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Manual Supplement

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Notices

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Typeface Conventions

[Sample] key	Indicates the hardkey whose key label is "Sample"."key" may be omitted.
[Sample] - Item	Indicates a series of key operations in which you press the **[Sample]** key, make the item called "Item" on the displayed menu blink by using the **[↓]** or in other ways, and then press the **[Enter]** key.

VBA Macro

The Agilent folder (D:\Agilent) on the hard disk of the E5070B/E5071B contains the VBA macros (VBA Projects) used in this manual.

The customer shall have the personal, non-transferable rights to use, copy, or modify the VBA macros for the customer's internal operations.

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Sample Program Disk

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1 Setting the System Z0

This chapter describes how to set the system characteristic impedance (Z0) of the E5070B/E5071B.

Setting the System Z0

NOTE This function is available with the firmware version 3.01 or greater.

Setting the system Z0 using the front panel

The procedure to set the system characteristic impedance (Z0) is as follows:

Step 1. Press Cal.

Step 2. Press **Set Z0**.

Step 3. Enter the system Z0 using the ENTRY block keys on the front panel.

Setting the system Z0 using the SCPI command.

To set the system characteristic impedance (Z0), use the following command:

- **:SENS:CORR:IMP** on page 9

Setting the system Z0 using the COM object.

To set the system characteristic impedance (Z0), use the following object:

- **SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude** on page 10

SCPI Command Reference

:SENS:CORR:IMP

Syntax

:SENSe:CORRection:IMPedance[:INPut][:MAGNitude] <numeric>

:SENSe:CORRection:IMPedance[:INPut][:MAGNitude]?

Description

Sets the system characteristic impedance (Z0) value.

NOTE

This command is available with the firmware version 3.01 or greater.

Parameters

	<numeric>
Description	System Z0 value
Range	1E-3 to 1000
Preset value	50
Unit	Ω (ohm)
Resolution	0.001

If the specified parameter is out of the allowable setup range, the minimum value (if the lower limit of the range is not reached) or the maximum value (if the upper limit of the range is exceeded) is set.

Query response

{numeric}<newline><^END>

Example of use

```
10   OUTPUT 717;":SENS:CORR:IMP 75"
20   OUTPUT 717;":SENS:CORR:IMP?"
30   ENTER 717;A
```

Equivalent key

[Cal] - **Set Z0**

COM Object Reference

SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude

Object type Property

Syntax SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude = *Value*

Value = SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude

Description Sets the system characteristic impedance (Z0) value.

NOTE This object is available with the firmware version 3.01 or greater.

Variable

	Value
Description	System Z0 value
Data type	Double precision floating point type (Double)
Range	1E-3 to 1000
Preset value	50
Unit	Ω (ohm)
Resolution	0.001
Note	If the specified variable is out of the allowable setup range, the minimum value (if the lower limit of the range is not reached) or the maximum value (if the upper limit of the range is exceeded) is set.

Examples

```
Dim SysZ0 As Double
SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude = 75
SysZ0 = SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude
```

Equivalent key **[Cal] - Set Z0**

2 Saving data in Touchstone format

This chapter describes how to save measurement data into a file in Touchstone format.

Overview

Use the following VBA macro to save measurement data into a file in Touchstone format.

Folder	VBA macro name (project name)
D:\Agilent	SaveToTouchstone.vba

NOTE Don't delete this VBA macro. This VBA macro can not be restored by executing system recovery.

This VBA macro saves measurement data of any channel into a Touchstone format file, based on 1 to 4 port models.

NOTE You can save data in "real number - imaginary number", "dB - angle" or "amplitude - angle."

You can use data saved in Touchstone format for a circuit simulator such as Agilent Advanced Design System (ADS) on your PC (personal computer) or workstation. For more information on the ADS, refer to the operation manual that comes with the system.

NOTE You cannot recall data saved in Touchstone format on the E5070B/E5071B.

For information on data structure in a saved file, refer to "Data structure in Touchstone file" on page 15.

Note on use

When the fixture simulator is ON and the port impedance conversion is ON, Z0 of all ports to be saved must be set to the same value.

Operating procedure

1. Starting VBA macro

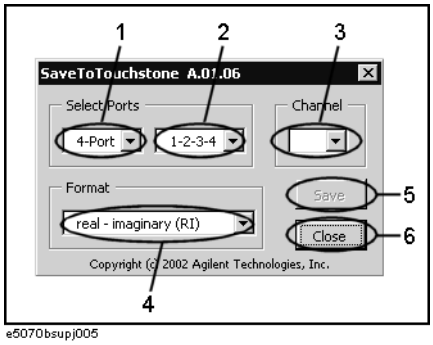
Step 1. Press **[Macro Setup]**.

Step 2. Press **Load Project**.

Step 3. The Open dialog box appears. Specify the file name “D:\Agilent\SaveToTouchstone.vba” and press the **Open** button.

Step 4. Press **[Macro Run]** to start the macro. (Refer to Figure 2-1.)

Figure 2-1 **SaveToTouchstone**



2. Saving data

Step 1. Select the number of ports (1 in Figure 2-1) and test ports (2 in Figure 2-1).

NOTE You can selects 1 port or 2 ports as the number of ports when the maximum number of channels/traces is 16 channels/4 traces or 12 channels/6 traces.

Step 2. Select a channel (3 in Figure 2-1).

NOTE The channel selected in this step has no relation to active channel.

Step 3. Select the data saving format (4 in Figure 2-1).

real - imaginary (RI)	real and imaginary parts
magunitude - angle (MA)	linear magnitude and phase (degree)
dB - angle (DB)	logarithmic magnitude (dB) and phase (degree)

Step 4. Press the **Save** button (5 in Figure 2-1). Measurement of necessary data for the selected channel in Step 2 starts.

NOTE Regardless of state of the trigger system, measurement is automatically performed once.

NOTE Regardless of on/off state of the balance-unbalance conversion, measurement is performed without the balance-unbalance conversion.

Step 5. When the measurement is complete, the Save As dialog box appears. Specify a file name and press the **Save** button.

Step 6. When saving to the file is complete, the start screen appears again.

