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Registration number: 282399

Report No.: GLEMO060300496AVF
Page: 1 of 14
FCC ID: TZIKT4510

FCC TEST REPORT

Application No. : GLEMO060300496AV
Applicant: Arts Electronics Co.,Ltd
FCC ID: TZIKT4510
Fundamental Carrier Frequency : 88.1MHz to 107.9MHz
Equipment Under Test (EUT):
Name: FM Transmitter for iPod
Model: KT4510
Band Name: Not supply by client
Standards: FCC PART 15: 2005
Please refer to section 2 for further details.
Date of Receipt: 28 March 2006
Date of Test: 17 to 28 March 2006
Date of Issue: 29 March 2006

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



2006-Mar

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 :2005	Section 15.239	PASS ①
Occupied Bandwidth	FCC PART 15 :2005	Section 15.239	PASS

Remark:

①The EUT passed Radiated Emission test after modification carried out by the applicant.



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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: FM Transmitter for iPod
Model: KT4510
Power Supply: By host iPod
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 setup correctly.
The transmitter have 100 channels between the 88.1MHz & 107.9MHz with 200KHz channel spacing can be 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, 2006.
- **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

RE in Chamber/OATS						
No:	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
EMC0525	Impact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	06-03-2006	06-03-2007
EMC0525	Compact chamber	ZhongYu	N/A	N/A	20-12-2005	20-12-2006
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	05-12-2005	05-12-2006
N/A	EMI Test Software	Audix	E3	N/A	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	04-12-2005	04-12-2006
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	16-01-2006	16-01-2007
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	10-05-2005	09-05-2006
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2005	05-12-2006
EMC0520	0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A06252	06-03-2006	06-03-2007
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	06-03-2006	06-03-2007
EMC0523	Active Loop Antenna	EMCO	6502	00042963	14-01-2006	14-01-2007
EMC0529	10m Open Site	ZhongYu	N/A	N/A	26-12-2005	26-12-2006

5.2 E.U.T. Operation

Input voltage: By host iPod.

Operating Environment:

Temperature: 25.0 °C

Humidity: 58 % RH

Atmospheric Pressure: 1006 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:	20 March 2006(Initial test) 28 March 2006(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.

