

SHARP®

SHARP MANUFACTURING COMPANY OF AMERICA

DIVISION OF SHARP ELECTRONICS CORPORATION

Sharp Plaza Boulevard, Memphis, Tennessee 38193

Telephone: (901) 795-6510 • Fax: (901) 367-5493

June 8, 1996

Federal Communications Commission
C/O Mellon Bank
525 William Penn Way
Room 153-2713
Pittsburgh, PA 15259-0001

Attn.: Wholesale Lockbox Supervisor

Subject: Part 18 Certification for Microwave Oven

Models: R-1850, R-1851
Brand Name: Sharp
FCC ID Number: APYDMR0112
Applicant: Sharp Corporation
Manufacturer: Sharp Manufacturing Company of America

Dear Sirs,

Sharp Manufacturing Company of America requests certification for the subject models under Part 18 of the FCC Rules. Enclosed you will find a completed FCC Form 731 and supporting exhibits. A list of exhibits is included directly behind the FCC Form 731.

If you should have any questions concerning this application please contact myself, (901) 367-5214 or Mr. Gary Earle, (201) 529-9691. Thank you.

Sincerely,



Eddie Anderson
Compliance Engineer
Microwave Oven Division

Enclosure

0619,115957-021

SHARP MANUFACTURING COMPANY OF AMERICA • Memphis, Tennessee 38193

A525-CHEK

0089234

INVOICE NO.	DATE	DATA VOUCHER	DESCRIPTION	AMOUNT
EDDIE ANDERSON#	06/12/96	13 0372801	57385 FEDERAL COMMUNIC	\$845.00
CHECK DATE :	06/21/96		PAYMENT TOTAL	\$845.00

SHARP

SHARP MANUFACTURING COMPANY OF AMERICA

DIVISION OF SHARP ELECTRONICS CORPORATION
Sharp Plaza Boulevard • Memphis, TN 38193

THE FUJI BANK & TRUST CO.

345 PARK AVE.
NEW YORK, NY 10022
1-890/260

0089234

SEQ. NO 085189

DATE	AMOUNT
06/21/96	\$845.00

FEDERAL COMMUNICATIONS COMMISSION

SHARP MANUFACTURING CO. OF AMERICA



TO THE ORDER OF

⑈089234⑈ ⑆026008905⑆ 0020001683⑈

FCC FORM 731
APPLICATION FOR EQUIPMENT AUTHORIZATION

See 47 CFR 1.1103 for FEE TYPE CODES and FEES, and paragraph C of the attached instructions.

SECTION I - ALL ITEMS IN THIS SECTION MUST BE COMPLETED

APPLICANT'S FULL BUSINESS NAME

SHARP CORPORATION

APPLICANT'S MAILING ADDRESS (Line 1) (Maximum 35 characters)

Reliability Control Group

APPLICANT'S MAILING ADDRESS (Line 2) (if required) (Maximum 35 characters)

22-22 Nagaiki-Cho, Abeno Ku

CITY

Osaka

STATE OR COUNTRY (if foreign address)

Japan

ZIP CODE

545

COMPLETE FCC IDENTIFIER:

GRANTEE CODE

EQUIPMENT PRODUCT CODE (14 characters maximum)

A P Y DMR0112

Enter in Column (A) the correct Fee Type Code for the service for which you are applying. Fee Type Codes may be found in FCC Fee Filing Guides and paragraph C of attached instructions. Enter in Column (C) the result obtained from multiplying the value of the Fee Type Code in Column (A) by the number entered in Column (B).

(A)	(B)	(C)	
FEE TYPE CODE	FEE MULTIPLE	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
(1) E G C	0 0 0 1	\$ 845.00	

SECTION II - Use only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	
FEE TYPE CODE	FEE MULTIPLE	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
(2) [] [] []	0 0 0 1	\$ []	
(3) [] [] []	0 0 0 1	\$ []	
(4) [] [] []	0 0 0 1	\$ []	
ADD ALL AMOUNTS SHOWN IN COLUMN C, LINES (1) THROUGH (4), AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.			
TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING			
\$ 845.00			FOR FCC USE ONLY

(5) NAME AND TITLE OF PERSON AT ABOVE ADDRESS FOR CONTACT, OR TO RECEIVE GRANT (THIS ITEM MUST BE COMPLETED):

Y. Murakami
Department General Manager

SECTION III

Bureau Use Only

1.(a) INSTEAD OF APPLICANT, FCC IS AUTHORIZED TO MAIL ORIGINAL GRANT TO (See instructions): Firm name, Sharp Electronics Corporation number, street, Sharp Plaza city, Mahwah, NJ 07430 state, and ZIP Code					LI
(b) NAME AND TITLE OF PERSON AT ABOVE ADDRESS TO RECEIVE GRANT: Mr. Gary Earle, Project Engineer					DN
2. INFORMATION CONTACT, IF DIFFERENT FROM ITEM 5, PAGE 1 (See instructions): Firm name, Sharp Manufacturing Company of America contact person, Mr. Eddie Anderson number, street, Sharp Plaza Blvd. city, Memphis, TN 38193 state, and ZIP Code					DM
3.(a) TELEPHONE NUMBER (include area code and extension - USA ONLY): 901/367-5214					RG
3.(b) FAX NUMBER (include area code and extension - USA ONLY): 901/367-5413					Code
4. Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR 0.459 of the Commission's Rules? (See instructions) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Reviewer
5. Does the applicant desire the Commission to defer grant of this application pursuant to 47 CFR 0.457(d)(1)(ii)? (See instructions) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
6. Kind of equipment authorization requested (check ONE box only): <input checked="" type="checkbox"/> Certification <input type="checkbox"/> Type Acceptance <input type="checkbox"/> Type Approval <input type="checkbox"/> Notification					
7.(a) Kind of equipment: Consumer ISM Equipment (microwave oven)			7.(b) Equipment will be operated under FCC Rule Part(s): Part 18		
8. Application is for (Check ONE box only): <input checked="" type="checkbox"/> 1 Original equipment <input type="checkbox"/> 2 Change in identification of presently authorized equipment * <input type="checkbox"/> 3 Class II permissive change or modification of presently authorized equipment				9.(a) FCC ID before change in identification: N/A	
* If box 2 is checked, complete items 9(a) and (b).				(b) Grant date of FCC ID in 9(a) above: N/A	
10. EQUIPMENT SPECIFICATIONS:					
(a) Frequency range in MHz	(b) Rated RF power output in watts	(c) Frequency tolerance %, Hz, ppm	(d) Emission designator	(e) Microprocessor model number	
2450 MHz	950 Watts (IEC 705 Method, 1988)	+ 50 MHz	N/A	N/A	
11. Type of equipment tested: <input type="checkbox"/> Production <input type="checkbox"/> Pre-Production <input checked="" type="checkbox"/> Prototype					
12.(a) Is the equipment, or section(s) thereof, subject to more than one equipment authorization? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If YES, complete items 12(b), (c), (d), or (e) as appropriate.					
(b) Additional equipment authorization(s) required for equipment: N/A <input type="checkbox"/> Certification <input type="checkbox"/> Type Acceptance <input type="checkbox"/> Type Approval <input type="checkbox"/> Notification					
(c) Granted FCC ID or FCC ID listed on RX or RX section application: N/A		(d) Granted FCC ID or FCC ID listed on TX or TX section application: N/A		(e) Granted FCC ID or FCC ID listed on other device application: N/A	

Complete and sign Page 3 (reverse side)

FCC Form 731 - Page 2
October 1992

13.(a) Testing facility, if different from applicant or contact person:

Sharp Corporation (Yao Factory)

(b) Mailing address number, street city, state and ZIP code	Sharp Corporation Kitchen Appliances Systems Division 3.1.72 Kitakamei-Cho Yao-City, Osaka 581, Japan	(c) Telephone No. (Area code and number): (USA ONLY)
		(d) FAX No. (Area code and number): (USA ONLY)

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

14. APPLICANT ANTI-DRUG ABUSE CERTIFICATION:

By checking **yes**, the applicant certifies that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a), or, in the case of a non-individual applicant (e.g. corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits, that includes FCC benefits, pursuant to that section. For the definition of a "party" for these purposes, see 47 CFR 1.2002(b).

Yes No

15. APPLICANT CERTIFICATION:

I certify that I am authorized to sign for the applicant and that all the statements in this application and in the exhibits attached hereto are true and correct to the best of my knowledge and belief. If the applicant is not the actual manufacturer of the equipment listed herein, appropriate arrangements have been made with the manufacturer to ensure that production units of this equipment bearing the FCC IDENTIFIER listed in this application will continue to comply with the Commission's requirements. If an agent has been authorized to sign this application it is understood that the applicant remains responsible for all statements herein.

June 11, 1996

▲ Written signature of authorized signer

▲ Date (Month, Day, Year)

T. Kaneko

Manager, Quality Control Center

▲ Typed/printed name of authorized signer

▲ Title of authorized signer

16.(a) AGENT CERTIFICATION:

I certify that I am authorized to sign this application on behalf of the applicant. A copy of the authorization will be submitted upon request by the FCC. It is understood that the FCC reserves the right to contact the applicant at any time.

▲ Written signature of authorized agent

▲ Date (Month, Day, Year)

▲ Typed/printed name and title of authorized agent

▲ Business name of authorized agent

(b) Agent address number, street city, state and ZIP code	(c) Telephone No. (Area code and number): (USA ONLY)
	(d) FAX No. (Area code and number): (USA ONLY)

NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT OF 1974 AND THE PAPERWORK REDUCTION ACT OF 1980

The solicitation of personal information requested in this form is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to evaluate the equipment, to maintain a computer database of authorized equipment, and to determine whether grant of this application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. All information provided in this form will be available for public inspection, unless otherwise determined pursuant to 47 CFR, Section 0.459; 5 U.S.C. Section 552. If information requested in this form is not provided, processing of the application may be delayed or the application may be returned without action pursuant to the Commission's Rules. Your response is required to obtain the requested equipment authorization. THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Public reporting burden for this collection of information is estimated to vary from 18 hours to 30 hours per response, with an average of 24 hours per response, including time for reviewing instructions, searching existing data sources, gathering information and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any aspect of this collection of information, including suggestions for reducing this burden, to Federal Communications Commission, AMD-PIRS, Records Management Division, Washington, DC 20554, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Paperwork Reduction Project (3060-0057), Washington, DC 20503.

TECHNICAL REPORT

APPLICATION FOR CERTIFICATION

June, 1996

FCC ID: APYDMR0112

MODEL NO.: R-1850, R-1851

MAGNETRON TYPE: 2M167B - PANASONIC
2M240J(L),5 - TOSHIBA

EQUIPMENT CLASS: Part 18 Consumer Device

FCC ID: APYDMR0112

LIST OF EXHIBITS

- EXHIBIT A - Purpose of Filing**
- EXHIBIT B - Block Diagram and Schematic Drawing**
- EXHIBIT C - Operations Manual**
- EXHIBIT D - Identification Label**
- EXHIBIT E - Photographs**
- EXHIBIT F - Measurement Report**

INFORMATION FOR CERTIFICATION

APPLICANT:

Name: Sharp Corporation, Reliability Control Group
Address: 22-22 Nagaike-Cho, Abeno-Ku
Osaka 545, Japan

Grantee Code: APY
Applicant Representative: Y. Murakami

REPORTED BY:

Name: Sharp Manufacturing Company of America
Address: Sharp Plaza Blvd., Memphis, TN 38193

CONTACT PERSON:

Name: Sharp Electronics Corporation
Address: Sharp Plaza, Mahwah, New Jersey 07430
Applicant Representative: Mr. Gary Earle
Telephone No.: (201) 529-9691

MANUFACTURER:

Name: Sharp Manufacturing Company of America
Address: Sharp Plaza Blvd., Memphis, TN 38193

FCC IDENTIFIER: APYDMR0112

EQUIPMENT: Microwave Oven Models R-1850 and R-1851

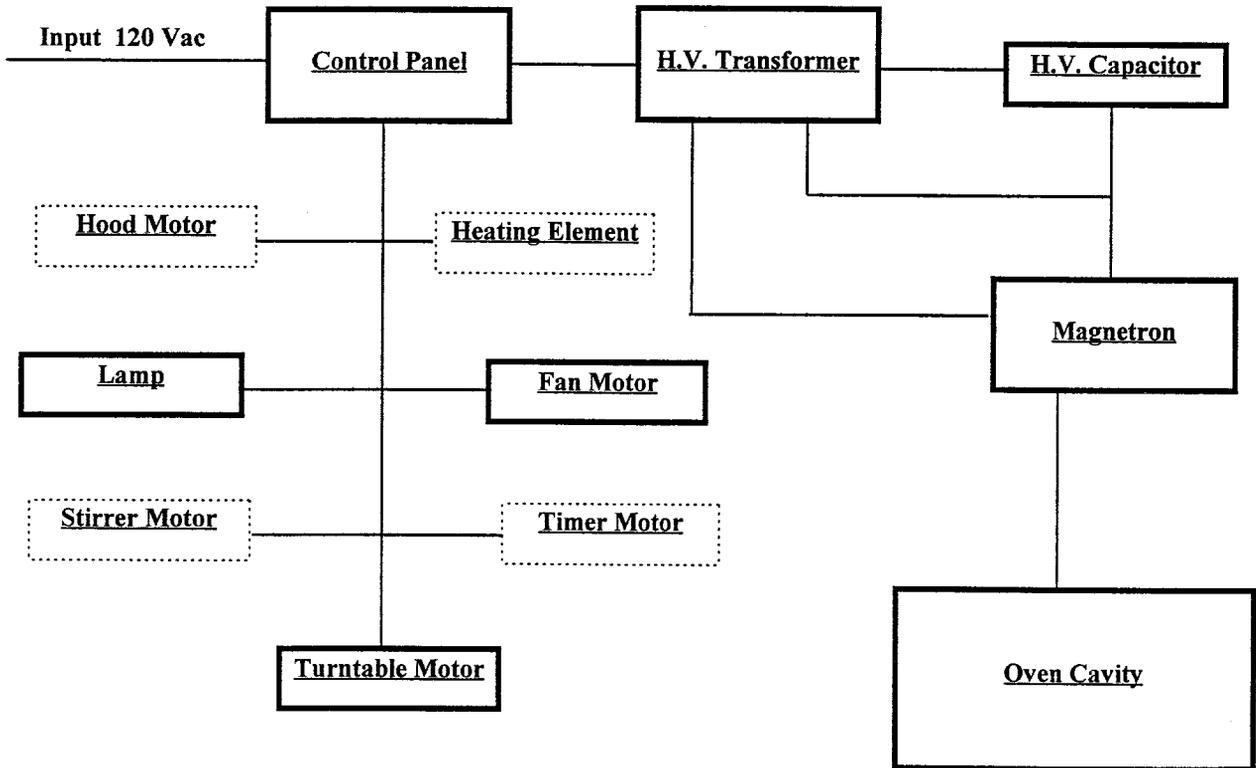
FCC ID: APYDMR0112

EXHIBIT A

PURPOSE OF FILING

The purpose of this filing is to request certification for a new model family of microwave ovens. These models are over-the-range type microwave / convection ovens with a microwave RF power output of 950 watts as measured by the IEC 705 Method, 1988 revision. The magnetrons used with these models have both been used on several other microwave ovens manufactured by Sharp Manufacturing. The power transformer is a new design. The chassis design and waveguide are a new design as well as the door design.

MICROWAVE OVEN BLOCK DIAGRAM

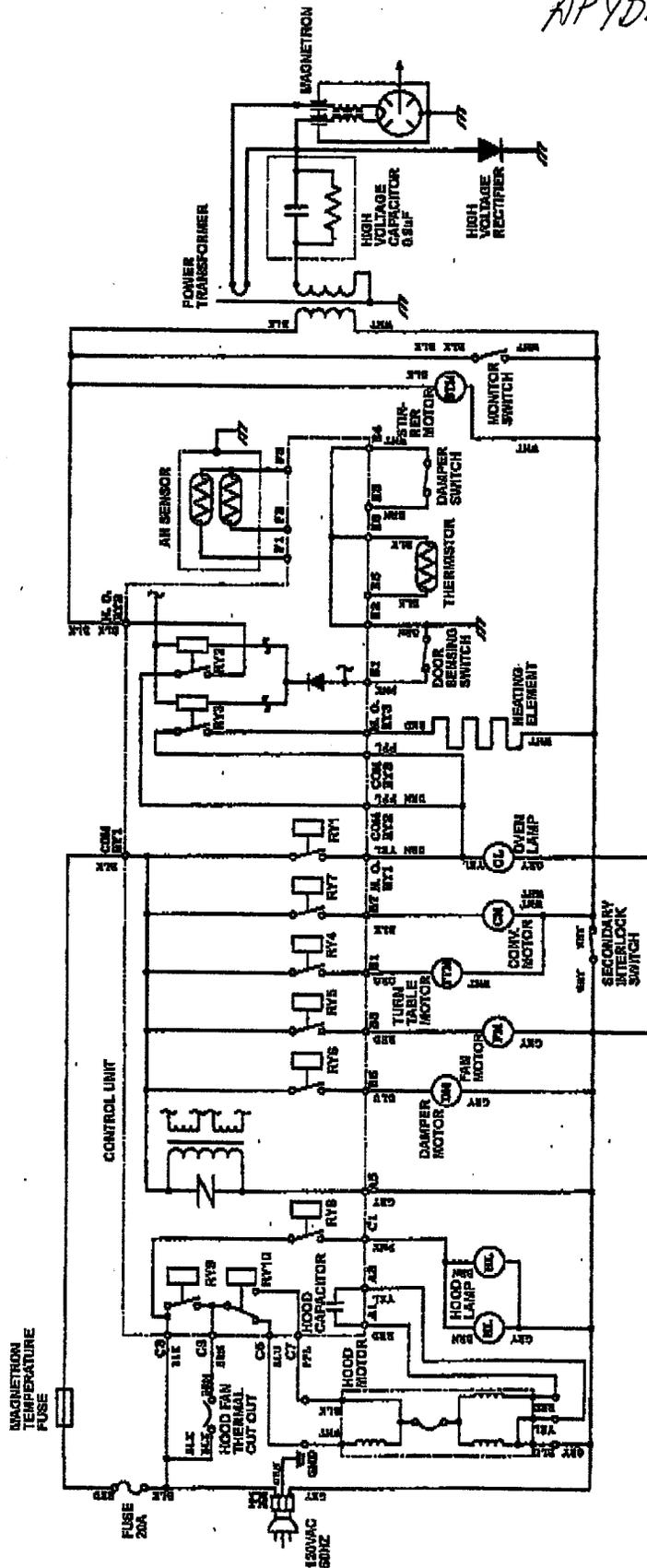


Note: Components outlined with dotted line are optional and may not be present on all models.

APYDMR0112

P. 2/2

MODEL NOS. R-1850 / R-1851
SCHEMATIC DIAGRAM (DOOR CLOSED COOK OFF CONDITION)



APYDMR0112

SHARP®

Carousel
**OVER THE RANGE
MICROWAVE
OVEN**

With

**INTERACTIVE
COOKING SYSTEM**

OPERATION MANUAL

MODELS

R-1850

R-1851

Read all instructions carefully before using this oven.

PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- (a) Do not attempt to operate this oven with the door open since open-door operation can result in harmful exposure to microwave energy. It is important not to defeat or tamper with the safety interlocks.
- (b) Do not place any object between the oven front face and the door or allow soil or cleaner residue to accumulate on sealing surfaces.
- (c) Do not operate the oven if it is damaged. It is particularly important that the oven door close properly and that there is no damage to the: (1) door (bent), (2) hinges and latches (broken or loosened), (3) door seals and sealing surfaces.
- (d) The oven should not be adjusted or repaired by anyone except properly qualified service personnel.

