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FCC RADIO TEST REPORT

Applicant's company	**Accton Technology Corporation**
Applicant Address	No.1 Creation 3rd Rd., Science-based Industrial Park, Hsinchu 30077, Taiwan R.O.C.
FCC ID	**HEDE21011**
Manufacturer's company	**Accton Technology Corporation**
Manufacturer Address	No.1 Creation 3rd Rd., Science-based Industrial Park, Hsinchu 30077, Taiwan R.O.C.

Product Name	Draft 11n Dual band Wireless Access Point
Brand Name	SMC
Model Name	SMCE21011
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz
Received Date	Mar. 01, 2009
Final Test Date	Apr. 01, 2009
Submission Type	Original Equipment
Operating Mode	Master

Statement

Test result included is for the Draft n and 802.11a (5150 ~ 5250MHz) 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.

TAF
Testing Laboratory
1190

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History of This Test Report

Original Issue Date: Apr. 01, 2009

Report No.: FR931603AA

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Draft 11n Dual band Wireless Access Point
Brand Name	:	SMC
Model Name	:	SMCE21011
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 Mar. 01, 2009 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.

2009.4.8

Wayne Hsu

SPORTON INTERNATIONAL INC.

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	3.10 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.21 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.02 dB
4.5	15.407(a)	Peak Excursion	Complies	7.14 dB
4.6	15.407(b)	Radiated Emissions	Complies	5.48 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.02 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	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.5dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
Peak Excursion	±0.5dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Draft n

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter & From POE
Modulation	see the below table for draft n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for Draft n
Frequency Range	5150 ~ 5250MHz
Channel Number	4 for 20MHz bandwidth ; 2 for 40MHz bandwidth
Channel Band Width (99%)	MCS0 (20MHz): 18.72 MHz ; MCS0 (40MHz): 36.32 MHz
Conducted Output Power	Band 1: MCS0 (20MHz): 14.76 dBm ; MCS0 (40MHz): 16.79 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11a

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter & From POE
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)
Frequency Range	5150 ~ 5250MHz
Channel Number	11a: 4
Channel Band Width (99%)	11a: 17.12 MHz
Conducted Output Power	Band 1: 15.34 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

Antenna	Three (TX)	
Band width Mode	20 MHz	40 MHz
802.11a	V	X
Draft n	V	V

Draft n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

3.2. Accessories

Power	Brand	Model	Rating
Adapter	APD	DA-24F12	Input: 100-240VAC, 50-60Hz, 0.65A Output: 12VDC, 2A

3.3. Table for Filed Antenna

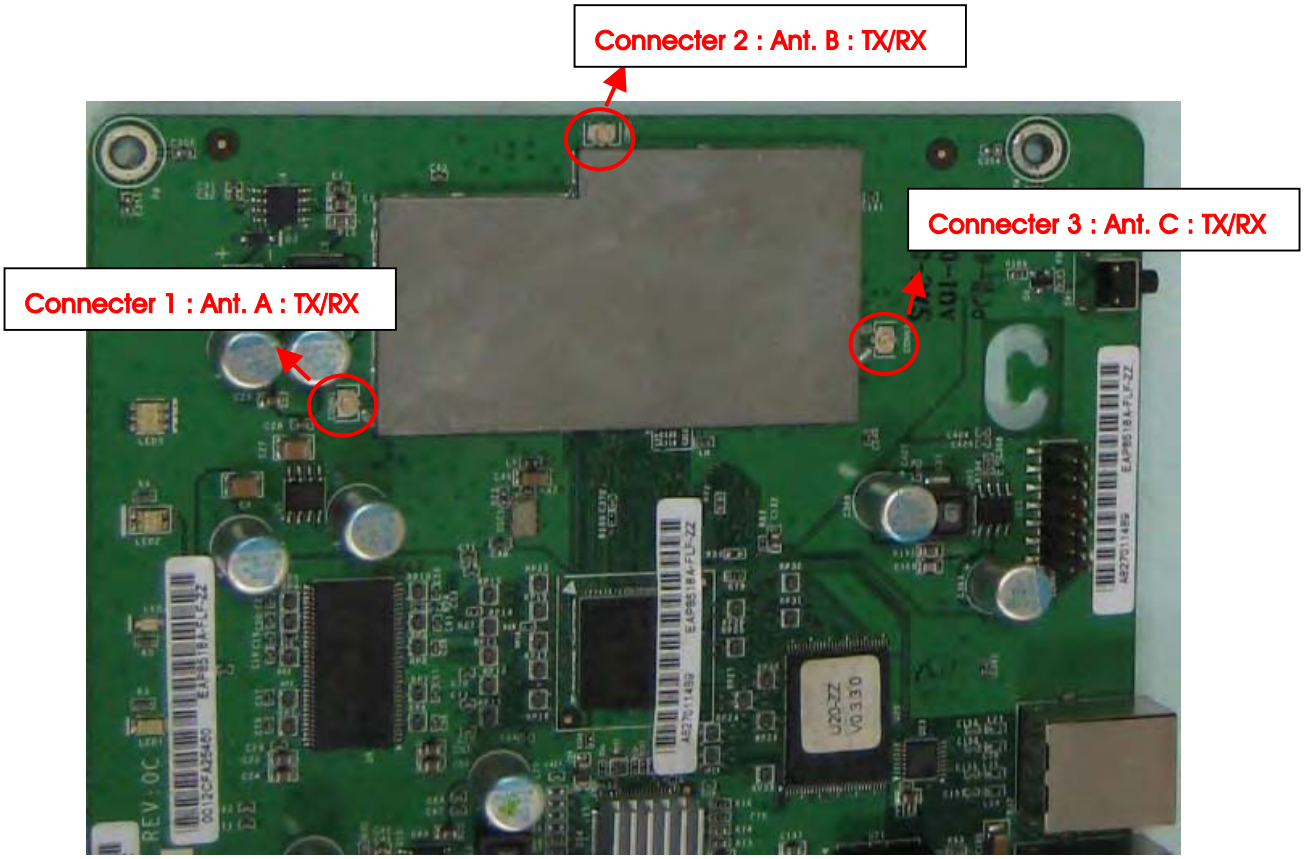
<For 5GHz Band>

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Remark
A	LCT	FDE_ACBSMA-BGP	Dipole Antenna	Reversed-SMA	5.00	TX/RX
B	LCT	FDE_ACBSMA-BGP	Dipole Antenna	Reversed-SMA	5.00	TX/RX
C	LCT	FDE_ACBSMA-BGP	Dipole Antenna	Reversed-SMA	5.00	TX/RX

Note: The EUT has three Antennas (3TX/3RX).

For 802.11abgn Mode:

Ant. A, Ant. B and Ant. C will transmit and receive the same signal simultaneously.



3.4. Table for Carrier Frequencies

Frequency Allocation for 802.11a

There are two bandwidth systems for draft n.

For both 20MHz bandwidth systems, use Channel 36, 40, 44, 48

For both 40MHz bandwidth systems, use Channel 38, 46

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz (USA/Canada) Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 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	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 1	6.5Mbps	36/40/48	A / B / C / A+B+C
	MCS0/40MHz	Band 1	13.5Mbps	38/46	A / B / C / A+B+C
	11a/BPSK	Band 1	6.5Mbps	36/40/48	A / B / C / A+B+C
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Power Spectral Density Peak Excursion	MCS0/20MHz	Band 1	6.5Mbps	36/40/48	A+B+C
	MCS0/40MHz	Band 1	13.5Mbps	38/46	A+B+C
	11a/BPSK	Band 1	6.5Mbps	36/40/48	A+B+C
Radiated Emission Below 1GHz	Normal Link		Auto	-	-
Radiated Emission Above 1GHz	MCS0/20MHz	Band 1	6.5Mbps	36/40/48	A+B+C
	MCS0/40MHz	Band 1	13.5Mbps	38/46/	A+B+C
	11a/BPSK	Band 1	6.5Mbps	36/40/48	A+B+C
Band Edge Emission	MCS0/20MHz	Band 1	6.5Mbps	36/40/48	A+B+C
	MCS0/40MHz	Band 1	13.5Mbps	38/46	A+B+C
	11a/BPSK	Band 1	16.5Mbps	36/40/48	A+B+C
Frequency Stability	Un-modulation		-	40	N/A

Note:

The test modes were illustrated as below.

Mode 1: EUT + Adapter

Mode 2: EUT + POE

<For Conducted Emissions>:

Due to Mode 2 generated the worst test result, so it was recorded in this report.

<For Radiated Emissions Below 1GHz>:

Due to Mode 1 generated the worst test result, so it was recorded in this report.

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	PP25L	E2K4965AGNM
Notebook	DELL	M1330	E2KWM3945ABG
Notebook	DELL	D400	E2K24GBRL
POE	PowerDsine	PD-7001G/AC	N/A

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 Draft n MCS0 20MHz Ant. A / Ant. B / Ant. C

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
Draft n 20MHz	9.5	10	10.5

Power Parameters of Draft n MCS0 40MHz Ant. A / Ant. B / Ant. C

Test Software Version	ART	
Frequency	5190 MHz	5230 MHz
Draft n 40MHz	12	12

Power Parameters of IEEE 802.11a Ant. A / Ant. B / Ant. C

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	9.5	10	10

During the test, the following programs under WIN XP were executed:

During testing, the remote wireless network ancillary were connected by EUT.

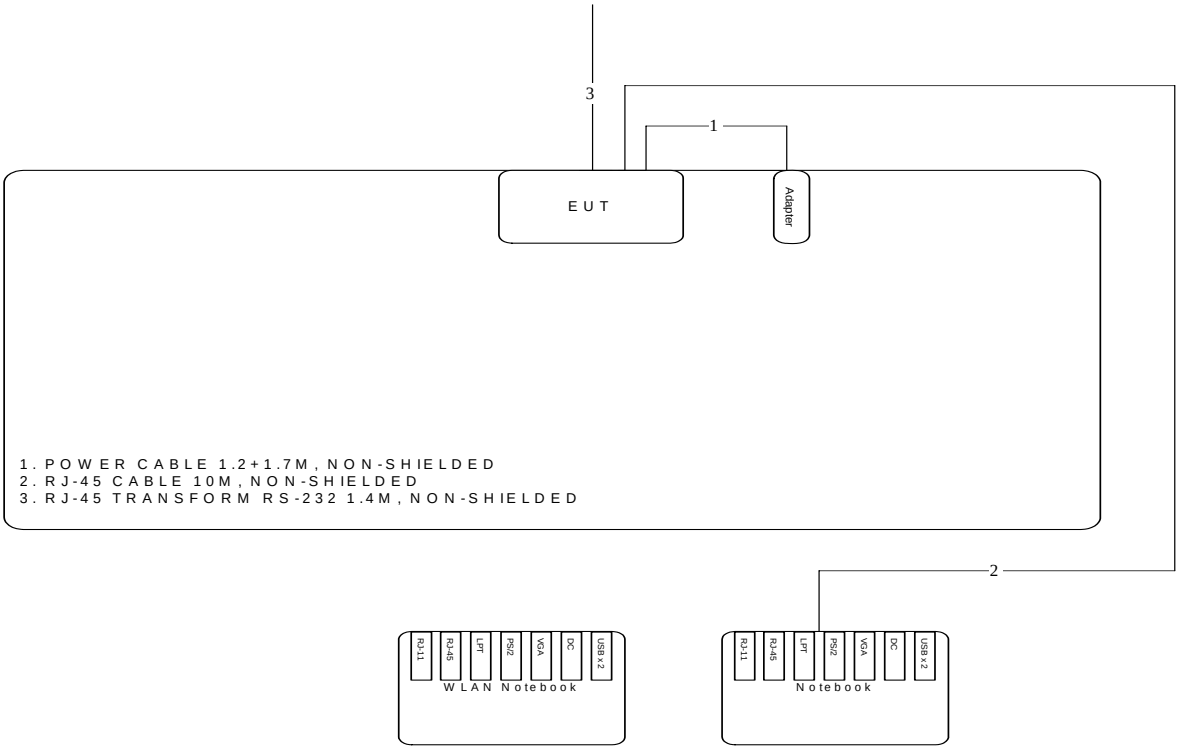
At the same time, "ART" was executed to control the EUT continuously transmit RF signal.

3.9. Test Configurations

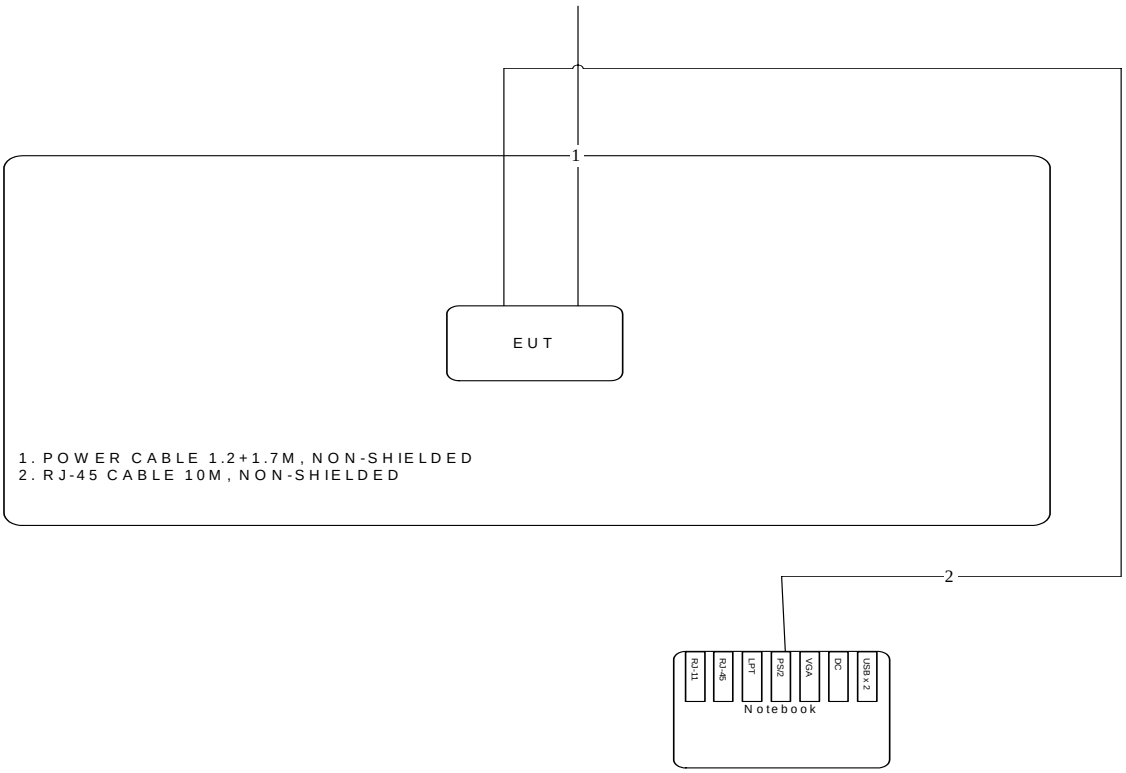
3.9.1. Radiation Emissions Test Configuration

Test Configuration: 9kHz~1GHz

Test Mode: Mode 1

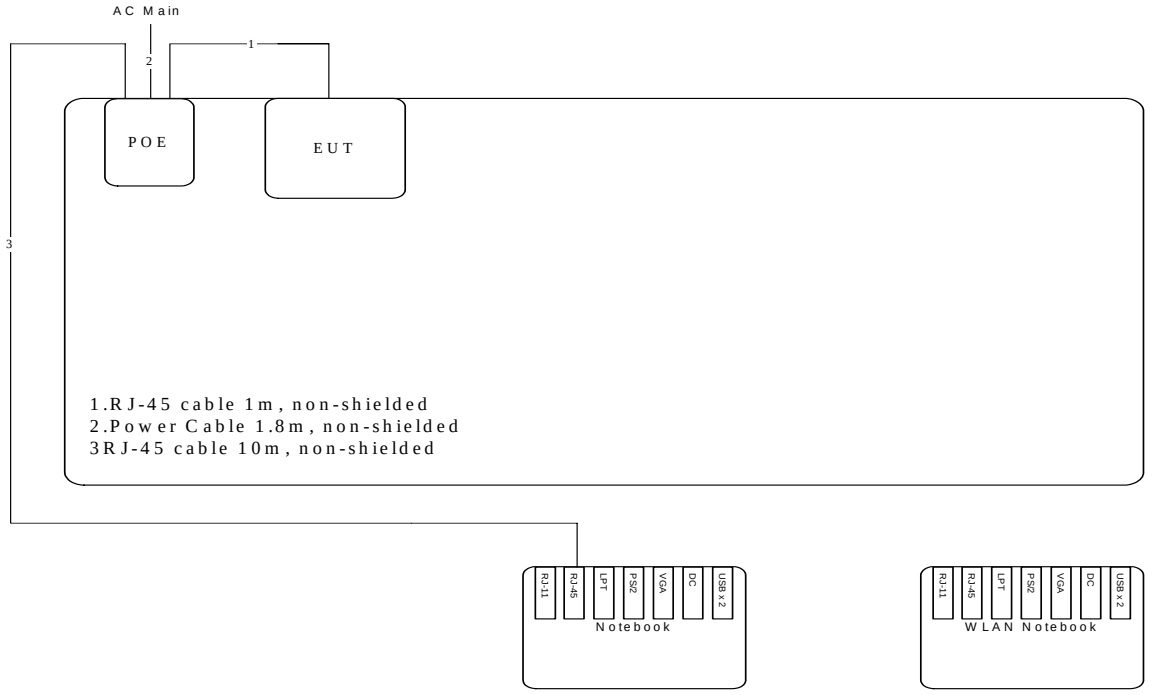


Test Configuration: Above 1GHz



3.9.2. AC Power Line Conduction Emissions Test Configuration

Test Mode: Mode 2



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect 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

