

校准证书

CALIBRATION CERTIFICATE



证书编号: JL2220438181

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客户名称 : 深圳市美格信测控技术有限公司
Name of Customer :
客户地址 : 深圳市光明区玉塘街道田寮社区同仁路盛荟红星创智广场 1002
Address of Customer :
计量器具名称 : 音频分析仪
Name of Instrument :
器具用途 : -----
Use of Instrument :
型号/规格 : PM6682
Type/Specification :
出厂编号 : J20220518001
Serial No :
资产编号 : -----
Asset No :
制造单位 : MegaSig
Manufacture :
校准依据 : 参考 JJF1395-2013 音频分析仪校准规范
Calibrated in Accordance to :

(校准专用章)
Stamp

批准人 : 刘明夏
Approved by

签名 : 刘明夏
Signature

校准日期 : 2022 年 08 月 02 日
Operation Date Year Month Day

核验员 : 黄琰
Checked by

建议复校日期 : 2023 年 08 月 01 日
Suggested Recal.Date Year Month Day

校准员 : 庄宇晖
Calibrated by

签发日期 : 2022 年 08 月 02 日
Issue Date Year Month Day

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获得的国家、省、市专业站 Establishment of Following Institutions

国家数字电子产品质量检验检测中心
National Digital Electronic Product Testing Center (NETC)
国家营养食品质量检验检测中心(广东)
National Nutrition Food Testing Center (Guangdong)
国家体育用品质量检验检测中心(广东)
National Sports Product Testing Center (Guangdong)
国家环保产品质量检验检测中心(广东)
National Environmental Product Testing Center (Guangdong)
国家分布式光伏发电系统质量检验检测中心(广东)
National Distributed Photovoltaic Power Generation System Testing Center (Guangdong)
国家电动汽车电池及充电系统产业计量测试中心
National Metrology Center for Electric Vehicle Battery and Charging System Industry
国家民用无人机产品质量检验检测中心(广东)
National Civil Unmanned Aerial Vehicle Product Testing Center (Guangdong)
国家高新技术计量站
National Hi-tech Metrology Station
国家医疗器械产业计量测试中心
National Metrology and Testing Center for Medical Device Industry
国家计量数据科学中心深圳分中心
National Metrology Data Science Center (Shenzhen)
国家城市能源计量中心(深圳)
National Urban Energy Measurement Center (Shenzhen)
中国轻工业联合会家具质量监督检测深圳站
Accredited Testing Station (Shenzhen) for Furniture by China National Light Industry Council (CNLIC)
广东省质量监督食品检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Food (Shenzhen)
广东省质量监督生态纺织服装产品检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Ecological Textile and Garment Products (Shenzhen)
广东省质量监督皮革制品检验站
Guangdong Quality Supervision and Inspection Institution for Leather Products
广东省质量监督家具检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Furniture Products (Shenzhen)
广东省质量监督学生用品检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Student's Articles (Shenzhen)
广东省质量监督自行车检验站
Guangdong Quality Supervision and Inspection Institution for Bicycle Quality
广东省质量监督钟表检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Horological Products (Shenzhen)
广东省质量监督节能环保产品(安全性能)检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Safety Performance of Environmental Protection and Energy Saving Products (Shenzhen)
广东省质量监督眼镜检验站(深圳)
Guangdong Quality Supervision and Inspection Institution for Eyewear Products (Shenzhen)
广东省质量监督电磁兼容检验站
Guangdong Quality Supervision and Inspection Institution for Electromagnetic Compatibility
广东省质量监督综合布线系统检验站
Guangdong Quality Supervision and Inspection Institution for Generic Cabling System
深圳市纤维纺织检验所
Shenzhen Quality Inspection Institution for Fiber and Textile
深圳市建材产品质量监督检验站
Shenzhen Quality Supervision and Inspection Institution for Building Materials
深圳市消防产品燃烧性能检测中心
Shenzhen Testing Center for Burning Behavior of Fire Protection Products

