

HomeTek Technology (Chang-An) Inc.

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FCC TEST REPORT FOR

APPLICANT :	PINE-TUM ENTERPRISE CO.,LTD.
ADDRESS :	5/F, NO. 190, 2, Chung-Hsin Rd., Hsin-Tien City, Taipei Hsien, Taiwan, R. O. C.
EUT :	FM Transmitter
MODEL NO. :	PT-FM-007
FCC ID :	TUMPT-FM-007

Under Part 15, SUBPART C.

CLASS B

Certification

MEASUREMENT PROCEDURE USED

FCC RULES AND FCC / ANSI C63.4-2003

PREPARED BY :

HomeTek Technology (Chang-An) Inc.

South of Shatou Industry District, Chang-An Town,

DongGuan City, GuangDong, China

Report # : FBRP5164



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CERTIFICATION

EUT	: FM Transmitter
MODEL NO.	: PT-FM-007
FCC ID	: TUMPT-FM-007
Receipt Date	: 11/12/2005 Final Test Date: 11/25/2005
REPORT #	: FBRP5164
APPLICANT	: PINE-TUM ENTERPRISE CO.,LTD.
ADDRESS	: 5/F, NO. 190, 2, Chung-Hsin Rd., Hsin-Tien City, Taipei Hsien, Taiwan, R. O. C.

MEASUREMENT PROCEDURE USED :

FCC RULES AND REGULATION PART 15, SUBPART C
AND FCC / ANSI C63.4-2003

We hereby show that:

The measurement shown in this test report were made in accordance with and no deviation with the procedures indicated, and the maximum energy emitted by the equipment was found to be within the FCC limits applicable.

This test result of this report applies to above tested sample only.

This test report shall not be reproduce in part without written approval of HomeTek Technology (Chang-An) Inc.

PREPARED BY : CATHY HE DATE : 11/25/2005
Assistant

CHECK BY : GEORGE ZHOU DATE : 11/25/2005
Director

APPROVED BY : Grant Huang DATE : 11/25/2005
GRANT HUANG / Manager



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GENERAL INFORMATION

- 1 APPLICANT : PINE-TUM ENTERPRISE CO.,LTD.
- 2 ADDRESS : 5/F, NO. 190, 2, Chung-Hsin Rd., Hsin-Tien City,
Taipei Hsien, Taiwan, R. O. C.
- 3 MANUFACTURER : PINE-TUM SPECIAL ELECTRIC WIRE
MANUFACTURING CO.,LTD.
- 4 ADDRESS : Da-Jing-Tou Zhu-Shan Managing Area,
Dong-Cheng Dong-Guan
Guang-Dong 523120 China
- 5 DESCRIPTION OF EUT :
EUT : FM Transmitter
FCC ID : TUMPT-FM-007
Model Number : PT-FM-007
Serial # : N/A

6 FEATURES OF EUT :

DC power	: 12VDC
Operating range	: $\leq 30\text{m}$
Channel isolation Ratio	: $\geq 72\text{dB}$
Frequency range	: 20-15000Hz
Transmission Frequency	: 88.3,88.5,88.7,88.9MHz
Input resistance	: 1K
Signal-to-Noise	: $\geq 45\text{dB}$
Signal Distortion	: $\leq 3\%$ [F=75KHz,f=1KHz]
Frequency windage	: $\leq 20\text{KHz}$
Current consumption	: 0.05A(not charging)
Charging voltage and current	: DC5V,500mA

7 TEST MODE :

The EUT were investigated with five operation modes shown as below :

- (1) Charger mode;
- (2) FM 88.3MHz mode;
- (3) FM 88.5MHz mode;
- (4) FM 88.7MHz mode;
- (5) FM 88.9MHz mode

The test mode of (5) FM 88.9MHz is worst case, and the final test data were shown in this test report.



MODIFICATION LIST

THE FOLLOWING ACCESSORIES WERE ADDED TO THE EUT DURING TESTING :

NO MODIFICATION BY HOMETEK TECHNOLOGY(Chang-An) INC.



CONDUCTED POWER LINE TEST

1 TEST PROCEDURE

According to **ANSI C63.4 – 2003**.

2 RESULT OF CONDUCTED EMISSION TEST

N/A (Conducted Power Line Test is not applicable to this EUT (Model : PT-FM-007)).

RADIATED EMISSION TEST

1 TEST INSTRUMENTS & FACILITIES

The following test Instruments was used during the radiated emission test :

Item	Instruments /facilities	Specification	Manufacturer	Model # / S/N#	Date of Cal.
1	OPEN AREA TEST SITE	<input checked="" type="checkbox"/> OATS 1			SEP/2005
2	EMI TEST RECEIVER	20Hz ~ 26.5GHz	ROHDE & SCHWARZ	845636/007	SEP/2005
3	PRE-AMPLIFIER	9KHz ~ 1300MHz	HEWLETT PACKARD	8447D 1937A02095	SEP/2005
4	BICONICAL/LOG BROADBAND ANTENNA	25MHz ~ 2GHz	ANTENNA RESEACH	LPB2520/A 1095	OCT/2005
5	Attenuation	50Ω/6dB	JYE BAO	FAT-N (M-F) 001	SEP/2005
6	Cable	10m	SUHNER	RG214/U OS3-003	SEP/2005
7	Cable	14m	BELDEN	9913 OS3-001	SEP/2005
8	EMI 32 (software)	N/A	AUDIX	19991013-0923	N/A

