

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

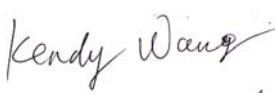
Product description: FM Transmitter
Model No.: ES0909, ES0904
FCC ID: U9I-ES0909

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

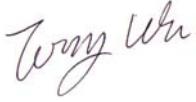
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Test by: **Reviewed By:**



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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 as 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 |

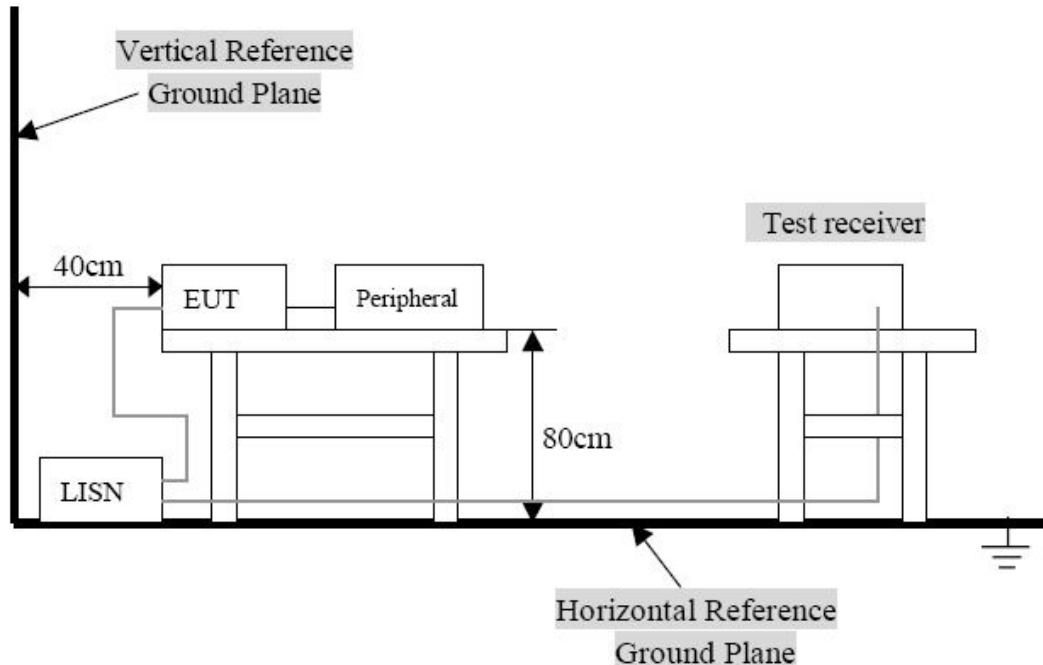
4. TEST OF CONDUCTED EMISSION

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

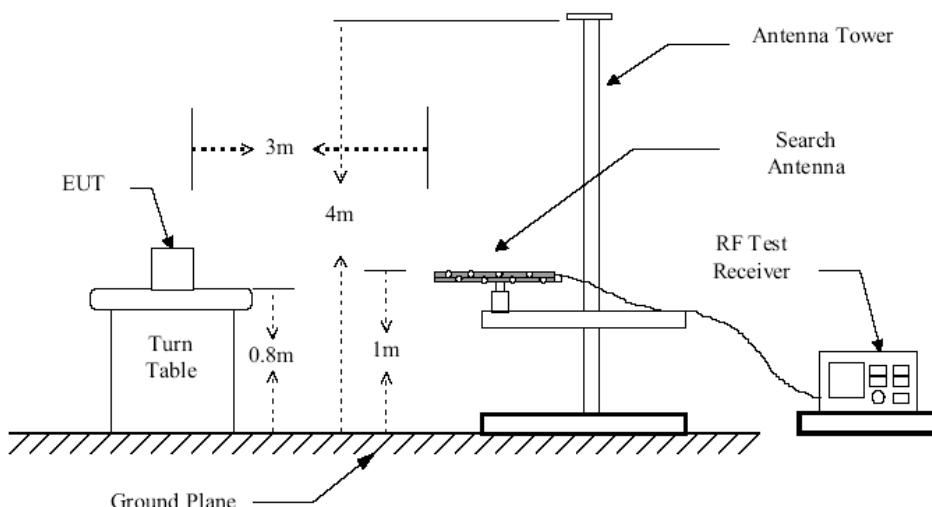


Figure 1 : Frequencies measured below 1 GHz configuration

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 (dB μ V) | Correction Factor (dB μ V/m) | FS (dB μ V/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

