SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
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FCC RADIO TEST REPORT

Applicant's company	**3Com Corporation**
Applicant Address	3Com Campus Drive, Marlborough, MA 01752-3064. U.S.A.
FCC ID	**O9C-WL548A1**
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	3Com AirProtect Sensor 5750
Brand Name	3Com
Model Name	WL-548A
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Receive Date	Apr. 11, 2006
Test Date	Apr. 08, 2008
Submission Type	Original Equipment

Statement

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

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

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

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

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

Table of Contents

History of This Test Report

Original Issue Date: Apr. 15, 2008

Report No.: FR640737-01AA

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	3Com AirProtect Sensor 5750
Brand Name	:	3Com
Model Name	:	WL-548A
Applicant	:	3Com 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. 11, 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.

Wayne Hsu 15.4.08

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	3.54 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	2.51 dB
4.4	15.407(a)	Power Spectral Density	Complies	2.40 dB
4.5	15.407(a)	Peak Excursion	Complies	7.11 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.24 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.34 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	±2.26dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.71dB	Confidence levels of 95%
Power Spectral Density	±0.71dB	Confidence levels of 95%
Peak Excursion	±0.71dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	±6.25×10-7	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	±3.72dB	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN
Radio Type	Intentional Transceiver
Power Type	POE
Interface Type	POE / 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 / 5470 ~ 5725MHz
Channel Number	Band 1: 6 ; Band 2: 5 ; Band 3: 11
Channel Band Width (99%)	11a: 21.92 MHz ; 11a Turbo: 33.80MHz
Conducted Output Power	Band 1: 16.86 dBm ; Band 2: 21.22 dBm ; Band 3: 21.49 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

Power	Brand	Model	Rating
POE	3Com	PW130	100-250VAC, 48VDC

3.3. Table for Filed Antenna

For 5GHz Band

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	FDP-ACBSMA-GG	Dipole Antenna	Reversed-SMA	5.00

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		
5470~5725 MHz Band 3	100	5500 MHz	124	5620 MHz
	104	5520 MHz	128	5640 MHz
	108	5540 MHz	132	5660 MHz
	112	5560 MHz	136	5680 MHz
	116	5580 MHz	140	5700 MHz
	120	5600 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	Auto	-	1
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Max. Conducted Output Power Power Spectral Density Peak Excursion	Band 1~2/BPSK	6Mbps	36/52/64	NA
	Band 3/BPSK	6Mbps	100/120/140	NA
	Band 1~2 Turbo/BPSK	12Mbps	42/50/58	NA
Radiated Emission Below 1GHz	Normal Link	Auto	-	1
Radiated Emission Above 1GHz	Band 1~2/BPSK	6Mbps	36/52/64	1
	Band 3/BPSK	6Mbps	100/120/140	1
	Band 1~2 Turbo/BPSK	12Mbps	42/50/58	1
Band Edge Emission	Band 1~2/BPSK	6Mbps	36/64	1
	Band 1~2 Turbo/BPSK	12Mbps	42/58	1
	Band 3/BPSK	6Mbps	100/140	1
Frequency Stability	Un-modulation	-	60	NA

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.

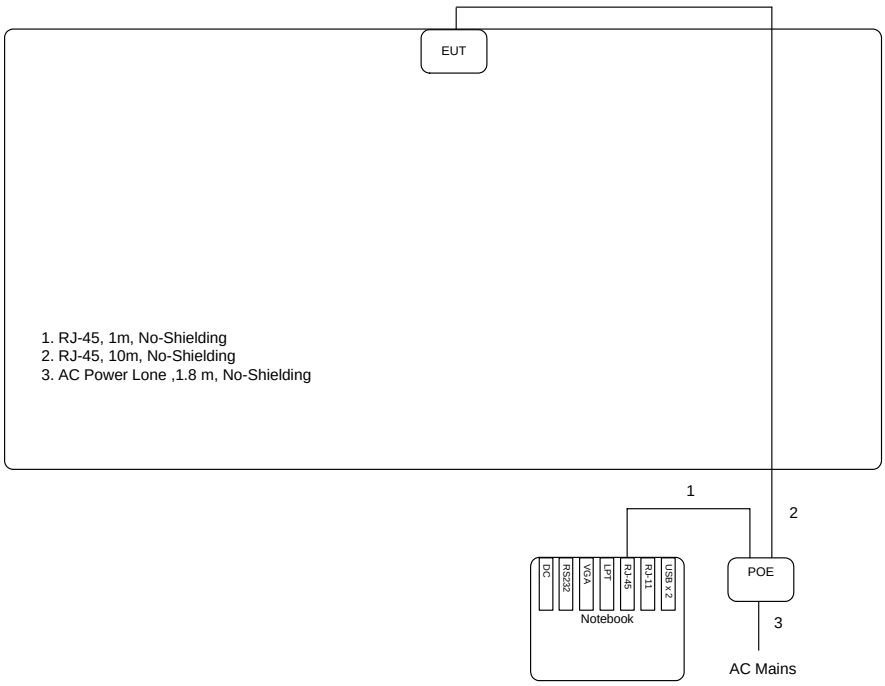
Power Parameters of IEEE 802.11a

Test Software Version	ART								
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
IEEE 802.11a	14	13	13.5	19	18	16	17	21	14
Frequency	5210 MHz	5250 MHz	5290 MHz						
IEEE 802.11a Turbo	13	13	13						

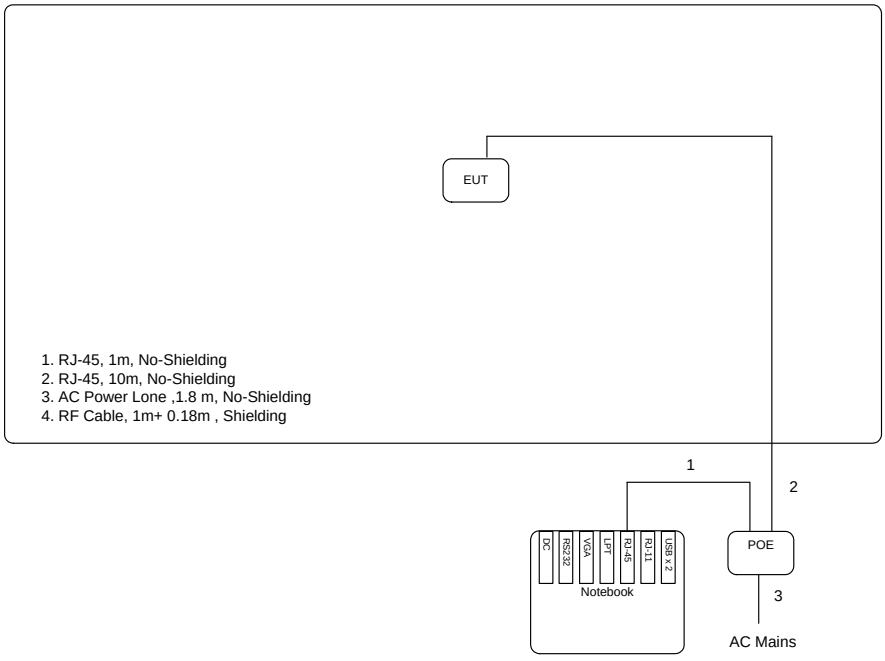
3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

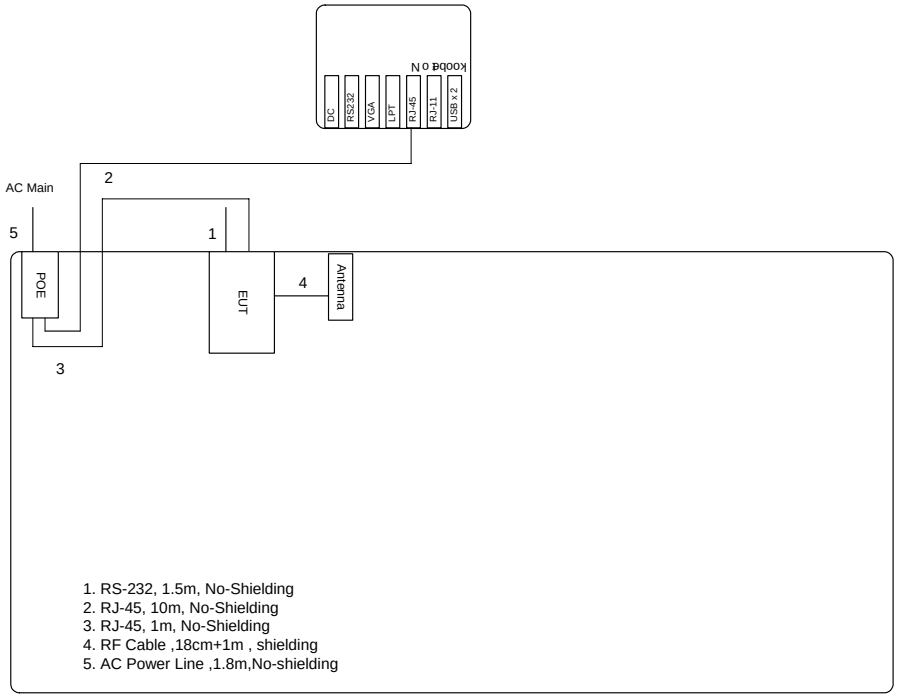
Test Configuration: 9KHz~1GHz



Test Configuration: above 1GHz



3.9.2. AC Power Line Conduction Emissions Test Configuration



1. RS-232, 1.5m, No-Shielding
2. RJ-45, 10m, No-Shielding
3. RJ-45, 1m, No-Shielding
4. RF Cable ,18cm+1m , shielding
5. AC Power Line ,1.8m,No-shielding

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

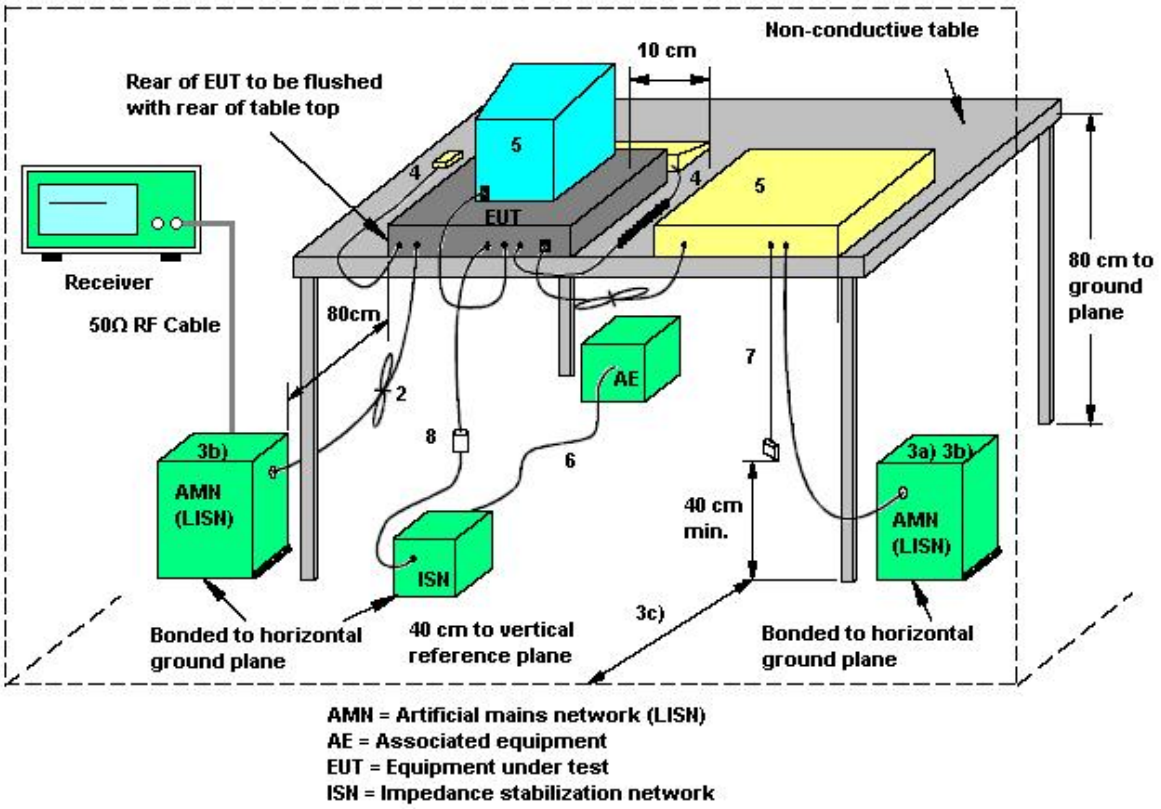
Please refer to section 5 in this report. The following table is the setting of the receiver.

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



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

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, mouses, 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

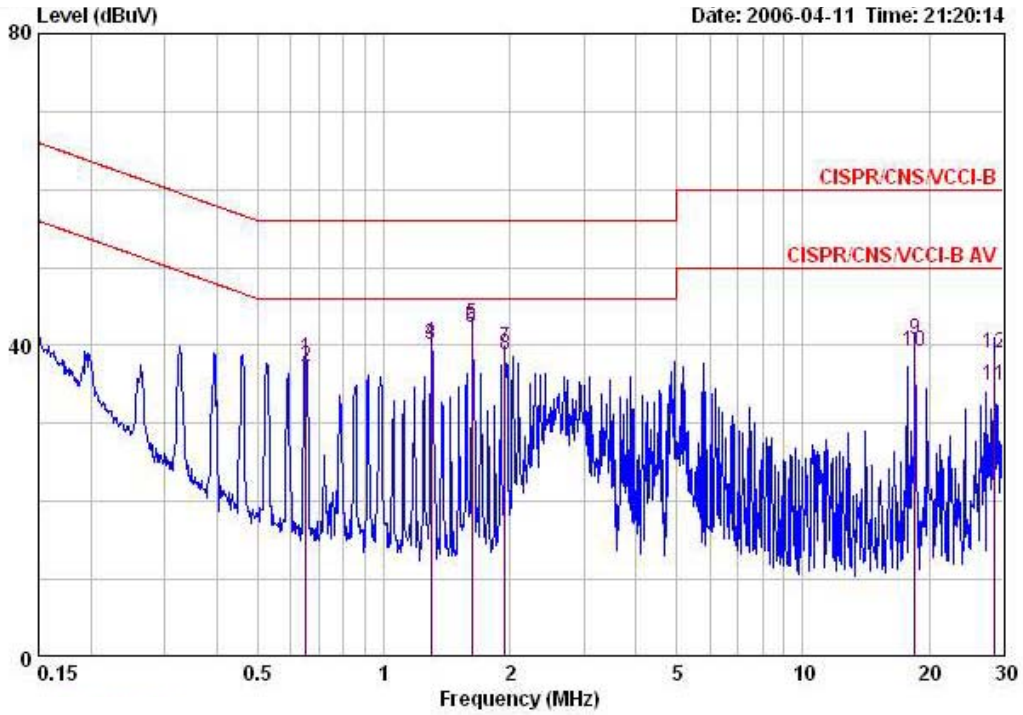
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

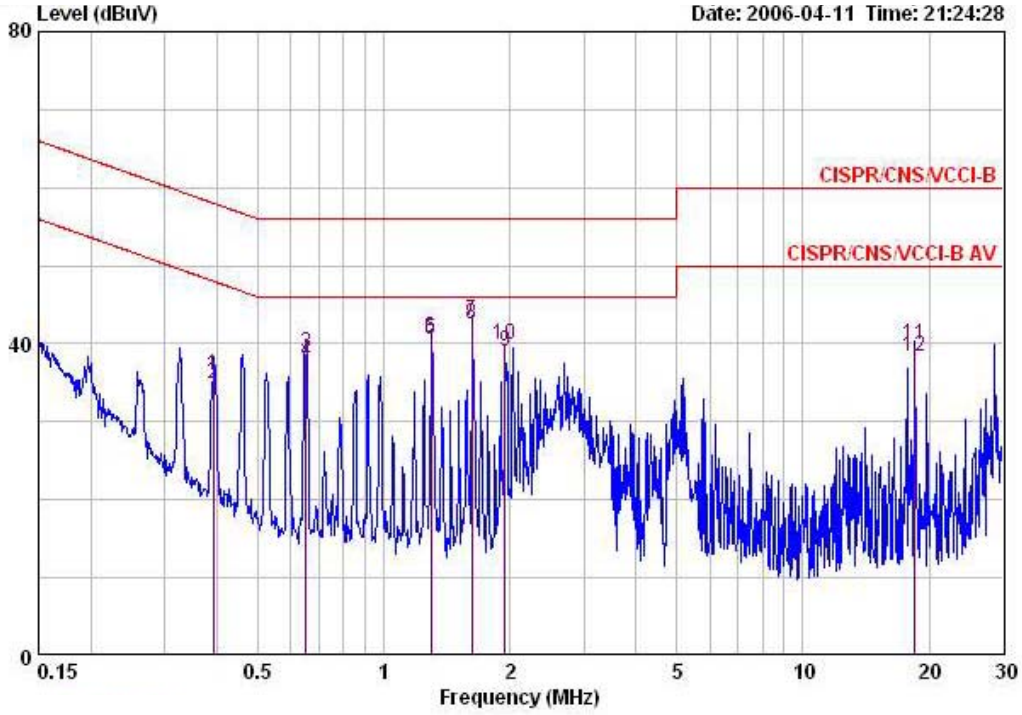
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.65084	38.26	-17.74	56.00	37.66	0.40	0.20	QP
2	0.65084	37.18	-8.82	46.00	36.58	0.40	0.20	AVERAGE
3	1.298	40.22	-5.78	46.00	39.78	0.30	0.14	AVERAGE
4	1.298	40.36	-15.64	56.00	39.92	0.30	0.14	QP
5	1.624	42.74	-13.26	56.00	42.31	0.30	0.13	QP
6 @	1.624	42.20	-3.80	46.00	41.77	0.30	0.13	AVERAGE
7	1.949	39.73	-16.27	56.00	39.24	0.30	0.19	QP
8	1.949	38.78	-7.22	46.00	38.29	0.30	0.19	AVERAGE
9	18.487	40.73	-19.27	60.00	39.83	0.40	0.50	QP
10	18.487	39.19	-10.81	50.00	38.29	0.40	0.50	AVERAGE
11	28.686	34.87	-15.13	50.00	33.92	0.35	0.60	AVERAGE
12	28.686	38.95	-21.05	60.00	38.00	0.35	0.60	QP

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.39235	36.01	-22.00	58.01	35.31	0.50	0.20	QP
2	0.39235	34.79	-13.22	48.01	34.09	0.50	0.20	AVERAGE
3	0.65084	38.91	-17.09	56.00	38.41	0.30	0.20	QP
4	0.65084	37.66	-8.34	46.00	37.16	0.30	0.20	AVERAGE
5	1.298	40.50	-5.50	46.00	40.06	0.30	0.14	AVERAGE
6	1.298	40.84	-15.16	56.00	40.40	0.30	0.14	QP
7	1.623	42.93	-13.07	56.00	42.53	0.27	0.13	QP
8 @	1.623	42.46	-3.54	46.00	42.06	0.27	0.13	AVERAGE
9	1.949	39.07	-6.93	46.00	38.67	0.21	0.19	AVERAGE
10	1.949	39.80	-16.20	56.00	39.40	0.21	0.19	QP
11	18.488	39.90	-20.10	60.00	39.00	0.40	0.50	QP
12	18.488	38.34	-11.66	50.00	37.44	0.40	0.50	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 99% Occupied Bandwidth Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

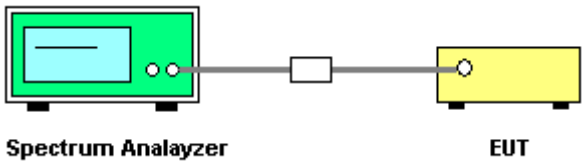
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

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℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a

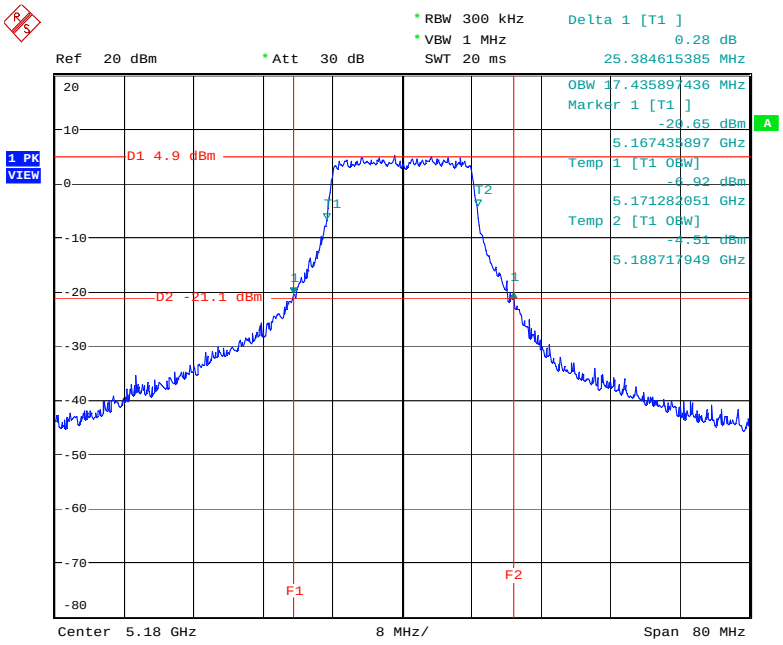
Configuration IEEE 802.11a

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.38	17.43
40	5200 MHz	24.48	17.43
48	5240 MHz	24.61	17.43
52	5260 MHz	27.69	17.69
60	5300 MHz	29.35	17.82
64	5320 MHz	25.12	17.56
100	5500 MHz	26.53	17.56
116	5580 MHz	40.46	21.92
140	5700 MHz	24.87	17.43

Configuration IEEE 802.11a Turbo

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	47.80	33.60
50	5250 MHz	46.20	33.80
58	5290 MHz	48.60	33.80

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



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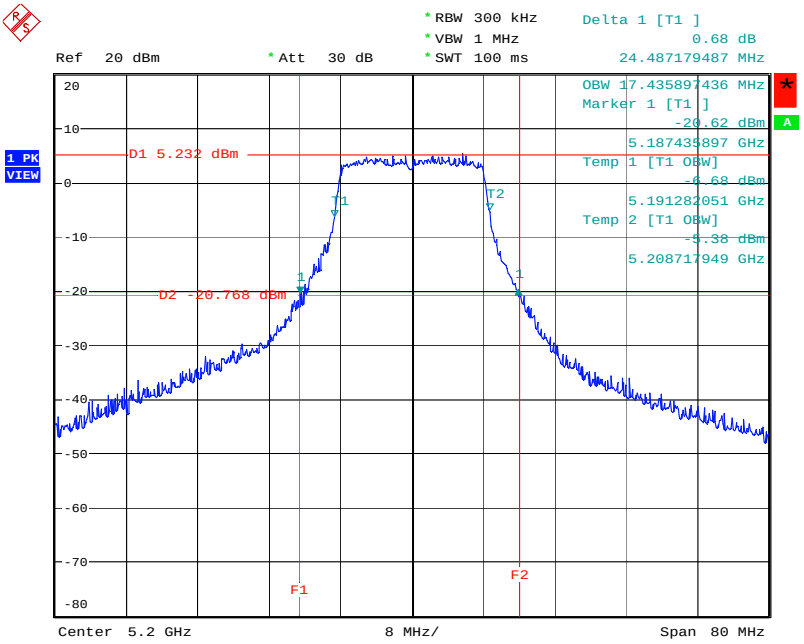
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5200 MHz



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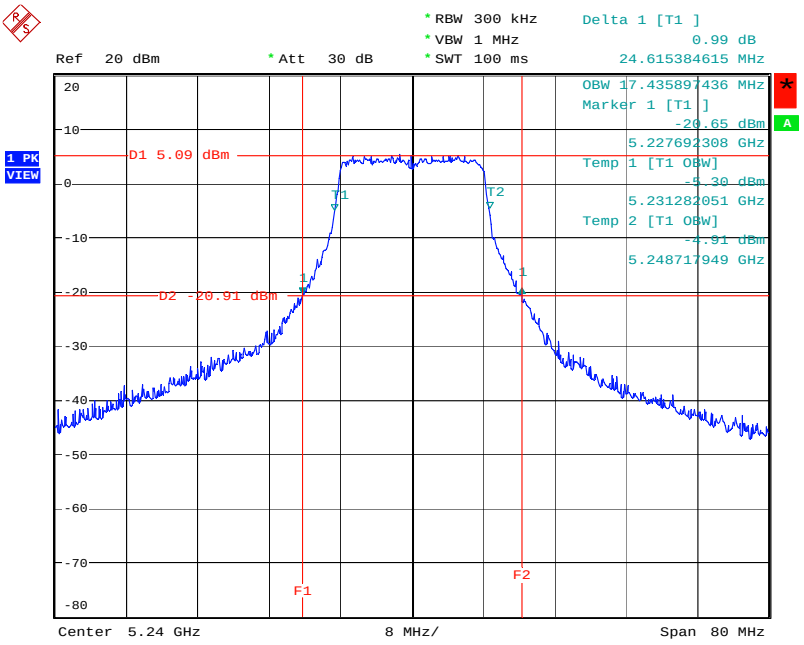
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5240 MHz



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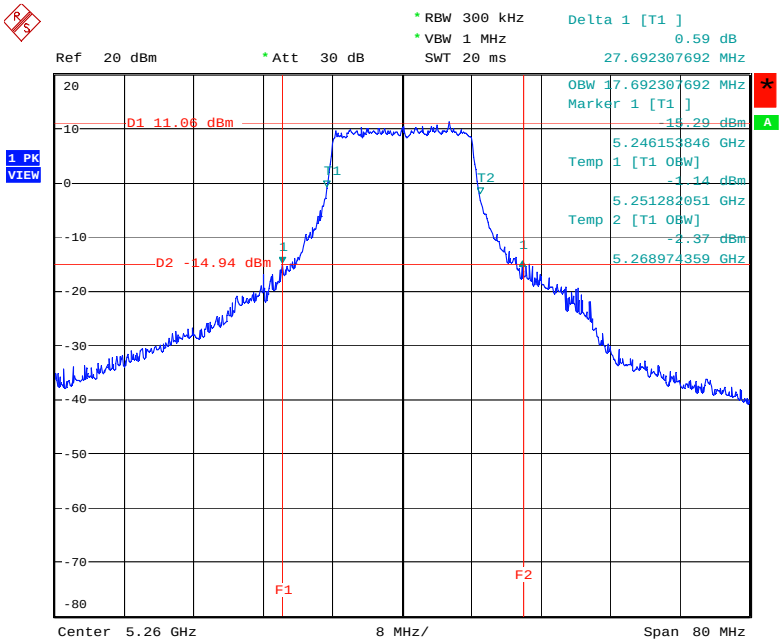
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5260 MHz



