

Manufacturer	HEWLETT-PACKARD	Calibration date	October 07 2018
Model Number	3458A	Ambient Temperature	25.19 °C
Serial	STDHP	Relative Humidity	65.06 %
ID Number	3458-3	Pressure	1011.59
Notes	Check	Test type	HLK5720

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 / Unc	CEID	Calibration date	Due date
MFC	HULK	5720A	03/HLK	E2E6	XC01	08/01/2018	09/01/2018
AVMS	Wavetek	4920M	80	29336	XA01	07/11/2017	07/11/2018
DMM	Keithley	2002	MEM2	0603805	XD4	02/25/2018	02/25/2019
STDR	ESI	SR104	10000.0012 KΩ	±1.00 ppm	XR04	06/30/2018	12/30/2018
STDR	xDevs.com/Fluke	SL935	1.00005942 Ω	±0.17 ppm	XR03	05/31/2018	05/31/2019
STDR	xDevs.com/Fluke	SL935	9999.9755 kΩ	±0.33 ppm	XR02	05/31/2018	05/31/2019
DC STD	Wavetek	7000	10.0000007 VDC	±0.9 ppm	XD02	06/07/2018	12/08/2018
DC STD	xDevs.com	792X[2]	10.000009 VDC	±2.2 ppm	XD01	02/16/2018	08/16/2018
Divider	Keithley	262	None	0000	XZ02	08/01/2018	09/01/2018

MFC last calibrated	0.0 days ago	MFC since DCV ZERO	0.0 days ago
MFC since WBFLAT	32.0 days ago	MFC since WBGAIN	33.0 days ago
MFC Confidence level	24h 95% REL	MFC Calibrate date	2018-10-07 00:00:00
MFC Calibrate date Zero	2018-10-07 00:00:00	Calibrate date WB Flatness	2018-09-05 00:00:00
Calibrate date WB Gain	2018-09-04 00:00:00	CAL CONST 6.5V reference voltage	6.95748344554
CAL CONST 13V reference voltage	13.855299976	CAL CONST 22V range positive zero	398.1794
CAL CONST 22V range negative zero	398.17932	CAL CONST DAC Linearity	0.0
CAL CONST 10KOHM true output resistance	9999.79605457	CAL CONST 10KOHM standard resistance	9998.74552082
CAL CONST, Zero calibration temperature	23.0	CAL CONST, All calibration temp	23.0

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

Meter Info	HP3458A	Last calibration date	7/24/2018
CALSTR?	"7/26/2018 CAL, TEMP: 33.7"	Test date	07 October 2018 12:30
DUT Internal TEMP?	35.8	DUT Calibrations number?	180
Self-test result?	Not tested	ACAL ALL result?	0,"NO ERROR"
Firmware	9,2	Options	1,0
CAL? 72	0.997706589	CAL? 1,1	39998.8732
CAL? 2,1	7.18070929	CAL? Res 73	0.997508727
CAL 0 TEMP	31.74	CAL 10V TEMP	32.61
CAL 10KOhm TEMP	34.52	CAL? DCI	0.997871051

Service information

CAL DUMP

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Destructive overloads?

111, DESTRUCTIVE OVERLOADS valid 2941

Reference

Pomona LTC direct to MFC

DUT Condition

test

Test procedure : \$Id: hp3458a.py | Rev 948 | 2018/10/06 23:04:21 tin_fpga \$

Source procedure : \$Id: f5720a.py | Rev 945 | 2018/10/05 16:42:31 tin_fpga \$

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	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Deviation	DUT Spec	Test Status
Short 0 mVDC	0.000000E+00	-0.55 µV	0.75 µV	-0.910 µV	0.910 µV	N/A	0.16 µV	PASS
Short 0.0 VDC	0.000000E+00	-0.27 µV	0.75 µV	-0.900 µV	0.900 µV	N/A	0.15 µV	PASS
Short 00.0 VDC	0.000000E+00	0.05 µV	0.75 µV	-1.070 µV	1.070 µV	N/A	0.32 µV	PASS
Short 000.0 VDC	0.000000E+00	26.85 µV	0.75 µV	-14.750 µV	14.750 µV	N/A	14.00 µV	FAIL
Short 0000.0 VDC	0.000000E+00	62.25 µV	0.75 µV	-41.750 µV	41.750 µV	N/A	41.00 µV	FAIL
DCV Test	0.1V-1000V	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
0.1 VDC (0.10 Range)	0.1000000	0.10000007	7.27 ppm	0.099998723	0.10000128	0.690 ppm	5.50 ppm	PASS 5.40 %
-0.1 VDC (0.10 Range)	-0.1000000	-0.10000014	7.27 ppm	-0.10000128	-0.099998723	1.385 ppm	5.50 ppm	PASS 10.85 %
0.1 VDC (1.00 Range)	0.1000000	0.10000022	7.27 ppm	0.099999093	0.10000091	2.193 ppm	1.80 ppm	PASS 24.18 %
0.2 VDC (1.00 Range)	0.2000000	0.2000003	3.86 ppm	0.19999887	0.20000113	1.491 ppm	1.80 ppm	PASS 26.34 %
1.0 VDC (1.00 Range)	1.0000000	0.99999886	3.86 ppm	0.99999434	1.0000057	-1.139 ppm	1.80 ppm	PASS 20.13 %
-0.1 VDC (1.00 Range)	-0.1000000	-0.099999917	7.27 ppm	-0.10000091	-0.099999093	-0.831 ppm	1.80 ppm	PASS 9.16 %
-0.2 VDC (1.00 Range)	-0.2000000	-0.20000001	3.86 ppm	-0.20000113	-0.19999887	0.059 ppm	1.80 ppm	PASS 1.04 %
-1.0 VDC (1.00 Range)	-1.0000000	-0.99999969	3.86 ppm	-1.0000057	-0.99999434	-0.312 ppm	1.80 ppm	PASS 5.51 %
1.0 VDC (10.00 Range)	1.0000000	1.0000003	3.86 ppm	0.99999559	1.0000044	0.270 ppm	0.55 ppm	PASS 6.12 %
2.0 VDC (10.00 Range)	2.0000000	2	2.77 ppm	1.9999934	2.0000066	-0.002 ppm	0.55 ppm	PASS 0.05 %
10.0 VDC (10.00 Range)	10.0000000	9.9999977	2.73 ppm	9.9999672	10.000033	-0.229 ppm	0.55 ppm	PASS 6.99 %
-1.0 VDC (10.00 Range)	-1.0000000	-1.0000002	3.86 ppm	-1.0000044	-0.99999559	0.151 ppm	0.55 ppm	PASS 3.42 %
-2.0 VDC (10.00 Range)	-2.0000000	-1.9999998	2.77 ppm	-2.0000066	-1.9999934	-0.119 ppm	0.55 ppm	PASS 3.58 %
-10.0 VDC (10.00 Range)	-10.0000000	-9.9999963	2.73 ppm	-10.000033	-9.9999672	-0.368 ppm	0.55 ppm	PASS 11.23 %
10 VDC (100.00 Range)	10.0000000	10.000072	2.77 ppm	9.9999443	10.000056	7.180 ppm	2.80 ppm	FAIL 128.90 %
20 VDC (100.00 Range)	20.0000000	20.000051	3.73 ppm	19.999869	20.000131	2.567 ppm	2.80 ppm	PASS 39.32 %
100 VDC (100.00 Range)	100.0000000	100.00004	3.73 ppm	99.999347	100.00065	0.445 ppm	2.80 ppm	PASS 6.81 %
-10 VDC (100.00 Range)	-10.0000000	-9.9999327	2.77 ppm	-10.000056	-9.9999443	-6.727 ppm	2.80 ppm	FAIL 120.77 %
-20 VDC (100.00 Range)	-20.0000000	-19.999916	3.73 ppm	-20.000131	-19.999869	-4.199 ppm	2.80 ppm	PASS 64.30 %
-100 VDC (100.00 Range)	-100.0000000	-99.999915	3.73 ppm	-100.00065	-99.999347	-0.851 ppm	2.80 ppm	PASS 13.03 %
100 VDC (1000.00 Range)	100.0000000	100.00012	3.73 ppm	99.999367	100.00063	1.179 ppm	2.60 ppm	PASS 18.63 %
200 VDC (1000.00 Range)	200.0000000	200.00005	3.73 ppm	199.99873	200.00127	0.243 ppm	2.60 ppm	PASS 3.84 %
1000 VDC (1000.00 Range)	1000.0000000	1000.0027	5.45 ppm	999.97995	1000.02	2.672 ppm	2.60 ppm	PASS 13.33 %
-100 VDC (1000.00 Range)	-100.0000000	-100.00007	3.73 ppm	-100.00063	-99.999367	0.705 ppm	2.60 ppm	PASS 11.14 %
-200 VDC (1000.00 Range)	-200.0000000	-199.99996	3.73 ppm	-200.00127	-199.99873	-0.194 ppm	2.60 ppm	PASS 3.07 %
-1000 VDC (1000.00 Range)	-1000.0000000	-1000.0026	5.45 ppm	-1000.02	-999.97995	2.600 ppm	2.60 ppm	PASS 65.82 %

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.

DCV Linearity	1V Range	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
1.0999999	1.0999999	1.0999903	2.73 ppm	1.099996	1.100004	-8.69 ppm	0.55 ppm	FAIL 265.06 %
0.9999999	0.9999999	0.9999904	2.73 ppm	0.9999966	1.000003	-9.51 ppm	0.55 ppm	FAIL 290.06 %
0.9000000	0.9000000	0.8999905	2.73 ppm	0.899997	0.900003	-10.55 ppm	0.55 ppm	FAIL 321.69 %
0.8888888	0.8888888	0.8888794	2.73 ppm	0.8888859	0.8888917	-10.63 ppm	0.55 ppm	FAIL 324.03 %
0.8000000	0.8000000	0.7999905	2.73 ppm	0.7999974	0.8000026	-11.92 ppm	0.55 ppm	FAIL 363.42 %
0.7777777	0.7777777	0.7777683	2.73 ppm	0.7777751	0.7777803	-12.09 ppm	0.55 ppm	FAIL 368.54 %
0.7000000	0.7000000	0.6999907	2.73 ppm	0.6999977	0.7000023	-13.23 ppm	0.55 ppm	FAIL 403.32 %
0.6666666	0.6666666	0.6666573	2.73 ppm	0.6666644	0.6666688	-13.98 ppm	0.55 ppm	FAIL 426.13 %
0.6000000	0.6000000	0.5999906	2.73 ppm	0.599998	0.600002	-15.71 ppm	0.55 ppm	FAIL 478.93 %
0.5555555	0.5555555	0.5555461	2.73 ppm	0.5555537	0.5555573	-16.91 ppm	0.55 ppm	FAIL 515.46 %
0.5000000	0.5000000	0.4999906	2.73 ppm	0.4999984	0.5000016	-18.77 ppm	0.55 ppm	FAIL 572.36 %
0.4444444	0.4444444	0.4444350	2.73 ppm	0.4444429	0.4444459	-21.26 ppm	0.55 ppm	FAIL 648.09 %
0.4000000	0.4000000	0.3999905	2.73 ppm	0.3999987	0.4000013	-23.87 ppm	0.55 ppm	FAIL 727.69 %
0.3333333	0.3333333	0.3333237	2.73 ppm	0.3333322	0.3333344	-28.76 ppm	0.55 ppm	FAIL 876.72 %
0.3000000	0.3000000	0.2999905	2.73 ppm	0.299999	0.300001	-31.79 ppm	0.55 ppm	FAIL 969.31 %
0.2222222	0.2222222	0.2222125	2.73 ppm	0.2222215	0.2222229	-43.75 ppm	0.55 ppm	FAIL 1333.85 %
0.2000000	0.2000000	0.1999902	2.73 ppm	0.1999993	0.2000007	-48.92 ppm	0.55 ppm	FAIL 1491.47 %
0.1234567	0.1234567	0.1234469	2.73 ppm	0.1234563	0.1234571	-79.35 ppm	0.55 ppm	FAIL 2419.06 %
0.1111111	0.1111111	0.1111014	2.73 ppm	0.1111107	0.1111115	-87.60 ppm	0.55 ppm	FAIL 2670.61 %
0.1000000	0.1000000	0.0999901	2.73 ppm	0.0999967	0.1000003	-99.32 ppm	0.55 ppm	FAIL 3028.12 %
0.0987654	0.0987654	0.0987555	3.86 ppm	0.09876496	0.09876584	-100.60 ppm	0.55 ppm	FAIL 2281.10 %
0.0111111	0.0111111	0.0111011	7.27 ppm	0.01111101	0.01111119	-900.90 ppm	0.55 ppm	FAIL 11520.43 %
-0.0111111	-0.0111111	-0.0111219	7.27 ppm	-0.01111119	-0.01111101	969.35 ppm	0.55 ppm	FAIL 12395.78 %
-0.0987654	-0.0987654	-0.0987764	3.86 ppm	-0.09876584	-0.09876496	111.26 ppm	0.55 ppm	FAIL 2522.79 %
-0.1000000	-0.1000000	-0.1000110	2.73 ppm	-0.1000003	-0.09999967	110.13 ppm	0.55 ppm	FAIL 3357.55 %
-0.1111111	-0.1111111	-0.1111221	2.73 ppm	-0.1111115	-0.1111107	99.14 ppm	0.55 ppm	FAIL 3022.57 %
-0.1234567	-0.1234567	-0.1234677	2.73 ppm	-0.1234571	-0.1234563	88.94 ppm	0.55 ppm	FAIL 2711.63 %
-0.2000000	-0.2000000	-0.2000112	2.73 ppm	-0.2000007	-0.1999993	55.95 ppm	0.55 ppm	FAIL 1705.83 %
-0.2222222	-0.2222222	-0.2222333	2.73 ppm	-0.2222229	-0.2222215	50.16 ppm	0.55 ppm	FAIL 1529.20 %
-0.3000000	-0.3000000	-0.3000112	2.73 ppm	-0.300001	-0.299999	37.33 ppm	0.55 ppm	FAIL 1138.00 %
-0.3333333	-0.3333333	-0.3333444	2.73 ppm	-0.3333344	-0.3333322	33.44 ppm	0.55 ppm	FAIL 1019.63 %
-0.4000000	-0.4000000	-0.4000114	2.73 ppm	-0.4000013	-0.3999987	28.43 ppm	0.55 ppm	FAIL 866.90 %
-0.4444444	-0.4444444	-0.4444559	2.73 ppm	-0.4444459	-0.4444429	25.77 ppm	0.55 ppm	FAIL 785.63 %
-0.5000000	-0.5000000	-0.5000115	2.73 ppm	-0.5000016	-0.4999984	22.92 ppm	0.55 ppm	FAIL 698.76 %
-0.5555555	-0.5555555	-0.5555670	2.73 ppm	-0.5555573	-0.5555537	20.78 ppm	0.55 ppm	FAIL 633.53 %
-0.6000000	-0.6000000	-0.6000118	2.73 ppm	-0.600002	-0.599998	19.61 ppm	0.55 ppm	FAIL 597.87 %
-0.6666666	-0.6666666	-0.6666784	2.73 ppm	-0.6666688	-0.6666644	17.76 ppm	0.55 ppm	FAIL 541.47 %
-0.7000000	-0.7000000	-0.7000118	2.73 ppm	-0.7000023	-0.6999977	16.91 ppm	0.55 ppm	FAIL 515.66 %
-0.7777777	-0.7777777	-0.7777897	2.73 ppm	-0.7777803	-0.7777751	15.42 ppm	0.55 ppm	FAIL 470.04 %
-0.8000000	-0.8000000	-0.8000121	2.73 ppm	-0.8000026	-0.7999974	15.11 ppm	0.55 ppm	FAIL 460.64 %
-0.8888888	-0.8888888	-0.8889010	2.73 ppm	-0.8888917	-0.8888859	13.73 ppm	0.55 ppm	FAIL 418.48 %
-0.9000000	-0.9000000	-0.9000122	2.73 ppm	-0.900003	-0.899997	13.52 ppm	0.55 ppm	FAIL 412.28 %
-0.9999999	-0.9999999	-1.0000122	2.73 ppm	-1.000003	-0.9999966	12.33 ppm	0.55 ppm	FAIL 375.96 %
-1.0999999	-1.0999999	-1.1000124	2.73 ppm	-1.100004	-1.099996	11.40 ppm	0.55 ppm	FAIL 347.66 %
DCV Linearity	10V Range	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
10.999999	10.999999	10.9999953	2.73 ppm	10.99996	11.00004	-0.34 ppm	0.55 ppm	PASS 10.28 %
10.101010	10.101010	10.1010067	2.73 ppm	10.10098	10.10104	-0.32 ppm	0.55 ppm	PASS 9.84 %
10.000000	10.000000	9.9999967	2.73 ppm	9.999967	10.00003	-0.33 ppm	0.55 ppm	PASS 9.97 %
9.999999	9.999999	9.9999958	2.73 ppm	9.999966	10.00003	-0.32 ppm	0.55 ppm	PASS 9.63 %
9.000000	9.000000	8.9999970	2.73 ppm	8.99997	9.00003	-0.33 ppm	0.55 ppm	PASS 10.00 %
8.888888	8.888888	8.8888847	2.73 ppm	8.888859	8.888917	-0.37 ppm	0.55 ppm	PASS 11.29 %
8.000000	8.000000	7.9999972	2.73 ppm	7.999974	8.000026	-0.35 ppm	0.55 ppm	PASS 10.58 %
7.777777	7.777777	7.7777740	2.73 ppm	7.777751	7.777803	-0.38 ppm	0.55 ppm	PASS 11.67 %
7.000000	7.000000	6.9999974	2.73 ppm	6.999977	7.000023	-0.37 ppm	0.55 ppm	PASS 11.25 %
6.666666	6.666666	6.6666635	2.73 ppm	6.666644	6.666688	-0.37 ppm	0.55 ppm	PASS 11.37 %
6.000000	6.000000	5.9999978	2.73 ppm	5.99998	6.00002	-0.36 ppm	0.55 ppm	PASS 11.06 %
5.555555	5.555555	5.5555526	2.73 ppm	5.555537	5.555573	-0.44 ppm	0.55 ppm	PASS 13.29 %
5.000000	5.000000	4.9999977	2.73 ppm	4.999984	5.000016	-0.45 ppm	0.55 ppm	PASS 13.82 %
4.444444	4.444444	4.4444421	2.73 ppm	4.444429	4.444459	-0.43 ppm	0.55 ppm	PASS 13.00 %
4.000000	4.000000	3.9999979	2.73 ppm	3.999987	4.000013	-0.53 ppm	0.55 ppm	PASS 16.21 %
3.333333	3.333333	3.3333310	2.73 ppm	3.333322	3.333344	-0.59 ppm	0.55 ppm	PASS 17.88 %
3.000000	3.000000	2.9999980	2.73 ppm	2.99999	3.00001	-0.67 ppm	0.55 ppm	PASS 20.55 %
2.222222	2.222222	2.2222201	2.73 ppm	2.222215	2.222229	-0.84 ppm	0.55 ppm	PASS 25.68 %
2.000000	2.000000	1.9999982	2.73 ppm	1.999993	2.000007	-0.92 ppm	0.55 ppm	PASS 28.14 %
1.111111	1.111111	1.1111092	2.73 ppm	1.111107	1.111115	-1.62 ppm	0.55 ppm	PASS 49.35 %
1.000000	1.000000	0.9999982	3.86 ppm	0.9999956	1.000004	-1.78 ppm	0.55 ppm	PASS 40.29 %
0.555555	0.555555	0.5555533	7.27 ppm	0.5555507	0.5555593	-3.11 ppm	0.55 ppm	PASS 39.79 %
-0.555555	-0.555555	-0.5555560	7.27 ppm	-0.5555593	-0.5555507	1.83 ppm	0.55 ppm	PASS 23.46 %
-1.000000	-1.000000	-1.0000009	3.86 ppm	-1.000004	-0.9999956	0.92 ppm	0.55 ppm	PASS 20.82 %
-1.111111	-1.111111	-1.1111118	2.73 ppm	-1.111115	-1.111107	0.69 ppm	0.55 ppm	PASS 21.16 %

-2.000000	-2.000000	-2.0000004	2.73 ppm	-2.000007	-1.999993	0.20 ppm	0.55 ppm	PASS 6.16 %
-2.222222	-2.222222	-2.2222224	2.73 ppm	-2.222229	-2.222215	0.20 ppm	0.55 ppm	PASS 6.04 %
-3.000000	-3.000000	-3.0000002	2.73 ppm	-3.00001	-2.99999	0.07 ppm	0.55 ppm	PASS 2.05 %
-3.333333	-3.333333	-3.3333331	2.73 ppm	-3.333344	-3.333322	0.03 ppm	0.55 ppm	PASS 0.99 %
-4.000000	-4.000000	-3.9999995	2.73 ppm	-4.000013	-3.999987	-0.12 ppm	0.55 ppm	PASS 3.80 %
-4.444444	-4.444444	-4.4444435	2.73 ppm	-4.444459	-4.444429	-0.11 ppm	0.55 ppm	PASS 3.30 %
-5.000000	-5.000000	-4.9999996	2.73 ppm	-5.000016	-4.999984	-0.07 ppm	0.55 ppm	PASS 2.16 %
-5.555555	-5.555555	-5.5555542	2.73 ppm	-5.555573	-5.555537	-0.15 ppm	0.55 ppm	PASS 4.46 %
-6.000000	-6.000000	-5.9999995	2.73 ppm	-6.00002	-5.99998	-0.08 ppm	0.55 ppm	PASS 2.56 %
-6.666666	-6.666666	-6.6666653	2.73 ppm	-6.666688	-6.666644	-0.11 ppm	0.55 ppm	PASS 3.36 %
-7.000000	-7.000000	-6.9999987	2.73 ppm	-7.000023	-6.999977	-0.18 ppm	0.55 ppm	PASS 5.52 %
-7.777777	-7.777777	-7.7777754	2.73 ppm	-7.777803	-7.777751	-0.21 ppm	0.55 ppm	PASS 6.27 %
-8.000000	-8.000000	-7.9999983	2.73 ppm	-8.000026	-7.999974	-0.21 ppm	0.55 ppm	PASS 6.35 %
-8.888888	-8.888888	-8.8888856	2.73 ppm	-8.888917	-8.888859	-0.27 ppm	0.55 ppm	PASS 8.12 %
-9.000000	-9.000000	-8.9999978	2.73 ppm	-9.00003	-8.99997	-0.25 ppm	0.55 ppm	PASS 7.56 %
-9.999999	-9.999999	-9.9999964	2.73 ppm	-10.00003	-9.999966	-0.26 ppm	0.55 ppm	PASS 7.79 %
-10.000000	-10.000000	-9.9999967	2.73 ppm	-10.00003	-9.999967	-0.33 ppm	0.55 ppm	PASS 10.05 %
-10.101010	-10.101010	-10.1010069	2.73 ppm	-10.10104	-10.10098	-0.31 ppm	0.55 ppm	PASS 9.40 %
-10.999999	-10.999999	-10.9999963	2.73 ppm	-11.00004	-10.99996	-0.24 ppm	0.55 ppm	PASS 7.34 %
DCV Linearity	100V Range	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
100.99999	100.99999	101.0000960	2.73 ppm	100.99966	101.00032	1.05 ppm	0.55 ppm	PASS 23.35 %
100.10101	100.10101	100.1010903	2.73 ppm	100.10068	100.10134	0.80 ppm	0.55 ppm	PASS 17.90 %
100.00000	100.00000	100.0000777	2.73 ppm	99.999672	100.00033	0.78 ppm	0.55 ppm	PASS 17.33 %
99.99999	99.99999	100.0000603	2.73 ppm	99.999662	100.00032	0.70 ppm	0.55 ppm	PASS 15.70 %
90.00000	90.00000	90.0000834	2.73 ppm	89.999705	90.000295	0.93 ppm	0.55 ppm	PASS 28.25 %
88.88888	88.88888	88.8889626	2.73 ppm	88.888588	88.889172	0.93 ppm	0.55 ppm	PASS 28.32 %
80.00000	80.00000	80.0000779	2.73 ppm	79.999738	80.000262	0.97 ppm	0.55 ppm	PASS 29.68 %
77.77777	77.77777	77.7778553	2.73 ppm	77.777515	77.778025	1.10 ppm	0.55 ppm	PASS 33.43 %
70.00000	70.00000	70.0000896	2.73 ppm	69.99977	70.00023	1.28 ppm	0.55 ppm	PASS 39.03 %
66.66666	66.66666	66.6667425	2.73 ppm	66.666441	66.666879	1.24 ppm	0.55 ppm	PASS 37.73 %
60.00000	60.00000	60.0000884	2.73 ppm	59.999803	60.000197	1.47 ppm	0.55 ppm	PASS 44.90 %
55.55555	55.55555	55.5556358	2.73 ppm	55.555368	55.555732	1.54 ppm	0.55 ppm	PASS 47.10 %
50.00000	50.00000	50.0000785	2.73 ppm	49.999836	50.000164	1.57 ppm	0.55 ppm	PASS 47.87 %
44.44444	44.44444	44.4445242	2.73 ppm	44.444294	44.444586	1.89 ppm	0.55 ppm	PASS 57.75 %
40.00000	40.00000	40.0000847	2.73 ppm	39.999869	40.000131	2.12 ppm	0.55 ppm	PASS 64.58 %
33.33333	33.33333	33.3334092	2.73 ppm	33.333221	33.333439	2.37 ppm	0.55 ppm	PASS 72.41 %
30.00000	30.00000	30.00008570	2.73 ppm	29.999902	30.000098	2.86 ppm	0.55 ppm	PASS 87.09 %
22.22222	22.22222	22.2223011	2.73 ppm	22.222147	22.222293	3.65 ppm	0.55 ppm	FAIL 111.24 %
20.00000	20.00000	20.0000777	2.73 ppm	19.999934	20.000066	3.88 ppm	0.55 ppm	FAIL 118.45 %
11.11111	11.11111	11.1111863	2.73 ppm	11.111075	11.111147	6.78 ppm	0.55 ppm	FAIL 206.67 %
10.00000	10.00000	10.0000746	3.86 ppm	9.9999559	10.000044	7.46 ppm	0.55 ppm	FAIL 169.14 %
9.87654	9.87654	9.87661779	7.27 ppm	9.8764658	9.8766202	7.57 ppm	0.55 ppm	PASS 96.84 %
-9.87654	-9.87654	-9.8764636	7.27 ppm	-9.8766202	-9.8764658	-8.04 ppm	0.55 ppm	FAIL 102.77 %
-10.00000	-10.00000	-9.9999247	3.86 ppm	-10.000044	-9.9999559	-7.53 ppm	0.55 ppm	FAIL 170.76 %
-11.11111	-11.11111	-11.1110338	2.73 ppm	-11.111147	-11.111075	-6.95 ppm	0.55 ppm	FAIL 211.93 %
-20.00000	-20.00000	-19.9999281	2.73 ppm	-20.000066	-19.999934	-3.60 ppm	0.55 ppm	FAIL 109.64 %
-22.22222	-22.22222	-22.22215323	2.73 ppm	-22.222293	-22.222147	-3.00 ppm	0.55 ppm	PASS 91.61 %
-30.00000	-30.00000	-29.9999337	2.73 ppm	-30.000098	-29.999902	-2.21 ppm	0.55 ppm	PASS 67.41 %
-33.33333	-33.33333	-33.3332621	2.73 ppm	-33.333439	-33.333221	-2.04 ppm	0.55 ppm	PASS 62.09 %
-40.00000	-40.00000	-39.9999384	2.73 ppm	-40.000131	-39.999869	-1.54 ppm	0.55 ppm	PASS 46.96 %
-44.44444	-44.44444	-44.4443810	2.73 ppm	-44.444586	-44.444294	-1.33 ppm	0.55 ppm	PASS 40.50 %
-50.00000	-50.00000	-49.9999365	2.73 ppm	-50.000164	-49.999836	-1.27 ppm	0.55 ppm	PASS 38.71 %
-55.55555	-55.55555	-55.5554921	2.73 ppm	-55.555732	-55.555368	-1.04 ppm	0.55 ppm	PASS 31.79 %
-60.00000	-60.00000	-59.9999432	2.73 ppm	-60.000197	-59.999803	-0.95 ppm	0.55 ppm	PASS 28.87 %
-66.66666	-66.66666	-66.6665949	2.73 ppm	-66.666879	-66.666441	-0.98 ppm	0.55 ppm	PASS 29.77 %
-70.00000	-70.00000	-69.9999392	2.73 ppm	-70.00023	-69.99977	-0.87 ppm	0.55 ppm	PASS 26.49 %
-77.77777	-77.77777	-77.7777078	2.73 ppm	-77.778025	-77.777515	-0.80 ppm	0.55 ppm	PASS 24.38 %
-80.00000	-80.00000	-79.9999335	2.73 ppm	-80.000262	-79.999738	-0.83 ppm	0.55 ppm	PASS 25.35 %
-88.88888	-88.88888	-88.8888202	2.73 ppm	-88.889172	-88.888588	-0.67 ppm	0.55 ppm	PASS 20.50 %
-90.00000	-90.00000	-89.9999459	2.73 ppm	-90.000295	-89.999705	-0.60 ppm	0.55 ppm	PASS 18.31 %
-99.99999	-99.99999	-99.9999293	2.73 ppm	-100.00032	-99.999662	-0.61 ppm	0.55 ppm	PASS 18.50 %
-100.00000	-100.00000	-99.9999340	2.73 ppm	-100.00033	-99.999672	-0.66 ppm	0.55 ppm	PASS 20.12 %
-100.10101	-100.10101	-100.1009429	2.73 ppm	-100.10134	-100.10068	-0.67 ppm	0.55 ppm	PASS 32.25 %
-100.99999	-100.99999	-100.9999134	2.73 ppm	-101.00032	-100.99966	-0.76 ppm	0.55 ppm	PASS 36.67 %
1 GΩ STD	9.9751672E+08	0.0000000E+00	0.0 ppm	992519161.233	1002514278.77	-1.0000 %	5010.00 ppm	FAIL 19960.08 %

4W and 2W Zero test procedure for all test points that verify Zero offset of the OHMF function. 4-wire kelvin connection is used between DMM and MFC. 1G Ω resistance range is tested using the external standard, as MFC unable to provide this range value.

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	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
Zero µADC	0	-6.6477183E-11	71.82 ppm	0	0	Z-check	410 ppm	INFO
50 nADC	5E-08	4.9988125E-08	71.82 ppm	4.997591E-08	5.002409E-08	-237.492 ppm	410 ppm	INFO
100 nADC	1E-07	9.9981917E-08	71.82 ppm	9.995182E-08	1.000482E-07	-180.830 ppm	410 ppm	PASS 37.53 %
-100 nADC	-1E-07	-1.000174E-07	71.82 ppm	-1.000482E-07	-9.995182E-08	173.962 ppm	410 ppm	PASS 36.11 %
-50 nADC	-5E-08	-4.9984551E-08	71.82 ppm	-5.002409E-08	-4.997591E-08	-308.971 ppm	410 ppm	INFO
Zero µADC	0	2.1922633E-11	71.82 ppm	0	0	Z-check	410 ppm	INFO
0.5 µADC	5E-07	5.000864E-07	71.82 ppm	4.999391E-07	5.000609E-07	172.806 ppm	50 ppm	FAIL 141.85 %
1.0 µADC	1E-06	1.0001087E-06	71.82 ppm	9.998782E-07	1.000122E-06	108.730 ppm	50 ppm	PASS 89.25 %
-1.0 µADC	-1E-06	-1.0001162E-06	71.82 ppm	-1.000122E-06	-9.998782E-07	116.220 ppm	50 ppm	PASS 95.40 %
-0.5 µADC	-5E-07	-4.9999451E-07	71.82 ppm	-5.000609E-07	-4.999391E-07	-10.980 ppm	50 ppm	PASS 9.01 %
Zero 00 µADC	0	8.5668659E-12	71.82 ppm	0	0	Z-check	410 ppm	INFO
5 µADC	5E-06	5.000684E-06	71.82 ppm	4.999556E-06	5.000444E-06	136.799 ppm	17 ppm	FAIL 154.02 %
10 µADC	1E-05	1.0001349E-05	71.82 ppm	9.999112E-06	1.000089E-05	134.864 ppm	17 ppm	FAIL 151.84 %
-10 µADC	-1E-05	-1.0001173E-05	71.82 ppm	-1.000089E-05	-9.999112E-06	117.262 ppm	17 ppm	FAIL 132.02 %
-5 µADC	-5E-06	-5.0005765E-06	71.82 ppm	-5.000444E-06	-4.999556E-06	115.299 ppm	17 ppm	FAIL 129.81 %
Zero 000 µADC	0	4.9274969E-11	71.82 ppm	0	0	Z-check	410 ppm	INFO
50 µADC	5E-05	5.0006651E-05	71.82 ppm	4.999561E-05	5.000439E-05	133.018 ppm	16 ppm	FAIL 151.47 %
100 µADC	0.0001	0.00010001309	71.82 ppm	9.999122E-05	0.0001000088	130.907 ppm	16 ppm	FAIL 149.06 %
-100 µADC	-0.0001	-0.00010001265	71.82 ppm	-0.0001000088	-9.999122E-05	126.539 ppm	16 ppm	FAIL 144.09 %
-50 µADC	-5E-05	-5.0006231E-05	71.82 ppm	-5.000439E-05	-4.999561E-05	124.620 ppm	16 ppm	FAIL 141.90 %
Zero mADC	0	4.8518398E-11	33.64 ppm	0	0	Z-check	410 ppm	INFO
0.5 mADC	0.0005	0.00050005301	33.64 ppm	0.0004999762	0.0005000238	106.011 ppm	14 ppm	FAIL 222.53 %
1.0 mADC	0.001	0.0010001065	33.64 ppm	0.0009999524	0.001000048	106.528 ppm	14 ppm	FAIL 223.61 %
-1.0 mADC	-0.001	-0.0010001096	33.64 ppm	-0.001000048	-0.0009999524	109.584 ppm	14 ppm	FAIL 230.03 %
-0.5 mADC	-0.0005	-0.00050005613	33.64 ppm	-0.0005000238	-0.0004999762	112.269 ppm	14 ppm	FAIL 235.66 %
Zero 00 mADC	0	8.2774447E-11	32.27 ppm	0	0	Z-check	410 ppm	INFO
5 mADC	0.005	0.0050004979	32.27 ppm	0.004999769	0.005000231	99.588 ppm	14 ppm	FAIL 215.23 %
10 mADC	0.01	0.01000102	32.27 ppm	0.009999537	0.01000046	101.993 ppm	14 ppm	FAIL 220.43 %
-10 mADC	-0.01	-0.01000107	32.27 ppm	-0.01000046	-0.009999537	107.017 ppm	14 ppm	FAIL 231.29 %
-5 mADC	-0.005	-0.0050005489	32.27 ppm	-0.005000231	-0.004999769	109.776 ppm	14 ppm	FAIL 237.25 %
Zero 000 mADC	0	7.1877537E-11	53.32 ppm	0	0	Z-check	410 ppm	INFO
50 mADC	0.05	0.050001897	53.32 ppm	0.04999588	0.05000412	37.944 ppm	29 ppm	PASS 46.09 %
100 mADC	0.1	0.1000038	53.32 ppm	0.09999177	0.1000082	38.008 ppm	29 ppm	PASS 46.17 %
-100 mADC	-0.1	-0.10000537	53.32 ppm	-0.1000082	-0.09999177	53.716 ppm	29 ppm	PASS 65.25 %
-50 mADC	-0.05	-0.050002867	53.32 ppm	-0.05000412	-0.04999588	57.349 ppm	29 ppm	PASS 69.67 %
Zero ADC	0	1.3803513E-10	115.22 ppm	0	0	Z-check	410 ppm	INFO
0.5 ADC	0.5	0.50009206	115.22 ppm	0.4998874	0.5001126	184.127 ppm	110 ppm	PASS 81.75 %
1.0 ADC	1	1.0000425	115.22 ppm	0.9997748	1.000225	42.503 ppm	110 ppm	PASS 18.87 %
-1.0 ADC	-1	-1.0002355	115.22 ppm	-1.000225	-0.9997748	235.495 ppm	110 ppm	FAIL 104.56 %
-0.5 ADC	-0.5	-0.50019916	115.22 ppm	-0.5001126	-0.4998874	398.321 ppm	110 ppm	FAIL 176.86 %

Test completed

Test date	07 October 2018 18:55
UUT Internal TEMP?	35.4
Destructive overloads?	113, DESTRUCTIVE OVERLOADS valid 2941

Lab temperature maintained +24°C ±2°C

Internal use only

Not validated

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