cal equipment

HP 3458A

Manufacturer	HEWLETT-PACKARD	Calibration date	August 28 2024
Model Number	3458A	Ambient Temperature	23.70 °C
Serial	LC_Unit	Relative Humidity	56.0 %
ID Number	Leigh	Pressure	1012.00 hPa
Notes	Test front V/R ports	Test type	Calibration verification

This report provides calibration data solely for performance evaluation purposes. **It is important to note that this report is not accredited documentation and therefore cannot be used as such. For ANSI Z540-1 or ISO 17025 accredited calibration, please contact your preferred commercial calibration facility or instrument manufacturer.**

DMM is tested against the strict 24-hour specifications with 95% confidence.

Prior to the calibration of the DMM, the calibrator and reference standards were checked and recalibrated following the instrument's recommended guidelines. ACAL ALL was performed before the calibration process.
This DMM was adjusted according to the manufacturer's manual P/N 03458-90017, Chapter 3 procedures before calibration.

Reference standard	Mfg	Model	Options	Serial / Unc	CEID	Calibration date	Due date
DCC	MIL	6010B		REDACTED	XRB1	N/A	N/A
MFC	Fluke	5720A	03/HLK	7530212	XHC1	08/28/2024	01/28/2025
Amplifier	Fluke	5725A		5930005	XHB1	08/28/2024	01/28/2025
DC STD	xDevs.com	792X[2]	9.9999798 VDC	±0.5 ppm	XD01	PROCESS	PROCESS
DC STD	xDevs.com	732Bx	10.00009551 VDC	±0.5 ppm	XD01	PROCESS	PROCESS
STDR	ESI	SR104	10000.0025 KΩ	±0.2 ppm	G202088930104	07/26/2024	07/26/2025
STDR	xDevs.com/Fluke	SL935	1.00006384 Ω	±0.50 ppm	XR03	08/04/2024	08/04/2025
STDR	xDevs.com/Fluke	SL935	9999.9775 kΩ	±0.3 ppm	XR02	08/02/2024	08/02/2025
DMM	HP	3458A	001,X02	MY45040325	XD2	PROCESS	PROCESS
DMM	HP	3458A	001,X02	Process DMM	XD3	PROCESS	PROCESS

MFC last calibrated	0.0 days ago	MFC since DCV ZERO	0.0 days ago
MFC since WBFLAT	13389.0 days ago	MFC since WBGAIN	13389.0 days ago
MFC Confidence level	**24h 95% REL**	MFC Calibrate date	2024-08-28 00:00:00
MFC Calibrate date Zero	2024-08-28 00:00:00	Calibrate date WB Flatness	1988-10-01 00:00:00
Calibrate date WB Gain	1988-10-01 00:00:00	CAL CONST 6.5V reference voltage	6.493276559602114
CAL CONST 13V reference voltage	13.01710277253303	CAL CONST 22V range positive zero	398.16921

CAL CONST 22V range negative zero	398.16915	CAL CONST DAC Linearity	0.0
CAL CONST 10KOHM true output resistance	9999.641877761422	CAL CONST 10KOHM standard resistance	9998.605737051026
CAL CONST, Zero calibration temperature	25.20000076293945	CAL CONST, All calibration temp	25.20000076293945
Booster type	VB5725,IB5725	Current output posts	AUX
Calibrate date 5725A AMP	1988-10-01 00:00:00	Calibrated days ago	Debug
CAL CONST, Amp ACAL temperature	23.0	CAL CONST, Amp CalCheck temperature	23.0

Total uncertainty of each calibration point calculated with RSS

$$U_{95\%} = \sqrt{U_{SRC}{}^2 * U_{DUT}{}^2 * 2}$$

Meter Info	HP3458A	Last calibration date	??/??/????
CALSTR?	"20131203092116~37.9~2823A02383"	Test date	28 August 2024 14:20
DUT Internal TEMP?	36.5	DUT Calibrations number?	62
Self-test result?	0,"NO ERROR"	ACAL ALL result?	0,"NO ERROR"
Firmware	9,2	Options	0,0
CAL? 72	1.00161418	CAL? 1,1	39998.3868
CAL? 2,1	7.18719051	CAL? Res 73	1.00210907
CAL 0 TEMP	36.95	CAL 10V TEMP	36.99
CAL 10KOhm TEMP	37.05	CAL? DCI	1.00207696

Service information

CAL DUMP

[(1, 39998.3868), (1, 7.18719051), (1, 3.10184303e-07), (1, -2.72295817e-07), (1, -4.00571971e-07), (1, -9.33798575e-07), (1, -5.64085265e-07), (1, -1.14292629e-06), (1, -0.000244231906), (1, -0.000244231906), (1, -0.000265295096), (1, -0.000265295096), (1, 0.397583725), (1, 0.397192729), (1, 0.396638237), (1, 0.393630376), (1, 0.380983391), (1, 0.137132815), (1, -0.757194993), (1, -0.685081184), (1, -0.685081184), (1, 0.398006503), (1, 0.397105284), (1, 0.396510618), (1, 0.388882872), (1, 0.371098963), (1, 0.227351772), (1, -2.95666616), (1, -2.48792641), (1, -2.48792641), (1, 0.000211871915), (1, 0.00212489363), (1, 0.00199660597), (1, 0.0187633097), (1, 0.0343790523), (1, 0.299526938), (1, 3.56963354), (1, 2.4158126), (1, 2.4158126), (1, 9.75472672e-06), (1, 9.49868745e-05), (1, 2.74100531e-06), (1, 0.000868953968), (1, -0.012445722), (1, -0.00360875829), (1, -0.937479515), (1, -1.29804856), (1, -1.29804856), (1, 397.0), (1, 39.0), (1, 3.0), (1, 0.0), (1, 0.0), (1, 0.0), (1, 0.0), (1, 0.0), (1, 0.0), (1, 36.9479774), (1, 36.9853278), (1, 37.0457505), (1, 170.0), (1, -6.92196872e-12), (1, -3.43016874e-11), (1, -3.09478422e-10), (1, -2.18383925e-09), (1, -1.58984683e-08), (1, -1.55004088e-07), (1, -1.46619881e-06), (1, -1.58443717e-05), (1, 1.00146132), (1, 1.00212442), (1, 1.00161418), (1, 1.00210907), (1, 1.00159884), (1, 1.00305021), (1, 1.00301717), (1, 1.0036813), (1, 1.0038285), (1, 1.00392334), (1, 1.00428585), (1, 1.0034321), (1, 1.0034321), (1, 1.0034321), (1, 1.00305021), (1, 1.00301719), (1, 1.00368132), (1, 1.00382867), (1, 1.00392373), (1, 1.00428585), (1, 1.0034321), (1, 1.0034321), (1, 1.0034321), (1, 1.00207696), (1, 1.00147531), (1, 1.00074636), (1, 1.00207999), (1, 1.0015777), (1, 1.00180543), (1, 1.01042909), (1, 1.09761851), (1, 73.0), (1, 97.0), (1, 4.94889697), (1, 1.90757017e-11), (1, -1.94687054e-12), (1, 10002277.2), (1, -0.00699221935), (1, -0.0795943995), (1, 0.999999087), (1, 0.999999601), (1, 1666.99398), (1, 16666.9803), (1, 5041.0), (1, 5038.0), (1, 5040.0), (1, 5038.0), (1, 5040.0), (1, 60492.0), (1, 60456.0), (1, 60480.0), (1, 60456.0), (1, 60480.0), (1, 4993.0), (1, 4994.0), (1, 4990.0), (1, 4990.0), (1, 2494.0), (1, 2493.0), (1, 2496.0), (1, 12480.0), (1, 22691.0), (1, 59916.0), (1, 59928.0), (1, 59880.0), (1, 59880.0), (1, 29928.0), (1, 29916.0), (1, 29952.0), (1, 149760.0), (1, 272292.0), (1, 4993.0), (1, 4994.0), (1, 4990.0), (1, 4990.0), (1, 2494.0), (1, 2493.0), (1, 2496.0), (1, 12480.0), (1, 22691.0), (1, 59916.0), (1, 59928.0), (1, 59880.0), (1, 59880.0), (1, 29928.0), (1, 29916.0), (1, 29952.0), (1, 149760.0), (1, 272292.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 274.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 3288.0), (1, 36.5072273), (1, 36.5492781), (1, 36.5564084), (1, 127.0), (1, 127.0), (1, 125.0), (1, 123.0), (1, 127.0), (1, 128.0), (1, 122.0), (1, 122.0), (1, 124.0), (1, 123.0), (1, 127.0), (1, 128.0), (1, 131.0), (1, 131.0), (1, 131.0), (1, 131.0), (1, 131.0), (1, 2464.0), (1, 2461.0), (1, 1559.0), (1, 2342.0), (1, 2568.0), (1, 2573.0), (1, 132.0), (1, 127.0), (1, 126.0), (1, 127.0), (1, 129.0), (1, 127.0), (1, 127.0), (1, 127.0), (1, 127.0), (1, -0.00188093328), (1, -0.0189571064), (1, -0.195851166), (1, -1.90015755), (1, -18.8120089), (1, -189.533893), (1,