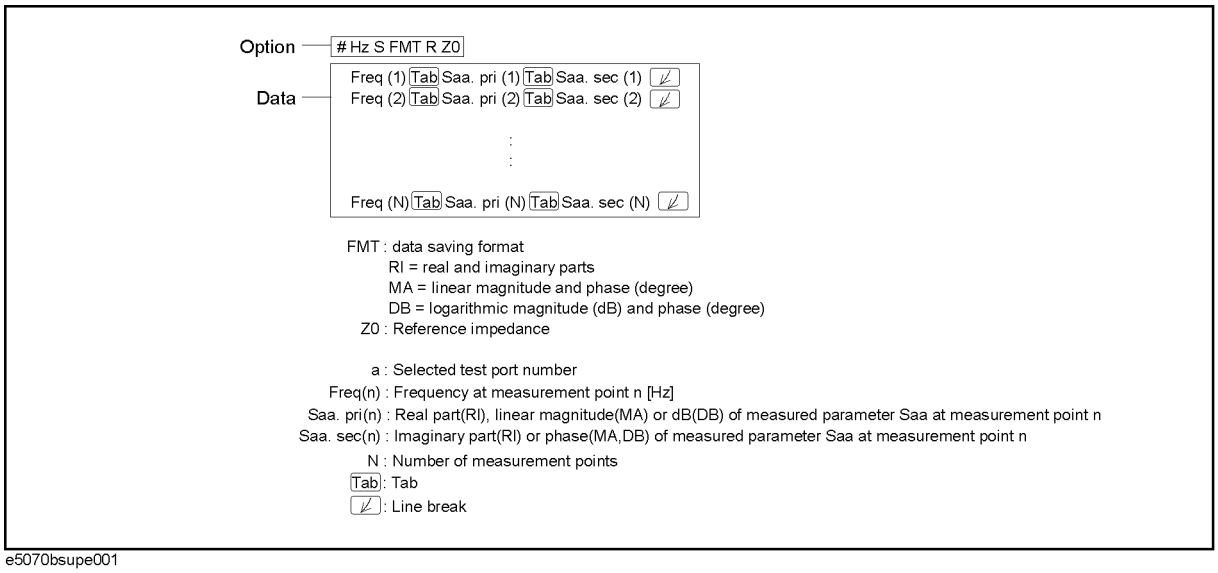
3. Closing VBA macro

Step 1. Press the **Close** button (6 in Figure 2-1) to exit from the macro.

Data structure in Touchstone file

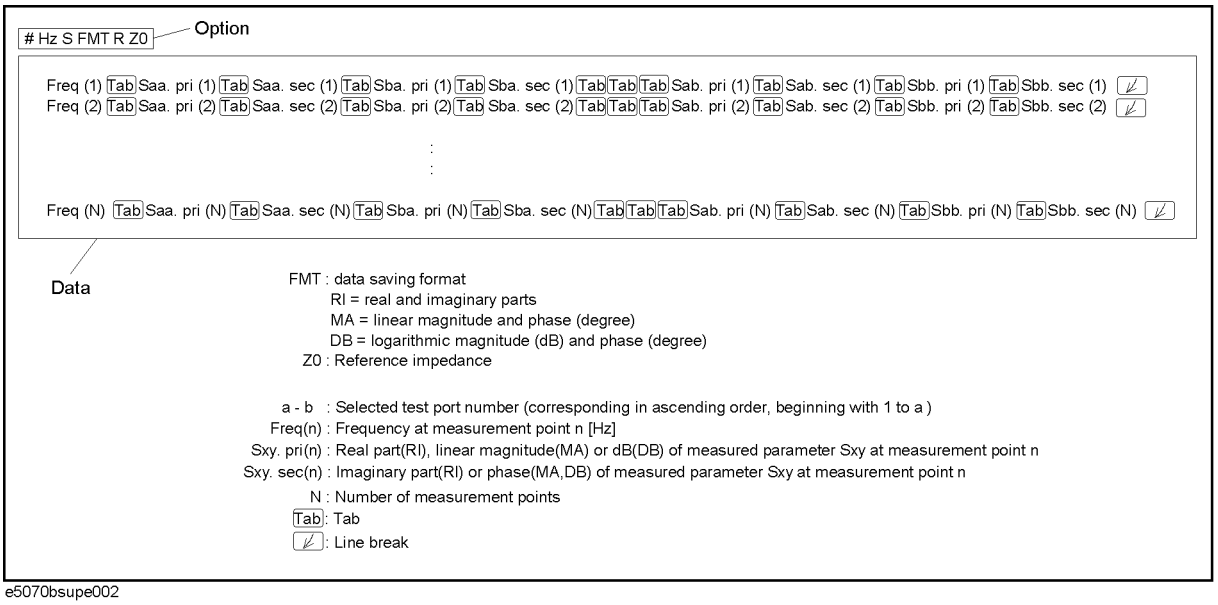
Figure 2-2 through Figure 2-5 show the data structure of a file saved in Touchstone format. Contents of the file is text data, which is ready for being read with your text editor.

