

FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart E § 15.407

Equipment : Dual Band WLAN Adapter
Brand Name : Askey
Model No. : WLU5080-D4(ROHS)
Filing Type : New Application
Applicant : Askey Computer Corp.
10F, No. 119, ChienKang RD., Chung-Ho, Taipei,
Taiwan, 23585, R.O.C.
FCC ID : H8N-WLU5080-D4
Manufacturer : Askey Computer Corp.
10F, No. 119, ChienKang RD., Chung-Ho, Taipei,
Taiwan, 23585, R.O.C.
Askey Technology (Jing Su) Ltd.
No.1388, Jiao Tong Road, Wujiang
Economic-Technological Development Area,
Jiangsu Province, P.R.China
Received Date : Nov. 25, 2011
Final Test Date : Dec. 27, 2011

Statement

Test result included is only for the 802.11a/n (5150~5350MHz; 5470~5725MHz) of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2003** and **47 CFR FCC Part 15 Subpart E**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



SPORTON International Inc.

No. 52 Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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History of This Test Report

Original Issue Date: Dec. 29, 2011

Report No.: FR160328AN

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart E § 15.407

Equipment : Dual Band WLAN Adapter

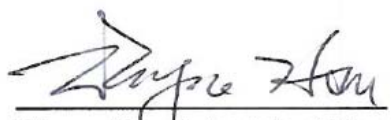
Brand Name : Askey

Model No. : WLU5080-D4(ROHS)

Applicant : Askey Computer Corp.

10F, No. 119, ChienKang RD., Chung-Ho,
Taipei, Taiwan, 23585, R.O.C.

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Nov. 25, 2011 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.


Wayne Hsu / Assistant Manager

SPORTON International Inc.

No. 52 Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

1 SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	Rule Section	Description of Test	Result	Under Limit
3.1	15.207	AC Power Line Conducted Emissions	Complies	20.62 dB
3.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
3.3	15.407(a)	Maximum Conducted Output Power	Complies	8.27 dB
3.4	15.407(a)	Power Spectral Density	Complies	0.05 dB
3.5	15.407(a)	Peak Excursion	Complies	4.94 dB
3.6	15.407(b)	Radiated Emissions	Complies	3.60 dB
3.7	15.407(b)	Band Edge Emissions	Complies	0.60 dB
3.8	15.407(g)	Frequency Stability	Complies	-
3.9	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.5dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
Peak Excursion	±0.5dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	±8.5×10 ⁻⁸	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

2 GENERAL INFORMATION

2.1 Product Details

Only the radio detail of IEEE 802.11a/n is shown in this report. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Power Type	Power from host
Data Modulation Data Rate (Mbps)	OFDM for IEEE 802.11a (BPSK / QPSK / 16QAM / 64QAM) (6/9/12/18/24/36/48/54) See the below table for IEEE 802.11n
Frequency Range	5150~5250MHz ; 5250~5350MHz ; 5470~5725MHz
Channel Band Width (99%)	802.11a : Band 1: 17.80 MHz ; Band 2: 18.50 MHz ; Band 3: 18.50 MHz 802.11n : MCS 0 (20MHz) : Band 1: 18.80 MHz ; Band 2: 19.80 MHz MCS 0 (20MHz) : Band 3: 19.60 MHz MCS 0 (40MHz) : Band 1: 37.00 MHz ; Band 2: 37.40 MHz MCS 0 (40MHz) : Band 3: 37.80 MHz MCS 8 (20MHz) : Band 1: 18.50 MHz ; Band 2: 18.80 MHz MCS 8 (20MHz) : Band 3: 18.60 MHz MCS 8 (40MHz) : Band 1: 36.60 MHz ; Band 2: 37.00 MHz MCS 8 (40MHz) : Band 3: 37.20 MHz
Conducted Output Power	802.11a : Band 1: 14.54 dBm ; Band 2: 18.37 dBm ; Band 3: 18.36 dBm 802.11n : MCS 0 (20MHz) : Band 1: 14.61 dBm ; Band 2: 18.51 dBm ; MCS 0 (20MHz) : Band 3: 18.28 dBm MCS 0 (40MHz) : Band 1: 16.91 dBm ; Band 2: 18.01 dBm ; MCS 0 (40MHz) : Band 3: 18.56 dBm MCS 8 (20MHz) : Band 1: 14.07 dBm ; Band 2: 20.84 dBm ; MCS 8 (20MHz) : Band 3: 20.64 dBm MCS 8 (40MHz) : Band 1: 16.66 dBm ; Band 2: 21.27 dBm ; MCS 8 (40MHz) : Band 3: 21.73 dBm

2.2 Table for Filed Antenna

Antenna Category Information (5GHz Band)	
☐	Equipment placed on the market without antennas
☒	Integral antenna (antenna permanently attached)
☐	☐ Temporary RF connector provided
☐	☒ No temporary RF connector provided
☐	External antenna (dedicated antennas)
☐	☐ Single power level with corresponding antenna(s)
☐	☐ Multiple power settings and corresponding antenna(s)
☐	☐ Professional Install
☐	☒ Unique antenna connector
☐	☐ BIOS lock.

Antenna General Information (5GHz Band)					
Ant. No.	Category	Type	Brand	Model	Gain (dBi)
1	Internal	PIFA	--	--	4.95
	Internal	PIFA	--	--	4.95
☐ EUT is consist of single model antenna assembly for spatial multiplexing MIMO configuration. ☒ EUT is consist of multiple model antennas assembly (secondary source multiple model antennas regardless of spatial multiplexing MIMO configuration), the test (except DFS test) should be performed with highest antenna gain of each antenna type. Then Port No. 1 shall be performed the test. ☐ EUT is consist of multiple model antennas assembly for spatial multiplexing MIMO configuration (e.g. model A shall be installed in port 1 and model B shall be installed in port 2...).					

Antenna: 3dBi Dual Band Dipole Antenna x 2 (2T2R Spatial Multiplexing MIMO configuration;
2 antennas are for signal transmitting and 2 antennas are for signal receiving)

Transmitter Outputs & Receiver Inputs Information				
Modulation	Transmitter Outputs	Receiver Inputs	Transmitter Output Signals	Co-location
802.11a	1	1	Correlated	No
802.11n HT20 / HT40	2 (SM)	2	Uncorrelated	No
Note 1: CDD - Cyclic Delay Diversity (CDD) modes (e.g., legacy modes in 802.11n devices). In CDD modes, the same digital data is carried by each transmit antenna, but with different cyclic delays. Note 2: STBC - Space Time Block Codes (STBC) for which different digital data is carried by each transmit antenna during any symbol period. Note 3: SM - Spatial Multiplexing MIMO (SM-MIMO), for which independent data streams are sent to each transmit antenna. Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other.				

Antenna Directional Gain (5GHz Band)					
Port No.	Modulation	Transmitter Outputs Signals Correlated	Transmitter Outputs (N)	Antenna Gain Combination (dBi)	Directional Gain (dBi)
1	802.11a	Correlated	1	4.95	4.95
1+2	802.11n HT20	Uncorrelated	2	4.95, 4.95	4.95
1+2	802.11n HT40	Uncorrelated	2	4.95, 4.95	4.95
☒ For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows - Any transmit signals are correlated, Directional Gain = GANT + 10 log(N) dBi - All transmit signals are completely uncorrelated, Directional Gain = GANT ☐ For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows: - Any transmit signals are correlated, Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi - All transmit signals are completely uncorrelated, Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N]$ dBi					

IEEE 802.11n Modulation Scheme

MCS	Spatial	Modulation	Coding Rate	Data rate(Mbps)	
Index	Streams	Type	Type	20 MHz channel 800nsGI	40 MHz channel 800nsGI
0	1	BPSK	1/2	6.5	13.5
1	1	QPSK	1/2	13	27
2	1	QPSK	3/4	19.5	40.5
3	1	16-QAM	1/2	26	54
4	1	16-QAM	3/4	39	81
5	1	64-QAM	2/3	52	108
6	1	64-QAM	3/4	58.5	121.5
7	1	64-QAM	5/6	65	135
8	2	BPSK	1/2	13	27
9	2	QPSK	1/2	26	54
10	2	QPSK	3/4	39	81
11	2	16-QAM	1/2	52	108
12	2	16-QAM	3/4	78	162
13	2	64-QAM	2/3	104	216
14	2	64-QAM	3/4	117	243
15	2	64-QAM	5/6	130	270

2.3 Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency (20MHz)	Channel No.	Frequency (40MHz)
5150~5250 MHz Band 1	36	5180 MHz	38	5190 MHz
	40	5200 MHz	46	5230 MHz
	44	5220 MHz	-	-
	48	5240 MHz	-	-

Frequency Band	Channel No.	Frequency (20MHz)	Channel No.	Frequency (40MHz)
5250~5350 MHz Band 2	52	5260 MHz	54	5270 MHz
	56	5280 MHz	62	5310 MHz
	60	5300 MHz	-	-
	64	5320 MHz	-	-

Frequency Band	Channel No.	Frequency (20MHz)
5470~5725 MHz Band 3	100	5500 MHz
	104	5520 MHz
	108	5540 MHz
	112	5560 MHz
	116	5580 MHz
	132	5660 MHz
	136	5680 MHz
	140	5700 MHz
	Channel No.	Frequency (40MHz)
	102	5510 MHz
	110	5550 MHz
	134	5670 MHz

2.4 Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on the entire possible Configuration for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Antenna Port
AC Power Conducted Emission Radiated Emission Below 1GHz	Normal Mode	Auto	-	-
Max. Conducted Output Power 26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Power Spectral Density Peak Excursion	11a Band 1/BPSK	6Mbps	36/40/48/52/56 /64/100/116/140	1
	11n Band 1/BPSK MCS 0 (20MHz)	6.5 Mbps	36/40/48/52/56 /64/100/116/140	
	11n Band 1/BPSK MCS 0 (40MHz)	13.5 Mbps	38/46/54/62/102/110/134	
	11n Band 1/BPSK MCS 8 (20MHz)	13Mbps	36/40/48/52/56 /64/100/116/140	1/2 ; 1+2
	11n Band 1/BPSK MCS 8 (40MHz)	27Mbps	38/46/54/62/102/110/134	
Radiated Emission Above 1GHz	11a Band 1/BPSK	6Mbps	36/40/48/52/56 /64/100/116/140	1
	11n Band 1/BPSK MCS 0 (20MHz)	6.5 Mbps	36/40/48/52/56 /64/100/116/140	
	11n Band 1/BPSK MCS 0 (40MHz)	13.5 Mbps	38/46/54/62/102/110/134	
	11n Band 1/BPSK MCS 8 (20MHz)	13Mbps	36/40/48/52/56 /64/100/116/140	1+2
	11n Band 1/BPSK MCS 8 (40MHz)	27Mbps	38/46/54/62/102/110/134	
Band Edge Emission	11a Band 1/BPSK	6Mbps	36/40/48/52/56 /64/100/116/140	1
	11n Band 1/BPSK MCS 0 (20MHz)	6.5 Mbps	36/40/48/52/56 /64/100/116/140	
	11n Band 1/BPSK MCS 0 (40MHz)	13.5 Mbps	38/46/54/62/102/110/134	
	11n Band 1/BPSK MCS 8 (20MHz)	13Mbps	36/40/48/52/56 /64/100/116/140	1+2
	11n Band 1/BPSK MCS 8 (40MHz)	27Mbps	38/46/54/62/102/110/134	

2.5 Table for Testing Locations

Test Site No.	Site Category	Location
CO04-HY	Conduction	Hwa Ya
TH01-HY	OVEN Room	Hwa Ya
03CH02-HY	SAC	Hwa Ya

Semi Anechoic Chamber (SAC).

2.6 Table for Supporting Units

Support Unit	Brand	Model	FCC ID	Remark
Notebook	DELL	E5520	DoC	Conducted Emissions
(USB) Mouse	Microsoft	1004	DoC	
iPod Nano	Apple	A1320	R33057	
Wireless AP (Remote Workstation)	D-Link	DNS-G120	N/A	
Notebook	DELL	E5520	DoC	Radiated Emissions
(USB) Mouse	Microsoft	1004	DoC	
iPod Nano	Apple	A1199	R33057	
Wireless AP (Remote Workstation)	3COM	AP2750	O9C-AP2750	

2.7 Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For Single Chain:

Power Parameters of IEEE 802.11a

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	14.5	13.5	13.5
Frequency	5260 MHz	5280 MHz	5320 MHz
IEEE 802.11a	17.5	17.5	16
Frequency	5500 MHz	5580 MHz	5700 MHz
IEEE 802.11a	18	17	17

Power Parameters of IEEE 802.11n (20MHz)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11n	14.5	14.5	14
Frequency	5260 MHz	5280 MHz	5320 MHz
IEEE 802.11n	17.5	17.5	15
Frequency	5500 MHz	5580 MHz	5700 MHz
IEEE 802.11n	18	17	17

Power Parameters of IEEE 802.11n (40MHz)

Test Software Version	ART		
Frequency	5190 MHz	5230 MHz	5270 MHz
IEEE 802.11n	13	17	17.5
Frequency	5310 MHz	5510 MHz	5550 MHz
IEEE 802.11n	12	15	18
Frequency	5670 MHz		
IEEE 802.11n	17.5		

For Two Chains:**Power Parameters of IEEE 802.11n (20MHz)**

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11n	10/10	10/10	10/10
Frequency	5260 MHz	5280 MHz	5320 MHz
IEEE 802.11n	16.5/16.5	16/16	14/14
Frequency	5500 MHz	5580 MHz	5700 MHz
IEEE 802.11n	16/16	16/16	16/16

Power Parameters of IEEE 802.11n (40MHz)

Test Software Version	ART		
Frequency	5190 MHz	5230 MHz	5270 MHz
IEEE 802.11n	12/12	13/13	17.5/17.5
Frequency	5310 MHz	5510 MHz	5550 MHz
IEEE 802.11n	12/12	15/15	18/18
Frequency	5670 MHz		
IEEE 802.11n	18/18		

2.8 EUT Operation during Test

An executive program, "EMITEST.exe" under WIN 7, which generates a complete line of continuously repeating "H" pattern, was used as the test software.

The program was executed as follows:

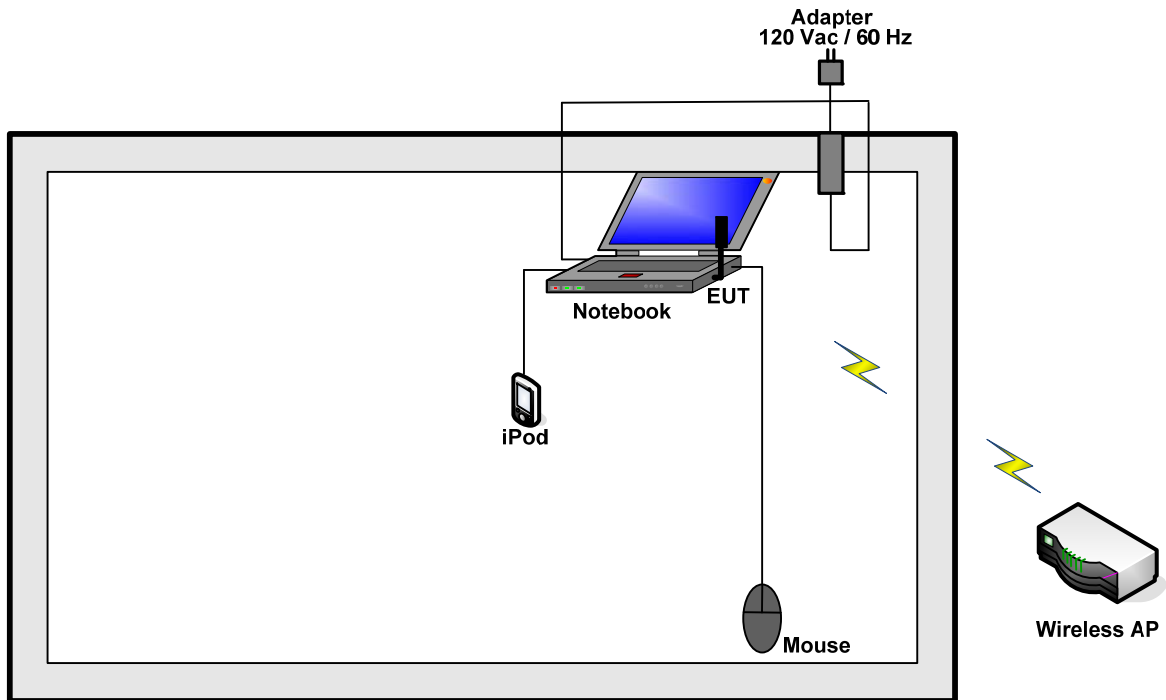
- a. Turn on the power of all equipment.
- b. The EUT reads the test program from the hard disk drive and runs it.
- c. The EUT sends "H" messages to the monitor, and the monitor displays "H" patterns on the screen.
- d. The EUT sends messages to the modem.
- e. The EUT sends "H" messages to the internal hard disk, and the hard disk reads and writes the message.
- f. Repeat the steps from c to e.

At the same time, the following programs were executed:

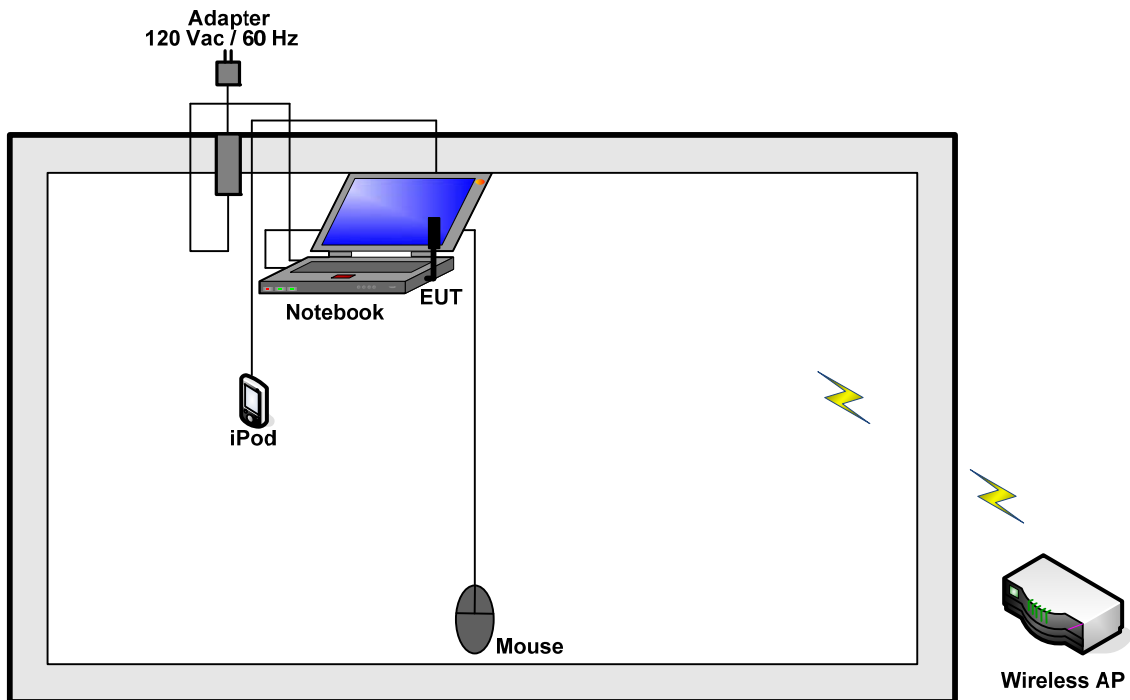
- Executed "Ping.exe" to link with the remote workstation AP to receive and transmit data via Wireless.

For Radiated Emissions :

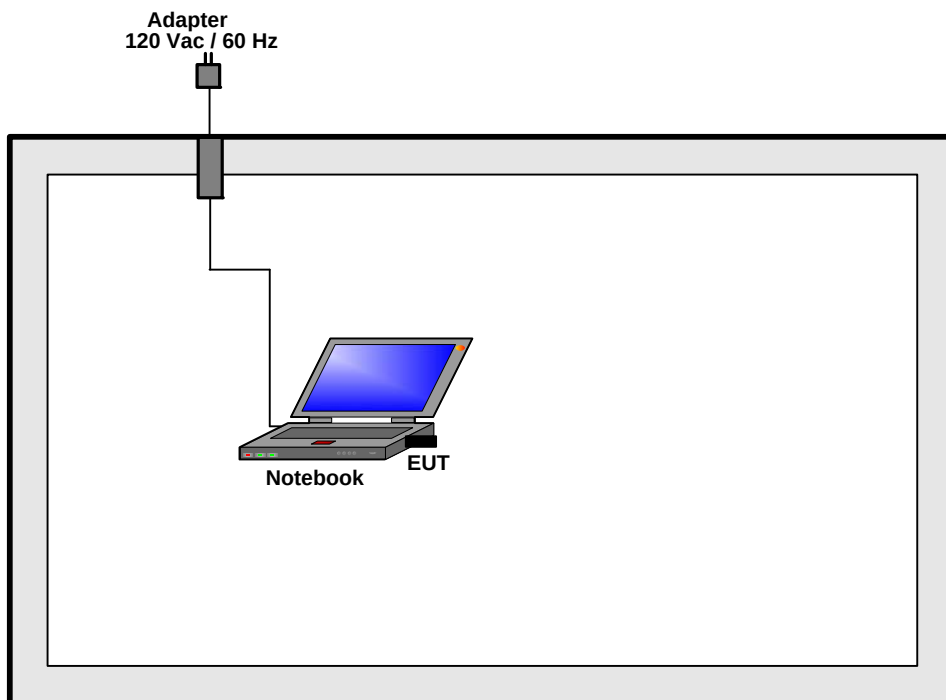
- Executed "ART" to keep transmitting signals at fixed frequency.

2.9 Test Configuration**For conducted emissions**

For radiated emissions 9kHz~1GHz



For radiated emissions above 1GHz



3 TEST RESULT

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

For this product which is designed to be connected to the 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 below limits table.

Class B

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

3.1.2 Measuring Instruments and Setting

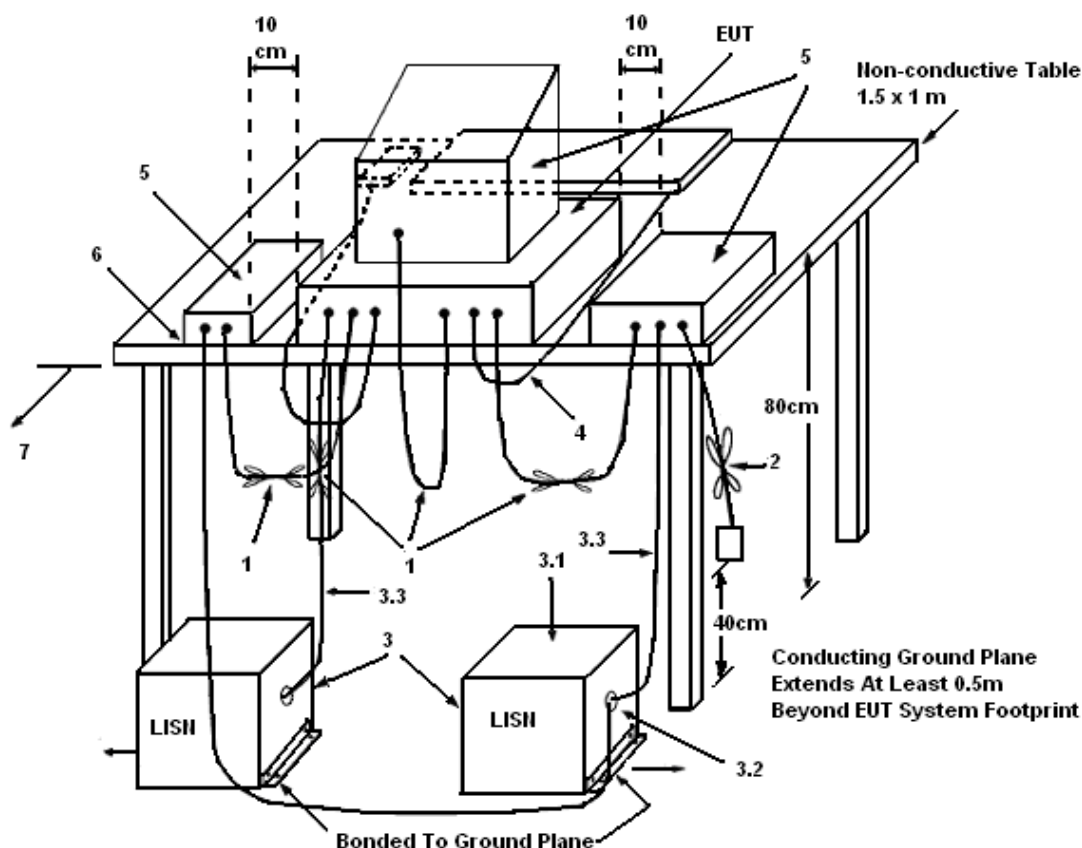
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

3.1.3 Test Procedures

1. The EUT warm up about 15 minutes then start test.
2. Configure the EUT according to ANSI C63.4. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. The measurement has to be done between each power line and ground at the power terminal.

3.1.4 Test Setup Layout



LEGEND:

- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
- (3.1) All other equipment powered from additional LISN(s).
- (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
- (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

3.1.5 Test Deviation

There is no deviation with the original standard.

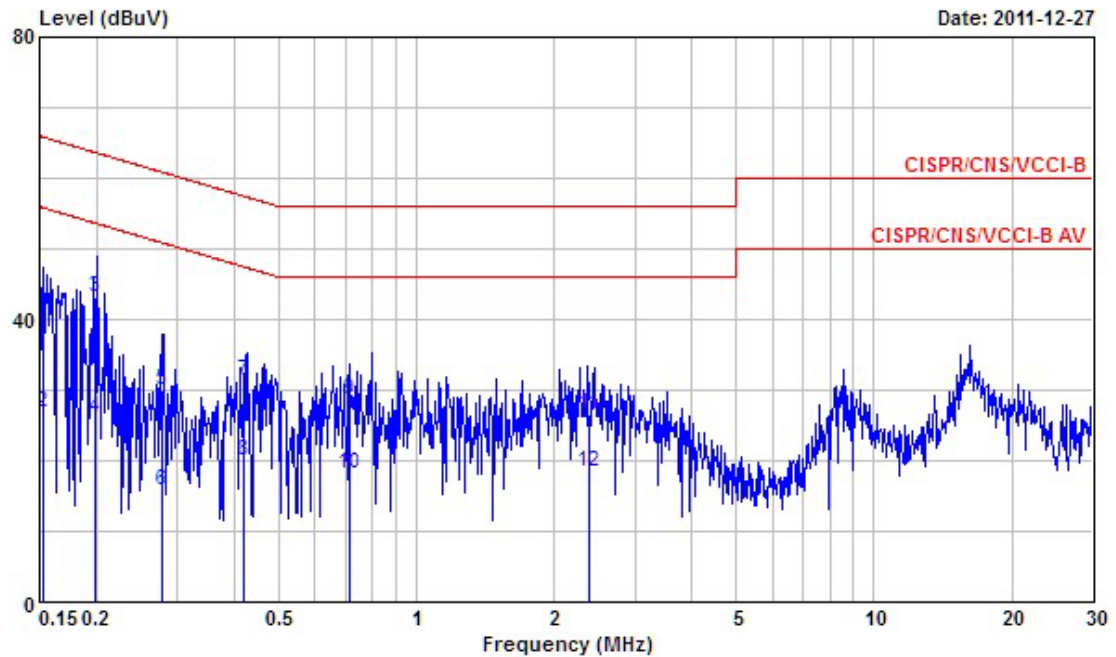
3.1.6 EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

3.1.7 Results of AC Power Line Conducted Emissions Measurement

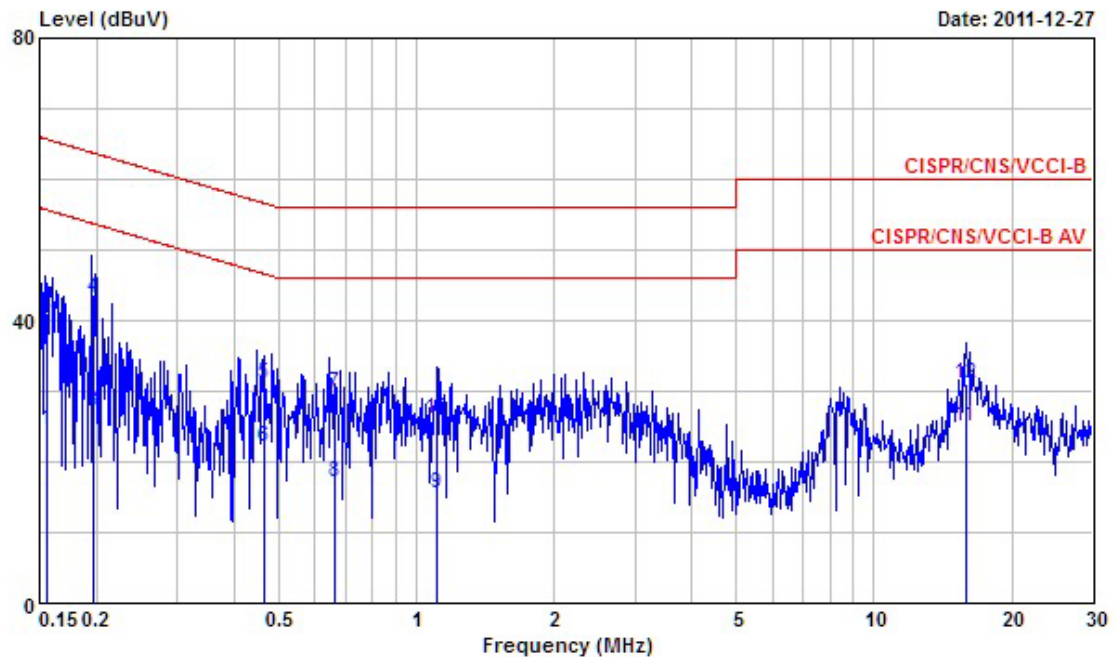
Final Test Date	Dec. 27, 2011	Test Site No.	CO04-HY
Temperature	24.5°C	Humidity	48%
Test Engineer	Assen	Configuration	Normal Mode

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1532130	41.88	-23.94	65.82	41.48	0.30	0.10	QP
2	0.1532130	26.91	-28.91	55.82	26.51	0.30	0.10	Average
3	0.1979970	43.07	-20.62	63.69	42.67	0.30	0.10	QP
4	0.1979970	26.08	-27.61	53.69	25.68	0.30	0.10	Average
5	0.2773390	29.98	-30.92	60.90	29.58	0.30	0.10	QP
6	0.2773390	15.82	-35.08	50.90	15.42	0.30	0.10	Average
7	0.4198600	31.39	-26.06	57.45	31.00	0.29	0.10	QP
8	0.4198600	19.95	-27.50	47.45	19.56	0.29	0.10	Average
9	0.7121870	28.61	-27.39	56.00	28.22	0.29	0.10	QP
10	0.7121870	18.03	-27.97	46.00	17.64	0.29	0.10	Average
11	2.389	26.70	-29.30	56.00	26.31	0.32	0.07	QP
12	2.389	18.39	-27.61	46.00	18.00	0.32	0.07	Average

Neutral



	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1554020	24.37	-31.34	55.71	24.00	0.27	0.10	Average
2	0.1554020	41.07	-24.64	65.71	40.70	0.27	0.10	QP
3	0.1972480	27.02	-26.71	53.73	26.67	0.25	0.10	Average
4	0.1972480	43.04	-20.69	63.73	42.69	0.25	0.10	QP
5	0.4626650	31.07	-25.57	56.64	30.73	0.24	0.10	QP
6	0.4626650	22.05	-24.59	46.64	21.71	0.24	0.10	Average
7	0.6603580	29.64	-26.36	56.00	29.29	0.25	0.10	QP
8	0.6603580	17.12	-28.88	46.00	16.77	0.25	0.10	Average
9	1.110	15.62	-30.38	46.00	15.27	0.25	0.10	Average
10	1.110	25.92	-30.08	56.00	25.57	0.25	0.10	QP
11	15.890	25.00	-25.00	50.00	24.47	0.45	0.08	Average
12	15.890	31.01	-28.99	60.00	30.48	0.45	0.08	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

3.2 99% Occupied Bandwidth Measurement

3.2.1 Limit

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

3.2.2 Measuring Instruments and Setting

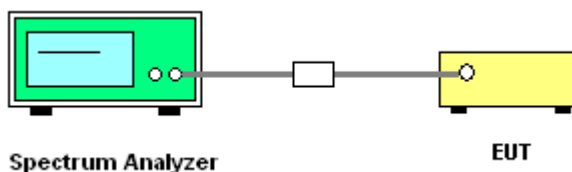
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RB	300 kHz
VB	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.2.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were used.
3. Measured the spectrum width with power higher than 26dB below carrier.
4. Measuring multiple antennas, the connectors are required to link with Spectrum Analyzer through a combiner. (Only for IEEE 802.11n test)

3.2.4 Test Setup Layout



3.2.5 Test Deviation

There is no deviation with the original standard.

3.2.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.2.7 Test Result of 99% Occupied Bandwidth

Final Test Date	Dec. 01, 2011	Test Site No.	TH01-HY
Temperature	23.3~23.8℃	Humidity	37~65%
Test Engineer	Ian	Configurations	802.11a/n

For Single Chain:

Configuration of IEEE 802.11a Port 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.90	17.70
40	5200 MHz	25.60	17.80
48	5240 MHz	25.70	17.70
52	5260 MHz	32.20	18.40
56	5280 MHz	33.00	18.50
64	5320 MHz	26.30	17.80
100	5500 MHz	32.10	18.40
116	5580 MHz	30.60	18.10
140	5700 MHz	33.20	18.50

Configuration IEEE 802.11n Port 1 (20MHz)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	26.70	18.80
40	5200 MHz	26.50	18.80
48	5240 MHz	26.50	18.70
52	5260 MHz	36.60	19.60
56	5280 MHz	38.50	19.80
64	5320 MHz	27.00	18.80
100	5500 MHz	36.40	19.60
116	5580 MHz	32.60	19.20
140	5700 MHz	36.80	19.50

Configuration IEEE 802.11n Port 1 (40MHz)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	49.00	36.80
46	5230 MHz	67.00	37.00
54	5270 MHz	67.40	37.40
62	5310 MHz	49.40	36.80
102	5510 MHz	49.00	36.80
110	5550 MHz	65.00	37.20
134	5670 MHz	73.20	37.80

**For Two Chains:
Configuration IEEE 802.11n Port 1 (20MHz)**

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.40	18.40
40	5200 MHz	25.10	18.50
48	5240 MHz	25.10	18.40
52	5260 MHz	27.40	18.60
56	5280 MHz	26.60	18.50
64	5320 MHz	25.60	18.50
100	5500 MHz	27.60	18.60
116	5580 MHz	26.90	18.60
140	5700 MHz	27.40	18.60

Configuration IEEE 802.11n Port 2 (20MHz)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.40	18.40
40	5200 MHz	25.50	18.40
48	5240 MHz	25.40	18.40
52	5260 MHz	30.10	18.80
56	5280 MHz	29.30	18.70
64	5320 MHz	25.50	18.50
100	5500 MHz	26.50	18.50
116	5580 MHz	25.80	18.50
140	5700 MHz	28.80	18.60

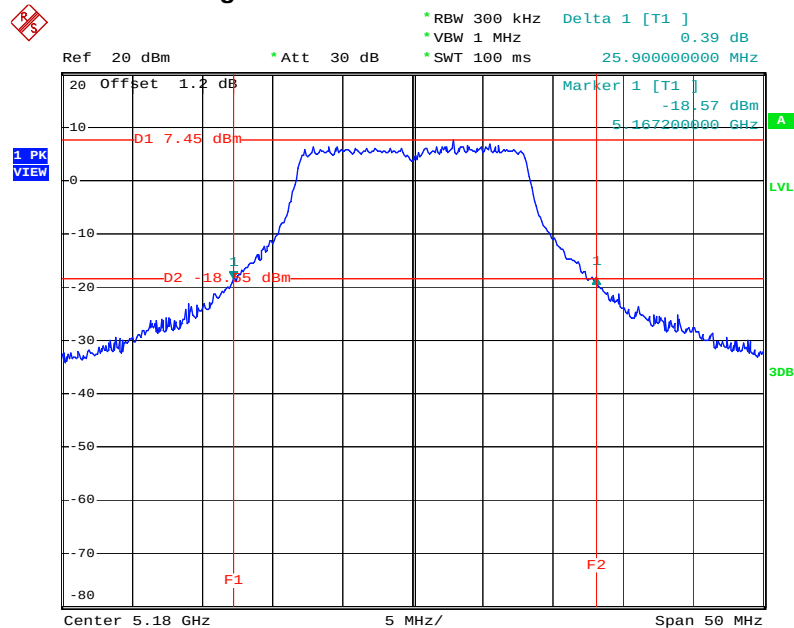
Configuration IEEE 802.11n Port 1 (40MHz)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	46.40	36.60
46	5230 MHz	47.00	36.60
54	5270 MHz	70.80	37.00
62	5310 MHz	46.40	36.40
102	5510 MHz	46.80	36.40
110	5550 MHz	69.00	37.20
134	5670 MHz	70.20	37.20

Configuration IEEE 802.11n Port 2 (40MHz)

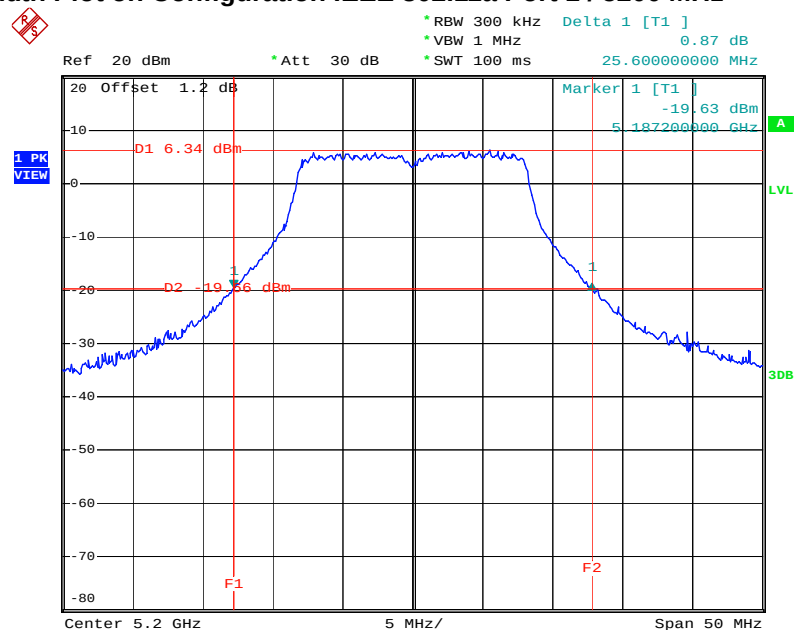
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	46.60	36.60
46	5230 MHz	46.20	36.60
54	5270 MHz	63.40	37.00
62	5310 MHz	45.40	36.40
102	5510 MHz	47.40	36.60
110	5550 MHz	62.40	36.80
134	5670 MHz	62.60	36.80

For Single Chain:
26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5180 MHz



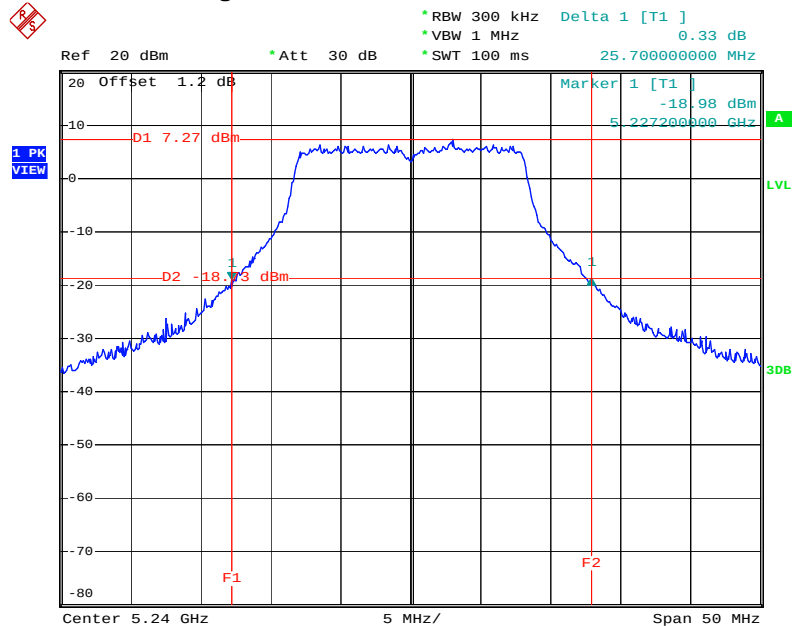
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26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5200 MHz



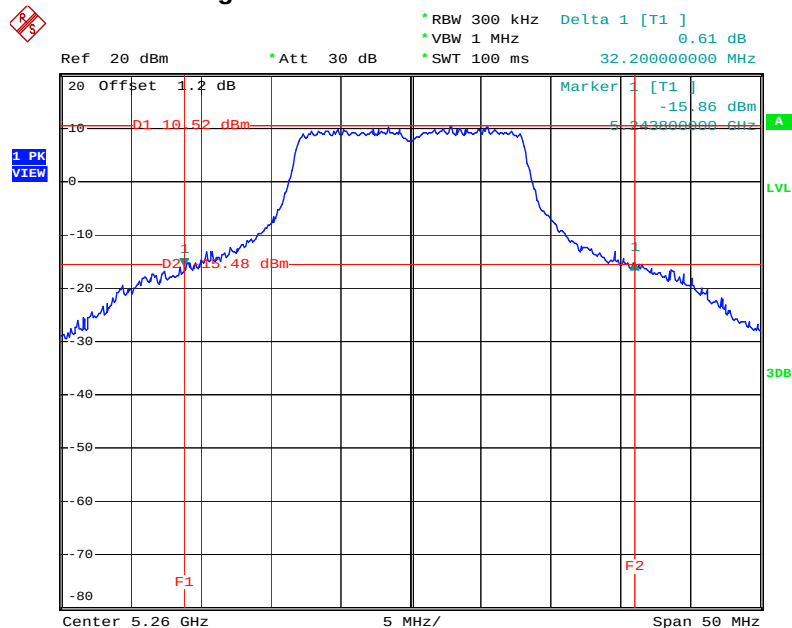
Date: 5.DEC.2011 09:03:55

26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5240 MHz



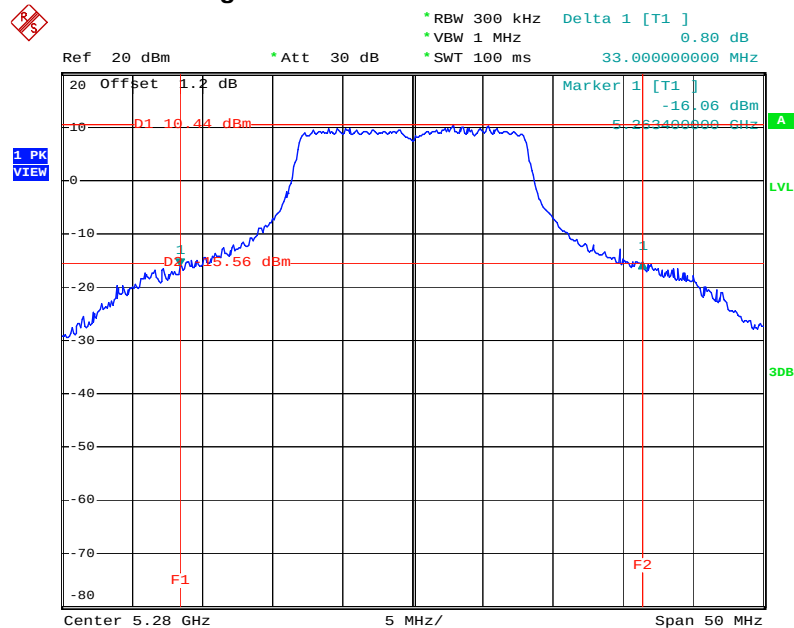
Date: 5.DEC.2011 09:08:59

26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5260 MHz



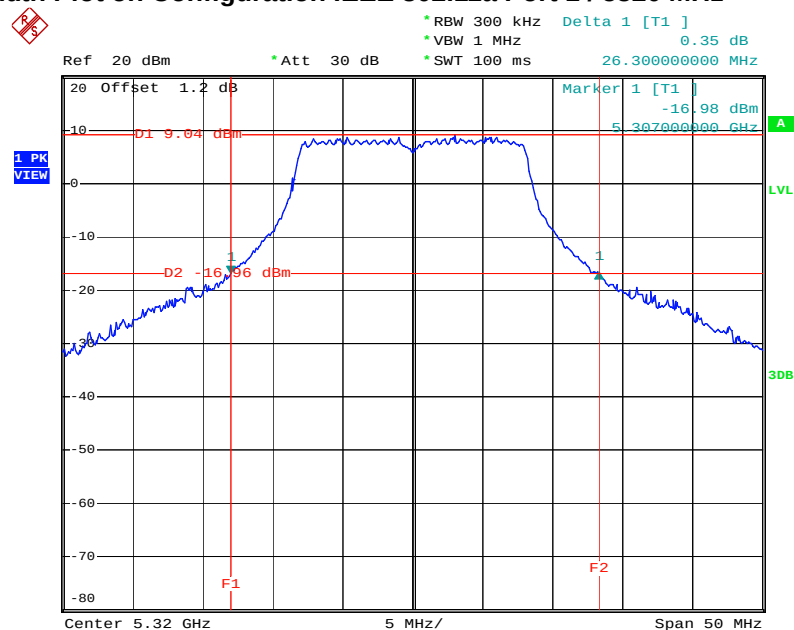
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26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5280 MHz



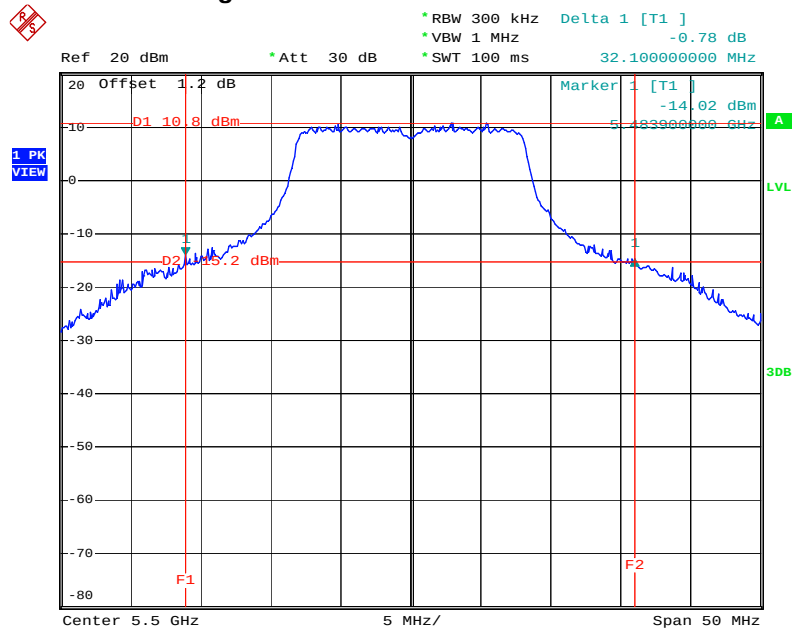
Date: 5.DEC.2011 09:29:10

26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5320 MHz



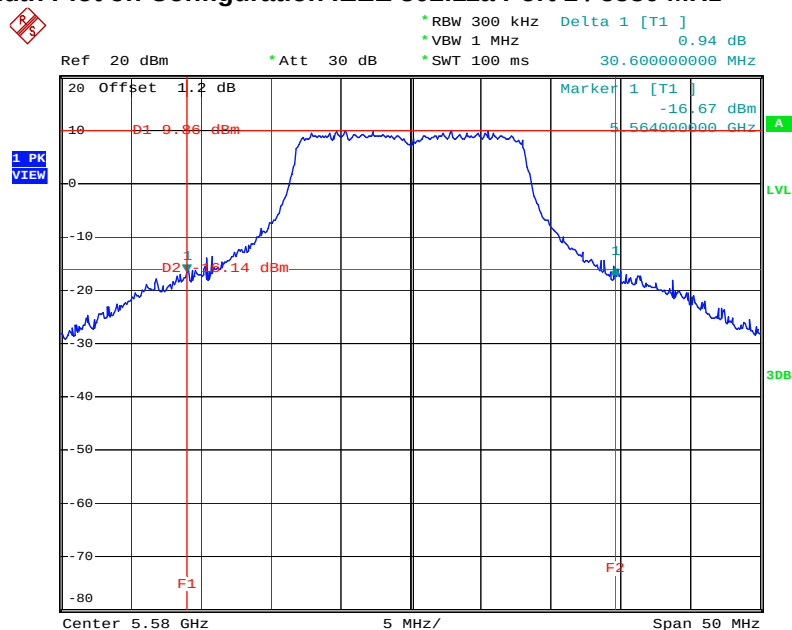
Date: 9.DEC.2011 17:12:42

26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5500 MHz



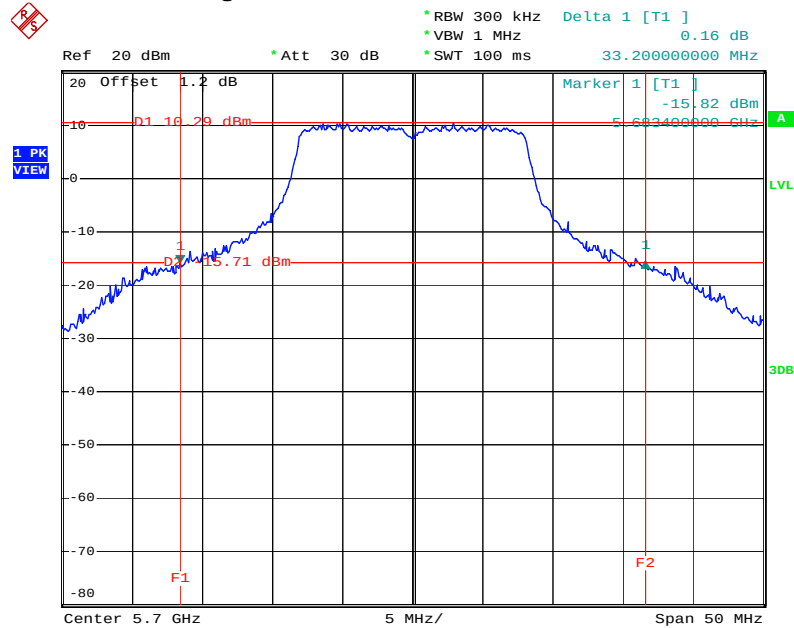
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26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5580 MHz



