

Manufacturer	HEWLETT-PACKARD	Calibration date	05 January 2017
Model Number	3458A	Ambient Temperature	24.48 °C
Serial	MY45040325	Relative Humidity	55.10 %
ID Number	Post-cal-test 52h test #14	Pressure	1016.71
Notes	Post-test 48h	Test type	POST-CAL PERFVAL

This note is test dummy text block for further use. It allow to include user information for further reference

Reference standard	Mfg	Model	Options	Serial Number	CEID	Calibration date	Due date
DMM	Agilent	3458A-CAL	001,002	2823A0XXXX	XM01	2016/09/02	2017/09/02
MFC	Fluke	5700A/03		XXX	ML01	2017/01/02	2017/03/02
STDR	IET	1 Ohm		± 0.17ppm	SM02	2016/08/18	2017/08/18
STDR	ESI	SR104	10000.505 KΩ	± 0.17ppm	SM01	2016/08/18	2017/08/18
STDR	xD	1GOhm	1.0 GΩ	XXX	MR00	2016/08/23	2017/08/23
DC STD	Fluke	732B	9.9999323 VDC	± 0.55ppm	SV03	2016/08/20	2017/08/20
SigGen	HP	3325B		XXXXAXXXXX	XG01	2011/09/20	2017/09/20

Unit last calibrated	2.0 days ago	Unit since DCV ZERO	1.0 days ago
Unit since WBFLAT	1591.0 days ago	Unit since WBGAIN	133.0 days ago
Confidence level	24h 95%	Calibrate date	2017-10-03 00:00:00
Calibrate date Zero	2017-10-04 00:00:00	Calibrate date WB Flatness	2012-08-28 00:00:00
Calibrate date WB Gain	2016-08-25 00:00:00	CAL CONST 6.5V reference voltage	6.89136486635
CAL CONST 13V reference voltage	13.7948232566	CAL CONST 22V range positive zero	398.17877
CAL CONST 22V range negative zero	398.17833	CAL CONST DAC Linearity	0.0
CAL CONST 10KOHM true output resistance	10000.0840484	CAL CONST 10KOHM standard resistance	10000.4392459
CAL CONST, Zero calibration temperature	23.6800003052	CAL CONST, All calibration temp	23.6800003052

This note is test MFC dummy text block for further use.
Calibrator was warmed up >8 hours.

Meter Info	HP3458A	Last calibration date	01/01/2017
Next calibration date	03/01/2018	Test date	05 January 2017 10:18
DUT Internal TEMP?	36.8	DUT Calibrations number?	177
Self-test result?	103,"SYNTAX -- * Expected command header."	ACAL ALL result?	0,"NO ERROR"
Firmware	9,2	Options	0,0
CAL? 72	0.982327173	CAL? 1,1	39999.2111
CAL? 2,1	7.07034233	CAL? Res 73	0.982504696
CAL 0 TEMP	36.09	CAL 10V TEMP	36.53
CAL 10KOhm TEMP	37.03	CAL? DCI	0.981227815

Service information

CAL DUMP

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Destructive overloads?

206, DESTRUCTIVE OVERLOADS valid 2941

Reference

HP 3458A-STD A9, modified for reduced oven temp with 100KΩ VPG VAR in series to 15K

DUT condition

Missing top inguard shield, only REAR terminals used for all calibrations/performance tests. New A3 is used.

Test procedure : \$!d hp3458a.py Rev 172\$

Source procedure : \$!d hp3458a.py Rev 171\$

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 corrected 24-hour MFC output. DC voltage offset of DUT is nulled before FS tests.

