

Application for FCC Certificate
On Behalf of
TOSPO Electronics Co., Ltd

Compact Fluorescent Lamp

Model No.: TP120-15S (SP-15S)
TP120-20S (SP-20S)
TP120-23S (SP-23S)
TP120-15SL (SP-15SL, Helix 15W, EL/DT 15W)
TP120-20SL (SP-20SL, Helix 20W, EL/DT 20W)
TP120-23SL (SP-23SL, Helix 23W, EL/DT 23W)

FCC ID: PDYTP1523

Prepared For : TOSPO Electronics Co., Ltd
No.2 West Xing-Sheng Road, Hengdian Industrial Area
Dong Yang City, Zhejiang, P. R. China (P.O.: 322118)

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Date of Test : Nov 14, 2000
Date of Report : Dec 12, 2000

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TEST REPORT FOR FCC CERTIFICATE

Applicant : TOSPO Electronics Co., Ltd

Manufacturer : TOSPO Electronics Co., Ltd

EUT Description : Compact Fluorescent Lamp

(A) Model No

TP120-15SL (S/N: TP2000-006), SP-15SL, Helix 15W, EL/DT 15W

TP120-20SL (S/N: TP2000-005), SP-20SL, Helix 20W, EL/DT 20W

TP120-23SL (S/N: TP2000-004), SP-23SL, Helix 23W, EL/DT 23W

TP120-15S (S/N: TP2000-003), SP-15S

TP120-20S (S/N: TP2000-002), SP-20S

TP120-23S (S/N: TP2000-001), SP-23S

(B) Power Supply : AC 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 18 CONSUMER DEVICES (1998)
AND MP-5/1986*

The device described above is tested by AUDIX Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 18 RF Lighting Device limits both radiated and conducted emissions.

The test results are contained in this test report and AUDIX Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology (Shanghai) Co., Ltd.

Date of Test : Nov 14, 2000

Prepared by : Lemon Lee
(LEMON LEE)
Test Engineer For and on behalf of
AUDIX TECHNOLOGY (SHANGHAI) CO., LTD.
Reviewer : Hall Wang
(HALL WANG)
Approved Signatory : Jeremy Geng
(JEREMY GENG)
Authorized Signature(s)

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test

Description : Compact Fluorescent Lamp

Type of EUT : ☒ Production ☐ Pre-product ☐ Pro-type

Model Number : TP120-15SL (SP-15SL, Helix 15W, EL/DT 15W)
TP120-20SL (SP-20SL, Helix 20W, EL/DT 20W)
TP120-23SL (SP-23SL, Helix 23W, EL/DT 23W)
TP120-15S (SP-15S)
TP120-20S (SP-20S)
TP120-23S (SP-23S)

(The model/s in the bracket is/are the same product/s, except the model name. All the above models have two kinds of button enclosures – with/without opening. In this report, only the test data for TP series are attached.)

Applicant : TOSPO Electronics Co., Ltd
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Manufacturer : TOSPO Electronics Co., Ltd
No.2 West Xing-Sheng Road, Hengdian Industrial Area
Dong Yang City, Zhejiang, P. R. China (P.O.: 322118)

M/N	INPUT POWER (VA)	OUTPUT POWER (W)
TP120-23S	22.1	20.9
TP120-20S	20.7	19.6
TP120-15S	14.1	13.6
TP120-23SL	41.8	23.1
TP120-20SL	34.5	18.6
TP120-15SL	26.3	13.4

1.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber)	:	Sept. 17, 1998 file on Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	:	AUDIX Technology (Shanghai) Co., Ltd.
Site Location	:	3 F., 34 Bldg., 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai, China
NVLAP Lab Code	:	200371-0

1.3 Measurement Uncertainty

Conducted Emission Uncertainty	:	U = 2.66dB
Radiated Emission Uncertainty	:	U = 3.90dB

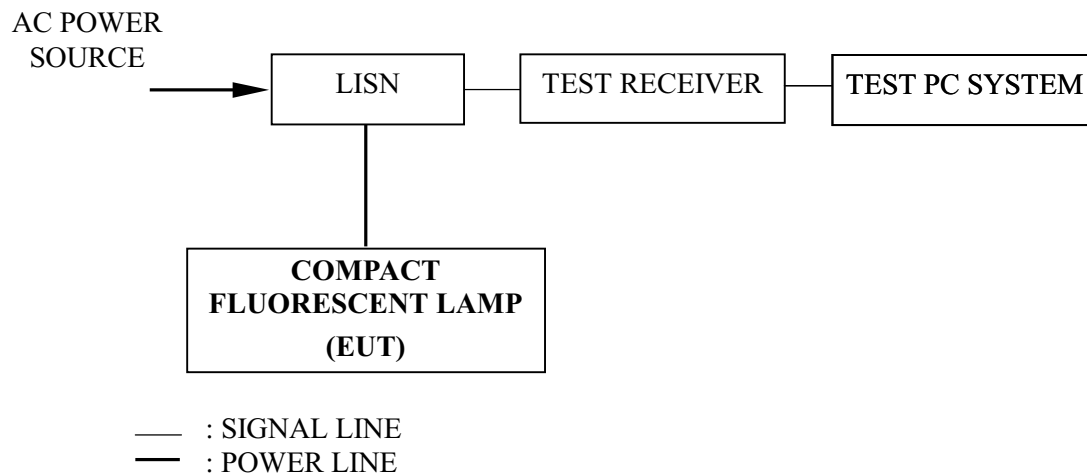
2 AC POWERLINE CONDUCTED EMISSION TEST

2.1 Test Equipment

The following test equipment are used during the powerline conducted test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	844077/020	May 24, 2000	1 Year
2.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Jun. 04, 2000	1 Year

2.2 Block Diagram of Test Setup



2.3 Conduction Limits

Frequency (MHz)	Maximum RF Line Voltage	
	(μ V)	dB(μ V)
0.45 ~ 30	250	48
NOTE 1 – RF Line Voltage dB(μ V) = 20 log RF Line Voltage (μ V)		

2.4 Test Configuration

The EUT (listed in Sec. 1.1) was installed as shown on Sec. 2.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

2.5 Operating Condition of EUT

The EUT was connected to the power mains through a Line Impedance Stabilization Network (LISN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to MP-5/1986 during conducted test.

The bandwidth of Test Receiver ESHS10 was set at 10 kHz.

The frequency range from 450 kHz to 30 MHz was checked. The three test modes - Low, Medium & High were done on conducted test and the test results of the highest emissions are listed in Sec. 2.7.

The waveform is attached in APPENDIX I.

