

FCC CERTIFICATION
On Behalf of
Zonoki Electronics Manufacturer Co.,Ltd.

Vehicle FM Transmitter With Power Charger for ipod
Model No.: Z-1300i

FCC ID: S6XFMZ1300

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Test Report Certification

Applicant : Zonoki Electronics Manufacturer Co.,Ltd.
 Manufacturer : Zonoki Electronics Manufacturer Co.,Ltd.
 EUT Description : Vehicle FM Transmitter With Power Charger For ipod
 (A) MODEL NO.: Z-1300i
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: DC 12V

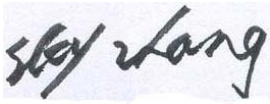
Measurement Procedure Used:

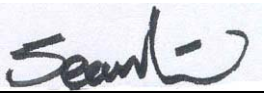
FCC Rules and Regulations Part 15 Subpart C Section 15.239: 2006

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 : September 18, 2006

Prepared by : 
 (Engineer)

Reviewer : 
 (Quality Manager)

Approved & Authorized Signer : 
 (Manager)

2. MEASURING DEVICE AND TEST EQUIPMENT

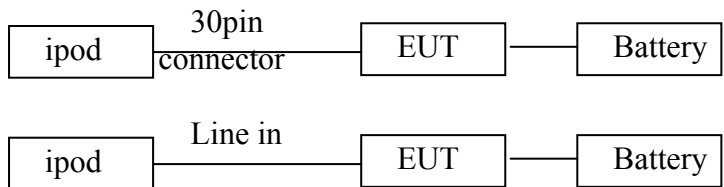
Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.31.2007
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	01.02.2007
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	03.31.2007
Bilog Antenna	Chase	CBL6112B	2591	03.31.2007
Horn Antenna	Rohde&Schwarz	HF906	100013	01.02.2007
Spectrum Analyzer	Anritsu	MS2651B	6200238856	03.31.2007
Pre-Amplifier	Agilent	8447D	2944A10619	03.31.2007
iPod	Apple	60GB	JQ543GF95ZA	N/A

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

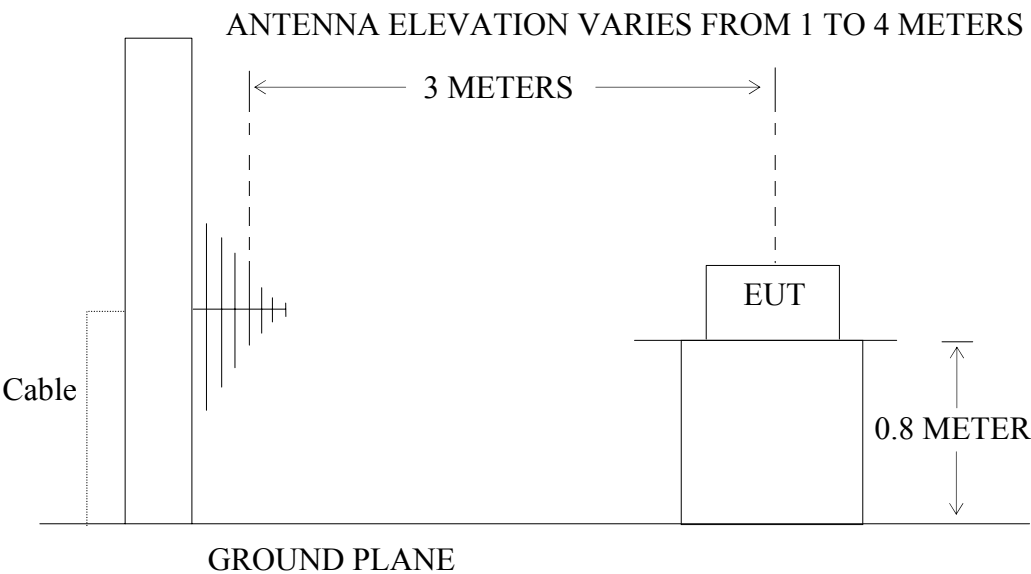
3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



(EUT: Vehicle FM Transmitter With Power Charger For ipod)

3.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Vehicle FM Transmitter With Power Charger For ipod)

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 mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
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.Vehicle FM Transmitter With Power Charger For ipod (EUT)

Model Number : Z-1300i
 Serial Number : N/A
 Manufacturer : Zonoki Electronics Manufacturer 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 [Plug iPod to EUT 30pin Connector and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz.We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

3.4.3.Turn on the power of all equipment.

Let the EUT work in TX modes [Connect iPod audio output to EUT line in port, and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz.We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

Note: The EUT is connected to ipod by the base interface of ipod. The input signal of EUT is controlled by ipod. so the volume control of ipod was set to maximum during the test. It means that the test was performed with the maximum audio input.

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 ESCS30) 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:	<u>November 1, 2006</u>	Temperature:	<u>27°C</u>
EUT:	<u>Vehicle FM Transmitter With</u>	Humidity:	<u>55%</u>
Model No.:	<u>Power Charger For ipod</u>	Power Supply:	<u>DC 12V</u>
	<u>Z-1300i</u>		
	<u>TX 88.1MHz[30pin connector</u>		
	<u>Input typical audio signal(music</u>		
	<u>song) with the maximum audio</u>		
Test Mode:	<u>input]</u>	Test Engineer:	<u>Andy</u>

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.(dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	176.200	26.7	8.1	34.8	43.5	8.7
Horizontal	264.240	23.5	10.8	34.3	46.0	11.7
Horizontal	352.370	15.1	14.0	29.1	46.0	16.9
Horizontal	440.480	15.8	15.9	31.7	46.0	14.3
Horizontal	528.470	14.7	17.5	32.2	46.0	13.8
Horizontal	616.540	7.7	18.8	26.5	46.0	19.5
Horizontal	704.690	12.6	20.0	32.6	46.0	13.4
Horizontal	792.830	10.0	21.0	31.0	46.0	15.0
Horizontal	880.830	10.5	21.9	32.4	46.0	13.6
Horizontal	968.950	11.8	22.8	34.6	54.0	19.4
Vertical	176.180	25.2	8.4	33.6	43.5	9.9
Vertical	264.260	21.8	10.2	32.0	46.0	14.0
Vertical	352.390	17.5	14.0	31.5	46.0	14.5
Vertical	440.440	20.4	16.4	36.8	46.0	9.2
Vertical	528.480	16.3	18.3	34.6	46.0	11.4
Vertical	616.620	9.9	20.0	29.9	46.0	16.1
Vertical	704.760	12.7	21.3	34.0	46.0	12.0
Vertical	792.940	10.1	22.6	32.7	46.0	13.3
Vertical	880.880	9.4	23.7	33.1	46.0	12.9
Vertical	969.320	12.9	24.6	37.5	54.0	16.5
Vertical	1056.980	9.6	25.0	34.6	54.0	19.4

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:

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

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

Date of Test: November 1, 2006 Temperature: 27°C
 EUT: Vehicle FM Transmitter With
Power Charger For ipod Humidity: 55%
 Model No.: Z-1300i Power Supply: DC 12V
TX 98.1MHz[30pin connector
Input typical audio signal(music
song) with the maximum audio
 Test Mode: input] 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	196.200	27.5	9.6	37.1	43.5	6.4
Horizontal	294.270	18.7	12.4	31.1	46.0	14.9
Horizontal	392.350	18.1	14.9	33.0	46.0	13.0
Horizontal	490.440	21.4	16.8	38.2	46.0	7.8
Horizontal	588.540	17.9	18.4	36.3	46.0	9.7
Horizontal	686.650	14.4	19.8	34.2	46.0	11.8
Horizontal	784.710	14.3	20.9	35.2	46.0	10.8
Horizontal	882.820	18.1	21.9	40.0	46.0	6.0
Horizontal	980.850	13.9	22.9	36.8	54.0	17.2
Horizontal	1078.910	10.0	23.2	33.2	54.0	20.8
Vertical	196.180	26.1	9.0	35.1	43.5	8.3
Vertical	294.272	20.9	12.1	33.0	46.0	12.6
Vertical	392.348	21.8	15.2	37.0	46.0	8.9
Vertical	490.500	21.9	17.5	39.4	46.0	7.3
Vertical	588.530	21.0	19.4	40.4	46.0	6.2
Vertical	686.660	14.0	21.1	35.1	46.0	10.5
Vertical	784.750	14.8	22.5	37.3	46.0	8.4
Vertical	882.820	14.9	23.7	38.6	46.0	7.0
Vertical	980.880	14.1	24.9	39.0	54.0	14.7
Vertical	1079.130	10.0	25.1	35.1	54.0	18.9

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:

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

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

Date of Test: November 1, 2006 Temperature: 27°C
 EUT: Vehicle FM Transmitter With
Power Charger For ipod Humidity: 55%
 Model No.: Z-1300i Power Supply: DC 12V
TX 107.9MHz[30pin connector
Input typical audio signal(music
song) with the maximum audio
 Test Mode: input] 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	215.828	27.1	9.7	36.8	43.5	6.7
Horizontal	323.690	20.3	13.2	33.5	46.0	12.5
Horizontal	431.610	19.0	15.7	34.7	46.0	11.3
Horizontal	539.440	21.0	17.7	38.7	46.0	7.3
Horizontal	647.310	20.5	19.3	39.8	46.0	6.2
Horizontal	755.170	14.0	20.6	34.6	46.0	11.4
Horizontal	863.110	17.0	21.8	38.8	46.0	7.2
Horizontal	970.890	18.6	22.8	41.4	54.0	12.6
Vertical	215.770	28.3	8.9	37.2	43.5	6.3
Vertical	323.652	21.2	13.1	34.3	46.0	11.7
Vertical	431.536	23.0	16.2	39.2	46.0	6.8
Vertical	539.440	22.1	18.5	40.6	46.0	5.4
Vertical	647.350	18.8	20.4	39.2	46.0	6.8
Vertical	755.240	11.7	22.1	33.8	46.0	12.2
Vertical	863.040	15.4	23.5	38.9	46.0	7.1
Vertical	971.120	20.1	24.8	44.9	54.0	9.1

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:

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

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

Date of Test: November 1, 2006 Temperature: 27°C
 EUT: Vehicle FM Transmitter With
Power Charger For ipod Humidity: 55%
 Model No.: Z-1300i Power Supply: DC 12V
TX 88.1MHz[Line in typical audio
signal(music song) with the
 Test Mode: maximum audio input] 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	176.210	29.1	7.9	37.0	43.5	6.5
Horizontal	264.274	28.3	11.0	39.3	46.0	6.7
Horizontal	352.380	24.0	14.0	38.0	46.0	8.0
Horizontal	440.492	23.2	15.9	39.1	46.0	6.9
Horizontal	528.552	20.7	17.5	38.2	46.0	7.8
Horizontal	616.584	11.5	18.8	30.3	46.0	15.7
Horizontal	704.750	14.1	20.0	34.1	46.0	11.9
Horizontal	792.740	12.0	21.0	33.0	46.0	13.0
Horizontal	880.820	13.1	21.9	35.0	46.0	11.0
Horizontal	969.140	13.0	22.8	35.8	54.0	18.2
Vertical	176.216	28.6	8.4	37.0	43.5	6.5
Vertical	264.374	27.0	10.2	37.2	46.0	8.8
Vertical	352.360	18.5	14.0	32.5	46.0	13.5
Vertical	440.564	18.3	16.4	34.7	46.0	11.3
Vertical	528.498	13.9	18.3	32.2	46.0	13.8
Vertical	704.760	9.9	21.3	31.2	46.0	14.8
Vertical	792.860	10.5	22.6	33.1	46.0	12.9
Vertical	880.920	10.5	23.7	34.2	46.0	11.8
Vertical	969.160	12.3	24.7	37.0	54.0	17.0

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:

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

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

Date of Test: November 1, 2006 Temperature: 27°C
 EUT: Vehicle FM Transmitter With
Power Charger For ipod Humidity: 55%
 Model No.: Z-1300i Power Supply: DC 12V
TX 98.1MHz[Line in typical audio
signal(music song) with the
 Test Mode: maximum audio input] 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	196.210	28.2	9.6	37.8	43.5	5.7
Horizontal	294.320	27.4	12.4	39.8	46.0	6.2
Horizontal	392.360	22.2	14.9	37.1	46.0	8.9
Horizontal	490.490	19.7	16.8	36.5	46.0	9.5
Horizontal	588.600	16.8	18.4	35.2	46.0	10.8
Horizontal	686.720	14.4	19.8	34.2	46.0	11.8
Horizontal	784.770	13.4	20.9	34.3	46.0	11.7
Horizontal	882.940	14.4	22.0	36.4	46.0	9.6
Horizontal	981.110	11.2	22.9	34.1	54.0	19.9
Horizontal	1079.050	8.0	23.2	31.2	54.0	22.8
Vertical	196.220	27.2	9.0	36.2	43.5	7.3
Vertical	294.304	24.4	12.1	36.5	46.0	9.5
Vertical	392.332	20.6	15.1	35.7	46.0	10.3
Vertical	490.464	19.1	17.5	36.6	46.0	9.4
Vertical	588.520	15.1	19.4	34.5	46.0	11.5
Vertical	686.632	11.2	21.1	32.3	46.0	13.7
Vertical	784.732	13.0	22.5	35.5	46.0	10.5
Vertical	882.840	13.3	23.7	37.0	46.0	9.0
Vertical	980.840	11.2	24.9	36.1	54.0	17.9
Vertical	1079.124	10.1	25.1	35.2	54.0	18.8

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:

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

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

Date of Test: November 1, 2006 Temperature: 27°C
 EUT: Vehicle FM Transmitter With
Power Charger For ipod Humidity: 55%
 Model No.: Z-1300i Power Supply: DC 12V
TX 107.9MHz[Line in typical
audio signal(music song) with the
 Test Mode: maximum audio input] 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	215.822	27.9	9.6	37.5	43.5	6.0
Horizontal	323.674	25.1	13.2	38.3	46.0	7.7
Horizontal	431.580	23.5	15.8	39.3	46.0	6.7
Horizontal	539.500	22.5	17.6	40.1	46.0	5.9
Horizontal	647.390	15.9	19.2	35.1	46.0	10.9
Horizontal	755.270	11.2	20.6	31.8	46.0	14.2
Horizontal	863.200	14.3	21.8	36.1	46.0	9.9
Horizontal	971.130	16.5	22.8	39.3	54.0	14.7
Horizontal	1079.010	8.4	23.2	31.6	54.0	22.4
Vertical	215.818	27.7	8.9	36.6	43.5	6.9
Vertical	323.704	22.8	13.1	35.9	46.0	10.1
Vertical	431.602	20.3	16.2	36.5	46.0	9.5
Vertical	539.441	18.7	18.5	37.2	46.0	8.8
Vertical	647.410	14.4	20.4	34.8	46.0	11.2
Vertical	755.210	11.1	22.1	33.2	46.0	12.8
Vertical	863.210	14.0	23.5	37.5	46.0	8.5
Vertical	971.020	14.5	24.8	39.3	54.0	14.7
Vertical	1078.900	10.4	25.1	35.5	54.0	18.5

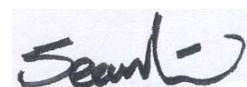
The spectral diagrams in appendix I display the measurement of un-weighted peak values.

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

Reviewer :

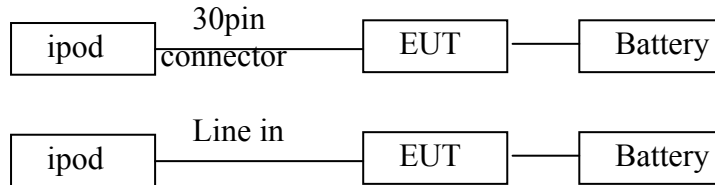


4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

SECTION 15.239(B)

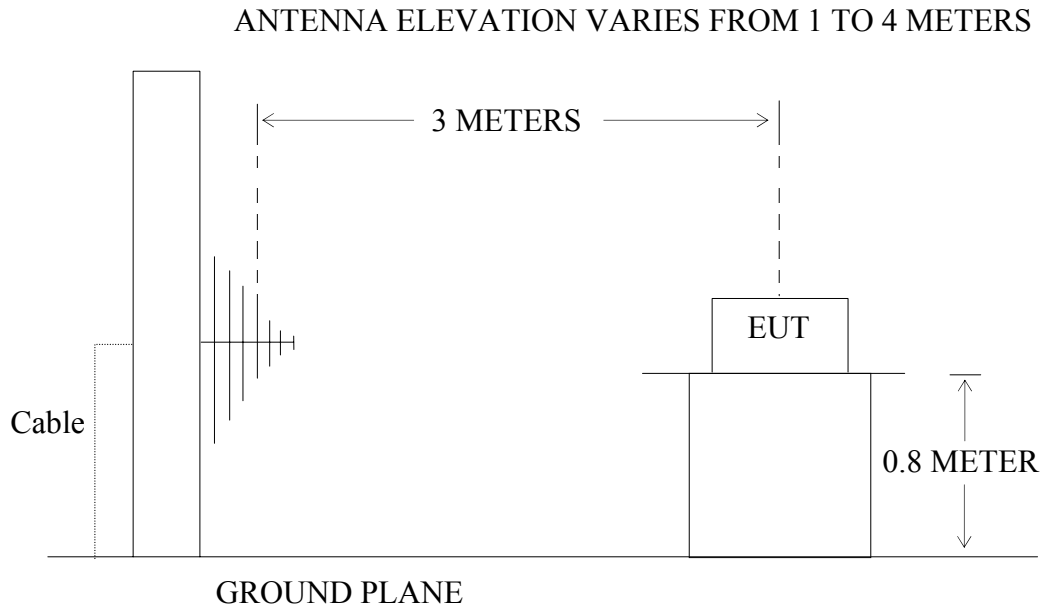
4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: Vehicle FM Transmitter With Power Charger For ipod)

4.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Vehicle FM Transmitter With Power Charger For ipod)

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.Vehicle FM Transmitter With Power Charger For ipod (EUT)

Model Number : Z-1300i
 Serial Number : N/A
 Manufacturer : Zonoki Electronics Manufacturer 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 [Plug iPod to EUT 30pin Connector and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz.We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

4.4.3.Turn on the power of all equipment.

