Agilent 4284A Precision LCR Meter

Step-by-Step Operation Manual

Power Inductor Measurement

February 2004

No. 16000-95104

Notices

The information contained in this document is subject to change without notice.

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Step-by-Step Easy Operations

Agilent 4284A 20 Hz to 1 MHz LCR Meter
Power Inductor Measurement

Agilent Technologies

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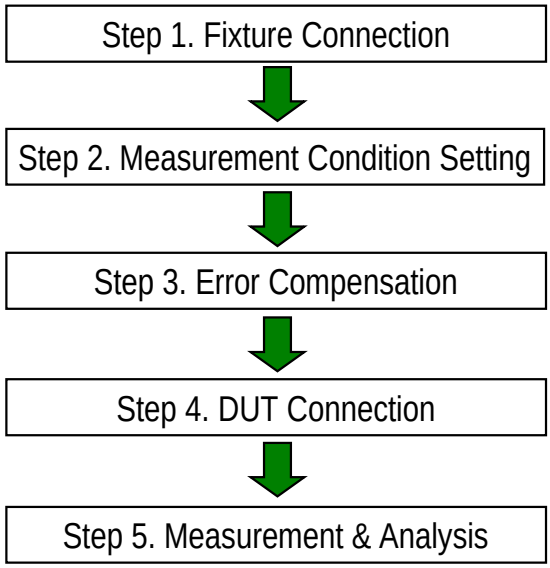
Fundamental Measurement Procedures



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The fundamental measurement procedures of the Agilent 4284A are shown in this slide.

1. Fixture Connection
The appropriate fixture is selected and connected to the instrument.

2. Measurement Condition Setting
The measurement conditions of the instrument, such as frequency, test signal level, and measurement parameters are set.

3. Error Compensation
In this step, stray admittance and residual impedance are eliminated by the open, short, and load corrections.

4. DUT Connection
The DUT is connected to the fixture.

5. Measurement & Analysis
After obtaining the measurement results, they are processed and/or analyzed in this step.

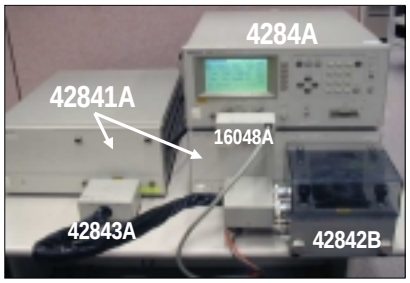
Power Inductor Measurement

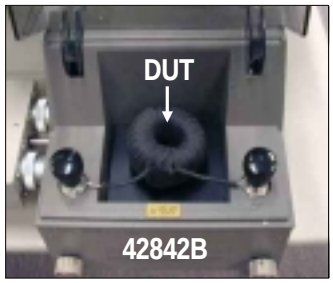
Equipment and Text Fixtures:

42841A x 2 ea., 42842B, 42843A and 16048A

DUT:

Power Inductor (Agilent P/N: 9140-1358)





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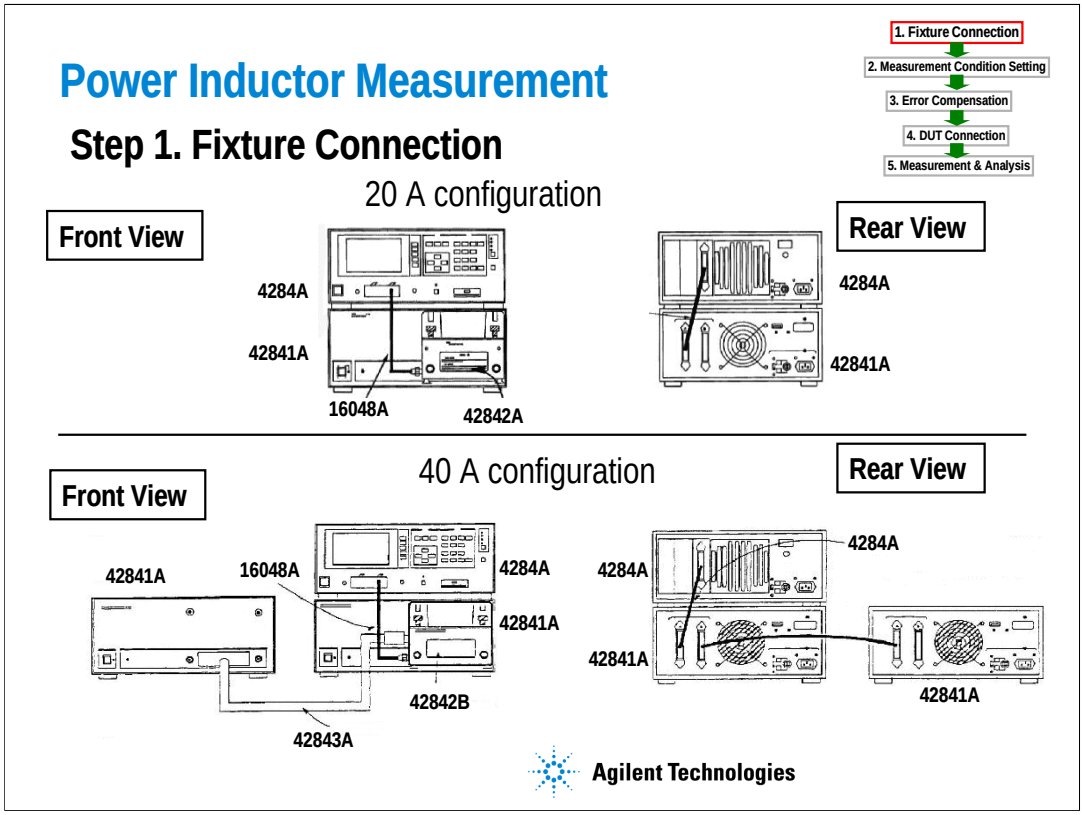
Two 42841A units, 42842B, 42843A, and 16048A are required for a power inductor measurement.

