Agilent M9330A Series PXI-H Arbitrary Waveform Generator

Option Y1176A Synchronization Cable Kits

Installation Note

Edition, January 7, 2011

M9330-90007

Agilent Technologies

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Installation

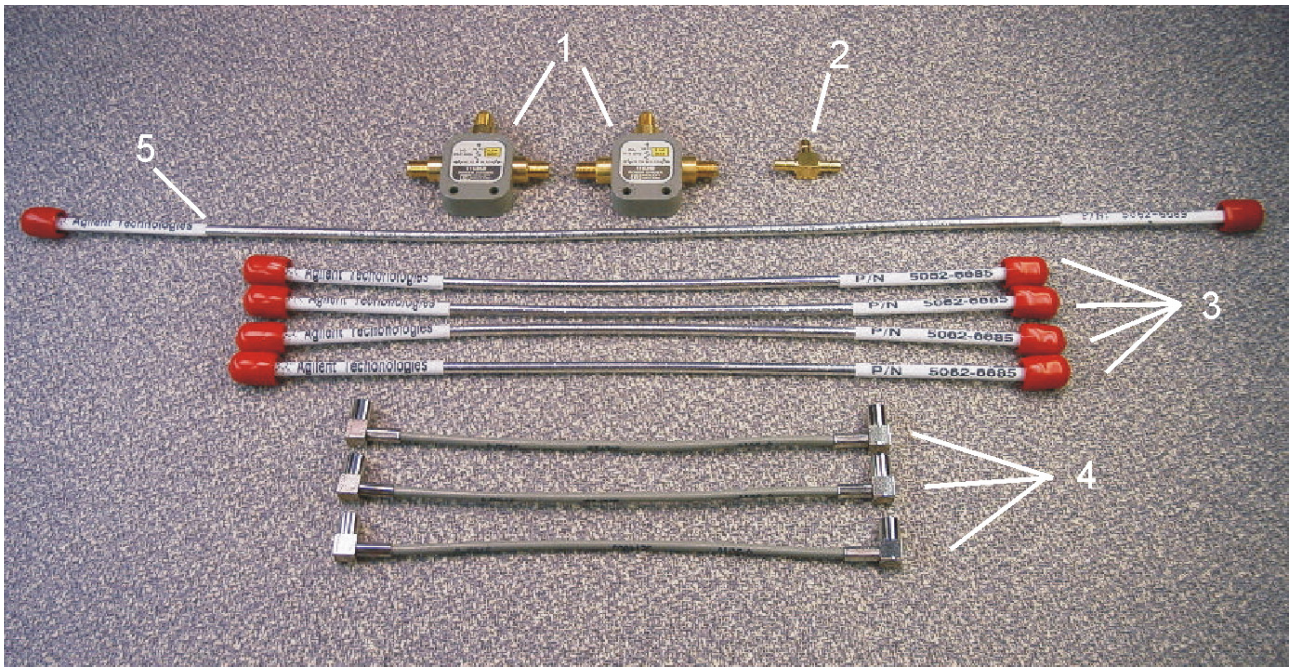
1.0 GHz Clock Rate

Description

The Agilent Technologies M9330A Series AWG Module Synchronization Cable Kit is designed for use with a clock rate of 1.0 GHz. The cable kit is a set of eight cable assemblies, one adapter, and two power dividers that provide the necessary interconnection for two-M9330A Series AWG module synchronization.

