FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart C § 15.247

Equipment	:	**RFID Reader**
Model No.	:	**CS5111TD/CS5112TD/CS5116TD/CS5113TD /CS5114TD/CS5118TD**
Brand Name	:	**Convergence Systems Limited**
Filing Type	:	**New Application**
Applicant	:	**Convergence Systems Limited** 12/F, Chung Nam Building, 1 Lockhart Road, Wanchai, Hong Kong
FCC ID	:	**UB4CS51113TD**
Manufacturer	:	**Convergence Systems Limited** 12/F, Chung Nam Building, 1 Lockhart Road, Wanchai, Hong Kong
Received Date	:	Dec. 17, 2010
Final Test Date	:	Dec. 22, 2010

Statement

Test result included is only for the RFID part 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 C**.

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

Testing Laboratory 1190

SPORTON International Inc.

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

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History of This Test Report

Original Issue Date: Jan. 05, 2011
Report No.: FR0D1430

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart C § 15.247

Equipment	:	**RFID Reader**
Model No.	:	**CS5111TD/CS5112TD/CS5116TD/ CS5113TD/CS5114TD/CS5118TD**
Brand Name	:	**Convergence Systems Limited**
Applicant	:	**Convergence Systems Limited** 12/F, Chung Nam Building, 1 Lockhart Road, Wanchai, Hong Kong

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 17, 2010 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 / Vice Manager

SPORTON International Inc.

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

1. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
3.1	15.207	AC Power Line Conducted Emissions	Complies	10.93 dB
3.2	15.247(b)(3)	Maximum Peak Output Power	Complies	18.61 dB
3.3	15.247(e)	Power Spectral Density	Complies	35.24 dB
3.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
3.5	15.247(d)	Radiated Emissions	Complies	1.38 dB
3.6	15.247(d)	Band Edge Emissions	Complies	3.24 dB
3.7	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	$\pm 8.5\times10^{-8}$	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%

2. GENERAL INFORMATION

2.1 Product Details

Only the radio detail of RFID is shown in the table below. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Power Type	From adapter or POE
Modulation	Chirp Spread Spectrum (CSS)
Frequency Range	2400 ~ 2483MHz
Channel Band Width (99%)	58.40 MHz
Conducted Output Power	8.39 dBm

Difference explanation for model No.

Model No.	CS5113TD	CS5111TD	CS5114TD	CS5112TD	CS5118TD	CS5116TD
Group	A		B		C	
PCB layout	○		○		○	
Modulation	○		○		○	
Frequency range	○		○		○	
Channel No.	○		○		○	
RF power	○		○		○	
Patch Antenna	○		○		X	
Dipole Antenna	X		X		○	
Adapter	○	○	○	○	○	○
POE	○	X	○	X	○	X

Note: It is same to label "○"; It is not same to label " X ".

2.2 Accessories

Power	Brand	Model	Rating
Switvhing Adapter	CUI INC	DSA-60W-20 1 24060	INPUT : 100-240V~ 50/60Hz 1.5A 150VA OUTPUT : +24V 2.5A
Other			
LAN cable			

2.3 Table for Filed Antenna

Group	Antenna Type	Connector	Gain (dBi)	Remark
A	Patch antenna	Fix on board	9.0	RFID

Group	Antenna Type	Connector	Gain (dBi)	Remark
B	Patch antenna	Fix on board	5.0	RFID

Group	Ant.	Antenna Type	Connector	Gain (dBi)	Remark
C	1	Dipole antenna	N Type	9.0	RFID
	2	Dipole antenna	N Type	7.0	
	3	Dipole antenna	N Type	5.0	
	4	Dipole antenna	N Type	2.0	

The group C EUT may match the four antennas use. Performed the worst configuration for higher gain was test in final test report.

2.4 Table for Carrier Frequencies

Frequency Allocation for RFID

Frequency Band	Channel No.	Frequency
2400~2483 MHz	1	2441 MHz

2.5 Test Manner

a. The following test modes were performed for disturbances at RF conducted test:
(EUT may match the Patch and Dipole antennas use. Performed the worst configuration for higher gain was test in final test report.)
Mode 1. EUT Model No. CS5113TD
Mode 2. EUT Model No. CS5118TD

b. The following test modes were performed for disturbances at conducted emissions test:
Mode 1. EUT Model No. CS5111TD (120V/60Hz Adapter mode)
Mode 2. EUT Model No. CS5113TD (120V/60Hz Adapter mode)
Mode 3. EUT Model No. CS5114TD (120V/60Hz Adapter mode)
Mode 4. EUT Model No. CS5112TD (120V/60Hz Adapter mode)
Mode 5. EUT Model No. CS5118TD (120V/60Hz Adapter mode)
Mode 6. EUT Model No. CS5116TD (120V/60Hz Adapter mode)

c. The following test modes were performed for disturbances at radiated emissions below 1GHz test:
Mode 1. EUT Model No. CS5113TD (Adapter mode)
Mode 2. EUT Model No. CS5114TD (Adapter mode)
Mode 3. EUT Model No. CS5118TD (Adapter mode)
Mode 4. EUT Model No. CS5113TD (POE mode)
Mode 5. EUT Model No. CS5114TD (POE mode)
Mode 6. EUT Model No. CS5118TD (POE mode)

d. The following test modes were performed for disturbances at radiated emissions above 1GHz test:
Mode 1. EUT Model No. CS5113TD (Adapter mode)
Mode 2. EUT Model No. CS5114TD (Adapter mode)
Mode 3. EUT Model No. CS5118TD (Adapter mode)

2.6 Table for Test Modes

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

Test Items	Mode	Channel
AC Power Line Conducted Emissions	Mode 1~Mode 6	-
Maximum Peak Output Power Power Spectral Density 6dB Spectrum Bandwidth	Mode 1 / Mode 2	1
Radiated Emissions Below 1GHz	Mode 1~Mode 6	1
Radiated Emissions Above 1GHz Band Edge and Fundamental Emissions	Mode 1~Mode 3	1

2.7 Table for Testing Locations

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

Semi Anechoic Chamber (SAC).

2.8 Table for Supporting Units

Support Unit	Brand	Model	FCC ID	Remark
Notebook	DELL	INSPIRON 6400	N/A	Conducted (POE mode)
USB Mouse	Microsoft	1004	DoC	
USB Printed	EPSON	STYLUS C61	N/A	
POE	D-Link	DWL-P200	N/A	
RFID Reader	Convergence Systems Limited	CS3151TC	UB4CS3151TC	

Note: For adapter mode only EUT tested.

Support Unit	Brand	Model	FCC ID	Remark
Notebook	DELL	PP20L	N/A	Radiated Emissions Below 1GHz
USB Mouse	Microsoft	1004	DoC	
iPod nano	Apple	A1199	DoC	
POE	D-Link	DWL-P200	N/A	
RFID Reader	Convergence Systems Limited	CS3151TC	UB4CS3151TC	

Note: Above 1GHz adapter mode only EUT tested.

2.9 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 RFID

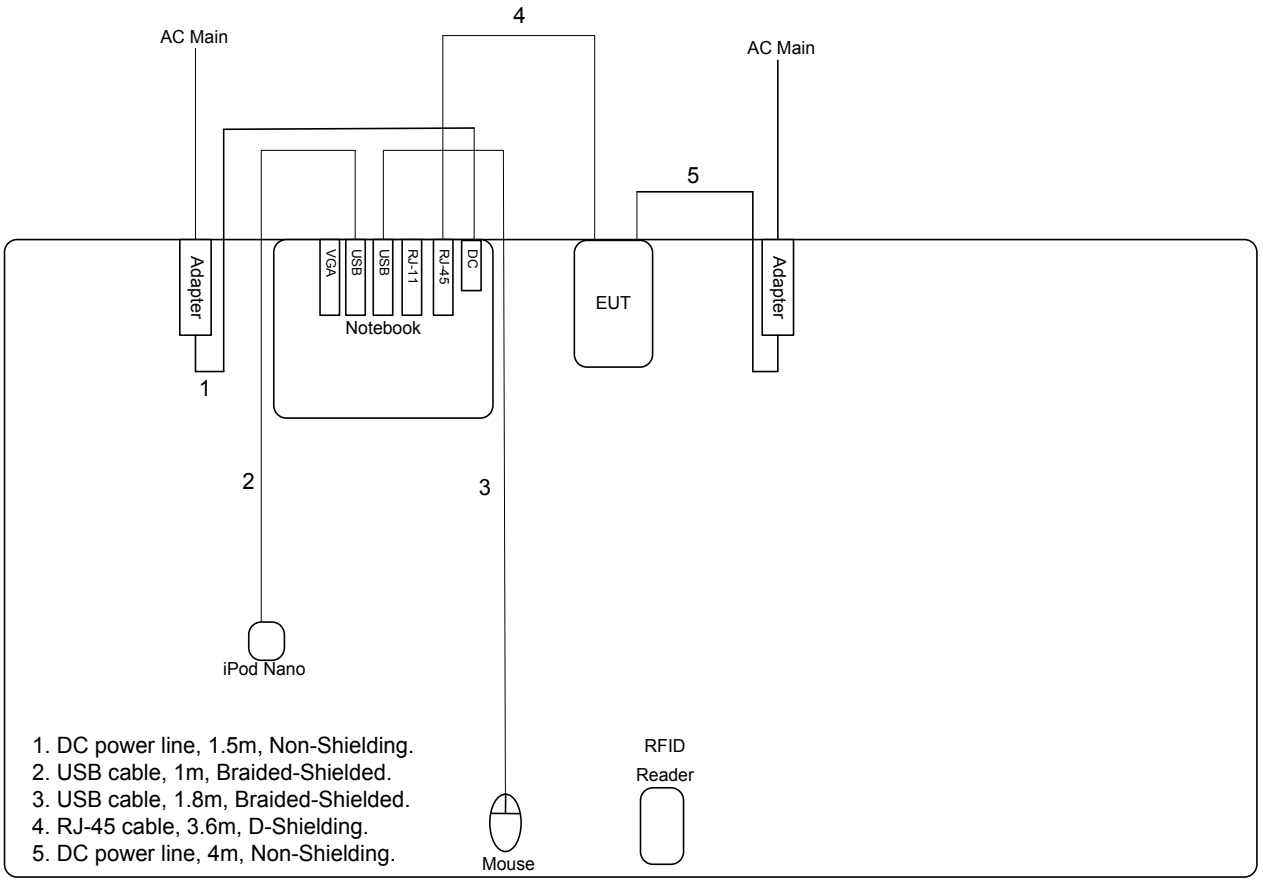
Test Software Version	rdkctl
Frequency	2441 MHz
RFID	Default

2.10 EUT Operation during Test

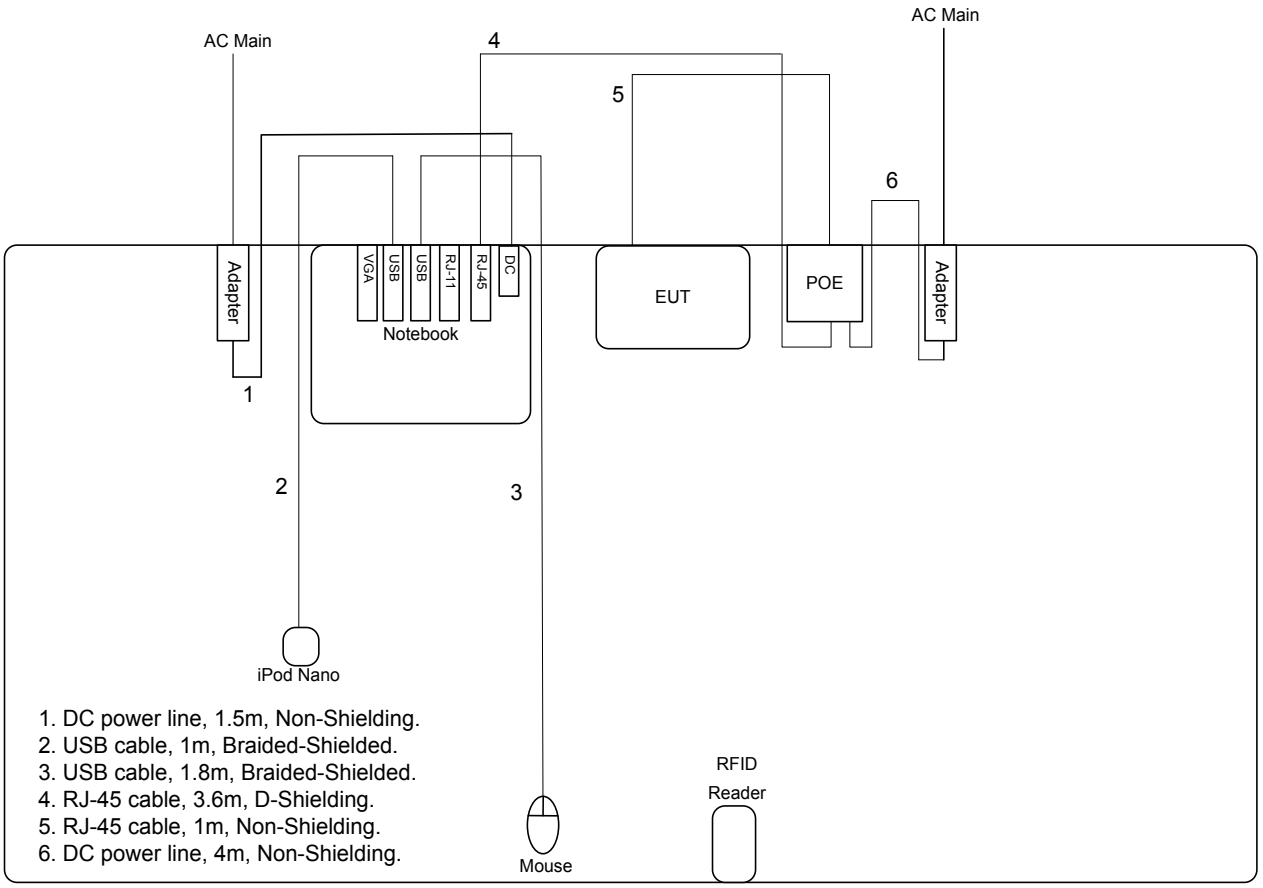
An executive program, “EMCTEST.exe” under Win XP for EUT, which generates a complete line of continuously repeating “H“ pattern was used as the test software.
The program was executed as follows:
a. Turn on the power of all equipment.
b. The NB reads the test program from the hard disk drive and runs it.
c. The NB sends “H“ messages to the panel, and the panel displays “H“ patterns on the screen.
At the same time, “RTLSPROGRAM.EXE ” was executed to link to receive and transmit data via RJ45 cable.
- Executed “rdkctl” to keep transmitting signals at fixed frequency.

