

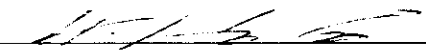
ENGINEERING TEST RECORD
REPORT OF MEASUREMENTS (MICROWAVE OVEN TEST DATA SHEET)

FCC ID CODE: APYDMR0119

TEST DATE: June 2 - 5, 1998

TESTED MODEL: R-21HT

NOMINAL FREQUENCY: 2450 MHz

TESTED BY: 

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

DESCRIPTION OF THE MICROWAVE OVEN

UNIT BODY DIMENSIONS : 520 mm wide, 309 mm high, 406 mm deep
(Include feet)

DOOR DIMENSIONS : 416 mm wide, 276 mm high
(Viewing Area: 284 mm by 140 mm)

OVEN CAVITY DIMENSIONS : 352 mm wide, 235 mm high, 371 mm deep
(without tray)

FEED TYPE AND LOCATION : Supplied by waveguide located side and under of oven

DOOR SEAL TYPE : Choke and Capacitive Seals

MAGNETRON TYPE : 2M240H(L2), mfd by Toshiba

DATA SUMMARY (FCC Measurement Procedure MP-5)

RADIATED FIELD STRENGTH : See attached 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 attached "Description of Measurement Facilities".

TOTAL POWER INPUT TO OVEN : 1550 W

POWER DEVELOPED IN DUMMY LOAD : 861 W (by calorimetric method with water
load under well heated microwave oven)

PERMISSIBLE : 32.8 uV/m at 300 m

SUPPLY VOLTAGE : 120 V ac

DATA SHEET (FCC Measurement Procedure MP-5)

FCC ID: APYDMR0119

Model R-21HT

Magnetron: 2M240H(L2), mfd by Toshiba

Date: June 2 - 5, 1998

	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	2481	1000	Center	20.70	1.03	91	84	2774.28	1239.22
2nd Harmonic	4973	700	Center	20.50	1.58	42	34	16.00	6.37
	4974	700	R.F.Corner	20.50	1.58	46	36	25.35	8.02
	4931	300	Center	20.50	1.58	40	31	12.71	4.51
	4971	300	R.F.Corner	20.50	1.58	46	40	25.35	12.71
3rd Harmonic	7365	700	Center	19.20	2.10	40	35	11.62	6.53
	7306	700	R.F.Corner	19.20	2.10	37	33	8.22	5.19
	7364	300	Center	19.20	2.10	42	37	14.62	8.22
	7314	300	R.F.Corner	19.20	2.10	45	37	20.65	8.22
4th Harmonic	9820	700	Center	20.00	2.62	41	40	15.17	13.52
Spurious F<1000, 4575<F	5254	700	Center	20.60	1.63	34	25	6.48	2.30
	7819	700	Center	19.50	2.20	33	29	5.43	3.43
Spurious 1000<F<4575	2388	700	Center	20.70	1.00	48	51	18.88	26.67
		700	Center	-	-	-	-	-	-
Emission Sideband	2400	1000	Center	20.70	1.01	50	51	23.91	26.82
	2415	1000	Center	20.70	1.02	57	58	53.90	60.48
	2485	1000	Center	20.70	1.03	88	82	1966.97	985.82
	2500	1000	Center	20.80	1.04	32	28	3.17	2.00

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 : 0.4 mW/cm

FREQUENCY MEASUREMENTS

MODEL: R-21HT (Employed Magnetron: 2M240H(L2), mfd by Toshiba)

FCC ID : APYDMR0119

TESTED: June 5, 1998

(1) Frequency VS Line Voltage Variation Test

Test Result (Room Temperature: 20. C)

Load: 1000 cc water in the glass beaker

Line Voltage Variation (V)	Frequency against the tolerance for center frequency 2450 Mhz	Allowed Tolerance for the ISM Band (2450 MHz)
96 (80%)	+37 MHz -14 MHz	+/- 50 MHz
108 (90%)	+ 37 MHz - 9 MHz	
120 (Nominal)	+ 36 MHz - 13 MHz	
132 (110%)	+ 37 MHz - 6 MHz	
150 (125%)	+ 39 MHz - 6 MHz	

