

# 校准证书

CALIBRATION CERTIFICATE

证书编号: J19120000116 号  
Certificate No.

客户名称 Customer Electromagnetica S.A.  
客户地址 Address of customer Calea Rahovei 266-268, Sector 5, 050912 - Bucuresti, ROMANIA (Postal code: 050912)  
计量器具名称 Name of Samples EMI Test System  
型号 / 规格 Type/Specification EMI-9KB  
出厂编号 Series No. 2019FD02004  
制造单位 Manufacturer Lisun Electronics Inc.

批准人 Approved by 姜晓虹 副主任

核验员 Checked By 陈海冰

校准员 Calibrated By 李祥



校准日期 2019 年 02 月 20 日  
Date of calibration Year Month Day

地址(Address): 上海市江月路 900 号 邮编(Post Code): 201114  
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# 上海市质量监督检验技术研究院

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本次校准所依据的技术文件(代号、名称):

Reference documents for the calibration(code、name)

JJF1144-2006 电磁骚扰测量接收机校准规范

校准地点及环境条件:

Location and environmental condition

校准地点: 江月路 900 号 5 号楼 413 室

Location

环境温度: 21℃

Ambient temperature

其它: /

Others

相对湿度: 37%

Relative humidity

本次校准所使用的主要计量标准器具:

Main measurement standards used in this calibration

名称/型号 Name/Type	编号 Number	测量范围/准确度 Measuring range/Accuracy	证书编号/ Certificate No./	有效期至 Due date
通用计数器 /EE3386	338609311262	0.025Hz-1000MHz $\pm 5 \times 10^{-9}$	2018F34-20-13957240 01/	2019.3.15
任意波/函数信 号发生器 /AFG3251C	C010238	DC~240MHz/F:外控;L: $\pm 1\%$	J18120000599/	2019.8.22
微波信号发生器 /SMF100A	101383	100kHz~22GHz/F:外控;L: $\pm 1.0\text{dB}$	J18111000080/	2019.3.4
EMI 校准脉冲发 生器/IGUU-2916	2916233	Band A/B: $\pm 0.5\text{dB}$ at 100kHz,10MHz; Band C/D: $\pm 0.8\text{dB}$ at 100MHz,500MHz	XDdj2018-4028/	2019.9.29
测量接收机 /N5531S	US44302495	F:0.1MHz~26.5GHz $\pm 1 \times 10^{-8}$ , L:(-130~13)dBm $\pm 0.124\text{dB}$ , FM:(0~400)kHz $\pm (1\sim 6.5)\%$ of reading, AM:(0~99)% $\pm (0.75\sim 1.6)\%$ of reading	RMA201810001/	2019.10.7

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

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.

## 1、Intermediate Frequency Bandwidth

Frequency	Nominal Value	Actual Value
100kHz	200Hz	196.3Hz
10MHz	9kHz	8.894kHz
100MHz	120kHz	118.9kHz

The intermediate frequency bandwidth calibration measurement uncertainty:  $U_{rel}=1.5\%(k=2)$

## 2、Noise Indicated

Frequency	Noise Indicated(dBμV)
100kHz	0
10MHz	0
100MHz	10

The noise indicated calibration measurement uncertainty:  $U=3dB(k=2)$

## 3、Receiver Level Measurement

Input level: 110dBμV	Frequency (MHz)	Indicated Value		
		AV (dBμV)	PK+ (dBμV)	QPK (dBμV)
(IBW 200Hz)	0.009	111.50	111.53	111.53
	0.05	111.33	111.39	111.39
	0.10	111.46	111.46	111.46
	0.15	111.28	111.28	111.28
(IBW 9kHz)	0.25	111.21	111.22	111.21
	0.50	110.95	110.95	110.95
	1	112.21	112.21	112.21
	10	111.67	111.67	111.67
(IBW 120kHz)	20	111.03	111.03	111.03
	30	110.83	110.83	110.83
	60	111.09	111.11	111.09
	100	110.08	110.08	110.08
	300	108.13	108.17	108.17

