

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

CAR MP3 PLAYER
Model No.: EM190F

FCC ID: S7JEM190F

Prepared for : Shenzhen Yifang Digital Technologies Co.,Ltd.
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Report Number : ATE2005494
Date of Test : April 15-16, 2005
Date of Report : April 18, 2005

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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.: EM190F
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: 12V DC

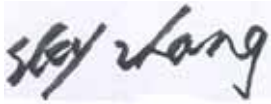
Measurement Procedure Used:

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

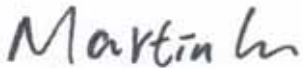
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.239 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY 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 : April 15-16, 2005

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	:	EM190F
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	:	April 10, 2005
Date of Test	:	April 15-16, 2005

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	=	$\pm 2.66\text{dB}$
Radiated Emission Uncertainty	=	$\pm 4.26\text{dB}$

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	01.02.2006
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	01.02.2006
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	01.02.2006
Horn Antenna	Rohde&Schwarz	HF906	100013	01.02.2006
Spectrum Analyzer	Anritsu	MS2651B	6200238856	01.02.2006
Pre-Amplifier	Agilent	8447D	2944A10619	01.02.2006
Signal Generator	GW	GAG-810	0913317	01.02.2006

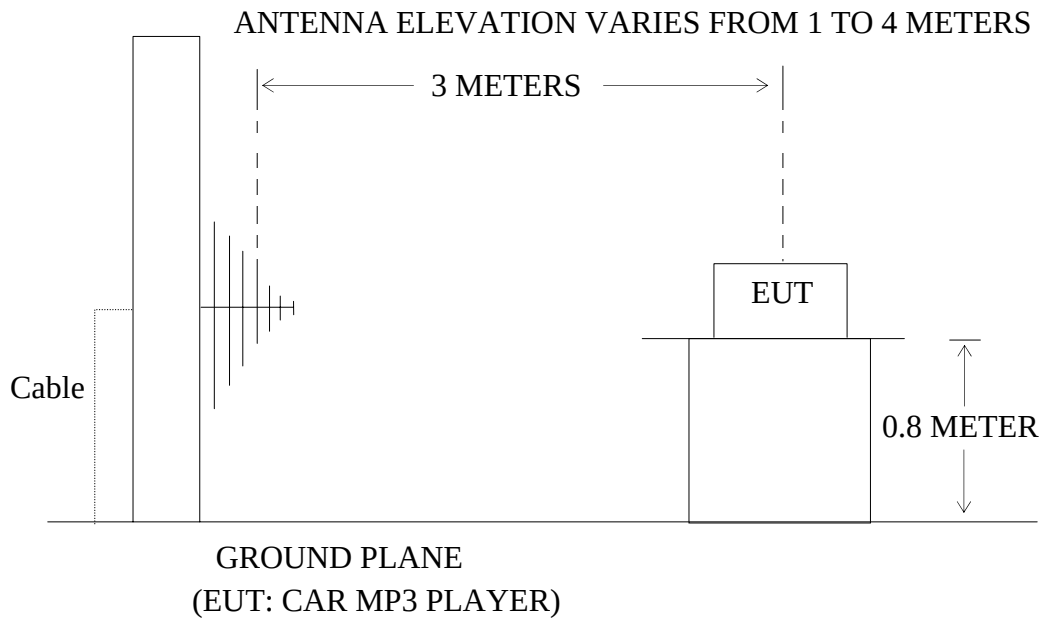
3. RADIATED EMISSION FOR FCC PART 15 SECTION 15.239(C)

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



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
	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	frequency bands 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 : EM190F
 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.

3.4.3. Let the EUT work in TX modes (On with 1kHz signal) measure it. The transmit frequency are 88.1, 88.3, 88.5, 88.7, 88.9MHz.We are select the lowest, Middle and highest 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. The frequency range from 30MHz to 1000MHz 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 1000MHz is investigated.