2.6 Test Procedures

2.6.1 Setup the EUT as shown in Sec. 2.2.

2.6.2 Turn on the power of all equipment.

2.6.3 The EUT will be operated normally.

2.7 Test Results

< PASS >

The frequency and amplitude of the highest AC powerline conducted emissions relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-23SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 20, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.456	0.46	45.60	46.06	48.00	1.94
	0.501	0.43	44.40	44.83	48.00	3.17
	0.541	0.41	42.50	42.91	48.00	5.09
	0.592	0.40	44.70	45.10	48.00	2.90
	0.676	0.40	40.00	40.40	48.00	7.60
	0.736	0.40	41.90	42.30	48.00	5.70
VB	0.453	0.53	44.20	44.73	48.00	3.27
	0.490	0.52	44.80	45.32	48.00	2.68
	0.506	0.51	46.30	46.81	48.00	1.19
	0.577	0.48	42.20	42.68	48.00	5.32
	0.717	0.40	39.90	40.30	48.00	7.70
	0.852	0.40	39.90	40.30	48.00	7.70

NOTE 1 – Emission Level = Meter Reading + Factor

NOTE 2 – Factor = Insertion Loss + Cable Loss

NOTE 3 – All reading are Quasi-Peak Values.

NOTE 4 – The worst emission is detected at 0.506 MHz with corrected signal level of 46.81 dB(μV) (limit is 48.00 dB(μV)), when the VB of the EUT is connected to LISN.

NOTE 5 – At the frequencies (VA – 0.456 MHz; VB – 0.506 MHz), the measured results are below the specification limit by a margin less than the measurement uncertainty. It is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a higher probability that the product tested complies with the specification limit.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-20SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.469	0.45	44.90	45.35	48.00	2.65
	0.539	0.41	46.50	46.91	48.00	1.09
	0.624	0.40	42.40	42.80	48.00	5.20
	0.714	0.40	41.60	42.00	48.00	6.00
	0.774	0.40	44.00	44.40	48.00	3.60
	0.861	0.40	42.20	42.60	48.00	5.40
VB	0.454	0.53	45.50	46.03	48.00	1.97
	0.533	0.51	45.30	45.81	48.00	2.19
	0.587	0.47	43.20	43.67	48.00	4.33
	0.656	0.43	42.70	43.13	48.00	4.87
	0.761	0.40	42.70	43.10	48.00	4.90
	1.010	0.40	46.40	46.80	48.00	1.20

NOTE 1 – Emission Level = Meter Reading + Factor

NOTE 2 – Factor = Insertion Loss + Cable Loss

NOTE 3 – All reading are Quasi-Peak Values.

NOTE 4 – The worst emission is detected at 0.539 MHz with corrected signal level of 46.91 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.

NOTE 5 – At the frequencies (VA – 0.469 MHz; 0.539 MHz, VB – 0.454 MHz, 0.533 MHz, 1.010 MHz), the measured results are below the specification limit by a margin less than the measurement uncertainty. It is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a higher probability that the product tested complies with the specification limit.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-15SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.454	0.46	40.00	40.46	48.00	7.54
	0.494	0.44	42.40	42.84	48.00	5.16
	0.584	0.40	40.20	40.60	48.00	7.40
	0.668	0.40	39.60	40.00	48.00	8.00
	0.720	0.40	37.90	38.30	48.00	9.70
	0.954	0.40	38.70	39.10	48.00	8.90
VB	0.456	0.53	39.60	40.13	48.00	7.87
	0.496	0.52	41.10	41.62	48.00	6.38
	0.519	0.51	38.30	38.81	48.00	9.19
	0.548	0.50	38.90	39.40	48.00	8.60
	0.636	0.44	38.20	38.64	48.00	9.36
	0.704	0.40	38.40	38.80	48.00	9.20
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.494 MHz with corrected signal level of 42.84 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.						

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-23SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.479	0.45	40.70	41.15	48.00	6.85
	0.513	0.42	42.60	43.02	48.00	4.98
	0.601	0.40	39.70	40.10	48.00	7.90
	0.619	0.40	42.20	42.60	48.00	5.40
	0.723	0.40	40.70	41.10	48.00	6.90
	0.838	0.40	41.20	41.60	48.00	6.40
VB	0.476	0.52	40.60	41.12	48.00	6.88
	0.575	0.48	35.70	36.18	48.00	11.82
	0.614	0.46	43.70	44.16	48.00	3.84
	0.856	0.40	38.10	38.50	48.00	9.50
	1.460	0.40	39.20	39.60	48.00	8.40
	1.710	0.40	39.70	40.10	48.00	7.90
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.614 MHz with corrected signal level of 44.16 dB(μV) (limit is 48.00 dB(μV)), when the VB of the EUT is connected to LISN.						

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-20SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.456	0.46	38.00	38.46	48.00	9.54
	0.506	0.43	36.90	37.33	48.00	10.67
	0.517	0.42	39.70	40.12	48.00	7.88
	0.659	0.40	38.40	38.80	48.00	9.20
	0.723	0.40	32.20	32.60	48.00	15.40
	0.915	0.40	36.80	37.20	48.00	10.80
VB	0.505	0.51	36.10	36.61	48.00	11.39
	0.517	0.51	39.70	40.21	48.00	7.79
	0.608	0.46	36.40	36.86	48.00	11.14
	0.754	0.40	35.50	35.90	48.00	12.10
	0.775	0.40	34.50	34.90	48.00	13.10
	0.889	0.40	36.00	36.40	48.00	11.60
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.517 MHz with corrected signal level of 40.21 dB(μV) (limit is 48.00 dB(μV)), when the VB of the EUT is connected to LISN.						

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-15SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.469	0.45	40.20	40.65	48.00	7.35
	0.508	0.43	41.40	41.83	48.00	6.17
	0.582	0.40	39.70	40.10	48.00	7.90
	0.651	0.40	37.50	37.90	48.00	10.10
	0.748	0.40	37.10	37.50	48.00	10.50
	0.838	0.40	36.50	36.90	48.00	11.10
VB	0.462	0.53	40.70	41.23	48.00	6.77
	0.533	0.51	37.50	38.01	48.00	9.99
	0.577	0.48	36.20	36.68	48.00	11.32
	0.609	0.46	35.70	36.16	48.00	11.84
	0.665	0.42	37.20	37.62	48.00	10.38
	0.751	0.40	35.30	35.70	48.00	12.30
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.508 MHz with corrected signal level of 41.83 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.						

