



## DVB-T2 Modulator FPGA IP-Core



### DVB-T2 Modulation according to ETSI-EN 302 755 V.1.1.1

- Constellations: QPSK, 16QAM, 64QAM, 256QAM (normal or rotated)
- IFFT Modes: 1k, 2k, 4k, 8k, 16k, 32k (normal or extended)
- Bandwidths: 1.7, 5, 6, 7, 8, 10 MHz
- Implementation using a single 27MHz crystal; other frequencies are possible
- Integrated IF upconverter and interpolation filter
- FEC (LDPC): 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
- Cell Interleaver incl., Time Interleaver optionally
- TS processing (stuffing packets generator, PCR correction)
- No external dependencies
- In conjunction with the AD9772 DAC (I/Q output) or AD9744 DAC (IF output): >27dB MER

### Ressource Requirements

- Altera, Xilinx or Lattice; information on request

maintech GmbH  
Max-Planck-Str. 8  
D-97204 Höchberg  
Germany

Tel +49-(0)931-4070690  
Fax +49-(0)931-4070653

Mail [info@maintech.de](mailto:info@maintech.de)  
Web [www.maintech.de](http://www.maintech.de)

## IP Core

For custom hardware developments, the use of an IP core offers the chance to save on development time and opens the possibility of using existing hardware in new applications. The maintech DVB-T2 IP core is especially suited for this as it was developed with particular attention on the following aspects:

- Flexible configuration depending on available resources and necessary RF processing
- Operation with a single 27MHz crystal
- The modulated signal is available as I/Q baseband or alternatively as a ready-to-use IF signal
- A powerful interpolation filter makes sure that any desired DAC sample rate can be used
- The resulting IF can be chosen freely in steps of a few hundred Hertz
- To compensate for the unavoidable FIFO delay, PCR correction and a stuffing packets generator are available which raises the transport stream rate to the needed transmission rate
- All transmission parameters can be changed during operation of the IP core; changes are immediately applied

## DVB-T2 Modulation

DVB-T2, follow-up of the DVB-T standard, features a higher transmission capacity at the same bandwidth and transmission power. Not only SDTV but HDTV and H.264 data streams can be transmitted in that efficient mode, too. DVB-T2 modulation can also make sense for the transmission of great masses of data or internet services.

maintech's IP-Core unites all advantages of the DVB-T2 modulation: The IP-Core provides a powerful LDPC error correction and features all constellation types as QPSK, 16QAM, 64QAM und 256QAM as well as the new IFFT Modes. MISO processing is featured on request.

Apart from DVB-T, DVB-C and DVB-S IP-Cores there are also IP-Cores for DVB-S2 and DVB-C2 available. You'll find further information on [www.maintech.de](http://www.maintech.de).

## Licensing

The DVB-T2 IP core is available in different configurations. Depending on your budget and wishes, finished binary images or the complete VHDL source code can be delivered – please contact us for a quote for your planned application.

| Constellations   | QPSK, 16QAM, 64QAM, 256QAM (normal / rotated)   |
|------------------|---|
| FEC (LDPC)       | 1/2, 3/5, 2/3, 3/4, 4/5, 5/6 (depending on the constellation type)  |
| Guard Interval   | 1/4, 19/256, 1/8, 19/128, 1/16, 1/32, 1/128   |
| IFFT Modes       | 1k, 2k, 4k, 8k, 16k, 32k (normal / extended)  |
| Bandwidth        | 1.7, 5, 6, 7, 8, 10 MHz   |
| IF Output        | I/Q baseband or continuous between 3.5MHz and 70MHz   |
| Level correction | 0dB down to -40dB   |
| Pilots           | PP1-PP8 (depending on Guard Interval and IFFT)  |
| Interleaver      | Cell Interleaver<br>Time Interleaver: optionally, external RAM necessary                                      |
| TS input         | 8 Bit parallel + clock & sync (SPI), PCR correction included<br>MPEG2-TS<br>GS / BBFrame available on request |
| Platforms        | Altera, Xilinx, Lattice   |
| Language         | VHDL  |
| Dependencies     | none  |