

ZWD150PAF

TEST DATA IEC61000 SERIES

DWG No.	PA573-58-01	
APPD	CHK	DWG
<i>zef</i>	<i>[Signature]</i>	<i>heng</i>
11/8/04	11/8/04	11-04-2004

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* Test results are typical data. Nevertheless, the following results are considered to be actual capability data because all units have nearly the same characteristics.

1. Electrostatic discharge immunity test (IEC61000-4-2)

MODEL : ZWD150PAF

(1) Equipment Used

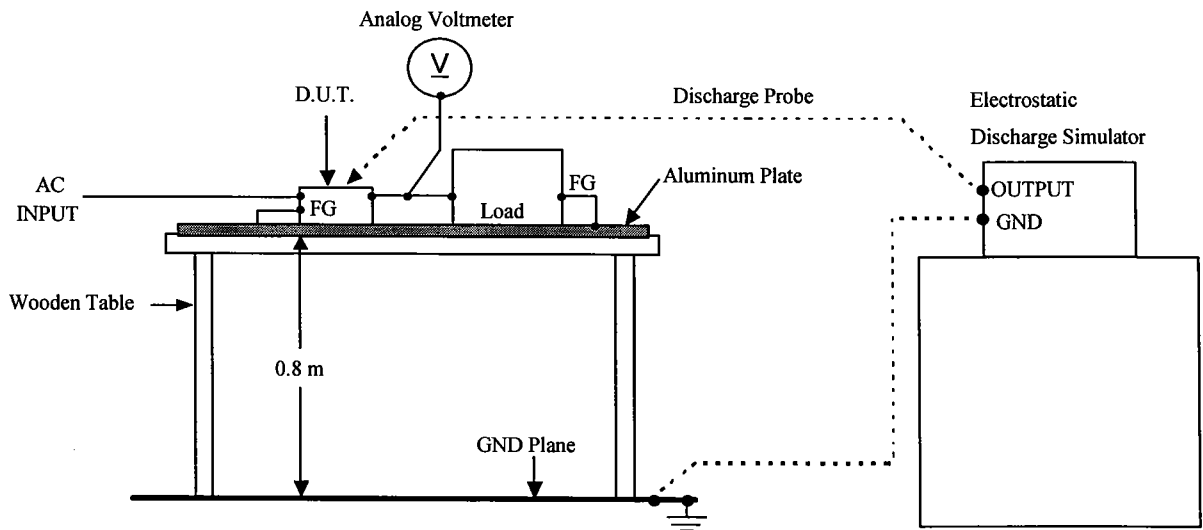
Electrostatic Discharge Simulator : NSG 435 (Schaffner)
 Discharge Resistance : 330Ω Capacitor : 150pF

(2) Test Conditions

Input Voltage : 100, 230VAC Output Voltage : Rated
 Output Current : 100% Polarity : +, -
 Number of Tests : 10 times Ambient Temperature : 25°C
 Discharge Interval : >1 Second

(3) Test Method and Device Test Point

Contact Discharge : FG, Heatsink/Case Screw
 Air Discharge : Input and Output Terminals



(4) Acceptable Conditions

1. Output voltage regulation not to exceed ±5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Results

Contact Discharge (kV)	ZWD150PAF	Air Discharge (kV)	ZWD150PAF
2	PASS	4	PASS
4	PASS	8	PASS
5	PASS	10	PASS

