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FCC RADIO TEST REPORT

Applicant's company	**Wistron NeWeb Corporation**
Applicant Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.
FCC ID	**NKRUPAST410**
Manufacturer's company 1	**Wistron NeWeb Corporation**
Manufacturer Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.
Manufacturer's company 2	**WNC (Kunshan) Corporation**
Manufacturer Address	No. 88, Central Avenue, Area B, Kunshan Export Processing Zone, Kunshan City, Jiangsu, China

Product Name	STARMATE REPLY IV
Brand Name	SIRIUS SATELLIATE RADIO
Model Name	ST4(A)
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.239
Test Freq. Range	88 ~ 108MHz
Received Date	Jun. 11, 2007
Final Test Date	Jun. 27, 2007
Submission Type	Original Equipment

Statement

The device is only possible within the range 88.1-107.9MHz.
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

Table of Contents

History of This Test Report

Original Issue Date: Jul. 03, 2007

Report No.: FR761511

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	STARMATE REPLY IV
Brand Name	:	SIRIUS SATELLIATE RADIO
Model Name	:	ST4(A)
Applicant	:	Wistron NeWeb Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.239

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 11, 2007 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

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
-	15.207	AC Power Line Conducted Emissions	-	-
4.1	15.239(b)	Field Strength of Fundamental Emissions	Complies	0.10 dB
4.2	15.239(a)	20dB Spectrum Bandwidth	Complies	-
4.3	15.239(c)	Radiated Emissions	Complies	3.52 dB
4.4	15.239(c)	Band Edge Emissions	Complies	1.30 dB
4.5	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
Field Strength of Fundamental Emissions	±3.72dB	Confidence levels of 95%
20dB Spectrum Bandwidth	±6.25×10-7	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	±3.72dB	Confidence levels of 95%

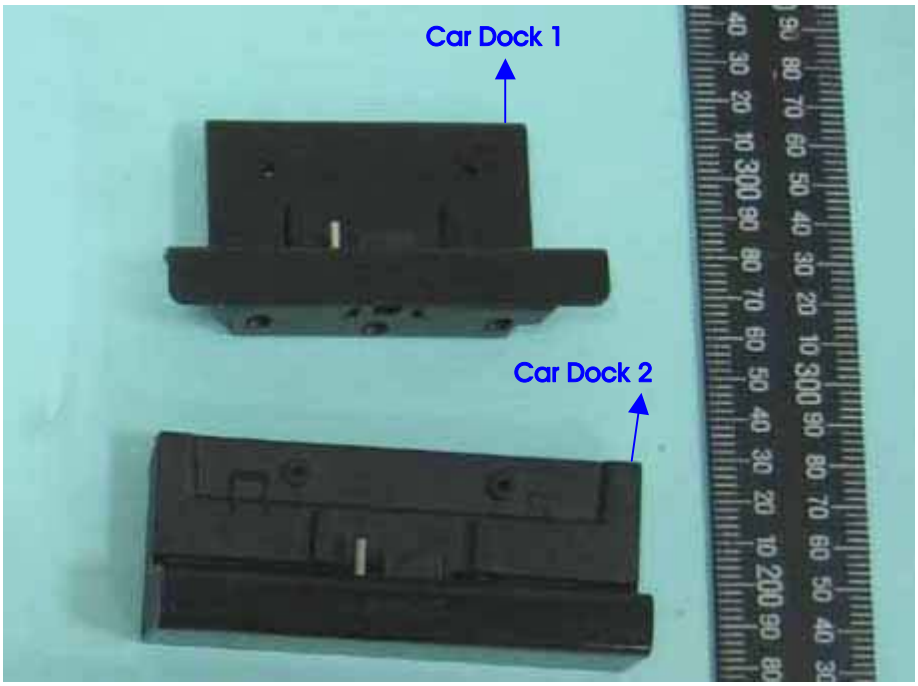
3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	Low Power Communication Device (FM Transmitter)
Radio Type	Intentional Transmitter
Power Type	Cigarette Lighter Adapter
Interface Type	ANT / FM OUT / AUDIO / 5VDC
Modulation	FM
Frequency Range	88 ~ 108MHz
Channel Number	100
Channel Band Width (99%)	159.61 kHz
Max. Field Strength	47.90 dBuV/m at 3m (Average)
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

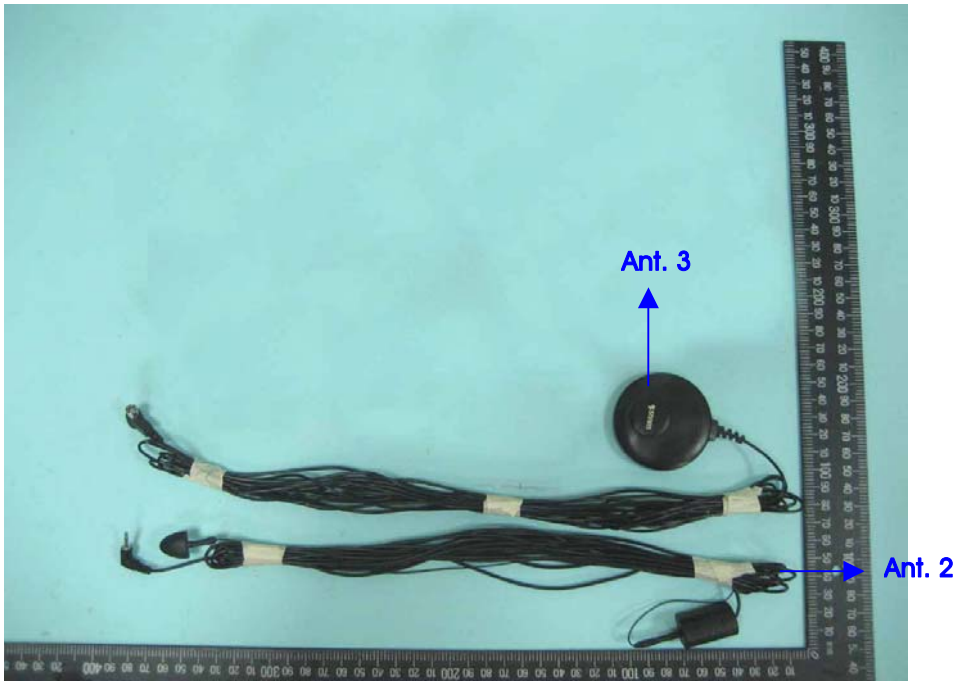
Power	Brand	Model	Rating
Cigarette Lighter Adapter	SIRIUS	DDA-10W-52	Input: 9-16VDC, 1.5A Output: +5.2VDC, 2A
Others			
Car Dock, Remote controller			



3.3. Table for Filed Antenna

Ant.	Description
1	Internal antenna (for FM transmitter); Antenna gain: -7dBi
2	External antenna (for FM transmitter) – connector: Audio Jack (2.5mm); Antenna gain: -7dBi
3	External antenna (for Satellite receiver)

Note: The EUT has two transmitting antennas. But there is only one will be used at the same time.



3.4. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
88 ~ 108MHz	1	88.1 MHz
	2	88.3 MHz
	:	:
	50	97.9 MHz
	51	98.1 MHz
	52	98.3 MHz
	:	:
	99	107.7 MHz
	100	107.9 MHz

3.5. 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	Channel	Antenna
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX1 / Mode 4	1/51/100	1+3
Radiated Emissions 9kHz~30MHz	CTX1 / Mode 4	51	1+3
Radiated Emissions 30MHz~10th Harmonic	CTX1 / Mode 4	1/51/100	1+3
Band Edge Emissions	CTX1 / Mode 4	1/100	1+3

Test Mode:

Mode 1: TX Ant.1, RX Ant without bundle of cable (cable is placed as S type), Car Dock 1.

Mode 2: TX Ant.1, RX Ant without bundle of cable (cable is placed as S type), Car Dock 2.

Mode 3: TX Ant.1, RX Ant with bundle of cable, Car Dock 1.

Mode 4: TX Ant.1, RX Ant with bundle of cable, Car Dock 2.

Mode 5: TX Ant.2 without bundle of cable (cable is placed as S type), RX Ant without bundle of cable (cable is placed as S type), Car Dock 1.

Mode 6: TX Ant.2 without bundle of cable (cable is placed as S type), RX Ant without bundle of cable (cable is placed as S type), Car Dock 2.

Mode 7: TX Ant.2 without bundle of cable (cable is placed as S type), RX Ant with bundle of cable, Car Dock 1.

Mode 8: TX Ant.2 without bundle of cable (cable is placed as S type), RX Ant with bundle of cable, Car Dock 2.

Mode 9: TX Ant.2 without bundle of cable (cable is placed as Circuit type), RX Ant without bundle of cable (cable is placed as S type), Car Dock 1.

Mode 10: TX Ant.2 without bundle of cable (cable is placed as Circuit type), RX Ant without bundle of cable (cable is placed as S type), Car Dock 2.

Mode 11: TX Ant. 2 without bundle of cable (cable is placed as Circuit type), RX Ant with bundle of cable, Car Dock 1.

Mode 12: TX Ant. 2 without bundle of cable (cable is placed as Circuit type), RX Ant with bundle of cable, Car Dock 2.

30MHz~1GHz: Mode 4 has been evaluated to be the worst case when this device operates in 88~108MHz, thus measurement under 30MHz~1GHz will follow this same test mode.

88~108MHz: Due to Mode 4 generated the worst test result, so it was recorded in this report.

Note: CTX1=Continuously transmitting and audio modulating content a range of 100 to 5000 Hz.

3.6. Table for Testing Locations

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

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

Please refer section 6 for Test Site Address.