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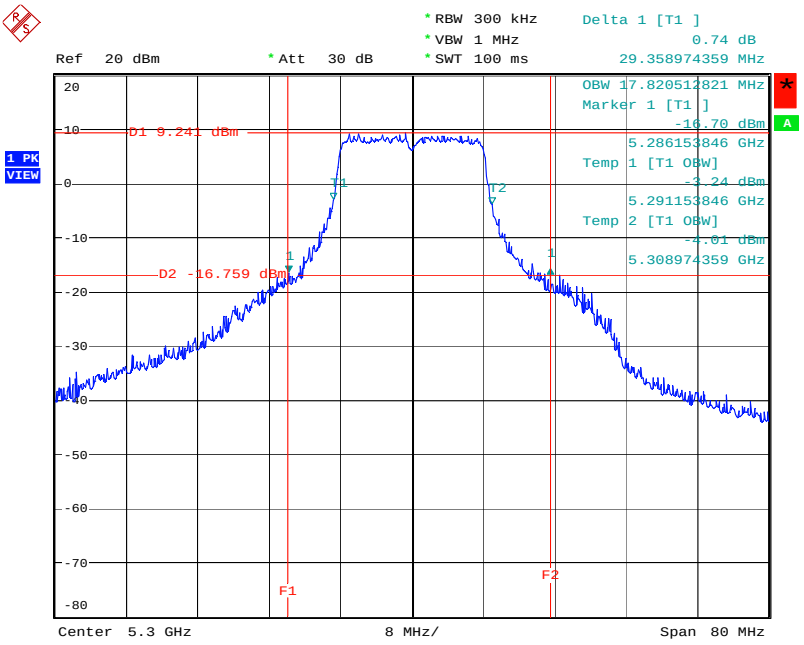
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5300 MHz



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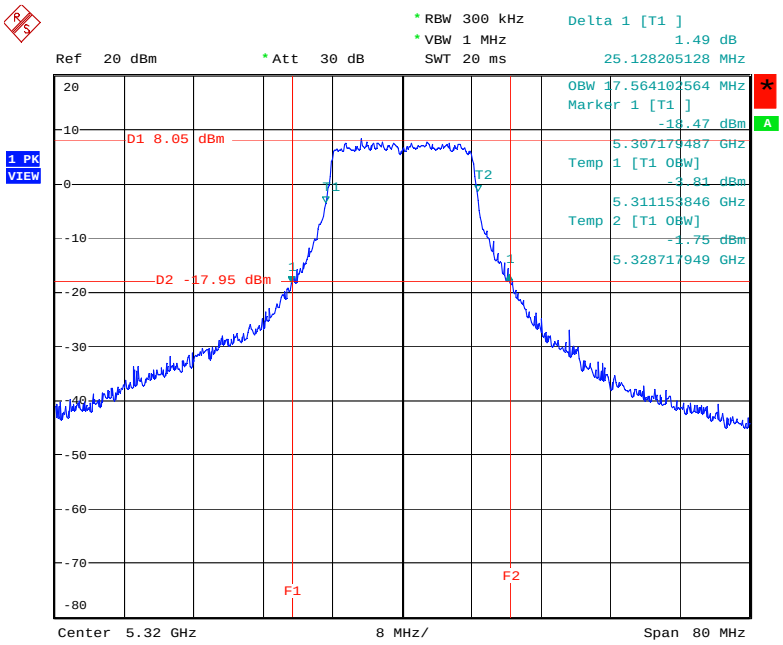
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5320 MHz



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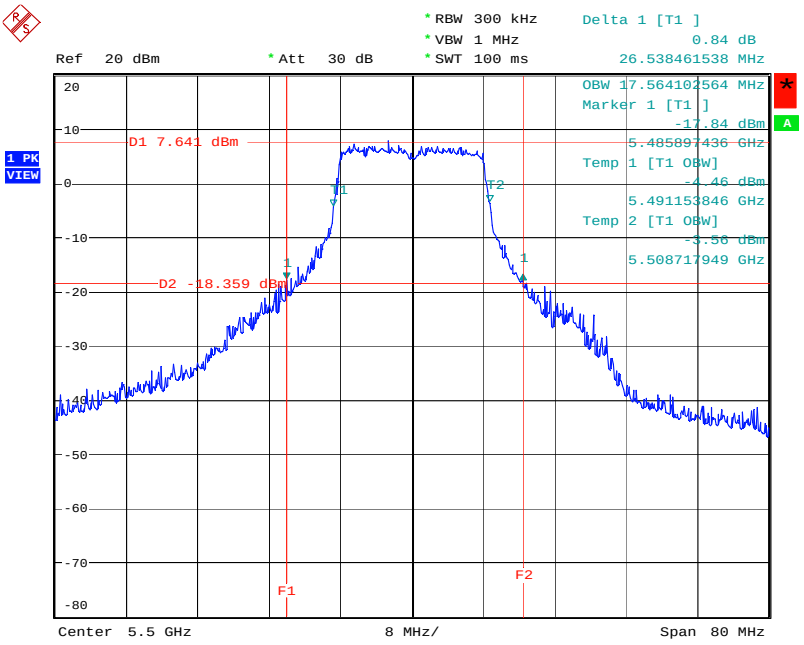
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5500 MHz



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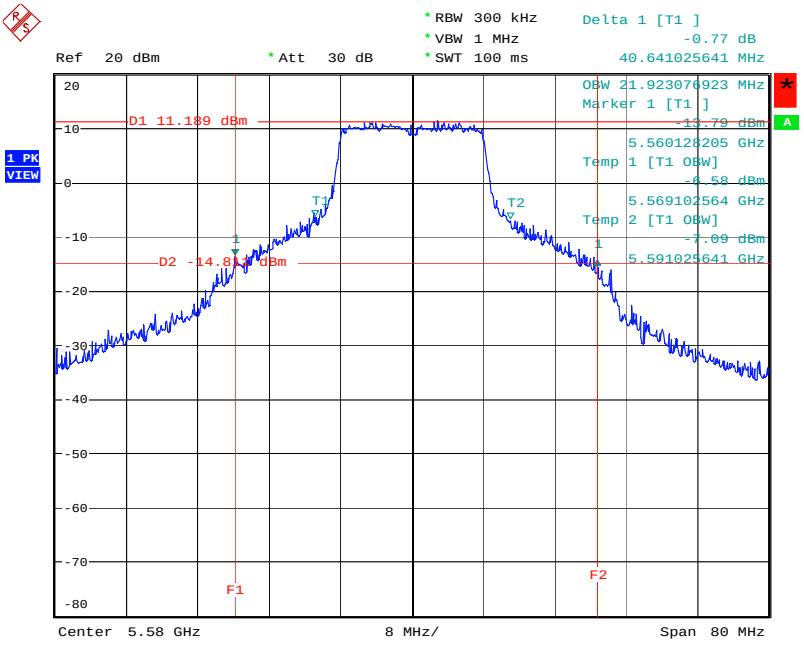
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5580 MHz



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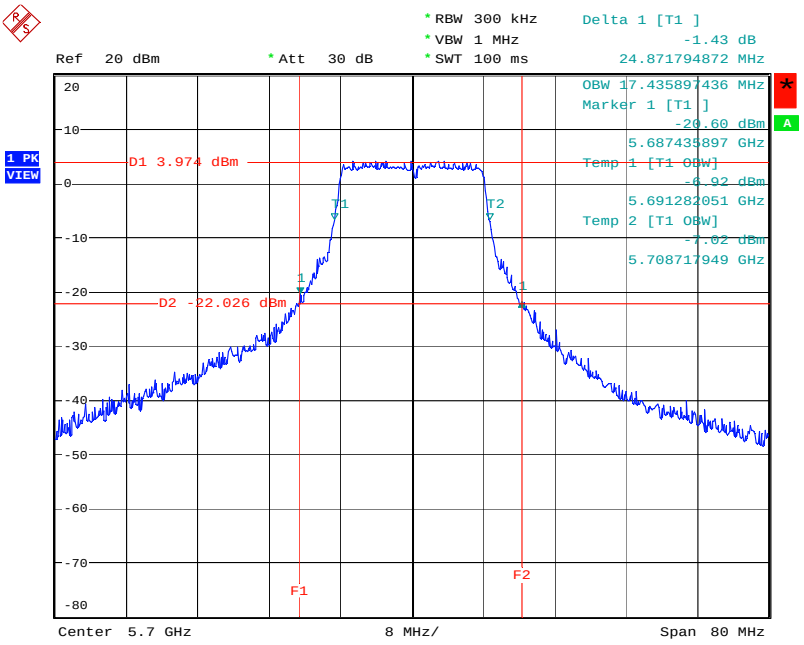
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5700 MHz



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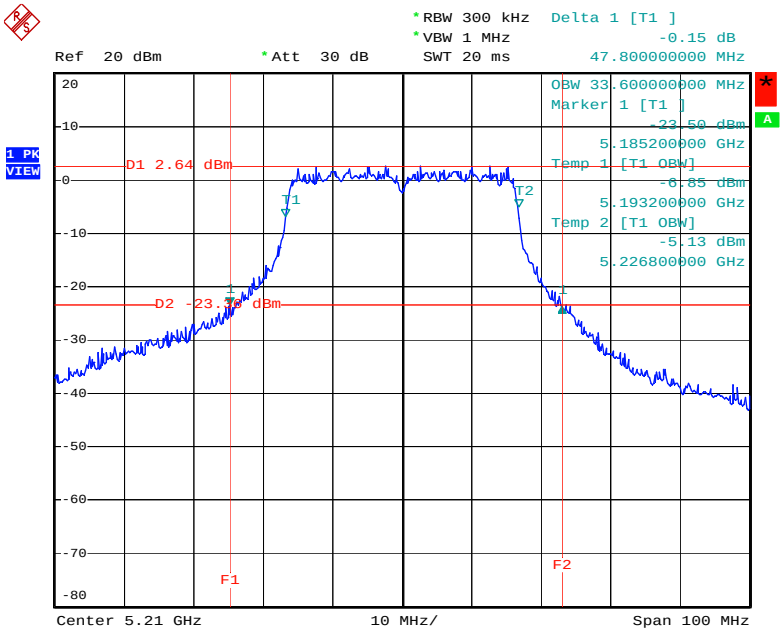
26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5210 MHz



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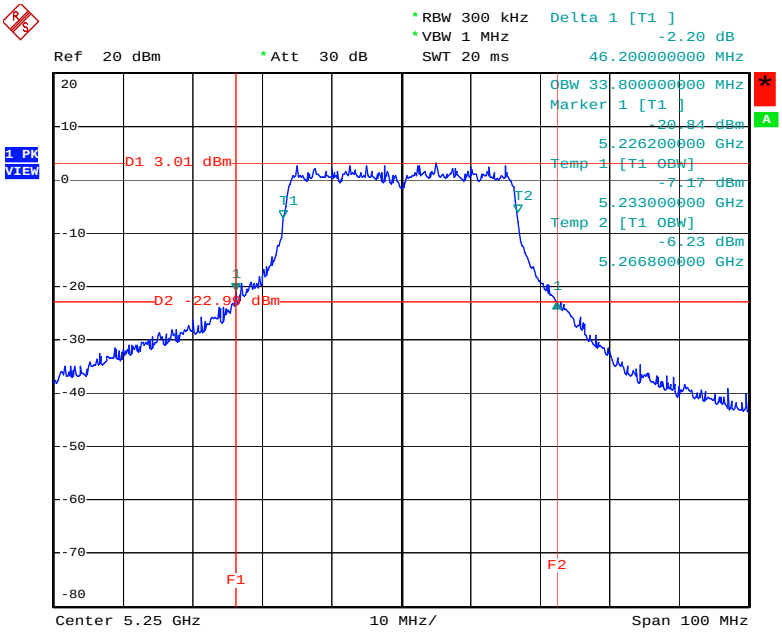
26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



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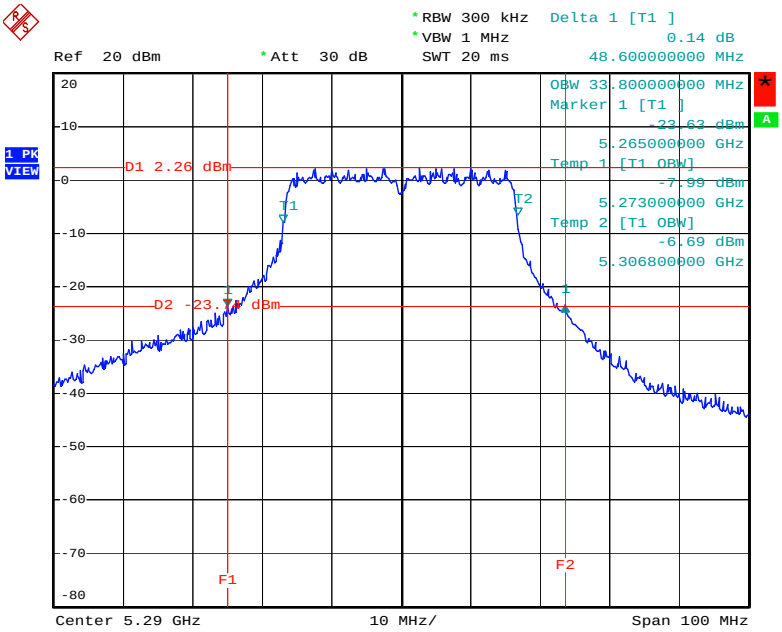
26 dB Bandwidth Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



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4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

For the band 5.15~5.25 GHz and 5.47~5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power 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 dBm + 10log 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℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a

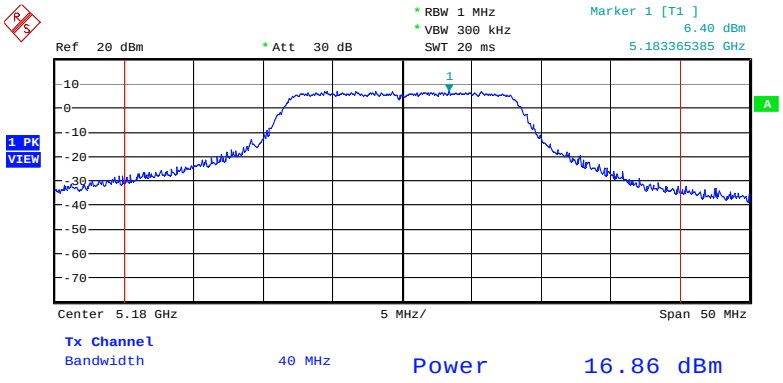
Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	16.86	17.00	Complies
40	5200 MHz	16.82	17.00	Complies
48	5240 MHz	16.86	17.00	Complies
52	5260 MHz	21.22	24.00	Complies
60	5300 MHz	21.21	24.00	Complies
64	5320 MHz	19.06	24.00	Complies
100	5500 MHz	18.72	24.00	Complies
116	5580 MHz	21.49	24.00	Complies
140	5700 MHz	15.36	24.00	Complies

Configuration IEEE 802.11a Turbo

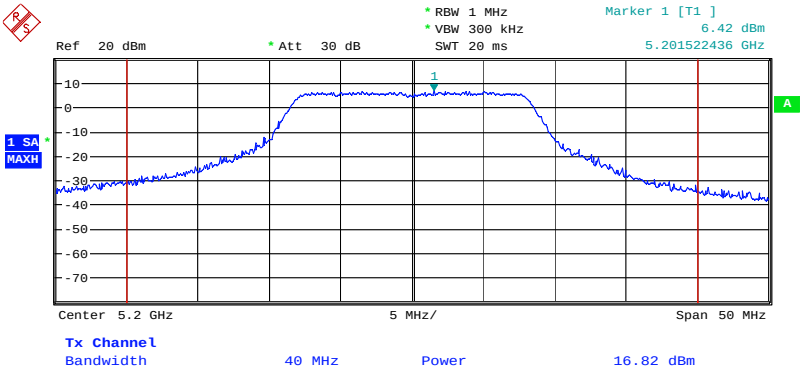
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
42	5210 MHz	15.60	17.00	Complies
50	5250 MHz	15.54	17.00	Complies
58	5290 MHz	15.74	24.00	Complies

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



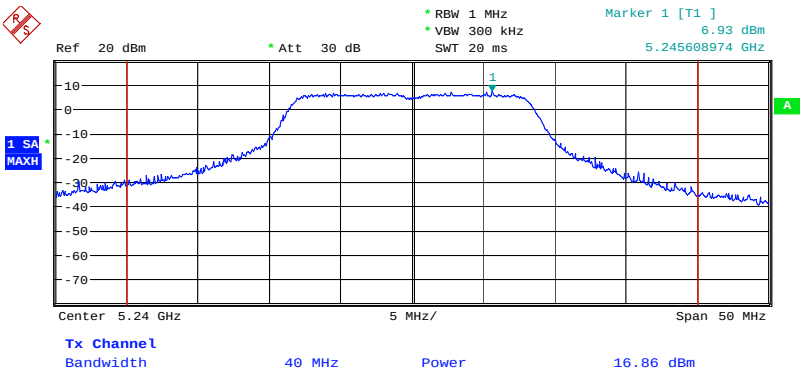
Date: 8.MAY.2006 16:02:06

Channel Output Power Plot on Configuration IEEE 802.11a / 5200 MHz



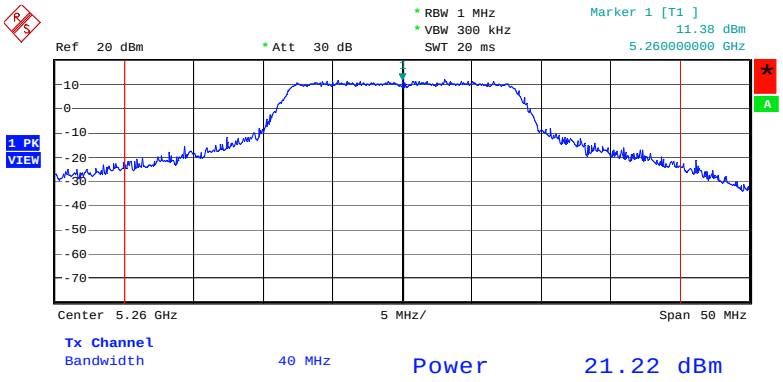
Date: 27.MAR.2008 10:19:28

Channel Output Power Plot on Configuration IEEE 802.11a / 5240 MHz



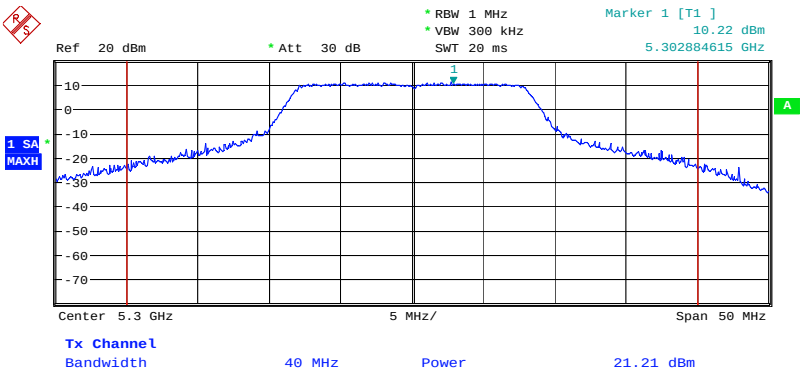
Date: 27.MAR.2008 10:21:49

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



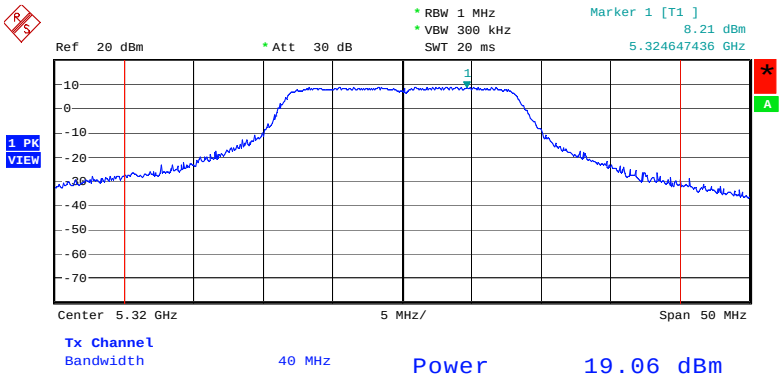
Date: 8.MAY.2006 16:02:45

Channel Output Power Plot on Configuration IEEE 802.11a / 5300 MHz



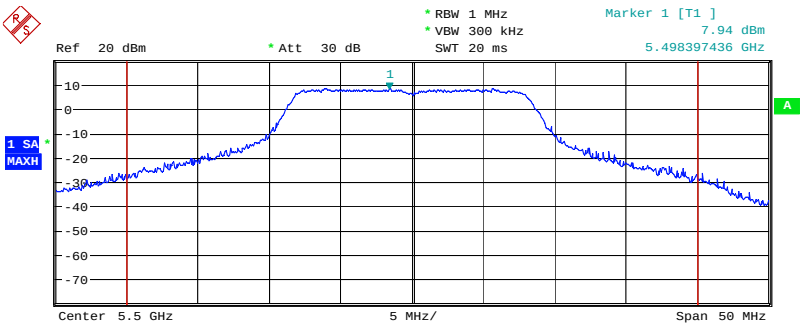
Date: 27.MAR.2008 12:20:59

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



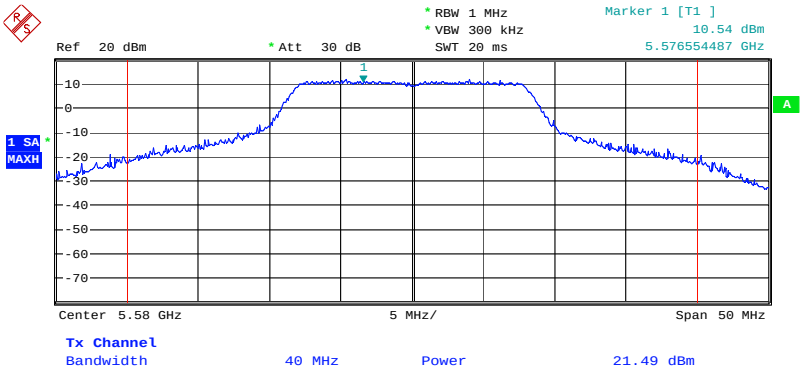
Date: 8.MAY.2006 16:03:14

Channel Output Power Plot on Configuration IEEE 802.11a / 5500 MHz



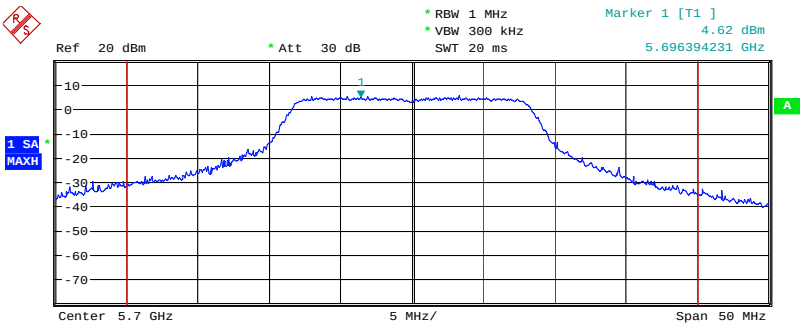
Date: 27.MAR.2008 10:24:53

Channel Output Power Plot on Configuration IEEE 802.11a / 5580 MHz



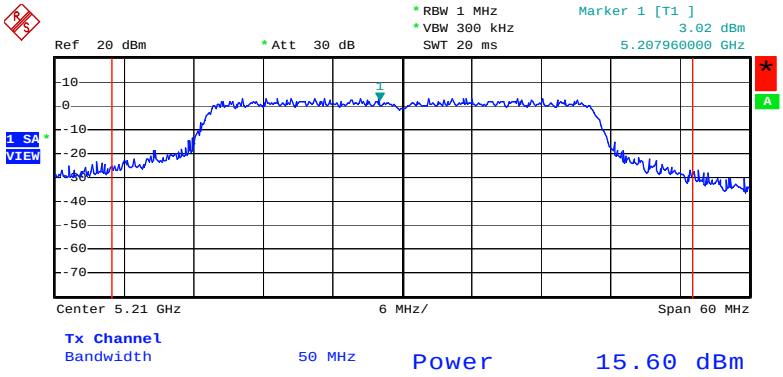
Date: 8.APR.2008 11:19:02

Channel Output Power Plot on Configuration IEEE 802.11a / 5700 MHz



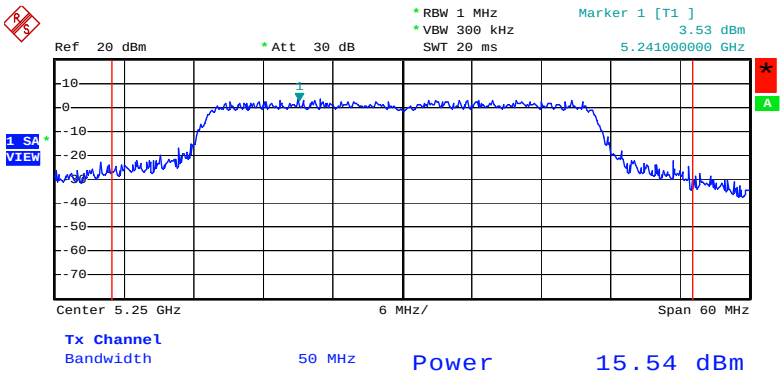
Date: 27.MAR.2008 10:29:30

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



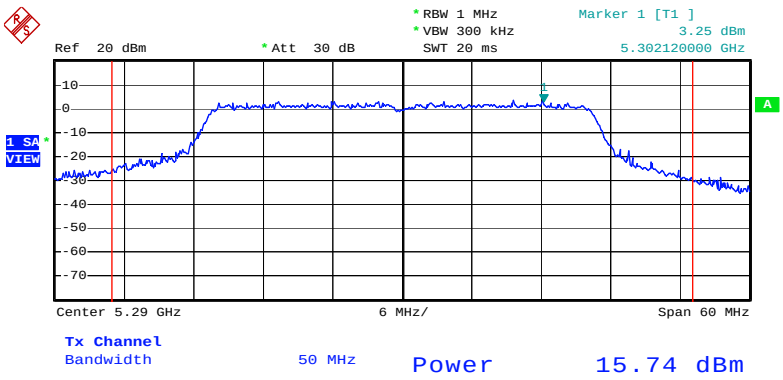
Date: 4.MAY.2006 22:18:41

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



Date: 4.MAY.2006 22:18:19

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



Date: 4.MAY.2006 22:18:01

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.

