TurboCodeBER_WCDMA

Where To Find This Example

Select **Help > Open Examples...** from the menus and type either the example name listed above or one of the keywords below.

Or in Version 13 or higher you can open the project directly from this page using this button. Make sure to select the **Enable Guided Help** before clicking this button.

Open Install Example

Design Notes

Standard Turbo Encoder and Decoder

This example shows how to use of the VSS standard turbo encoder and decoder. TURBO_ENC_STD is a turbo encoder that supports various standard turbo codes. The user can select the appropriate standard, code rate and block length. TURBO_DEC_STD is a typical iterative turbo decoder, which can can be configured automatically using code parameters propagated by the turbo encoder. A BER meter may be used to measure BER and sweep Eb/N0. An AWGN model is used to simulate the propagation channel based on the Eb/N0 setting. Please note that the noise level is set according to Es/N0, which is calculated based on Eb/N0 by using appropriate scaling to account for the coding gain and modulation type.

The turbo decoder can be configured to use various windowing implementations and various Add-Compare-Select (ACS) algorithms. In this example, a standard WCDMA turbo code with rate 1/3 and block length of 2110 is used. The decoder is implementing a full-window recursion using a Log-MAP ACS algorithm and is running 5 iterations. The results of a simplified ACS algorithm, Max Log-MAP, are shown for reference in the BER N2 2110 MaxLogMAP graph. From these results, it may be seen that the Log-MAP ACS algorithm provides a gain of about 0.25 dB compared to the simplified Max Log-MAP. Details for the supported ACS algorithms are provided in the TURBO_DEC_STD element help.

System Diagram - System Diagram 1

Graph - BER

Graph - BER 2110 MaxLogMAP

BER 2110 MaxLogMAP

- Iteration 1
- Iteration 2
- Iteration 3
- Iteration 4
- Iteration 5