IC RADIO TEST REPORT

According to

IC RSS-210 Section A2.8

Equipment	:	**3010-1A Control Box**
Brand Name	:	**JET**
Model Name	:	**KA000N1001**
Filing Type	:	**New Application**
Applicant	:	**JET OPTOELECTRONICS CO., LTD.** 3F., No. 300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan, R.O.C.
IC ID	:	**9930A-30101ABOX0**
Manufacturer	:	**3D Technologies (WuJiang) Co., LTD.** No.18, Yanbang Road, TongLi Science and Technology Park Wujiang Economic Development Zone, Jiangsu Province P.R.C.
Received Date	:	Apr. 06, 2012
Final Test Date	:	May 16, 2012

Statement

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 **IC RSS-210 issue 8**.

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.

Table of Contents

History of This Test Report

Original Issue Date: May 16, 2012
Report No.: CR233022
■ No additional attachment.
□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

According to

IC RSS-210 Section A2.8

Equipment : 3010-1A Control Box
Brand Name : JET
Model No. : KA000N1001
Applicant : JET OPTOELECTRONICS CO., LTD.
3F., No. 300, Yangguang St., Neihu Dist.,
Taipei City 11491, Taiwan, R.O.C.

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Apr. 06, 2012 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 / Assistant 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: IC RSS-210 issue 8				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
3.1	RSS-Gen 7.2.2	AC Power Line Conducted Emissions	Not Applicable	-
3.2	A2.8	Field Strength of Fundamental Emissions	Complies	1.08 dB
3.3	A2.8	20dB Spectrum Bandwidth	Complies	-
3.4	2.2(a)	Radiated Emissions	Complies	5.98 dB
3.5	2.2(a)	Band Edge Emissions	Complies	2.92 dB
3.6	RSS-Gen 7.1.4	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Field Strength of Fundamental Emissions	±1.9dB	Confidence levels of 95%
20dB Spectrum Bandwidth	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated / Band Edge Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (1GHz~18GHz)	±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

Items	Description
Modulation	FM
Frequency Range	88 ~ 108MHz
Channel Number	98
Channel Band Width (99%)	175.80 kHz
Max. Field Strength	46.92 dBuV/m at 3m (Average)
Antenna	WIRE Antenna (Without any antenna connector)

2.2. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency	Channel No.	Frequency	Channel No.	Frequency
88 ~ 108MHz	1	88.3 MHz	34	94.9 MHz	67	101.5 MHz
	2	88.5 MHz	35	95.1 MHz	68	101.7 MHz
	3	88.7 MHz	36	95.3 MHz	69	101.9 MHz
	4	88.9 MHz	37	95.5 MHz	70	102.1 MHz
	5	89.1 MHz	38	95.7 MHz	71	102.3 MHz
	6	89.3 MHz	39	95.9 MHz	72	102.5 MHz
	7	89.5 MHz	40	96.1 MHz	73	102.7 MHz
	8	89.7 MHz	41	96.3 MHz	74	102.9 MHz
	9	89.9 MHz	42	96.5 MHz	75	103.1 MHz
	10	90.1 MHz	43	96.7 MHz	76	103.3 MHz
	11	90.3 MHz	44	96.9 MHz	77	103.5 MHz
	12	90.5 MHz	45	97.1 MHz	78	103.7 MHz
	13	90.7 MHz	46	97.3 MHz	79	103.9 MHz
	14	90.9 MHz	47	97.5 MHz	80	104.1 MHz
	15	91.1 MHz	48	97.7 MHz	81	104.3 MHz
	16	91.3 MHz	49	97.9 MHz	82	104.5 MHz
	17	91.5 MHz	50	98.1 MHz	83	104.7 MHz
	18	91.7 MHz	51	98.3 MHz	84	104.9 MHz
	19	91.9 MHz	52	98.5 MHz	85	105.1 MHz
	20	92.1 MHz	53	98.7 MHz	86	105.3 MHz
	21	92.3 MHz	54	98.9 MHz	87	105.5 MHz
	22	92.5 MHz	55	99.1 MHz	88	105.7 MHz
	23	92.7 MHz	56	99.3 MHz	89	105.9 MHz
	24	92.9 MHz	57	99.5 MHz	90	106.1 MHz
	25	93.1 MHz	58	99.7 MHz	91	106.3 MHz
	26	93.3 MHz	59	99.9 MHz	92	106.5 MHz
	27	93.5 MHz	60	100.1 MHz	93	106.7 MHz
	28	93.7 MHz	61	100.3 MHz	94	106.9 MHz
	29	93.9 MHz	62	100.5 MHz	95	107.1 MHz
	30	94.1 MHz	63	100.7 MHz	96	107.3 MHz
	31	94.3 MHz	64	100.9 MHz	97	107.5 MHz
	32	94.5 MHz	65	101.1 MHz	98	107.7 MHz
	33	94.7 MHz	66	101.3 MHz	--	--

Note: A Carrier frequency is 0.2 MHz per a channel.

2.3. Table for Test Modes

Audio input adjusted to maximize emission for test. 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	Frequency
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX	88.3 MHz / 98.1 MHz / 107.7 MHz
Radiated Emissions	CTX	88.3 MHz / 98.1 MHz / 107.7 MHz
Band Edge Emissions	CTX	88.3 MHz / 107.7 MHz

Note: CTX=Continuously transmitting.

2.4. Table for Testing Locations

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

Semi Anechoic Chamber (SAC).

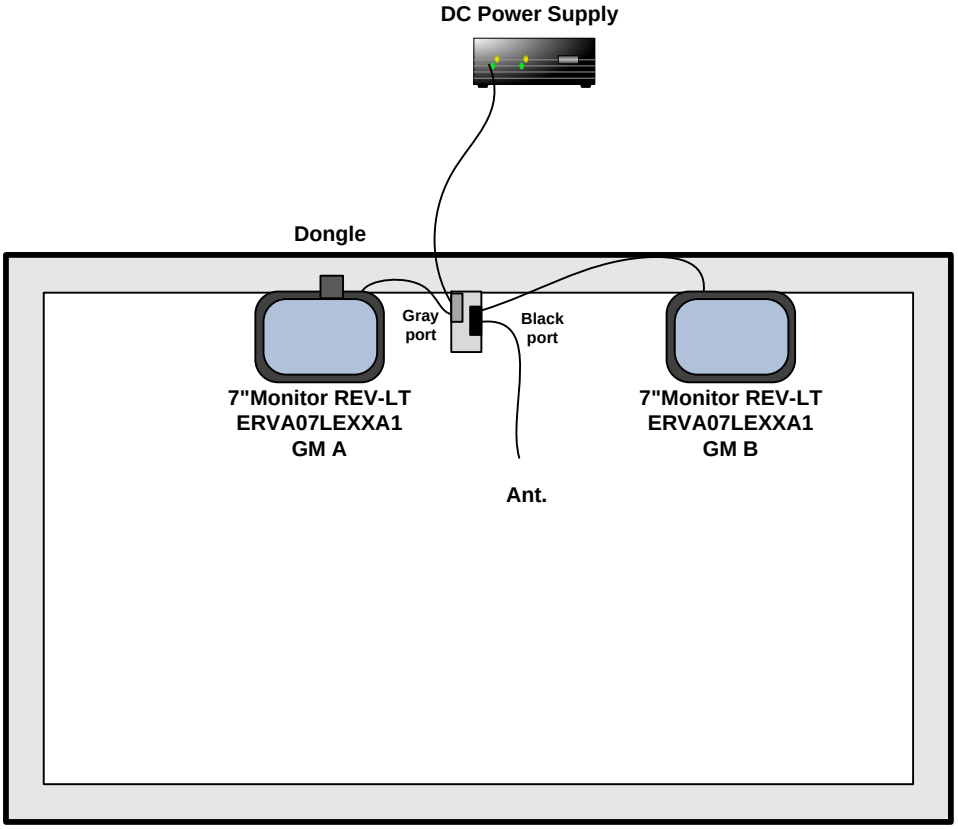
2.5. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Dongle	Transcend	1G	N/A
7"Monitor REV-LT ERVA07LEXXA1 GM A/B	Invision	K9070N4007	N/A
DC Power Supply (Remote Workstation)	GW	GTC-6030D	N/A