Date of Test:	April 16, 2005	Temperature:	22°C
EUT:	CAR MP3 PLAYER	Humidity:	50%
Model No.:	EM190F	Power Supply:	12V DC
Test Mode:	TX 88.1MHz	Test Engineer:	Andy

Polarization	Frequency MHz	Emission Level dBμV/m QP	Limits dBμV/m	Margin dBμV/m
Horizontal	49.1	34.7	40	5.3
Horizontal	147.5	34.6	43.5	8.9
Horizontal	172.0	36	43.5	7.5
Horizontal	196.6	35.4	43.5	8.1
Vertical	49.1	36.1	40	3.9
Vertical	147.5	37.7	43.5	5.8
Vertical	172.0	35.8	43.5	7.7
Vertical	196.6	35.3	43.5	8.2

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

Date of Test:	April 16, 2005	Temperature:	22°C
EUT:	CAR MP3 PLAYER	Humidity:	50%
Model No.:	EM190F	Power Supply:	12V DC
Test Mode:	TX 88.5MHz	Test Engineer:	Andy

Polarization	Frequency MHz	Emission Level dBμV/m QP	Limits dBμV/m	Margin dBμV/m
Horizontal	49.1	33.7	40	6.3
Horizontal	147.5	34.6	43.5	8.9
Horizontal	172.0	35.8	43.5	7.7
Horizontal	196.6	35.4	43.5	8.1
Vertical	49.1	36.2	40	3.8
Vertical	122.9	35.8	43.5	7.7
Vertical	147.5	36.9	43.5	6.6
Vertical	172.0	35.5	43.5	8.0
Vertical	196.6	32.6	43.5	10.9

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

Date of Test:	<u>April 16, 2005</u>	Temperature:	<u>22°C</u>
EUT:	<u>CAR MP3 PLAYER</u>	Humidity:	<u>50%</u>
Model No.:	<u>EM190F</u>	Power Supply:	<u>12V DC</u>
Test Mode:	<u>TX 88.9MHz</u>	Test Engineer:	<u>Andy</u>

Polarization	Frequency MHz	Emission Level dBμV/m QP	Limits dBμV/m	Margin dBμV/m
Horizontal	49.1	31.7	40	8.3
Horizontal	147.5	34.4	43.5	9.1
Horizontal	172.0	35.8	43.5	7.7
Horizontal	196.6	35.4	43.5	8.1
Vertical	49.1	36.3	40	3.7
Vertical	122.9	36.6	43.5	6.9
Vertical	147.5	37.6	43.5	5.9
Vertical	172.0	33.4	43.5	10.1
Vertical	196.6	31.9	43.5	11.6

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

Reviewer :



4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

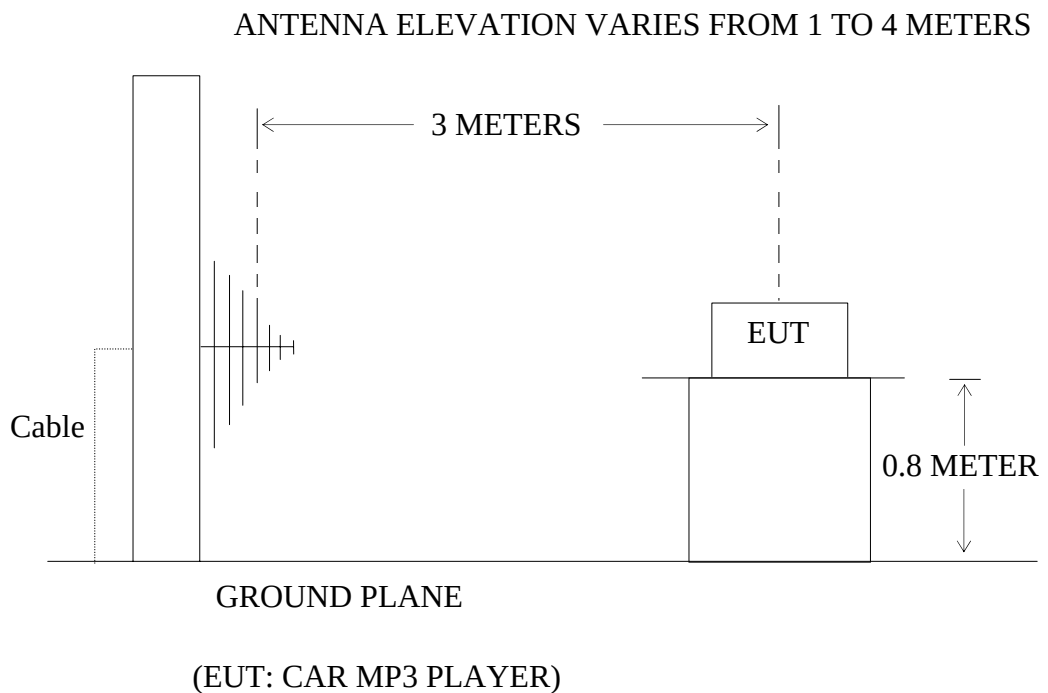
SECTION 15.239(B)

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Anechoic Chamber Test Setup Diagram



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 : EM190F
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.