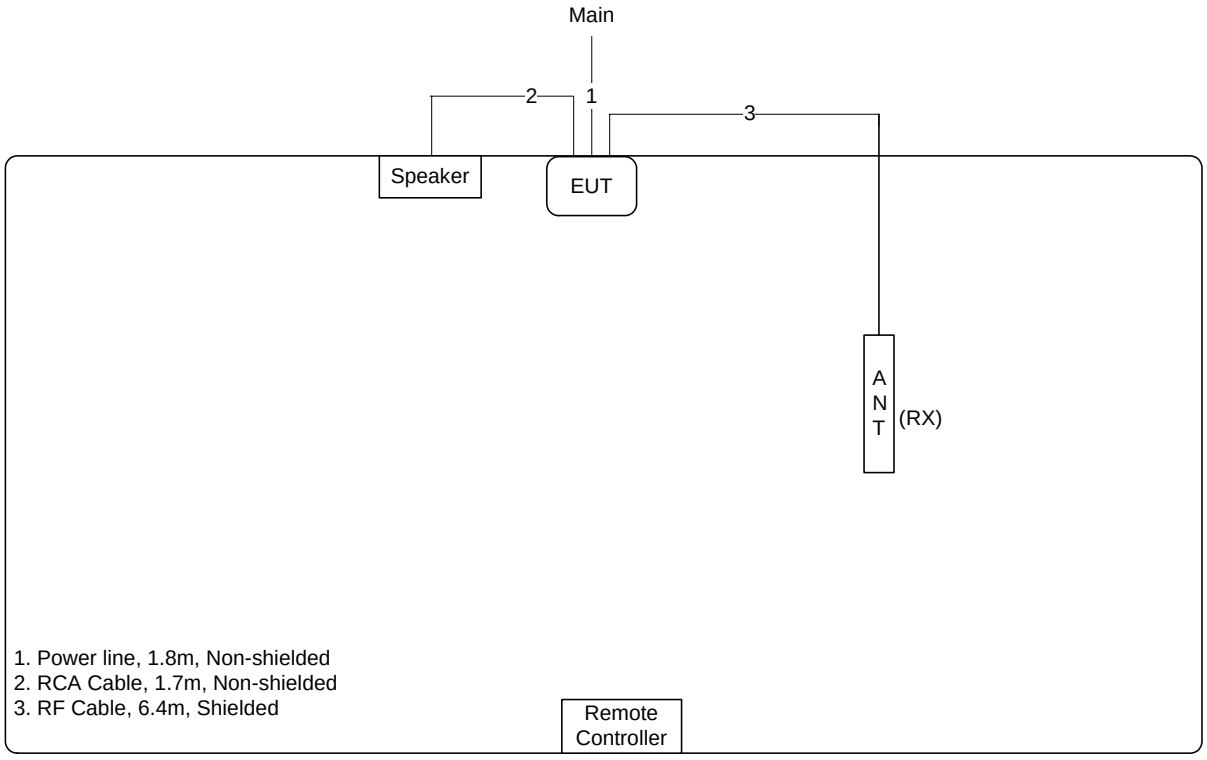
3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Speaker	BLUEsky	SP510	DoC

3.8. Test Configurations

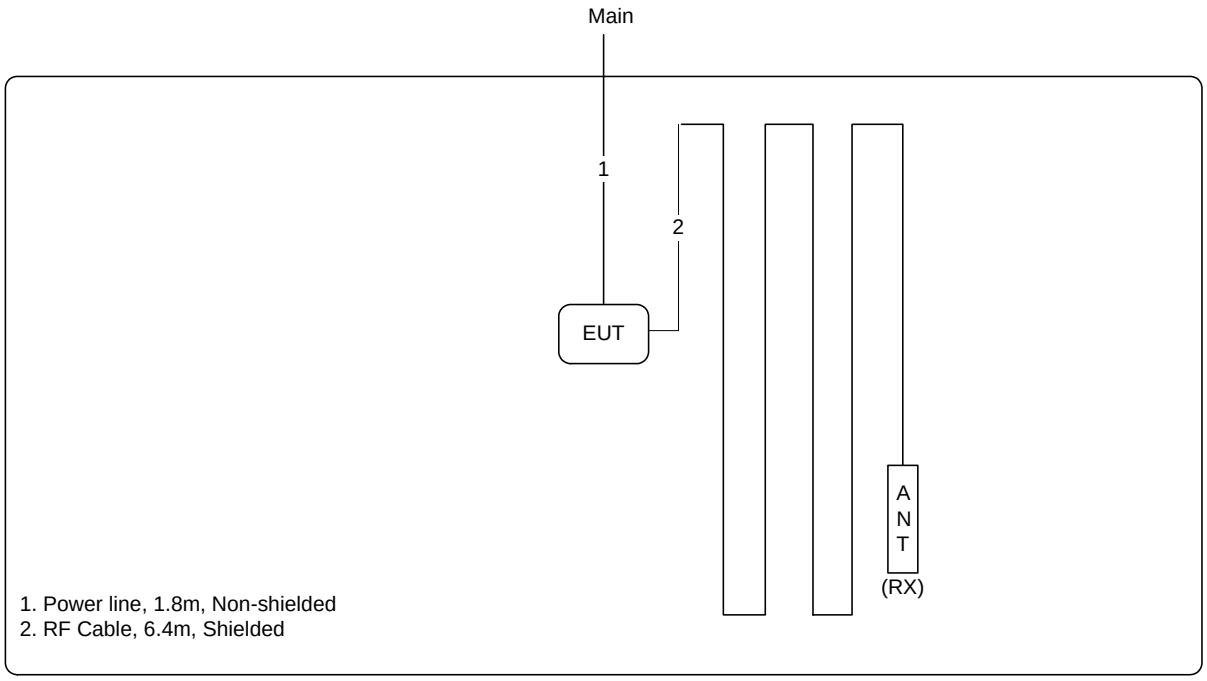
3.8.1. Radiation Emissions Test Configuration

Test Configurations: 30MHz~1GHz (Test Mode 4)