-0.00178228566), (1, -0.0189403011), (1, -0.193855568), (1, -1.9001797), (1, -18.8161283), (1, -189.465322), (1, 1.01747626), (1, 1.02420717), (1, 1.04818166), (1, 1.03120608), (1, 1.01956821), (1, 1.01827895), (1, -192862.506), (1, 10.3684536), (1, 1.00634216), (1, 1.01308307), (1, 1.03679718), (1, 1.02000597), (1, 1.0084945), (1, 1.00721924), (1, -6.84257315e-06), (1, -7.04770137e-05), (1, -0.000704770137), (1, -0.00704770137), (1, -0.0704770137), (1, -0.704770137), (1, 1.02847316), (1, 1.0002531), (1, 0.999950706), (1, 1.00001383), (1, 84.0), (1, 82.0), (1, 82.0), (1, 82.0), (1, 105.0), (1, 114.0), (1, 114.0), (1, 11.0)]
Destructive overloads?
1069053, DESTRUCTIVE OVERLOADS valid 2941
Reference
Direct MFC test, verification post-adjustment
DUT Condition
As returned condition

Test procedure : $Id: hp3458a.py | Rev 2952 | 2024/08/26 18:08:55 Illya $

Source procedure : $Id: f5720b.py | Rev 2973 | 2024/08/28 17:34:10 tin_sl $

Main DC Voltage ranges performance test.
Checks zero offset and +/-FS calibration on all ranges
The following test for the offset voltage specification using MFC 0V source in 4-wire ext sense mode as reference.
DCV gain range points verify gain of the DC voltage function, using uncorrected 24-hour MFC output. DC voltage offset of DUT is nulled before FS tests.

Test Description	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Deviation	DUT Spec	Test Status
Short 0 mVDC	**-0.28 µV**	0.75 µV	-0.910 µV	0.910 µV	N/A	0.16 µV	**PASS**
Short 0.0 VDC	**0.38 µV**	0.75 µV	-0.900 µV	0.900 µV	N/A	0.15 µV	**PASS**
Short 00.0 VDC	**0.62 µV**	0.75 µV	-1.070 µV	1.070 µV	N/A	0.32 µV	**PASS**
Short 000.0 VDC	**36.62 µV**	0.75 µV	-14.750 µV	14.750 µV	N/A	14.00 µV	**FAIL due MFC short**
Short 0000.0 VDC	**62.49 µV**	0.75 µV	-41.750 µV	41.750 µV	N/A	41.00 µV	**FAIL due MFC short**
DCV Test	**Measured Value**	**Reference uncertainty**	**Low Limit**	**Hi limit**	**Measured deviation**	**90d spec**	**Result**
0.019 VDC (0.10 Range)	**0.019000092**	22.5 µV/V	0.018999206	0.019000794	4.8 µV/V	19.3 µV/V	**PASS** 16.29 %
0.1 VDC (0.10 Range)	**0.10000008**	9.5 µV/V	0.0999984	0.1000016	0.8 µV/V	6.5 µV/V	**PASS** 6.63 %
0.11 VDC (0.10 Range)	**0.11000009**	4.5 µV/V	0.10999882	0.11000118	0.8 µV/V	6.2 µV/V	**PASS** 10.93 %
-0.019 VDC (0.10 Range)	**-0.018999847**	22.5 µV/V	-0.019000794	-0.018999206	-8.0 µV/V	19.3 µV/V	**PASS** 27.15 %
-0.1 VDC (0.10 Range)	**-0.09999972**	9.5 µV/V	-0.1000016	-0.0999984	-2.8 µV/V	6.5 µV/V	**PASS** 24.28 %
-0.11 VDC (0.10 Range)	**-0.10999971**	4.5 µV/V	-0.11000118	-0.10999882	-2.7 µV/V	6.2 µV/V	**PASS** 34.76 %
0.19 VDC (1.00 Range)	**0.19000096**	7.0 µV/V	0.18999778	0.19000222	5.0 µV/V	4.7 µV/V	**PASS** 59.78 %
1.0 VDC (1.00 Range)	**1.0000008**	2.5 µV/V	0.9999941	1.0000059	0.8 µV/V	3.4 µV/V	**PASS** 19.19 %
1.1 VDC (1.00 Range)	**1.1000007**	2.4 µV/V	1.0999937	1.1000063	0.6 µV/V	3.4 µV/V	**PASS** 14.36 %
-0.19 VDC (1.00 Range)	**-0.18999897**	7.0 µV/V	-0.19000222	-0.18999778	-5.4 µV/V	4.7 µV/V	**PASS** 64.52 %
-1.0 VDC (1.00 Range)	**-0.99999832**	2.5 µV/V	-1.0000059	-0.9999941	-1.7 µV/V	3.4 µV/V	**PASS** 39.70 %
-1.1 VDC (1.00 Range)	**-1.0999982**	2.4 µV/V	-1.1000063	-1.0999937	-1.6 µV/V	3.4 µV/V	**PASS** 38.72 %
1.9 VDC (10.00 Range)	**1.9000004**	5.1 µV/V	1.8999849	1.9000151	0.2 µV/V	2.9 µV/V	**PASS** 3.58 %
10.0 VDC (10.00 Range)	**10.000004**	3.8 µV/V	9.9999355	10.000065	0.4 µV/V	2.7 µV/V	**PASS** 9.41 %
10.999999 VDC (10.00 Range)	**11.000004**	4.4 µV/V	10.999922	11.000076	0.5 µV/V	2.6 µV/V	**PASS** 9.35 %
-1.9 VDC (10.00 Range)	**-1.8999979**	5.1 µV/V	-1.9000151	-1.8999849	-1.1 µV/V	2.9 µV/V	**PASS** 18.51 %
-10.0 VDC (10.00 Range)	**-9.9999975**	3.8 µV/V	-10.000065	-9.9999355	-0.3 µV/V	2.7 µV/V	**PASS** 5.45 %
-10.999999 VDC (10.00 Range)	**-10.999996**	4.4 µV/V	-11.000076	-10.999922	-0.3 µV/V	2.6 µV/V	**PASS** 4.90 %
19 VDC (100.00 Range)	**19.000071**	3.8 µV/V	18.999813	19.000187	3.7 µV/V	6.1 µV/V	**PASS** 52.27 %
100 VDC (100.00 Range)	**100.00004**	2.6 µV/V	99.999257	100.00074	0.4 µV/V	4.8 µV/V	**PASS** 6.50 %
110 VDC (100.00 Range)	**110.00001**	2.4 µV/V	109.99921	110.00079	0.1 µV/V	4.8 µV/V	**PASS** 2.33 %
-19 VDC (100.00 Range)	**-18.999932**	3.8 µV/V	-19.000187	-18.999813	-3.6 µV/V	6.1 µV/V	**PASS** 49.85 %
-100 VDC (100.00 Range)	**-99.99998**	2.6 µV/V	-100.00074	-99.999257	-0.2 µV/V	4.8 µV/V	**PASS** 3.74 %
-110 VDC (100.00 Range)	**-109.99998**	2.4 µV/V	-110.00079	-109.99921	-0.2 µV/V	4.8 µV/V	**PASS** 4.11 %
190 VDC (1000.00 Range)	**189.99986**	10.2 µV/V	189.99711	190.00289	-0.7 µV/V	5.0 µV/V	**PASS** 6.27 %
-190 VDC (1000.00 Range)	**-189.99988**	10.2 µV/V	-190.00289	-189.99711	-0.7 µV/V	5.0 µV/V	**PASS** 5.77 %
500 VDC (1000.00 Range)	**499.9996**	8.2 µV/V	499.99055	500.00945	-0.8 µV/V	4.7 µV/V	**PASS** 7.78 %
-500 VDC (1000.00 Range)	**-499.99983**	8.2 µV/V	-500.00945	-499.99055	-0.3 µV/V	4.7 µV/V	**PASS** 3.35 %

