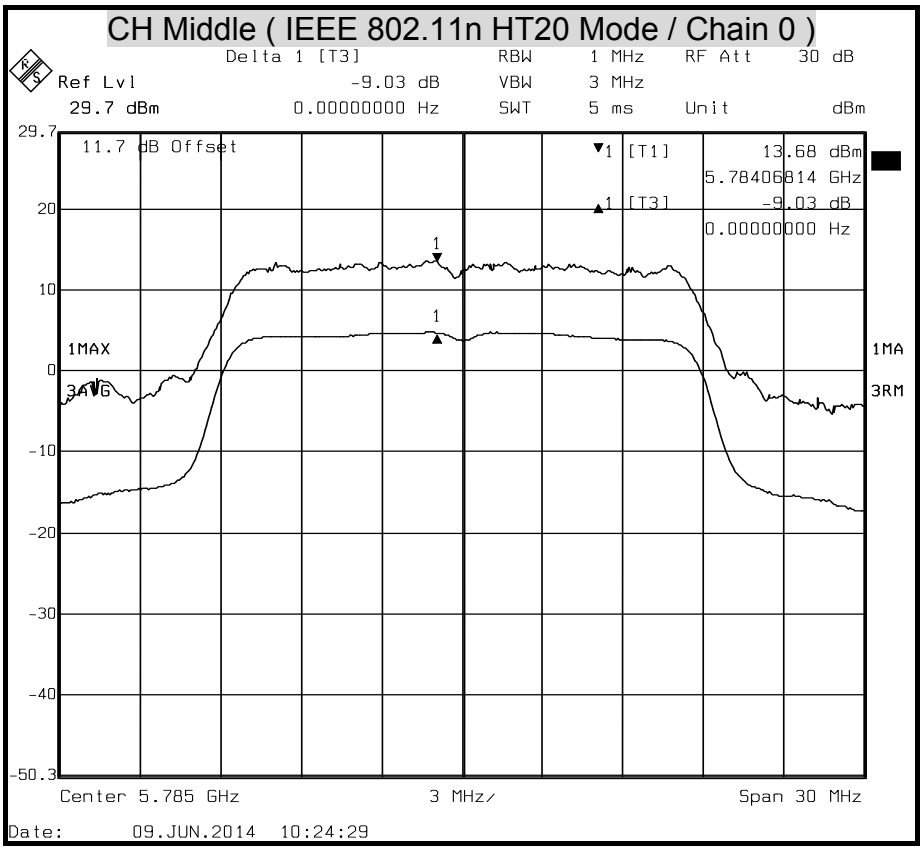




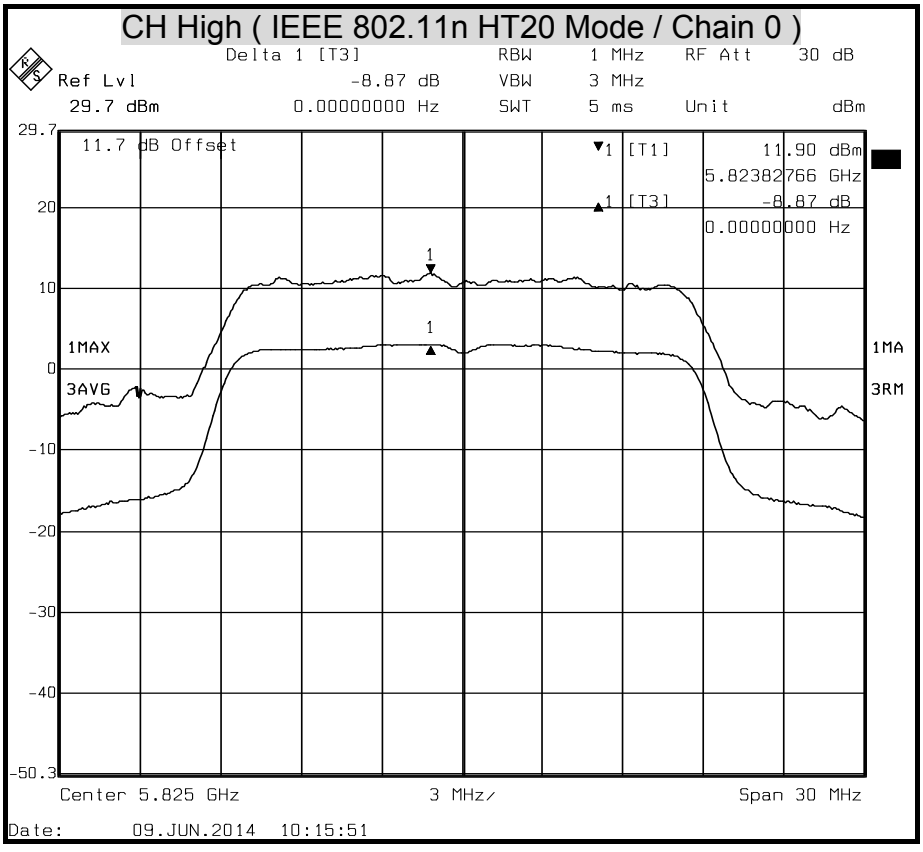
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

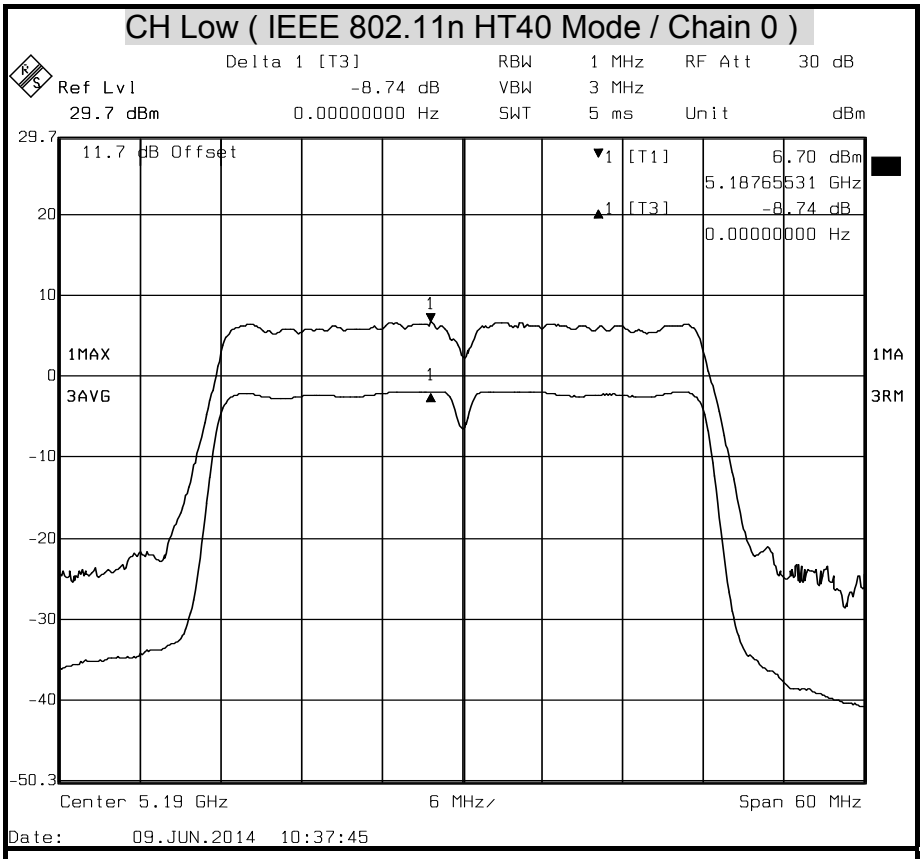


CH High (IEEE 802.11n HT20 Mode / Chain 0)

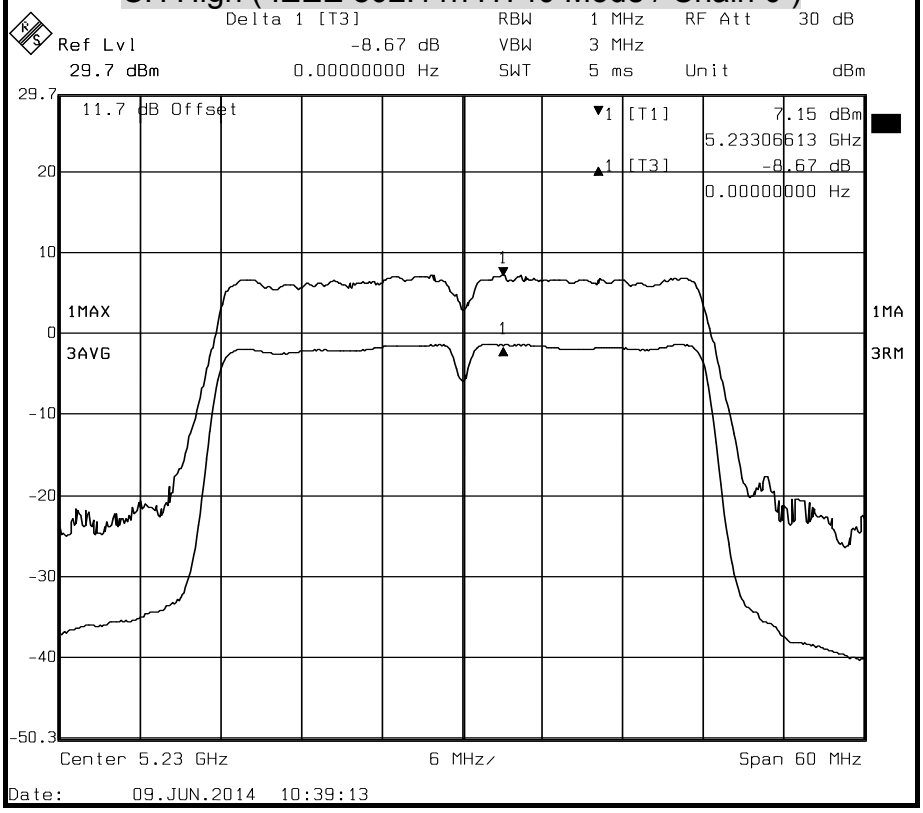


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

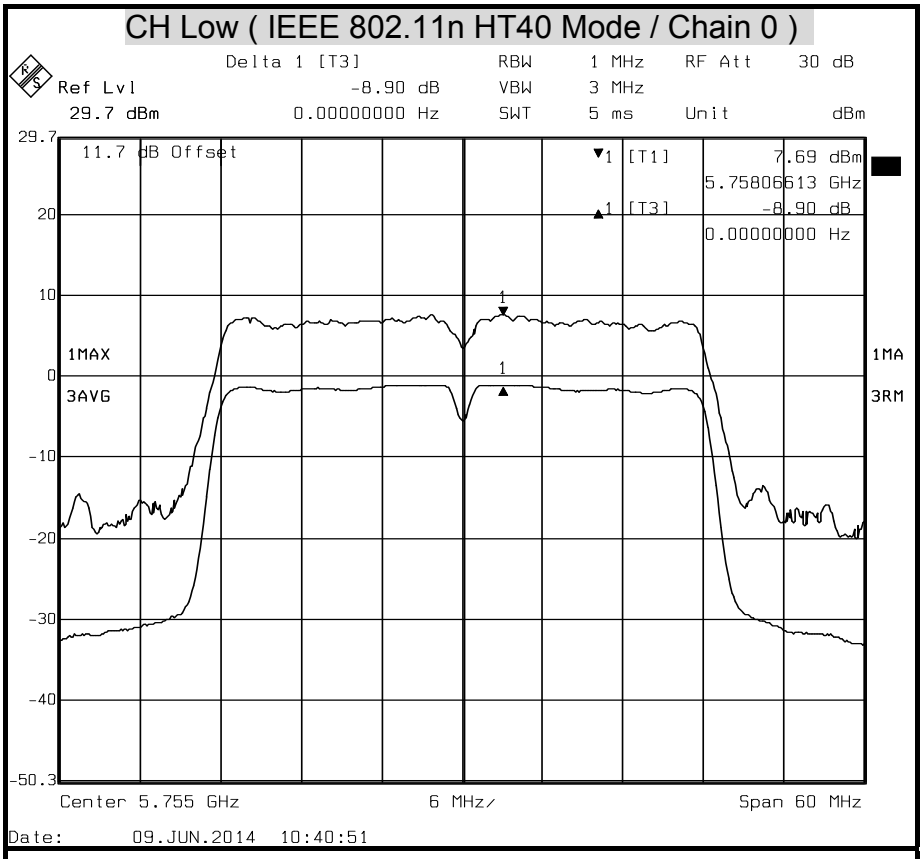


CH High (IEEE 802.11n HT40 Mode / Chain 0)

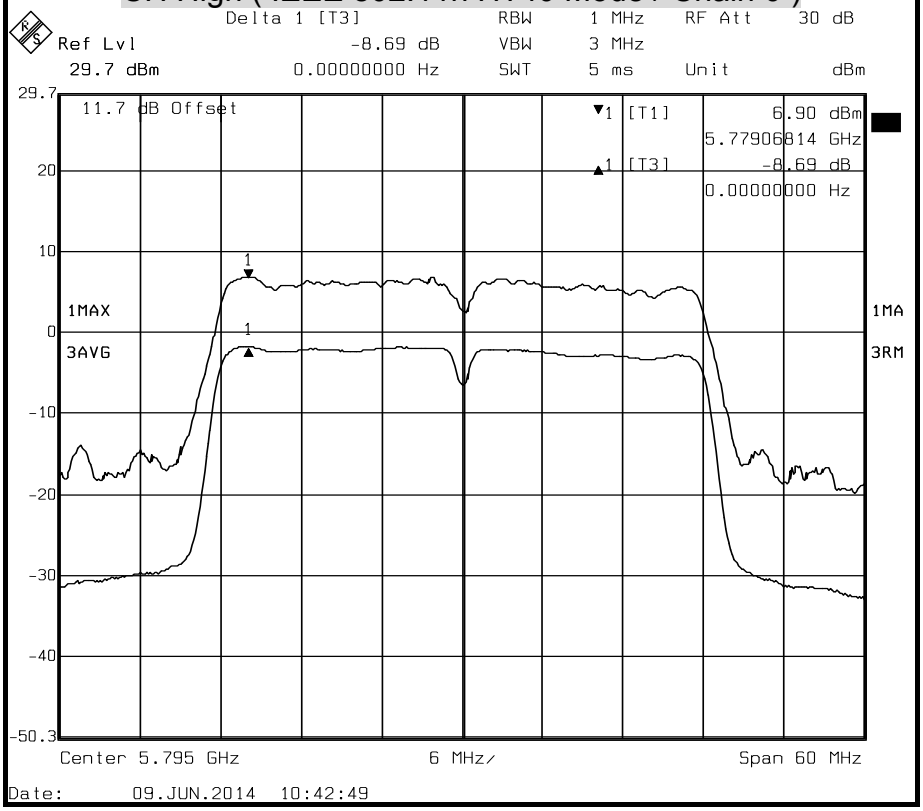


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

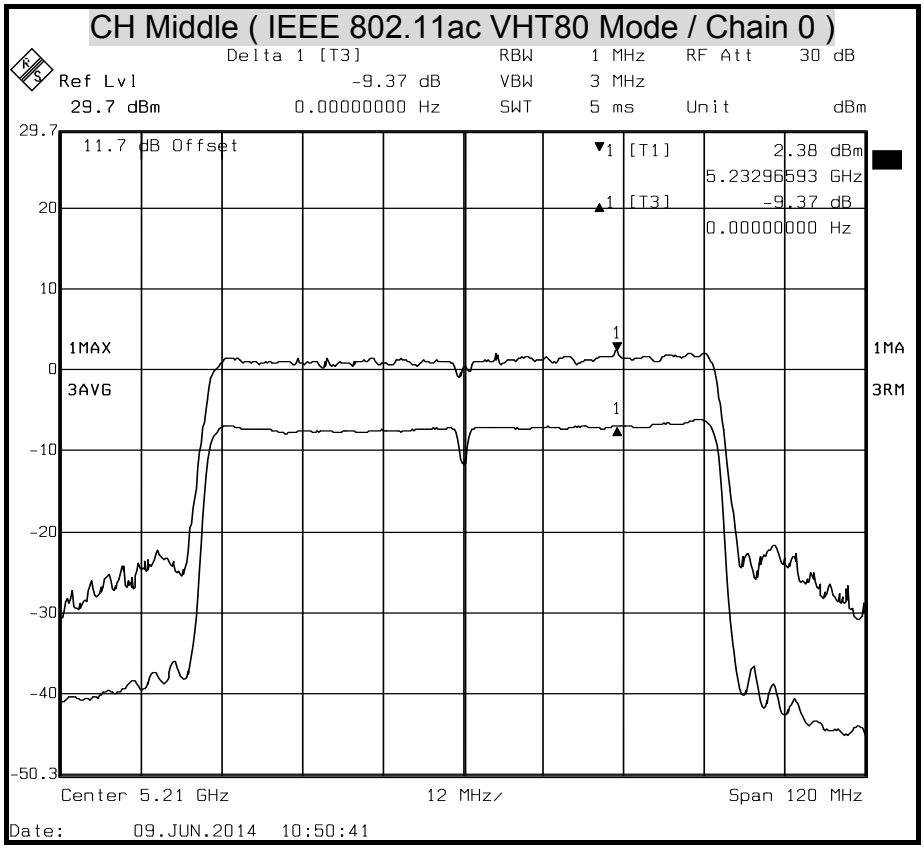
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



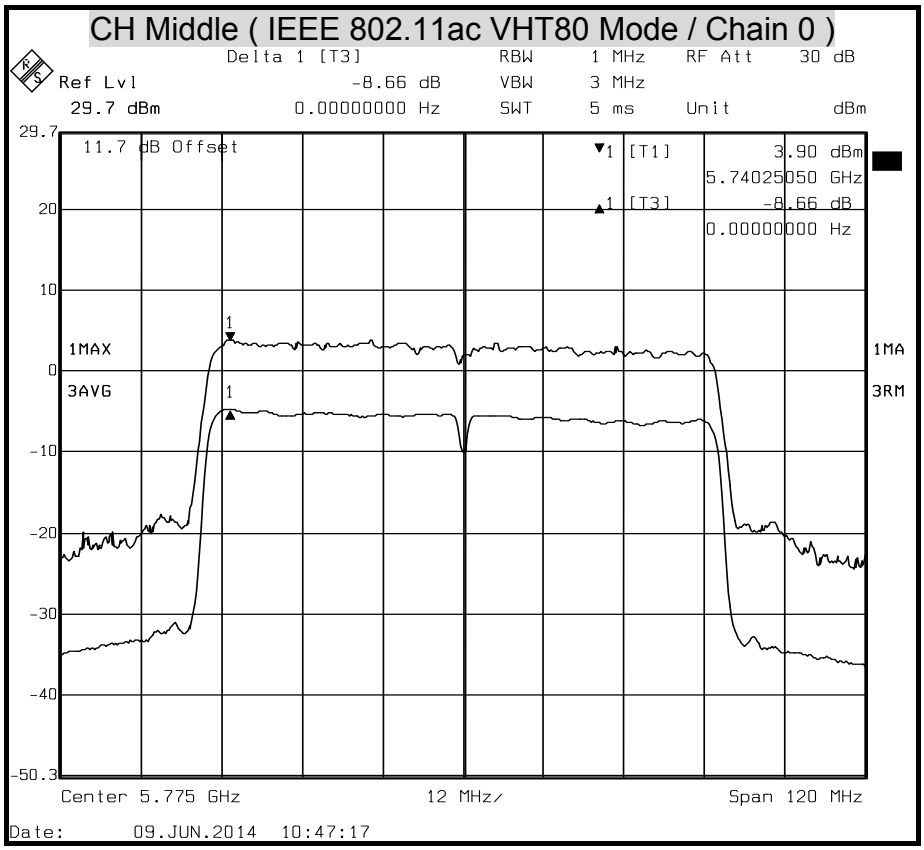
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.5 DUTY CYCLE

LIMIT

Nil (No dedicated limit specified in the Rules)

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP

TEST PROCEDURE

a) Place the EUT on the table and set it in transmitting mode.

b) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

c) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

TEST RESULTS

No non-compliance noted.

TEST DATA

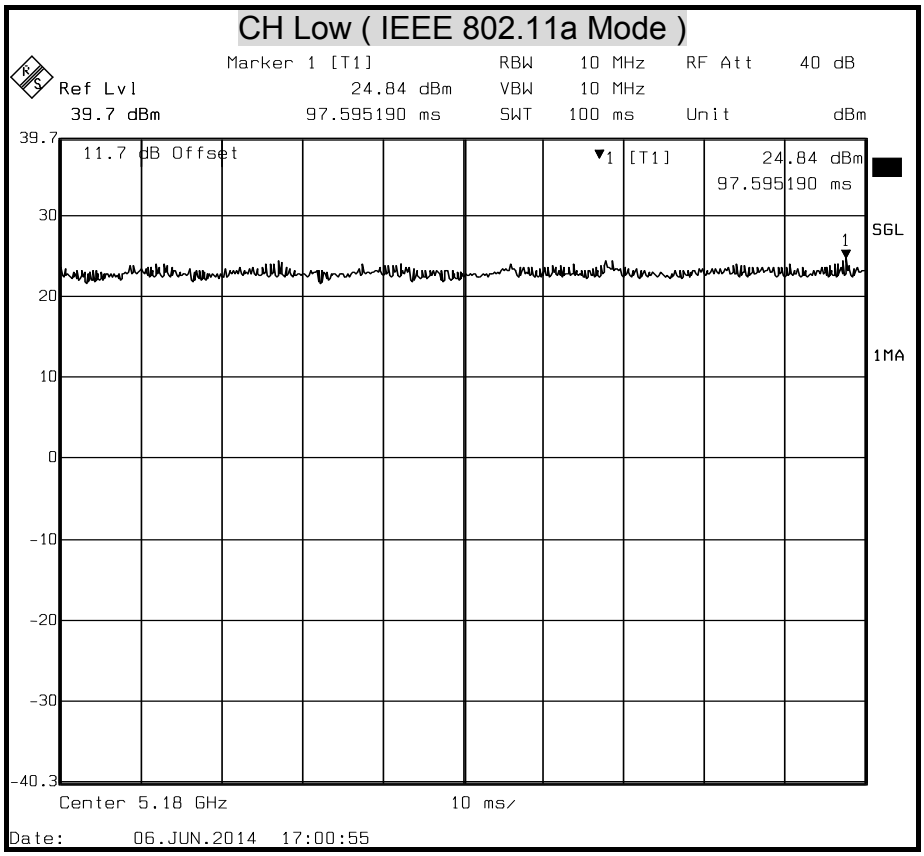
	us	Times	Ton	Total Ton time(ms)
Ton1	100000.000	1	100000.000	100.000
Ton2		0	0.000	
Ton3		0	0.000	
Tp				100.000

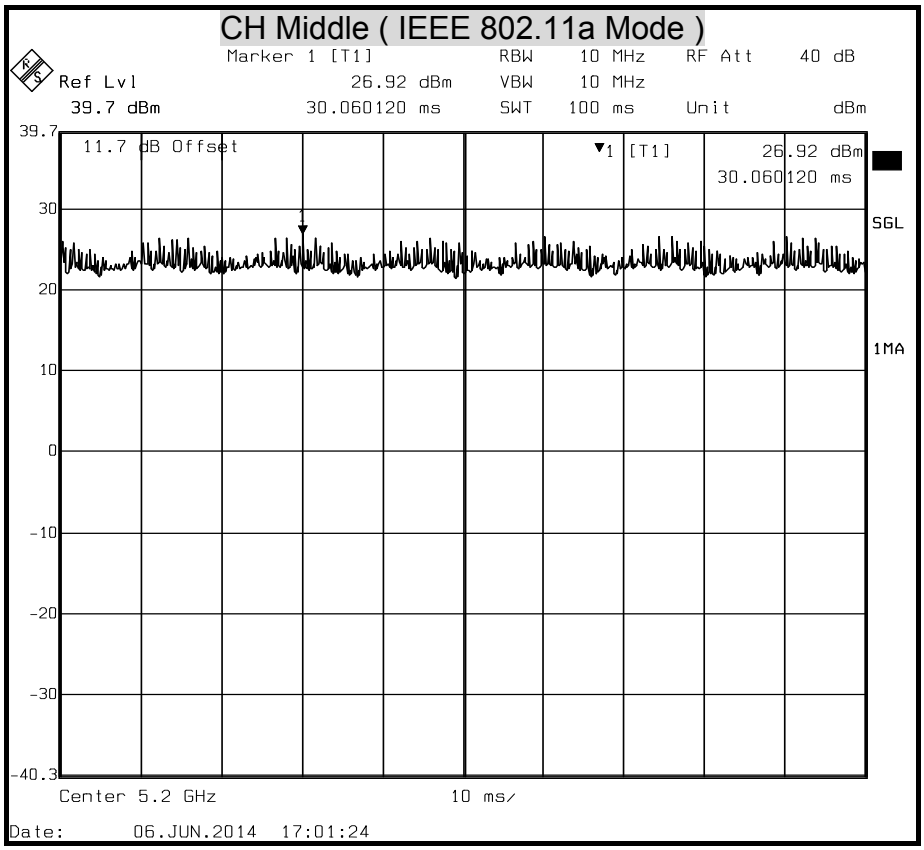
Ton	100.000		
Tp(Ton+Toff)	100.000		
Duty Cycle	1.000	100	%
Duty Factor	0.000		

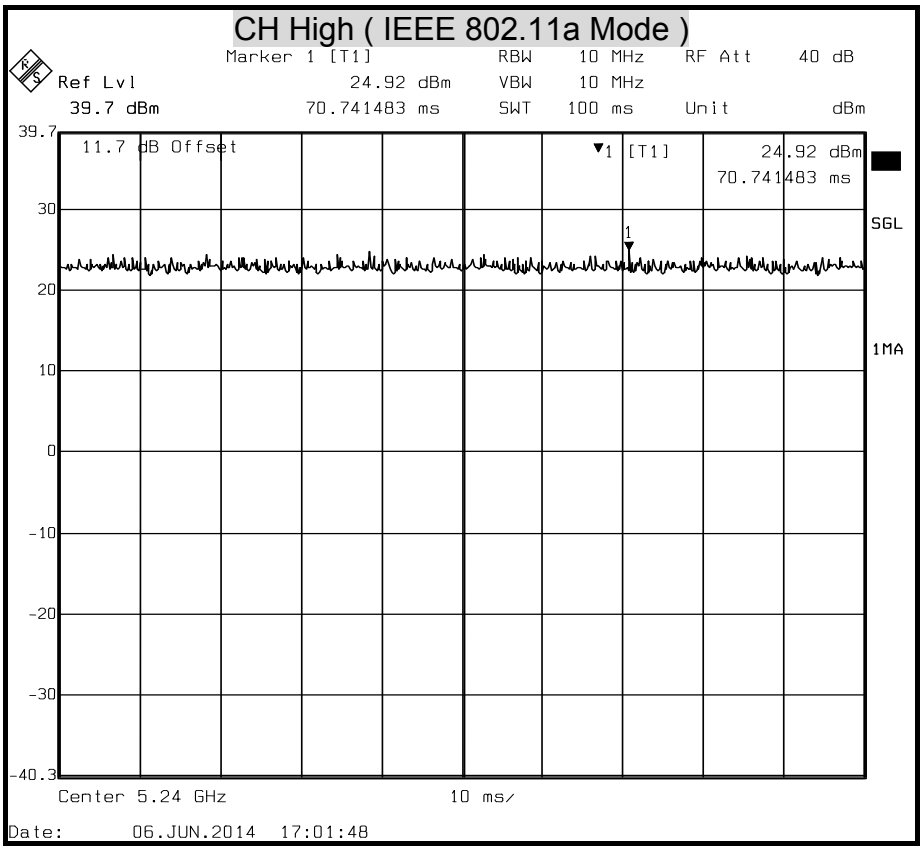
TEST PLOT

Duty Cycle

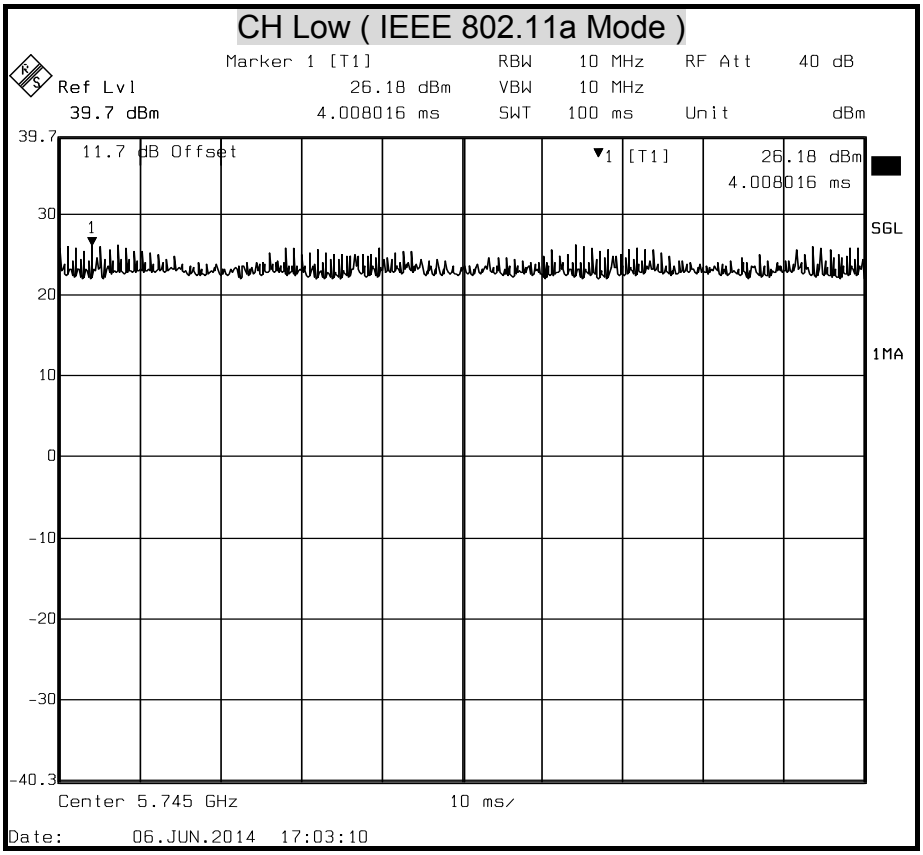
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz



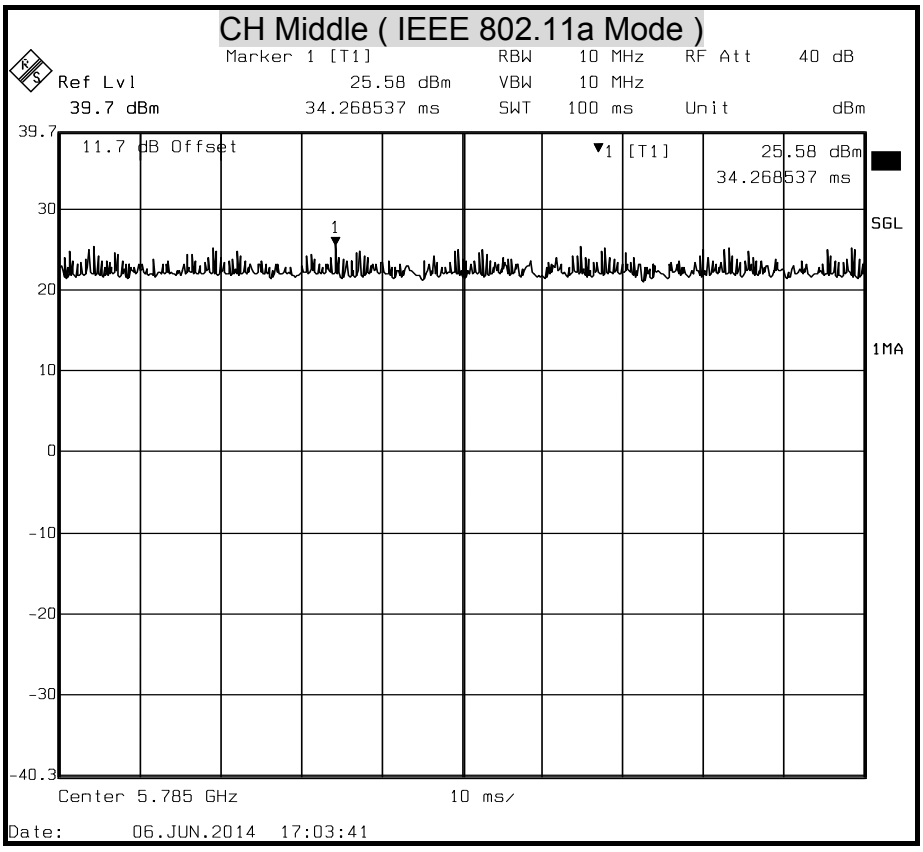




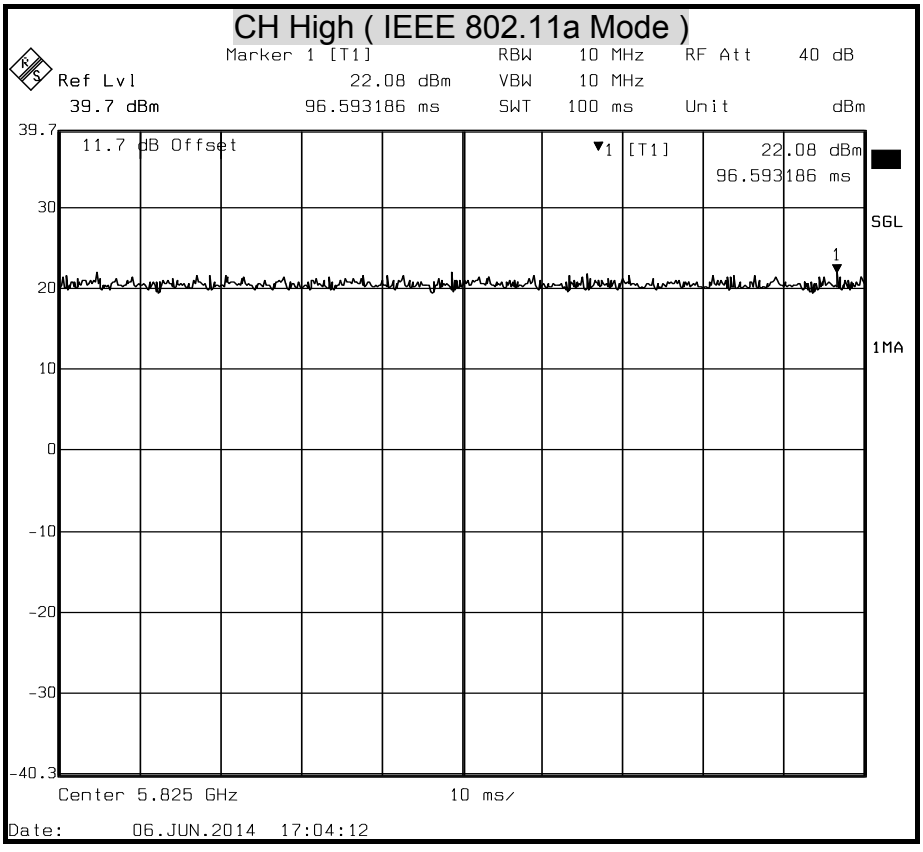
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

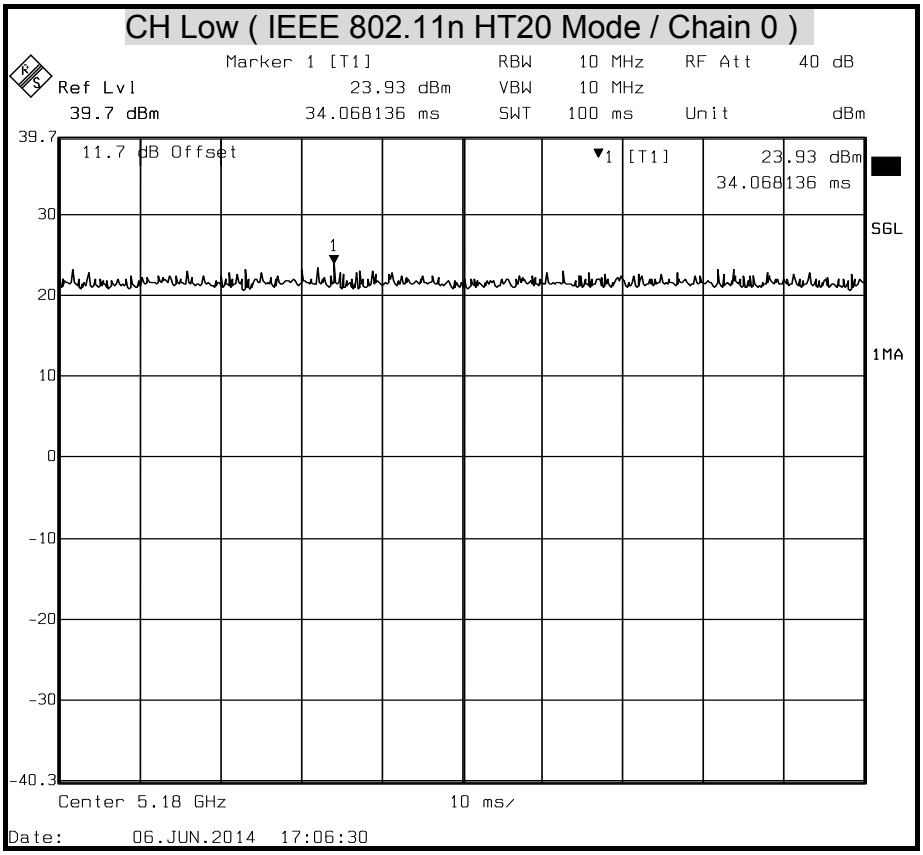


CH High (IEEE 802.11a Mode)

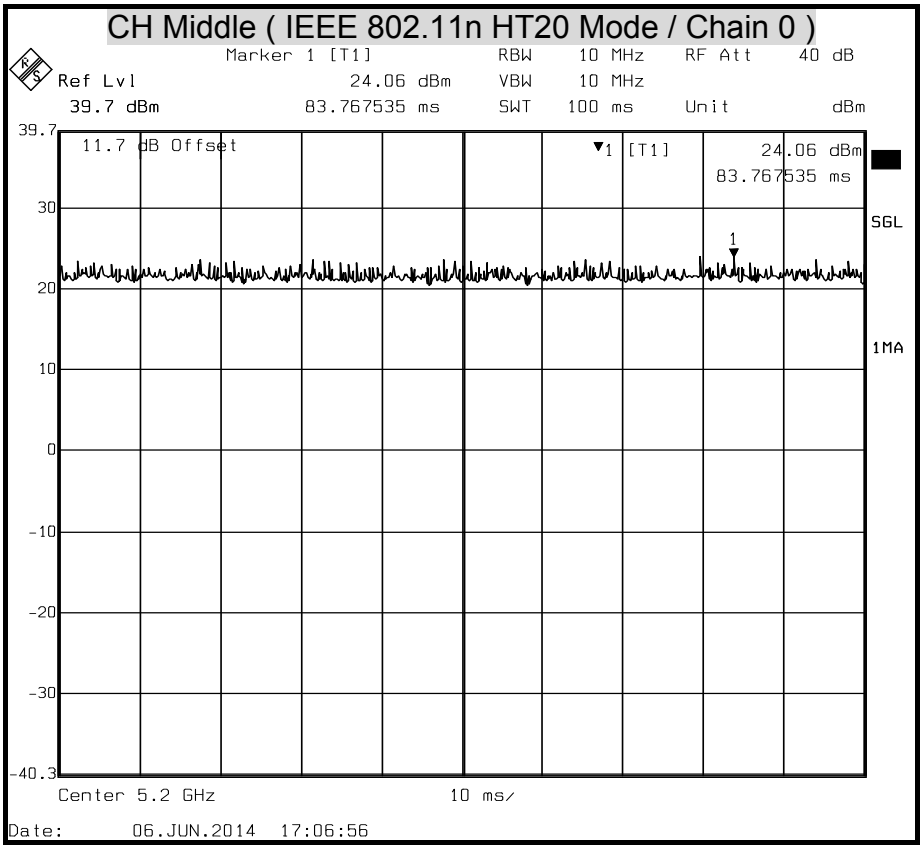


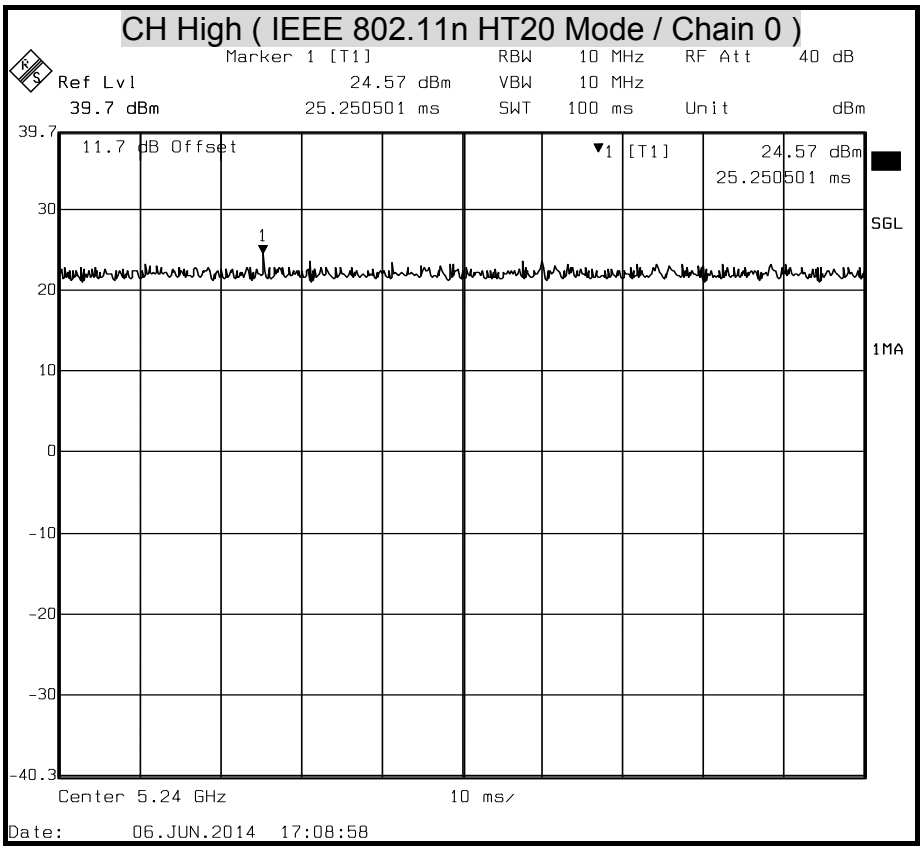
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

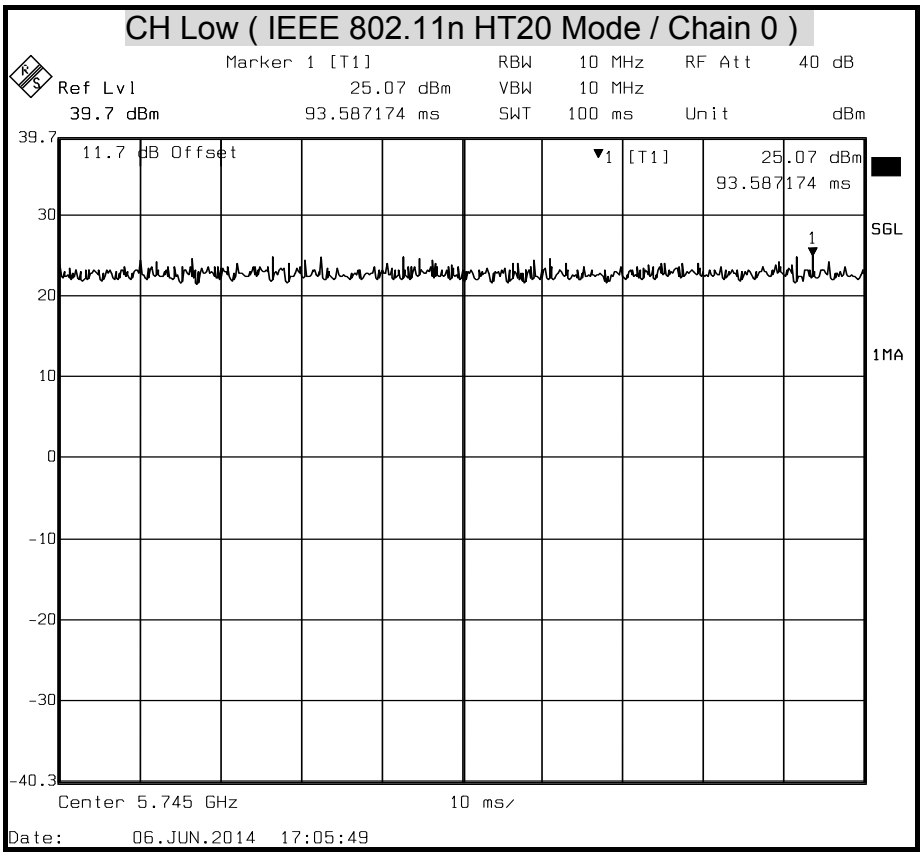


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

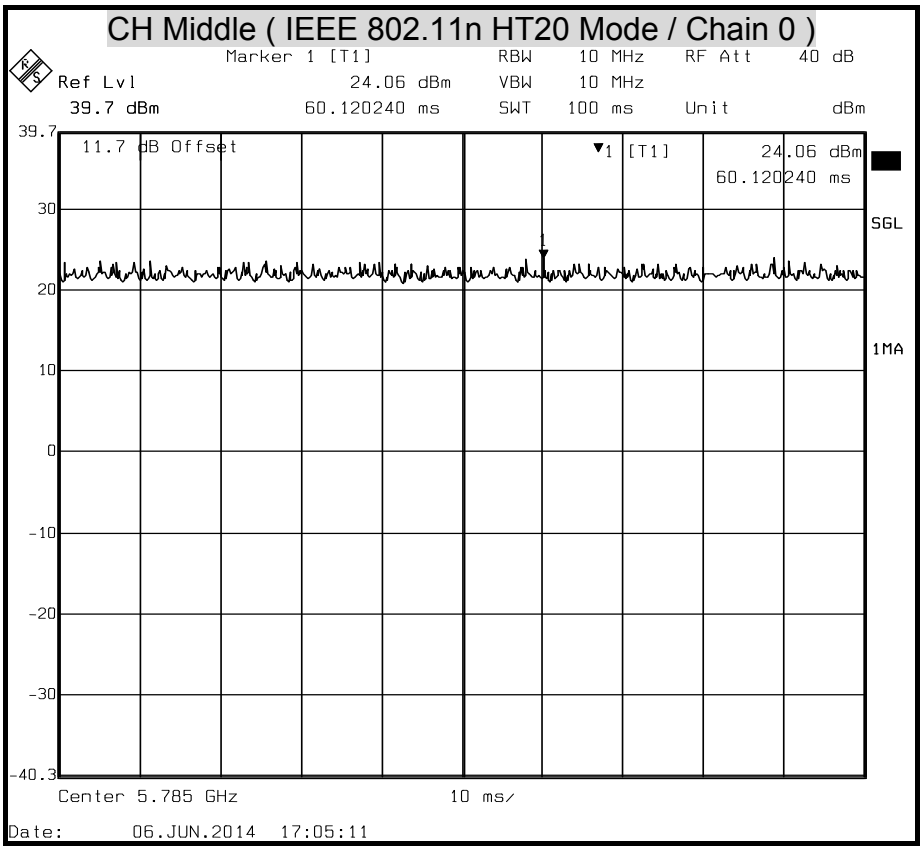




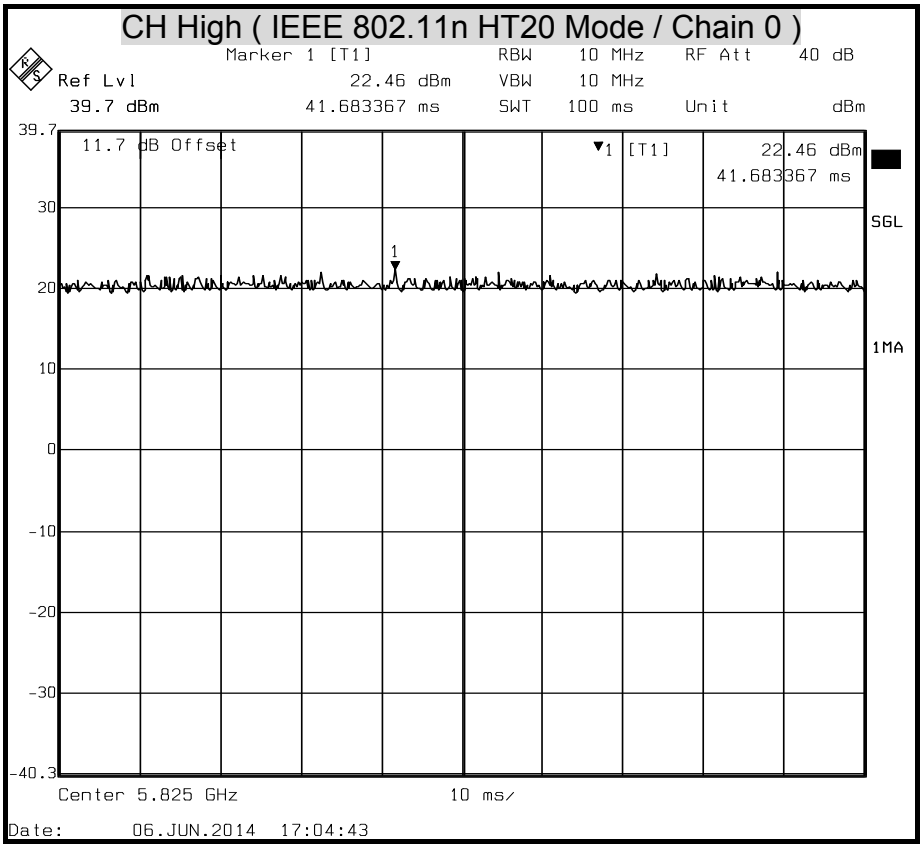
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

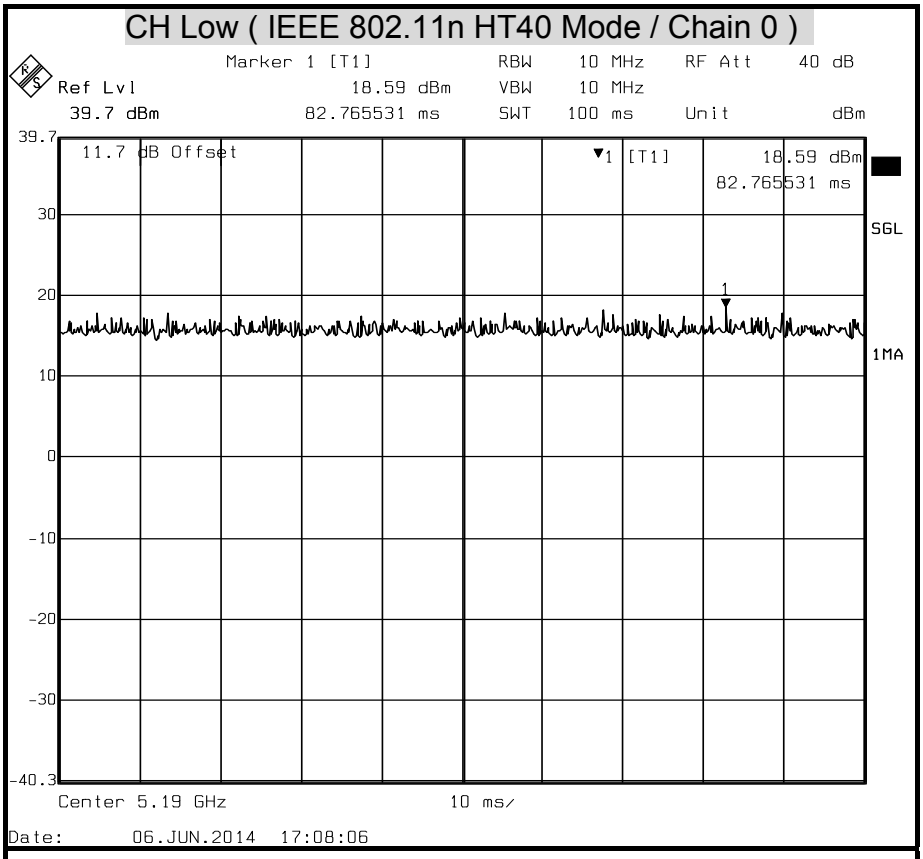


CH High (IEEE 802.11n HT20 Mode / Chain 0)

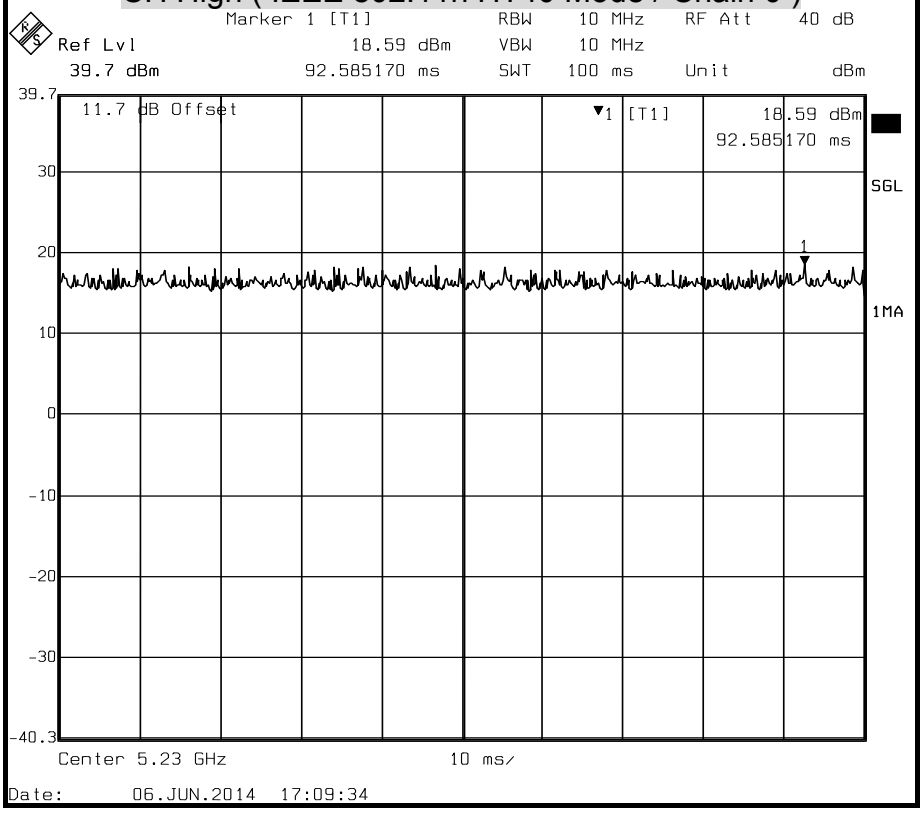


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

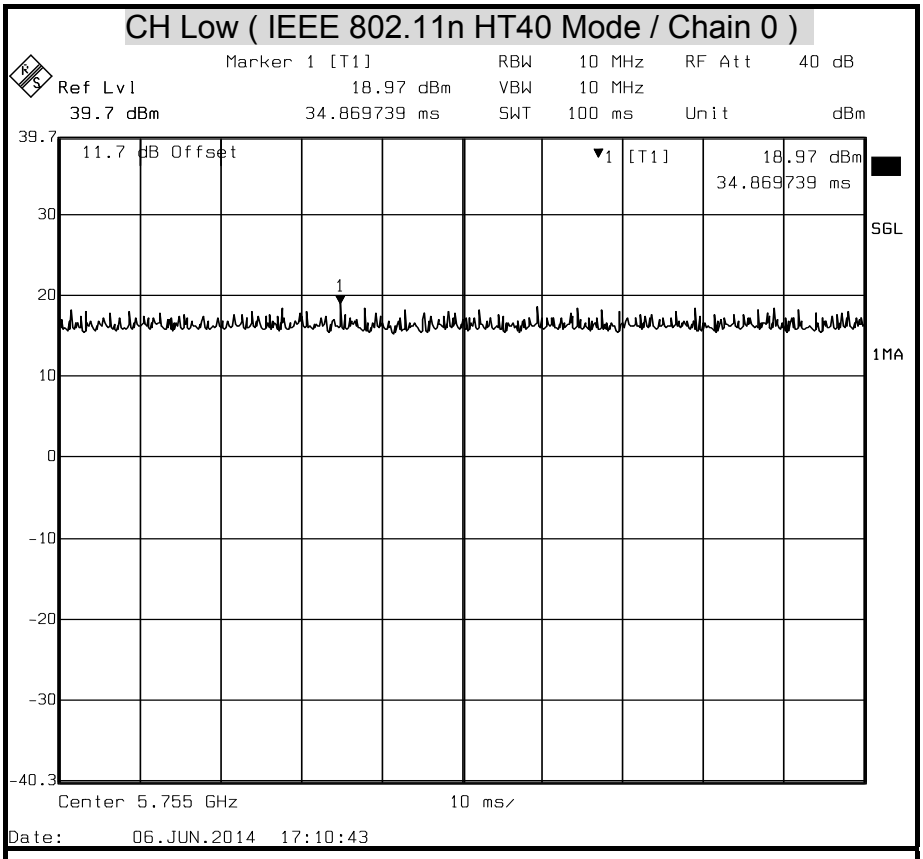


CH High (IEEE 802.11n HT40 Mode / Chain 0)

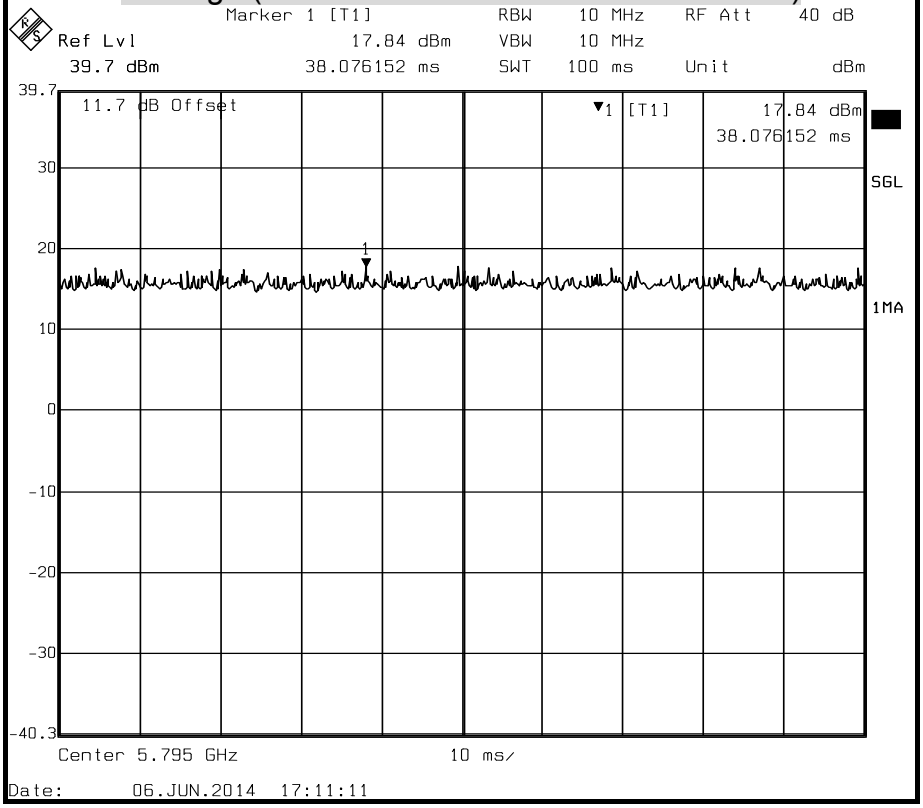


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

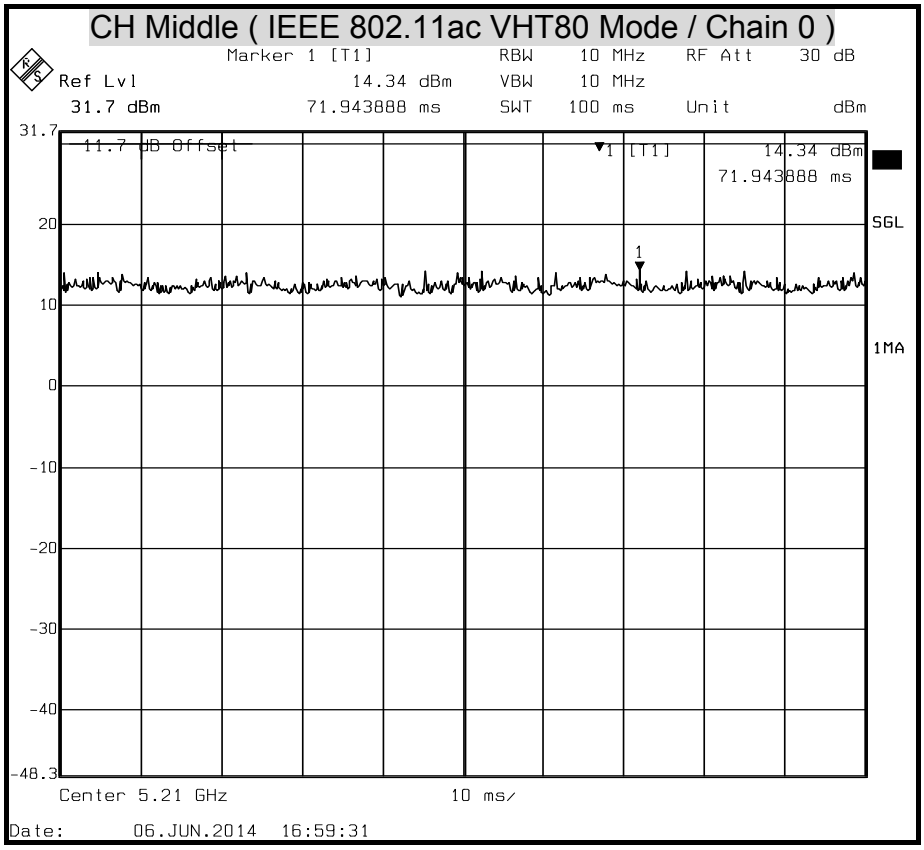
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



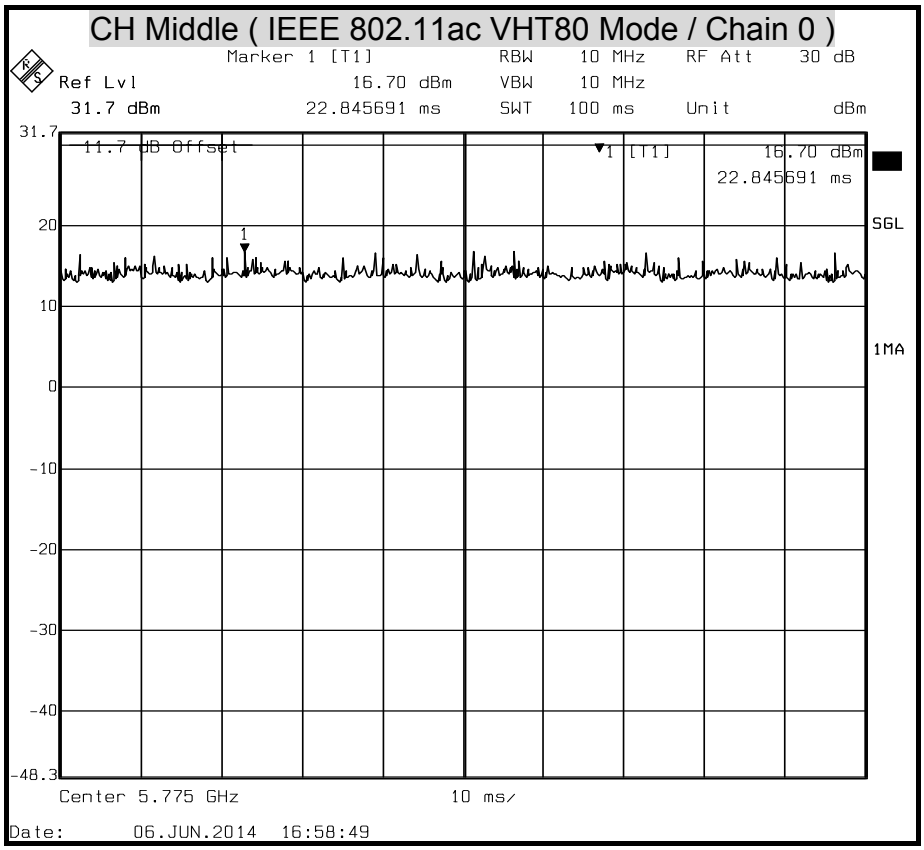
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.6 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.407 (b),

(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of ￥27 dBm/MHz.