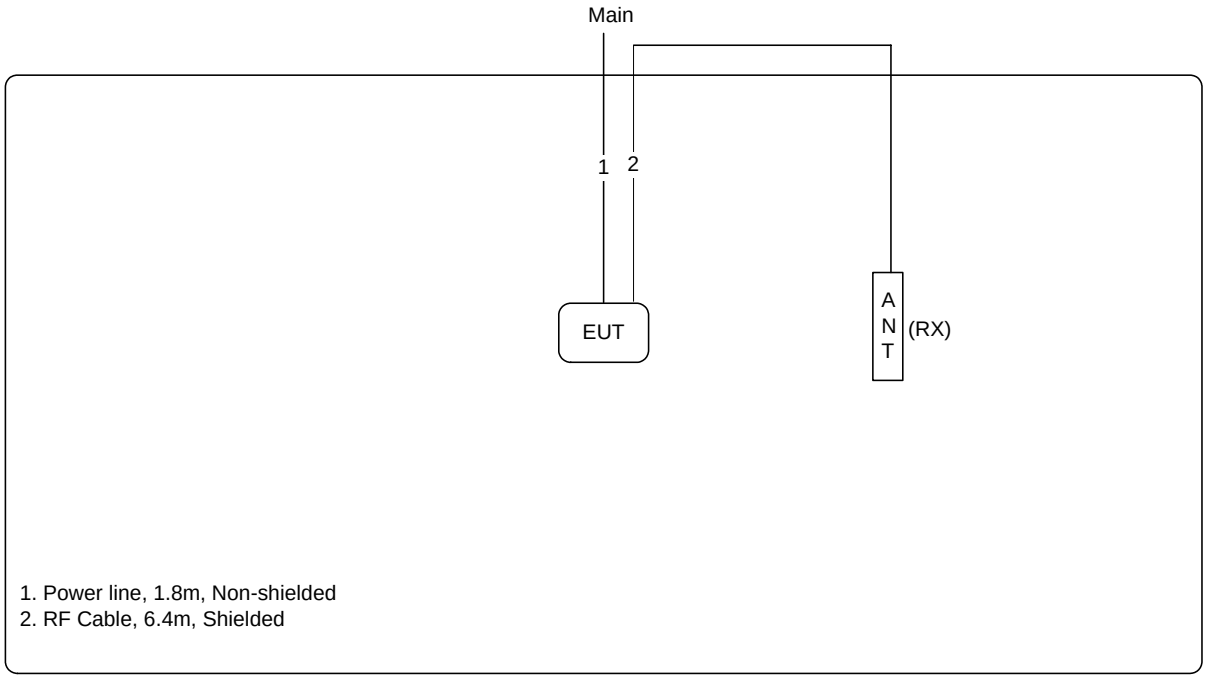
Test Mode 1 / Test Mode 2

Test Configurations: 88~108MHz



Test Mode 3 / Test Mode 4

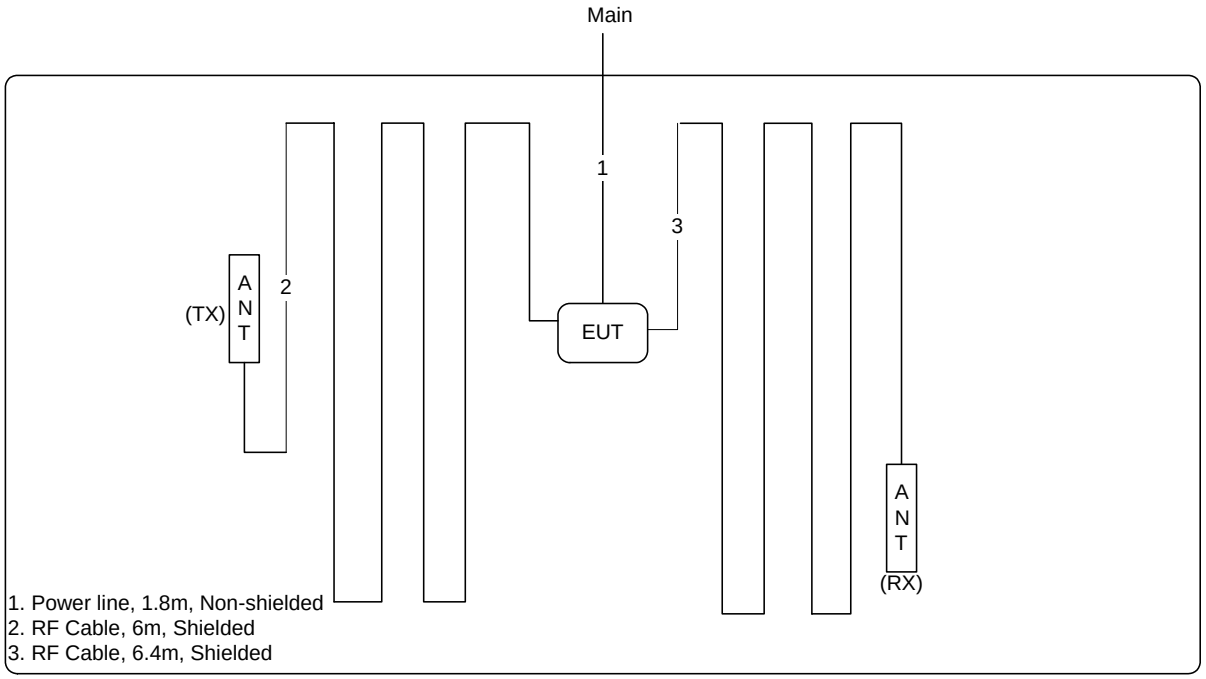
Test Configurations: 88~108MHz



1. Power line, 1.8m, Non-shielded
2. RF Cable, 6.4m, Shielded

Test Mode 5 / Test Mode 6

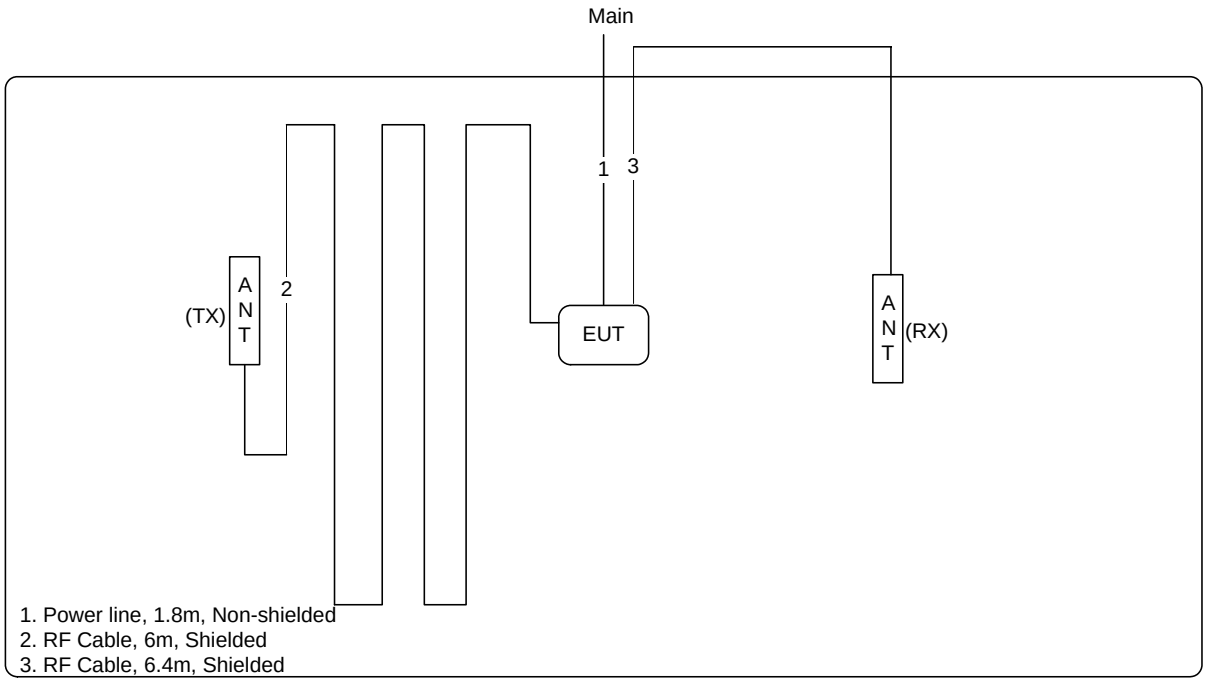
Test Configurations: 88~108MHz



1. Power line, 1.8m, Non-shielded
2. RF Cable, 6m, Shielded
3. RF Cable, 6.4m, Shielded

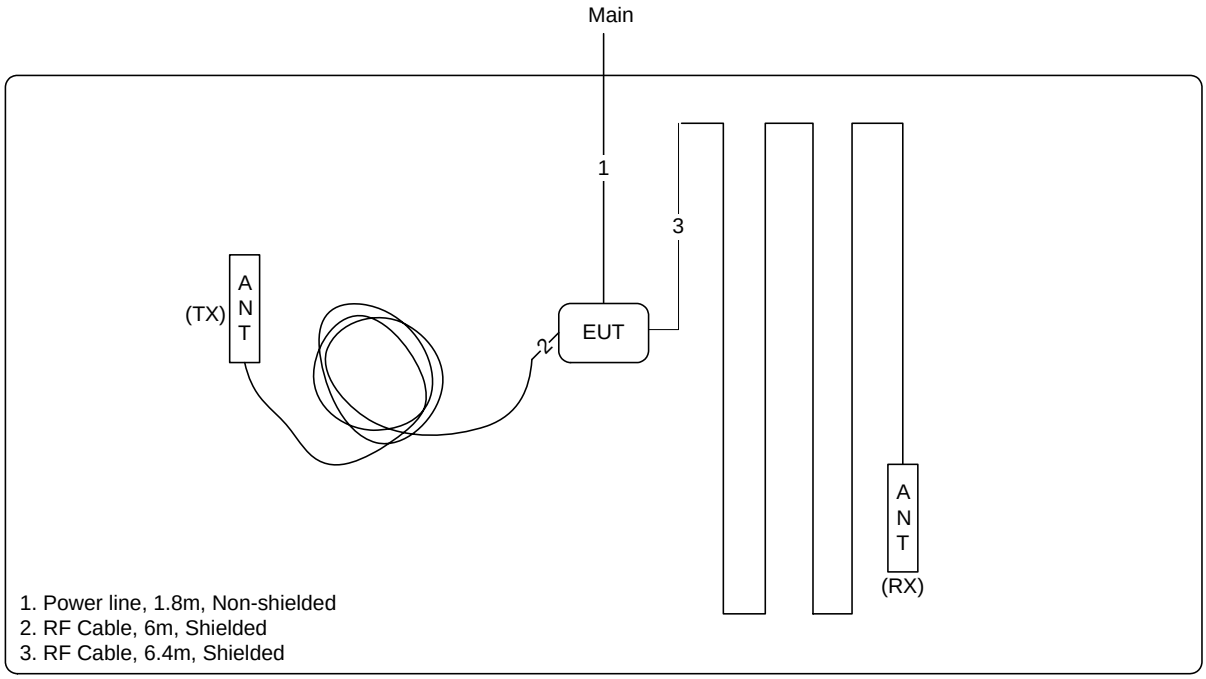
Test Mode 7 / Test Mode 8

Test Configurations: 88~108MHz



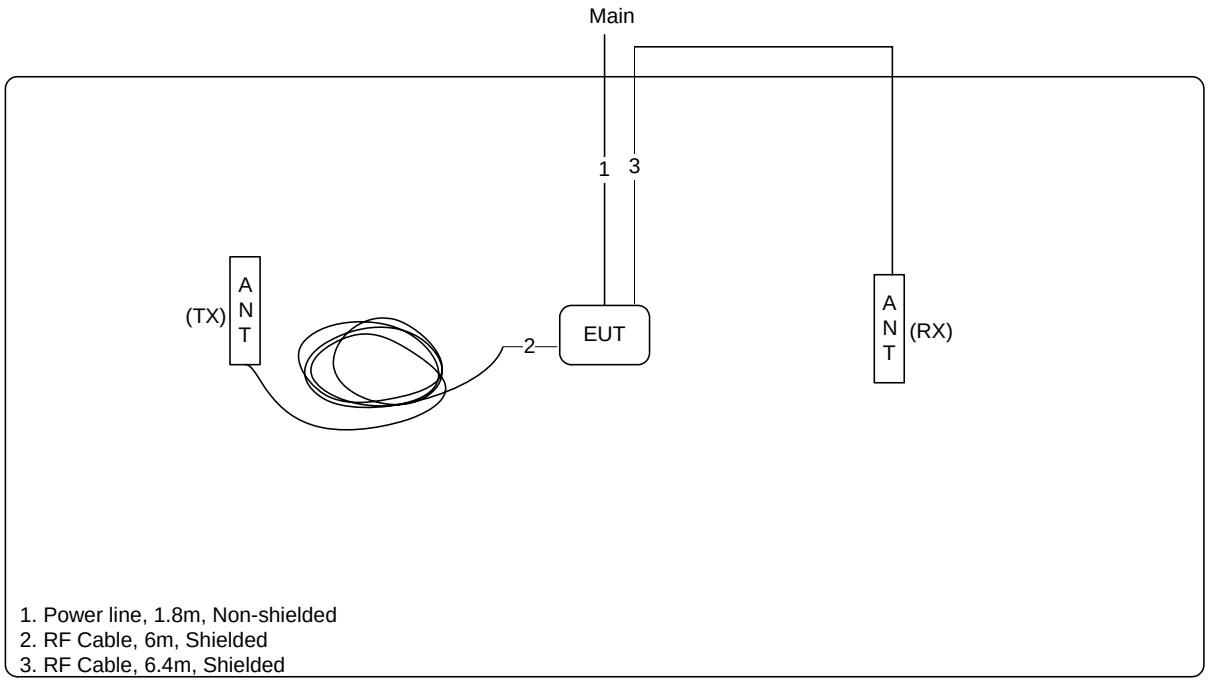
Test Mode 9 / Test Mode 10

Test Configurations: 88~108MHz



Test Mode 11 / Test Mode 12

Test Configurations: 88~108MHz



1. Power line, 1.8m, Non-shielded
2. RF Cable, 6m, Shielded
3. RF Cable, 6.4m, Shielded

4. TEST RESULT

4.1. Field Strength of Fundamental Emissions Measurement

4.1.1. 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)

4.1.2. Measuring Instruments and Setting

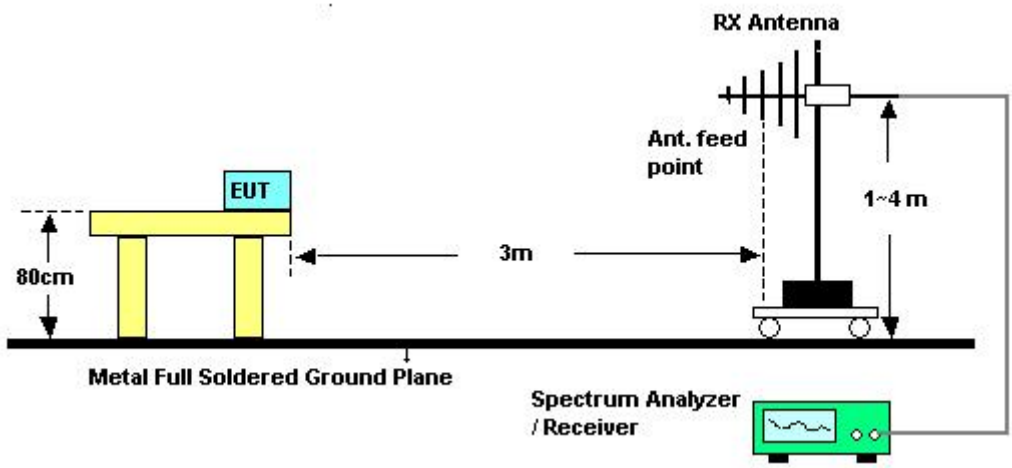
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. 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.

