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Installation Note

Agilent Technologies
E4406A VSA Series Transmitter Tester
Operating System Update Kit



Agilent Technologies

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Description

The Agilent Technologies Operating System Update Kit contains an iomega zip disk™ and the documentation needed to install the new operating system (from the zip disk) into the E4406A VSA Series Transmitter Tester. The zip disk contains the operating system update and the firmware for the E4406A. The procedure includes saving all the configuration and calibration files on the zip disk and installing the new operating system and firmware. The instrument will not need to be re-calibrated after this procedure. It takes about 1 hour to complete the operating system update.

The zip disk also contains many utilities in the "Advanced Menu" which are described after the installation procedure.

Equipment Required

- iomega zip 100™ SCSI zip drive *or* iomega zip 250™ SCSI zip drive
- Mini D50 male to DB25 male SCSI cable
- PS2 keyboard

NOTE The zip drive needs to be an iomega zip 100™ SCSI zip drive or iomega zip 250™ SCSI zip drive—NOT the iomega zip plus™ drive. The "zip plus" will not work.

Installation Procedure

Step 1. Load the utilities program

Ensure the E4406 Transmitter Tester Utilities Disk is write-protected. The "slider" in the corner of the disc should be set so you can see through the small window.

A. Insert the Utilities Disk into the disc drive of the transmitter tester.

B. Cycle instrument's power (off, then back on).

C. After the instrument boots up, the following message will appear on the screen:.

```
**************************************************************

                    E4406A Utilities Disc
               VSA Serial Number: US38430092

Front Panel Key UP-ARROW is equivalent to N
Front Panel Key DOWN-ARROW is equivalent to N


**************************************************************************
Remove VSA UTILS Disk
Insert a BLANK DOS formatted disk
Proceed to Save [y/n]
```

Step 2. Save Flash Configuration files

A. Remove the Utilities disk and insert the blank formatted DOS disk that is included in the kit.

B. Select "Y" using the UP-ARROW on the instrument front panel. Press the front panel **Enter** key to save the configuration files.

Saving configuration files enables you to save the license key numbers, IP address, host name, and synthesizer calibration values that are stored on the flash memory board.

C. Messages will appear on screen as the files are saved. When the message "Remove floppy and recycle power...." is displayed, remove the floppy disk from the disk drive and set the instrument to standby.

D. Label the floppy disk with the instrument model and serial number. The floppy disk can hold the configuration files for only one instrument.

Step 3. Enabling the PS2 keyboard

A. Set the E4406A power switch to Standby (0).

B. Connect the external PS2 keyboard to the KYBD connector on the rear panel.

C. Set the E4406A power switch to On (1) while watching the display. When you see "`To discontinue, press any key within 2 seconds`", press any number key on the front panel of the transmitter tester to stop the boot-up process.

If pressing one of the number keys on the front panel fails to stop the boot-up process, the instrument may already be set for the external keyboard. Cycle the power and press the space bar twice on the external keyboard when the "`To discontinue, press any key within 2 seconds`" message appears. Go to Step 4.

D. Using the front-panel keys, enter "52" at the "`Main Menu: Enter command>`" prompt. Backspace to delete any characters that you may have entered on the main menu line:

```
Main Menu: Enter command>  52
Enter
```

The instrument should respond with:

"`Keyboard path:  PS2`"

Step 4. Connecting the SCSI zip drive to the E4406A

A. Set the E4406A power switch to Standby (0).
The external keyboard is now enabled.

B. Set the SCSI zip drive SCSI ID (address) to "5" and Termination to "on" (1).
If you change the address, remove power from the zip drive and then reconnect it.

C. Connect the SCSI cable from the E4406A's rear-panel SCSI connector to the zip drive's connector labeled "zip".

D. Put the removable zip disk, which contains the operating system, in the SCSI zip drive.

E. Set the E4406A power switch to On (1) while watching the display. When you see "`To discontinue, press any key within 2 seconds`", press the space bar on the external keyboard twice to stop the boot-up process.

Step 5. Booting the E4406A from the SCSI zip drive

A. Search for E4406A bootable devices by entering "sea" at the "`Main Menu: Enter command>`" prompt:

```
Main Menu: Enter command>  sea
Enter
```

This command may take a few seconds to complete. It will list all of the bootable devices:

Path Number	Device Path	Device Type
P0	SESCSI.5.0	IOMEGA ZIP 100 or IOMEGA ZIP 250
P1	FLASH	

There may be other lines in the bootable devices display if other devices are connected to the instrument.

IOMEGA ZIP 100 or 250 should appear under "Device Type". If the zip drive is not found or SESCSI. 6. 0 appears under "Device Path", go back to Step 4 and begin again.

B. Enter the following main menu commands to boot from the zip drive:

```
Main Menu: Enter command>  bo p0
Enter
Interact with IPL (Y,N,Q)  n
Enter
```

NOTE The "o" in "bo" is the letter "o"; the "0" in "p0" is a zero.

After entering this command, boot-up tests and copyright messages scroll on the screen for about 30 seconds, after which the following firmware upgrade screen will appear:

```
**********************************************************


    E4406A FLASH MEMORY UPGRADE
    VSA Serial Number:   US38430092
    Flash Memory Size:    48MB

    Front Panel Key UP-ARROW    is equivalent to Y
    Front Panel Key DOWN-ARROW is equivalent to N

**********************************************************

Current Flash Usage:    Used 39065 KB      Free 8564 KB

[1] Show Version Information
[2] Upgrade Installed System
[3] Upgrade And Choose Options
[4] Advanced Menus
[0] Prepare for Power Down

Select  [0-4]:
```

NOTE The "VSA Serial Number," "Flash Memory Size," and "Current Flash Usage" will vary from instrument to instrument.

C. Set the external keyboard aside and use the instrument's front-panel keys to enter selections in the following steps. Use the up arrow to select "y" and the down arrow to select "n".

Step 6. Choosing the upgrade procedure to use

A. Selection [2] upgrades the instrument using the current configuration. Proceed to Step 7 if you make this selection.

B. Selection [3] allows you to select the options to install. If you are installing a new option, you must use this selection. Proceed to Step 8 if you make this selection.

Step 7. Upgrading the instrument using the current configuration

A. Using the front-panel keyboard, select "2":

```
Select [0-4]:  2
```
Enter

The following screen will appear:

```
*******************************************************************************
  The following steps will be taken:
   a - Select Options which are currently licensed and/or installed
   b - Save calibration data to SCSI disk:  sd5b:/US38430092
   c - Erase Flash
   d - Install Base Firmware
   e - Install the licensed/installed options
   f - Restore calibration data from disk
*******************************************************************************
Selecting [ 3 BAH] - GSM  : License present
Selecting [ 4 BAC] - cdmaOne : License present
Selecting [ 5 BAE] - NADC : License present
Selecting [ 6 BAE] - PDC  : License present
Selecting [ 9 BAF] - W-CDMA : License present
Selecting [10 B78] - cdma2000 : License present
Selecting [11 HN1] - iDEN : License present
Current Flash Usage:      Used  28533 KB     Free  1241 KB
Expected Flash Usage:     Used  28493 KB     Free  1281 KB
*******************************************************************************
```

NOTE The option mix and Flash Usage will vary from instrument to instrument.

This process includes saving and restoring all of the configuration and calibration files. Once the process starts, it will run automatically.

CAUTION Do NOT interrupt power to the instrument or the zip drive. Do NOT remove the update disk from the disk drive while the instrument is loading the operating system. If power is interrupted or the disk is removed before the update is completed, the contents of the instrument's A22A2 Flash Memory assembly will be erased and all configuration and calibration files will be lost. If this occurs, refer to "Recovering from an operating system upgrade crash" in the "Troubleshooting" section of this installation note.

When you are ready, enter "y" after the prompt:

```
Continue [y/n]: y
Enter
```

The full installation process will take about 15 minutes.

NOTE If you use the iomega zip 250™ SCSI zip drive the following message, or a message similar to this message, may appear:

```
SCSI dev = 0x70205,0_SYNC I/O cannot be
forced to media with this disk
Immediate Reporting
scsi_diag_io:error 22 for device
scsi_diag_io:error 22 for device
scsi_diag_io:error 0
```

This messages does not impact this application and should be disregarded.

B. The process is complete when the message "Press Enter to Continue" appears. Press **Enter**.

C. At the end of the installation process, the firmware upgrade screen will be displayed. To finish the installation of the operating system upgrade, enter the following commands:

```
Select [0-4]: 0
Enter
Prepare for reboot
Please confirm? [y]: y
Enter
```

When the message "You may power down now!" is displayed, power down the instrument.

D. Proceed to Step 9.

Step 8. Choosing options and upgrading the instrument

A. Using the front-panel keyboard, select "3":

```
Select [0-4]:  3
```
Enter

The following screen will appear:

```
*******************************************************************************
  The following steps will be taken:
   a - Select Options which are licensed and rest removed
   b - Prompt user to select options to install
   c - Save calibration data to SCSI disk:  sd5b:/US38430092
   d - Erase Flash
   e - Install Base System
   f - Install the selected options
   g - Restore calibration data
*******************************************************************************
Selecting [ 3 BAH] - GSM  : License present
Selecting [ 4 BAC] - cdmaOne  : License present
Selecting [ 5 BAE] - NADC  : License present
Selecting [ 6 BAE] - PDC  : License present
Selecting [ 9 BAF] - W-CDMA  : License present
Selecting [10 B78] - cdma2000 : License present
Selecting [11 HN1] - iDEN : License present
Current Flash Usage:      Used  28533 KB     Free  1241 KB
Expected Flash Usage:     Used  28493 KB     Free  1281 KB
*****************************************************************
Proceed to Select Options [y/n]
```

NOTE The option mix and Flash Usage will vary from instrument to instrument.

B. Press the front-panel up arrow key to enter "y"

The following is an example of the screen that will appear:

```
Current Flash Usage:       Used  28533 KB     Free  1241 KB
Expected Flash Usage:      Used  28493 KB     Free  1281 KB
************************************************************
Opt#       Name          New           Current

           Base        8145 KB       8105 KB                 Install
[ 3 BAH]   GSM         1817 KB       1817 KB     Licensed    Install
[ 4 BAC]   cdmaOne     1642 KB       1642 KB     Licensed    Install
[ 5 BAE]   NADC         992 KB          0 KB     Licensed
[ 6 BAE]   PDC         1141 KB          0 KB     Licensed
[ 9 BAF]   W-CDMA      3492 KB          0 KB     Licensed
[10 B78]   cdma200     2547 KB          0 KB     Licensed
[11 HN1]   iDEN        1429 KB          0 KB     Licensed
[ 0] Selections done

Enter Option # to Install/UnSelect:
```

If the instrument has a license key number for an option, "Licensed" will appear on the option line. If the option is currently NOT installed in the instrument, "0 KB" will be assigned to the option.

C. Select the option you wish to install by entering the "Opt#", for example, to select NADC:

Press **5**
Enter

If you want to unselect an option, just enter the number again.

CAUTION If you get the error message "WARNING: Not enough free space to install selected options", you do not have enough memory for all of the options you have selected. You need to unselect an option. If you try to install more options than will fit in the memory, the firmware will not install properly. If this occurs, you will get error messages at the end of the procedure. Refer to "Recovering from an operating system upgrade crash" in the "Troubleshooting" section of this installation note.

When you are finished selecting options, select "`[0] Selections done`":

Press **0**
Enter

This process includes saving and restoring all of the configuration and calibration files. Once the process starts, it will run automatically.

CAUTION Do NOT interrupt power to the instrument or the zip drive. Do NOT remove the update disk from the disk drive while the instrument is loading the operating system. If power is interrupted or the disk is removed before the update is completed, the contents of the instrument's A22A2 Flash Memory assembly will be erased and all configuration and calibration files will be lost. If this occurs, refer to "Recovering from an operating system upgrade crash" in the "Troubleshooting" section of this installation note.

D. When you are ready, enter "y" after the prompt:

```
Proceed to Install  [y]:  y (up arrow)
Enter
```

NOTE For the latest firmware update please visit our website at **http://www.agilent.com/find/vsa**

The full installation process will take about 15 minutes.

E. The process is complete when the message "`Press Enter to Continue`" appears. Press the front-panel **Enter** key.

F. At the end of the installation process, the firmware upgrade screen will be displayed. To finish the installation of the operating system update, enter the following commands:

```
Select [0-4]:  0
Enter

Prepare for reboot
Please confirm? [y]:  y (up arrow)
Enter
```

When the message "`You may power down now`" is displayed, power down the instrument.

Step 9. Disabling the external PS2 keyboard and removing the zip disk.

A. Set the E4406A power switch to On (1) while watching the display. When you see "`To discontinue, press any key within 2 seconds`", press the space bar on the external keyboard twice to stop the boot-up process.

B. Enter the command to reset the transmitter tester to use the front panel for bootup:

`Main menu: Enter command>` **pa key front_panel**
Enter

C. Using the external keyboard, enter "99" to reset the instrument:

`Main menu: Enter command>` **99**
Enter

The transmitter tester will now reset.

D. Remove the operating system zip disk from the zip drive and disconnect the zip drive from the instrument.

This completes the installation of the operating system and firmware update.

Advanced Menu Descriptions

Access the Advanced Menu utilities by following Steps 1 through 3 of the "Installation Procedure" in this installation note, then selecting "4" at the prompt:

```
Select [0-4]:  4
Enter
```

The following Advanced Menu screen will appear:

```
**********************************************************

                Agilent Technologies

    E4406A FLASH MEMORY UPGRADE
    VSA Serial Number:   US38430092
    Flash Memory Size:    48MB

    Front Panel Key UP-ARROW    is equivalent to Y
    Front Panel Key DOWN-ARROW is equivalent to N

**********************************************************

Current Flash Usage:    Used 39065 KB      Free 8564 KB
[ 1] Install System & Default Options
[ 2] Install Base Firmware Only
[ 3] CHOOSE and Install Options
[ 4] CHOOSE and REMOVE Options
[ 5] SAVE configuration files
[ 6] RESTORE configuration files
[ 7] Setup IP address and Hostname
[ 8] Duplicate BOOT disk
[ 9] Execute optional install script
[10] Floppy drive test (Mfg Use)
[ 0] Return to Main menu
```

[1] Install System & Default Options

This selection is used to install the operating system with default options. The default options depend on the size of the flash memory assembly. The default options for a 30 MB flash memory are GSM and CDMA. All options are installed on the 48 MB flash memory assembly.

[2] Install Base Firmware Only

This selection installs only the base firmware, not the operating system or any options. Care must be taken when using this selection. The base firmware MUST be matched with the correct operating system. If there is a mismatch, the instrument will not boot.

[3] CHOOSE and Install Options

This selection installs only the chosen options. Base firmware and operating system files are not installed. Care must be taken when using this selection. The options need to match the base firmware and operating system to function properly.

[4] CHOOSE and REMOVE Options

This selection removes chosen options. Use this selection to free up memory space for other functions.

[5] SAVE configuration files

Use this selection to save the instrument's configuration files. See "Saving Configuration Files Using the Advanced Menu" for the procedure.

[6] RESTORE configuration files

Use this selection to restore configuration files that have been saved using selection 5 or saved during an upgrade. For the procedure to recover the files, refer to "Recovering configuration files from the zip disk" in the Troubleshooting section of this installation note.

[7] Setup IP address and Hostname

This selection can be used to set up instrument's LAN parameters.

[8] Duplicate BOOT disk

Use this selection to duplicate the iomega zip disk. You will need two 100 iomega zip drives daisy-chained together and connected to the transmitter tester. You will also need a PC 100 zip disk. Set one zip drive to address 5 and the other to address 6. Terminate the second zip drive. Boot from the zip drive at address 5 and copy to the zip drive at address 6.

[9] Execute optional install script

This selection is for factory use only.

[10] Floppy drive test (Mfg Use)

This selection is for factory use only.

Saving Configuration Files Using the Advanced Menu

A. Access the Advanced Menu utilities by following Steps 1 through 3 of the "Installation Procedure" in this installation note, then selecting "4" at the prompt:

```
Select [0-4]:  4
Enter
```

B. Select the "SAVE configuration files" from the Advanced Menu:

```
Select [0-10]:  5
Enter
```

Saving the flash configuration files will allow you to recover the contents of the flash memory if, for some reason, the full installation procedure is interrupted or "hangs up". You can then use the "Restore configuration files" menu if necessary. The zip disk can save multiple instrument configurations.

NOTE The "Save configuration files" menu cannot be used to save configuration settings to a floppy disk.

The following procedure describes saving configuration files to a 100 MB zip disk.

Select "3" to save the configuration to the SCSI disk:

```
. . .Save configuration
     1 - RAM - Lost if powered down
     2 - FLOPPY (Insert a DOS Formatted Floppy)
     3 - SCSI DISK
     0 - Return to Main Menu
     Select [0-3]:  3
     Enter
```

C. Select "5" to set the SCSI address:

```
SCSI Address [0 - 7]:  5
Enter
```

D. Select "2" to choose partition "b" on the disk:

NOTE Do NOT select "3" or "4". They will cause data to be lost.

```
1 - Partition a
2 - Partition b
3 - Partition c
4 - Partition d
Select [1 - 4]:  2
Enter
```

Messages will appear that indicates the files are being restored, after which the firmware upgrade screen will appear.

Troubleshooting

❑ Recovering from an operating system upgrade crash.

NOTE There is a good chance that you can restore the configuration files by performing the following procedure. If the configuration files cannot be restored, the instrument will need to have the synthesizer adjustment performed and the License Key, Host Name, GPIB Address, and IP Address reloaded.

1. Perform Step 1 through Step 3 of the "Installation Procedure"of this installation note. Do NOT do Step 4 or Step 5.
2. Perform Step 6, EXCEPT answer "n" to the question, `"Overwrite previously saved files? [y/n]"`.

❑ Recovering configuration files from the zip disk

NOTE This procedure steps through recovering the configuration files from the zip disk without loading the operating system or firmware. In order to use this procedure, the configuration files must have previously been saved on the zip disk.

1. Access the Advanced Menu utilities by following Steps 1 through 3 of the "Installation Procedure" in this installation note, then selecting "4" at the prompt:

   ```
   Select [0-4]: 4
   ```
   Enter

2. Select the "RESTORE configuration files" from the Advanced Menu:

   ```
   Select [0-10]: 6
   ```
   Enter

3. Select "3" to restore the configuration from the SCSI disk:

   ```
   Restore configuration from:
        1 - RAM - Lost if powered down
        2 - FLOPPY (Insert a DOS Formatted Floppy)
        3 - SCSI DISK
        0 - Return to Main Menu
        Select [0-3]: 3
   ```
   Enter

4. Select "5" to set the SCSI address:

   ```
   SCSI Address [0 - 7]: 5
   ```
   Enter

5. Select "2" to choose partition "b" on the disk:

```
1 - Partition a
2 - Partition b
3 - Partition c
4 - Partition d
Select [1 - 4]:  2
Enter
```

Messages will appear that indicates the files are being restored, after which the Advanced Menu screen will appear.

6. To finish the restoration of the configuration files, enter the following commands:

```
Select [0-4]:  0
Enter

Select [0-4]:  0
Enter

Prepare for reboot
Please confirm? [y]:  y
Enter
```

When the message, "`You may power down now`" is displayed, power down the instrument.

7. Disable the PS2 keyboard. Refer to Step 9. of the "Installation Procedure".

❑ Restoring Flash configuration files

NOTE The instrument power must be off (Standby) before inserting the floppy disk.

1. Insert the configuration files floppy disk into the transmitter tester disk drive.
2. Set the power switch On (1).
3. During the boot up process the transmitter tester firmware identifies the floppy disk and autoloads the configuration files. Messages will appear on the display as the files are restored.
4. After the configuration files have been restored, a message will appear instructing you "`to remove disk and cycle power`".

❑ **If the instrument does not boot up:**

Check that the auto-boot options are set correctly:

1. Enable the external PS2 keyboard. Refer to Step 3. of the "InstallationProcedure".
2. Using the external keyboard, enter "co bin" at the "Main menu: Enter command>" prompt:

   ```
   Main menu: Enter command>  co bin
   Enter
   ```

   Compare the boot information with the following default settings:

   ```
   Autoboot:                ON
   Autosearch:              OFF
   Autostart:               ON
   Secure flag:             OFF
   Fastboot:                ON
   Primary boot path:       FLASH
   Alternate boot path:     SESCSI.5.0
   Console path:            GRAPHICS(0)
   Keyboard path:           PS2
   ```

   Note the items that do not match the above settings.

3. Enter the "co" command to display the configuration menu:

   ```
   Main menu: Enter command>  co
   Enter
   ```

4. Change the boot information so it matches the default settings. Use the configuration menu to determine the commands to enter. For example:

   If Autoboot is OFF:

   ```
   Main menu: Enter command>  au bo on
   Enter
   ```

   If Autosearch is ON:

   ```
   Main menu: Enter command>  au sea off
   Enter
   ```

To make the primary boot path FLASH:

```
Main menu: Enter command>  pa pri flash
Enter
```

To make the alternate boot path SCSI:

```
Main menu: Enter command>  pa alt sescsi.5.0
Enter
```

5. Check that the boot information now matches the default settings:

```
Main menu: Enter command>  co bin
Enter
```

6. Reset the instrument:

```
Main menu: Enter command>  reset
Enter
```

The transmitter tester should now boot up.

7. If the transmitter tester boots up successfully, disable the PS2 keyboard to complete the installation. Refer to Step 9. of the "Installation Procedure".

❑ **If the instrument fails after configuring the boot settings:**

Contact your nearest Agilent Technologies Sales and Service Office for assistance. Please provide the following information:

Model Number: E4406A

Serial Number:

State that you are having trouble installing an operating system update.

Table 1. Agilent Technologies Sales and Service Offices

UNITED STATES		
Instrument Support Center Agilent Technologies Company (800) 403-0801		
EUROPEAN FIELD OPERATIONS		
Headquarters Agilent Technologies S.A. 150, Route du Nant-d'Avril 1217 Meyrin 2/ Geneva Switzerland (41 22) 780.8111	France Agilent Technologies France 1 Avenue Du Canada Zone D'Activite De Courtaboeuf F-91947 Les Ulis Cedex France (33 1) 69 82 60 60	Germany Agilent Technologies GmbH Agilent Technologies Strasse 61352 Bad Homburg v.d.H Germany (49 6172) 16-0
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INTERCON FIELD OPERATIONS		
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Japan Agilent Technologies Japan, Ltd. 9-1 Takakura-Cho, Hachioji Tokyo 192, Japan (81 426) 60-2111	Singapore Agilent Technologies Singapore (Pte.) Ltd. 150 Beach Road #29-00 Gateway West Singapore 0718 (65) 291-9088	Taiwan Agilent Technologies Taiwan 8th Floor, H-P Building 337 Fu Hsing North Road Taipei, Taiwan (886 2) 712-0404
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