(2) Frequency VS Load Variation Test

Test Results (room temperature: 20. C)

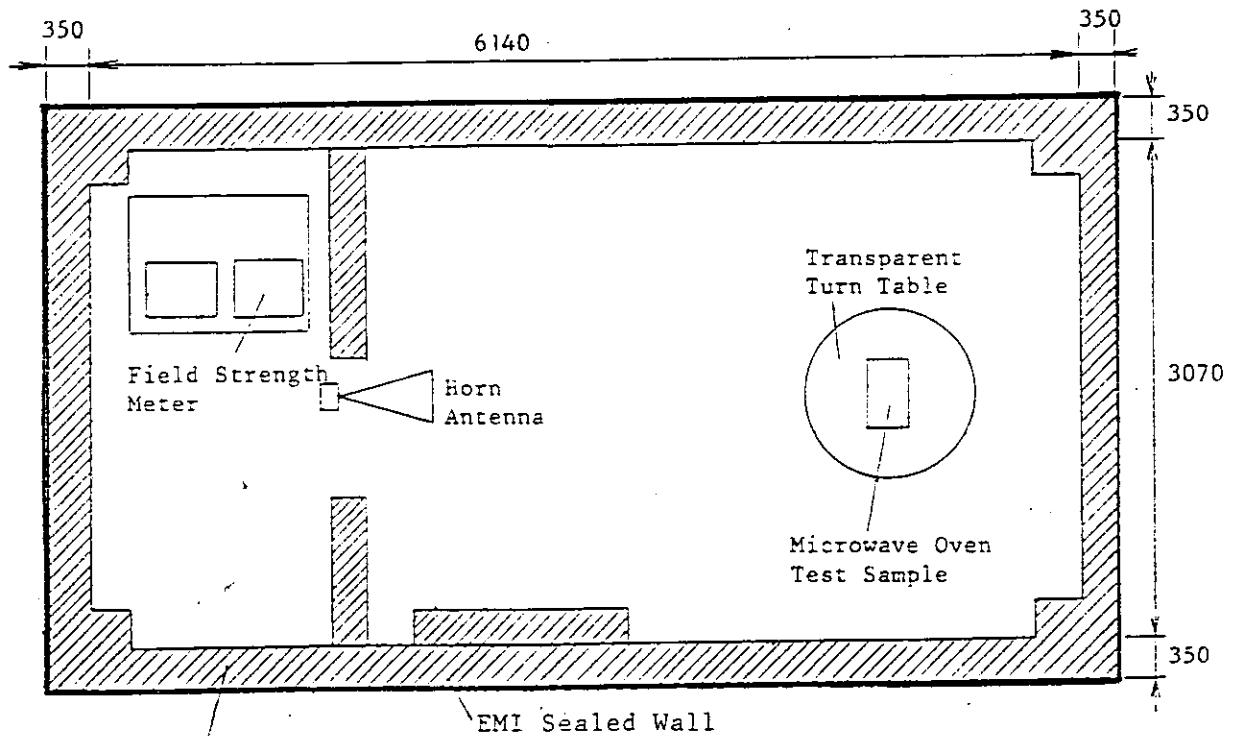
Load: 1000 cc water in the glass beaker

Volume of Water (cc)	Frequency against the tolerance for center frequency 2450 Mhz	Allowed Tolerance for the ISM Band (2450 MHz)
1000	+ 36 MHz - 13 MHz	+/- 50 MHz
800	+ 41 MHz - 10 MHz	
600	+ 42 MHz - 11 MHz	
400	+ 42 MHz - 17 MHz	
200	+ 41 MHz - 21 MHz	

