

# CUS250M


# IMMUNITY DATA

Template	260584 iss 1
DWG No.	260929 iss 1

# INDEX

1.	Summary of Immunity Test Result.....	3
2.	Electrostatic Discharge Immunity Test (IEC61000-4-2) .....	4
3.	Radiated Radio-Frequency Electromagnetic Field Immunity Test (IEC61000-4-3) .....	5
4.	Electrical Fast Transient/Burst Immunity Test (IEC61000-4-4).....	6
5.	Surge Immunity Test (IEC61000-4-5).....	7
6.	Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6) .....	8
7.	Power Frequency Magnetic Field Immunity Test (IEC61000-4-8).....	9
8.	Voltage Dips, Short Interruptions Immunity Test (IEC61000-4-11).....	10

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 Result

**MODEL : CUS250M**

Item	Standard	Test level	Criteria	Result	Page	Notes & Conditions
Electrostatic Discharge Immunity Test	IEC61000-4-2	1,2,3,4	A	PASS	4	
Radiated Radio-Frequency Electromagnetic Field Immunity Test	IEC61000-4-3	3	A	PASS	5	
	IEC60601-1-2	Proximity Field to Table 9	A	PASS	5	
Electrical Fast Transient / Burst Immunity Test	IEC61000-4-4	4	A	PASS	6	
Surge Immunity	IEC61000-4-5	1,2,3	A	PASS	7	
Conducted Disturbances Induced by Radio-Frequency Field Immunity Test	IEC61000-4-6	3	A	PASS	8	
Power Frequency Magnetic Field Immunity Test	IEC61000-4-8	4	A	PASS	9	
Voltage Dips, Short Interruptions Immunity Test	IEC61000-4-11	70%, 25 cycles	A	PASS	10	Criteria A is load and line dependent, see 260792 CUS250M Electromagnetic Compatibility Report for full details.
		40%, 10 cycles	A			
		0%, 1 cycle	A			
		0%, 250 cycles	B			
		0%, 0.5 cycles	A			
		80%, 250 cycles	A			

### 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)

**MODEL : CUS250M-12/J CUS250M-24/J**

### (1) Equipment Used

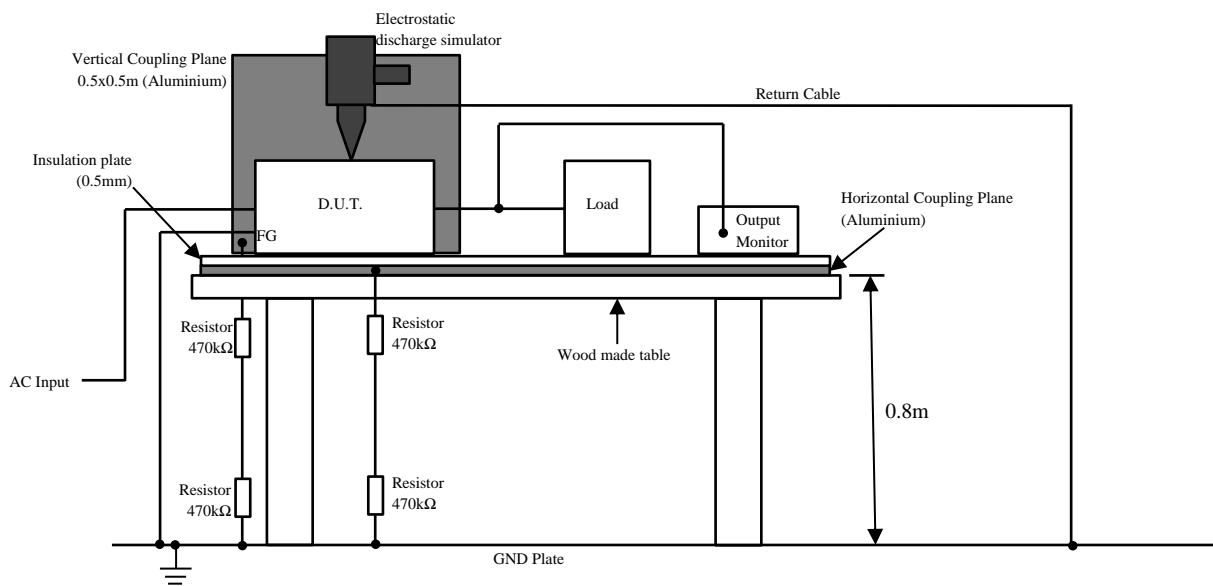
Electro Static Discharge Simulator :NSG435 (Schaffner)  
 Discharge Resistance: 330Ω Capacity: 150pF