FOR CUSTOMER ASSISTANCE

To aid in reporting this microwave oven in case of loss or theft, please record below the model number and serial number located on the unit. We also suggest you record all the information listed and retain for future reference.

MODEL NUMBER _____	SERIAL NUMBER _____
DATE OF PURCHASE _____	
Dealer _____	Telephone _____
Service _____	Telephone _____

TO PHONE,

DIAL 1-800-BE-SHARP (1-800-237-4277) FOR:
 SERVICE
 (for your nearest Sharp Authorized Servicer)
 PARTS
 (for your authorized parts distributor)
 ACCESSORIES
 ADDITIONAL CUSTOMER INFORMATION

DIAL 201-529-8703 FOR:
 COOKING ASSISTANCE

TO WRITE:

For cooking and operation questions:

Susan Edwards/Test Kitchen
 Sharp Electronics Corporation
 Sharp Plaza, Box 650
 Mahwah, NJ 07430-2135

For service problems, warranty information, missing items and other assistance:

Sharp Electronics Corporation
 Customer Assistance Center
 1300 Naperville Drive
 Romeoville, IL 60446-1091

Please provide the following information when you write or call: model number, serial number, date of purchase, your complete mailing address (including zip code), your daytime telephone number (including area code) and description of the problem.

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R-1850/ R-1851

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INTERACTIVE COOKING SYSTEM

The Interactive Cooking System offers step-by-step instructions in the display for using the oven, from setting the clock to programming each feature. It also includes Custom Help for instructions on using Demonstration Mode, Safety Lock, Audible Signal Elimination, Auto Start and Help. There is a choice of English, Spanish or French and a choice of U.S. Customary Unit-pound or Metric-kilograms. Touch CUSTOM HELP and follow the directions displayed or check page 24.

LIMITED WARRANTY

SHARP ELECTRONICS CORPORATION warrants to the first consumer purchaser that this Sharp brand product (the "Product"), when shipped in its original container, will be free from defective workmanship and materials and agrees that it will, at its option, either repair the defect or replace the defective Product or part thereof at no charge to the purchaser for parts or labor for the time period(s) set forth below.

This warranty does not apply to any appearance items of the Product nor to the additional excluded item(s) set forth below nor to any Product the exterior of which has been damaged or defaced, which has been subjected to misuse, abnormal service or handling or which has been altered or modified in design or construction.

In order to enforce the rights under this limited warranty, the purchaser should follow the steps set forth below and provide proof of purchase to the servicer.

The limited warranty described above is in addition to whatever implied warranties may be granted to purchasers by law. ALL IMPLIED WARRANTIES INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE LIMITED TO THE PERIOD(S) FROM THE DATE OF PURCHASE SET FORTH BELOW. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Neither the sales personnel of the seller nor any other person is authorized to make any warranties other than those described above or to extend the duration of any warranties beyond the time period described above on behalf of Sharp.

The warranties described above shall be the sole and exclusive warranties granted by Sharp and shall be the sole and exclusive remedy available to the purchaser. Correction of defects, in the manner and for the period of time described herein, shall constitute complete fulfillment of all liabilities and responsibilities of Sharp to the purchaser with respect to the Product and shall constitute full satisfaction of all claims, whether based on contract, negligence, strict liability or otherwise. In no event shall Sharp be liable, or in any way responsible, for any damages or defects in the Product which were caused by repairs or attempted repairs performed by anyone other than an authorized servicer. Nor shall Sharp be liable, or in any way responsible, for any incidental or consequential economic or property damage. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

THE WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

Your Product model number: R-1850 and R-1851 Home Use Carousel Microwave Oven.
(Be sure to have this information available when you need service for your Product.)

Warranty period for this Product: One (1) year parts and labor in-home service. In-home service: The servicer will come to the unit's location. If it is necessary to remove the unit for repair, the servicer will reinstall the unit at no extra charge. The warranty period continues for an additional six (6) years, for a total of seven (7) years, with respect to the magnetron tube in the Product for parts only. Labor is not provided free of charge for this additional period.

Additional items excluded from warranty coverage: accessories, rubber or plastic parts, the turntable, light bulbs, glass parts or any printed materials.

Where to obtain service: at a Sharp Authorized Servicer or Sharp Authorized Service Dealer located in the United States. To find out the location of the nearest Sharp Authorized Servicer or Dealer, call Sharp toll free at 1-800-BE-SHARP (1-800-237-4277).

PRODUCT INFORMATION CARD

The product information card which is on the inside of the microwave oven carton should be completed within ten days of purchase and returned. We will keep it on file and help you access the information in case of loss, damage or theft. This will also enable us to contact you in the unlikely event that any adjustments or modifications are ever required for your oven.

APYDMR0112

IMPORTANT SAFETY INSTRUCTIONS

When using electrical appliances basic safety precautions should be followed, including the following:

WARNING - To reduce the risk of burns, electric shock, fire, injury to persons or exposure to excessive microwave energy:

1. Read all instructions before using the appliance.
2. Read and follow the specific **“PRECAUTIONS TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY”** on inside front cover.
3. This appliance must be grounded. Connect only to properly grounded outlet. See **“GROUNDING INSTRUCTIONS”** on page 4 .
4. Install or locate this appliance only in accordance with the provided installation instructions.
5. Some products such as whole eggs and sealed containers - for example, closed glass jars - may explode and should not be heated in this oven.
6. Use this appliance only for its intended use as described in this manual. Do not use corrosive chemicals or vapors in this appliance. This type of oven is specifically designed to heat, cook or dry food. It is not designed for industrial or laboratory use.
7. As with any appliance, close supervision is necessary when used by children.
8. Do not operate this appliance if it has a damaged cord or plug, if it is not working properly or if it has been damaged or dropped.
9. This appliance should be serviced only by qualified service personnel. Contact nearest Sharp Authorized Servicer or Dealer for examination, repair or adjustment.
10. Do not cover or block any openings on the appliance.
11. Do not store or use this appliance outdoors. Do not use this product near water- for example, near a kitchen sink, in a wet basement or near a swimming pool, and the like.
12. Do not immerse cord or plug in water.
13. Keep cord away from heated surfaces.
14. Do not let cord hang over edge of table or counter.
15. See door surface cleaning instructions on page 25.
16. To reduce the risk of fire in the oven cavity:
 - a. Do not overcook food. Carefully attend appliance if paper, plastic or other combustible materials are placed inside the oven to facilitate cooking.
 - b. Remove wire twist-ties from paper or plastic bags before placing bag in oven.
 - c. **If materials inside the oven should ignite, keep oven door closed, turn oven off and disconnect the power cord or shut off power at the fuse or circuit breaker panel.**
 - d. Do not use the cavity for storage purposes. Do not leave paper products, cooking utensils or food in the cavity when not in use.
17. Clean ventilation openings and grease filters frequently-Grease should not be allowed to accumulate on ventilation openings, hood (louver) or grease filters.
18. Use care when cleaning the louver and the grease filters. Corrosive cleaning agents, such as lye-based oven cleaners, may damage the louver and the grease filters.
19. When foods flame under the grease filters, turn the fan off by pushing the FAN button, if possible, or by turning power off at the circuit breaker box. The fan cannot be turned off manually if it had started as a result of heat rising from range units or burners. The fan, if operating, may spread the flame.
20. This appliance is suitable for use above both gas and electric cooking equipment 36" wide or less.

SAVE THESE INSTRUCTIONS

UNPACKING INSTRUCTIONS

Unpacking and Examining Your Oven

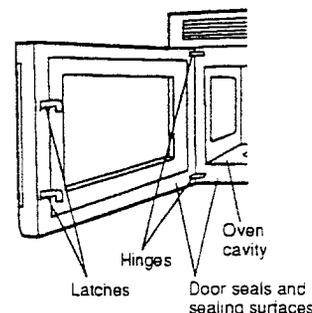
Carefully remove oven from carton. **SAVE THE CARTON AS IT MAY MAKE INSTALLATION EASIER.**

Remove:

1. all packing materials from inside the oven cavity. Check to see that there are Installation Instructions, Wall Template and Top Template. Read enclosures and **SAVE** the Operation Manual.
2. the feature sticker from the outside of the door, if there is one.

Check the oven for any damage, such as misaligned or bent door, damaged door seals and sealing surfaces, broken or loose door hinges and latches and dents inside the cavity or on the door. If there is any damage, do not operate the oven and contact your dealer or SHARP AUTHORIZED SERVICER.

See Installation Instructions for more details.



ACCESSORIES

Two accessories are available for this oven:

1. Charcoal Filter (RK-220). This is required when hood exhaust is recirculated. See Charcoal Filter on page 26. If your dealer does not stock this item, it can be ordered by calling 1-800-BE-SHARP.
2. Filler Panel Kit. For use when the oven is installed in a 36-inch or 42-inch wide opening. The metal filler panels come in pairs, each 3-inches wide. To purchase contact:

Modern-Aire Manufacturing Corporation
7319 Lankershim Blvd.
North Hollywood, CA 91605
Phone: (818) 765-9870 or (213) 875-1350 Fax (818) 765-4916

GROUNDING INSTRUCTIONS

This appliance must be grounded. This oven is equipped with a cord having a grounding wire with a grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances. In the event of an electrical short circuit, grounding reduces risk of electric shock by providing an escape wire for the electric current.

WARNING – Improper use of the grounding plug can result in a risk of electric shock.

Electrical Requirements

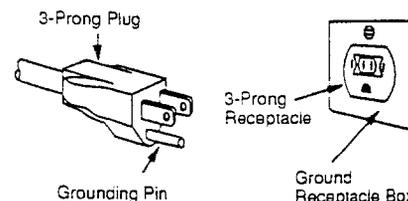
Check Installation Instructions for proper location for the power supply.

The electrical requirements are a 120 volt 60 Hz, AC only, 15 amp. or more protected electrical supply. It is recommended that a separate circuit serving only the oven be provided.

The oven is equipped with a 3-prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded. **DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE GROUNDING PIN FROM THE PLUG.**

Note:

1. If you have any questions about the grounding or electrical instructions, consult a qualified electrician or service person.
2. Neither Sharp nor the dealer can accept any liability for damage to the oven or personal injury resulting from failure to observe the correct electrical connection procedures.



Radio or TV Interference

Should there be any interference caused by the microwave oven to your radio or TV, check that the microwave oven is on a different electrical circuit, relocate the radio or TV as far away from the oven as feasible or check position and signal of receiving antenna.

INFORMATION YOU NEED TO KNOW

...About Your Oven

This Operation Manual is valuable: read it carefully and always save it for reference.

A good microwave cookbook is a valuable asset. Check it for microwave cooking principles, techniques, hints and recipes. See the order form on page 28 for ordering the Ultimate Accessory, the SHARP CAROUSEL MICROWAVE COOKBOOK.

NEVER use the oven without the turntable and support nor turn the turntable over so that a large dish could be placed in the oven. The turntable will turn both clockwise and counterclockwise.

ALWAYS have food in the oven when it is on to absorb the microwave energy.

When using the oven at power levels below 100%, you may hear the magnetron cycling on and off.

Condensation is a normal part of microwave cooking. Room humidity and the moisture in food will influence the amount of moisture that condenses in the oven. Generally, covered foods will not cause as much condensation as uncovered ones. Ventilation openings must not be blocked.

The oven is for food preparation only. It should not be used to dry clothes or newspapers.

The R-1850 and R-1851 is rated at 850 watts using the IEC-705-1988 method. In using recipes or package directions, check food at the minimum time and add time accordingly.

...About Food

FOOD	DO	DON'T
Eggs, fruits, vegetables & sausages	<ul style="list-style-type: none"> * Puncture egg yolks before cooking to prevent "explosion". * Pierce skins of potatoes, apples, squash, hot dogs and sausages so that steam escapes. 	<ul style="list-style-type: none"> * Cook eggs in shells. * Reheat whole eggs.
Popcorn	<ul style="list-style-type: none"> * Use specially bagged popcorn for the microwave oven. * Listen while popping corn for the popping to slow to 1 or 2 seconds or use POPCORN pad. 	<ul style="list-style-type: none"> * Pop popcorn in regular brown bags or glass bowls. * Exceed maximum time on popcorn package.
Baby Food	<ul style="list-style-type: none"> * Transfer baby food to small dish and heat carefully, stirring often. Check temperature before serving. * Put nipples on bottles after heating and shake thoroughly. "Wrist" test before feeding. 	<ul style="list-style-type: none"> * Heat baby food in original jars. * Heat disposable bottles. * Heat bottles with nipples on.
General	<ul style="list-style-type: none"> * Cut baked goods with filling after heating to release steam and avoid burns. * Stir liquid briskly before and after heating to avoid "eruption". * Use deep bowl, when cooking liquid or cereal, to prevent boilovers. 	<ul style="list-style-type: none"> * Heat or cook in closed glass jars or airtight containers. * Can in the microwave as harmful bacteria may not be destroyed. * Deep fat fry. * Dry wood, gourds, herbs or wet papers.

...About Microwave Cooking

APYD MR0112

- * Arrange food carefully. Place thickest areas toward outside of dish.
- * Watch cooking time closely. Cook for the shortest amount of time indicated and add more as needed. Food severely overcooked can smoke or ignite.
- * Cover foods while cooking. Check recipe or cookbook for suggestions: paper towels, wax paper, microwave plastic wrap or a lid. Covers prevent spattering and help foods to cook evenly.
- * Shield with small flat pieces of aluminum foil any thin areas of meat or poultry to prevent overcooking before dense, thick areas are cooked thoroughly.
- * Stir foods from outside to center of dish once or twice during cooking, if possible.
- * Turn foods over once during microwaving to speed cooking of such foods as chicken and hamburgers. Large items like roasts must be turned over at least once.
- * Rearrange foods like meatballs halfway through cooking both from top to bottom and from the center of the dish to the outside.
- * Add standing time. Remove food from oven and stir, if possible. Cover for standing time which allows the food to finish cooking without overcooking.
- * Check for doneness. Look for signs indicating that cooking temperatures have been reached. Doneness signs include:
 - * Food steams throughout, not just at edge.
 - * Center bottom of dish is very hot to the touch.
 - * Poultry thigh joints move easily.
 - * Meat and poultry show no pinkness.
 - * Fish is opaque and flakes easily with a fork.

...About Safety

- * Check foods to see that they are cooked to the United States Department of Agriculture's recommended temperatures.

TEMP	FOOD
160°F	...for fresh pork, boneless white meat of poultry, ground meat, fish, seafood, egg dishes and frozen prepared food.
165°F	...for leftover, ready-to-reheat refrigerated and deli and carry-out "fresh" food.
170°F	...white meat of poultry.
180°F	...dark meat of poultry.

To test for doneness, insert a meat thermometer in a thick or dense area away from fat or bone. Never leave the thermometer in the food during cooking, unless it is approved for microwave oven use.

- * ALWAYS use potholders to prevent burns when handling utensils that are in contact with hot food. Enough heat from the food can transfer through utensils to cause skin burns.
- * Avoid steam burns by directing steam away from the face and hands. Slowly lift the farthest edge of a dish's covering and carefully open popcorn and oven cooking bags away from the face.
- * Stay near the oven while it's in use and check cooking progress frequently so that there is no chance of overcooking food.
- * NEVER use the cavity for storing cookbooks or other items.
- * Select, store and handle food carefully to preserve its high quality and minimize the spread of foodborne bacteria.
- * Keep wave guide cover clean. Food residue can cause arcing and/or fires.

...About Children and the Microwave

- * Children below the age of 7 should use the microwave with a supervising person very near to them. Between the ages of 7 and 12, the supervising person should be in the same room.
- * The child must be able to reach the oven comfortably; if not, he/she should stand on a sturdy stool.
- * At no time should anyone be allowed to lean on or swing on the oven door.
- * Children should be taught all safety precautions: use potholders; remove coverings carefully, pay special attention to packages that crisp food because they may be extra hot.
- * Don't assume that because a child has mastered one cooking skill he/she can cook everything.
- * Children need to learn that the microwave oven is not a toy.

...About Utensils and Coverings

APYDMR0112

It is not necessary to buy all new cookware. Many pieces already in your kitchen can be used successfully in your new microwave convection oven. The chart below will help you decide what utensils and coverings should be used in each mode.

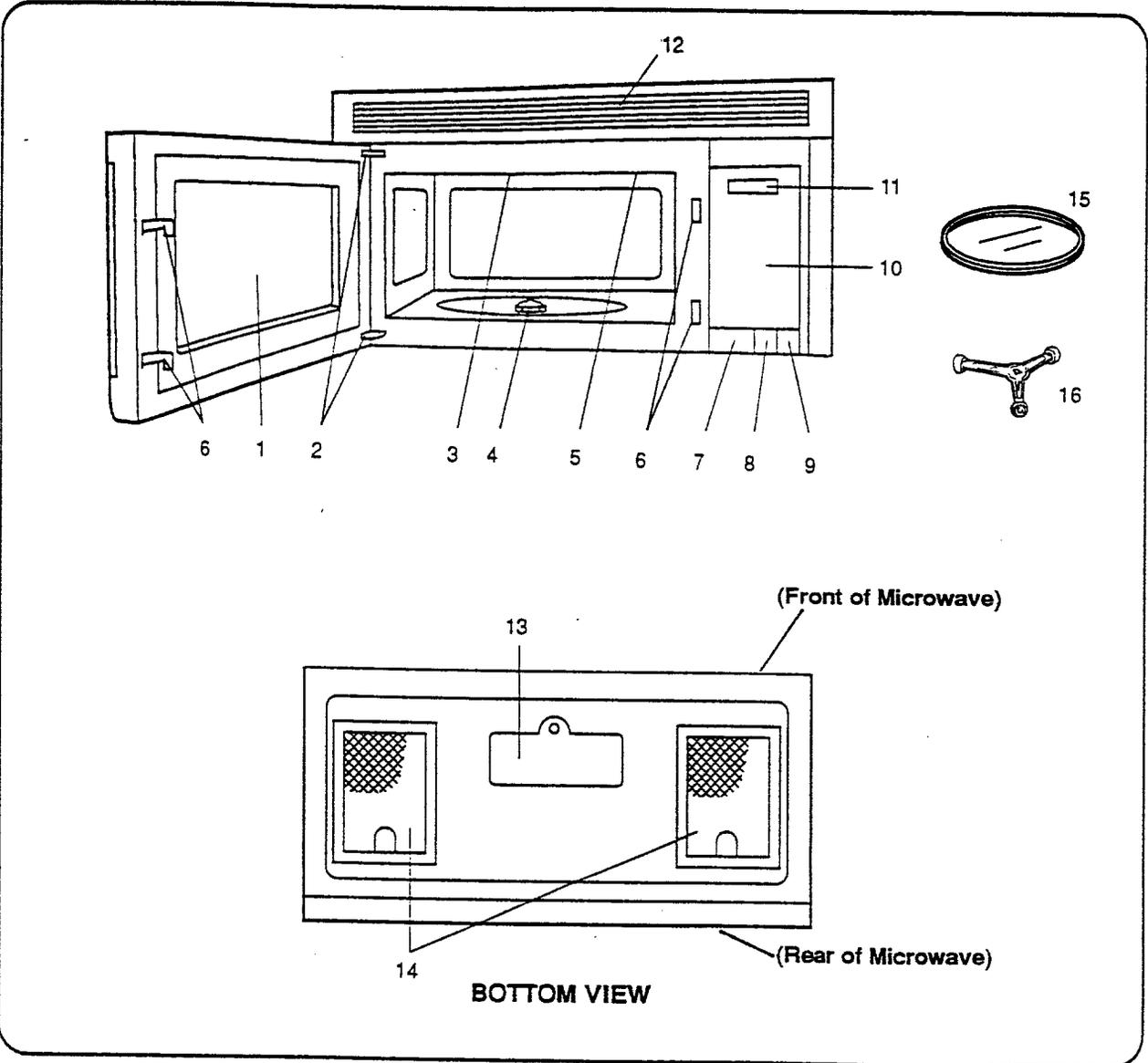
Utensils and Coverings	Microwave Only	Convection Broil, Slow Cook	High Mix/Roast Low Mix/Bake
Aluminum foil	Yes Small flat pieces of aluminum foil placed smoothly on food can be used to shield areas from cooking or defrosting too quickly. Keep foil at least 1 inch from walls of oven.	Yes For shielding.	Yes For shielding
Aluminum containers	Yes Can be used if 3/4 filled with food. Keep 1 inch away from walls and do not cover with foil.	Yes Broil-No cover.	Yes Can be used if 3/4 filled with food. Keep 1 inch away from walls and do not cover with foil.
Browning dish	Yes Do not exceed recommended preheating time. Follow manufacturer's directions.	No	No
Glass ceramic (Pyroceram®)	Yes Excellent.	Yes Excellent.	Yes Excellent
Glass, heat-resistant	Yes Excellent. Overturned pie plate necessary for popping popcorn.	Yes Excellent.	Yes Excellent.
Glass, non-heat-resistant	No	No	No
Lids, glass	Yes	Yes Broil-No cover.	Yes
Lids, metal	No	Yes Broil-No cover.	No
Metal cookware	No	Yes	Yes Do not use metal coverings
Metal, misc: dishes with metallic trim, etc. Metal twist-ties.	No	No	No
Oven cooking bags	Yes Good for large meats or foods that need tenderizing. DO NOT use metal twist ties.	Yes Broil-No	Yes DO NOT use metal twist-ties.
Paper plates	Yes For reheating.	No	No
Paper towels	Yes To cover for reheating and cooking. Do not use recycled paper towels which may contain metal fillings	No	No
Paper, ovenable	Yes	Yes For temperatures up to 400°F. Do not use for broiling.	Yes For temperatures up to 400°F.
Microwave-safe plastic containers	Yes Use for reheating and defrosting. Follow manufacturer's directions.	No	No
Plastic, Thermoset®	Yes	Yes are heat resistant up to 425°F. Do not use for broiling.	Yes
Plastic wrap	Yes Use brands specially marked for microwave use DO NOT allow plastic wrap to touch food. Vent so steam can escape.	No	No
Pottery, porcelain stoneware	Yes Check manufacturer's recommendation for being microwave-safe.	Yes	Yes Must be microwave-safe & ovenable.
Styrofoam	Yes For reheating.	No	No
Wax paper	Yes Good covering for cooking and reheating.	No	No
Wicker, wood, straw	Yes May be used for short periods of time. Do not use with high fat or high sugar content foods. Could char.	No	No

