Measurement Report

Product ..... ***: FM TRANSMITTER***
Applicant ..... ***: Hanming Industries Company***
FCC ID ..... ***: OYP21PHONE01***
Model ..... ***: SP-001***
Report No. ..... *: MLT0003P15003*
Test Date ..... ***: March 28,2000***

Test By

Max Light Technology Co.,Ltd.

Room 5, 8F, No.125, Section 3 Roosevelt Road,
Taipei, Taiwan., R.O.C.
Tel: 886-2-363-2447 Fax: 886-2-363-2597

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CERTIFICATION

We here by verify that :

The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4-1992. All test were conducted by *MLT (Max Light Technology Co.,Ltd) Room 5, 8F, No.125, Section 3 Roosevelt Road, Taipei, Taiwan, R.O.C* Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is in compliance radiated emission limit of FCC Rules Part 15 Subpart C Section 15.239.

EUT	: FM TRANSMITTER
Applicant	: HANMING INDUSTRIES COMPANY. UNIT B,5/F,HAVEN COMM. BLDG., 6-8 TSING FUNG ST., Hong Kong
Manufacturer	: SHENZHEN A POWER TECHNOLOGY CO.,LTD. E.5F,S.BLDG.,ZHONGHANGS SHAHE INDUSTRIAL AREA,OVERSEAS CHINESE TOWN,SHENZHE,CHINA
Model No	: SP-001
FCC ID	: OYP21PHONE01

Prepared by : _____ *Approved by :* _____

Country Huang *Roger Chen*

I. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of HANMING INDUSTRIES COMPANY. In support of an Intentional Periodic Radiator certification in accordance with Part2 Subpart J and Part 15 Subpart A And C of the Commission's and Regulations.

1.2 Description of EUT

EUT : FM TRANSMITTER

Applicant : HANMING INDUSTRIES COMPANY.
UNIT B,5/F,HAVEN COMM. BLDG.,
6-8 TSING FUNG ST., Hong Kong

Manufacturer : SHENZHEN A POWER TECHNOLOGY CO.,LTD.
E.5F,S.BLDG.,ZHONGHANGS SHAHE
INDUSTRIAL AREA,OVERSEAS CHINESE
TOWN,SHENZHE,CHINA

Model No : SP-001

FCC ID : OYP21PHONE01

Power Type : Powered by Batter (Size: AA)

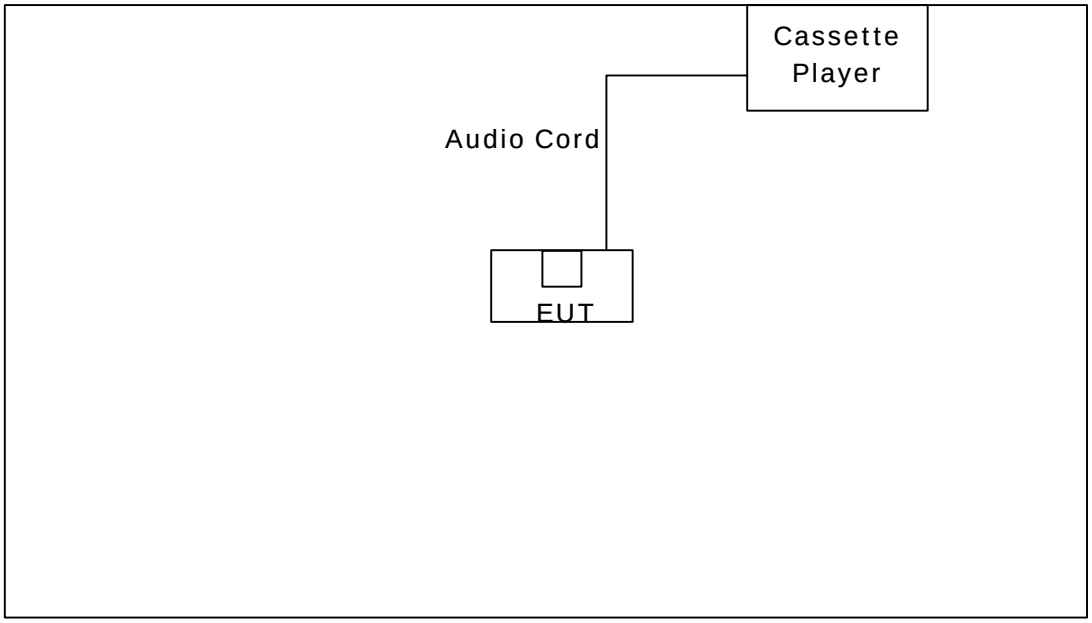
The EUT(SP-001) is wireless ear-phone's transmitter product. The operation frequency is 89.22MHz.Connect the audio input of emitter and the audio output of TV set or cassette player … by using the audio cord and hear the audio signal of TV set or cassette player … ,through your FM Radio. The receiver is FM radio. While testing the EUT was adjusted at a position which transmit the maximum.

