

Mapping

1) Functional Description

The mapping operation consists in modulating the inputs bits into symbols (complex signals). In our system, the used mapping is a QPSK (Quadrature Phase-Shift Keying) modulation. This means each symbol is coded by two bits. The architecture of the mapping component is presented in the figure 1. It is composed of a mapping core and a MWMM wrapper. The wrapper is used to interface the core and the MWMM controller available here [VciMwmmController](#).



2) Component definition & usage

Component definition

- source:trunk/soclib/soclib/module/ofdm_chain_components/mapping/caba/metadata/mapping.sd?

Usage

Mapping has a *fifo_depth* parameter, which defines the fifo depth for the input. For example with a FIFO depth equal to 16 :

```
Uses('Mapping', fifo_depth = 16);
```

3) CABA Implementation

CABA sources

- interface :
source:trunk/soclib/soclib/module/ofdm_chain_components/mapping/caba/source/include/mapping.h?
- implementation :
source:trunk/soclib/soclib/module/ofdm_chain_components/mapping/caba/source/src/mapping.cpp?

CABA Constructor parameters

```
Mapping(  
    sc_module_name name,                // Instance name  
    int ncycles) // Number of computation cycles
```

CABA Ports

- `sc_in<bool> p_resetrn` : hardware reset
- `sc_in<bool> p_clk` : clock
- `soclib::caba::FifoOutput<uint32_t> p_to_ctrl` : interface from the mapping to the MWMM controller
- `soclib::caba::FifoInput<uint32_t> p_from_ctrl` : interface from the MWMM controller to the mapping

4) TLM-T Implementation

The TLM-T implementation is not yet available.