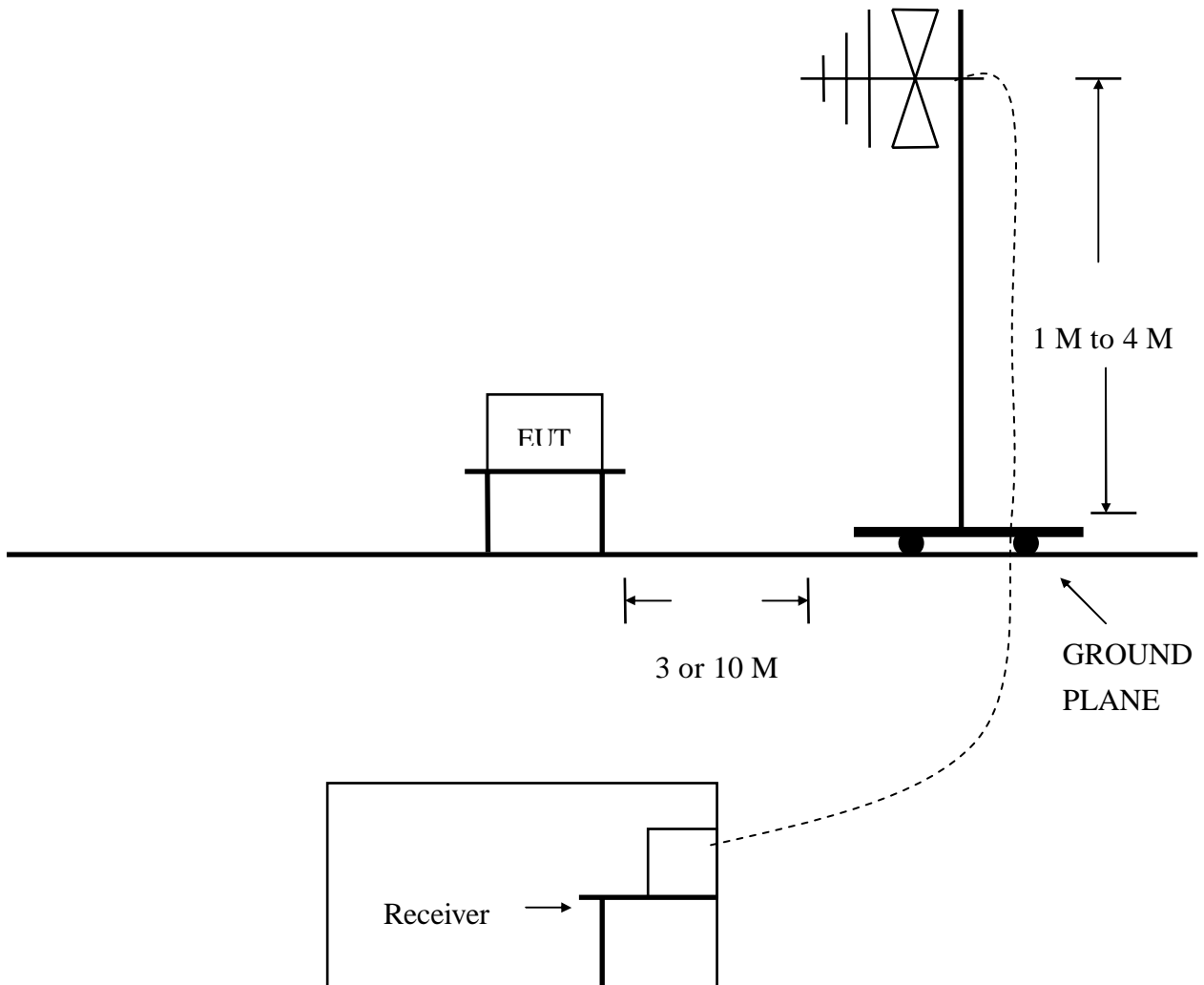
Note : Items 1 ~ 7 were calibrated within period of 1 year.

2 EUT OPERATING CONDITION

- 2.1 Configure the EUT according to the **ANSI C63.4 - 2003**.
- 2.2 The radiated emission in the frequency range from 30 MHz - 1000 MHz was test in a horizontal and vertical polarization at HomeTek(Chang-An) Lab's open site I.
- 2.3 The crystal frequency of the EUT is 7.6 MHz.
- 2.4 Install DC 3V Battery to EUT. Connect audio cable of EUT to audio output port of iPod player.
- 2.5 Turn on all the power of EUT and peripheral.
- 2.6 iPod player send 1KHz audio to EUT. (Apply audio signal 0.5Vrms to audio R/L of EUT).
- 2.7 The EUT was operated in its normal operating mode for the purpose of the measurements.
- 2.8 The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the ESMI test receiver or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the EUT.
- 2.9 **The photos of radiated test configuration, please refer to appendix A.**

