

TEST RESULTS

RF Power Output

Measurement Results (Calorimetric method) 929.25 W

Applied Limits of Radiated Emission $\frac{34.1}{10.0} \frac{\mu\text{V}}{\text{m}}$ at $\frac{300}{1600}$ m

Remarks: _____

ISM Frequency 2.4 GHz - 2.5 GHz

The requirements are ● - Passed ○ - Not Passed

Worst (lowest/highest) range 2402.30 MHz - 2469.50 MHz
against 2.45 GHz $\pm$ 50 MHz

Uncertainty of measurement results ± 0.05 ppm

Remarks: _____

Magnetic Field Radiated Emission 9 kHz - 30 MHz

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	<u>2.6</u> dB at <u>0.04</u> MHz	
Max. limit exceeding	<u> </u> dB at <u> </u> MHz	
Uncertainty of measurement results	<u>+ 2.5</u> dB(2σ)	<u>- 2.5</u> dB(2σ)

Remarks: _____

Electromagnetic Field Radiated Emission 30 MHz - 1000 MHz

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	<u>25.6</u> dB at <u>30.0</u> MHz	
Max. limit exceeding	<u> </u> dB at <u> </u> MHz	
Uncertainty of measurement results	<u>+ 3.8</u> dB(2σ)	<u>- 3.9</u> dB(2σ)

Remarks: _____

Electromagnetic Field Radiated Emission 1 GHz - 26 GHz

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	<u>3.5</u> dB at <u>2400.0</u> MHz	
Max. limit exceeding	<u> </u> dB at <u> </u> MHz	
Uncertainty of measurement results	<u>+ 3.2</u> dB(2σ)	<u>- 3.2</u> dB(2σ)

Remarks: _____

RF Power Output Measurement ISM Frequency Device

Test Date: October 7, 2003

Temp.: 24 °C ; Humi.: 52 %

The power output was measured by the calorimetric method, computing the power output from the observed temperature rise of the load over a period of time.

Load (water) : 1500 ml

Measurement time : 48.0 sec. (calculated by the rated RF power output)

No.	Water temperature [°C]		RF Power Output (※) [W]
	t ₁ (before test)	t ₂ (after test)	
1	10.10	17.05	912.19
2	10.45	17.60	938.44
3	10.30	17.25	912.19
4	10.45	17.60	938.44
5	10.00	17.20	945.00
Average			929.25

$$※) \text{ RF Power Output [W]} = 4.2 \times 1500 \times (t_2 - t_1) / 48.0$$

Results of RF power output : 929.25 W

The limit of the radiated emission at 300 m : $25 \times \sqrt{929.25/500} = 34.1 \text{ } [\mu\text{V/m}]$

The AC power input to the oven is measured to determine if the oven is operating in accordance with the manufacturer's specifications.

Rated AC power input : AC 120 V × 13 A = 1560.0 VA

Measured AC power input : AC 120 V × 12.25 A = 1470.0 VA

Tester : Akio Hosoda

ISM Frequency Measurement
ISM Frequency Device

Test Date: October 9, 2003

Temp.: 26 °C ; Humi.: 57 %

The maximum frequency deviation was measured at -26dB with respect to the maximum level.

Maximum Frequency Deviation [MHz]		Voltage Variation	Remarks (Note 2)
Lower Frequency	Upper Frequency		
2409.40	2468.70	96 V (80 %)	A
2438.40	2468.30	120 V (100 %)	A
2402.30	2469.50	150 V (125 %)	A

The point shown on "....." is the Minimum Margin Point.

The results were within 2450 MHz $\pm$ 50 MHz.

Remarks:

Note 2	Detector Function	RES. B.W.	V.B.W.	Sweep Time	Span
A	Peak	10 kHz	10 kHz	20 msec	100 MHz

Tester : Akio Hosoda

Magnetic Field Radiated Emission Measurement

ISM Frequency Device

Test Date: October 10, 2003

Temp.: 26 °C ; Humi.: 55 %

Frequency [MHz]	Correction Factor [dB(1/m)]	Meter Readings at 30 m [dB(μV)]	Limits [μV/m]		Results [μV/m]		Margin [dB]	Remarks (Note 2)
			300 m	1600 m	300 m	1600 m		
0.02	2.5	<30.0	34.1	10.0	<4.22	<0.79	>+18.1	A
0.04	1.1	47.0	34.1	10.0	25.41	4.79	+2.6	A
0.09	0.4	33.0	34.1	10.0	4.68	0.88	+17.3	A
0.13	0.3	<30.0	34.1	10.0	<3.27	<0.62	>+20.4	A

Sample of calculated result at 0.04 MHz, as the Minimum Margin point:

Correction Factor = 1.1 dB(1/m)

Conversion Factor = -20.0 dB (20 dB/decade)

+ Meter Reading = 47.0 dB(μV)

Result = 28.1 dB(μV/m) at 300 m

Minimum Margin : $20\log(34.1/10^{28.1}) - 20\log(34.1/25.41) = 2.6$ (dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 2450 MHz

2)The upper frequency of measurement range : 24.5 GHz

Remarks:

Note 2	Detector Function	IF Bandwidth
A	Average	200 Hz
B	Average	10 kHz

Tester : Akio Hosoda

Electromagnetic Field Radiated Emission Measurement ISM Frequency Device

Test Date: October 10, 2003

Temp.: 26 °C ; Humi.: 55 %

Frequency [MHz]	Antenna Factor [dB(1/m)]	Cable Loss [dB]	Meter Readings at 10 m [dB(μV)]		Limits [μV/m]		Results (Highest) [μV/m]		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.	300 m	1600 m	300 m	1600 m		
30.0	18.0	0.6	< 0.0	16.0	34.1	10.0	1.80	0.33	+25.6	B
32.0	17.2	0.7	< 0.0	10.0	34.1	10.0	0.83	0.15	+32.3	B
87.0	7.4	1.1	4.0	12.0	34.1	10.0	0.35	0.07	+39.7	B
148.0	14.3	1.5	< 0.0	1.0	34.1	10.0	0.23	0.04	+43.4	B
163.4	15.4	1.6	-2.0	4.0	34.1	10.0	0.38	0.07	+39.2	B
478.0	18.2	2.9	8.0	2.0	34.1	10.0	0.95	0.18	+31.1	B
546.5	19.6	3.1	-3.0	<-10.0	34.1	10.0	0.32	0.06	+40.5	B
775.0	23.4	3.9	<-10.0	<-10.0	34.1	10.0	<0.25	<0.05	>+42.9	B
900.0	24.6	4.2	<-10.0	<-10.0	34.1	10.0	<0.29	<0.05	>+41.4	B

Sample of calculated result at 30.0 MHz, as the Minimum Margin point:

Antenna Factor = 18.0 dB(1/m)

Cable Loss = 0.6 dB

Conversion Factor = -29.5 dB (20 dB/decade)

+) Meter Reading = 16.0 dB(μV)

Result = 5.1 dB(μV/m) at 300 m

Minimum Margin : $20\log(34.1/10^{5.1/20}) = 20\log(34.1/1.80) = 25.6$ (dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT: 2450 MHz

2)The upper frequency of measurement range : 24.5 GHz

Remarks:

Note 2	Detector Function	IF Bandwidth
A	Average	1 MHz
B	Average	120 kHz
C	Average	12 kHz
D	Average	7.5 kHz

Tester : Akio Hosoda

Electromagnetic Field Radiated Emission Measurement ISM Frequency Device

Test Date: October 9, 2003

Temp.: 26 °C ; Humi.: 57 %

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings at 3 m [dB(μV)]		Limits [μV/m]		Results (Highest) [μV/m]		Margin [dB]	Remarks (Note 2)
			Hori.	Vert.	300 m	1600 m	300 m	1600 m		
2400.0	21.4	10.8	34.0	35.0	34.1	10.0	22.91	4.32	+ 3.5	B
4910.0	36.6	-21.3	47.0	49.0	34.1	10.0	16.41	3.09	+ 6.4	B
7370.0	36.9	-19.5	47.0	42.0	34.1	10.0	16.60	3.13	+ 6.3	B
9850.0	39.8	-27.2	40.0	38.0	34.1	10.0	4.27	0.80	+18.1	B
12300.0	44.1	-26.6	<35.0	<35.0	34.1	10.0	< 4.22	< 0.79	>+18.2	B
14750.0	45.7	-26.6	42.0	38.0	34.1	10.0	11.35	2.14	+ 9.6	B
17230.0	44.0	-26.9	47.0	46.0	34.1	10.0	16.03	3.02	+6.6	B

Sample of calculated result at 2400.0 MHz, as the Minimum Margin point:

Antenna Factor = 21.4 dB(1/m)

Corr. Factor = 10.8 dB

Conversion Factor = -40.0 dB (20 dB/decade)

+) Meter Reading = 35.0 dB(μV)

Result = 27.2 dB(μV/m) at 300 m

Minimum Margin : $20\log(34.1/10^{-(27.2/20)}) = 20\log(34.1/22.91) = 3.5$ (dB)

The point shown on "____" is the Minimum Margin Point.

Note 1:

1)The highest frequency generated or used in the EUT : 2450 MHz

2)The upper frequency of measurement range : 24.5 GHz

3)Corr. Factor (≤ 3.6 GHz) = Cable Loss + 10 dB Pad Attenuator [dB]

Corr. Factor (3.6 GHz $< f \leq 7.6$ GHz) = Cable Loss + 20 dB Pad Attenuator - Amp. Gain [dB]

Corr. Factor (≤ 18 GHz) = Cable Loss + 10 dB Pad Attenuator - Amp. Gain [dB]

Corr. Factor (≥ 18 GHz) = Cable Loss + 10 dB Pad Attenuator - Amp. Gain + Mixer Conversion Loss [dB]

Remarks:

Note 2	Detector Function	RES. B.W.	V.B.W.	Sweep T	Span
A	Peak (SP)	1 MHz	1 MHz	20 msec	0 Hz
*) B	Average (ESV)	1 MHz (3 MHz)	3 MHz	20 msec	0 Hz

():Setting of test receiver

*)For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer(950523A).

Tester : Yuzo Tanaka