### (2) Test Conditions

Input Voltage	:230VAC	Output Voltage	:Rated
Output Current	:20.8A	Polarity	+,-
Number of Tests	:10 times	Discharge Interval	:>1 second
Ambient Temperature	:21°C		

### (3) Test Method and Device Test Point

Contact Discharge	:FG, Case, AC Input, DC Outputs, Signals, Controls, HCP, VCP
Air Discharge	: None



### (4) Acceptable Conditions

- Criteria A

### (5) Test Result

Contact Discharge (kV)	CUS250M-12/J	CUS250M-24/J	Air Discharge (kV)	CUS250M-12/J	CUS250M-24/J
2	N/A	N/A	2	N/A	N/A
4	N/A	N/A	4	N/A	N/A
6	PASS <sup>1</sup>	PASS <sup>1</sup>	8	N/A	N/A
8	PASS <sup>2</sup>	PASS <sup>2</sup>	15	N/A	N/A

<sup>1</sup> DC Outputs, Signals & Controls

<sup>2</sup> FG, Case, AC Input, HCP, VCP

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

**MODEL: CUS250M-12/J CUS250M-24/J**

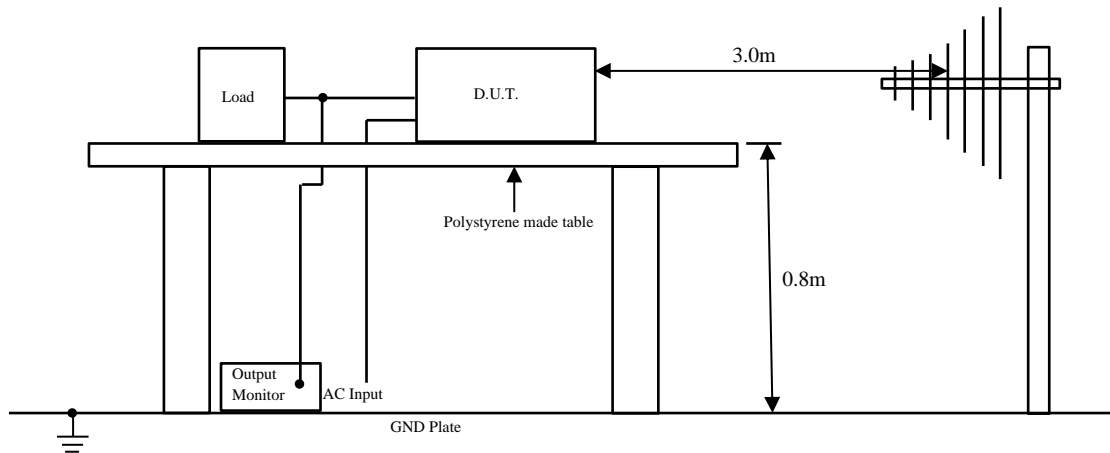
#### (1) Equipment Used

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	:80~6000MHz,

#### (3) Test Method



#### (4) Acceptable Conditions

- Criteria A

#### (5) Test Result

Radiation Field Strength (V/m)	Electromagnetic Frequency	CUS250M-12/J	CUS250M-24/J
10	80~6000MHz	PASS	PASS
IEC60601-1-2 Proximity Field, Table 9	380~5800MHz	PASS	PASS