**The 3010-DA Control Box provide by customer.

2.6. Test Configurations

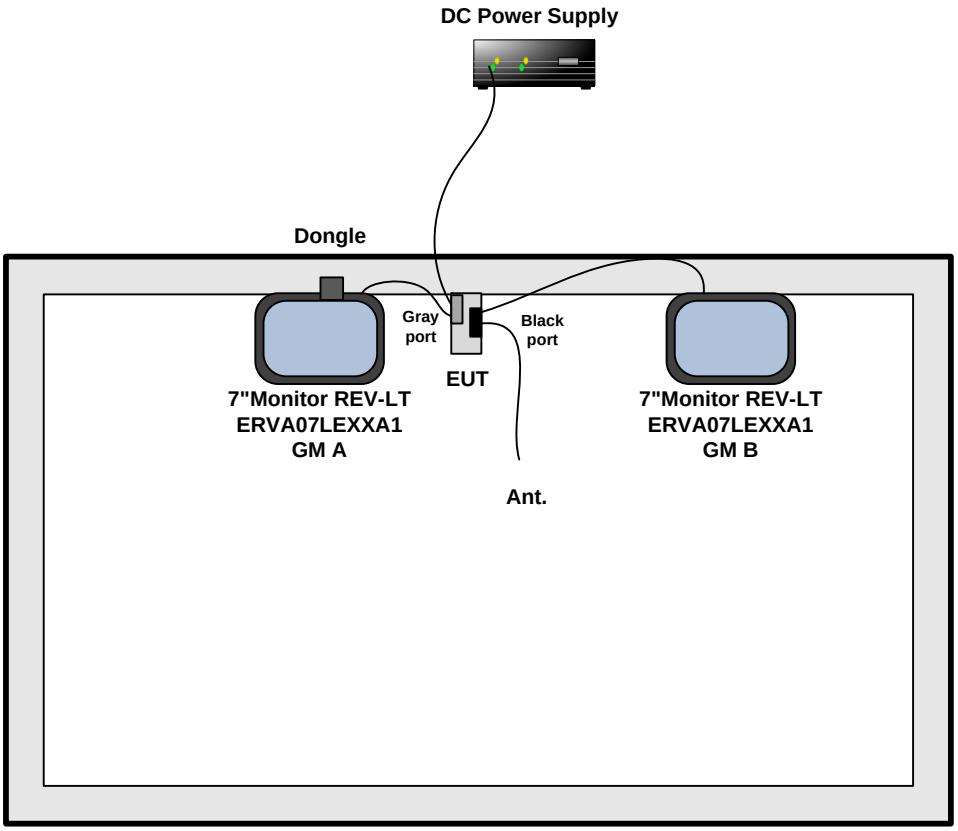
For radiated emissions 30MHz~1GHz



Gray port :
Power supply DC cable.
Red Connector Power & AV Output cable.
White Connector AV Input cable.

Black port :
Blue Connector AV Input cable.
Black Connector Power & AV Output cable.
FM Antenna cable.

For radiated emissions above 1GHz



Gray port :
Power supply DC cable.
Red Connector Power & AV Output cable.
White Connector AV Input cable.

Black port :
Blue Connector AV Input cable.
Black Connector Power & AV Output cable.
FM Antenna cable.

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

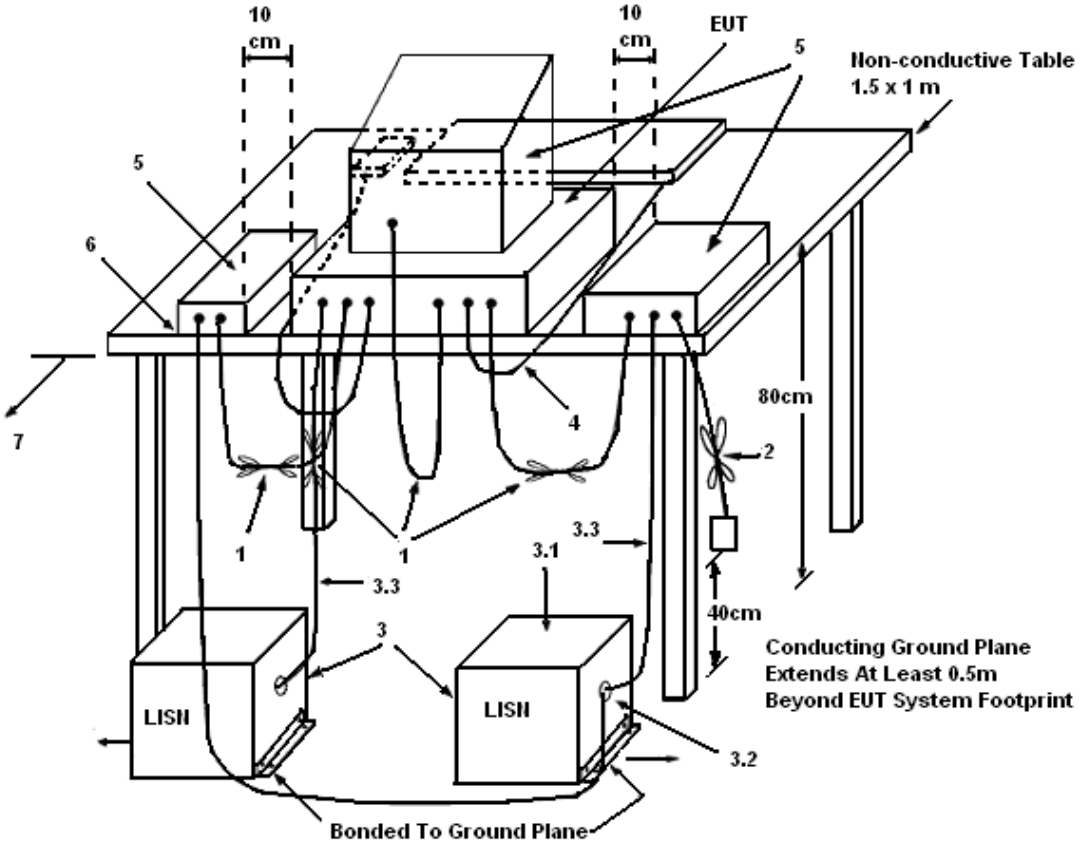
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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 was warmed up for 15 minutes before testing started.
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

The EUT is power by DC source so there is no need to do this test.

3.2. Field Strength of Fundamental Emissions Measurement

3.2.1. Limit

The field strength of fundamental emissions shall comply with the following table.

Frequency Band (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
88~108	48 (Average)
88~108	68 (Peak)

3.2.2. Measuring Instruments and Setting

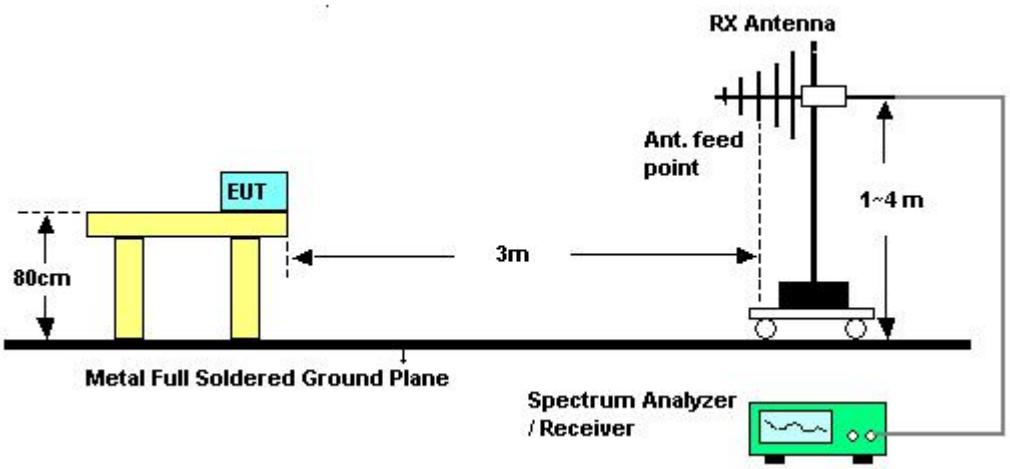
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	Auto
Center Frequency	Fundamental Frequency
RB	120 kHz
Detector	Peak / Average

3.2.3. 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. For Fundamental emissions, use the receiver to measure peak and average reading.
6. 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.

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 Field Strength of Fundamental Emissions

Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	88.3 MHz / 98.1 MHz / 107.7 MHz

Frequency 88.3 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.310	46.95	-21.05	68.00	64.12	9.11	1.57	27.85	Peak	---	---
3	88.310	46.65	-1.35	48.00	63.82	9.11	1.57	27.85	Average	---	---

Frequency 98.1 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.010	48.37	-19.63	68.00	63.74	10.84	1.64	27.85	Peak	---	---
2 @	98.010	46.77	-1.23	48.00	62.14	10.84	1.64	27.85	Average	---	---

Frequency 107.7 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.680	47.17	-20.83	68.00	61.15	12.11	1.73	27.82	Peak	---	---
2 @	107.680	46.92	-1.08	48.00	60.90	12.11	1.73	27.82	Average	---	---

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

3.3. 20dB Spectrum Bandwidth Measurement

3.3.1. Limit

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency.

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 Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	30 kHz
Detector	Sample
Trace	Max Hold
Sweep Time	Auto

3.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Check for a Bandwidth test with audio input play music at maximum.
3. The resolution bandwidth of 10 kHz and the video bandwidth of 30 kHz were used.
4. Measured the spectrum width with power higher than 20dB below carrier.