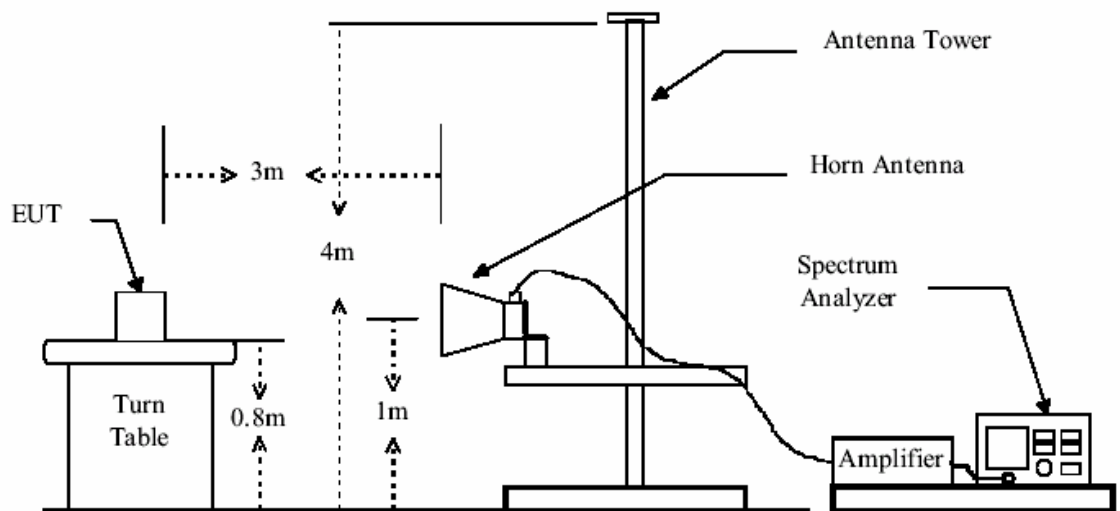
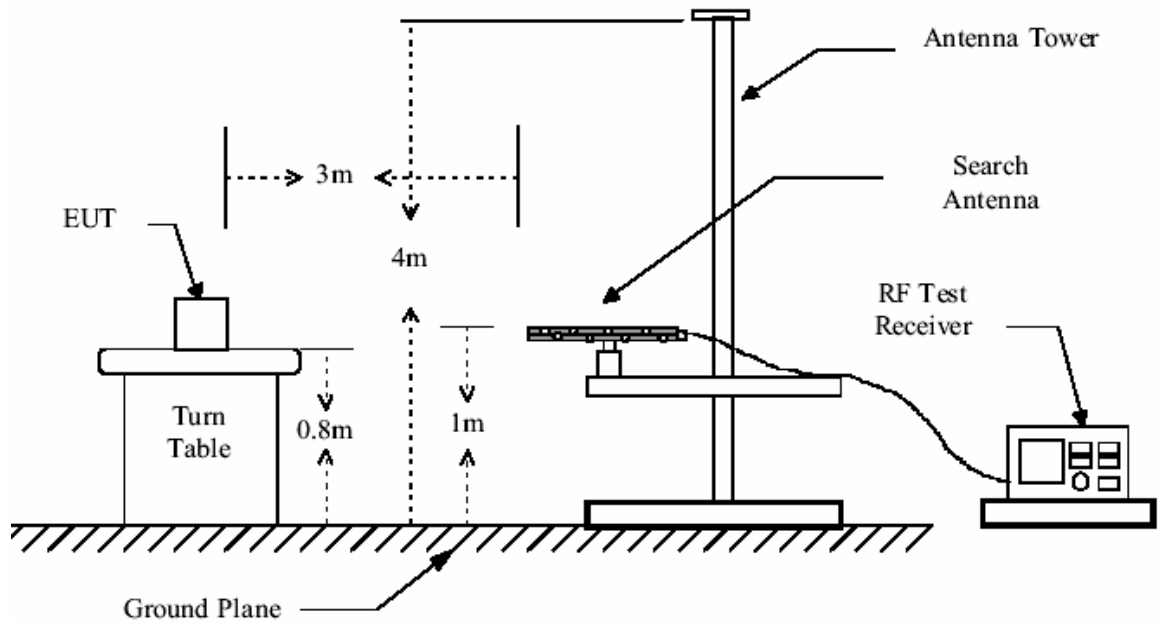
The EUT have 100 channels in the 88.1MHz and 107.9MHz with 200KHz channel spacing can in exchange for choice,According to ANSI 63.4 chapter 12,the test fundamental frequency of the EUT is lowest channel 88.1MHz,middle channel 98.1MHz and highest channel 107.9MHz.

The limit for average field strength dBuV/m for the fundamental frequency = 48.0 dB μ V/m.

And the limit for peak field strength dBuV/m for the fundamental frequency = 68.0 dB μ V/m

Test Procedure: The procedure used was ANSI Standard C63.4-2003. The receive 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 & Peramplifier . The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Peramplifier Factor}$$

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	33.7	41.9	68.0	34.3	26.1
Average Measurement					
88.1	23.5	26.4	48.0	24.5	21.6

(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	11.7	12.7	43.5	31.8	30.8
3) 264.3	11.9	14.9	46.0	34.1	31.1
4) 352.4	15.1	16.4	46.0	30.9	29.6
5) 440.5	15.9	16.1	46.0	30.1	29.9
6) 528.6	16.6	16.7	46.0	29.4	29.3
7) 616.7	20.2	19.7	46.0	25.8	26.3
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 7th harmonic.



The following test results were performed on the EUT:

For **middle channel,98.1MHz:**

(1). Fundamental emission

Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
98.1	37.7	43.1	68.0	30.3	24.9
Average Measurement					
98.1	22.9	29.2	48.0	25.1	18.8

(2). Harmonics & Spurious Emissions

Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
2) 196.2	14.2	23.1	43.5	29.3	20.4
3) 294.3	13.8	25.3	46.0	32.2	20.7
4) 392.4	17.5	30.9	46.0	28.5	15.1
5) 490.5	17.1	25.9	46.0	28.9	20.1
6) 588.6	20.2	21.4	46.0	25.8	24.6
7) 686.7	20.5	22.7	46.0	25.5	23.3
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 7th harmonic.