4.4.3. Let the EUT work in TX mode (On with 1kHz signal) measure it. The transmit frequency are 88.1, 88.3, 88.5, 88.7, 88.9MHz.We are select the lowest, Middle and highest 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:	April 16, 2005	Temperature:	22°C
EUT:	CAR MP3 PLAYER	Humidity:	50%
Model No.:	EM190F	Power Supply:	12V DC
Test Mode:	TX	Test Engineer:	Andy

Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		88.1MHz	
T _{nom} (22°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	38.9/88.1	39.1/90.2
	Vertical	40.1/101.2	41.2/114.8
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Test conditions		Fundamental Frequency	
		88.5MHz	
T _{nom} (22°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	37.6/75.9	39.4/93.3
	Vertical	39.1/90.2	41.3/116.1
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Test conditions		Fundamental Frequency	
		88.9MHz	
T _{nom} (22°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	38.8/87.1	39.8/97.7
	Vertical	40.0/100	41.2/114.8
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 : EM190F
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.

- 5.3.3. Let the EUT work in TX mode (On with 1kHz signal) measure it. The transmit frequency are 88.1, 88.3, 88.5, 88.7, 88.9MHz. We are select the lowest, Middle and highest frequency to transmitted.

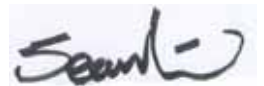
5.4.Test Procedure

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.

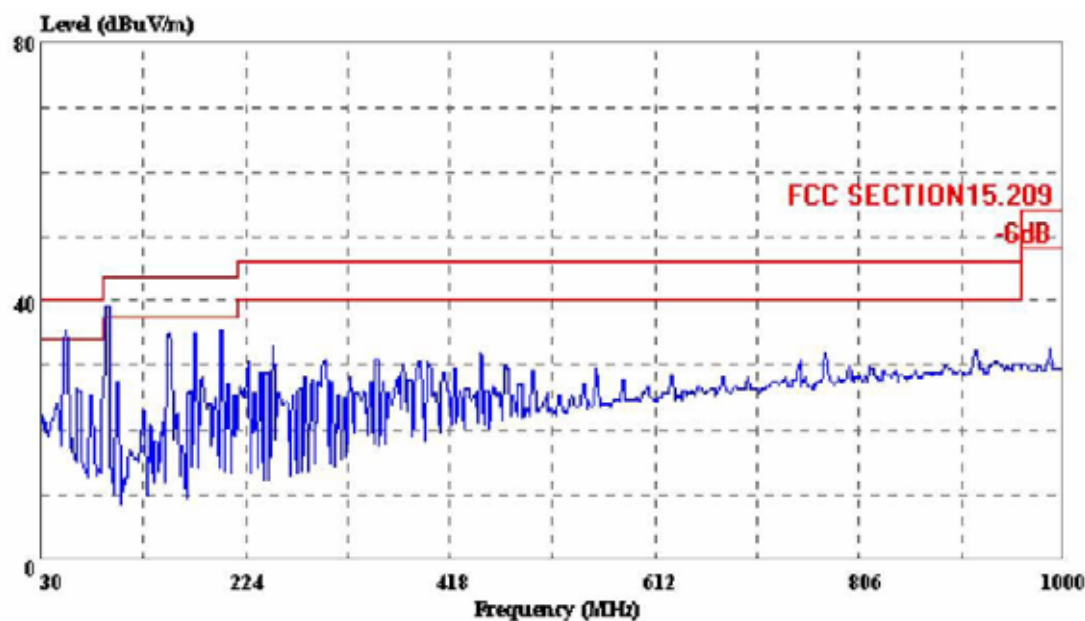
5.5. Test Result

The EUT does meet the FCC requirement.

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is written over a light blue rectangular background. The signature is cursive and includes a stylized flourish at the end.