(4) For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

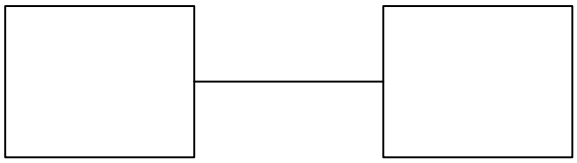
The provisions of § 15.205 apply to intentional radiators operating under this section.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015

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

TEST SETUP



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation of measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1MHz. The video bandwidth is set to 1MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

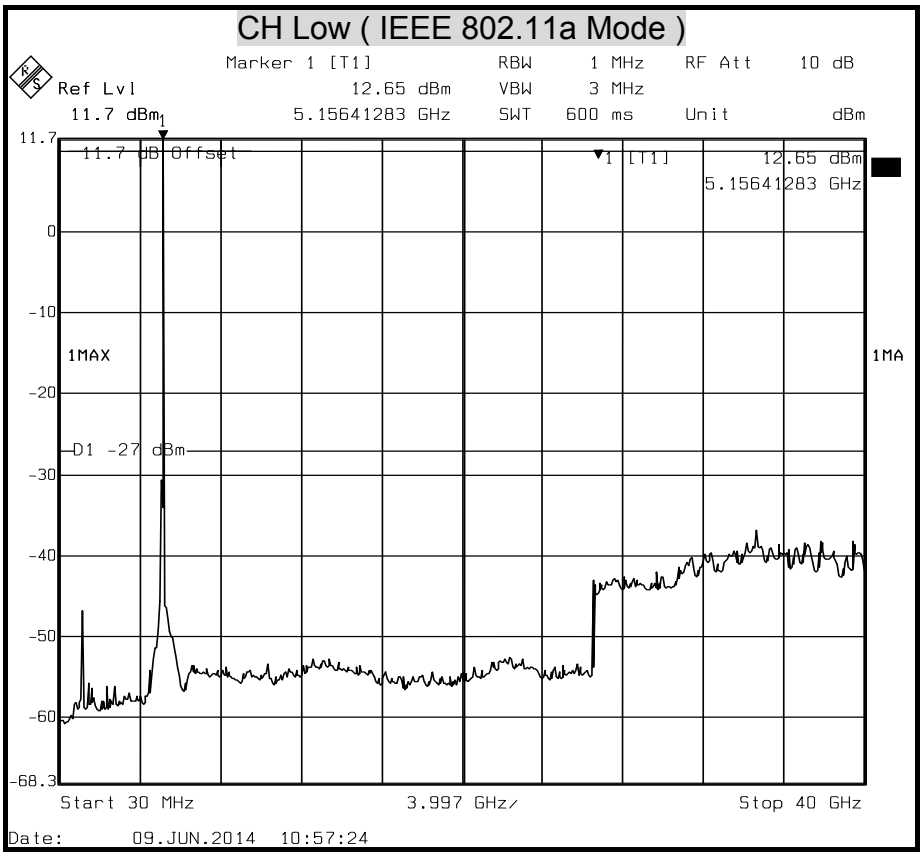
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

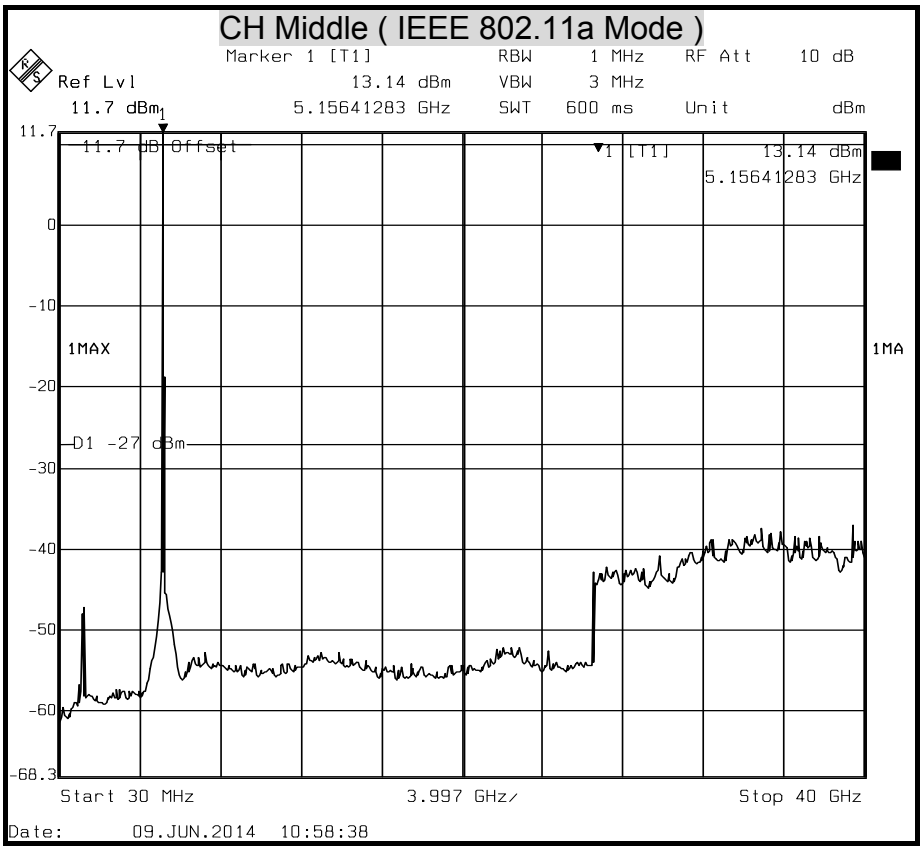
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

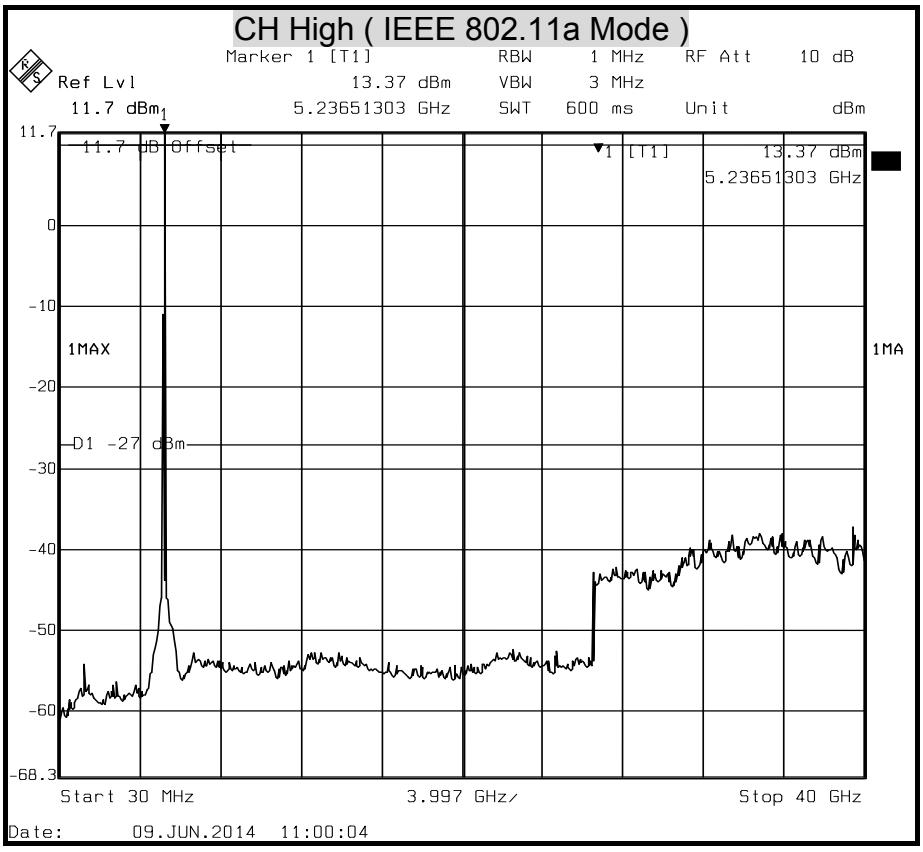
Test Mode: IEEE 802.11a mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11a Mode)

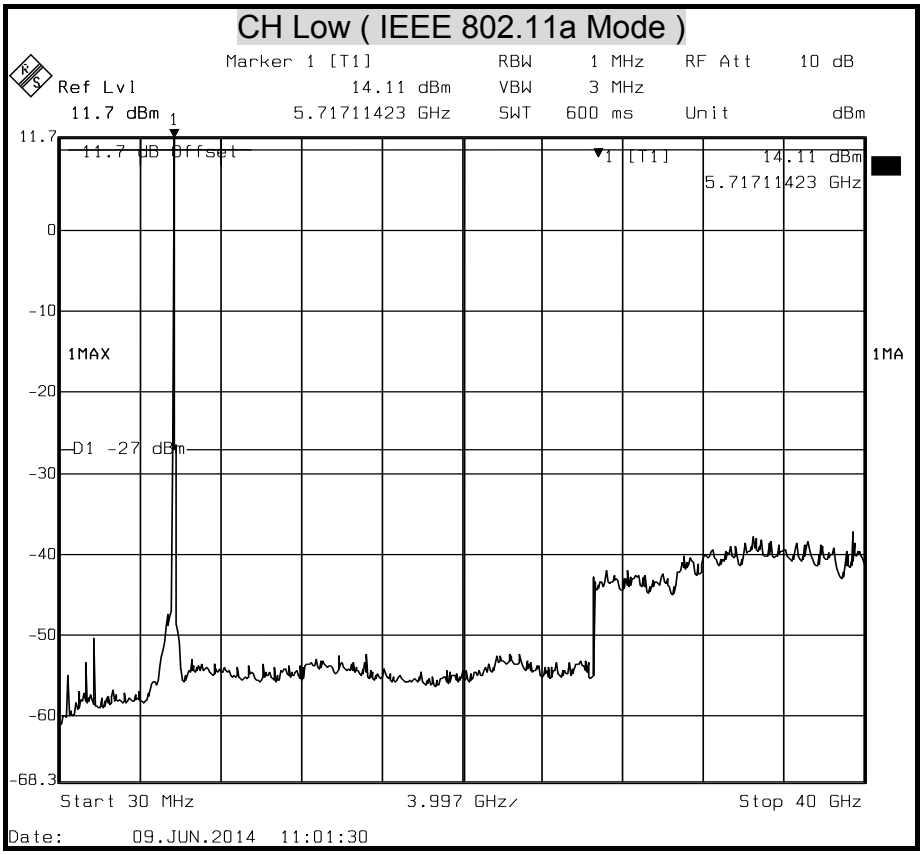


CH Middle (IEEE 802.11a Mode)

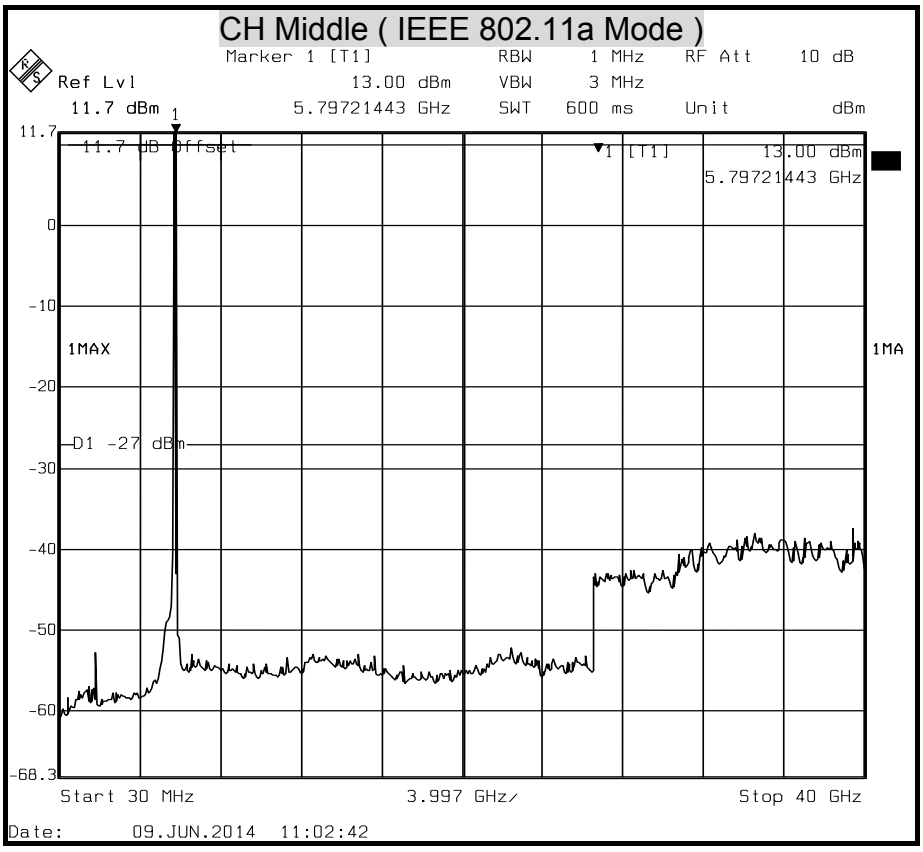




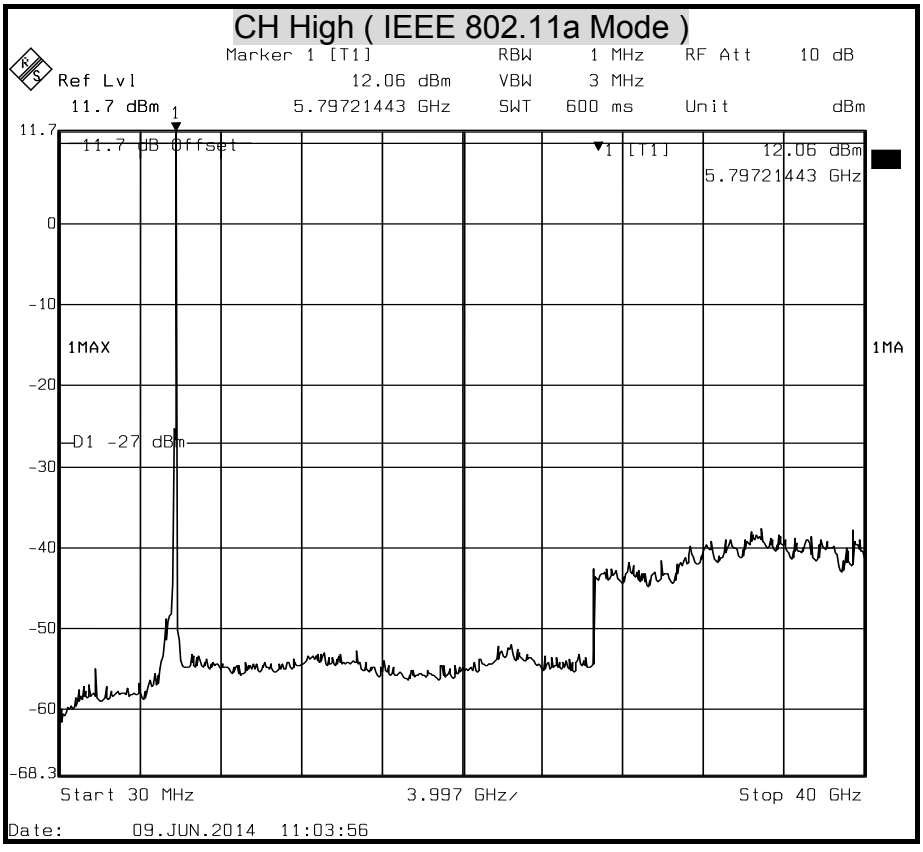
Test Mode: IEEE 802.11a mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11a Mode)

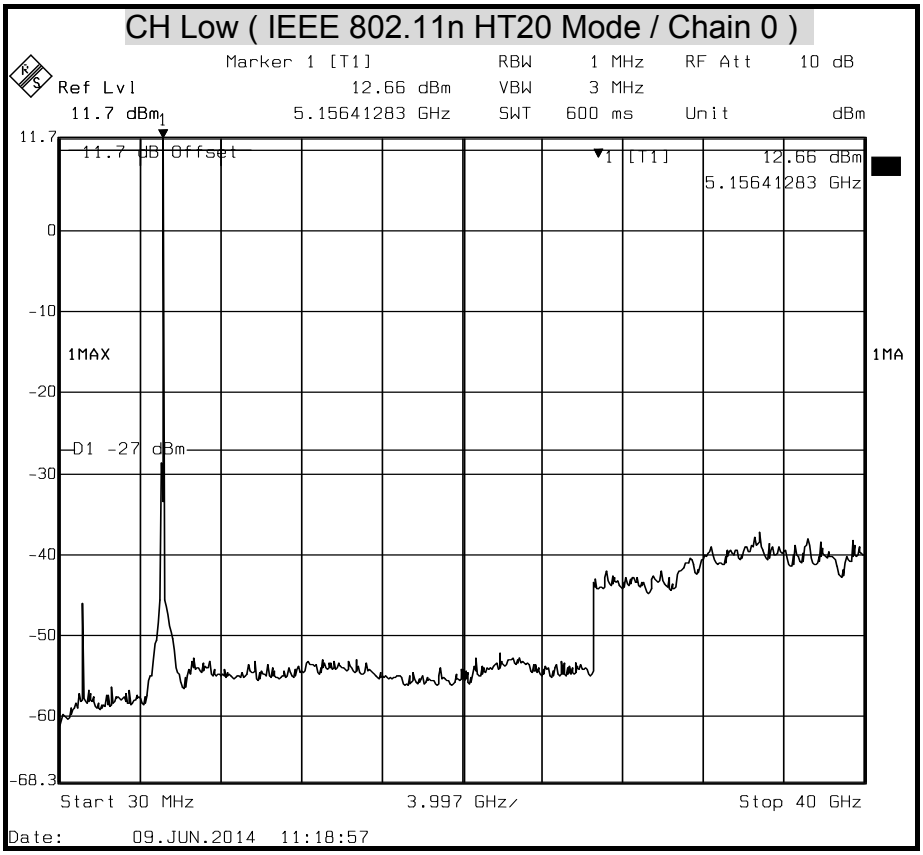


CH High (IEEE 802.11a Mode)

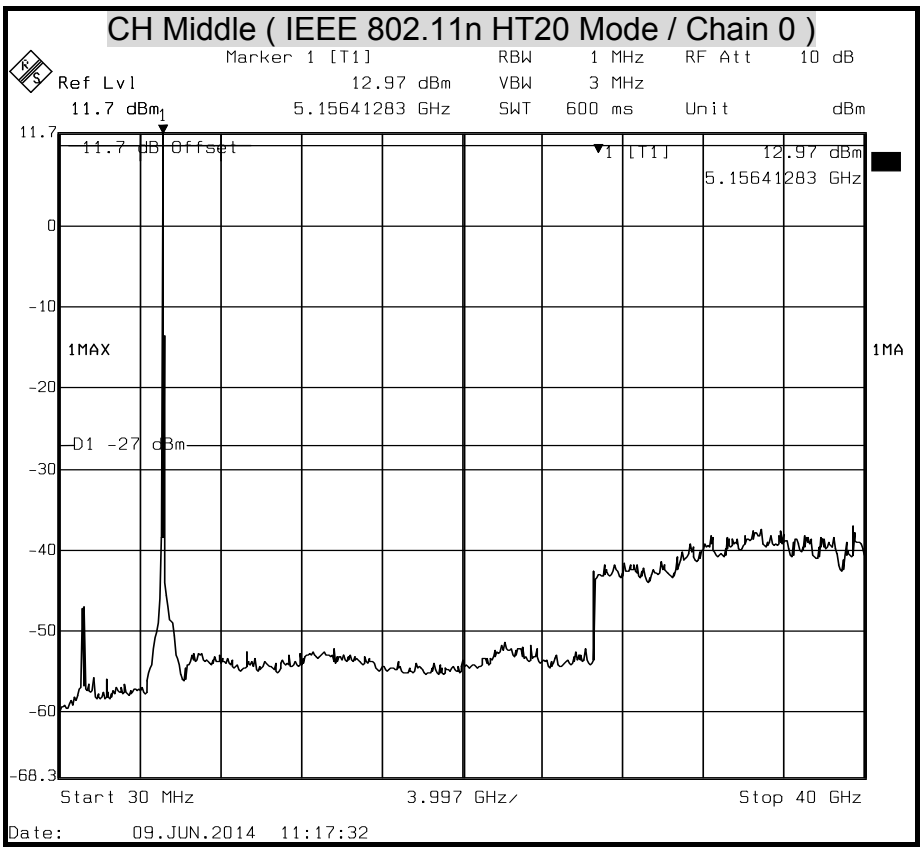


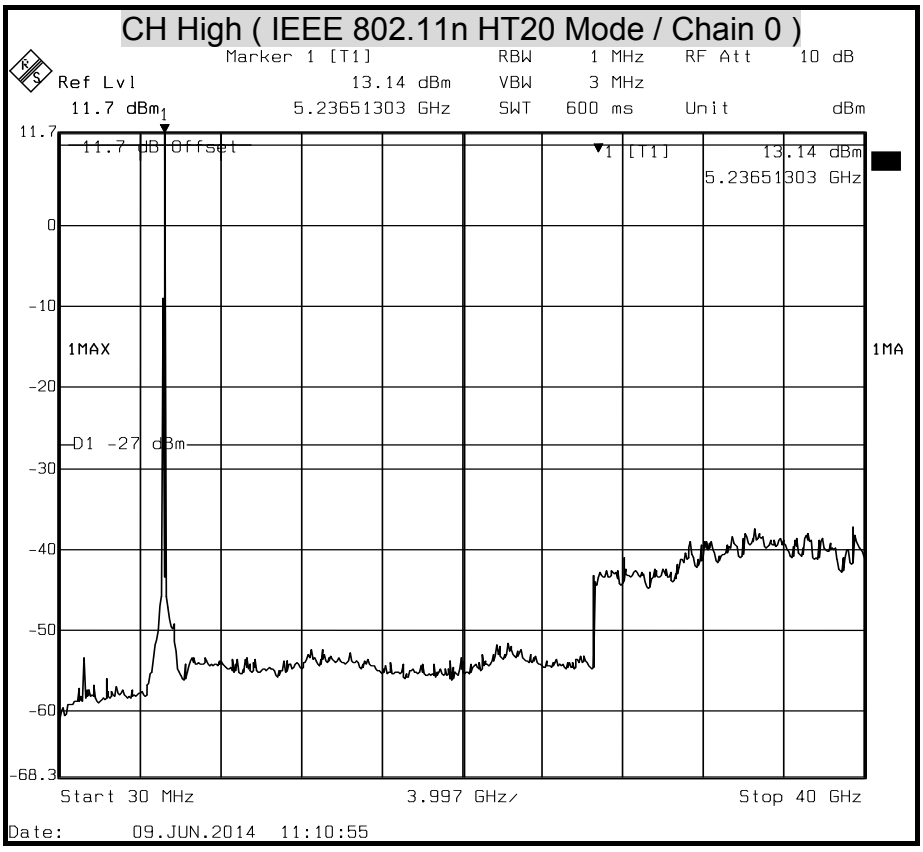
Test Mode: IEEE 802.11n HT 20 MHz mode / 5150 ~ 5250MHz

CH Low (IEEE 802.11n HT20 Mode / Chain 0)

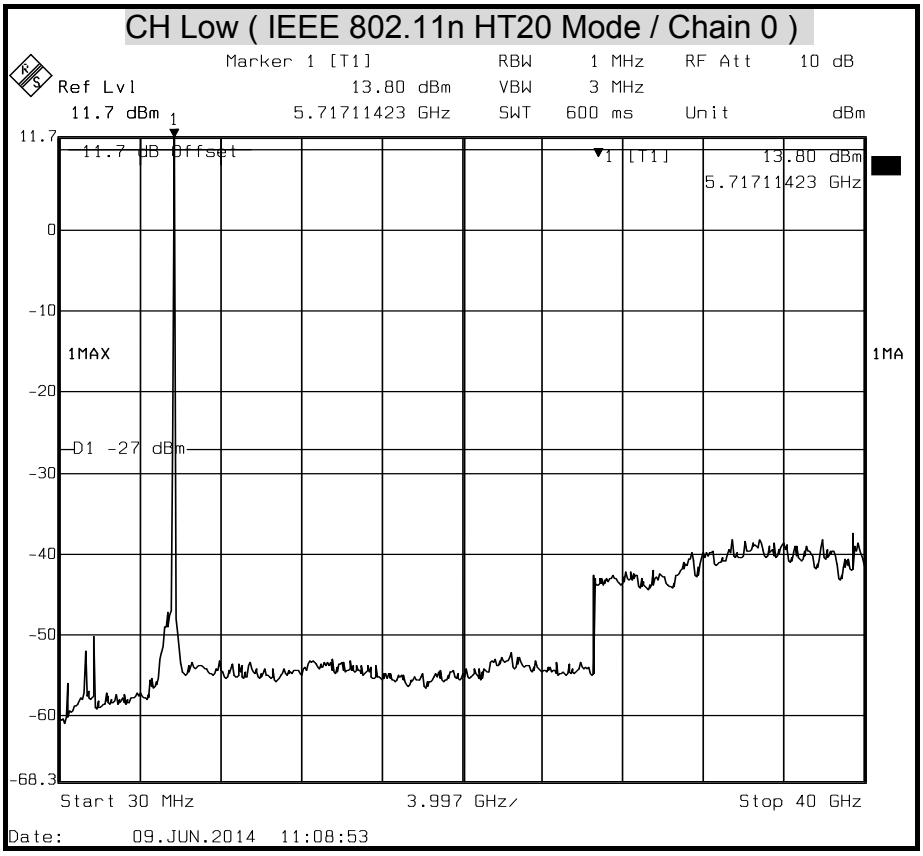


CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

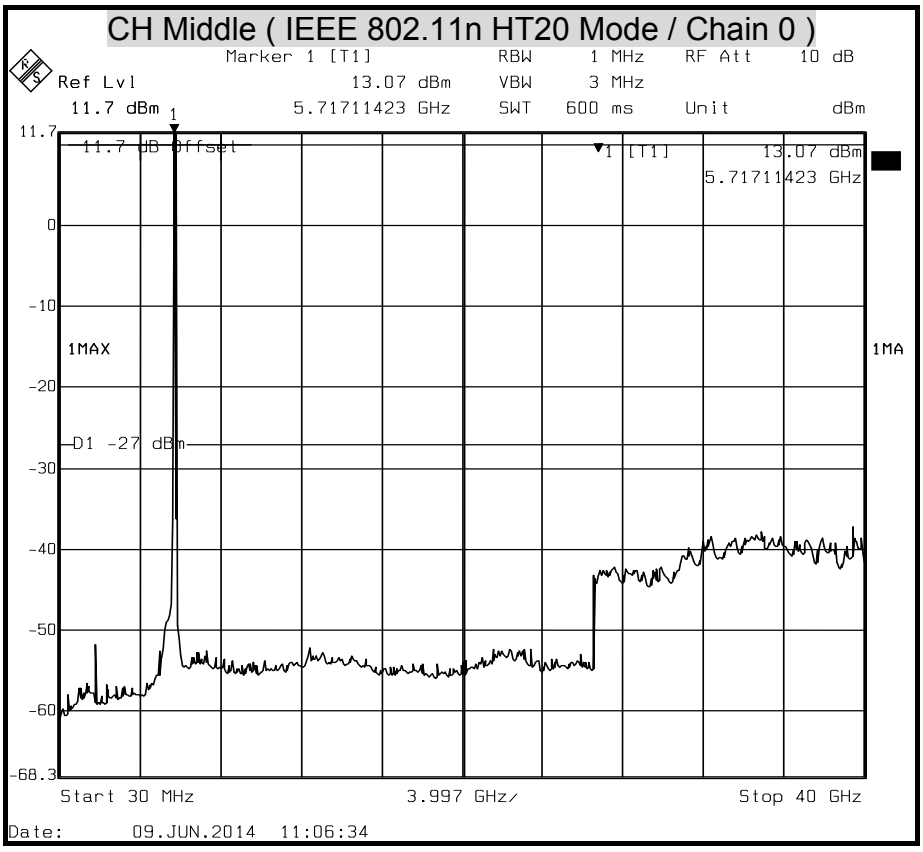




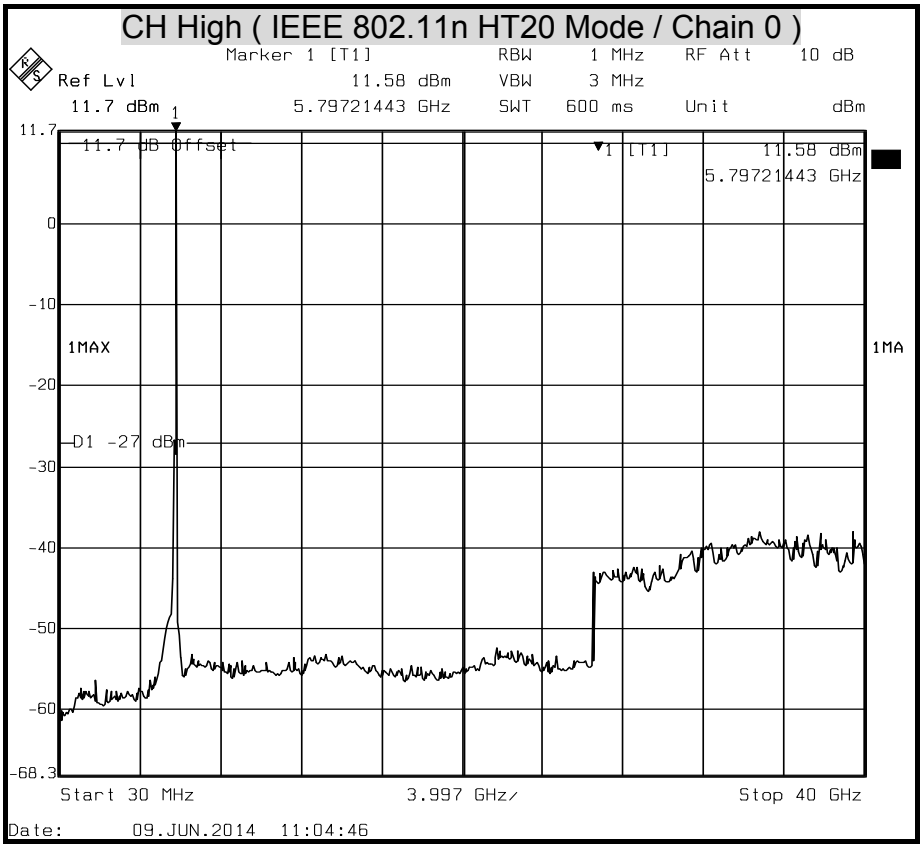
Test Mode: IEEE 802.11n HT 20 MHz mode / 5725 ~ 5850MHz



