SGS-CSTC Standards Technical Services Ltd.

'own Economic& Technology Development District Guangzhou, China 510663Telephone:
Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: sgs_internet_operations@sgs.com
**FEDERAL COMMUNICATIONS COMMISSION**
Registration number: 282399

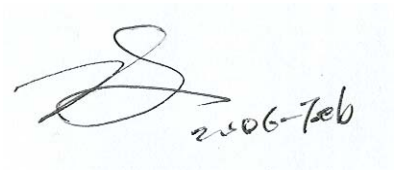


# *FCC TEST REPORT*

| | |
|---|---|
| **Application No. :** | GLEMO060100173AV |
| **Applicant:** | Arts Electronics Co.,Ltd |
| **FCC ID:** | TZIKT4530 |
| **Fundamental Carrier** | **Frequency** : 88.1MHz to 107.9MHz |
| **Equipment Under Test (EUT):** | |
| Name: | iPod Car Charger and FM Transmitter |
| Model: | KT4530 |
| Band Name: | Not supply by client |
| **Standards:** | FCC PART 15: 2005 |
| | Please refer to section 2 for further details. |
| **Date of Receipt:** | 20 February 2006 |
| **Date of Test:** | 5 to 17 February 2006 |
| **Date of Issue:** | 21 February 2006 |
| **Test Result :** | **PASS *** |

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jerry Chen

Technical Manager

# 2 Test Summary

| Test | Test Requirement | Stanadard Paragraph | Result |
|---|---|---|---|
| Radiated Emission (30MHz to 1000MHz) | FCC PART 15 :2005 | Section 15.239 | PASS |
| Occupied Bandwidth | FCC PART 15 :2005 | Section 15.239 | PASS |

# 3 Contents

# 4 General Information

## 4.1 Client Information

| | |
|---|---|
| Applicant Name: | Arts Electronics Co.,Ltd |
| Applicant Address: | No.60 ShangXing Lu,ShangJiao Management District,Chang An Zhen,DongGuan City |

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

| | |
|---|---|
| Product Name: | iPod Car Charger and FM Transmitter |
| Model: | KT4530 |
| Power Supply: | 12V Car Charger DC |
| Power Cord: | N/A- |

## 4.3 Description of Support Units

The EUT was tested as a peripheral unit:it must connet to an iPod and charge to Car and setup correctly.

The transmitter have 100 channels in the 88.1MHz between 107.9MHz with 200KHz channel spacing can in exchange for choice by software setup.

## 4.4 Standards Applicable for Testing

The customer requested FCC tests for a FM transmitter for iPod.

The standard used was FCC PART 15, SUBPART C (2005) 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. Effective through December 31, 2004.
- **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.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
  Date of Registration:June 01, 2005. Valid until February 22, 2008
- **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.
- **CNAL – LAB Code: L0141**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01: 2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 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 authorised test laboratory for the DoC process.
- **Industry Canada (IC)**
  The 3m 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.: 5169.

# 5 Test Results

## 5.1 Test Instruments

| Test Equipment | Manufacturer | Model | Asset No. | Cal. Due Date |
|---|---|---|---|---|
| 3m Semi- Anechoic Chamber | Frankonia | 3m method | EMC0501 | 15-02-2005 |
| EMI Test Receiver | Rohde & Schwarz | ESCS30 | EMC0506 | 15-02-2005 |
| Bilog Type Antenna | Schaffner Chase | CBL6143 | EMC0519 | 17-01-2005 |
| Coaxial cable | SGS-CSTC | 10m | EMC0514 | 04-11-2004 |
| Spectrum Analyzer | Rohde & Schwarz | FSP 30 | EMC0521 | 01-04-2005 |
| Horn Antenna | Rohde & Schwarz | HF906 | EMC0517 | 01-04-2005 |
| Temperature, Humidity & Barometer | Oregon Scientific | BA-888 | EMC0003 | 30-06-2005 |
| Peramplifier | Agilent | 8449B | EMC0520 | 30-06-2005 |
| Coaxial cable | SGS | N/A | EMC0514 | 01-06-2005 |
| Shielding Room | Frankonia | 12 x 4 x 4 $m^3$ | EMC0103 | N/A |
| LISN | Schaffner Chase | MNZ050D11 | 1421 | 04-11-2005 |
| EMI Test Receiver | Rohde& Schwarz | ESCS30 | 100086 | 09-12-2005 |
| Coaxial Cable | SGS | 2m | EMC0107 | 01-06-2005 |

## 5.2 E.U.T. Operation

Input voltage: 12V Car Charger DC.

