

FCC CERTIFICATION  
On Behalf of  
Shenzhen Yifang Digital Technologies Co.,Ltd.

Car MP3 Player  
Model No.: EM193F

FCC ID: S7JEM193J

Prepared for : Shenzhen Yifang Digital Technologies Co.,Ltd.  
Address : 5/F.,Bldg.H-3, Huaqiaocheng East Industrial Park, No.1  
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Prepared by : ACCURATE TECHNOLOGY CO. LTD  
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Report Number : ATE20060031  
Date of Test : January 05, 2006  
Date of Report : January 10, 2006

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### Test Report Certification

Applicant : Shenzhen Yifang Digital Technologies Co., Ltd.  
 Manufacturer : Shenzhen Yifang Digital Technologies Co., Ltd.  
 EUT Description : Car MP3 Player  
 (A) MODEL NO.: EM193F  
 (B) SERIAL NO.: N/A  
 (C) POWER SUPPLY: 12V DC

Measurement Procedure Used:

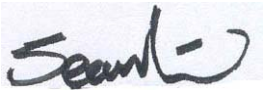
FCC Rules and Regulations Part 15 Subpart C Section 15.239: 2004  
& ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.239 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : January 05, 2006

Prepared by :   
(Engineer)

Reviewer :   
(Quality Manager)

Approved & Authorized Signer :   
(Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Car MP3 Player

Model Number : EM193F

Power Supply : 12V DC

Applicant : Shenzhen Yifang Digital Technologies Co., Ltd.  
Address : 5/F., Bldg. H-3, Huaqiaocheng East Industrial Park, No.1  
Xiangshan East Rd., Nanshan District, Shenzhen City,  
Guangdong, P.R.China

Manufacturer : Shenzhen Yifang Digital Technologies Co., Ltd.  
Address : 5/F., Bldg. H-3, Huaqiaocheng East Industrial Park, No.1  
Xiangshan East Rd., Nanshan District, Shenzhen City,  
Guangdong, P.R.China

Date of sample received : January 02, 2006  
Date of Test : January 05, 2006

### 1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen, May 10, 2004  
Accredited by FCC, May 10, 2004  
The Certificate Registration Number is 253065  
Accredited by Industry Canada, May 18, 2004  
The Certificate Registration Number is IC 5077

Name of Firm : ACCURATE TECHNOLOGY CO. LTD  
Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

### 1.3. Measurement Uncertainty

Conducted Emission Uncertainty =  $\pm 2.66$ dB

Radiated Emission Uncertainty =  $\pm 4.26$ dB

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment**

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	12.16.2006
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	12.16.2006
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	12.16.2006
Bilog Antenna	Chase	CBL6112B	2591	12.16.2006
Horn Antenna	Rohde&Schwarz	HF906	100013	12.16.2006
Spectrum Analyzer	Anritsu	MS2651B	6200238856	12.16.2006
Pre-Amplifier	Agilent	8447D	2944A10619	12.16.2006
Signal Generator	GW	GAG-810	0913317	12.16.2006