1000 VDC (1000.00 Range)	**999.99625**	8.0 µV/V	999.9754	1000.0246	-3.7 µV/V	4.6 µV/V	**PASS** 25.97 %
-1000 VDC (1000.00 Range)	**-999.99668**	8.0 µV/V	-1000.0246	-999.9754	-3.3 µV/V	4.6 µV/V	**PASS** 23.05 %

4W test procedure for all test points that verify Gain of the OHMF function. 4-wire kelvin connection is used between DMM and MFC.
1GΩ resistance range is tested using the external standard, as MFC unable to provide this range value.

OHM Test	Reference	Measured DUT	Reference uncertainty	Low Limit	Hi limit	Measured deviation	90d spec	Result
1 Ω	0.999681 Ω	**0.9996521 Ω**	85.0 µΩ/Ω	0.999531032	0.999830968	-28.9 µΩ/Ω	65.0 µΩ/Ω	**PASS**, 27.04 % of 107.0 µΩ/Ω
1.9 Ω	1.899631 Ω	**1.8995832 Ω**	85.0 µΩ/Ω	1.89939104	1.89987096	-25.1 µΩ/Ω	41.3 µΩ/Ω	**PASS**, 26.60 % of 94.5 µΩ/Ω
10 Ω	10.000971 Ω	**10.0009993 Ω**	23.0 µΩ/Ω	10.000541	10.001401	2.8 µΩ/Ω	20.0 µΩ/Ω	**PASS**, 9.28 % of 30.5 µΩ/Ω
19 Ω	18.998434 Ω	**18.9983351 Ω**	23.0 µΩ/Ω	18.9973071	18.9995609	-5.2 µΩ/Ω	36.3 µΩ/Ω	**PASS**, 12.11 % of 43.0 µΩ/Ω
100 Ω	99.99345 Ω	**0.099994 kΩ**	10.0 µΩ/Ω	99.9909501	99.9959499	3.5 µΩ/Ω	15.0 µΩ/Ω	**PASS**, 19.65 % of 18.0 µΩ/Ω
190 Ω	189.99449 Ω	**0.189995 kΩ**	10.0 µΩ/Ω	189.99057	189.99841	2.3 µΩ/Ω	10.6 µΩ/Ω	**PASS**, 15.50 % of 14.6 µΩ/Ω
1.0 kΩ	999.9299 Ω	**0.9999294 kΩ**	8.0 µΩ/Ω	999.913401	999.946399	-0.5 µΩ/Ω	8.5 µΩ/Ω	**PASS**, 4.49 % of 11.7 µΩ/Ω
1.9 kΩ	1899.8782 Ω	**1.8998795 kΩ**	8.0 µΩ/Ω	1899.8428	1899.9136	0.7 µΩ/Ω	10.6 µΩ/Ω	**PASS**, 5.07 % of 13.3 µΩ/Ω
10 kΩ	9999.644 Ω	**9.9996359 kΩ**	8.0 µΩ/Ω	9999.47901	9999.80899	-0.8 µΩ/Ω	8.5 µΩ/Ω	**PASS**, 6.94 % of 11.7 µΩ/Ω
19 kΩ	18999.593 Ω	**18.9995908 kΩ**	9.0 µΩ/Ω	18999.22	18999.966	-0.1 µΩ/Ω	10.6 µΩ/Ω	**PASS**, 0.84 % of 13.9 µΩ/Ω
100 kΩ	99993.55 Ω	**99.99311 kΩ**	9.0 µΩ/Ω	99991.8001	99995.2999	-4.4 µΩ/Ω	8.5 µΩ/Ω	**PASS**, 35.68 % of 12.4 µΩ/Ω
190 kΩ	190009.31 Ω	**190.00976 kΩ**	9.0 µΩ/Ω	190003.32	190015.3	2.4 µΩ/Ω	22.5 µΩ/Ω	**PASS**, 9.72 % of 24.3 µΩ/Ω
1.0 MΩ	999901.8 Ω	**0.999901 MΩ**	16.0 µΩ/Ω	999871.803	999931.797	-1.0 µΩ/Ω	14.0 µΩ/Ω	**PASS**, 4.67 % of 21.3 µΩ/Ω
1.9 MΩ	1900019.3 Ω	**1.900045 MΩ**	17.0 µΩ/Ω	1899792	1900246.6	13.3 µΩ/Ω	102.6 µΩ/Ω	**PASS**, 12.80 % of 104.0 µΩ/Ω
10 MΩ	9998286 Ω	**9.998189 MΩ**	33.0 µΩ/Ω	9997356.14	9999215.86	-9.7 µΩ/Ω	60.0 µΩ/Ω	**PASS**, 14.14 % of 68.5 µΩ/Ω
19 MΩ	19000389 Ω	**19.000695 MΩ**	43.0 µΩ/Ω	18989071.8	19011706.2	16.1 µΩ/Ω	552.6 µΩ/Ω	**PASS**, 2.91 % of 554.3 µΩ/Ω
100 MΩ	100006510 Ω	**100.00230 MΩ**	100.0 µΩ/Ω	99945506.1	100067514	-42.1 µΩ/Ω	510.0 µΩ/Ω	**PASS**, 8.10 % of 519.7 µΩ/Ω

4W and 2W Zero test procedure for all ranges that verify Zero offset of the resistance function on the FRONT inputs.