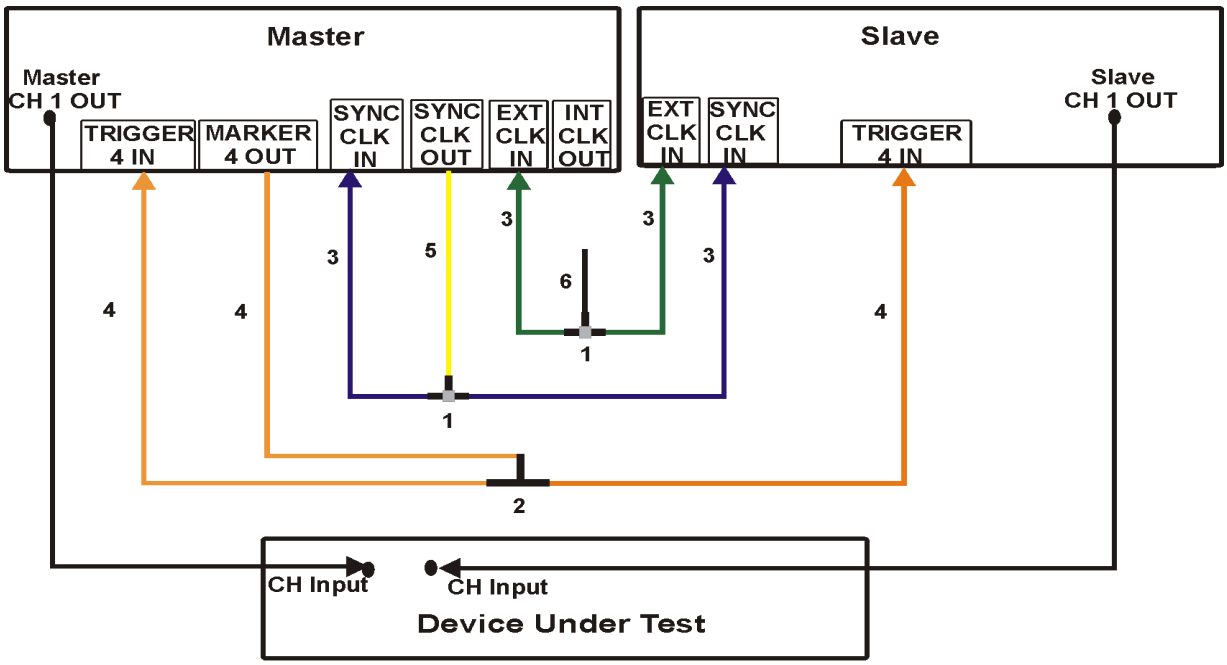
Cable Kit Contents

Figure 1 Cable Kit Contents



Item	Quantity	Description	Part Number
1	2	DC to 26.5 GHz power divider, APC 3.5	11636B-FG
2	1	Adapter-Coax Tee	1250-0670
3	4	Cable Assembly 10 in SMA	5062-6685
4	3	Cable Assembly	8120-5016
5	1	Cable Assembly 16 in SMA	5062-6689

Cabling, 1.0 GHz Clock Rate



1 — Power divider
2 — SMB Adapter Tee
3 — SMA Cable Assembly 10 in
4 — SMB Cable Assembly
5 — SMA Cable Assembly 16 in
6 — External Clock In

Note: The CH 1 OUT customer furnished cables from the Master and Slave modules must be of equal length.
The external clock cable is also customer furnished.