CH Middle (IEEE 802.11n HT20 Mode / Chain 0)

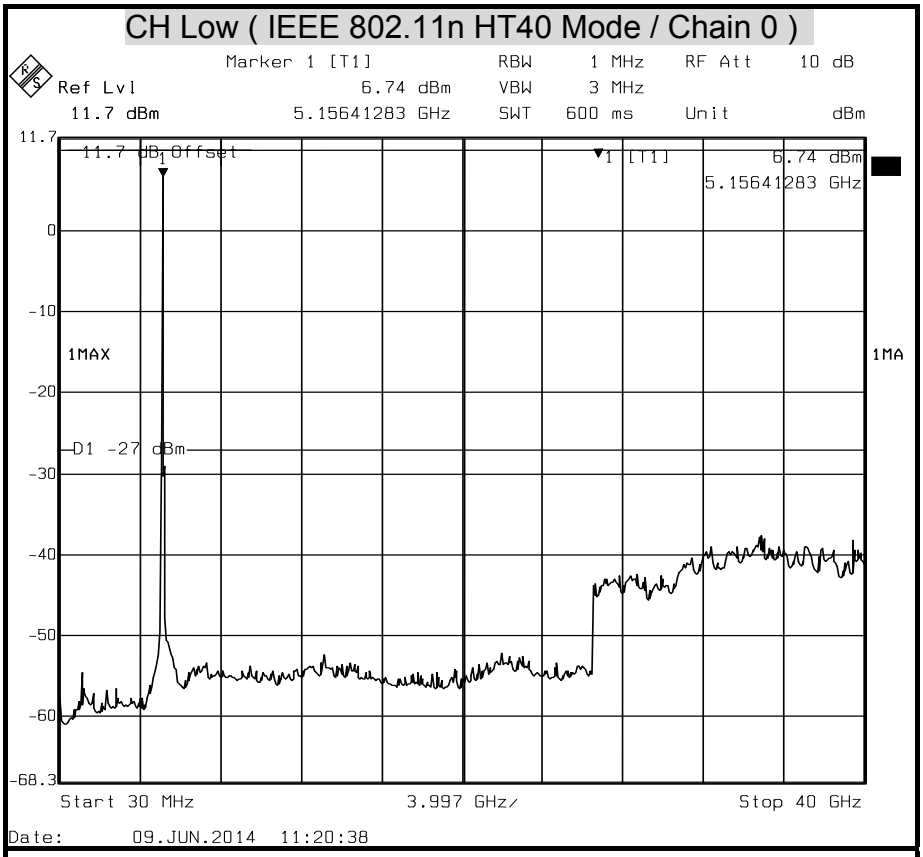


CH High (IEEE 802.11n HT20 Mode / Chain 0)

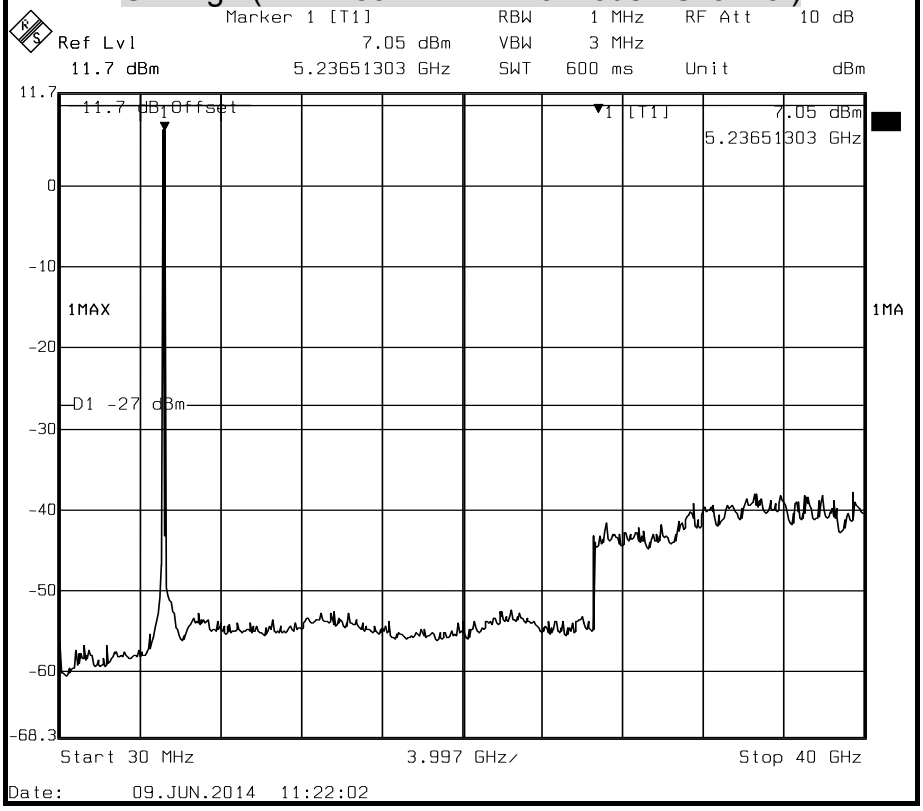


Test Mode: IEEE 802.11n HT 40 MHz mode / 5150 ~ 5250MHz

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

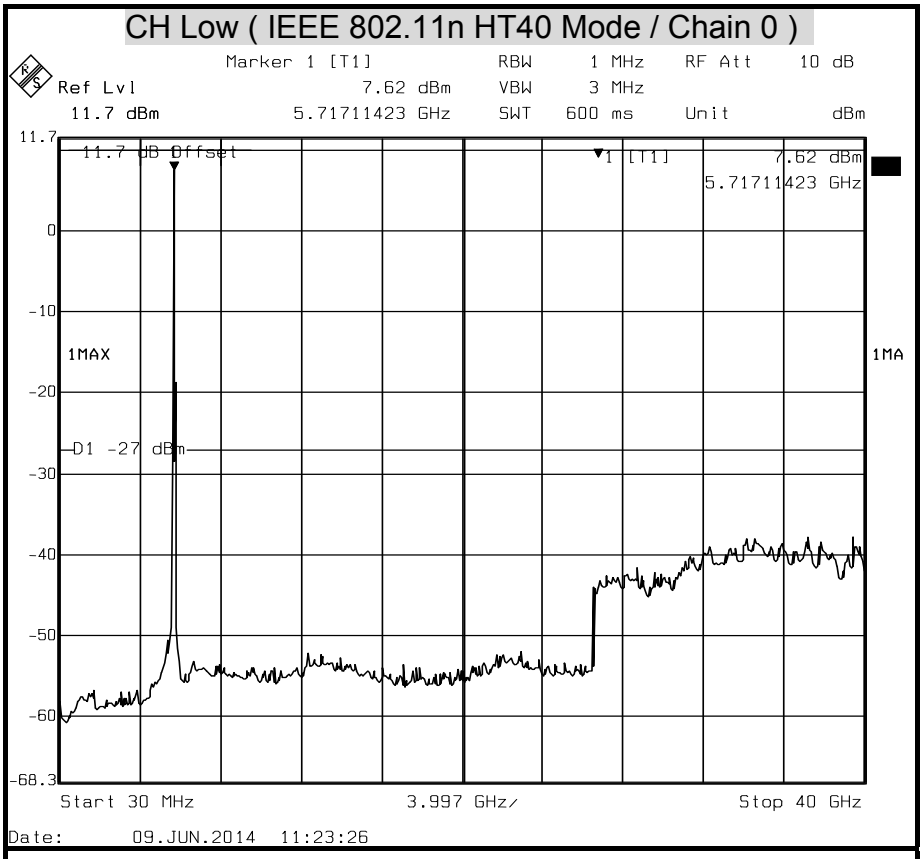


CH High (IEEE 802.11n HT40 Mode / Chain 0)

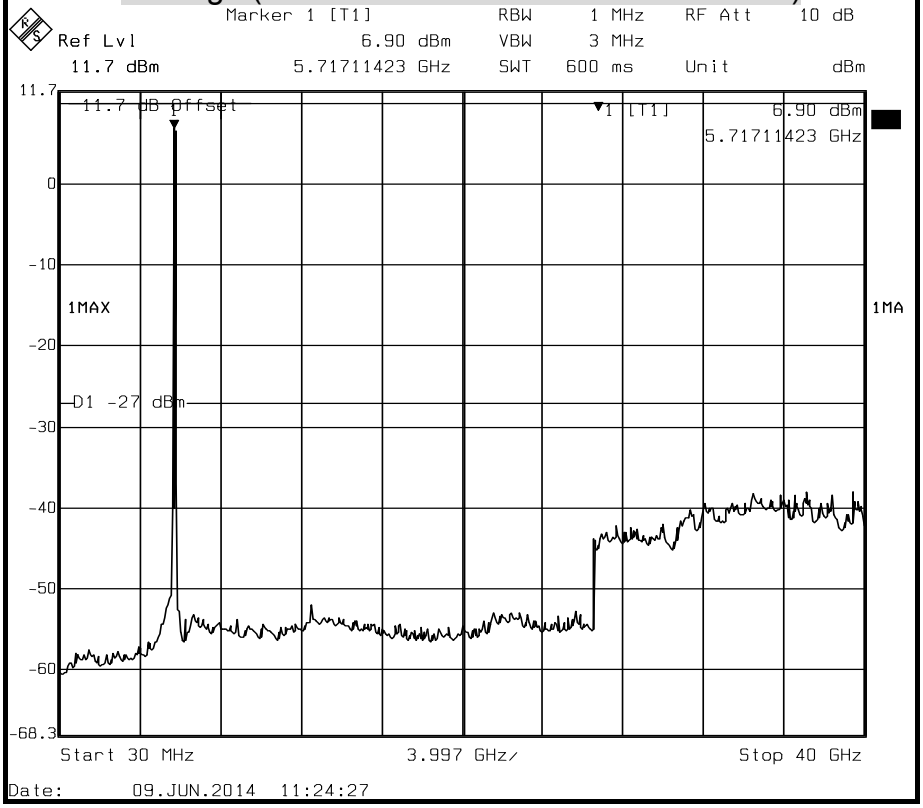


Test Mode: IEEE 802.11n HT 40 MHz mode / 5725 ~ 5850MHz

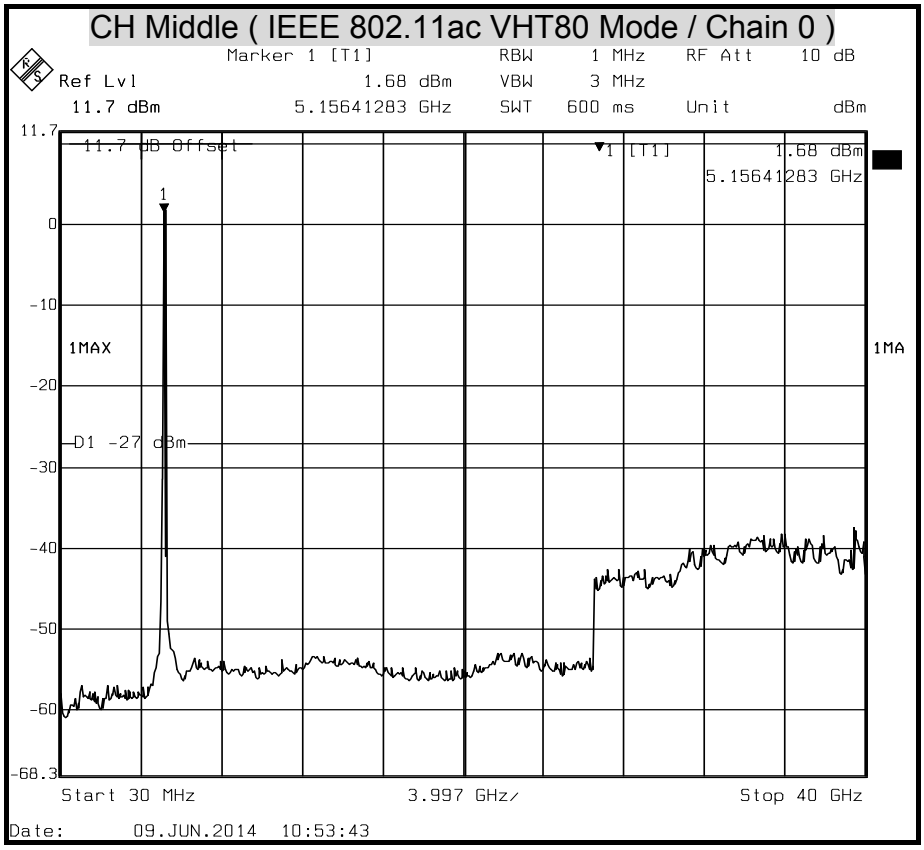
CH Low (IEEE 802.11n HT40 Mode / Chain 0)



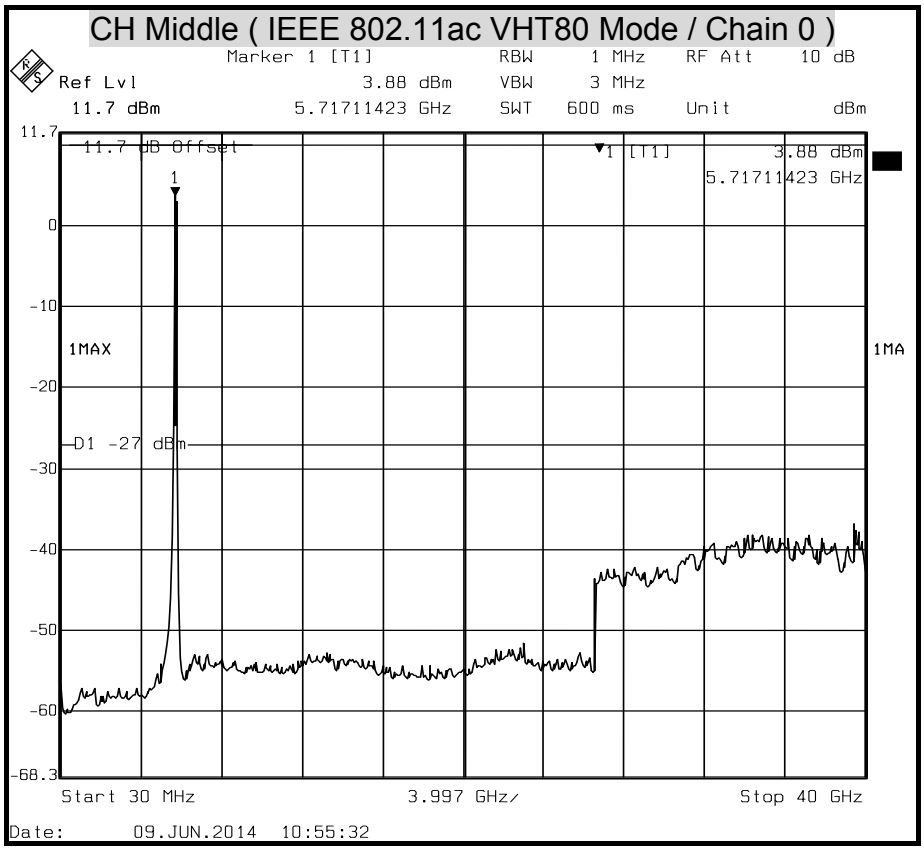
CH High (IEEE 802.11n HT40 Mode / Chain 0)



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5150 ~ 5250MHz



Test Mode: IEEE 802.11ac VHT 80 MHz mode / 5725 ~ 5850MHz



7.7 RADIATED EMISSION

LIMITS

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

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

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

(2) According to § 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown 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

The following test equipments are utilized in making the measurements contained in this report.

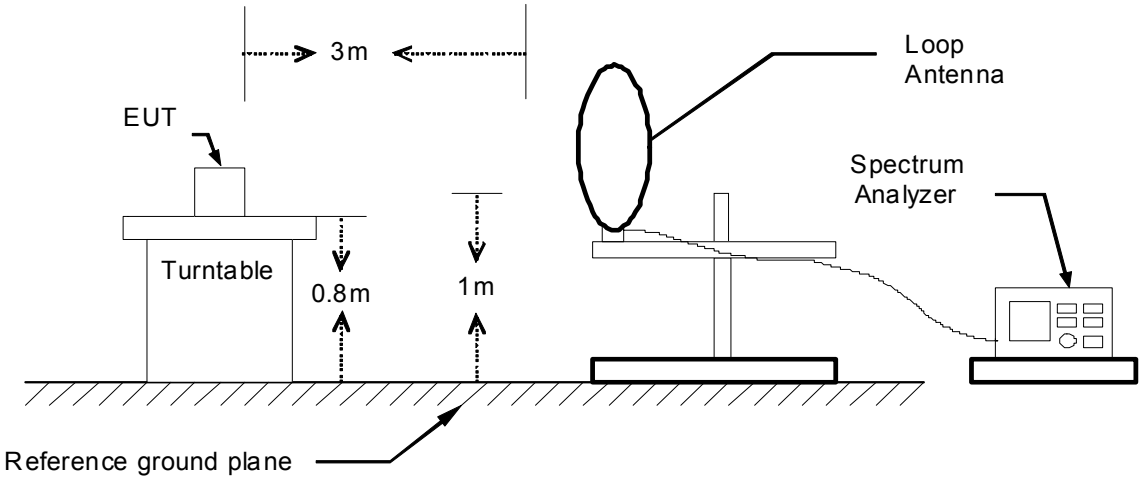
Open Area Test Site # 6				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
TYPE N COAXIAL CABLE	SUHNER	CHA9513	6	DEC. 18, 2014
BI-LOG Antenna	Sunol	JB1	A070506-2	SEP. 09, 2014
LOOP ANTENNA	EMCO	6502	8905-2356	JUN. 10, 2015
Pre-Amplifier	HP	8447F	2944A03817	FEB. 13, 2015
Pre-Amplifier	EMCI	EMC 012645	980097	FEB. 16, 2015
EMI Receiver	R&S	ESVS10	833206/012	JUN. 26, 2014
Horn Antenna	Com-Power	AH-118	071032	DEC. 05, 2014
3116 Double Ridge Antenna (40G)	ETS-LINDGREN	3116	00078900	FEB. 23, 2015
Turn Table	Yo Chen	001	----------	N.C.R.
Antenna Tower	AR	TP1000A	309874	N.C.R.
Controller	CT	SC101	----------	N.C.R.
RF Swicth	E-INSTRUMENT TELH LTD	ERS-180A	EC1204141	N.C.R
Power Meter	Anritsu	ML2487A	6K00003888	JUN. 24, 2014
Power Sensor	Anritsu	MA2491A	33265	JUN. 24, 2014
Temp./Humidity Chamber	K.SON	THS-M1	242	AUG. 08, 2014
DC Power Source	LOKO	DSP-5050	L1507009282	N.C.R
Spectrum Analyzer	R&S	FSU	200789	JUL. 01, 2014
Spectrum Analyzer	R&S	FSEM	830270/015	NCR
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015
Signal Analyzer	ROHDE&SCHWARZ	FSV 40	101073	APR. 25.2015

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

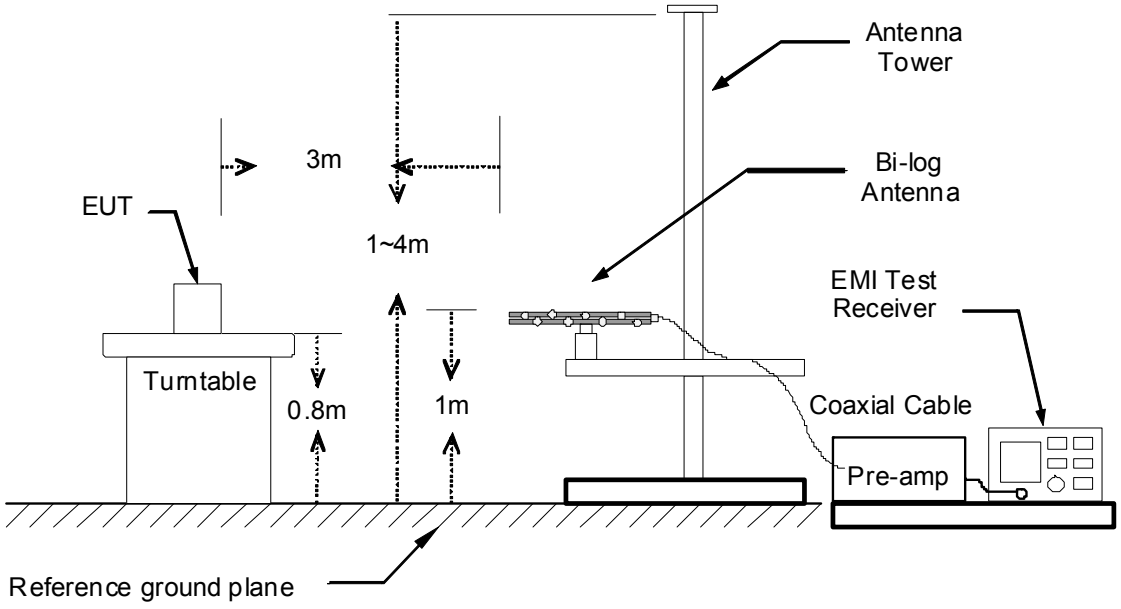
TEST SETUP

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

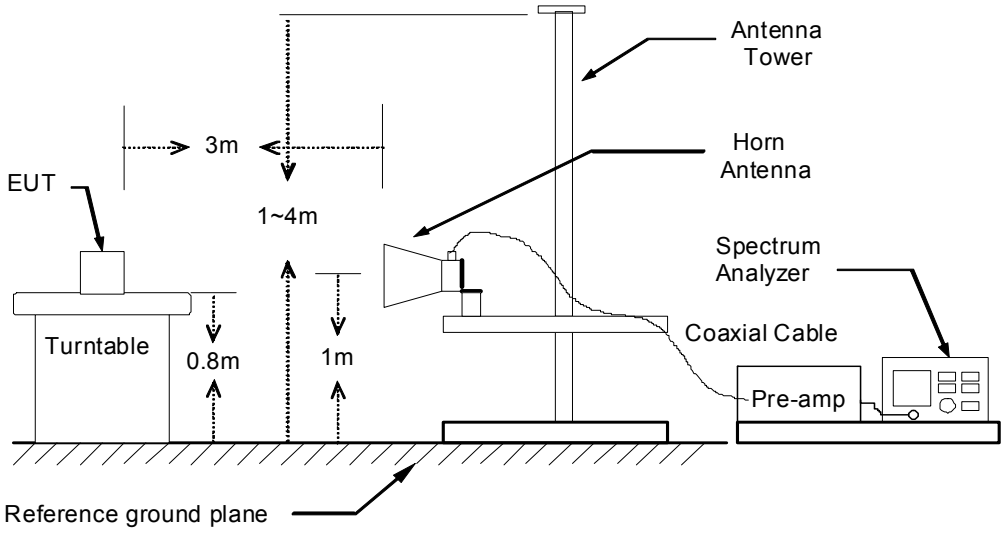
9kHz ~ 30MHz



30MHz ~ 1GHz



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



TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. 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

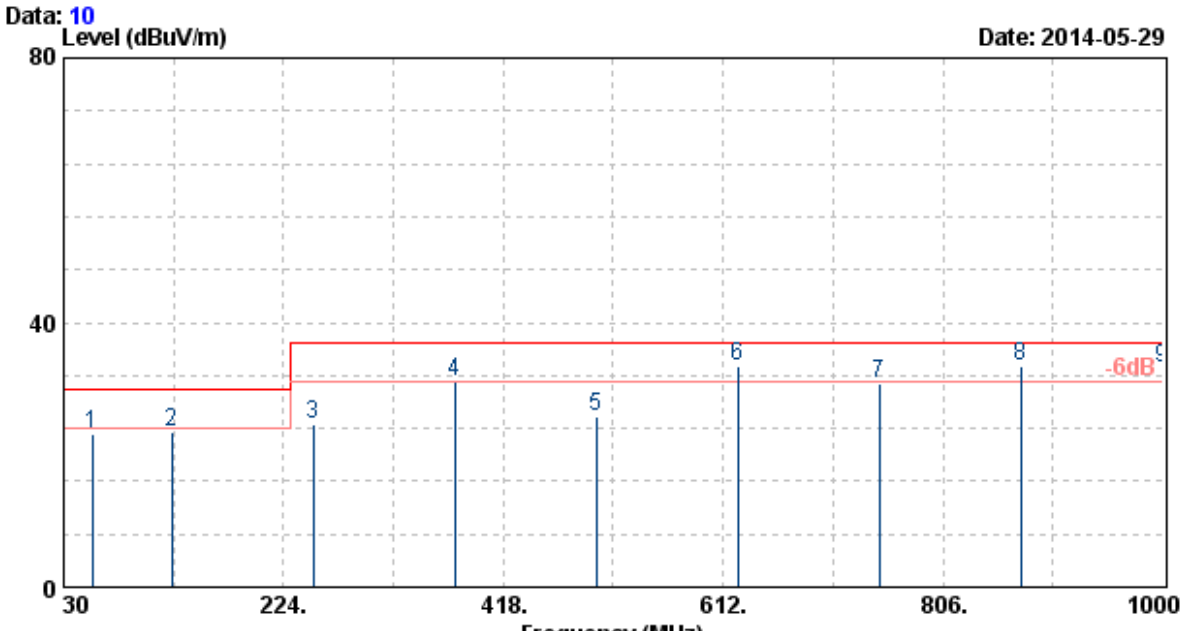
Below 1 GHz (9kHz ~ 30MHz)

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

Below 1 GHz (30MHz ~ 1GHz)

Model No.	4GM3W-01	**Test Mode**	3G mode
Environmental Conditions	28℃, 38% RH	**Resolution Bandwidth**	120 kHz
Antenna Pole	Vertical	**Antenna Distance**	10m
Detector Function:	Quasi-peak.	**Tested By**	Taiyu Cyu
Test Site	OATS 5		

(The chart below shows the highest readings taken from the final data.)



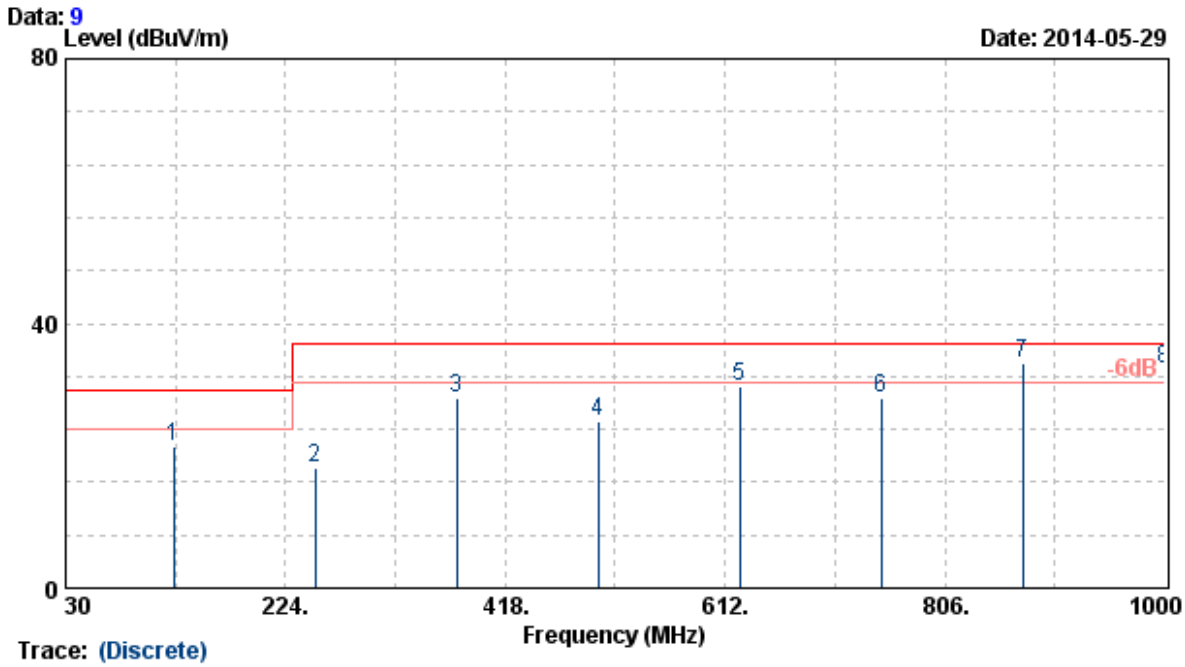
Trace: (Discrete)

Freq. MHz	Reading Level dBuV	Antenna Factor dB/m	Cable Loss dB	Measure Level dBuV/m	Limit dBuV/m	Over Limit dBuV/m	Detector
55.09	13.17	7.94	2.07	23.17	30.00	-6.83	QP
125.00	6.40	13.94	3.20	23.54	30.00	-6.46	QP
250.00	8.12	11.91	4.65	24.67	37.00	-12.33	QP
375.00	10.28	14.98	5.74	31.00	37.00	-6.00	QP
500.00	1.16	17.79	6.75	25.70	37.00	-11.30	QP
625.00	6.70	19.06	7.56	33.32	37.00	-3.68	QP
750.00	2.08	20.68	8.06	30.83	37.00	-6.17	QP
875.00	2.10	22.32	9.09	33.51	37.00	-3.49	QP
1000.00	0.09	23.40	9.58	33.07	37.00	-3.93	QP

Note: 1. QP= Quasi-peak Reading.
2. The other emission levels were very low against the limit

Model No.	4GM3W-01	Test Mode	3G mode
Environmental Conditions	28℃, 38% RH	Resolution Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested By	Taiyu Cyu
Test Site	OATS 5		

(The chart below shows the highest readings taken from the final data.)



