Keysight Technologies Signal Studio Waveform Licenses



User's Guide

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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

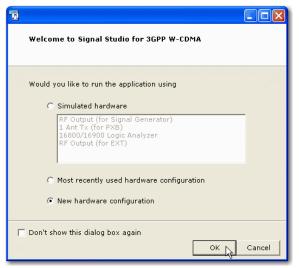
Using Signal Studio to Create and Download a Waveform

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

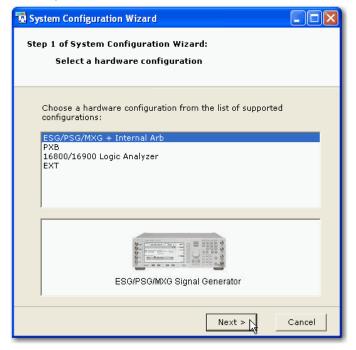


Some Signal Studio products do not support a live connection to the EXT. In these cases, use Method 2: Export waveform files to a USB storage device (EXG, MXG, EXT) on page 10.

- 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.

System Configuration Wizard	
Step 2 of System Configuration Wizard: Select a specific hardware system	
Select a specific system from the list below or select <new> to configure a new system (the list shows all applicable, previously saved hardware configurations for the current function): <<u>New></u> George's ESG Keith's MXG</new>	View Details Delete
< Back Next >	Cancel

Using Signal Studio to Create and Download a Waveform

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

System Configuration Wizard	
Step 3 of System Configuration Wizard: Select an ESG/PSG/MXG Signal Generator	
Enter the ESG/PSG/MXG Signal Generator connection information below: Enter a new ESG/PSG/MXG Signal Generator: LAN Hostname / Hostname / IP Address: 141.121.91.164 Choose an ESG/PSG/MXG Signal Generator Choose an ESG/PSG/MXG Signal Generator from the list of configured interfaces in IO Libraries:	View Properties Test I/O Connection
< Back Next >	Cancel

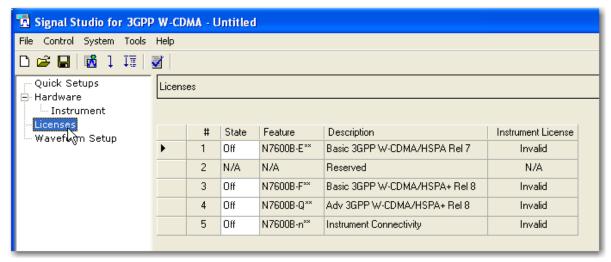
7. Click Next.

🗟 System Configuration Wizard	
Step 4 of System Configuration Wizard: Test I/O connection for ESG/PSG/MXG Signal Generator	
Testing I/O connection for ESG/PSG/MXG Signal Generator at TCPIP0::141.121.91.164::INSTR ESG/PSG/MXG Signal Generator connected. Press the Next button to continue.	
< Back Next >	Cancel

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.

File Control System Tool	s Help					
D 🚅 🖬 🔯 1 🍱	1					
Quick Setups Hardware	Licens	es				
- <mark>Licenses</mark> - Waveform Setup	# State Feature Description Instrument License					
1 On N7600B-E** Basic 3GPP W-CDMA/HSPA Rel 7 Invalid					Invalid	
		2	N/A	N/A	Reserved	N/A
	•	3		N7600B-F**	Basic 3GPP W-CDMA/HSPA+ Rel 8	Invalid
		4	On be	N7600B-Q**	Adv 3GPP W-CDMA/HSPA+ Rel 8	Invalid
Off よ) 5 Uff N7600B-n** Instrument Connectivity 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.