42841A Bias Current Source

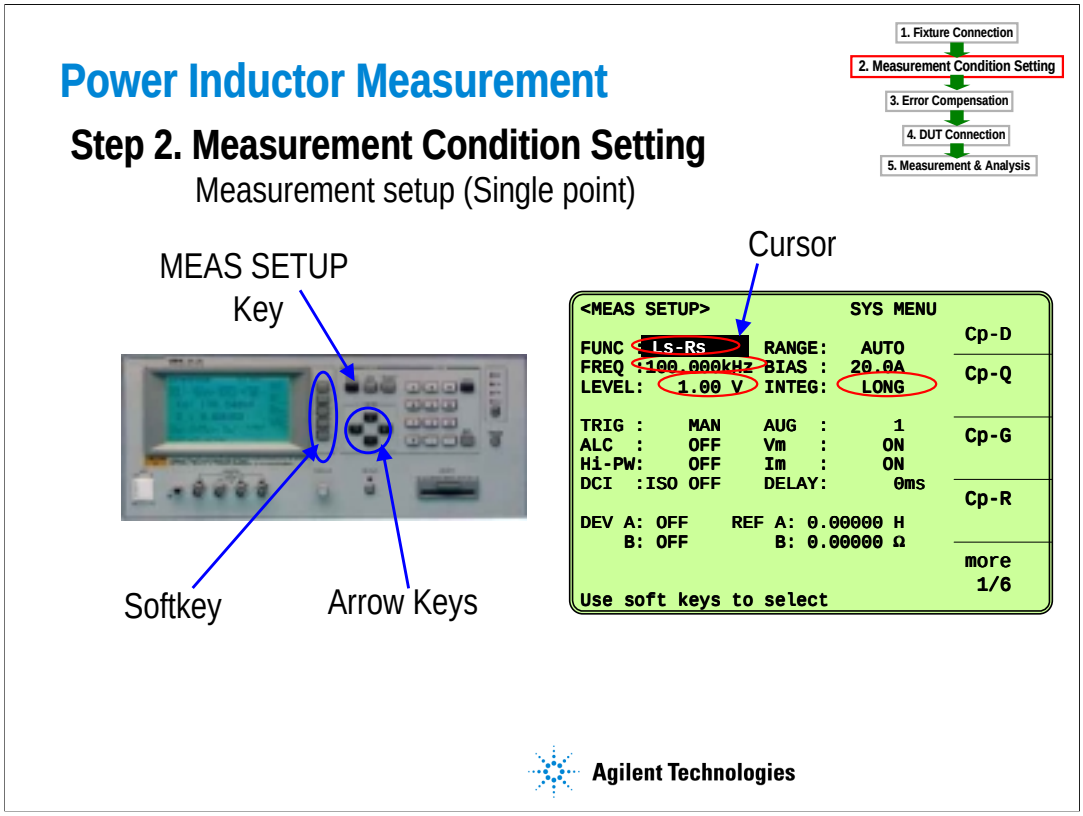
42842B Bias Current Test Fixture

42843A Bias Current Cable

16048A Test Leads



The first step of the measurement procedure is fixture connection.