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

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4
5.25-5.35 GHz	11
5.47-5.725 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 analyser.
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℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a

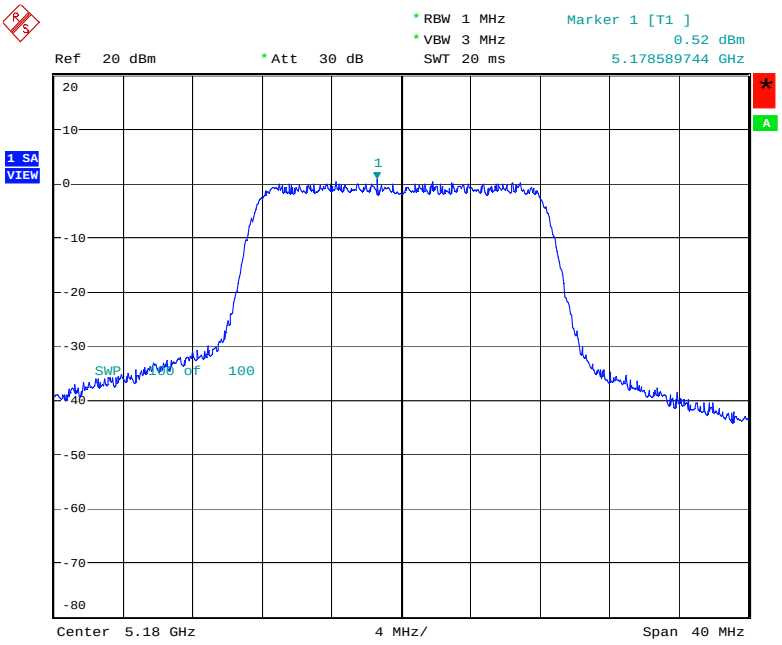
Configuration IEEE 802.11a

Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5180 MHz	0.52	4.00	Complies
5200 MHz	1.44	4.00	Complies
5240 MHz	1.60	4.00	Complies
5260 MHz	5.14	11.00	Complies
5300 MHz	5.95	11.00	Complies
5320 MHz	2.76	11.00	Complies
5500 MHz	3.57	11.00	Complies
5580 MHz	7.46	11.00	Complies
5700 MHz	0.72	11.00	Complies

Configuration IEEE 802.11a Turbo

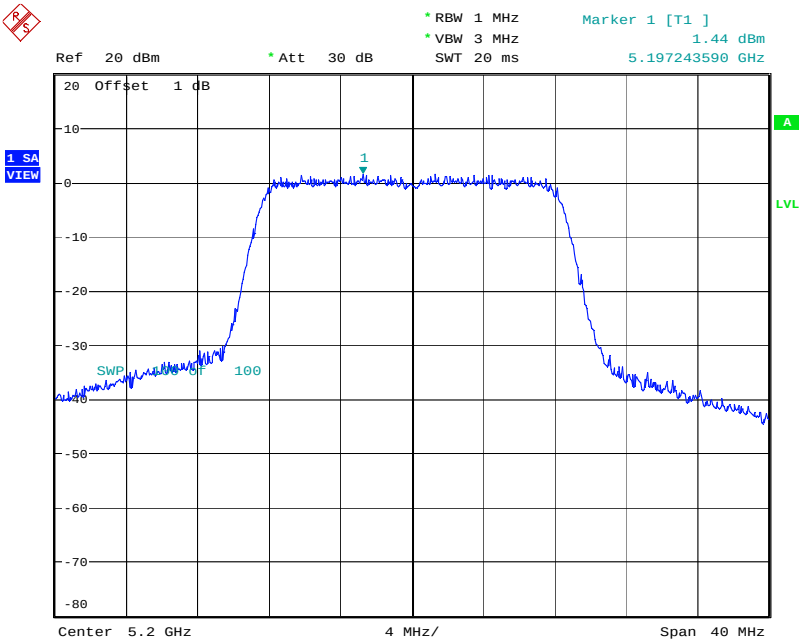
Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5210 MHz	-2.31	4.00	Complies
5250 MHz	-1.84	4.00	Complies
5290 MHz	-2.95	11.00	Complies

Power Density Plot on Configuration IEEE 802.11a / 5180 MHz



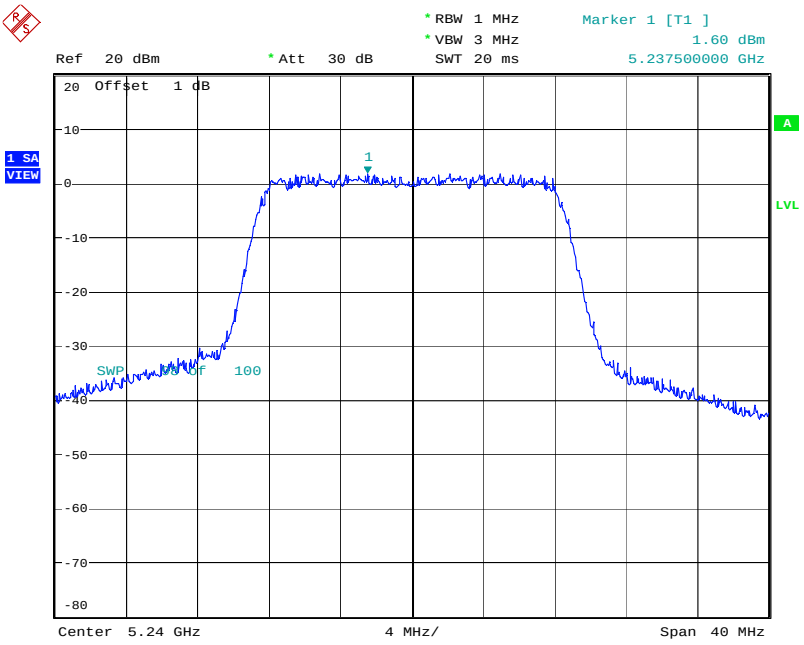
Date: 8.MAY.2006 16:01:24

Power Density Plot on Configuration IEEE 802.11a / 5200 MHz



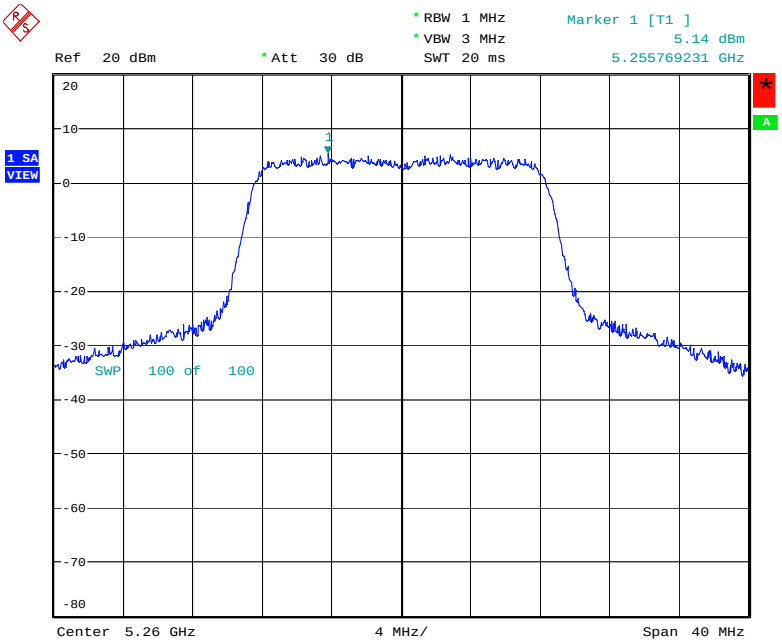
Date: 27.MAR.2008 12:35:32

Power Density Plot on Configuration IEEE 802.11a / 5240 MHz



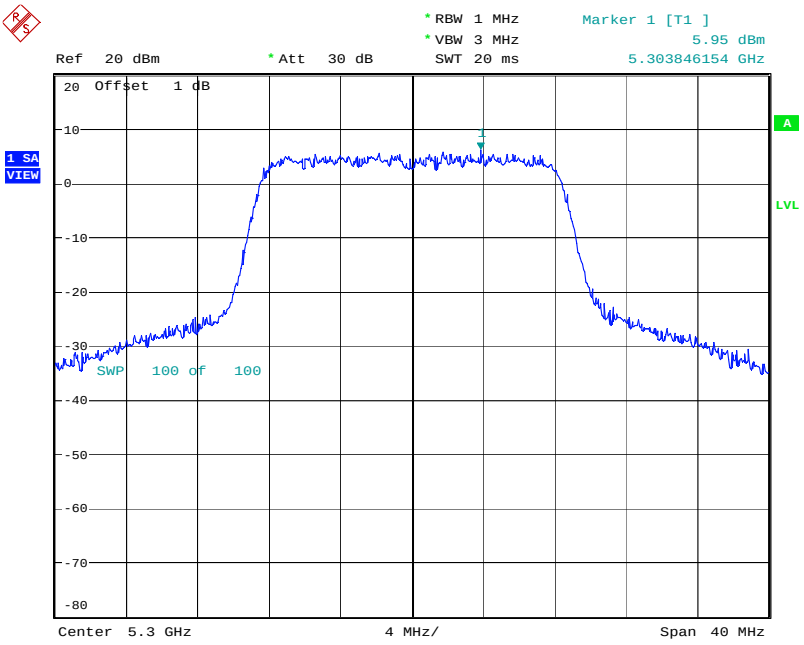
Date: 27.MAR.2008 12:36:31

Power Density Plot on Configuration IEEE 802.11a / 5260 MHz



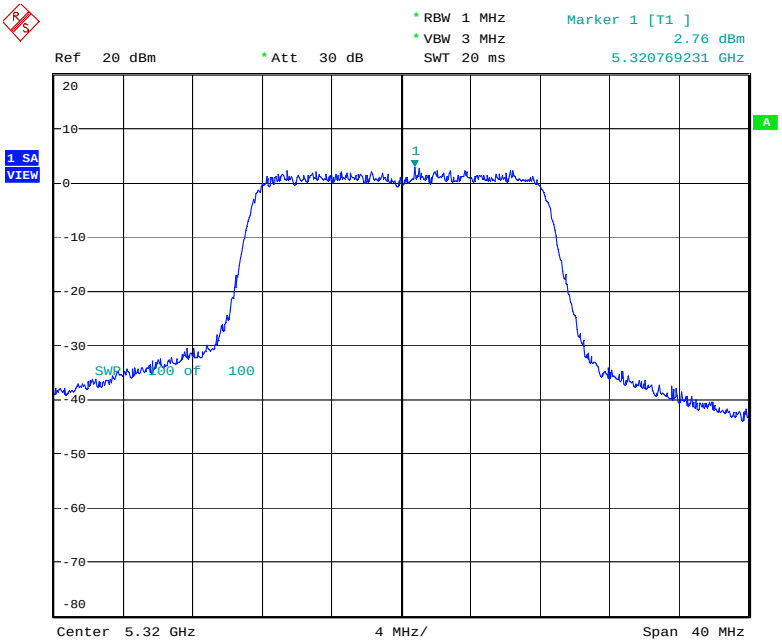
Date: 8.MAY.2006 16:00:54

Power Density Plot on Configuration IEEE 802.11a / 5300 MHz



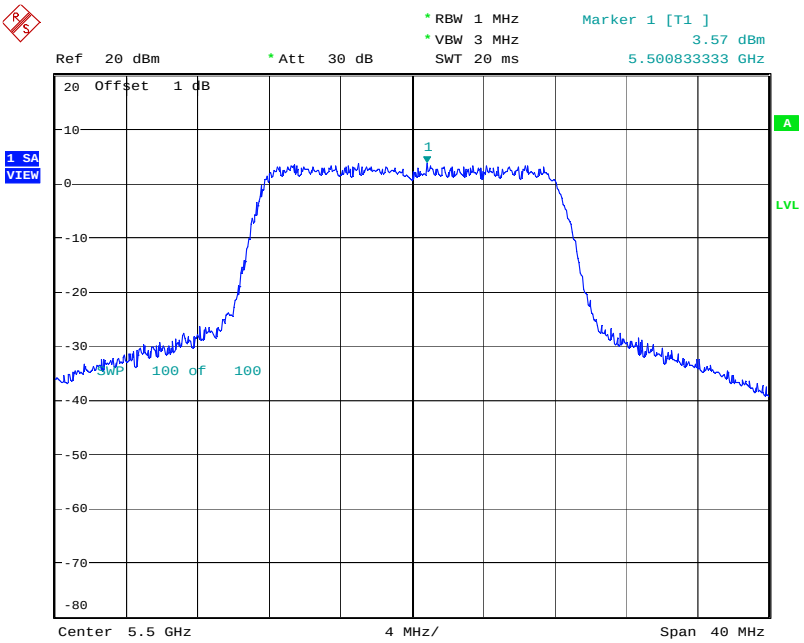
Date: 27.MAR.2008 12:38:49

Power Density Plot on Configuration IEEE 802.11a / 5320 MHz



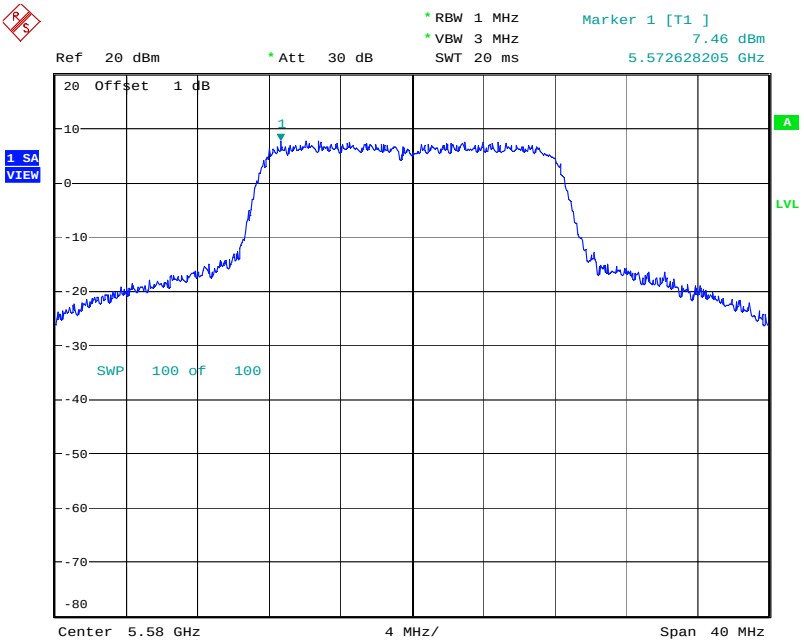
Date: 8.MAY.2006 16:00:08

Power Density Plot on Configuration IEEE 802.11a / 5500 MHz



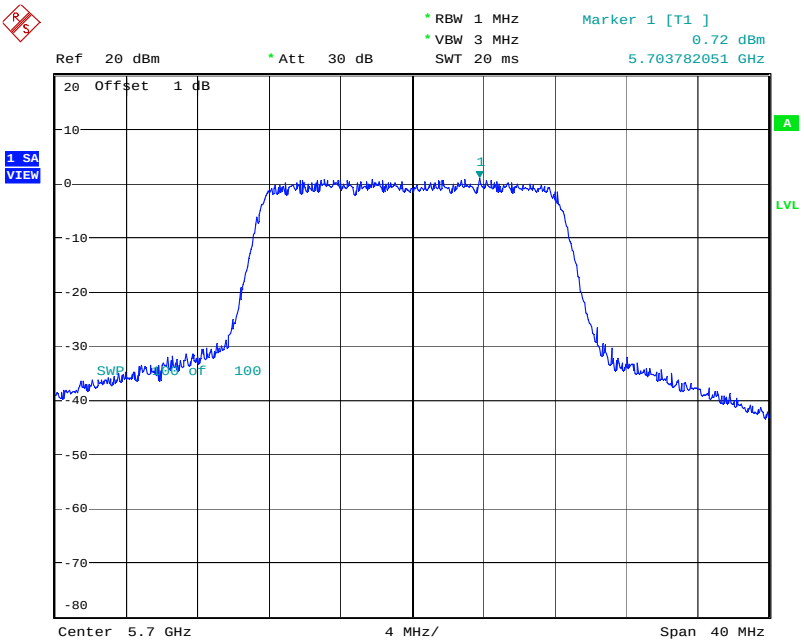
Date: 27.MAR.2008 12:39:46

Power Density Plot on Configuration IEEE 802.11a / 5580 MHz



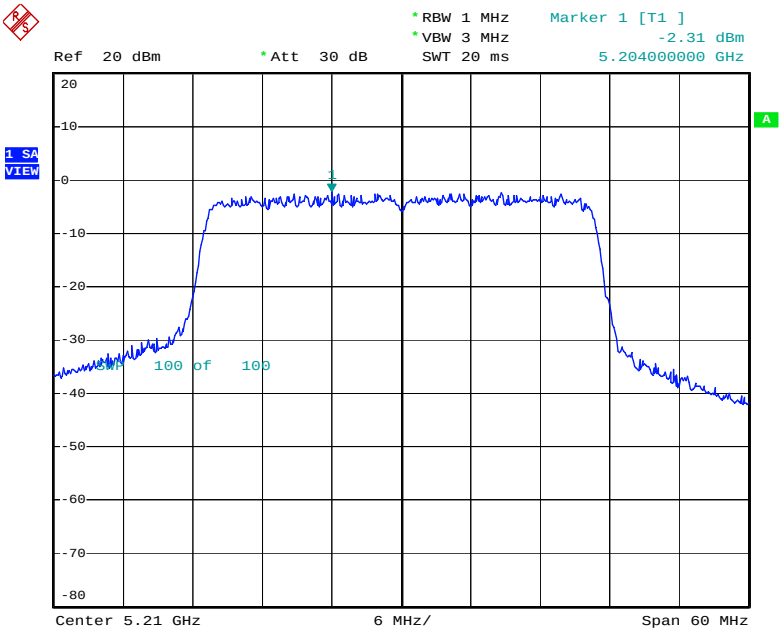
Date: 27.MAR.2008 12:41:45

Power Density Plot on Configuration IEEE 802.11a / 5700 MHz



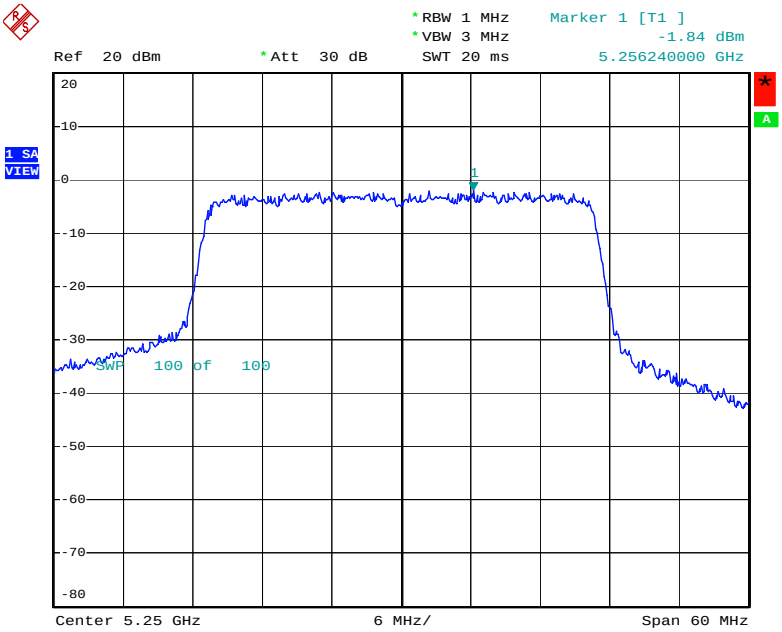
Date: 27.MAR.2008 12:44:16

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



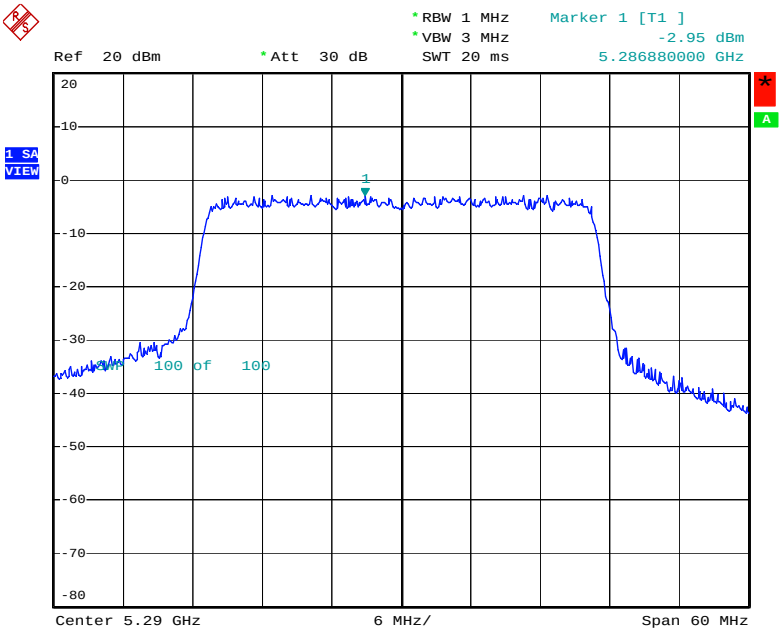
Date: 4.MAY.2006 22:13:50

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



Date: 4.MAY.2006 22:14:14

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



Date: 4.MAY.2006 22:14:35

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 analyser.
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 ≥ 1/T (IEEE 802.11a VBW = 300kHz ≥ 1/4 μs). 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℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a

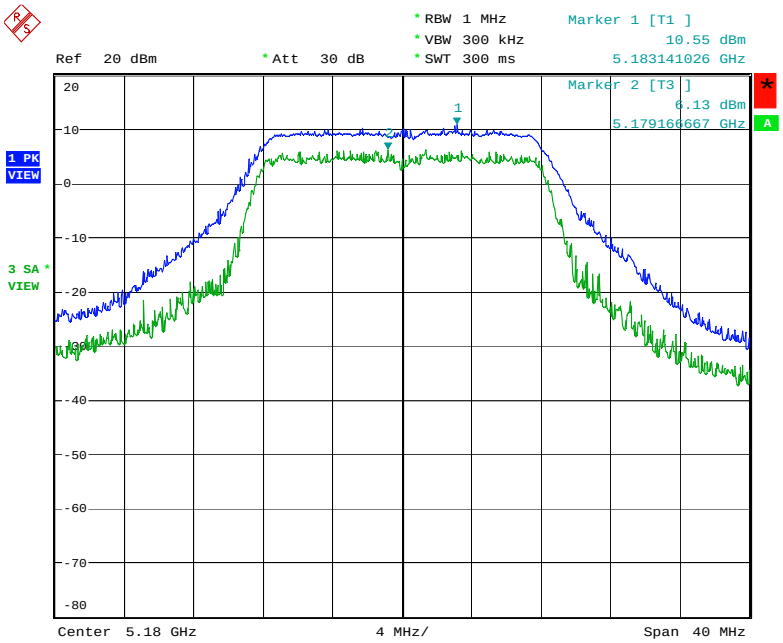
Configuration IEEE 802.11a

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5180 MHz	4.42	13	Complies
5200 MHz	4.62	13	Complies
5240 MHz	5.07	13	Complies
5260 MHz	4.58	13	Complies
5300 MHz	5.89	13	Complies
5320 MHz	5.70	13	Complies
5500 MHz	4.51	13	Complies
5580 MHz	5.41	13	Complies
5700 MHz	5.18	13	Complies

Configuration IEEE 802.11a Turbo

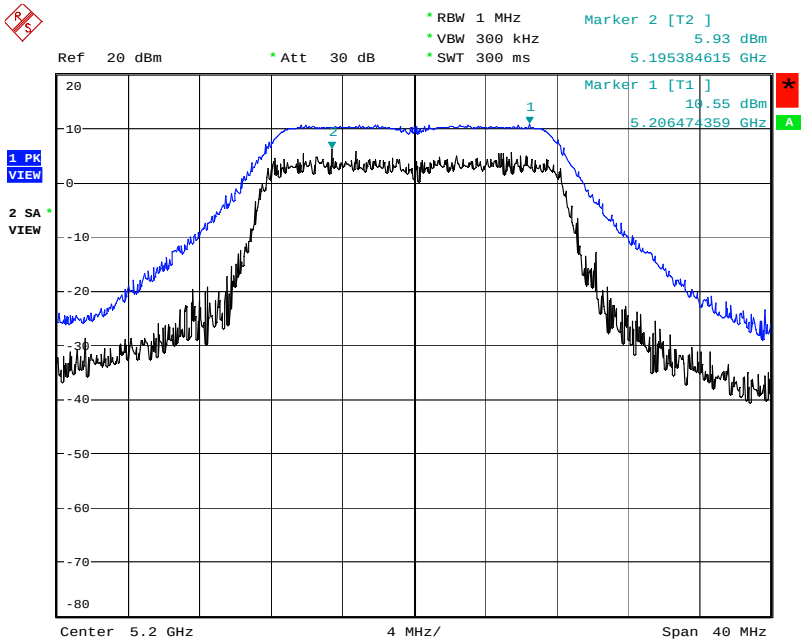
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5210 MHz	4.48	13	Complies
5250 MHz	4.35	13	Complies
5290 MHz	4.18	13	Complies

