

FCC TEST REPORT
for
Zhongshan K-mate General Elec. Co., Ltd.

MP3 FM TRANSMITTER
FCC ID: RLQAT900 Model No.: AT900

Prepared for : Zhongshan K-mate General Elec. Co., Ltd.
Address : 3F B1 Building Fuwan Ind. Zone, Sun Wen Road, Zhongshan,
China
Tel: (86) 760-3887062
Fax: (86) 760-8233316

Prepared By : Anbotek Compliance Laboratory Limited
Address : 2/F, Langfeng Building, Kefa Road North, Hi-tech Industrial
Park, Nanshan District, Shenzhen 518057, China
Tel: (86) 755-26014771
Fax: (86) 755-26014720

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APPENDIX I (Photos of EUT) (3 Pages)

TEST REPORT

Applicant : Zhongshan K-mate General Elec. Co., Ltd.
 Manufacturer : Zhongshan K-mate General Elec. Co., Ltd.
 EUT : MP3 FM TRANSMITTER
 Model No. : AT900
 Serial No. : N/A
 Rating : DC 3.0V
 Trade Mark : K-MATE

Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.239

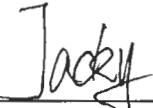
The device described above is tested by Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Date of Test :

Jul.31~Aug.22, 2007

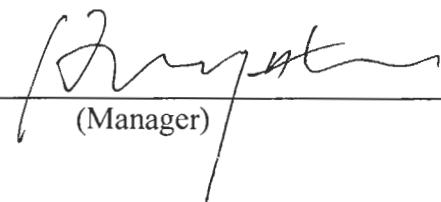
Prepared by :


 (Engineer)

Reviewer :


 (Project Manager)

Approved & Authorized Signer :


 (Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : MP3 FM TRANSMITTER

Model Number : AT900

Test Power Supply : DC 3.0V

Frequency : 88.1 ~ 107.9MHz (199 Channels, with 100KHz channel spacing)

Antenna assembly : 0 dBi
Gain

Antenna : on the PCB

Input Line : Non-shielded, Undetachable, <3.0m

Applicant : Zhongshan K-mate General Elec. Co., Ltd.
Address : 3F B1 Building Fuwan Ind. Zone, Sun Wen Road, Zhongshan, China

Manufacturer : Zhongshan K-mate General Elec. Co., Ltd.
Address : 3F B1 Building Fuwan Ind. Zone, Sun Wen Road, Zhongshan, China

Date of receiver : Jul.27, 2007
Date of Test : Jul.31~Aug.22, 2007

1.2. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

VCCI-Registration No.: R-2197 and C-2383

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (VCCI) Voluntary Control Council for Interference by Information Technology Equipment. The acceptance letter from the VCCI is maintained in our files. Registration R-2197 and C-2383, September 29, 2005.

FCC-Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682.

IC-Registration No.: 6002

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 6002, August 25, 2005.

Test Location

All Emissions tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. at No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China

