

6.2.5 Test Data

Table 6.2-1 RFI Field Strength Measurement Results (Q-Peak Measurement)
<0.009MHz to 30MHz>

EUT: PTZ-430 + Grip Pen
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001
 Test distance: 3 meters*

Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		Result		30 Meter Limit (μ V/m)	Margin	
	Ver.	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
0.67	10.0	-	0.3	0.0	18.8	29.1	-	28.51	-	36.0	2.0	-
15.34	1.0	-	1.0	0.0	20.1	22.1	-	12.74	-	30.0	7.4	-

Limit

Frequency (MHz)	dB μ V/m	μ V/m	Distance(m)
0.009 ~ 0.490	48.5 ~ 13.8	2400/F(kHz)	300
0.490 ~ 1.705	33.8 ~ 23.0	24000/F(kHz)	30
1.705 ~ 30	29.5	30	30

* The test result obtained at 3meters from the EUT is complied with the limit of 300meters and 30meters from FCC requirement.
 Therefore, the EUT had complied with FCC Part 15 Sub.part C requirement.

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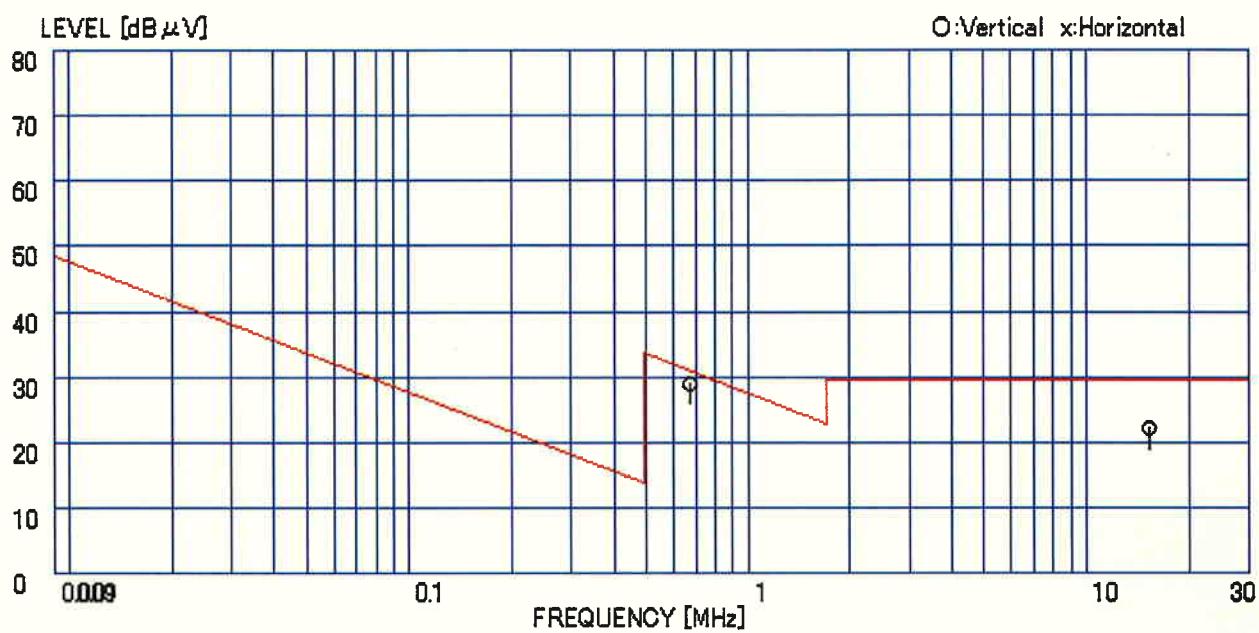


Figure 6.2-1 RFI Field Strength Measurement Results

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Table 6.2-2 RFI Field Strength Measurement Results (Q-Peak Measurement)
<30MHz to 1000MHz>

EUT: PTZ-430 + Grip Pen
Operating mode: Device detection state
Test procedure: ANSI C63.4-2001

Date of measurement: June 2, 2004
Temperature: 23 degree C
Humidity: 52 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		Result		3 Meter Limit (μ V/m)	Margin	
	Ver. (dB μ V)	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
59.64	-	41.0	1.5	-27.5	7.5	-	22.5	-	13.34	100	-	17.5
71.39	46.5	-	1.7	-27.5	6.8	27.5	-	23.71	-	100	12.5	-
96.00	52.0	45.0	2.2	-27.5	9.8	36.5	29.5	66.83	29.85	150	7.0	14.0
114.38	42.0	-	2.4	-27.4	12.6	29.6	-	30.20	-	150	13.9	-
144.00	40.0	38.0	2.6	-27.3	14.8	30.1	28.1	31.99	25.41	150	13.4	15.4
192.00	46.0	44.0	3.1	-27.0	16.7	38.8	36.8	87.10	69.18	150	4.7	6.7
228.00	43.0	34.5	3.5	-26.7	17.3	37.1	28.6	71.61	26.92	200	8.9	17.4
240.00	32.0	39.0	3.5	-26.7	17.7	26.5	33.5	21.13	47.32	200	19.5	12.5
264.00	-	42.0	3.8	-26.8	18.8	-	37.8	-	77.62	200	-	8.2
300.00	37.0	36.0	4.3	-26.7	20.1	34.7	33.7	54.33	48.42	200	11.3	12.3
312.00	39.0	42.0	4.4	-26.7	14.7	31.4	34.4	37.15	52.48	200	14.6	11.6
336.00	38.0	45.0	4.5	-26.9	15.9	31.5	38.5	37.58	84.14	200	14.5	7.5
365.00	40.0	42.0	4.7	-27.2	17.9	35.4	37.4	58.88	74.13	200	10.6	8.6
372.00	-	41.0	4.8	-27.2	18.2	-	36.8	-	69.18	200	-	9.2
384.00	-	40.0	4.9	-27.3	18.6	-	36.2	-	64.57	200	-	9.8
528.08	30.0	-	5.9	-28.1	19.9	27.7	-	24.27	-	200	18.3	-
624.10	33.5	-	6.5	-28.4	19.3	30.9	-	35.08	-	200	15.1	-
720.11	26.0	-	7.0	-28.2	22.4	27.2	-	22.91	-	200	18.8	-

Class B limit

Radiated Emission – 3 meter distance

Frequency (MHz)	dB μ V/m	μ V/m
30 - 88	40.0	100
88 - 216	43.5	150
216 - 960	46.0	200
> 960	54.0	500

