

# TOSHIBA

TOSHIBA HOKUTO ELECTRONICS CORPORATION

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Sharp Manufacturing Company  
of America

Dec. 13, 1999  
(Ref. No. : 99-174)

RE : Electromagnetic radiation from microwave oven VB-A  
with Toshiba magnetron 2M248

Dear sir

We are enclosing herewith the above mentioned test results based on FCC measuring method in our measuring facility of FCC file number 430A.

We confirmed test results are satisfied with FCC limit.

Please feel free to contact us, if you have any question or request.

Sincerely yours,



Toshiki Azuma  
Group Manager  
Magnetron Engineering Group

AZ/is/us

cc : Mr. Murata TOSHIBA TOKYO  
Mr. Ikegami TOSHIBA HOKUTO TOKYO

## ELECTROMAGNETIC RADIATION TEST OF MICROWAVE OVEN

The following measurements were conducted in Toshiba Hokuto Electronics Corporation measurement facility of FCC file number 430A.

Date : 1999-12-10  
Oven : VB-A  
Tube : 2M248J(L)-NK  
Line : 120V/60Hz

### 1. Output power (Load : 1500ml water (center))

Input power : 1660W  
Output power : 930W  
\* Permissible FIS =  $34.1 \mu\text{V/m}$  at 300m  
(FIS : Field Intensity Strength)

### 2. Power Leak (Load : 275ml water (center))

Po leak :  $0.2 \text{ mW/cm}^2$

### 3. FIS measurements

Measurement equipment (Refer Page-4)

Interference analyzer : EMC-60 MK-IV (Bandwidth : 5MHz)  
Antenna : CA-S, CA-M and CA-X

#### 3-1 Side band radiation (Load : 1050ml water (center))

Frequency (MHz)	FIS ( $\mu\text{V/m}$ ) at 300m
2400	1.0
2535	1.1

#### 3-2 Harmonics radiation

Harmonics	Load	FIS ( $\mu\text{V/m}$ ) at 300m	Frequency (MHz)
2nd	450ml center	13.9	4868
3rd	450ml center	15.5	7305
4th	1050ml center	12.0	9823

Note : 2nd and 3rd Harmonics : The maximum value with the load condition such as 450ml or 1050ml water in the center or side position

#### 4. Frequency measurements

Measurement equipment (Refer Page-4)

Interference analyzer : EMC-60 MK-IV (Bandwidth : 5MHz)  
Antenna : CA-S, CA-M and CA-X

4-1 The variation of frequency for load variation ( Load : 1500ml water center)

Volume of water (ml)	Frequency (MHz)
1500	2467
1200	2469
900	2467
600	2467
300	2467

4-2 The variation of frequency for line voltage variation ( Load : 1500ml water center)

Line voltage (V)	Frequency (MHz)
96	2467
108	2469
120	2467
132	2463
150	2464

#### 5. Frequency sweeping

Measurement equipment (Refer Page-4)

Spectrum analyzer : HP8562A  
Antenna : CA-S, CA-M and CA-X

None of higher FIS value than those shown in the above table existed in the following frequency band.

Frequency (MHz)	Load condition
2000 - 2400	1050ml center
2500 - 4000	
4000 - 8000	450ml or 1050ml water in the center or side position
8000 - 10000	1050ml center

No.	Equipment Name	Model Name & Manufacturer	Specification	Last Calibration Date	Calibration Frequency
1	Interference Analyzer	EMC-60 MK-IV SER : 44116 ELECTRO-METRICS	0.5 to 18 GHz	March 1999	
2	Antenna	(1) CA-S SER : 22-1 POLARAD	2.1 to 4.34 GHz		
		(2) CA-M SER : 20-15 POLARAD	4.19 to 7.74 GHz		
		(3) CA-X SER : 20-10 POLARAD	7.36 to 10 GHz		
3	Signal Generator	8671B SER : 2545A00106 HEWLETT PACKARD	2.0 to 18 GHz	March 1999	
4	Frequency Counter	85340A SER : 134A01280 HEWLETT PACKARD		March 1999	Annually
5	Power Meter	435A SER : 1312J00144 HEWLETT PACKARD	0 to 1 mW	March 1999	Annually
6	Power Sensor	8481A SER : 1234A871 HEWLETT PACKARD		March 1999	
7	Spectrum Analyzer	8562A SER : 2923A03932 HEWLETT PACKARD	1 kHz to 22 GHz	March 1999	