FCC RF Test Report

APPLICANT	**:**	**ARS Global Guiding, Inc.**
EQUIPMENT	**:**	**ARS2 DEVICE**
BRAND NAME	**:**	**ARS2 Device**
MODEL NAME	**:**	**ARS2**
FCC ID	**:**	**YA2ARS2**
STANDARD	**:**	**FCC Part 15 Subpart C §15.239**

The product was received on Oct. 18, 2011 and completely tested on Apr. 10, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai

Jones Tsai / Manager

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1O1803C	Rev. 01	Initial issue of report	Apr. 13, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.239 (a)	200 kHz Bandwidth of Frequency Band Edges	200 kHz	Pass	-
3.2	15.239 (b)	20dBc and Field Strength	48 dBuV/m	Pass	-
3.3	15.239 (c)	Radiated Emission Measurement	15.209 (a)	Pass	The worst is under limit 0.54 dB at 55.11 MHz
3.4	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.68 dB at17.75 MHz
3.5	15.203	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ARS Global Guiding, Inc.
2674 East Walnut Street, Pasadena, California, United States, 91107

1.2 Manufacturer

ARS Global Guiding, Inc.
2674 East Walnut Street, Pasadena, California, United States, 91107

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	ARS2 DEVICE
Brand Name	ARS2 Device
Model Name	ARS2
FCC ID	YA2ARS2
Frequency Range	88.1 MHz ~ 107.9 MHz
Number of Channels	100
Carrier Frequency of each channel	88.1 + n * 200 kHz, n = 0~99
Channel Spacing	200 kHz
Maximum Fundamental Field Strength	59.56 dBuV/m at 3m (Peak) 46.81 dBuV/m at 3m (Average)
Antenna Type	Wire Antenna
HW Version	ARS2-V5.0
SW Version	ARS2-2.03.08
Type of Modulation	FSK
EUT Stage	Production Unit

Remark:

1. For other wireless features of this EUT, test report will be issued separately.

2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	
	CO01-KS	03CH01-KS

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.239
- ANSI C63.4-2003

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (Verification), recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (30 MHz to 3000MHz).

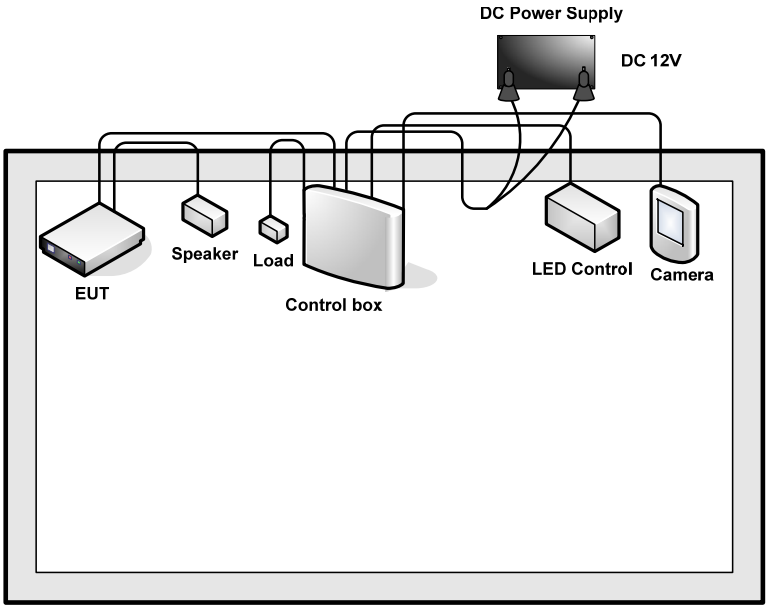
The following tables are showing the test modes as the worst cases and recorded in this report.

Test Cases	
Test Item	**802.11b**
Radiated TCs	Mode 1 : FM Tx Mode for 88.1MHz Mode 2 : FM Tx Mode for 98.0MHz Mode 3 : FM Tx Mode for 107.9MHz
Conducted Emission TCs	FM Tx Mode for 98.0MHz

2.2 Ancillary Equipment List

N/A

2.3 Connection Diagram of Test System



2.4 RF Utility

The programmed RF utility is installed in EUT to provide channel selection and the application type by playing music via iPod. RF Utility can send transmitting signal for all testing.

3 Test Result

3.1 200 kHz Bandwidth of Frequency Band Edges

3.1.1 Limit of 200 kHz Bandwidth

The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

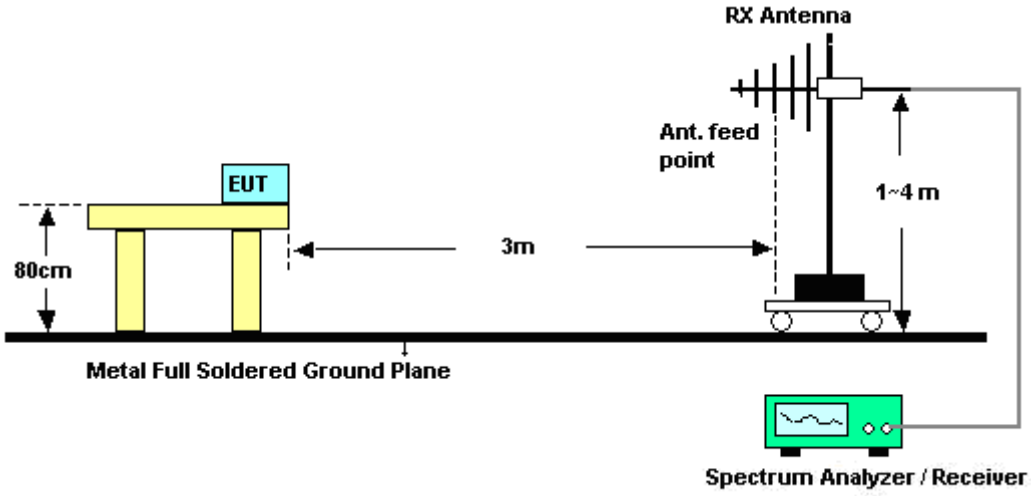
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

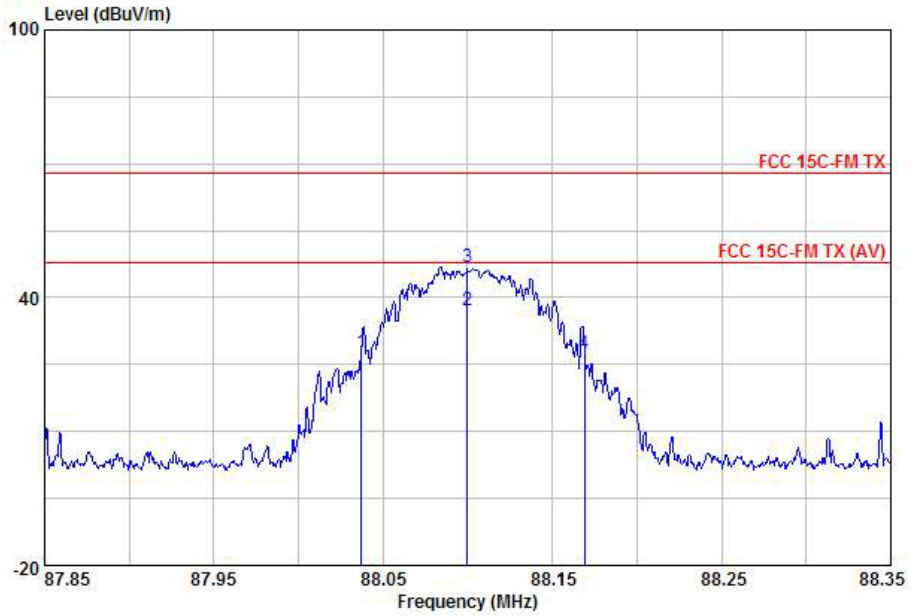
1. Set both RBW/VBW=30 kHz/100 kHz for peak measurement in the radiated measurement.
2. The band edges was measured and recorded.

