

FCC RADIO TEST REPORT

Applicant's company	Accton Technology Corporation
Applicant Address	No. 1 Creation Rd., III, Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C.
FCC ID	HEDBAP120
Manufacturer's company	Accton Technology Corporation
Manufacturer Address	No. 1 Creation Rd., III, Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C.

Product Name	802.11 abg AP
Brand Name	Nortel
Model Name	Business Access Point 120 a/b/g
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz
Receive Date	Apr. 14, 2006
Test Date	Jun. 2, 2006
Submission Type	Original Equipment



Statement

Test result included is only for the 802.11a (5150 ~ 5350MHz) 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.

NVLAQ®

Lab Code: 200079-0

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History of This Test Report

Original Issue Date: Jun. 12, 2006

Report No.: FR641005-AA

☒ No additional attachment.

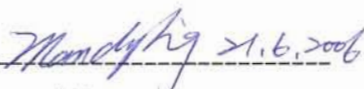
☐ Additional attachment were issued as following record:

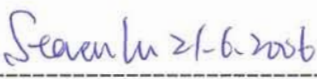
Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name : 802.11 abg AP
Brand Name : Nortel
Model Name : Business Access Point 120 a/b/g
Applicant : Accton Technology Corporation
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Apr. 14, 2006 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.


Prepared By:
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Reviewed By:
Wayne Hsu

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.207	AC Power Line Conducted Emissions	Complies	3.04 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	2.85dB
4.4	15.407(a)	Power Spectral Density	Complies	6.89 dB
4.5	15.407(a)	Peak Excursion	Complies	7.14 dB
4.6	15.407(b)	Radiated Emissions	Complies	1.21 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.08 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	$\pm 2.26\text{dB}$	Confidence levels of 95%
Maximum Conducted Output Power	$\pm 0.71\text{dB}$	Confidence levels of 95%
Power Spectral Density	$\pm 0.71\text{dB}$	Confidence levels of 95%
Peak Excursion	$\pm 0.71\text{dB}$	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	$\pm 6.25 \times 10^{-7}$	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	$\pm 3.72\text{dB}$	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN
Radio Type	Intentional Transceiver
Power Type	POE & Power Adapter
Interface Type	RJ-45 (POE) / DC IN / Console / Antenna
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54/108)
Frequency Range	5150 ~ 5350MHz
Channel Number	11a: 11
Channel Band Width (99%)	11a: 17.56 MHz ; 11a Turbo: 33.65 MHz
Conducted Output Power	11a : 13.04 dBm ; 11a Turbo: 14.23 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

Power	Brand	Model	Rating
Adapter	DELTA	ADP-15KB	100~240VAC, 5.1VDC
POE Injector	Symbol	AP-PSBIAS-T-1P-AF	100~240VAC, 48VDC

3.3. Table for Filed Antenna

For 5GHz Band

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Accton	BWP6101B-ZZ	Dipole Antenna	Reversed-SMA	5.0
2	Smartant	ACC04-223910	Patch Antenna	SMA	8.0

3.4. Table for Carrier Frequencies

Frequency Allocation for 802.11a

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	Turbo 42	5210 MHz
	40	5200 MHz	Turbo 50	5250 MHz
	44	5220 MHz		
	48	5240 MHz		
5250~5350 MHz Band 2	52	5260 MHz	Turbo 58	5290 MHz
	56	5280 MHz		
	60	5300 MHz		
	64	5320 MHz		

3.5. 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 all the possible configurations 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
AC Power Conducted Emission	Normal Link	54Mbps	64	2
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	Band 1~2/BPSK	6Mbps	36/52/64	1/2
Max. Conducted Output Power Power Spectral Density Peak Excursion	Band 1~2 Turbo/BPSK	12Mbps	42/50/58	1/2
Radiated Emission Below 1GHz	BPSK	6Mbps	64	1/2
Radiated Emission Above 1GHz	Band 1~2/BPSK	6Mbps	36/52/64	1/2
	Band 1~2 Turbo/BPSK	12Mbps	42/50/58	1/2
Band Edge Emission	Band 1~2/BPSK	6Mbps	36/64	1/2
	Band 1~2 Turbo/BPSK	12Mbps	42/58	1/2
Frequency Stability	Un-modulation	-	64	1

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	101377	IC 4088	-
CO04-HY	Conduction	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	PP01L	DoC

3.8. 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.

Power Parameters of IEEE 802.11a / Ant. 1

Test Software Version	ART_V48_Build13		
Frequency	5180 MHz	5260 MHz	5320 MHz
IEEE 802.11a	13	13	13
Frequency	5210 MHz	5250 MHz	5290 MHz
IEEE 802.11a Turbo	13.5	14	14

Power Parameters of IEEE 802.11a / Ant. 2

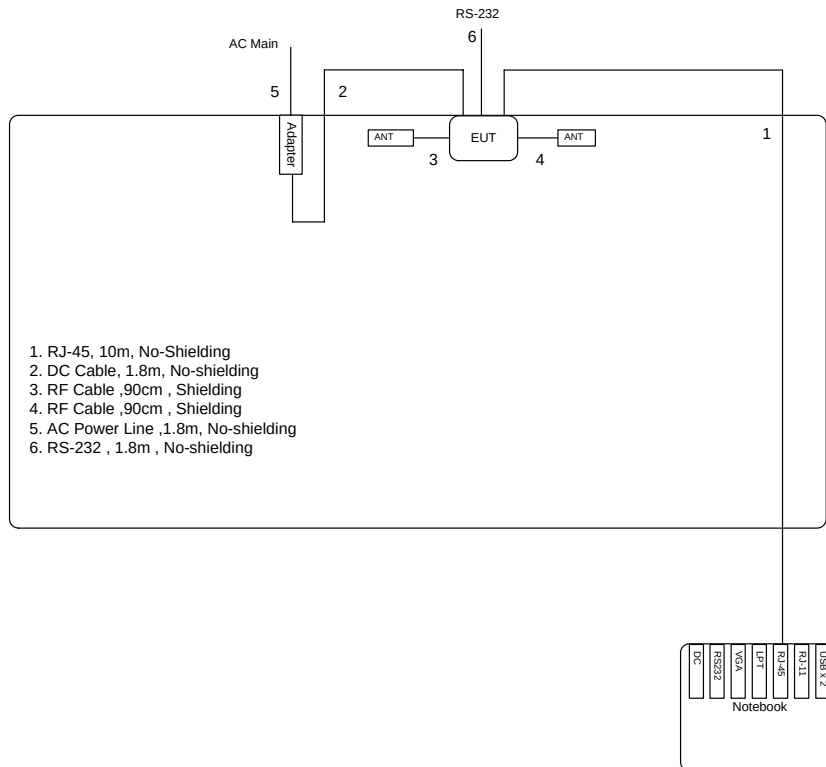
Test Software Version	ART_V48_Build13		
Frequency	5180 MHz	5260 MHz	5320 MHz
IEEE 802.11a	13	13	13
Frequency	5210 MHz	5250 MHz	5290 MHz
IEEE 802.11a Turbo	13.5	14	14

3.9. Test Configurations

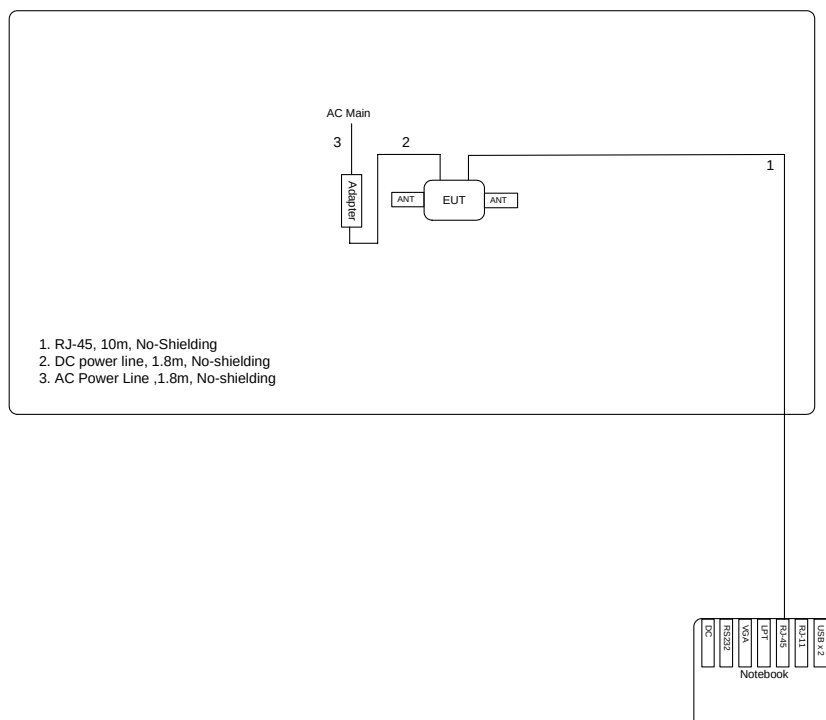
3.9.1. Radiation Emissions Test Configuration