Peak Excursion Plot on Configuration IEEE 802.11a / 5180 MHz



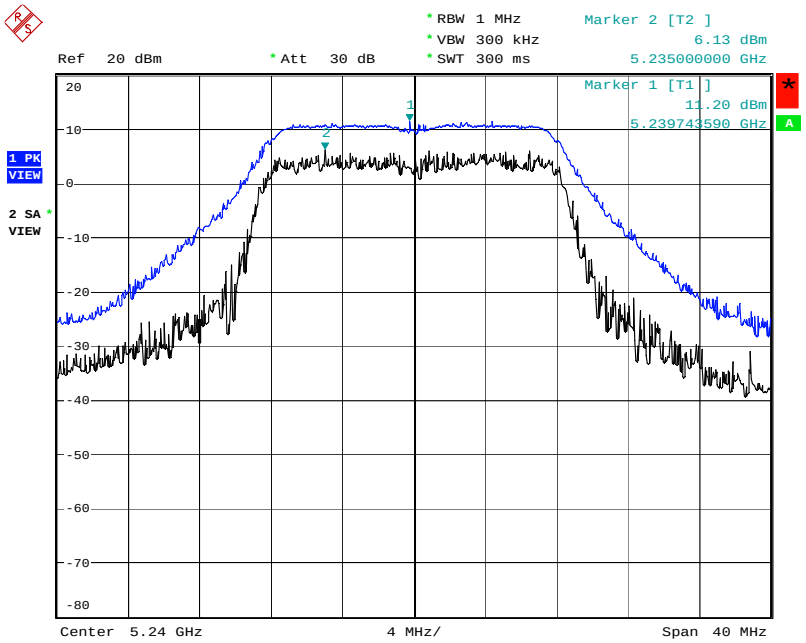
Date: 8.MAY.2006 15:51:21

Peak Excursion Plot on Configuration IEEE 802.11a / 5200 MHz



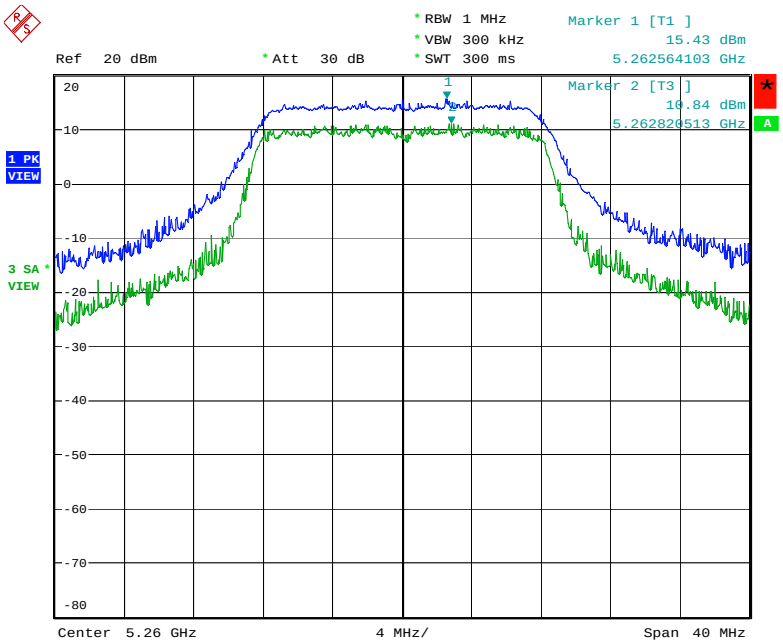
Date: 27.MAR.2008 12:35:44

Peak Excursion Plot on Configuration IEEE 802.11a / 5240 MHz



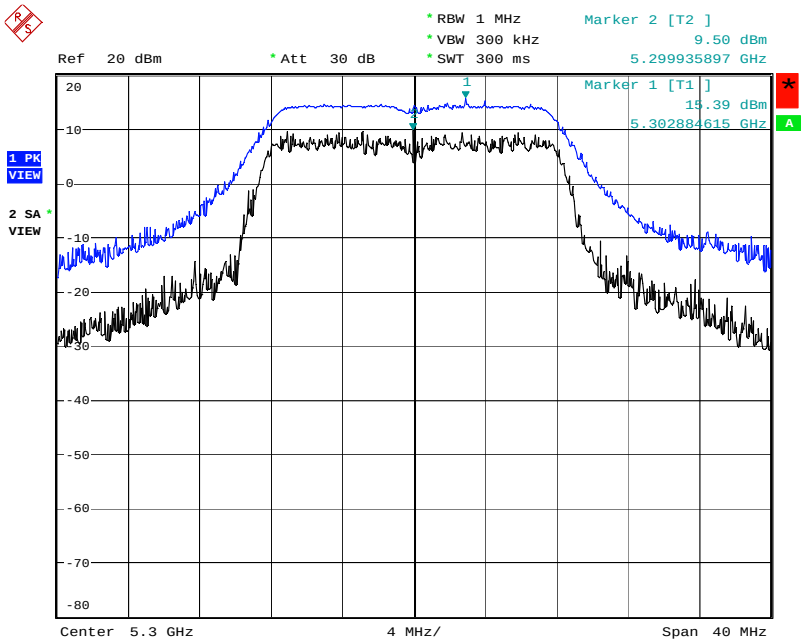
Date: 27.MAR.2008 12:36:44

Peak Excursion Plot on Configuration IEEE 802.11a / 5260 MHz



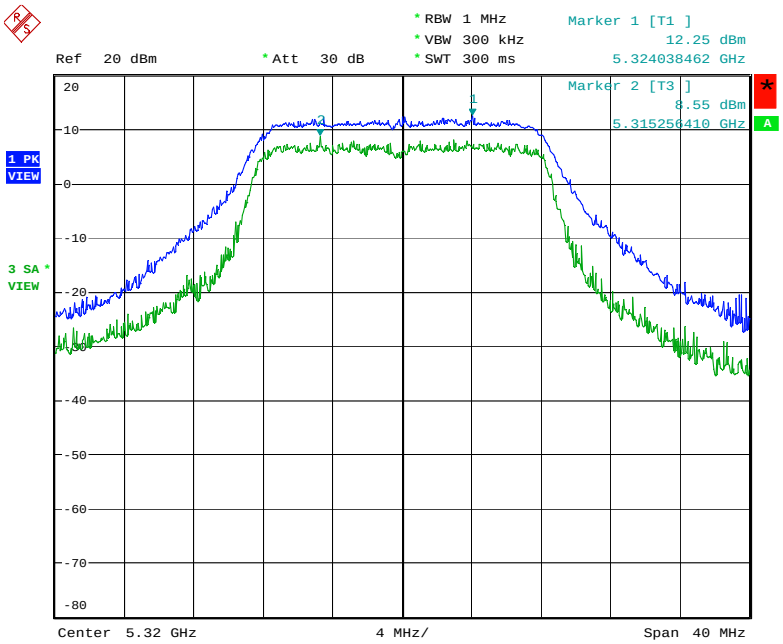
Date: 8.MAY.2006 15:52:23

Peak Excursion Plot on Configuration IEEE 802.11a / 5300 MHz



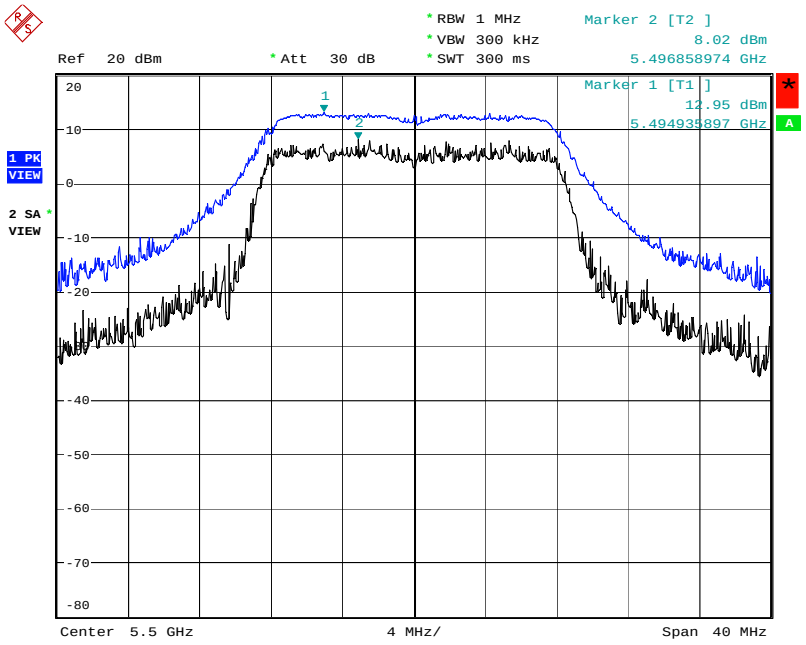
Date: 27.MAR.2008 12:39:01

Peak Excursion Plot on Configuration IEEE 802.11a / 5320 MHz



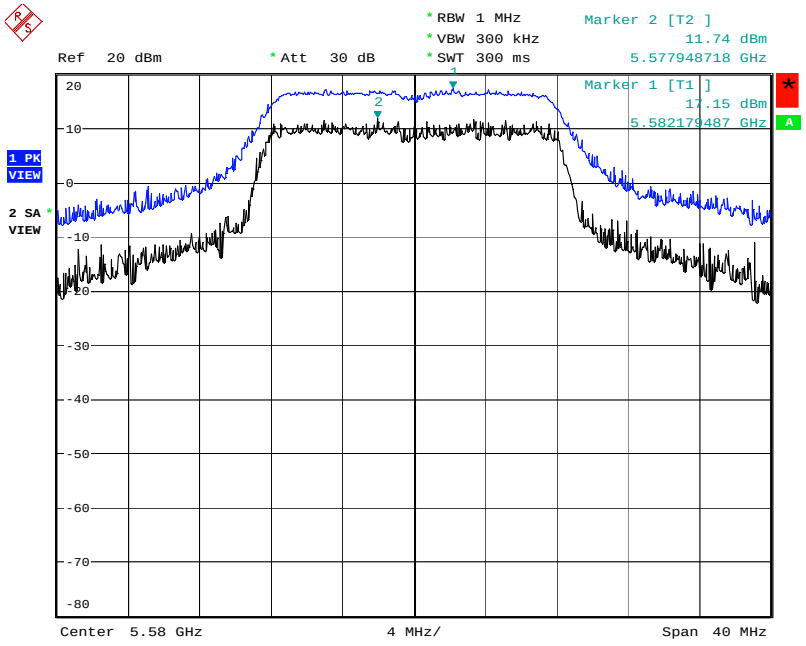
Date: 8.MAY.2006 15:58:59

Peak Excursion Plot on Configuration IEEE 802.11a / 5500 MHz



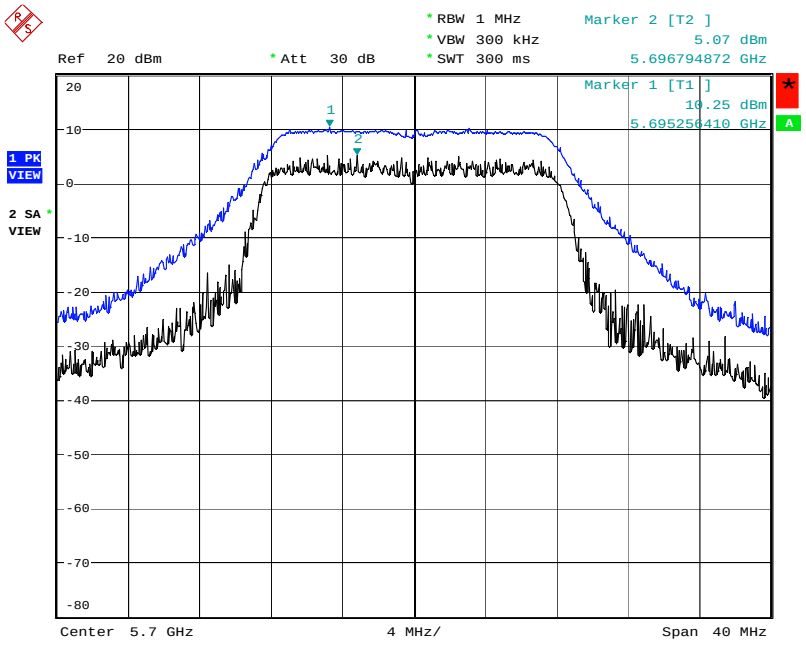
Date: 27.MAR.2008 12:40:00

Peak Excursion Plot on Configuration IEEE 802.11a / 5580 MHz



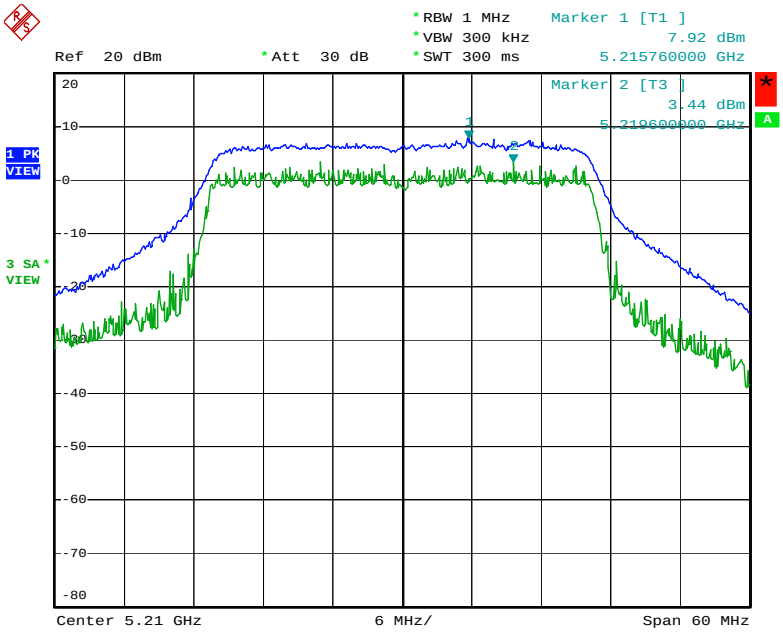
Date: 27.MAR.2008 12:41:59

Peak Excursion Plot on Configuration IEEE 802.11a / 5700 MHz



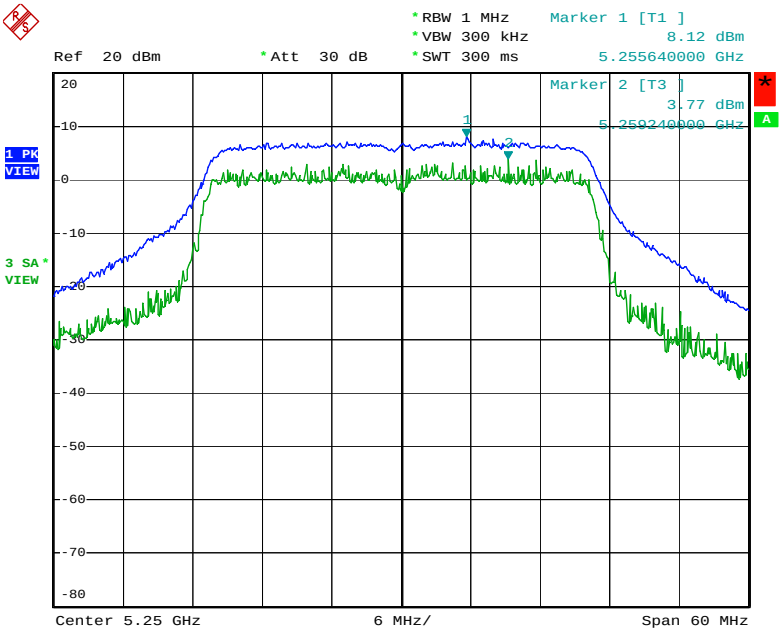
Date: 27.MAR.2008 12:44:30

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



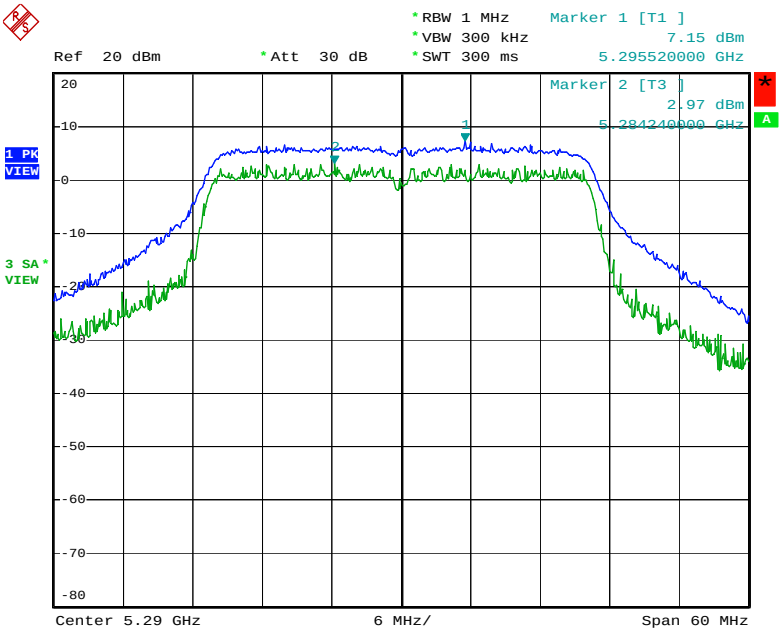
Date: 4.MAY.2006 22:13:12

Peak Excursion Plot on Configuration IEEE 802.11a Turbo / 5250 MHz



Date: 4.MAY.2006 22:12:09

Peak Excursion Plot on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 4.MAY.2006 22:11:05

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz and 5.47-5.725 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100KHz / 100KHz for peak

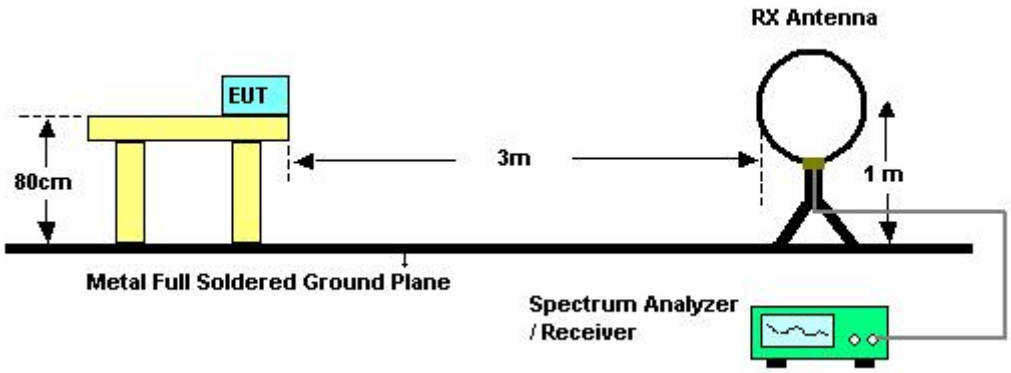
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

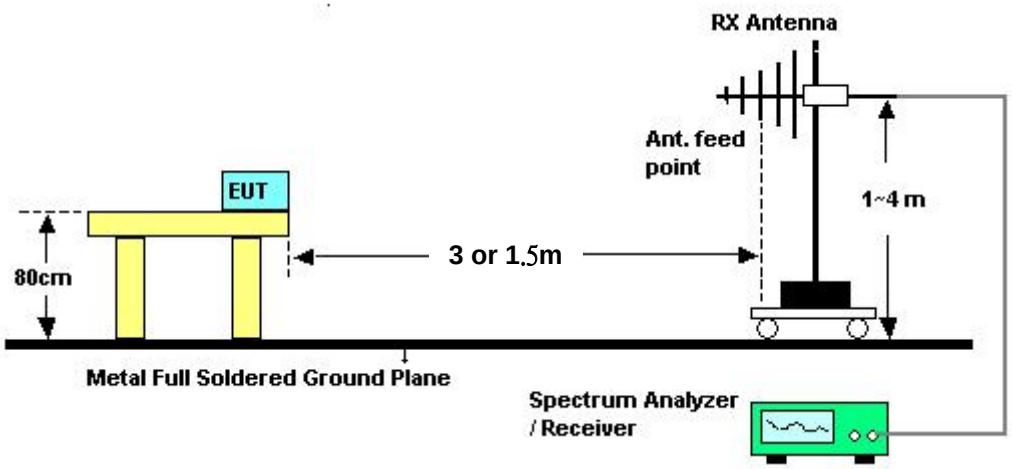
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5] (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6dB].

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 64

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

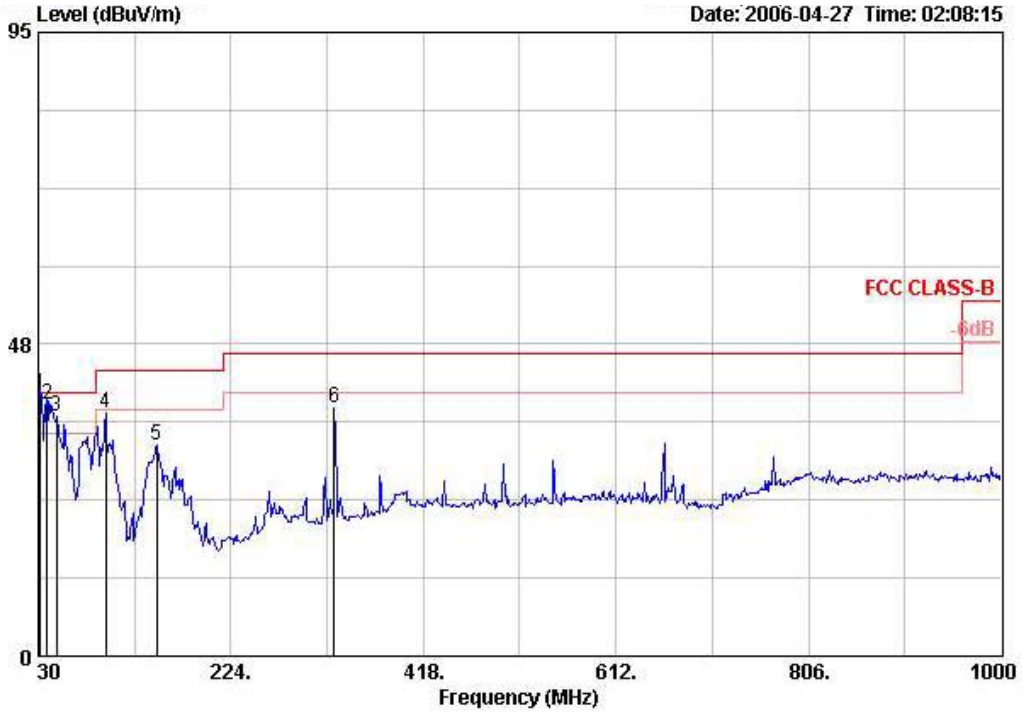
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.6.8. Results of Radiated Emissions (30MHz~1GHz)

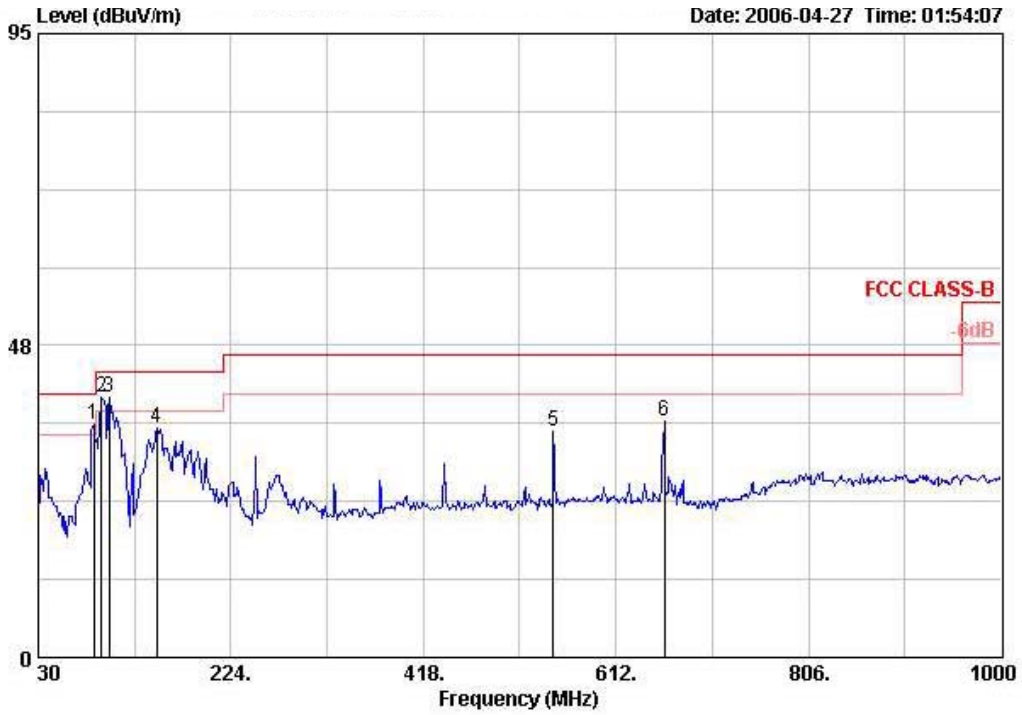
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 64

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	31.940	39.75	-0.25	40.00	54.15	16.34	0.93	31.67	QP	HORIZONTAL	3
2 @	38.730	38.23	-1.77	40.00	54.09	14.74	1.15	31.75	QP	HORIZONTAL	3
3 @	48.430	36.48	-3.52	40.00	56.42	10.79	1.10	31.83	Peak	HORIZONTAL	3
4	97.900	37.12	-6.38	43.50	56.51	10.84	1.50	31.73	Peak	HORIZONTAL	3
5	149.310	32.08	-11.42	43.50	50.10	11.63	1.90	31.54	Peak	HORIZONTAL	3
6	327.790	37.89	-8.11	46.00	51.84	15.02	2.31	31.28	Peak	HORIZONTAL	3