1.3. Measurement Uncertainty

Radiation Uncertainty : Ur = ± 4.26dB

Conduction Uncertainty : Uc = ± 2.66dB

2. MEASURING DEVICE AND TEST EQUIPMENT

Equipment	Manufacturer	Model #	Serial #	Data of Cal.	Due Data
EMI Test Receiver	Rohde & Schwarz	ESCI	100119	Mar.03, 2007	Mar.02, 2008
EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	Sep.22, 2006	Sep.21, 2007
Spectrum Analyzer	Rohde & Schwarz	FSP40	100273	Sep.18, 2006	Sep.17, 2007
Signal Generator	Rohde & Schwarz	SMR27	100124	Jul.06, 2005	Jul.25, 2007
Signal Generator	Rohde & Schwarz	SML03	102319	Aug.01, 2005	Aug.01, 2007
AC Power Source	All Power Electronic Co.	APW-1100N	890869	N/A	N/A
Absorbing Clamp	Rohde & Schwarz	MDS21	100218	Apr.30, 2005	Apr.29, 2007
Power Meter	Rohde & Schwarz	NRVD	101287	Jul.19, 2005	Jul.18, 2007
Coaxial Cable	N/A	N/A	N/A	May.31, 2006	May.30, 2007
Coaxial Cable	N/A	N/A	N/A	May.31, 2006	May.30, 2007
Coaxial Cable	N/A	N/A	N/A	May.31, 2006	May.30, 2007
Universal radio Communication tester	Rohde & Schwarz	CMU200	101724	Sep.08, 2006	Sep.07, 2008
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
BiConilog Antenna	ETS-LINDGREN	3142C	00042670	Mar.03, 2007	Mar.02, 2008
BiConilog Antenna	ETS-LINDGREN	3142C	00042673	Mar.03, 2007	Mar.02, 2008
Double-ridged Waveguide horn	ETS-LINDGREN	3117	00035926	Dec.30, 2005	Dec.29, 2007
Double-ridged Waveguide horn	ETS-LINDGREN	3117	00041545	Dec.30, 2005	Dec.29, 2007
Pre-amplifier	Rohde & Schwarz	AFS42-00101800-25-S-42	1091457	Jul.17, 2006	Jul.16, 2008
Thermo-/Hygrometer	N/A	TH01	N/A	May.03, 2006	Mar.03, 2008
Shielding Room	Zhong Yu Electron	GB-88	N/A	N/A	N/A
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	N/A	Apr.28, 2005	Apr.27, 2007

3. Test Results

3.1. EUT Operation

Input voltage: DC 3.0V (Battery)

Operating Environment:

Temperature: 24.0 °C

Humidity: 52 % RH

Atmospheric Pressure: 1012 mbar

EUT Operation: Test in transmitting mode:

1. For lowest channel: 88.1MHz.
2. For middle channel: 98.0MHz.
3. For highest channel: 107.9MHz.

3.2. Test Procedure & Measurement Data

3.2.1. Radiated Emissions

3.2.1.1. Test in transmitting mode

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part 15 C Section 15.239
Measurement Distance:	3m (Semi-Anechoic Chamber)
Frequency range	30 MHz – 10GHz for transmitting mode. Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 M – 25GHz)
Operation:	Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal
Requirements:	<p>(b) The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.</p> <p>(c) The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in Section 15.209.</p>