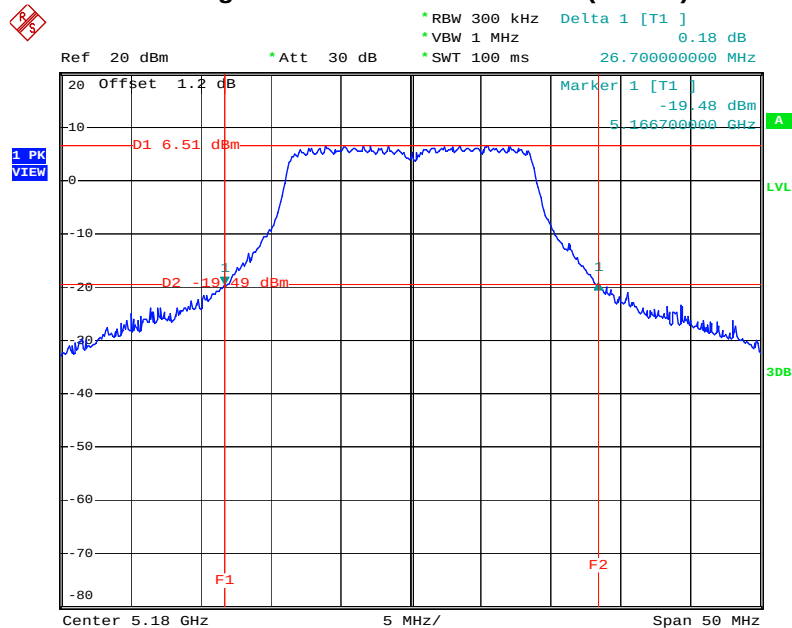
Date: 5.DEC.2011 09:45:48

26 dB Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5700 MHz



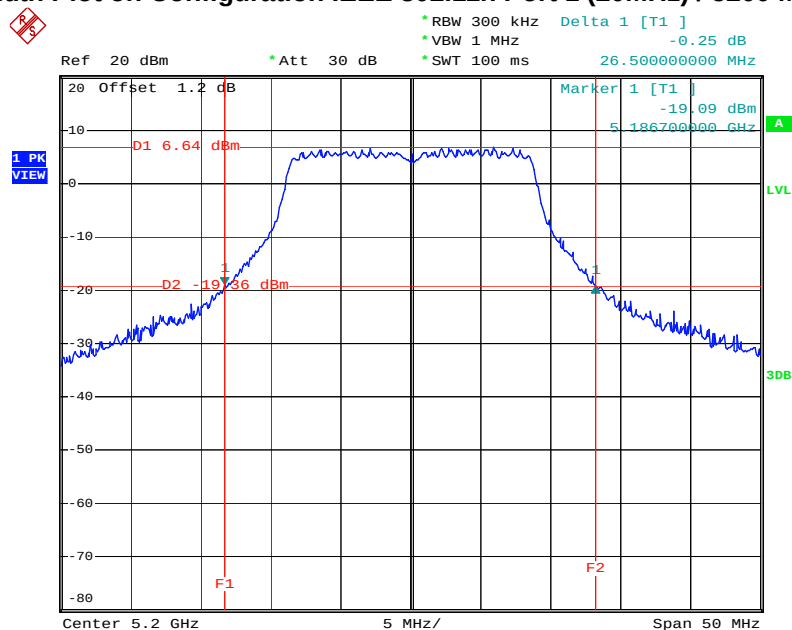
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



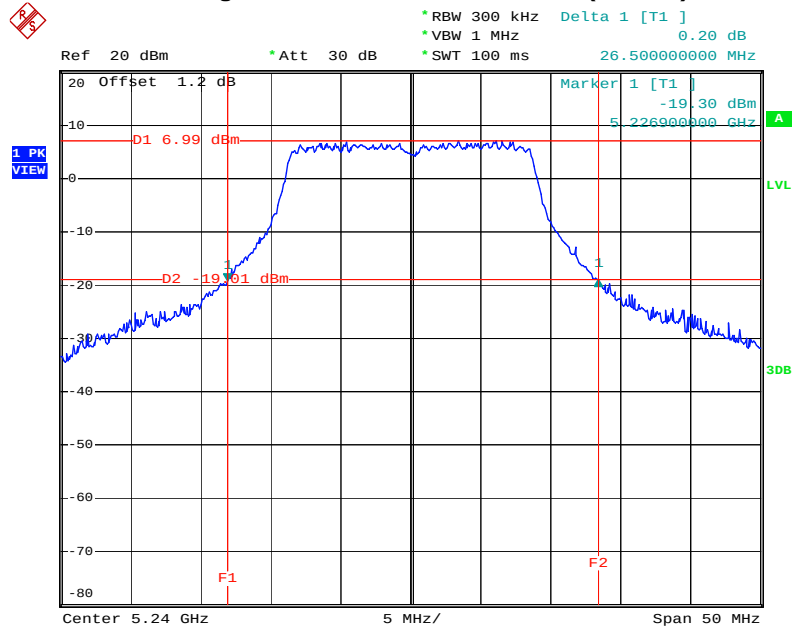
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



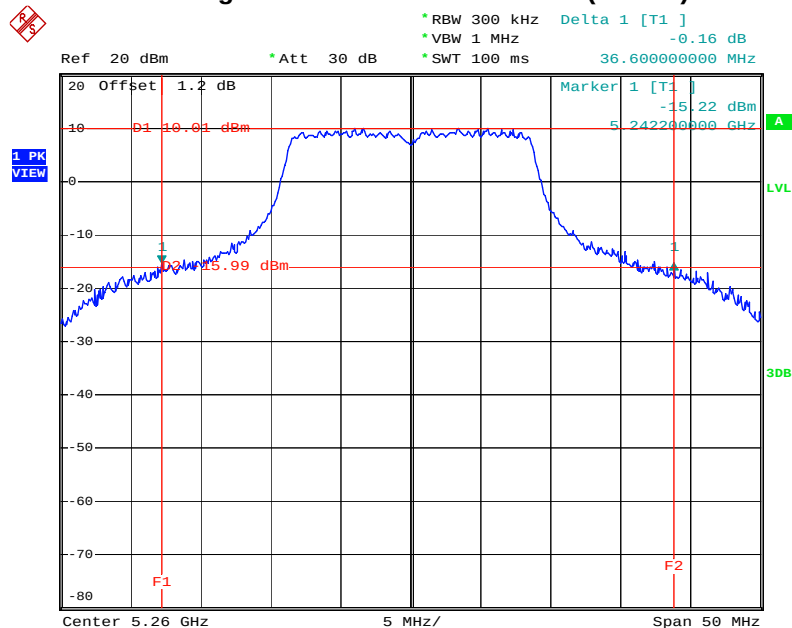
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



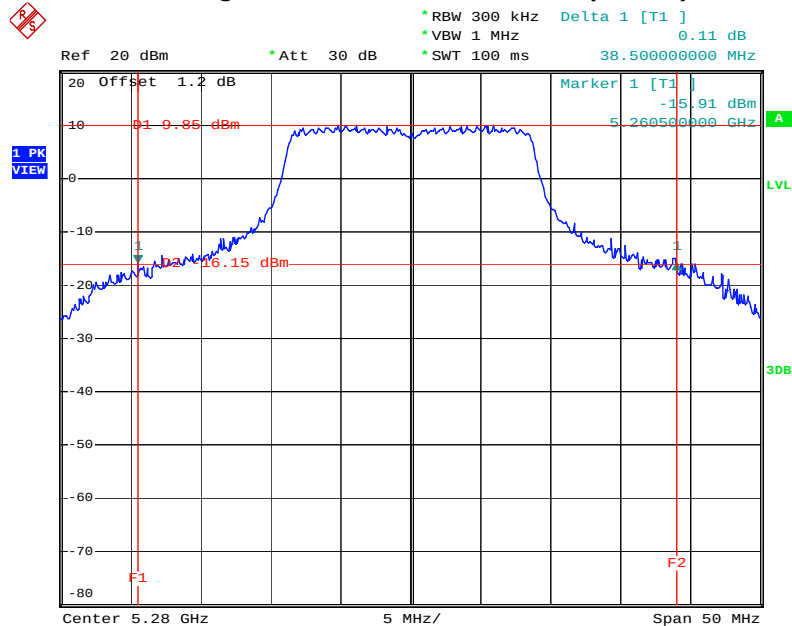
Date: 5.DEC.2011 10:42:15

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



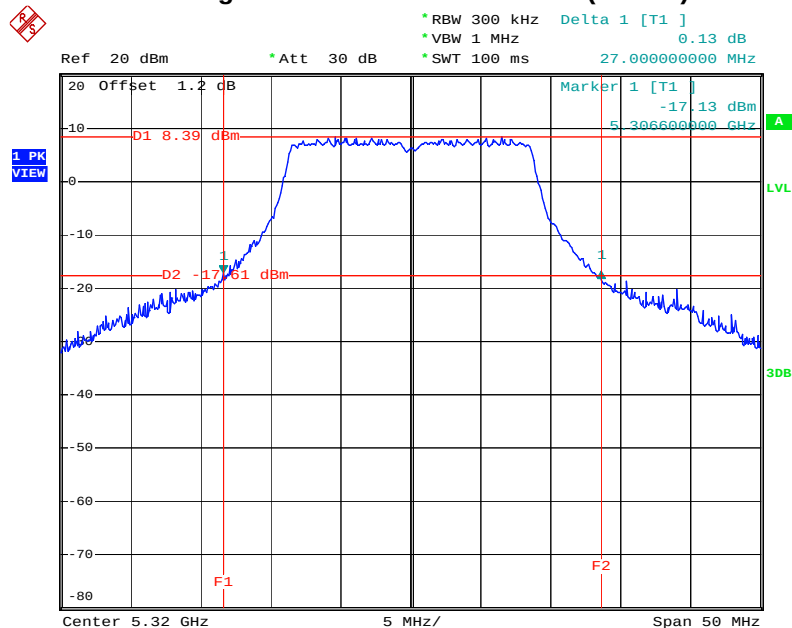
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



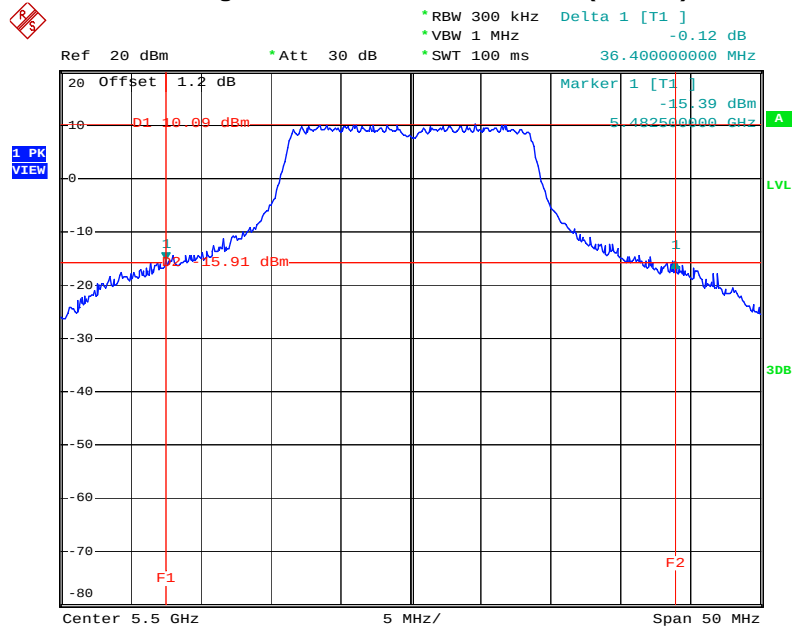
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



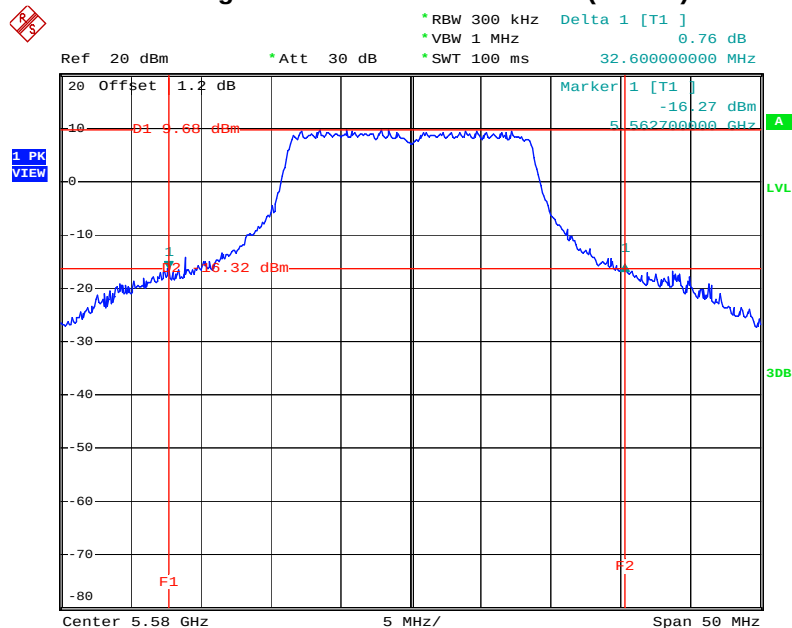
Date: 9.DEC.2011 17:02:59

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



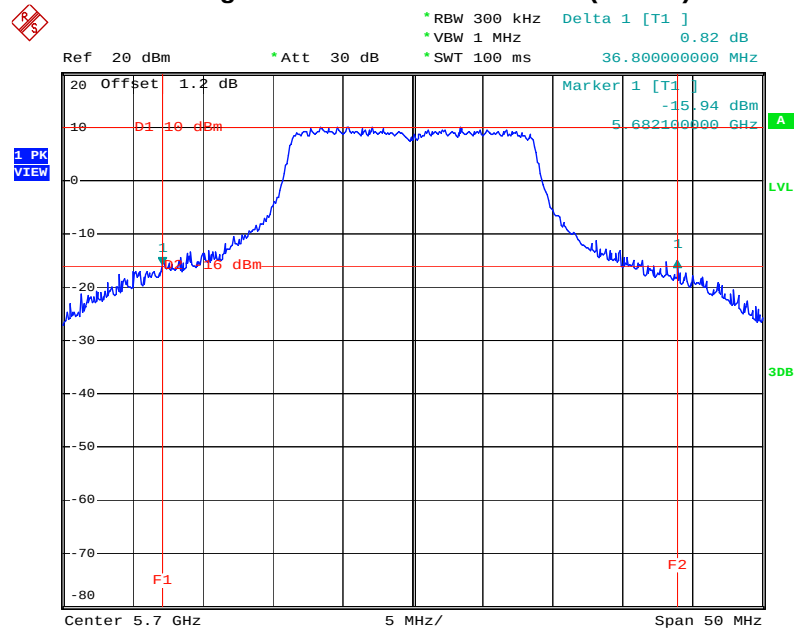
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



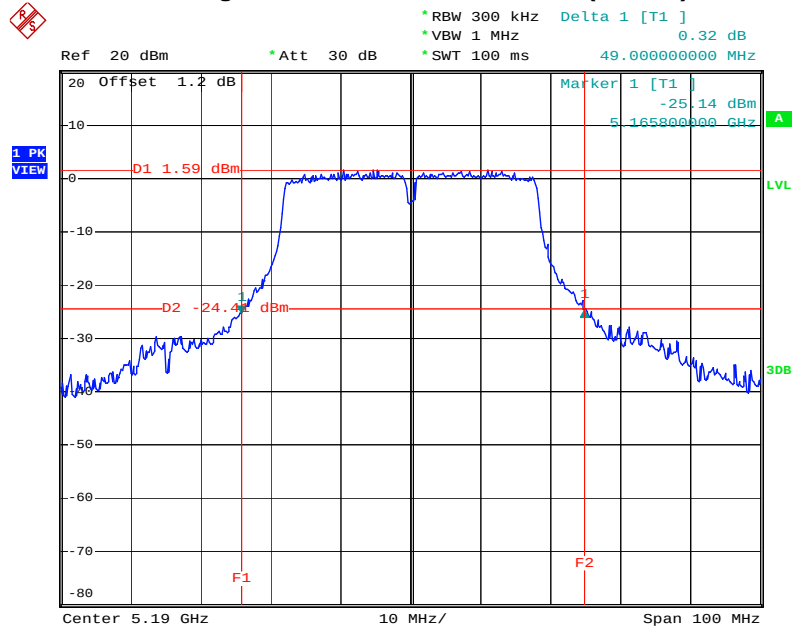
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



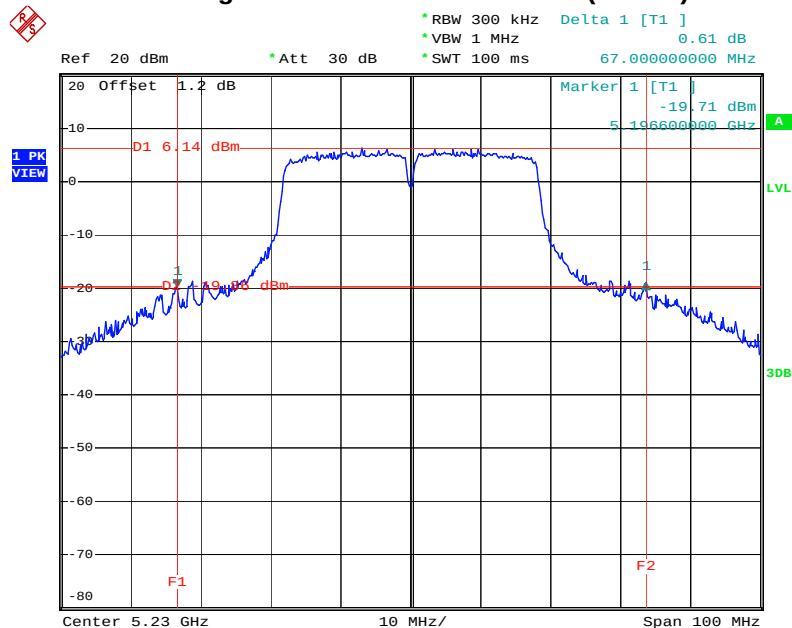
Date: 5.DEC.2011 11:25:42

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



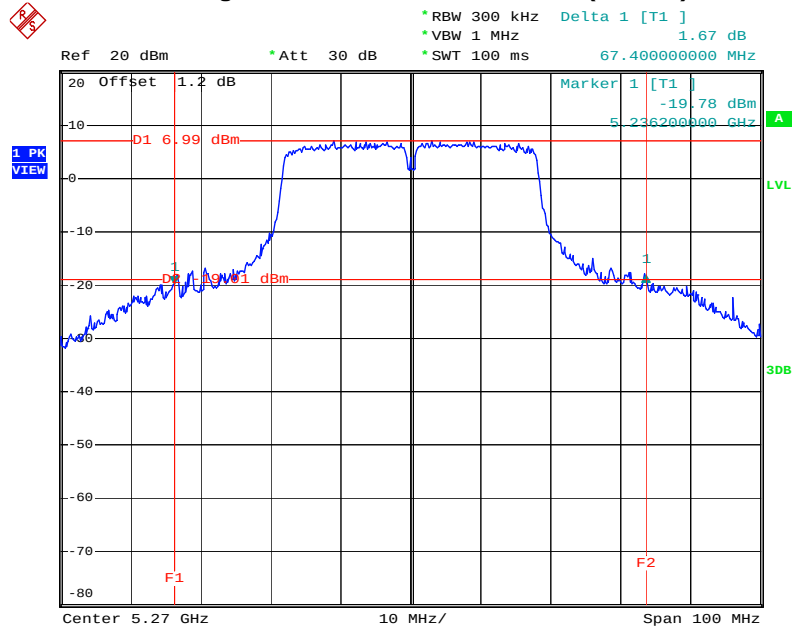
Date: 5.DEC.2011 14:14:21

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



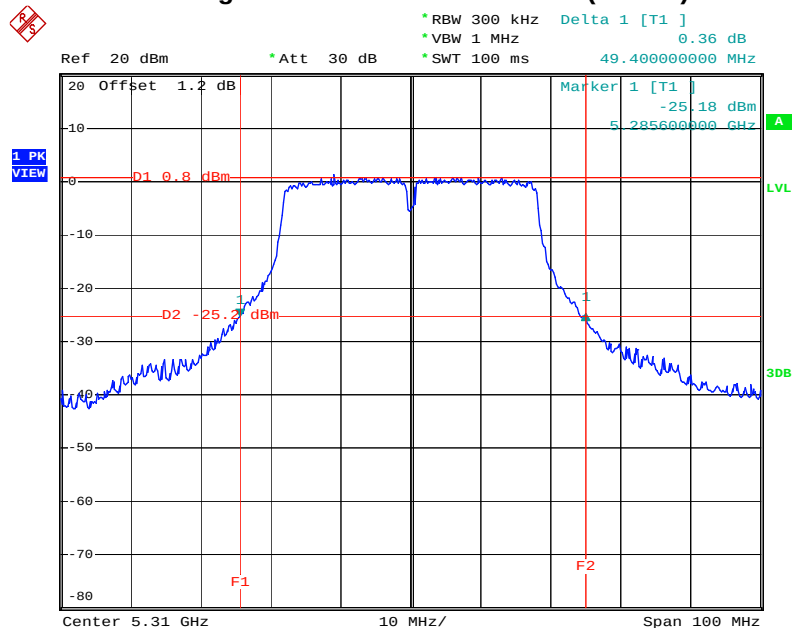
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



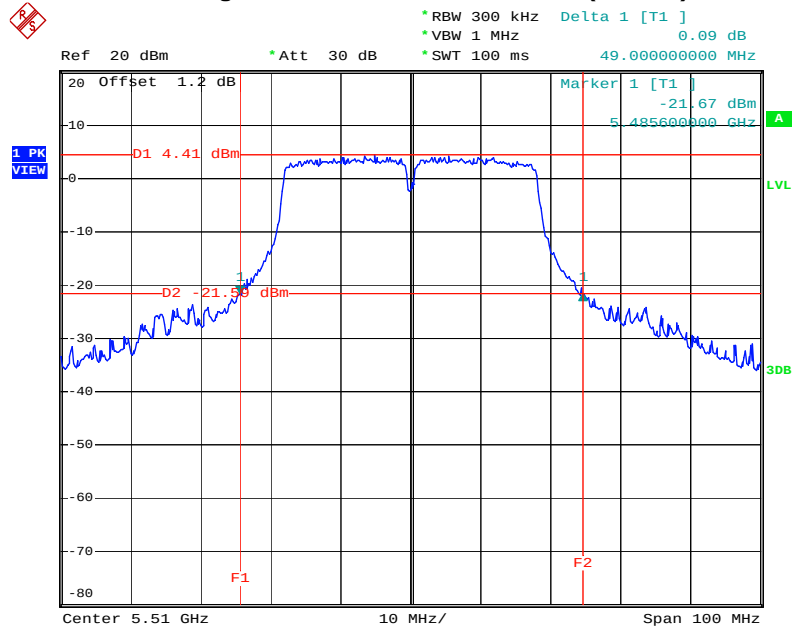
Date: 7.DEC.2011 17:14:22

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



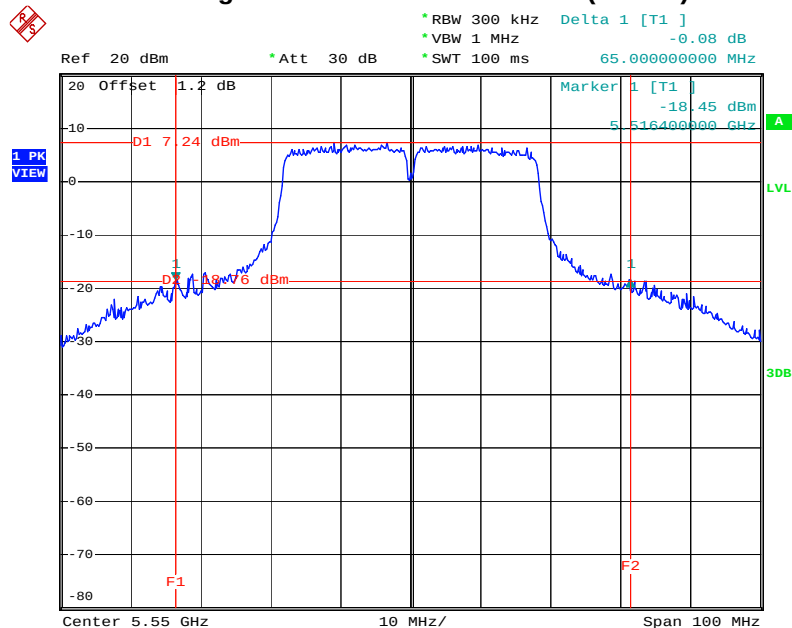
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



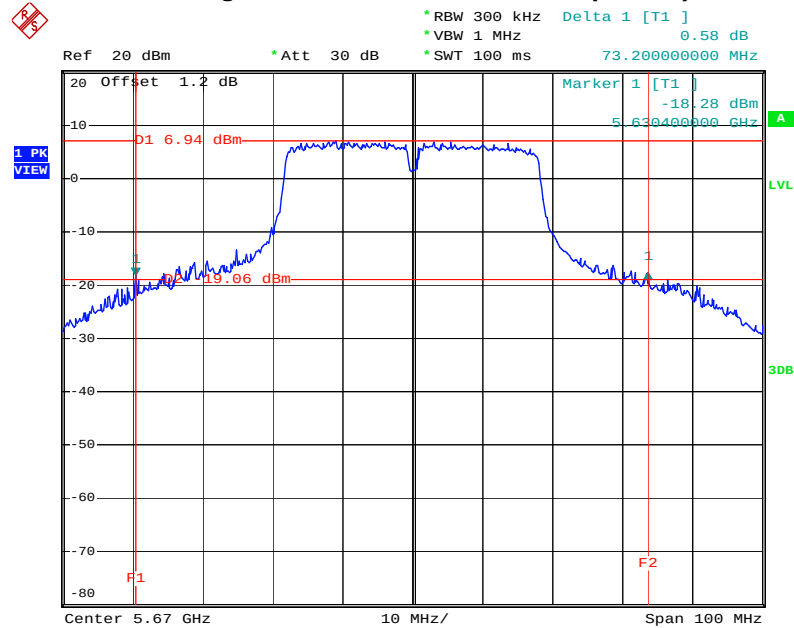
Date: 7.DEC.2011 17:25:54

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



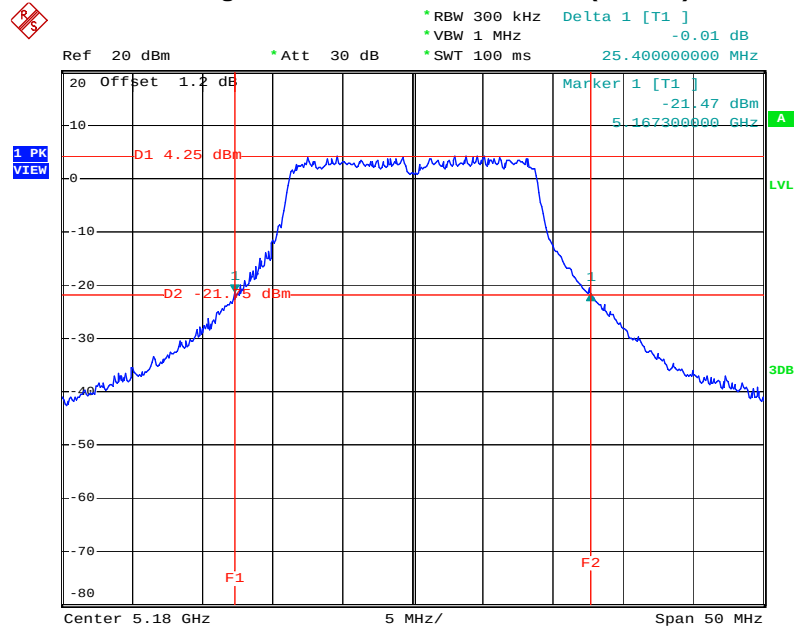
Date: 5.DEC.2011 14:56:24

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



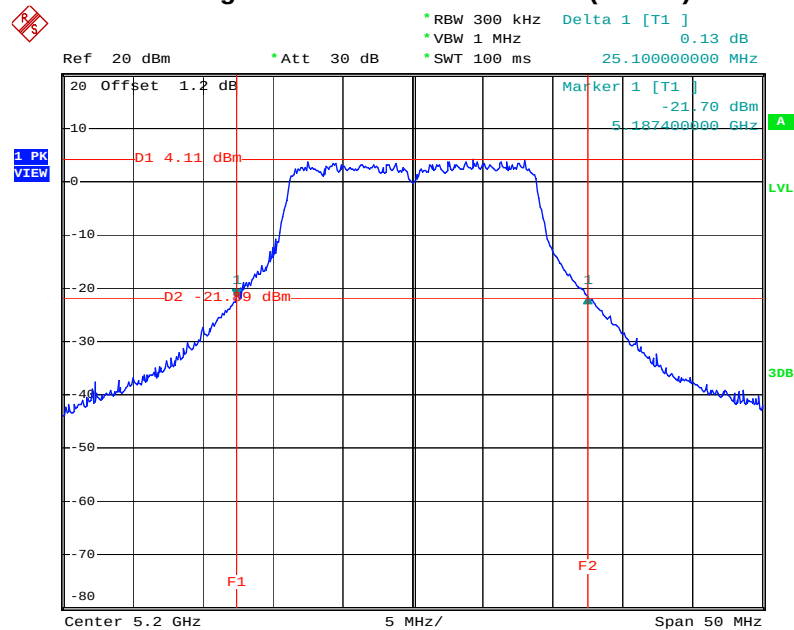
Date: 5.DEC.2011 15:00:32

For Two Chains:
26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz

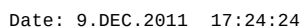
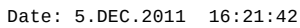


Date: 5.DEC.2011 16:02:27

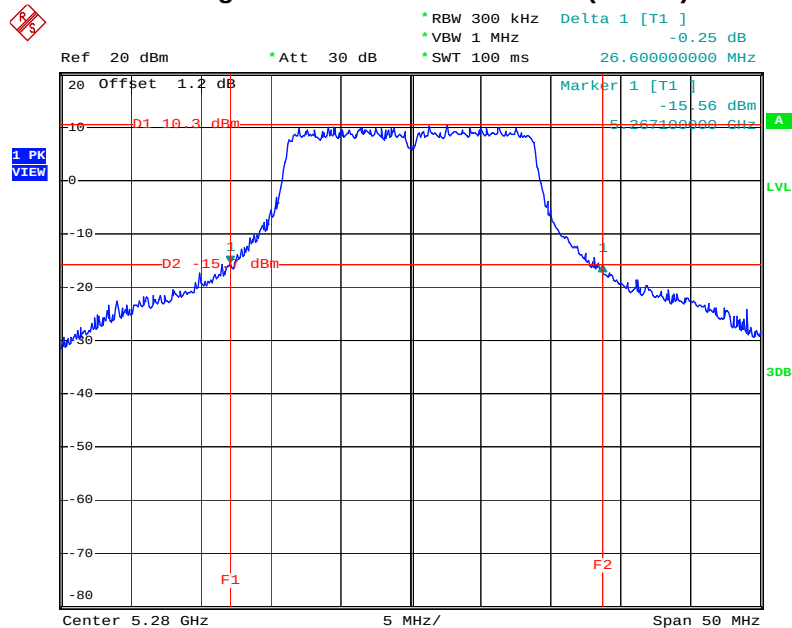
26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



Date: 5.DEC.2011 16:11:38

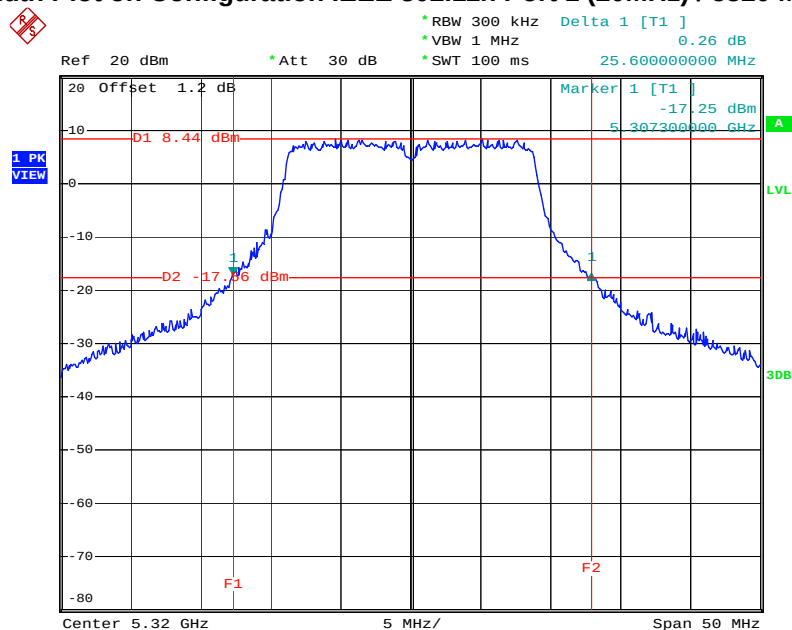


26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



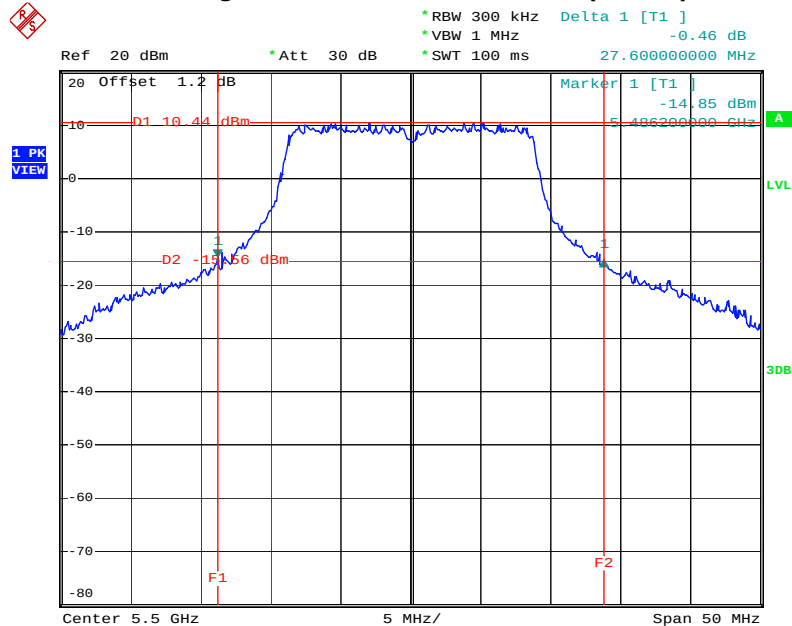
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



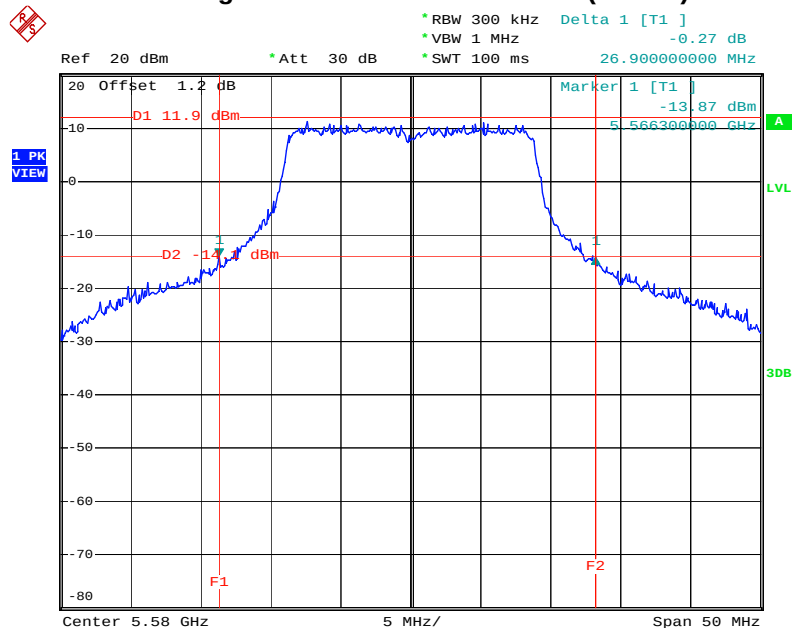
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



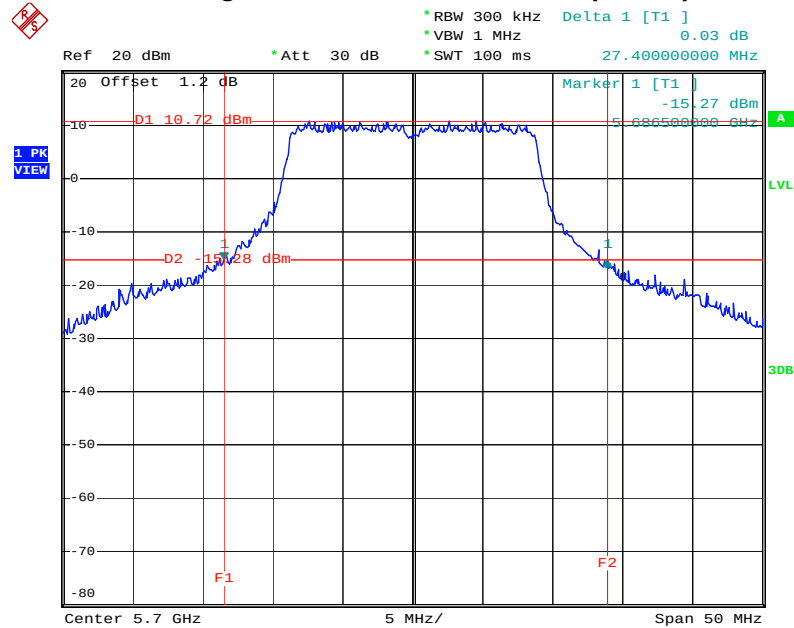
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



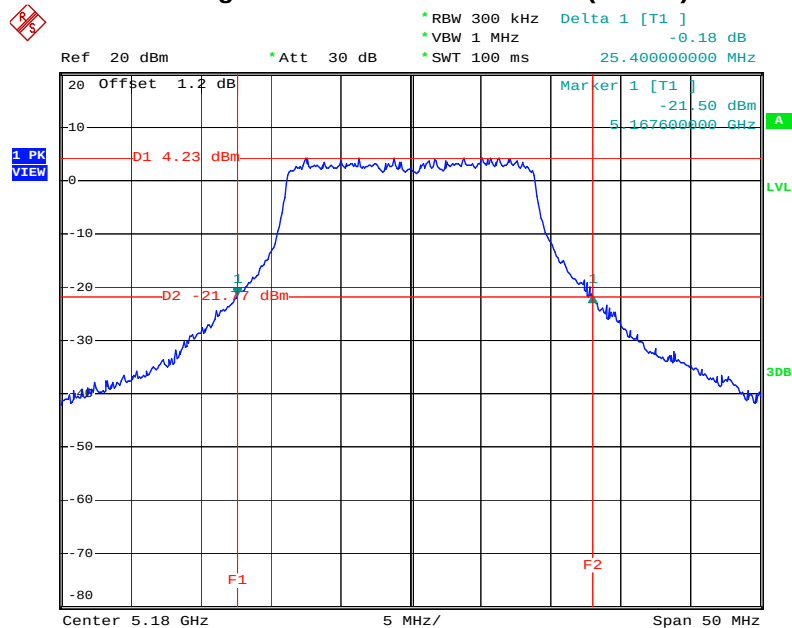
Date: 9.DEC.2011 18:06:35

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



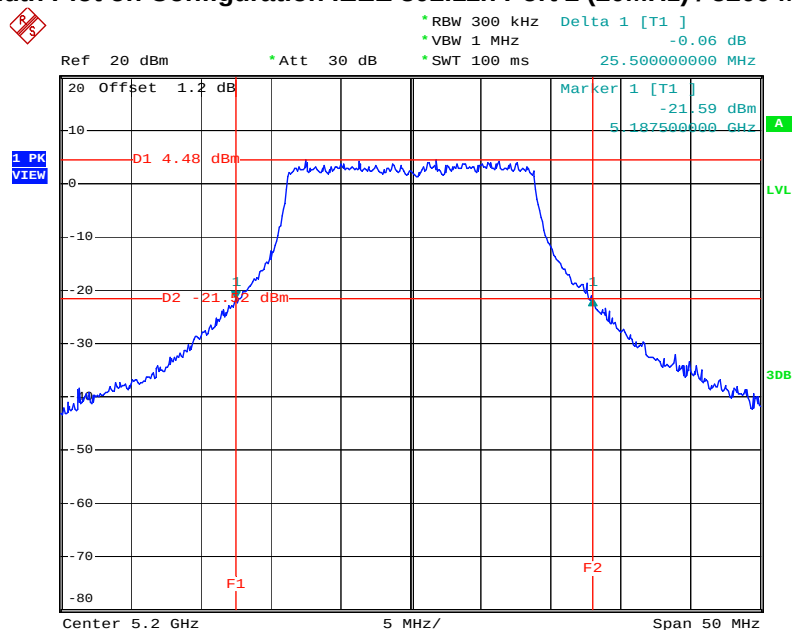
Date: 9.DEC.2011 18:16:57

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5180 MHz



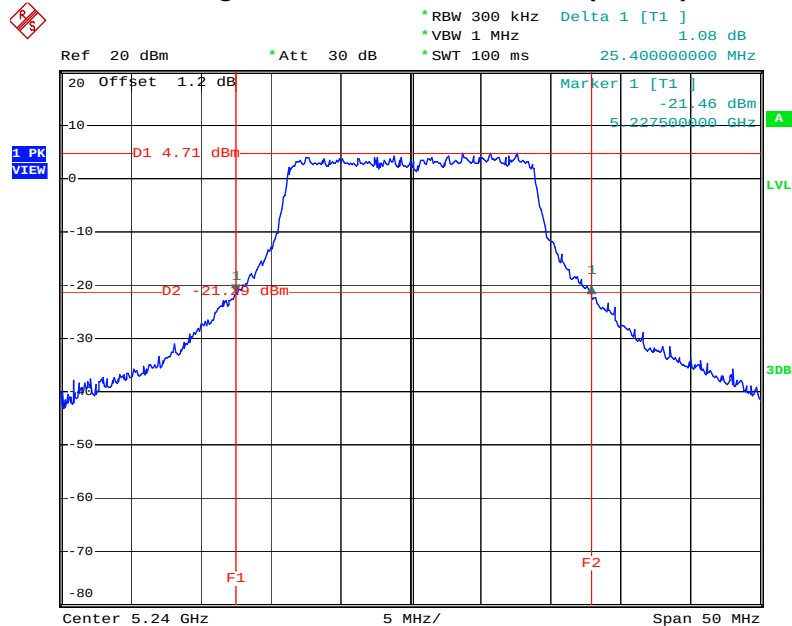
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5200 MHz



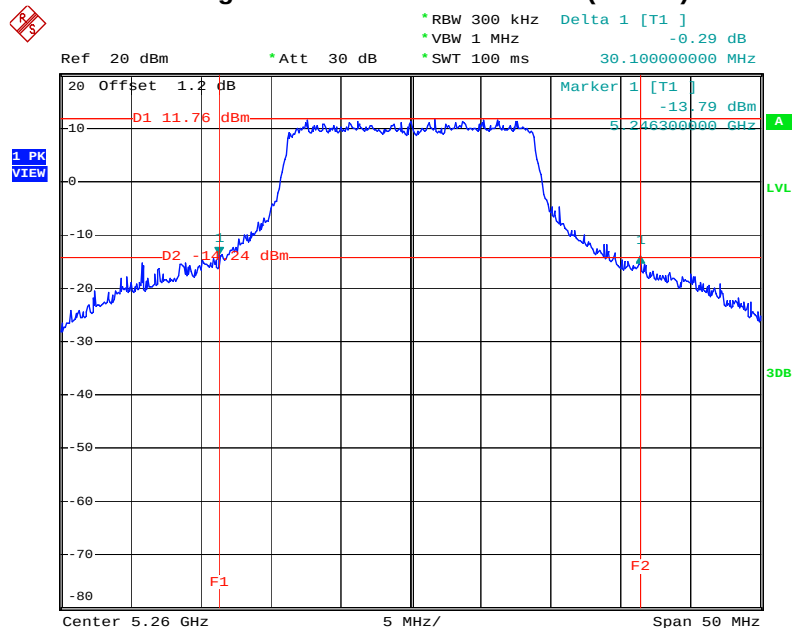
Date: 5.DEC.2011 16:14:20

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5240 MHz



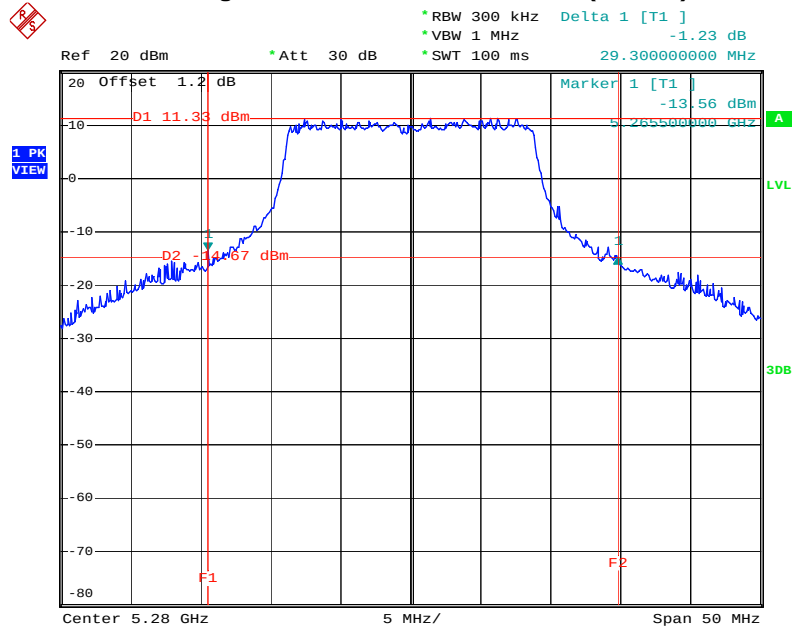
Date: 5.DEC.2011 16:23:45

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5260 MHz



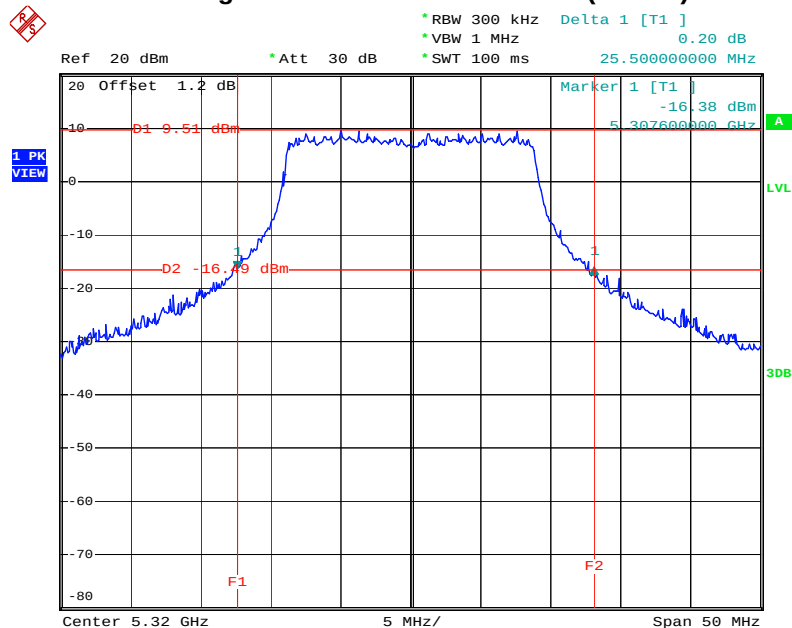
Date: 9.DEC.2011 17:33:37

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5280 MHz



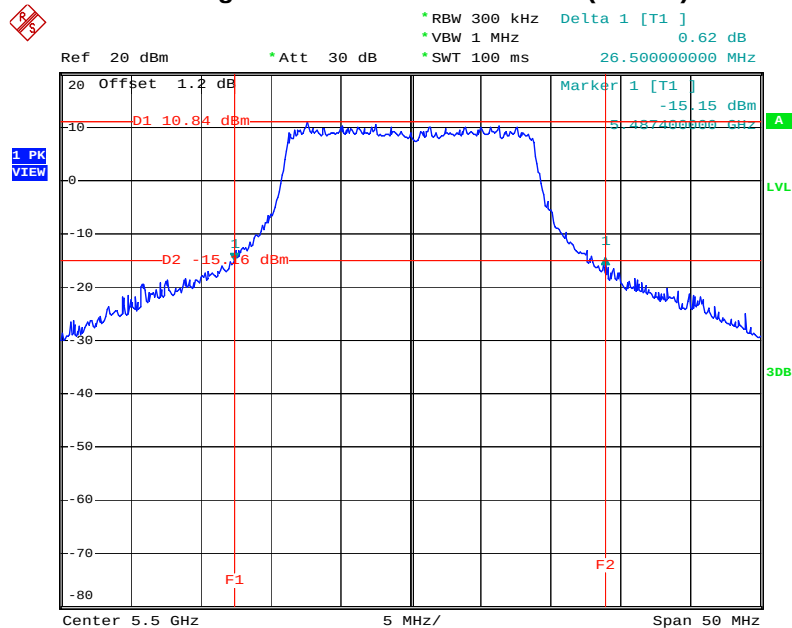
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5320 MHz