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 !	86.260	35.55	-4.45	40.00	56.87	8.89	1.45	31.65	Peak	VERTICAL	3
2 @	94.020	39.66	-3.84	43.50	59.78	10.13	1.47	31.72	Peak	VERTICAL	3
3 @	101.780	39.61	-3.89	43.50	58.45	11.37	1.50	31.71	Peak	VERTICAL	3
4	149.310	34.97	-8.53	43.50	52.99	11.63	1.90	31.54	Peak	VERTICAL	3
5	548.950	34.55	-11.45	46.00	44.14	17.95	3.20	30.75	Peak	VERTICAL	3
6	660.500	36.08	-9.92	46.00	45.36	17.55	3.52	30.35	Peak	VERTICAL	3

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

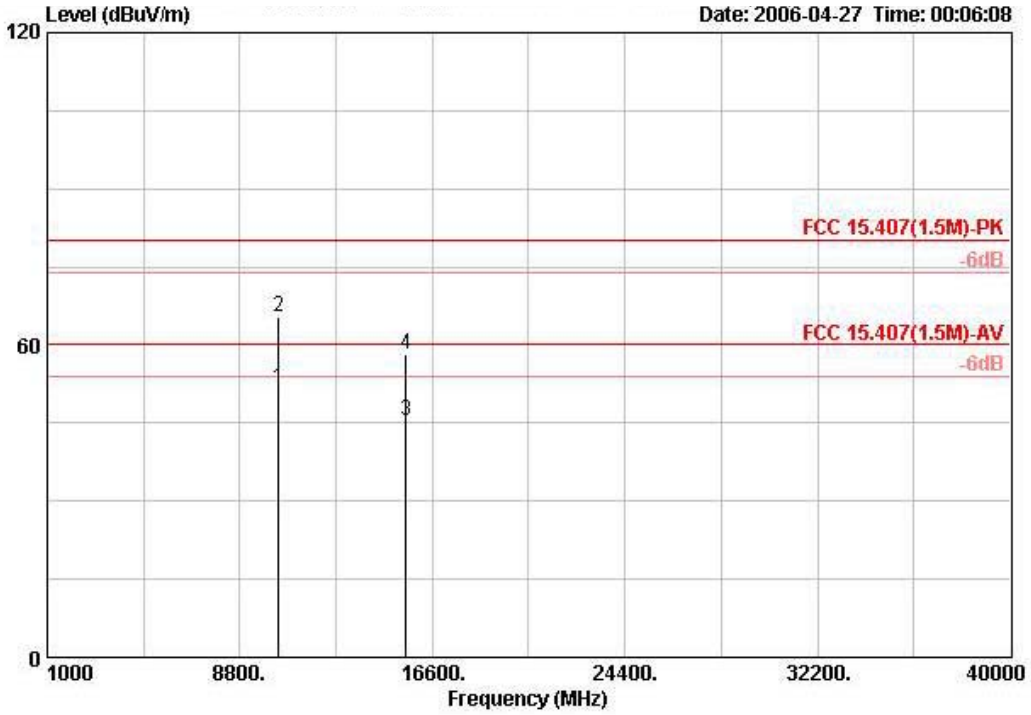
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6.9. Results for Radiated Emissions (1GHz~40GHz)

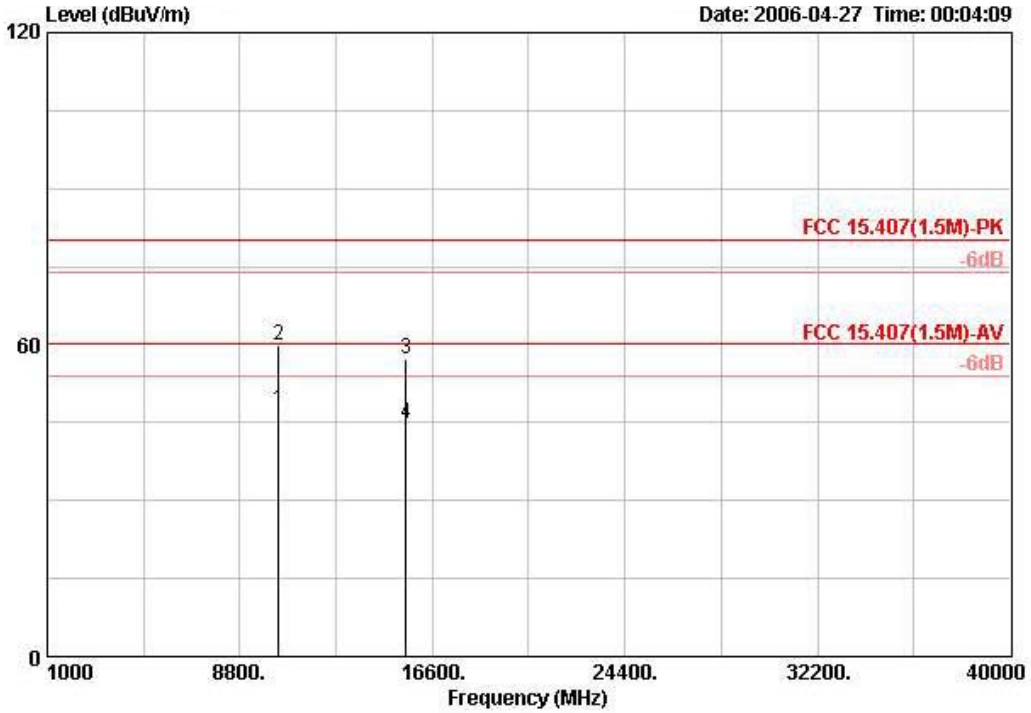
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 36

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10360.180	51.81	-8.19	60.00	40.73	38.53	7.67	35.12	AVERAGE	VERTICAL	3
2	10360.760	65.54	-14.46	80.00	54.46	38.53	7.67	35.12	PEAK	VERTICAL	3
3	15535.880	45.41	-14.59	60.00	34.20	38.06	8.43	35.28	AVERAGE	VERTICAL	3
4	15541.760	58.23	-21.77	80.00	47.02	38.06	8.43	35.28	PEAK	VERTICAL	3

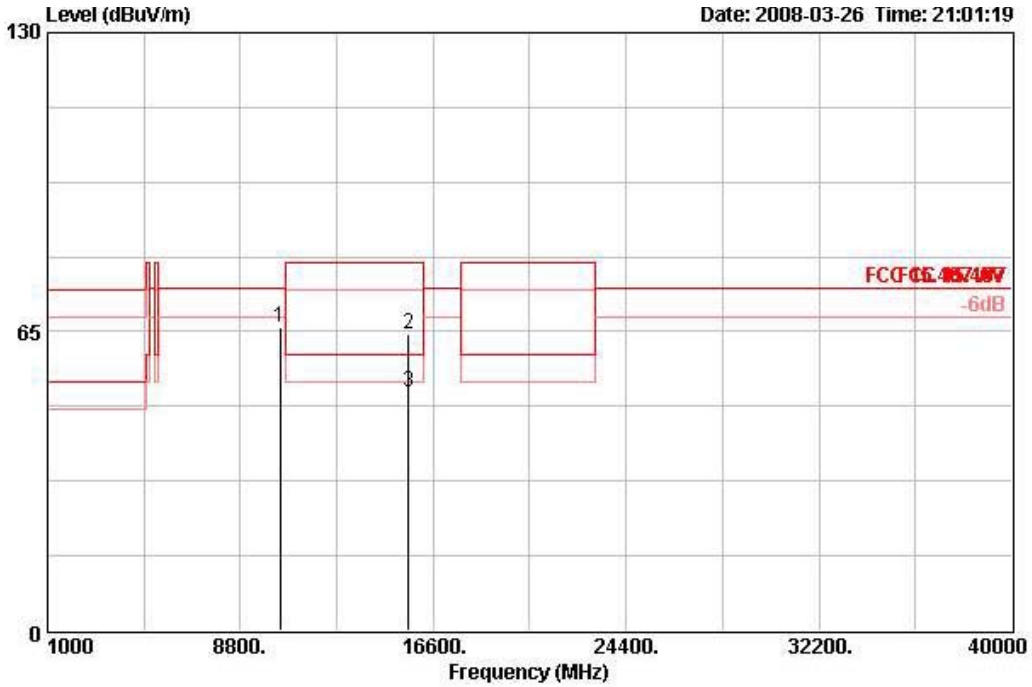
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10361.440	47.48	-12.52	60.00	36.39	38.53	7.67	35.12	AVERAGE	HORIZONTAL	3
2	10362.130	59.68	-20.32	80.00	48.60	38.53	7.67	35.12	PEAK	HORIZONTAL	3
3	15536.800	57.38	-22.62	80.00	46.17	38.06	8.43	35.28	PEAK	HORIZONTAL	3
4	15537.220	44.90	-15.10	60.00	33.70	38.06	8.43	35.28	AVERAGE	HORIZONTAL	3

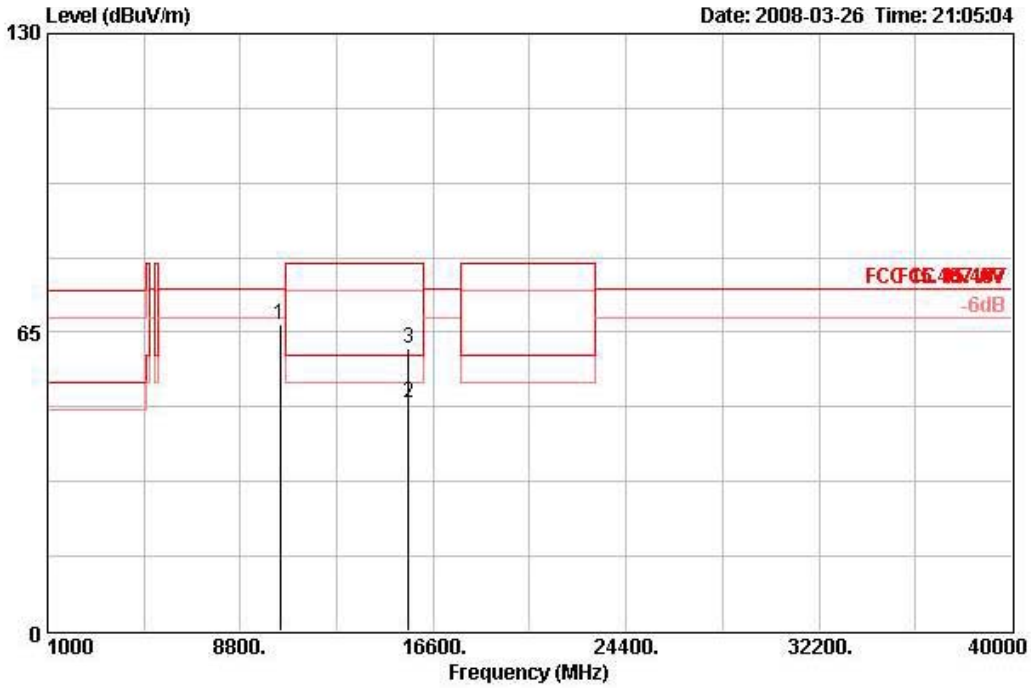
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 40

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	10398.680	65.80	-8.50	74.30	52.31	38.52	35.30	10.27	PEAK	136	118	VERTICAL
2	15592.160	64.31	-15.69	80.00	49.14	38.19	34.74	11.73	PEAK	46	100	VERTICAL
3	15598.360	51.82	-8.18	60.00	36.63	38.20	34.74	11.73	AVERAGE	46	100	VERTICAL

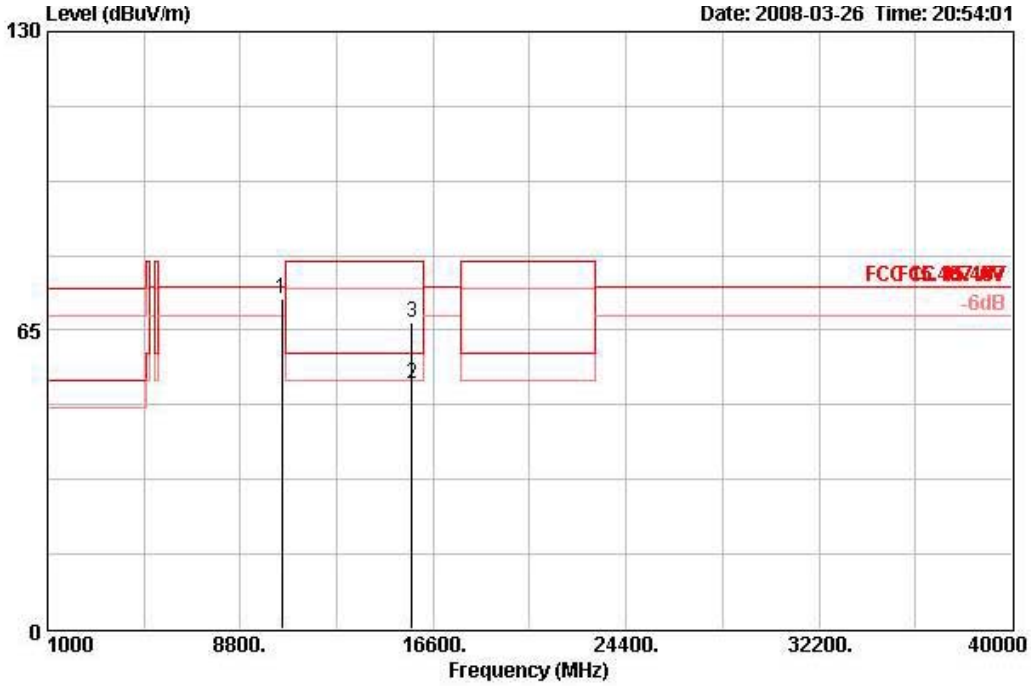
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	10398.480	66.69	-7.61	74.30	53.20	38.52	35.30	10.27	PEAK	266	101	HORIZONTAL
2	15596.400	49.45	-10.55	60.00	34.26	38.20	34.74	11.73	AVERAGE	234	100	HORIZONTAL
3	15601.800	61.59	-18.41	80.00	46.40	38.20	34.77	11.75	PEAK	234	100	HORIZONTAL

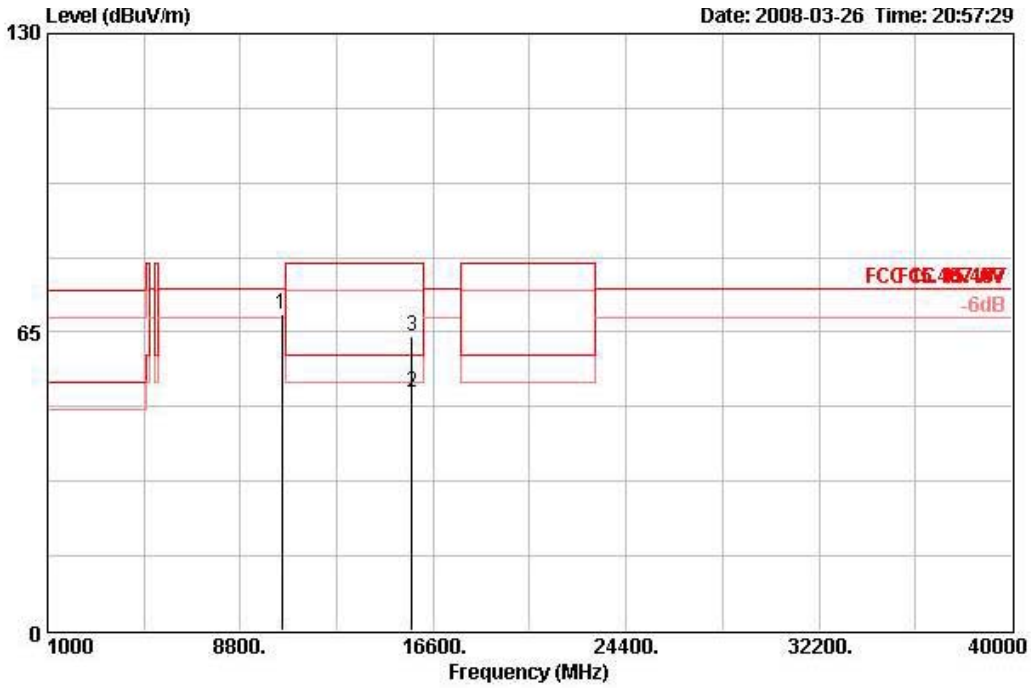
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 48

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	10475.600	71.90	-2.40	74.30	58.19	38.57	35.21	10.35	PEAK	342	107	VERTICAL
2 @	15720.000	53.23	-6.77	60.00	37.94	38.32	34.86	11.83	AVERAGE	120	104	VERTICAL
3	15729.720	66.51	-13.49	80.00	51.22	38.32	34.89	11.85	PEAK	120	104	VERTICAL

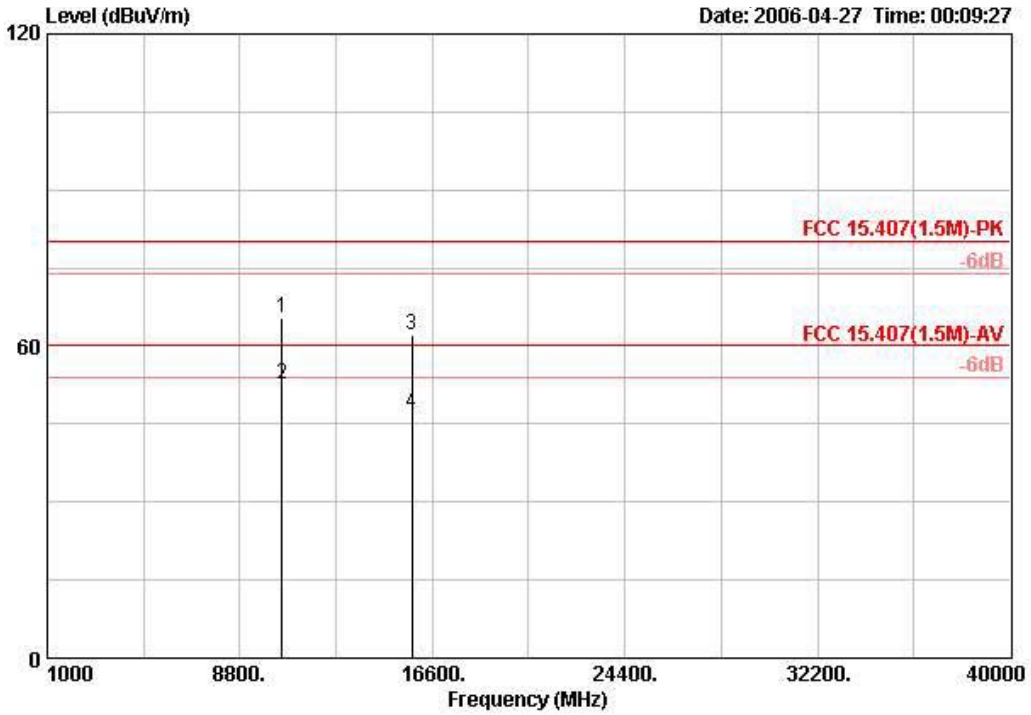
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	10480.920	69.06	-5.24	74.30	55.34	38.59	35.21	10.35	PEAK	249	100	HORIZONTAL
2	15721.400	51.76	-8.24	60.00	36.47	38.32	34.86	11.83	AVERAGE	341	100	HORIZONTAL
3	15722.400	63.98	-16.02	80.00	48.69	38.32	34.86	11.83	PEAK	341	100	HORIZONTAL

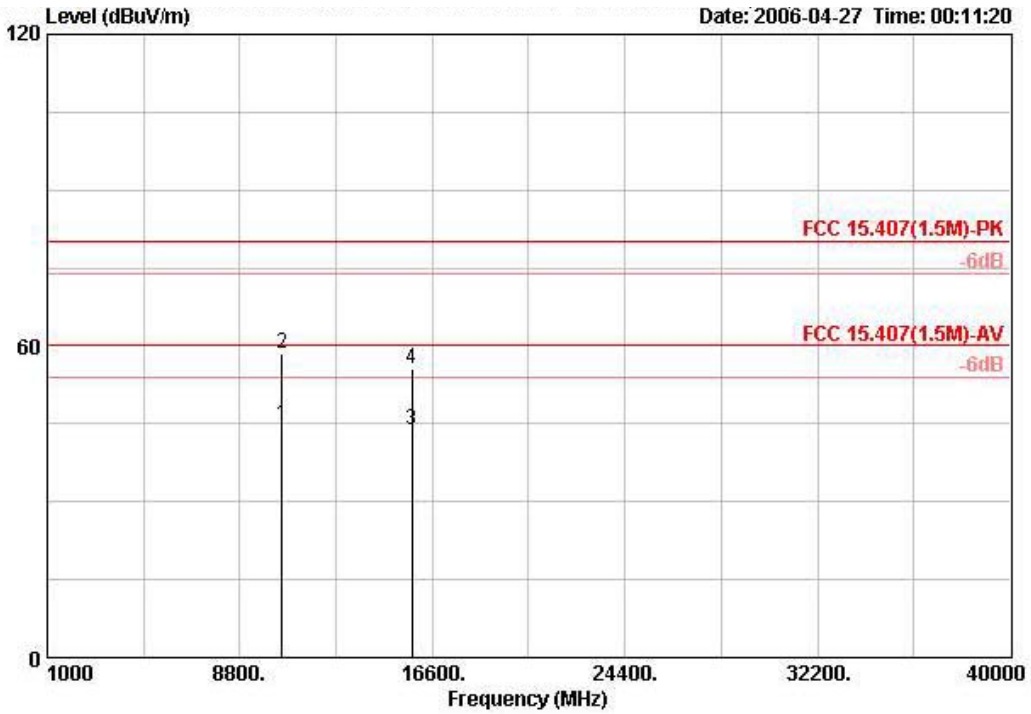
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 52

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10516.600	65.55	-14.45	80.00	54.61	38.11	7.75	34.93	PEAK	VERTICAL	3
2	10519.380	52.67	-7.33	60.00	41.74	38.11	7.75	34.93	AVERAGE	VERTICAL	3
3	15778.500	62.07	-17.93	80.00	51.17	37.77	8.50	35.37	PEAK	VERTICAL	3
4	15780.660	46.97	-13.03	60.00	36.08	37.77	8.50	35.37	AVERAGE	VERTICAL	3

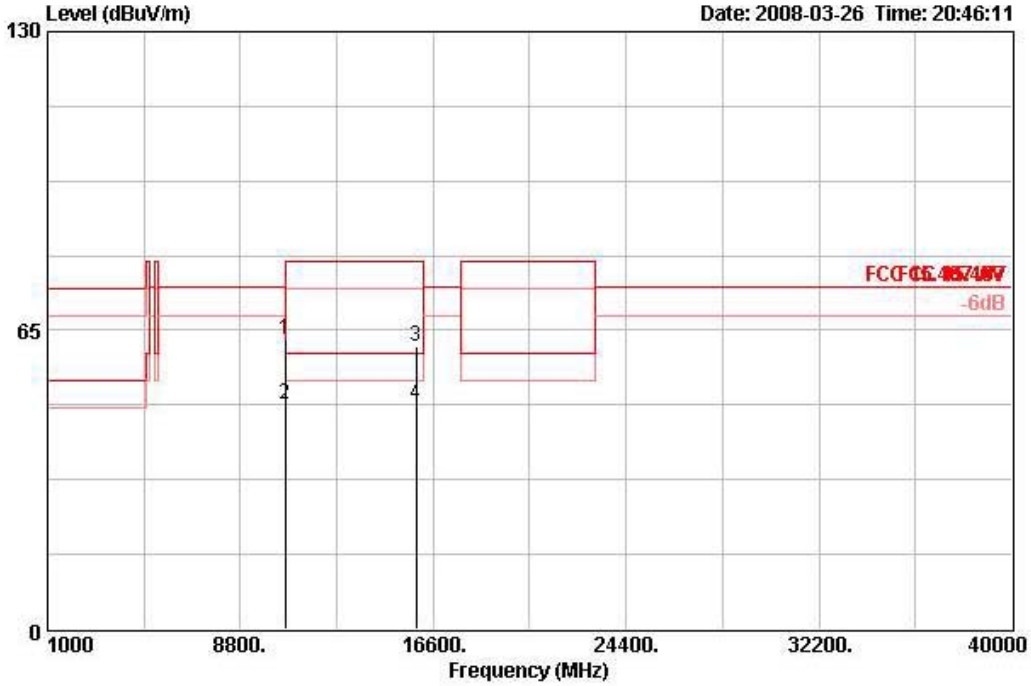
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10521.300	44.77	-15.23	60.00	33.84	38.11	7.75	34.93	AVERAGE	HORIZONTAL	3
2	10522.820	58.46	-21.54	80.00	47.52	38.11	7.75	34.93	PEAK	HORIZONTAL	3
3	15777.240	43.85	-16.15	60.00	32.95	37.77	8.50	35.36	AVERAGE	HORIZONTAL	3
4	15783.480	55.64	-24.36	80.00	44.77	37.75	8.50	35.37	PEAK	HORIZONTAL	3