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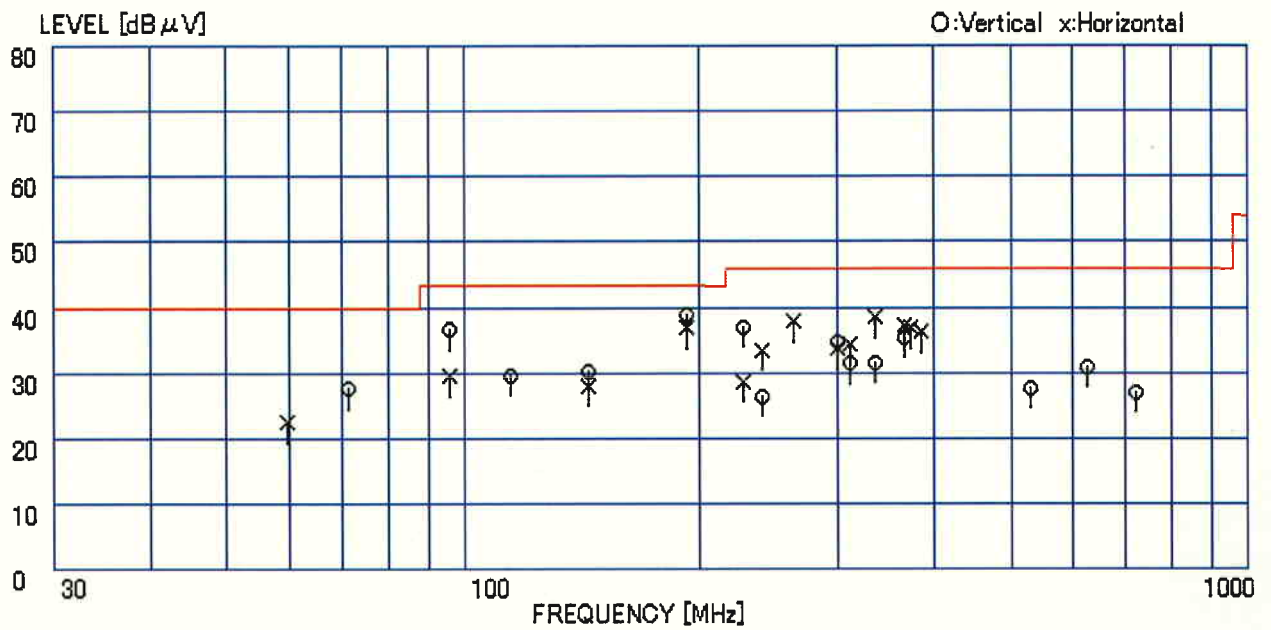


Figure 6.2-2 RFI Field Strength Measurement Results

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Table 6.2-3 RFI Field Strength Measurement Results (Q-Peak Measurement)
<0.009MHz to 30MHz>

EUT: PTZ-630 + Ink Pen
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001
 Test distance: 3 meters*
 Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level (dB μ V)		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dB μ V/m)		Result (μ V/m)		30 Meter Limit (μ V/m)	Margin (dB)	
	Ver.	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
0.67	10.0	-	0.3	0.0	18.8	29.1	-	28.51	-	36.0	2.0	-
15.34	0.5	-	1.0	0.0	20.1	21.6	-	12.02	-	30.0	7.9	-

Limit

Frequency (MHz)	dB μ V/m	μ V/m	Distance(m)
0.009 ~ 0.490	48.5 ~ 13.8	2400/F(kHz)	300
0.490 ~ 1.705	33.8 ~ 23.0	24000/F(kHz)	30
1.705 ~ 30	29.5	30	30

* The test result obtained at 3meters from the EUT is complied with the limit of 300meters and 30meters from FCC requirement.
 Therefore, the EUT had complied with FCC Part 15 Sub.part C requirement.

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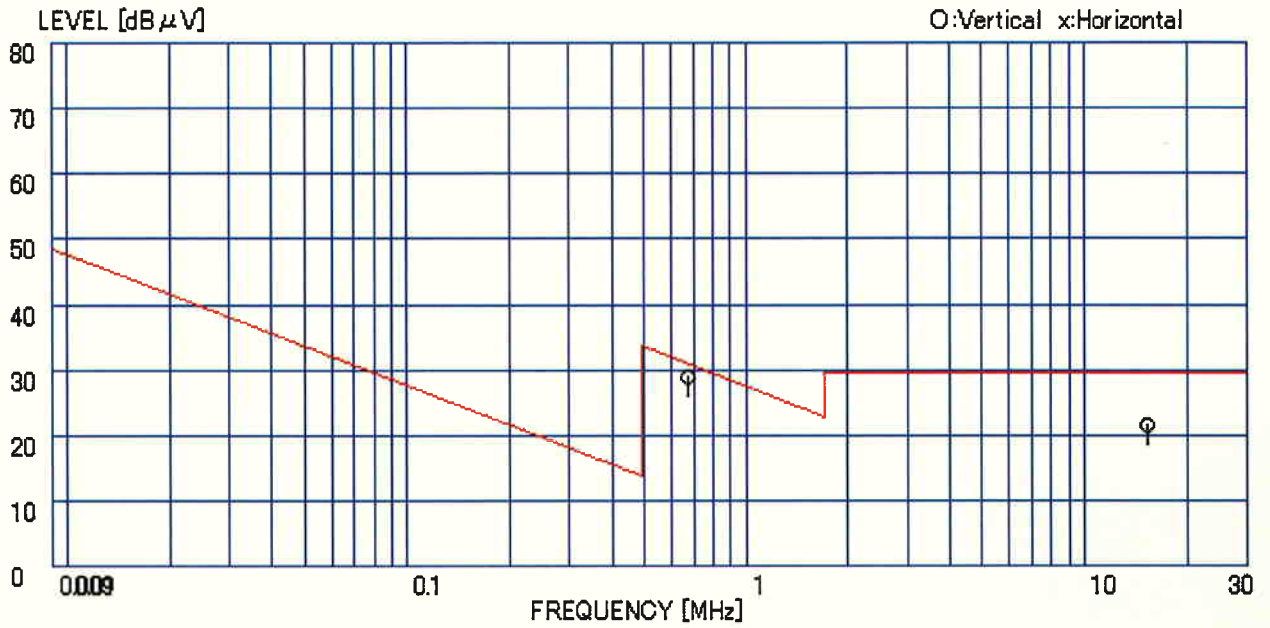


Figure 6.2-3 RFI Field Strength Measurement Results

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Table 6.2-4 RFI Field Strength Measurement Results (Q-Peak Measurement)
<30MHz to 1000MHz>

