360248

MU

IMMUNITY DATA

Template	260584 iss 1		
Doc No.	360248 iss 1		
	APPD	CHK	DWG
Sign			
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Date	08/10/2025	08/10/2025	08/10/2025

I N D E X

Terminology used

FG	…	Frame GND
L	…	Live Line
N	…	Neutral line
≒	…	Earth
+V	…	+ Output
–V	…	– Output

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

1. Summary of Immunity Test Results[1]

MODEL : MU4

Item	Standard	Test level	Criteria	Result	Page	Notes & Conditions
Electrostatic Discharge Immunity Test	IEC61000-4-2	4	A	PASS	5	
Radiated Radio-Frequency Electromagnetic Field Immunity Test	IEC61000-4-3	3	A	PASS	6	
	IEC60601-1-2	Proximity Field to Table 9	A	PASS	6	
Electrical Fast Transient / Burst Immunity Test	IEC61000-4-4	3	A	PASS	7	
Surge Immunity	IEC61000-4-5	3	A	PASS	8	
Conducted Disturbances Induced by Radio-Frequency Field Immunity Test	IEC61000-4-6	3	A	PASS	9	
Power Frequency Magnetic Field Immunity Test	IEC61000-4-8	4	A	PASS	10	
Voltage Dips, Short Interruptions Immunity Test	IEC61000-4-11	70%, 25 cycles	A/B	PASS	11	Dependent on output power, see 260791 MU Electromagnetic Compatibility Report for full details.
		40%, 10 cycles	A/B			
		0%, 1 cycle	A/B			
		0%, 250 cycles	B			
		0%, 0.5 cycles	A			
		80%, 250 cycles	A			

MODEL : MU6

Item	Standard	Test level	Criteria	Result	Page	Notes & Conditions
Electrostatic Discharge Immunity Test	IEC61000-4-2	4	A	PASS	5	
Radiated Radio-Frequency Electromagnetic Field Immunity Test	IEC61000-4-3	3	A	PASS	6	
	IEC60601-1-2	Proximity Field to Table 9	A	PASS	6	
Electrical Fast Transient / Burst Immunity Test	IEC61000-4-4	3	A	PASS	7	
Surge Immunity	IEC61000-4-5	3	A	PASS	8	
Conducted Disturbances Induced by Radio-Frequency Field Immunity Test	IEC61000-4-6	3	A	PASS	9	
Power Frequency Magnetic Field Immunity Test	IEC61000-4-8	4	A	PASS	10	
Voltage Dips, Short Interruptions Immunity Test	IEC61000-4-11	70%, 25 cycles	A/B	PASS	11	Dependent on output power, see 260791 MU Electromagnetic Compatibility Report for full details.
		40%, 10 cycles	A/B			
		0%, 1 cycle	A/B			
		0%, 250 cycles	B			
		0%, 0.5 cycles	A			
		80%, 250 cycles	A			

[1] Full EMC Results for the MU Family are in document 260791 – MU Electromagnetic Compatibility Report.

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 test.
3. Smoke and fire are not allowed.

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

MODELS: MU4FSDL T5H 5SBSL 12SBSL 24SBSL 48SBSL and MU6FSDL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL

(1) Equipment Used

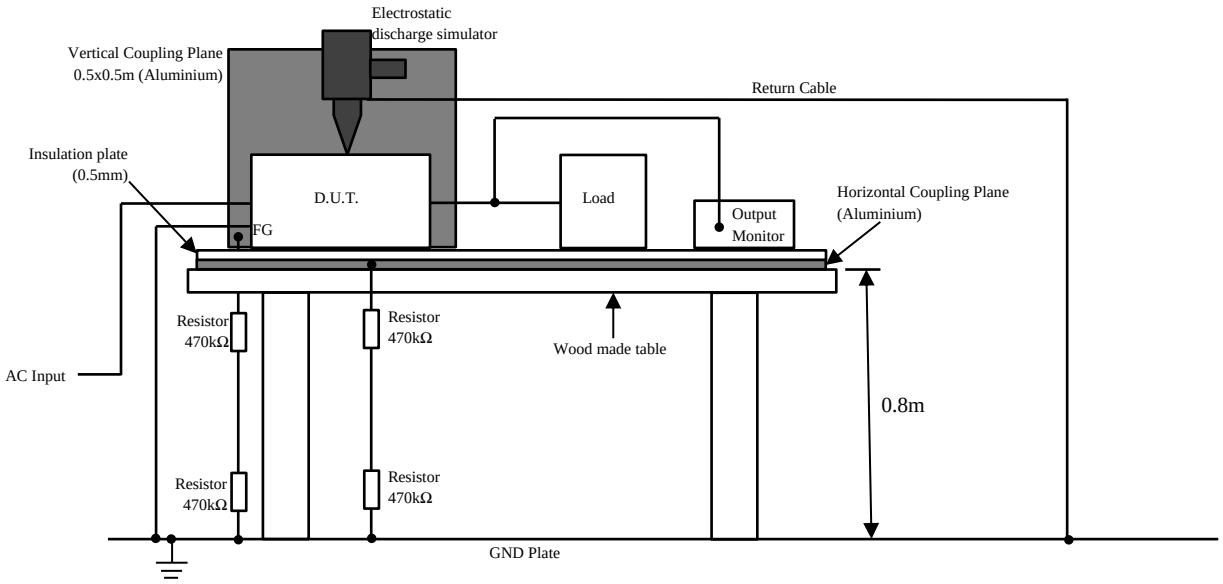
Electro Static Discharge Simulator :NSG435 (Schaffner)
Discharge Resistance: 330Ω Capacity: 150pF

(2) Test Conditions

Input Voltage	:230VAC	Output Voltage	:Rated
Output Current	:Full Load	Polarity	+,–
Number of Tests	:10 times	Discharge Interval	:>1 second
Ambient Temperature	:22°C		

(3) Test Method and Device Test Point

Contact Discharge :FG, Case, HCP, VCP
Air Discharge : No test points



(4) Acceptable Conditions

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

(5) Test Result

Contact Discharge (kV)	MU4	MU6	Air Discharge (kV)	MU4	MU6
2	N/A	N/A	2	N/A	N/A
4	N/A	N/A	4	N/A	N/A
6	N/A	N/A	8	N/A	N/A
8	PASS	PASS	15	PASS	N/A

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

MODELS: MU4FSDL T5H 5SBSL 12SBSL 24SBSL 48SBSL and MU6FSDL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL

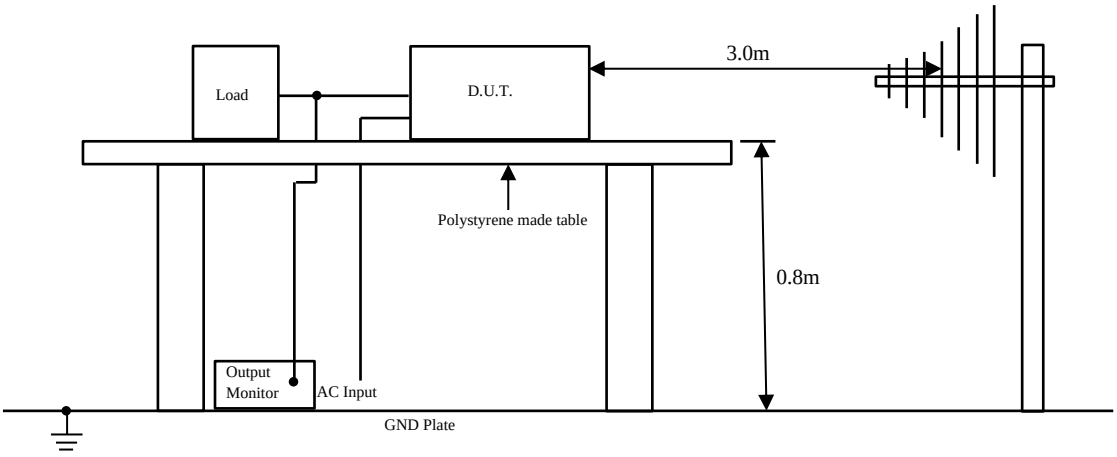
(1) Equipment Used

Signal Generator	:Rohde & Schwarz SMB 100A
Power Amplifier	:Prâna MT200
Power Amplifier	: Prâna SX220-55
Electric Field Sensor	:AR FL7006 Kit
Bilog Antenna	:Schwarzbeck VULP 9118E
Horn Antenna	: TDK RF Solutions HRN-0118