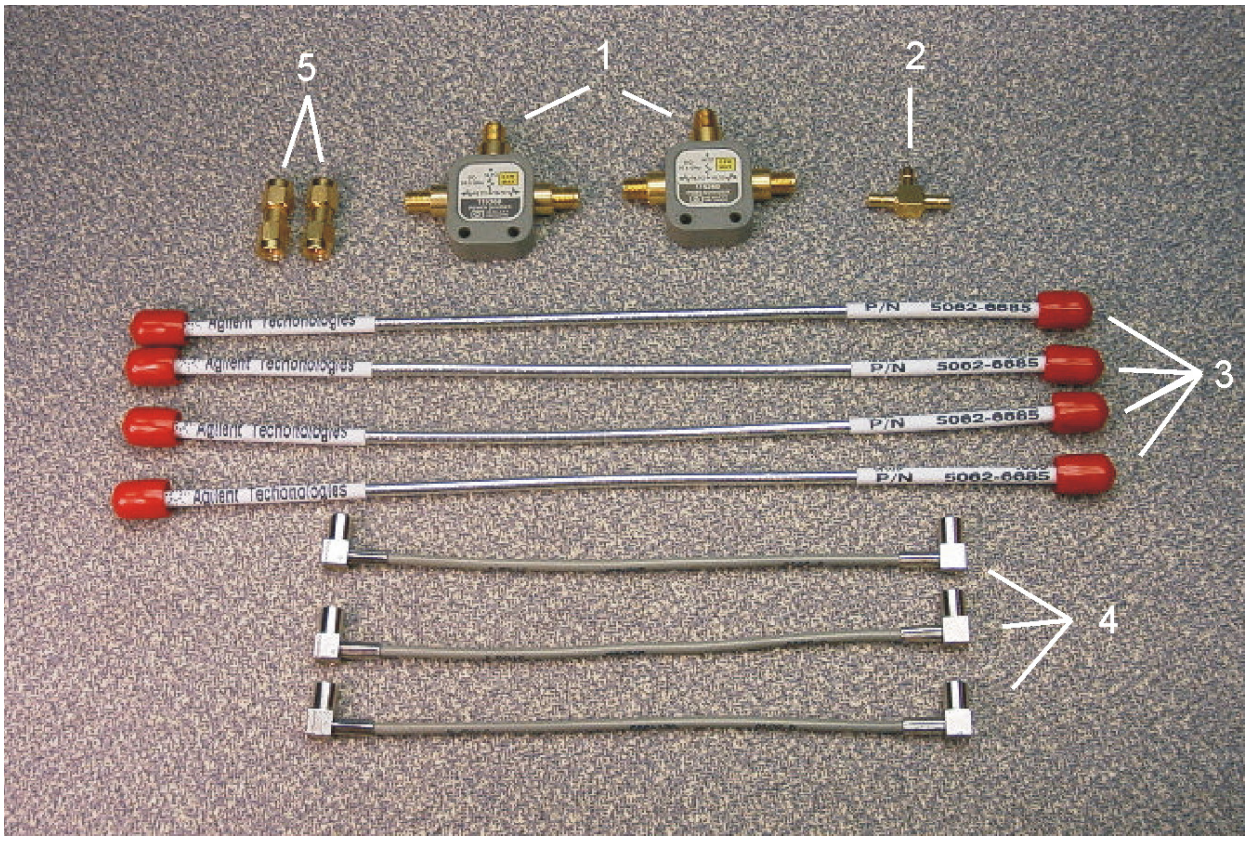
1.25 GHz Clock Rate

Description

The Agilent Technologies M9330A Series AWG Module Synchronization Cable Kit is designed for use with internal clock rate of 1.25 GHz. The cable kit is a set of seven cable assemblies, three adapters, and two power dividers that provide the necessary interconnection for two-M9330A Series AWG module synchronization.