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

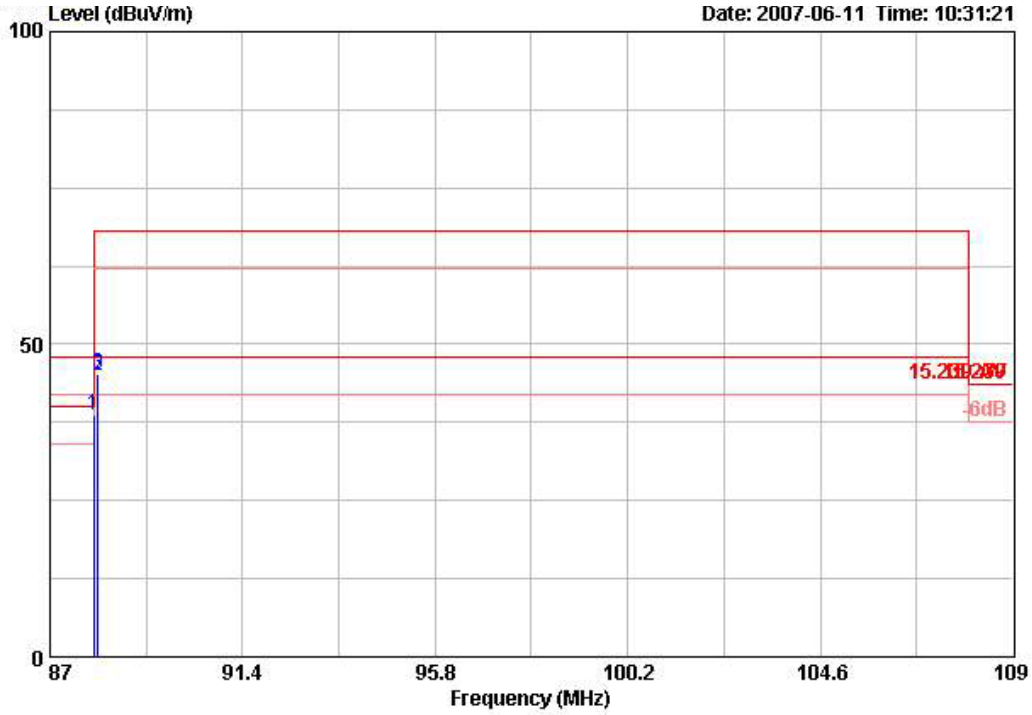
4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Field Strength of Fundamental Emissions

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 1

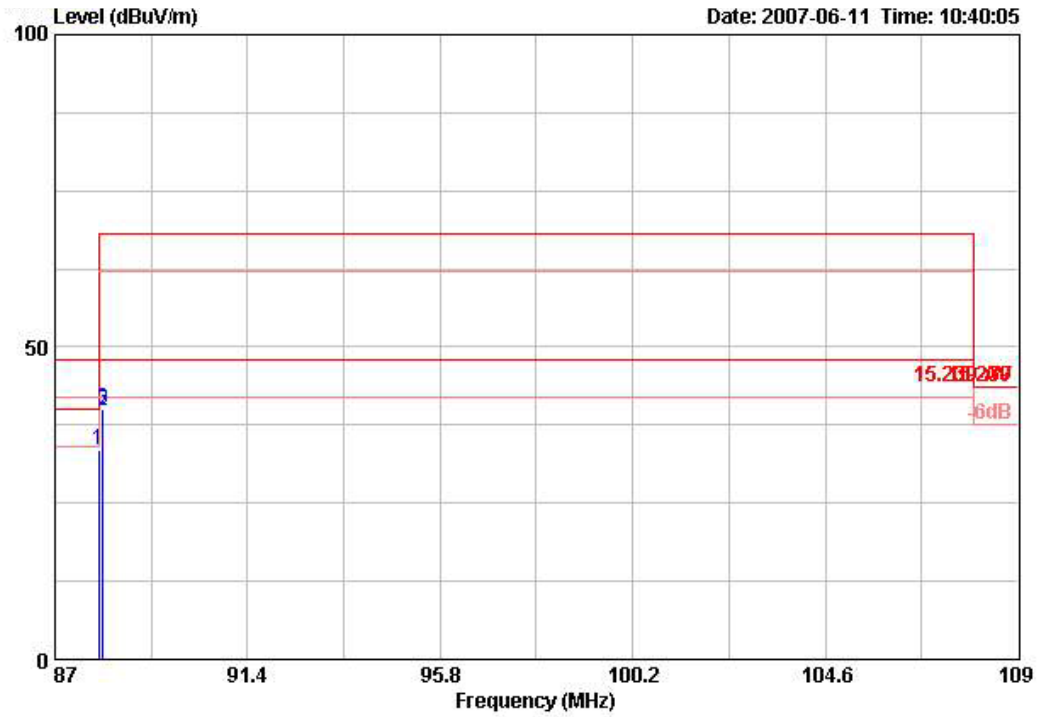
Horizontal



	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
2	88.092	45.05	-22.95	68.00	61.64	8.98	0.55	26.12	PEAK	129	138
3 !	88.096	45.17	-2.83	48.00	61.76	8.98	0.55	26.12	AVERAGE	129	138

Item 2, 3 are fundamental frequency at 88.1 MHz.

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
2	88.095	39.92	-8.08	48.00	56.51	8.98	0.55	26.12	AVERAGE	194	283
3	88.095	39.94	-28.06	68.00	56.53	8.98	0.55	26.12	PEAK	194	283

Item 2, 3 are fundamental frequency at 88.1 MHz.

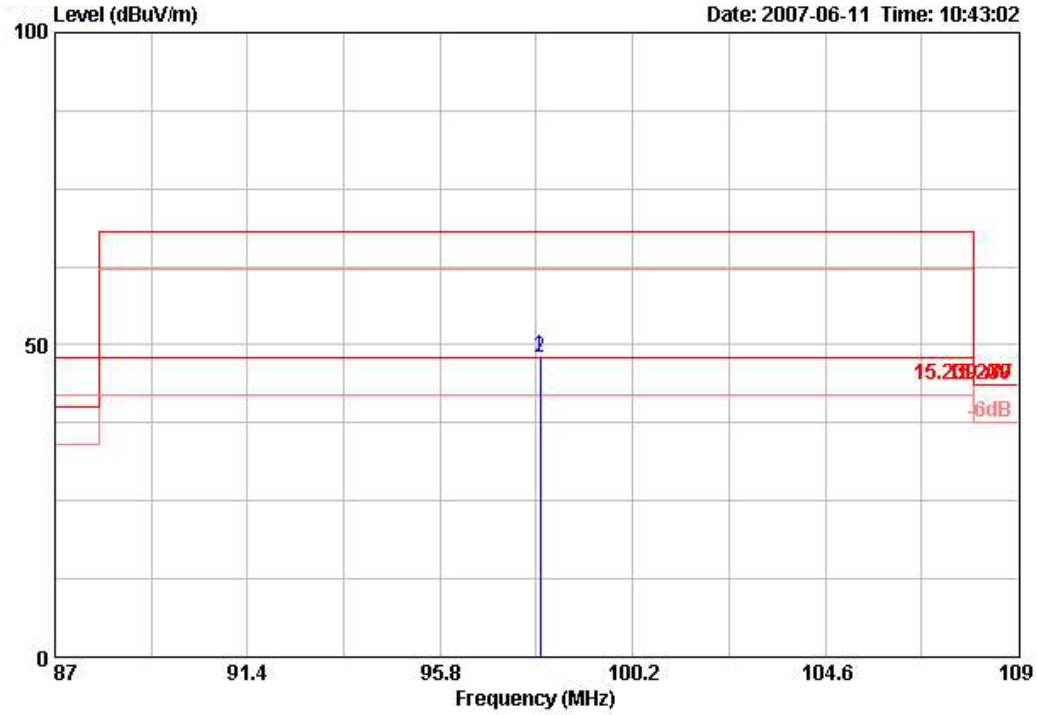
Note:

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

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

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 51

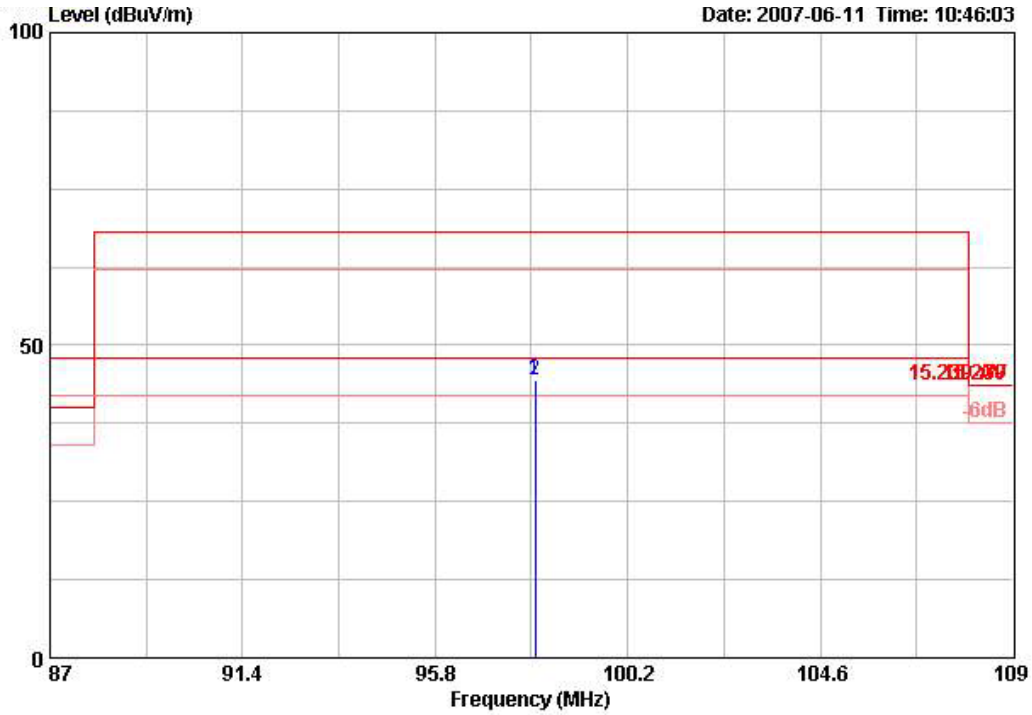
Horizontal



	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	98.090	48.19	-19.81	68.00	62.94	10.82	0.42	26.00	PEAK	236	99
2 @	98.096	47.82	-0.18	48.00	62.58	10.82	0.42	26.00	AVERAGE	238	99

Item 1, 2 are fundamental frequency at 98.1 MHz.

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	98.092	44.54	-23.46	68.00	59.30	10.82	0.42	26.00	PEAK	121	270
2 !	98.095	44.43	-3.57	48.00	59.19	10.82	0.42	26.00	AVERAGE	121	270

Item 1, 2 are fundamental frequency at 98.1 MHz.