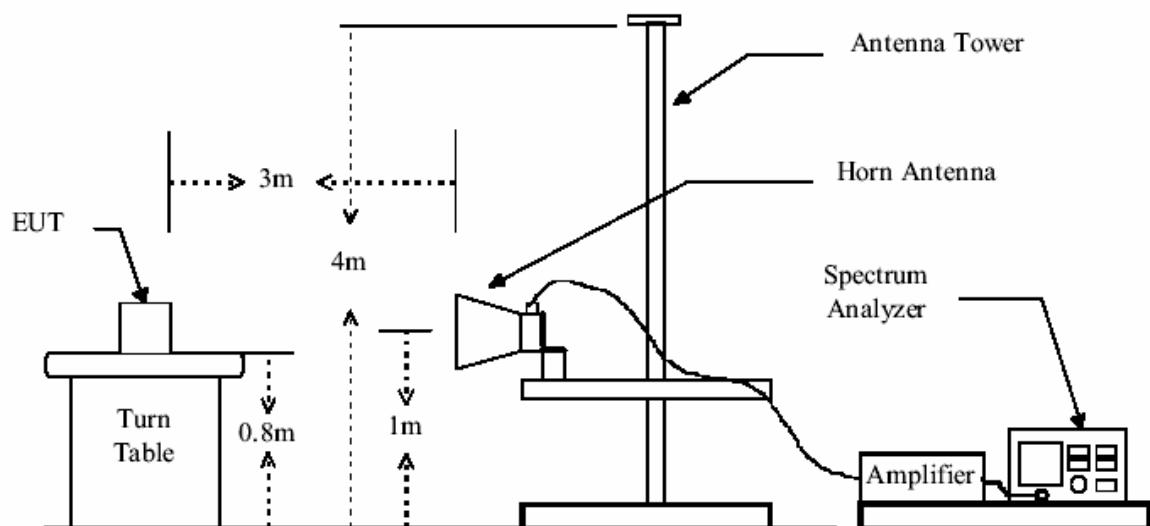
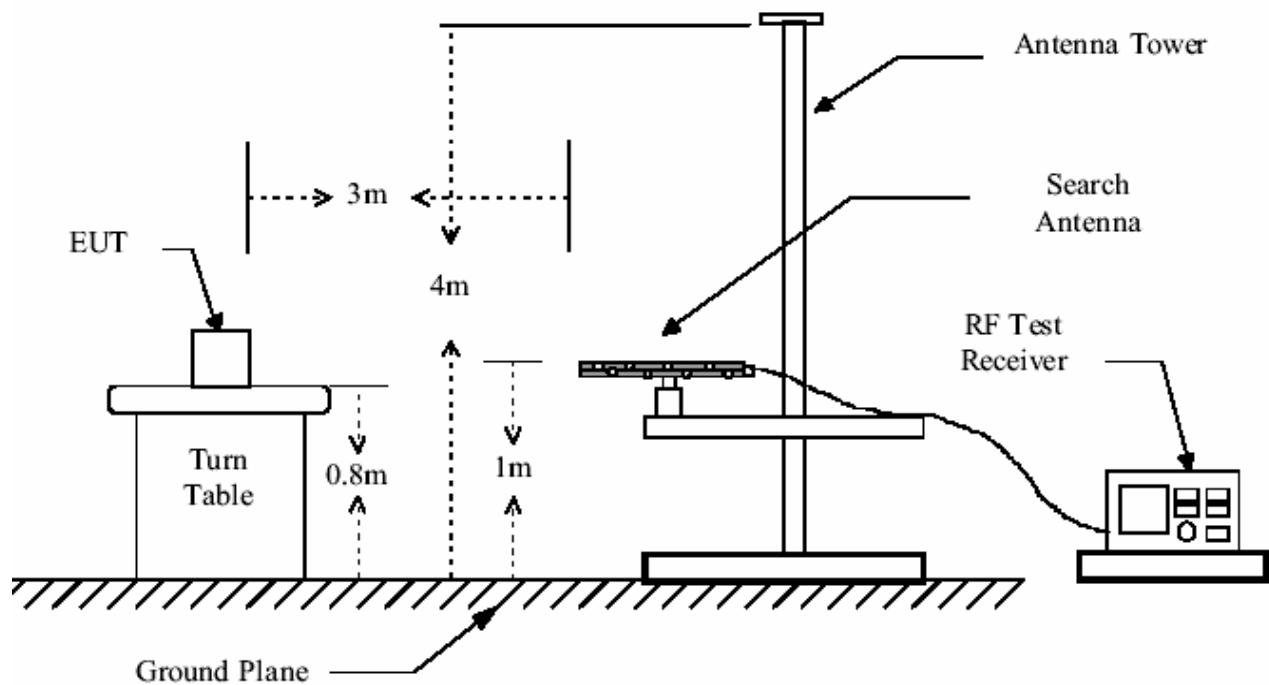
The EUT have 199 channels in the 88.1MHz and 107.9 MHz with 100KHz channel spacing can in exchange for choice, According to ANSI 63.4 chapter 12, the test fundamental frequency of the EUT is lowest channel 88.1MHz, middle channel 98.0MHz and highest channel 107.9MHz.

