

CFR 47 FCC Part 15.407

TEST REPORT

E.U.T. : **NoteBook PC**

Trade Name : MTC ; GTEAC

Model Number : 8212X

FCC ID : MAU8212X

Prepared for

MiTAC Technology Corp.

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Statement of Compliance

Applicant: MiTAC Technology Corp.
Manufacturer: Getac Technology (Kunshan) Co., Ltd.
EUT Description: NoteBook PC
Model No.: 8212X
Serial No.: N/A
Tested Power Supply: 120Vac; 60Hz
Date of Final Test: Dec. 10, 2007


Configuration of Measurements and Standards Used :

FCC Rules and Regulations Part 15 Subpart E

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

- Note:** 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of IETC

Report Issued: 2007/12/10

Test Engineer: 
Anya Lee

Checked: 
Danny Tang

Approved: 
Jerry Liu

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1 General Information

1.1 Description of Equipment Under Test

Equipment Under Test : NoteBook PC
Model Number : 8212X
Serial Number : N/A
Type of Sample Tested : Proto-type Pre-Production Mass Production
Applicant : **MiTAC Technology Corp.**
9th Fl., No. 75, Ming Sheng East Road, Sec. 3, Taipei, Taiwan, R.O.C.
Manufacturer : **Getac Technology (Kunshan) Co., Ltd.**
Kunshan Export Processing Zone, 215300 Jiangsu, P.R.China
Power Adapter : Manufacturer: Delta, M/N: ADP-45AD A, S/N: 86W0731000118
Input: 100~240Vac, 50~60Hz, 1.2A
Power cord: Non-shielded Detachable, 1.8 m w/o core
Output: 15Vdc, 3A
Power cable: Non-shielded Un-detachable, 1.8m w/o core
Operating Frequency : 5180MHz ~ 5320MHz
Channel Number : Refer to section 1.3 page 7.
Type of Modulation : OFDM; DSSS
Antenna description : This device uses PCB Printed antenna.

Antenna Gain	:	1.4dBi
Connector type	:	U.FL

Sample Receive date : Nov. 13, 2007
Date of Test : Nov. 15~16, 2007

Remark :

The imbedded wireless module (AW-NE770) is designed for 802.11a/b/g/n applications with a PCI Express Minicard interface. It has three receive chains and two transmit chains (2x3 configuration). The 2x3 configuration is implemented with two outside chains (Chain 0 and 2) as Tx/Rx and the middle Chain (chain 1) as Rx only.

1.2 Technical Specifications

Key parts	SKU A
Memory	Hynix 1Gbit DDR
CPU	Intel McCaslin - Stealey, 800MHz
LCD Monitor	Toshiba, PI-LTD121EW6S
Bluetooth	BTM-203B EDRV2.0 ver1.2
HDD	Toshiba, (40GB, 1.8", PATA), Model: MK4009GAL
ODD	TEAK, (DVDSuper-multi) DVW28ECPUBA
Modem	Billionton, Model :RD002-D330
Wireless LAN	AzureWave, (802.11abgn, Mini PCI-E) Model : AW-NEW770 (1024)
3G	Novatel, EU870D
AC/DC Adapter	Delta, ADP-45ADA
Battery (LITHIUM)	SANYO, 6Cell, 11.1V/5.2AH

WIRELESS Module Information (AW-NE770)

Host Interface	MINI PCI Express
Chipset	Atheros AR5418 (MAC/Baseband) + AR5133 (Radio)
Network Standard	IEEE 802.11a/b/g
Modulation Techniques	BPSK, QPSK, 16QAM, 64QAM
Modulation Technology	OFDM, CCK, DSSS
Media Access Technology	CSMA/CA
Supported Data Rates	IEEE802.11a/b/g/n Stand Mode: up to 300Mbps

1.3 Table for Carrier Frequencies

802.11a / 802.11n (20MHz)

CH No.	36	40	44	48	52	56	60	64
CF (MHz)	5180	5200	5220	5240	5260	5280	5300	5320

802.11n (40MHz)

CH No.	38	46	54	62
CF (MHz)	5190	5230	5270	5310

1.4 Test Facility

- Site Description** : ☒OATS 2 ☒Conduction 2
- Name of Firm** : Interocean EMC Technology Corp.
- Company web** : <http://www.ietc.com.tw>
- Site 1, 2 Location** : No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei County, Taiwan, R.O.C.
- Site 3, 4 Location** : No. 12, Ruei-Shu Valley, Ruei-Ping Tsun, Lin-Kou Hsiang, Taipei County, Taiwan, R.O.C.
- Site Filing** :
 - Federal Communication Commissions – USA
Registration No.: 96399 (OATS 1 & 2)
Registration No.: 518958 (OATS 3 & 4)
 - Voluntary Control Council for Interference by Information Technology Equipment (VCCI) – Japan
Registration No. (Conducted Room): C-1094
Registration No. (Conducted Room): T-271
Registration No. (OATS 1): R-1040
Registration No. (OATS 2): R-1041
 - Industry Canada (IC)
Submission: 113543
 - Japan Electrical Safety & Environment Technology Laboratories (JET)
Registration No.: 04S03-01
- Site Accreditation** :
 - Bureau of Standards and Metrology and Inspection (BSMI) – Taiwan, R.O.C.
Accreditation No.:
SL2-IN-E-0026 for CNS13438 / CISPR22
SL2-R1-E-0026 for CNS13439 / CISPR13
SL2-R2-E-0026 for CNS13439 / CISPR13
SL2-A1-E-0026 for CNS13783-1 / CISPR14-1
 - National Voluntary Laboratory Accreditation Program (NVLAP) - USA
NVLAP LAB CODE 200458
 - Nemko AS
Authorization No.: ELA 181A
Authorization No.: ELA 181B
 - Taiwan Accreditation Foundation (TAF)
Accrditation No.: 1113



1.5 Test Equipment

Instrument	Manufacturer	Model	Serial No.	Last Calibration
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100135	2007/08/03
L.I.S.N.	Schwarzbeck	NNLK8121	8121417	2007/07/17
L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100176	2007/02/14
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	843602/02	2007/09/10
RF Cable	HARBOUR	RG400	CBL04	2007/08/09
Spectrum Analyzer	Agilent	8564EC	4046A00331	2007/03/29
Spectrum Analyzer	R&S	FSQ	200406	2007/03/29
Biconical Antenna	Schwarzbeck	VHA 9103	2484	2007/09/06
Log Antenna	Schwarzbeck	UHALP 9108	A 0765	2007/09/06
Pre-Amplifier	HP	8447D	2944A10321	2007/07/17
Preamplifier	Agilent	8449B	3008A01434	2007/04/03
RF Cable	Ultra Link	CBL02	CBL02	2007/05/04
Cable	IETC	CBL07	CBL07	2007/05/08

Note: All instrument upon which need to be calibrated are within calibration period of 1 year.

Instrument	Manufacturer	Model	Serial No.	Last Calibration
Horn Antenna	COM-POWER	AH-118	10081	2006/05/16
Horn Antenna	SCHWARZBECK	BBHA9120	9120D-583	2006/12/18
Synthesizer Signal Generator	Anritsu	MG3691A	043321	2007/11/22
FSP30 Spectrum Analyzer	Rohde & Schwarz	FSP30	100245	2007/03/07
Wireless Access Point	Cisco	AIR-AP1242AG-A-K9	FTX1135131S1	N/A
Spectrum Analyzer	Rohde & schwarz	SEK30	100186	2006/11/13

Note: All instrument upon which need to be calibrated are within calibration period of 2 year.

1.6 Summary of Measurement

Report Clause	Test Parameter	Reference Document CFR47 Part15	Results
2	Peak output power test	§15.407 (a)	Pass
3	26dB Bandwidth	§15.407 (a)	Pass
4	Power Spectrum Density test	§15.407 (a)	Pass
5	Peak excursion to average ratio test	§15.407(a)(6)	Pass
6	Radiated emission test (FCC Part 15.209)	§15.209	Pass
7	Band edge test	§15.209, 15.205	Pass
8	Radiated spurious emission test	§15.407(b), 15.209, 15.205	Pass
9	RF antenna conducted spurious emission test	§15.407(b)	Pass
10	AC Power Line Conducted Emission test	§15.407(b)(6), 15.207	Pass
11	Dynamic Frequency Selection (DFS) test	§15.407(h)	Pass

1.7 Justification

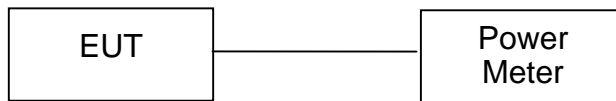
The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of the frequency band were all reach limit requirement, thus we evaluate the EUT pass the specified test.

2 Peak output power test

2.1 Limits

Operating Frequency (MHz)	Output power limit
5150~5250	< 50mW (17dBm) or 4dBm+10logB
5250~5350, 5470~5725	< 250mW (24dBm) or 11dBm+10logB
5725~5825	< 1W (30dBm) or 17dBm+10logB

2.2 Configuration of Measurement



2.3 Test Procedure

According to FCC §15.407(a) the power output was measured on the EUT using a 50ohm SMA cable connected to power meter via power sensor. Peak output power was read directly from power meter. The test was performed at 3 channels (lowest, middle and highest).

2.4 Test Result

PASS.

The final test data is shown on as following pages.

Maximum output power

5G (Single Tx)				
Mode : 802.11 a Chain 0				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
36	5180	16.72	17	-0.28
44	5220	16.31	17	-0.69
48	5240	16.48	17	-0.52
52	5260	16.46	24	-7.54
60	5300	15.40	24	-8.60
64	5320	15.05	24	-8.95

Mode : 802.11 a Chain 2				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
36	5180	14.46	17	-2.54
44	5220	14.81	17	-2.19
48	5240	15.65	17	-1.35
52	5260	15.24	24	-8.76
60	5300	15.63	24	-8.37
64	5320	14.99	24	-9.01

Mode : 802.11 n (HT20) Chain 0				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
36	5180	10.14	17	-6.86
44	5220	11.15	17	-5.85
48	5240	10.16	17	-6.84
52	5260	10.05	24	-13.95
60	5300	8.77	24	-15.23
64	5320	8.34	24	-15.66

Mode : 802.11 n (HT20) Chain 2				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
36	5180	7.93	17	-9.07
44	5220	8.72	17	-8.28
48	5240	8.42	17	-8.58
52	5260	8.03	24	-15.97
60	5300	8.96	24	-15.04
64	5320	8.30	24	-15.70

Mode : 802.11 n (HT40) Chain 0				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
38	5190	10.06	17	-6.94
46	5230	10.63	17	-6.37
54	5270	10.12	24	-13.88
62	5310	8.46	24	-15.54

Mode : 802.11 n (HT40) Chain 2				
CH	Frq. MHz	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
38	5190	7.76	17	-9.24
46	5230	8.42	17	-8.58
54	5270	8.10	24	-15.90
62	5310	8.49	24	-15.51

5G (Dual Tx)					
Mode : 802.11 n (HT20)					
CH	Maximum transmit power (dBm)		Total Power (dBm)	Limit (dBm)	Margin (dB)
	Chain 0	Chain 2			
36	10.17	8.02	12.24	17	-4.76
44	10.19	8.43	12.41	17	-4.59
48	10.24	9.02	12.68	17	-4.32
52	9.98	8.45	12.29	24	-11.71
60	9.14	8.92	12.04	24	-11.96
64	8.51	8.55	11.54	24	-12.46

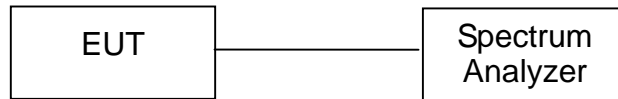
Mode : 802.11 n (HT40)					
CH	Maximum transmit power (dBm)		Total Power (dBm)	Limit (dBm)	Margin (dB)
	Chain 0	Chain 2			
38	10.23	8.26	12.37	17	-4.63
46	12.94	8.85	14.37	17	-2.63
54	10.24	8.26	12.37	24	-11.63
62	8.78	8.94	11.87	24	-12.13

3 26dB bandwidth

3.1 Limits

No regulation limit, for reference purpose.

3.2 Configuration of Measurement



3.3 Test Result

The final test data is shown on as following pages.

26dB Bandwidth

Test Mode : 802.11a		
Test Chain : 0		
Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
36	5180	24.10
44	5220	26.40
48	5240	23.59
52	5260	23.59
60	5300	24.03
64	5320	23.59

Test Mode : 802.11a		
Test Chain : 2		
Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
36	5180	24.10
44	5220	26.64
48	5240	23.40
52	5260	23.65
60	5300	22.95
64	5320	23.53

Test Mode : 802.11n (HT20)		
Test Chain : 0		
Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
36	5180	23.72
44	5220	23.76
48	5240	24.23
52	5260	24.29
60	5300	23.97
64	5320	24.23

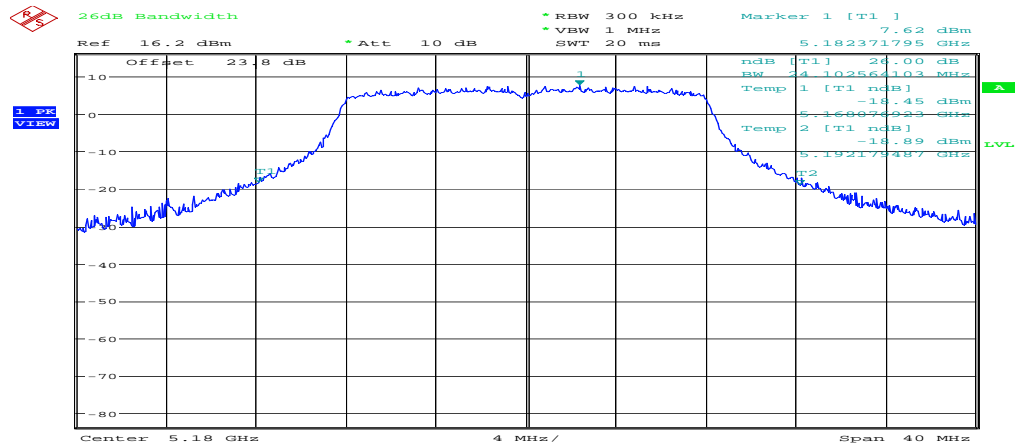
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Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
36	5180	24.42
44	5220	23.92
48	5240	24.55
52	5260	24.36
60	5300	24.23
64	5320	24.17

Test Mode : 802.11n (HT40)		
Test Chain : 0		
Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
38	5190	45.48
46	5230	45.29
54	5270	45.87
62	5310	45.96

Test Mode : 802.11n (HT40)		
Test Chain : 2		
Test CH		26dB Bandwidth (MHz)
CH No.	Freq. (MHz)	
38	5190	44.90
46	5230	44.52
54	5270	45.48
62	5310	45.67

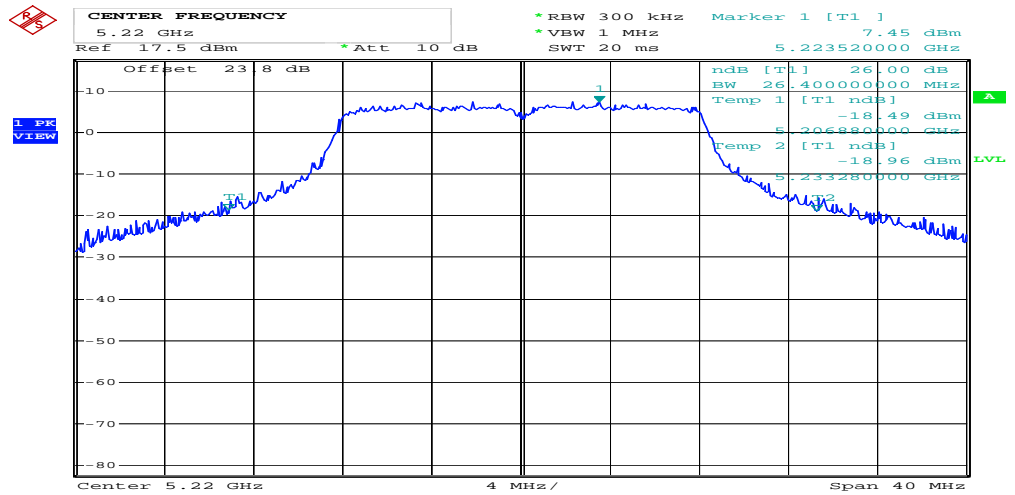
26dB Bandwidth

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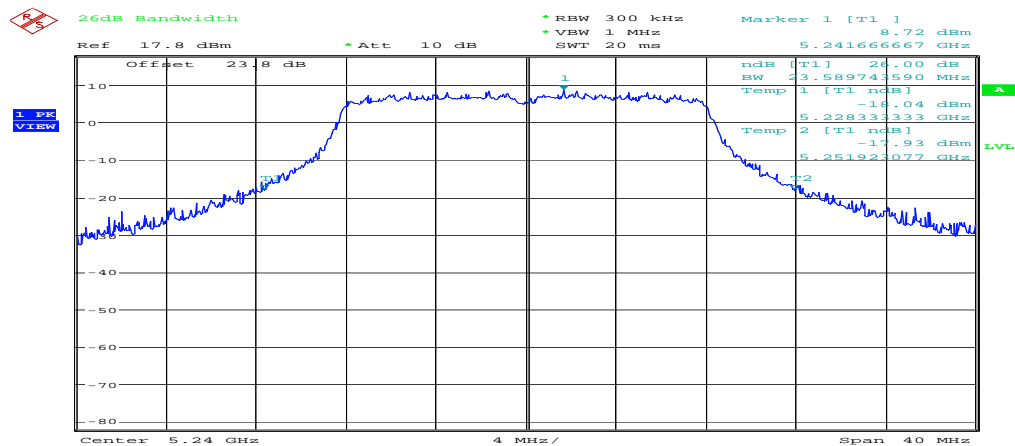
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802.11 a Chain 0 CH44 5220MHz



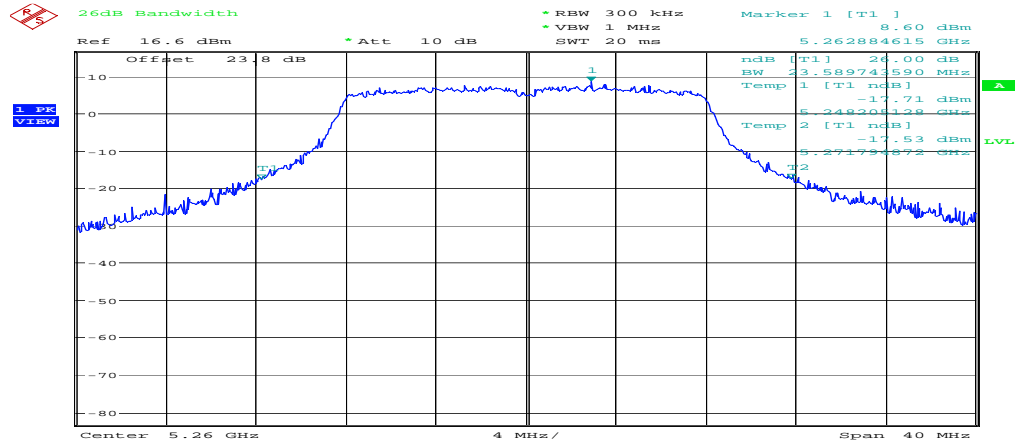
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802.11 a Chain 0 CH48 5240MHz



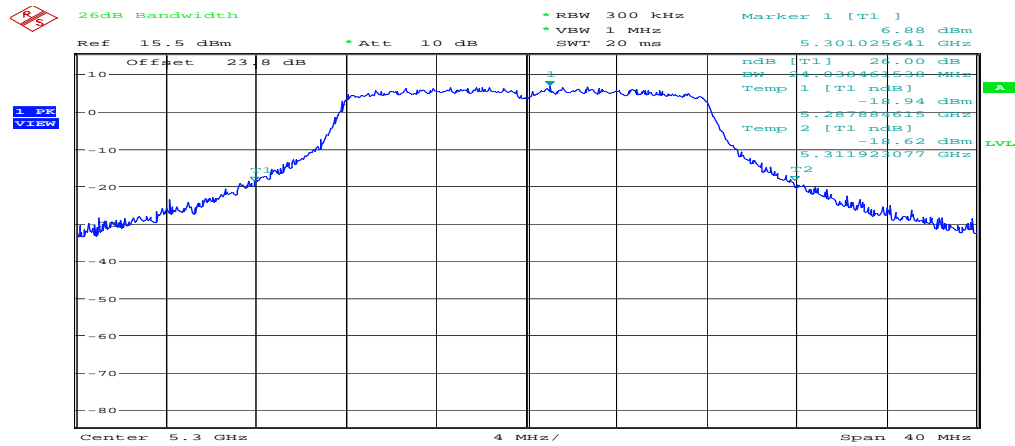
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802.11 a Chain 0 CH52 5260MHz



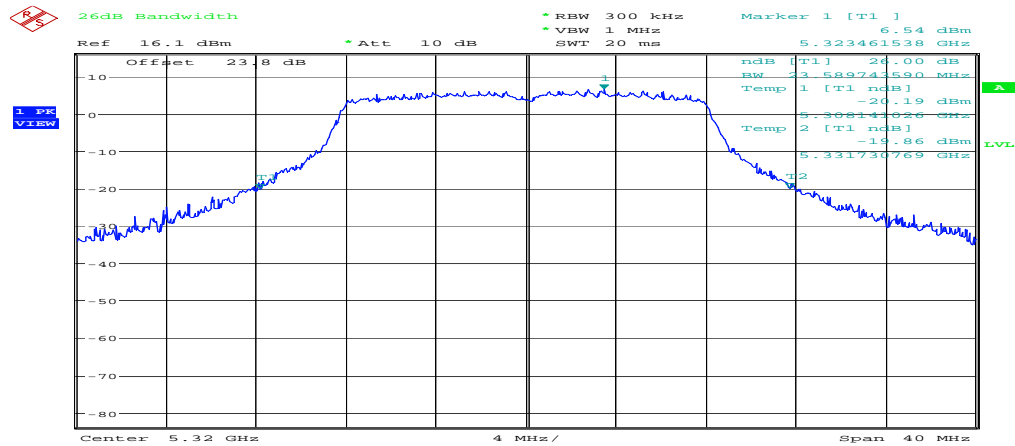
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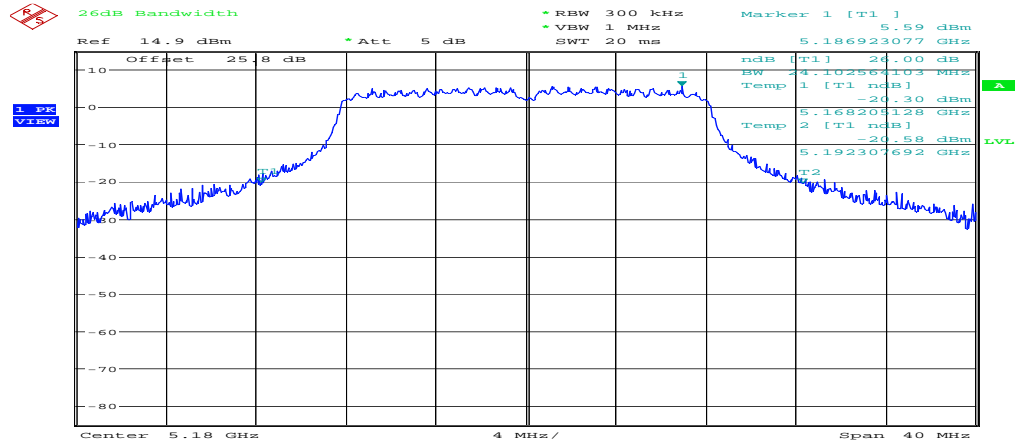
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802.11 a Chain 0 CH64 5320MHz



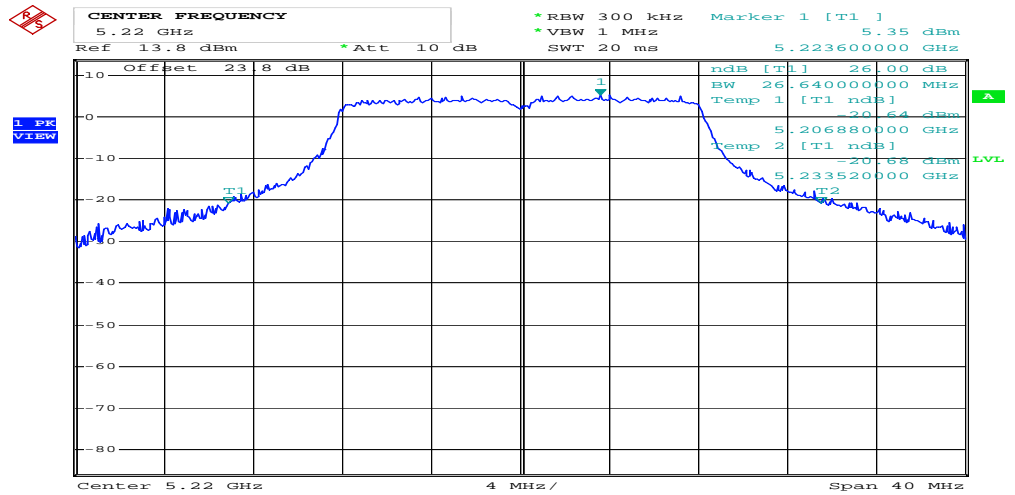
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802.11 a Chain 2 CH36 5180MHz