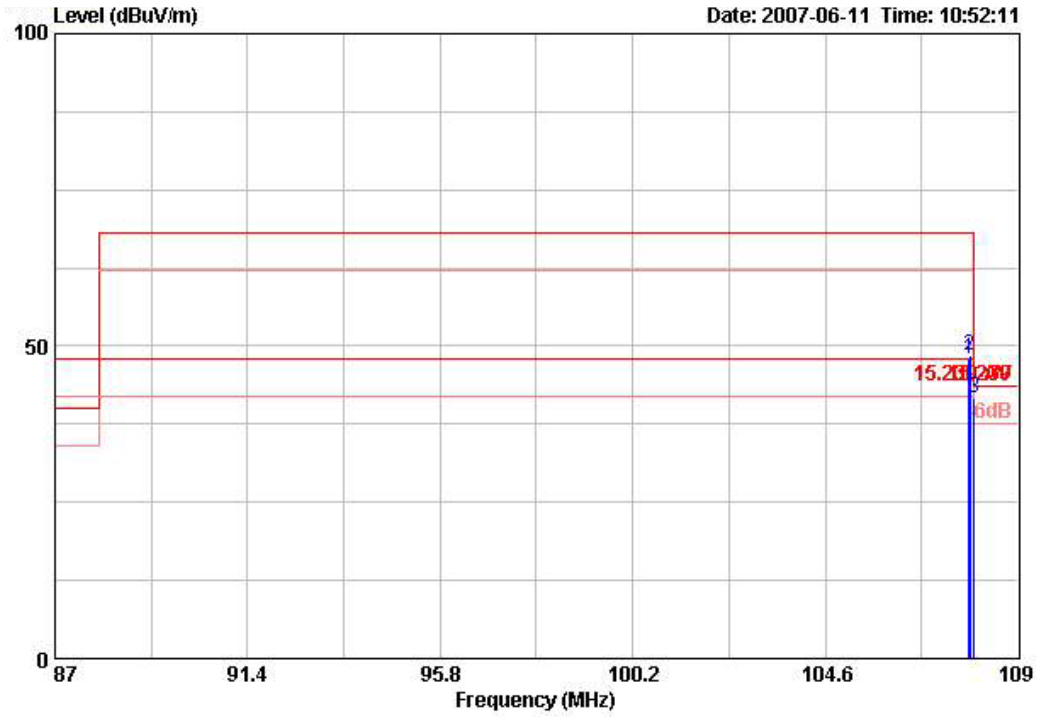
Note:

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

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

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 100

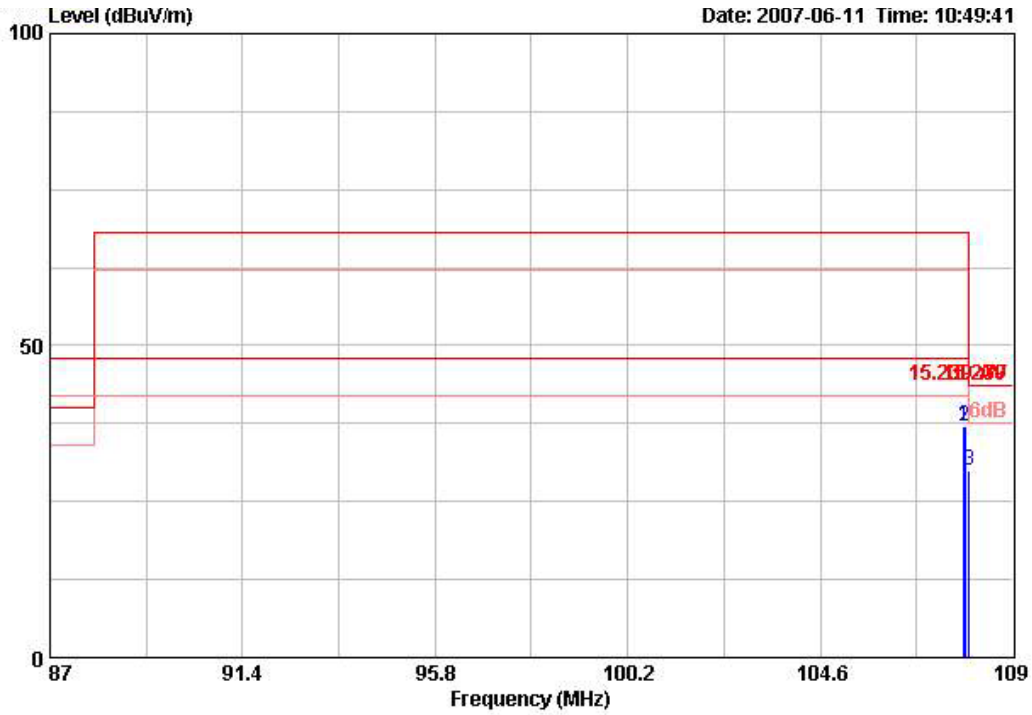
Horizontal



	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 @	107.888	47.90	-0.10	48.00	61.08	12.24	0.53	25.95	AVERAGE	284	88
2	107.896	48.55	-19.45	68.00	61.73	12.24	0.53	25.95	PEAK	284	88

Item 1, 2 are fundamental frequency at 107.9 MHz.

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	107.889	37.14	-30.86	68.00	50.32	12.24	0.53	25.95	PEAK	100	273
2	107.897	37.15	-10.85	48.00	50.33	12.24	0.53	25.95	AVERAGE	100	273

Item 1, 2 are fundamental frequency at 107.9 MHz.

Note:

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

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

4.2. 20dB Spectrum Bandwidth Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

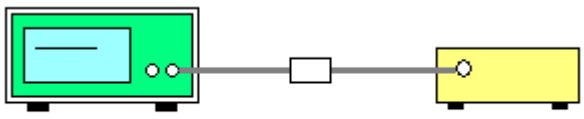
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. Check for a Bandwidth test with audio input CTX1(100Hz~5kHz) at maximum.
3. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
4. Measured the spectrum width with power higher than 20dB below carrier.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

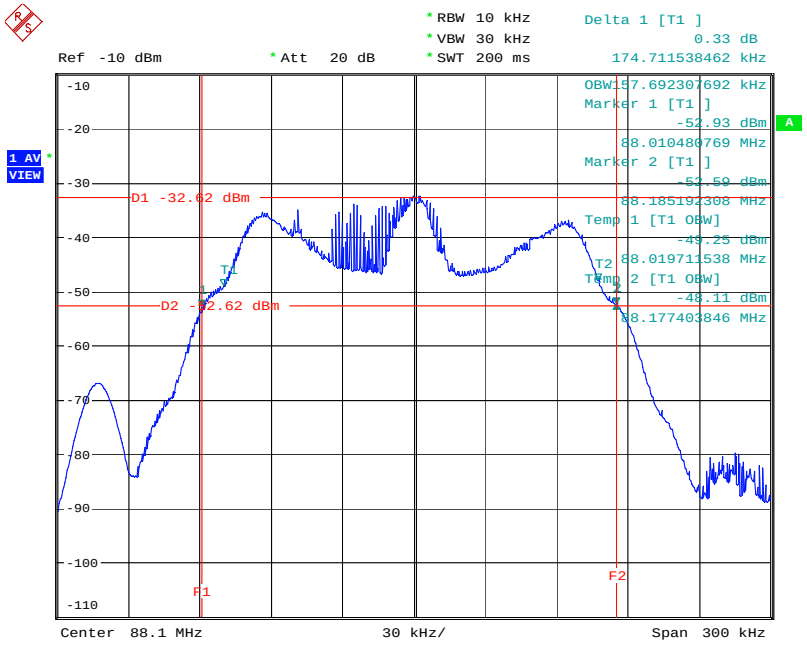
The EUT was programmed to be in continuously transmitting mode. Audio input adjusted (100Hz~5kHz) to maximize 20dB bandwidth for test.

4.2.7. Test Result of 20dB Spectrum Bandwidth

Temperature	24.3℃	Humidity	56%
Test Engineer	Jordan Hsiao	Configurations	Channel 1/51/100

Frequency	20dB BW (kHz)	99% OBW (kHz)	Frequency range (MHz) $f_L > 88MHz$	Frequency range (MHz) $f_H < 108MHz$	Test Result
88.1 MHz	174.70	157.69	88.0100	-	Complies
98.1 MHz	174.80	157.69	-	-	Complies
107.9 MHz	174.23	159.61	-	107.9800	Complies

20 dB/99% Bandwidth Plot on 88.1 MHz



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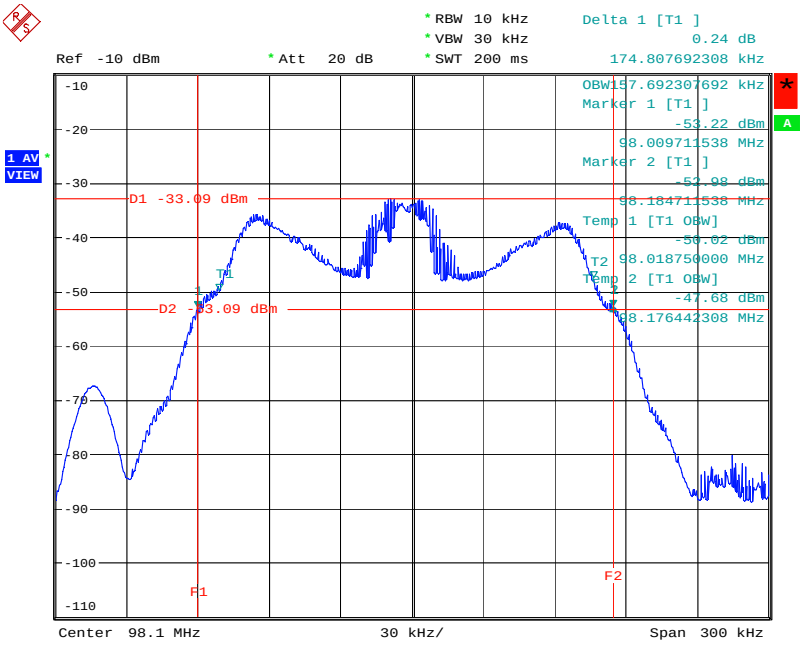
20 dB/99% Bandwidth Plot on 98.1 MHz



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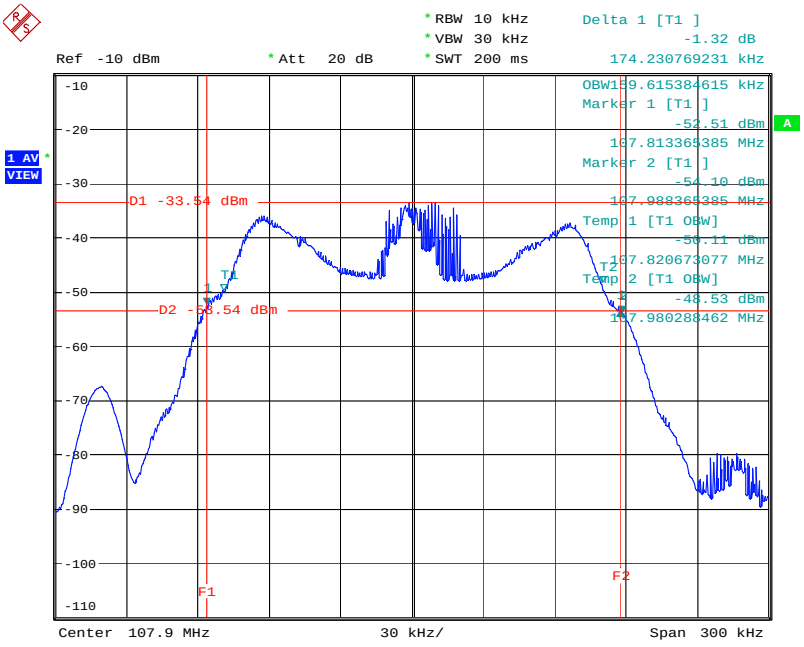
20 dB/99% Bandwidth Plot on 107.9 MHz



