

Test Report of FCC Part 15 C for FCC Certificate
On Behalf of
PRODIGY XP ELECTRONICS TECHNOLOGY CO

Product description: FM Transmitter
Model No.: ES0909, ES0904
FCC ID: U9I-ES0909

Prepared for: PRODIGY XP ELECTRONICS TECHNOLOGY CO

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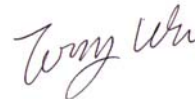
Test Date: April 20~25, 2007

Test by:

Reviewed By:



Kendy Wang



Tony Wu

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Bontek Compliance Laboratory Ltd.

TABLE OF CONTENTS

1 - GENERAL INFORMATION	3
1.1 Product Description for Equipment Under Test (EUT)	3
1.2 Related Submittal(s) / Grant (s)	3
1.3 Test Methodology	4
1.4 Test Facility	4
2. SYSTEM TEST CONFIGURATION	5
2.1 EUT Configuration	5
2.2 EUT Exercise	5
2.3 General Test Procedures	5
2.4 List of Measuring Equipments Used	6
3. SUMMARY OF TEST RESULTS	7
4. TEST OF CONDUCTED EMISSION	8
4.1 Applicable Standard	8
4.2 Test Setup Diagram	8
5- RADIATED EMISSIONS	9
5.1 Limit of Radiated Emissions (FCC 47 CFR 15.209 Class B):	9
5.2 Test Equipment Used	9
5.3 EUT Setup	9
5.4 Test Procedure	10
5.5 Test Result	10
6- OCCUPIED BANDWIDTH	13
6.1 Requirement of Occupied Bandwidth	13
6.2 Test Procedure	13
6.3 Test Equipment Used	13
6.4 Emissions within Band Edges Test Result	13

1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant: **PRODIGY XP ELECTRONICS TECHNOLOGY CO**
Address of Applicant: 6F, Room 11, Harry Ind Bldg, 49-51 Au Pui Wan Street, Hong Kong
Manufacturer: **PRODIGY XP ELECTRONICS TECHNOLOGY CO**
Address of Manufacturer: 6F, Room 11, Harry Ind Bldg, 49-51 Au Pui Wan Street, Hong Kong

EUT Description: FM Transmitter
Trade Name: N/A
Model No.: ES0909, ES0904
Remark: the difference between the two models is the color of LED used in the front surface. ES0909 use 5 green LED and ES0904 use 5 red LED.
ES0909 is the representative model used for test.
Rated Voltage DC 3V (2 x1.5VAA alkaline battery) for Transmitter
Frequency Range 88.1~88.9MHz
Number of Channels 5 channels
Channel Allocation 88.1MHz, 88.3MHz, 88.5MHz, 88.7MHz, 88.9MHz,
Channel Separation 200kHz
Product Class: Low Power Communication Device Transmitter
Measurement Procedure ANSI C63.4-2003

Remark: * The test data gathered are from the production sample provided by the manufacturer.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The following Declaration of Conformity report of EUT is prepared in accordance with FCC Rules and Regulations Part 15 Subpart C Section15.239

The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

All measurement required was performed at laboratory of Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 759397

Solid Industrial., 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 759397, Nov 04, 2003.

2. SYSTEM TEST CONFIGURATION

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C Section 15.239.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 List of Measuring Equipments Used