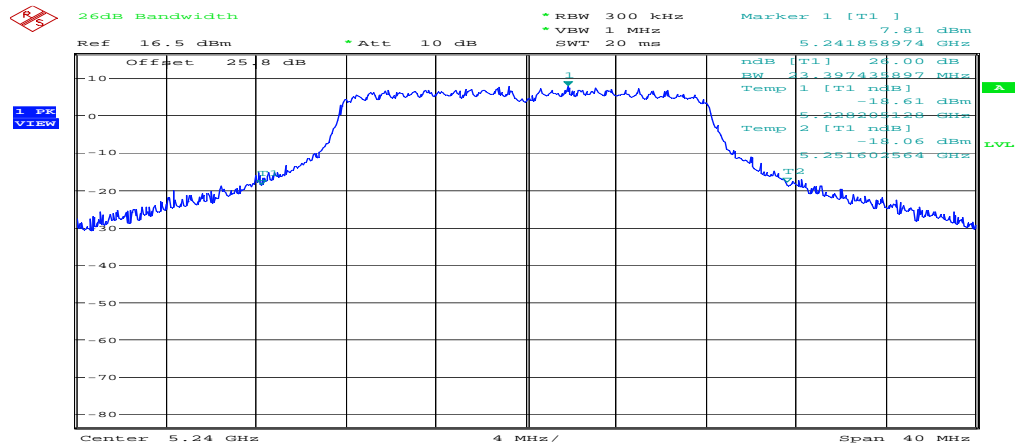
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802.11 a Chain 2 CH44 5220MHz



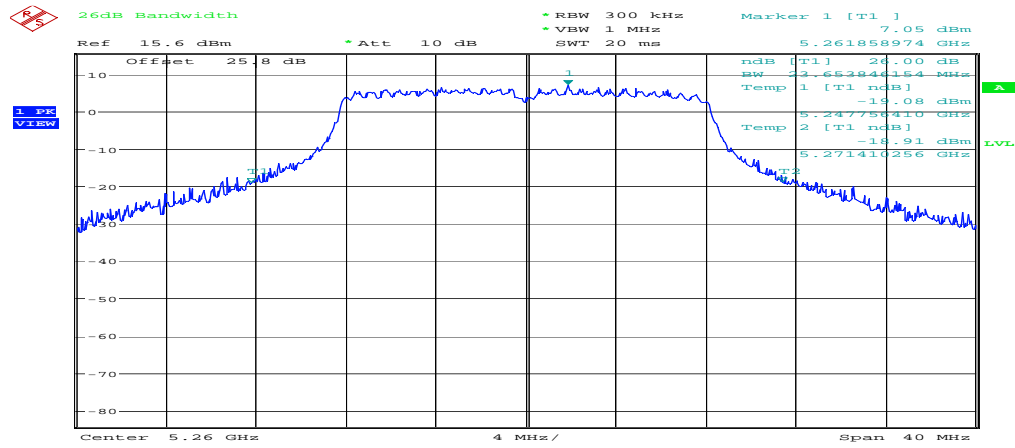
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802.11 a Chain 2 CH48 5240MHz



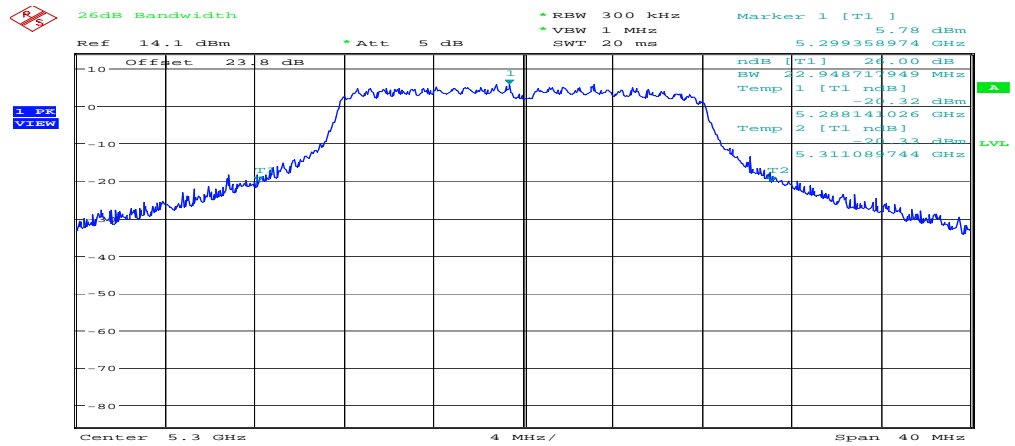
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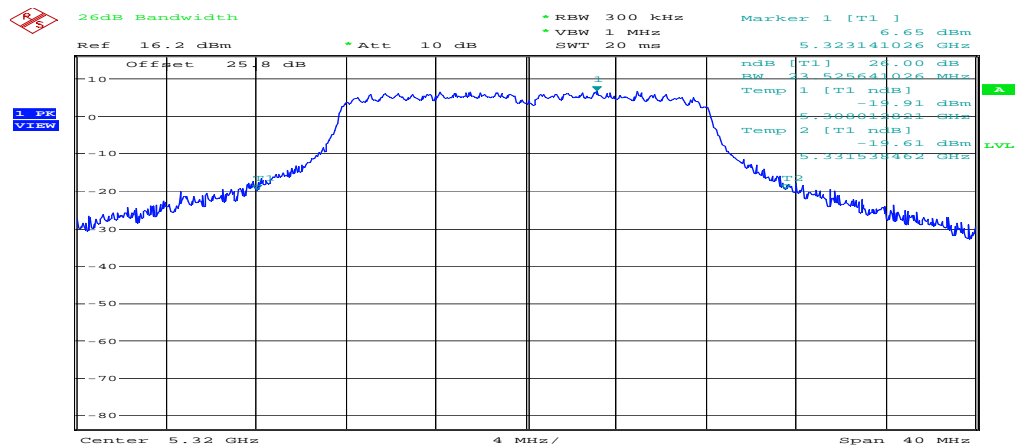
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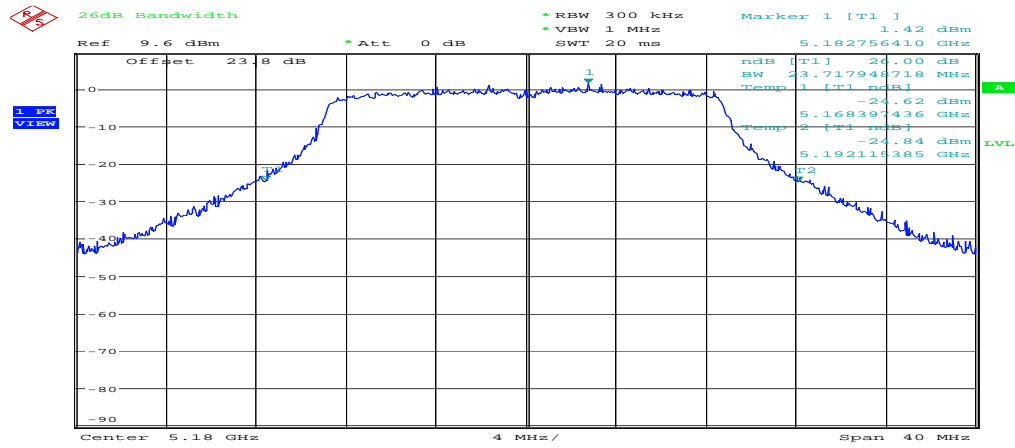
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802.11 a Chain 2 CH64 5320MHz



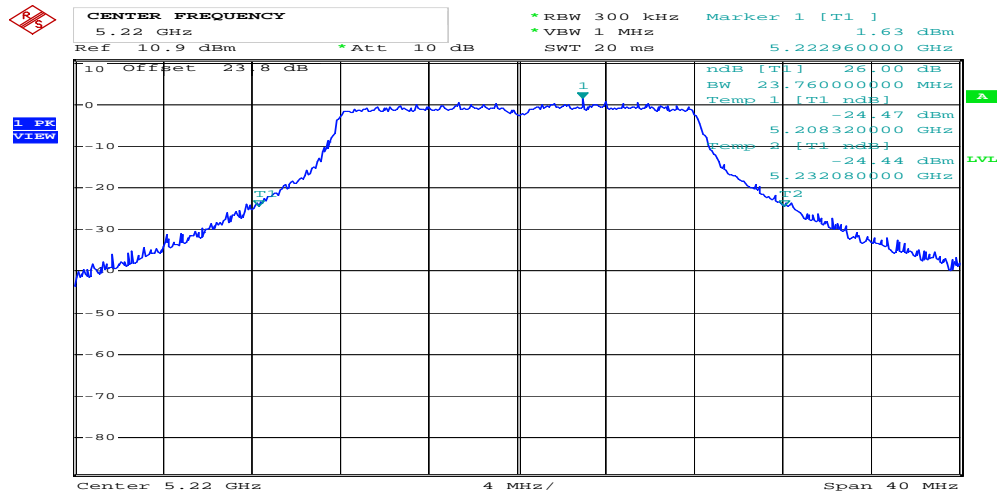
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802.11 n (HT20) Chain 0 CH36 5180MHz



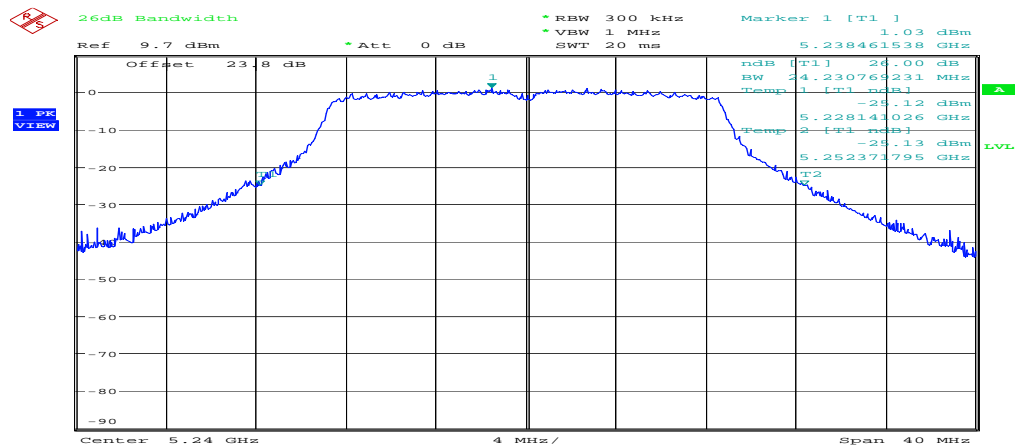
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802.11 n (HT20) Chain 0 CH44 5220MHz



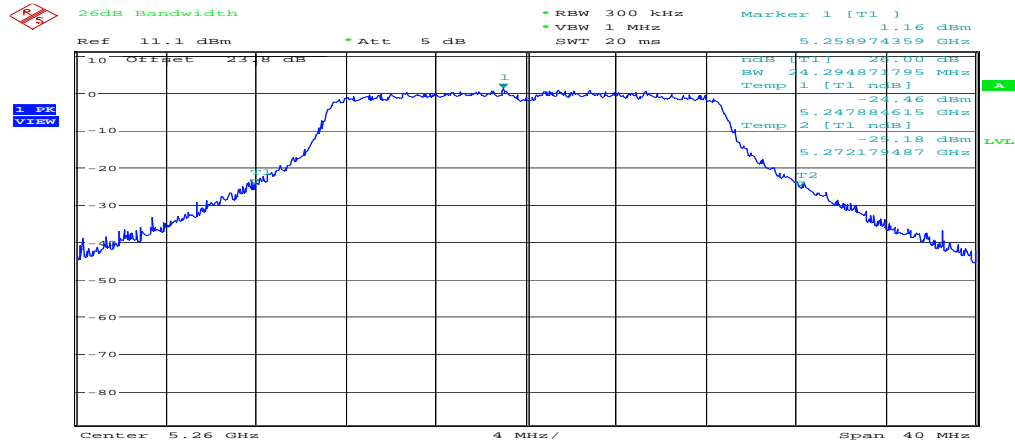
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802.11 n (HT20) Chain 0 CH48 5240MHz



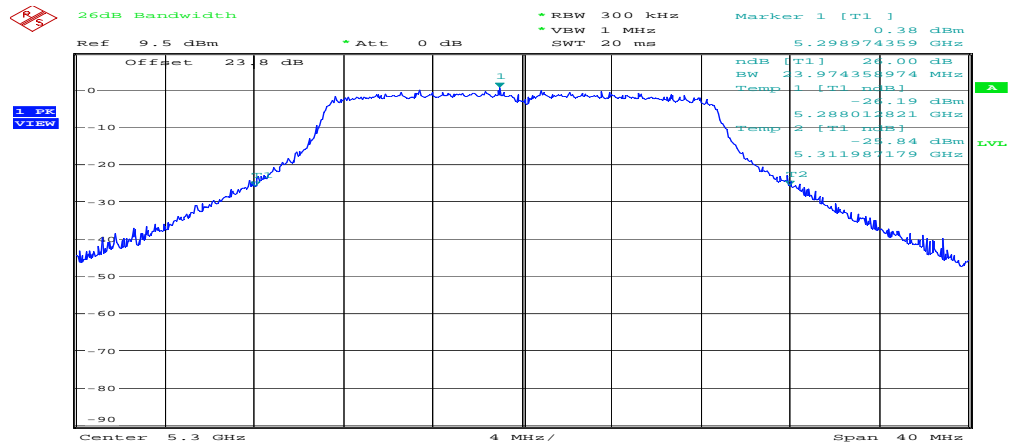
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802.11 n (HT20) Chain 0 CH52 5260MHz



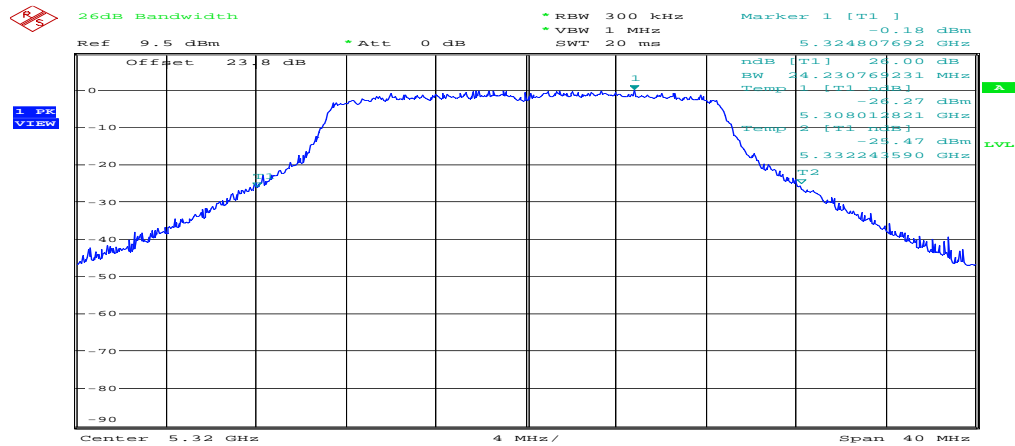
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802.11 n (HT20) Chain 0 CH60 5300MHz



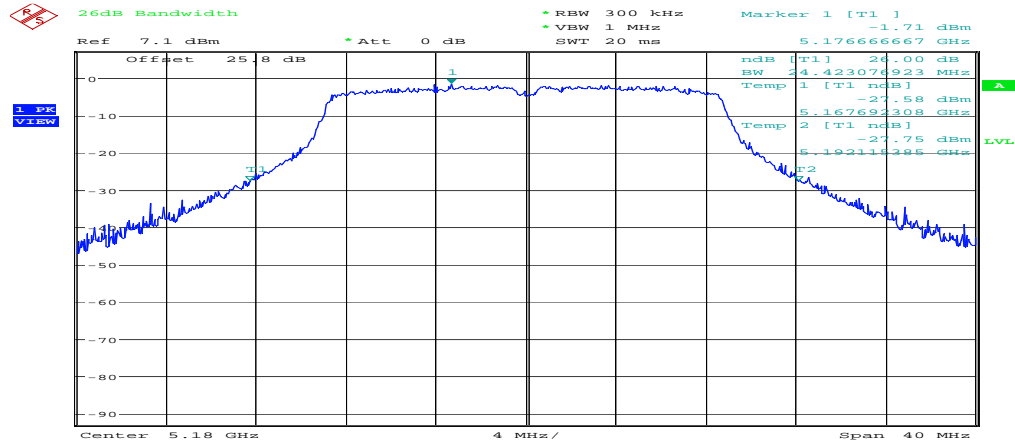
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 Date: 25.NOV.2007 20:45:42

802.11 n (HT20) Chain 0 CH64 5320MHz



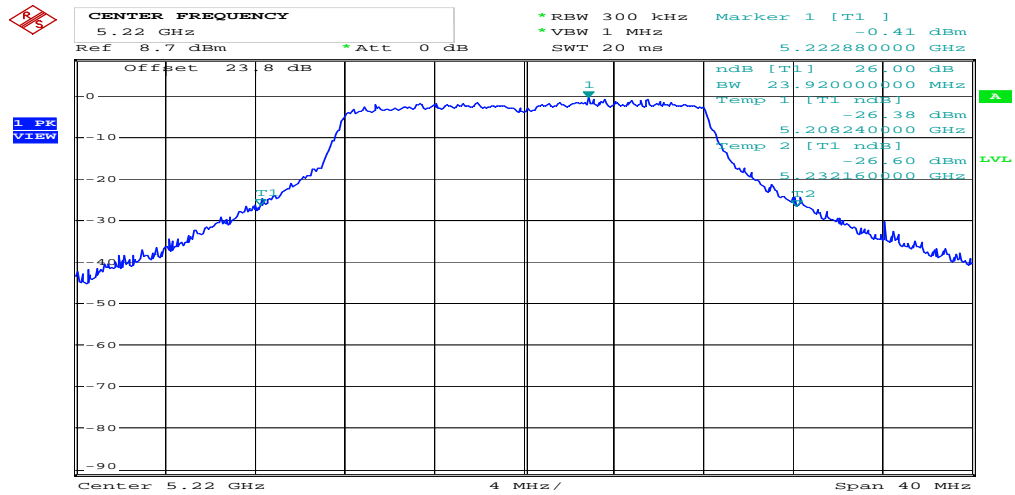
802.11a 5320MHz ()
 Date: 25.NOV.2007 20:42:16

802.11 n (HT20) Chain 2 CH36 5180MHz



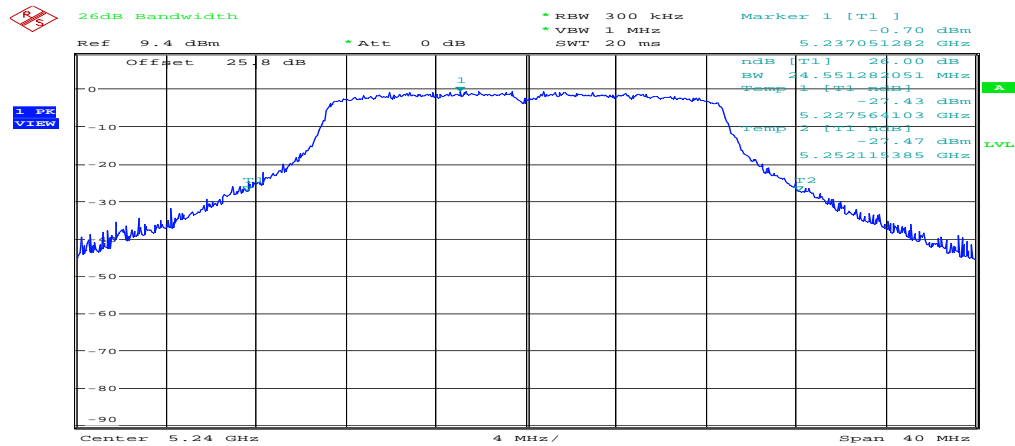
802.11a 5180MHz ()
 Date: 25.NOV.2007 21:17:52

802.11 n (HT20) Chain 2 CH44 5220MHz



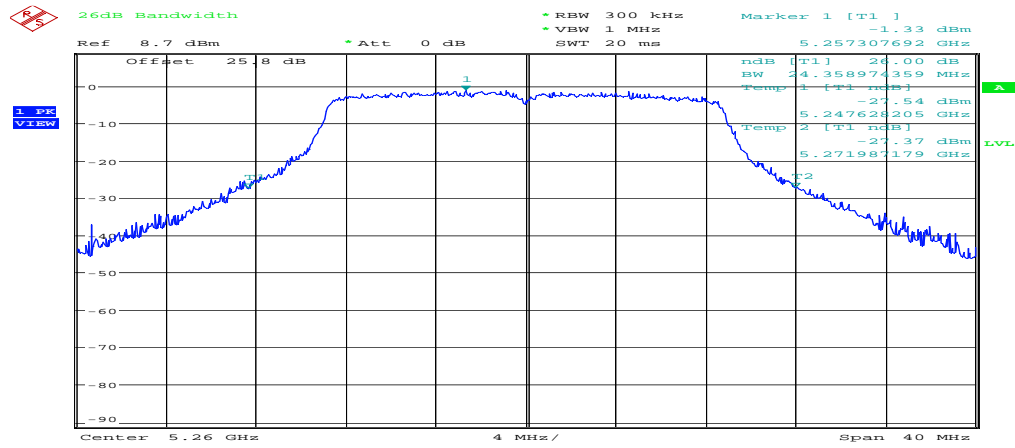
Comment: 802.11n(20) 5220MHz
 Date: 12.DEC.2007 15:47:47

802.11 n (HT20) Chain 2 CH48 5240MHz



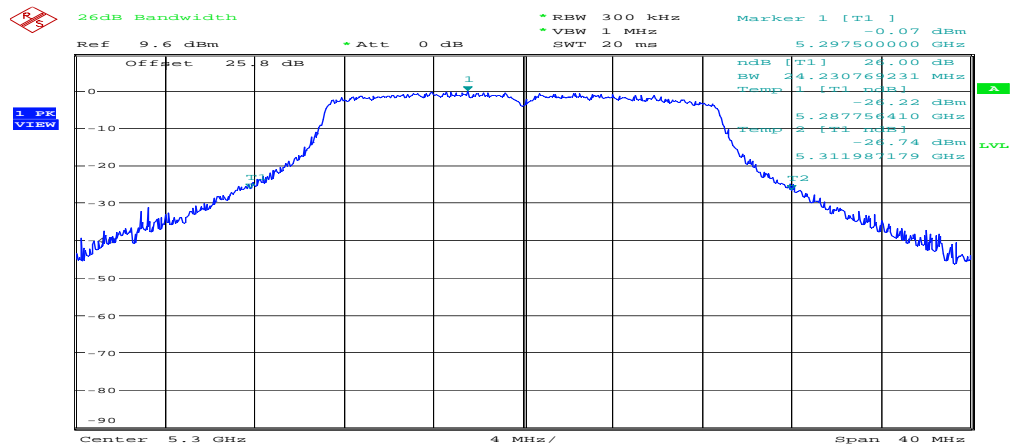
802.11a 5240MHz ()
 Date: 25.NOV.2007 21:15:58

802.11 n (HT20) Chain 2 CH52 5260MHz



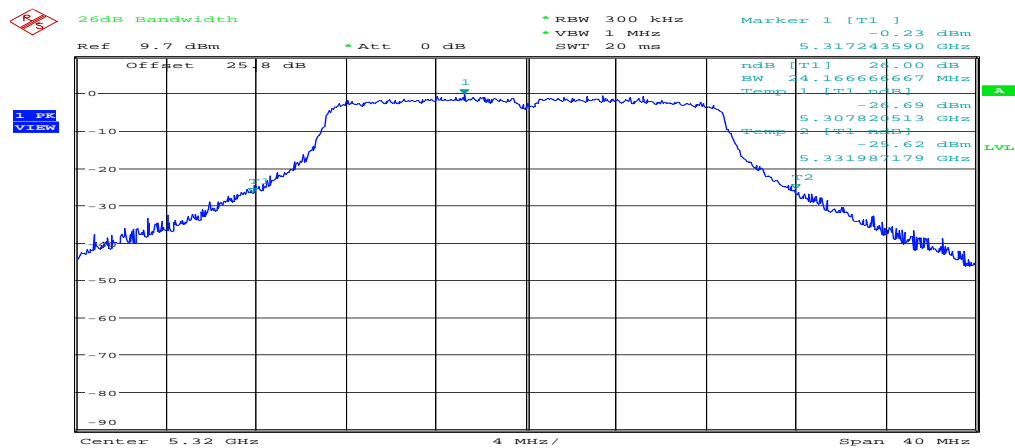
802.11a 5260MHz ()
Date: 25.NOV.2007 21:13:54

802.11 n (HT20) Chain 2 CH60 5300MHz



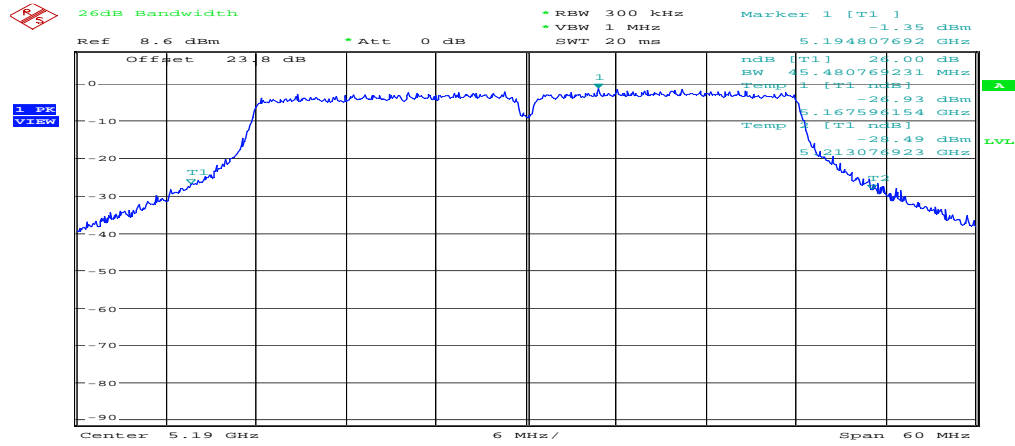
802.11a 5300MHz ()
Date: 25.NOV.2007 21:02:50