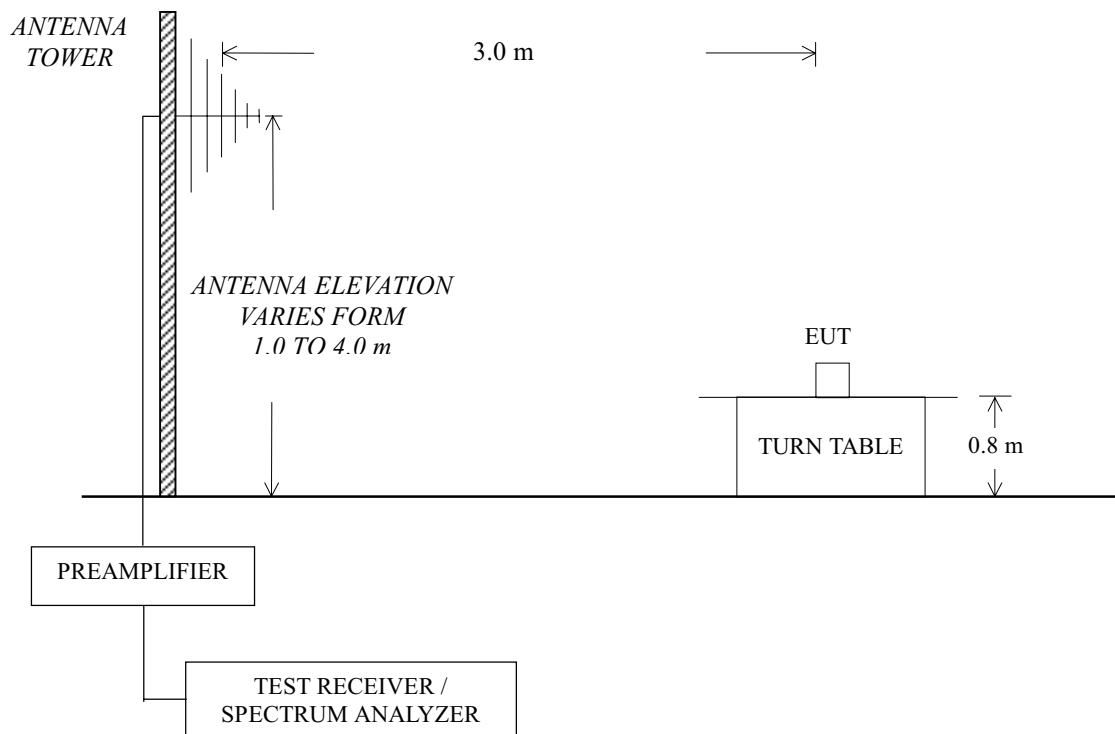
3 RADIATED EMISSION TEST

3.1 Test Equipment

The following test equipment are used during the radiated emission test in an semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8593EM	3628A00167	May 28, 2000	1 Year
2.	Preamplifier	HP	8447D	2944A06849	Jun 03, 2000	1/2 Year
3.	Bilog Antenna	Chase	CBL6111	1146	Jun 02, 2000	1/2 Year
4.	Test Receiver	Rohde & Schwarz	ESVS10	844594/001	May 24, 2000	1 Year

3.2 Block Diagram of Test Setup



3.3 Radiated Emission Limits

Frequency (MHz)	Distance (m)	Field strength limits ($\mu\text{V/m}$)	Converted Field Strengths Limits By 3 meters Measuring Distance	
			$\mu\text{V/m}$	$\text{dB}(\mu\text{V/m})$
30 ~ 88	30	10	100	40.0
88 ~ 216	30	15	150	43.5
216 ~ 1000	30	20	200	46.0
NOTE 1 - Emission Level $\text{dB}(\mu\text{V/m}) = 20 \log \text{Emission Level } (\mu\text{V/m})$ NOTE 2 - The tighter limit applies at the band edges. NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. NOTE 4 - The measurements are made at 3 meters distance, then the permissible field strength limits be adjusted using $1/d$ as an attenuation factor.				

3.4 Test Configuration

The configuration of the EUT is same as those used in conducted test.

Please refer to Sec. 2.4.

3.5 Operating Condition of EUT

The EUT was placed on a turn table which is 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or dipole antenna were used as receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to MP-5/1986 requirements during radiated test.

The bandwidth setting on Test Receiver ESVS10 was 120 kHz.

The frequency range from 30 MHz to 1000 MHz was checked. The three test modes - Low, Medium & High were done on radiated test and the test results of the highest emissions are listed in Sec. 3.7.

3.6 Test Procedures

Same as conducted test which is listed in Sec. 2.6, except the test set up replaced by Sec. 3.2.

3.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emissions relative the limit is reported. All the emissions not reported below are too low against the FCC Part 18 limit.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-23SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (Db/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	30.970	17.73	0.72	25.56	28.05	20.94	40.00	19.06
	35.820	15.74	0.80	25.50	27.60	18.64	40.00	21.36
	87.230	7.55	1.27	25.15	30.78	14.45	40.00	25.55
	116.330	12.73	1.48	25.10	28.61	17.72	43.50	25.78
	243.400	12.32	2.36	25.10	25.57	15.15	46.00	30.85
	380.170	16.23	3.03	25.83	26.62	20.05	46.00	25.95
Vertical	33.880	16.54	0.78	25.53	39.58	31.37	40.00	8.63
	39.700	14.12	0.80	25.46	36.06	25.52	40.00	14.48
	45.520	10.43	0.81	25.41	37.31	23.14	40.00	16.86
	54.250	7.17	0.94	25.34	39.09	21.86	40.00	18.14
	113.420	12.34	1.47	25.10	30.25	18.96	43.50	24.54
	270.560	13.42	2.53	25.10	27.30	18.15	46.00	27.85

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 30.970 MHz with corrected signal level of 20.94 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.82m height and the turn table was at 182°.

NOTE 4 – The worst emission at vertical polarization was detected at 33.880 MHz with corrected signal level of 31.37 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 182°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-20SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (Db/m)	Cable Loss (dB)	Preamp Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	32.910	16.92	0.76	25.54	27.19	19.33	40.00	20.67
	53.280	7.45	0.93	25.35	31.12	14.15	40.00	25.85
	80.440	7.60	1.20	25.19	30.28	13.89	40.00	26.11
	119.240	13.12	1.50	25.10	27.36	16.88	43.50	26.62
	159.980	10.84	1.80	25.10	27.40	14.94	43.50	28.56
	315.180	14.71	2.76	25.24	26.22	18.45	46.00	27.55
Vertical	33.880	16.54	0.78	25.53	37.56	29.35	40.00	10.65
	46.490	10.00	0.83	25.40	38.80	24.23	40.00	15.77
	56.190	6.61	0.96	25.33	41.70	23.94	40.00	16.06
	82.380	7.58	1.22	25.17	37.71	21.34	40.00	18.66
	115.360	12.62	1.48	25.10	31.74	20.74	43.50	22.76
	441.280	17.97	3.23	26.31	29.91	24.80	46.00	21.20

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 32.910 MHz with corrected signal level of 19.33 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.78m height and the turn table was at 180°.

NOTE 4 – The worst emission at vertical polarization was detected at 33.880 MHz with corrected signal level of 29.35 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 177°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-15SPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (Db/m)	Cable Loss (dB)	Preamp Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	32.910	16.92	0.76	25.54	26.57	18.71	40.00	21.29
	47.460	9.56	0.85	25.39	26.50	11.52	40.00	28.48
	99.840	10.25	1.40	25.10	27.05	13.60	43.50	29.90
	120.210	13.23	1.50	25.10	26.88	16.51	43.50	26.99
	166.770	10.25	1.85	25.10	27.72	14.72	43.50	28.78
	250.190	12.69	2.40	25.10	28.35	18.34	46.00	27.66
Vertical	38.730	14.51	0.80	25.47	28.46	18.30	40.00	21.70
	48.430	9.12	0.87	25.38	33.76	18.37	40.00	21.63
	101.780	10.62	1.41	25.10	29.34	16.27	43.50	27.23
	111.480	12.07	1.46	25.10	28.29	16.27	43.50	26.78
	121.180	12.85	1.50	25.10	31.17	20.42	43.50	23.08
	441.280	17.97	3.23	26.31	29.91	24.80	46.00	21.20

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 32.910 MHz with corrected signal level of 18.71 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.83m height and the turn table was at 185°.

