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

For

Simultaneous Dual-Band Wireless N750 Media Router

Model: NBG5615

Data Applies To：EMG2626-R10A, Keenetic Ultra

Brand Name : ZyXEL

Issued for

ZyXEL Communications Corporation

No.6 Innovation Rd. II , Science-Based Industrial Park , Hsin-Chu , Taiwan

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
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Issued Date: January 12, 2013

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	January 12, 2013	Initial Issue	ALL	Sunny Chang

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TITLE PAGE NO.

1. TEST REPORT CERTIFICATION

Applicant ：ZyXEL Communications Corporation

Address ：No.6 Innovation Rd. II , Science-Based Industrial Park , Hsin-Chu , Taiwan

Equipment Under Test ：Simultaneous Dual-Band Wireless N750 Media Router

Model Number ：NBG5615

Data Applies To ：EMG2626-R10A, Keenetic Ultra

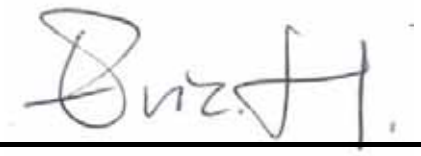
Brand Name ：ZyXEL

Date of Test ：December 17, 2012 ~ December 28, 2012

APPLICABLE STANDARD	
Standard	**Test Result**
FCC Part 15 Subpart C AND ANSI C63.4:2003	PASS

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

Approved by: ***Reviewed by:***



Jeter Wu
Assistant Manager

Eric Huang
Assistant Section Manager

2. EUT DESCRIPTION

Product Name	Simultaneous Dual-Band Wireless N750 Media Router
Model Number	NBG5615
Data Applies To	EMG2626-R10A, Keenetic Ultra
Brand Name	ZyXEL
Identify Number	T121212N91
Received Date	December 12, 2012
Operation Frequency	IEEE 802.11b/g, 802.11n HT20 : 2412MHz~2462MHz IEEE 802.11n HT40 : 2422MHz~2452MHz IEEE 802.11a, IEEE 802.11n HT20 : 5745MHz~5825MHz IEEE 802.11n HT40 : 5745MHz~5825MHz
Transmit Power	IEEE 802.11b (2.4G) : 19.30 dBm IEEE 802.11g (2.4G) : 23.45 dBm IEEE 802.11n HT20 (2.4G) : 23.96 dBm IEEE 802.11n HT40 (2.4G) : 20.42 dBm IEEE 802.11a (5G) : 23.13 dBm IEEE 802.11n HT20 (5G) : 24.72 dBm IEEE 802.11n HT40 (5G) : 24.59 dBm
Channel Spacing	IEEE 802.11b/g, 802.11n HT20/HT40 (2.4G) : 5MHz IEEE 802.11a, 802.11n HT20 (5G) : 20MHz IEEE 802.11n HT40 (5G) : 20MHz
Channel Number	IEEE 802.11b/g, 802.11n HT20 (2.4G) : 11 Channels IEEE 802.11n HT40 (2.4G) : 7 Channels IEEE 802.11a, 802.11n HT20 (5G) : 5 Channels IEEE 802.11n HT40 (5G) : 5 Channels
Transmit Data Rate	IEEE 802.11b (2.4G) : 11, 5.5, 2, 1 Mbps IEEE 802.11g (2.4G) : 54, 48 ,36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 (2.4G) : 130 , 117 , 104 , 78 , 65 , 58.5 , 52 , 39 , 26 , 19.5 , 13 , 6.5 Mbps IEEE 802.11n HT40 (2.4G) : 300 , 270 , 243 , 216 , 162 , 150 , 135 , 121.5 , 108 , 81 , 54 , 40.5 , 27 , 13.5 Mbps IEEE 802.11a (5G) : 54, 48 ,36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 (5G) : 195 , 175.5 , 156 , 130 , 117 , 104 , 78 , 65 , 58.5 , 52 , 39 , 26 , 19.5 , 13 , 6.5 Mbps IEEE 802.11n HT40 (5G) : 450 , 405 , 364.5 , 324 , 300 , 270 , 243 , 216 , 162 , 150 , 135 , 121.5 , 108 , 81 , 54 , 40.5 , 27 , 13.5 Mbps

Type of Modulation	IEEE 802.11b (2.4G) : DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g (2.4G) : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40 (2.4G) : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a (5G) : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40 (5G) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	**2.4GHz Antenna (2T2R)** Manufacture: WIESON TECHNOLOGIES CO., LTD. Type: Dipole antenna **Antenna 1:** Model: GY121HT467-009 Gain: 2.4G: 3dBi **Antenna 2:** Model: GY121HT467-010 Gain: 2.4G: 3dBi **5GHz Antenna (3T3R)** Manufacture: WIESON TECHNOLOGIES CO., LTD. Type: Dipole antenna **Antenna 1:** Model: GY121HT467-009 Gain: 5G: 4dBi **Antenna 2: (2pcs)** Model: GY121HT467-010 Gain: 5G: 4dBi
Power Rating	12Vdc; 2A(Powered from Adapter)
Test Voltage	120Vac, 60Hz

Power Adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	Powertron	PA1024-2I	100-240Vac, 50/60Hz, 0.6A	12Vdc, 2.0A

Remark :

1. *Client consigns only one model sample to test (Model Number: NBG5615).*
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: **I88NBG5615** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*
5. *The listed models(EMG2626-R10A, Keenetic Ultra)are all the same of the original model(NBG5615), design, except for different models name and is just for the marketing purpose.*

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 802.11b, 802.11g, 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode : 1Mbps data rate (worst case) were chosen for full testing.

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

IEEE 802.11n HT20 mode : 13Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n HT40 mode : 27Mbps data rate (worst case) were chosen for full testing.

While all conducted test the spectrum / power meter was connected to the Booster RF-out for 2.4GHz and the chain 1 of WiFi module for 5GHz.

IEEE 802.11a, 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5745
Middle	5785
High	5825

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

IEEE 802.11n HT20 mode : 19.5Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5745
Middle	5785
High	5825

IEEE 802.11n HT40 mode : 40.5Mbps data rate (worst case) were chosen for full testing.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47, 15.207, 15.209 and 15.247.

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

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

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	BenQ	Joybook R22E	DOC	Power cable, unshd, 1.6m

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

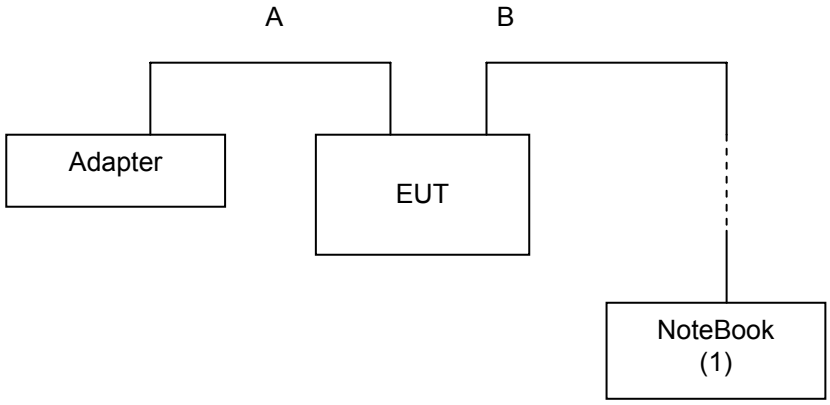
For EMI test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1	Printer	HP	C2164A	DOC	Printer cable, unshd, 1.6m
2	Notebook	Acer	AS 3830TG	DOC	Power cable, unshd, 1.6m
3	Notebook	TOSHIBA	Satellite L730	DOC	Power cable, unshd, 1.6m
4	HUB	BARRICAD	SMC7008BR	DOC	Power cable, unshd, 1.6m
5	Printer	HP	LASERJET-1320	CNBJJ70438	Printer cable, unshd, 1.6m

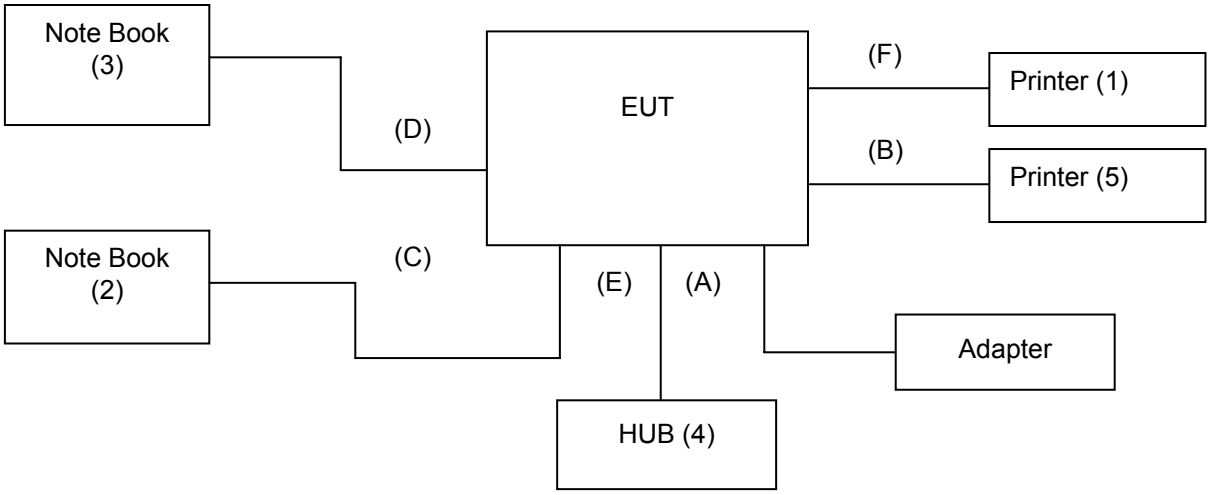
No.	Signal cable description	
A	Power	Unshielded, 1.4m, 1pcs.
B	USB	Shielded, 1.8m, 1pcs.
C	LAN	Unshielded, 10m, 1pcs.
D	LAN	Unshielded, 10m, 1pcs.
E	LAN	Unshielded, 2.0m, 3pcs.
F	USB	Shielded, 1.8m, 1pcs.

SETUP DIAGRAM FOR TESTS

For RF test



For EMI test



EUT OPERATING CONDITION

Follow the steps:

1. PC IP :192.168.1.99
2. Run “MultiBootSrv_AMIT_P5.exe”
3. Use “ROM-D Configuration File” in “MultiBootSrv_AMIT_P5”
4. Choose file “Zyxel.log”
5. Use “Enable Engineer Debug Flag” in “MultiBootSrv_AMIT_P5”
6. Press "Start" button
7. EUT power ON
8. Telnet 192.168.1.1
   User:root
   Passwd:1234
9. Command for 5G RF test:
   ated -i rai0
   Command for 2.4G RF test:
   ated -i ra0
10. For 5G RF test:
    Run “RT3593 V1.0.2.4 AP QA Tools” in PC
    For 2.4G RF test:
    Run “RT5x9x V1.0.7.4 AP QA Tools” in PC

RF Setup (2.4G)

1. Set up all computers like the setup diagram.
2. The “Ralink QA Test Program for “RT5x9xQA V1.0.7.4” software was used for testing The EUT driver software installed in the host support equipment during testing was Ralink QA Test Program for “RT5x9xQA V1.0.7.4” Drive

TX Mode:

⇨ **Tx Mode:CCK 、OFDM、 HT MixMode** (Bandwidth: 20、40)

⇨ **Tx Data Rate: 1Mbps long** (IEEE 802.11b mode ,chain 0 TX)

6Mbps (IEEE 802.11g mode ,chain 0 TX)

13Mbps (IEEE 802.11n HT20 mode ,chain 0, chain 1 TX)

27Mbps (IEEE 802.11n HT40 mode, chain 0, chain 1 TX)

Power control mode

Target Power: IEEE 802.11b Channel Low (2412MHz) =0F **(Chain 0)**
IEEE 802.11b Channel Middle (2437MHz) =12 **(Chain 0)**
IEEE 802.11b Channel High (2462MHz) = 14 **(Chain 0)**

Target Power: IEEE 802.11g Channel Low (2412MHz) = 0B **(Chain 0)**
IEEE 802.11g Channel Middle (2437MHz) = 0F **(Chain 0)**
IEEE 802.11g Channel High (2462MHz) = 0F **(Chain 0)**

Target Power: IEEE 802.11n HT20 Channel Low (2412MHz) = 08 **(Chain 0)**
IEEE 802.11 n HT20 Channel Middle (2437MHz) =09 **(Chain 0)**
IEEE 802.11 n HT20 Channel High (2462MHz) = 0A **(Chain 0)**
IEEE 802.11n HT20 Channel Low (2412MHz) = 11 **(Chain 1)**
IEEE 802.11 n HT20 Channel Middle (2437MHz) = 12 **(Chain 1)**
IEEE 802.11 n HT20 Channel High (2462MHz) = 14 **(Chain 1)**

Target Power: IEEE 802.11n HT40 Channel Low (2422MHz) = 01 **(Chain 0)**
IEEE 802.11 n HT40 Channel Middle (2437MHz) = 02 **(Chain 0)**
IEEE 802.11 n HT40 Channel High (2452MHz) = 02 **(Chain 0)**
IEEE 802.11n HT40 Channel Low (2422MHz) = 0A **(Chain 1)**
IEEE 802.11 n HT40 Channel Middle (2437MHz) = 0B**(Chain 1)**
IEEE 802.11 n HT40 Channel High (2452MHz) = 0C **(Chain 1)**

RX Mode：

Start RX

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

Normal Link Setup

1. Set up all computers like the setup diagram.
2. All of the function are under run.
3. Notebook PC (2) ping 192.168.0.10 –t to Notebook PC (1).
4. Notebook PC (1) ping 192.168.0.20 –t to Notebook PC (2).
5. Notebook PC (1) ping 192.168.0.50 –t to Wireless Access Point (3).

Start test.

RF Setup (5G)

1. Set up all computers like the setup diagram.
2. The “Ralink QA Test Program for “RT3593 QA_1.0.2.4” software was used for testing The EUT driver software installed in the host support equipment during testing was Ralink QA Test Program for “RT3593 QA_1.0.2.4” Drive

TX Mode:

⇨ **Tx Mode: OFDM、 HT MixMode** (Bandwidth: 20、40)

⇨ **Tx Data Rate: 6Mbps** (IEEE 802.11a mode ,chain 0 TX)
19.5Mbps (IEEE 802.11n HT20 mode ,chain 0, chain 1, chain 2 TX)
40.5Mbps (IEEE 802.11n HT40 mode, chain 0, chain 1, chain 2 TX)

Power control mode

Target Power:

IEEE 802.11a Higher Sub-Band Channel Low (5745MHz) = 13 **(Chain 0)**
IEEE 802.11a Higher Sub-Band Channel Middle (5785MHz) = 13 **(Chain 0)**
IEEE 802.11a Higher Sub-Band Channel High (5825MHz) = 14 **(Chain 0)**

Target Power:

IEEE 802.11n HT20 Higher Sub-Band Channel Low (5745MHz) = 0D **(Chain 0)**
IEEE 802.11 n HT20 Higher Sub-Band Channel Middle (5785MHz) = 0E **(Chain 0)**
IEEE 802.11n HT20 Higher Sub-Band Channel High (5825MHz) = 0F **(Chain 0)**
IEEE 802.11n HT20 Higher Sub-Band Channel Low (5745MHz) = 0C **(Chain 1)**
IEEE 802.11 n HT20 Higher Sub-Band Channel Middle (5785MHz) = 0E **(Chain 1)**
IEEE 802.11n HT20 Higher Sub-Band Channel High (5825MHz) = 0F **(Chain 1)**
IEEE 802.11n HT20 Higher Sub-Band Channel Low (5745MHz) = 00 **(Chain 2)**
IEEE 802.11 n HT20 Higher Sub-Band Channel Middle (5785MHz) = 00 **(Chain 2)**
IEEE 802.11n HT20 Higher Sub-Band Channel High (5825MHz) = 00 **(Chain 2)**

Target Power:

IEEE 802.11n HT40 Higher Sub-Band Channel Low (5745MHz) = 0D **(Chain 0)**
IEEE 802.11 n HT40 Higher Sub-Band Channel Middle (5785MHz) = 0E **(Chain 0)**
IEEE 802.11n HT40 Higher Sub-Band Channel High (5825MHz) = 0F **(Chain 0)**
IEEE 802.11n HT40 Higher Sub-Band Channel Low (5745MHz) = 0C **(Chain 1)**
IEEE 802.11 n HT40 Higher Sub-Band Channel Middle (5785MHz) = 0E **(Chain 1)**
IEEE 802.11n HT40 Higher Sub-Band Channel High (5825MHz) = 0F **(Chain 1)**
IEEE 802.11n HT40 Higher Sub-Band Channel Low (5745MHz) = 00 **(Chain 2)**
IEEE 802.11 n HT40 Higher Sub-Band Channel Middle (5785MHz) = 00 **(Chain 2)**
IEEE 802.11n HT40 Higher Sub-Band Channel High (5825MHz) = 00 **(Chain 2)**

RX Mode：

MAC Address: FFFFFFFFFFFF

Start RX

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

Normal Link Setup

1. Set up all computers like the setup diagram.
2. All of the function are under run.
3. Notebook PC (2) ping 192.168.0.10 –t to Notebook PC (1).
4. Notebook PC (1) ping 192.168.0.20 –t to Notebook PC (2).
5. Notebook PC (1) ping 192.168.0.50 –t to Wireless Access Point (3).

Start test.

7. FCC PART 15.247 REQUIREMENTS

7.1 6dB BANDWIDTH

LIMITS

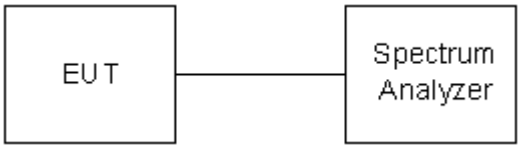
§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200789	SEP. 29, 2013

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

TEST SETUP



TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 1-5 % of the emission bandwidth (EBW).
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Compare the resultant bandwidth with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is 1-5 %.

TEST RESULTS

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	12.12	500	PASS
Middle	2437	12.12	500	PASS
High	2462	12.12	500	PASS

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	16.41	500	PASS
Middle	2437	16.41	500	PASS
High	2462	16.41	500	PASS

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain1		
Low	2412	17.56	17.63	500	PASS
Middle	2437	17.56	17.66	500	PASS
High	2462	17.63	17.63	500	PASS

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain1		
Low	2422	36.28	36.28	500	PASS
Middle	2437	36.15	36.22	500	PASS
High	2452	36.11	36.15	500	PASS

IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	5745	16.54	500	PASS
Middle	5785	16.41	500	PASS
High	5825	16.54	500	PASS

IEEE 802.11n HT20 Mode

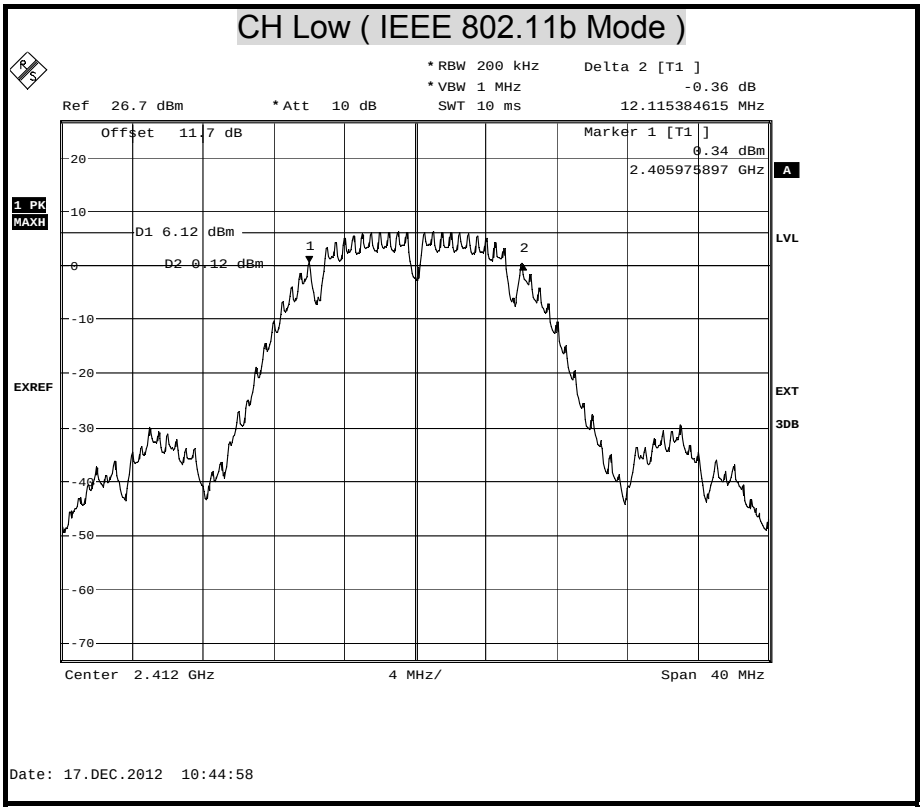
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain1	Chain2		
Low	5745	17.56	17.63	17.69	500	PASS
Middle	5785	17.56	17.69	17.69	500	PASS
High	5825	17.63	17.69	17.69	500	PASS

IEEE 802.11n HT40 Mode

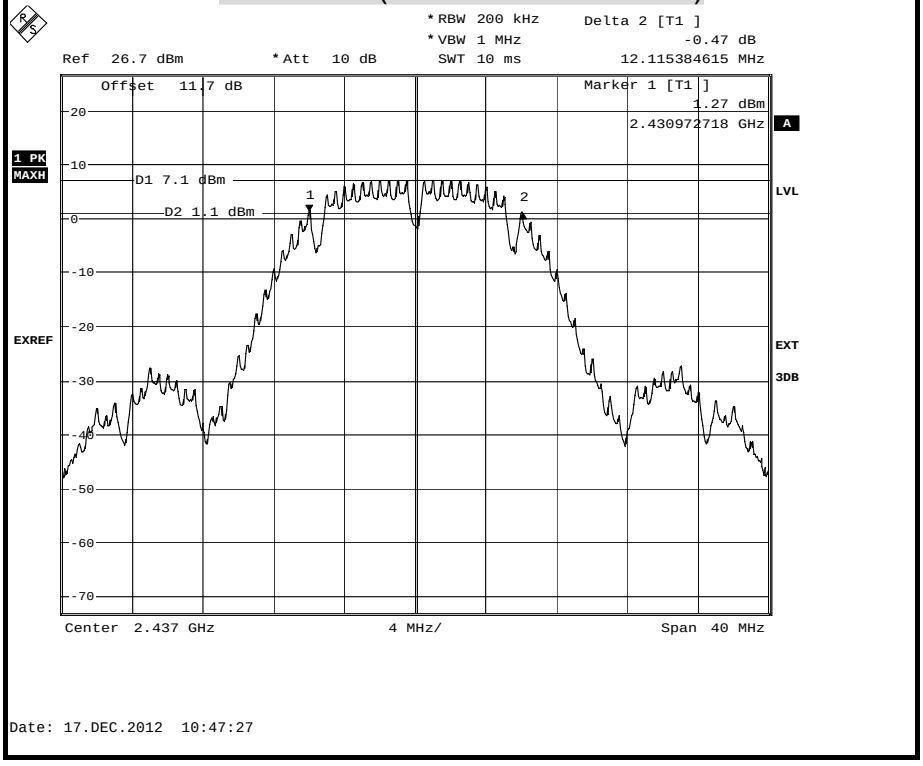
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain1	Chain2		
Low	5745	36.03	35.96	36.03	500	PASS
Middle	5785	36.03	35.90	36.03	500	PASS
High	5825	36.28	35.90	36.03	500	PASS

6dB BANDWIDTH (2.4G)

CH Low (IEEE 802.11b Mode)



CH Middle (IEEE 802.11b Mode)



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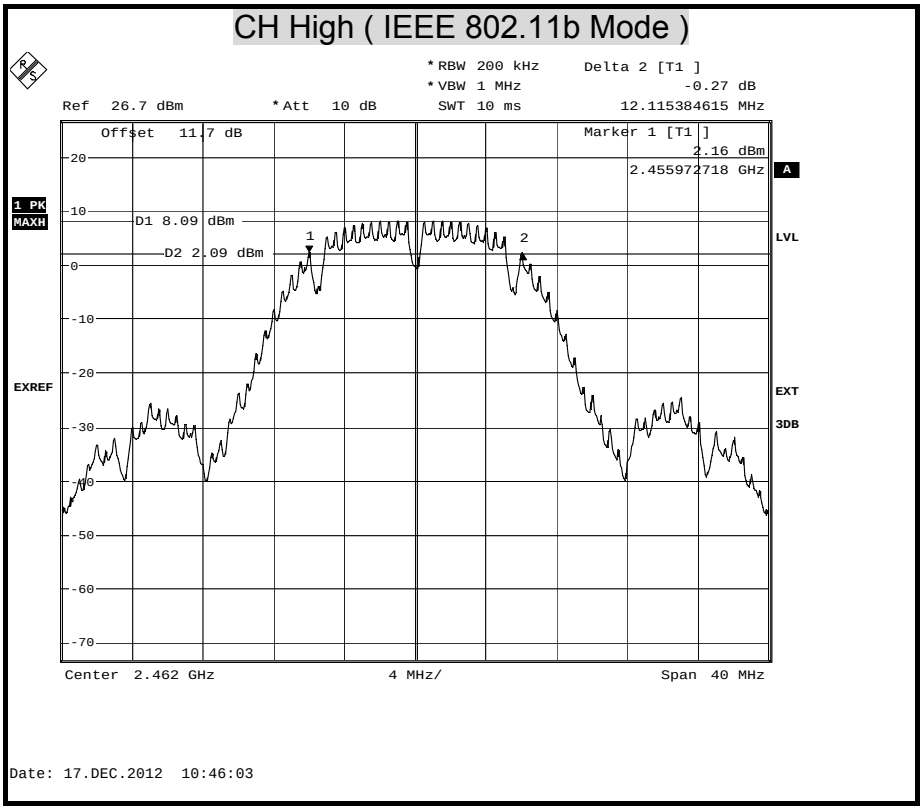

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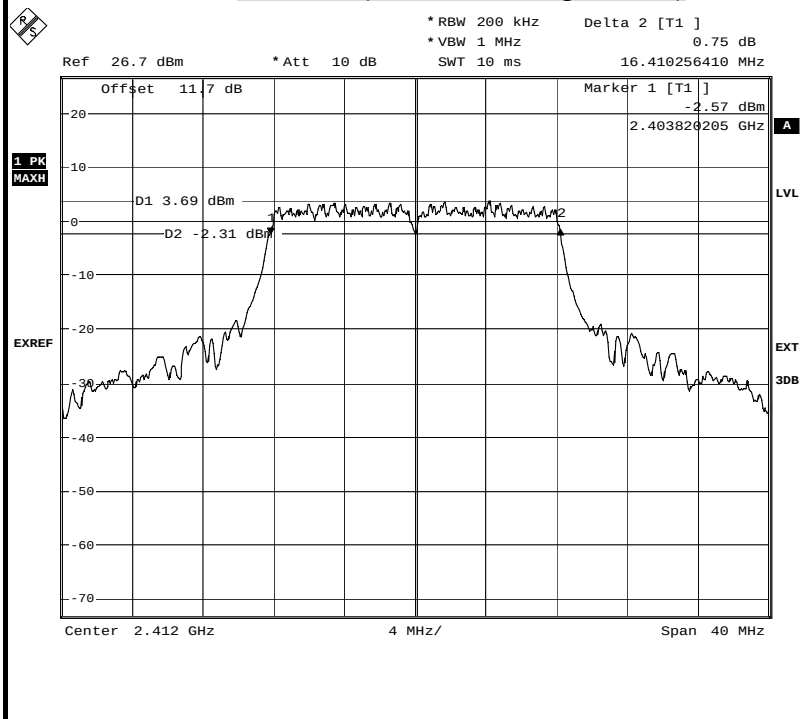

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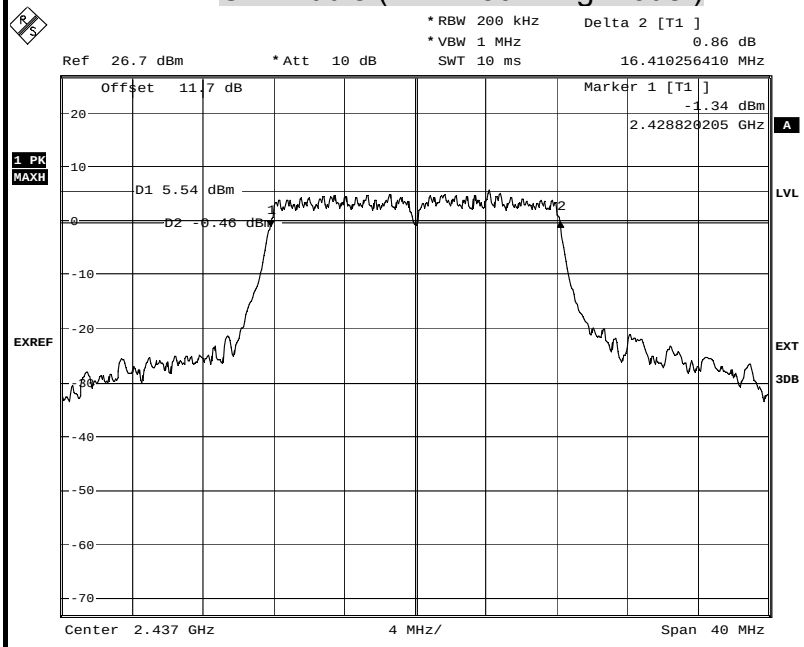
CH Middle (IEEE 802.11g Mode)



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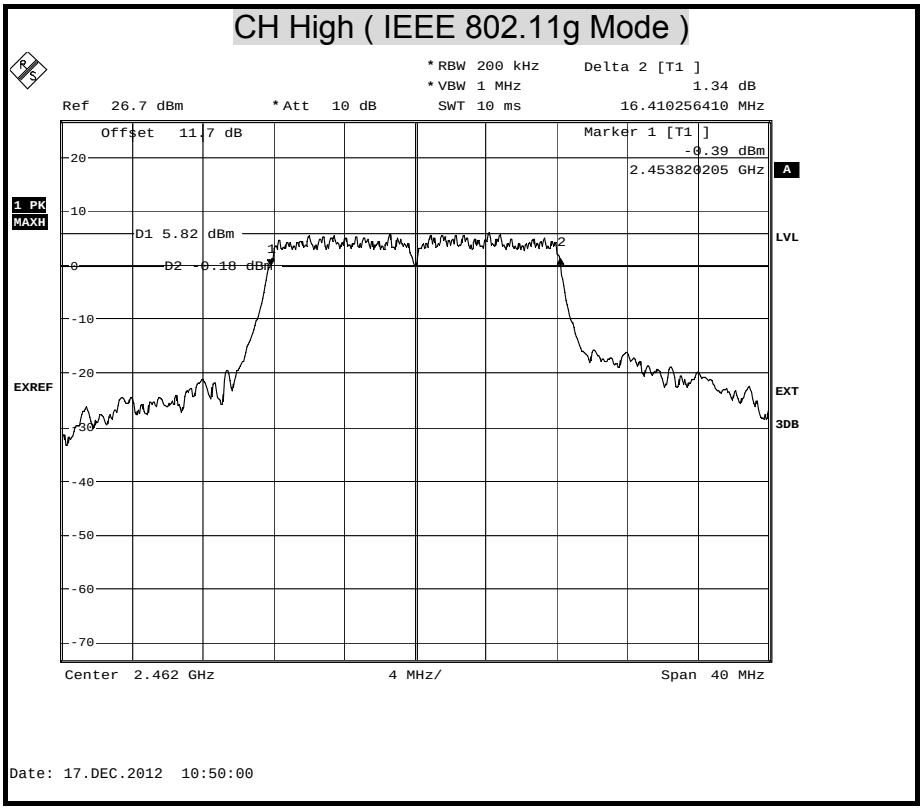
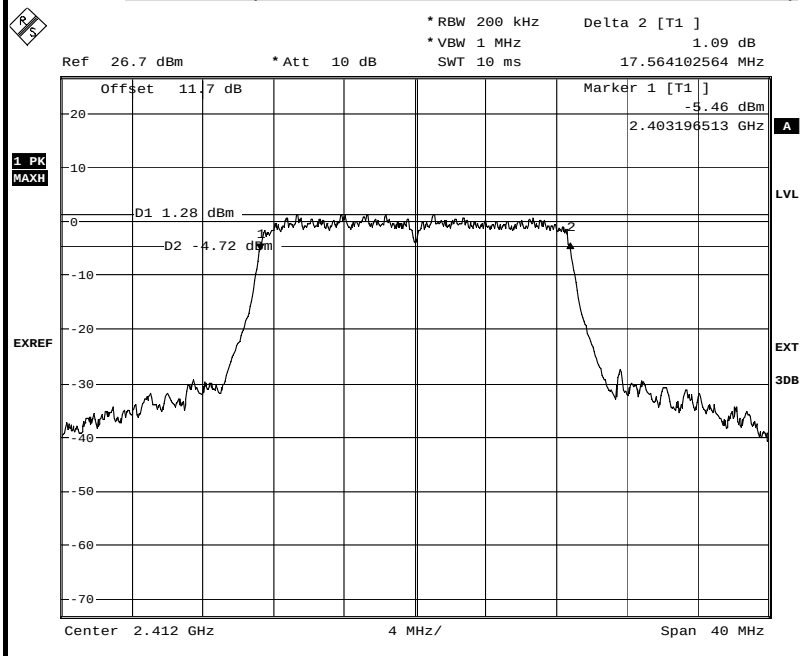
CH High (IEEE 802.11g Mode)



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



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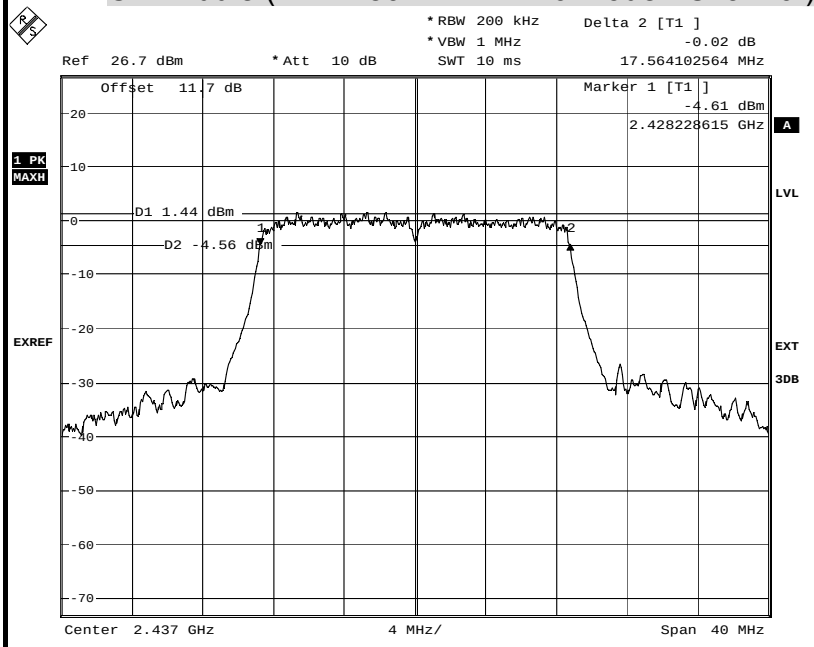

