

4.4 EUT OPERATING CONDITION

Operating condition is according to FCC Part18 and MP-5.

Tested condition will be:

- a. Normal room Temperature with 1000ml water load.
- b. Variation of time: Put 1000ml water in the beaker located in the center of EUT. And starting with the EUT & load at room temperature & continuing until the load quantity has been reduced to approximately 200ml.
- c. Variation of line voltage: Set up 1000ml water in the beaker located In the center of EUT and starting with the EUT & load at room Temperature and continuing at least 10 min.

Change line voltage to 96VAC/60Hz and 150 VAC / 60Hz.

4.5 TEST RESULTS

TEST CONDITION	FREQUENCY
NORMAL CONDITION	2449.8MHz
CHANGED LOAD	2443.4MHz
1000ml → 200ml	
96 VAC / 60Hz	2448.4MHz
150VAC/60Hz	2445.8MHz

5. RADIATED EMISSION TEST

5.1 TEST EQUIPMENT

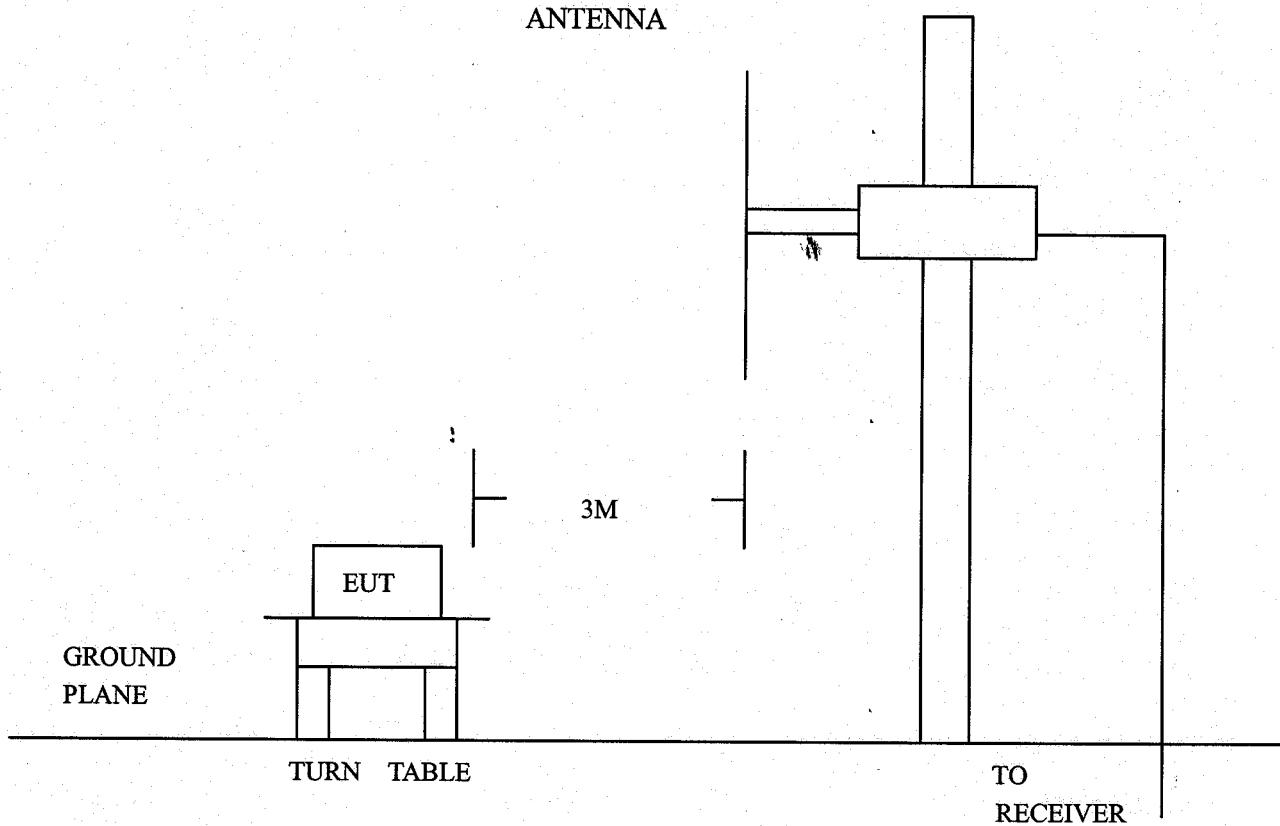
The following test equipment were used during the radiated emission test