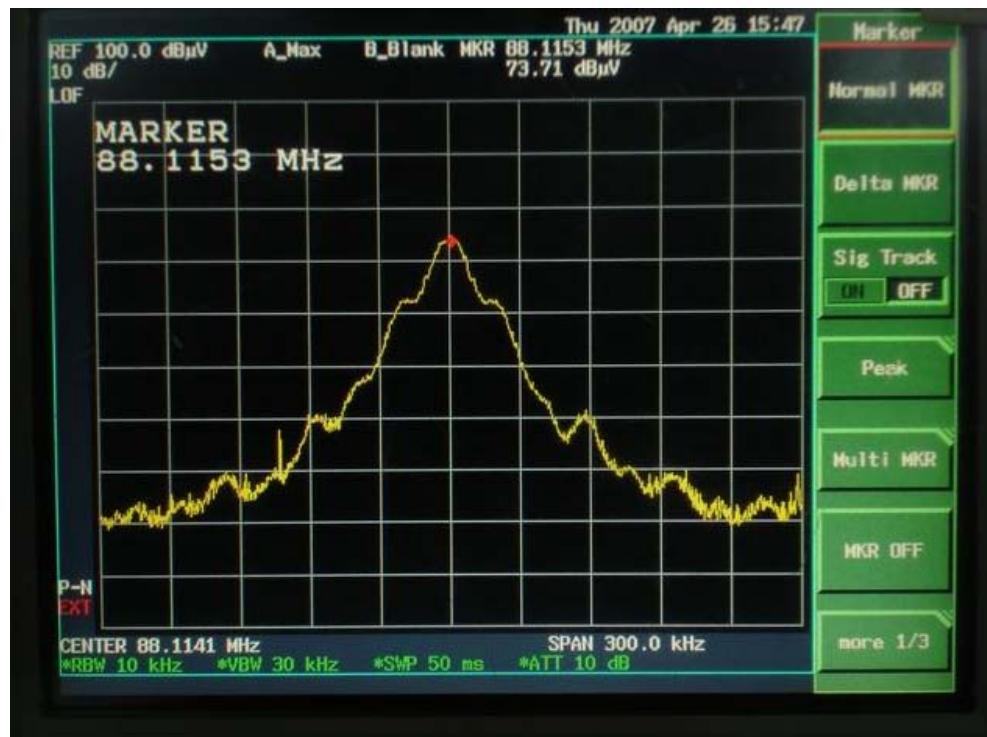
| | |
|---|---------------------------------------|
| Temperature (°C) : 22~23 | EUT: FM Transmitter |
| Humidity (%RH) : 50~54 | M/N: ES0909 |
| Barometric Pressure (mbar) : 950~1000 | Operation Condition: Normal Operating |

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

Test plots see following:

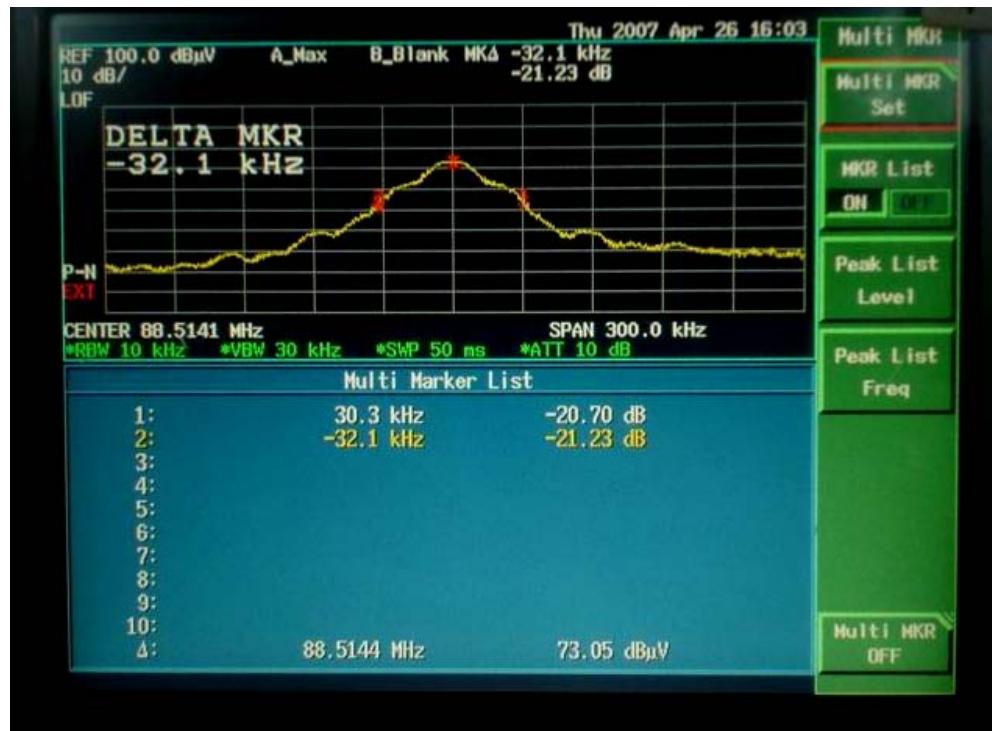
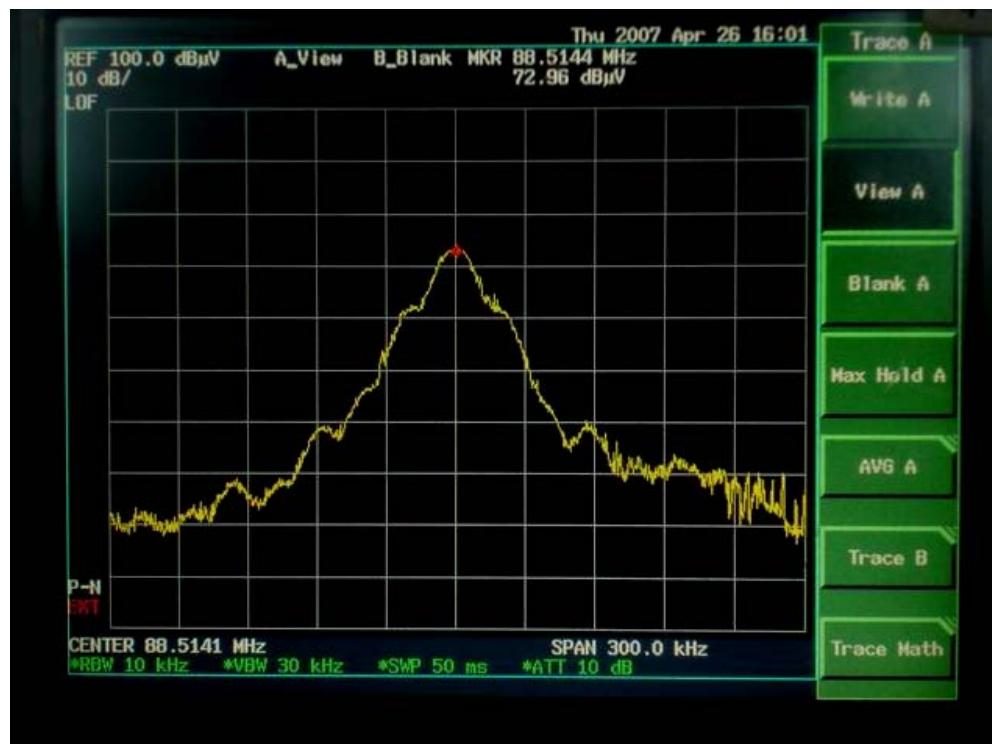
1. Play typical song