Test mode: Adapter with Ant. 1

Test Configuration: 9KHz~1GHz

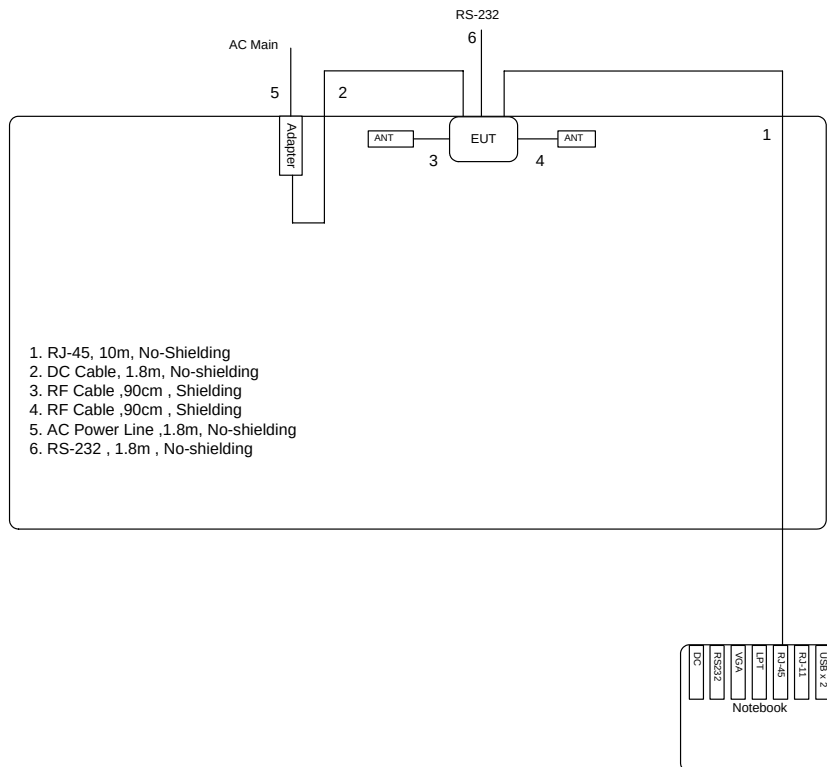


Test Configuration: above 1GHz

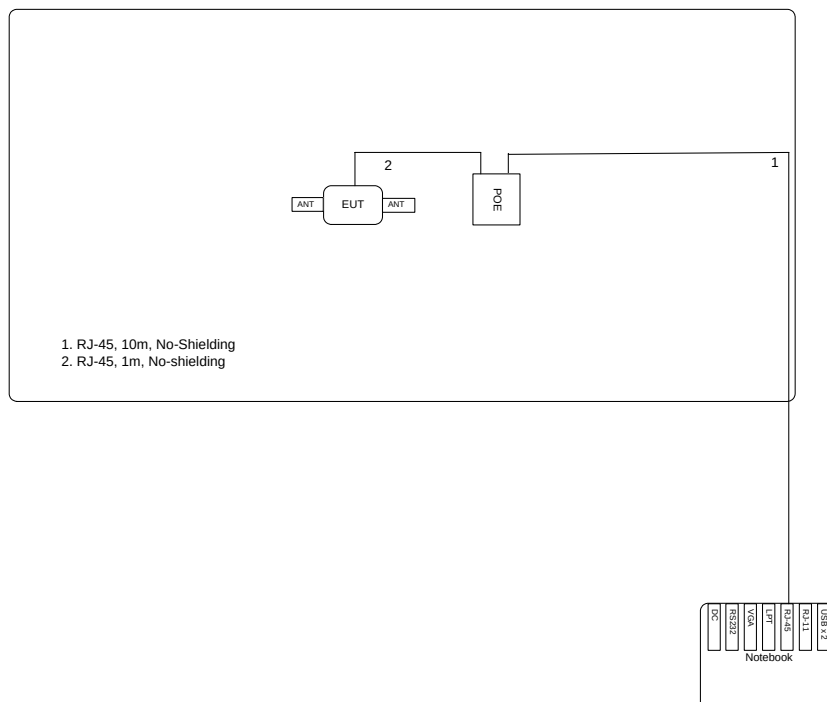


Test mode: POE with Ant. 1

Test Configuration: 9KHz~1GHz

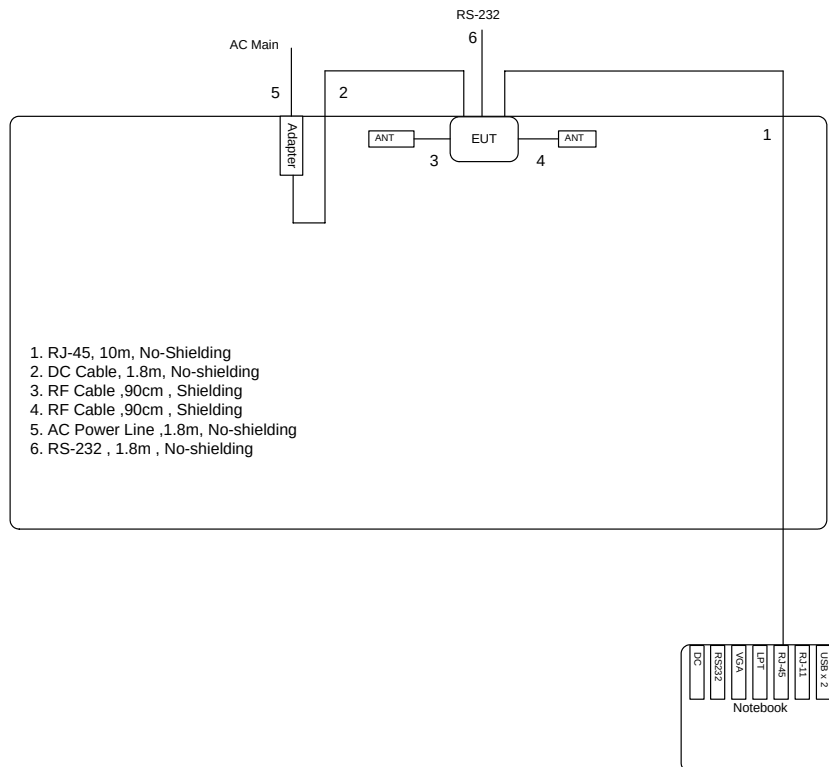


Test Configuration: above 1GHz

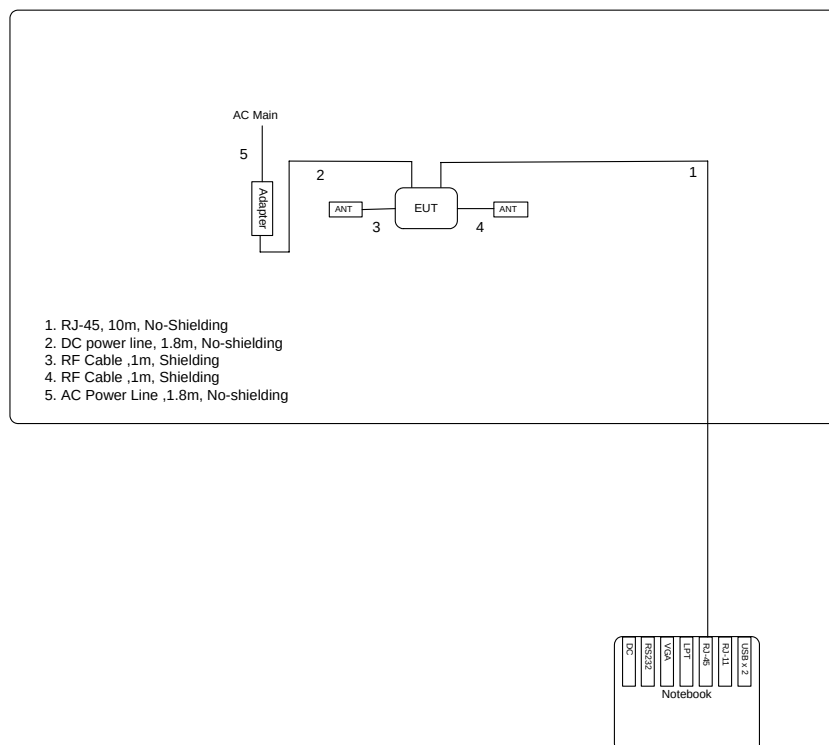


Test mode: Adapter with Ant. 2

Test Configuration: 9KHz~1GHz

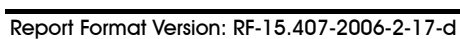


Test Configuration: above 1GHz



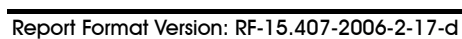


Test Configuration: 9KHz~1 GHz





Test mode: Adapter with Ant. 2



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For a Low-power Radio-frequency Device 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.

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

4.1.2. Measuring Instruments and Setting

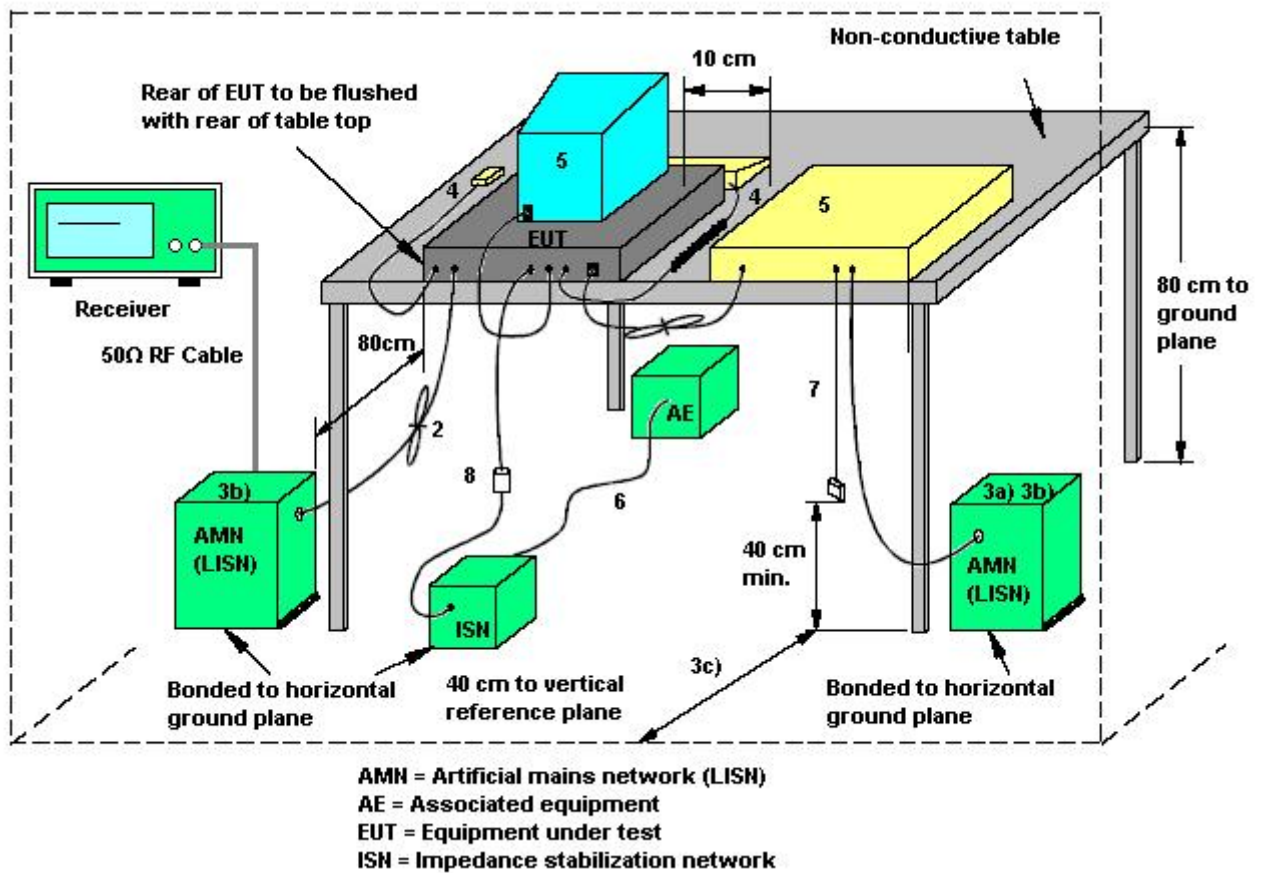
Please refer to section 5 in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

1. 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.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



1. If cables, which hang closer than 40 cm to the horizontal metal groundplane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
2. Excess mains cord shall be bundled in the centre or shortened to appropriate length.
3. EUT is connected to one artificial mains network (AMN). All AMNs and ISNs may alternatively be connected to a vertical reference plane or metal wall.
4. All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
5. AMN and ISN are 80 cm from the EUT and at least 80 cm from other units and other metal planes.
6. Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
7. Cables of hand operated devices, such as keyboards, mice, etc. shall be placed as for normal usage.
8. Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
9. I/O signal cable intended for external connection.
10. The end of the I/O signal cables which are not connected to an AE may be terminated, if required, using correct terminating impedance.
11. If used, the current probe shall be placed at 0,1 m from the ISN.

4.1.5. Test Deviation

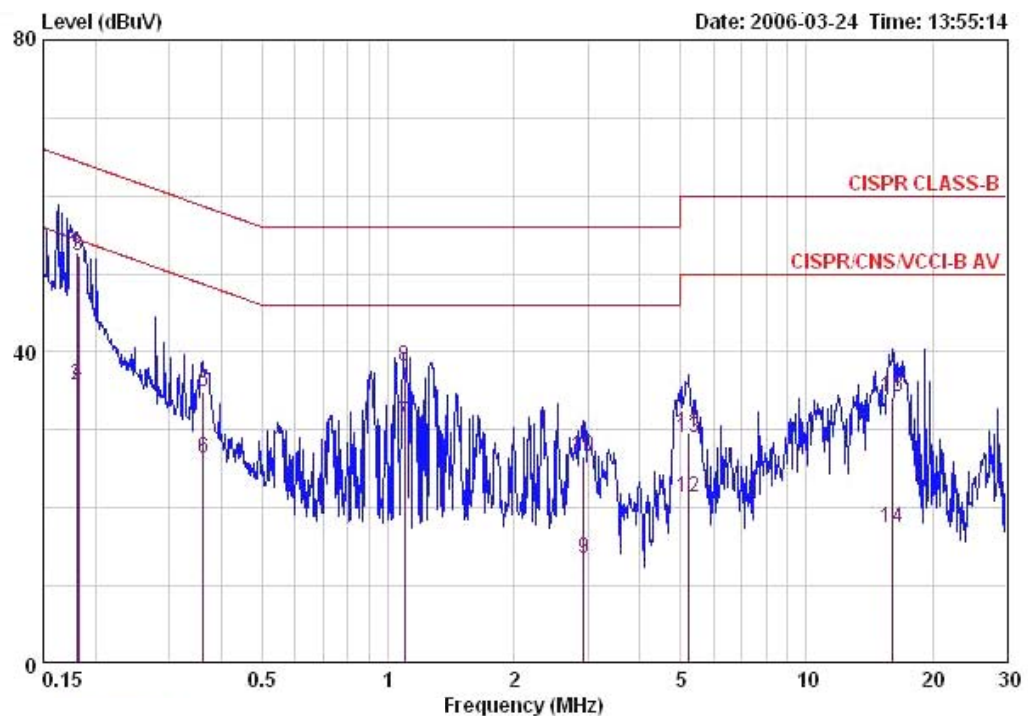
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