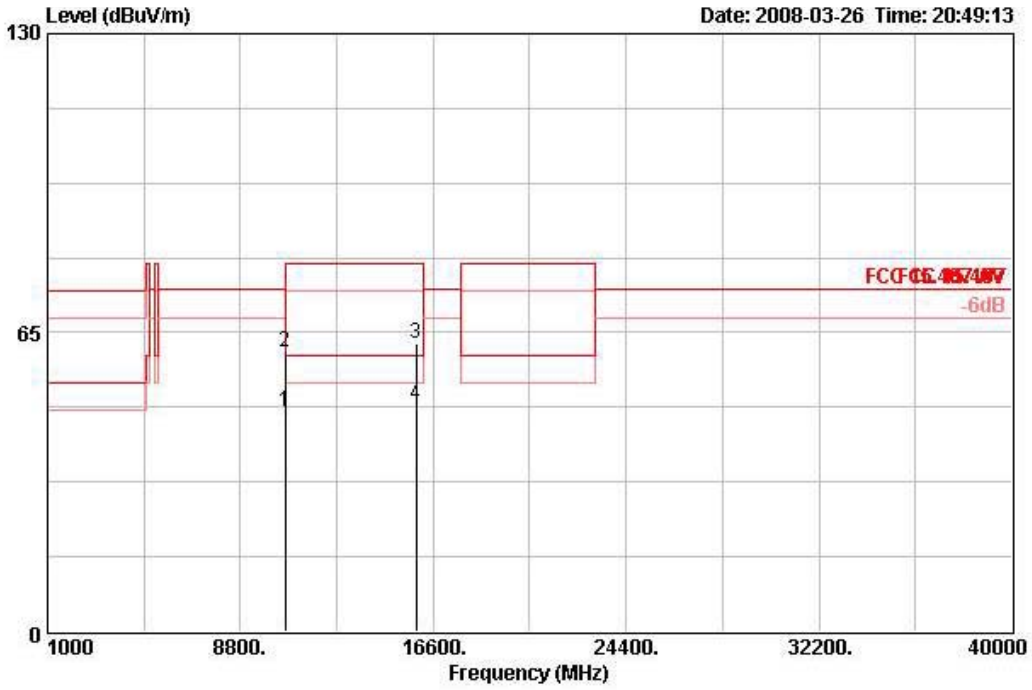
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 60

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	10596.680	62.79	-11.51	74.30	48.98	38.56	35.10	10.36	PEAK	309	100	VERTICAL
2	10600.880	48.97	-11.03	60.00	35.14	38.56	35.08	10.35	AVERAGE	309	100	VERTICAL
3	15892.800	61.60	-18.40	80.00	46.17	38.50	35.03	11.97	PEAK	44	100	VERTICAL
4	15903.240	48.76	-11.24	60.00	33.31	38.51	35.03	11.97	AVERAGE	44	100	VERTICAL

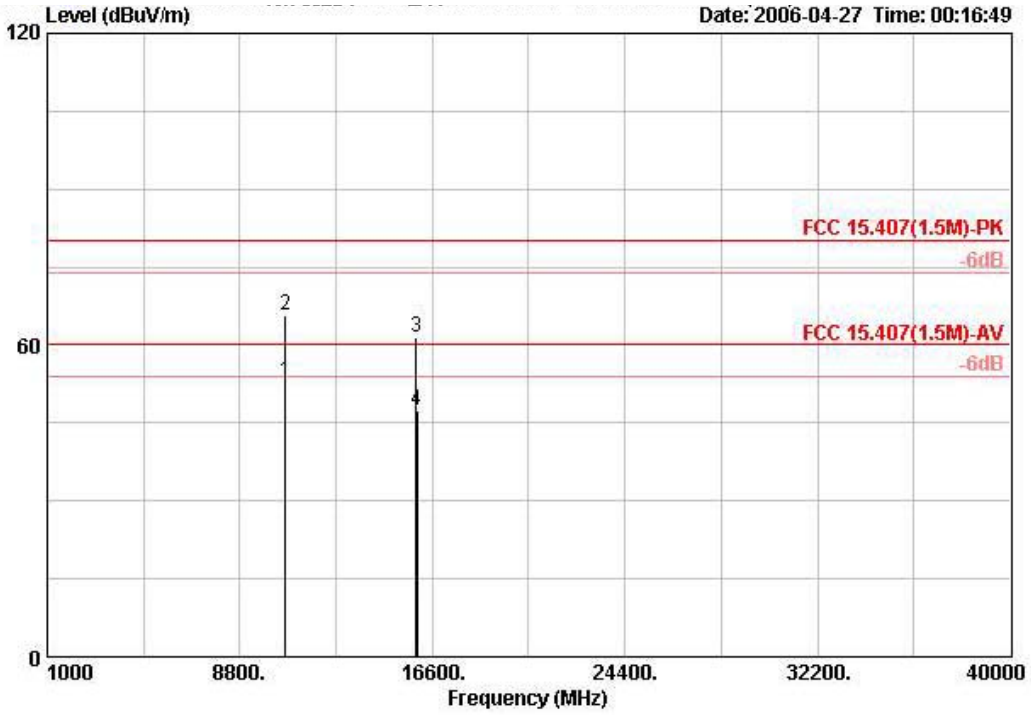
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	10600.320	47.60	-12.40	60.00	33.79	38.56	35.10	10.36	AVERAGE	43	107	HORIZONTAL
2	10601.920	60.82	-19.18	80.00	46.99	38.56	35.08	10.35	PEAK	43	107	HORIZONTAL
3	15907.880	62.48	-17.52	80.00	47.04	38.51	35.06	11.99	PEAK	272	100	HORIZONTAL
4	15908.000	49.33	-10.67	60.00	33.88	38.51	35.06	11.99	AVERAGE	272	100	HORIZONTAL

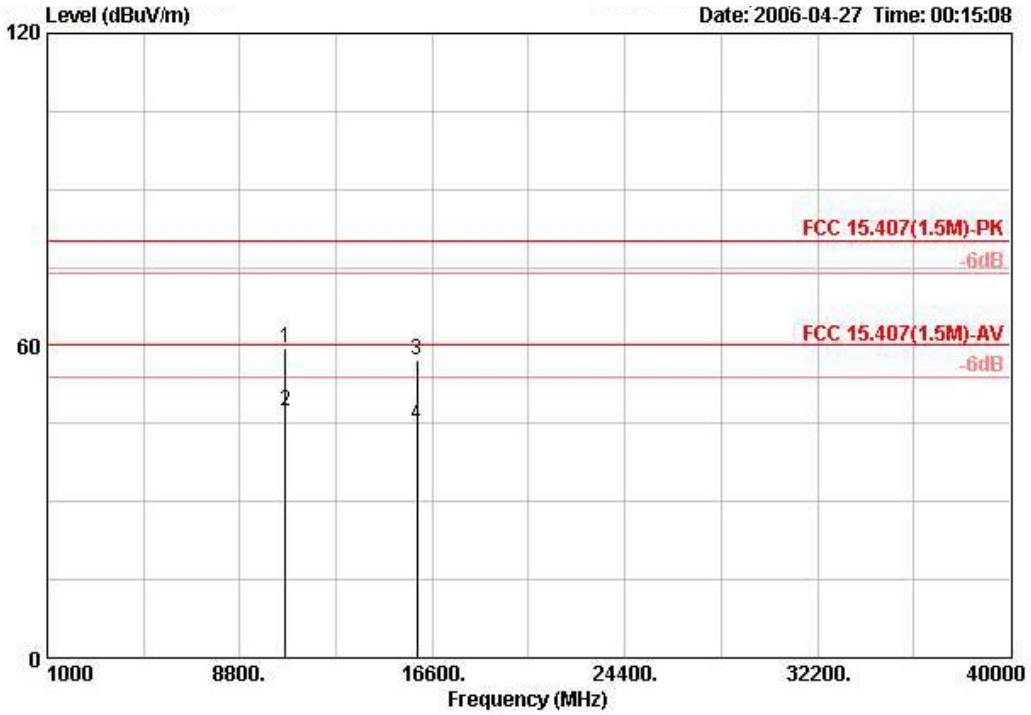
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 64

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10640.540	52.97	-7.03	60.00	41.90	38.21	7.74	34.88	AVERAGE	VERTICAL	3
2	10640.960	65.80	-14.20	80.00	54.73	38.21	7.74	34.88	PEAK	VERTICAL	3
3	15955.060	61.32	-18.68	80.00	50.67	37.54	8.54	35.43	PEAK	VERTICAL	3
4	15962.440	47.51	-12.49	60.00	36.85	37.54	8.55	35.44	AVERAGE	VERTICAL	3

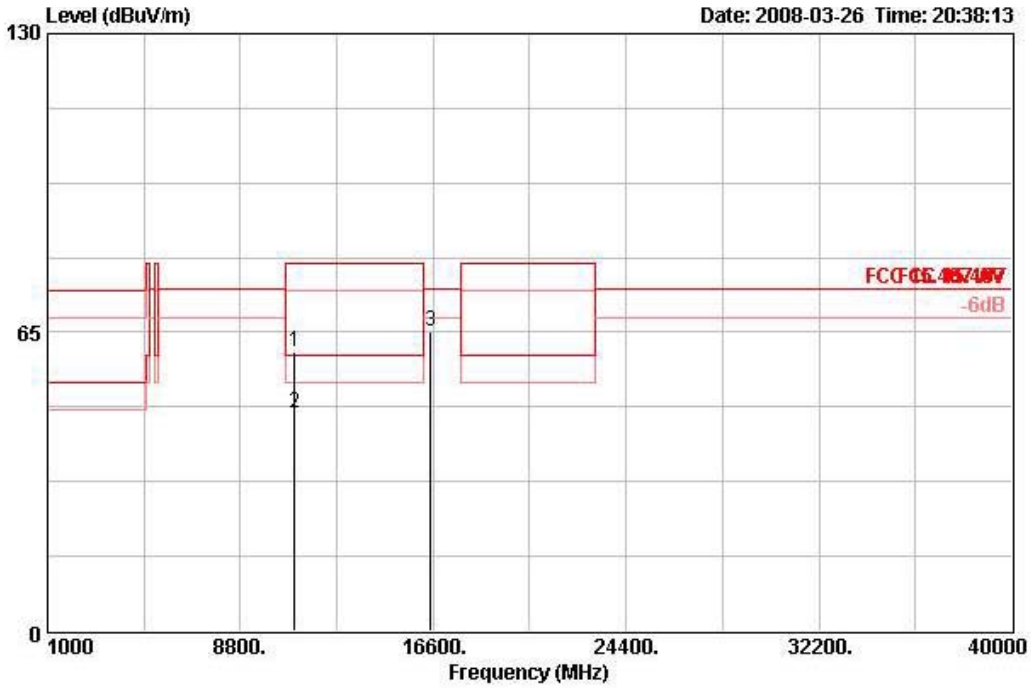
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10640.420	59.66	-20.34	80.00	48.59	38.21	7.74	34.88	PEAK	HORIZONTAL	3
2	10640.440	47.29	-12.71	60.00	36.22	38.21	7.74	34.88	AVERAGE	HORIZONTAL	3
3	15960.780	57.37	-22.63	80.00	46.71	37.54	8.55	35.44	PEAK	HORIZONTAL	3
4	15964.220	44.91	-15.09	60.00	34.25	37.54	8.55	35.44	AVERAGE	HORIZONTAL	3

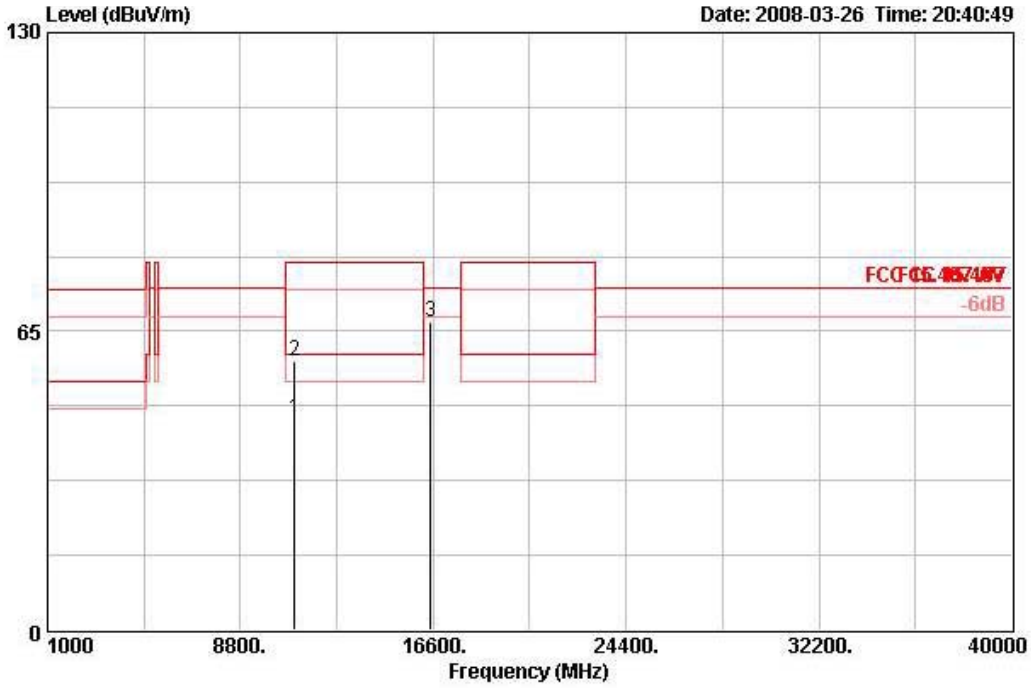
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 100

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	10995.200	60.78	-19.22	80.00	46.79	38.40	34.69	10.28	PEAK	318	104	VERTICAL
2	11001.080	47.38	-12.62	60.00	33.39	38.40	34.69	10.28	AVERAGE	318	104	VERTICAL
3	16497.520	65.29	-9.01	74.30	48.31	39.30	34.92	12.60	PEAK	154	100	VERTICAL

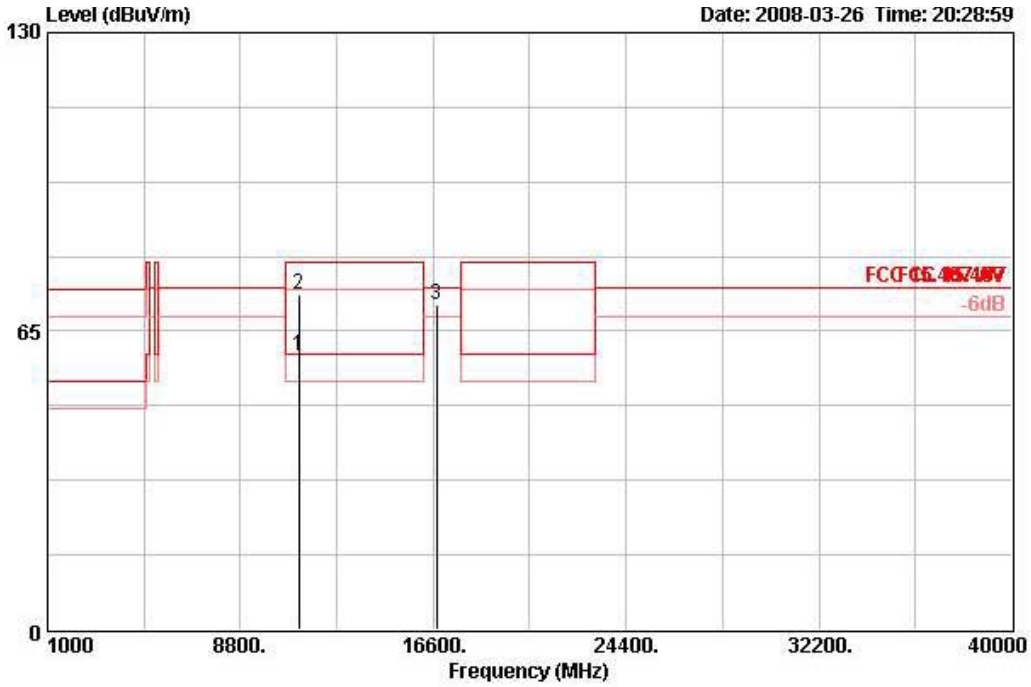
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	11001.360	46.07	-13.93	60.00	32.08	38.40	34.69	10.28	AVERAGE	81	100	HORIZONTAL
2	11002.400	58.49	-21.51	80.00	44.50	38.40	34.69	10.28	PEAK	81	100	HORIZONTAL
3 @	16507.080	66.89	-7.41	74.30	49.91	39.30	34.92	12.60	PEAK	44	100	HORIZONTAL

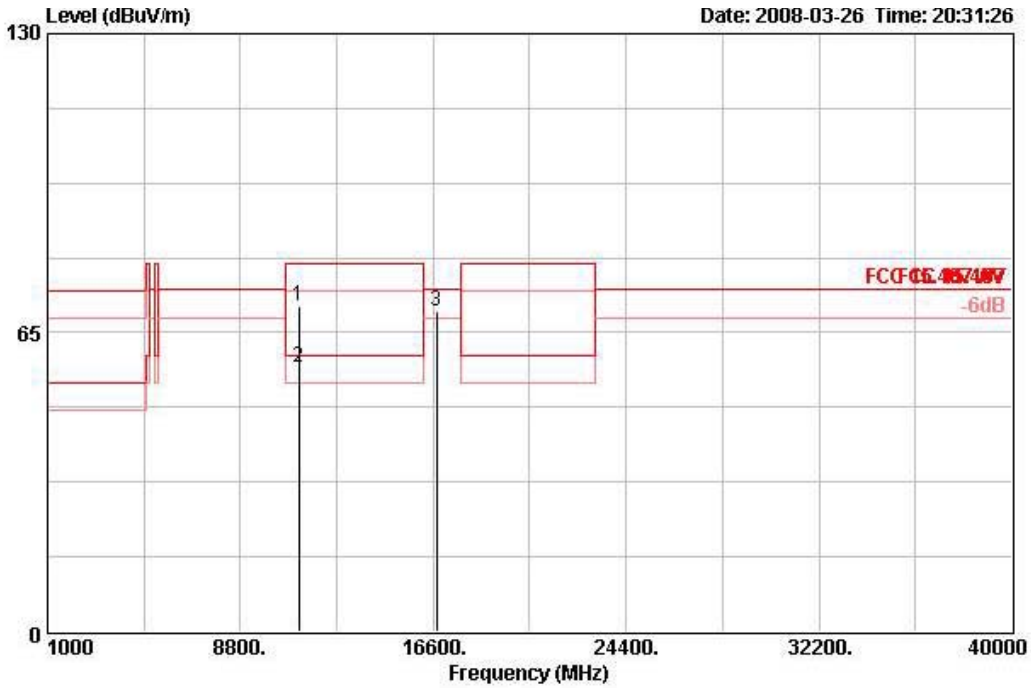
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 116

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	11159.840	59.76	-0.24	60.00	45.56	38.43	34.71	10.48	AVERAGE	320	106	VERTICAL
2 @	11161.360	72.81	-7.19	80.00	58.61	38.43	34.71	10.48	PEAK	320	106	VERTICAL
3 @	16732.680	70.75	-3.55	74.30	52.46	40.33	34.52	12.47	PEAK	150	100	VERTICAL

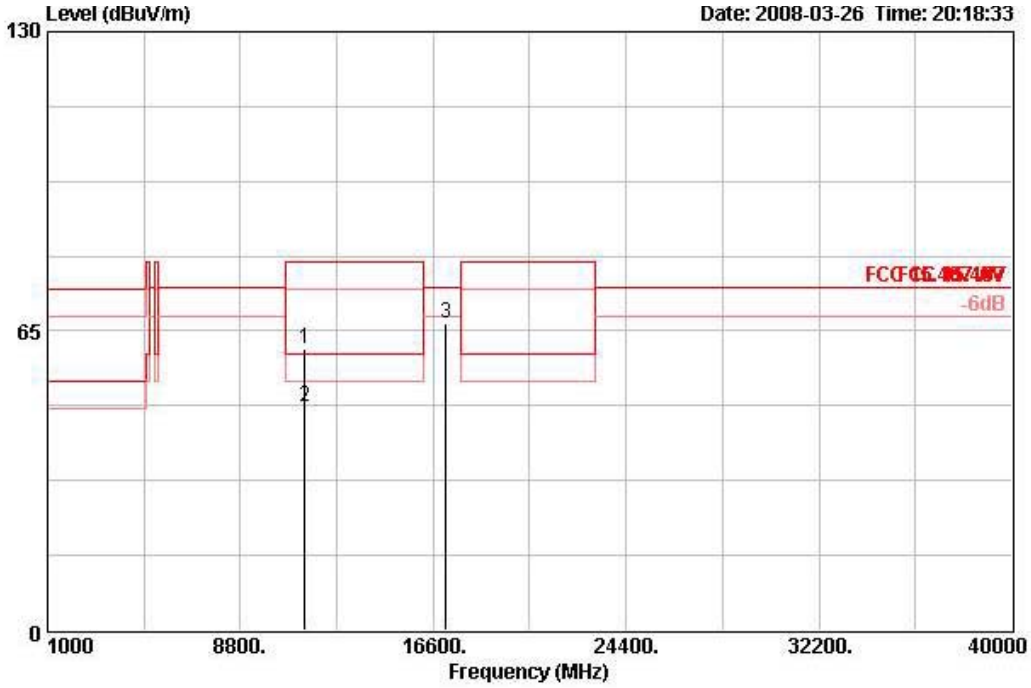
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	11151.560	70.66	-9.34	80.00	56.47	38.43	34.71	10.48	PEAK	291	100	HORIZONTAL
2 @	11160.760	57.27	-2.73	60.00	43.07	38.43	34.71	10.48	AVERAGE	291	100	HORIZONTAL
3 @	16736.200	69.70	-4.60	74.30	51.33	40.41	34.52	12.47	PEAK	43	100	HORIZONTAL

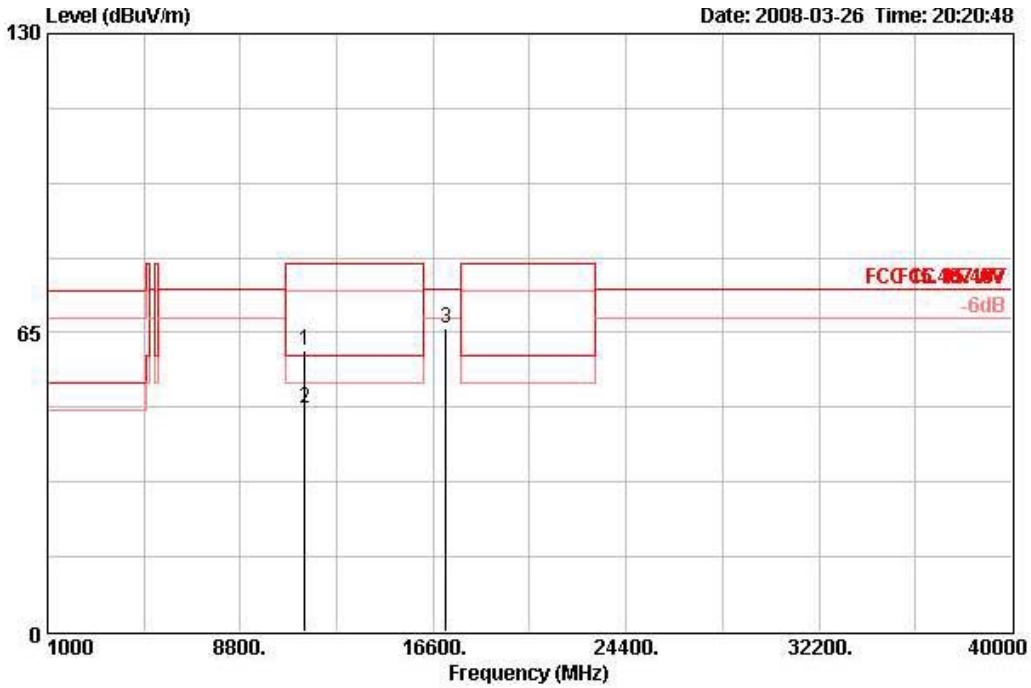
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 140

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	11398.580	61.05	-18.95	80.00	46.51	38.48	34.74	10.80	PEAK	178	103	VERTICAL
2	11400.320	48.68	-11.32	60.00	34.14	38.48	34.74	10.80	AVERAGE	178	103	VERTICAL
3	17100.180	66.49	-7.81	74.30	46.45	41.70	34.04	12.38	PEAK	183	100	VERTICAL

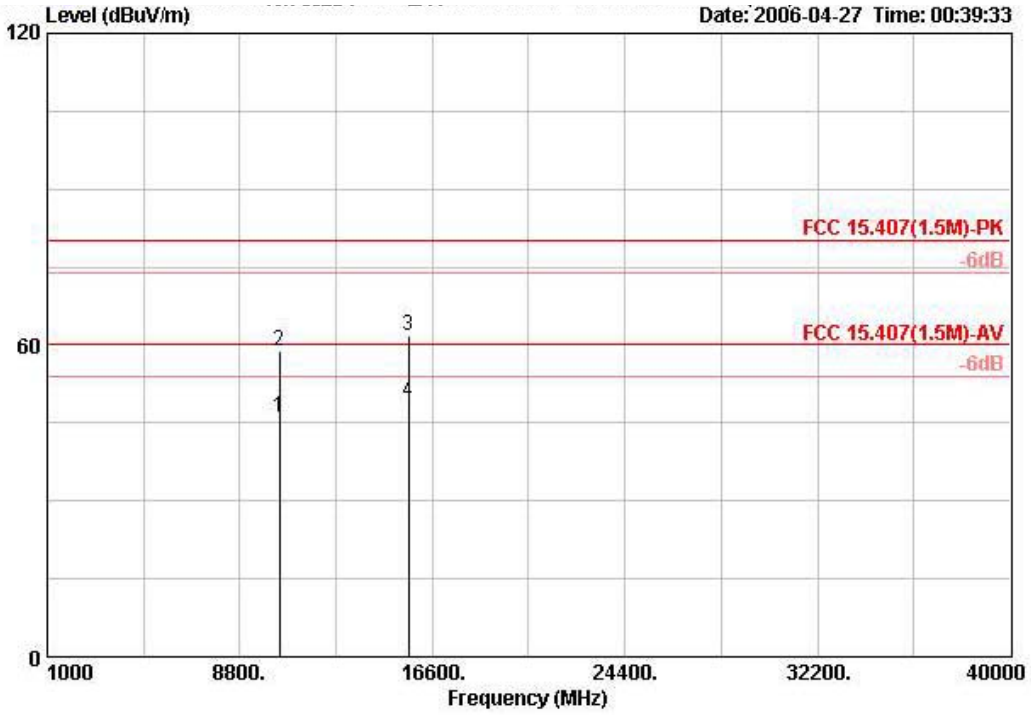
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1	11396.810	61.12	-18.88	80.00	46.58	38.48	34.74	10.80	PEAK	70	100	HORIZONTAL
2	11400.810	48.38	-11.62	60.00	33.84	38.48	34.74	10.80	AVERAGE	70	100	HORIZONTAL
3	17100.400	65.99	-8.31	74.30	45.95	41.70	34.04	12.38	PEAK	316	112	HORIZONTAL

