

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

MP3 PLAYER
Model No.: EM193F

FCC ID: S7JEM1932

Prepared for : Shenzhen Yifang Digital Technologies Co.,Ltd.
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Report Number : ATE20051739
Date of Test : October 14, 2005
Date of Report : October 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 : MP3 PLAYER
 (A) MODEL NO.: EM193F
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: 12V DC

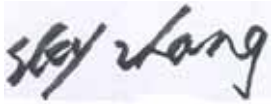
Measurement Procedure Used:

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

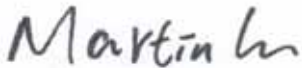
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.239 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY 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 : October 14, 2005

Prepared by : 
 (Engineer)

Reviewer : 
 (Quality Manager)

Approved & Authorized Signer : 
 (Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	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	:	October 10, 2005
Date of Test	:	October 14, 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)

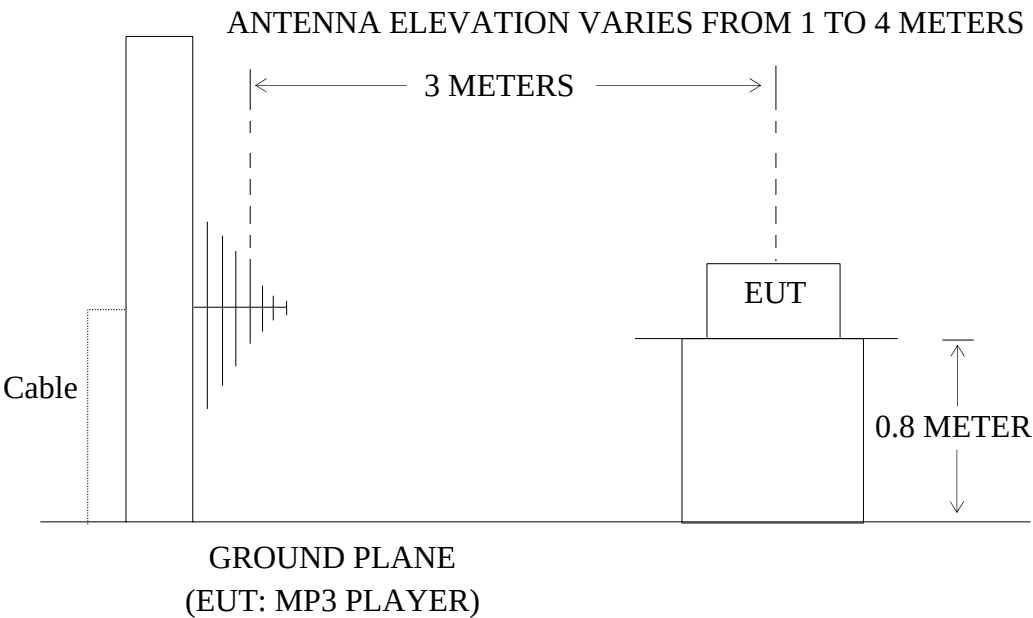
3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



(EUT: 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
	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.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:	October 14, 2005	Temperature:	22°C
EUT:	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	66.1	15.1	20.8	35.9	40	4.1
Horizontal	110.1	21.1	15.3	36.4	43.5	7.1
Horizontal	132.2	24.7	13.7	38.4	43.5	5.1
Horizontal	150.5	22.4	14.2	36.6	43.5	6.9
Horizontal	186.0	21.1	17.1	38.2	43.5	5.3
Horizontal	222.0	13.8	19.8	33.6	46.0	12.4
Horizontal	288.0	14.0	19.9	33.9	46.0	12.1
Horizontal	360.0	13.8	21.9	35.7	46.0	10.3
Horizontal	372.0	15.3	21.8	37.1	46.0	8.9
Horizontal	395.1	17.8	23.0	40.8	46.0	5.2
Horizontal	420.0	17.1	23.4	40.5	46.0	5.5
Horizontal	525.0	10.4	24.8	35.2	46.0	10.8
Vertical	66.1	12.0	16.8	28.8	40	11.2
Vertical	110.1	13.1	20.2	33.3	43.5	10.2
Vertical	132.1	15.7	20.1	35.8	43.5	7.7
Vertical	152.4	12.0	19.1	31.1	43.5	12.4
Vertical	186.3	15.0	19.3	34.3	43.5	9.2
Vertical	321.7	9.4	23.6	33.0	46.0	13.0
Vertical	348.0	12.3	24.6	36.9	46.0	9.1
Vertical	372.6	17.6	24.1	41.7	46.0	4.3

