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**FEDERAL COMMUNICATIONS COMMISSION**

Registration number: 282399

Report No.: GLEMR070300800RFT

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FCC ID:TZ9I707

# FCC TEST REPORT

**Application No. :** GLEMR070300800RF  
**Applicant:** SEATUNE ELECTRONICS CO.,LTD  
**FCC ID:** TZ9I707  
**Fundamental Carrier Frequency :** 88.1MHz to 107.9MHz  
**Equipment Under Test (EUT):**

**Name:** FM Transmitter

**Model:** i707

**Band Name:** Not supply by client

**Standards:** FCC PART 15.239: 2006

Please refer to section 2 for further details.

**Date of Receipt:** 30 March 2007

**Date of Test:** 30 March 2007 to 19 April 2007

**Date of Issue:** 24 April 2007

<b>Test Result :</b>	<b>PASS *</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jerry Chen  
Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



## 2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Radiated Emission (30MHz to 1000MHz)	FCC PART 15 :2006	Section 15.239	PASS *
Occupied Bandwidth	FCC PART 15 :2006	Section 15.239	PASS

\* The EUT passed the Radiated Emission test after modification carried out by the applicant (manufacturer).



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## 4 General Information

### 4.1 Client Information

Applicant Name: SEATUNE ELECTRONICS CO.,LTD

Applicant Address: No.27, ShuiKou Avenue, ShuiKou Town, HuiZhou City, GuangDong, China.

### 4.2 General Description of E.U.T.

Product Name: FM Transmitter

Model: i707

Power Supply: 3.3Vdc Supplied by iPod.

Or 12V DC supplied by battery

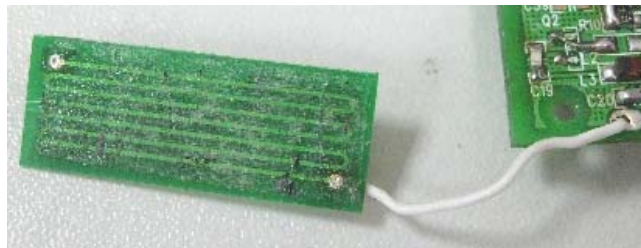
Power Cord: Not Applied.

### 4.3 Description of the Transmitter and Support Units

The EUT was tested with a audio source ipod.

The transmitter have 199 channels between the 88.1MHz & 107.9MHz with 100KHz channel spacing can be in exchange for choice manually by software setup. The antenna is a permanently antenna (a wire with an extended wire lay on PCB) coupling to the intentional radiator and do not connect as part of the car wiring. About the installation and operation of this device, please refer to the user manual for more detail.

Antenna photo:



### 4.4 Standards Applicable for Testing

The customer requested FCC tests for a FM transmitter .

The standard used was FCC PART 15, SUBPART C (2006) section 15.239.

### 4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663

Tel: +86 20 82155555

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### 4.6 Other Information Requested by the Customer

None.



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### 4.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **FCC – Registration No.: 282399**

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 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorized test laboratory for the DoC process.



## **5 Test Results**

### **5.1 E.U.T. Operation**

Input voltage:	3.3Vdc Supplied by iPod. Or 12V DC supplied by battery
Operating Environment:	
Temperature:	26.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1011 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.

