

校准证书

CALIBRATION CERTIFICATE

证书编号: J15126902500 号
Certificate No.

客户名称

Customer

客户地址

Address of customer

计量器具名称

Name of Samples

型号 / 规格

Type/Specification

出厂编号

Series No.

制造单位

Manufacturer

No. 3, Roodsar St., shahid Azodi St., Karimkhan-e-zand Blvd., Tehran - IRAN

EFT Immunity Measurement

EFT61000-4

0448A1615135

Lisun Electronics Inc

批准人

Approved by

核验员

Checked By

校准员

Calibrated By



校准日期 2015 年 11 月 17 日
Date of calibration Year Month Day

地址(Address): 上海市江月路900号

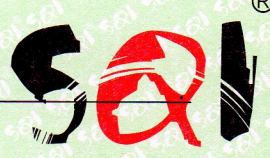
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本次计量所依据的技术文件(代号、名称):

Reference documents for the calibration (code, name)

- GB/T 17626.4-2008 电磁兼容 试验和测量技术 电快速瞬变脉冲群抗扰度试验
- GB/T 17626.4-2008 Electromagnetic compatibility-Testing and measurement techniques-Electrical fast transient/burst immunity test
- SQI/JL-BD-209 电快速瞬变脉冲发生器校准装置不确定度评定
- SQI/JL-BD-209 Uncertainty evaluation of Electrical fast transient generator

计量地点及环境条件:

Location and environmental condition

计量地点: 委托方现场实验室 其它: /
Location **Others**
 环境温度: 22 °C; 相对湿度: 60 %
Ambient temperature **Relative humidity**

本次计量所使用的主要计量标准器具:

Main measurement standards used in this verification

名称/型号 Name/Type	编号 Number	测量范围/准确度 Measuring range/Accuracy	证书编号/有效期限 Certificate No./Due date
示波器DP04014B-L	C023952	DC-1GHz /±1.5% 0-100V /±1.5%	J15126000473/ 2016-7-19
衰减器	1011-057	100:1(50Ω) /±5%	J15120000723/ 2016-9-29
衰减器	0212-034	500:1(1000Ω) /±5%	J15120000724/ 2016-9-29

以上计量标准器具的量值均可溯源到国家基准。

Quantity values of above measurement standards used in this calibration are traced to those of the national primary standards in the P.R. China.

结果/说明:

Results and additional explanation

所测数据符合仪器技术要求
数据见后页

本证书提供的结果仅对本次被检(校)样品有效, 未经本院许可, 不得部分采用本证书的内容。

The data are valid only for the Sample(s),Partly using this certificate will not be admitted unless allowed.



结果/说明 (续页):

Results and additional explanation (continued page)

1. 波形参数 (50Ω)(脉冲输出)

Waveform Parameter (50Ω)(Impulse Output)

示值 (kV) Indicated Value	理论实测值 (kV)Theoretical Measured Value	实测值 (kV) Actual Value	误差范围 (kV) Error Range	上升时间 (ns) Rise Time	脉冲中峰 (ns) Impulse half Peak
0.25	0.125	0.123	0.113-0.137	5.03	42.1
0.5	0.250	0.247	0.225-0.275	5.04	42.3
1	0.500	0.486	0.45-0.55	5.01	42.1
2	1.00	0.98	0.9-1.1	5.03	41.7
4	2.00	1.96	1.8-2.2	5.07	42.5
-0.25	-0.125	-0.123	-(0.113-0.137)	5.05	42.2
-0.5	-0.250	-0.246	-(0.225-0.275)	5.02	42.1
-1	-0.500	-0.485	-(0.45-0.55)	5.06	42.2
-2	-1.00	-0.96	-(0.9-1.1)	5.05	41.2
-4	-2.00	-1.95	-(1.8-2.2)	5.11	42.8

时间要求允许误差范围: 1. 上升时间: 3.5ns-6.5ns; 2. 中峰时间: 35ns-65ns

Time allowed error range: 1.Rise time:3.5ns-6.5ns ; 2. Half peak time:35ns-65ns

2. 波形参数 (1kΩ)(脉冲输出)