Vertical	443.9	10.4	26.3	36.7	46.0	9.3
Vertical	540.0	7.2	26.7	33.9	46.0	12.1
Vertical	559.1	7.3	27.0	34.3	46.0	11.7
Vertical	848.8	4.1	31.0	35.1	46.0	10.9
Vertical	874.3	4.0	31.4	35.4	46.0	10.6

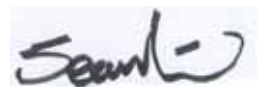
The spectral diagrams in appendix I display the measurement of un-weighted peak values.

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:

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

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

Reviewer :



Date of Test:	October 14, 2005	Temperature:	22°C
EUT:	MP3 PLAYER	Humidity:	50%
Model No.:	EM193F	Power Supply:	12V DC
Test Mode:	TX 107.9MHz	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	64.7	3.5	21.5	25.0	40	15.0
Horizontal	86.3	20.5	15.4	35.9	40	4.1
Horizontal	129.5	24.8	13.7	38.5	43.5	5.0
Horizontal	152.5	21.5	14.3	35.8	43.5	7.7
Horizontal	186.0	21.1	17.1	38.2	43.5	5.3
Horizontal	348.0	19.9	22.0	41.9	46.0	4.1
Horizontal	372.9	18.3	21.8	40.1	46.0	5.9
Horizontal	395.7	10.7	23.1	33.8	46.0	12.2
Horizontal	576.1	8.1	25.2	33.3	46.0	12.7
Horizontal	661.9	6.3	26.7	33.0	46.0	13.0
Vertical	64.7	10.1	17.0	27.1	40	12.9
Vertical	86.3	17.5	17.4	34.9	40	5.1
Vertical	129.5	18.7	20.1	38.8	43.5	4.7
Vertical	152.2	13.9	19.2	33.1	43.5	10.4
Vertical	171.6	14.8	19.0	33.8	43.5	9.7
Vertical	186.4	17.0	19.3	36.3	43.5	7.2
Vertical	348.0	16.3	24.6	40.9	46.0	5.1
Vertical	372.0	14.6	24.1	38.7	46.0	7.3
Vertical	396.0	14.1	24.2	38.3	46.0	7.7
Vertical	420.0	10.7	25.3	36.0	46.0	10.0
Vertical	546.0	8.3	26.7	35.0	46.0	11.0
Vertical	566.1	8.2	27.3	35.5	46.0	10.5
Vertical	575.1	6.1	27.6	33.7	46.0	12.3
Vertical	857.4	3.1	31.1	34.2	46.0	11.8

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:

Result = Reading + Corrected Factor

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

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is placed over a light blue rectangular background. The signature is written in a cursive, stylized font.