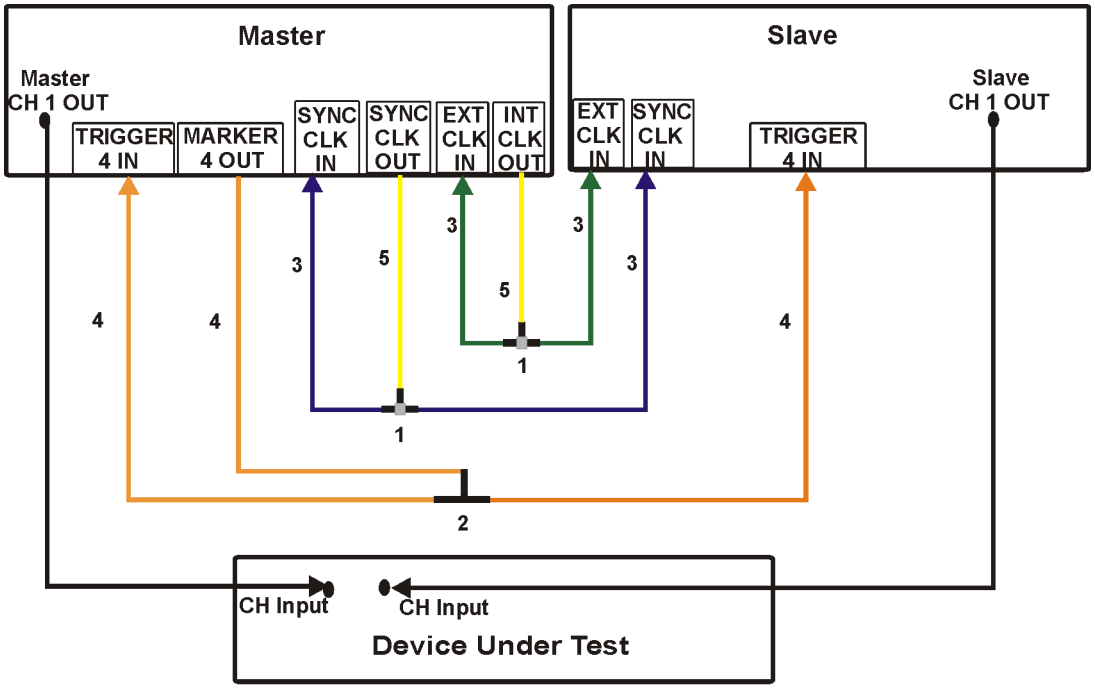
Cable Kit Contents

Figure 2 Cable Kit Contents



Item	Quantity	Description	Part Number
1	2	DC to 26.5 GHz power divider, APC 3.5	11636B-FG
2	1	Adapter-Coax Tee	1250-0670
3	4	Cable Assembly 10 in SMA	5062-6685
4	3	Cable Assembly	8120-5016
5	2	Adapter	1250-1788

Cabling, 1.25 GHz Clock Rate



1 — Power divider
2 — SMB Adapter Tee
3 — SMA Cable Assembly 10 in
4 — SMB Cable Assembly
5 — Adapter

Note: The CH 1 OUT customer furnished cables from the Master and Slave modules must be of equal length.

Synchronizing Two M9330A Series AWG Modules

Internal Clock Synchronization Using Continuous Mode

When synchronizing two-M9330A Series AWG modules using the internal clock, one unit is designated as the Master and the other unit is designated as the Slave. The Master unit sources the sample clock and the sync clock signals. These signals are split and fed to the synchronized modules (the Master as well as the Slave).

The internal sample clock operates at 1.25 GHz and provides the final retiming of the analog output from each M9330A Series AWG module. Any skew in the sample clock cable delays between the modules will result in the same skew in the analog outputs. The sample clock signal is split with a matched passive divider and the cable lengths are matched. The resulting skew is small and repeatable.

Required Equipment

- M9330A Series AWG module
- PXI compliant chassis
- Embedded controller or PXI interface link
- Cable Kit

Customer Furnished Cables

- SMA to BNC Cable (2 each, equal length)

Procedure Using a Software Marker

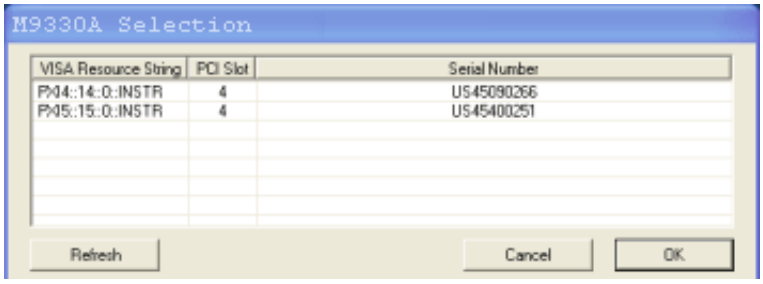
1 Start with the system turned off.

2 Cable the equipment.

Selecting the Master Unit

1 Open an **M9330A Control Utility** session (double-click the **M9330A** icon on the desktop).

2 Highlight the Master unit in the **M9330A Selection** window list and click **OK**.



1 Select the desired signal conditioning path.

2 Select the desired waveform file.

3 Select the Clock tab.

4 From the **SYNC CLK IN** drop-down list, select **Master**.

Notice the following changes to the graphical user interface that are automatically configured when the Master unit is assigned:

Clock tab

- the internal clock is no longer driving the sample clock
- the sample clock and sync clock out are driven by the external clock in signal
- the sync clock in signal communicates with the sequencer

Markers tab

- Marker 4 is assigned to a Software marker and is grayed out

Triggers tab

- Start trigger is assigned to Trigger 4 and is grayed out

Selecting the Slave Unit

1 Open a second **M9330A Control Utility** session.

2 Highlight the unit designated as the Slave in the **M9330A Selection** window list and click **OK**.

3 Select the desired signal conditioning path

4 Select the desired waveform file.

5 Select the **Clock** tab.

6 From the **SYNC CLK IN** drop-down list, select **Slave**.

Notice the changes to the graphical user interface that are automatically configured when the Slave unit is assigned:

Clock tab

- the internal clock is disabled
- the sample clock is driven by the external clock in signal
- the sync clock out is disabled
- the sync clock in signal communicates with the sequencer

Triggers tab

- Start trigger is assigned to Trigger 4 and is grayed out

Initiating Synchronous Playback

1 In the **Quick Play** area of the Slave GUI, select **Play**. This arms the waveform playback.

2 In the **Quick Play** area of the Master GUI, select **Play**. This initiates synchronous waveform playback.

NOTE You can view the output on an oscilloscope by setting **Marker 1** on the **Master** module to **Waveform Start** and cabling the marker output to trigger the oscilloscope.

External Clock Synchronization Using Continuous Mode

When synchronizing two modules using an external clock, one unit is designated as the Master and the other unit is designated as the Slave. The Master unit sources the sample clock and the sync clock signals. These signals are split and fed to the synchronized modules (the Master as well as the Slave).

The external sample clock provides the final retiming of the analog output from each AWG. Any skew in the sample clock cable delays between the modules will result in the same skew in the analog outputs.The sample clock signal is split with a matched passive divider and the cable lengths are matched. The resulting skew is small and repeatable.

Required Equipment

- M9330A Series AWG module
- PXI compliant chassis
- Embedded controller or PXI interface link
- Cable Kit

Customer Furnished Cables

SMA to BNC Cable (2 each, equal length)

Procedure Using a Software Marker

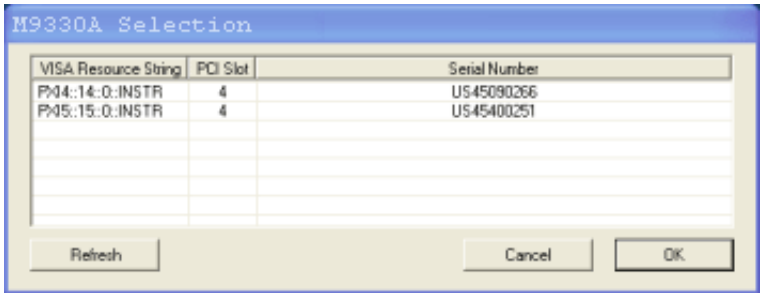
1 Start with the system turned off.

2 Cable the equipment.

Selecting the Master Unit

1 Open an **M9330A Control Utility** session (double-click the **M9330A** icon on the desktop).

2 Highlight the Master unit in the **M9330A Selection** window list and click **OK**.



3 Select the desired signal conditioning path.

4 Select the desired waveform file.

5 Select the **Clock** tab.

6 Enable **EXT CLK IN**.

7 Enter the external clock frequency.

8 From the **SYNC CLK IN** drop-down list, select **Master**.

Notice the following changes to the graphical user interface that are automatically configured when the Master unit is assigned:

Clock tab

- the internal clock is no longer driving the sample clock
- the sample clock and sync clock out are driven by the external clock in signal
- the sync clock in signal communicates with the sequencer

Markers tab

- Marker 4 is assigned to a Software marker and is grayed out

Triggers tab

- Start trigger is assigned to Trigger 4 and is grayed out

Selecting the Slave Unit

1 Open a second **M9330A Control Utility** session.

2 Highlight the unit designated as the Slave in the **M9330A Selection** window list and click **OK**.

3 Select the desired signal conditioning path.

4 Select the desired waveform file.

5 Select the **Clock** tab.

6 From the **SYNC CLK IN** drop-down list, select **Slave**.

Notice the changes to the graphical user interface that are automatically configured when the Slave unit is assigned:

Clock tab

- the internal clock is disabled
- the sample clock is driven by the external clock in signal
- the sync clock out is disabled
- the sync clock in signal communicates with the sequencer

Triggers tab

- Start trigger is assigned to Trigger 4 and is grayed out

Initiating Synchronous Playback

1 In the **Quick Play** area of the Slave GUI, select **Play**. This arms the waveform playback.

2 In the **Quick Play** area of the Master GUI, select **Play**. This initiates synchronous waveform playback.

You can view the output on an oscilloscope by setting **Marker 1** on the **Master** module to **Waveform Start** and cabling the marker output to trigger the oscilloscope.