3.1.4 Test Setup



3.1.5 Test Result of 200 kHz Bandwidth of Frequency Band Edges

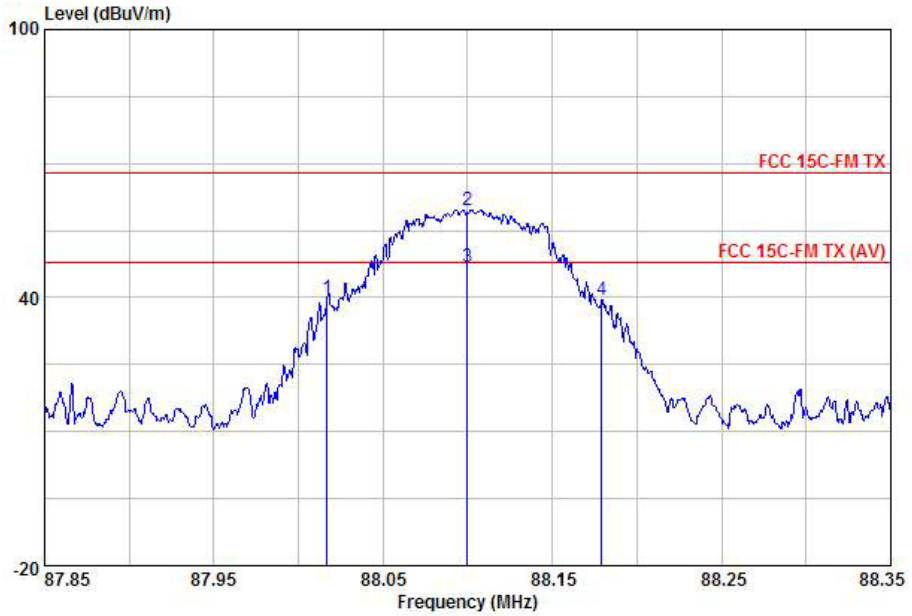
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	88.04	27.79	-40.21	68.00	49.11	8.30	0.38	30.00	---	---	Peak
2	88.10	37.21	-10.79	48.00	58.53	8.30	0.38	30.00	100	216	Average
3	88.10	46.96	-21.04	68.00	68.28	8.30	0.38	30.00	100	216	Peak
4	88.17	27.61	-40.39	68.00	48.93	8.30	0.38	30.00	---	---	Peak

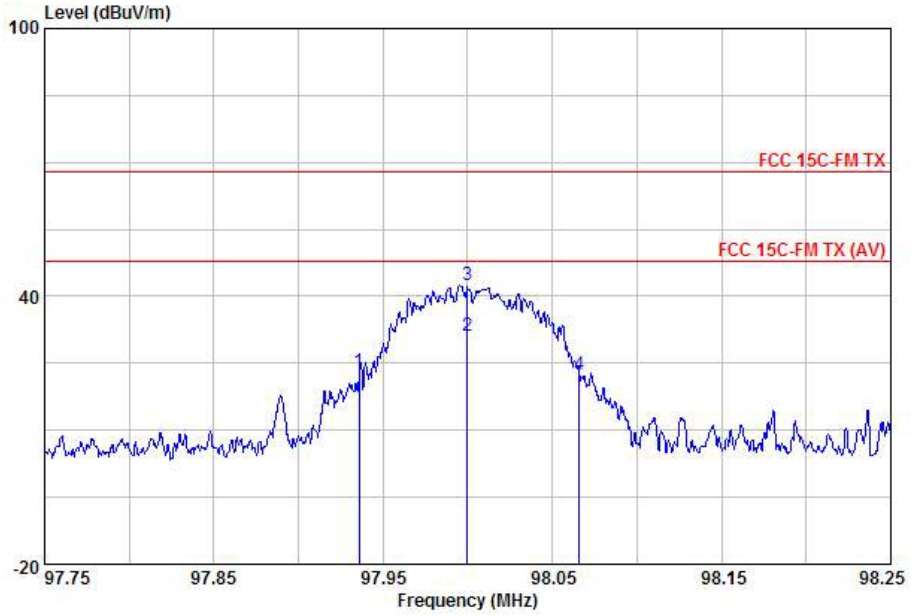
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	88.02	39.94	-28.06	68.00	61.26	8.30	0.38	30.00	---	---	Peak
2	88.10	59.56	-8.44	68.00	80.88	8.30	0.38	30.00	200	103	Peak
3	88.10	46.81	-1.19	48.00	68.13	8.30	0.38	30.00	200	103	Average
4	88.18	39.65	-28.35	68.00	60.97	8.30	0.38	30.00	---	---	Peak

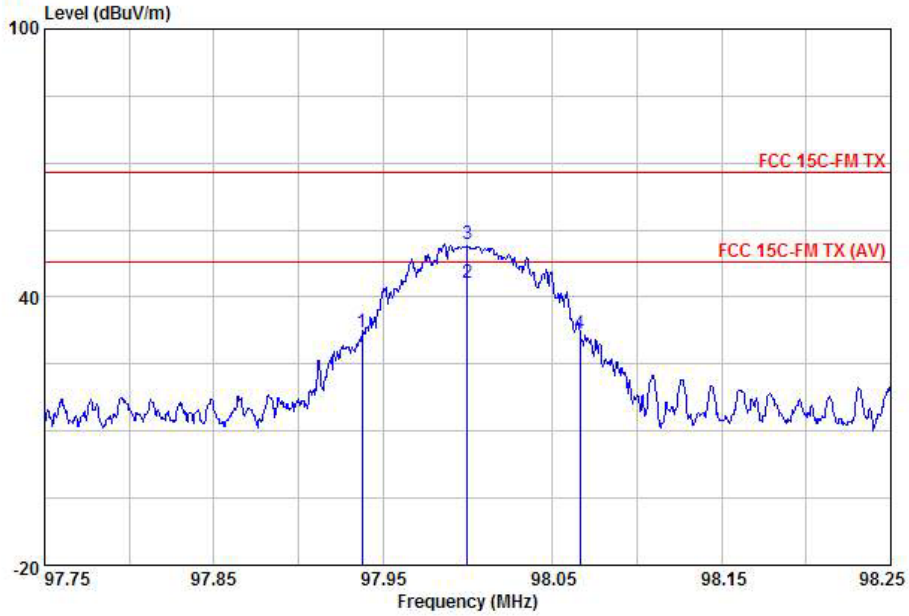
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 2
: 98 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	97.94	23.19	-44.81	68.00	42.60	10.15	0.41	29.97	---	---	Peak
2	98.00	31.18	-16.82	48.00	50.59	10.15	0.41	29.97	200	0	Average
3	98.00	42.36	-25.64	68.00	61.77	10.15	0.41	29.97	200	0	Peak
4	98.07	22.57	-45.43	68.00	41.98	10.15	0.41	29.97	---	---	Peak

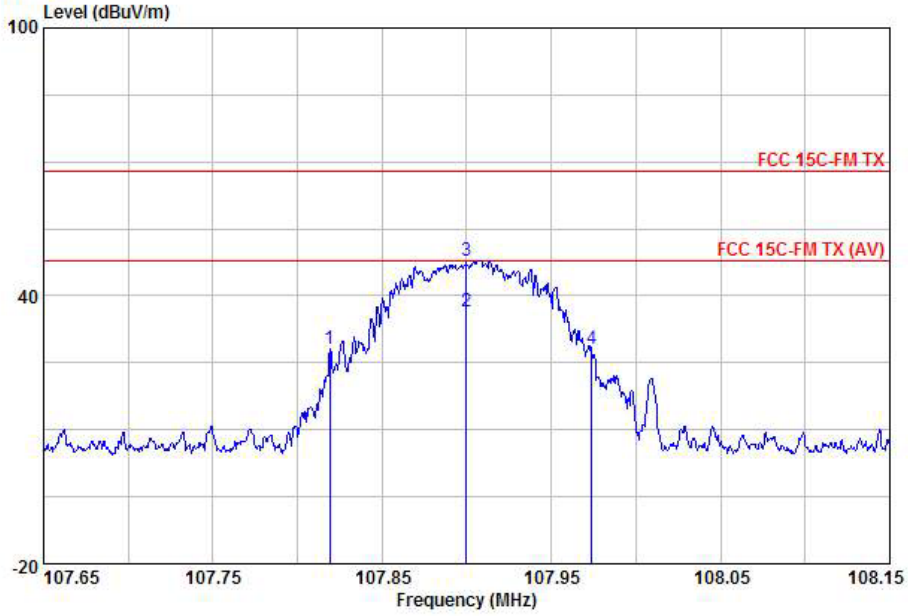
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 2
: 98 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	97.94	32.10	-35.90	68.00	51.51	10.15	0.41	29.97	---	---	Peak
2	98.00	43.17	-4.83	48.00	62.58	10.15	0.41	29.97	100	162	Average
3	98.00	51.73	-16.27	68.00	71.14	10.15	0.41	29.97	100	162	Peak
4	98.07	31.88	-36.12	68.00	51.29	10.15	0.41	29.97	---	---	Peak