APPENDIX I (Test Curves)



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) HORIZONTAL

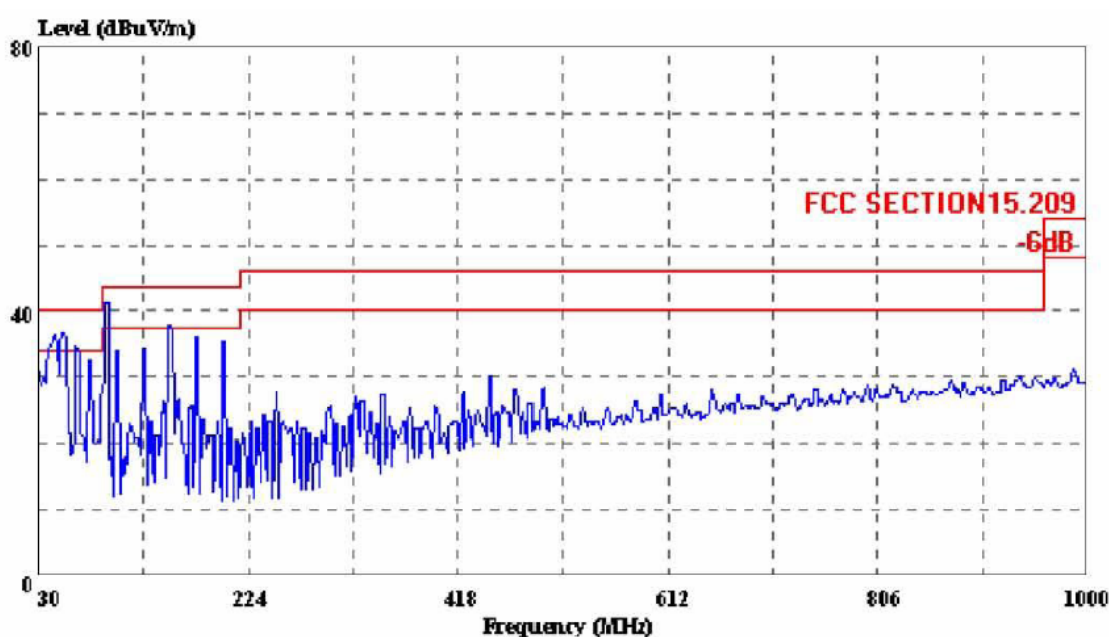
eut : CAR MP3 PLAYER M/N:EM190F

power: DC 12.0V

memo : FM 88.1MHz

manuf: YIFANG

: 88.1MHz Is The Fundamental Frequency



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) VERTICAL

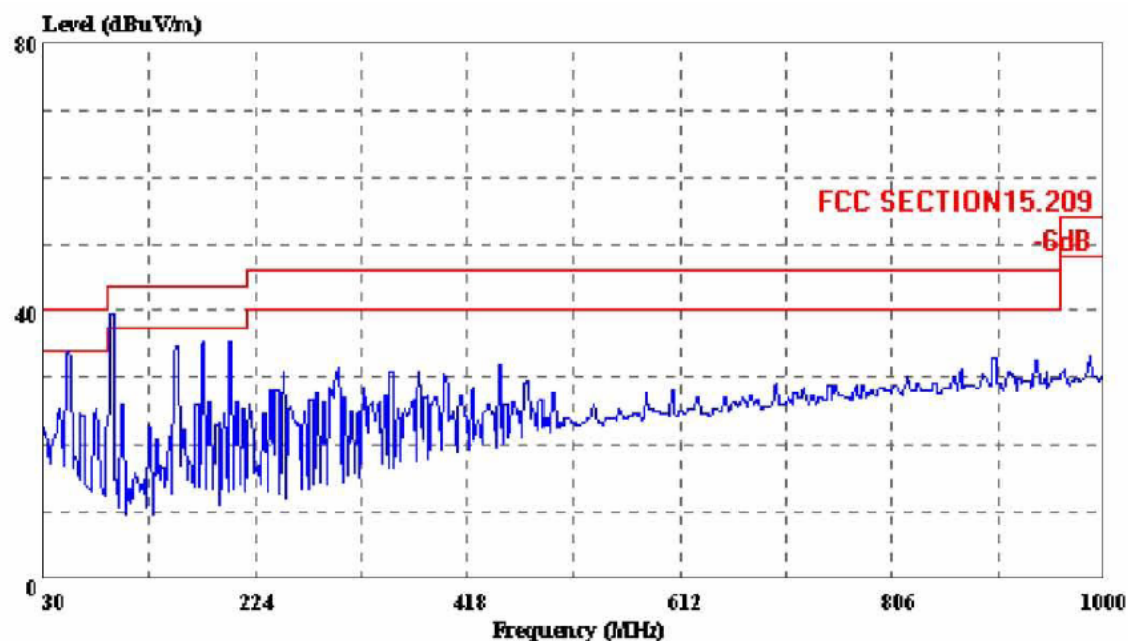
eut : CAR MP3 PLAYER M/N:EM190F

power: DC 12.0V

memo : FM 88.1MHz

manuf: YIFANG