### 3. RADIATED EMISSION FOR FCC PART 15 SECTION 15.239(C)

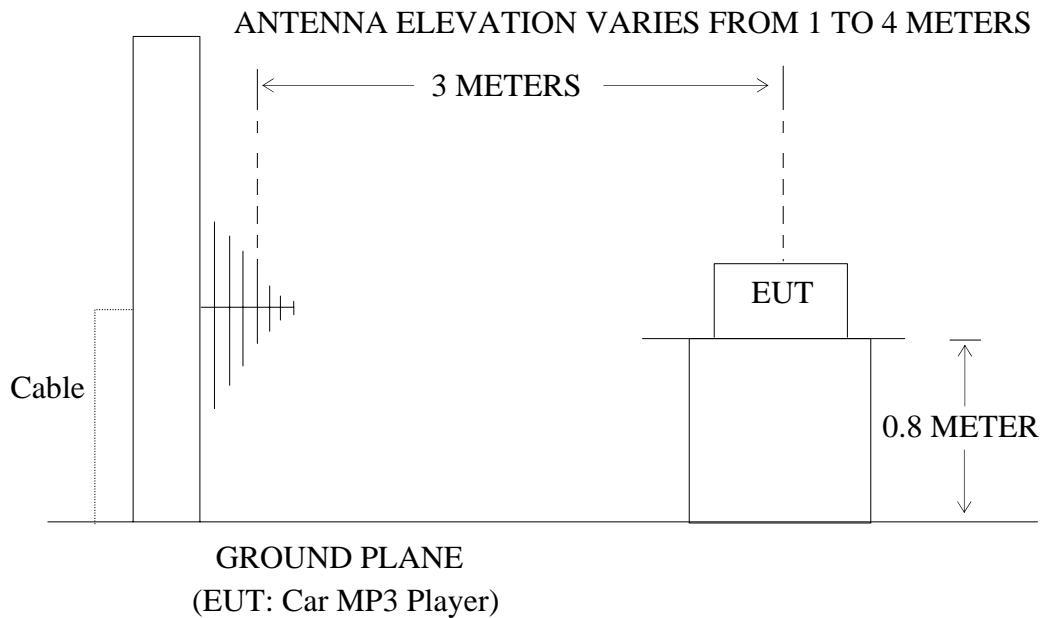
#### 3.1. Block Diagram of Test Setup

##### 3.1.1. Block diagram of connection between the EUT and simulators



(EUT: Car MP3 Player)

##### 3.1.2. Anechoic Chamber Test Setup Diagram



#### 3.2. The Emission Limit for section 15.239(c)

3.2.1 The field strength of any emissions radiated on any frequency outside of the specified 200kHz band shall not exceed the general radiated emission limits in section 15.209

Radiation Emission Measurement Limits According to Section 15.209

Frequency (MHz)	Limit,		The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBµV/m)	
30 - 88	100	40	
88 - 216	150	43.5	

216 - 960	200	46	mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
Above 960	500	54	

### 3.3.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 3.3.1.Car MP3 Player(EUT)

Model Number : EM193F  
 Serial Number : N/A  
 Manufacturer : Shenzhen Yifang Digital Technologies Co., Ltd.

### 3.4.Operating Condition of EUT

3.4.1.Setup the EUT and simulator as shown as Section 3.1.

3.4.2.Turn on the power of all equipment.

Let the EUT work in TX modes (On with 1kHz signal) measure it. The transmit frequency are 88.1-89.1M, 106.7-107.9MHz.We are select 88.1M, 107.9MHz TX frequency to transmitted.

### 3.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120KHz in 30-1000MHz; Set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 1100MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

### 3.6.The Field Strength of Radiation Emission Measurement Results

#### **PASS.**

The frequency range 30MHz to 1100MHz is investigated.

Date of Test:	January 05, 2006	Temperature:	22°C
EUT:	Car MP3 Player	Humidity:	50%
Model No.:	EM193F	Power Supply:	12V DC
Test Mode:	TX 88.1MHz	Test Engineer:	Andy

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.( dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	346.720	17.2	22.0	39.2	46.0	6.8
Horizontal	360.012	19.2	21.8	41.0	46.0	5.0
Horizontal	370.060	17.5	21.8	39.3	46.0	6.7
Horizontal	380.059	18.6	22.0	40.6	46.0	5.4
Horizontal	480.022	16.9	22.5	39.4	46.0	6.6
Horizontal	720.044	12.6	27.2	39.8	46.0	6.2
Horizontal	840.020	10.6	28.1	38.7	46.0	7.3
Horizontal	960.008	12.5	30.0	42.5	54.0	11.5
Vertical	331.659	16.0	24.5	40.5	46.0	5.5
Vertical	345.261	14.5	24.6	39.1	46.0	6.9
Vertical	360.020	16.5	24.2	40.7	46.0	5.3
Vertical	380.016	15.1	24.0	39.1	46.0	6.9
Vertical	480.019	11.5	27.4	38.9	46.0	7.1
Vertical	840.020	8.6	30.9	39.5	46.0	6.5
Vertical	960.040	10.4	31.0	41.4	54.0	12.6

The spectral diagrams in appendix I display the measurement of un-weighted peak values.