Table 1: Test Equipment for Emission Test

Equipment	Manufacturer	Model No.	Last Cal	Calibration Period
EMC Analyzer	Agilent	E7402A	2006/11	1 year
EMI Test Receiver	R&S	ESS	2006/11	1 year
Spectrum Analyzer	ADVANTEST	R3263	2006/8	1 year
RF Selector	TOYO	NS4901A	2006/11	1 year
Pre Amplifier	Anritsu	MH648A	2006/11	1 year
Bilog Antenna	CHASE	CBL6111A	N/A	N/A
Signal Generator	R&S	SMG	N/A	N/A
Turn Disc	HD	DS4150S	N/A	N/A
Power Reflection Meter	R&S	NAP	2006/11	1 year
RF Power Amplifier	TOYO	AS300SSS	2006/11	1 year
Isotropic Field Monitor	AR	FM2000	2006/11	1 year
Antenna Mast	HD	MA2400	N/A	1 year
Distortion Meter	HM-250	KNEWOOD	N/A	N/A
Synthesized Function Generator	FC110	YOKOGAWA	2006/11	1 year
Distortion Meter	MEGURO	MAK-6578A	2006/11	1 year
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	2006/11	1 year
Oscilloscope	LEADER	LS1020	N/A	1 year
Function Generator	National	VP-7422A	N/A	N/A
Signal Generator	R&S	SMG	2006/11	1 year
Remote Controller	TOYO	MAC	2006/11	1 year
Fast Transient Burst Generator	SCHAFFENR	NSG3025	2006/11	1 year
AC Power Supply	KIKUSUI	PCR2000L	2006/11	1 year
Electrostatic Discharge Simulator	Noiseken	ESS-200AX	2006/11	1 year
AC Power Supply	KIKUSUI	PCR4000L	2006/11	1 year

Table 2: General Description of Test Auxiliary

Description:	Manufacturer	Model No.	Serial No.	Certificate
Notebook	Haier	W66-730256060BD	JB054N00000JG69J1057	CE, FCC
Mouse	A4TECH	RFW-5	SD08451275D	CE, FCC
AC Adapter	DELTA	SADP-65KB B	1LW0635008427	CE, FCC

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.207	Disturbance Voltage at The Mains Terminals	N/A, without AC power supply
15.239	Radiation Emission	Pass
15.239	Occupied Bandwidth	Pass

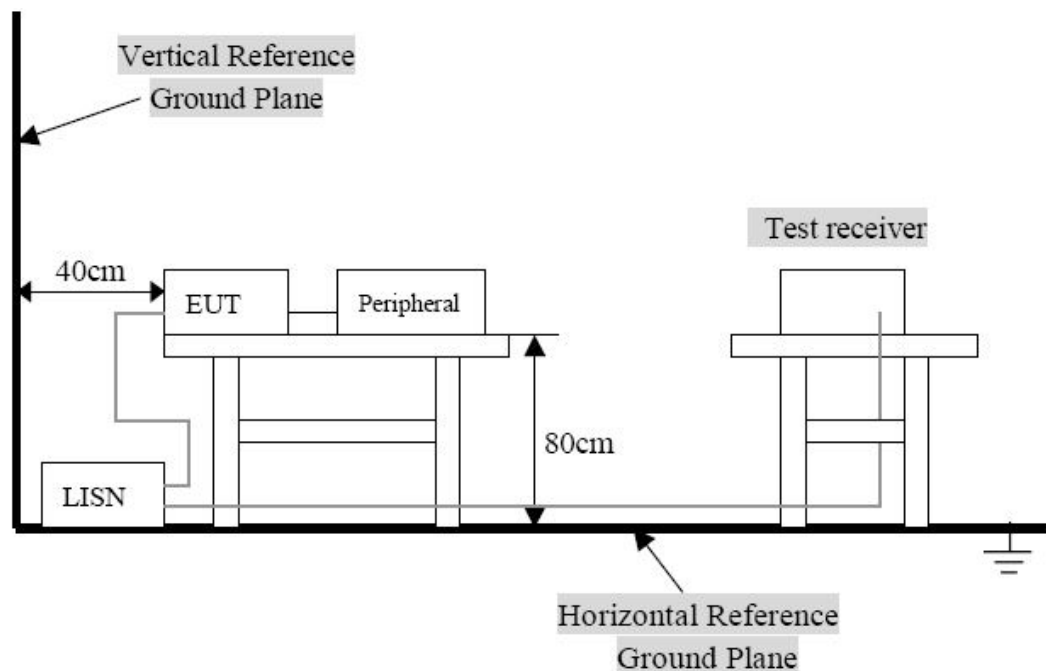
4. TEST OF CONDUCTED EMISSION

4.1 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

4.2 Test Setup Diagram



- Remark: 1. The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC 15.207 limits.
2. The EUT is excluded from investigation of Disturbance Voltage at The Mains Terminals, for it is powered by DC 3V (2 x1.5VAA alkaline) battery. According to the Section 15.207(d), measurement to demonstrate compliance with the limits of Disturbance Voltage at The Mains Terminals are not required to the devices which only employed battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