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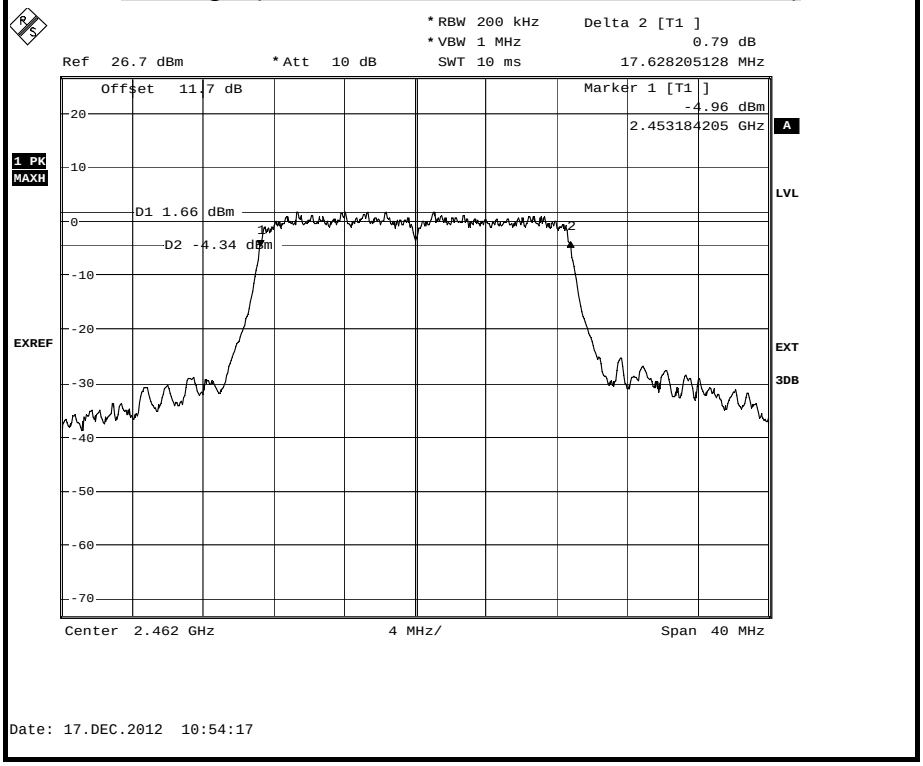
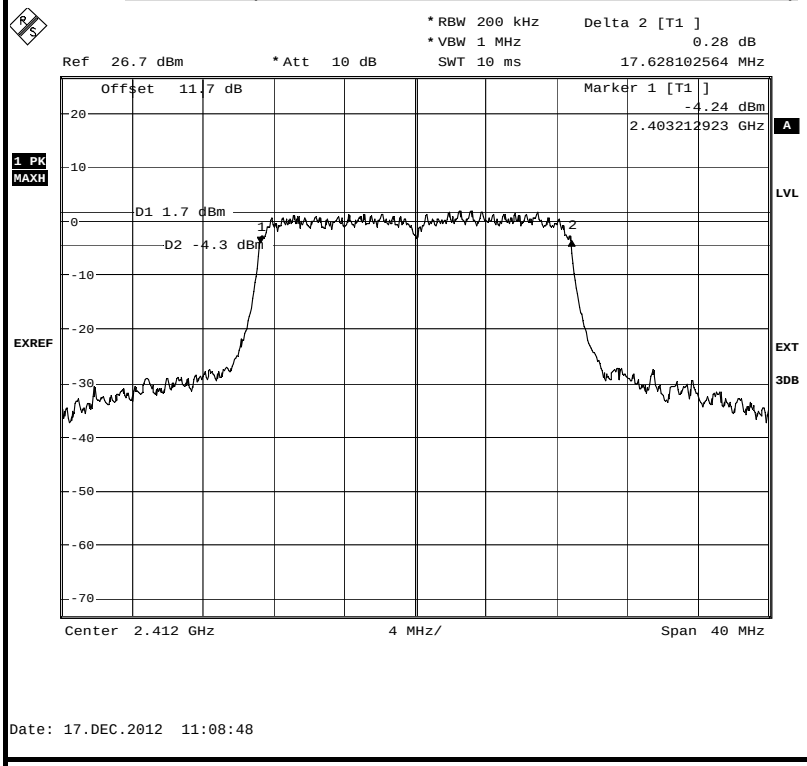
CH High (IEEE 802.11n HT20 Mode / Chain 0)



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



Date: 17.DEC.2012 11:08:48

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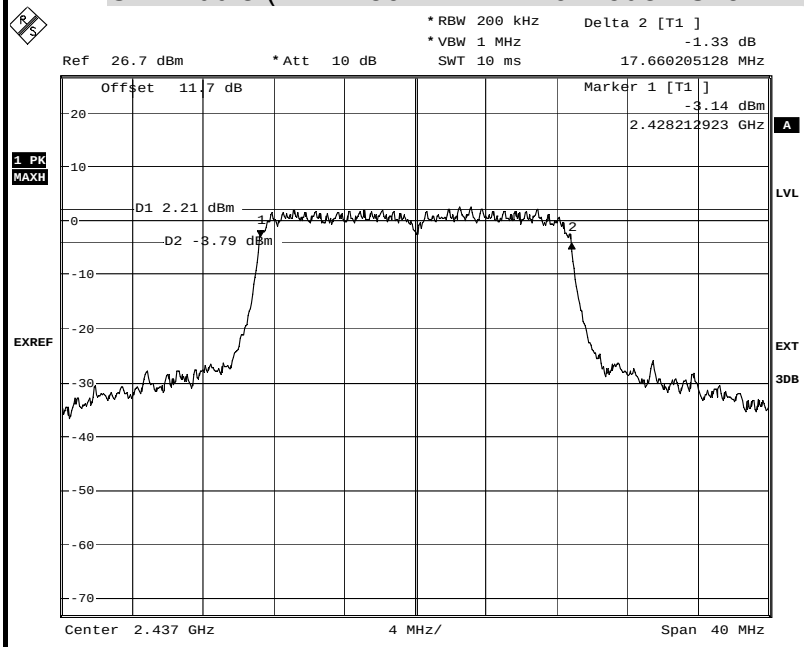

Date: 17.DEC.2012 11:09:52

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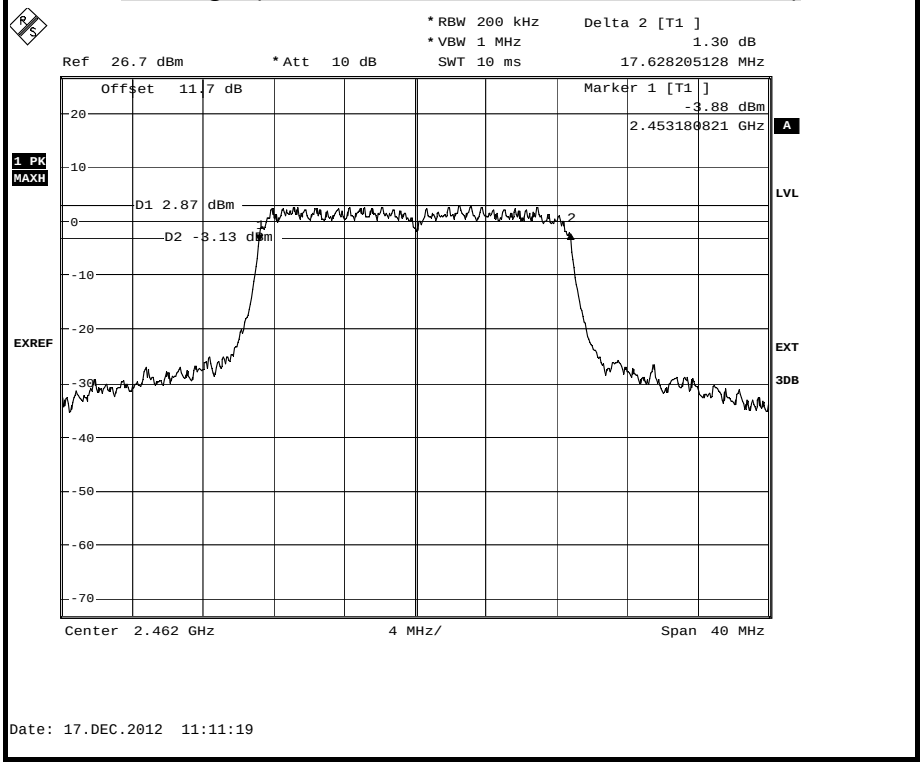
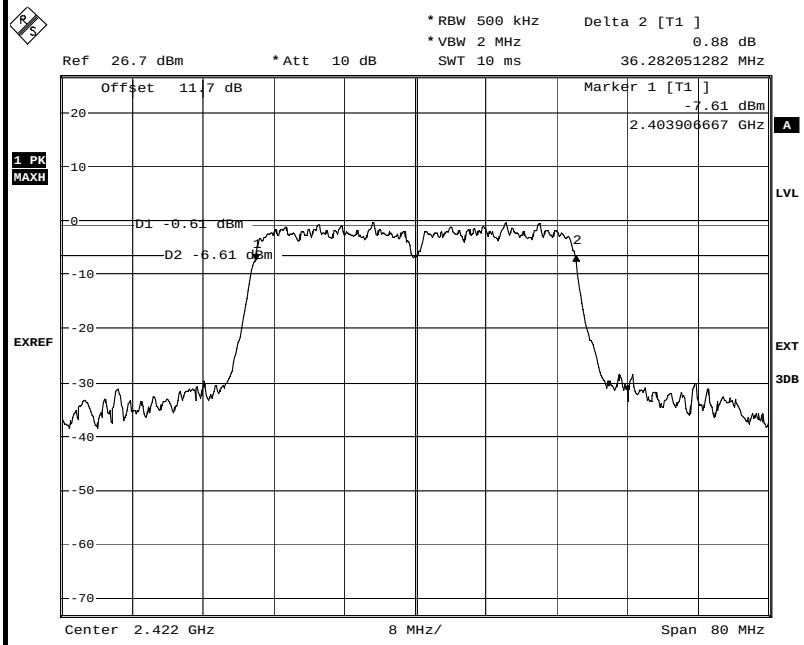


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



Date: 17.DEC.2012 10:57:42

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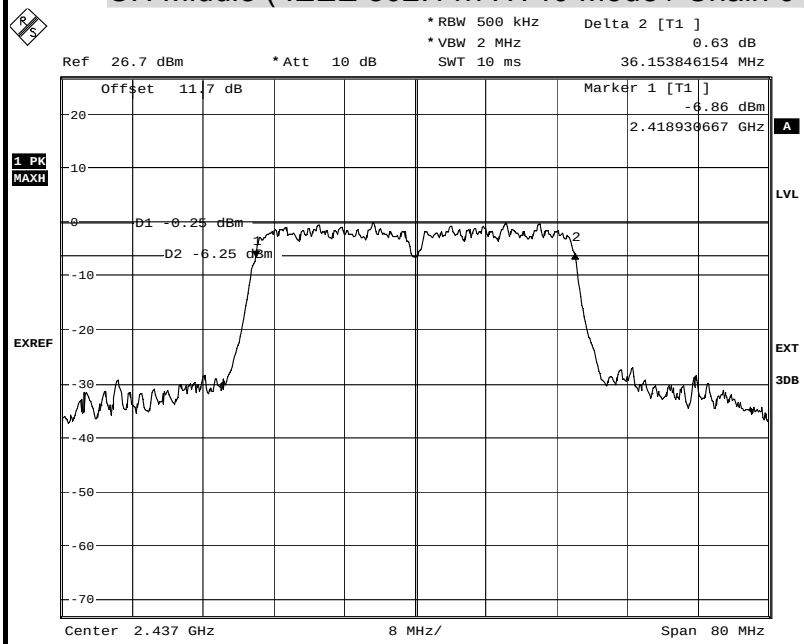

Date: 17.DEC.2012 11:00:10

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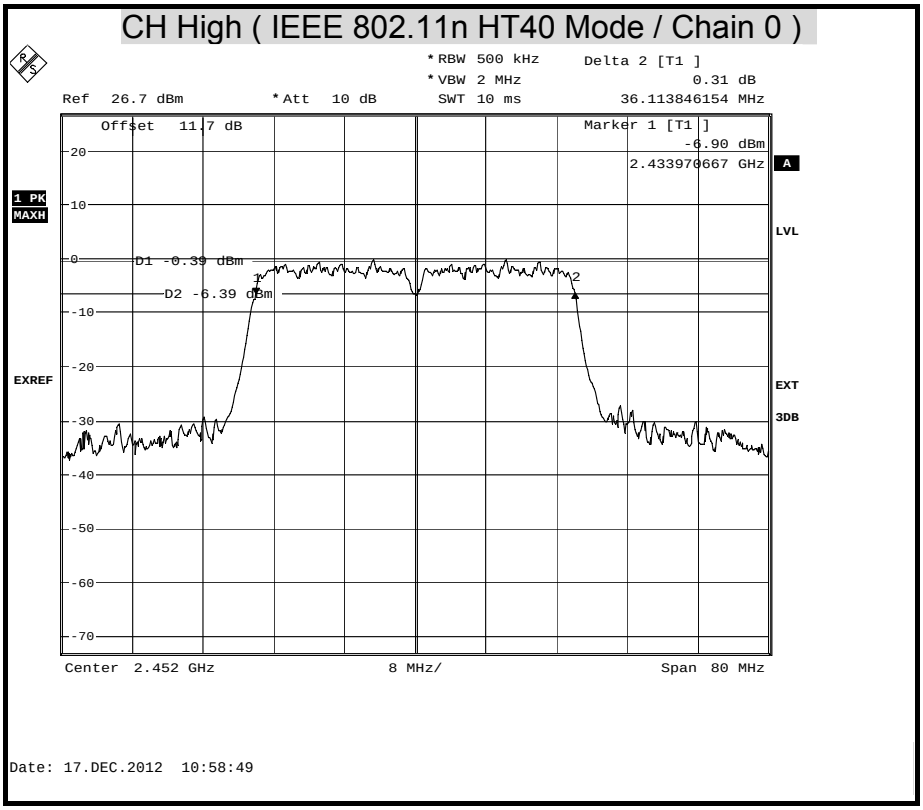
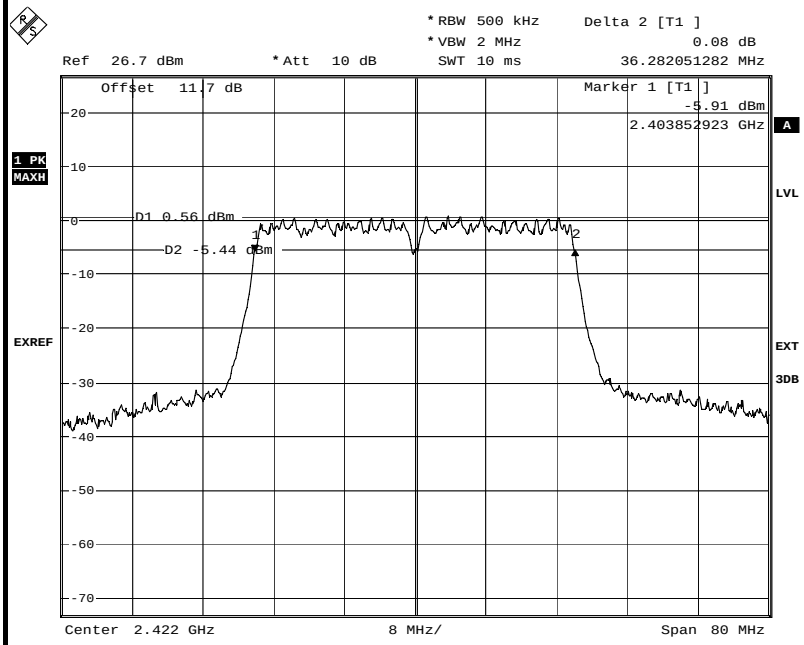


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



Date: 17.DEC.2012 11:02:28

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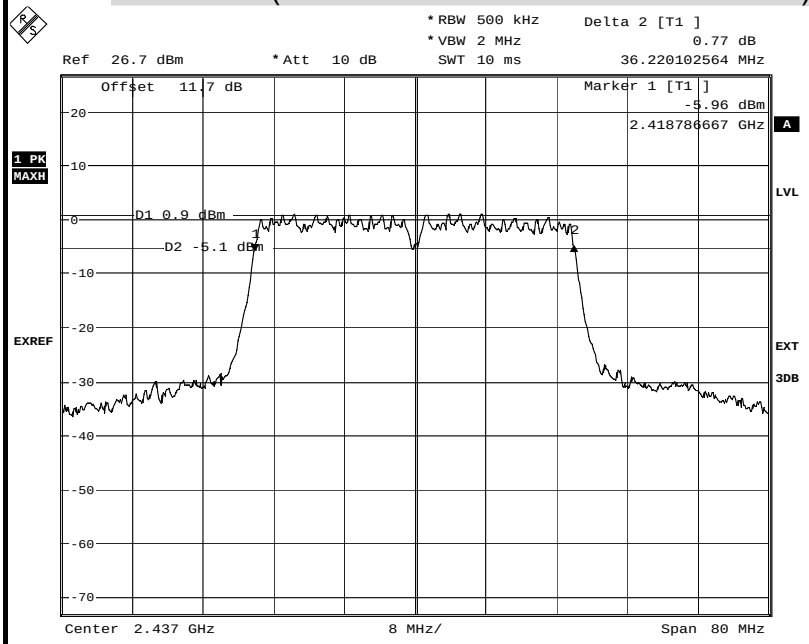

Date: 17.DEC.2012 11:05:13

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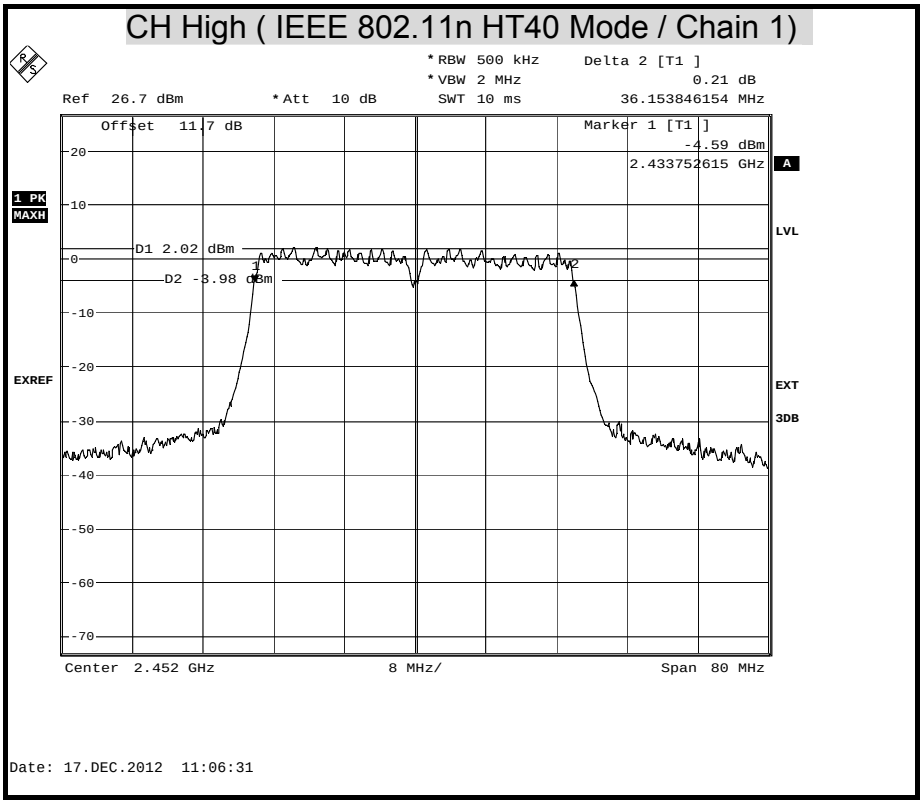
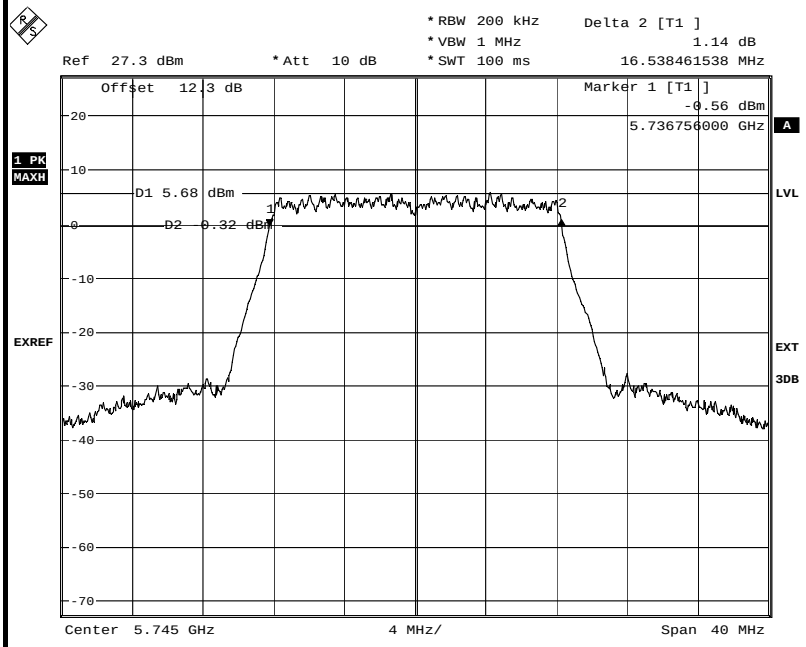


6dB BANDWIDTH (5G)

CH Low (IEEE 802.11a Mode)



Date: 19.DEC.2012 20:10:27

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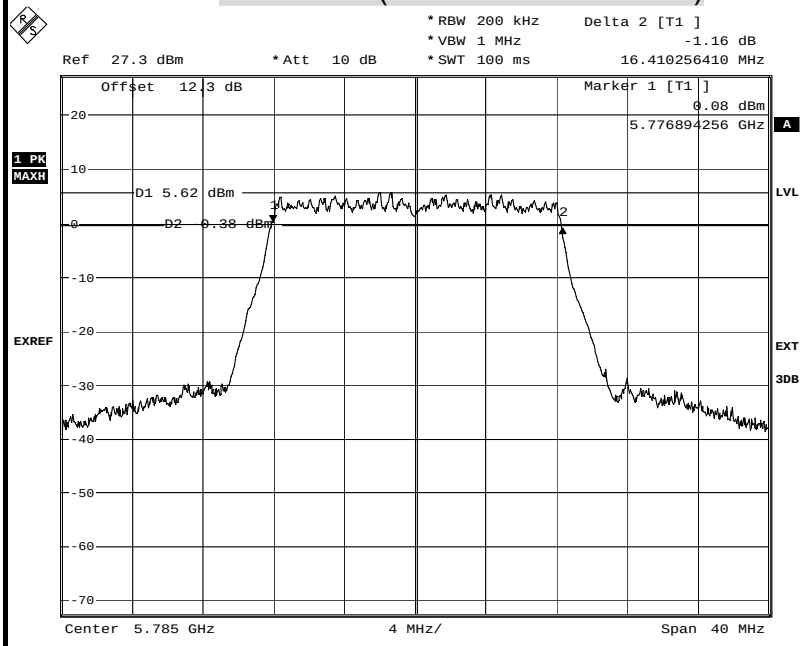

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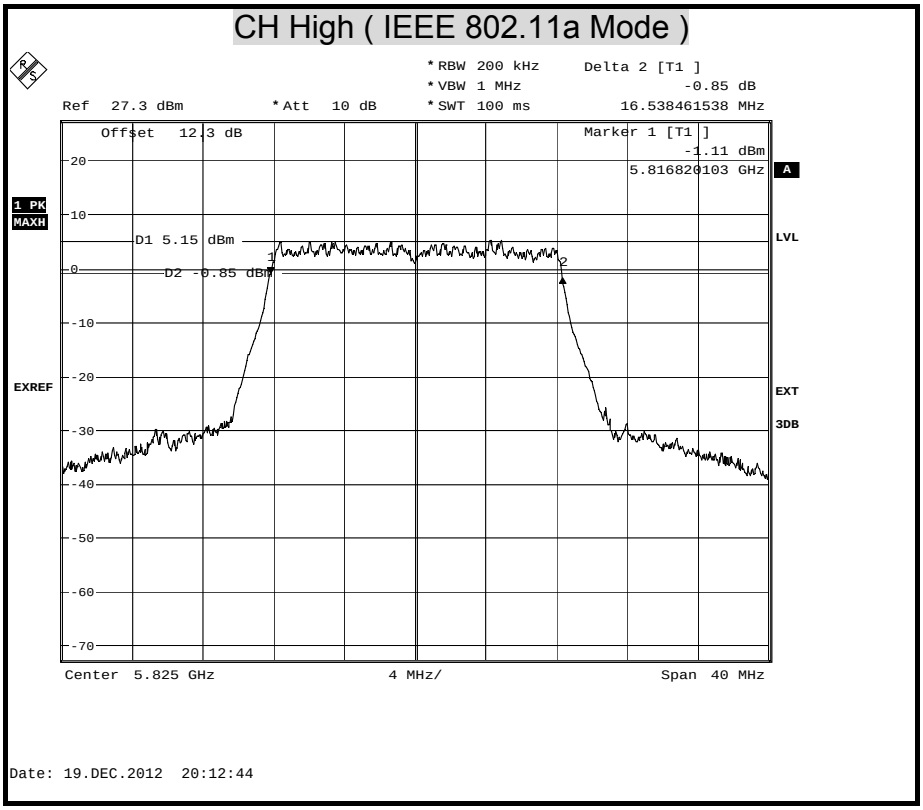

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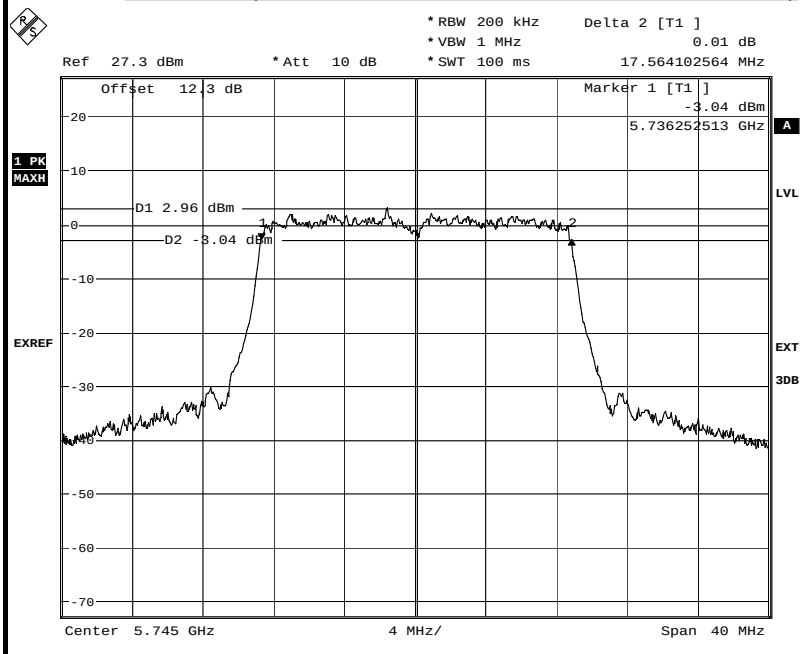

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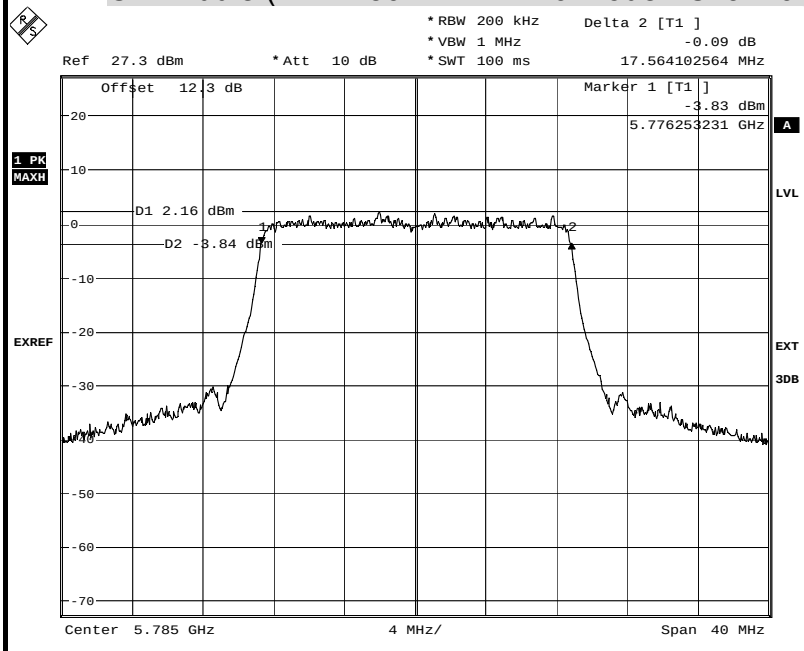

Date: 19.DEC.2012 20:07:41

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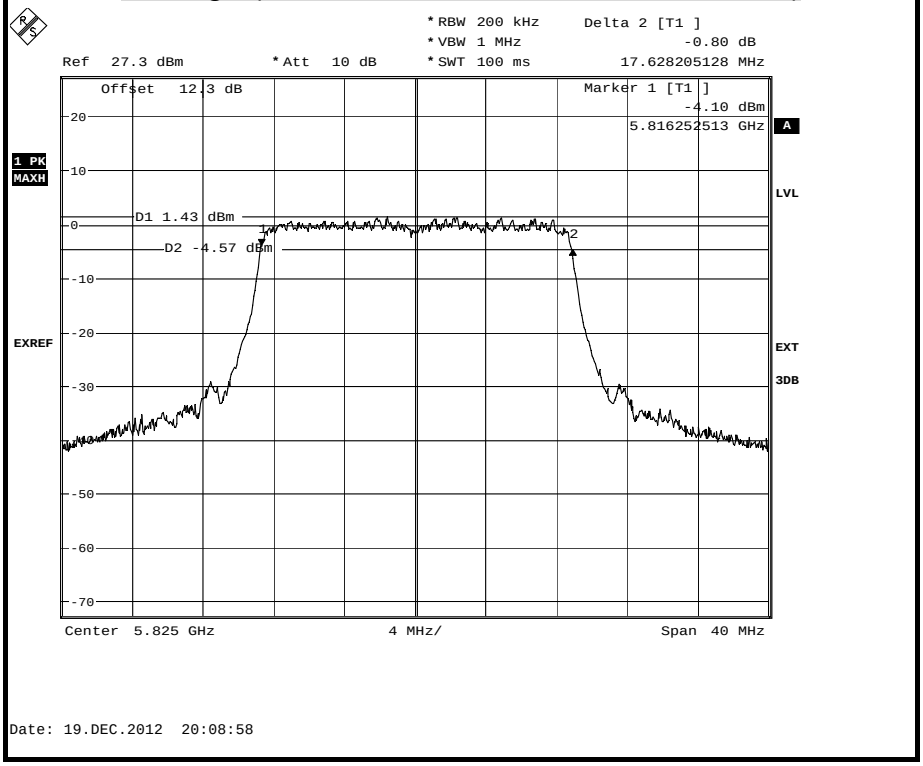

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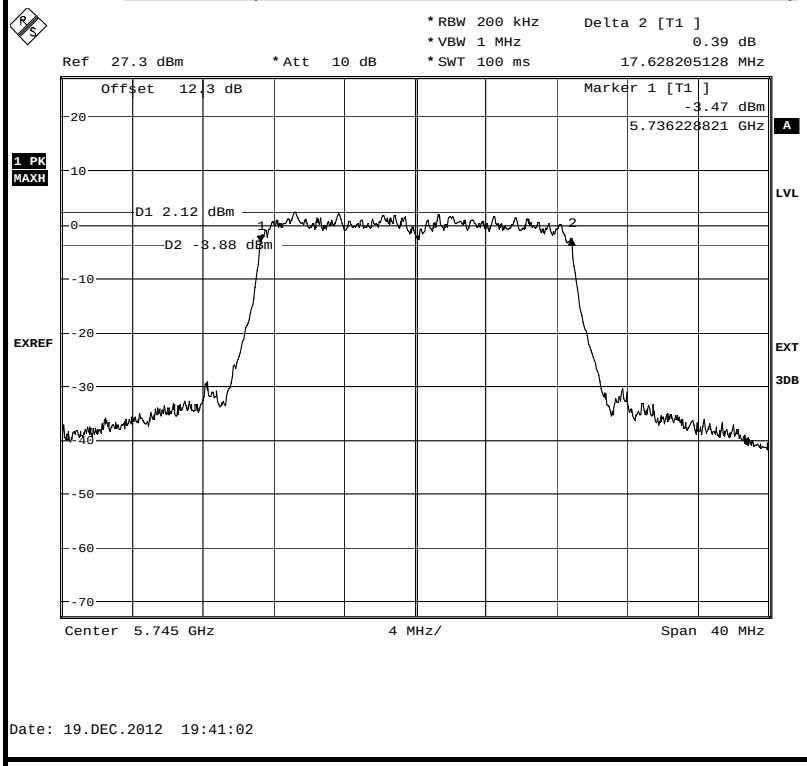

Date: 19.DEC.2012 19:41:02

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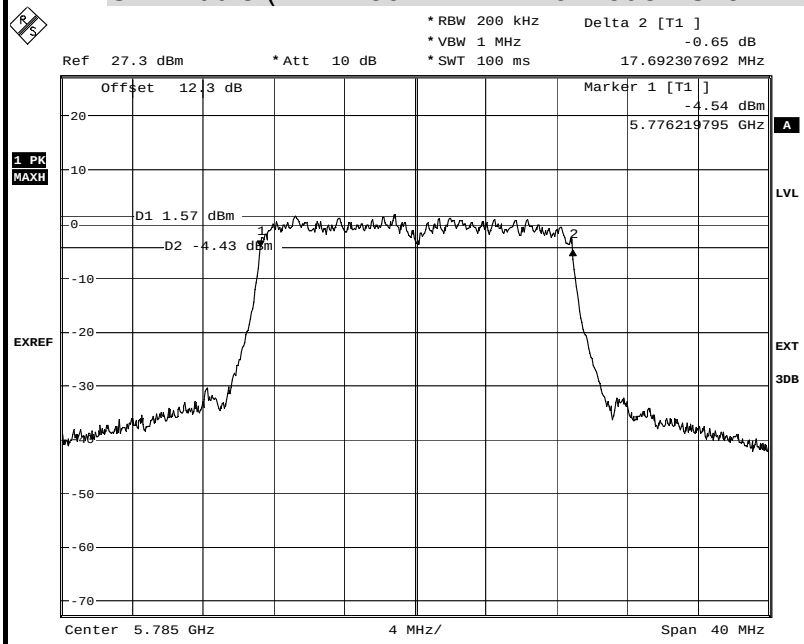

Date: 19.DEC.2012 19:42:34

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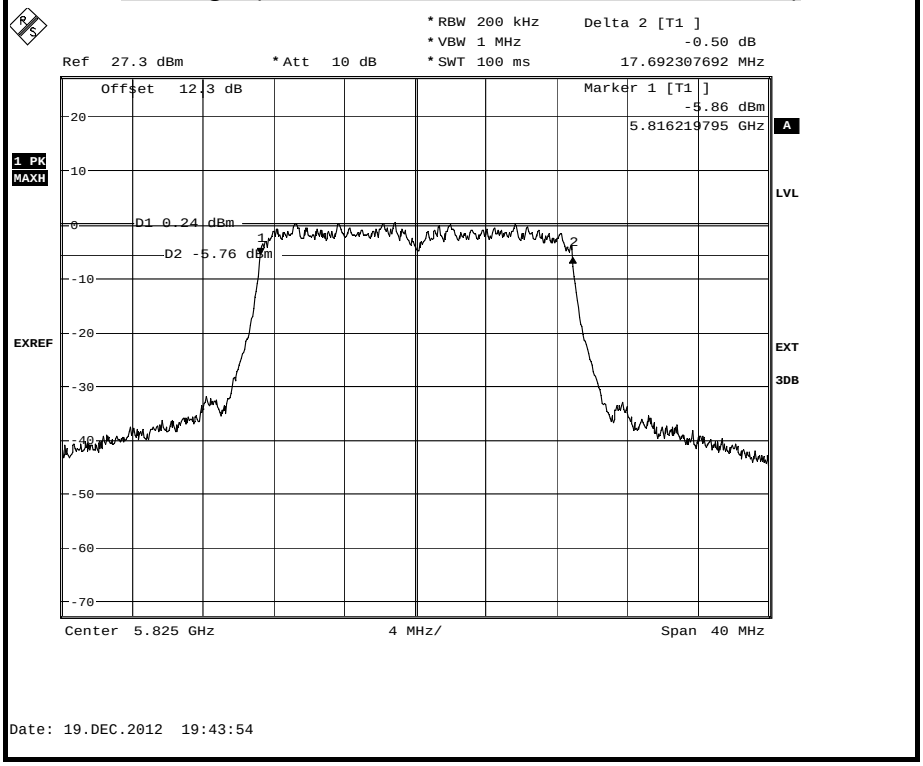