Figure 2-2 One port Touchstone file



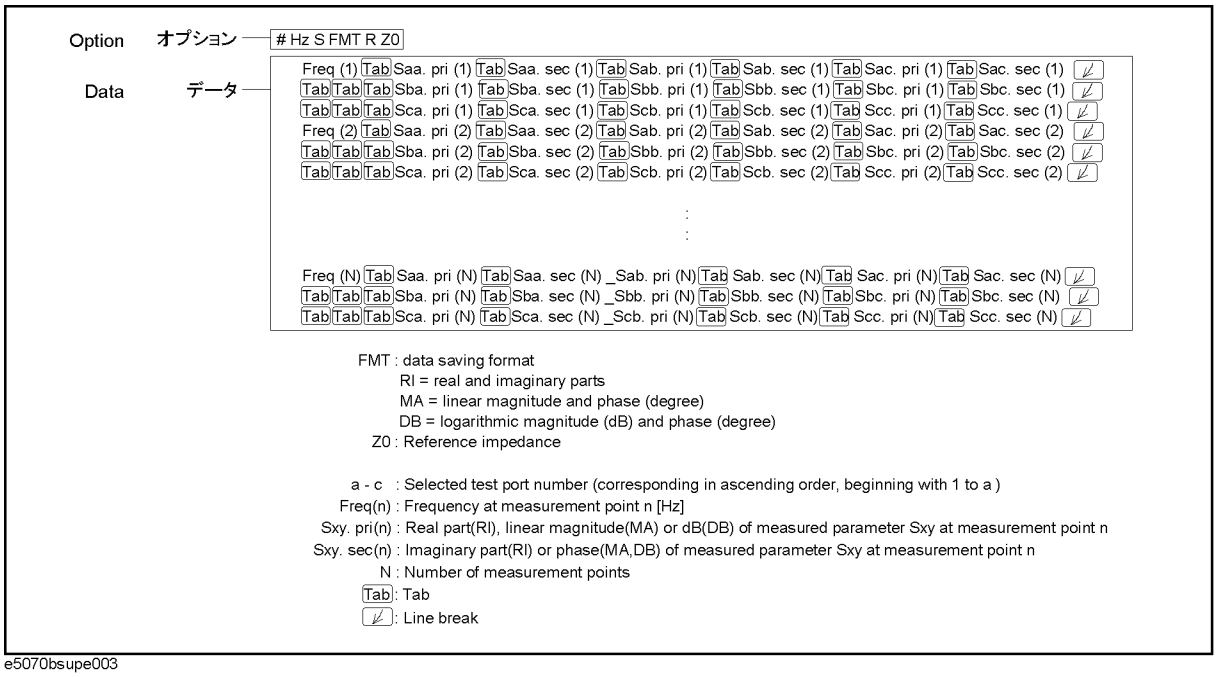
e5070bsupe001

Figure 2-3 Two port Touchstone file



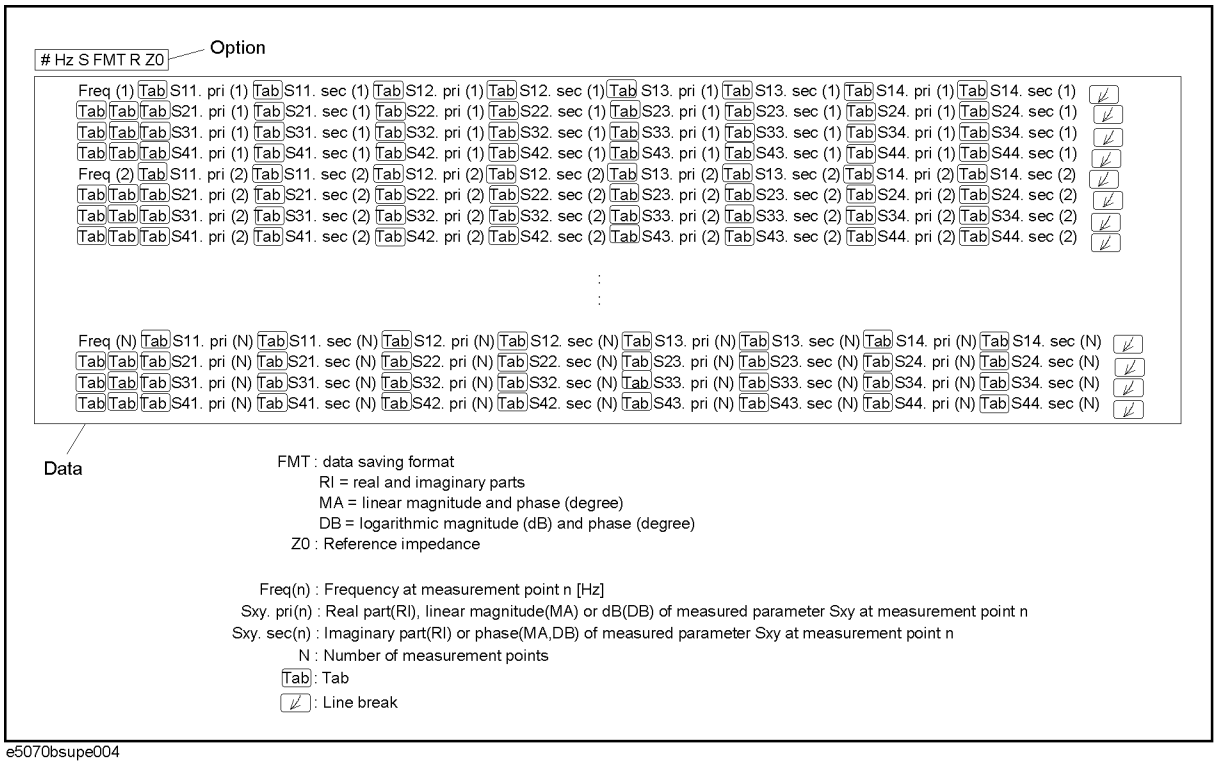
e5070bsupe002

Figure 2-4 Three port Touchstone file



e5070bsupe003

Figure 2-5 Four port Touchstone file



e5070bsupe004

3 Performing TRL Calibration

This chapter describes how to perform the TRL calibration.

Overview

Use the following VBA macro to perform the TRL calibration.

Folder	VBA macro name (project name)
D:\Agilent	TRL_Calibration.vba

NOTE Don’t delete this VBA macro. This VBA macro can not be restored by executing system recovery.

This VBA macro lets you perform the 2/3/4 port TRL calibration for any selected port.

NOTE You cannot perform the TRM calibration using this VBA macro.

The TRL calibration provides accuracy equivalent to full 2/3/4/ port calibration using short, open, load, and thru (SOLT) standards*1.

To perform the TRL calibration, you need to prepare thru, reflection (open or short), and line standards. The thru and line must have the same reference impedance Z0 and the transfer constant (same material).

NOTE You can perform the LRL calibration using a line standard instead of the thru standard because this VBA macro lets you define arbitrary value as the delay of the thru standard. To perform the LRL calibration, define the delay value of the line at the thru definition, and then measure the thru calibration data using the line standard.

Note on use

Set the power level to -10 dBm or less in order to accurately measure a DUT close to open or short state.

*1. For details, refer to Chapter 4 “Calibration” in *User's Guide*.

Operating procedure

1. Setting stimulus conditions

Set the stimulus conditions of the channel for which you perform the calibration.

For information on the setting procedure, refer to Chapter 3 “Setting Measurement Conditions” in *User's Guide*.

2. Starting VBA macro

Load the VBA project for the TRL calibration and run it.

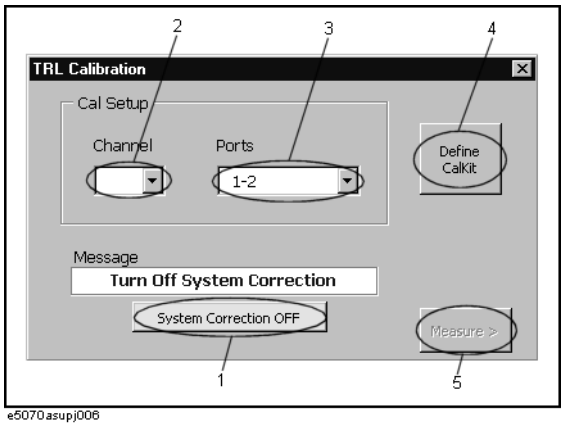
Step 1. Press **[Macro Setup]**.

Step 2. Press **Load Project**.

Step 3. The Open dialog box appears. Specify the file name “D:\AgilentTRL_Calibration.vba” and press the **Open** button.

Step 4. Press **[Macro Run]** to start the macro. (Refer to Figure 3-1.)

Figure 3-1 **TRL_Calibration macro**



3. Turning off system correction

Press the **System Correction OFF** button (1 in Figure 3-1) to turn off system error correction.

NOTE The **System Correction OFF** button does not appear when system error correction has been already turned off.

4. Selecting channel and ports

Select a channel (2 in Figure 3-1) and test ports (3 in Figure 3-1).