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4.3. Radiated Emissions Measurement

4.3.1. Limit

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emissions limits in Section 15.209(a)

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

4.3.2. Measuring Instruments and Setting

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

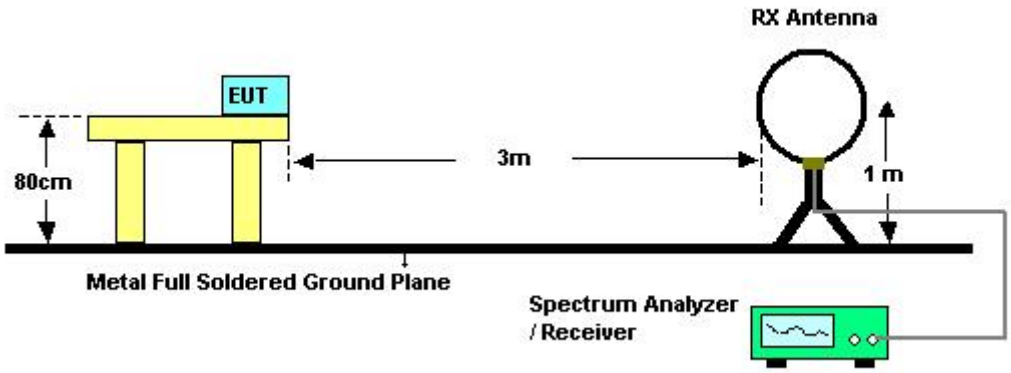
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.3.3. Test Procedures

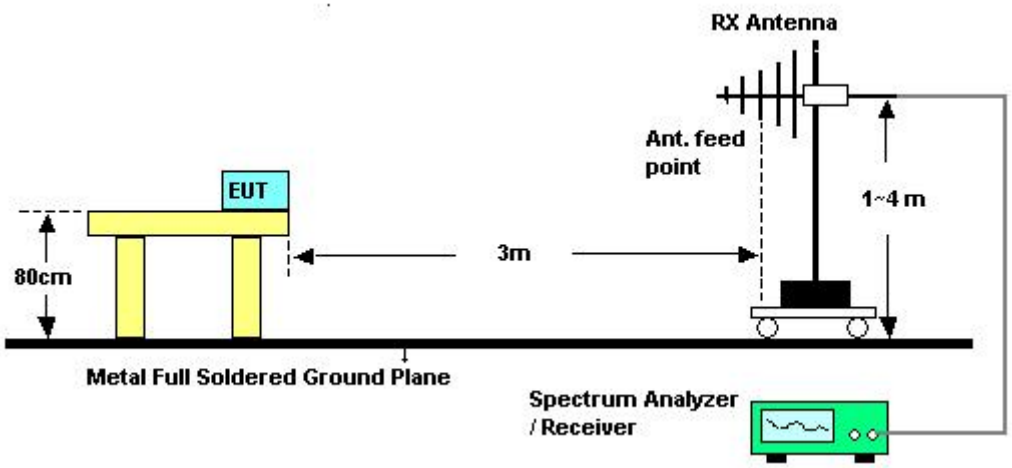
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

4.3.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode. Audio input adjusted (100Hz~5kHz) to maximize emission for test.

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

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 51

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.

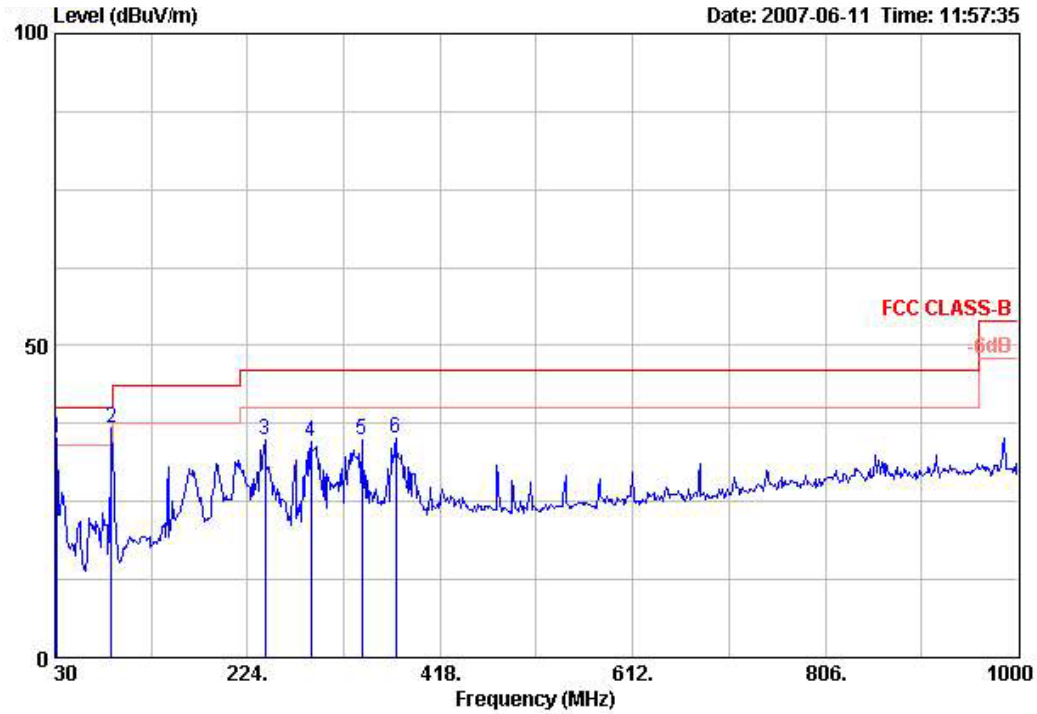
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

4.3.8. Results for Radiated Emissions (30MHz~10th Harmonic)

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 1

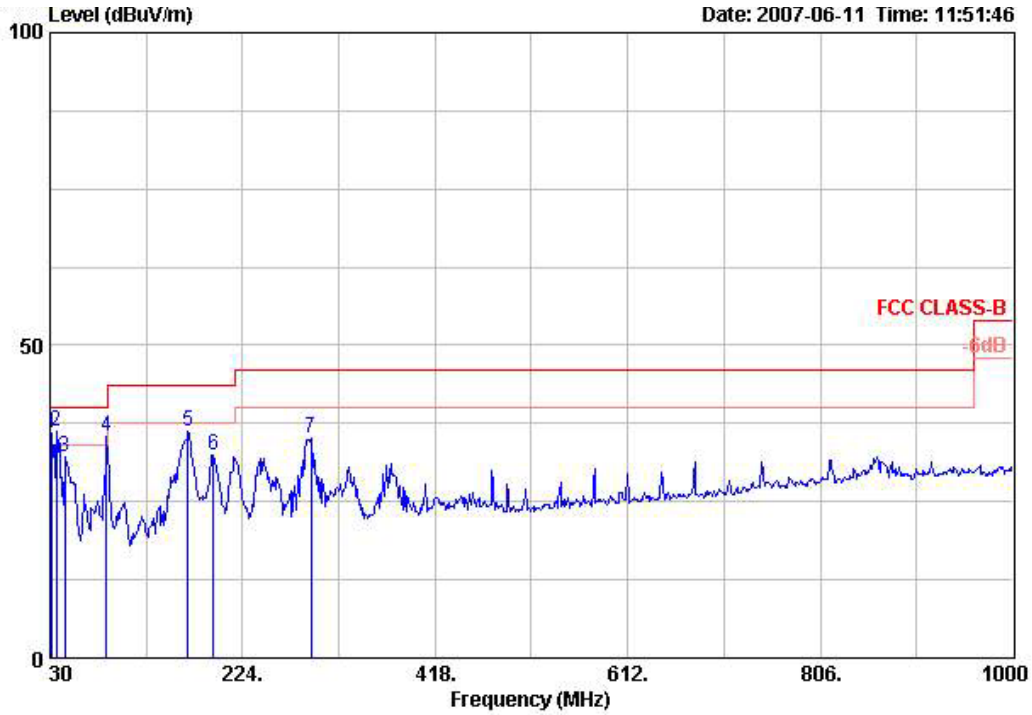
Horizontal



	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 !	31.940	35.18	-4.82	40.00	42.39	18.96	0.32	26.49	Peak	100	0
2 !	87.230	36.76			53.53	8.82	0.54	26.13	Peak	100	0
3	241.460	34.99	-11.01	46.00	46.97	12.33	1.12	25.43	Peak	100	0
4	288.020	34.56	-11.44	46.00	44.81	13.66	1.14	25.05	Peak	100	0
5	339.430	34.79	-11.21	46.00	43.61	15.00	1.16	24.98	Peak	100	0
6	373.380	35.24	-10.76	46.00	43.26	15.86	1.37	25.25	Peak	100	0

Item 2 is fundamental frequency.

Vertical

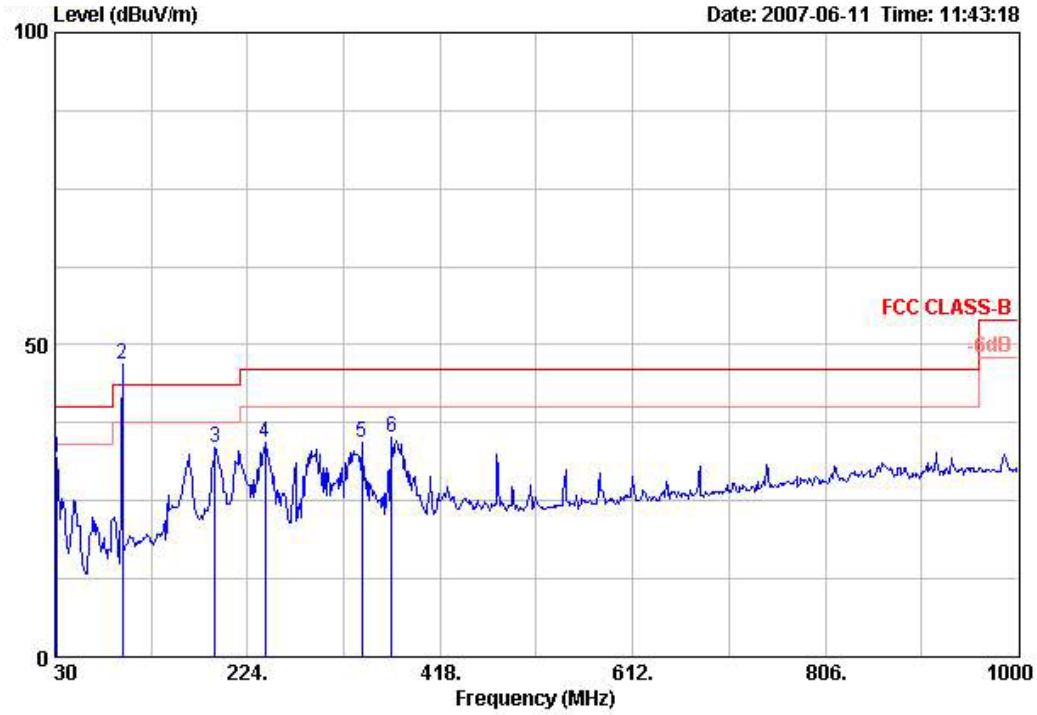


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 !	31.940	35.99	-4.01	40.00	43.20	18.96	0.32	26.49	Peak	400	0
2 !	36.790	36.37	-3.63	40.00	46.50	15.90	0.34	26.37	Peak	400	0
3	44.550	32.08	-7.92	40.00	46.55	11.50	0.51	26.48	Peak	400	0
4 !	87.230	35.31			52.08	8.82	0.54	26.13	Peak	400	0
5	168.710	36.17	-7.33	43.50	50.81	10.23	0.71	25.58	Peak	400	0
6	194.900	32.43	-11.07	43.50	47.08	9.90	0.89	25.44	Peak	400	0
7	292.870	35.01	-10.99	46.00	45.12	13.76	1.14	25.01	Peak	400	0

Item 4 is fundamental frequency.