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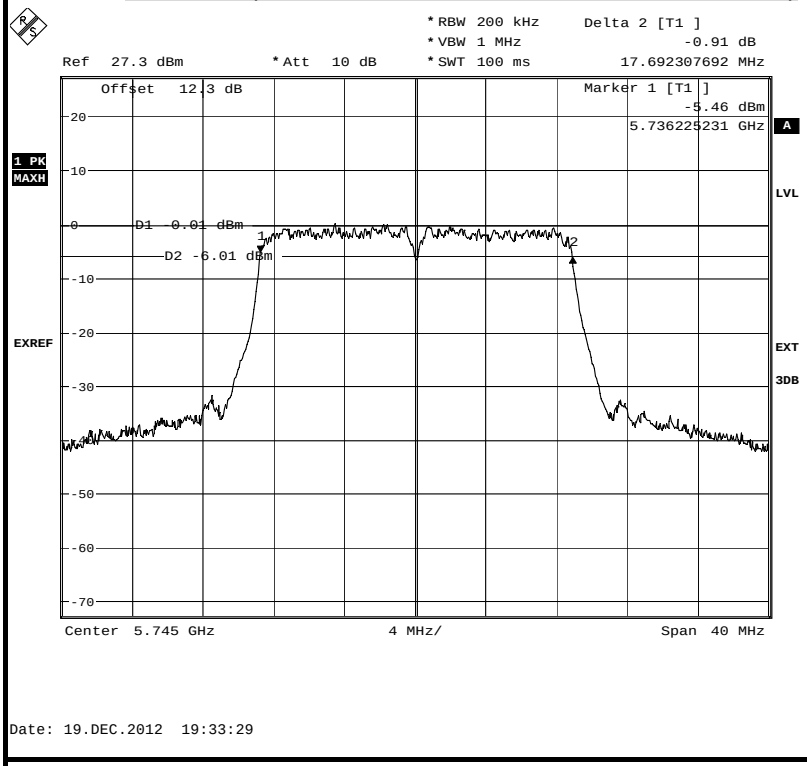

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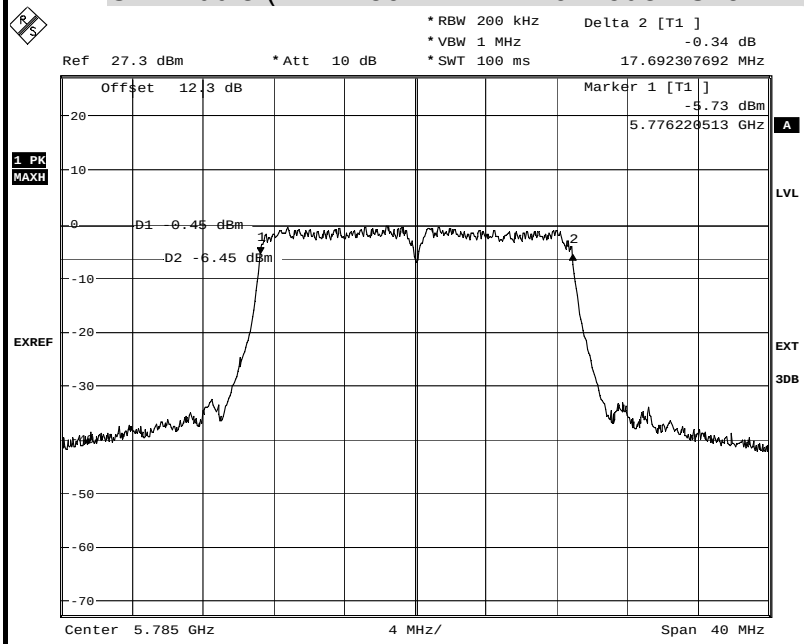

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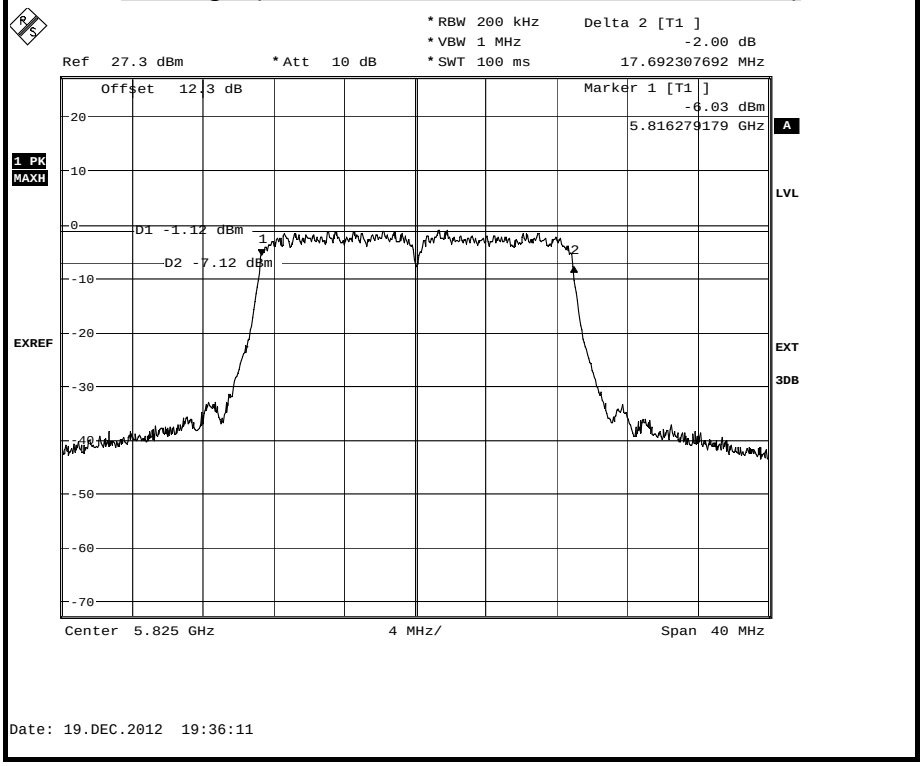
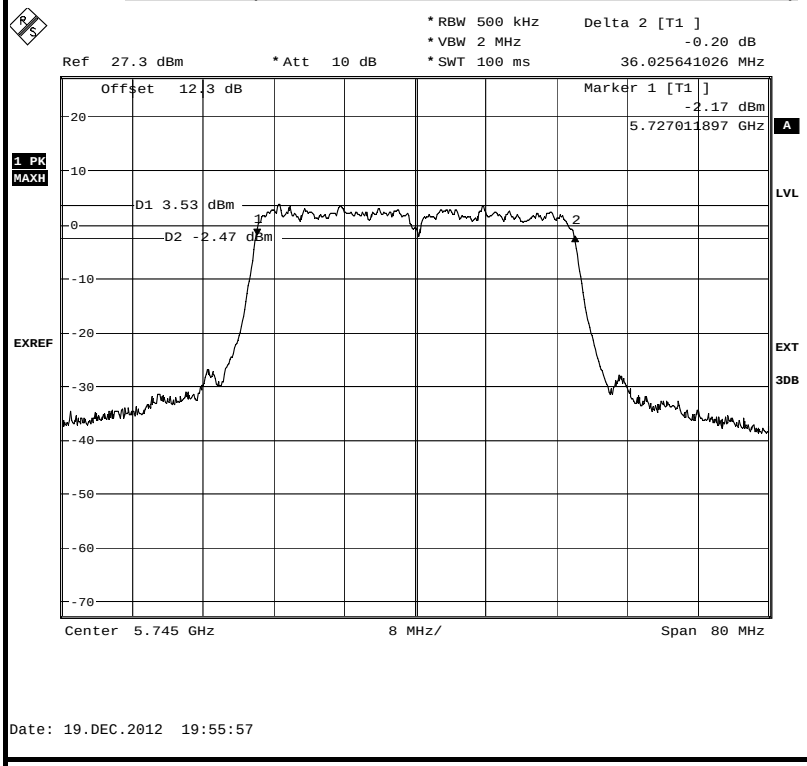


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



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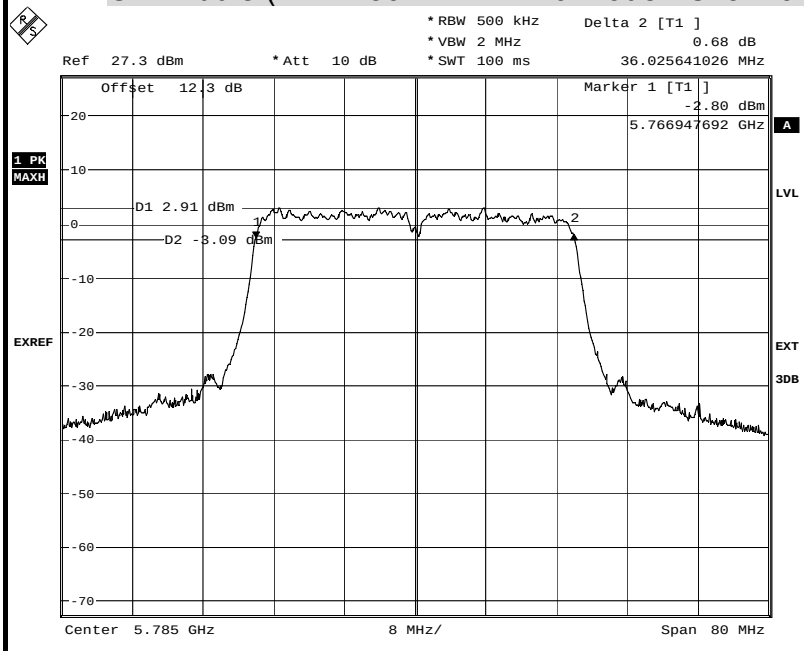

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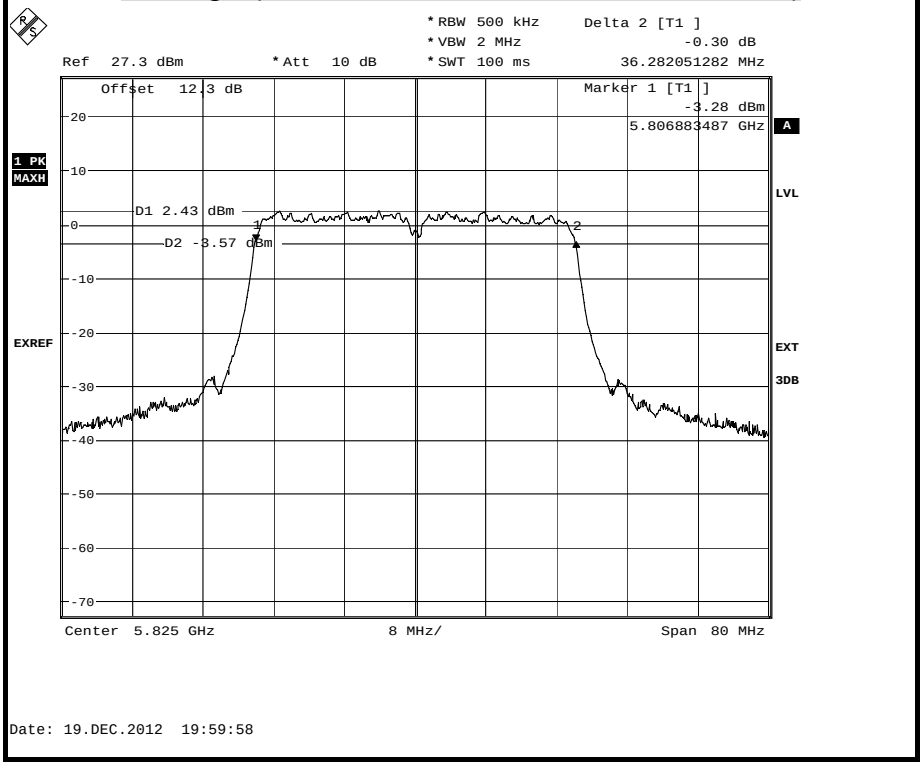
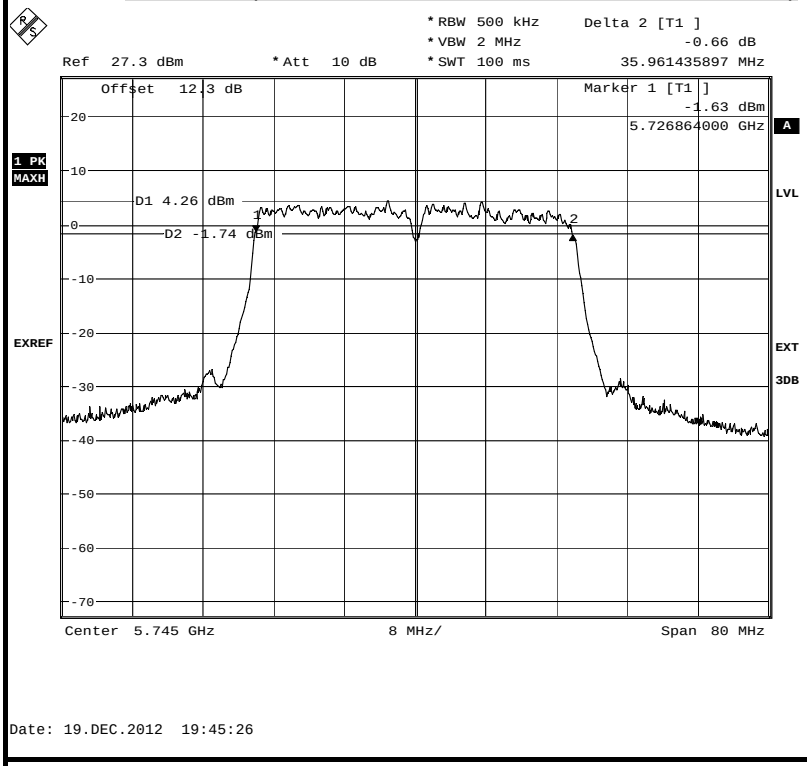


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



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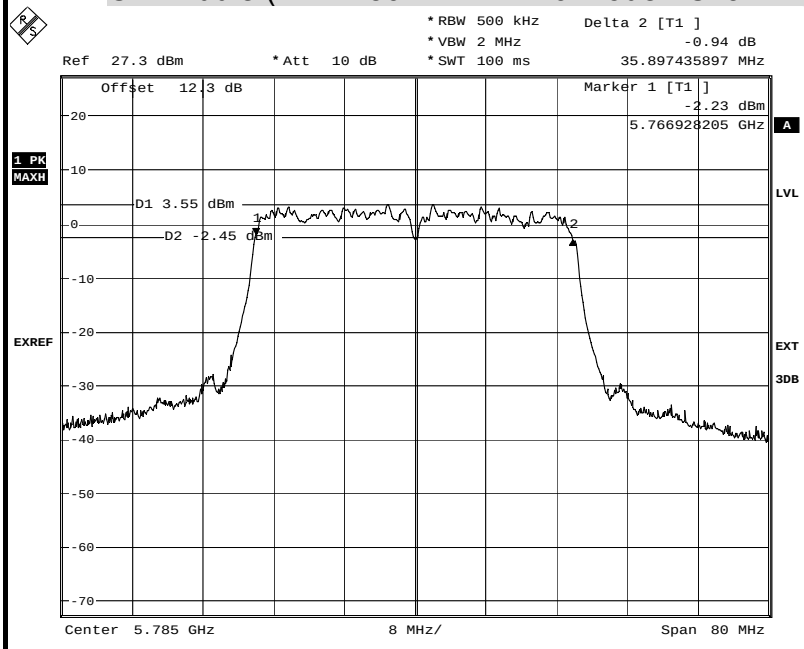

Date: 19.DEC.2012 19:46:31

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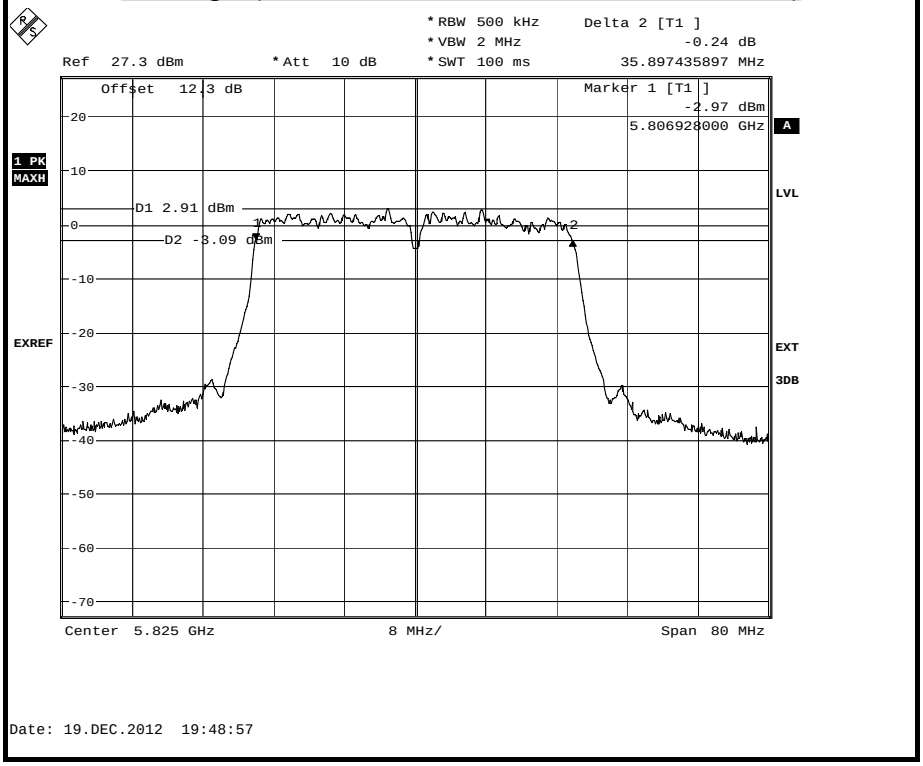
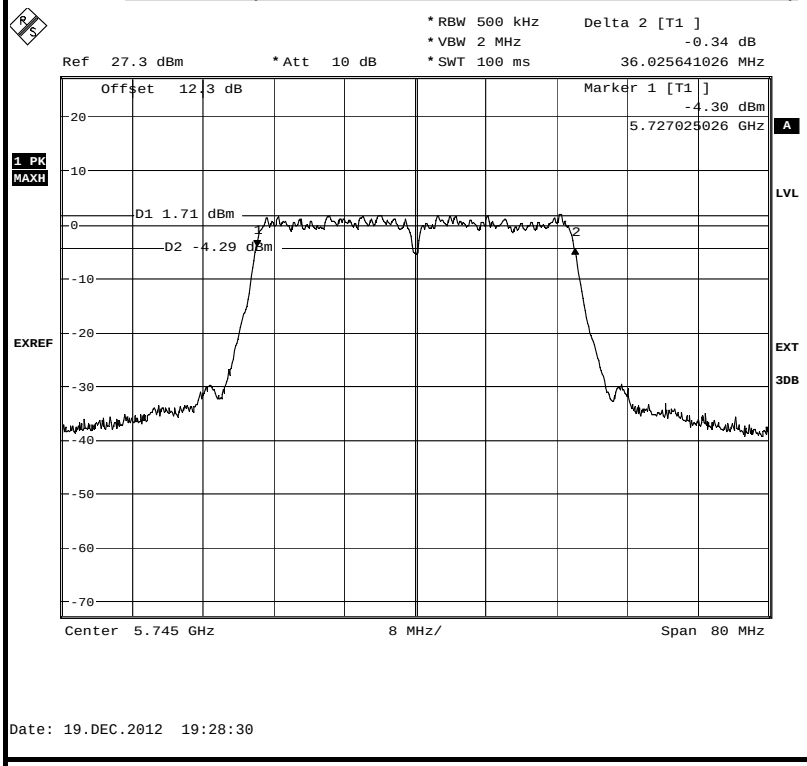


CH Low (IEEE 802.11n HT40 Mode / Chain 2)



Date: 19.DEC.2012 19:28:30

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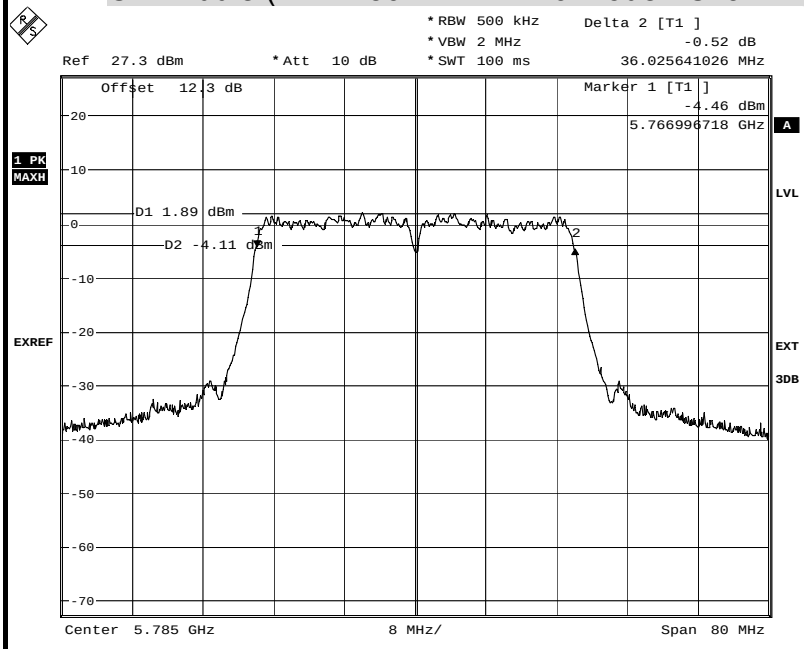

Date: 19.DEC.2012 19:30:05

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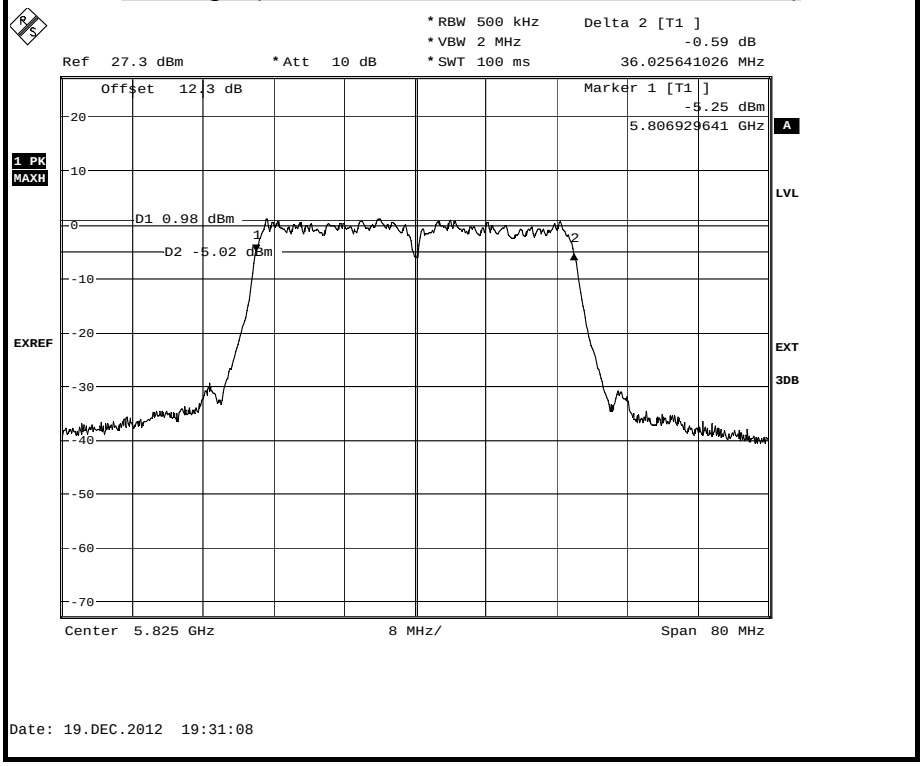


7.2 MAXIMUM PEAK OUTPUT POWER

LIMITS

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5745-5825 MHz bands : 1 watt.

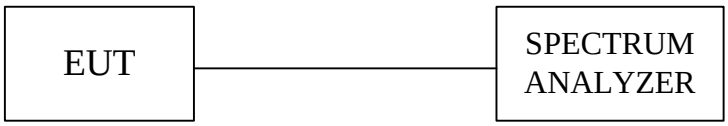
§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200789	SEP. 29, 2013

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

TEST SETUP



TEST PROCEDURE

The tests were performed in accordance with KDB 558074 5.2.1.2 and 5.2.2.1.

5.2.1.2 Measurement Procedure PK2:

1. This procedure provides an integrated measurement alternative when the maximum available RBW < EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Set the span to a value that is 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges(for some analyzers, this may require a manual overrideto ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at 1 MHz intervals extending across the EBW of the spectrum.

5.2.2.1 Measurement Procedure AVG1(power averaging over the EBW with slow sweep speed):

1. Set the analyzer span to 5-30% greater than the EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW ≥ 3 MHz.
4. Detector = power average (RMS).
5. Ensure that the number of measurement points in the sweep ≥ 2 x (span/RBW).
6. Manually set the sweep time to: ≥10 x (number of measurement points in sweep) x (transmission symbol period).
7. Perform the measurement over a single sweep.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges to determine the maximum conducted output power of the EUTover the EBW. Note: If the analyzer does not have a band power function, sum the spectral levels (in linear power units) at 1 MHz intervals extending across the entire EBW.

TEST RESULTS

Antenna Gain1:	3	dBi						
Antenna Gain2:	3	dBi						
Array Gain=:	6.01	=	10*log	((10^(	3	/10)+	(10^(	3 /10)))
Peak Power Limit:	29.99	=	30-	(	6.01	-6	)	

Maximum Peak Output Power (2.4G)
IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	18.16	30	PASS
Middle	2437	19.30		PASS
High	2462	17.66		PASS

Remark: *At finial test to get the worst-case emission at 1Mbps.*

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	21.20	30	PASS
Middle	2437	22.71		PASS
High	2462	23.45		PASS

Remark: *At finial test to get the worst-case emission at 6Mbps.*

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total	Peak Power Limit	Pass / Fail
		Chain 0	Chain 1	(dBm)	(dBm)	
Low	2412	18.99	20.91	23.07	29.99	PASS
Middle	2437	19.40	21.38	23.51		PASS
High	2462	19.59	21.98	23.96		PASS

Remark: *At finial test to get the worst-case emission at 13Mbps.*

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power (dBm)	Peak Power Limit	Pass / Fail
		Chain 0	Chain 0	(dBm)	(dBm)	
Low	2422	15.71	17.46	19.68	29.99	PASS
Middle	2437	16.08	17.88	20.08		PASS
High	2452	16.02	18.46	20.42		PASS

Remark: *At finial test to get the worst-case emission at 27Mbps.*

Antenna Gain1:	4	dBi	
Antenna Gain2:	4	dBi	
Antenna Gain2:	4	dBi	
Array Gain=:	8.77	=	10*log ((10^(4 /10)+ (10^(4 /10)+ (10^(4 /10)))
Peak Power Limit:	27.23	=	30- (8.77 -6)

Maximum Peak Output Power (5G)
IEEE 802.11a Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	5745	22.97	30	PASS
Middle	5765	23.08		PASS
High	5805	23.13		PASS

Remark: *At finial test to get the worst-case emission at 6Mbps.*

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)			Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
Low	5745	20.43	20.52	18.64	24.72	27.2288	PASS
Middle	5765	20.34	20.07	18.52	24.49		PASS
High	5805	20.28	18.88	17.58	23.82		PASS

Remark: *At finial test to get the worst-case emission at 19.5Mbps.*

IEEE 802.11n HT40 Mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)			Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
Low	5745	20.22	20.40	18.63	24.59	27.2288	PASS
Middle	5765	20.34	19.81	18.38	24.36		PASS
High	5805	20.14	18.77	17.37	23.68		PASS

Remark: *At finial test to get the worst-case emission at 40.5Mbps.*

Average Power (2.4G)

802.11b Mode

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	14.91
Middle	2437	15.97
High	2462	14.32

802.11g Mode

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	13.40
Middle	2437	14.86
High	2462	15.59

802.11n HT20 Mode

Channel	Frequency (MHz)	Average Power Chain0 (dBm)	Average Power Chain1 (dBm)	Average Power Total (dBm)
Low	2412	10.85	12.53	14.78
Middle	2437	11.18	13.10	15.26
High	2462	11.44	13.57	15.64

802.11n HT40 Mode

Channel	Frequency (MHz)	Average Power Chain0 (dBm)	Average Power Chain1 (dBm)	Average Power Total (dBm)
Low	2422	7.35	8.99	11.26
Middle	2437	7.82	9.30	11.63
High	2452	7.68	10.04	12.03

Average Power (5G)

802.11a Mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	5745	15.27	0.0337
Middle	5785	15.18	0.0330
High	5825	15.30	0.0339

802.11n HT20 Mode

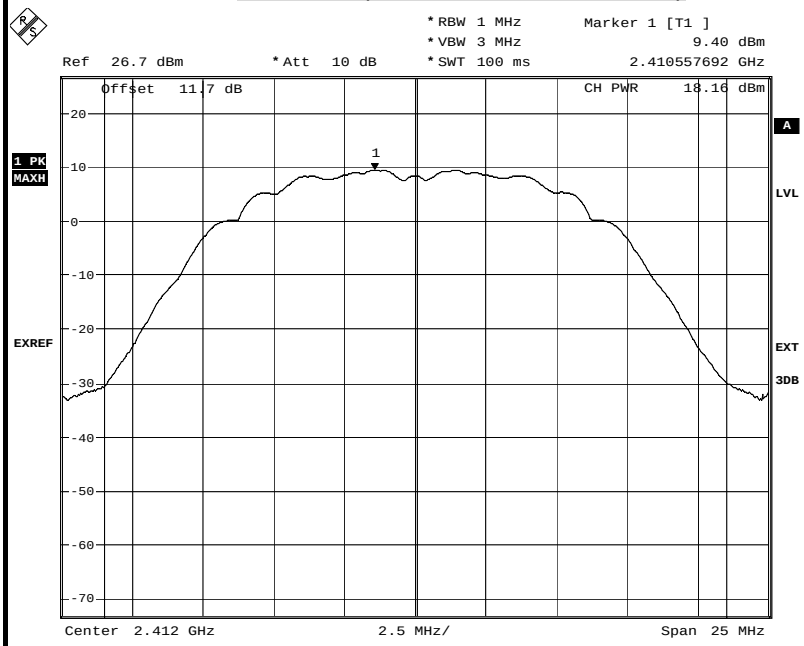
Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Output Power (dBm)	Total Output Power (W)
Low	5745	12.25	12.22	10.45	16.49	0.0446
Middle	5785	12.25	11.65	10.17	16.21	0.0418
High	5825	12.12	10.61	9.32	15.61	0.0364

802.11n HT40 Mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Output Power (dBm)	Total Output Power (W)
Low	5745	12.22	12.28	10.42	16.49	0.0446
Middle	5785	12.29	11.48	10.04	16.14	0.0411
High	5825	12.08	10.45	9.30	15.53	0.0357

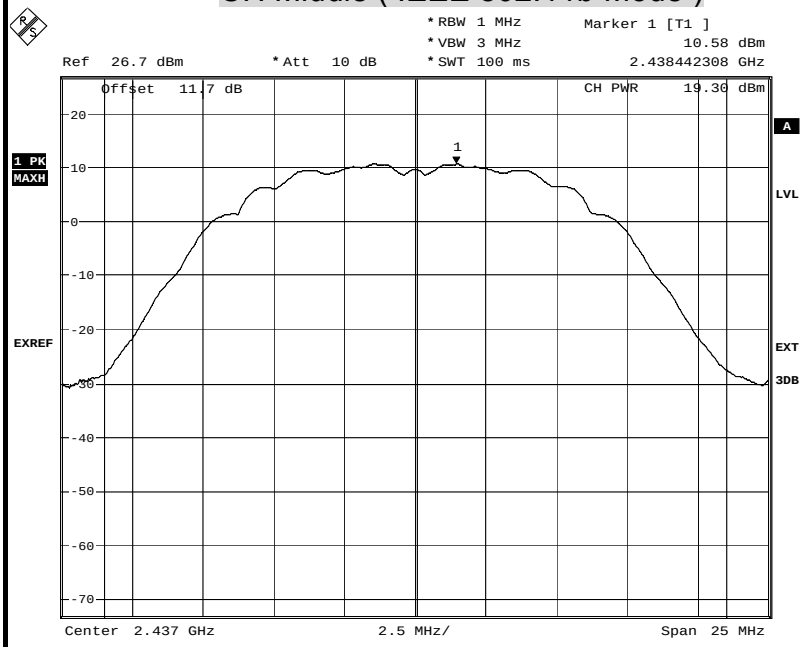
MAXIMUM PEAK OUTPUT POWER (2.4G)

CH Low (IEEE 802.11b Mode)



Date: 17.DEC.2012 14:20:14

CH Middle (IEEE 802.11b Mode)



Date: 17.DEC.2012 14:23:52

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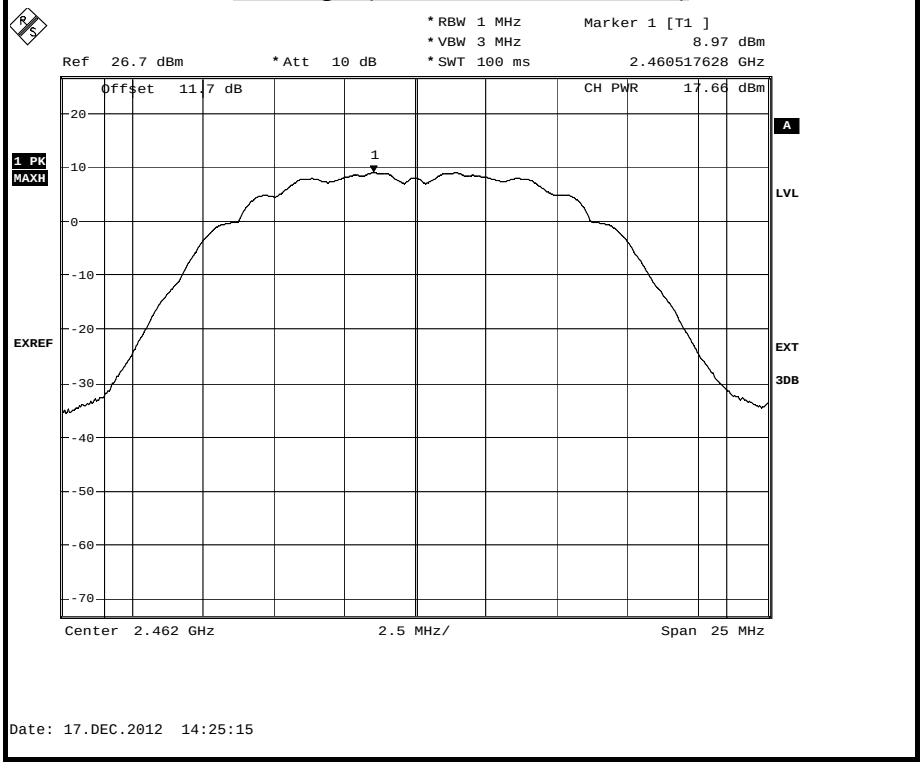
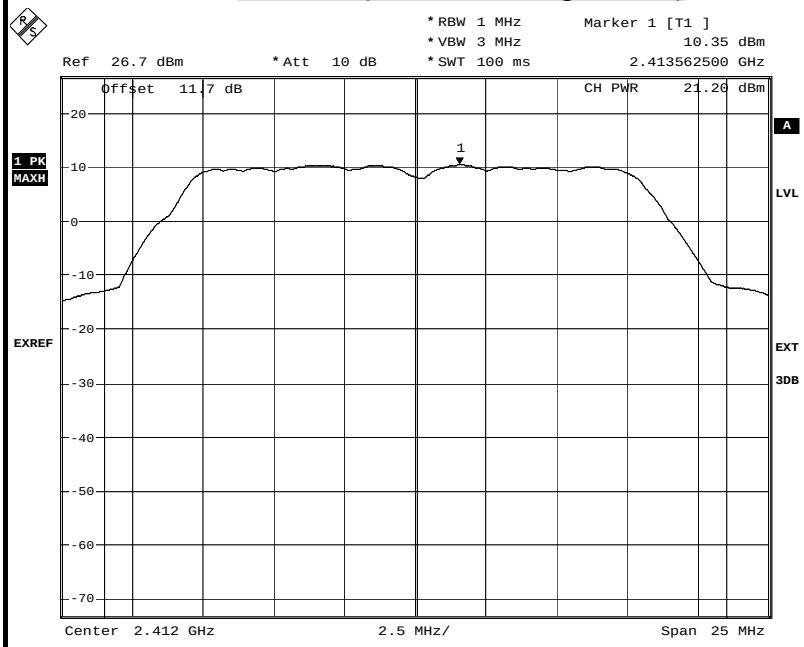
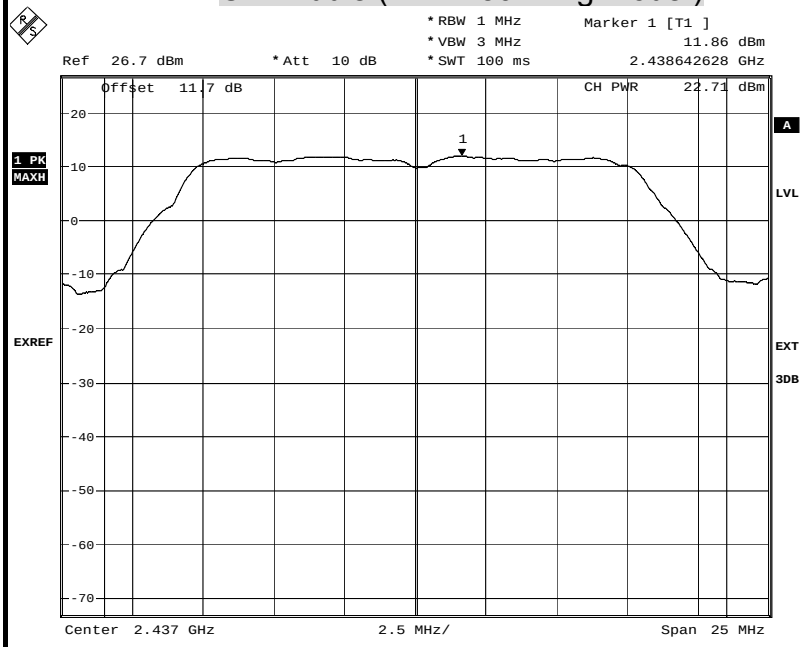