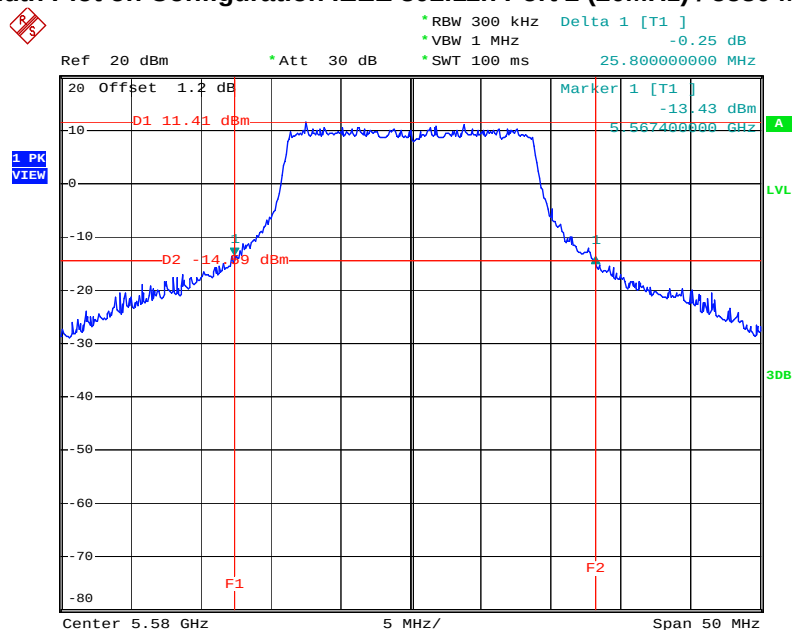
Date: 9.DEC.2011 17:54:15

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5500 MHz



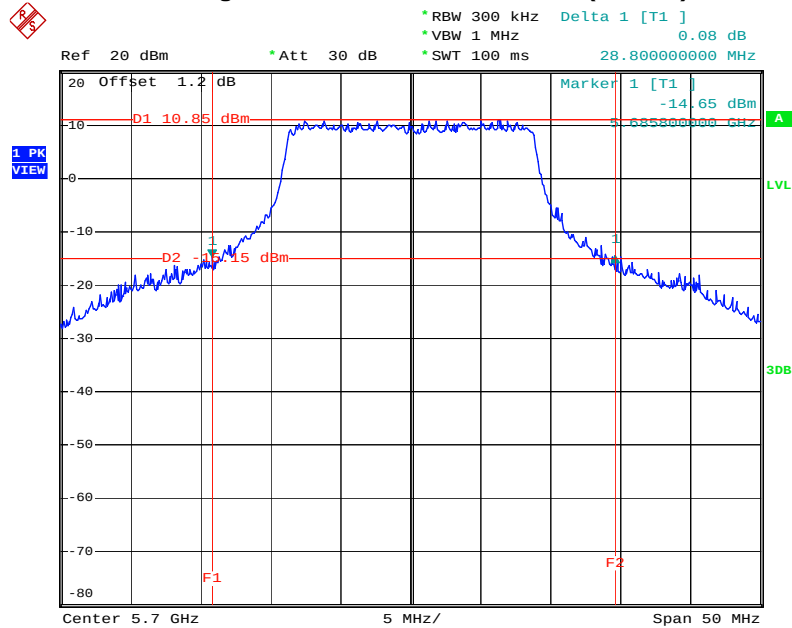
Date: 9.DEC.2011 17:57:13

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5580 MHz



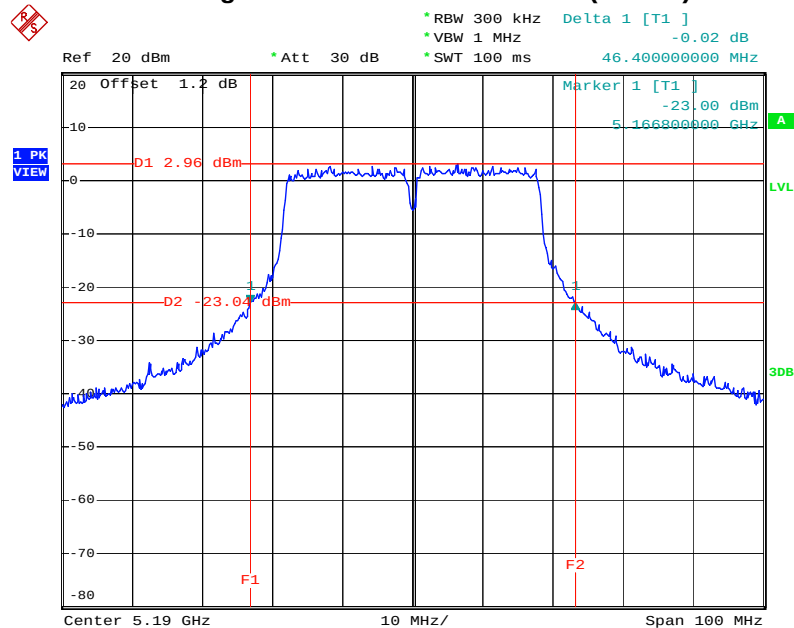
Date: 9.DEC.2011 18:10:28

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5700 MHz



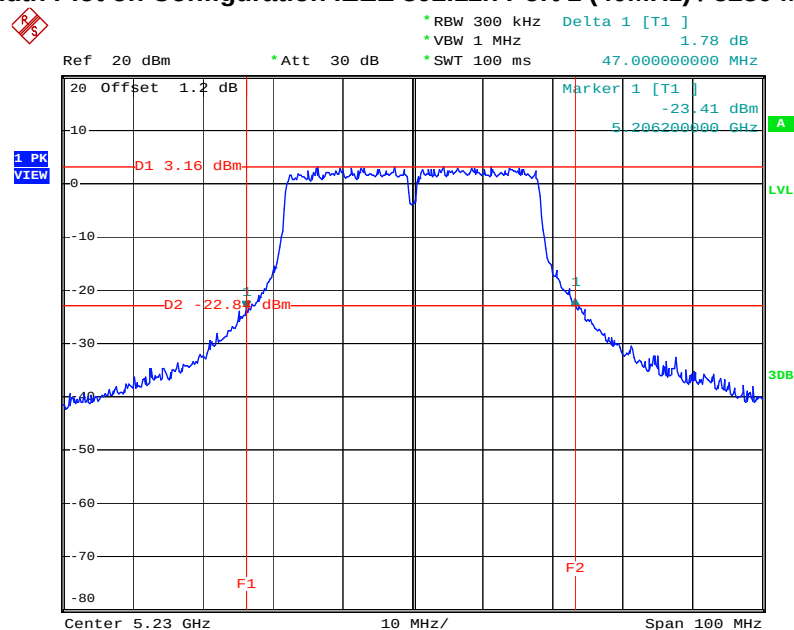
Date: 9.DEC.2011 18:13:02

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



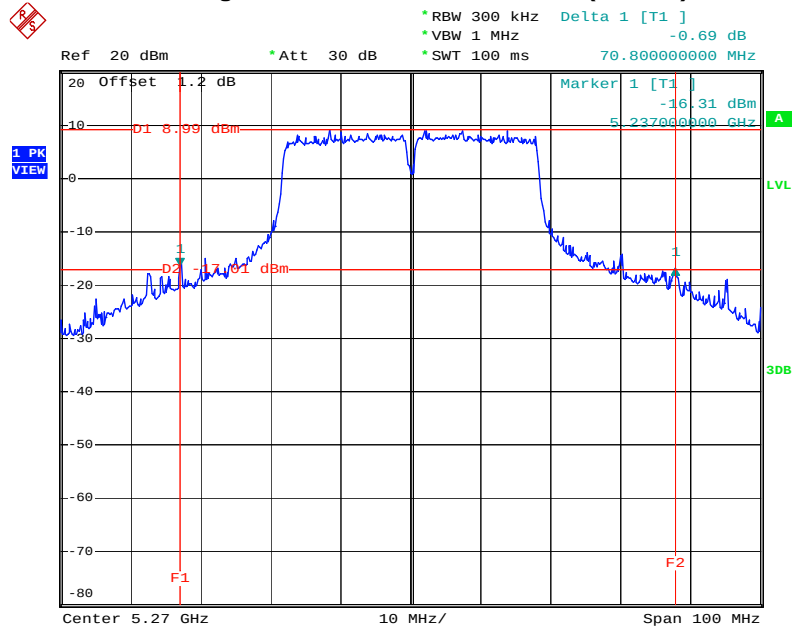
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



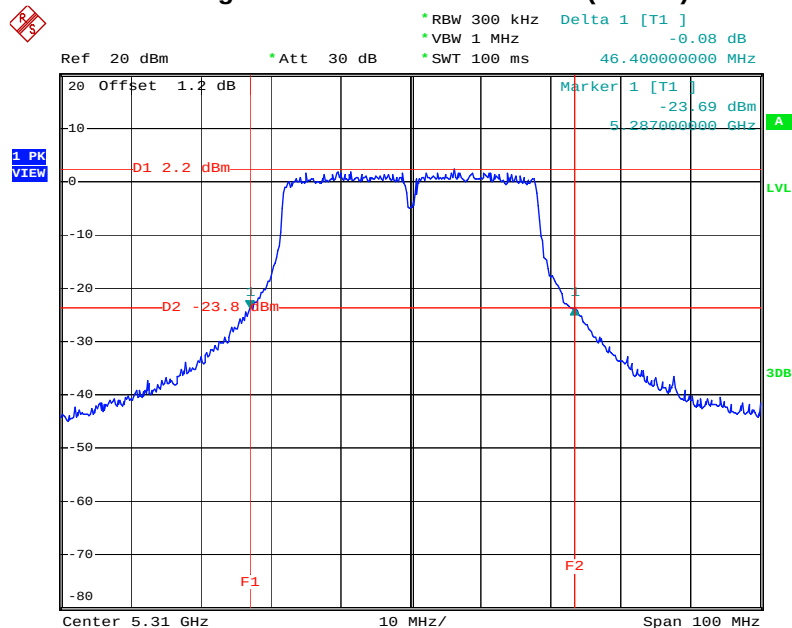
Date: 5.DEC.2011 20:00:45

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



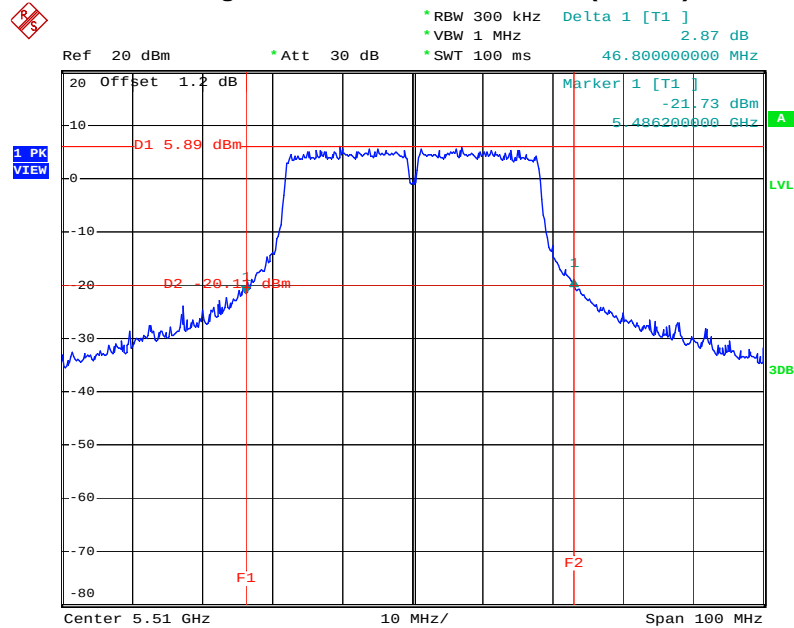
Date: 9.DEC.2011 18:27:09

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



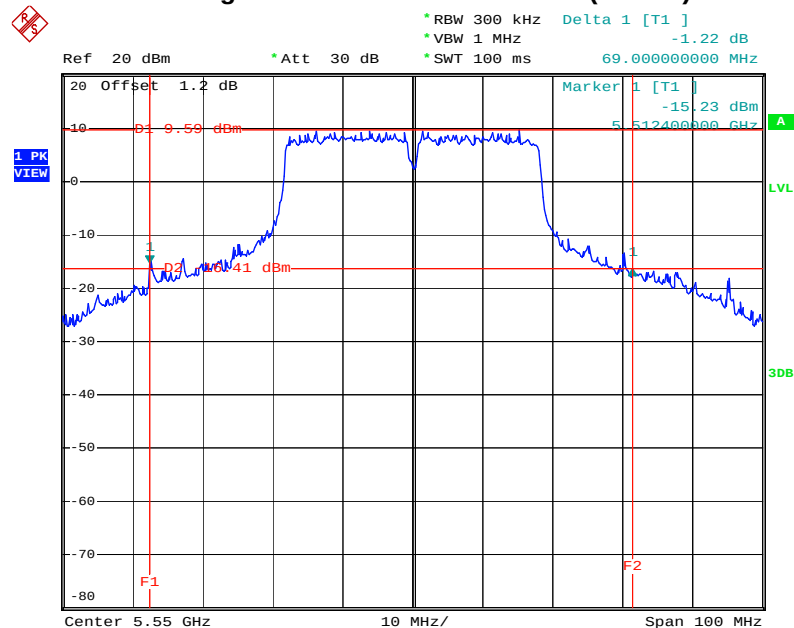
Date: 7.DEC.2011 18:06:35

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



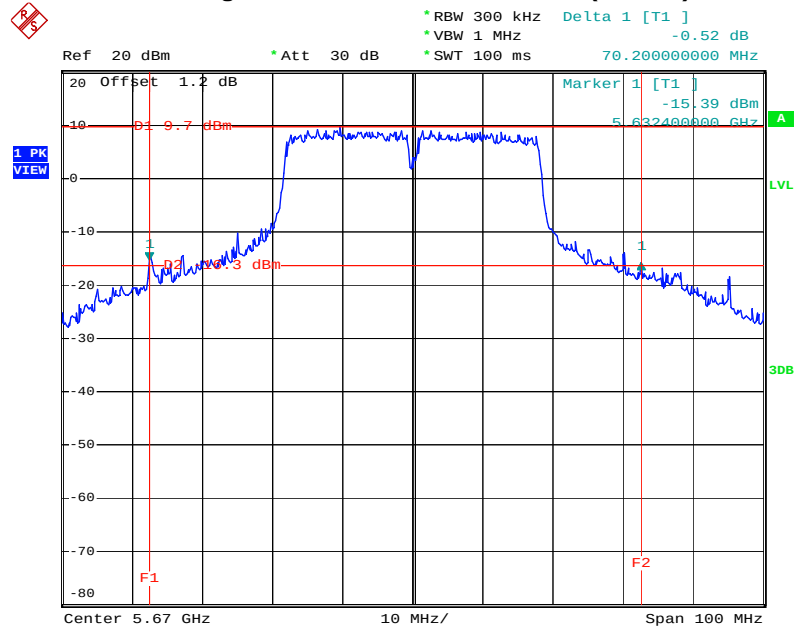
Date: 5.DEC.2011 20:19:53

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



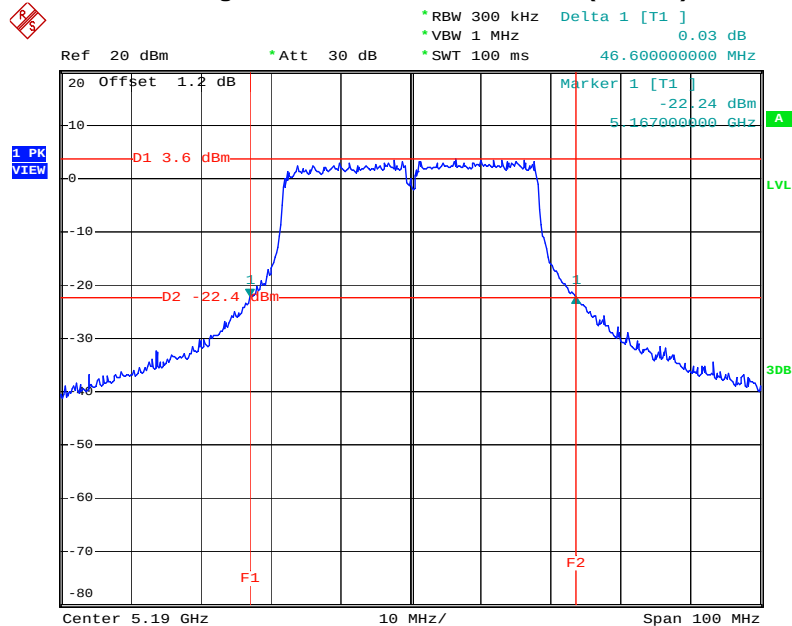
Date: 9.DEC.2011 18:49:28

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



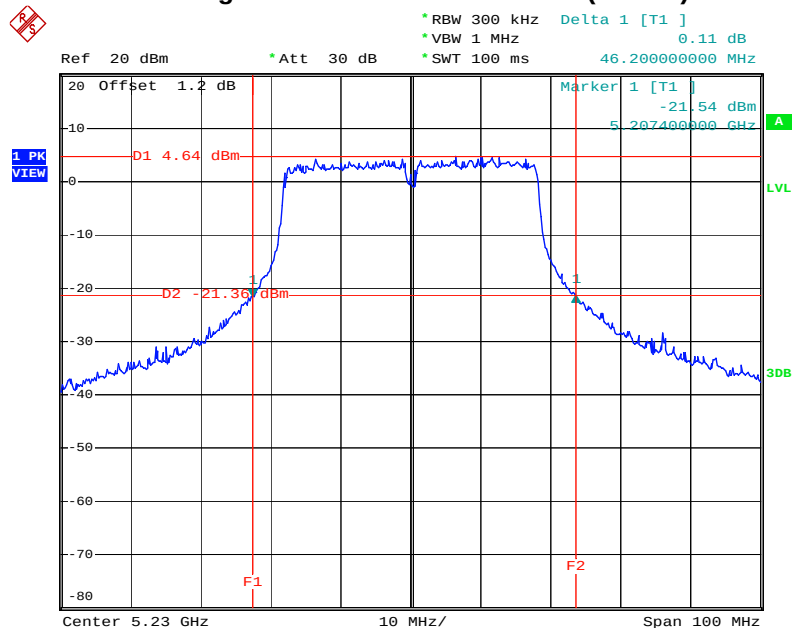
Date: 9.DEC.2011 18:52:16

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5190 MHz



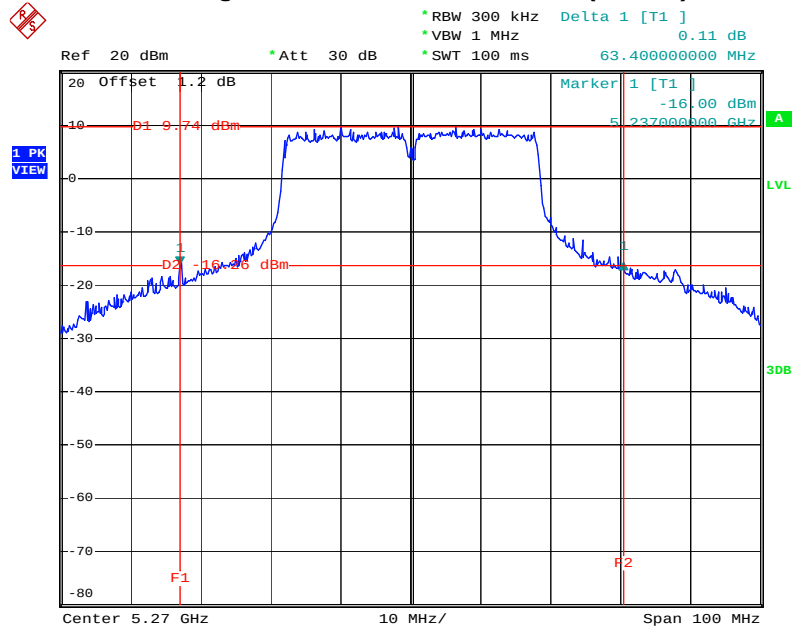
Date: 7.DEC.2011 17:57:43

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5230 MHz



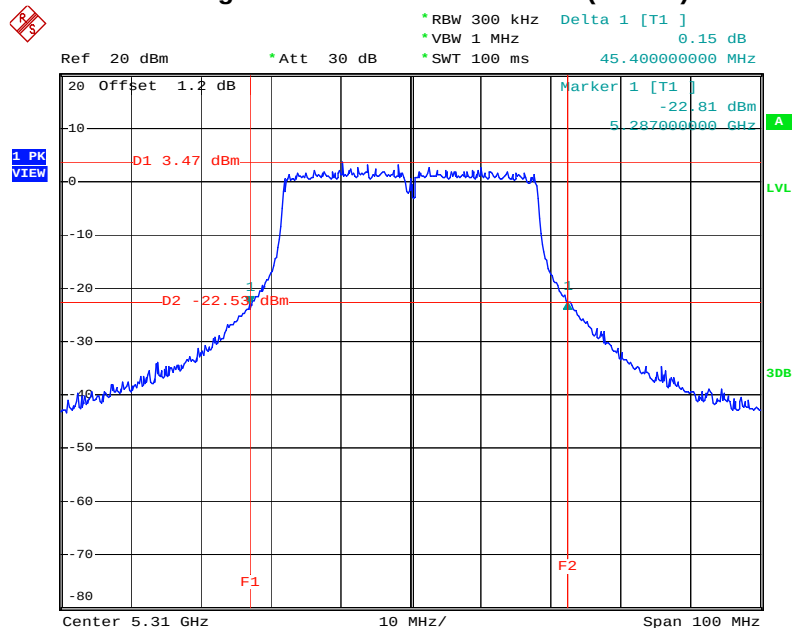
Date: 5.DEC.2011 20:03:50

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5270 MHz



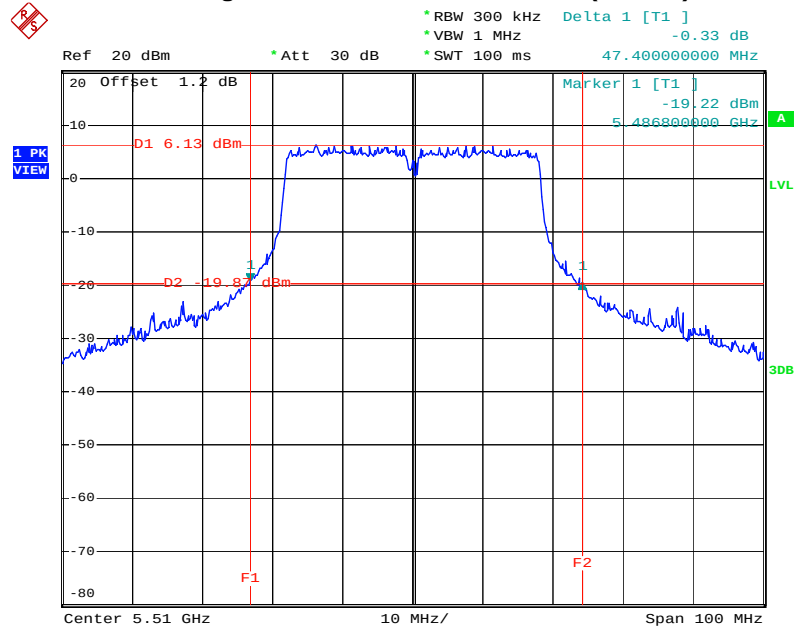
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26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5310 MHz



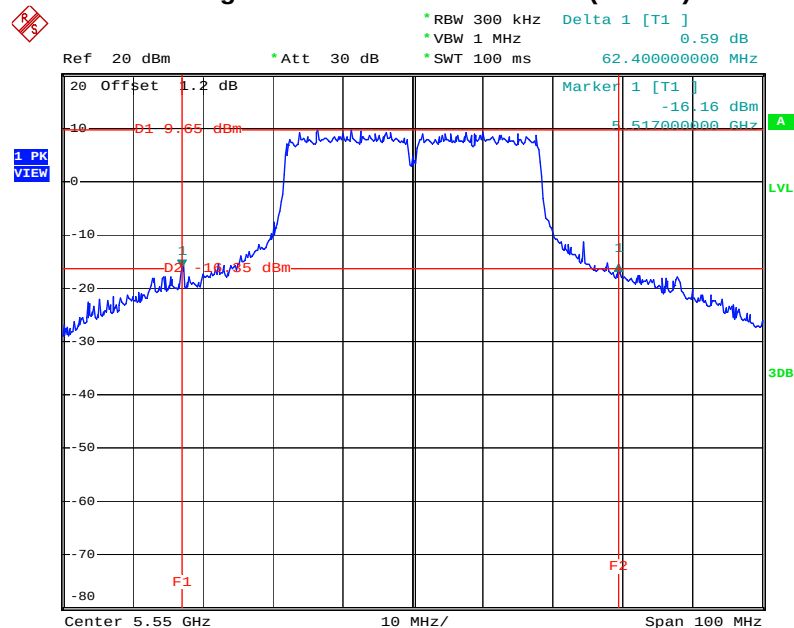
Date: 7.DEC.2011 18:08:51

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5510 MHz



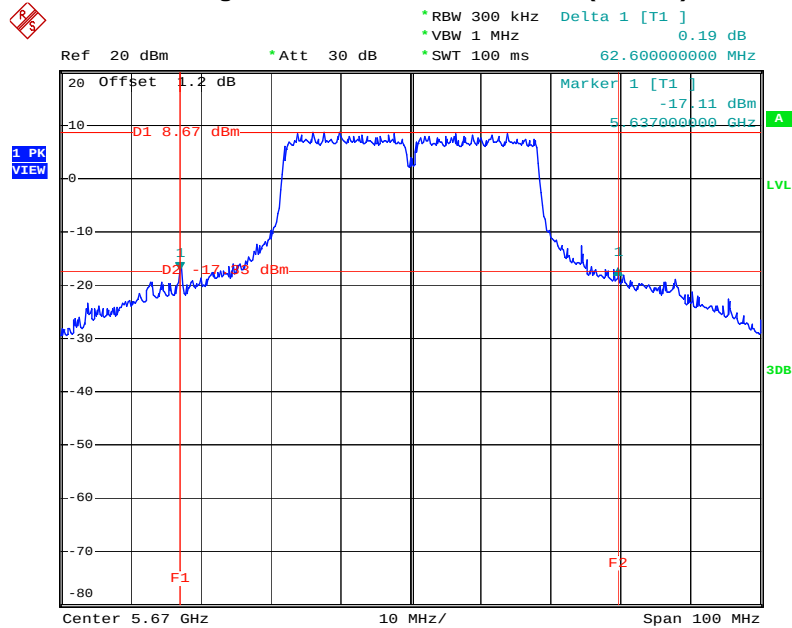
Date: 5.DEC.2011 20:23:34

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5550 MHz



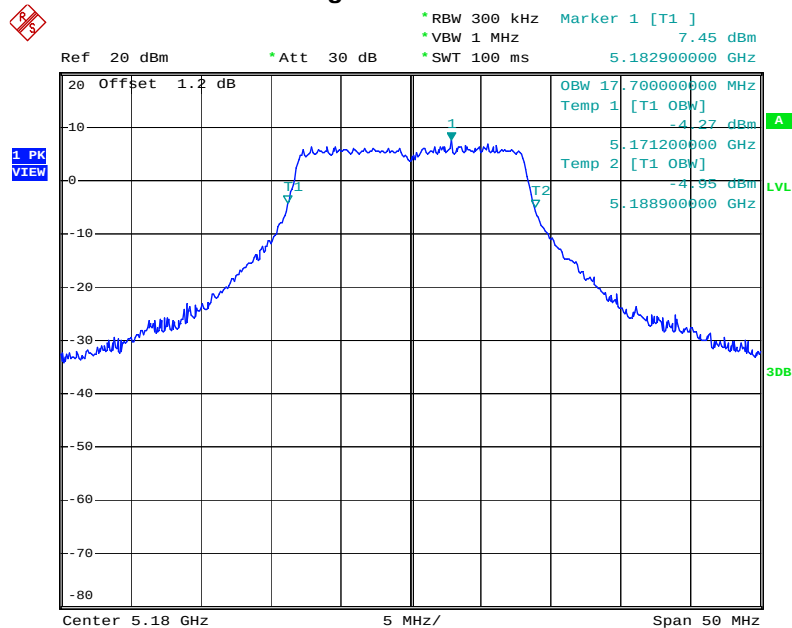
Date: 9.DEC.2011 18:45:26

26 dB Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5670 MHz



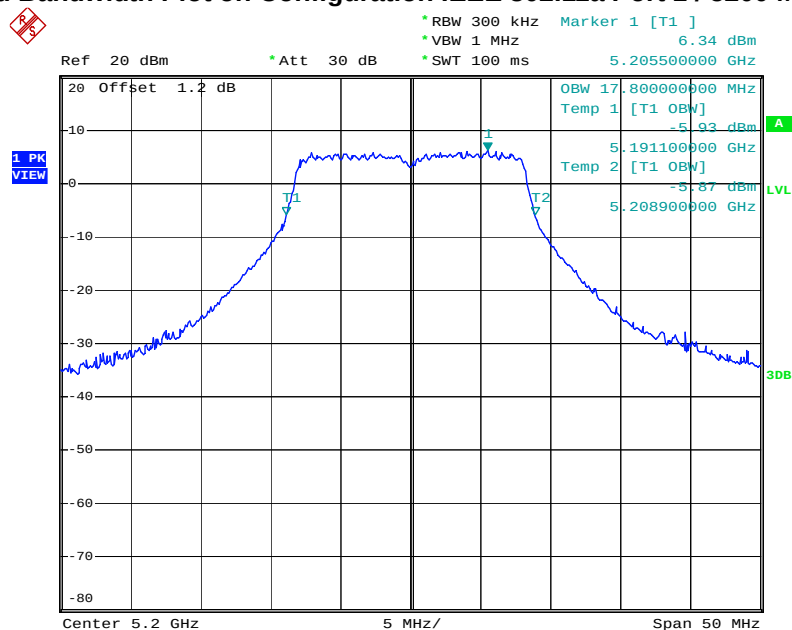
Date: 9.DEC.2011 18:55:55

For Single Chain:
99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5180 MHz



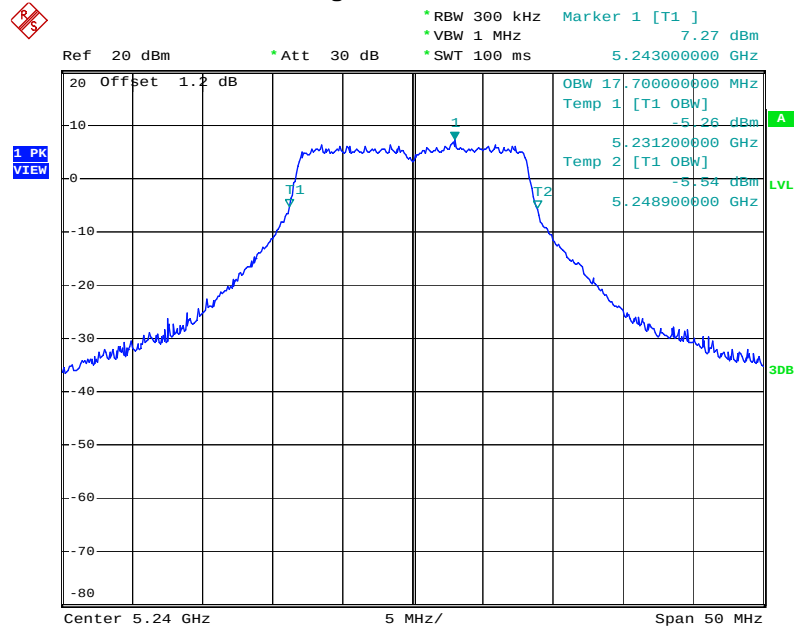
Date: 2.DEC.2011 21:18:05

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5200 MHz



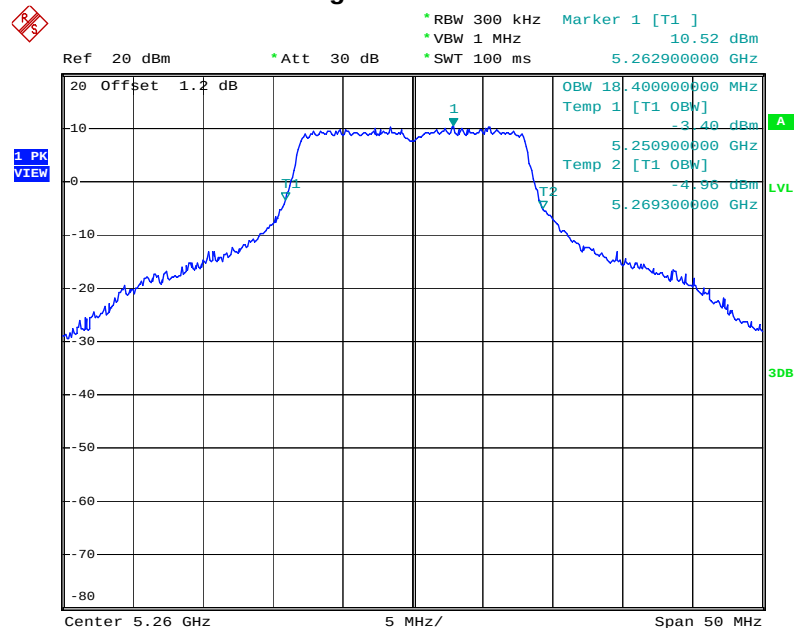
Date: 5.DEC.2011 09:04:18

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5240 MHz



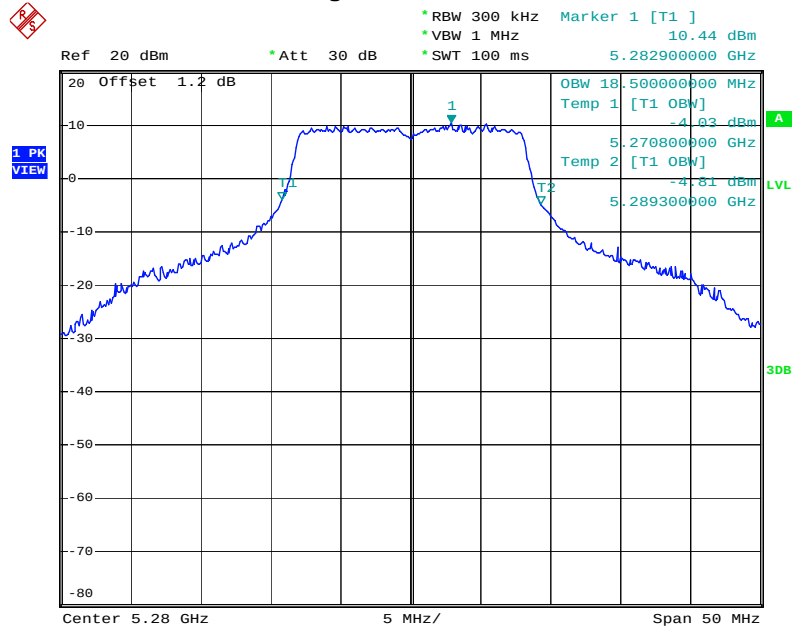
Date: 5.DEC.2011 09:09:11

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5260 MHz



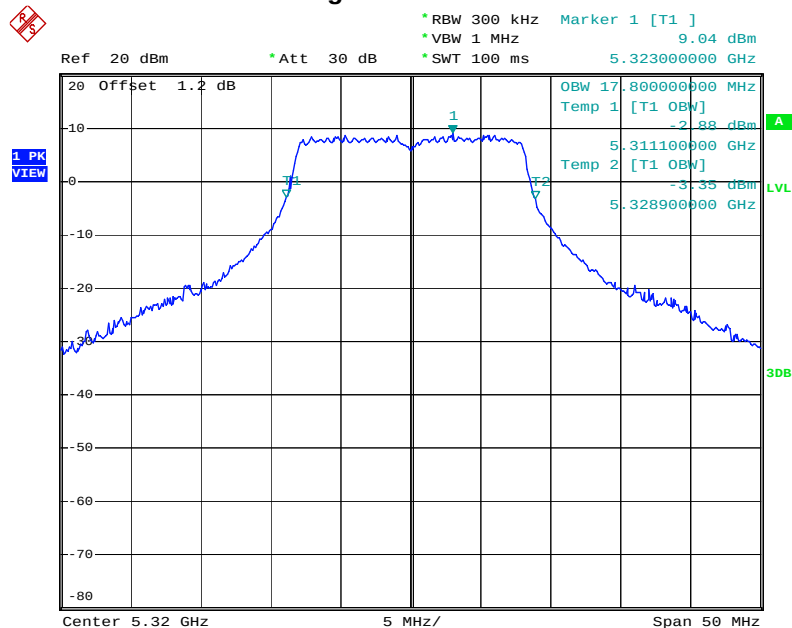
Date: 5.DEC.2011 09:16:29

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5280 MHz



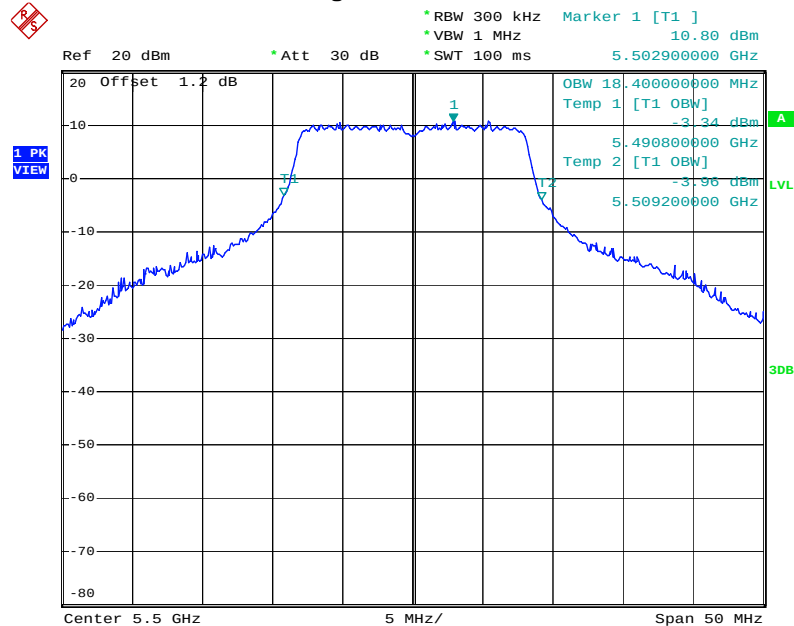
Date: 5.DEC.2011 09:29:21

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5320 MHz



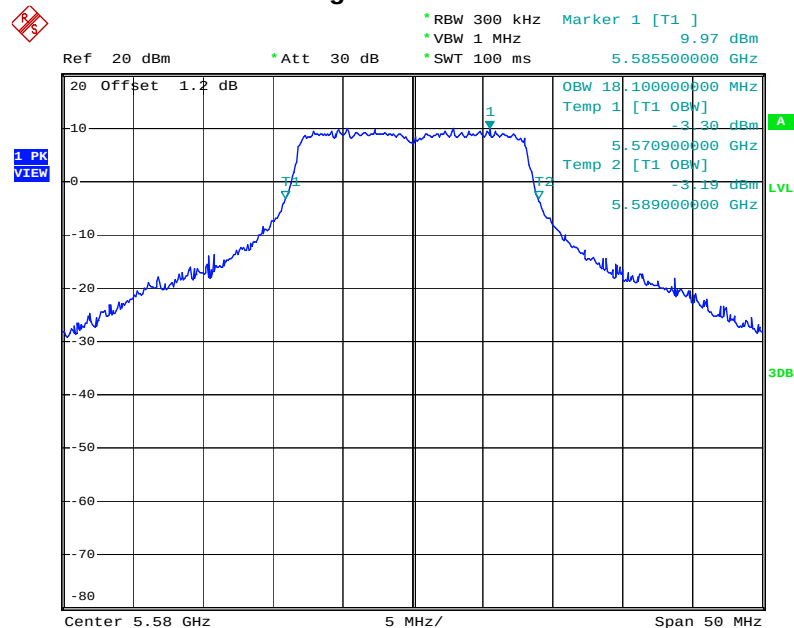
Date: 9.DEC.2011 17:13:09

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5500 MHz



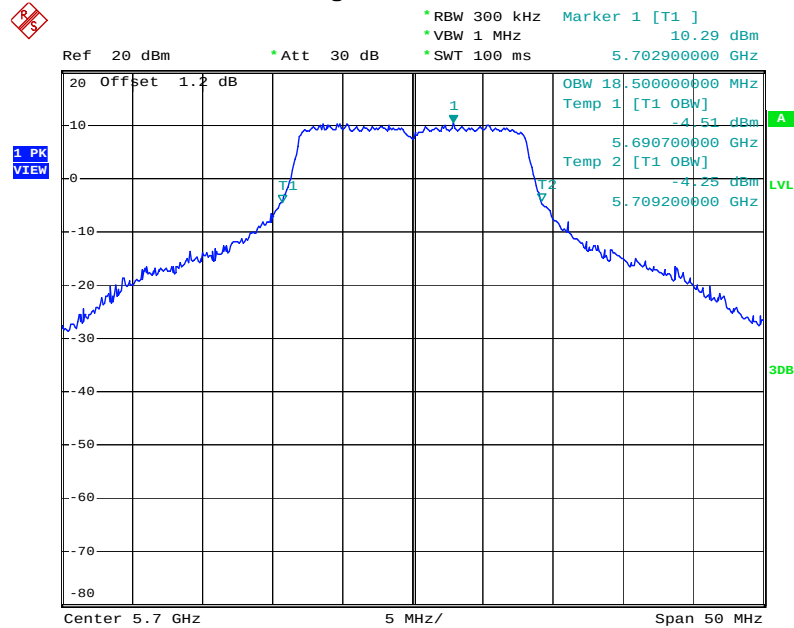
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99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5580 MHz



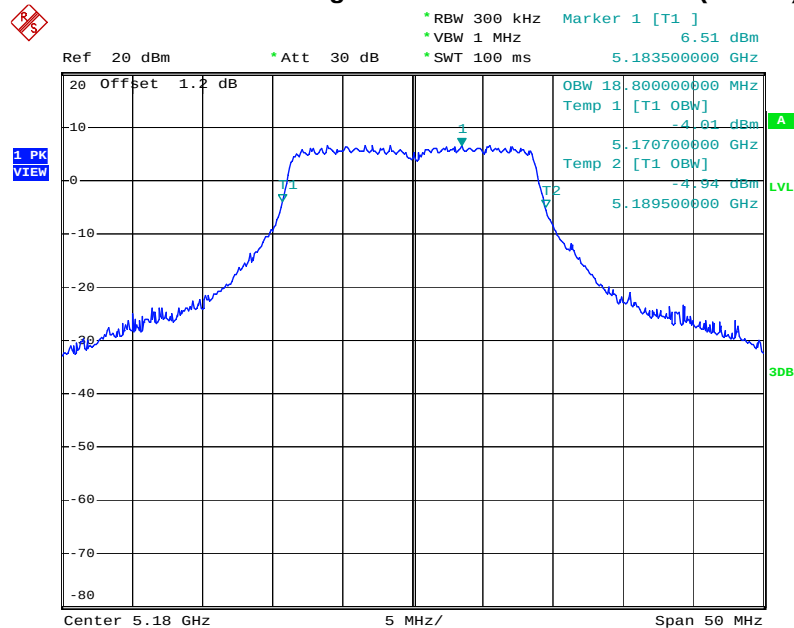
Date: 5.DEC.2011 09:45:59

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a Port 1 / 5700 MHz



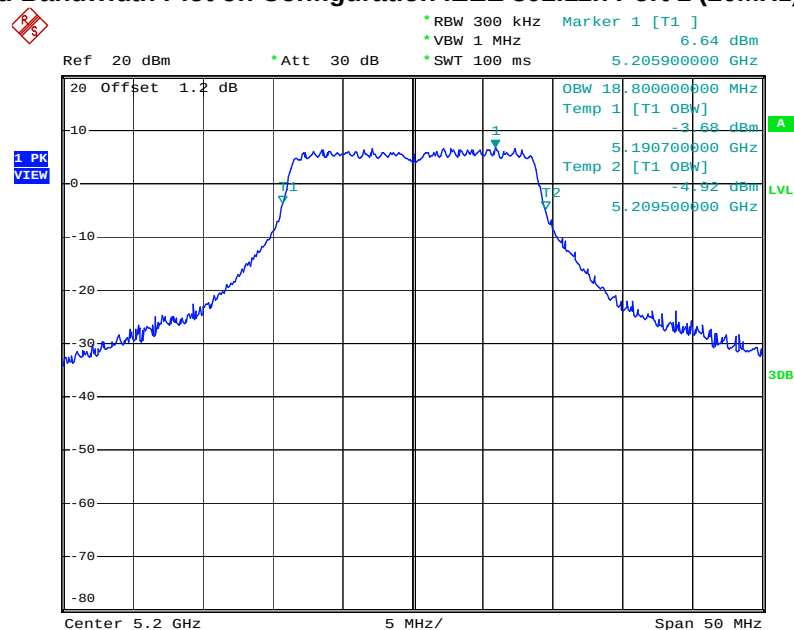
Date: 5.DEC.2011 09:50:00

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



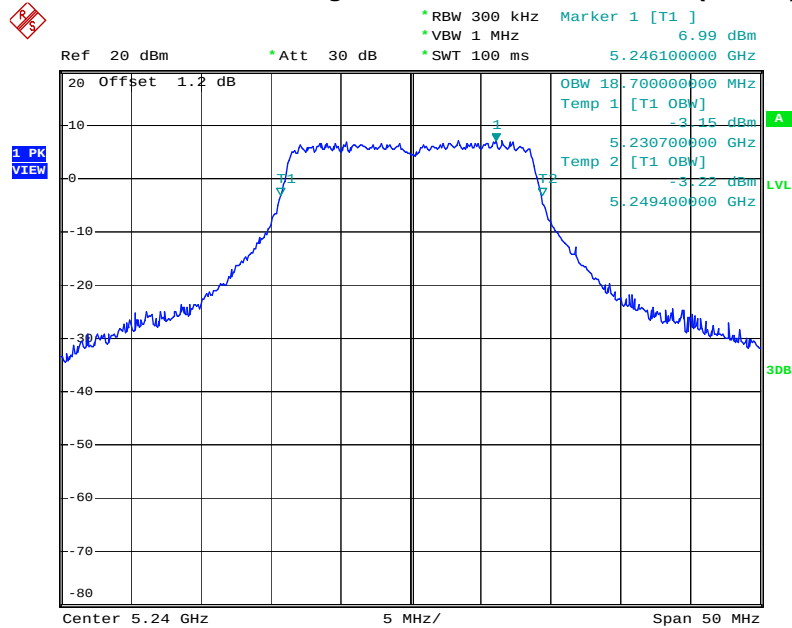
Date: 5.DEC.2011 10:35:14

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



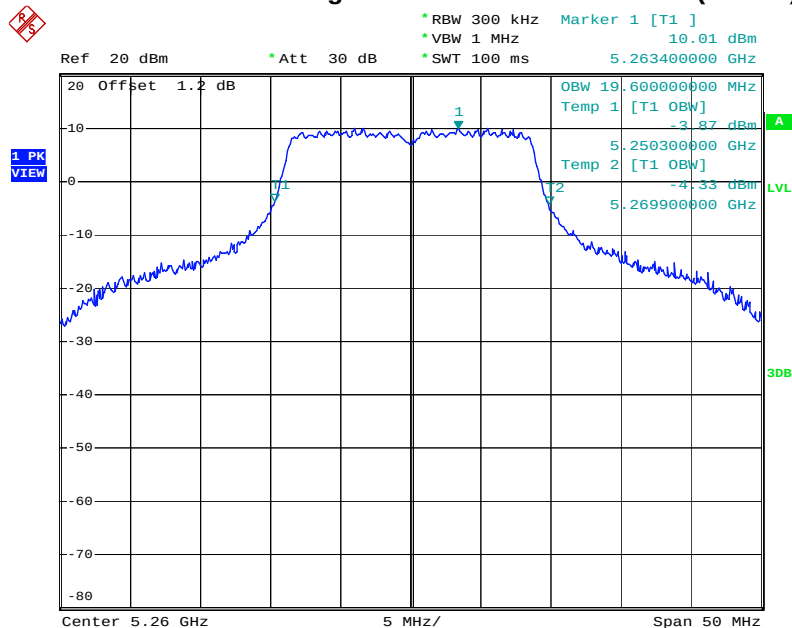
Date: 5.DEC.2011 10:38:20

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



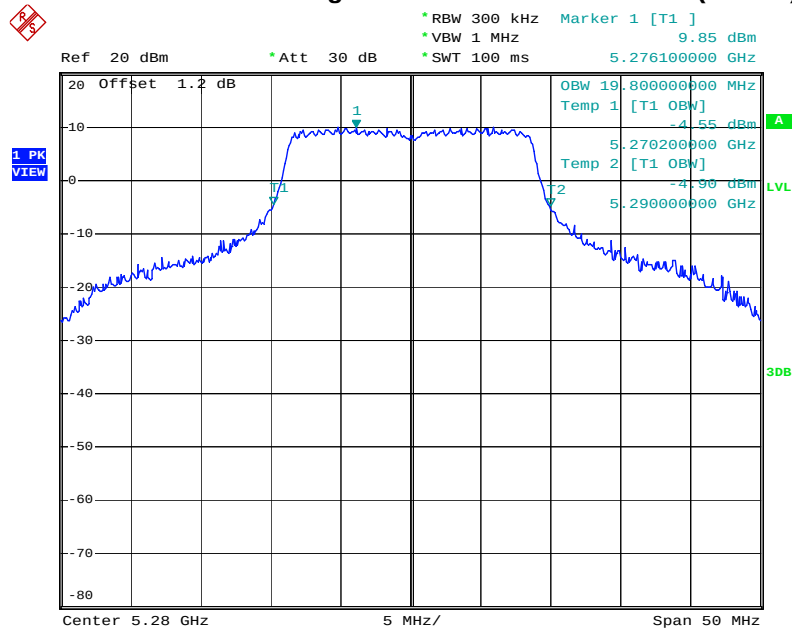
Date: 5.DEC.2011 10:42:34

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



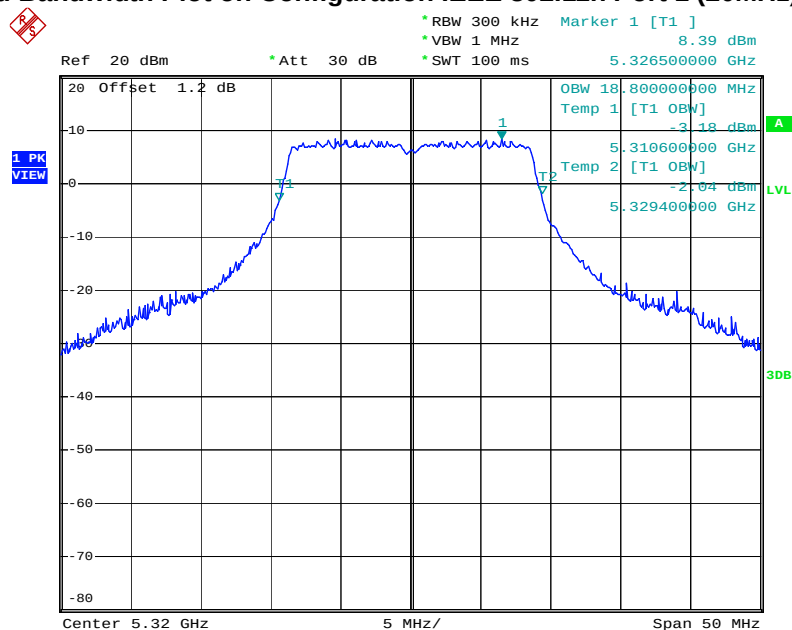
Date: 5.DEC.2011 10:54:33

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



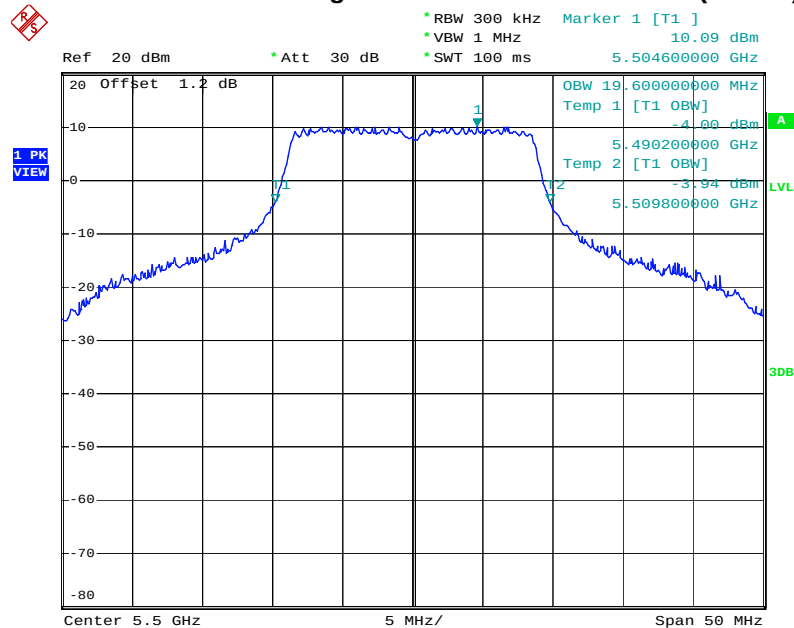
Date: 5.DEC.2011 11:01:00

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



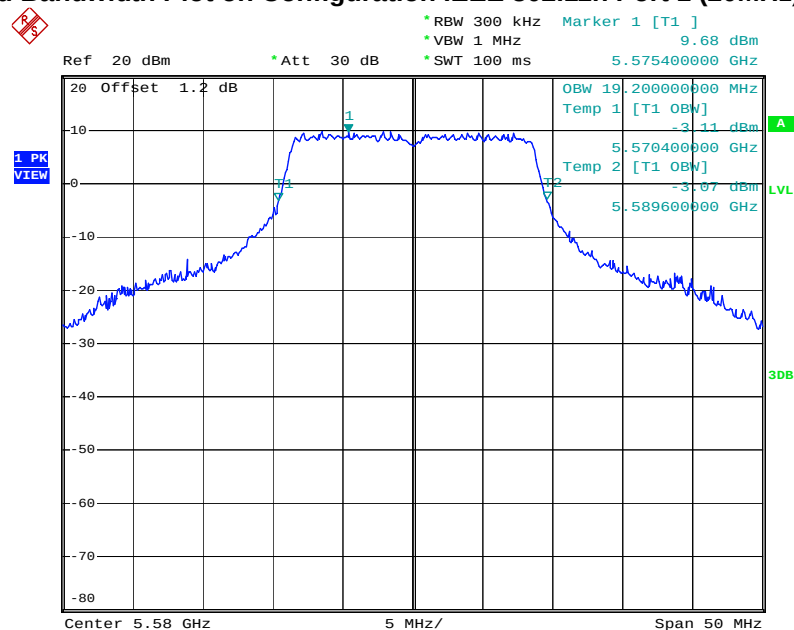
Date: 9.DEC.2011 17:03:34

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



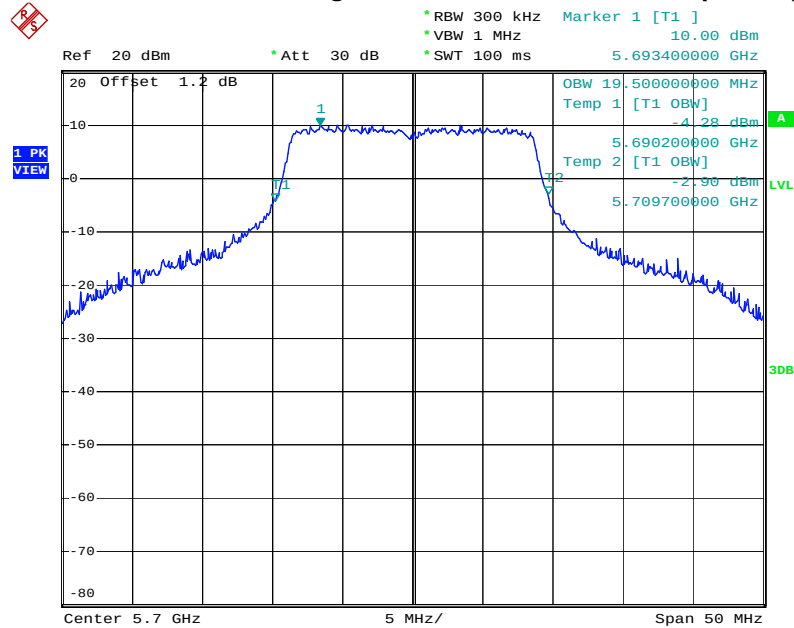
Date: 5.DEC.2011 11:10:38

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



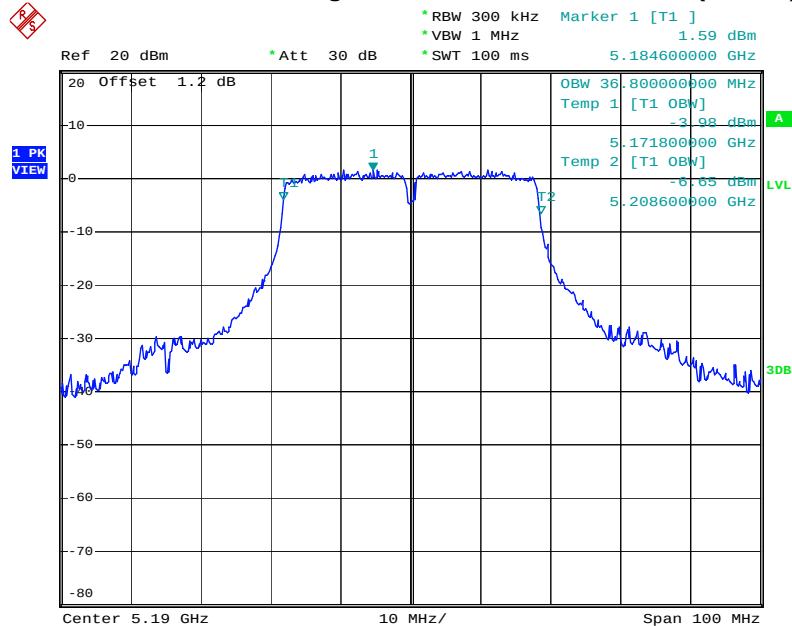
Date: 5.DEC.2011 11:21:52

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



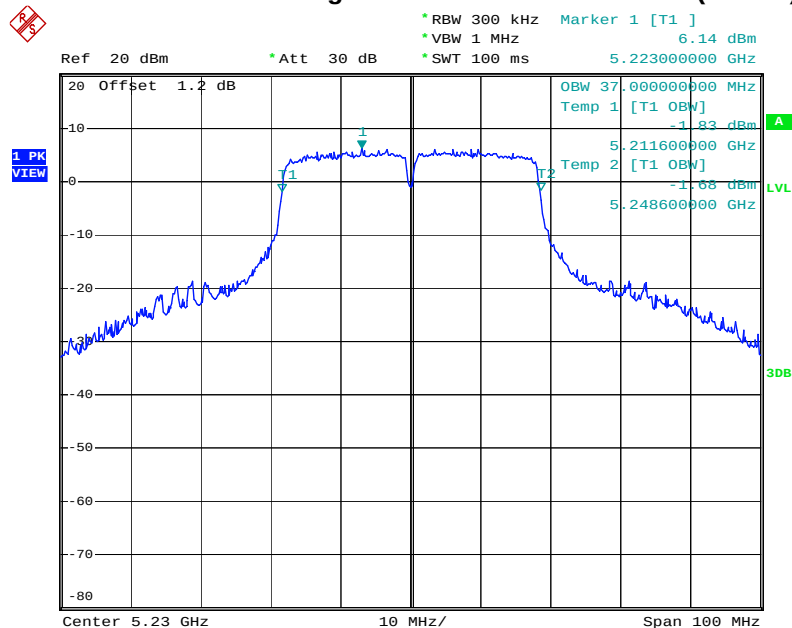
Date: 5.DEC.2011 11:25:51

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz

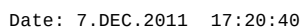
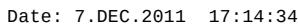