### **5.2 Test Instruments**



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No:	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
EMC0039	Temperature Chamber	TERCHY	MHG-800RR	0118	05-12-2006	05-12-2007
EMC0009	D.C. Power Supply	Instek	PS-3030	9862036	Check when used	
EMC0007	DMM	Fluke	73	70671122	27-09-2006	27-09-2007
EMC0006	DMM	Fluke	73	70681569	27-09-2006	27-09-2007
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	06-03-2007	06-03-2008
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	22-08-2006	22-08-2007
EMC0502	Biconical Antenna (Rx)	Rohde & Schwarz	HK116	100032	31-07-2006	31-07-2007
EMC0503	Biconical Antenna (Tx)	Rohde & Schwarz	HK116	100033	31-07-2006	31-07-2007
EMC0504	Log-Perd. Dipole Antenna (Rx)	Rohde & Schwarz	HL223	100039	31-07-2006	31-07-2007
EMC0505	Log-Perd. Dipole Antenna (Tx)	Rohde & Schwarz	HL223	100040	31-07-2006	31-07-2007
EMC0517	Horn Antenna (Rx)	Rohde & Schwarz	HF906	100095	29-07-2006	29-07-2007
EMC0519	Bilog Type Antenna	Schaffner Chase	CBL6143	5070	31-07-2006	31-07-2007
EMC0520	0.1-1300 MHz Pre Amplifier	HP	8447D OPT 010	2944A06252	06-03-2007	06-03-2008
EMC0521	1-26.5GHz Pre Amplifier	Agilent	8449B	3008A01649	06-03-2006	06-03-2007
EMC0507	Antenna Mask (Tx)	HD-GmbH	AS620M	620/408	N/A	N/A
EMC0508	Antenna Mask (Rx)	HD-GmbH	MA240	240/619	N/A	N/A
EMC0509	Turntable	HD-GmbH	DT430	N/A	N/A	N/A
EMC0510	Turntable & Antenna Mask Controller	HD-GmbH	HD100	N/A	N/A	N/A
EMC0512	EMI Test Software	Rohde & Schwarz	ES-K1	N/A	N/A	N/A
EMC0511	Coaxial cable	Rohde & Schwarz	N/A	N/A	04-11-2006	03-11-2007
EMC0514	Coaxial cable	Rohde & Schwarz	N/A	N/A	04-11-2006	03-11-2007
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	05-12-2006	05-12-2007
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2006	05-12-2007
EMC0516	Signal Generator	Rohde & Schwarz	SMR20	100416	05-12-2006	05-12-2007
EMC0032	Radio Communication Monitor	Rohde & Schwarz	CMS54	100137	20-12-2006	20-12-2007
EMC0904	Power Meter	Rohde & Schwarz	NRVS	825770/074	22-07-2006	22-07-2007
EMC0905	Power Sensor	Rohde & Schwarz	NRV-Z5	825802/013	22-07-2006	22-07-2007
EMC0906	Dual Directional Coupler	Werlatone Inc.	C1795	6634	20-11-2006	20-11-2007
EMC1508	Audio Analyzer	Rohde & Schwarz	UPL	100855	11-09-2006	11-09-2007
EMC1005	Digital Oscilloscope	Tektronix	TDS3012	B015508	14-07-2006	14-07-2007
EMC0523	Active Loop Antenna	EMCO	6502	00042963	09-08-2006	09-08-2008
EMC0001	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	EMC0001	20-09-2007	20-09-2008



### **5.3 Test Procedure & Measurement Data**

#### **5.3.1 Radiated Emissions**

##### **5.3.1.1 Test in transmitting mode .**

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part 15 C Section 15.239
Test Date:	18 April 2007
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:**

- (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.
- (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.

The EUT have 199 channels between 88.1MHz and 107.9MHz 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 98MHz and highest channel 107.9MHz.

The limit for average field strength dB $\mu$ V/m for the fundamental frequency = 48.0 dB $\mu$ V/m.