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

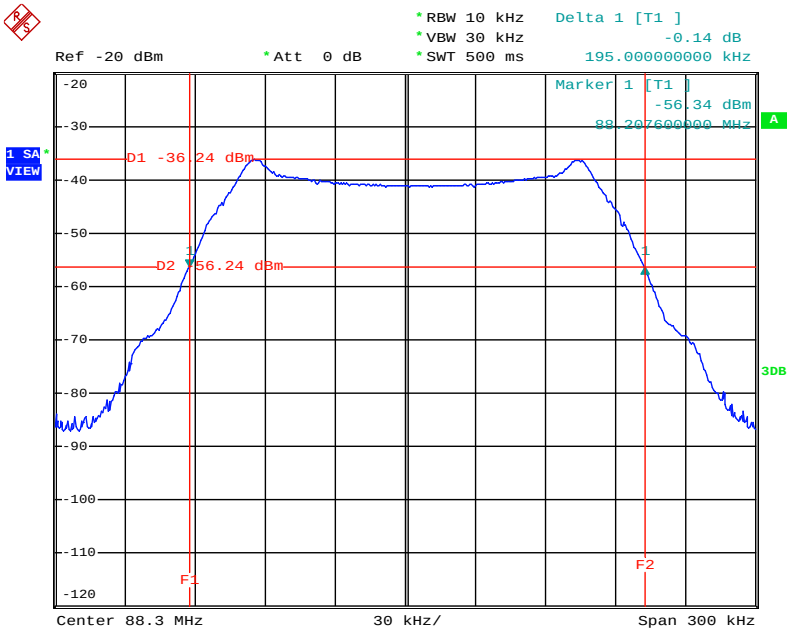
Input source through the Satellite Base Station continuously transmitter maximum audio input to EUT.

3.3.7. Test Result of 20dB Spectrum Bandwidth

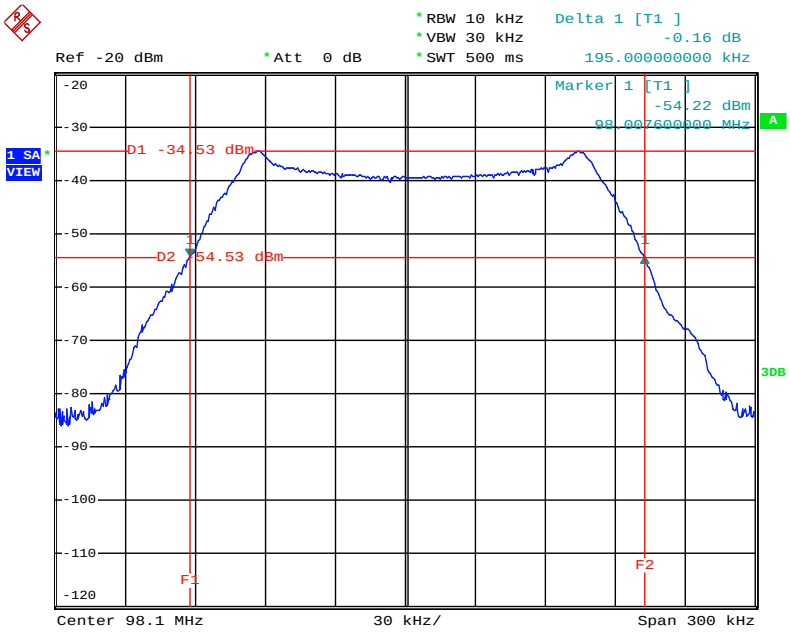
Final Test Date	May 16, 2012	**Test Site No.**	TH01-HY
Temperature	28.5℃	**Humidity**	35%
Test Engineer	Shiming	**Frequency**	88.3 MHz / 98.1 MHz / 107.7 MHz

Frequency	20dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Frequency range (MHz) f_L > 88MHz	Frequency range (MHz) f_H < 108MHz	Test Result
88.3 MHz	195.00	175.80	88.2076	-	**Complies**
98.1 MHz	195.00	175.80	-	-	**Complies**
107.7 MHz	195.00	175.80	-	107.8032	**Complies**

20dB Bandwidth Plot on 88.3 MHz



20dB Bandwidth Plot on 98.1 MHz



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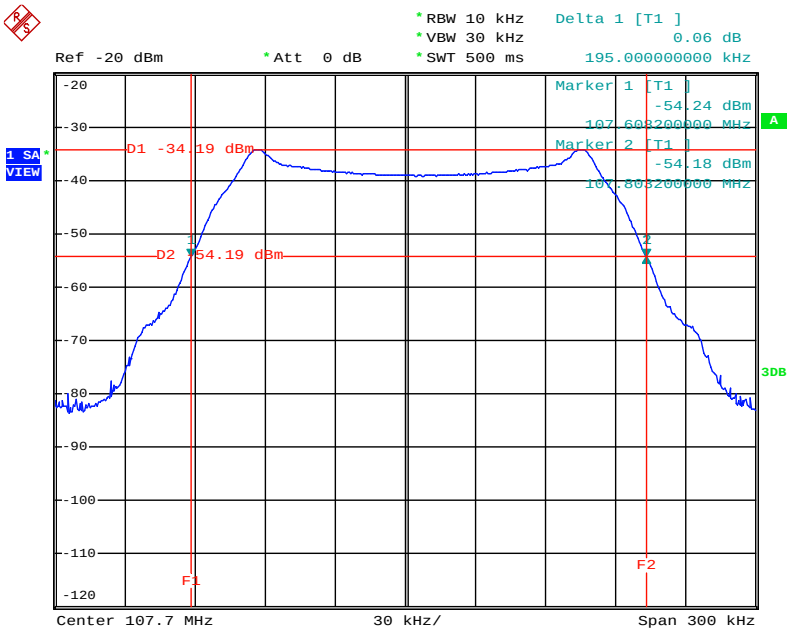
20dB Bandwidth Plot on 107.7 MHz



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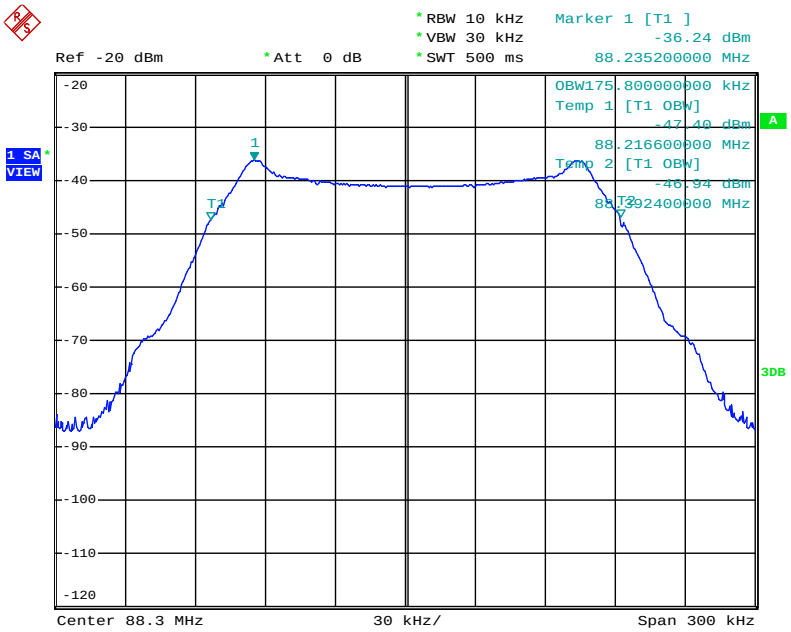
99% Occupied Bandwidth Plot on 88.3 MHz



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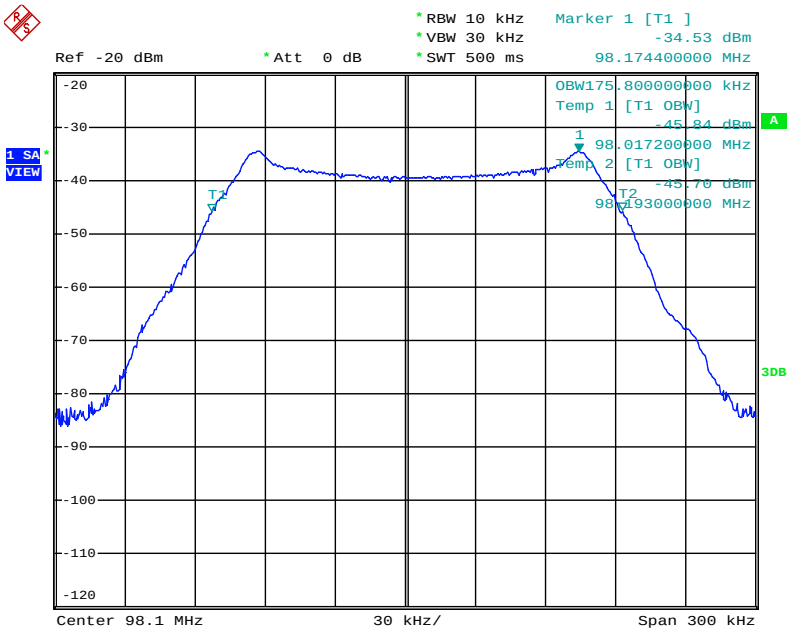
99% Occupied Bandwidth Plot on 98.1 MHz