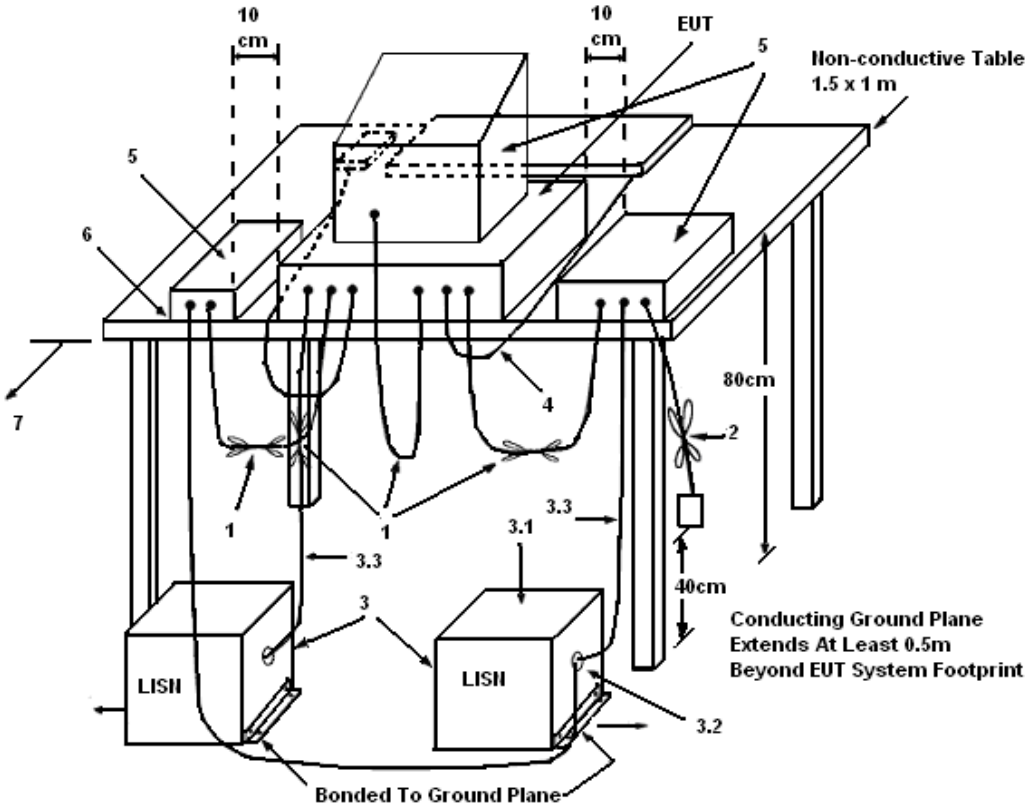
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

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



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

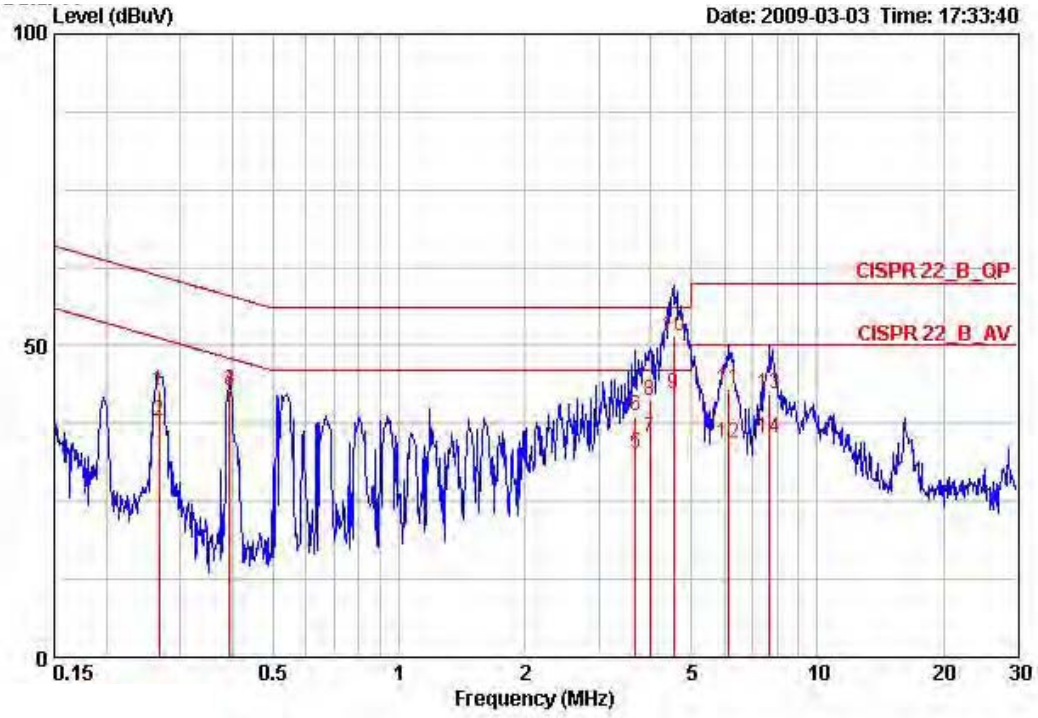
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

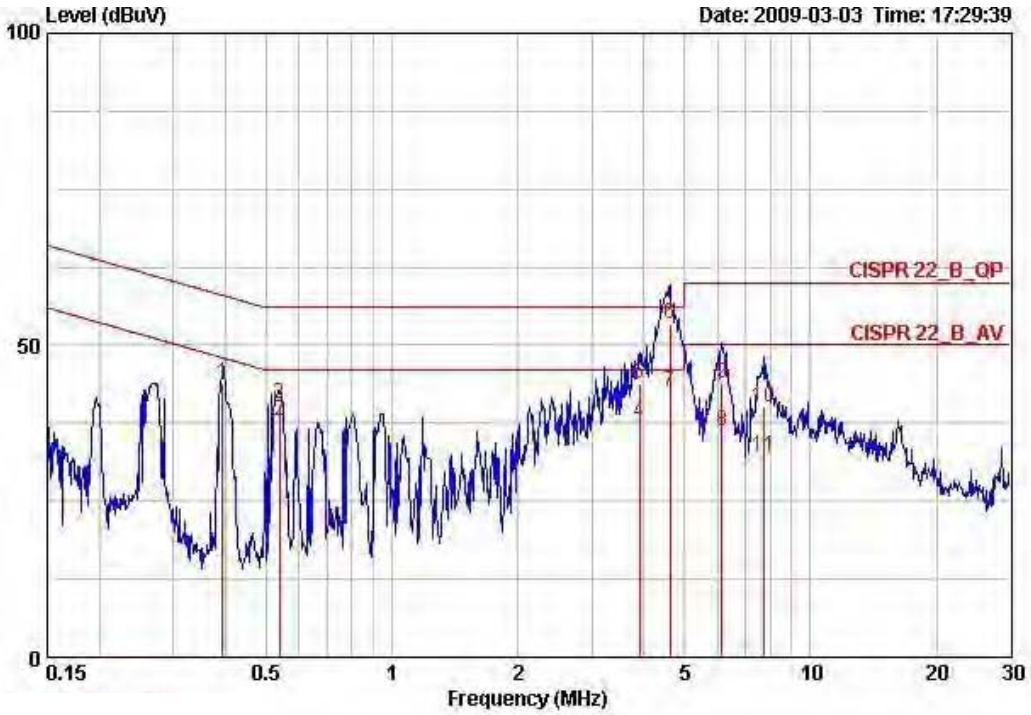
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	56%
Test Engineer	Howar Sung	Phase	Line
Configuration	Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.26663	42.69	-18.53	61.22	42.45	0.04	0.20	QP
2	0.26663	37.74	-13.48	51.22	37.50	0.04	0.20	AVERAGE
3	0.39433	42.80	-5.17	47.97	42.57	0.03	0.20	AVERAGE
4	0.39433	42.79	-15.18	57.97	42.56	0.03	0.20	QP
5	3.681	32.58	-13.42	46.00	32.19	0.09	0.30	AVERAGE
6	3.681	38.67	-17.33	56.00	38.28	0.09	0.30	QP
7	3.985	35.15	-10.85	46.00	34.75	0.10	0.30	AVERAGE
8	3.985	41.27	-14.73	56.00	40.87	0.10	0.30	QP
9 @	4.525	42.32	-3.68	46.00	41.89	0.13	0.30	AVERAGE
10	4.525	51.52	-4.48	56.00	51.09	0.13	0.30	QP
11	6.153	43.08	-16.92	60.00	42.53	0.22	0.33	QP
12	6.153	34.41	-15.59	50.00	33.86	0.22	0.33	AVERAGE
13	7.687	42.10	-17.90	60.00	41.42	0.28	0.40	QP
14	7.687	35.18	-14.82	50.00	34.50	0.28	0.40	AVERAGE

Temperature	24°C	Humidity	56%
Test Engineer	Howar Sung	Phase	Neutral
Configuration	Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.39344	43.87	-14.12	57.99	43.60	0.07	0.20	QP
2	0.53782	37.98	-8.02	46.00	37.71	0.07	0.20	AVERAGE
3	0.53782	40.48	-15.52	56.00	40.21	0.07	0.20	QP
4	3.901	37.58	-8.42	46.00	37.14	0.14	0.30	AVERAGE
5	3.901	43.80	-12.20	56.00	43.36	0.14	0.30	QP
6 @	4.622	53.40	-3.10	56.00	52.92	0.18	0.30	QP
7 @	4.622	42.58	-3.42	46.00	42.10	0.18	0.30	AVERAGE
8	6.153	36.24	-13.76	50.00	35.65	0.26	0.33	AVERAGE
9	6.153	43.82	-16.18	60.00	43.23	0.26	0.33	QP
10	7.769	39.94	-20.06	60.00	39.22	0.32	0.40	QP
11	7.769	32.16	-17.84	50.00	31.44	0.32	0.40	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

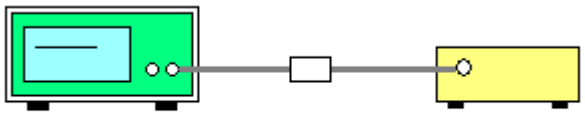
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.2.3. Test Procedures

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

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	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	Draft n
Test Date	Mar. 24, 2009		

Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	23.84	18.72
40	5200 MHz	21.92	17.60
48	5240 MHz	24.16	18.08

Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C

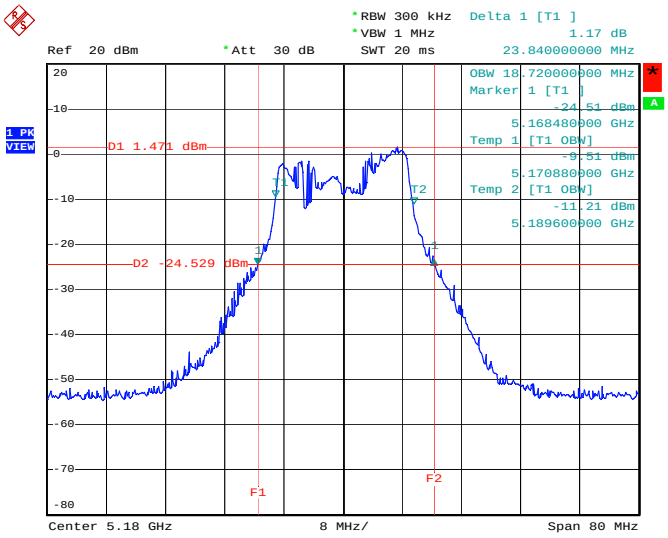
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	43.04	36.32
46	5230 MHz	42.56	36.16

Temperature	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	802.11a
Test Date	Mar. 24, 2009		

Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C

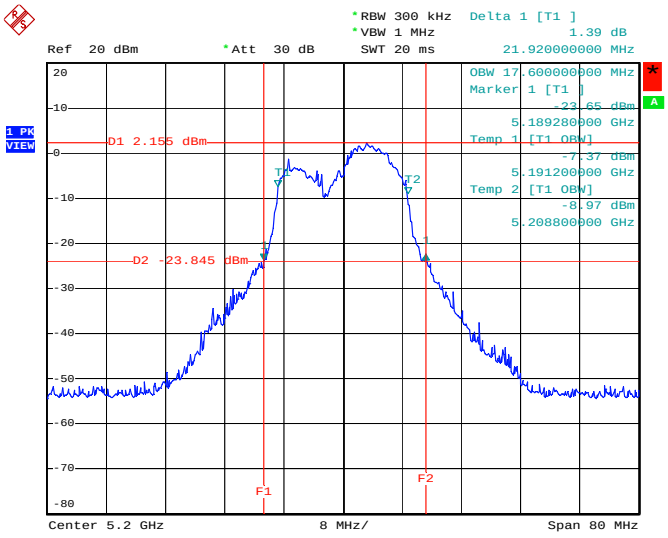
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	21.92	17.12
40	5200 MHz	21.76	17.12
48	5240 MHz	21.60	16.96