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: 98.1MHz.
3. For highest channel:107.9MHz

## 5.3 Test Procedure & Measurement Data

### 5.3.1 Radiated Emissions

#### 5.3.1.1 Test in transmitting mode

| | |
|---|---|
| Test Requirement: | FCC Part15 C |
| Test Method: | Based on FCC Part15 C Section 15.239 |
| Test Date: | 17 February 2006 |
| Measurement Distance: | 3m (Semi-Anechoic Chamber) |
| Frequency range | 30 MHz – 10GHz for transmitting mode. |
| | Test instrumentation resolution bandwidth<br>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.

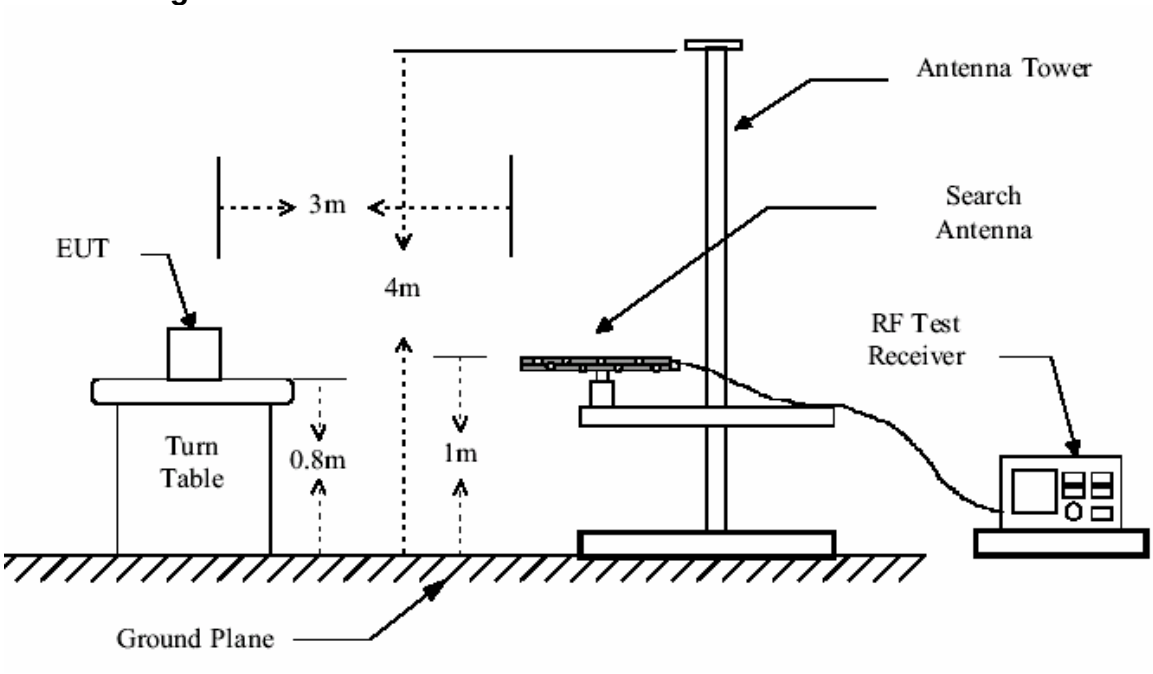
The EUT have 100 channels in the 88.1MHz and 107.9MHz with 200KHz channel spacing can in exchange for choice,According to ANSI 63.4 chapter 12,the test fundamental frequency of the EUT is lowest channel 88.1MHz,middle channel 98.1MHz and highest channel 107.9MHz.