EUT: PTZ-630 + Ink Pen
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001

Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		Result		3 Meter Limit (µV/m)	Margin	
	Ver. (dBµV)	Hor.				Ver. (dBµV/m)	Hor.	Ver. (µV/m)	Hor.		Ver. (dB)	Hor.
58.53	-	43.0	1.5	-27.5	7.6	-	24.6	-	16.98	100	-	15.4
59.64	45.5	-	1.5	-27.5	7.5	27.0	-	22.39	-	100	13.0	-
69.58	49.0	-	1.7	-27.5	6.8	30.0	-	31.62	-	100	10.0	-
72.00	-	44.0	1.7	-27.5	6.9	-	25.1	-	17.99	100	-	14.9
75.90	52.0	-	1.7	-27.4	7.1	33.4	-	46.77	-	100	6.6	-
96.00	46.0	42.0	2.2	-27.5	9.8	30.5	26.5	33.50	21.13	150	13.0	17.0
114.40	40.0	-	2.4	-27.4	12.6	27.6	-	23.99	-	150	15.9	-
144.00	40.0	35.0	2.6	-27.3	14.8	30.1	25.1	31.99	17.99	150	13.4	18.4
192.00	-	36.0	3.1	-27.0	16.7	-	28.8	-	27.54	150	-	14.7
228.00	-	38.0	3.5	-26.7	17.3	-	32.1	-	40.27	200	-	13.9
240.00	37.0	36.0	3.5	-26.7	17.7	31.5	30.5	37.58	33.50	200	14.5	15.5
312.00	34.0	39.0	4.4	-26.7	14.7	26.4	31.4	20.89	37.15	200	19.6	14.6
365.00	39.0	38.0	4.7	-27.2	17.9	34.4	33.4	52.48	46.77	200	11.6	12.6
519.25	31.0	-	5.9	-28.1	19.4	28.2	-	25.70	-	200	17.8	-
528.08	30.0	31.0	5.9	-28.1	19.9	27.7	28.7	24.27	27.23	200	18.3	17.3
624.10	34.0	31.0	6.5	-28.4	19.3	31.4	28.4	37.15	26.30	200	14.6	17.6
720.10	26.0	-	7.0	-28.2	22.4	27.2	-	22.91	-	200	18.8	-

Class B limit

Radiated Emission – 3 meter distance

Frequency (MHz)	dBµV/m	µV/m
30 - 88	40.0	100
88 - 216	43.5	150
216 - 960	46.0	200
> 960	54.0	500

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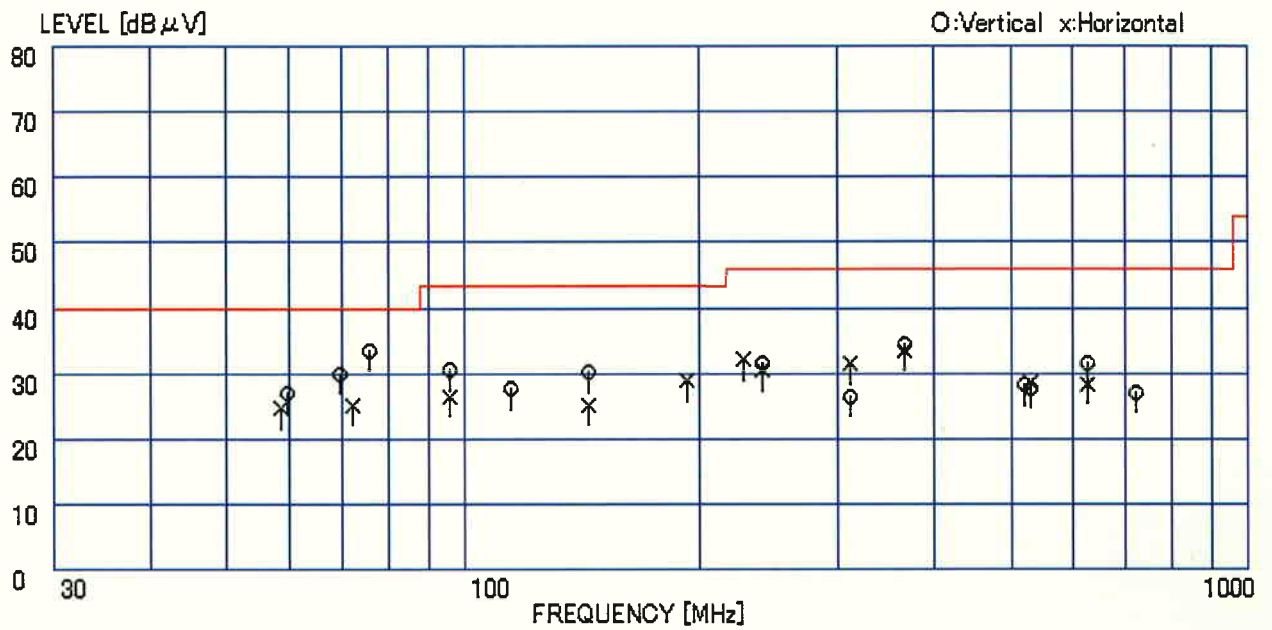


Figure 6.2-4 RFI Field Strength Measurement Results

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Table 6.2-5 RFI Field Strength Measurement Results (Q-Peak Measurement)
<0.009MHz to 30MHz>

EUT: PTZ-930 + Airbrush
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001
 Test distance: 3 meters*

Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		Result		30 Meter Limit (μV/m)	Margin	
	Ver.	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
0.67	10.5	-	0.3	0.0	18.8	29.6	-	30.20	-	36.0	1.5	-
15.34	0.0	-	1.0	0.0	20.1	21.1	-	11.35	-	30.0	8.4	-

Limit

Frequency (MHz)	dBμV/m	μV/m	Distance(m)
0.009 ~ 0.490	48.5 ~ 13.8	2400/F(kHz)	300
0.490 ~ 1.705	33.8 ~ 23.0	24000/F(kHz)	30
1.705 ~ 30	29.5	30	30

* The test result obtained at 3meters from the EUT is complied with the limit of 300meters and 30meters from FCC requirement.
 Therefore, the EUT had complied with FCC Part 15 Sub.part C requirement.

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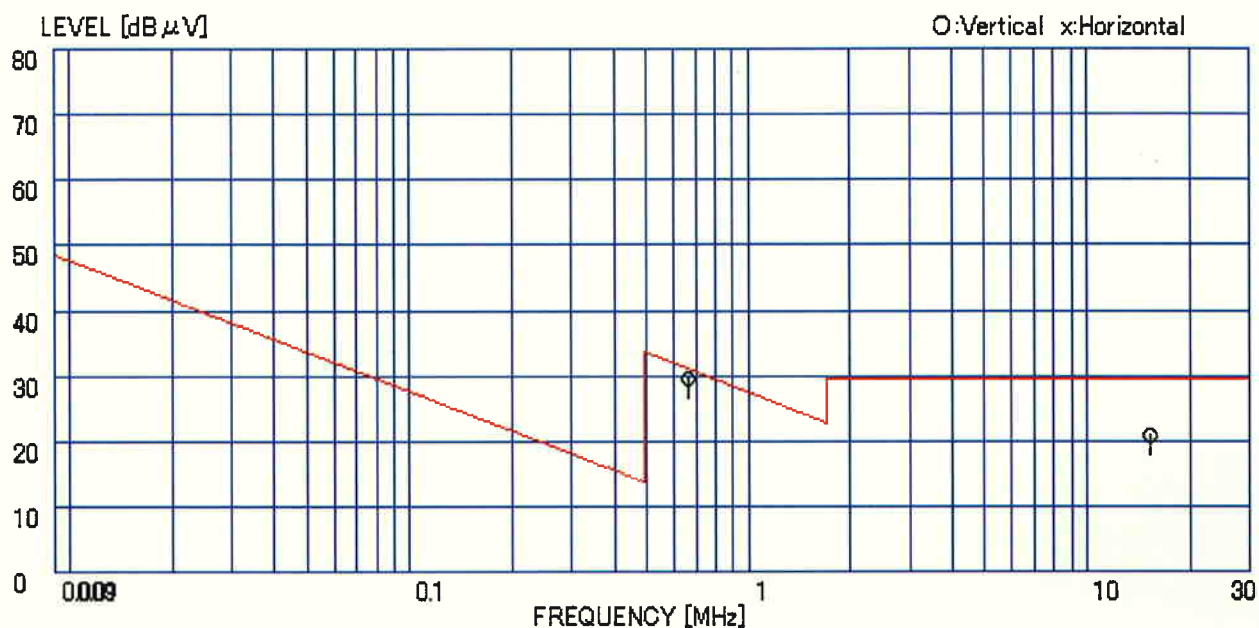