26 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5180 MHz



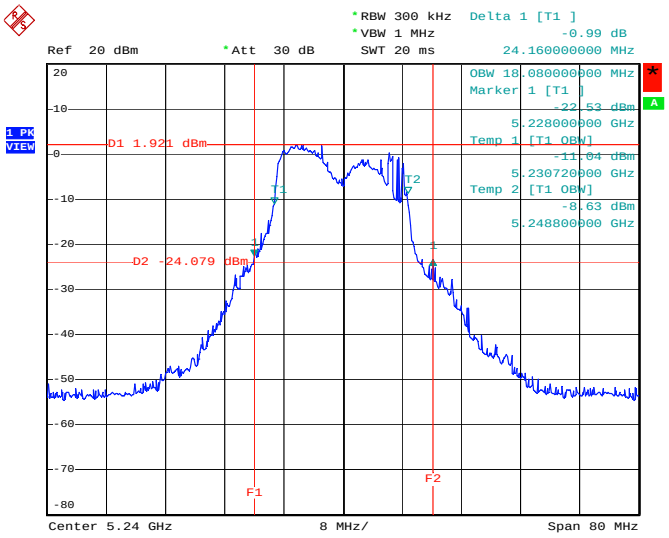
Date: 23.MAR.2009 15:17:08

26 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5200 MHz



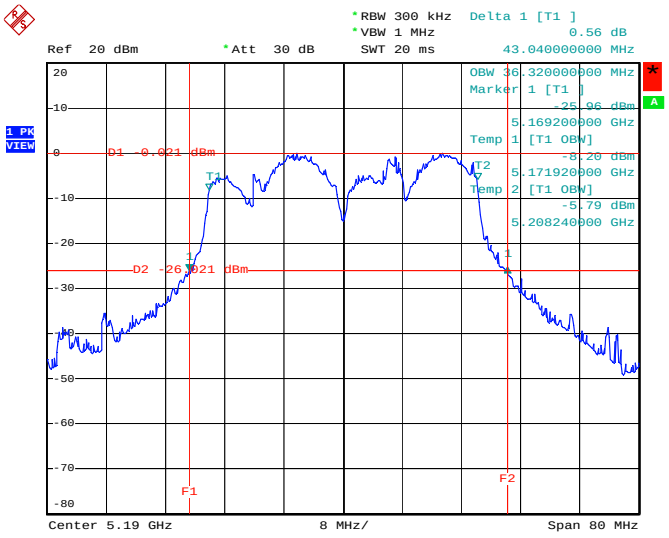
Date: 23.MAR.2009 15:14:34

26 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5240 MHz



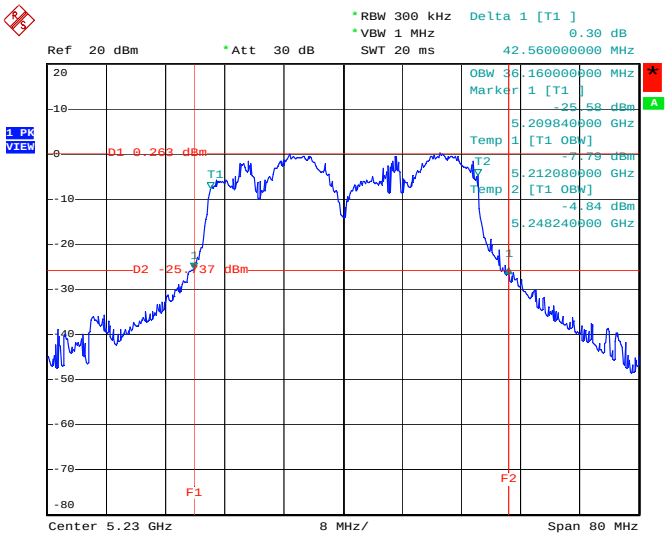
Date: 23.MAR.2009 15:13:57

26 dB Bandwidth Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5190 MHz



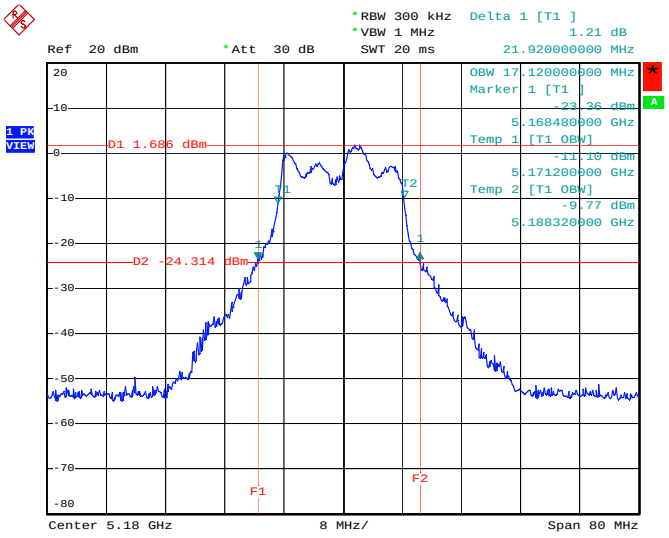
Date: 23.MAR.2009 15:29:34

26 dB Bandwidth Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5230 MHz



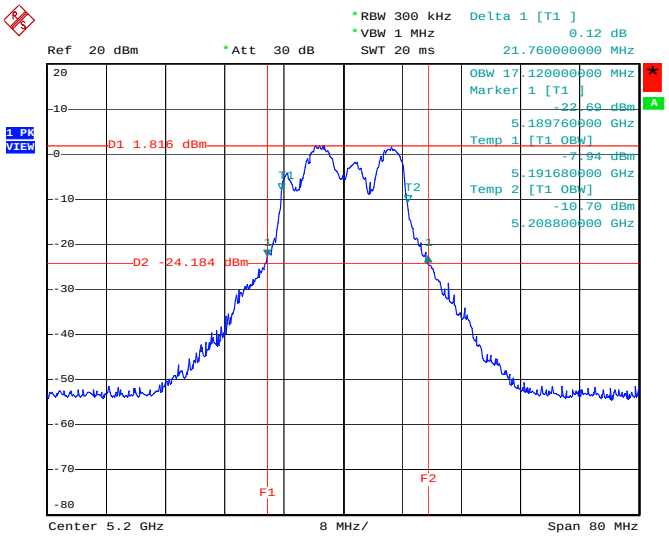
Date: 23.MAR.2009 15:30:37

26 dB Bandwidth Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5180 MHz



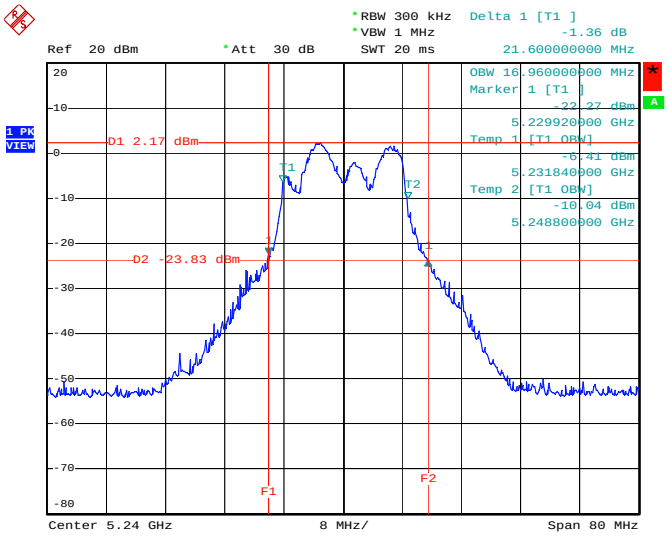
Date: 23.MAR.2009 15:07:37

26 dB Bandwidth Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5200 MHz



Date: 23.MAR.2009 15:08:56

26 dB Bandwidth Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5240 MHz



Date: 23.MAR.2009 15:10:04

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 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power and power density from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain up to 23 dBi without any corresponding reduction in the transmitter peak output power and peak power spectral density. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak transmitter power and peak power spectral density for each 1 dB of antenna gain in excess of 23 dBi would be required.

4.3.2. Measuring Instruments and Setting

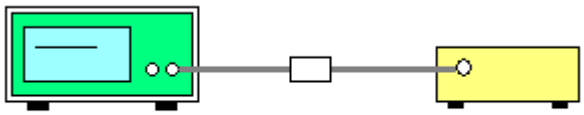
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with FCC Public Notice DA 02-2138, August 30, 2002.
3. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

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	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	Draft n
Test Date	Mar. 24, 2009		

Configuration Draft n MCS0 20MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	9.93	17.00	Complies
40	5200 MHz	10.05	17.00	Complies
48	5240 MHz	10.40	17.00	Complies

Configuration Draft n MCS0 20MHz Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	10.57	17.00	Complies
40	5200 MHz	10.26	17.00	Complies
48	5240 MHz	9.91	17.00	Complies

Configuration Draft n MCS0 20MHz Ant. C

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	9.37	17.00	Complies
40	5200 MHz	9.12	17.00	Complies
48	5240 MHz	9.05	17.00	Complies

Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	14.76	17.00	Complies
40	5200 MHz	14.62	17.00	Complies
48	5240 MHz	14.59	17.00	Complies

Configuration Draft n MCS0 40MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	11.94	17.00	Complies
46	5230 MHz	12.18	17.00	Complies

Configuration Draft n MCS0 40MHz Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	12.43	17.00	Complies
46	5230 MHz	12.24	17.00	Complies

Configuration Draft n MCS0 40MHz Ant. C

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	11.66	17.00	Complies
46	5230 MHz	11.53	17.00	Complies

Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	16.79	17.00	Complies
46	5230 MHz	16.77	17.00	Complies

Temperature	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	802.11a
Test Date	Mar. 24, 2009		

Configuration IEEE 802.11a Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	10.31	17.00	Complies
40	5200 MHz	10.53	17.00	Complies
48	5240 MHz	10.60	17.00	Complies

Configuration IEEE 802.11a Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	11.28	17.00	Complies
40	5200 MHz	11.04	17.00	Complies
48	5240 MHz	10.63	17.00	Complies

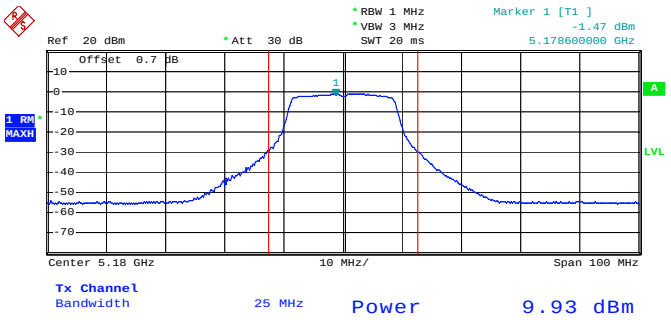
Configuration IEEE 802.11a Ant. C

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	10.01	17.00	Complies
40	5200 MHz	9.84	17.00	Complies
48	5240 MHz	9.82	17.00	Complies

Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C

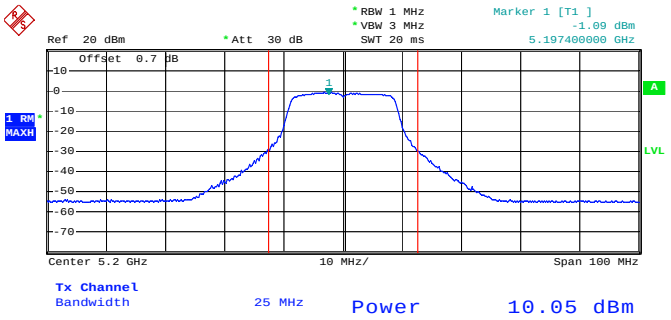
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	15.34	17.00	Complies
40	5200 MHz	15.27	17.00	Complies
48	5240 MHz	15.14	17.00	Complies