2.11 Test Configuration

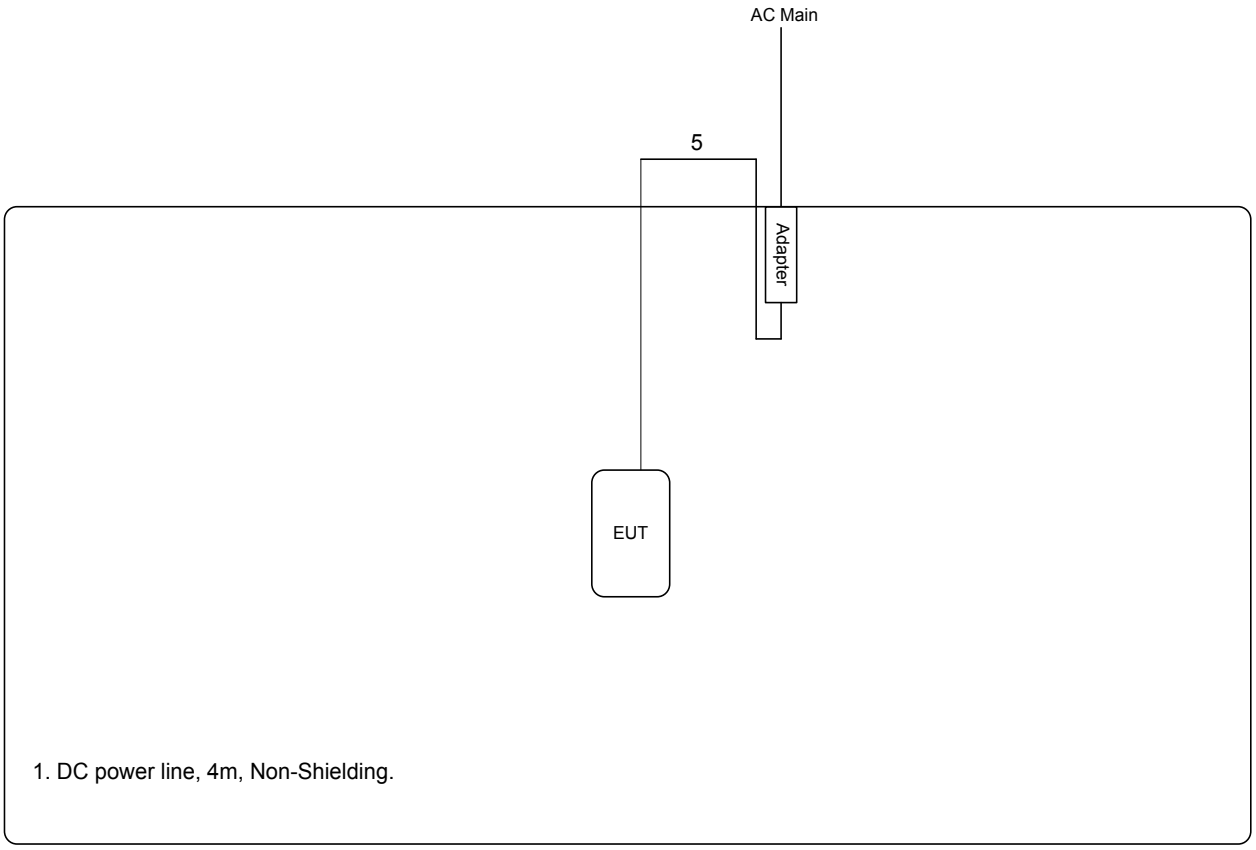
Radiation Emissions Test Configuration
For radiated emissions 9kHz~1GHz
Model 1~Mode 3



Mode 4~Mode 6


AC Main
AC Main
4
5
6
Adapter
VGA
USB
USB
RJ-11
RJ-45
DC
Notebook
EUT
POE
Adapter
1
2
3
iPod Nano
1. DC power line, 1.5m, Non-Shielding.
2. USB cable, 1m, Braided-Shielded.
3. USB cable, 1.8m, Braided-Shielded.
4. RJ-45 cable, 3.6m, D-Shielding.
5. RJ-45 cable, 1m, Non-Shielding.
6. DC power line, 4m, Non-Shielding.
RFID
Reader
Mouse

For radiated emissions above 1GHz
Model 1~Mode 3



1. DC power line, 4m, Non-Shielding.

3. TEST RESULT

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Class B

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

3.1.2 Measuring Instruments and Setting

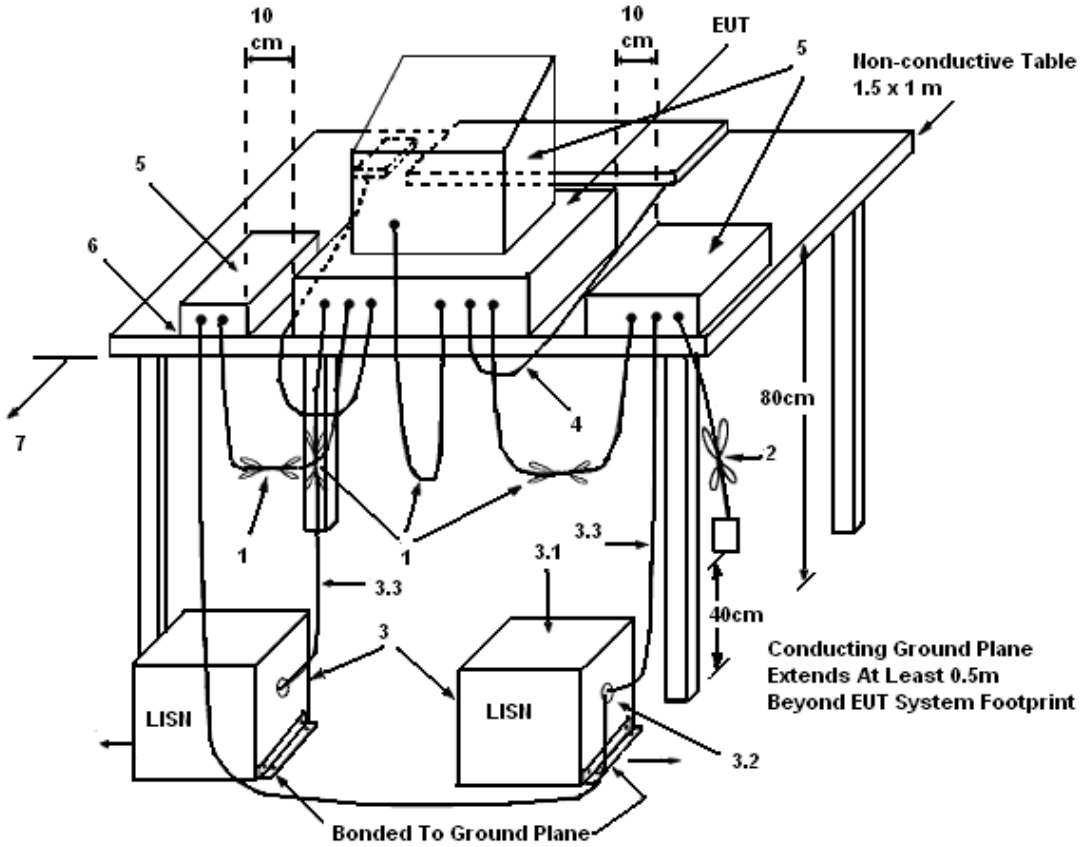
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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

3.1.3 Test Procedures

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

3.1.4 Test Setup Layout



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

3.1.5 Test Deviation

There is no deviation with the original standard.

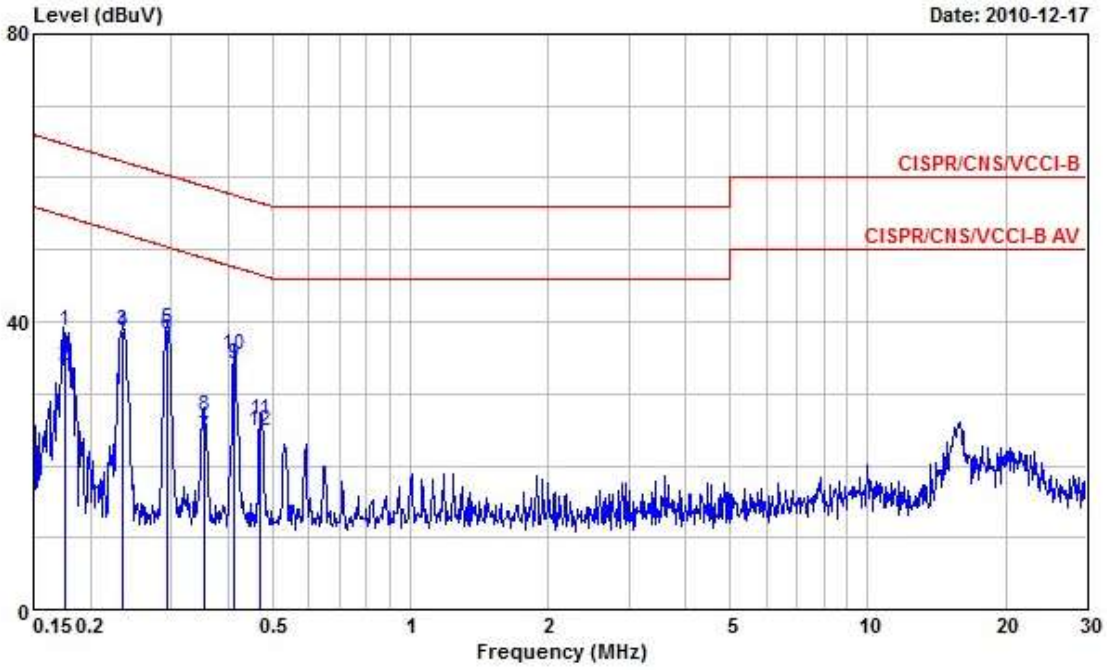
3.1.6 EUT Operation during Test

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

3.1.7 Results of AC Power Line Conducted Emissions Measurement

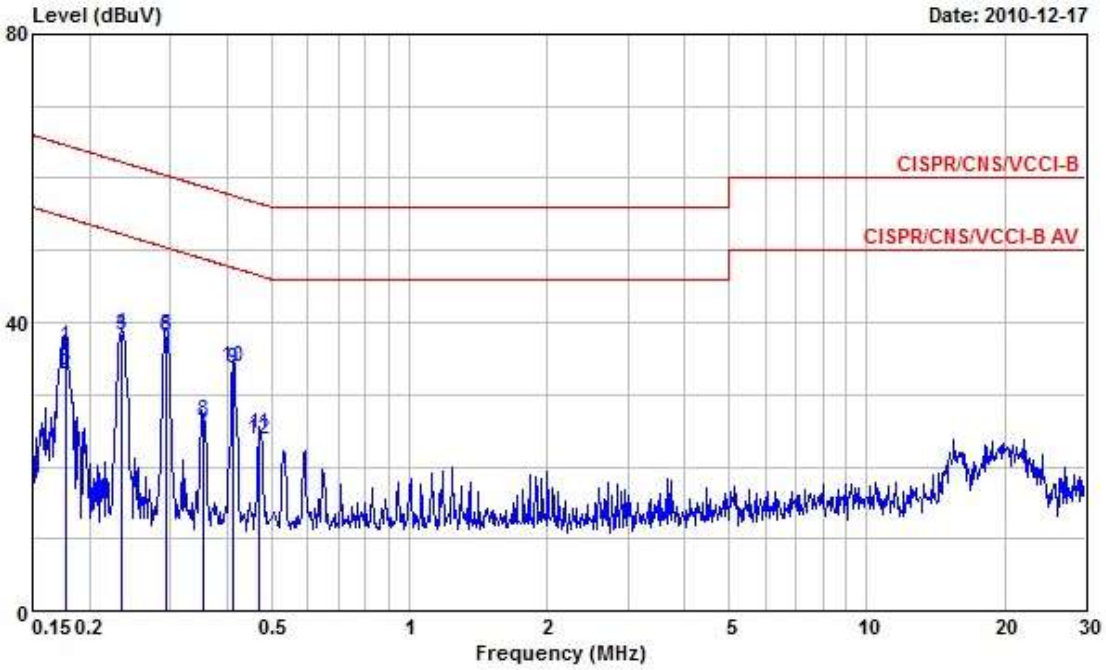
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 1

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1766130	38.76	-25.88	64.64	38.60	0.08	0.08	QP
2	0.1766130	33.84	-20.80	54.64	33.68	0.08	0.08	Average
3	0.2353310	38.73	-23.53	62.26	38.57	0.08	0.08	QP
4	0.2353310	38.43	-13.83	52.26	38.27	0.08	0.08	Average
5	0.2939830	38.98	-21.43	60.41	38.85	0.09	0.04	QP
6	0.2939830	38.12	-12.29	50.41	37.99	0.09	0.04	Average
7	0.3538820	23.95	-24.92	48.87	23.84	0.09	0.02	Average
8	0.3538820	26.74	-32.13	58.87	26.63	0.09	0.02	QP
9	0.4126560	34.16	-13.43	47.59	34.07	0.09	0.00	Average
10	0.4126560	35.27	-22.32	57.59	35.18	0.09	0.00	QP
11	0.4711010	26.21	-30.28	56.49	26.10	0.09	0.02	QP
12	0.4711010	24.90	-21.59	46.49	24.79	0.09	0.02	Average

Neutral



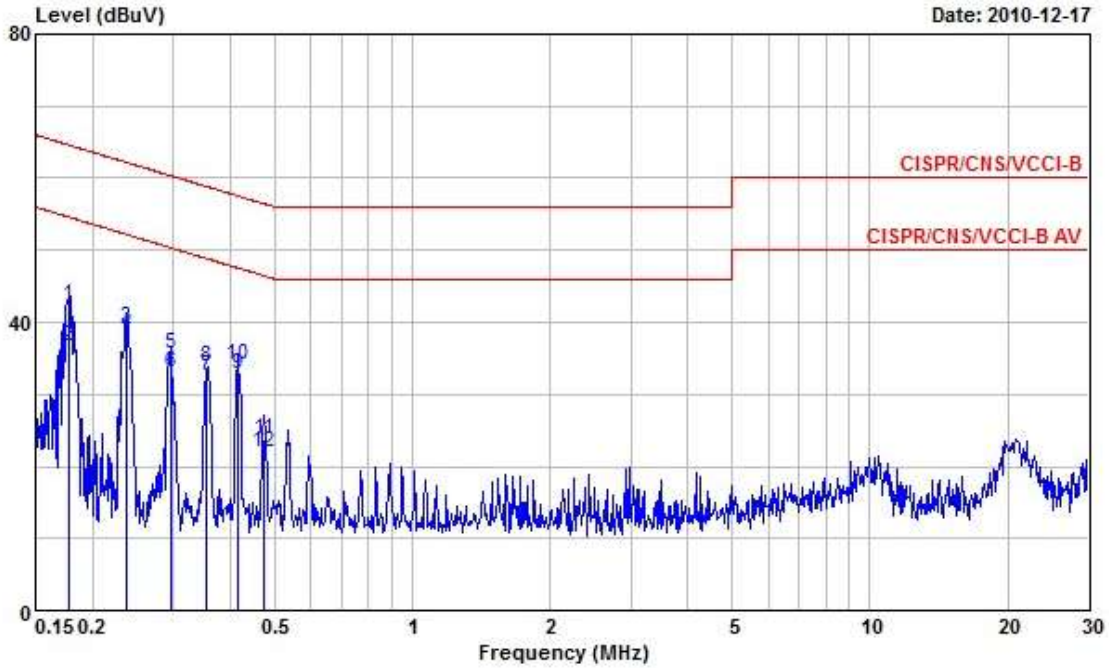
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1775900	36.58	-28.02	64.60	36.42	0.08	0.08	QP
2	0.1775900	32.85	-21.75	54.60	32.69	0.08	0.08	Average
3	0.2353310	38.19	-24.07	62.26	38.03	0.08	0.08	QP
4	0.2353310	38.38	-13.88	52.26	38.22	0.08	0.08	Average
5	0.2939830	38.21	-22.20	60.41	38.09	0.08	0.04	QP
6	0.2939830	37.94	-12.47	50.41	37.82	0.08	0.04	Average
7	0.3531370	24.64	-24.25	48.89	24.54	0.08	0.02	Average
8	0.3531370	26.31	-32.58	58.89	26.21	0.08	0.02	QP
9	0.4126560	33.55	-14.04	47.59	33.47	0.08	0.00	Average
10	0.4126560	33.80	-23.79	57.59	33.72	0.08	0.00	QP
11	0.4711010	24.56	-31.93	56.49	24.46	0.08	0.02	QP
12	0.4711010	23.64	-22.85	46.49	23.54	0.08	0.02	Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

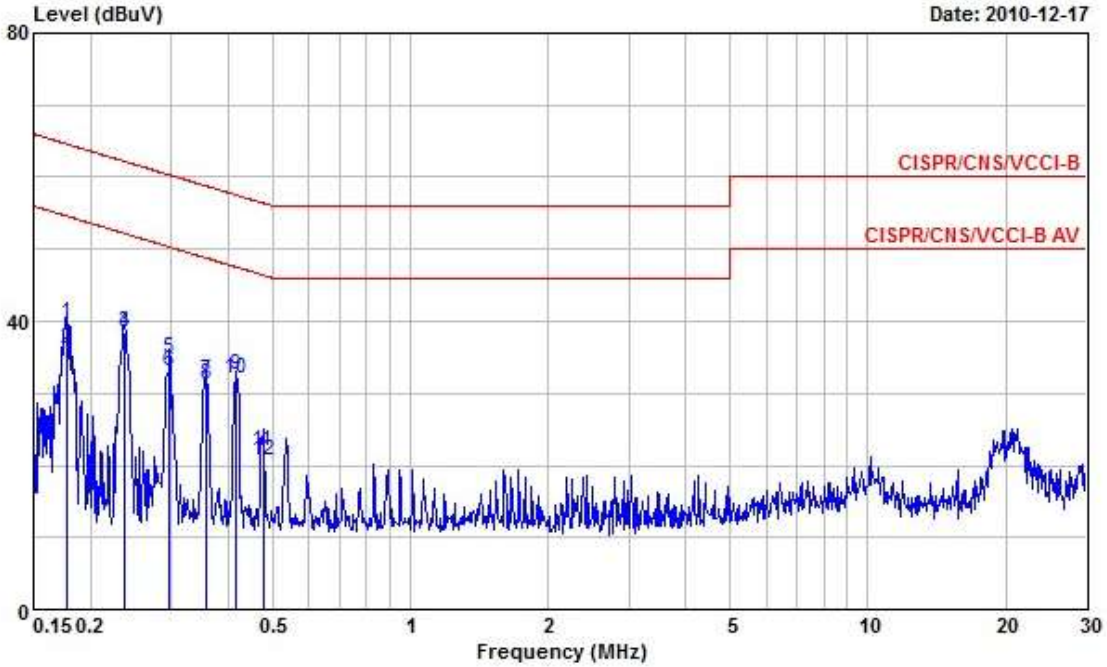
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 2

