



Pseudo Random Test Pattern for BER Monitor

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Introduction

- **10GBASE-T Draft1.3**
 - Clause 55.3.12**
 - 10GBASE-R Test pattern as a starting point.**
 - Clause 55.5.3:**
 - 6 Test modes are defined for Transmitter test**

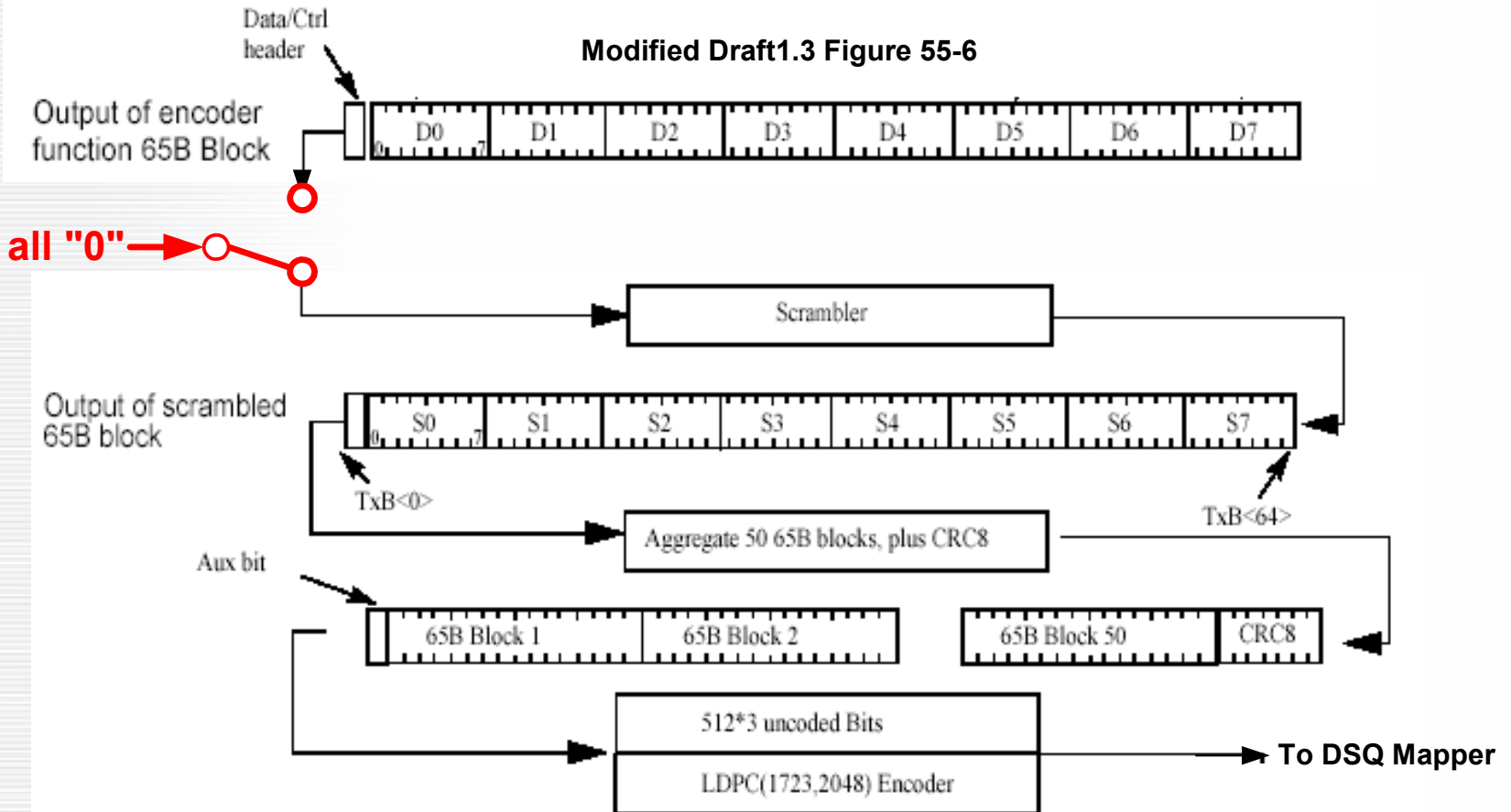
- **10GBASE-R Test pattern (see Clause 49.2.8)**
 - Square wave : Transmitter test**
 - Pseudo random : BER Monitor**
 - 1) Sync header+ Scrambled" LFS or 64 zeros"**
 - 2) Sync header+ PRBS31(Optional)**

Proposal:

- **Pseudo random Test pattern for BER monitor using 10GBASE-T PCS scrambler**
- **Merges Pseudo random test mode into MDIO register for transmitter test(Clause 55.5.3)**