DISH CHECK. If you wish to check if a dish is safe for microwaving, place the empty dish in the oven and microwave on HIGH for 30 seconds. If the dish becomes very hot, DO NOT use it for microwaving.

ACCESSORIES

There are many microwave accessories available for purchase. Evaluate carefully before you purchase so that they meet your needs. A microwave-safe thermometer will assist you in determining correct doneness and assure you that foods have been cooked to safe temperatures. Sharp is not responsible for any damage to the oven when accessories are used.

PART NAMES



- 1. Oven door with see-through window.
- 2. Door hinges.
- 3. Wave guide cover.
- 4. Turntable motor shaft.
- 5. Oven light.
It will light when oven is operating or door is open.
- 6. Safety door latches.
The oven will not operate unless the door is securely closed.
- 7. One touch DOOR OPEN button.
Push to open door.
- 8. FAN HI / LO button.
Push for High/Low/Off.
- 9. LIGHT button.
Push for On/Off.

- 10. Auto-Touch control panel.
- 11. Time display: Digital display, 99 minutes 99 seconds.
- 12. Ventilation openings.
- 13. Light cover.
- 14. Grease filters.
- 15. Removable turntable.
The turntable will rotate clockwise or counterclockwise. Only remove for cleaning.
- 16. Removable turntable support.
Place the turntable support on the floor of the oven cavity and the turntable on the turntable support.

TOUCH CONTROL PANEL R-1850/R-1851

Control panel display
Words will light in the display to indicate features and cooking instructions.

MIX CONV	00:00000
DEFROST	
SENSOR	
TURNTABLE ON OFF	COOK LBS OZ KG HELP

INTERACTIVE COOKING SYSTEM

CUSTOM HELP

SENSOR REHEAT	MINUTE PLUS	<ul style="list-style-type: none"> 1 Baked potatoes 2 Frozen vegetables 3 Fresh veg. soft 4 Fresh veg. hard 5 Frozen entrees 6 Hot dogs 7 Bacon 8 Fish, seafood 	SENSOR COOK
POPCORN	COMPU DEFROST		
CONVEC	PREHEAT	<ul style="list-style-type: none"> 1 Hamburgers 2 Chicken pieces 3 Steaks 4 Fish steaks 	COMPU BROIL
LOW MIX BAKE	HIGH MIX ROAST	<ul style="list-style-type: none"> 1 Chicken 2 Turkey 3 Turkey breast 4 Pork 	COMPU ROAST
BROIL	SLOW COOK	<ul style="list-style-type: none"> 1 Cake 2 Brownies 3 Muffins 4 French fries 	COMPU BAKE

1 100°F	2 150°F	3 275°F	4 300°F	5 325°F
6 350°F	7 375°F	8 400°F	9 425°F	0 450°F

KITCHEN TIMER	CLOCK	KEEP WARM	START TOUCH ON
TURNTABLE ON OFF	POWER LEVEL	STOP CLEAR	

Number indicates pages on which there are a feature description and usage information.

BEFORE OPERATING

- Before operating your new microwave oven make sure you read and understand this operation manual completely.
 - Before the oven can be used follow these procedures.
- 1) Plug in the oven. Close the door.
The oven display will show **SHARP SIMPLY THE BEST PRESS CLEAR AND PRESS CLOCK**
 - 2) Touch the STOP/CLEAR pad.
: will appear.
 - 3) Touch CLOCK and follow directions to set.

To Set the Clock

- Suppose you want to enter the correct time of day 12:30 (A.M. or P.M.)

Procedure	Display
1 CLOCK Touch CLOCK pad.	TURNTABLE ON ENTER TURNTABLE ON TIME
2 Enter the correct time of day by touching the numbers in sequence.	12 30
3 CLOCK Touch CLOCK pad	12:30

This is a 12 hour clock. If you attempt to enter an incorrect clock time, **ERROR** will appear in the display. Touch the STOP/CLEAR pad and re-enter the time.

- If the electrical power supply to your microwave oven should be interrupted, the display will intermittently show **SHARP SIMPLY THE BEST PRESS CLEAR AND PRESS CLOCK** after the power is reinstated. If this occurs during cooking, the program will be erased. The time of day will also be erased. Simply touch STOP/CLEAR pad and reset the clock for the correct time of day.

NOTE: Your oven can be programmed with the door open except for START/TOUCH ON, MINUTE PLUS, SENSOR REHEAT and POPCORN.

Stop/Clear

Touch the STOP/CLEAR pad to:

1. Erase if you make a mistake during programming.
2. Cancel kitchen timer.
3. Stop the oven temporarily during cooking.
4. Return the time of day to the display.
5. Cancel a program during cooking, touch twice.

MANUAL OPERATION

Turntable On / Off

For most cooking, the turntable should be on; however the turntable can be turned off so that it does not rotate when extra large dishes, such as the popular 13 x 9 x 2 glass utility casserole, are used. The casserole should be placed on the turntable so that it is level.

- Suppose you want to cook lasagna in a 13 x 9 x 2 casserole for 45 minutes on 40% power.

Procedure	Display
1 TURNTABLE ON / OFF Touch TURNTABLE ON/OFF pad and note TURNTABLE OFF in the display.	TURNTABLE OFF
2 POWER LEVEL 4 300°F Enter Power level.	TURNTABLE OFF
3 4 5 0 0 300°F 325°F 450°F 450°F Enter cooking time.	TURNTABLE OFF
4 START TOUCH ON Touch START/TOUCH ON pad.	TURNTABLE OFF COOK

NOTE:

The door can be opened for checking food and the turntable will stay in the off position. After checking, close door and touch START/TOUCH ON.

The turntable will stay off for one minute after door is opened when time-of-day appears in the display. It is possible to reprogram the oven during that minute without touching the TURNTABLE ON/OFF pad. The display always indicates whether the turntable is off or on.

THE TURNTABLE SHOULD ALWAYS BE ON WHEN USING THE SPECIAL FEATURES. Only manual operation is available when the turntable is off.

When cooking large quantities of food which cannot be stirred, it is best to use a lower power level such as 40 or 50%. You may speed cooking of large amounts by programming 5 to 10 minutes on 100% power (HIGH) followed by the desired time on lower power. See page 23 for how to program multiple sequences. You may wish to reverse a large casserole once during cooking; simply open door, reposition casserole, close door and touch START/TOUCH ON.

MANUAL OPERATION

Hood Light/ Hood Fan

Your oven is equipped with a Hood Light and a Hood Fan feature. The Hood Light and Hood Fan pads can be input whenever the door is open or closed.

To turn Hood Light ON, touch the LIGHT pad once. To turn the Hood Light OFF, touch the LIGHT pad once again.

To turn Hood Fan ON, touch the FAN HI/LO pad once for High speed. To turn Hood Fan to Low speed, touch pad twice and touch the pad three times to turn the fan OFF.

Time Cooking

Your oven can be programmed for 99 minutes 99 seconds (99:99). Always enter the seconds after the minutes, even if they are both zeros.

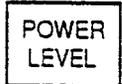
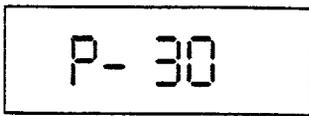
* Suppose you want to cook for 5 minutes at 100%.

Procedure	Display
1.  Enter cooking time.	
2.  Touch START pad.	

There are eleven preset power levels. Using lower power levels increases the cooking time which is recommended for foods such as cheese, milk and long slow cooking of meats. Consult cookbook or recipes for specific recommendations.

Touch POWER LEVEL Pad, Once then Touch	Approximate Percentage of Power	Common Words for Power Levels
POWER LEVEL	100%	High
9	90%	
8	80%	Medium High
7	70%	
6	60%	
5	50%	Medium
4	40%	Med. Low/Defrost
3	30%	
2	20%	
1	10%	Low
0	0%	

* Suppose you want to defrost for 5 minutes at 30%.

Procedure	Display
1.  Enter defrosting time.	
2.   Touch POWER LEVEL pad. Enter power level.	
3.  Touch START pad.	

SPECIAL FEATURES FOR MICROWAVE MODE

CompuDefrost

CompuDefrost automatically defrosts ground meat, steaks and chicken pieces.

* Suppose you want to defrost a 2.0 pound steak.

Procedure	Display
<p>1 x 3 </p> <p>Touch COMPU DEFROST pad once. Then touch COMPU DEFROST pad two more times to select steak.</p>	
<p>2 </p> <p>Enter weight by touching the number pads. (Ex. 2.0 lbs.)</p>	
<p>3 </p> <p>Touch START/ TOUCH ON pad.</p> <p>The oven will stop and directions will be displayed. Follow the indicated message.</p>	

After the 1st stage, open the door. Turn steak over and shield any warm portions. Close the door.

4

Touch START/ TOUCH ON pad.

After the 2nd stage, open the door. Shield any warm portions. Close the door.

5

Touch START/ TOUCH ON pad.

6 After defrost cycle ends, cover and let stand as indicated in chart below.

- NOTE:**
1. The weight can be entered in increments of 0.1 lb. If you attempt to enter more or less than the allowed amount and will appear in the display.
 2. CompuDefrost can be programmed with More or Less Time Adjustment. See page 23.
 3. To defrost other foods or foods above or below the weights allowed on CompuDefrost Chart, use time and 30% power. See Manual Defrost on page 13.

CompuDefrost Chart

<u>Touch CompuDefrost Pad*</u>	<u>Food</u>	<u>For Amount</u>	<u>Procedure</u>
once	Ground meat	0.5–3.0 lbs. (0.2–1.4 kg)	Remove any thawed pieces after each stage. Stand, covered 5–10 min.
twice	Steak (chops) (fish)	0.5–4.0 lbs. (0.2–1.8 kg)	After each stage of defrost cycle, rearrange and if there are warm or thawed portions, shield with small flat pieces of aluminum foil. Remove any meat or fish that is nearly defrosted. Stand, covered 10–20 minutes.
3 times	Chicken pieces	0.5–3.0 lbs. (0.2–1.4 kg)	After each stage of defrost cycle, if there are warm or thawed portions, rearrange or remove. Stand, covered 10–20 min.

* Number of touches AFTER initial touch to access COMPU DEFROST.

NOTE: Check foods when oven signals. After final stage, small sections may still be icy. Let stand to continue thawing. Do not defrost until all ice crystals are thawed. Shielding prevents cooking from occurring before the center of the food is defrosted. Use small smooth strips of aluminum foil to cover edges and thinner sections of the food.

SPECIAL FEATURES

Manual Defrost

If the food that you wish to defrost is not listed on the CompuDefrost Chart or is above or below the limits in the "Amount" column on the chart, you need to defrost manually.

You can defrost any frozen food, either raw or previously cooked, by using Power Level 3. Follow the exact 3-step procedure found under Time Cooking on page 11. Estimate defrosting time and press 3 for 30% when you select the power level.

For either raw or previously cooked frozen food, the rule of thumb is approximately 5 minutes per pound. For example, defrost 5 minutes for 2-3 cups of casserole or 1 pound of frozen spaghetti sauce.

Always stop the oven periodically to remove or separate the portions that are defrosted. If food is not defrosted at the end of the estimated defrosting time, program the oven in 1 minute increments on Power Level 3 until totally defrosted.

When using plastic containers from the freezer, defrost only long enough to remove from the plastic in order to place food in a microwave-safe dish.

Sensor Cooking

Sharp's Sensor is a semi-conductor device that detects the vapor (moisture and humidity) emitted from the food as it heats. The Sensor adjusts the cooking times and power level for various foods and quantities. It takes the guesswork out of microwave cooking.

Using Sensor Settings:

1. Room temperature should not exceed 95° F.
2. Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
3. Sensor cooking can only be entered within 1 minute after cooking, opening and closing the door or touching the STOP/CLEAR pad.

4. During the first part of sensor cooking, **SENSOR**,

REHEAT	FROZEN	ENTREE	POPCORN	BAKED
POTATO	SOFT	HARD	FRESH	VEG.
FROZEN	VEG.	BACON	FISH	HOT

EGGS will appear on display. Do not open the oven door or touch STOP/CLEAR during this part of the cooking cycle. The measurement of vapor will be interrupted. If this occurs, **ERROR** will appear and sensor cooking will be interrupted. To continue cooking, touch the STOP/CLEAR pad and select cooking time and power. When sensor detects the vapor emitted from the food, remainder of cooking time will appear. Door may be opened when remaining cooking time appears on display. At this time, you may stir or season food, as desired.

5. Check food for doneness after cooking with sensor settings. If additional time is needed, continue to cook with variable power and time.

6. If the sensor does not detect vapor, **ERROR** will appear and the oven will shut off.
7. At the end of any cycle, open oven door or touch STOP/CLEAR pad. The time of day will reappear on the display.
8. Any Sensor setting can be programmed with More or Less Time Adjustment. See page 23.

Selecting Foods:

1. The sensor works with foods at normal storage temperature. For example, foods for reheating would be at refrigerator temperature and potatoes for baking would be room temperature.
2. More or less food than the quantity listed in the charts should be cooked by time and variable power.

Covering Foods:

Some foods work best when covered. Use the cover recommended in the chart for these foods.

1. Casserole lid.
2. Plastic wrap: Use plastic wrap recommended for microwave cooking. Cover dish loosely; allow approximately 1/2 inch to remain uncovered to allow steam to escape. Plastic wrap should not touch food.
3. Paper towel: Use paper towels to absorb excess fat and moisture when cooking bacon and potatoes. Line the turntable when baking potatoes.
4. Wax paper: Cover dish completely; fold excess wrap under dish to secure. If dish is wider than paper, overlap two pieces at least one inch to cover.

SPECIAL FEATURES

Instant Sensors

Your oven has Instant Sensor Popcorn and Instant Sensor Reheat.

To use any of the Instant Sensors, simply touch the chosen pad according to the chart for the desired food. The oven will start automatically.

Any sensor setting can be programmed with More or Less Time Adjustment. See page 23.

Instant Sensor Reheat

You can reheat many foods by touching just one pad/button. You don't need to calculate cooking time or power level.

For more information, refer to Instant Sensor Chart below.

Procedure

1



Touch **SENSOR REHEAT** pad.

SENSOR REHEAT will be displayed repeatedly. When sensor detects the vapor emitted from the food, remainder of cooking time will appear. After cooking, LET STAND COVERED will be displayed repeatedly.

Instant Sensor Popcorn

* Suppose you want to pop a 3.5 oz. bag of popcorn.

Procedure

1



Touch **POPCORN** pad/button once. (Ex: Touch **POPCORN** once for regular size bag.)

SENSOR POPCORN REGULAR will be displayed repeatedly. After cooking, END will be displayed repeatedly.

This sensor setting works well with most brands of microwave popcorn. You may wish to try several and choose your favorite. Pop only one bag at a time. Unfold the bag and place in oven according to directions.

Popcorn Chart

Touch POPCORN Pad	For Amount	
once	3.0 and 3.5 oz. bag	Regular size.
twice	1.5 and 1.75 oz. bag	Snack size.

Instant Sensor Chart

Food	Amount	Procedure
Leftovers such as rice, potatoes, vegetables, casserole	4-32 oz.	Place in dish or casserole slightly larger than amount to be reheated. Flatten, if possible. Cover with lid, plastic wrap or wax paper. Use covers such as plastic wrap or lids with larger quantities of more dense foods such as stews.
Soups	1-4 cups	After reheating, stir well, if possible. Foods should be very hot. If not, continue to heat with variable power and time. After stirring, recover and allow to stand 2 to 3 minutes.
Canned entrees and vegetables	4-16 oz.	Use Less Time Adjustment by touching Power level pad twice for small quantities of canned vegetables.
Dinner Plate 1 plate	(3-6 oz. meat plus vegetables and/or potato/rice)	Use this pad to reheat precooked foods from the refrigerator. Place meaty portions and bulky vegetables to outside of plate. Cut large items like baked potatoes in smaller pieces. Flatten foods such as mashed potatoes and other dense foods. Cover with wax paper or plastic wrap. ONE PLATE ONLY. After cooking, check that food is very hot throughout and that the bottom center of the plate is very hot. If not, continue heating using time and power level. Allow to stand, covered, 2 to 3 minutes.
Popcorn	Only 1 package at a time	Use only popcorn packaged for microwave oven use. Try several brands to decide which you like best. Do not try to pop unpopped kernels. More or Less Time Adjustment can be used to provide adjustment needed for older popcorn or individual tastes.
Hot dogs	1-2	Place hot dog in bun and wrap in paper towel or paper napkin.