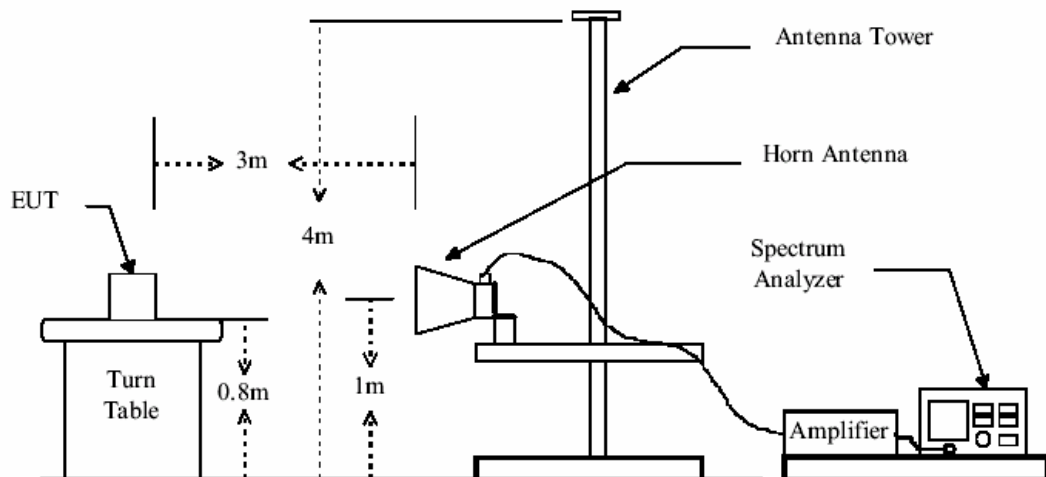
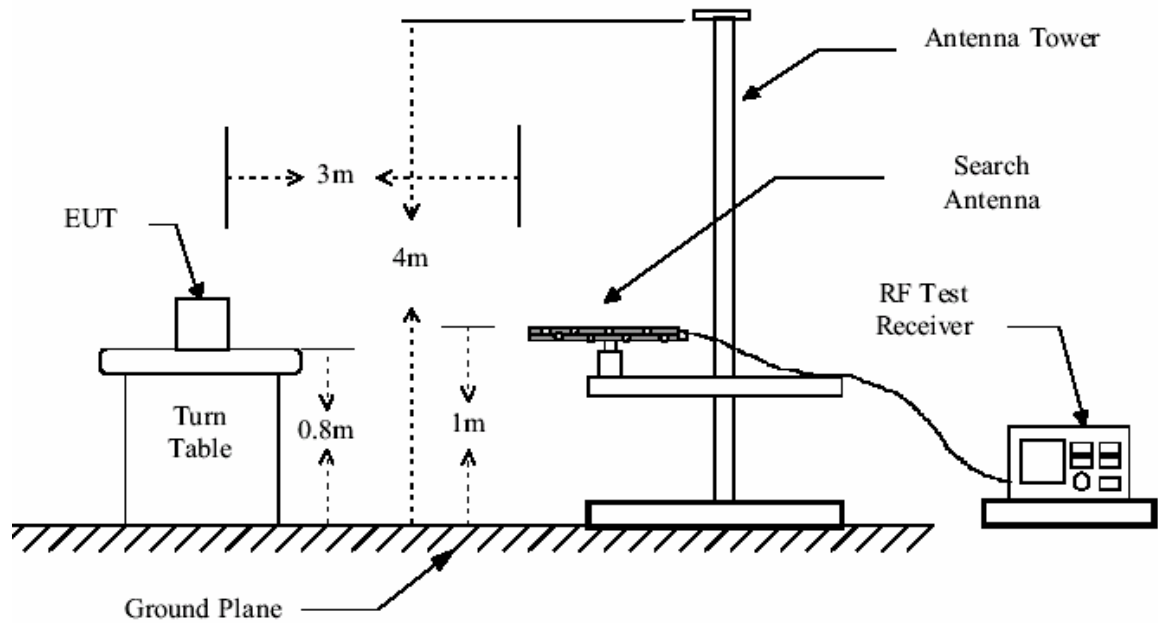
And the limit for peak field strength dB $\mu$ V/m for the fundamental frequency = 68.0 dB $\mu$ V/m

**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:





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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 **The lowest channel ,88.1MHz:**

Fundamental Emission, Harmonic Emission, Band edge emission , Restricted band (108-121.94MHz)

Emission and all other spurious emission.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
88.100	48.3	10.2	0.8	25.2	34.2	68.0	-33.8	PEAK
88.100	46.6	10.2	0.8	25.2	32.5	48.0	-15.5	AVERAGE
175.500	38.1	8.5	1.2	24.8	23.0	40.0	-20.5	QP
254.070	31.1	12.8	1.5	24.4	21.0	43.5	-25.0	QP
319.060	31.1	14.2	1.7	24.5	22.3	43.5	-23.7	QP
397.630	25.4	16.1	1.9	25.0	18.4	43.5	-27.6	QP
528.580	24.5	18.6	2.3	25.9	19.5	43.5	-26.5	QP
708.030	25.7	21.8	2.7	25.7	24.5	46.0	-21.5	QP

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
88.100	44.2	7.5	0.8	25.2	27.4	68.0	-40.6	PEAK
88.100	43.6	7.5	0.8	25.2	26.7	48.0	-21.3	AVERAGE
238.550	28.2	10.8	1.5	24.4	16.0	46.0	-30.0	QP
319.060	25.2	15.2	1.7	24.5	17.5	46.0	-28.5	QP
397.630	26.5	16.2	1.9	25.0	19.6	46.0	-26.4	QP
533.430	25.9	19.6	2.3	25.9	21.9	46.0	-24.1	QP

Remark:

For this intentional radiator operates below 10 GHz, the spectrum was investigated to the tenth harmonic of the highest fundamental frequency. The frequency was not recorded if the level of the spurious emission is very weak.