The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain



Date of Test:	<u>January 05, 2006</u>	Temperature:	<u>22°C</u>
EUT:	<u>Car MP3 Player</u>	Humidity:	<u>50%</u>
Model No.:	<u>EM193F</u>	Power Supply:	<u>12V DC</u>
Test Mode:	<u>TX 107.9MHz</u>	Test Engineer:	<u>Andy</u>

Polarization	Frequency (MHz)	Reading(dBµV/m)	Factor Corr.( dB)	Result(dBµV/m)	Limits(dBµV/m)	Margin(dBµV/m)
		QP		QP	QP	QP
Horizontal	330.600	19.4	21.8	41.2	46.0	4.8
Horizontal	342.800	19.4	22.0	41.4	46.0	4.6
Horizontal	360.023	19.4	21.9	41.3	46.0	4.7
Horizontal	370.035	19.3	21.8	41.1	46.0	4.9
Horizontal	380.012	18.1	22.0	40.1	46.0	5.9
Horizontal	720.016	12.3	27.2	39.5	46.0	6.5
Horizontal	840.010	12.4	28.1	40.5	46.0	5.5
Horizontal	960.010	11.6	30.0	41.6	54.0	12.4
Vertical	343.580	15.9	24.6	40.5	46.0	5.5
Vertical	360.012	17.0	24.2	41.2	46.0	4.8
Vertical	480.030	11.1	27.3	38.4	46.0	7.6
Vertical	840.013	9.0	30.8	39.8	46.0	6.2
Vertical	960.012	11.1	31.0	42.1	54.0	11.9

The spectral diagrams in appendix I display the measurement of un-weighted peak values.

The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

Reviewer : 

## 4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

### SECTION 15.239(B)

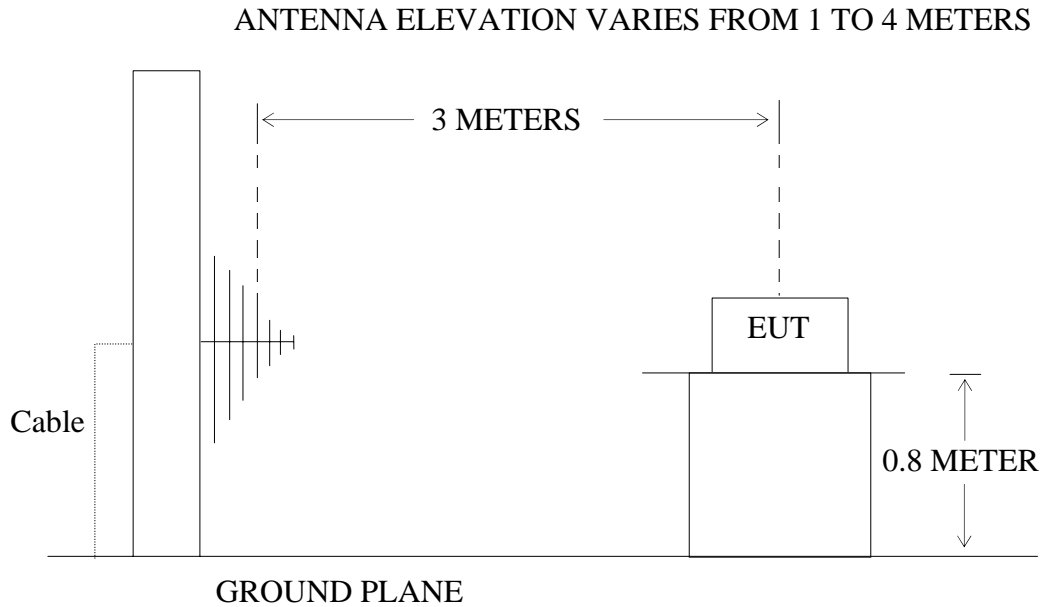
#### 4.1. Block Diagram of Test Setup

##### 4.1.1. Block diagram of connection between the EUT and simulators



(EUT: Car MP3 Player)

##### 4.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Car MP3 Player)

#### 4.2. The Emission Limit For Section 15.239(b)

4.2.1 The field strength of any emission within the permitted 200kHz band shall not exceed 250microvolts/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.

### 4.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 4.3.1.Car MP3 Player(EUT)

Model Number : EM193F  
Serial Number : N/A  
Manufacturer : Shenzhen Yifang Digital Technologies Co., Ltd.

