

HomeTek Technology (Chang-An) Inc.

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## FCC TEST REPORT FOR

APPLICANT :	SAKAR INTERNATIONAL INC.
ADDRESS :	No.172, Kunming Road, Tao Yuan City, Taiwan, R.O.C.
EUT :	xxx32588
MODEL NO. :	4 in 1 Car Kit for iPod
FCC ID :	32588
Trademark :	SAKAR

Under Part 15, SUBPART B AND SUBPART C.

CLASS B

Certification

MEASUREMENT PROCEDURE USED

FCC RULES AND FCC / ANSI C63.4-2003

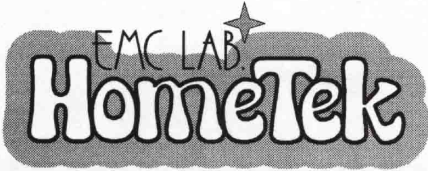
PREPARED BY :

HomeTek Technology (Chang-An) Inc.

South of Shatou Industry District, Chang-An Town,

DongGuan City, GuangDong, China

Report # : FBRP6113



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# CERTIFICATION

EUT	:	4 in 1 Car Kit for iPod		
MODEL NO.	:	32588		
FCC ID	:	xxx32588		
Receipt Date	:	01/03/2007	Final Test Date:	01/23/2007
REPORT #	:	FBRP6113		
APPLICANT	:	SAKAR INTERNATIONAL INC.		
ADDRESS	:	No.172, Kunming Road, Tao Yuan City, Taiwan, R.O.C.		

## MEASUREMENT PROCEDURE USED :

FCC RULES AND REGULATION PART 15, SUBPART B AND 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 : 01/23/2007  
Assistant

CHECK BY : GEORGE ZHOU DATE : 01/23/2007  
Director

APPROVED BY : *Grant Huang* DATE : 01/23/2007  
GRANT HUANG / Manager





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PLOT OF OCCUPIED BANDWIDTH



## GENERAL INFORMATION

- 1 APPLICANT : SAKAR INTERNATIONAL INC.
- 2 ADDRESS : No.172, Kunming Road, Tao Yuan City, Taiwan, R.O.C.
- 3 MANUFACTURER : Shengfei Electronic Factory
- 4 ADDRESS : Ho Pei Village, Pan Li, Li Lin Town, Huizhou City,  
Guang Dong Province, China
- 5 DESCRIPTION OF EUT :
- EUT : 4 in 1 Car Kit for iPod
- FCC ID : xxx32588
- Model Number : 32588
- Serial # : N/A
- Trademark : SAKAR

## 6 FEATURES OF EUT :

Working voltage : DC12V  
Frequency is responded : 20Hz to 20KHz  
Working temperature : -15 ~50  
Output Frequencies : 88.1/88.3/88.5/88.7MHz  
Control distance : 500cm max.  
Input the interface : Special purpose base interface of iPod  
The sound channel is separated degree:40dB

## 7 TEST MODE :

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

- (1) FM 88.1MHz mode
- (2) FM 88.3MHz mode
- (3) FM88.5MHz mode
- (4) FM88.7MHz mode

The test mode of (1) FM 88.1MHz 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 : 32588).

## 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/2006
2	EMI TEST RECEIVER	20Hz ~ 26.5GHz	ROHDE & SCHWARZ	845636/007	SEP/2006
3	PRE-AMPLIFIER	9KHz ~ 1300MHz	HEWLETT PACKARD	8447D 1937A02095	SEP/2006
4	BICONICAL/LOG BROADBAND ANTENNA	25MHz ~ 2GHz	ANTENNA RESEACH	LPB2520/A 1095	OCT/2006
5	Attenuation	50 /6dB	JYE BAO	FAT-N (M-F) 001	SEP/2006
6	Cable	10m	SUHNER	RG214/U OS3-003	SEP/2006
7	Cable	14m	BELDEN	9913 OS3-001	SEP/2006
8	EMI 32 (software)	N/A	AUDIX	19991013-0923	N/A