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Input level: 90dB $\mu$ V	Frequency (MHz)	Indicated Value		
		AV	PK+	QPK
		(dB $\mu$ V)	(dB $\mu$ V)	(dB $\mu$ V)
(IBW 200Hz)	0.009	90.40	90.40	90.40
	0.05	90.54	90.54	90.54
	0.10	90.57	90.57	90.57
	0.15	90.60	90.60	90.60
(IBW 9kHz)	0.25	90.51	90.51	90.51
	0.50	90.10	90.10	90.10
	1	91.52	91.53	91.53
	10	90.82	90.82	90.82
(IBW 120kHz)	20	90.00	90.18	90.18
	30	89.73	89.79	89.78
	60	89.74	90.02	90.02
	100	88.87	88.07	89.07
	300	87.04	87.24	87.24
	Indicated Value			
	Frequency (MHz)	AV (dB $\mu$ V)	PK+ (dB $\mu$ V)	QPK (dB $\mu$ V)
(IBW 200Hz)	0.009	60.59	60.59	60.59
	0.05	60.64	60.64	60.64
	0.10	60.67	60.67	60.67
	0.15	60.71	60.73	60.71
(IBW 9kHz)	0.25	60.63	60.64	60.63
	0.50	60.42	60.42	60.42
	1	61.52	61.68	61.68
	10	61.14	61.15	61.14
(IBW 120kHz)	20	60.46	60.48	60.46
	30	60.13	60.13	60.13
	60	60.39	60.39	60.39
	100	59.44	59.44	59.44
	300	57.61	57.64	57.61

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Input level: 30dB $\mu$ V	Frequency (MHz)	Indicated Value		
		AV (dB $\mu$ V)	PK+ (dB $\mu$ V)	QPK (dB $\mu$ V)
(IBW 200Hz)	0.009	28.55	28.55	28.55
	0.05	29.83	30.24	30.24
	0.10	30.34	30.34	30.34
	0.15	30.44	30.47	30.44
(IBW 9kHz)	0.25	30.29	30.41	30.36
	0.50	30.09	30.12	30.10
	1	30.96	31.35	31.34
	10	29.94	30.06	29.94
	20	28.35	28.91	28.88
(IBW 120kHz)	30	29.71	29.80	29.71
	60	29.80	29.80	29.80
	100	28.36	28.62	28.62
	300	27.13	27.40	27.40

The level calibration measurement uncertainty:  $U=0.50\text{dB}(k=2)$

## 4、Impulse Response Characteristics

### 1)、Amplitude Relationship(Absolute Calibration)

	Unmodulated Impulse Response	Reference Impulse Response
	(dB $\mu$ V)	(dB $\mu$ V)
100kHz	40.32	40.56
10MHz	61.15	60.73
100MHz	59.43	59.56

### 2)、Transformation of the repeat frequency(Relatively Accurate)

Band A(100kHz)			Band B(10MHz)		
Repeat Frequency	Reference Value	Indicate Value	Repeat Frequency	Reference Value	Indicate Value
(Hz)	(dB)	(dB)	(Hz)	(dB)	(dB)
Isolated Pulse	-21~-19	-	Isolated Pulse	-25.5~-21.5	-
1	-19~-15	-17.5	1	-24.5~-20.5	-22.4
2	-15~-13	-13.9	2	-22.5~-18.5	-21.4
5	-9~-6	-8.2	10	-11.5~-8.5	-11.1
10	-5~-3	-4.1	20	-7.5~-5.5	-7.3
25	0(40dB $\mu$ V)	0	100	0(60dB $\mu$ V)	0
60	2~4	2.3	1000	5.5~3.5	4.8
100	3~5	3.8			
Band C(100MHz)					
Repeat Frequency	Reference Value	Indicate Value			
(Hz)	(dB)	(dB)			
Isolated Pulse	-33.5~-29.5	-			
1	-30.5~-26.5	-29.3			
2	-28~-24	-27.0			
10	-15.5~-12.5	-14.6			
20	-10~-8	-9.5			
100	0(60dB $\mu$ V)	0			
1000	7~9	8.0			

Impulse Response calibration measurement uncertainty

Band A/B  $U=0.8\text{dB}(k=2)$

Band C/D  $U=1.0\text{dB}(k=2)$

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