1.3 Description of Support Equipment

In order to construct the minimum system which required by the ANSI C63.4-1991, following equipments were used as the support units.

Cassette Player : KOKA
Model No. : KW-240
Serial No. : KS3303

1.4 Configuration of System Under Test



During testing the EUT(FM TRANSMITTER) correctly insert two new batteries(size AA). Connect the audio input of emitter and the audio output of cassette player by using the audio cord.

1.5 Test Procedure

All measurements contained in this report were performed according to the techniques described in Measurement procedure ANSI C63.4-1992 "Measurement of Intentional Radiators."

1.6 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests was chosen as that which produced the highest emission levels. However, only those conditions which the EUT was considered likely to encounter in normal use were investigated.

II. Conducted Emissions Requirements

The EUT operates solely by the battery. According to the rule of Section 15.207(c), the EUT exempt to the power line conducted test.

III. Radiated Emissions Requirements

3.1 General & Setup :

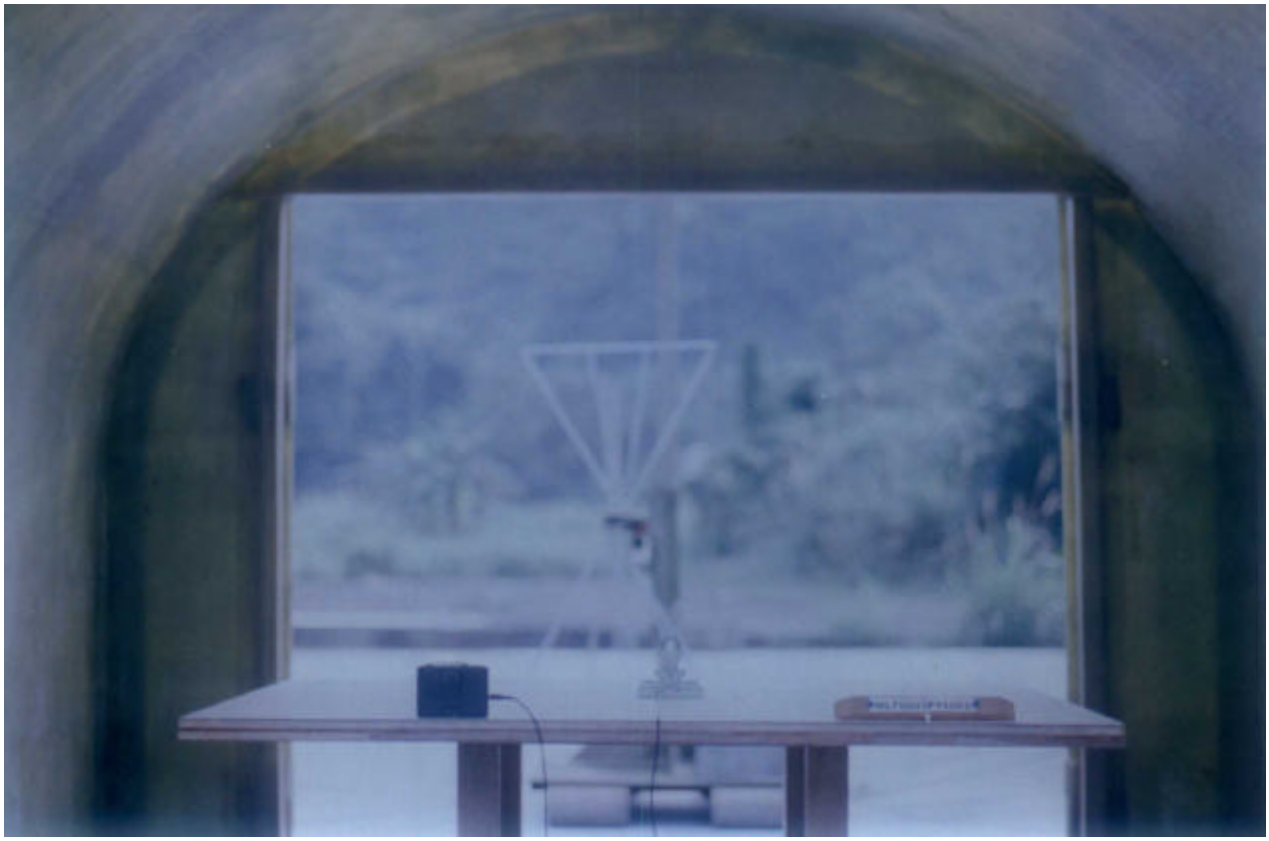
Prior to open-field testing, the EUT was placed in a shielded enclosure and scanned at a close distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration which produced the highest emissions was noted so it could be reproduced later during the open-field tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT. Final radiation measurements were made on a three-meter, open-field test site. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 8591EM Spectrum Analyzer, EMCO Biconical Antenna (Model 3142) for 30-1000MHz. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post-detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 120 KHz, and the analyzer was operated in the quasi-peak detection mode. The highest emission amplitudes relative to the appropriate limit were measured and recorded in paragraph 3.6.

