



# TESTREPORT FCC CLASS B COMPLIANCE REPORT (DOC)

- |                                     |                 |     |         |
|-------------------------------------|-----------------|-----|---------|
| <input checked="" type="checkbox"/> | Testreport      | No. | 665 327 |
| <input type="checkbox"/>            | Completion to   | No. |         |
| <input type="checkbox"/>            | Modification to | No. |         |

Order Number:	665 327
Applicant:	Danube Enterprise Co., Ltd.
Manufacturer:	Danube Enterprise Co., Ltd.
Kind of Product:	DC-DC Converter
Product model:	LW Series
Serial Number:	N/A
Remark:	

# FCC CLASS B COMPLIANCE REPORT (DOC)

<b>Equipment Under Test</b>	:	DC-DC Converter
<b>Model No.</b>	:	LW Series
<b>Series Model No.</b>	:	LWS-0505-3K, LWS-1212H, LWD-1205HT, LWS-1205TC, LWD-2405H, LWS-4809H-3K
<b>Applicant</b>	:	Danube Enterprise Co., Ltd.
<b>Manufacturer</b>	:	Danube Enterprise Co., Ltd.
<b>Address of Applicant</b>	:	A2, No.255, Fengren Road., Renwu Shiang, Kaohsiung County 814, Taiwan, R.O.C.

## Standards:

EN55022 : 1998 Class B

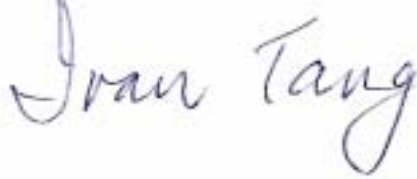
EN55024 : 1998 : IEC 61000-4-2 : 2003, IEC 61000-4-3 : 2004

In the configuration tested, the EUT complied with the standards specified above.

## Remarks :

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of Testhaus EMC Services or testing done by Testhaus EMC Services in connection with distribution or use of the product described in this report must be approved by Testhaus EMC Services in writing.



**Tested by** :

**Date** : December. 26, 2006

Ivan Tang



**Approved by** :

**Date** : December. 26, 2006

James Sung

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## 1. General Information

### 1.1 Client Information

Applicant: Danube Enterprise Co., Ltd.

Address of Applicant: A2, No.255, Fengren Road., Renwu Shiang,  
Kaohsiung County 814, Taiwan,

### 1.2 General Description of EUT

Name of EUT : DC-DC Converter

Model No.: LWS-0505-3K, LWS-1212H, LWD-1205HT, LWS-1205TC,  
LWD-2405H, LWS-4809H-3K

The EUT is a DC Converter

### 1.3 Details of EUT

Power Supply :N/A

Power Cord : N/A

### 1.4 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
N/A			-

### 1.5 Test Methodology And Configuration

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10m on an open area test site.

### 1.6 Standards Applicable for Testing

Table of tests to be carried out under FCC PART 15, SUBPART B, CLASS B (1997)

Test Standards	Status
FCC Part 15,Subpart B, Class B	<input checked="" type="checkbox"/>

- Indicates that the test is not applicable
- Indicates that the test is applicable

### 1.7 Deviation from the Standards

1. This British Standard is the English language version of EN55022 : 1998.  
It was derived by CENELEC from CISPR 22 : 1997.
2. The section 15.107 and 15.109 of FCC Part 15 (1997). As an alternative to the FCC Rules are are acceptable for the CISPR 22 (EN55022).

# Radio Disturbance

EN55022 : 1998

## 2.1 Limits Of Conducted And Radiated Emission

### 2.1.1 Limit Of Radiated Emission Of CISPR 22

FREQUENCY (MHz)	Class A (at 10m)*	Class B (at 10m)*
	dBuV/m	dBuV/m
30-230	40	30
230-1000	47	37

\* Detector Function : Quasi - Peak

### 2.1.2 Limit Of Radiated Emission Of FCC Part 15, Subpart B For Frequency

#### Above 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

Note : (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

**2.1.3 Limit Of Conducted Emission Of CISPR 22**

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi - peak	Average	Quasi - peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- Note : (1) The lower limit shall apply at the transition frequencies.  
 (2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.  
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