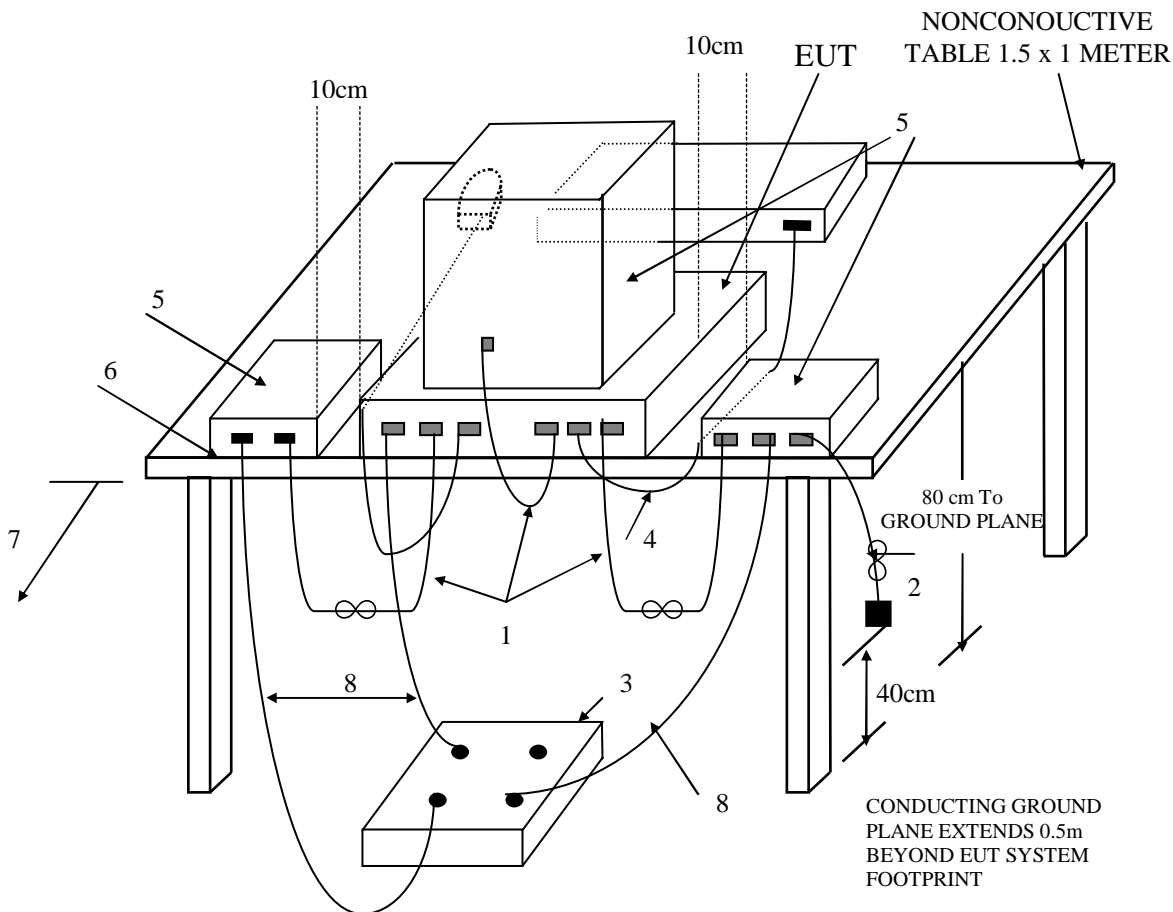
3 TEST SETUP

3.1 TEST SETUP OF OPEN SITE.



3.2 TEST SETUP OF EUT

ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE OF 9kHz TO 40 GHz

ANSI
C63.4-2003


(Details for setup configuration, please refer to appendix A.)

LEGEND:

1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between ground plane and table.
2. I/O cables that are connected to a peripheral shall be bundled in center. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1m.
3. If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground plane with the receptacle flush with the ground plane.
4. Cables of hand-operated devices, such as keyboards, mice, etc., have to be placed as close as possible to the controller.
5. Non-EUT components of EUT system being tested.
6. The rear of all components of the system under test shall be located flush with the rear of the table.
7. No vertical conducting wall used.
8. Power cords drape to the floor and are routed over to receptacle.

Test Configuration Tabletop Equipment Radiated Emission

4 CONFIGURATION OF THE EUT

The EUT was configured according to **ANSI C63.4 - 2003**. All I/O ports were connected to the appropriate peripherals. All peripherals and cables are listed below (including internal device) :

4.1 EUT

EUT Type : ☐Proto Type ☒Engineer Type ☐Mass Production
Condition when received : ☒Good ☐Damage : _____
Device : FM Transmitter
Applicant : PINE-TUM ENTERPRISE CO.,LTD.
Manufacturer : PINE-TUM SPECIAL ELECTRIC WIRE
MANUFACTURING CO.,LTD.
Model Number : PT-FM-007
Serial Number : N/A
FCC ID : TUMPT-FM-007
Power Cord (Output) : Un-Shielded, 0.6 m
Power Supply Type : Switching

4.2 PERIPHERALS

☒ iPod

Manufacturer : Apple
Model Number : A1137
Serial Number : 5U540FX7TK2
FCC ID : FCC DoC
Memory : 4GB

☒ Job Site Radio/Charger

Manufacturer : Finemost

Model Number : DC011

Serial Number : N/A

FCC ID : FCC DoC

Power Cord : Un-shield, 2 Pin, 1.5 m

Audio cable : Shield, 1.5 m

☒ LOAD(Full Load)