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

**MODEL: CUS250M-12/J CUS250M-24/J**

#### (1) Equipment Used

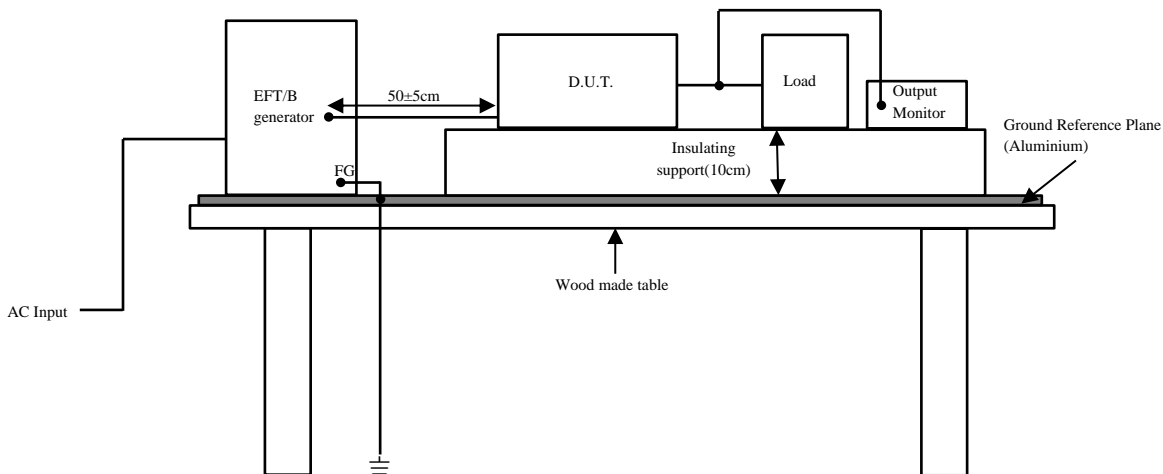
EFT/B Generator	:EMC Partner TRA2000IN6
Capacitive Coupling Clamp	:EMC Partner CN-EFT1000
Capacitive Coupling Clamp	:Schaffner CDN125

#### (2) Test Conditions

Input Voltage	:100, 230VAC	Output Voltage	:Rated
Output Current	:100%	Test Time	:1 minute
Polarity	:+,-	Ambient Temperature	21°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

- Criteria A

#### (5) Test Result

Test Voltage (kV)	CUS250M-12/J	CUS250M-24/J
0.5	N/A	N/A
1	N/A	N/A
2	N/A	N/A
4	PASS	PASS

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

**MODEL: CUS250M-12/J CUS250M-24/J**

#### (6) Equipment Used

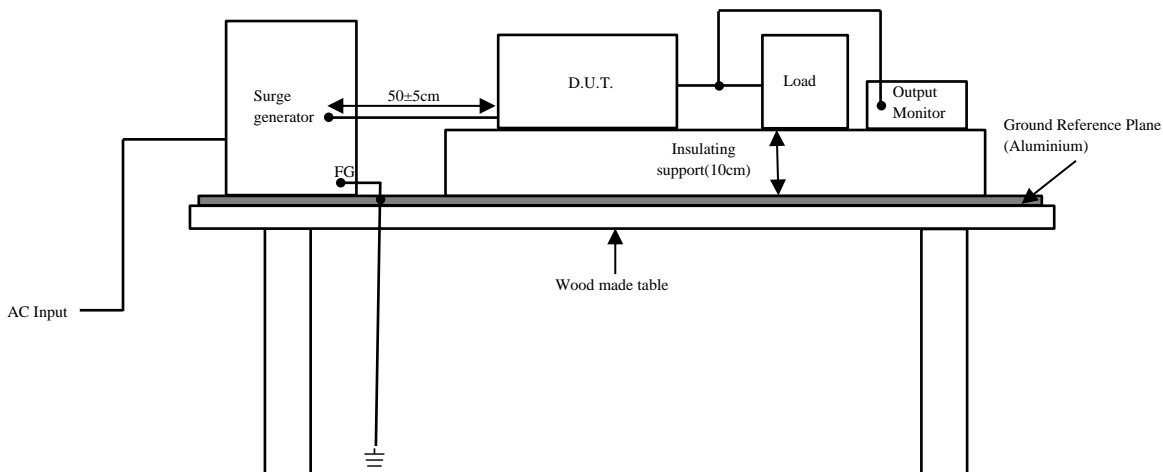
Surge Generator	:EMC Partner TRA2000IN6
Coupling Impedance	:Common – 12Ω, Normal – 2Ω
Coupling Capacitance	:Common – 9μF, Normal – 18μF