802.11 n (HT20) Chain 2 CH64 5320MHz



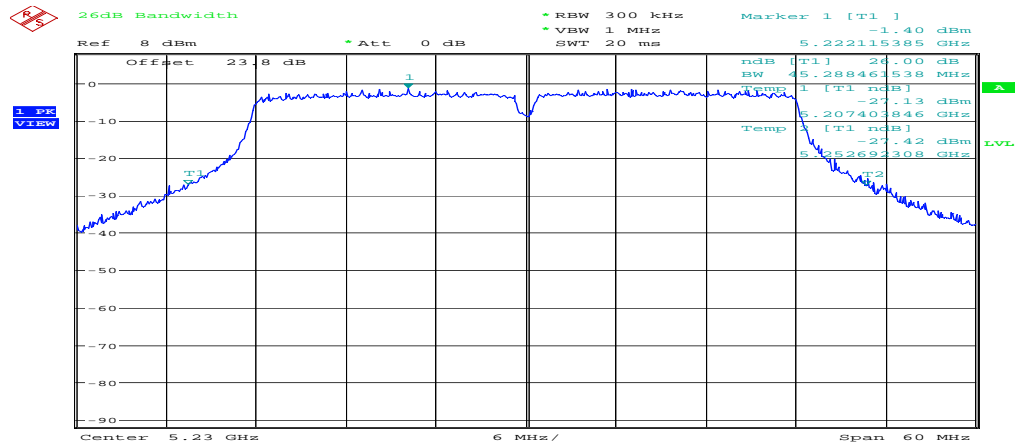
802.11a 5320MHz ()
Date: 25.NOV.2007 21:10:19

802.11 n (HT40) Chain 0 CH38 5190MHz



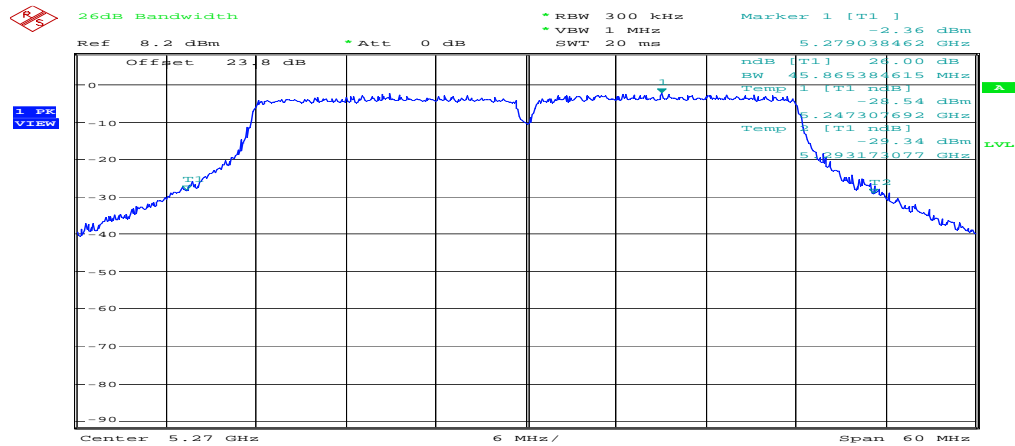
802.11a 5190MHz
Date: 26.NOV.2007 14:22:07

802.11 n (HT40) Chain 0 CH46 5230MHz



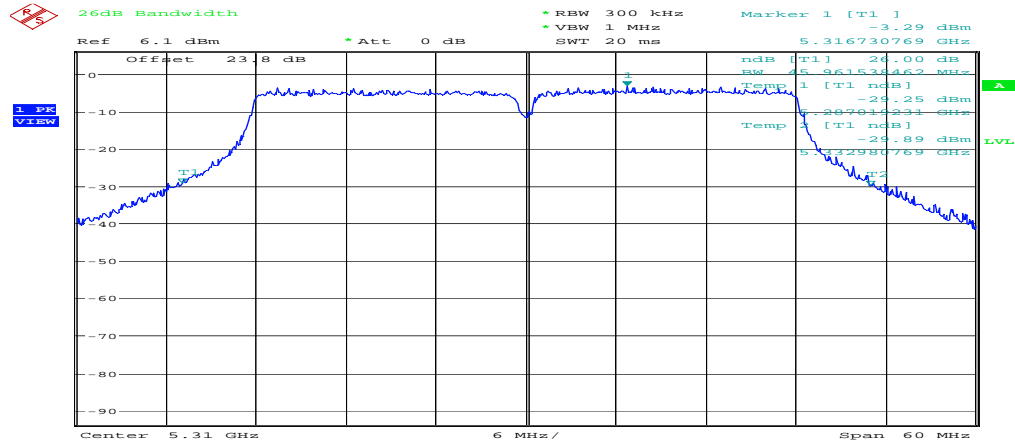
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:26:46

802.11 n (HT40) Chain 0 CH54 5270MHz



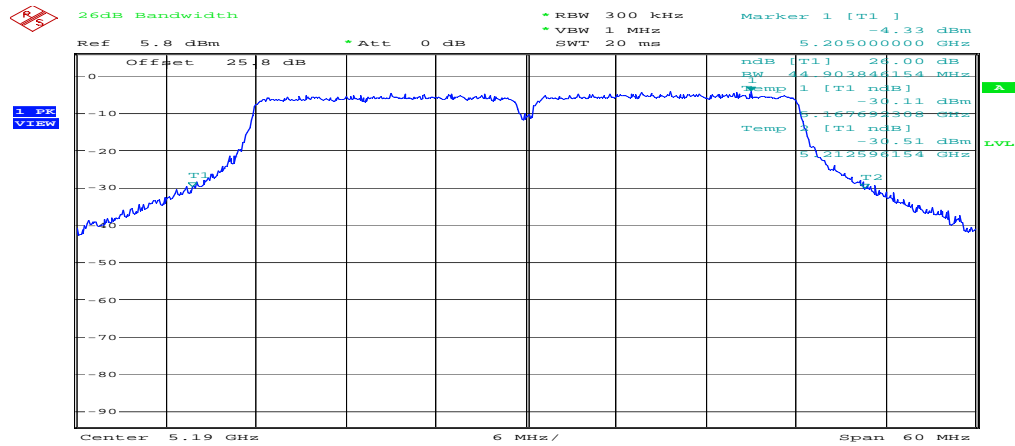
802.11n(40) 5270MHz
Date: 26.NOV.2007 14:28:59

802.11 n (HT40) Chain 0 CH62 5310MHz



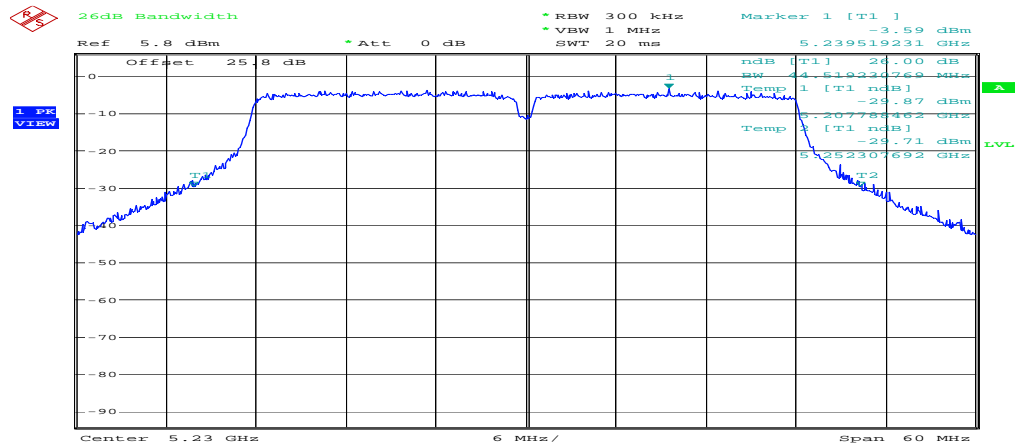
802.11n(40) 5310MHz
Date: 26.NOV.2007 14:30:59

802.11 n (HT40) Chain 2 CH38 5190MHz



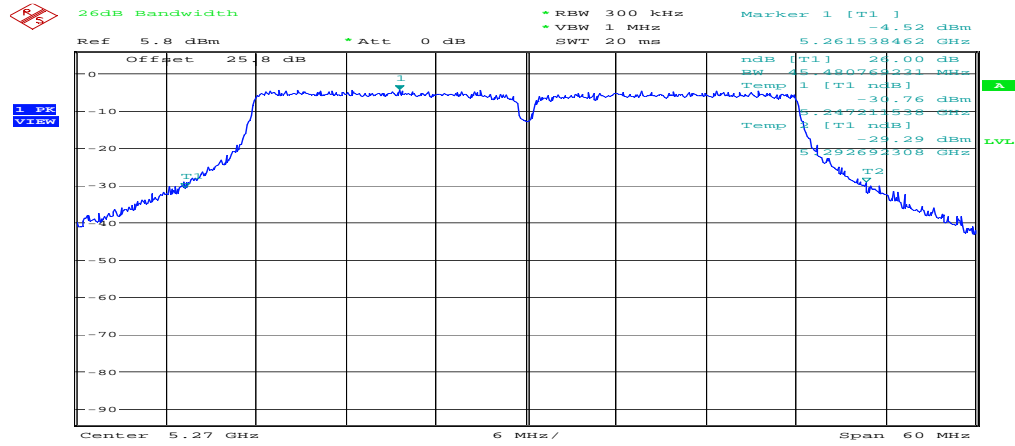
802.11n(40) 5190MHz
Date: 26.NOV.2007 14:41:20

802.11 n (HT40) Chain 2 CH46 5230MHz



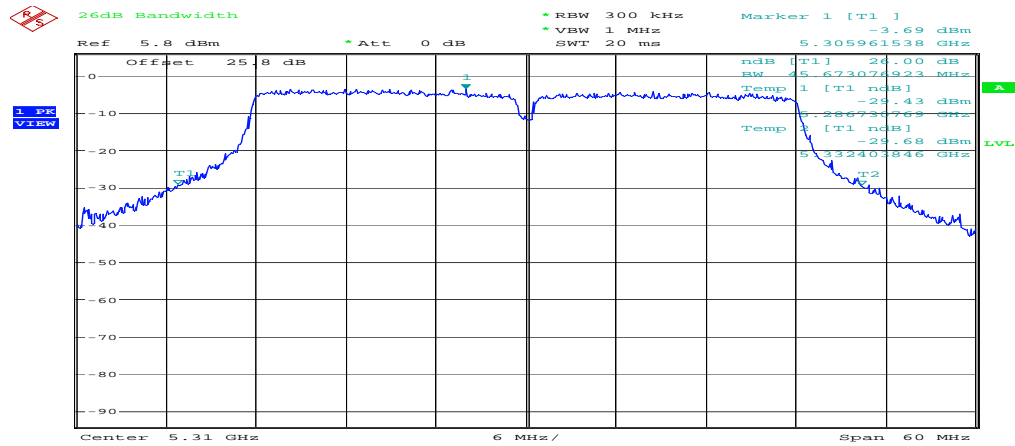
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:39:32

802.11 n (HT40) Chain 2 CH54 5270MHz



802.11n(40) 5270MHz
 Date: 26.NOV.2007 14:37:39

802.11 n (HT40) Chain 2 CH62 5310MHz



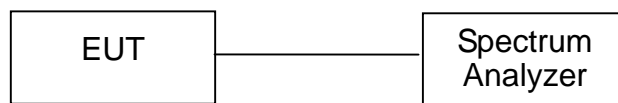
802.11n(40) 5310MHz
 Date: 26.NOV.2007 14:34:38

4 Power Spectrum Density test

4.1 Limits

Operating Frequency (MHz)	Power density limit
5150~5250	< 4dBm/MHz
5250~5350, 5470~5725	< 11dBm/MHz
5725~5825	< 17dBm/MHz

4.2 Configuration of Measurement



4.3 Test Procedure

The power spectrum density was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 1MHz, the video bandwidth set at 3MHz. Power spectrum density was read directly at the EUT antenna terminals.

4.4 Test Result

PASS.

The final test data is shown on as following pages.

Power spectral density

Single Tx

802.11a Chain 0			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
36	2.72	4	-1.28
44	1.73	4	-2.27
48	2.60	4	-1.40
52	2.23	11	-8.77
60	1.38	11	-9.62
64	0.90	11	-10.10

802.11a Chain 2			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
36	-0.58	4	-4.58
44	0.45	4	-3.55
48	1.42	4	-2.58
52	0.54	11	-10.46
60	1.26	11	-9.74
64	2.12	11	-8.88

802.11a (HT20) Chain 0			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
36	-4.86	4	-8.86
44	-4.19	4	-8.19
48	-3.86	4	-7.86
52	-4.62	11	-15.62
60	-5.36	11	-16.36
64	-5.84	11	-16.84

802.11a (HT20) Chain 2			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
36	-7.07	4	-11.07
44	-5.69	4	-9.69
48	-5.65	4	-9.65
52	-6.31	11	-17.31
60	-5.21	11	-16.21
64	-5.98	11	-16.98

802.11a (HT40) Chain 0			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
38	-7.71	4	-11.71
46	-7.69	4	-11.69
54	-8.06	11	-19.06
62	-9.60	11	-20.60

802.11a (HT40) Chain 2			
CH	Power Spectral Density (dBm)	Limit (dBm)	Margin (dB)
38	-9.77	4	-13.77
46	-9.04	4	-13.04
54	-10.06	11	-21.06
62	-10.12	11	-21.12

Power spectral density

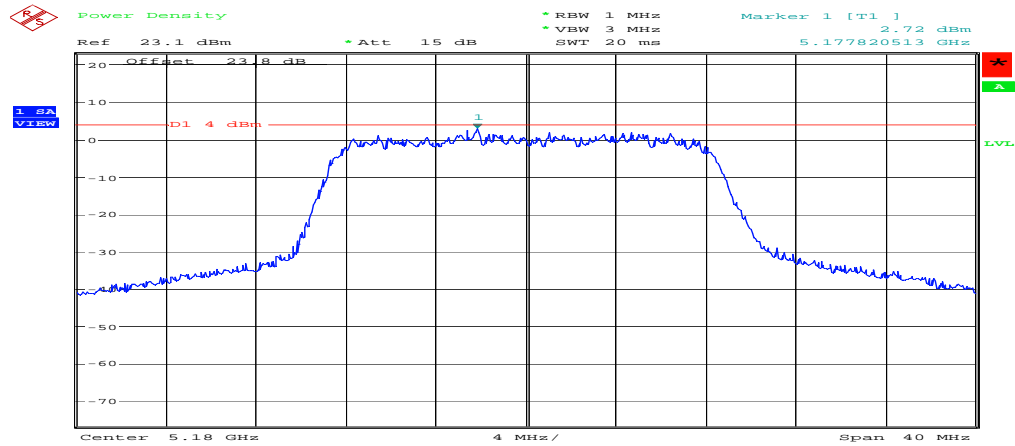
Dual Tx

Test Mode	CH	Power Spectral Density (dBm)		Maximum EIRP Spectral Density (dBm)	Limit (dBm)	Margin (dB)
		Chain 0	Chain 2			
802.11n (HT20)	36	-4.59	-6.74	-2.52	4	-6.52
	44	-3.75	-5.58	-1.56	4	-5.56
	48	-4.22	-5.53	-1.82	4	-5.82
	52	-4.36	-6.37	-2.24	11	-13.24
	60	-5.48	-5.57	-2.51	11	-13.51
	64	-5.80	-5.64	-2.71	11	-13.71
802.11n (HT40)	38	-7.43	-9.57	-5.36	4	-9.36
	46	-6.56	-9.27	-4.70	4	-8.70
	54	-7.78	-10.32	-5.86	11	-16.86
	62	-9.42	-9.45	-6.42	11	-17.42

Power spectral density

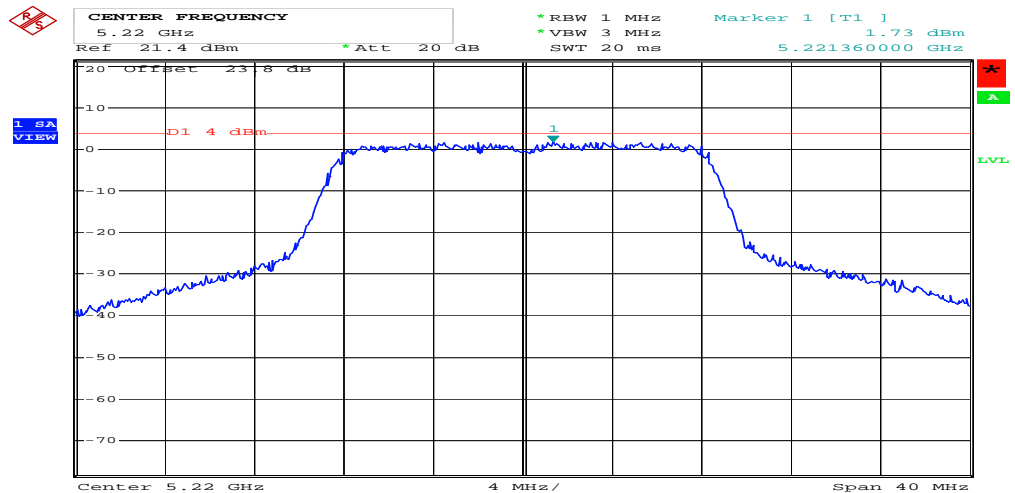
Single Tx

802.11 a Chain 0 CH36 5180MHz



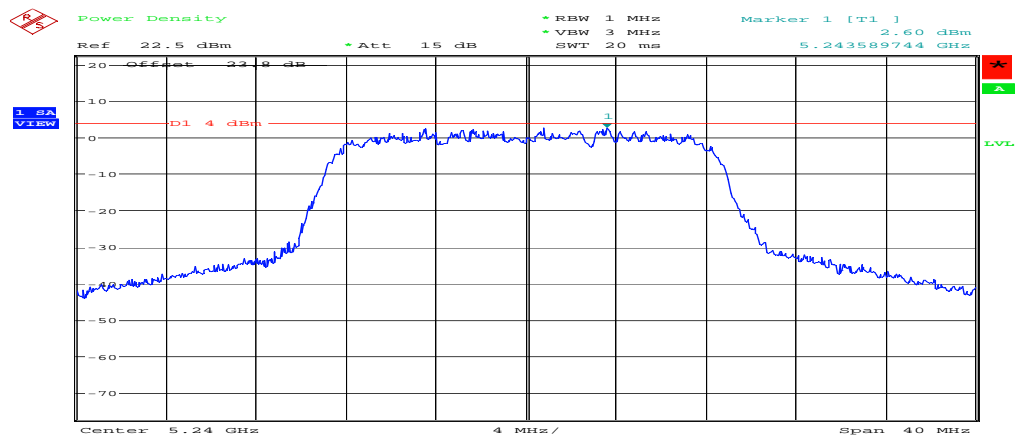
802.11a 5180MHz ()
Date: 25.NOV.2007 19:59:27

802.11 a Chain 0 CH44 5220MHz



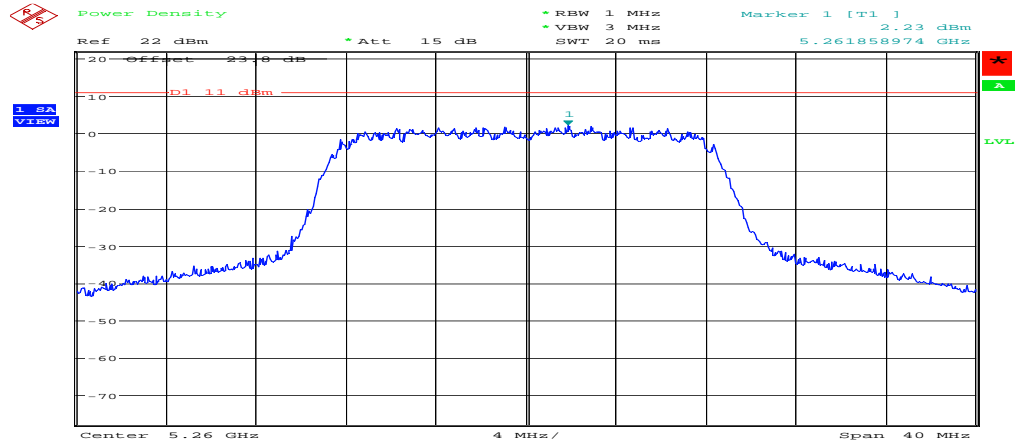
Comment: 802.11a 5220MHz
Date: 12.DEC.2007 15:17:24

802.11 a Chain 0 CH48 5240MHz



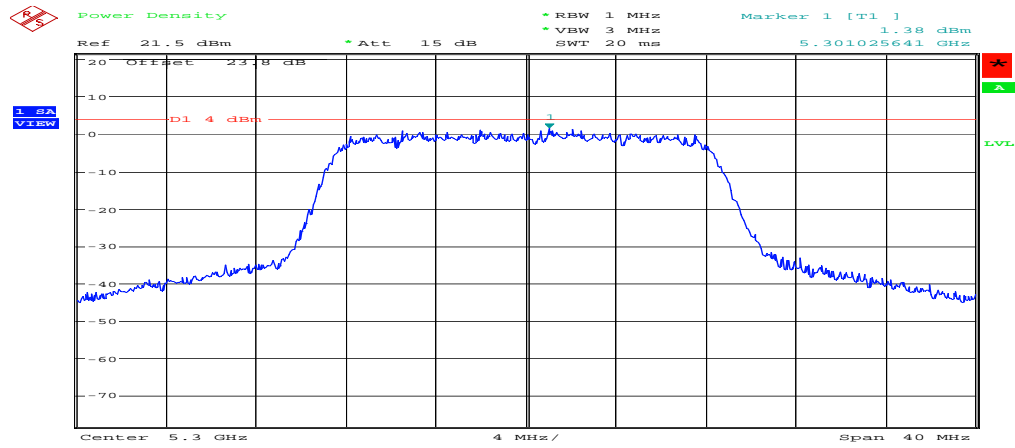
802.11a 5240MHz ()
Date: 25.NOV.2007 20:01:58

802.11 a Chain 0 CH52 5260MHz



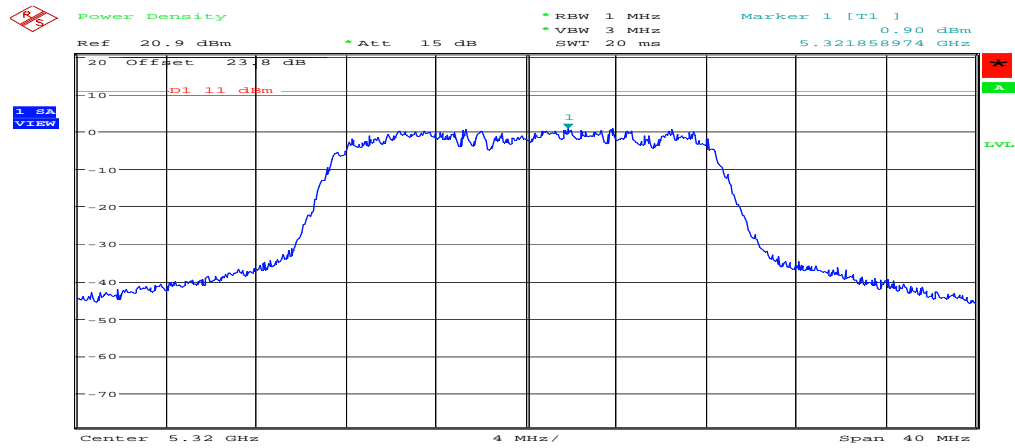
802.11a 5260MHz ()
Date: 25.NOV.2007 20:04:01

802.11 a Chain 0 CH60 5300MHz



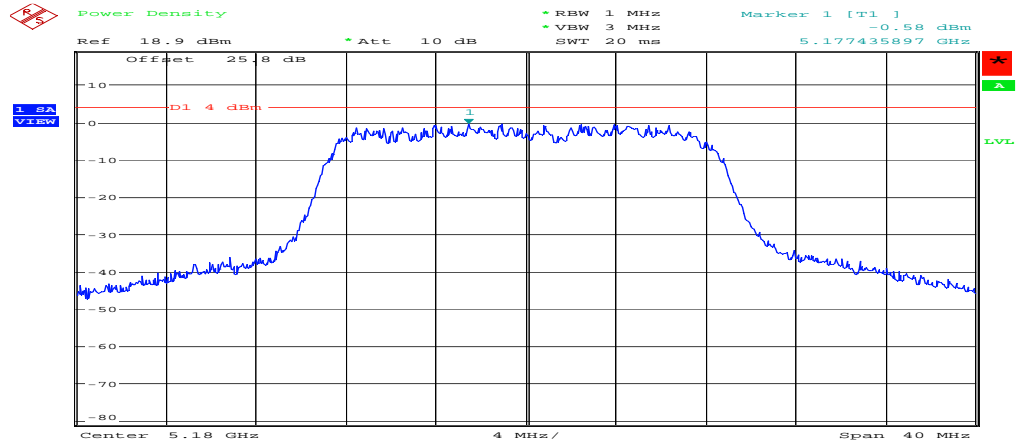
802.11a 5300MHz ()
Date: 25.NOV.2007 20:10:55