Manufacturer : HomeTek

Specification : 10 Ω

4.3 REMARK : N/A

5 TEST PROCEDURE

- 5.1 The EUT was test according to **ANSI C63.4 – 2003 & FCC Part 15.35/15.209/15.239.**
- 5.2 The radiated test was performed at HomeTek(Chang-An) Lab's Open Site I.
- 5.3 This site is on file with the FCC laboratory division, test firm registration number: 140723, expiration Date : 2004/09/29.
- 5.4 For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies. The signal of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
- 5.5 For emission frequencies measured below and above 1 GHz, set the spectrum analyzer or a 100KHz and 1MHz resolution bandwidth respectively for each frequency measured in item 5.4.
- 5.6 The receiving antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Move the antenna to a position where the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna positior again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
- 5.7 Repeat item 5.6 until all frequencies need to be measured were completed.
- 5.8 Repeat item 5.7 with search antenna in vertical polarized orientations.
- 5.9 Check seven frequencies of highest emission with varying the placement of cables (if any) associated with EUT to obtain the worst case and record the result.
- 5.10 The frequency range from 30 MHz to 1 GHz were investigated, the measurement were made at 3 meters, with a BI-log antenna.

6 LIMIT OF RADIATED EMISSION CLASS B

Frequency (MHz)	Measurement Distance	dBuV/m	uV/m
Fundamental frequency	3 (M)	48	250
30 - 88	3 (M)	40	100
88 - 216	3 (M)	43.5	150
216 - 960	3 (M)	46	200
Above 960	3 (M)	54	500

6.1 The tighter limit shall apply at the edge between two frequency bands.

6.2 Measurement distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or peripherals.

7 RESULT OF RADIATED EMISSION TEST

7.1 The frequency range from 30 MHz to 1 GHz was investigated.

7.2 All readings below or equal 1 GHz are quasi-peak or peak values with resolution bandwidth of 120 KHz. The reading of fundamental frequency is peak or average values. With resolution bandwidth of 120KHz.

7.3 The measurements were made at 3 meters of HomeTek(Chang-An) Lab's open site I.

7.4 Temperature : 18 °C, Humidity : 60 % RH.

7.5 Deviation form the test standards and rules : None

7.6 The radiation emission result were gained by the following method :

Level = Reading Level + Probe Factor (Antenna Factor) + Cable Loss – Preamp Factor

Over Limit = Level – Limit Line

7.7 The radiated mission test was passed at minimum margin :

Horizontal 89.17 MHz/ 45.87 dBuV/m, Antenna Height 3.5 Meter,

Turn Table 143 degree, The Model : PT-FM-007 .

7.8 Result : **PASSED**

8 RADIATED EMISSION TEST DATA (PAGE 1)



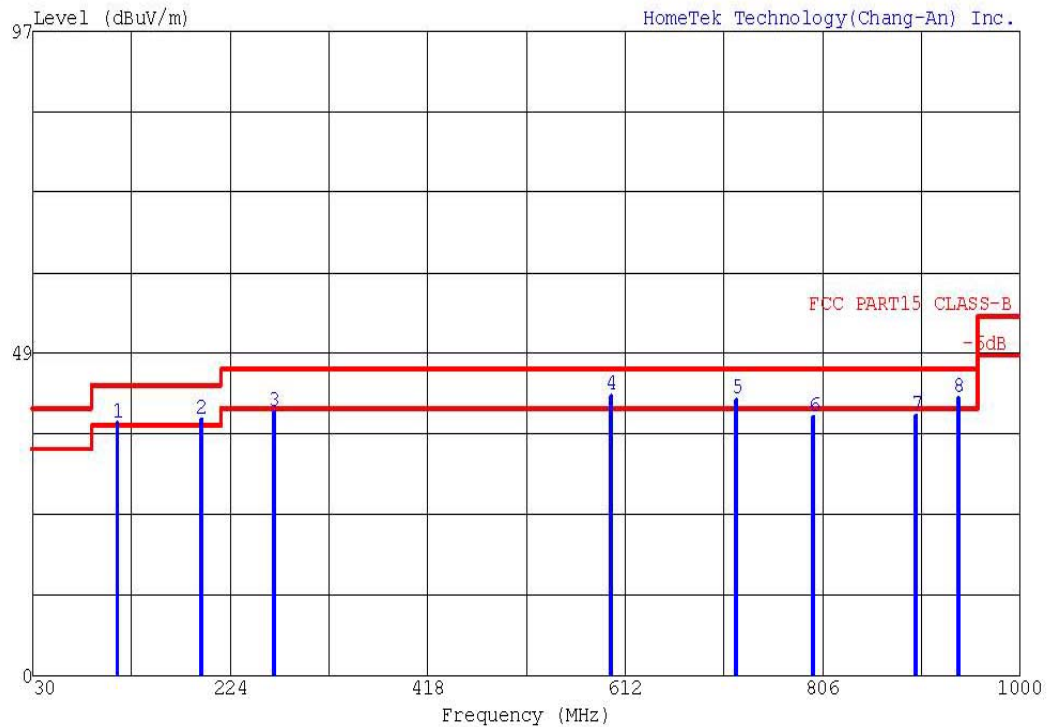
HomeTek Technology(Chang-An) Inc.

HomeTek Technology(Chang-An) Inc.