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

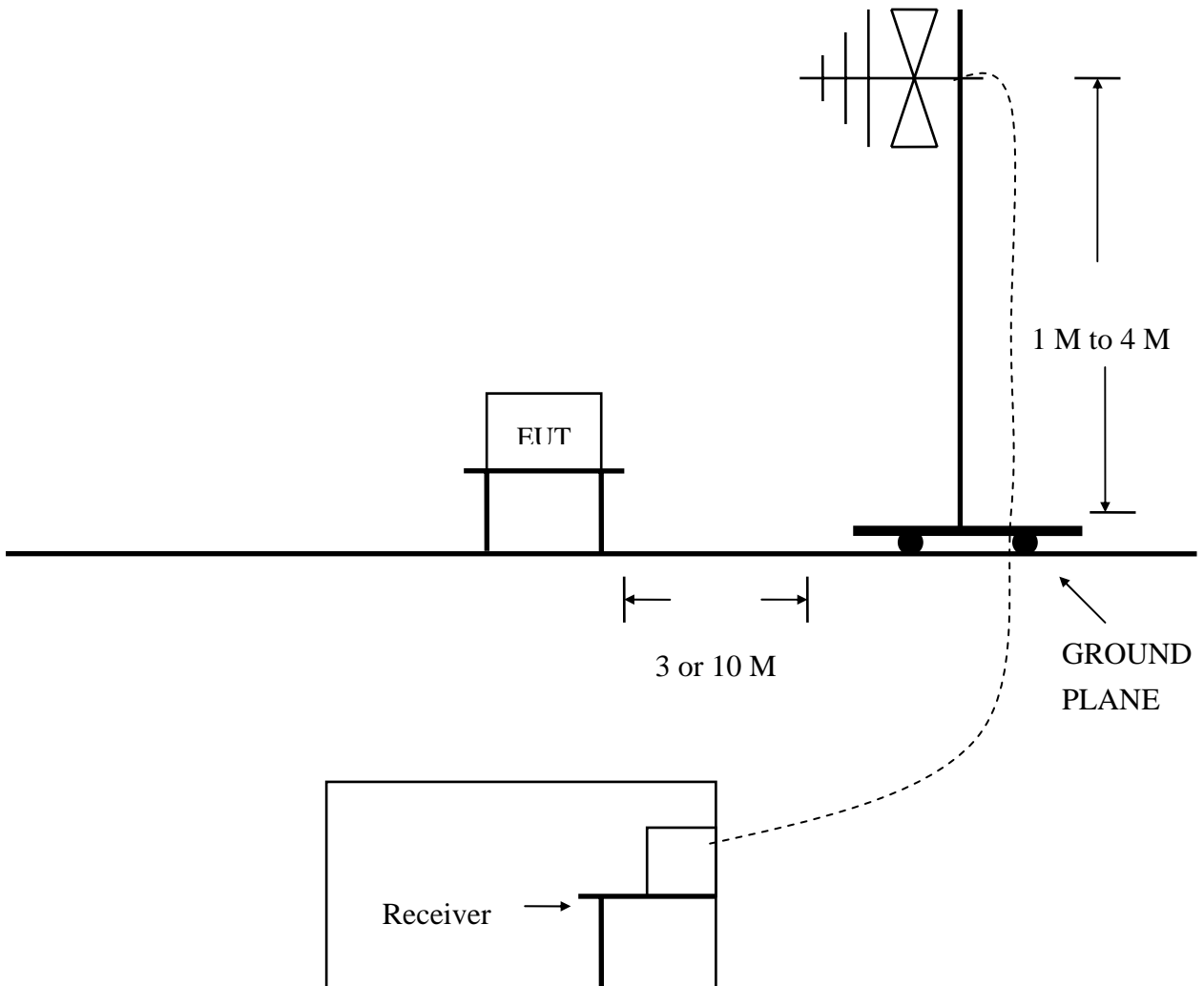


## 2 EUT OPERATING CONDITION

- 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 Plug EUT into power, connect the iPod and the unit with the audio cable, Turn on all the power of EUT and peripheral. Begin playing a song or selection a FM frequency.
- 2.5 The EUT was tested using the audio signal from the iPod at maximum power level. (Apply audio signal 0.5Vrms to audio R/L of EUT).
- 2.6 The EUT was operated in its normal operating mode for the purpose of the measurements.
- 2.7 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.
- 2.8 **The photos of radiated test configuration, please refer to appendix A.**

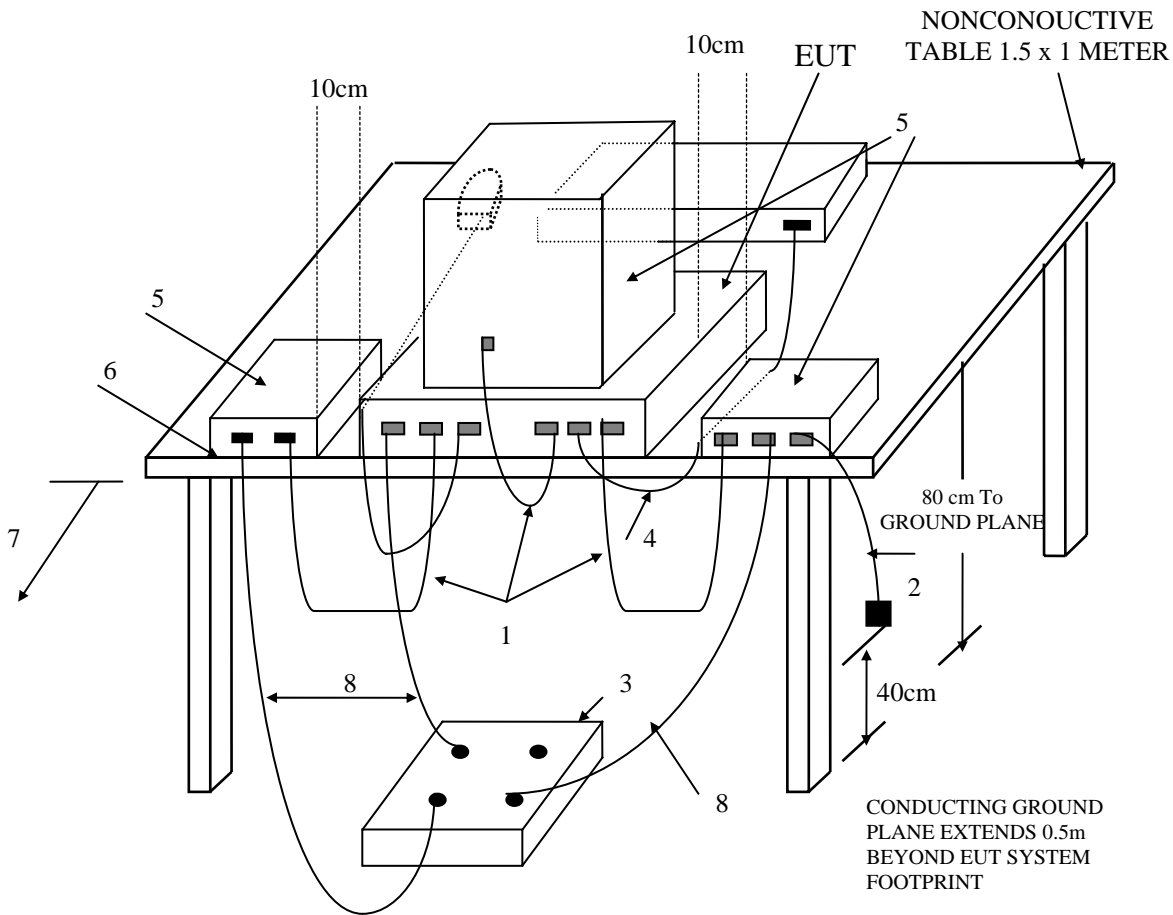
### 3 TEST SETUP

#### 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 : 4 in 1 Car Kit for iPod

Applicant : SAKAR INTERNATIONAL INC

Manufacturer : Shengfei Electronic Factory

Model Number : 32588

FCC ID : xxx32588

Trademark : SAKAR

Audio Cable : Un-Shielded,1.05 m

USB Cable : Shielded,1.5 m

##### 4.2 PERIPHERALS

###### iPod

Manufacturer : Apple

Model Number : A1199

Serial Number : YM640BYPVQH

FCC ID : FCC DoC

Memory : 2GB

##### 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 position 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