2. Radiated, radio-frequency, electromagnetic field immunity test (IEC61000-4-3)

MODEL : ZWD150PAF

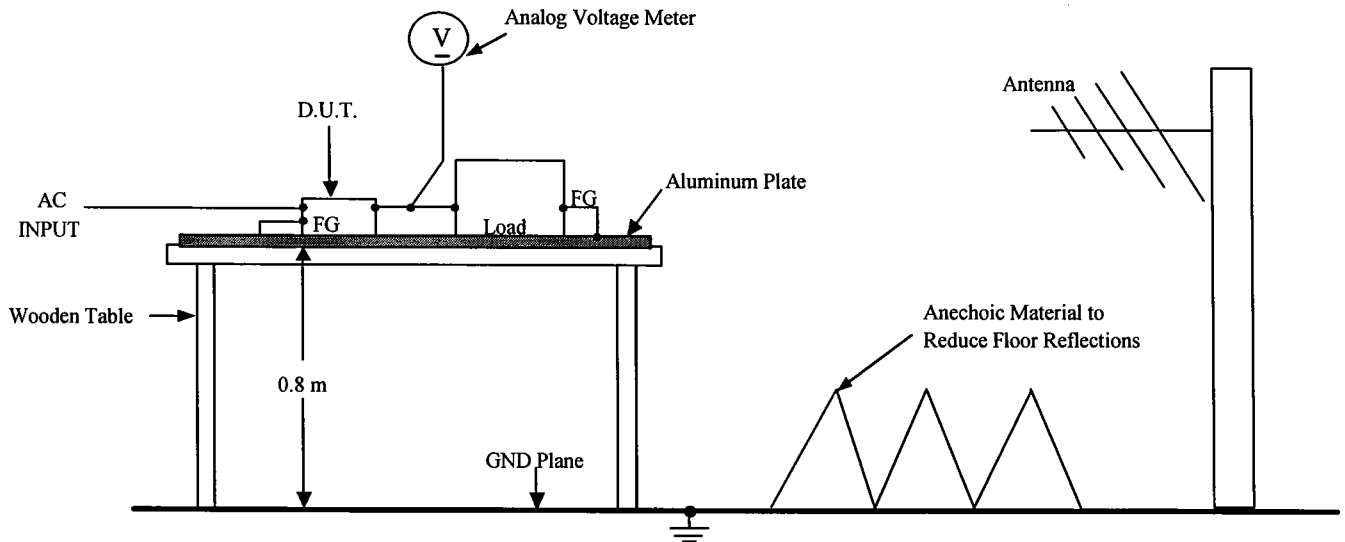
(1) Equipment Used

Test Laboratory : Productivity Standard Board (PSB) Singapore Accreditation Lab

(2) Test Conditions

Input Voltage	: 100, 230VAC	Output Voltage	: Rated
Output Current	: 100%	Amplitude Modulated	: 80%, 1kHz
Electromagnetic Frequency	: 80~1000MHz	Ambient Temperature	: 25°C
Distance	: 2.4m	Wave Angle	: Horizontal and Vertical
Sweep Conditions	: 1.0% Step up, $\leq 1.5 \times 10^{-3}$ decades/s		
Test Angle	: Front/ Back, Left/Right		