OHM ZERO 4-wire FRONT	Maximum specification	Low Limit	Hi limit	DUT Measured	Result
10 Ω Range (4w FRONT)	2.5E-05 Ω	-2.5e-05	2.5e-05	**-0.0000065 Ω**	PASS
100 Ω Range (4w FRONT)	5E-05 Ω	-5e-05	5e-05	**0.0001126 Ω**	**FAIL due to MFC short**
1.0 kΩ Range (4w FRONT)	0.0005 Ω	-0.0005	0.0005	**-0.0000126 Ω**	PASS
10 kΩ Range (4w FRONT)	0.005 Ω	-0.005	0.005	**0.0002886 Ω**	PASS
100 kΩ Range (4w FRONT)	0.05 Ω	-0.05	0.05	**-0.0007215 Ω**	PASS
1.0 MΩ Range (4w FRONT)	0.5 Ω	-0.5	0.5	**0.1804379 Ω**	PASS
10 MΩ Range (4w FRONT)	5 Ω	-5.0	5.0	**1.4783332 Ω**	PASS
100 MΩ Range (4w FRONT)	5 Ω	-5	5	**3.0287810 Ω**	PASS
1 GΩ Range (4w FRONT)	50 Ω	-50	50	**2.3436994 Ω**	PASS
OHM ZERO 2-wire FRONT	**Maximum specification**	**Low Limit**	**Hi limit**	**DUT Measured**	**Result**
10 Ω Range (2w FRONT)	0.3 Ω	-0.3	0.3	**-0.0043608 Ω**	PASS
100 Ω Range (2w FRONT)	0.35 Ω	-0.35	0.35	**-0.0016596 Ω**	PASS
1.0 kΩ Range (2w FRONT)	0.4 Ω	-0.4	0.4	**-0.0015076 Ω**	PASS
10 kΩ Range (2w FRONT)	0.4 Ω	-0.4	0.4	**0.0014609 Ω**	PASS
100 kΩ Range (2w FRONT)	0.55 Ω	-0.55	0.55	**0.0046897 Ω**	PASS
1.0 MΩ Range (2w FRONT)	5.5 Ω	-5.5	5.5	**0.2562222 Ω**	PASS
10 MΩ Range (2w FRONT)	55 Ω	-55	55	**0.5408534 Ω**	PASS
100 MΩ Range (2w FRONT)	550 Ω	-550	550	**0.8293086 Ω**	PASS
1 GΩ Range (2w FRONT)	5500 Ω	-5500	5500	**0.7211379 Ω**	PASS

4W and 2W Zero test procedure for all ranges that verify Zero offset of the resistance function on the REAR inputs

OHM ZERO 4-wire REAR	Maximum specification	Low Limit	Hi limit	DUT Measured	Result
10 Ω Range (4w REAR)	2.5E-05 Ω	-2.5e-05	2.5e-05	**0.0000093 Ω**	PASS
100 Ω Range (4w REAR)	5E-05 Ω	-5e-05	5e-05	**0.0000337 Ω**	PASS
1.0 kΩ Range (4w REAR)	0.0005 Ω	-0.0005	0.0005	**0.0000144 Ω**	PASS
10 kΩ Range (4w REAR)	0.005 Ω	-0.005	0.005	**0.0001623 Ω**	PASS
100 kΩ Range (4w REAR)	0.05 Ω	-0.05	0.05	**0.0021645 Ω**	PASS
1.0 MΩ Range (4w REAR)	0.5 Ω	-0.5	0.5	**0.0505227 Ω**	PASS
10 MΩ Range (4w REAR)	5 Ω	-5.0	5.0	**0.6129672 Ω**	PASS
100 MΩ Range (4w REAR)	5 Ω	-5	5	**0.4687396 Ω**	PASS
1 GΩ Range (4w REAR)	50 Ω	-50	50	**1.1177638 Ω**	PASS
OHM ZERO 2-wire REAR	**Maximum specification**	**Low Limit**	**Hi limit**	**DUT Measured**	**Result**
10 Ω Range (2w REAR)	0.3 Ω	-0.3	0.3	**-0.0017762 Ω**	PASS
100 Ω Range (2w REAR)	0.35 Ω	-0.35	0.35	**-0.0011779 Ω**	PASS
1.0 kΩ Range (2w REAR)	0.4 Ω	-0.4	0.4	**-0.0009666 Ω**	PASS
10 kΩ Range (2w REAR)	0.4 Ω	-0.4	0.4	**0.0067633 Ω**	PASS
100 kΩ Range (2w REAR)	0.55 Ω	-0.55	0.55	**0.0119046 Ω**	PASS

1.0 MΩ Range (2w REAR)	5.5 Ω	-5.5	5.5	**-0.0360876 Ω**	PASS
10 MΩ Range (2w REAR)	55 Ω	-55	55	**0.8293085 Ω**	PASS
100 MΩ Range (2w REAR)	550 Ω	-550	550	**0.5769103 Ω**	PASS
1 GΩ Range (2w REAR)	5500 Ω	-5500	5500	**0.4687396 Ω**	PASS

Procedure for all test points in the AC performance verification for SYNCronous mode. This is highest AC accuracy test. AC-measurements does not suffer from TEMF offsets, test connection can be made using shielded leads terminated with dual banana plugs. MFC main AC output is used as reference source