SPECIAL FEATURES

Sensor Cook

* Suppose you want to cook a Baked potato.

Procedure	Display
<p>1 SENSOR COOK</p> <p>Touch SENSOR COOK pad.</p>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">SELECT</div> <div style="border: 1px solid black; padding: 2px;">FOOD</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">NUMBER</div>
<p>2 1</p> <p>Select desired sensor setting. Touch 1 to cook Baked potatoes.</p>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">BAKED</div> <div style="border: 1px solid black; padding: 2px;">POTATO</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px;">PRESS</div> <div style="border: 1px solid black; padding: 2px;">START</div> </div>

3 Touch START/TOUCH ON pad.

When sensor detects the vapor emitted from the food, the remainder of cooking time will appear.

LET

STAND

COVERED

Open oven door or touch STOP / CLEAR pad. The time of day will appear in the display.

Sensor Cook Chart

Food	Amount	Procedure
1. Baked potatoes	1 to 6 medium	Prick. Place on paper-towel-lined turntable. After cooking, remove from oven, wrap in aluminum foil and let stand 5 to 10 minutes.
2. Frozen vegetables	1 to 6 cups	Cover with lid or plastic wrap. After cooking, stir and let stand 3 minutes, covered.
3. Fresh vegetables, soft		Wash and place in casserole. Add no water if vegetables have just been washed. Cover with lid for tender vegetables. Use plastic wrap for tender-crisp vegetables. Stir before standing if possible. After cooking, let stand, covered, 2-5 minutes.
Broccoli	1/4 to 2 lbs.	
Brussels sprouts	1/4 to 2 lbs.	
Cabbage	1/4 to 2 lbs.	
Cauliflower (flowerets)	1/4 to 2 lbs.	
Cauliflower (whole)	1 medium	
Spinach	1/4 to 1 lb.	
Zucchini	1/4 to 2 lbs.	
Baked apples	2 to 4 medium	
4. Fresh vegetables, hard		Place in casserole. Add 1-4 tbsp. water. Cover with lid for tender vegetables. Use plastic wrap cover for tender-crisp vegetables. Stir before standing, if possible. After cooking, let stand, covered, 2-5 minutes.
Carrots, sliced	1/4 to 1 1/2 lbs.	
Corn on cob	2 to 4 pcs.	
Green beans	1/4 to 1 1/2 lbs.	
Winter squash, diced halves	1/4 to 1 1/2 lbs. 1 to 2	
5. Frozen entree	6 to 17 oz.	Use this button for frozen convenience foods. It will give satisfactory results for most brands. You may wish to try several and choose your favorite. Remove package from outer wrapping and follow package directions for covering. After cooking, let stand, covered, for 1 to 3 minutes.
6. Hot dogs	1 to 4 servings	Place hot dog in bun and wrap in paper towel or paper napkin.
7. Bacon	2 to 6 slices	Place bacon on paper plate, lined with paper towel. Bacon should not extend over the rim of plate. Cover with paper towel.
8. Fish, seafood	0.25 to 2.0 lbs.	Arrange in ring around shallow glass dish (roll fillet with edges underneath). Cover with plastic wrap. After cooking, let stand, covered, 3 minutes.

Cranberry Fluff

2 cups fresh cranberries
1 cup water
3/4 cup sugar
1 carton (3 ounces) orange flavored gelatin

1/2 pint whipping cream, whipped or
1 carton (8 ounces) non-dairy whipped topping

Makes 6 to 8 servings

1. Combine cranberries, water and sugar in a 2-quart casserole. Cover with wax paper. Microwave using Sensor Cook for Soft Fresh Vegetables. Drain cranberries and reserve liquid.
2. Add enough hot water to reserved liquid to make 2 cups. Stir the gelatin into hot liquid until it dissolves. Cover with wax paper. Microwave using Sensor Reheat.
3. Add berries and cool. Refrigerate until thickened. Fold whipped cream into cooled cranberry mixture. Spoon into serving dishes and garnish with extra whipped cream. Refrigerate until ready to serve.

Curry Vegetable Chowder

6 slices bacon
1 can (10 3/4 ounces) chicken broth
3 medium potatoes, finely diced (about 2 cups)
2 carrots, shredded (about 1 cup)
1 small onion, chopped (about 1/2 cup)

3/4 teaspoon salt
1/2 teaspoon curry powder
1/8 teaspoon pepper
1 can (12 ounces) evaporated milk
2 tablespoons chopped fresh parsley

Makes 4 servings

1. Layer 2 paper towels on a microwave-safe plate. Arrange bacon on the towels. Cover with another paper towel. Microwave using Sensor Cook for Bacon. Crumble and reserve bacon.
2. Combine chicken broth, vegetables and seasonings in 4-quart casserole. Cover with vented plastic wrap. Microwave using Sensor Cook for Baked Potatoes. Vegetables should be tender.
3. Stir in evaporated milk. Re-cover with vented plastic wrap. Microwave using Sensor Reheat Less. Stir in parsley. Let stand, covered, 5 minutes.
4. Top each serving with crumbled bacon.

Flounder Fillet with Vegetables

1/2 green pepper, diced
1 small onion
1 medium potato, peeled and diced
1 clove garlic, minced
2 tablespoons margarine or butter
1 medium tomato, chopped

1 pound flounder fillet, fresh or frozen, thawed
1/8 teaspoon pepper
1/8 teaspoon paprika
1/4 teaspoon salt
1/4 teaspoon thyme leaves
parsley flakes

Makes 4 servings

1. Combine green pepper, onion, potato, garlic and margarine in 2-cup measuring cup. Cover with vented plastic wrap. Microwave using Sensor Cook for Fresh Vegetables, Soft. Stir in tomato.
2. Arrange fish in a ring around the outside of a 12-inch round glass utility dish. Pour vegetables over fish. Sprinkle with pepper, paprika, salt and thyme. Cover well with vented plastic wrap. Microwave using Sensor Cook for Fish and Seafood. Let stand 2 minutes. Top with parsley and serve.

Glazed Apple Slices

1/4 cup packed brown sugar
3 tablespoons margarine or butter
2 tablespoons apricot preserves
1/2 teaspoon ground nutmeg
1/4 teaspoon salt
1/2 cup sugar

3/4 cup orange juice
1 tablespoon cornstarch
4 baking apples (about 1 1/2 pounds), peeled and sliced into 8 pieces each
3 tablespoons chopped green pistachios

Makes 6 to 8 servings

1. Combine brown sugar, margarine and apricot preserves in a small bowl. Microwave at HIGH (100%) until margarine melts and preserves soften, 45 seconds to 1 minute. Stir in nutmeg, salt, sugar, orange juice and cornstarch. Microwave at HIGH (100%) until thickened, 4 to 6 minutes, stirring several times.
2. Arrange apple slices in a large microwave serving dish. Spread hot sauce over apples. Cover well with vented plastic wrap. Microwave using Sensor Cook for Fresh Vegetables, Soft. Allow to cool 5 minutes before serving.
3. Sprinkle with pistachios. Serve alone or over vanilla ice cream or sponge cake.

Mexican Seasoned Potatoes

4 medium baking potatoes (8 ounces each)
1/4 cup olive oil
1 tablespoon instant minced onion
1/2 teaspoon chili powder

1/2 teaspoon oregano leaves
1/4 teaspoon ground cumin
1/2 teaspoon salt

Makes 6 to 8 servings

1. Cut each potato lengthwise into 4 equal wedges. Place potato wedges into 10-inch square casserole. Toss potatoes with oil to coat well.
2. In small bowl, combine remaining ingredients. Sprinkle over potatoes.
3. Cover potatoes with wax paper. Microwave using Sensor Cook for Baked Potatoes. Rearrange potatoes when time appears on display. Let stand covered 5 minutes.

Microwaved Fresh Pumpkin

1 Pie Pumpkin or Sugar Pumpkin

1. Wash and cut pumpkin into quarters. Remove seeds and strings. Place in a glass pie plate. Cover well with vented plastic wrap.
2. Microwave using Sensor Cook for Fresh Vegetables, Hard. Allow to stand covered 5 minutes.
3. Scrape the pulp from the shell. Strain off excess liquid from cooked pumpkin. Place in food processor or blender and process until smooth. Use in your favorite recipes.

Shrimp Scampi

1/2 cup margarine or butter
1 tablespoon snipped fresh parsley
2 tablespoons lemon juice
1 large clove garlic, minced

1/2 teaspoon salt
1 pound large raw shrimp, shelled and deveined
paprika

Makes 4 servings

1. Place margarine in 2-cup measuring cup. Microwave at HIGH (100%) until melted, 1 to 1 1/2 minutes. Stir in parsley, lemon juice, garlic and salt.
2. Arrange shrimp in a large glass pie plate. Pour seasoned butter over shrimp. Cover well with vented plastic wrap. Microwave using Sensor Cook for Fish and Seafood. Shrimp should be pink and opaque.
3. Sprinkle with paprika and serve over hot cooked rice.

Spiced Carrots

3 cups sliced carrots, 1/4 inch thick
1/2 cup chopped green pepper, 1 inch cubes
1/4 cup finely chopped onion
3 tablespoons water
1 can (7 3/4 ounces) semi-condensed tomato soup

1/2 cup sugar
2 teaspoons vinegar
1 teaspoon soy sauce
1/2 teaspoon salt
1/2 teaspoon prepared mustard
1/8 teaspoon pepper

Makes 6 to 8 servings

1. In a 1 1/2-quart casserole, combine carrots, green pepper, onion and water. Cover with lid. Microwave using Sensor Cook for Fresh Vegetables, Hard. Carrots should be tender crisp. Drain.
2. Stir in remaining ingredients. Cover and microwave using Sensor Reheat.

Spaghetti Squash

1 spaghetti squash
Option A
3 tablespoons butter, melted
1/4 cup grated Parmesan cheese
2 tablespoons chopped parsley

Option B
3 tablespoons butter, melted
1 to 2 tablespoons honey

1. Pierce squash deeply several times with knife or carving fork.
2. Place squash on paper towel on turntable. Touch Sensor Cook for Vegetables, Hard. When ovens sounds, remove squash and let stand 10 minutes.
3. While squash is standing, mix together ingredients for Option A or B. Cut squash in half and remove seeds. Unwind squash with fork into spaghetti-like strands.
4. Toss squash with desired mixture. Serve immediately.

MICROWAVE OPERATION CONVECTION

Convection/Automatic Mix Cooking

This section of the Operation manual gives you helpful hints for convection and combination cooking. Please consult your Sharp Carousel Convection Cookbook for more specific cooking instructions and procedures.

Convection Cooking

During convection heating, hot air is circulated throughout the oven cavity to brown and crisp foods quickly and evenly. This oven can be programmed for ten different convection cooking temperatures for up to 99 minutes, 99 seconds.

The oven should not be used without the turntable in place, and it should never be restricted so that it cannot rotate. You may remove the turntable when preheating the oven and when preparing food to be cooked directly on the turn-

Automatic Mix Cooking:

This oven has two pre-programmed settings that make it easy to cook with both convection heat and microwave automatically.

With the exception of those foods that cook best by convection heating alone, most foods are well suited to mix cooking using either LOW MIX/BAKE or HIGH MIX/ROAST.

The marriage of these two cooking methods produces juicy meats, moist and tender cakes and fine textured breads, all with just the right amount of browning and crispness.

	Oven temperature	Microwave power
HIGH MIX	325°F	30%
LOW MIX	325°F	10%

The temperatures can be changed; however, the microwave power cannot.

The oven temperature can be changed from 100°F., to 450°F., in 10 levels.

To Cook with Convection

* Suppose you want to cook at 350°F. for 25 minutes.

Procedure	Display
1 CONVEC Touch CONVEC pad.	SELECT TEMP
2 Touch number pad for desired temperature (Ex: Pad 6 for 350°F.)	350F ENTER COOKING TIME
3 Enter cooking time.	20:00
4 Touch START/ TOUCH ON pad.	

To Preheat and Cook with Convection

Your oven can be programmed to combine preheating and convection cooking operations. You can preheat at the same temperature as the convection temperature or change it to a higher or lower temperature.

* Suppose you want to preheat until 350° F., and then cook 25 minutes at 375° F., Convection.

Procedure	Display
1 PREHEAT Touch PREHEAT pad.	SELECT PREHEAT TEMP
2 Touch number pad for desired temperature (Ex: Pad 6 for 350°F.)	350F PRESS START
3 Touch START/ TOUCH ON pad.	PREHEAT

When the oven reaches the programmed temperature, it will automatically hold at the preheat temperature for 30 minutes and then the display will change to time of day. When ever STOP/CLEAR pad is touched during this 30 minute period, PRESS CONVEC or PRESS MIX will be displayed and cooking mode and time can be entered.

To Broil with Convection

In the BROIL setting, preheating is automatically set by only entering the actual cooking time. (Preset 450° F.) Oven temperature can not be changed.

* Suppose you want to broil a steak for 15 minutes.

Procedure	Display
1 BROIL Touch BROIL pad.	450F ENTER COOKING TIME
2 Touch number pads to enter cooking time. (Ex: 1 5 0 0) Touch START/TOUCH ON pad.	PREHEAT

To Slow Cook with Convection

Slow Cook is a preset convection mode of 300° F. Slow Cook is programmed for 4 hours.

Oven temperature can be changed once to any of 100° F., 150° F., 275° F and 300° F.

Procedure	Display
1 SLOW COOK Touch SLOW COOK pad.	300F 4 HOURS PRESS START
2 Touch START/TOUCH ON pad	

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SPECIAL FEATURES COMPU ROAST

(SEC to add brief explanation here)

Compu Roast

CompuRoast automatically cooks chicken, turkey, turkey breast or pork.

*Suppose you want to roast a 2.5 pound chicken.

Procedure	Display
1 Touch COMPU ROAST pad.	<div style="display: flex; justify-content: space-around; margin-bottom: 5px;"> SELECT FOOD </div> <div style="border: 1px solid black; padding: 2px; margin: 0 auto; width: 60px; text-align: center;">NUMBER</div>
2 <div style="display: inline-block; border: 1px solid black; padding: 2px; margin: 5px 10px;">1</div> Touch number pad. (Ex: For Chicken, touch 1).	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; width: 80px; text-align: center;">CHICKEN</div> <div style="display: flex; justify-content: space-around; margin-bottom: 5px;"> USE LOW </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; width: 80px; text-align: center;">RACK</div> <div style="display: flex; justify-content: space-around;"> ENTER WEIGHT </div>
3 <div style="display: inline-block; border: 1px solid black; padding: 2px; margin: 5px 10px;">2</div> <div style="display: inline-block; border: 1px solid black; padding: 2px; margin: 5px 10px;">5</div> Touch number pad to enter weight. (Ex: 2.5).	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px; width: 60px; text-align: center;">2.5</div> <div style="display: flex; justify-content: space-around;"> PRESS START </div>

4

Touch START/TOUCH ON pad.

MAX **33:03**

TURNTABLE ON COOK HELP

After COMPU ROAST cycle ends, a long tone will sound, let stand, covered for 5-10 minutes will be displayed repeatedly.

LET

STAND

COVERED

FOR

5-10 MIN

NOTE:

1. CompuRoast can be programmed with More or Less Time Adjustment. See page 23.
2. If you attempt to enter more or less than the allowed amount ERROR WEIGHT TOO LARGE PRESS CLEAR or ERROR WEIGHT TOO SMALL PRESS CLEAR will appear in the display.
3. To roast other food or foods above or below the weights allowed on the chart below, use time and 30% power. See Manual Defrost on page 00.

Compu Roast Chart

Setting	Food	Amount	Procedure
1.	Chicken	2.5 to 4.0 lbs. (1.2 to 3.1 KG.)	After the cycle ends, let stand covered for 5 - 10 minutes.
2.	Turkey	6.5 to 9.0 lbs. (3.0 to 4.0 KG.)	Season, as desired. If stuffed, add 1-2 lbs. for stuffing depending on size of bird. Place on broiling trivet. Let stand, covered with foil, 10 minutes.
3.	Turkey breast	3.0 to 6.0 lbs. (1.4 to 2.7 KG.)	Place skin side down on a microwave-safe rack. Cover with vented plastic wrap. At signal, turn over. Shield with small, flat pieces of aluminum foil any areas that are cooking too rapidly. Re-cover. After cooking, remove from oven. Cover with foil and allow to stand 10 minutes. Internal temperatures should be 170°F.
4.	Pork	2.0 to 3.5 lbs. (0.9 -1.5 KG.)	Boneless pork loin is recommended because it cooks evenly. Place on a microwave-safe rack. Cover with vented plastic wrap. At signal, turn over. Shield with small, flat pieces of aluminum foil any areas that are cooking too rapidly. Re-cover. After cooking, remove from oven, cover with foil and allow to stand 5 - 10 minutes. Internal temperature should be 160°F.

SPECIAL FEATURES COMPU BAKE

((SEC insert brief explanation here))

Compu Bake

CompuBake automatically bakes cakes, brownies, muffins and french fries.

*Suppose you want to bake a 13"x9"x2" cake.

Procedure	Display
<p>1</p> <p>Touch COMPU BAKE pad.</p> <p>Note: Turntable function is automatically turned OFF.</p>	
<p>2</p> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin: 5px;">1</div> <p>Touch number pad. (Ex: For Cake, touch 1).</p>	

3

Touch START/ TOUCH ON pad

CONV
PREHEAT
TURNTABLE OFF COOK HELP

After CompuBake preheat cycle ends, 4 tones will sound. The display will indicate PREHEAT OVER PLACE FOOD IN OVEN. Open door. Place the cake pan inside. Close door and touch START/ TOUCH ON pad.

4

Touch START/TOUCH ON pad.

CONV
40.00
TURNTABLE ON COOK HELP

After COMPU BAKE cycle ends, 1 long tone will sound, and END will be displayed repeatedly.

- NOTE:**
- CompuBake can be programmed with More or Less Time Adjustment. See page 23.
 - If you attempt to enter more or less than the allowed amount ERROR WEIGHT TOO LARGE PRESS CLEAR or ERROR WEIGHT TOO SMALL PRESS CLEAR will appear in the display.
 - To bake other food or foods above or below the weights allowed on the chart below, use time and 30% power. See Manual Defrost on page 00.

Compu Bake Chart

Setting	Food	Pan size/Qty	Rack	Cooking Mode
1.	Cake	13" x 9" x 2"	Low Rack	Preheat oven by touching CompuBake pad, the number 1 pad and START/TOUCH ON pad. After the preheat cycle ends, open door, insert cake mixture. Close the door and touch START/TOUCH ON pad. When baking cycle is complete, Let stand to cool for 5 - 10 minutes.
2.	Brownies	13" x 9" x 2"	Low Rack	Preheat oven by touching CompuBake pad, the number 2 pad and START/TOUCH ON pad. After the preheat cycle ends, open door, insert brownie mixture. Close the door and touch START/TOUCH ON pad. When baking cycle is complete, Let stand to cool for 5 - 10 minutes.
3.	Muffins	12 cups	Low Rack	Preheat oven by touching CompuBake pad, the number 3 pad and START/TOUCH ON pad. After the preheat cycle ends, open door, insert muffin mixture. Close the door and touch START/TOUCH ON pad. When baking cycle is complete, END will be displayed repeatedly.
4.	French Fries	3 to 24 oz.	Low Rack	No preheat is required for the french fries baking procedure. Place french fries on cookie sheet on low rack. Simply touch CompuBake pad, the number pad 4, enter weight and touch START/TOUCH ON pad. After baking cycle is complete, END will be displayed repeatedly.