### 4.4.Operating Condition of EUT

4.4.1.Setup the EUT and simulator as shown as Section 4.1.

4.4.2.Turn on the power of all equipment.

Let the EUT work in TX modes (On with 1kHz signal) measure it. The transmit frequency are 88.1-89.1M, 106.7-107.9MHz.We are select 88.1M, 107.9MHz TX frequency to transmitted.

### 4.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

## 4.6.The Emission Measurement Result

**PASS.**

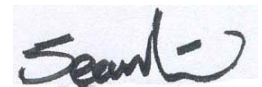
Date of Test:	January 05, 2006	Temperature:	22°C
EUT:	Car MP3 Player	Humidity:	50%
Model No.:	EM193F	Power Supply:	12V DC
Test Mode:	TX	Test Engineer:	Andy

**Fundamental Radiated Emissions**

Test conditions		Fundamental Frequency	
		88.1MHz	
T <sub>nom</sub> (22°C)	Unit	(dBμV/m)/( μ V/m) AV	(dBμV/m)/( μ V/m) PEAK
	Horizontal	42.8/138	46.5/211
	Vertical	41.3/116	45.0/178
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Test conditions		Fundamental Frequency	
		107.9MHz	
T <sub>nom</sub> (22°C)	Unit	(dBμV/m)/( μ V/m) AV	(dBμV/m)/( μ V/m) PEAK
	Horizontal	43.5/150	46.9/221
	Vertical	42.1/127	46.1/202
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Reviewer :



## 5. OCCUPIED BANDWIDTH FOR FCC PART 15 SECTION

### 15.239(A)

#### 5.1.The Requirement For Section 15.239(a)

5.1.1. Emission from the device shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz.

#### 5.2.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

##### 5.2.1.Car MP3 Player(EUT)

Model Number : EM193F  
Serial Number : N/A  
Manufacturer : Shenzhen Yifang Digital Technologies Co., Ltd.

#### 5.3.Operating Condition of EUT

5.3.1.Setup the EUT and simulator as shown as Section 4.1.

5.3.2.Turn on the power of all equipment.

Let the EUT work in TX modes (On with 1kHz signal) measure it. The transmit frequency are 88.1-89.1M, 106.7-107.9MHz.We are select 88.1M, 107.9MHz TX frequency to transmitted.

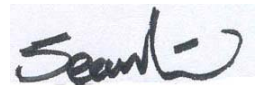
#### 5.4.Test Procedure

The zero level was set without modulation. A small sample of the transmitter output was fed into the spectrum analyzer and above photo was taken. The vertical scale is set to 10dB per division; the horizontal scale is set to 20kHz per division.