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1775340	42.38	-22.22	64.60	42.22	0.08	0.08	QP
2	0.1775340	36.55	-18.05	54.60	36.39	0.08	0.08	Average
3	0.2365810	39.29	-22.93	62.22	39.13	0.08	0.08	QP
4	0.2365810	38.54	-13.68	52.22	38.38	0.08	0.08	Average
5	0.2955450	35.50	-24.87	60.37	35.37	0.09	0.04	QP
6	0.2955450	33.02	-17.35	50.37	32.89	0.09	0.04	Average
7	0.3556520	32.41	-16.42	48.83	32.30	0.09	0.02	Average
8	0.3556520	33.79	-25.04	58.83	33.68	0.09	0.02	QP
9	0.4148480	32.80	-14.75	47.55	32.71	0.09	0.00	Average
10	0.4148480	34.16	-23.39	57.55	34.07	0.09	0.00	QP
11	0.4742280	23.81	-32.63	56.44	23.70	0.09	0.02	QP
12	0.4742280	21.82	-24.62	46.44	21.71	0.09	0.02	Average

Neutral

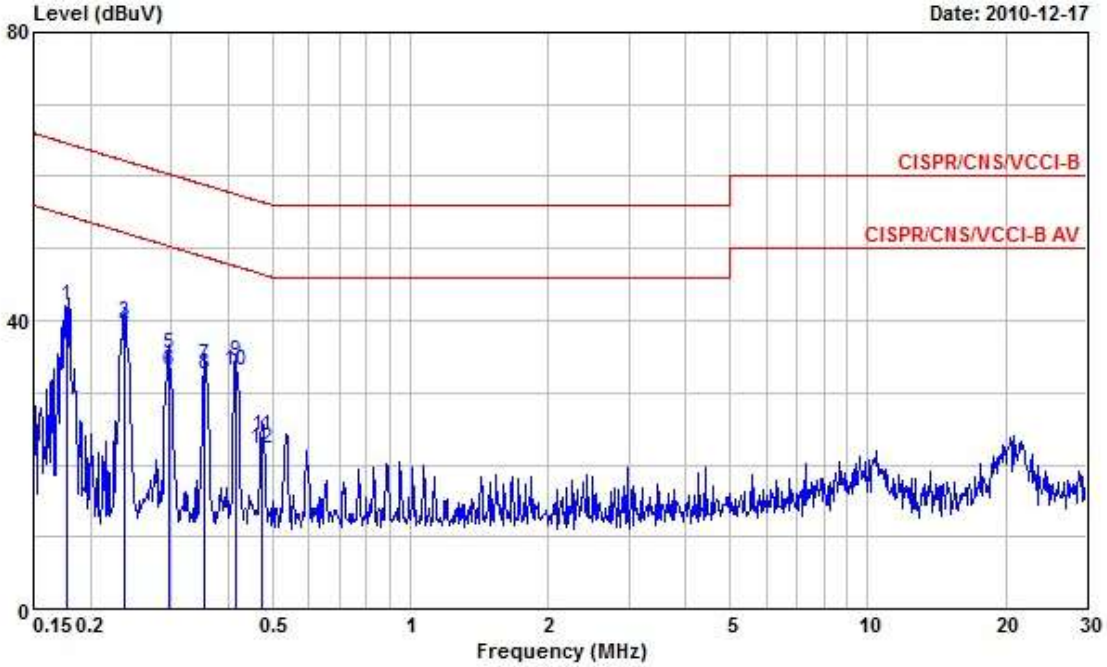


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1777150	39.82	-24.77	64.59	39.66	0.08	0.08	QP
2	0.1777150	36.05	-18.54	54.59	35.89	0.08	0.08	Average
3	0.2365810	38.47	-23.75	62.22	38.31	0.08	0.08	QP
4	0.2365810	38.38	-13.84	52.22	38.22	0.08	0.08	Average
5	0.2958650	34.83	-25.53	60.36	34.71	0.08	0.04	QP
6	0.2958650	32.91	-17.45	50.36	32.79	0.08	0.04	Average
7	0.3562770	31.72	-27.09	58.81	31.62	0.08	0.02	QP
8	0.3562770	31.23	-17.58	48.81	31.13	0.08	0.02	Average
9	0.4158020	32.50	-25.03	57.53	32.42	0.08	0.00	QP
10	0.4158020	32.04	-15.49	47.53	31.96	0.08	0.00	Average
11	0.4761190	21.88	-34.53	56.41	21.78	0.08	0.02	QP
12	0.4761190	20.63	-25.78	46.41	20.53	0.08	0.02	Average

Note:
Level = Read Level + LISN Factor + Cable Loss.

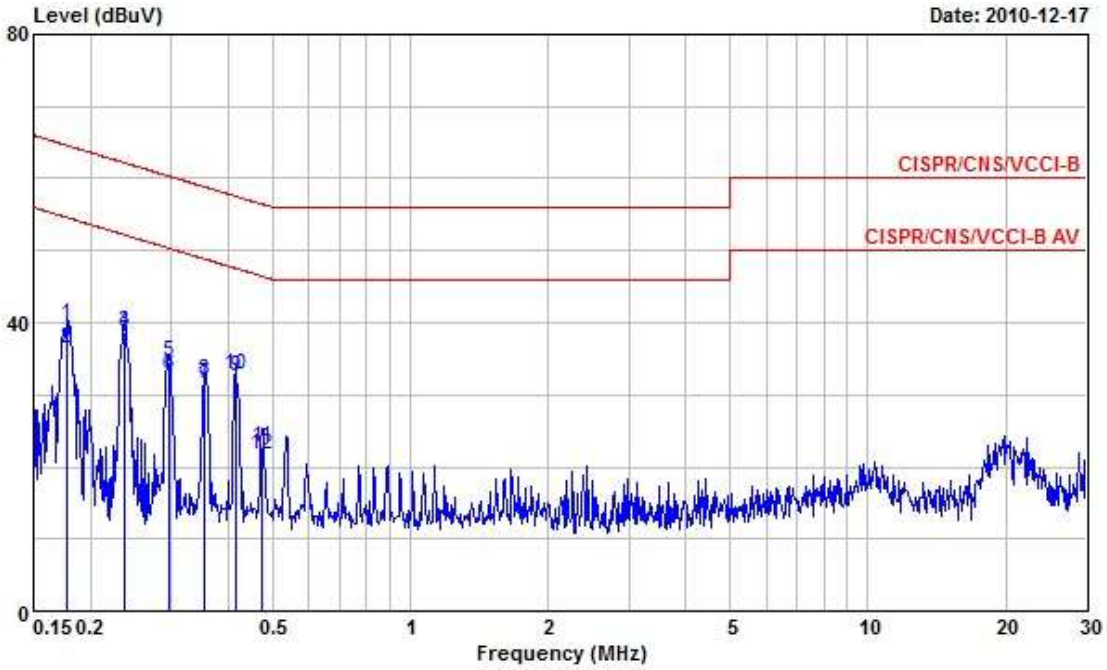
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 3

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1779090	42.08	-22.50	64.58	41.92	0.08	0.08	QP
2	0.1779090	36.55	-18.03	54.58	36.39	0.08	0.08	Average
3	0.2365810	39.65	-22.57	62.22	39.49	0.08	0.08	QP
4	0.2365810	39.02	-13.20	52.22	38.86	0.08	0.08	Average
5	0.2955450	35.40	-24.97	60.37	35.27	0.09	0.04	QP
6	0.2955450	32.97	-17.40	50.37	32.84	0.09	0.04	Average
7	0.3557620	33.91	-24.92	58.83	33.80	0.09	0.02	QP
8	0.3557620	32.57	-16.26	48.83	32.46	0.09	0.02	Average
9	0.4148480	34.32	-23.23	57.55	34.23	0.09	0.00	QP
10	0.4148480	33.06	-14.49	47.55	32.97	0.09	0.00	Average
11	0.4736030	23.95	-32.50	56.45	23.84	0.09	0.02	QP
12	0.4736030	22.14	-24.31	46.45	22.03	0.09	0.02	Average

Neutral



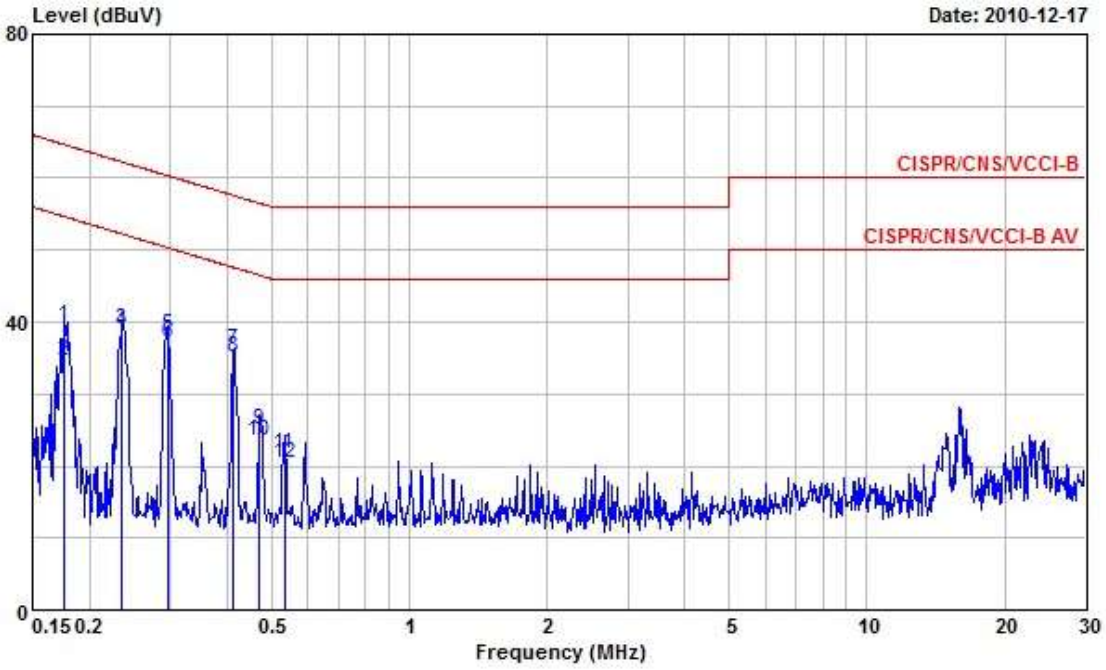
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1777150	39.74	-24.85	64.59	39.58	0.08	0.08	QP
2	0.1777150	36.27	-18.32	54.59	36.11	0.08	0.08	Average
3	0.2378380	38.72	-23.45	62.17	38.57	0.08	0.07	QP
4	0.2378380	38.64	-13.53	52.17	38.49	0.08	0.07	Average
5	0.2968580	34.64	-25.69	60.33	34.52	0.08	0.04	QP
6	0.2968580	32.79	-17.54	50.33	32.67	0.08	0.04	Average
7	0.3559020	31.48	-17.34	48.82	31.38	0.08	0.02	Average
8	0.3559020	31.98	-26.84	58.82	31.88	0.08	0.02	QP
9	0.4148480	32.48	-15.07	47.55	32.40	0.08	0.00	Average
10	0.4148480	32.81	-24.74	57.55	32.73	0.08	0.00	QP
11	0.4752440	22.74	-33.68	56.42	22.64	0.08	0.02	QP
12	0.4752440	21.72	-24.70	46.42	21.62	0.08	0.02	Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

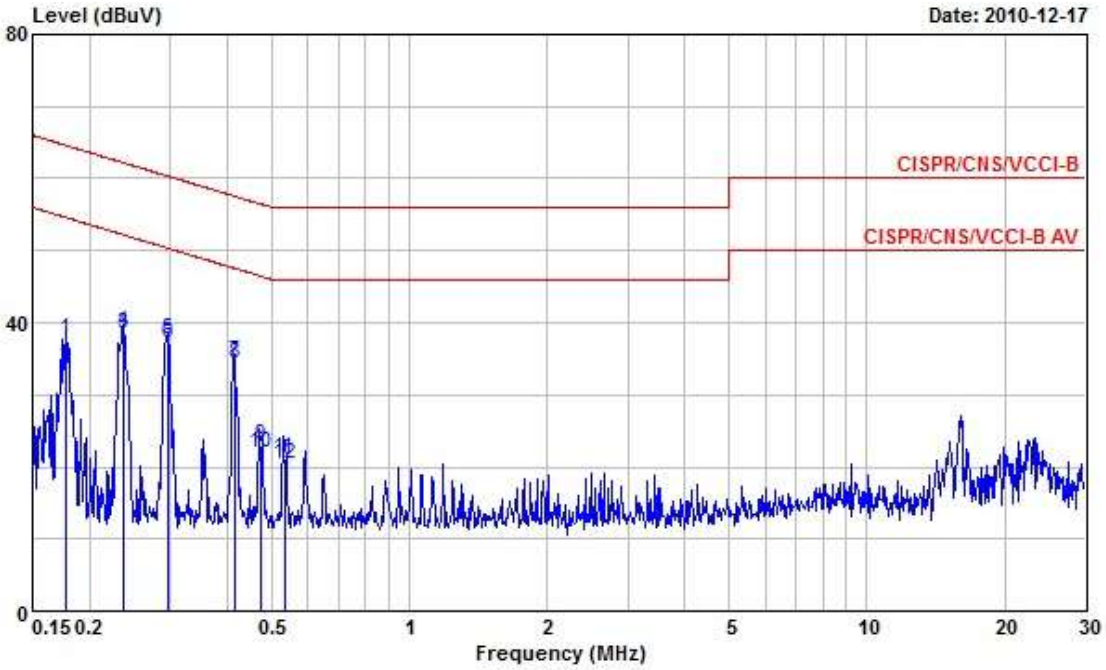
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 4

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1758420	39.47	-25.21	64.68	39.31	0.08	0.08	QP
2	0.1758420	34.46	-20.22	54.68	34.30	0.08	0.08	Average
3	0.2353310	39.09	-23.17	62.26	38.93	0.08	0.08	QP
4	0.2353310	38.76	-13.50	52.26	38.60	0.08	0.08	Average
5	0.2955450	38.22	-22.15	60.37	38.09	0.09	0.04	QP
6	0.2955450	37.23	-13.14	50.37	37.10	0.09	0.04	Average
7	0.4133480	36.05	-21.53	57.58	35.96	0.09	0.00	QP
8	0.4133480	34.97	-12.61	47.58	34.88	0.09	0.00	Average
9	0.4711010	25.03	-31.46	56.49	24.92	0.09	0.02	QP
10	0.4711010	23.57	-22.92	46.49	23.46	0.09	0.02	Average
11	0.5321540	21.71	-34.29	56.00	21.58	0.10	0.03	QP
12	0.5321540	20.41	-25.59	46.00	20.28	0.10	0.03	Average