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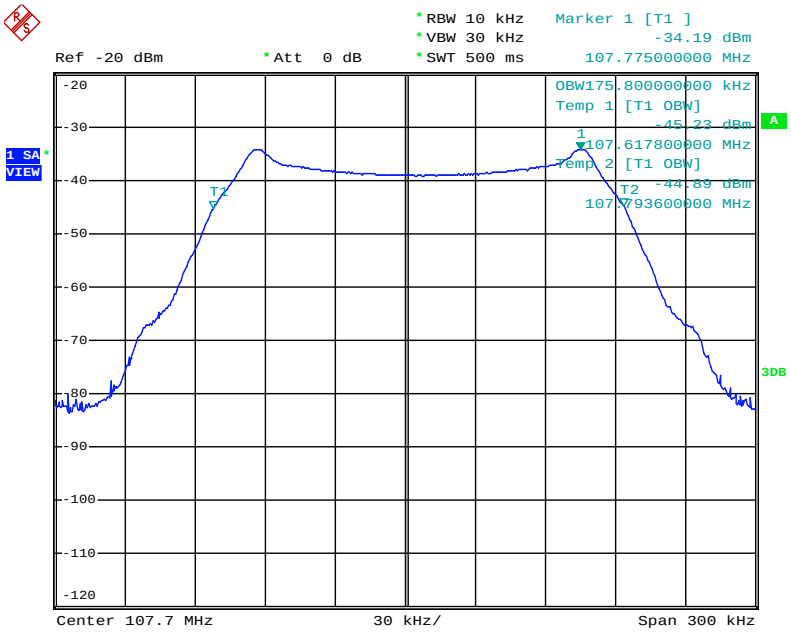
99% Occupied Bandwidth Plot on 107.7 MHz



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3.4. Radiated Emissions Measurement

3.4.1. Limit

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emissions limits in Section 2.2(b)

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

3.4.2. 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 and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

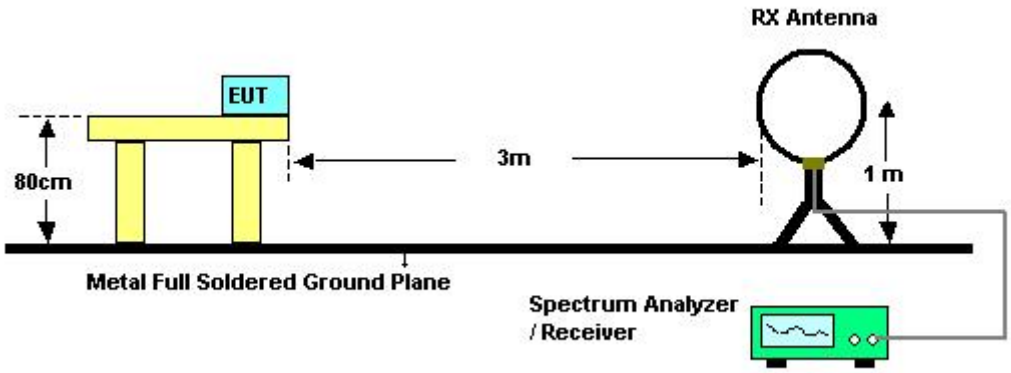
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.4.3. Test Procedures

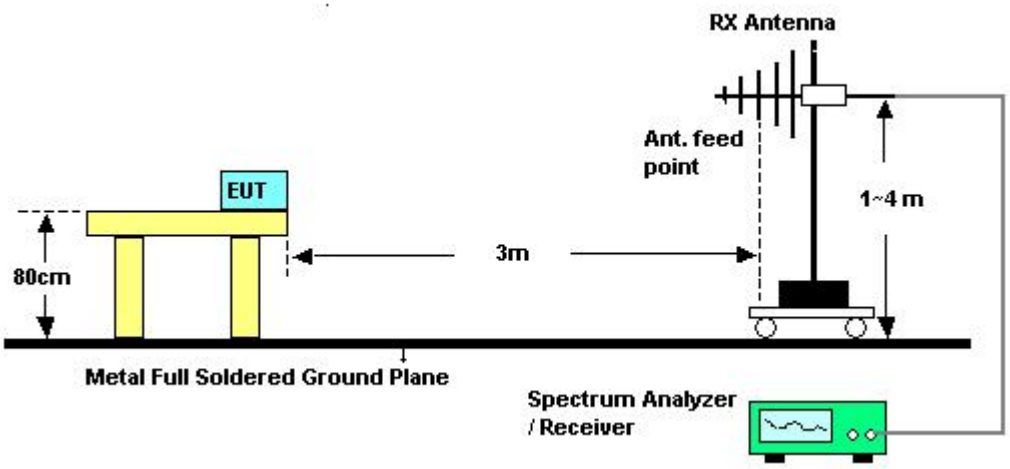
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

3.4.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.4.5. Test Deviation

There is no deviation with the original standard.

3.4.6. EUT Operation during Test

Input source through the Satellite Base Station continuously transmitter maximum audio input to EUT.

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

Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao		

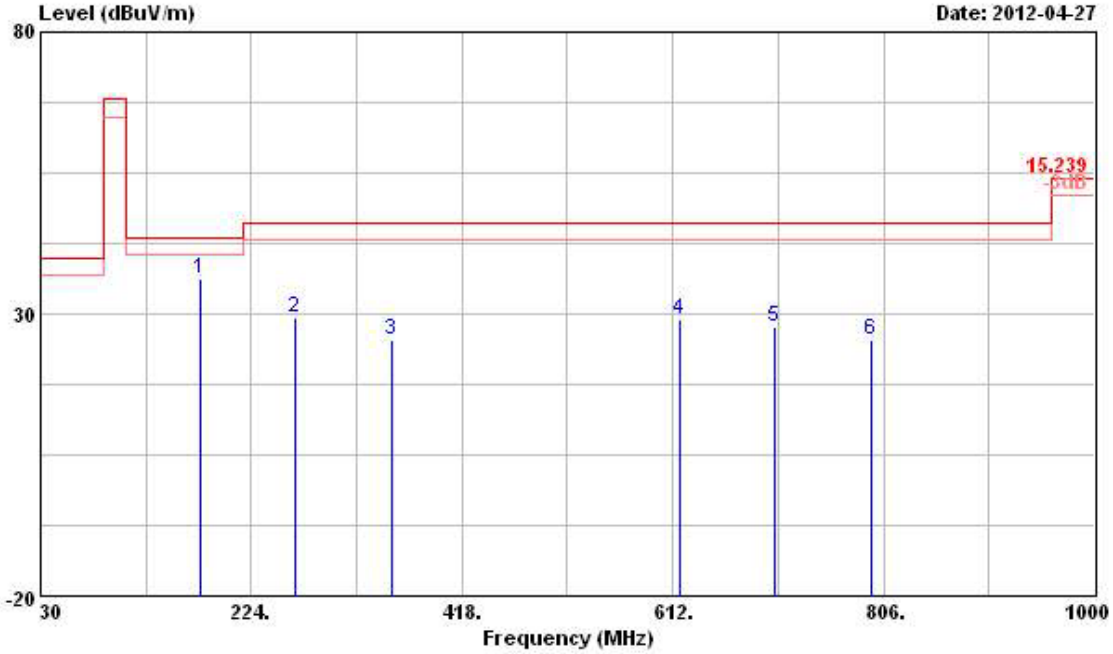
Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:
The amplitude of spurious emissions which are attenuated by more than 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.