CH Low (IEEE 802.11g Mode)



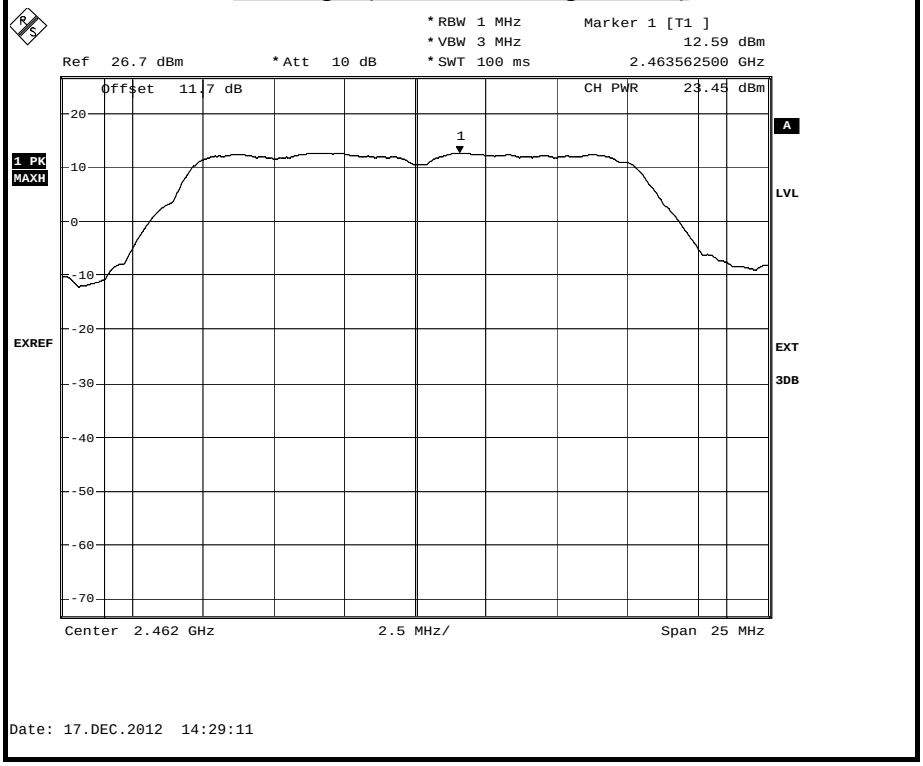
Date: 17.DEC.2012 14:26:28

CH Middle (IEEE 802.11g Mode)

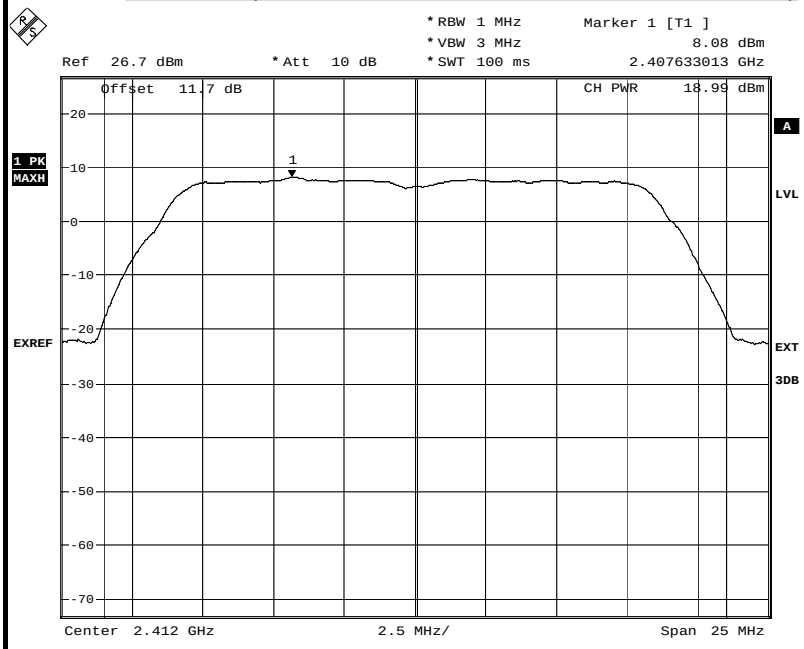


Date: 17.DEC.2012 14:30:06

CH High (IEEE 802.11g Mode)

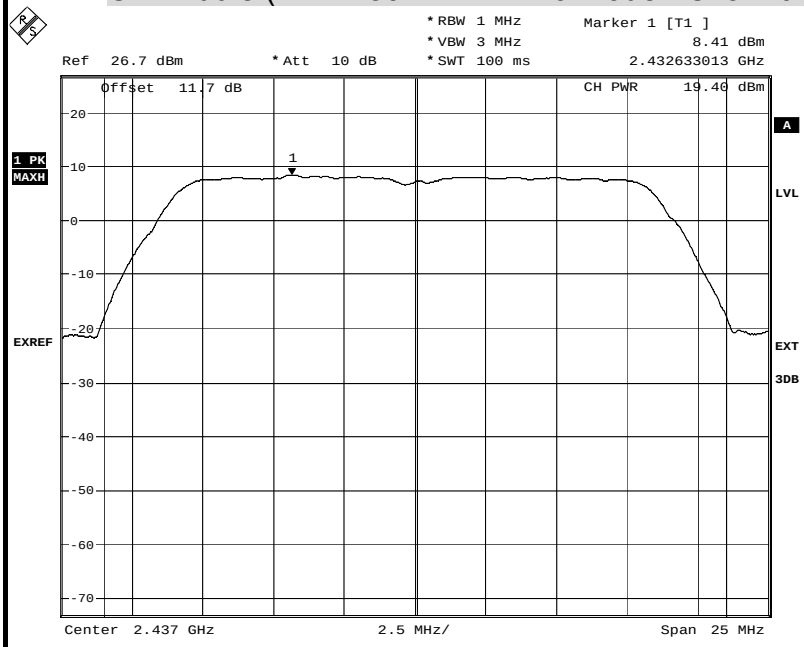


CH Low (IEEE 802.11n HT20 Mode / Chain 0)



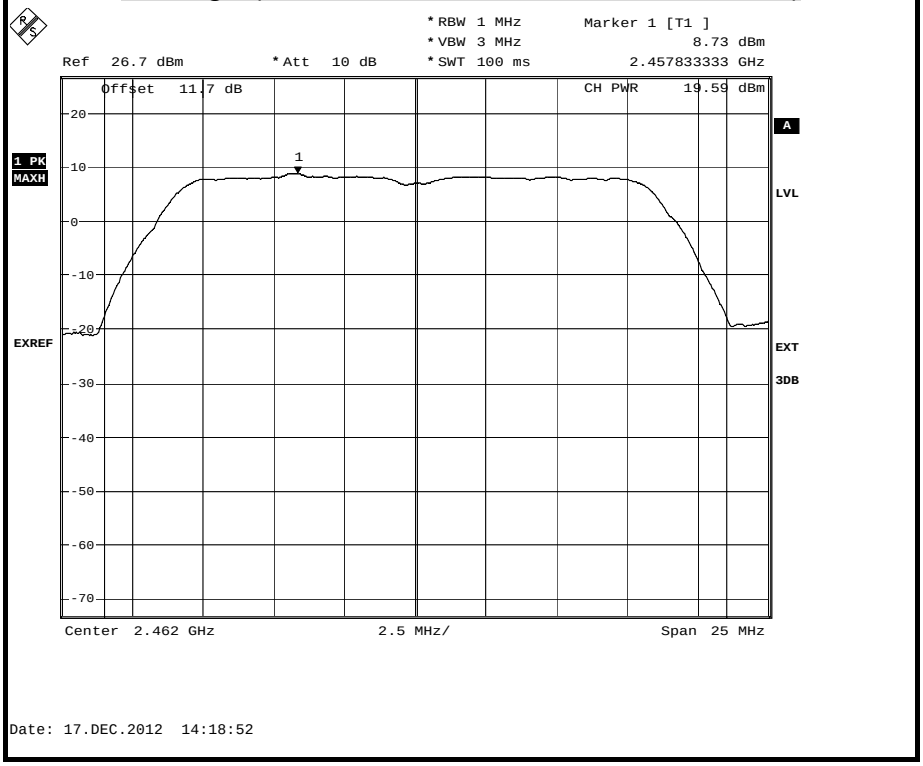
Date: 17.DEC.2012 14:16:10

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

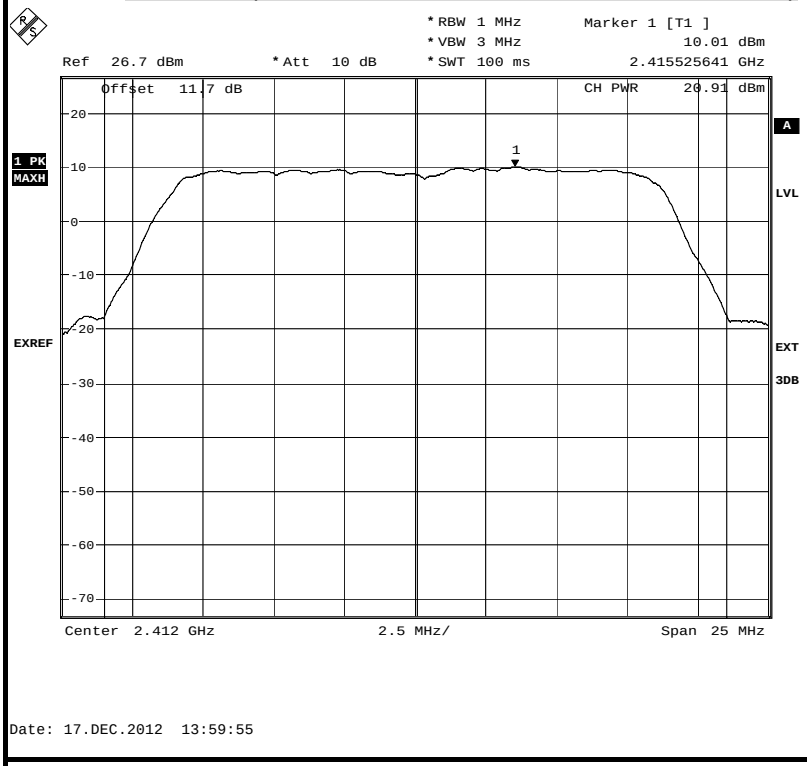


Date: 17.DEC.2012 14:17:27

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

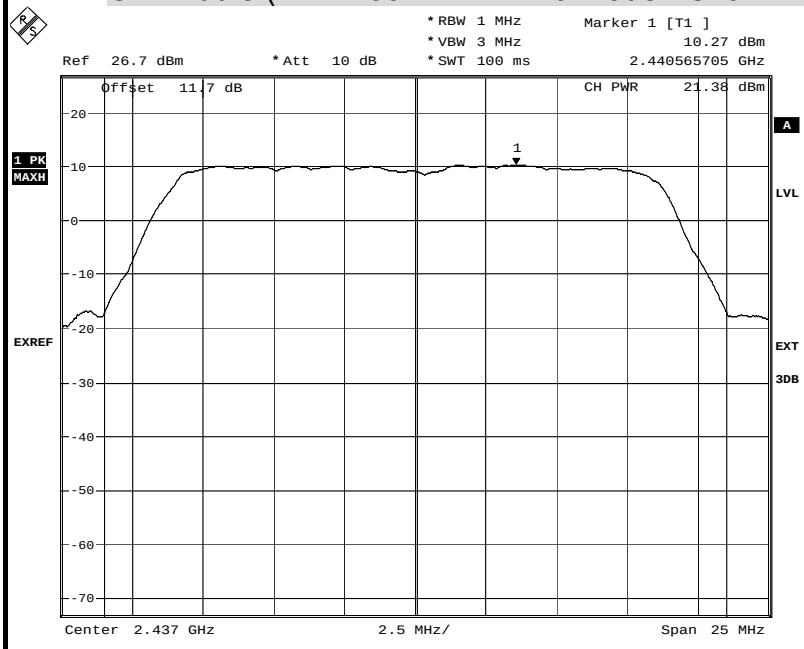


CH Low (IEEE 802.11n HT20 Mode / Chain 1)



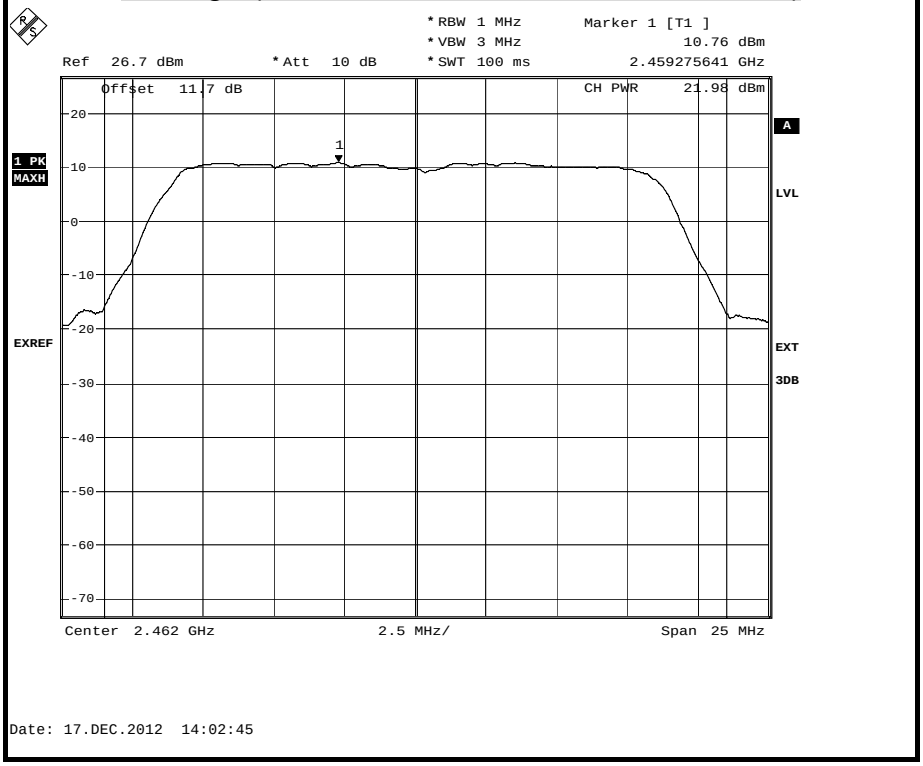
Date: 17.DEC.2012 13:59:55

CH Middle (IEEE 802.11n HT20 Mode / Chain 1)

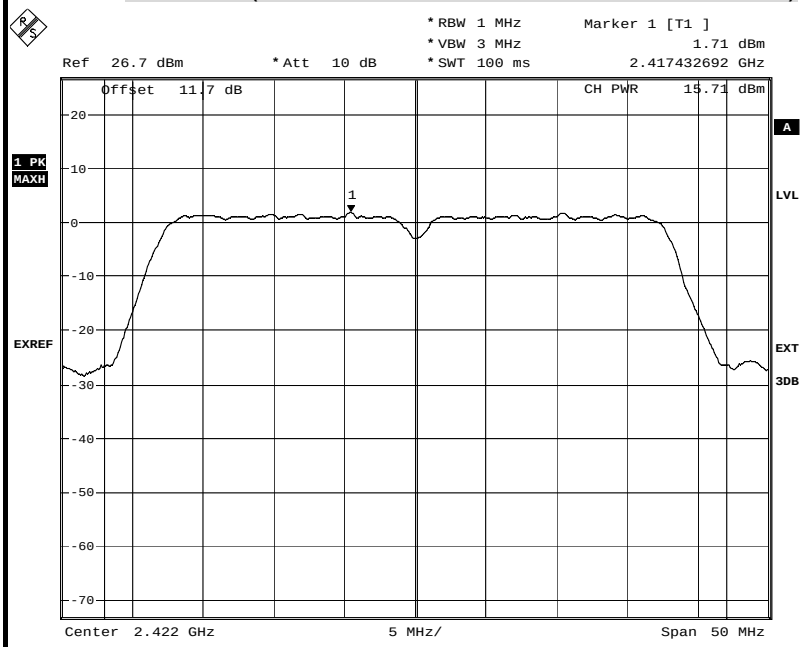


Date: 17.DEC.2012 14:01:57

CH High (IEEE 802.11n HT20 Mode / Chain 1)

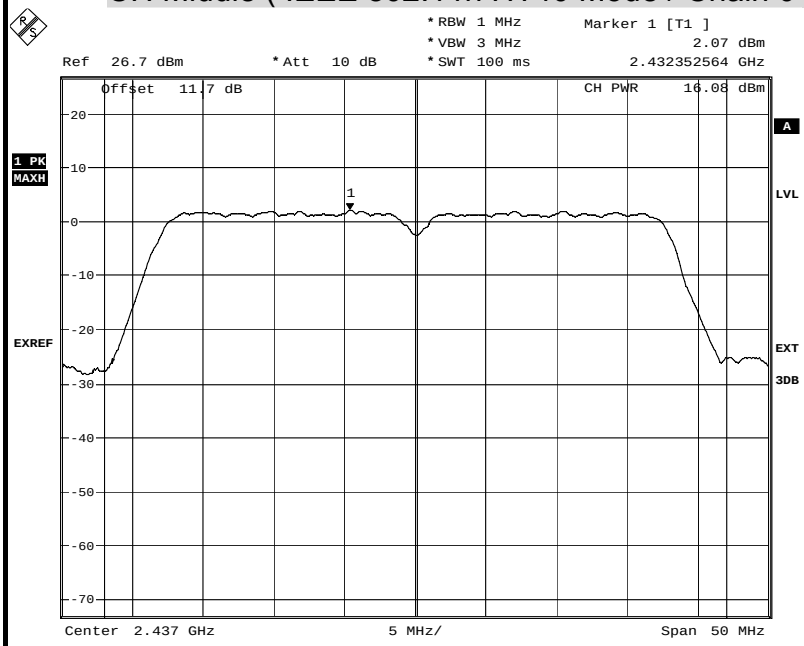


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



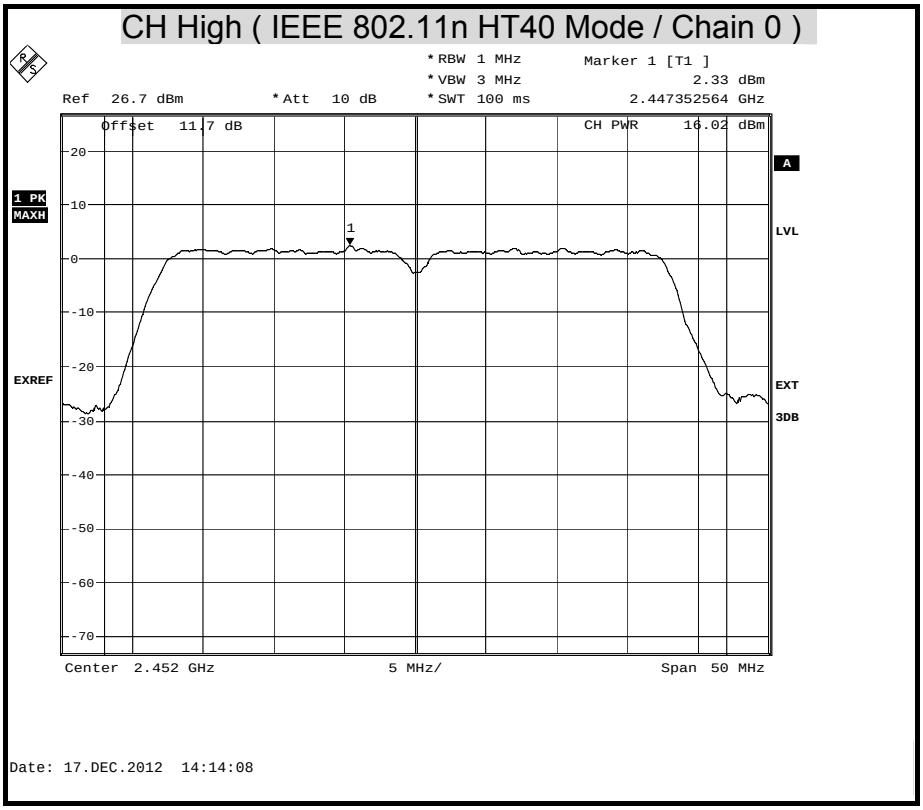
Date: 17.DEC.2012 14:09:31

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

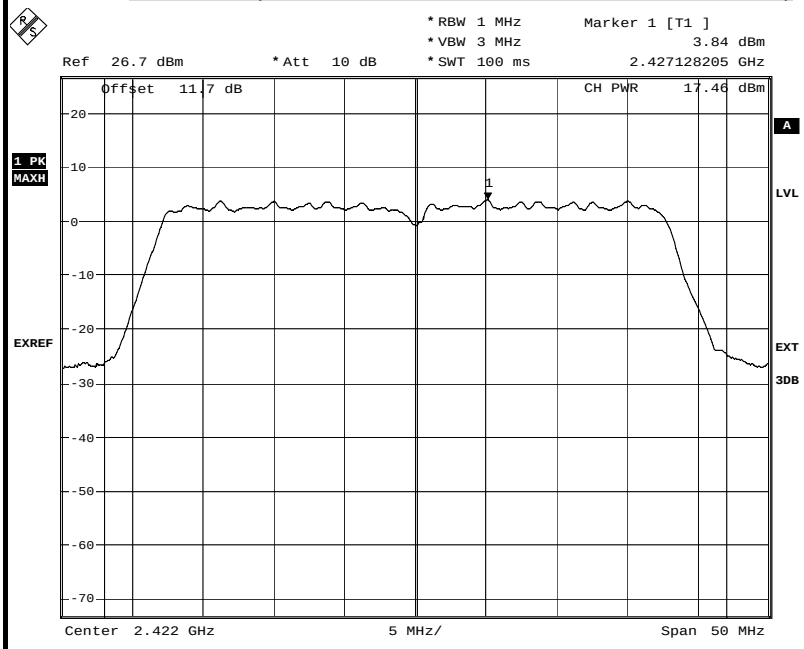


Date: 17.DEC.2012 14:13:07

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

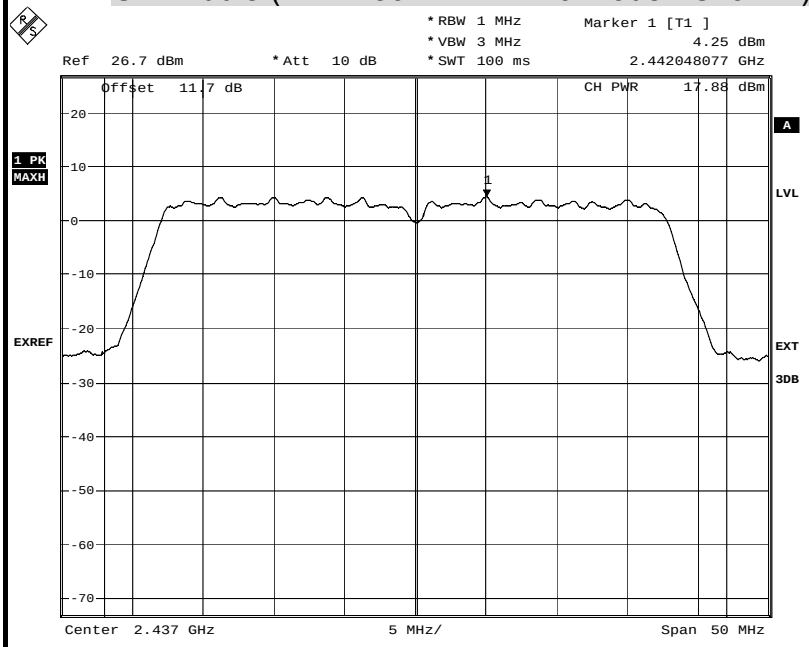


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



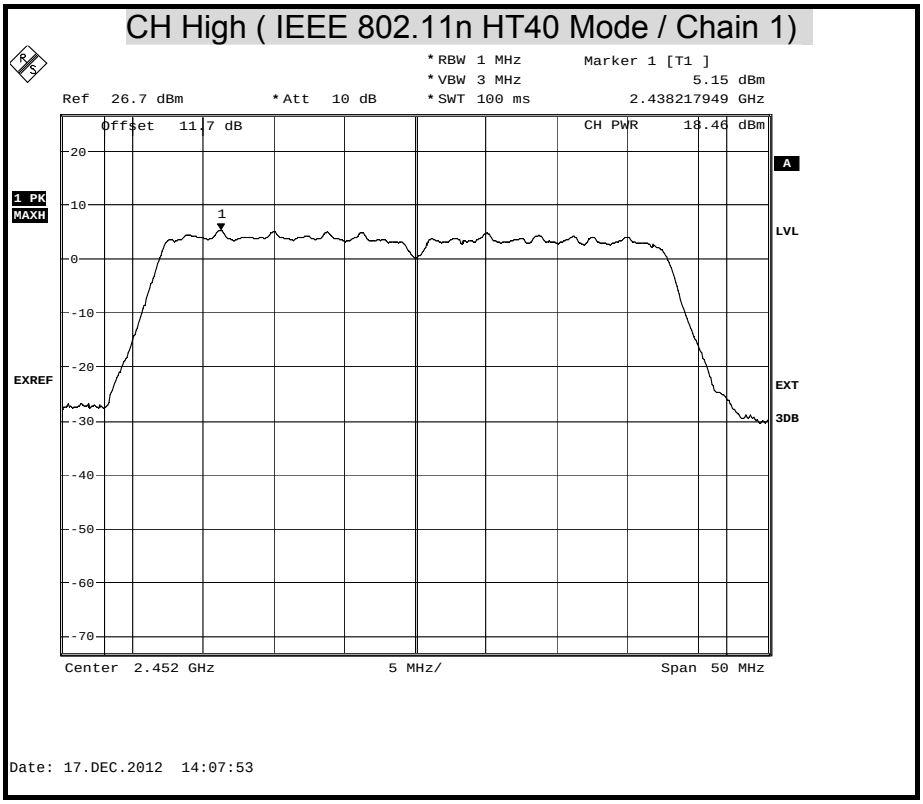
Date: 17.DEC.2012 14:04:25

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



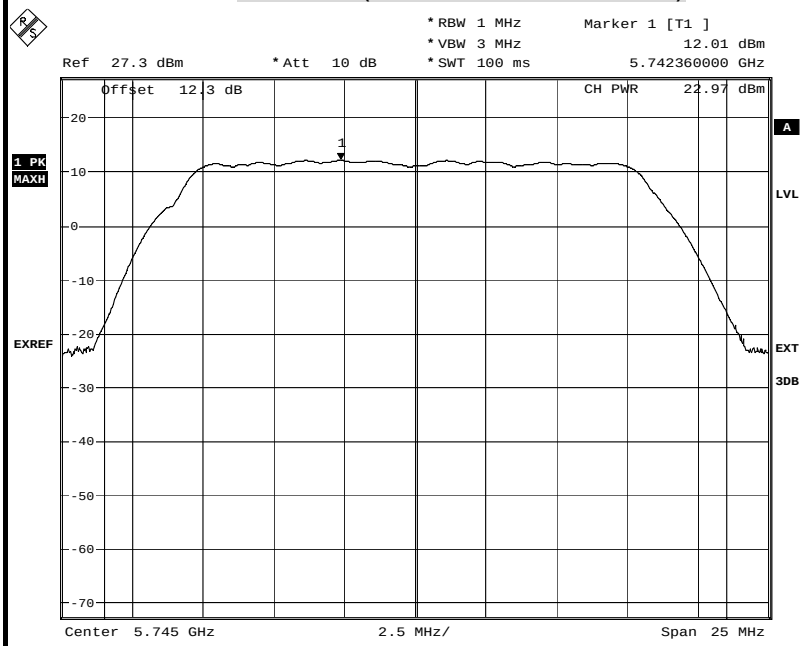
Date: 17.DEC.2012 14:05:43

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



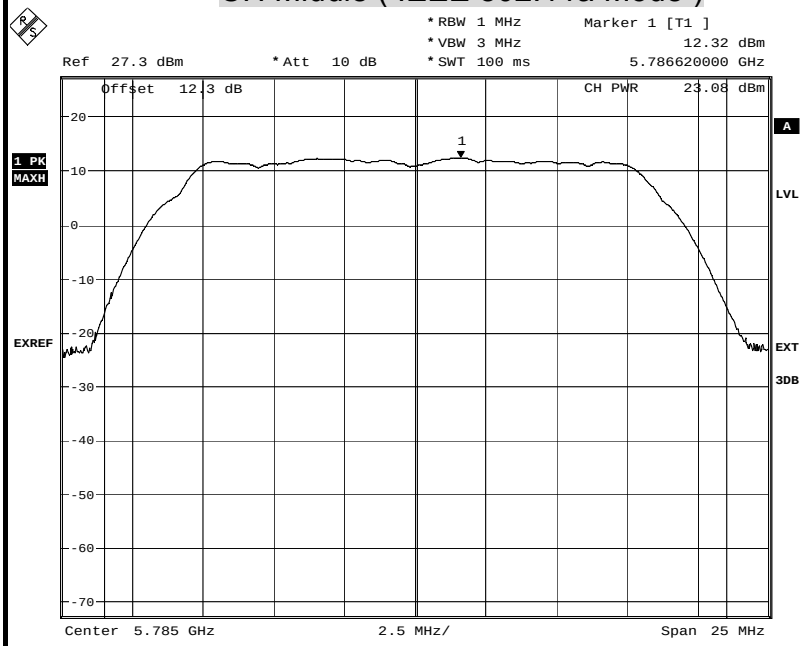
MAXIMUM PEAK OUTPUT POWER (5G)

CH Low (IEEE 802.11a Mode)



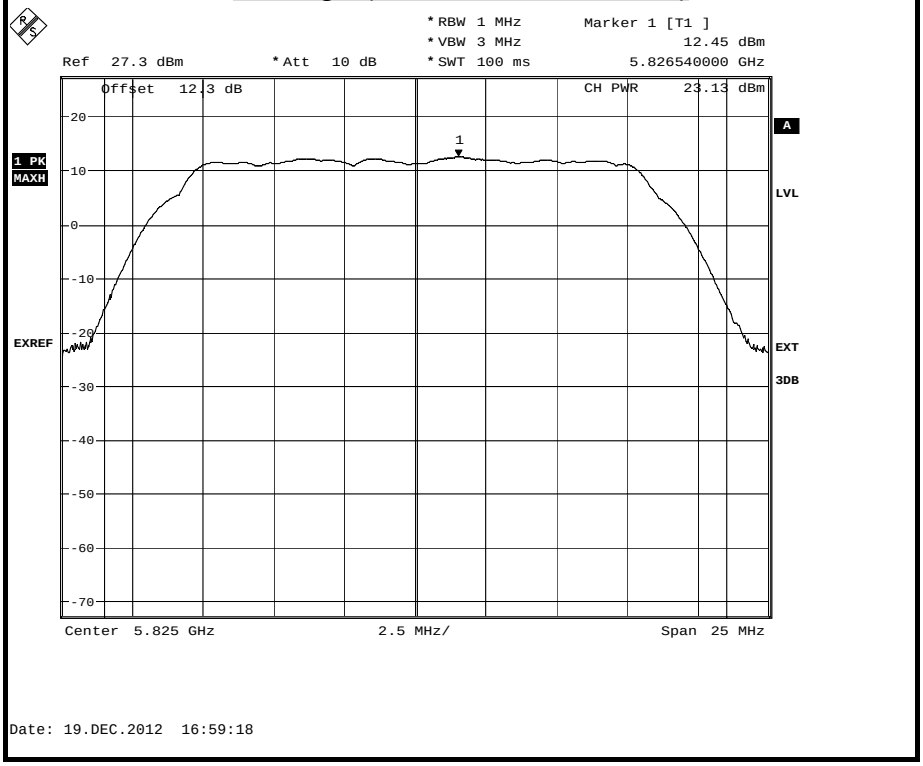
Date: 19.DEC.2012 16:55:32

CH Middle (IEEE 802.11a Mode)

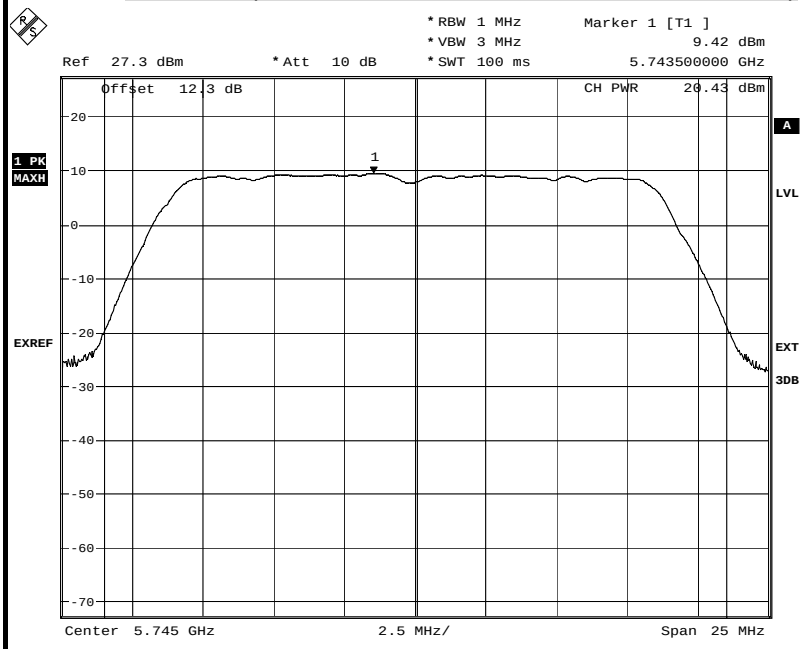


Date: 19.DEC.2012 16:57:40

CH High (IEEE 802.11a Mode)

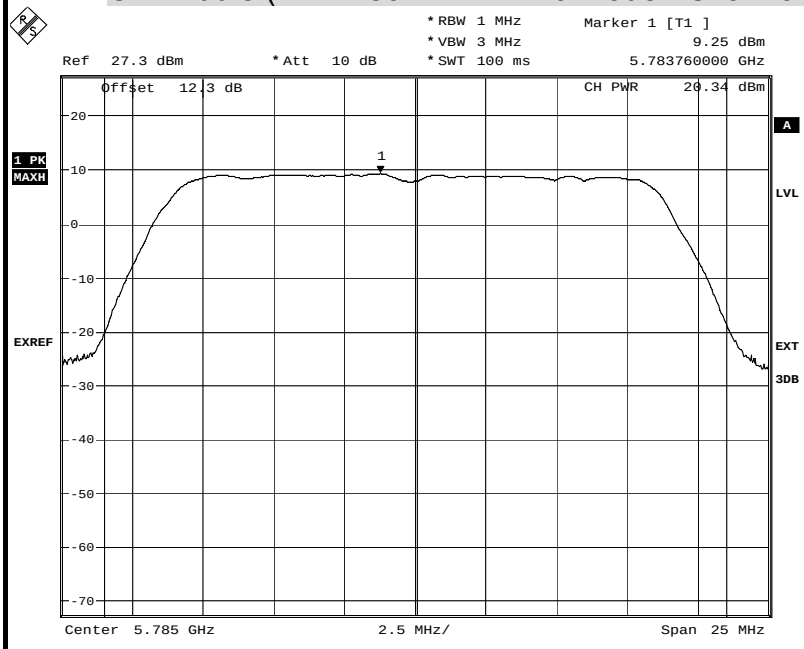


CH Low (IEEE 802.11n HT20 Mode / Chain 0)