🖪 Signal Studio for 3GPP	W-CDMA - U	ntitled								
File Control System Tools	Help									
D 🚅 🖬 🔂 1 🎞 1	V									
Quick Setups	Configuration :	Configuration : W-CDMA DL 1 Carrier								
Instrument	<u>■</u> +·X									
- Waveform Setup	Carrier	State	Frequency Offset	Power						
E-Carrier 1	👬 Carrier 1	On	Basic W-CDMA/HSPA DL Rel 7	Test Model 1 + 64 DPCH	0.000000 Hz	0.00 dB				
Channel Setup										
4										
	Carrier 1 Basi	c W-CDMA	/HSPA DL Rel 7			🖂 Hint				
	□ 3GPP									
	State			On		•				
	Channel Co	oficuration		Test Model 1 + 64 DPCH						
	Chip Rate	Ingulation			3.840000 Mcps					
	TFCI Field			Off						
	Primary Scra	amblina Co	de	0						
	Tx Diversity			None						
	Baseband									
	Oversamplin	ig Ratio		AUTO						
	E Filter			Root Nyquist (Alpha = 0.22)						
	Filter			Root Nyquist						
	Alpha			0.22						
	ВЬТ			0.5						
	Pre-Filter Cli			100.0 %						
	Post-Filter C			100.0 %						
	Total Sampl			76800 Points 0.000000 Hz						
	Frequency (Power	JIISE		0.00 dB						
	Timing Offse	st.		0.00 ab						
	Initial Phase			0.0 O Deg						
	This art ridso			_ 5 5 6g						
Ready										

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

N	NT	
	UI	

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

💀 Signal Studio for 3GPP W-CDMA - Untitled*								
File Control System Tools Help								
D 🛎 🖬 👪 1 🎞								
- Quick Setups ⊡-Hardware	Conligation . W CDMR DE 1 Callier (Modiled)							
Instrument	II +· X							
- Licenses - Waveform Setup	Carrier	State	Radio Format	Configuration	Frequency Offset			
⊡- <mark>Waveform Setup</mark> ⊟- Carrier 1	age Carrier 1	On	Basic W-CDMA/HSPA+ DL Rel 8	1 DPCH	0.000000 Hz			
Channel Setup								
· ·								
	1							
	Waveform Attrib	utes						
	🗆 1. Basic							
	Waveform Name N7600B-1							
	Comment							
	Total Sample	Points						
	I/Q Map 2. Marker			Normal				
				-				

13.Click the Generate and Download button.



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

Auth	horization 🛛
2	The target instrument does not have a valid license. Without a valid license, an instrument can not play back the downloaded waveform. Do you still want to download the waveform anyway?
	OK Cancel

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

Using Signal Studio to Create and Download a Waveform

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**.

Welcome to Signal Studio for 3GPP W-CDMA	
Would you like to run the application using	
RF Output (for Signal Generator) 1 Ant Tx (for PXB)	
1 Ant 1X (for PAD) 16800/16900 Logic Analyzer	
C Most recently used hardware configuration	
C New hardware configuration	
🔽 Don't show this dialog box again	
ок	Cancel

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.

😨 Signal Studio for 3GPP W-CDMA - Untitled								
File Control System Tools Help								
uick Setups ⊡-Hardware		nfiguration : V	V-CDMA D	DL 1 Carrier				
Instrument	Ш	+• X						
- Licenses ⊡- Waveform Setup	Ca	rrier	State	Radio Format	Cor	nfiguration	Frequency Offset	Power
E- Waveform Setup E- Carrier 1	96 F	Carrier 1	On	Basic W-CDMA/HSPA DL Rel 7	Tes	st Model 1 + 64 DPCH	0.000000 Hz	0.00 dB
Channel Setup								
4								
	Carr	ier 1 Basic	W-CDMA	/HSPA DL Rel 7				🗖 Hint
	E	3GPP						
		State				On		-
	0	Channel Con	figuration			Test Model 1 + 64 DPCH		
		Chip Rate				3.840000 Mcps		
		TFCI Field			Off			
		Primary Scra	mbling Cod	e		0		
		Tx Diversity				None		
		Baseband	D-K-			41170		
		Dversampling) Hatio			AUTO Root Nyquist (Alpha = 0.22)		
		Filter				Root Nyquist (Alpria = 0.22)		
		Alpha				0.22		
		ВЬТ				0.5		
	F	Pre-Filter Clip	ping			100.0 %		
	F	Post-Filter Clip	oping			100.0 %		
		Total Sample				76800 Points		
		Frequency O	ffset			0.000000 Hz		
		Power				0.00 dB		
		Timing Offset				0.0		
↓		nitial Phase				ODeg		
Ready								

