

E4981A-09B

Modification Recommended Service Note

Supersedes:
E4981A-09A

E4981A Capacitance Meter

Serial Numbers: See below
Manufacturing ID Number: N/A

D value deviation issue

Parts Required:

P/N Description Qty.

NONE

ADMINISTRATIVE INFORMATION

ACTION	<input type="checkbox"/> ON SPECIFIED FAILURE	STANDARDS			
CATEGORY:	<input checked="" type="checkbox"/> AGREEABLE TIME	LABOR:	2.0 Hours		
LOCATION	<input type="checkbox"/> CUSTOMER INSTALLABLE	SERVICE:	<input type="checkbox"/> RETURN	USED	<input type="checkbox"/> RETURN
CATEGORY:	<input checked="" type="checkbox"/> ON-SITE (active On-site contract required)	INVENTORY:	<input type="checkbox"/> SCRAP	PARTS:	<input type="checkbox"/> SCRAP
	<input checked="" type="checkbox"/> SERVICE CENTER		<input type="checkbox"/> SEE TEXT		<input type="checkbox"/> SEE TEXT
	<input type="checkbox"/> CHANNEL PARTNERS				
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	NO CHARGE AVAILABLE UNTIL:	30-June-2021		
	<input checked="" type="checkbox"/> Calibration Required	PRODUCT LINE:	WN		
	<input type="checkbox"/> Calibration NOT Required	AUTHOR:	jm		

ADDITIONAL INFORMATION:

Situation:

E4981A with the listed serial numbers below may not meet the specification of the measurement accuracy, due to inaccurate correction constants written by improper calibration steps.

Duration of the inaccurate correction constants written: since December 2017 to May 2019.

Solution/Action:

Customer action:

If a customer meets one of four conditions below, the product is not impacted and can continue to be used. However, Keysight recommends a planned/agreeable time re-calibration to permanently fix the issue.

Condition-1: If a customer executes and turns ON Open/Short/Load correction, the correction constants written at factory shipment is not used and the unit is free from this issue as far as the configuration is unchanged.

Note: If Open/Short correction is executed, this issue remains.

Condition-2: If a customer executes incoming inspection when E4981A is delivered and the results of D value are within the limits, the unit is usable at the customer's discretion.

Condition-3: If a customer has C standards and the results of D value are within the limits, the unit is usable at the customer's discretion.

- measures D value with 16385A (C standard 16380C, 0.01 μ F) at 120 Hz and at 1 kHz, then the results of D value are within the limits. AND
- measure D value with 16383A (C standard 16380A, 100pF) at 1 MHz with 0m/1m/2m cable, then the results of D value are within the limits.

Step 1. Connect the 16385A on the UNKNOWN terminal.

Step 2. Press **[Preset]** key.

Step 3. Press **CLEAR SET&CORR**, then press **OK**

Step 4. Press the down cursor key twice to select **FREQ** field.

Step 5. Press **120 Hz** to set the frequency at 120 Hz

Step 6. Press the down cursor key to select **MEAS TIME** field.

Step 7. Press **INCR +** twice to set the measurement time at 8.

Step 8. Press **[Meas Setup]** key.

Step 9. Press the down cursor keys four times to select **TRIG** field.

Step 10. Press **MAN** to select the manual trigger mode.

Step 11. Press **[Display Format]** key to show the measurement display.

Step 12. Press **[Trigger]** key to make a single measurement.

Step 13. Check if the D value is within the limits.

Step 14. Connect the 16385A on the UNKNOWN terminal.

Step 15. Press **[Preset]** key.

Step 16. Press **CLEAR SET&CORR**, then press **OK**
Step 17. Press the down cursor key twice to select **FREQ** field.
Step 18. Press **1 kHz** to set the frequency at 1 kHz
Step 19. Press the down cursor key to select **MEAS TIIME** field.
Step 20. Press **INCR +** twice to set the measurement time at 8.
Step 21. Press **[Meas Setup]** key.
Step 22. Press the down cursor keys four times to select **TRIG** field.
Step 23. Press **MAN** to select the manual trigger mode.
Step 24. Press **[Display Format]** key to show the measurement display.
Step 25. Press **[Trigger]** key to make a single measurement.
Step 26. Check if the D value is within the limits.

Step 27. Connect the 16183A on the UNKNOWN terminal.
Step 28. Press **[Preset]** key.
Step 29. Press **CLEAR SET&CORR**, then press **OK**
Step 30. Press the down cursor key twice to select **FREQ** field.
Step 31. Press **1MHz** to set the frequency at 1 MHz.
Step 32. Press the down cursor key to select **MEAS TIIME** field.
Step 33. Press **INCR +** twice to set the measurement time at 8.
Step 34. Press **[Meas Setup]** key.
Step 35. Press the down cursor keys four times to select **TRIG** field.
Step 36. Press **MAN** to select the manual trigger mode.
Step 37. Press **[Display Format]** key to show the measurement display.
Step 38. Press **[Trigger]** key to make a single measurement.
Step 39. Check if the D value is within the limits.

Step 40. Connect the 1m cable on the UNKNOWN terminal
Step 41. Connect 16183A to the end of 1m cable.
Step 42. Press **[Preset]** key.
Step 43. Press **CLEAR SET&CORR**, then press **OK**
Step 44. Press the down cursor key twice to select **FREQ** field.
Step 45. Press **1MHz** to set the frequency at 1 MHz.
Step 46. Press the down cursor key to select **MEAS TIIME** field.
Step 47. Press **INCR +** twice to set the measurement time at 8.
Step 48. Press **[Meas Setup]** key.
Step 49. Press the down cursor keys four times to select **TRIG** field.
Step 50. Press **MAN** to select the manual trigger mode.
Step 51. Press **[Meas Setup]** key.
Step 52. Press **CORRECTION** to show **<CORRECTION>** display.
Step 53. Press the down cursor key, then press the right key to select **CABLE** field.
Step 54. Press **1m** to select the 1m cable mode.
Step 55. Press **[Display Format]** key to show the measurement display.
Step 56. Press **[Trigger]** key to make a single measurement.
Step 57. Check if the D value is within the limits.

Step 58. Connect the 2m cable on the UNKNOWN terminal
Step 59. Connect 16383A to the end of 2m cable.
Step 60. Press **[Preset]** key.
Step 61. Press **CLEAR SET&CORR**, then press **OK**
Step 62. Press the down cursor key twice to select **FREQ** field.
Step 63. Press **1MHz** to set the frequency at 1 MHz.
Step 64. Press the down cursor key to select **MEAS TIIME** field.
Step 65. Press **INCR +** twice to set the measurement time at 8.
Step 66. Press **[Meas Setup]** key.

- Step 67.** Press the down cursor keys four times to select **TRIG** field.
- Step 68.** Press **MAN** to select the manual trigger mode.
- Step 69.** Press **[Meas Setup]** key.
- Step 70.** Press **CORRECTION** to show **<CORRECTION>** display.
- Step 71.** Press the down cursor key, then press the right key to select **CABLE** field.
- Step 72.** Press **2m** to select the 2m cable mode.
- Step 73.** Press **[Display Format]** key to show the measurement display.
- Step 74.** Press **[Trigger]** key to make a single measurement.
- Step 75.** Check if the D value is within the limits.

Condition-4: If a customer has a known reliable E4981A and a known reliable sample like “golden device” and then the D values of the known reliable E4981A and the one of the specified serial-numbers listed below are consistent, the unit is usable at the customer’s discretion.

Even though a customer does not meet either of four conditions above, the customer starts to use Open/Short/Load correction, the customer can continue to use the unit.

Based on rough estimation statically, D value at 1 kHz might indicate 0.005 at worst case. If the customer measured device does not allow the above, contact to the nearest service center.

Keysight service center action:

Make arrangement of re-calibration.

Perform as received Performance test.

Perform full adjustment then perform Performance Test.

Provide CoC and Measurement Report to the customer.

Serial Number list:

MY48206255	MY48206351	MY48206391	MY48206485	MY48206496	MY48206499	MY48206505	MY48206577
MY48206582	MY48206628	MY48206689	MY48206719	MY48206824	MY48206825	MY48206833	MY48206847
MY48206850	MY48206860	MY48206867	MY48206881	MY48206925	MY48206927	MY48206943	MY48206950
MY48206958	MY48206970	MY48206977	MY48206988	MY48206990	MY48206996	MY48206997	MY48206998
MY48207002	MY48207012	MY48207019	MY48207020	MY48207022	MY48207023	MY48207024	MY48207027
MY48207028	MY48207033	MY48207034	MY48207039	MY48207040	MY48207041	MY48207042	MY48207043
MY48207052	MY48207054	MY48207056	MY48207057	MY48207062	MY48207083	MY48207086	MY48207087
MY48207106	MY48207107	MY48207112	MY48207114	MY48207116	MY48207117	MY48207119	MY48207123
MY48207126	MY48207130	MY48207137	MY48207141	MY48207142	MY48207143	MY48207150	MY48207151
MY48207156	MY48207161	MY48207163	MY48207164	MY48207167	MY48207168	MY48207172	MY48207174
MY48207175	MY48207177	MY48207181	MY48207182	MY48207186	MY48207188	MY48207190	MY48207196
MY48207198	MY48207201	MY48207205	MY48207212	MY48207213	MY48207217	MY48207219	MY48207220
MY48207230	MY48207233	MY48207236	MY48207239	MY48207240	MY48207242	MY48207245	MY48207246
MY48207247	MY48207252	MY48207255	MY48207256	MY48207257	MY48207265	MY48207273	MY48207274
MY48207278	MY48207285	MY48207287	MY48207289	MY48207290	MY48207294	MY48207295	MY48207297
MY48207298	MY48207306	MY48207311	MY48207312	MY48207314	MY48207318	MY48207324	MY48207325
MY48207330	MY48207340	MY48207350	MY48207367	MY48207371	MY48207373	MY48207376	MY48207381
MY48207384	MY48207398	MY48207399	MY48207402	MY48207404	MY48207419	MY48207434	MY48207447
MY48207448	MY48207463	MY48207466	MY48207469	MY48207475	MY48207478	MY48207480	MY48207484
MY48207485	MY48207489	MY48207500	MY48207503	MY48207504	MY48207521	MY48207525	MY48207529
MY48207543	MY48207549	MY48207551	MY48207558	MY48207564	MY48207578	MY48207582	MY48207625
MY48207632	MY48207634	MY48207638	MY48207640	MY48207641	MY48207642	MY48207649	MY48207650
MY48207652	MY48207657	MY48207661	MY48207662	MY48207668	MY48207669	MY48207671	MY48207676
MY48207679	MY48207680	MY48207693	MY48308103	MY48308112	MY48308115	MY48308130	MY48308134
MY48308136	MY48308138	MY48308139	MY48308140	MY48308142	MY48308150	MY48308152	MY48308154
MY48308156	MY48308159	MY48308161	MY48308163	MY48308167	MY48308172	MY48308177	MY48308179
MY48308180	MY48308181	MY48308186	MY48308192	MY48308195	MY48308209	MY48308214	MY48308228
MY48308234	MY48308237	MY48308242	MY48308259	MY48308264	MY48308268	MY48308270	MY48308278
MY48308279	MY48308282	MY48308289	MY48308291	MY48308299	MY48308304	MY48308305	MY48308307
MY48308309	MY48308315	MY48308323	MY48308341	MY48308343	MY48308354	MY48308355	MY48308357
MY48308368	MY48308369	MY48308395	MY48308400	MY48308405	MY48308406	MY48308407	MY48308418
MY48308420	MY48308421	MY48308422	MY48308453	MY48308454	MY48308459	MY48308461	MY48308483
MY48308485	MY48308493	MY48308495	MY48308497	MY48308499	MY48308503	MY48308504	MY48308509
MY48308512	MY48308517	MY48308518	MY48308532	MY48308541	MY48308542	MY48308554	MY48308557
MY48308561	MY48308565	MY48308568	MY48308572	MY48308575	MY48308579	MY48308582	MY48308613
MY48308618	MY48308626	MY48308629	MY48308663	MY48308670	MY48308680	MY48308681	MY48308696
MY48308698	MY48308712	MY48308718	MY48308753	MY48308783	MY48308786	MY48308802	MY48308804
MY48308812	MY48308831	MY48308838	MY48308868	MY48308884	MY48308943	MY48308955	MY48308965
MY48308978	MY48309038	MY48309040					

Revision History:

Date	Service Note Revision	Author	Reason for Change
05 Jun 2019	E4981A-09	Jun Maruo	As Published
11 Jun 2019	E4981A-09A	Jun Maruo	Added some defective serial-numbers
22 Jul 2019	E4981A-09B	Jun Maruo	Listed all the affected serial-numbers