4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

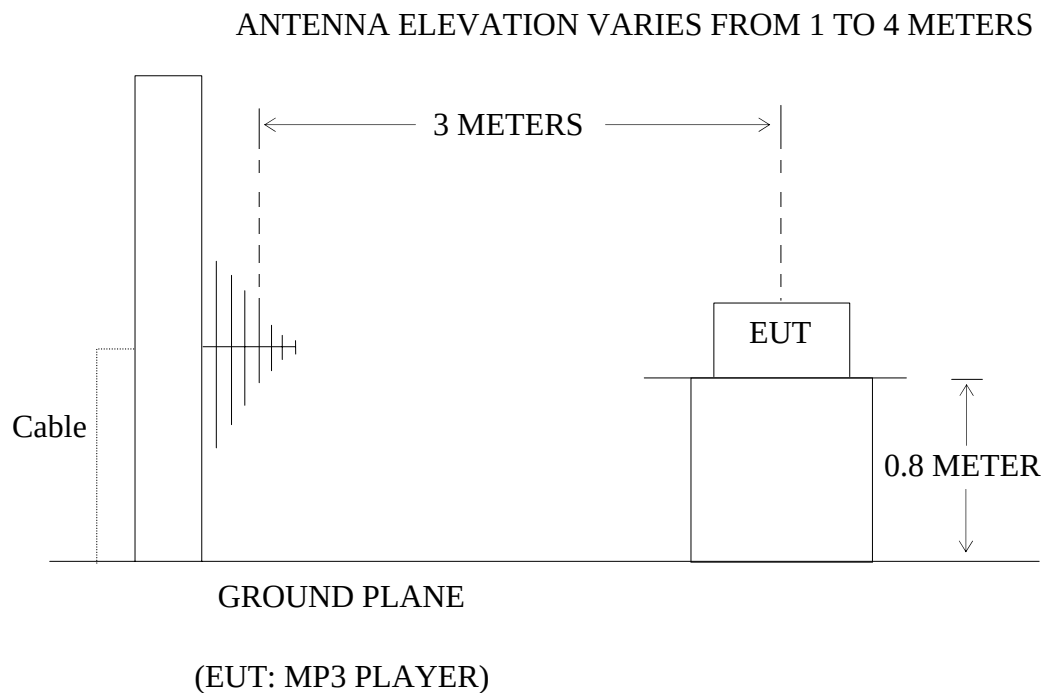
SECTION 15.239(B)

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.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:	October 14, 2005	Temperature:	22°C
EUT:	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 _{nom} (22°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	40.8/110	55.9/624
	Vertical	41.1/117	56.1/638
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 _{nom} (22°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	40.5/106	55.5/596
	Vertical	40.1/101	55.2/575
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.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.

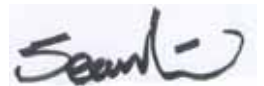
5.4.Test Procedure

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.