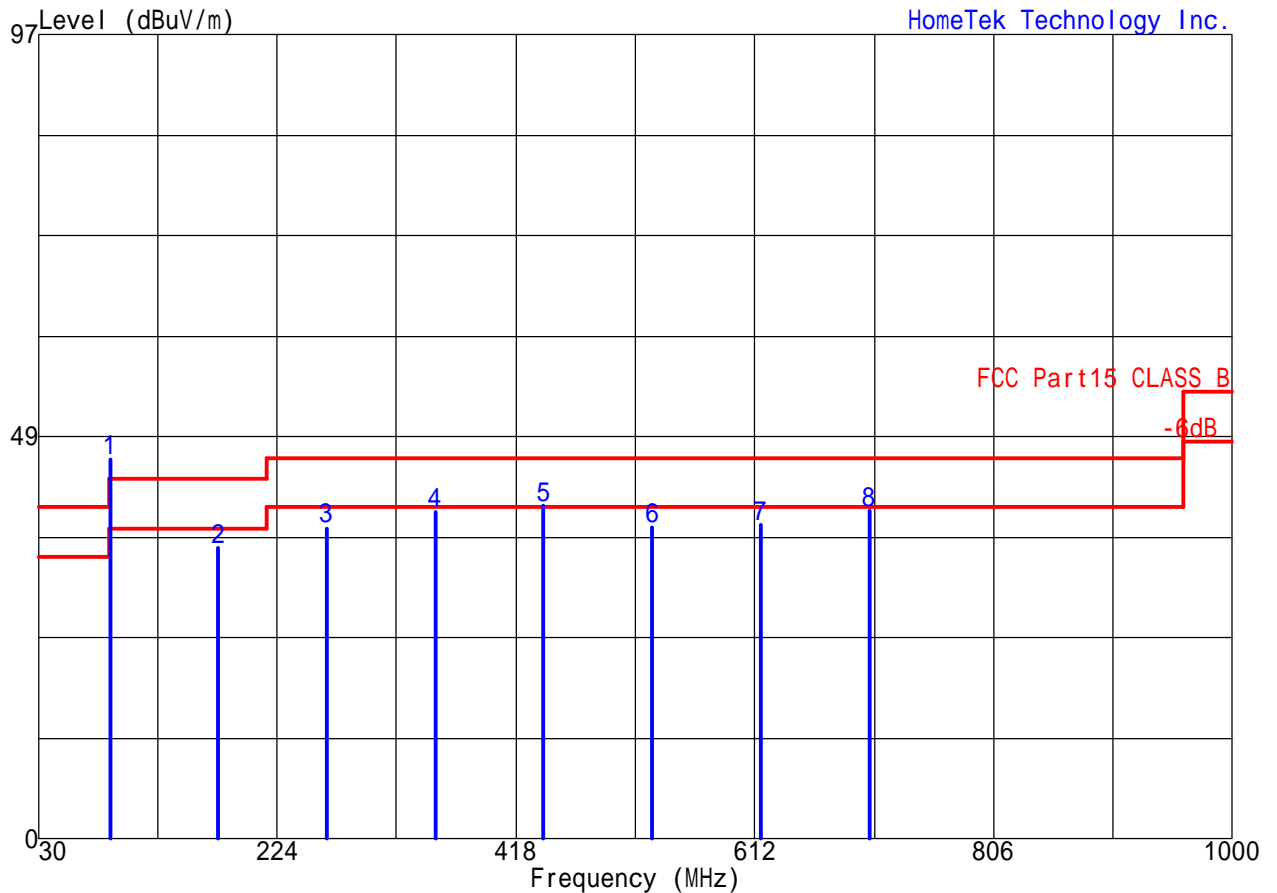
- 6.1 The tighter limit shall apply at the edge between two frequency bands.
- 6.2 Measurement distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or peripherals.

## 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 : 20.3 , Humidity : 42 % 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 88.118 MHz/ 45.85 dBuV/m, Antenna Height 2.8 Meter,  
Turn Table 145 degree, The Model : 32588.
- 7.8 Result : **PASSED**

Data#: 4 File#: RP6113.EMI

Date: 1-7,2007 Time: 12:11:27



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 HORIZONTAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.1MHz  
 :  
 :

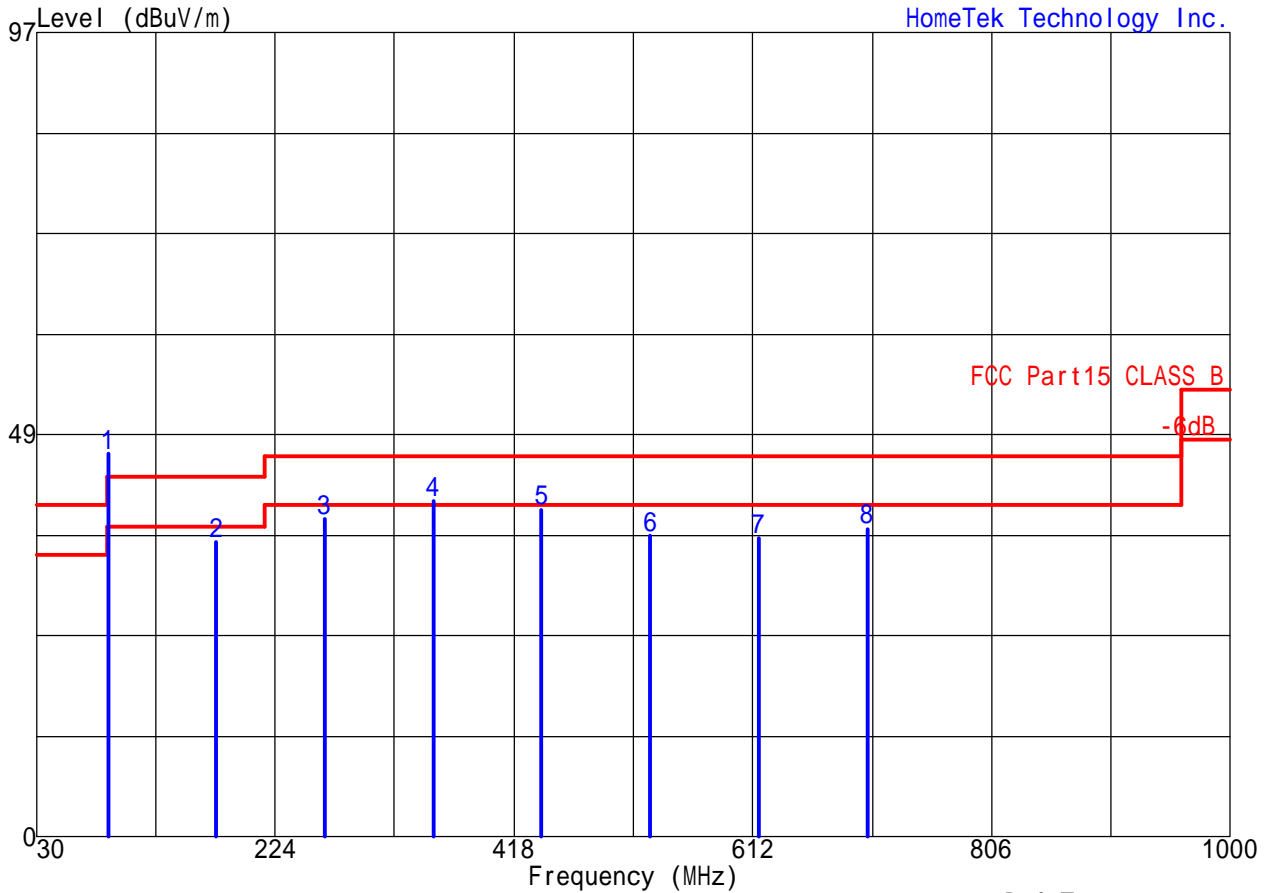
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Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	88.118	45.85	-2.05	47.90	60.13	10.96	2.58	27.83	QP
2	176.242	35.18	-8.32	43.50	47.88	11.61	3.11	27.43	Peak
3	264.335	37.51	-8.49	46.00	45.56	13.90	5.22	27.17	Peak
4	352.502	39.48	-6.52	46.00	46.36	15.92	4.61	27.41	Peak
5 !	440.518	40.24	-5.76	46.00	45.07	17.54	5.53	27.90	Peak
6	528.637	37.52	-8.48	46.00	39.41	18.97	7.40	28.26	Peak
7	616.702	37.95	-8.05	46.00	38.12	20.06	8.19	28.42	Peak
8	704.801	39.54	-6.46	46.00	37.65	21.63	8.75	28.49	Peak

