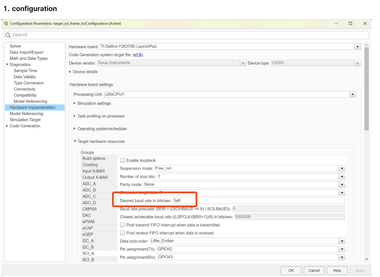
target model

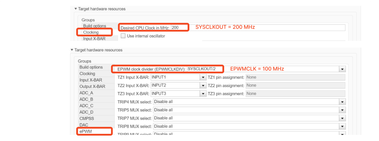
In this example, target transmits more data to the host than from host to target.
The host displays the received data at a slower rate.

0. Objective

target transmits at 20 kHz / 50e-6 s; host receives at 0.03s, i.e. 600 times slower than target's TX.

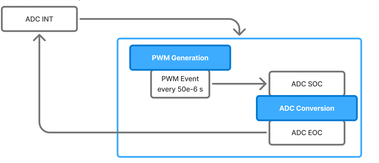
1. configuration





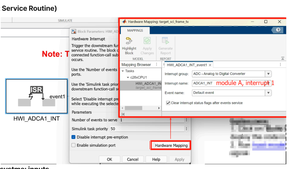
2. function blocks setting

from the diagram, the target's TX rate is determined by the ADC Interrupt, which should be set to 50e-6 s.
then, let's the scheduling



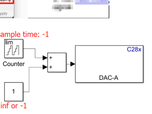
ADC interrupt will trigger a function-call subsystem, in which ADC conversion is done and PWM is generated.
In the function-call subsystem, the PWM generator can be set to generate pulses with period of 50e-6s and generate an event at a condition to enable ADC start of conversion (SOC). So ADC also converts at 50e-6s. At the end of conversion (EOC), ADC should generate an interrupt which is exactly the trigger of the function-call system to close the loop.
Therefore, the function-call subsystem will be executed at 50e-6s.

ISR (Interrupt Service Routine)

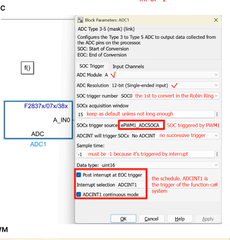


function-call systme: inputs

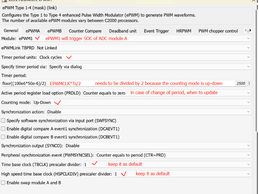
inputs in a system called by an interrupt must be set as '-1'
which means to inherit from the rate of the caller.
constant can be set as inf too.

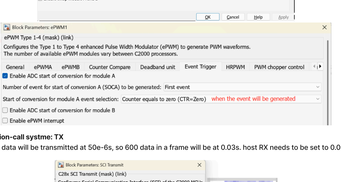


function-call systme: ADC



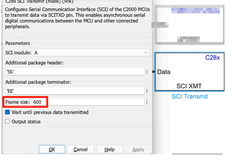
function-call systme: PWM





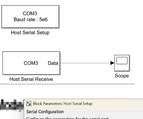
function-call systme: TX

every data will be transmitted at 50e-6s, so 600 data in a frame will be at 0.03s. host RX needs to be set to 0.03s.

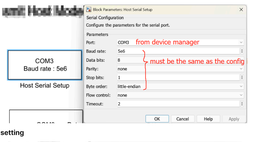


3. Build, Deploy & Start target model

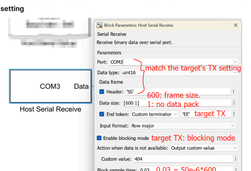
host model



1. configuration

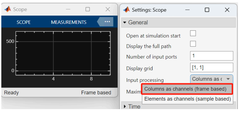


2. function block setting



3. scope setting

to observe the waveform correctly, the input must process columns as channels.



4. run and observe