(2) Test Conditions

Input Voltage	: 230VAC	Output Voltage	:Rated
Output Current	: 100%	Amplitude Modulated	:80% 1kHz
Wave Angle	:Horizontal and Vertical	Ambient Temperature	:21°C
Test Angle	:Top/Bottom, Both Sides, Front/Back	Electromagnetic Frequency	:80~1000MHz, 1.0~6.0GHz

(3) Test Method



(4) Acceptable Conditions

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

(5) Test Result

Radiation Field Strength (V/m)	Electromagnetic Frequency	MU4	MU6
10	80~1000MHz	PASS	PASS
10	1.0~6.0GHz	PASS	PASS
IEC60601-1-2 Proximity Field, Table 9	380~5800MHz	PASS	PASS
CISPR 35 Table 1, 1.3	1.8~5.0GHz	PASS	PASS

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

MODELS: MU4FSDL T5H 5SBSL 12SBSL 24SBSL 48SBSL and MU6FSDL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL

(1) Equipment Used

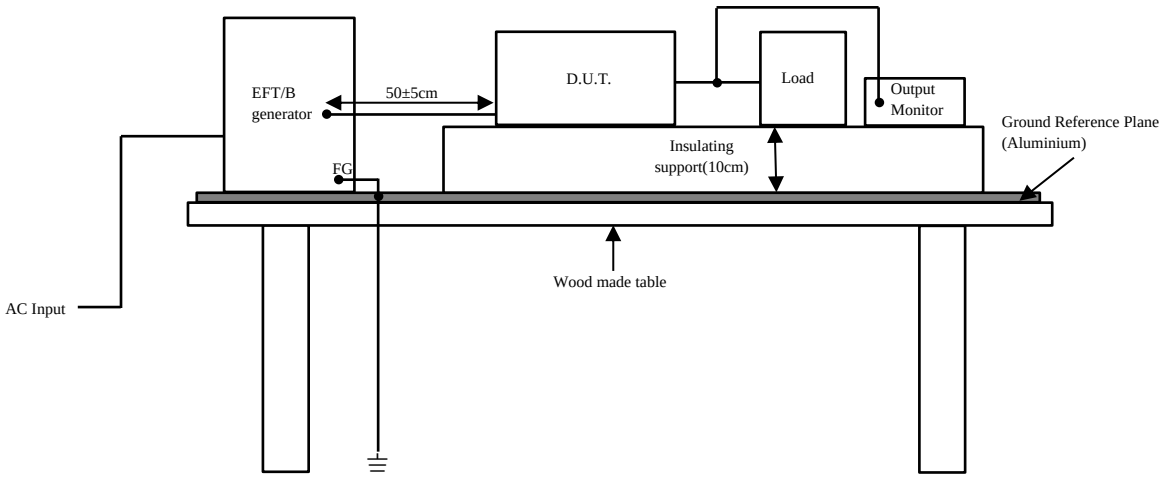
EFT/B Generator	:EMC Partner TRA2000IN6
EFT/B Generator	:EMC Partner IMU-MGE
Capacitive Coupling Clamp	:EMC Partner CN-EFT1000
Capacitive Coupling Clamp	:Schaffner CDN125

(2) Test Conditions

Input Voltage	:100, 230VAC	Output Voltage	:Rated
Output Current	:0, 100%	Test Time	:1 minute
Polarity	:+,–	Ambient Temperature	22°C
Number of Tests	:3 times	Pulse Frequency	:5kHz & 100kHz
Burst Time	:15ms, 0.75ms	Number of Pulse	:75
Burst Cycle	:300ms		

(3) Test Method and Device Test Point

Apply to (N,L,FG), (+V, –V).