Data#: 3 File#: RP6113.EMI

Date: 1-7,2007 Time: 11:01:27



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 VERTICAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.1MHz  
 :  
 :

Ref Trace:

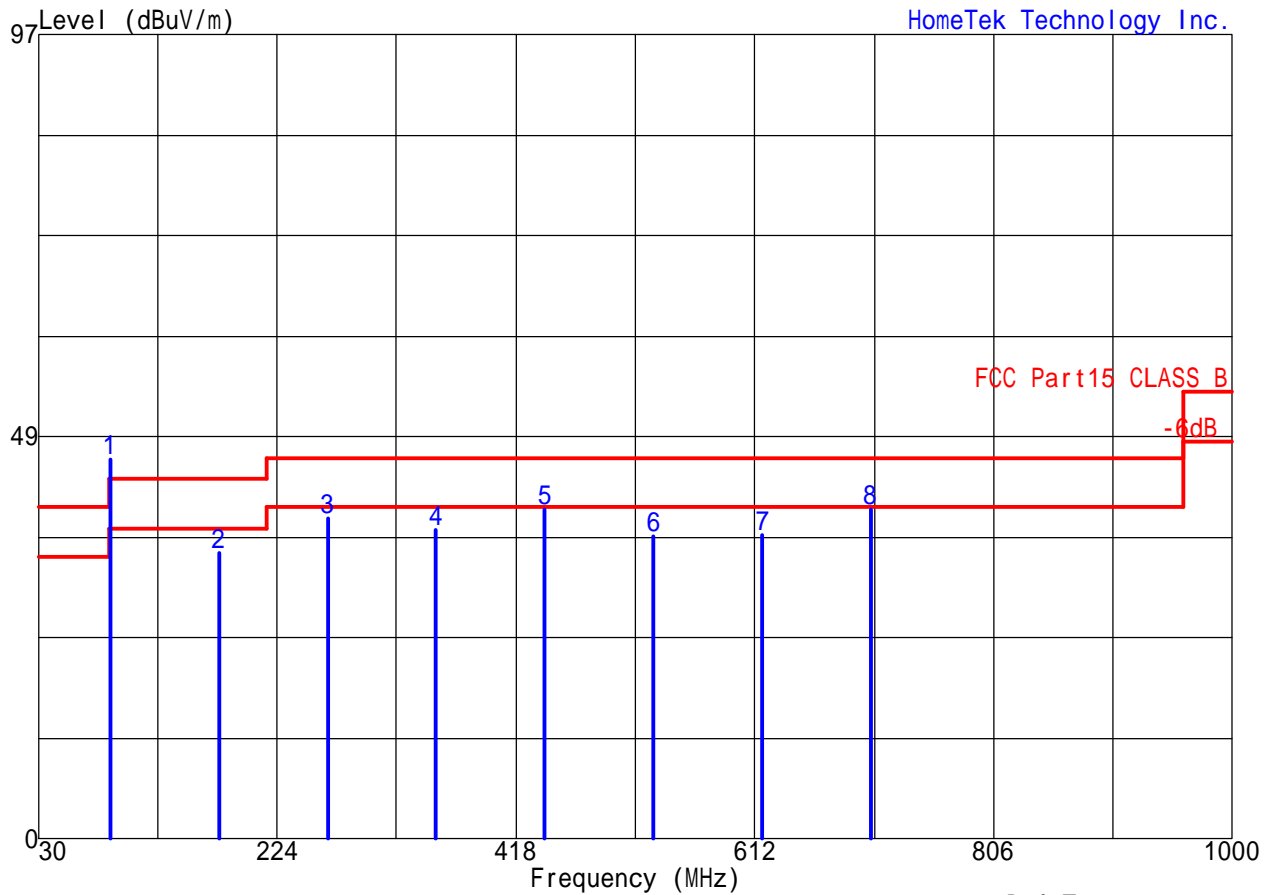
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	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1 *	88.108	45.25	-2.65	47.90	59.53	10.96	2.58	27.83	QP
2	176.248	35.65	-7.85	43.50	48.35	11.61	3.11	27.43	Peak
3	264.314	38.30	-7.70	46.00	46.35	13.90	5.22	27.17	Peak
4 !	352.524	40.47	-5.53	46.00	47.35	15.92	4.61	27.41	Peak
5	440.510	39.52	-6.48	46.00	44.35	17.54	5.53	27.90	Peak
6	528.617	36.35	-9.65	46.00	38.24	18.97	7.40	28.26	Peak
7	616.712	36.07	-9.93	46.00	36.24	20.06	8.19	28.42	Peak
8	704.804	37.21	-8.79	46.00	35.32	21.63	8.75	28.49	Peak