3.4.8. Results for Radiated Emissions (30MHz~1GHz)

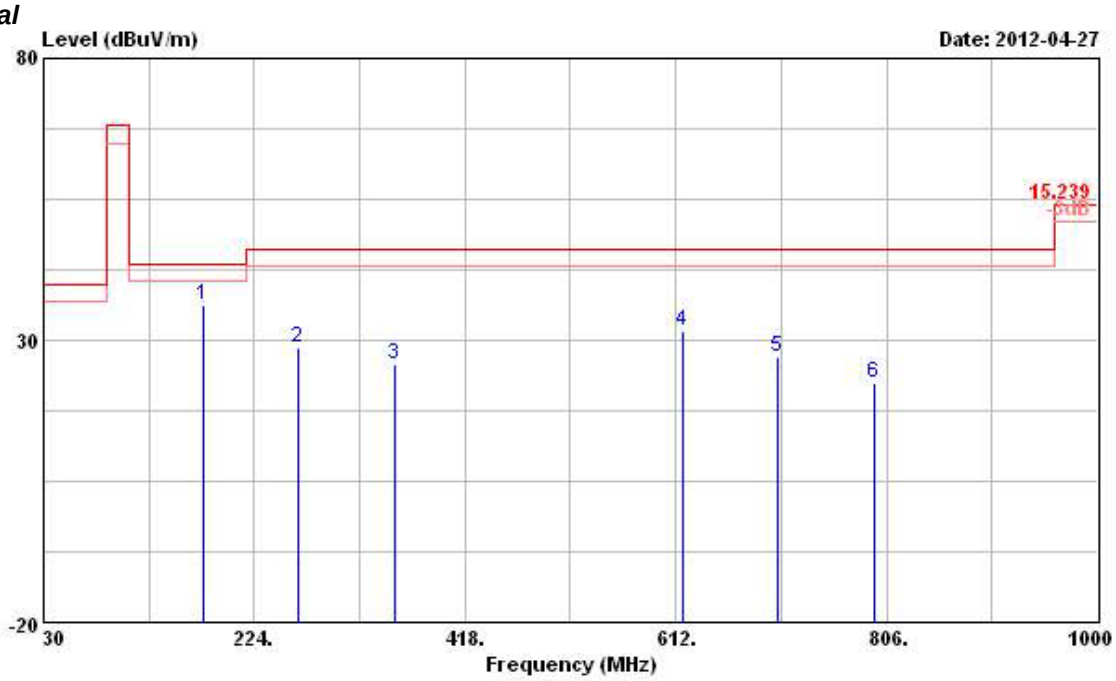
Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	88.3 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	176.600	36.16	-7.34	43.50	51.54	9.88	2.25	27.51	Peak	---	---
2	264.900	29.49	-16.51	46.00	40.70	13.21	2.83	27.25	Peak	---	---
3	353.200	25.51	-20.49	46.00	35.32	14.54	3.19	27.54	Peak	---	---
4	618.100	29.06	-16.94	46.00	33.24	19.95	4.30	28.43	Peak	---	---
5	706.400	27.65	-18.35	46.00	32.40	18.95	4.56	28.26	Peak	---	---
6	794.700	25.46	-20.54	46.00	28.36	20.19	4.87	27.96	Peak	---	---

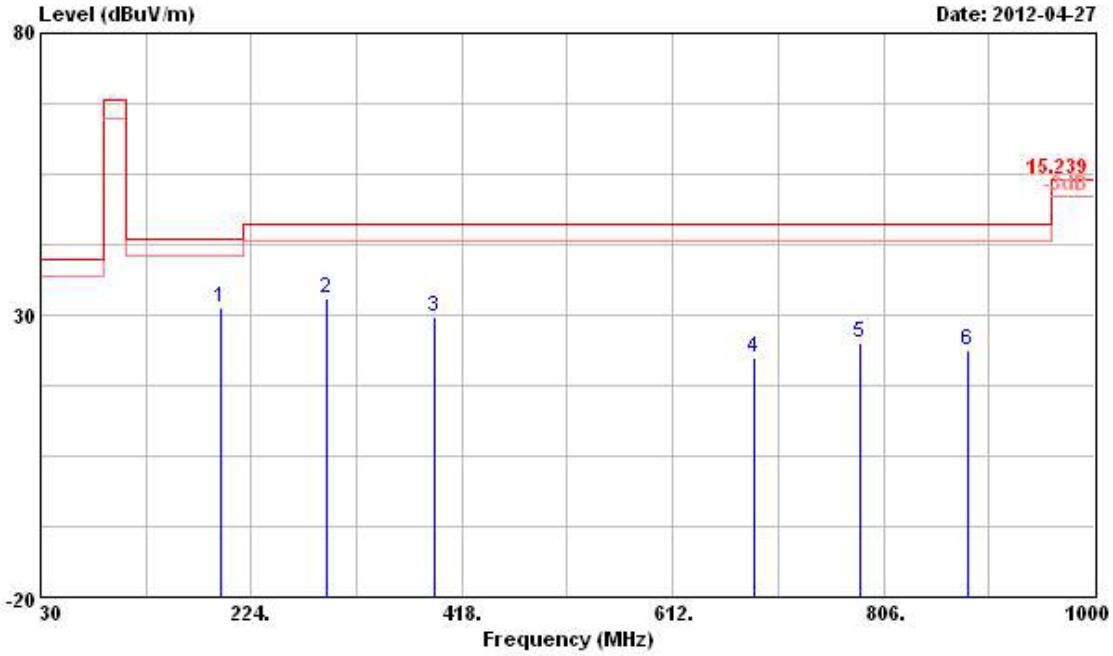
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	176.600	36.32	-7.18	43.50	51.70	9.88	2.25	27.51	Peak	---	---
2	264.900	28.72	-17.28	46.00	39.93	13.21	2.83	27.25	Peak	---	---
3	353.200	25.77	-20.23	46.00	35.58	14.54	3.19	27.54	Peak	---	---
4	618.100	31.76	-14.24	46.00	35.94	19.95	4.30	28.43	Peak	---	---
5	706.400	26.99	-19.01	46.00	31.74	18.95	4.56	28.26	Peak	---	---
6	794.700	22.38	-23.62	46.00	25.28	20.19	4.87	27.96	Peak	---	---

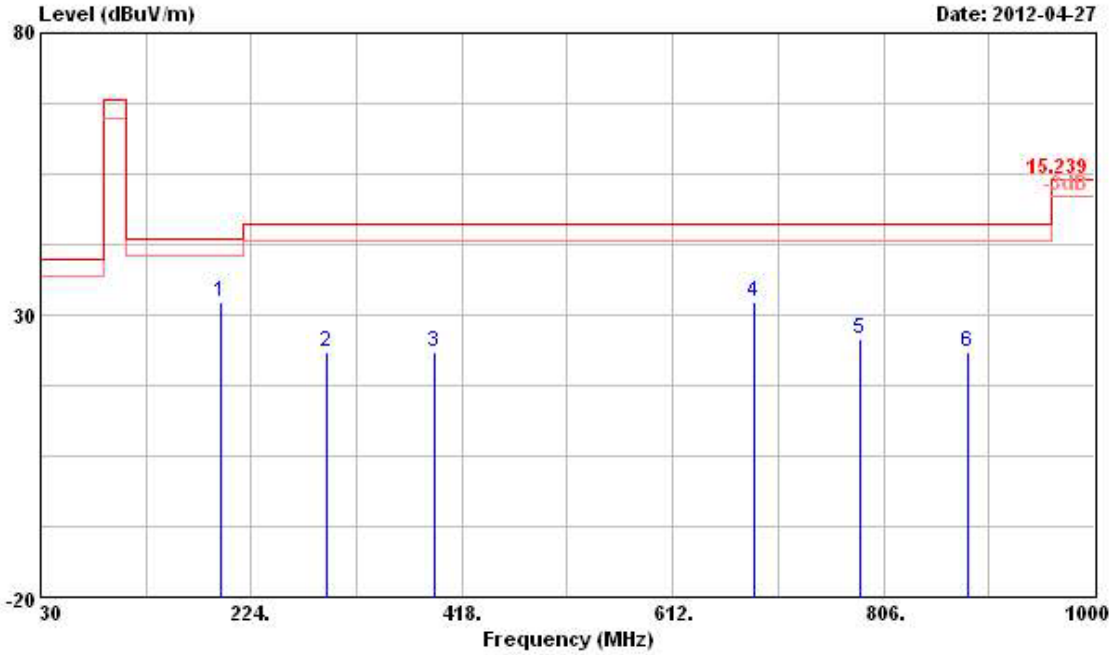
Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	98.1 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	196.200	31.20	-12.30	43.50	45.10	11.13	2.40	27.43	Peak	---	---
2	294.300	32.83	-13.17	46.00	43.45	13.62	2.94	27.18	Peak	---	---
3	392.400	29.82	-16.18	46.00	39.12	15.15	3.36	27.81	Peak	---	---
4	686.700	22.42	-23.58	46.00	27.20	19.02	4.50	28.30	Peak	---	---
5	784.800	24.97	-21.03	46.00	28.08	20.05	4.83	27.99	Peak	---	---
6	882.900	23.85	-22.15	46.00	26.26	20.07	5.18	27.66	Peak	---	---