**2.2 Test Results**

Conducted Emission	<b>PASS</b>
Radiated Emission	<b>PASS</b>

**2.3 Frequency Range**

Conducted Emission : 150 kHz - 30 MHz

Radiated Emission : 30 MHz - 1000 MHz

## 2.4. Test of Conducted Emission

### 2.4.1 Test Instruments

Description& Manufacturer	Model No.	Serial No.	Date of Calibration
HP EMC Analyzer	8594EM	3624A00203	Dec. 10, 2006
EMI Test Receiver	ESCS 30	828985/004	Oct. 10, 2006
HP Transient Limiter	11947A	3107A02062	Jul. 30, 2006
Coaxial Cables	No. 3, 4	-	N/A
Rolf-Heine L.I.S.N	NNB-2/16Z	99012	Oct. 01, 2006

### 2.4.2 Test Site

Testhaus Test Lab.

### 2.4.3 Operation of EUT

Operating Environment :

Temperature : 21 degree C                      Humidity :51 %RH

Atmospheric Pressure : 1000 mBar

Operating the EUT :

Power on then test the EUT in normal operating mode.

#### 2.4.4 Measurement Data

Product Name:	DC-DC Converter	Test Date:	December. 26, 2006
Model No.:	LWS-0505-3K, LWS-1212H, LWD-1205HT, LWS-1205TC, LWD-2405H, LWS-4809H-3K	Tester:	Ivan Tang
Test Mode:	operation mode	Temperature	21
Test Result:	PASS	Humidity:	51%

Main Terminals:

Under EN 55022 the EUT deem to be pass without testing.

1. “-” denotes the emission level was – 10 dB beneath the Average limit, so nothing need to re-check anymore.
2. QP1/AVG1 value means the QP/AV reading without the factor.
3. QP2/AVG2 value means the QP/AV final reading with the factor.

## 2.5 Test of Radiated Emission

### 2.5.1 Test Instruments

Description& Manufacturer	Model No.	Serial No.	Date of Calibration
HP Spectrum Analyzer	8594E	3810A06555	Oct. 01, 2006
RF-Amplifier	8447F	3113A06892	Jul. 01, 2006
Broadband Antenna	CBL6111B	1871	Jan. 01, 2006
Turn Table	N/A	N/A	N/A
Antenna Master	MA 240	240/515	N/A
Controller	HD 100	N/A	N/A

### 2.5.2 Test Site

Testhaus Test Lab.

### 2.5.3 Operation of EUT

Operating Environment :

Temperature : 21 degree C                      Humidity : 51 %RH

Atmospheric Pressure : 1000 mBar

Operating the EUT :

Power on then test the EUT in normal operating mode.

**2.5.4 Measurement Data**

**2.5.4.1 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

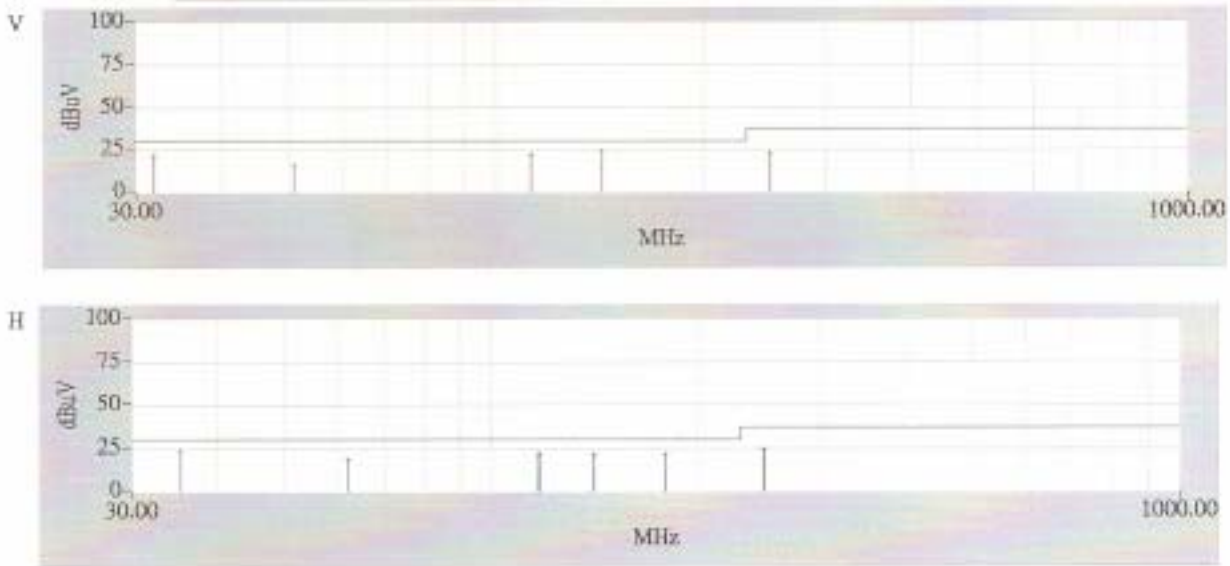
POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWS-0505-3K