Neutral



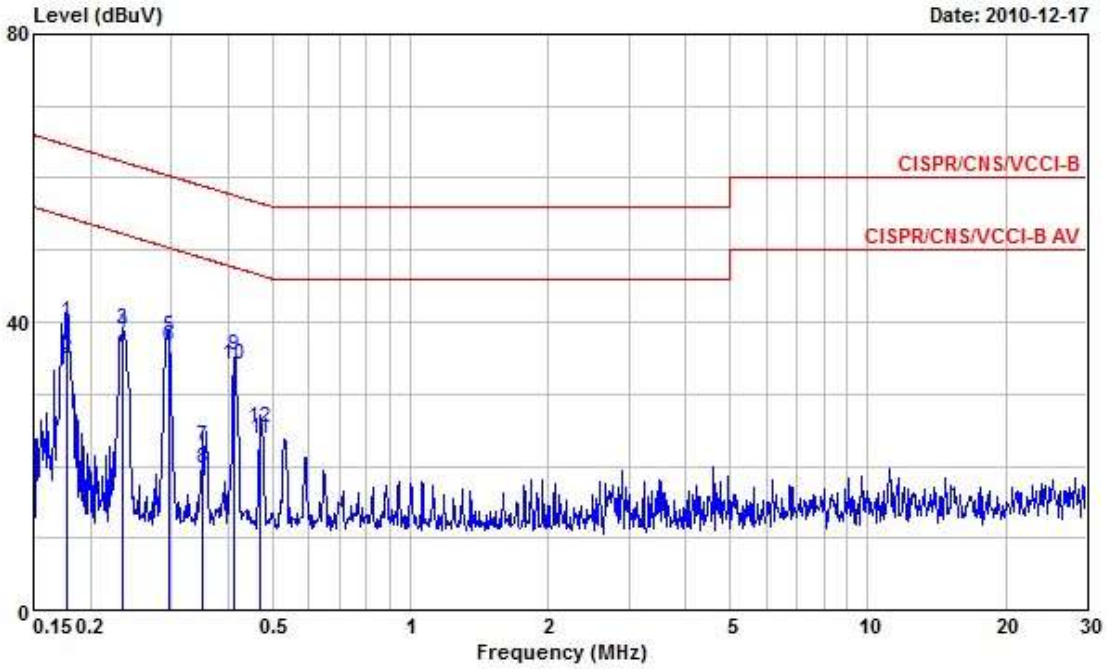
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1777150	37.56	-27.03	64.59	37.40	0.08	0.08	QP
2	0.1777150	33.75	-20.84	54.59	33.59	0.08	0.08	Average
3	0.2365810	38.51	-23.71	62.22	38.35	0.08	0.08	QP
4	0.2365810	38.60	-13.62	52.22	38.44	0.08	0.08	Average
5	0.2955450	37.55	-22.82	60.37	37.43	0.08	0.04	QP
6	0.2955450	37.03	-13.34	50.37	36.91	0.08	0.04	Average
7	0.4138480	34.50	-23.07	57.57	34.42	0.08	0.00	QP
8	0.4138480	34.24	-13.33	47.57	34.16	0.08	0.00	Average
9	0.4737260	23.02	-33.43	56.45	22.92	0.08	0.02	QP
10	0.4737260	21.91	-24.54	46.45	21.81	0.08	0.02	Average
11	0.5323420	21.14	-34.86	56.00	21.02	0.09	0.03	QP
12	0.5323420	20.40	-25.60	46.00	20.28	0.09	0.03	Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

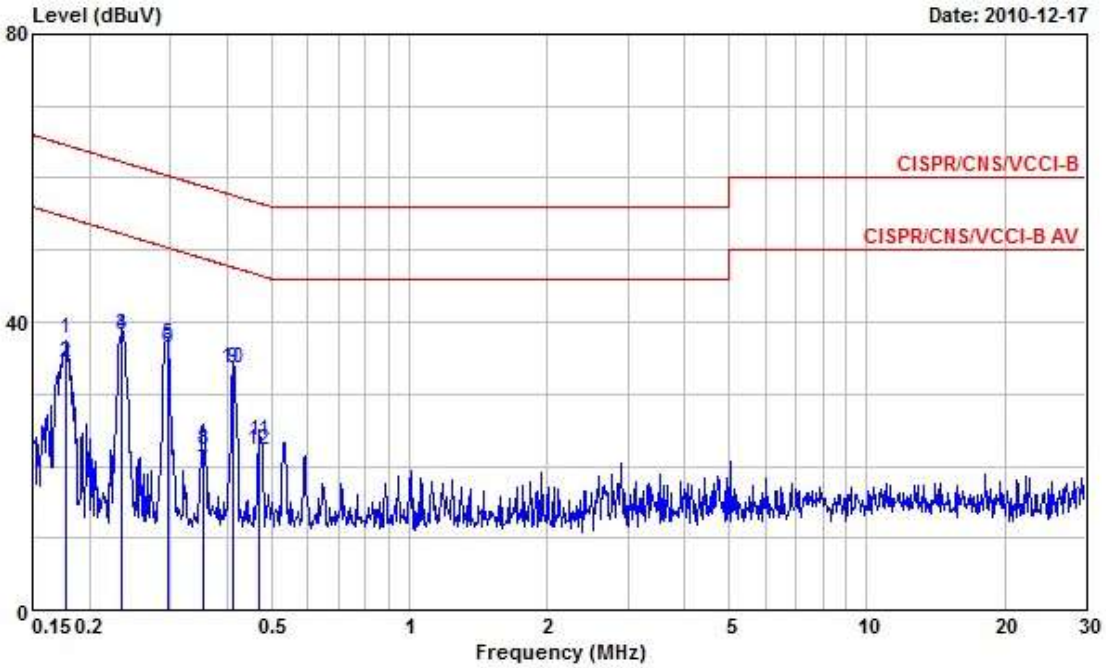
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 5

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1767760	40.05	-24.59	64.64	39.89	0.08	0.08	QP
2	0.1767760	34.89	-19.75	54.64	34.73	0.08	0.08	Average
3	0.2353310	38.91	-23.35	62.26	38.75	0.08	0.08	QP
4	0.2353310	38.49	-13.77	52.26	38.33	0.08	0.08	Average
5	0.2955450	37.86	-22.51	60.37	37.73	0.09	0.04	QP
6	0.2955450	36.64	-13.73	50.37	36.51	0.09	0.04	Average
7	0.3520120	22.62	-36.29	58.91	22.51	0.09	0.02	QP
8	0.3520120	19.50	-29.41	48.91	19.39	0.09	0.02	Average
9	0.4124730	35.25	-22.35	57.60	35.16	0.09	0.00	QP
10	0.4124730	34.12	-13.48	47.60	34.03	0.09	0.00	Average
11	0.4711010	23.80	-22.69	46.49	23.69	0.09	0.02	Average
12	0.4711010	25.33	-31.16	56.49	25.22	0.09	0.02	QP

Neutral



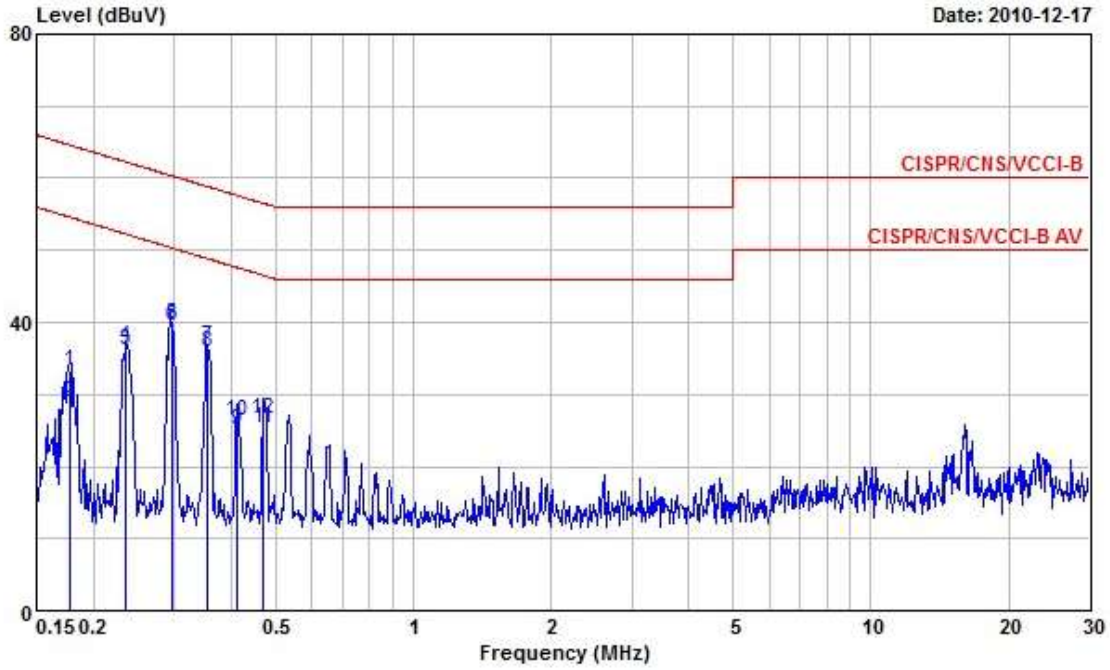
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1767330	37.71	-26.93	64.64	37.55	0.08	0.08	QP
2	0.1767330	34.37	-20.27	54.64	34.21	0.08	0.08	Average
3	0.2353310	38.19	-24.07	62.26	38.03	0.08	0.08	QP
4	0.2353310	38.32	-13.94	52.26	38.16	0.08	0.08	Average
5	0.2955450	36.91	-23.46	60.37	36.79	0.08	0.04	QP
6	0.2955450	36.43	-13.94	50.37	36.31	0.08	0.04	Average
7	0.3557620	19.43	-29.40	48.83	19.33	0.08	0.02	Average
8	0.3557620	22.09	-36.74	58.83	21.99	0.08	0.02	QP
9	0.4126560	33.46	-14.13	47.59	33.38	0.08	0.00	Average
10	0.4126560	33.58	-24.01	57.59	33.50	0.08	0.00	QP
11	0.4711010	23.54	-32.95	56.49	23.44	0.08	0.02	QP
12	0.4711010	22.22	-24.27	46.49	22.12	0.08	0.02	Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

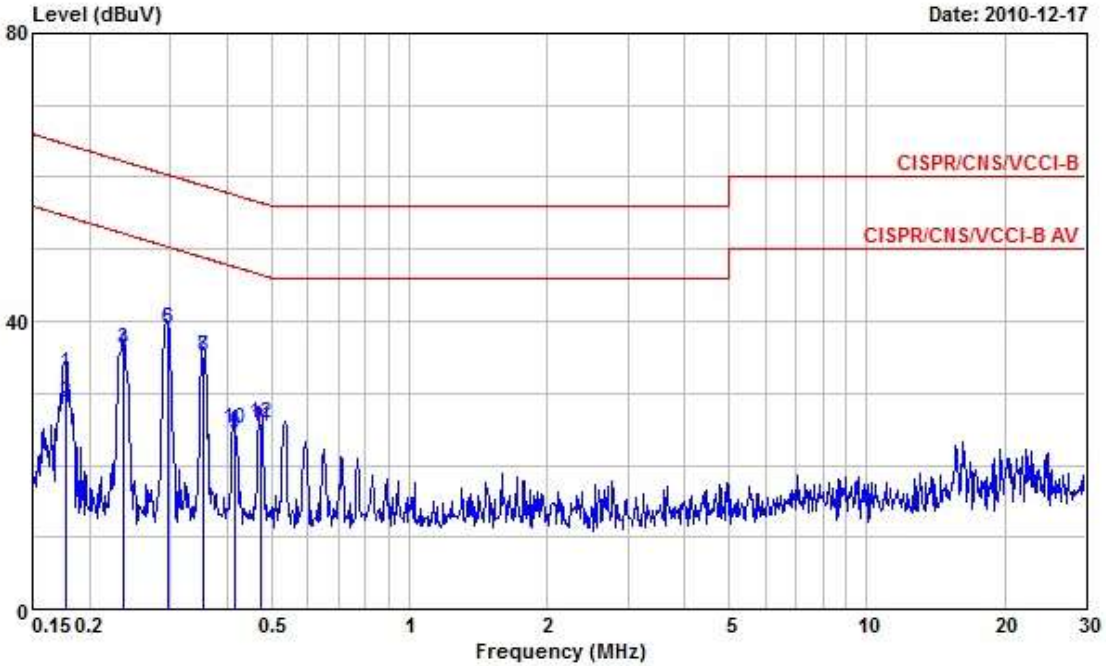
Final Test Date	Dec. 17, 2010	**Test Site No.**	CO04-HY
Temperature	23.7℃	**Humidity**	53.1%
Test Engineer	Jason	**Configuration**	Mode 6

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1777150	33.18	-31.41	64.59	33.02	0.08	0.08	QP
2	0.1777150	28.97	-25.62	54.59	28.81	0.08	0.08	Average
3	0.2353310	36.19	-16.07	52.26	36.03	0.08	0.08	Average
4	0.2353310	36.69	-25.57	62.26	36.53	0.08	0.08	QP
5	0.2953580	39.76	-20.61	60.37	39.63	0.09	0.04	QP
6	0.2953580	39.44	-10.93	50.37	39.31	0.09	0.04	Average
7	0.3546370	36.65	-22.20	58.85	36.54	0.09	0.02	QP
8	0.3546370	35.84	-13.01	48.85	35.73	0.09	0.02	Average
9	0.4129060	25.08	-22.51	47.59	24.99	0.09	0.00	Average
10	0.4129060	26.36	-31.23	57.59	26.27	0.09	0.00	QP
11	0.4711010	25.28	-21.21	46.49	25.17	0.09	0.02	Average
12	0.4711010	26.69	-29.80	56.49	26.58	0.09	0.02	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1767760	32.83	-31.81	64.64	32.67	0.08	0.08	QP
2	0.1767760	28.54	-26.10	54.64	28.38	0.08	0.08	Average
3	0.2367060	36.09	-26.12	62.21	35.93	0.08	0.08	QP
4	0.2367060	35.97	-16.24	52.21	35.81	0.08	0.08	Average
5	0.2954830	39.03	-11.34	50.37	38.91	0.08	0.04	Average
6	0.2954830	38.95	-21.42	60.37	38.83	0.08	0.04	QP
7	0.3557620	35.06	-13.77	48.83	34.96	0.08	0.02	Average
8	0.3557620	35.22	-23.61	58.83	35.12	0.08	0.02	QP
9	0.4139730	24.35	-23.22	47.57	24.27	0.08	0.00	Average
10	0.4139730	24.95	-32.62	57.57	24.87	0.08	0.00	QP
11	0.4734760	25.27	-21.18	46.45	25.17	0.08	0.02	Average
12	0.4734760	25.78	-30.67	56.45	25.68	0.08	0.02	QP

Note:
Level = Read Level + LISN Factor + Cable Loss.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-multipoint antenna reduction operation, the limit has to be reduced by 1dB for every dB that the directional gain of the antenna exceeds 6dBi. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

3.2.2 Measuring Instruments and Setting

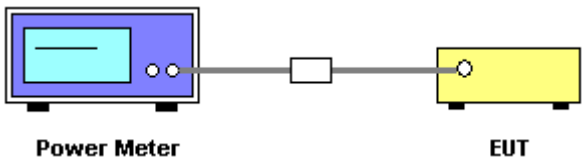
Please refer to section 4 of equipments list in this report. The following table is the setting of the power meter.

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

3.2.3 Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

3.2.4 Test Setup Layout



3.2.5 Test Deviation

There is no deviation with the original standard.

3.2.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.2.7 Test Result of Maximum Conducted Output Power

Final Test Date	Dec. 22, 2010	**Test Site No.**	TH01-HY
Temperature	24℃	**Humidity**	60%
Test Engineer	Ian	**Configuration**	Channel 1

Mode 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2441 MHz	8.39	27.00	**Complies**

Mode 2

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2441 MHz	6.35	27.00	**Complies**

3.3 Power Spectral Density Measurement

3.3.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

3.3.2 Measuring Instruments and Setting

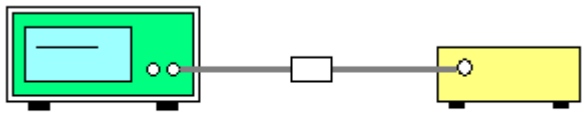
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	1.5MHz
RB	3 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	500s

3.3.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 3 kHz and VBW to 30 kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.

3.3.4 Test Setup Layout



3.3.5 Test Deviation

There is no deviation with the original standard.