EQIPMENT / FACILITIES	SPECIFICA-TIONS	MANUFACTUR-ER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DU-E DATE	FINAL TEST
TEST RECEIVER	9 KHz TO 2.75 MHz	R & S	ESCS30/ 830245/012	JULY 2000 ETC	1Y	✓
TEST RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/ 841977/003	MARCH 2000 ETC	1Y	
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/ 3019A05294	OCT. 1999 ETC	1Y	
SPECTRUM ANALYZER	9 KHz TO 26.5 GHz	HP	8593E/ 3710A03220	DEC. 1999 ETC	1Y	✓
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	MARCH 2000 ETC	1Y	✓
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-534	MARCH 2000 SRT	1Y	
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	AUG. 2000 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9701-1124	JAN. 2000 SRT	1Y	✓
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9608-1073	AUG. 2000 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/ 9509-1152	AUG. 2000 SRT	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A08402	MARCH 2000 ETC	1Y	
PRE-AMPLIFIER	1 GHz TO 26.5 GHz	HP	8449B/ 3008A01019	OCT. 2000 ETC	1Y	✓
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9602-4681	DEC. 1999 ETC	1Y	✓

5.2 TEST PROCEDURE

- (1).The EUT was tested according to MP-5. The radiated test was performed at SRT lab's open site. This site is on file with the FCC laboratory division, reference 31040/SIT.
- (2).The table size is 1m x 1.5 m, table high 0.8 m. All set up is according to MP-5.
- (3).The frequency spectrum from 30 MHz to 24.5 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz, average values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
- (4). The antenna height were varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5). The antenna polarization Vertical polarization and horizontal polarization.

5.3 RADIATED TEST SET-UP



5.4 EUT OPERATING CONDITION

- A. Operating frequency : 2450MHz
- C. Test load : For all tests the energy developed by the EUT is According to the following loads condition.
 - 1. Load for power output measurement : 1000 milliliters of water in the beaker located in the center of the oven
 - 2. Load for frequency measurement : 1000 milliliters of water in the beaker located in the center of the oven
 - 3. Load for measurement of radiation on second and third Harmonic : Two loads, one of 700 and the other of 300 milliliters, of water are used. Each load is tested both with the beaker located in the center of the oven and with it in the right front corner
 - 4. Load for all other measurements: 700 milliliters of water, with the beaker located in the center of the oven

5.5 RADIATED EMISSION LIMITS

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below

FREQUENCY	DISTANCE (m)	FIELD STRENGTH (dBuV/m)
30MHz - 24.5GHz	3	72.0
2.45GHz	3	UNLIMITED
4.90GHz	3	72.0
7.35GHz	3	72.0

AT 2450MHz, $K = 0.006226$

$$E_{300m} = K * E_{3m}$$

$$25\mu V = 0.006226 * E_{3m}$$

$$E_{3m} = 4015.5\mu V = 72dB\mu V$$

5.6 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature 25Humidity 60 %RH

POWER	FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
				HORIZ	VERT	HORIZ	VERT	
HIGH	70.74	1.0	8.7	5.0	8.0	14.7	17.7	72.0
	135.73	1.4	9.9	5.00	5.0	16.3	16.3	72.0
	509.18	2.8	20.1	5.0	2.0	27.9	24.9	72.0
	814.73	4.0	22.0	4.0	4.0	30.0	30.0	72.0
MED.	67.83	1.0	8.9	13.0	10.0	22.9	19.9	72.0
	410.24	2.7	19.1	18.0	*	39.8	*	72.0
	487.84	2.8	19.8	8.0	5.0	30.6	27.6	72.0
	521.70	2.9	20.3	5.0	5.0	28.2	28.2	72.0
	756.50	3.9	23.3	7.0	6.0	34.2	33.2	72.0
	895.24	4.2	24.3	8.0	6.0	36.5	34.5	72.0
LOW	65.89	1.0	9.3	22.0	18.0	32.3	28.3	72.0
	128.94	1.3	9.6	18.0	29.0	28.9	39.9	72.0
	412.18	2.7	19.1	12.0	22.0	33.8	43.8	72.0
	484.93	2.8	19.8	20.0	*	42.6	*	72.0
	625.58	3.4	22.8	6.0	7.0	32.2	33.2	72.0
	775.93	3.9	22.5	4.0	*	30.4	*	72.0
	882.63	4.2	23.9	7.0	*	35.1	*	72.0

REMARKS

- (1). *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation
 $20 \log (\text{emission}) \text{ uV/m} = \text{Factor (dB)} + \text{Ant. Factor(dB/m)} + \text{reading(dBuV)}$
- (6). 30MHz – 1GHz
Put load 700ml in the beaker located in the center of oven.
- (7). EUT was test at high power, med. Power and low power condition.