NOTE 4 – The worst emission at vertical polarization was detected at 441.280 MHz with corrected signal level of 24.80 dB(μV/m) (limit is 46.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 175°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-23SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	30.000	18.15	0.70	25.57	30.85	24.13	40.00	15.87
	33.880	16.54	0.78	25.53	29.43	21.22	40.00	18.78
	111.480	12.07	1.46	25.10	29.63	18.06	43.50	25.44
	118.270	13.01	1.49	25.10	31.45	20.85	43.50	22.65
	518.880	19.91	3.50	26.70	29.25	25.96	46.00	20.04
	958.290	24.26	5.28	26.35	28.42	31.61	46.00	14.39
Vertical	33.880	16.54	0.78	25.53	40.69	32.48	40.00	7.52
	40.670	13.56	0.80	25.45	36.09	25.00	40.00	15.00
	48.430	9.12	0.87	25.38	39.51	24.12	40.00	15.88
	101.780	10.62	1.41	25.10	31.96	18.89	43.50	24.61
	114.390	12.46	1.47	25.10	33.41	22.24	43.50	21.26
	271.530	13.45	2.53	25.10	29.58	20.46	46.00	25.54

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 958.290 MHz with corrected signal level of 31.61 dB(μV/m) (limit is 46.00 dB(μV/m)), when the antenna was 1.80m height and the turn table was at 185°.

NOTE 4 – The worst emission at vertical polarization was detected at 33.880 MHz with corrected signal level of 32.48 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 175°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-20SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (Db/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Meter Reading dB(μV)	Emission Level Db(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	30.970	17.73	0.72	25.56	27.72	20.61	40.00	19.39
	33.880	16.54	0.78	25.53	27.02	18.81	40.00	21.19
	106.630	11.34	1.43	25.10	30.06	17.73	43.50	25.77
	117.300	12.85	1.49	25.10	30.68	19.92	43.50	23.58
	138.640	11.59	1.59	25.10	28.96	17.04	43.50	26.46
	917.550	24.25	5.08	26.40	28.05	30.98	46.00	15.02
Vertical	30.500	17.96	0.71	25.56	33.11	26.22	40.00	13.78
	32.600	17.06	0.75	25.54	35.50	27.77	40.00	12.23
	40.670	13.56	0.80	25.45	31.90	20.81	40.00	19.19
	46.490	10.00	0.83	25.40	32.80	18.23	40.00	21.77
	114.390	12.46	1.47	25.10	28.09	16.92	43.50	26.58
	965.000	24.26	5.32	26.34	31.62	34.86	46.00	11.14

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 917.550 MHz with corrected signal level of 30.98 dB(μV/m) (limit is 46.00 dB(μV/m)), when the antenna was 1.85m height and the turn table was at 182°.

NOTE 4 – The worst emission at vertical polarization was detected at 965.000 MHz with corrected signal level of 34.86 dB(μV/m) (limit is 46.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 178°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP120-15SLPDYTP1523 Humidity : 53%

Test Mode : ON Date of Test : Nov 14, 2000

Polarization	Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV/m)	Limits dB(μV/m)	Margin (dB)
Horizontal	30.970	17.73	0.72	25.56	26.69	19.58	40.00	20.42
	101.780	10.62	1.41	25.10	29.67	16.60	43.50	26.90
	114.390	12.46	1.47	25.10	30.26	19.09	43.50	24.41
	280.260	13.73	2.58	25.10	27.52	18.73	46.00	27.27
	371.440	16.03	2.99	25.77	28.31	21.56	46.00	24.44
	949.560	24.26	5.25	26.36	27.50	30.65	46.00	15.35
Vertical	30.970	17.73	0.72	25.56	29.65	22.54	40.00	17.46
	43.580	11.57	0.80	25.43	39.30	26.24	40.00	13.76
	48.430	9.12	0.87	25.38	36.51	21.12	40.00	18.88
	58.130	6.06	0.98	25.31	36.94	18.67	40.00	21.33
	116.330	12.73	1.48	25.10	33.29	22.40	43.50	21.10
	929.190	24.25	5.15	26.38	27.90	30.92	46.00	15.08

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor

NOTE 2 – All reading are Quasi-Peak values.

NOTE 3 – The worst emission at horizontal polarization was detected at 949.560 MHz with corrected signal level of 30.65 dB(μV/m) (limit is 46.00 dB(μV/m)), when the antenna was 1.85m height and the turn table was at 175°.

NOTE 4 – The worst emission at vertical polarization was detected at 43.580 MHz with corrected signal level of 26.24 dB(μV/m) (limit is 40.00 dB(μV/m)), when the antenna was 1.00 m height and the turn table was at 180°.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

4 PHOTOGRAPHS

4.1 AC Powerline Conducted Emission Test



SIDE VIEW (M/N: TP120-23S)



SIDE VIEW (M/N: TP120-20S)



SIDE VIEW (M/N: TP120-15S)



SIDE VIEW (M/N: TP120-23SL)

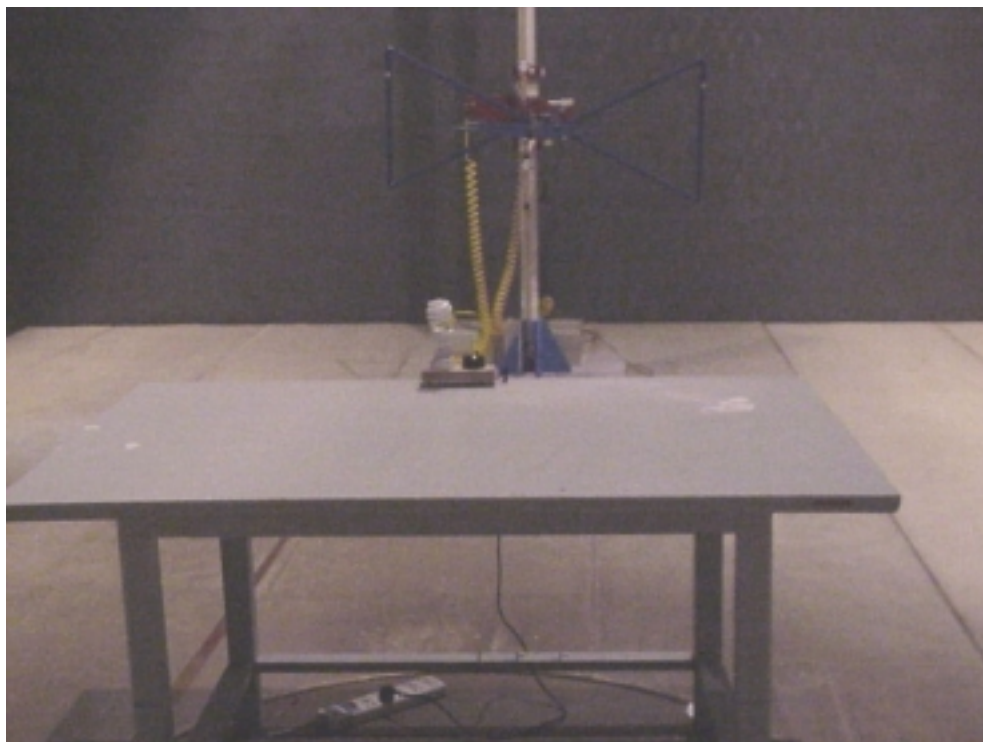


SIDE VIEW (M/N: TP120-20SL)