Waveform Parameter (1KΩ)(Impulse Output)

示值 (kV) Indicated Value	理论实测值 (kV)Theoretical Measured Value	实测值 (kV) Actual Value	误差范围 (kV) Error Range	上升时间 (ns) Rise Time	脉冲中峰 (ns) Impulse half Peak
0.25	0.240	0.237	0.192-0.288	5.09	62.3
0.5	0.480	0.475	0.384-0.576	5.05	61.2
1	0.950	0.939	0.76-1.14	4.98	58.1
2	1.90	1.86	1.52-2.28	5.05	56.5
4	3.80	3.74	3.04-4.56	5.02	55.7
-0.25	-0.240	-0.235	-(0.192-0.288)	5.05	63.1
-0.5	-0.480	-0.474	-(0.384-0.576)	5.03	61.1
-1	-0.950	-0.938	-(0.76-1.14)	4.99	58.3
-2	-1.90	-1.84	-(1.52-2.28)	5.03	53.5
-4	-3.80	-3.71	-(3.04-4.56)	5.11	52.9

时间要求允许误差范围: 1. 上升时间: 3.5ns-6.5ns; 2. 中峰时间: 35ns-150ns

Time allowed error range: 1.Rise time:3.5ns-6.5ns ; 2. Half peak time:35ns-150ns

3. 重复频率 (kHz) Repeat Frequency

设定值 Set Value	实测值 Actual Value	误差范围 Error Range
5	5.00	4-6
100	100.0	80-120

4. 脉冲群持续时间 (设定值 75个)

Immunity Duration (Set Value 75)

设定值重复频率	实测值	误差范围
Set Repeat Frequency	Actual Value	Error Range
5kHz	14.8ms	12ms-18ms
100kHz	735μs	600μs-900μs

5. 脉冲群周期 (ms) Immunity Cycle

设定值	实测值	误差范围
Set Value	Actual Value	Error Range
300	301	240-360

三相耦合网络测试 Three-phase coupling network testing

测试端口 Test Port	示值 (kV)	理论实测值		误差范围 (kV)	上升时间	脉冲中峰
	Impulse half Peak	(kV) Theoretical Measured Value	实测值 (kV) Actual Value		(ns) Error Range	(ns) Impulse half Peak
L1	0.25	0.125	0.123	0.113-0.137	5.01	42.1
	4	2.00	1.92	1.8-2.2	4.97	42.0
	-0.25	-0.125	-0.121	-(0.113-0.137)	4.98	42.1
	-4	-2.00	-1.95	-(1.8-2.2)	5.01	41.9
L2	0.25	0.125	0.121	0.113-0.137	4.99	41.5
	4	2.00	1.93	1.8-2.2	4.97	42.3
	-0.25	-0.125	-0.122	-(0.113-0.137)	4.96	42.3
	-4	-2.00	-1.95	-(1.8-2.2)	4.92	41.7
L3	0.25	0.125	0.123	0.113-0.137	5.01	41.3
	4	2.00	1.92	1.8-2.2	4.98	41.4
	-0.25	-0.125	-0.121	-(0.113-0.137)	5.01	42.4
	-4	-2.00	-1.95	-(1.8-2.2)	5.03	41.7
N	0.25	0.125	0.119	0.113-0.137	5.01	42.3
	4	2.00	1.91	1.8-2.2	4.98	42.1
	-0.25	-0.125	-0.122	-(0.113-0.137)	4.97	41.5
	-4	-2.00	-1.92	-(1.8-2.2)	5.04	41.5
PE	0.25	0.125	0.118	0.113-0.137	4.97	41.3
	4	2.00	-1.92	1.8-2.2	4.95	42.1
	-0.25	-0.125	-0.119	-(0.113-0.137)	4.93	41.7
	-4	-2.00	-1.90	-(1.8-2.2)	4.96	41.7

时间要求允许误差范围: 1. 上升时间: 3.5ns-6.5ns; 2. 中峰时间: 35ns-150ns

Time allowed error range: 1. Rise time: 3.5ns-6.5ns; 2. Half peak time: 35ns-150ns