3.2 Test Equipment List:

A. HP 8591EM 9KHz-1.8GHz Spectrum Analyzer (S/N:73412A00230)
B. HP 8447D Pre Amplifier (S/N:2944A08954)
C. EMCO 3142 Biconilog Antenna (S/N:1184)
D. HP 8590A 10KHz-1.5GHz Spectrum Analyzer (S/N:5212A000211)
E. HP 9872B Plotter (S/N:20447A03436)

3.3 Test Configuration:

Front View of The Test Configuration



Rear View of The Test Configuration

3.4 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner. During the testing, the highest and lowest frequency were measured under the conditions that the EUT was considered likely to encounter in normal use.

3.5 Radiated Emissions Limits:

Fundamental Frequency

Frequency range (MHz)	dBuV/meter
88 to 108	47.9

Other Frequency

Frequency range (MHz)	dBuV/meter
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

3.6 Measurement Data Of Radiated Emissions:

3.6.1 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following

Manufacturer : HANMING INDUSTRIES COMPANY.
Model No : SP-001
EUT : FM TRANSMITTER

Radiated Emissions (HORIZONTAL)					
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Limits(Class B) (dBuV/m)	Margin (dB)
89.22	39.58	1.5	300	47.9	-8.32
178.50	31.19	1	270	43.5	-12.31
267.65	32.53	1.5	360	46	-13.47
356.90	35.69	1	200	46	-10.31
446.15	37.90	1.5	360	46	-8.10
535.39	35.15	2	300	46	-10.85
624.43	34.67	1.5	200	46	-11.33
713.77	35.19	1	340	46	-10.81
802.98	30.31	1.5	360	46	-15.69
892.31	30.98	2	290	46	-15.02

*Notes : 1.*Margin= Amplitude - Limits
*2.*Distance of Measurement : 3 Meter (30-1000MHz)
*3.*Height of table for EUT placed: 0.8 Meter.
*4.*ANT= Antenna height.
*5.*Amplitude= Reading Amplitude –Amplifier gain+Cable loss +Antenna factor
(Auto calculate in spectrum analyzer)

3.6.2 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following.

Manufacturer : HANMING INDUSTRIES COMPANY.
Model No : SP-001
EUT : FM TRANSMITTER

Radiated Emissions (VERTICAL)					
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Limits(Class B) (dBuV/m)	Margin (dB)
89.22	43.68	1.5	300	47.9	-4.22
178.50	35.23	1	270	43.5	-8.27
267.65	36.19	1.5	360	46	-9.81
356.90	37.69	1	200	46	-8.31
446.15	40.15	1.5	360	46	-5.85
535.39	37.98	1.5	340	46	-8.02
624.43	37.12	1	300	46	-8.88
713.77	38.55	1.5	360	46	-7.45
802.98	34.31	1	270	46	-11.69
892.31	33.57	1	300	46	-12.43