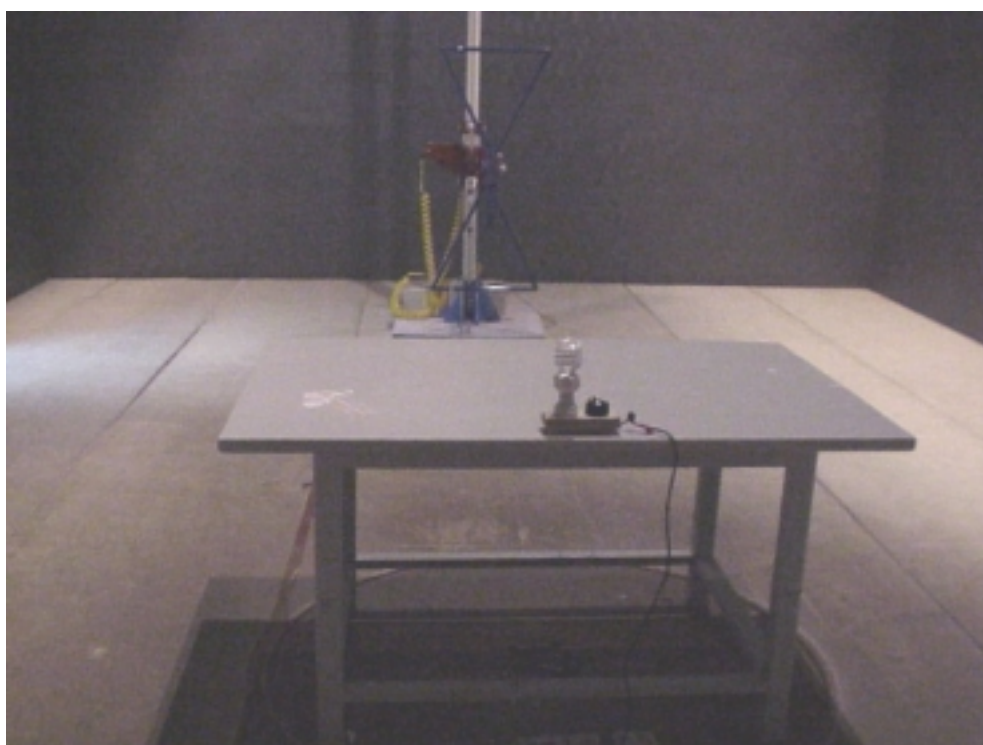


SIDE VIEW (M/N: TP120-15SL)