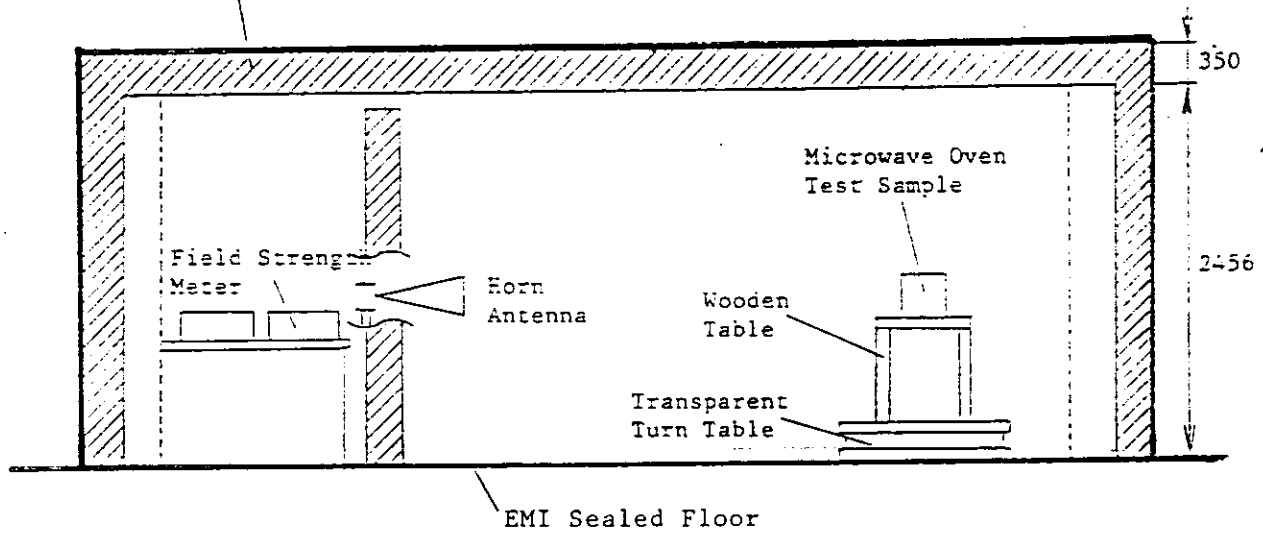
DESCRIPTION OF THE MEASUREMENT FACILITIES

SHARP CORPORATION, KITCHEN APPLIANCE SYSTEMS DIVISION
EMI ANECHOIC CHAMBER

4. DIMENSIONS OF TEST SITE



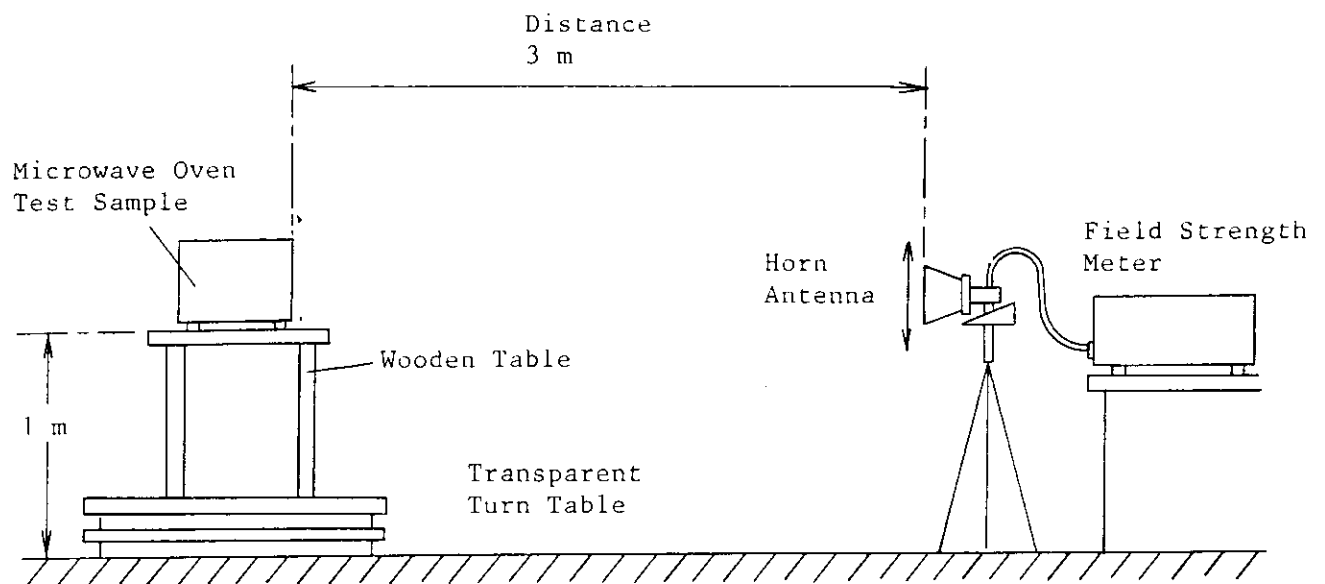
Electric Magnetic Wave Absorber: Cat. No. AEP-12EM WP
Mfd by Advanced ElectroMagnetic, Inc.