Let the EUT work in TX modes [Connect iPod audio output to EUT line in port, and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz.We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

Note: The EUT is connected to ipod by the base interface of ipod. The input signal of EUT is controlled by ipod. so the volume control of ipod was set to maximum during the test. It means that the test was performed with the maximum audio input.

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:	<u>November 1, 2006</u>	Temperature:	<u>27°C</u>
EUT:	<u>Vehicle FM Transmitter With</u>	Humidity:	<u>55%</u>
Model No.:	<u>Power Charger For ipod</u>	Power Supply:	<u>DC 12V</u>
	<u>Z-1300i</u>		
Test Mode:	<u>TX [30pin connector Input</u>	Test Engineer:	<u>Andy</u>
	<u>typical audio signal(music song)</u>		
	<u>with the maximum audio input]</u>		

Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		88.1MHz	
T _{nom} (25°C)	Unit	(dBμV/m)/ (μ V/m)	(dBμV/m)/(μ V/m)
		AV	PEAK
	Horizontal	39.6/95	43.0/141
	Vertical	33.9/48	37.6/76
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Test conditions		Fundamental Frequency	
		98.1MHz	
T _{nom} (25°C)	Unit	(dBμV/m)/ (μ V/m)	(dBμV/m)/(μ V/m)
		AV	PEAK
	Horizontal	40.4/105	44.2/162
	Vertical	40.2/102	41.9/124
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} (25°C)	Unit	(dBμV/m)/ (μ V/m)	(dBμV/m)/(μ V/m)
		AV	PEAK
	Horizontal	43.0/141	46.6/214
	Vertical	42.8/138	46.5/211
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Date of Test:	<u>November 1, 2006</u>	Temperature:	<u>27°C</u>
EUT:	<u>Vehicle FM Transmitter With</u>	Humidity:	<u>55%</u>
Model No.:	<u>Power Charger For ipod</u>	Power Supply:	<u>DC 12V</u>
	<u>Z-1300i</u>		
Test Mode:	<u>TX [Line in typical audio</u> <u>signal(music song) with the</u> <u>maximum audio input]</u>	Test Engineer:	<u>Andy</u>

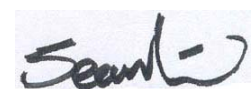
Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		88.1MHz	
T _{nom} (25°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	36.6/68	40.3/104
	Vertical	33.1/45	36.9/70
limit		48/250	68/2500
Note: Measurement was performed with modulated signal with average detector and peak detector.			

Test conditions		Fundamental Frequency	
		98.1MHz	
T _{nom} (25°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	39.8/98	43.3/146
	Vertical	36.3/65	40.1/101
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} (25°C)	Unit	(dBμV/m)/ (μ V/m) AV	(dBμV/m)/(μ V/m) PEAK
	Horizontal	42.5/133	46.1/202
	Vertical	40.3/104	44.1/160
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.Vehicle FM Transmitter With Power Charger For ipod (EUT)

Model Number : Z-1300i
Serial Number : N/A
Manufacturer : Zonoki Electronics Manufacturer 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 [Plug iPod to EUT 30pin Connector and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz. We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

Note: The EUT is connected to ipod by the base interface of ipod. The input signal of EUT is controlled by ipod. so the volume control of ipod was set to maximum during the test. It means that the test was performed with the maximum audio input.

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.

Input signal : play typical audio signal(music song)

FM 88.1MHz

26dB bandwidth = 162.4kHz

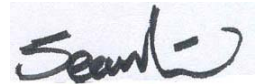
FM 98.1MHz

26dB bandwidth = 123.2kHz

FM 107.9MHz

26dB bandwidth = 125.6kHz

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.

6. TUNING RANGE

6.1.The Requirement For Section 15.239

88-108MHz

6.2.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.

6.2.1.Vehicle FM Transmitter With Power Charger For ipod (EUT)

Model Number : Z-1300i
 Serial Number : N/A
 Manufacturer : Zonoki Electronics Manufacturer Co.,Ltd.

6.3.Operating Condition of EUT

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

6.3.2.Turn on the power of all equipment.

Let the EUT work in TX modes [Plug iPod to EUT 30pin Connector and ipod playing typical audio signal(music song) with maximum audio level] measure it. The transmit frequency are 88.1-107.9MHz.We are select 88.1M, 98.1M, 107.9MHz TX frequency to transmitted.

Note: The EUT is connected to ipod by the base interface of ipod. The input signal of EUT is controlled by ipod. so the volume control of ipod was set to maximum during the test. It means that the test was performed with the maximum audio input.

6.4.Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set the EUT working on the lowest frequency.
3. Set EMI test receiver center frequency = working frequency, RBW, VBW= 10KHz, Span=200KHz.
4. Measuring the working frequency. And check the measuring result with the EUT display.
3. Set the EUT working on the mid frequency. Repeat step 3 and 4.
4. Set the EUT working on the high frequency. Repeat step 3 and 4.
5. Press the “◀” and “▶” to select the transmission frequency, from the low to high frequency. And check the working frequency display on the screen. The working frequency should be inside 88-108MHz.

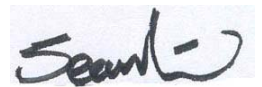
6.5. Test Result

The EUT does meet the FCC requirement.

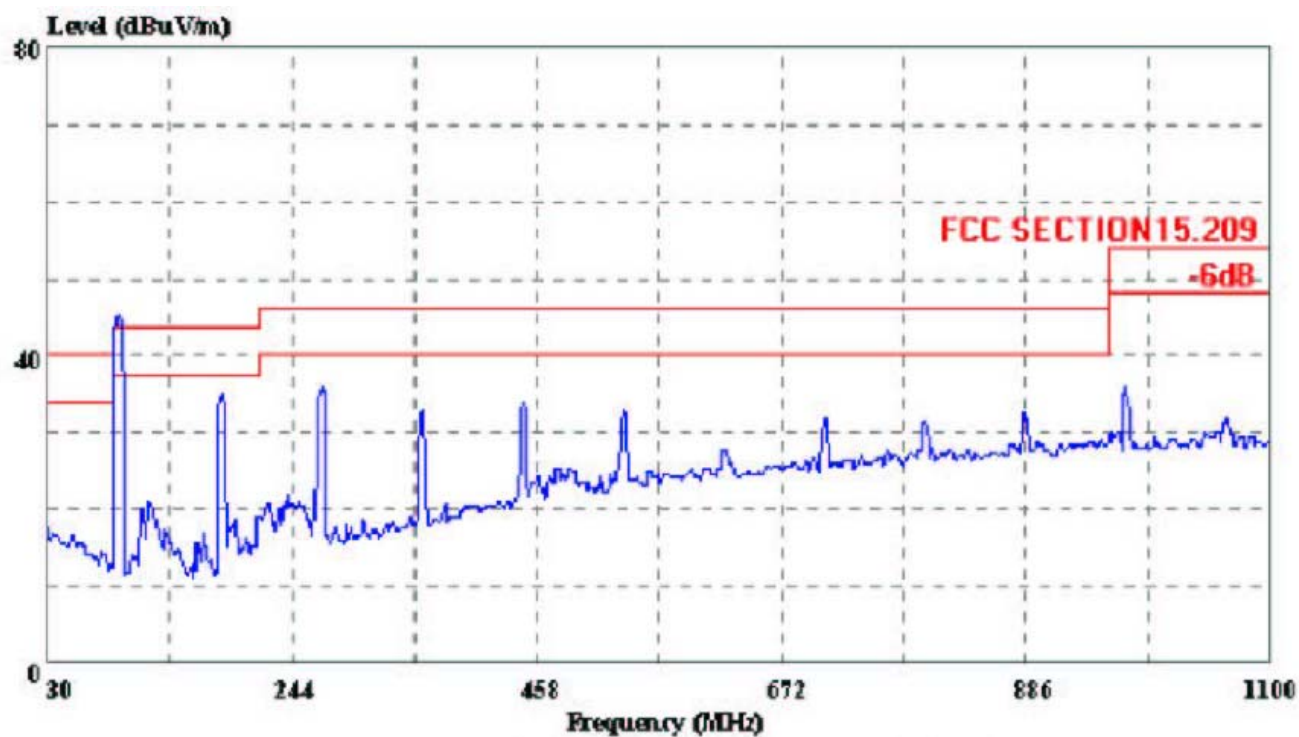
Low Frequency= 88.0956MHz	EUT screen display 88.1MHz
Mid Frequency= 98.0964MHz	EUT screen display 98.1MHz
High Frequency=107.894MHz	EUT screen display 107.9MHz

The working frequency rang is from 88.1 to 107.9MHz.