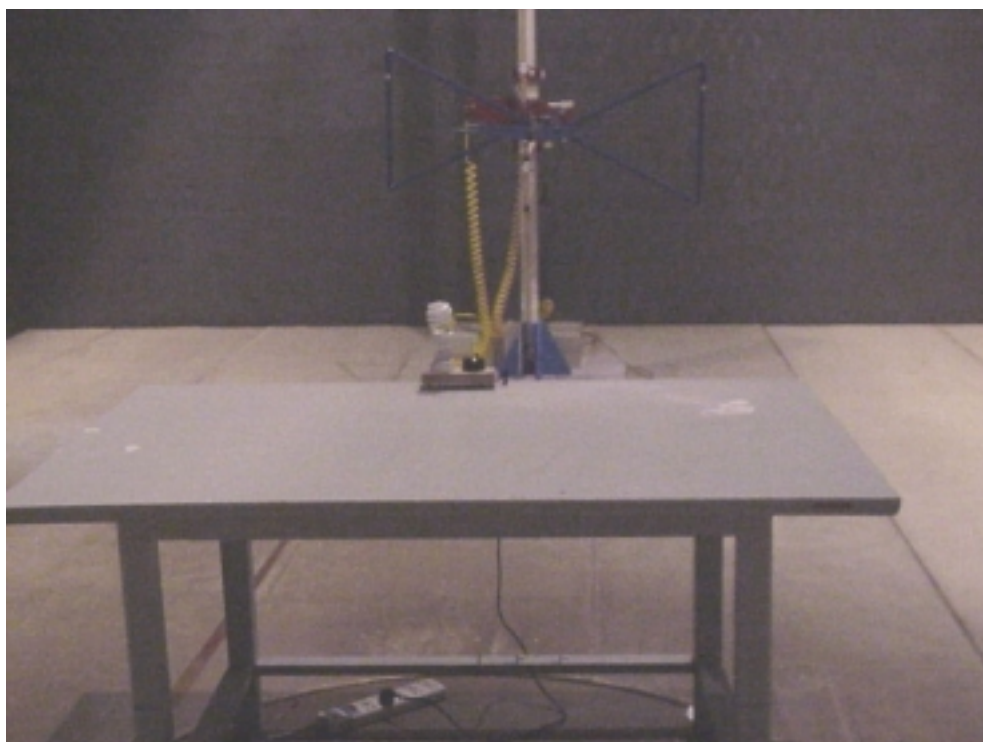
4.2 Radiated Emission Test



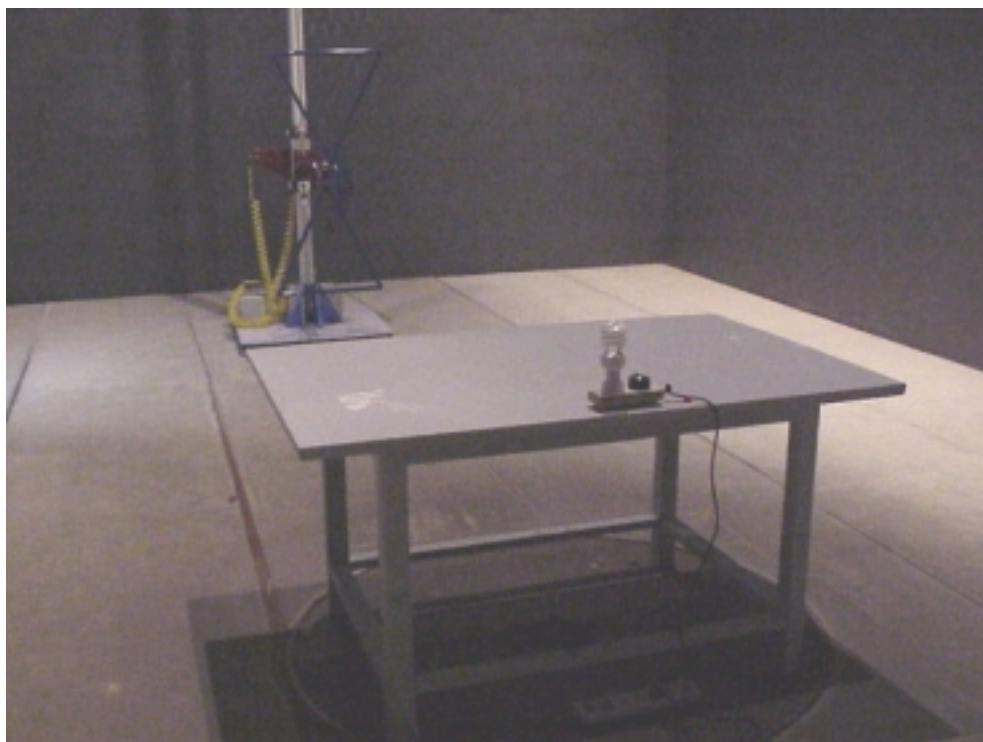
HORIZONTAL (M/N: TP120-23S)



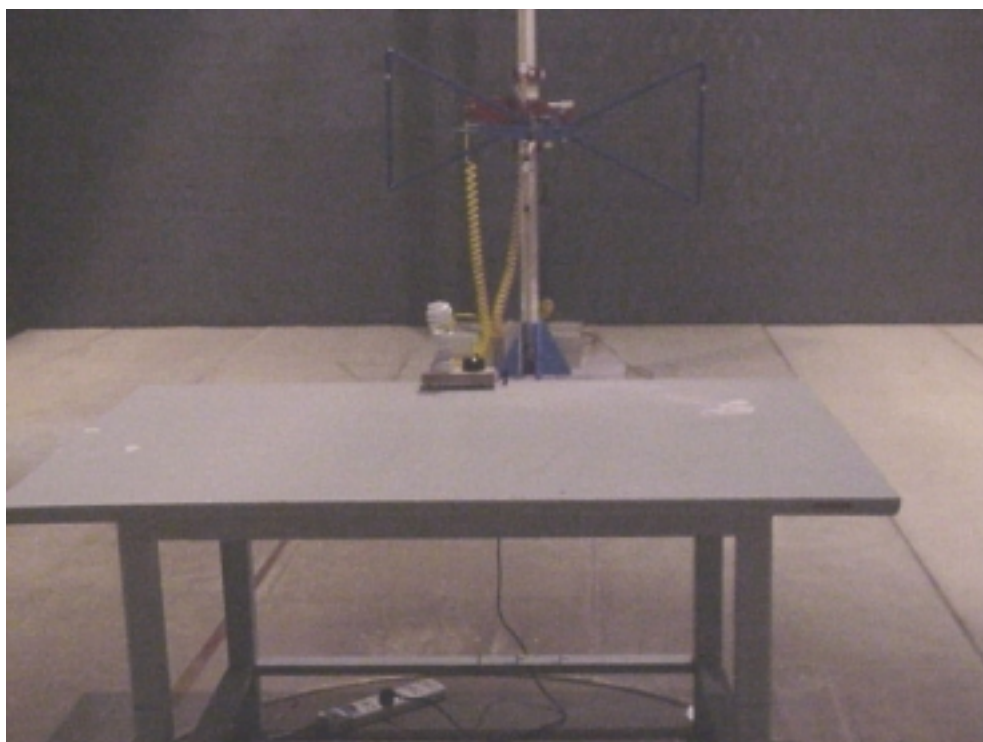
VERTICAL (M/N: TP120-23S)