*Notes : 1.*Margin= Amplitude - Limits
*2.*Distance of Measurement : 3 Meter (30-1000MHz)
*3.*Height of table for EUT placed: 0.8 Meter.
*4.*ANT= Antenna height.
*5.*Amplitude= Reading Amplitude –Amplifier gain+Cable loss +Antenna factor
(Auto calculate in spectrum analyzer)

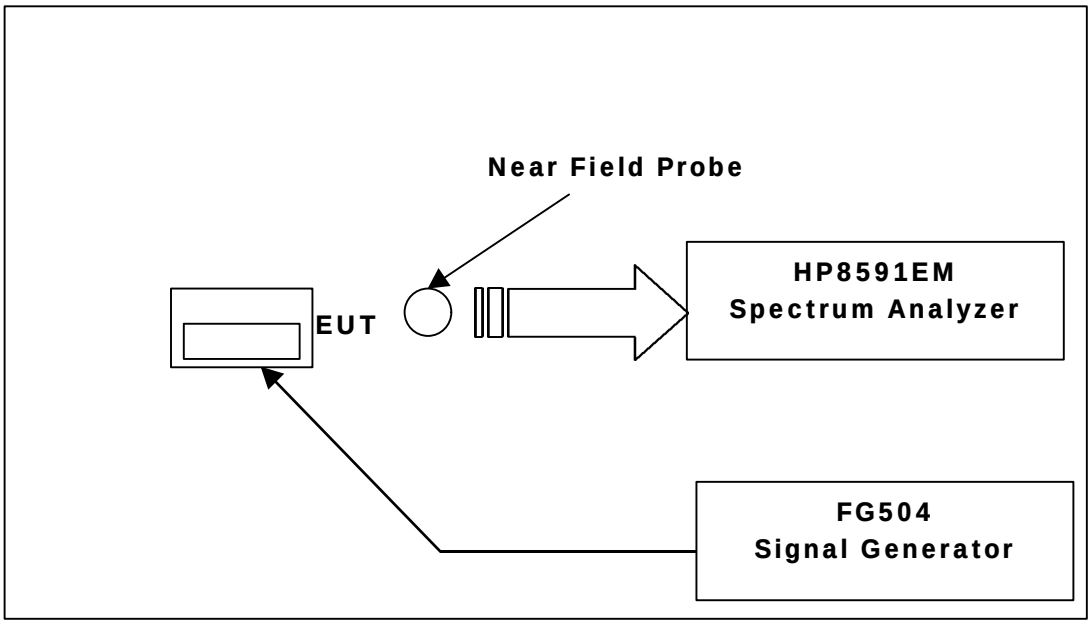
IV. Emissions Band Measurement

4.1 Test Condition & Setup :

The transmitter bandwidth measurements were performed in a shielded enclosure. The EUT was placed on a wooded table which is 0.8 meters height and a near field probe was used at a distance about 20 cm for receiving. While testing, EUT was set to transmit continuously.

The resolution bandwidth of the spectrum analyzer was set to 10KHz. The detector function was set to peak and hold mode to clearly observe the components. Emission from the intentional radiator shall be confined within a band 200KHz wide centered on the operating frequency. The 200 KHz band shall lie wholly within the frequency range of 88~108MHz.