5. Click the Generate Waveform button.



Using Signal Studio to Create and Download a Waveform

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



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

Export Wavefo	rm				? 🗙
Save in:	🔁 My Waveform	ns	•	🗢 🗈 💣 🎫	•
My Recent Documents Desktop					
My Documents					
My Computer					
My Network	File name:	N7600B-1		•	_ Save
Places	Save as type:	wfm files (*.wfm)			Cancel

- 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).

FREQUENCY	A	MPLITUDE		USB Nedia 🦯
900.000 000			0.00 dBm	Use as▶
	I/Q_AU	GN		
QD Directory: /			3.7368 Fre	Copy File to Instrument
USB Directory: / (This path is the default p	path)		3.7300 FLet	
File Name Documents/	Type (DIR)	Size	Nodified 11/30/08 10:09	Up Directory
System/	(DIR)		11/30/08 10:09	
LaunchU3.exe N7500B-1.WFM		1.27MB 375kB	10/23/07 09:45 05/21/10 14:22	Delete File or
RestoreU3.exe		1.62MB	11/01/07 16:34	Directory
				Create Directory
*** PROTO CODE ** NOT FOR CUSTOME	R USE ***		05/27/2010 16:01	flore 1 of 2

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.

FREQUEN	6.000 000 000 00		144.00 dBm	HFN Licensing Add Waveform To First↓ Available Slot
Havefor Slot	n Licensing Status	Filename	Licenses Used: 3/50	Replace Waveform. In Slot
1 2 3	Locked 03/30/2010 Remaining Trial Time 20:40 Remaining Trial Time 22:33	SOPK3GPP PK50A		Clear Waveform From Slot
4 5 6 7	Available Available Available			Lock Waveform _▶ In Slot
/ 8 9 10	Available Available Available Available			Goto Slot∙
*** PRO	TO CODE ** NOT FOR CUSTOMER USE	***	03/31/2010 14:32	Nore 1 of 2

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.

FREQUENCY 6.000 000 0	00 00 GHz -144.00 dBr	Add To Slot Add Waveform
Catalog of BBG Segment Files Haveform GSM_1C_CONT_UFM GSM_BURST_UFM N76018-1 PAUL 1 QAM16_UFM QPSK_UFM RAMP_TEST_UFM SINE_TEST_UFM SINE_TEST_UFM TESTUAVE *** PROTO CODE ** NOT FOR CUS	Status Waveform License Not Required Waveform License Not Required	

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.

FREQUEN	6.000 000 000	00 GHz -1	44.00 dBm	HFN Licensing Add Waveform To First⊨ Available Slot
Havefor Slot	°m Licensing Status	Filename	Licenses Used: 7/50	Replace Waveform. In Slot
1 2 3	Locked 03/30/2010 Lock Required Lock Required	SOPK3GPP PK50A		Clear Waveform From Slot
4 5 6	Locked 03/31/2010 Locked 04/19/2010 Lock Required	N7601B-1 41910B TRIAL4_0		Lock Waveform In Slot
7 8 9	Remaining Trial Time 48:0 Available Available	DO N7600B-1.WFM		Goto Slot∙
10 *** PRO	Available TO CODE ** NOT FOR CUSTOME	R USE ***	06/01/2010 14:58	Nore 1 of 2

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.