联系方式 Contact Information

联系电话 Contact Tel.: 0755-26941696 26941546 (龙珠) 27591789 (宝安) 82426246 (八卦岭) 28932280 (龙岗) 0769-21684525 (东莞)
传真电话 Fax No.: 0755-27591716 (宝安) 82408176 (八卦岭) 28932840 (龙岗) 0769-21684527 (东莞)
投诉及证书/报告真伪查询电话 Complaint Tel.: 400-900-8999 按5 Email: complaint@smq.com.cn

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校准用主要计量标准装置信息

Main Standard Devices Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	计量标准考核证书号 Certificate No	有效期至 Due Date
_____	_____	_____	_____	_____

校准用主要标准器信息

Main Standards of Measurement Used

名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级/ 最大允许误差 Uncertainty/Accuracy Class/ Maximum Permissible Error	设备编号 Equipment No	证书号/溯源单位 Certificate No/ Traceability to	有效期至 Due Date
频率计	频率:1Hz~12.4GHz	频率:±1E-08	SB0608	WSP202101797 /广东省计量院	2022-08-11
数字万用表	ACU:(0.1 μV~750V),DCU:(0.1 μV~1000V),ACI:(1 μA~3A),DCI:(0.01 μA~3A),R:(0.1mΩ~100MΩ)	ACU:±0.06%R,DCU:±0.0035%R,ACI:±0.1%R,DCI:±0.05%R,R:±0.01%R	SB3380	223102107/深圳检测院	2023-05-16
失真仪检定装置	失真:0.01%~100% (5Hz~200kHz)	失真:±0.5%	SB4092	WWD20210334 4/广东省计量院	2022-12-07
多功能校准器	电压(0~1000)V,电流(0~20)A,电阻(0~400)MΩ.方波20V/div,时标(2ns~5s)/div,上升时间1ns,稳幅信号600MHz	DCV:±0.006%,ACV:±0.04%,DCI:±0.02%,ACI:±0.07%;R:±0.02%.方波电压:±0.25%,时标:2.5E-05	SB5988	223102109/深圳检测院	2023-05-22
音频分析仪	频率:10Hz~110kHz,失真:0.0003%~100%,交流电平:10mV~100V,直流电平:10mV~31.6V	频率:±5E-05,失真:±1dB,交流电平:±2%Fs,直流电平:±2%	SB6862	XDxh2022-0097 7/中国计量院	2023-05-08

附加说明

Appended Directions

委托日期:
Application Date

2022 年 08 月 02 日

校准地点:
Operation Location

本院无线电实验室

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附加说明 Appended Directions

环境条件:
Operation Environment

温度 21°C 相对湿度 58%

符合性及限制使用说明:
Statement of Compliance and Limitation

参见校准结果使用(Use referring to the results of Calibration)

校准结果

RESULTS OF CALIBRATION

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1 外观及工作正常性检查: 正常

Check on Appearance and Function: Pass

2 ANALOG OUTPUT

2.1 频率准确度(Frequency Accuracy)

		标称值 Nominal	实测值 Measured	误差 Error
CH1 Unbalance	(Hz)		(Hz)	(Hz)
	20		19.999898	1.02E-04
	100		99.999737	2.6E-04
	(kHz)		(kHz)	(kHz)
	1		0.9999964	3.6E-06
	10		9.9999651	3.49E-05
	50		49.999826	1.7E-04
	90		89.999690	3.10E-04
	CH2 Unbalance	(Hz)		(Hz)
20			19.999912	8.80E-05
100			99.999921	7.92E-05
(kHz)			(kHz)	(kHz)
1			0.99999644	3.56E-06
10			9.99996543	3.457E-05
50			49.9998276	1.724E-04
CH1 Balance	(Hz)		(Hz)	(Hz)
	20		20.000000	1.00E-07
	100		99.999769	2.31E-04
	(kHz)		(kHz)	(kHz)
	1		0.9999967	3.3E-06
	10		9.9999673	3.28E-05
	50		49.999836	1.64E-04
CH2 Balance	(Hz)		(Hz)	(Hz)
	20		19.999672	3.28E-04
	100		99.999792	2.08E-04