Figure 6.2-5 RFI Field Strength Measurement Results

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Table 6.2-6 RFI Field Strength Measurement Results (Q-Peak Measurement)
<30MHz to 1000MHz>

EUT: PTZ-930 + Airbrush
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001

Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		Result		3 Meter Limit (µV/m)	Margin	
	Ver. (dBµV)	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
58.24	46.0	46.0	1.5	-27.5	7.7	27.7	27.7	24.27	24.27	100	12.3	12.3
65.97	-	43.0	1.7	-27.4	6.9	-	24.2	-	16.22	100	-	15.8
72.00	-	42.0	1.7	-27.5	6.9	-	23.1	-	14.29	100	-	16.9
74.50	49.0	-	1.8	-27.4	7.0	30.4	-	33.11	-	100	9.6	-
96.00	45.0	43.0	2.2	-27.5	9.8	29.5	27.5	29.85	23.71	150	14.0	16.0
114.40	39.0	-	2.4	-27.4	12.6	26.6	-	21.38	-	150	16.9	-
144.00	39.0	40.0	2.6	-27.3	14.8	29.1	30.1	28.51	31.99	150	14.4	13.4
192.00	38.0	41.0	3.1	-27.0	16.7	30.8	33.8	34.67	48.98	150	12.7	9.7
228.00	-	34.0	3.5	-26.7	17.3	-	28.1	-	25.41	200	-	17.9
240.00	36.0	-	3.5	-26.7	17.7	30.5	-	33.50	-	200	15.5	-
264.00	39.0	-	3.8	-26.8	18.8	34.8	-	54.95	-	200	11.2	-
306.05	32.0	39.0	4.3	-26.7	14.8	24.4	31.4	16.60	37.15	200	21.6	14.6
312.00	33.0	43.0	4.4	-26.7	14.7	25.4	35.4	18.62	58.88	200	20.6	10.6
336.00	37.0	38.0	4.5	-26.9	15.9	30.5	31.5	33.50	37.58	200	15.5	14.5
365.87	40.5	-	4.9	-27.2	18.0	36.2	-	64.57	-	200	9.8	-
372.00	-	36.0	4.8	-27.2	18.2	-	31.8	-	38.90	200	-	14.2
519.25	34.0	-	5.9	-28.1	19.4	31.2	-	36.31	-	200	14.8	-
528.09	29.5	32.0	5.9	-28.1	19.9	27.2	29.7	22.91	30.55	200	18.8	16.3
624.10	34.0	31.0	6.5	-28.4	19.3	31.4	28.4	37.15	26.30	200	14.6	17.6
646.31	31.0	-	6.6	-28.2	20.1	29.5	-	29.85	-	200	16.5	-
720.10	27.0	30.0	7.0	-28.2	22.4	28.2	31.2	25.70	36.31	200	17.8	14.8

Class B limit

Radiated Emission – 3 meter distance

Frequency (MHz)	dBµV/m	µV/m
30 - 88	40.0	100
88 - 216	43.5	150
216 - 960	46.0	200
> 960	54.0	500

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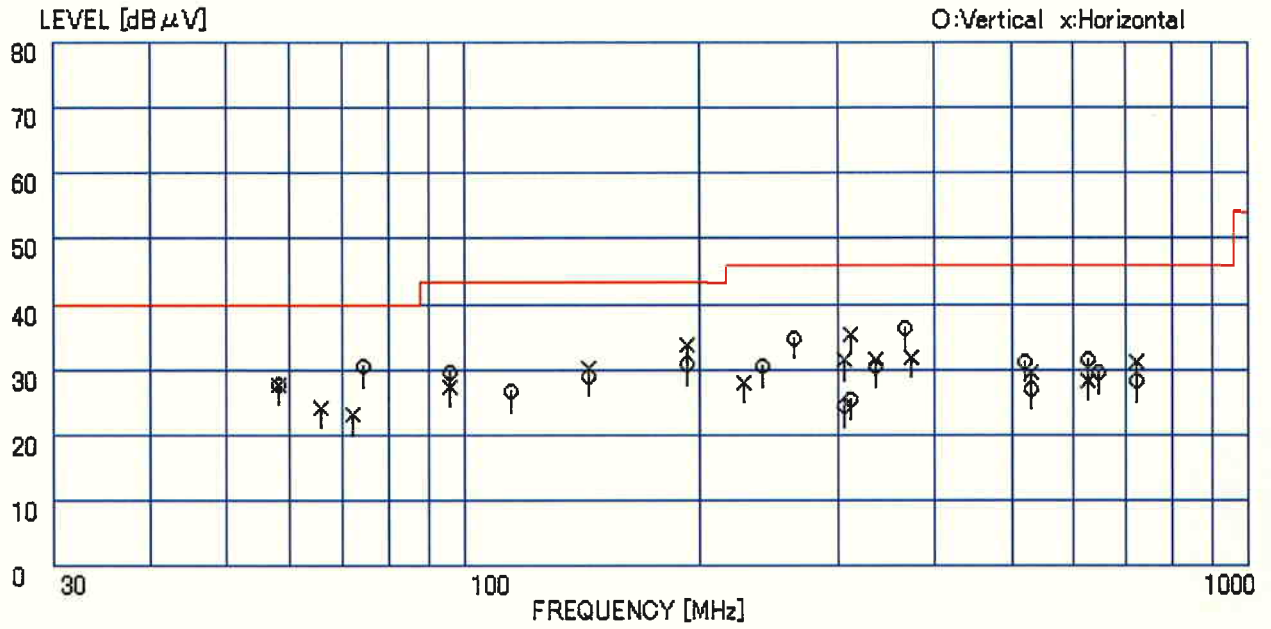


Figure 6.2-6 RFI Field Strength Measurement Results

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Table 6.2-7 RFI Field Strength Measurement Results (Q-Peak Measurement)
<0.009MHz to 30MHz>