Test Description	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Units	Deviation	DUT Spec	Test Status
Short 0 mVDC	0.0000000E+00	0.0000005	8.2 ppm	0.000000	0.000001	VDC	N/A	0.16 μ V	PASS
Short 0.0 VDC	0.0000000E+00	0.0000005	4.0 ppm	0.000000	0.000001	VDC	N/A	0.15 μ V	PASS
Short 00.0 VDC	0.0000000E+00	0.0000011	3.3 ppm	0.000001	0.000002	VDC	N/A	0.32 μ V	PASS
Short 000.0 VDC	0.0000000E+00	0.0000063	4.4 ppm	-0.000024	0.000036	VDC	N/A	14.00 μ V	PASS
Short 0000.0 VDC	0.0000000E+00	0.0000718	6.5 ppm	-0.000028	0.000172	VDC	N/A	41.00 μ V	PASS
DCV Test	0.1V-1000V	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24hr	Result
0.1 VDC	0.100000	0.09999962	3.81 ppm	0.099999069	0.100000931	VDC	-3.753 ppm	5.50 ppm	PASS 40.31 %
-0.1 VDC	-0.100000	-0.09999991	3.81 ppm	-0.100000931	-0.099999069	VDC	-0.926 ppm	5.50 ppm	PASS 9.94 %
1.0 VDC	1.000000	1.00000007	2.45 ppm	0.99999575	1.00000425	VDC	0.069 ppm	1.80 ppm	PASS 1.62 %
-1.0 VDC	-1.000000	-1.00000003	2.45 ppm	-1.00000425	-0.99999575	VDC	0.030 ppm	1.80 ppm	PASS 0.71 %
10 VDC	10.000000	9.99999840	1.47 ppm	9.9999798	10.0000202	VDC	-0.160 ppm	0.55 ppm	PASS 7.91 %
-10 VDC	-10.000000	-9.99999754	1.47 ppm	-10.0000202	-9.9999798	VDC	-0.246 ppm	0.55 ppm	PASS 12.19 %
100 VDC	100.000000	99.99996600	2.36 ppm	99.999484	100.000516	VDC	-0.340 ppm	2.80 ppm	PASS 6.59 %
-100 VDC	-100.000000	-99.99994760	2.36 ppm	-100.000516	-99.999484	VDC	-0.524 ppm	2.80 ppm	PASS 10.16 %
1000 VDC	1000.000000	999.99982480	2.85 ppm	999.98255	1000.01745	VDC	-0.175 ppm	2.60 ppm	PASS 1.00 %
-1000 VDC	-1000.000000	-1000.00069300	2.85 ppm	-999.99345	-1000.00655	VDC	0.693 ppm	2.60 ppm	PASS 10.58 %

Additional test for **combined DUT+MFC** DC Voltage Integral Linearity (INL) using fixed 10V range.

Integral linearity is a measure of the device's deviation from ideal linear behaviour. Max linearity error of HP 3458A is ± 0.1 ppm for 10V