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(kHz)	(kHz)	(kHz)
1	0.99999765	2.35E-06
10	9.99997612	2.388E-05
50	49.9998802	1.198E-04
90	89.9997773	2.227E-04

2.2 幅度准确度(Amplitude Accuracy)(1kHz)

	标称值 Nominal	实测值 Measured	误差 Error
CH1 Unbalance	(mV)(rms)	(mV)(rms)	(mV)(rms)
	10	10.033	-0.033
	50	50.023	-0.023
	100	100.022	-0.022
	500	500.08	-0.080
	(V)(rms)	(V)(rms)	(V)(rms)
	1	1.00003	0.0000
	2	1.9997	0.0003
	5	4.9997	0.0003
	10	9.9991	0.0009
CH2 Unbalance	(mV)(rms)	(mV)(rms)	(mV)(rms)
	10	10.030	-0.030
	50	50.018	-0.018
	100	100.016	-0.016
	500	500.08	-0.080
	(V)(rms)	(V)(rms)	(V)(rms)
	1	1.0001	-0.0001
	2	1.9997	0.0003
	5	4.9995	0.0005
	10	9.9989	0.0011
CH1 Balance	(mV)(rms)	(mV)(rms)	(mV)(rms)
	10	9.978	0.022
	50	49.898	0.102
	100	99.797	0.203

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	500	500.536	-0.536
	(V)(rms)	(V)(rms)	(V)(rms)
	1	1.0010	-0.0010
	2	2.0002	-0.0002
	5	5.0042	-0.0042
	10	10.0082	-0.0082
CH2 Balance	(mV)(rms)	(mV)(rms)	(mV)(rms)
	10	9.964	0.036
	50	49.826	0.174
	100	99.658	0.342
	500	500.157	-0.157
	(V)(rms)	(V)(rms)	(V)(rms)
	1	1.0003	-0.0003
	2	2.0000	0.0000
	5	5.0060	-0.0060
	10	10.0116	-0.0116

2.3 幅度平坦度(Amplitude Flatness)

	频率	平坦度
	Frequency	Flatness
CH1 Unbalance	(Hz)	(dB)
	20	-0.013
	100	-0.002
	(kHz)	(dB)
	1	0.000(Ref)
	10	0.000
	20	-0.001
	50	-0.009
	80	-0.017
CH2 Unbalance	(Hz)	(dB)
	20	-0.014
	100	-0.002
	(kHz)	(dB)

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		1	0.000(Ref)
		10	0.001
		20	0.003
		50	0.004
		80	-0.014
CH1	Balance	(Hz)	(dB)
		20	-0.013
		100	-0.001
		(kHz)	(dB)
		1	0.000(Ref)
		10	0.000
		20	-0.001
		50	-0.009
		80	-0.018
CH2	Balance	(Hz)	(dB)
		20	-0.013
		100	-0.001
		(kHz)	(dB)
		1	0.000(Ref)
		10	0.002
		20	0.004
		50	0.005
		80	-0.014

2.4 失真(Distortion)

		测量带宽 Meas BW	频率 Frequency	失真 Distortion
CH1	Unbalance	(kHz)	(Hz)	(%)
		20	20	0.0002
		20	100	0.0002
			(kHz)	(%)
		20	1	0.0002
		20	10	0.0002
		20	20	0.0004
CH2	Unbalance	(kHz)	(Hz)	(%)
		20	20	0.0002

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		20	100	0.0002
			(kHz)	(%)
		20	1	0.0002
		20	10	0.0002
		20	20	0.0004
CH1	Balance	(kHz)	(Hz)	(%)
		20	20	0.0007
		20	100	0.0007
			(kHz)	(%)
		20	1	0.0008
		20	10	0.0008
		20	20	0.0008
CH2	Balance	(kHz)	(Hz)	(%)
		20	20	0.0007
		20	100	0.0007
			(kHz)	(%)
		20	1	0.0007
		20	10	0.0007
		20	20	0.0008

3 ANALOG INPUT

3.1 频率准确度(Frequency Accuracy)