注: 脉冲群信号同时注入L、N、PE时校准 Note: Calibrate when Impulse signal immit L, N, PE at the same tim

本次校准输出电压((0-4kV)相对扩展不确定度 $U_{rel}=4.4%$ ($k=2$))

The relative expanded uncertainty of output voltage (0-4KV) $U_{rel}=4.4%$ ($k=2$)

本次校准脉冲上升时间相对扩展不确定度((3.5-20)ns) $U_{rel}=6.2%$ ($k=2$)

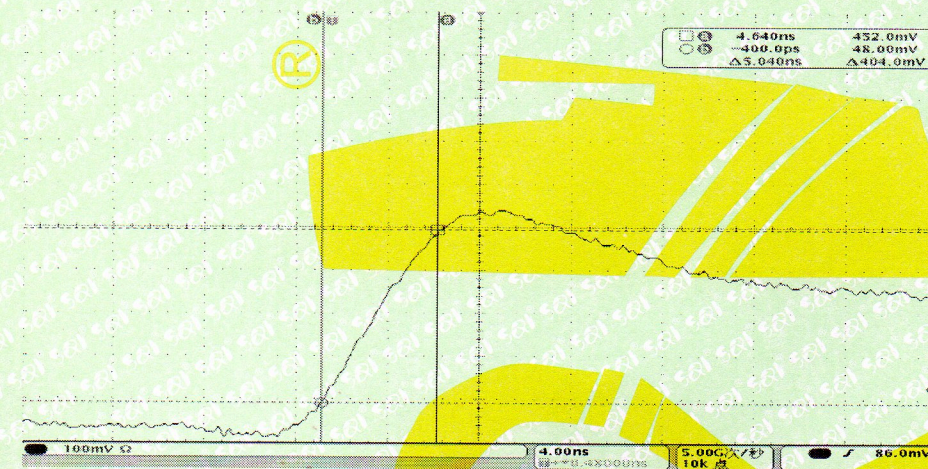
The relative expanded uncertainty of pulse rise time ((3.5-20)ns) $U_{rel}=6.2%$ ($k=2$)

本次校准时间(除上升时间)相对扩展不确定度(20ns-500ms) $U_{rel}=3.0%$ ($k=2$)

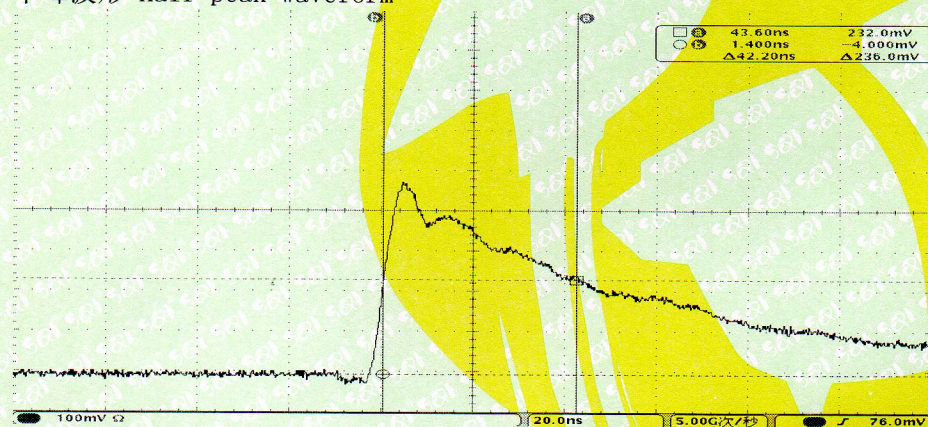
The relative expanded uncertainty of time (except the rise time) (20ns-500ms) $U_{rel}=3.0%$ ($k=2$)