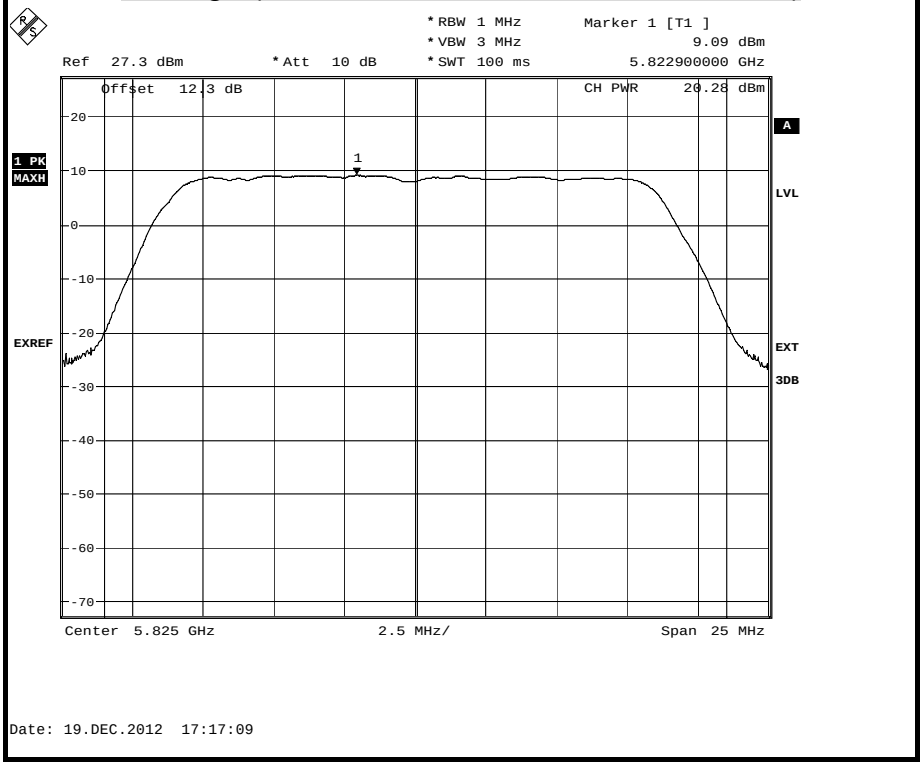
Date: 19.DEC.2012 17:11:25

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

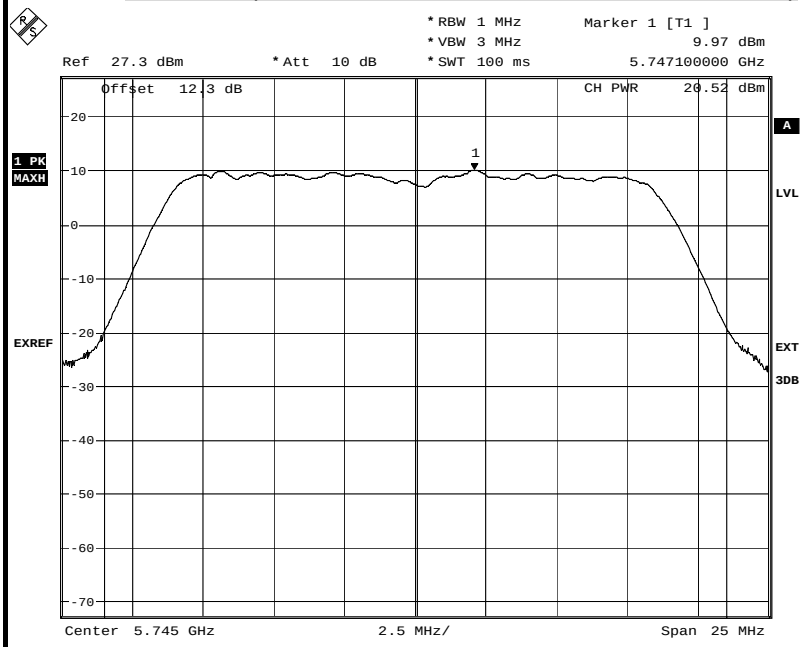


Date: 19.DEC.2012 17:13:45

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

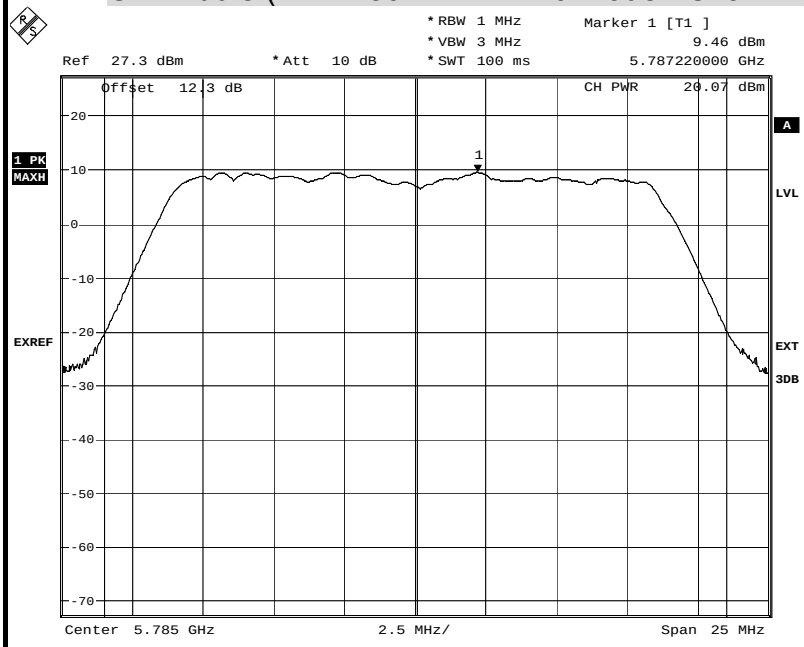


CH Low (IEEE 802.11n HT20 Mode / Chain 1)



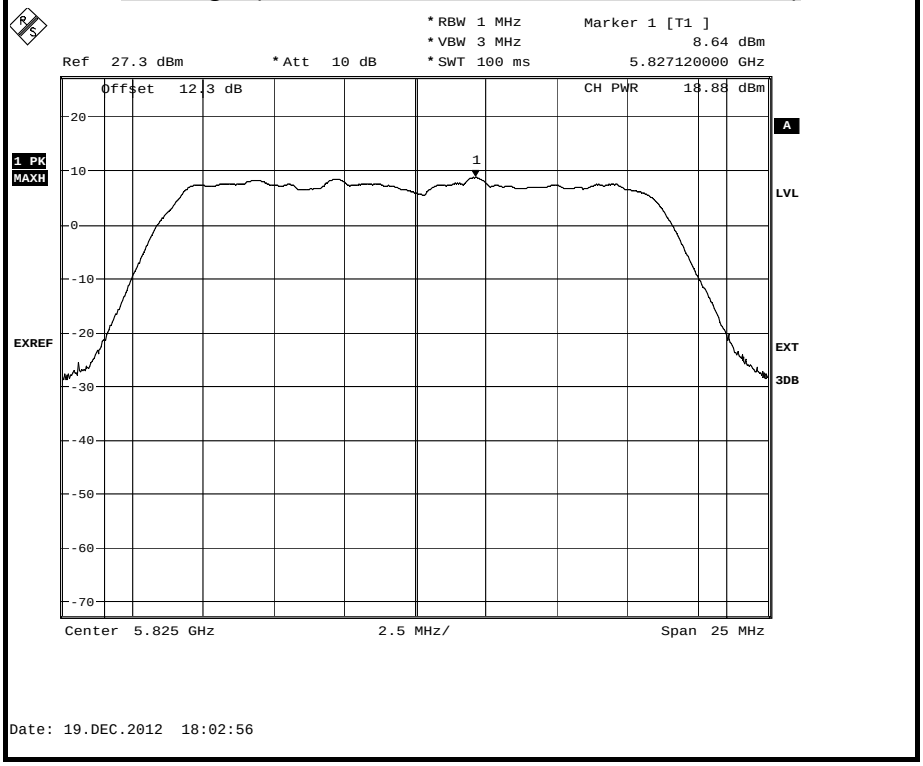
Date: 19.DEC.2012 18:00:21

CH Middle (IEEE 802.11n HT20 Mode / Chain 1)

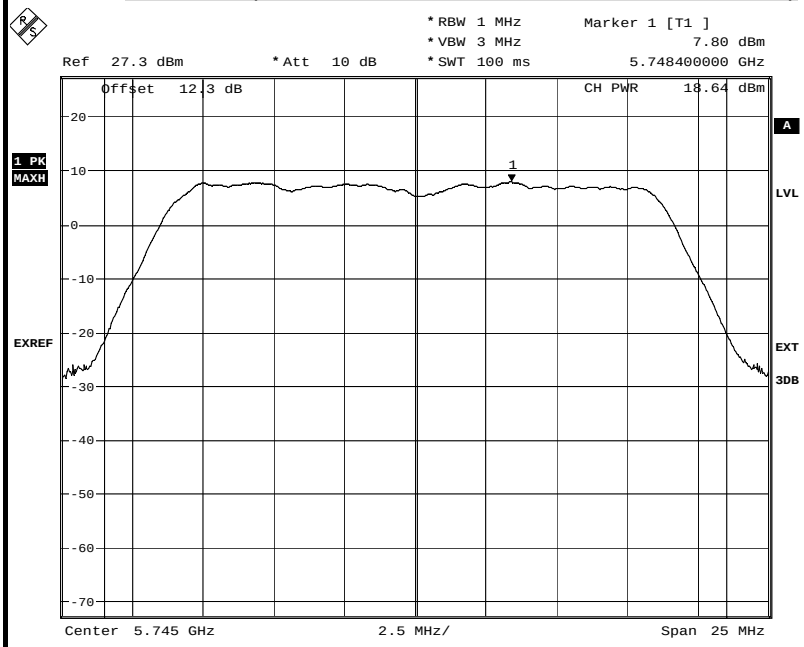


Date: 19.DEC.2012 18:01:19

CH High (IEEE 802.11n HT20 Mode / Chain 1)

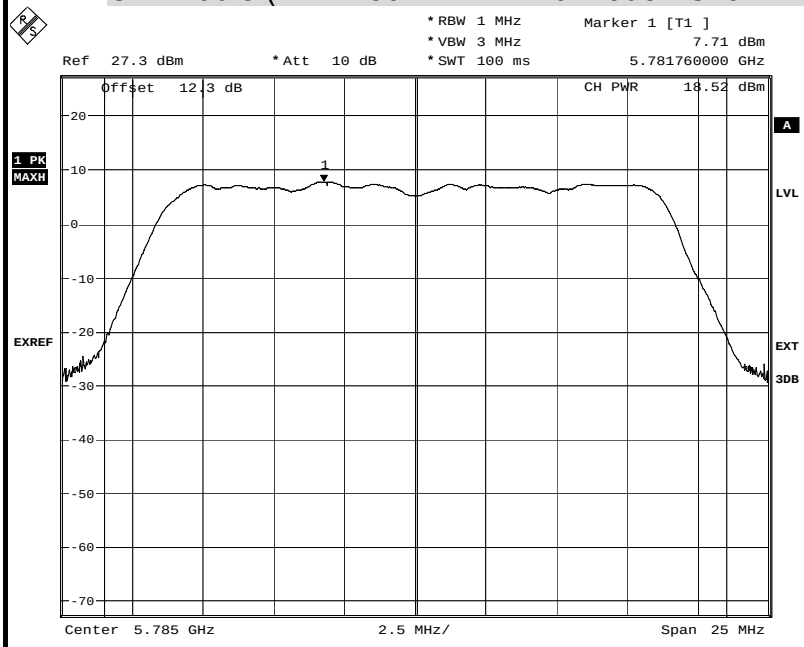


CH Low (IEEE 802.11n HT20 Mode / Chain 2)



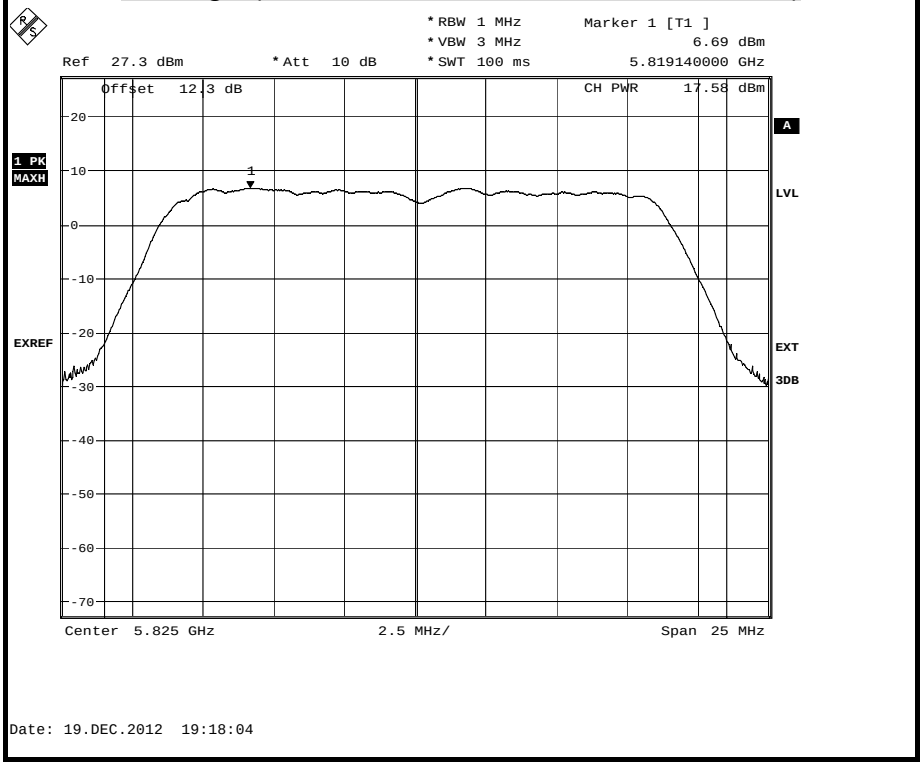
Date: 19.DEC.2012 19:14:58

CH Middle (IEEE 802.11n HT20 Mode / Chain 2)

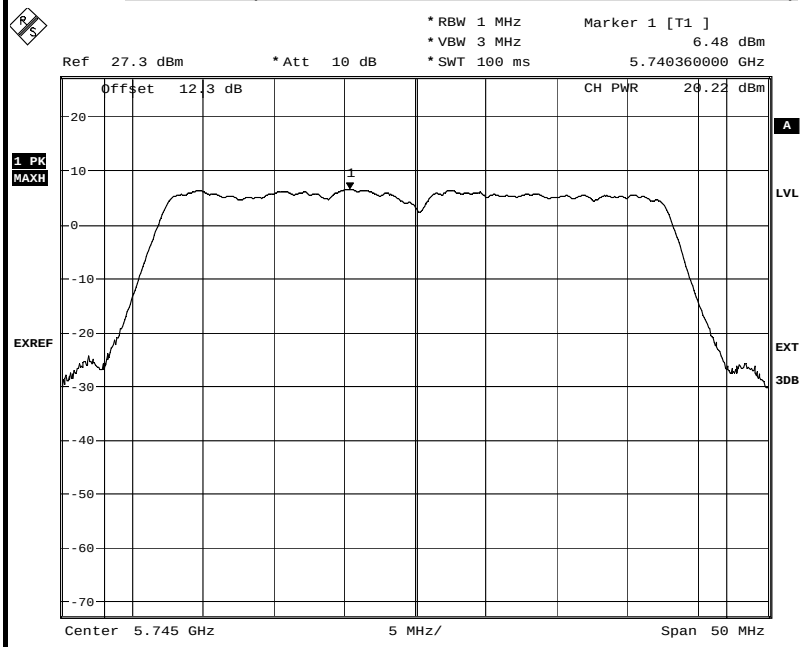


Date: 19.DEC.2012 19:16:55

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

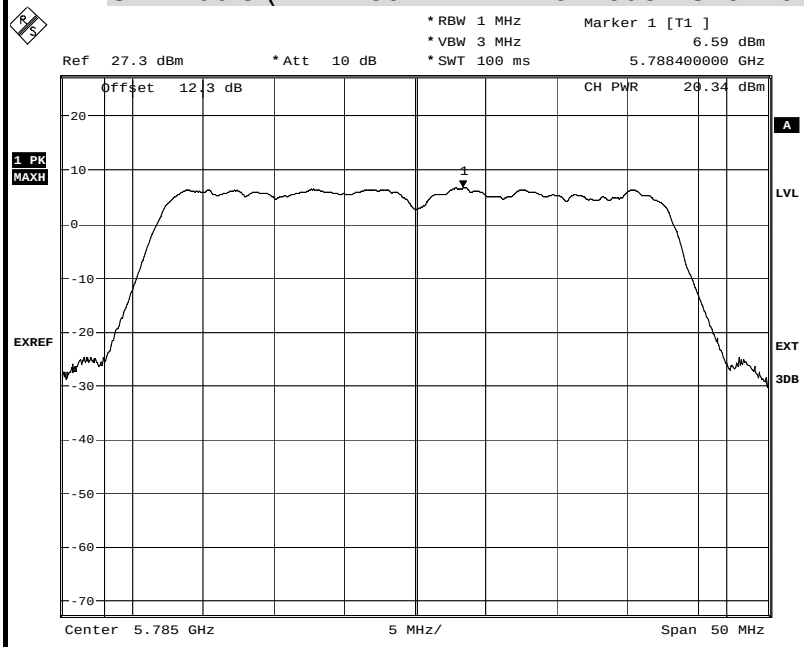


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



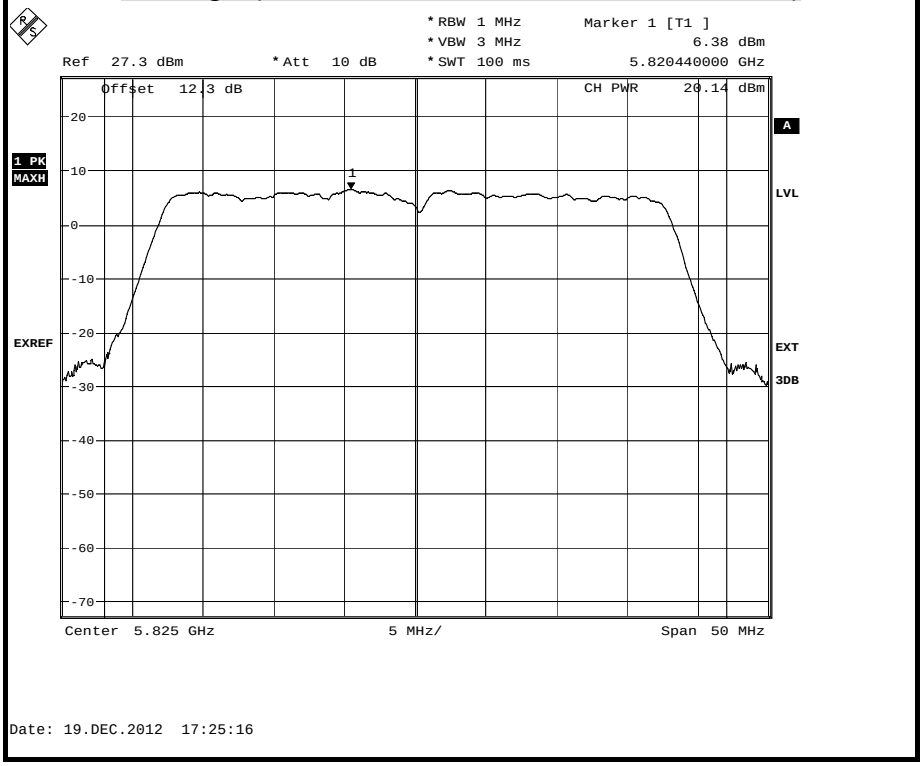
Date: 19.DEC.2012 17:20:46

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

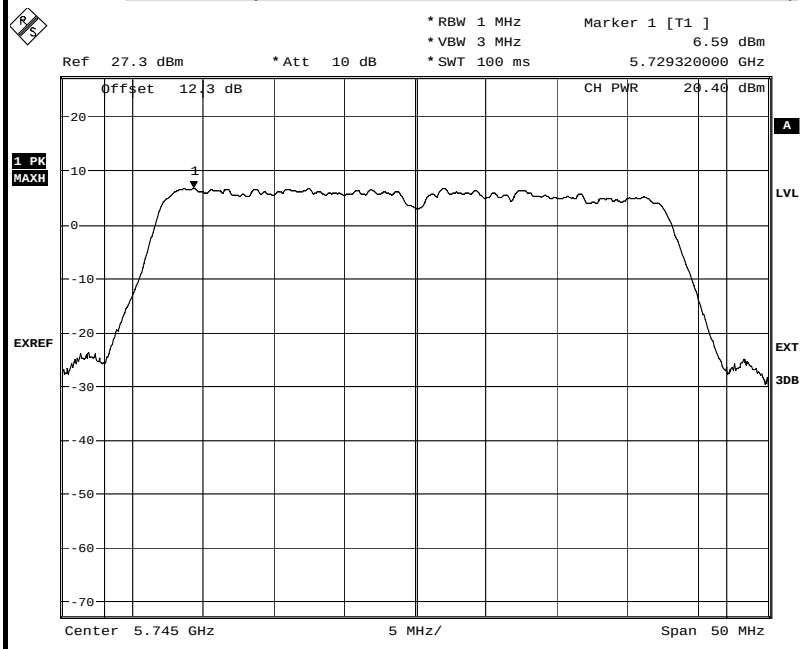


Date: 19.DEC.2012 17:22:55

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

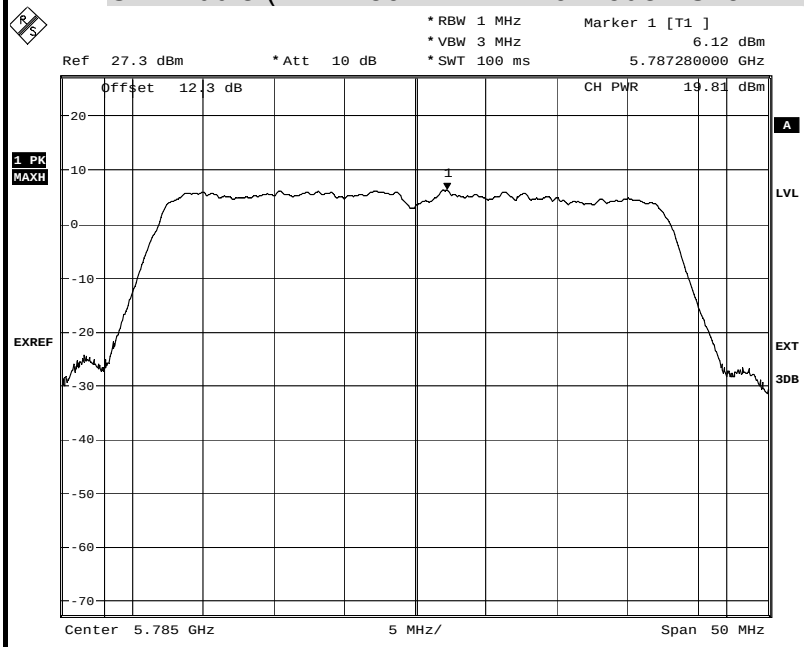


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



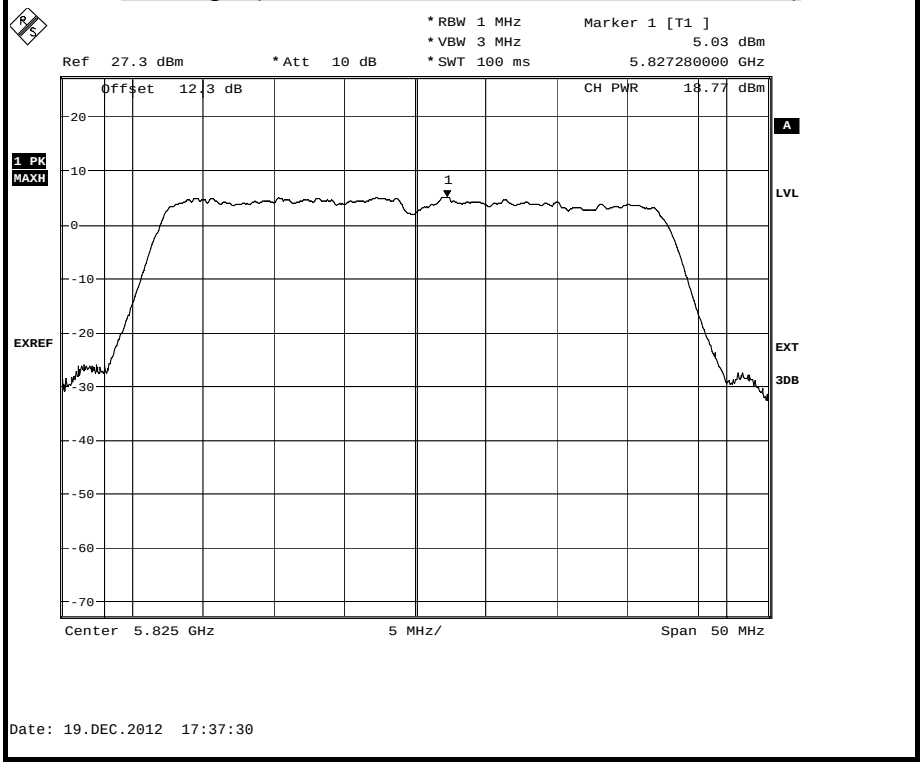
Date: 19.DEC.2012 17:28:58

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

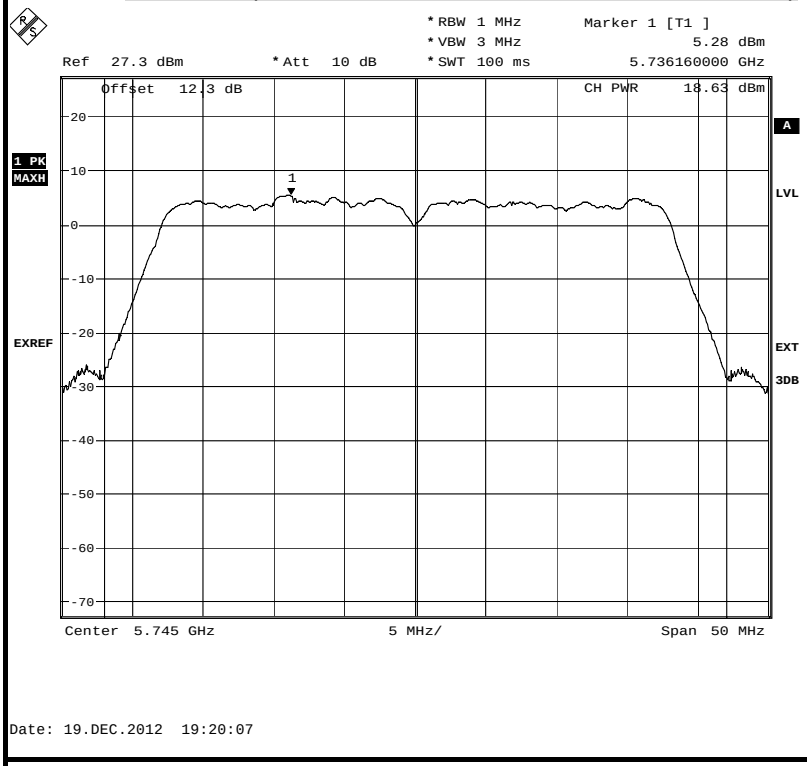


Date: 19.DEC.2012 17:35:51

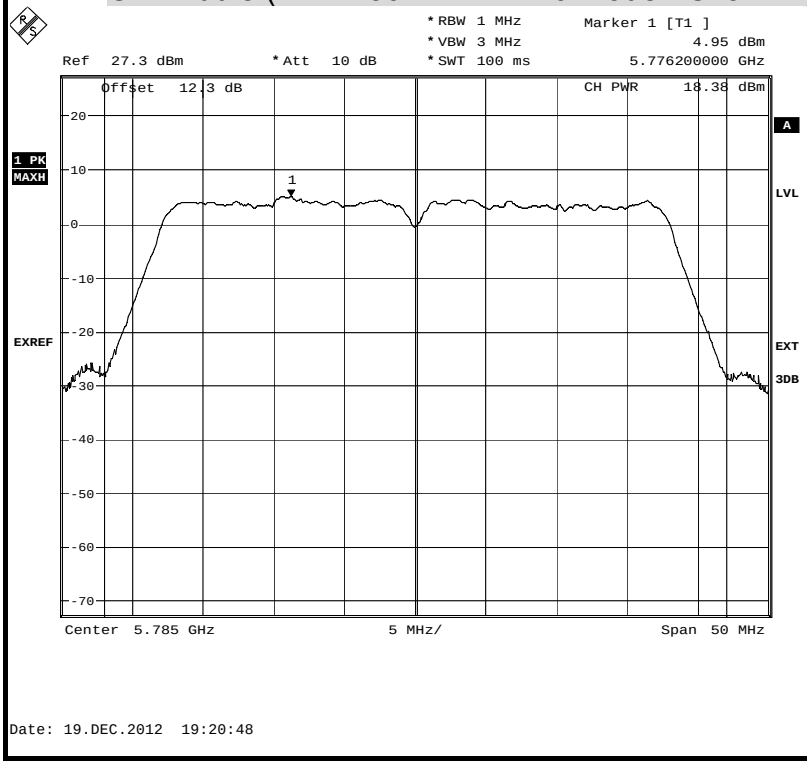
CH High (IEEE 802.11n HT40 Mode / Chain 1)



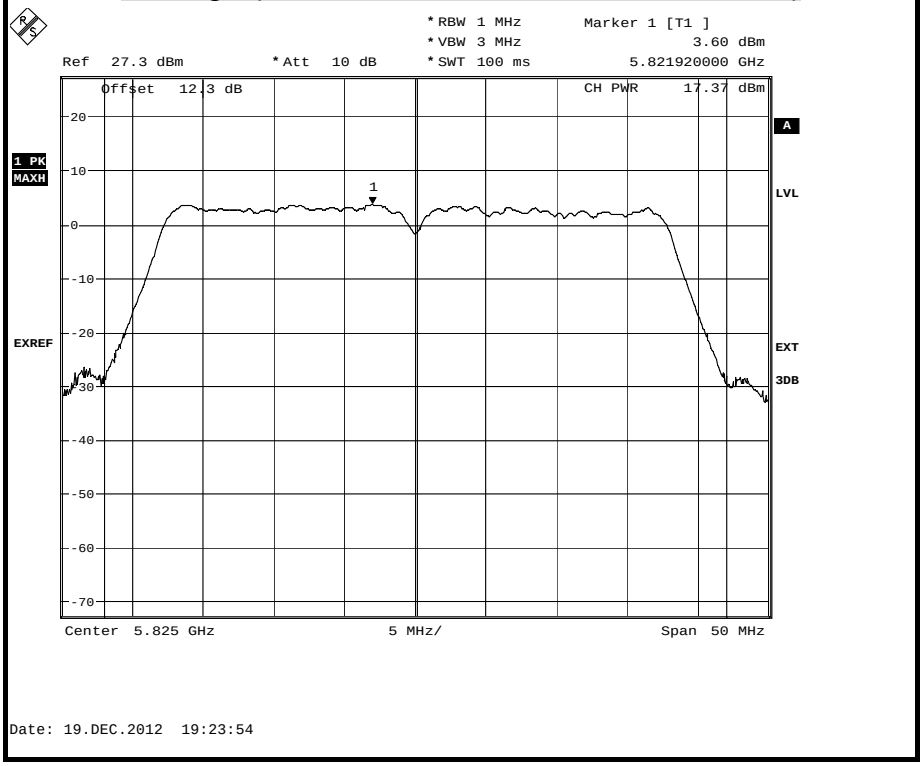
CH Low (IEEE 802.11n HT40 Mode / Chain 2)



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

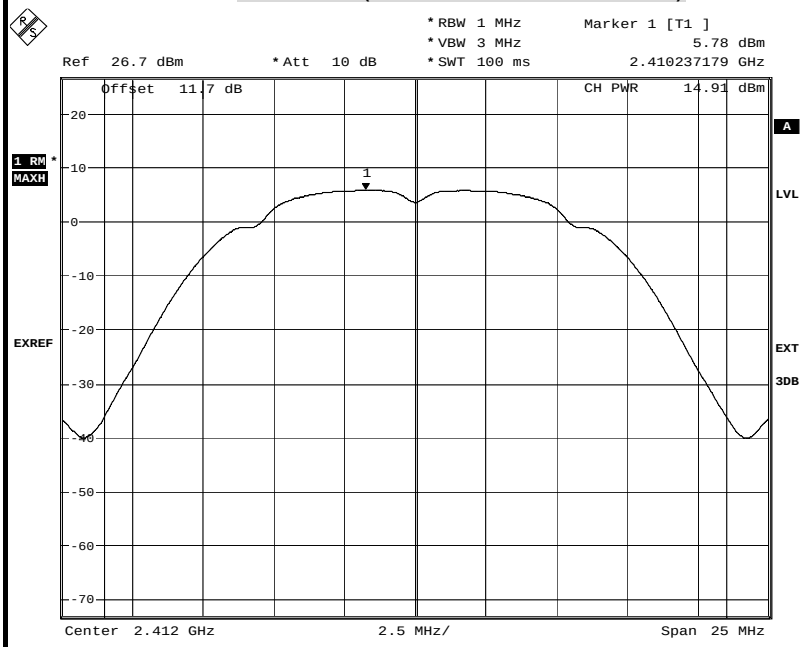


CH High (IEEE 802.11n HT40 Mode / Chain 2)



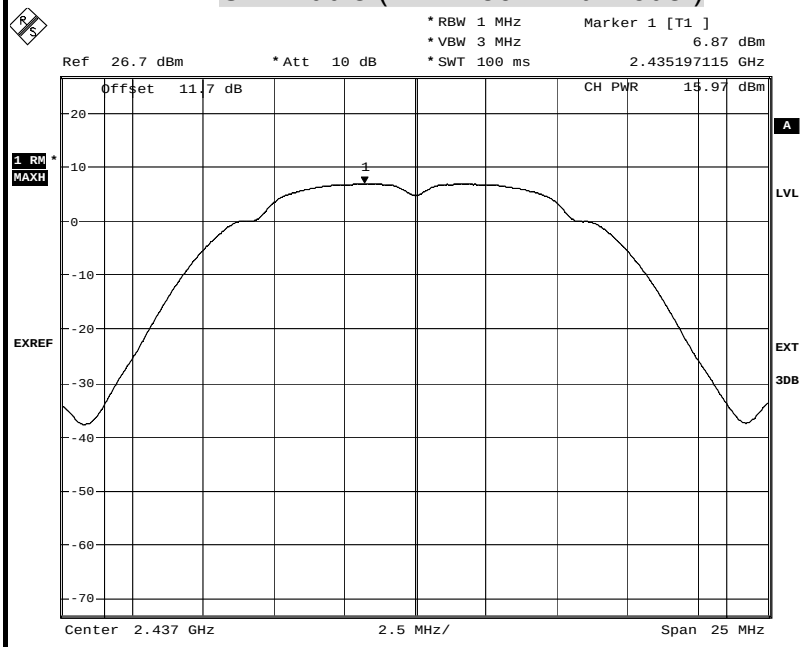
AVERAGE POWER(2.4G)

CH Low (IEEE 802.11b Mode)