Tel:86-769-5303005 FAX:86-769-5303006

Data#: 17 File#: RP5164.EMI

Date: 11-15,2005 Time: 09:30:46



Trace :
Limit : FCC PART15 CLASS-B 3m
Probe : LPB-250/A-031028 HORIZONTAL
Margin: -6.0dB
EUT : PT-FM-007
Power : DC12V
Memo : Charger Mode
:
:

Ref Trace:

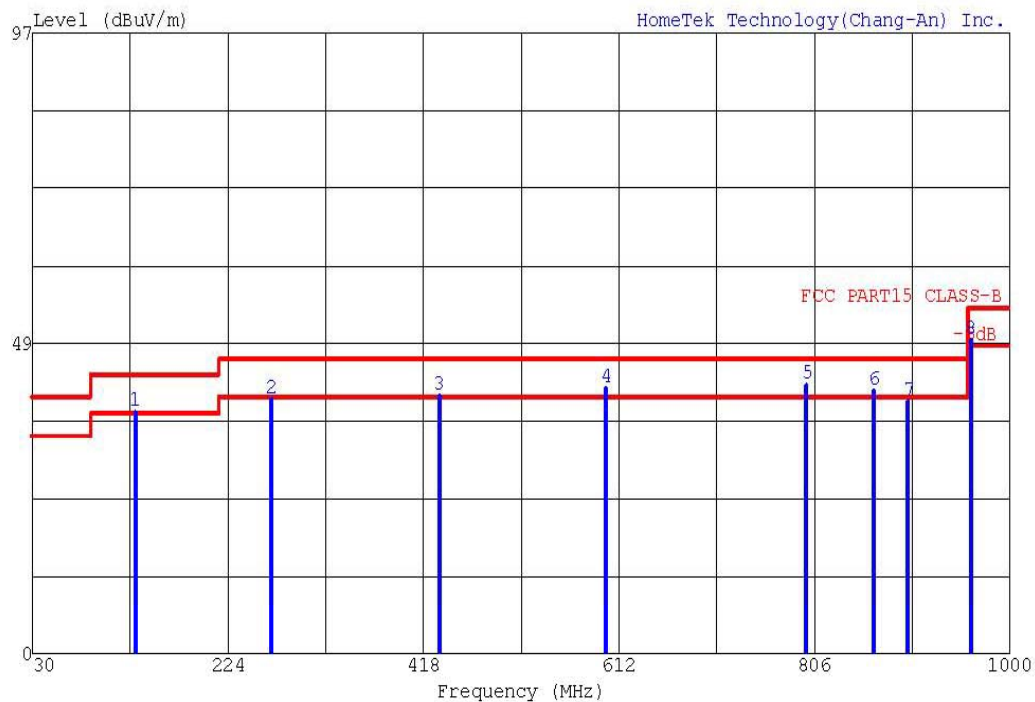
Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 !	113.720	35.78	-7.72	43.50	48.55	11.83	3.14	27.74	Peak
2 !	196.840	34.38	-9.12	43.50	46.14	12.00	3.57	27.33	Peak
3	267.650	39.43	-6.57	46.00	47.46	13.95	5.19	27.17	QP
4 !	599.390	41.87	-4.13	46.00	43.36	19.90	7.01	28.40	Peak
5 !	722.580	41.35	-4.65	46.00	37.44	21.80	10.56	28.45	Peak
6	798.240	38.76	-7.24	46.00	36.83	22.47	7.77	28.31	QP
7	899.120	38.92	-7.08	46.00	33.17	23.20	10.55	28.00	QP
8 !	940.830	41.46	-4.54	46.00	35.22	23.97	10.15	27.88	Peak

9 RADIATED EMISSION TEST DATA (PAGE 2)

Data#: 18 File#: RP5164.EMI

Date: 11-15,2005 Time: 10:26:03



Trace :

Limit : FCC PART15 CLASS-B 3m

Probe : LPB-250/A-031028 VERTICAL

Margin: -6.0dB

EUT : PT-FM-007

Power : DC12V

Memo : Charger Mode

:
:
:

Ref Trace:

Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 ↓	132.780	34.56	-8.94	43.50	46.54	11.92	3.74	27.64	Peak
2 ↓	267.650	39.76	-6.24	46.00	47.79	13.95	5.19	27.17	QP
3 ↓	434.490	40.16	-5.84	46.00	45.32	17.41	5.30	27.87	Peak
4 ↓	600.360	41.35	-4.65	46.00	42.81	19.93	7.01	28.40	Peak
5 ↓	799.210	41.98	-4.02	46.00	40.04	22.47	7.77	28.30	Peak
6 ↓	866.140	40.99	-5.01	46.00	35.08	23.27	10.73	28.10	Peak
7 ↓	900.090	39.39	-6.61	46.00	33.38	23.20	10.81	28.00	QP
8 ↓	962.170	40.88	-13.12	54.00	34.28	24.25	10.17	27.82	QP

