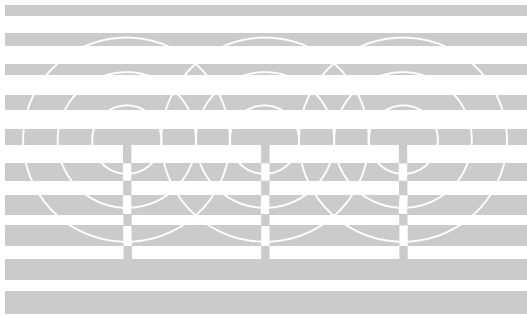


BUILDING BLOCKS FOR 802.11 AND CUSTOMIZED TURNKEY SOLUTIONS SHORT DEVELOPMENT CYCLES WITH WIRELESS IP CORES



The following RTL IP Cores for wireless communications are available for licensing

802.11a Physical layer

1. IFFT-FFT
2. Viterbi convolutional decoder
3. Interleaver for 802.11a
4. Deinterleaver for 802.11a
5. Mapper for 802.11a
6. Demapper for 802.11a

ABOUT THE “IFFT/FFT”

The IFFT/FFT block is a dedicated block optimized for performing radix-4, 64-point IFFT or FFT. It completes one FFT in 192 cycles. It can operate at 160 MHz.

ABOUT THE “VITERBI DECODER”

The Viterbi decoder is capable of performing soft encoding on convolutionally encoded data stream with convolution constant $K = 7$. It can operate at 160 MHz. Most the variables of the Viterbi decoder are parameterized and can be adjusted before synthesis and several others can be programmed during operation. The backtracing depth, which usually is chosen to be equal to $5 \times K$ can be varied during operation. Depuncturing is also supported and the depuncturing algorithm pattern is also programmable.

ABOUT THE “INTERLEAVER”

The interleaver is a hardware dedicated block to perform the interleaving function required by 802.11a. It operates on two bits at a time as they come out of the convolutional coder.

ABOUT THE “DE-INTERLEAVER”

The deinterleaver implements the deinterleaving function required by 802.11a. It operates on soft bits. The size of the soft bits is defined by a parameter that can be specified before synthesis.

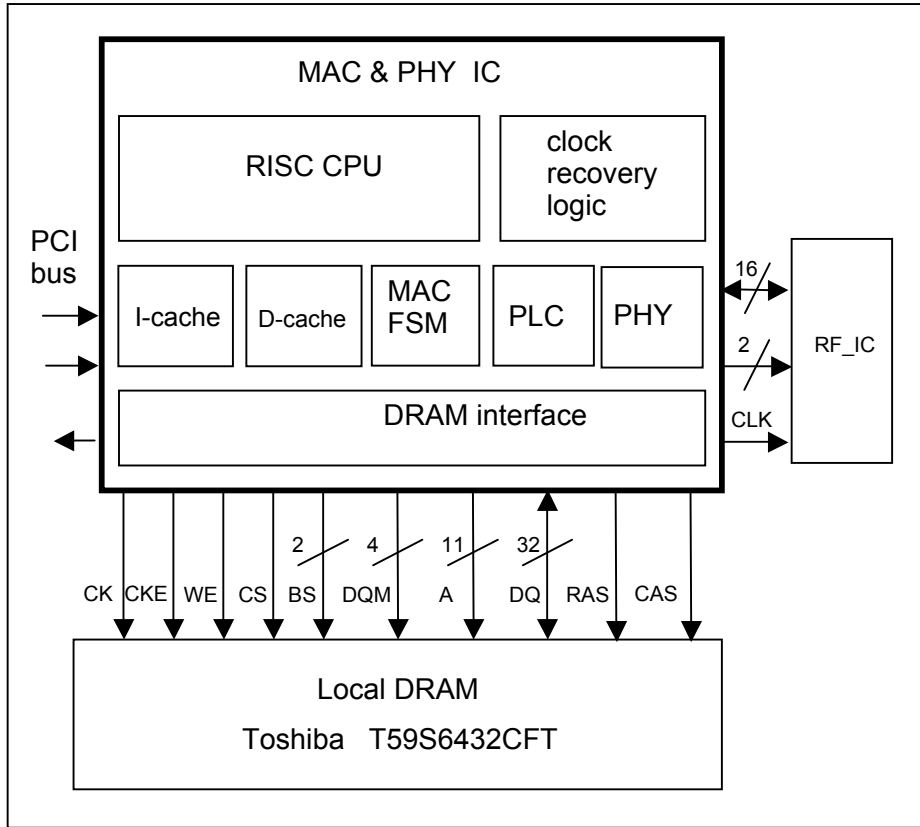
ABOUT THE “MAPPER”