(mm)

EMI Anechoic Chamber equipped by Akzo Kashima Ltd.

5. ARRANGEMENT OF INSTRUMENTATION



6. DESCRIPTION OF MEASUREMENT EQUIPMENTS

6-1. 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	<i>September 10, 1997</i>

- 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	<i>August 6, 1997</i>

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)

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

E_f : Radiated Field Strength at 300 m (uV/m)

F_a : Antenna Factor (dB)

F_c : Cable Factor (dB)

D : Reading Data of the Field Strength Meter (dBuV at 3 m)

K : Conversion Factor

$K = 0.0137 * \log F - 0.0401$ (if $F < 4575$ MHz)

$K = 0.01$ (if $F \geq 4574$ 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)

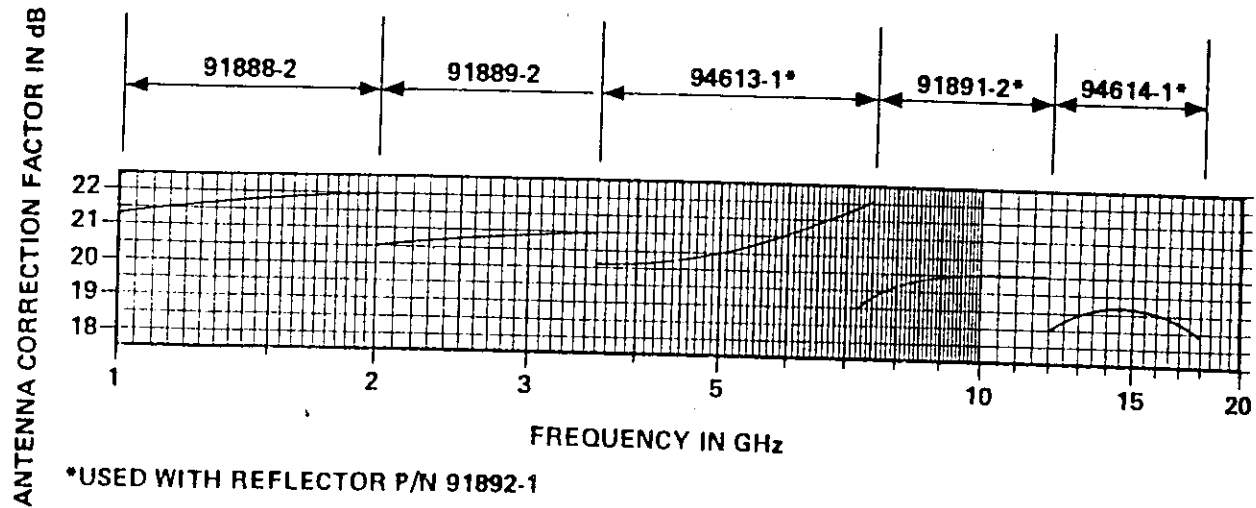


Figure 5-3. Antenna Correction Factors, 1-18 GHz Horn Antennas

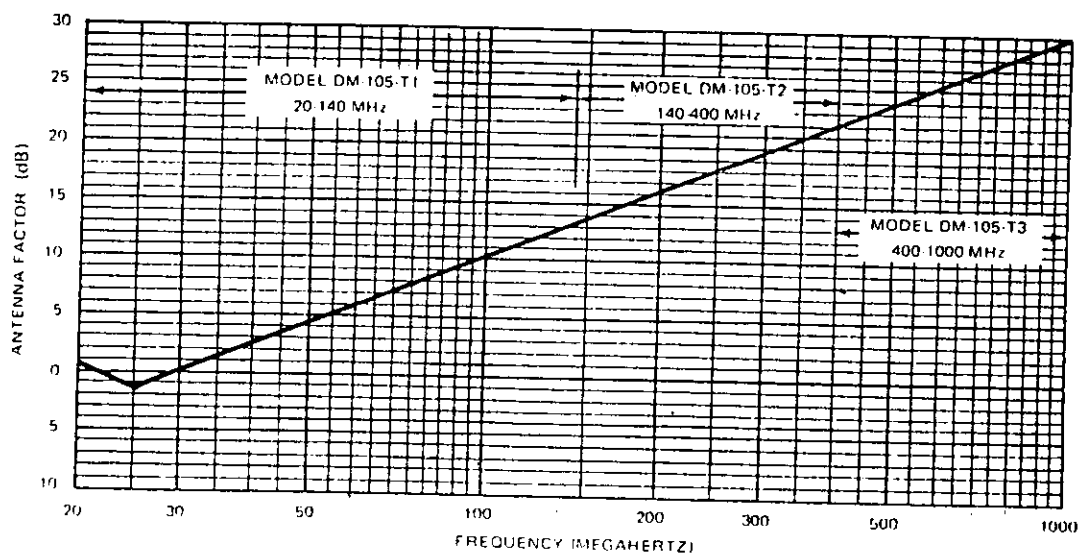


Figure 2-18. Antenna Factor Versus Frequency Characteristics, Models DM-105-T1, DM-105-T2 and DM-105-T3 Dipole Antennas