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The following test results were performed on the EUT:

For **middle channel ,98.0MHz:**

Fundamental Emission, Harmonic Emission, Band edge emission, Restricted band (108-121.94MHz)

Emission and all other spurious emission.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
98.000	54.0	10.7	0.9	25.1	40.4	68.0	-27.6	PEAK
98.000	52.2	10.7	0.9	25.1	38.7	48.0	-9.3	AVERAGE
119.240	30.9	13.4	1.0	25.1	20.2	43.5	-23.3	QP
215.270	32.0	10.5	1.4	24.5	19.3	43.5	-24.2	QP
257.950	29.5	13.2	1.5	24.4	19.7	46.0	-26.3	QP
311.300	28.2	13.9	1.6	24.5	19.2	46.0	-26.8	QP
541.190	24.9	19.1	2.3	25.9	20.5	46.0	-25.5	QP

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
98.000	50.7	7.7	0.9	25.1	34.1	68.0	-33.9	Peak
98.000	49.6	7.7	0.9	25.1	33.0	48.0	-15.0	AVERAGE
223.030	31.2	10.6	1.4	24.5	18.7	46.0	-27.3	QP
280.260	34.4	12.5	1.6	24.4	24.0	46.0	-22.0	QP
311.300	34.7	14.8	1.6	24.5	26.7	46.0	-19.3	QP
358.830	23.9	15.4	1.8	24.8	16.3	46.0	-29.7	QP
561.560	23.4	20.5	2.4	25.8	20.5	46.0	-25.5	QP

Remark:

For this intentional radiator operates below 10 GHz, the spectrum was investigated to the tenth harmonic of the highest fundamental frequency. The frequency was not be recorded if the level of the spurious emission is very weak.



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The following test results were performed on the EUT:

For **The Highest channel ,107.9MHz:**

Fundamental Emission, Harmonic Emission, Band edge emission , Restricted band (108-121.94MHz) Emission and all other spurious emission.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
107.900	53.4	11.8	0.9	25.1	41.0	68.0	-27.0	PEAK
107.900	52.7	11.8	0.9	25.1	40.4	48.0	-7.7	AVERAGE
215.800	41.4	10.4	1.4	24.5	28.6	43.5	-14.9	QP
241.460	31.6	12.5	1.5	24.4	21.1	46.0	-24.9	QP
311.300	35.7	13.9	1.6	24.5	26.7	46.0	-19.3	QP
323.700	30.7	14.2	1.7	24.6	22.0	46.0	-24.0	QP
464.560	24.7	17.3	2.1	25.6	18.5	46.0	-27.5	QP

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
107.900	52.0	10.0	0.9	25.1	37.8	68.0	-30.2	PEAK
107.900	51.1	10.0	0.9	25.1	36.9	48.0	-11.1	AVERAGE
257.950	34.7	11.9	1.5	24.4	23.8	46.0	-22.2	QP
311.300	26.7	14.8	1.6	24.5	18.6	46.0	-27.4	QP
323.700	29.9	15.0	1.7	24.6	22.0	46.0	-24.0	QP
452.920	22.7	17.7	2.1	25.5	17.0	46.0	-29.0	QP
718.700	25.6	22.1	2.8	25.7	24.8	46.0	-21.2	QP

Remark:

For this intentional radiator operates below 10 GHz, the spectrum was investigated to the tenth harmonic of the highest fundamental frequency. The frequency was not recorded if the level of the emission is very weak.

**TEST RESULTS: The unit does meet the FCC requirements.**



### **5.3.2 Occupied Bandwidth**

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.239.

Operation within the band 88MHz – 108MHz

Test Date: 18 April 2007

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.