5- RADIATED EMISSIONS

5.1 Limit of Radiated Emissions (FCC 47 CFR 15.209 Class B):

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

5.2 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal	Calibration Period
EMC Analyzer	Agilent	E7402A	2006/11	1 year
EMI Test Receiver	R&S	ESS	2006/11	1 year
Pre Amplifier	Anritsu	MH648A	2006/11	1 year
Bilog Antenna	CHASE	CBL6111A	2006/11	1 year
Turn Disc	HD	DS4150S	N/A	N/A
Antenna Mast	HD	MA2400	N/A	N/A

5.3 EUT Setup

Radiated Measurement Setup

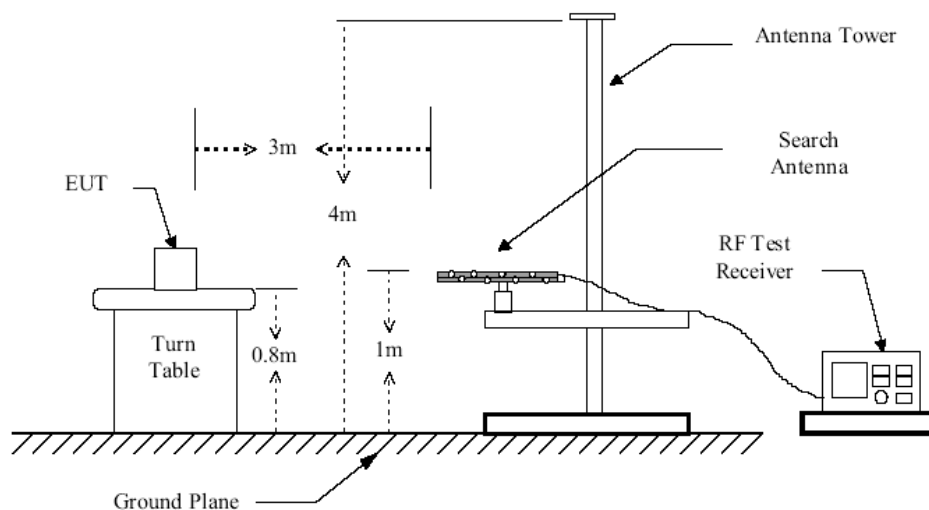


Figure 1 : Frequencies measured below 1 GHz configuration

5.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

- 1). Configure the EUT according to ANSI C63.4:2003.
- 2). The EUT was placed on the top of the turntable 0.8 meter above ground.
- 3). The receiving antenna was placed 3 meters far away from the turntable.
- 4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 5). For Spurious Emissions test, The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 6). For Field Strength of Fundamental Emissions test, Positioned the loop antenna with its plane vertical at the specified distance of 3 meters between its center and the EUT. The center of the loop antenna is set with 1m above the grounded plane. Then rotated about its vertical axis for finding out the maximum emission level of the EUT.

5.5 Test Result

Temperature (°C) : 22~23	EUT: FM Transmitter
Humidity (%RH) : 50~54	M/N: ES0909
Barometric Pressure (mbar) : 950~1000	Operation Condition: Normal Operating

Note: The notebook is playing typical MP3 song and the notebook is adjusted to maximum volume.

Fundamental Emission Test Data

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
88.1153	40.3	46.8	68.0	27.7	21.2
Average Measurement					
88.1153	37.9	44.4	48.0	10.1	3.6

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
88.5141	41.2	47.1	68.0	26.8	20.9
Average Measurement					
88.5141	37.4	43.3	48.0	10.6	4.7

Peak Measurement					
Test Frequency (MHz)	Measuring Level (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
88.9135	40.9	48.5	68.0	27.1	19.5
Average Measurement					
88.9135	36.8	44.4	48.0	11.2	3.6