(4) Acceptable Conditions

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

(5) Test Result

Test Voltage (kV)	MU4	MU6
0.5	N/A	N/A
1	N/A	N/A
2	PASS	PASS
4	N/A	N/A

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

MODEL: MU4FSDL T5H 5SBSL 12SBSL 24SBSL 48SBSL and MU6FSDL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL

(6) Equipment Used

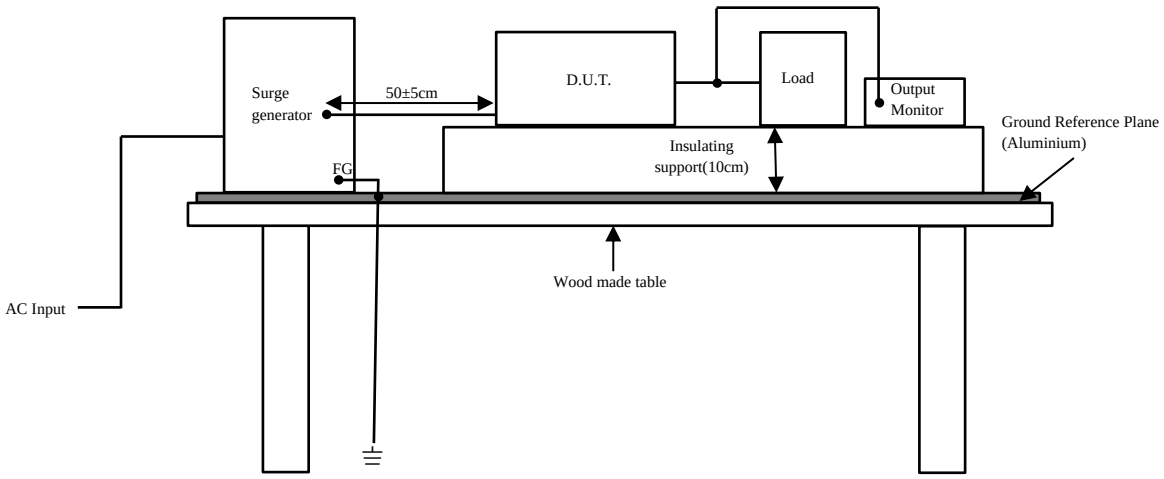
Surge Generator	:EMC Partner TRA2000IN6
Surge Generator	:EMC Partner IMU-MGE
Coupling Impedance	:Common – 12Ω, Normal – 2Ω
Coupling Capacitance	:Common – 9μF, Normal – 18μF

(7) Test Conditions

Input Voltage	:100, 240VAC	Output Voltage	:Rated
Output Current	:0, 100%	Number of Tests	:5
Polarity	:+,–	Mode	:Common, Normal
Phase	:0°,90°,180°,270°	Ambient Temp	: 22°C

(8) Test Method and Device Test Point

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



(9) Acceptable Conditions

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

(10) Test Result

Common			Normal		
Test Voltage (kV)	MU4	MU6	Test Voltage (kV)	MU4	MU6
0.5	PASS	PASS	0.5	PASS	PASS
1	PASS	PASS	1	PASS	PASS
2	PASS	PASS	2	N/A	N/A
4	N/A	N/A			

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

MODEL: MU4FSDL T5H 5SBSL 12SBSL 24SBSL 48SBSL and MU6FSDL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL 12SBSL