上升波形 The rising waveform

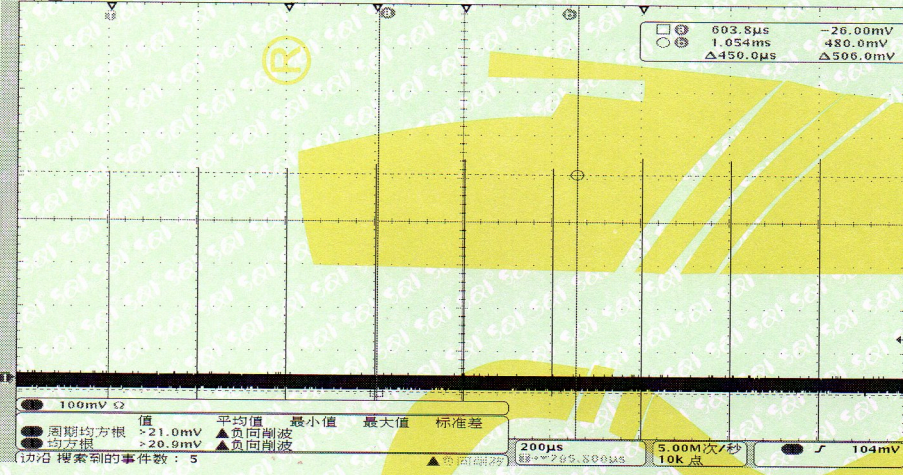


中峰波形 Half peak waveform

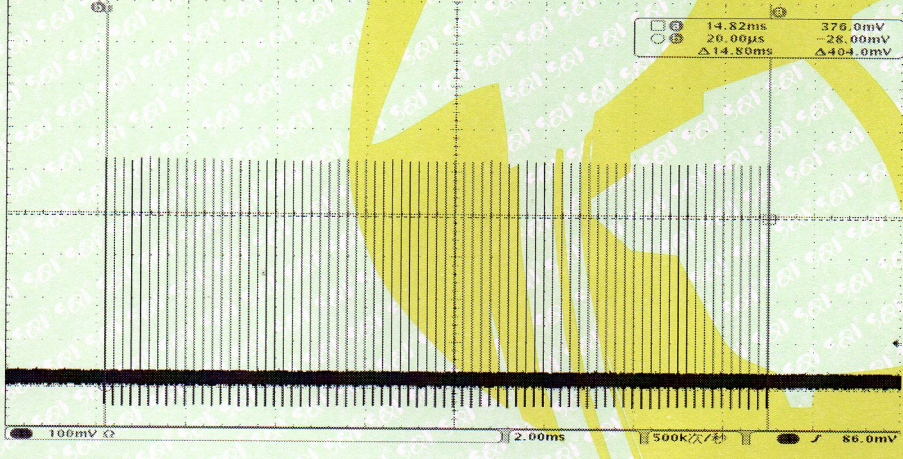




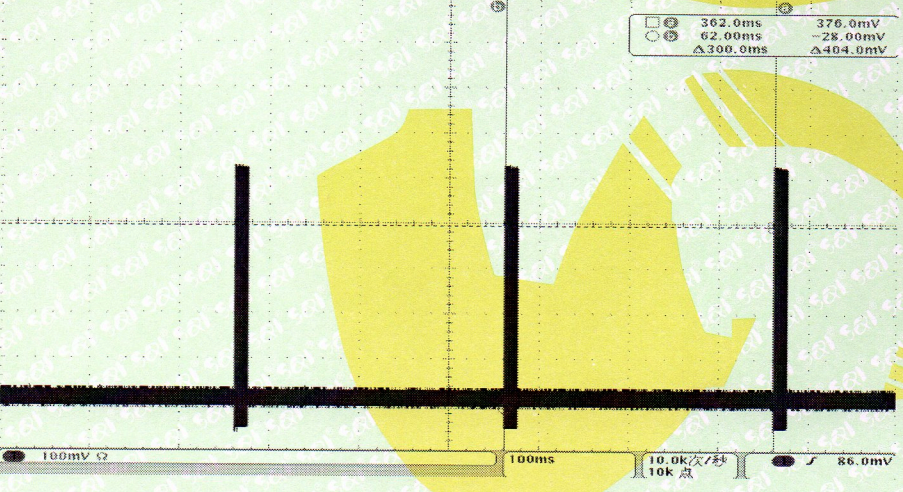
重复频率 (5kHz) Repeat Frequency



脉冲群持续时间 Pulse Duration



脉冲群周期 Immunity Cycle



以下空白