		标准值 Standard	示值 Indication	误差 Error
CH1	Unbalance	(Hz)	(Hz)	(Hz)
		20	20.0280	0.0280
		100	100.000	0.000
		(kHz)	(kHz)	(kHz)
		1	1.00000	0.00000
		10	10.0000	0.0000
		20	20.0001	0.0001
		50	50.0002	0.0002
		90	90.0003	0.0003
CH2	Unbalance	(Hz)	(Hz)	(Hz)

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	20	19.9810	-0.0190
	100	100.001	0.001
	(kHz)	(kHz)	(kHz)
	1	1.00000	0.00000
	10	10.0000	0.0000
	20	20.0190	0.0190
	50	50.0002	0.0002
	90	90.0003	0.0003
CH1 Balance	(Hz)	(Hz)	(Hz)
	20	20.0190	0.0190
	100	100.001	0.001
	(kHz)	(kHz)	(kHz)
	1	1.00000	0.00000
	10	10.0000	0.0000
	20	20.0001	0.0001
	50	50.0002	0.0002
	90	90.0003	0.0003
CH2 Balance	(Hz)	(Hz)	(Hz)
	20	20.0190	0.0190
	100	100.001	0.001
	(kHz)	(kHz)	(kHz)
	1	1.00000	0.00000
	10	10.0000	0.0000
	20	20.0001	0.0001
	50	50.0000	0.0000
	90	90.0003	0.0003

3.2 幅度准确度(Amplitude Accuracy)(at 1 kHz)

=====			
	标准值	示值	误差
	Standard	Indication	Error

CH1 Unbalance	(mV)(rms)	(mV)(rms)	(mV)(rms)
	10	10.001	0.001
	100	99.974	-0.026

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		(V)(rms)	(V)(rms)	(V)(rms)
		1	0.9996	-0.000356
		10	9.997	-0.003
		20	19.994	-0.006
		50	49.991	-0.009
		100	99.975	-0.025
CH2	Unbalance	(mV)(rms)	(mV)(rms)	(mV)(rms)
		10	10.001	0.001
		100	99.961	-0.039
		(V)(rms)	(V)(rms)	(V)(rms)
		1	0.9996	-0.0004
		10	9.997	-0.003
		20	19.994	-0.006
		50	49.986	-0.014
		100	99.967	-0.033
CH1	Balance	(mV)(rms)	(mV)(rms)	(mV)(rms)
		10	10.005	0.005
		100	99.953	-0.047
		(V)(rms)	(V)(rms)	(V)(rms)
		1	0.9995	-0.0005
		10	9.996	-0.004
		20	19.990	-0.01
		50	49.980	-0.02
		100	99.953	-0.047
CH2	Balance	(mV)(rms)	(mV)(rms)	(mV)(rms)
		10	10.002	0.002
		100	99.953	-0.047
		(V)(rms)	(V)(rms)	(V)(rms)
		1	0.9995	-0.0005
		10	9.995	-0.005
		20	19.990	-0.010
		50	49.977	-0.023
		100	99.950	-0.050

3.3 频率响应(Frequency Response)(DC coupling)

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		频率 Frequency	标准值 Standard	示值 Indication	误差 Error	
CH1	Unbalance	(Hz)	(V)(rms)	(V)(rms)	(V)(rms)	
		20	1.0000	0.995	-0.005	
		100	1.0000	1.000	0.000	
		500	1.0000	1.000	0.000	
			(kHz)	(V)(rms)	(V)(rms)	(V)(rms)
			1	1.0000	1.000	0.000
			10	1.0000	1.000	0.000
			20	1.0000	1.000	0.000
			50	1.0000	1.001	0.001
			80	1.0000	1.001	0.001
	CH2	Unbalance	(Hz)	(V)(rms)	(V)(rms)	(V)(rms)
			20	1.0000	0.995	-0.005
			100	1.0000	1.000	0.000
			500	1.0000	1.000	0.000
			(kHz)	(V)(rms)	(V)(rms)	(V)(rms)
			1	1.0000	1.000	0.000
			10	1.0000	1.000	0.000
			20	1.0000	1.000	0.000
			50	1.0000	1.001	0.001
			80	1.0000	1.000	0.000
CH1		Balance	(Hz)	(V)(rms)	(V)(rms)	(V)(rms)
			20	1.0000	0.995	-0.005
			100	1.0000	0.999	-0.001
			500	1.0000	0.999	-0.001
			(kHz)	(V)(rms)	(V)(rms)	(V)(rms)
			1	1.0000	1.000	0.000
			10	1.0000	0.999	-0.001
			20	1.0000	1.000	0.000
			50	1.0000	1.001	0.001
			80	1.0000	1.001	0.001
	CH2	Balance	(Hz)	(V)(rms)	(V)(rms)	(V)(rms)
			20	1.0000	0.995	-0.005
			100	1.0000	0.999	-0.001
			500	1.0000	0.999	-0.001
(kHz)			(V)(rms)	(V)(rms)	(V)(rms)	