Date: 5.DEC.2011 14:14:32

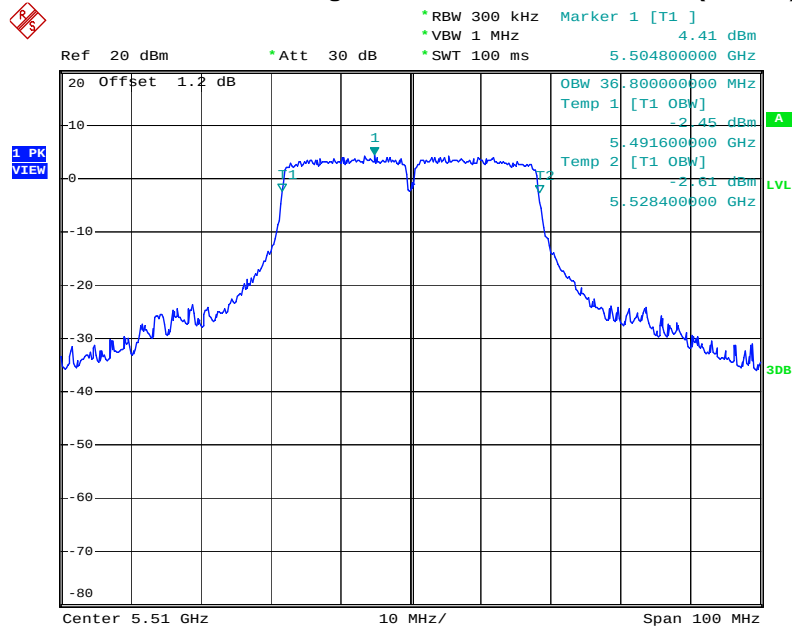
99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



Date: 5.DEC.2011 14:17:34

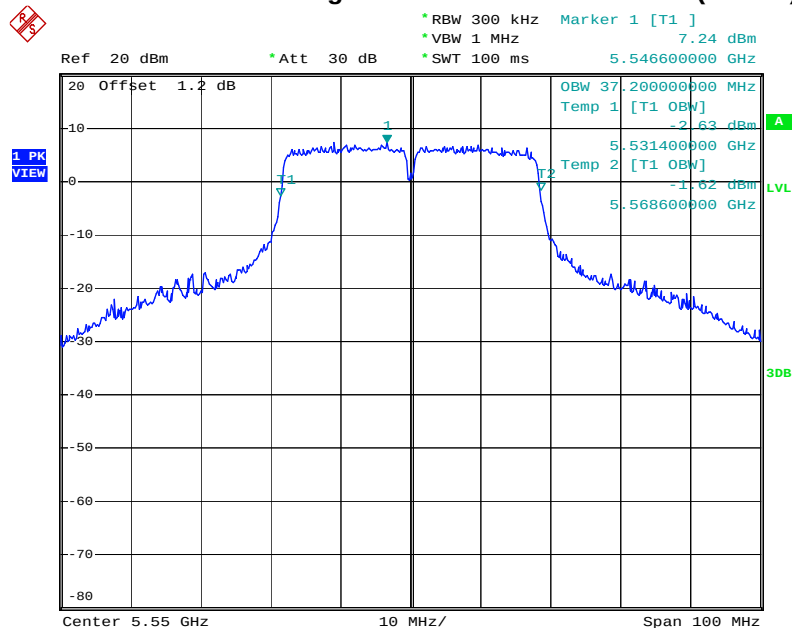


99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



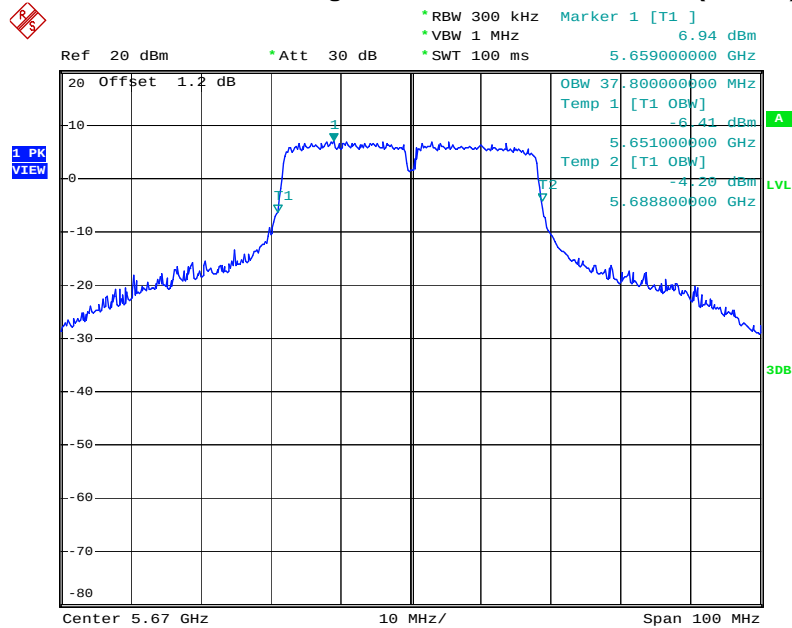
Date: 7.DEC.2011 17:26:04

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



Date: 5.DEC.2011 14:56:35

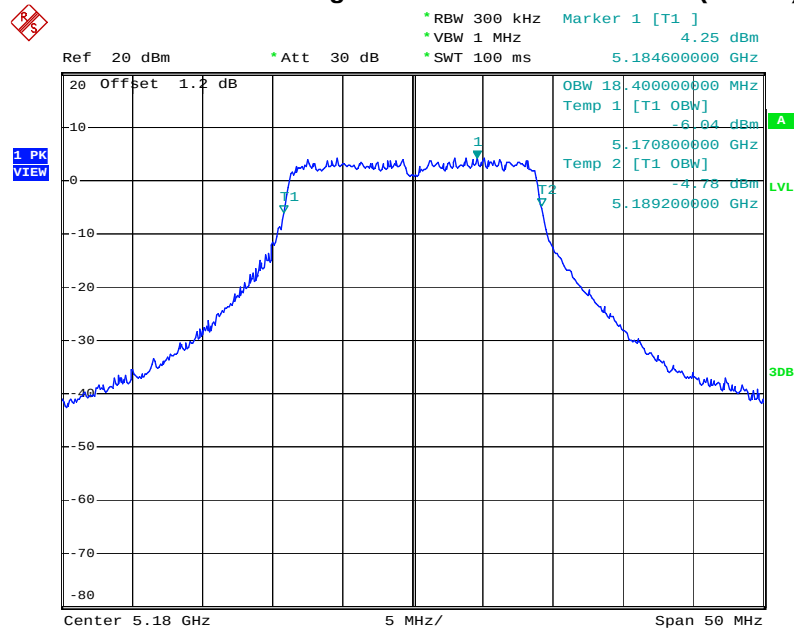
99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



Date: 5.DEC.2011 15:00:42

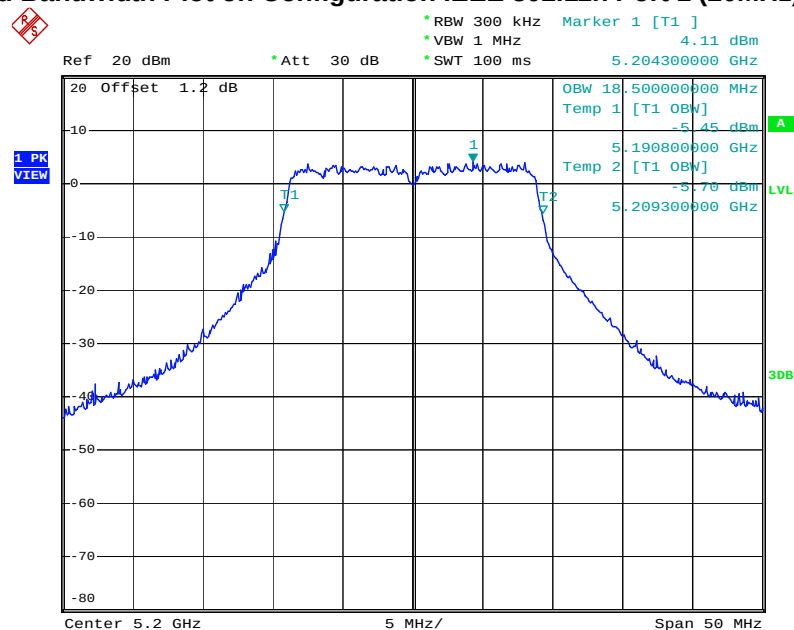
For Two Chains:

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



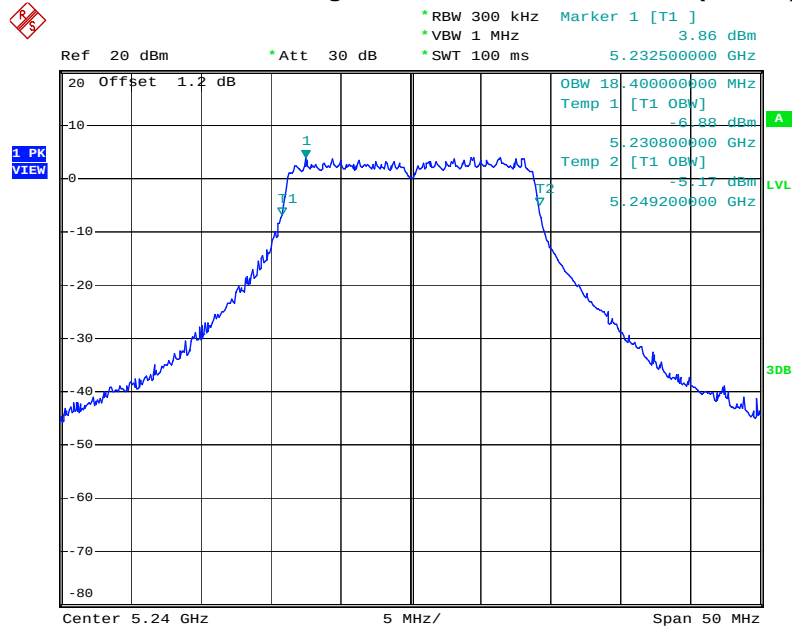
Date: 5.DEC.2011 16:02:38

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



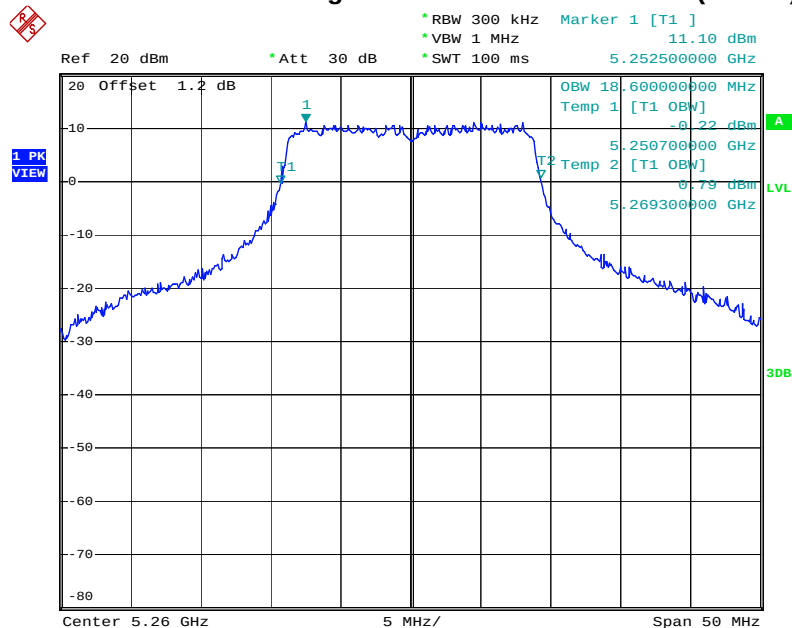
Date: 5.DEC.2011 16:11:55

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



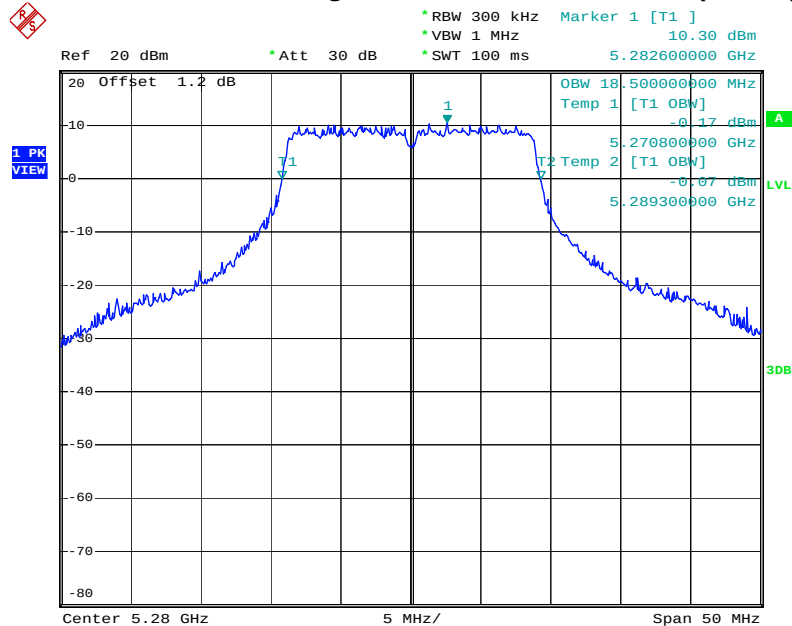
Date: 5.DEC.2011 16:21:52

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



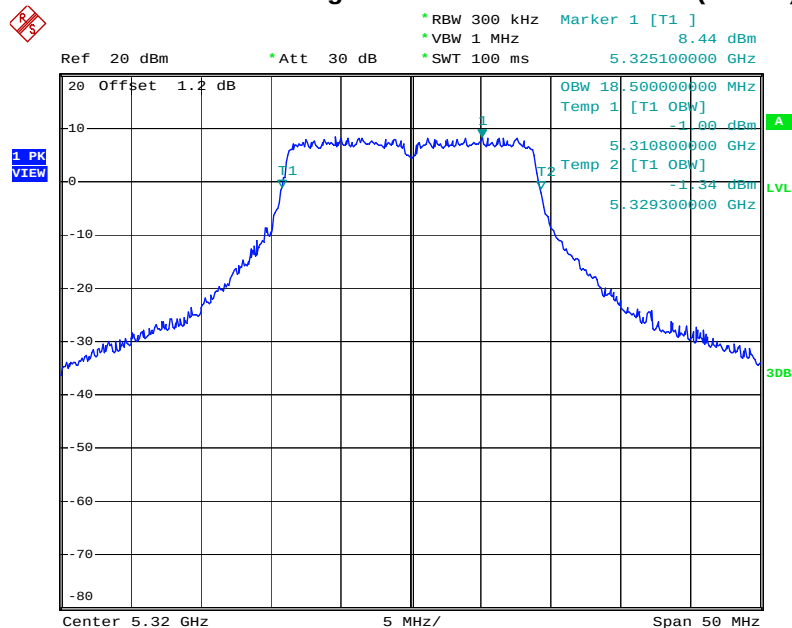
Date: 9.DEC.2011 17:25:15

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



Date: 9.DEC.2011 17:43:25

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



Date: 9.DEC.2011 17:46:59



FCC ID : H8N-WLU5080-D4

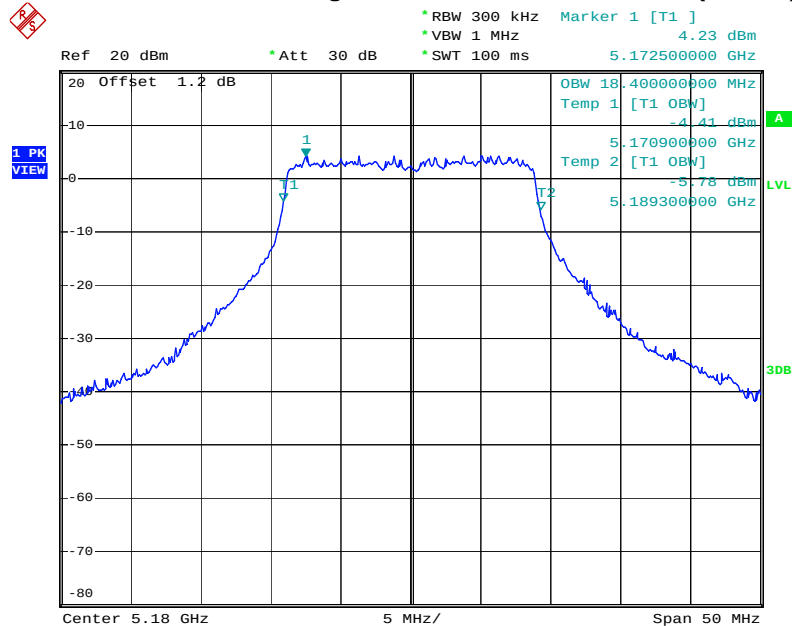


A

LVL

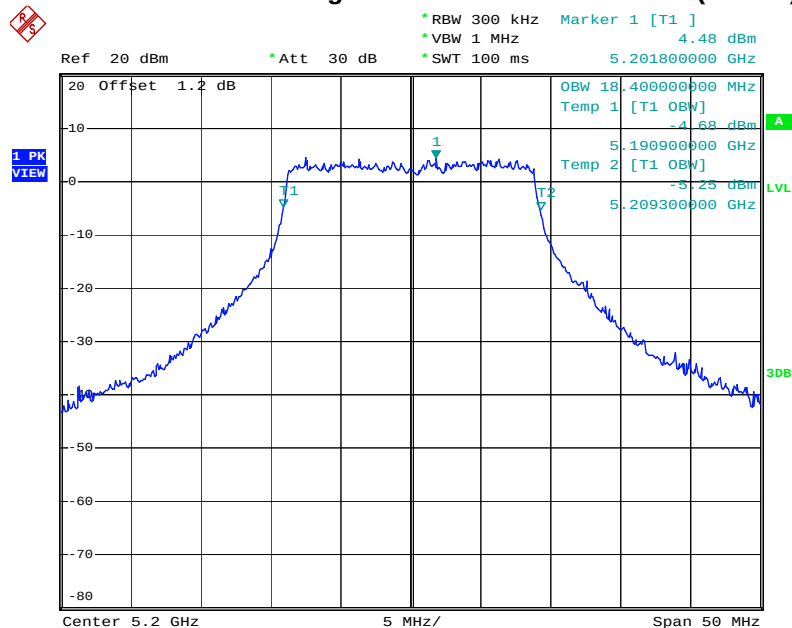
3DB

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5180 MHz



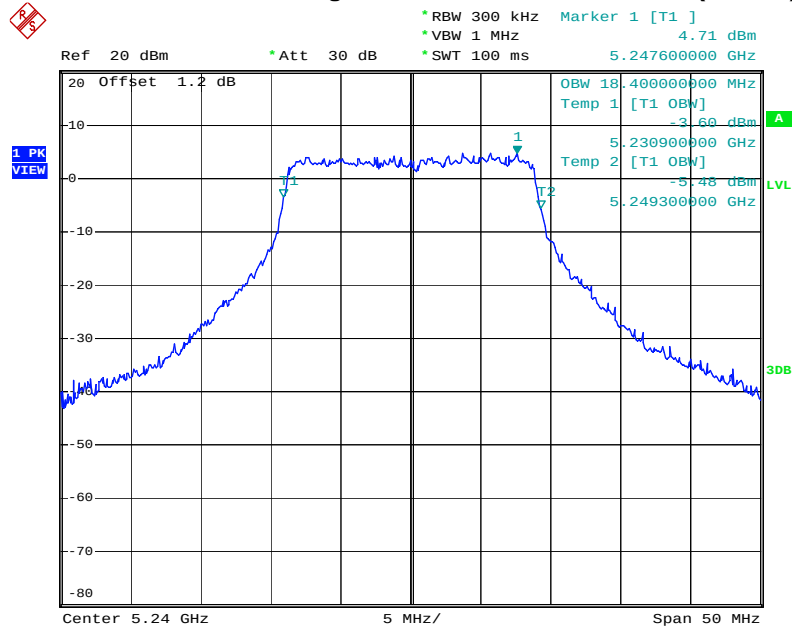
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99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5200 MHz



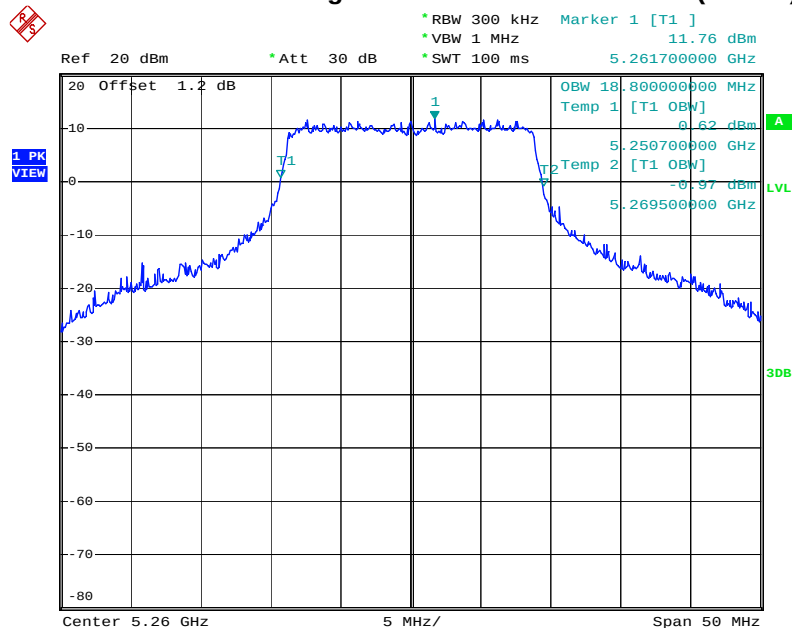
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99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5240 MHz



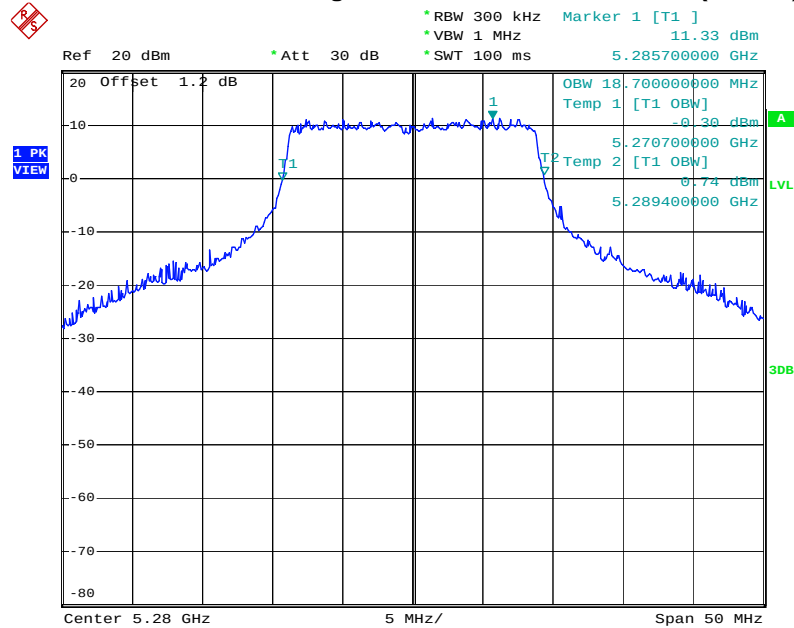
Date: 5.DEC.2011 16:23:54

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5260 MHz



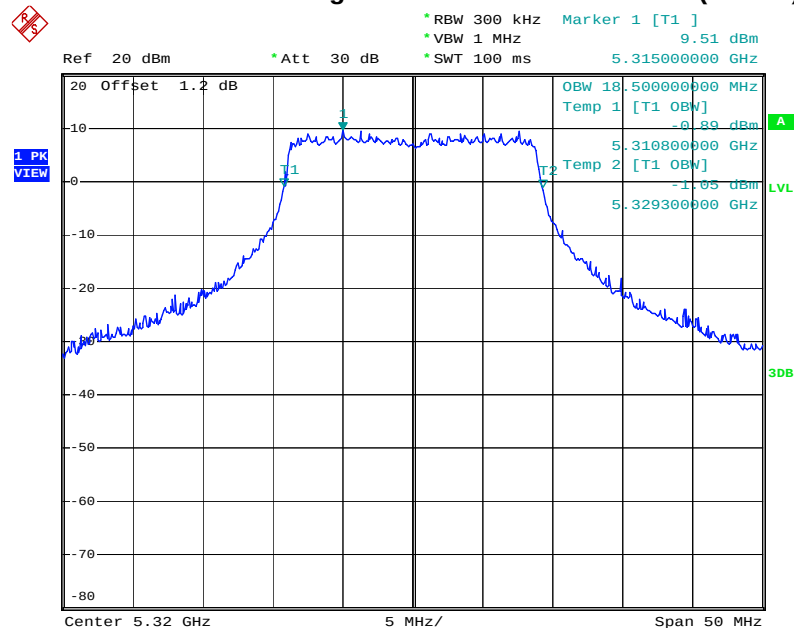
Date: 9.DEC.2011 17:34:10

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5280 MHz



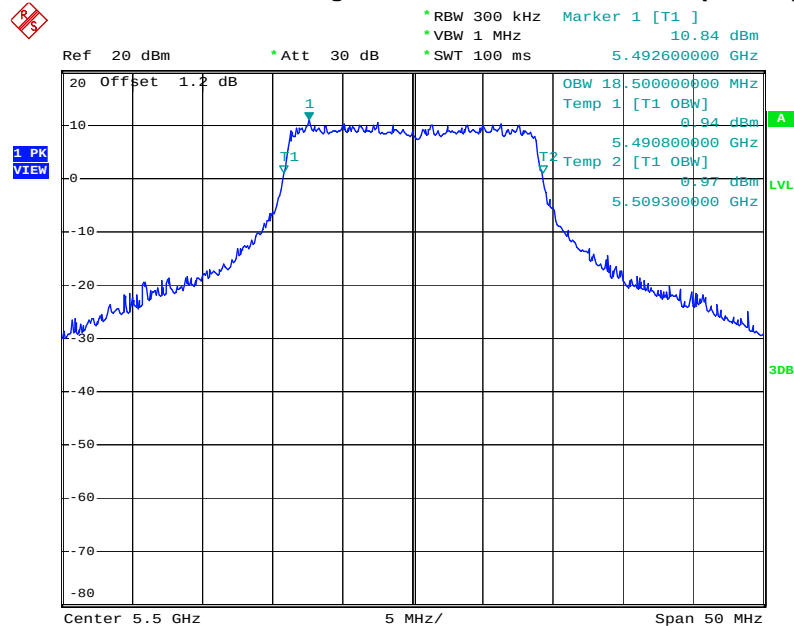
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99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5320 MHz



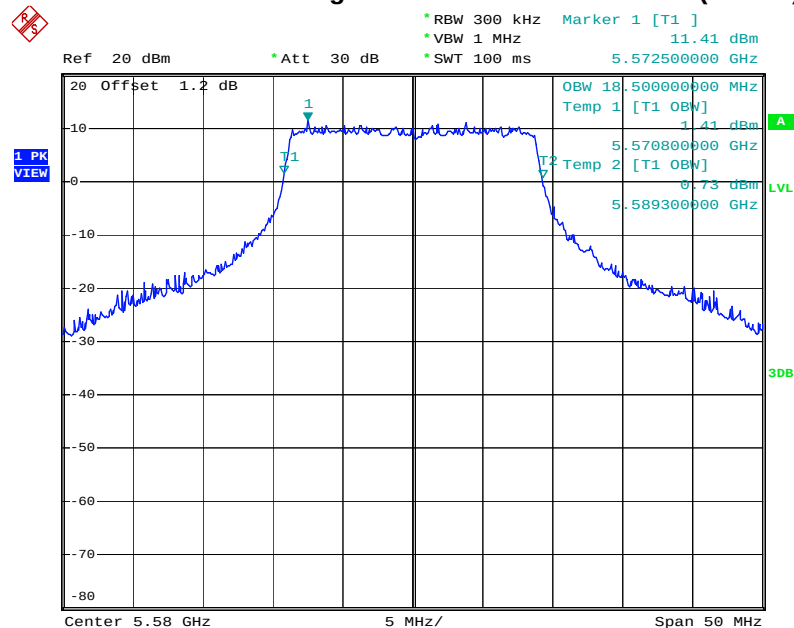
Date: 9.DEC.2011 17:54:34

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5500 MHz



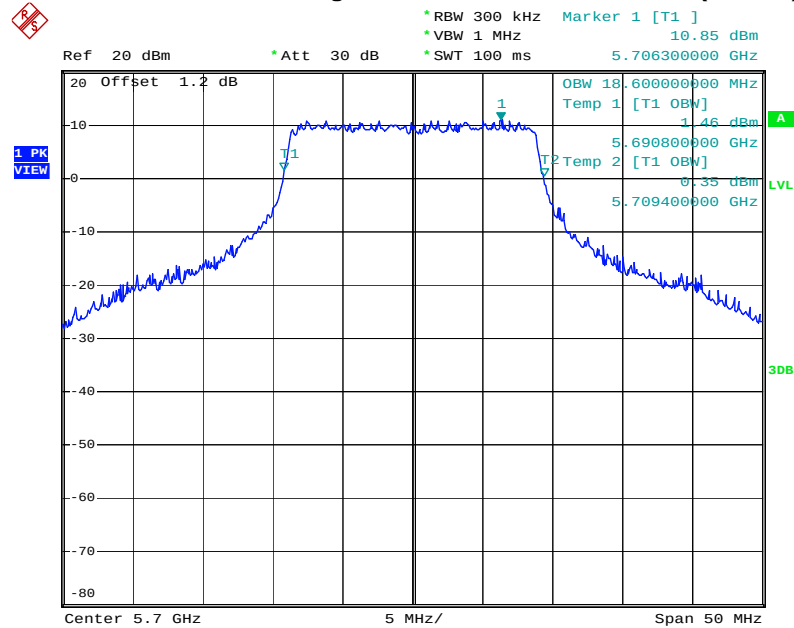
Date: 9.DEC.2011 17:57:25

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5580 MHz



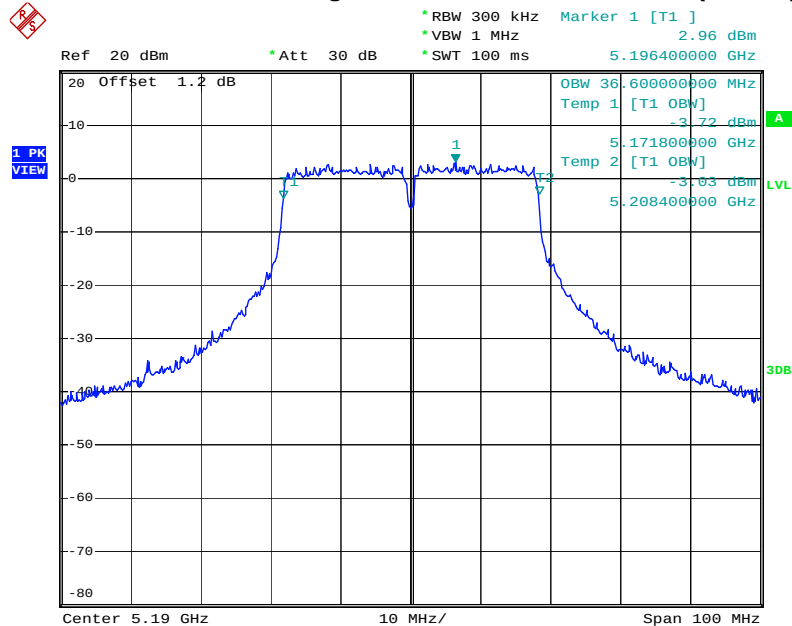
Date: 9.DEC.2011 18:10:37

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5700 MHz



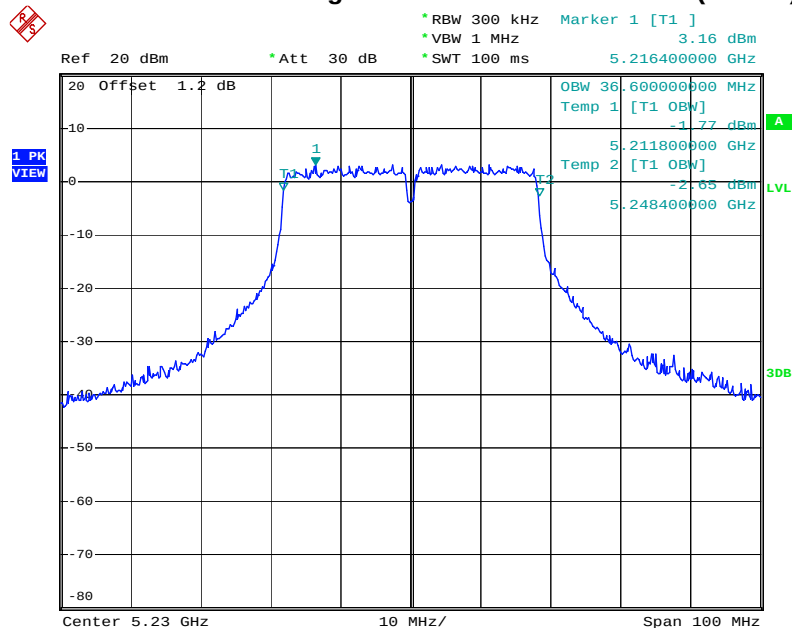
Date: 9.DEC.2011 18:13:11

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



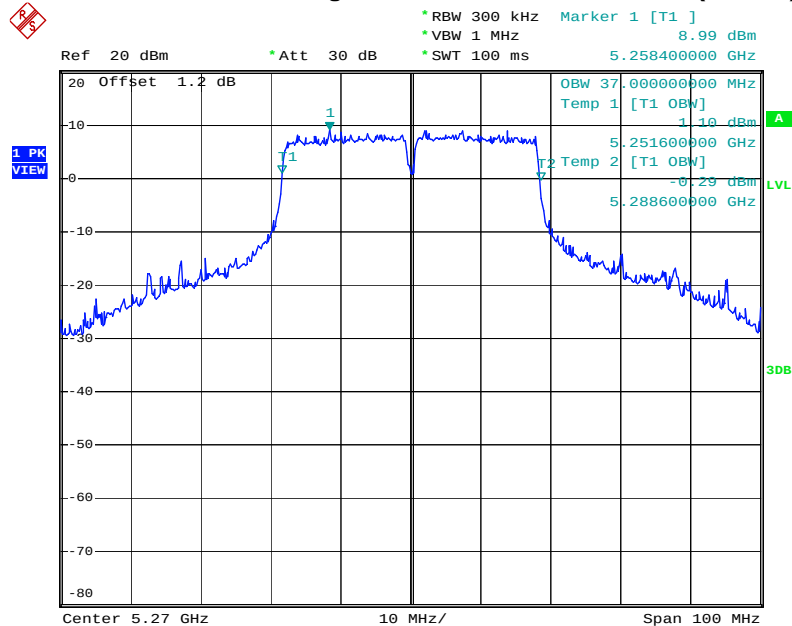
Date: 7.DEC.2011 17:55:07

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



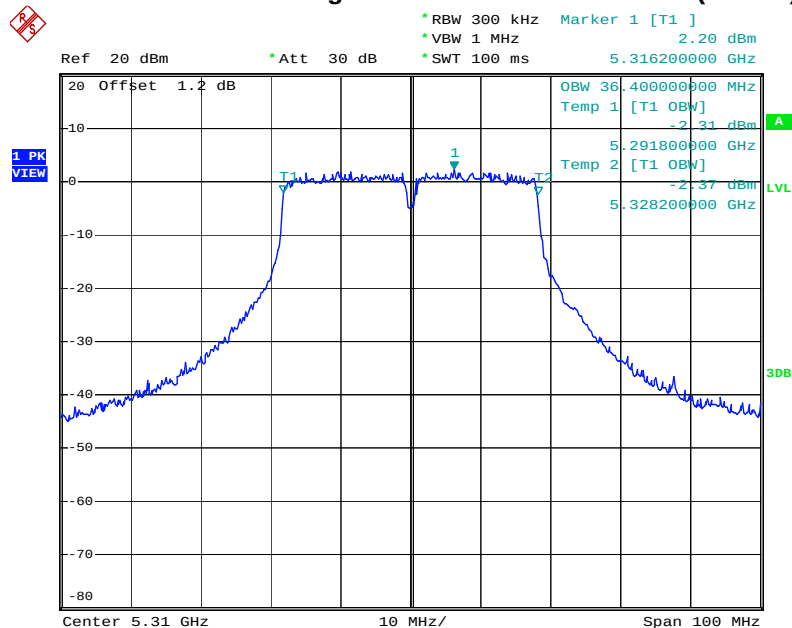
Date: 5.DEC.2011 20:00:58

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



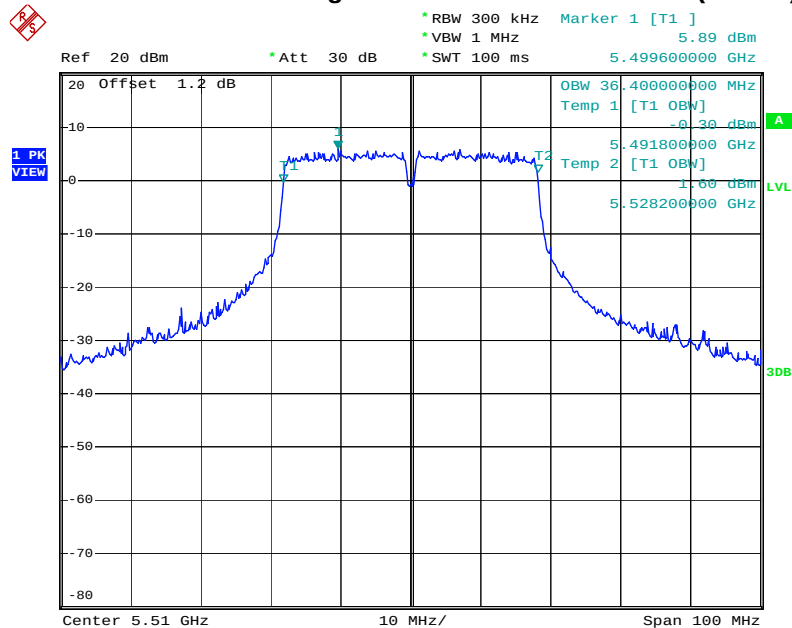
Date: 9.DEC.2011 18:27:27

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



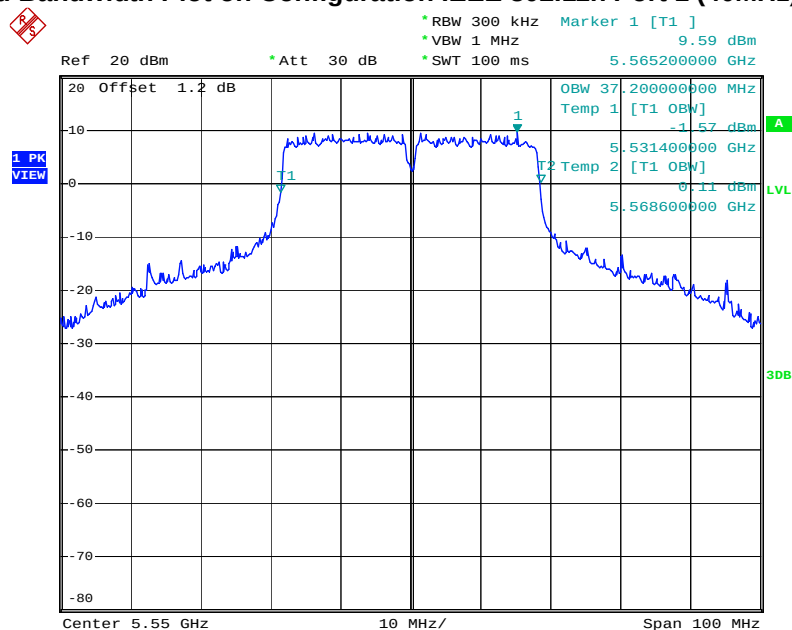
Date: 7.DEC.2011 18:06:44

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



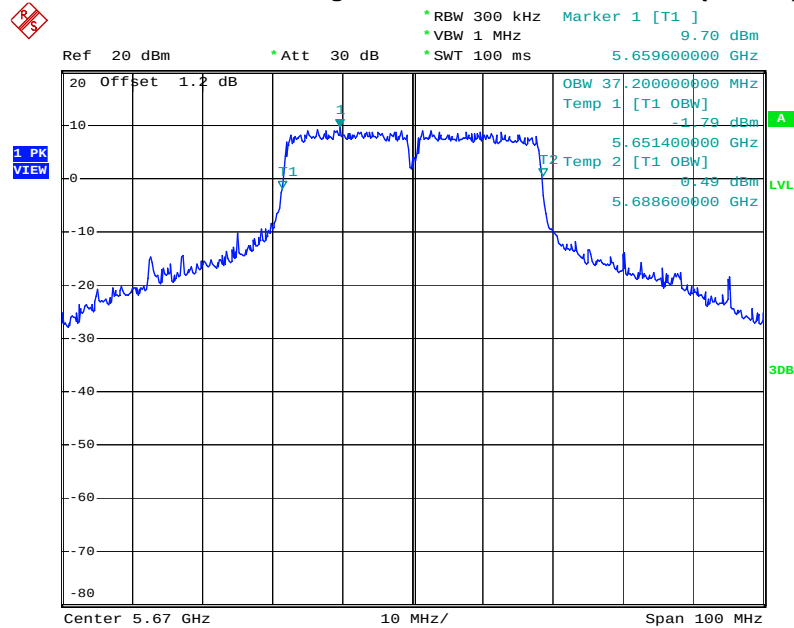
Date: 5.DEC.2011 20:20:07

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



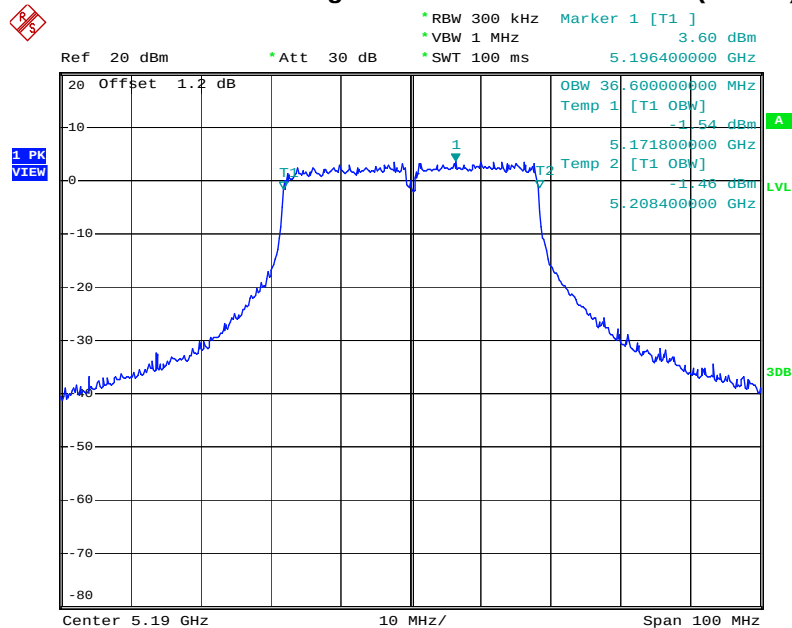
Date: 9.DEC.2011 18:49:43

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



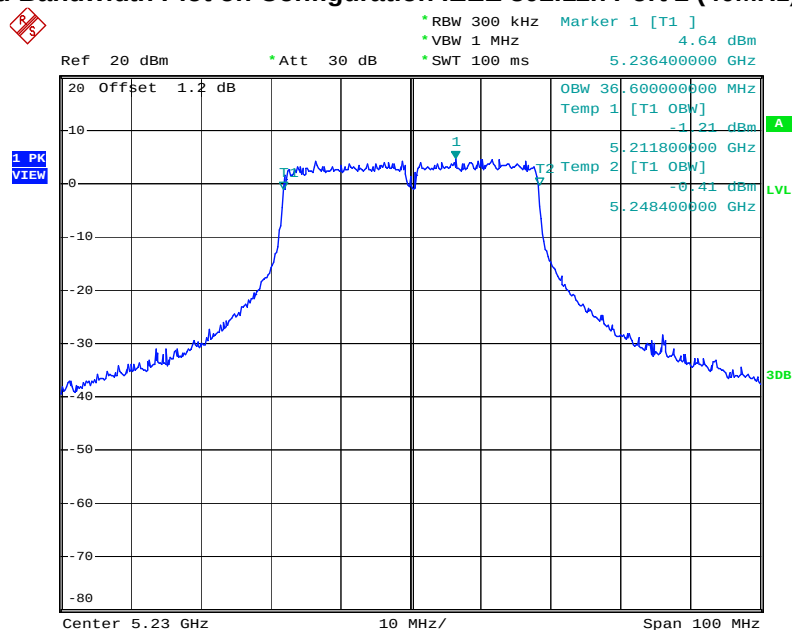
Date: 9.DEC.2011 18:52:28

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5190 MHz



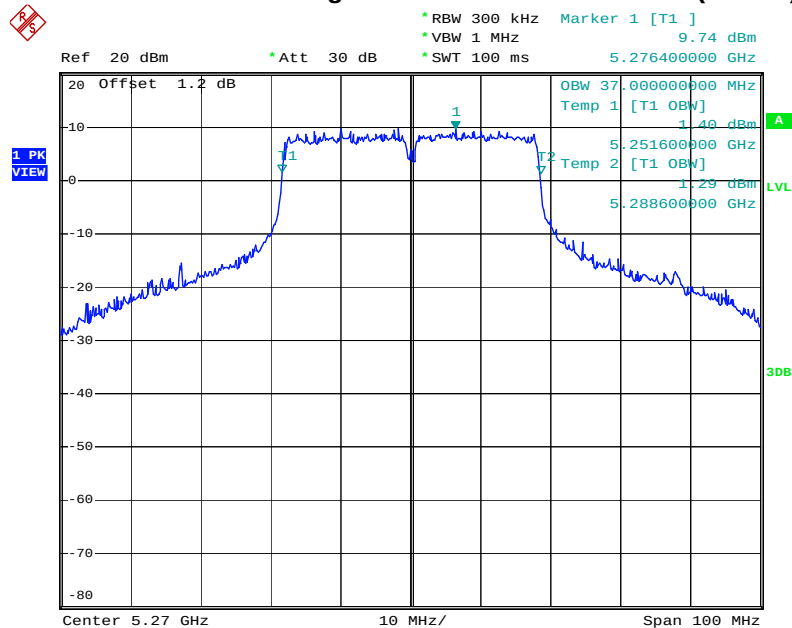
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99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5230 MHz