Reviewer :



APPENDIX I (Test Curves)



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC FCC15C ANTENNA HORIZONTAL

eut : Vehicle FM transmitter with Power

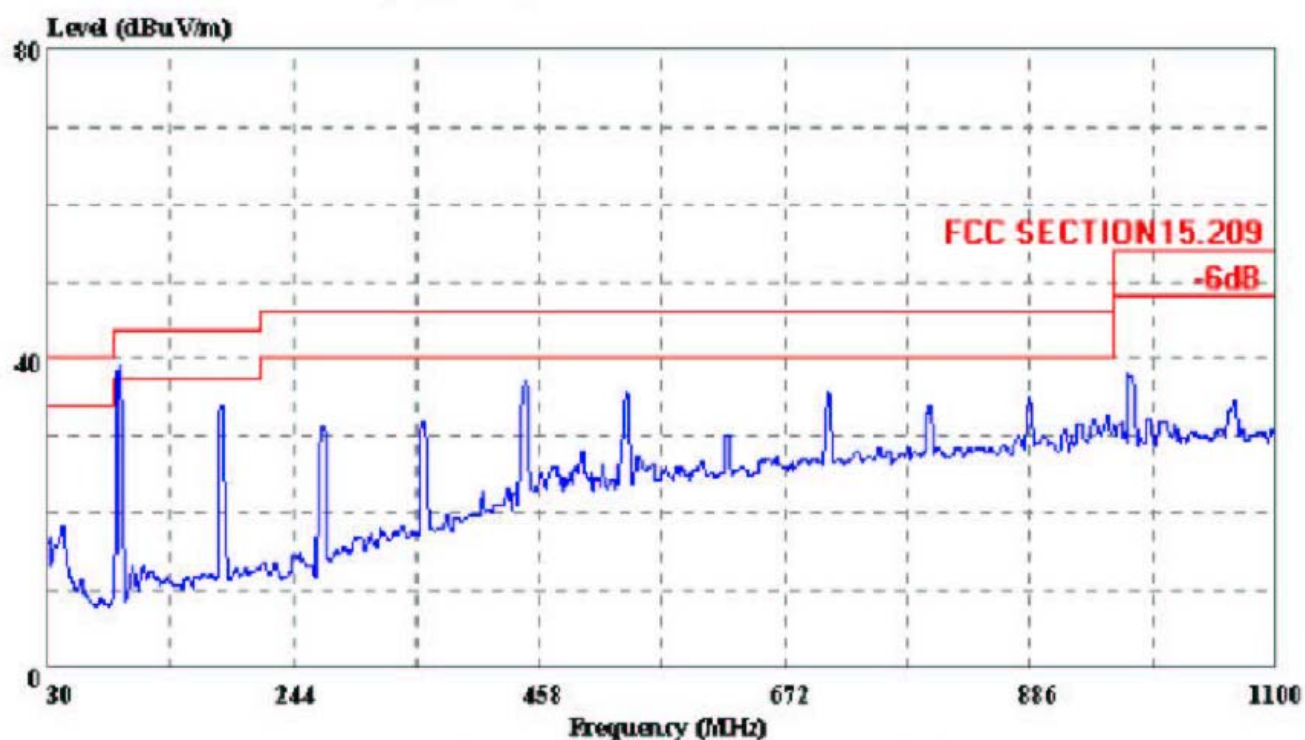
: Charger for iPod m/n: Z-1300i

power : DC 12.0V

memo : TX 88.1MHz (30Pin input)

manuf : ZONOKI

sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA VERTICAL

eut : Vehicle FM transmitter with Power

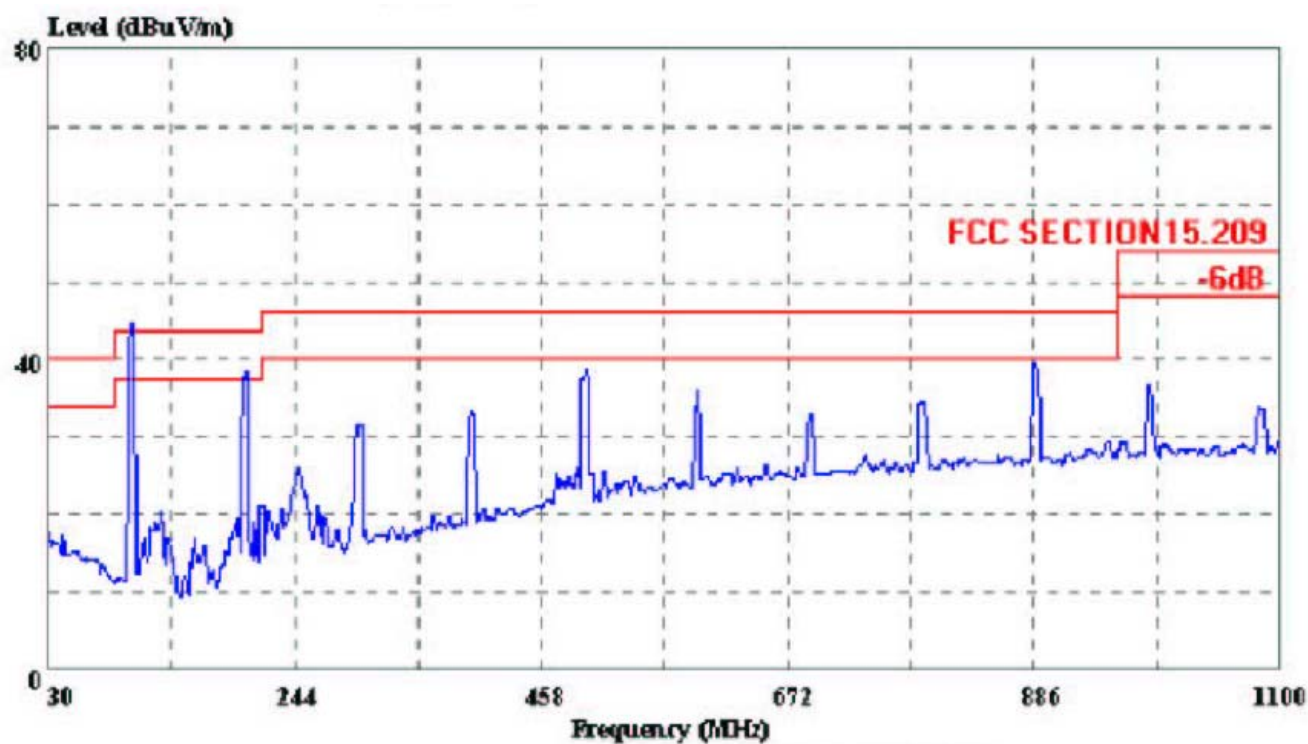
: Charger for iPod m/n:Z-1300i

power : DC 12.0V

memo : TX 88.1MHz (30Pin input)

manuf : ZONOKI

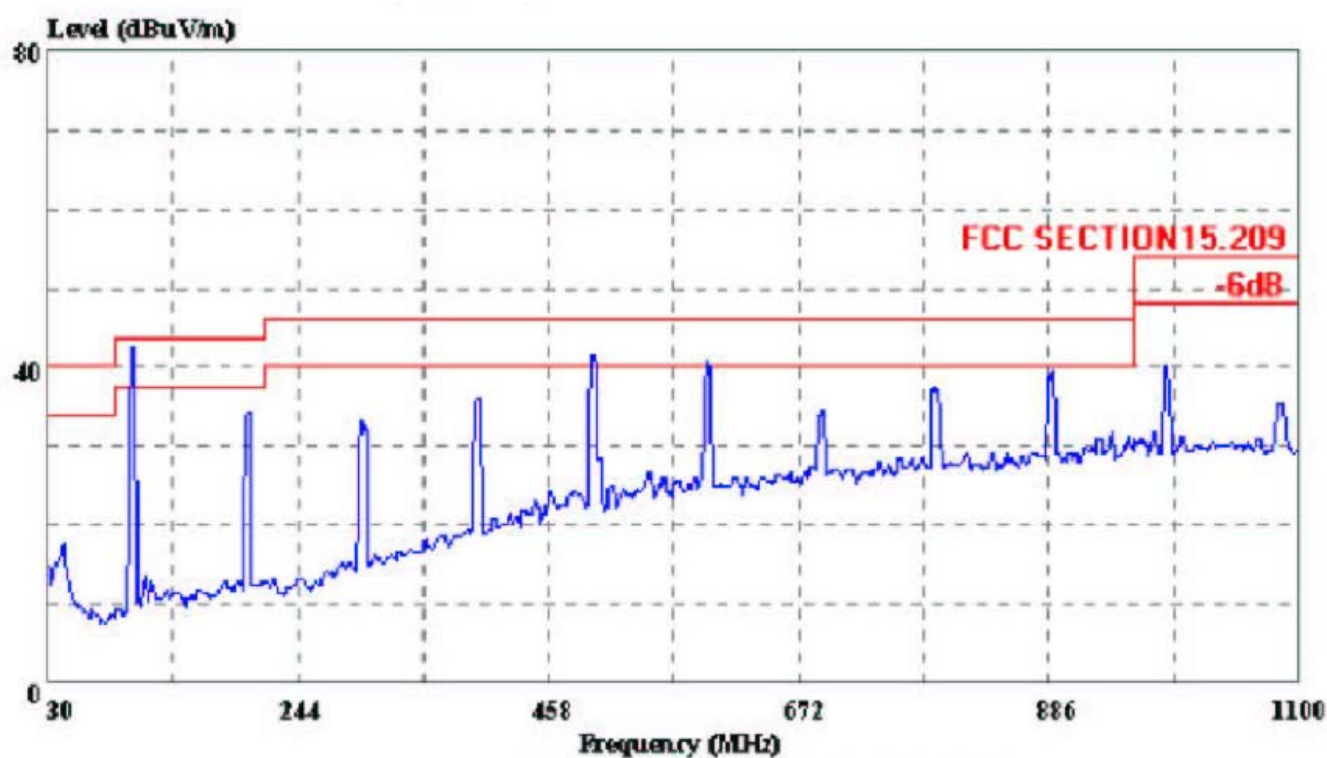
sample no.: 063019



Trace:

Ref Trace:

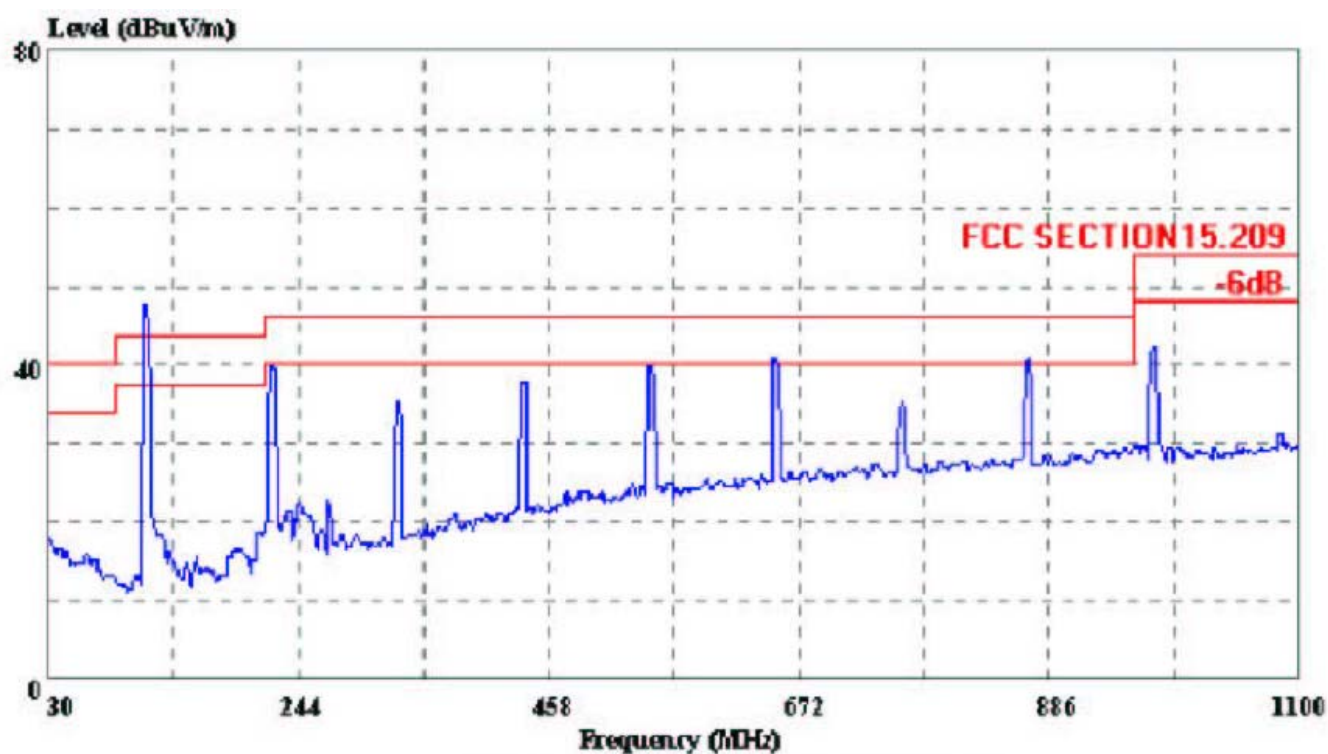
Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA HORIZONTAL
 eut : Vehicle FM transmitter with Power
 : Charger for iPod m/n:Z-1300i
 power : DC 12.0V
 memo : TX 98.1MHz (30Pin input)
 manuf : ZONOKI
 sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA VERTICAL
 eut : Vehicle FM transmitter with Power
 : Charger for iPod m/n:Z-13001
 power : DC 12.0V
 memo : TX 98.1MHz (30Pin input)
 manuf : ZONOKI
 sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA HORIZONTAL

eut : Vehicle FM transmitter with Power

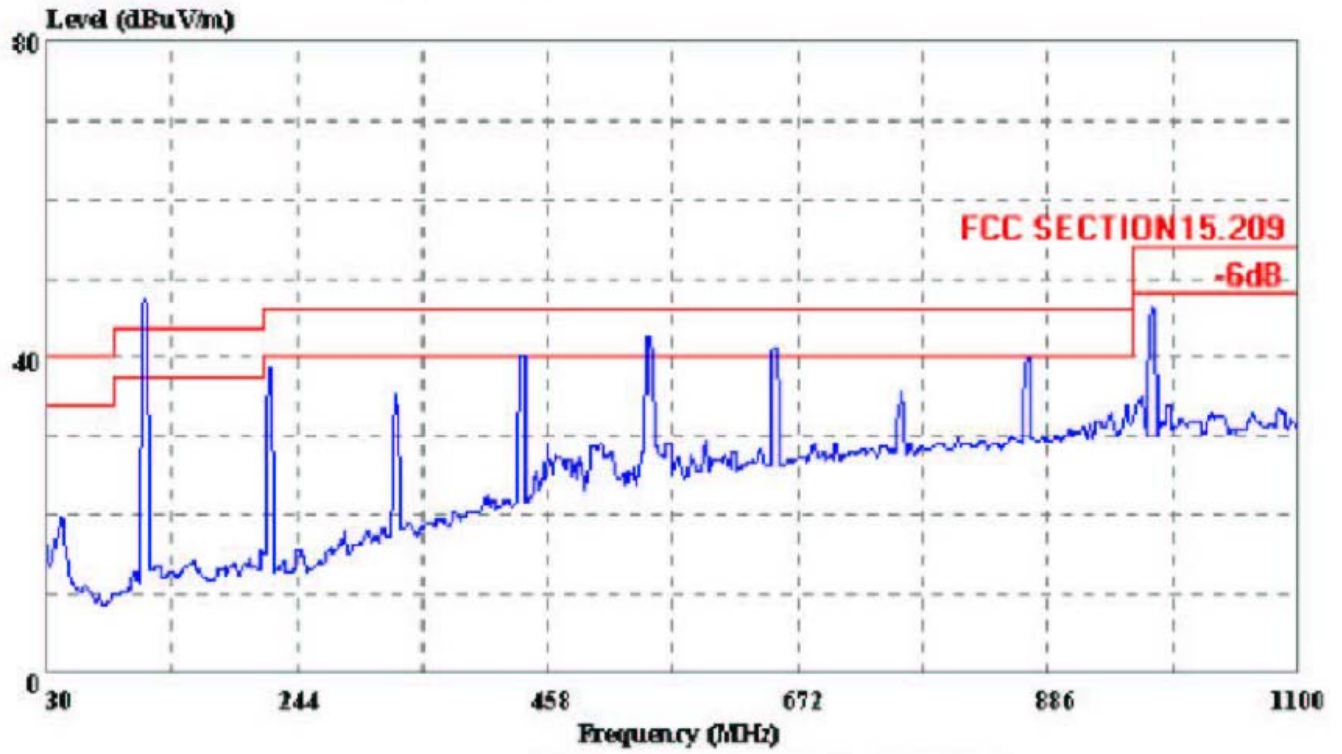
: Charger for iPod m/n:Z-1300i

power : DC 12.0V

memo : TX 107.9MHz (30Pin input)

