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**FEDERAL COMMUNICATIONS COMMISSION**

Registration number: 282399

Report No.: SZEMO061102433TXR

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FCC ID: S4CKC9522

# FCC TEST REPORT

**Application No. :** SZEMO061102433TX  
**Applicant:** Alligator Game Company Limited.  
**FCC ID:** S4CKC9522

**Fundamental Carrier Frequency :** 88.1MHz to 107.9MHz

**Equipment Under Test (EUT):**

Name: Digital FM Transmitter with Auto Power Adapter

Model: P-5A

**Standards:** FCC PART 15.239: 2006

Please refer to section 2 for further details.

**Date of Receipt:** 08 January 2007

**Date of Test:** 08 January to 18 January 2007

**Date of Issue:** 19 January 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:

Robinson Lo  
Laboratory 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 and Occupied Bandwidth test after modification carried out by the applicant.



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## **4 General Information**

### **4.1 Client Information**

Applicant Name: Alligator Game Company Limited.  
Applicant Address: Flat 4, 10<sup>th</sup> Floor, Goodluck Industrial Centre, 808 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hong Kong.

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

Product Name: Digital FM Transmitter with Auto Power Adapter  
Model: P-5A  
Power Supply: 12Vdc  
Power Cord: Two wires not shielding cable.

### **4.3 Description of the Transmitter and Support Units**

The EUT was tested as a single unit.

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) coupling to the intentional radiator and do not connect to a car. About the installation and operation of this device, please refer to the Use't manual for more details.

### **4.4 Standards Applicable for Testing**

The customer requested FCC tests as 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

Fax: +86 20 82075059

### **4.6 Other Information Requested by the Customer**

None.



#### **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.

- **ACA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS L0167**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **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.

- **Industry Canada (IC)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620B-1.

Date of Registration: Jan 15, 2007. Valid until Jan 15, 2009



## **5 Test Results**

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

Input voltage:	12Vdc Supplied by battery.
Operating Environment:	
Temperature:	26.0 °C
Humidity:	56 % 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.

### **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	06-03-2006	06-03-2007
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	06-03-2006	06-03-2007
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	20-09-2006	20-09-2007



## **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:	29 December 2006 (initial test); 18 January 2007 (final test)
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 in the 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 98.0MHz 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.