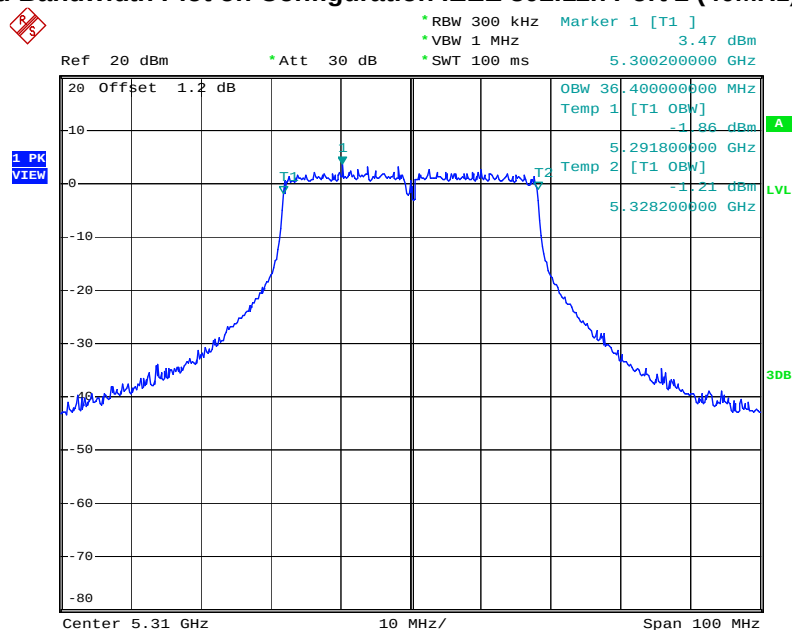
Date: 5.DEC.2011 20:04:00

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5270 MHz



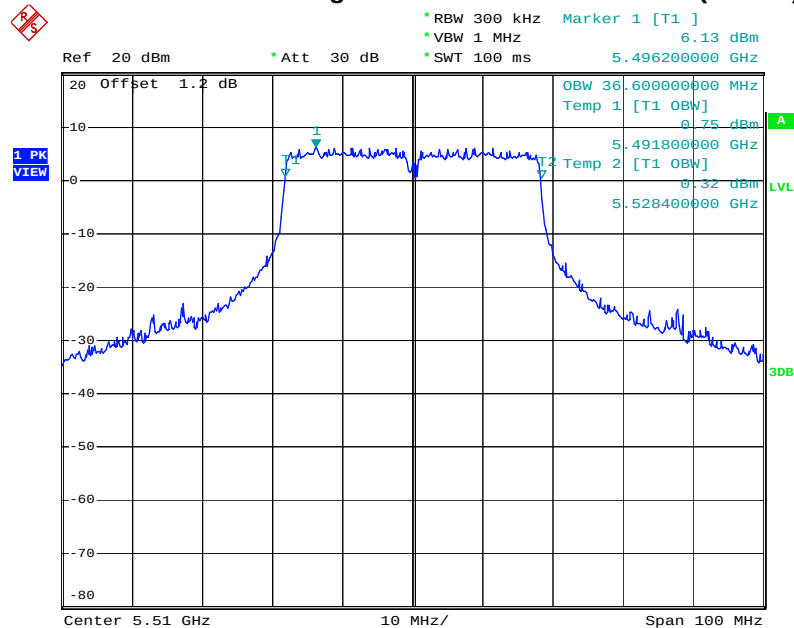
Date: 9.DEC.2011 18:34:44

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5310 MHz



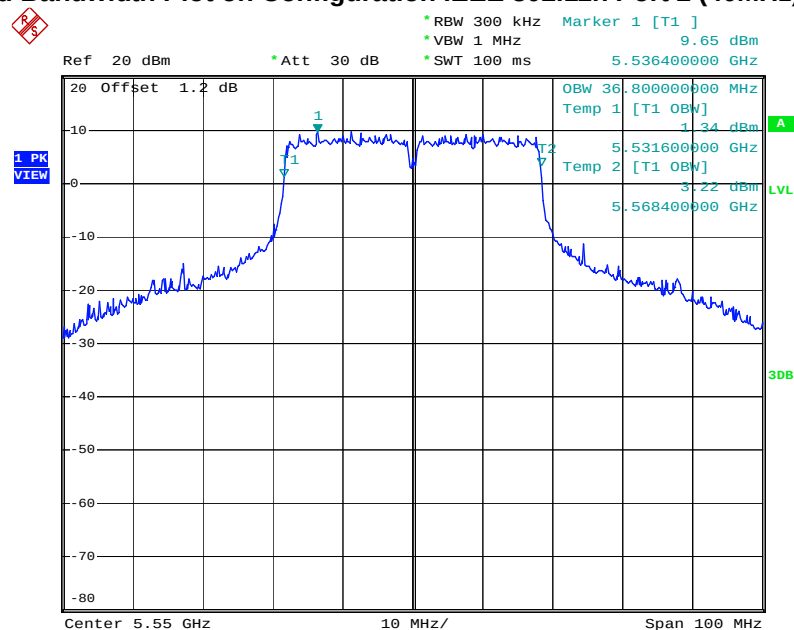
Date: 7.DEC.2011 18:09:00

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5510 MHz



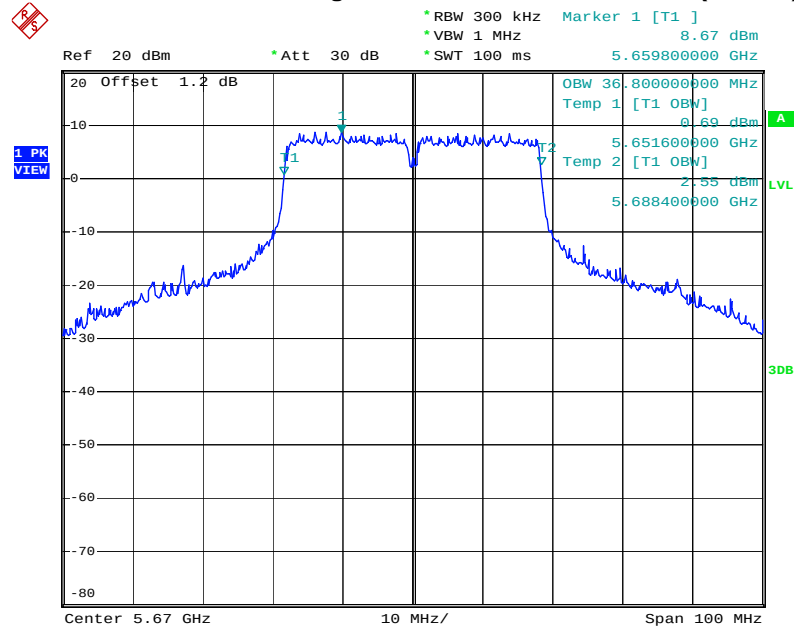
Date: 5.DEC.2011 20:23:44

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5550 MHz



Date: 9.DEC.2011 18:45:38

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5670 MHz



Date: 9.DEC.2011 18:56:05

3.3 Maximum Conducted Output Power Measurement

3.3.1 Limit

For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power and power density from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Maximum Conducted Output Power mean that the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level.

3.3.2 Measuring Instruments and Setting

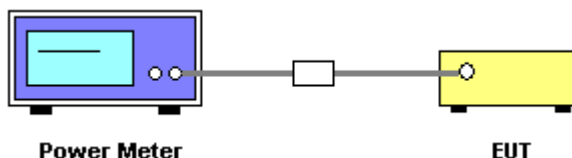
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s
Used Sensor	MA2411B

3.3.3 Test Procedures

1. The transmitter output (antenna port) was connected to the wideband power meter.
2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.
4. When measuring maximum conducted output power within multiple antenna systems, add every result of the values by mathematic formula. (Only for IEEE 802.11n test)

3.3.4 Test Setup Layout



3.3.5 Test Deviation

There is no deviation with the original standard.

3.3.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.3.7 Test Result of Maximum Conducted Output Power

Final Test Date	Dec. 01, 2011	Test Site No.	TH01-HY
Temperature	23.3~23.8℃	Humidity	37~65%
Test Engineer	Ian	Configurations	802.11a/n

For Single Chain:

Configuration of IEEE 802.11a Port 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	14.54	17.00	Complies
40	5200 MHz	13.69	17.00	Complies
48	5240 MHz	14.11	17.00	Complies
52	5260 MHz	18.23	24.00	Complies
56	5280 MHz	18.37	24.00	Complies
64	5320 MHz	16.74	24.00	Complies
100	5500 MHz	18.28	24.00	Complies
116	5580 MHz	18.25	24.00	Complies
140	5700 MHz	18.36	24.00	Complies

Configuration IEEE 802.11n Port 1 (20MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	14.61	17.00	Complies
40	5200 MHz	14.41	17.00	Complies
48	5240 MHz	14.29	17.00	Complies
52	5260 MHz	18.33	24.00	Complies
56	5280 MHz	18.51	24.00	Complies
64	5320 MHz	15.96	24.00	Complies
100	5500 MHz	18.27	24.00	Complies
116	5580 MHz	18.09	24.00	Complies
140	5700 MHz	18.28	24.00	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	12.49	17.00	Complies
46	5230 MHz	16.91	17.00	Complies
54	5270 MHz	18.01	24.00	Complies
62	5310 MHz	12.78	24.00	Complies
102	5510 MHz	14.63	24.00	Complies
110	5550 MHz	18.43	24.00	Complies
134	5670 MHz	18.56	24.00	Complies

For Two Chains:**Configuration IEEE 802.11n Port 1 (20MHz)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	10.72	17.00	Complies
40	5200 MHz	10.43	17.00	Complies
48	5240 MHz	10.68	17.00	Complies
52	5260 MHz	16.76	24.00	Complies
56	5280 MHz	17.07	24.00	Complies
64	5320 MHz	15.10	24.00	Complies
100	5500 MHz	16.44	24.00	Complies
116	5580 MHz	16.89	24.00	Complies
140	5700 MHz	17.45	24.00	Complies

Configuration IEEE 802.11n Port 2 (20MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	11.09	17.00	Complies
40	5200 MHz	11.16	17.00	Complies
48	5240 MHz	11.41	17.00	Complies
52	5260 MHz	17.94	24.00	Complies
56	5280 MHz	18.47	24.00	Complies
64	5320 MHz	16.23	24.00	Complies
100	5500 MHz	16.84	24.00	Complies
116	5580 MHz	17.15	24.00	Complies
140	5700 MHz	17.81	24.00	Complies

Configuration IEEE 802.11n Port 1+ Port 2 (20MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	13.92	17.00	Complies
40	5200 MHz	13.82	17.00	Complies
48	5240 MHz	14.07	17.00	Complies
52	5260 MHz	20.40	24.00	Complies
56	5280 MHz	20.84	24.00	Complies
64	5320 MHz	18.71	24.00	Complies
100	5500 MHz	19.65	24.00	Complies
116	5580 MHz	20.03	24.00	Complies
140	5700 MHz	20.64	24.00	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	11.69	17.00	Complies
46	5230 MHz	12.75	17.00	Complies
54	5270 MHz	17.57	24.00	Complies
62	5310 MHz	12.61	24.00	Complies
102	5510 MHz	15.19	24.00	Complies
110	5550 MHz	18.01	24.00	Complies
134	5670 MHz	19.36	24.00	Complies

Configuration IEEE 802.11n Port 2 (40MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	12.75	17.00	Complies
46	5230 MHz	14.39	17.00	Complies
54	5270 MHz	18.85	24.00	Complies
62	5310 MHz	13.13	24.00	Complies
102	5510 MHz	15.73	24.00	Complies
110	5550 MHz	18.22	24.00	Complies
134	5670 MHz	17.98	24.00	Complies

Configuration IEEE 802.11n Port 1+ Port 2 (40MHz)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	15.26	17.00	Complies
46	5230 MHz	16.66	17.00	Complies
54	5270 MHz	21.27	24.00	Complies
62	5310 MHz	15.89	24.00	Complies
102	5510 MHz	18.48	24.00	Complies
110	5550 MHz	21.13	24.00	Complies
134	5670 MHz	21.73	24.00	Complies

3.4 Power Spectral Density Measurement

3.4.1 Limit

The power spectral density is defined as the highest level of power in dBm per MHz generated by the transmitter within the power envelope. The following table is power spectral density limits and decrease power density limit rule refer to section 3.3.1.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4

3.4.2 Measuring Instruments and Setting

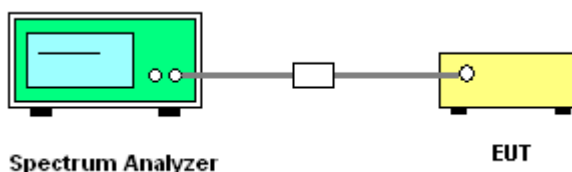
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

3.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 3000kHz. Set Detector to Peak, Trace to Max Hold. Mark the frequency with maximum peak power as the center of the display of the spectrum.
3. When measuring maximum conducted output power within multiple antenna systems, add every result of the values by mathematic formula. (Only for IEEE 802.11n test)

3.4.4 Test Setup Layout



3.4.5 Test Deviation

There is no deviation with the original standard.

3.4.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.4.7 Test Result of Power Spectral Density

Final Test Date	Dec. 01, 2011	Test Site No.	TH01-HY
Temperature	23.3~23.8℃	Humidity	37~65%
Test Engineer	Ian	Configurations	802.11a/n

For Single Chain:

Configuration of IEEE 802.11a Port 1

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	3.99	4.00	Complies
5200 MHz	3.76	4.00	Complies
5240 MHz	3.55	4.00	Complies
5260 MHz	7.61	11.00	Complies
5280 MHz	7.30	11.00	Complies
5320 MHz	6.17	11.00	Complies
5500 MHz	7.57	11.00	Complies
5580 MHz	6.83	11.00	Complies
5700 MHz	7.57	11.00	Complies

Configuration IEEE 802.11n Port 1 (20MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	3.71	4.00	Complies
5200 MHz	3.66	4.00	Complies
5240 MHz	3.84	4.00	Complies
5260 MHz	7.22	11.00	Complies
5280 MHz	6.81	11.00	Complies
5320 MHz	5.29	11.00	Complies
5500 MHz	7.38	11.00	Complies
5580 MHz	6.95	11.00	Complies
5700 MHz	7.01	11.00	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5190 MHz	-1.34	4.00	Complies
5230 MHz	3.03	4.00	Complies
5270 MHz	3.94	11.00	Complies
5310 MHz	-1.84	11.00	Complies
5510 MHz	1.18	11.00	Complies
5550 MHz	4.05	11.00	Complies
5670 MHz	3.92	11.00	Complies

For Two Chains:**Configuration IEEE 802.11n Port 1 (20MHz)**

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	0.65	4.00	Complies
5200 MHz	0.29	4.00	Complies
5240 MHz	0.33	4.00	Complies
5260 MHz	7.20	11.00	Complies
5280 MHz	7.55	11.00	Complies
5320 MHz	5.71	11.00	Complies
5500 MHz	6.92	11.00	Complies
5580 MHz	7.56	11.00	Complies
5700 MHz	7.77	11.00	Complies

Configuration IEEE 802.11n Port 2 (20MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	0.74	4.00	Complies
5200 MHz	0.93	4.00	Complies
5240 MHz	1.53	4.00	Complies
5260 MHz	8.40	11.00	Complies
5280 MHz	8.29	11.00	Complies
5320 MHz	6.08	11.00	Complies
5500 MHz	8.26	11.00	Complies
5580 MHz	7.73	11.00	Complies
5700 MHz	7.94	11.00	Complies

Configuration IEEE 802.11n Port 1+ Port 2 (20MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	3.71	4.00	Complies
5200 MHz	3.63	4.00	Complies
5240 MHz	3.98	4.00	Complies
5260 MHz	10.85	11.00	Complies
5280 MHz	10.95	11.00	Complies
5320 MHz	8.91	11.00	Complies
5500 MHz	10.65	11.00	Complies
5580 MHz	10.66	11.00	Complies
5700 MHz	10.87	11.00	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5190 MHz	-1.10	4.00	Complies
5230 MHz	0.45	4.00	Complies
5270 MHz	5.58	11.00	Complies
5310 MHz	-1.72	11.00	Complies
5510 MHz	2.12	11.00	Complies
5550 MHz	6.13	11.00	Complies
5670 MHz	6.22	11.00	Complies

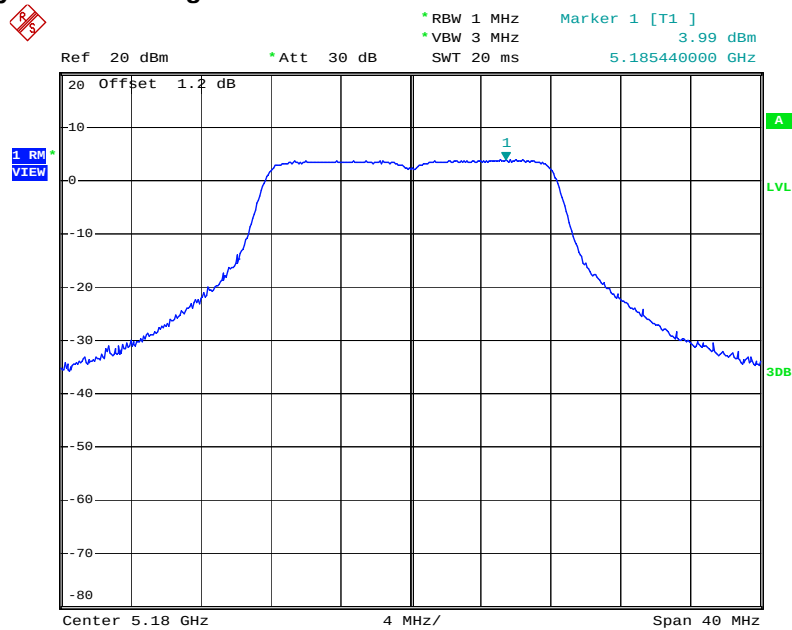
Configuration IEEE 802.11n Port 2 (40MHz)

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5190 MHz	0.41	4.00	Complies
5230 MHz	0.94	4.00	Complies
5270 MHz	6.34	11.00	Complies
5310 MHz	-0.77	11.00	Complies
5510 MHz	2.84	11.00	Complies
5550 MHz	6.19	11.00	Complies
5670 MHz	5.34	11.00	Complies

Configuration IEEE 802.11n Port 1+ Port 2 (40MHz)

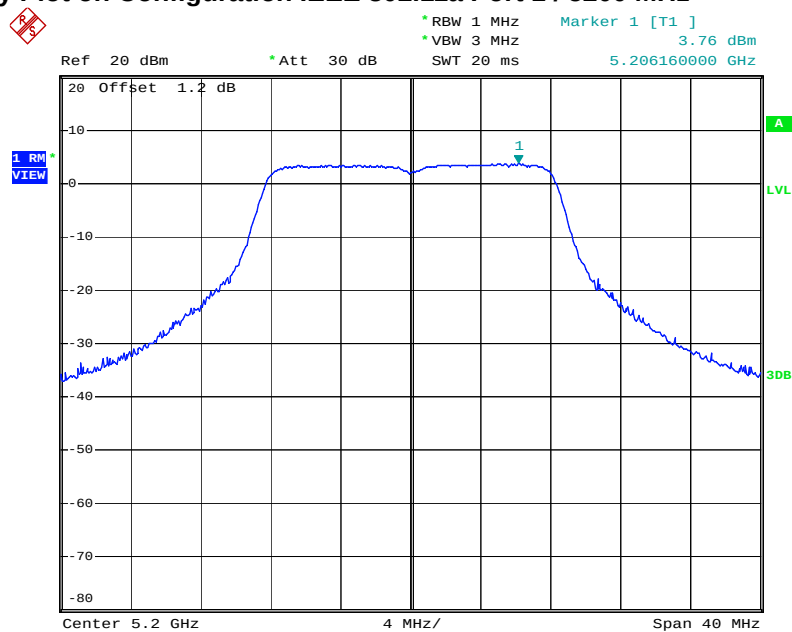
Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5190 MHz	2.73	4.00	Complies
5230 MHz	3.71	4.00	Complies
5270 MHz	8.99	11.00	Complies
5310 MHz	1.79	11.00	Complies
5510 MHz	5.51	11.00	Complies
5550 MHz	9.17	11.00	Complies
5670 MHz	8.81	11.00	Complies

For Single Chain:
Power Density Plot on Configuration IEEE 802.11a Port 1 / 5180 MHz



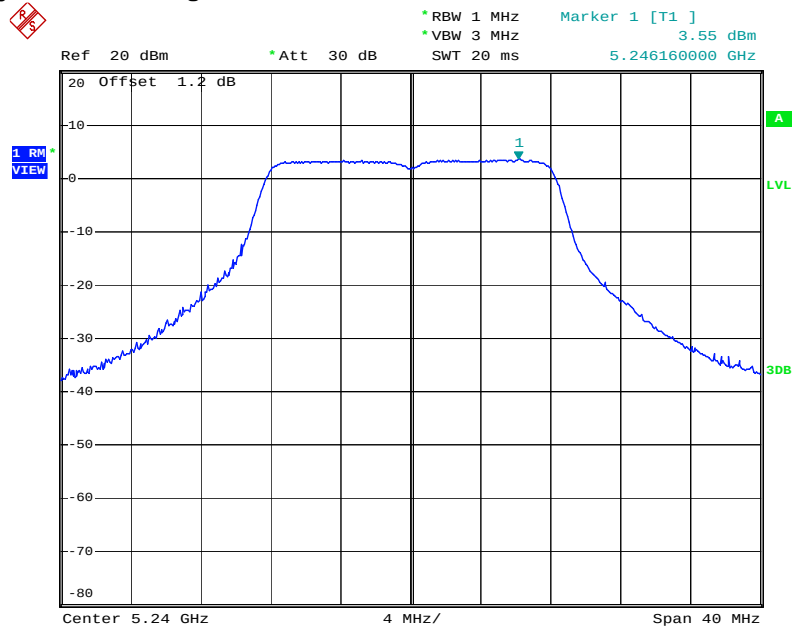
Date: 2.DEC.2011 19:37:54

Power Density Plot on Configuration IEEE 802.11a Port 1 / 5200 MHz



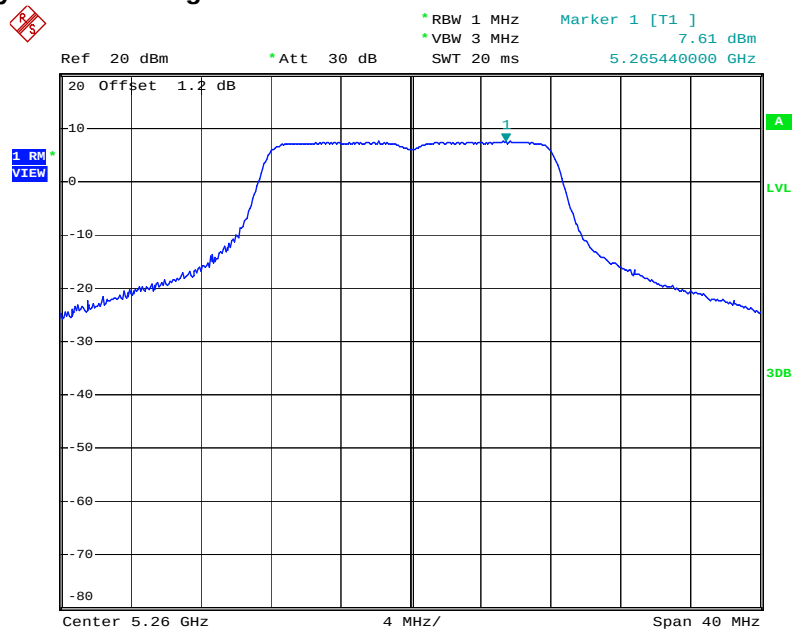
Date: 2.DEC.2011 19:39:39

Power Density Plot on Configuration IEEE 802.11a Port 1 / 5240 MHz



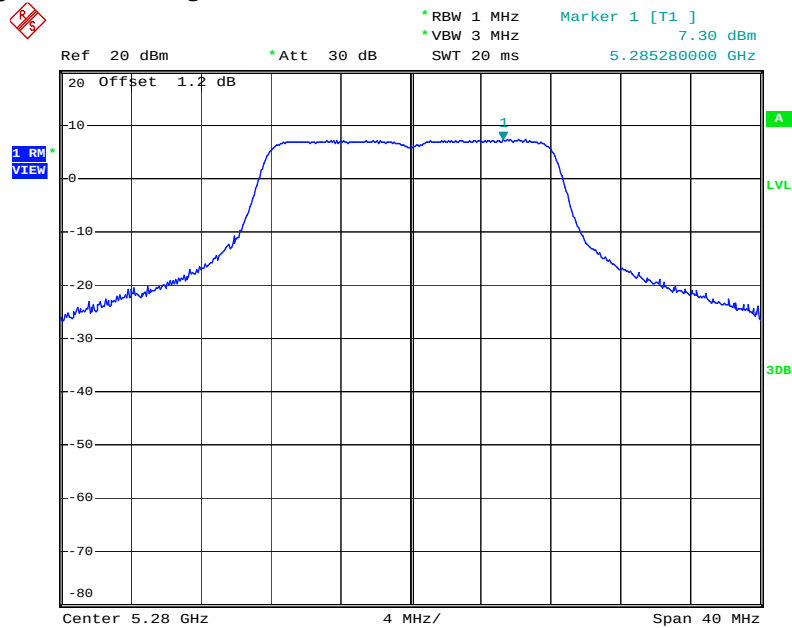
Date: 2.DEC.2011 19:40:57

Power Density Plot on Configuration IEEE 802.11a Port 1 / 5260 MHz



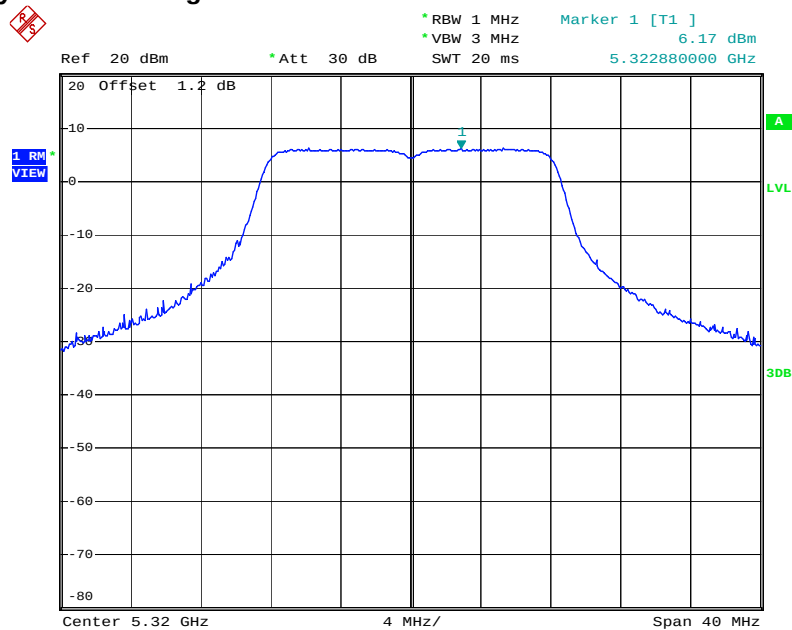
Date: 5.DEC.2011 09:13:42

Power Density Plot on Configuration IEEE 802.11a Port 1 / 5280 MHz

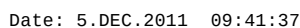
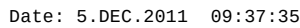


Date: 5.DEC.2011 09:25:07

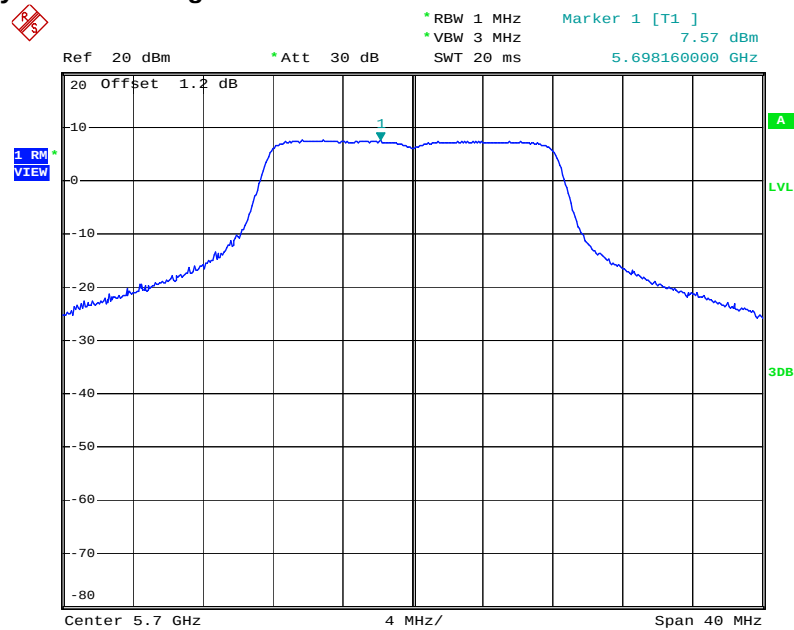
Power Density Plot on Configuration IEEE 802.11a Port 1 / 5320 MHz



Date: 9.DEC.2011 16:27:09

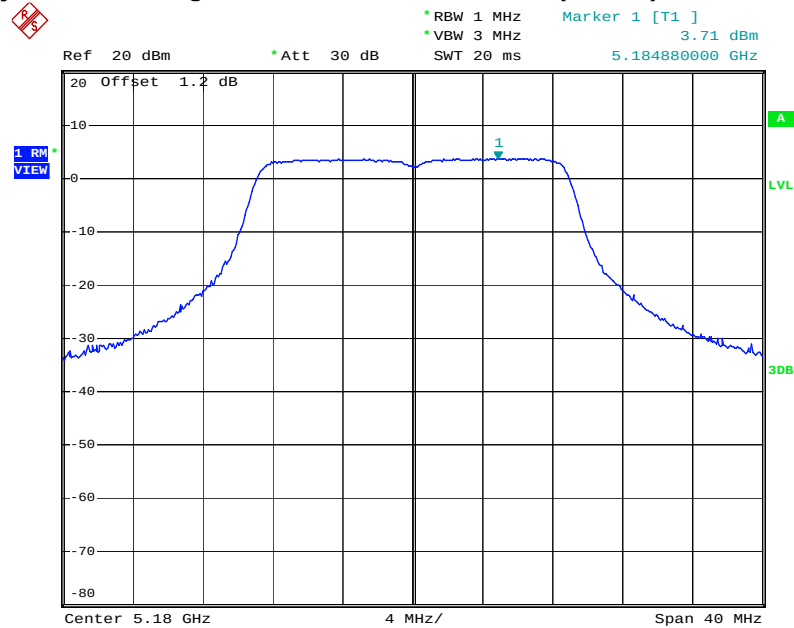


Power Density Plot on Configuration IEEE 802.11a Port 1 / 5700 MHz



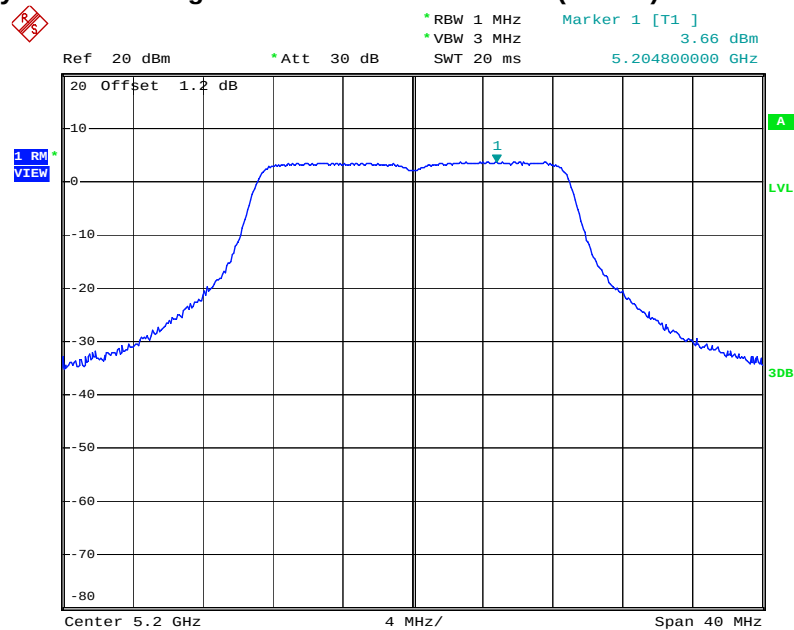
Date: 5.DEC.2011 09:47:31

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



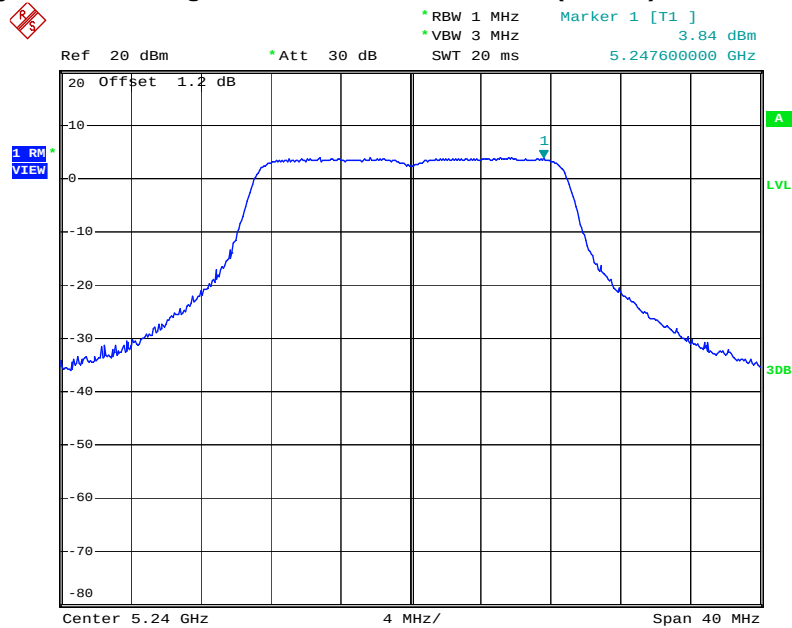
Date: 2.DEC.2011 19:44:13

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



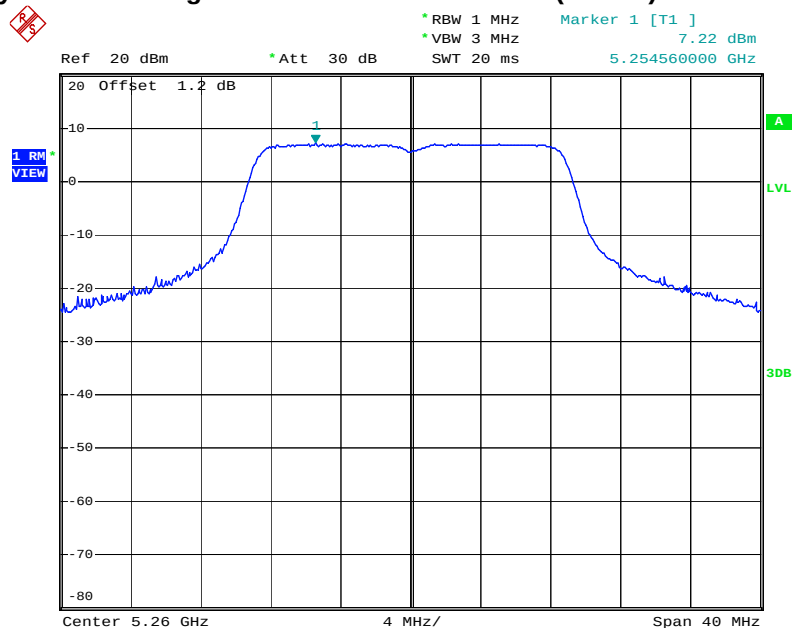
Date: 2.DEC.2011 19:45:15

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



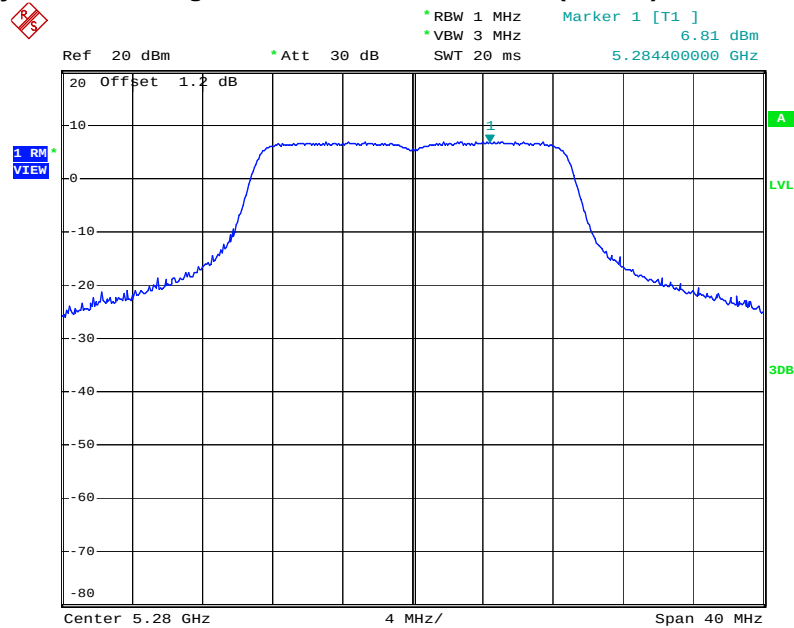
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Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