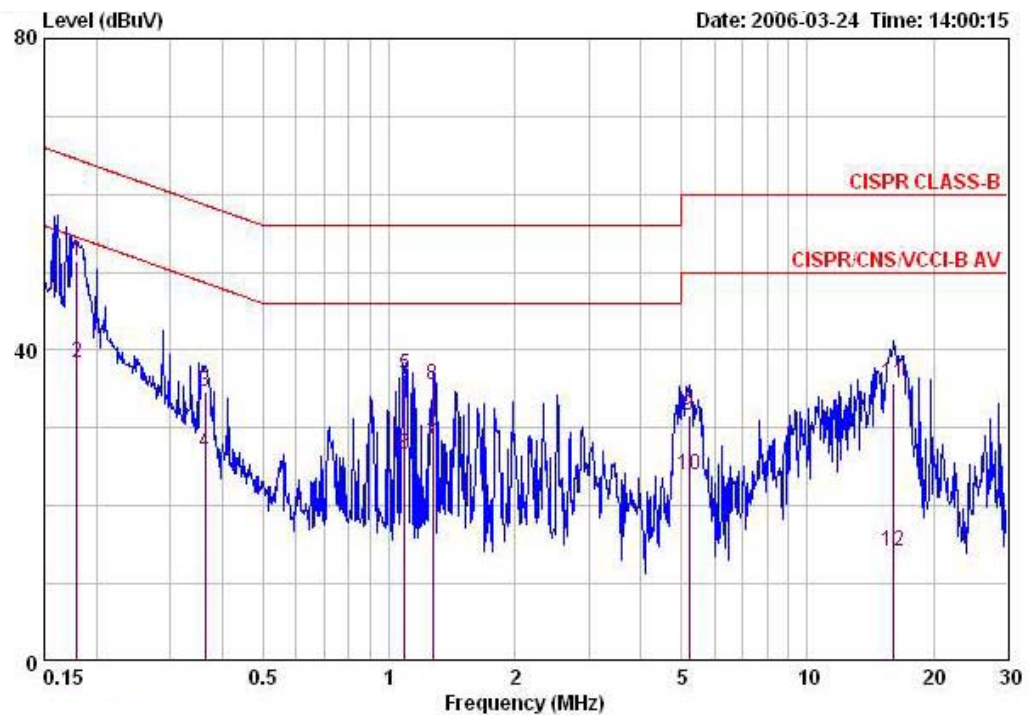
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	20°C	Humidity	70%
Test Engineer	Evelyn Shih	Phase	Line
Configuration	Adapter / Ant. 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18056	52.81	-11.65	64.46	50.96	1.65	0.20	QP
2	0.18056	35.73	-18.73	54.46	33.88	1.65	0.20	AVERAGE
3	0.18203	52.40	-12.00	64.39	50.66	1.54	0.20	QP
4	0.18203	35.87	-18.53	54.39	34.13	1.54	0.20	AVERAGE
5	0.36146	34.82	-23.87	58.69	33.94	0.68	0.20	QP
6	0.36146	26.28	-22.41	48.69	25.40	0.68	0.20	AVERAGE
7	1.094	30.92	-15.08	46.00	30.44	0.30	0.18	AVERAGE
8	1.094	38.19	-17.81	56.00	37.71	0.30	0.18	QP
9	2.931	13.55	-32.45	46.00	13.05	0.30	0.20	AVERAGE
10	2.931	26.56	-29.44	56.00	26.06	0.30	0.20	QP
11	5.249	29.60	-30.40	60.00	29.00	0.30	0.30	QP
12	5.249	21.39	-28.61	50.00	20.79	0.30	0.30	AVERAGE
13	5.249	29.08	-30.92	60.00	28.48	0.30	0.30	QP
14	16.055	17.34	-32.66	50.00	16.64	0.30	0.40	AVERAGE
15	16.055	34.25	-25.75	60.00	33.55	0.30	0.40	QP

Temperature	20°C	Humidity	70%
Test Engineer	Evelyn Shih	Phase	Neutral
Configuration	Adapter / Ant. 2		

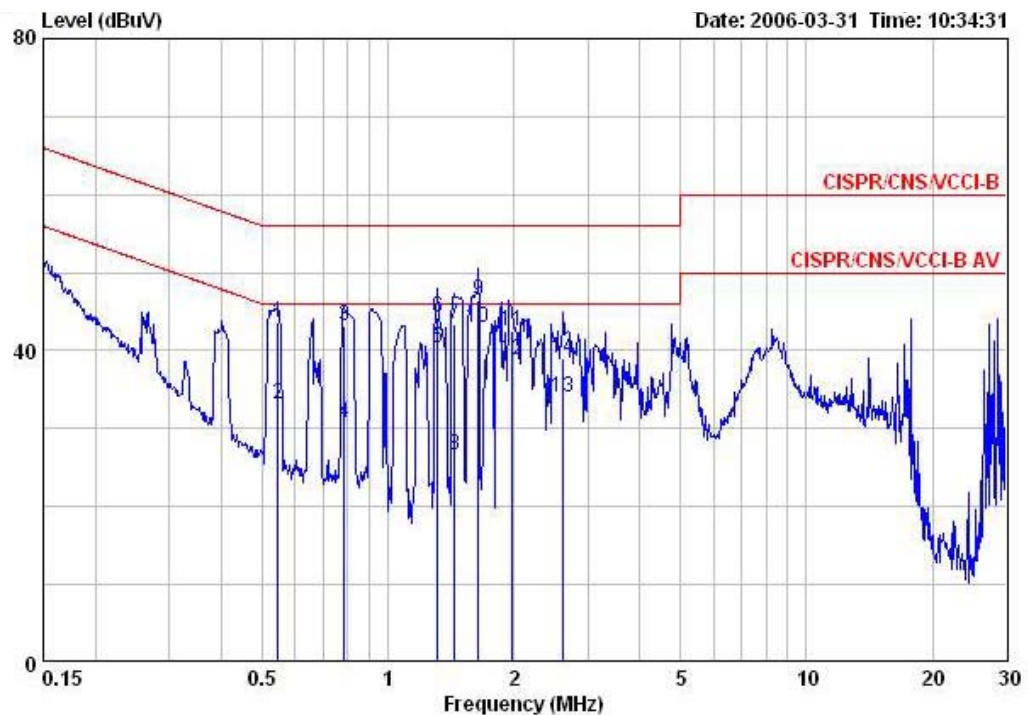


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17961	51.35	-13.15	64.50	49.65	1.50	0.20	QP
2	0.17961	38.47	-16.03	54.50	36.77	1.50	0.20	AVERAGE
3	0.36378	34.69	-23.95	58.64	33.93	0.56	0.20	QP
4	0.36378	26.82	-21.82	48.64	26.06	0.56	0.20	AVERAGE
5	1.090	36.76	-19.24	56.00	36.28	0.30	0.18	QP
6	1.090	26.65	-19.35	46.00	26.17	0.30	0.18	AVERAGE
7	1.269	27.85	-18.15	46.00	27.41	0.30	0.14	AVERAGE
8	1.269	35.56	-20.44	56.00	35.12	0.30	0.14	QP
9	5.221	31.55	-28.45	60.00	30.95	0.30	0.30	QP
10	5.221	24.08	-25.92	50.00	23.48	0.30	0.30	AVERAGE
11	16.055	35.81	-24.19	60.00	35.11	0.30	0.40	QP
12	16.055	14.17	-35.83	50.00	13.47	0.30	0.40	AVERAGE

Note:

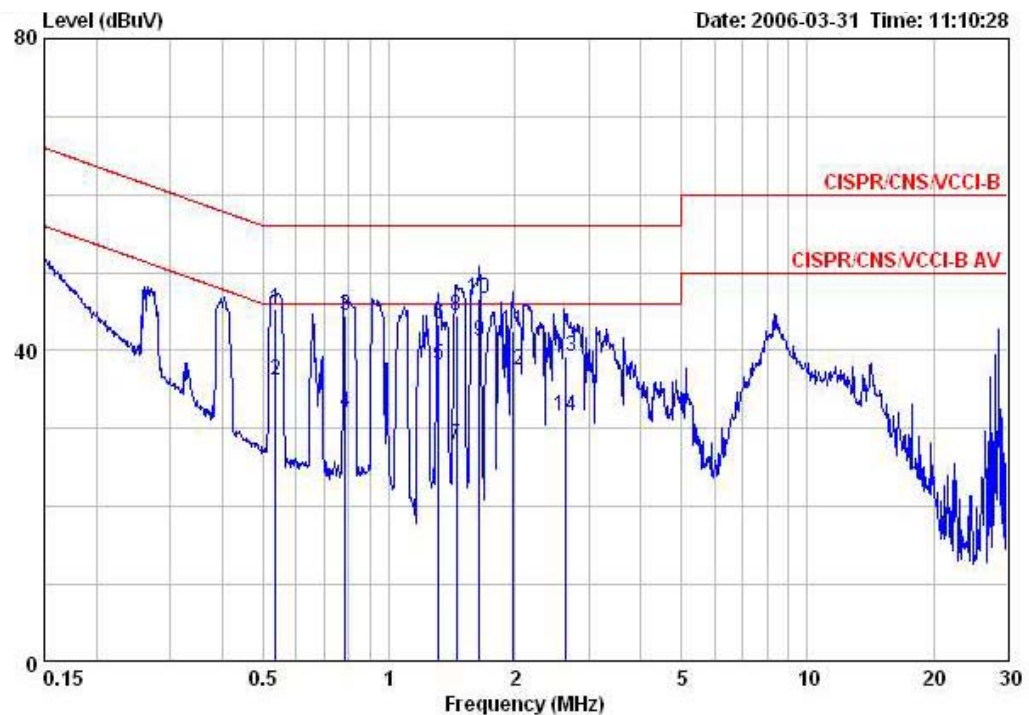
Level = Read Level + LISN Factor + Cable Loss.

Temperature	20°C	Humidity	70%
Test Engineer	Evelyn Shih	Phase	Line
Configuration	POE / Ant. 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.54644	43.67	-12.33	56.00	43.07	0.40	0.20	QP
2	0.54644	33.19	-12.81	46.00	32.59	0.40	0.20	AVERAGE
3	0.78761	43.26	-12.74	56.00	42.76	0.30	0.20	QP
4	0.78761	30.72	-15.28	46.00	30.22	0.30	0.20	AVERAGE
5	1.313	40.41	-5.59	46.00	39.98	0.30	0.13	AVERAGE
6	1.313	44.15	-11.85	56.00	43.72	0.30	0.13	QP
7	1.441	43.39	-12.61	56.00	42.98	0.30	0.11	QP
8	1.441	26.69	-19.31	46.00	26.28	0.30	0.11	AVERAGE
9	1.642	46.47	-9.53	56.00	46.04	0.30	0.13	QP
10	1.642	42.96	-3.04	46.00	42.53	0.30	0.13	AVERAGE
11	1.971	42.57	-13.43	56.00	42.08	0.30	0.19	QP
12	1.971	38.72	-7.28	46.00	38.23	0.30	0.19	AVERAGE
13	2.629	34.03	-11.97	46.00	33.53	0.30	0.20	AVERAGE
14	2.629	38.92	-17.08	56.00	38.42	0.30	0.20	QP

Temperature	20°C	Humidity	70%
Test Engineer	Evelyn Shih	Phase	Neutral
Configuration	POE / Ant. 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.53498	45.44	-10.56	56.00	44.94	0.30	0.20	QP
2	0.53498	36.26	-9.74	46.00	35.76	0.30	0.20	AVERAGE
3	0.78731	44.51	-11.49	56.00	44.01	0.30	0.20	QP
4	0.78731	31.98	-14.02	46.00	31.48	0.30	0.20	AVERAGE
5	1.315	38.17	-7.83	46.00	37.74	0.30	0.13	AVERAGE
6	1.315	43.44	-12.56	56.00	43.01	0.30	0.13	QP
7	1.449	27.95	-18.05	46.00	27.54	0.30	0.11	AVERAGE
8	1.449	44.54	-11.46	56.00	44.13	0.30	0.11	QP
9	1.643	41.30	-4.70	46.00	40.90	0.27	0.13	AVERAGE
10	1.643	46.70	-9.30	56.00	46.30	0.27	0.13	QP
11	1.971	42.60	-13.40	56.00	42.20	0.21	0.19	QP
12	1.971	37.46	-8.54	46.00	37.06	0.21	0.19	AVERAGE
13	2.630	39.18	-16.82	56.00	38.68	0.30	0.20	QP
14	2.630	31.64	-14.36	46.00	31.14	0.30	0.20	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 99% Occupied Bandwidth Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

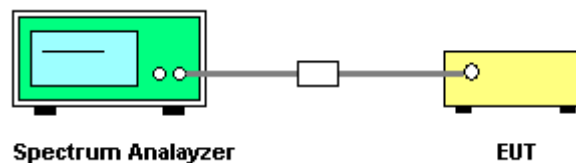
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

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

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser 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.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 99% Occupied Bandwidth

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 1

Configuration IEEE 802.11a

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.76	17.56
52	5260 MHz	24.61	17.43
64	5320 MHz	24.87	17.43

Configuration IEEE 802.11a Turbo

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	48.55	33.65
50	5250 MHz	48.07	33.49
58	5290 MHz	49.35	33.65

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 2

Configuration IEEE 802.11a

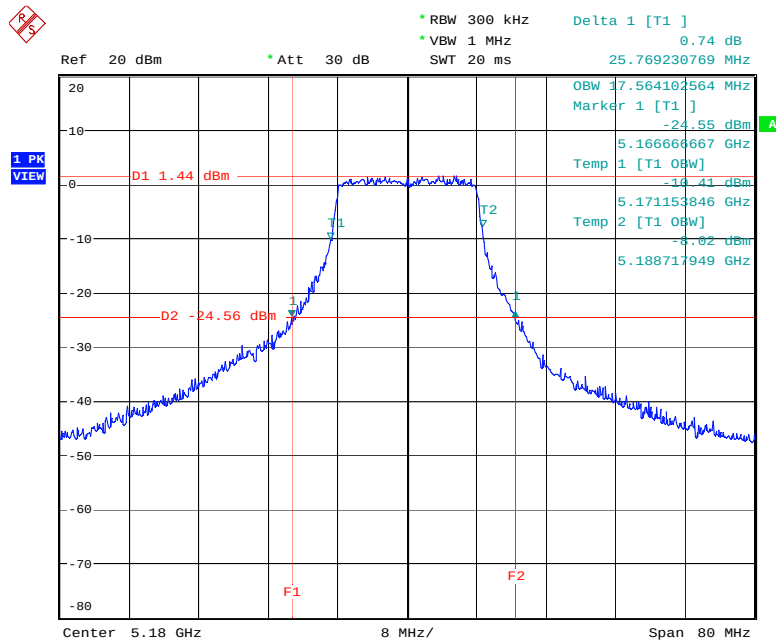
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.64	17.56
52	5260 MHz	25.38	17.43
64	5320 MHz	25.38	17.43