ACV SYNC Test	Measured Value	Source uncertainty	Low Limit	Hi limit	Measured deviation	24h spec	Result, % spec
0.01 V AC+DC @ 10 Hz	**0.0099995186**	0.0600 %	0.009988	0.010012	-0.0048 %	0.0600 %	**PASS**, 5.67 % of 849 µV/V
0.01 V AC+DC @ 20 Hz	**0.009998967**	0.0480 %	0.0099892	0.0100108	-0.0103 %	0.0600 %	**PASS**, 13.44 % of 768 µV/V
0.01 V AC+DC @ 40 Hz	**0.0099986362**	0.0470 %	0.0099893	0.0100107	-0.0136 %	0.0600 %	**PASS**, 17.89 % of 762 µV/V
0.01 V AC+DC @ 100 Hz	**0.0099987774**	0.0470 %	0.0099922	0.0100078	-0.0122 %	0.0310 %	**PASS**, 21.71 % of 563 µV/V
0.01 V AC+DC @ 1.0 kHz	**0.009998275**	0.0470 %	0.0099922	0.0100078	-0.0172 %	0.0310 %	**PASS**, 30.64 % of 563 µV/V
0.01 V AC+DC @ 10.0 kHz	**0.0099973686**	0.0470 %	0.0099912	0.0100088	-0.0263 %	0.0410 %	**PASS**, 42.19 % of 624 µV/V
0.01 V AC+DC @ 20.0 kHz	**0.0099963292**	0.0470 %	0.0099912	0.0100088	-0.0367 %	0.0410 %	**PASS**, 58.85 % of 624 µV/V
0.01 V AC+DC @ 50.0 kHz	**0.0099896007**	0.0570 %	0.0099832	0.0100168	-0.1040 %	0.1110 %	PASS, 83.34 % of 1248 µV/V
0.01 V AC+DC @ 100.0 kHz	**0.0099716931**	0.0900 %	0.0099399	0.0100601	-0.2831 %	0.5110 %	**PASS**, 54.56 % of 5189 µV/V
0.01 V AC+DC @ 300.0 kHz	**0.0098469055**	0.1300 %	0.009585	0.010415	-1.5309 %	4.0200 %	**PASS**, 38.06 % of 40221 µV/V
0.01 V AC+DC @ 500.0 kHz	**0.0099398908**	0.3100 %	0.009164	0.010836	-0.6011 %	8.0500 %	**PASS**, 7.46 % of 80560 µV/V
0.03 V AC+DC @ 10 Hz	**0.030000926**	0.0600 %	0.029975	0.030025	0.0031 %	0.0233 %	**PASS**, 4.80 % of 644 µV/V
0.03 V AC+DC @ 20 Hz	**0.029998536**	0.0313 %	0.02998361	0.03001639	-0.0049 %	0.0233 %	**PASS**, 12.50 % of 390 µV/V
0.03 V AC+DC @ 40 Hz	**0.029998611**	0.0303 %	0.02998391	0.03001609	-0.0046 %	0.0233 %	**PASS**, 12.10 % of 382 µV/V
0.03 V AC+DC @ 100 Hz	**0.029998898**	0.0303 %	0.02998681	0.03001319	-0.0037 %	0.0137 %	**PASS**, 11.06 % of 332 µV/V
0.03 V AC+DC @ 1.0 kHz	**0.029998173**	0.0303 %	0.02998681	0.03001319	-0.0061 %	0.0137 %	**PASS**, 18.32 % of 332 µV/V
0.03 V AC+DC @ 10.0 kHz	**0.029998388**	0.0303 %	0.02998471	0.03001529	-0.0054 %	0.0207 %	**PASS**, 14.65 % of 367 µV/V
0.03 V AC+DC @ 20.0 kHz	**0.029998109**	0.0303 %	0.02998471	0.03001529	-0.0063 %	0.0207 %	**PASS**, 17.19 % of 367 µV/V
0.03 V AC+DC @ 50.0 kHz	**0.029998594**	0.0403 %	0.02997691	0.03002309	-0.0047 %	0.0367 %	**PASS**, 8.60 % of 545 µV/V
0.03 V AC+DC @ 100.0 kHz	**0.029993359**	0.0967 %	0.02994499	0.03005501	-0.0221 %	0.0867 %	**PASS**, 17.05 % of 1299 µV/V
0.03 V AC+DC @ 300.0 kHz	**0.02996466**	0.1400 %	0.029858	0.030142	-0.1178 %	0.3333 %	**PASS**, 32.58 % of 3615 µV/V
0.03 V AC+DC @ 500.0 kHz	**0.030063264**	0.1900 %	0.029633	0.030367	0.2109 %	1.0333 %	**PASS**, 20.07 % of 10507 µV/V
0.03 V AC+DC @ 1.0 MHz	**0.030100286**	0.3900 %	0.029573	0.030427	0.3343 %	1.0333 %	**PASS**, 30.27 % of 11045 µV/V
0.1 V AC+DC @ 10 Hz	**0.099998285**	0.0320 %	0.099954	0.100046	-0.0017 %	0.0140 %	**PASS**, 4.91 % of 349 µV/V
0.1 V AC+DC @ 20 Hz	**0.099995098**	0.0150 %	0.099971	0.100029	-0.0049 %	0.0140 %	**PASS**, 23.89 % of 205 µV/V
0.1 V AC+DC @ 40 Hz	**0.099994392**	0.0121 %	0.09997386	0.1000261	-0.0056 %	0.0140 %	**PASS**, 30.27 % of 185 µV/V
0.1 V AC+DC @ 100 Hz	**0.099994019**	0.0121 %	0.09997886	0.1000211	-0.0060 %	0.0090 %	**PASS**, 39.58 % of 151 µV/V
0.1 V AC+DC @ 1.0 kHz	**0.099991316**	0.0121 %	0.09997886	0.1000211	-0.0087 %	0.0090 %	**PASS**, 57.47 % of 151 µV/V
0.1 V AC+DC @ 10.0 kHz	**0.09999187**	0.0121 %	0.09997186	0.1000281	-0.0081 %	0.0160 %	**PASS**, 40.48 % of 201 µV/V
0.1 V AC+DC @ 20.0 kHz	**0.099993913**	0.0121 %	0.09997186	0.1000281	-0.0061 %	0.0160 %	**PASS**, 30.31 % of 201 µV/V
0.1 V AC+DC @ 50.0 kHz	**0.099990324**	0.0256 %	0.09994236	0.1000576	-0.0097 %	0.0320 %	**PASS**, 23.60 % of 410 µV/V
0.1 V AC+DC @ 100.0 kHz	**0.099972213**	0.0591 %	0.09985891	0.1001411	-0.0278 %	0.0820 %	**PASS**, 27.49 % of 1011 µV/V
0.1 V AC+DC @ 300.0 kHz	**0.099810259**	0.0964 %	0.09959364	0.1004064	-0.1897 %	0.3100 %	**PASS**, 58.45 % of 3246 µV/V
0.1 V AC+DC @ 500.0 kHz	**0.10022126**	0.1500 %	0.09884	0.10116	0.2213 %	1.0100 %	**PASS**, 21.67 % of 10211 µV/V
0.1 V AC+DC @ 1.0 MHz	**0.10031154**	0.3000 %	0.09869	0.10131	0.3115 %	1.0100 %	**PASS**, 29.57 % of 10536 µV/V
0.3 V AC+DC @ 10 Hz	**0.30000684**	0.0270 %	0.299429	0.300571	0.0023 %	0.1633 %	**PASS**, 1.38 % of 1655 µV/V