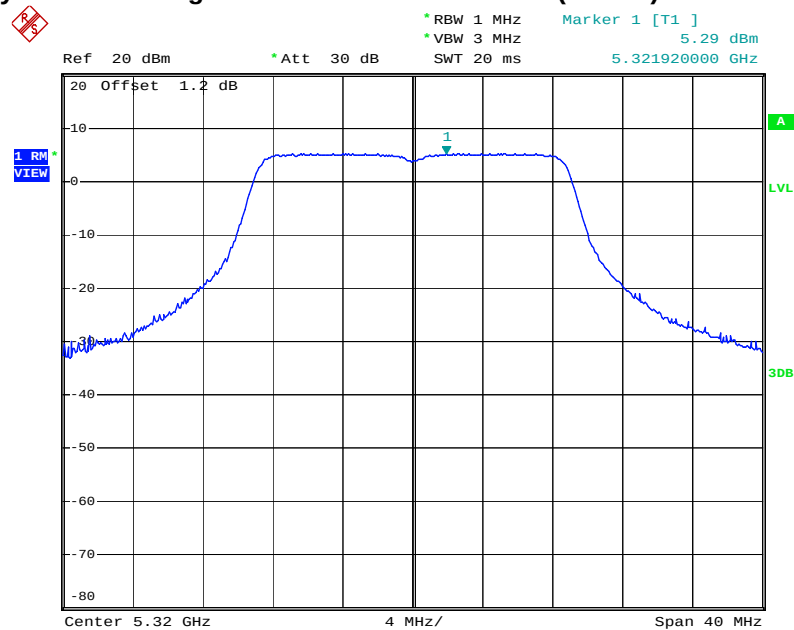
Date: 5.DEC.2011 10:48:39

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



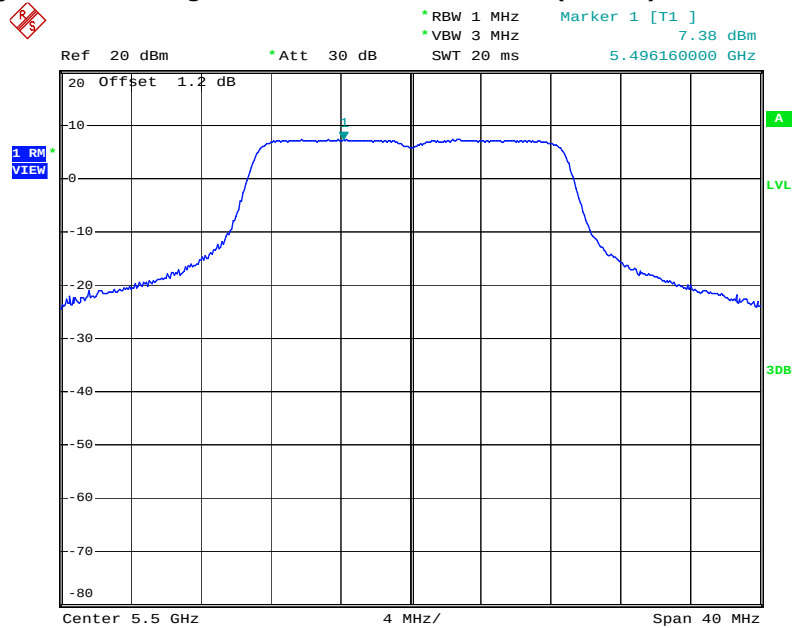
Date: 5.DEC.2011 10:56:55

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



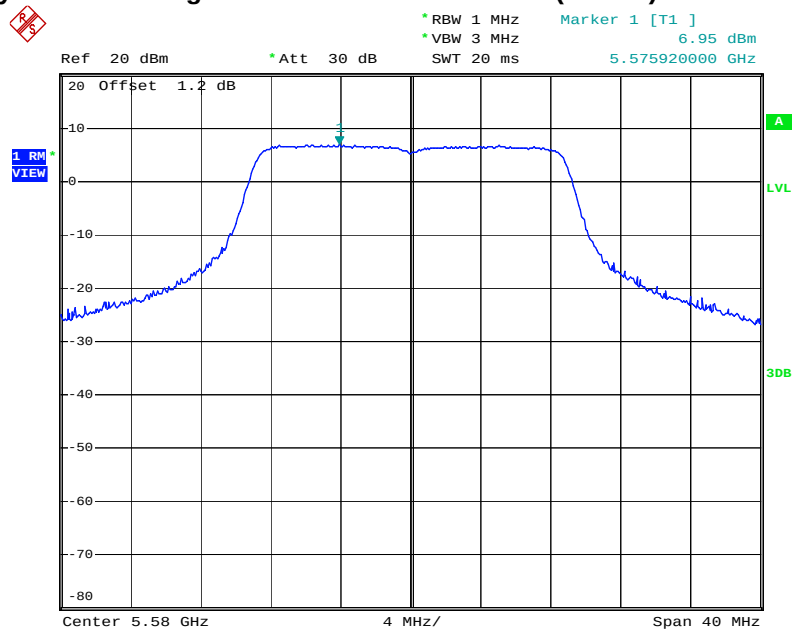
Date: 9.DEC.2011 16:58:05

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



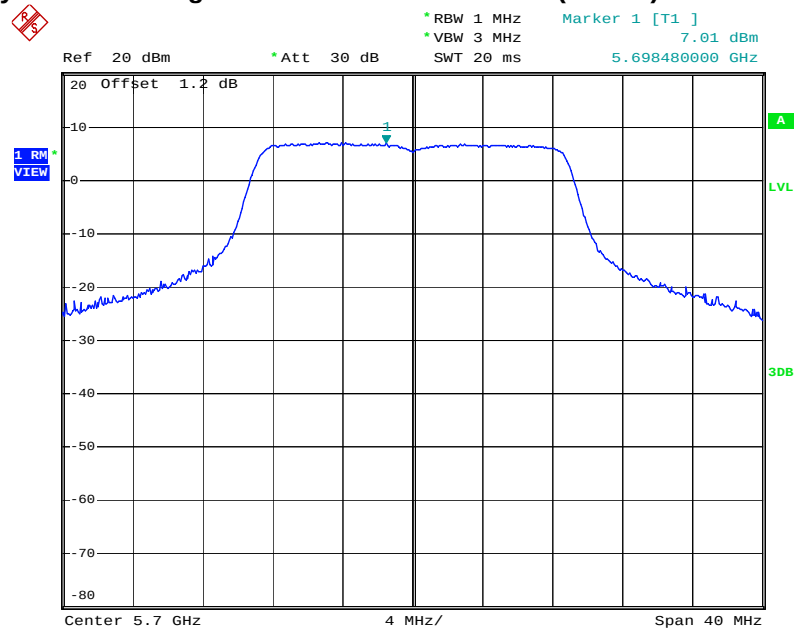
Date: 5.DEC.2011 11:08:08

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



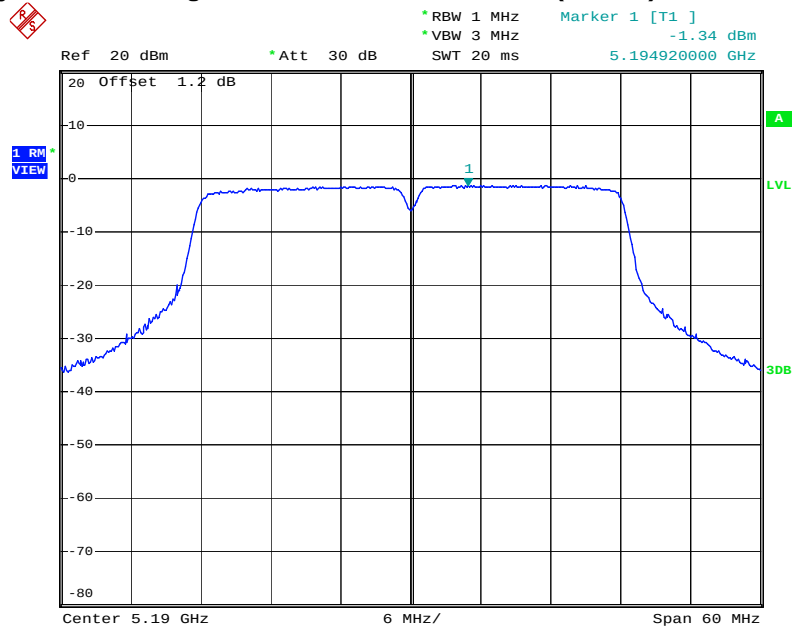
Date: 5.DEC.2011 11:19:21

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



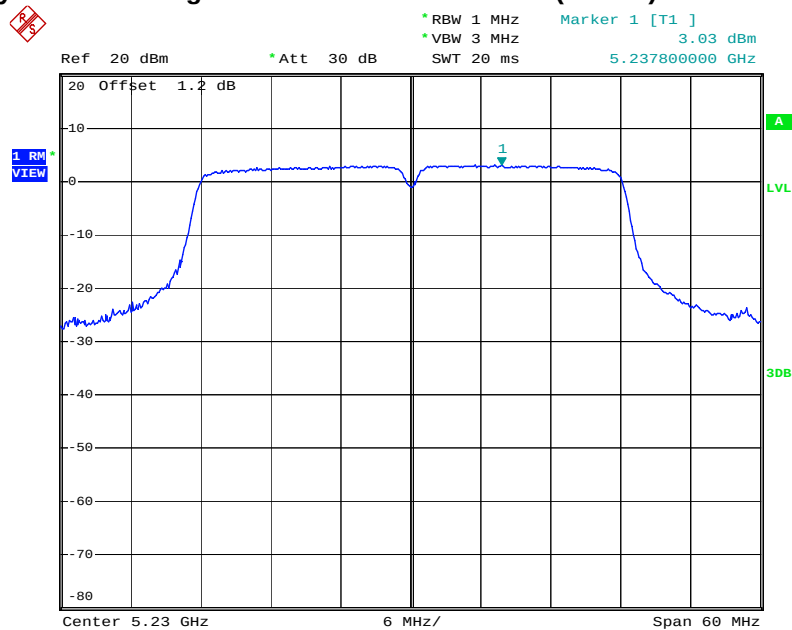
Date: 5.DEC.2011 11:23:50

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



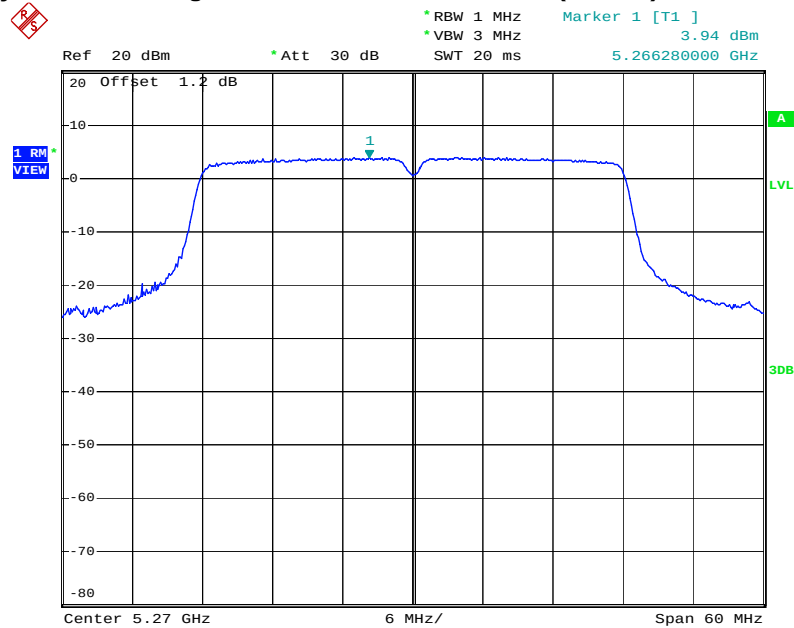
Date: 2.DEC.2011 19:51:24

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



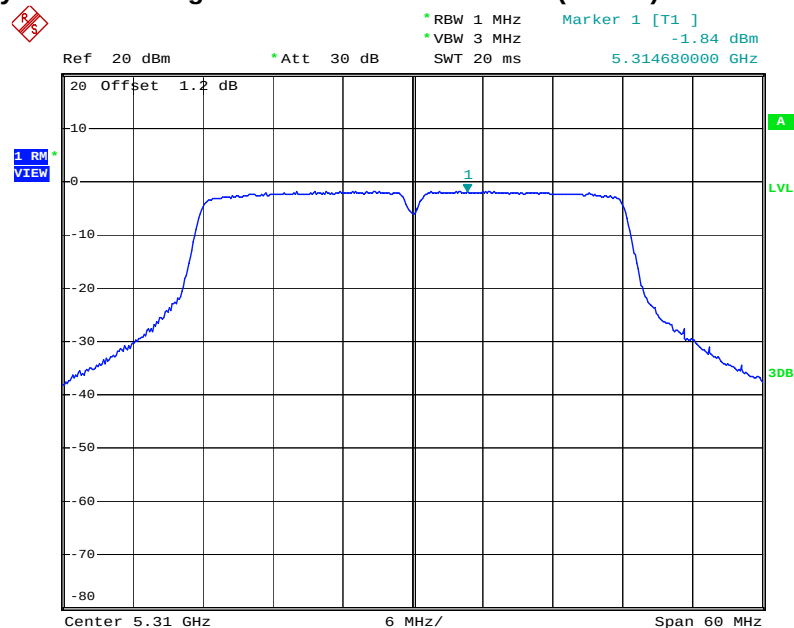
Date: 2.DEC.2011 19:54:46

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



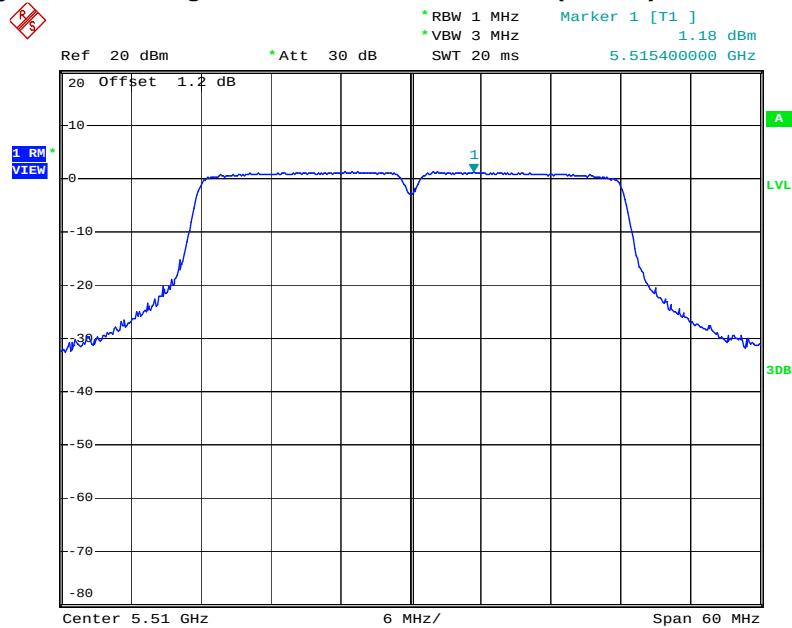
Date: 7.DEC.2011 17:12:15

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



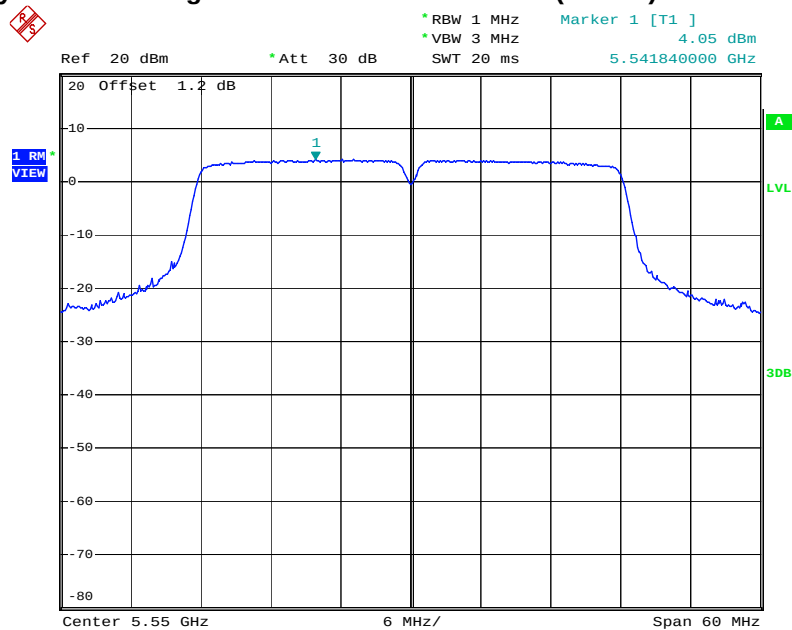
Date: 7.DEC.2011 17:18:48

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



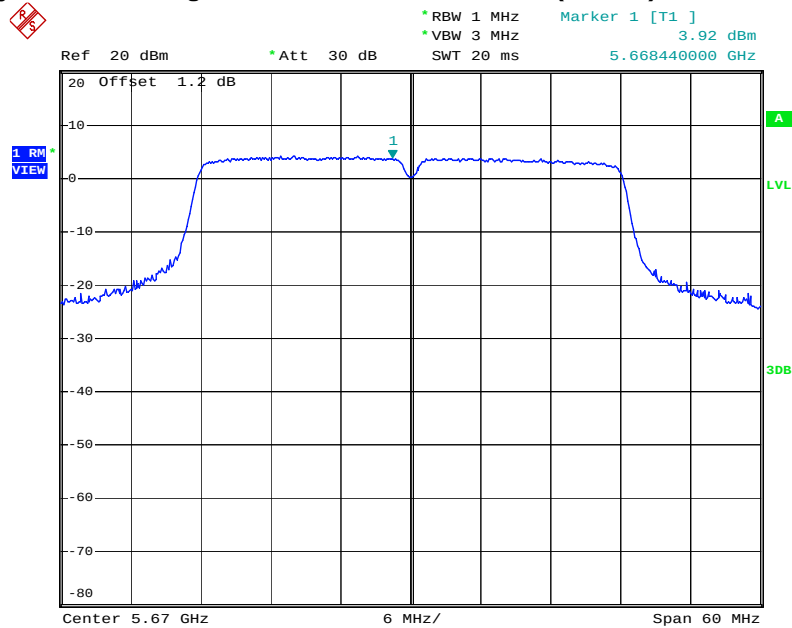
Date: 7.DEC.2011 17:24:01

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



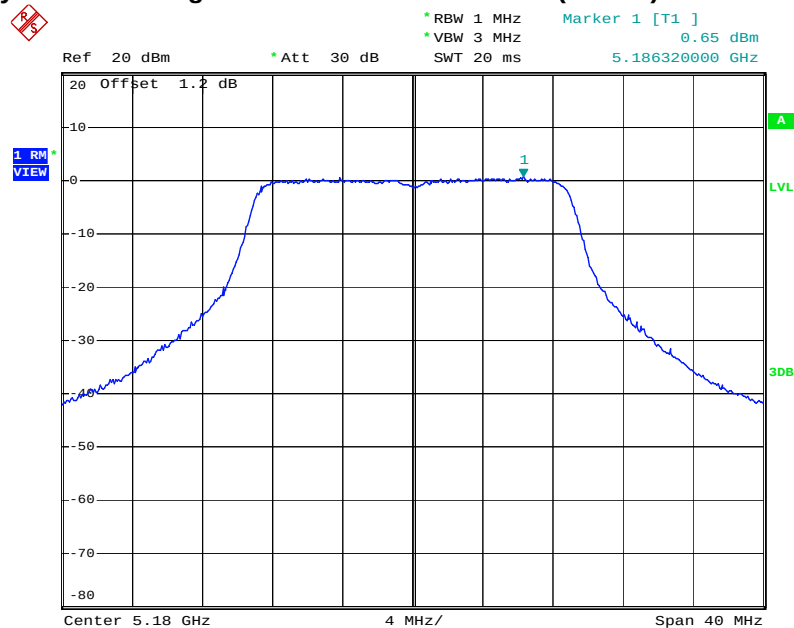
Date: 5.DEC.2011 14:52:13

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



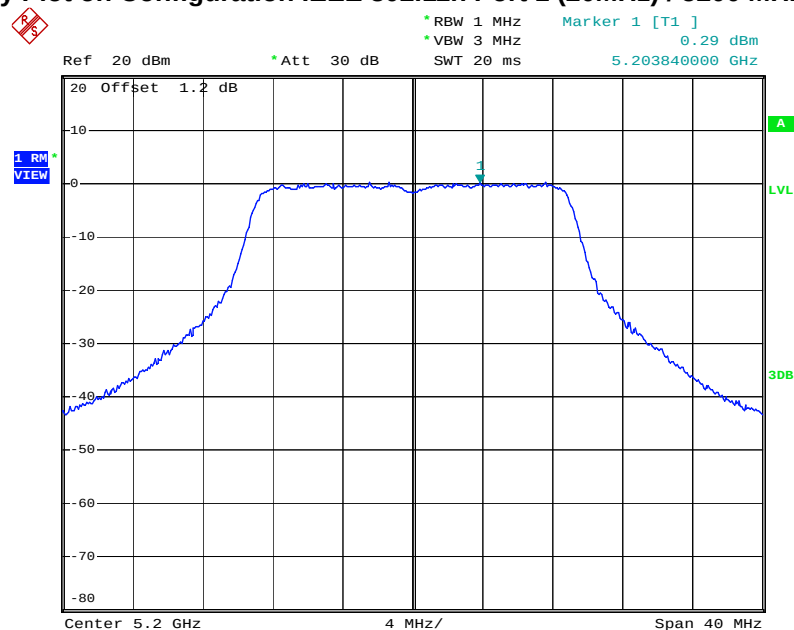
Date: 5.DEC.2011 14:58:15

For Two Chains:
Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



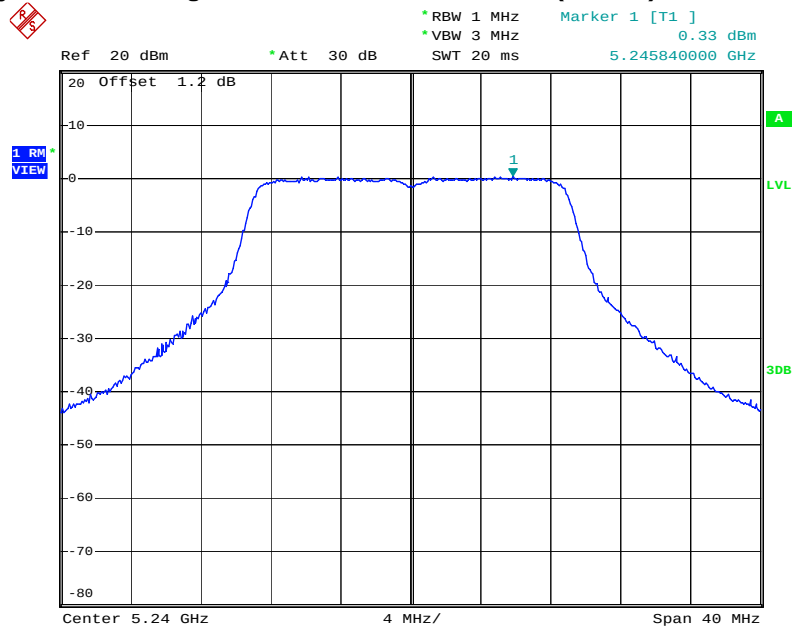
Date: 5.DEC.2011 15:54:05

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



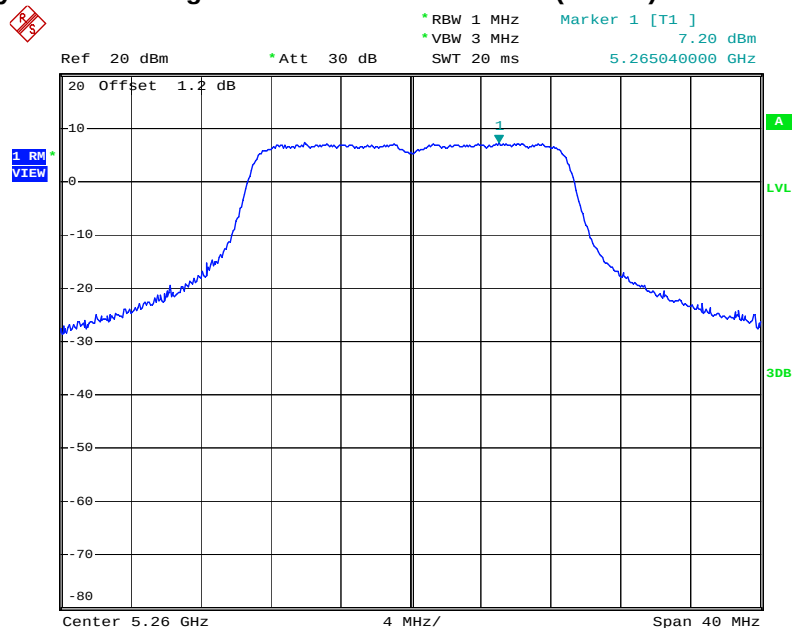
Date: 5.DEC.2011 16:07:03

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



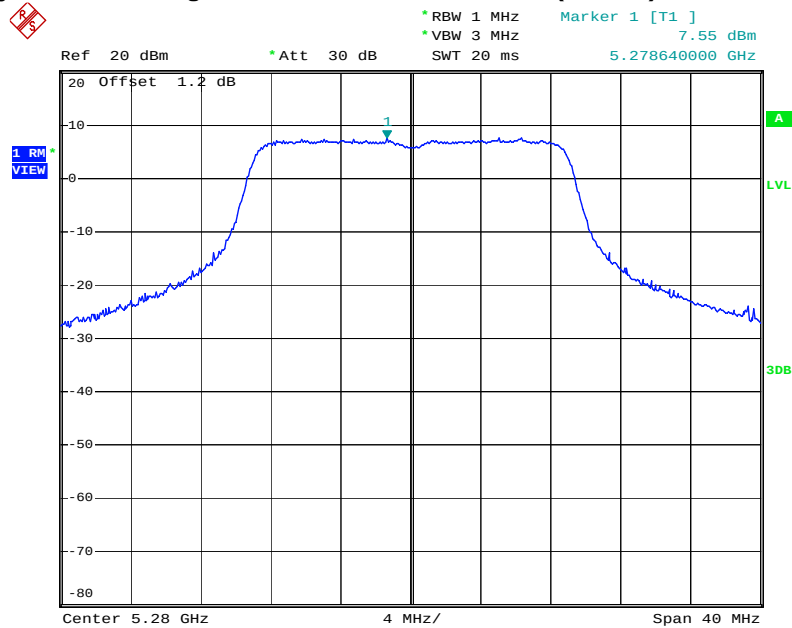
Date: 5.DEC.2011 16:16:59

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



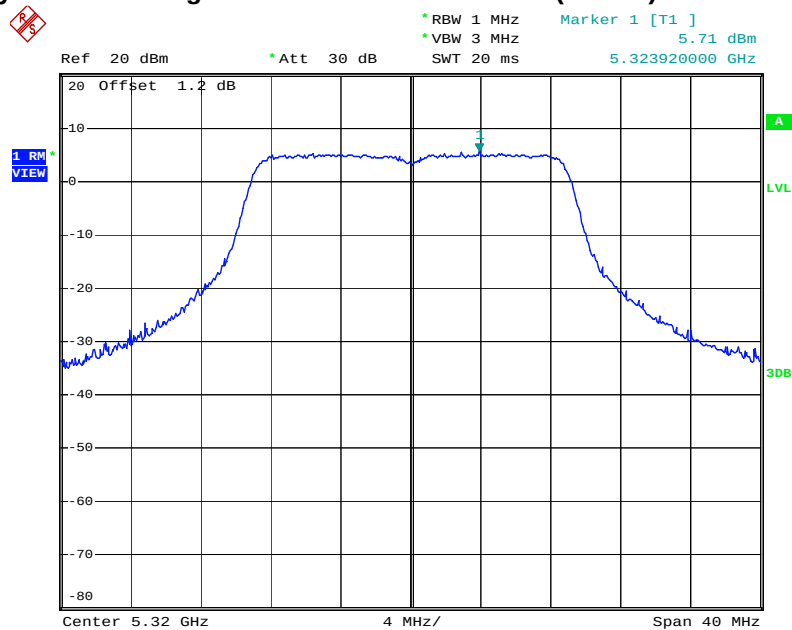
Date: 9.DEC.2011 13:50:28

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



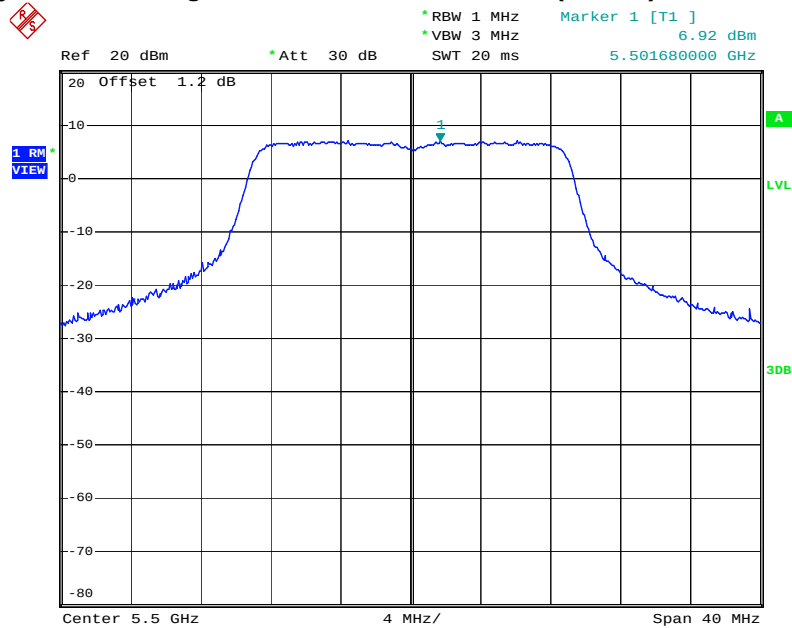
Date: 9.DEC.2011 13:57:43

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



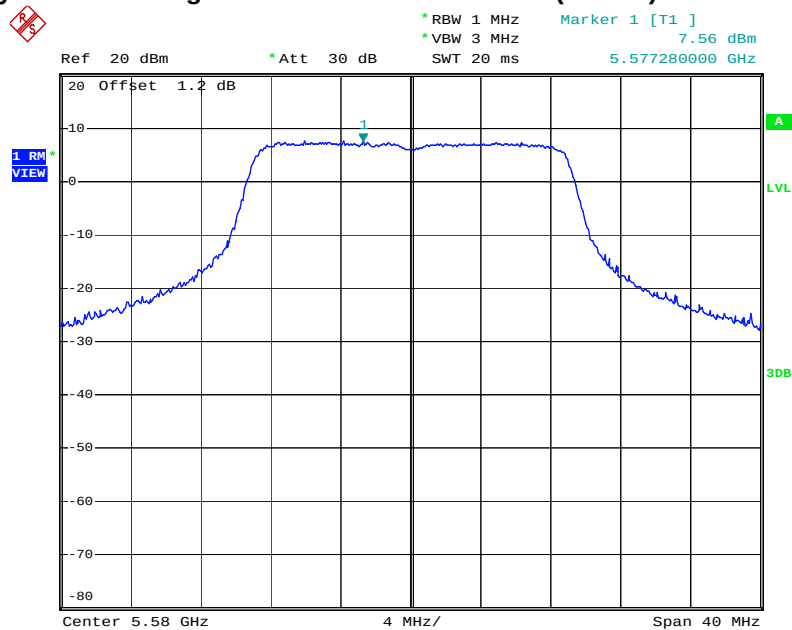
Date: 9.DEC.2011 14:15:49

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



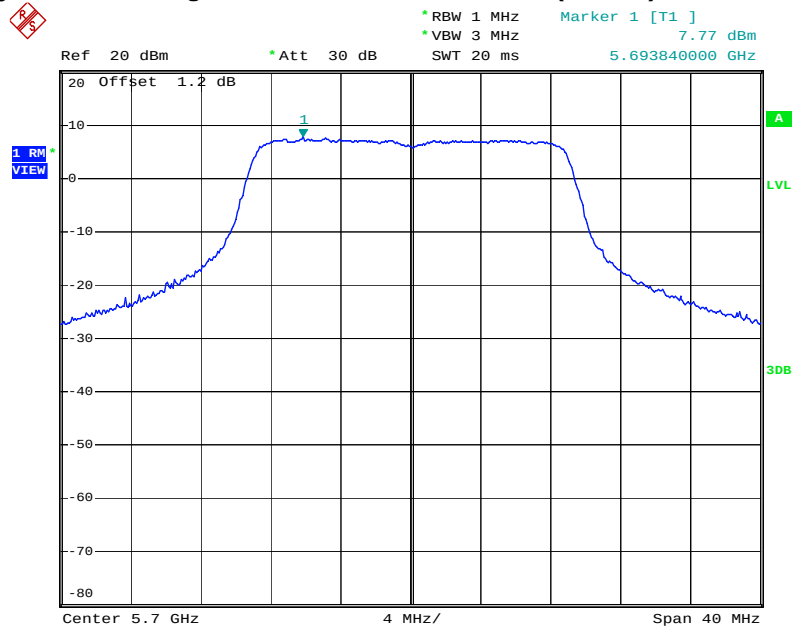
Date: 9.DEC.2011 14:20:53

Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



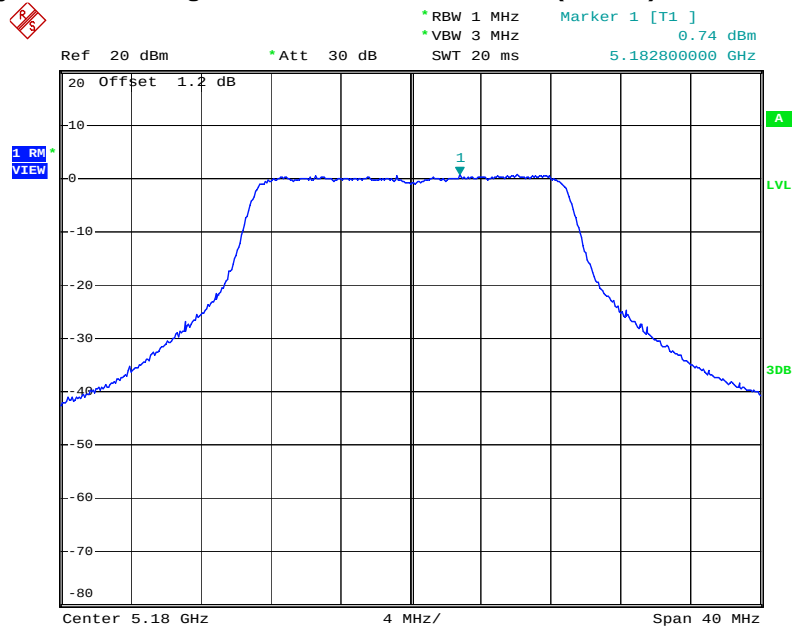
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Power Density Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



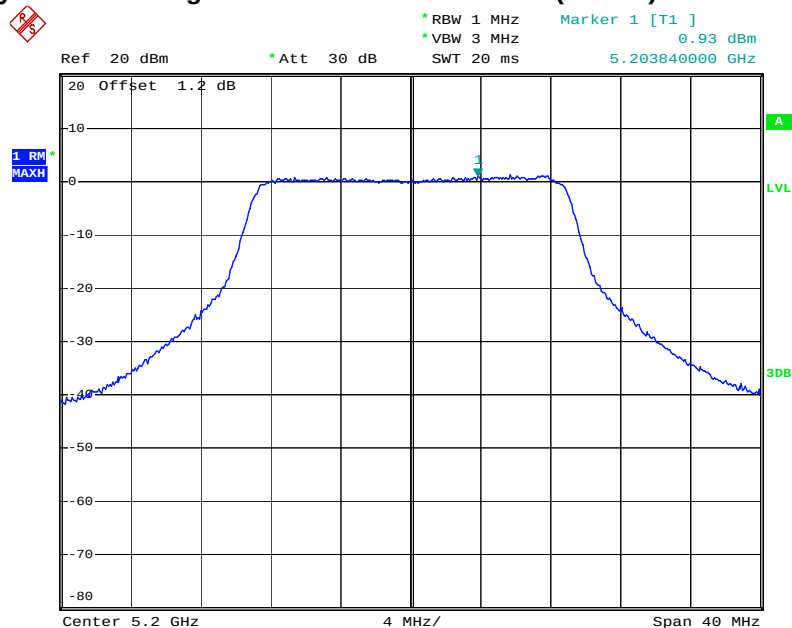
Date: 9.DEC.2011 14:36:41

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5180 MHz



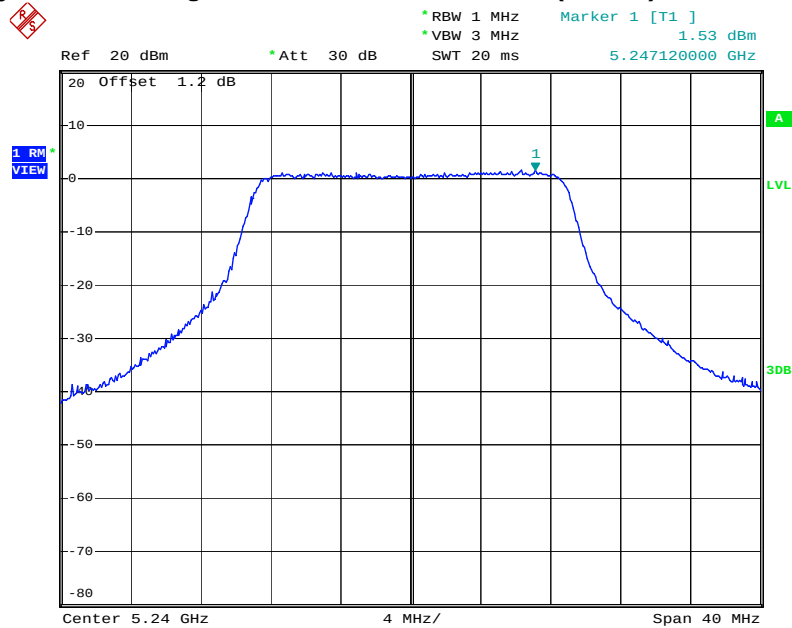
Date: 5.DEC.2011 15:54:59

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5200 MHz



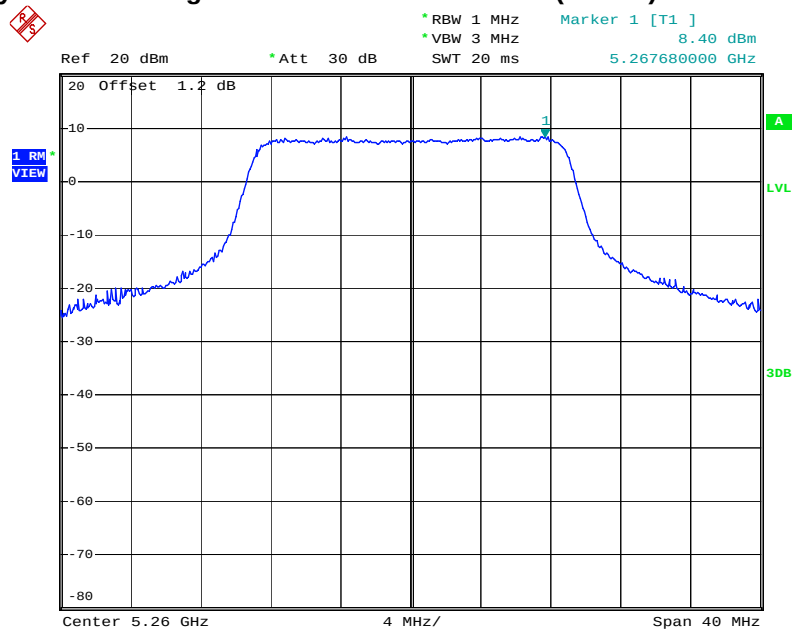
Date: 5.DEC.2011 16:08:32

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5240 MHz



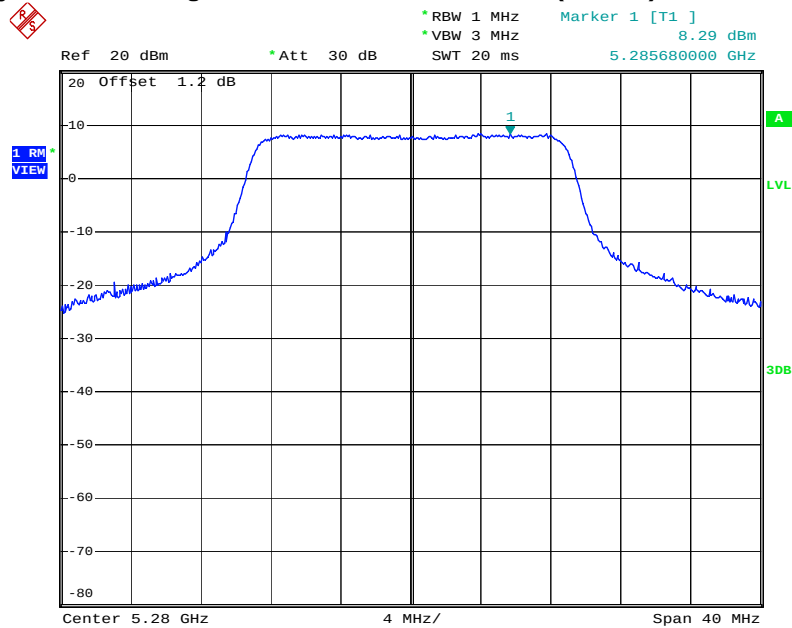
Date: 5.DEC.2011 16:17:51

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5260 MHz



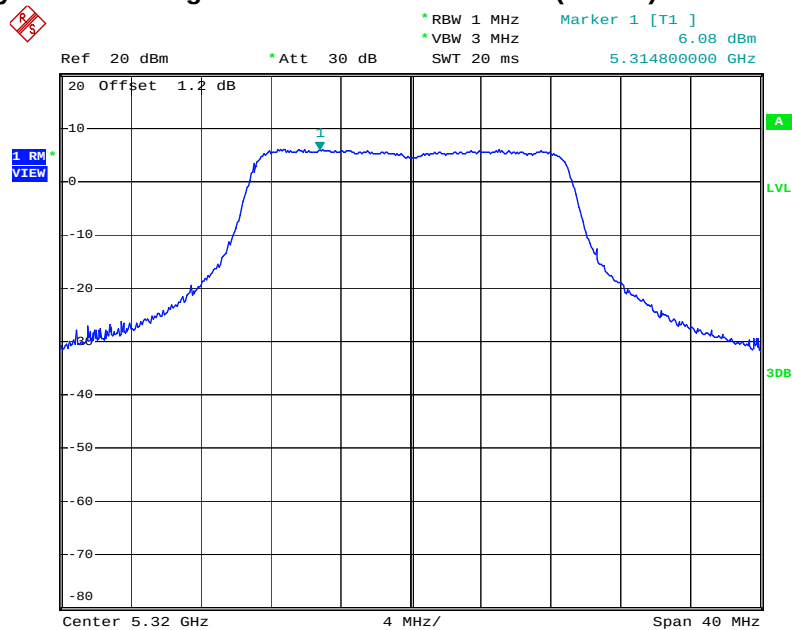
Date: 9.DEC.2011 13:49:49

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5280 MHz



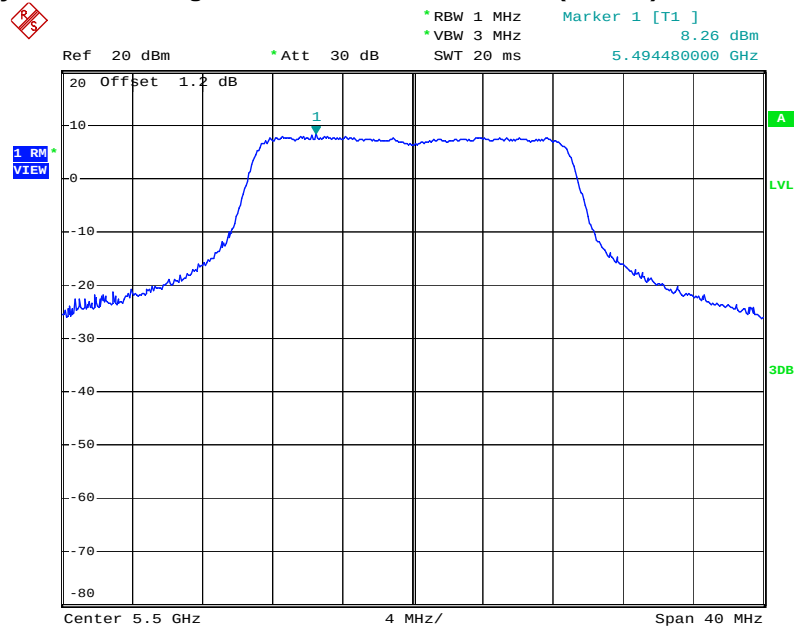
Date: 9.DEC.2011 13:56:40

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5320 MHz



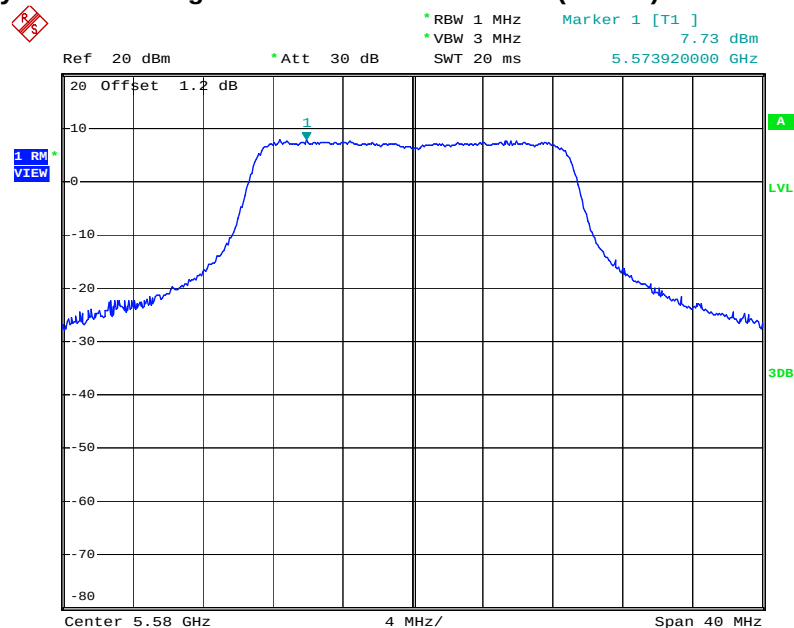
Date: 9.DEC.2011 14:15:05

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5500 MHz



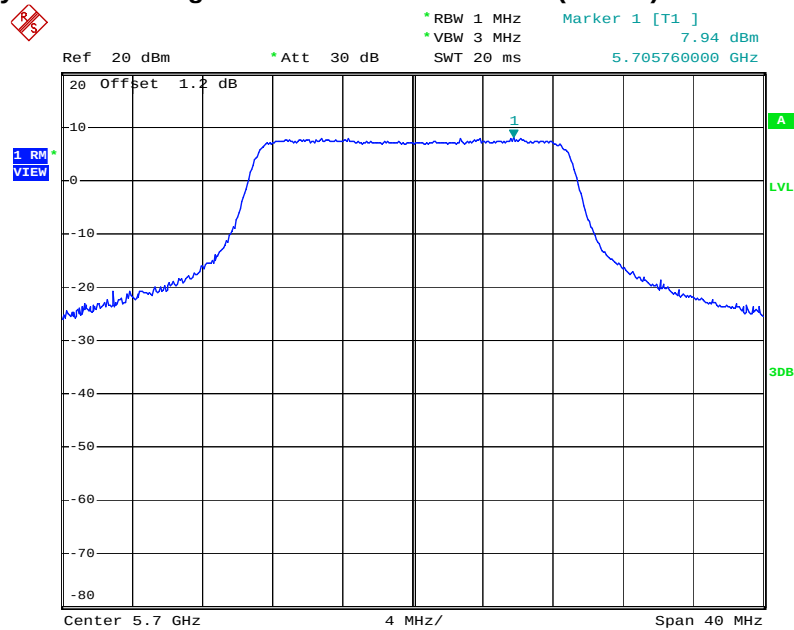
Date: 9.DEC.2011 14:20:06

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5580 MHz



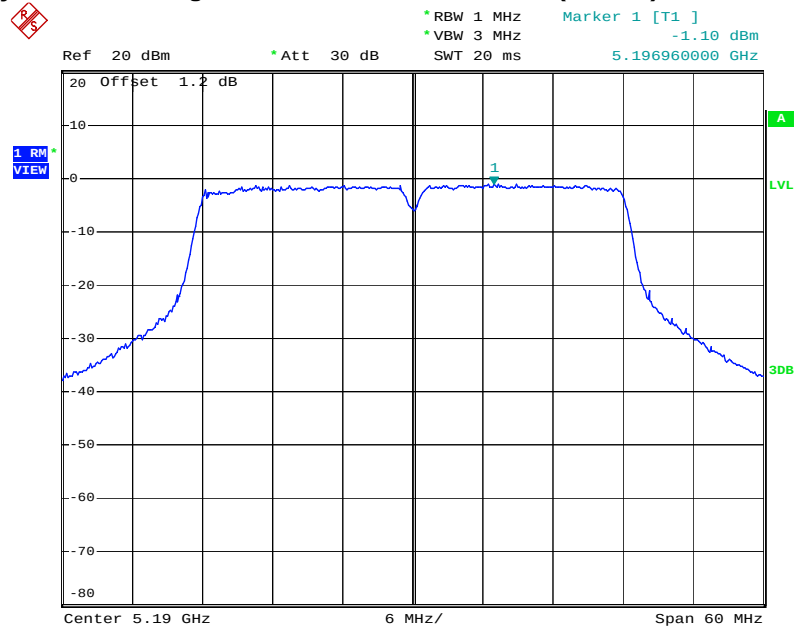
Date: 9.DEC.2011 14:30:42

Power Density Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5700 MHz



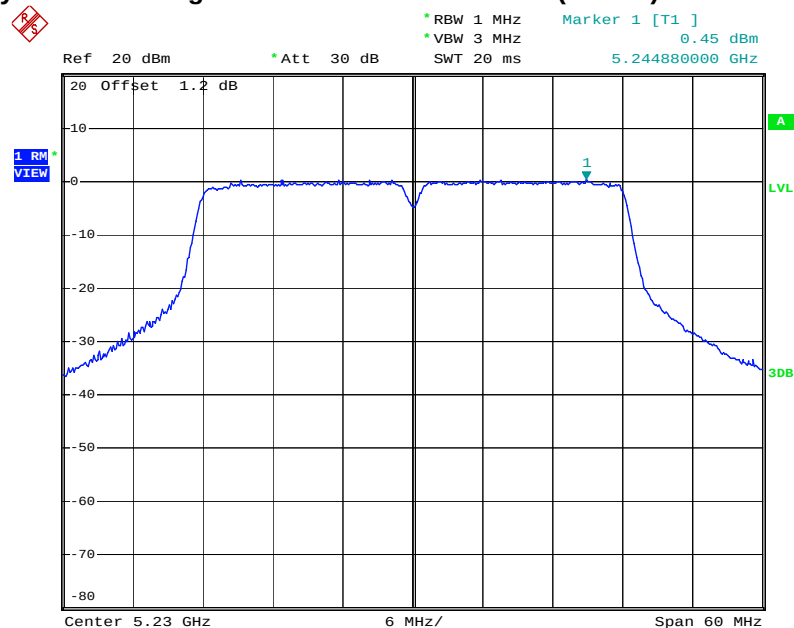
Date: 9.DEC.2011 14:35:44

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



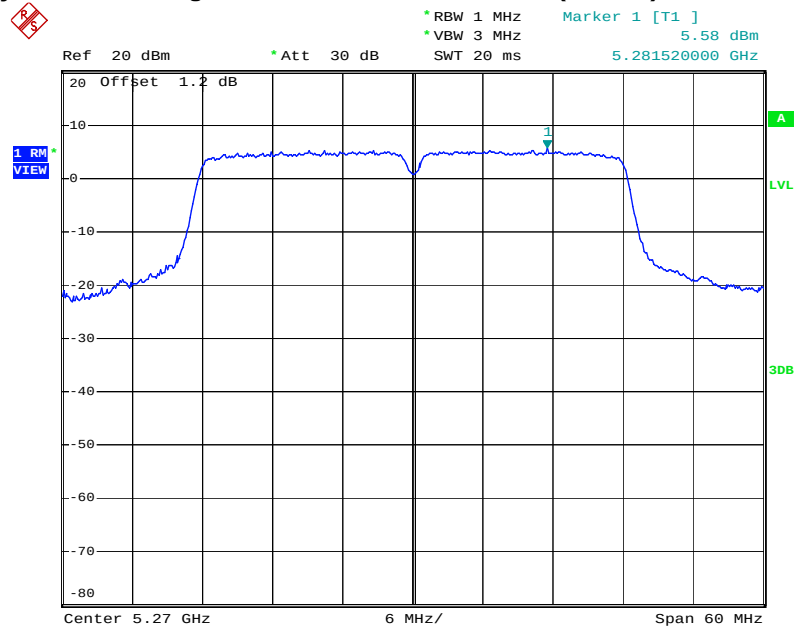
Date: 7.DEC.2011 17:53:12

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



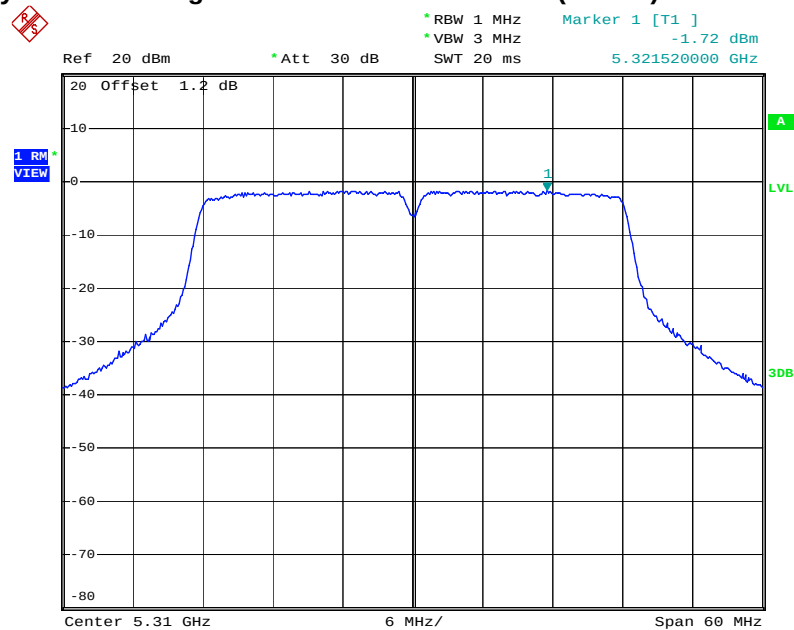
Date: 5.DEC.2011 19:07:43

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



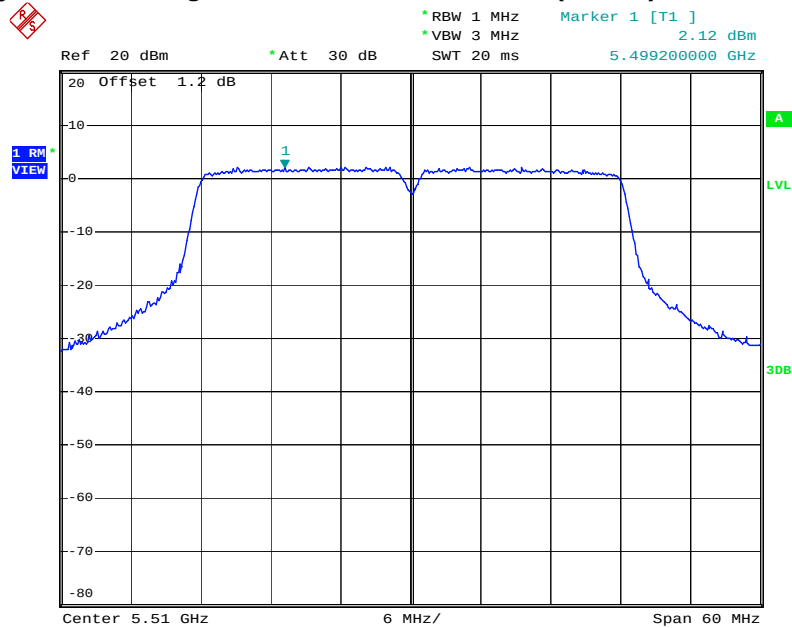
Date: 9.DEC.2011 15:08:41

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



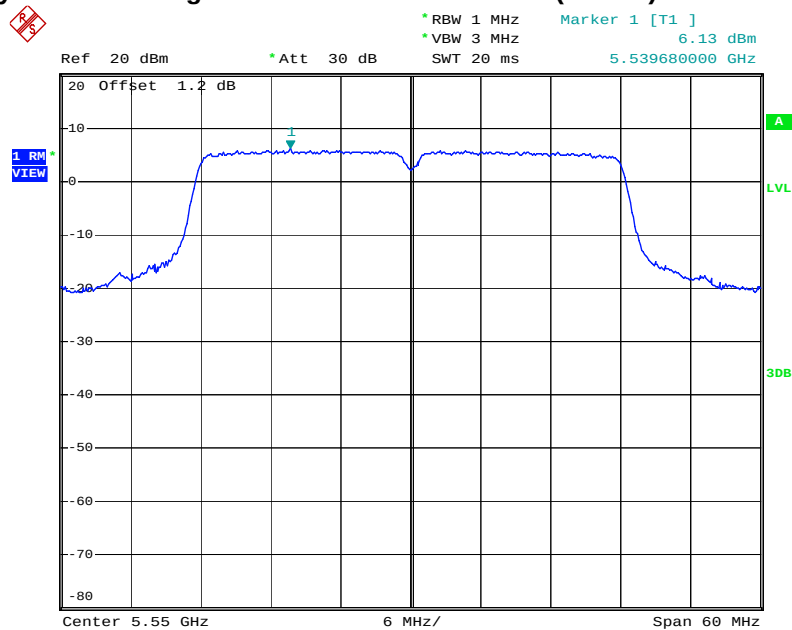
Date: 7.DEC.2011 18:04:59

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



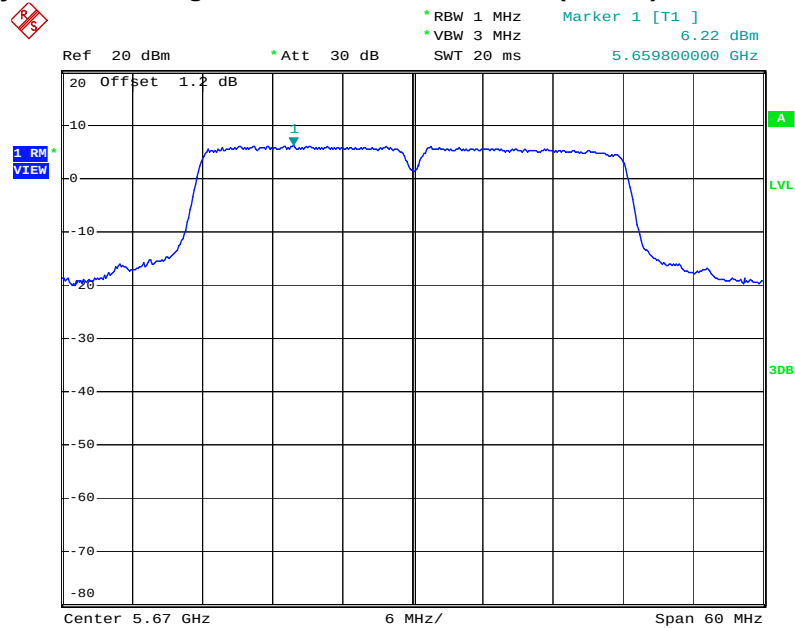
Date: 5.DEC.2011 20:17:53

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



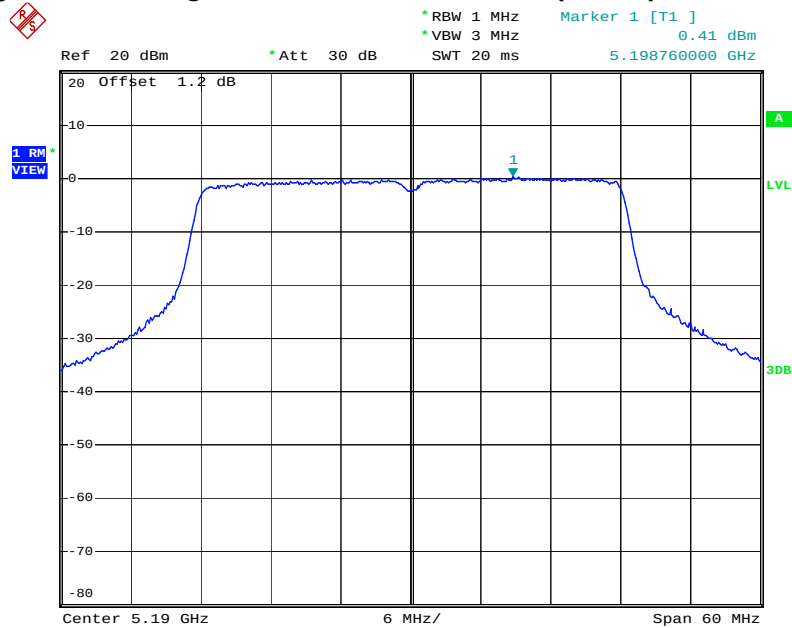
Date: 9.DEC.2011 15:31:07

Power Density Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



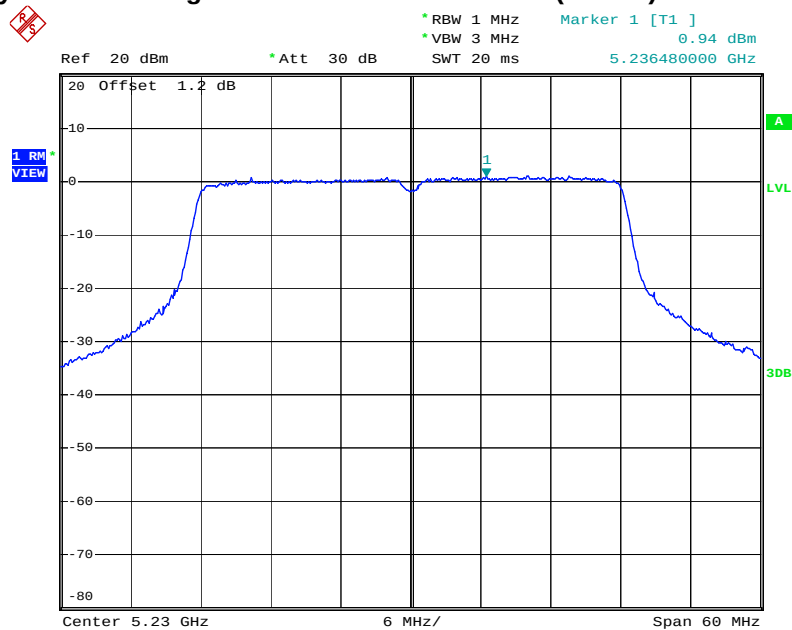
Date: 9.DEC.2011 15:39:51

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5190 MHz



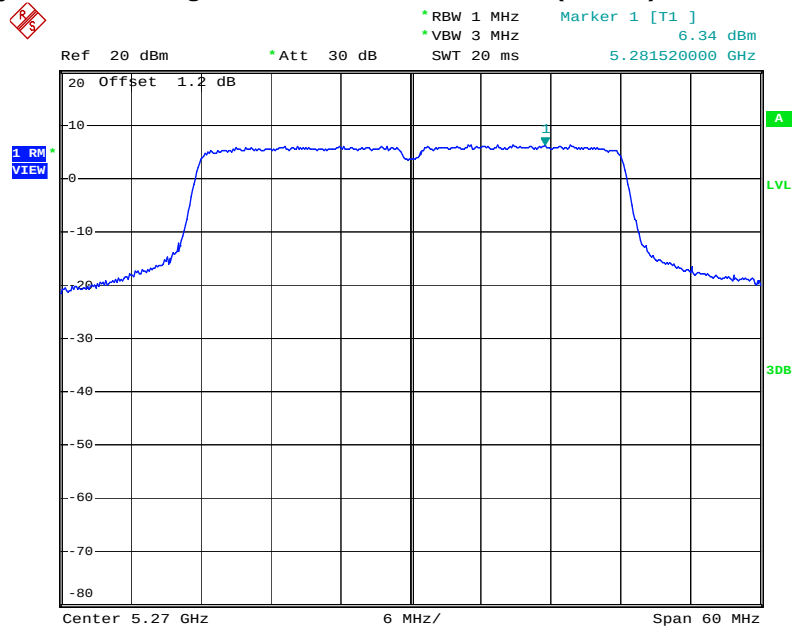
Date: 7.DEC.2011 17:56:06

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5230 MHz



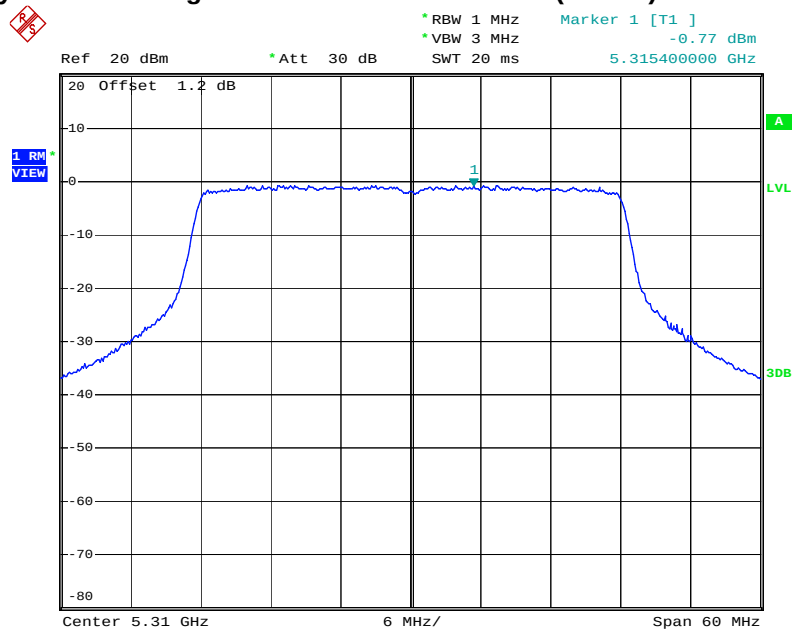
Date: 5.DEC.2011 19:08:45

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5270 MHz



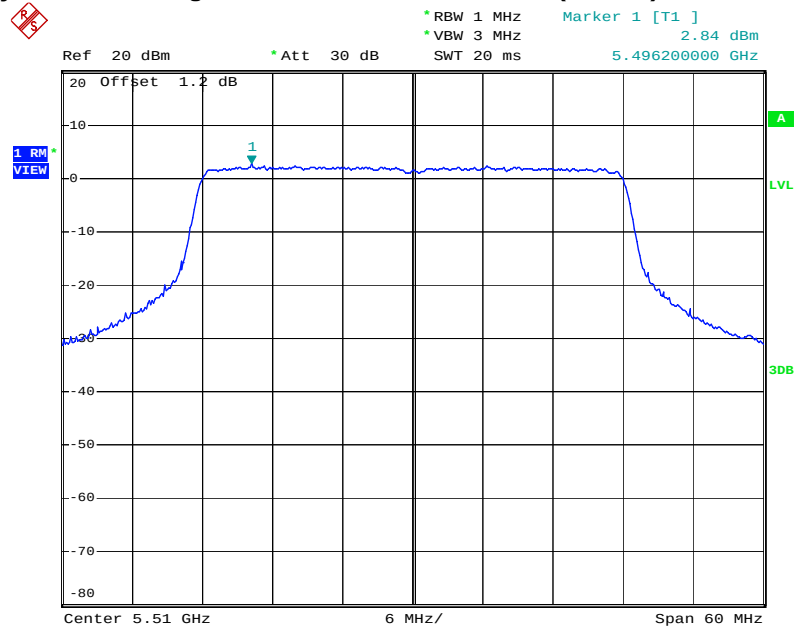
Date: 9.DEC.2011 15:08:07

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5310 MHz



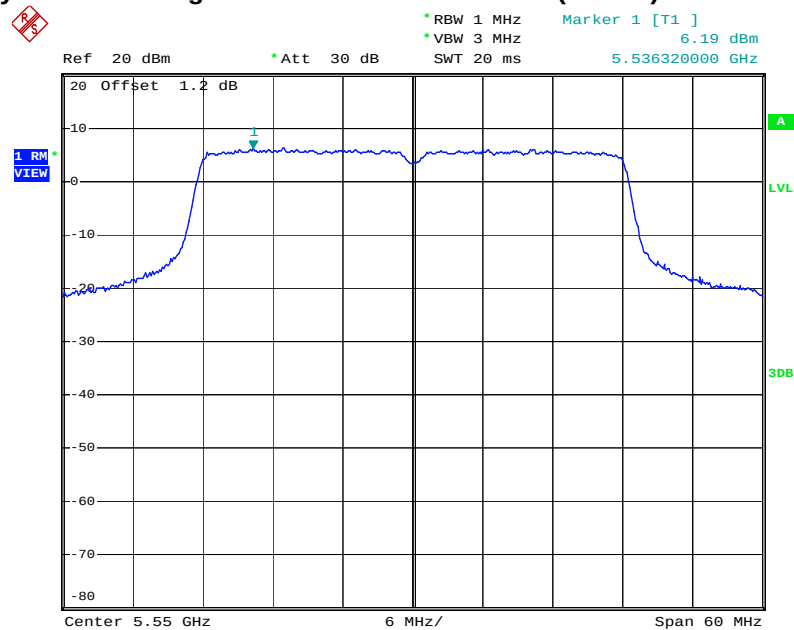
Date: 7.DEC.2011 18:07:29

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5510 MHz



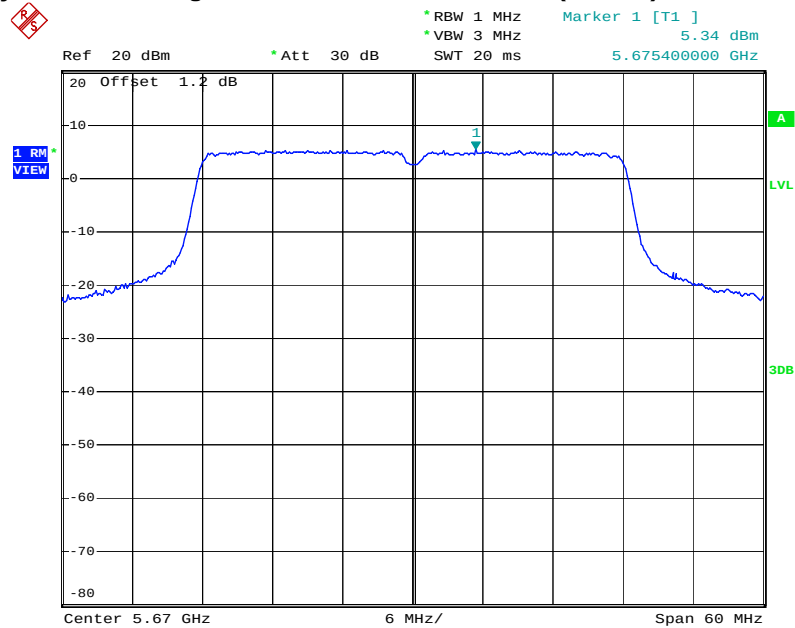
Date: 5.DEC.2011 20:21:31

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5550 MHz



Date: 9.DEC.2011 15:29:42

Power Density Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5670 MHz



Date: 9.DEC.2011 15:39:00

3.5 Peak Excursion Measurement

3.5.1 Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emissions bandwidth whichever is less.