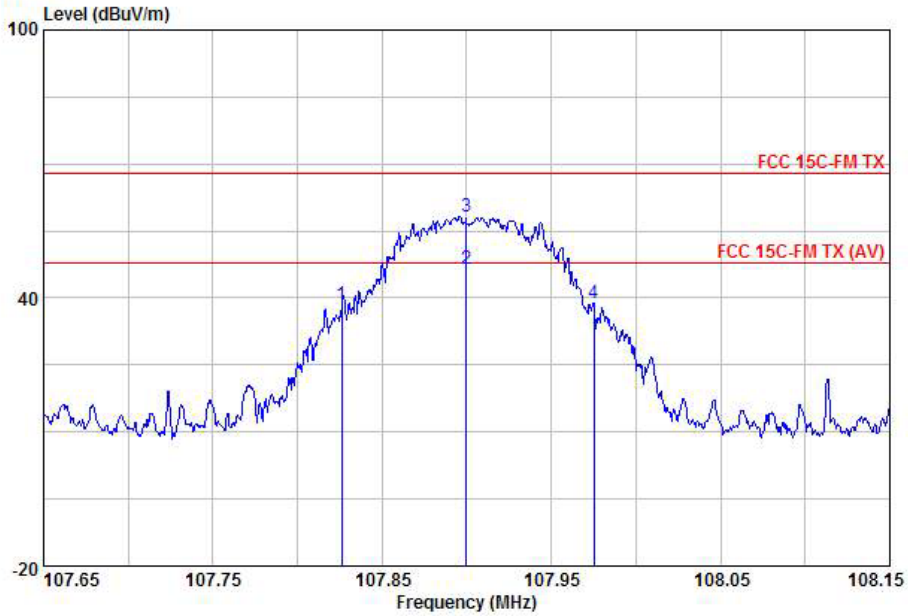
Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	107.82	28.03	-39.97	68.00	46.00	11.56	0.43	29.96	---	---	Peak
2	107.90	36.63	-11.37	48.00	54.60	11.56	0.43	29.96	100	109	Average
3	107.90	47.96	-20.04	68.00	65.93	11.56	0.43	29.96	100	109	Peak
4	107.97	28.17	-39.83	68.00	46.14	11.56	0.43	29.96	---	---	Peak

Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	107.83	38.53	-29.47	68.00	56.50	11.56	0.43	29.96	---	---	Peak
2	107.90	46.54	-1.46	48.00	64.51	11.56	0.43	29.96	200	181	Average
3	107.90	58.25	-9.75	68.00	76.22	11.56	0.43	29.96	200	181	Peak
4	107.98	38.98	-29.02	68.00	56.95	11.56	0.43	29.96	---	---	Peak

3.2 20dBc and Field Strength

3.2.1 Limit of 20dBc and Field Strength

The field strength of any emissions within the permitted 200 kHz shall not exceed 48 dBuV/m at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

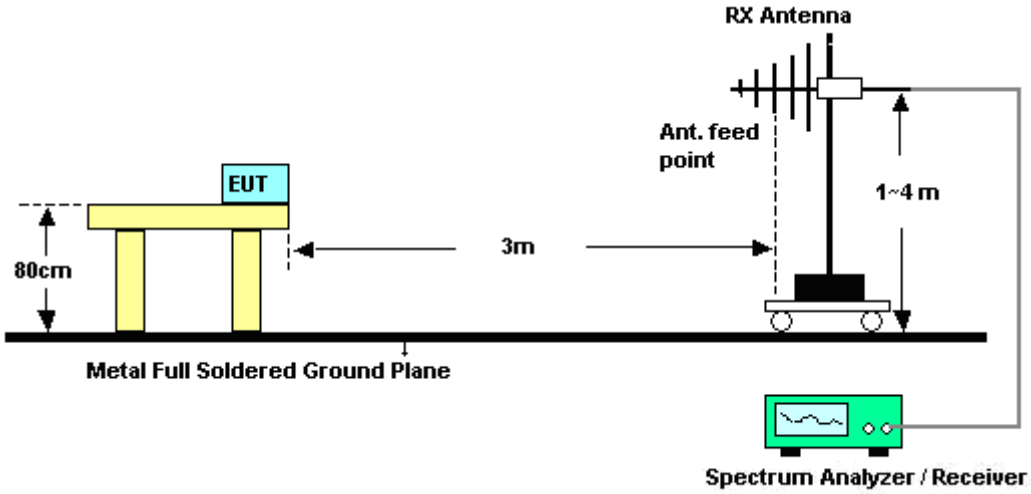
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

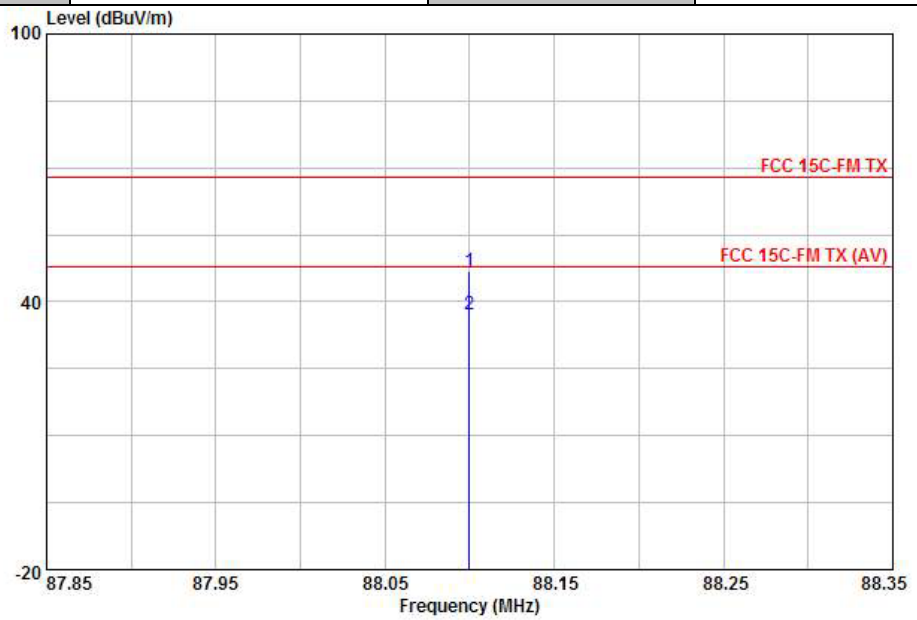
1. Set both RBW/VBW=30 kHz/100 kHz for peak and average measurement in the radiated measurement.
2. The field strength was measured and recorded.