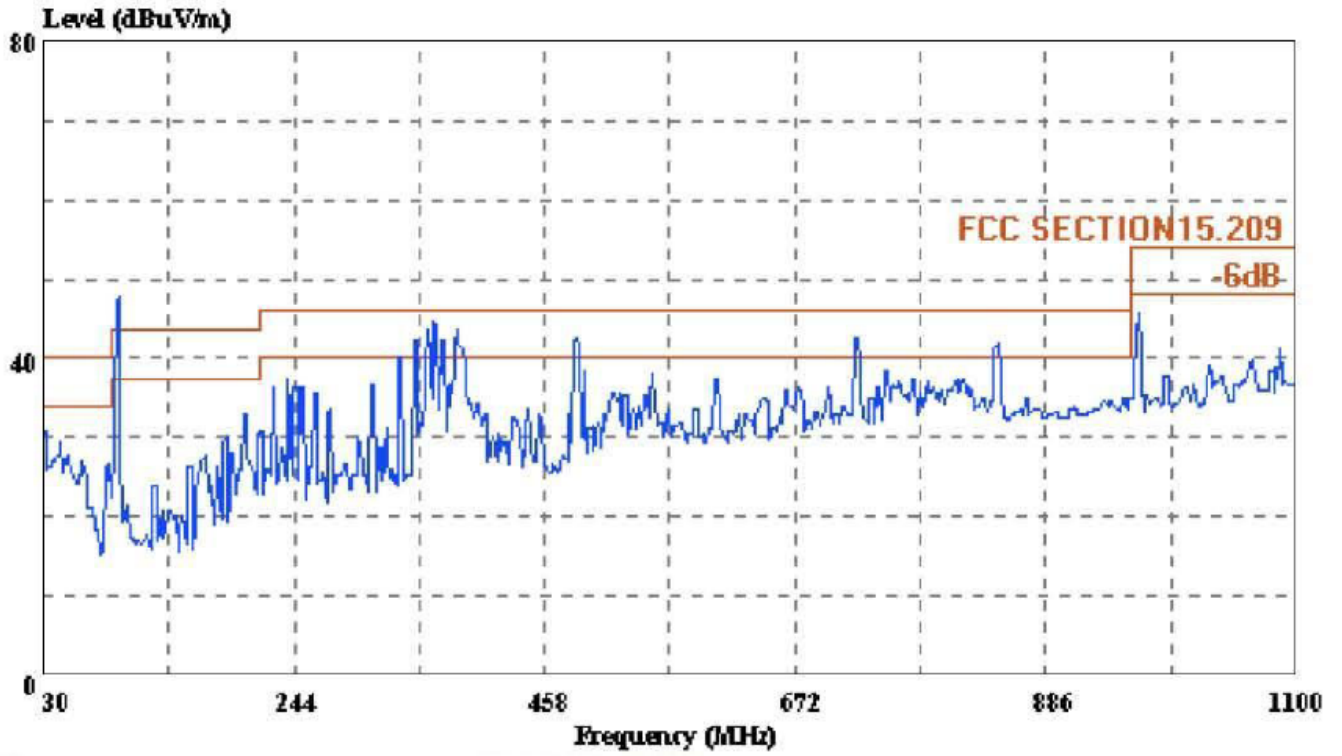
## 5.5. Test Result

**The EUT does meet the FCC requirement.**

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is written over a light grey rectangular background. The signature is positioned above a horizontal line that extends to the right.

# APPENDIX I (Test Curves)



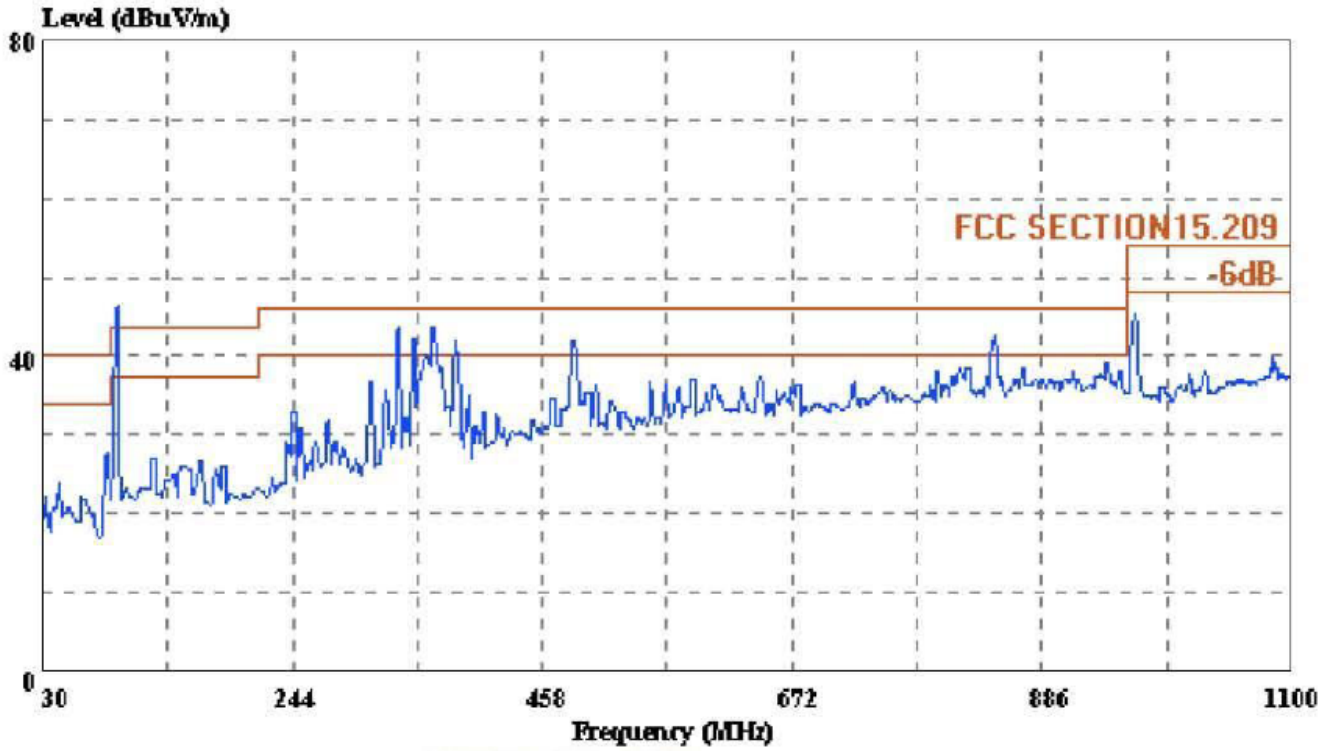
Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m  
cut : Car MP3 Player m/n:EM193F  
power: DC 12.0V  
memo : TX(88.1MHz)  
manuf: YF