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 5180 MHz



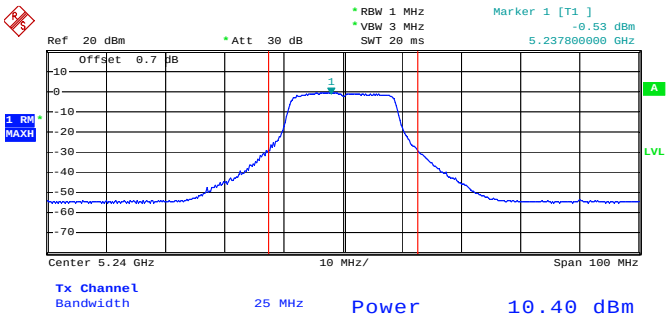
Date: 24.MAR.2009 10:01:54

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 5200 MHz



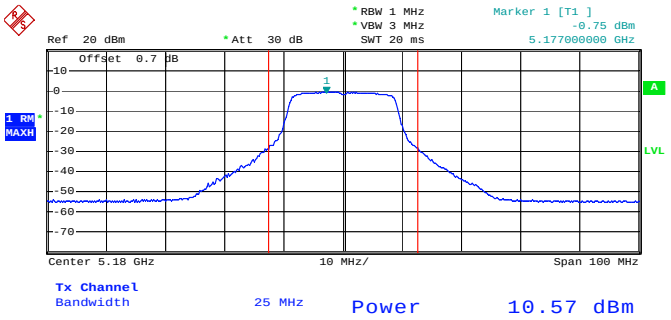
Date: 24.MAR.2009 10:07:20

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 5240 MHz



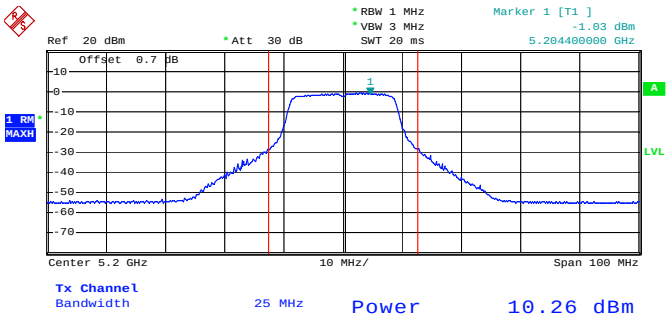
Date: 24.MAR.2009 10:08:35

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. B / 5180 MHz



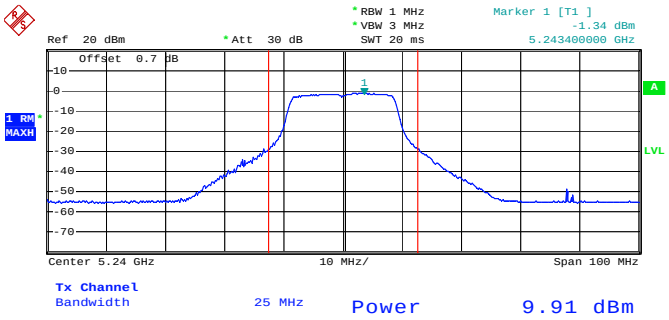
Date: 24.MAR.2009 10:03:16

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. B / 5200 MHz



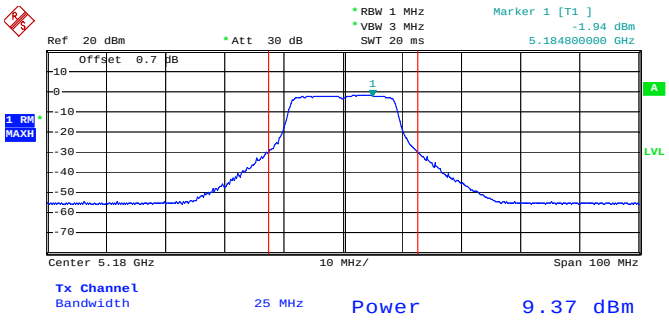
Date: 24.MAR.2009 10:06:14

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. B / 5240 MHz



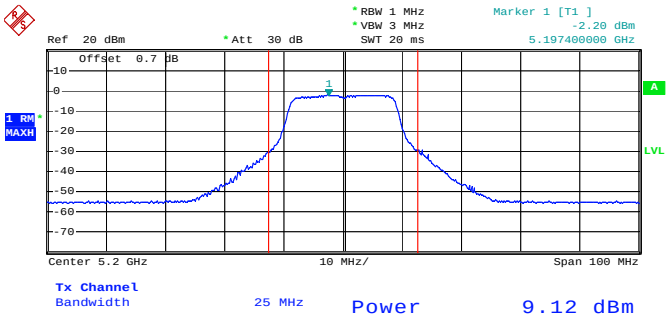
Date: 24.MAR.2009 10:09:57

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. C / 5180 MHz



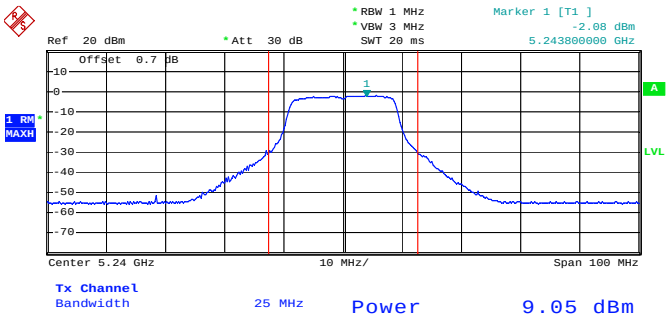
Date: 24.MAR.2009 10:04:07

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. C / 5200 MHz



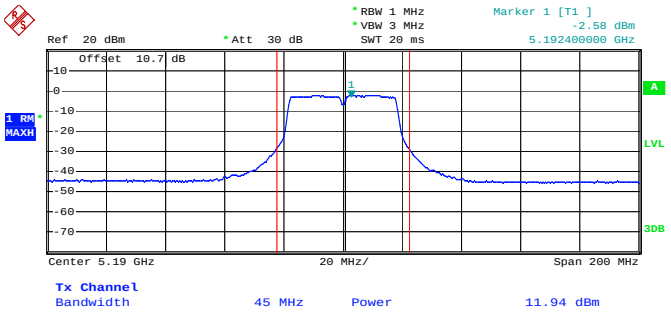
Date: 24.MAR.2009 10:05:21

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. C / 5240 MHz



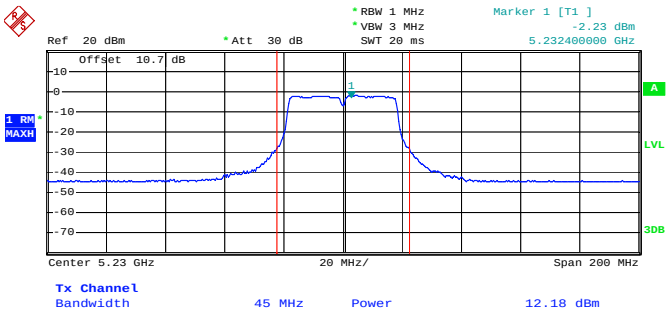
Date: 24.MAR.2009 10:10:54

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. A / 5190 MHz



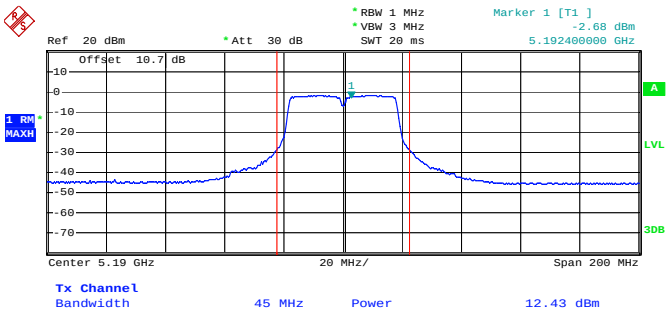
Date: 22.MAR.2009 12:09:34

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. A / 5230 MHz



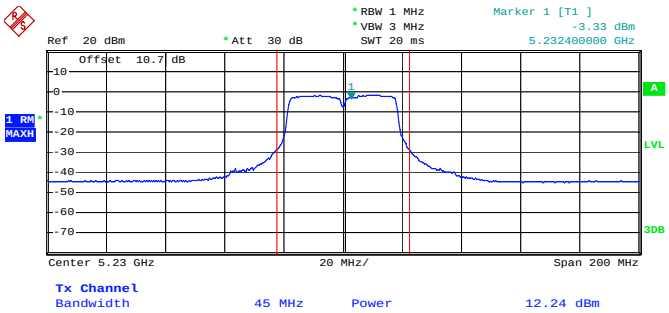
Date: 22.MAR.2009 12:17:09

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. B / 5190 MHz



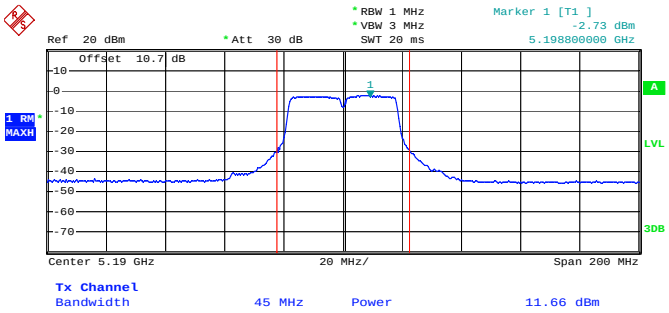
Date: 22.MAR.2009 12:10:09

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. B / 5230 MHz



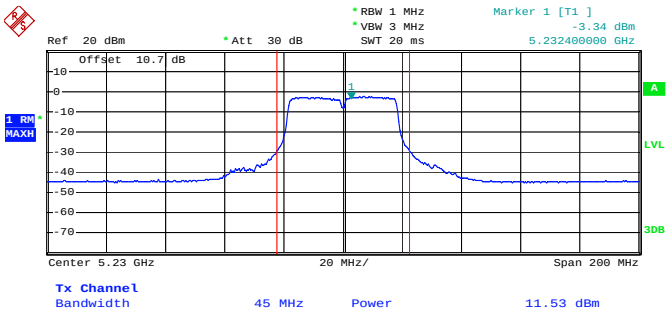
Date: 22.MAR.2009 12:18:12

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. C / 5190 MHz



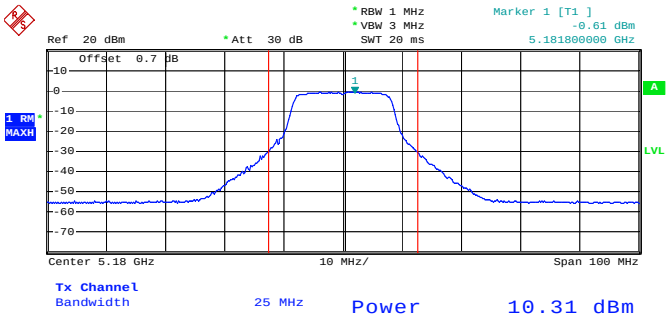
Date: 22.MAR.2009 12:11:13

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. C / 5230 MHz



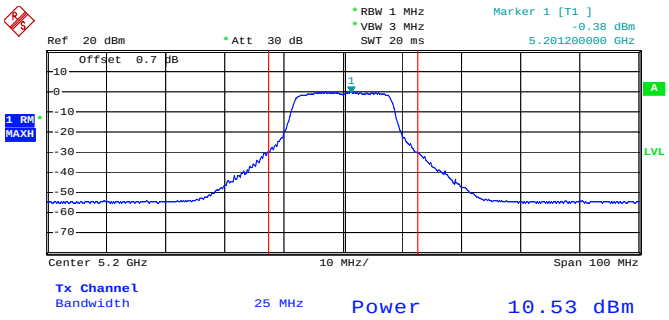
Date: 22.MAR.2009 12:19:05

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. A / 5180 MHz



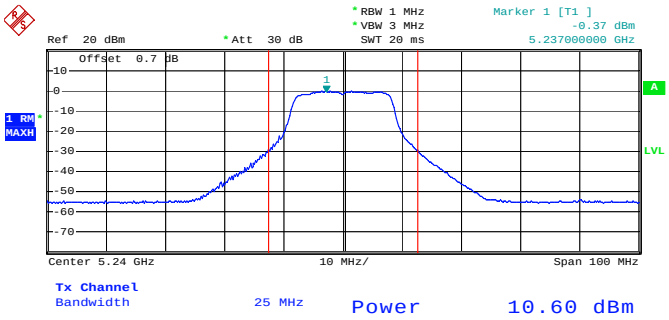
Date: 24.MAR.2009 10:30:52

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. A / 5200 MHz



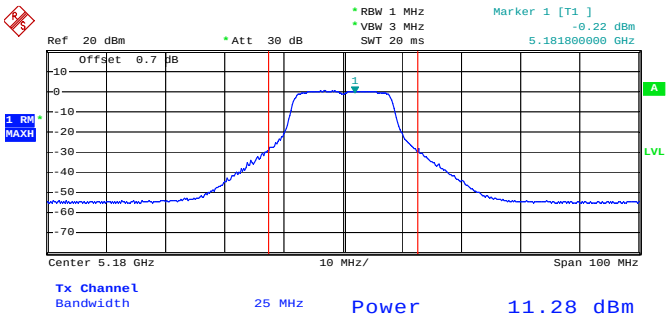
Date: 24.MAR.2009 10:32:57

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. A / 5240 MHz



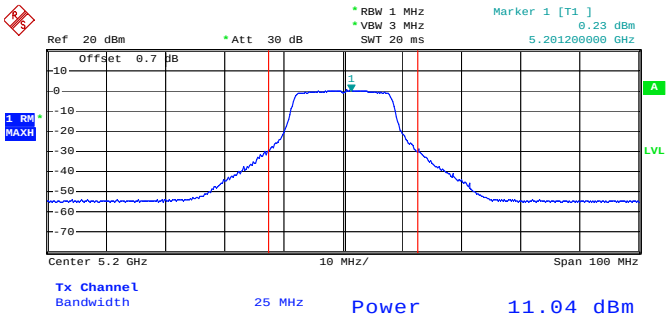
Date: 24.MAR.2009 10:33:20

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. B / 5180 MHz



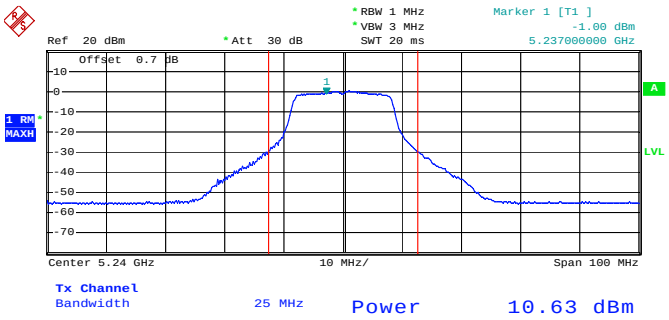
Date: 24.MAR.2009 10:31:17

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. B / 5200 MHz



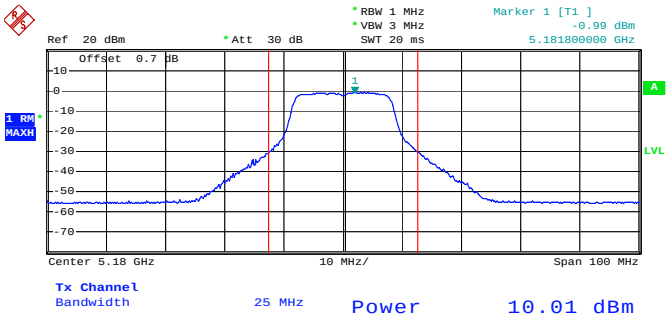
Date: 24.MAR.2009 10:32:35

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. B / 5240 MHz



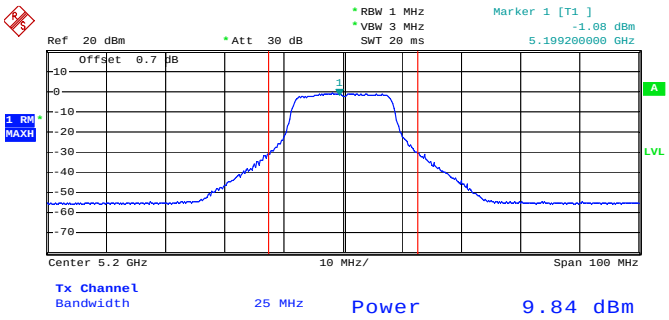
Date: 24.MAR.2009 10:33:45

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. C / 5180 MHz



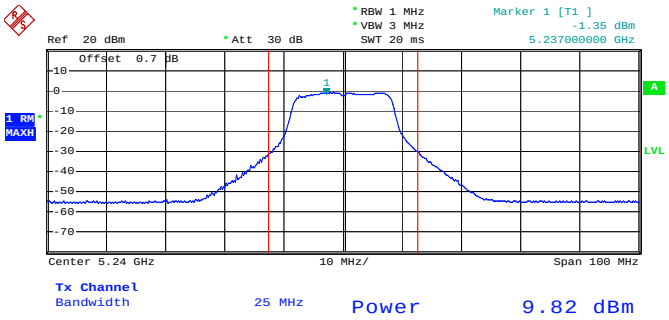
Date: 24.MAR.2009 10:31:46

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. C / 5200 MHz



Date: 24.MAR.2009 10:32:11

Conducted Output Power Plot on Configuration IEEE 802.11a Ant. C / 5240 MHz



Date: 24.MAR.2009 10:34:15

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 and decrease power density limit rule refer to section 4.3.1.

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

4.4.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	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.
3. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

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	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	Draft n
Test Date	Mar. 24, 2009		

Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	2.68	4.00	Complies
40	5200 MHz	3.31	4.00	Complies
48	5240 MHz	3.98	4.00	Complies

Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C

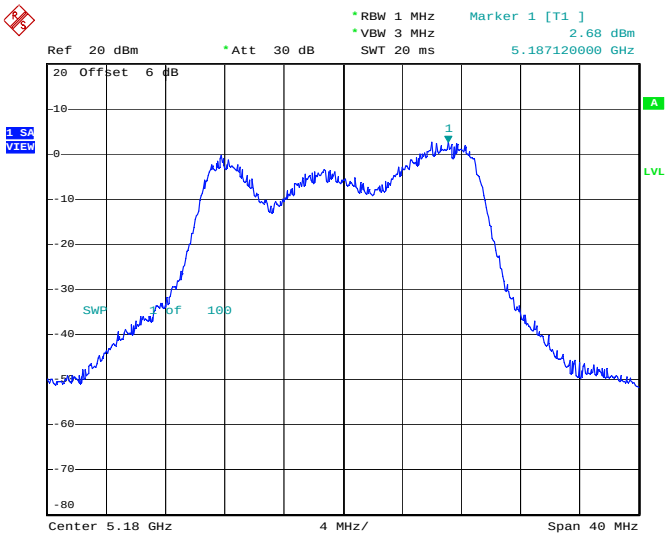
Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	1.33	4.00	Complies
46	5230 MHz	1.11	4.00	Complies

Temperature	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	802.11a
Test Date	Mar. 24, 2009		

Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C

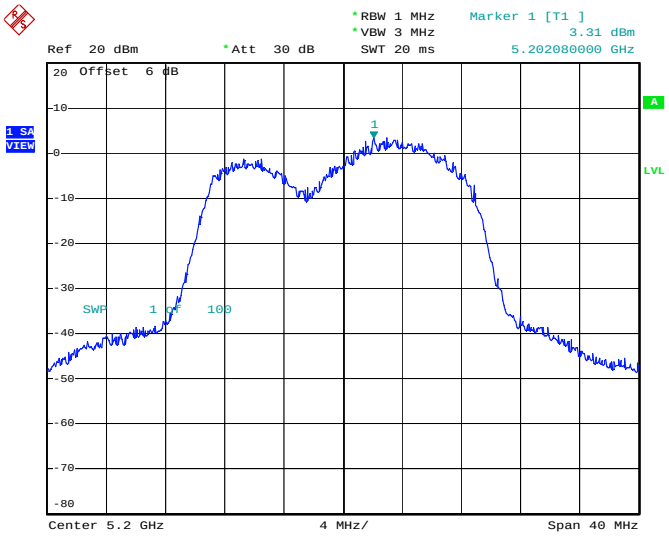
Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	3.94	4.00	Complies
40	5200 MHz	3.85	4.00	Complies
48	5240 MHz	3.40	4.00	Complies