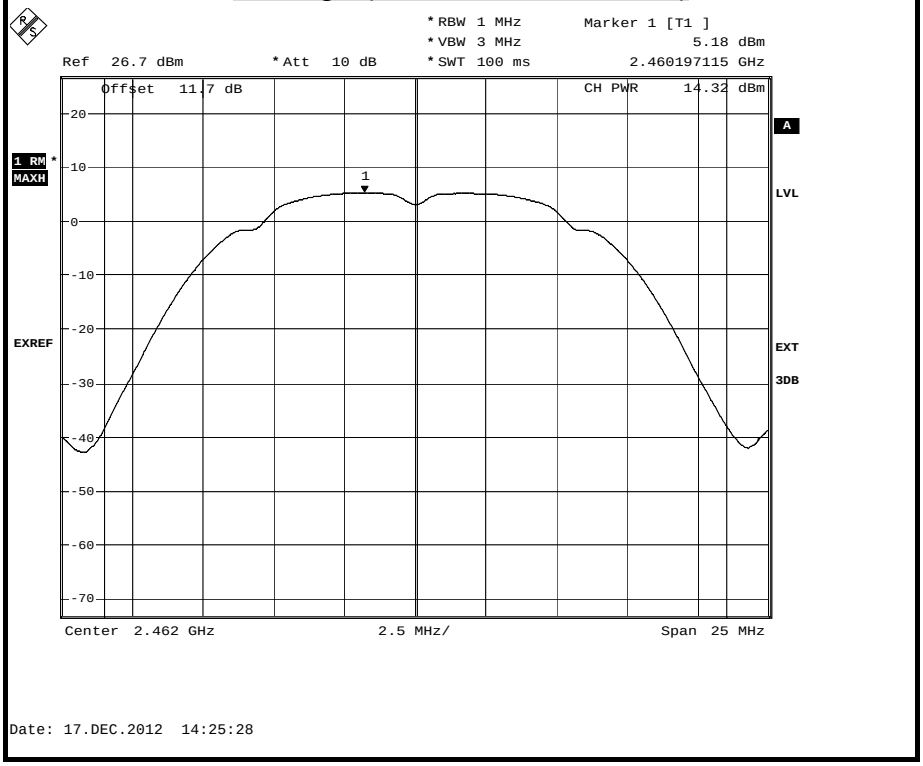
Date: 17.DEC.2012 14:21:58

CH Middle (IEEE 802.11b Mode)

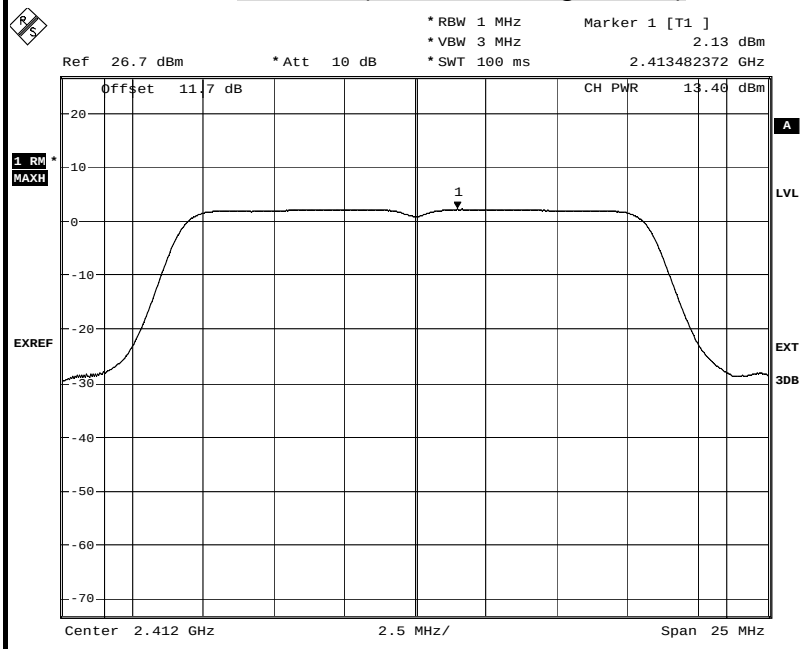


Date: 17.DEC.2012 14:23:30

CH High (IEEE 802.11b Mode)

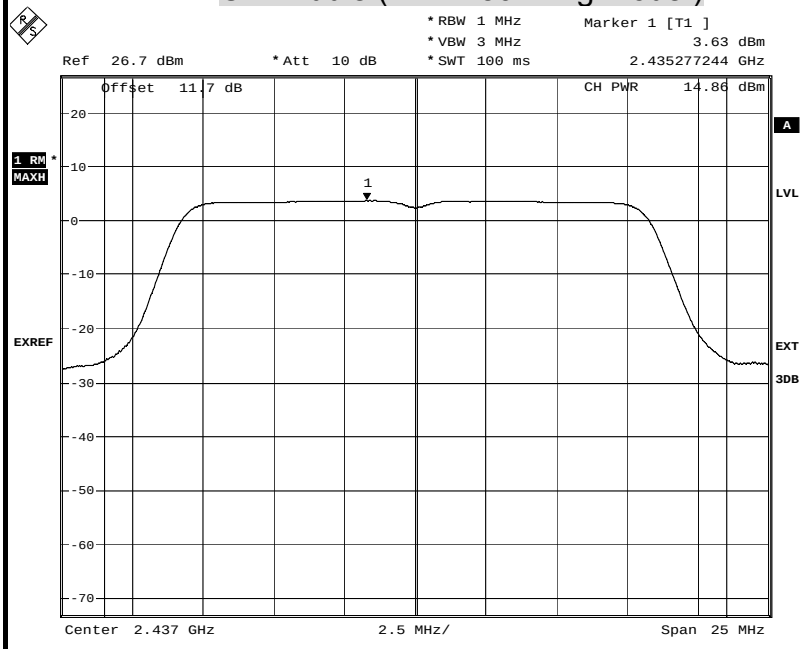


CH Low (IEEE 802.11g Mode)



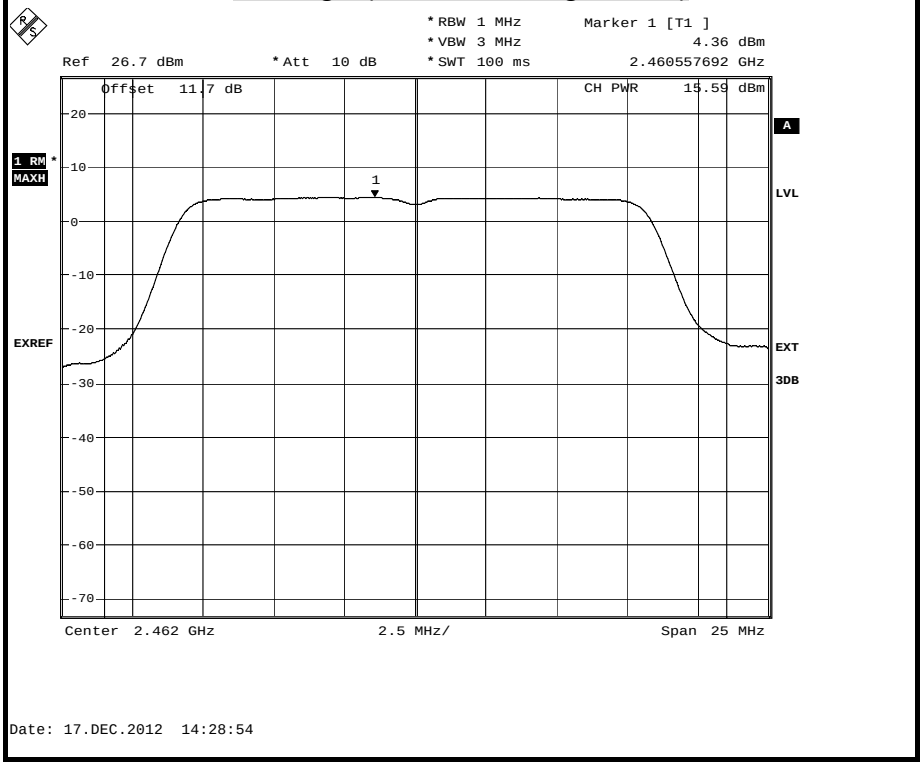
Date: 17.DEC.2012 14:26:16

CH Middle (IEEE 802.11g Mode)

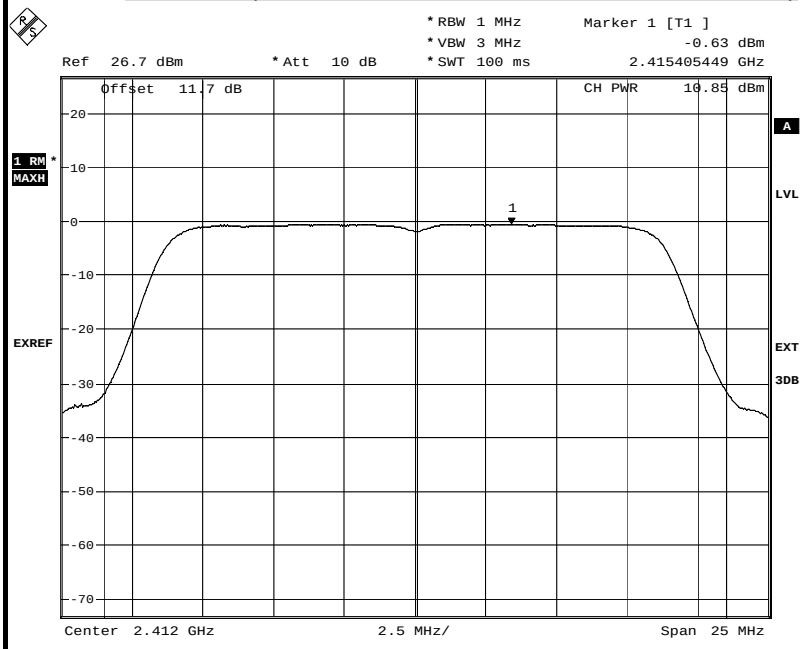


Date: 17.DEC.2012 14:30:19

CH High (IEEE 802.11g Mode)

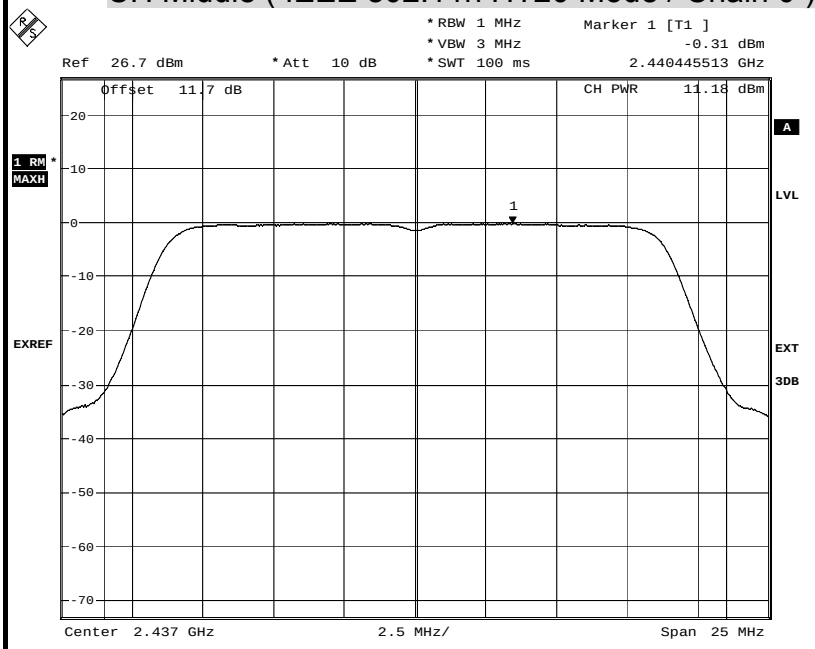


CH Low (IEEE 802.11n HT20 Mode / Chain 0)



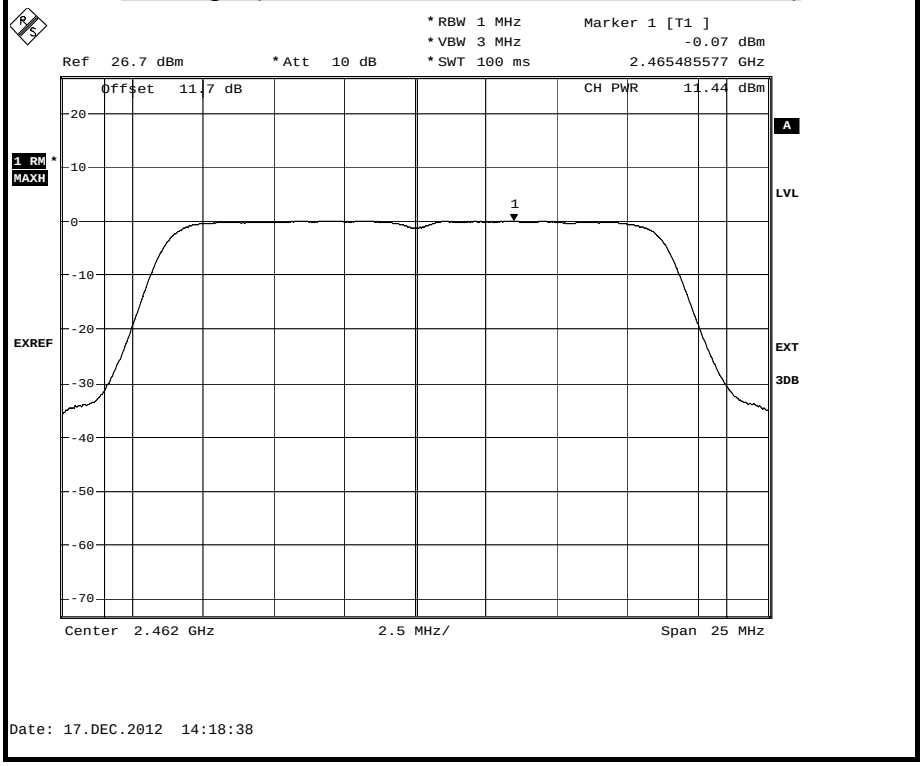
Date: 17.DEC.2012 14:15:48

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

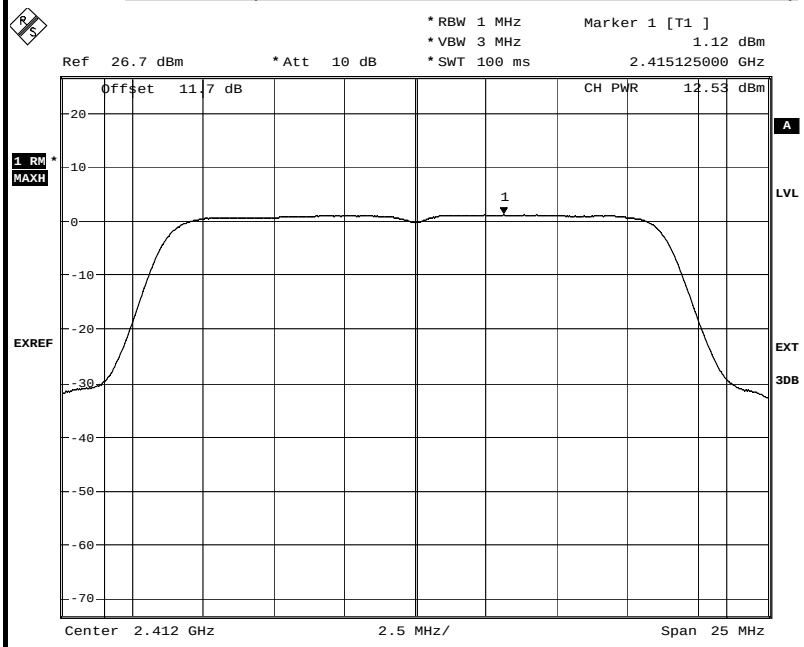


Date: 17.DEC.2012 14:17:48

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

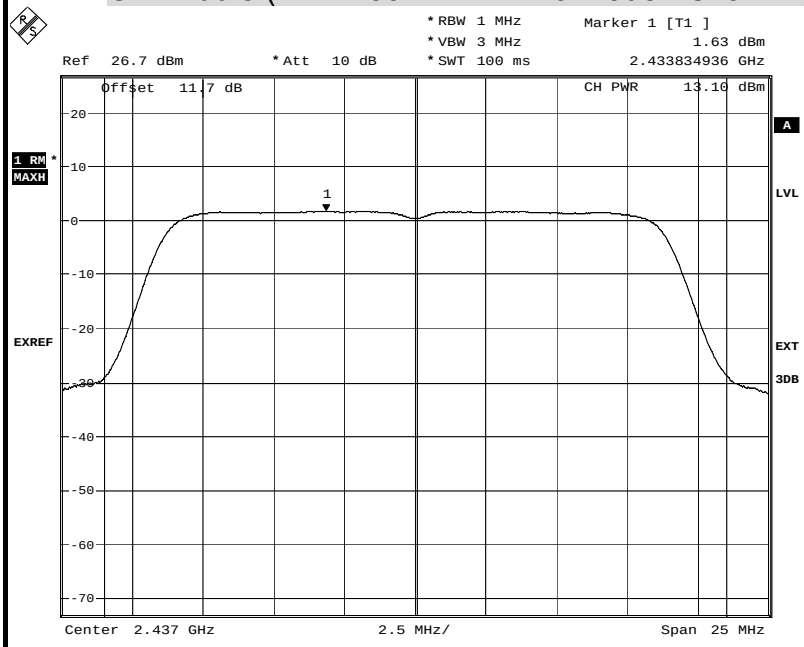


CH Low (IEEE 802.11n HT20 Mode / Chain 1)



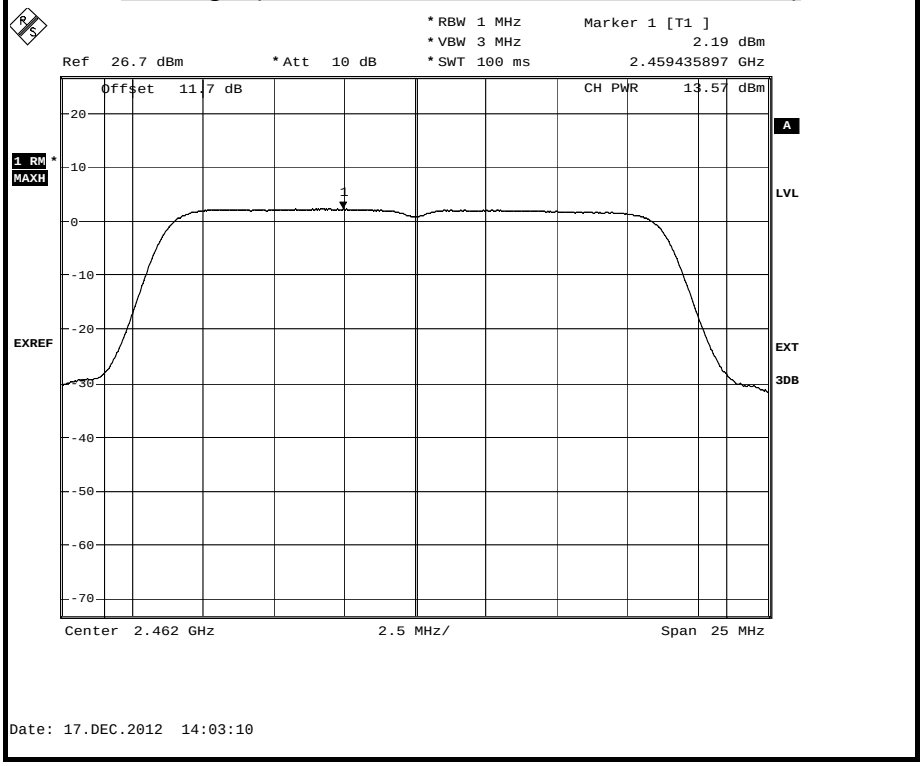
Date: 17.DEC.2012 14:00:08

CH Middle (IEEE 802.11n HT20 Mode / Chain 1)

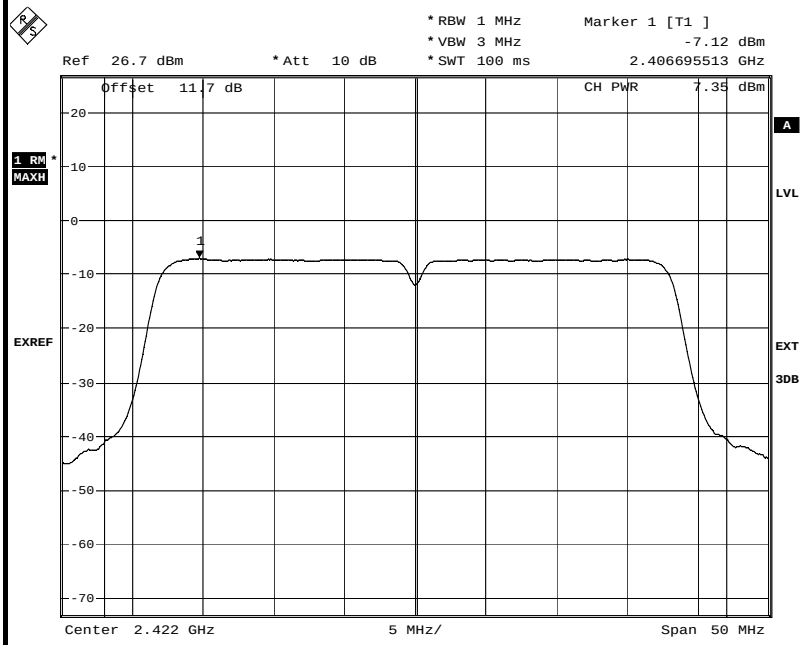


Date: 17.DEC.2012 14:01:41

CH High (IEEE 802.11n HT20 Mode / Chain 1)

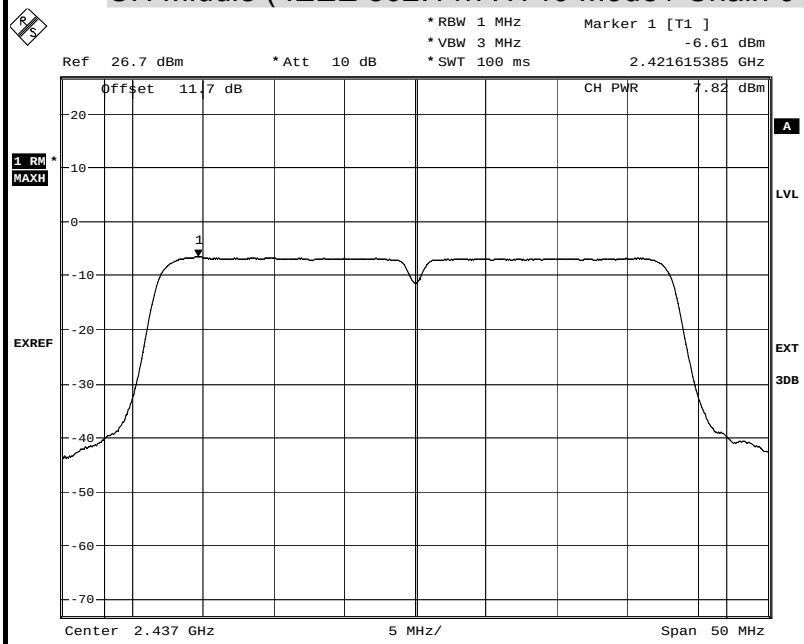


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



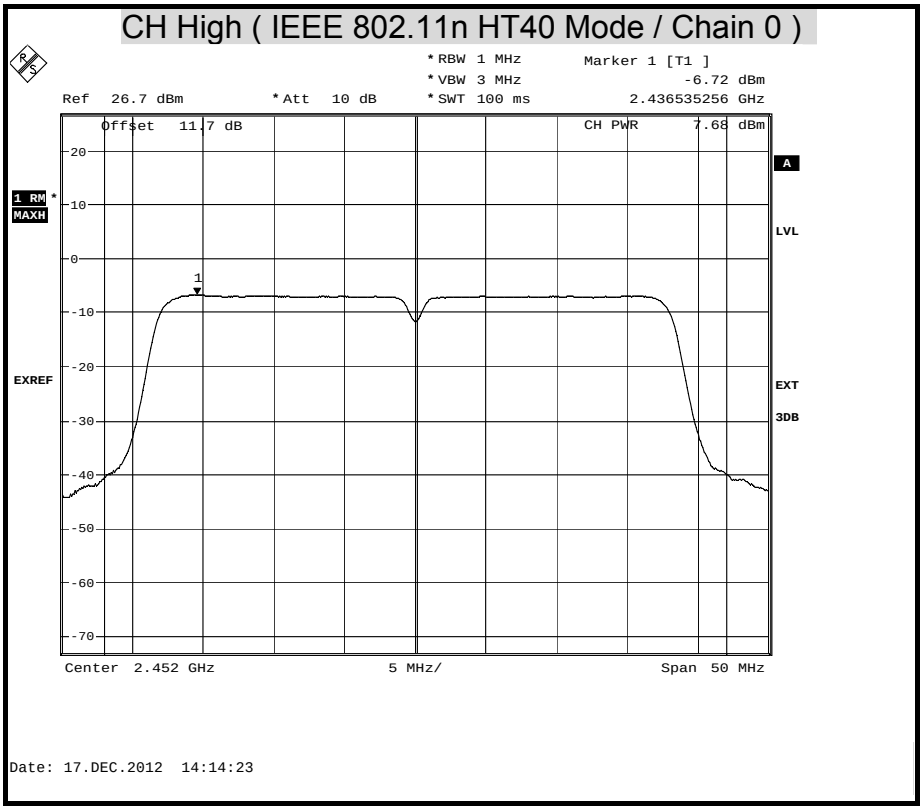
Date: 17.DEC.2012 14:10:58

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

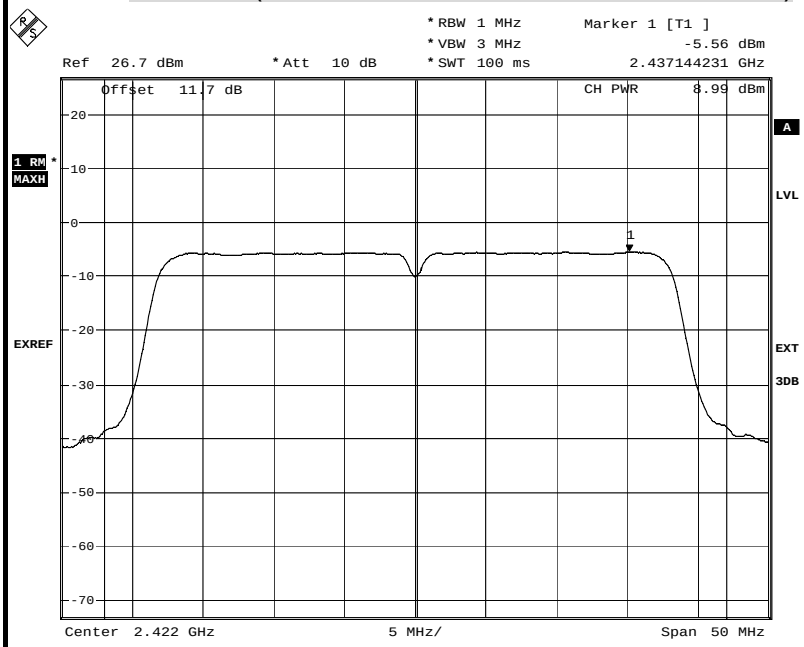


Date: 17.DEC.2012 14:12:45

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

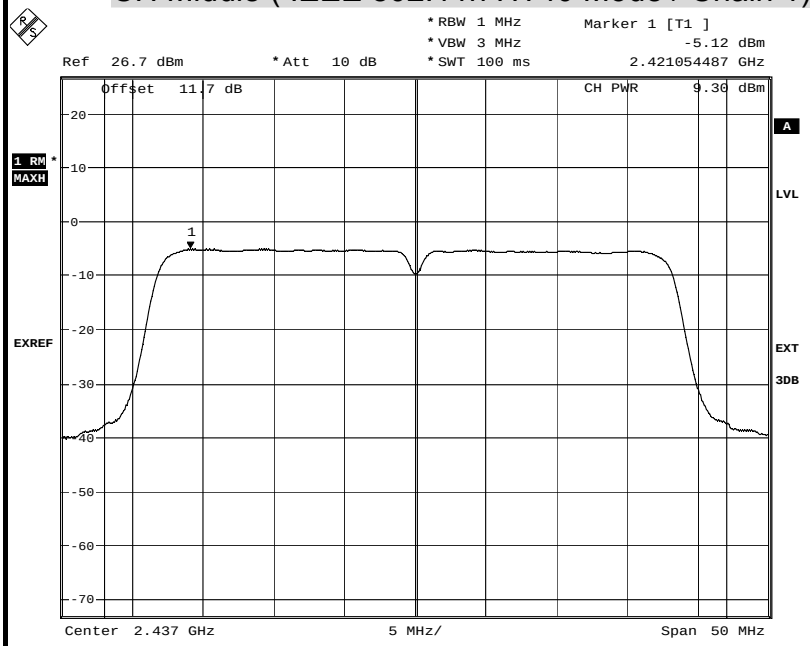


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



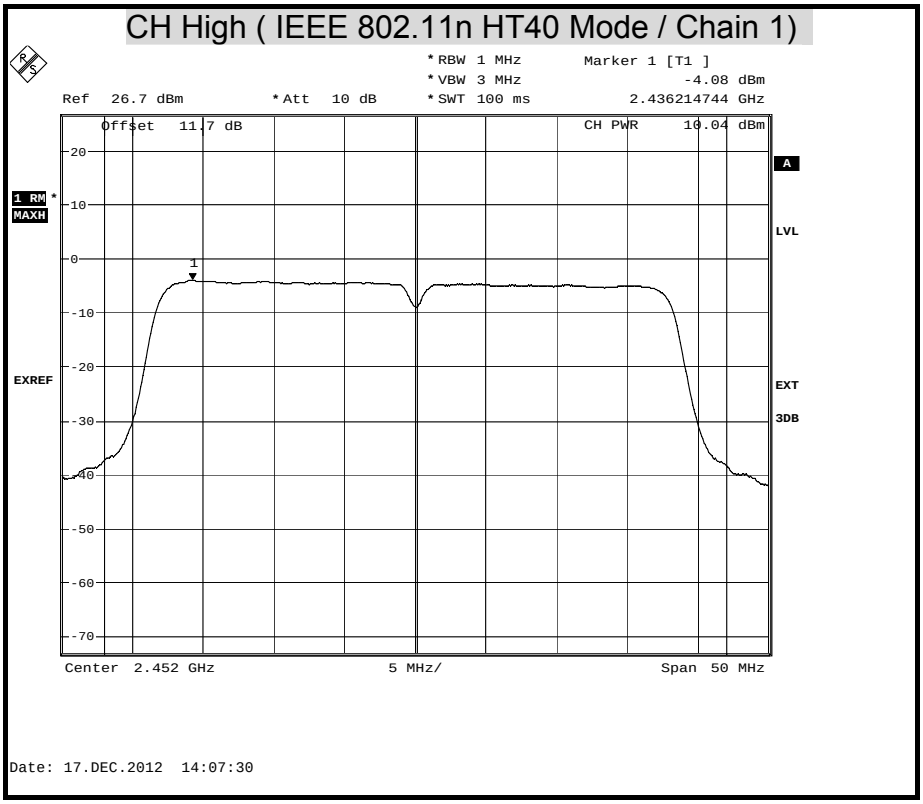
Date: 17.DEC.2012 14:04:05

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



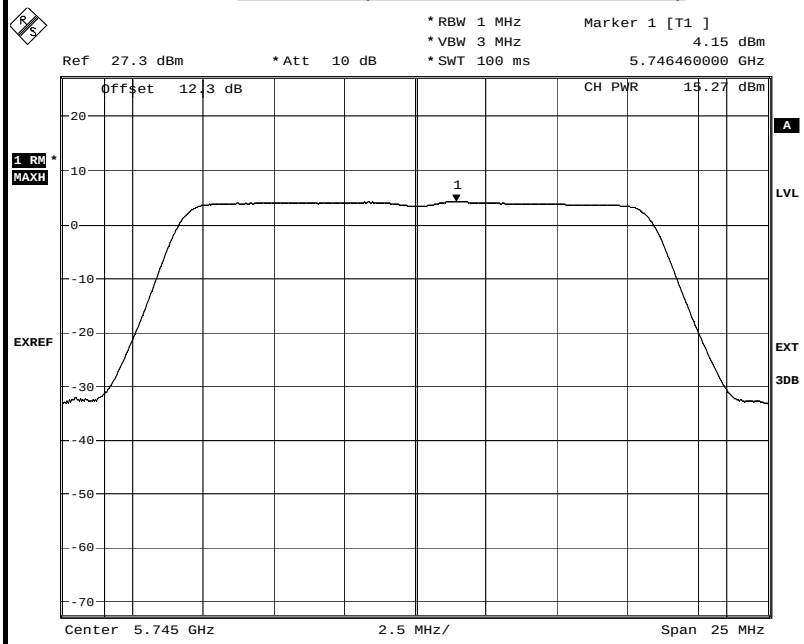
Date: 17.DEC.2012 14:06:00

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



AVERAGE POWER (5G)

CH Low (IEEE 802.11a Mode)



Date: 19.DEC.2012 16:56:11

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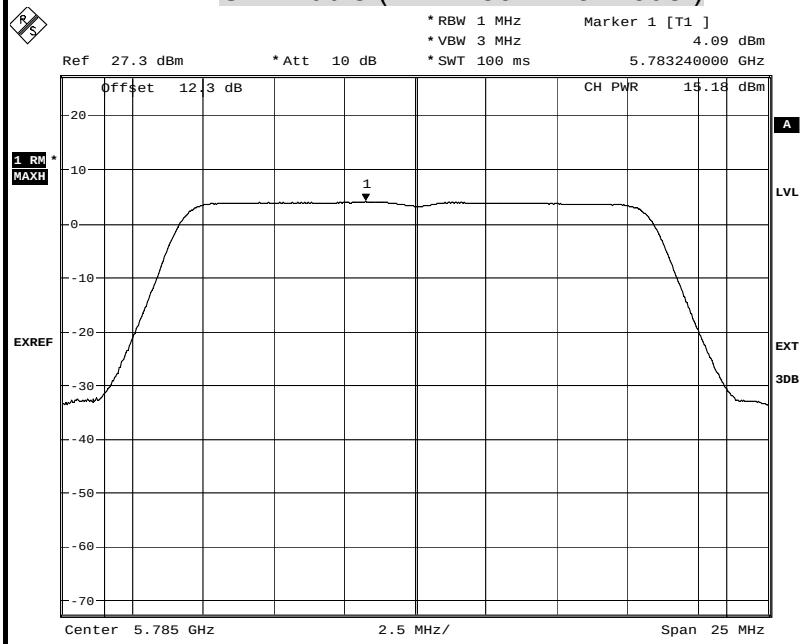

Date: 19.DEC.2012 16:57:54

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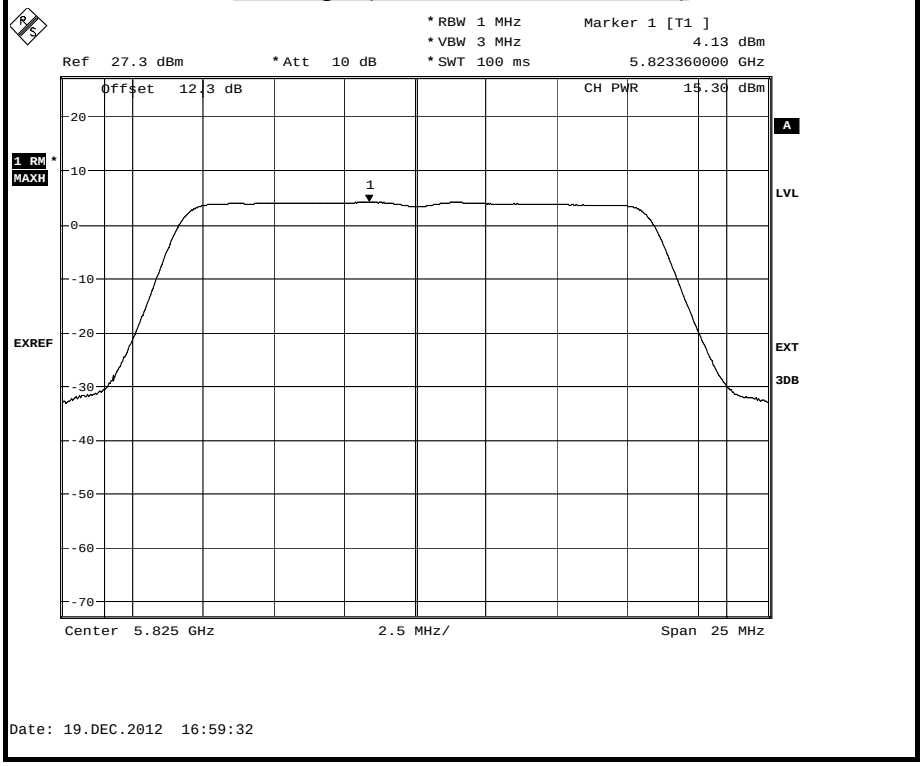
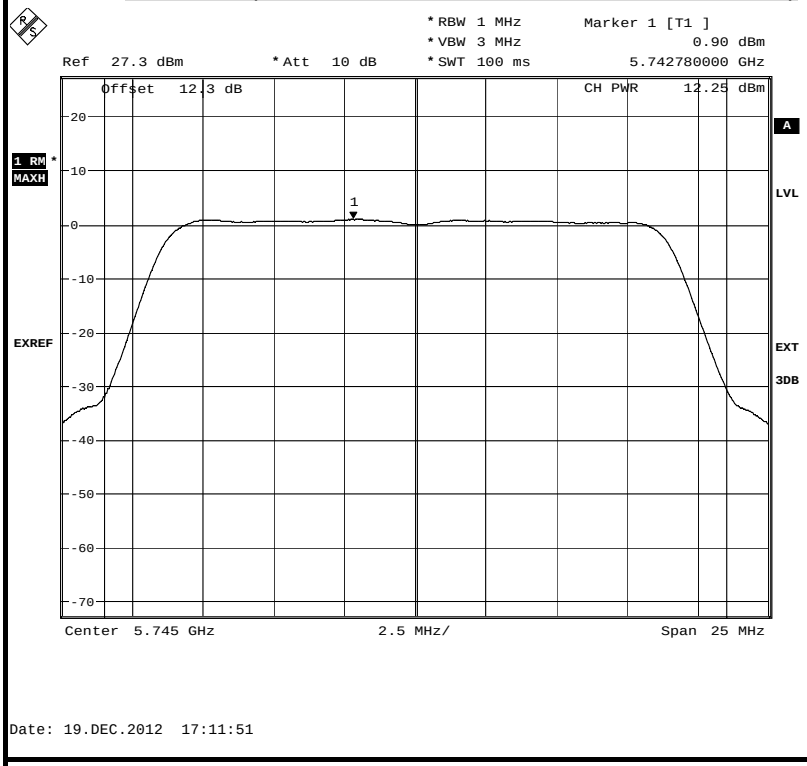