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Hight Pol. cm	Note
31.91	2.98	18.35	21.33	30.00	-8.67			V PK
35.34	6.73	16.31	23.04	30.00	-6.96			H PK
51.00	7.17	8.49	15.66	30.00	-14.34			V PK
61.84	11.03	7.37	18.40	30.00	-11.60			H PK
112.41	8.21	13.79	22.00	30.00	-8.00			V PK
117.26	7.96	13.81	21.77	30.00	-8.23			H PK
141.12	8.46	12.50	20.96	30.00	-9.04			H PK
142.06	11.70	12.39	24.09	30.00	-5.91			V PK
179.19	10.62	10.85	21.47	30.00	-8.53			H PK
249.25	9.88	14.10	23.98	37.00	-13.02			H PK
249.25	8.24	14.10	22.34	37.00	-14.66			V PK

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

**2.5.4.2 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

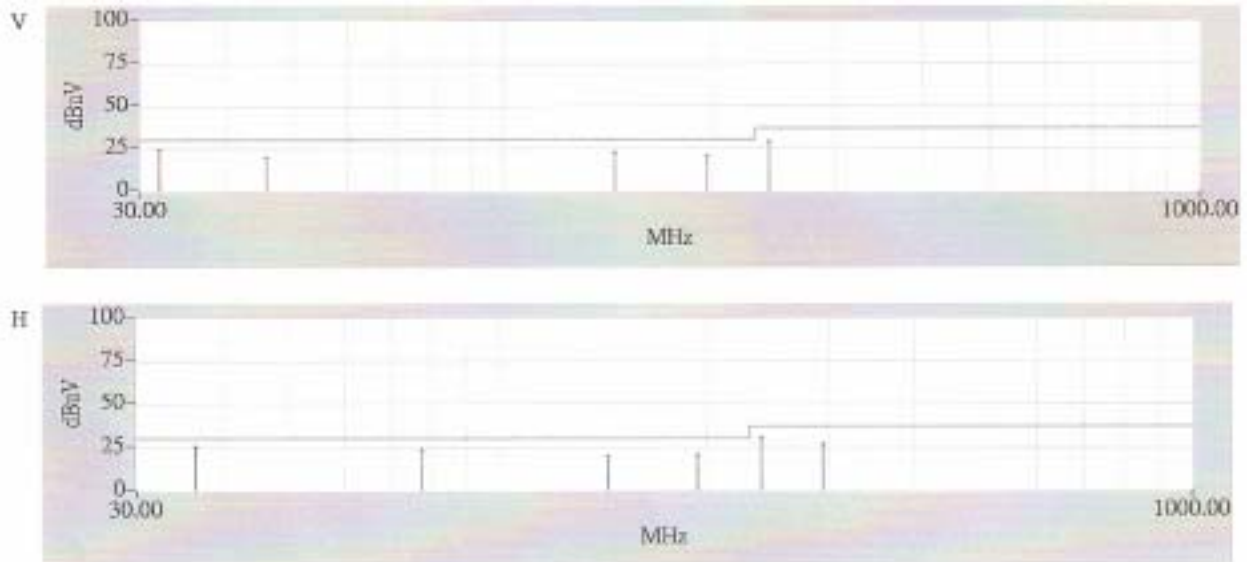
POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWS-1212H