802.11 a Chain 0 CH64 5320MHz



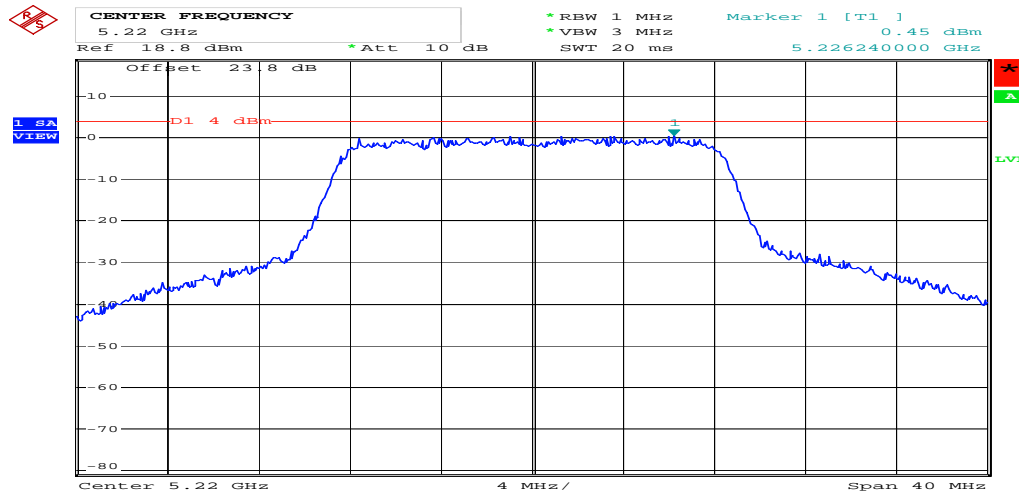
802.11a 5320MHz ()
Date: 25.NOV.2007 20:06:10

802.11 a Chain 2 CH36 5180MHz



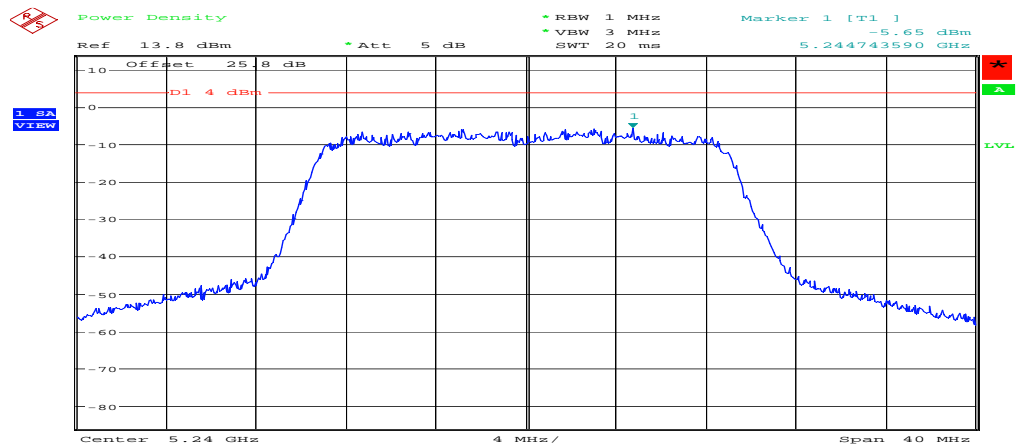
802.11a 5180MHz ()
Date: 25.NOV.2007 20:33:44

802.11 a Chain 2 CH44 5220MHz



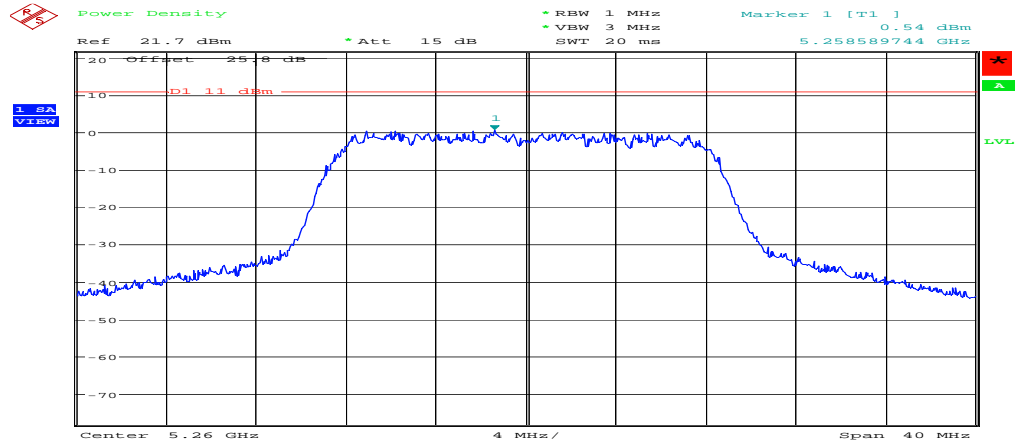
Comment: 802.11a 5220MHz
Date: 12.DEC.2007 15:21:34

802.11 a Chain 2 CH48 5240MHz



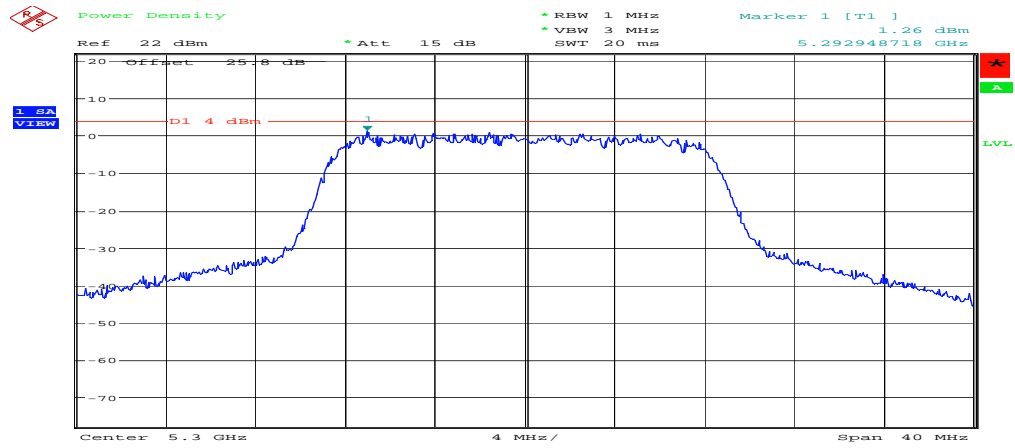
802.11a 5240MHz ()
Date: 25.NOV.2007 21:16:47

802.11 a Chain 2 CH52 5260MHz



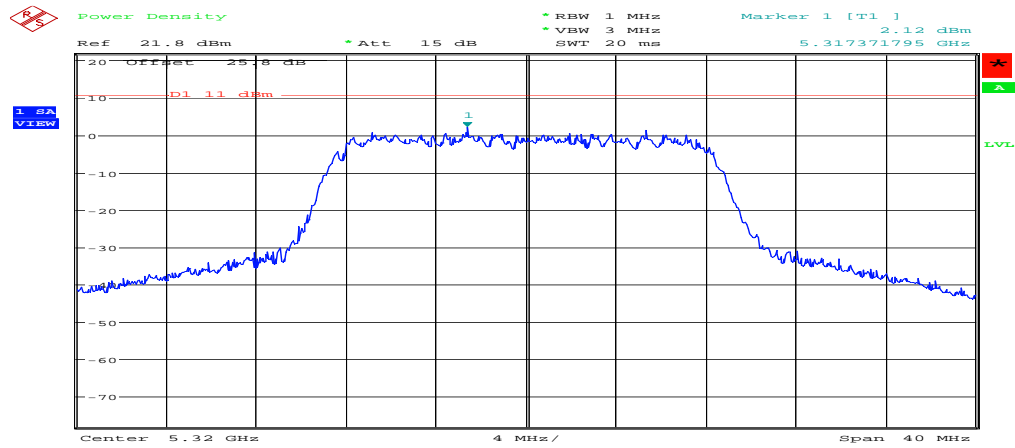
802.11a 5260MHz ()
Date: 25.NOV.2007 20:29:43

802.11 a Chain 2 CH60 5300MHz



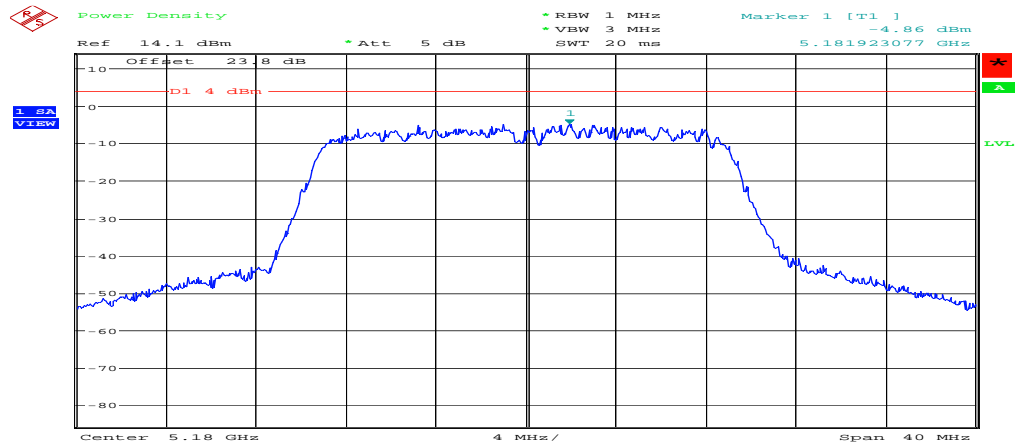
802.11a 5300MHz ()
Date: 25.NOV.2007 20:13:56

802.11 a Chain 2 CH64 5320MHz



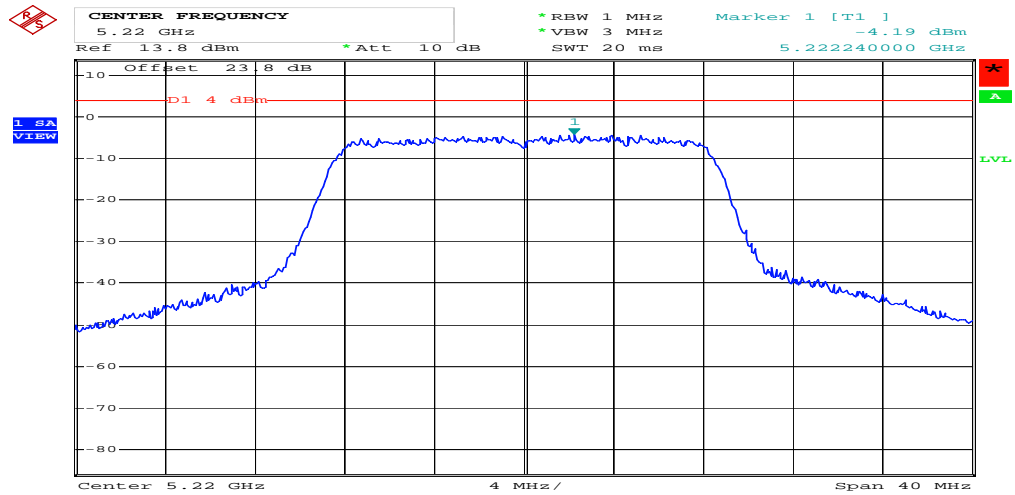
802.11a 5320MHz ()
Date: 25.NOV.2007 20:19:17

802.11 n (HT20) Chain 0 CH36 5180MHz



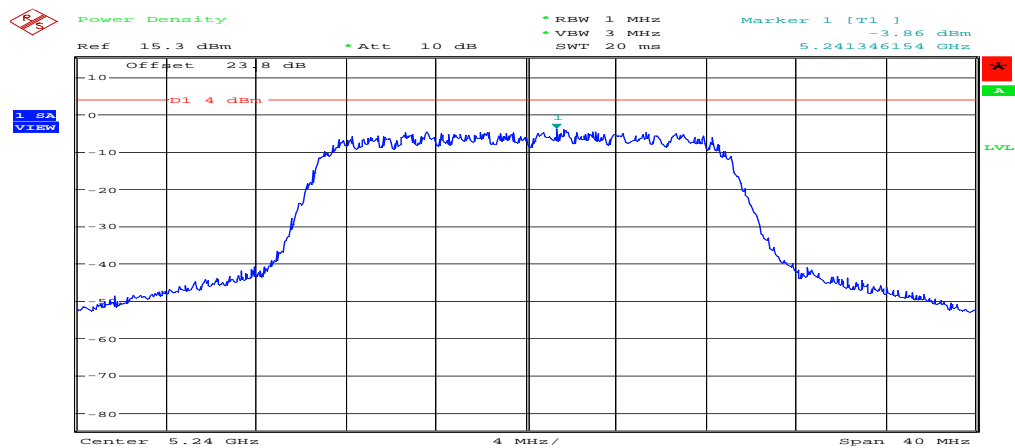
802.11a 5180MHz ()
Date: 25.NOV.2007 20:37:06

802.11 n (HT20) Chain 0 CH44 5220MHz



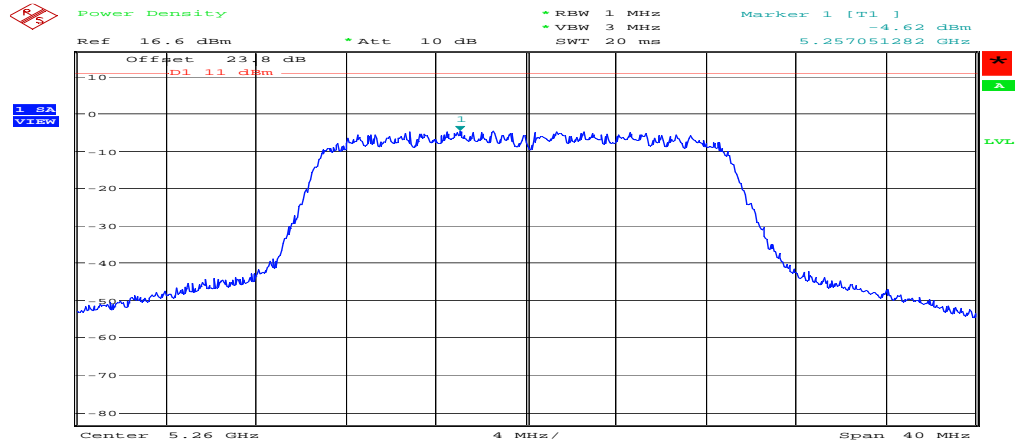
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:44:58

802.11 n (HT20) Chain 0 CH48 5240MHz



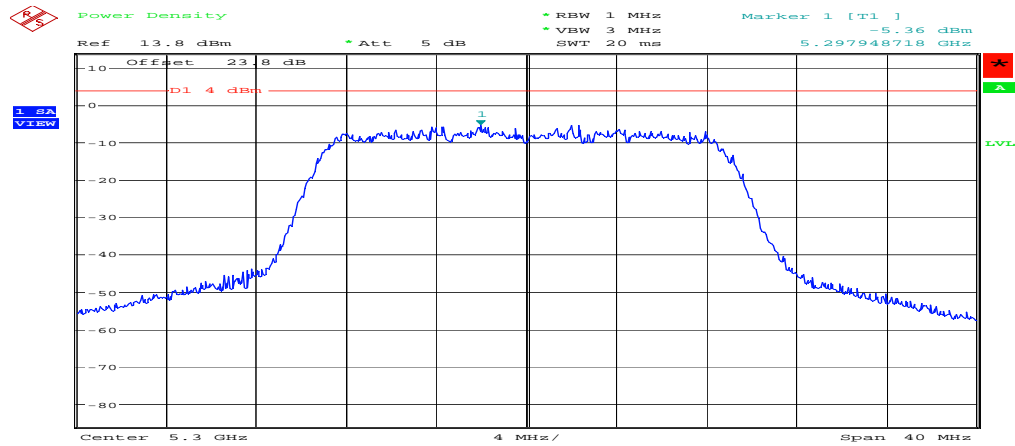
802.11a 5240MHz ()
Date: 25.NOV.2007 20:39:03

802.11 n (HT20) Chain 0 CH52 5260MHz



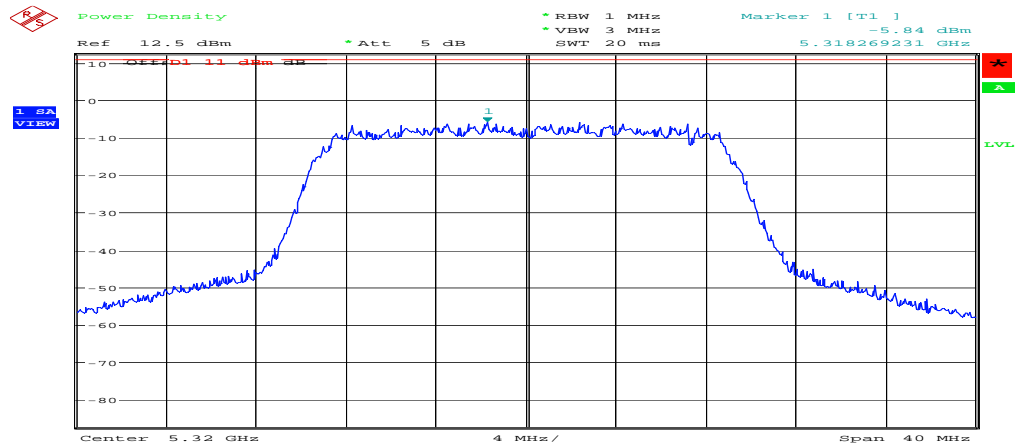
802.11a 5260MHz ()
Date: 25.NOV.2007 20:41:02

802.11 n (HT20) Chain 0 CH60 5300MHz



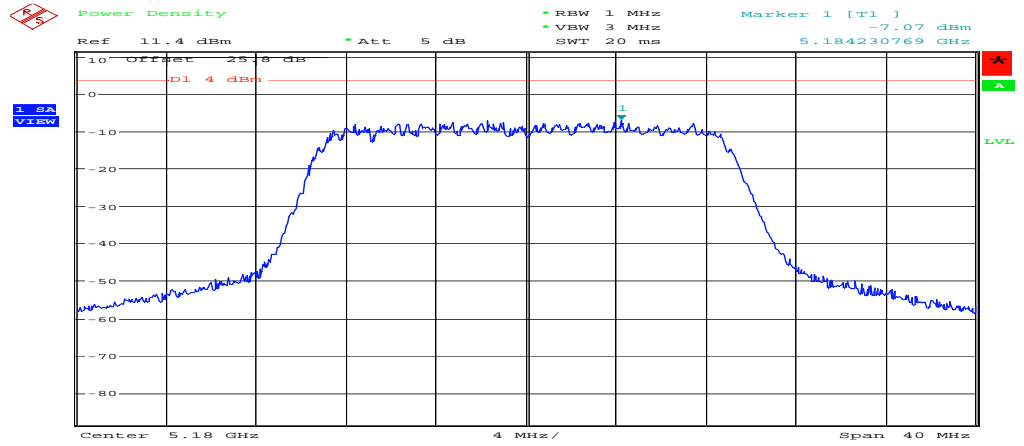
802.11a 5300MHz ()
Date: 25.NOV.2007 20:46:30

802.11 n (HT20) Chain 0 CH64 5320MHz



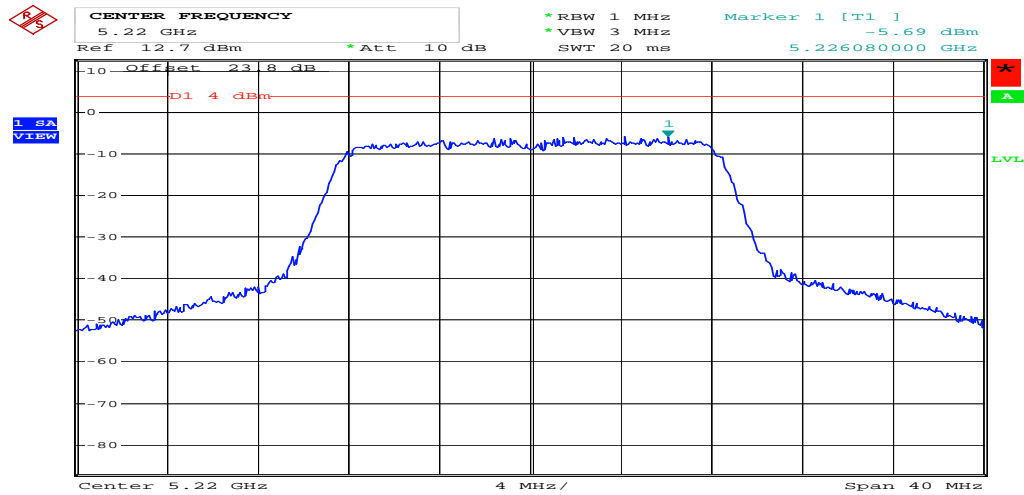
802.11a 5320MHz ()
Date: 25.NOV.2007 20:43:04

802.11 n (HT20) Chain 2 CH36 5180MHz



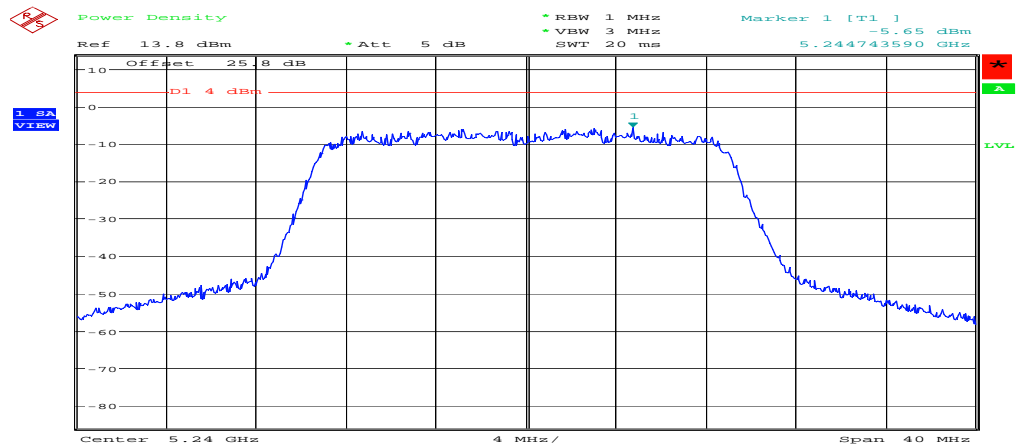
802.11a 5180MHz ()
Date: 25.NOV.2007 21:18:39

802.11 n (HT20) Chain 2 CH44 5220MHz



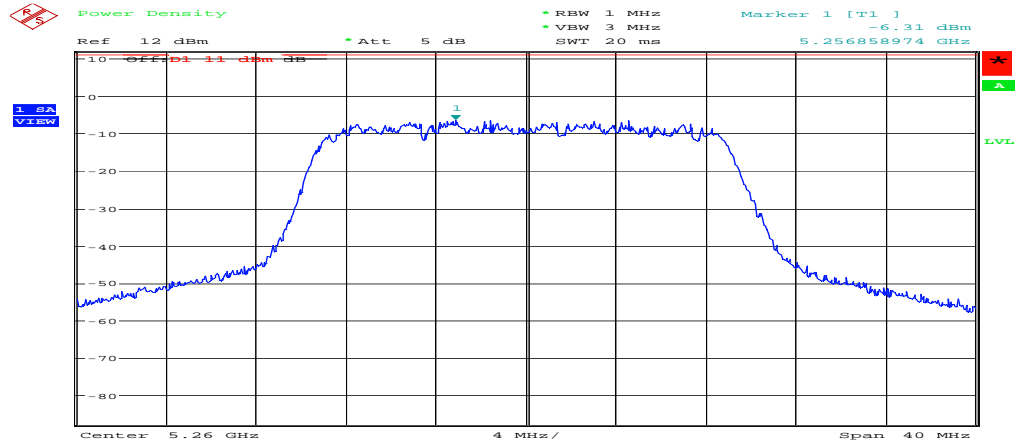
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:48:39

802.11 n (HT20) Chain 2 CH48 5240MHz



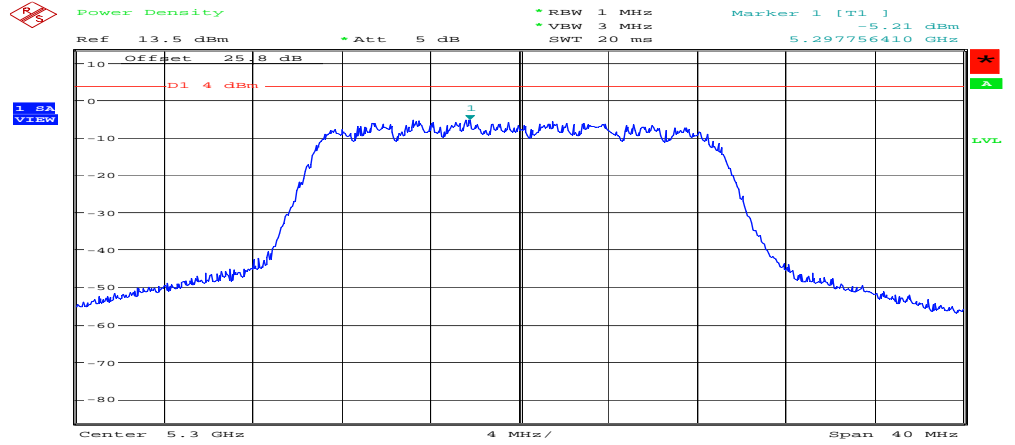
802.11a 5240MHz ()
Date: 25.NOV.2007 21:16:47