0.3 V AC+DC @ 20 Hz	**0.29999246**	0.0120 %	0.299474	0.300526	-0.0025 %	0.1633 %	**PASS**, 1.53 % of 1638 µV/V
0.3 V AC+DC @ 40 Hz	**0.29999058**	0.0050 %	0.299495	0.300505	-0.0031 %	0.1633 %	**PASS**, 1.92 % of 1634 µV/V
0.3 V AC+DC @ 100 Hz	**0.29999314**	0.0050 %	0.2997851	0.3002149	-0.0023 %	0.0667 %	**PASS**, 3.42 % of 669 µV/V
0.3 V AC+DC @ 1.0 kHz	**0.30000147**	0.0050 %	0.2997851	0.3002149	0.0005 %	0.0667 %	**PASS**, 0.73 % of 669 µV/V
0.3 V AC+DC @ 10.0 kHz	**0.30000048**	0.0050 %	0.2999051	0.3000949	0.0002 %	0.0267 %	**PASS**, 0.58 % of 271 µV/V
0.3 V AC+DC @ 20.0 kHz	**0.29997181**	0.0050 %	0.2999051	0.3000949	-0.0094 %	0.0267 %	**PASS**, 34.64 % of 271 µV/V
0.3 V AC+DC @ 50.0 kHz	**0.29998561**	0.0085 %	0.2995044	0.3004956	-0.0048 %	0.1567 %	**PASS**, 3.06 % of 1569 µV/V
0.3 V AC+DC @ 100.0 kHz	**0.30005268**	0.0138 %	0.2981385	0.3018615	0.0176 %	0.6067 %	**PASS**, 2.89 % of 6068 µV/V
0.3 V AC+DC @ 300.0 kHz	**0.30048189**	0.0425 %	0.2937724	0.3062276	0.1606 %	2.0333 %	**PASS**, 7.90 % of 20338 µV/V
0.3 V AC+DC @ 500.0 kHz	**0.3003814**	0.1100 %	0.28457	0.31543	0.1271 %	5.0333 %	**PASS**, 2.53 % of 50345 µV/V
0.3 V AC+DC @ 1.0 MHz	**0.30317489**	0.1800 %	0.28436	0.31564	1.0583 %	5.0333 %	**PASS**, 21.01 % of 50366 µV/V
1.0 V AC+DC @ 10 Hz	**1.0000149**	0.0240 %	0.99822	1.00178	0.0015 %	0.1540 %	**PASS**, 0.96 % of 1559 µV/V
1.0 V AC+DC @ 20 Hz	**0.99999147**	0.0090 %	0.99837	1.00163	-0.0009 %	0.1540 %	**PASS**, 0.55 % of 1543 µV/V
1.0 V AC+DC @ 40 Hz	**0.99999183**	0.0045 %	0.998415	1.001585	-0.0008 %	0.1540 %	**PASS**, 0.53 % of 1541 µV/V
1.0 V AC+DC @ 100 Hz	**0.99999816**	0.0045 %	0.999335	1.000665	-0.0002 %	0.0620 %	**PASS**, 0.30 % of 622 µV/V
1.0 V AC+DC @ 1.0 kHz	**1.0000275**	0.0045 %	0.999335	1.000665	0.0028 %	0.0620 %	**PASS**, 4.42 % of 622 µV/V
1.0 V AC+DC @ 10.0 kHz	**1.0000007**	0.0045 %	0.999735	1.000265	0.0001 %	0.0220 %	**PASS**, 0.33 % of 225 µV/V
1.0 V AC+DC @ 20.0 kHz	**0.99994653**	0.0045 %	0.999735	1.000265	-0.0053 %	0.0220 %	**PASS**, 23.81 % of 225 µV/V
1.0 V AC+DC @ 50.0 kHz	**0.9999567**	0.0075 %	0.998405	1.001595	-0.0043 %	0.1520 %	**PASS**, 2.85 % of 1522 µV/V
1.0 V AC+DC @ 100.0 kHz	**1.0001235**	0.0130 %	0.99385	1.00615	0.0124 %	0.6020 %	**PASS**, 2.05 % of 6021 µV/V
1.0 V AC+DC @ 300.0 kHz	**1.0016348**	0.0380 %	0.97952	1.02048	0.1635 %	2.0100 %	**PASS**, 8.13 % of 20104 µV/V
1.0 V AC+DC @ 500.0 kHz	**1.0012882**	0.1000 %	0.9489	1.0511	0.1288 %	5.0100 %	**PASS**, 2.57 % of 50110 µV/V
1.0 V AC+DC @ 1.0 MHz	**1.0100414**	0.1600 %	0.9483	1.0517	1.0041 %	5.0100 %	**PASS**, 20.03 % of 50126 µV/V
3.0 V AC+DC @ 10 Hz	**3.0000484**	0.0333 %	2.9941	3.0059	0.0016 %	0.1633 %	**PASS**, 0.97 % of 1667 µV/V
3.0 V AC+DC @ 20 Hz	**2.9999739**	0.0105 %	2.994785	3.005215	-0.0009 %	0.1633 %	**PASS**, 0.53 % of 1637 µV/V
3.0 V AC+DC @ 40 Hz	**2.9999721**	0.0054 %	2.994939	3.005061	-0.0009 %	0.1633 %	**PASS**, 0.57 % of 1634 µV/V
3.0 V AC+DC @ 100 Hz	**2.9999842**	0.0054 %	2.997839	3.002161	-0.0005 %	0.0667 %	**PASS**, 0.79 % of 669 µV/V
3.0 V AC+DC @ 1.0 kHz	**2.9999399**	0.0054 %	2.997839	3.002161	-0.0020 %	0.0667 %	**PASS**, 3.00 % of 669 µV/V
3.0 V AC+DC @ 10.0 kHz	**2.9999231**	0.0054 %	2.999039	3.000961	-0.0026 %	0.0267 %	**PASS**, 9.42 % of 272 µV/V
3.0 V AC+DC @ 20.0 kHz	**2.9999133**	0.0054 %	2.999039	3.000961	-0.0029 %	0.0267 %	**PASS**, 10.63 % of 272 µV/V
3.0 V AC+DC @ 50.0 kHz	**2.9999359**	0.0098 %	2.995005	3.004995	-0.0021 %	0.1567 %	**PASS**, 1.36 % of 1570 µV/V
3.0 V AC+DC @ 100.0 kHz	**2.9999311**	0.0157 %	2.98133	3.01867	-0.0023 %	0.6067 %	**PASS**, 0.38 % of 6069 µV/V
3.0 V AC+DC @ 300.0 kHz	**2.9989958**	0.0450 %	2.93765	3.06235	-0.0335 %	2.0333 %	**PASS**, 1.65 % of 20338 µV/V
3.0 V AC+DC @ 500.0 kHz	**3.0097484**	0.1500 %	2.8445	3.1555	0.3249 %	5.0333 %	**PASS**, 6.45 % of 50356 µV/V
3.0 V AC+DC @ 1.0 MHz	**3.0002333**	0.2300 %	2.8421	3.1579	0.0078 %	5.0333 %	**PASS**, 0.15 % of 50386 µV/V
10.0 V AC+DC @ 10 Hz	**10.000339**	0.0240 %	9.9822	10.0178	0.0034 %	0.1540 %	**PASS**, 2.17 % of 1559 µV/V
10.0 V AC+DC @ 20 Hz	**10.000136**	0.0090 %	9.9837	10.0163	0.0014 %	0.1540 %	**PASS**, 0.88 % of 1543 µV/V
10.0 V AC+DC @ 40 Hz	**10.000129**	0.0042 %	9.98418	10.01582	0.0013 %	0.1540 %	**PASS**, 0.84 % of 1541 µV/V
10.0 V AC+DC @ 100 Hz	**10.000105**	0.0042 %	9.99338	10.00662	0.0010 %	0.0620 %	**PASS**, 1.69 % of 621 µV/V
10.0 V AC+DC @ 1.0 kHz	**9.9999966**	0.0042 %	9.99338	10.00662	-0.0000 %	0.0620 %	**PASS**, 0.05 % of 621 µV/V
10.0 V AC+DC @ 10.0 kHz	**9.9997782**	0.0042 %	9.99738	10.00262	-0.0022 %	0.0220 %	**PASS**, 9.90 % of 224 µV/V