Test Pattern Generator for BER Monitor NEC

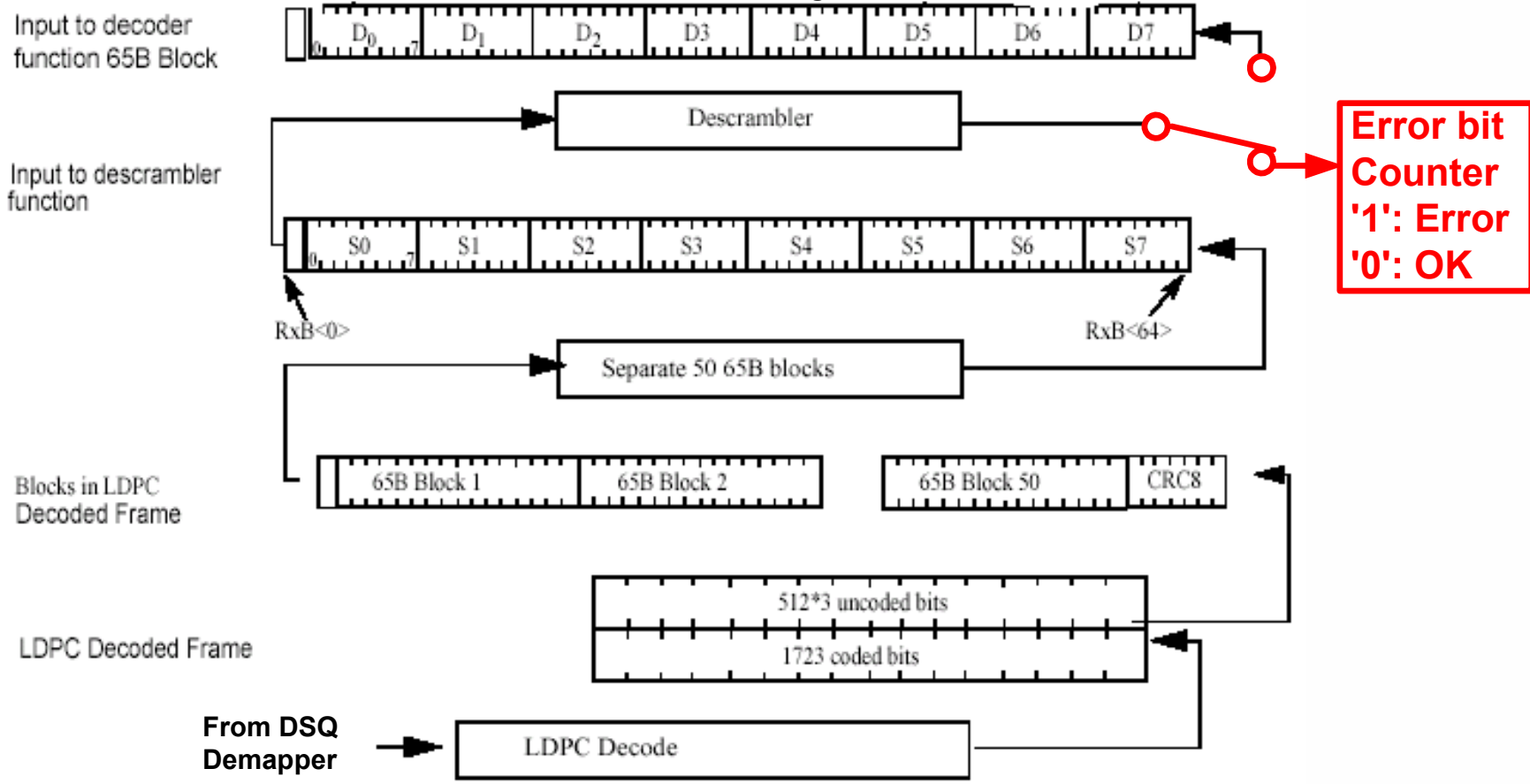
Modified Draft1.3 Figure 55-6



- In pseudo random test mode, all zeros is entered into scrambler
- In no case shall the scrambler state be initialized at all zeros

Test Pattern Checker for BER Monitor

Modified Draft1.3 Figure 55-7



- Error counter can measure the BER of the link including LDPC encoder/decoder, tx and rx AFE and cable
- Reuse 10GBASE-R error counter register (Reg 3.43.15:0)

MDIO register for test modes

Merges pseudo random test mode into transmitter test register (7.9.15:13)

b15	b14	b13	Mode
0	0	0	Normal operation
0	0	1	Test mode 1. Transmit voltage at MDI test
0	1	0	Test mode 2. Transmit jitter test in MASTER mode
0	1	1	Test mode 3. Transmit jitter test in SLAVE mode (if loop timing is supported)
1	0	0	Test mode 4. Transmit distortion test
1	0	1	Test mode 5 - Normal operation with no power backoff
1	1	0	Test mode 6 – Transmitter droop test
1	1	1	Reserved Test mode 7 - Pseudo Random test mode for BER Monitor (Mandatory)

- **Pseudo random test mode for BER monitor**
Measures **the BER of the link including LDPC encoder/decoder, tx and rx AFE and cable**

Reuse 10GBASE-T PCS scrambler

Reuse 10GBASE-R MDIO error counter register

- **MDIO register for test mode**
Merges pseudo random test mode for BER monitor into transmitter test register (7.9.15:13)