

AN2502: Output Clock/Trigger Generation

A new Clock Generation feature is available from SDK 1.8.11 and applies to the following Isomet Synthesizer model types:

Model	Minimum firmware revision
• iMS4-P	Controller FW v2.5.107
• iCSA-	FW 1.1.30

When this feature is enabled, the Image Clock internally generated by the synthesizer is made available on connector J11 and if enabled, the start of Image Trigger on J10.

Application

This feature is intended for systems where the iMS4 (or iCSA) is configured to be the master timing source.

Pre-condition

In the Player Configuration, the **Image Clock Source** must be set to **Internal**.

The Image Trigger can be set to **No Trigger** or **External Trigger*** depending on the requirement.

* External trigger will only function if the **Generate Trigger Pulse** is not enabled

Output Controls:

- Clock Frequency
- Duty Cycle of clock output on J11
- Phase (or delay) of J11 output relative to the internal update clock
- Polarity of signals
- Continuous Output.

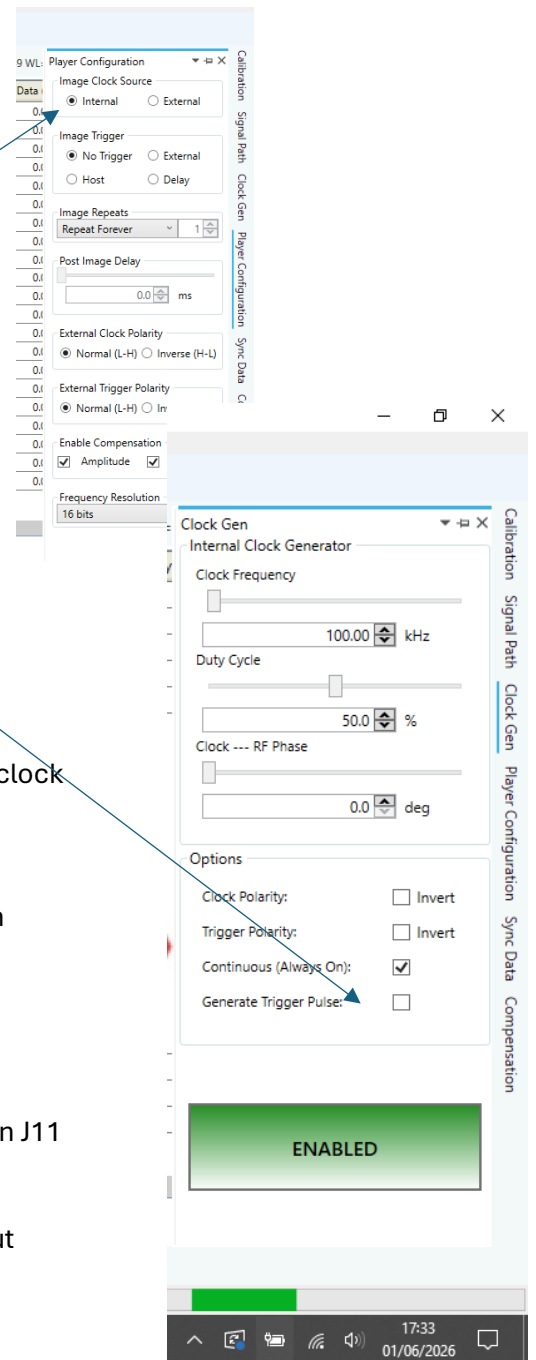
If **checked**, the Clock is always output on J11

If **unchecked**, the Clock is only output for the duration of the Image file.

NOTE:

Duty cycle and Phase relate ONLY to the output clock signal on J11 relative to the internal master clock, updating the RF output.

Do not confuse with the Duty Cycle and Phase of the RF output signals on J1, J2, J3 and J4

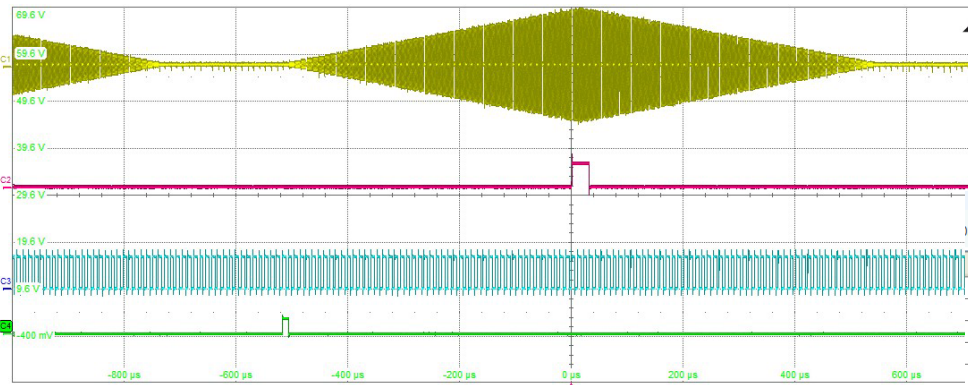


Example waveforms:

An example Image file created for ease of illustration. It comprises of 120 Image points with alternating ON:OFF amplitude values, with the ON points programmed to give a triangular envelope.

- Top trace (C1) = RF output
- Middle trace (C2) = Sync IO output on J7
- Middle trace (C3) = Image Clock output J11
- Lower trace (C4) = Trigger output J10

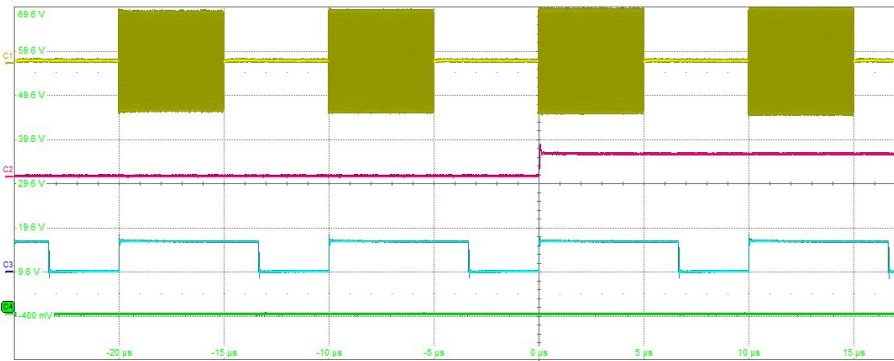
Clock Gen enabled



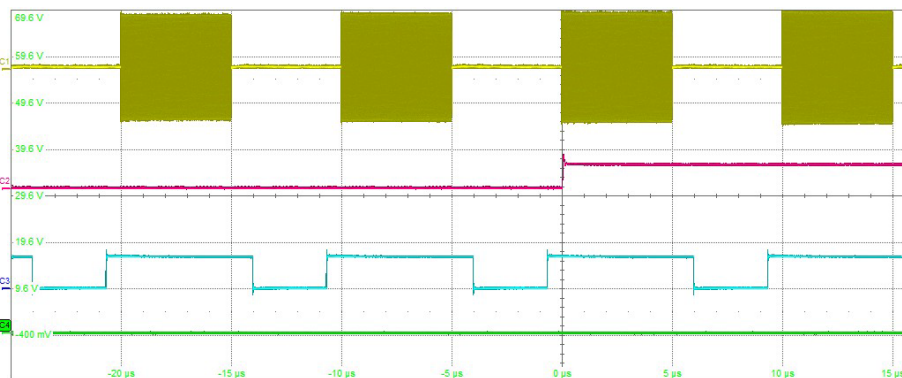
The screenshot shows the 'Clock Gen' configuration window. The 'Internal Clock Generator' section is active. The 'Clock Frequency' is set to 94.63 kHz. The 'Duty Cycle' is set to 55.4%. The 'Clock --- RF Phase' is set to 0.0 deg. Under the 'Options' section, 'Clock Polarity' and 'Trigger Polarity' are unchecked, 'Continuous (Always On)' is checked, and 'Generate Trigger Pulse' is checked. A green 'ENABLED' button is visible at the bottom.

(Zoomed in)

Duty of clock signal from J11 = 55.4%. (Arbitrary value)
Phase 0% = J11 clock edge coincides with active RF output



Duty on J11 = 66.6%. (Arbitrary value)
Phase 25% = rising clock edge on J11 is output in advance of RF output



The screenshot shows the 'Clock Gen' configuration window. The 'Internal Clock Generator' section is active. The 'Clock Frequency' is set to 100.00 kHz. The 'Duty Cycle' is set to 66.6%. The 'Clock --- RF Phase' is set to 25.1 deg. Under the 'Options' section, 'Clock Polarity' and 'Trigger Polarity' are unchecked, 'Continuous (Always On)' is checked, and 'Generate Trigger Pulse' is checked. A green 'ENABLED' button is visible at the bottom.