EUT: PTZ-930 + 2D Mouse
 Operating mode: Device detection state
 Test procedure: ANSI C63.4-2001
 Test distance: 3 meters*
 Date of measurement: June 2, 2004
 Temperature: 23 degree C
 Humidity: 52 %

Frequency (MHz)	Level (dBμV)		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dBμV/m)		Result (μV/m)		30 Meter Limit (μV/m)	Margin (dB)	
	Ver.	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
0.67	10.5	-	0.3	0.0	18.8	29.6	-	30.20	-	36.0	1.5	-
15.34	0.0	-	1.0	0.0	20.1	21.1	-	11.35	-	30.0	8.4	-

Limit

Frequency (MHz)	dBμV/m	μV/m	Distance(m)
0.009 ~ 0.490	48.5 ~ 13.8	2400/F(kHz)	300
0.490 ~ 1.705	33.8 ~ 23.0	24000/F(kHz)	30
1.705 ~ 30	29.5	30	30

* The test result obtained at 3meters from the EUT is complied with the limit of 300meters and 30meters from FCC requirement.
 Therefore, the EUT had complied with FCC Part 15 Sub.part C requirement.

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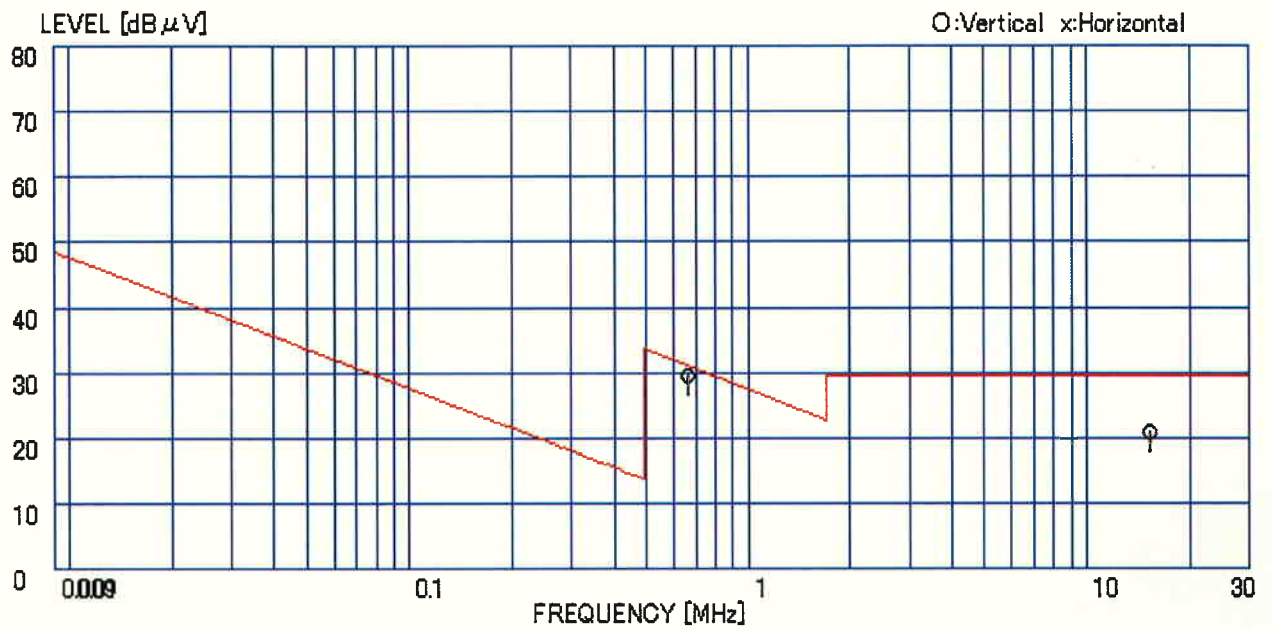


Figure 6.2-7 RFI Field Strength Measurement Results

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Table 6.2-8 RFI Field Strength Measurement Results (Q-Peak Measurement)
<30MHz to 1000MHz>

EUT: PTZ-930 + 2D Mouse
Operating mode: Device detection state
Test procedure: ANSI C63.4-2001

Date of measurement: June 2, 2004
Temperature: 23 degree C
Humidity: 52 %

Frequency (MHz)	Level (dB μ V)		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dB μ V/m)		Result (μ V/m)		3 Meter Limit (μ V/m)	Margin (dB)	
	Ver.	Hor.				Ver.	Hor.	Ver.	Hor.		Ver.	Hor.
58.24	46.0	46.0	1.5	-27.5	7.7	27.7	27.7	24.27	24.27	100	12.3	12.3
65.97	-	43.0	1.7	-27.4	6.9	-	24.2	-	16.22	100	-	15.8
72.00	-	42.0	1.7	-27.5	6.9	-	23.1	-	14.29	100	-	16.9
74.50	50.0	-	1.8	-27.4	7.0	31.4	-	37.15	-	100	8.6	-
96.00	45.0	43.0	2.2	-27.5	9.8	29.5	27.5	29.85	23.71	150	14.0	16.0
114.40	39.0	-	2.4	-27.4	12.6	26.6	-	21.38	-	150	16.9	-
144.00	39.0	40.0	2.6	-27.3	14.8	29.1	30.1	28.51	31.99	150	14.4	13.4
192.00	39.0	41.0	3.1	-27.0	16.7	31.8	33.8	38.90	48.98	150	11.7	9.7
228.00	-	34.0	3.5	-26.7	17.3	-	28.1	-	25.41	200	-	17.9
240.00	36.0	-	3.5	-26.7	17.7	30.5	-	33.50	-	200	15.5	-
264.00	39.0	-	3.8	-26.8	18.8	34.8	-	54.95	-	200	11.2	-
306.05	32.0	39.0	4.3	-26.7	14.8	24.4	31.4	16.60	37.15	200	21.6	14.6
312.00	33.0	43.0	4.4	-26.7	14.7	25.4	35.4	18.62	58.88	200	20.6	10.6
336.00	37.0	38.0	4.5	-26.9	15.9	30.5	31.5	33.50	37.58	200	15.5	14.5
365.87	40.5	-	4.9	-27.2	18.0	36.2	-	64.57	-	200	9.8	-
372.00	-	36.0	4.8	-27.2	18.2	-	31.8	-	38.90	200	-	14.2
519.25	34.0	-	5.9	-28.1	19.4	31.2	-	36.31	-	200	14.8	-
528.09	29.5	32.0	5.9	-28.1	19.9	27.2	29.7	22.91	30.55	200	18.8	16.3
624.10	34.0	31.0	6.5	-28.4	19.3	31.4	28.4	37.15	26.30	200	14.6	17.6
646.31	31.0	-	6.6	-28.2	20.1	29.5	-	29.85	-	200	16.5	-
720.10	27.0	30.0	7.0	-28.2	22.4	28.2	31.2	25.70	36.31	200	17.8	14.8