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Hight Pol. cm	Note
32.09	5.63	18.24	23.87	30.00	-6.13			V PK
36.61	9.73	15.60	25.33	30.00	-4.67			H PK
45.66	7.75	11.29	19.04	30.00	-10.96			V PK
77.68	14.93	8.34	23.27	30.00	-6.73			H PK
143.74	7.25	12.20	19.45	30.00	-10.55			H PK
144.64	10.56	12.10	22.66	30.00	-7.34			V PK
193.68	9.62	10.60	20.22	30.00	-9.78			H PK
196.05	9.75	10.67	20.42	30.00	-9.58			V PK
239.94	17.20	13.24	30.44	30.00	-6.56			H PK
241.05	15.62	13.34	28.96	37.00	-8.04			V PK
293.96	11.45	15.09	26.54	37.00	-10.46			H PK

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

**2.5.4.3 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

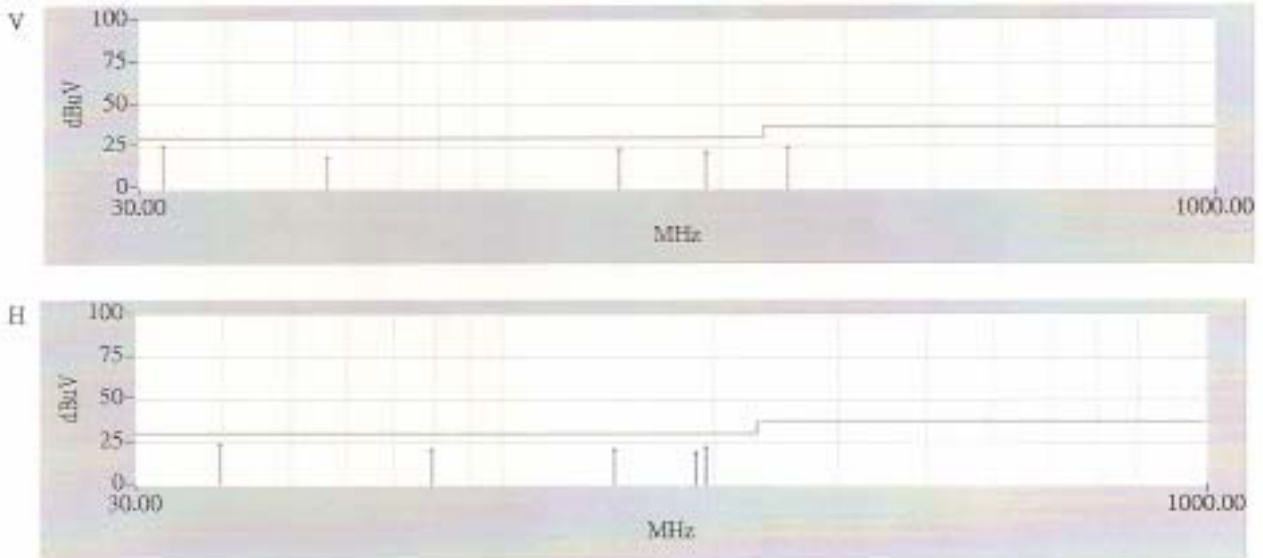
POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWD-1205HT



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Hight Pol. cm	Note
32.52	6.60	17.98	24.58	30.00	-5.42			V PK
39.57	9.24	14.07	23.31	30.00	-6.69			H QP
55.51	10.09	7.91	18.00	30.00	-12.00			V PK
79.30	12.32	8.54	20.86	30.00	-9.14			H PK
143.69	11.05	12.21	23.26	30.00	-6.74			V PK
144.27	8.57	12.14	20.71	30.00	-9.29			H PK
188.30	8.23	10.55	18.78	30.00	-11.22			H PK
190.76	10.62	10.52	21.14	30.00	-8.86			V PK
194.82	11.10	10.63	21.73	30.00	-8.27			H PK
249.25	9.53	14.10	23.63	37.00	-13.37			V PK