The second step is measurement condition setting. Set the measurement conditions by using the following key strokes.

	Setting Condition	Value	Key Stroke
	Reset	-	[MEAS SETUP], (SYS MENU), 'more 1/2', 'SYSTEM RESET'
1	Meas. Parameter	Ls-Rs	[MEAS SETUP], (FUNC), 'more 1/6', 'more2/6', more3/6, 'Ls-Rs'
2	Frequency	100 kHz	(FREQ), [1], [0], [0], 'kHz'
3	Signal Level	1 V	(LEVEL), [1], 'V'
4	Bias	20 A	(BIAS), [2], [0], 'A'
5	Meas. Time	Long	(INTEG), 'LONG'
6	Trigger type	Manual	(TRIG), 'MAN'

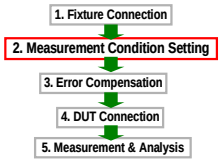
Typeface conventions:

[ ] : Hard key of the instrument

( ) : Moving the cursor using the arrow keys

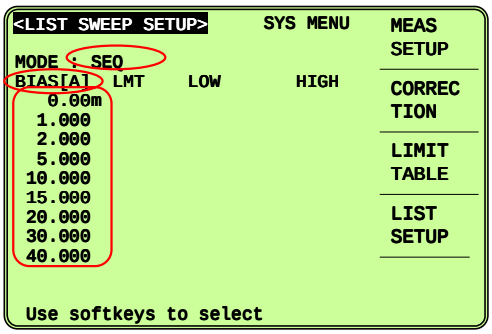
‘ ’ : Softkey on the display

Power Inductor Measurement



Step 2. Measurement Condition Setting

List sweep setup



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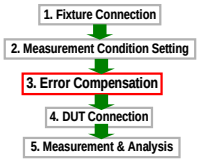
The second step is measurement condition setting. Set the measurement conditions by following key strokes.

	Setting Condition	Value	Key Stroke
1	List Setup, Mode	Seq	[MEAS SETUP], 'LIST SETUP', (MODE:), 'SEQ'
2	List parameter	Current Bias	[MEAS SETUP], 'LIST SETUP', 'BIAS [A]'
3	Sweep Value	0 mA ~ 40 A	Move to new columns and enter values as shown in this slide

Power Inductor Measurement

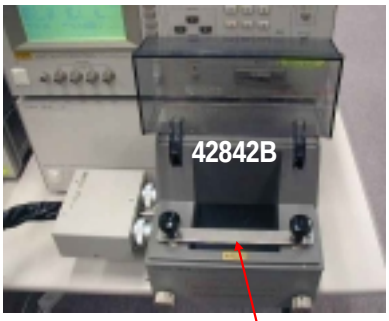
Step 3. Error Compensation



1) Make the short condition

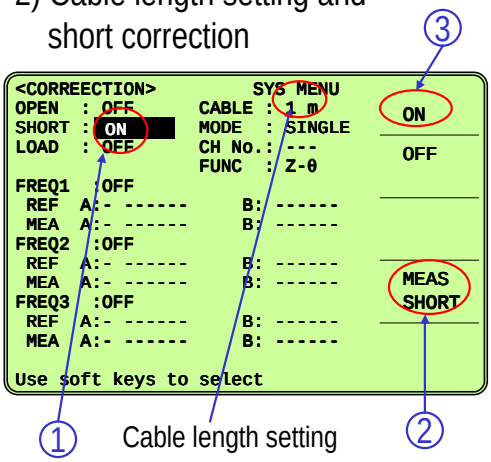
(i) Open the cover and connect the shorting bar

(ii) Close the cover



Shorting bar

2) Cable length setting and short correction



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The third step is error compensation. Cable length setting and short correction are performed.

1) Short connection

Make the short condition by using the shorting bar furnished with the 42842B as shown in this slide.

2) Cable length setting and short correction

A cable length of 1 m is selected to eliminate phase errors that can result from an extended cable.

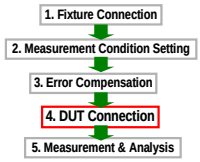
Open correction is not necessary for this power inductor measurement.

Perform error compensation by using the following key strokes.