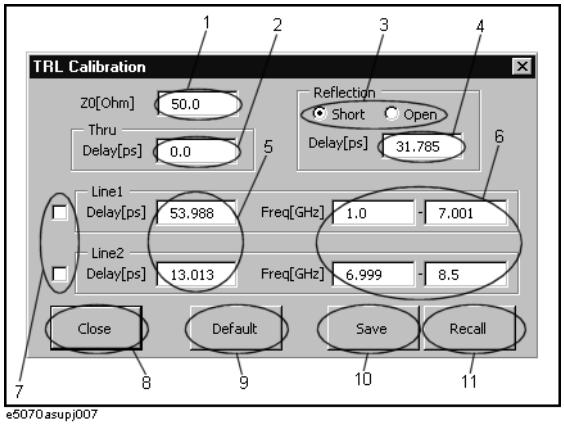
NOTE The channel selected in this step has no relation to active channel.

5. Defining calibration kit

Define the calibration kit you use.

Step 1. Press the **Define Cal kit** button (4 in Figure 3-1) to bring up the calibration kit definition screen shown in Figure 3-2.

Figure 3-2 Calibration kit definition screen



Step 2. Define each standard as follows:

Reference impedance (Z0)

Enter a value of the reference impedance of thru/line (1 in Figure 3-2).

Thru

Enter a delay value (2 in Figure 3-2) in ps.

Reflection

Select a standard type (3 in Figure 3-2) and enter a delay value (4 in Figure 3-2) in ps.

Line

You can define 2 lines: Line 1 and Line 2.

Enter a delay value (5 in Figure 3-2) in ps and enter a frequency range (6 in Figure 3-2) in GHz.

Check the lines you use for calibration (7 in Figure 3-2).

NOTE When you use Line 1 and Line 2, 10 kHz or more overlapped within their defined frequency ranges must be required.

Saving and loading calibration kit definitions

Press the **Save** button (10 in Figure 3-2) to save the definition of the current calibration kit to your desired file. Press the **Recall** button (11 in Figure 3-2) to recall the definition of a calibration kit from a previously saved file.

NOTE If you save as "D:\Agilent\Trldata\Default.dat," the file is handled as the default definition file. The default definition file is automatically recalled when the macro starts.

NOTE The factory-shipped default definition file has the same content as "D:\Agilent\Trldata\SysDefault.dat." Copy "D:\Agilent\Trldata\SysDefault.dat" to the default definition file in order to restore the default definition file to its factory-shipped condition.

Don't change "D:\Agilent\Trldata\SysDefault.dat."

Initializing calibration kit definition

Press the **default** button (9 in Figure 3-2) to recall the definition of a calibration kit from the default definition file ("D:\Agilent\Trldata\Default.dat").

Step 3. Press the **Close** button (8 in Figure 3-2) to finish defining the calibration kit.

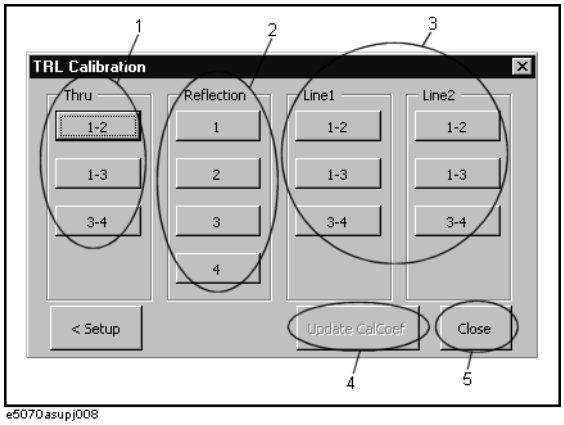
6. Performing calibration

Measure necessary calibration data and enable error correction.

NOTE The definition of the frequency range of the line standard used for measurement must cover the sweep range of the channel for which you perform calibration.

Step 1. Press the **Measure** button (5 in Figure 3-1) to bring up the TRL calibration execution screen. Depending on the port selection and the calibration kit definition, a button appears for data that must be measured. Figure 3-3 is an example when selecting "1-2-3-4" as ports and enabling Line 1 and Line 2.

Figure 3-3 Example of the TRL calibration execution screen

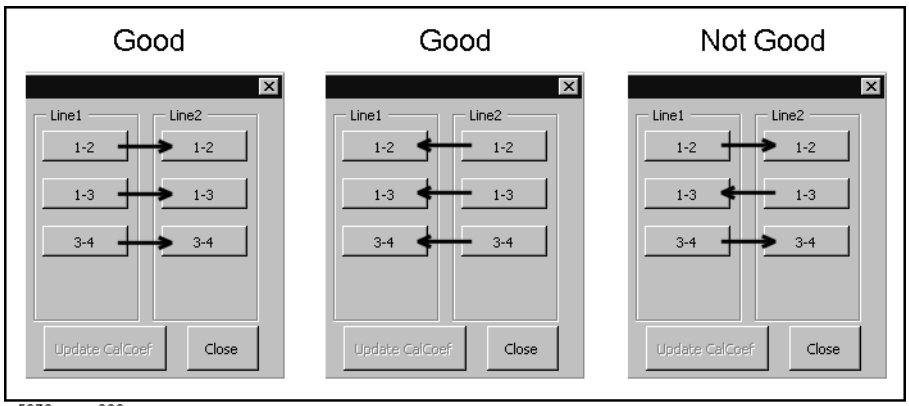


Step 2. Measure calibration data.

For thru and line, connect the standard between the ports shown on the button and then press the button (1,3 in Figure 3-3). The data between the ports is measured and the button changes into light blue.

For reflection, connect the standard to the port shown on the button and then press the button (2 in Figure 3-3). The data of the port is measured and the button changes into light blue.

NOTE When you want to measure calibration data between two or three pairs of ports using Line 1 and Line 2, the order to use the Line 1 and Line 2 must be same for all the pairs of ports. For example, when you measure the calibration data between ports 1-2, 1-3 and 3-4 and use the Line 1 and Line 2 in order for ports 1-2, you have to use the Line 1 and Line 2 in the same order for ports 1-3 and 3-4.



NOTE When you use Line 1 and Line 2 and their frequency ranges overlap, data of the line measured later is used.

NOTE The isolation measurement is not available.

Step 3. When measuring all the data is complete, press the **Update Cal Coef** button (4 in Figure 3-3). The calibration coefficient is calculated and the error correction is turned ON. In the calibration property display (ON/OFF with **[Cal]** - **Property**), the state is indicated by "F" (same as the full n port SOLT calibration).

7. Closing macro

Press the **Close** button (5 in Figure 3-3) to exit from the macro.

4 Calibration between Ports of Different Connector Types

This chapter describes how to perform calibration between ports of different connector types and adapter characterization.

Calibration between Ports of Different Connector Types

Overview

When you perform calibration between ports of different connector type, you need to use a different calibration kit for each test port. In addition, for transmission measurement between 2 ports, you need to use adapters suitable for the connector types of both ports.