Harmonics & Spurious Emission

Spurious Emission							
Maximum Frequency (MHz)	Position and Level				Limit (dB μ V/m)	Margin (dB)	Detector Mode
	Ant.Pol. H/V	Reading (dBuV)	Correction Factor (dBuV/m)	FS (dBuV/m)			
59.980	V	37.80	-20.14	17.66	40.00	-22.34	Q
86.420	V	40.10	-17.35	22.75	40.00	-17.25	Q
120.070	V	34.80	-13.78	21.02	43.50	-22.48	Q
130.210	V	35.10	-13.68	21.42	43.50	-22.08	Q
176.340	V	37.50	-14.59	22.91	43.50	-20.59	Q
444.490	V	30.20	-4.91	25.29	46.00	-20.71	Q
46.490	H	40.80	-16.35	24.45	40.00	-15.55	Q
57.280	H	45.80	-19.61	26.19	40.00	-13.81	Q
176.400	H	41.70	-14.59	27.11	43.50	-16.39	Q
240.140	H	33.70	-11.55	22.15	46.00	-23.85	Q
250.020	H	33.70	-10.83	22.87	46.00	-23.13	Q
529.700	H	32.20	-2.46	29.74	46.00	-16.26	Q

6- OCCUPIED BANDWIDTH

6.1 Requirement of Occupied Bandwidth

Emission from the intentional radiator shall be confined within a band 200kHz wide centered on the operation frequency. The 200kHz band shall lie wholly within the frequency range of 88~108MHz.

6.2 Test Procedure

- 1). The EUT was placed on the top of the turntable 0.8 meter above ground.
- 2). The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 3). Power on the EUT and all the supporting units.
- 4). The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 5). For each suspected emission, the antenna tower was scanned (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading of both horizontal and vertical polarization.
- 6). Set EMI test receiver with Max hold. Mark peak, -20dB.

6.3 Test Equipment Used

Equipment	Manufacturer	Model No.	Last Cal	Calibration Period
Spectrum Analyzer	ADVANTEST	R3263	2006/8	1 year
EMI Test Receiver	R&S	ESS	2006/11	1 year
Pre Amplifier	Anritsu	MH648A	2006/11	1 year
Bilog Antenna	CHASE	CBL6111A	2006/11	1 year
Turn Disc	HD	DS4150S	N/A	N/A
Antenna Mast	HD	MA2400	N/A	N/A