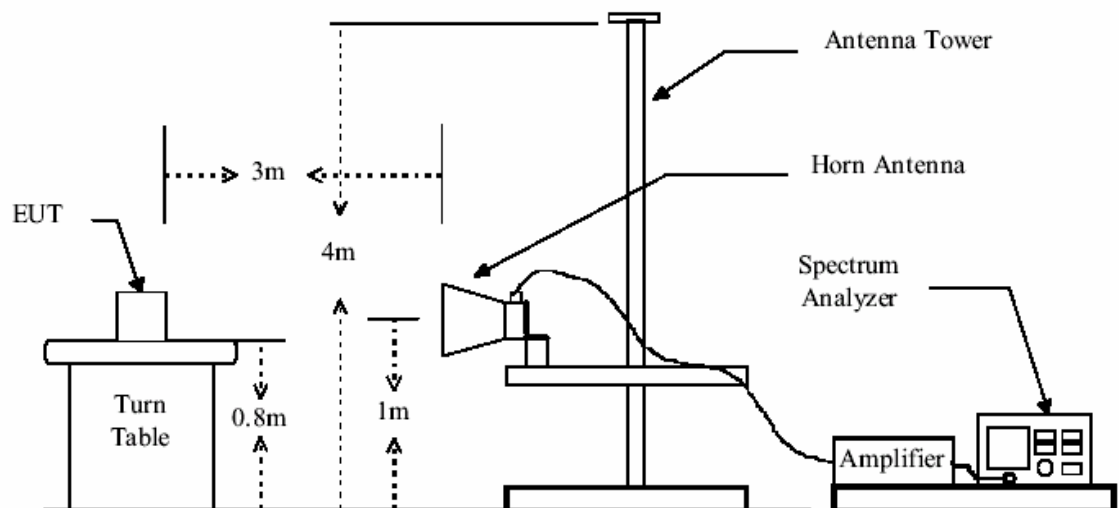
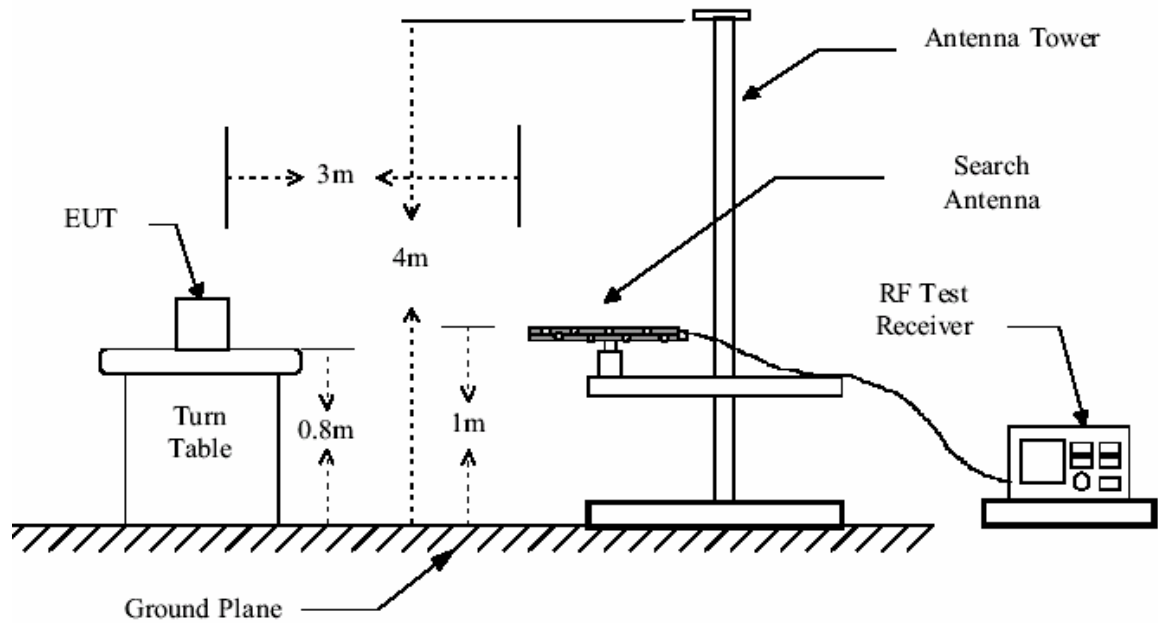
And the limit for peak field strength dB $\mu$ V/m for the fundamental frequency = 68.0 dB $\mu$ V/m

#### **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 & Peramplifier . The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Peramlifer Factor

The following test results were performed on the EUT:

For **lowest channel 88.1MHz**:

(1). Fundamental emission& Spurious Emission

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	54.2	10.2	0.8	25.2	40.0	68.0	-28.0	PEAK
88.100	50.9	10.2	0.8	25.2	36.8	48.0	-11.2	AVERAGE
176.200	40.7	8.4	1.2	24.8	25.5	43.5	-18.1	QP
264.300	45.2	13.3	1.5	24.4	35.7	46.0	-10.3	QP
352.400	47.2	16.8	1.8	24.7	41.0	46.0	-5.0	QP
440.500	39.4	17.7	2.0	25.4	33.8	46.0	-12.2	QP

(2). Fundamental emission& Spurious Emission

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	56.4	7.5	0.8	25.2	39.6	68.0	-28.5	PEAK
88.100	53.2	7.5	0.8	25.2	36.3	48.0	-11.7	AVERAGE
176.200	37.4	10.8	1.2	24.8	24.6	43.5	-18.9	QP
264.300	37.5	12.5	1.5	24.4	27.1	46.0	-18.9	QP
352.400	41.3	15.4	1.8	24.7	33.7	46.0	-12.3	QP
440.500	39.0	17.3	2.0	25.4	33.0	46.0	-13.0	QP