FREQUE			RF OFF		Arb Uaveform
	6.000 000) 000 00 GHz	-144.00	dBm	Select Waveform (*NONE*)
					Displąy Wąveform,
Select Pg 2/3	Segment On BBG Nedia	Points	Sequence On Int Nedia	Segs	And Markers
	GSM_1C_CONT_WFM GSM_BURST_WFM	250000 1950000			Waveform. Segments•
	N7600B-1.WFM N7601B-1	7 5800 76800			
	PAUL 1 QAM16_WFM QPSK_WFM	1432 65536 65536			
	RAMP_TEST_WFM SINE_TEST_WFM	200			Goto Roµ▶
*** PRO	TESTÜAVE	1000 CUSTOMER USE ***	06/01/20	10 15:03	

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.

FREQUENCY	2.000 000	0000	_	-10.00) dBm	Arb Segments
			I/Q ARB			
BBG Nemor Pg 2/3	ry ~57 Segment	.1MSa free Points	Int Storage Pg 1/3	~89 Segment	.9MSa free Points	Store Segment To Int Media
	ISM_1C_CONT_WFM GSM_BURST_WFM N7500B-1.WFM	250000 1950000 75800		12TONE_UFI 2TONE_UFM 41910B	2112 80 76800	Store All To Int Media
	N7601B-1 PAUL 1 QAM16_WFM	76800 1432 65536	CDMA2ł	50PK3GPP <_9CHAN_WFM <_PILOT_WFM	131072 262144 131072 250000	Delete Segment⊧
	QPSK_WFM RAMP_TEST_WFM SINE_TEST_WFM TESTWAVE	65536 200 200 1000	EDGE_: EDGE	C_BURST_WFM 1C_CONT_WFM E_BURST_WFM C_BURST_WFM	250000 250000 1950000 250000	Delete All Segments On⊳ BBG Memory
*** PROTO) CODE ** NOT FOR	CUSTOMER US	3E ***	06/01/	2010 15:15	llore 1 of 2

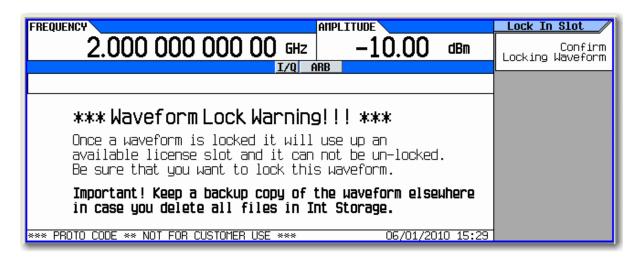
8. To license the waveform into a 5- or 50-pack slot, press Mode > Dual ARB > More > Waveform Licensing and use the arrow keys or front panel knob to select your waveform file's slot.

FREQUENC	/	AMPLIT	UDE	UFN Licensing 🦯
	2.000 000 000 00		–10.00 dBm	Add Waveform To First⊳ Available Slot
_		I/Q ARB		HUGIIGDIE JIOC
				Replace Waveform
Uaveform Slot	Licensing Status	Filename	Licenses Used: 7/50	In Slot [®]
1 2 3	Locked 03/30/2010 Lock Required Lock Required	50PK3GPP PK50A		Clear Waveform From Slot
4 5 6	Locked 03/31/2010 Locked 04/19/2010 Lock Required	N7601B-1 41910B TRIAL4_0		Lock Waveform In Slot
7 8 9 10	Remaining Trial Time 47:37 Available Available Available	N7600B-1.WF		Goto Slot▶
	CODE ** NOT FOR CUSTOMER USE	***	06/01/2010 15:20	llore 1 of 2

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



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.