Data#: 6 File#: RP6113.EMI

Date: 1-7,2007 Time: 14:05:08



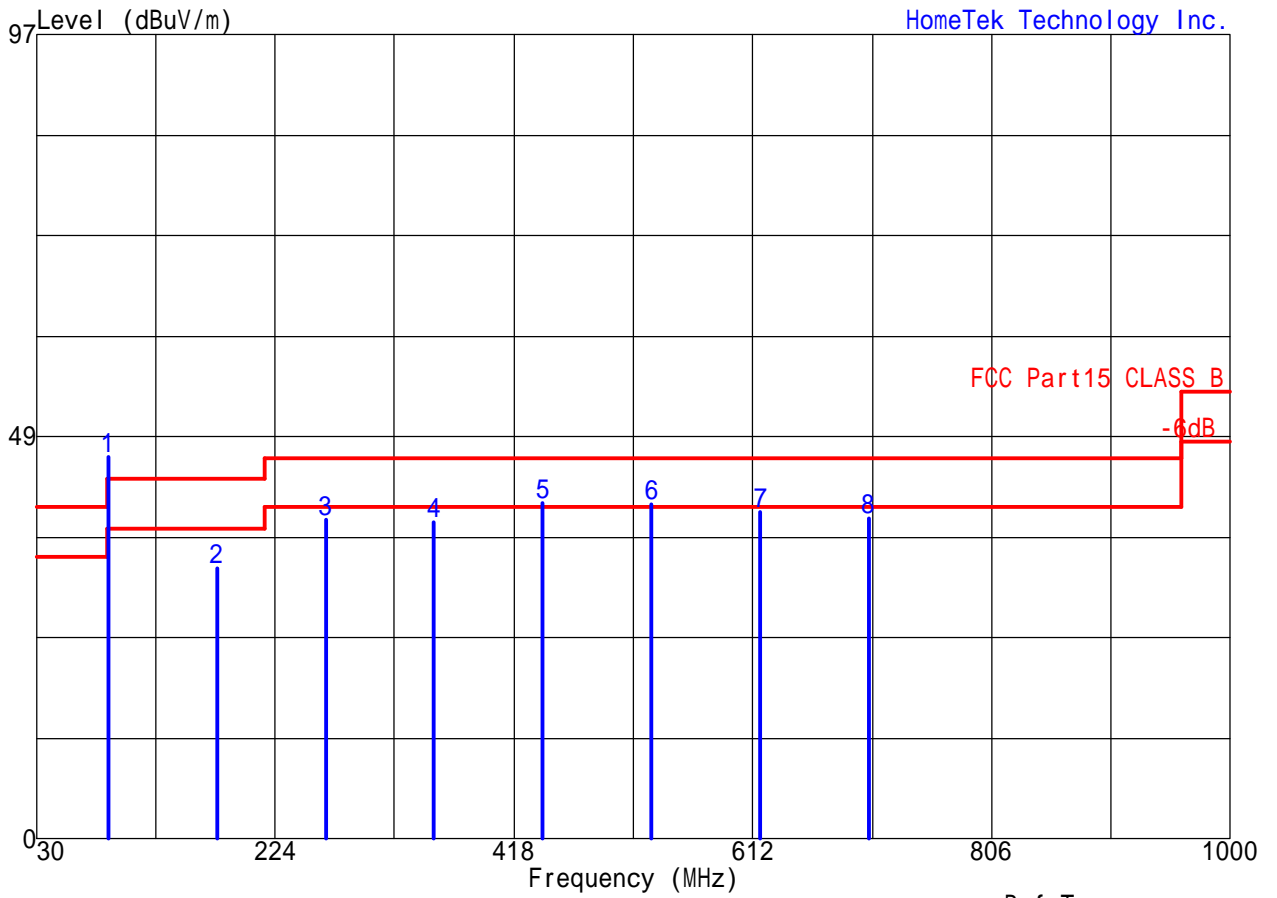
Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 HORIZONTAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.3MHz  
 :  
 :

Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	88.312	45.84	-2.06	47.90	59.72	11.17	2.77	27.82	QP
2	176.619	34.54	-8.96	43.50	47.28	11.61	3.07	27.42	Peak
3	264.945	38.64	-7.36	46.00	46.70	13.90	5.21	27.17	Peak
4	353.219	37.24	-8.76	46.00	44.09	15.94	4.63	27.42	Peak
5	441.524	39.71	-6.29	46.00	44.56	17.59	5.47	27.90	Peak
6	529.804	36.45	-9.55	46.00	38.07	19.01	7.63	28.26	Peak
7	618.152	36.72	-9.28	46.00	36.72	20.08	8.33	28.42	Peak
8	706.216	39.71	-6.29	46.00	37.44	21.65	9.11	28.49	Peak

Data#: 5 File#: RP6113.EMI

Date: 1-7,2007 Time: 13:15:08



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 VERTICAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.3MHz  
 :  
 :