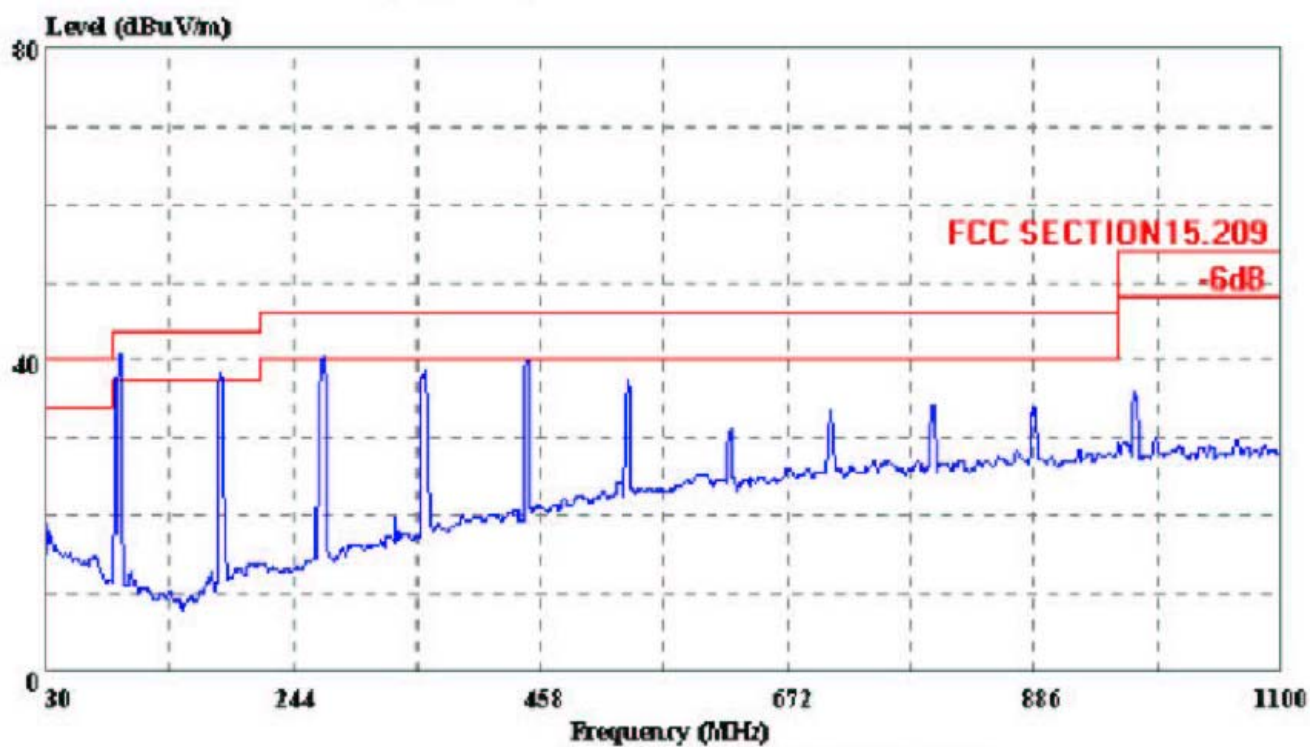
manuf : ZONOKI

sample no.: 063019



Trace: Ref Trace:

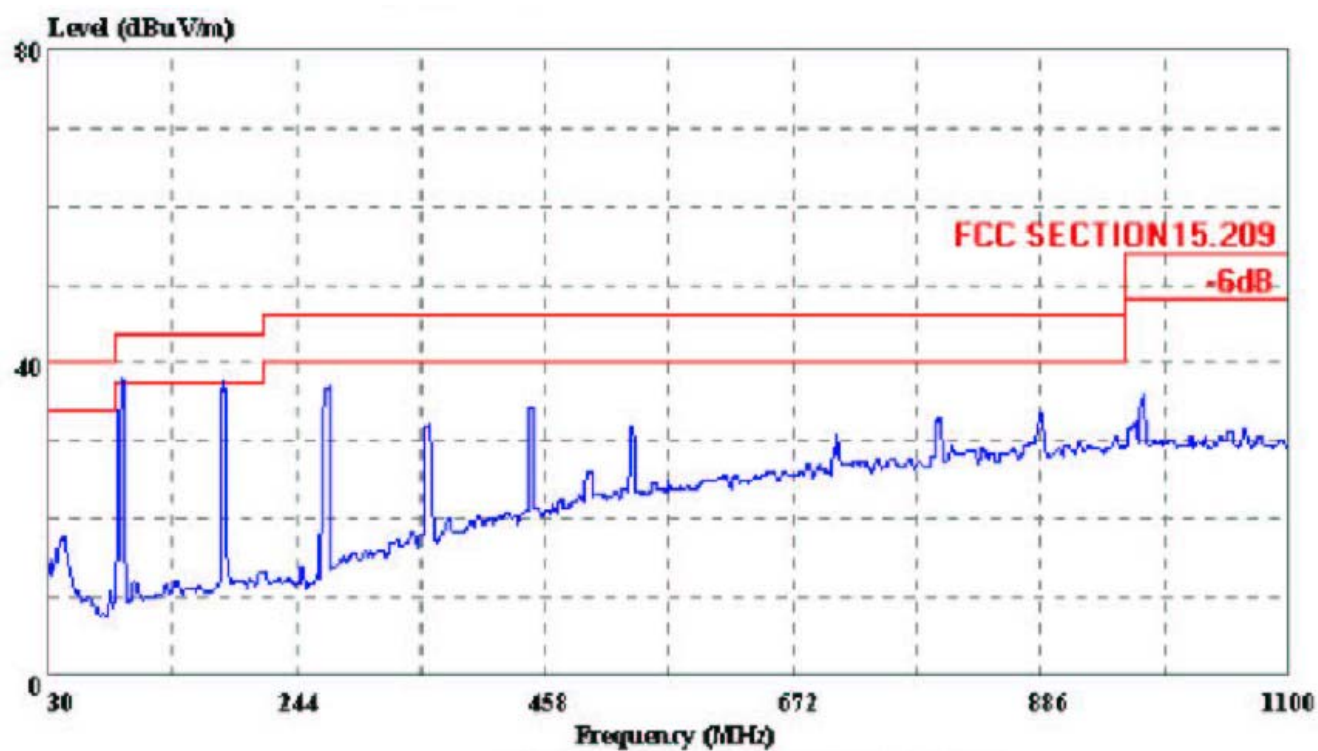
Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA VERTICAL
eut : Vehicle FM transmitter with Power
 : Charger for iPod m/n:Z-1300i
power : DC 12.0V
memo : TX 107.9MHz (30Pin input)
manuf : ZONOKI
sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA HORIZONTAL
 eut : Vehicle FM transmitter with Power
 : Charger for iPod m/n:Z-13001
 power : DC 12.0V
 memo : TX 88.1MHZ (Line in)
 manuf : ZONOKI
 sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA VERTICAL

eut : Vehicle FM transmitter with Power

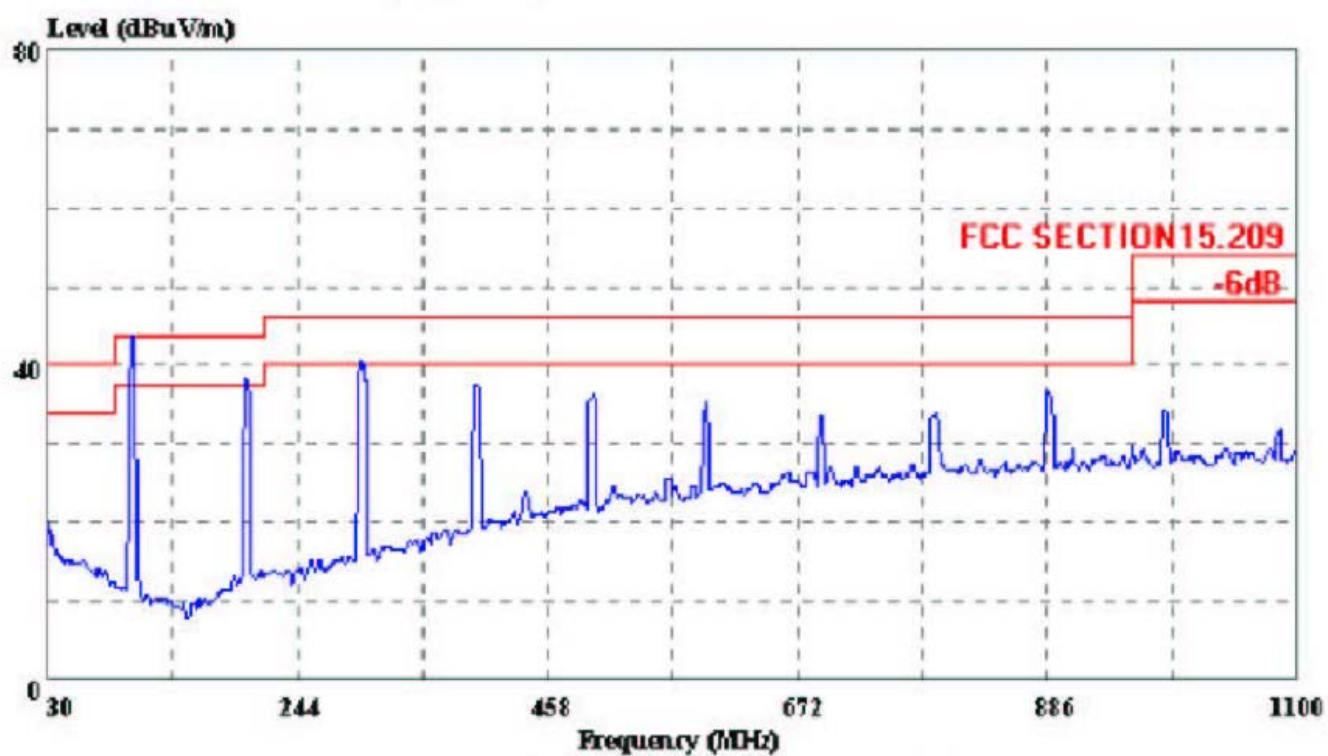
: Charger for iPod m/n:Z-1300i

power : DC 12.0V

memo : TX 88.1MHz (Line in)