3.3.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

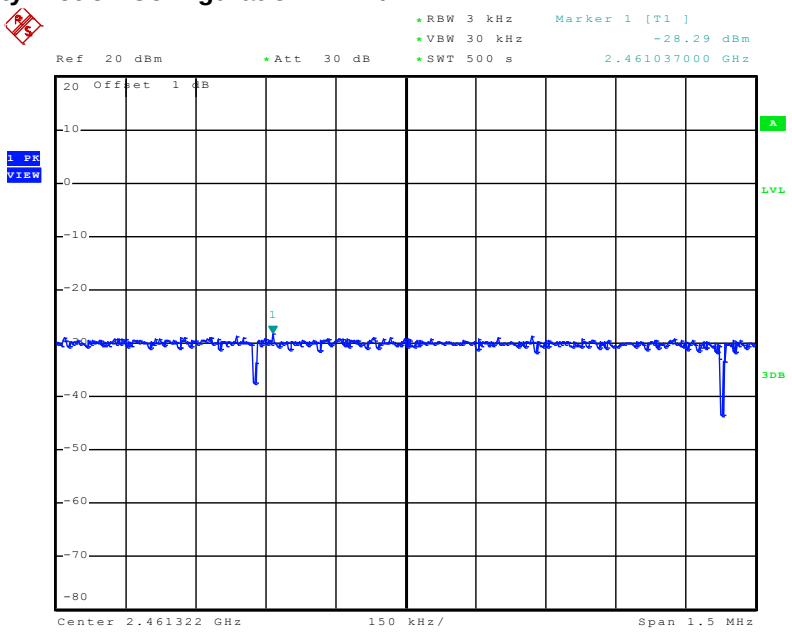
3.3.7 Test Result of Power Spectral Density

Final Test Date	Dec. 22, 2010	**Test Site No.**	TH01-HY
Temperature	24℃	**Humidity**	60%
Test Engineer	Ian	**Configuration**	Channel 1

Mode 1

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2441 MHz	-28.29	5	**Complies**

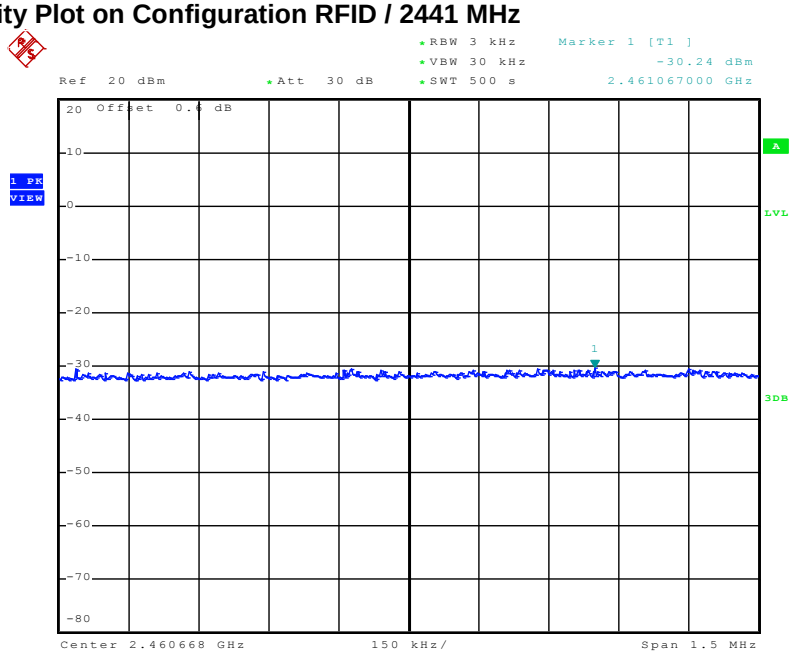
Power Density Plot on Configuration RFID / 2441 MHz



Mode 2

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2441 MHz	-30.24	5	**Complies**

Power Density Plot on Configuration RFID / 2441 MHz



3.4 6dB Spectrum Bandwidth Measurement

3.4.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

3.4.2 Measuring Instruments and Setting

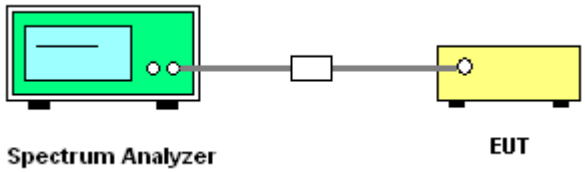
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

3.4.4 Test Setup Layout



3.4.5 Test Deviation

There is no deviation with the original standard.

3.4.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

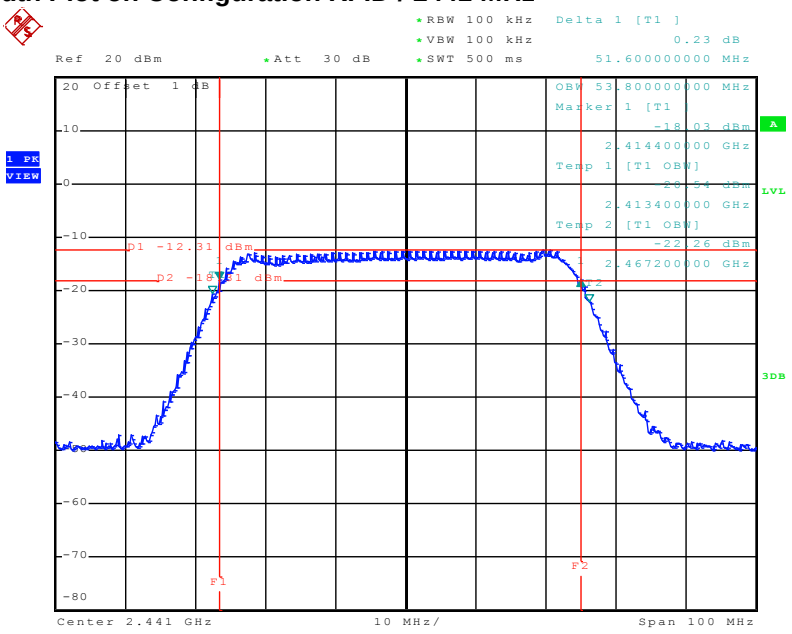
3.4.7 Test Result of 6dB Spectrum Bandwidth

Final Test Date	Dec. 22, 2010	**Test Site No.**	TH01-HY
Temperature	24℃	**Humidity**	62%
Test Engineer	Ian	**Configuration**	Channel 1

Mode 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2441 MHz	51.60	53.80	500	**Complies**

6 dB Bandwidth Plot on Configuration RFID / 2441 MHz

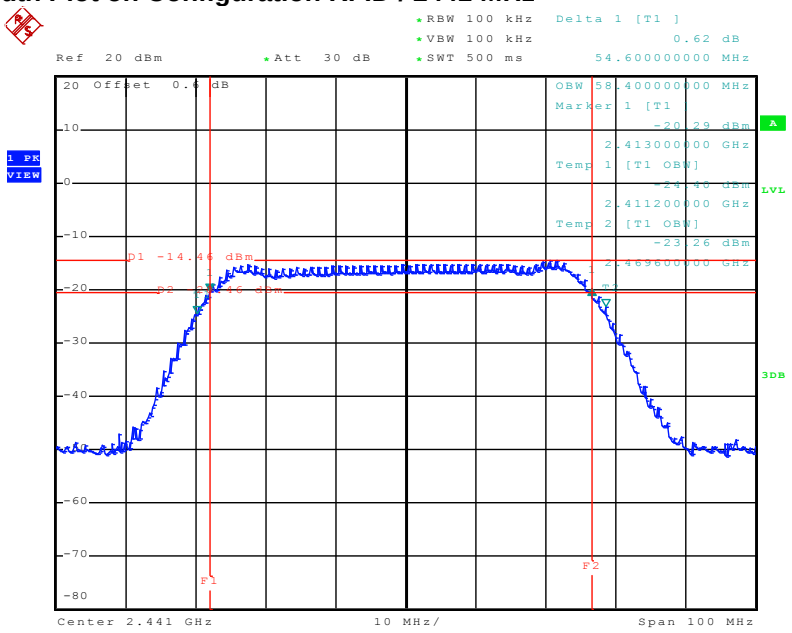


Date: 22.DEC.2010 10:16:15

Mode 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2441 MHz	54.60	58.40	500	**Complies**

6 dB Bandwidth Plot on Configuration RFID / 2441 MHz



Date: 22.DEC.2010 11:40:00

3.5 Radiated Emissions Measurement

3.5.1 Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 2.7 the restricted bands must also comply with the radiated emission limit specified in section 2.8.

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

3.5.2 Measuring Instruments and Setting

Please refer to section 4 of equipments list in this report. The following table is the setting of 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 (Emission in non-restricted band)	1MHz / 1MHz for Peak

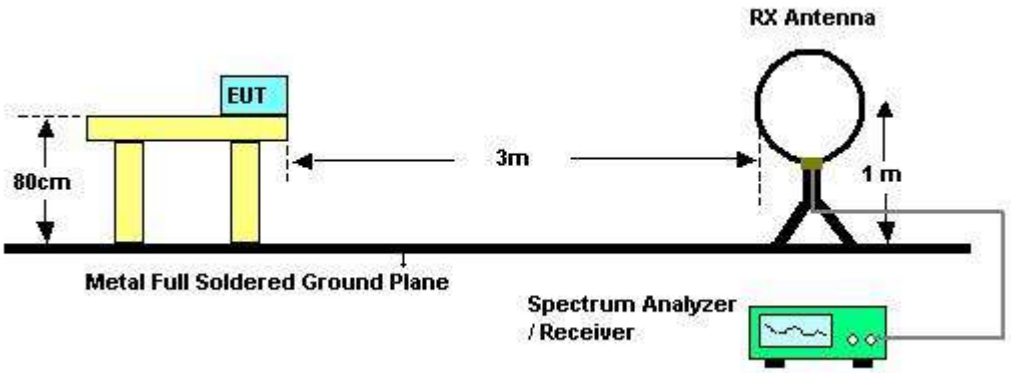
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.5.3 Test Procedures

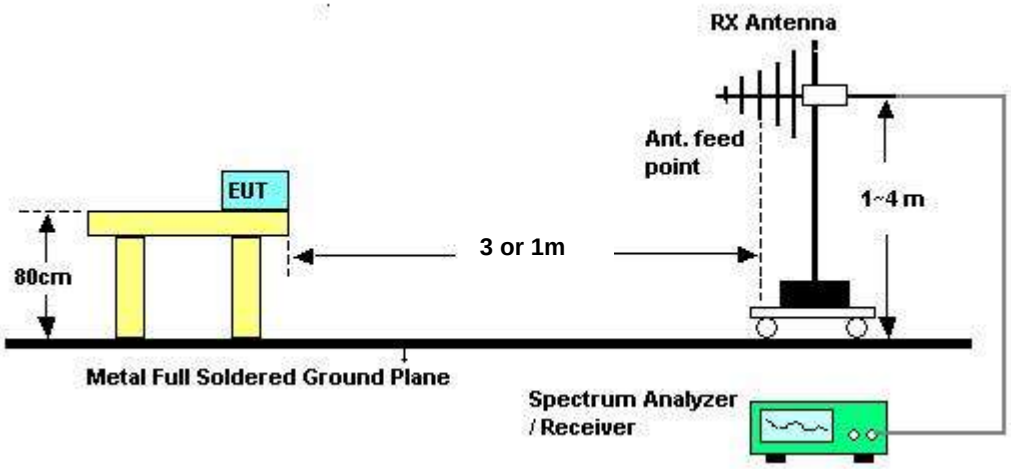
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

3.5.4 Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

3.5.5 Test Deviation

There is no deviation with the original standard.

3.5.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.5.7 Results of Radiated Emissions (9kHz~30MHz)

Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel		

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 20 dB below the permissible value has no need to be reported.

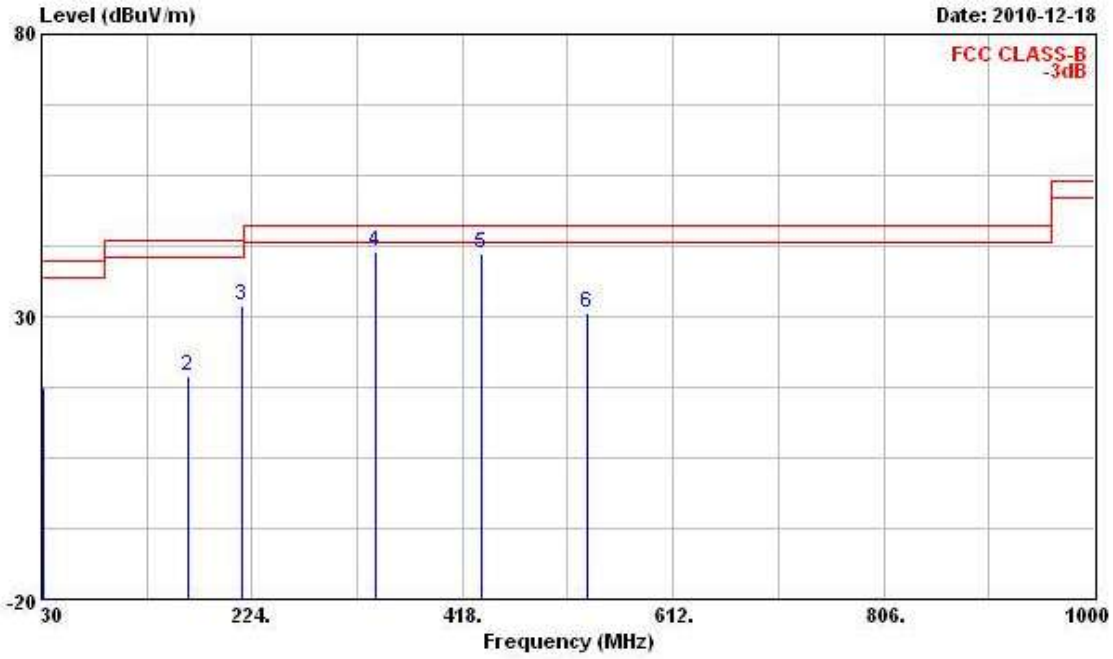
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.5.8 Results of Radiated Emissions (30MHz~1GHz)

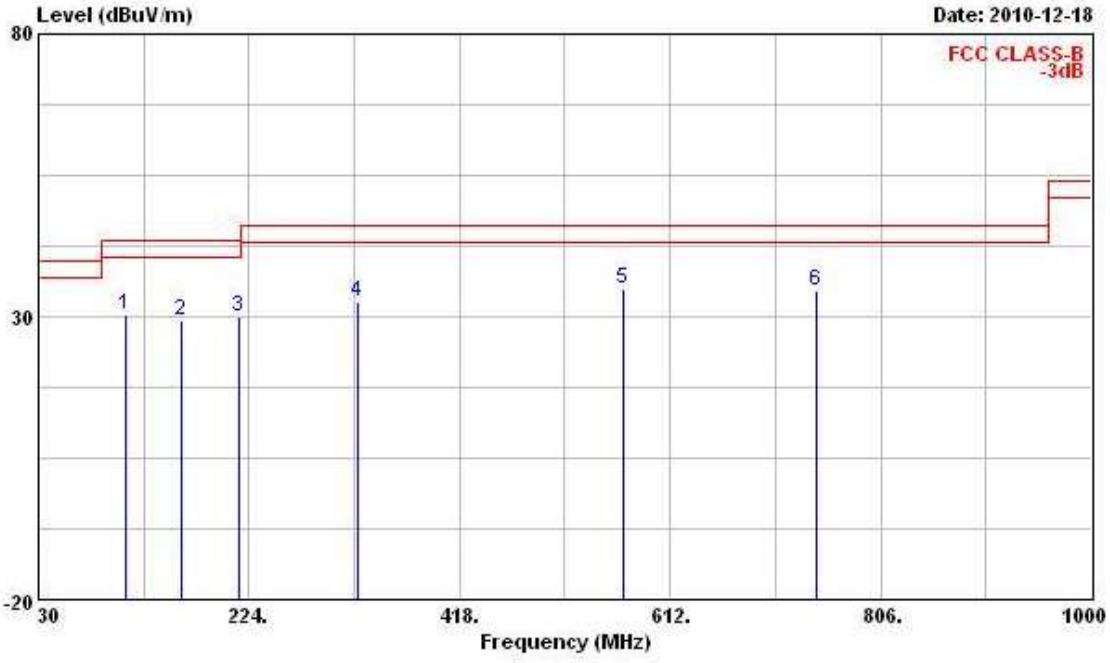
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 1

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	31.940	17.35	-22.65	40.00	28.95	15.48	0.78	27.86	Peak
2	164.830	19.34	-24.16	43.50	34.23	10.34	2.11	27.34	Peak
3	215.270	31.99	-11.51	43.50	44.68	11.86	2.43	26.98	Peak
4	338.460	41.38	-4.62	46.00	51.19	14.29	2.99	27.09	Peak
5	435.460	41.22	-4.78	46.00	49.65	15.98	3.44	27.85	Peak
6	532.460	30.75	-15.25	46.00	36.93	18.21	3.78	28.17	Peak

Vertical

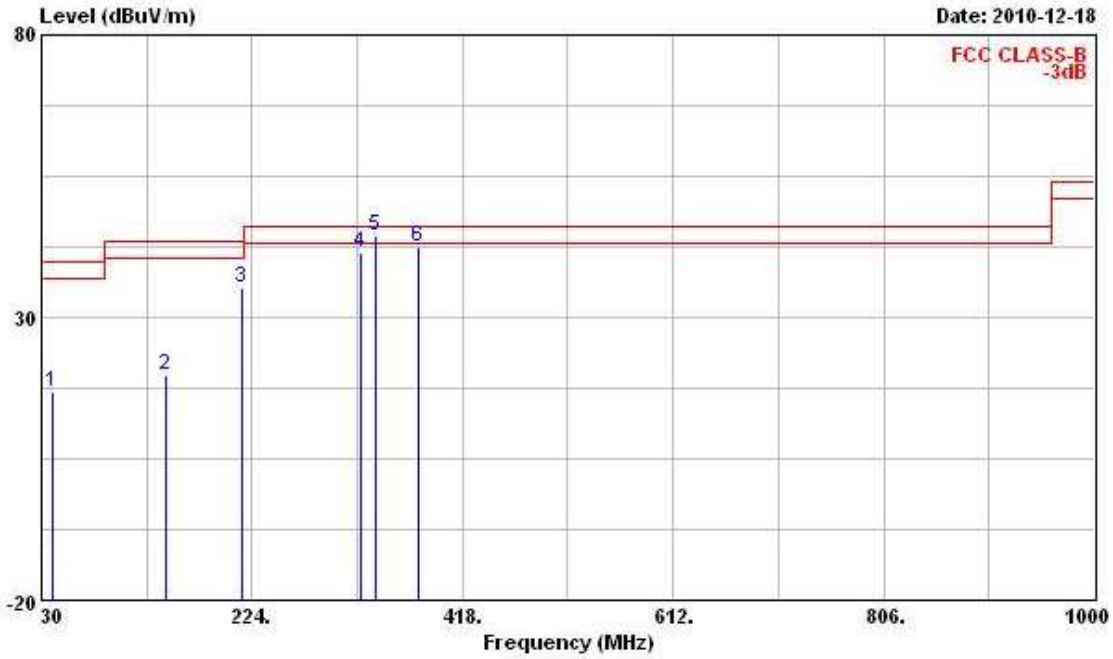


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	110.510	30.34	-13.16	43.50	43.75	12.46	1.70	27.57	Peak
2	160.950	29.20	-14.30	43.50	43.96	10.51	2.10	27.37	Peak
3	215.270	29.85	-13.65	43.50	42.54	11.86	2.43	26.98	Peak
4	323.910	32.62	-13.38	46.00	42.56	14.08	2.96	26.98	Peak
5	568.350	35.00	-11.00	46.00	40.05	19.25	3.86	28.16	Peak
6	746.830	34.50	-11.50	46.00	38.31	19.51	4.56	27.88	Peak

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.