Power Density Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5180 MHz



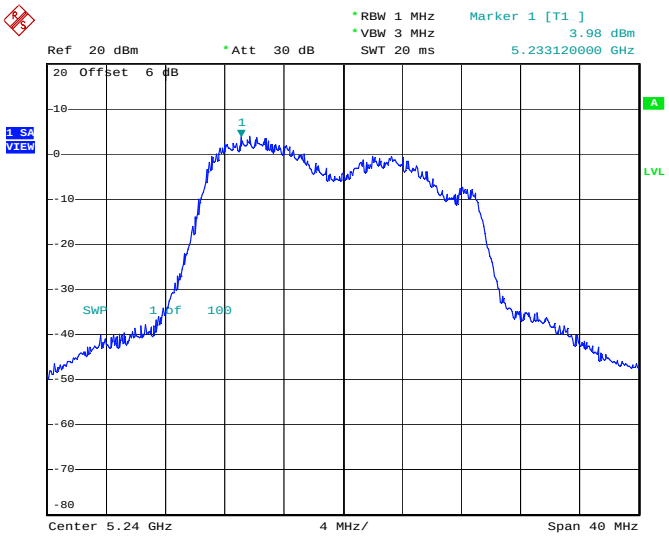
Date: 23.MAR.2009 15:17:15

Power Density Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5200 MHz



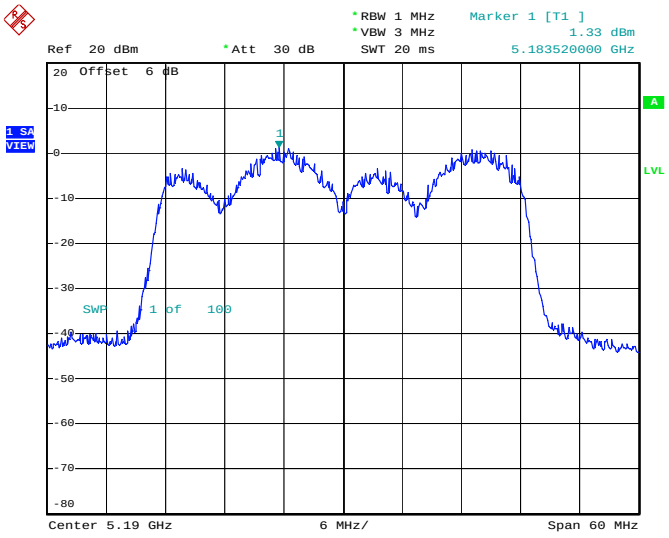
Date: 23.MAR.2009 15:14:41

Power Density Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5240 MHz



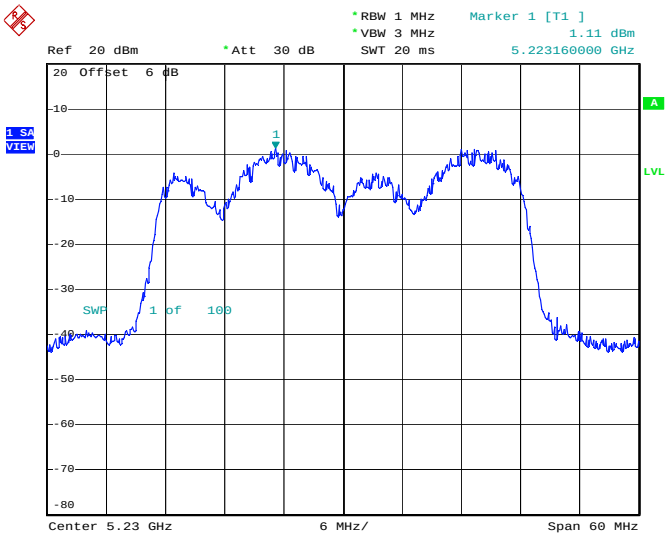
Date: 23.MAR.2009 15:14:03

Power Density Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5190 MHz



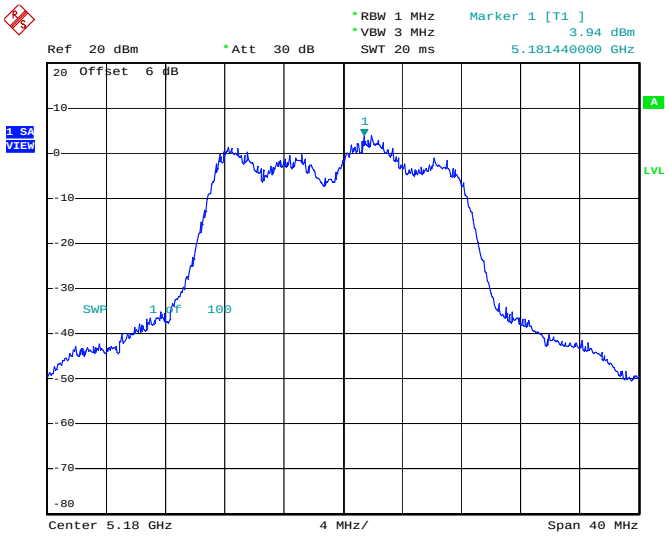
Date: 23.MAR.2009 15:29:40

Power Density Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5230 MHz



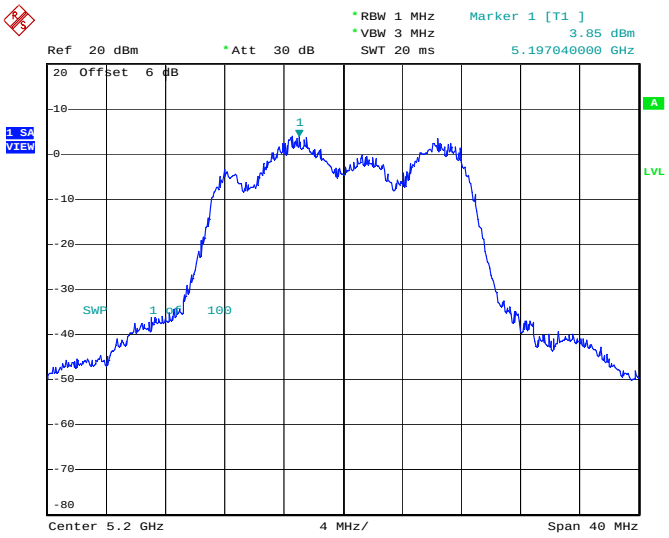
Date: 23.MAR.2009 15:30:43

Power Density Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5180 MHz



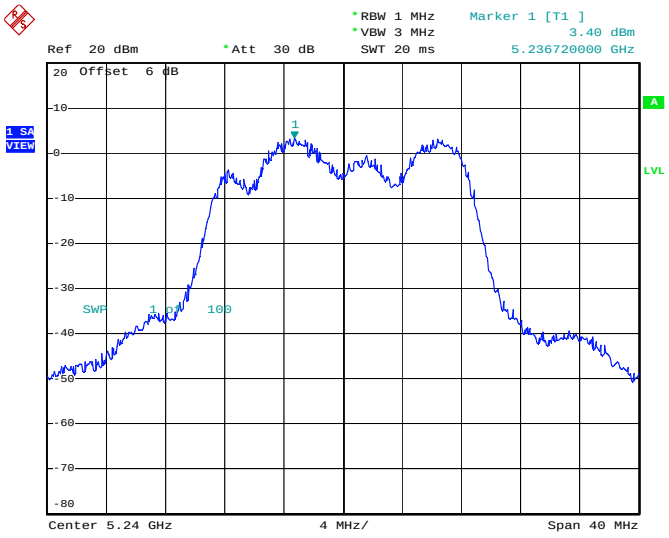
Date: 23.MAR.2009 15:07:43

Power Density Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5200 MHz



Date: 23.MAR.2009 15:09:02

Power Density Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5240 MHz



Date: 23.MAR.2009 15:10:10

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

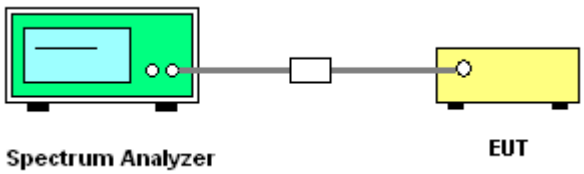
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 300 kHz (Average Trace)
Detector	Peak (Peak Trace) / 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 max-hold settings.
4. Average Trace: Method #3—video averaging with max hold--and sum power across the band. Set span to encompass the entire emissions bandwidth (EBW) of the signal. Set sweep trigger to “free run”. Set RBW = 1 MHz. Set VBW ≥ 1/T (Draft n VBW = 300kHz ≥ 1/4μs). Use sample detector mode if bin width (i.e., span/number of points in spectrum) < 0.5 RBW. Otherwise use peak detector mode. Set max hold. Allow max hold to run for 60 seconds.
5. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

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	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	Draft n
Test Date	Mar. 24, 2009		

Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	5.13	13	Complies
40	5200 MHz	4.72	13	Complies
48	5240 MHz	4.87	13	Complies

Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C

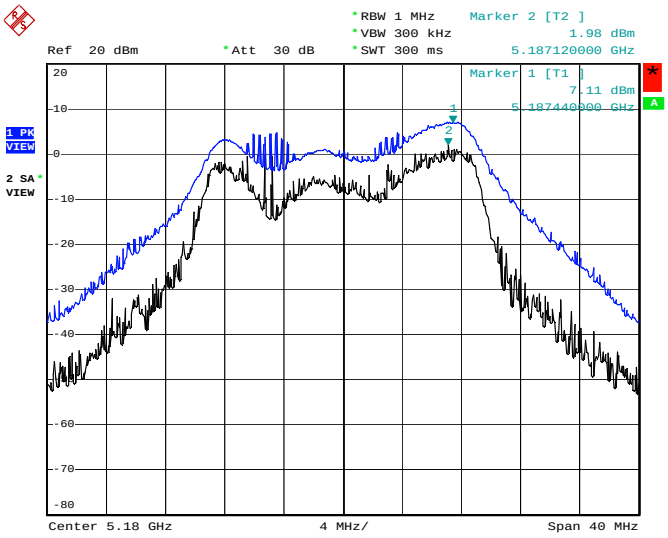
Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	4.76	13	Complies
46	5230 MHz	5.55	13	Complies

Temperature	23°C	Humidity	62%
Test Engineer	Jacky Ho	Configurations	802.11a
Test Date	Mar. 24, 2009		

Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C

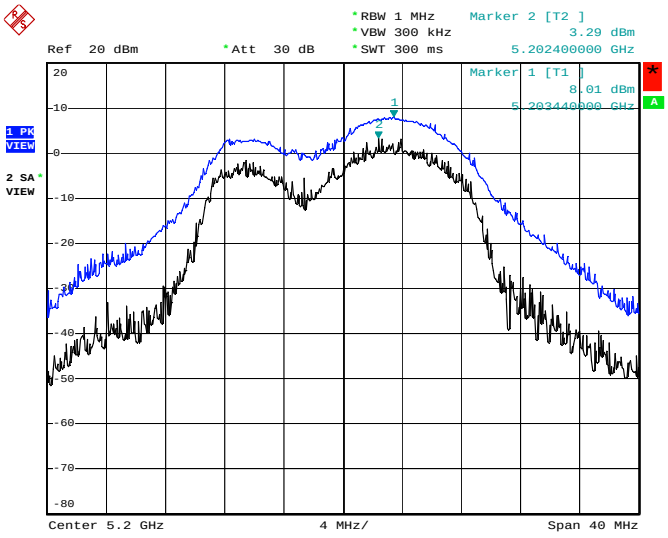
Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	4.83	13	Complies
40	5200 MHz	4.64	13	Complies
48	5240 MHz	5.86	13	Complies

Peak Excursion Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5180 MHz



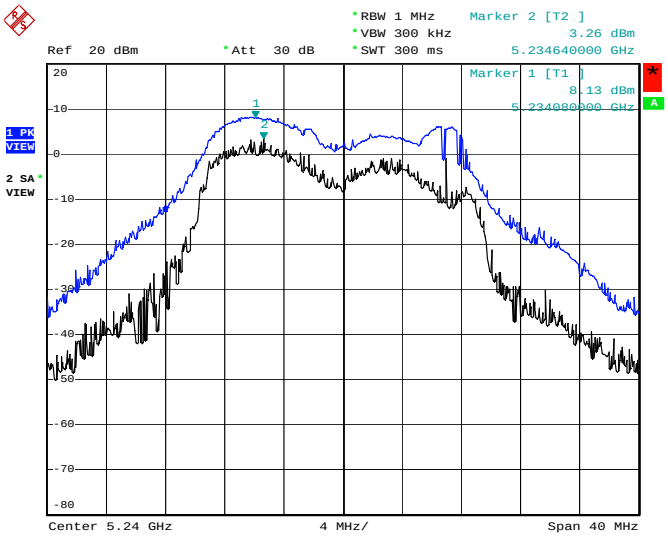
Date: 23.MAR.2009 15:17:27

Peak Excursion Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5200 MHz



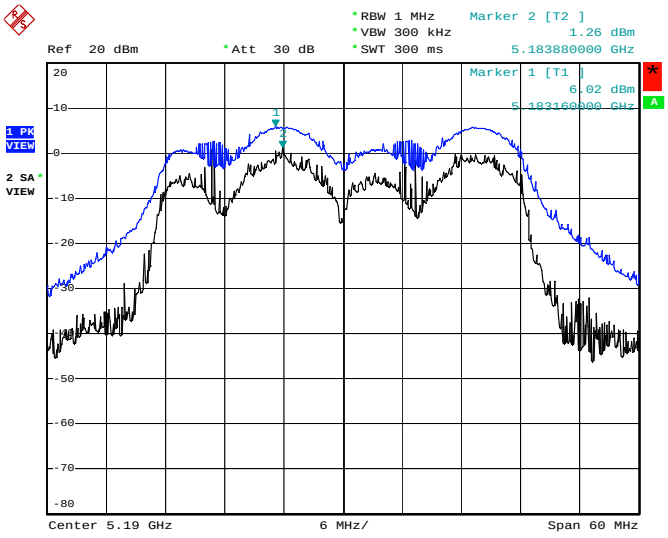
Date: 23.MAR.2009 15:14:53

Peak Excursion Plot on Configuration Draft n MCS0 20MHz Ant. A + Ant. B + Ant. C / 5240 MHz



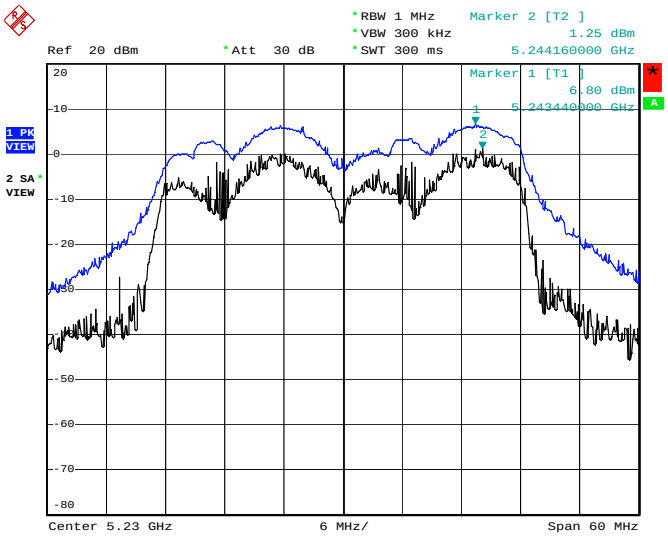
Date: 23.MAR.2009 15:14:15

Peak Excursion Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5190 MHz



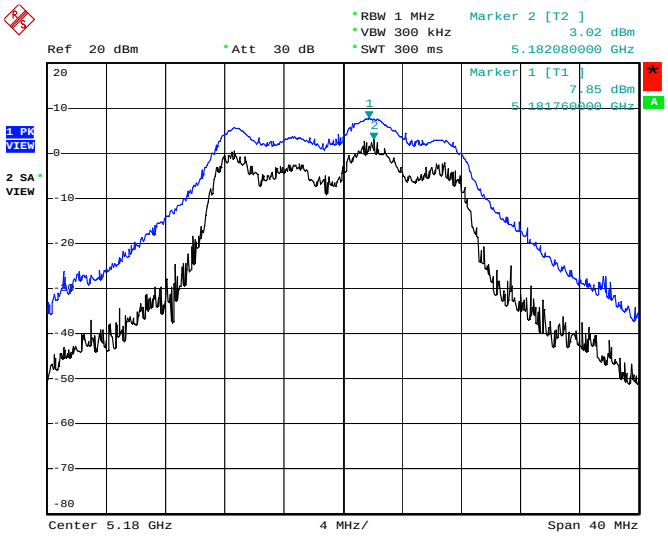
Date: 23.MAR.2009 15:29:52

Peak Excursion Plot on Configuration Draft n MCS0 40MHz Ant. A + Ant. B + Ant. C / 5230 MHz



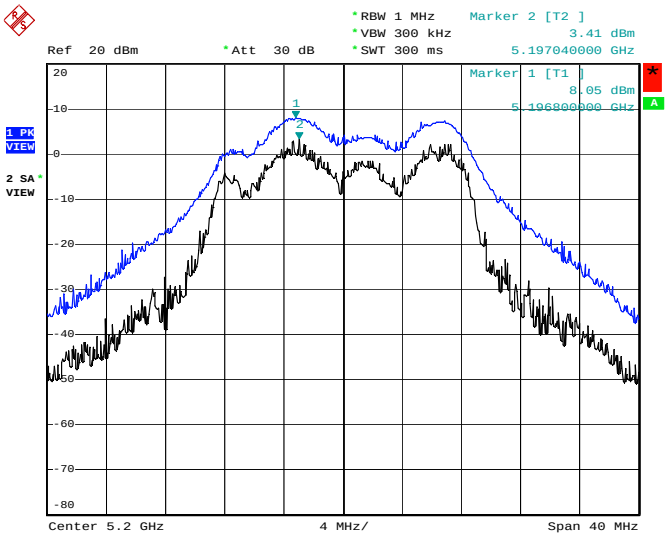
Date: 23.MAR.2009 15:30:55

Peak Excursion Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5180 MHz



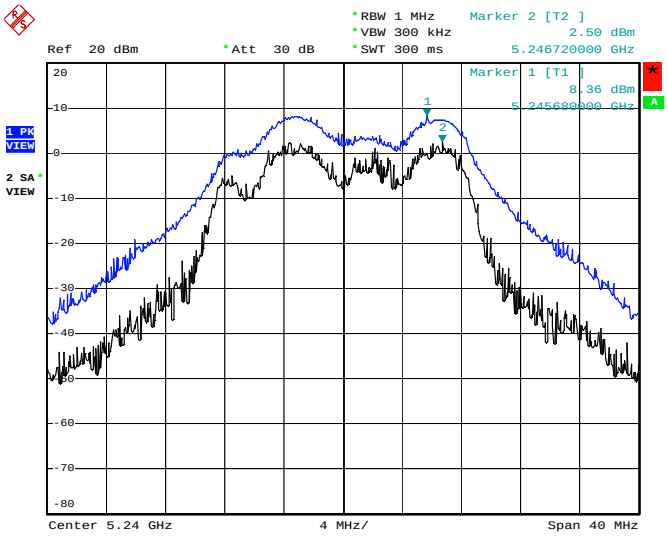
Date: 23.MAR.2009 15:07:55

Peak Excursion Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5200 MHz



Date: 23.MAR.2009 15:09:14

Peak Excursion Plot on Configuration IEEE 802.11a Ant. A + Ant. B + Ant. C / 5240 MHz



Date: 23.MAR.2009 15:10:22

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions 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 of equipments list 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	40 GHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

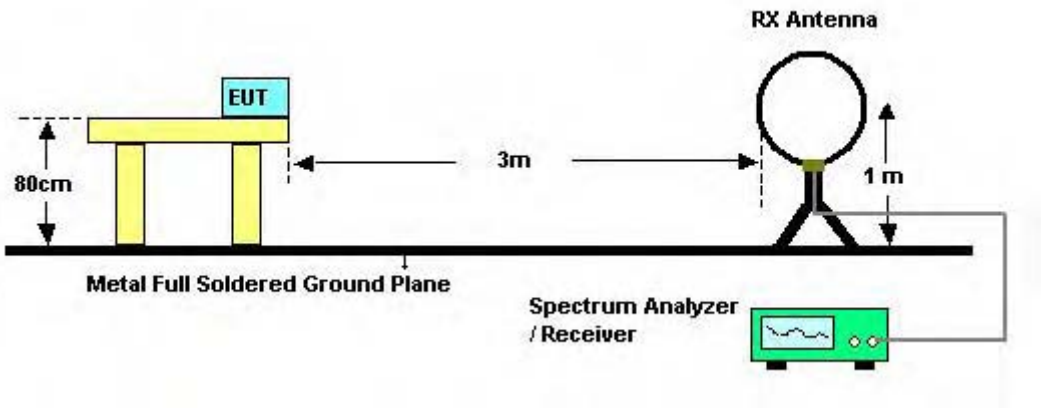
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