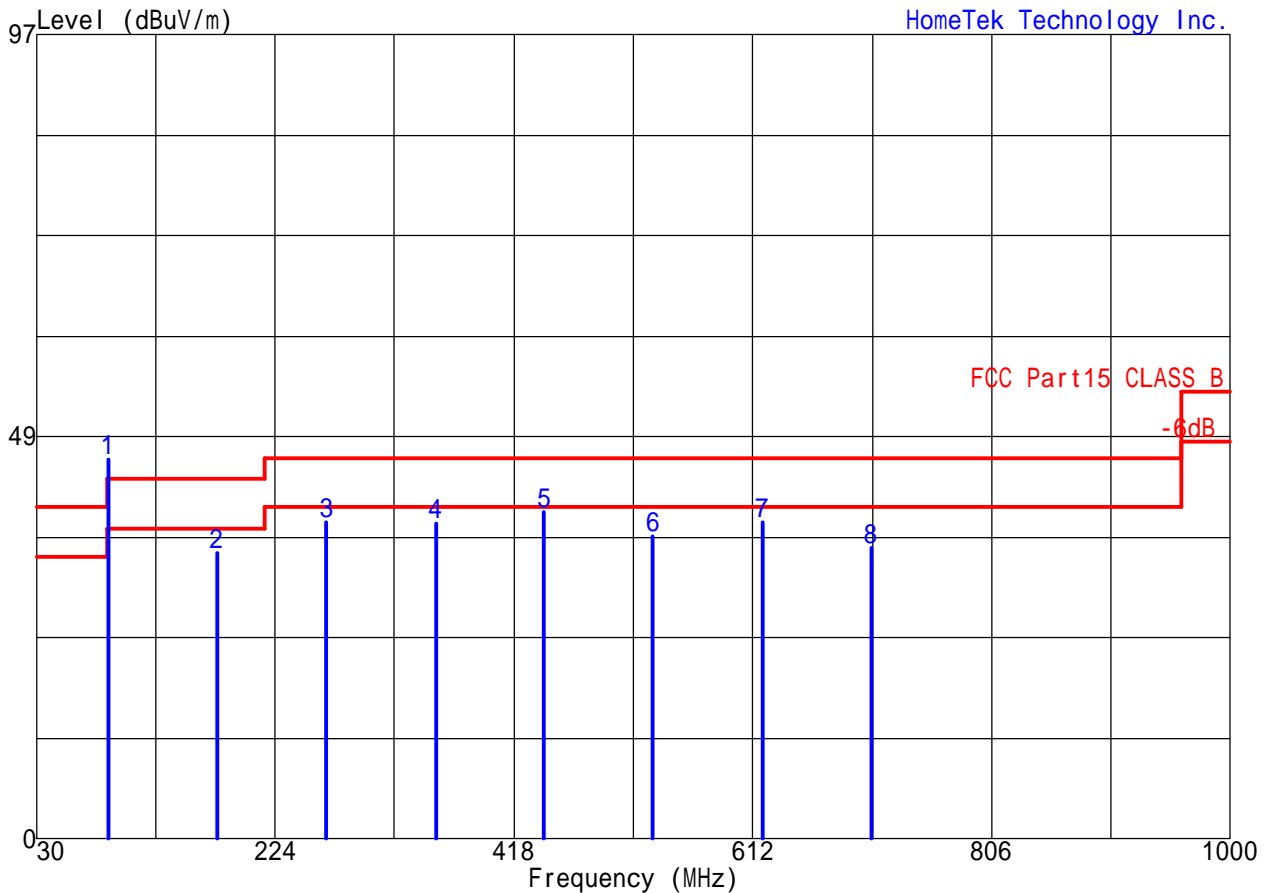
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	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	88.305	45.05	-2.85	47.90	58.93	11.17	2.77	27.82	QP
2	176.628	32.61	-10.89	43.50	45.35	11.61	3.07	27.42	Peak
3	264.905	38.59	-7.41	46.00	46.65	13.90	5.21	27.17	Peak
4	353.241	38.24	-7.76	46.00	45.09	15.94	4.63	27.42	Peak
5 !	441.587	40.50	-5.50	46.00	45.35	17.59	5.47	27.90	Peak
6 !	529.870	40.35	-5.65	46.00	41.97	19.01	7.63	28.26	Peak
7	618.152	39.45	-6.55	46.00	39.45	20.08	8.33	28.42	Peak
8	706.254	38.71	-7.29	46.00	36.44	21.65	9.11	28.49	Peak

Data#: 8 File#: RP6113.EMI

Date: 1-7,2007 Time: 16:12:25



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 HORIZONTAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.5MHz  
 :  
 :

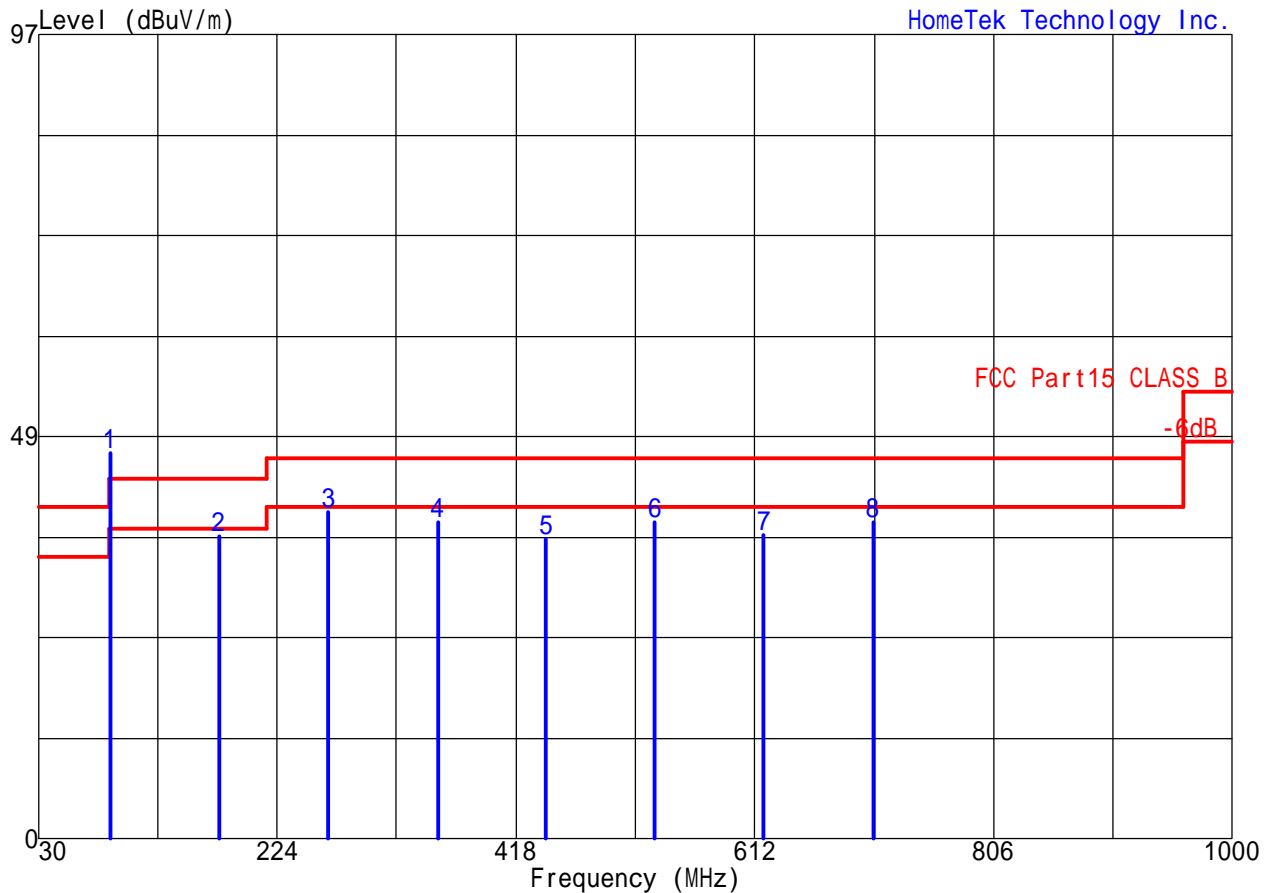
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	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	88.513	45.78	-2.12	47.90	59.66	11.17	2.77	27.82	QP
2	177.025	34.51	-8.99	43.50	47.25	11.61	3.07	27.42	Peak
3	265.518	38.15	-7.85	46.00	46.21	13.90	5.21	27.17	Peak
4	354.417	38.03	-7.97	46.00	44.86	15.94	4.65	27.43	Peak
5	442.514	39.48	-6.52	46.00	44.33	17.59	5.47	27.91	Peak
6	531.014	36.48	-9.52	46.00	38.10	19.01	7.63	28.26	Peak
7	619.518	38.15	-7.85	46.00	38.13	20.11	8.33	28.42	Peak
8	708.017	35.15	-10.85	46.00	32.85	21.68	9.11	28.49	Peak