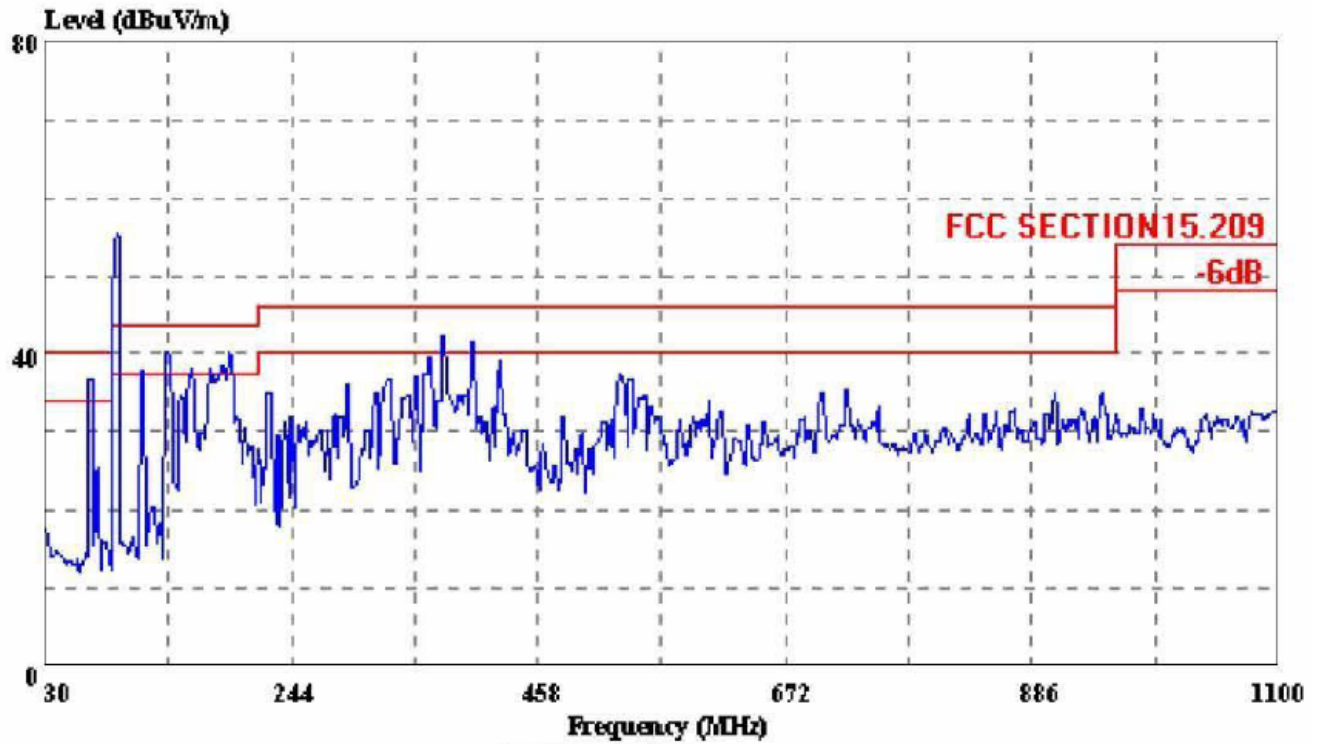
5.5. Test Result

The EUT does meet the FCC requirement.

Reviewer :

A handwritten signature in black ink, appearing to read "Sean", is written over a light blue rectangular background. The signature is stylized with a large 'S' and a cursive 'e'.

APPENDIX I (Test Curves)