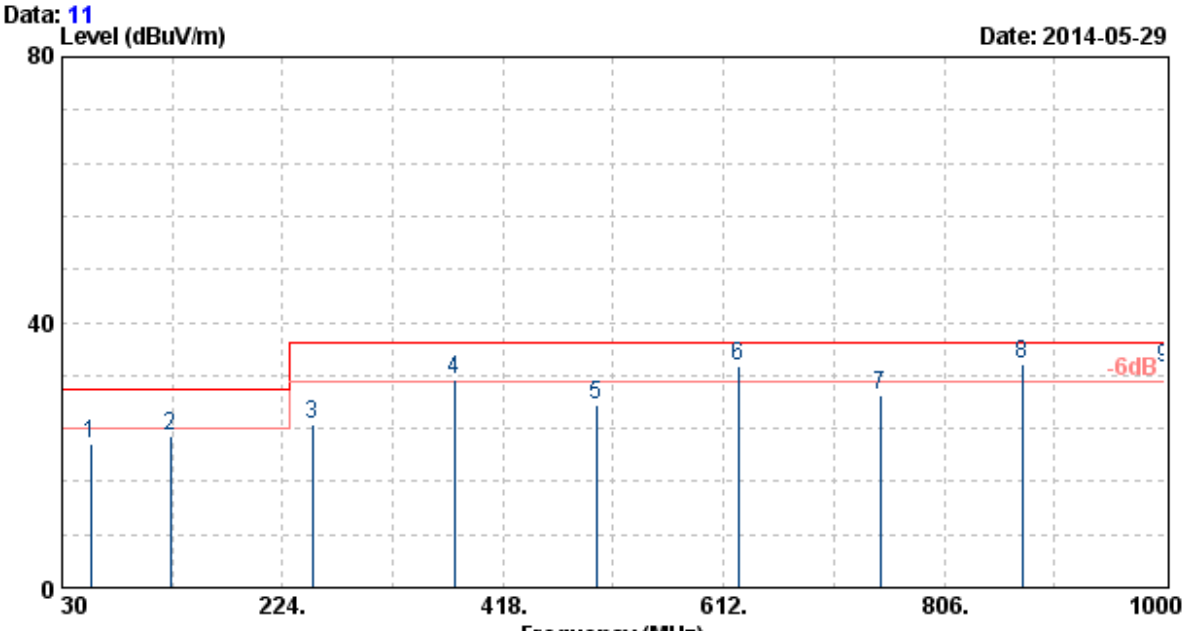
Trace: (Discrete)

Freq. MHz	Reading Level dBuV	Antenna Factor dB/m	Cable Loss dB	Measure Level dBuV/m	Limit dBuV/m	Over Limit dBuV/m	Detector
125.00	4.13	13.94	3.20	21.28	30.00	-8.72	QP
250.00	1.51	11.91	4.65	18.07	37.00	-18.93	QP
375.00	7.96	14.98	5.74	28.69	37.00	-8.31	QP
500.00	0.61	17.79	6.75	25.15	37.00	-11.85	QP
625.00	3.84	19.06	7.56	30.46	37.00	-6.54	QP
750.00	0.07	20.68	8.06	28.82	37.00	-8.18	QP
875.00	2.49	22.32	9.09	33.90	37.00	-3.10	QP
1000.00	0.10	23.40	9.58	33.08	37.00	-3.92	QP

Note: 1. QP= Quasi-peak Reading.
2. The other emission levels were very low against the limit

Model No.	4GM3W-01	**Test Mode**	Storage mode
Environmental Conditions	28℃, 38% RH	**Resolution Bandwidth**	120 kHz
Antenna Pole	Vertical	**Antenna Distance**	10m
Detector Function:	Quasi-peak.	**Tested By**	Taiyu Cyu
Test Site	OATS 5		

(The chart below shows the highest readings taken from the final data.)



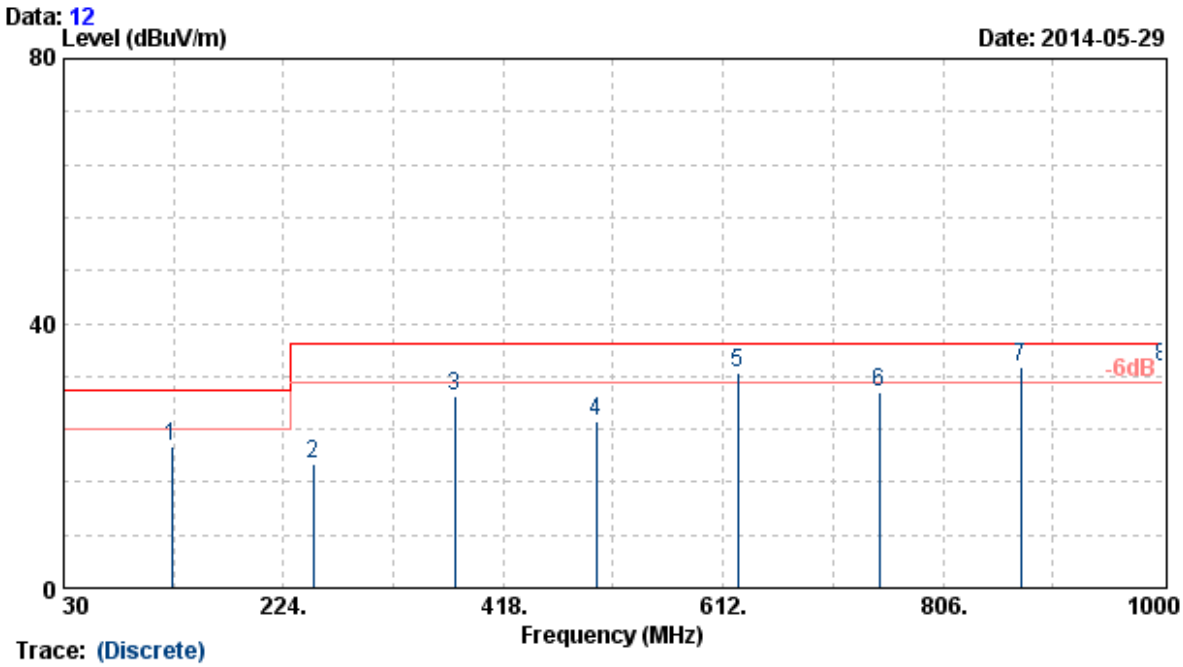
Trace: (Discrete)

Freq. MHz	Reading Level dBuV	Antenna Factor dB/m	Cable Loss dB	Measure Level dBuV/m	Limit dBuV/m	Over Limit dBuV/m	Detector
54.94	11.65	7.94	2.07	21.66	30.00	-8.34	QP
125.00	5.84	13.94	3.20	22.98	30.00	-7.02	QP
250.00	8.14	11.91	4.65	24.69	37.00	-12.31	QP
375.00	10.59	14.98	5.74	31.32	37.00	-5.68	QP
500.00	2.94	17.79	6.75	27.48	37.00	-9.52	QP
625.00	6.77	19.06	7.56	33.39	37.00	-3.61	QP
750.00	0.23	20.68	8.06	28.97	37.00	-8.03	QP
875.00	2.17	22.32	9.09	33.58	37.00	-3.42	QP
1000.00	0.22	23.40	9.58	33.20	37.00	-3.80	QP

Note: 1. QP= Quasi-peak Reading.
2. The other emission levels were very low against the limit

Model No.	4GM3W-01	**Test Mode**	Storage mode
Environmental Conditions	28℃, 38% RH	**Resolution Bandwidth**	120 kHz
Antenna Pole	Horizontal	**Antenna Distance**	10m
Detector Function	Quasi-peak.	**Tested By**	Taiyu Cyu
Test Site	OATS 5		

(The chart below shows the highest readings taken from the final data.)



Trace: (Discrete)

Freq. MHz	Reading Level dBuV	Antenna Factor dB/m	Cable Loss dB	Measure Level dBuV/m	Limit dBuV/m	Over Limit dBuV/m	Detector
125.00	4.27	13.94	3.20	21.41	30.00	-8.59	QP
250.00	2.31	11.91	4.65	18.87	37.00	-18.13	QP
375.00	8.36	14.98	5.74	29.08	37.00	-7.92	QP
500.00	0.56	17.79	6.75	25.10	37.00	-11.90	QP
625.00	5.78	19.06	7.56	32.40	37.00	-4.60	QP
750.00	0.81	20.68	8.06	29.55	37.00	-7.45	QP
875.00	2.06	22.32	9.09	33.47	37.00	-3.53	QP
1000.00	0.30	23.40	9.58	33.28	37.00	-3.72	QP

Note: 1. QP= Quasi-peak Reading.
2. The other emission levels were very low against the limit

Above 1 GHz

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11a TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.89	59.70	25.32	1.70	48.99	0.30	38.03	74.00	-35.97	P
*	1130.89	48.78	25.32	1.70	48.99	0.30	27.11	54.00	-26.89	A
	10360.41	56.97	39.40	4.87	45.51	0.50	56.22	74.00	-17.78	P
	10360.41	46.87	39.40	4.87	45.51	0.50	46.12	54.00	-7.88	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.82	57.90	25.32	1.70	48.99	0.30	36.23	74.00	-37.77	P
*	1130.82	47.58	25.32	1.70	48.99	0.30	25.91	54.00	-28.09	A
	10360.13	57.18	39.40	4.87	45.51	0.50	56.43	74.00	-17.57	P
	10360.13	48.10	39.40	4.87	45.51	0.50	47.35	54.00	-6.65	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11a TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.54	60.47	25.33	1.70	48.99	0.30	38.81	74.00	-35.19	P
*	1131.54	48.96	25.33	1.70	48.99	0.30	27.30	54.00	-26.70	A
	10400.91	53.92	39.40	4.87	45.48	0.50	53.21	74.00	-20.79	P
	10400.91	45.30	39.40	4.87	45.48	0.50	44.59	54.00	-9.41	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.76	57.72	25.32	1.70	48.99	0.30	36.05	74.00	-37.95	P
*	1130.76	47.34	25.32	1.70	48.99	0.30	25.67	54.00	-28.33	A
	10400.39	57.64	39.40	4.87	45.48	0.50	56.93	74.00	-17.07	P
	10400.39	47.58	39.40	4.87	45.48	0.50	46.87	54.00	-7.13	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11a TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.73	59.52	25.32	1.70	48.99	0.30	37.85	74.00	-36.15	P
*	1130.73	48.47	25.32	1.70	48.99	0.30	26.80	54.00	-27.20	A
	10480.27	54.63	39.40	4.88	45.40	0.50	54.01	74.00	-19.99	P
	10480.27	45.90	39.40	4.88	45.40	0.50	45.28	54.00	-8.72	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.68	58.17	25.32	1.70	48.99	0.30	36.50	74.00	-37.50	P
*	1130.68	47.83	25.32	1.70	48.99	0.30	26.16	54.00	-27.84	A
	10480.29	53.30	39.40	4.88	45.40	0.50	52.68	74.00	-21.32	P
	10480.29	44.42	39.40	4.88	45.40	0.50	43.80	54.00	-10.20	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11a TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.89	60.27	25.32	1.70	48.99	0.30	38.60	74.00	-35.40	P
*	1130.89	48.98	25.32	1.70	48.99	0.30	27.31	54.00	-26.69	A
*	11490.91	55.35	40.88	4.96	46.16	0.60	55.63	74.00	-18.37	P
*	11490.91	46.04	40.88	4.96	46.16	0.60	46.32	54.00	-7.68	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.25	59.72	25.33	1.70	48.99	0.30	38.05	74.00	-35.95	P
*	1131.25	48.62	25.33	1.70	48.99	0.30	26.95	54.00	-27.05	A
*	11492.72	54.65	40.88	4.96	46.16	0.60	54.93	74.00	-19.07	P
*	11492.72	44.96	40.88	4.96	46.16	0.60	45.24	54.00	-8.76	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11a TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.22	59.68	25.32	1.70	48.99	0.30	38.01	74.00	-35.99	P
*	1131.22	47.92	25.32	1.70	48.99	0.30	26.25	54.00	-27.75	A
*	11570.53	54.65	40.91	4.97	46.33	0.60	54.81	74.00	-19.19	P
*	11570.53	45.99	40.91	4.97	46.33	0.60	46.15	54.00	-7.85	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.22	58.72	25.32	1.70	48.99	0.30	37.05	74.00	-36.95	P
*	1130.22	48.06	25.32	1.70	48.99	0.30	26.39	54.00	-27.61	A
*	11568.84	56.90	40.91	4.97	46.32	0.60	57.06	74.00	-16.94	P
*	11568.84	47.41	40.91	4.97	46.32	0.60	47.57	54.00	-6.43	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11a TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.24	58.72	25.32	1.70	48.99	0.30	37.05	74.00	-36.95	P
*	1131.24	48.15	25.32	1.70	48.99	0.30	26.48	54.00	-27.52	A
*	11650.22	55.94	40.93	4.98	46.51	0.60	55.95	74.00	-18.05	P
*	11650.22	44.90	40.93	4.98	46.51	0.60	44.91	54.00	-9.09	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.82	58.82	25.32	1.70	48.99	0.30	37.15	74.00	-36.85	P
*	1130.82	48.23	25.32	1.70	48.99	0.30	26.56	54.00	-27.44	A
*	11651.53	57.99	40.93	4.98	46.51	0.60	58.00	74.00	-16.00	P
*	11651.53	47.80	40.93	4.98	46.51	0.60	47.81	54.00	-6.19	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11n HT20 TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.89	60.27	25.32	1.70	48.99	0.30	38.60	74.00	-35.40	P
*	1130.89	48.98	25.32	1.70	48.99	0.30	27.31	54.00	-26.69	A
	10360.03	56.38	39.40	4.87	45.51	0.50	55.63	74.00	-18.37	P
	10360.03	46.44	39.40	4.87	45.51	0.50	45.69	54.00	-8.31	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.15	58.14	25.32	1.70	48.99	0.30	36.47	74.00	-37.53	P
*	1131.15	47.78	25.32	1.70	48.99	0.30	26.11	54.00	-27.89	A
	10360.34	57.72	39.40	4.87	45.51	0.50	56.97	74.00	-17.03	P
	10360.34	46.96	39.40	4.87	45.51	0.50	46.21	54.00	-7.79	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11n HT20 TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.26	60.53	25.33	1.70	48.99	0.30	38.86	74.00	-35.14	P
*	1131.26	48.84	25.33	1.70	48.99	0.30	27.17	54.00	-26.83	A
	10400.41	56.43	39.40	4.87	45.48	0.50	55.72	74.00	-18.28	P
	10400.41	45.13	39.40	4.87	45.48	0.50	44.42	54.00	-9.58	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.23	57.83	25.32	1.70	48.99	0.30	36.16	74.00	-37.84	P
*	1131.23	47.57	25.32	1.70	48.99	0.30	25.90	54.00	-28.10	A
	10400.22	59.11	39.40	4.87	45.48	0.50	58.40	74.00	-15.60	P
	10400.22	48.08	39.40	4.87	45.48	0.50	47.37	54.00	-6.63	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11n HT20 TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.95	59.76	25.32	1.70	48.99	0.30	38.09	74.00	-35.91	P
*	1130.95	48.68	25.32	1.70	48.99	0.30	27.01	54.00	-26.99	A
	10479.22	55.85	39.40	4.88	45.40	0.50	55.23	74.00	-18.77	P
	10479.22	45.01	39.40	4.88	45.40	0.50	44.39	54.00	-9.61	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.76	58.37	25.32	1.70	48.99	0.30	36.70	74.00	-37.30	P
*	1130.76	48.06	25.32	1.70	48.99	0.30	26.39	54.00	-27.61	A
	10479.59	58.97	39.40	4.88	45.40	0.50	58.35	74.00	-15.65	P
	10479.59	47.01	39.40	4.88	45.40	0.50	46.39	54.00	-7.61	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11n HT20 TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.76	59.83	25.32	1.70	48.99	0.30	38.16	74.00	-35.84	P
*	1130.76	48.62	25.32	1.70	48.99	0.30	26.95	54.00	-27.05	A
*	11487.21	54.95	40.87	4.96	46.16	0.60	55.22	74.00	-18.78	P
*	11487.21	45.24	40.87	4.96	46.16	0.60	45.51	54.00	-8.49	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.18	59.82	25.32	1.70	48.99	0.30	38.15	74.00	-35.85	P
*	1131.18	48.73	25.32	1.70	48.99	0.30	27.06	54.00	-26.94	A
*	11490.22	56.49	40.88	4.96	46.16	0.60	56.77	74.00	-17.23	P
*	11490.22	45.99	40.88	4.96	46.16	0.60	46.27	54.00	-7.73	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11n HT20 TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.06	59.87	25.32	1.70	48.99	0.30	38.20	74.00	-35.80	P
*	1131.06	48.16	25.32	1.70	48.99	0.30	26.49	54.00	-27.51	A
*	11569.72	55.75	40.91	4.97	46.33	0.60	55.91	74.00	-18.09	P
*	11569.72	46.30	40.91	4.97	46.33	0.60	46.46	54.00	-7.54	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.52	58.83	25.32	1.70	48.99	0.30	37.16	74.00	-36.84	P
*	1130.52	48.27	25.32	1.70	48.99	0.30	26.60	54.00	-27.40	A
*	11570.16	57.97	40.91	4.97	46.33	0.60	58.13	74.00	-15.87	P
*	11570.16	47.63	40.91	4.97	46.33	0.60	47.79	54.00	-6.21	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11n HT20 TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.34	58.93	25.33	1.70	48.99	0.30	37.26	74.00	-36.74	P
*	1131.34	48.37	25.33	1.70	48.99	0.30	26.70	54.00	-27.30	A
*	11649.66	57.77	40.93	4.98	46.51	0.60	57.78	74.00	-16.22	P
*	11649.66	46.82	40.93	4.98	46.51	0.60	46.83	54.00	-7.17	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.84	59.14	25.32	1.70	48.99	0.30	37.47	74.00	-36.53	P
*	1130.84	48.62	25.32	1.70	48.99	0.30	26.95	54.00	-27.05	A
*	11650.53	56.63	40.93	4.98	46.51	0.60	56.64	74.00	-17.36	P
*	11650.53	47.01	40.93	4.98	46.51	0.60	47.02	54.00	-6.98	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11n HT40 TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.75	60.06	25.32	1.70	48.99	0.30	38.39	74.00	-35.61	P
*	1130.75	48.82	25.32	1.70	48.99	0.30	27.15	54.00	-26.85	A
	10380.22	54.06	39.40	4.87	45.49	0.50	53.33	74.00	-20.67	P
	10380.22	45.68	39.40	4.87	45.49	0.50	44.95	54.00	-9.05	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.23	58.52	25.32	1.70	48.99	0.30	36.85	74.00	-37.15	P
*	1131.23	47.93	25.32	1.70	48.99	0.30	26.26	54.00	-27.74	A
	10380.28	53.67	39.40	4.87	45.49	0.50	52.94	74.00	-21.06	P
	10380.28	44.42	39.40	4.87	45.49	0.50	43.69	54.00	-10.31	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11n HT40 TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.16	57.74	25.32	1.70	48.99	0.30	36.07	74.00	-37.93	P
*	1131.16	47.46	25.32	1.70	48.99	0.30	25.79	54.00	-28.21	A
	10460.17	53.96	39.40	4.88	45.42	0.50	53.32	74.00	-20.68	P
	10460.17	44.04	39.40	4.88	45.42	0.50	43.40	54.00	-10.60	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.24	60.24	25.32	1.70	48.99	0.30	38.57	74.00	-35.43	P
*	1131.24	48.83	25.32	1.70	48.99	0.30	27.16	54.00	-26.84	A
	10460.20	52.96	39.40	4.88	45.42	0.50	52.32	74.00	-21.68	P
	10460.20	43.44	39.40	4.88	45.42	0.50	42.80	54.00	-11.20	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11n HT40 TX / CH Low		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.81	60.27	25.32	1.70	48.99	0.30	38.60	74.00	-35.40	P
*	1130.81	48.86	25.32	1.70	48.99	0.30	27.19	54.00	-26.81	A
*	11510.22	54.14	40.90	4.96	46.19	0.60	54.41	74.00	-19.59	P
*	11510.22	44.60	40.90	4.96	46.19	0.60	44.87	54.00	-9.13	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.24	59.76	25.32	1.70	48.99	0.30	38.09	74.00	-35.91	P
*	1131.24	48.68	25.32	1.70	48.99	0.30	27.01	54.00	-26.99	A
*	11509.95	54.30	40.90	4.96	46.19	0.60	54.57	74.00	-19.43	P
*	11509.95	44.78	40.90	4.96	46.19	0.60	45.05	54.00	-8.95	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11n HT40 TX / CH High		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.82	59.72	25.32	1.70	48.99	0.30	38.05	74.00	-35.95	P
*	1130.82	48.31	25.32	1.70	48.99	0.30	26.64	54.00	-27.36	A
*	11590.49	55.50	40.92	4.97	46.37	0.60	55.62	74.00	-18.38	P
*	11590.49	45.68	40.92	4.97	46.37	0.60	45.80	54.00	-8.20	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.25	59.28	25.33	1.70	48.99	0.30	37.61	74.00	-36.39	P
*	1131.25	48.57	25.33	1.70	48.99	0.30	26.90	54.00	-27.10	A
*	11590.16	56.49	40.92	4.97	46.37	0.60	56.61	74.00	-17.39	P
*	11590.16	46.49	40.92	4.97	46.37	0.60	46.61	54.00	-7.39	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Lower Sub-Band IEEE 802.11ac VHT80 TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.88	59.78	25.32	1.70	48.99	0.30	38.11	74.00	-35.89	P
*	1130.88	48.76	25.32	1.70	48.99	0.30	27.09	54.00	-26.91	A
	10420.07	53.75	39.40	4.87	45.46	0.50	53.07	74.00	-20.93	P
	10420.07	45.73	39.40	4.87	45.46	0.50	45.05	54.00	-8.95	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.16	58.68	25.32	1.70	48.99	0.30	37.01	74.00	-36.99	P
*	1131.16	48.24	25.32	1.70	48.99	0.30	26.57	54.00	-27.43	A
	10420.16	54.38	39.40	4.87	45.46	0.50	53.70	74.00	-20.30	P
	10420.16	45.19	39.40	4.87	45.46	0.50	44.51	54.00	-9.49	A

REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

Model	4GM3W-01	Test By	Ted Huang
TEMP & Humidity	26.2℃, 63%	Test Date	2014/06/06
Test Mode	Higher Sub-Band IEEE 802.11ac VHT80 TX / CH Middle		

	Measurement Distance at 3m Horizontal polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1131.34	60.52	25.33	1.70	48.99	0.30	38.85	74.00	-35.15	P
*	1131.34	48.92	25.33	1.70	48.99	0.30	27.25	54.00	-26.75	A
*	11550.31	55.48	40.91	4.97	46.28	0.60	55.68	74.00	-18.32	P
*	11550.31	45.13	40.91	4.97	46.28	0.60	45.33	54.00	-8.67	A

	Measurement Distance at 3m Vertical polarity									
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1130.83	59.84	25.32	1.70	48.99	0.30	38.17	74.00	-35.83	P
*	1130.83	48.76	25.32	1.70	48.99	0.30	27.09	54.00	-26.91	A
*	11550.36	55.11	40.91	4.97	46.28	0.60	55.31	74.00	-18.69	P
*	11550.36	45.57	40.91	4.97	46.28	0.60	45.77	54.00	-8.23	A

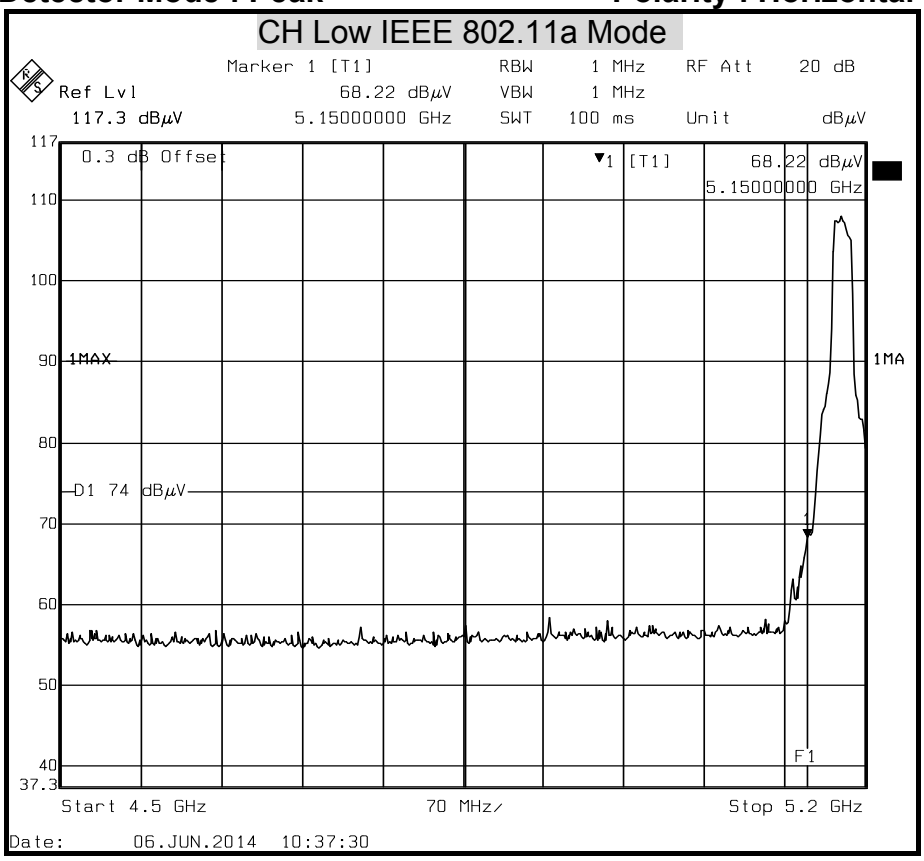
REMARK:

1. *AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss*
2. *Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz*
3. *The result basic equation calculation is as follow:*
   Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. *The other emission levels were 20dB below the limit*
5. *The test limit distance is 3M limit.*
6. ** means: the frequency is under 15.205 restricted bands.*

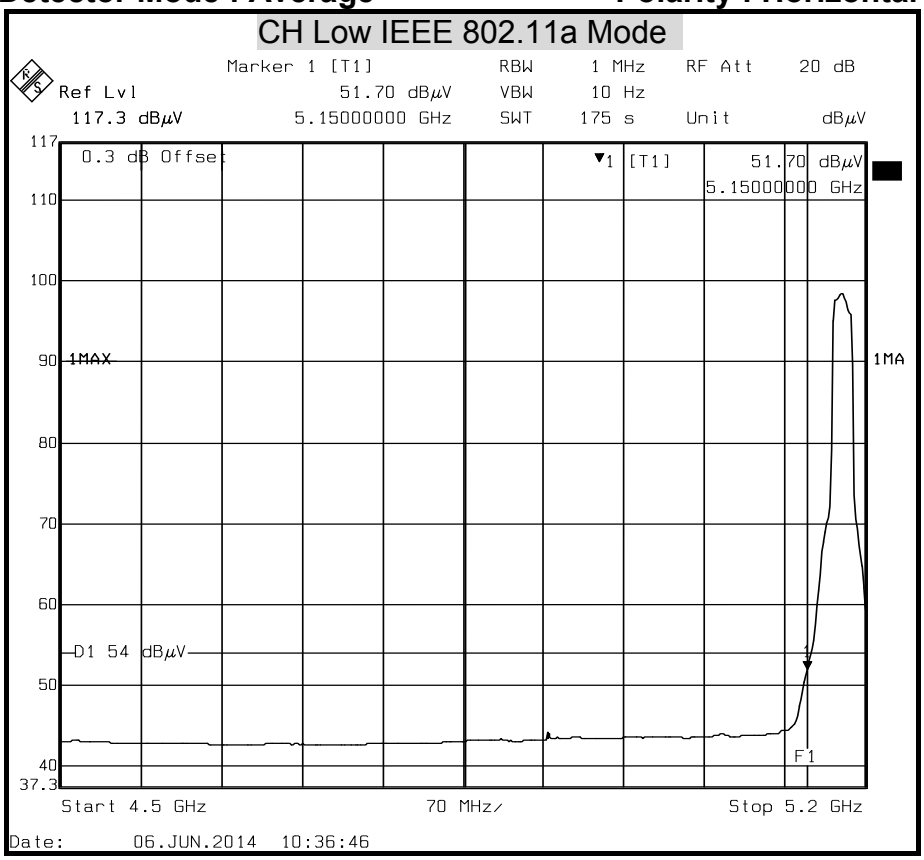
Restricted Band Edges

Higher Sub-Band

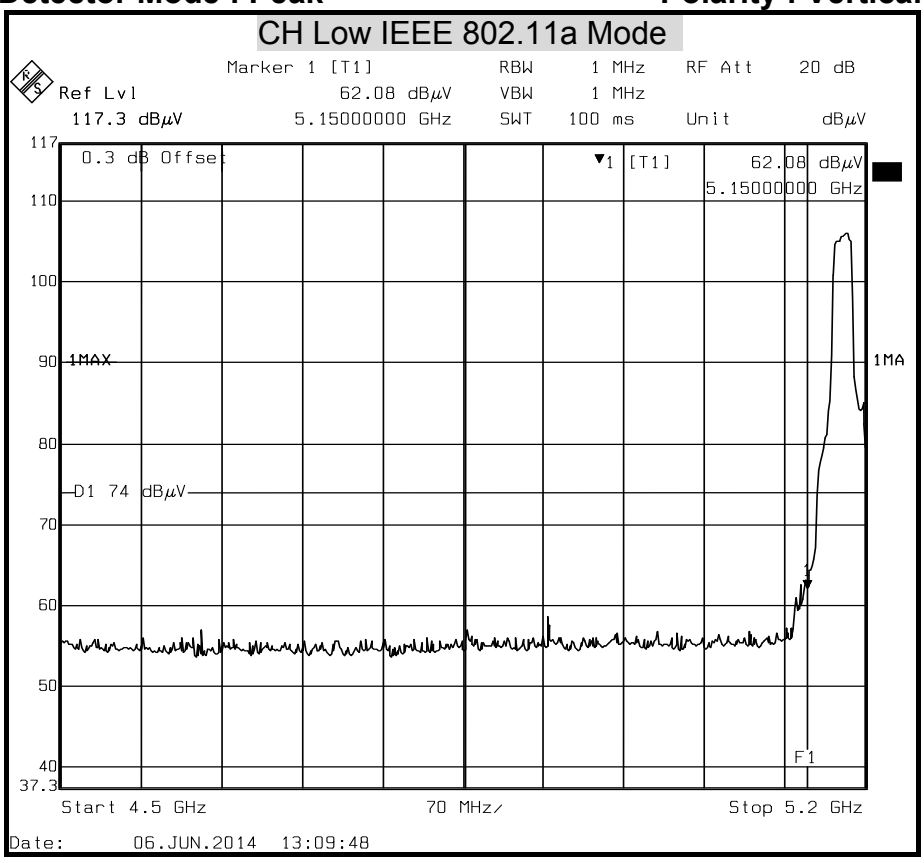
Detector Mode : Peak **Polarity : Horizontal**



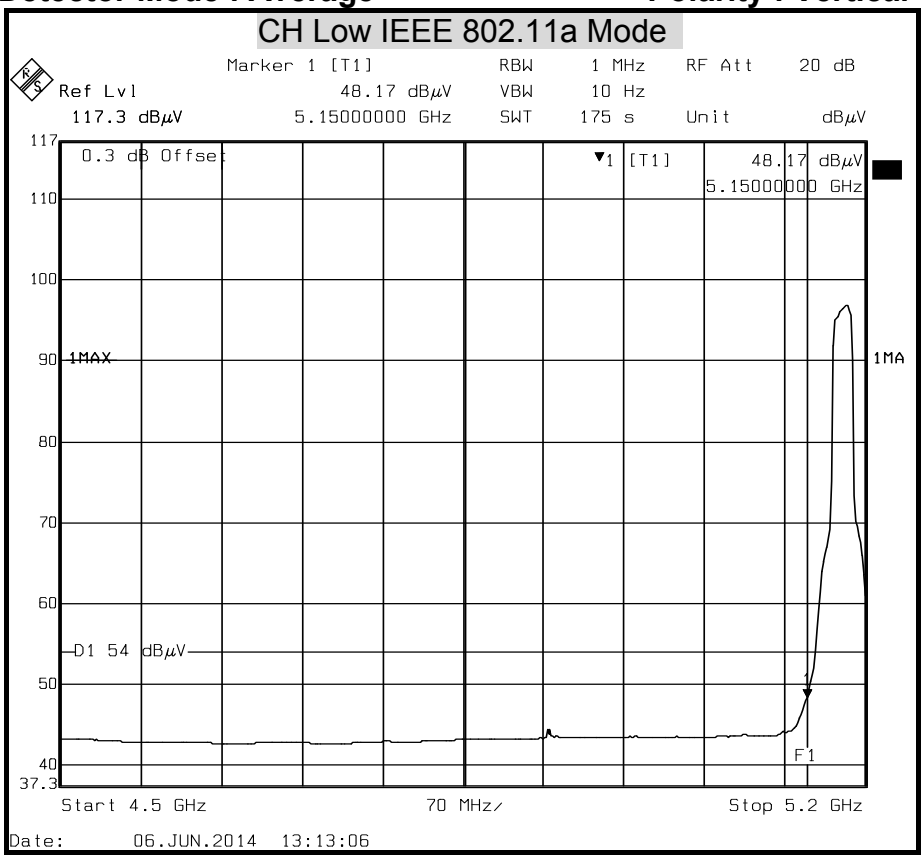
Detector Mode : Average **Polarity : Horizontal**