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

**2.5.4.4 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWS-1205TC



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Hight Pol. cm	Note
53.84	16.40	8.12	24.52	30.00	-5.48			V PK
57.38	3.58	7.68	11.26	30.00	-18.74			H QP
63.23	5.97	7.36	13.33	30.00	-16.67			H PK
66.19	14.21	7.36	21.57	30.00	-8.43			V PK
83.88	8.71	9.22	17.93	30.00	-12.07			H PK
85.16	14.00	9.40	23.40	30.00	-6.60			V PK
110.44	8.77	13.79	22.56	30.00	-7.44			V PK
148.08	5.57	11.71	17.28	30.00	-12.72			H PK
161.24	7.89	11.46	19.35	30.00	-10.65			H PK
181.03	13.90	10.80	24.70	30.00	-5.30			V QP
207.00	3.85	10.91	14.76	30.00	-15.24			H PK
207.70	16.05	10.91	27.52	30.00	-3.04			H QP

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

**2.5.4.5 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

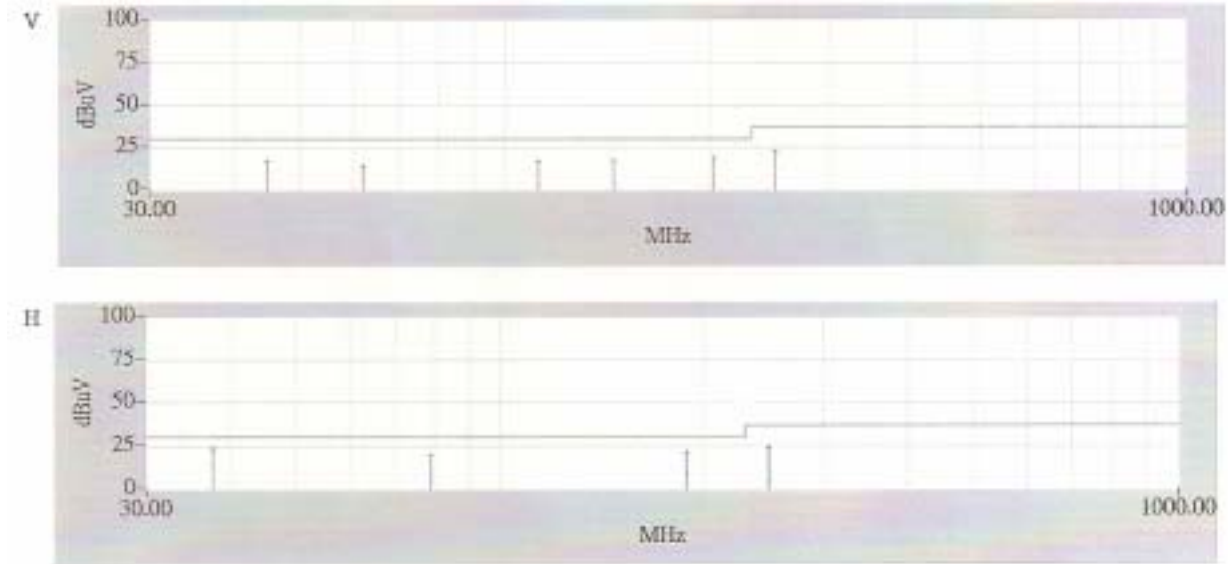
POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWD-2405H



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Hight Pol. cm	Note
37.71	8.50	15.02	23.52	30.00	-6.48			H PK
44.67	5.04	11.85	16.89	30.00	-13.11			V QP
61.78	6.60	7.37	13.97	30.00	-16.03			V PK
79.01	10.85	8.51	19.36	30.00	-10.64			H PK
111.92	2.53	13.79	16.32	30.00	-13.68			V PK
144.27	5.01	12.14	17.15	30.00	-12.85			V PK
188.18	10.36	10.56	20.92	30.00	-9.08			H PK
202.45	8.00	10.82	18.82	30.00	-11.18			V PK
249.25	8.55	14.10	22.65	37.00	-14.35			V PK
249.25	9.87	14.10	23.97	37.00	-13.03			H PK

