

Supplement to the AMIQ operating manual

The current AMIQ software version 3.05 has been upgraded to 4.00. The modifications are described below.

Previously ...	Now ...
... the hard disk had to be accessed to change a waveform at the AMIQ signal outputs, which involved long loading times.	<p>... the new multisegment waveform feature is available. This is a new waveform which can contain up to 30 partial traces (segments). Once this waveform is loaded into the output RAM of the AMIQ, the partial traces are changed solely by modifying a start address in the output RAM, and thus in the millisecond range.</p> <p>See section 4, Multisegment Waveform</p>
	<p>New option AMIQK16, Digital Standard 802.11b Wireless LAN.</p> <p>WinIQSIM generates signals to the Wireless LAN Standard IEEE 802.11b, which can be output by the AMIQ if option AMIQK16 is enabled.</p> <p>The Wireless LAN Standard 802.11b is a packet-oriented method for data transmission. Data packets are transmitted and received on the same frequency in the time division duplex (TDD), but without a fixed timeslot grid.</p>
... there was a problem controlling the AMIQ via the WinIQSIM RS232 interface in conjunction with Windows 98 and specific controllers. In WinIQSIM, the automatic search for the baud rate set in the AMIQ was sometimes performed only once, after the AMIQ was switched on.	...error eliminated!
In some circumstances problems on the IEC bus (GPIB) may occur: Because of a special feature of the bus – called "High-speed-mode" – which is used on the AMIQ until now, the transmission of the SCPI commands via the IEEE bus may be disturbed (duplicated or missing characters) if the connection cable is long (approx. 5 meter or more) and many units are connected to the bus (approx. 8 units or more).	This difficulty will be solved with the next firmware release V. 4.00 of the AMIQ. Then this feature of the IEC bus is not used any more. With the normal mode of the IEC bus, which is then used, the slowdown is negligible .

Section 4

Multisegment Waveform

Application and structure

In particular when the AMIQ is used in automatic test equipment (ATE), the components to be tested must be operated by a wide variety of test signals. To minimize the test time, the change between the individual test signals must be as rapid as possible. Loading the new signals from the AMIQ hard disk should be avoided, if possible. The multisegment waveform (MWV), which is implemented in the AMIQ as of firmware version 4.00, meets this requirement.

Superficially, an MWV is similar to a standard waveform in the AMIQ. Its maximum length depends on the AMIQ model (4 Msamples with AMIQ03, 16 Msamples with AMIQ04). What makes the MWV special is the fact that it can consist of up to 30 partial traces, the segments.

Each segment can be considered an independent waveform (with its own marker assignment and clock rate). The complete waveform is loaded into the output RAM of the AMIQ, where a segment can be selected and output. It is then possible to change between the segments (partial signals) without reloading the output RAM by simply specifying a new segment index. A rapid change between the partial signals, and, consequently, an acceleration of the test procedure is thus possible.

The structure of the AMIQ output RAM requires the multisegment waveforms to comply with the following conditions:

- Maximally 30 segments.
- The minimum length of each segment must be 128 ksamples (=131 072 samples).
- The segment length in samples must be a multiple of 4.
- For a fast segment change, it is recommended that all segments be generated with the same clock rate. The clock rate can easily be changed in each new segment.

Note: Use the operator program WinIQSIM version 3.80 or higher for easy generation of a multisegment waveform from various partial traces.

The AMIQ ensures compliance with these conditions. The user only needs to specify which standard waveforms in the AMIQ he or she would like to combine to form a multisegment waveform. The AMIQ automatically meets the conditions placed on length by repeating the basic waveform of a segment. Once a multiwaveform has been generated, it can be loaded and output like any other waveform. The next subsection describes the operating steps for generating an MWV.

Generation of a multisegment waveform

Before generating an MWV, transfer to the AMIQ hard disk all standard waveforms you want to combine to form an MWV. You can then perform all further steps via a few remote-control commands.

When generating an MWV, three parameters must be specified:

1. *Source waveform file to append:* The standard waveform or its file path on the AMIQ hard disk which is to be appended as the next (or first) segment to the current multisegment waveform.
2. *Destination multi segment waveform file:* The multisegment waveform to be generated or extended.
3. *Comment:* A comment on the entire MWV, which can later be read from the MWV, and which facilitates file management and selection.

There are the following two commands to generate an MWV:

Set first segment

:MMEMory:MWV:FIRStsegment 'Source waveform file to start','Destination multi segment waveform file','Comment'

If this command is transmitted to the AMIQ, a new MWV is created on the AMIQ hard disk. This MWV consists only of the segment selected from the *Source waveform file to start* parameter. An existing MWV of the same name will be overwritten.