Class B limit

Radiated Emission – 3 meter distance

Frequency (MHz)	dB μ V/m	μ V/m
30 - 88	40.0	100
88 - 216	43.5	150
216 - 960	46.0	200
> 960	54.0	500

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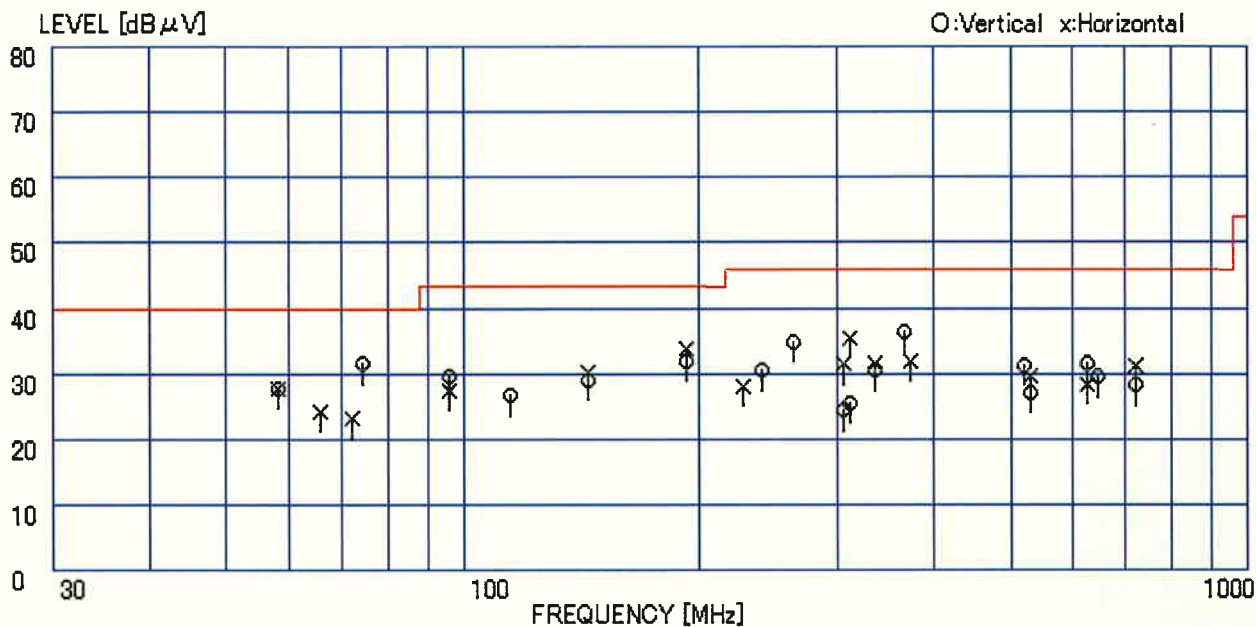


Figure 6.2-8 RFI Field Strength Measurement Results

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6.3 Minimum Margin

Table 6.3-1 Minimum Margin

<u>Conducted emission</u>			
<i>Device detection state</i>	operation mode	20.670 MHz,	7.1 dB
<u>Radiated emission</u>			
<i>Device detection state</i>	operation mode	0.67 MHz,	1.5 dB

6.4 Sample Calculation

Table 6.4-1 Sample Calculation

The maximum radiating emission can be obtained at the frequency of 0.67 MHz, polarization on *Device detection state* operation mode.

Each value at frequency is as follows;

R :	Field strength meter reading	=	10.5	(dBμV)
A :	Antenna factor	=	18.8	(dB/m)
C :	Cable loss	=	0.3	(dB)
G :	Amplifier gain	=	0.0	(dB)

Then radiated emission E(dBμV/m) is ;

$$E = R + A + C - G$$

Therefore, the maximum radiated emission is ;

29.6
(dBμV/m)

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7 MEASUREMENT PHOTOS

Photo 7.1a Setup with the Maximized RFI Voltage Emission Level
(PTZ-430 + Grip Pen)



Photo 7.1b Setup with the Maximized RFI Voltage Emission Level
(PTZ-630 + Ink Pen)

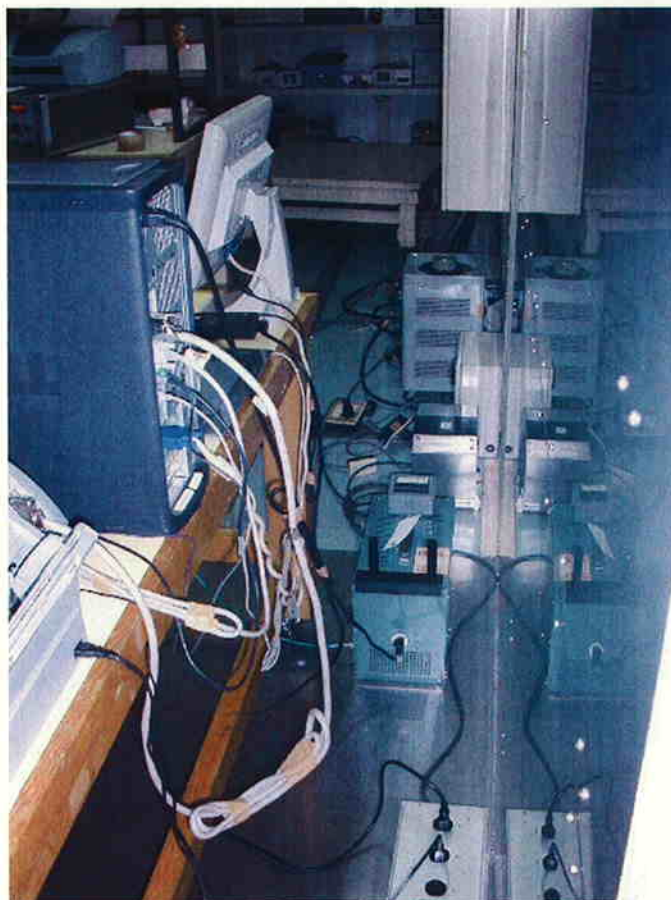


Photo 7.1c Setup with the Maximized RFI Voltage Emission Level (PTZ-930 + Airbrush)