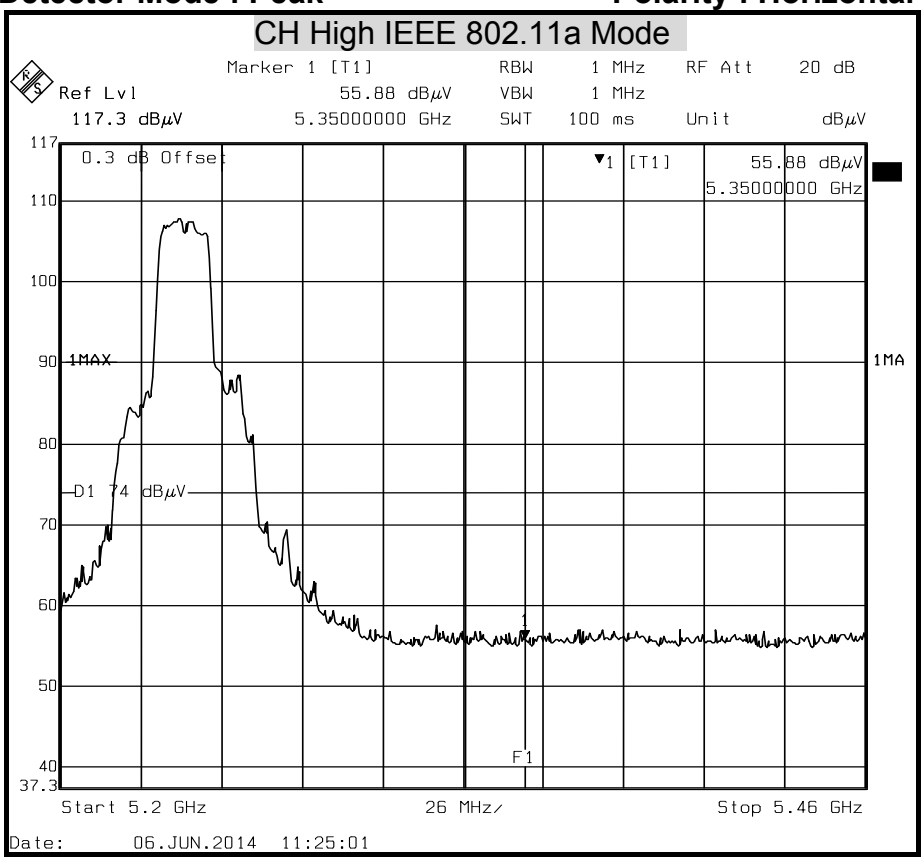
Detector Mode : Peak **Polarity : Vertical**



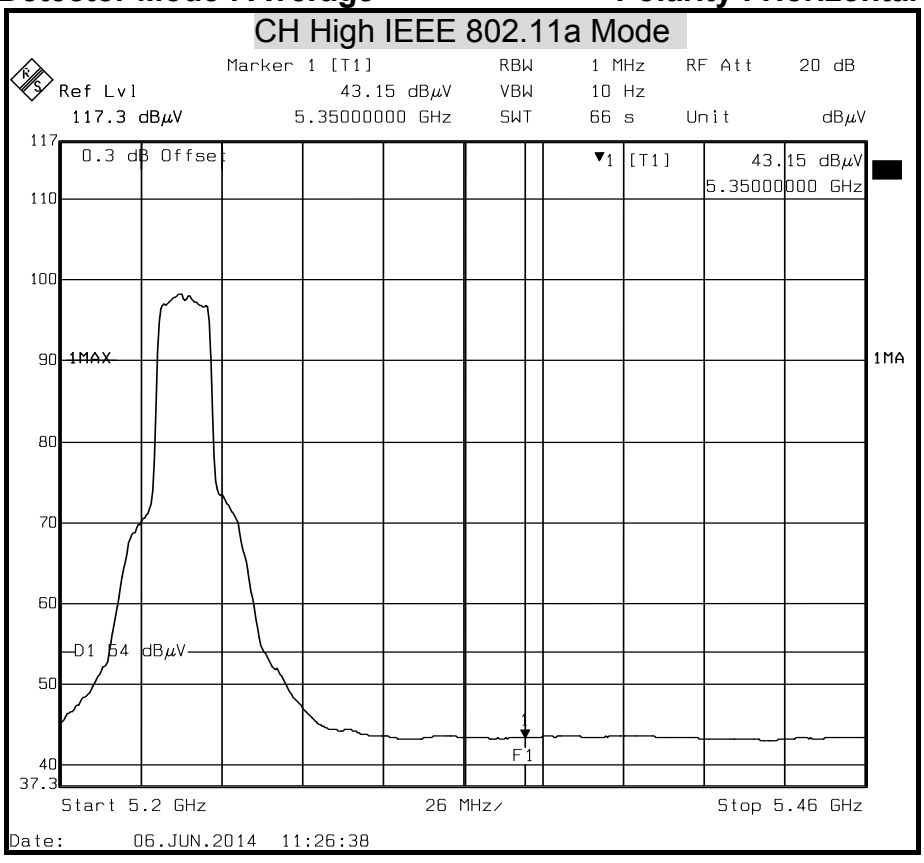
Detector Mode : Average **Polarity : Vertical**



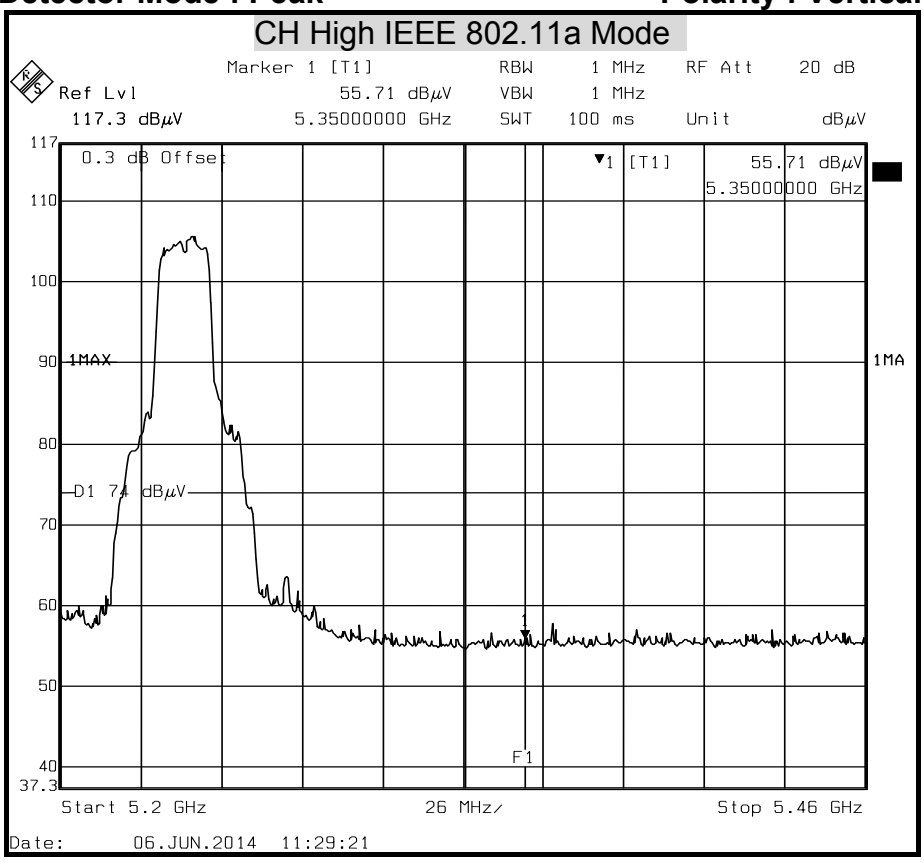
Detector Mode : Peak **Polarity : Horizontal**



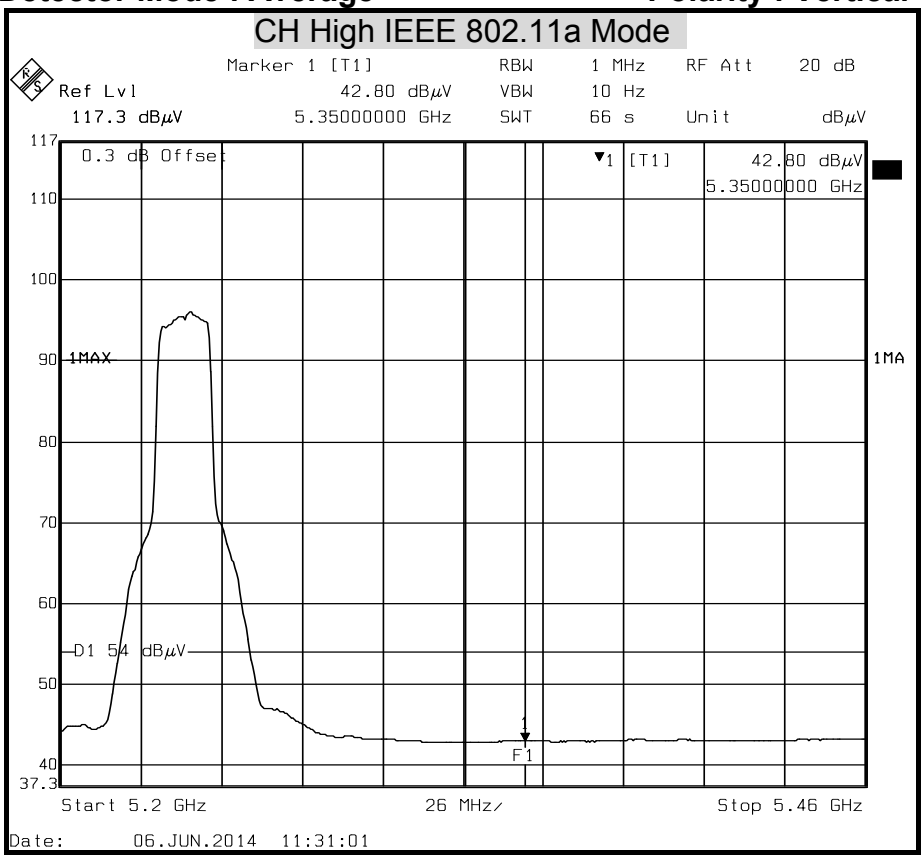
Detector Mode : Average **Polarity : Horizontal**



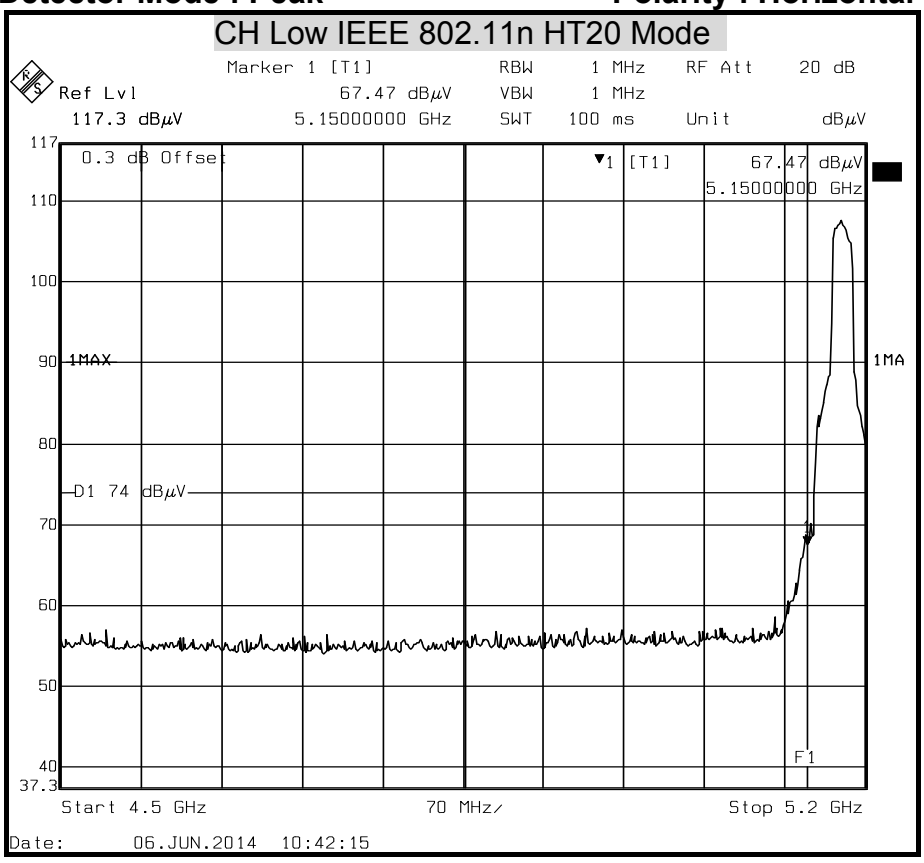
Detector Mode : Peak **Polarity : Vertical**



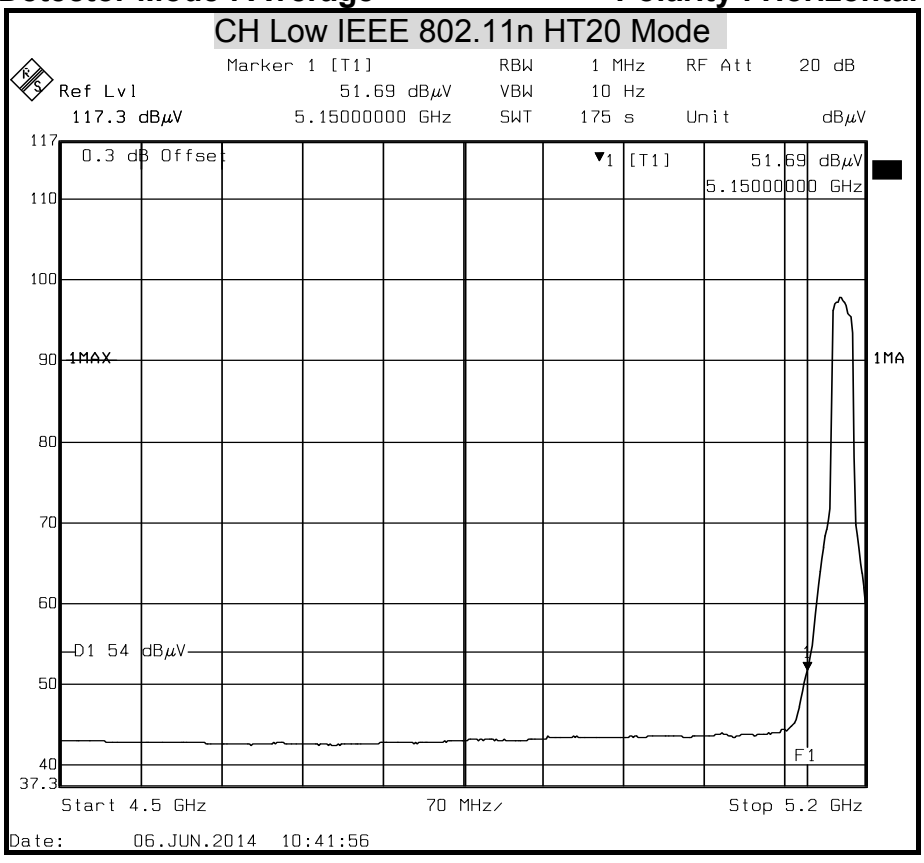
Detector Mode : Average **Polarity : Vertical**



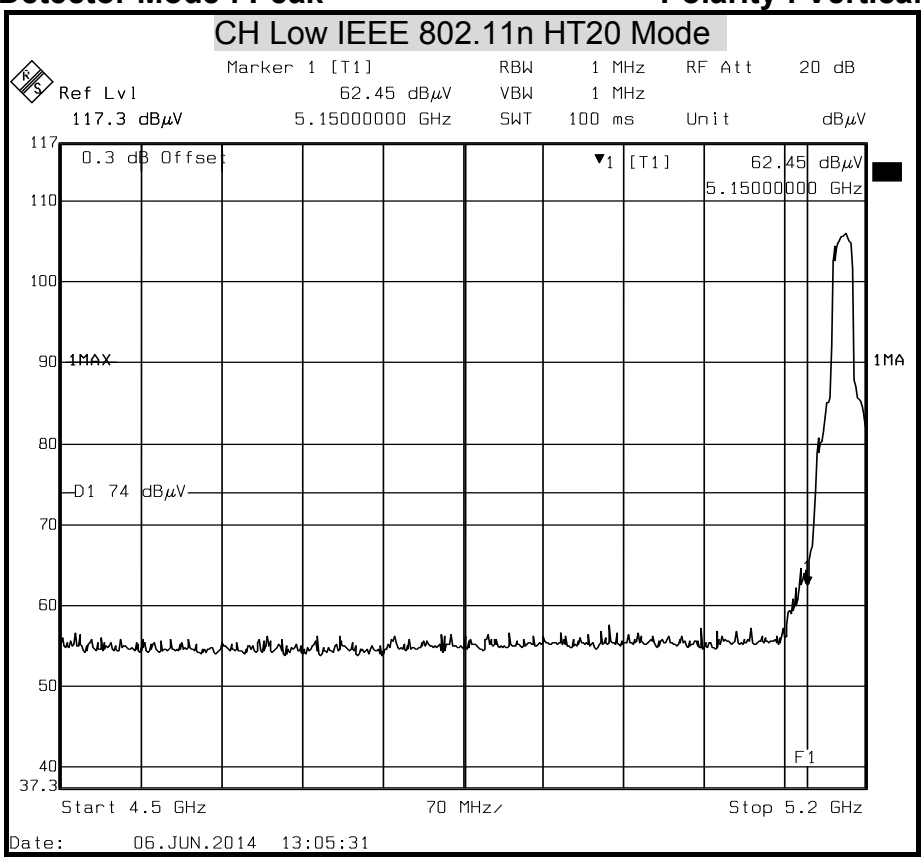
Detector Mode : Peak **Polarity : Horizontal**



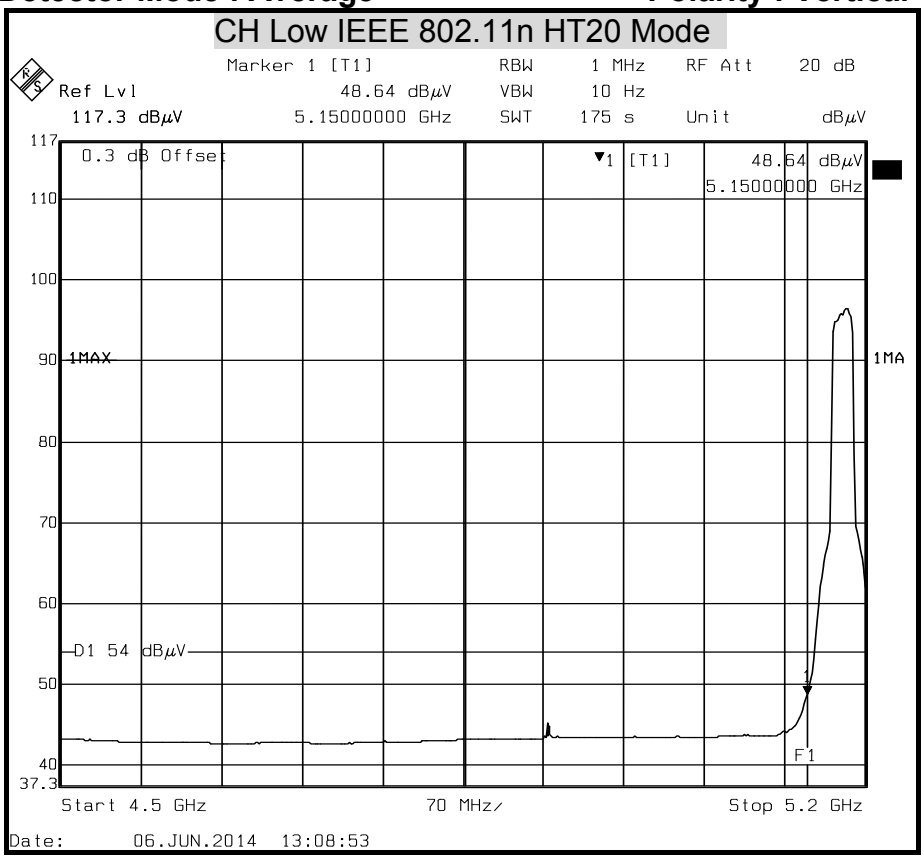
Detector Mode : Average **Polarity : Horizontal**



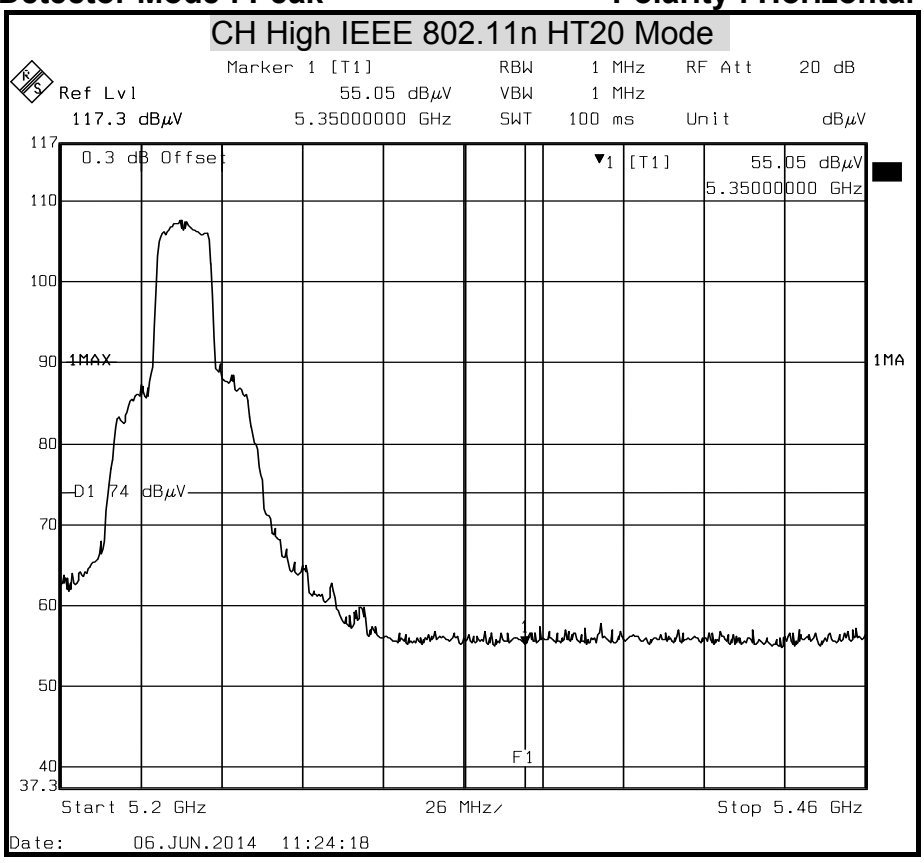
Detector Mode : Peak **Polarity : Vertical**



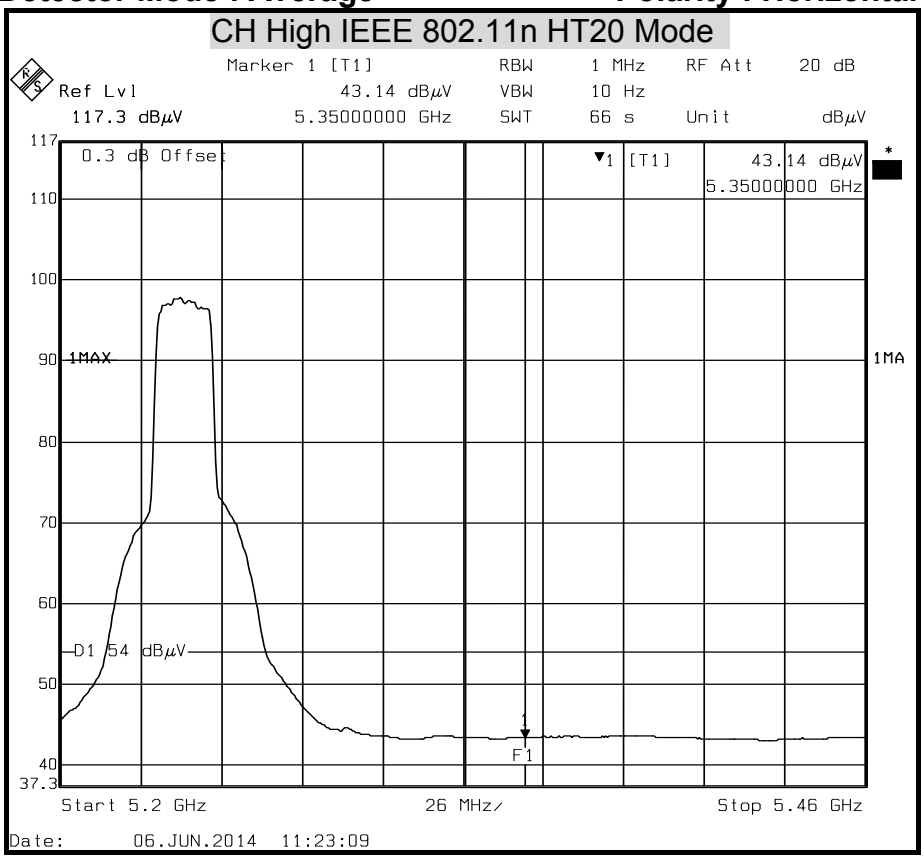
Detector Mode : Average **Polarity : Vertical**



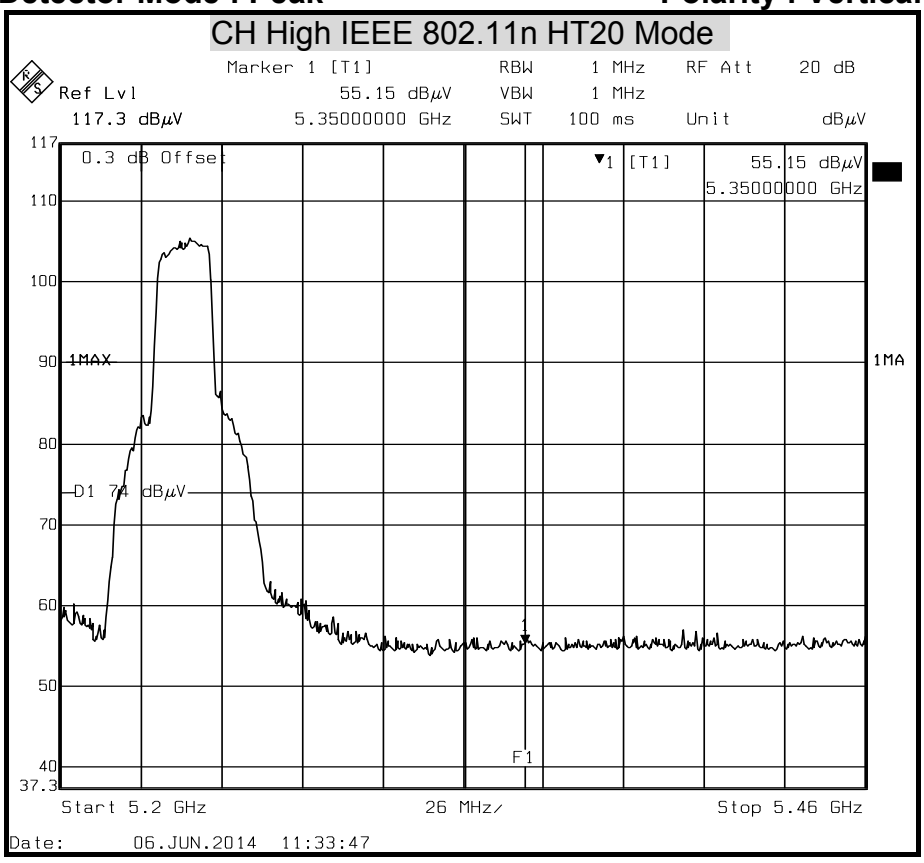
Detector Mode : Peak **Polarity : Horizontal**



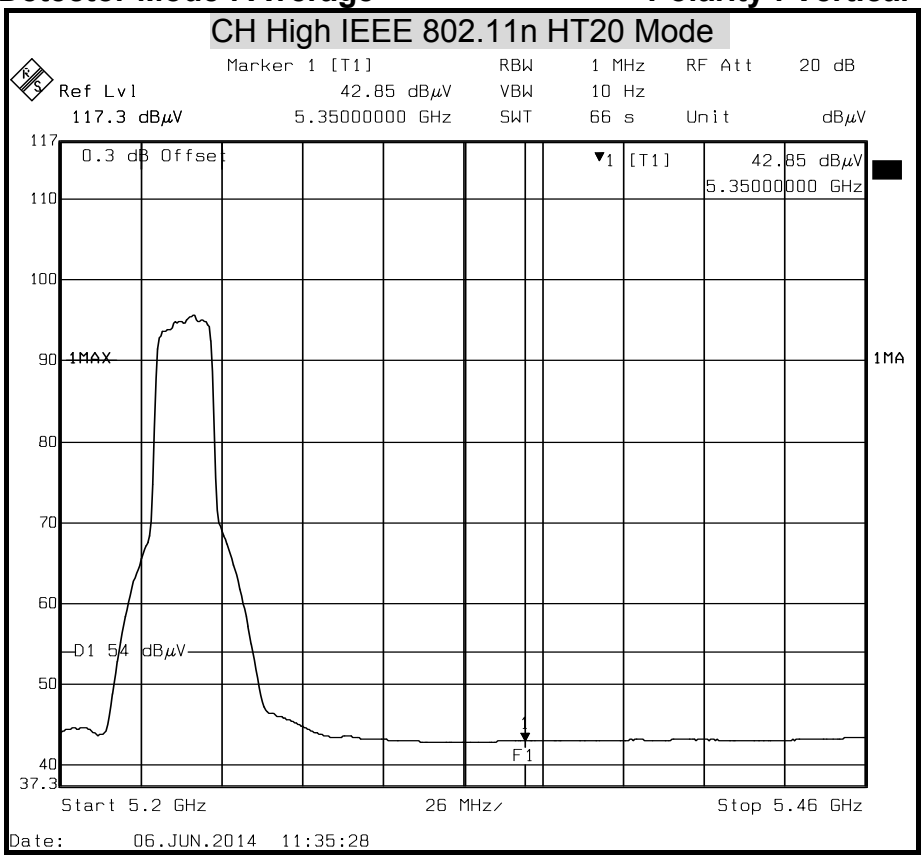
Detector Mode : Average **Polarity : Horizontal**