FREQUENC	/	AMPLI		UFN Licensing
	2.000 000 000 00) GHZ	-10.00 dBm	Add Waveform To First⊳ Available Slot
L		I/Q ARB		HVAIIADIE SIUC
				ReplaceWaveform,
llaveform Slot	Licensing Status	Filename	Licenses Used: 7/50	In Slot"
1 2 3	Locked 03/30/2010 Lock Required Lock Required	50PK3GPP PK50A		Clear Waveform From Slot
4 5 6	Locked 03/31/2010 Locked 04/19/2010 Lock Required	N7601B-1 41910B TRIAL4_0		Lock Waveform In Slot
7 1	Locked 06/01/2010	N7600B-1.L	FM	
8 9 10	Available Available Available			Goto Slot▶
*** PROTO) CODE ** NOT FOR CUSTOMER USE	***	06/01/2010 15:39	flore 1 of 2

Evaluating and Locking Waveforms to License Slots

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.

FREQUENCY	[´] 4.000 000 0	00 00 GHz -136.00 dBm	Add Waveform To First♪ Available Slot
_		RF NOD OFF ON	Replace Waveform In Slot
Havefori	n Licensing	Licenses Used: 1/5	Clear Waveform From Slot
51ot	Status Lock Required Available	Filename	Lock Waveform. In Slot
3 4 5	Available Available Available Available		Play Waveform
			Locate Waveform in Memory
		04/02/2010 14:42	Goto Slot♪

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.

FREQUENCY 4.000 000 0	00 00 GHz -136.00 dBm	Add Waveform
	ALC OFF RF HOD OFF ON	Catalog Type (WFM1)♥
Catalog of NFM1 Files Naveform	Licenses Used: 1/5 Status	
AGT.WAVEFORM ARBIJITTER CDMA2K_PILOT_WFM GSM_1C_BURST_WFM JITTER JITTER_2 N75008=4	Waveform License Not Required Waveform License Not Required	
RAMP_TEST_WFM REALSECURE SECURE TEST	Waveform License Not Required Waveform License Not Required Waveform License Not Required 04/02/2010 15:32	

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.

FREQUENCY	4.000 000 000 00 GHz -136.00 dBm	Add Waveform To First⊳ Available Slot
	ALC OFF RF HOD OFF ON	Replace Waveform In Slot
Haveform Slot	n Licensing Licenses Used: 2/5 Status Filename	Clear Waveform From Slot
	Lock Required Remaining Trial Time 48:00 N76008-1 Available	Lock Waveform. In Slot
5 4 5	Available Available Available	Play Waveform
		Locate Waveform in Memory
	04/02/2010 15:35	- Goto 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.

FREQUE	A.000 00	0 000 00) бнг -136.00	dBm	Select Waveform (*NONE*)
				RF OFF ON	Show Waveform⊳ Sequence Contents⊳
Sele	ct Waveform		1	V7600B-1	Waveform. Segments
(1/5)	Segment	Points	Sequence	Segs	
	AGT.WAVEFORM	224000	256_SEQ_TEST	256	Display Markers⊧
	ARBIJITTER	50000	BAD_SEQ2	1	
	CDMA2K_PILOT_WFM	131072	BIG_SEQ_TEST	1	
	GSM_1C_BURST_WFM	312564	GSM EDGE BASIC	1	Goto Row▶
	JITTER JITTER 2	50000 50000	LONG_SEQ NEW PATTERN 1	31744 2	
	N7600B-1	153600	NEW PATTERN 2	2 4	
	RAMP_TEST_WFM	200	RECURSE_TEST	1	Page Up
	REALSECURE	200	RECURSE_TEST1	1	
	SECURETEST	200	RECURSE_TEST10	1	
			04/02/20	10 16:00	Page Down

- 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.