(3) Test Method



(4) Acceptable Conditions

1. Output voltage regulation not to exceed $\pm 5\%$ of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Results

Radiation Field Strength (V/m)	ZWD150PAF
1	PASS
3	PASS
10	PASS

3. Electrical fast transient / burst immunity test (IEC61000-4-4)

MODEL : ZWD150PAF

(1) Equipment Used

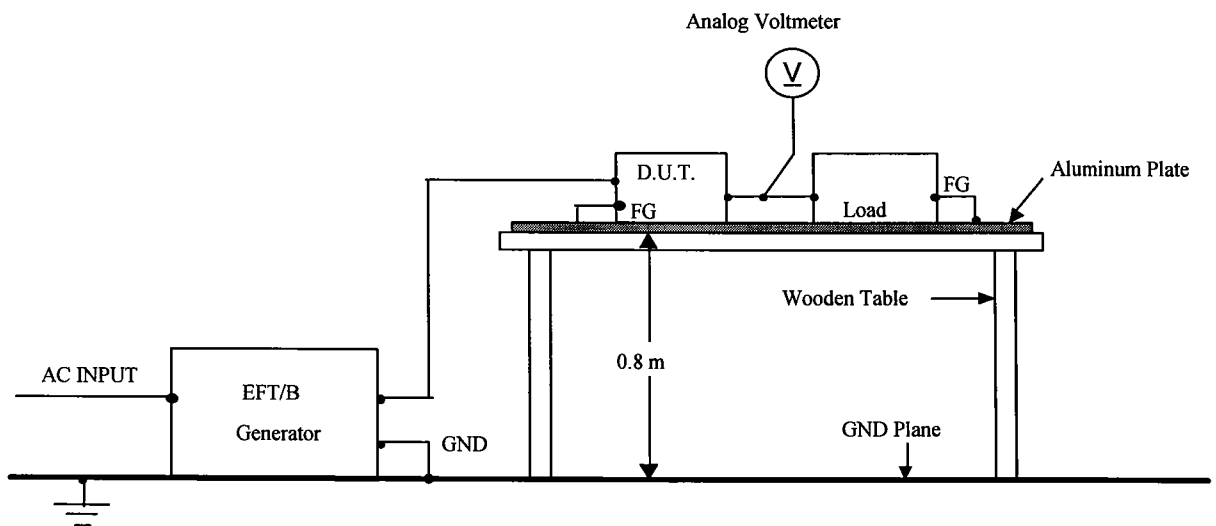
EFT/B (Generator) : NSG-2025 (SCHAFFNER Co.,LTD)

(2) Test Conditions

Input Voltage	: 100, 230VAC	Output Voltage	: Rated
Output Current	: 100%	Polarity	: +, -
Number of Tests	: 3 times	Ambient Temperature	: 25°C
Test time	: 1 minute		

(3) Test Method and Device Test Points

Apply to (N,L,FG),(NL),(N),(L),(FG)



(4) Acceptable Conditions

1. Output voltage regulation not to exceed $\pm 5\%$ of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Results

Test Voltage (kV)	Repetition Rate (kHz)	ZWD150PAF
1.0	5.0	Pass
2.0	5.0	Pass
2.4	5.0	Pass

4. Surge immunity test (IEC61000-4-5)

MODEL : ZWD150PAF

(1) Equipment Used

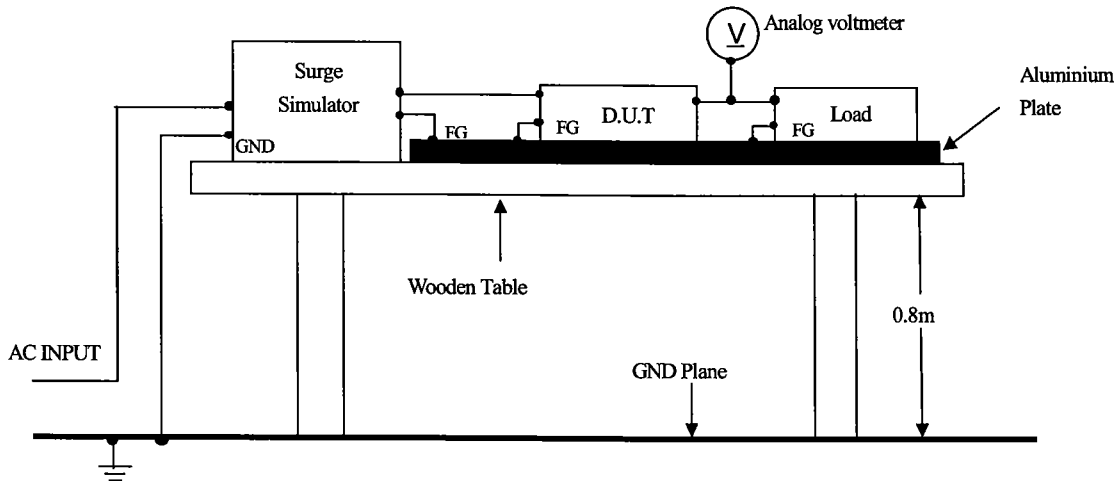
Surge Simulator	: NSG-651 (SCHAFFNER Co.,LTD)	
Coupling Impedance	: Common	12Ω
	: Normal	2Ω
Coupling Capacitance	: Common	9μF
	: Normal	18μF

(2) Test Conditions

Input Voltage	: 100, 230VAC	Output Voltage	: Rated
Output Current	: 100%	Number of Tests	: 5 times
Polarity	: +, -	Mode	: Common, Normal
Phase	: 0, 90 deg	Ambient Temperature	: 25°C

(3) Test Method and Device Test Points

Apply to Common mode (N-FG, L-FG) and Normal mode (N-L).