(1) Equipment Used

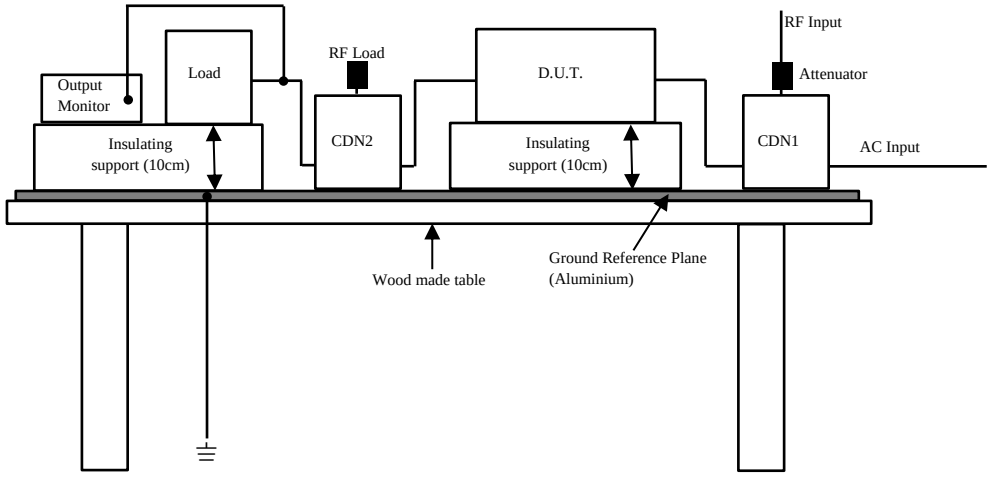
Signal Generator	:Rohde & Schwarz SMB 100A
Power Amplifier	:Ophir RF 5084
Power Amplifier	:Prâna N-DP 340
CDNs	:Com-Power CDN M350E, Schwarzbeck CDN M2 32A, Schwarzbeck CDN M2 125A
Attenuator	:Fairview Microwave SA3N10W-10 & Fairview Microwave SA4N251-06
RF Load	:Fairview Microwave ST3N252

(2) Test Conditions

Input Voltage	:100, 240VAC	Output Voltage	:Rated
Output Current	:100%	Electromagnetic Frequency	:150kHz~80MHz
Ambient Temp	: 22°C	Sweep Condition	:1.0% step up, 0.5 seconds hold

(3) Test Method and Device Test Point

Apply to (N, L, FG) and (+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 test.
3. Smoke and fire are not allowed.

(5) Test Result

Voltage Level (V)	MU4	MU6
1	N/A	N/A
3	N/A	N/A
10	PASS	PASS

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

MODEL: MU4FSDL T5H 5SBSL 12SBSL 12SBSL 48SBSL and MU6NSDL 12SCSG 24SCSG 48SCSG

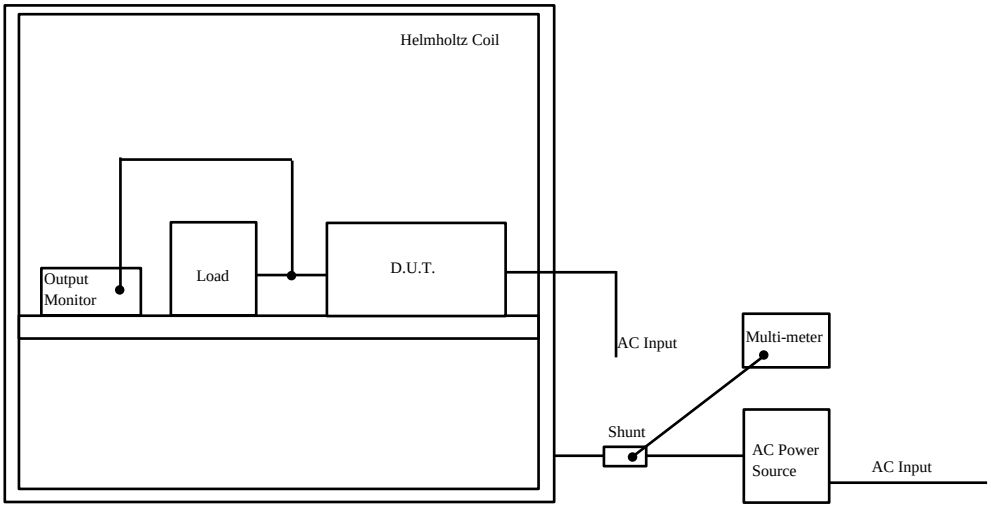
(1) Equipment Used

AC Power Source	:California Instruments 2750L-PT
Helmholtz Coil	:TLU HHC02
Current Shunt	:P74 Calibrated Shunt
Multimeter	:Fluke 287 DMM