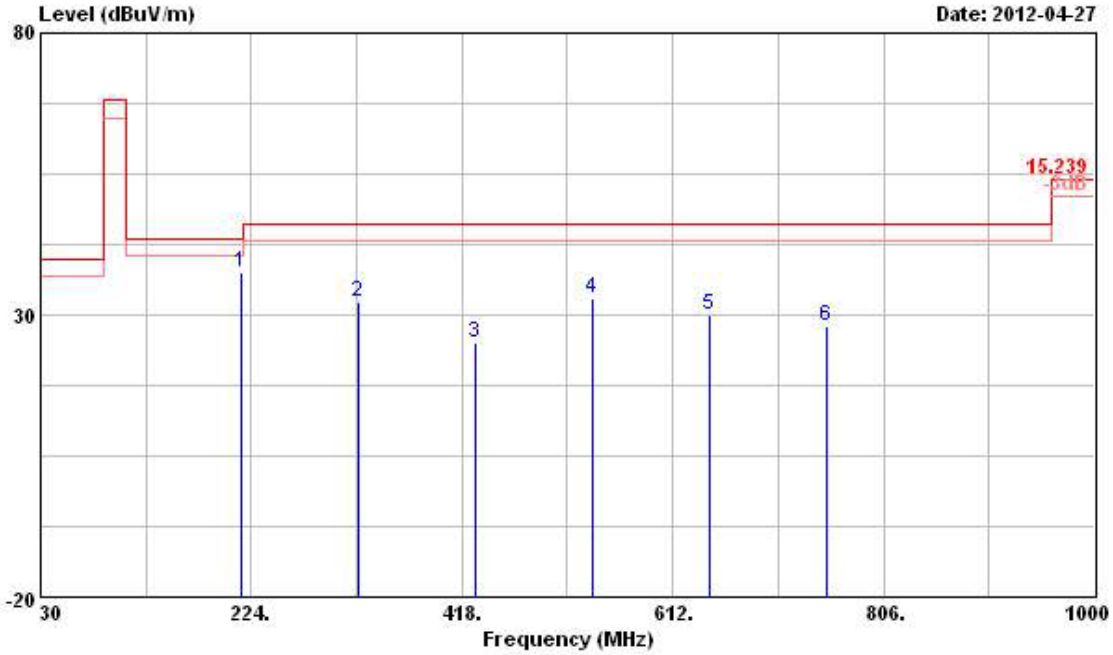
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	196.200	32.16	-11.34	43.50	46.06	11.13	2.40	27.43	Peak	---	---
2	294.300	23.36	-22.64	46.00	33.98	13.62	2.94	27.18	Peak	---	---
3	392.400	23.45	-22.55	46.00	32.75	15.15	3.36	27.81	Peak	---	---
4	686.700	32.24	-13.76	46.00	37.02	19.02	4.50	28.30	Peak	---	---
5	784.800	25.87	-20.13	46.00	28.98	20.05	4.83	27.99	Peak	---	---
6	882.900	23.32	-22.68	46.00	25.73	20.07	5.18	27.66	Peak	---	---

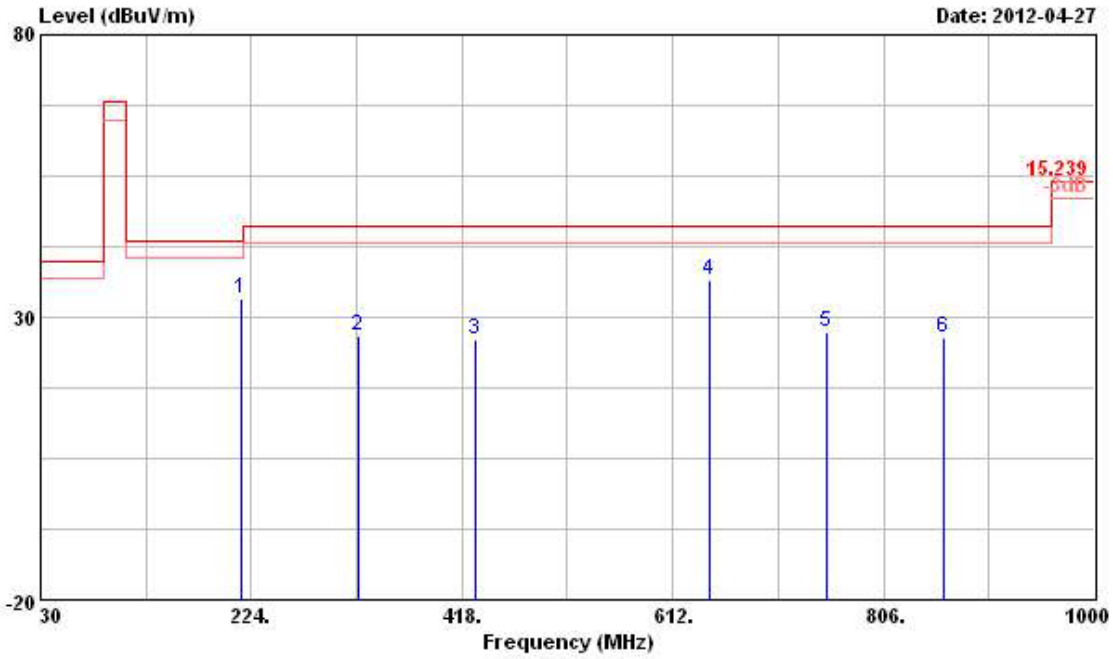
Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	107.7 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	215.400	37.52	-5.98	43.50	50.49	11.86	2.54	27.37	Peak	---	---
2	323.100	32.40	-13.60	46.00	42.60	14.07	3.06	27.33	Peak	---	---
3	430.800	25.16	-20.84	46.00	33.80	15.88	3.50	28.02	Peak	---	---
4	538.500	32.85	-13.15	46.00	38.86	18.41	3.99	28.41	Peak	---	---
5	646.200	30.07	-15.93	46.00	34.50	19.57	4.38	28.38	Peak	---	---
6	753.900	28.08	-17.92	46.00	31.83	19.62	4.72	28.09	Peak	---	---

Vertical



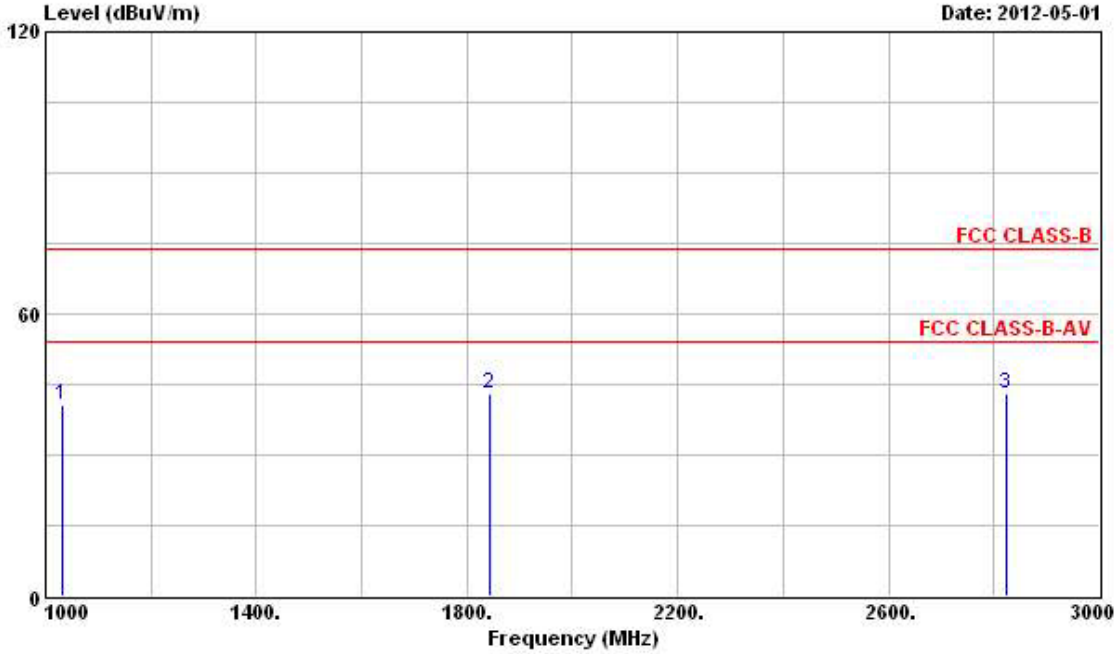
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	215.400	33.42	-10.08	43.50	46.39	11.86	2.54	27.37	Peak	---	---
2	323.100	26.72	-19.28	46.00	36.92	14.07	3.06	27.33	Peak	---	---
3	430.800	26.06	-19.94	46.00	34.70	15.88	3.50	28.02	Peak	---	---
4	646.200	36.68	-9.32	46.00	41.11	19.57	4.38	28.38	Peak	---	---
5	753.900	27.29	-18.71	46.00	31.04	19.62	4.72	28.09	Peak	---	---
6	861.600	26.25	-19.75	46.00	28.77	20.12	5.09	27.73	Peak	---	---

Note:
The amplitude of spurious emissions which 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.

