

## SUMMARY REPORT

Applicant : **L.V.CONTROL TECHNOLOGIES SDN BHD**  
98, Jalan SS 14/1,  
47500 Subang Jaya,  
Selangor

Product : **DUVAL Series Filter. Model DSF65-20AIR-240**

Reference Standard/  
Method of test : EN/IEC 61000-4-5 (2001)

Description of sample : Brand name : Sharp  
Model/Type : 21S-FX10M  
Rating: Voltage : 240 VAC  
Frequency : 50 Hz

Test Date : 19<sup>th</sup> November 2008

Tester : ZARISMAIL ABDUL RAHMAN



### SURGE VOLTAGE MEASUREMENT

#### 1.1 Test Setup

- a. The test was performed in a 3.7m x 3.7m shielded enclosure, using a Surge generator network coupler/Decoupler compliant with IEC 61000-4-5: 2001 .
- b. The Surge generator network was on the top of the ground plane and connected to the positive earth.

#### 1.2 Test Condition

- a. The humidity during the test was maintained at 65%RH, at a temperature of 24.4C.
- b. Characteristics of the Combination wave (hybrid) generator (1.2/50 $\mu$ s- 8/20 $\mu$ s):
  - i. Open-circuit output voltage  
- At least as low as 0.5kV to at least as high as 4.0kV

- Front time	:	1.2 $\mu$ s $\pm$ 30%
- Time to half value	:	50 $\mu$ s $\pm$ 20%
- Peak voltage output	:	$\pm$ 10%
- Polarity	:	positive/negative
Phase shifting	:	in range between 0 <sup>o</sup> to 360 <sup>o</sup> versus the a.c. line phase angle.
Repetition	:	at least 1 per minute

ii. Short-circuit output current

- At least as low as 0.25kA to at least as high as 3.0kA		
- Front time	:	8 $\mu$ s $\pm$ 20%
- Time to half value	:	20 $\mu$ s $\pm$ 20%
- Peak voltage output	:	$\pm$ 10%
- Polarity	:	positive/negative
- Phase shifting	:	in range between 0 <sup>o</sup> to 360 <sup>o</sup> versus the a.c. line phase angle
- Repetition	:	at least 1 per minute

### 1.3 Test Method

#### 2.3.1 Surge voltage test for EUT power supply a.c./d.c. lines

- i. The surge was introduced to the power terminal of the EUT.
- ii. The test system has a built-in-coupling network which couples the surge generated to its test supply output to which the EUT's power supply line was connected.
- iii. The interference surges were coupled to either the Positive Line (L1), Negative Line (L2) or Ground Line (PE) of the EUT for the time duration of 1 minutes.
- iv. The observations for the test were recorded.
- v. Step "i" to "iv" were performed on the EUT with surge in the positive and negative polarity.

## 2. TEST MEASUREMENT RESULTS

### 2.1 Test Specification and results

Standard	Specifications	Result
IEC 61000-4-5 (2001)	AC Mains (input supply line) 6.0kV	PASS

### 2.2 Surge Voltage Measurement

a. Surge measurement : Voltage supply lines

Surge Voltage	Test voltage between +ve (L1) & -ve (N)	Test voltage between +ve (L1) & -ve (PE)	Test voltage between -ve (N) & -ve (PE)	Test voltage between +ve (L1,N) & -ve (PE)
-6 kV/3kA	Pass	Pass	Pass	Pass
-6kV/3kA	Pass	Pass	Pass	Pass

**Observations:**

During testing, there are no interruptions or any disturbances of the behaviour of load. The load is a Rectifier equipment.

b. Surge measurement : Let Through voltage captured

Surge test 6kV/3kA	Connection of surge generator and measurement point of limiting voltage	Let-through Voltage (Vp)  (Maximum) (Probe 1000:1V)
Three phase 4-wire + ground	L1    N    PE	
Test 0	-No Signal-	0V
Test - 1	H    L    -	520
Test - 2	L    H    -	600

Test - 3	H	-	L	780
Test - 4	L	-	H	780
Test - 5	-	H	L	584
Test - 6	-	L	H	710
G = ground, N = neutral (ground circuit conductor), L1, L2, L3= line conductor (ungrounded circuit conductors).				

### 2.3 General Statement

The test sample and other accessories were found to be immuned to surge voltage with no modifications.

### 2.4 Measurement Results

Measurement complies with IEC 61000-4-5:1995 (6.0kV).