3.2.4 Test Setup



3.2.5 Test Result of 20dBc and Field Strength

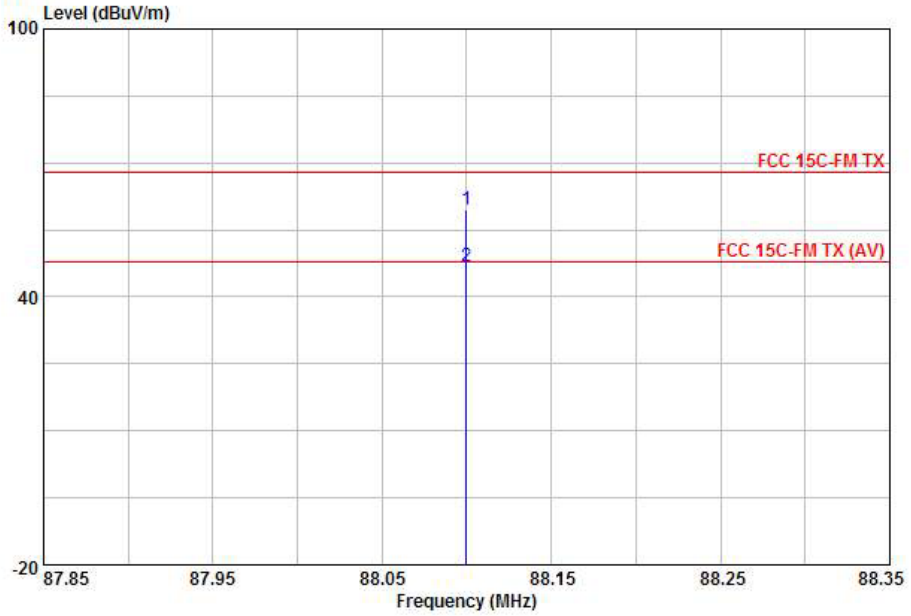
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	88.10	46.96	-21.04	68.00	68.28	8.30	0.38	30.00	100	216	Peak
2	88.10	37.21	-10.79	48.00	58.53	8.30	0.38	30.00	100	216	Average

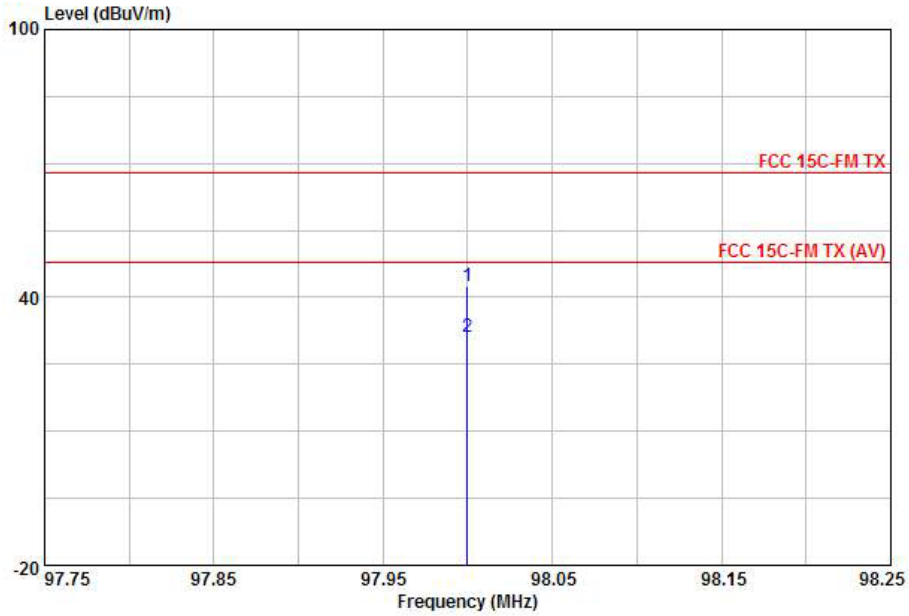
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	88.10	59.56	-8.44	68.00	80.88	8.30	0.38	30.00	200	103	Peak
2	88.10	46.81	-1.19	48.00	68.13	8.30	0.38	30.00	200	103	Average

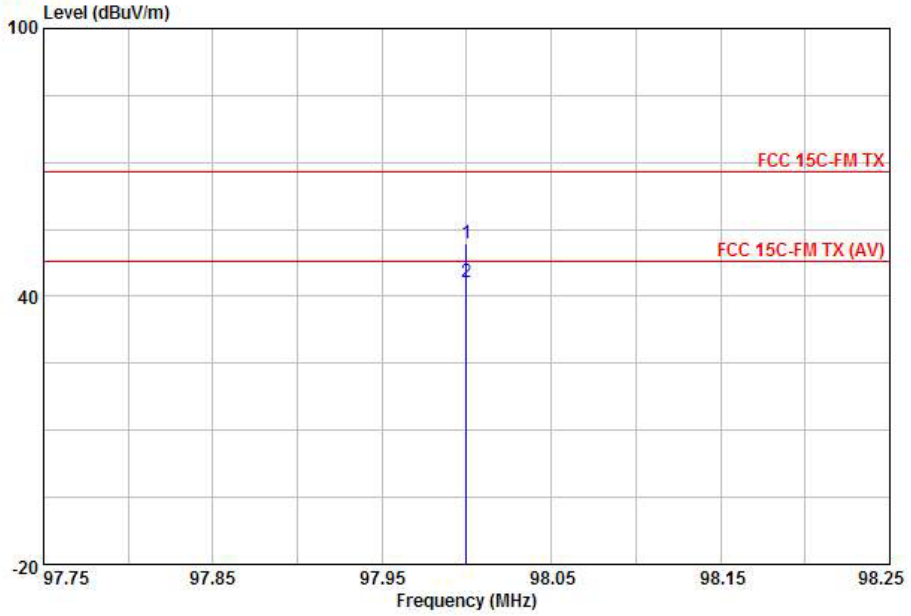
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 2
: 98 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	98.00	42.36	-25.64	68.00	61.77	10.15	0.41	29.97	200	0	Peak
2	98.00	31.18	-16.82	48.00	50.59	10.15	0.41	29.97	200	0	Average

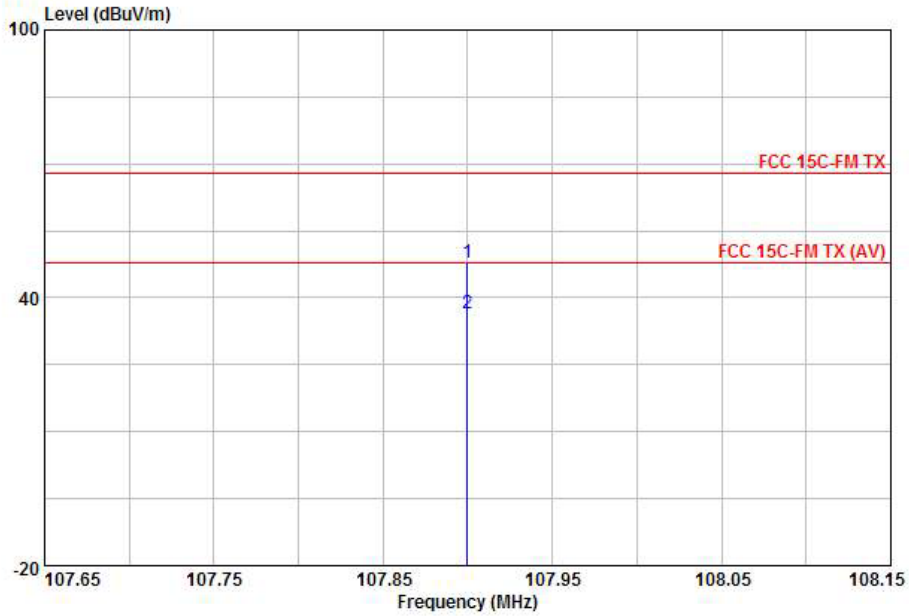
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 2
: 98 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	98.00	51.73	-16.27	68.00	71.14	10.15	0.41	29.97	100	162	Peak
2	98.00	43.17	-4.83	48.00	62.58	10.15	0.41	29.97	100	162	Average