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

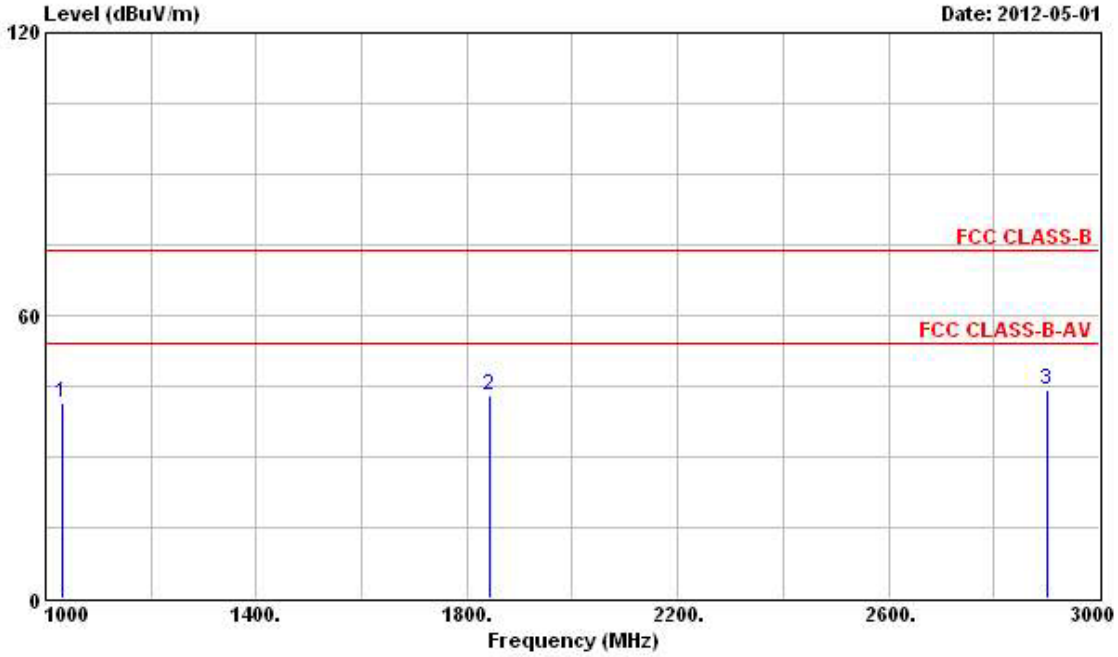
Final Test Date	May 01, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	88.3 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1030.000	40.78	-13.22	54.00	47.33	27.13	1.84	35.52	PK	---	---
2	1844.000	43.13	-10.87	54.00	45.82	29.39	2.59	34.67	PK	---	---
3	2822.000	43.02	-10.98	54.00	41.64	32.96	3.32	34.90	PK	---	---

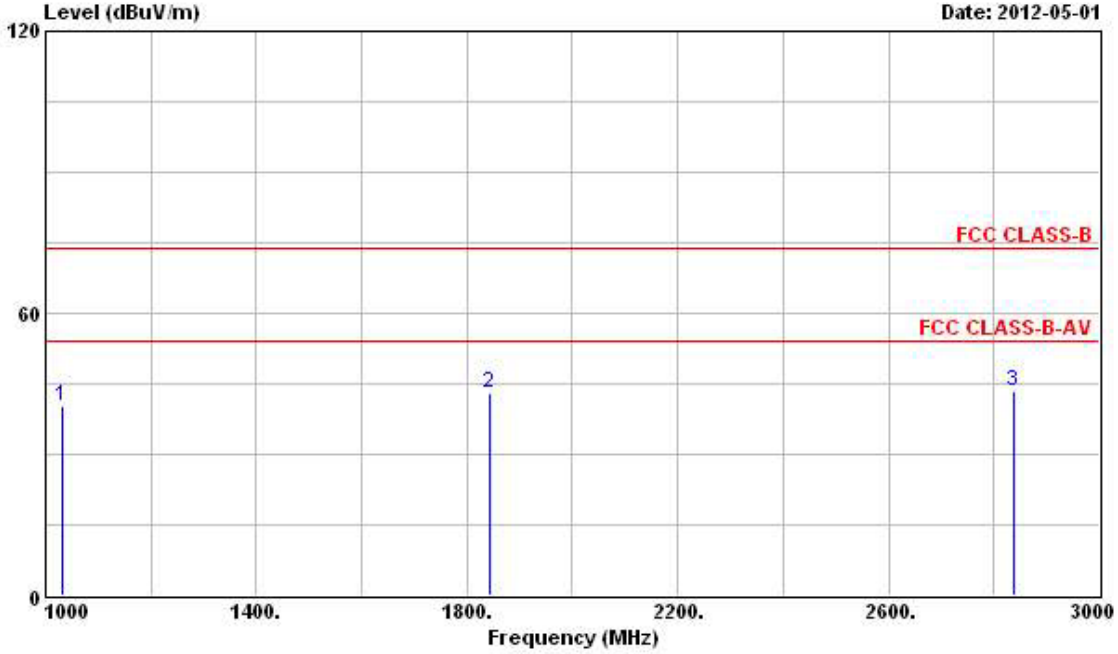
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1030.000	41.41	-12.59	54.00	48.10	26.99	1.84	35.52	PK	---	---
2	1844.000	43.00	-11.00	54.00	45.20	29.88	2.59	34.67	PK	---	---
3	2902.000	44.38	-9.62	54.00	42.89	33.04	3.37	34.92	PK	---	---

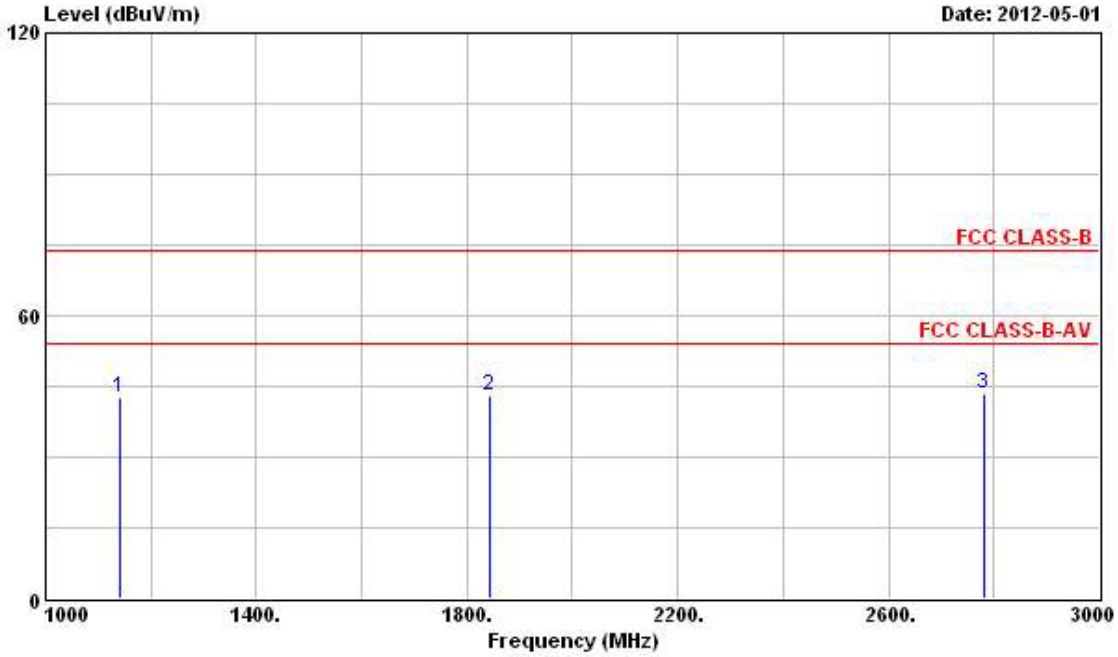
Final Test Date	May 01, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	98.1 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1030.000	40.23	-13.77	54.00	46.78	27.13	1.84	35.52	PK	---	---
2	1844.000	42.96	-11.04	54.00	45.65	29.39	2.59	34.67	PK	---	---
3	2838.000	43.57	-10.43	54.00	42.15	33.00	3.32	34.90	PK	---	---