3.5.2 Measuring Instruments and Setting

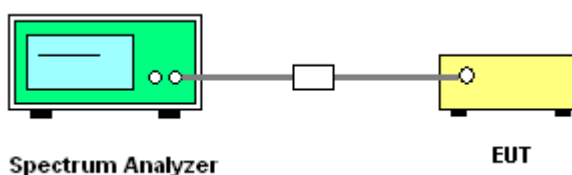
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 300 kHz (Average Trace)
Detector	Peak (Peak Trace) / RMS (Average Trace)
Trace	Max Hold
Sweep Time	60s

3.5.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emissions bandwidth. The largest difference between the following two traces (Peak Trace and Average Trace) must be ≤ 13 Db for all frequencies across the emissions bandwidth. Submit a plot.
3. Peak Trace: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and max-hold settings.
4. Average Trace: Method #3—video averaging with max hold—and sum power across the band. Set span to encompass the entire emissions bandwidth (EBW) of the signal. Set sweep trigger to “free run”. Set RBW = 1 MHz. Set VBW $\geq 1/T$ (IEEE 802.11a VBW = 300kHz $\geq 1/4\mu\text{s}$). Use sample detector mode if bin width (i.e., span/number of points in spectrum) < 0.5 RBW. Otherwise use peak detector mode. Set max hold. Allow max hold to run for 60 seconds.
5. Measuring multiple antennas, the connectors are required to link with Spectrum Analyzer through a combiner. (Only for IEEE 802.11n test)

3.5.4 Test Setup Layout



3.5.5 Test Deviation

There is no deviation with the original standard.

3.5.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.5.7 Test Result of Peak Excursion

Final Test Date	Dec. 01, 2011	Test Site No.	TH01-HY
Temperature	23.3~23.8℃	Humidity	37~65%
Test Engineer	Ian	Configurations	802.11a/n

For Single Chain:

Configuration of IEEE 802.11a Port 1

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	6.13	13	Complies
5200 MHz	6.04	13	Complies
5240 MHz	5.64	13	Complies
5260 MHz	5.76	13	Complies
5280 MHz	5.80	13	Complies
5320 MHz	5.68	13	Complies
5500 MHz	5.96	13	Complies
5580 MHz	5.50	13	Complies
5700 MHz	5.91	13	Complies

Configuration IEEE 802.11n Port 1 (20MHz)

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	5.75	13	Complies
5200 MHz	5.73	13	Complies
5240 MHz	5.81	13	Complies
5260 MHz	5.88	13	Complies
5280 MHz	5.99	13	Complies
5320 MHz	5.78	13	Complies
5500 MHz	5.95	13	Complies
5580 MHz	5.79	13	Complies
5700 MHz	5.66	13	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5190 MHz	5.60	13	Complies
5230 MHz	5.73	13	Complies
5270 MHz	5.76	13	Complies
5310 MHz	5.95	13	Complies
5510 MHz	5.82	13	Complies
5550 MHz	6.10	13	Complies
5670 MHz	5.85	13	Complies

For Two Chains:**Configuration IEEE 802.11n Port 1 (20MHz)**

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	7.61	13	Complies
5200 MHz	7.22	13	Complies
5240 MHz	7.55	13	Complies
5260 MHz	7.37	13	Complies
5280 MHz	7.31	13	Complies
5320 MHz	7.36	13	Complies
5500 MHz	7.44	13	Complies
5580 MHz	7.22	13	Complies
5700 MHz	7.30	13	Complies

Configuration IEEE 802.11n Port 2 (20MHz)

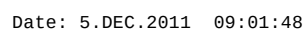
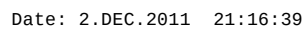
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	7.60	13	Complies
5200 MHz	7.28	13	Complies
5240 MHz	7.22	13	Complies
5260 MHz	7.04	13	Complies
5280 MHz	6.96	13	Complies
5320 MHz	8.06	13	Complies
5500 MHz	6.77	13	Complies
5580 MHz	6.91	13	Complies
5700 MHz	7.37	13	Complies

Configuration IEEE 802.11n Port 1 (40MHz)

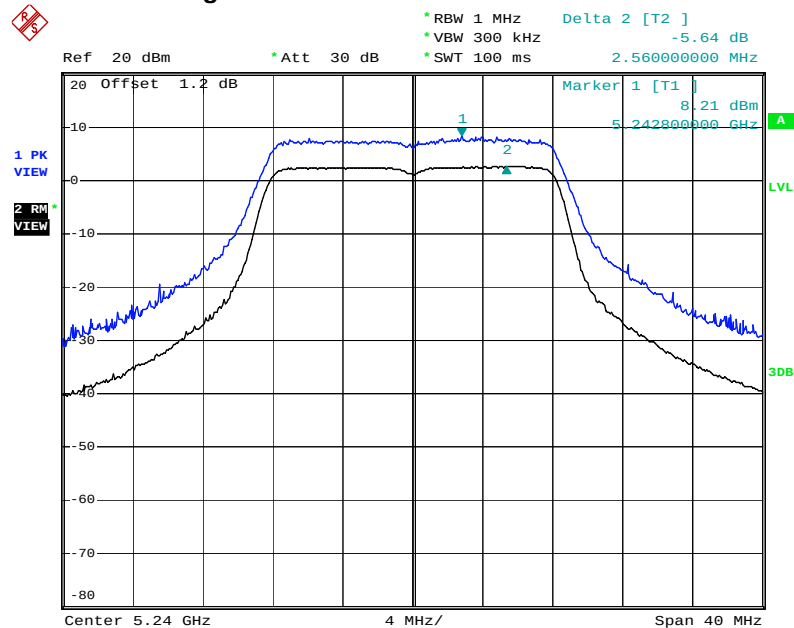
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5190 MHz	7.64	13	Complies
5230 MHz	6.69	13	Complies
5270 MHz	7.38	13	Complies
5310 MHz	7.51	13	Complies
5510 MHz	7.30	13	Complies
5550 MHz	7.05	13	Complies
5670 MHz	7.17	13	Complies

Configuration IEEE 802.11n Port 2 (40MHz)

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5190 MHz	7.47	13	Complies
5230 MHz	7.20	13	Complies
5270 MHz	7.68	13	Complies
5310 MHz	7.02	13	Complies
5510 MHz	7.38	13	Complies
5550 MHz	7.99	13	Complies
5670 MHz	7.91	13	Complies

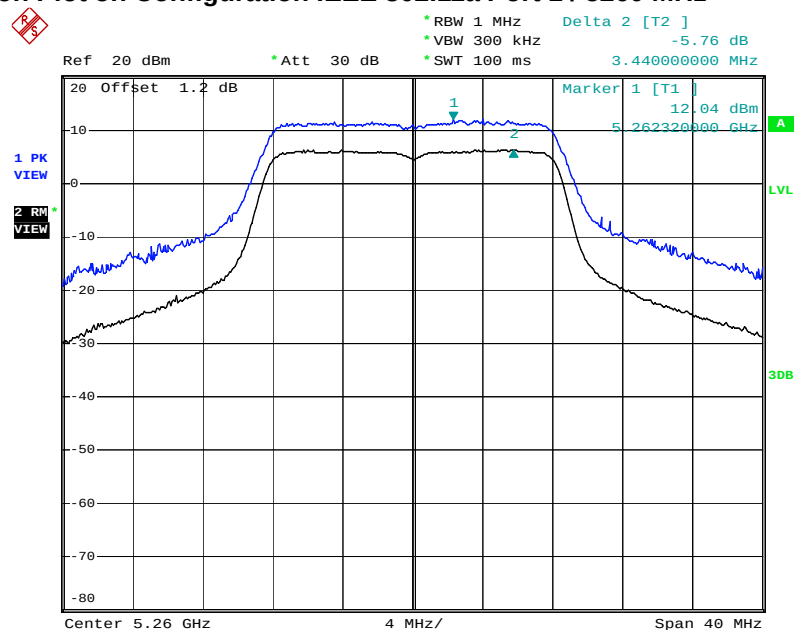


Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5240 MHz



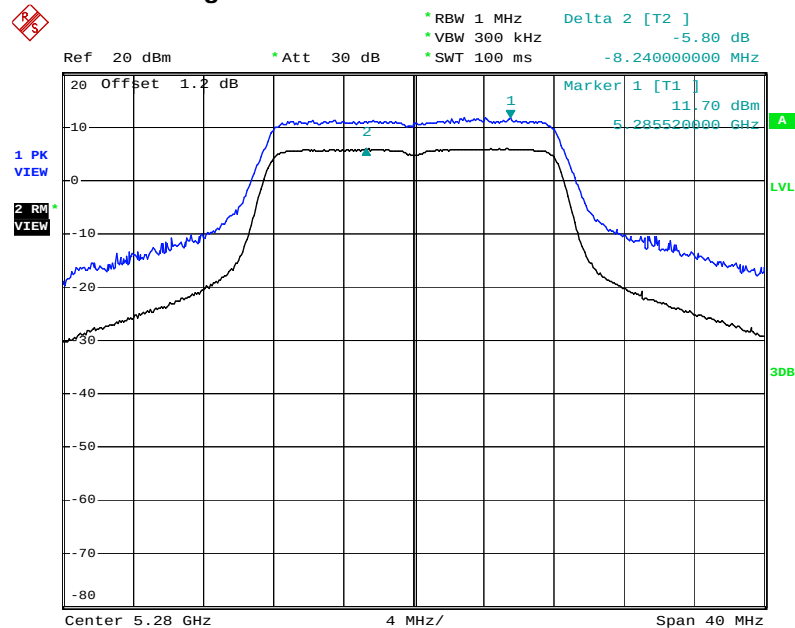
Date: 5.DEC.2011 09:07:14

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5260 MHz



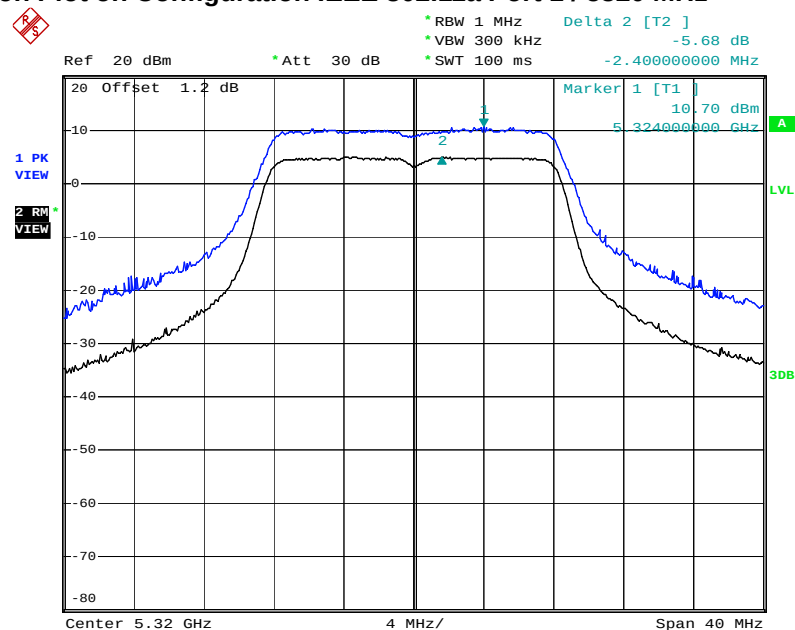
Date: 5.DEC.2011 09:14:46

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5280 MHz



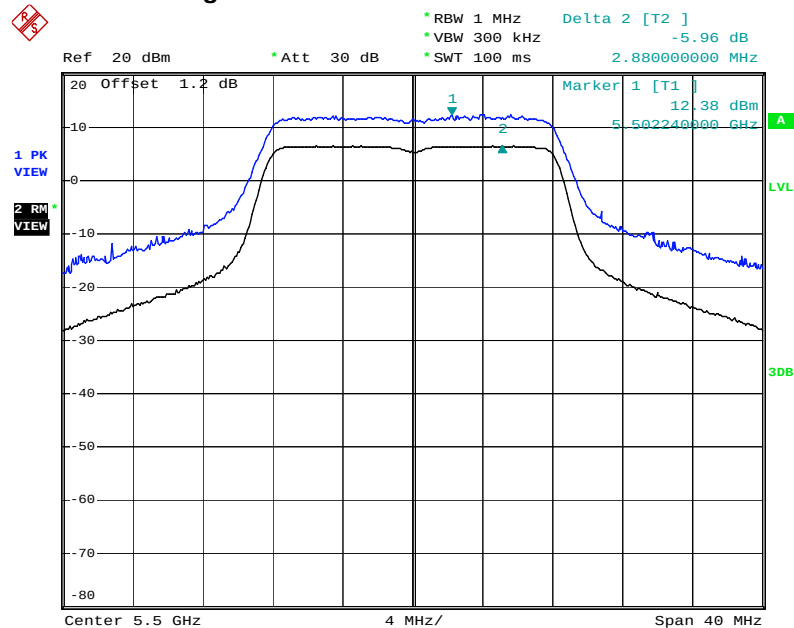
Date: 5.DEC.2011 09:25:55

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5320 MHz



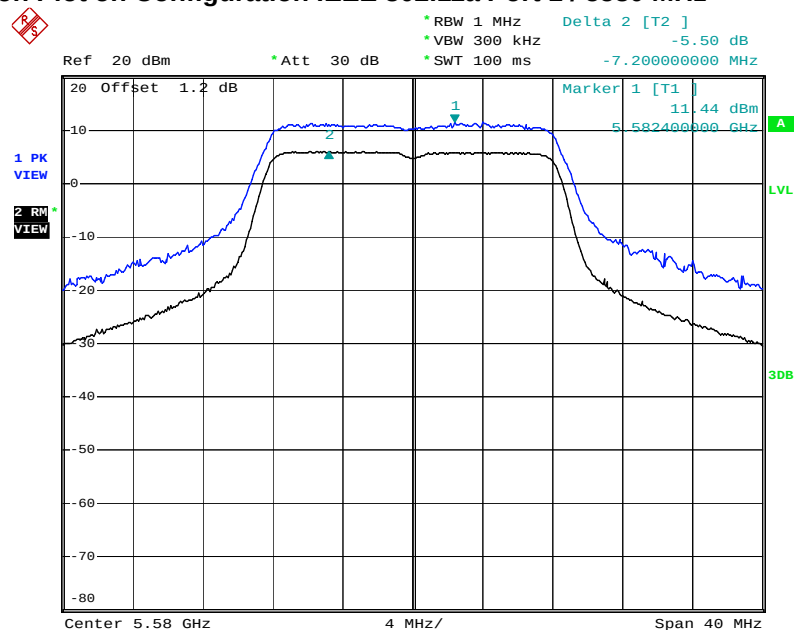
Date: 9.DEC.2011 17:09:42

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5500 MHz



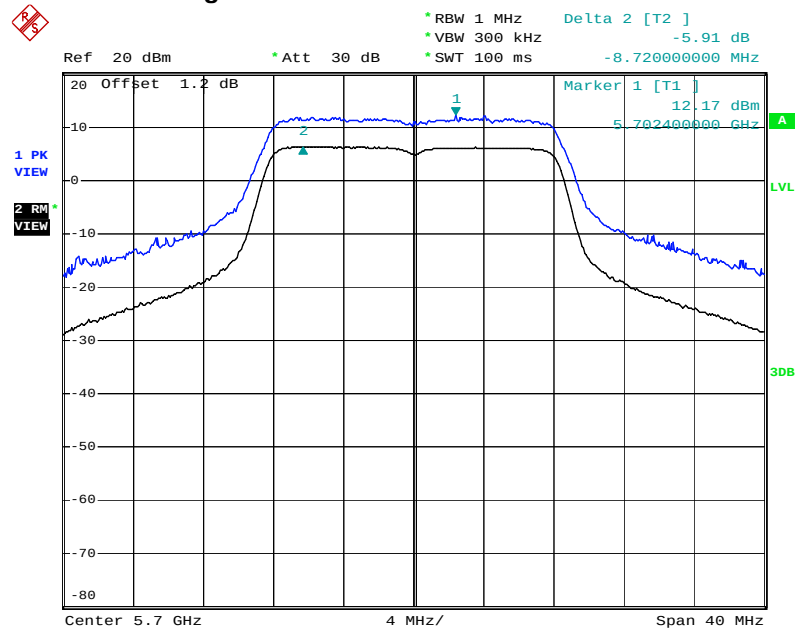
Date: 5.DEC.2011 09:38:45

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5580 MHz



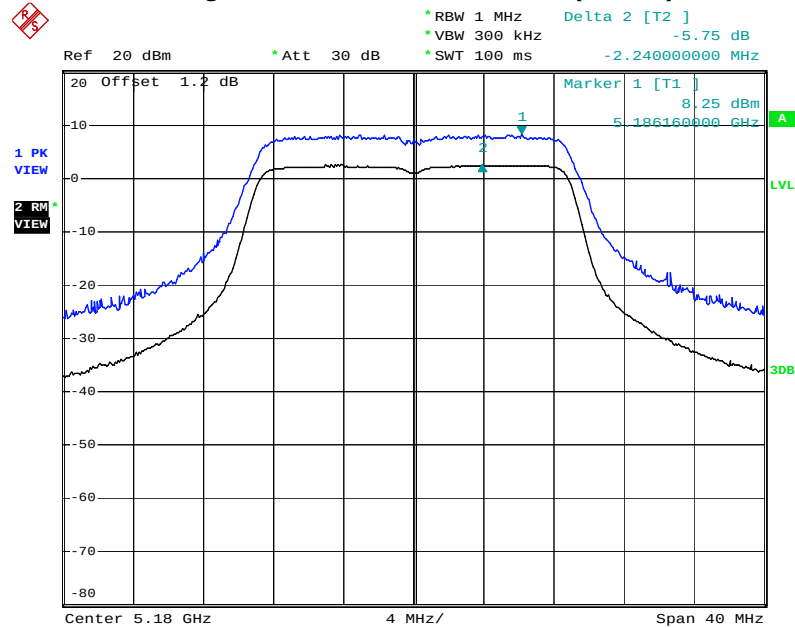
Date: 5.DEC.2011 09:43:35

Peak Excursion Plot on Configuration IEEE 802.11a Port 1 / 5700 MHz



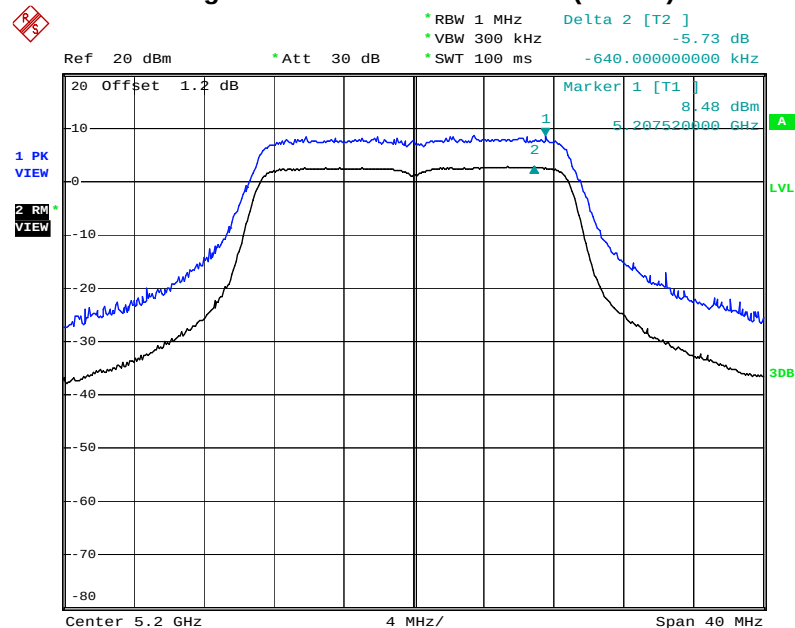
Date: 5.DEC.2011 09:48:30

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



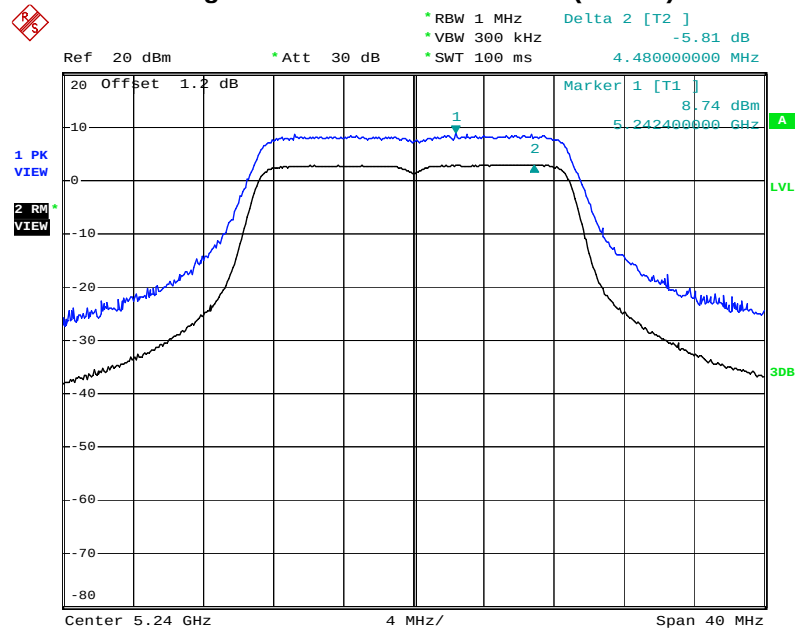
Date: 5.DEC.2011 10:31:45

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



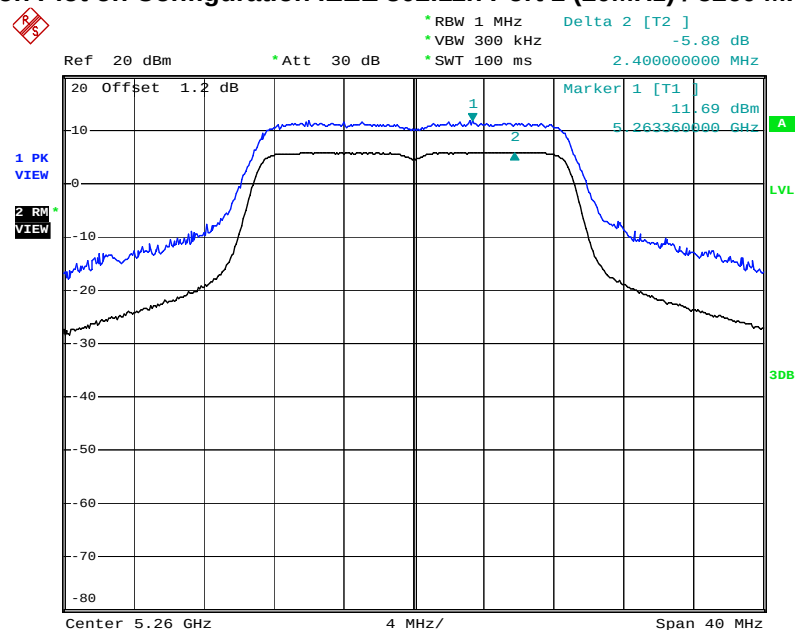
Date: 5.DEC.2011 10:36:39

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



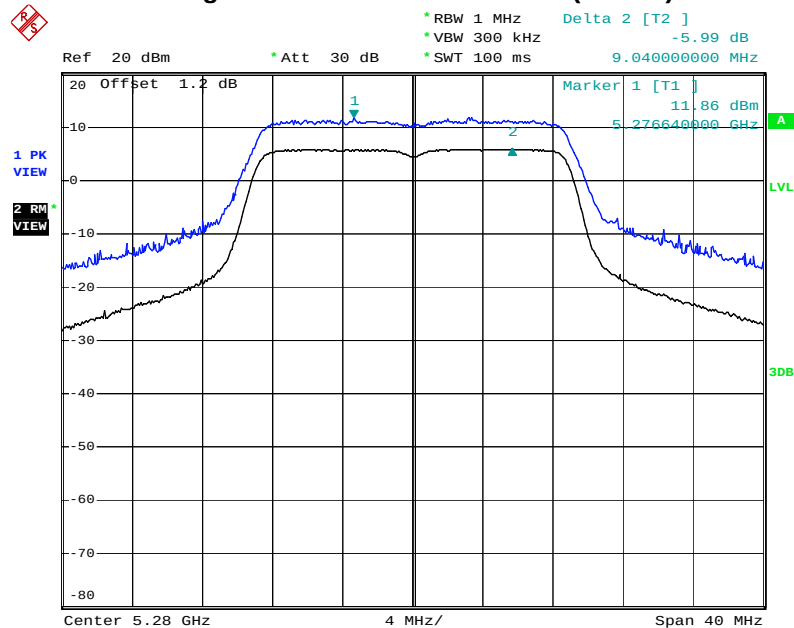
Date: 5.DEC.2011 10:40:18

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



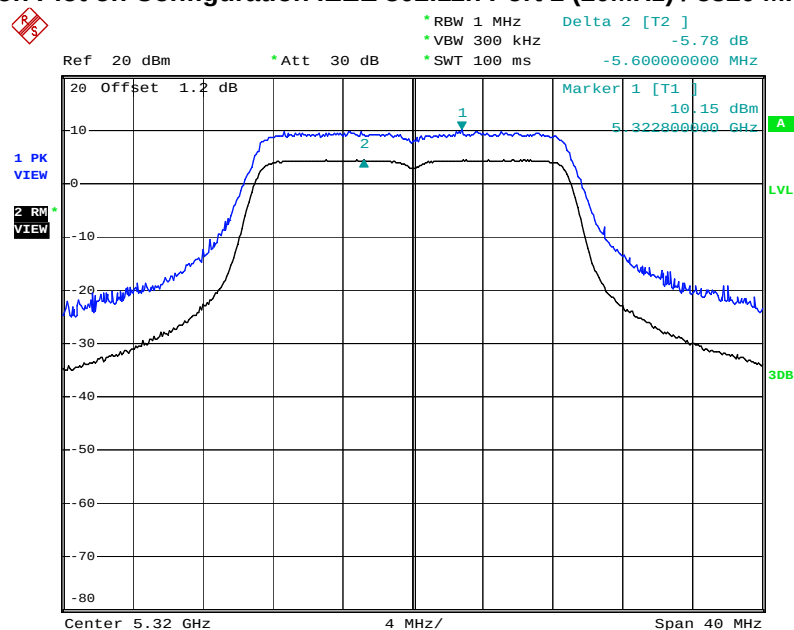
Date: 5.DEC.2011 10:49:27

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



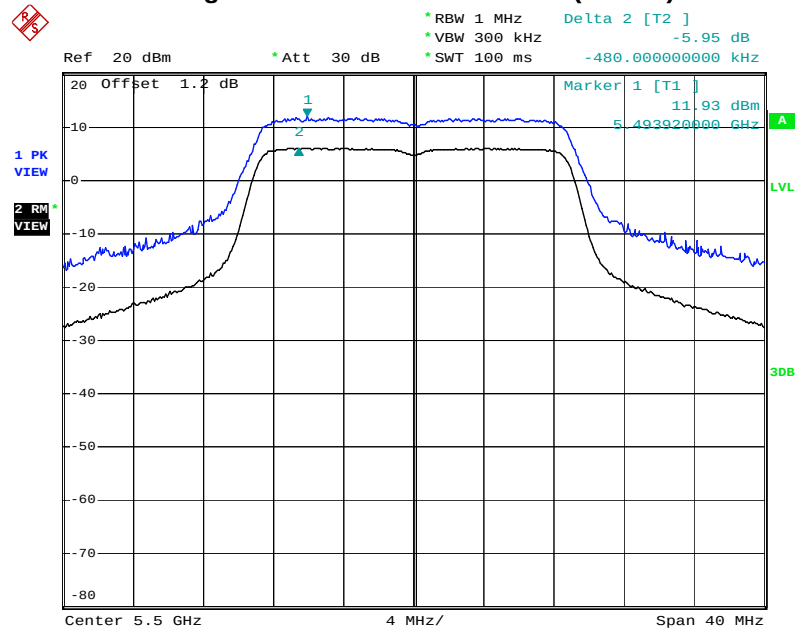
Date: 5.DEC.2011 10:58:08

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



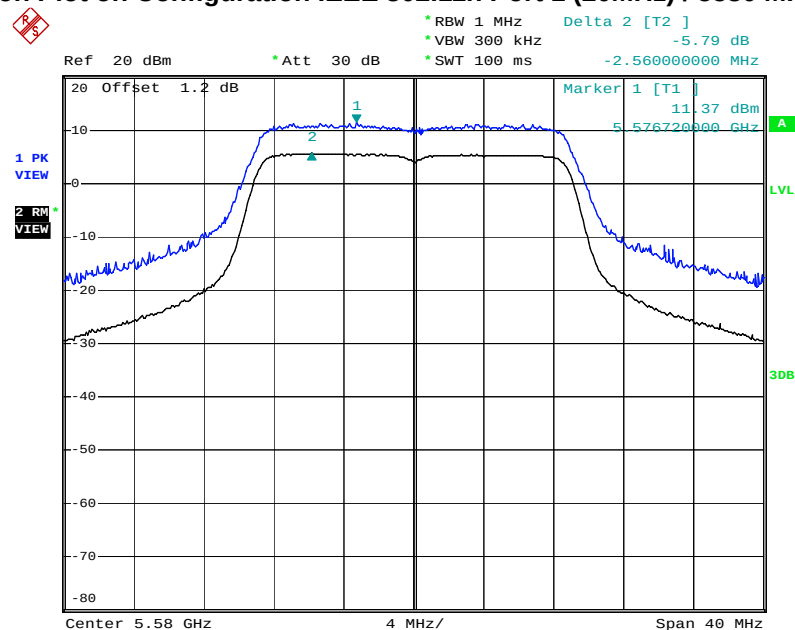
Date: 9.DEC.2011 17:07:03

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



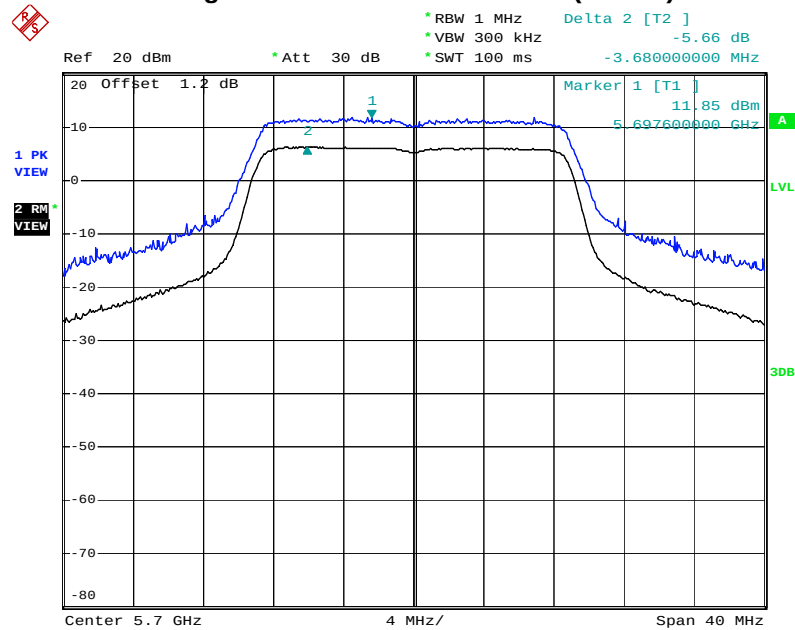
Date: 5.DEC.2011 11:09:07

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



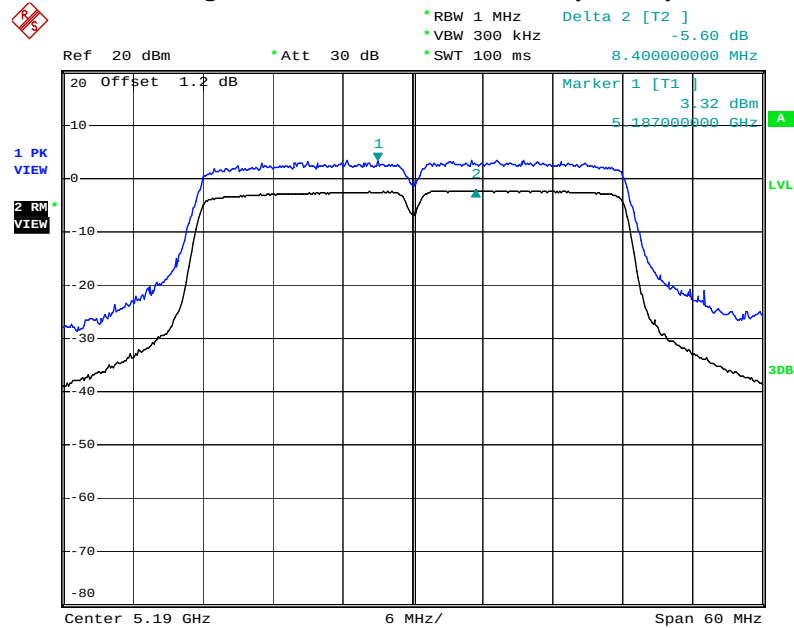
Date: 5.DEC.2011 11:20:15

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



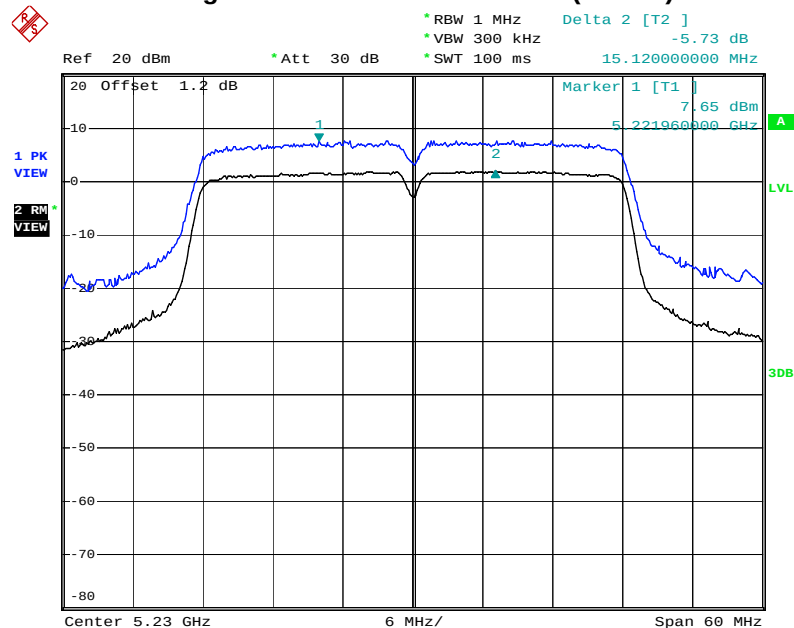
Date: 5.DEC.2011 11:24:42

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



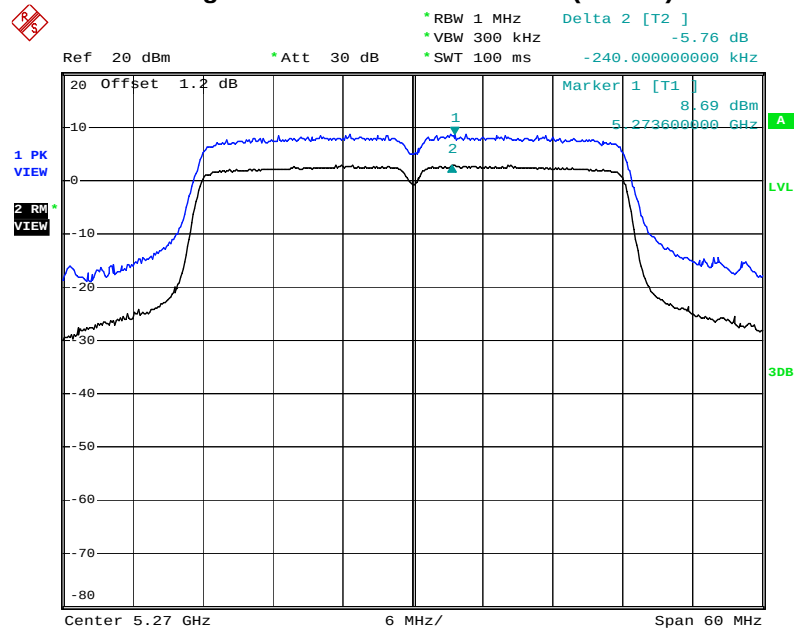
Date: 5.DEC.2011 14:13:11

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



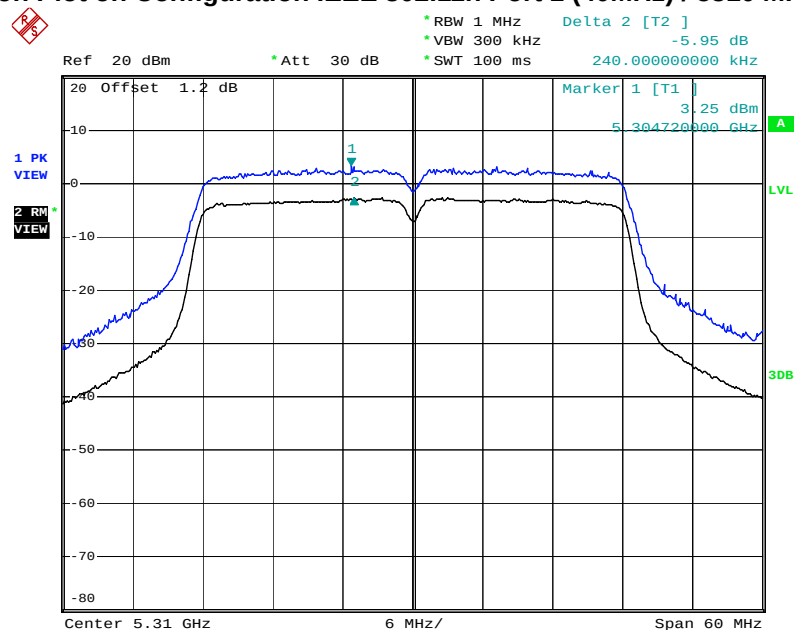
Date: 5.DEC.2011 14:16:04

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



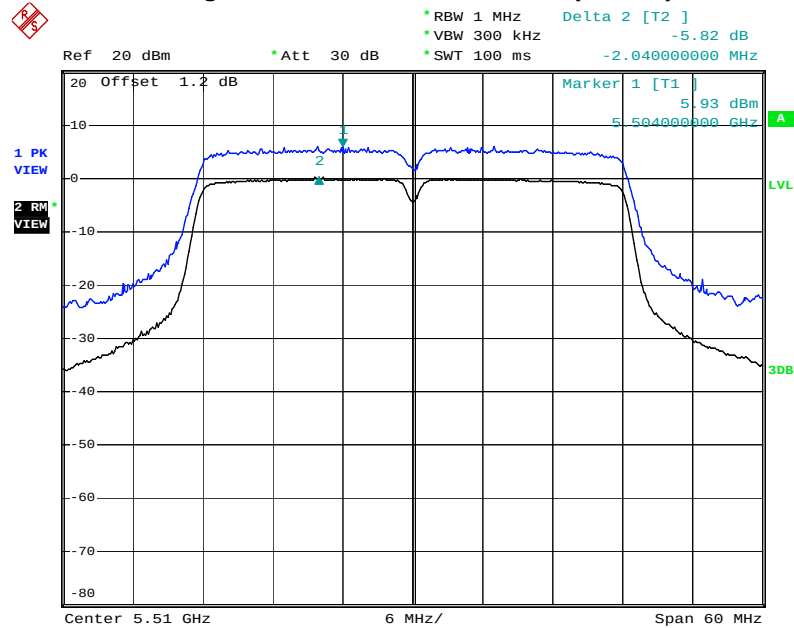
Date: 7.DEC.2011 17:12:56

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



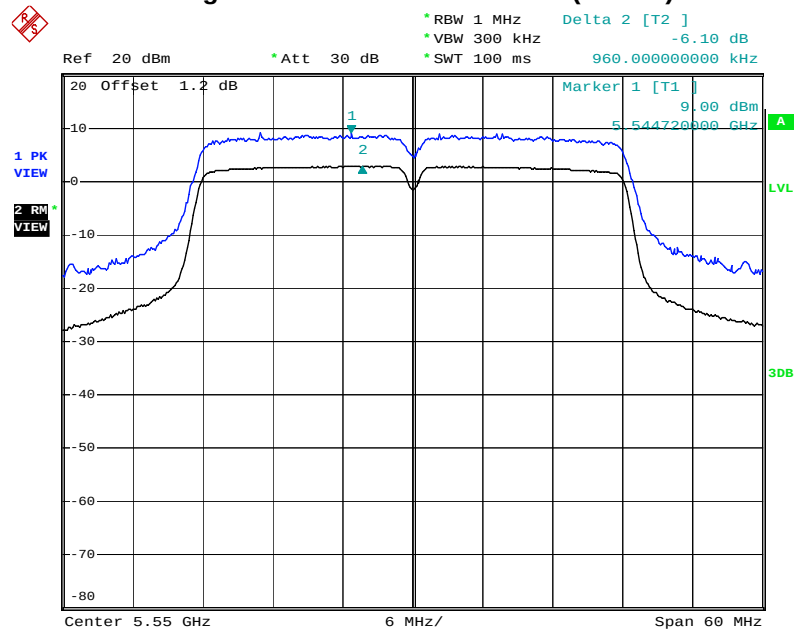
Date: 7.DEC.2011 17:19:22

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



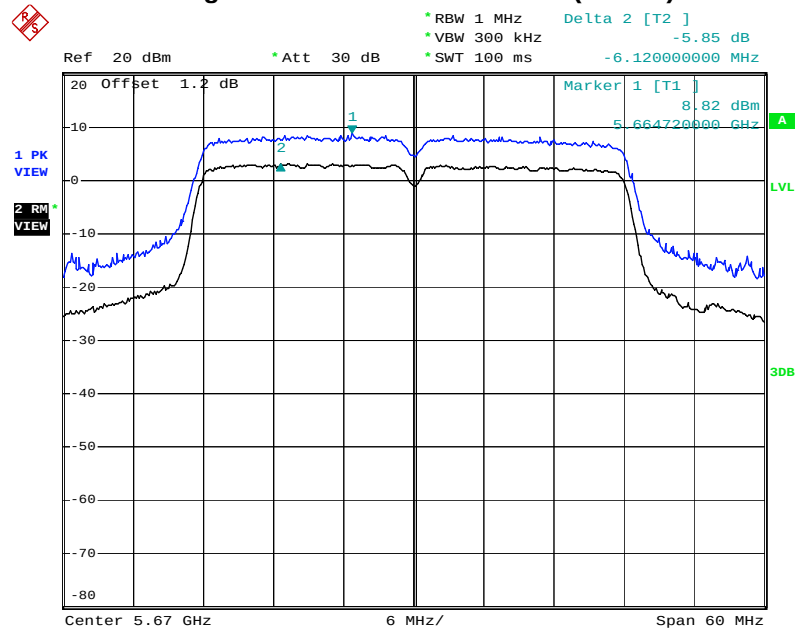
Date: 7.DEC.2011 17:24:35

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



Date: 5.DEC.2011 14:53:18

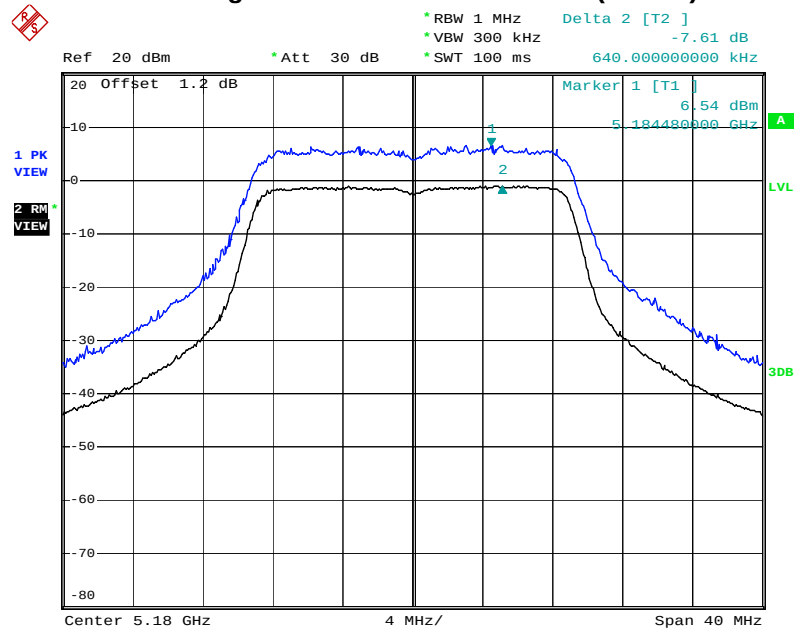
Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