FREQU	ENCY 2.000 0	00 000	00 GHZ	AMPLITUDE -10.0	O dBm	Load Store
			ARB	ENVLP 1/Q	RF HOD ON ON	Store Segment To NVWFM Memory
UF#1	~====1000=	painta free	NULIFII	~100.770004	painta (neo	Store All To NVWFM Memory
(1/2)	Segment	points free Points		~1684778291 Segment	Points free Points	
	AGT.WAVEFORM ARBIJITTER	224000 50000		AGT.WAVEFORM ARBIJITTER	224000 50000	Delete Segment⊧
	CDMA2K_PILOT_WFM GSM_1C_BURST_WFM JITTER	131072 312564 50000		MA2K_PILOT_WFM M_1C_BURST_WFM JITTER	131072 312564 50000	Delete All WFM1 Files
	JITTER_2 N75008-1	50000 153500		JITTER_2 N7600B-1	50000 153600	Rename Segment
	RAMP_TEST_WFM REALSECURE SECURE TEST	200 200 200		REALSECURE SECURETEST A3GPP_WAVEFORM	200 200 268800	
					2010 16:09	Goto Roµ▶

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.

FR	EQUENCY	2.000 000	000 00 GHz	AMPLITUDE -10.00	dBm	Add Waveform To First⊳ Available Slot
			ARB	ENULP I/Q	RF HOD ON ON	Replace Waveform. In Slot
L	laveform	Licensing		Licenses Us	ed: 2/5	Clear Waveform From Slot
	\$1ot 1 2			1ename 6008-1		Lock Waveform In Slot
	3 4 5	Available Available Available				Play Waveform
						Locate Waveform in Memory
				04/02/201	lO 16:11	Goto Slot▶

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



Be sure to keep a backup copy of the waveform.

FREQUENCY 2.000 000 000 00 GHz AMPLITUDE ARB -10.00 dBm ENULP I/Q BF UOD	Confirm Locking Waveform
*** Waveform Lock Warning!!! *** Once a waveform is locked it will use up an available license slot and it can not be un-locked. Be sure that you want to lock this waveform. Important! Keep a backup copy of the waveform elsewhere in case you delete all files in Int Storage.	
04/02/2010 15:15	

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

FREQUEN	2.000 000 00)0 00 GHz -10.00 dBm	Add Waveform To First∳ Available Slot
		ARB ENULP I/Q ON ON	Replace Waveform⊳ In Slot
	rm Licensing	Licenses Used: 2/5	Clear Waveform From Slot
Slot	Status Lock Required Locked 04/02/2010	Filename N7600B-1	Lock Waveform⊳ In Slot⊳
3 4 5	Available Available Available		Play Waveform
			Locate Waveform in Memory
		04/02/2010 16:17	Goto Slot▶

Evaluating and Locking Waveforms to License Slots

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.

IQ Analy LXI	yzer (Basic) - Complex Spectrum RFIO1 50 ג DC PNO: Wide IFGain:Auto		Multi-Pack Licenses
Licen	ises Used: 6/50		Waveform
Slot	Status	Filename	
1	LOCKED: 8/18/2010	sample.wfm	Replace
2	LOCKED: 8/19/2010	GSM_1C_BURST.WFM	Waveform
3	Remaining Trial Time: 28 hours	EDGE_1C_BURST.WFM	
4	Remaining Trial Time: 28 hours	WCDMA_BasicTM1_64DPCH.wfm	
5	Remaining Trial Time: 45 hours	CDMA2K_9CHAN.WFM	Clear Waveform
6	Remaining Trial Time: 47 hours	EDGE_1TS_WFM1.wfm	from Slot
			Lock Waveform in Slot

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.

IQ Analyzer (Basic) - Complex Spectrum		(Prototype - Limit	ted Sale Allowed)	
	0: Wide 😱 Trig:	SENSE:INT ALIGNAUTO er Freq: 100.000000 MHz Free Run Avg Hold:>25/25 : 6 dB (Elec 0)	11:30:03 AM Aug 19, 2010	HDD Segments
Current Directory: D:\NVARB		Available ARE	3 Memory: 2 GB	To ARB Memory
Segments on HDD	Size (KB)	Segments in ARB Memory	Size (KB)	
CDMA2K_9CHAN.WFM	1280	2		Load Al
CDMA2K_PILOT.WFM	640			To ARB Memory
EDGE_1C_BURST.WFM	1221			
EDGE_1TS_WFM1.wfm	317			
EDGE_BURST.WFM	9521			
GSM_1C_BURST.WFM	1221			
GSM_1TS_WFM1.wfm	317			
GSM_BURST.WFM	9521			
MT_31TONES_2MHZSPC.WFM	0			
MT_7TONES_2KHZSPC.WFM	6			
N7600B-1.wfm	937			
QAM16.WFM	320			
QPSK.WFM	320			