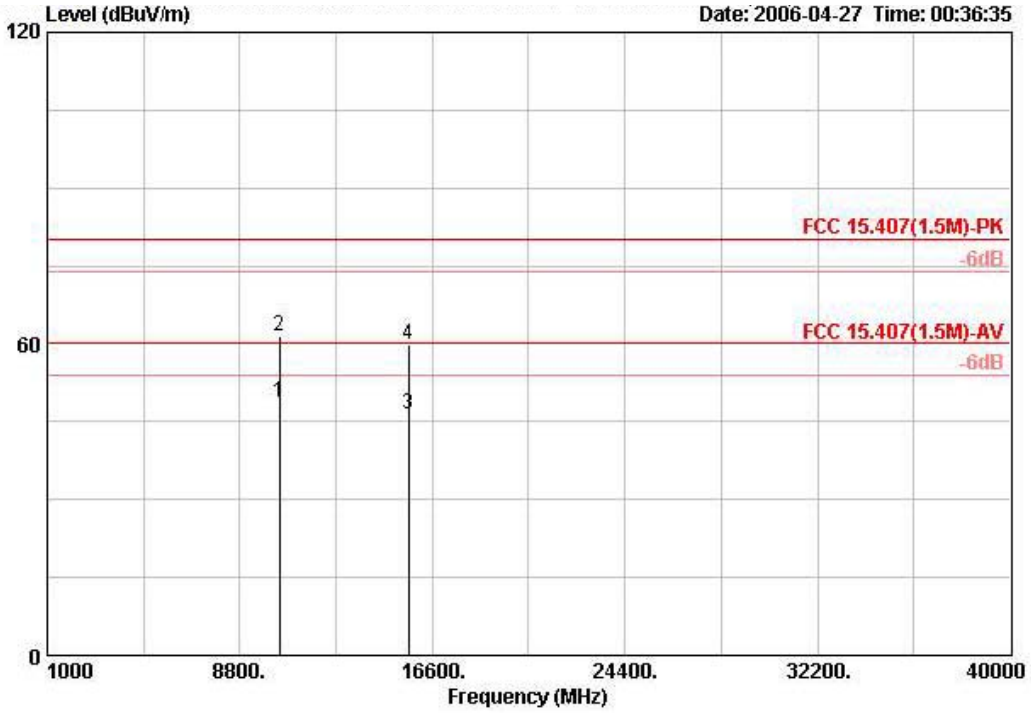
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Turbo Channel 42

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10416.820	46.08	-13.92	60.00	35.05	38.37	7.71	35.05	AVERAGE	VERTICAL	3
2	10416.820	58.90	-21.10	80.00	47.87	38.37	7.71	35.05	PEAK	VERTICAL	3
3	15632.700	61.81	-18.19	80.00	50.74	37.93	8.45	35.32	PEAK	VERTICAL	3
4	15632.700	48.93	-11.07	60.00	37.86	37.93	8.45	35.32	AVERAGE	VERTICAL	3

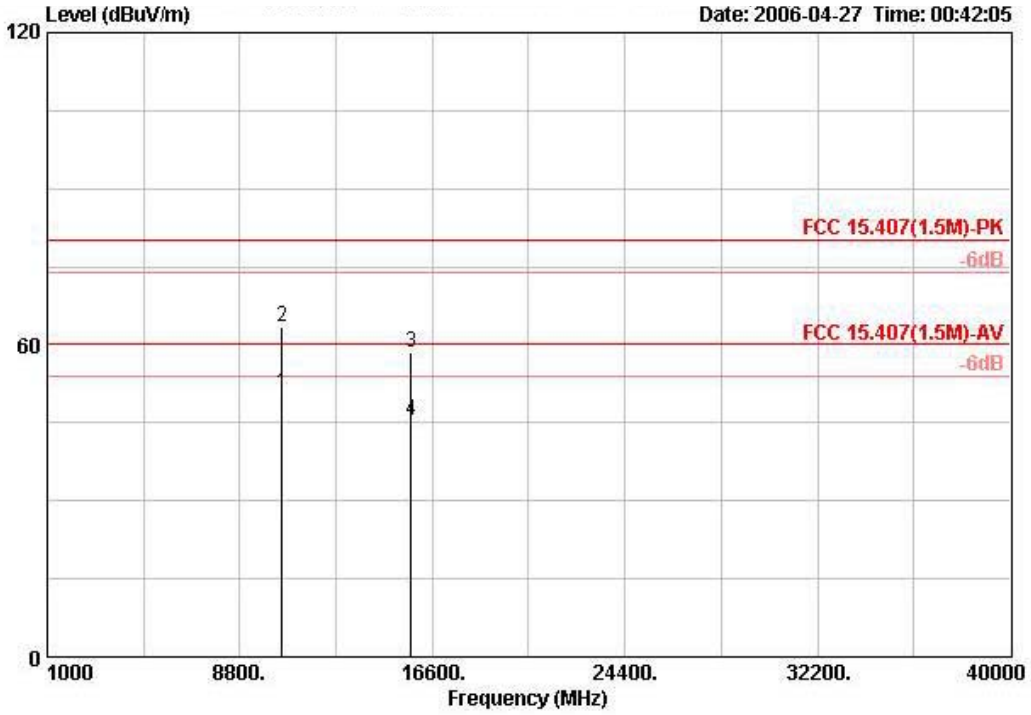
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10418.260	48.88	-11.12	60.00	37.85	38.37	7.71	35.05	AVERAGE	HORIZONTAL	3
2	10420.920	61.56	-18.44	80.00	50.54	38.37	7.71	35.05	PEAK	HORIZONTAL	3
3	15629.320	46.48	-13.52	60.00	35.41	37.93	8.45	35.32	AVERAGE	HORIZONTAL	3
4	15632.700	59.78	-20.22	80.00	48.71	37.93	8.45	35.32	PEAK	HORIZONTAL	3

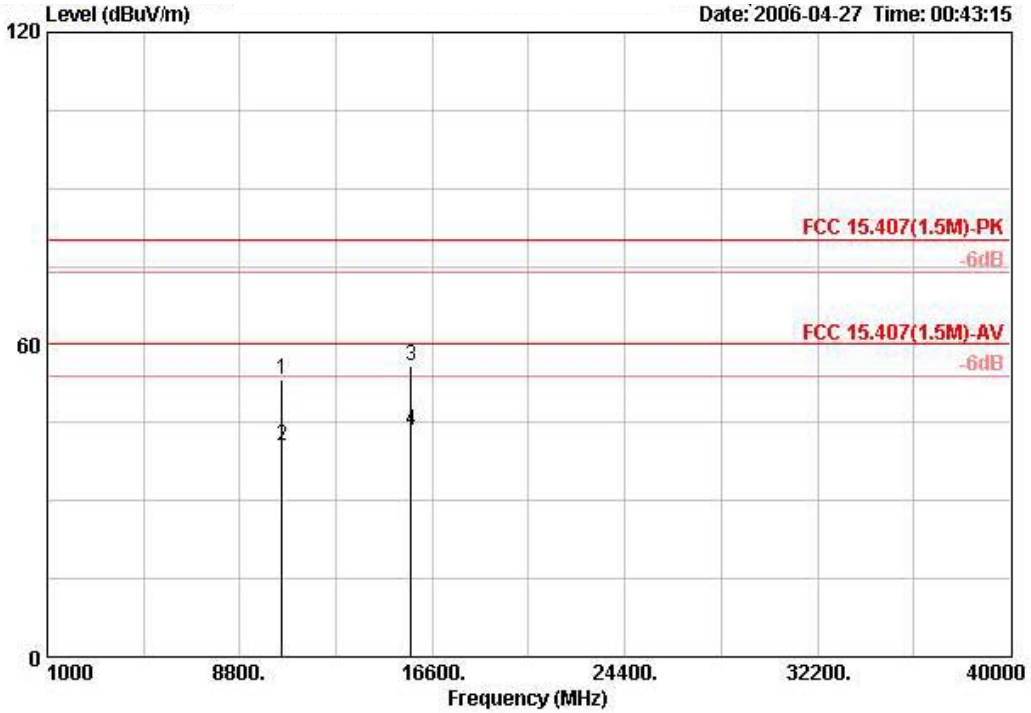
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Turbo Channel 50

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10498.710	50.82	-9.18	60.00	39.93	38.10	7.75	34.96	AVERAGE	VERTICAL	3
2	10501.910	63.32	-16.68	80.00	52.40	38.10	7.75	34.93	PEAK	VERTICAL	3
3	15747.780	58.69	-21.31	80.00	47.77	37.79	8.48	35.35	PEAK	VERTICAL	3
4	15751.320	45.35	-14.65	60.00	34.43	37.79	8.48	35.35	AVERAGE	VERTICAL	3

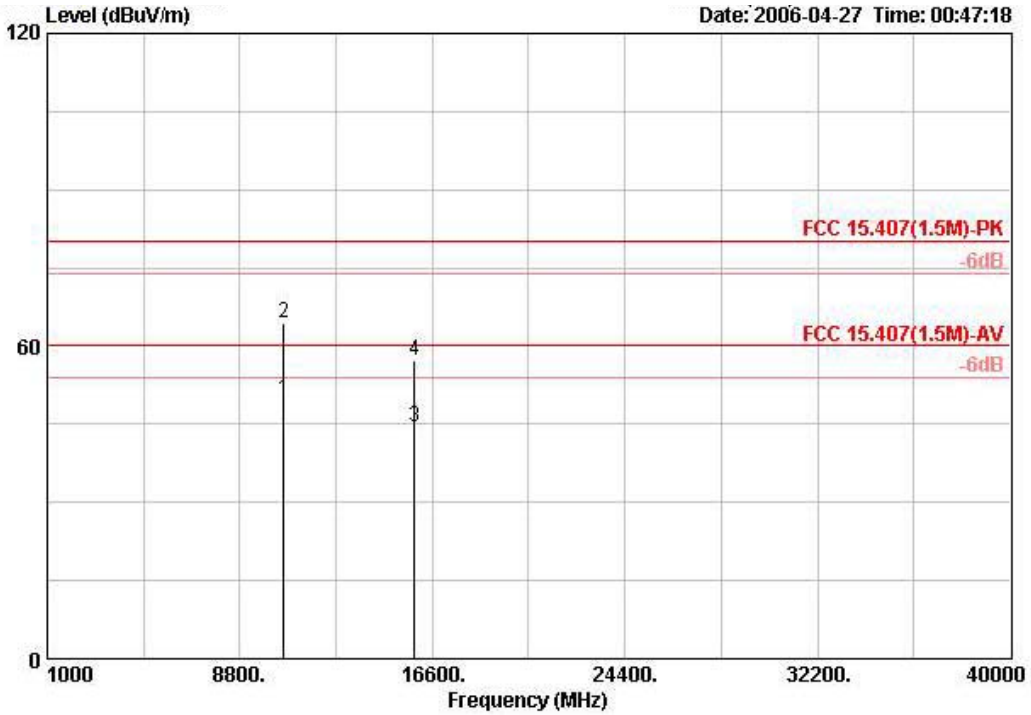
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10499.460	53.27	-26.73	80.00	42.34	38.10	7.75	34.93	PEAK	HORIZONTAL	3
2	10501.930	40.45	-19.55	60.00	29.53	38.10	7.75	34.93	AVERAGE	HORIZONTAL	3
3	15751.200	55.94	-24.06	80.00	45.02	37.79	8.48	35.35	PEAK	HORIZONTAL	3
4	15752.110	43.39	-16.61	60.00	32.48	37.79	8.48	35.36	AVERAGE	HORIZONTAL	3

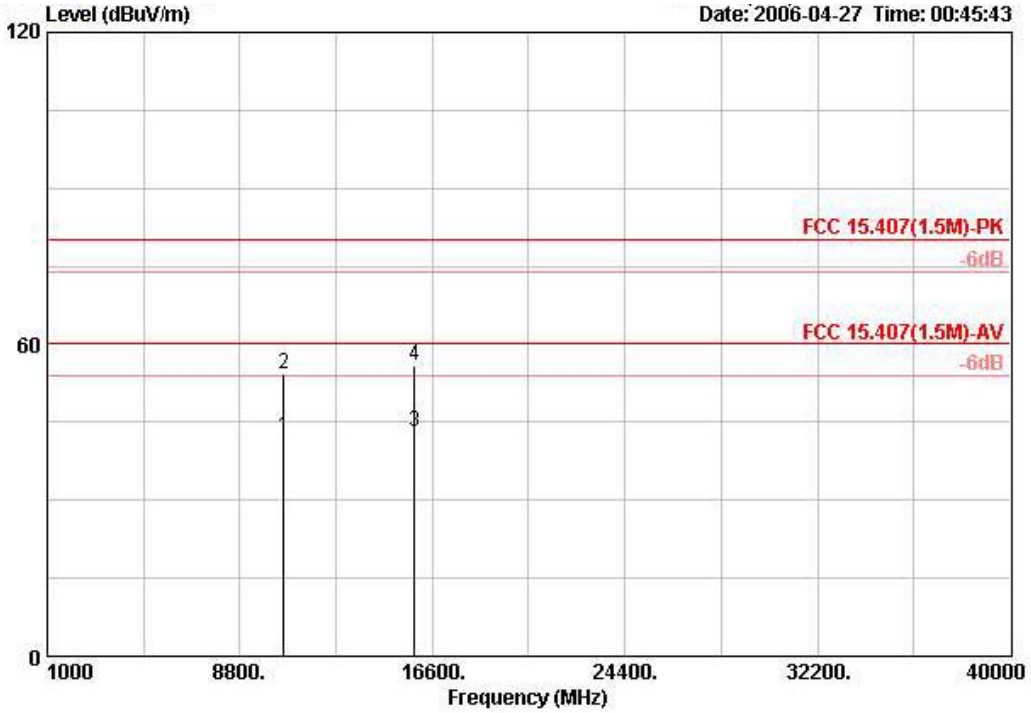
Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Turbo Channel 58

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10579.030	49.73	-10.27	60.00	38.73	38.16	7.75	34.90	AVERAGE	VERTICAL	3
2	10581.210	64.26	-15.74	80.00	53.25	38.17	7.75	34.90	PEAK	VERTICAL	3
3	15868.550	44.55	-15.45	60.00	33.79	37.64	8.52	35.40	AVERAGE	VERTICAL	3
4	15868.830	57.17	-22.83	80.00	46.41	37.64	8.52	35.40	PEAK	VERTICAL	3

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	10580.040	42.08	-17.92	60.00	31.07	38.17	7.75	34.90	AVERAGE	HORIZONTAL	3
2	10582.030	54.28	-25.72	80.00	43.27	38.17	7.75	34.90	PEAK	HORIZONTAL	3
3	15867.680	43.04	-16.96	60.00	32.28	37.64	8.52	35.40	AVERAGE	HORIZONTAL	3
4	15872.050	56.02	-23.98	80.00	45.26	37.64	8.52	35.40	PEAK	HORIZONTAL	3

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.35 GHz and 5.47-5.725 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.7.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	1 MHz /1 MHz for Peak

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, only the freqeuncy range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

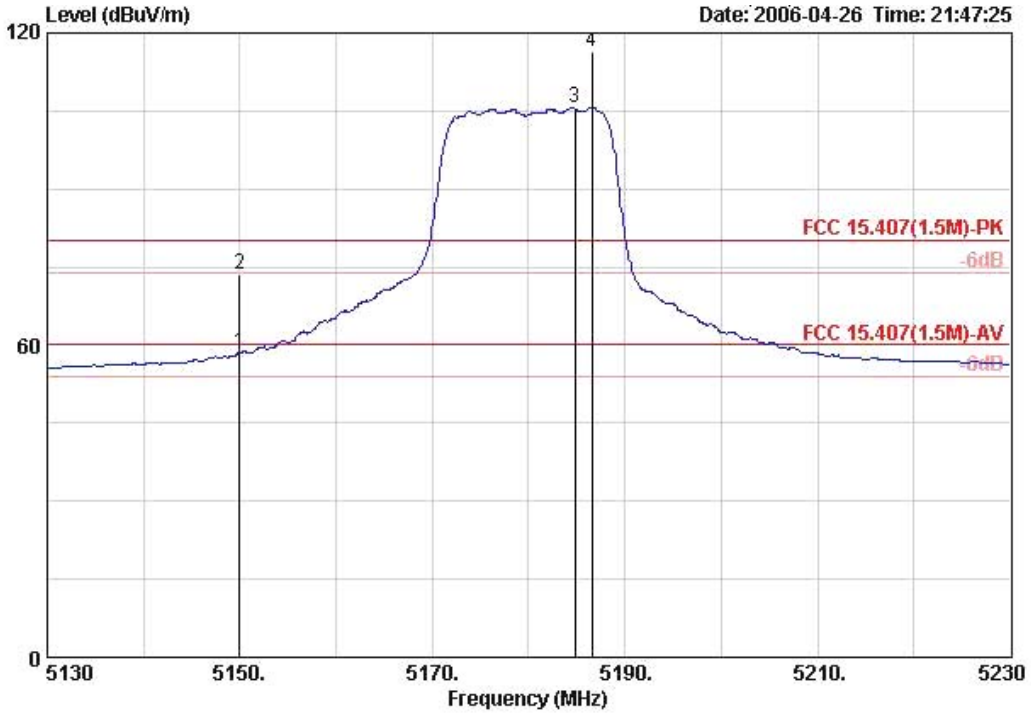
4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 36, 40

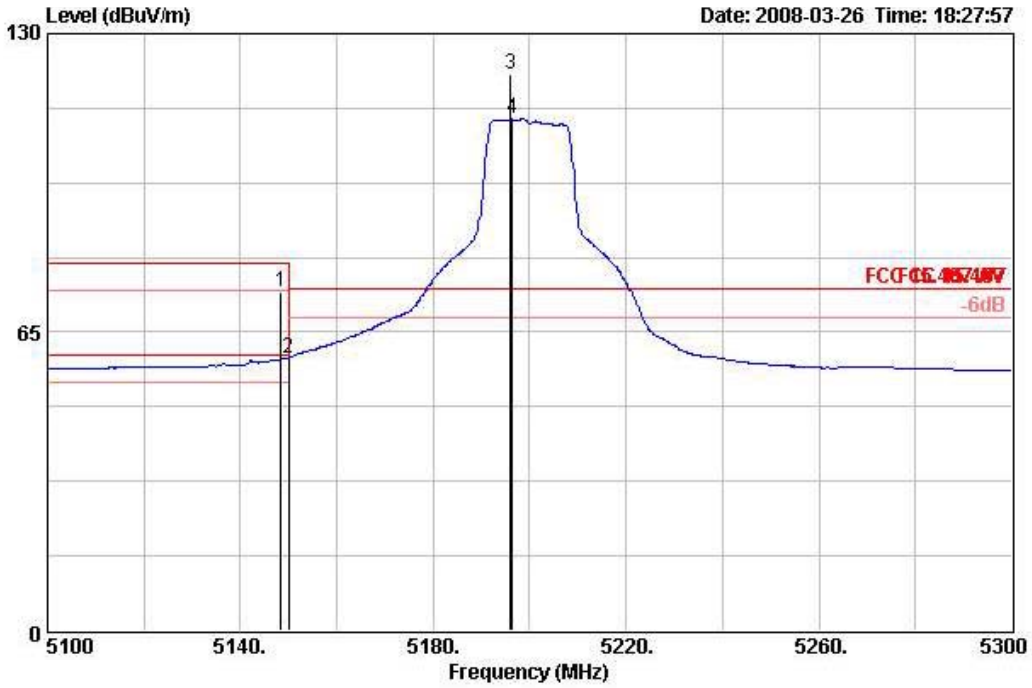
Channel 36



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	5150.000	58.53	-1.47	60.00	20.71	33.45	4.37	0.00	AVERAGE	VERTICAL	3
2	5150.000	73.53	-6.47	80.00	35.71	33.45	4.37	0.00	PEAK	VERTICAL	3
3 @	5184.800	105.53			67.59	33.55	4.38	0.00	AVERAGE	VERTICAL	3
4 @	5186.600	116.37			78.44	33.55	4.38	0.00	PEAK	VERTICAL	3

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

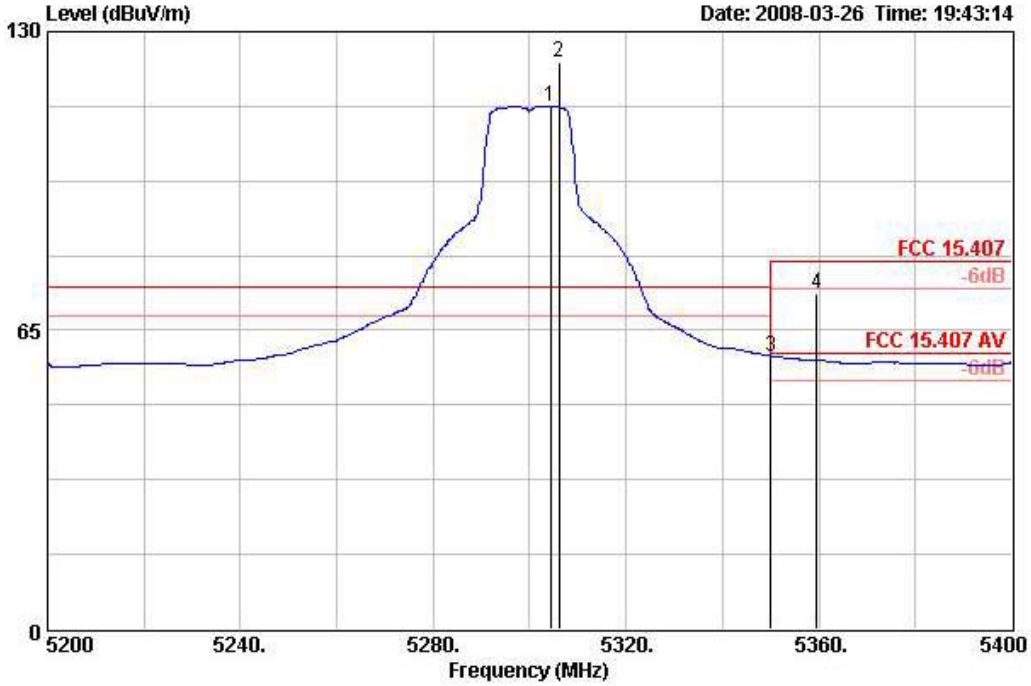


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	5148.400	73.72	-6.28	80.00	36.24	33.04	0.00	4.44	PEAK	358	100	VERTICAL
2 @	5150.000	59.38	-0.62	60.00	21.90	33.04	0.00	4.44	AVERAGE	358	100	VERTICAL
3 @	5196.000	120.93			83.38	33.12	0.00	4.43	PEAK	358	100	VERTICAL
4 @	5196.400	111.34			73.79	33.12	0.00	4.43	AVERAGE	358	100	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 60, 64

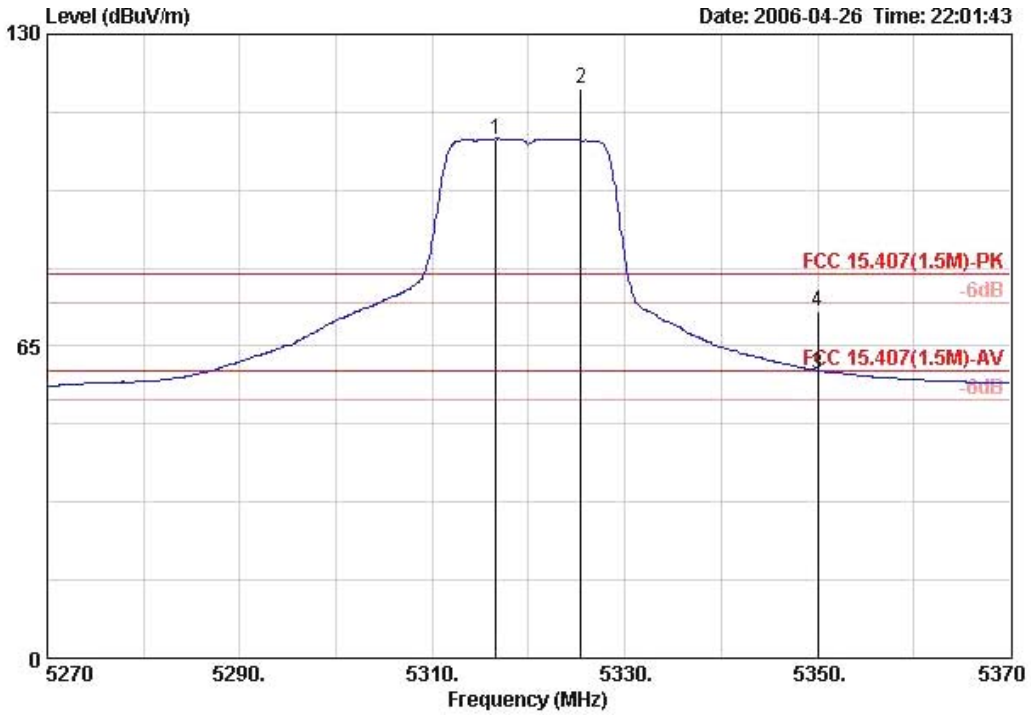
Channel 60



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	5304.400	113.76			76.08	33.28	0.00	4.40	AVERAGE	189	100	VERTICAL
2 @	5306.000	123.42			85.75	33.28	0.00	4.40	PEAK	189	100	VERTICAL
3 @	5350.000	59.43	-0.57	60.00	21.69	33.36	0.00	4.38	AVERAGE	189	100	VERTICAL
4 @	5359.600	73.03	-6.97	80.00	35.29	33.36	0.00	4.38	PEAK	189	100	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