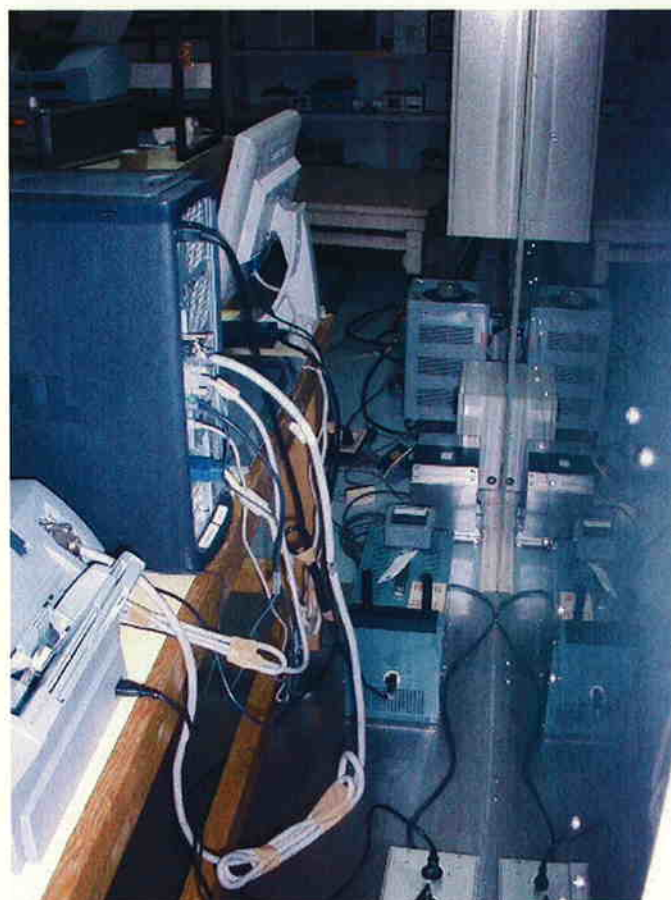
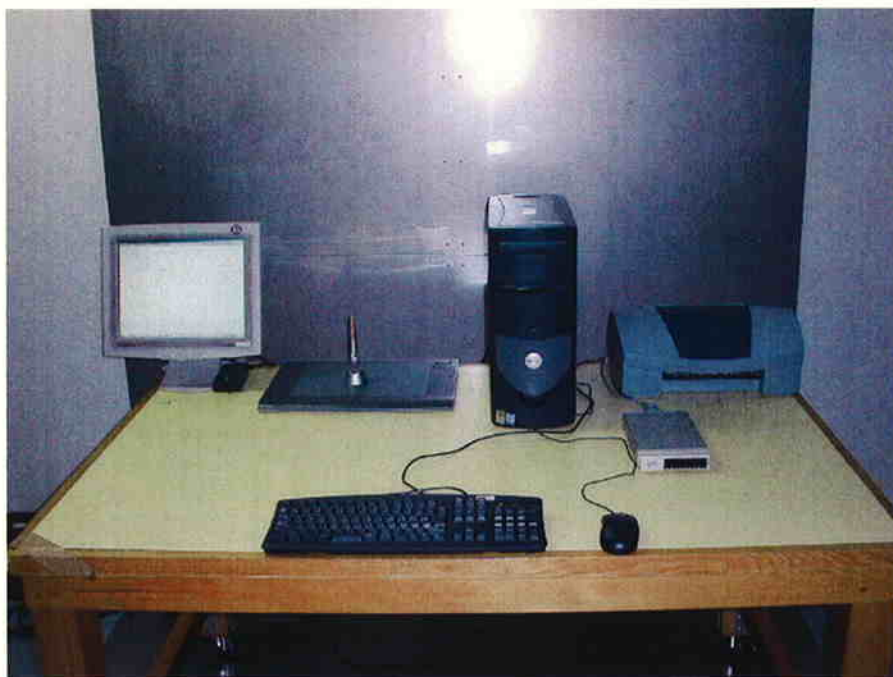


Photo 7.1d Setup with the Maximized RFI Voltage Emission Level
(PTZ-930 + 2D Mouse)

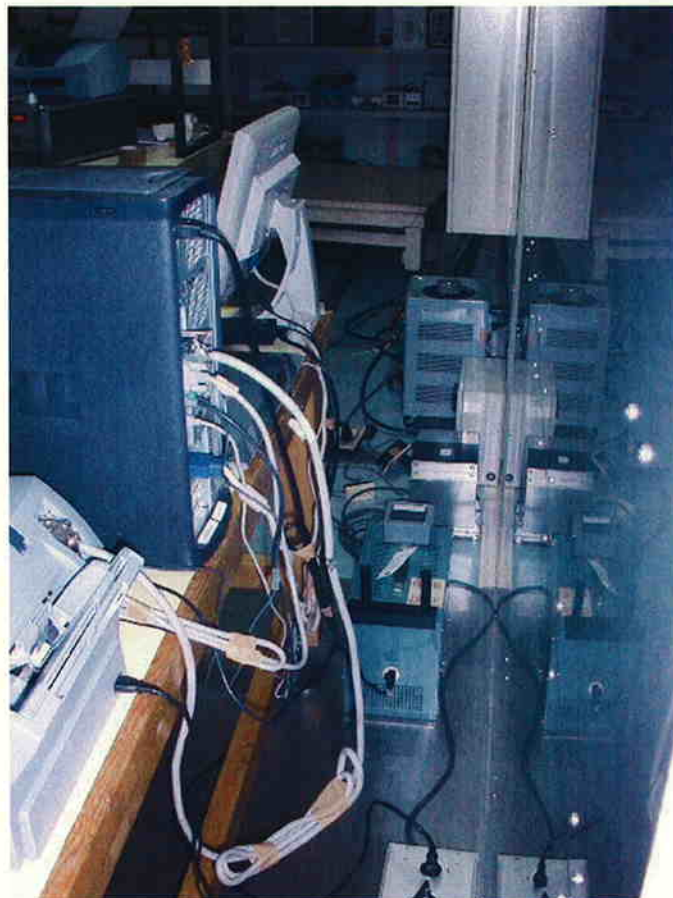
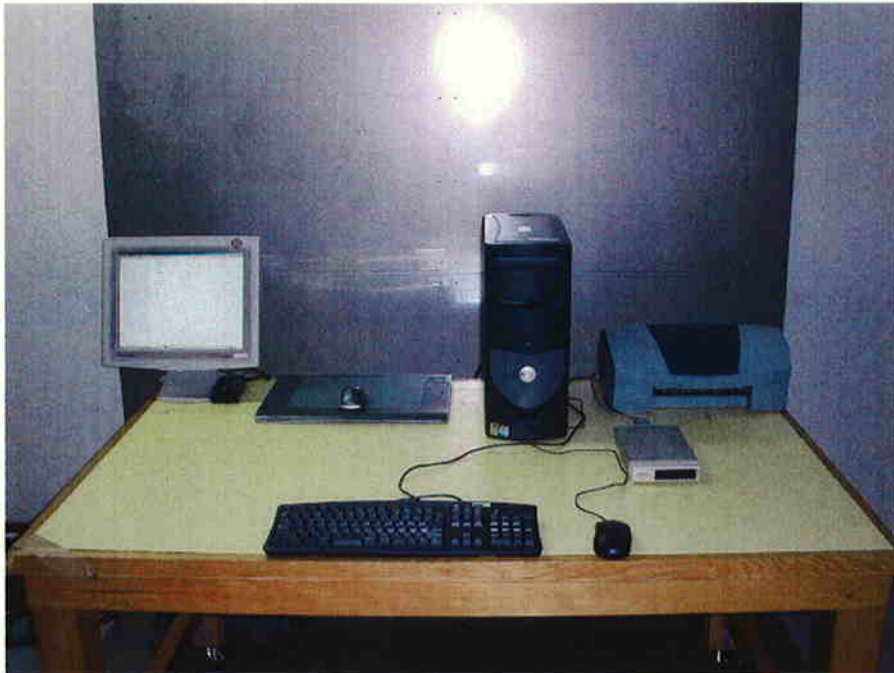