10.0 V AC+DC @ 20.0 kHz	**9.999887**	0.0042 %	9.99738	10.00262	-0.0011 %	0.0220 %	**PASS**, 5.04 % of 224 µV/V
10.0 V AC+DC @ 50.0 kHz	**9.9996704**	0.0075 %	9.98405	10.01595	-0.0033 %	0.1520 %	**PASS**, 2.17 % of 1522 µV/V
10.0 V AC+DC @ 100.0 kHz	**9.9991189**	0.0110 %	9.9387	10.0613	-0.0088 %	0.6020 %	**PASS**, 1.46 % of 6021 µV/V
10.0 V AC+DC @ 300.0 kHz	**9.9968705**	0.0310 %	9.7959	10.2041	-0.0313 %	2.0100 %	**PASS**, 1.56 % of 20102 µV/V
10.0 V AC+DC @ 500.0 kHz	**10.031336**	0.1000 %	9.489	10.511	0.3134 %	5.0100 %	**PASS**, 6.25 % of 50110 µV/V
10.0 V AC+DC @ 1.0 MHz	**9.9986948**	0.1500 %	9.484	10.516	-0.0131 %	5.0100 %	**PASS**, 0.26 % of 50122 µV/V
30 V AC+DC @ 10 Hz	**29.999319**	0.0333 %	29.98001	30.01999	-0.0023 %	0.0333 %	**PASS**, 4.82 % of 471 µV/V
30 V AC+DC @ 20 Hz	**29.998722**	0.0125 %	29.98625	30.01375	-0.0043 %	0.0333 %	**PASS**, 11.97 % of 356 µV/V
30 V AC+DC @ 40 Hz	**29.998657**	0.0065 %	29.98805	30.01195	-0.0045 %	0.0333 %	**PASS**, 13.18 % of 340 µV/V
30 V AC+DC @ 100 Hz	**29.998627**	0.0065 %	29.99005	30.00995	-0.0046 %	0.0267 %	**PASS**, 16.68 % of 274 µV/V
30 V AC+DC @ 1.0 kHz	**29.998262**	0.0065 %	29.99005	30.00995	-0.0058 %	0.0267 %	**PASS**, 21.11 % of 274 µV/V
30 V AC+DC @ 10.0 kHz	**29.997565**	0.0065 %	29.99005	30.00995	-0.0081 %	0.0267 %	**PASS**, 29.57 % of 274 µV/V
30 V AC+DC @ 20.0 kHz	**29.995858**	0.0065 %	29.99005	30.00995	-0.0138 %	0.0267 %	**PASS**, 50.30 % of 274 µV/V
30 V AC+DC @ 50.0 kHz	**29.991332**	0.0103 %	29.9844	30.0156	-0.0289 %	0.0417 %	**PASS**, 67.31 % of 429 µV/V
30 V AC+DC @ 100.0 kHz	**29.981981**	0.0203 %	29.95591	30.04409	-0.0601 %	0.1267 %	**PASS**, 46.82 % of 1283 µV/V
30 V AC+DC @ 300.0 kHz	**29.928154**	0.1200 %	29.834	30.166	-0.2395 %	0.4333 %	**PASS**, 53.26 % of 4496 µV/V
30 V AC+DC @ 500.0 kHz	**29.938943**	0.5300 %	29.381	30.619	-0.2035 %	1.5333 %	**PASS**, 12.55 % of 16223 µV/V
100.0 V AC+DC @ 10 Hz	**100.00004**	0.0240 %	99.952	100.048	0.0000 %	0.0240 %	**PASS**, 0.11 % of 339 µV/V
100.0 V AC+DC @ 20 Hz	**99.998513**	0.0090 %	99.967	100.033	-0.0015 %	0.0240 %	**PASS**, 5.80 % of 256 µV/V
100.0 V AC+DC @ 40 Hz	**99.998273**	0.0051 %	99.9709	100.0291	-0.0017 %	0.0240 %	**PASS**, 7.04 % of 245 µV/V
100.0 V AC+DC @ 100 Hz	**99.998058**	0.0051 %	99.9729	100.0271	-0.0019 %	0.0220 %	**PASS**, 8.60 % of 226 µV/V
100.0 V AC+DC @ 1.0 kHz	**99.997183**	0.0051 %	99.9729	100.0271	-0.0028 %	0.0220 %	**PASS**, 12.47 % of 226 µV/V
100.0 V AC+DC @ 10.0 kHz	**99.995936**	0.0051 %	99.9729	100.0271	-0.0041 %	0.0220 %	**PASS**, 18.00 % of 226 µV/V
100.0 V AC+DC @ 20.0 kHz	**99.99081**	0.0051 %	99.9729	100.0271	-0.0092 %	0.0220 %	**PASS**, 40.69 % of 226 µV/V
100.0 V AC+DC @ 50.0 kHz	**99.971712**	0.0080 %	99.955	100.045	-0.0283 %	0.0370 %	**PASS**, 74.73 % of 379 µV/V
100.0 V AC+DC @ 100.0 kHz	**99.935606**	0.0145 %	99.8635	100.1365	-0.0644 %	0.1220 %	**PASS**, 52.41 % of 1229 µV/V
300.0 V AC+DC @ 100 Hz	**299.99867**	0.0088 %	299.8336	300.1664	-0.0004 %	0.0467 %	**PASS**, 0.94 % of 475 µV/V
300.0 V AC+DC @ 1.0 kHz	**299.99957**	0.0088 %	299.8336	300.1664	-0.0001 %	0.0467 %	**PASS**, 0.30 % of 475 µV/V
750.0 V AC+DC @ 100 Hz	**750.09135**	0.0080 %	749.62	750.38	0.0122 %	0.0427 %	**PASS**, 28.06 % of 434 µV/V
750.0 V AC+DC @ 1.0 kHz	**750.11546**	0.0080 %	749.62	750.38	0.0154 %	0.0427 %	**PASS**, 35.46 % of 434 µV/V

Procedure for all test points that verify Gain of the DC current DCI function. Both +/-FS points are tested.
2-wire connection at LO and DCI is used between DMM and MFC.
DCI gain range points verify gain of the DC current function, using corrected 24-hour MFC output.

DCI Test	DUT measured	Reference uncertainty	Low Limit	Hi limit	Deviation from reference	90d spec	Result
Zero µADC	**0.0126 nA**						INFO
50 nADC	**49.9010 nA**						INFO
100 nADC	**99.9763 nA**	0.157 %	9.979982E-08	1.002002E-07	-237.3 µA/A	430 µA/A	**PASS**, 14.56 % of 0.163 %
-100 nADC	**-100.0142 nA**	0.157 %	-1.002002E-07	-9.979982E-08	141.5 µA/A	430 µA/A	**PASS**, 8.69 % of 0.163 %
-50 nADC	**-50.0222 nA**						INFO
Zero µADC	**0.0459 nA**						INFO
0.5 µADC	**499.9113 nA**	0.162 %	4.991425E-07	5.008575E-07	-177.3 µA/A	95 µA/A	**PASS**, 10.93 % of 0.162 %
1.0 µADC	**1.00000 µA**	0.082 %	9.99124E-07	1.000876E-06	2.4 µA/A	55 µA/A	**PASS**, 0.29 % of 823 µA/A
-1.0 µADC	**-0.99997 µA**	0.082 %	-1.000876E-06	-9.99124E-07	-33.2 µA/A	55 µA/A	**PASS**, 4.03 % of 823 µA/A
-0.5 µADC	**-500.0051 nA**	0.162 %	-5.008575E-07	-4.991425E-07	10.1 µA/A	95 µA/A	**PASS**, 0.62 % of 0.162 %
Zero 00 µADC	**0.0299 nA**						INFO
5 µADC	**5.00001 µA**	182.0 µA/A	4.998915E-06	5.001085E-06	2.8 µA/A	35 µA/A	**PASS**, 1.53 % of 185 µA/A
10 µADC	**9.99997 µA**	102.0 µA/A	9.99873E-06	1.000127E-05	-2.6 µA/A	25 µA/A	**PASS**, 2.44 % of 105 µA/A
-10 µADC	**-9.99985 µA**	102.0 µA/A	-1.000127E-05	-9.99873E-06	-15.3 µA/A	25 µA/A	**PASS**, 14.56 % of 105 µA/A
-5 µADC	**-4.99986 µA**	182.0 µA/A	-5.001085E-06	-4.998915E-06	-27.8 µA/A	35 µA/A	**PASS**, 15.01 % of 185 µA/A
Zero 000 µADC	**0.0705 nA**						INFO
50 µADC	**49.99967 µA**	38.0 µA/A	4.999655E-05	5.000345E-05	-6.6 µA/A	31 µA/A	**PASS**, 13.48 % of 49 µA/A
100 µADC	**99.99893 µA**	30.0 µA/A	9.99947E-05	0.0001000053	-10.7 µA/A	23 µA/A	**PASS**, 28.25 % of 38 µA/A
-100 µADC	**-99.99806 µA**	30.0 µA/A	-0.0001000053	-9.99947E-05	-19.4 µA/A	23 µA/A	**PASS**, 51.29 % of 38 µA/A
-50 µADC	**-49.99885 µA**	38.0 µA/A	-5.000345E-05	-4.999655E-05	-23.0 µA/A	31 µA/A	**PASS**, 46.91 % of 49 µA/A
Zero mADC	**0.0677 nA**						INFO
0.5 mADC	**499.99658 µA**	26.0 µA/A	0.0004999745	0.0005000255	-6.8 µA/A	25 µA/A	**PASS**, 18.97 % of 36 µA/A
1.0 mADC	**0.999993 mA**	24.0 µA/A	0.000999956	0.001000044	-7.2 µA/A	20 µA/A	**PASS**, 23.05 % of 31 µA/A
-1.0 mADC	**-0.999991 mA**	24.0 µA/A	-0.001000044	-0.000999956	-9.0 µA/A	20 µA/A	**PASS**, 28.66 % of 31 µA/A
-0.5 mADC	**-499.99568 µA**	26.0 µA/A	-0.0005000255	-0.0004999745	-8.6 µA/A	25 µA/A	**PASS**, 23.93 % of 36 µA/A
Zero 00 mADC	**0.0584 nA**						INFO
5 mADC	**4.999964 mA**	26.0 µA/A	0.004999745	0.005000255	-7.2 µA/A	25 µA/A	**PASS**, 19.91 % of 36 µA/A
10 mADC	**9.999924 mA**	24.0 µA/A	0.00999956	0.01000044	-7.6 µA/A	20 µA/A	**PASS**, 24.26 % of 31 µA/A
-10 mADC	**-9.999922 mA**	24.0 µA/A	-0.01000044	-0.00999956	-7.8 µA/A	20 µA/A	**PASS**, 24.99 % of 31 µA/A
-5 mADC	**-4.999971 mA**	26.0 µA/A	-0.005000255	-0.004999745	-5.9 µA/A	25 µA/A	**PASS**, 16.22 % of 36 µA/A
Zero 000 mADC	**0.0893 nA**						INFO
50 mADC	**50.000582 mA**	27.5 µA/A	0.04999663	0.05000337	11.6 µA/A	40 µA/A	**PASS**, 23.98 % of 49 µA/A
100 mADC	**100.00107 mA**	26.5 µA/A	0.09999385	0.1000061	10.7 µA/A	35 µA/A	**PASS**, 24.39 % of 44 µA/A
-100 mADC	**-100.00186 mA**	26.5 µA/A	-0.1000062	-0.09999385	18.6 µA/A	35 µA/A	**PASS**, 42.41 % of 44 µA/A
-50 mADC	**-50.000916 mA**	27.5 µA/A	-0.05000338	-0.04999662	18.3 µA/A	40 µA/A	**PASS**, 37.75 % of 49 µA/A