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 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**:

(1). Fundamental emission& Spurious Emission

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	61.1	10.7	0.9	25.1	47.6	68.0	-20.4	PEAK
98.000	57.8	10.7	0.9	25.1	44.3	48.0	-3.7	AVERAGE
196.000	43.9	9.1	1.3	24.6	29.6	43.5	-13.9	QP
294.000	45.4	13.6	1.6	24.4	36.1	46.0	-9.9	QP
392.000	51.1	16.2	1.9	25.0	44.3	46.0	-1.7	QP
490.000	34.5	18.0	2.2	25.8	28.9	46.0	-17.1	QP

(2). Fundamental emission& Spurious Emission

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	55.3	7.7	0.9	25.1	38.7	68.0	-4.8	PEAK
98.000	51.8	7.7	0.9	25.1	35.2	48.0	-8.3	AVERAGE
196.000	36.3	11.0	1.3	24.6	24.0	43.5	-19.5	QP
294.000	38.1	12.9	1.6	24.4	28.3	46.0	-17.8	QP
392.000	47.0	15.8	1.9	25.0	39.7	46.0	-6.3	QP
490.000	28.2	18.7	2.2	25.8	23.2	46.0	-22.8	QP

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 the level of the spurious emission is very weak.



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The following test results were performed on the EUT:

For **highest channel, 107.9MHz**:

(1). Fundamental emission& Spurious Emission

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
107.900	51.6	11.8	0.9	25.1	39.2	68.0	-28.8	PEAK
107.900	47.2	11.8	0.9	25.1	34.8	48.0	-13.2	AVERAGE
167.740	37.0	9.2	1.2	24.9	22.5	43.5	-21.0	QP
215.800	42.7	10.4	1.4	24.5	29.9	43.5	-13.6	QP
323.700	43.6	14.2	1.7	24.6	34.9	46.0	-11.1	QP
431.600	45.5	17.6	2.0	25.3	39.8	46.0	-6.2	QP

(2). Fundamental emission& Spurious Emission

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
107.900	49.9	10.0	0.9	25.1	35.7	68.0	-32.3	PEAK
107.900	45.1	10.0	0.9	25.1	30.9	48.0	-17.1	AVERAGE
215.800	28.1	10.9	1.4	24.5	15.8	43.5	-27.7	QP
323.700	36.6	15.0	1.7	24.6	28.8	46.0	-17.2	QP
431.600	38.4	17.2	2.0	25.3	32.3	46.0	-13.7	QP
539.500	27.5	19.5	2.3	25.9	23.5	46.0	-22.5	QP

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 the level of the emission is very weak.