*Note: For Shoestring potatoes, touch POWER LEVEL pad to enter More/ less time before touching START pad.

OTHER CONVENIENT FEATURES

Custom Help

CUSTOM HELP provides 6 features which make using your oven easy because specific instructions are provided in the interactive display.

Demonstration Mode

To demonstrate, touch CLOCK, **0** and START/TOUCH ON pad. Hold the START/TOUCH ON pad for three seconds. **DEMO ON SHARP SIMPLY THE BEST** will appear in the display. Cooking operations and special features can now be demonstrated with no power in the oven. For example, Touch MINUTE PLUS and the display will show **1:00** and countdown quickly to **0** and the **END**

Safety Lock

The Safety Lock prevents unwanted oven operation such as by small children. Note: Safety Lock is not applicable to Hood Fan and Hood Light buttons.

The oven can be set so that the control panel is deactivated or locked. To set, touch CUSTOM HELP, the number **1** and START/TOUCH ON pad. Should a pad be touched, **LOCK** will appear in the display.

To cancel, touch CUSTOM HELP, the number **1** and STOP/CLEAR.

Audible Signal Elimination

If you wish to have the oven operate with no audible signals, touch CUSTOM HELP, the number **2** and STOP/CLEAR.

To cancel and restore the audible signal, touch CUSTOM HELP, the number **2** and START/TOUCH ON.

Auto Start

If you wish to program your oven to begin cooking automatically at a designated time of day, follow this procedure:

* Suppose you want to start cooking a stew for 20 minutes on 50% at 4:30. Before setting, check to make sure the clock is showing the correct time of day.

Procedure		
1	CUSTOM HELP	Touch CUSTOM HELP pad.
2	4	Touch the number.
3	4 3 0	Enter the start time.
4	CLOCK	Touch the CLOCK pad.
5	2 0 0 0	Enter cooking program or cooking time.
6	START TOUCH ON	Touch START/TOUCH ON pad.

NOTE:

1. Auto start can be used for manual cooking, Compu Broil/ Roast/Bake if clock is set.
2. If the oven door is opened after programming Auto Start, it is necessary to touch the START pad for the time of day to appear in the readout so that the oven will automatically begin programmed cooking at the chosen Auto Start time.
3. Be sure to choose foods that can be left in the oven safely until the Auto Start time. Baked potatoes are often a good choice.

Language Selection

The oven comes set for English language. To change, touch CUSTOM HELP and the number **4**. Continue to touch the number **4** until your choice is selected from the table below. Then, touch START/TOUCH ON pad.

Number 4	Language	Display
Once	English	ENGLISH
Twice	Espanol	ESPAÑOL
3 Times	French	FR

Weight/Temp Selection

The oven comes set for U.S. Customary Unit-pounds. To change, touch CUSTOM HELP and the number **5**. Continue to touch the number **5** until your choice is selected from the table below. Then, touch START/TOUCH ON pad.

Number 5	Standard of Weight	Display
Once	Lb F	LBF
Twice	KG C	KGC

Help

Each setting of CompuDefrost, CompuBroil, CompuRoast, CompuBake and Sensor Cook has a cooking hint. If you wish to check, touch CUSTOM HELP whenever HELP is lighted in the interactive display.

SERVICE CALL CHECK

Please check the following before calling for service:

1. Place one cup of water in a glass measuring cup in the oven and close the door securely. Operate the oven for two minutes a HIGH 100%.
 - A. Does the light come on in the oven? YES _____ NO _____
 - B. Does the cooling fan work? YES _____ NO _____
(Put your hand over the top ventilation openings.)
 - C. Does the turntable rotate when the TURNTABLE ON/OFF pad is touched and TURNTABLE ON is in the display? YES _____ NO _____
(It is normal for the turntable to turn in either direction when TURNTABLE ON is in the display.)
 - D. Is the water in the oven warm? YES _____ NO _____

If "NO" is the answer to any of the above questions, please check electrical outlet, fuse and/or circuit breaker. If both are functioning properly, CONTACT YOUR NEAREST SHARP AUTHORIZED SERVICER. A microwave oven should never be serviced by a "do-it-yourself" repair person.

NOTE: If time appearing in the display is counting down very rapidly, check Demonstration Mode on page 24 and cancel.

SPECIFICATIONS

R-1850/ R-1851

AC Line Voltage:	Single phase 120V, 60Hz, AC only
AC Power Required:	1600 watts 13.2 amps.
Output Power:	
Microwave	850 watts* (IEC-705-1988 Test Procedure)
Frequency:	2450 MHz
Outside Dimensions:	29 15/16" (W) x 16 11/32" (H) x 15 9/32" (D)
Cavity Dimensions:	17 1/8" (W) x 8 1/16" (H) x 13 13/16" (D)
Oven Capacity:	1.1 cu. ft.
Cooking Uniformity:	Turntable & Stirrer Fan
Weight:	Approx. 71 lbs.

*The International Electrotechnical Commission's standardized method for measuring output wattage. This test method is widely recognized.

In compliance with standards set by:

- FCC - Federal Communications Commission Authorized.
- DHHS - Complies with Department of Health and Human Services (DHHS) rule, CFR, Title 21, Chapter I, Subchapter J.



- This symbol on the nameplate means the product is listed by Underwriters Laboratories, Inc.

CLEANING AND CARE

Exterior

The outside surface is precoated metal and plastic. Clean the outside with mild soap and water; rinse and dry with a soft cloth. Do not use any type of household or abrasive cleaner.

Door

Wipe the window on both sides with a damp cloth to remove any spills or splatters. Metal parts will be easier to maintain if wiped frequently with a damp cloth. Avoid the use of harsh abrasives.

Touch Control Panel

Care should be taken in cleaning the touch control panel. If the control panel becomes soiled, open the oven door to inactivate the control panel before cleaning. Wipe the panel with a cloth dampened slightly with water only. Dry with a soft cloth. Do not scrub or use any sort of chemical cleaners. Avoid the use of excess water. Close door and touch STOP/CLEAR.

Interior

Cleaning is easy because no heat is generated to the interior surfaces; therefore, there is no baking and setting of spills or spattering. To clean the interior surfaces, wipe with a soft cloth and warm water. **DO NOT USE ABRASIVE OR HARSH CLEANERS OR SCOURING PADS.** For heavier soil, use baking soda or a mild soap; rinse thoroughly with hot water. The turntable motor shaft is sealed, but excess water or spills should be wiped up immediately.

Wave Guide Cover

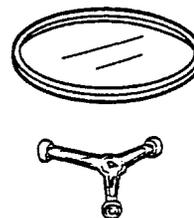
Carefully wash any food particles from the wave guide cover located on the ceiling in the oven cavity.

Odor Removal

Occasionally, a cooking odor may remain in the oven. To remove, combine 1 cup water, grated peel and juice of 1 lemon and several whole cloves in a 2-cup glass measuring cup. Boil for several minutes using 100% power. Allow to set in oven until cool. Wipe interior with a soft cloth.

Turntable/Turntable Support

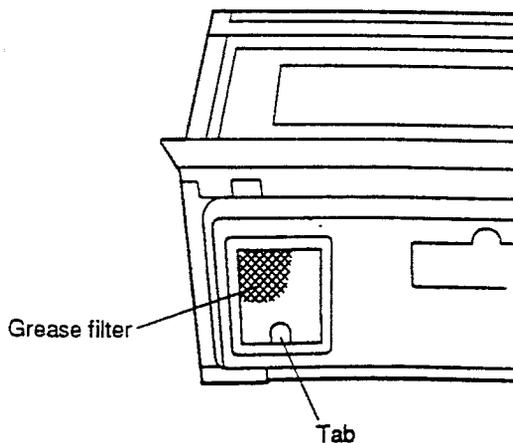
The turntable and turntable support can be removed for easy cleaning. Wash them in mild, sudsy water; for stubborn stains use a mild cleanser and scouring sponge as described above. They are also dishwasher-proof.



Grease Filters

Filters should be cleaned at least once a month. Never operate the fan or oven without the filters in place.

1. Pull the tab toward the front of the oven, down slightly and remove the filter. Repeat for the other filter.
2. Soak the filters in a sink or dish pan filled with hot water and detergent.
DO NOT use ammonia or other alkali; they will react with the filter material and darken it.
3. Agitate and scrub with a brush to remove embedded dirt.
4. Rinse thoroughly and shake dry.
5. Replace by fitting the filter back into the opening.



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CLEANING AND CARE

Fan

The fan will automatically start when heat rises from range surface units or burners. This protects the microwave oven from excessive temperature rise. The fan will stay on until the temperature decreases. It cannot be turned off manually during this time.

For other uses, select either HI or LO speed.

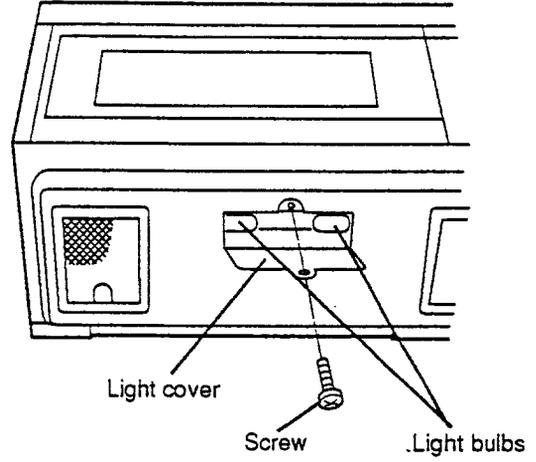
PRECAUTIONS FOR PROPER USE:

1. DO NOT leave range unattended while using high temperatures. Automatic fan may start and provide excessive air to the surface units. This may cause spattering or boilover.
2. Avoid burning food.
3. Keep grease filters clean.

Light

1. To replace light bulbs, first disconnect power to the oven at the circuit breaker panel or by unplugging.
2. To release cover remove the screw on the light cover. (See illustration.)
3. Replace bulbs only with Sharp Part Number RLMPTA036WRE0 available from a Sharp Servicer or equivalent 30 watt bulb available at most hardware stores or lighting centers. DO NOT USE A BULB LARGER THAN 30 WATTS.
4. Close light cover and secure with screw removed in step 2.

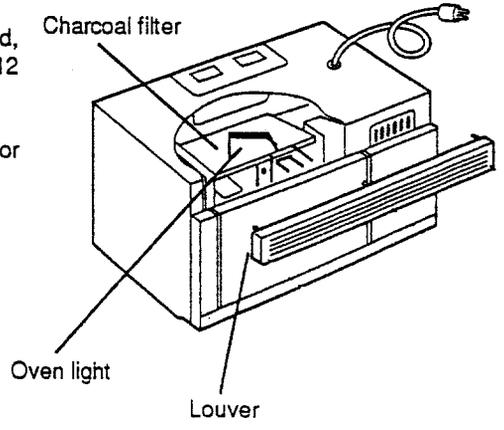
CAUTION: Light cover may become very hot. Do not touch glass when light is on. Do not use light for long time use such as a night light.



Charcoal Filter

Charcoal Filter, Sharp Part Number RK-220 is used for non-vented, recirculated installation. The filter should be changed every 6 to 12 months depending on use.

1. Disconnect power to the oven at the circuit breaker panel or by unplugging.
2. Remove three louver mounting screws. (See illustration.)
3. Pull the louver away from the unit.
4. Change the charcoal filter.
5. Push louver back in place and replace the screws.



Oven Light

Remove the louver per instructions 1 - 3 above and charcoal filter, if used.

4. Remove and save one Phillips head screw from oven light cover.
5. Remove old light bulb and replace only with Sharp Part Number RLMPTA068WRE0 available from Sharp Servicer or equivalent 20 watt light bulb available from most hardware stores and lighting centers. DO NOT USE BULB LARGER THAN 20 WATTS.
6. Replace the oven light cover, Phillips head screw and charcoal filter, if used; push louver back in place and replace the louver mounting screws.

Vegetable Cooking Chart

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Vegetable	Amount	Cooking Procedure	Microwave Time at HIGH (100%)	Standing Time, Covered	
Artichokes Fresh	2 medium	Trim and rinse. 2-qt. casserole. 2 tbsp. water. Cover with plastic wrap.	5-8 min.	5 min.	
Asparagus Fresh Spears	1 lb.	2-qt. casserole. 2 tbsp. water. Cover. Rearrange after 3 min.	4-7 min.	2 min.	
Beans Fresh, Green and Wax	1 lb.	1 1/2-in. pieces. 2-qt. casserole. 1/4 cup water. Cover. Stir twice.	9-13 min.	2 min.	
Beets Fresh, Whole	5 medium	Wash. Leave 1 inch of tops. 2-qt. casserole. 1/4 cup water. Cover. Stir every 5 min.	12-18 min.	3 min.	
Broccoli Fresh, Spears	1 lb.	Wash. 2-qt. casserole. Add no water. Cover. Rearrange after 3 min. Uncover during stand.	6-8 min.	3 min. uncovered	
	Fresh, Pieces	1 lb. Wash. 2-qt. casserole. Add no water. Cover. Stir after 3 min. Uncover during stand.	5-7 min.	2 min. uncovered	
Cabbage Shredded	1 lb.	2-qt. casserole. 2 tbsp. water. Cover. Stir after 4 min.	8-12 min.	2 min.	
	Wedges	1 lb. 2-qt. casserole. 2 tbsp. water. Cover. Rearrange after 5 min.	12-14 min.	3 min.	
Carrots Fresh, Slices	2 cups	1-qt. casserole. 2 tbsp. water. Cover. Stir after 3 min.	5-8 min.	3 min.	
Cauliflower Fresh, Flowerets	2 cups	1-qt. casserole. 1 tbsp. water. Cover. Stir after 2 min.	3-5 min.	2 min.	
	Fresh, Whole	1 1/2 lbs. Remove leaves and core center. 2-qt. casserole. 2 tbsp. water. Cover.	7-9 min.	3 min.	
Corn Fresh, on Cob	2 ears	9-in. pie plate. 2 tbsp. water. Cover. Rearrange after 4 min.	6-9 min.	5 min.	
	4 ears	2-qt. oval or rectangular casserole. 1/4 cup water. Cover.	12-14 min.	5 min.	
	Frozen, on Cob	2 ears	6-8 min.	5 min.	
	4 ears		10-12 min.	5 min.	
Peas, Green Fresh	2 cups	1-qt. casserole. 1/4 cup water. Cover. Stir after 3 min.	4-6 min.	3 min.	
Potatoes Boiled	4 medium	Peel and quarter potatoes. 2-qt. casserole. Cover. Stir after 5 min.	9-12 min.	3 min.	
Spinach Fresh	1 lb.	Wash and trim. Add no water. 3-qt. casserole. Cover. Stir after 3 min.	5-7 min.	2 min.	
Squash Fresh, Acorn	1 whole	Pierce; place on paper towel. Turn over after 4 min.	7-10 min.	5 min.	
	Fresh, Zucchini Slices	2 cups	1-qt. casserole. Add no water. Cover. Stir after 2 min.	2-4 min.	1 min.
	Frozen, Mashed	10-oz. pkg.	1-qt. casserole. Add no water. Cover. Break apart and stir after 3 min.	6-8 min.	2 min.
Sweet Potatoes Baked	2 medium	Pierce; place on paper towels.	5-9 min.	5 min.	
	4 medium	Turn over, rearrange after 5 min.	10-13 min.	5 min.	

APYD MROH-2

SOLAMENTE ESCRITO EN INGLES!

THE ULTIMATE ACCESSORY

*** SHARP CAROUSEL MICROWAVE COOKBOOK ***

- * Great recipes
- * Reliable microwave reference guide
- * Many color photos
- * Step-by-step instructions
- * Nutritional information for each recipe
- * Durable wipe-clean soft cover with 128 8 1/2 x 11 pages
- * Helpful tips and special techniques

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If you prefer to order by mail, complete and return the order form below. Please include check or money order (payable to Sharp Accessories & Supplies Center) for \$6.00 plus \$4.00 shipping & handling and tax, if applicable, per book. See chart on order form below.

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*Florida.....\$.36	*New Jersey.....\$.36
*Illinois.....\$.44	*Texas.....\$.83

TOTAL ORDER AMOUNT..... \$ _____

I have enclosed a check made payable to Sharp Accessories & Supplies Center.
 Please bill my VISA MASTERCARD
 Acct. No. _____ Expiration date ____/____/____

Signature _____
(All credit card orders must be signed.)
 Name _____
 Address _____
 City _____ State _____ Zip _____
 Daytime Phone No. (_____) _____

Mail to: SHARP Accessories & Supplies Center
 2130 Townline Road
 Peoria, Illinois 61615-1560

Prices are subject to change without notice.

FCC ID: APYDMR0112

EXHIBIT D

IDENTIFICATION LABEL (NAMEPLATE)

SHARP HOUSEHOLD MICROWAVE OVEN MODEL NO. R-1850

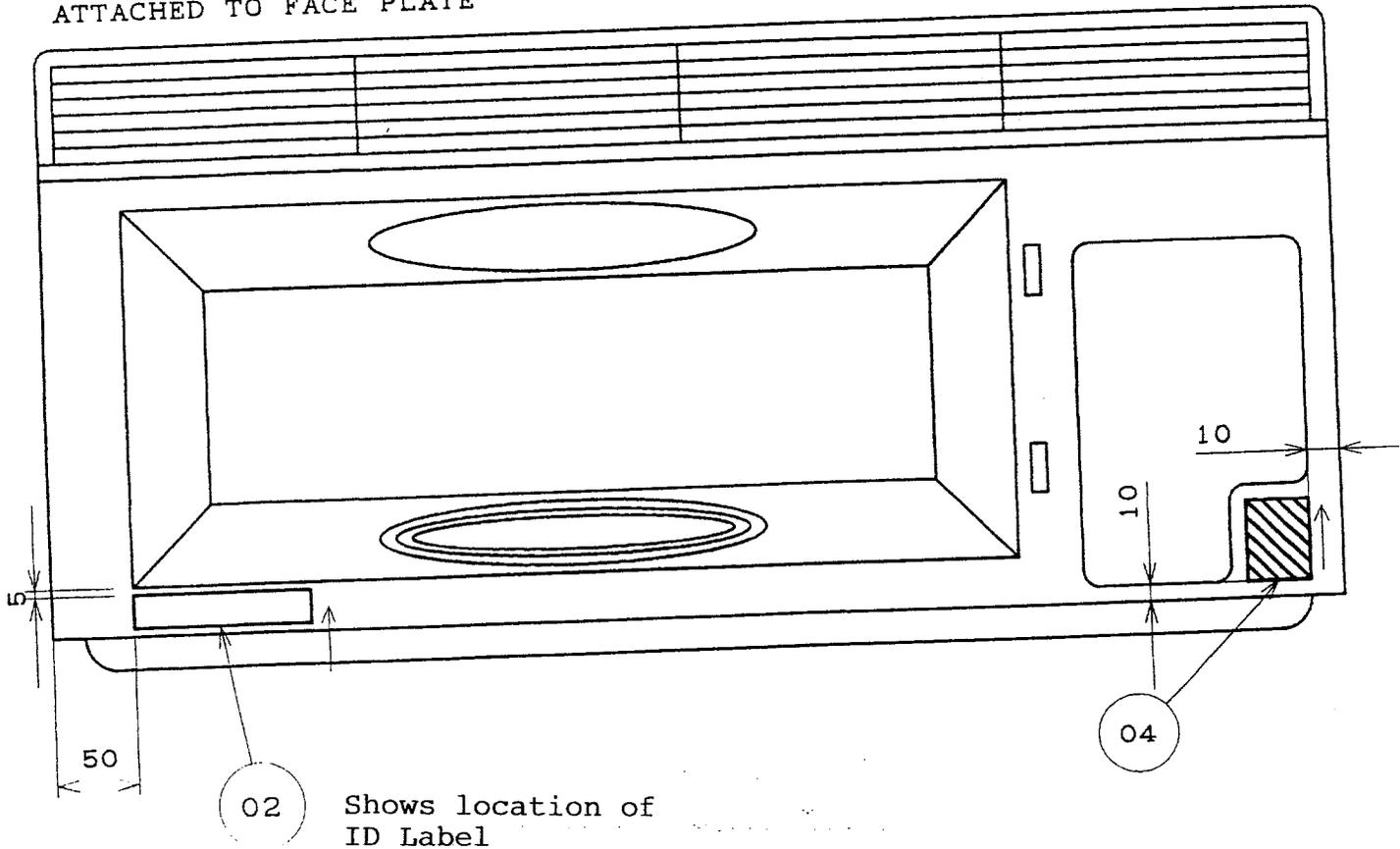
120 V.A.C. 1.5 kW 60 Hz SINGLE PHASE OUTPUT W 2450 MHz
COMPLIES WITH DHHS RADIATION PERFORMANCE STANDARDS 21CFR SUBCHAPTER J.
SHARP ELECTRONICS CORP. MAHWAH, N.J. 07430 FCC ID: APYDMR0112 LISTED
MADE IN USA.  LISTED
285B
SERIAL NO. MANUFACTURED:

FCC ID NUMBER

**APY:
DMR0112:**

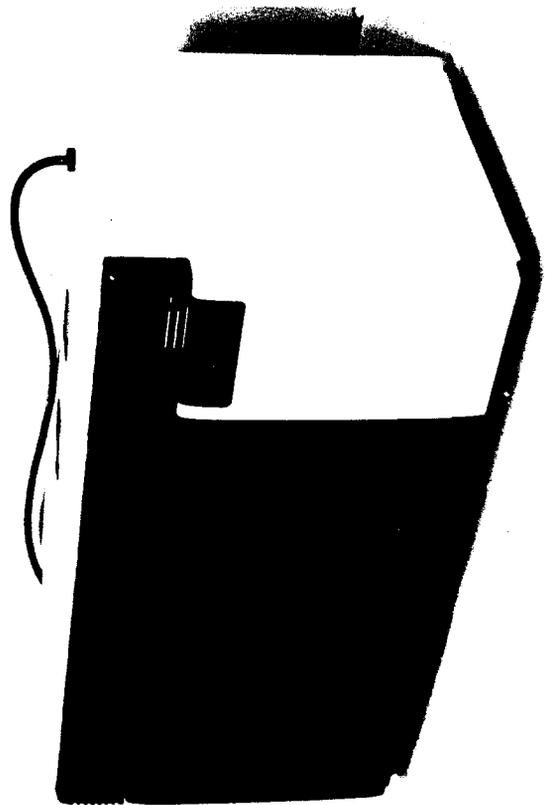
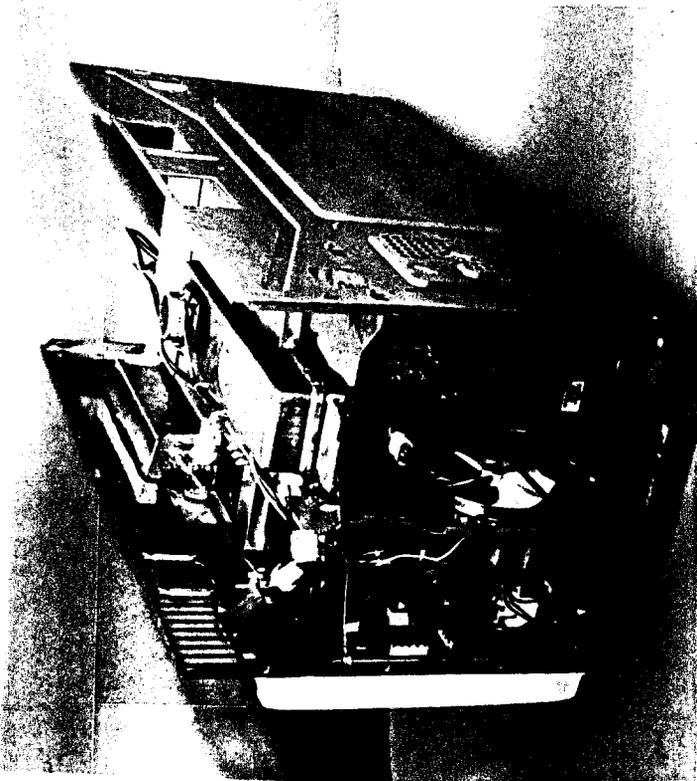
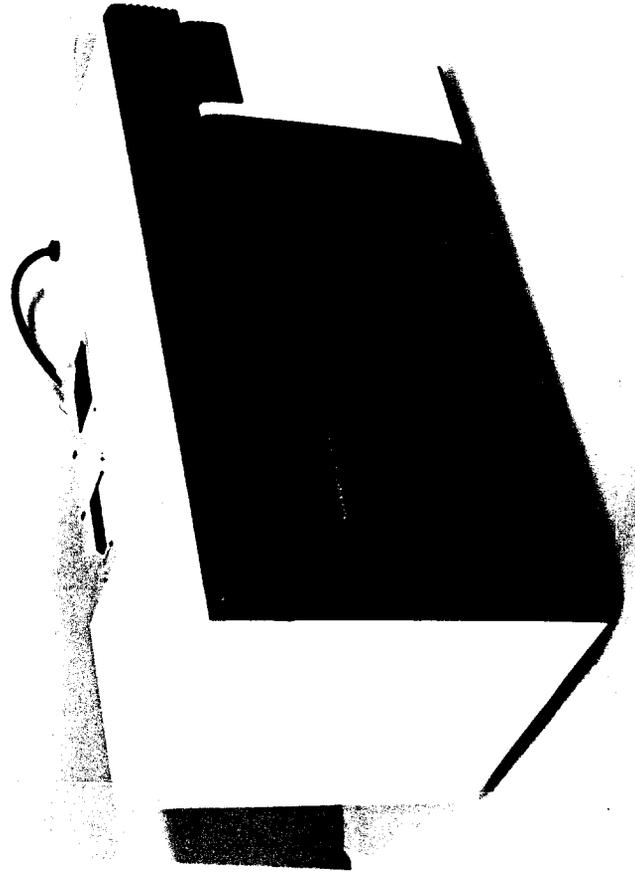
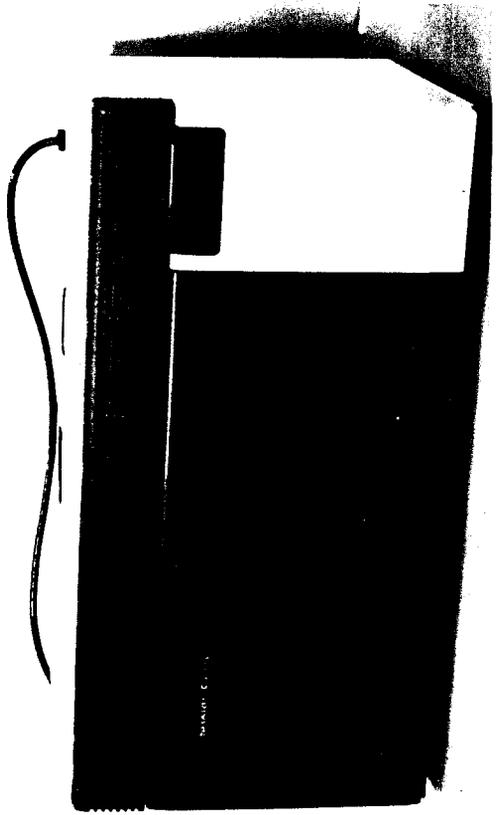
**FCC Grantee Code for Sharp Corporation
Designation Assigned to This Model Family**

ATTACHED TO FACE PLATE

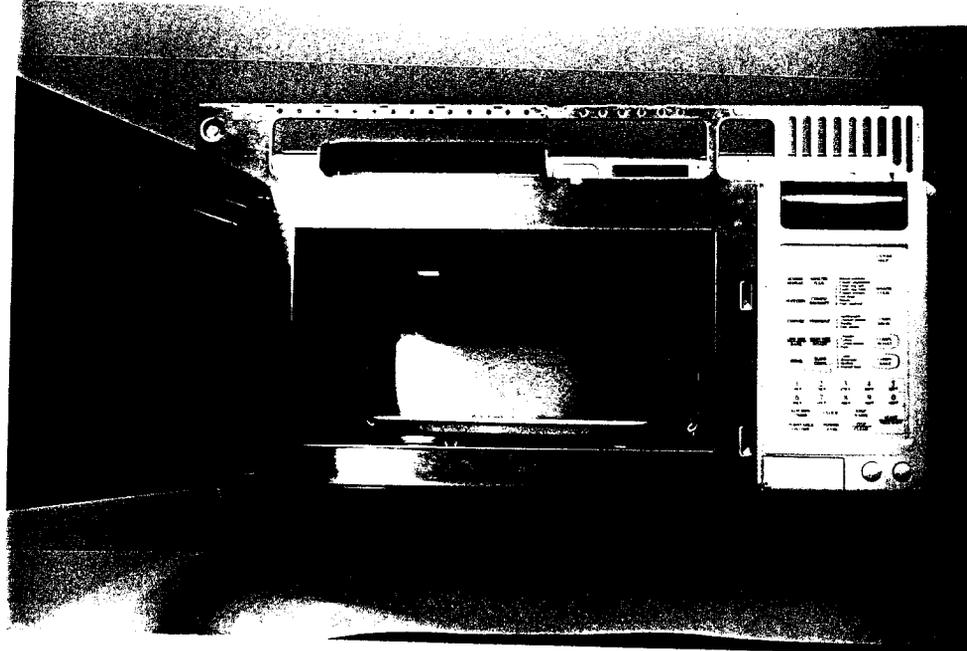
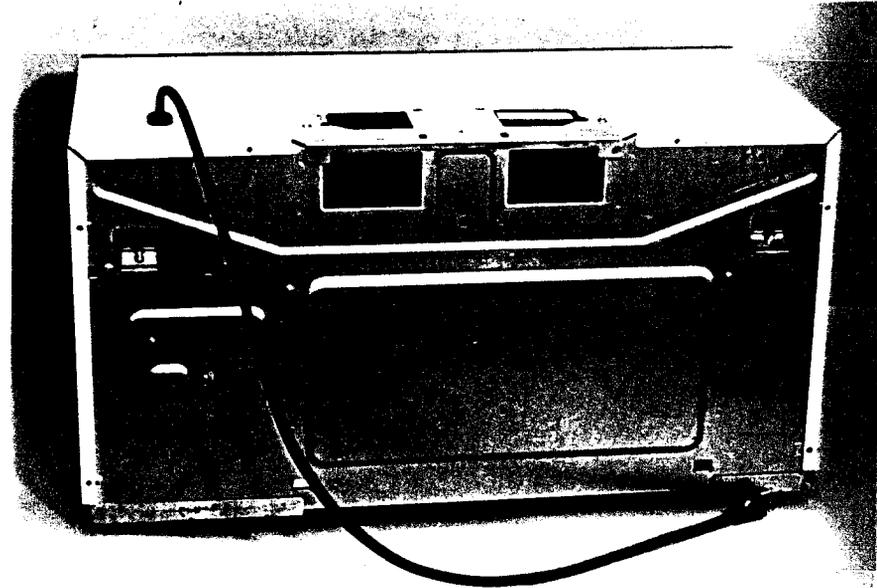
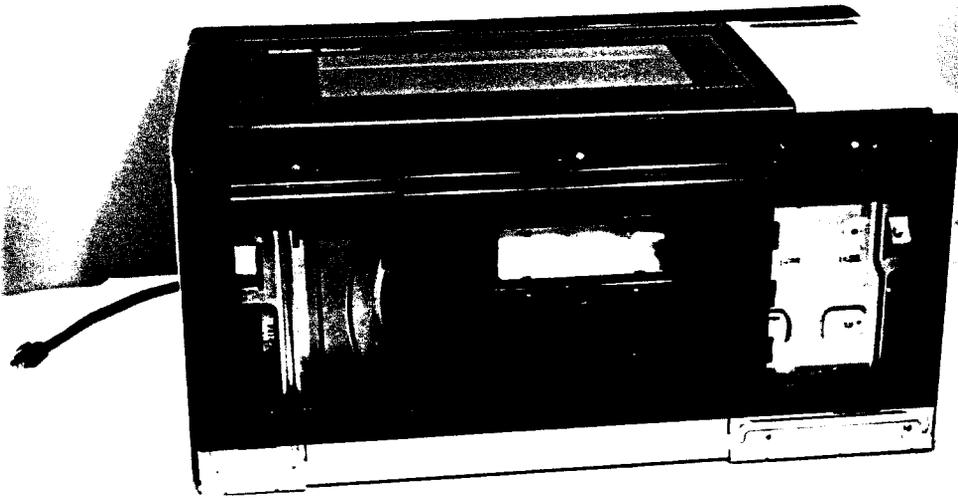


02 Shows location of ID Label

APYDMR0112



APYDMR0112



APYD MR0112

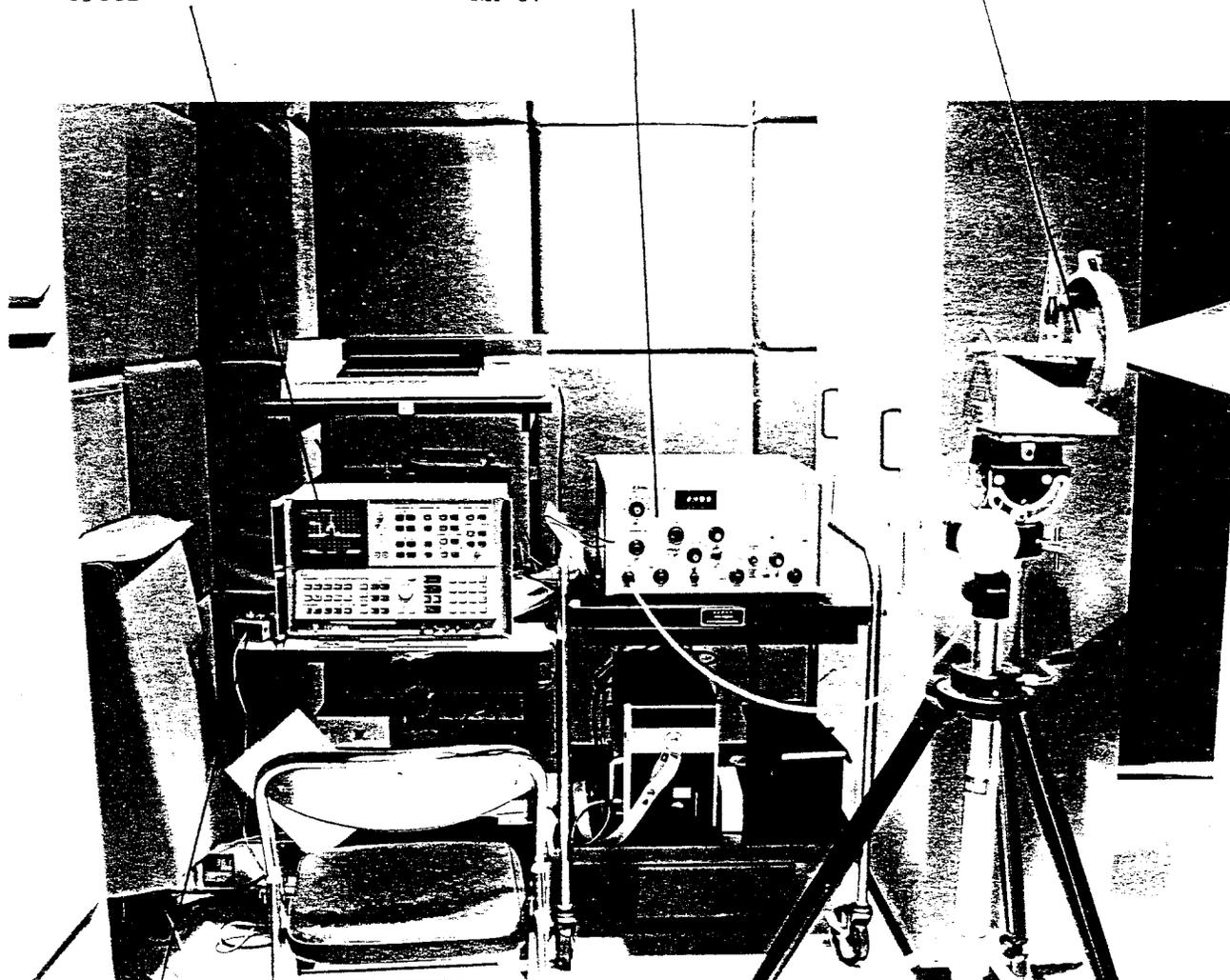
DESCRIPTION OF THE MEASUREMENT FACILITIES