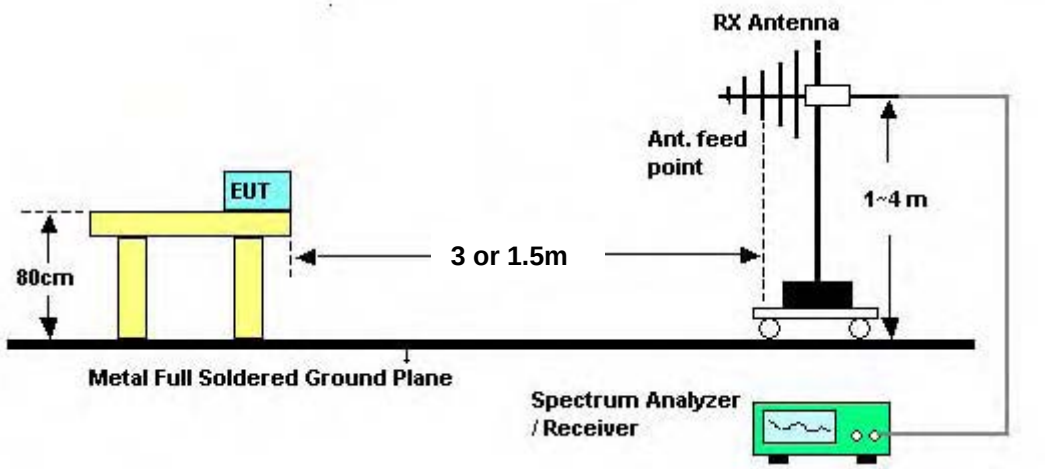
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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 distance [3m] / test distance [1.5m]) (dB);

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

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	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Normal Link

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

Note:

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

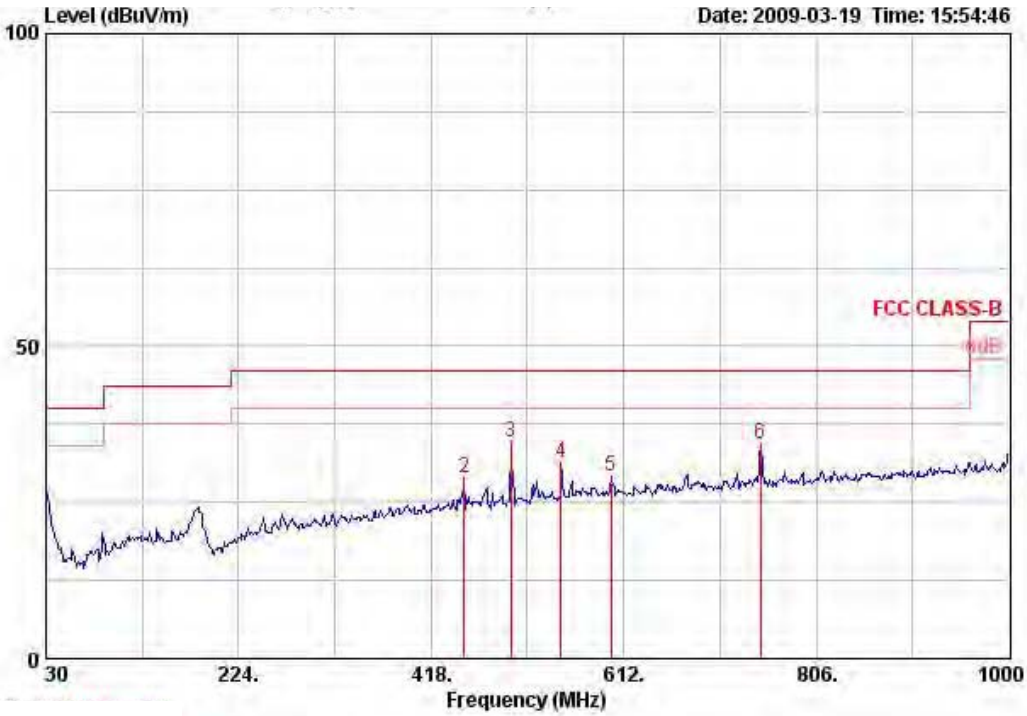
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

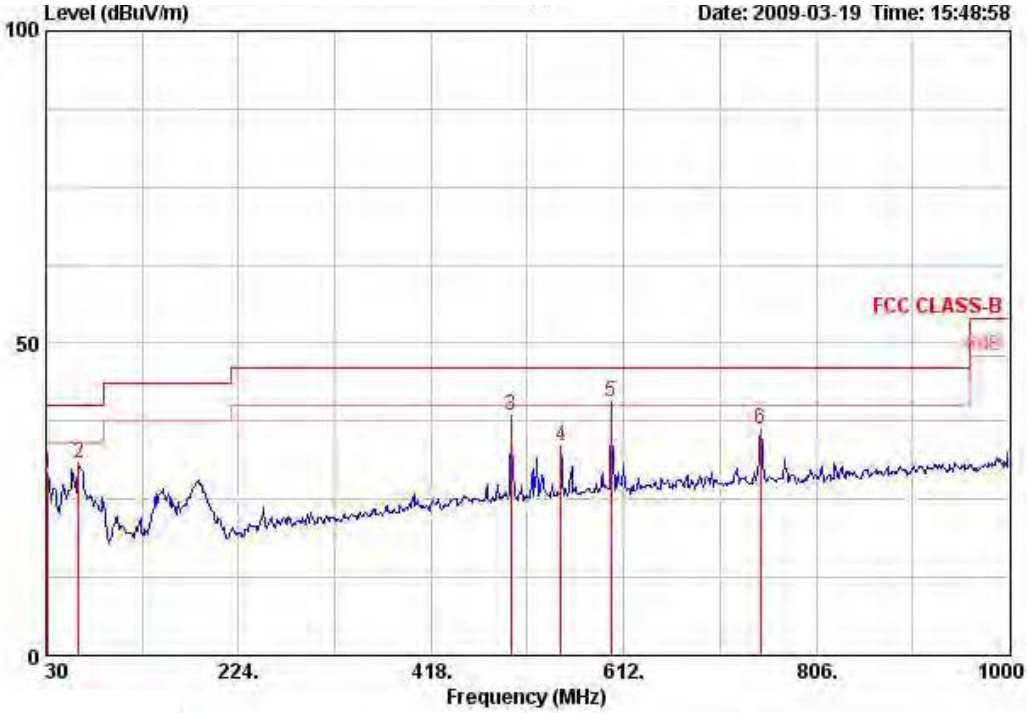
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Normal Link / Mode 1

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	30.000	26.60	-13.40	40.00	35.14	18.76	0.50	27.80	Peak	100	0	HORIZONTAL
2	450.980	28.86	-17.14	46.00	37.25	16.86	2.60	27.85	Peak	100	0	HORIZONTAL
3 @	498.510	34.54	-11.46	46.00	42.34	17.60	2.70	28.09	Peak	100	0	HORIZONTAL
4	548.950	31.21	-14.79	46.00	38.33	18.18	2.80	28.10	Peak	100	0	HORIZONTAL
5	599.390	29.26	-16.74	46.00	35.70	18.76	2.90	28.10	Peak	100	0	HORIZONTAL
6 @	749.740	34.32	-11.68	46.00	39.20	19.43	3.50	27.80	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 @	31.940	29.06	-10.94	40.00	38.67	17.69	0.50	27.80	Peak	400	0	VERTICAL
2 @	62.980	30.78	-9.22	40.00	50.94	6.73	0.86	27.75	Peak	400	0	VERTICAL
3 @	498.510	38.32	-7.68	46.00	46.11	17.60	2.70	28.09	Peak	400	0	VERTICAL
4 @	548.950	33.52	-12.48	46.00	40.64	18.18	2.80	28.10	Peak	400	0	VERTICAL
5 @	599.390	40.52	-5.48	46.00	46.96	18.76	2.90	28.10	Peak	400	0	VERTICAL
6 @	749.740	36.35	-9.65	46.00	41.22	19.43	3.50	27.80	Peak	400	0	VERTICAL

Note:

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

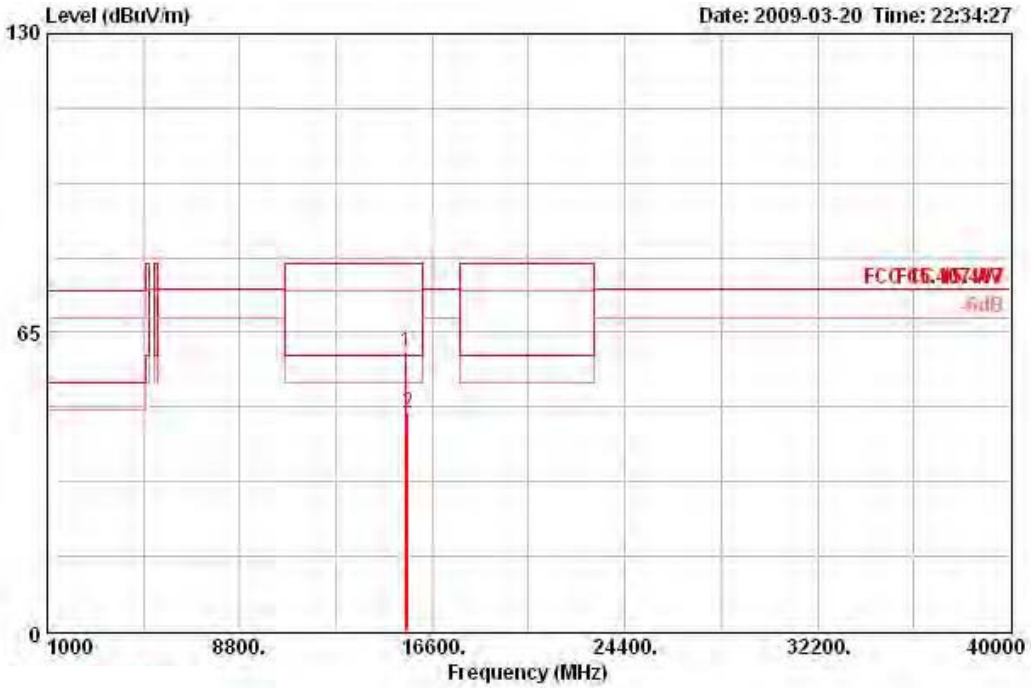
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

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

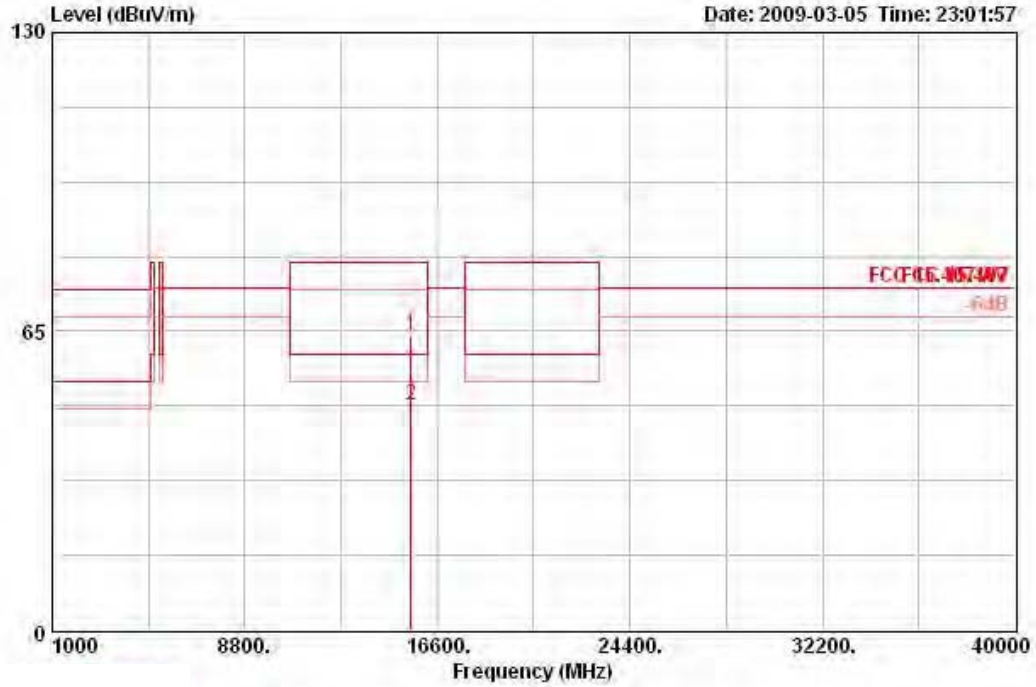
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 20MHz Ch 36 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	15530.200	60.60	-19.40	80.00	46.35	38.14	35.59	11.69	PEAK	HORIZONTAL	360	100
2 @	15588.000	47.50	-12.50	60.00	33.29	38.06	35.58	11.73	AVERAGE	HORIZONTAL	360	100

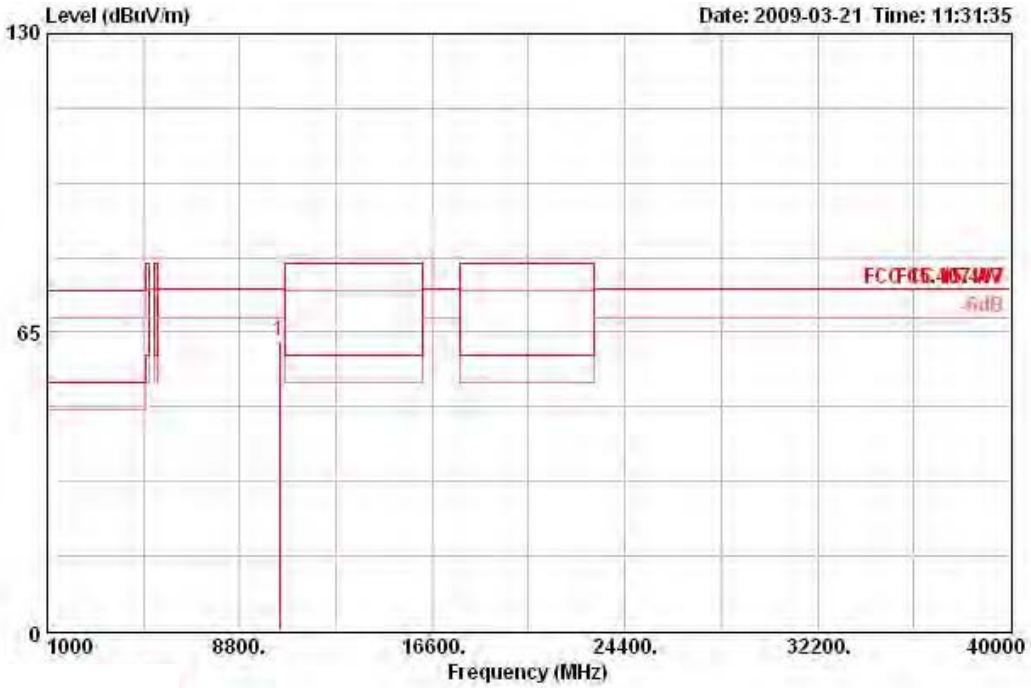
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	15531.200	64.17	-15.83	80.00	49.03	38.14	34.69	11.69	PEAK	VERTICAL	300	100
2	15533.120	48.70	-11.30	60.00	33.56	38.14	34.69	11.69	AVERAGE	VERTICAL	300	100

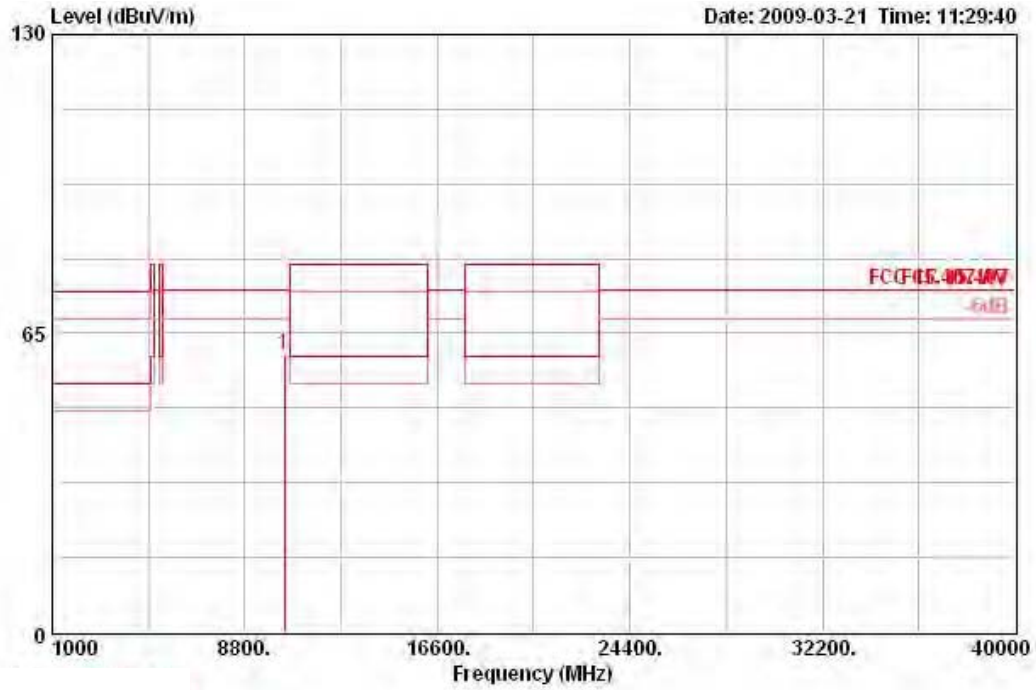
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 20MHz Ch 40 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10401.200	62.98	-11.32	74.30	48.17	39.82	35.28	10.27	PEAK	HORIZONTAL	77	100