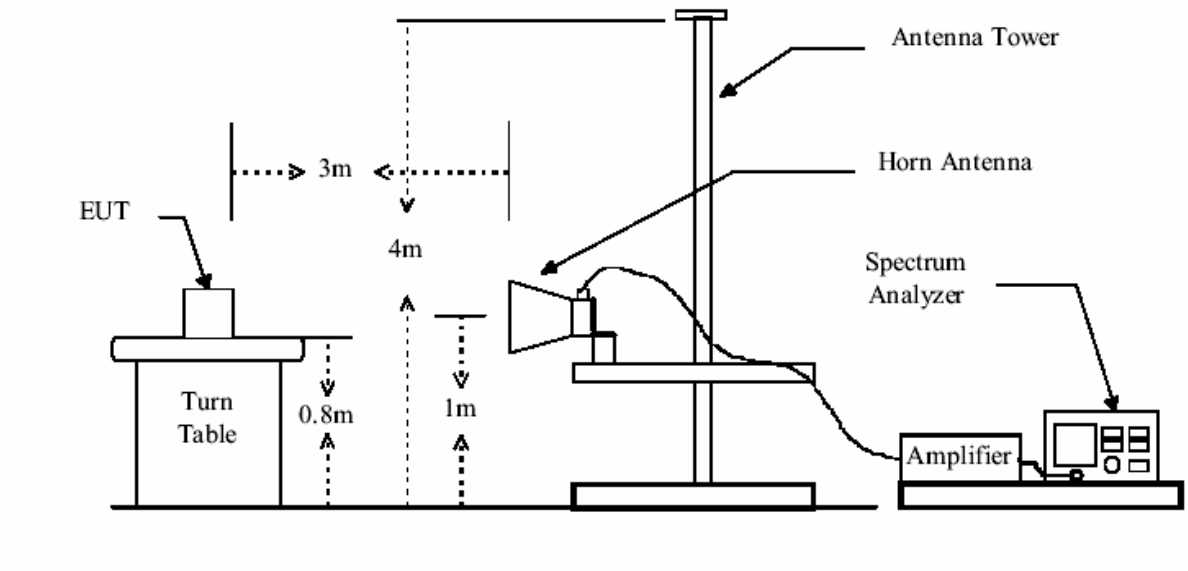
The limit for average field strength dBuv/m for the fundamental frequency = 48.0 dBμV/m.

And the limit for peak field strength dBuv/m for the fundamental frequency = 68.0 dBμV/m

**Test Procedure:** The procedure uesd was ANSI Standard C63.4-2003. The receive was scanned from 30MHz to 25GHz.When an emission was found,the table was roated 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 & 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

**Peak Measurement**

| Test Frequency (MHz) | Measuring Level (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|
| | Vertical | Horizontal | | Vertical | Horizontal |
| 88.1 | 33.8 | 43.0 | 68.0 | 34.2 | 25.0 |
| **Average Measurement** | | | | | |
| 88.1 | 31.9 | 41.4 | 48.0 | 16.1 | 6.6 |

(2). Harmonics & Spurious Emissions

**Quasi-peak Measurement**

| Test Frequency (MHz) | | Measuring Level (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|
| | | Vertical | Horizontal | | Vertical | Horizontal |
| 2) | 176.2 | 27.7 | 27.1 | 43.5 | 15.8 | 16.4 |
| 3) | 264.3 | 11.9 | 16.6 | 46.0 | 34.1 | 29.4 |
| 4) | 352.4 | 15.1 | 16.9 | 46.0 | 30.9 | 29.1 |
| 5) | 440.5 | 15.9 | 15.9 | 46.0 | 30.1 | 30.1 |
| 6) | 528.6 | 16.6 | 16.8 | 46.0 | 29.4 | 29.2 |
| 7) | 616.7 | 20.4 | 19.6 | 46.0 | 25.6 | 26.4 |
| 8) | 704.8 | N/A | N/A | 46.0 | N/A | N/A |
| 9) | 792.9 | N/A | N/A | 46.0 | N/A | N/A |
| 10) | 881.0 | N/A | N/A | 46.0 | N/A | N/A |

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the eighth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to $7^{th}$ harmonic.