SHARP CORPORATION, KITCHEN APPLIANCE SYSTEMS DIVISION
EMI ANECHOIC CHAMBER

Spectrum Analyzer
8566B

Field Strength Meter
NM-67

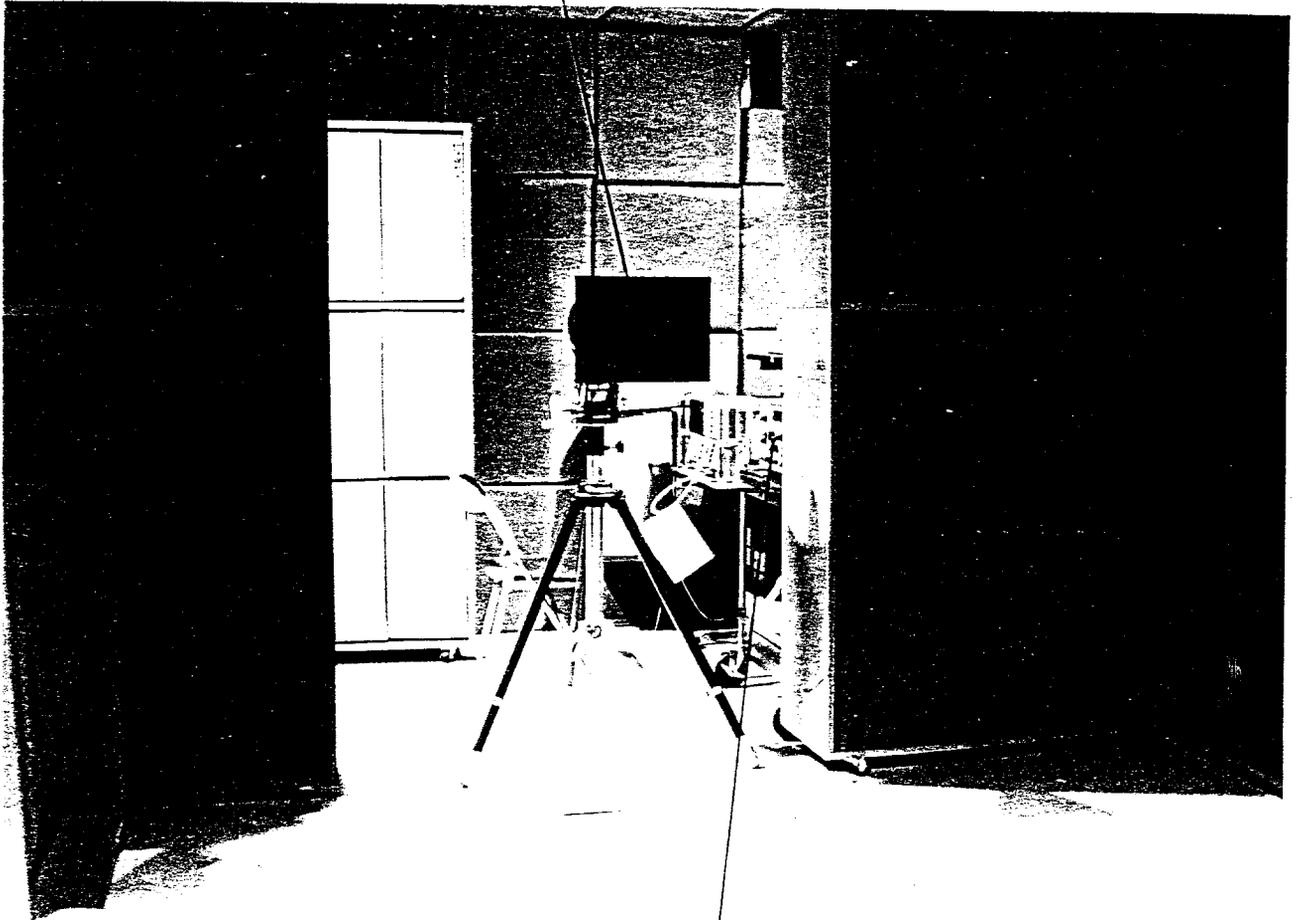
Horn Antenna



Turn Table Controller

APYDMR0112

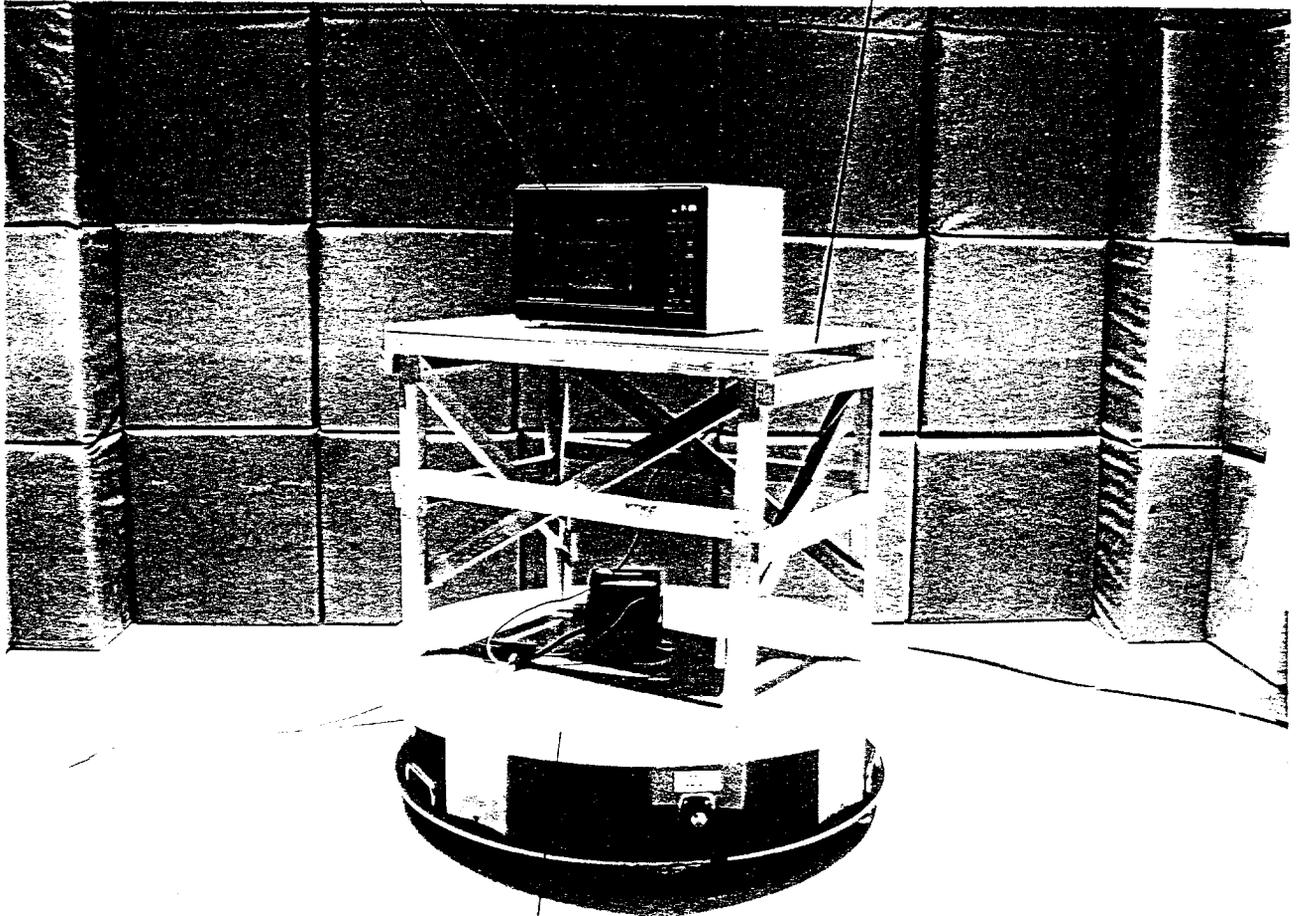
Horn Antenna



Field Strength Meter
NM-67

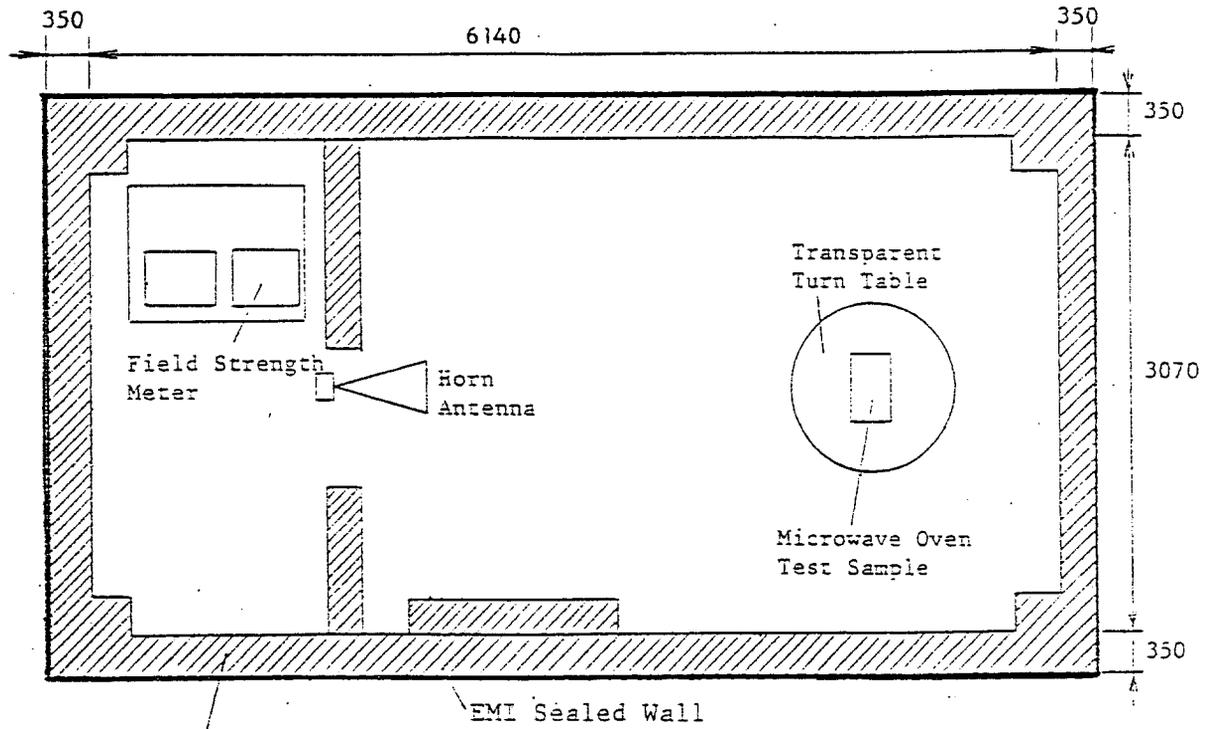
Microwave Oven
Test Sample

Wooden Table

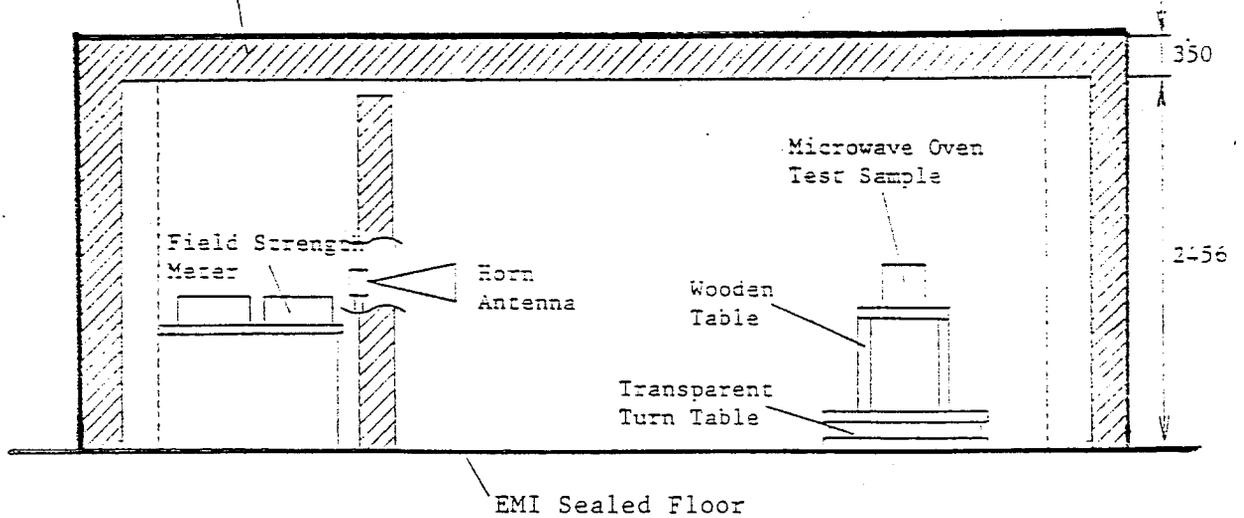


Transparent Turn Table

4. DIMENSIONS OF TEST SITE



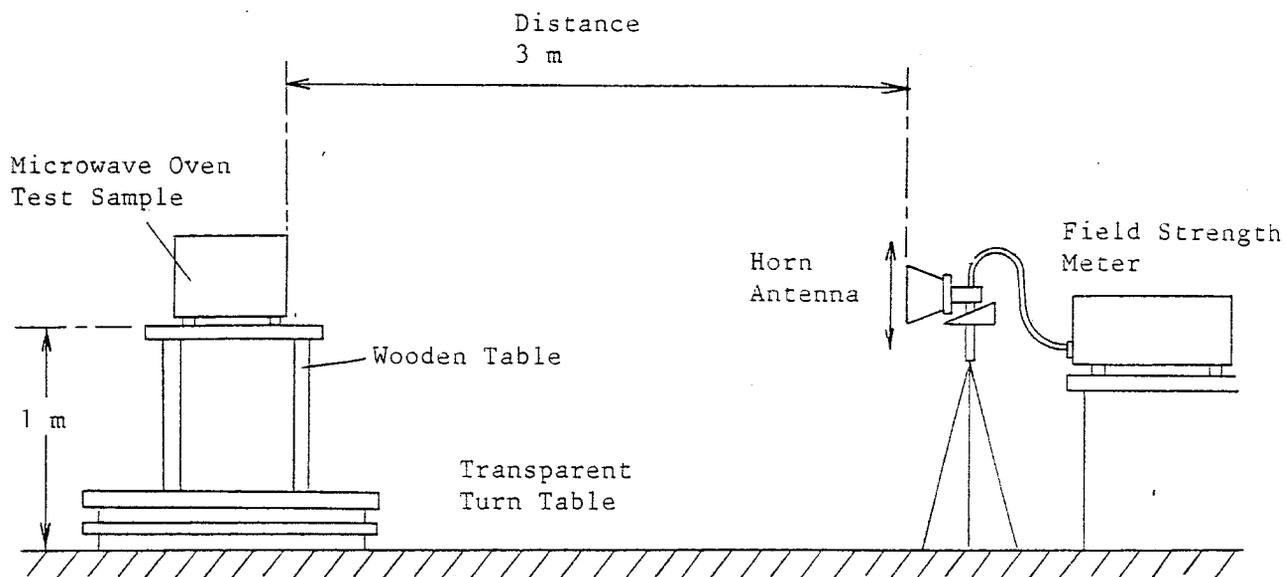
Electric Magnetic Wave Absorber: Cat. No. AEP-12EM WP
Mfd by Advanced ElectroMagnetic, Inc.



(mm)

EMI Anechoic Chamber equipped by Akzo Kashima Ltd.

5. ARRANGEMENT OF INSTRUMENTATION



6. DESCRIPTION OF MEASUREMENT EQUIPMENTS6-1. FIELD STRENGTH METER

a) #UHR4000, Mfd by CHASE (100 MHz through 1.0 GHz)

BANDWIDTH	120 kHz
DETECTOR FUNCTION	Linear average value; AVERAGE 1: 1 ms averaging AVERAGE 2: 600 ms averaging
CALIBRATION DATE	July 19, 1995

b) #NM-67, Mfd by EATON (1.0 GHz through 10.0 GHz)

BANDWIDTH	10 MHz
DETECTOR FUNCTION	Linear average value; Field Intensity
CALIBRATION DATE	July 19, 1995

6-2. RADIATED FREQUENCY OBSERVATION SUB-EQUIPMENT

SPECTRUM ANALYZER #8566B, Mfd by HEWLETT. PACKARD

6-3. ANTENNA

<u>RANGE FOR FREQUENCY</u>	<u>ANTENNA</u>
From 100 MHz to 140 MHz	#DM-105A-T1, Mfd by SINGER
From 140 MHz to 400 MHz	#DM-105A-T2, Mfd by SINGER
From 400 MHz to 1.0 GHz	#DM-105A-T3, Mfd by SINGER
From 1.0 GHz to 2.0 GHz	#91888-2, Mfd by EATON
From 2.0 GHz to 3.6 GHz	#91889-2, Mfd by EATON
From 3.6 GHz to 7.3 GHz	#94613-1 with Reflector #91892-1 Mfd by EATON
From 7.3 GHz to 10.0 GHz	#91891-2 with Reflector #91892-1 Mfd by EATON

6-4. CABLE

<u>RANGE FOR FREQUENCY</u>	<u>CABLE</u>
From 100 MHz to 1.0 GHz	#RG-55/U
From 1.0 GHz to 10.0 GHz	#94615-1

6.5. PERTINENT DETAILS

a) Calculation Formula	(See Attachment 1)
b) Antenna Correction Factor	(See Attachment 2)
c) Cable Loss	(See Attachment 3)
d) Calibration Curve	(See Attachment 4)

6-6. TEST CONDITION

a) Antenna height variation	From <u>1.1 m</u> to <u>2.1 m</u>
b) Antenna to test unit distance	<u>3 m</u>

CALCULATION OF RADIATED FIELD STRENGTH (uV/m)

$$E_f = 10^{\left(\frac{F_a + F_c + D}{20}\right)} * K$$

- Ef : Radiated Field Strength at 300 m (uV/m)
- Fa : Antenna Factor (dB)
- Fc : Cable Factor (dB)
- D : Reading Data of the Field Strength Meter (dBuV at 3 m)
- K : Conversion Factor

- K = 0.0137 * logF - 0.0401 (if F < 4575 MHz)
- K = 0.01 (if F ≥ 4574 MHz)
- F : Emission Frequency

Emission Frequency (MHz)	K
1830	0.0046
2745	0.0070
3660	0.0090
4575 and above	0.0100

In case of emission frequency less than 1.0 GHz, conversion factor K=0.01 is used for the measurement of 3 m distance.

ANTENNA FACTOR (dB)

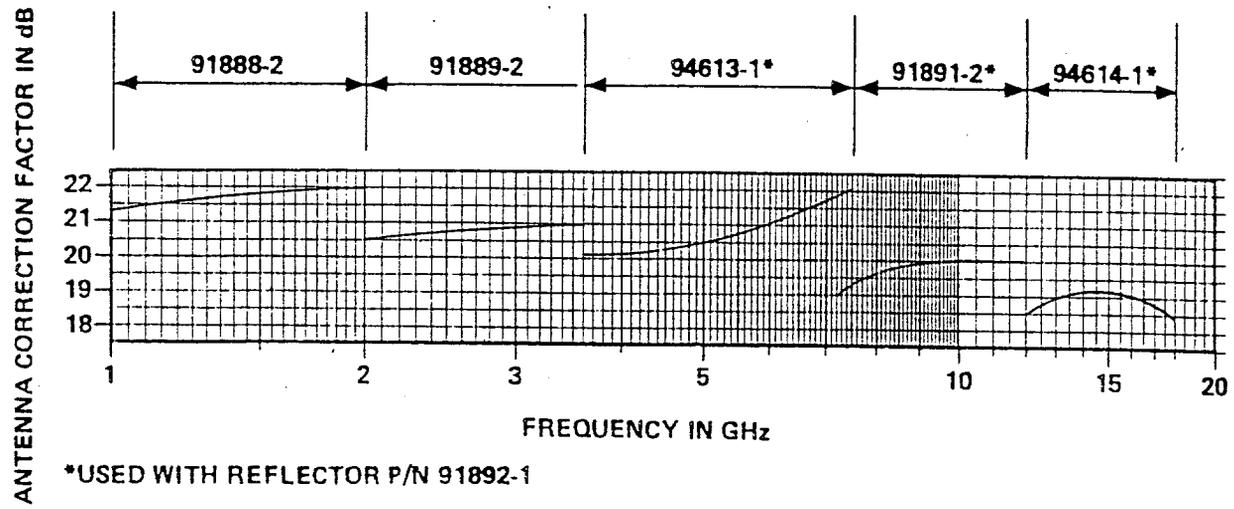


Figure 5-3. Antenna Correction Factors, 1-18 GHz Horn Antennas

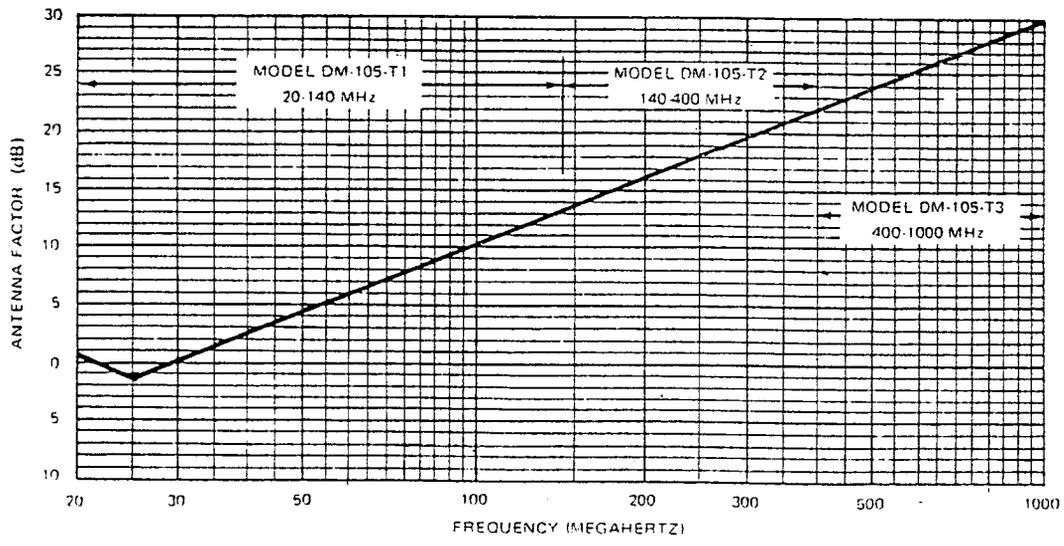


Figure 2-18. Antenna Factor Versus Frequency Characteristics, Models DM-105-T1, DM-105-T2 and DM-105-T3 Dipole Antennas