Zero ADC	**0.0469 nA**						INFO
0.5 ADC	**499.98577 mA**	46.0 µA/A	0.499917	0.500083	-28.5 µA/A	120 µA/A	**PASS**, 22.15 % of 129 µA/A
-0.5 ADC	**-499.98092 mA**	46.0 µA/A	-0.500083	-0.499917	-38.2 µA/A	120 µA/A	**PASS**, 29.70 % of 129 µA/A
1.0 ADC	**0.9999138 A**	43.0 µA/A	0.999847	1.000153	-86.2 µA/A	110 µA/A	**PASS**, 73.00 % of 118 µA/A
-1.0 ADC	**-0.9999097 A**	43.0 µA/A	-1.000153	-0.999847	-90.3 µA/A	110 µA/A	**PASS**, 76.50 % of 118 µA/A

Procedure for all test points that verify Gain of the AC Current ACI function. Three frequency band points are tested, 50 Hz, 60 Hz and 1 kHz. 2-wire connection at LO and DCI is used between DMM and MFC.

ACI Test	Measured Value	Reference uncertainty	Low Limit	Hi limit	Measured deviation	90d spec	Result, % spec
10 µA AC @ 50 Hz	**10.01696 µA**	0.0900 %	9.955E-06	1.0045E-05	0.1696 %	0.360 %	**PASS**, 22.85 % of 7422 µA/A
100 µA AC @ 50 Hz	**99.98943 µA**	0.0180 %	9.9892E-05	0.000100108	-0.0106 %	0.090 %	**PASS**, 5.76 % of 1836 µA/A
1.0 mA AC @ 50 Hz	**0.999937 mA**	0.0135 %	0.000999065	0.001000935	-0.0063 %	0.080 %	**PASS**, 3.87 % of 1623 µA/A
10 mA AC @ 50 Hz	**9.999257 mA**	0.0135 %	0.00999065	0.01000935	-0.0074 %	0.080 %	**PASS**, 4.58 % of 1623 µA/A
100 mA AC @ 50 Hz	**99.99706 mA**	0.0125 %	0.0999075	0.1000925	-0.0029 %	0.080 %	**PASS**, 1.82 % of 1619 µA/A
1.0 A AC @ 50 Hz	**0.9998999 A**	0.0265 %	0.998735	1.001265	-0.0100 %	0.100 %	**PASS**, 4.84 % of 2069 µA/A
10 µA AC @ 60 Hz	**10.01683 µA**	0.0900 %	9.955E-06	1.0045E-05	0.1683 %	0.360 %	**PASS**, 22.68 % of 7422 µA/A
100 µA AC @ 60 Hz	**99.99199 µA**	0.0180 %	9.9892E-05	0.000100108	-0.0080 %	0.090 %	**PASS**, 4.36 % of 1836 µA/A
1.0 mA AC @ 60 Hz	**0.999960 mA**	0.0135 %	0.000999065	0.001000935	-0.0040 %	0.080 %	**PASS**, 2.49 % of 1623 µA/A
10 mA AC @ 60 Hz	**9.999641 mA**	0.0135 %	0.00999065	0.01000935	-0.0036 %	0.080 %	**PASS**, 2.21 % of 1623 µA/A
100 mA AC @ 60 Hz	**99.99915 mA**	0.0125 %	0.0999075	0.1000925	-0.0008 %	0.080 %	**PASS**, 0.52 % of 1619 µA/A
1.0 A AC @ 60 Hz	**0.9999222 A**	0.0265 %	0.998735	1.001265	-0.0078 %	0.100 %	**PASS**, 3.76 % of 2069 µA/A
10 µA AC @ 1.0 kHz	**10.01538 µA**	0.0900 %	9.955E-06	1.0045E-05	0.1538 %	0.360 %	**PASS**, 20.73 % of 7422 µA/A
100 µA AC @ 1.0 kHz	**99.98806 µA**	0.0180 %	9.9892E-05	0.000100108	-0.0119 %	0.090 %	**PASS**, 6.50 % of 1836 µA/A
1.0 mA AC @ 1.0 kHz	**1.000008 mA**	0.0135 %	0.000999365	0.001000635	0.0008 %	0.050 %	**PASS**, 0.75 % of 1036 µA/A
10 mA AC @ 1.0 kHz	**10.000129 mA**	0.0135 %	0.00999365	0.01000635	0.0013 %	0.050 %	**PASS**, 1.25 % of 1036 µA/A
100 mA AC @ 1.0 kHz	**100.00583 mA**	0.0125 %	0.0999375	0.1000625	0.0058 %	0.050 %	**PASS**, 5.66 % of 1031 µA/A
1.0 A AC @ 1.0 kHz	**1.0001098 A**	0.0265 %	0.998535	1.001465	0.0110 %	0.120 %	**PASS**, 4.47 % of 2458 µA/A

Test date	29 August 2024 03:30
UUT Internal TEMP?	35.6
Destructive overloads?	1069056, DESTRUCTIVE OVERLOADS valid 2941

Lab temperature maintained +23°C ±2°C

Note 1: High voltages (>100V) data was captured after initial 5 minute warm-up for DMM divider

Note 2: High current (>100mA) data was captured after initial 10 minute warm-up for DMM shunts

This is NOT an accredited calibration, data is presented for evaluation reference only