4. Press Load Segment to ARB Memory.

IQ Analyzer (Basic) - Complex Spectrum	nara antos nara asonabiciona	(Prototype - Limit	ted Sale Allowed)	
	NO: Wide 🕟 🗖 Trig: I	SENSE:INT ALIGNAUTO er Freq: 100.000000 MHz Free Run Avg Hold:>25/25 : 6 dB (Elec 0)	11:32:50 AM Aug 19, 2010	HDD Segments
Current Directory: D:\NVARB	Gam.Auto		3 Memory: 1.990 GB	Load Segment To ARB Memory
Segments on HDD	Size (KB)	Segments in ARB Memory	Size (KB)	
CDMA2K_9CHAN.WFM	1280	N7600B-1.wfm	9600	Load Al
CDMA2K_PILOT.WFM	640			To ARB Memory
EDGE_1C_BURST.WFM	1221			
EDGE_1TS_WFM1.wfm	317			
EDGE_BURST.WFM	9521			
GSM_1C_BURST.WFM	1221			
GSM_1TS_WFM1.wfm	317			
GSM_BURST.WFM	9521			
MT_31TONES_2MHZSPC.WFM	0			
MT_7TONES_2KHZSPC.WFM	6			
N7600B-1.wfm	937			
QAM16.WFM	320			

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

IQ Analyzer (Basic) - Complex Spectrum		(Prototype - Limite	d Sale Allowed)	
X RFI01 50 Ω DC Sample Rate 125.0000000	PNO: Wide 🕟 Trig: Free Run Avg	ALIGN AUTO Hz Hold:>25/25	11:35:17 AM Aug 19, 2010	Add Waveform
Licenses Used: 7/50	IFGain:Auto Atten: 6 dB (Elec 0)			Add Waveform
Waveform		Status		
N7600B-1.wfm				
	Add Waveform to License Slot	×		
	This will assign the selected waveform is assi slot. Once the waveform is assi cannot be undone. Are you sure you want to do thi	gned to the slot it		
	Press Enter to process or Esc to			Cogmonto on
				Segments on Hard Disk
d				

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.

IQ Analy	rzer (Basic) - Complex Spectrum	(Prototype - Limited Sale Allowed)	
Cente	er Freq 1.000000000 GHz PNO: Wide	SENSE:INT ALIGN AUTO 12:01:30 PM Aug 19, 2010 Center Freq: 1.000000000 GHz Trig: Free Run Avg Hold:>25/25 Atten: 6 dB (Elec 0) Avg Hold:>25/25	Multi-Pack Licenses
Licen	IFGain:Auto ses Used: 7/50		Add Waveform
Slot	Status	Filename	
1	LOCKED: 8/18/2010	sample.wfm	Replace
2	LOCKED: 8/19/2010	GSM_1C_BURST.WFM	Waveform
3	Remaining Trial Time: 27 hours	EDGE_1C_BURST.WFM	
4	Remaining Trial Time: 27 hours	WCDMA_BasicTM1_64DPCH.wfm	
5	Remaining Trial Time: 44 hours	CDMA2K_9CHAN.WFM	Clear Waveform
6	Remaining Trial Time: 47 hours	EDGE_1TS_WFM1.wfm	from Slot
7	Remaining Trial Time: 47 hours	N7600B-1.wfm	
			Lock Waveform in 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.