HORIZONTAL



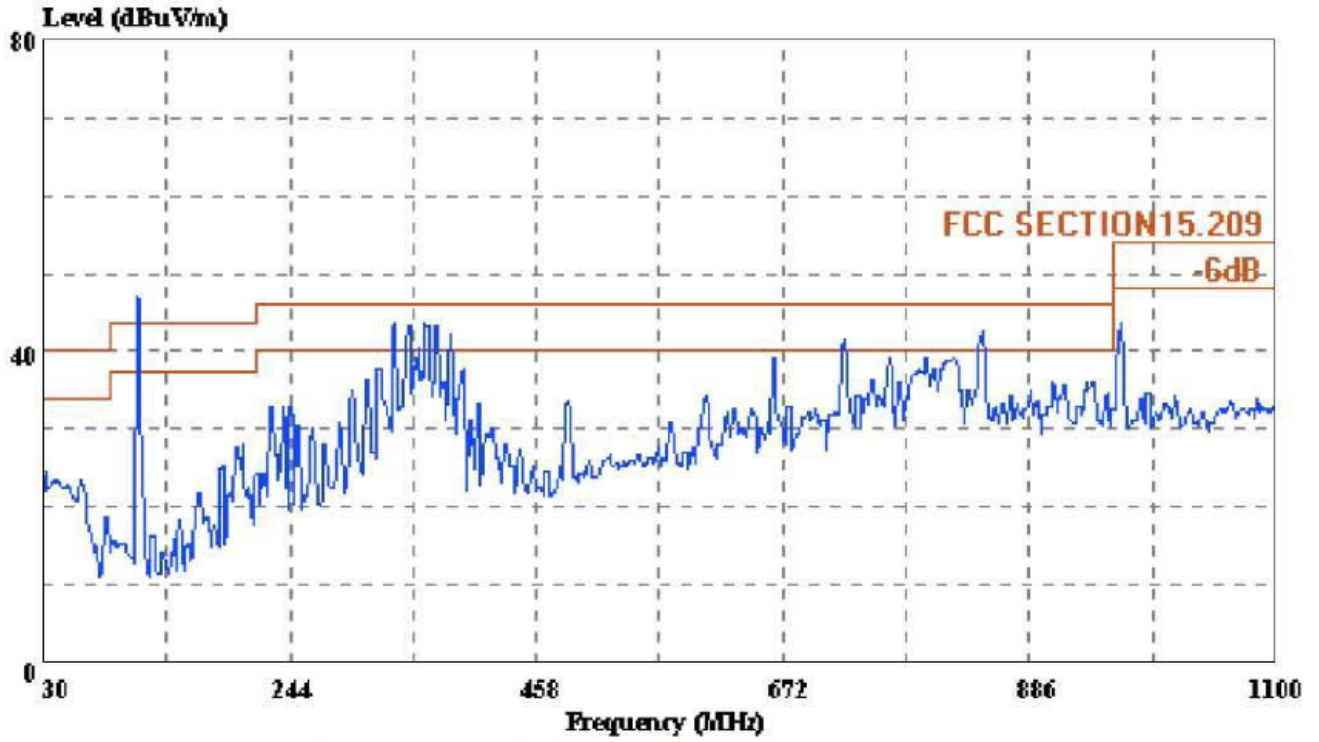


Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m  
cut : Car MP3 Player m/n:EM193F  
power: DC 12.0V  
memo : TX(88.1MHz)  
manuf: YF