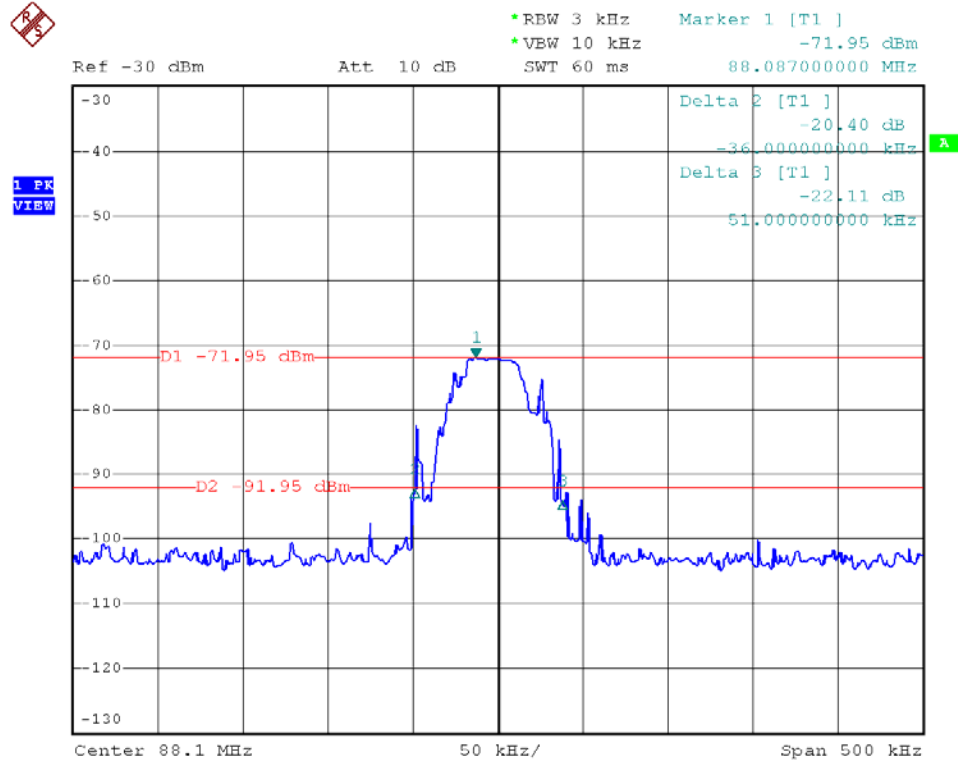
Test procedure: 1.Play typical song as audio input source:  
(1)Play a typical song ('New Stores' (Highway Blues), from sample music of Windows XP ® ) as the audio input source, input level as the Max volume of the player, nearly 10mV(r.m.s).  
(2)Set the RBW=3KHz, VBW=10KHz,Sweep time= Auto for the Spectrum Analyzer setting.  
(3)Record and report the plot as below:  
2.Play Gauss white noise as audio input source:  
(1)Play the gauss white noise as the audio input source, input level as the Max volume of the player, nearly 10mV(r.m.s).  
(2)Set the RBW=3KHz, VBW=10KHz,Sweep time= Auto for the Spectrum Analyzer setting.  
(3)Record and report the plot as below:



1. Play typical song

(1). For lowest Channel: 88.1 MHz

The occupied bandwidth as below:

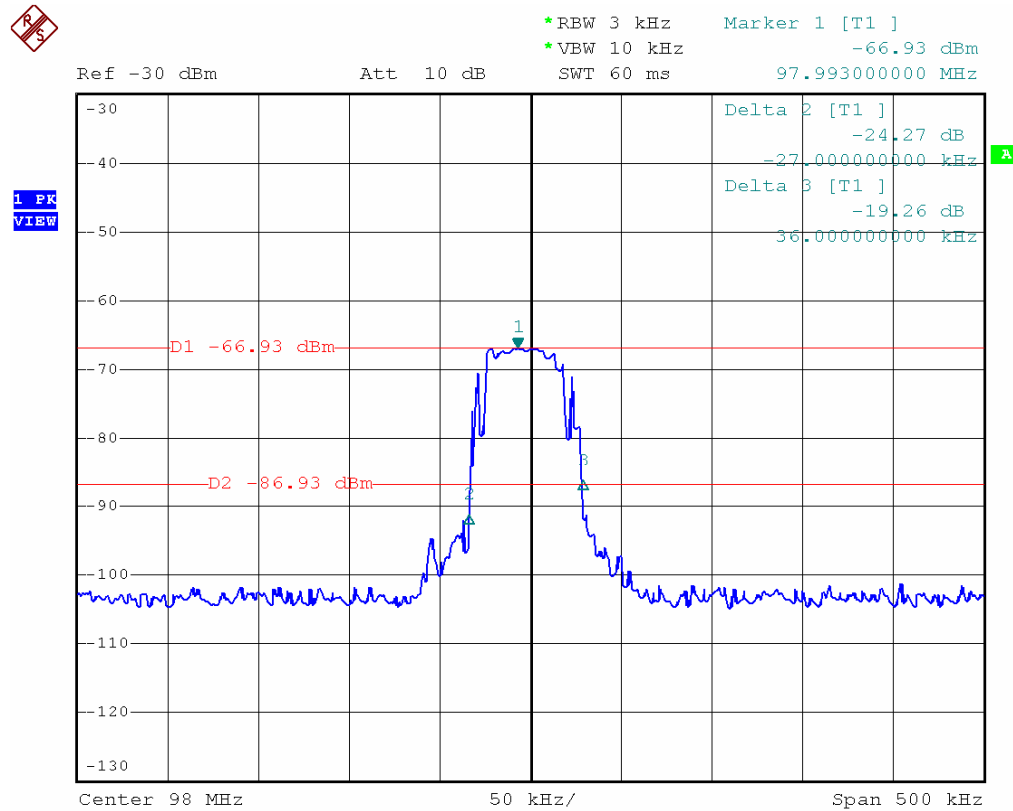


20dB bandwidth of the emission is 87.0 kHz.



(2). For middle Channel: 98.0MHz

The occupied bandwidth as below:

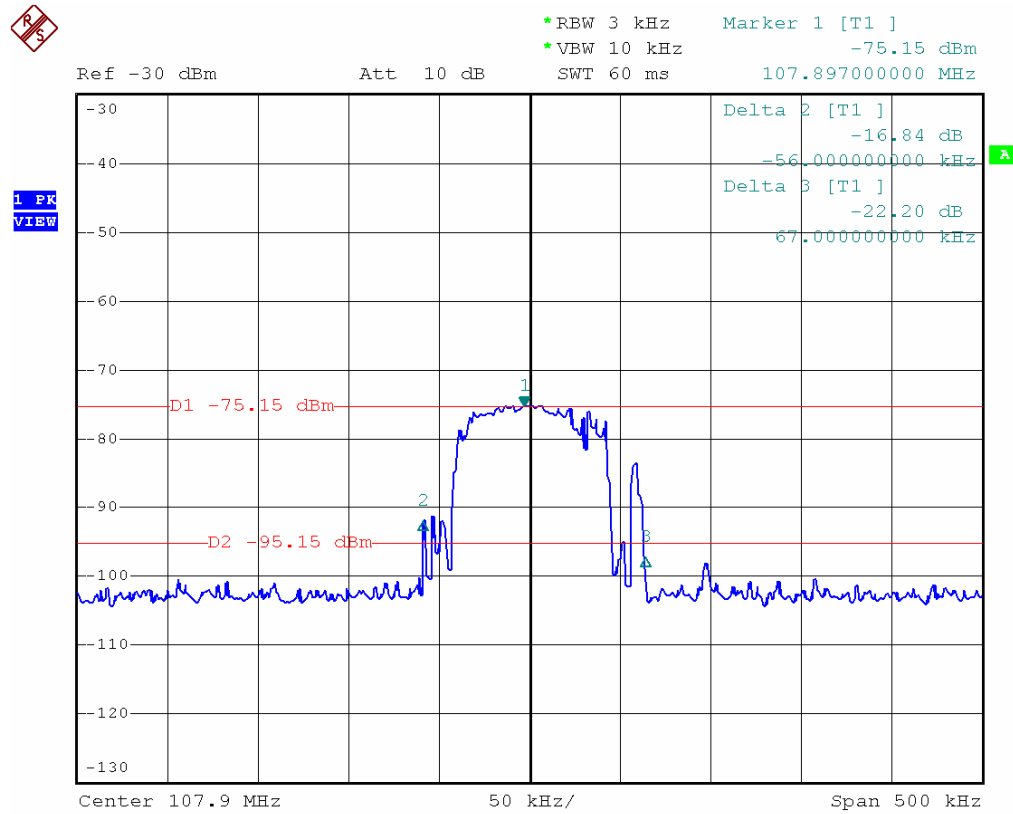


20dB bandwidth of the emission is 63.0 kHz



(3). For highest Channel:107.9MHz

The occupied bandwidth as below:



20dB bandwidth of the emission is 123.0 kHz

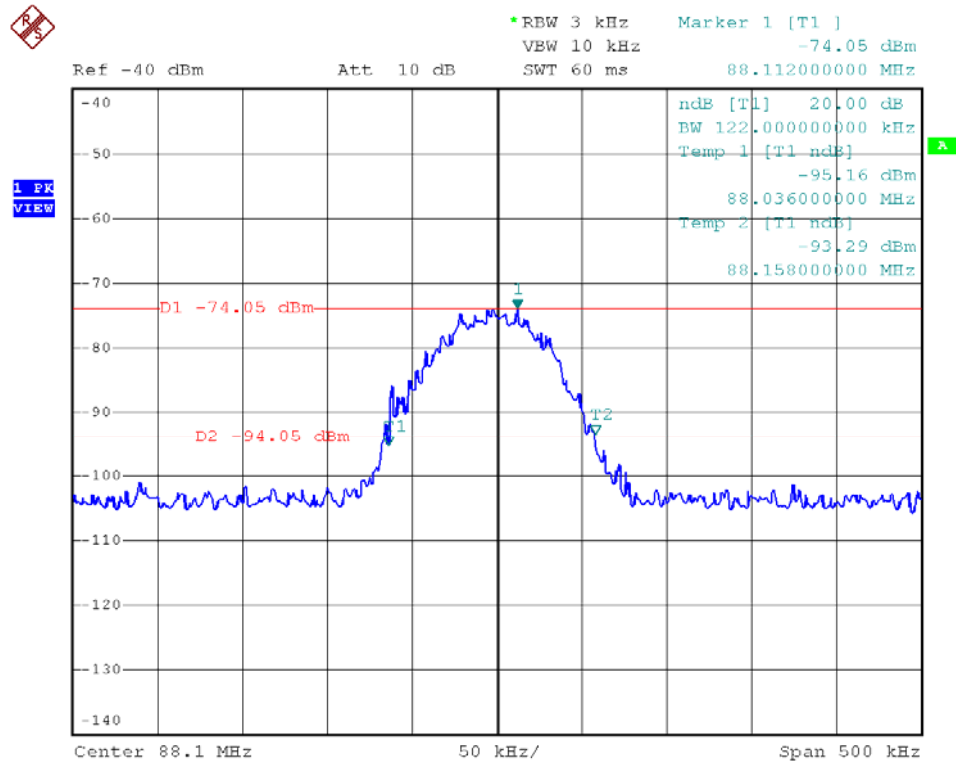




## 1. Play Gauss white noise

### (1). For lowest Channel: 88.1 MHz

The occupied bandwidth as below:

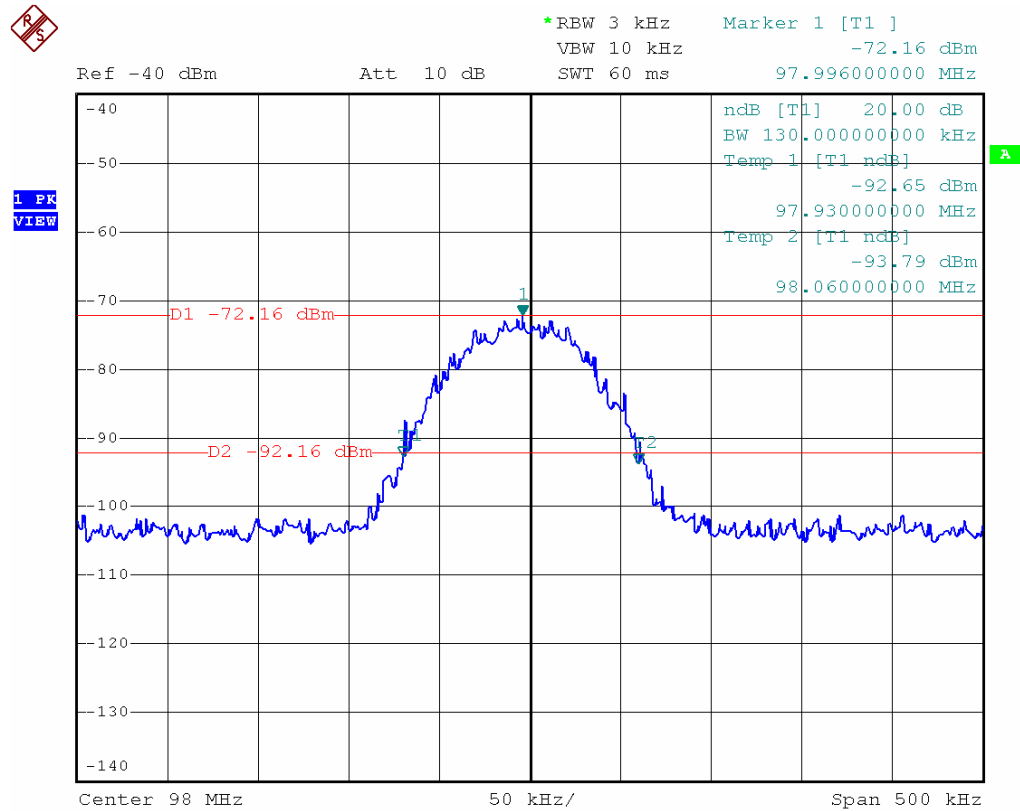


20dB bandwidth of the emission is 122.0 kHz.



(2). For middle Channel: 98.0MHz

The occupied bandwidth as below:

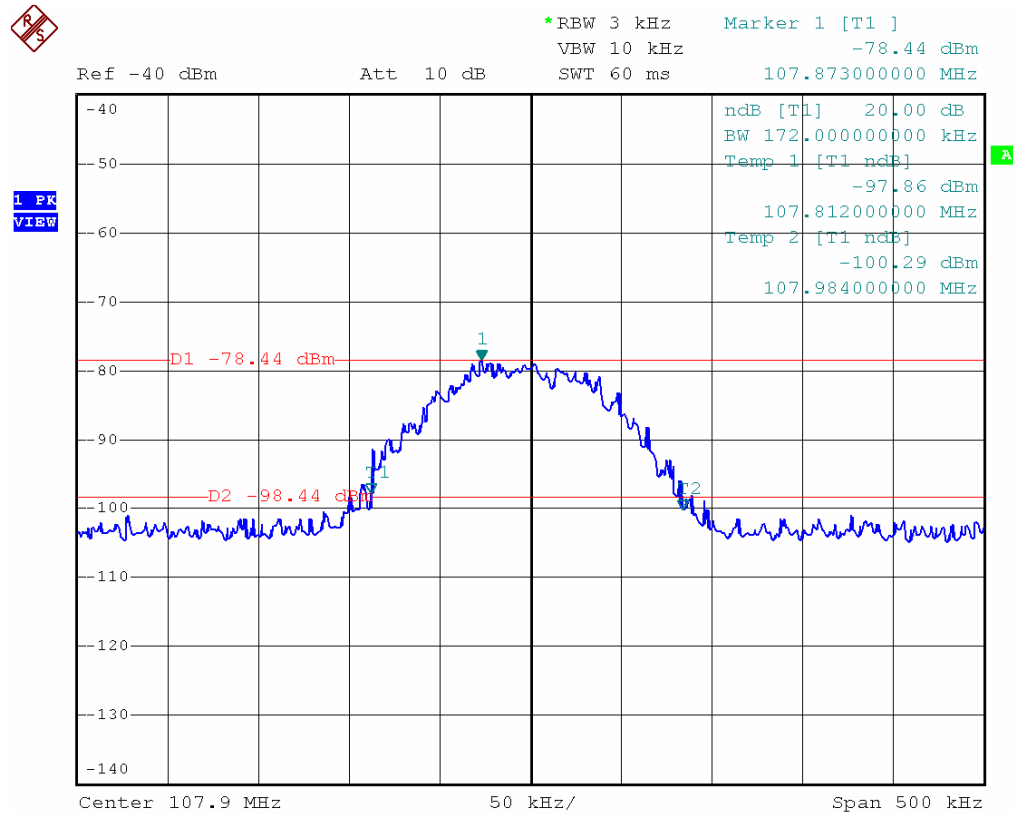


20dB bandwidth of the emission is 130.0 kHz



**(3). For highest Channel:107.9MHz**

The occupied bandwidth as below:



20dB bandwidth of the emission is 172.0 kHz

**The results: The unit does meet the FCC requirements.**