Channel Low: 88.1MHz



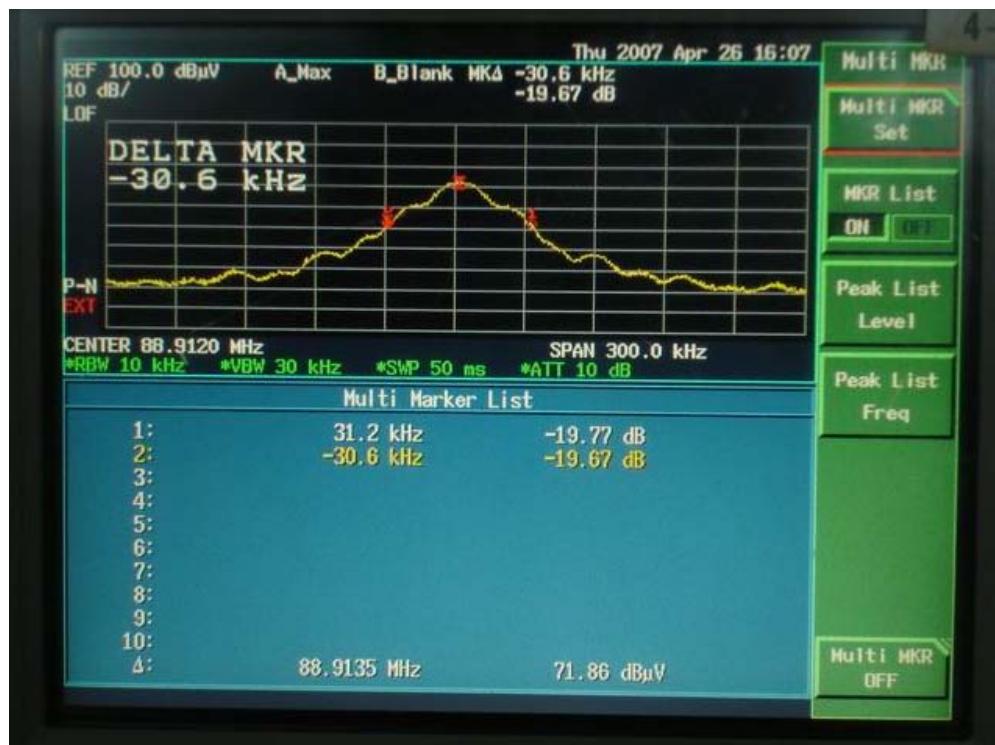
The 20dB bandwidth of the emission is 57kHz

Channel Low: 88.5MHz



The 20dB bandwidth of the emission is 62kHz

Channel Low: 88.9MHz



The 20dB bandwidth of the emission is 62kHz