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 51

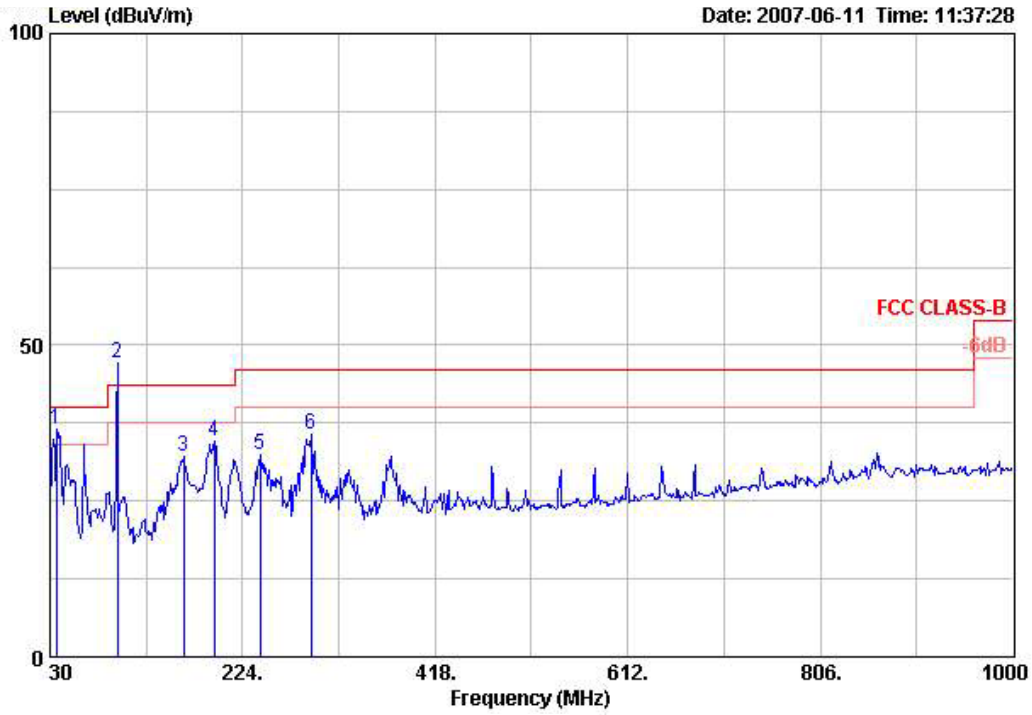
Horizontal



	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	31.940	31.83	-8.17	40.00	39.03	18.96	0.32	26.49	Peak	100	0
2 @	97.900	46.82			61.57	10.82	0.42	26.00	Peak	100	0
3	191.020	33.49	-10.01	43.50	48.49	9.58	0.83	25.42	Peak	100	0
4	241.460	34.30	-11.70	46.00	46.29	12.33	1.12	25.43	Peak	100	0
5	339.430	34.28	-11.72	46.00	43.10	15.00	1.16	24.98	Peak	100	0
6	369.500	35.15	-10.85	46.00	43.24	15.77	1.34	25.21	Peak	100	0

Item 2 is fundamental frequency.

Vertical

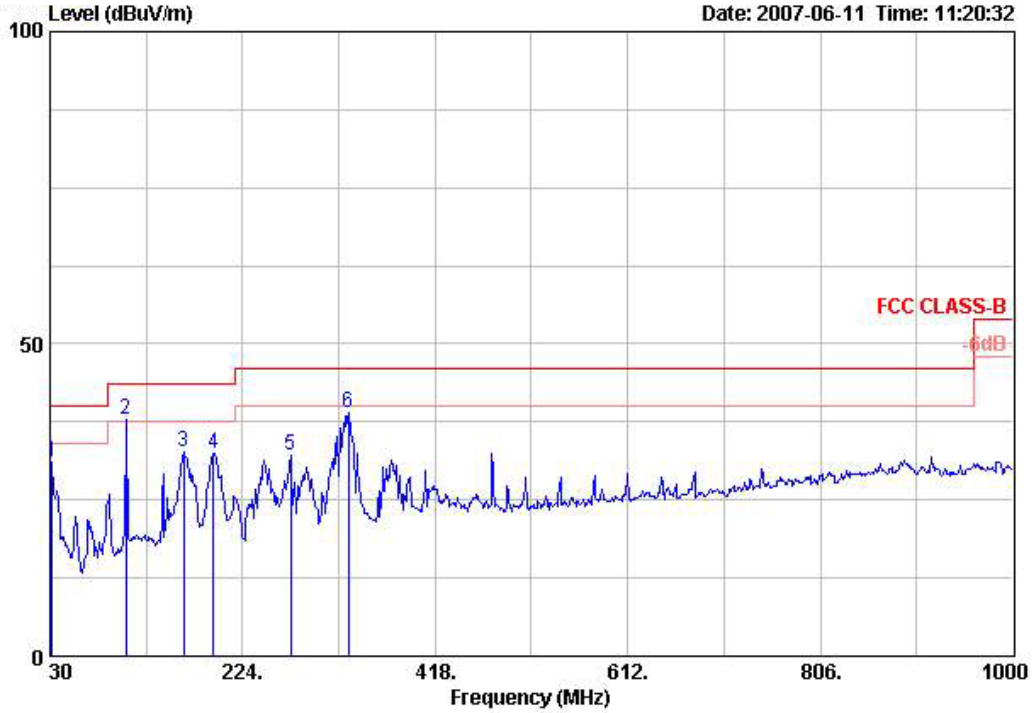


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 !	36.790	36.48	-3.52	40.00	46.60	15.90	0.34	26.37	Peak	400	0
2 @	97.900	47.22			61.97	10.82	0.42	26.00	Peak	400	0
3	164.830	32.11	-11.39	43.50	46.70	10.35	0.72	25.66	Peak	400	0
4	195.870	34.51	-8.99	43.50	49.07	9.98	0.90	25.44	Peak	400	0
5	241.460	32.53	-13.47	46.00	44.51	12.33	1.12	25.43	Peak	400	0
6	292.870	35.69	-10.31	46.00	45.80	13.76	1.14	25.01	Peak	400	0

Item 2 is fundamental frequency.

Temperature	24.3℃	Humidity	56%
Test Engineer	Roy Huang	Configurations	Channel 100

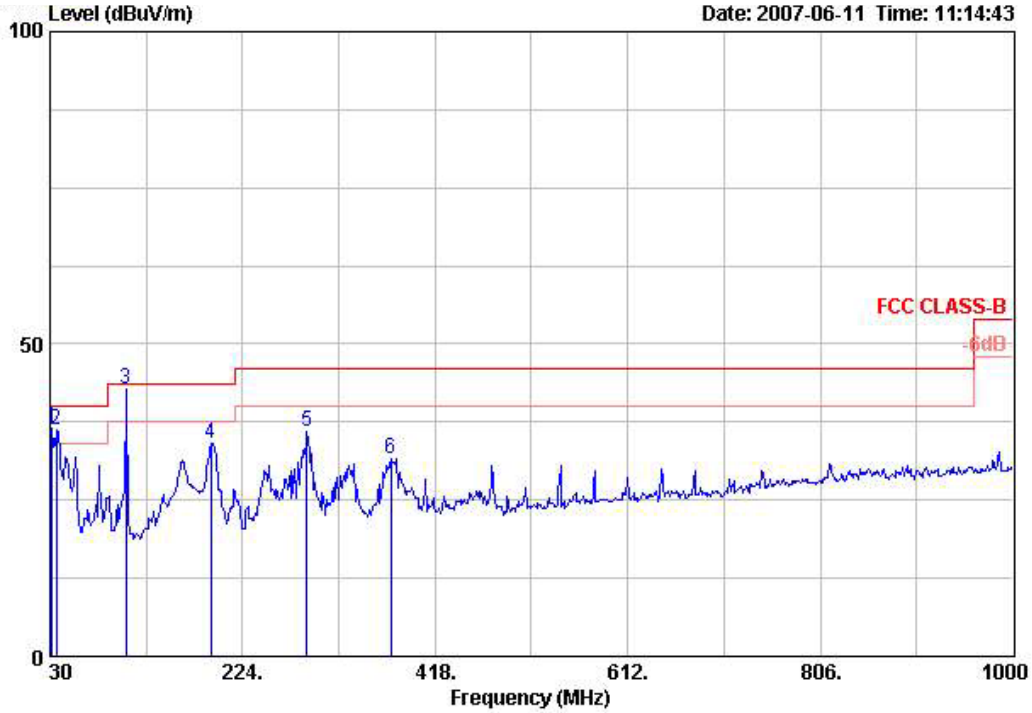
Horizontal



	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	31.940	31.15	-8.85	40.00	38.36	18.96	0.32	26.49	Peak	100	0
2 !	106.630	38.00			51.34	12.11	0.50	25.95	Peak	100	0
3	164.830	32.57	-10.93	43.50	47.16	10.35	0.72	25.66	Peak	100	0
4	194.900	32.43	-11.07	43.50	47.07	9.90	0.89	25.44	Peak	100	0
5	272.500	32.16	-13.84	46.00	42.72	13.50	1.15	25.20	Peak	100	0
6	330.700	38.93	-7.07	46.00	47.98	14.76	1.15	24.97	Peak	100	0

Item 2 is fundamental frequency.