#### (7) Test Conditions

Input Voltage	:100, 230VAC	Output Voltage	:Rated
Output Current	:100%	Number of Tests	:5
Polarity	:+,-	Mode	:Common, Normal
Phase	:0°,90°,180°,270°	Ambient Temp	: 21°C

#### (8) Test Method and Device Test Point

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



#### (9) Acceptable Conditions

- Criteria A

#### (10) Test Result

Common			Normal		
Test Voltage (kV)	CUS250M-12/J	CUS250M-24/J	Test Voltage (kV)	CUS250M-12/J	CUS250M-24/J
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: CUS250M-12/J CUS250M-24/J**

### (1) Equipment Used

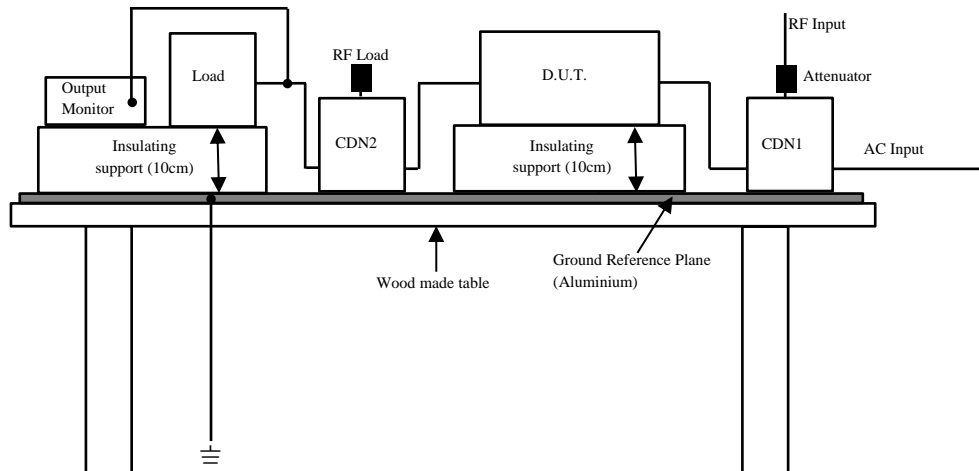
Signal Generator	:Rohde & Schwarz SMB 100A
Power Amplifier	:Ophir RF 5084
CDN1	:Com-Power CDN M350E
CDN2	:Schwarzbeck CDN M2 32A
CDN3	:Schwarzbeck CDN AF2
Attenuator	:Fairview Microwave SA3N10W-10
Attenuator	:Fairview Microwave SA4N251-06
RF Load	:Fairview Microwave ST3N252

### (2) Test Conditions

Input Voltage	:100, 230VAC	Output Voltage	:Rated
Output Current	:100%	Electromagnetic Frequency	:150kHz~80MHz
Ambient Temp	: 21°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. Criteria A