DCV Linearity	10V Range	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24hr	Result
10.9999999	10.99999990	10.99999866	1.47 ppm	10.999977680	11.000022120	VDC	-0.113 ppm	0.55 ppm	PASS 5.58 %
9.9999999	9.99999990	9.99999782	1.47 ppm	9.999978800	10.000019200	VDC	-0.118 ppm	0.55 ppm	PASS 5.82 %
8.8888888	8.88888800	8.88888750	1.47 ppm	8.888870044	8.888905956	VDC	-0.057 ppm	0.55 ppm	PASS 2.81 %
7.7777777	7.77777700	7.77777699	1.47 ppm	7.777761289	7.777792711	VDC	-0.001 ppm	0.55 ppm	PASS 0.04 %
6.6666666	6.66666600	6.66666582	1.47 ppm	6.666652533	6.666679467	VDC	-0.026 ppm	0.55 ppm	PASS 1.31 %
5.5555555	5.55555500	5.55555506	1.47 ppm	5.555543778	5.555566222	VDC	0.010 ppm	0.55 ppm	PASS 0.52 %
4.4444444	4.44444400	4.44444457	1.47 ppm	4.444435022	4.444452978	VDC	0.129 ppm	0.55 ppm	PASS 6.37 %
3.3333333	3.33333300	3.33333365	1.47 ppm	3.333326267	3.333339733	VDC	0.195 ppm	0.55 ppm	PASS 9.64 %
2.2222222	2.22222200	2.22222253	1.47 ppm	2.222217511	2.222226489	VDC	0.240 ppm	0.55 ppm	PASS 11.87 %
1.1111111	1.11111100	1.11111116	2.45 ppm	1.111107667	1.111114333	VDC	0.141 ppm	0.55 ppm	PASS 4.71 %
0.123456789	0.12345679	0.12345642	9.91 ppm	0.123455498	0.123458080	VDC	-3.027 ppm	0.55 ppm	PASS 28.94 %
-0.123456789	-0.12345679	-0.12345664	9.91 ppm	-0.123458080	-0.123455498	VDC	-1.243 ppm	0.55 ppm	PASS 11.88 %
-1.1111111	-1.11111100	-1.11111106	2.45 ppm	-1.111114333	-1.111107667	VDC	0.058 ppm	0.55 ppm	PASS 1.92 %
-2.2222222	-2.22222200	-2.22222184	1.47 ppm	-2.222226489	-2.222217511	VDC	-0.070 ppm	0.55 ppm	PASS 3.48 %
-3.3333333	-3.33333300	-3.33333249	1.47 ppm	-3.333339733	-3.333326267	VDC	-0.154 ppm	0.55 ppm	PASS 7.60 %
-4.4444444	-4.44444400	-4.44444327	1.47 ppm	-4.444452978	-4.444435022	VDC	-0.164 ppm	0.55 ppm	PASS 8.12 %
-5.5555555	-5.55555500	-5.55555353	1.47 ppm	-5.555566222	-5.555543778	VDC	-0.265 ppm	0.55 ppm	PASS 13.11 %
-6.6666666	-6.66666600	-6.66666407	1.47 ppm	-6.666679467	-6.666652533	VDC	-0.290 ppm	0.55 ppm	PASS 14.35 %
-7.7777777	-7.77777700	-7.77777497	1.47 ppm	-7.777792711	-7.777761289	VDC	-0.261 ppm	0.55 ppm	PASS 12.90 %
-8.8888888	-8.88888800	-8.88888562	1.47 ppm	-8.888905956	-8.888870044	VDC	-0.268 ppm	0.55 ppm	PASS 13.27 %
-9.9999999	-9.99999900	-9.99999605	1.47 ppm	-10.000019200	-9.999978800	VDC	-0.295 ppm	0.55 ppm	PASS 14.60 %
-10.9999999	-10.99999990	-10.99999784	1.47 ppm	-11.000022120	-10.999977680	VDC	-0.187 ppm	0.55 ppm	PASS 9.27 %

Procedure for all test points in the AC performance verification for ANAlog mode.

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 ANA Test	1V-10V	3458B	w/Guardband	Low Limit	Hi limit	Units	Measured	24h spec	Result
1.0 VAC @ 50.0 kHz	1.0	1.0001338	129.09	0.99955091	1.00044909	VAC	133.767 ppm	320.0 ppm	PASS 29.79 %
1.0 VAC @ 1.0 MHz	1.0	1.0153036	0.2500 %	0.9874	1.0126	VAC	1.5304 %	1.0100 %	FAIL 121.46 %
10.0 VAC @ 10 Hz	10.0	9.9821675	2085	9.97805	10.02195	VAC	-1783.254 ppm	110.0 ppm	PASS 81.24 %
10.0 VAC @ 200 Hz	10.0	10.000868	73.18	9.9983682	10.0016318	VAC	86.771 ppm	90.0 ppm	PASS 53.18 %
10.0 VAC @ 500 Hz	10.0	10.000847	73.18	9.9983682	10.0016318	VAC	84.673 ppm	90.0 ppm	PASS 51.89 %
10.0 VAC @ 50.0 kHz	10.0	10.000628	129.09	9.9955091	10.0044909	VAC	62.784 ppm	320.0 ppm	PASS 13.98 %
10.0 VAC @ 1.0 MHz	10.0	10.136017	0.3000 %	9.869	10.131	VAC	1.3602 %	1.0100 %	FAIL 103.83 %