CH Low (IEEE 802.11n HT20 Mode / Chain 0)



Date: 19.DEC.2012 17:11:51

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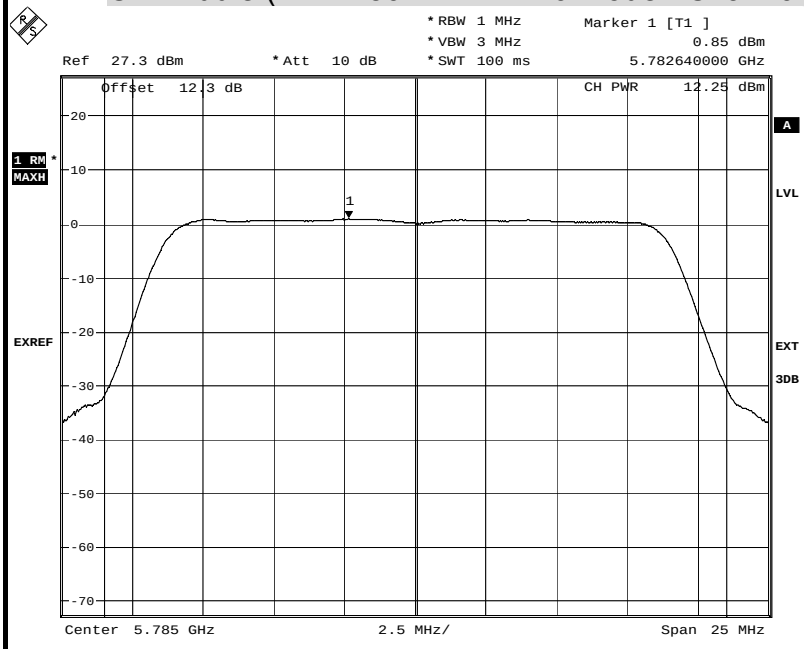

Date: 19.DEC.2012 17:14:07

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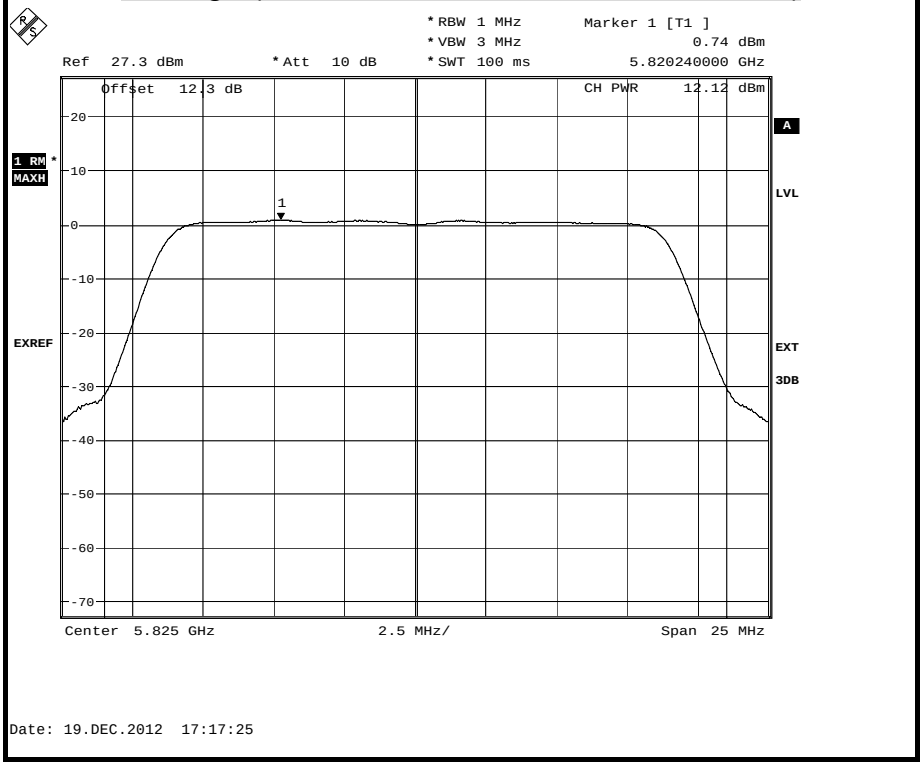
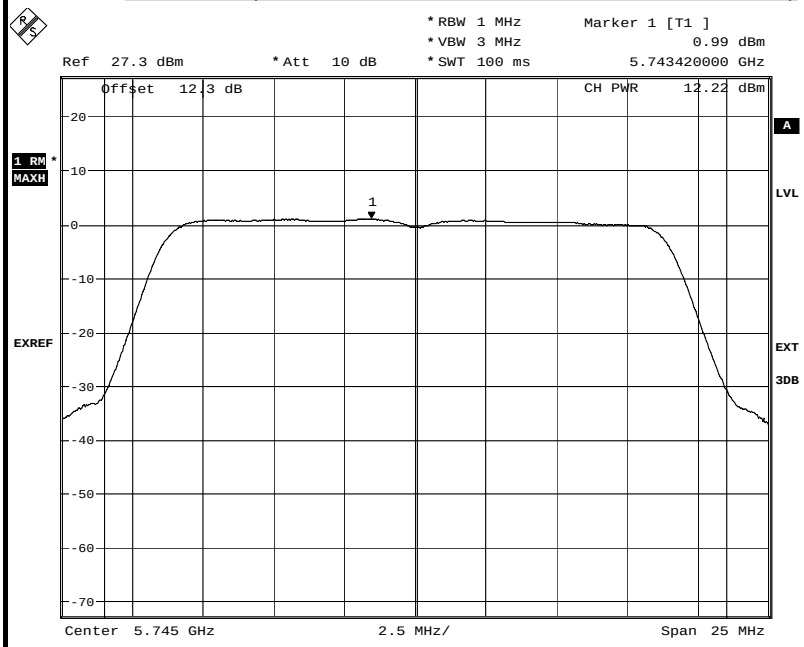


CH Low (IEEE 802.11n HT20 Mode / Chain 1)



Date: 19.DEC.2012 18:00:04

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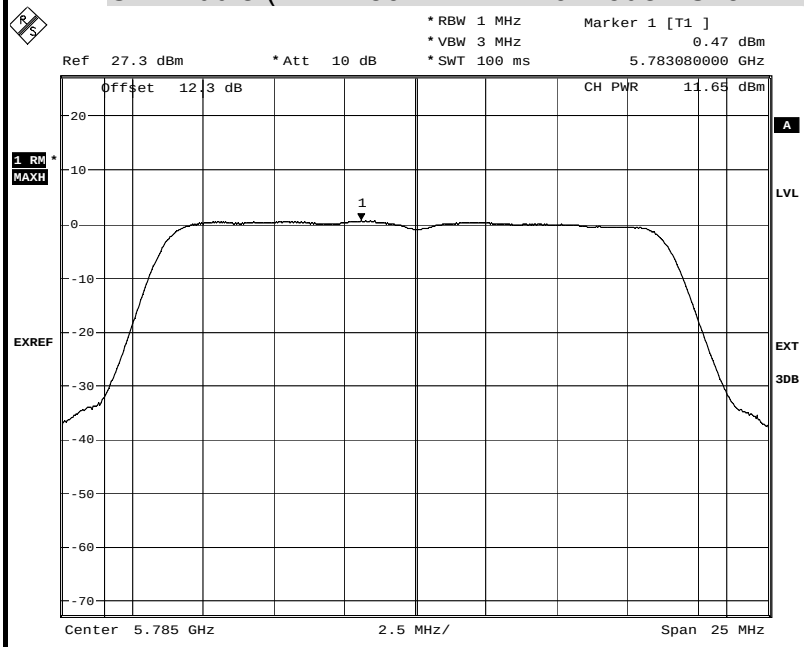

Date: 19.DEC.2012 18:01:39

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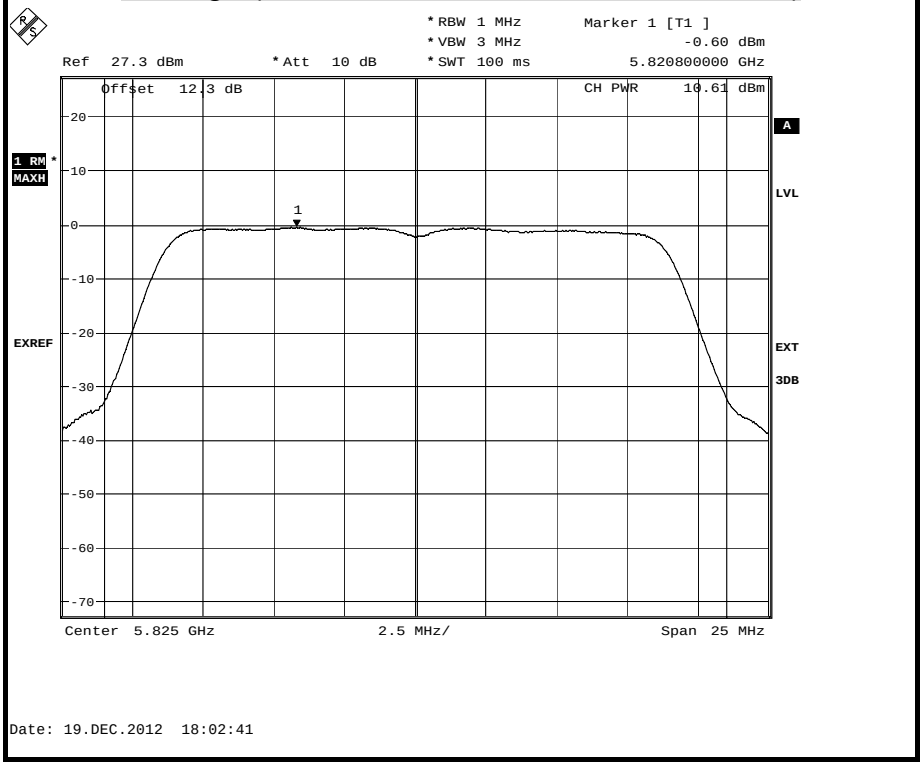

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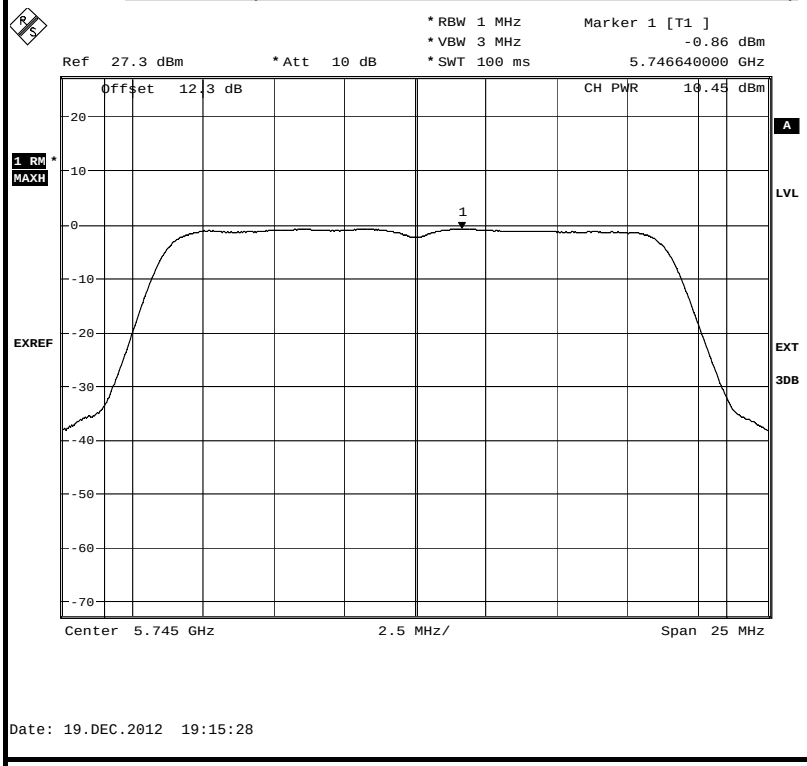

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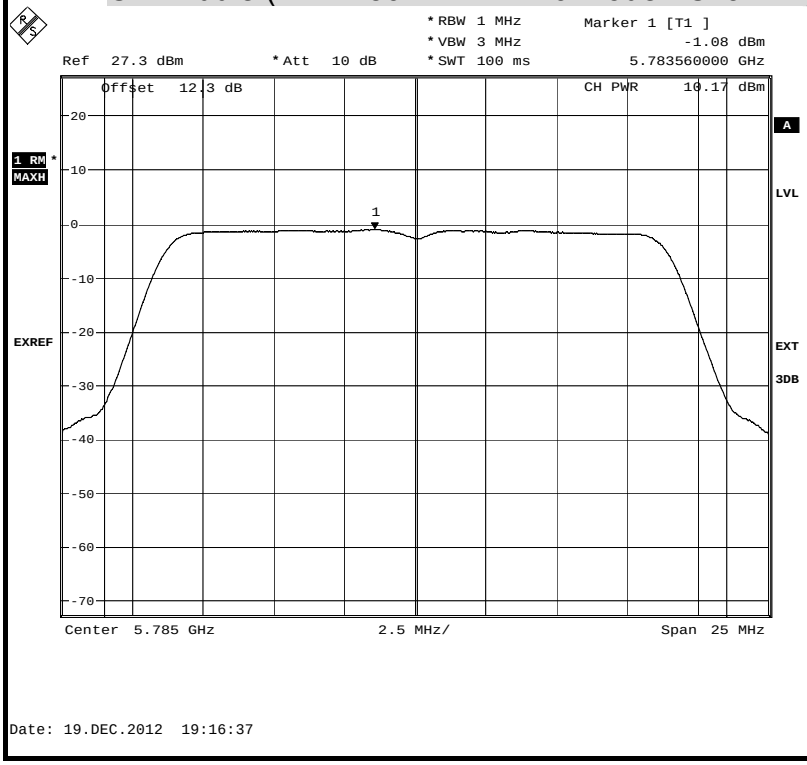

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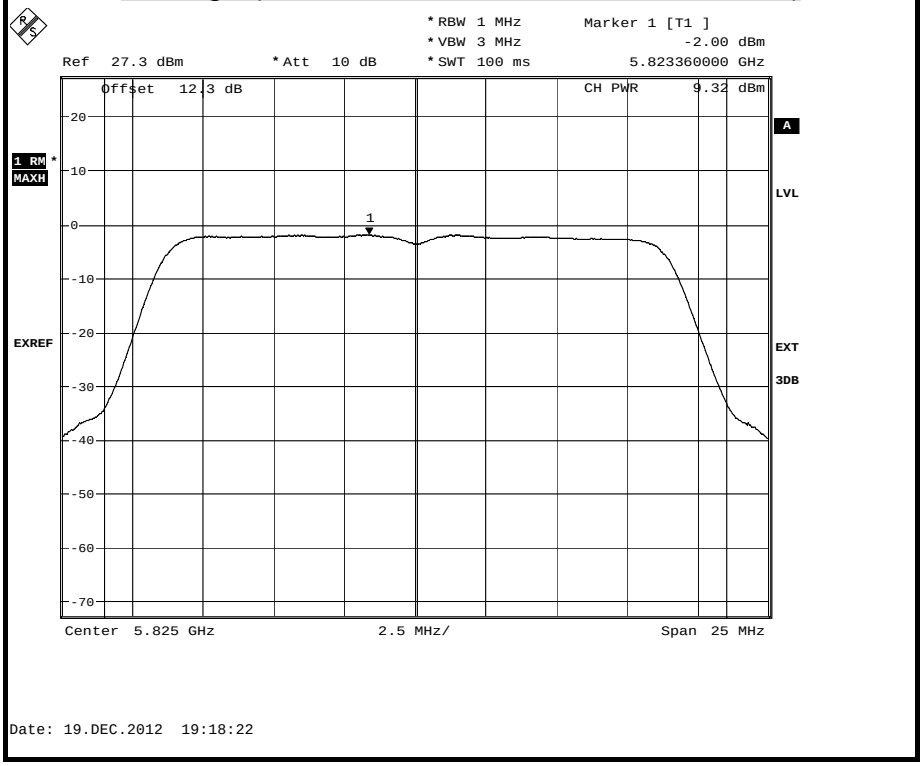
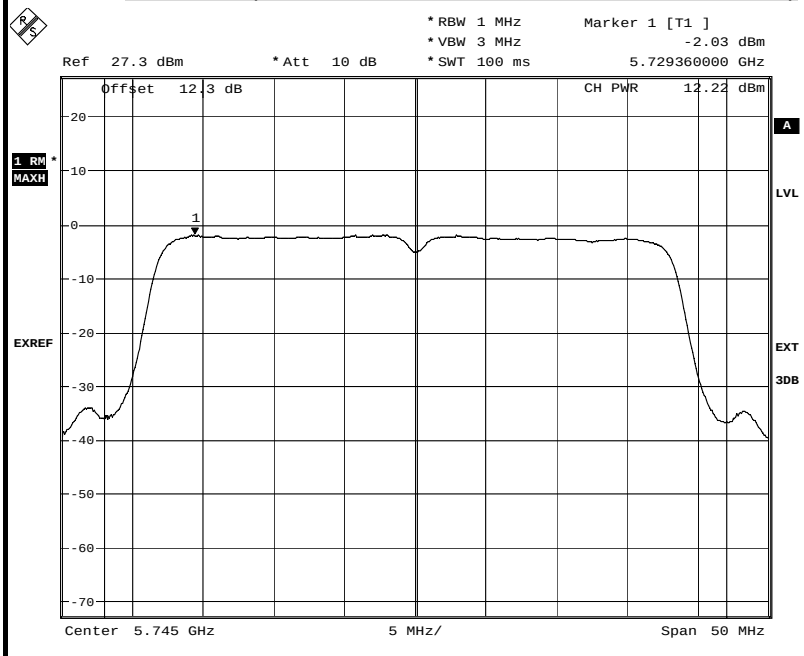


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



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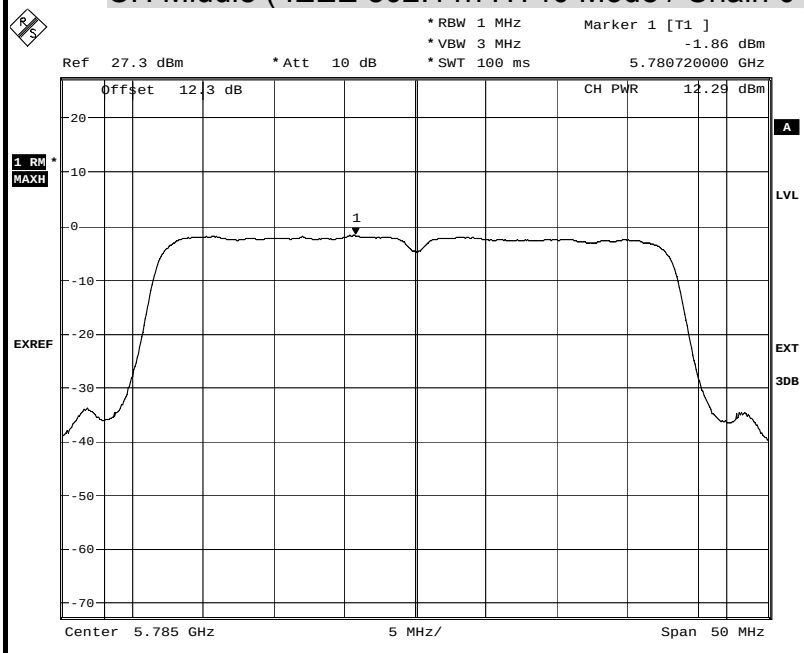

Date: 19.DEC.2012 17:23:10

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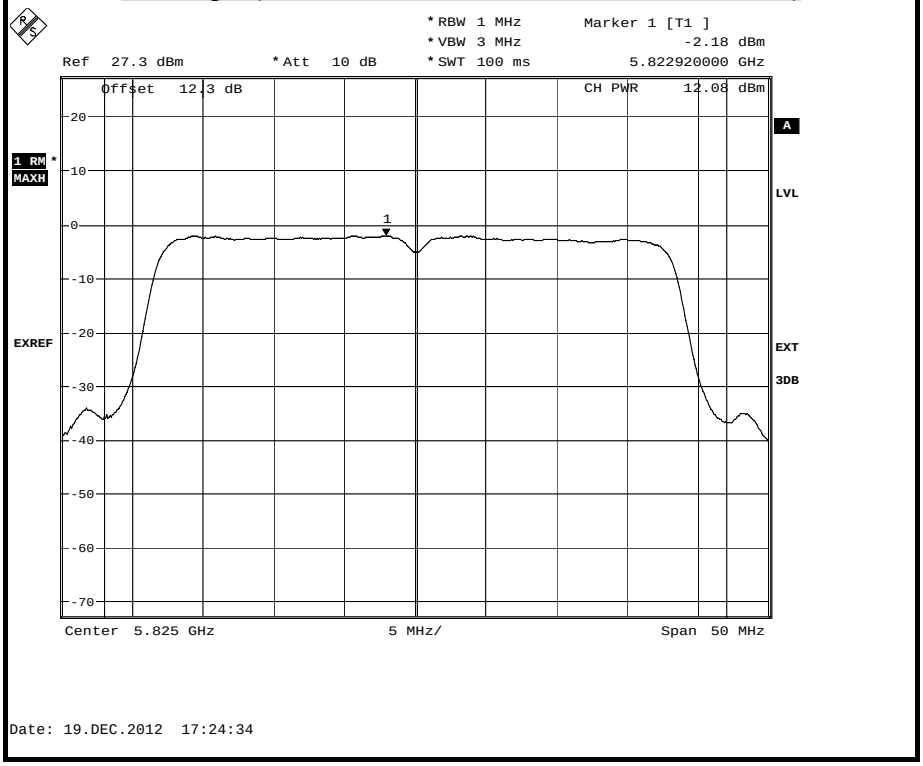
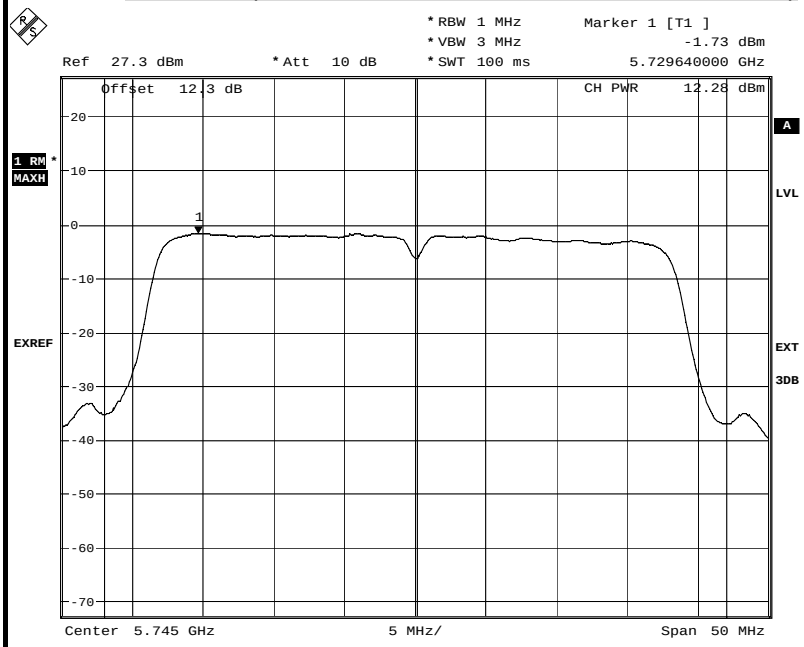


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



Date: 19.DEC.2012 17:30:45

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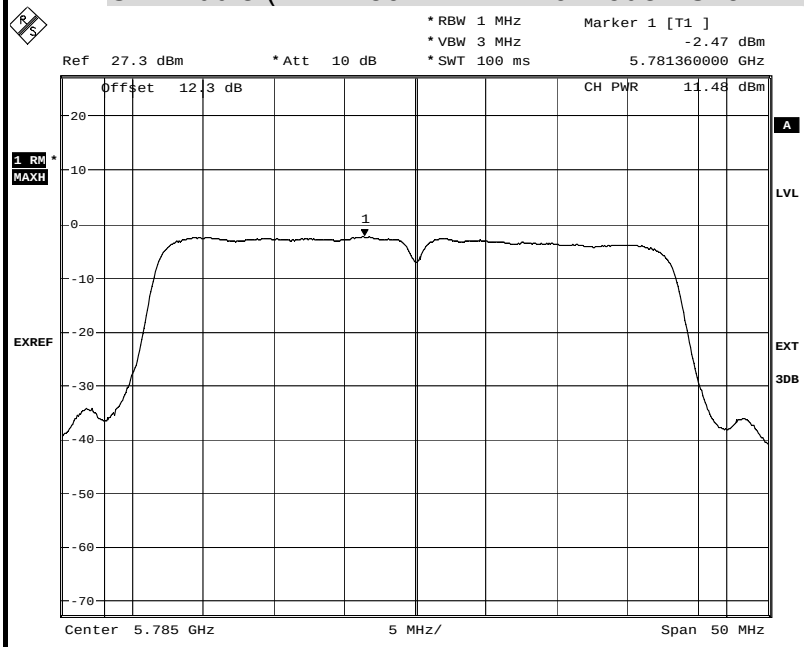

Date: 19.DEC.2012 17:35:23

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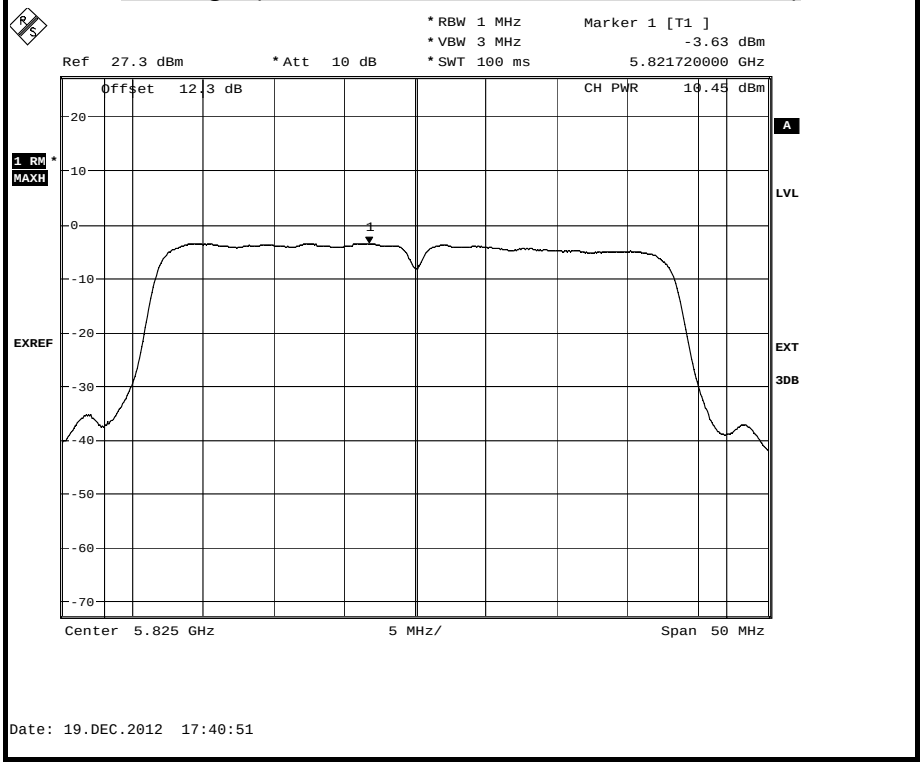

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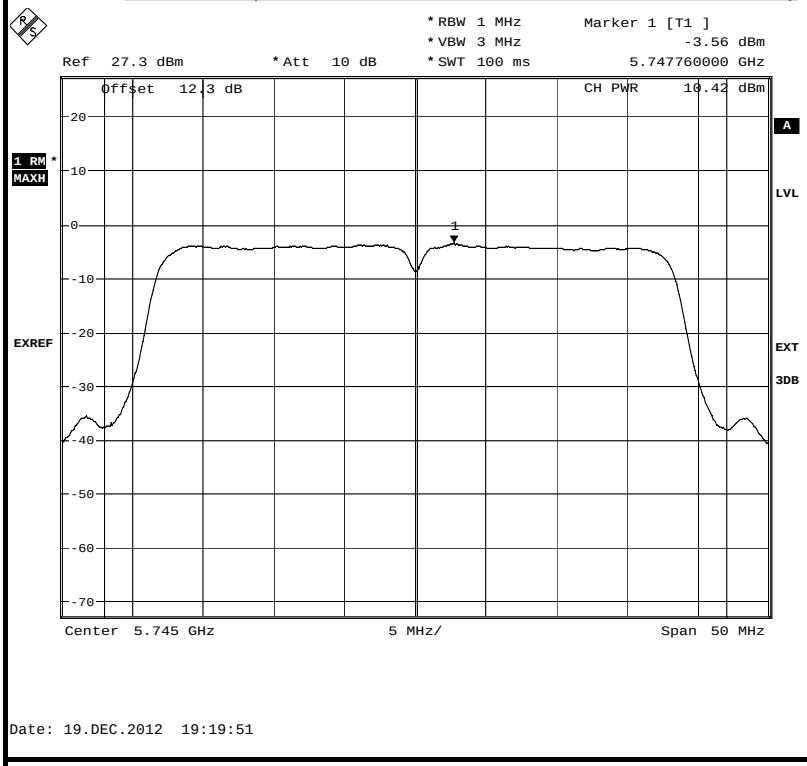
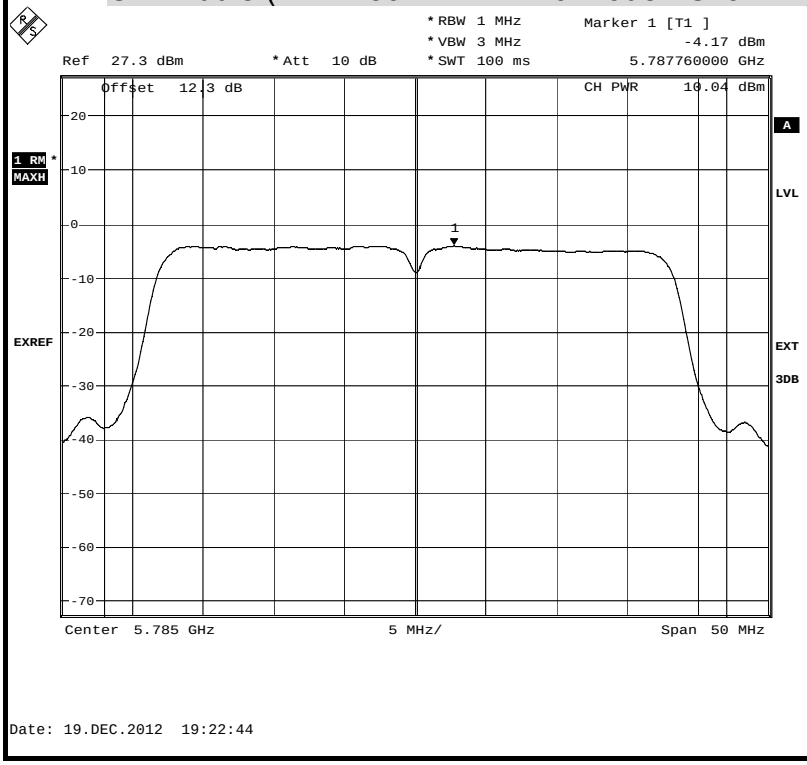
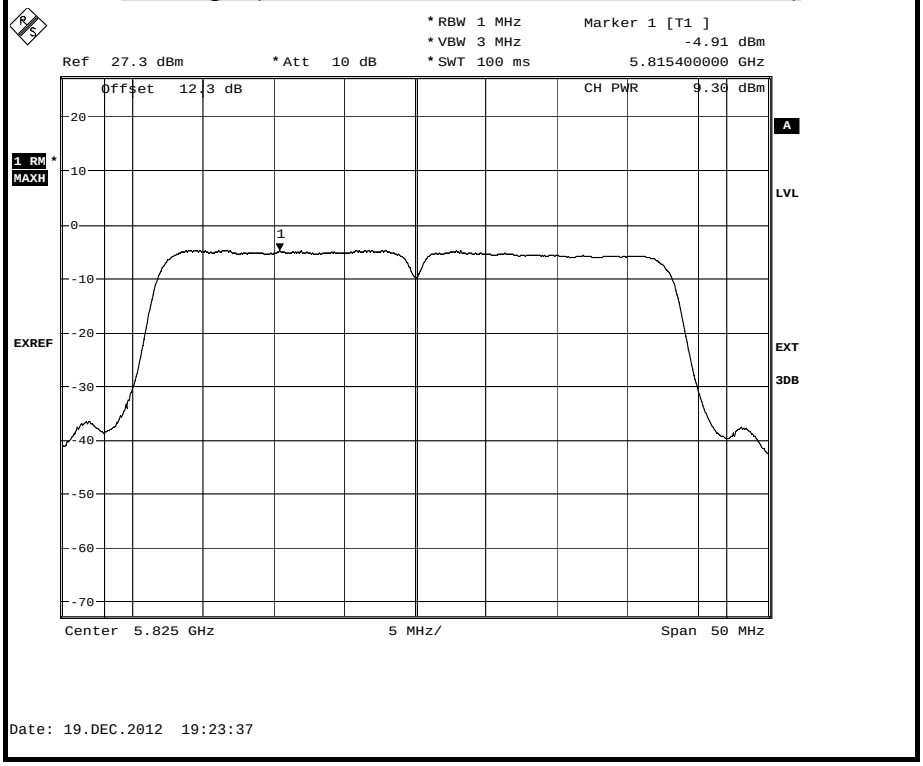


CH Middle (IEEE 802.11n HT40 Mode / Chain 2)



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



7.3 POWER SPECTRAL DENSITY

LIMITS

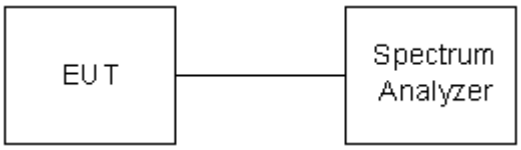
§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200789	SEP. 29, 2013

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

TEST SETUP



TEST PROCEDURE

The tests were performed in accordance with KDB 558074 5.3.1.

5.3.1 Measurement Procedure PKPSD:

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW ≥ 300 kHz.
4. Set the span to 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(3 kHz/100 kHz= -15.2 dB).11.The resulting peak PSD level must be ≤ 8 dBm.