The following test results were performed on the EUT:

For **highest channel, 107.9MHz:**

(1). Fundamental emission

Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
107.9	41.2	48.5	68.0	26.8	19.5
Average Measurement					
107.9	32.1	30.1	48.0	15.9	17.9

(2). Harmonics & Spurious Emissions

Test Frequency (MHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
2) 215.8	11.8	25.4	43.5	31.7	18.1
3) 323.7	14.1	26.6	46.0	31.9	19.4
4) 431.6	16.4	33.4	46.0	29.6	12.6
5) 539.5	17.8	27.2	46.0	28.2	18.8
6) 647.4	22.1	31.1	46.0	23.9	14.9
7) 755.3	21.9	34.6	46.0	24.1	11.4
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 7th harmonic.

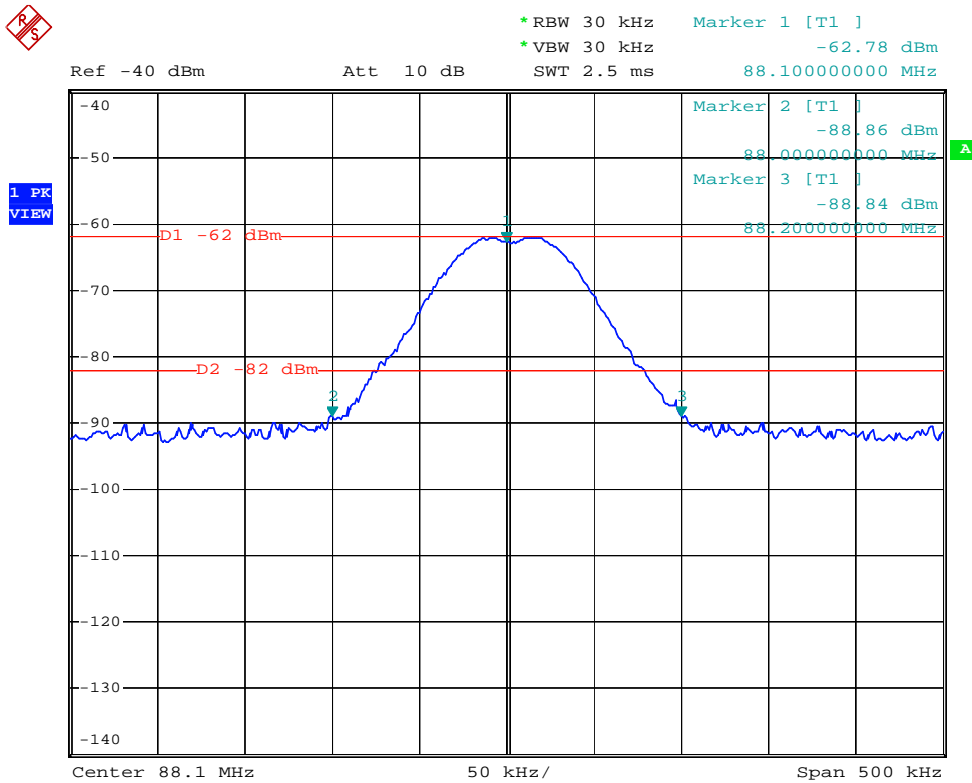
TEST RESULTS: The unit does meet the FCC requirements.

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: 17 March 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:

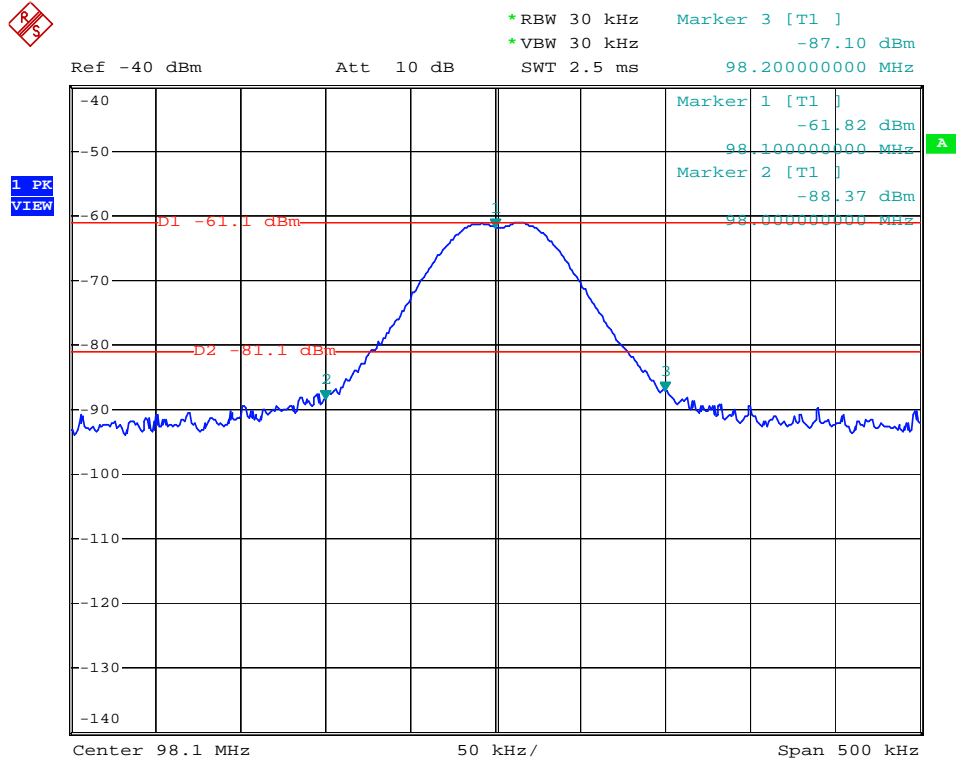


Date: 17.MAR.2006 10:50:54



(2). For middle Channel:98.1MHz

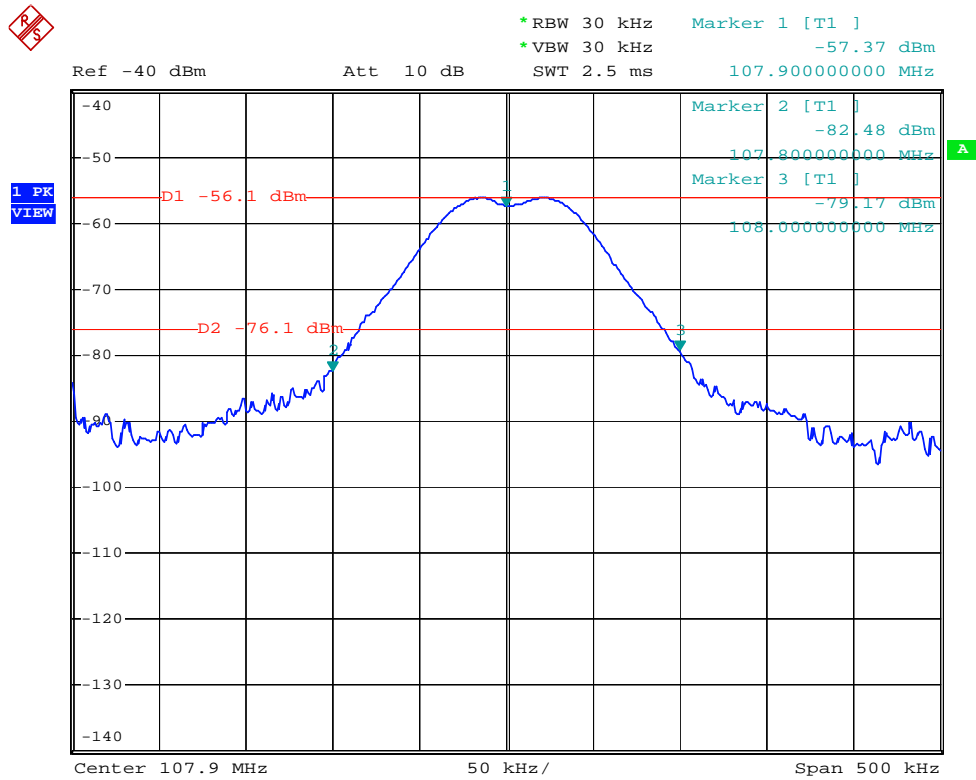
The occupied bandwidth as below:



Date: 17.MAR.2006 10:52:51

(3). For highest Channel:107.9MHz

The occupied bandwidth as below:



Date: 17.MAR.2006 11:01:24

The results: The unit does meet the FCC requirements.