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

**2.5.4.6 Horizontal / Vertical measurement**

ANTENNA : VULB 9160

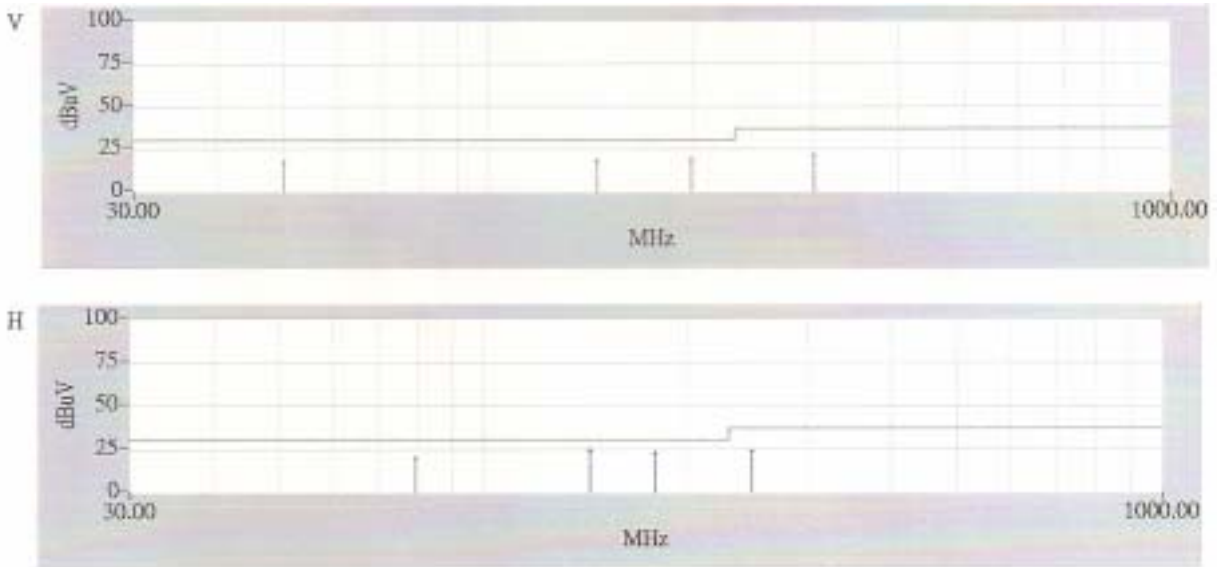
POLARITY : Horizontal / Vertical

DETECTOR FUNCTION AND BANDWIDTH : 120 kHz

FREQUENCY RANGE : 30-1000 MHz

MEASURED DISTANCE : 10 M

Model: LWS-4809H-3K



Frequency (MHz)	Reading (dBuV/m)	Corrected Factor (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin Limit (dB)	Table degree	Antenn Height Pol. cm	Note
49.96	8.43	8.65	17.08	30.00	-12.92			V PK
79.36	11.40	8.55	19.95	30.00	-10.05			H QP
143.62	12.31	12.21	24.52	30.00	-5.48			H PK
144.42	6.10	12.12	18.22	30.00	-11.78			V PK
178.74	12.07	10.86	22.93	30.00	-7.07			H PK
198.38	7.71	10.73	18.44	30.00	-11.56			V PK
249.25	9.75	14.10	23.85	37.00	-13.15			H PK
300.84	5.89	15.29	21.18	37.00	-15.82			V PK