For example, in order to perform the full 2-port calibration between port 1 of the N-type connector and port 2 of the 3.5-mm connector, you need to use an N-type connector calibration kit (for example, 85032F) for reflection measurement of port 1, a 3.5-mm connector calibration kit (for example, 85033E) for reflection measurement of port 2, and an N-3.5 mm adapter for transmission measurement between ports 1 and 2.

Because you cannot use a different calibration kit for each port in normal calibration of the E5070B/E5071B, you have to use the following VBA macro to perform calibration between ports of different connector type.

Storage folder	VBA macro name (project name)
D:\Agilent	AdapterCharacterization.vba

NOTE Never delete this VBA macro. Even if you execute system recovery, this VBA macro will not be recovered.

This VBA macro lets you select a calibration kit for each test port and each pair of test ports when performing calibration and, in addition, it lets you select any adapter (2-port touchstone file) whose characteristics have been determined for a standard between test ports.

NOTE This VBA macro has the adapter characterization function to obtain the characteristics of an adapter and save them into a 2-port touchstone file. For more information, refer to “Adapter Characterization” on page 29.

Operating procedure

NOTE

This VBA macro changes definition of the label of calibration kit 10 (calibration kit corresponding to the lowest softkey) temporarily, performs calibration, and restore the definition after completion of the calibration. Therefore, if the VBA macro is aborted for some reason, the definition of the label of calibration kit 10 may be lost.

When you use this VBA macro, it is recommended that you do not use calibration kit 10. If you are using calibration kit 10, it is recommended that you back up calibration kit 10 before using this VBA macro.

To back up a calibration kit, use the VBA macro (SavRecCalKit.vba). You can download this VBA macro through Internet from our product information web site of the Agilent Technologies E5070B/E5071B.

1. Setting stimulus condition

Set the stimulus condition of the channel for which you perform the calibration.

For information on the setting procedure, refer to Chapter 3 “Setting Measurement Conditions” in *User's Guide*.

2. Starting VBA macro

Load the VBA project and run it.

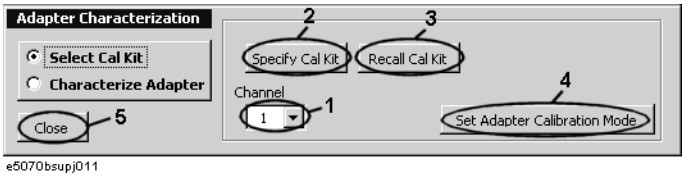
Step 1. Press Macro Setup.

Step 2. Press **Load Project**.

Step 3. The Open dialog box appears. Specify the file name “D:\Agilent\AdapterCharacterization.vba” and press the **Open** button.

Step 4. Press Macro Run to start the macro. (See Figure 4-1)

Figure 4-1 **The Adapter Characterization macro**



3. Selecting a channel

Select a channel (1 in Figure 4-1).

NOTE

The selected channel does not relate to the active channel.

Calibration between Ports of Different Connector Types

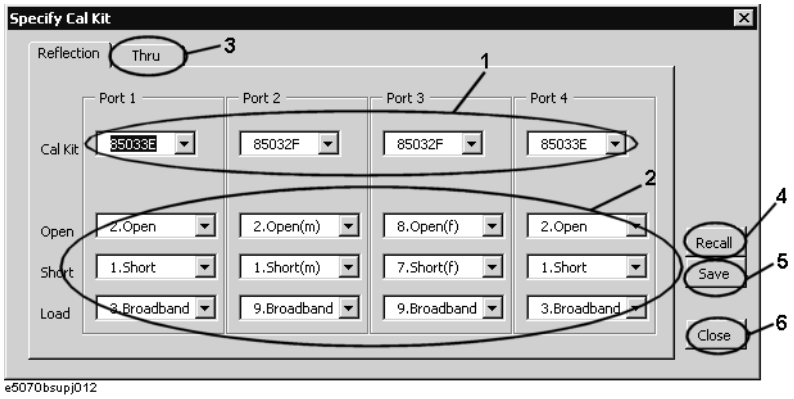
4. Setting calibration kit

Select a calibration kit for each test port and each pair of test ports and select a standard you use for each reflection/transmission measurement.

Step 1. Press the **Specify Cal Kit** button (2 in Figure 4-1).

The Specify Cal Kit dialog box (Reflection tab) as shown in Figure 4-2 appears.

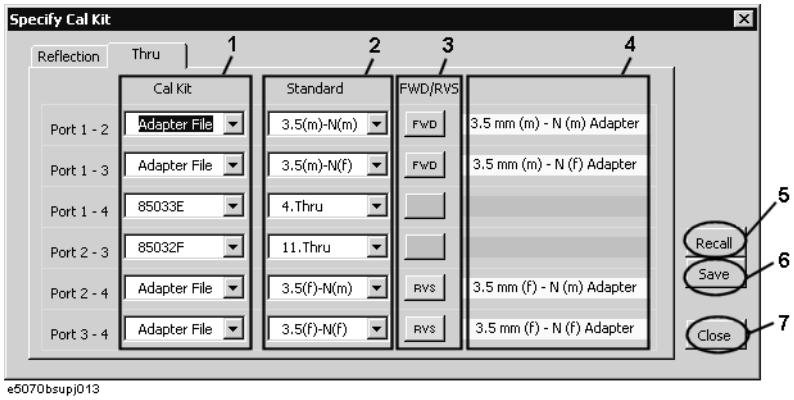
Figure 4-2 **Specify Cal Kit dialog box (Reflection tab)**



Step 2. For each test port, select a calibration kit you use (1 in Figure 4-2) and select a standard you use in the open/short/load reflection measurement from the calibration kits (2 in Figure 4-2).

Step 3. Select the **Thru** tab (3 in Figure 4-2). The Specify Cal Kit dialog box (Thru tab) as shown in Figure 4-3appears.

Figure 4-3 **Specify Cal Kit dialog box (Thru tab)**



Step 4. For each test port, select a calibration kit you use (1 in Figure 4-3). In addition to the 10 calibration kits you can select for normal calibration, you can select Adapter File. When you want to use the adapter as the standard, select Adapter File.

From the calibration kits you have selected, select a standard you use for transmission measurement (2 in Figure 4-3). If you select Adapter File as the calibration kit, you can select an adapter file (2-port touchstone file) under the D:\Agilent\Data\AdapterCharacterization folder as the standard. In this case, you have to

specify the port connection mode (FWD/RVS) between the E5070B/E5071B and the adapter (3 in Figure 4-3).

FWD	Port 1 of the adapter (port 1 of the 2-port touchstone file) is connected to the test port of the smaller port number of the E5070B/E5071B.
RVS	Port 2 of the adapter (port 2 of the 2-port touchstone file) is connected to the test port of the smaller port number of the E5070B/E5071B.