VERTICAL

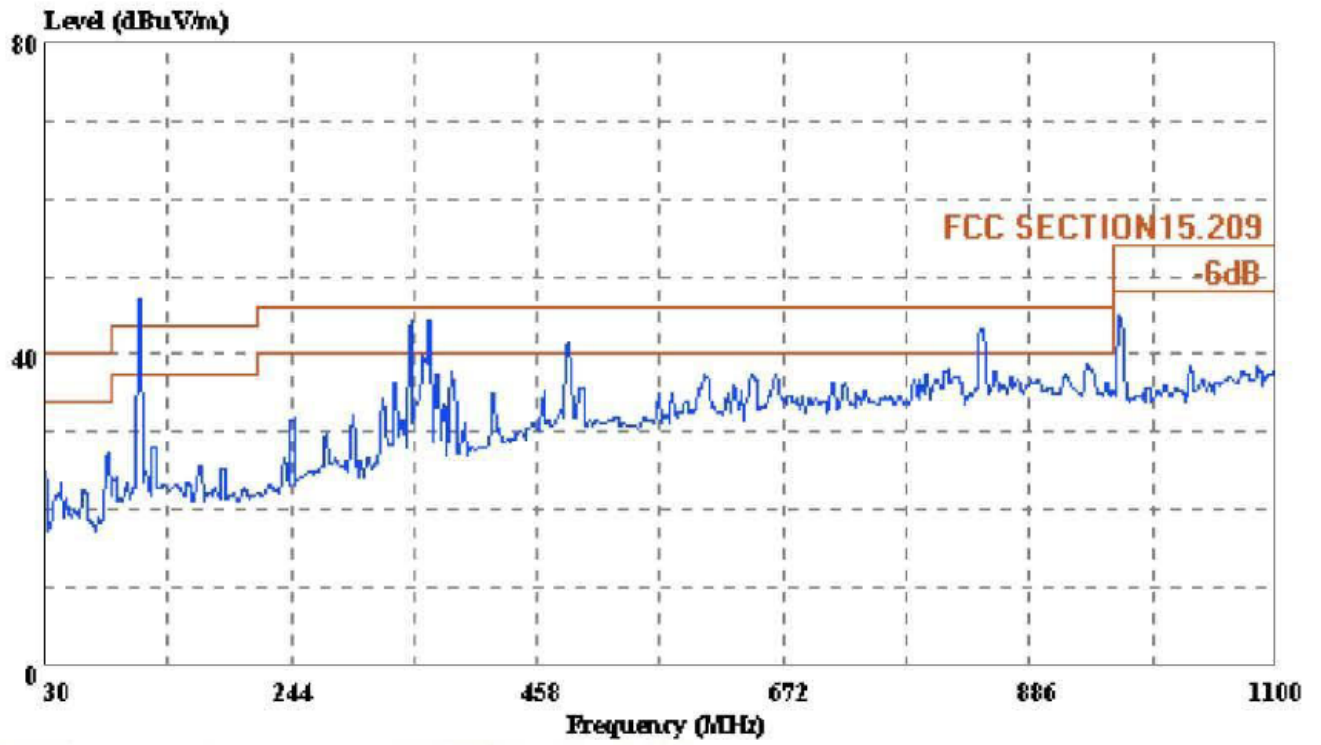


Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m  
eui : Car MP3 Player m/n:EM193F  
power: DC 12.0V  
memo : TX(107.9MHz)  
manuf: YF

HORIZONTAL



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m  
cut : Car MP3 Player m/n:EM193F  
power: DC 12.0V  
memo : TX (107.9MHz)  
manuf: YF

VERTICAL



Ref 87 dBuV      \*Att 0 dB      \*RBW 10 kHz      Marker 1 [T1]      61.73 dBuV  
\*VBW 10 kHz      \*SWT 50 ms      88.100000000 MHz