Configuration IEEE 802.11a Turbo

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	46.95	33.65
50	5250 MHz	48.23	33.65
58	5290 MHz	46.63	33.49

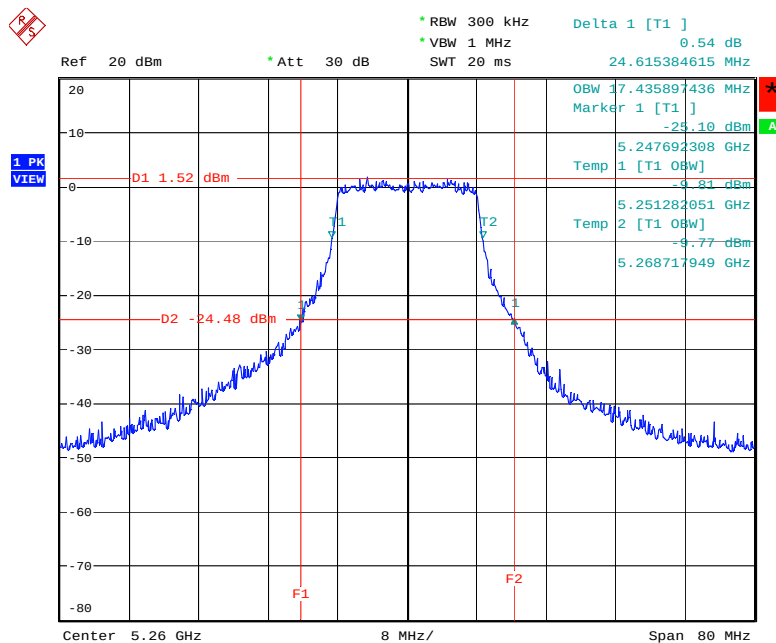
For Ant. 1

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5180 MHz



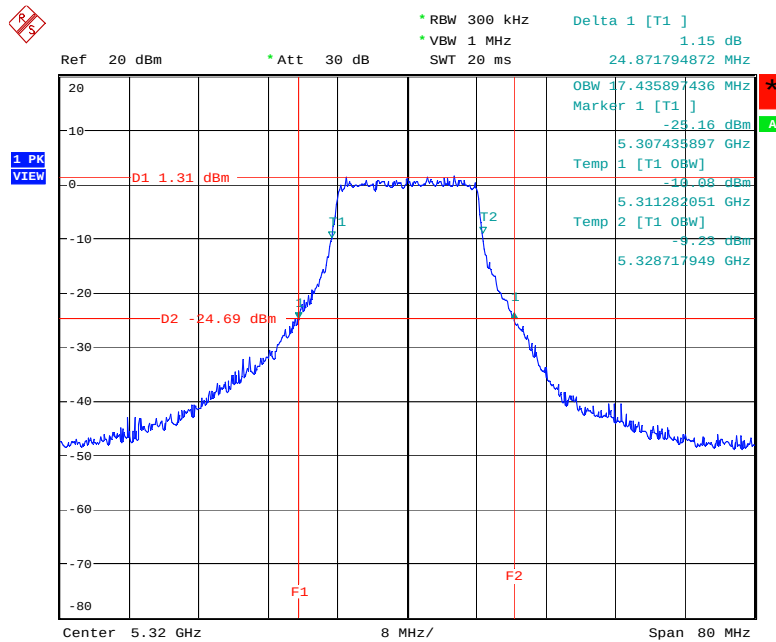
Date: 2.JUN.2006 14:26:43

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



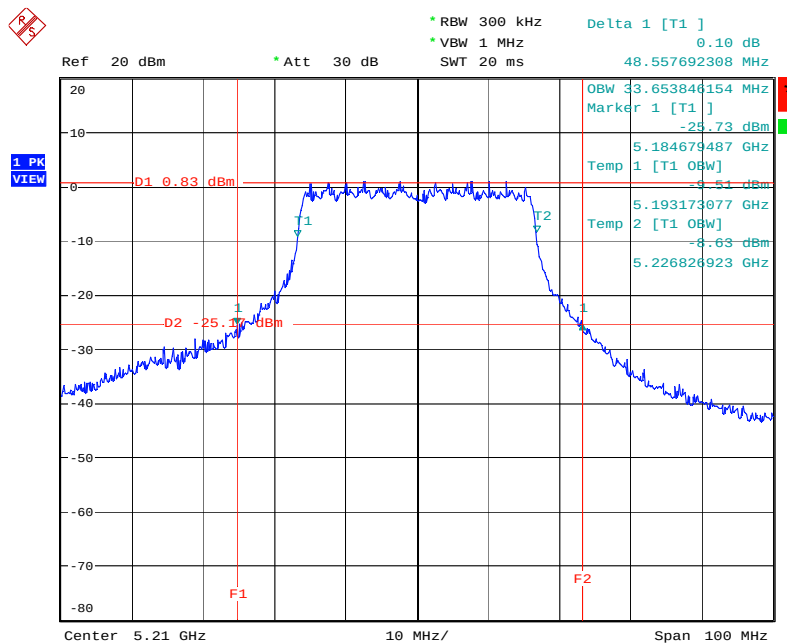
Date: 2.JUN.2006 14:27:39

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



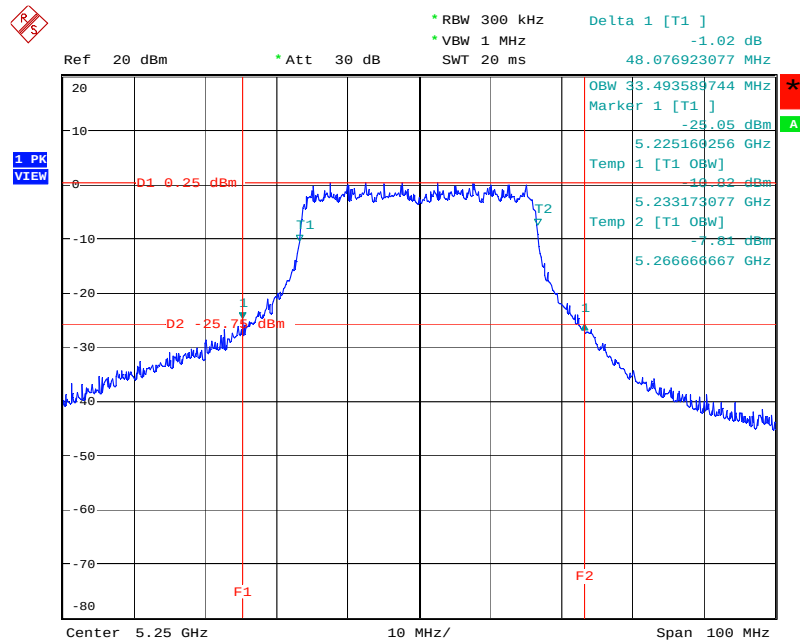
Date: 2.JUN.2006 14:28:36

26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



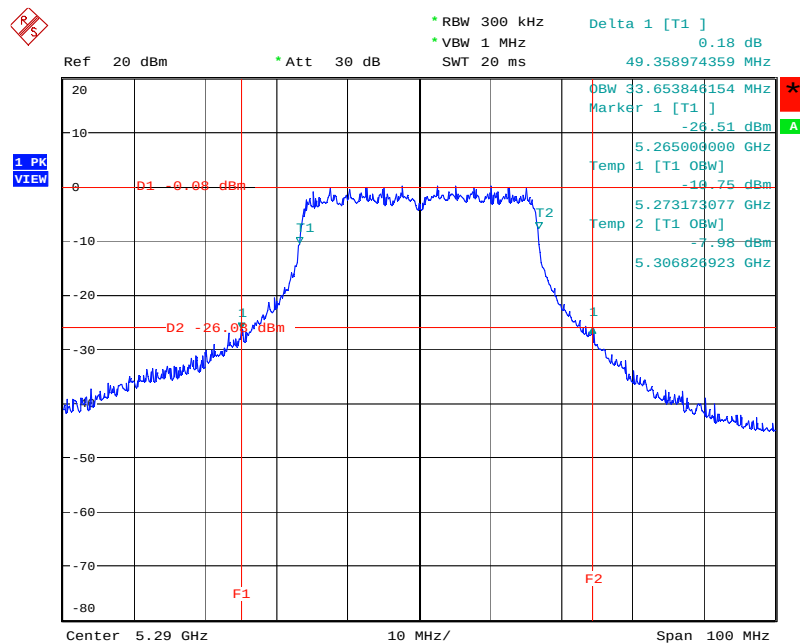
Date: 2.JUN.2006 14:47:23

26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 2.JUN.2006 14:46:30

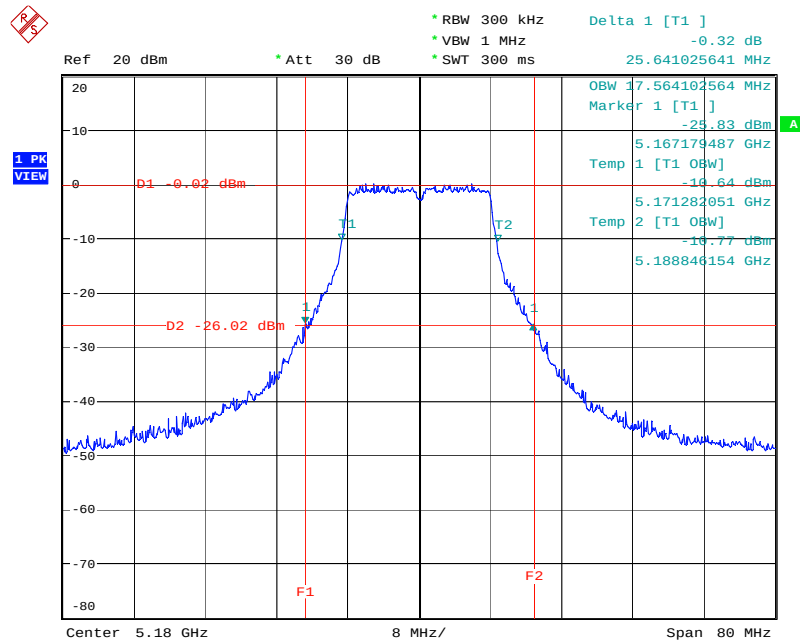
26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 2.JUN.2006 14:45:41