802.11 n (HT20) Chain 2 CH52 5260MHz



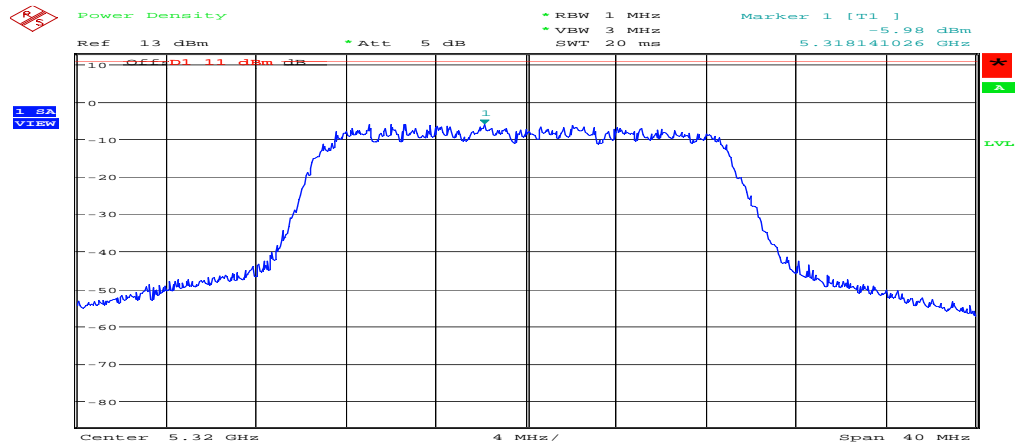
802.11a 5260MHz ()
Date: 25.NOV.2007 21:14:40

802.11 n (HT20) Chain 2 CH60 5300MHz



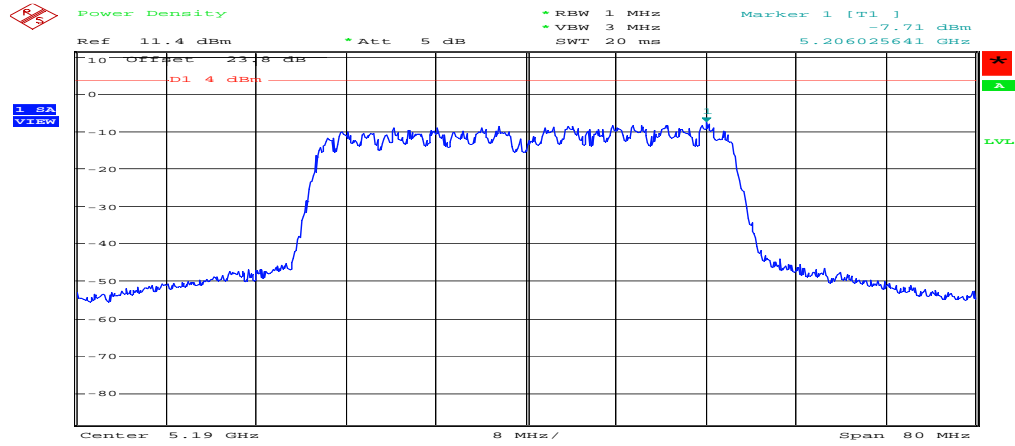
802.11a 5300MHz ()
Date: 25.NOV.2007 21:03:38

802.11 n (HT20) Chain 2 CH64 5320MHz



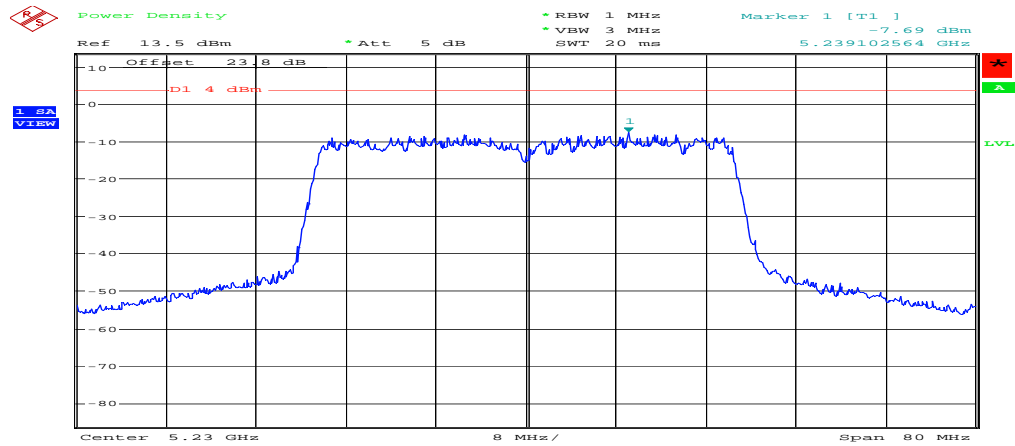
802.11a 5320MHz ()
Date: 25.NOV.2007 21:11:07

802.11 n (HT40) Chain 0 CH38 5190MHz



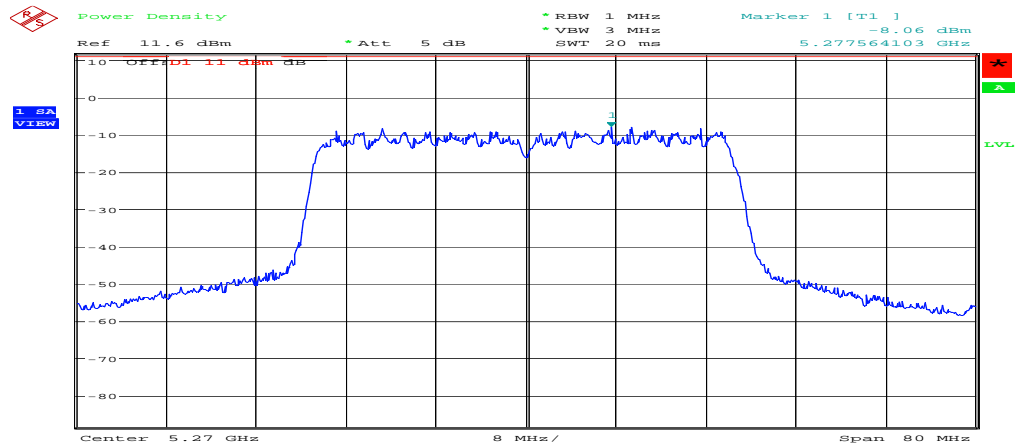
802.11a 5190MHz
Date: 26.NOV.2007 14:22:53

802.11 n (HT40) Chain 0 CH46 5230MHz



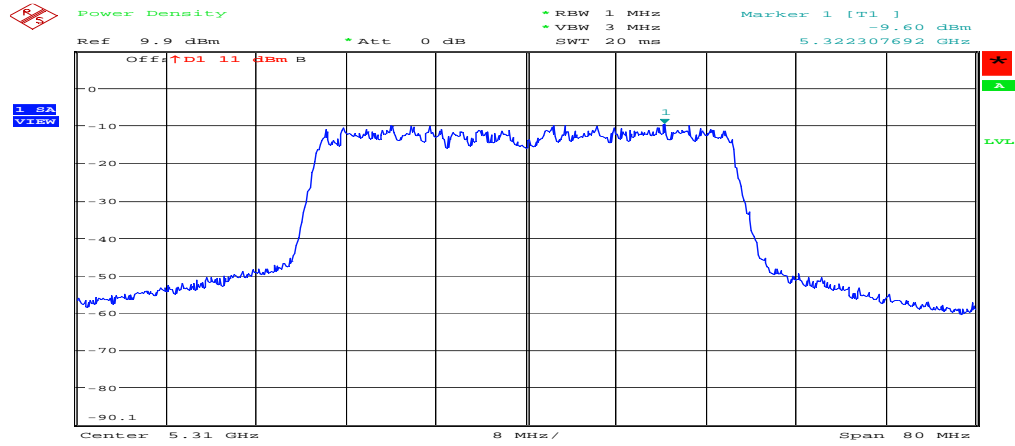
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:27:34

802.11 n (HT40) Chain 0 CH54 5270MHz



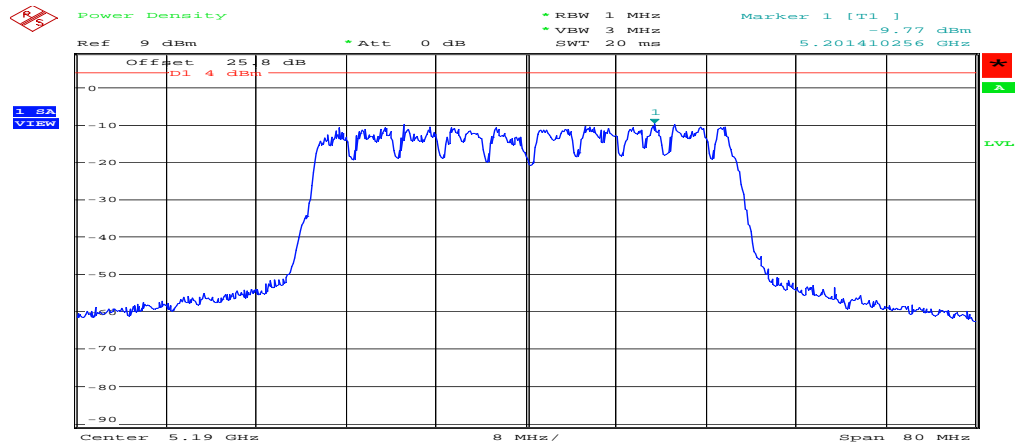
802.11n(40) 5270MHz
Date: 26.NOV.2007 14:29:46

802.11 n (HT40) Chain 0 CH62 5310MHz



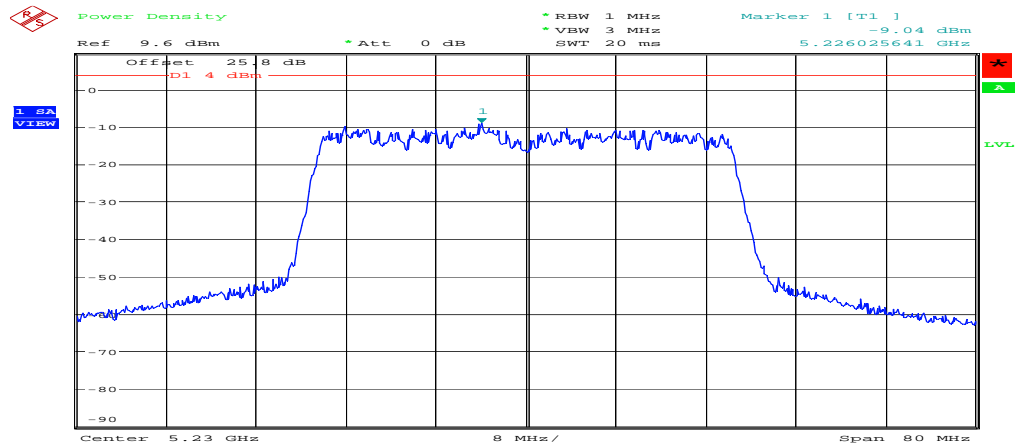
802.11n(40) 5310MHz
Date: 26.NOV.2007 14:31:46

802.11 n (HT40) Chain 2 CH38 5190MHz



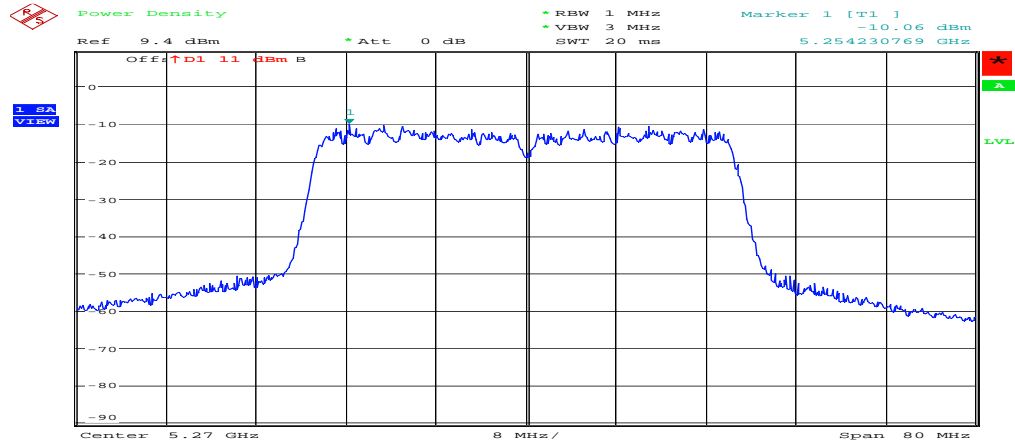
802.11n(40) 5190MHz
Date: 26.NOV.2007 14:42:06

802.11 n (HT40) Chain 2 CH46 5230MHz



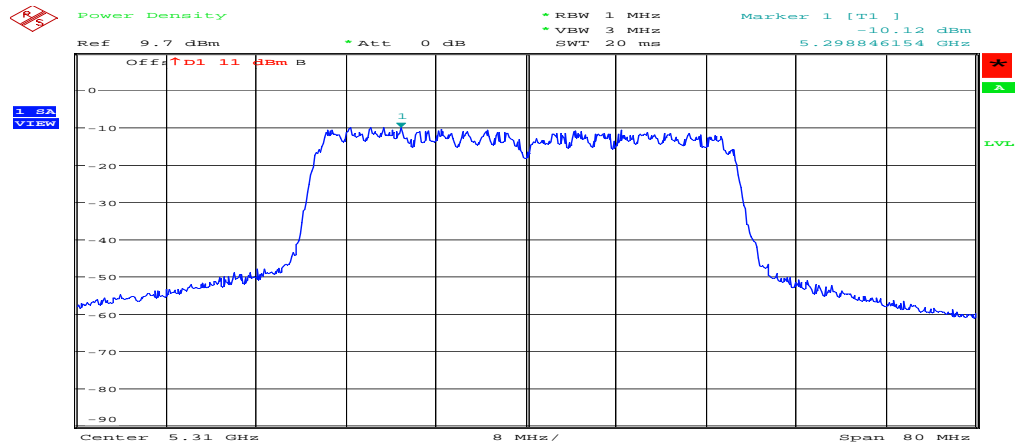
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:40:18

802.11 n (HT40) Chain 2 CH54 5270MHz



802.11n(40) 5270MHz
Date: 26.NOV.2007 14:38:25

802.11 n (HT40) Chain 2 CH62 5310MHz

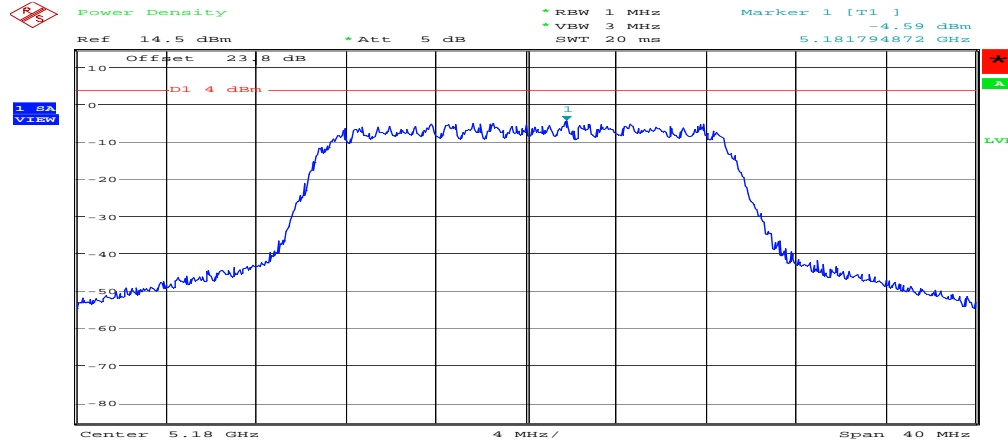


802.11n(40) 5310MHz
Date: 26.NOV.2007 14:35:24

Power spectral density

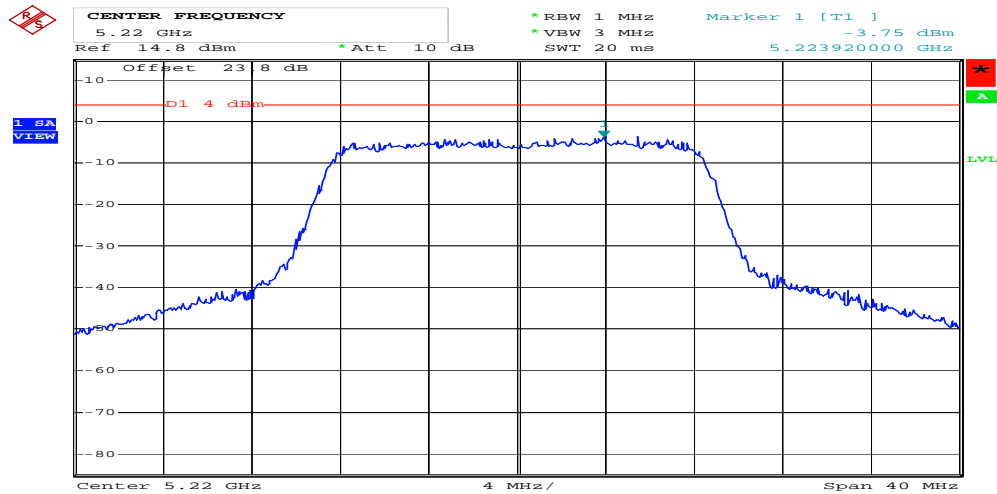
Dual Tx

802.11 n (HT20) Chain 0 CH36 5180MHz



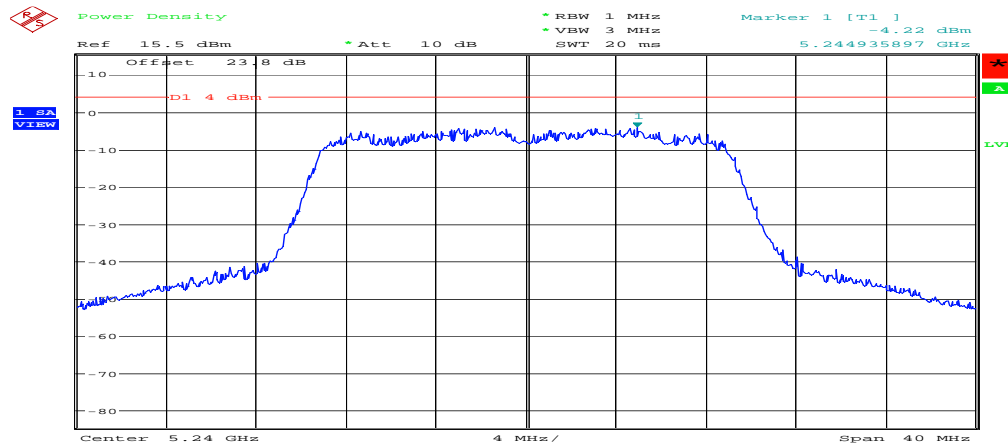
802.11n(20) 5180MHz
Date: 26.NOV.2007 14:55:38

802.11 n (HT20) Chain 0 CH44 5220MHz



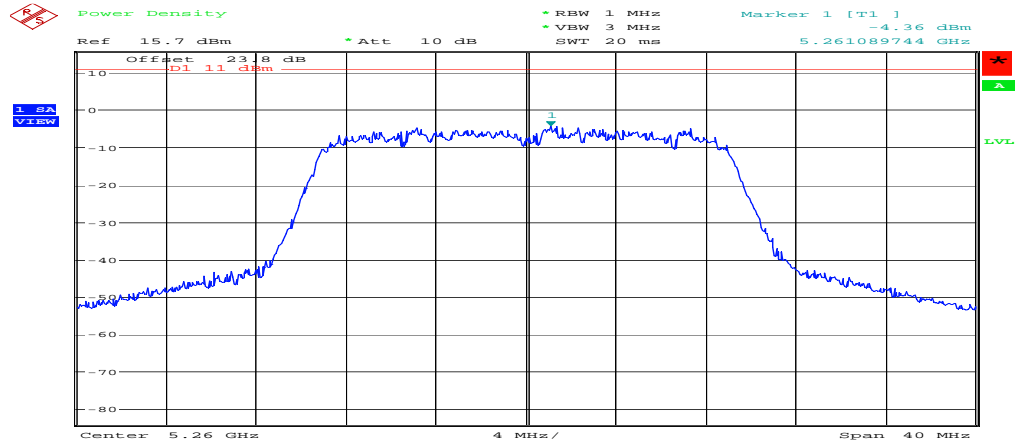
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:38:28

802.11 n (HT20) Chain 0 CH48 5240MHz



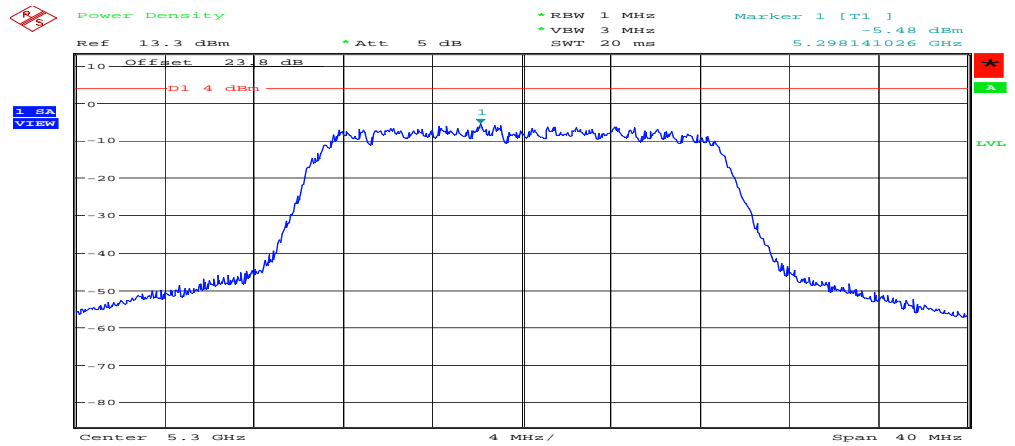
802.11n(20) 5240MHz
Date: 26.NOV.2007 14:56:42

802.11 n (HT20) Chain 0 CH52 5260MHz



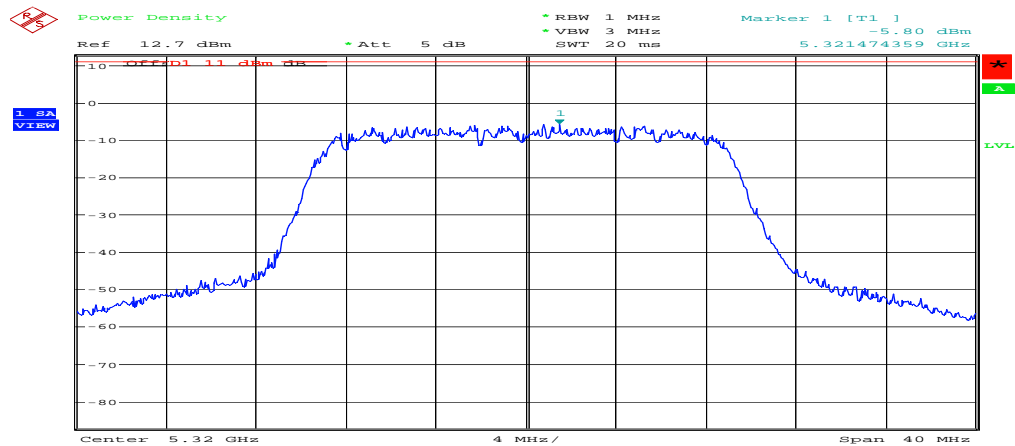
802.11n(20) 5260MHz
Date: 26.NOV.2007 14:58:02

802.11 n (HT20) Chain 0 CH60 5300MHz



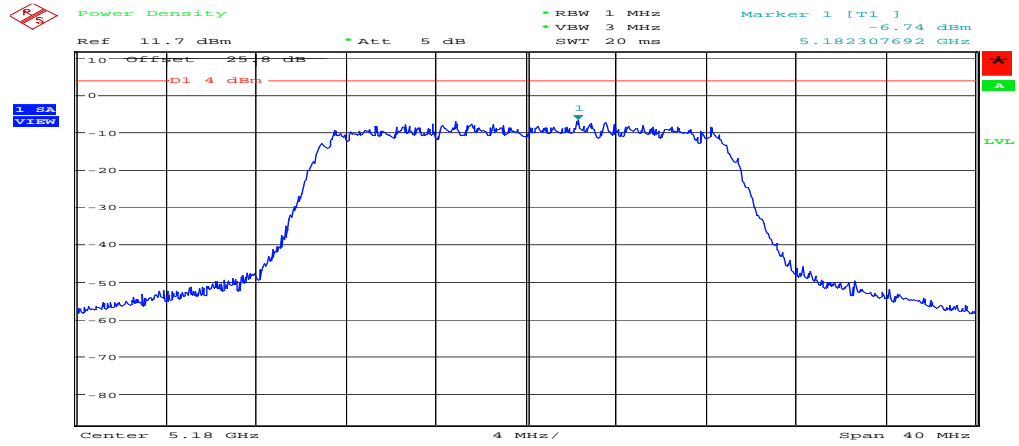
802.11n(40) 5300MHz
Date: 26.NOV.2007 14:53:01