The following test results were performed on the EUT:

For **middle channel,98.1MHz**:

(1). Fundamental emission

**Peak Measurement**

| Test Frequency (MHz) | Measuring Level (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|
| | Vertical | Horizontal | | Vertical | Horizontal |
| 98.1 | 38.0 | 44.7 | 68.0 | 30.0 | 23.3 |
| **Average Measurement** | | | | | |
| 98.1 | 36.0 | 44.2 | 48.0 | 12.0 | 3.8 |

(2). Harmonics & Spurious Emissions

**Quasi-peak Measurement**

| Test Frequency (MHz) | | Measuring Level (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|
| | | Vertical | Horizontal | | Vertical | Horizontal |
| 2) | 196.2 | 20.0 | 28.0 | 43.5 | 23.5 | 15.5 |
| 3) | 294.3 | 13.3 | 21.3 | 46.0 | 32.7 | 24.7 |
| 4) | 392.4 | 16.0 | 18.2 | 46.0 | 30.0 | 27.8 |
| 5) | 490.5 | 15.2 | 15.9 | 46.0 | 30.8 | 30.1 |
| 6) | 588.6 | 20.0 | 19.1 | 46.0 | 26.0 | 26.9 |
| 7) | 686.7 | 20.1 | 21.2 | 46.0 | 25.9 | 24.8 |
| 8) | 784.8 | N/A | N/A | 46.0 | N/A | N/A |
| 9) | 882.9 | N/A | N/A | 46.0 | N/A | N/A |
| 10) | 981.0 | N/A | N/A | 46.0 | N/A | N/A |

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the eighth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to $7^{th}$ harmonic.

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 | 41.0 | 47.0 | 68.0 | 27.0 | 21.0 |
| **Average Measurement** | | | | | |
| 107.9 | 38.2 | 44.4 | 48.0 | 9.8 | 3.6 |

(2). Harmonics & Spurious Emissions

**Quasi-peak Measurement**

| Test Frequency (MHz) | Measuring Level (dBuV/m) | | Limits (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|
| | Vertical | Horizontal | | Vertical | Horizontal |
| 2) 215.8 | 12.3 | 17.2 | 43.5 | 31.2 | 26.3 |
| 3) 323.7 | 14.1 | 20.1 | 46.0 | 31.9 | 25.9 |
| 4) 431.6 | 16.0 | 16.1 | 46.0 | 30.0 | 29.9 |
| 5) 539.5 | 17.1 | 17.2 | 46.0 | 28.9 | 28.8 |
| 6) 647.4 | 20.2 | 20.1 | 46.0 | 25.8 | 25.9 |
| 7) 755.3 | 21.6 | 21.4 | 46.0 | 24.4 | 24.6 |
| 8) 863.2 | N/A | N/A | 46.0 | N/A | N/A |
| 9) 971.1 | N/A | N/A | 46.0 | N/A | N/A |
| 10) 1079.0 | N/A | N/A | 46.0 | N/A | N/A |

Remark:

For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the eighth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to $7^{th}$ harmonic.