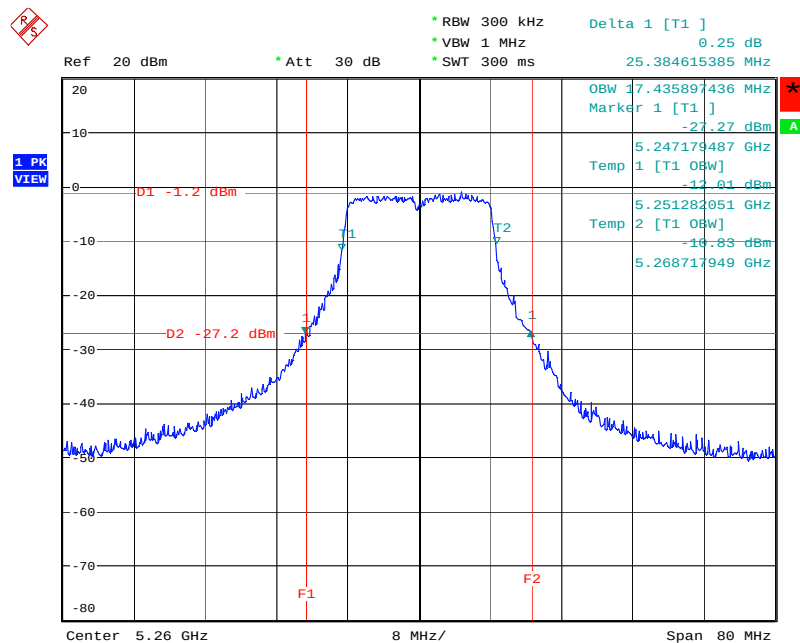
For Ant. 2

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5180 MHz



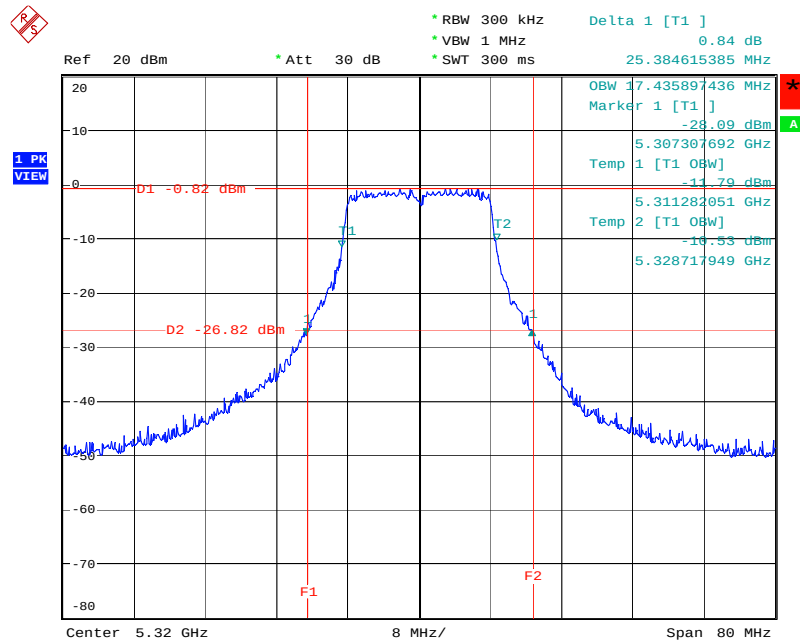
Date: 20.APR.2006 20:51:14

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



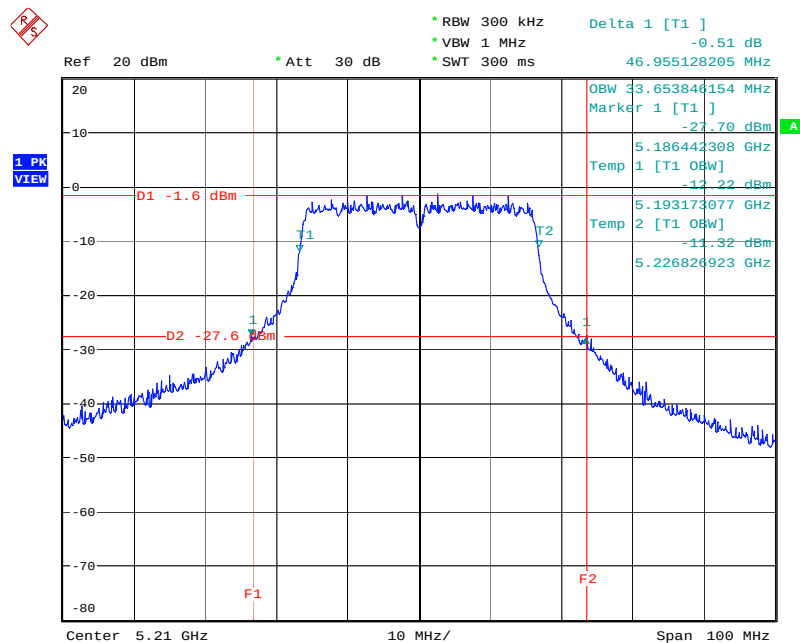
Date: 20.APR.2006 20:56:00

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



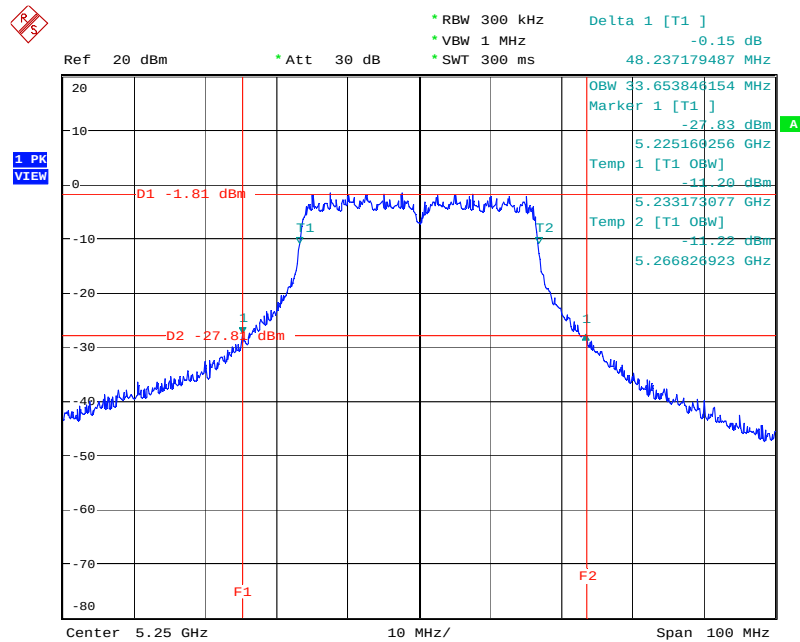
Date: 20.APR.2006 20:57:56

26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



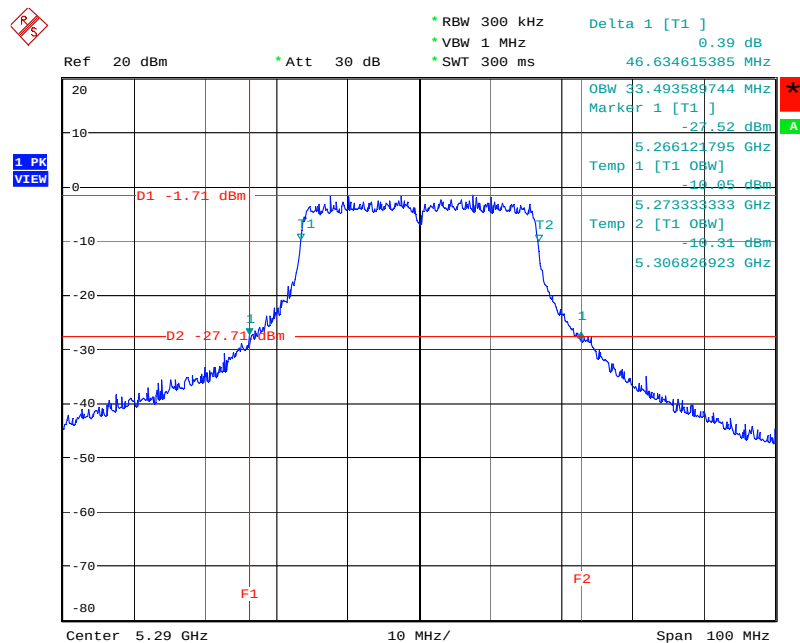
Date: 20.APR.2006 20:52:45

26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 20.APR.2006 20:53:59

26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 20.APR.2006 20:54:55

4.3. Maximum Conducted Output Power Measurement

4.3.1. 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 $4 \text{ dBm} + 10\log B$, 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 from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the and 5.25-5.35 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or $11 \text{ dBm} + 10\log B$. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2. Measuring Instruments and Setting

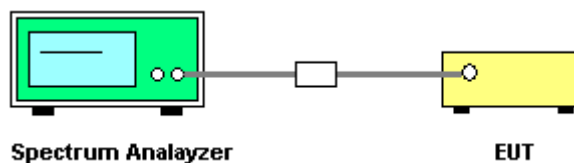
Please refer to section 5 in this report. The following table is the setting of the spectrum.

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

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with method #3 of FCC Public Notice DA-02-2138.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 1

Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	12.79	17.00	Complies
52	5260 MHz	13.04	24.00	Complies
64	5320 MHz	12.51	24.00	Complies

Configuration IEEE 802.11a Turbo

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
42	5210 MHz	13.80	17.00	Complies
50	5250 MHz	14.15	17.00	Complies
58	5290 MHz	14.23	24.00	Complies

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 2

Configuration IEEE 802.11a

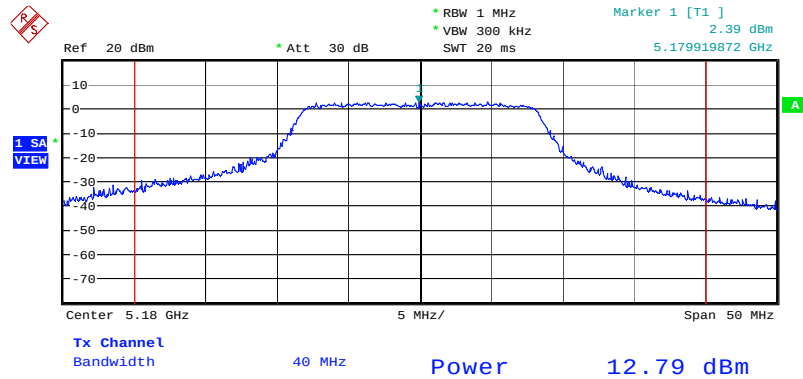
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	11.25	15.00	Complies
52	5260 MHz	10.72	22.00	Complies
64	5320 MHz	11.31	22.00	Complies

Configuration IEEE 802.11a Turbo

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
42	5210 MHz	12.06	15.00	Complies
50	5250 MHz	12.13	15.00	Complies
58	5290 MHz	12.41	22.00	Complies