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 !	31.940	36.43	-3.57	40.00	43.64	18.96	0.32	26.49	Peak	400	0
2 !	36.790	36.15	-3.85	40.00	46.28	15.90	0.34	26.37	Peak	400	0
3 @	106.630	42.68			56.01	12.11	0.50	25.95	Peak	400	0
4	191.990	34.04	-9.46	43.50	48.95	9.66	0.85	25.42	Peak	400	0
5	288.990	36.03	-9.97	46.00	46.25	13.68	1.14	25.04	Peak	400	0
6	373.380	31.66	-14.34	46.00	39.68	15.86	1.37	25.25	Peak	400	0

Item 3 is fundamental frequency.

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.

4.4. Band Edge Emissions and Tuning Range of FM transmitter Measurement

4.4.1. Limit

Band edge emissions outside of the frequency bands shown in below table.

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

4.4.2. Measuring Instruments and Setting

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

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

4.4.3. Test Procedures

The test procedure is the same as section 4.2.3, only the frequency range investigated is limited to 2MHz around bandedges.

4.4.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.2.4

4.4.5. Test Deviation

There is no deviation with the original standard.

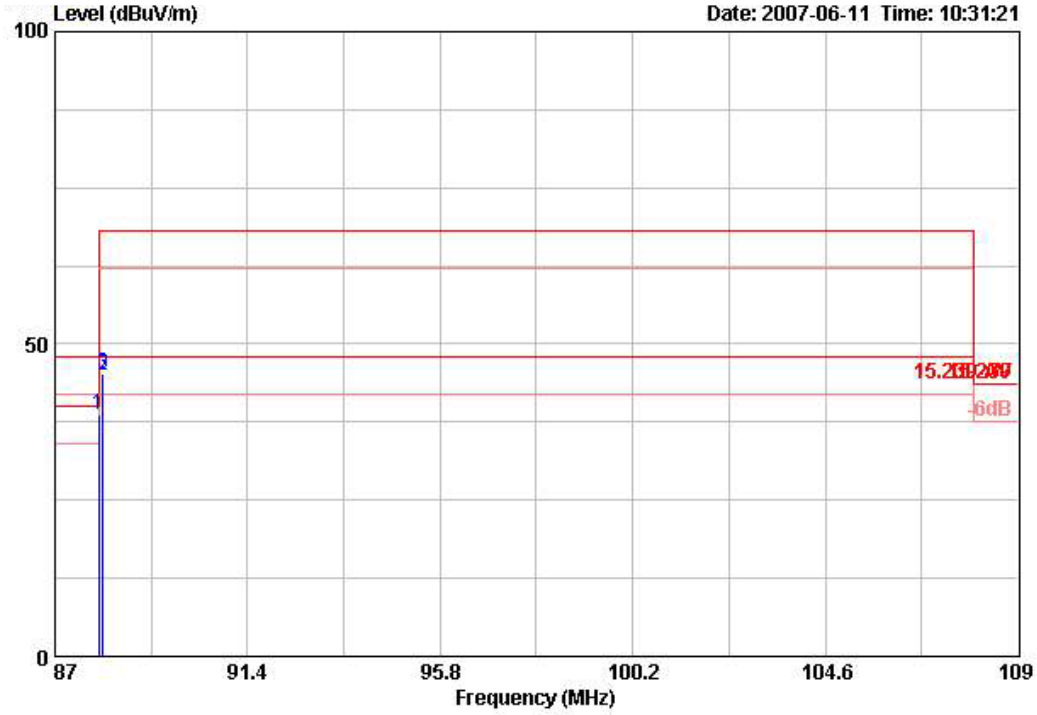
4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24.3℃	Humidity	56%
Test Engineer	Jordan Hsiao	Configurations	Channel 1, 100

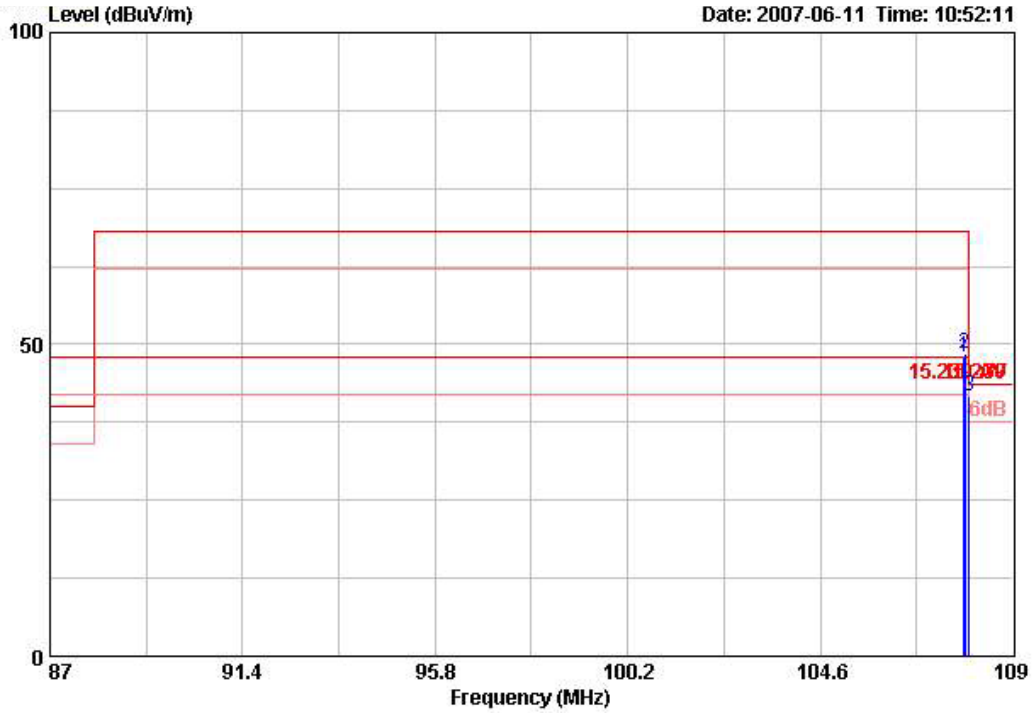
Channel 1



	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 @	88.000	38.70	-1.30	40.00	55.29	8.98	0.55	26.12	QP	129	138

Item 1 is Band Edge.

Channel 100



	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 @	108.000	41.73	-1.77	43.50	54.91	12.24	0.53	25.95	QP	284	88

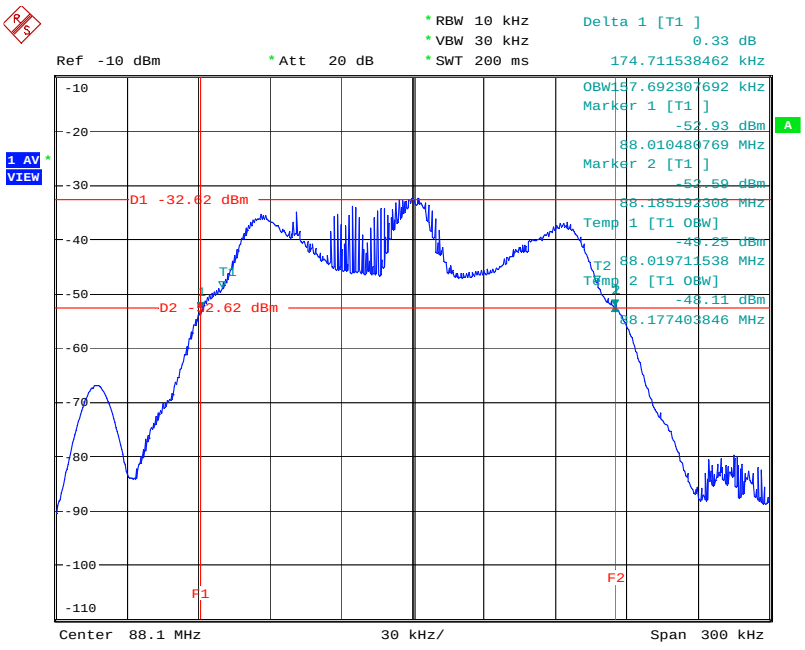
Item 3 is Band Edge.

Note:

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

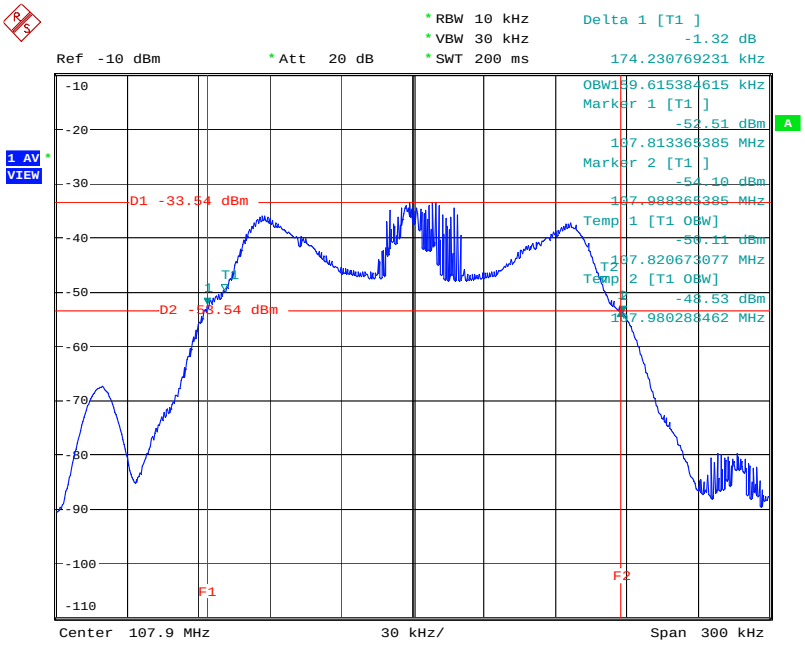
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Low Band Edge Plot on 88.1 MHz



Date: 27.JUN.2007 11:47:20

High Band Edge Plot on 107.9 MHz



Date: 27.JUN.2007 11:45:51

4.5. Antenna Requirements

4.5.1. Limit

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

4.5.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 16, 2007	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	1886	9 kHz - 2 GHz	Jan. 22, 2007	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02326	1 GHz - 26.5 GHz	Dec 18, 2006	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	923364	26.5 GHz - 40 GHz	Jan. 22, 2007*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004/040	9 kHz - 40 GHz	Sep. 21, 2006	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 24, 2006	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	MAY. 04, 2007	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	NCR	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec. 02, 2006	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec. 02, 2006	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Dec. 17, 2006	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100764	DC ~ 40GHz	Jul. 20, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 40GHz	Jul. 20, 2006	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun. 09, 2007	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	May. 4, 2007*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 03, 2007	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 02, 2006	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2006	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2006	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Jun. 19, 2007	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 07, 2007	Conducted (TH01-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 15, 2007	Conducted (TH01-HY)

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

* Calibration Interval of instruments listed above is two year.

NCR means Non-Calibration required.

6. 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

7. TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-070110

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, 2007 to January 09, 2010
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

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 10, 2007

P1, total 9 pages

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