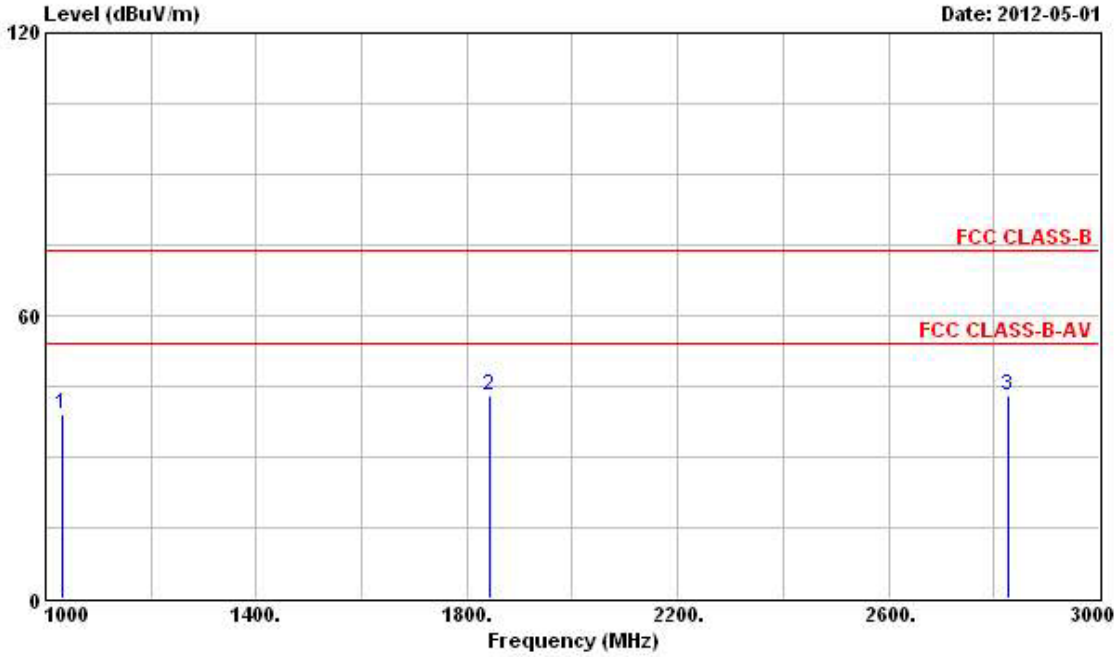
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1142.000	42.61	-11.39	54.00	48.73	27.26	1.95	35.33	PK	---	---
2	1844.000	43.16	-10.84	54.00	45.36	29.88	2.59	34.67	PK	---	---
3	2780.000	43.53	-10.47	54.00	42.28	32.85	3.29	34.89	PK	---	---

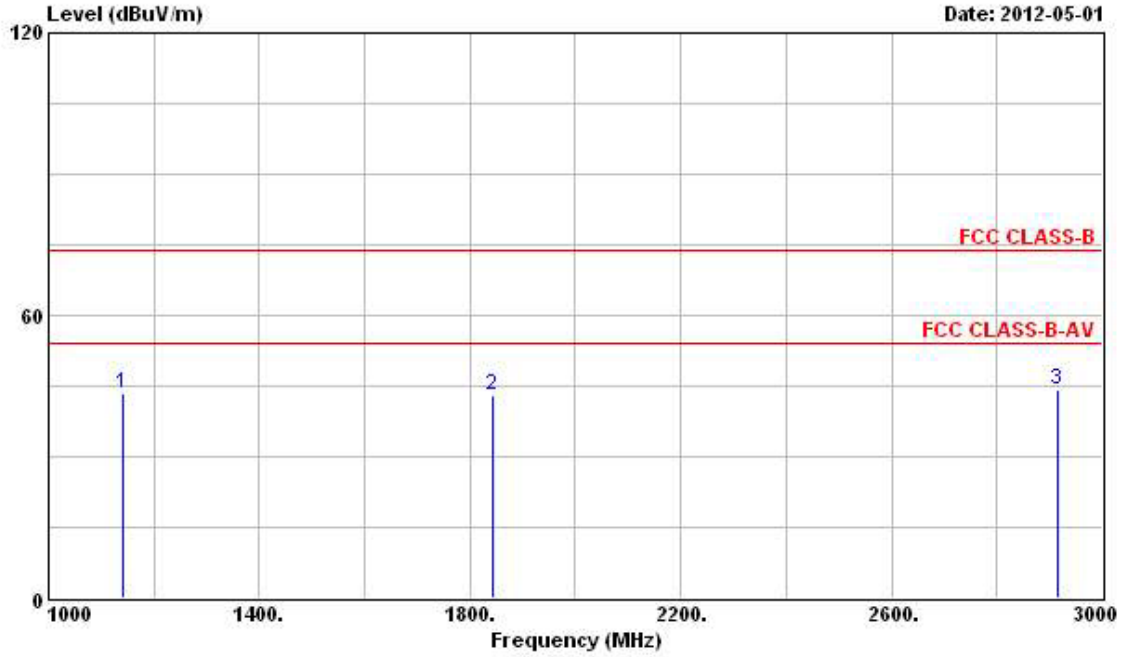
Final Test Date	May 01, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	107.7 MHz

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1030.000	39.26	-14.74	54.00	45.81	27.13	1.84	35.52	PK	---	---
2	1844.000	43.02	-10.98	54.00	45.71	29.39	2.59	34.67	PK	---	---
3	2828.000	43.02	-10.98	54.00	41.60	33.00	3.32	34.90	PK	---	---

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1142.000	43.55	-10.45	54.00	49.67	27.26	1.95	35.33	PK	---	---
2	1844.000	42.83	-11.17	54.00	45.03	29.88	2.59	34.67	PK	---	---
3	2916.000	44.21	-9.79	54.00	42.69	33.07	3.37	34.92	PK	---	---

Note:
The amplitude of spurious emissions which 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. Band Edge Emissions and Tuning Range of FM transmitter Measurement

3.5.1. Limit

Band edge emissions outside of the frequency bands shown in below table. Check the tuning range of FM transmitter.

Outside Frequency Band Edge	Limit (dBuV/m) at 3m
Below 88MHz	40.0 (QP)
Above 108MHz	43.5 (QP)

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 the receiver.

Receiver Parameter	Setting
Center Frequency	Fundamental Frequency
RB	120 kHz
Detector	QP or Peak

3.5.3. Test Procedures

The test procedure is the same as section 3.4.3, only the frequency range investigated is limited to 2MHz around bandedges.

3.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 3.4.4

3.5.5. Test Deviation

There is no deviation with the original standard.

3.5.6. EUT Operation during Test

Input source through the Satellite Base Station continuously transmitter maximum audio input to EUT.

3.5.7. Test Result of Band Edge and Fundamental Emissions

Final Test Date	Apr. 27, 2012	**Test Site No.**	03CH02-HY
Temperature	21℃	**Humidity**	42%
Test Engineer	Hsiao	**Frequency**	88.3 MHz / 107.7 MHz

Frequency 88.3 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	87.960	37.08	-2.92	40.00	54.25	9.11	1.57	27.85	Peak	---	---

Frequency 107.7 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
3	108.140	26.16	-17.34	43.50	40.14	12.11	1.73	27.82	Peak	---	---

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

3.5.8. Tuning Range of FM transmitter

Specific Tuning Range	88 MHz~108 MHz
Actually Operate Tuning Channel Frequency	88.3 MHz~107.7 MHz
Actually Operate Tuning Mechanism Range	88 MHz~108 MHz

3.6. Antenna Requirements

3.6.1. 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.

3.6.2. Antenna Connector Construction

Please refer to section 2.1 in this test report, antenna connector complied with the requirements.

4. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9 KHz ~ 40 GHz	Feb. 21, 2012	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 03, 2011	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20~100℃	Dec. 07, 2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10 MHz ~ 40 GHz	Jun. 07, 2011	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	1027452	300 MHz ~ 40 GHz	Jun. 16, 2011	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	1124009	300 MHz ~ 40 GHz	Jun. 20, 2011	Conducted (TH01-HY)
RF Cable-1m	Jye Bao	RG142	CB034-1m	20 MHz ~ 7 GHz	Dec. 03, 2011	Conducted (TH01-HY)
RF Cable-2m	Jye Bao	RG142	CB035-2m	20 MHz ~ 1 GHz	Dec. 03, 2011	Conducted (TH01-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	FSP40	100593	9 kHz ~ 40 GHz	Aug. 08, 2011	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz ~ 1 GHz 3m	May 11, 2011	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100 kHz ~ 1.3 GHz	Jul. 25, 2011	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1 GHz ~ 26.5 GHz	Jul. 25, 2011	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1 GHz ~ 18 GHz	Nov. 15, 2011	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz ~ 1 GHz	Nov. 11, 2011	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1 GHz ~ 40 GHz	Mar. 06, 2012	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz ~ 2 GHz	Oct. 22, 2011	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 221, Taiwan, 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 Vil., Linkou Dist., New Taipei City 244, Taiwan, R.O.C.
	TEL	:	886-2-2601-1640
	FAX	:	886-2-2601-1695
DUNGHU	ADD	:	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei 114, Taiwan, R.O.C.
	TEL	:	886-2-2631-4739
	FAX	:	886-2-2631-9740
JUNGHE	ADD	:	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei 235, Taiwan, 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. : L1190-111208

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 : December 08, 2011

P1, total 24 pages

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