Data#: 7 File#: RP6113.EMI

Date: 1-7,2007 Time: 15:12:25



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 VERTICAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.5MHz  
 :  
 :

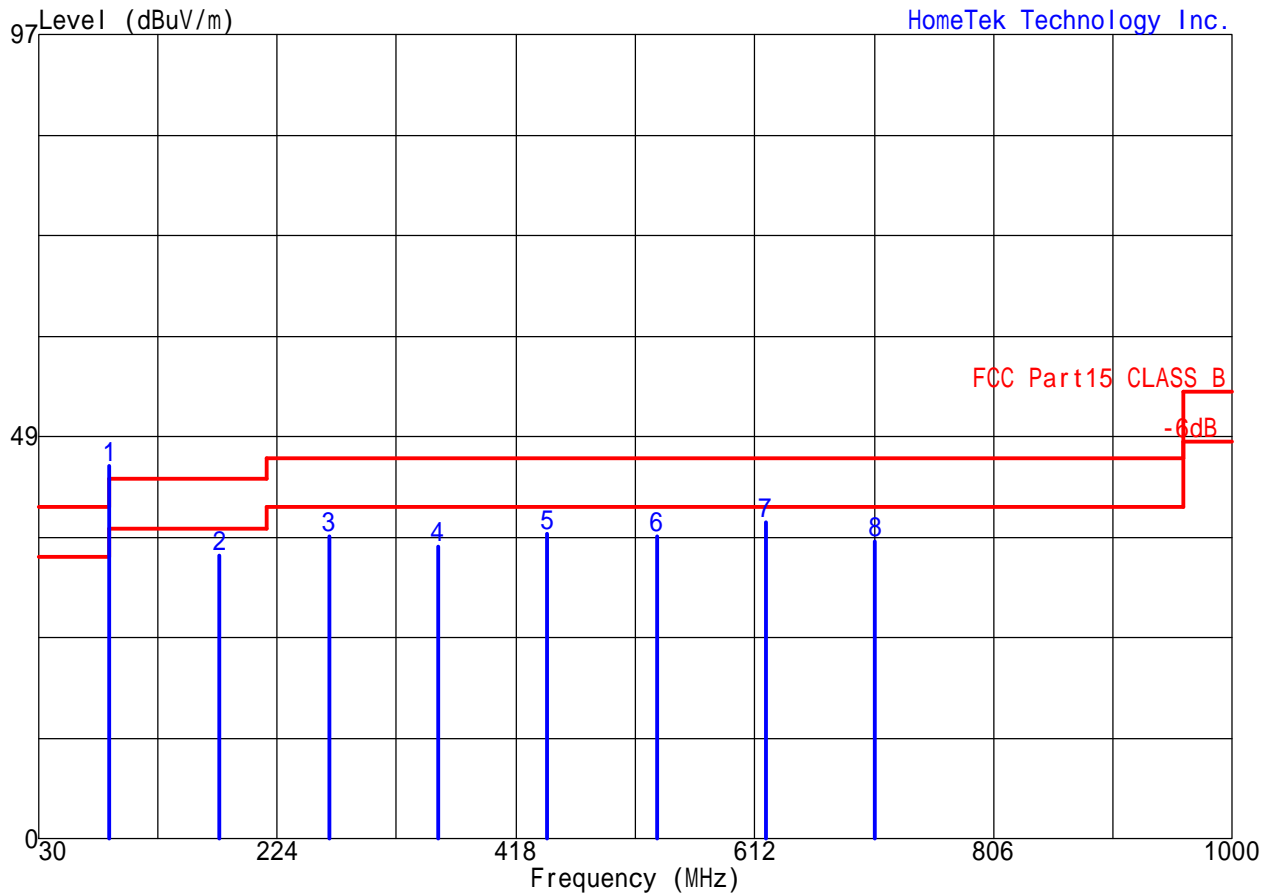
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	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	88.504	45.52	-2.38	47.90	59.40	11.17	2.77	27.82	QP
2	177.014	36.50	-7.00	43.50	49.24	11.61	3.07	27.42	Peak
3	265.504	39.51	-6.49	46.00	47.57	13.90	5.21	27.17	Peak
4	354.470	38.24	-7.76	46.00	45.07	15.94	4.65	27.43	Peak
5	442.504	36.15	-9.85	46.00	41.00	17.59	5.47	27.91	Peak
6	531.070	38.24	-7.76	46.00	39.86	19.01	7.63	28.26	Peak
7	619.501	36.71	-9.29	46.00	36.69	20.11	8.33	28.42	Peak
8	708.004	38.15	-7.85	46.00	35.86	21.68	9.11	28.49	Peak