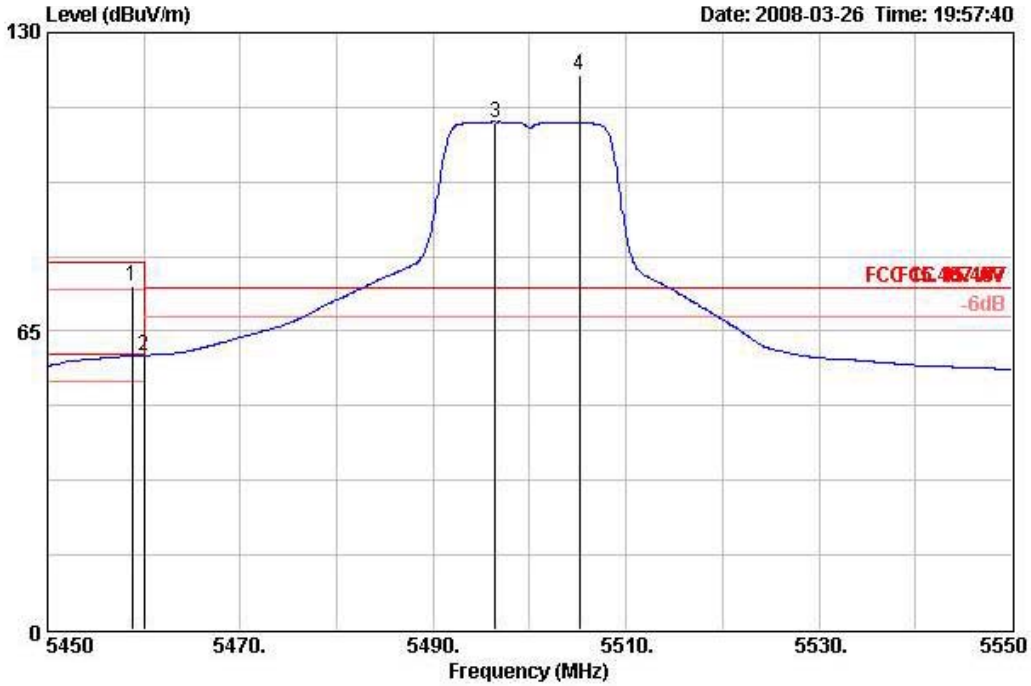


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	5316.600	108.21			69.82	33.95	4.44	0.00	AVERAGE	VERTICAL	3
2 @	5325.400	118.61			80.23	33.95	4.44	0.00	PEAK	VERTICAL	3
3 @	5350.000	58.98	-1.02	60.00	20.48	34.05	4.45	0.00	AVERAGE	VERTICAL	3
4	5350.000	72.21	-7.79	80.00	33.71	34.05	4.45	0.00	PEAK	VERTICAL	3

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Channel 100, 140

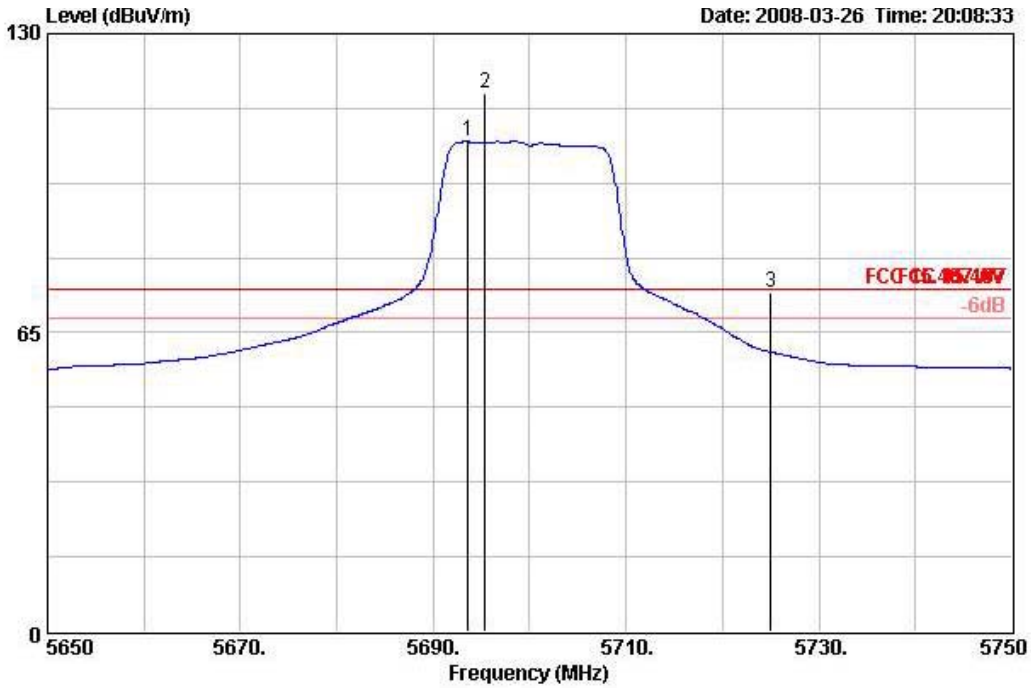
Channel 100



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	5458.800	74.71	-5.29	80.00	36.84	33.52	0.00	4.35	PEAK	164	100	VERTICAL
2 @	5460.000	59.66	-0.34	60.00	21.79	33.52	0.00	4.35	AVERAGE	164	100	VERTICAL
3 @	5496.400	110.55			72.64	33.57	0.00	4.34	AVERAGE	164	100	VERTICAL
4 @	5505.200	120.81			82.86	33.60	0.00	4.35	PEAK	164	100	VERTICAL

Item 3, 4 are the fundamental frequency at 5500 MHz.

Channel 140

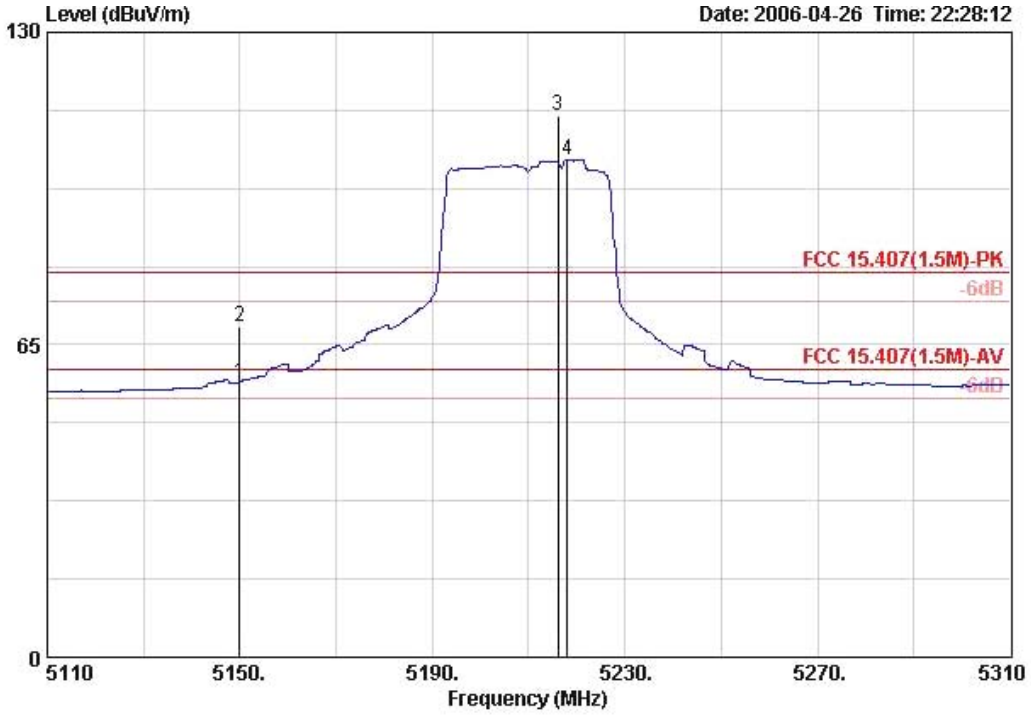


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Table Pos	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		deg	cm	
1 @	5693.600	106.49			67.93	34.17	0.00	4.39	AVERAGE	180	100	VERTICAL
2 @	5695.400	117.05			78.49	34.17	0.00	4.39	PEAK	180	100	VERTICAL
3 @	5725.000	73.79	-0.51	74.30	35.12	34.27	0.00	4.40	PEAK	180	100	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Temperature	24℃	Humidity	63%
Test Engineer	Leo Hung	Configurations	802.11a Turbo Channel 42, 58

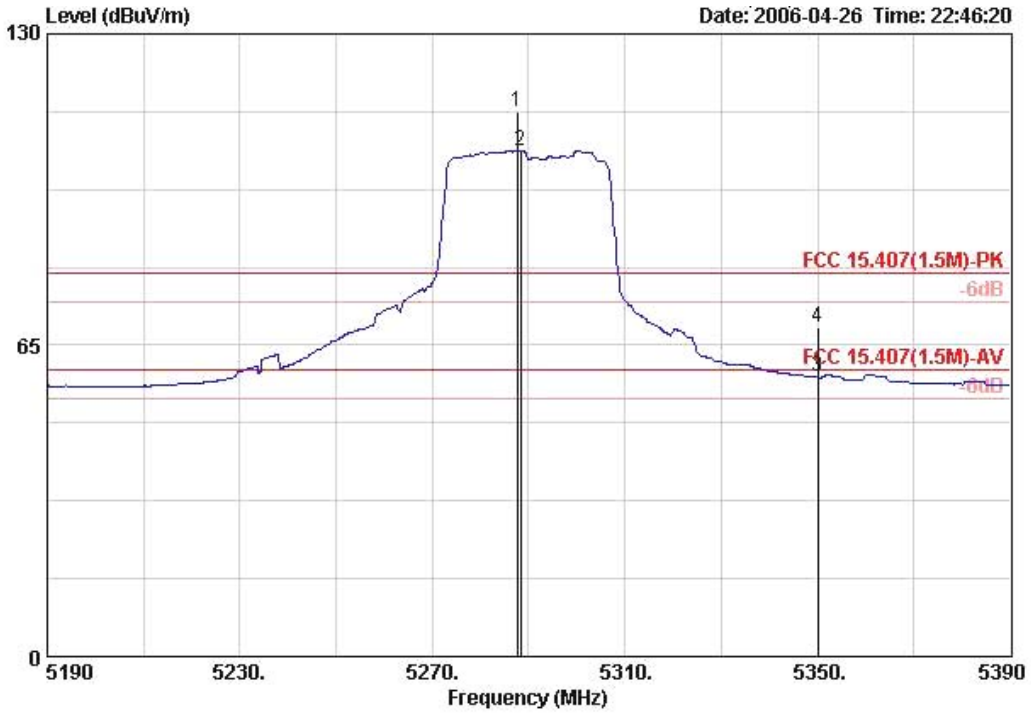
Turbo Channel 42



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	5150.000	57.16	-2.84	60.00	19.34	33.45	4.37	0.00	AVERAGE	VERTICAL	3
2	5150.000	68.89	-11.11	80.00	31.08	33.45	4.37	0.00	PEAK	VERTICAL	3
3 @	5216.000	112.73			74.68	33.65	4.40	0.00	PEAK	VERTICAL	3
4 @	5218.000	103.40			65.35	33.65	4.40	0.00	AVERAGE	VERTICAL	3

Item 3, 4 are the fundamental frequency at 5210 MHz.

Turbo Channel 58



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	5287.600	113.74			75.47	33.85	4.42	0.00	PEAK	VERTICAL	3
2 @	5288.400	105.58			67.31	33.85	4.42	0.00	AVERAGE	VERTICAL	3
3 @	5350.000	58.38	-1.62	60.00	19.87	34.05	4.45	0.00	AVERAGE	VERTICAL	3
4	5350.000	68.56	-11.44	80.00	30.06	34.05	4.45	0.00	PEAK	VERTICAL	3

Item 1, 2 are the fundamental frequency at 5290 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

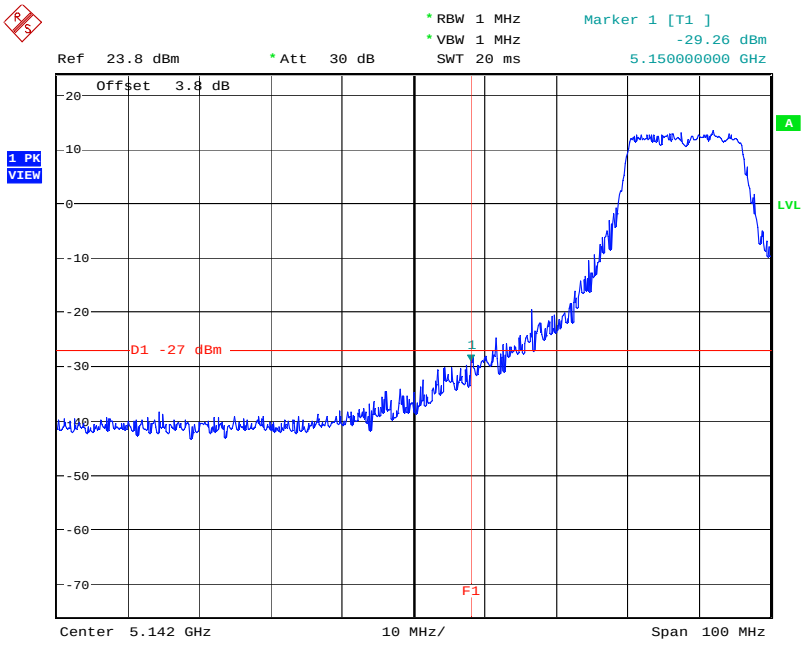
Receiving maximum band edge emissions are Horizontal Polarization.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5m]) (dB);

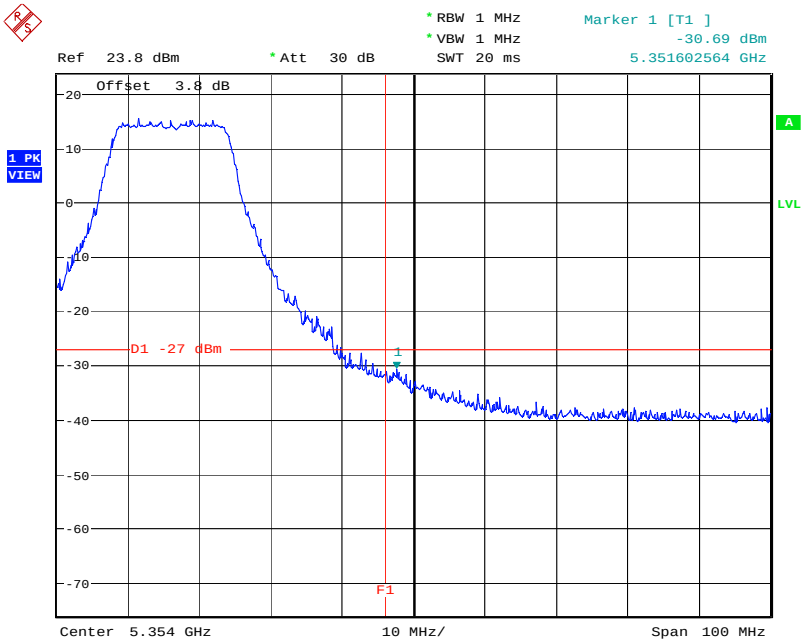
Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

EIRP Emission in Band on Configuration IEEE 802.11a / 5180 MHz



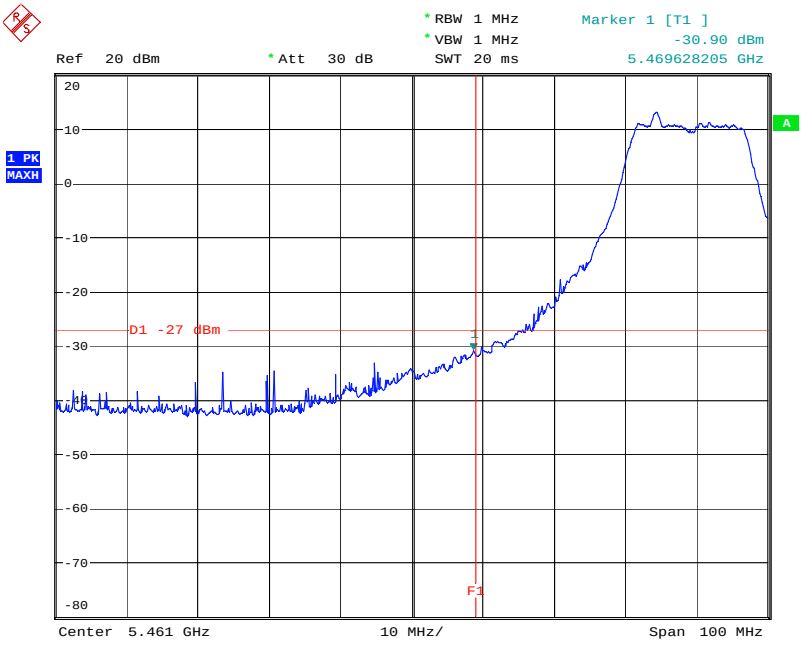
Date: 8.MAY.2006 15:50:12

EIRP Emission in Band on Configuration IEEE 802.11a / 5320 MHz



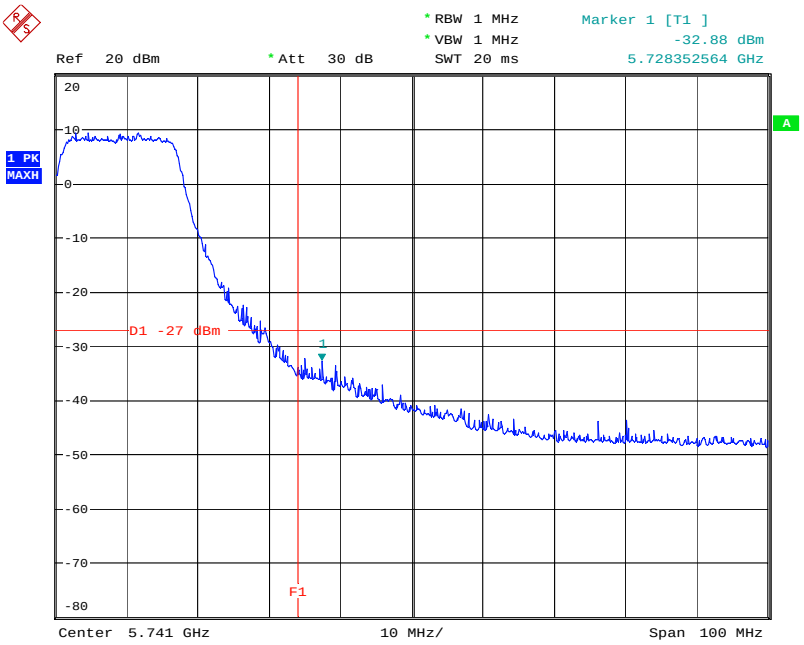
Date: 8.MAY.2006 15:48:58

EIRP Emission in Band on Configuration IEEE 802.11a / 5500 MHz



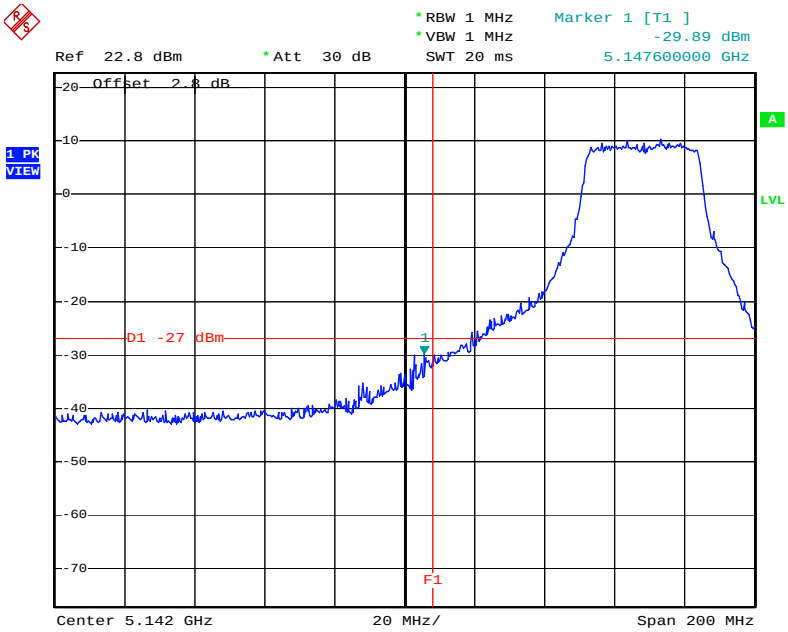
Date: 27.MAR.2008 12:58:28

EIRP Emission in Band on Configuration IEEE 802.11a / 5700 MHz



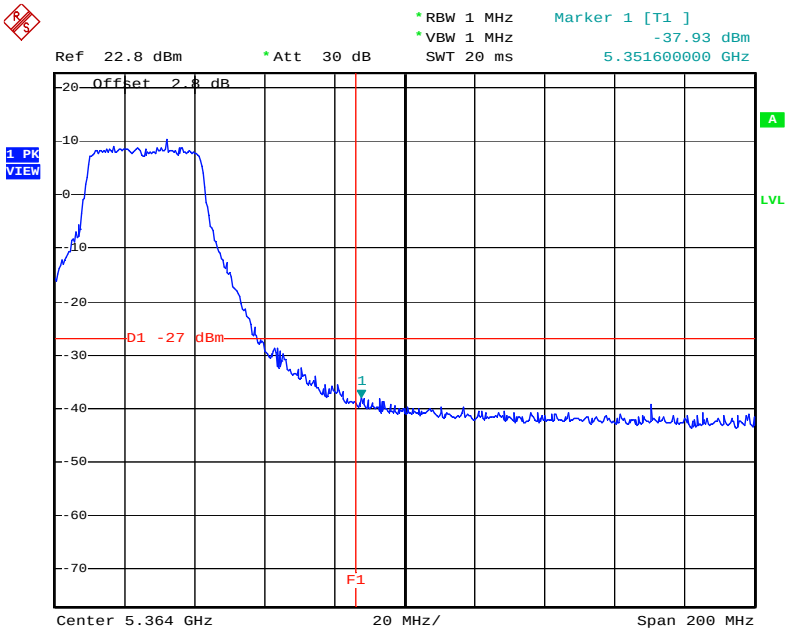
Date: 27.MAR.2008 12:56:17

EIRP Emission in Band on Configuration IEEE 802.11a Turbo / 5210 MHz



Date: 4.MAY.2006 22:09:19

EIRP Emission in Band on Configuration IEEE 802.11a Turbo / 5290 MHz



Date: 4.MAY.2006 22:09:58

4.8. Frequency Stability Measurement

4.8.1. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or ±20ppm (IEEE 802.11a specification).

4.8.2. Measuring Instruments and Setting

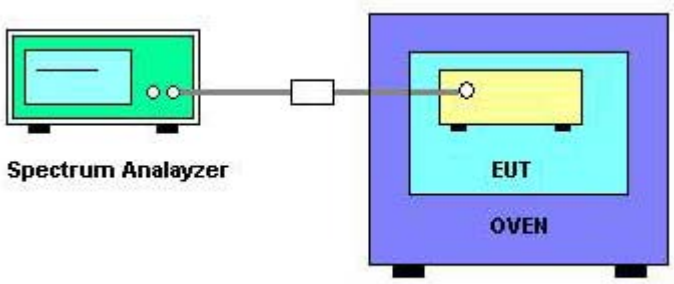
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11a specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is -30°C~50°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	**5260**
126.50	5259.9866
110.00	5259.9860
93.50	5259.9862
Max. Deviation (MHz)	**0.0140**
Max. Deviation (ppm)	**2.6616**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(℃)	**5260**
-30	5260.0216
-20	5260.0134
-10	5259.9980
0	5259.9894
10	5259.9826
20	5259.9860
30	5259.9918
40	5259.9800
50	5259.9889
Max. Deviation (MHz)	**0.0216**
Max. Deviation (ppm)	**4.1065**

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

Please refer to section 3.3 in this test report, all antenna connectors comply with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 22, 2006	Conduction (CO04-HY)
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Mar. 03, 2008	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Dec. 19, 2005	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 31, 2008	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9708-1839	9kHz – 30MHz	Mar. 18, 2006	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2008	Conduction (CO04-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 22, 2005	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2007	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN T400	21653	9kHz –30MHz	Mar. 27, 2008	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 16, 2005	Radiation (03CH03-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 14, 2007	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	3565	9 kHz - 2 GHz	Jan. 18, 2006	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 14, 2008	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	May 31, 2005	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jun. 07, 2007	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	923364	26.5 GHz - 40 GHz	Jan. 24, 2006*	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Jan. 22, 2007*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004/040	9 kHZ - 40 GHz	Sep. 30, 2005	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100305	9 kHz - 40 GHz	Sep. 27, 2007	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 24, 2004*	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 21, 2007	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6903	1GHz ~ 18GHz	Mar. 15, 2006	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	May 04, 2007	Radiation (03CH03-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jun. 09, 2004*	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan.18, 2008	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec.02, 2005	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec.02, 2005	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 - 360 degree	N/A	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Nov. 26, 2005	Conducted (TH01-HY)
Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Jan. 10, 2008	Conducted (TH01-HY)
Power meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jun. 27, 2007	Conducted (TH01-HY)
Power sensor	R&S	NRV-Z55	100049	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC ~ 30GHz	Jun. 27, 2007	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Apr. 27, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun. 27, 2007	Conducted (TH01-HY)
AC power source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Apr. 21, 2005*	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	May 04, 2007*	Conducted (TH01-HY)
DC power source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Dec. 28, 2005	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2008	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2005	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2007	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 30, 2005	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2007	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 30, 2005	Conducted (TH01-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2007	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Apr. 15, 2005*	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Nov. 14, 2007	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Dec. 30, 2005	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 10, 2008	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: * Calibration Interval of instruments listed above is two year.

6. SPORTON COMPANY PROFILE

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

6.1. Test Location

SHIJR	ADD	: 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	: 02-2696-2468
	FAX	: 02-2696-2255
HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	: 03-327-3456
	FAX	: 03-318-0055
LINKOU	ADD	: No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 02-2601-1640
	FAX	: 02-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 02-2631-4739
	FAX	: 02-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 02-8227-2020
	FAX	: 02-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 02-2794-8886
	FAX	: 02-2794-9777
JHUBEI	ADD	: No.8, Lane 728, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.
	TEL	: 03-656-9065
	FAX	: 03-656-9085