### (5) Test Result

Voltage Level (V)	CUS250M-12/J	CUS250M-24/J
1	N/A	N/A
3	N/A	N/A
10	PASS	PASS



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

**MODEL: CUS250M-12/J CUS250M-24/J**

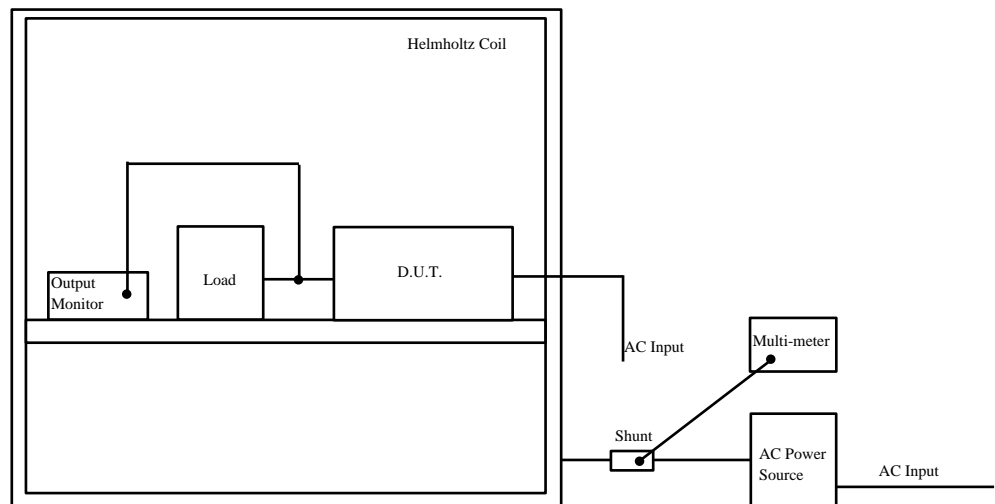
### (1) Equipment Used

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	: 18°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

- Criteria A

### (5) Test Result

Continuous Magnetic Field Strength (A/m)	Short Term Magnetic Field Strength (A/m)	CUS250M-12/J	CUS250M-24/J
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)

**MODEL: CUS250M-12/J CUS250M-24/J**

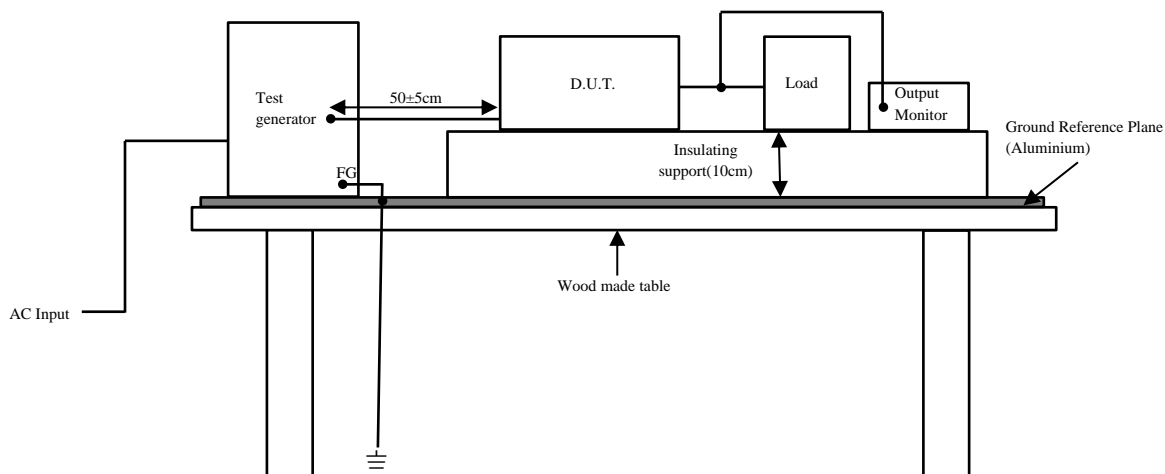
### (1) Equipment Used

Test Generator :EMC Partner TRA2000IN6

### (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	: 21°C	Phase Angle	:0°,45°,90°135°,180°,225°,270°,315° (0% for 0.5 cycle)

### (3) Test Method



### (4) Acceptable Conditions

- Criteria A
- Criteria B

### (5) Test Result

Test Level	Continue Time	Criteria <sup>3</sup>	CUS250M-12/J	CUS250M-24/J
70%	25 cycles	A	PASS	PASS
40%	10 cycles	A	PASS	PASS
0%	1 cycle	A	PASS	PASS
0%	250 cycles	B	PASS	PASS
0%	0.5 cycles	A	PASS	PASS
80%	250 cycles	A	PASS	PASS

<sup>3</sup> Load and Line dependant, see 260792 CUS250M Electromagnetic Compatibility Report for full details.  
Template No: 260584-1