PK: Peak  
QP: QuasiPeak

N: Neutral  
AV: Average

H: Horizontal  
F: Fail

V: Vertical  
M: Margin

## 2.6 EUT Photo Documentation

Model LWS-0505-3K



EUT Photo Documentation

Model LWS-1212H



EUT Photo Documentation

Model LWD-1205HT



EUT Photo Documentation

Model LWS-1205TC



EUT Photo Documentation

Model LWD-2405H

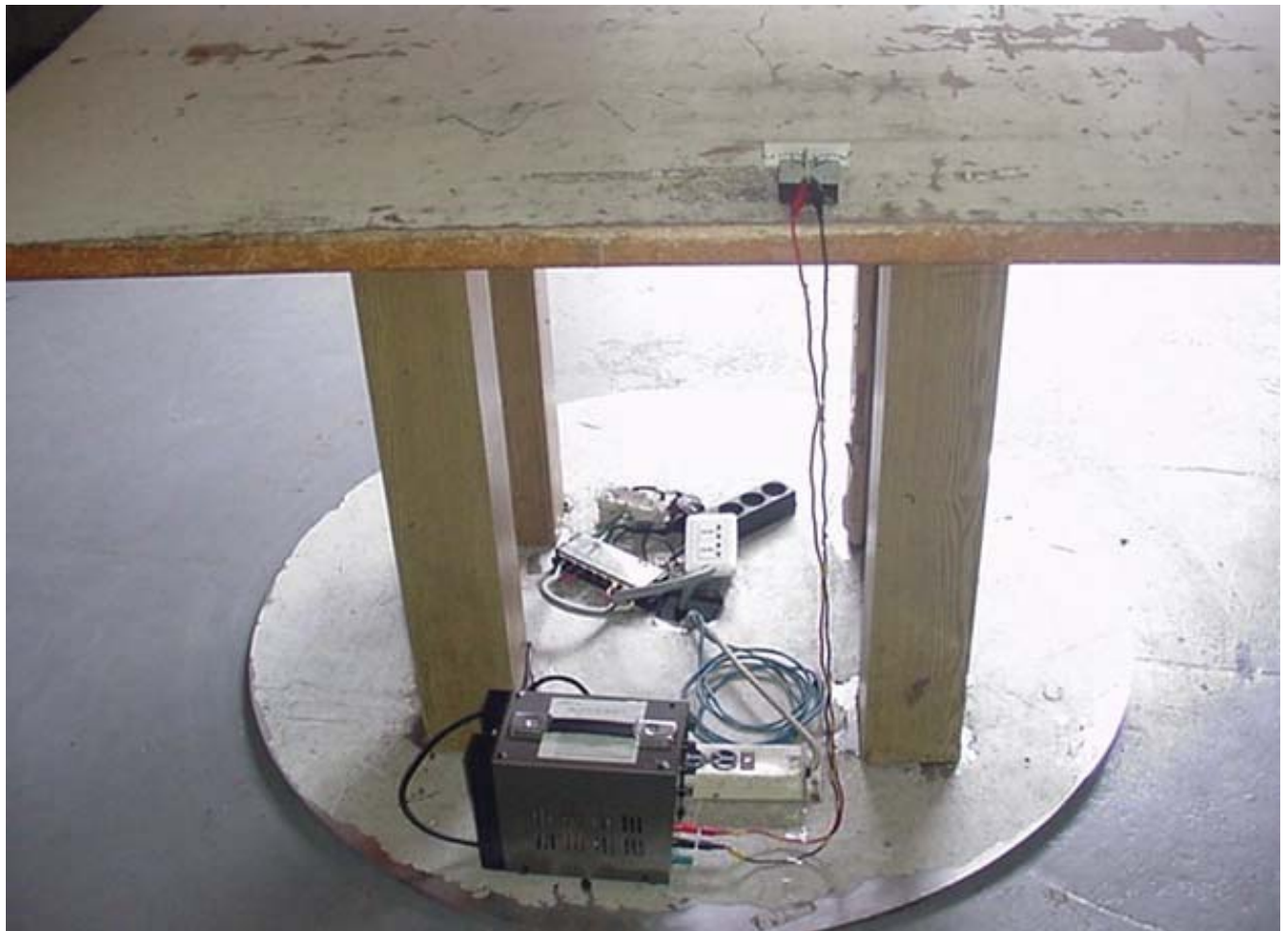


EUT Photo Documentation

Model LWS-4809H-3K



2.7 Photographs of Test



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