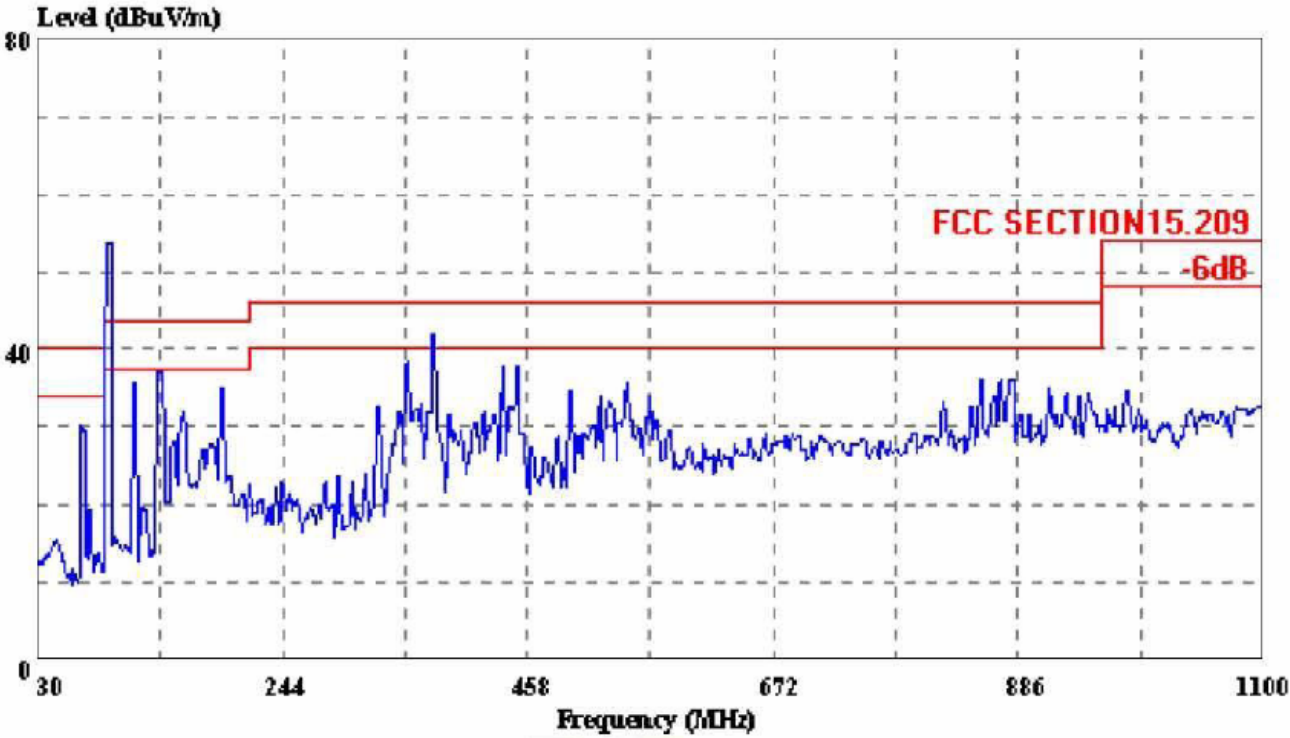


Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m
eut : MP3 PLAYER M/N:EM193F
power: DC 12.0V
memo : TX(88.1MHz)
manuf: YIFANG

HORIZONTAL



Trace: FCC SECTION15.209 3m Ref Trace: VERTICAL

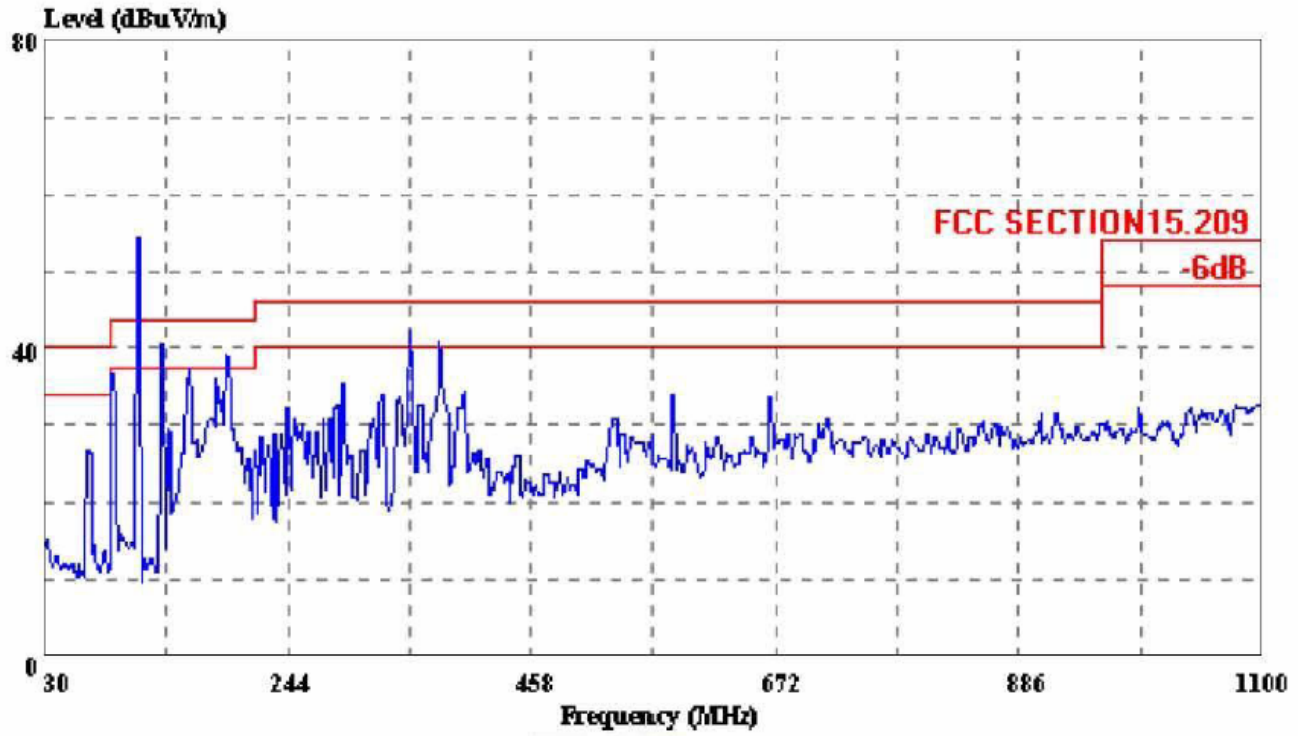
Condition: FCC SECTION15.209 3m

eut : MP3 PLAYER M/N:EM193F

power: DC 12.0V

memo : TX(88.1MHz)