4.2 Test Instruments Configuration:



4.3 Test Equipment List:

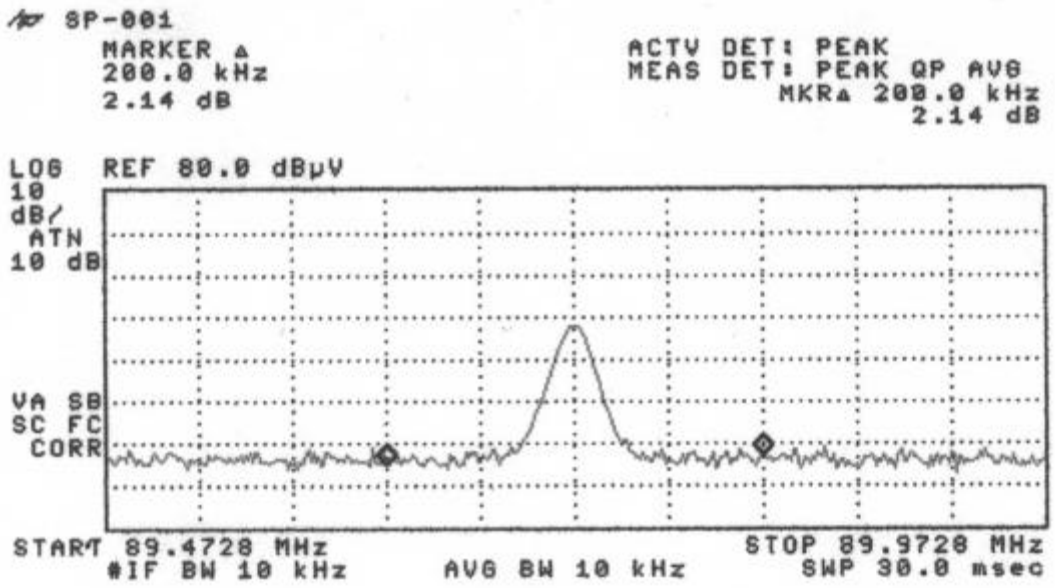
A. Tektronix FG504 0.1H~40MHz (S/N:43AS251)
B. EMCO Near Field Probe (S/N:7901-291)
C. HP 8591EM 9KHZ-1.8GHz Spectrum Analyzer (S/N:73412A00110)
D. Shielded Room (MLT-SR1)

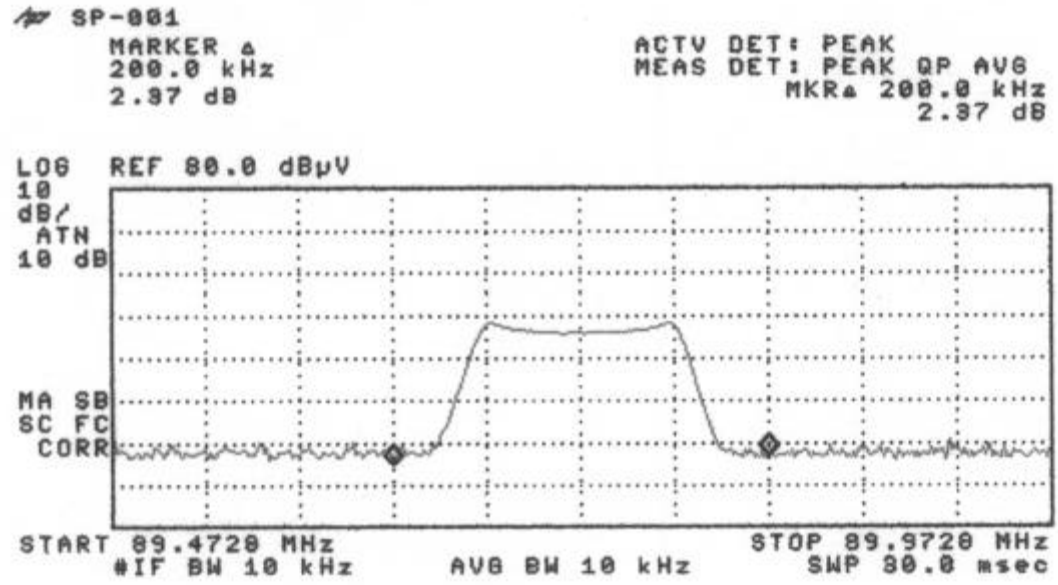
4.4 Test Result:

Fundamental emission	
Permitted Maximum Bandwidth	200KHz
Lowest Frequency of 200KHz Bandwidth Measurement	89.32MHz
Highest Frequency of 200KHz Bandwidth Measurement	89.82MHz

4.5 Test Graphs:

See next page.


SP-001
MARKER Δ
200.0 kHz
2.14 dB
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 200.0 kHz
2.14 dB
LOG REF 80.0 dBµV
10
dB/
ATN
10 dB
VA SB
SC FC
CORR
START 89.4728 MHz
#IF BW 10 kHz
AVG BW 10 kHz
STOP 89.9728 MHz
SWP 30.0 msec


SP-001
MARKER Δ
200.0 kHz
2.37 dB
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 200.0 kHz
2.37 dB
LOG REF 80.0 dBµV
10
dB/
ATN
10 dB
MA SB
SC FC
CORR
START 89.4728 MHz
#IF BW 10 kHz
AVG BW 10 kHz
STOP 89.9728 MHz
SWP 30.0 msec

Appendix I- EUT Test SETUP

MEASUREMENT OF RADIATED EMISSION