PRELIMINARY

DALLAS
SEMICONDUCTOR

Application Note 337
DS2151 Programming, Implementation
of ANSI T1.231–1993

The DS2151 Single–Chip Transceiver has been designed to incorporate all of the key performance indications that are required by ANSI T1.231–1993 which is titled "Digital Hierarchy – Layer 1 In–Service Digital Transmission Performance Monitoring". Below is table listing all of important parameters and where they are located within the DS2151. The DS2151 does the raw collection of the data and it relies on the external host to accumulate the parameters and create the higher order statistics such as Errored Seconds, Severely Errored Seconds, LOS Seconds, and so on. The one second timer within the DS2151 (at SR2.5) is ideal for timing these higher order statistics.

PARAMETER	PARAGRAPH	LOCATION WITHIN THE DS2151
Bipolar Violations (BPV)	6.1.1.1.1	Line Code Violation Count Registers
Excessive Zeros (EXZ) (see note 1)	6.1.1.1.2	Line Code Violation Count Registers with RCR1.7 = 1
Cyclic Redundancy Check (CRC)	6.1.1.2.1	Path Code Violation Count Registers
Frame Bit Error (FE) (see note 2)	6.1.1.2.2	(1) RIR1.0 (2) Path Code Violation Count Registers in D4 framing mode / Multiframes Out of Sync Count Registers in ESF mode with RCR2.0 = 0
Controlled Slip (CS)	6.1.1.2.3	SR1.4 on receive side RIR2.3 on transmit side
Loss Of Signal (LOS)	6.1.2.1.1	SR1.1
Out Of Frame (OOF)	6.1.2.2.1	SR1.0 (RCR1.4 & RCR1.5 are used to set the criteria)
Severely Errored Frame (SEF) (see note 3)	6.1.2.2.2	RIR1.2
Alarm Indication Signal (AIS)	6.1.2.2.3	SR1.3

NOTES:

1. The DS2151 only counts each excessive zero string once. For example, a string of 48 consecutive zeros would only increment the Line Code Violation Count Registers once, not multiple times.

2. Via the RCR2.1 bit, the user has the choice in the D4 framing mode of counting errors in just the Ft bit pattern or in both the Ft and the Fs bit patterns.

3. In the D4 framing mode, the SEFE bit (RIR1.2) only counts errors in the Ft pattern; in the ESF framing mode, only errors in the FPS pattern are counted.