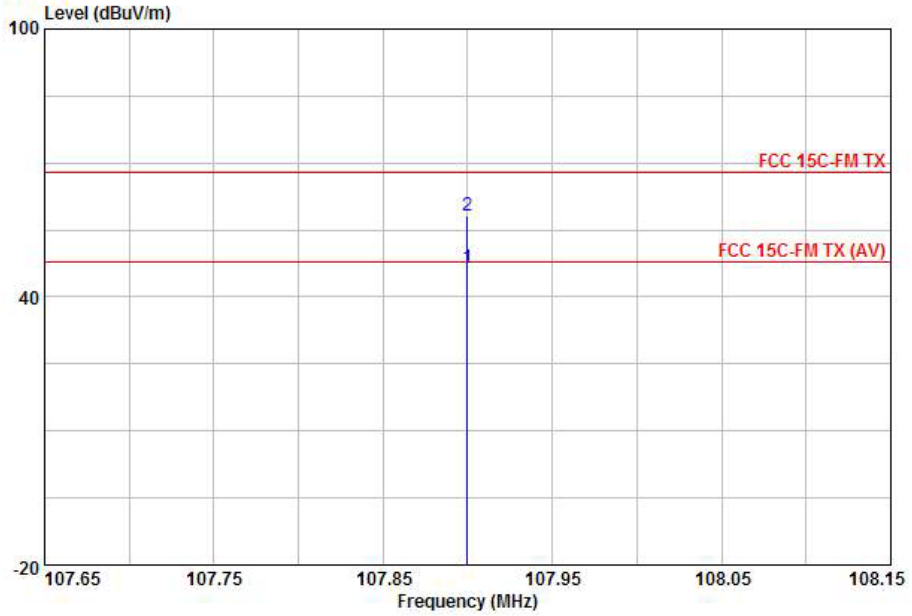
Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	107.90	47.96	-20.04	68.00	65.93	11.56	0.43	29.96	100	109	Peak
2	107.90	36.63	-11.37	48.00	54.60	11.56	0.43	29.96	100	109	Average

Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical



Site : 03CH01-KS
Condition: FCC 15C-FM TX 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	107.90	46.54	-1.46	48.00	64.51	11.56	0.43	29.96	200	181	Average
2	107.90	58.25	-9.75	68.00	76.22	11.56	0.43	29.96	200	181	Peak

3.3 Radiated Emission Measurement

3.3.1 Limit of Radiated Emission

Radiated emissions shall not exceed the field strength levels specified in the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

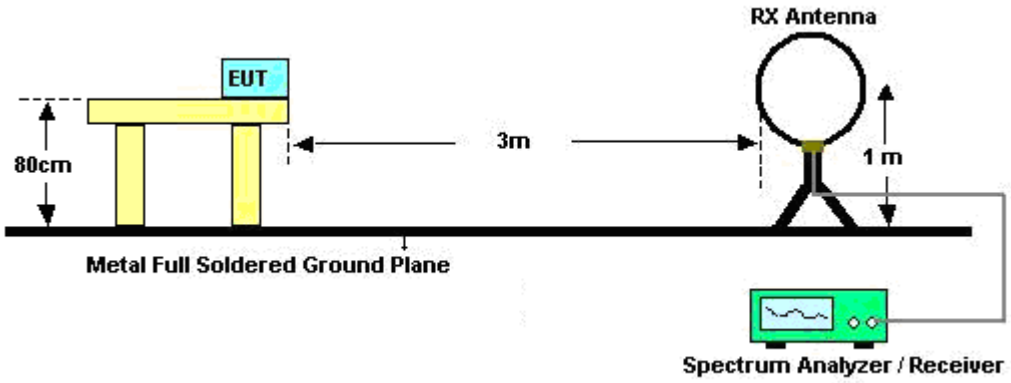
3.3.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.

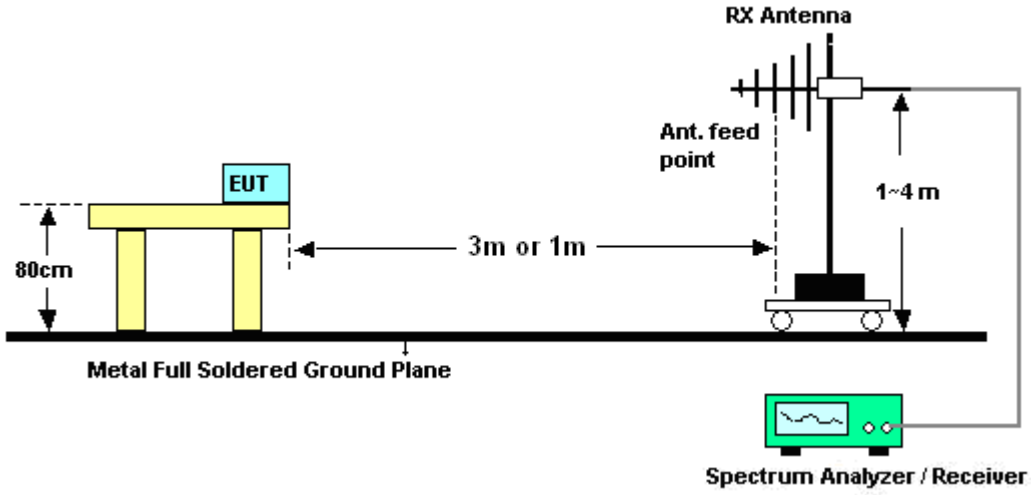
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.3.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.3.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

Test Engineer :	Chenmy Cheng	Temperature :	21~22°C
		Relative Humidity :	41~42%

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

Note:

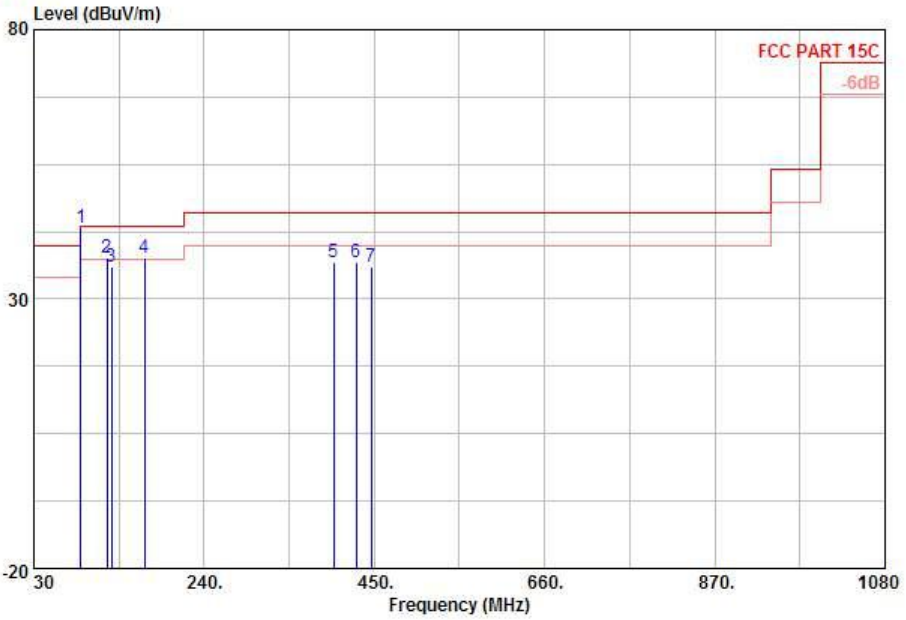
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

