

GUS600

TEST DATA
IEC61000 SERIES

1. Electrostatic Discharge Immunity Test (IEC61000-4-2).....	R-1
2. Radiated Radio-Frequency Electromagnetic Field Immunity Test (IEC61000-4-3).....	R-2
3. Electrical Fast Transient / Burst Immunity Test (IEC61000-4-4).....	R-3
4. Surge Immunity Test (IEC61000-4-5).....	R-4
5. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6).....	R-5
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7. Voltage Dips, Short Interruptions Immunity Test (IEC61000-4-11).....	R-7

Terminology Used

FG		Frame GND
$\oplus$		Earth $\oplus$) terminal
L		Live line
N		Neutral line
$\overline{\overline{\text{---}}}$		Earth
+V		+ Output
-V		- Output

※ Test results are reference data based on our standard measurement condition.

Load Conditions

Output voltage : 12V, 24V, 36V, 48V

I _{out}	12V	24V	36V	48V
100%	50A	25A	16.7A	12.6A

1. Electrostatic Discharge Immunity Test (IEC61000-4-2)

MODEL: GUS600

(1) Equipment Used

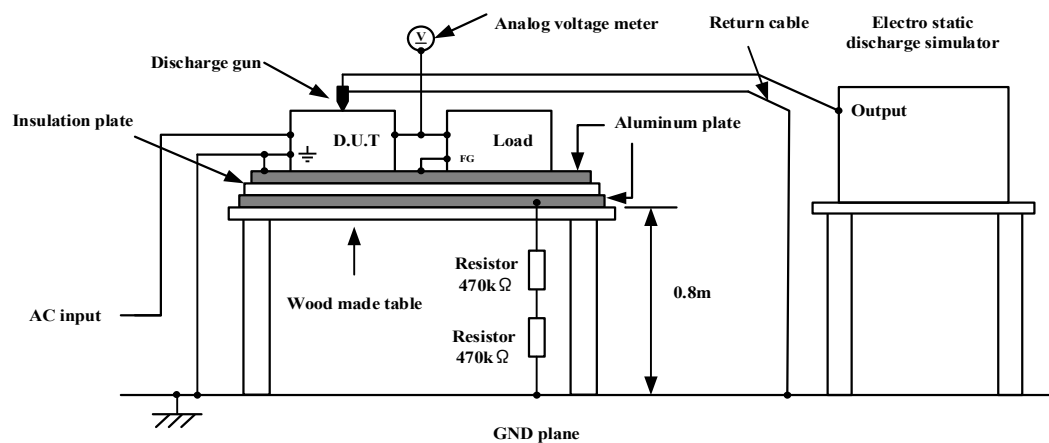
Electro Static Discharge Simulator : ESS-S3011A (NOISEKEN)
 Discharge Resistance : 330Ω Capacity : 150pF

(2) Test Conditions

• Input Voltage	: 100, 240VAC	• Output Voltage	: Rated
• Output Current	: 0%, 100%	• Polarity	: +, -
• Number of Tests	: 10 times	• Discharge Interval	: > 1 second
• Ambient Temperature	: 25°C		

(3) Test Method and Device Test Point

Contact Discharge : $\pm$, Screw
 Air Discharge : Input and Output terminal (L, N, +V, -V)



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Contact Discharge (kV)	GUS600-12 /24/36/48
2	PASS
4	PASS
6	PASS
8	PASS