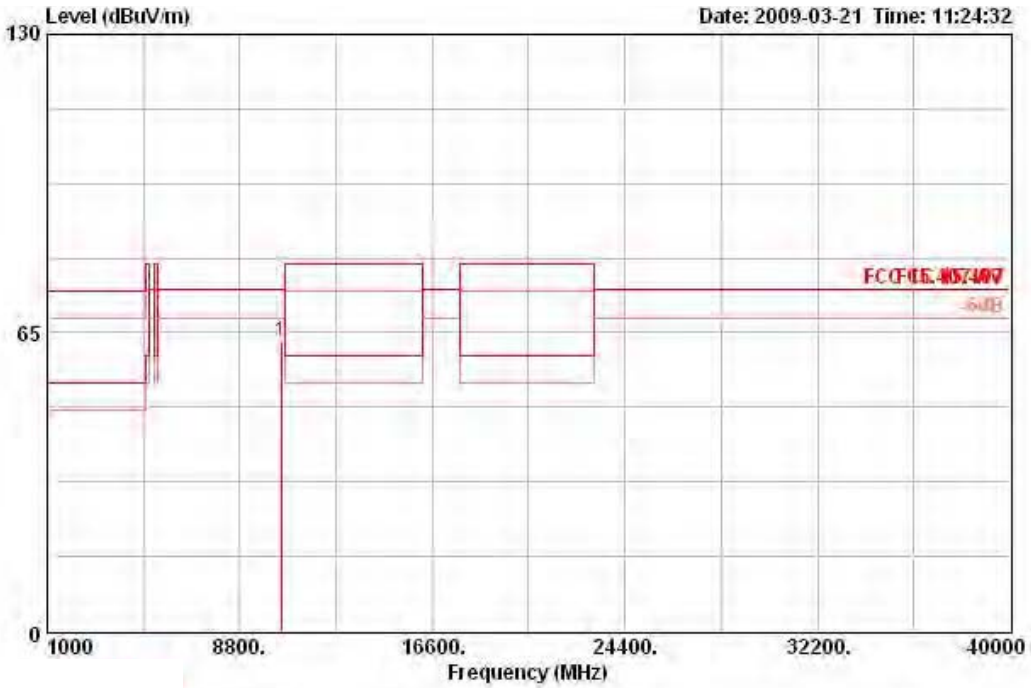
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10406.400	60.42	-13.88	74.30	45.61	39.82	35.28	10.27	PEAK	VERTICAL	15	116

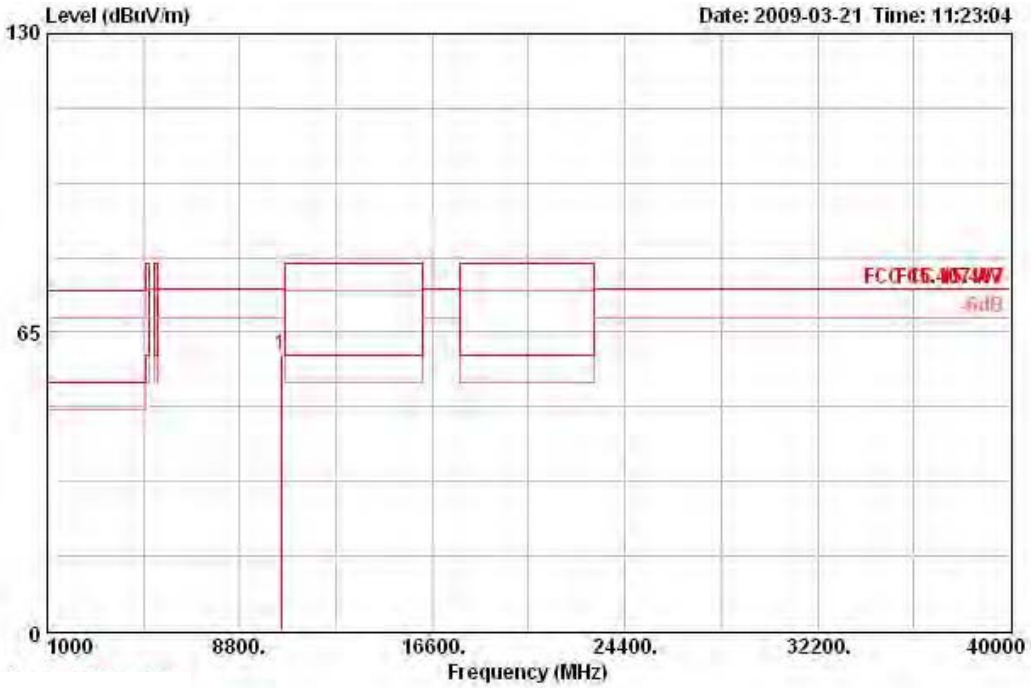
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 20MHz Ch 48 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	10485.400	62.87	-11.43	74.30	47.77	39.97	35.21	10.35	PEAK	HORIZONTAL	78	101

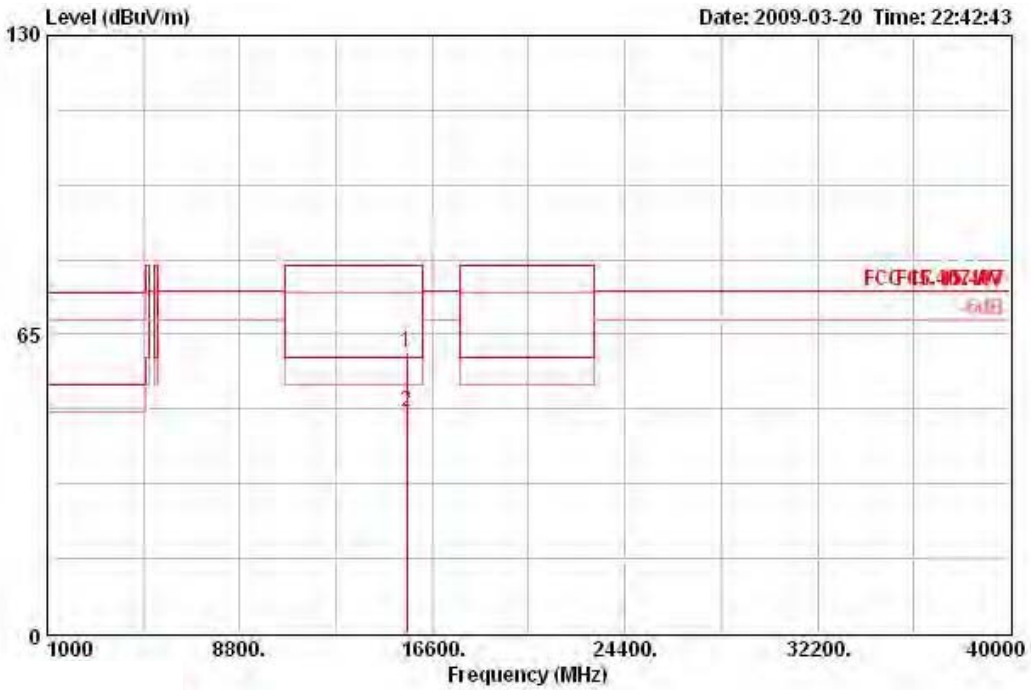
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10488.400	59.90	-14.40	74.30	44.80	39.97	35.21	10.35	PEAK	VERTICAL	273	100

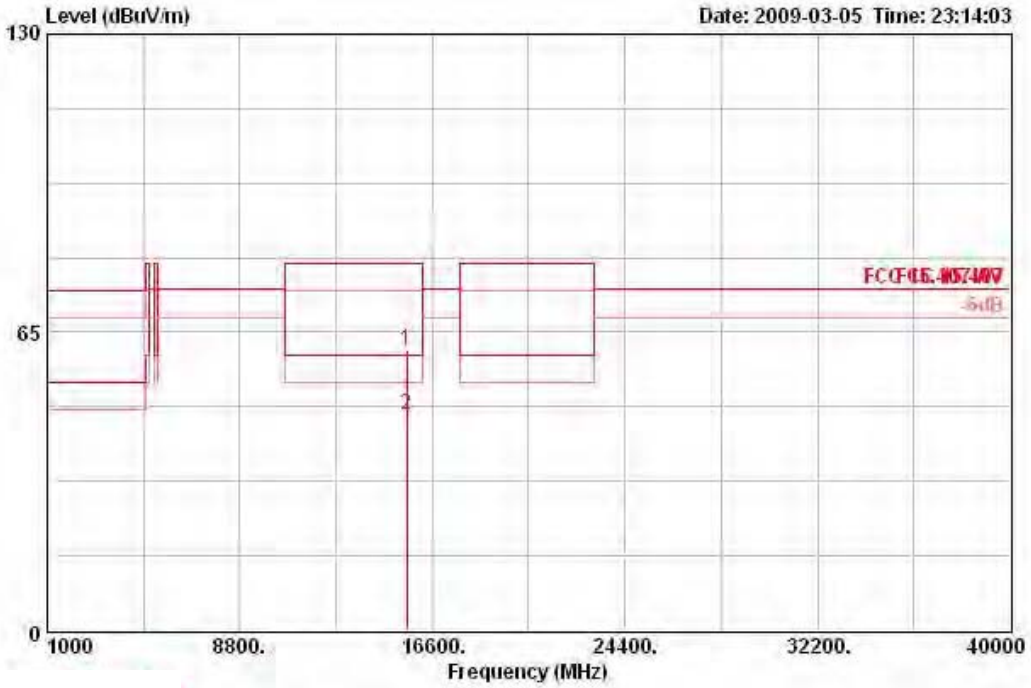
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 40MHz Ch 38 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	15555.600	61.20	-18.80	80.00	46.96	38.12	35.59	11.71	PEAK	HORIZONTAL	0	100
2 @	15576.800	48.15	-11.85	60.00	33.92	38.09	35.59	11.73	AVERAGE	HORIZONTAL	0	100

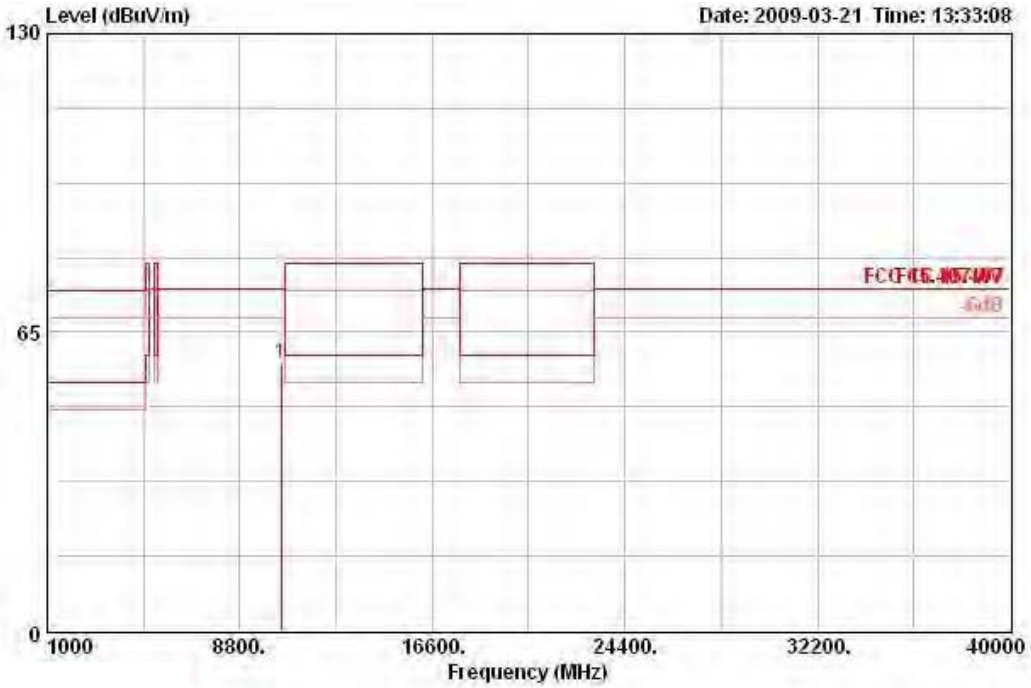
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	15567.850	61.01	-18.99	80.00	45.93	38.09	34.72	11.71	PEAK	VERTICAL	0	100
2	15570.210	46.97	-13.03	60.00	31.89	38.09	34.72	11.71	AVERAGE	VERTICAL	0	100

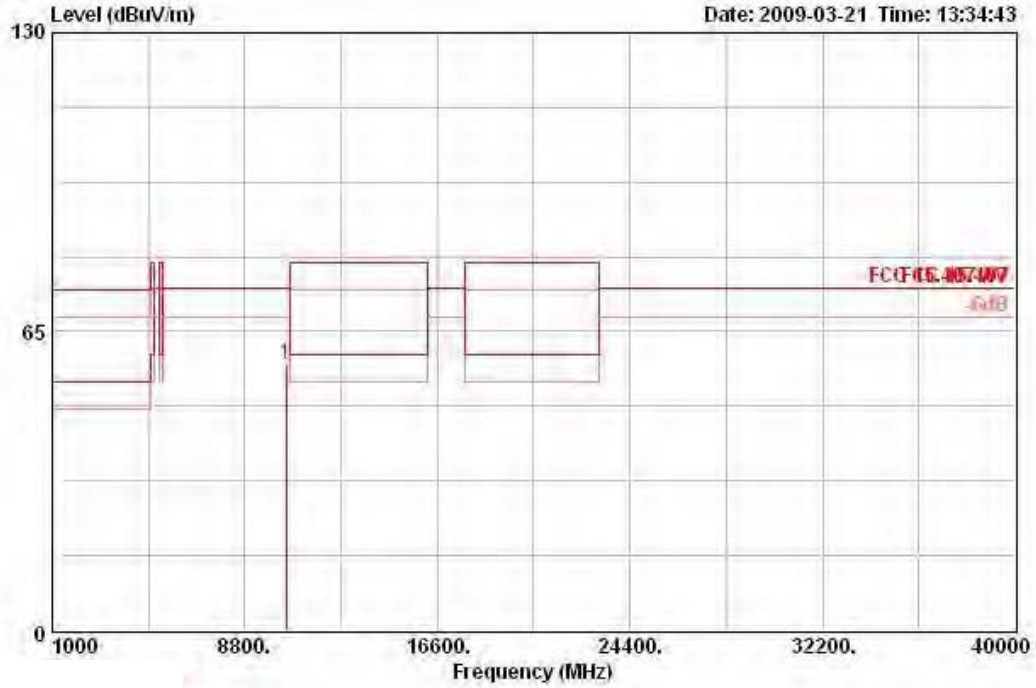
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 40MHz Ch 46 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10467.600	58.07	-16.23	74.30	43.03	39.94	35.23	10.32	PEAK	HORIZONTAL	204	127

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10466.200	57.93	-16.37	74.30	42.90	39.94	35.23	10.32	PEAK	VERTICAL	69	104

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB 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.