3.3.6 Test Result of Radiated Emission (30 MHz ~10th Harmonic)

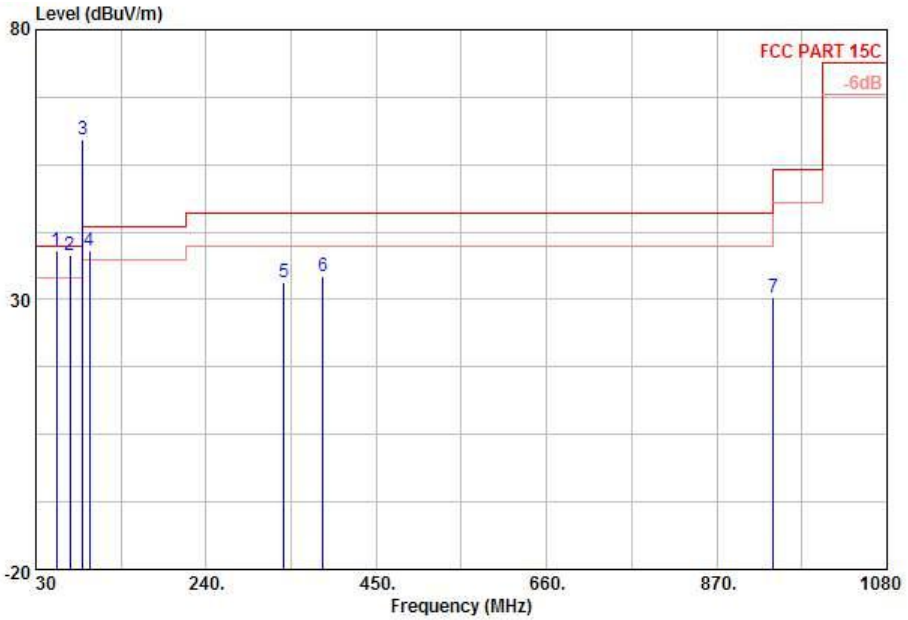
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	#1 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	88.10	43.21			64.53	8.30	0.38	30.00	---	---	Peak
2	!	120.18	37.77	-5.73	43.50	55.49	11.80	0.45	29.97	100	106	Peak
3		125.85	35.96	-7.54	43.50	53.74	11.74	0.46	29.98	---	---	Peak
4	!	166.35	37.66	-5.84	43.50	57.73	9.31	0.54	29.92	---	---	Peak
5		400.10	36.96	-9.04	46.00	49.95	16.00	0.84	29.83	---	---	Peak
6		427.40	36.93	-9.07	46.00	49.68	16.18	0.88	29.81	---	---	Peak
7		446.30	35.97	-10.03	46.00	48.58	16.28	0.90	29.79	---	---	Peak

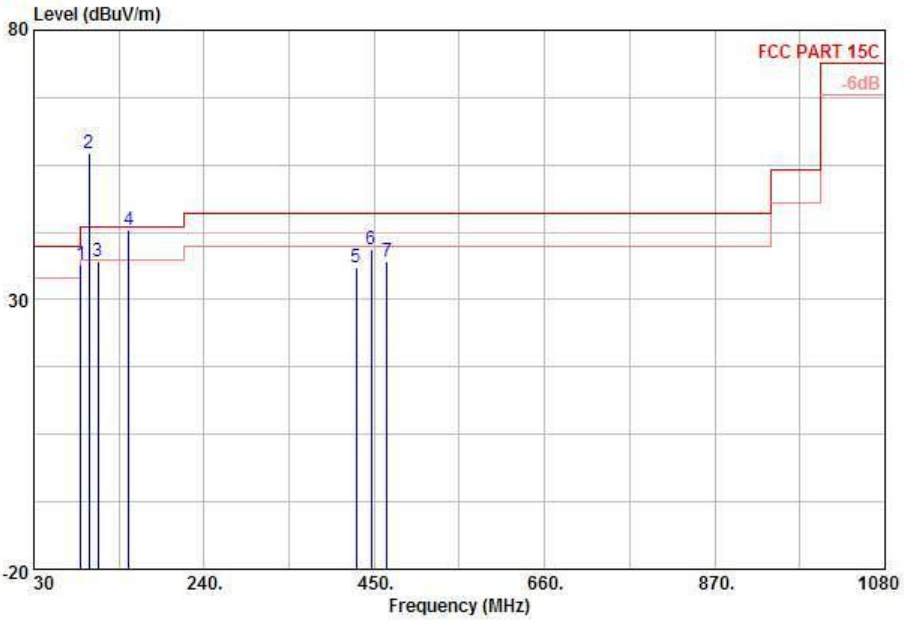
Test Mode :	Mode 1	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 88.1MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	#3 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 1
: 88.1 MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	55.11	39.16	-0.84	40.00	62.80	6.20	0.29	30.13	100	151	QP
2	!	71.85	38.33	-1.67	40.00	62.60	5.46	0.34	30.07	100	32	QP
3	X	88.10	59.63			80.95	8.30	0.38	30.00	---	---	Peak
4	!	95.88	39.07	-4.43	43.50	58.73	9.91	0.40	29.97	---	---	Peak
5		335.70	33.09	-12.91	46.00	48.09	14.14	0.80	29.94	---	---	Peak
6		384.00	34.26	-11.74	46.00	47.70	15.59	0.83	29.86	---	---	Peak
7		939.80	30.43	-15.57	46.00	37.94	20.69	1.33	29.53	---	---	Peak

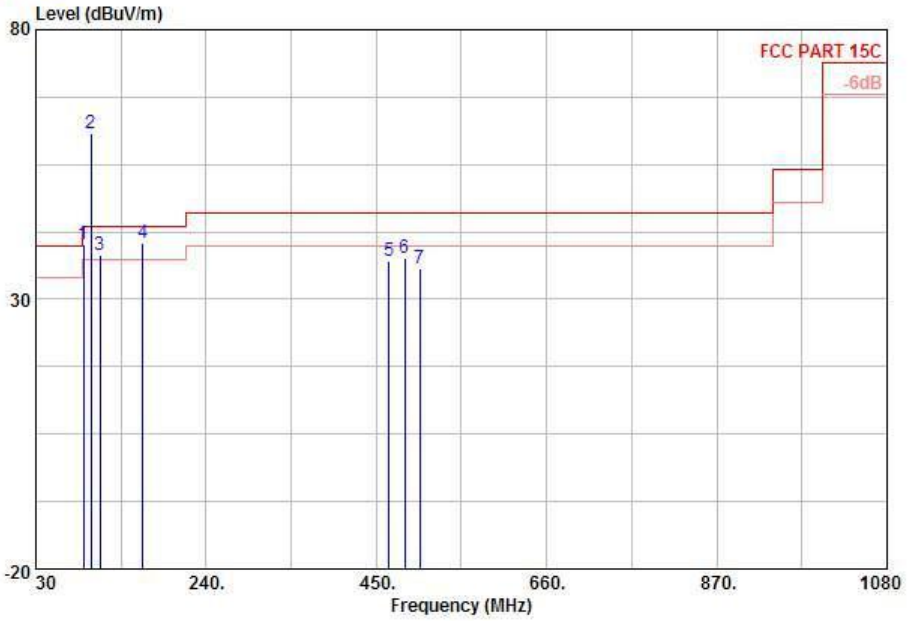
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	#2 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 2
: 98MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	87.78	36.48	-3.52	40.00	57.80	8.30	0.38	30.00	200	208	QP
2	X	98.00	57.09			76.50	10.15	0.41	29.97	---	---	Peak
3		109.11	37.16	-6.34	43.50	54.90	11.80	0.43	29.97	200	331	QP
4	!	147.18	42.93	-0.57	43.50	62.20	10.21	0.50	29.98	200	100	QP
5		427.40	36.04	-9.96	46.00	48.79	16.18	0.88	29.81	---	---	Peak
6		446.30	39.28	-6.72	46.00	51.89	16.28	0.90	29.79	---	---	Peak
7		465.20	37.03	-8.97	46.00	49.35	16.53	0.92	29.77	---	---	Peak