: 88.1MHz Is The Fundamental Frequency



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) HORIZONTAL

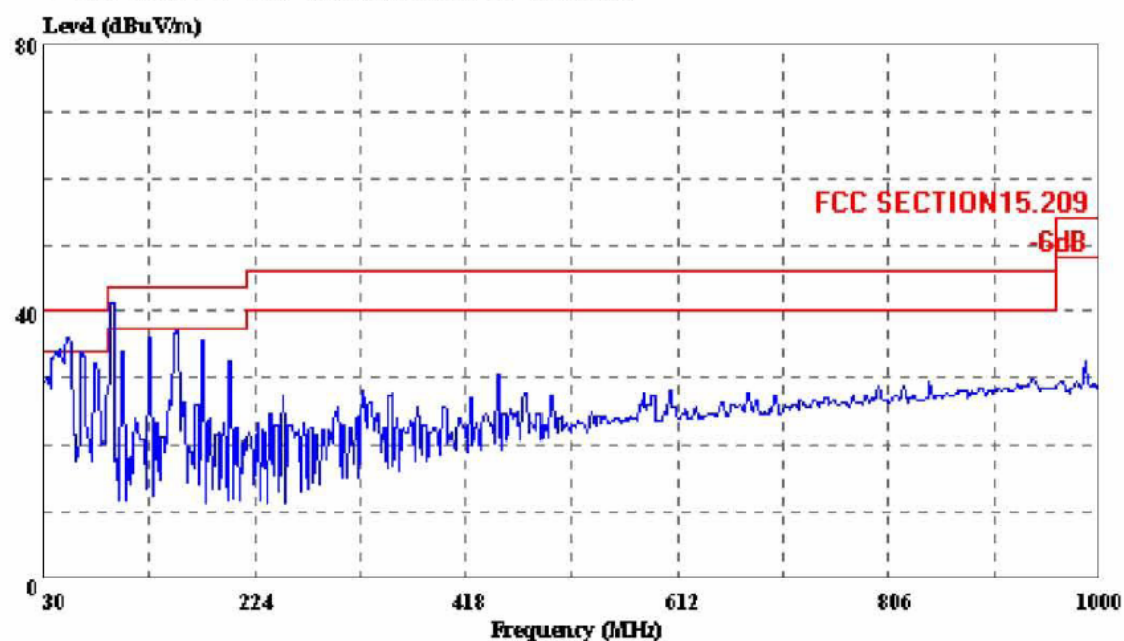
eut : CAR MP3 PLAYER M/N:EM190F

power: DC 12.0V

memo : FM 88.5MHz

manuf: YIFANG

: 88.5MHz Is The Fundamental Frequency



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) VERTICAL

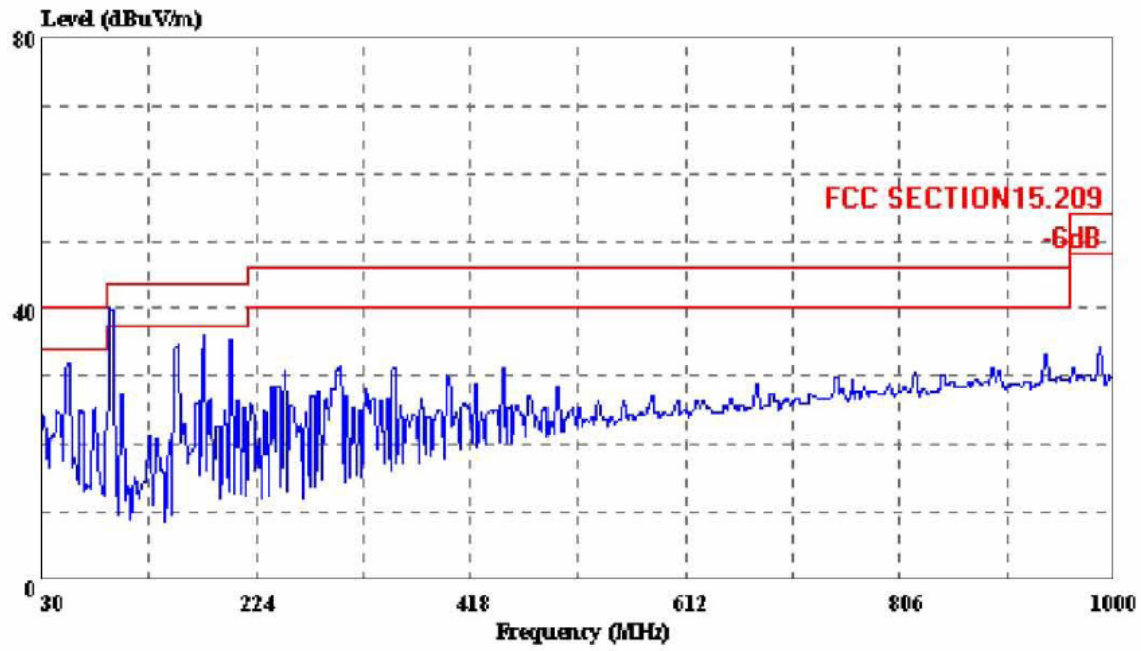
eut : CAR MP3 PLAYER M/N:EM190F

power: DC 12.0V

memo : FM 88.5MHz

manuf: YIFANG