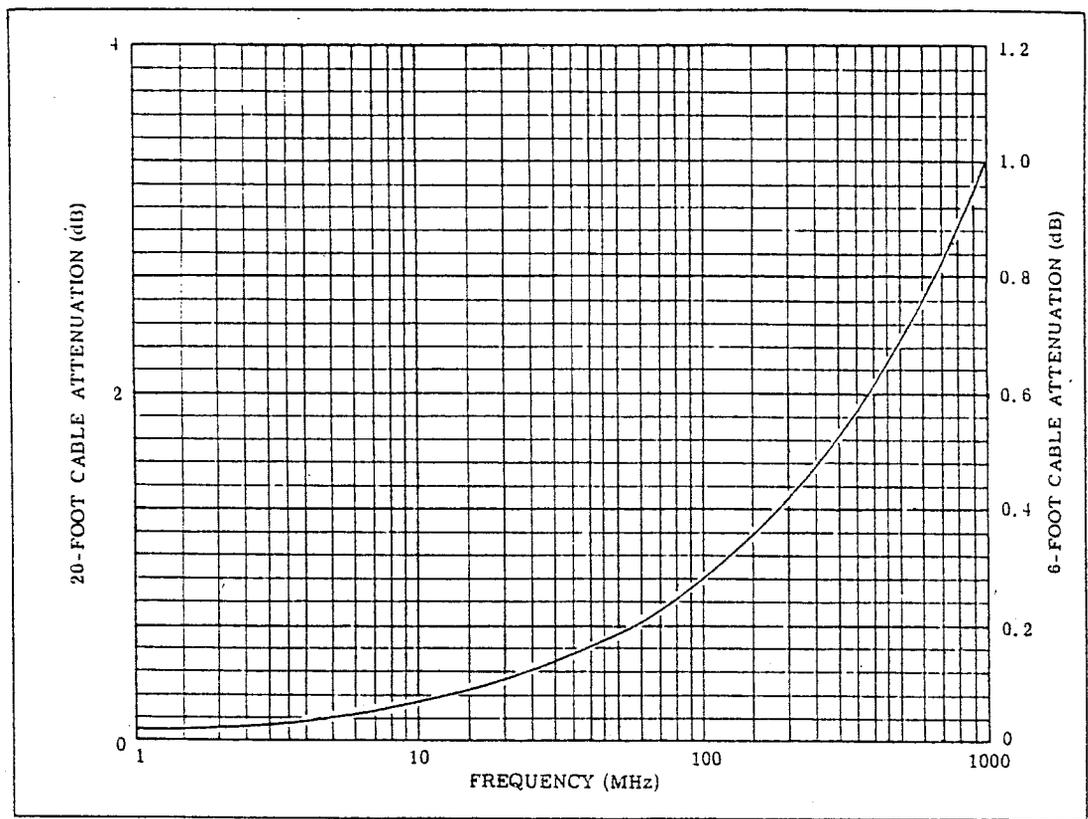


Figure 2-10. Attenuation Vs. Frequency for RG-55/U Coaxial Cable

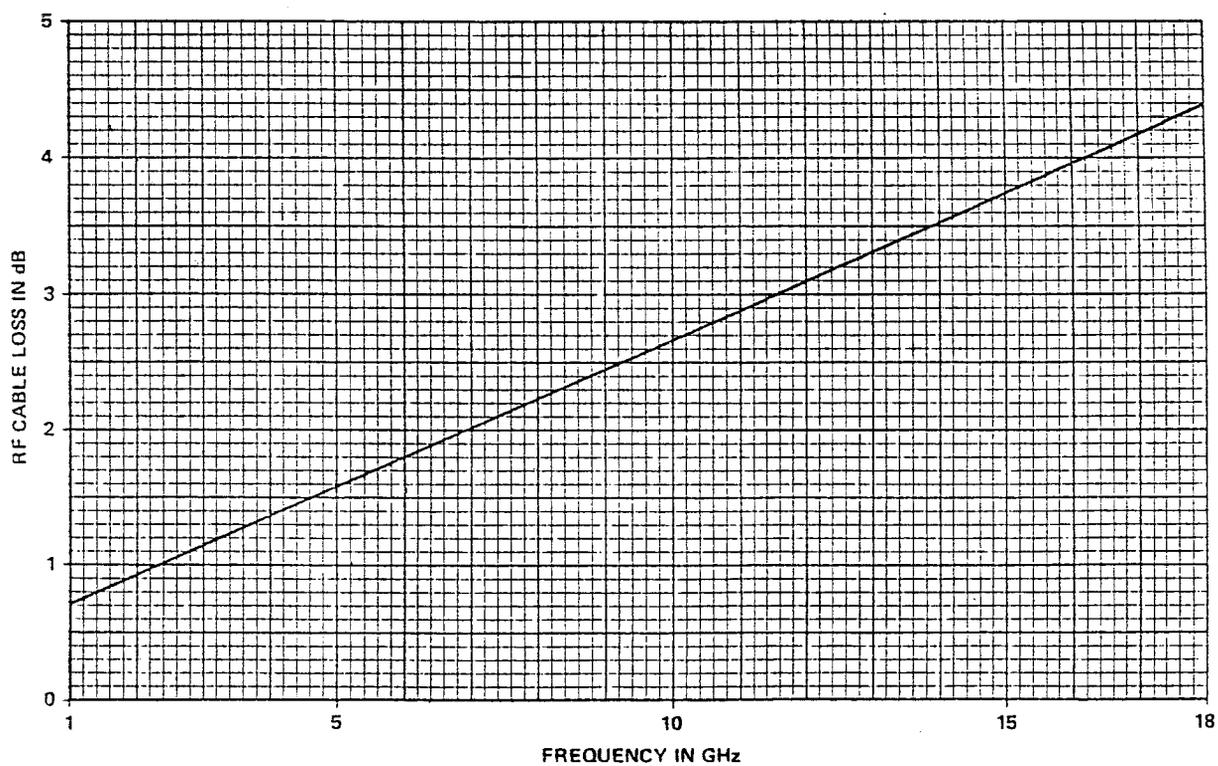
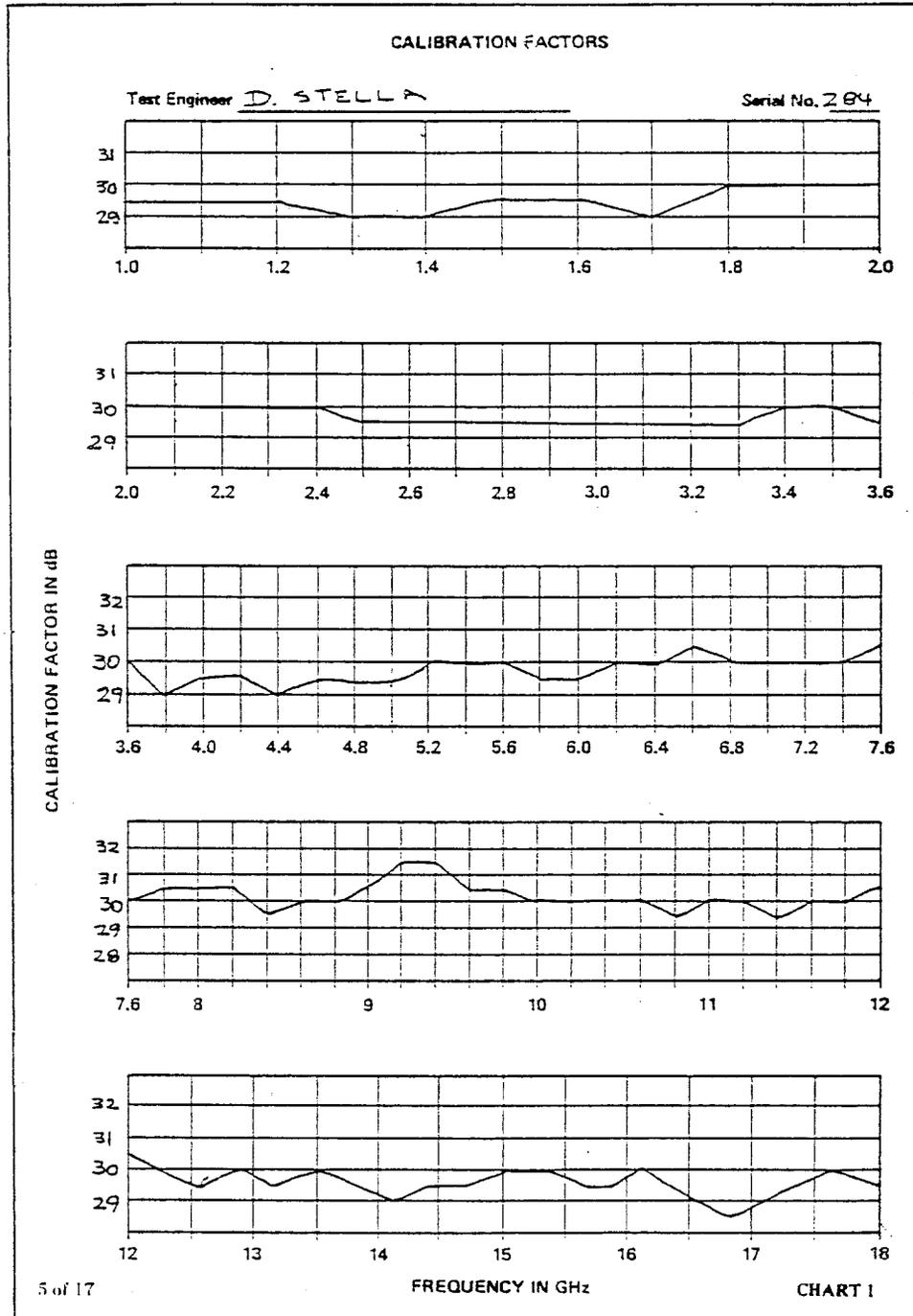


Figure 5-1. Model 94615-1 RF Cable Loss Chart

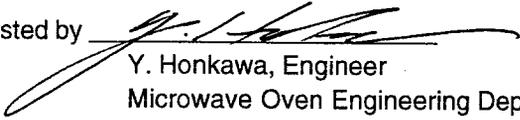
CALIBRATION CURVE

For Model NM-67



ENGINEERING TEST RECORD
REPORT OF MEASUREMENTS (MICROWAVE OVEN TEST DATA SHEET)

FCC ID : APYDMR0112
TEST DATE : May 29, 1996
TESTED MODEL : R-1850
MAGNETRON : 2M167B, mfd by Matsushita
NOMINAL FREQUENCY : 2450 MHz

Tested by 
Y. Honkawa, Engineer
Microwave Oven Engineering Dept.
Kitchen Appliance Systems Div.
Sharp Corp. (Yao factory)

DATA SUMMARY (FCC Measurement Procedure MP-5)

Radiated Field Strength : See attachment Data Sheet.

Frequency variation : See attached Data Sheet

Measurement Test Site : Sharp Corporation
Kitchen Appliance Systems Division
Yao factory, EMI Anechoic Chamber

Note: For further details of Test Site, refer to "Description of Measurement Facilities".

Total power input to oven : 1380 Watts
Power developed in dummy load : 566 Watts (Thermal method/1000 ml water load, well heated microwave oven)
PERMISSIBLE : 26.59 uV/m at 300 m
Supply voltage : 120 V ac

APYDMR0112

DATA SHEET (FCC Measurement Procedure MP-5)

FCC ID: APYDMR0112

Model R-1850

Magnetron: 2M167B, mfd by Matsushita

Date: May 29, 1996

	Frequency (MHz)	Load (ml)	Place of the load	Antenna Factor (dB)	Cable Loss (dB)	Reading Data (dBuV @:3m)		Radiated Field Strength (uV/m @:300m)	
						Vertical	Horizen	Vertical	Horizen
Fundamental	2456	1000	Center	20.70	1.03	87	90	1733.98	2449.32
2nd Harmonic	4902	700	Center	20.50	1.58	30	28	4.02	3.19
	4909	700	R.F.Corner	20.50	1.58	30	29	4.02	3.58
	4897	300	Center	20.50	1.58	30	28	4.02	3.19
	4909	300	R.F.Corner	20.50	1.58	32	30	5.06	4.02
3rd Harmonic	7359	700	Center	19.20	2.10	35	32	6.53	4.62
	7357	700	R.F.Corner	19.20	2.10	36	33	7.33	5.19
	7305	300	Center	19.20	2.10	36	30	7.33	3.67
	7371	300	R.F.Corner	19.20	2.10	40	37	11.62	8.22
	9812	700	Center	20.00	2.62	30	32	4.28	5.38
Spurious F<1000, 4575<F	4346	700	Center	20.30	1.45	24	25	1.94	2.18
	5410	700	Center	20.70	1.67	31	22	4.66	1.65
Spurious 1000<F<4575	-	700	Center	-	-	-	-	-	-
	-	-	Center	-	-	-	-	-	-
Emission Sideband	2400	1000	Center	20.70	1.01	26	27	1.51	1.69
	2415	1000	Center	20.70	1.02	42	45	9.59	13.54
	2485	1000	Center	20.70	1.03	21	23	0.88	1.11
	2500	1000	Center	20.80	1.04	20	22	0.80	1.00

Emission observed from 100MHz through 10GHz by spectrum analyzer. No significant emission was detected except for above data. Microwave Leakage at 5 cm on fundamental : 0.31 mW/cm

FREQUENCY MEASUREMENTS

MODEL: R-1850

EMPLOYED MAGNETRON: 2M167B, Matsushita

TESTED: May 29, 1996

(1) Frequency VS Line Voltage Variation Test

Test Result (Room Temperature: 20. C)

Load: 1000 cc water in 1 liter glass beaker

Line Voltage Variation (V)	Frequency (MHz)	Deviation For ISM Frequency (MHz)
96 (80%)	2451	+ 1
108 (90%)	2448	- 2
120 (Nominal)	2451	+ 1
132 (110%)	2449	- 1
150 (125%)	2448	- 2

(2) Frequency VS Load Variation Test

Test Results (room temperature: 20. C)

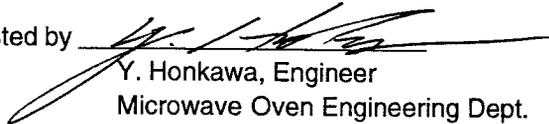
Load: 1000 cc water in 1 liter glass beaker

Volume of Water (cc)	Frequency (MHz)	Deviation for ISM Frequency (MHz)
1000	2450	0
800	2453	+ 3
600	2452	+ 2
400	2447	- 3
200	2447	- 3

ENGINEERING TEST RECORD
REPORT OF MEASUREMENTS (MICROWAVE OVEN TEST DATA SHEET)

FCC ID : APYDMR0112
TEST DATE : May 29 - 30, 1996
TESTED MODEL : R-1850
MAGNETRON : 2M240H(L2), mfd by Toshiba
NOMINAL FREQUENCY : 2450 MHz

Tested by


Y. Honkawa, Engineer
Microwave Oven Engineering Dept.
Kitchen Appliance Systems Div.
Sharp Corp. (Yao factory)

DATA SUMMARY (FCC Measurement Procedure MP-5)

Radiated Field Strength : See attachment Data Sheet.

Frequency variation : See attached Data Sheet

Measurement Test Site : Sharp Corporation
Kitchen Appliance Systems Division
Yao factory, EMI Anechoic Chamber

Note: For further details of Test Site, refer to "Description of Measurement Facilities".

Total power input to oven : 1367 Watts
Power developed in dummy load : 550 Watts (Thermal method/1000 ml water load, well heated microwave oven)
PERMISSIBLE : 26.22 uV/m at 300 m
Supply voltage : 120 V ac

DATA SHEET (FCC Measurement Procedure MP-5) **FCC ID: APYDMR0112**
Model R-1850 **Magnetron: 2M240H(L2), mfd by Toshiba**

Date: May 29-30, 1996

	Frequency (MHz)	Load (ml)	Place of the load	Antenna Factor (dB)	Cable Loss (dB)	Reading Data (dBuV @:3m)		Radiated Field Strength (uV/m @:300m)	
						Vertical	Horizen	Vertical	Horizen
Fundamental	2453	1000	Center	20.70	1.03	95	95	4350.60	4350.60
2nd Harmonic	4931	700	Center	20.50	1.58	26	20	2.54	1.27
	4913	700	R.F.Corner	20.50	1.58	26	22	2.54	1.60
	4942	300	Center	20.50	1.58	24	23	2.01	1.79
	4913	300	R.F.Corner	20.50	1.58	25	23	2.26	1.79
3rd Harmonic	7292	700	Center	19.20	2.10	22	20	1.46	1.16
	7291	700	R.F.Corner	19.20	2.10	22	20	1.46	1.16
	7317	300	Center	19.20	2.10	28	25	2.92	2.07
	7316	300	R.F.Corner	19.20	2.10	22	22	1.46	1.46
4th Harmonic	9767	700	Center	20.00	2.62	20	23	1.35	1.91
Sprious F<1000, 4575<F	5352	700	Center	20.70	1.67	22	20	1.65	1.31
	8389	700	Center	19.80	2.30	22	22	1.60	1.60
Spurious 1000<F<4575	-	700	Center	-	-	-	-	-	-
	-	-	Center	-	-	-	-	-	-
Emission Sideband	2400	1000	Center	20.70	1.01	32	33	3.01	3.38
	2415	1000	Center	20.70	1.02	38	40	6.05	7.61
	2485	1000	Center	20.70	1.03	45	46	13.92	15.62
	2500	1000	Center	20.80	1.04	24	23	1.26	1.13

APYDMR0112

Emission observed from 100MHz through 10GHz by spectrum analyzer. No significant emission was detected except for above data. Microwave Leakage at 5 cm on fundamental : 0.33 mW/cm

FREQUENCY MEASUREMENTS

MODEL: R-1850

EMPLOYED MAGNETRON: 2M240H(L2), Toshiba

TESTED: May 29 - 30, 1996

(1) Frequency VS Line Voltage Variation Test

Test Result (Room Temperature: 20. C)
 Load: 1000 cc water in 1 liter glass beaker

Line Voltage Variation (V)	Frequency (MHz)	Deviation For ISM Frequency (MHz)
96 (80%)	2450	0
108 (90%)	2446	- 4
120 (Nominal)	2453	+ 3
132 (110%)	2456	+ 6
150 (125%)	2450	0

(2) Frequency VS Load Variation Test

Test Results (room temperature: 20. C)
 Load: 1000 cc water in 1 liter glass beaker

Volume of Water (cc)	Frequency (MHz)	Deviation for ISM Frequency (MHz)
1000	2453	+ 3
800	2454	+ 4
600	2452	+ 2
400	2445	- 5
200	2448	- 2