(4) Acceptable Conditions

- 1. Output voltage regulation not to exceed ±5% of initial (before test) value during test.
- 2. Output voltage to be within regulation specification after the test.
- 3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Results

Test Voltage (kV) Common	ZWD150PAF	Test Voltage (kV) Normal	ZWD150PAF
1.0	PASS	1.0	PASS
2.0	PASS	2.0	PASS
4.0	PASS	2.4	PASS
4.4	PASS		

5. Conducted disturbances induced by radio-frequency field immunity test (IEC61000-4-6)

MODEL : ZWD150PAF

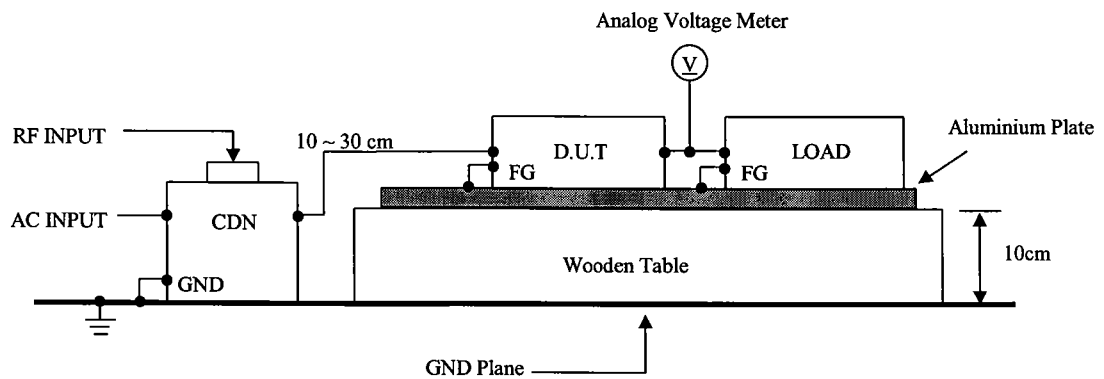
(1) Equipment Used

Test Laboratory : Productivity Standard Board (PSB) Singapore Accreditation Lab

(2) Test Conditions

Input Voltage : 100, 230VAC Output Voltage : Rated
 Output Current : 100% Electromagnetic Frequency : 150kHz~80MHz
 Ambient Temperature : 25°C
 Sweep Conditions : 1.0% Step up, $\leq 1.5 \times 10^{-3}$ decades/s