6.4 Emissions within Band Edges Test Result

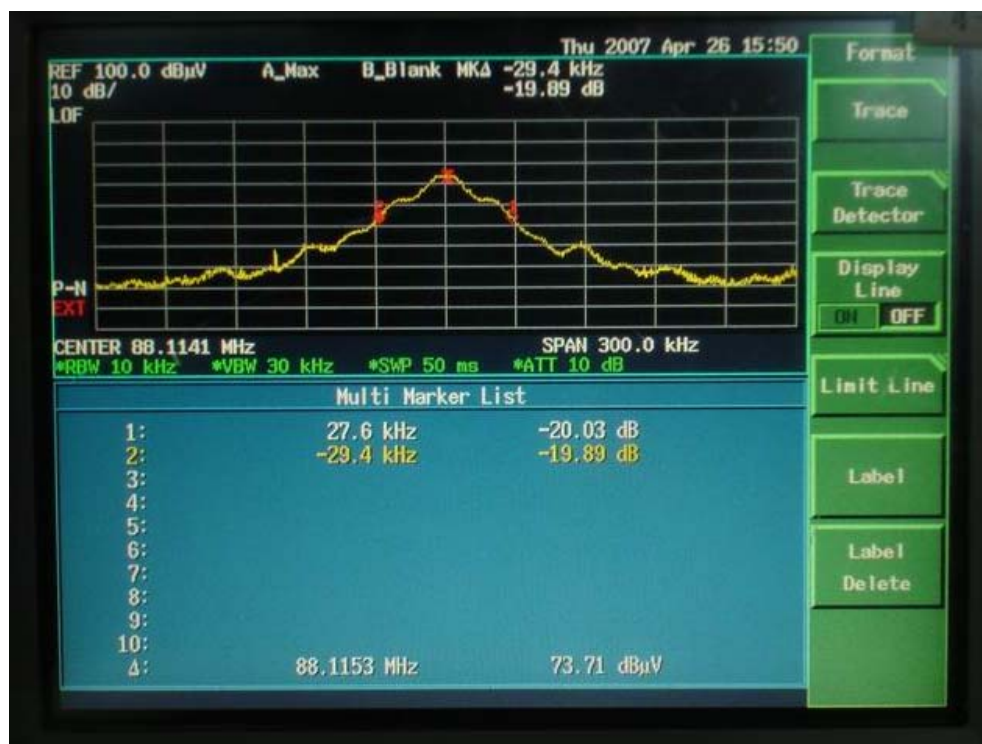
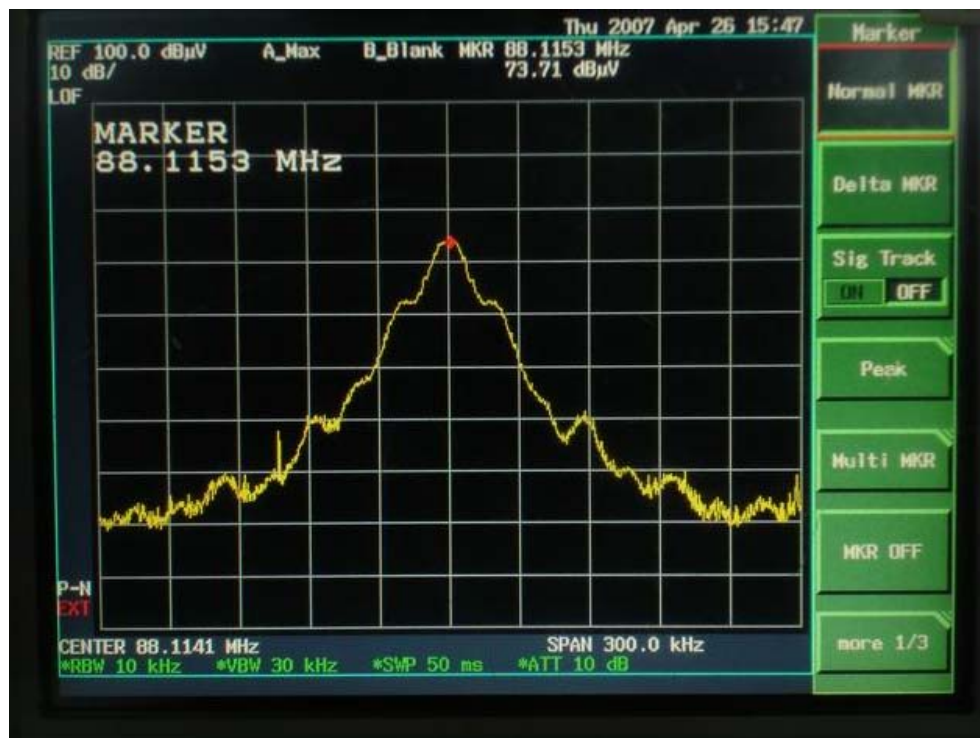
Temperature (°C) : 22~23	EUT: FM Transmitter
Humidity (%RH) : 50~54	M/N: ES0909
Barometric Pressure (mbar) : 950~1000	Operation Condition: Normal Operating

Note: The notebook is playing typical MP3 song and the notebook is adjusted to maximum volume.

Test plots see following:

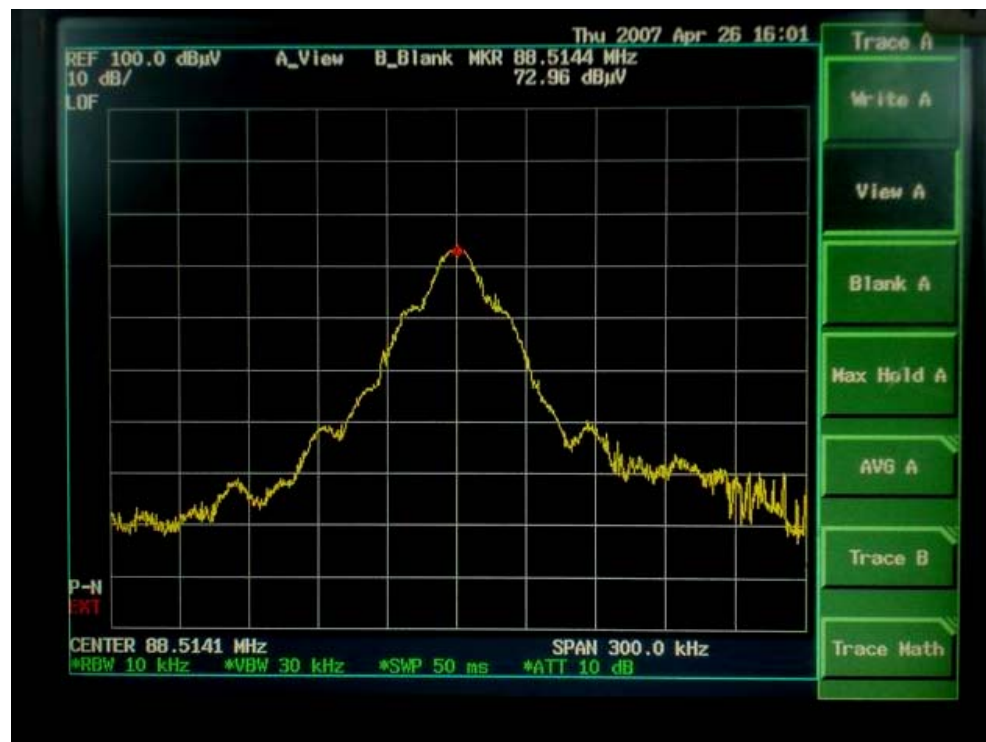
1. Play typical song

Channel Low: 88.1MHz



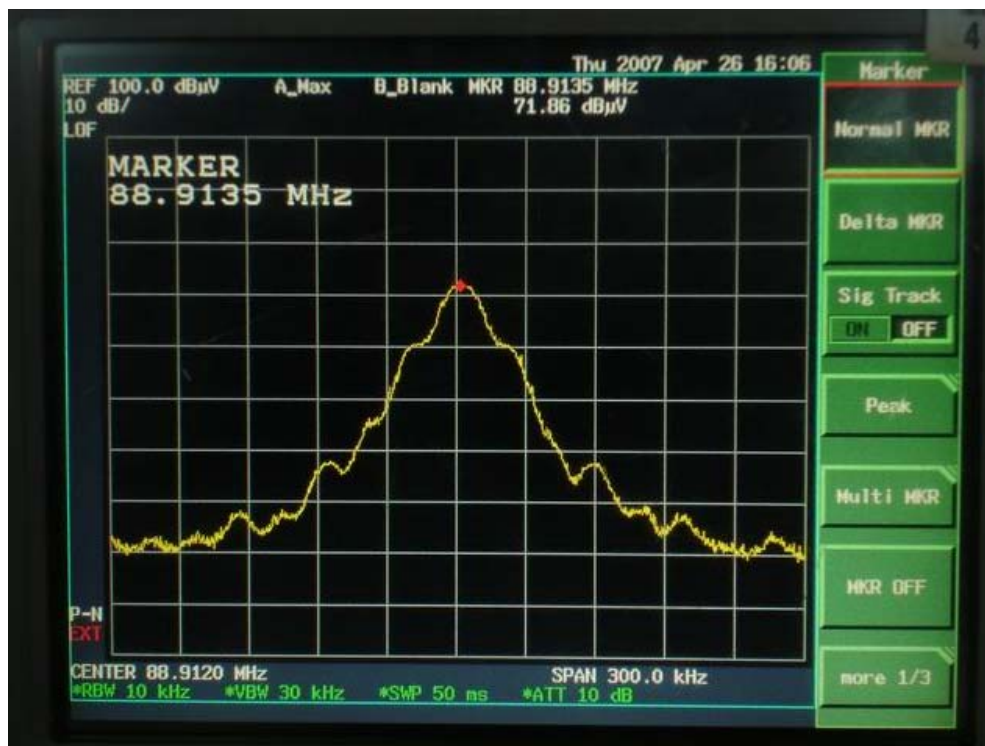
The 20dB bandwidth of the emission is 57kHz

Channel Low: 88.5MHz



The 20dB bandwidth of the emission is 62kHz

Channel Low: 88.9MHz



The 20dB bandwidth of the emission is 62kHz