manuf : ZONOKI

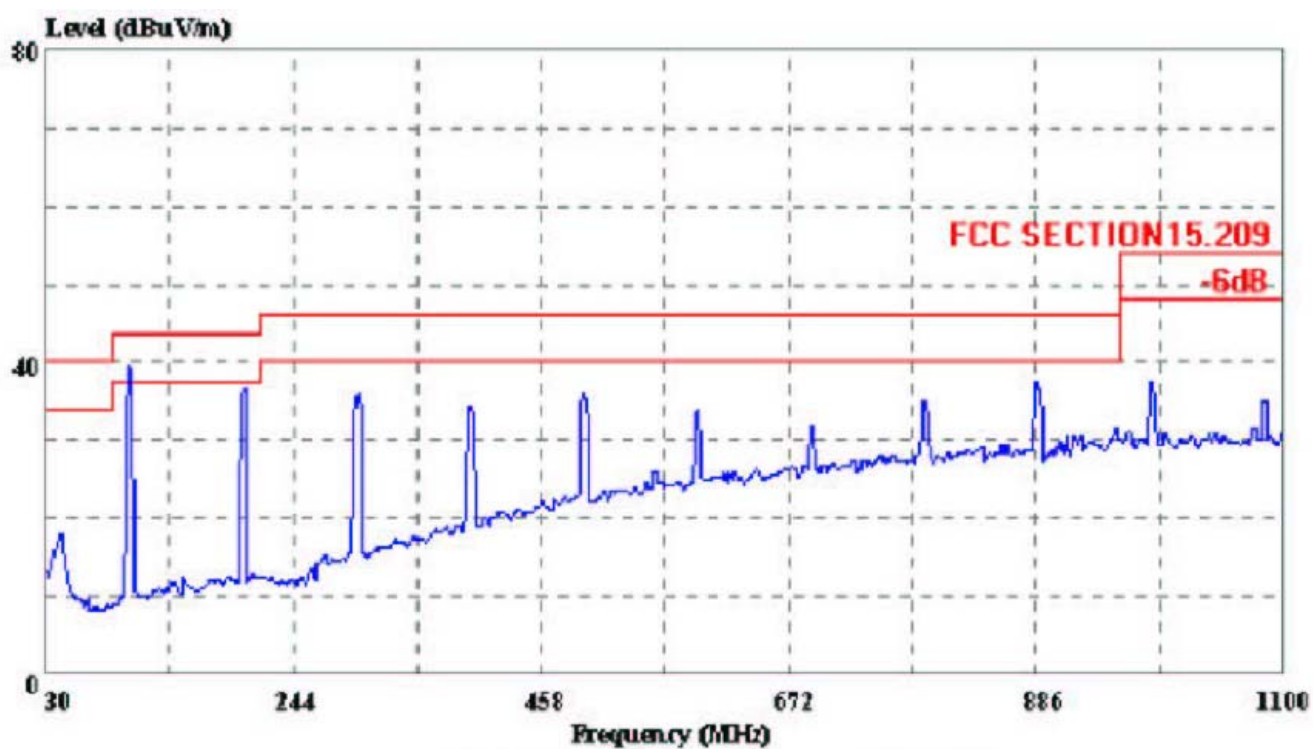
sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA HORIZONTAL
 eut : Vehicle FM transmitter with Power
 : Charger for iPod m/n:Z-1300i
 power : DC 12.0V
 memo : TX 98.1MHz (Line in)
 manuf : ZONOKI
 sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC FCC15C ANTENNA VERTICAL

eut : Vehicle FM transmitter with Power

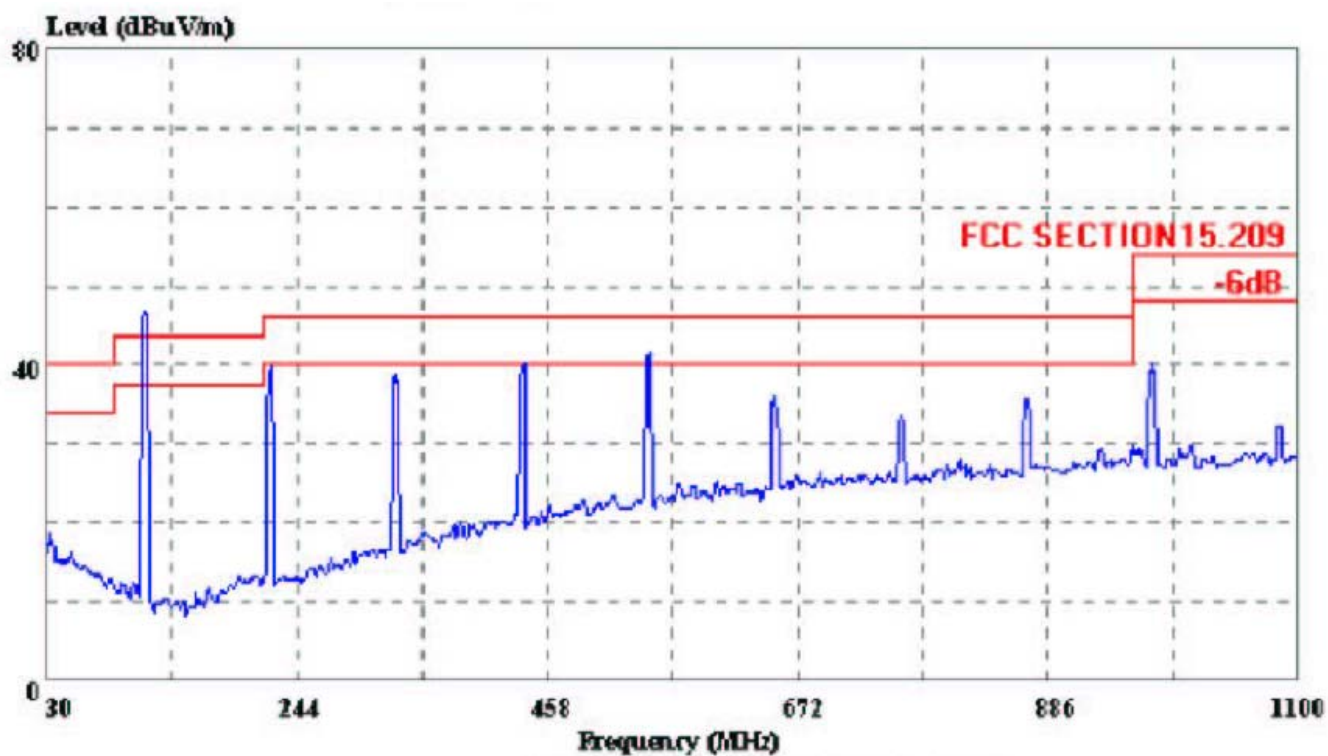
: Charger for iPod m/n:Z-1300i

power : DC 12.0V

memo : TX 98.1MHz (Line in)

manuf : ZONOKI

sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION 15.209 3m ATC FCC15C ANTENNA HORIZONTAL