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	0.01V-1000V	3458B	w/Guardband	Low Limit	Hi limit	Units	Measured	24h spec	Result, % spec
0.01 VAC @ 10 Hz	0.01	0.010010091	372.33	0.0099902767	0.0100097233	VAC	1009.073 ppm	600.0 ppm	FAIL 103.78 %
0.01 VAC @ 20 Hz	0.01	0.010011294	372.33	0.0099902767	0.0100097233	VAC	1129.379 ppm	600.0 ppm	FAIL 116.15 %
0.01 VAC @ 40 Hz	0.01	0.010009859	372.33	0.0099902767	0.0100097233	VAC	985.939 ppm	600.0 ppm	FAIL 101.40 %
0.01 VAC @ 100 Hz	0.01	0.010012933	372.33	0.0099931767	0.0100068233	VAC	1293.284 ppm	310.0 ppm	FAIL 189.54 %
0.01 VAC @ 1.0 kHz	0.01	0.01001085	372.33	0.0099931767	0.0100068233	VAC	1084.955 ppm	310.0 ppm	FAIL 159.01 %
0.01 VAC @ 10.0 kHz	0.01	0.010012776	372.33	0.0099921767	0.0100078233	VAC	1277.555 ppm	410.0 ppm	FAIL 163.30 %
0.01 VAC @ 20.0 kHz	0.01	0.010011055	372.33	0.0099921767	0.0100078233	VAC	1105.468 ppm	410.0 ppm	FAIL 141.30 %
0.01 VAC @ 50.0 kHz	0.01	0.010010292	0.0613 %	0.0099827727	0.0100172273	VAC	0.1029 %	0.1110 %	PASS 59.74 %
0.01 VAC @ 100.0 kHz	0.01	0.0099905198	0.1200 %	0.0099369	0.0100631	VAC	-0.0948 %	0.5110 %	PASS 15.02 %
0.01 VAC @ 300.0 kHz	0.01	0.0098537041	0.1800 %	0.00958	0.01042	VAC	-1.4630 %	4.0200 %	PASS 34.83 %
0.01 VAC @ 500.0 kHz	0.01	0.0096428477	0.2900 %	0.009566	0.010434	VAC	-3.5715 %	4.0500 %	PASS 82.29 %
0.01 VAC @ 1.0 MHz	0.01	0.008824327	0.4400 %	0.009551	0.010449	VAC	-11.7567 %	4.0500 %	FAIL 261.84 %
0.1 VAC @ 10 Hz	0.1	0.10002073	422.72	0.099946728	0.100053272	VAC	207.317 ppm	110.0 ppm	PASS 38.92 %
0.1 VAC @ 20 Hz	0.1	0.10001201	206.36	0.099968364	0.100031636	VAC	120.100 ppm	110.0 ppm	PASS 37.96 %
0.1 VAC @ 40 Hz	0.1	0.10001727	206.36	0.099968364	0.100031636	VAC	172.667 ppm	110.0 ppm	PASS 54.58 %
0.1 VAC @ 100 Hz	0.1	0.10001077	121.36	0.099978864	0.100021136	VAC	107.692 ppm	90.0 ppm	PASS 50.95 %
0.1 VAC @ 1.0 kHz	0.1	0.10001754	121.36	0.099978864	0.100021136	VAC	175.371 ppm	90.0 ppm	PASS 82.97 %
0.1 VAC @ 10.0 kHz	0.1	0.10001689	121.36	0.099971864	0.100028136	VAC	168.862 ppm	160.0 ppm	PASS 60.02 %