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5.6 RADIATED EMISSION TEST RESULTS

The frequency spectrum 2.450GHz was investigated. Values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature 25

Humidity 60 %RH

POWER	FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
				HORIZ	VERT	HORIZ	VERT	
HIGH	2450	5.05	27.1	75.0	78.0	107.15	110.15	---
MED.	2450	5.05	27.1	74.0	75.0	106.15	107.15	---
LOW	2450	5.05	27.1	70.0	71.0	102.15	103.15	---

REMARKS

- (1). *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation
 $20 \log (\text{emission}) \text{ uV/m} = \text{Factor (dB)} + \text{Ant. Factor(dB/m)} + \text{reading(dBuV)}$
- (6). 2.450GHz
Put load 1000ml in the beaker located in the center of oven.
- (7). EUT was test at high power, med. Power and low power condition.

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5.6 RADIATED EMISSION TEST RESULTS

The frequency spectrum of Harmonic were investigated. All readings are above 1 GHz, average values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature 25Humidity 60 %RH

POWER	FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
				HORIZ	VERT	HORIZ	VERT	
HIGH	4900	7.08	32.9	9.59	10.95	49.57	50.93	72.0
MED.	4900	7.08	32.9	20.38	19.98	60.36	59.96	72.0
LOW	4900	7.08	32.9	19.86	16.48	59.84	56.46	72.0
HIGH	7350	8.84	35.9	17.91	17.93	62.65	62.67	72.0
MED.	7350	8.84	35.9	16.64	14.51	61.38	59.25	72.0
LOW	7350	8.84	35.9	10.20	19.20	54.94	63.94	72.0

REMARKS

- (1). *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/-4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation
 $20 \log (\text{emission}) \text{ uV/m} = \text{Factor (dB)} + \text{Ant. Factor(dB/m)} + \text{reading(dBuV)}$
- (6). 2 nd, 3 rd Harmonic
Put load 700ml in the beaker located in the center of oven and 300ml in the beaker located in the right front corner of oven.
- (7). See page 14 remarks : (7).

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5.6 RADIATED EMISSION TEST RESULTS

The frequency spectrum of Harmonic were investigated. All readings are above 1 GHz, average values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature 25Humidity 60 %RH

POWER	FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
				HORIZ	VERT	HORIZ	VERT	
HIGH	4900	7.08	32.9	21.81	25.92	61.79	65.90	72.0
MED.	4900	7.08	32.9	19.91	12.90	59.89	52.88	72.0
LOW	4900	7.08	32.9	21.75	13.05	61.73	53.03	72.0
HIGH	7350	8.84	35.9	6.82	25.99	51.56	70.73	72.0
MED.	7350	8.84	35.9	1.28	21.46	46.02	66.20	72.0
LOW	7350	8.84	35.9	12.51	14.29	57.25	59.03	72.0

REMARKS

- (1). *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation
 $20 \log (\text{emission}) \text{ uV/m} = \text{Factor (dB)} + \text{Ant. Factor(dB/m)} + \text{reading(dBuV)}$
- (6). 2nd, 3rd Harmonic
Put load 300ml in the beaker located in the center of oven and 700ml in the beaker located in the right front corner of oven.
- (7). See page 14 remarks : (7).

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5.6 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 1 GHz to 24.5 GHz was investigated.

All readings are above 1 GHz, average values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature 25

Humidity 60 %RH

POWER	FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
				HORIZ	VERT	HORIZ	VERT	
HIGH	1348	3.47	25.3	23.57	*	52.34	*	72.0
HIGH	1471	3.67	25.9	23.26	13.90	52.83	43.47	72.0
HIGH	1551	3.77	25.9	23.86	14.97	53.53	44.64	72.0
HIGH	1709	3.86	27.2	25.66	35.97	56.72	67.03	72.0
HIGH	2202	4.51	28.1	33.11	37.00	65.72	69.61	72.0
HIGH	2311	4.73	28.2	35.83	34.86	68.76	67.79	72.0
HIGH	2360	4.86	28.2	33.96	30.99	67.02	64.05	72.0

REMARKS

- (1). *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/-4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor (dB)} + \text{Ant. Factor(dB/m)} + \text{reading(dBuV)}$$
- (6). Above 1GHz except fundamental freq. and Harmonic
Put load 700ml in the beaker located in the center of oven.
- (7). EUT was tested at high power condition.

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6. POWER OUTPUT TEST

6.1 TEST EQUIPMENT

The following test equipment were used during the conducted power line test.

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	DATE OF CAL. & CAL. CENTER
THERMOMETER	-20°C +50°C	LIFE	SEPT. 1, 2000

6.2 TEST PROCEDURE

The EUT was tested according to FCC PART18 and MP-5.

6.3 EUT OPERATING CONDITION

1. Put load 1000ml water in the beaker in the center of oven.
2. Measured the temperature of load.
3. Run 120 sec..
4. Measured the temperature of load again.

$$6.4 \text{ POWER (W)} = \frac{4.2 \text{ j / cal} \times 1000 \text{ (ml)} \times 13.4}{120 \text{ sec}} = 469 \text{ W}$$

120 sec