(2) Test Conditions

Input Voltage	: 230VAC	Output Voltage	:Rated
Output Current	: 100%	Magnetic Frequency	:50Hz, 60Hz
Ambient Temp	: 22°C	Direction	:X,Y,Z
Test Time (continuous)	: >30 seconds	Test Time (short duration)	:3 seconds

(3) Test Method and Device Test Point



(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 test.
3. Smoke and fire are not allowed.

(5) Test Result

Continuous Magnetic Field Strength (A/m)	Short Term Magnetic Field Strength (A/m)	MU4	MU6
1	-	N/A	N/A
3	-	N/A	N/A
10	-	N/A	N/A
30	300	PASS	PASS

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

MODELS: MU4FSDL T5H 5ZCSJ 24YCSL and MU6NSDL 12SCSG 24SCSG 48SCSG

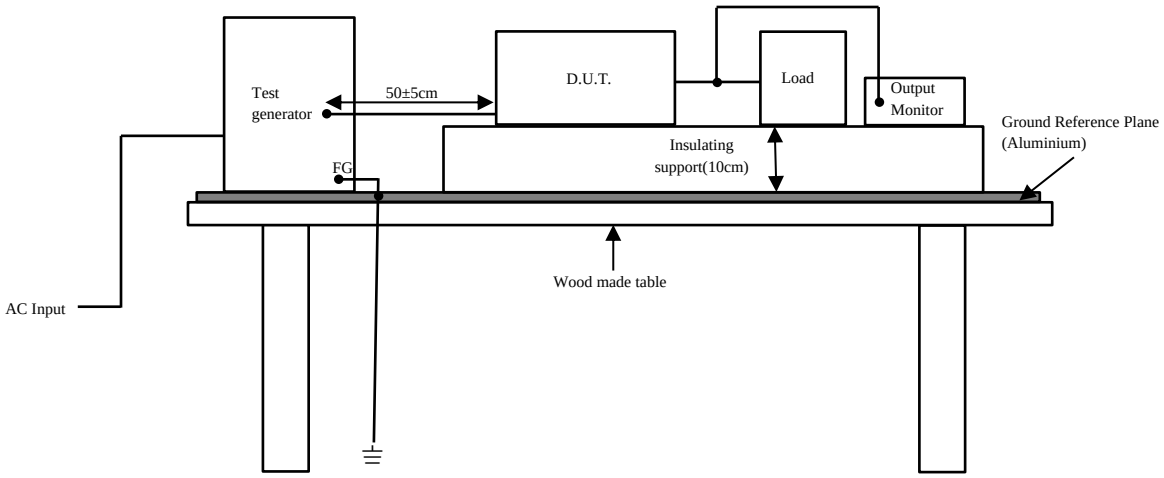
(1) Equipment Used

Test Generator :EMC Partner TRA2000IN6 and IMU-MGE

(2) Test Conditions

Input Voltage	:100, 240VAC	Output Voltage	:Rated
Output Current	:100%	Number of Tests	:3 times
Test Interval	:More than 10 seconds	Mains Frequency	: 50Hz
Ambient Temp	: 22°C	Phase Angle (0.5 cycle)	:0°,45°,90°135°,180°,225°,270°,315°

(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 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 test.
3. Smoke and fire are not allowed.

(5) Test Result

Test Level	Continue Time	Criteria	MU4	MU6
70%	25 cycles	A/B[2]	PASS	PASS
40%	10 cycles	A/B[2]	PASS	PASS
0%	1 cycle	A/B[2]	PASS	PASS
0%	250 cycles	B	PASS	PASS
0%	0.5 cycles	A	PASS	PASS
80%	250 cycles	A	PASS	PASS

[2] Dependant on output power, see 260791 MU Electromagnetic Compatibility Report for full details.