Air Discharge(kV)	GUS600-12 /24/36/48
2	PASS
4	PASS
8	PASS
15	PASS

2. Radiated Radio-Frequency Electromagnetic Field Immunity Test (IEC61000-4-3)

MODEL: GUS600

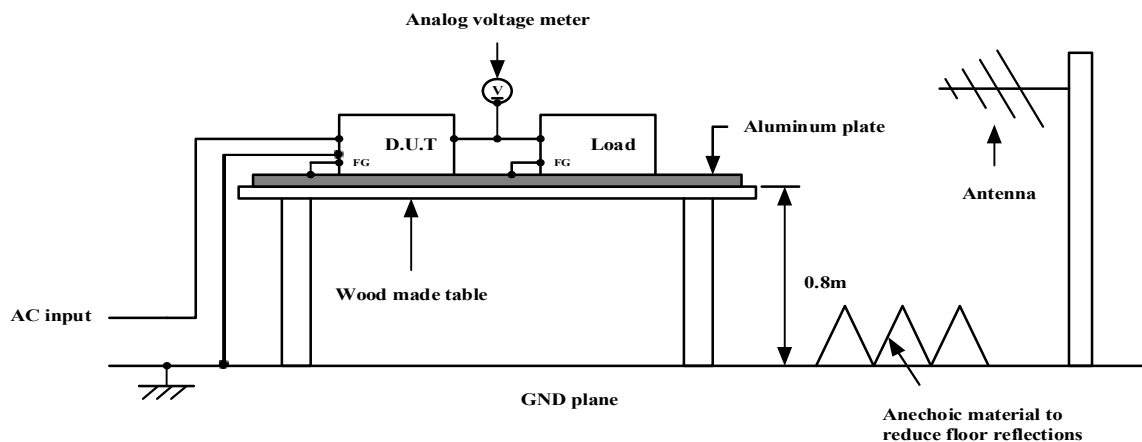
(1) Equipment Used

Signal generator	: MG3692B (Anritsu)
Power amplifier system	: 80RF1000-175 (AMETEK)
	: AS0102-65 (AMETEK)
	: AS1860-50 (AMETEK)
Log Periodic Broadband Antenna	: VULP 9118E (Schwarzbeck)
Stacked Double Log-Per Antenna	: STLP 9149 (Schwarzbeck)

(2) Test Conditions

• Input Voltage	: 100, 240VAC	• Output Voltage	: Rated
• Output Current	: 0%, 100%	• Amplitude Modulated	: 80%, 1KHz
• Wave Angle	: Horizontal and Vertical	• Ambient Temperature	: 25°C
• Sweep Condition	: 1.0% step up, 0.5 seconds hold	• Distance	: 3.0m
• Test Angle	: Top/Bottom, Both Sides, Front/Back		
• Electromagnetic Frequency	: 80~1000MHz , 1.4~2.0GHz , 2.0~2.7GHz		

(3) Test Method



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Radiation Field Strength (V/m)	Electromagnetic Frequency	GUS600-12/24/36/48
3	1.4~6.0GHz	PASS
10	80~1000MHz	PASS

3. Electrical Fast Transient / Burst Immunity Test (IEC61000-4-4)

MODEL: GUS600

(1) Equipment Used

EFT/B Generator : EMS61000-4A (EVERFINE)

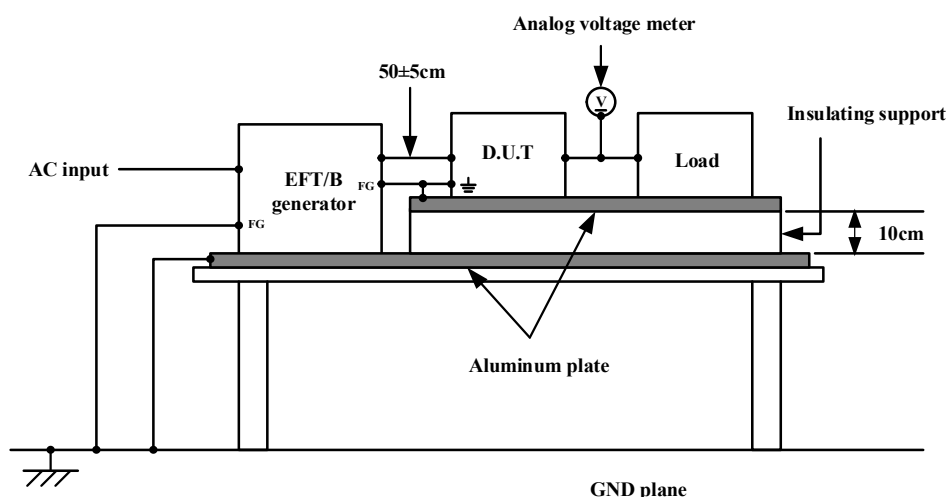
Coupling Clamp : EFTC-2 (EVERFINE)