IQ Analy (XI	zer (Basic) - Complex Spectrum RFIO1 50 Q DC PNO: Wide IFGain:Auto	(Prototype - Limited Sale Allowed) SENSE:INT RF OFF MOD ALIGN AUTO D1:26:33 PM Aug 19, 2010 Center Freq: 1.000000000 GHz Trig: Free Run Avg Hold>25/25 Atten: 6 dB (Elec 0) Auge 10, 2010	Multi-Pack Licenses
Licen	ses Used: 7/50		Waveform
Slot	Status	Filename	-
1	LOCKED: 8/18/2010	sample.wfm	Replace
2	LOCKED: 8/19/2010	GSM_1C_BURST.WFM	Waveform
3	Remaining Trial Time: 26 hours	EDGE_1C_BURST.WFM	
4	Remaining Trial Time: 26 hours	WCDMA_BasicTM1_64DPCH.wfm	
5	Remaining Trial Time: 43 hours	CDMA2K_9CHAN.WFM	Clear Waveform
6	Remaining Trial Time: 46 hours	EDGE_1TS_WFM1.wfm	from Slo
7	Remaining Trial Time: 46 hours	N7600B-1.wfm	
			Lock Waveform in Slo

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.

	Q Analyzer (Basic) - Complex Spectrum RFI01 50 Q DC PNO: Wide PNO: Wide IFGain:Auto PSes ses 7/50	(Prototype - Limited Sale Allowed) SENSE:INT RF OFF MOD ALIGNAUTO D1:28:35 PM Aug 19, 2010 Center Freq: 1.00000000 GHz Trig: Free Run Avg Hold:>25/25 Atten: 6 dB (Elec 0)	Multi-Pack Licenses Add Waveform
Slot	Status	Filename	
1 2	LOCKED: 8/18/2010 LOCKED: 8/19/2010	sample.wfm GSM_1C_BURST.WFM	Replace ₩aveform
3 4	Remaining Trial Time: 26 hours Remaining Trial Time: 26 hours	EDGE_1C_BURST.WFM WCDMA_BasicTM1_64DPCH.wfm	Clear Waveform
5 6	Remaining Trial Time: 43 hours Remaining Trial Time: 46 hours	CDMA2K_9CHAN.WFM EDGE 1TS WFM1.wfm	from Slot
	Remaining Trial Time: 46 hours	Lock Multi-Pack License Slot This will lock the selected multi-pack slot. Once the slot is locked the waveform assigned to it cannot be changed. Are you sure you want to do this? Press Enter to process or Esc to Cancel	Lock Waveform in Slot
		OK Cancel	

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

IQ Analy	zer (Basic) - Complex Spectrum	(Prototype - Limited Sale Allowed)	
LXI	RFIO1 50 Ω DC PNO: Wide ⊂ IFGain:Auto	SENSE:INT RF OFF MOD ALIGN AUTO D1:35:41 PM Aug 19, 2010 Center Freq: 1.000000000 GHz Trig: Free Run Avg Hold:>25/25 Atten: 6 dB (Elec 0) Avg Hold:>25/25	Multi-Pack Licenses
Licen	ses Used: 7/50		Waveform
Slot	Status	Filename	-
1	LOCKED: 8/18/2010	sample.wfm	Replace
2	LOCKED: 8/19/2010	GSM_1C_BURST.WFM	Waveform
3	Remaining Trial Time: 26 hours	EDGE_1C_BURST.WFM	-
4	Remaining Trial Time: 26 hours	WCDMA_BasicTM1_64DPCH.wfm	
5	Remaining Trial Time: 43 hours	CDMA2K_9CHAN.WFM	Clear Waveform
6	Remaining Trial Time: 46 hours	EDGE_1TS_WFM1.wfm	from Slot
7	LOCKED: 8/19/2010	N7600B-1.wfm	
			Lock Waveform in Slot



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