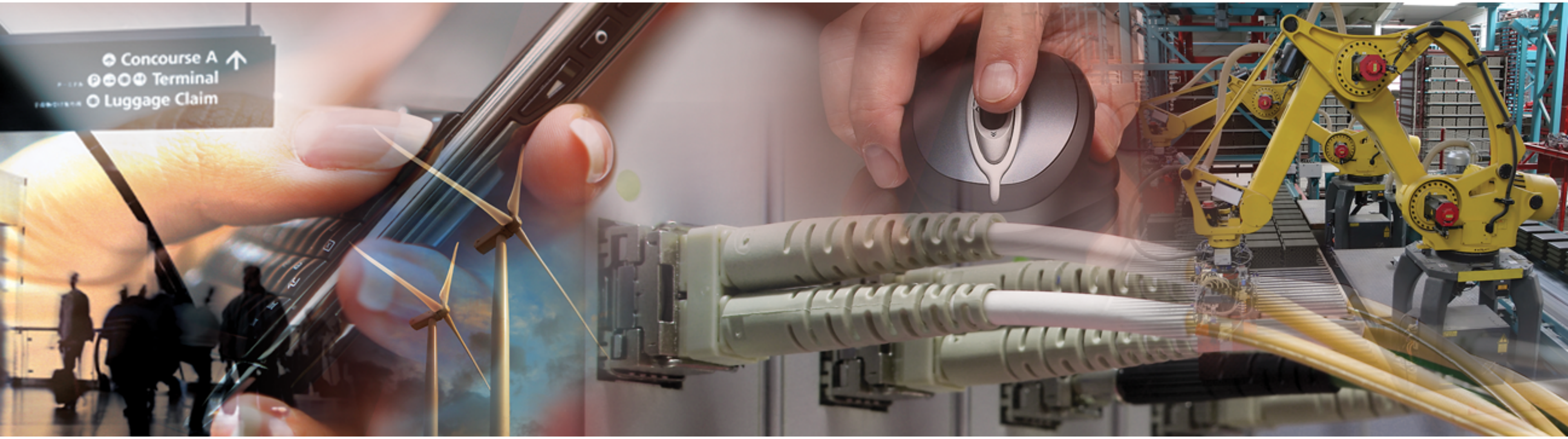
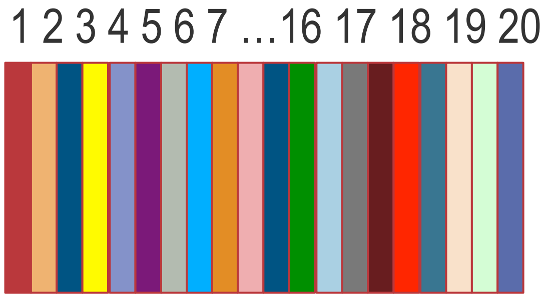
Support for Comment #65



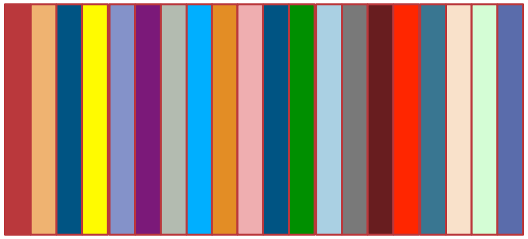
Jeff Slavick

FEC Codeword

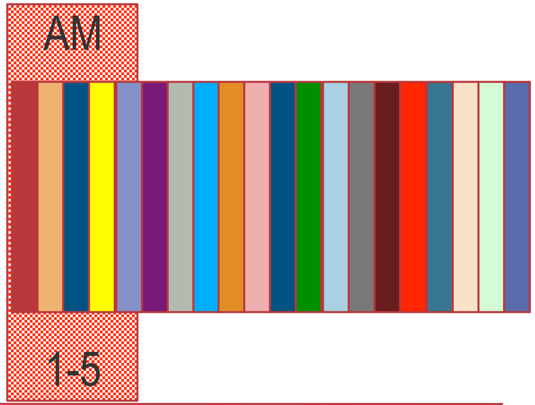


Each codeword composed of 20 257b TC blocks

Normal FEC codeword



AM FEC codeword

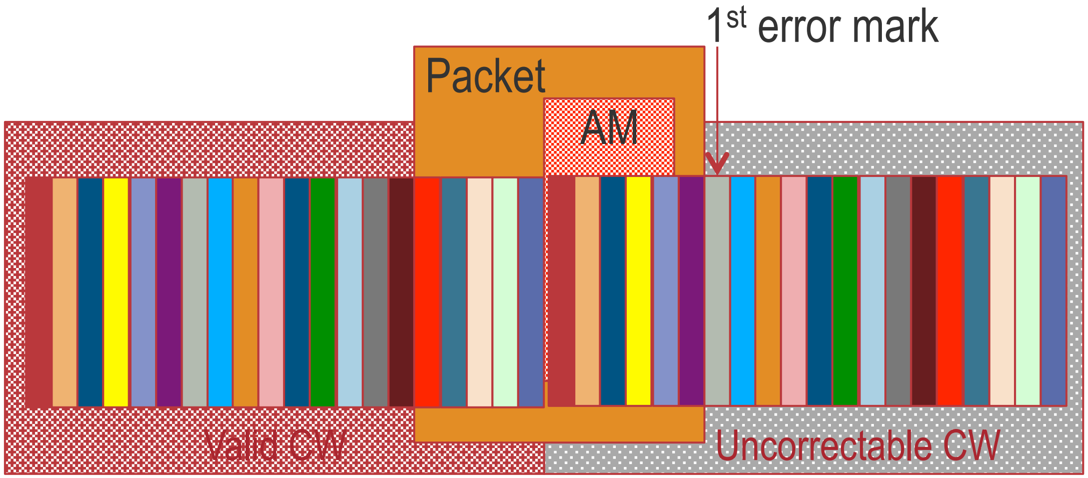


Error Marking

- Currently we mark the 1st 66b block of every odd TC block in a FEC codeword (1,3,5,7,9,…19) plus last 66b block of the last (20th) TC codeword.
- This means at least every 8th 66b block is marked bad in a normal codeword

When does error marking breakdown?

Valid normal codeword is followed by an uncorrectable AM codeword. Packet starts in the valid codeword and ends in the 1st TC block after the AM. First error mark of the uncorrectable AM codeword occurs on the 7th TC block. The 6th TC block contains packet TERM, so data in the 6th could be corrupted and allowed through.



Comment #65

- When error marking an uncorrected codeword the specification intends to mark all packets that contain data within the codeword as bad. When the codeword begins with Alignment markers the first set of data in the codeword is contained in the 6th transcoded block.
- Marking currently occurs on the 1,3,5,7,...etc transcoded blocks, so we skip the 6th. This allows for a some bad data to potentially not be marked.

Suggested Remedy

- Change: In addition, it shall ensure rx_coded_3<1:0> corresponding to the last (20th) 257-bit block in the codeword is set to 11.
- To: In addition, it shall ensure rx_coded_0<1:0> corresponding to the 6th 257-bit block and rx_coded_3<1:0> corresponding to the last (20th) 257-bit block in the codeword is set to 11.

PCS HI_BER Threshold

- Cl 82.2.18.2.2 sets the hi_ber threshold to 97 blocks in error.

- Currently we mark 11 blocks in error for each uncorrected codeword. To exceed the 97 threshold it takes 9 uncorrected codewords (9*11=99)

- Changing marked error blocks to 12 (add marking of 6th TC) maintains the same number of uncorrected codewords to exceed the threshold. (8*12 = 96 which is still less then 97)