manuf: YIFANG



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m

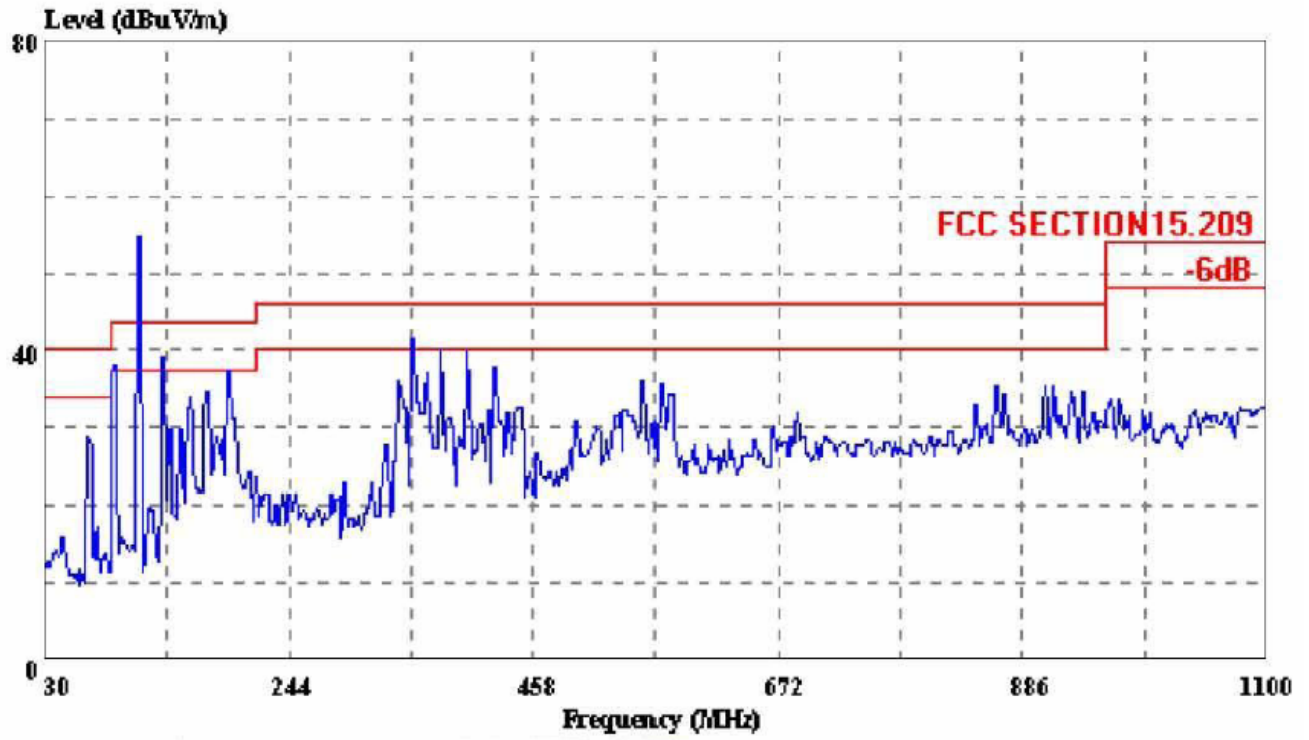
HORIZONTAL

eut : MP3 PLAYER M/N:EM193F

power: DC 12.0V

memo : TX(107.9MHz)

manuf: YIFANG



Trace: Ref Trace:

Condition: FCC SECTION15.209 3m VERTICAL

eut : MP3 PLAYER M/N:EM193F

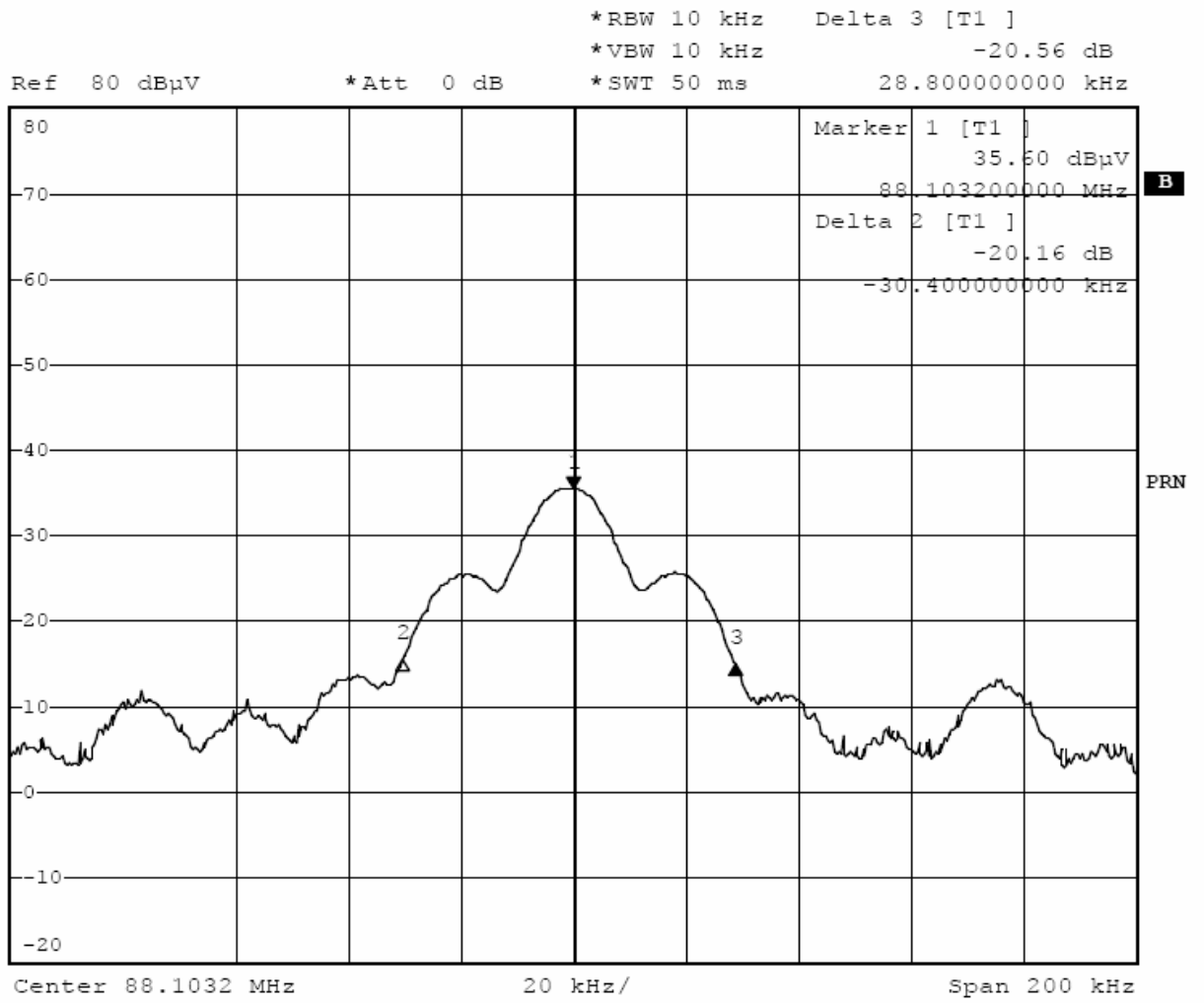
power: DC 12.0V

memo : TX(107.9MHz)

manuf: YIFANG



1 PK
VIEW





1 PK
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