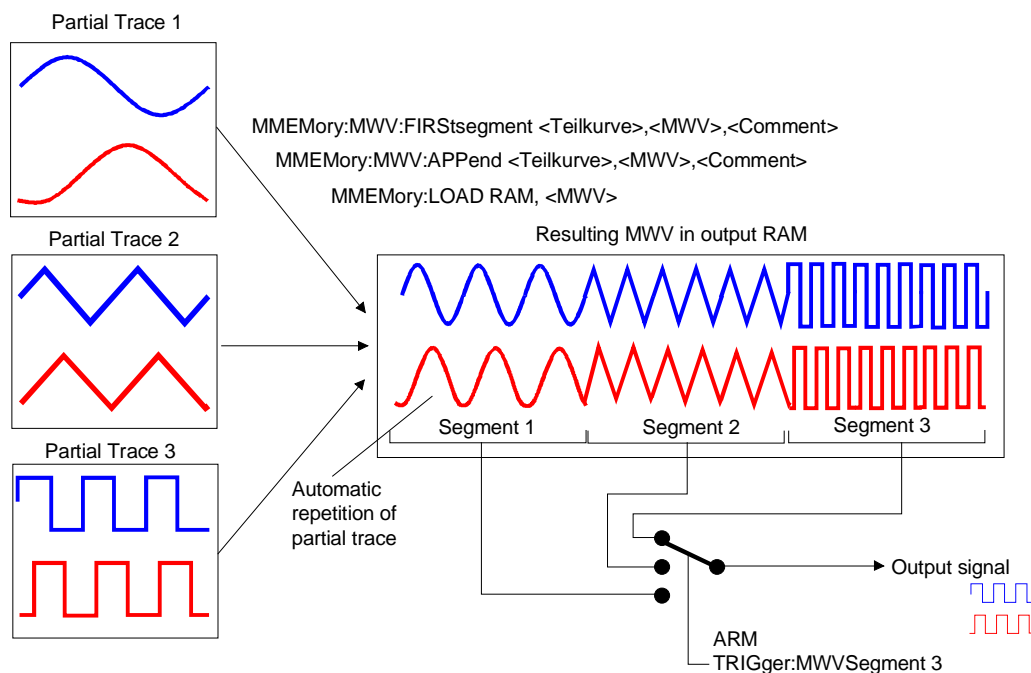
Example: :MMEM:MWV:FIRS 'SEG1.WV', 'MYMWV.WV', 'COMMENT'

Append segment

:MMEMory:MWV:APPend 'Source waveform file to append','Destination multi segment waveform file','Comment'

This command appends the segment selected from the *Source waveform file to append* parameter to the MWV selected.

Example: :MMEM:MWV:APP 'SEG2.WV', 'MYMWV.WV', 'COMMENT'
 :MMEM:MWV:APP 'SEG3.WV', 'MYMWV.WV', 'COMMENT'
 :MMEM:MWV:APP 'SEG4.WV', 'MYMWV.WV', 'COMMENT'



Generation of a multisegment waveform from partial traces

Possible error messages in the AMIQ error queue when generating an MWV

- *Selected waveform is a multi segment waveform but has to be a standard waveform:* It is not possible to append segments which are multisegment waveforms themselves. Please select a standard waveform to be appended.
- *Selected waveform is a standard waveform but has to be a multi segment waveform:* Please select an existing (or new) MWV as destination for Append or Set first.
- *Maximum number of segments (30) in destination waveform file exceeded:* The maximum number of 30 segments of an MWV in the AMIQ cannot be exceeded.
- *Resulting waveform length in destination MWV exceeds maximum length:* The maximum total length of an MWV (4 Msamples or 16 Msamples, depending on the AMIQ model) is exceeded. The new segment can no longer be appended.

Deleting segments of a multisegment waveform

If a segment of a multisegment waveform is no longer required, or if the maximum segment number in an MWV has been reached and a segment is to be replaced, the Delete Segment function can be used. The generation of a completely new MWV is thus not necessary. The segment which is no longer required can be simply deleted from the trace, and a new segment appended. The segment indices of all segments behind the deleted segment are decremented by 1 via the *MMEMory:MWV:DELeTe 'Multi Segment Waveform file', <Segment to delete>* command. In the *Multi Segment Waveform file* parameter, select the MWV from which a segment is to be deleted. To do so, indicate the index of the segment to be deleted under *Segment to delete*. If the MWV consists of only one segment and you delete it, the entire MWV file is removed from the AMIQ hard disk.

Example: :MMEM:MWV:APP 'MYMWV.WV', 2

Output of multisegment waveform segments

To output the partial segments of an MWV, load the MWV from the hard disk into the output RAM of the AMIQ, using the same commands as for a standard waveform (:MMEMory:LOAD RAM 'Multi Segment Waveform file'). If the signal output is started (e.g. via ARM and TRIG), the first segment of the MWV is output automatically. Use the *TRIGger:MWVS <Segment Index>* command to select a specific segment from the MWV. The segment selected is then output automatically.

Restrictions during the MWV output

The following minor restrictions apply during an MWV output:

- The GATED trigger operating mode (:TRIGger:MODE GATed) is not available.
- Marker lists (:OUTPut:MARKer<1..4>:LIST '0-100:1;200-400:0') cannot be subsequently taken into account.
- Shifting the marker signals (:OUTPut:MARKer<1..4>:DELeTe <shift in samples>) is not possible.
- The output resolution (:OUTPut:RESolution <resolution in bit>) of the I/Q signal cannot be subsequently modified.
- The clock frequency (:SOURce:CLOCK <clockfrequenz>) cannot be subsequently modified.