March 18, 2020

Dear Tektronix Customer:

Thank you for purchasing a Tektronix AWG5200 series Arbitrary Waveform Generator. Our reputation is built on accuracy, precision, and performance. You are a valued customer. We have identified multiple performance issues that may impact some AWG5200 use cases. This document communicates those issues to you.

1. Affected Products

   Tektronix model numbers: AWG5202, AWG5204, and AWG5208

   Description of products: two-, four-, and eight-channel arbitrary waveform generators

   Impacted Serial Range: all

2. Changes to Product Specification

SPEC	BACKGROUND	CHANGE
Channel-to-channel skew	Former AWG5200 documentation specified channel-to-channel skew of +/- 25 ps without identifying a corresponding output mode. Actual AWG5200 channel-to-channel skew is +/- 25 ps in DC High Bandwidth mode. Channel-to-channel skew is higher in AC Direct, AC Amplified, and DC High Voltage modes.	AWG5200 documentation now clarifies that channel-to-channel skew is +/- 25 ps in DC High Bandwidth mode.
Flag skew	The former AWG5200 PV Manual specified flag skew as 500 ns. Actual flag skew exceeds this specification.	An updated AWG5200 PV Manual omits the flag skew specification.

3. Potential Performance Issues

TOPIC	POTENTIAL ISSUE	DETAILS	HOW TO ADDRESS THE POTENTIAL ISSUE
ASYNC trigger mode	ASYNC trigger mode malfunction issues	Using ASYNC trigger mode may cause dropped triggers (up to 5%), corruption of waveforms played in sequence (typically switched first and last waveform samples), and trigger jitter up to +/- 64 waveform samples (+/- 12.8 ns at clock rate of 5 GS/s).	To avoid potential problems associated with ASYNC trigger, use only SYNC trigger mode.

Table Editor corruption	Corruption of waveforms edited using Table Editor	Waveforms edited using the Table Editor may be corrupted upon playback when waveforms are shortened or lengthened using the Table Editor and then played without saving and reloading. The most common form of resulting corruption is incorrect waveform amplitude.	First save and then reload waveforms after editing them using the Table Editor.
Triggered waveforms glitches	Glitches at end of triggered waveforms	Triggered waveforms may present glitches or corruption in the final samples of playback. The most common glitches are missing final samples and incorrect negative amplitude. These glitches are most commonly detected in the default ASYNC trigger mode but can also occur in SYNC trigger mode.	Use SYNC trigger mode instead of ASYNC trigger mode to reduce the frequency of glitches at the end of waveforms.
Gate-end timing variance	Variance between gate-end timing and frame timing at the end of waveforms	Waveforms play in "frames" of 32 samples starting from the first sample. When using triggers (such as asynchronous or frame-synchronous) in SYNC trigger mode, the gate may de-assert itself after the start of a frame while the rest of the frame finishes playing. This would result in a single-frame variance between gate-end timing and the end of waveforms.	Externally synchronize the gate width and frame timing and use a waveform granularity of 32 samples. Timing can be achieved by locking references and adjusting the skew using the 'Skew' tab in the GUI.
Sequence of waveforms	Corrupt playback of waveforms played in sequence	Waveforms with granularity other than 32 samples will display corruption when played in sequence.	Ensure that all waveforms played in sequence are generated with a granularity of 32 samples and use SYNC trigger mode instead of ASYNC trigger mode.

Channel skew values	Individual channel skew values displayed in the GUI may not reflect actual hardware settings	Multiple system actions prompt reset (to zero) of system hardware settings for individual channel skew: changing clock frequency, detecting external clock frequency, switching between internal and external clock, and switching between real and I/Q waveforms. When this reset occurs, the individual channel skew value displayed in the GUI does not reset, resulting in display of incorrect information.	Manually re-enter desired individual channel skew values in the GUI after completing actions that prompt reset of system hardware settings for individual channel skew.
Phase Adjustment values	If switching between internal and external clocks, the range of Phase Adjustment Values users can enter in the GUI is incorrect	The Phase Adjustment range is +/- 24 cycles, the length of which varies according to clock rate (e.g., +/- 24 cycles equates to +/- 9.6 ns at 2.5 GS/s (the lowest clock setting), and +/- 4.8 ns at 5.0 GS/s (the highest clock setting)). When a user switches from an internal clock to an external clock, the range of Phase Adjustment values (in nanoseconds or degrees) accepted by the GUI remains that associated with the internal clock rate which can lead to a mismatch between the Phase Adjustment value entered in the GUI and the actual phase adjustment applied by hardware on output signals.	When switching from internal to external clocks, adjust the Sample Rate value (found in the 'Clock' tab) so that the rate in the GUI matches the frequency of the external clock.

4. Tektronix's Plan

   Tektronix engineers are carefully assessing the root causes of these issues, and options to further correct each through firmware and software development. Our team will provide you with regular updates on these efforts and plans starting in May 2020.

5. Customer Contact for Questions and Feedback

   Please contact your local account manager or other sales representative with any questions or feedback. Our field engineers are standing by to help you optimize new firmware and implement the workarounds described above. Your business is important to us.

Regards,

Amy Taylor
General Manager, Tektronix Performance Solutions