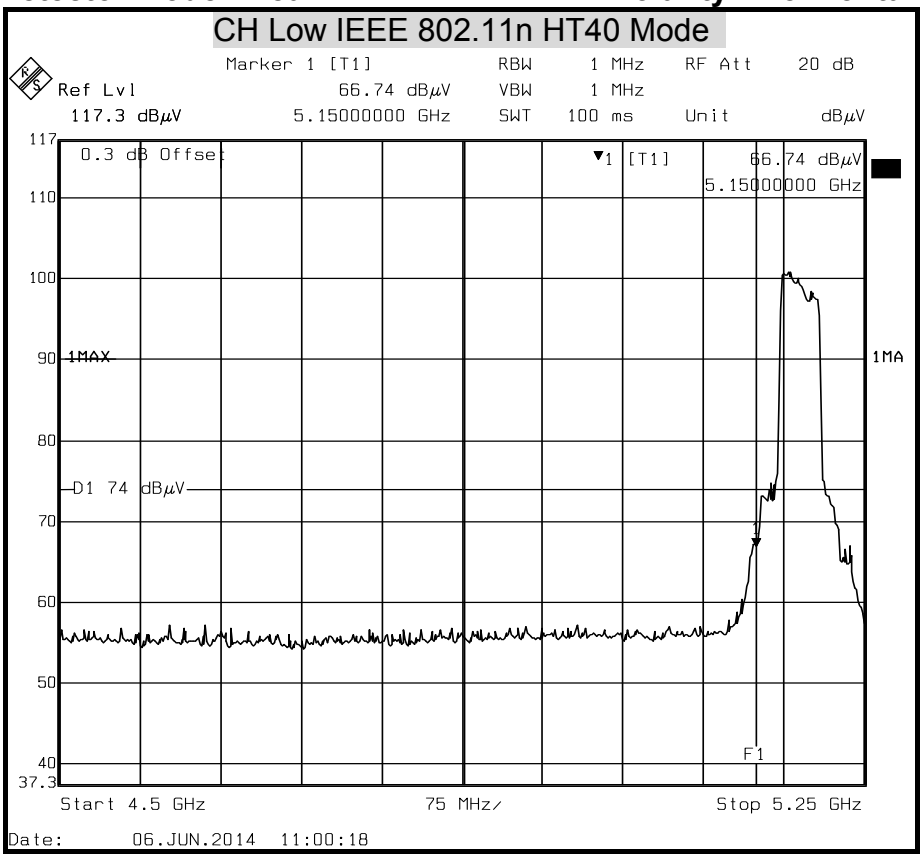
Detector Mode : Peak **Polarity : Vertical**



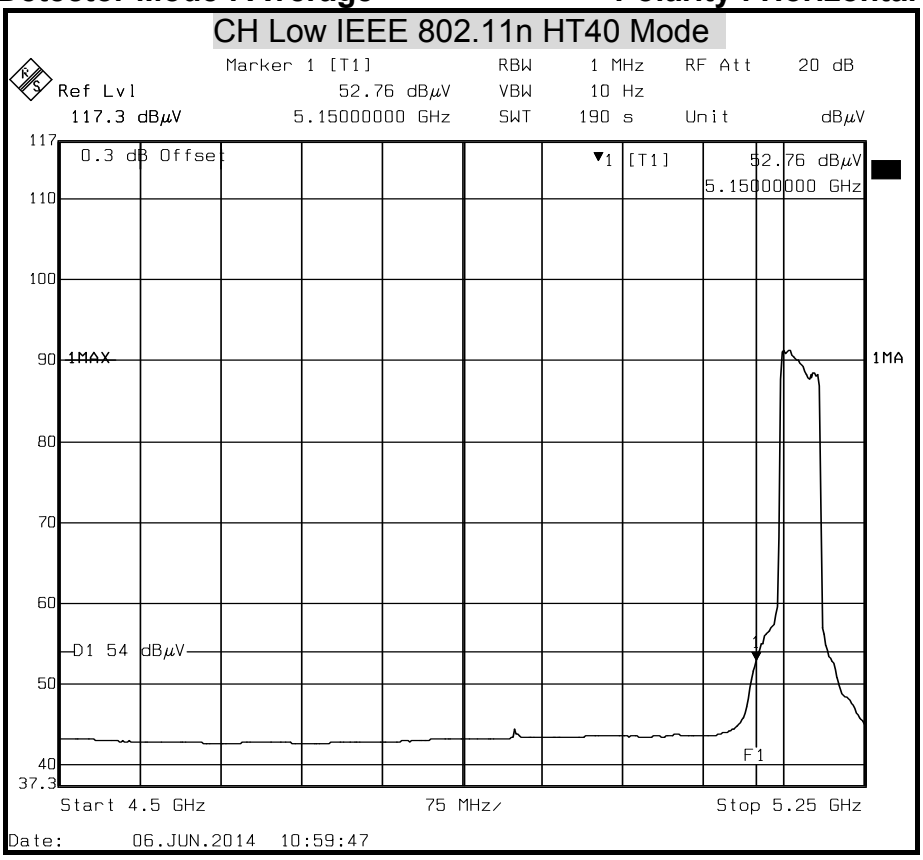
Detector Mode : Average **Polarity : Vertical**



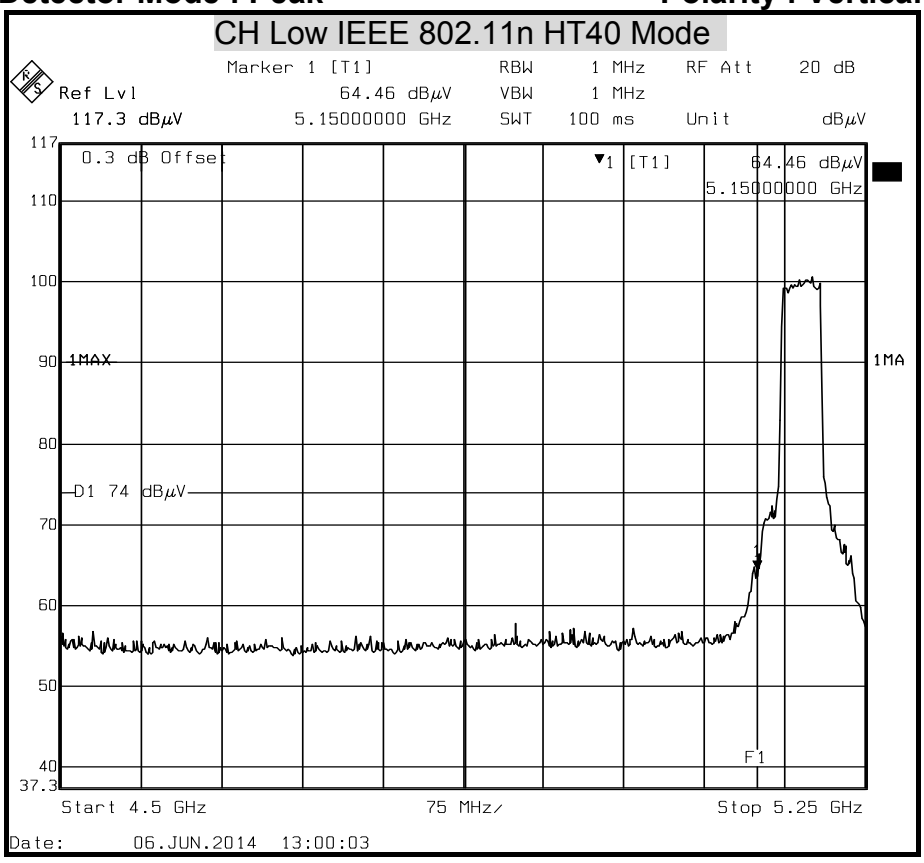
Detector Mode : Peak **Polarity : Horizontal**



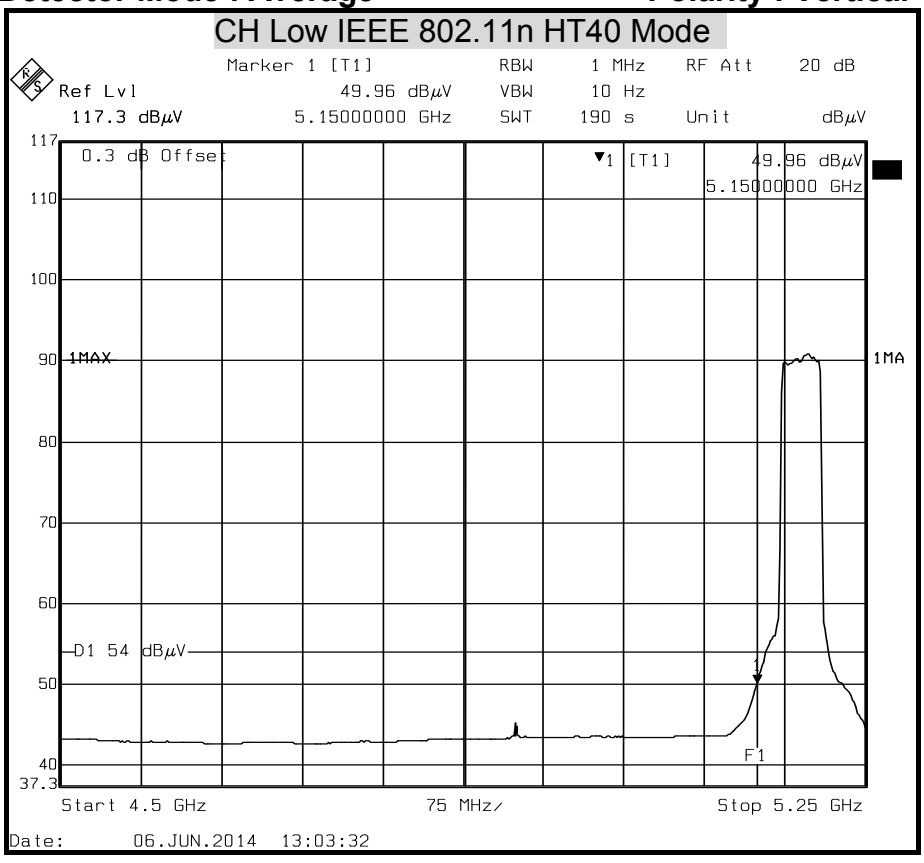
Detector Mode : Average **Polarity : Horizontal**



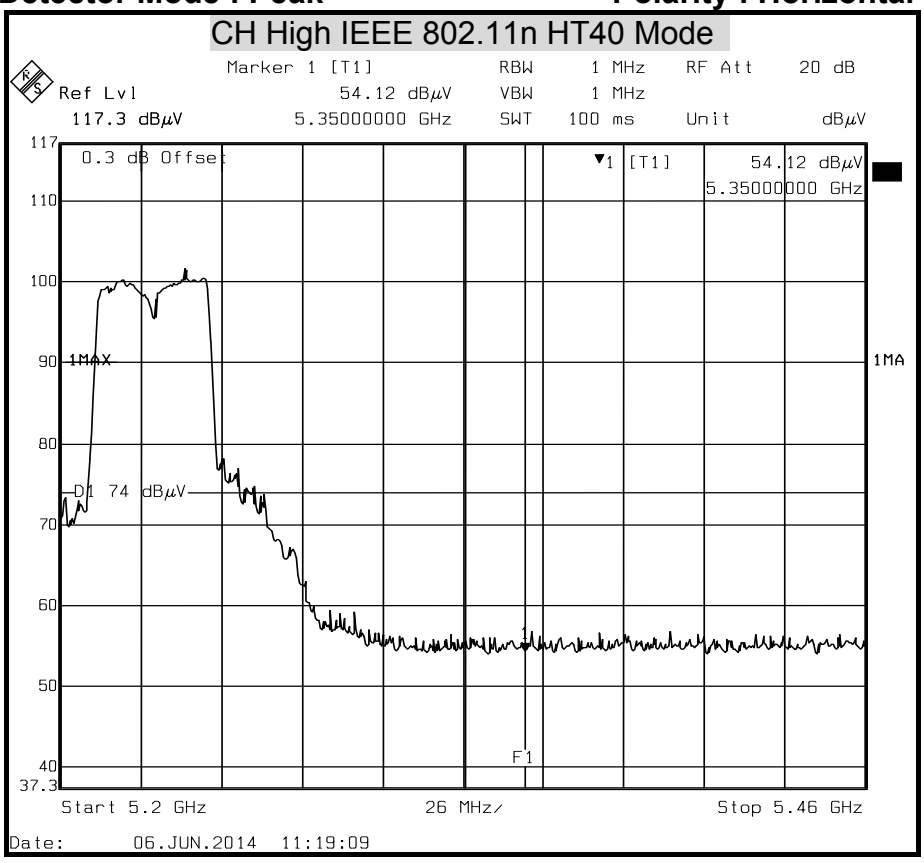
Detector Mode : Peak **Polarity : Vertical**



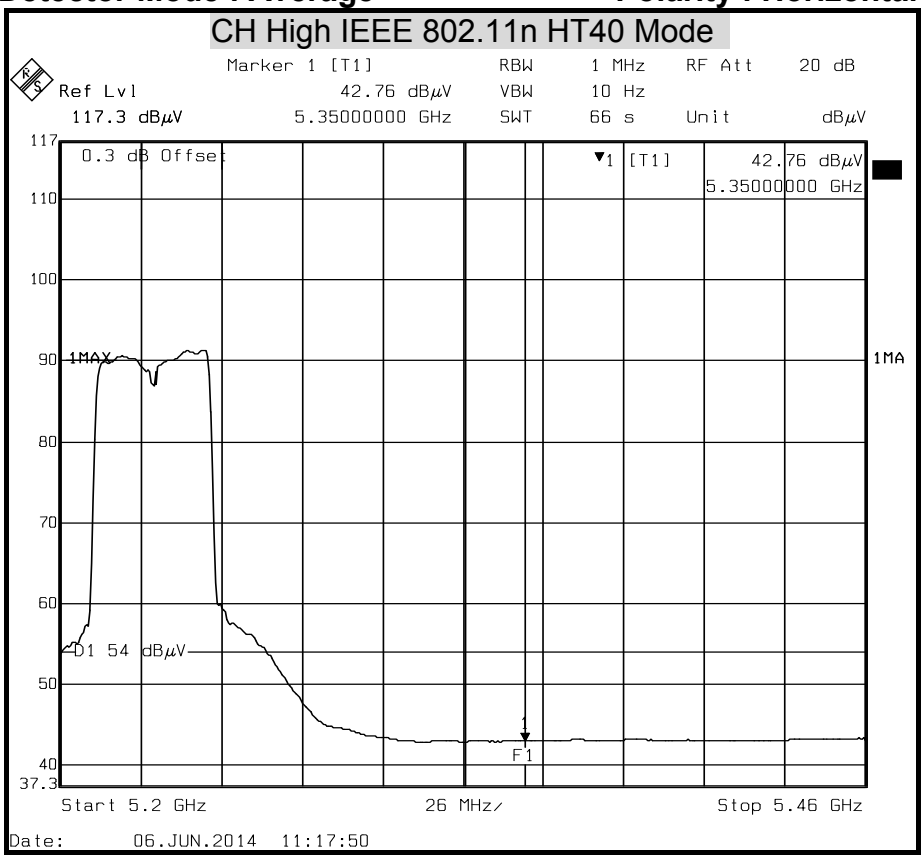
Detector Mode : Average **Polarity : Vertical**



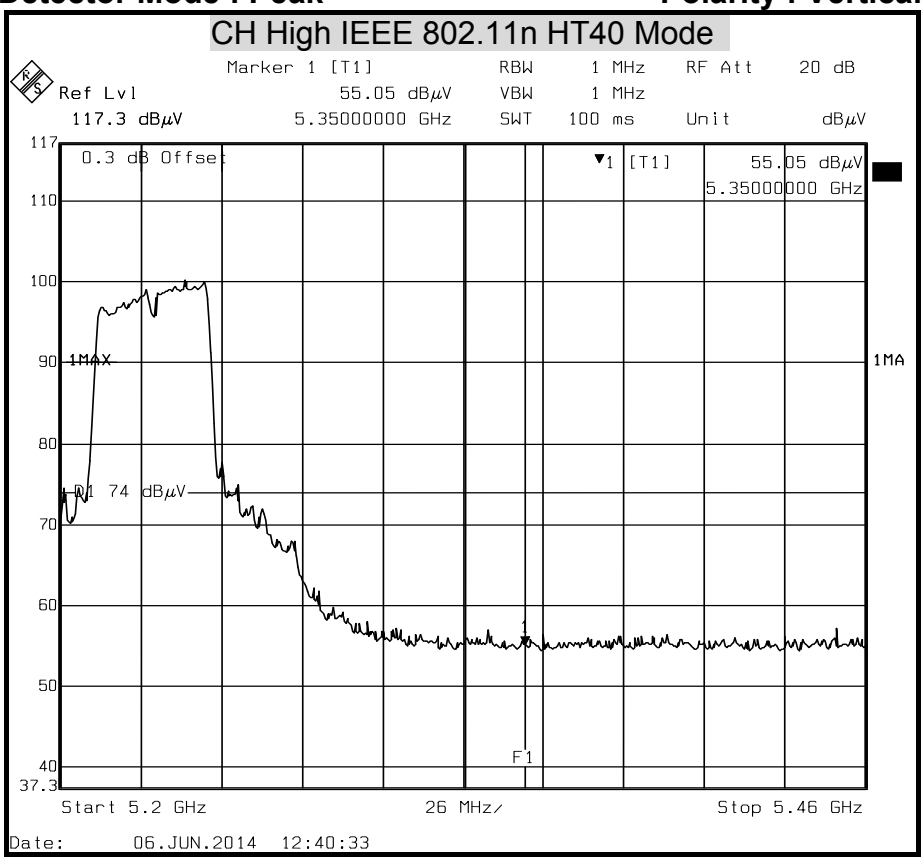
Detector Mode : Peak **Polarity : Horizontal**



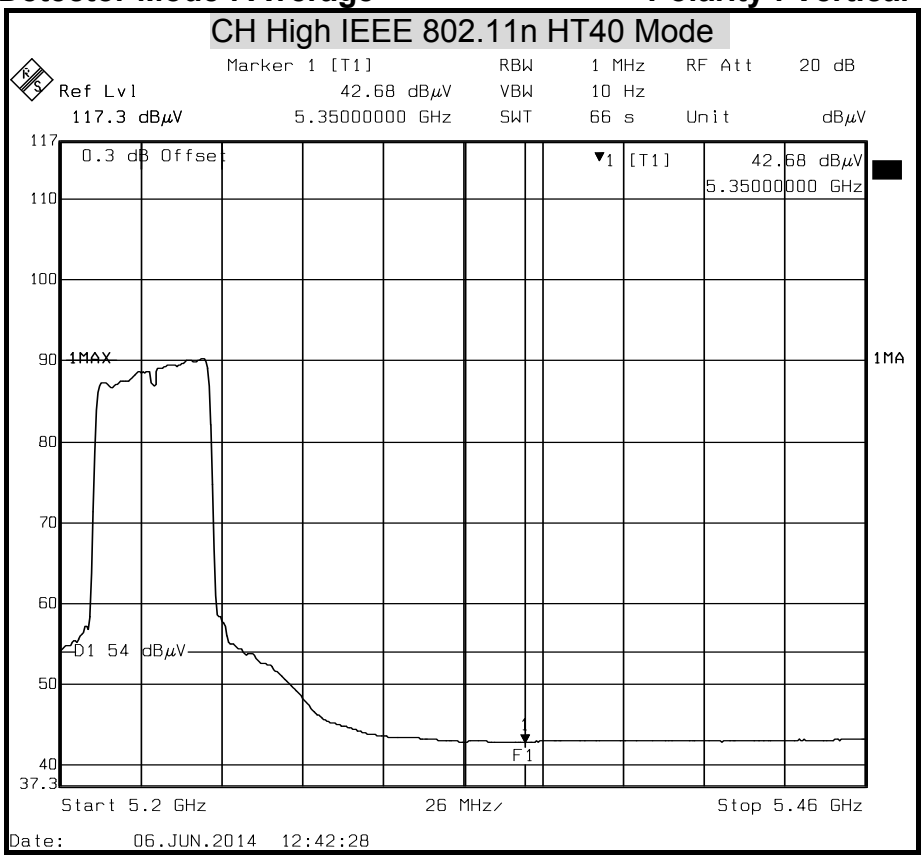
Detector Mode : Average **Polarity : Horizontal**



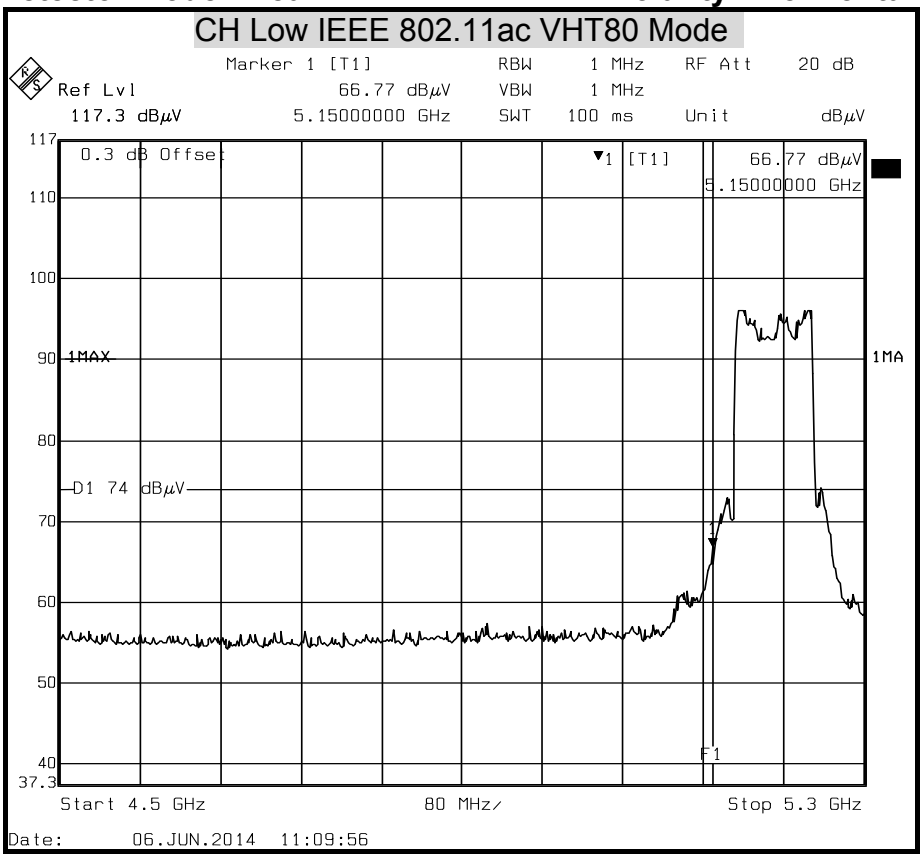
Detector Mode : Peak **Polarity : Vertical**



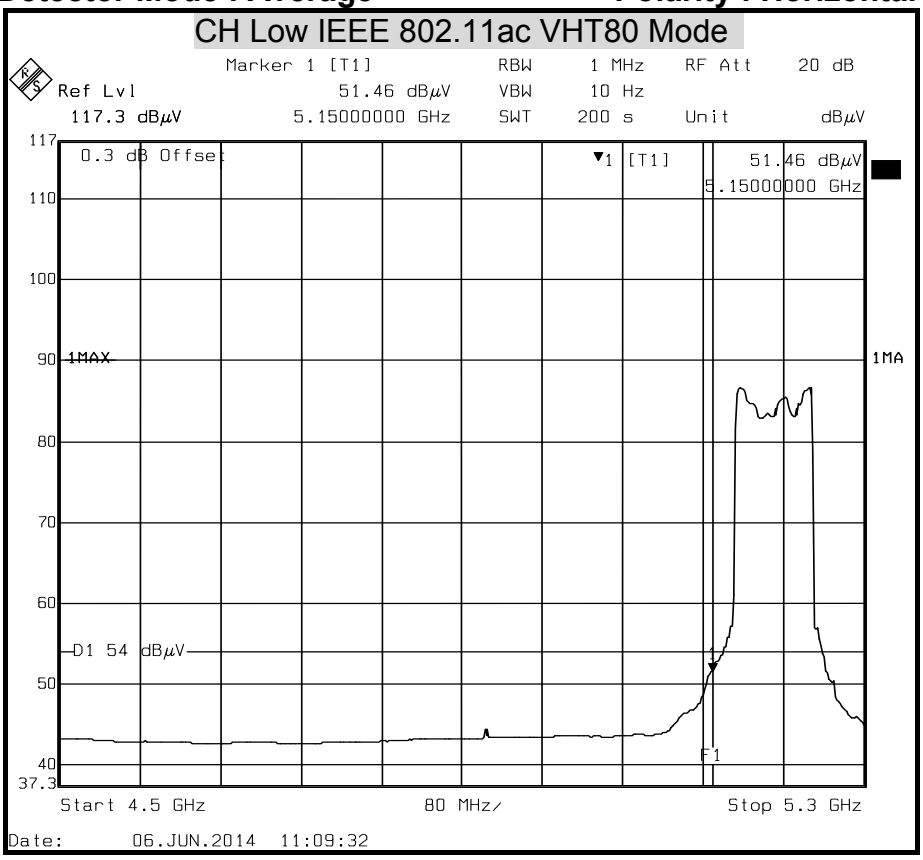
Detector Mode : Average **Polarity : Vertical**



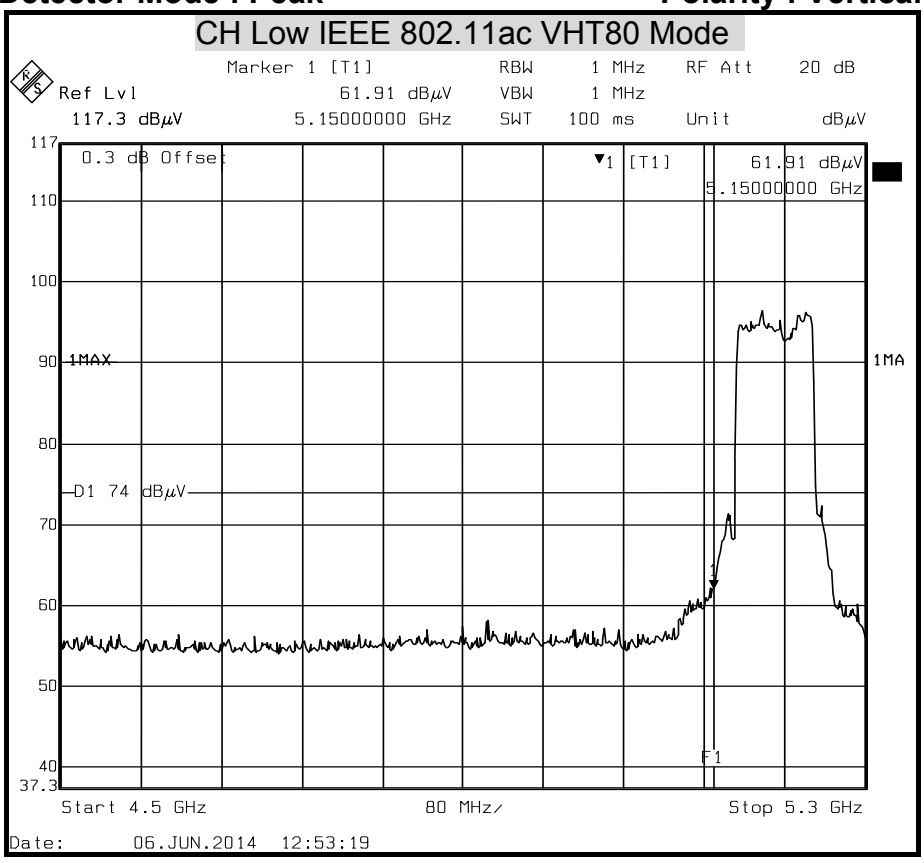
Detector Mode : Peak **Polarity : Horizontal**



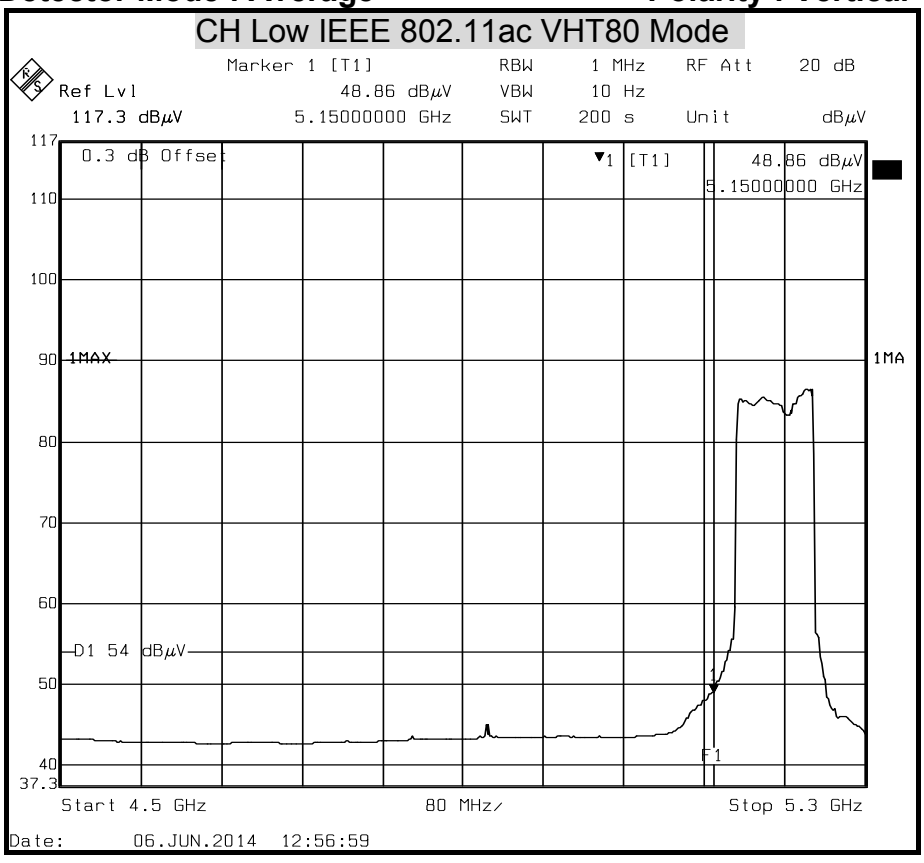
Detector Mode : Average **Polarity : Horizontal**



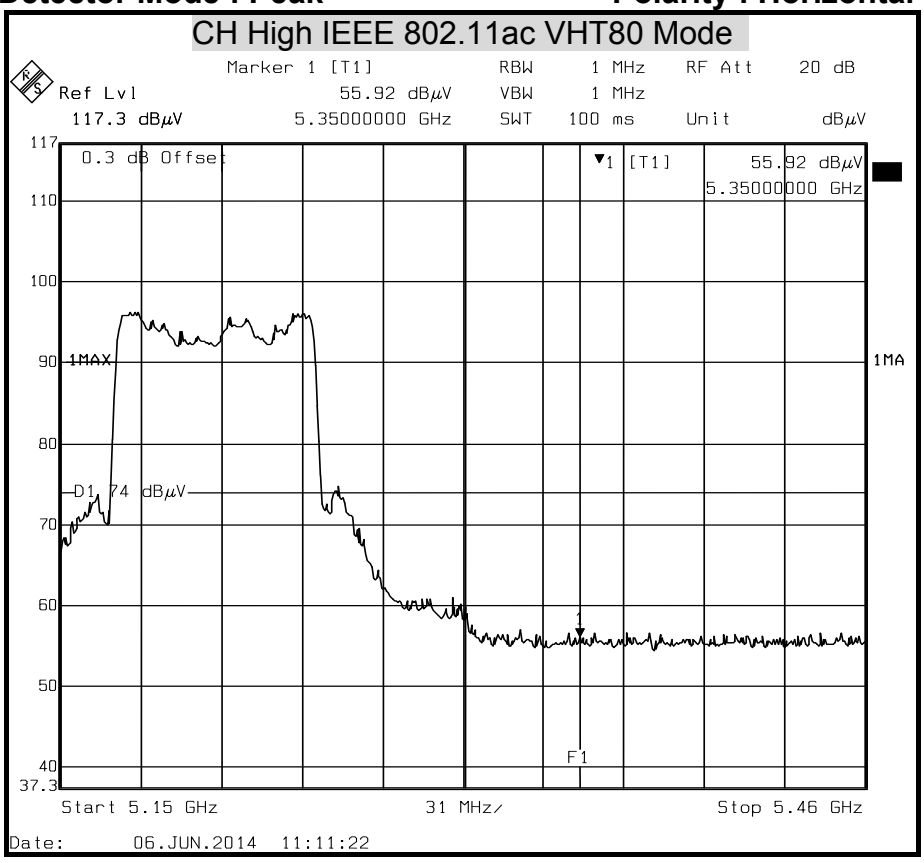
Detector Mode : Peak **Polarity : Vertical**