The mapper implements all the mapping functions specified by 802.11a. These consist of BPSK, QPSK, QAM16, QAM64

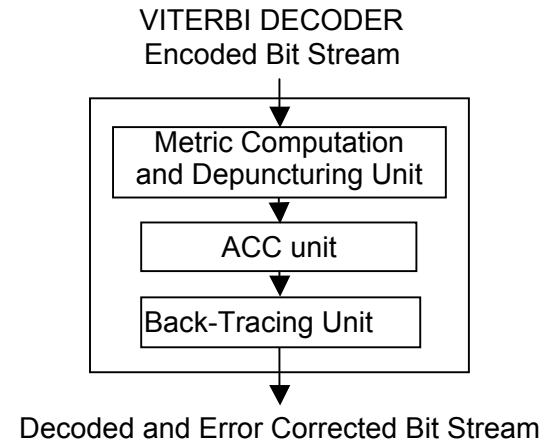
ABOUT THE “DEMAPPING”

The demapper performs the demapping functions of 802.11a generating 4-bit wide soft bits.

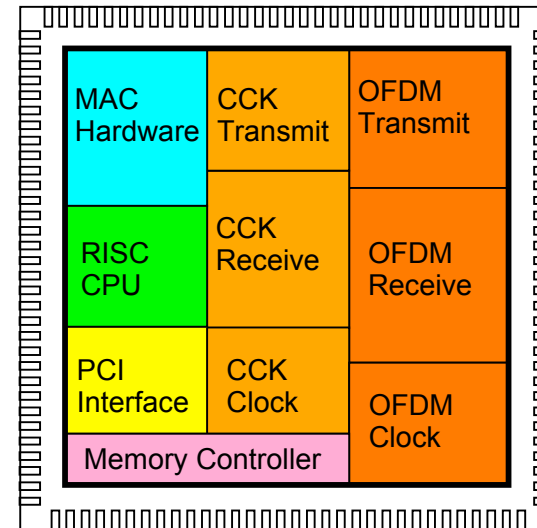
APPLICATION BLOCK DIAGRAM FOR AN 802.11A IMPLEMENTATION



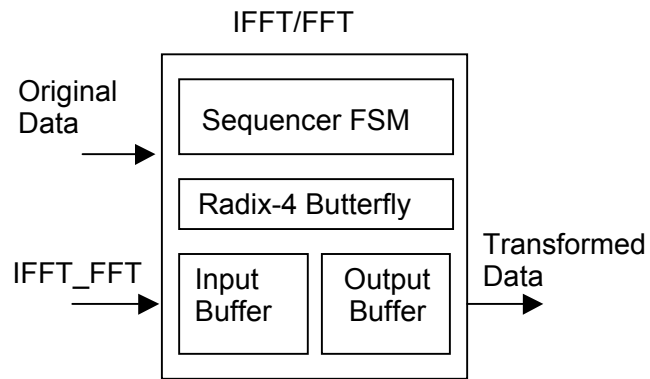
BLOCK DIAGRAM OF THE VITERBI DECODER BLOCK



EXAMPLE OF CHIP LAYOUT



BLOCK DIAGRAM OF THE IFFT/FFT BLOCK



APPLICATIONS

1. **Wireless corporate LANs**
2. **Wireless home LANs**
3. **Wireless video distribution**

PRELIMINARY

All the information contained herein is preliminary. We reserve the right to change the description of the blocks and the services offered, any time and without notice.