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1	1.0000	0.999	-0.001
10	1.0000	0.999	-0.001
20	1.0000	1.000	0.000
50	1.0000	1.001	0.001
80	1.0000	1.000	0.000

3.4 失真测量(Distortion Measurement)

		频率 Frequency	标准值 Standard	示值 Indication	误差 Error
			(%)	(%)	(%)
CH1	Unbalance	400 Hz	28.70	28.8167	0.1167
			19.60	19.6667	0.0667
			10.00	9.9789	-0.0211
			5.000	5.0073	0.0073
			2.000	2.0046	0.0046
			1.000	1.0020	0.0020
			0.500	0.5007	0.0007
			0.200	0.2000	0.0000
			0.100	0.0999	-0.0001
		0.0500	0.0498	-0.0002	
		0.0300	0.0298	-0.0002	
		1 kHz	28.70	28.7348	0.0348
			19.60	19.6087	0.0087
			10.00	9.9512	-0.0488
			5.000	4.9967	-0.0033
			2.000	2.0005	0.0005
			1.000	1.0003	0.0003
			0.500	0.4998	-0.0002
0.200	0.1998		-0.0002		
0.100	0.0998		-0.0002		
0.0500	0.0497	-0.0003			
0.0300	0.0297	-0.0003			
CH2	Unbalance	400 Hz	28.70	28.7773	0.0773

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			19.60	19.6451	0.0451
			10.00	9.9667	-0.0333
			5.000	5.0012	0.0012
			2.000	2.0022	0.0022
			1.000	1.0012	0.0012
			0.500	0.5003	0.0003
			0.200	0.1998	-0.0002
			0.100	0.0997	-0.0003
			0.0500	0.0497	-0.0003
			0.0300	0.0297	-0.0003
		1 kHz	28.70	28.8220	0.1220
			19.60	19.6707	0.0707
			10.00	9.9792	-0.0208
			5.000	5.0084	0.0084
			2.000	2.0049	0.0049
			1.000	1.0022	0.0022
			0.500	0.5007	0.0007
			0.200	0.2000	0.0000
			0.100	0.0998	-0.0002
			0.0500	0.0496	-0.0004
			0.0300	0.0297	-0.0003
CH1	Balance	400 Hz	28.70	28.7659	0.0659
			19.60	19.6287	0.0287
			10.00	9.9567	-0.0433
			5.000	4.9972	-0.0028
			2.000	2.0015	0.0015
			1.000	1.0005	0.0005
			0.500	0.5000	0.0000
			0.200	0.1995	-0.0005
			0.100	0.0996	-0.0004
			0.0500	0.0498	-0.0003
			0.0300	0.0298	-0.0002
		1 kHz	28.70	28.8140	0.1140
			19.60	19.6670	0.0670
			10.00	9.9767	-0.0233
			5.000	5.0067	0.0067
			2.000	2.0048	0.0048
			1.000	1.0023	0.0023