0.1 VAC @ 20.0 kHz	0.1	0.10001618	121.36	0.099971864	0.100028136	VAC	161.767 ppm	160.0 ppm	PASS 57.49 %
0.1 VAC @ 50.0 kHz	0.1	0.10000773	345.45	0.099933455	0.100066545	VAC	77.259 ppm	320.0 ppm	PASS 11.61 %
0.1 VAC @ 100.0 kHz	0.1	0.09995437	886.36	0.099829364	0.100170636	VAC	-456.295 ppm	820.0 ppm	PASS 26.74 %
0.1 VAC @ 300.0 kHz	0.1	0.099775358	0.1100 %	0.09958	0.10042	VAC	-0.2246 %	0.3100 %	PASS 53.49 %
0.1 VAC @ 500.0 kHz	0.1	0.099656167	0.1700 %	0.09882	0.10118	VAC	-0.3438 %	1.0100 %	PASS 29.14 %
0.1 VAC @ 1.0 MHz	0.1	0.099833206	0.3500 %	0.09864	0.10136	VAC	-0.1668 %	1.0100 %	PASS 12.26 %
1.0 VAC @ 10 Hz	1.0	1.0001032	436.36	0.99945364	1.00054636	VAC	103.165 ppm	110.0 ppm	PASS 18.88 %
1.0 VAC @ 20 Hz	1.0	1.0000216	141.36	0.99974864	1.00025136	VAC	21.570 ppm	110.0 ppm	PASS 8.58 %
1.0 VAC @ 40 Hz	1.0	1.000001	141.36	0.99974864	1.00025136	VAC	0.967 ppm	110.0 ppm	PASS 0.38 %
1.0 VAC @ 100 Hz	1.0	0.99998842	62.72	0.99984728	1.00015272	VAC	-11.585 ppm	90.0 ppm	PASS 7.59 %
1.0 VAC @ 1.0 kHz	1.0	1.0000271	62.72	0.99984728	1.00015272	VAC	27.101 ppm	90.0 ppm	PASS 17.75 %
1.0 VAC @ 10.0 kHz	1.0	0.99993185	62.72	0.99977728	1.00022272	VAC	-68.152 ppm	160.0 ppm	PASS 30.60 %
1.0 VAC @ 20.0 kHz	1.0	0.9999337	62.72	0.99977728	1.00022272	VAC	-66.302 ppm	160.0 ppm	PASS 29.77 %
1.0 VAC @ 50.0 kHz	1.0	0.99997053	129.09	0.99955091	1.00044909	VAC	-29.472 ppm	320.0 ppm	PASS 6.56 %
1.0 VAC @ 100.0 kHz	1.0	1.0000381	266.36	0.99891364	1.00108636	VAC	38.094 ppm	820.0 ppm	PASS 3.51 %
1.0 VAC @ 300.0 kHz	1.0	1.0011838	0.0468 %	0.99643182	1.00356818	VAC	0.1184 %	0.3100 %	PASS 33.18 %
1.0 VAC @ 500.0 kHz	1.0	1.0032895	0.1200 %	0.9887	1.0113	VAC	0.3290 %	1.0100 %	PASS 29.11 %
1.0 VAC @ 1.0 MHz	1.0	1.0098939	0.2500 %	0.9874	1.0126	VAC	0.9894 %	1.0100 %	PASS 78.52 %
10.0 VAC @ 10 Hz	10.0	10.001056	403.63	9.9948637	10.0051363	VAC	105.643 ppm	110.0 ppm	PASS 20.57 %
10.0 VAC @ 20 Hz	10.0	10.000405	141.36	9.9974864	10.0025136	VAC	40.488 ppm	110.0 ppm	PASS 16.11 %
10.0 VAC @ 40 Hz	10.0	10.000267	141.36	9.9974864	10.0025136	VAC	26.715 ppm	110.0 ppm	PASS 10.63 %
10.0 VAC @ 100 Hz	10.0	10.000156	62.72	9.9984728	10.0015272	VAC	15.635 ppm	90.0 ppm	PASS 10.24 %
10.0 VAC @ 1.0 kHz	10.0	10.000204	62.72	9.9984728	10.0015272	VAC	20.428 ppm	90.0 ppm	PASS 13.38 %

10.0 VAC @ 10.0 kHz	10.0	9.9996397	62.72	9.9977728	10.0022272	VAC	-36.031 ppm	160.0 ppm	PASS 16.18 %
10.0 VAC @ 20.0 kHz	10.0	9.9996389	62.72	9.9977728	10.0022272	VAC	-36.106 ppm	160.0 ppm	PASS 16.21 %
10.0 VAC @ 50.0 kHz	10.0	9.9994388	129.09	9.9955091	10.0044909	VAC	-56.122 ppm	320.0 ppm	PASS 12.50 %
10.0 VAC @ 100.0 kHz	10.0	9.996622	248.18	9.9893182	10.0106818	VAC	-337.797 ppm	820.0 ppm	PASS 31.62 %
10.0 VAC @ 300.0 kHz	10.0	9.9886896	0.0577 %	9.9632273	10.0367727	VAC	-0.1131 %	0.3100 %	PASS 30.76 %
10.0 VAC @ 500.0 kHz	10.0	10.003035	0.1400 %	9.885	10.115	VAC	0.0304 %	1.0100 %	PASS 2.64 %
10.0 VAC @ 1.0 MHz	10.0	10.089113	0.3000 %	9.869	10.131	VAC	0.8911 %	1.0100 %	PASS 68.02 %
100.0 VAC @ 1.0 kHz	100.0	100.00361	65.0	99.9715	100.0285	VAC	36.052 ppm	220.0 ppm	PASS 12.60 %
100.0 VAC @ 10.0 kHz	100.0	100.00173	65.0	99.9715	100.0285	VAC	17.280 ppm	220.0 ppm	PASS 6.04 %
100.0 VAC @ 20.0 kHz	100.0	100.00028	65.0	99.9715	100.0285	VAC	2.819 ppm	220.0 ppm	PASS 0.98 %
100.0 VAC @ 50.0 kHz	100.0	100.00277	170.02	99.945998	100.054002	VAC	27.668 ppm	370.0 ppm	PASS 5.11 %
100.0 VAC @ 100.0 kHz	100.0	99.989389	0.0400 %	99.837997	100.162003	VAC	-0.0106 %	0.1220 %	PASS 6.55 %
700.0 VAC @ 1.0 kHz	700.0	700.04533	78.64	699.650952	700.349048	VAC	64.760 ppm	420.0 ppm	PASS 12.77 %

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	1 Ohm to 1 GOhm	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24h spec	Result
1 Ω	0.999798100 Ω	0.99979858 Ω	40.20 ppm	0.999749909732	0.999846290268	Ω	0.480 ppm	8.00 ppm	PASS 1.00 %
10 Ω	9.99990700 Ω	9.9998924 Ω	8.30 ppm	9.99974400152	10.0000699985	Ω	-1.463 ppm	8.00 ppm	PASS 8.98 %
100 Ω	100.001630 Ω	100.00171 Ω	4.30 ppm	100.000599983	100.002660017	Ω	0.844 ppm	6.00 ppm	PASS 8.19 %
1.0 kΩ	0.9999910 kΩ	0.99999132 kΩ	3.30 ppm	999.985500049	999.996499951	Ω	0.323 ppm	2.20 ppm	PASS 5.87 %
10 kΩ	10000.0810 kΩ	10.000075 kΩ	3.30 ppm	10000.0259996	10000.1360004	Ω	-0.619 ppm	2.20 ppm	PASS 11.25 %
100 kΩ	100.001380 kΩ	100.00108 kΩ	3.30 ppm	100000.829992	100001.930008	Ω	-3.014 ppm	2.20 ppm	PASS 54.80 %
1.0 MΩ	1.00000250 MΩ	9.9999633 MΩ	5.30 ppm	999986.199959	1000018.80004	Ω	-6.171 ppm	11.00 ppm	PASS 37.86 %
10 MΩ	9.99940400 MΩ	9.9989881 MΩ	14.30 ppm	9998711.0413	10000096.9587	Ω	-41.595 ppm	55.00 ppm	PASS 60.02 %
100 MΩ	100.009130 MΩ	100.01333 MΩ	60.30 ppm	99952094.7932	100066165.207	Ω	42.013 ppm	510.00 ppm	PASS 7.37 %
1 GΩ STD	0.995516720 GΩ	0.99705412 GΩ	30000.0 ppm	960663679.633 Ω	1030369760.37 Ω	Ω	1544.328 ppm	5010.00 ppm	PASS 4.41 %
OHM Test	10 Ω, 10 KΩ ZERO	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24h spec	Result
10R REAR Ω	4.00000000E-06	4.4789 μΩ	50.000 μΩ	1.999998e-05	8.000002e-05	Ω	N/A	8.00 ppm	PASS 0.00 %
10K REAR Ω	4.00000000E-06	-305.5149 μΩ	50.000 μΩ	1.999998e-05	8.000002e-05	Ω	N/A	2.20 ppm	DNU

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	100nA-1A	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24h spec	Result
100 nADC	1E-07	1.0031973E-07	71.36 ppm	9.9951864e-08	1.00048136e-07	ADC	3197.255 ppm	410.00 ppm	-info-
-100 nADC	-1E-07	-9.967529E-08	71.36 ppm	-1.00048136e-07	-9.9951864e-08	ADC	-3247.104 ppm	410.00 ppm	-info-
1 µADC	1E-06	1.0003431E-06	71.36 ppm	9.9987864e-07	1.00012136e-06	ADC	343.071 ppm	50.00 ppm	-info-
-1 µADC	-1E-06	-9.996649E-07	71.36 ppm	-1.00012136e-06	-9.9987864e-07	ADC	-335.096 ppm	50.00 ppm	-info-
10 µADC	1E-05	1.0000317E-05	71.36 ppm	9.9991164e-06	1.00008836e-05	ADC	31.657 ppm	17.00 ppm	PASS 35.83 %
-10 µADC	-1E-05	-9.9996183E-06	71.36 ppm	-1.00008836e-05	-9.9991164e-06	ADC	-38.167 ppm	17.00 ppm	PASS 43.20 %
100 µADC	0.0001	9.9999772E-05	71.36 ppm	9.9991264e-05	0.000100008736	ADC	-2.284 ppm	16.00 ppm	PASS 2.61 %
-100 µADC	-0.0001	-9.9999499E-05	71.36 ppm	-0.000100008736	-9.9991264e-05	ADC	-5.005 ppm	16.00 ppm	PASS 5.73 %
1.0 mADC	0.001	0.00099998491	38.63 ppm	0.00099994737	0.00100005263	ADC	-15.092 ppm	14.00 ppm	PASS 28.68 %
-1.0 mADC	-0.001	-0.0010000138	38.63 ppm	-0.00100005263	-0.00099994737	ADC	13.789 ppm	14.00 ppm	PASS 26.20 %
10 mADC	0.01	0.0099999641	38.63 ppm	0.0099994737	0.0100005263	ADC	-3.589 ppm	14.00 ppm	PASS 6.82 %
-10 mADC	-0.01	-0.010000012	38.63 ppm	-0.0100005263	-0.0099994737	ADC	1.221 ppm	14.00 ppm	PASS 2.32 %
100 mADC	0.1	0.099999436	48.63 ppm	0.099992237	0.100007763	ADC	-5.637 ppm	29.00 ppm	PASS 7.26 %
-100 mADC	-0.1	-0.10000019	48.63 ppm	-0.100007763	-0.099992237	ADC	1.855 ppm	29.00 ppm	PASS 2.39 %
1.0 ADC	1	1.0000164	71.36 ppm	0.99981864	1.00018136	ADC	16.376 ppm	110.00 ppm	PASS 9.03 %
-1.0 ADC	-1	-1.0000227	71.36 ppm	-1.00018136	-0.99981864	ADC	22.672 ppm	110.00 ppm	PASS 12.50 %

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	1µA-1A	3458B	Source unc.	Low Limit	Hi limit	Units	Measured	24h spec	Result, % spec
10 µA AC @ 50 Hz	1e-05	1.0117107E-05	210.91	9.9888909e-06	1.00111091e-05	AAC	11710.657 ppm	900.0 ppm	-info-
100 µA AC @ 50 Hz	0.0001	0.00010000442	210.91	9.9888909e-05	0.000100111091	AAC	44.179 ppm	900.0 ppm	PASS 3.98 %
1.0 mA AC @ 50 Hz	0.001	0.0010007849	210.91	0.00099898909	0.00100101091	AAC	784.855 ppm	800.0 ppm	PASS 77.64 %
10 mA AC @ 50 Hz	0.01	0.010000482	138.18	0.0099906182	0.0100093818	AAC	48.189 ppm	800.0 ppm	PASS 5.14 %
100 mA AC @ 50 Hz	0.1	0.10000898	138.18	0.099906182	0.100093818	AAC	89.845 ppm	800.0 ppm	PASS 9.58 %
1.0 A AC @ 50 Hz	1.0	1.00007	138.18	0.99886182	1.00113818	AAC	0.0070 %	1000.0 ppm	PASS 6.15 %
10 µA AC @ 60 Hz	1e-05	1.0131683E-05	618.18	9.9848182e-06	1.00151818e-05	AAC	13168.315 ppm	900.0 ppm	-info-
100 µA AC @ 60 Hz	0.0001	0.00010000709	210.91	9.9888909e-05	0.000100111091	AAC	70.874 ppm	900.0 ppm	PASS 6.38 %
1.0 mA AC @ 60 Hz	0.001	0.0010008626	210.91	0.00099898909	0.00100101091	AAC	862.560 ppm	800.0 ppm	PASS 85.33 %
10 mA AC @ 60 Hz	0.01	0.010000811	210.91	0.0099898909	0.0100101091	AAC	81.085 ppm	800.0 ppm	PASS 8.02 %
100 mA AC @ 60 Hz	0.1	0.10001193	138.18	0.099906182	0.100093818	AAC	119.308 ppm	800.0 ppm	PASS 12.72 %
1.0 A AC @ 60 Hz	1.0	1.0001007	138.18	0.99886182	1.00113818	AAC	0.0101 %	1000.0 ppm	PASS 8.84 %
10 µA AC @ 1000.0 Hz	1e-05	1.0114189E-05	138.18	9.9896182e-06	1.00103818e-05	AAC	11418.918 ppm	900.0 ppm	-info-
100 µA AC @ 1000.0 Hz	0.0001	9.999221E-05	618.18	9.9848182e-05	0.000100151818	AAC	-77.904 ppm	900.0 ppm	PASS 5.13 %
1.0 mA AC @ 1000.0 Hz	0.001	0.0010008683	210.91	0.00099928909	0.00100071091	AAC	868.265 ppm	500.0 ppm	FAIL 122.13 % 0.00100014
10 mA AC @ 1000.0 Hz	0.01	0.010001086	210.91	0.0099928909	0.0100071091	AAC	108.618 ppm	500.0 ppm	PASS 15.28 %
100 mA AC @ 1000.0 Hz	0.1	0.10001607	210.91	0.099928909	0.100071091	AAC	160.722 ppm	500.0 ppm	PASS 22.61 %
1.0 A AC @ 1000.0 Hz	1.0	1.0002197	0.0138 %	0.99866182	1.00133818	AAC	0.0220 %	0.1200 %	PASS 16.42 %

Test date	05 January 2017 10:18
UUT Internal TEMP?	36.7
Destructive overloads?	208, DESTRUCTIVE OVERLOADS valid 2941

Lab temperature maintained +24°C ±2°C

Internal use only

Not validated