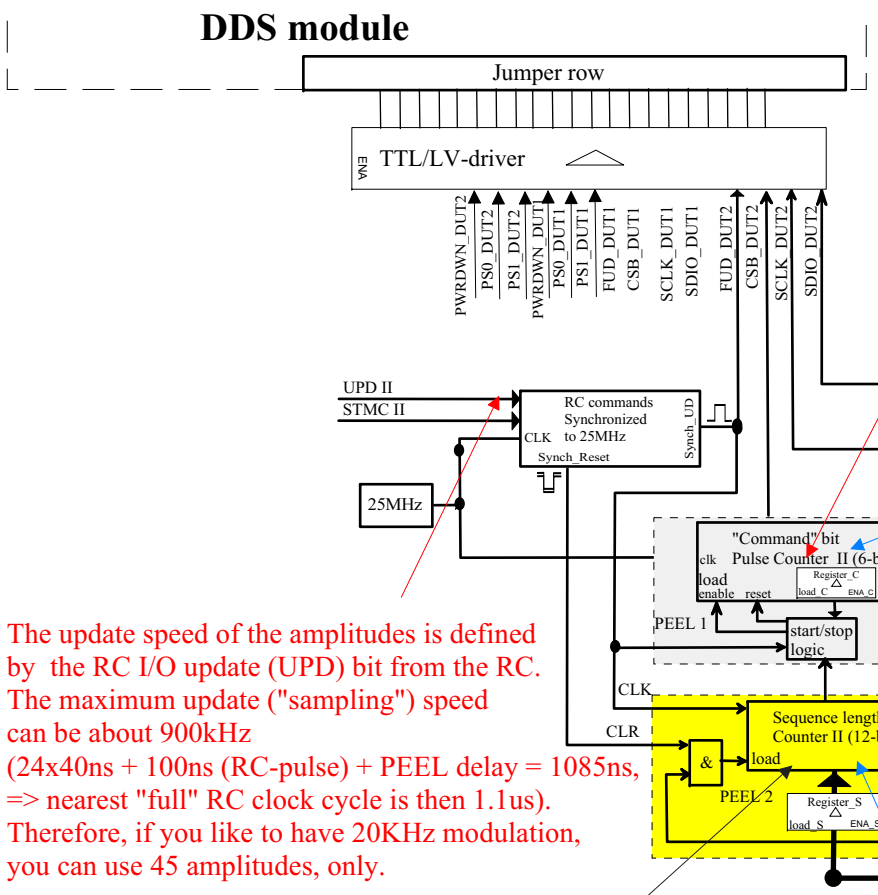
Block diagram of the amplitude modulation logic of the DDS carrier board



The command structure of the AD9953 is
Instruction (1 byte) + data (1 -5 bytes)
.
The loading itself is done in the serial form.
Amplitude loading data is two bytes.
Therefore, the "Command" pulse counter is
generating 24 pulses, when one new amplitude
value is loaded into the AD9953's ASF-register.
The loading takes 24 x 40ns = 960ns.

The "Command" pulse counter is loadable via I/O.

PC-counter value = number of bits in "Command"=
Instruction (1 byte) + data (2 bytes) = 24

Content of the ASF-RAM

Addr	Data	
0000h	02h	ASF-command
0001h	03h	ASF-amp.value 1, D14-D8
0002h	57h	ASF-amp.value 1, D7-D0
0003h	02h	ASF-command
0004h	02h	ASF-amp.value 2, D14-D8
0005h	DCh	ASF-amp.value 2, D7-D0
.....	.....	

The update speed of the amplitudes is defined
by the RC I/O update (UPD) bit from the RC.
The maximum update ("sampling") speed
can be about 900kHz
(24x40ns + 100ns (RC-pulse) + PEEL delay = 1085ns,
=> nearest "full" RC clock cycle is then 1.1us).
Therefore, if you like to have 20KHz modulation,
you can use 45 amplitudes, only.

The maximum number of the memory
locations is 4096 x 3 bytes = 12kbytes.

The loading of the ASF (Amplitude Scale Factors)
memory can be done via I/O. Loading speed is
about 2 kbytes/s. For example, loading 50 amplidutes
into the ASF-memories of the DDS carrier board
takes about 160ms

The sequence length counter is 12-bits, which means
that the maximum number of amplitudes is 4096.

The counter is loadable via I/O.

SC-counter value = number of bytes in "Command" x number of amplitudes (samples)

Romu: My Documents/tekniikka/KST HW/Heating/Block_diag_amp_mod_logic_DDS.dsf

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