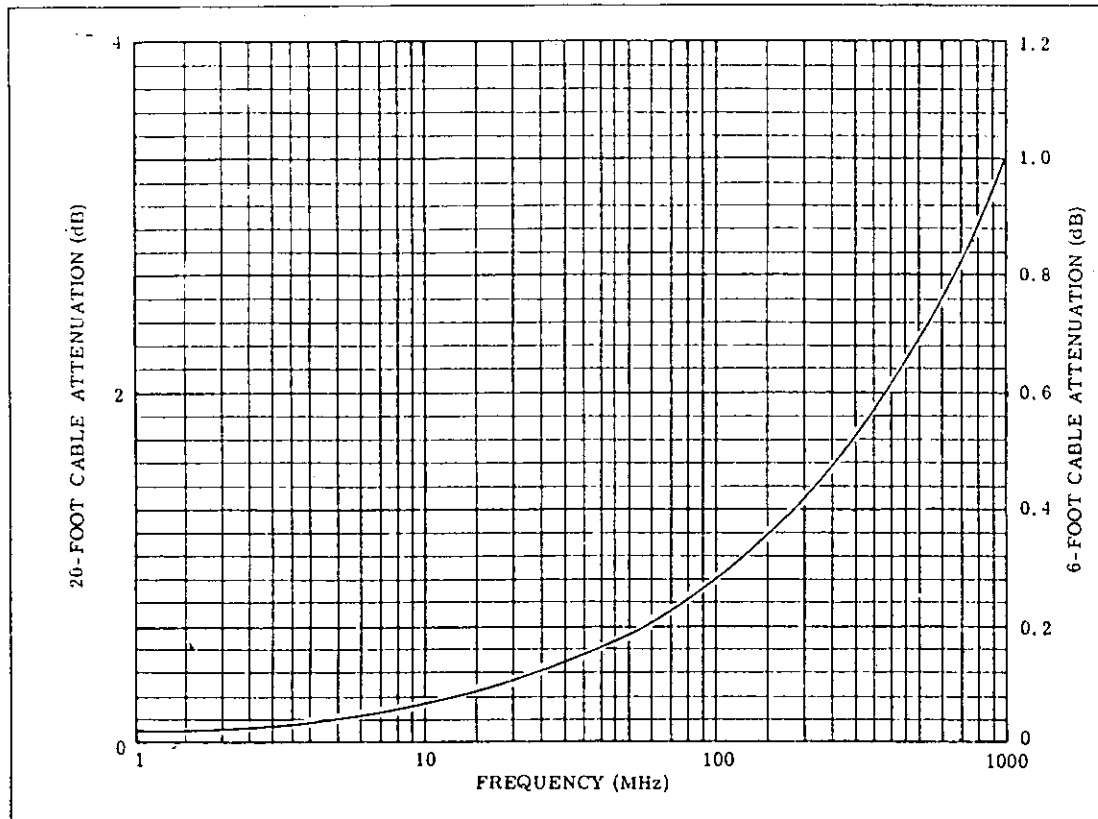


Figure 2-10. Attenuation Vs. Frequency for RG-55/U Coaxial Cable