10 RADIATED EMISSION TEST DATA (PAGE 3)



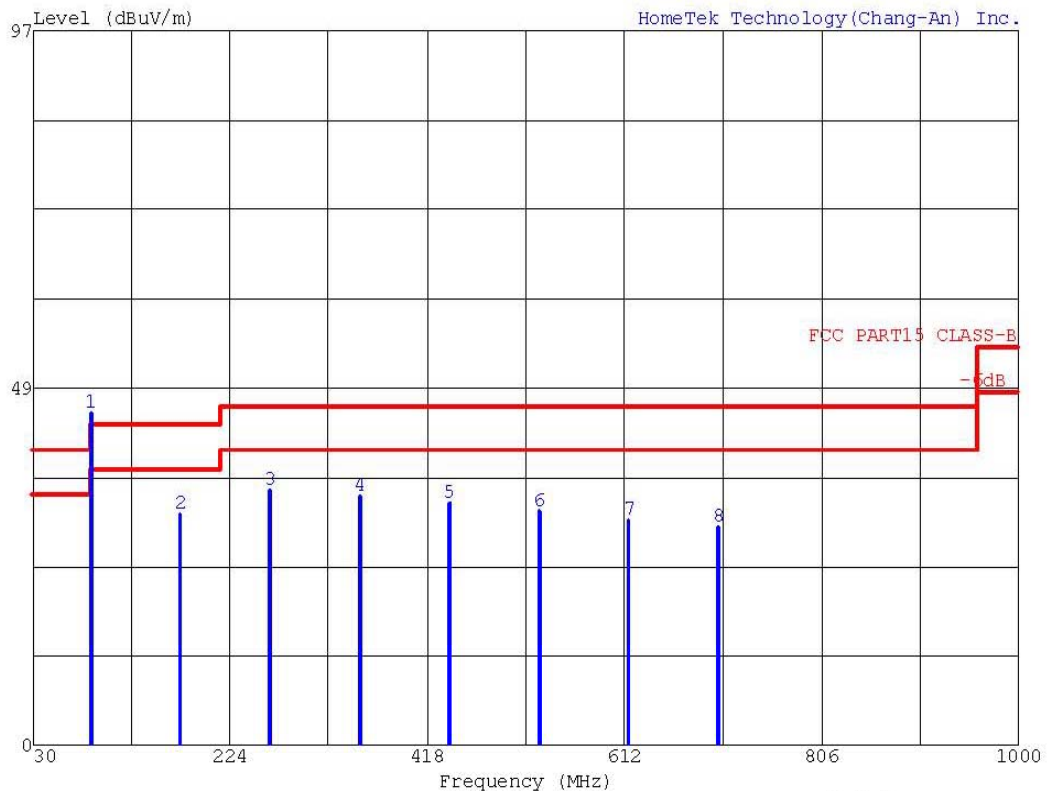
HomeTek Technology(Chang-An) Inc.

HomeTek Technology(Chang-An) Inc.

Tel:86-769-5303005 FAX:86-769-5303006

Data#: 29 File#: RP5164.EMI

Date: 11-16,2005 Time: 09:07:11



Trace :
Limit : FCC PART15 CLASS-B 3m
Probe : LPB-250/A-031028_3 HORIZONTAL
Margin: -6.0dB
EUT : PT-FM-007
Power : DC12V
Memo : FM88.5MHz
:
:

Ref Trace:

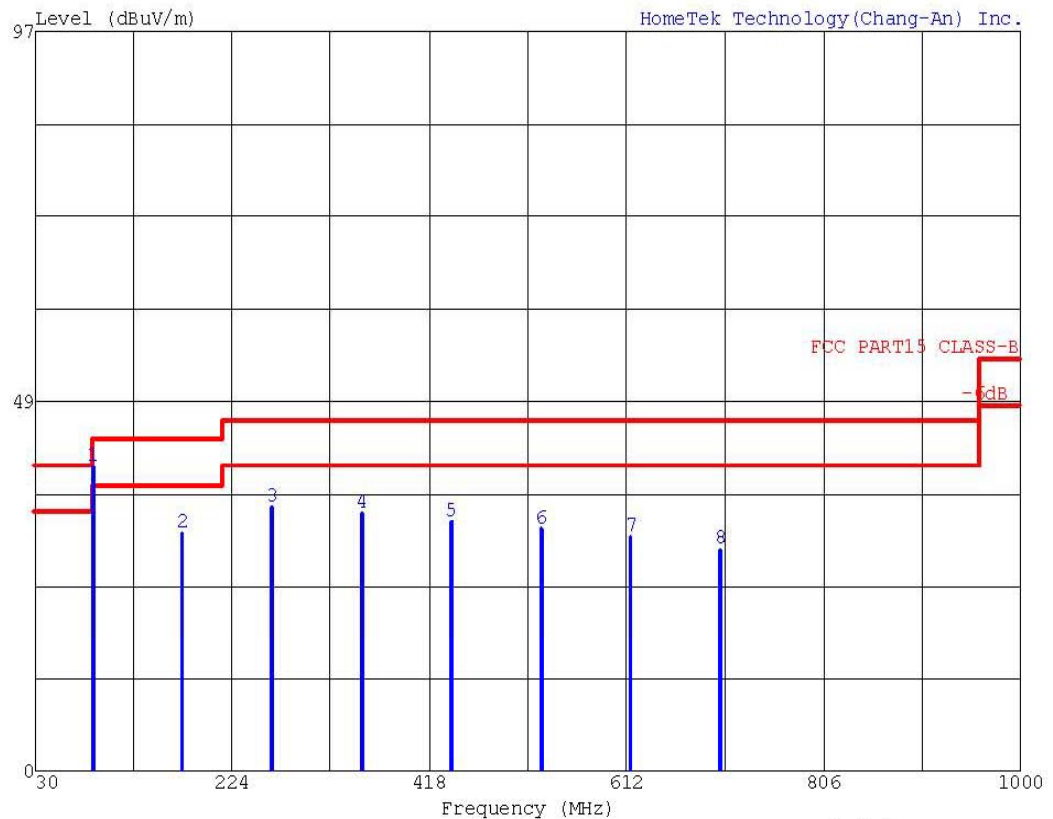
Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 *	88.500	45.05	-2.85	47.90	58.93	11.17	2.77	27.82	QP
2	177.200	31.18	-12.32	43.50	43.88	11.61	3.11	27.43	Peak
3	267.300	34.50	-11.50	46.00	42.55	13.90	5.22	27.17	Peak
4	353.100	33.78	-12.22	46.00	40.66	15.92	4.61	27.41	Peak
5	442.500	32.82	-13.18	46.00	37.65	17.54	5.53	27.90	Peak
6	528.900	31.78	-14.22	46.00	33.67	18.97	7.40	28.26	Peak
7	611.200	30.49	-15.51	46.00	30.64	20.08	8.19	28.42	Peak
8	702.300	29.58	-16.42	46.00	27.66	21.65	8.75	28.49	Peak