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			0.500	0.5008	0.0008
			0.200	0.2002	0.0002
			0.100	0.0999	-0.0001
			0.0500	0.0499	-0.0002
			0.0300	0.0298	-0.0002
CH2	Balance	400 Hz	28.70	28.7132	0.0132
			19.60	19.5987	-0.0013
			10.00	9.9443	-0.0557
			5.000	4.9906	-0.0094
			2.000	1.9979	-0.0021
			1.000	0.9988	-0.0012
			0.500	0.4999	-0.0001
			0.200	0.1995	-0.0005
			0.100	0.0997	-0.0003
			0.0500	0.0496	-0.0004
			0.0300	0.0298	-0.0003
		1 kHz	28.70	28.7821	0.0821
			19.60	19.6484	0.0484
			10.00	9.9668	-0.0332
			5.000	5.0032	0.0032
			2.000	2.0025	0.0025
			1.000	1.0016	0.0016
			0.500	0.5003	0.0003
			0.200	0.2001	0.0001
			0.100	0.1000	0.0000
			0.0500	0.0498	-0.0002
			0.0300	0.0296	-0.0004

注:

Notes:

1 本次校准的测量不确定度说明

Measurement Uncertainty in the Calibration

1.1 依据 JJF 1059.1-2012 测量不确定度评定与表示

According to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement

1.2 本次测量结果的扩展不确定度($k=2$)

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The Expanded Uncertainty of the Measurement Results

1.3 源输出频率测量结果的相对扩展不确定度: $U_{rel} = 2 \times 10^{-7}$

Related Expanded Uncertainty of Output Frequency: $U_{rel} = 2 \times 10^{-7}$

1.4 源输出正弦波电压测量结果的扩展不确定度:

20 Hz ~ 20 kHz : $U_{rel} = 0.2 \%$

>20 kHz ~ 50 kHz : $U_{rel} = 0.2 \%$

>50 kHz ~ 100 kHz : $U_{rel} = 0.8 \%$

Related Expanded Uncertainty of Output Voltage:

20 Hz ~ 20 kHz : $U_{rel} = 0.2 \%$

>20 kHz ~ 50 kHz : $U_{rel} = 0.2 \%$

>50 kHz ~ 100 kHz : $U_{rel} = 0.8 \%$

1.5 源输出正弦波失真测量结果的相对扩展不确定度: $U_{rel} = 15\%$

Related Expanded Uncertainty of Output Sinewave Distortion: $U_{rel} = 15\%$

1.6 失真测量测量结果的相对扩展不确定度:

0.3 % ~ 30 % : $U_{rel} = 1.2 \%$

0.05 % ~ <0.3 % : $U_{rel} = 1.4 \%$

0.03 % : $U_{rel} = 2.7 \%$

Related Expanded Uncertainty of Distortion Measurement:

0.3 % ~ 30 % : $U_{rel} = 1.2 \%$

0.05 % ~ <0.3 % : $U_{rel} = 1.4 \%$

0.03 % : $U_{rel} = 2.7 \%$

1.7 交流电压测量测量结果的相对扩展不确定度:

10 Hz ~ 3 kHz : $U_{rel} = 0.1 \%$

>3 kHz ~ 10 kHz : $U_{rel} = 0.1 \%$

>10 kHz ~ 30 kHz : $U_{rel} = 0.2 \%$

>30 kHz ~ 50 kHz : $U_{rel} = 0.3 \%$

>50 kHz ~ 100 kHz : $U_{rel} = 0.6 \%$

Related Expanded Uncertainty of ACV Measurement:

10 Hz ~ 3 kHz : $U_{rel} = 0.1 \%$

>3 kHz ~ 10 kHz : $U_{rel} = 0.1 \%$

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- > 10 kHz ~ 30 kHz : $U_{rel} = 0.2 \%$
- > 30 kHz ~ 50 kHz : $U_{rel} = 0.3 \%$
- > 50 kHz ~ 100 kHz : $U_{rel} = 0.6 \%$

1.8 频率测量测量结果的相对扩展不确定度: $U_{rel} = 2 \times 10^{-7}$

Related Expanded Uncertainty of Frequency Measurement: $U_{rel} = 2 \times 10^{-7}$

2 校准结果页中单项结论的判断依据: 仪器技术说明书提供的最大允许误差要求
Basis for the conclusion: Technical Specification of the Instrument