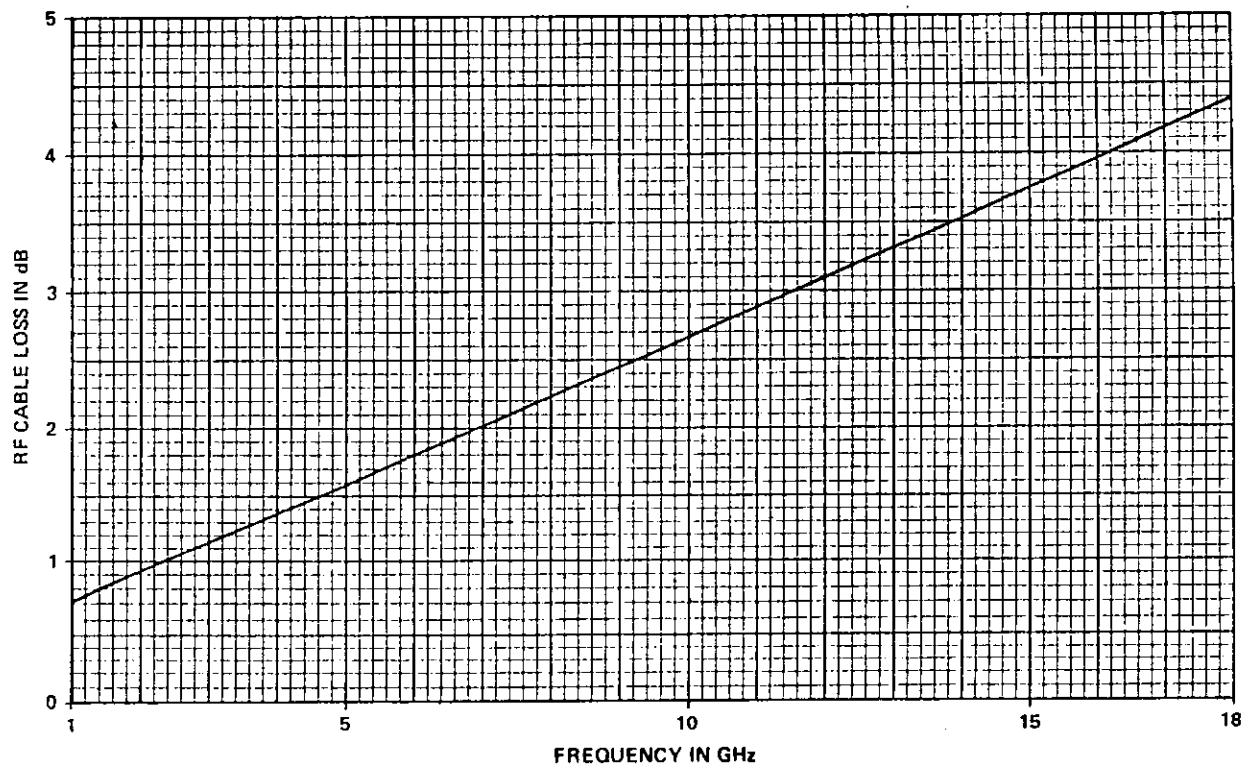


Figure 5-1. Model 94615-1 RF Cable Loss Chart

CALIBRATION CURVE

For Model NM-67