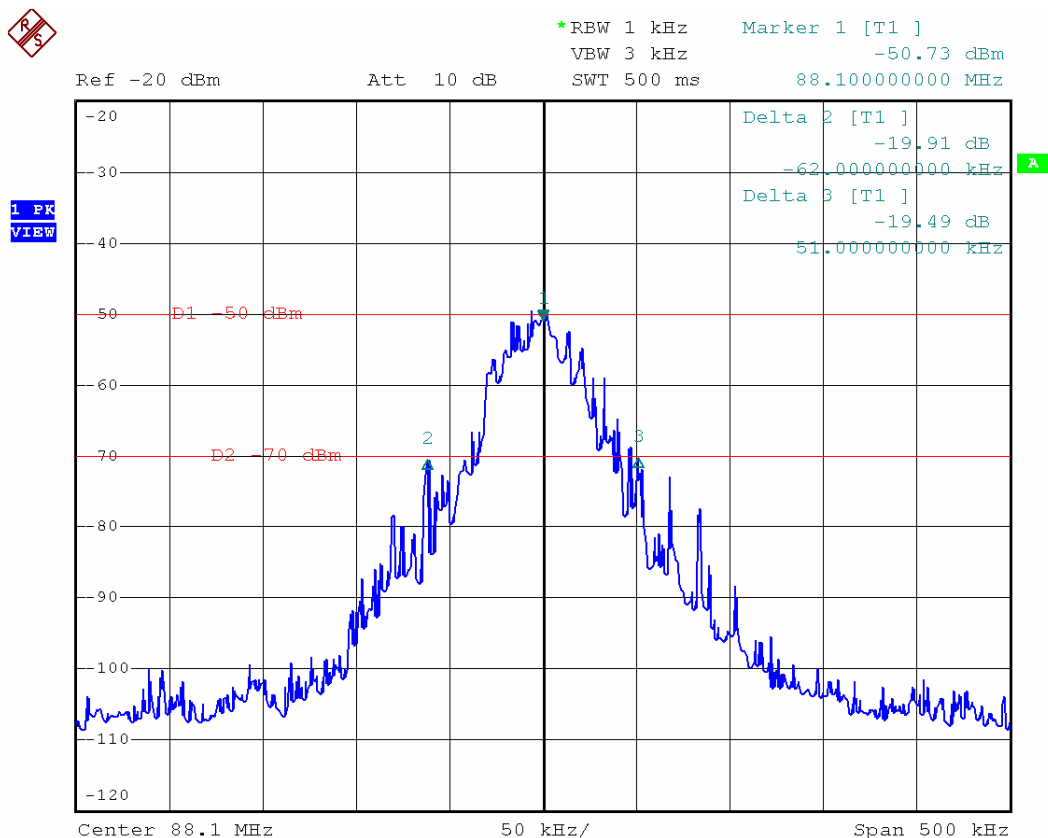
**TEST RESULTS: The unit does meet the FCC requirements.**

### 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: 29 December 2006(initial test); 18 January 2007(final test)  
 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 music input with maximum level(Peak level 10mV from iPod) 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 50KHz per division.

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

The occupied bandwidth as below:

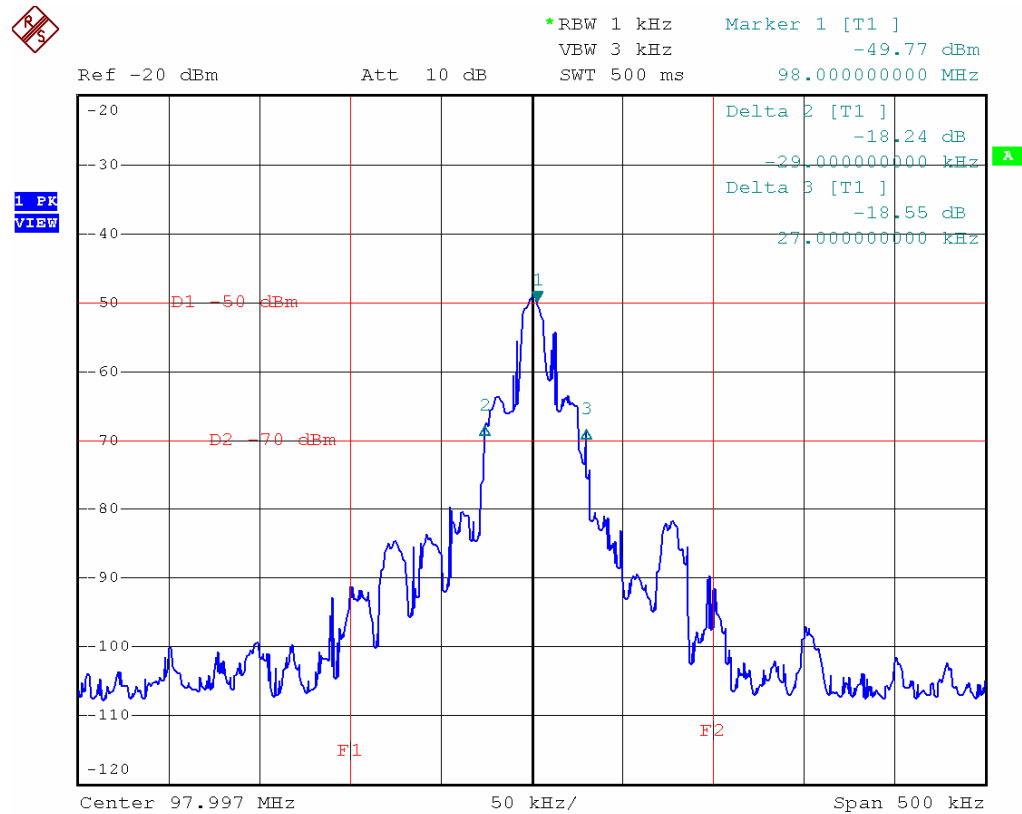


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(2). For middle Channel:98.0MHz

The occupied bandwidth as below:

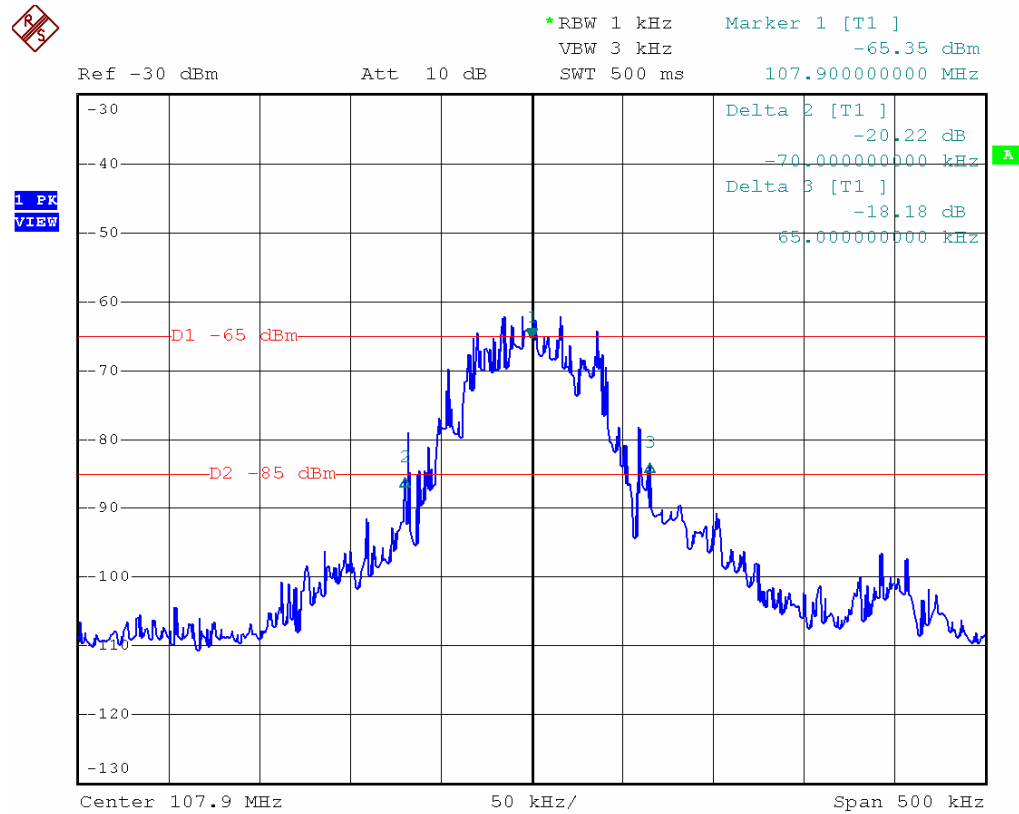


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**(3). For highest Channel:107.9MHz**

The occupied bandwidth as below:



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