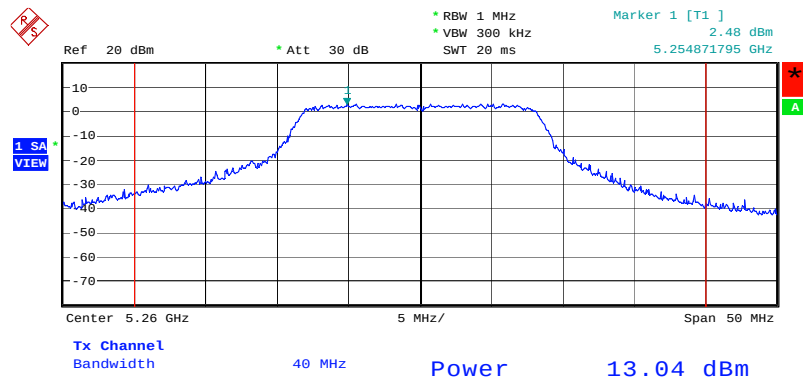
For Ant. 1

Channel Output Power Plot on Configuration IEEE 802.11a / 5180 MHz



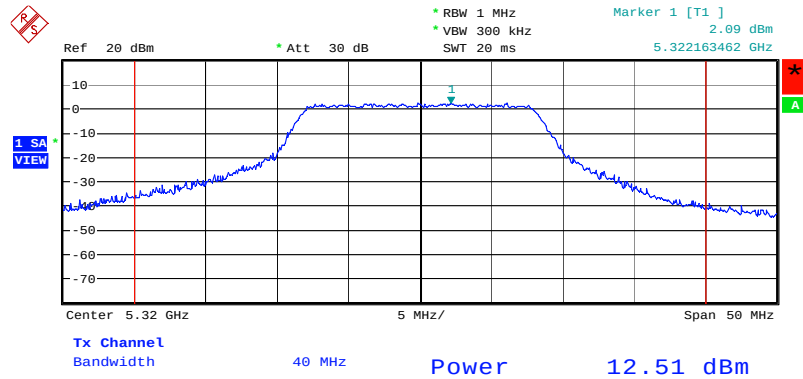
Date: 2.JUN.2006 14:36:02

Channel Output Power Plot on Configuration IEEE 802.11a / 5260 MHz



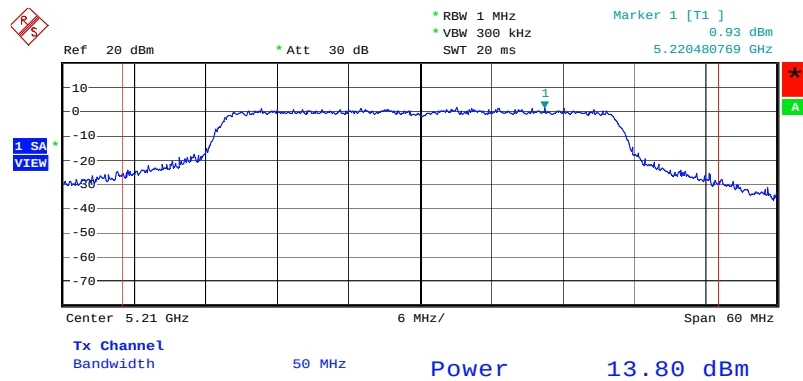
Date: 2.JUN.2006 14:36:31

Channel Output Power Plot on Configuration IEEE 802.11a / 5320 MHz



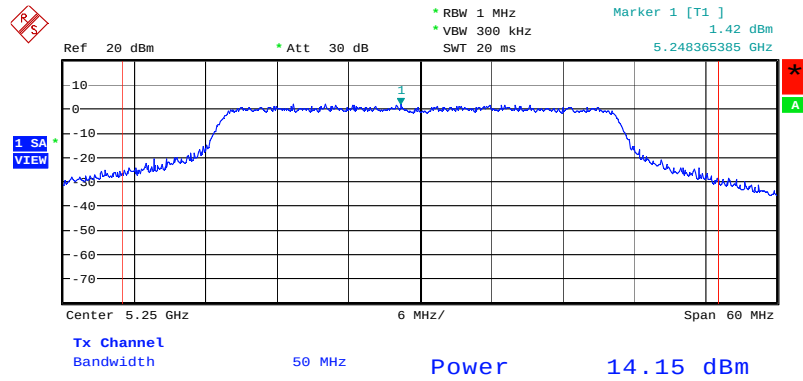
Date: 2.JUN.2006 14:37:03

Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



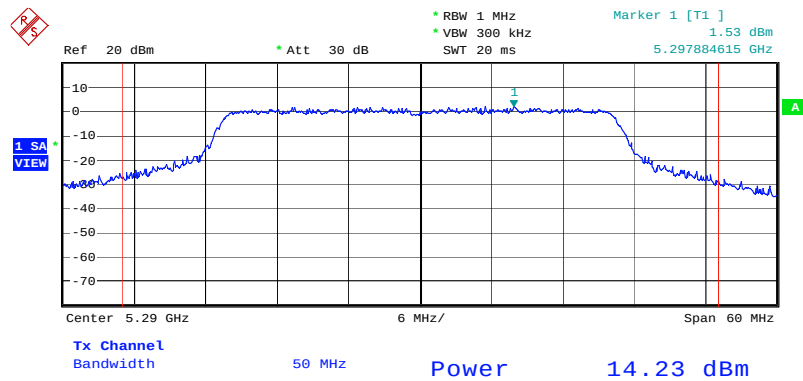
Date: 2.JUN.2006 14:38:45

Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 2.JUN.2006 14:38:14

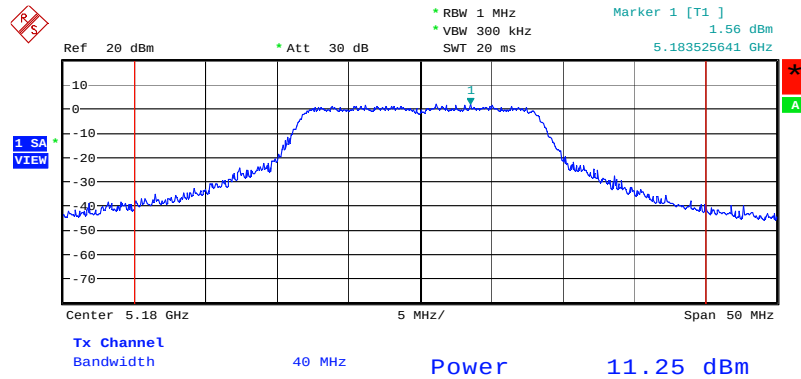
Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 2.JUN.2006 14:37:48

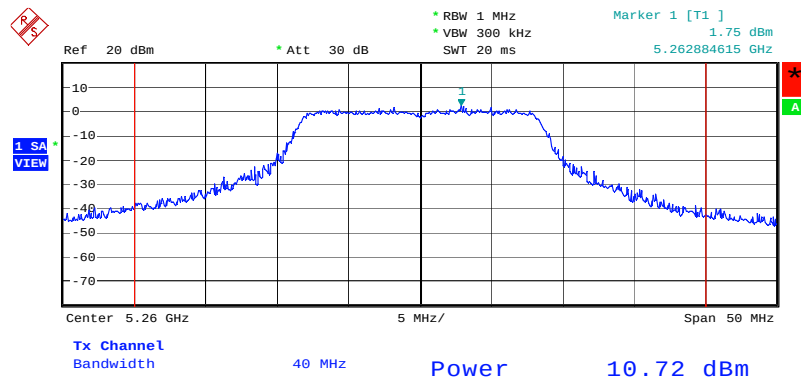
For Ant. 2

Channel Output Power Plot on Configuration IEEE 802.11a / 5180 MHz



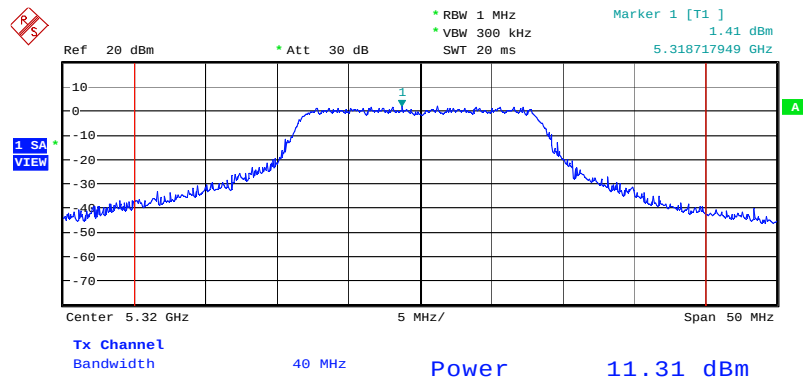
Date: 20.APR.2006 21:16:48

Channel Output Power Plot on Configuration IEEE 802.11a / 5260 MHz



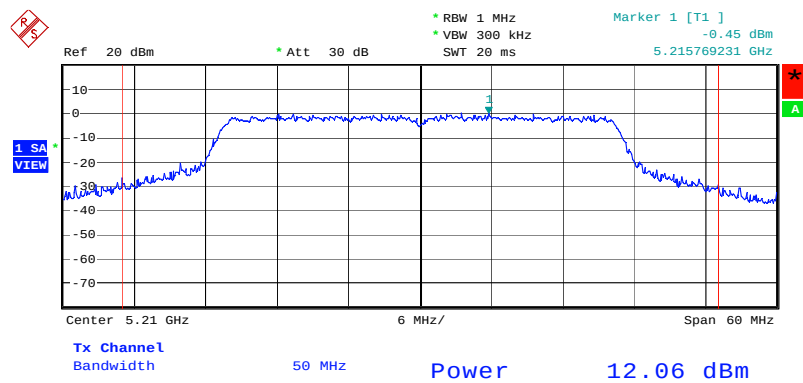
Date: 20.APR.2006 21:16:23

Channel Output Power Plot on Configuration IEEE 802.11a / 5320 MHz



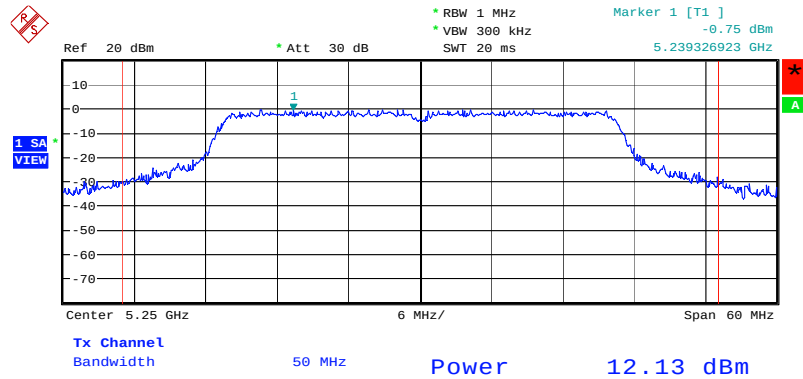
Date: 20.APR.2006 21:14:59

Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



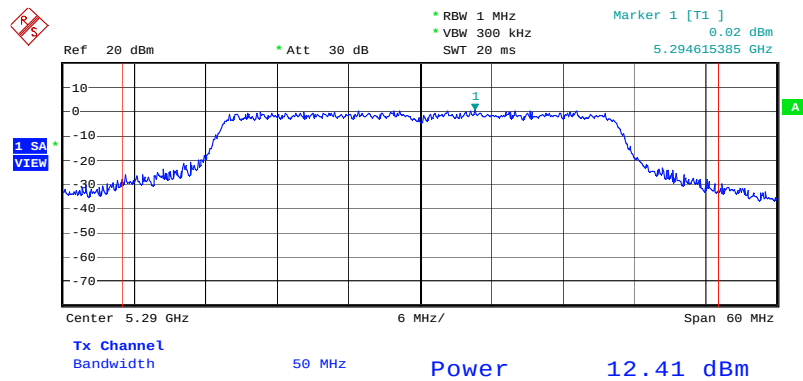
Date: 20.APR.2006 21:19:48

Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 20.APR.2006 21:19:25

Channel Output Power Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 20.APR.2006 21:19:04

4.4. Power Spectral Density Measurement

4.4.1. 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.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4
5.25-5.35 GHz	11

4.4.2. Measuring Instruments and Setting

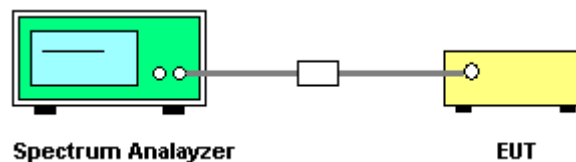
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

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

4.4.3. 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.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 1

Configuration IEEE 802.11a

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	-3.22	4.00	Complies
5260 MHz	-3.37	11.00	Complies
5320 MHz	-4.01	11.00	Complies

Configuration IEEE 802.11a Turbo

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5210 MHz	-5.39	4.00	Complies
5250 MHz	-4.42	4.00	Complies
5290 MHz	-4.49	11.00	Complies

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 2

Configuration IEEE 802.11a

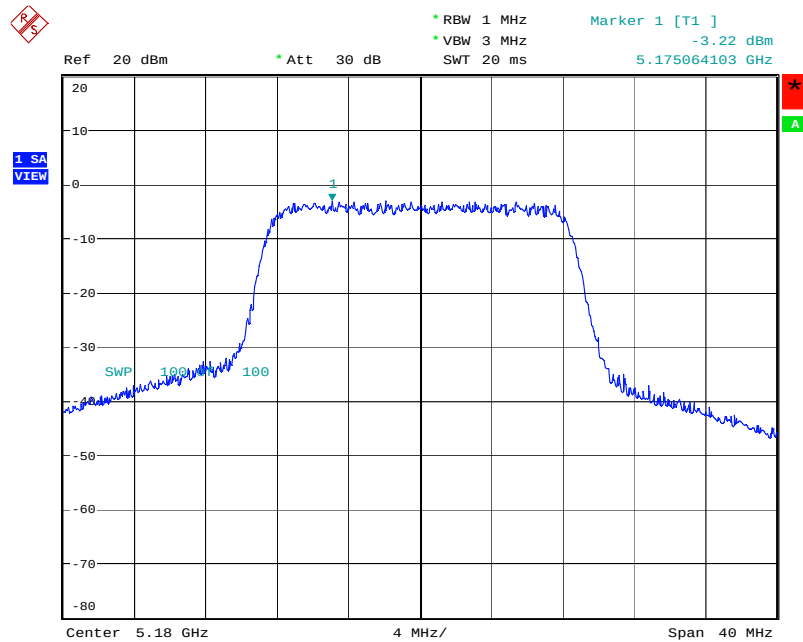
Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	-4.89	2.00	Complies
5260 MHz	-5.11	9.00	Complies
5320 MHz	-4.71	9.00	Complies

Configuration IEEE 802.11a Turbo

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5210 MHz	-6.04	2.00	Complies
5250 MHz	-6.56	2.00	Complies
5290 MHz	-6.26	9.00	Complies