11 RADIATED EMISSION TEST DATA (PAGE 4)

Data#: 30 File#: RP5164.EMI

Date: 11-16,2005 Time: 09:53:25



Trace :
Limit : FCC PART15 CLASS-B 3m
Probe : LPB-250/A-031028_3 VERTICAL
Margin: -6.0dB
EUT : PT-FM-007
Power : DC12V
Memo : FM88.5MHz
:
:

Ref Trace:

Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 !	88.500	39.92	-7.98	47.90	53.80	11.17	2.77	27.82	QP
2	173.590	31.15	-12.35	43.50	43.85	11.61	3.11	27.43	Peak
3	272.600	34.57	-11.43	46.00	42.62	13.90	5.22	27.17	Peak
4	351.890	33.73	-12.27	46.00	40.61	15.92	4.61	27.41	Peak
5	441.980	32.72	-13.28	46.00	37.55	17.54	5.53	27.90	Peak
6	530.900	31.78	-14.22	46.00	33.67	18.97	7.40	28.26	Peak
7	619.430	30.57	-15.43	46.00	30.72	20.08	8.19	28.42	Peak
8	721.590	29.01	-16.99	46.00	27.09	21.65	8.75	28.49	Peak

12 RADIATED EMISSION TEST DATA (PAGE 5)



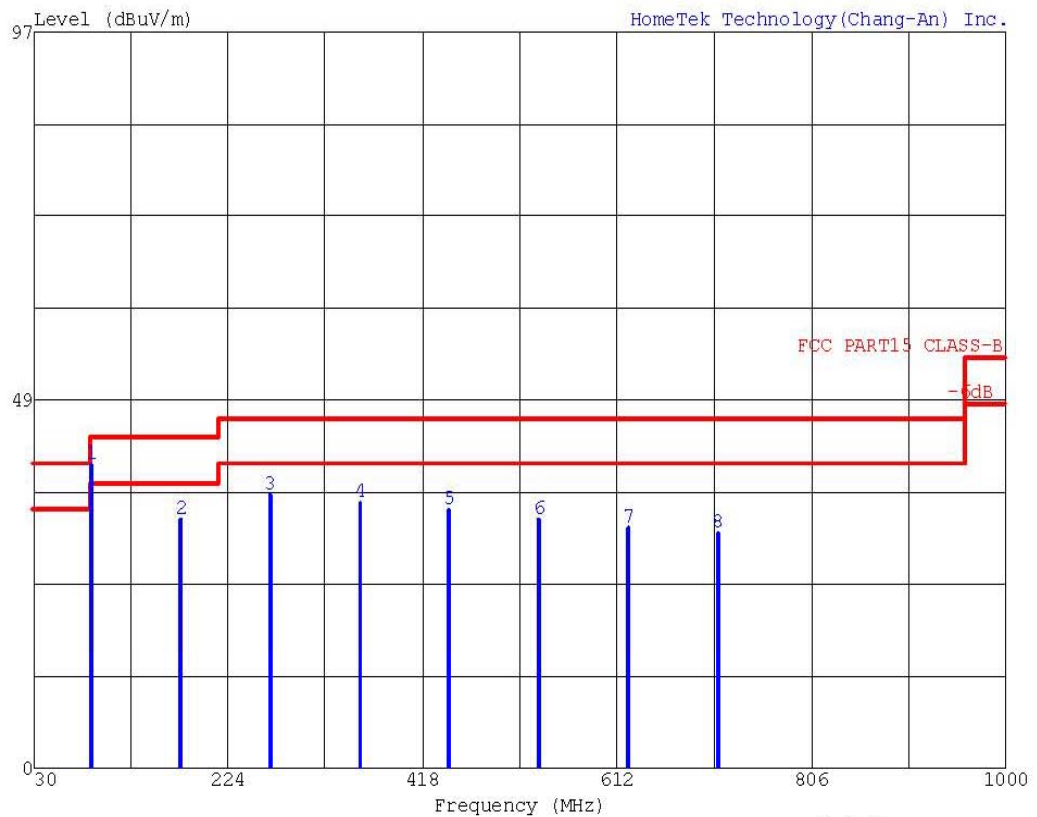
HomeTek Technology(Chang-An) Inc.

HomeTek Technology(Chang-An) Inc.