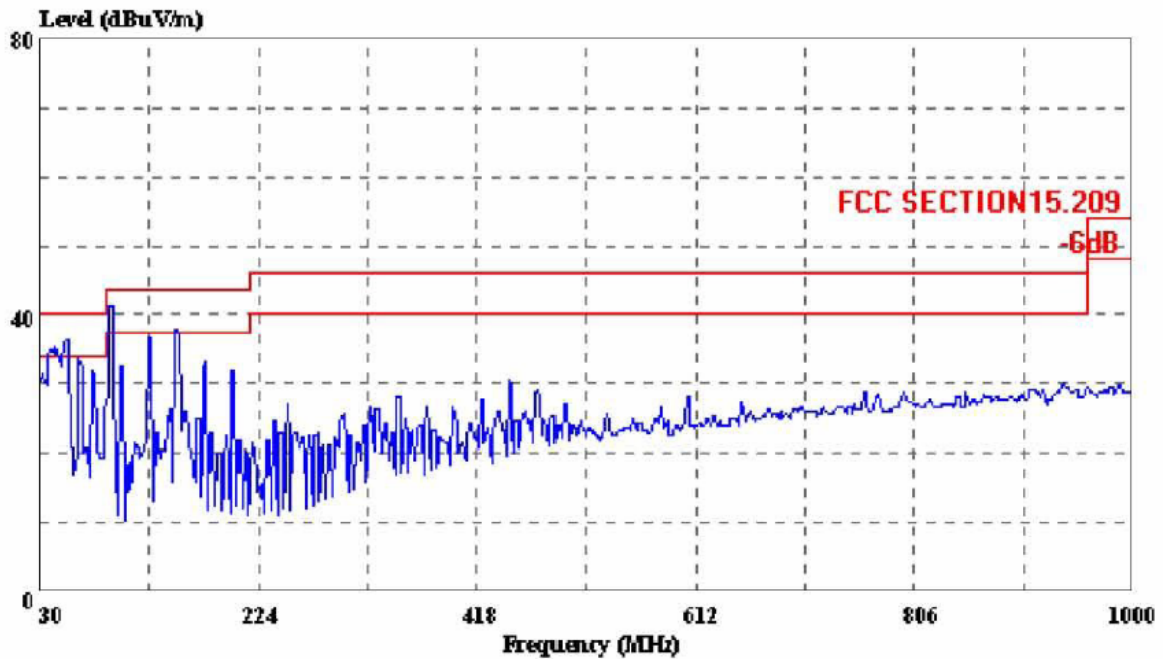
: 88.5MHz Is The Fundamental Frequency



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) HORIZONTAL
 eut : CAR MP3 PLAYER M/N:EM190F
 power: DC 12.0V
 memo : FM 88.9MHz
 manuf: YIFANG
 : 88.9MHz Is The Fundamental Frequency



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC VULB9163 (NEW) VERTICAL
 eut : CAR MP3 PLAYER M/N:EM190F
 power: DC 12.0V
 memo : FM 88.9MHz
 manuf: YIFANG
 : 88.9MHz Is The Fundamental Frequency