For example, when setting ports 2 to 4, if you want to connect port 1 of the adapter to test port 4 of the E5070B/E5071B and port 2 of the adapter to test port 2 of the E5070B/E5071B, select RVS as the port connection mode.

When you select Adapter File, the comment contained in the adapter file is displayed at 4 in Figure 4-3.

NOTE If the system Z0 written in the adapter file is different from the system Z0 of the E5070B/E5071B, "file error" is displayed at 4 in Figure 4-3. In this case, you cannot set the E5070B/E5071B to the adapter calibration mode.

Saving and loading calibration kit settings

You can save the selection of the calibration kit and standard for each test port (the setting in the Reflection tab) and that for each pair of test ports (the setting in the Thru tab), as well as load them for restoring whenever needed.

Press the **Save** button (5 in Figure 4-2/6 in Figure 4-3) to save the setting into a file.

Press the **Recall** button (4 in Figure 4-2/5 in Figure 4-3) or the **Recall Cal Kit** button (3 in Figure 4-1) to recall the setting from the file.

NOTE If the calibration kit definition is changed after saving the file resulting contradiction between information in the file and the calibration kit definition, you can no longer recall the settings from the file.

Step 5. Press the **Close** button (6 in Figure 4-2/7 in Figure 4-3) to finish the setting of the calibration kits.

5. Performing calibration

Set the E5070B/E5071B to the special calibration mode in which you can use a different calibration kit for each test port (adapter calibration mode) and then perform the calibration.

Step 1. Press the **Set Adapter Calibration Mode** button (4 in Figure 4-1) to set the E5070B/E5071B to the adapter calibration mode.

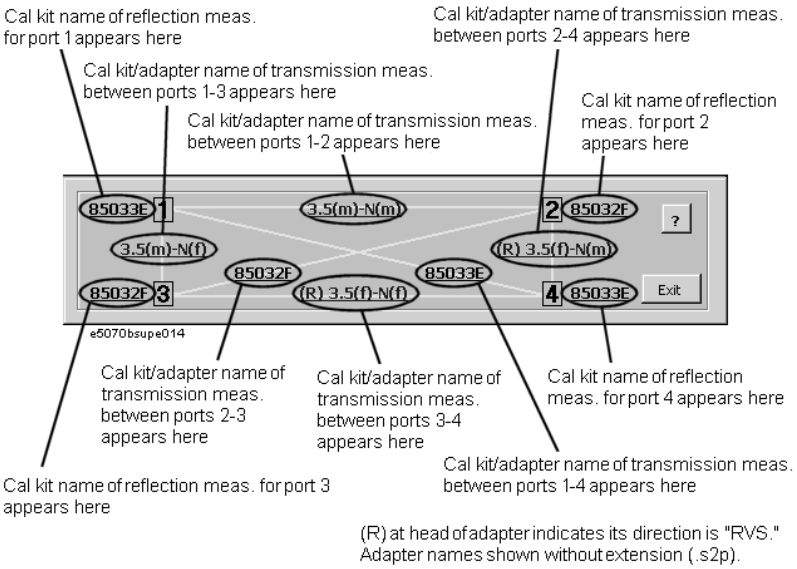
NOTE **Do not terminate the VBA macro forcefully.**

In the adapter calibration mode, if you terminate the VBA macro forcefully, for example, with the Macro Break key before returning to the normal calibration mode with the **Exit** button, normal calibration can no longer be performed and the label of calibration kit 10 remains altered. To return to the normal calibration mode, restart the firmware of the

E5070B/E5071B. In this case, you cannot restore the label of calibration kit 10.

Step 2. The screen showing the selected calibration kits for each test port and each pair of test ports based on the setting in "4. Setting calibration kit" on page 26 appears (refer to Figure 4-4).

Figure 4-4 **Calibration kit setting display screen for adapter calibration mode**



Calibration procedure in the adapter calibration mode is the same as that in the normal calibration except that the standard connected for each calibration data measurement differs. Therefore, when performing the calibration, you use the softkeys (the menu displayed by Cal - **Calibrate**) you use in the normal calibration.

In the adapter calibration mode, the standard name is displayed in the softkey to perform each calibration data measurement based on the setting in "4. Setting calibration kit" on page 26.

According to the on-screen information in Figure 4-4 and the softkey label, connect the appropriate standard and measure each type of calibration data to perform calibration.

Step 3. After the calibration, press the **Exit** button to return the E5070B/E5071B to the normal calibration mode.

6. Closing VBA macro

Press the **Close** button (5 in Figure 4-1) to close the macro.

Adapter Characterization

To perform calibration between ports of different connector types, you have to obtain characteristics of the adapter you use in transmission measurement in advance.

The adapter characterization function lets you obtain the characteristics of the adapter (S-parameter) and save them into a 2-port touchstone file.

Use the following VBA macro to execute the adapter characterization.

Storage folder	VBA macro name (project name)
D:\Agilent	AdapterCharacterization.vba

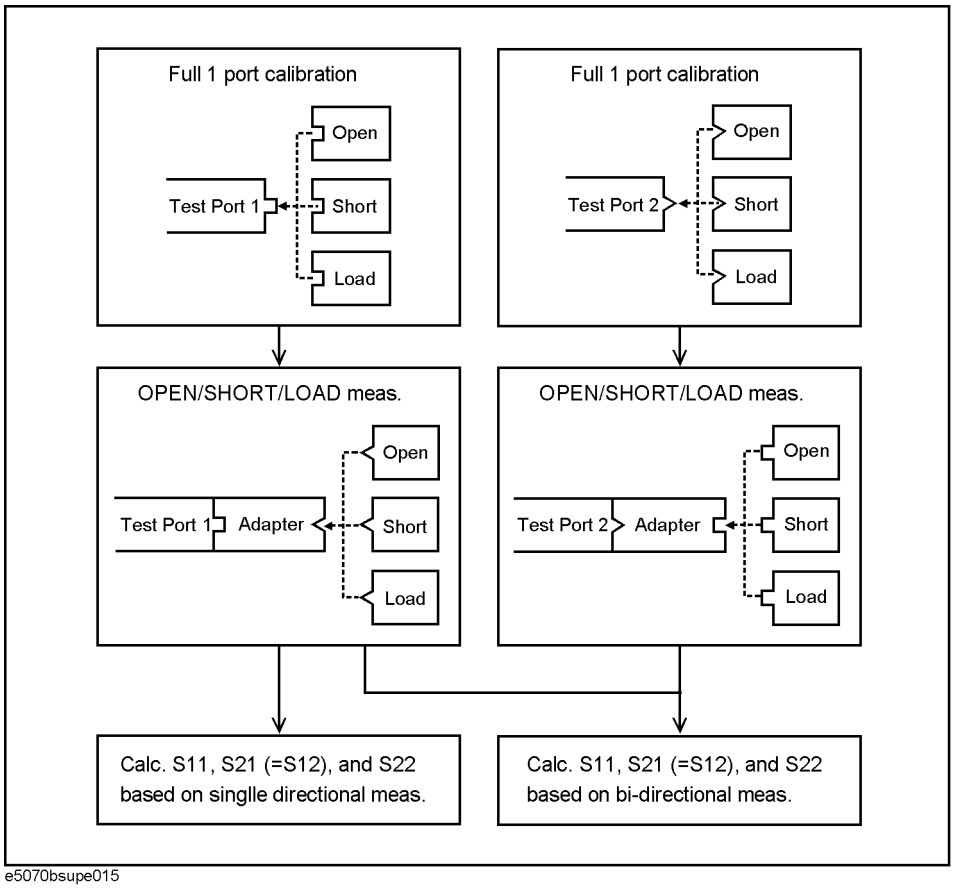
NOTE Never delete this VBA macro. Even if you execute system recovery, this VBA macro will not be recovered.