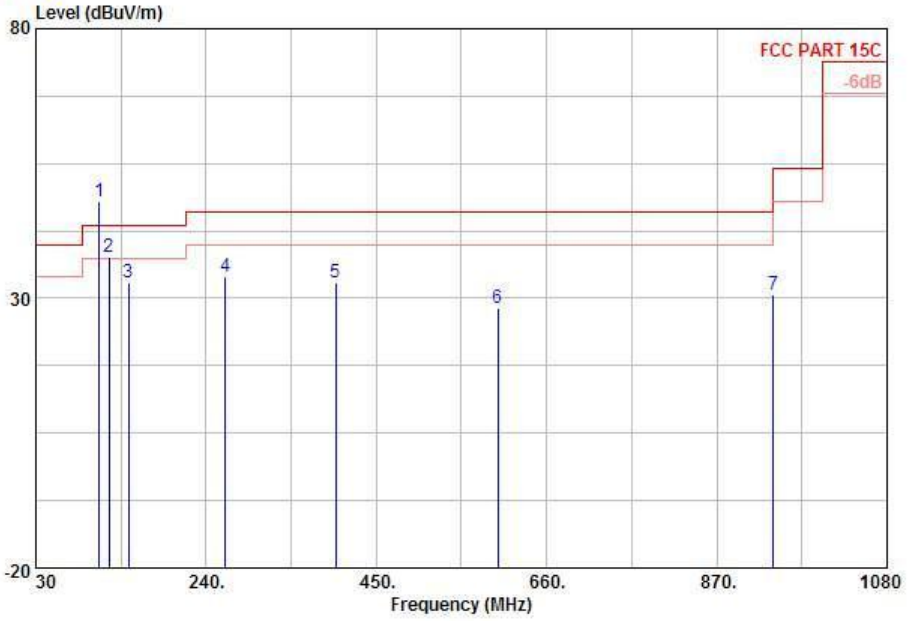
Test Mode :	Mode 2	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 98.0MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	#2 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 2
: 98MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	88.59	40.16	-3.34	43.50	61.48	8.30	0.38	30.00	---	---	Peak
2	X	98.00	60.73			80.14	10.15	0.41	29.97	---	---	Peak
3	!	109.38	38.16	-5.34	43.50	55.90	11.80	0.43	29.97	100	0	QP
4	!	161.49	40.49	-3.01	43.50	60.36	9.53	0.53	29.93	---	---	Peak
5		465.20	37.03	-8.97	46.00	49.35	16.53	0.92	29.77	---	---	Peak
6		484.80	37.76	-8.24	46.00	49.60	16.97	0.94	29.75	---	---	Peak
7		503.70	35.74	-10.26	46.00	47.25	17.26	0.96	29.73	---	---	Peak

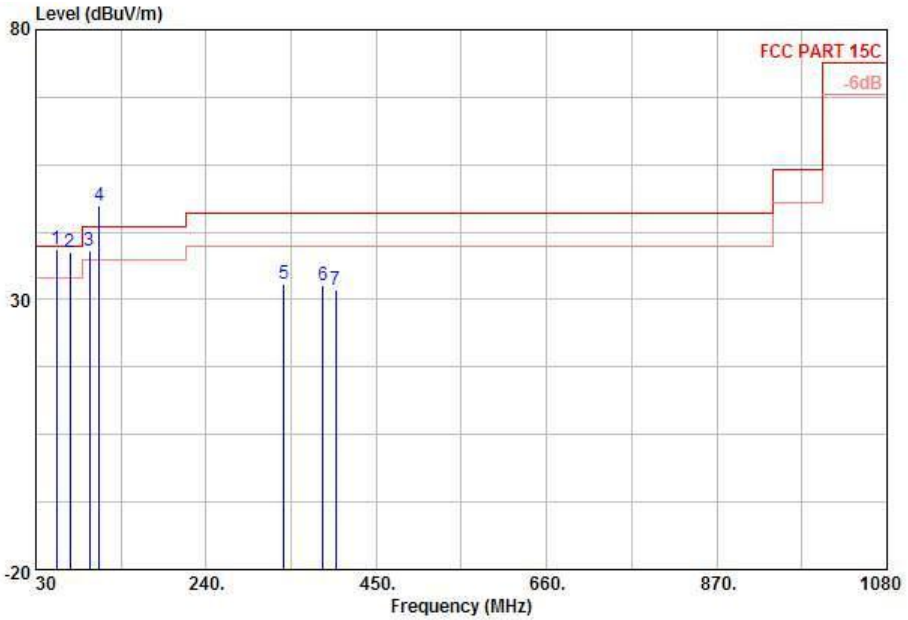
Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	#1 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 HORIZONTAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	X	107.90	47.90			65.87	11.56	0.43	29.96	---	---	Peak
2	!	119.91	37.62	-5.88	43.50	55.34	11.80	0.45	29.97	100	201	Peak
3		143.94	32.82	-10.68	43.50	51.76	10.55	0.50	29.99	---	---	Peak
4		264.09	34.01	-11.99	46.00	50.97	12.23	0.68	29.87	---	---	Peak
5		400.10	33.02	-12.98	46.00	46.01	16.00	0.84	29.83	---	---	Peak
6		600.30	28.27	-17.73	46.00	38.22	18.60	1.07	29.62	---	---	Peak
7		939.80	30.79	-15.21	46.00	38.30	20.69	1.33	29.53	---	---	Peak

Test Mode :	Mode 3	Temperature :	21~22°C
Test Frequency :	FM Tx Mode for 107.9MHz	Relative Humidity :	41~42%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	#4 is FM Tx signal which can be ignored.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_100803 VERTICAL
Project : (FR) 101803
Mode : mode 3
: 107.9 MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	55.11	39.46	-0.54	40.00	63.10	6.20	0.29	30.13	100	122	QP
2	!	71.85	38.65	-1.35	40.00	62.92	5.46	0.34	30.07	100	198	QP
3	!	95.88	39.00	-4.50	43.50	58.66	9.91	0.40	29.97	---	---	Peak
4	X	107.90	47.39			65.36	11.56	0.43	29.96	---	---	Peak
5		335.70	32.86	-13.14	46.00	47.86	14.14	0.80	29.94	---	---	Peak
6		384.00	32.52	-13.48	46.00	45.96	15.59	0.83	29.86	---	---	Peak
7		400.10	31.73	-14.27	46.00	44.72	16.00	0.84	29.83	---	---	Peak

3.4 AC Conducted Emission Measurement

3.4.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

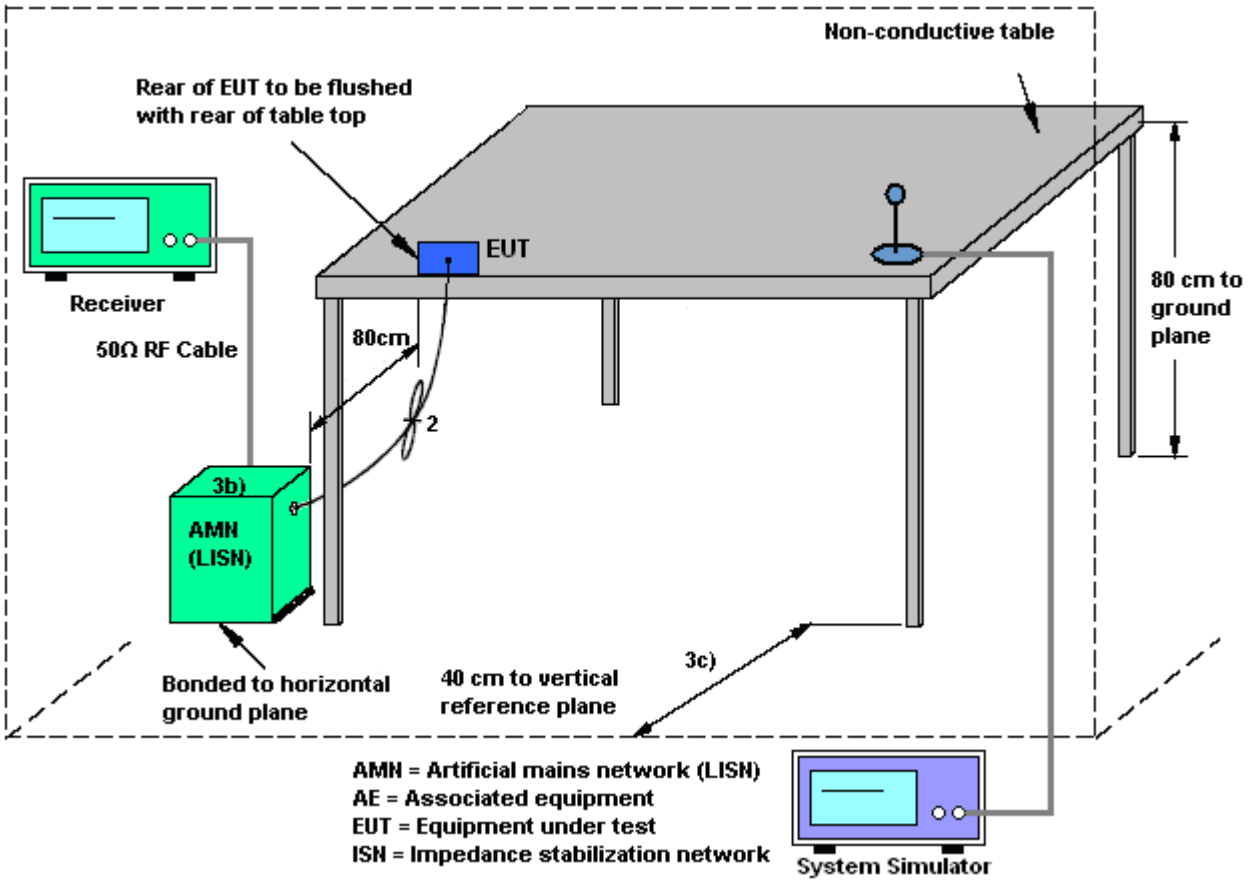
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