802.11 n (HT20) Chain 0 CH64 5320MHz



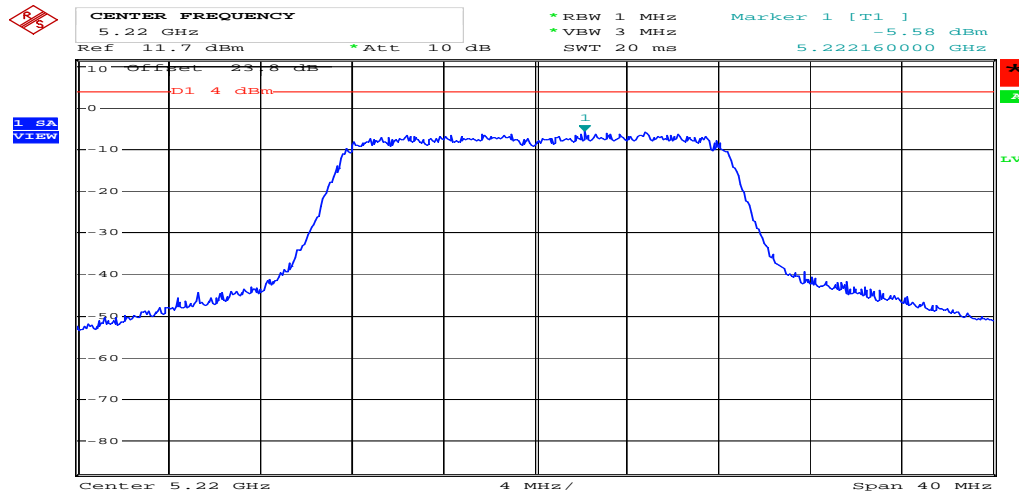
802.11n(20) 5320MHz
Date: 26.NOV.2007 14:59:08

802.11 n (HT20) Chain 2 CH36 5180MHz



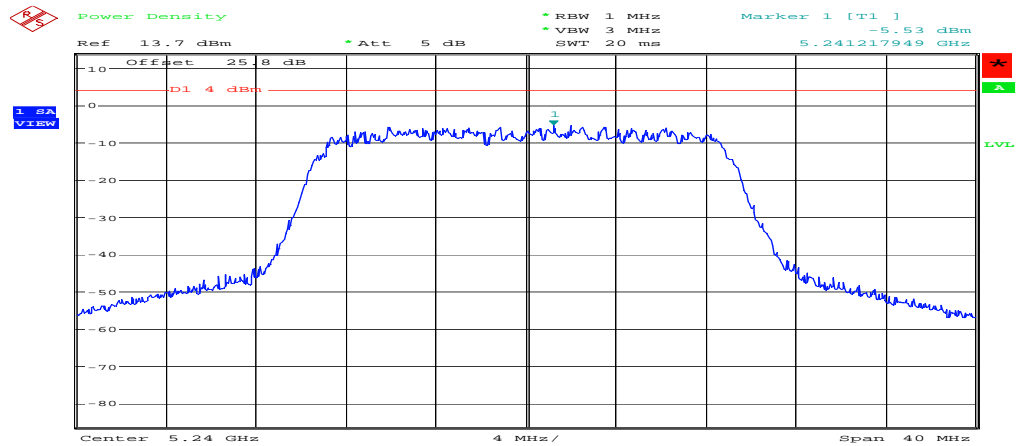
802.11n(20) 5180MHz
Date: 26.NOV.2007 14:55:58

802.11 n (HT20) Chain 2 CH44 5220MHz



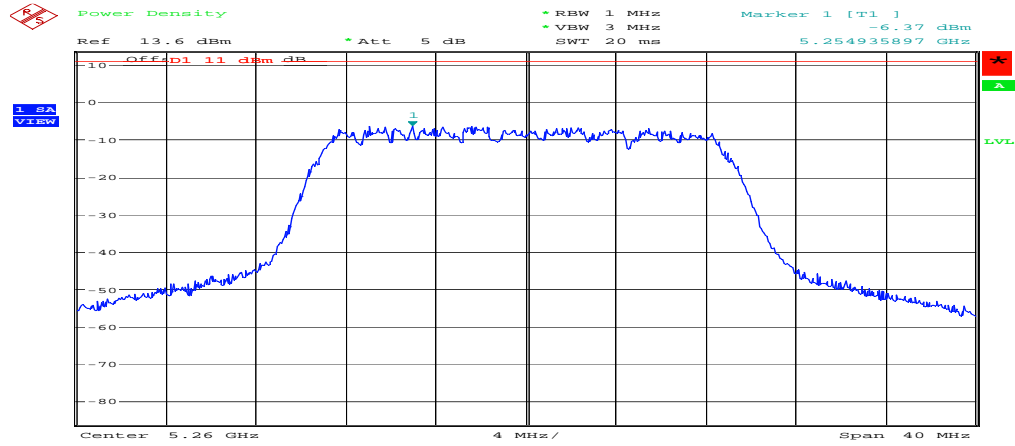
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:36:50

802.11 n (HT20) Chain 2 CH48 5240MHz



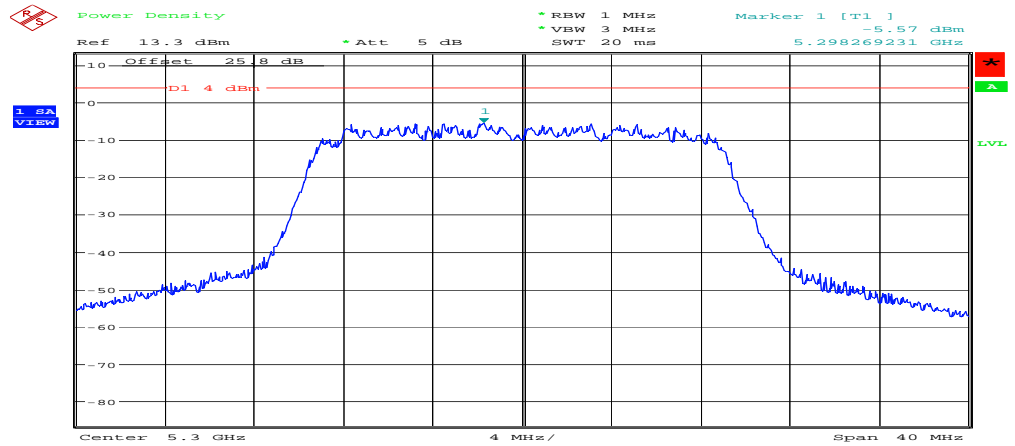
802.11n(20) 5240MHz
Date: 26.NOV.2007 14:57:03

802.11 n (HT20) Chain 2 CH52 5260MHz



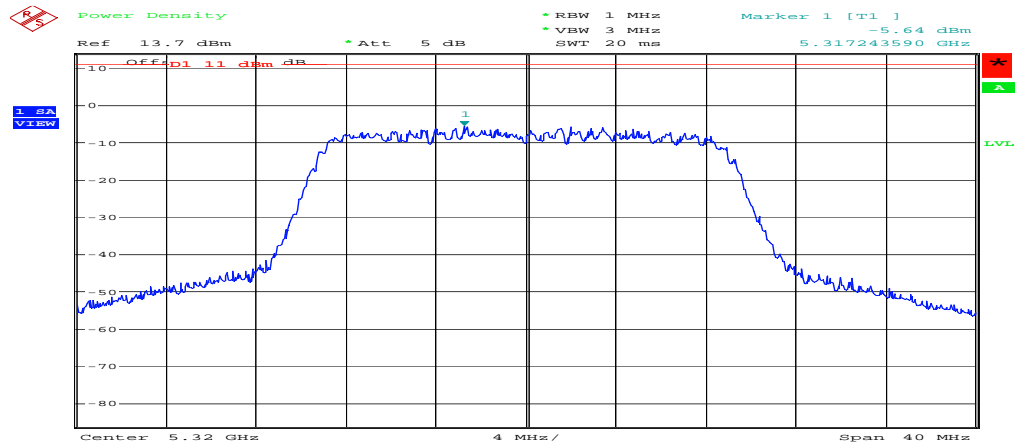
802.11n(20) 5260MHz
Date: 26.NOV.2007 14:58:24

802.11 n (HT20) Chain 2 CH60 5300MHz



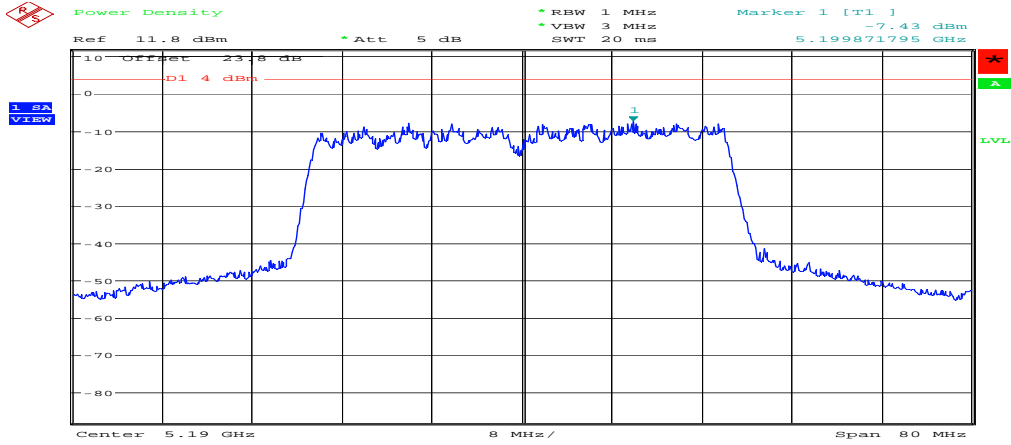
802.11n(40) 5300MHz
Date: 26.NOV.2007 14:53:21

802.11 n (HT20) Chain 2 CH64 5320MHz



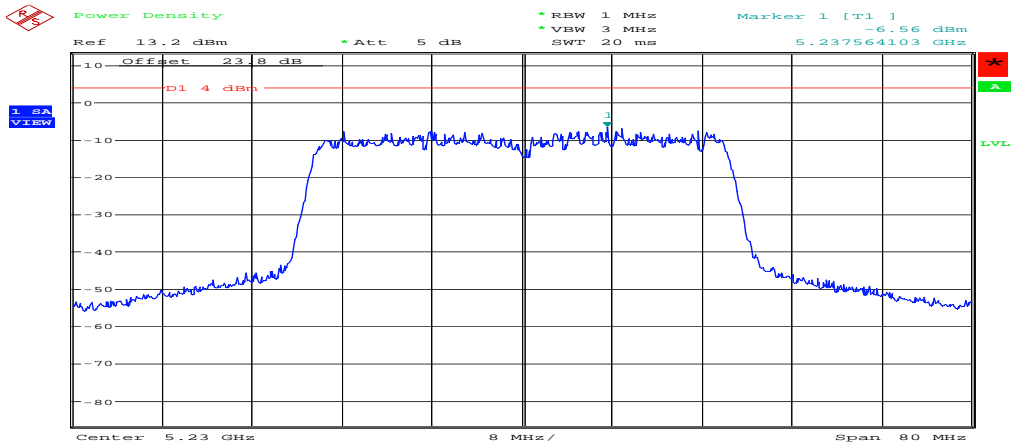
802.11n(20) 5320MHz
Date: 26.NOV.2007 14:59:30

802.11n (HT40) Chain 0 CH38 5190MHz



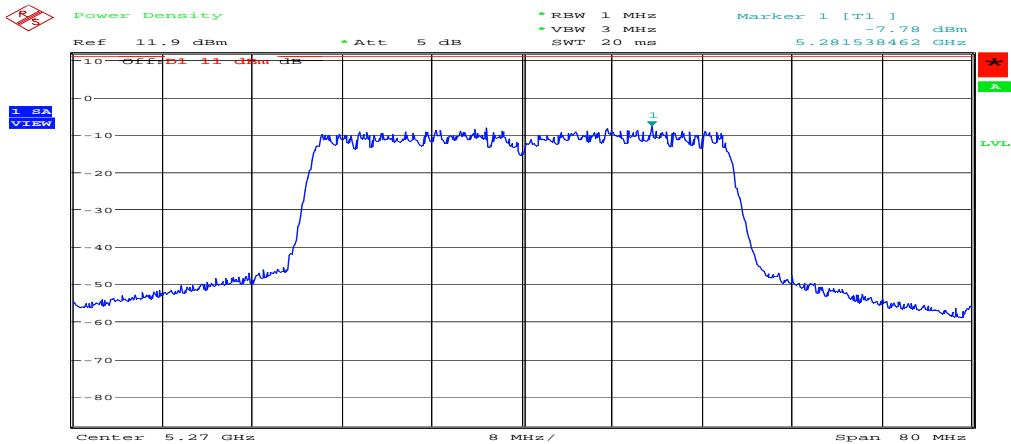
802.11n(40) 5190MHz
Date: 26.NOV.2007 15:00:58

802.11n (HT40) Chain 0 CH46 5230MHz



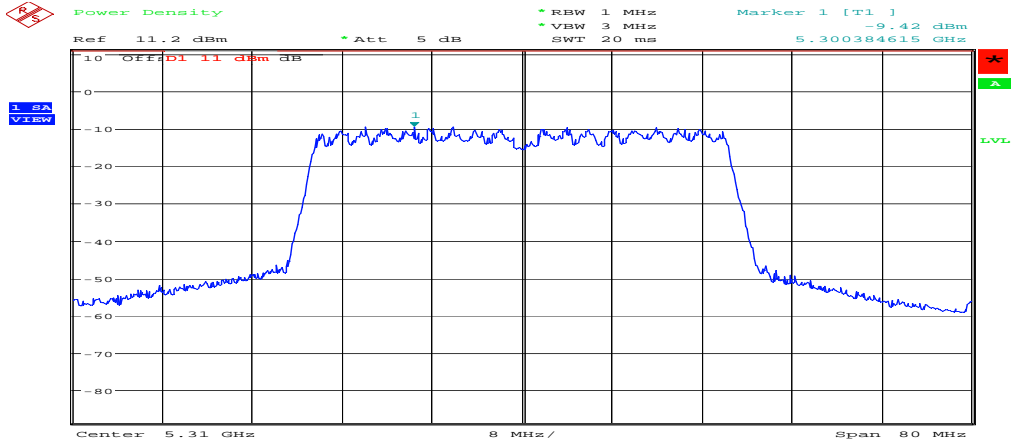
802.11n(40) 5230MHz
Date: 26.NOV.2007 15:01:52

802.11n (HT40) Chain 0 CH54 5270MHz



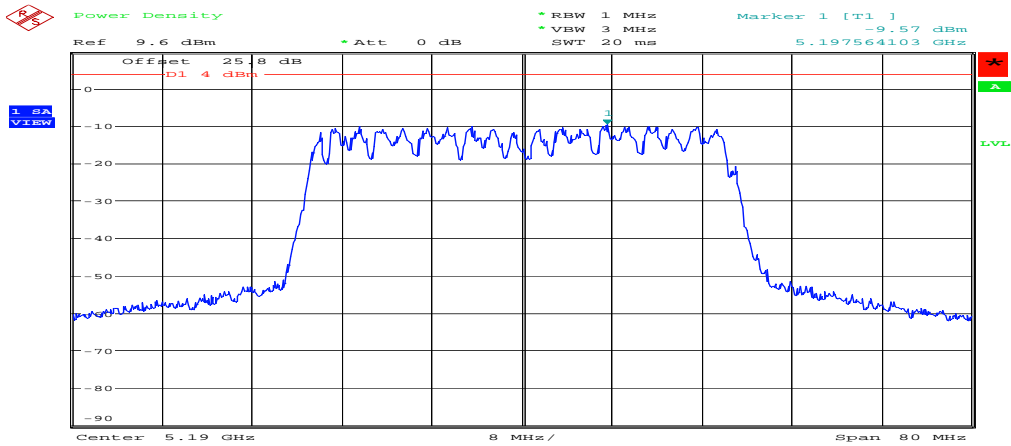
802.11n(40) 5270MHz
Date: 26.NOV.2007 15:02:43

802.11 n (HT40) Chain 0 CH62 5310MHz



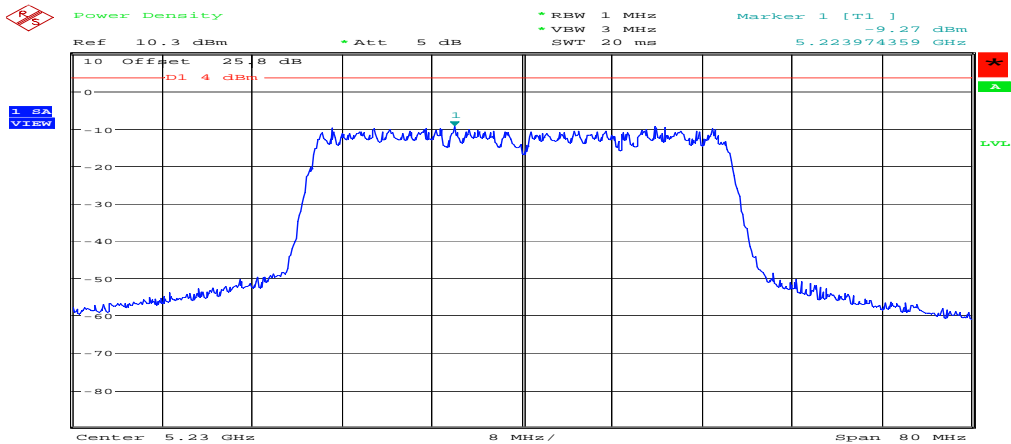
802.11n(40) 5310MHz
Date: 26.NOV.2007 15:03:33

802.11 n (HT40) Chain 2 CH38 5190MHz



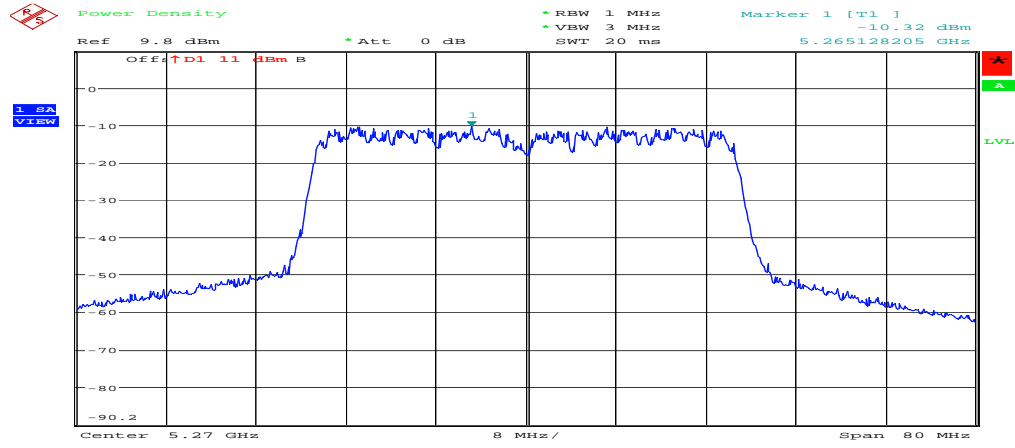
802.11n(40) 5190MHz
Date: 26.NOV.2007 15:01:19

802.11 n (HT40) Chain 2 CH46 5230MHz



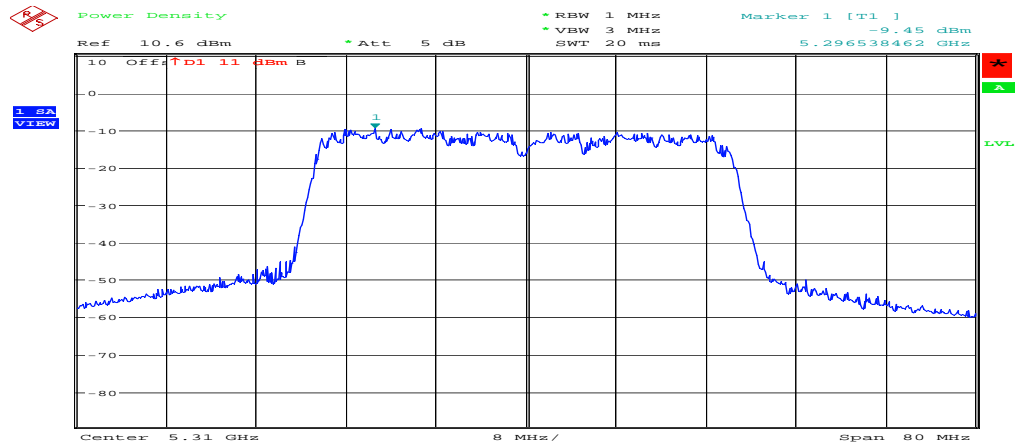
802.11n(40) 5230MHz
Date: 26.NOV.2007 15:02:12

802.11 n (HT40) Chain 2 CH54 5270MHz



802.11n(40) 5270MHz
Date: 26.NOV.2007 15:03:04

802.11 n (HT40) Chain 2 CH62 5310MHz



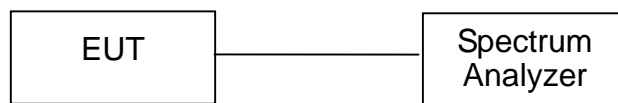
802.11n(40) 5310MHz
Date: 26.NOV.2007 15:03:53

5 Peak excursion to average ratio test

5.1 Limits

Operating Frequency (MHz)	Peak excursion to average ratio limit
5150~5250	<13dB
5250~5350	<13dB
5725~5825	<13dB

5.2 Configuration of Measurement



5.3 Test Procedure

Peak excursion to average ratio was measured from the antenna port of the EUT. Using a 50ohm spectrum analyzer with the RBW=VBW=1MHz for peak measurement and RBW=1MHz, VBW=10kHz for average measurement. Peak excursion to average ratio was read directly.

5.4 Test Result

PASS.

The final test data is shown on as following pages.

Peak excursion to Average ratio

Test Mode : 802.11a			
Test Chain : 0			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
36	5180	10.49	13
44	5220	10.11	13
48	5240	9.45	13
52	5260	9.99	13
60	5300	10.17	13
64	5320	10.42	13

Test Mode : 802.11a			
Test Chain : 2			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
36	5180	10.92	13
44	5220	10.38	13
48	5240	11.56	13
52	5260	11.01	13
60	5300	10.96	13
64	5320	11.28	13

Test Mode : 802.11n (HT20)			
Test Chain : 0			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
36	5180	10.32	13
44	5220	10.10	13
48	5240	10.47	13
52	5260	10.44	13
60	5300	10.53	13
64	5320	10.71	13

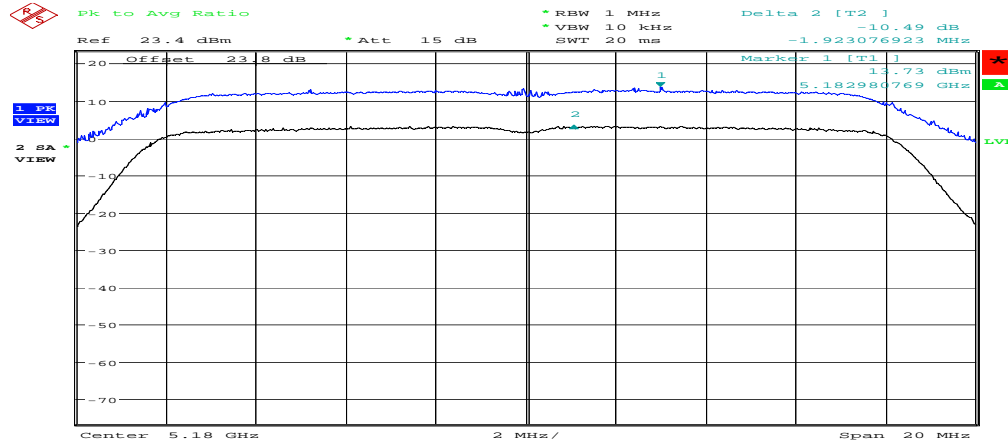
Test Mode : 802.11 n (HT20)			
Test Chain : 2			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
36	5180	10.51	13
44	5220	10.07	13
48	5240	10.81	13
52	5260	10.77	13
60	5300	10.61	13
64	5320	10.80	13

Test Mode : 802.11n (HT40)			
Test Chain : 0			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
38	5190	10.10	13
46	5230	10.61	13
54	5270	10.12	13
62	5310	10.10	13

Test Mode : 802.11 n (HT40)			
Test Chain : 2			
Test CH		PK excursion to Avg. ration (dB)	Limit (dB)
CH No.	Freq. (MHz)		
38	5190	10.17	13
46	5230	10.42	13
54	5270	11.20	13
62	5310	10.55	13