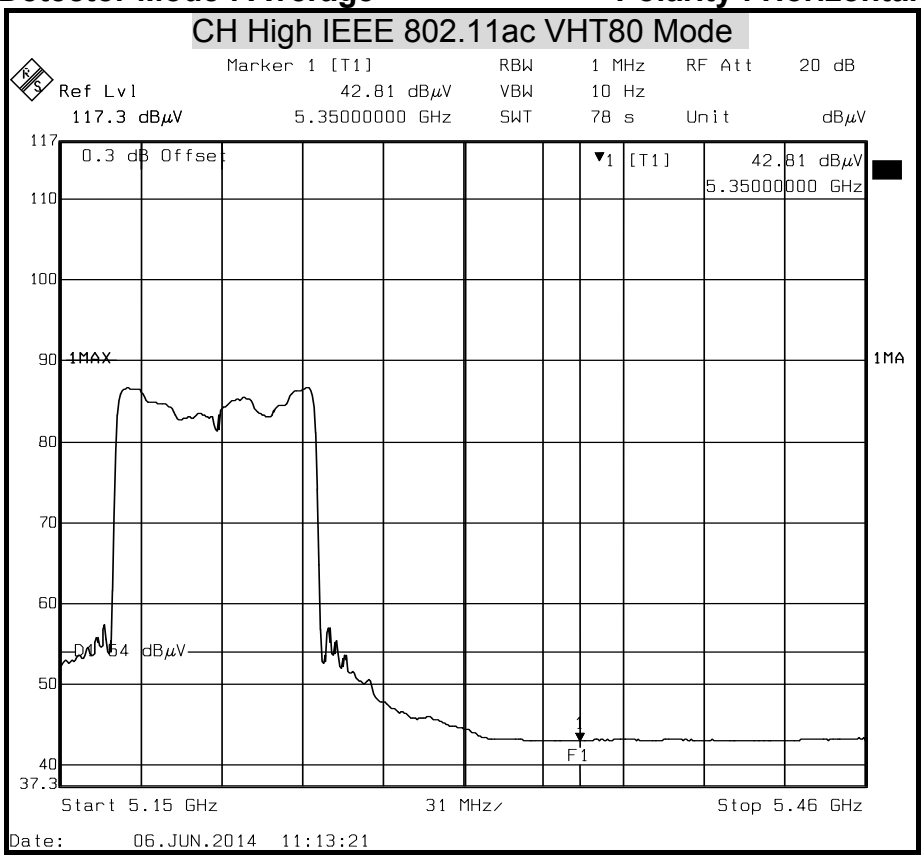
Detector Mode : Average **Polarity : Vertical**



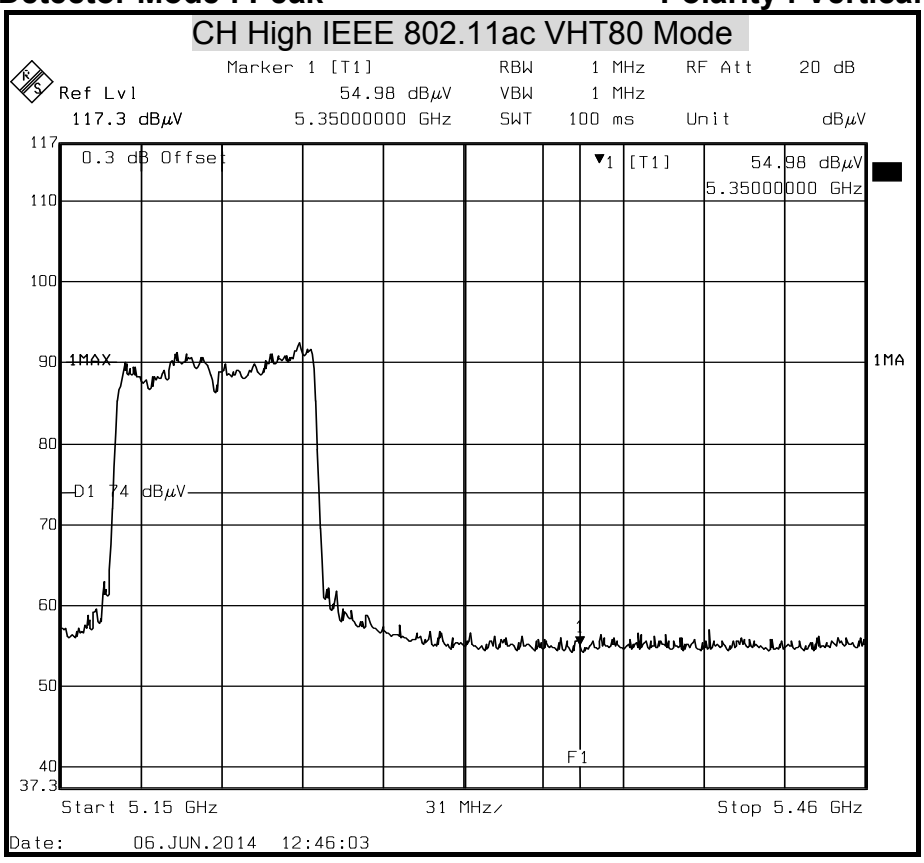
Detector Mode : Peak **Polarity : Horizontal**



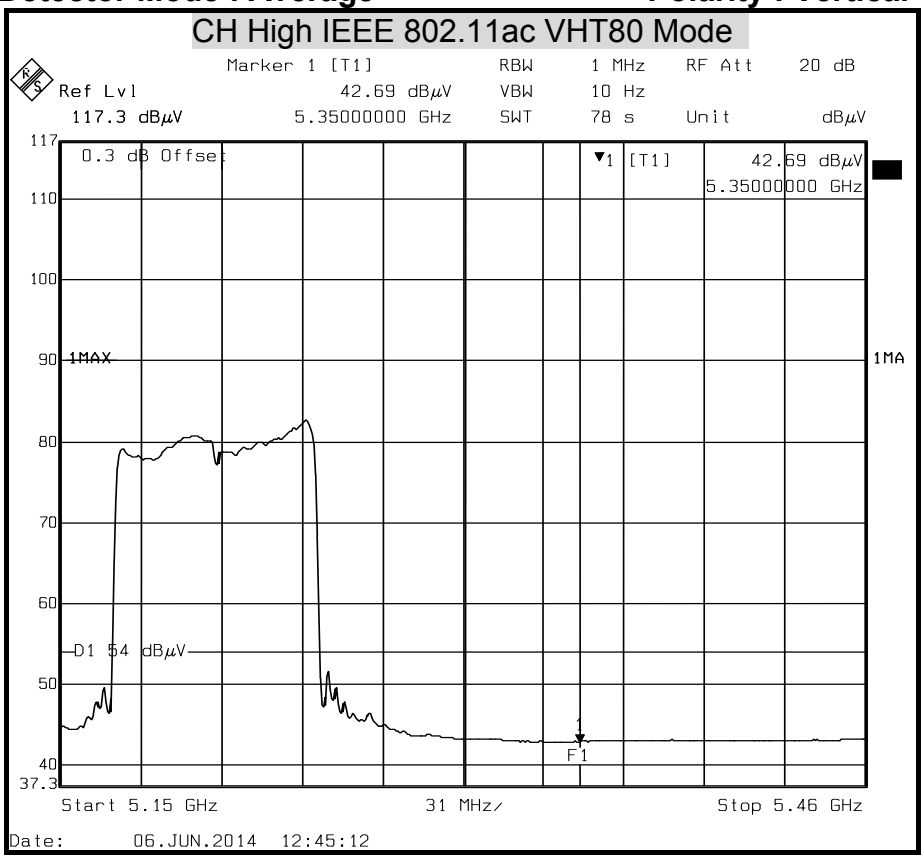
Detector Mode : Average **Polarity : Horizontal**



Detector Mode : Peak **Polarity : Vertical**



Detector Mode : Average **Polarity : Vertical**



7.8 CONDUCTED EMISSION

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 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.

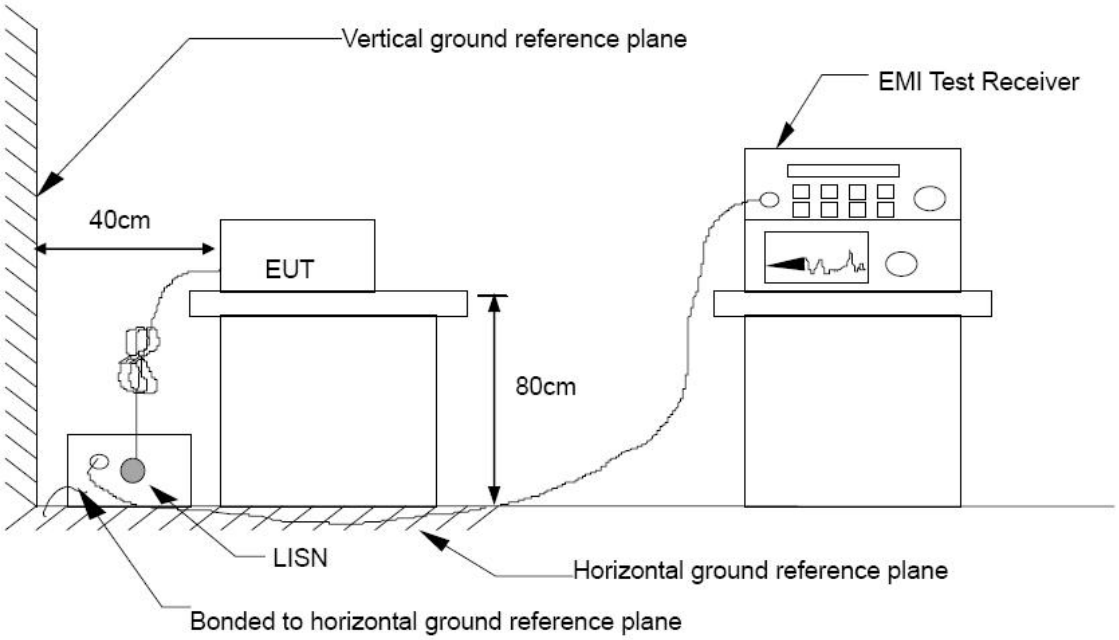
Frequency Range (MHz)	Conducted Limit (dBμv)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

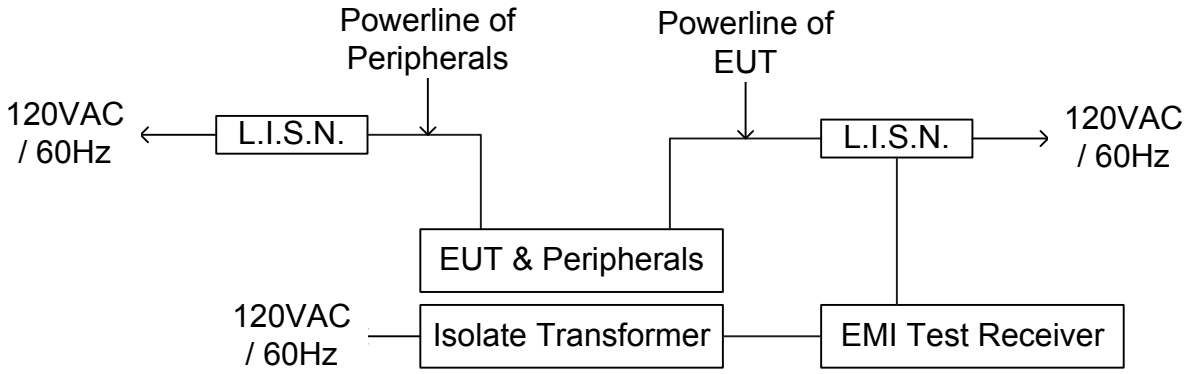
TEST EQUIPMENT

Conducted Emission room #1				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N.	SCHWARZBECK	NNLK 8130	8130124	AUG. 12, 2014
	Rohde & Schwarz	ESH 3-Z5	840062/021	SEP. 09, 2014
	Rohde & Schwarz	ESH 3-Z5	893540/015	APR. 13, 2015
TEST RECEIVER	Rohde & Schwarz	ESCS 30	100348	AUG. 09, 2014
BNC COAXIAL CABLE	CCS	BNC50	11	NOV. 19, 2014
Test S/W	e-3 (5.04211c) R&S (2.27)			

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

TEST SETUP





TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2009.

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.

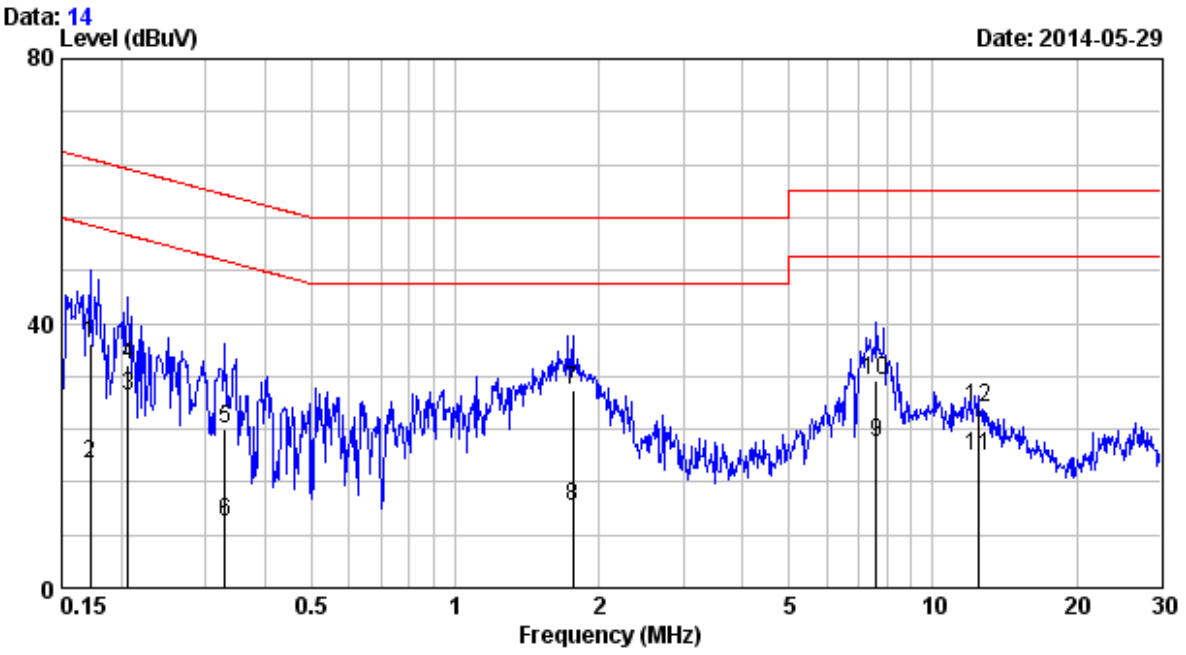
The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a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

TEST RESULTS

Model No.	4GM3W-01	Test Mode	Storage mode
Environmental Conditions	24.8℃, 54% RH	Resolution Bandwidth	9 kHz
Tested by	Vis Liang		

LINE

(The chart below shows the highest readings taken from the final data.)



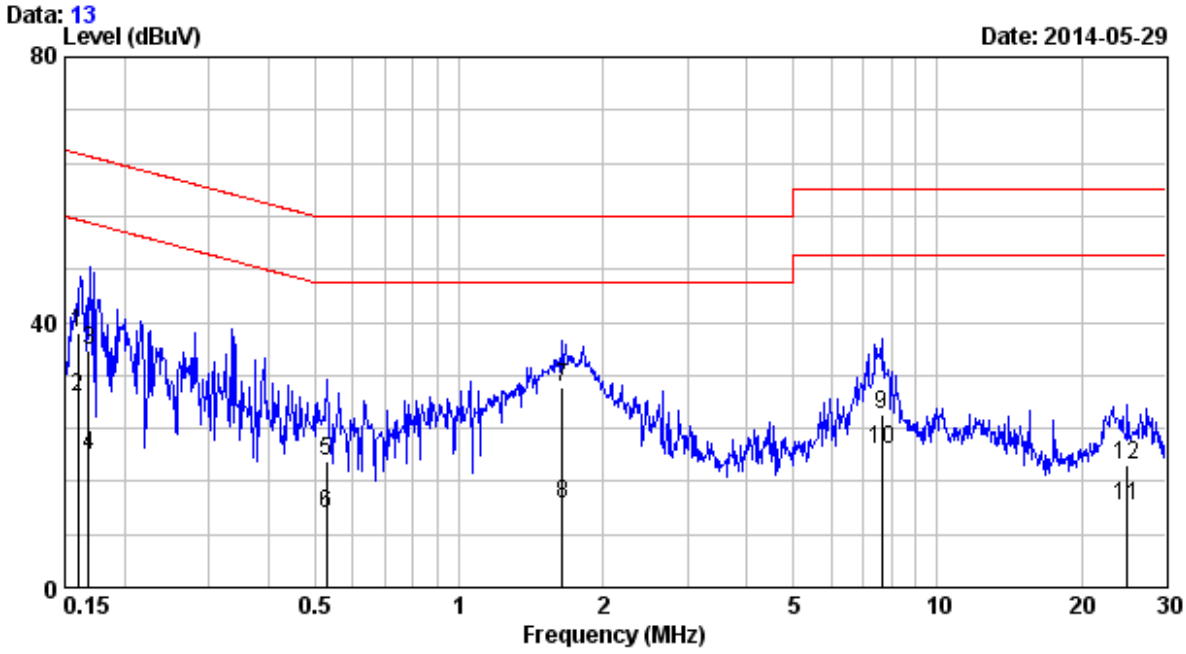
Freq. MHz	LISN Factor dB	Cable Loss dB	Meter Reading dBuV	Measured Level dBuV	Limits dBuV	Over Limits dBuV	Detector
0.17	7.59	0.10	29.11	36.80	64.86	-28.06	QP
0.17	7.59	0.10	10.94	18.63	54.86	-36.23	AVERAGE
0.21	7.74	0.13	21.14	29.01	53.36	-24.35	AVERAGE
0.21	7.74	0.13	25.94	33.81	63.36	-29.55	QP
0.33	7.99	0.17	16.00	24.16	59.44	-35.28	QP
0.33	7.99	0.17	1.80	9.96	49.44	-39.48	AVERAGE
1.76	7.88	0.25	21.82	29.94	56.00	-26.06	QP
1.76	7.88	0.25	4.07	12.19	46.00	-33.81	AVERAGE
7.61	8.80	0.30	12.88	21.98	50.00	-28.02	AVERAGE
7.61	8.80	0.30	22.37	31.47	60.00	-28.53	QP
12.45	8.92	0.33	10.56	19.81	50.00	-30.19	AVERAGE
12.45	8.92	0.33	18.03	27.28	60.00	-32.72	QP

REMARKS： 1. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB)
2. Over Limit (dBuV) = Measured Level (dBuV) – Limits (dBuV)

Model No.	4GM3W-01	Test Mode	Storage mode
Environmental Conditions	24.8℃, 54% RH	Resolution Bandwidth	9 kHz
Tested by	Vis Liang		

LINE

(The chart below shows the highest readings taken from the final data.)



Freq. MHz	LISN Factor dB	Cable Loss dB	Meter Reading dBuV	Measured Level dBuV	Limits dBuV	Over Limits dBuV	Detector
0.16	7.56	0.09	30.65	38.30	65.47	-27.17	QP
0.16	7.56	0.09	21.19	28.84	55.47	-26.63	AVERAGE
0.17	7.60	0.10	28.04	35.74	65.05	-29.31	QP
0.17	7.60	0.10	12.21	19.91	55.05	-35.14	AVERAGE
0.53	8.07	0.23	10.66	18.96	56.00	-37.04	QP
0.53	8.07	0.23	2.90	11.20	46.00	-34.80	AVERAGE
1.64	7.92	0.25	21.96	30.13	56.00	-25.87	QP
1.64	7.92	0.25	4.32	12.49	46.00	-33.51	AVERAGE
7.65	8.84	0.30	16.98	26.12	60.00	-33.88	QP
7.65	8.84	0.30	11.54	20.68	50.00	-29.32	AVERAGE
24.92	9.27	0.40	2.66	12.33	50.00	-37.67	AVERAGE
24.92	9.27	0.40	8.69	18.36	60.00	-41.64	QP

REMARKS： 1. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB)
2. Over Limit (dBuV) = Measured Level (dBuV) – Limits (dBuV)

7.9 FREQUENCY STABILITY

LIMITS

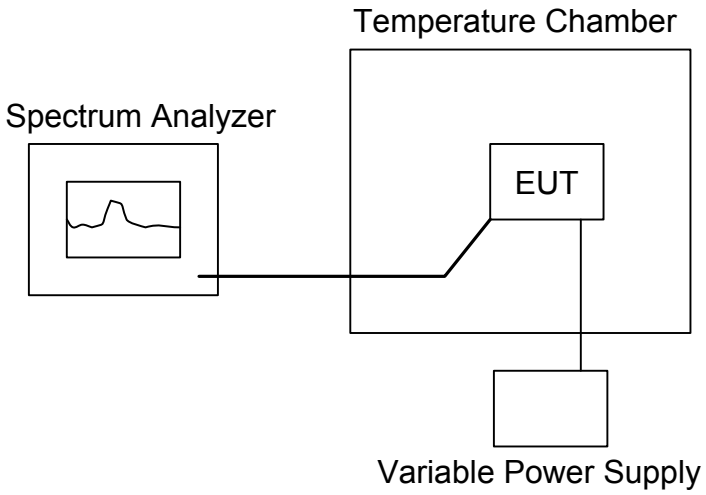
§ 15.407 (g) manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	100264	JAN. 26, 2015
Temp./Humidity Chamber	K.SON	THS-M1	242	AUG. 08, 2014

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

TEST SETUP



TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

TEST RESULTS

Test mode: IEEE 802.11a mode / 5150 ~ 5250 MHz

CH Low / Operating Frequency: 5180 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5180.007450	5150-5250	PASS
40		5180.008360	5150~5250	
30		5180.007930	5150~5250	
20		5180.007880	5150~5250	
10		5180.007740	5150~5250	
0		5180.008360	5150~5250	
-10		5180.008490	5150~5250	
-20		5180.009630	5150~5250	
20	108	5180.007520	5150~5250	PASS
	120	5180.007790	5150~5250	
	132	5180.008360	5150~5250	

CH Middle / Operating Frequency: 5200 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5200.008930	5150~5250	PASS
40		5200.009840	5150~5250	
30		5200.009460	5150~5250	
20		5200.007160	5150~5250	
10		5200.008330	5150~5250	
0		5200.008840	5150~5250	
-10		5200.008990	5150~5250	
-20		5200.009460	5150~5250	
20	108	5200.010250	5150~5250	PASS
	120	5200.009460	5150~5250	
	132	5200.008440	5150~5250	

CH High / Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5240.009690	5150~5250	PASS
40		5240.008410	5150~5250	
30		5240.008010	5150~5250	
20		5240.008330	5150~5250	
10		5240.008490	5150~5250	
0		5240.009320	5150~5250	
-10		5240.007820	5150~5250	
-20		5240.007690	5150~5250	
20	108	5240.008160	5150~5250	PASS
	120	5240.008830	5150~5250	
	132	5240.009450	5150~5250	

Test mode: IEEE 802.11a mode / 5725 ~ 5850 MHz

CH Low / Operating Frequency: 5745 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5745.007450	5725~5850	PASS
40		5745.008460	5725~5850	
30		5745.008130	5725~5850	
20		5745.009350	5725~5850	
10		5745.009950	5725~5850	
0		5745.008460	5725~5850	
-10		5745.010360	5725~5850	
-20		5745.009810	5725~5850	
20	108	5745.007820	5725~5850	PASS
	120	5745.009880	5725~5850	
	132	5745.009940	5725~5850	

CH Middle / Operating Frequency: 5785 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5785.008460	5725~5850	PASS
40		5785.008230	5725~5850	
30		5785.009360	5725~5850	
20		5785.009050	5725~5850	
10		5785.009450	5725~5850	
0		5785.008930	5725~5850	
-10		5785.009750	5725~5850	
-20		5785.009460	5725~5850	
20	108	5785.008840	5725~5850	PASS
	120	5785.009830	5725~5850	
	132	5785.009310	5725~5850	

CH High / Operating Frequency: 5825 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5825.008420	5725~5850	PASS
40		5825.009040	5725~5850	
30		5825.007900	5725~5850	
20		5825.010450	5725~5850	
10		5825.008460	5725~5850	
0		5825.008040	5725~5850	
-10		5825.007930	5725~5850	
-20		5825.007430	5725~5850	
20	108	5825.007730	5725~5850	PASS
	120	5825.008660	5725~5850	
	132	5825.009080	5725~5850	

IEEE 802.11n HT20 mode / 5150 ~ 5250 MHz

CH Low / Operating Frequency: 5180 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5180.007930	5150~5250	PASS
40		5180.008360	5150~5250	
30		5180.008490	5150~5250	
20		5180.009460	5150~5250	
10		5180.010460	5150~5250	
0		5180.009850	5150~5250	
-10		5180.009930	5150~5250	
-20		5180.009250	5150~5250	
20	108	5180.009360	5150~5250	PASS
	120	5180.009460	5150~5250	
	132	5180.009420	5150~5250	

CH Middle / Operating Frequency: 5200 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5200.008450	5150~5250	PASS
40		5200.007890	5150~5250	
30		5200.007920	5150~5250	
20		5200.007450	5150~5250	
10		5200.007190	5150~5250	
0		5200.007240	5150~5250	
-10		5200.007330	5150~5250	
-20		5200.007190	5150~5250	
20	108	5200.007820	5150~5250	PASS
	120	5200.007930	5150~5250	
	132	5200.007710	5150~5250	

CH High / Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5240.008460	5150~5250	PASS
40		5240.008860	5150~5250	
30		5240.009470	5150~5250	
20		5240.008150	5150~5250	
10		5240.007710	5150~5250	
0		5240.007190	5150~5250	
-10		5240.007820	5150~5250	
-20		5240.009300	5150~5250	
20	108	5240.007360	5150~5250	PASS
	120	5240.008450	5150~5250	
	132	5240.008850	5150~5250	

IEEE 802.11n HT20 mode / 5725 ~ 5850 MHz

CH Low / Operating Frequency: 5745 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5745.008460	5725~5850	PASS
40		5745.008830	5725~5850	
30		5745.008300	5725~5850	
20		5745.008360	5725~5850	
10		5745.009050	5725~5850	
0		5745.009250	5725~5850	
-10		5745.009980	5725~5850	
-20		5745.009910	5725~5850	
20	108	5745.008130	5725~5850	PASS
	120	5745.008790	5725~5850	
	132	5745.009010	5725~5850	

CH Middle / Operating Frequency: 5785 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5785.007930	5725~5850	PASS
40		5785.008840	5725~5850	
30		5785.009310	5725~5850	
20		5785.008460	5725~5850	
10		5785.008160	5725~5850	
0		5785.008690	5725~5850	
-10		5785.007460	5725~5850	
-20		5785.009250	5725~5850	
20	108	5785.009820	5725~5850	PASS
	120	5785.009150	5725~5850	
	132	5785.010030	5725~5850	

CH High / Operating Frequency: 5825 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5825.007320	5725~5850	PASS
40		5825.008790	5725~5850	
30		5825.008830	5725~5850	
20		5825.009360	5725~5850	
10		5825.009480	5725~5850	
0		5825.009180	5725~5850	
-10		5825.008490	5725~5850	
-20		5825.008530	5725~5850	
20	108	5825.008460	5725~5850	PASS
	120	5825.008490	5725~5850	
	132	5825.008440	5725~5850	

IEEE 802.11n HT40 mode / 5150 ~ 5250 MHz

CH Low / Operating Frequency: 5190 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5190.009360	5150~5250	PASS
40		5190.009540	5150~5250	
30		5190.008440	5150~5250	
20		5190.008480	5150~5250	
10		5190.009340	5150~5250	
0		5190.010250	5150~5250	
-10		5190.010490	5150~5250	
-20		5190.011060	5150~5250	
20	108	5190.009350	5150~5250	PASS
	120	5190.008940	5150~5250	
	132	5190.009850	5150~5250	

CH High / Operating Frequency: 5230 MHz				
Environment Temperature (°C)	**Voltage (V)**	**Measured Frequency (MHz)**	**Limit Range**	**Test Result**
50	120	5230.009460	5150~5250	PASS
40		5230.009770	5150~5250	
30		5230.009810	5150~5250	
20		5230.010470	5150~5250	
10		5230.008460	5150~5250	
0		5230.008580	5150~5250	
-10		5230.008870	5150~5250	
-20		5230.007490	5150~5250	
20	108	5230.008440	5150~5250	PASS
	120	5230.009010	5150~5250	
	132	5230.009740	5150~5250	

IEEE 802.11n HT40 mode / 5725 ~ 5850 MHz

CH Low / Operating Frequency: 5755 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5755.007930	5725~5850	PASS
40		5755.008490	5725~5850	
30		5755.009350	5725~5850	
20		5755.008420	5725~5850	
10		5755.007910	5725~5850	
0		5755.007360	5725~5850	
-10		5755.008460	5725~5850	
-20		5755.007950	5725~5850	
20	108	5755.007810	5725~5850	PASS
	120	5755.007220	5725~5850	
	132	5755.008390	5725~5850	

CH High / Operating Frequency: 5795 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5795.008640	5725~5850	PASS
40		5795.009050	5725~5850	
30		5795.008770	5725~5850	
20		5795.008460	5725~5850	
10		5795.008830	5725~5850	
0		5795.009450	5725~5850	
-10		5795.009010	5725~5850	
-20		5795.008910	5725~5850	
20	108	5795.008840	5725~5850	PASS
	120	5795.008970	5725~5850	
	132	5795.009010	5725~5850	

IEEE 802.11ac VHT80 mode / 5150 ~ 5250 MHz

CH Middle / Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5210.007210	5150~5250	PASS
40		5210.007930	5150~5250	
30		5210.008440	5150~5250	
20		5210.009040	5150~5250	
10		5210.009770	5150~5250	
0		5210.009460	5150~5250	
-10		5210.008450	5150~5250	
-20		5210.008860	5150~5250	
20	108	5210.009360	5150~5250	PASS
	120	5210.009980	5150~5250	
	132	5210.010440	5150~5250	

IEEE 802.11ac VHT80 mode / 5725 ~ 5850 MHz

CH Middle / Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	120	5775.007630	5725~5850	PASS
40		5775.009540	5725~5850	
30		5775.007250	5725~5850	
20		5775.008460	5725~5850	
10		5775.010240	5725~5850	
0		5775.010490	5725~5850	
-10		5775.010560	5725~5850	
-20		5775.009140	5725~5850	
20	108	5775.008490	5725~5850	PASS
	120	5775.008750	5725~5850	
	132	5775.009120	5725~5850	