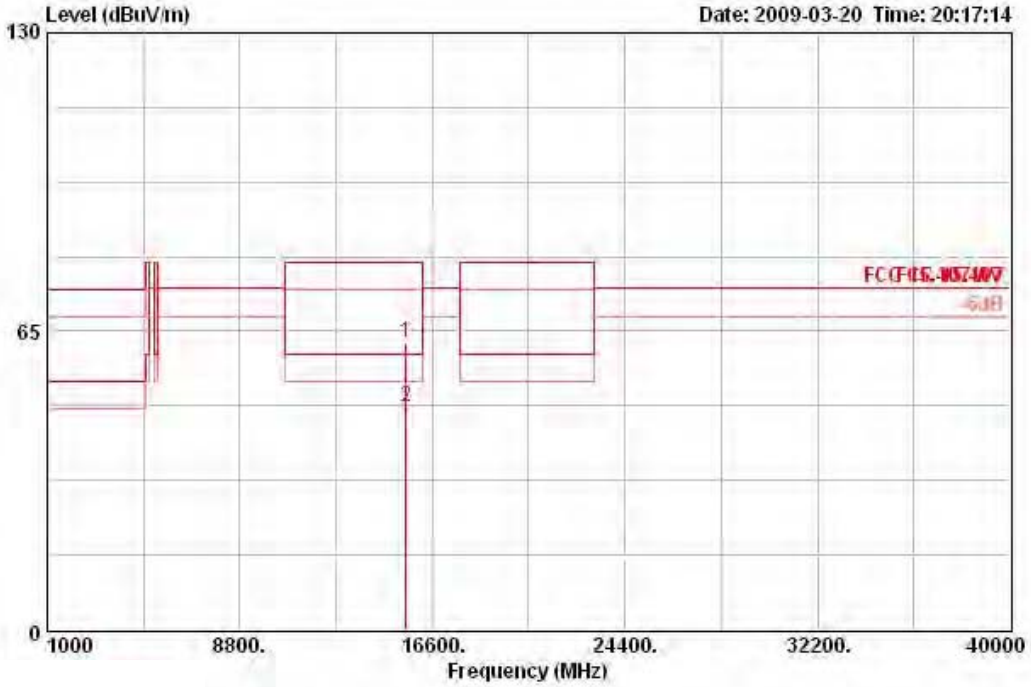
The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

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

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

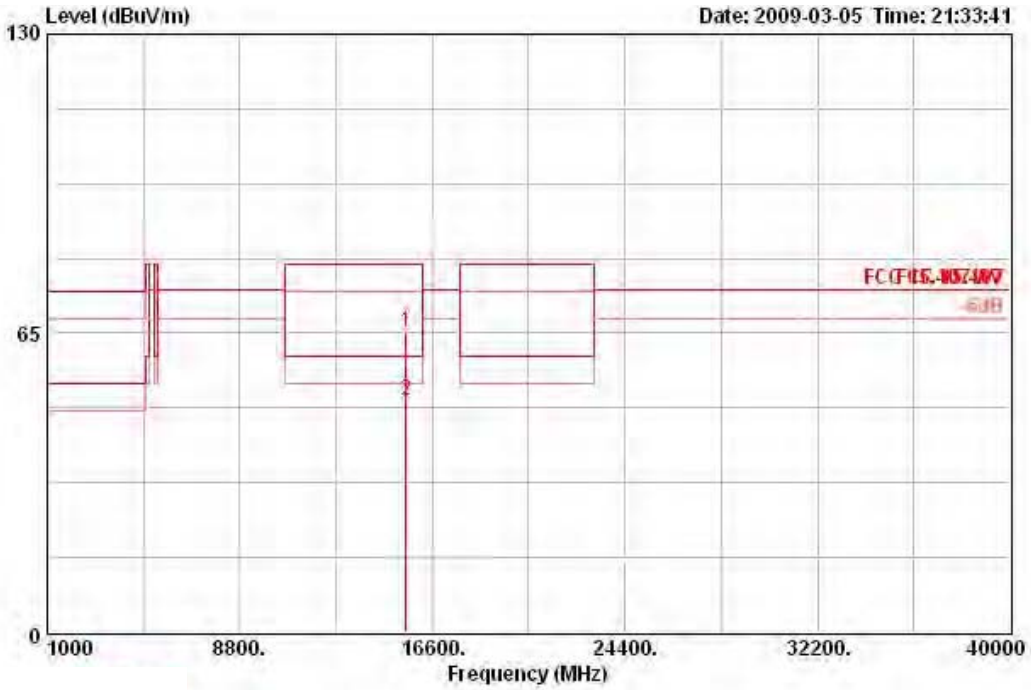
Temperature	25.6℃	Humidity	56%
Test Engineer	Johnson Chang	Configurations	802.11a Ch 36 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	15539.340	62.60	-17.40	80.00	48.36	38.14	35.59	11.69	PEAK	HORIZONTAL	78	100
2 @	15540.010	48.69	-11.31	60.00	34.44	38.14	35.59	11.69	AVERAGE	HORIZONTAL	78	100

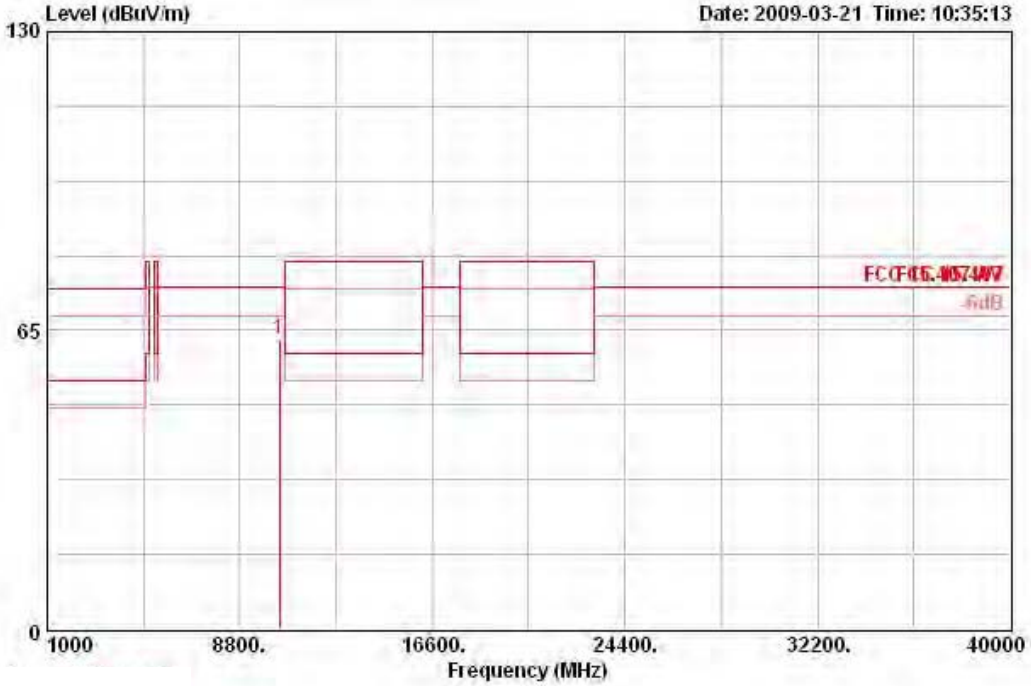
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	15540.440	65.08	-14.92	80.00	49.94	38.14	34.69	11.69	PEAK	VERTICAL	187	100
2 @	15541.840	50.23	-9.77	60.00	35.09	38.14	34.69	11.69	AVERAGE	VERTICAL	187	100

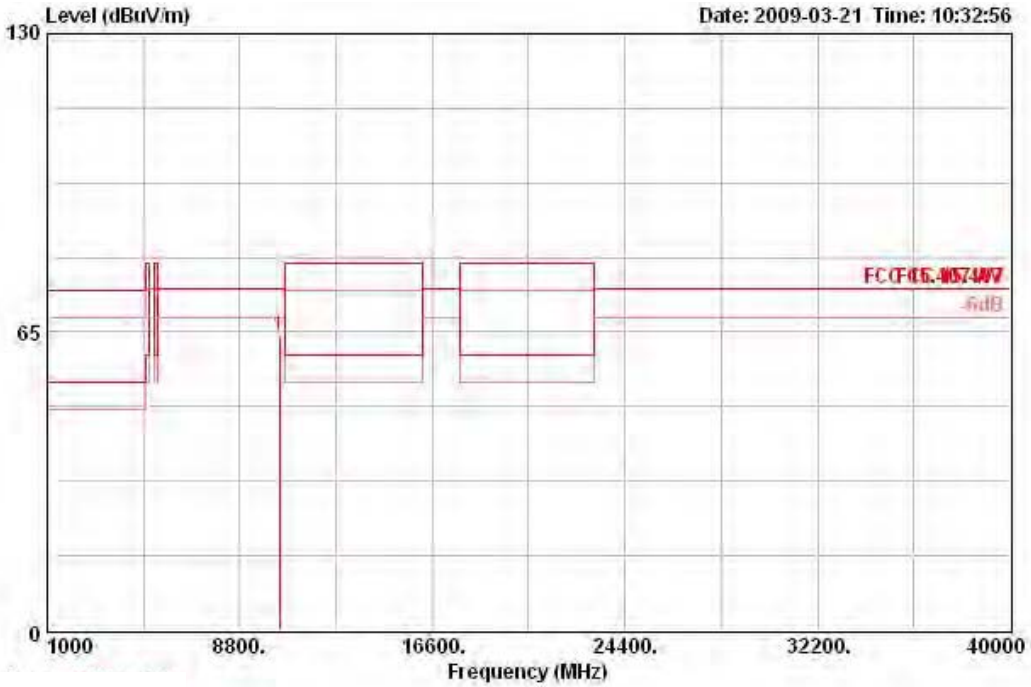
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	802.11a Ch 40 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10399.000	63.13	-11.17	74.30	48.32	39.82	35.28	10.27	PEAK	HORIZONTAL	76	100

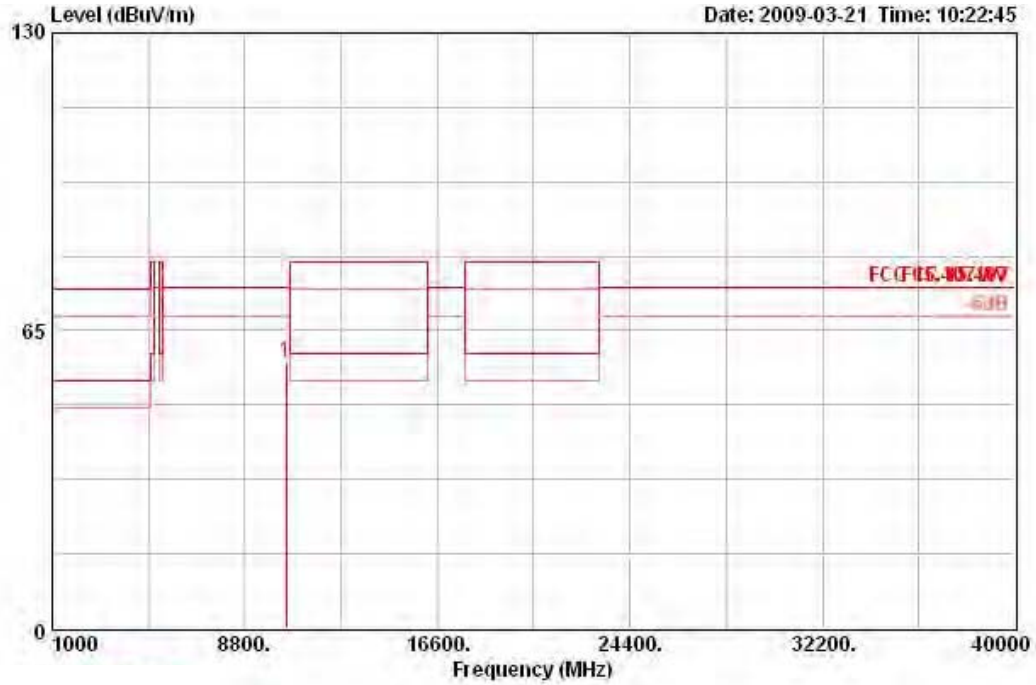
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10402.800	63.93	-10.37	74.30	49.12	39.82	35.28	10.27	PEAK	VERTICAL	15	115

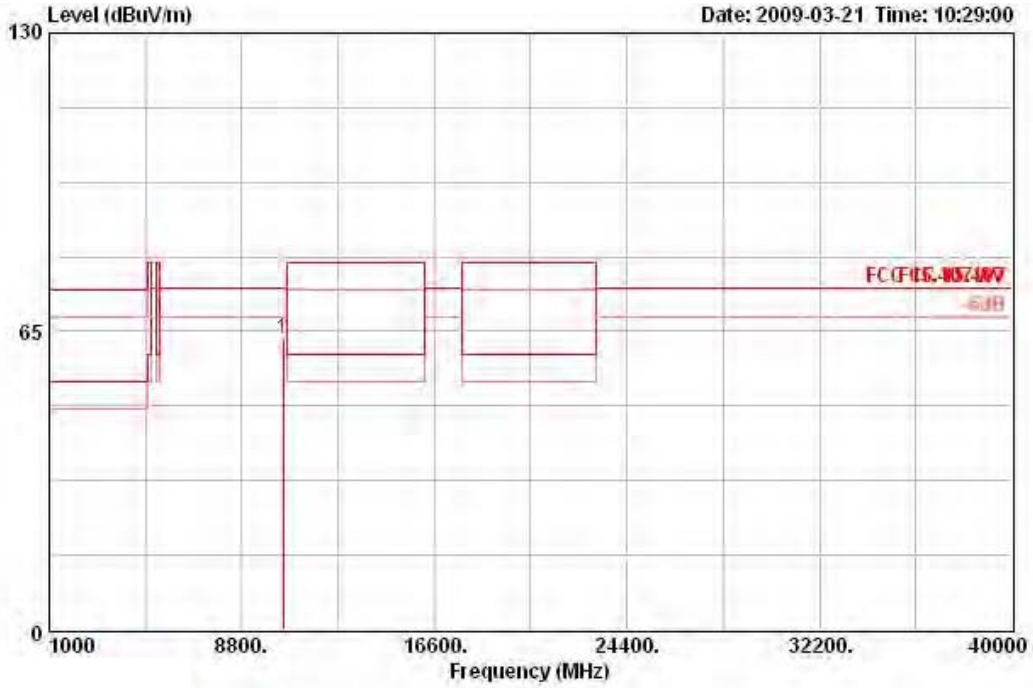
Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	802.11a Ch 48 / Ant. A + Ant. B + Ant. C

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10473.600	57.97	-16.33	74.30	42.91	39.94	35.23	10.35	PEAK	HORIZONTAL	272	108

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	10484.000	63.18	-11.12	74.30	48.07	39.97	35.21	10.35	PEAK	VERTICAL	274	107

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB 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 distance [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 band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions 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 of equipments list 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 (Emission in non-restricted band)	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 frequency 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	25.6℃	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 20MHz Ch 36, 40 / Ant. A + Ant. B + Ant. C
Test Date	Apr. 01, 2009		

Channel 36

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 !	5147.800	76.50	-3.50	80.00	37.07	33.07	6.36	0.00	PEAK	100	37	VERTICAL
2 !	5150.000	59.39	-0.61	60.00	19.95	33.07	6.36	0.00	AVERAGE	100	37	VERTICAL
3 @	5174.600	120.95			81.55	33.13	6.27	0.00	PEAK	100	37	VERTICAL
4	5177.800	110.08			70.68	33.13	6.27	0.00	AVERAGE	100	37	VERTICAL

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	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	5150.000	59.71	-0.29	60.00	21.27	34.00	0.00	4.44	AVERAGE	VERTICAL	202	100
2 @	5150.000	77.53	-2.47	80.00	39.09	34.00	0.00	4.44	PEAK	VERTICAL	202	100
3 @	5194.800	111.74			73.21	34.10	0.00	4.43	AVERAGE	VERTICAL	202	100
4 @	5195.200	121.97			83.44	34.10	0.00	4.43	PEAK	VERTICAL	202	100

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

Temperature	25.6°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	Draft n MCS0 40MHz Ch 38, 46 / Ant. A + Ant. B + Ant. C
Test Date	Apr. 01, 2009		

Channel 38

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 !	5149.200	79.28	-0.72	80.00	39.85	33.07	6.36	0.00	PEAK	100	12	VERTICAL
2 !	5150.000	59.93	-0.07	60.00	20.50	33.07	6.36	0.00	AVERAGE	100	12	VERTICAL
3	5172.800	102.15			62.78	33.10	6.27	0.00	AVERAGE	100	12	VERTICAL
4 @	5193.200	114.29			74.86	33.16	6.27	0.00	PEAK	100	12	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 @	5144.800	59.50	-0.50	60.00	21.06	34.00	0.00	4.44	AVERAGE	VERTICAL	168	100
2 @	5145.200	75.20	-4.80	80.00	36.76	34.00	0.00	4.44	PEAK	VERTICAL	168	100
3 @	5222.000	119.91			81.36	34.13	0.00	4.42	PEAK	VERTICAL	168	100
4 @	5246.800	108.08			69.47	34.20	0.00	4.41	AVERAGE	VERTICAL	168	100

Item 3, 4 are the fundamental frequency at 5230 MHz.

Note:

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 distance [3m] / test distance [1.5m]) (dB);

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