Date: 5.DEC.2011 14:59:14

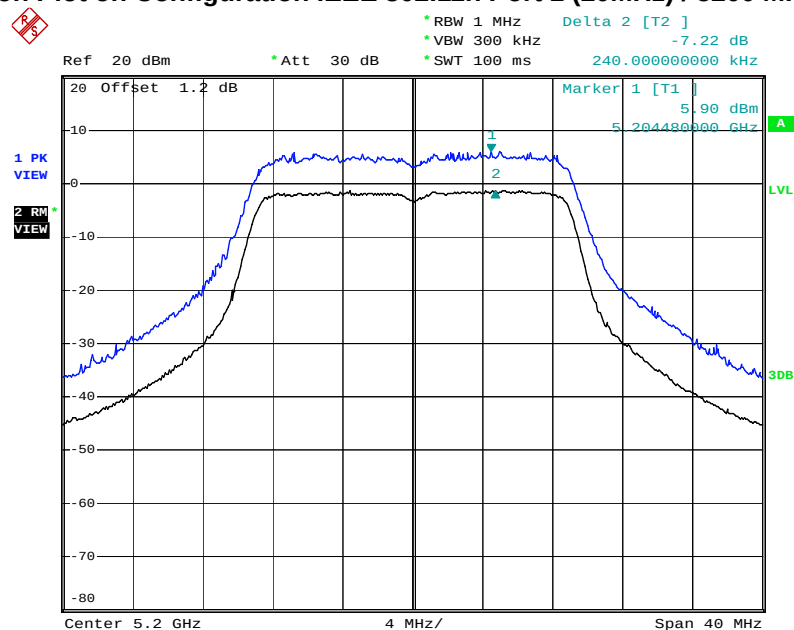
For Two Chains:

P Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5180 MHz



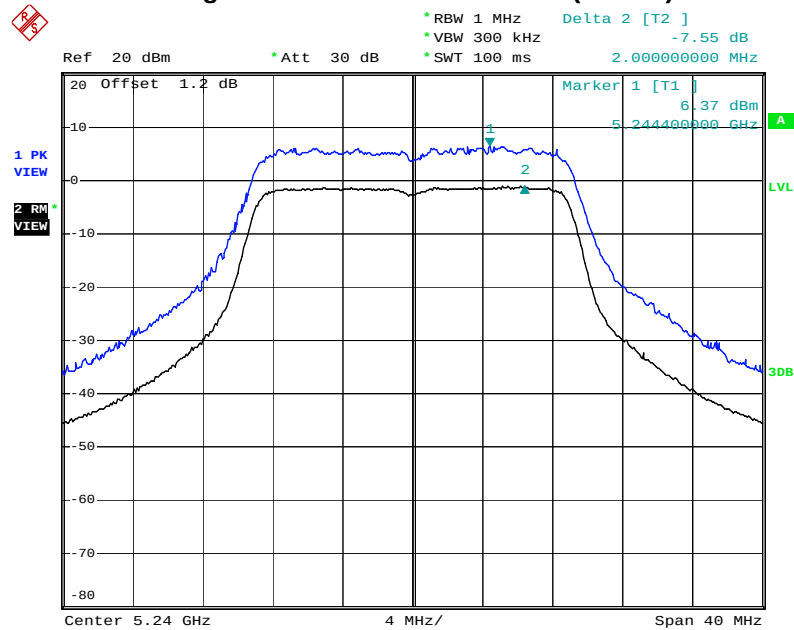
Date: 5.DEC.2011 16:00:30

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5200 MHz



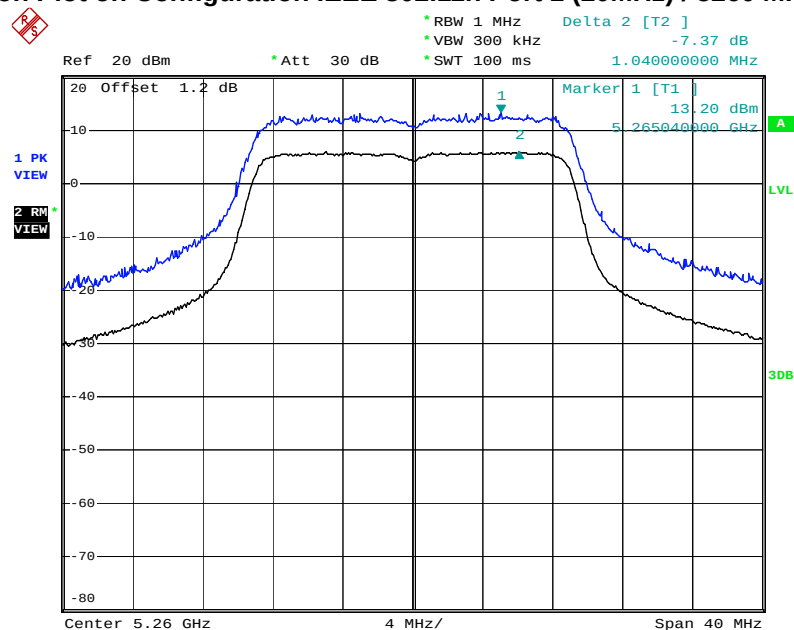
Date: 5.DEC.2011 16:09:54

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5240 MHz



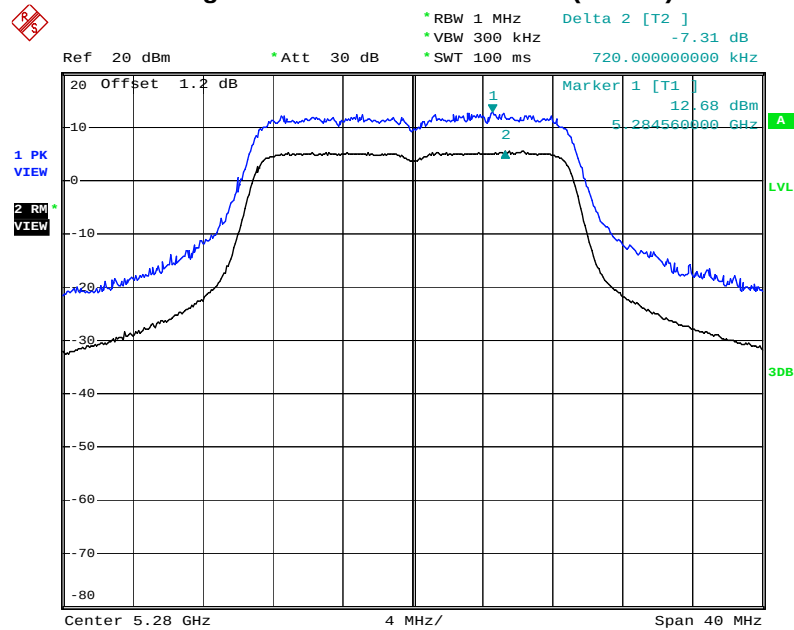
Date: 5.DEC.2011 16:20:37

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5260 MHz



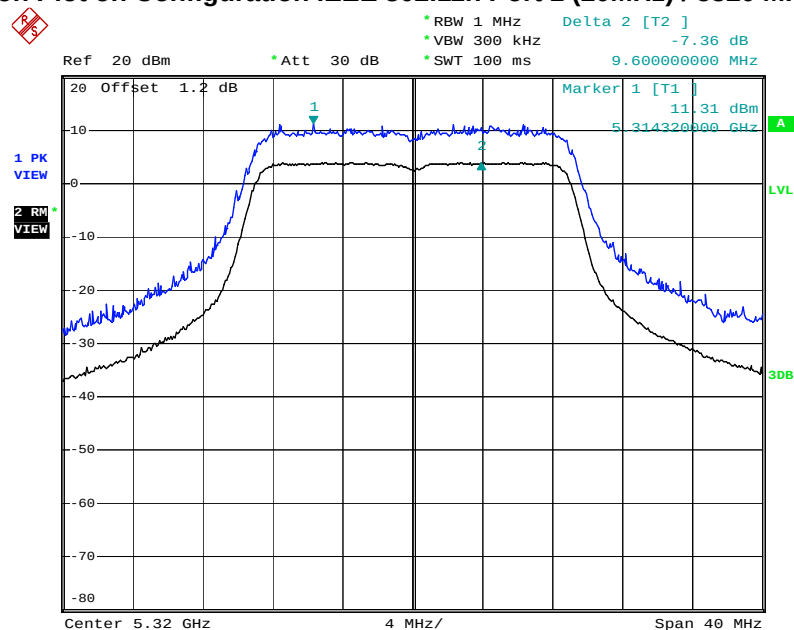
Date: 9.DEC.2011 17:27:14

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5280 MHz



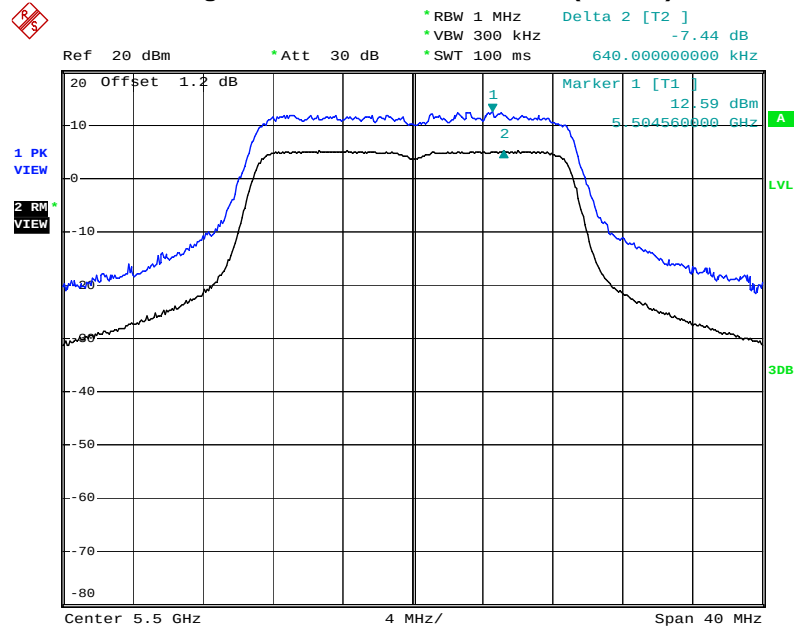
Date: 9.DEC.2011 17:41:15

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5320 MHz



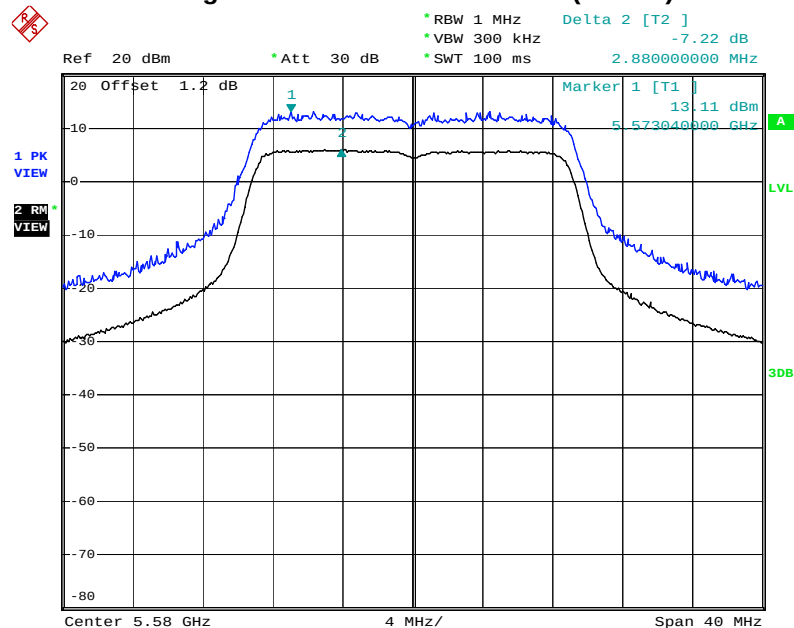
Date: 9.DEC.2011 17:51:22

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5500 MHz



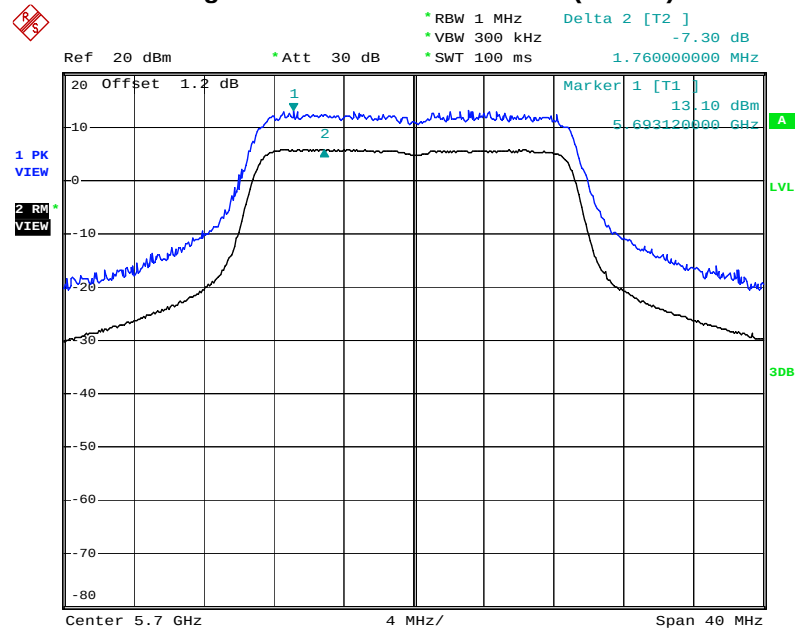
Date: 9.DEC.2011 18:00:55

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5580 MHz



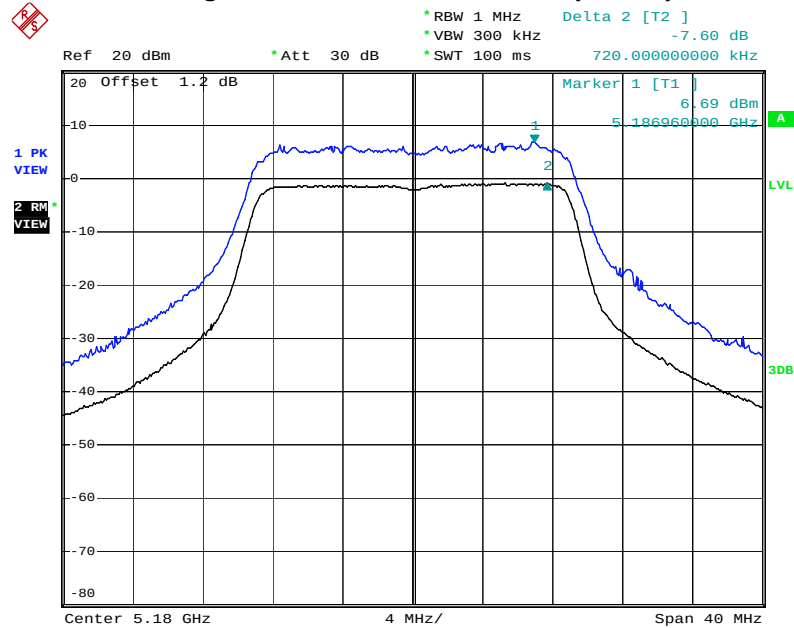
Date: 9.DEC.2011 18:07:37

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (20MHz) / 5700 MHz



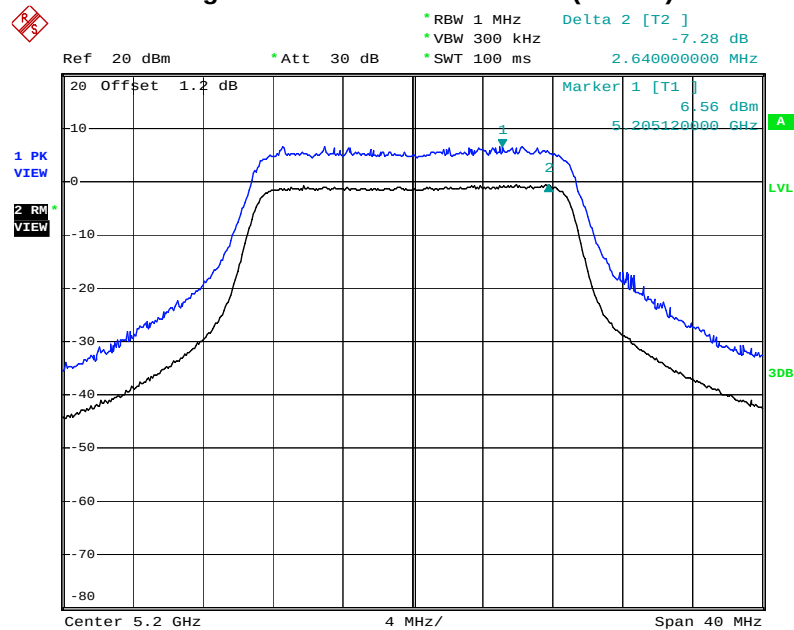
Date: 9.DEC.2011 18:15:34

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5180 MHz



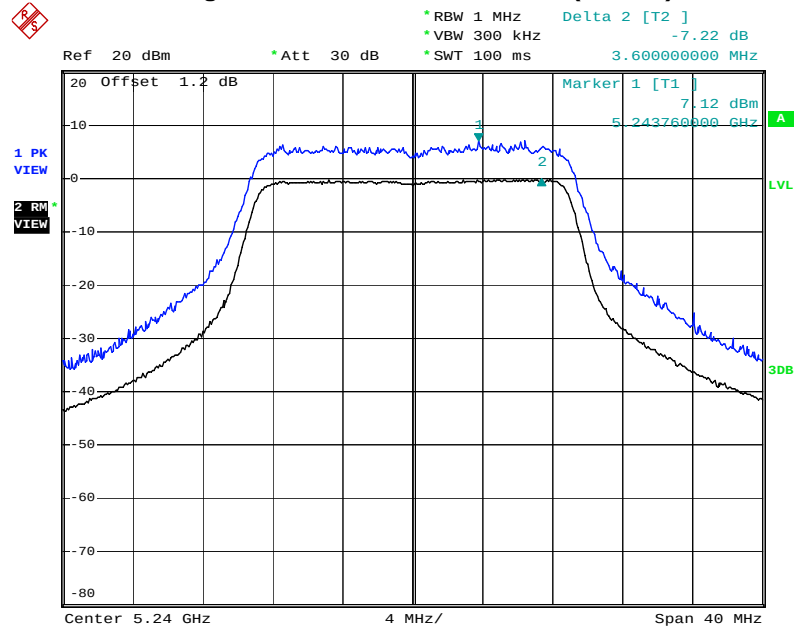
Date: 5.DEC.2011 16:04:23

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5200 MHz



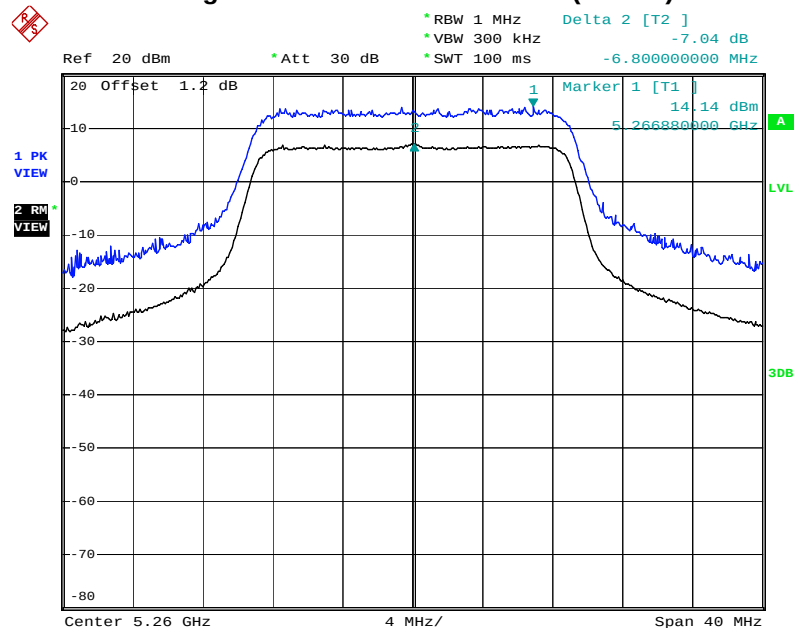
Date: 5.DEC.2011 16:13:11

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5240 MHz



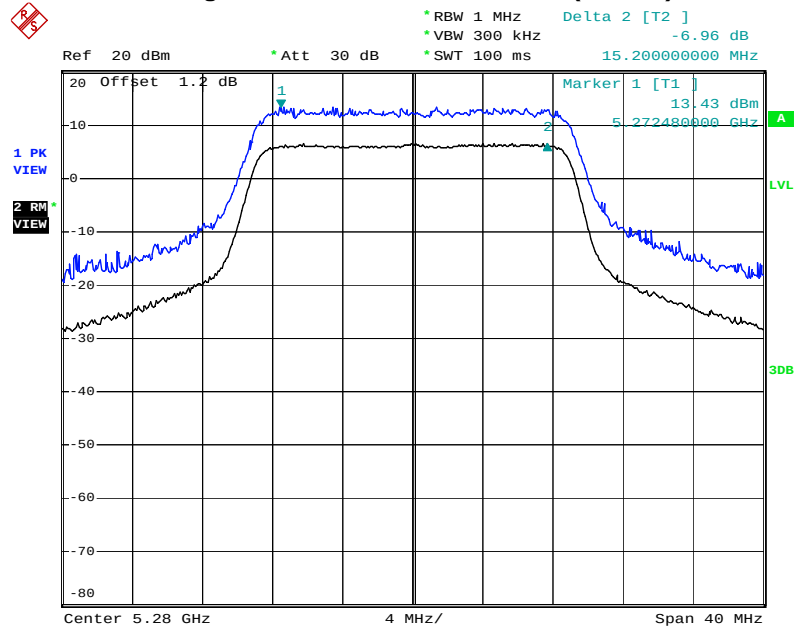
Date: 5.DEC.2011 16:22:43

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5260 MHz



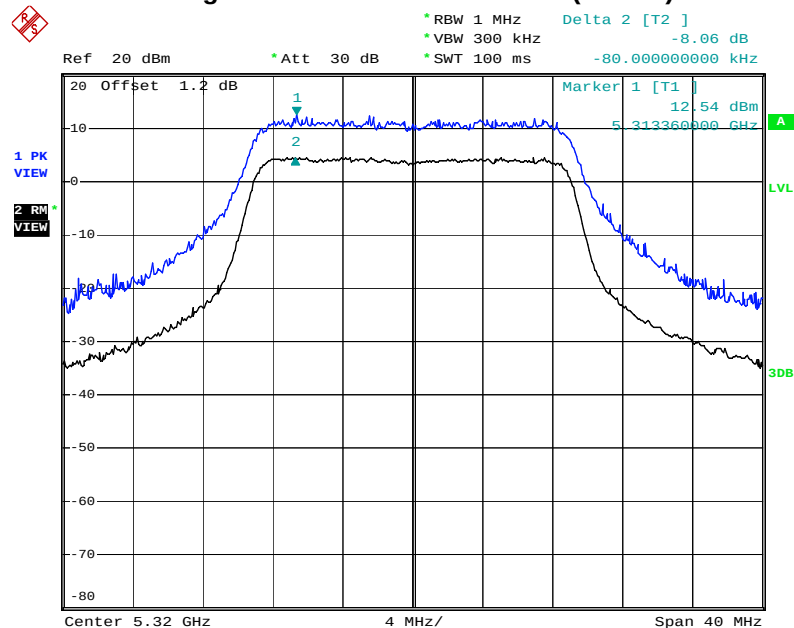
Date: 9.DEC.2011 17:29:59

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5280 MHz



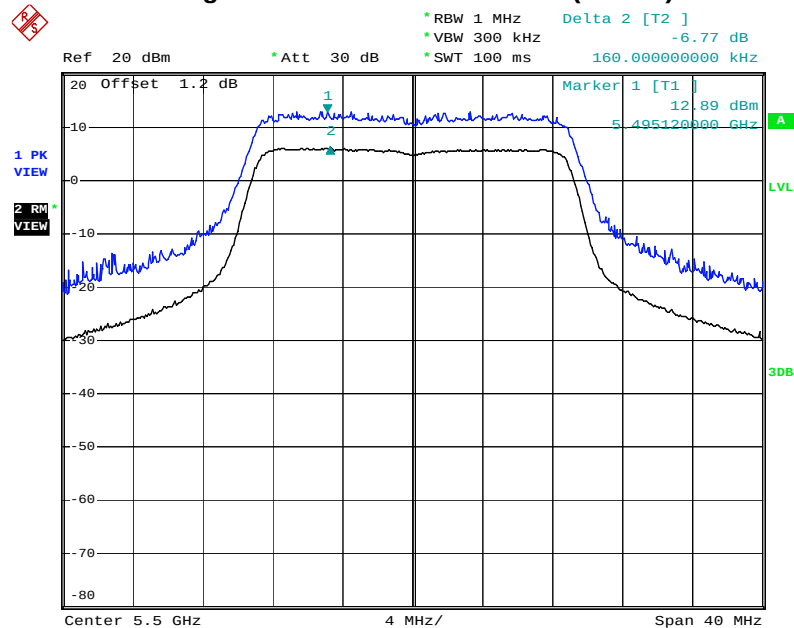
Date: 9.DEC.2011 17:39:32

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5320 MHz



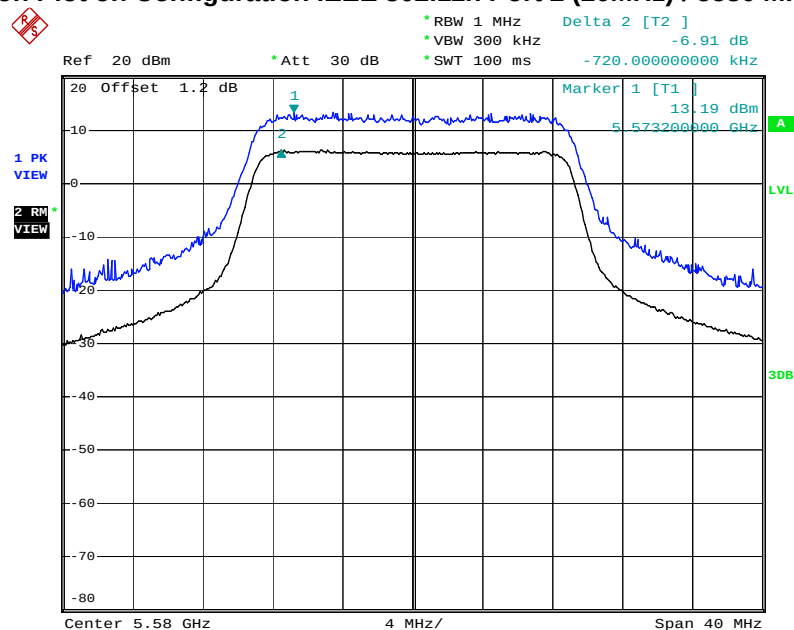
Date: 9.DEC.2011 17:52:59

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5500 MHz



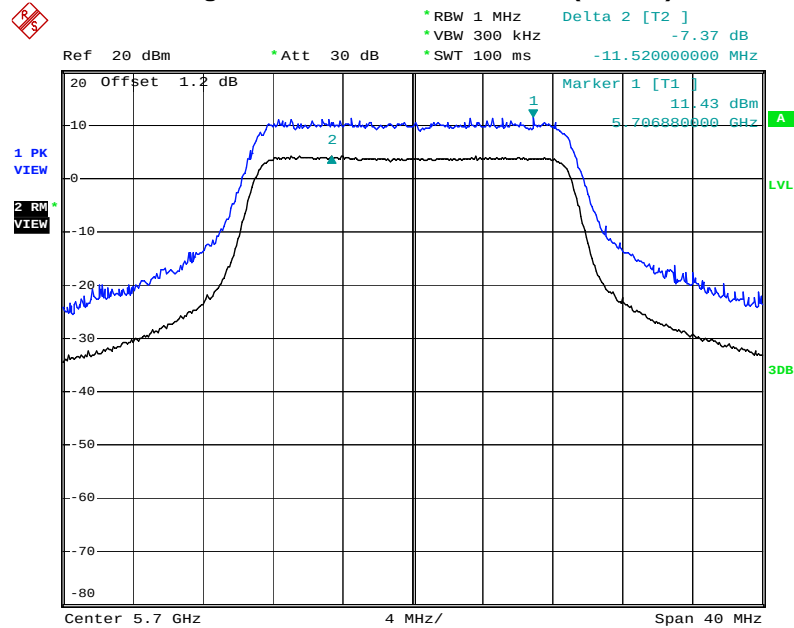
Date: 9.DEC.2011 17:58:59

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5580 MHz



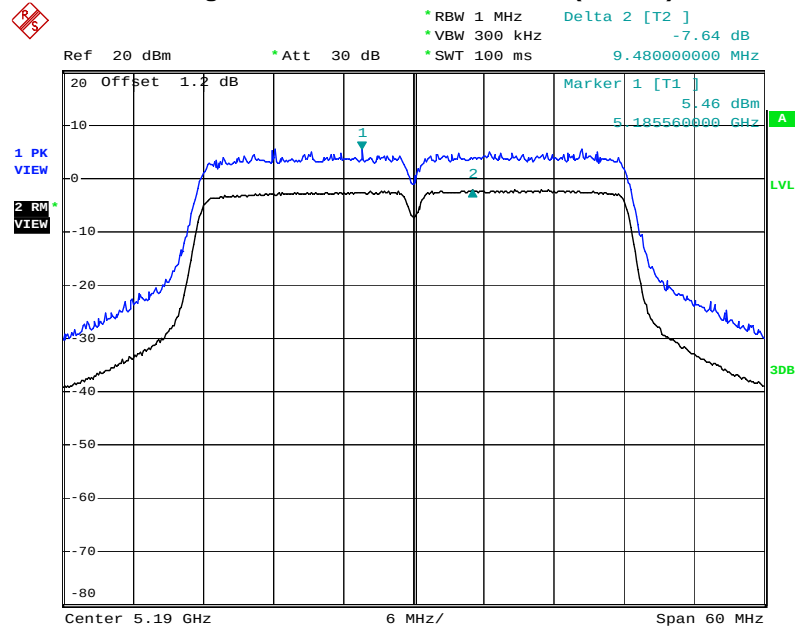
Date: 9.DEC.2011 18:09:13

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (20MHz) / 5700 MHz



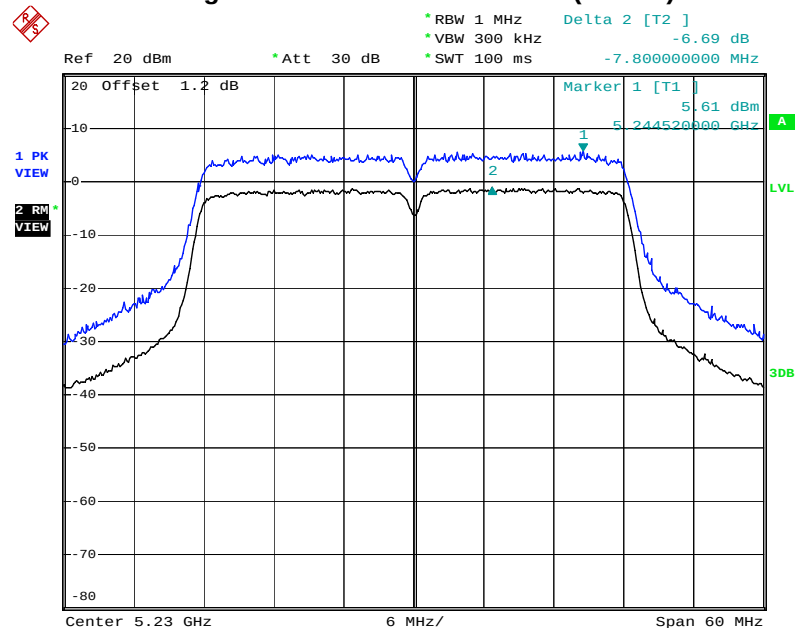
Date: 5.DEC.2011 17:24:20

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5190 MHz



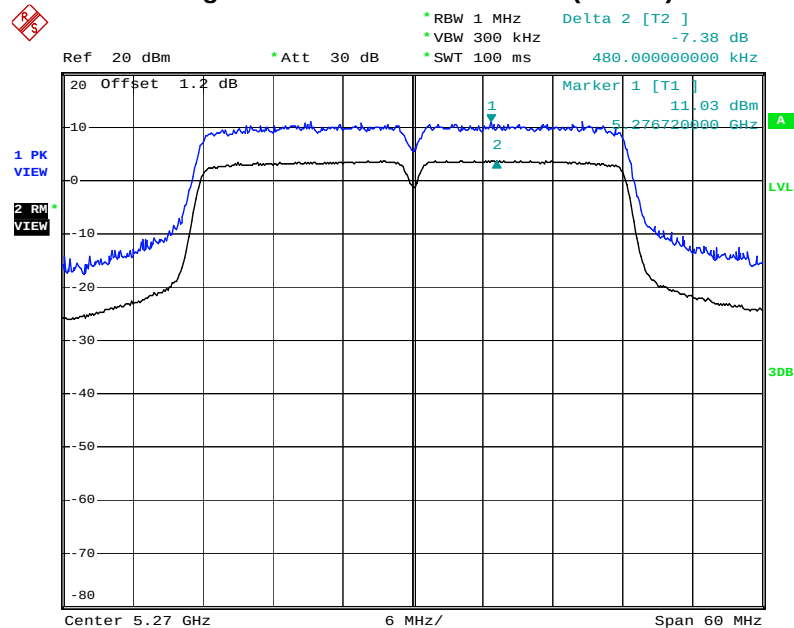
Date: 7.DEC.2011 17:53:52

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5230 MHz



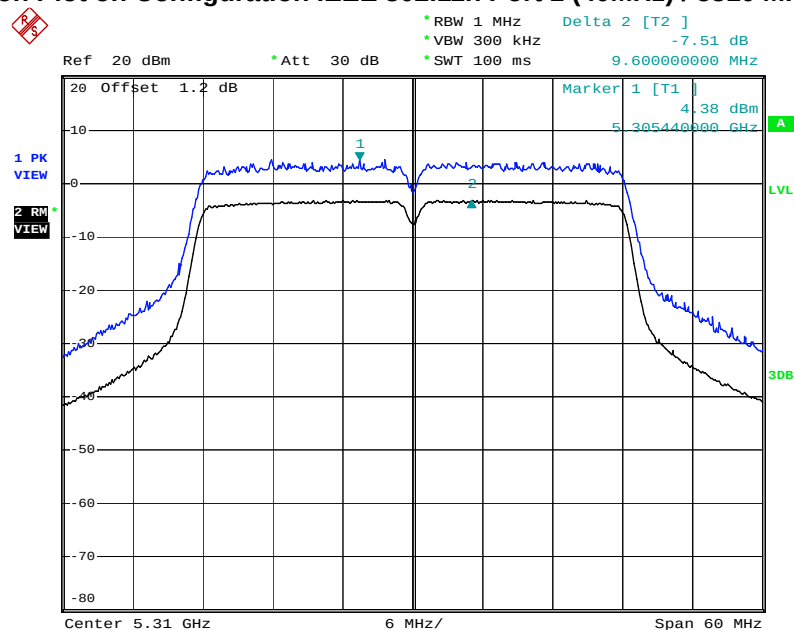
Date: 5.DEC.2011 19:59:23

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5270 MHz



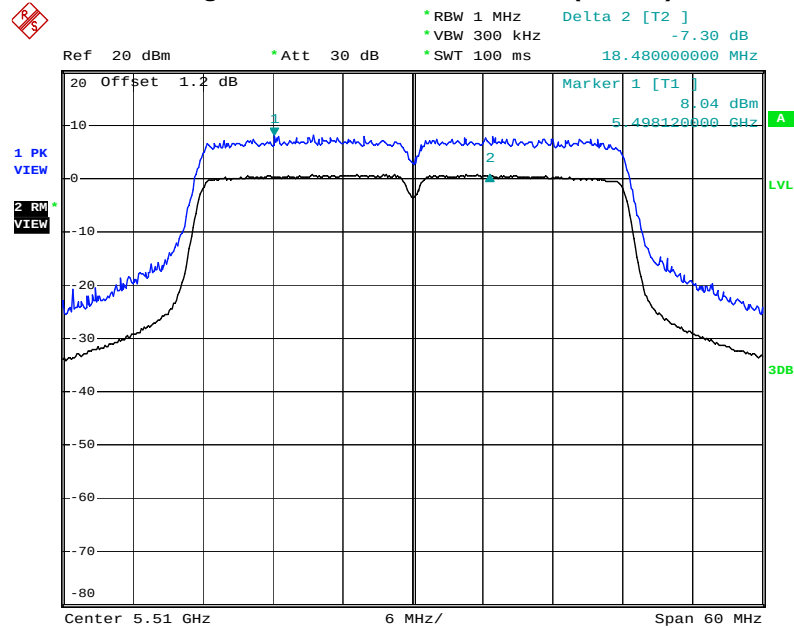
Date: 9.DEC.2011 18:31:52

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5310 MHz



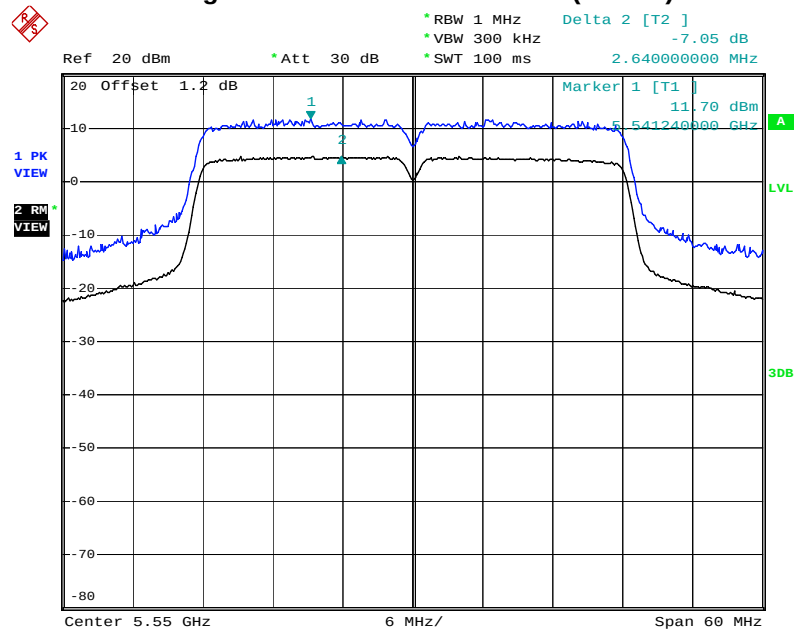
Date: 7.DEC.2011 18:05:28

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5510 MHz



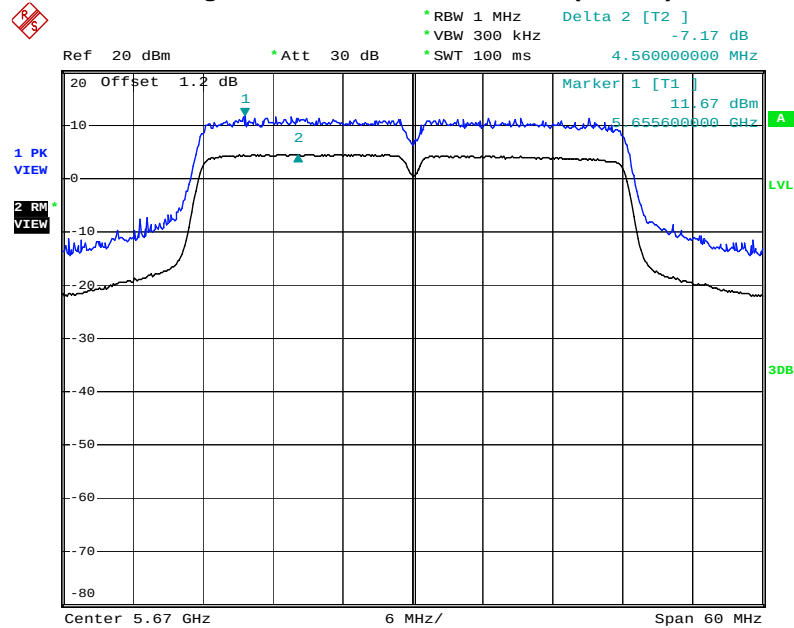
Date: 5.DEC.2011 20:18:28

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5550 MHz



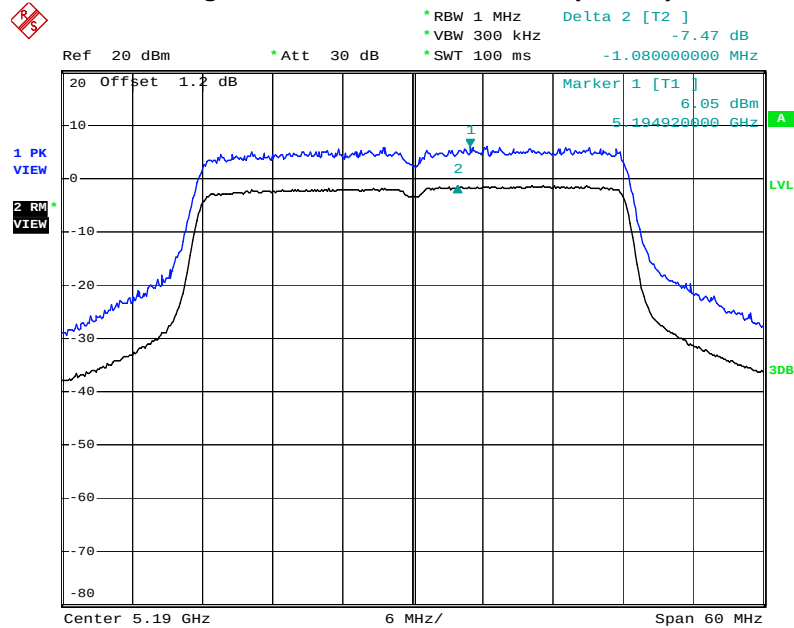
Date: 9.DEC.2011 18:48:10

Peak Excursion Plot on Configuration IEEE 802.11n Port 1 (40MHz) / 5670 MHz



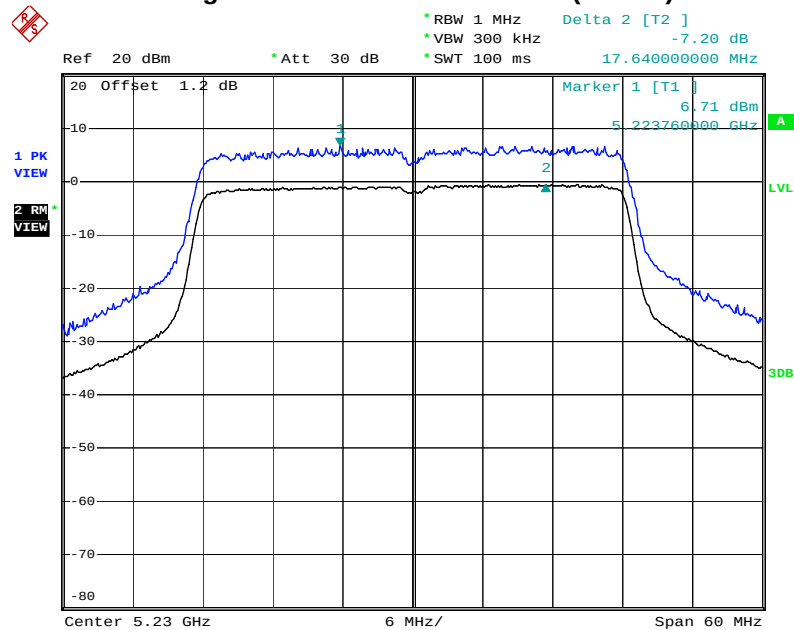
Date: 9.DEC.2011 18:53:30

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5190 MHz



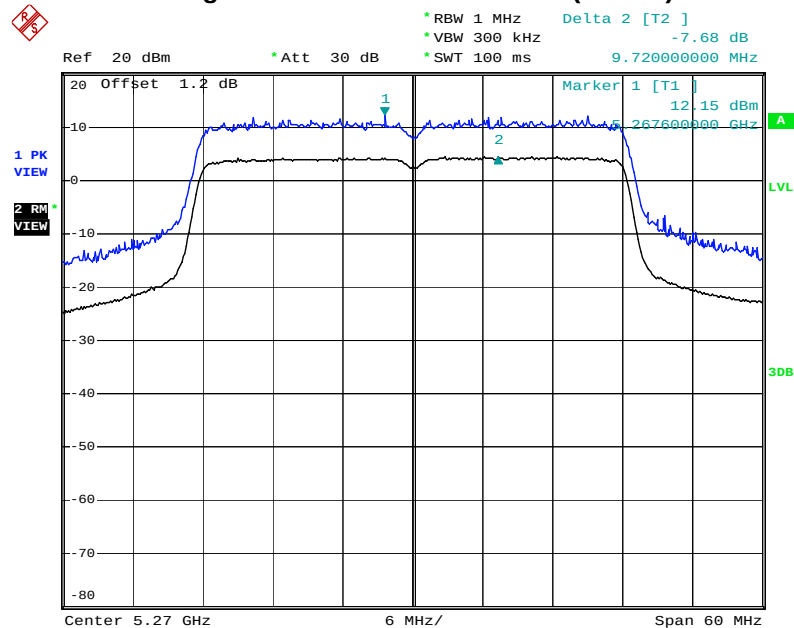
Date: 7.DEC.2011 17:56:43

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5230 MHz



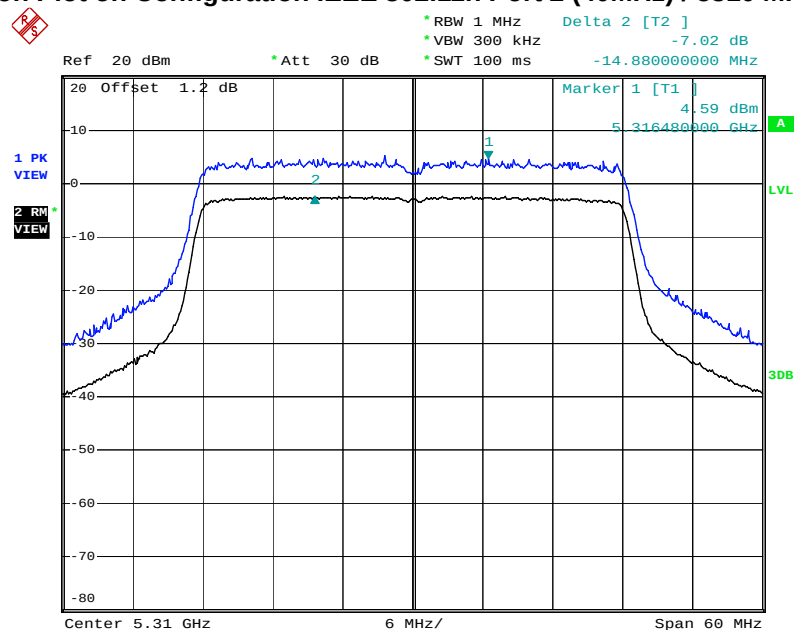
Date: 5.DEC.2011 20:02:38

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5270 MHz



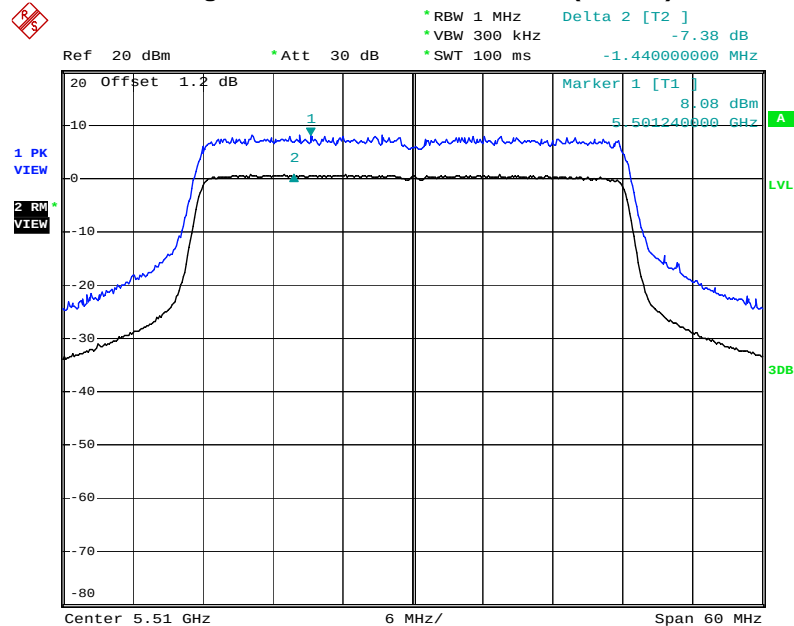
Date: 9.DEC.2011 18:33:13

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5310 MHz



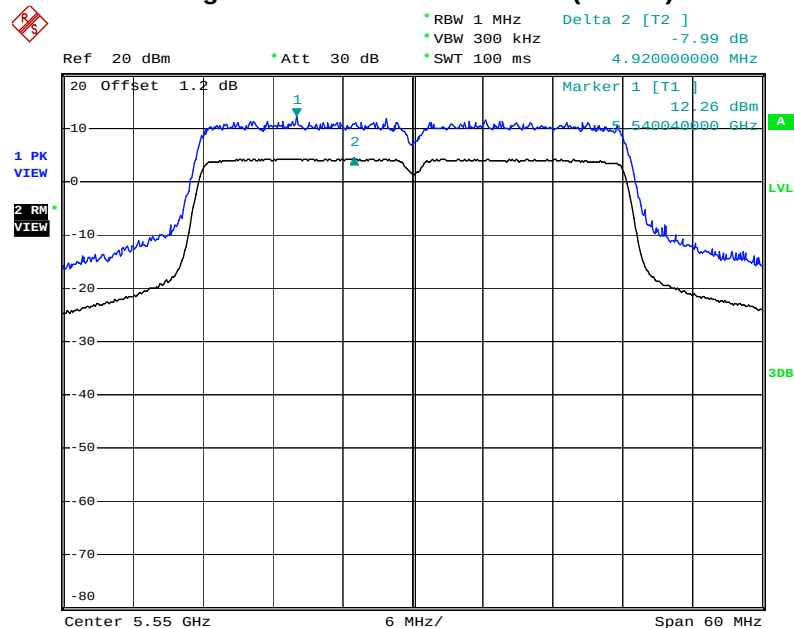
Date: 7.DEC.2011 18:07:57

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5510 MHz



Date: 5.DEC.2011 20:22:07

Peak Excursion Plot on Configuration IEEE 802.11n Port 2 (40MHz) / 5550 MHz



Date: 9.DEC.2011 18:47:01