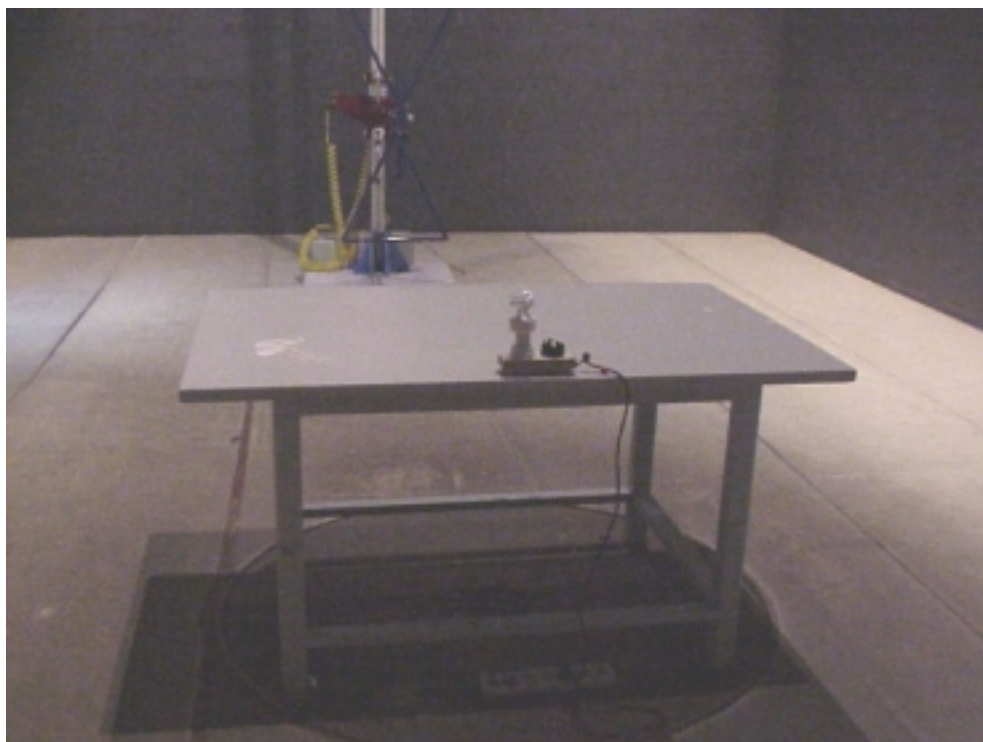
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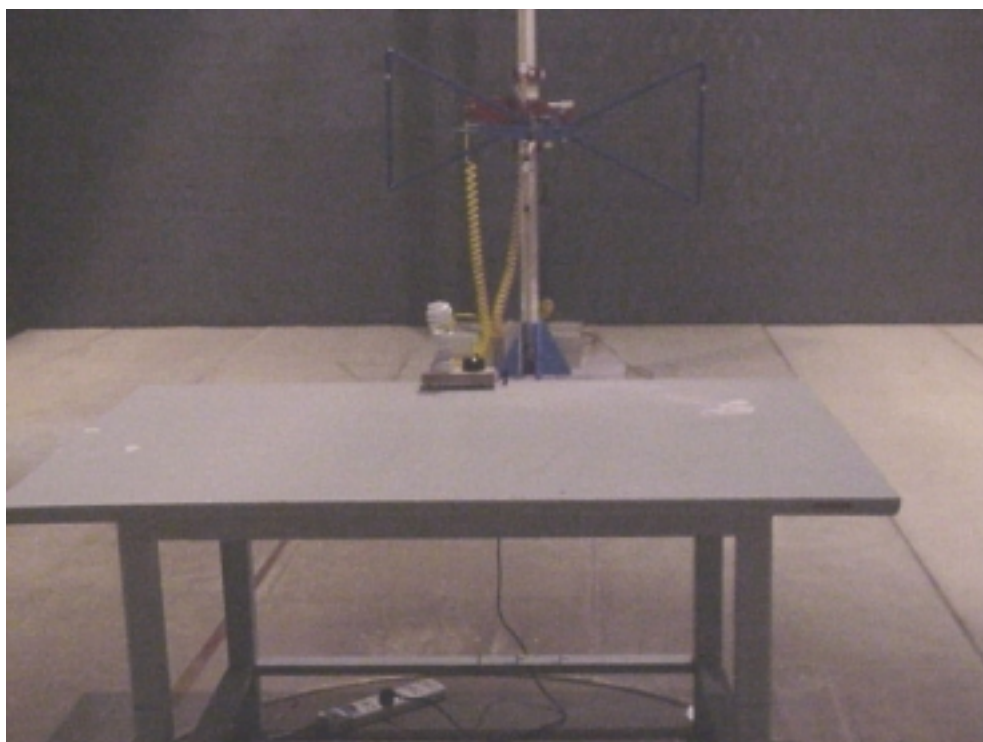
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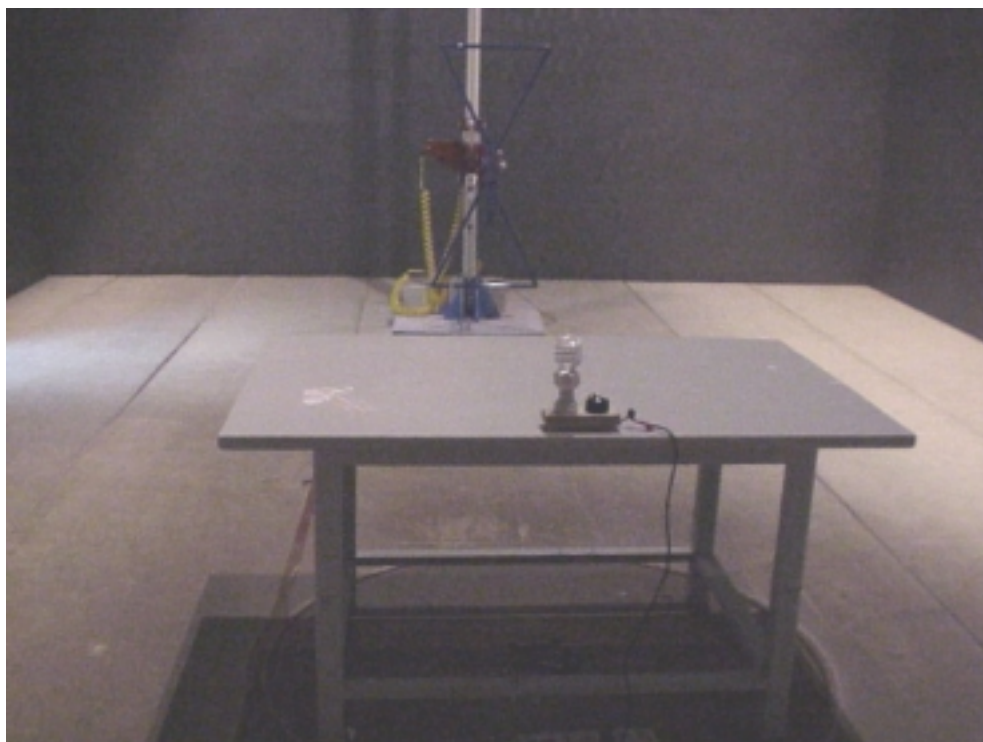
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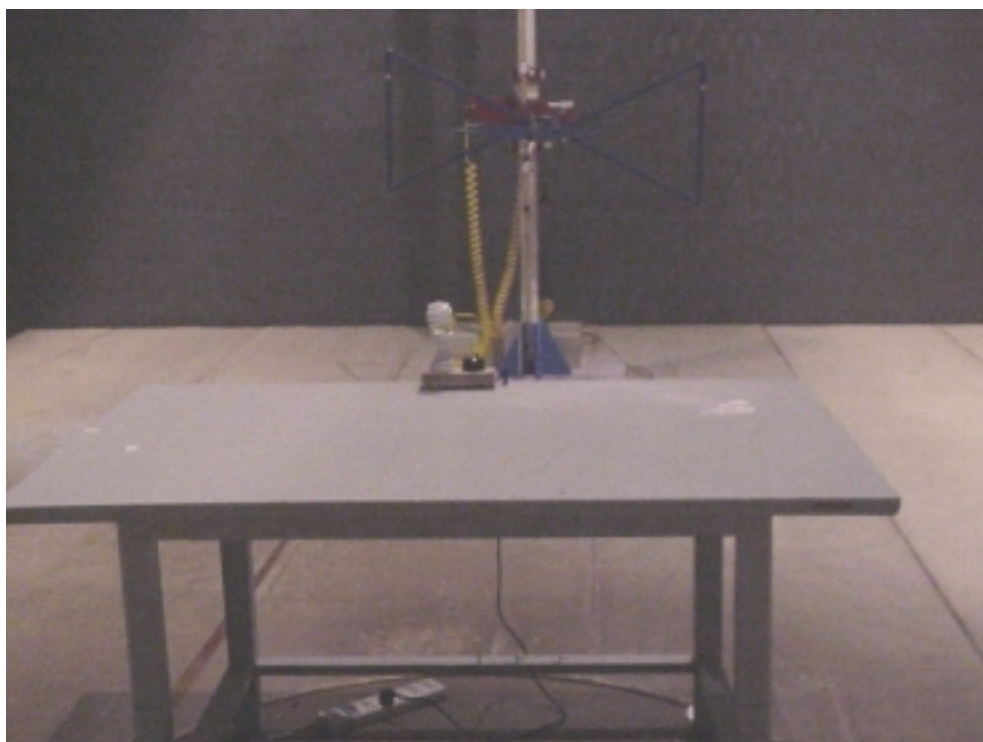
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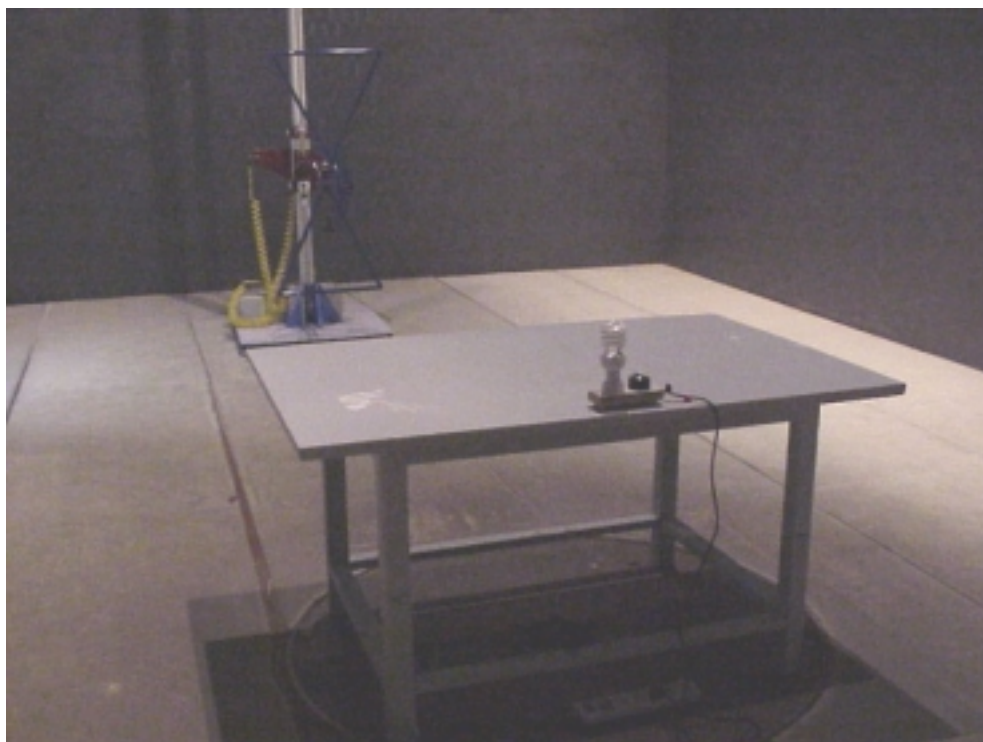
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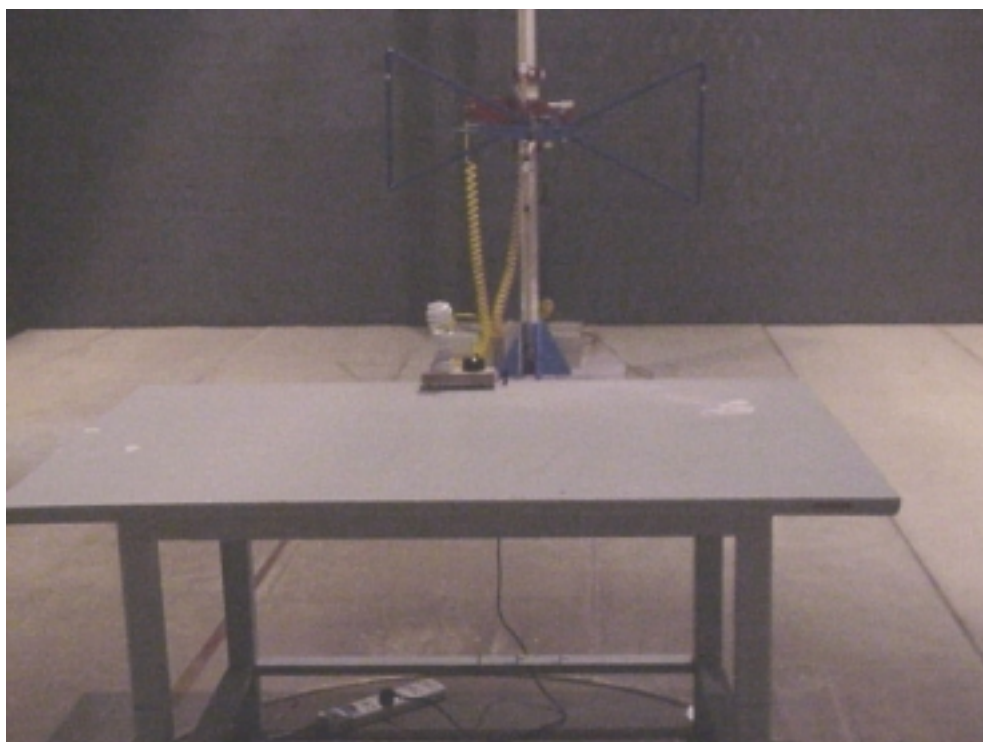
VERTICAL (M/N: TP120-23SL)