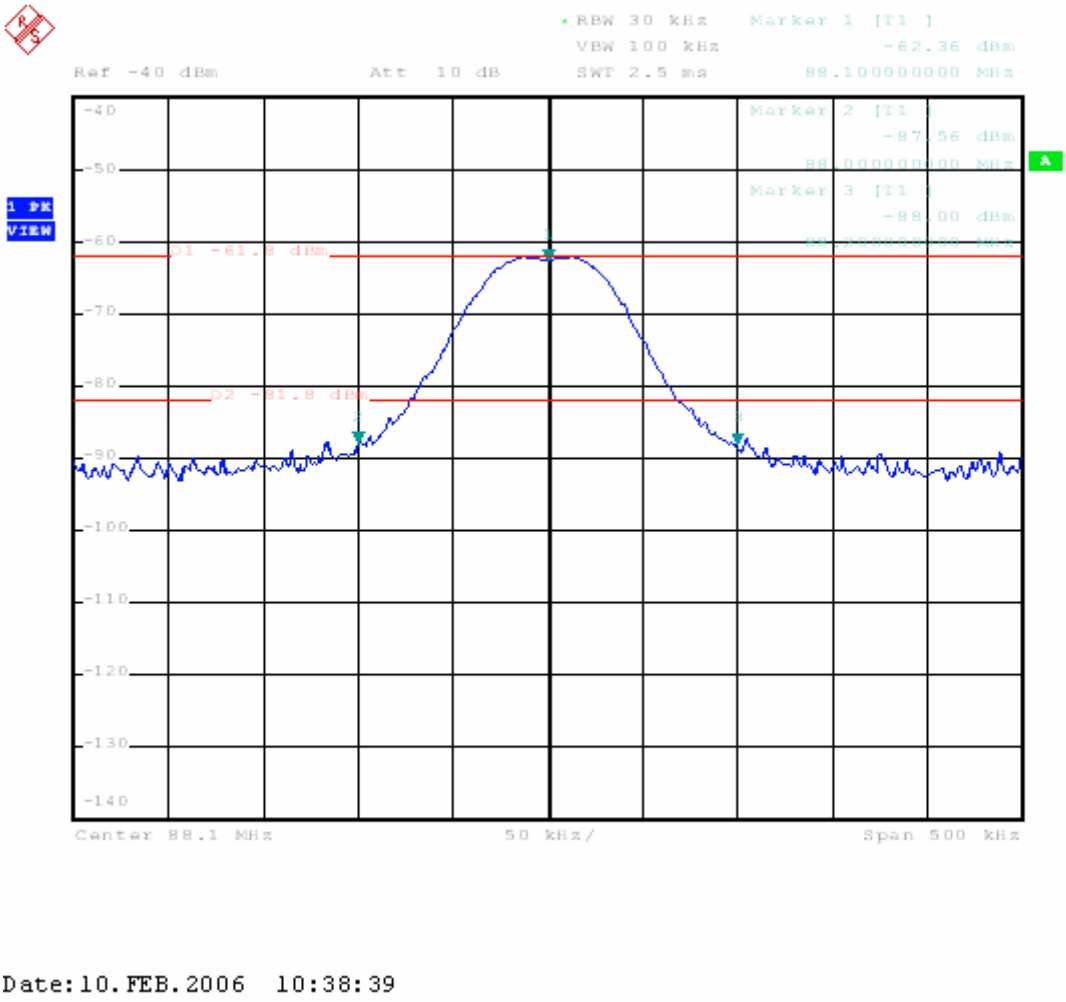
**TEST RESULTS: The unit does meet the FCC requirements.**

### 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: | 10 February 2006 |
| 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: | 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. |