(2) Test Conditions

• Input Voltage	: 100, 240VAC	• Output Voltage	: Rated
• Output Current	: 0%, 100%	• Test Time	: 1 minute
• Polarity	: +, -	• Ambient Temperature	: 25°C
• Number of Tests	: 1 time	• Pulse Frequency	: 5kHz / 100kHz
• Burst Time	: 15msec / 0.75msec	• Number of Pulse	: 75pcs
• Burst Cycle	: 300msec		

(3) Test Method and Device Test Point

Apply to (N, L, ϕ), (V+, V-)



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Test Point	Test Voltage (kV)	GUS600-12 /24/36/48
Input Power Port and Enclosure Port	0.5	PASS
	1	PASS
	2	PASS
	4	PASS

Test Point	Test Voltage (kV)	GUS600-12 /24/36/48
Output Power Port	0.25	PASS
	0.5	PASS
	1	PASS
	2	PASS

Test Point	Test Voltage (kV)	GUS600-12 /24/36/48
Signal Port	0.25	PASS
	0.5	PASS
	1	PASS
	-	-

4. Surge Immunity Test (IEC61000-4-5)

MODEL: GUS600

(1) Equipment Used

Surge Generator : LSS-F03 (NOISEKEN)

Coupling Impedance : Common 12Ω
Normal 2Ω

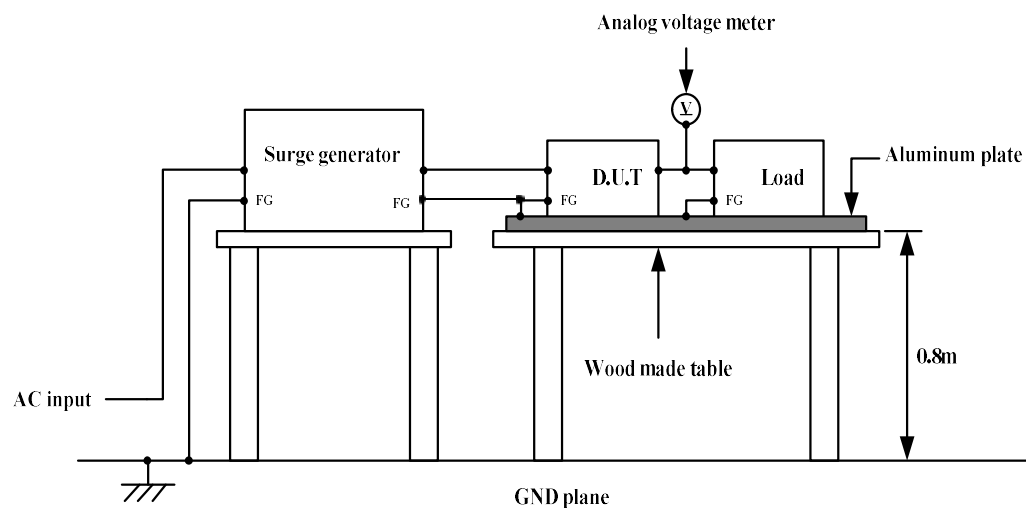
Coupling Capacitance : Common 9μF
Normal 18μF

(2) Test Conditions

- Input Voltage : 100, 240VAC
- Output Current : 0%, 100%
- Polarity : +, -
- Phase : 0, 90, 180, 270deg
- Output Voltage : Rated
- Number of Tests : 5 times
- Mode : Common and Normal
- Ambient Temperature : 25°C

(3) Test Method and Device Test Point

Apply to Common mode (N- $\oplus$, L- $\oplus$) and Normal mode (N-L).