Tel:86-769-5303005 FAX:86-769-5303006

Data#: 32 File#: RP5164.EMI

Date: 11-16,2005 Time: 11:26:33



Trace :

Limit : FCC PART15 CLASS-B 3m

Probe : LPB-250/A-031028_3 HORIZONTAL

Margin: -6.0dB

EUT : PT-FM-007

Power : DC12V

Memo : FM88.7MHz

:

:

Ref Trace:

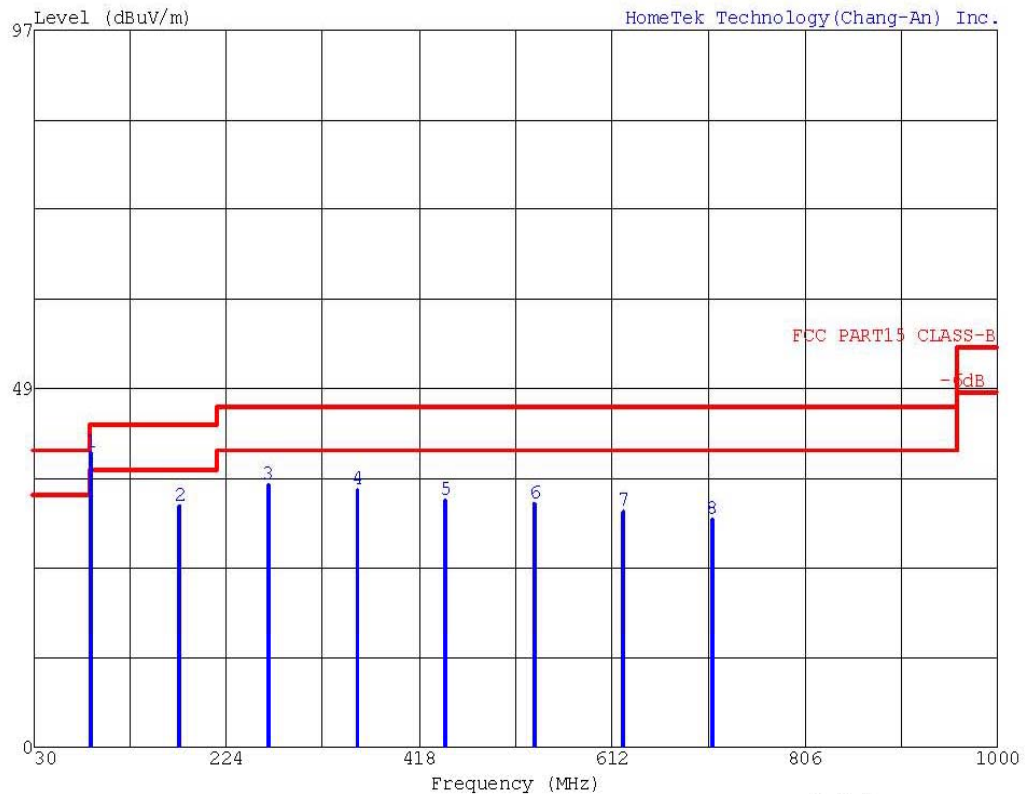
Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	88.700	39.92	-7.98	47.90	53.80	11.17	2.77	27.82	QP
2	188.380	32.68	-10.82	43.50	45.75	11.36	2.99	27.41	Peak
3	259.490	35.89	-10.11	46.00	43.92	13.95	5.19	27.17	Peak
4	359.670	34.76	-11.24	46.00	41.56	15.97	4.67	27.43	Peak
5	438.790	33.83	-12.17	46.00	38.68	17.71	5.35	27.92	Peak
6	541.040	32.59	-13.41	46.00	33.68	19.10	8.08	28.27	Peak
7	625.210	31.49	-14.51	46.00	31.50	20.14	8.27	28.42	Peak
8	719.410	30.82	-15.18	46.00	27.76	21.73	9.81	28.47	Peak

13 RADIATED EMISSION TEST DATA (PAGE 6)

Data#: 31 File#: RP5164.EMI

Date: 11-16,2005 Time: 10:41:24



Trace :
Limit : FCC PART15 CLASS-B 3m
Probe : LPB-250/A-031028_3 VERTICAL
Margin: -6.0dB
EUT : PT-FM-007
Power : DC12V
Memo : FM88.7MHz
:
:

Ref Trace:

Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	88.700	39.72	-8.18	47.90	53.60	11.17	2.77	27.82	QP
2	179.440	32.56	-10.94	43.50	45.63	11.36	2.99	27.41	Peak
3	259.910	35.28	-10.72	46.00	43.31	13.95	5.19	27.17	Peak
4	366.180	34.59	-11.41	46.00	41.39	15.97	4.67	27.43	Peak
5	451.010	33.29	-12.71	46.00	38.14	17.71	5.35	27.92	Peak
6	534.120	32.85	-13.15	46.00	33.94	19.10	8.08	28.27	Peak
7	631.290	31.79	-14.21	46.00	31.80	20.14	8.27	28.42	Peak
8	715.460	30.67	-15.33	46.00	27.61	21.73	9.81	28.47	Peak

PHOTO OF FCC ID LABEL**SAMPLE OF FCC ID LABEL :**

FCC ID : #####

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions: (1)
This device may not cause harmful interference. And (2)
this device must accept any interference that may cause
undesired operation.

Please refer to appendix B photo of ID location.