Concept

The adapter characterization is a function to calculate S-parameters of an adapter based on 3 measurement results with open/short/load standards that are connected to the test port, via the adapter, for which full 1-port calibration has been performed. This VBA macro uses test port 1 for this measurement.

The S-parameters of the adapter can be calculated from the above 3 measurement results. However, you can calculate the S-parameters more accurately by connecting the adapter to the test port in the reverse direction, measuring 3 more results in the same way as above, and using the above 3 results and these 3 results (the total of the 6 measurement results). This VBA macro uses test port 2 for the measurement in which the adapter is connected in the reverse direction.

Figure 4-5 **Adapter characterization**



e5070bsupe015

How to execute adapter characterization

1. Setting stimulus conditions

Set stimulus conditions of the channel for which you execute the adapter characterization.

For information on the setting procedure, refer to Chapter 3 “Setting Measurement Conditions” in *User's Guide*.

2. Performing calibration

Perform full 1-port calibration for test port 1 and test port 2 in the channel for which the stimulus condition has been set. Use the connector type appropriate for the adapter for the calibration surface of test port 1 and test port 2.

For information on the performing procedure, refer to Chapter 4 “Calibration” in *User's Guide*.

3. Starting VBA macro

Step 1. Press Macro Setup.

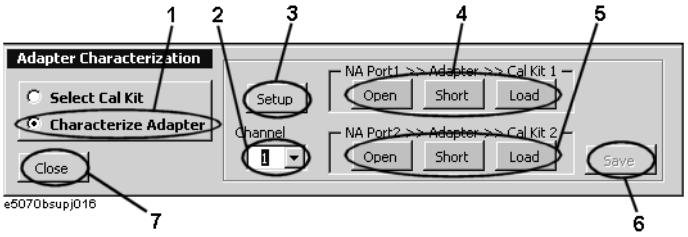
Step 2. Press **Load Project**.

Step 3. The Open dialog box appears. Specify the file name “D:\Agilent\AdapterCharacterization.vba” and press the **Open** button.

Step 4. Press Macro Run to start the macro.

Step 5. Select **Characterize Adapter** (1 in Figure 4-6) to display the Adapter Characterization screen.

Figure 4-6 **Adapter Characterization macro (Adapter Characterization screen)**



4. Selecting channel

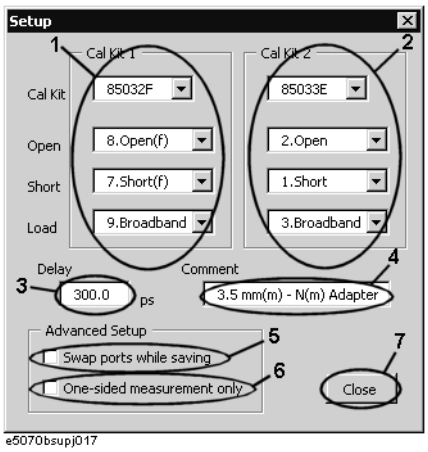
Select the channel for which calibration has been performed (2 in Figure 4-6).

NOTE The selected channel does not relate to the active channel.

5. Setting adapter characterization

Step 1. Press the **Setup** button (3 in Figure 4-6). The Setup dialog box as shown in Figure 4-7 appears.

Figure 4-7 **Setup dialog box**



Step 2. Make the setting of the calibration kit you connect to the adapter that is connected to test port 1 of the E5070B/E5071B in Cal Kit 1 (1 in Figure 4-7).

Step 3. Make the setting of the calibration kit you connect to the adapter that is connected to test port 2 of the E5070B/E5071B in Cal Kit 2 (2 in Figure 4-7).

When you calculate the S-parameters using measurement data in one direction only, you do not have to make the setting in Cal Kit 2. In this case, give a check mark to the left of One-sided measurement Only (6 in Figure 4-7).

Step 4. Enter the Delay of the adapter (3 in Figure 4-7) within an error of $\pm\frac{1}{4 \times f}$ [s]. Where f is the maximum measurement frequency [Hz]. For example, when the maximum value is 1 GHz, enter a value within an error of ±250 ps.

Step 5. Enter a comment about the adapter (4 in Figure 4-7). The comment entered here is displayed in the comment field in the Specify Cal Kit dialog box (4 in Figure 4-2).

Step 6. By default, the S-parameters are saved so that the port of the adapter connected to test port 1 of the E5070B/E5071B corresponds to port 1 of the 2-port touchstone file. To save the S-parameters in the reverse order, which means that the port of the adapter connected to test port 1 of the E5070B/E5071B corresponds to port 2 of the 2-port touchstone file, give a check mark to the left of Swap ports while saving (5 in Figure 4-7).

Step 7. Press the **Close** button (7 in Figure 4-7) to finish the setting of the adapter characterization.

6. Measuring data

Measure data when each standard is connected.

Step 1. Connect the adapter to test port 1 of the E5070B/E5071B.

Step 2. According to the setting of Cal Kit 1, connect each standard to the adapter and then press the corresponding button (4 in Figure 4-6). When the data measurement is complete, the button turns to yellow.

When you calculate the S-parameters using measurement data in one direction only, the data measurement is complete here.

Step 3. Connect the adapter to test port 2 of the E5070B/E5071B in the reverse direction.

Step 4. According to the setting of Cal Kit 2, connect each standard to the adapter and then press the corresponding button (5 in Figure 4-6). When the data measurement is complete, the button turns to yellow.

7. Saving to file

Calculate the S-parameters and save them into a file.

Step 1. Press the **Save** button (6 in Figure 4-6).

Step 2. The Save As dialog box appears. Enter a file name and press the **Save** button.