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Common	
Test Voltage (kV)	GUS600-12 /24/36/48
0.5	PASS
1	PASS
2	PASS
4	PASS

Normal	
Test Voltage (kV)	GUS600-12 /24/36/48
0.5	PASS
1	PASS
2	PASS

5. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6)

MODEL: GUS600

(1) Equipment Used

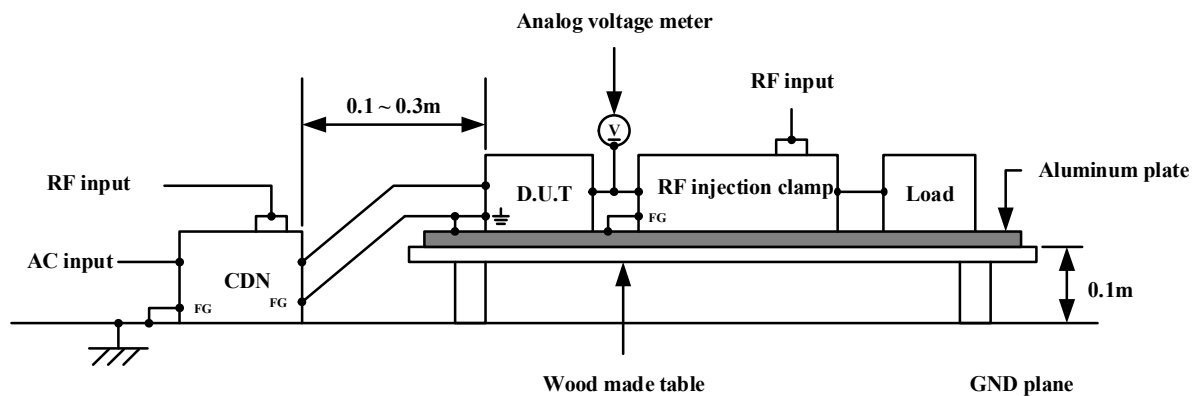
Compact RF Generator : CIT-10-75 (FRANKONIA)
 Coupling-Decoupling Network : CDN-M1 (FRANKONIA)
 : CDN-M2+3-32A (FRANKONIA)

(2) Test Conditions

• Input Voltage : 100, 240VAC • Output Voltage : Rated
 • Output Current : 0%, 100% • Electromagnetic Frequency : 150kHz~80MHz
 • Ambient Temperature : 25°C
 • Sweep Condition : 1.0% step up, 0.5 seconds hold

(3) Test Method and Device Test Point

Apply to (N, L, $\frac{\Delta}{\Delta}$), (V+, V-)



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Voltage Level (V)	GUS600-12 /24/36/48
1	PASS
3	PASS
10	PASS

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

MODEL: GUS600

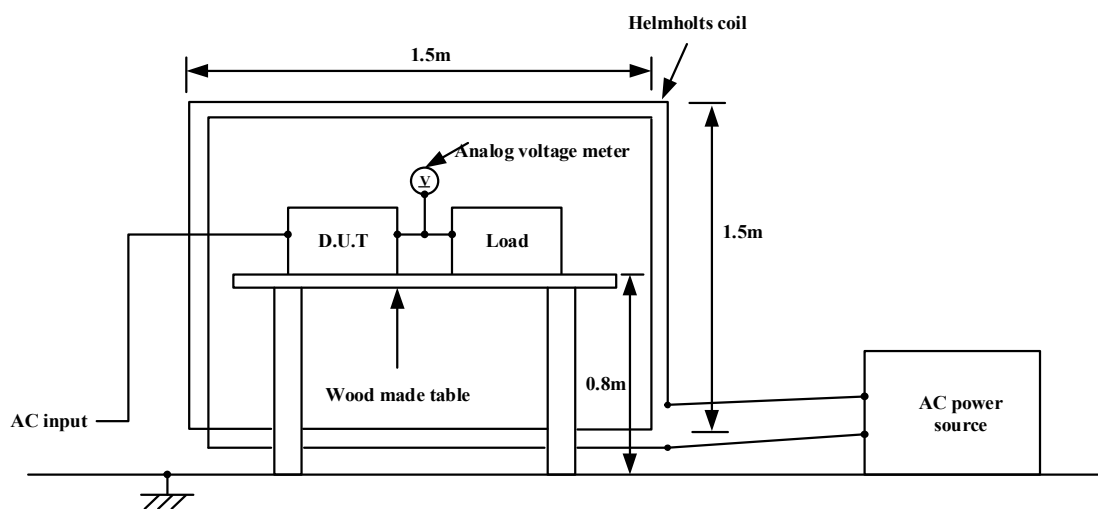
(1) Equipment Used

PFM Test System : PFM61008TM (PRECIMA)