Photo 7.2a Setup with the Maximized RFI Field Strength Emission Level (PTZ-430 + Grip Pen)

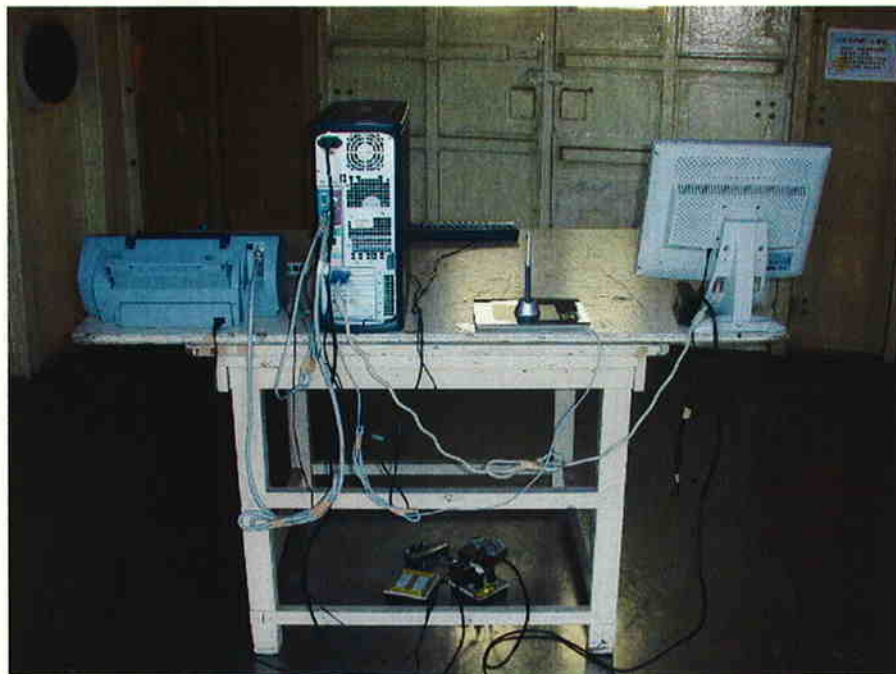


Photo 7.2b Setup with the Maximized RFI Field Strength Emission Level (PTZ-630 + Ink Pen)

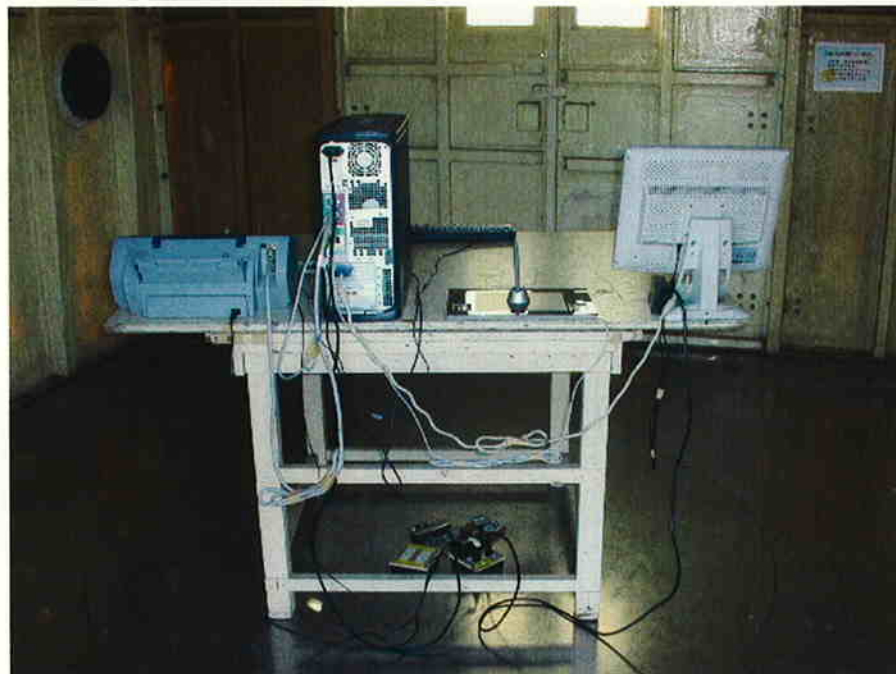


Photo 7.2c Setup with the Maximized RFI Field Strength Emission Level (PTZ-930 + Airbrush)

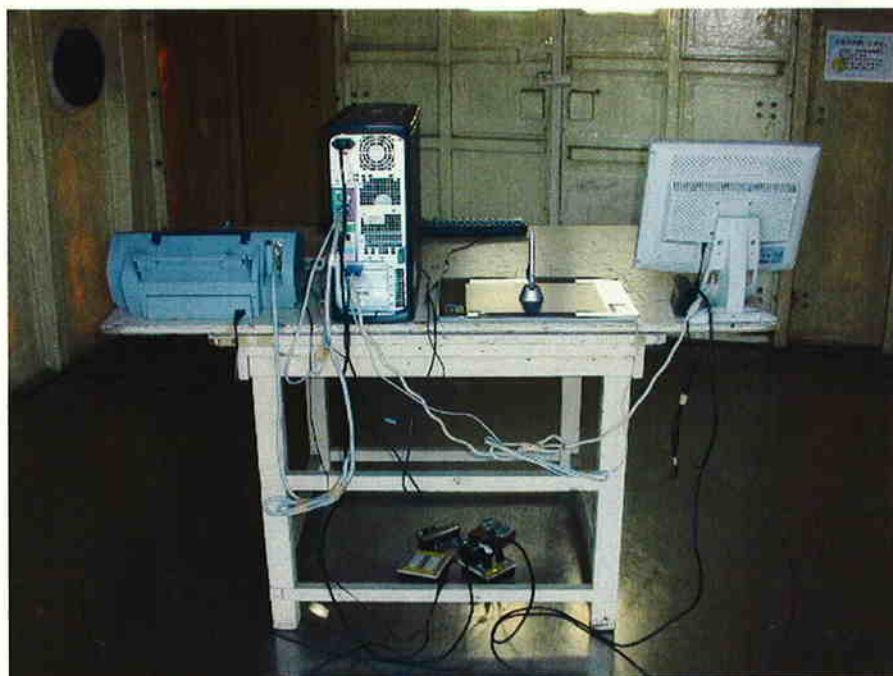


Photo 7.2d Setup with the Maximized RFI Field Strength Emission Level (PTZ-930 + 2D Mouse)