TEST RESULTS

Antenna Gain1: 3 dBi

Antenna Gain2: 3 dBi

Array Gain=: 6.01 = 10*log ((10^(3 /10)+ (10^(3 /10)))

Peak Power Limit: 7.99 = 8- (6.01 -6)

IEEE 802.11b Mode

Channel	Frequency (MHz)	Reading (dBm)	BWCF (dB)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2412	3.64	-15.2	-11.56	8.00	-19.56	PASS
Middle	2437	4.71	-15.2	-10.49	8.00	-18.49	PASS
High	2462	5.67	-15.2	-9.53	8.00	-17.53	PASS

Remark:

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

2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g Mode

Channel	Frequency (MHz)	Reading (dBm)	BWCF (dB)	PPSD (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2412	-0.69	-15.2	-15.89	8.00	-23.89	PASS
Middle	2437	0.66	-15.2	-14.54	8.00	-22.54	PASS
High	2462	1.66	-15.2	-13.54	8.00	-21.54	PASS

Remark:

1. At finial test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 Mode

Channel	Frequency (MHz)	Reading Chain0 (dBm)	Reading Chain1 (dBm)	BWCF (dB)	PPSD Chain0 (dBm)	PPSD Chain1 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2412	-3.11	-1.11	-15.2	-18.31	-16.31	-14.19	7.99	-22.18	PASS
Middle	2437	-3.05	-0.48	-15.2	-18.25	-15.68	-13.77	7.99	-21.76	PASS
High	2462	-2.81	-0.15	-15.2	-18.01	-15.35	-13.47	7.99	-21.46	PASS

Remark:

1. At finial test to get the worst-case emission at 13Mbps.

2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 Mode

Channel	Frequency (MHz)	Reading Chain0 (dBm)	Reading Chain1 (dBm)	BWCF (dB)	PPSD Chain0 (dBm)	PPSD Chain1 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2422	-9.45	-7.55	-15.2	-24.65	-22.75	-20.59	7.99	-28.58	PASS
Middle	2437	-9.19	-7.26	-15.2	-24.39	-22.46	-20.31	7.99	-28.30	PASS
High	2452	-9.07	-6.52	-15.2	-24.27	-21.72	-19.80	7.99	-27.79	PASS

Remark:

1. At finial test to get the worst-case emission at 27Mbps.

2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

Antenna Gain1:	4	dBi						
Antenna Gain2:	4	dBi						
Antenna Gain3:	4	dBi						
Array Gain=:	8.77	=	10*log	((10^(	4	/10)+	(10^(4 /10)+	(10^(4 /10)))
PPSD Limit:	5.23	=	8-	(	8.77	-6	)	

IEEE 802.11a Mode

Channel	Frequency (MHz)	Reading Chain 0 (dBm)	BWCF (dB)	PPSD Chain 0 (dBm)	Limit (dBm)	Margin (dB)	Result
Low	5745	1.50	-15.20	-13.70	8.00	-21.70	PASS
Middle	5785	1.34	-15.20	-13.86	8.00	-21.86	PASS
High	5825	0.89	-15.20	-14.31	8.00	-22.31	PASS

Remark:

1. At finial test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 Mode

Channel	Frequency (MHz)	Reading Chain 0 (dBm)	Reading Chain 1 (dBm)	Reading Chain 2 (dBm)	BWCF (dB)	PPSD Chain 0 (dBm)	PPSD Chain 1 (dBm)	PPSD Chain 2 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)	Result
Low	5745	-0.66	-1.15	-3.08	-15.20	-15.86	-16.35	-18.28	-11.94	5.23	-17.17	PASS
Middle	5785	-1.40	-2.08	-2.91	-15.20	-16.60	-17.28	-18.11	-12.52	5.23	-17.74	PASS
High	5825	-1.67	-3.64	-4.10	-15.20	-16.87	-18.84	-19.30	-13.43	5.23	-18.66	PASS

Remark:

1. At finial test to get the worst-case emission at 19.5Mbps.
2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 Mode

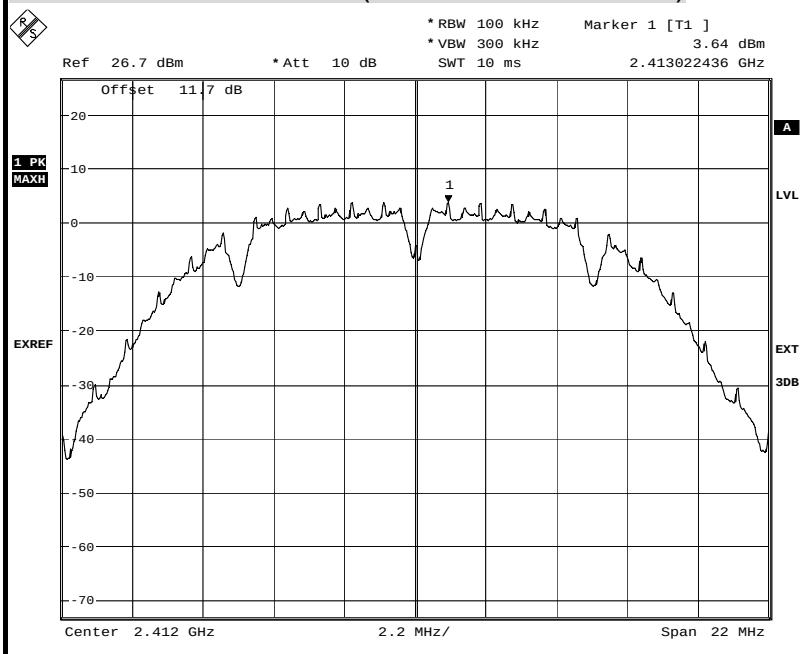
Channel	Frequency (MHz)	Reading Chain 0 (dBm)	Reading Chain 1 (dBm)	Reading Chain 2 (dBm)	BWCF (dB)	PPSD Chain 0 (dBm)	PPSD Chain 1 (dBm)	PPSD Chain 2 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)	Result
Low	5745	-4.15	-4.24	-6.34	-15.20	-19.35	-19.44	-21.54	-15.23	5.23	-20.46	PASS
Middle	5785	-3.85	-4.91	-6.20	-15.20	-19.05	-20.11	-21.40	-15.31	5.23	-20.54	PASS
High	5825	-4.70	-6.24	-7.56	-15.20	-19.90	-21.44	-22.76	-16.44	5.23	-21.67	PASS

Remark:

1. At finial test to get the worst-case emission at 40.5Mbps.
2. The cable assembly insertion loss of 12.3dB (including 10 dB pad and 2.3 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

POWER SPECTRAL DENSITY (2.4G)

CH Low (IEEE 802.11b Mode)



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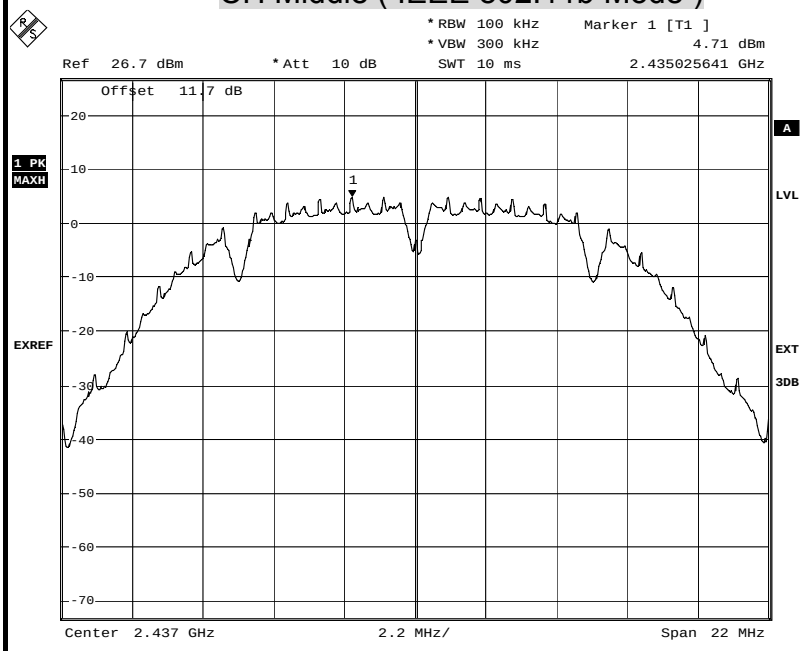
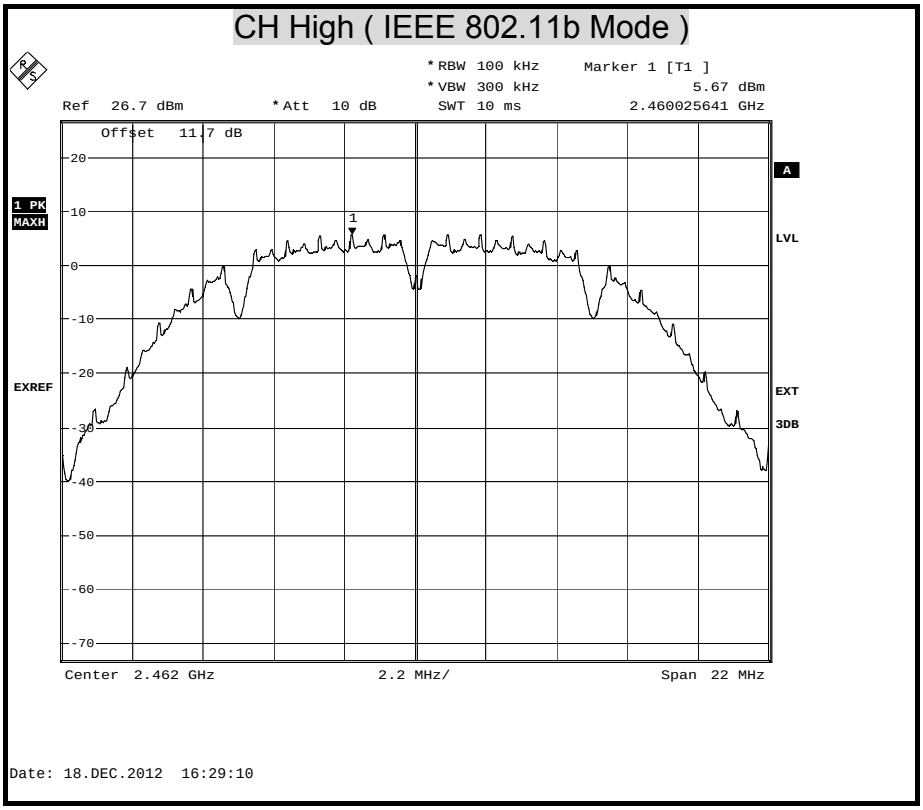
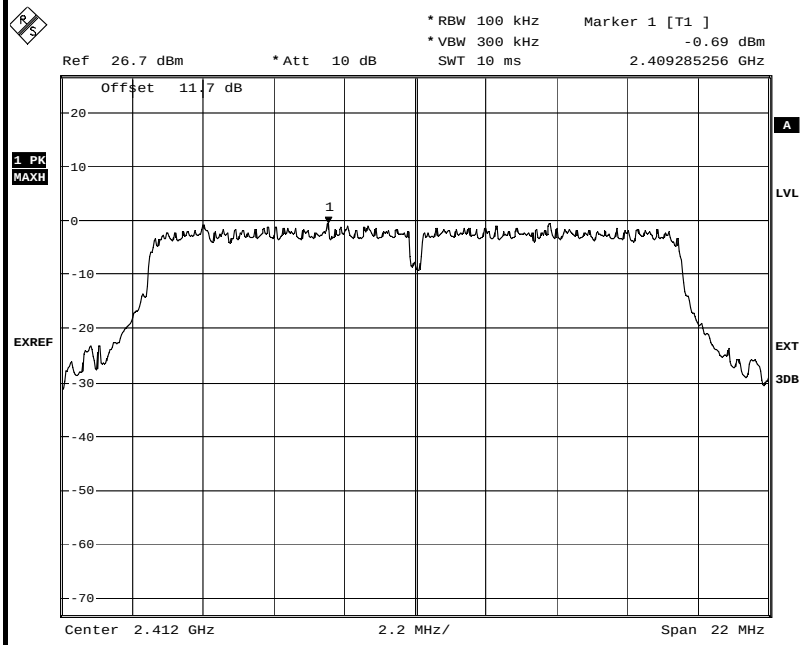


Date: 18.DEC.2012 16:28:17

CH High (IEEE 802.11b Mode)



CH Low (IEEE 802.11g Mode)



Date: 18.DEC.2012 16:29:52

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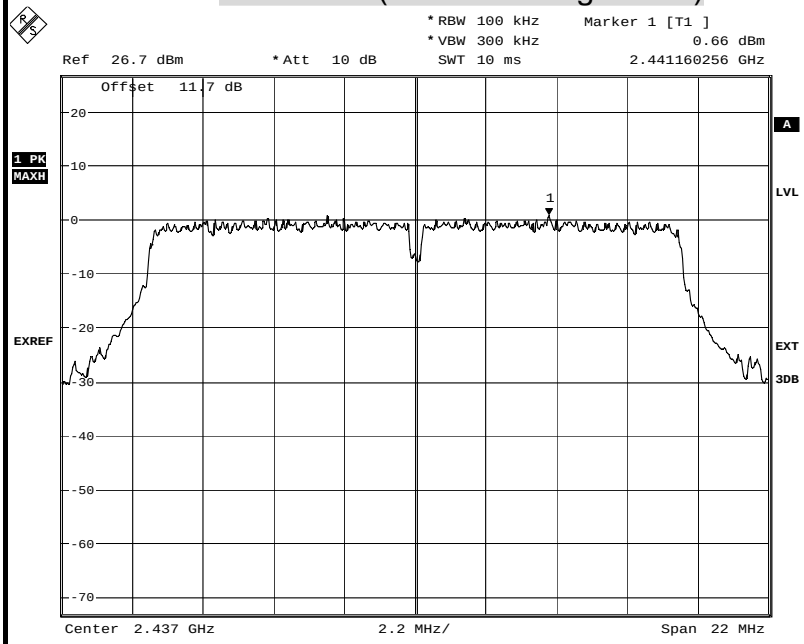

Date: 18.DEC.2012 16:30:33

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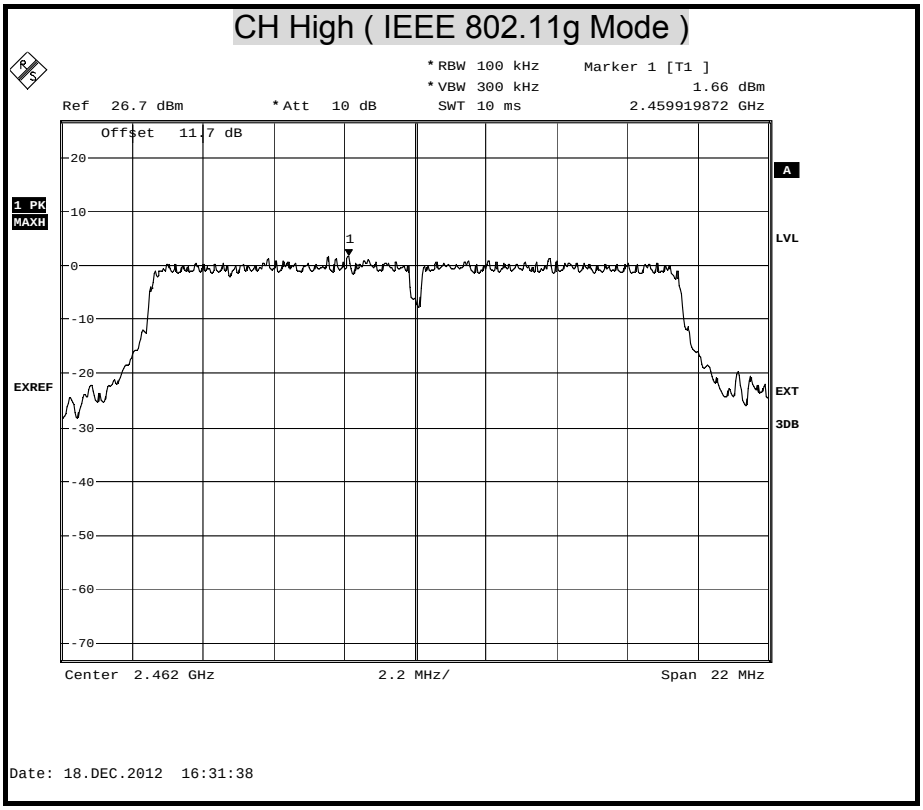
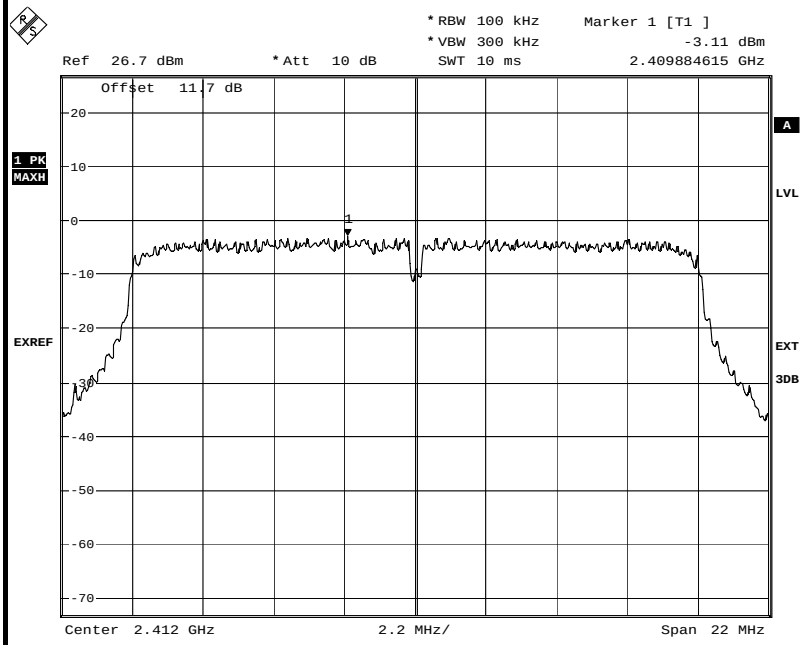


CH Low (IEEE 802.11n HT20 Mode / Chain 0)



Date: 18.DEC.2012 16:33:00

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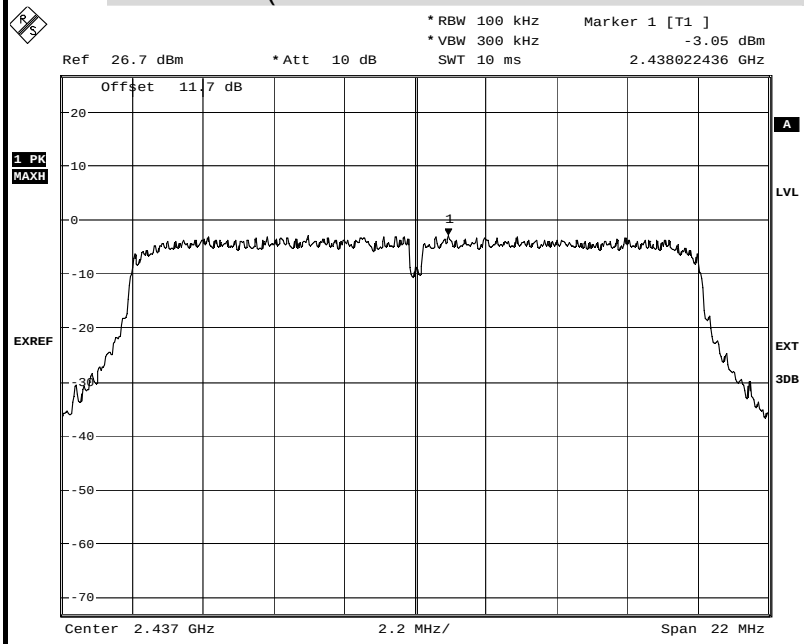

Date: 18.DEC.2012 16:33:44

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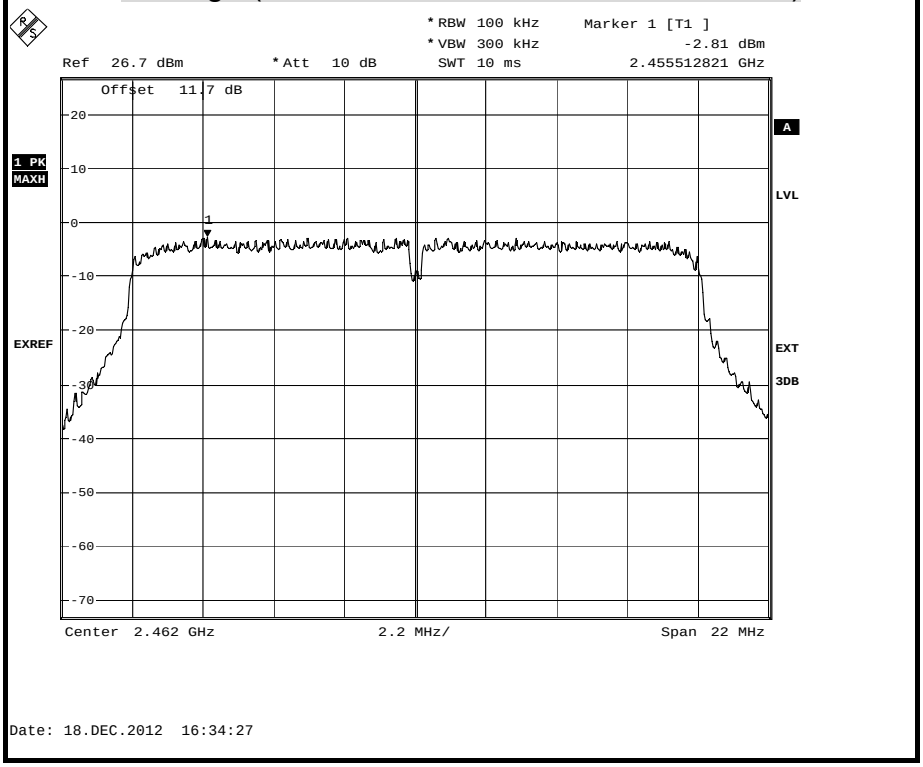
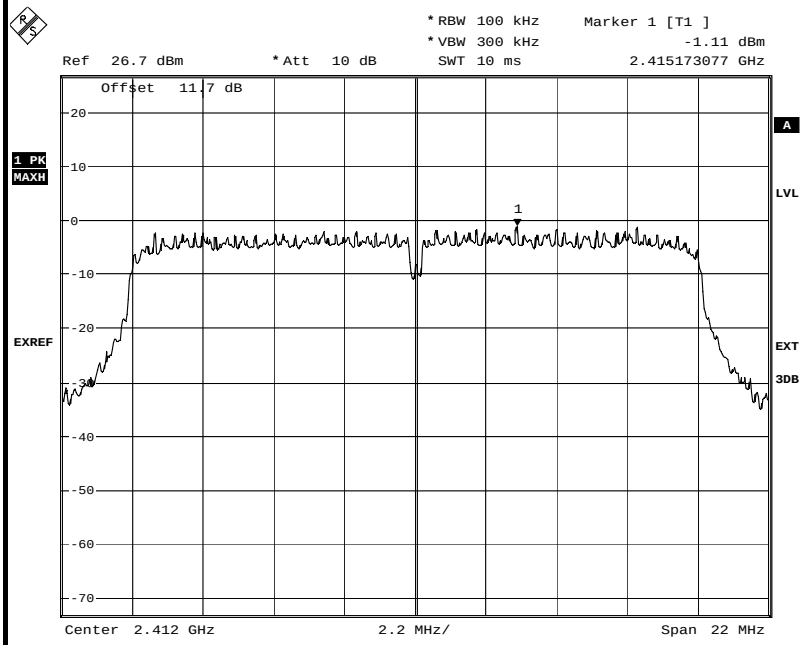


CH Low (IEEE 802.11n HT20 Mode / Chain 1)



Date: 18.DEC.2012 16:44:28

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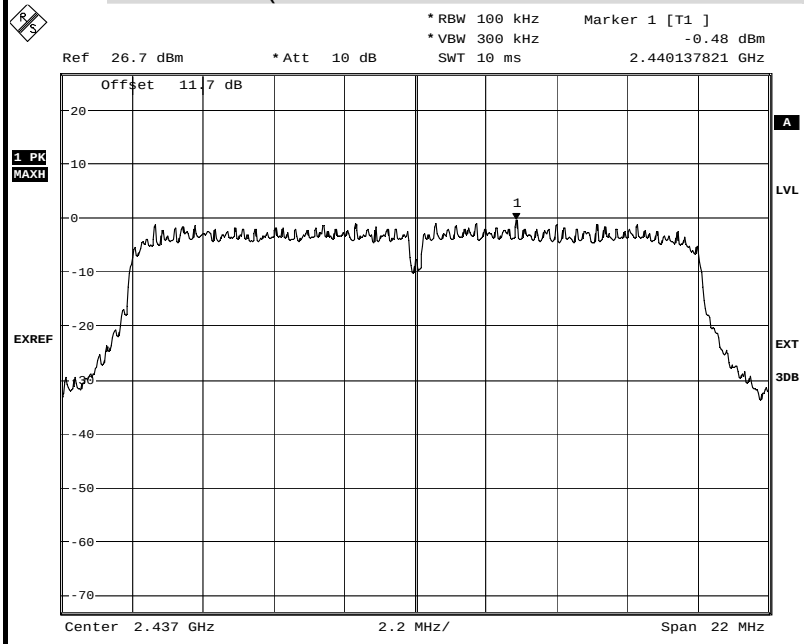

Date: 18.DEC.2012 16:45:46

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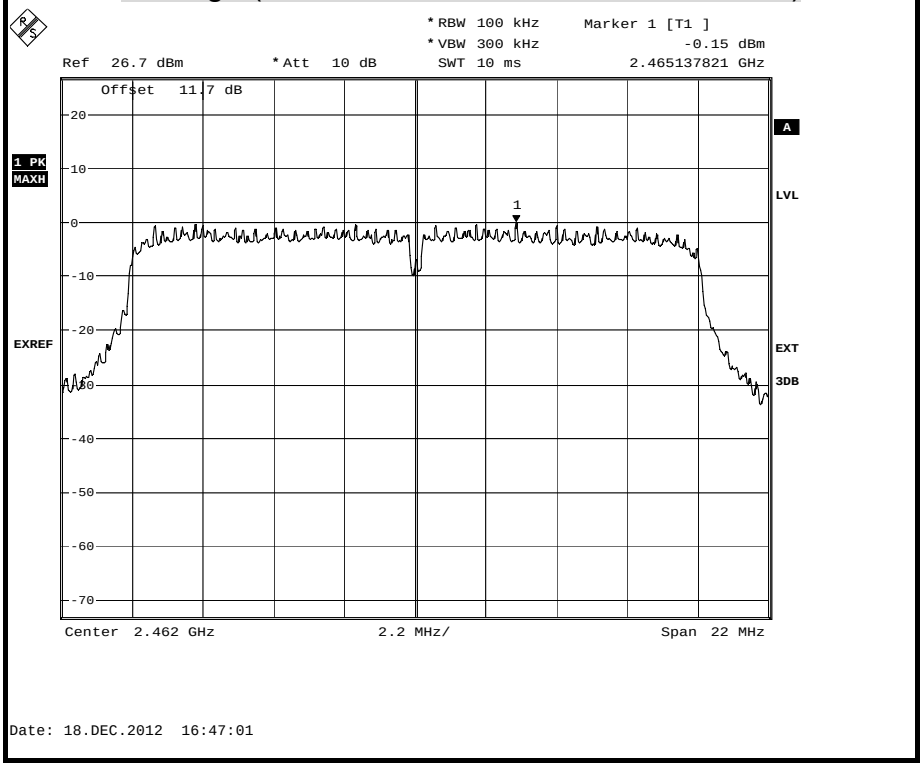
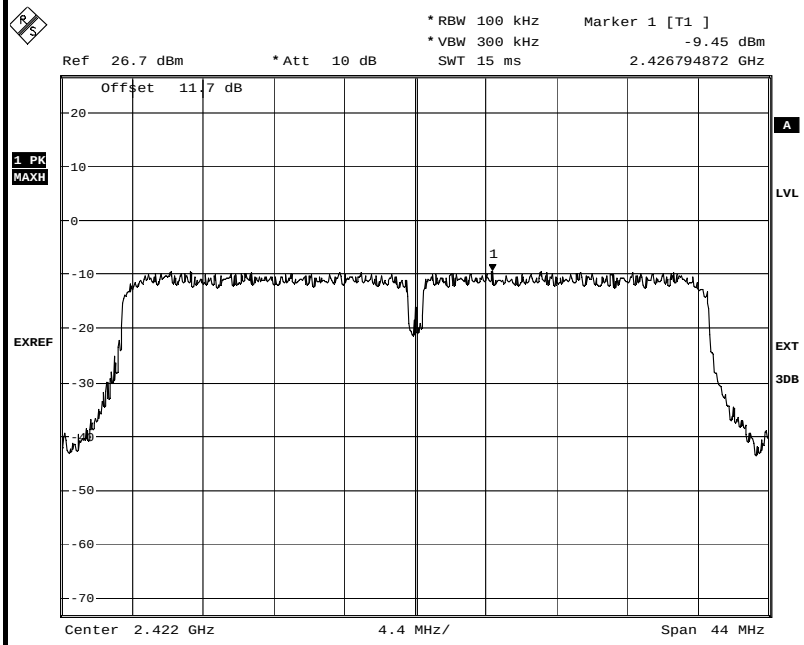
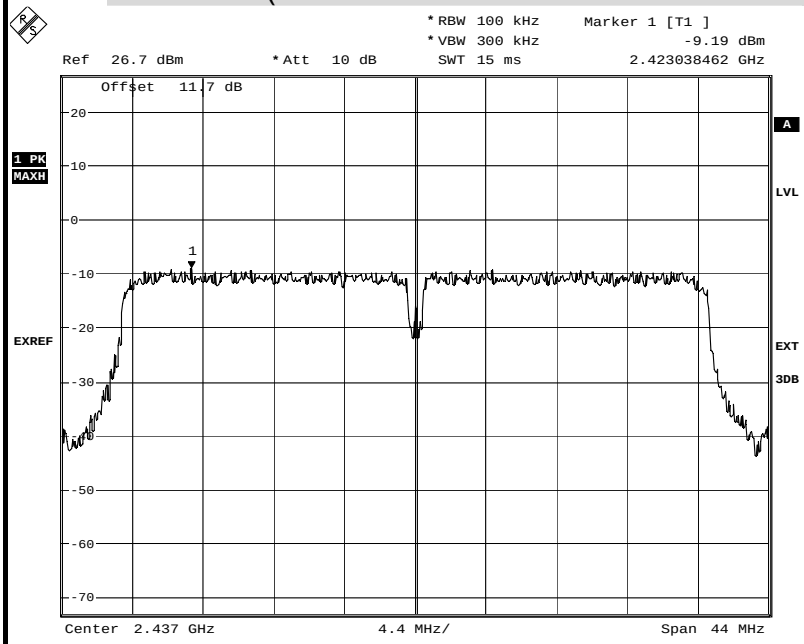


CH Low (IEEE 802.11n HT40 Mode / Chain 0)



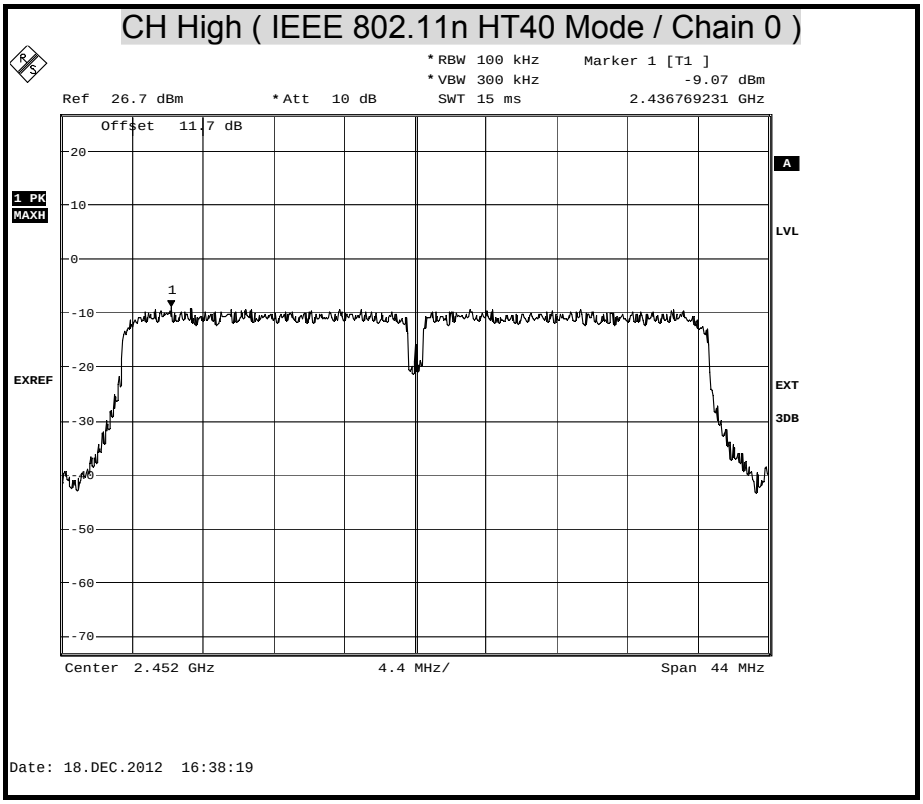
Date: 18.DEC.2012 16:35:29

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

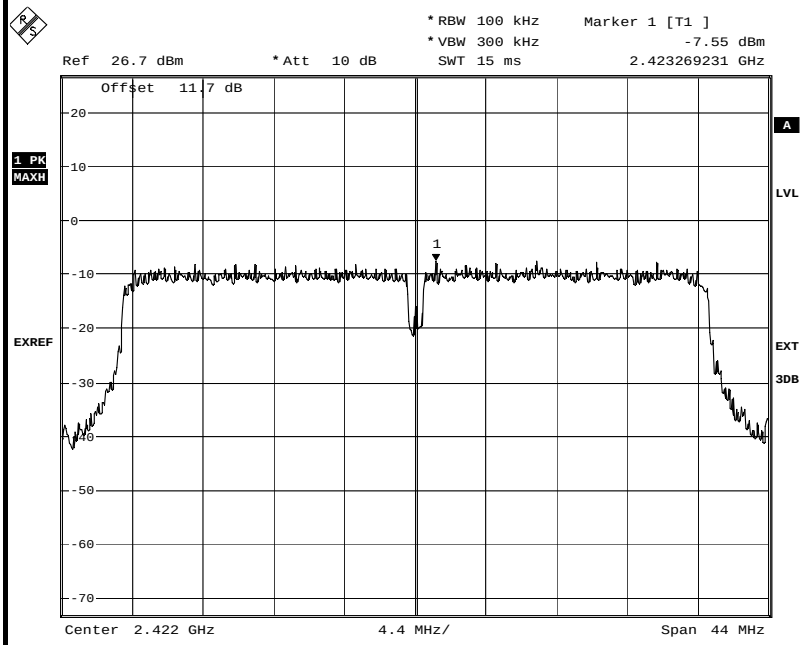


Date: 18.DEC.2012 16:37:17

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

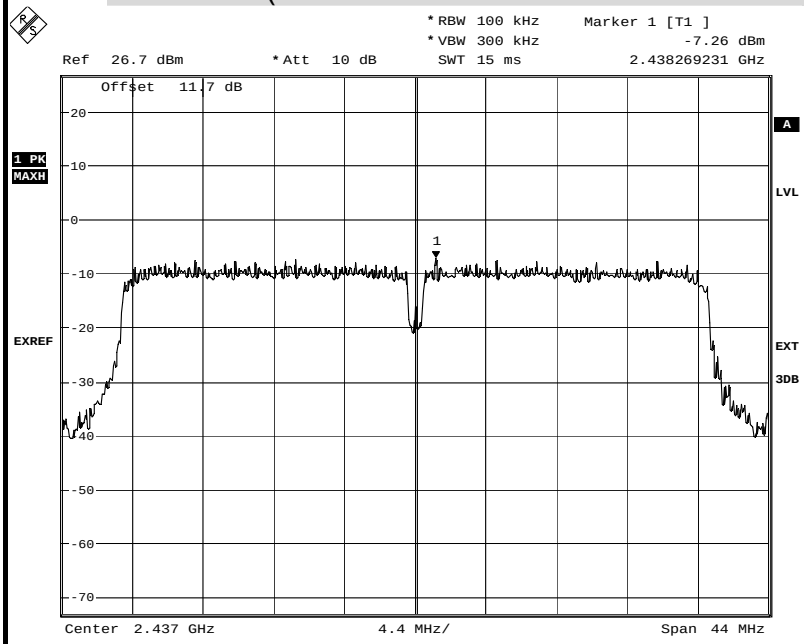


CH Low (IEEE 802.11n HT40 Mode / Chain 1)



Date: 18.DEC.2012 16:40:13

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



Date: 18.DEC.2012 16:41:24

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