Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Block Turbo Codes for 802.16 optional coding**
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Re:	
Abstract	Demonstrates that the current optional coding scheme does provide material gains, refuting claims made in C802.16a-02/59. [Results forthcoming]
Purpose	Defend BTC from claims made in C802.16a-02/59
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Optional Coding Schemes for 802.16

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Optional Coding

This contribution demonstrates that the current optional coding scheme provides material gains over the mandatory coding scheme. The mandatory coding scheme performance is modeled using convolutional codes, using simulation points read off of the graphs in [1]. This paper further demonstrates that the claimed additional gains in [1] beyond the current optional coding scheme are immaterial.

As the thrust of this paper is to respond to [1], there is no new text or changes necessary for the standard.

Performance of Optional FEC Schemes

In this section, we compare the performance of the current optional coding scheme, block turbo codes (BTCs), with parallel concatenated turbo convolutional codes (TCCs). Optimal log likelihood ratios (LLRs) are used by both the BTC and TCC. The TCC LLRs were computed in floating point precision and then quantized internally to the CRC software to 8 bits. The remainder of the processing occurs in 16 bit precision. The one exception to this is for the 64QAM example, where the I and Q values are quantized to 6 bits each, prior to the LLR computation. The BTC simulations assume 7 soft bits for each I and Q value. Bit error rate (BER) and packet error rate (PER) performance is compared for each coding scheme.

While simulations are still in process, we will show that both the TCC and BTC are high performance FEC schemes. We will show that the BTC offers significant advantage over the mandatory coding, and that the TCC is an unnecessary addition to the standard, providing no useful gain over the BTC.

[Results to be inserted here.]

Conclusion

We propose that the BTC remain in the standard as the optional channel coding scheme. The BTC is a proven technology with multiple vendor support, offering significant benefit to the physical layer.

References

[1] Brian Edmonston, “Convolutional turbo codes for 802.16,” IEEE C802.16a-02/59, May 15, 2002.