The limit for average field strength dB_{uv}/m for the fundamental frequency = 48.0 dB_{μV}/m.
And the limit for peak field strength dB_{uv}/m for the fundamental frequency = 68.0 dB_{μV}/m

Test Procedure:

The procedure used was ANSI Standard C63.4-2003. The receiver was scanned from 30MHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Test Configuration:



The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

The following test results were performed on the EUT:

For **lowest channel, 88.1MHz:**

(1). Fundamental emission

Peak Measurement

Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
88.1	37.7	41.6	68.0	30.3	26.4

Average Measurement

88.1	37.4	40.4	48.0	10.6	7.6
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(2). Harmonics & Spurious Emissions

Quasi-peak Measurement

Test Frequency (MHz)	Measuring Level (dBuV/m) Horizontal	Limits (dBuV/m)	Margin (dB)	
			Vertical	Horizontal
261.830	38.14	46	7.86	-
528.580	33.41	46	12.59	-
-	-	-	-	-
Test Frequency (MHz)	Measuring Level (dBuV/m) Vertical	Limits (dBuV/m)	Margin (dB)	
			Vertical	Horizontal
-	-	-	-	-

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. The frequency will not be recorded if the level of the spurious emission is very weak. All emissions more than 20dB below the limit were not listed.

The following test results were performed on the EUT:

For Middle channel, 98.0MHz:

(1). Fundamental emission

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
98.0	40.9	44.6	68.0	27.1	23.4
Average Measurement					
98.0	40.3	44.4	48.0	7.7	3.6

(2). Harmonics & Spurious Emissions

Quasi-peak Measurement

Test Frequency (MHz)	Measuring Level (dBuV/m) Horizontal	Limits (dBuV/m)	Margin (dB)
291.900	41.60	46	4.40
586.780	41.04	46	4.96
-	-	-	-
Test Frequency (MHz)	Measuring Level (dBuV/m) Vertical	Limits (dBuV/m)	Margin (dB)
-	-	-	-

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. The frequency will not be recorded if the level of the spurious emission is very weak. All emissions more than 20dB below the limit were not listed.

The following test results were performed on the EUT:

For **highest channel, 107.9MHz**:

(1). Fundamental emission

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
107.9	39.1	45.7	68.0	28.9	22.3
Average Measurement					
107.9	37.8	43.8	48.0	10.2	4.2

(2). Harmonics & Spurious Emissions

Quasi-peak Measurement

Test Frequency (MHz)	Measuring Level (dBuV/m) Horizontal	Limits (dBuV/m)	Margin (dB)
322.940	41.25	46	4.75
540.220	42.36	46	3.64
-	-	-	-
Test Frequency (MHz)	Measuring Level (dBuV/m) Vertical	Limits (dBuV/m)	Margin (dB)
-	-	-	-

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. The frequency will not be recorded if the level of the spurious emission is very weak. All emissions more than 20dB below the limit were not listed.

The results: The unit does meet the FCC requirements.

3.2.2. Occupied Bandwidth

Test Requirement:

FCC Part 15 C

Test Method:

Based on FCC Part 15 C Section 15.239

Operation within the band 88MHz – 108MHz

Requirements:

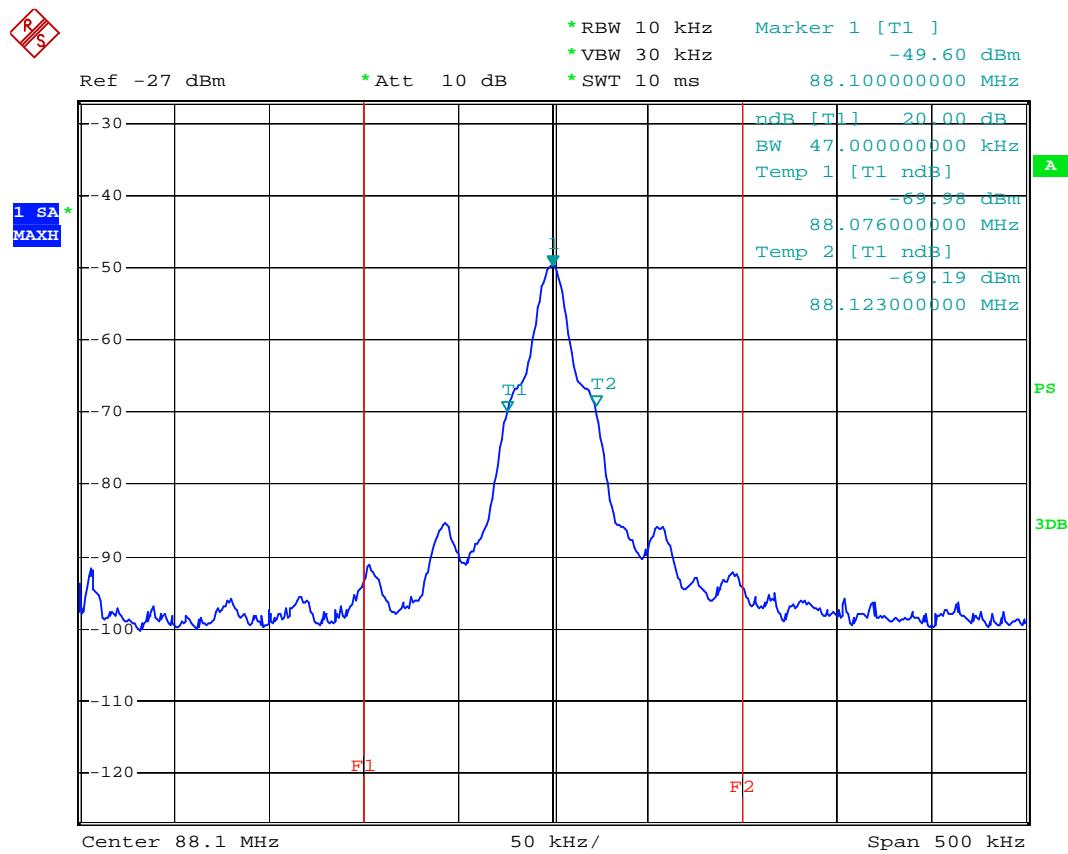
(a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

Method of measurement:

Test the EUT in 1kHz audio input with maximum level mode. A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. The vertical is set to 10dB per division. The horizontal scale is set to 100KHz per division.

1. For lowest channel: 88.1MHz

The occupied bandwidth as below:

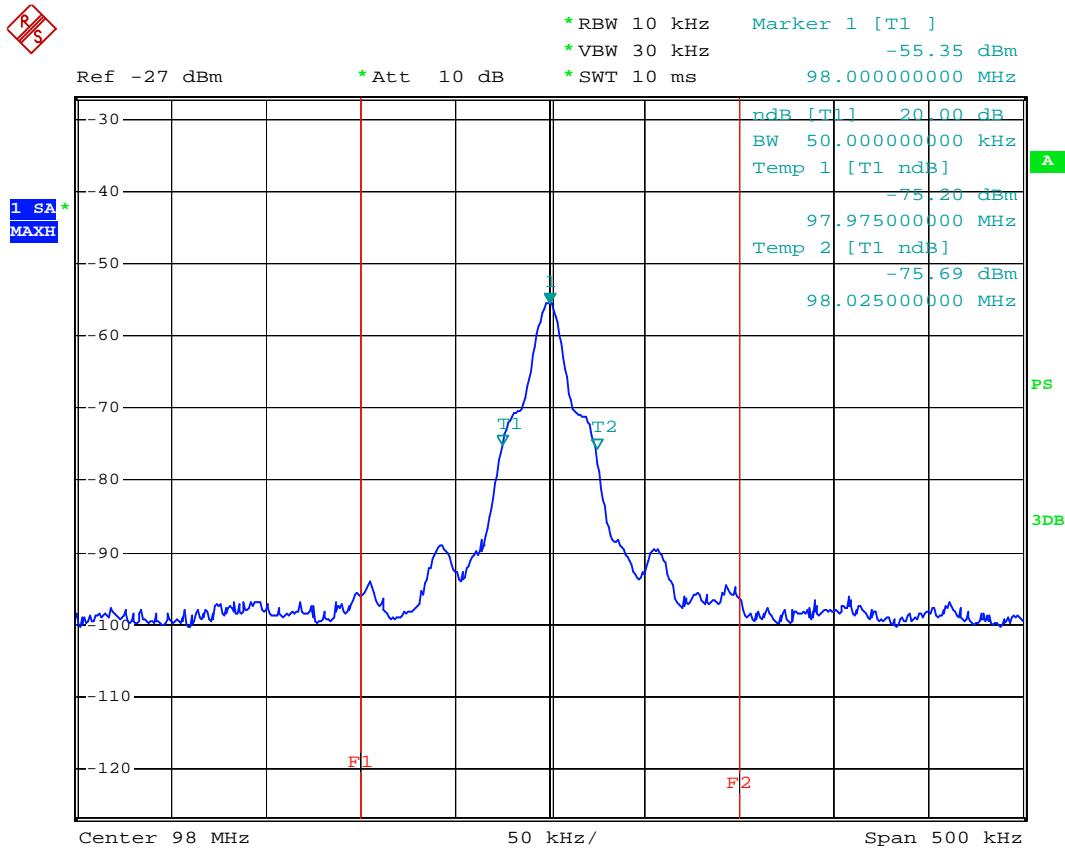


N

Date: 31.JUL.2007 18:01:42

2. For middle channel: 98.0MHz

The occupied bandwidth as below:

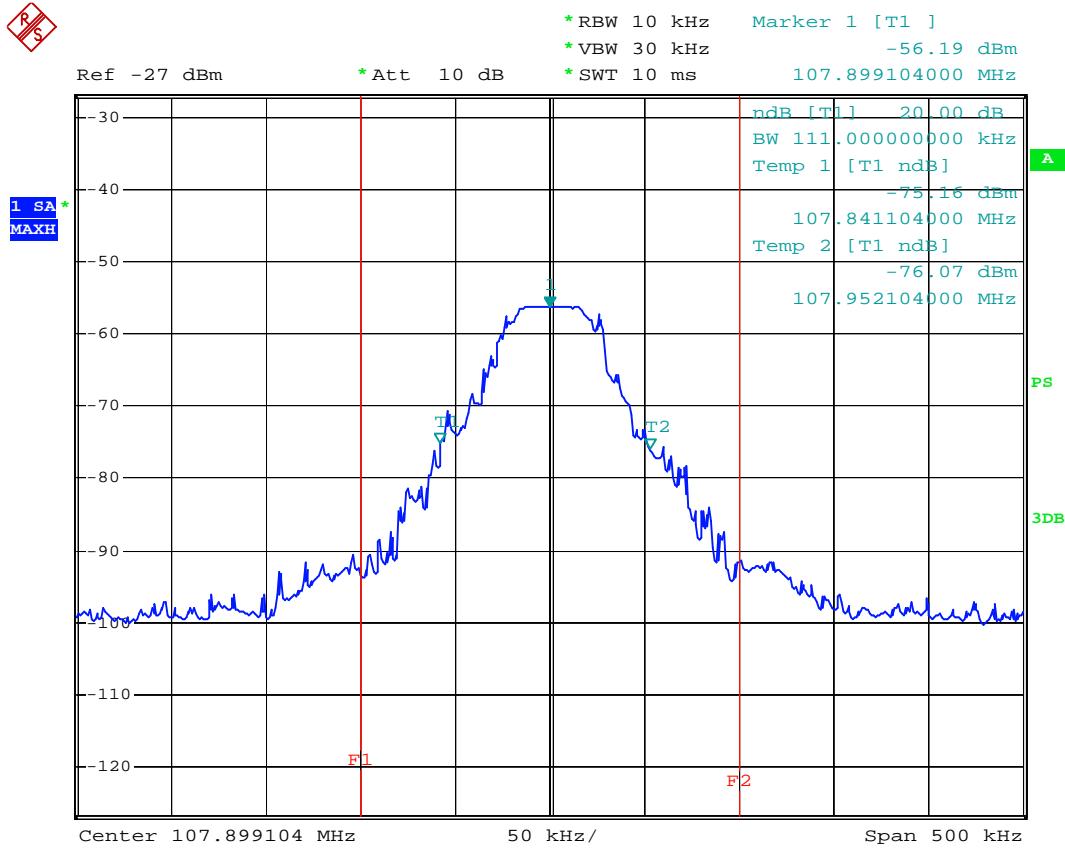


N

Date: 31.JUL.2007 17:59:22

3. For highest channel: 107.9MHz

The occupied bandwidth as below:



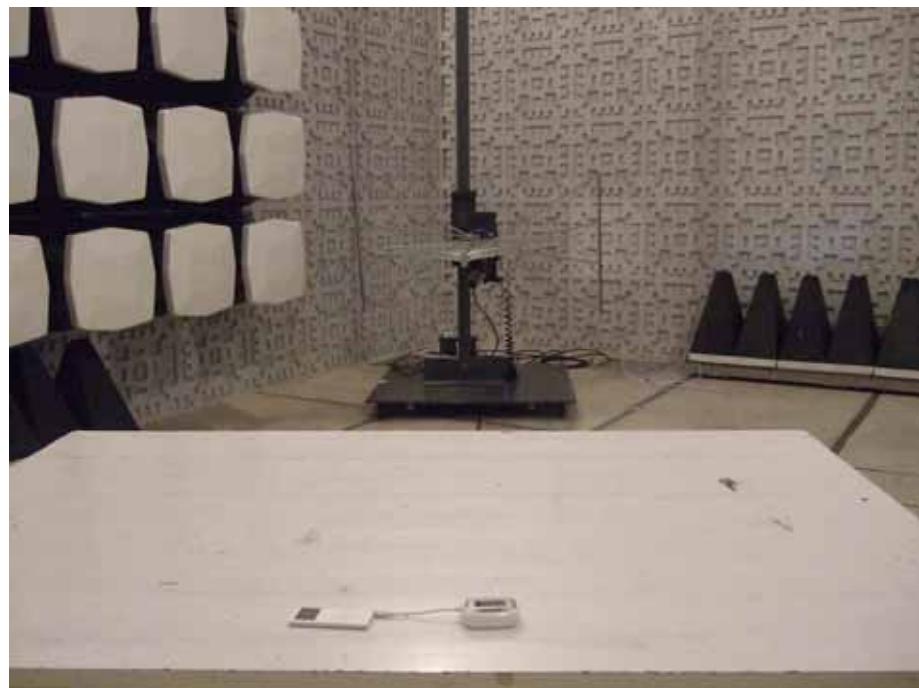
N

Date: 31.JUL.2007 17:56:22

The results: The unit does meet the FCC requirements.

4. PHOTOGRAPH

4.1. Photo of Radiation Emission Test



APPENDIX I (Photos of EUT)