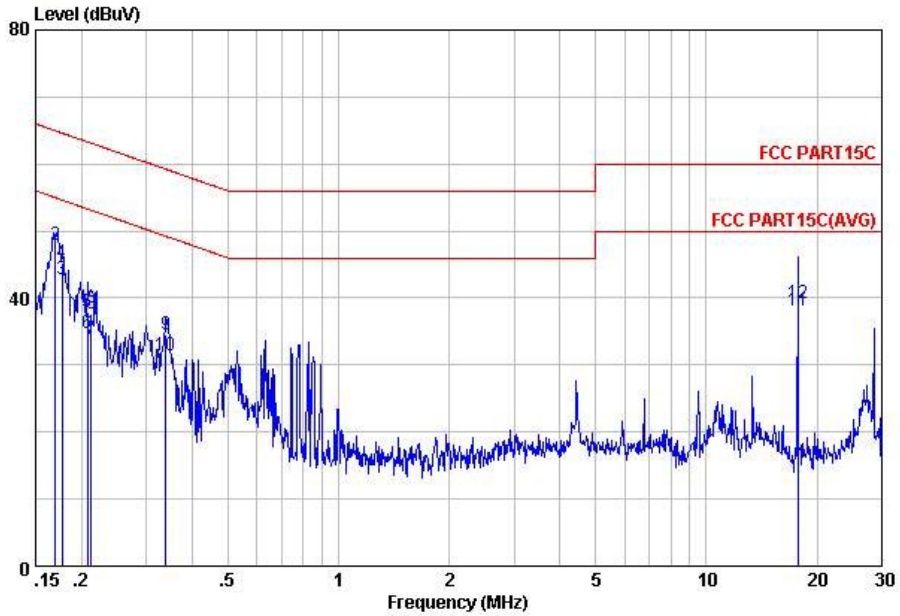
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.4.4 Test Setup



3.4.5 Test Result of AC Conducted Emission

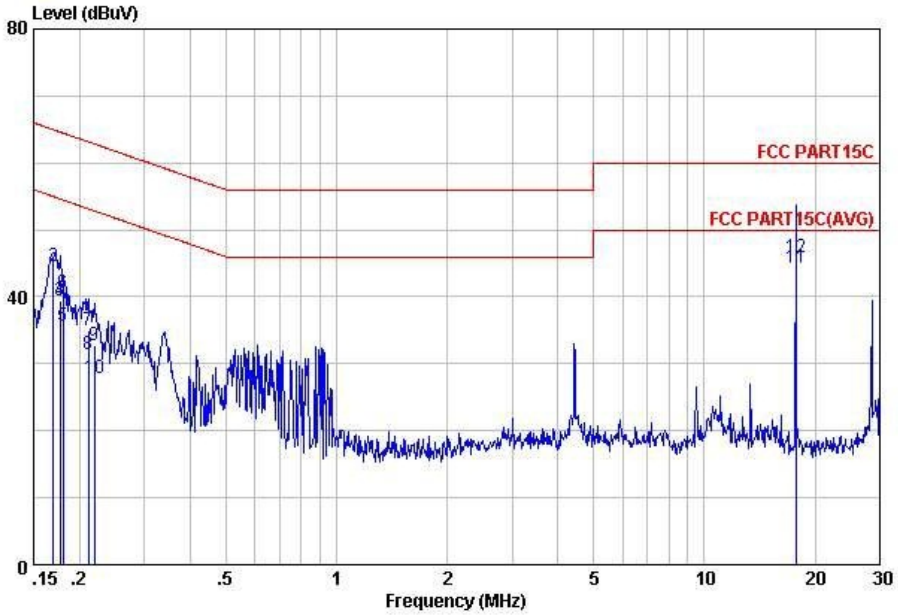
Test Mode :	Mode 1	Temperature :	19~20℃
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	FM Tx Mode for 98.0MHz		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C DC LISN-100807 LINE
Project : (FR) 101803
mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	46.72	-8.27	54.99	37.10	-0.52	10.14	Average
2	0.17	48.02	-16.97	64.99	38.40	-0.52	10.14	QP
3	0.18	42.75	-11.89	54.64	33.09	-0.49	10.15	Average
4	0.18	45.15	-19.49	64.64	35.49	-0.49	10.15	QP
5	0.21	37.92	-25.40	63.32	28.21	-0.44	10.15	QP
6	0.21	34.82	-18.50	53.32	25.11	-0.44	10.15	Average
7	0.21	33.83	-19.27	53.10	24.10	-0.42	10.15	Average
8	0.21	37.69	-25.41	63.10	27.96	-0.42	10.15	QP
9	0.34	34.48	-24.74	59.22	24.50	-0.20	10.18	QP
10	0.34	31.38	-17.84	49.22	21.40	-0.20	10.18	Average
11	17.75	38.12	-11.88	50.00	27.80	-0.22	10.54	Average
12	17.75	39.22	-20.78	60.00	28.90	-0.22	10.54	QP

Test Mode :	Mode 1	**Temperature :**	19~20℃
Test Engineer :	Tom Wang	**Relative Humidity :**	39~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	FM Tx Mode for 98.0MHz		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC PART15C DC LISN-100807 NEUTRAL
Project : (FR) 101803
mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	43.32	-11.67	54.99	33.70	-0.52	10.14	Average
2	0.17	44.62	-20.37	64.99	35.00	-0.52	10.14	QP
3	0.18	39.45	-25.19	64.64	29.79	-0.49	10.15	QP
4	0.18	39.44	-15.20	54.64	29.78	-0.49	10.15	Average
5	0.18	35.66	-18.80	54.46	25.99	-0.48	10.15	Average
6	0.18	40.66	-23.80	64.46	30.99	-0.48	10.15	QP
7	0.21	35.03	-28.11	63.14	25.31	-0.43	10.15	QP
8	0.21	31.53	-21.61	53.14	21.81	-0.43	10.15	Average
9	0.22	32.75	-30.08	62.83	23.00	-0.40	10.15	QP
10	0.22	27.95	-24.88	52.83	18.20	-0.40	10.15	Average
11	17.75	44.32	-5.68	50.00	34.00	-0.22	10.54	Average
12	17.75	45.92	-14.08	60.00	35.60	-0.22	10.54	QP

3.5 Antenna Requirements

3.5.1 Standard Applicable

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 FCC rule.

3.5.2 Antenna Connected Construction

The antennas type used in this product is Wire Antenna and it is considered to meet antenna requirement.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Mar. 17, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Mar. 17, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Mar. 17, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Mar. 17, 2012	Nov. 15, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 16, 2011	Apr. 10, 2012	Nov. 15, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Apr. 10, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Apr. 10, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	Apr. 10, 2012	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Apr. 10, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Apr. 10, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Apr. 10, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz-18GHz	Nov. 07, 2011	Apr. 10, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz -40GHz	Oct. 11, 2011	Apr. 10, 2012	Oct. 10, 2012	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP1O1803 as below.