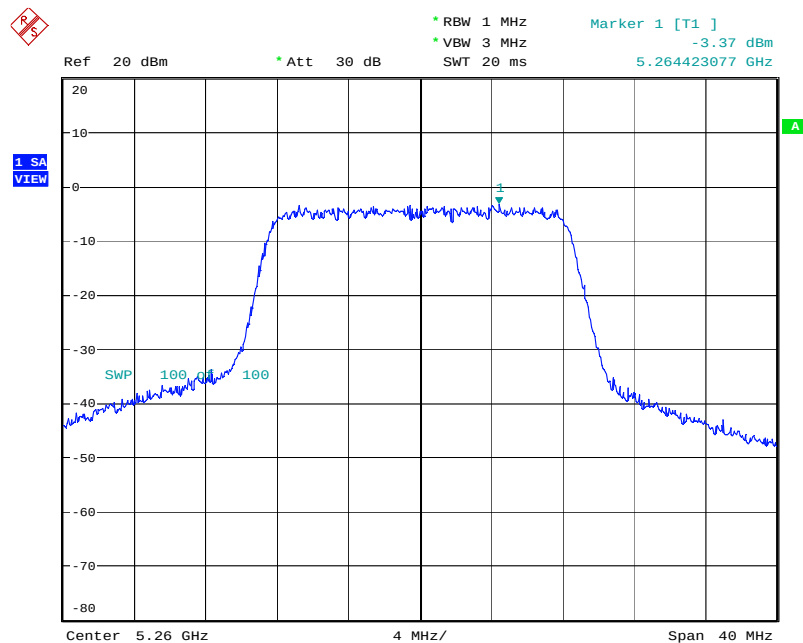
For Ant. 1

Power Density Plot on Configuration IEEE 802.11a / 5180 MHz



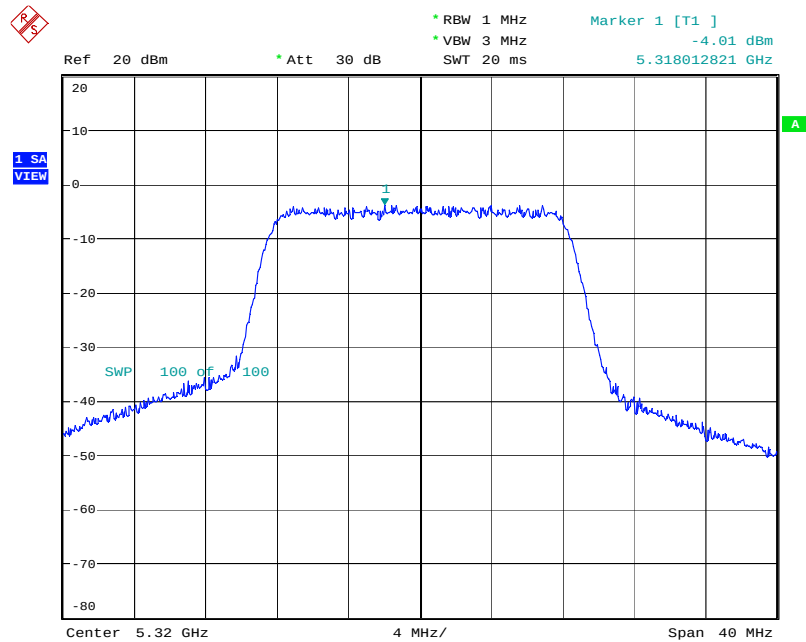
Date: 2.JUN.2006 14:34:37

Power Density Plot on Configuration IEEE 802.11a / 5260 MHz



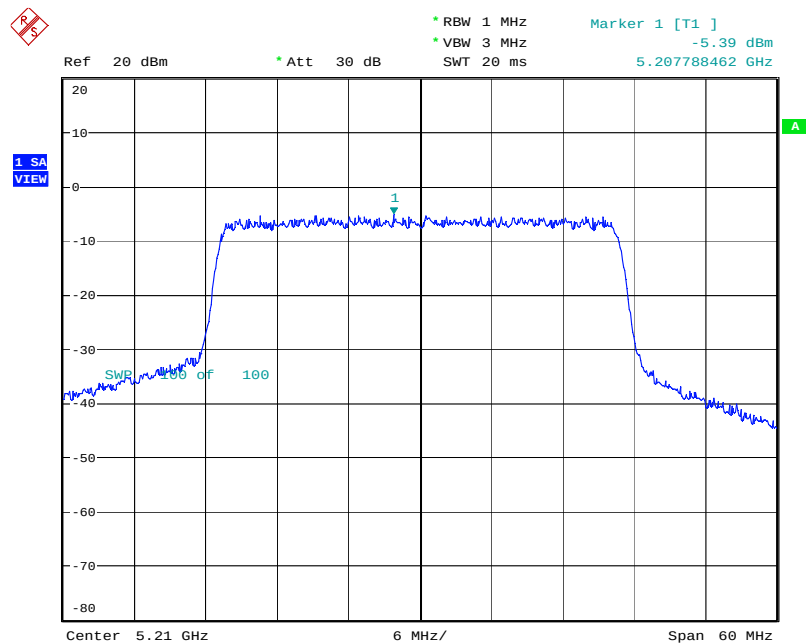
Date: 2.JUN.2006 14:34:17

Power Density Plot on Configuration IEEE 802.11a / 5320 MHz



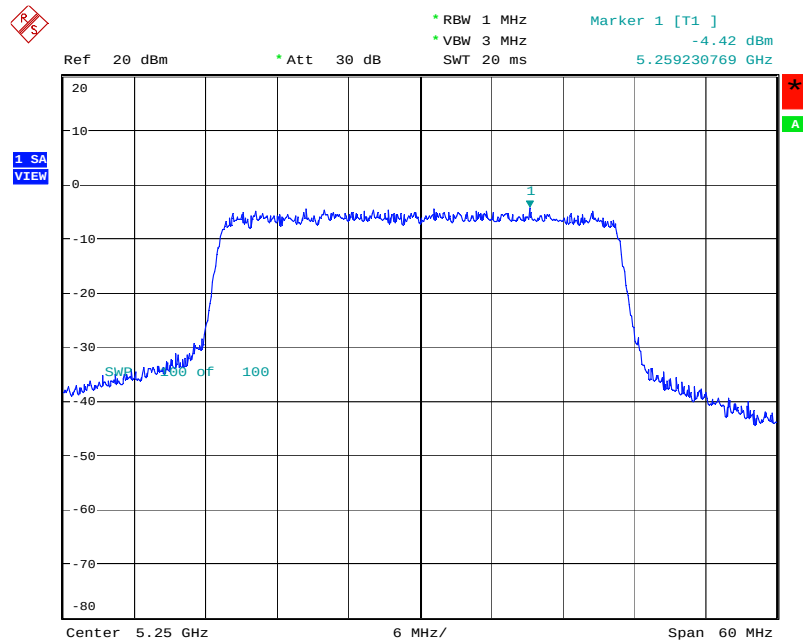
Date: 2.JUN.2006 14:33:31

Power Density Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



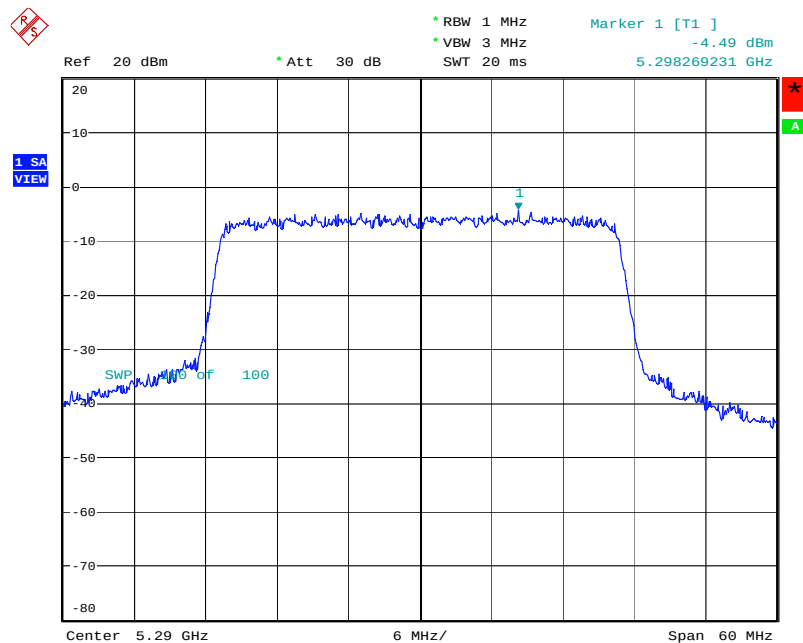
Date: 2.JUN.2006 14:39:24

Power Density Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 2.JUN.2006 14:39:47

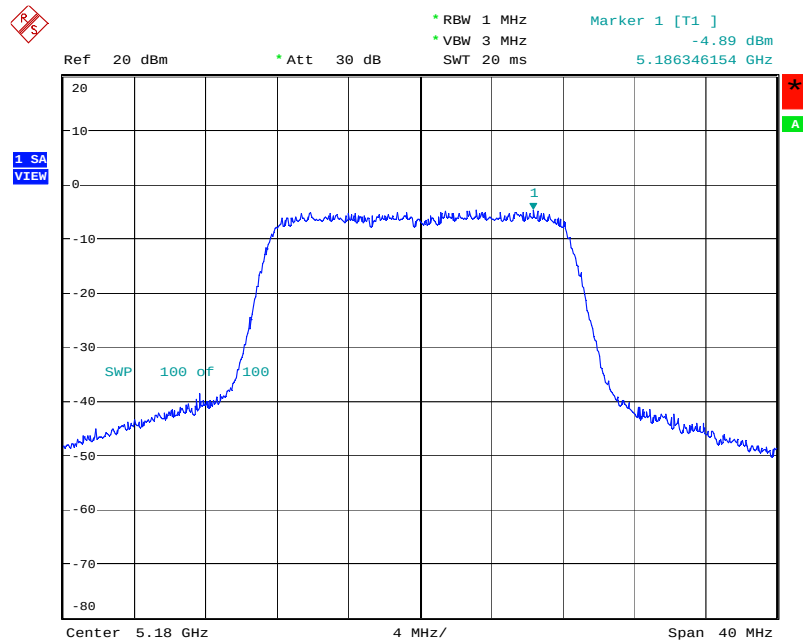
Power Density Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 2.JUN.2006 14:40:07