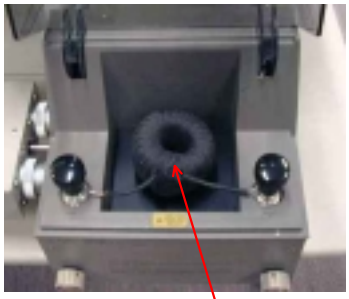
	Setting Condition	Value	Key Stroke
1	Cable Length	1 m	[MEAS SETUP], 'CORRECTION', (CABLE), '1m'
2	Open correction	Off	[MEAS SETUP], 'CORRECTION', (OPEN), 'OFF'
3	DC BIAS	On	[DC BIAS] (Indicator turns on)
4	Short correction	Measure/ On	[MEAS SETUP], 'CORRECTION', (SHORT), 'MEAS SHORT', 'ON'
5	DC BIAS	Off	[DC BIAS] (Indicator turns off)

Power Inductor Measurement

Step 4. DUT Connection



1) Open the cover and connect the DUT



2) Close the cover

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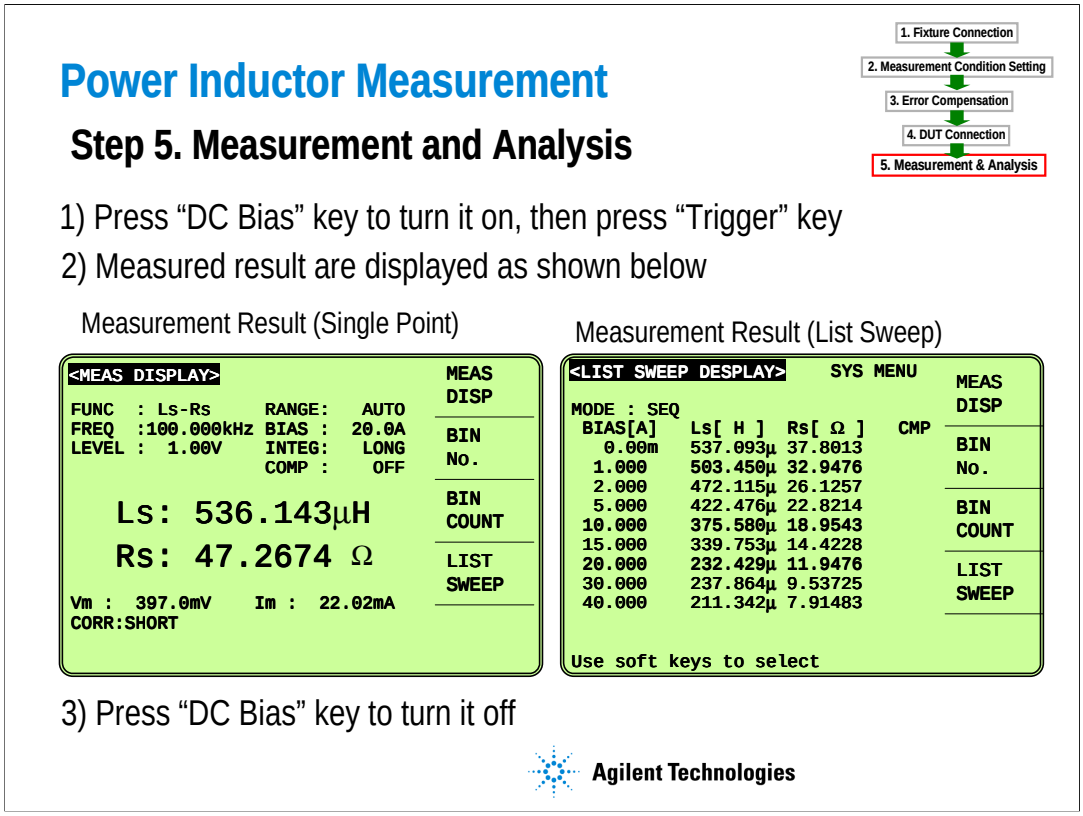
The fourth step is DUT connection.

1) Open the cover of the fixture and then connect the DUT as shown in this slide.

2) Close the cover



The last step of the procedure is measurement and analysis. To start the measurement, press the following keys.

	Setting Condition	Value	Key Stroke
1	Display Format	Measure-ment	[Dispplay Format], 'MEAS DISP'
2	DC Bias	On	[DC BIAS] (Indicator turns on)
3	Trigger	Trigger	[Trigger]
4	DC Bias	Off	[DC BIAS] (Indicator turns off)

Measurement result is shown on the display.

For list sweep measurement, press the following keys.

	Setting Condition	Value	Key Stroke
1	Display Format	List	[Dispplay Format] 'LIST SWEEP'
2	DC Bias	On	[DC BIAS] (Indicator turns on)
3	Trigger	Trigger	[Trigger]
4	DC Bias	Off	[DC BIAS] (Indicator turns off)

Operation Examples

Thank you very much

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