(2) Test Conditions

- Input Voltage : 100, 240VAC
- Output Current : 100%
- Ambient Temperature : 25°C
- Test Time : More than 10 seconds (each direction)
- Output Voltage : Rated
- Magnetic Frequency : 50Hz
- Direction : X, Y, Z

(3) Test Method



(4) Acceptable Conditions

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Magnetic Field Strength (A/m)	GUS600-12 /24/36/48
1	PASS
3	PASS
10	PASS
30	PASS

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

MODEL: GUS600

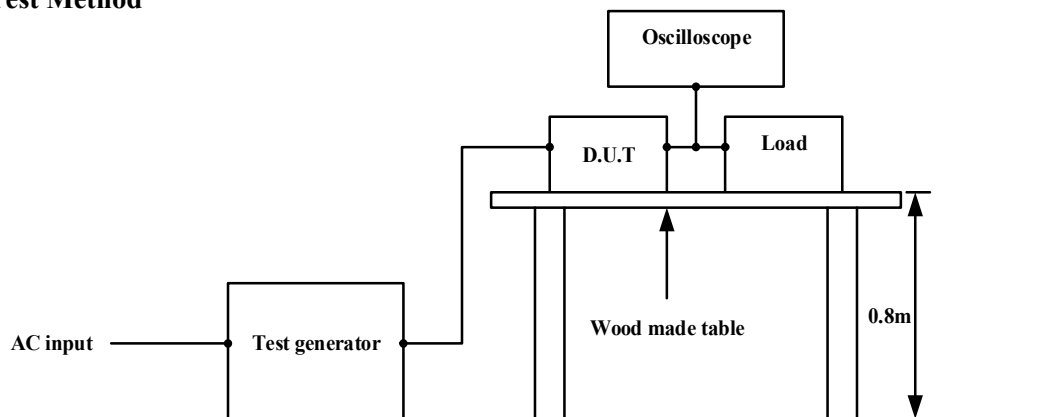
(1) Equipment Used

Test generator : PCR2000LA(KIKUSUI)

(2) Test Conditions

•Input Voltage	: 100, 240VAC	•Output Voltage	: Rated
•Output Current	: 100%	•Ambient Temperature	: 25°C
•Number of Tests	: 3 times	•Test Interval	: More than 10 seconds

(3) Test Method



(4) Acceptable Conditions

Criteria A

1. The regulation of output voltage must not exceed 5% of initial value during test.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

Criteria B

1. Must not have temporary function degradation that requires input restart.
2. The output voltage must be within the regulation of specification after the test.
3. Smoke and fire are not allowed.

(5) Test Result

Input Voltage Range	Test Level	Dip Rate	Continue Time	Criteria	GUS600-12 /24/36/48
100 ~ 120VAC	80%	20%	5000ms	A	PASS
	70%	30%	500ms	A	PASS
	40%	60%	200ms	A: $\leq 240W$, B: $> 240W$	PASS
	0%	100%	10ms	A	PASS
	0%	100%	20ms	A: $\leq 320W$, B: $> 320W$	PASS
	0%	100%	5000ms	B	PASS
200 ~ 240VAC	80%	20%	5000ms	A	PASS
	70%	30%	500ms	A	PASS
	40%	60%	200ms	A	PASS
	0%	100%	10ms	A	PASS
	0%	100%	20ms	A: $\leq 320W$, B: $> 320W$	PASS
	0%	100%	5000ms	B	PASS