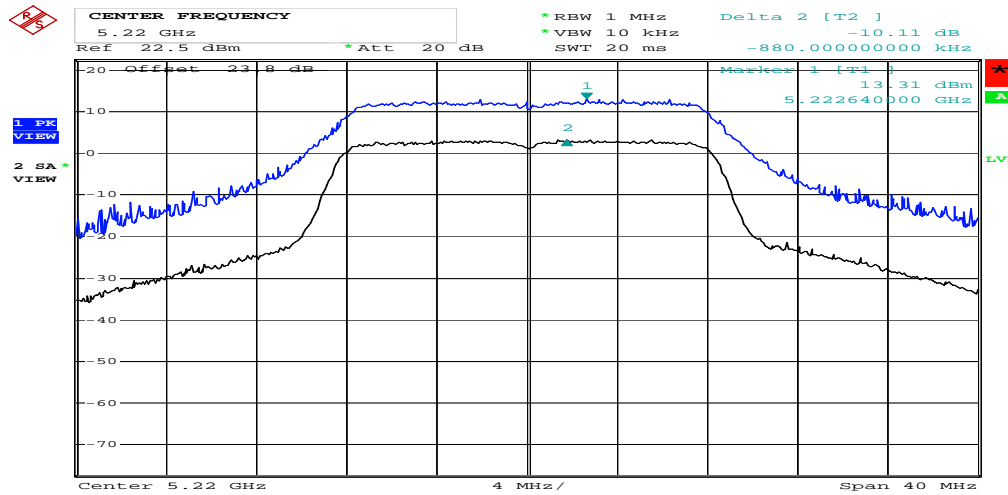
Peak excursion to Average ratio

802.11 a Chain 0 CH36 5180MHz PK to AV Ratio



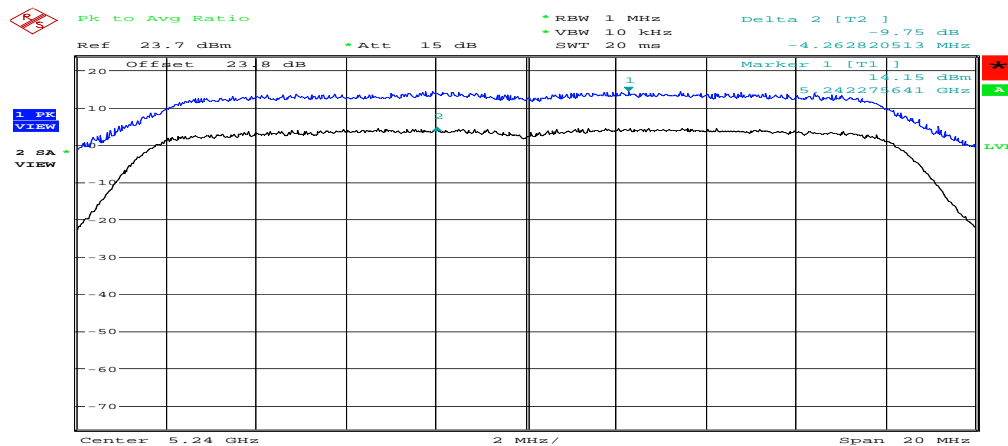
802.11a 5180MHz ()
Date: 25.NOV.2007 19:59:07

802.11 a Chain 0 CH44 5220MHz PK to AV Ratio



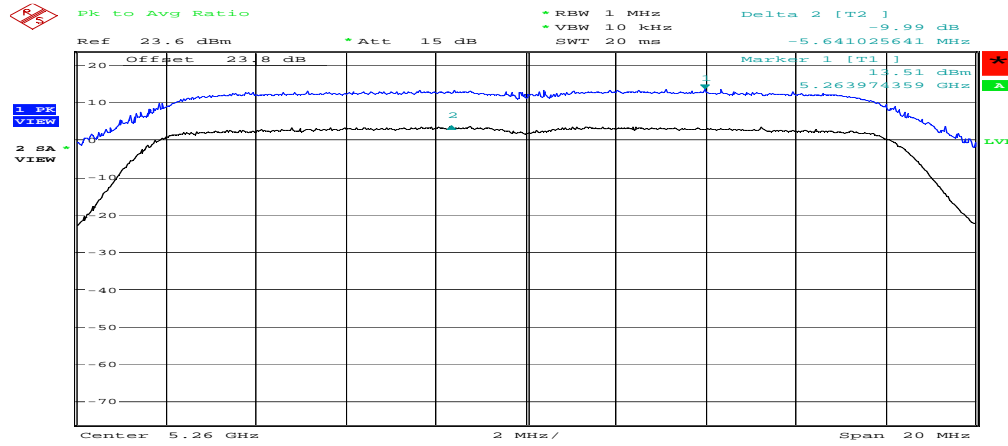
Comment: 802.11a 5220MHz
Date: 12.DEC.2007 15:17:00

802.11 a Chain 0 CH48 5240MHz PK to AV Ratio



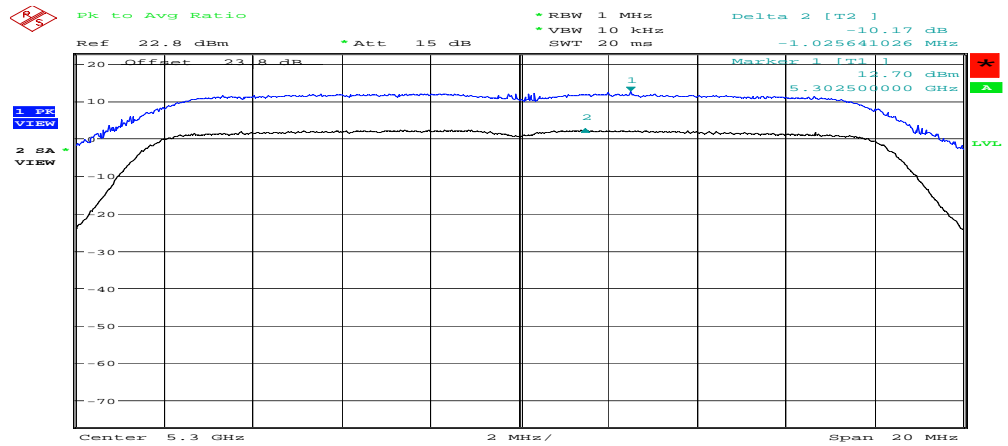
802.11a 5240MHz ()
Date: 25.NOV.2007 20:01:38

802.11 a Chain 0 CH52 5260MHz PK to AV Ratio



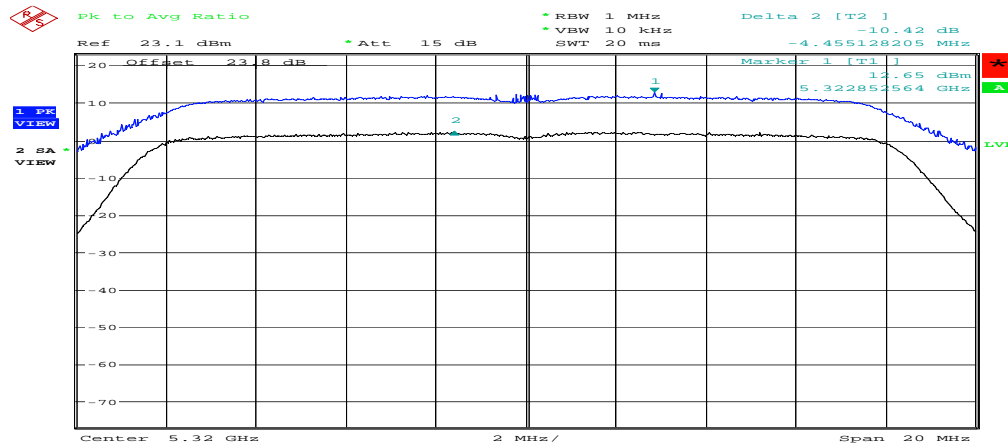
802.11a 5260MHz ()
Date: 25.NOV.2007 20:03:40

802.11 a Chain 0 CH60 5300MHz PK to AV Ratio



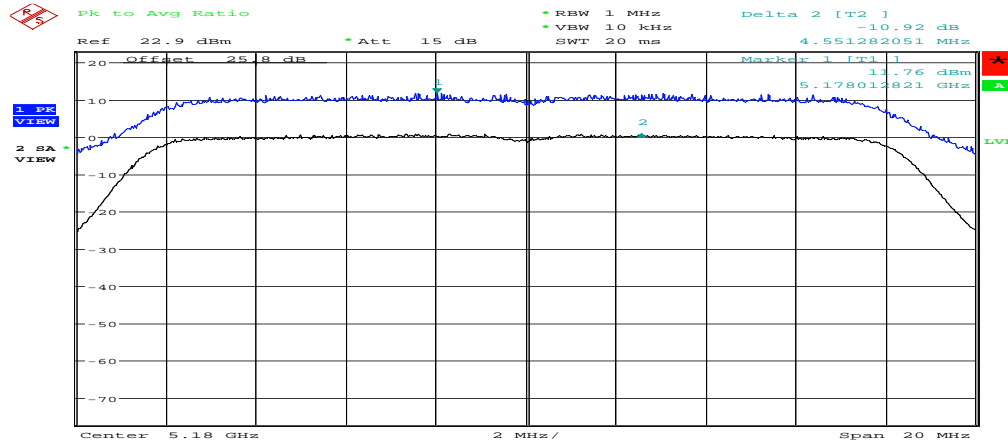
802.11a 5300MHz ()
Date: 25.NOV.2007 20:10:34

802.11 a Chain 0 CH64 5320MHz PK to AV Ratio



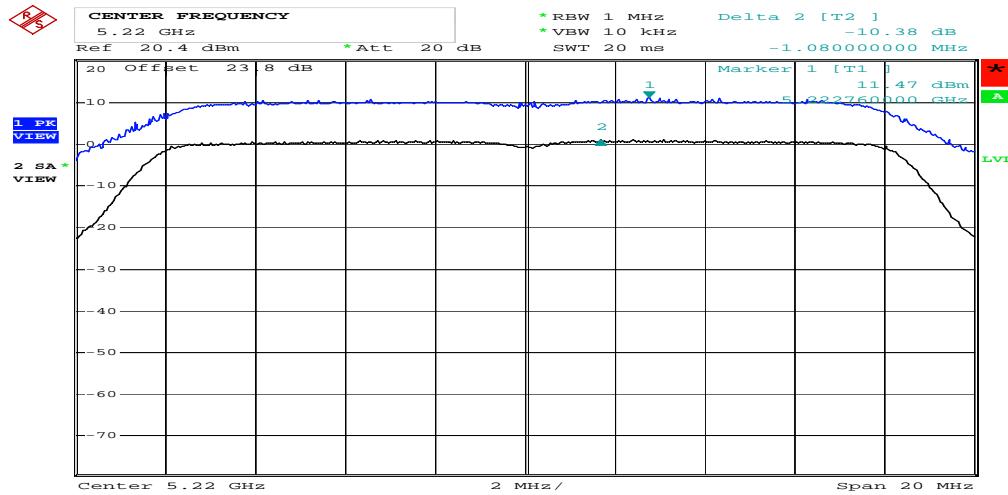
802.11a 5320MHz ()
Date: 25.NOV.2007 20:05:49

802.11 a Chain 2 CH36 5180MHz PK to AV Ratio



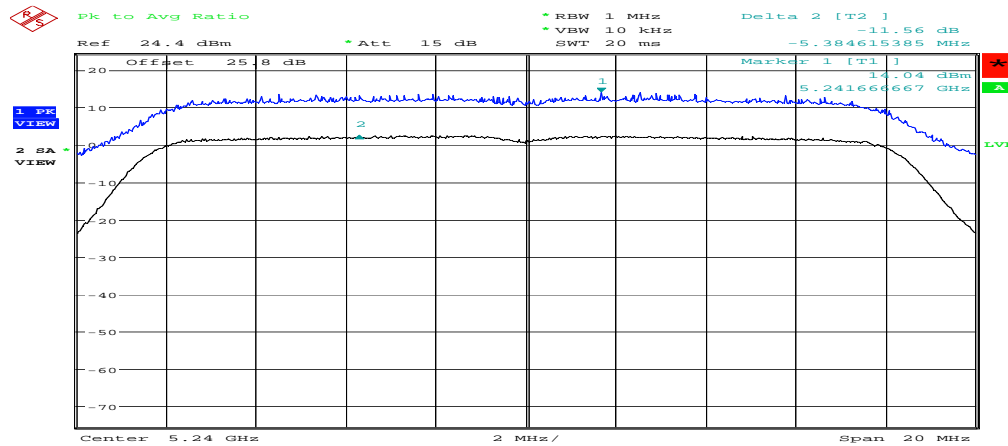
802.11a 5180MHz ()
Date: 25.NOV.2007 20:33:23

802.11 a Chain 2 CH44 5220MHz PK to AV Ratio



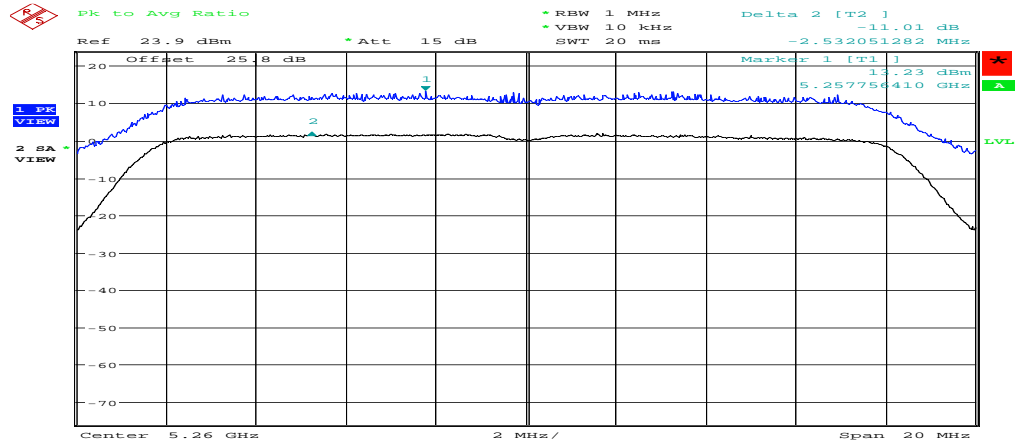
Comment: 802.11a 5220MHz
Date: 12.DEC.2007 15:21:10

802.11 a Chain 2 CH48 5240MHz PK to AV Ratio



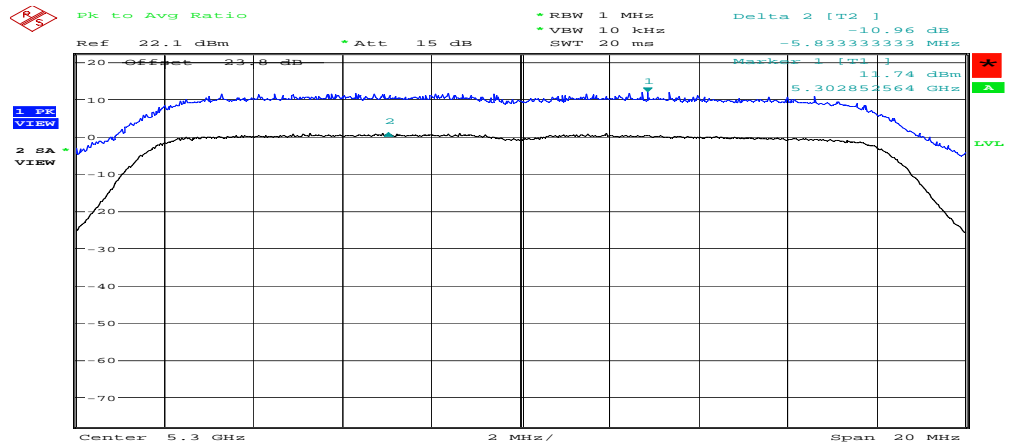
802.11a 5240MHz ()
Date: 25.NOV.2007 20:31:27

802.11 a Chain 2 CH52 5260MHz PK to AV Ratio



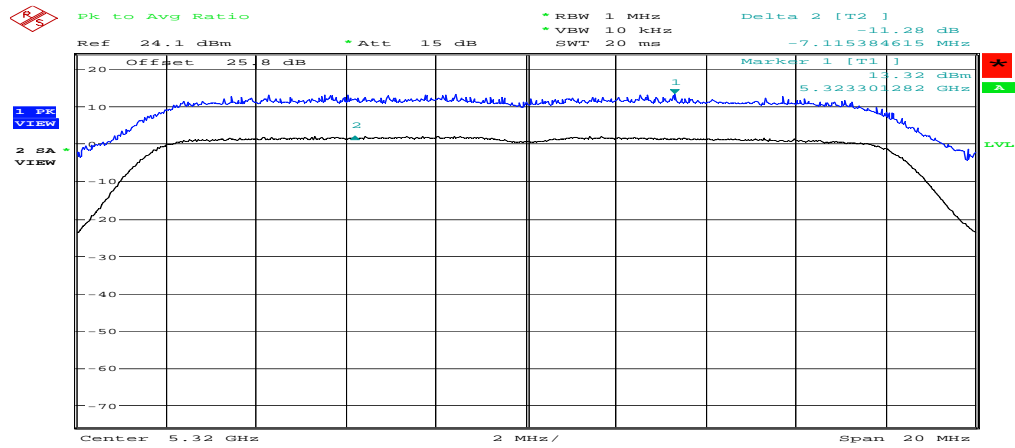
802.11a 5260MHz ()
Date: 25.NOV.2007 20:29:22

802.11 a Chain 2 CH60 5300MHz PK to AV Ratio



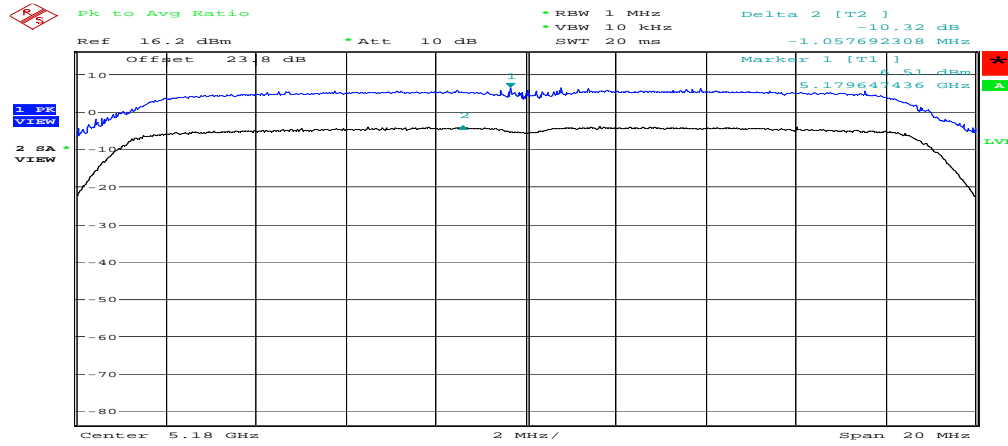
802.11a 5300MHz ()
Date: 25.NOV.2007 20:12:38

802.11 a Chain 2 CH64 5320MHz PK to AV Ratio



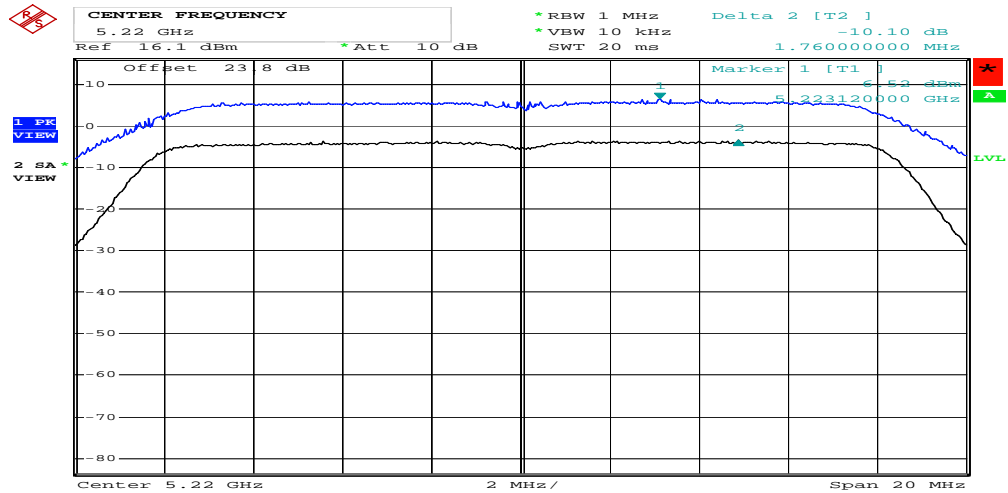
802.11a 5320MHz ()
Date: 25.NOV.2007 20:17:43

802.11 n (HT20) Chain 0 CH36 5180MHz PK to AV Ratio



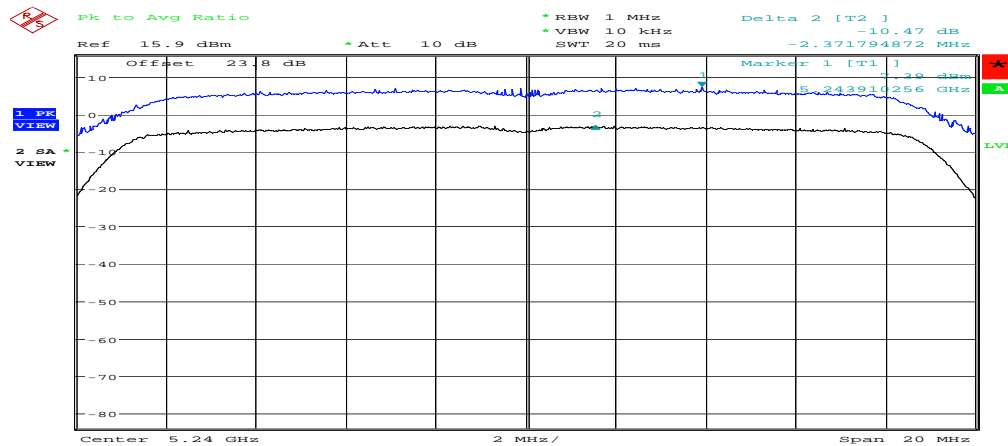
802.11a 5180MHz ()
Date: 25.NOV.2007 20:36:46

802.11 n (HT20) Chain 0 CH44 5220MHz PK to AV Ratio



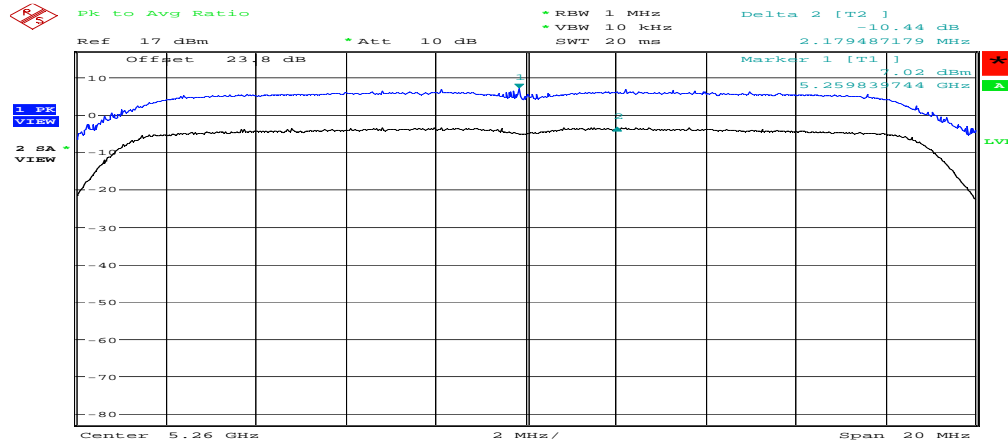
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:44:35

802.11 n (HT20) Chain 0 CH48 5240MHz PK to AV Ratio



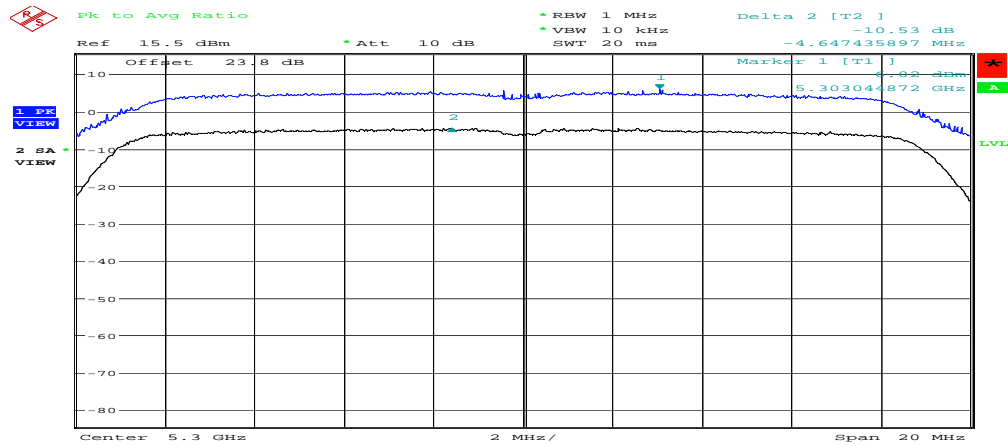
802.11a 5240MHz ()
Date: 25.NOV.2007 20:38:41

802.11 n (HT20) Chain 0 CH52 5260MHz PK to AV Ratio



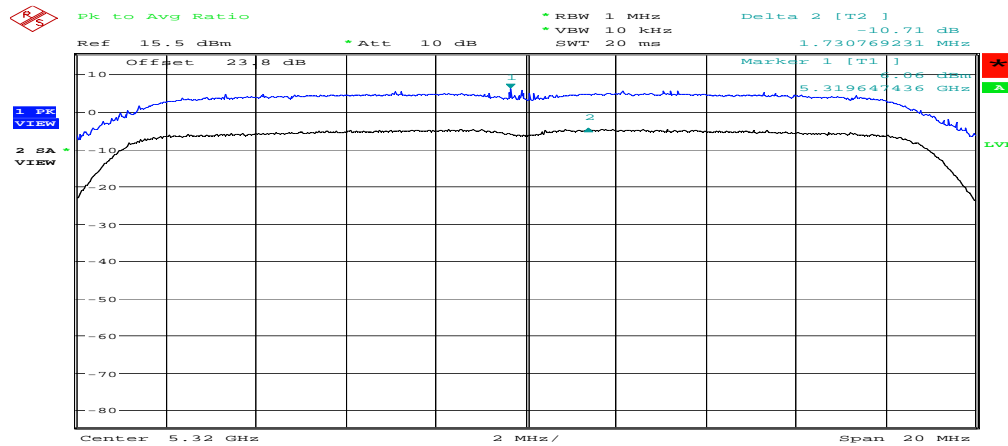
802.11a 5260MHz ()
Date: 25.NOV.2007 20:40:40