Data#: 10 File#: RP6113.EMI

Date: 1-7,2007 Time: 18:10:52



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 HORIZONTAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.7MHz  
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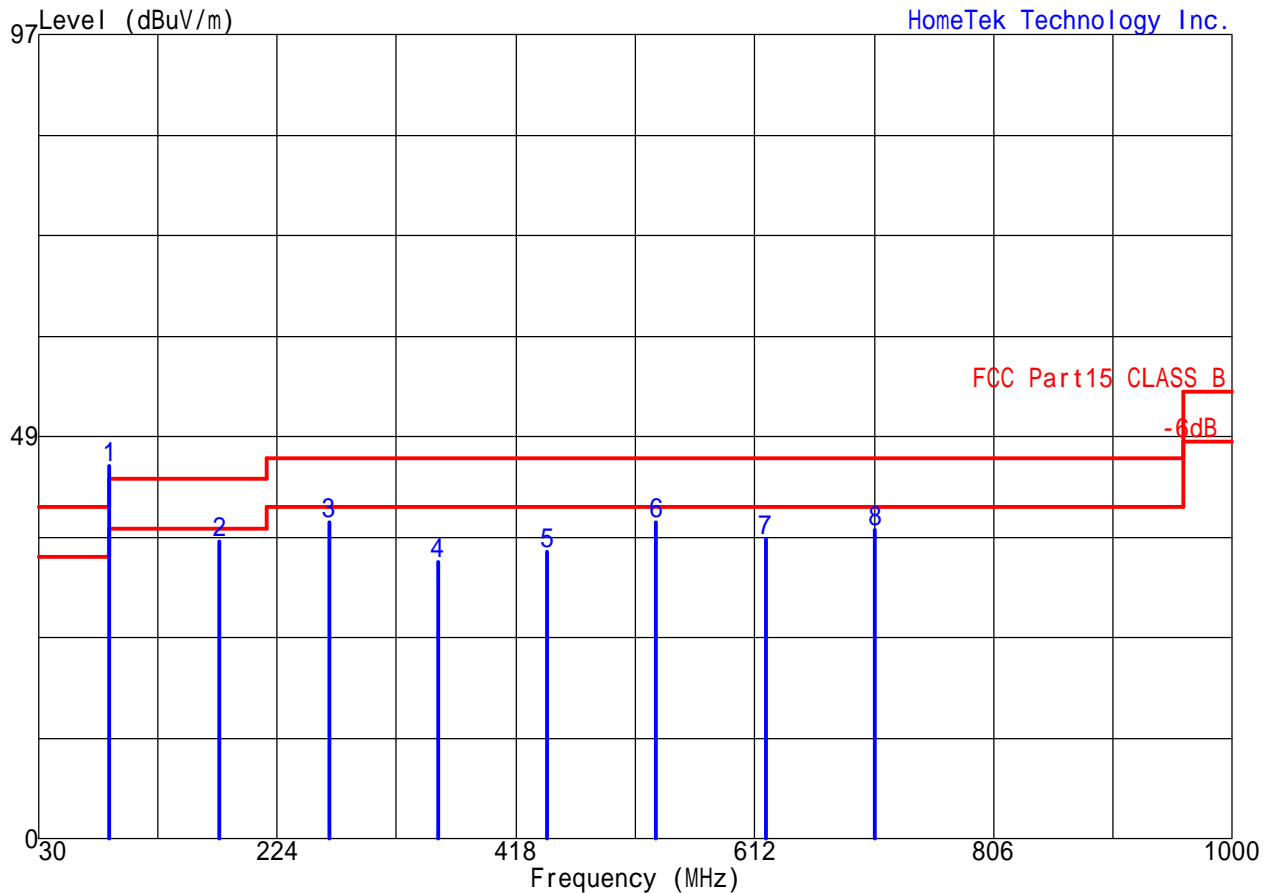
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Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	87.741	45.01	-2.89	47.90	59.29	10.96	2.58	27.83	QP
2	177.414	34.21	-9.29	43.50	46.95	11.61	3.07	27.42	Peak
3	266.127	36.54	-9.46	46.00	44.56	13.95	5.20	27.17	Peak
4	354.816	35.24	-10.76	46.00	42.07	15.94	4.65	27.43	Peak
5	443.534	36.84	-9.16	46.00	41.71	17.63	5.41	27.92	Peak
6	532.214	36.54	-9.46	46.00	37.89	19.05	7.86	28.26	Peak
7	620.945	38.15	-7.85	46.00	37.95	20.14	8.48	28.42	Peak
8	709.625	35.95	-10.05	46.00	33.30	21.68	9.46	28.48	Peak

Data#: 9 File#: RP6113.EMI

Date: 1-7,2007 Time: 17:08:48



Hometek  
 Trace :  
 Limit : FCC Part15 CLASS B 3m  
 Probe : LPB-250/A-031028\_3 VERTICAL  
 Margin: -6.0dB  
 EUT : 32588  
 Power : DC12V  
 Memo : TX 88.7MHz  
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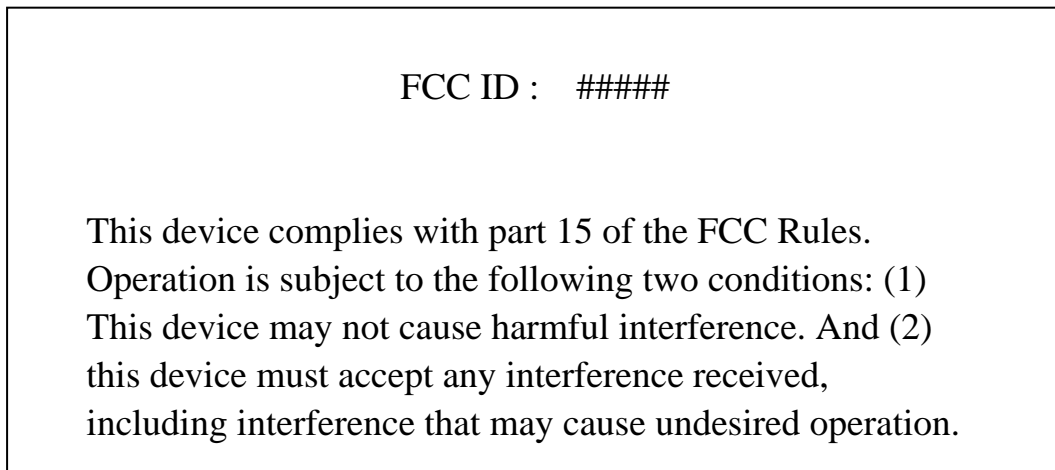
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	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Remark
	MHz	dB	dB	dB	dB	dB	dB	dB	
1	87.714	45.04	-2.86	47.90	59.32	10.96	2.58	27.83	QP
2	177.408	35.88	-7.62	43.50	48.62	11.61	3.07	27.42	Peak
3	266.154	38.23	-7.77	46.00	46.25	13.95	5.20	27.17	Peak
4	354.812	33.42	-12.58	46.00	40.25	15.94	4.65	27.43	Peak
5	443.582	34.67	-11.33	46.00	39.54	17.63	5.41	27.92	Peak
6	532.201	38.21	-7.79	46.00	39.56	19.05	7.86	28.26	Peak
7	620.924	36.24	-9.76	46.00	36.04	20.14	8.48	28.42	Peak
8	709.625	37.24	-8.76	46.00	34.59	21.68	9.46	28.48	Peak

## **PHOTO OF FCC ID LABEL**

SAMPLE OF FCC ID LABEL :



**Please refer to appendix B photo of ID location.**