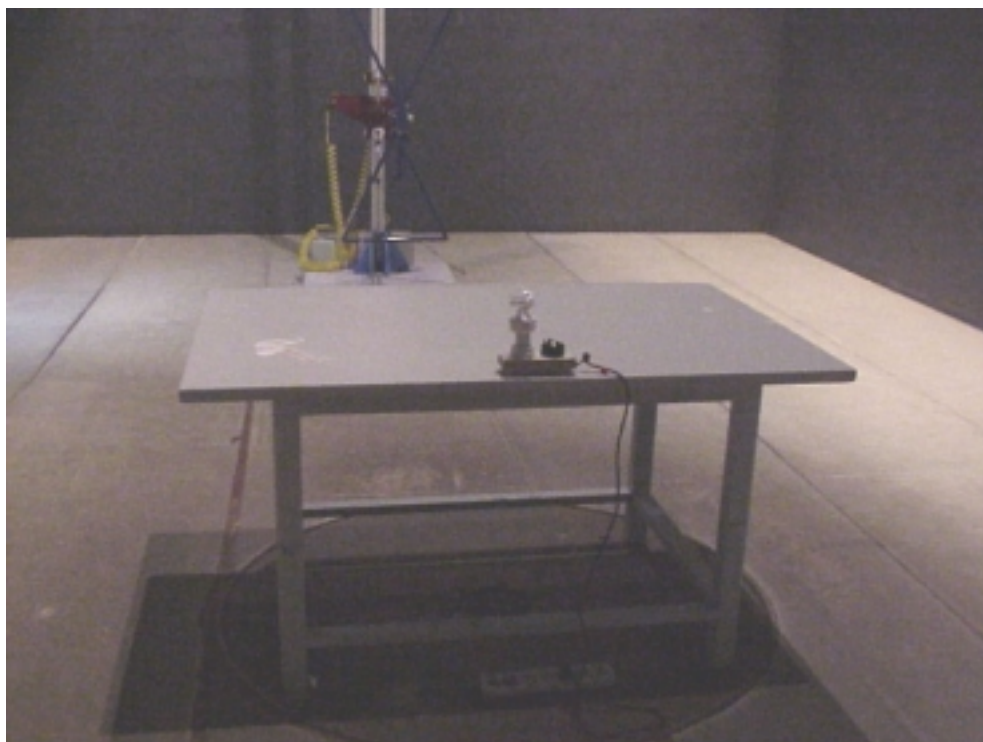
HORIZONTAL (M/N: TP120-20SL)



VERTICAL (M/N: TP120-20SL)



HORIZONTAL (M/N: TP120-15SL)



VERTICAL (M/N: TP120-15SL)