Figure 1
The EUT-Front View

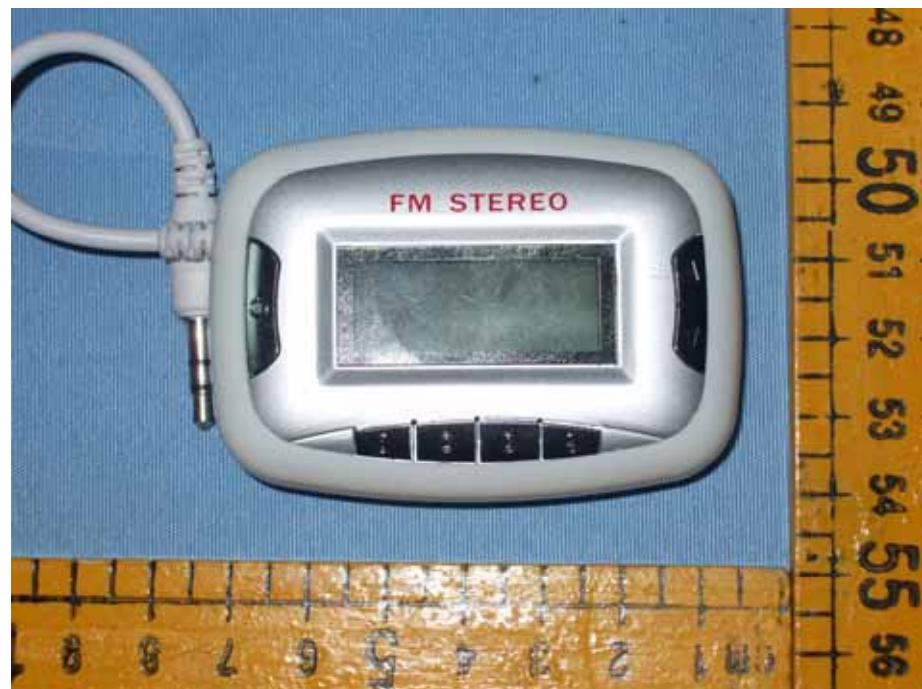


Figure 2
The EUT-Back View



Figure 3
The EUT-Inside View



Figure 4
The EUT-Inside View



Figure 5
PCB of the EUT-Front View

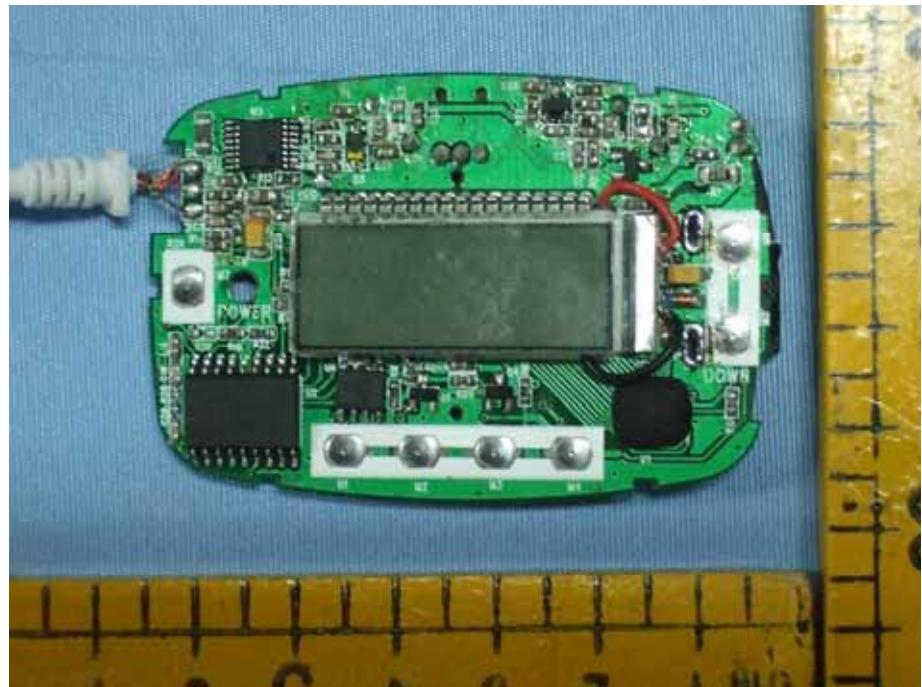


Figure 6
PCB of the EUT-Back View