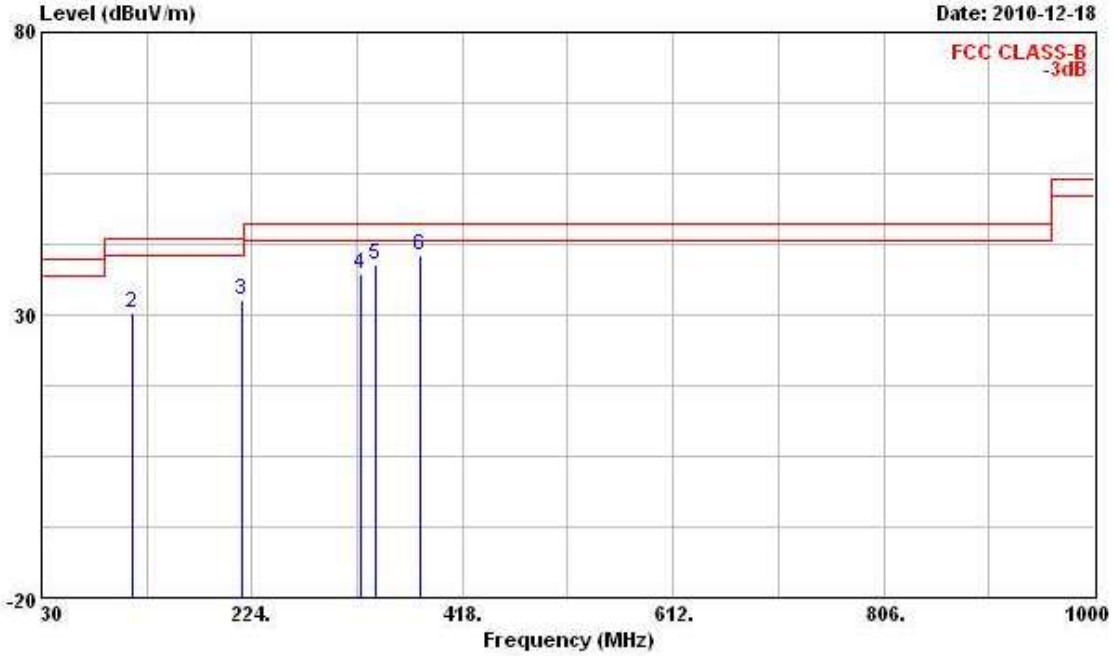
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 2

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	40.670	16.89	-23.11	40.00	30.66	13.01	1.01	27.79	Peak
2	144.460	19.64	-23.86	43.50	33.70	11.40	1.99	27.45	Peak
3	215.270	35.23	-8.27	43.50	47.92	11.86	2.43	26.98	Peak
4 @	323.910	41.45	-4.55	46.00	51.39	14.08	2.96	26.98	Peak
5 @	338.460	44.62	-1.38	46.00	54.43	14.29	2.99	27.09	QP
6 @	377.260	42.47	-3.53	46.00	51.82	14.90	3.19	27.44	QP

Vertical

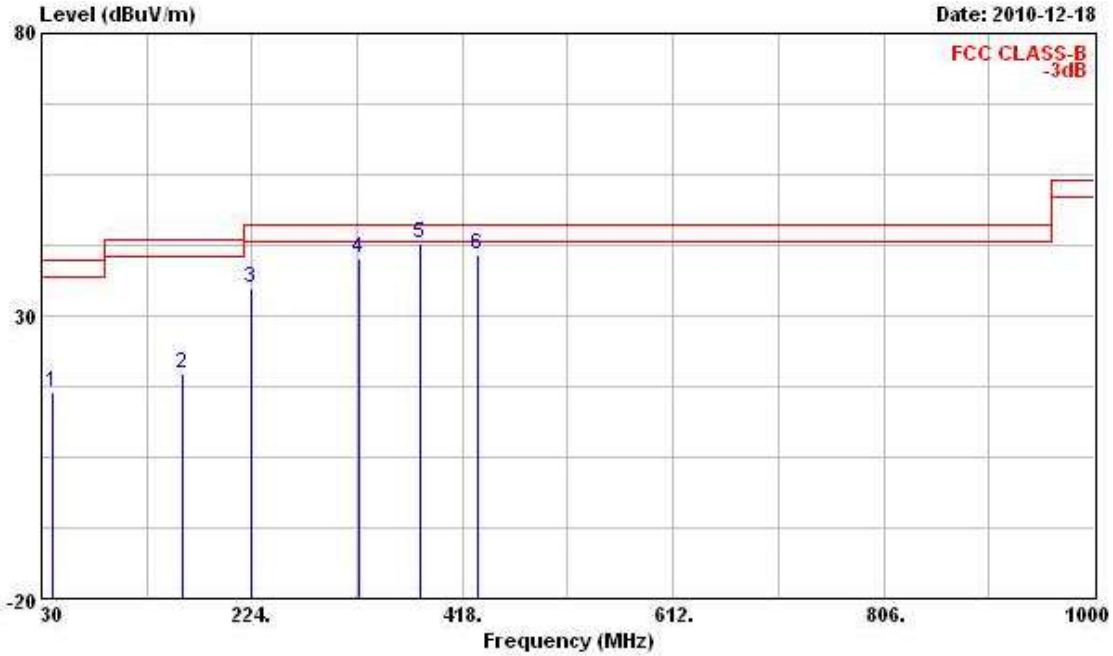


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	30.000	23.21	-16.79	40.00	34.15	16.22	0.72	27.88	Peak
2	113.420	30.36	-13.14	43.50	43.41	12.80	1.72	27.57	Peak
3	215.270	32.65	-10.85	43.50	45.34	11.86	2.43	26.98	Peak
4	323.910	37.13	-8.87	46.00	47.07	14.08	2.96	26.98	Peak
5	338.460	38.93	-7.07	46.00	48.74	14.29	2.99	27.09	Peak
6	378.230	40.46	-5.54	46.00	49.79	14.92	3.20	27.45	Peak

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.

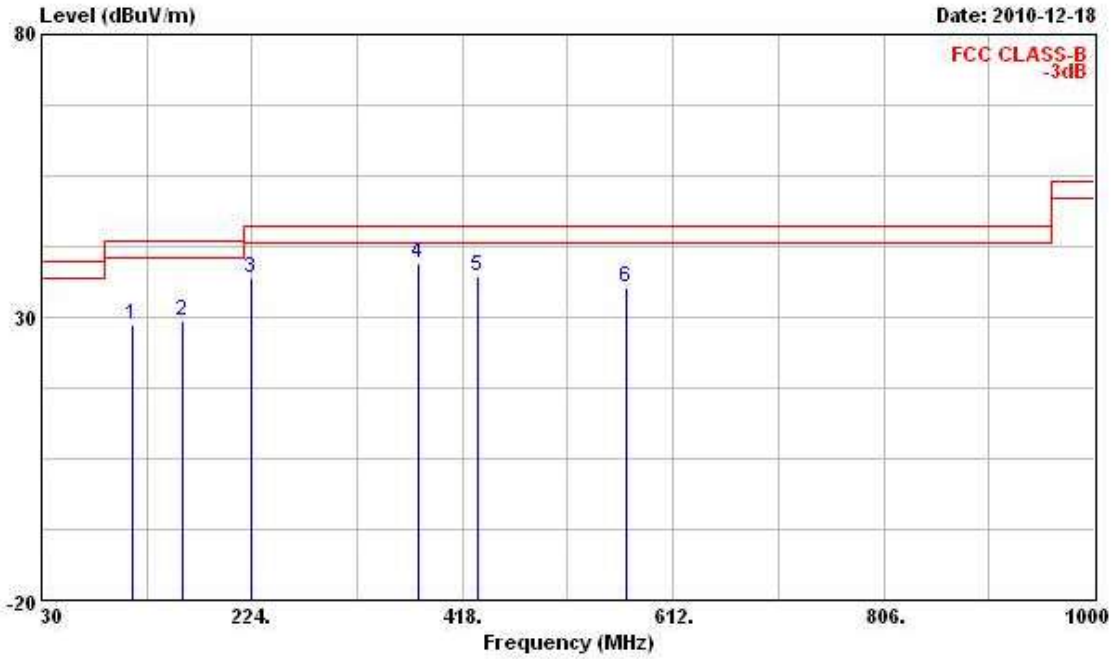
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 3

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	40.670	16.51	-23.49	40.00	30.28	13.01	1.01	27.79	Peak
2	159.980	19.71	-23.79	43.50	34.44	10.55	2.09	27.37	Peak
3	223.030	34.80	-11.20	46.00	47.15	12.11	2.49	26.95	Peak
4	322.940	40.24	-5.76	46.00	50.18	14.07	2.96	26.97	QP
5 @	378.230	42.83	-3.17	46.00	52.16	14.92	3.20	27.45	QP
6	432.550	40.87	-5.13	46.00	49.34	15.92	3.44	27.83	Peak

Vertical

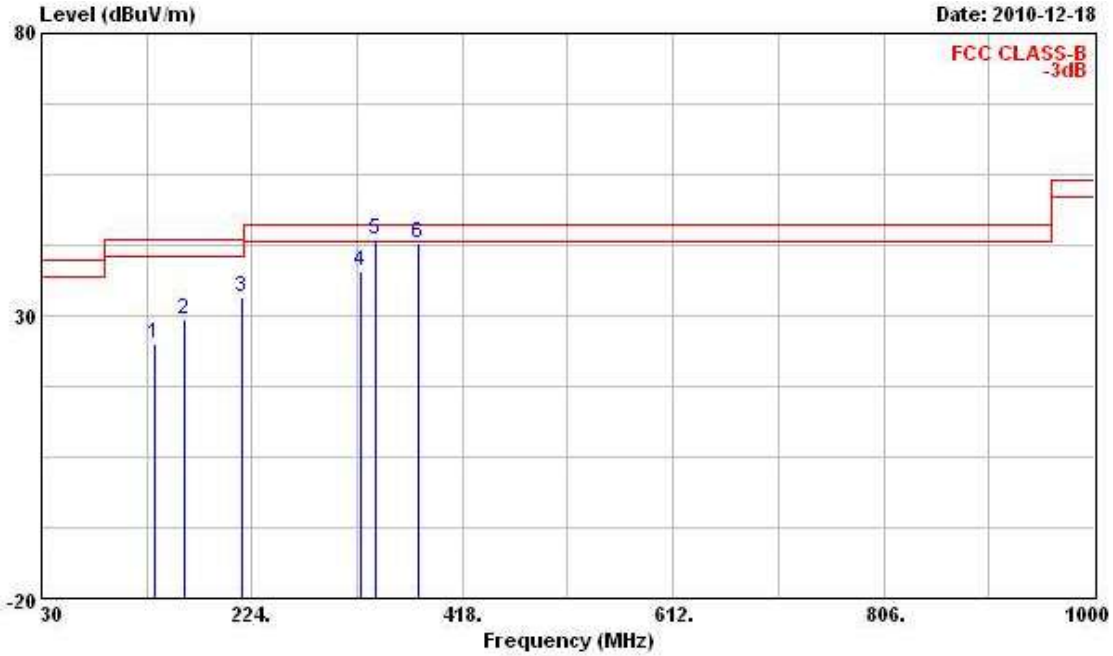


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	113.420	28.55	-14.95	43.50	41.60	12.80	1.72	27.57	Peak
2	159.980	29.20	-14.30	43.50	43.93	10.55	2.09	27.37	Peak
3	223.030	36.80	-9.20	46.00	49.15	12.11	2.49	26.95	Peak
4	377.260	39.53	-6.47	46.00	48.88	14.90	3.19	27.44	QP
5	432.550	37.37	-8.63	46.00	45.84	15.92	3.44	27.83	Peak
6	568.350	35.11	-10.89	46.00	40.16	19.25	3.86	28.16	Peak

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.

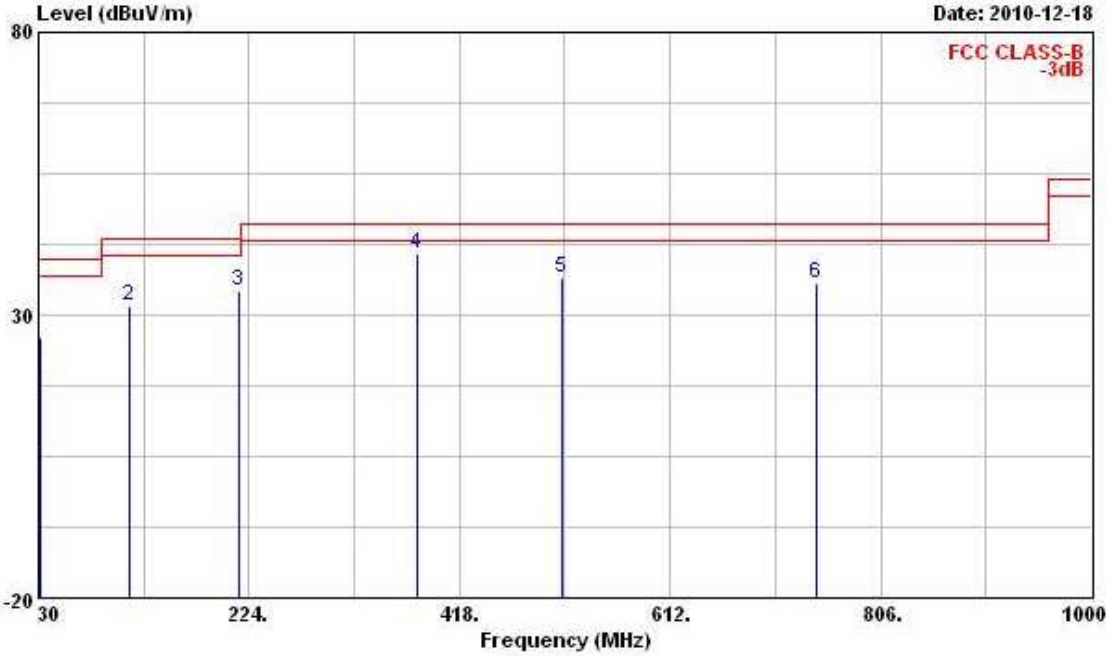
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 4

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	133.790	25.11	-18.39	43.50	38.23	12.49	1.89	27.50	Peak
2	160.950	29.29	-14.21	43.50	44.05	10.51	2.10	27.37	Peak
3	215.270	33.25	-10.25	43.50	45.94	11.86	2.43	26.98	Peak
4	323.910	37.93	-8.07	46.00	47.87	14.08	2.96	26.98	QP
5 @	338.460	43.47	-2.53	46.00	53.28	14.29	2.99	27.09	QP
6 @	377.260	42.76	-3.24	46.00	52.11	14.90	3.19	27.44	QP