(3) Test Method



(4) Acceptable Conditions

1. Output voltage regulation not to exceed $\pm 5\%$ of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Results

Test Voltage (kV)	ZWD150PAF
1	PASS
3	PASS
10	PASS

6. Power Frequency Magnetic Field Immunity Tests (IEC61000-4-8)

MODEL : ZWD150PAF

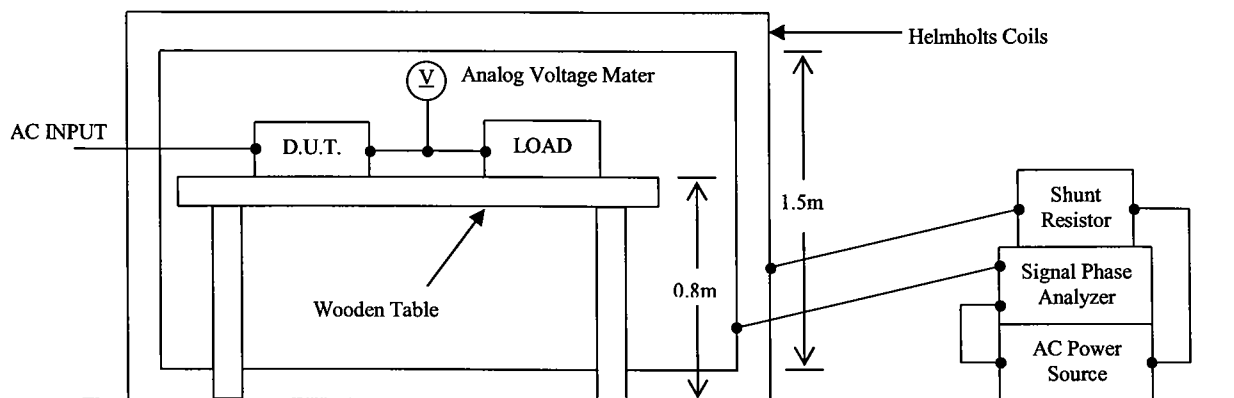
(1) Equipment Used

Test Laboratory : Productivity Standard Board (PSB) Singapore Accreditation Lab

(2) Test Conditions

Input Voltage	: 100, 230VAC	Output Voltage	: Rated
Output Current	: 100%	Magnetic Frequency	: 50Hz
Test Time	: > 10 sec (each direction)	Ambient Temperature	: 25°C
Direction	: X, Y, Z		

(3) Test Method and Device Test Point



(4) Acceptable Conditions

1. Output voltage regulation not to exceed $\pm 5\%$ of initial (before test) value during test.
2. Output voltage to be within output voltage regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test Result

Magnetic Field Strength (A/m)	ZWD150PAF
1	PASS
3	PASS
10	PASS
36	PASS

7. Voltage Dips, Short Interruptions Immunity Tests (IEC61000-4-11)

MODEL : ZWD150PAF

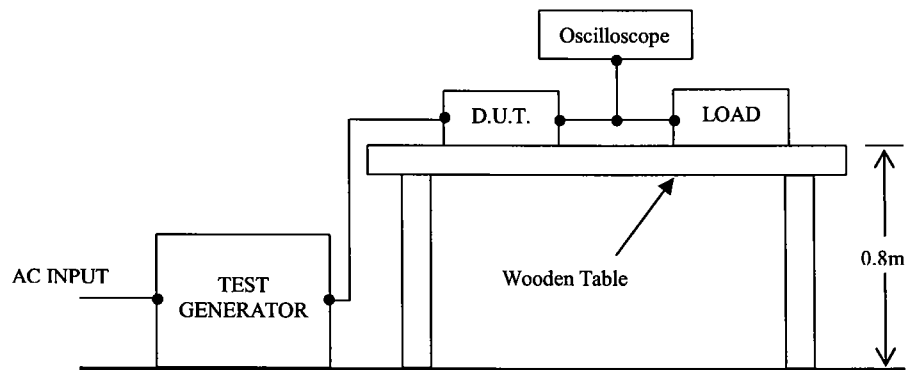
(1) Equipment Used

Programmable AC source: Schaffner 3KVA AC Power Source - NSG1007

(2) Test Conditions

Input Voltage	: 100, 230VAC	Output Voltage	: Rated
Output Current	: 100%	Ambient Temperature	: 25°C
Number of Tests	: 3 times	Test Interval	: > 10 sec.

(3) Test Method and Device Test Point



(4) Acceptable Conditions

At Test level 70%

1. Output voltage regulation not to exceed $\pm 5\%$ of initial (before test) value during test.
2. Output voltage to be within output voltage regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

At Test level 40%, 0%

1. Output voltage to be within output voltage regulation specification after the test.
2. No discharge of fire or smoke.

(5) Test Result

Test Level	Dip Rate	Continue Time	ZWD150PAF
70%	30%	10ms	PASS
40%	60%	100ms	PASS
0%	100%	5000ms	PASS