802.11 n (HT20) Chain 0 CH60 5300MHz PK to AV Ratio



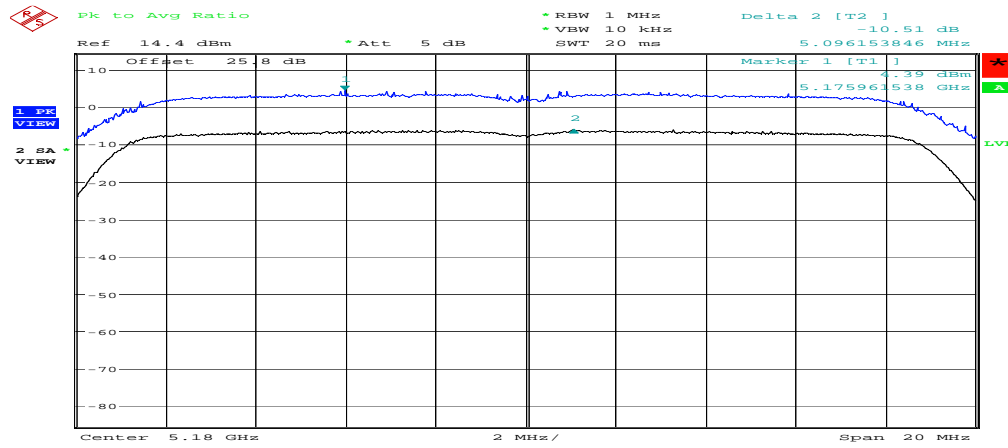
802.11a 5300MHz ()
Date: 25.NOV.2007 20:46:08

802.11 n (HT20) Chain 0 CH64 5320MHz PK to AV Ratio



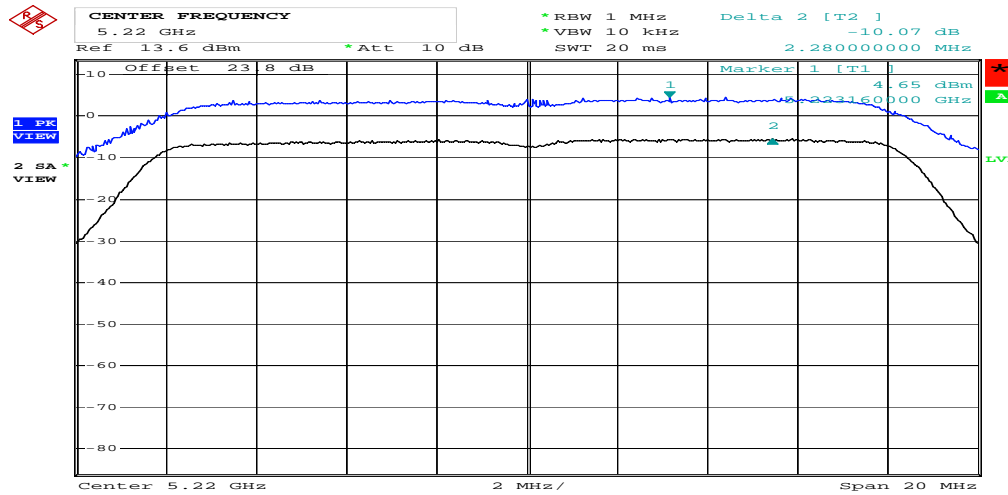
802.11a 5320MHz ()
Date: 25.NOV.2007 20:42:43

802.11 n (HT20) Chain 2 CH36 5180MHz PK to AV Ratio



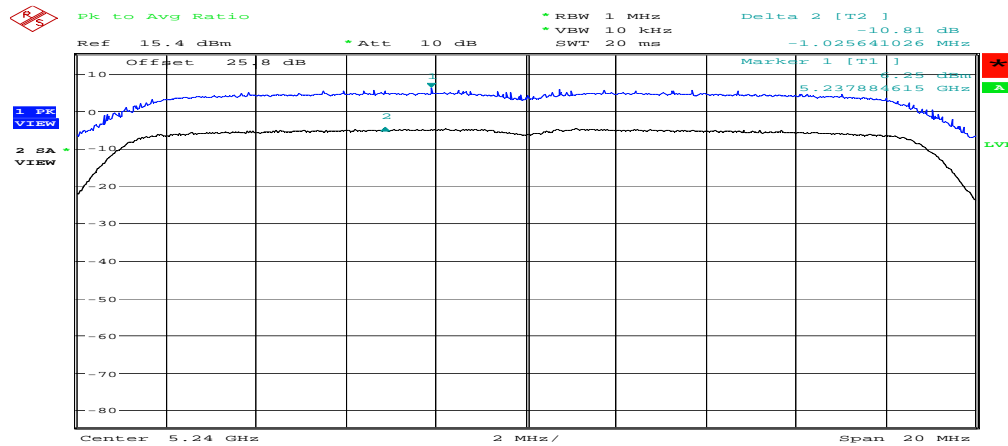
802.11a 5180MHz ()
Date: 25.NOV.2007 21:18:19

802.11 n (HT20) Chain 2 CH44 5220MHz PK to AV Ratio



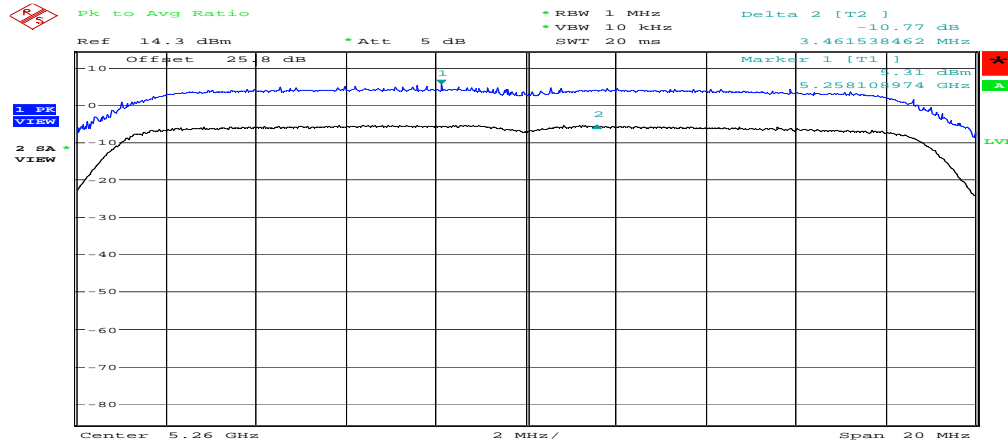
Comment: 802.11n(20) 5220MHz
Date: 12.DEC.2007 15:48:15

802.11 n (HT20) Chain 2 CH48 5240MHz PK to AV Ratio

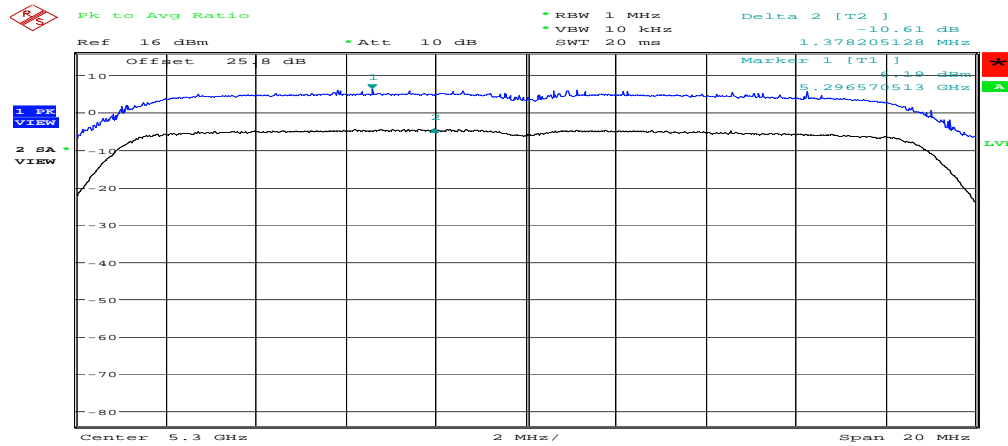


802.11a 5240MHz ()
Date: 25.NOV.2007 21:16:25

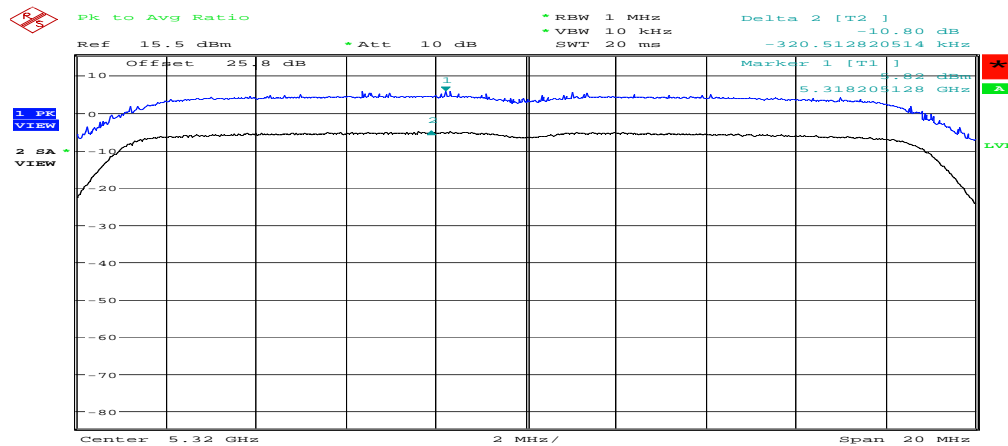
802.11 n (HT20) Chain 2 CH52 5260MHz PK to AV Ratio



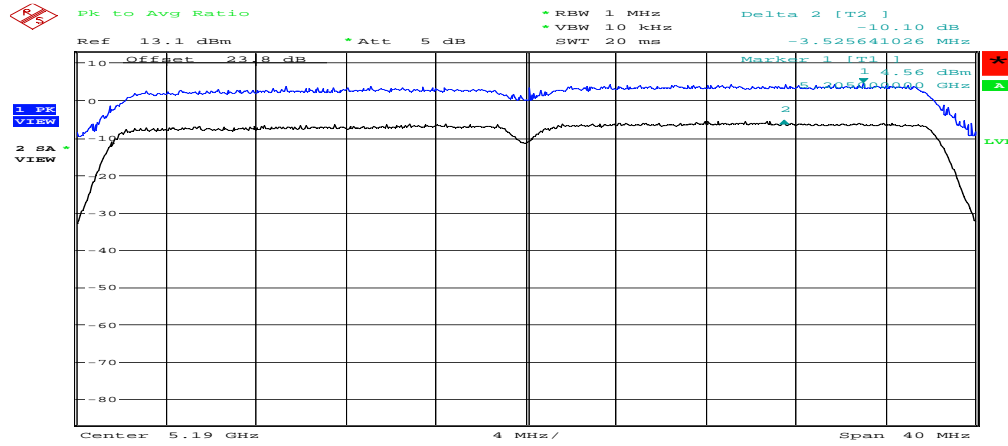
802.11 n (HT20) Chain 2 CH60 5300MHz PK to AV Ratio



802.11 n (HT20) Chain 2 CH64 5320MHz PK to AV Ratio

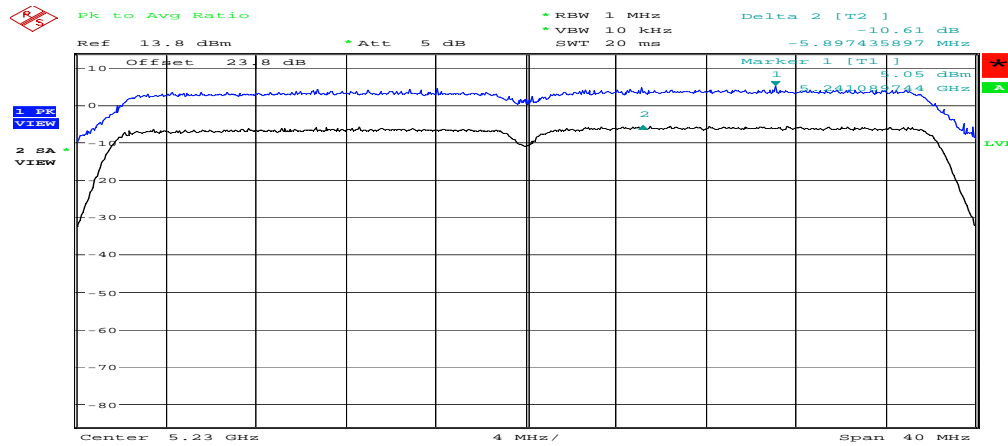


802.11 n (HT40) Chain 0 CH38 5190MHz PK to AV Ratio



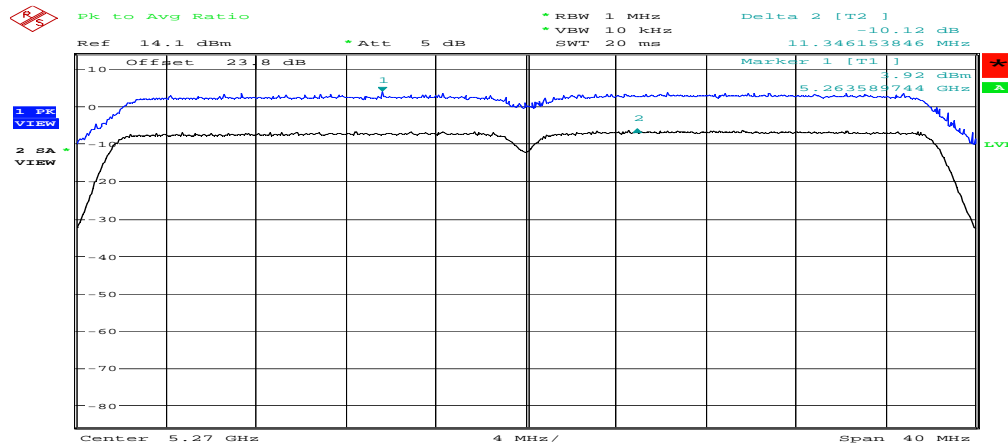
802.11a 5190MHz
Date: 26.NOV.2007 14:22:33

802.11 n (HT40) Chain 0 CH46 5230MHz PK to AV Ratio



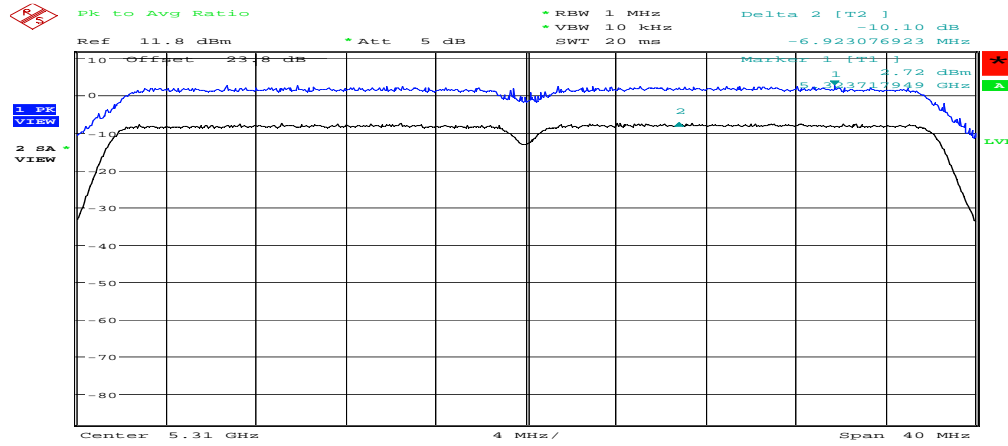
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:27:12

802.11 n (HT40) Chain 0 CH54 5270MHz PK to AV Ratio



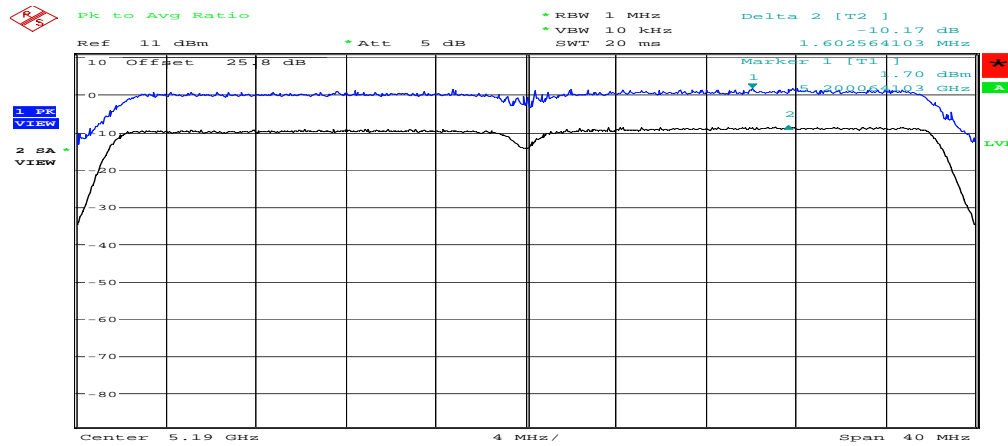
802.11n(40) 5270MHz
Date: 26.NOV.2007 14:29:26

802.11 n (HT40) Chain 0 CH62 5310MHz PK to AV Ratio



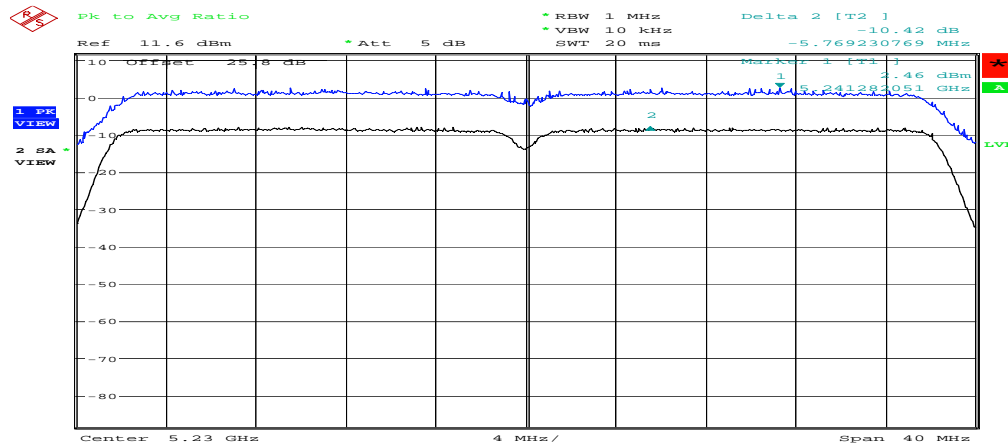
802.11n(40) 5310MHz
Date: 26.NOV.2007 14:31:25

802.11 n (HT40) Chain 2 CH38 5190MHz PK to AV Ratio



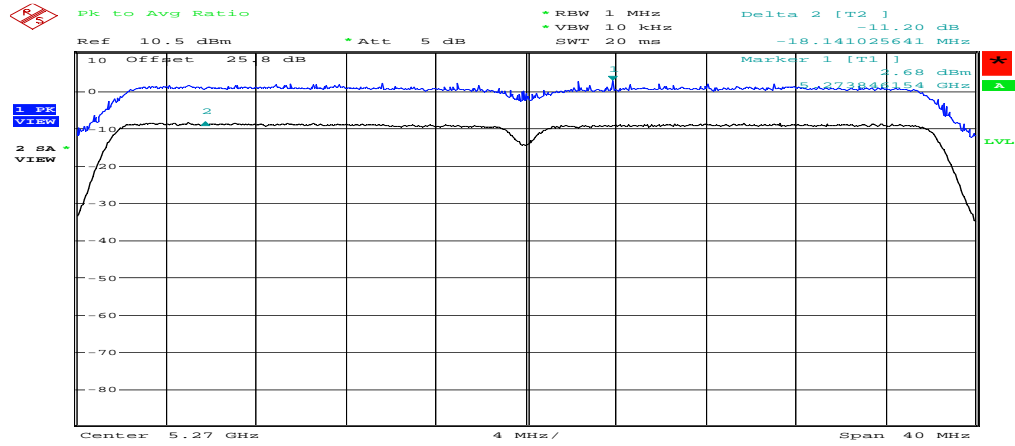
802.11n(40) 5190MHz
Date: 26.NOV.2007 14:41:46

802.11 n (HT40) Chain 2 CH46 5230MHz PK to AV Ratio



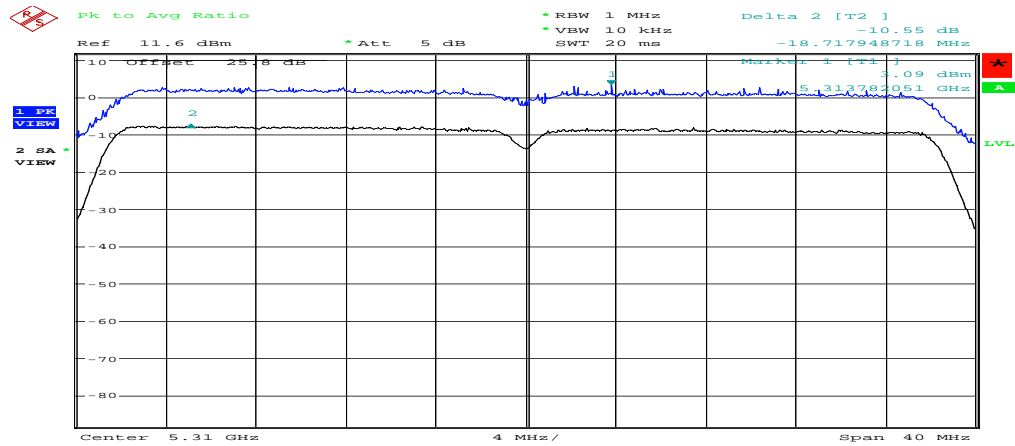
802.11n(40) 5230MHz
Date: 26.NOV.2007 14:39:58

802.11 n (HT40) Chain 2 CH54 5270MHz PK to AV Ratio



802.11n(40) 5270MHz
Date: 26.NOV.2007 14:38:04

802.11 n (HT40) Chain 2 CH62 5310MHz PK to AV Ratio



802.11n(40) 5310MHz
Date: 26.NOV.2007 14:35:03

6 Radiated emission test (FCC Part 15.209)

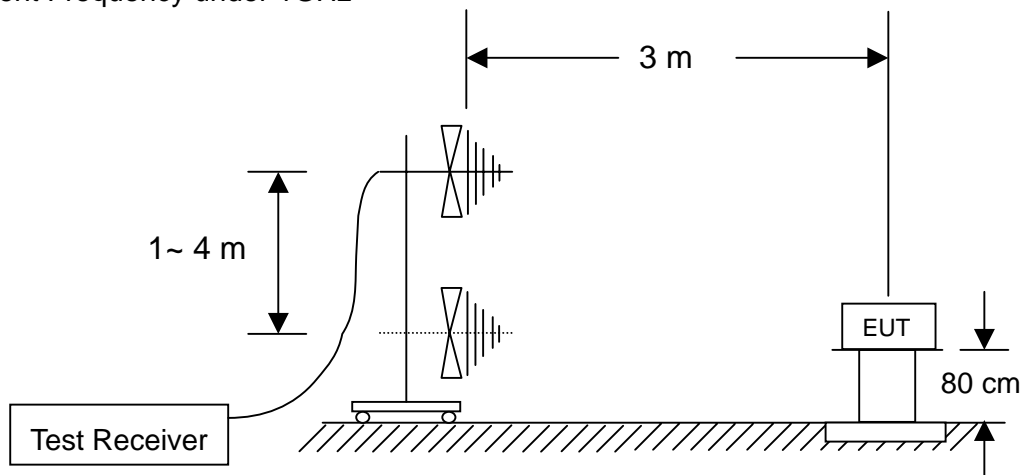
6.1 Limits

The radiated emission shall comply with §15.209(a).

Frequency (MHz)	Field strength Db(Mv/m)	Measurement distance (meters)
1.705~30.0	29.5	30
30 ~ 88	40	3
88~216	43.5	3
216~960	46	3
Above 960	54	3

6.2 Configuration of Measurement

Measurement Frequency under 1GHz



6.3 Test Procedure

Radiated emission measurements were performed from 30MHz to1GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater.

The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to present worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

6.4 Test Result

PASS.

The final test data is shown on as following pages.

Radiated spurious emission

Test Environment

Ambient temperature : 26.3°C

Relative humidity : 67%

Radiated Emission below 1GHz								
Worst case : 802.11a CH36 5180MHz								
Frequency (MHz)	Antenna Polarization	Reading (dB μ V)	Preamp (dB)	Correction Factor (dB/m)	Corrected Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Det. Mode
119.997	H	51.79	29.54	12.53	34.78	43.50	-8.72	QP
240.012	H	55.36	29.55	13.35	39.16	46.00	-6.84	QP
305.446	H	49.00	29.58	15.98	35.40	46.00	-10.60	QP
647.990	H	40.00	29.21	25.35	36.14	46.00	-9.86	QP
914.438	H	40.66	29.10	29.57	41.13	46.00	-4.87	QP
120.330	V	53.20	29.54	12.78	36.44	43.50	-7.06	QP
192.000	V	52.36	29.54	10.54	33.36	43.50	-10.14	QP
239.998	V	55.49	29.55	11.16	37.10	46.00	-8.90	QP
458.990	V	43.54	29.66	21.66	35.54	46.00	-10.46	QP
914.440	V	37.78	29.10	29.56	40.24	46.00	-5.76	QP

Remark : Corrected Level = Reading + Correction Factor – Preamp
 Correction Factor = Antenna Factor + Cable Loss