Vertical

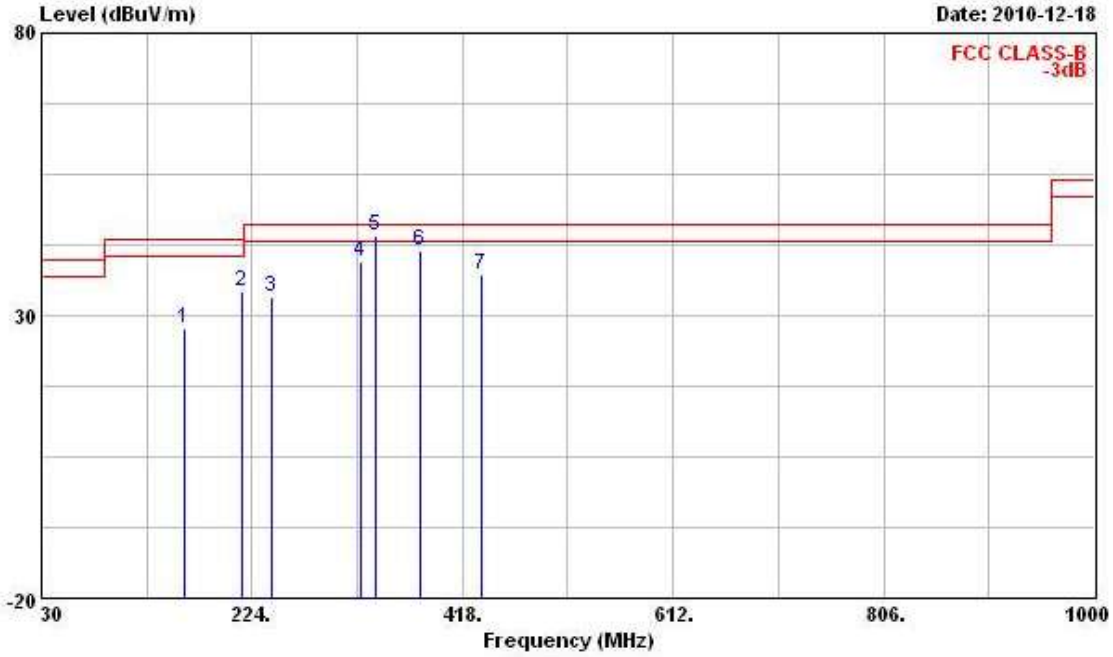


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	31.940	26.15	-13.85	40.00	37.75	15.48	0.78	27.86	Peak
2	113.420	31.54	-11.96	43.50	44.59	12.80	1.72	27.57	Peak
3	215.270	34.32	-9.18	43.50	47.01	11.86	2.43	26.98	Peak
4	378.230	41.00	-5.00	46.00	50.33	14.92	3.20	27.45	Peak
5	513.060	36.69	-9.31	46.00	43.41	17.67	3.79	28.18	Peak
6	746.830	35.70	-10.30	46.00	39.51	19.51	4.56	27.88	Peak

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.

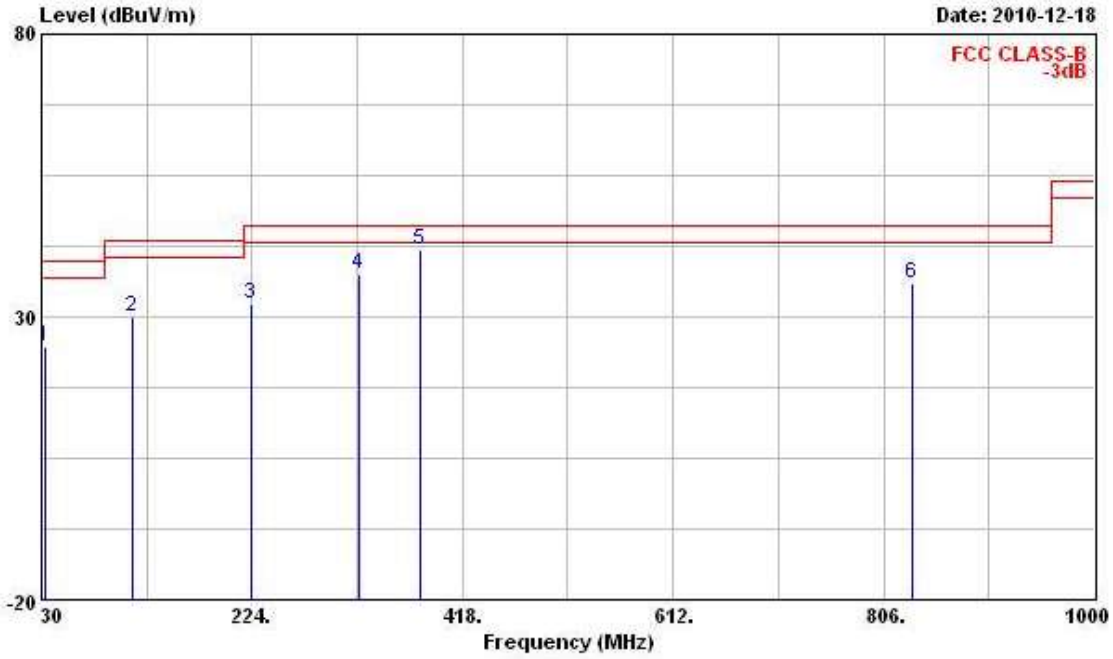
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 5

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	160.950	27.85	-15.65	43.50	42.61	10.51	2.10	27.37	Peak
2	215.270	34.37	-9.13	43.50	47.06	11.86	2.43	26.98	Peak
3	241.460	33.35	-12.65	46.00	44.87	12.71	2.62	26.85	Peak
4	323.910	39.59	-6.41	46.00	49.53	14.08	2.96	26.98	QP
5 @	338.460	44.19	-1.81	46.00	54.00	14.29	2.99	27.09	QP
6 @	378.230	41.60	-4.40	46.00	50.93	14.92	3.20	27.45	QP
7	435.460	37.39	-8.61	46.00	45.82	15.98	3.44	27.85	Peak

Vertical

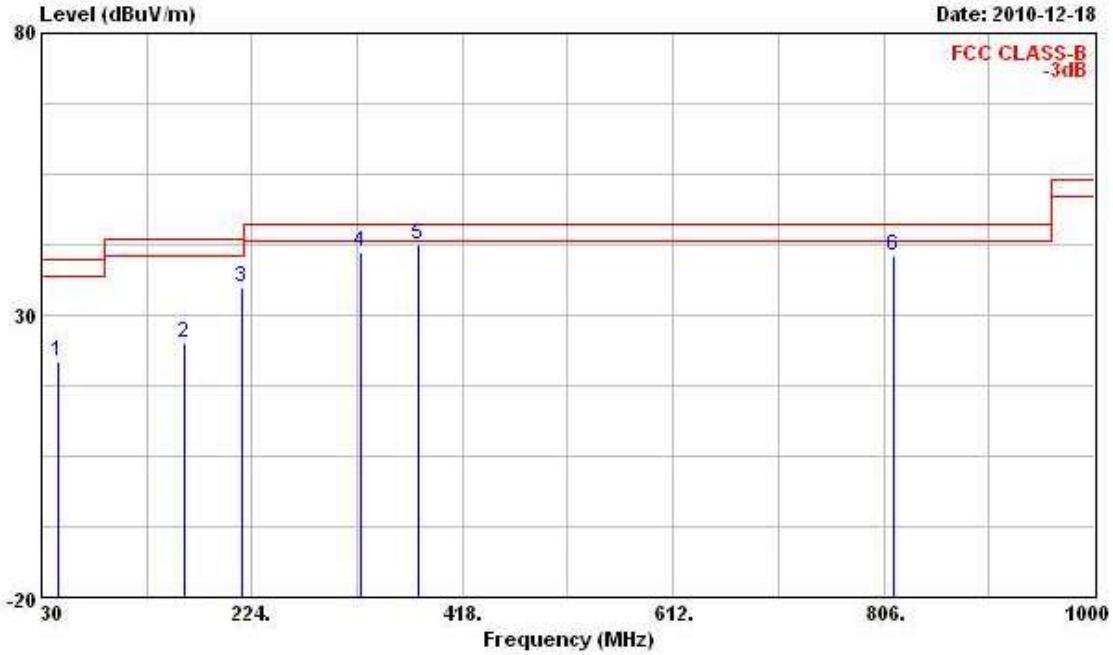


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	32.910	24.85	-15.15	40.00	36.79	15.11	0.81	27.86	Peak
2	113.420	30.14	-13.36	43.50	43.19	12.80	1.72	27.57	Peak
3	223.030	32.18	-13.82	46.00	44.53	12.11	2.49	26.95	Peak
4	322.940	37.72	-8.28	46.00	47.66	14.07	2.96	26.97	Peak
5 @	378.230	41.74	-4.26	46.00	51.07	14.92	3.20	27.45	Peak
6	832.190	36.02	-9.98	46.00	38.58	20.19	4.84	27.59	Peak

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.

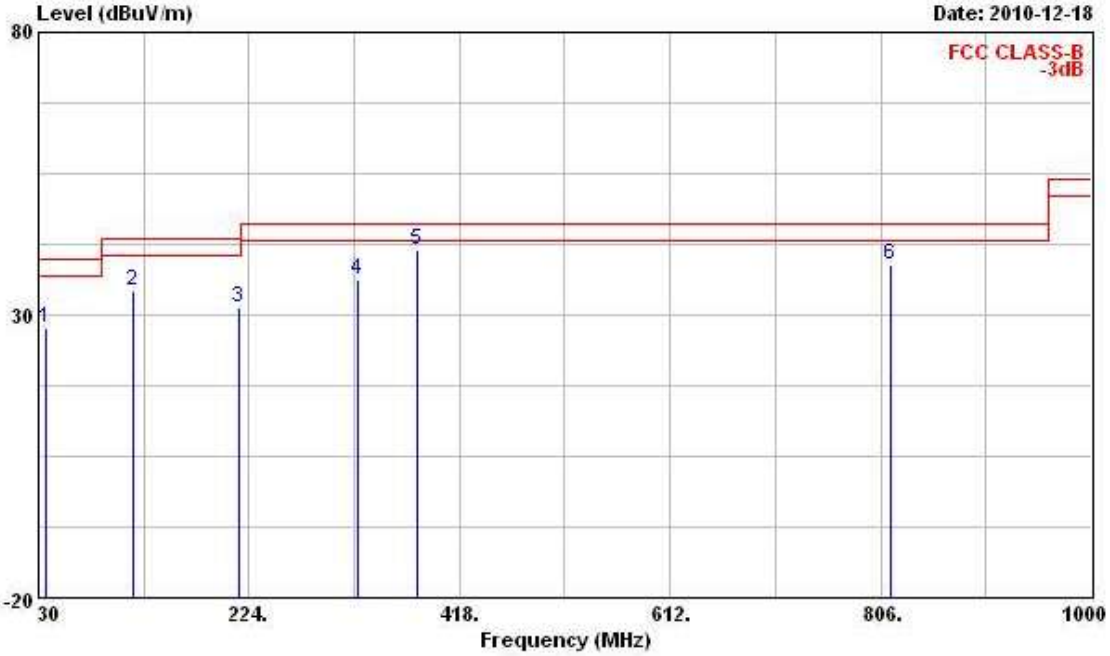
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 6

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	44.550	21.69	-18.31	40.00	36.37	12.02	1.05	27.75	Peak
2	160.950	25.06	-18.44	43.50	39.82	10.51	2.10	27.37	Peak
3	215.270	35.05	-8.45	43.50	47.74	11.86	2.43	26.98	Peak
4	323.910	41.16	-4.84	46.00	51.10	14.08	2.96	26.98	QP
5 @	377.260	42.56	-3.44	46.00	51.91	14.90	3.19	27.44	QP
6	815.700	40.69	-5.31	46.00	43.32	20.23	4.80	27.66	Peak

Vertical



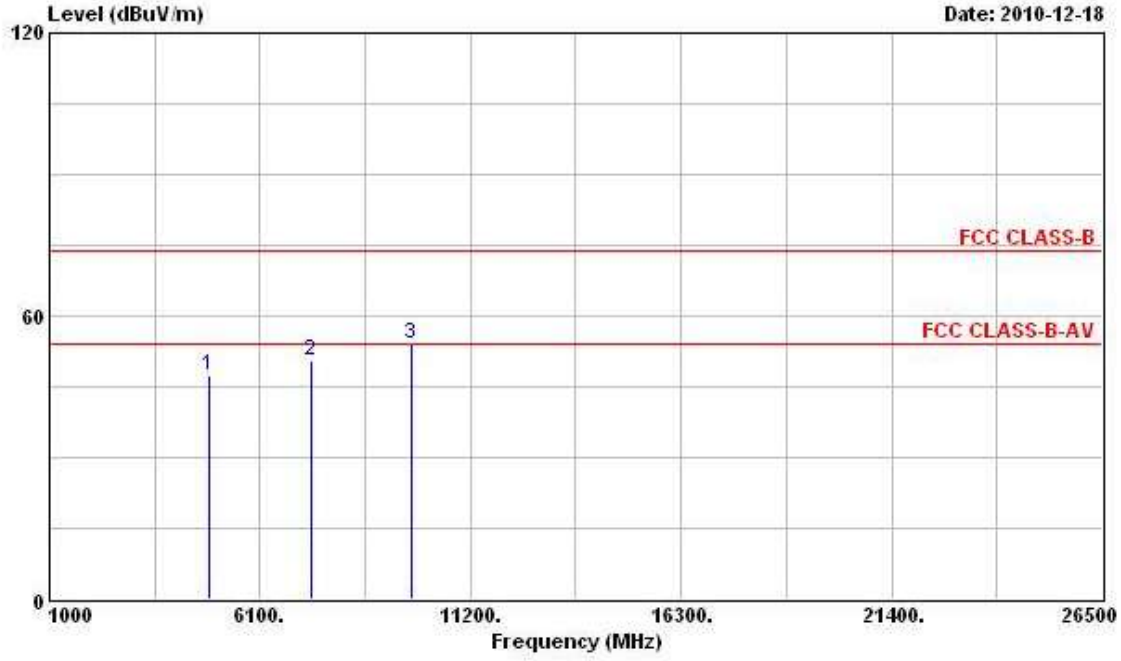
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	36.790	27.66	-12.34	40.00	40.64	13.92	0.92	27.82	Peak
2	117.300	34.17	-9.33	43.50	46.70	13.27	1.76	27.56	Peak
3	215.270	31.21	-12.29	43.50	43.90	11.86	2.43	26.98	Peak
4	323.910	36.36	-9.64	46.00	46.30	14.08	2.96	26.98	Peak
5 @	378.230	41.45	-4.55	46.00	50.78	14.92	3.20	27.45	Peak
6	815.700	38.75	-7.25	46.00	41.38	20.23	4.80	27.66	Peak

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.