eut : Vehicle FM transmitter with Power

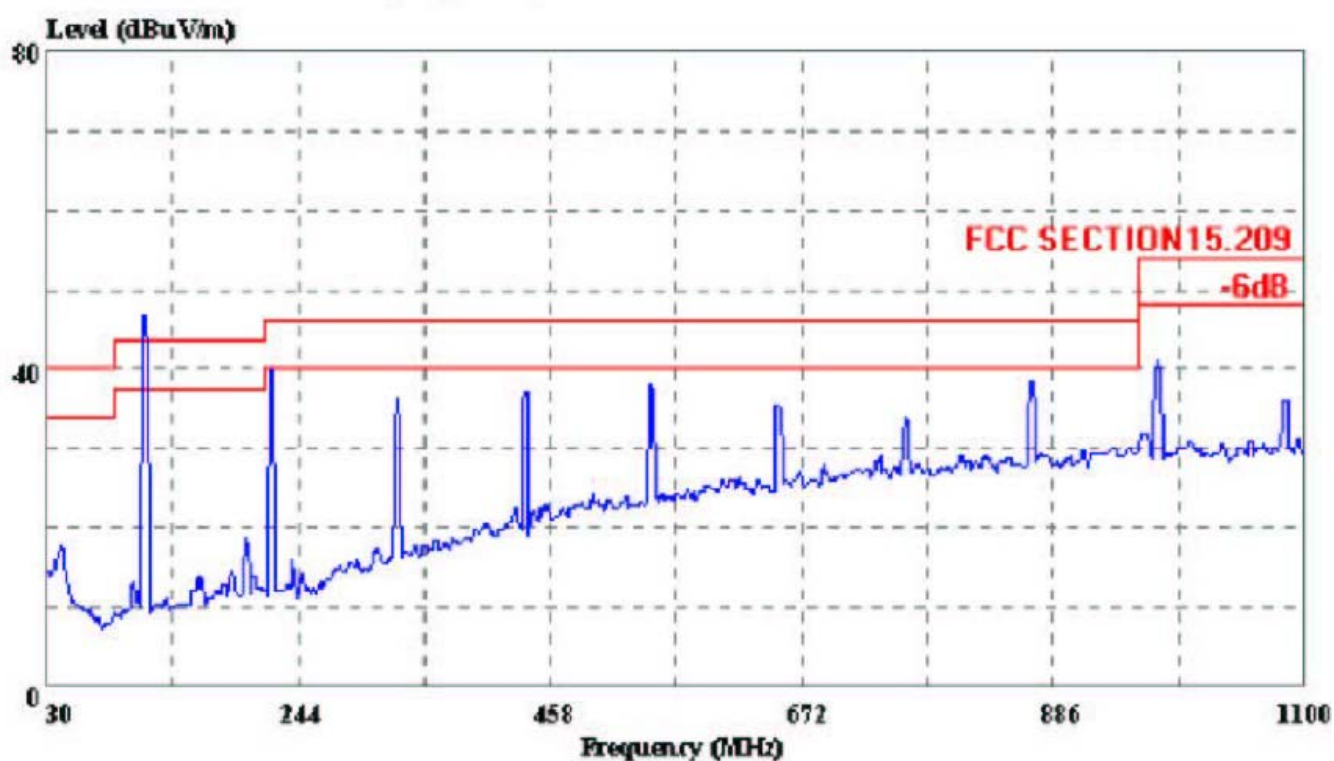
: Charger for iPod m/n: Z-13001

power : DC 12.0V

memo : TX 107.9MHz (Line in)

manuf : ZONOKI

sample no.: 063019



Trace:

Ref Trace:

Condition: FCC SECTION15.209 3m ATC FCC15C ANTENNA VERTICAL

eut : Vehicle FM transmitter with Power

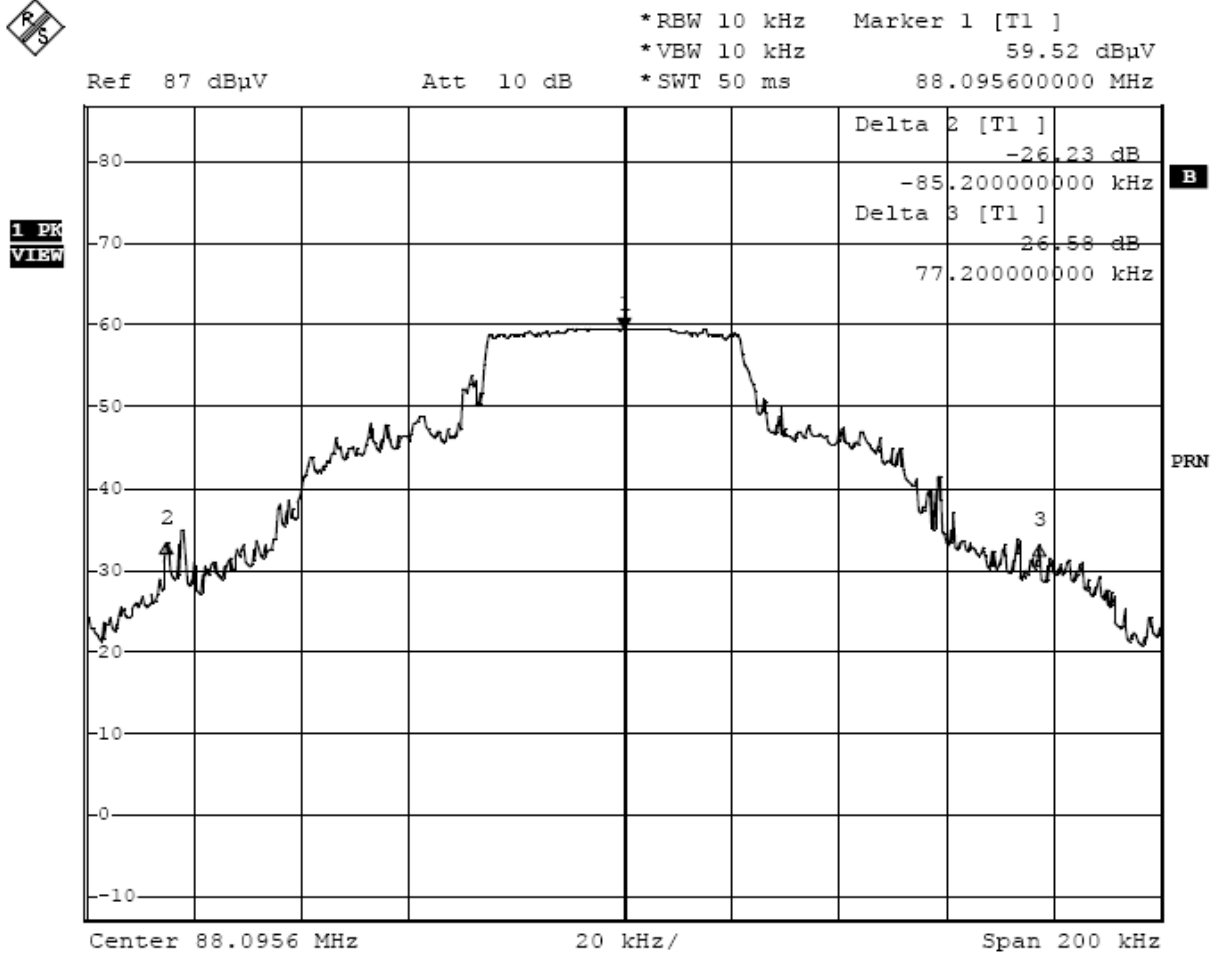
: Charger for iPod m/n:Z-1300i

power : DC 12.0V

memo : TX 107.9MHz (Line in)

manuf : ZONOKI

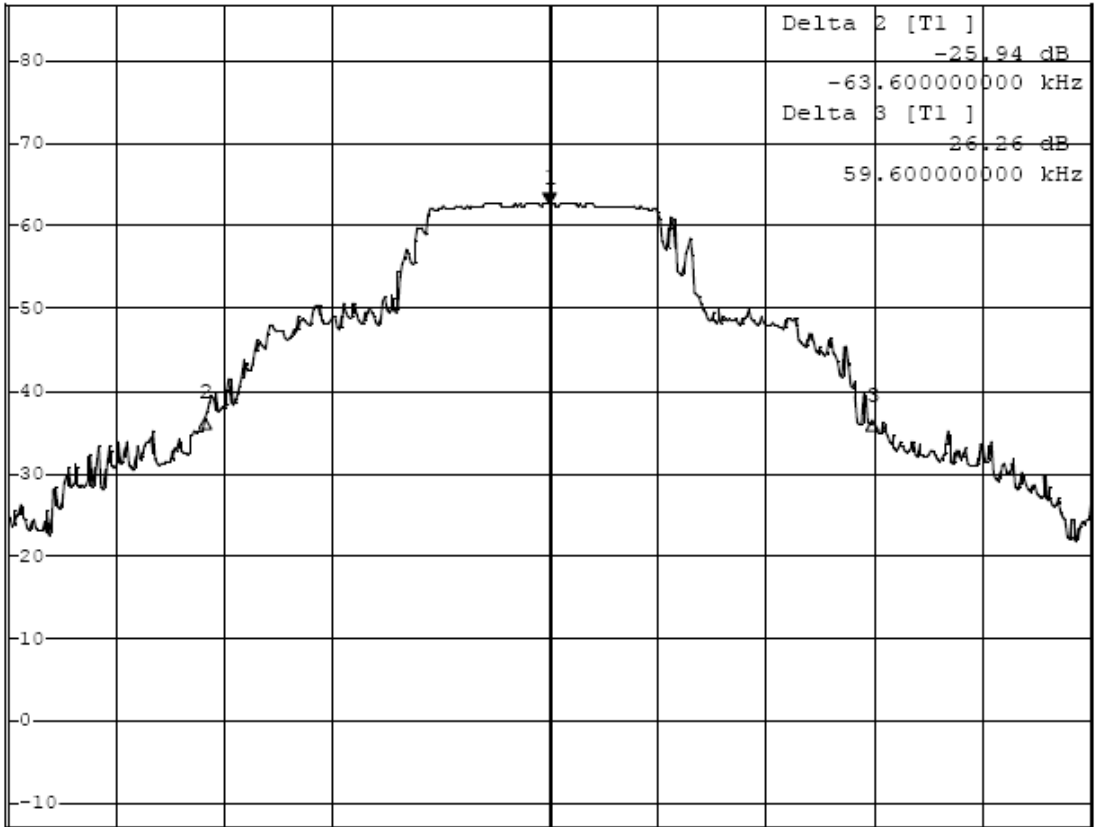
sample no.: 063019





Ref 87 dBuV Att 10 dB *RBW 10 kHz Marker 1 [T1]
*VBW 10 kHz 62.69 dBuV
*SWT 50 ms 98.096400000 MHz

1 PK
VIEW



B

PRN

Center 98.0964 MHz 20 kHz/ Span 200 kHz