If you save the file under the D:\Agilent\Data\AdapterCharacterization folder, you can select it as the standard when selecting Adapter file when you make the setting for the adapter calibration mode in the Specify Cal Kit dialog box.

8. Closing VBA macro

Press the **Close** button (7 in Figure 4-6) to close the macro.

Execution procedure of characterization for test fixture using probe

The adapter characterization function also lets you obtain characteristics of a test fixture inserted between a DUT that cannot be connected directly to the instrument and the instrument using a probe, and save them into a 2-port touchstone file. The obtained result can be eliminated using the network de-embedding function of the fixture simulator function, which provides measurement where the effect of the test fixture is eliminated.

NOTE For more information on the test fixture characterization using a probe, refer to Product Note E5070/71-4.

1. Setting stimulus conditions

Set the stimulus condition of the channel for which you execute the test fixture characterization.

2. Performing calibration

Perform full 1-port calibration for the probe in the channel for which the stimulus condition has been set.

3. Starting VBA macro

Start the VBA macro to display the Adapter Characterization screen (Figure 4-6).

4. Selecting channel

Select the channel for which calibration has been performed (2 in Figure 4-6).

5. Setting characterization

Step 1. Press the **Setup** button (3 in Figure 4-6) to display the Setup dialog box (Figure 4-7).

Step 2. Make the setting of the calibration kit you use in Cal Kit 1 (1 in Figure 4-7).

Step 3. Enter the Delay of the test fixture (3 in Figure 4-7).

Step 4. Enter a comment about the test fixture (4 in Figure 4-7). This comment is added to the comment line at the beginning of the touchstone file.

Step 5. Give a check mark to the left of Swap ports while saving (5 in Figure 4-7) in order to align the direction when specifying a file in the network de-embedding function.

Step 6. Give a check mark to the left of One-sided measurement Only (6 in Figure 4-7).

Step 7. Press the **Close** button (7 in Figure 4-7) to close the Setup dialog box.

6. Measuring data

Step 1. Connect the probe to the DUT side end of the test fixture.

Step 2. According to the setting of Cal Kit 1, connect each standard to the connector side of the test fixture and then press the corresponding button (4 in Figure 4-6). When the data measurement is complete, the button turns to yellow.

7. Saving to file

Press the **Save** button (6 in Figure 4-6) to save the calculated S-parameters into a 2-port touchstone file.

8. Closing VBA macro

Press the **Close** button (7 in Figure 4-6) to close the macro.

5 Sharing Hard Disk of External PC

This chapter describes the sample program to connect a hard disk (a shared folder) of an external PC to the E5070B/E5071B using VBA.

Connecting Hard Disk (Shared Folder) of External PC

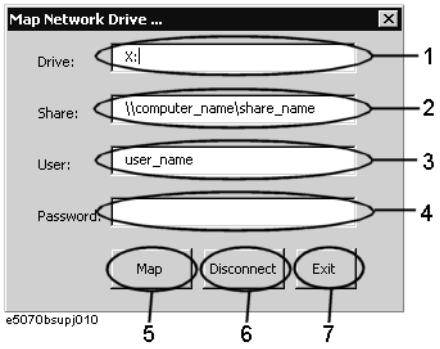
You can connect a hard disk (a shared folder) of an external PC to the E5070B/E5071B using VBA. Example 5-1 shows a sample program (VBA program) that demonstrates how to connect a hard disk of an external PC. You can find the source file of this program, named “map_drive.vba”, on the sample program disk. This VBA program consists of the following modules:

Object name	Module type	Description
frmMapDrive	User form	Connects or disconnects a hard disk.
Module1	Standard module	Displays frmMapDrive.

Using VBA program

Step 1. Load the map_drive.vba and press **[Macro Run]**. The following macro appears.

Figure 5-1 **Shared folder connection macro**



Step 2. **Connecting (Mapping)**

Enter the drive letter for the shared folder (1 in Figure 5-1), the share name of the shared folder (2 in Figure 5-1), the user name (3 in Figure 5-1) and the password (4 in Figure 5-1) in the external PC. And then click the **Map** button (5 in Figure 5-1).

NOTE Consult your network administrator and enter the settings in the same way as the Windows 2000® PC. If you enter an incorrect setting, an error occurs and the program is interrupted.

Disconnecting

Enter the drive letter for the shared folder (1 in Figure 5-1), and then click the **Disconnect** button (6 in Figure 5-1).

Step 3. Click the **Exit** button (7 in Figure 5-1) to exit from the program.

Description of operation in VBA program

The program (object name: frmMapDrive) is described in detail below:

Sub CommandButton1_Click

This procedure is called when the user clicks the **Map** button. This procedure checks if the drive letter is used using the IsDriveNameInUse procedure. And then this procedure connects the shared folder using the MapDrive procedure if the drive letter is not used, or displays a message to show the drive letter is used if the drive letter is used.

Sub CommandButton2_Click

This procedure is called when the user clicks the **Disconnect** button. This procedure disconnects the shared folder using the DisconnectDrive procedure.

Function IsDriveNameInUse

This procedure checks if the txtDrive.Text (the drive letter specified by 1 in Figure 5-1) is used.

Sub MapDrive

This procedure connects the shared folder as the txtDrive.Text (the drive letter specified by 1 in Figure 5-1) drive using the parameters: txtShare.Text (the share name specified by 2 in Figure 5-1), txtUser.Text (the user name specified by 3 in Figure 5-1), and txtPasswd.Text (the password specified by 4 in Figure 5-1).

Sub DisconnectDrive

This procedure disconnects the txtDrive.Text (the drive letter specified by 1 in Figure 5-1) drive.

Sub CommandButton3_Click

This procedure is called when the user clicks the **Exit** button. This procedure ends the program.

Example 5-1 **Connecting a hard disk of external PC (Object name: frmMapDrive)**

```
Private Sub CommandButton1_Click()
    If Not IsDriveNameInUse Then
        Call MapDrive
    Else
       MsgBox "Drive """ & txtDrive.Text & """ is Already used", vb
Critical
    End If
End Sub

Private Sub CommandButton2_Click()
    Call DisconnectDrive
End Sub

Private Function IsDriveNameInUse() As Boolean
    Set fso = CreateObject("Scripting.FileSystemObject")
    IsDriveNameInUse = fso.DriveExists(txtDrive.Text)
End Function

Private Sub MapDrive()
    Set network = CreateObject("wscript.network")
   Call network.MapNetworkDrive(txtDrive.Text, txtShare.Text, vbFal
se, txtUser. Text, txtPasswd.Text)
End Sub

Private Sub DisconnectDrive()
    Set network = CreateObject("wscript.network")
    network.RemoveNetworkDrive txtDrive.Text
End Sub

Private Sub CommandButton3_Click()
    Unload Me
End Sub
```