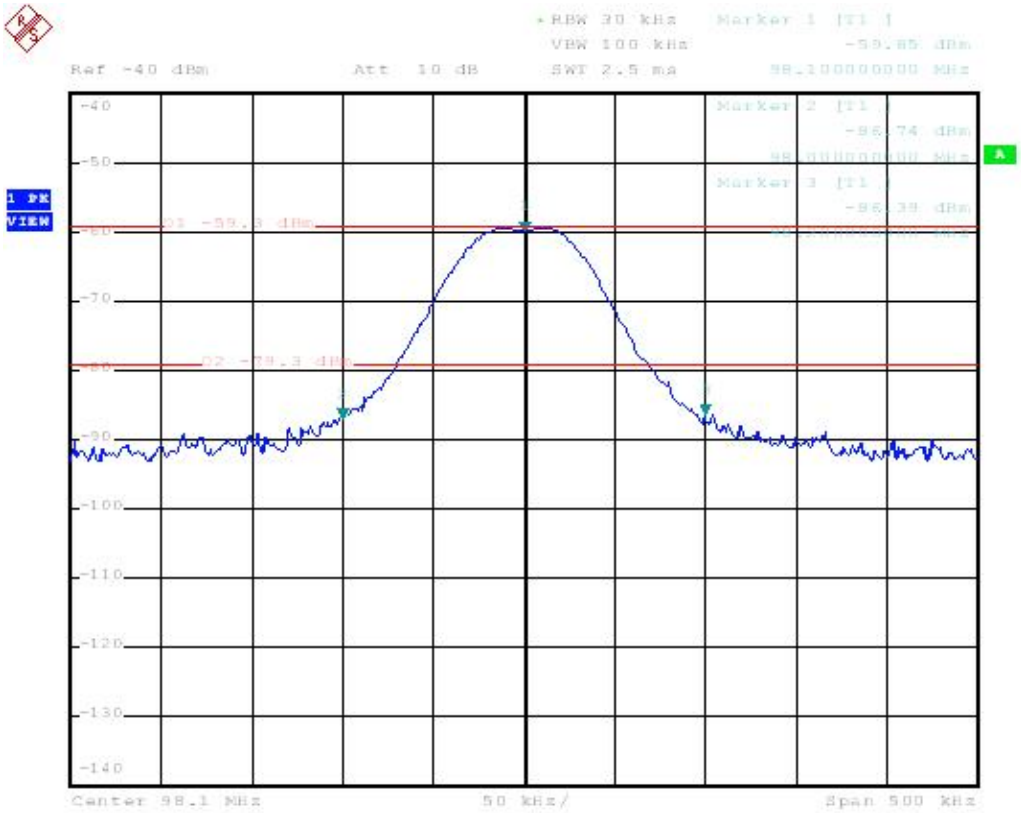
(1). **For lowest Channel:88.1MHz**

The occupied bandwidth as below:



**(2). For middle Channel:98.1MHz**

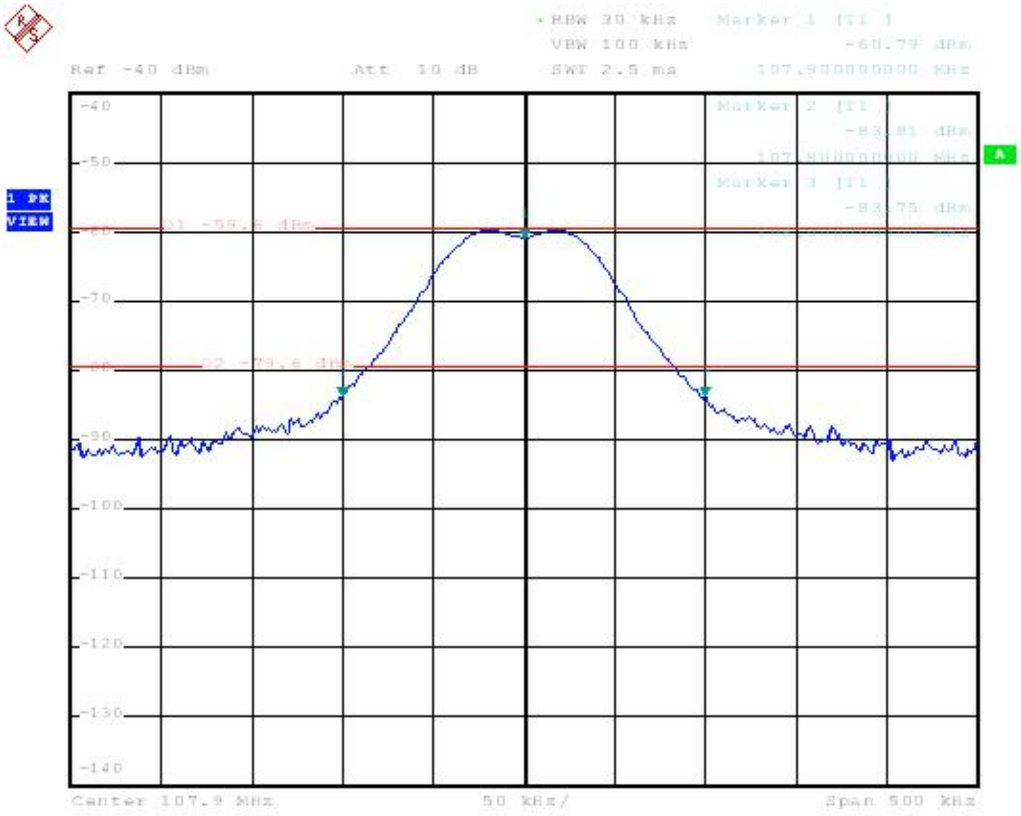
The occupied bandwidth as below:




Date:10.FEB.2006 10:41:47

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

The occupied bandwidth as below:




Date:10.FEB.2006 13:17:41

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