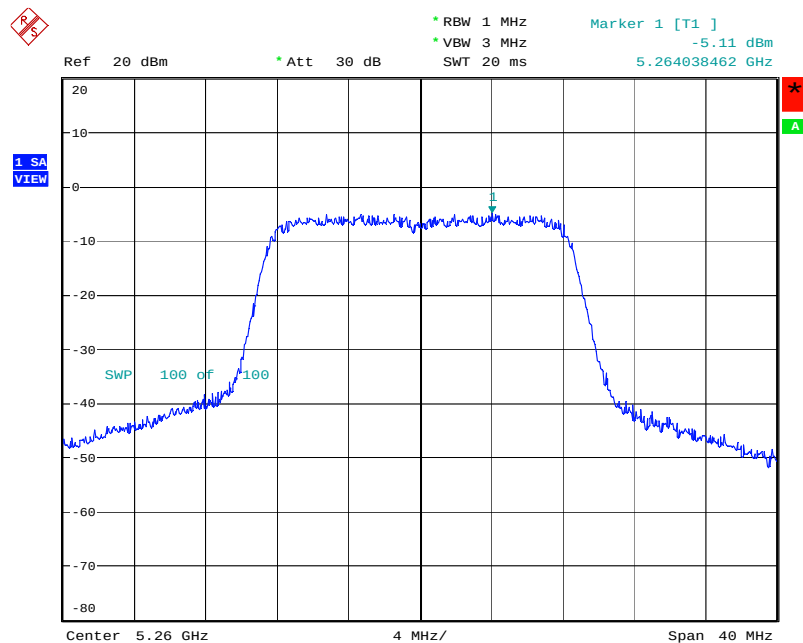
For Ant. 2

Power Density Plot on Configuration IEEE 802.11a / 5180 MHz



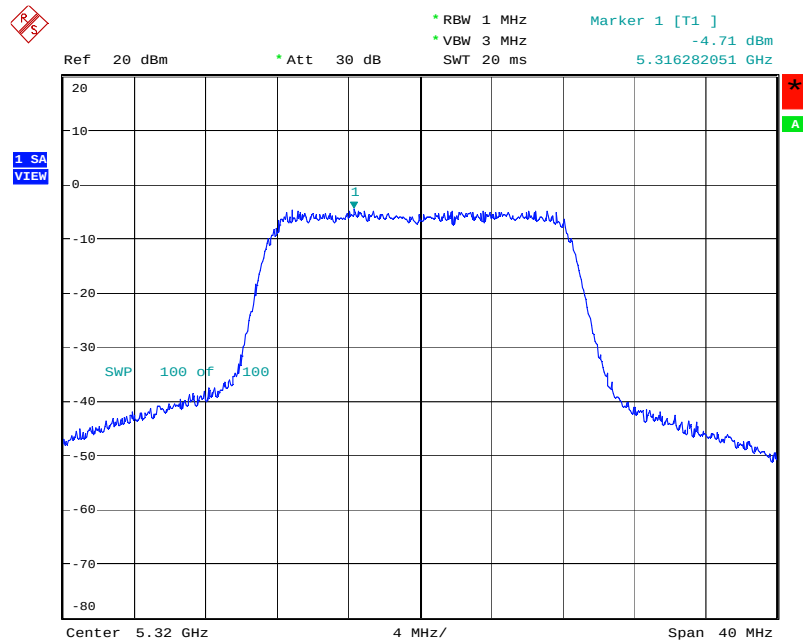
Date: 20.APR.2006 21:10:21

Power Density Plot on Configuration IEEE 802.11a / 5260 MHz



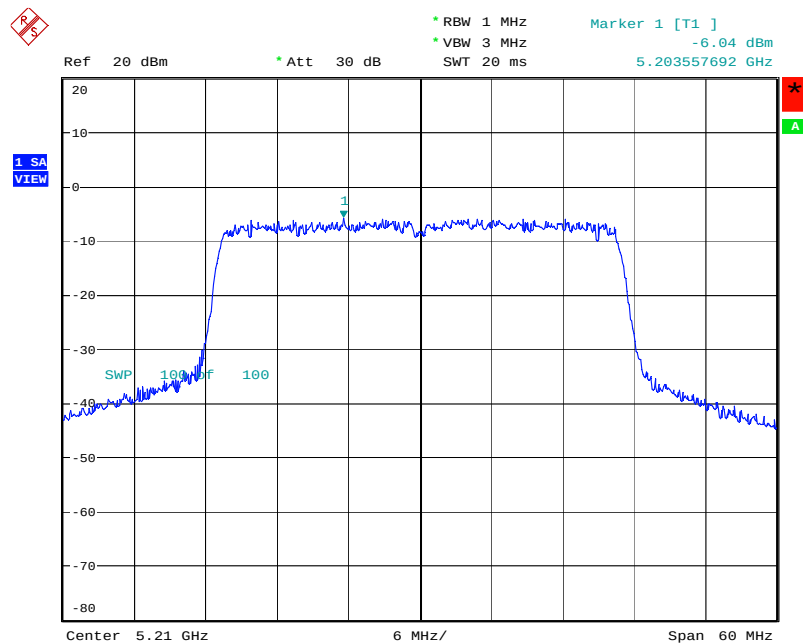
Date: 20.APR.2006 21:11:07

Power Density Plot on Configuration IEEE 802.11a / 5320 MHz



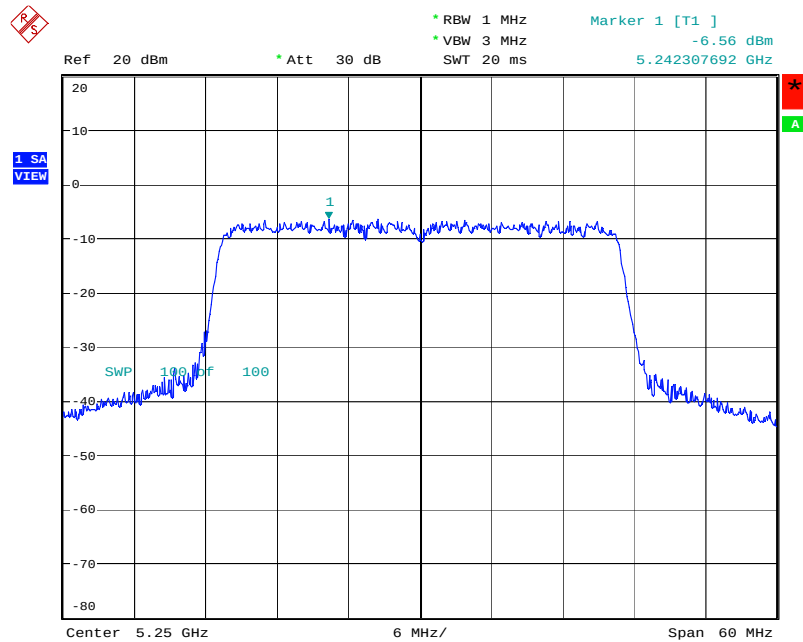
Date: 20.APR.2006 21:12:37

Power Density Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



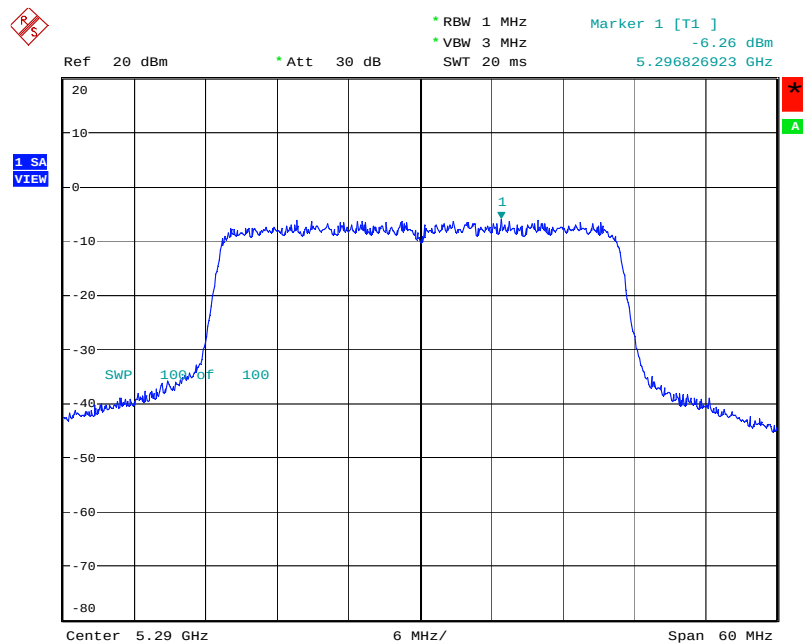
Date: 20.APR.2006 21:09:44

Power Density Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 20.APR.2006 21:09:12

Power Density Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 20.APR.2006 21:08:45

4.5. Peak Excursion Measurement

4.5.1. 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.

4.5.2. Measuring Instruments and Setting

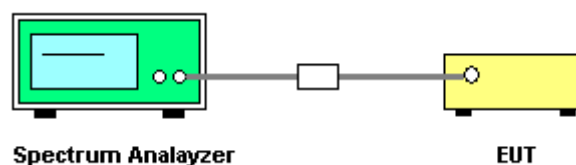
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

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) / Sample (Average Trace)
Trace	Max Hold
Sweep Time	60s

4.5.3. 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 maxhold 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 $\geq 1/4 \mu s$). 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.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Peak Excursion

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 1

Configuration IEEE 802.11a

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	4.90	13	Complies
5260 MHz	3.67	13	Complies
5320 MHz	4.87	13	Complies

Configuration IEEE 802.11a Turbo

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5210 MHz	4.16	13	Complies
5250 MHz	4.17	13	Complies
5290 MHz	4.11	13	Complies

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	802.11a / Ant. 2

Configuration IEEE 802.11a

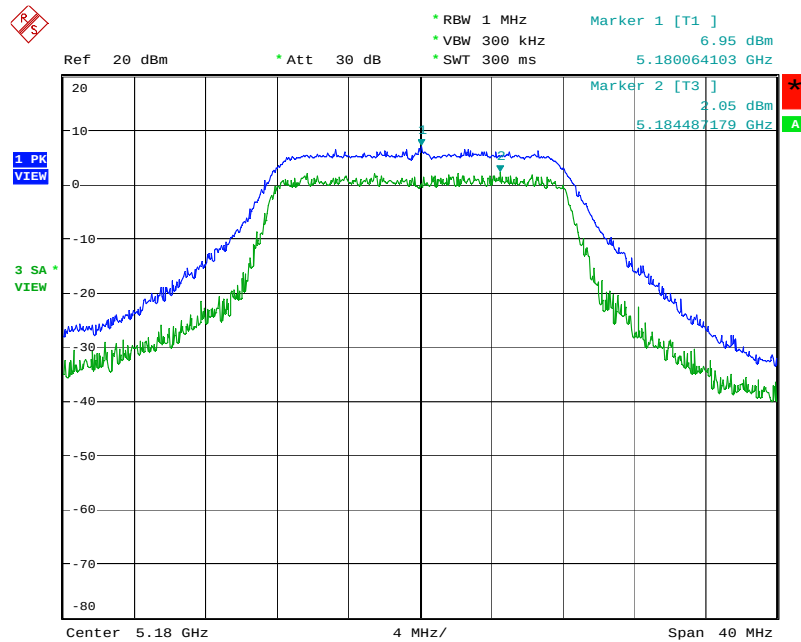
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	5.86	13	Complies
5260 MHz	4.81	13	Complies
5320 MHz	4.41	13	Complies

Configuration IEEE 802.11a Turbo

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5210 MHz	4.65	13	Complies
5250 MHz	4.30	13	Complies
5290 MHz	4.26	13	Complies

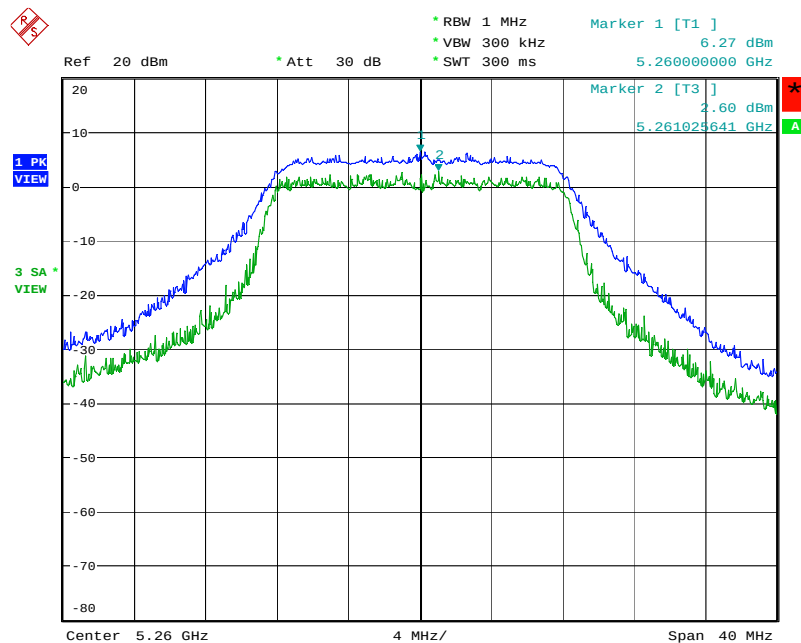
For Ant. 1

Peak Excursion Plot on Configuration IEEE 802.11a / 5180 MHz



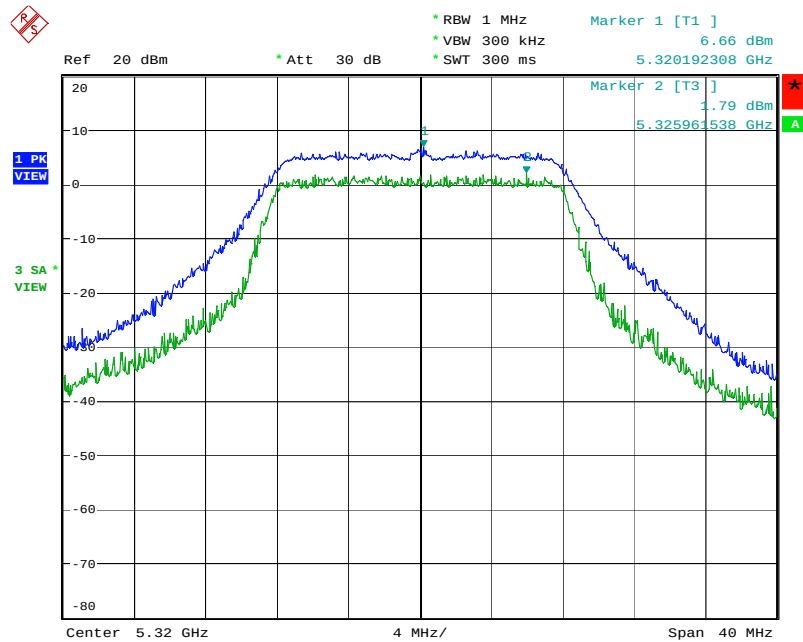
Date: 2.JUN.2006 14:31:22

Peak Excursion Plot on Configuration IEEE 802.11a / 5260 MHz



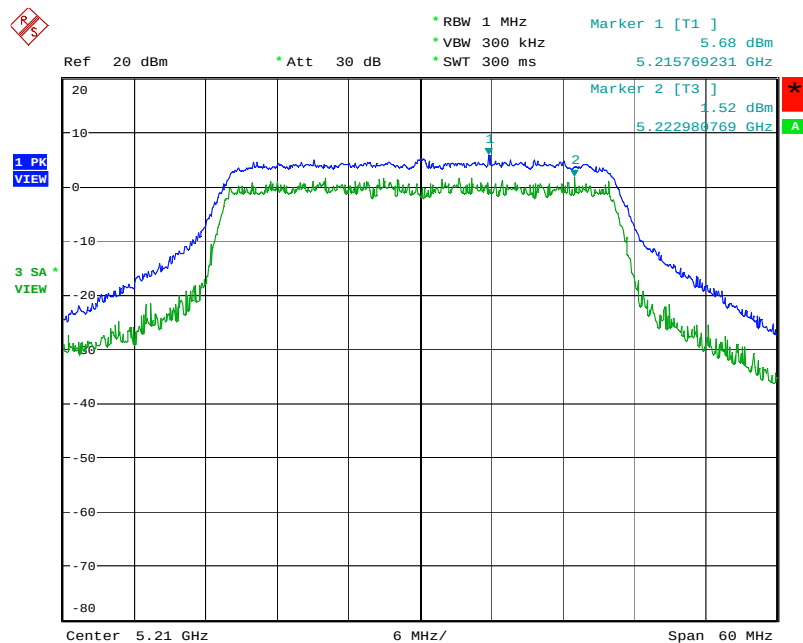
Date: 2.JUN.2006 14:32:11

Peak Excursion Plot on Configuration IEEE 802.11a / 5320 MHz



Date: 2.JUN.2006 14:32:52

Peak Excursion Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



Date: 2.JUN.2006 14:42:42