3.5.9 Results for Radiated Emissions (1GHz~10th Harmonic)

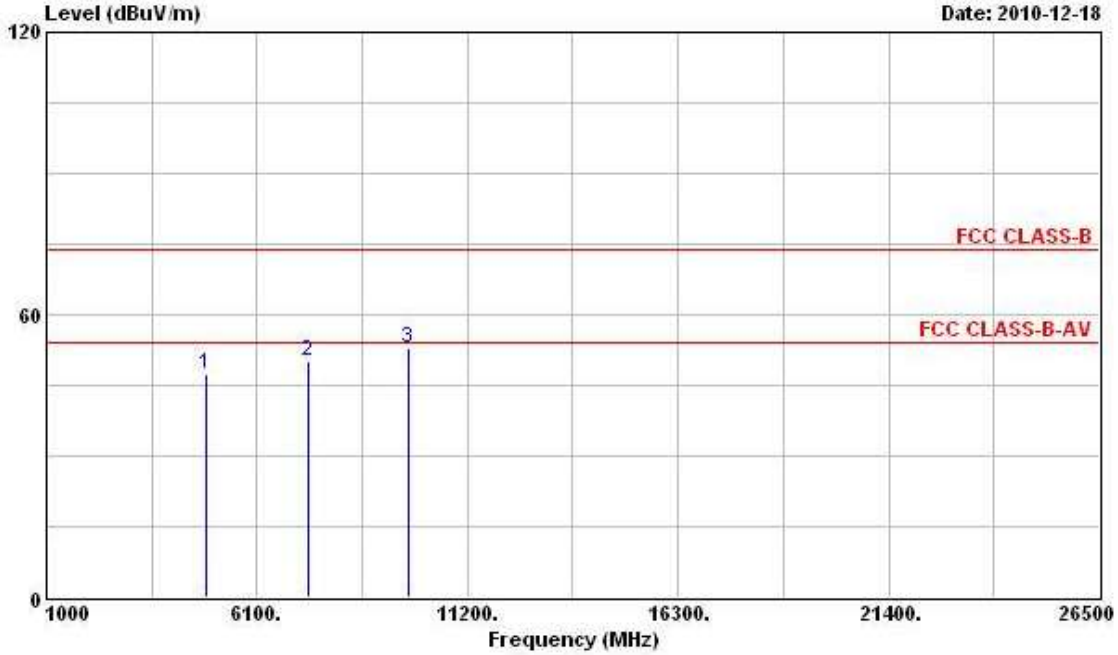
Final Test Date	Dec. 18, 2010	Test Site No.	03CH02-HY
Temperature	26.3℃	Humidity	56%
Test Engineer	Daniel	Configuration	Mode 1

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.000	47.30	-6.70	54.00	41.28	35.83	4.64	34.45	PK
2 @	7324.500	50.44	-3.56	54.00	41.22	37.87	5.64	34.29	PK
3	9767.000	54.25	-19.75	74.00	42.93	39.53	6.36	34.57	Peak

Vertical

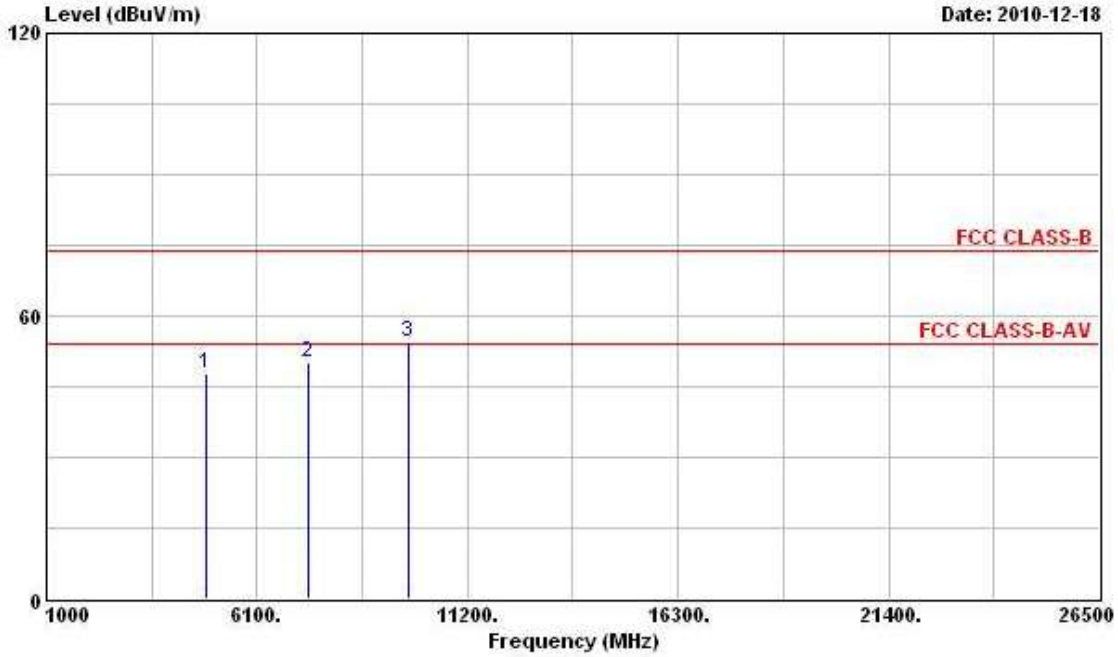


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.500	47.35	-6.65	54.00	41.98	35.18	4.64	34.45	PK
2 @	7324.500	50.26	-3.74	54.00	41.98	36.93	5.64	34.29	PK
3	9767.000	53.04	-20.96	74.00	42.52	38.73	6.36	34.57	Peak

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.

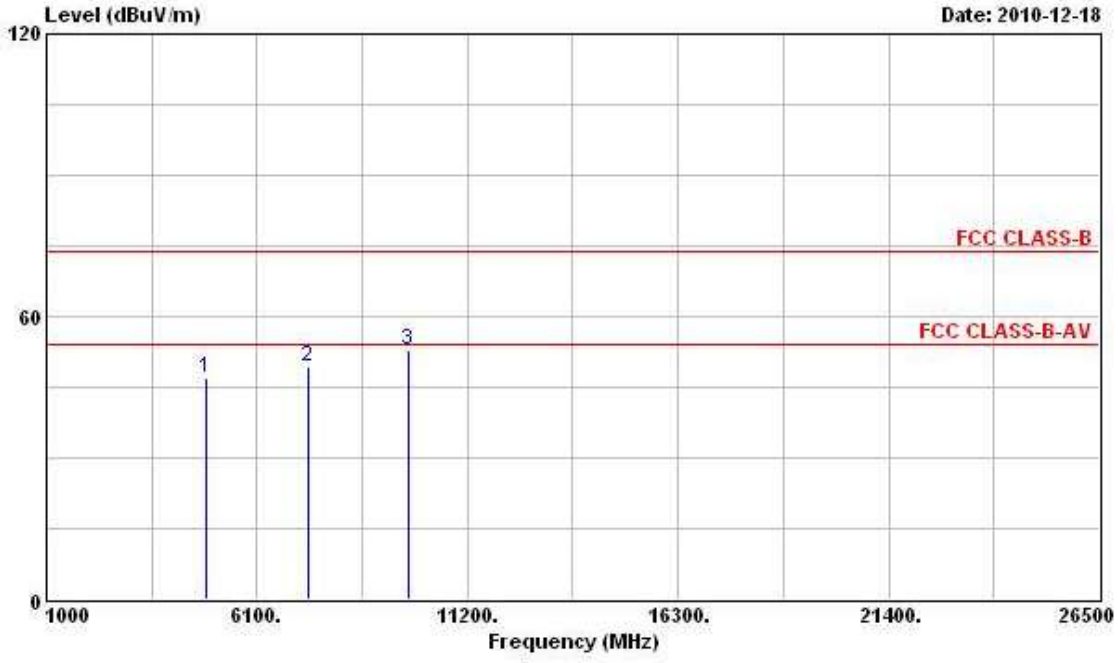
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 2

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.500	47.83	-6.17	54.00	41.81	35.83	4.64	34.45	PK
2 @	7324.500	50.29	-3.71	54.00	41.07	37.87	5.64	34.29	PK
3	9767.000	54.29	-19.71	74.00	42.97	39.53	6.36	34.57	Peak

Vertical

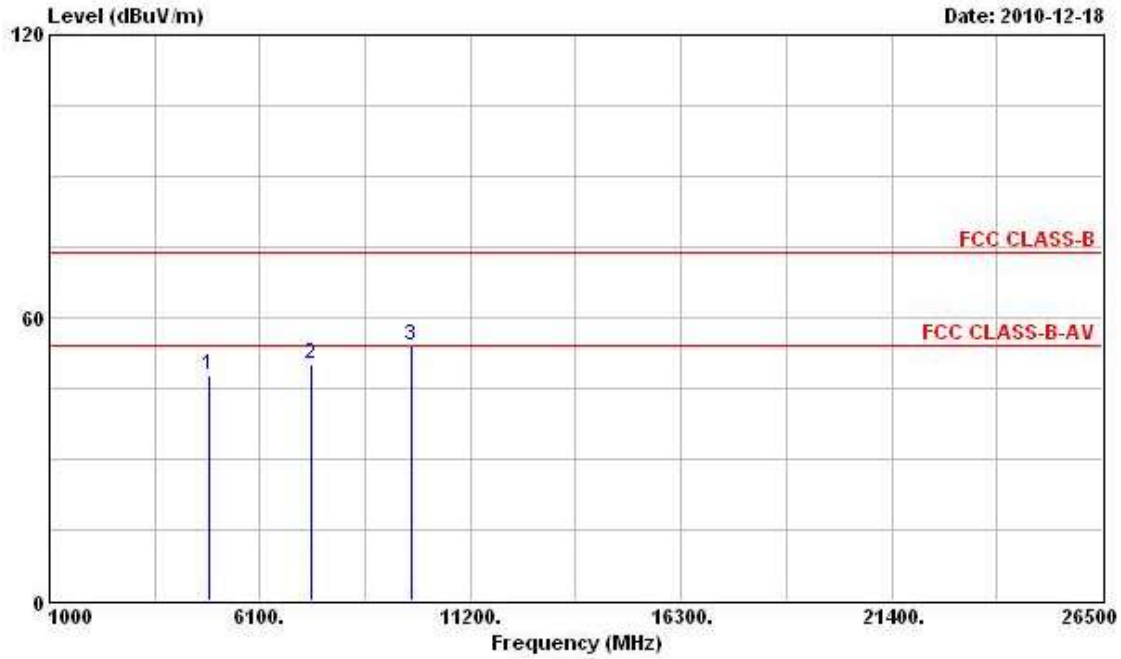


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.500	46.94	-7.06	54.00	41.57	35.18	4.64	34.45	PK
2	7324.500	49.40	-4.60	54.00	41.12	36.93	5.64	34.29	PK
3	9767.000	52.99	-21.01	74.00	42.47	38.73	6.36	34.57	Peak

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.

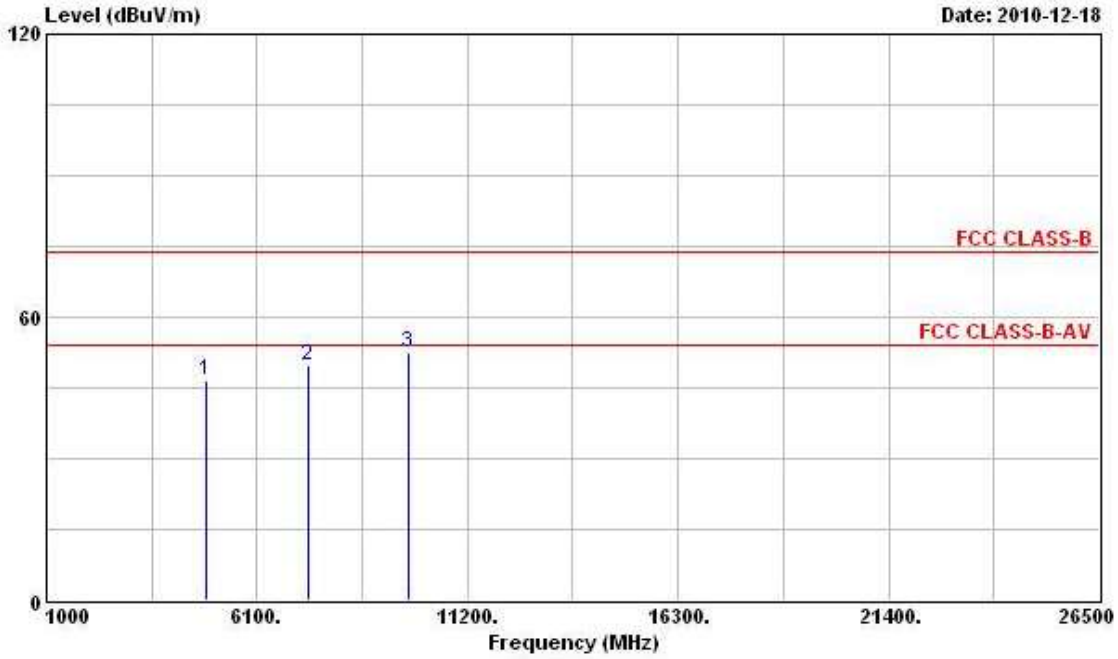
Final Test Date	Dec. 18, 2010	**Test Site No.**	03CH02-HY
Temperature	26.3℃	**Humidity**	56%
Test Engineer	Daniel	**Configuration**	Mode 3

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.500	47.63	-6.37	54.00	41.61	35.83	4.64	34.45	PK
2 @	7324.500	50.21	-3.79	54.00	40.99	37.87	5.64	34.29	PK
3	9767.000	53.99	-20.01	74.00	42.67	39.53	6.36	34.57	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4883.500	46.58	-7.42	54.00	41.21	35.18	4.64	34.45	PK
2 @	7324.500	49.80	-4.20	54.00	41.52	36.93	5.64	34.29	PK
3	9767.000	52.45	-21.55	74.00	41.93	38.73	6.36	34.57	Peak

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.

3.6 Band Edge and Fundamental Emissions Measurement

3.6.1 Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 2.7 the restricted bands must also comply with the radiated emission limit specified in section 2.8.

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

3.6.2 Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	11MHz / 1MHz for Peak

3.6.3 Test Procedures

1. The test procedure is the same as section 3.5.3; only the frequency range investigated is limited to 100MHz around band edges.
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.

3.6.4 Test Setup Layout

This test setup layout is the same as that shown in section 3.5.4.

3.6.5 Test Deviation

There is no deviation with the original standard.

3.6.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.6.7 Test Result of Band Edge and Fundamental Emissions

Final Test Date	Dec. 18, 2010	Test Site No.	03CH02-HY
Temperature	26.3℃	Humidity	56%
Test Engineer	Daniel	Configuration	Channel 1

Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2382.770	61.29	-12.71	74.00	26.33	31.97	2.99	0.00	Peak
2 @	2461.620	101.65			66.32	32.28	3.05	0.00	Peak
3	2495.820	62.22	-11.78	74.00	26.74	32.40	3.08	0.00	Peak
1	2388.850	47.74	-6.26	54.00	12.69	32.03	3.02	0.00	Average
2 @	2461.050	96.13			60.80	32.28	3.05	0.00	Average
3 @	2496.010	50.12	-3.88	54.00	14.64	32.40	3.08	0.00	Average

The item 2 is Fundamental Emissions.

Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2387.900	61.57	-12.43	74.00	26.52	32.03	3.02	0.00	Peak
2 @	2431.220	102.53			67.33	32.15	3.05	0.00	Peak
3	2483.660	62.75	-11.25	74.00	27.33	32.34	3.08	0.00	Peak
1 @	2387.330	49.64	-4.36	54.00	14.59	32.03	3.02	0.00	Average
2 @	2430.650	96.98			61.78	32.15	3.05	0.00	Average
3 @	2496.010	50.76	-3.24	54.00	15.28	32.40	3.08	0.00	Average

The item 2 is Fundamental Emissions.

Mode 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2366.810	61.05	-12.95	74.00	26.16	31.90	2.99	0.00	Peak
2 @	2418.490	96.34			61.23	32.09	3.02	0.00	Peak
3	2485.180	61.37	-12.63	74.00	25.95	32.34	3.08	0.00	Peak
1	2388.850	48.06	-5.94	54.00	13.01	32.03	3.02	0.00	Average
2 @	2418.300	90.79			55.68	32.09	3.02	0.00	Average
3	2483.660	48.69	-5.31	54.00	13.27	32.34	3.08	0.00	Average

The item 2 is Fundamental Emissions.

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Connector Construction

Please refer FCC 15.247 section 15.203. The antenna specification is not subject to the requirement of FCC 15.247 section 2.2.

4. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Apr. 06, 2010	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99041	9kHz – 30MHz	Mar. 23, 2010	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Apr. 29, 2010	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2010	Conduction (CO04-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Nov. 19, 2010	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Apr. 16, 2010	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Oct. 22, 2010	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 02, 2010	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 02, 2010	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 30, 2010	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	Dec. 03, 2010	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	Dec. 03, 2010	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jul. 26, 2010*	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100305/040	9 kHz - 40GHz	Feb. 02, 2010	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz - 1 GHz 3m	May 01, 2010	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100 kHz – 1.3 GHz	Jul. 23, 2010	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz – 26.5 GHz	Jul. 23, 2010	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz~18GHz	Nov. 11, 2010	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Feb. 26, 2010	Radiation (03CH02-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX106	03CH02-HY	1GHz~40GHz	Feb. 26, 2010	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz - 2 GHz	Oct. 16, 2010	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0 - 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 m - 4 m	N/A	Radiation (03CH02-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 29, 2010*	Radiation (03CH02-HY)

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

5. TEST LOCATION

SHIJR	ADD	:	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	:	886-2-2696-2468
	FAX	:	886-2-2696-2255
HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	:	886-3-327-3456
	FAX	:	886-3-318-0055
LINKOU	ADD	:	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	:	886-2-2601-1640
	FAX	:	886-2-2601-1695
DUNGHU	ADD	:	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	:	886-2-2631-4739
	FAX	:	886-2-2631-9740
JUNGHE	ADD	:	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	:	886-2-8227-2020
	FAX	:	886-2-8227-2626
NEIHU	ADD	:	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	:	886-2-2794-8886
	FAX	:	886-2-2794-9777
JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	:	886-3-656-9065
	FAX	:	886-3-656-9085

6. TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-100529

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025:2005
Accreditation Number	:	1190
Originally Accredited	:	December 15, 2003
Effective Period	:	January 10, 2010 to January 09, 2013
Accredited Scope	:	Testing Field, see described in the Appendix
Specific Accreditation Program	:	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : May 29, 2010

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix