Keysight Technologies Signal Studio Waveform Licenses

N5172B EXG X-Series RF Vector Signal Generator
N5182A MXG Vector Signal Generator
N5182B MXG X-Series RF Vector Signal Generator
E4438C ESG Vector Signal Generator
E6607 EXT Wireless Communications Test Set

User's Guide

KEYSIGHT TECHNOLOGIES

Notices

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Manual Part Number
N5180-90085

Edition
Edition 1, January 2018

Published by:
Keysight Technologies, Inc.
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

Using Signal Studio Waveform Licenses

Introduction

This document describes how to:

– Use the Signal Studio software to configure, generate, and download waveform files to your instrument.

– Play back waveforms for evaluation and permanently license the ones you want to keep.

Before using this document, you must install a Keysight 5- or 50-pack waveform license in your instrument. For license installation instructions, go to http://rfmw.em.keysight.com/wireless/helpfiles/license.

The following instruments support waveform licensing:

– N5172B EXG X-Series RF vector signal generator

– N5182B MXG X-Series RF vector signal generator

– N5182A MXG vector signal generator

– E4438C ESG vector signal generator

– E6607 EXT wireless communications test set

– M9381A PXIe vector signal generator (not described here—refer to the M9381A documentation)

– M9420A VXT PXIe vector transceiver (not described here—refer to the M9420A documentation)

– E6630A wireless connectivity test set (not described here—refer to the E6630A documentation)

– E6640A EXM wireless test set (not described here—refer to the E6640A documentation)

– E6650A EXF wireless test set for femtocel (not described here—refer to the E6650A documentation)

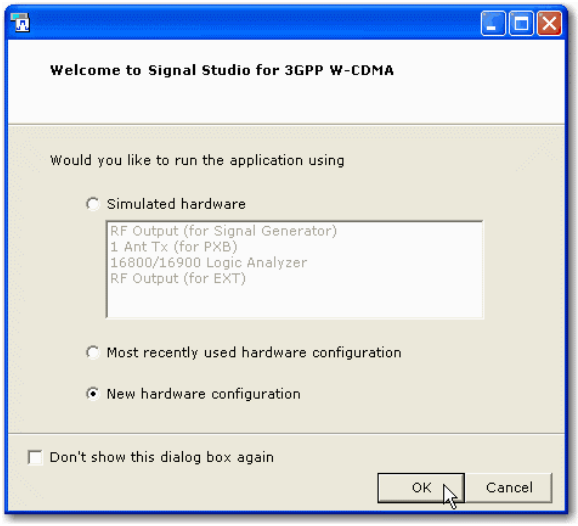
Using Signal Studio to Create and Download a Waveform

Method 1: Live connection via LAN (EXG, MXG, ESG, EXT)

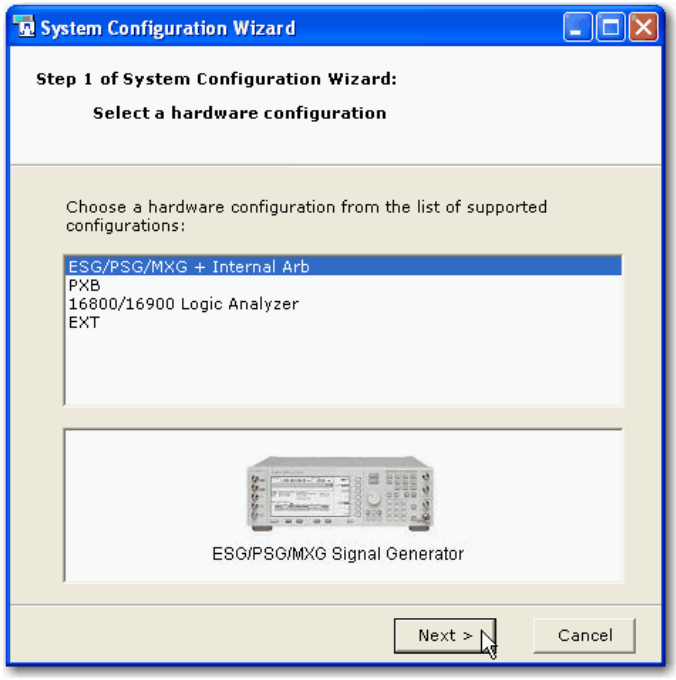
NOTE

Some Signal Studio products do not support a live connection to the EXT. In these cases, use Method 2: Export waveform files to a USB storage device (EXG, MXG, EXT) on page 11.

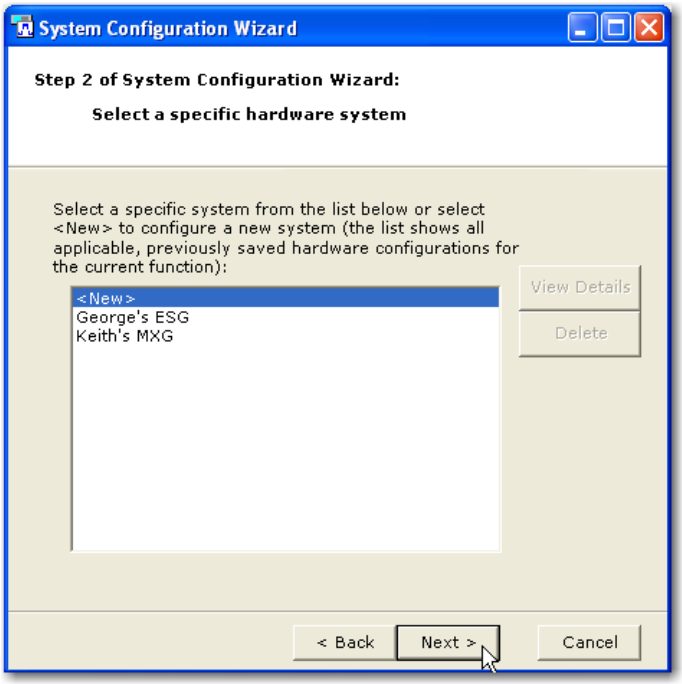
1. From the Keysight website, www.keysight.com/find/signalstudio, download and install the N76xxB Signal Studio software of your choice.
2. Open the software. The system configuration wizard appears.
3. Select **New hardware configuration** and click **OK**. If your software was previously connected to the instrument, choose **Most recently used hardware configuration**.



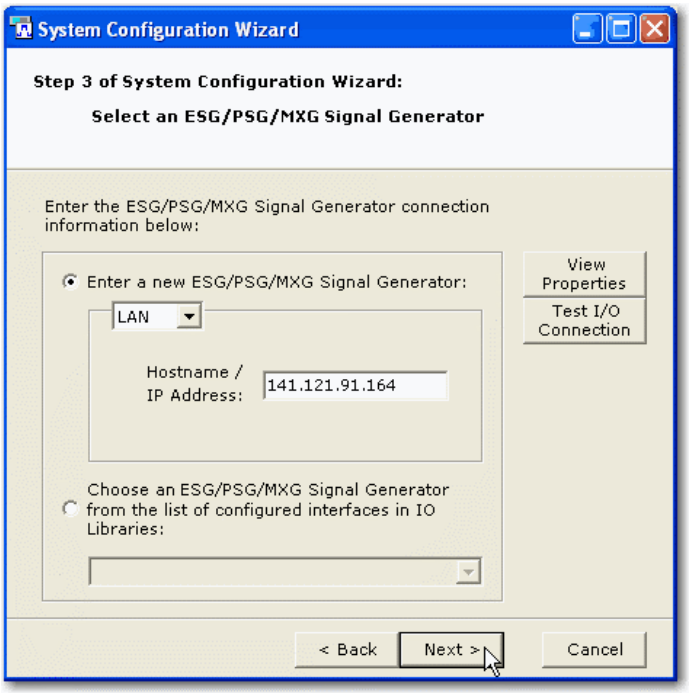
4. Select your instrument and click **Next**.



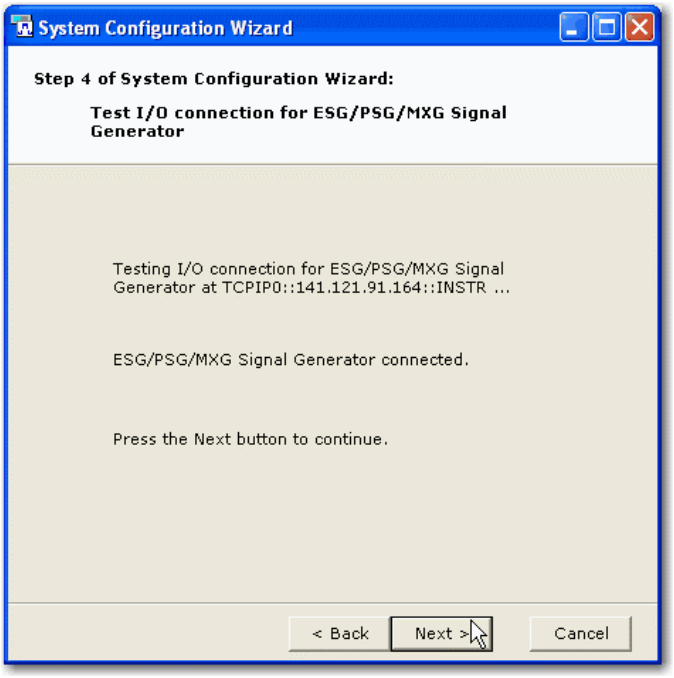
5. Click **Next**.



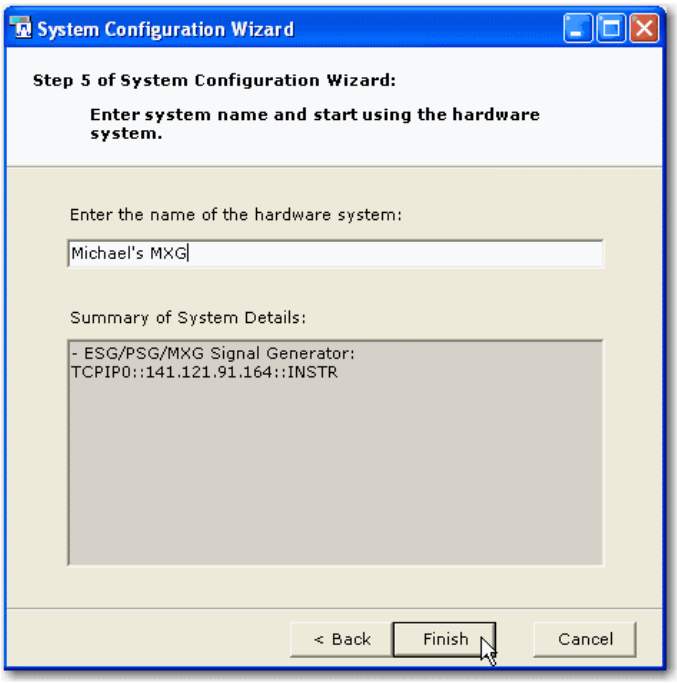
6. Enter your instrument's IP address and click **Next**.



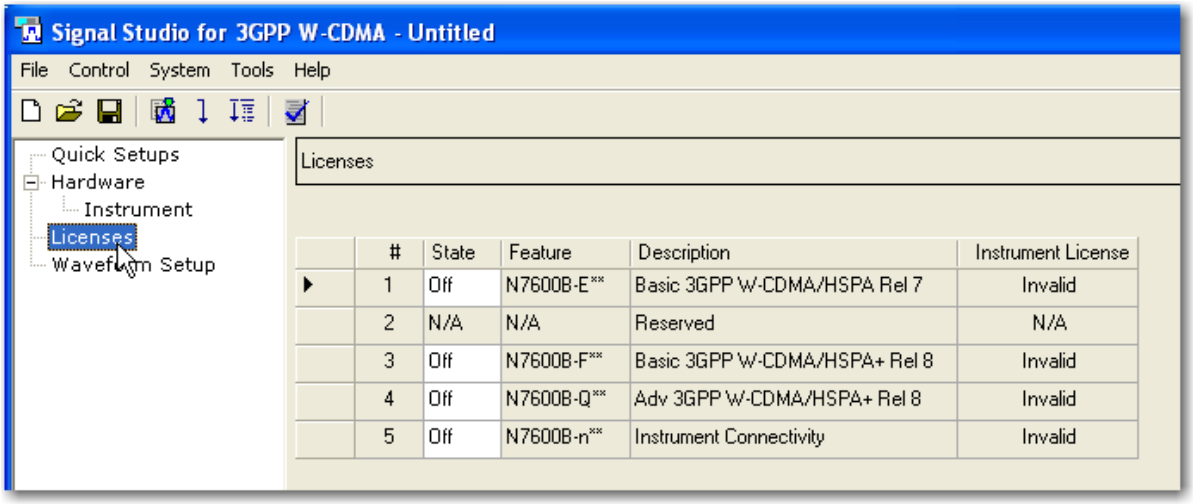
7. Click **Next**.



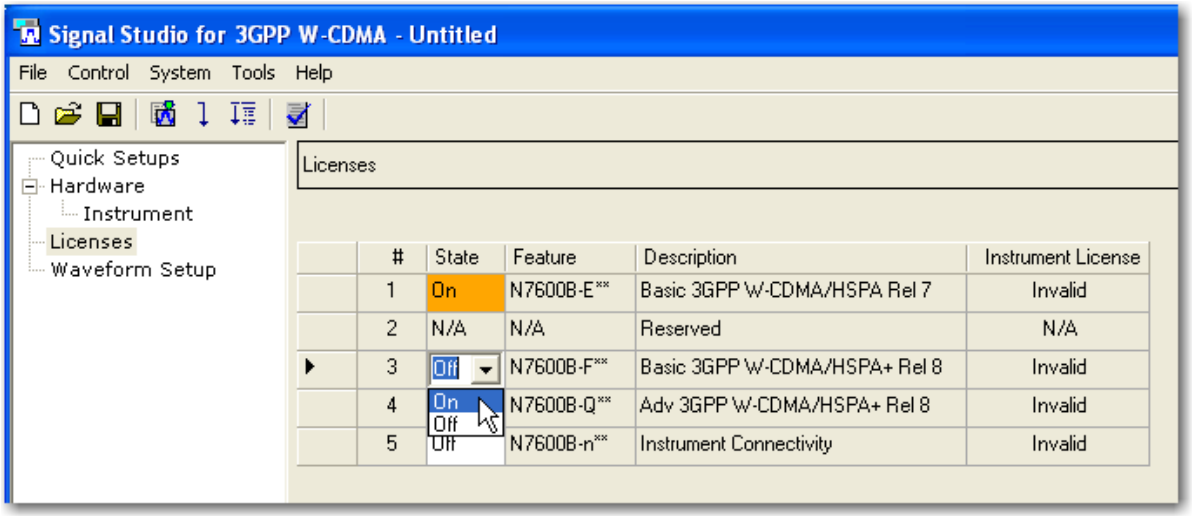
8. Enter a name for your instrument and click **Finish**.



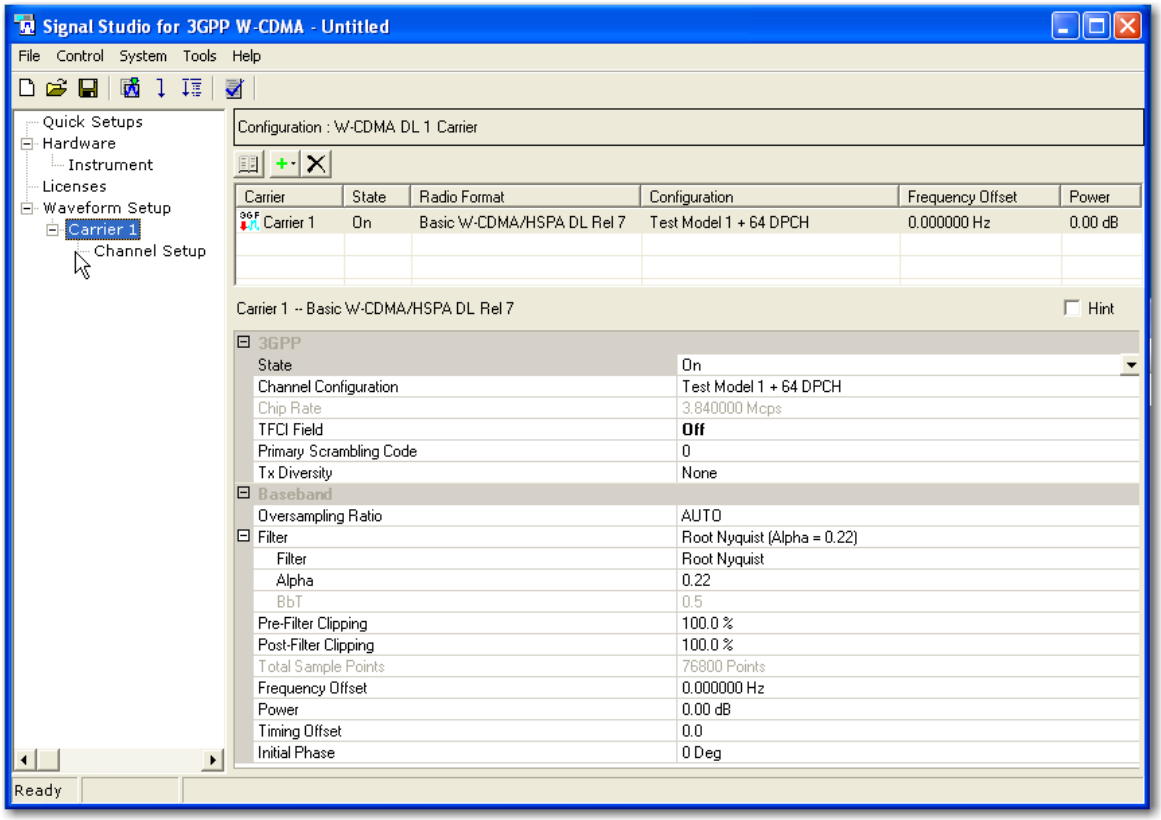
9. From the software's tree view, select **Licenses**. Notice that the state of each license is set to **Off** and displays **Invalid**. If you are using the software's 14-day free trial or have previously purchased a basic capability option, those licenses will be valid and already set to **On**.



10. Click the **State** field for each **Off** license and set to **On**. These licenses will continue to display **Invalid**.

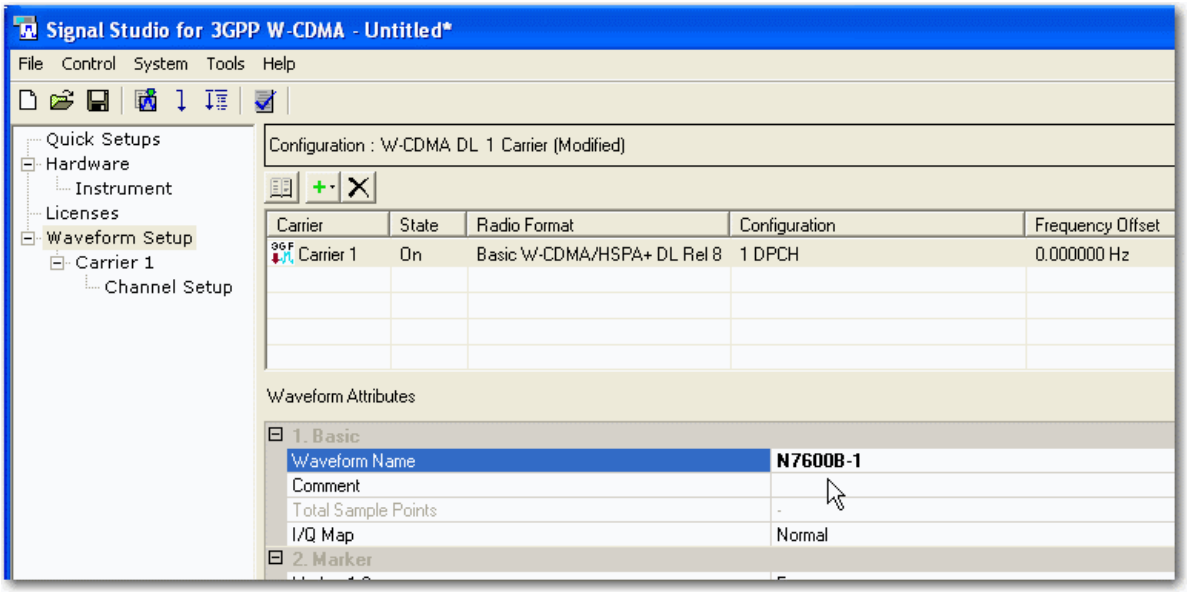


11. Configure the Signal Studio waveform using the various parameter selections and settings available under the **Waveform Setup** node in the tree view. This example shows the carrier settings for the N7600B Signal Studio software. Waveform parameters vary among Signal Studio products, so refer to your software's help system for more information.

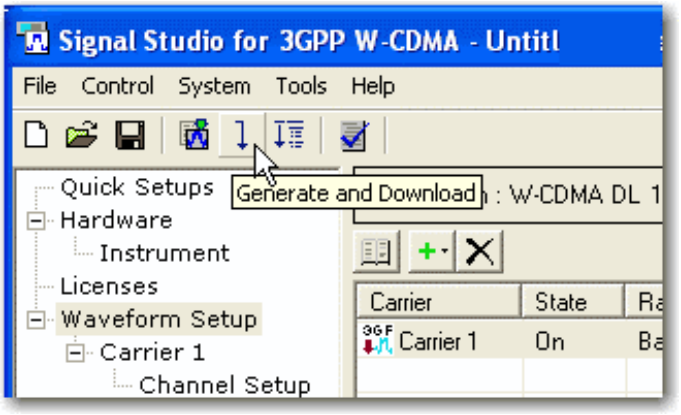


12. From the tree view, select **Waveform Setup** and enter a **Waveform Name**.

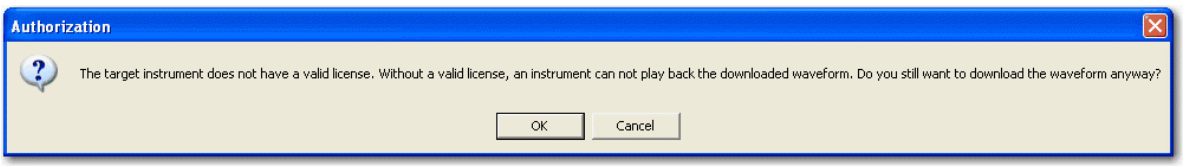
NOTE Some Signal Studio applications do not allow waveform file names greater than eight characters.



13. Click the **Generate and Download** button.



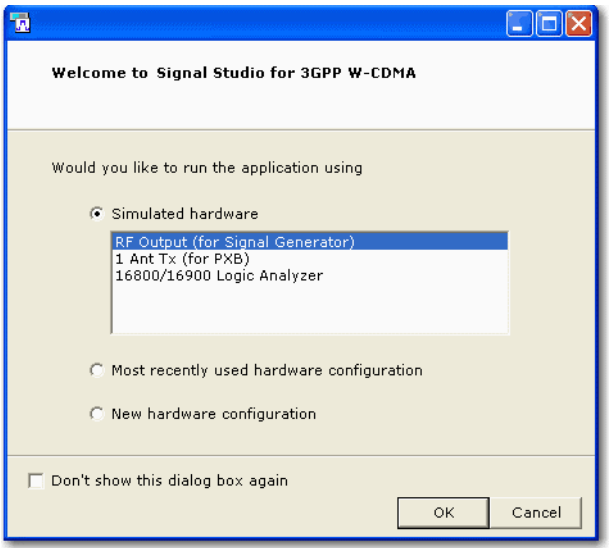
14. The following message appears. Click **OK**.



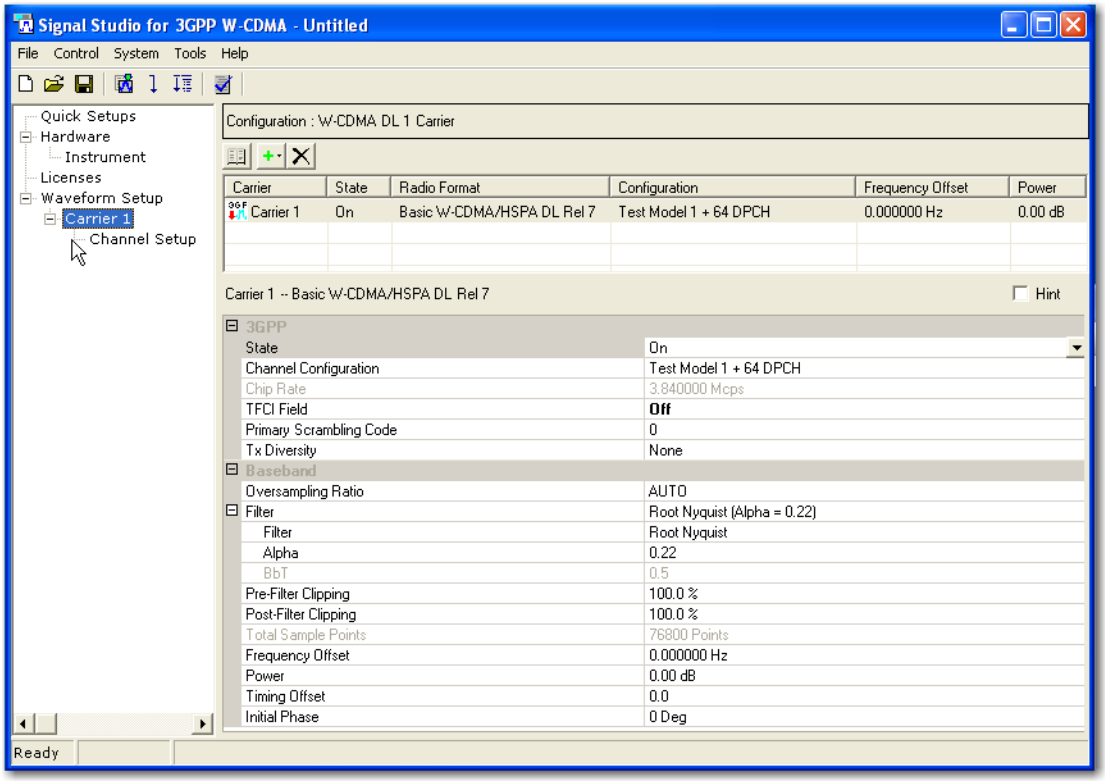
The waveform file now resides in the volatile memory of your instrument.

Method 2: Export waveform files to a USB storage device (EXG, MXG, EXT)

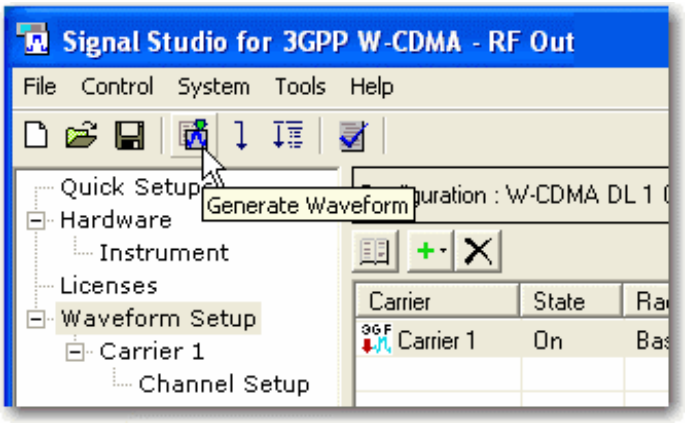
1. From the Keysight website, www.keysight.com/find/signalstudio, download and install the N76xxB Signal Studio software of your choice.
2. Open the software. The system configuration wizard appears.
3. Select **Simulated hardware** and make sure RF Output (for Signal Generator) is highlighted. Click **OK**.



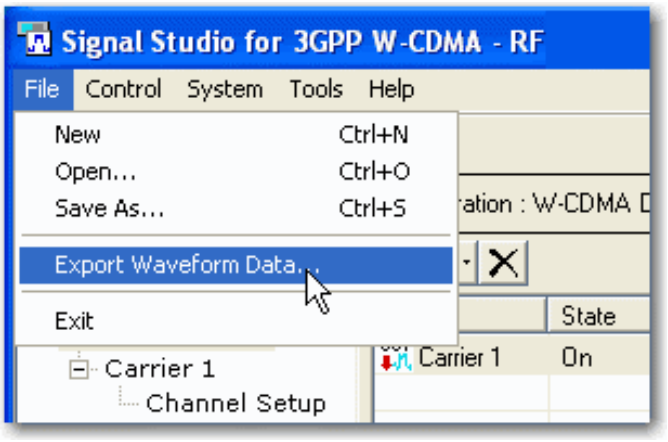
4. Configure the Signal Studio waveform using the various parameter selections and settings available under the **Waveform Setup** node in the tree view. This example shows the carrier settings for the N7600B Signal Studio software. Waveform parameters vary among Signal Studio products, so refer to your software's help system for more information.



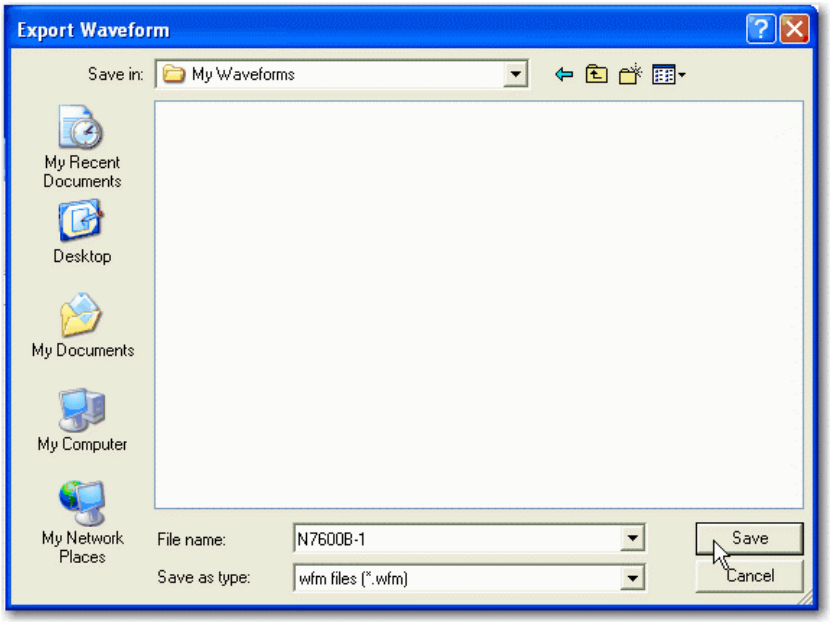
5. Click the **Generate Waveform** button.



6. Under the File menu, select **Export Waveform Data**.

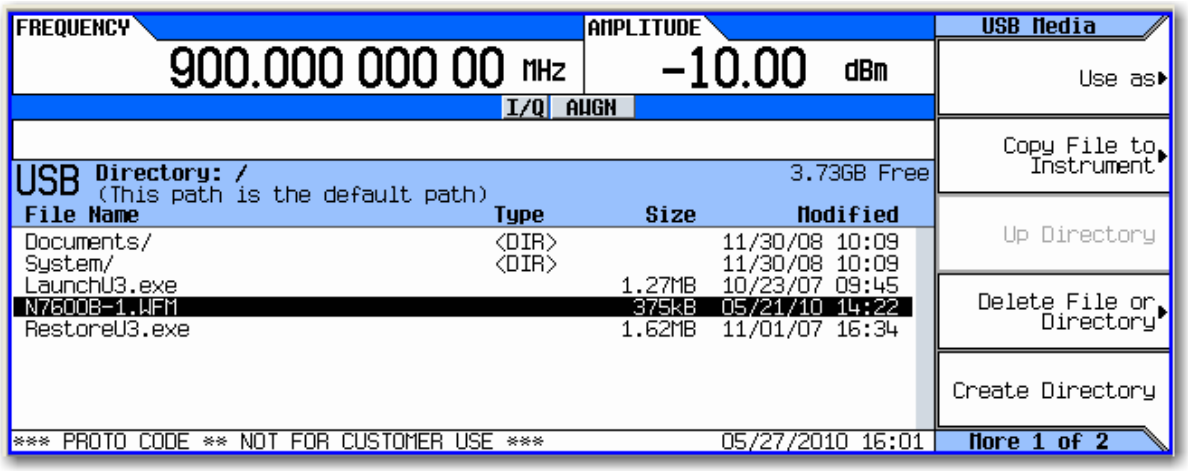


7. Name the waveform file and save it to your PC.



8. Copy the waveform file to a portable USB storage device.
9. Insert the USB storage device into the instrument's front panel USB port. Proceed to the appropriate step for your instrument model.

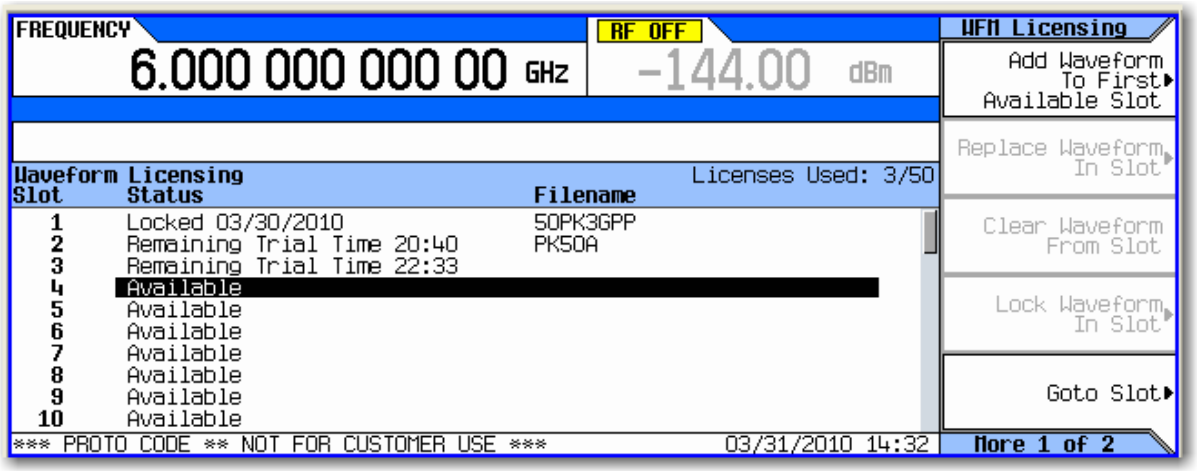
10. **For the EXT.** Make sure the EXT user interface is the active window and press **File** > **File Explorer**. Then locate the USB storage device and copy your waveform file to D:\NVARB. You can navigate to this folder by selecting **My Computer** > **User Data** > **NVAR**.
11. **For the EXG/MXG.** The USB file directory appears. Use the front panel knob to highlight your waveform file. Press **Copy File to Instrument** > **Waveform** > **BBG Memory** (volatile memory).



Evaluating and Locking Waveforms to License Slots

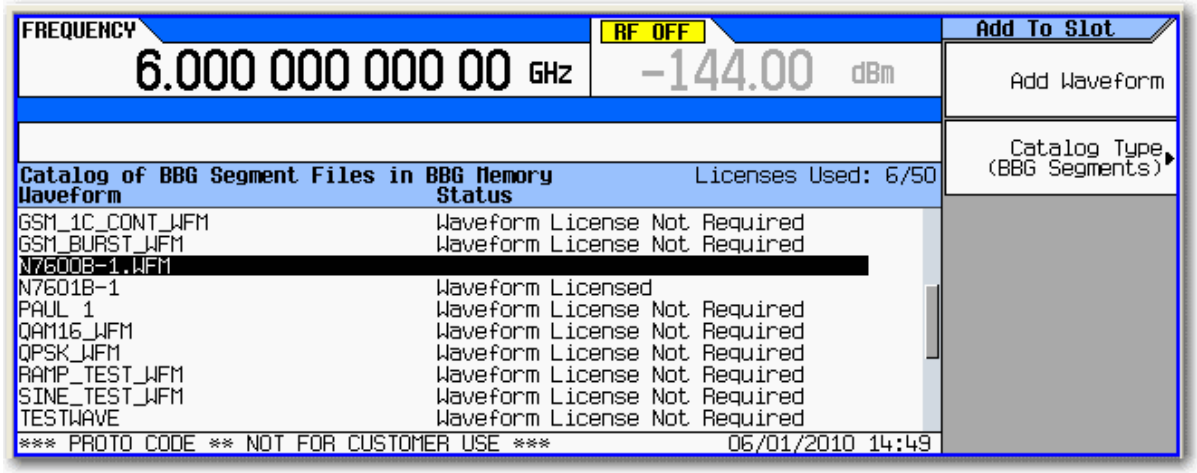
On the EXG/MXG

1. Press **Local** (same key as **Cancel/(ESC)**) to unlock the instrument from remote operation.
2. Press **Mode** > **Dual ARB** > **More** > **Waveform Licensing**. The following screen appears, showing occupied and available waveform slots for your instrument's 5- or 50-pack license.

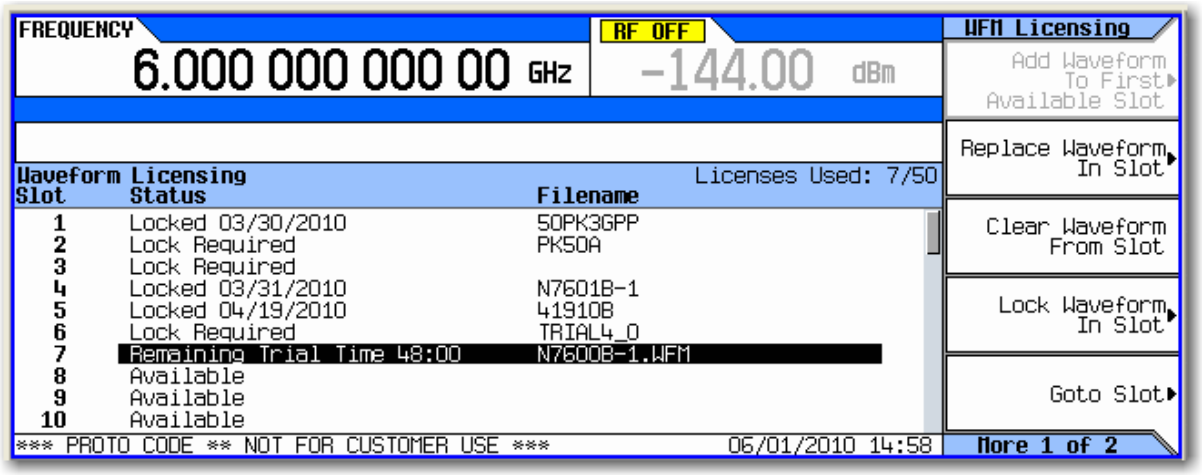


3. Press **Add Waveform To First Available Slot**. You can also use the arrow keys or front panel knob to select an occupied waveform slot and then press **Replace Waveform In Slot**. This allows you to use the remaining trial time for that slot on your waveform.

   In either case, a screen appears, showing the available files stored in volatile BBG memory. The waveform file you created and downloaded with the Signal Studio software should now reside here.

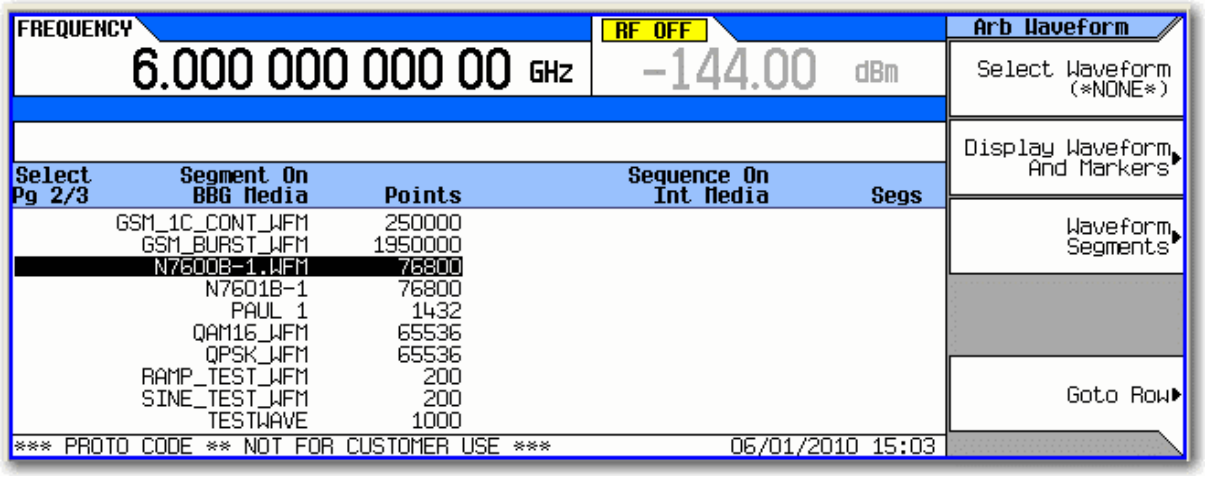


4. Use the arrow keys or front panel knob to find your waveform file and press **Add Waveform**. Notice that you have 48 hours remaining to fully evaluate the waveform. The trial time applies to individual slots. Once a waveform is added to a slot, the trial time for that slot begins counting down and cannot be reset. During the trial time, you can replace and evaluate waveforms in a slot as many times as you like. At the end of the trial time, however, you can no longer play the waveform in that slot unless you license (lock) it to that slot. You can, however, still replace files in an expired, unlocked slot.



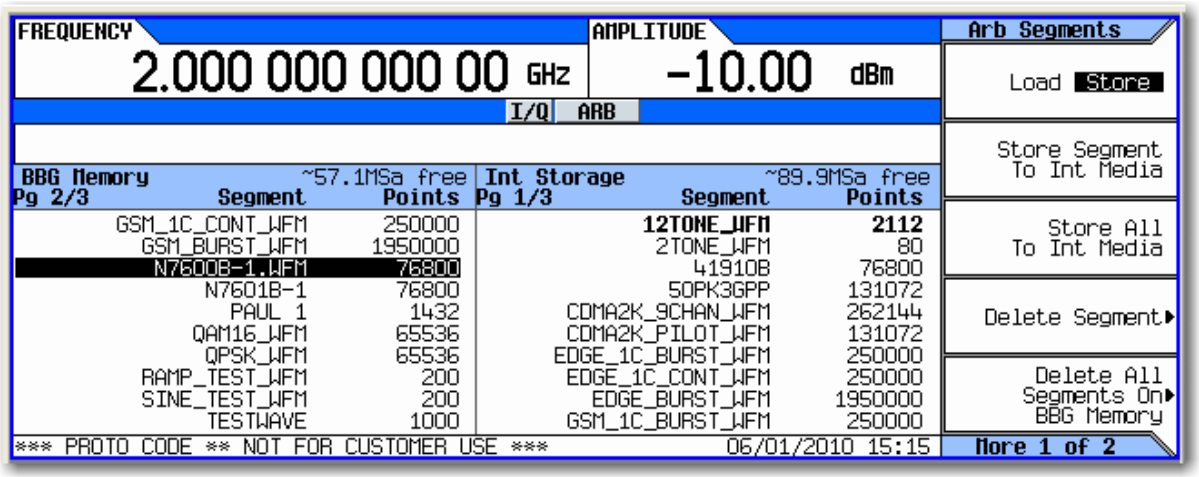
5. To playback the waveform for evaluation, press **Mode** > **Dual ARB** > **Select Waveform** and use the arrow keys or front panel knob to find your waveform.

NOTE The instrument's user interface uses the term segment to refer to a waveform file.

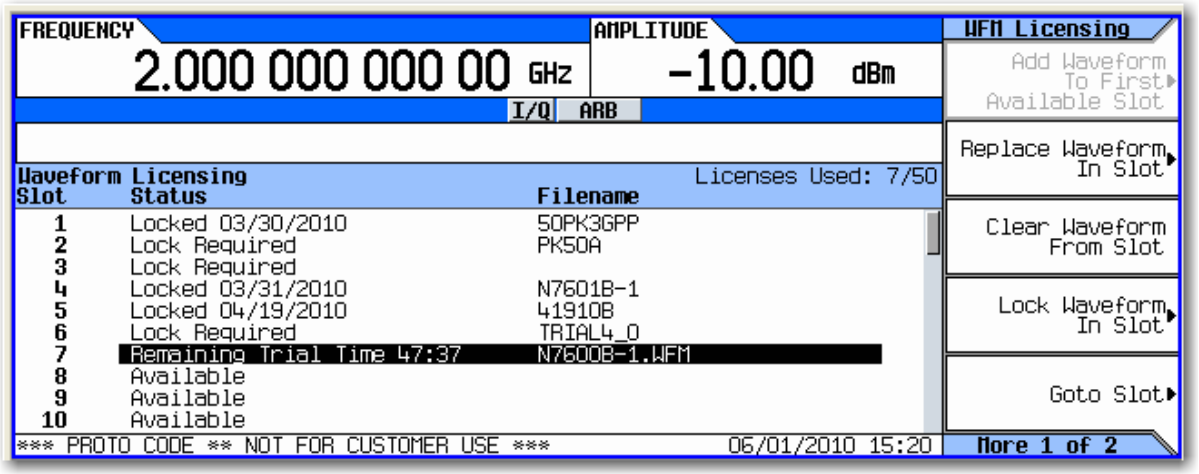


6. Press **Select Waveform** > **ARB Off On** to **On**. Set your frequency and amplitude for the carrier as you like and then press **RF On/Off** to **On**. You can now evaluate the waveform in your specific test scenario.

7. Prior to licensing (locking) your waveform file, you must save it to the instrument's non-volatile internal storage. Press **Mode** > **Dual ARB** > **Select Waveform** > **Waveform Segments** > **Load Store** to **Store** and use the arrow keys or front panel knob to select your waveform. Then press **Store Segment to Int Media**. If you do not save your waveform file to internal storage, you will be prompted to do so when you attempt to license the waveform file.



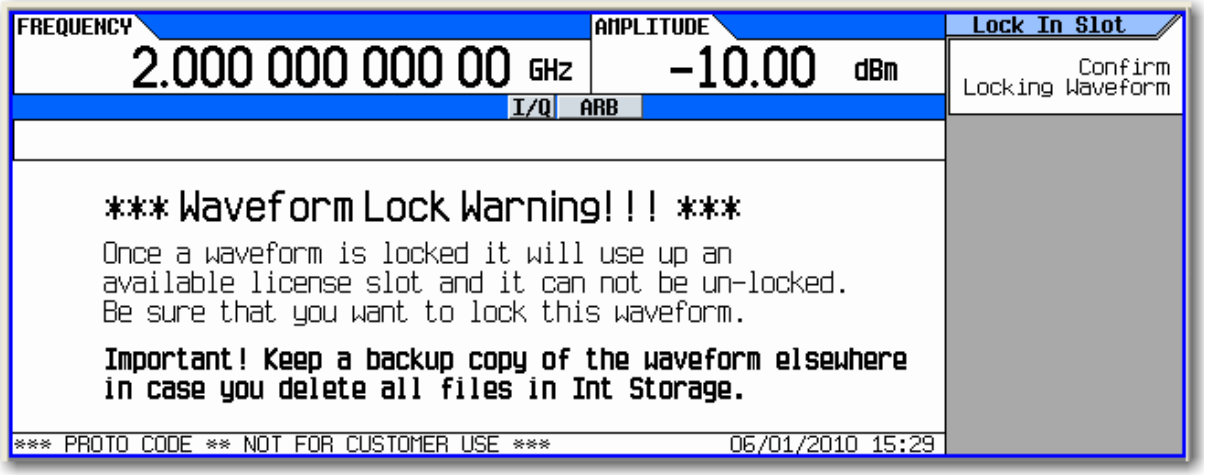
8. To license the waveform into a 5- or 50-pack slot, press **Mode** > **Dual ARB** > **More** > **Waveform Licensing** and use the arrow keys or front panel knob to select your waveform file's slot.



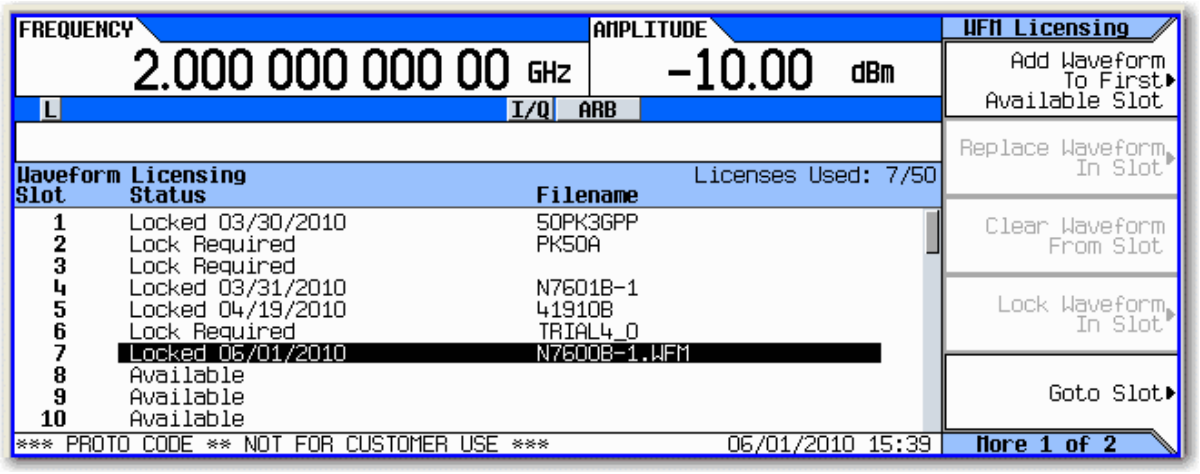
9. Press **Lock Waveform In Slot**. A warning message appears. Press **Confirm Locking Waveform**.

NOTE

Be sure to keep a backup copy of the waveform.

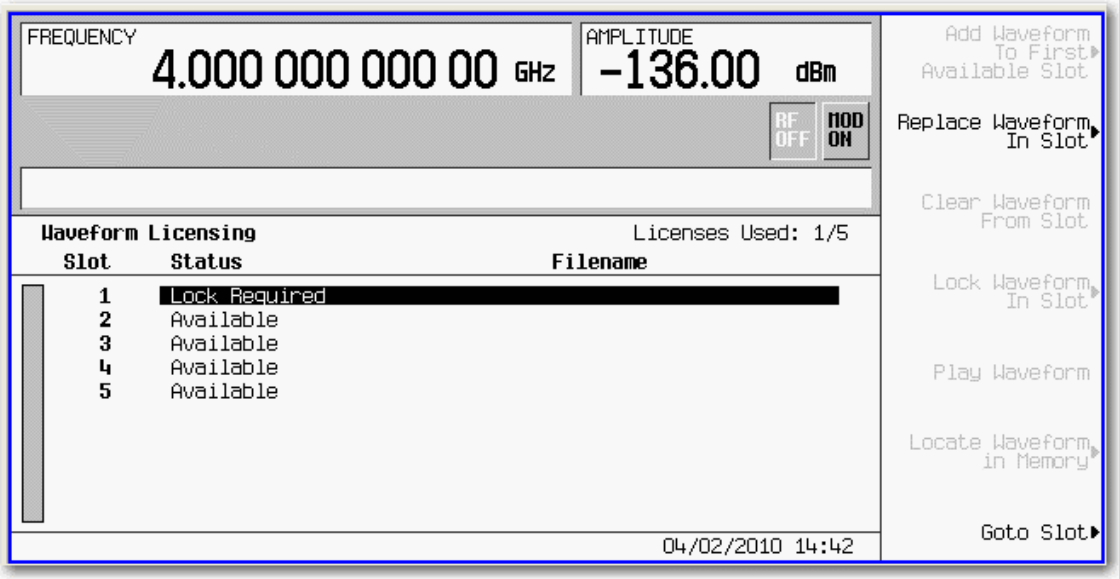


10. Your waveform file is now locked to a 5- or 50-pack slot and permanently licensed to your instrument.



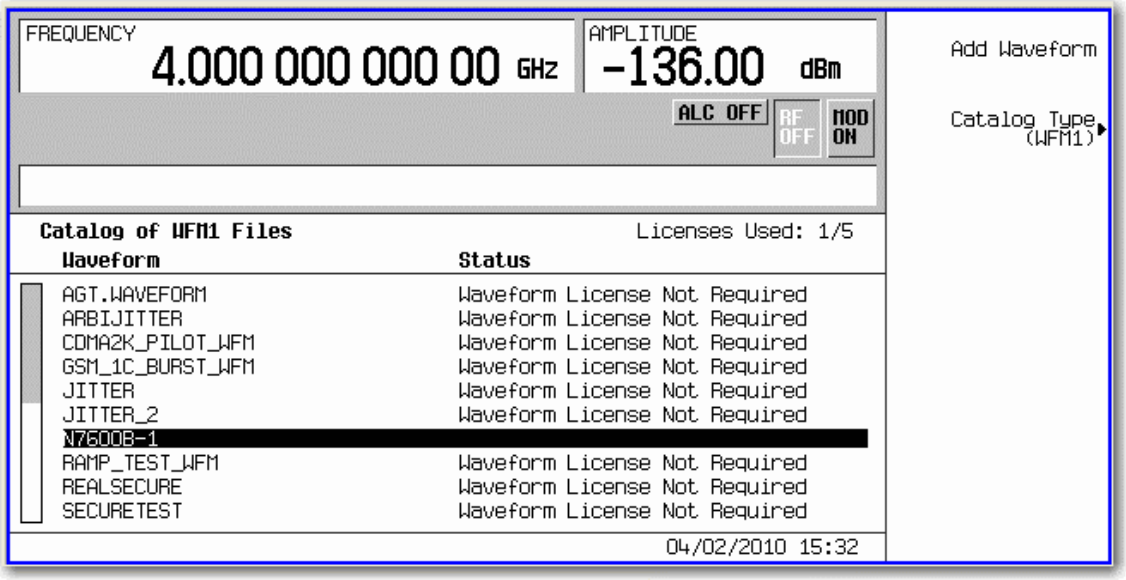
On the ESG

1. Press **Local** to unlock the instrument from remote operation.
2. Press **Mode** > **Dual ARB** > **More** > **Waveform Licensing**. The following screen appears, showing occupied and available waveform slots for your instrument's 5- or 50-pack license.

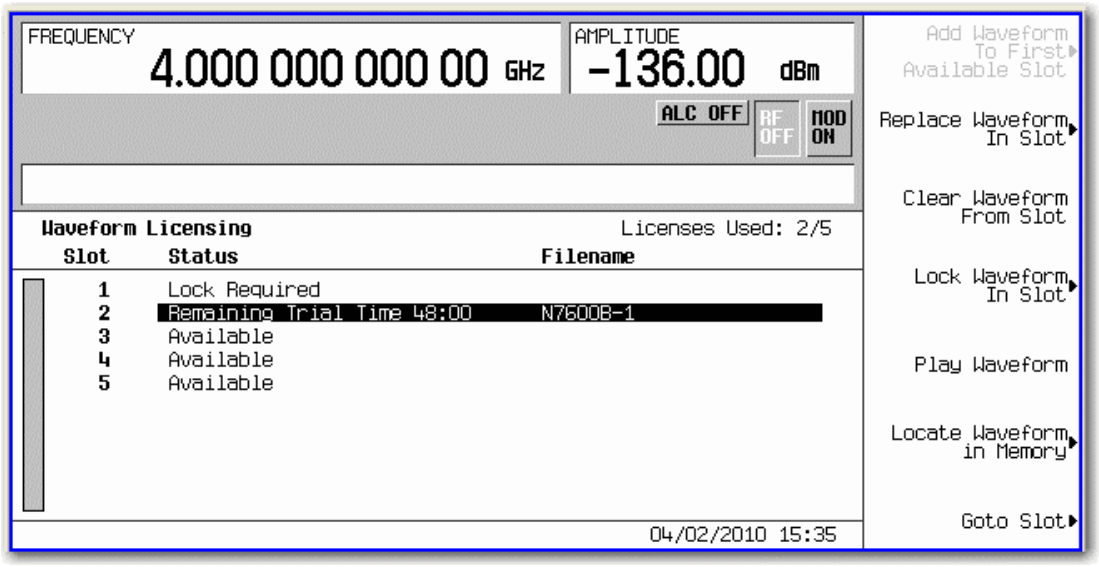


3. Use the arrow keys or front panel knob to highlight the first available slot and press **Add Waveform To First Available Slot**. You can also select an occupied waveform slot and then press **Replace Waveform In Slot**. This allows you to use the remaining trial time for that slot on your waveform.

   In either case, a screen appears, showing the available files stored in volatile waveform memory (WFM1). The waveform file you created and downloaded with the Signal Studio software should now reside here.

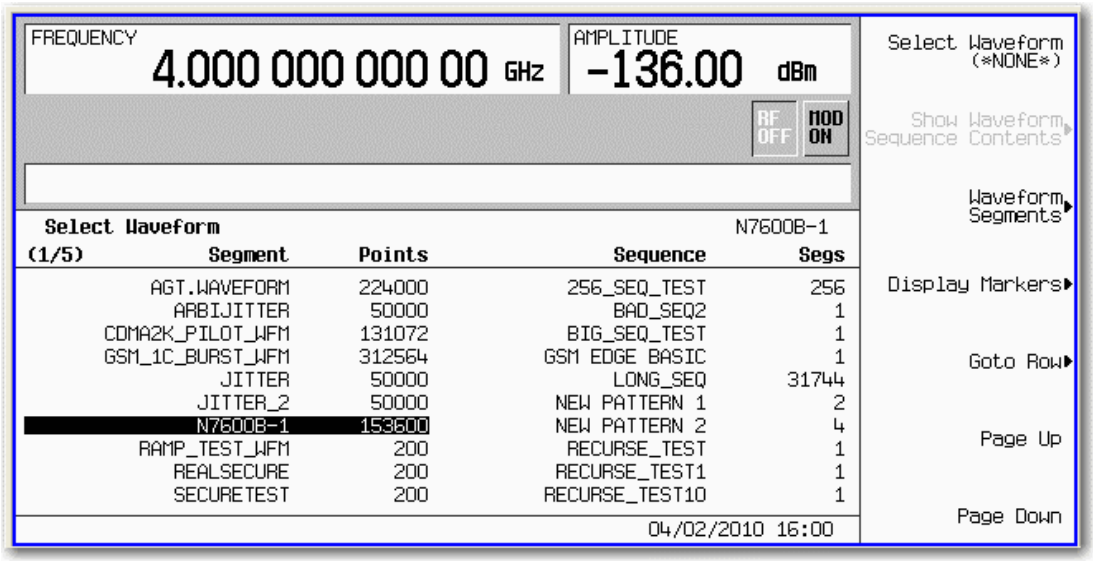


4. Use the arrow keys or front panel knob to find your waveform file and press **Add Waveform**. Notice that you have 48 hours remaining to fully evaluate the waveform. The trial time applies to individual slots. Once a waveform is added to a slot, the trial time for that slot begins counting down and cannot be reset. During the trial time, you can replace and evaluate waveforms in a slot as many times as you like. At the end of the trial time, however, you can no longer play the waveform in that slot unless you license (lock) it to that slot. You can, however, still replace files in an expired, unlocked slot.

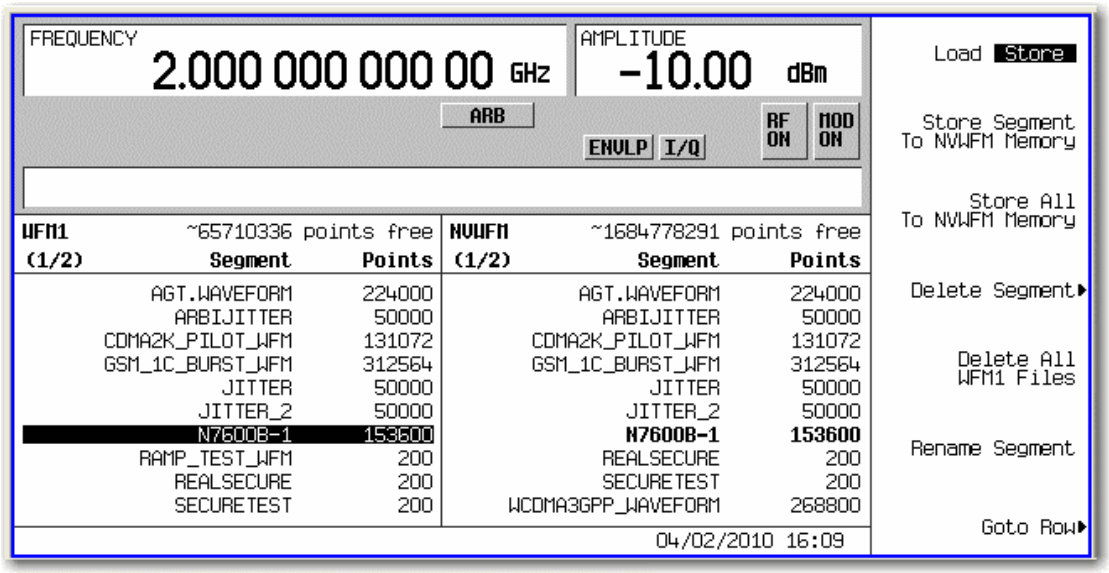


5. To playback the waveform for evaluation, press **Mode** > **Dual ARB** > **Select Waveform** and use the arrow keys or front panel knob to find your waveform.

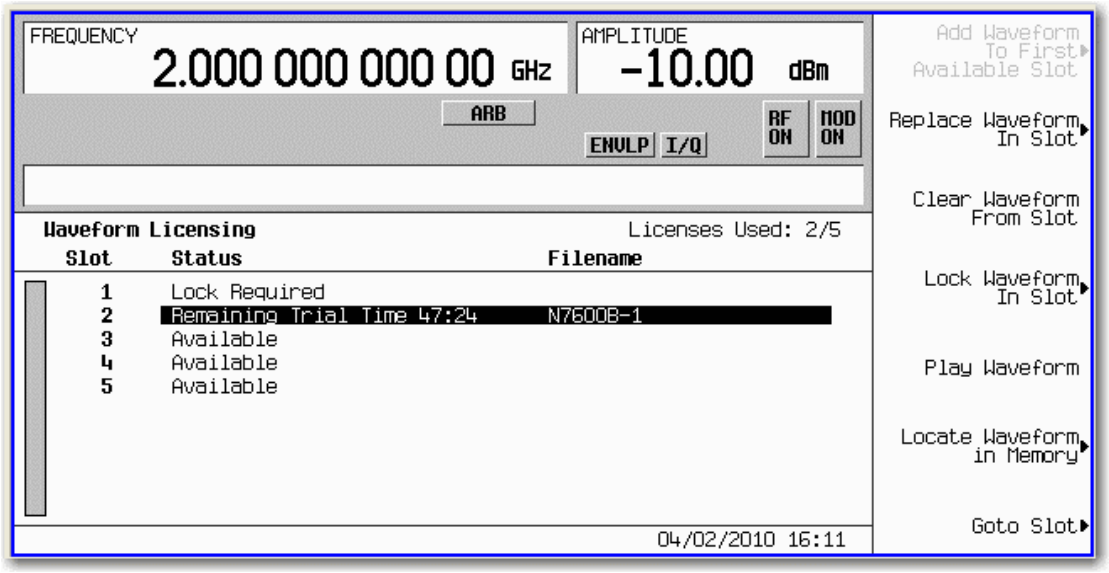
NOTE The instrument's user interface uses the term segment to refer to a waveform file.



6. Press **Select Waveform** > **ARB Off On** to **On**. Set your frequency and amplitude for the carrier as you like and then press **RF On/Off** to **On**. You can now evaluate the waveform in your specific test scenario.
7. Prior to licensing (locking) your waveform file, you must save it to the instrument's non-volatile waveform memory (NVWFM). Press **Mode** > **Dual ARB** > **Select Waveform** > **Waveform Segments** > **Load Store** to **Store** and use the arrow keys or front panel knob to select your waveform. Then press **Store Segment to NVWFM**. If you do not save your waveform file to internal storage, you will be prompted to do so when you attempt to license the waveform file.

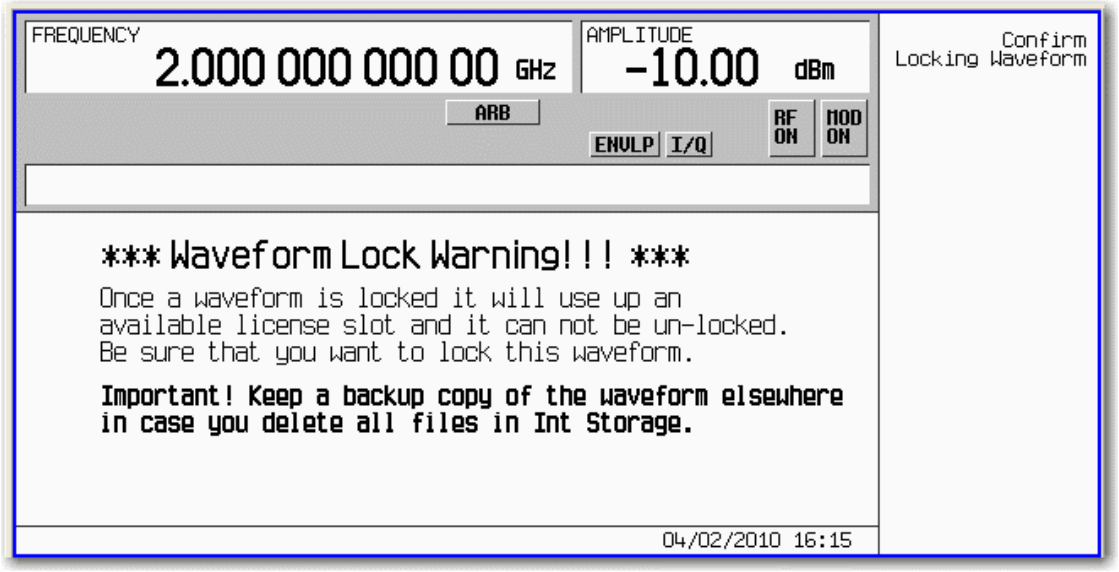


8. To license the waveform into a 5- or 50-pack slot, press **Mode** > **Dual ARB** > **More** > **Waveform Licensing** and use the arrow keys or front panel knob to select your waveform file's slot.

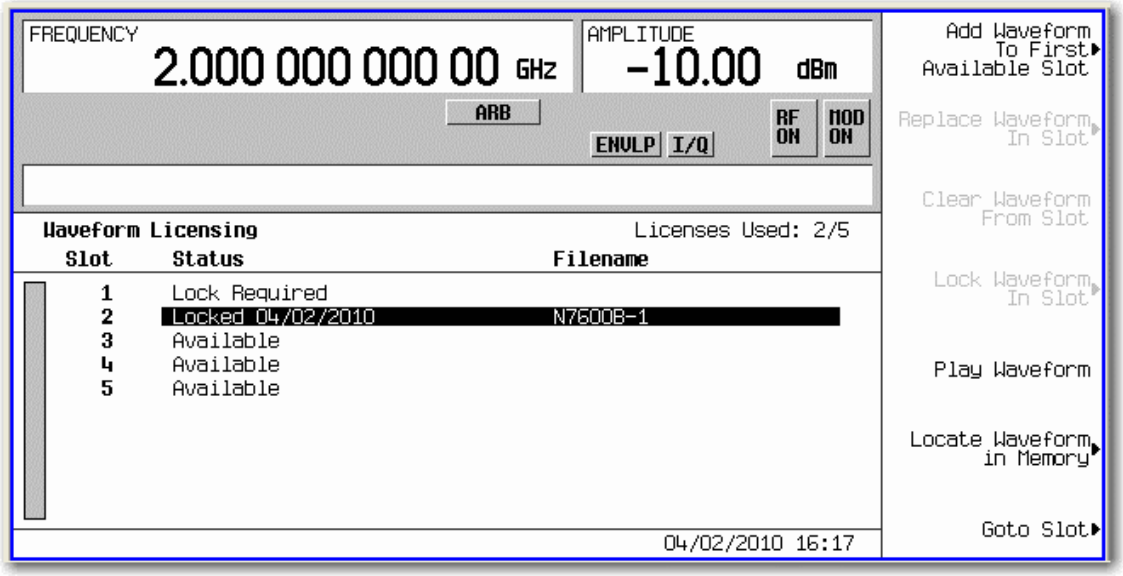


9. Press **Lock Waveform In Slot**. A warning message appears. Press **Confirm Locking Waveform**.

NOTE Be sure to keep a backup copy of the waveform.

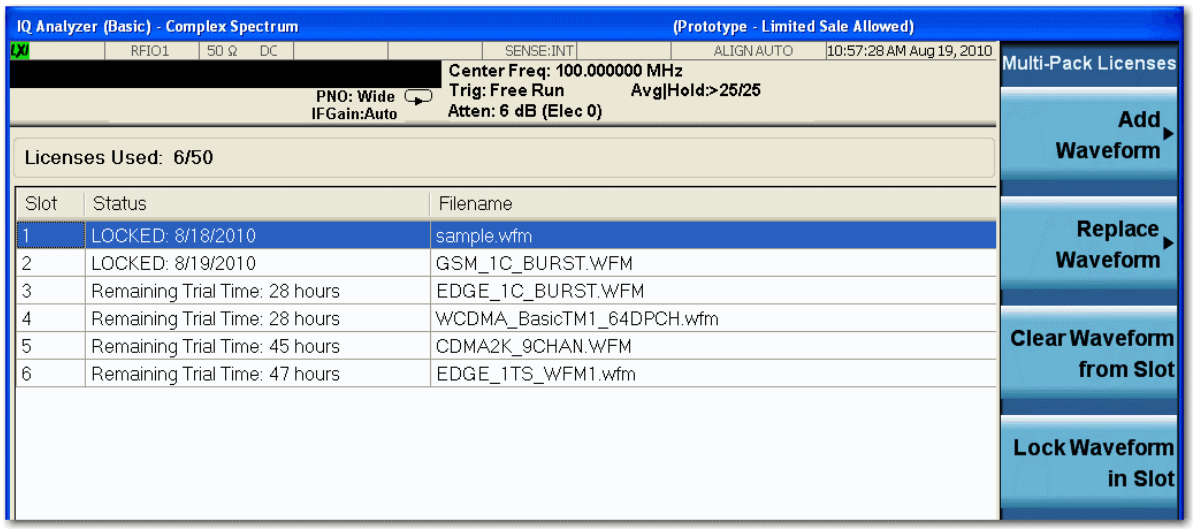


10. Your waveform file is now locked to a 5- or 50-pack slot and permanently licensed to your instrument.



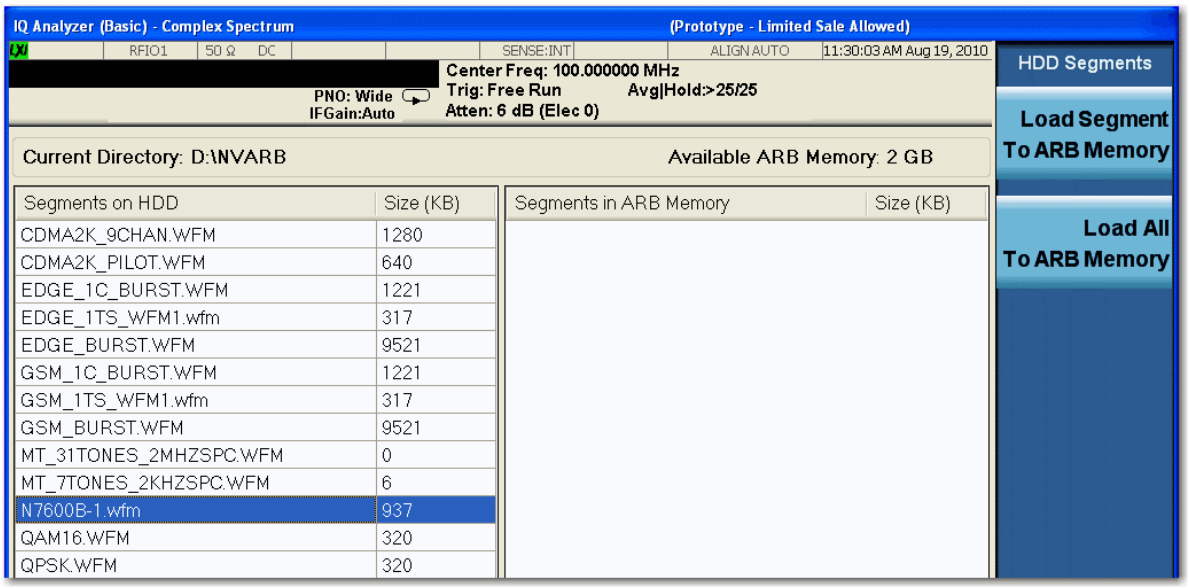
On the EXT

1. Press **Local** (same key as **Cancel/(ESC)**) to unlock the instrument from remote operation.
2. Press **Source** > **More 1 of 2** > **Modulation Setup** > **ARB** > **More 1 of 2** > **Waveform Utilities** > **Multi-Pack Licenses**. The following screen appears, showing occupied and available waveform slots for your instrument's 5- or 50-pack license.

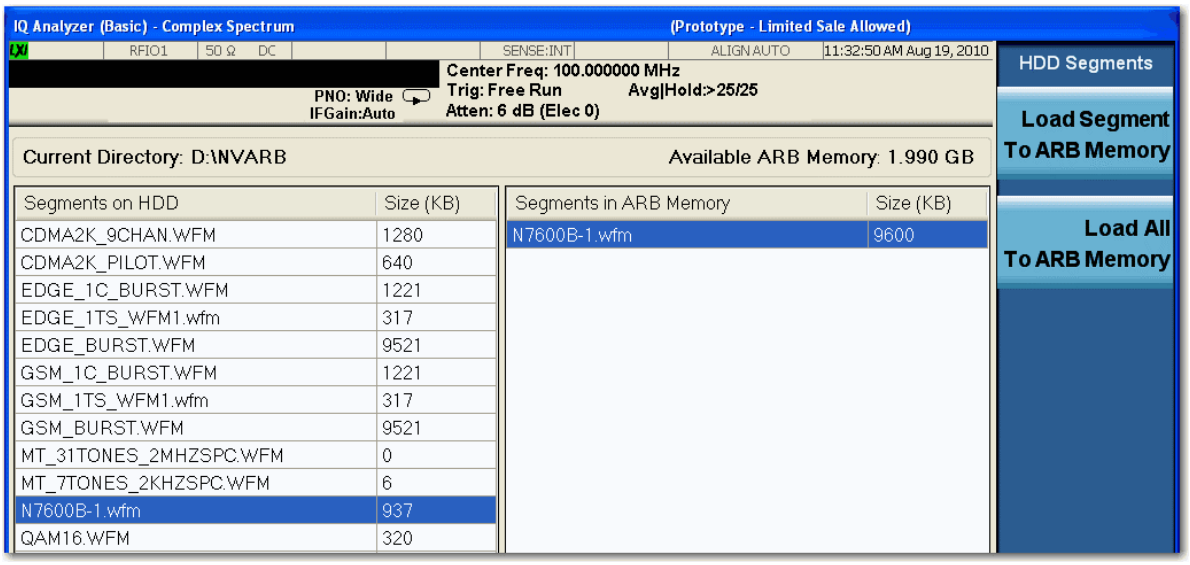


3. Press **Add Waveform** > **Segments on Hard Disk**. Then use the arrow keys or mouse to select a waveform file from NVARB memory.

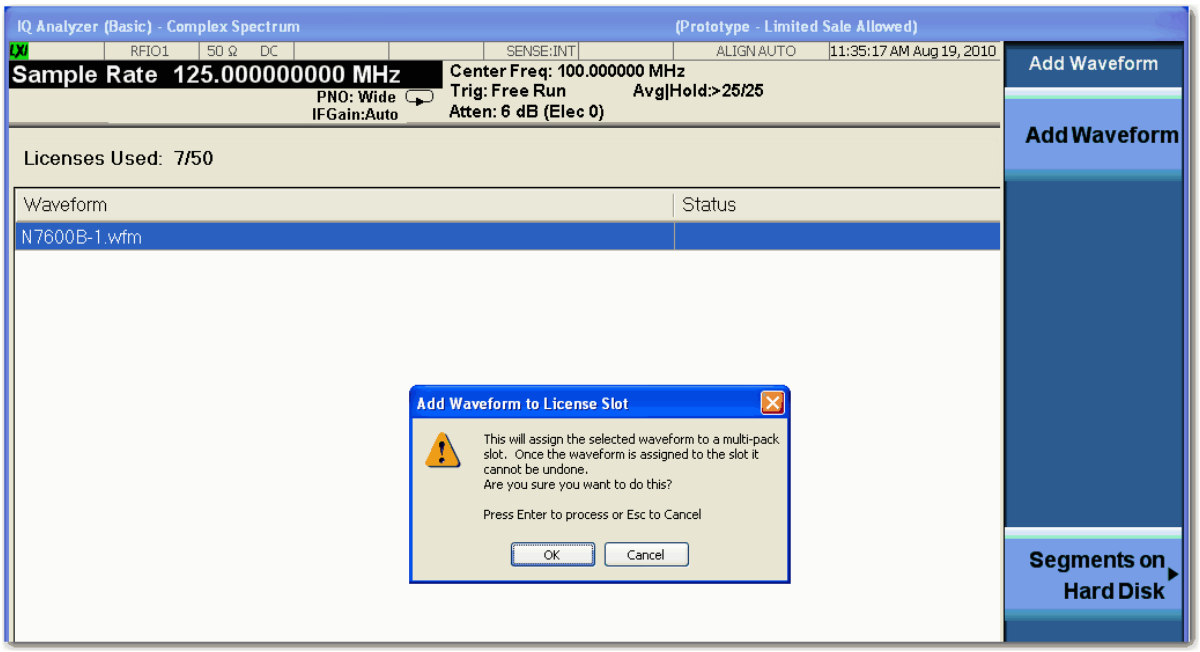
NOTE The instrument's user interface uses the term segment to refer to a waveform file.



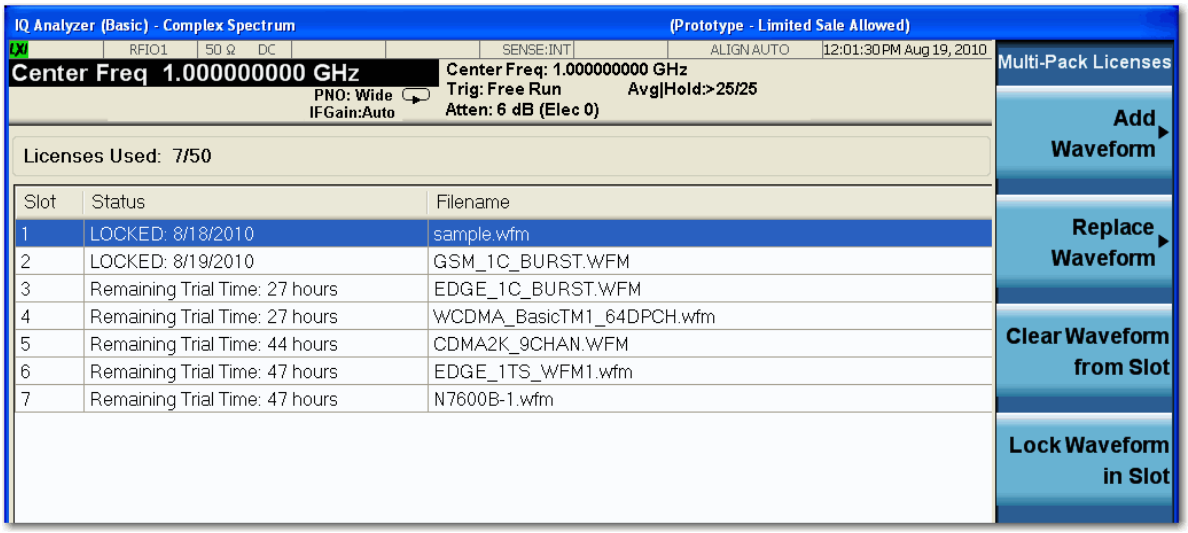
4. Press **Load Segment to ARB Memory**.



5. Press **Return** and use the arrow keys or mouse to select your waveform. Then press **Add Waveform**. A dialog box appears. Click **OK**.



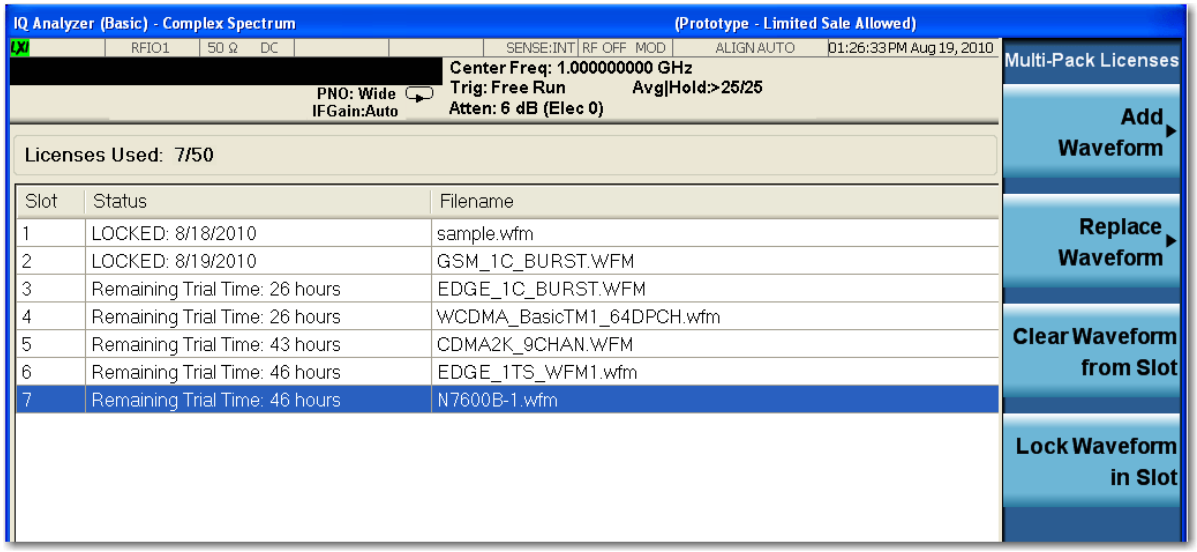
6. Notice that you have less than 48 hours (display shows 47 hours) remaining to fully evaluate the waveform. The trial time applies to individual slots. Once a waveform is added to a slot, the trial time for that slot begins counting down and cannot be reset. During the trial time, you can replace and evaluate waveforms in a slot as many times as you like. At the end of the trial time, however, you can no longer play the waveform in that slot unless you license (lock) it to that slot. You can, however, still replace files in an expired, unlocked slot.



7. To playback the waveform for evaluation, press **Source** > **More 1 of 2** > **Modulation Setup** > **ARB** > **Select Waveform** and use the arrow keys or mouse to highlight your waveform.

8. Press **Select Waveform** > **Return** > **ARB Off On** to **On**. Set your frequency and amplitude for the carrier as you like and then press **Source** > **RF On/Off to On**. You can now evaluate the waveform in your specific test scenario.

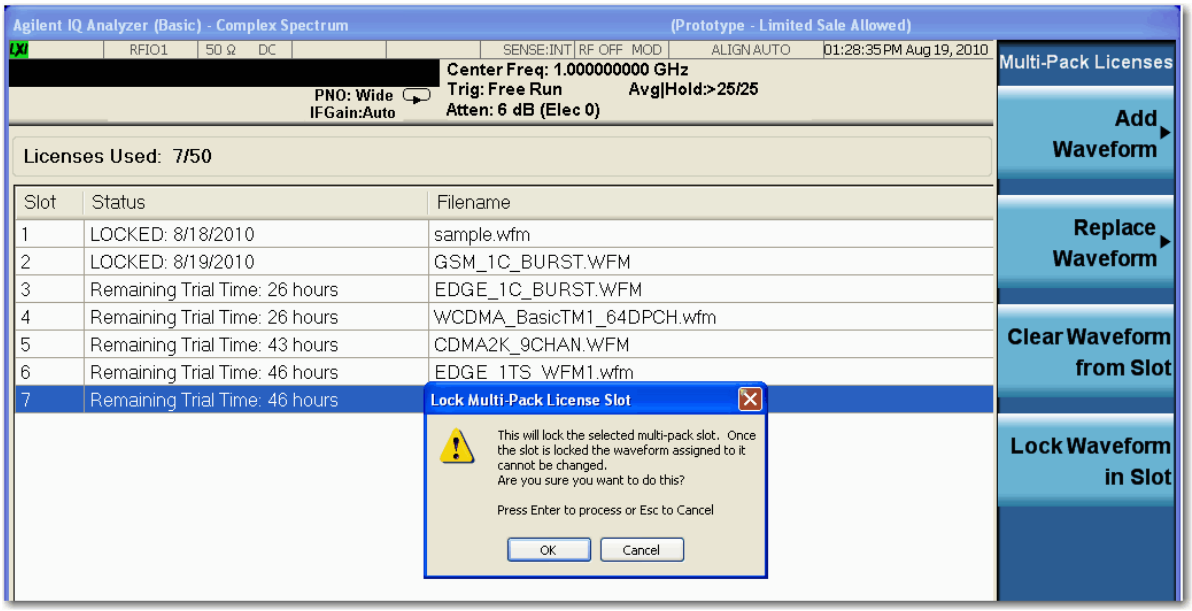
9. To license the waveform into a 5- or 50-pack slot, press **Source** > **More 1 of 2** > **Modulation Setup** > **ARB** > **More 1 of 2** > **Waveform Utilities** > **Multi-Pack Licenses** and use the arrow keys or mouse to select your waveform file's slot.



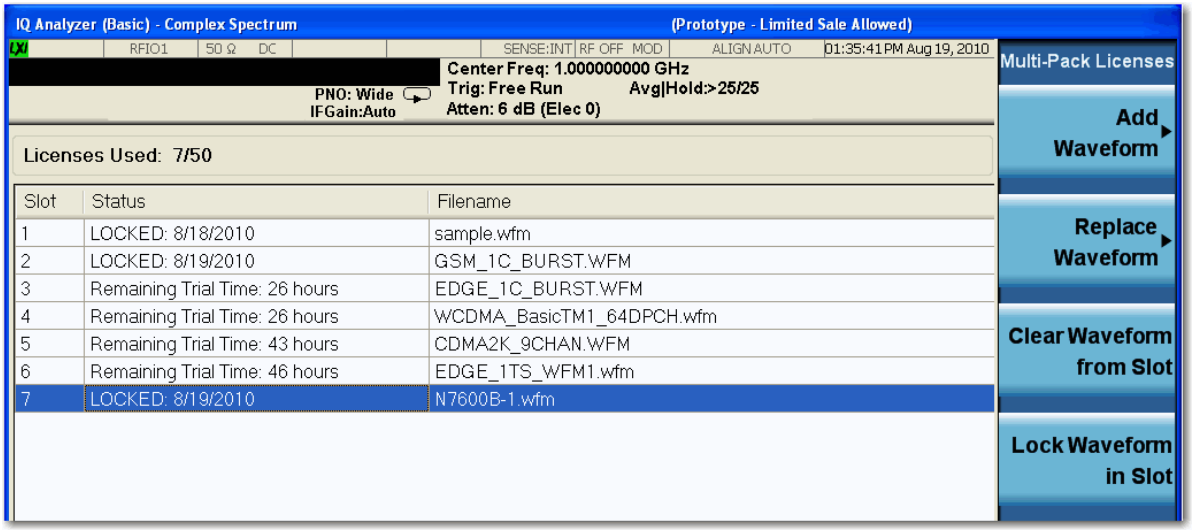
10. Press **Lock Waveform In Slot.** A dialog box appears, asking you to confirm your decision. Click **OK**.

NOTE

Be sure to keep a backup copy of the waveform.



11. Your waveform file is now locked to a 5- or 50-pack slot and permanently licensed to your instrument.



This information is subject to change without notice.
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Edition 1, January 2018

N5180-90085

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