Overview of RSS_DFE4 parameter modification

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Request for additional modification

- In subclause 111.8.3.1, there are tables that specify parameters for a receiver interference tolerance test.
- The test was intended to be based upon Clause 93 including the equivalent parameter table.
- One key parameter in that table (RSS_DFE4) was not carried over in the editing process (Draft 1.0) and this omission was not caught in subsequent reviews.
- There was no intent to remove this parameter and it has since been assumed to be included.
- The error was discovered this week during 802.3bs comment resolution.
  - See P802.3bs D1.2 comment #96.

source parameter table and text from 93.8.2.3

93.8.2.3 Receiver interference tolerance

The receiver interference tolerance test setup and method are defined in Annex 93C. The receiver on each lane shall meet the RS-FEC symbol error ratio requirement with the channel defined for each test listed in Table 93–6. The parameter RSS_DFE4 is a figure of merit for the test channel that is defined in 93A.2.

Table 93–6—Receiver interference tolerance parameters

Parameter	Test 1 values		Test 2 values		Test 3 values		Test 4 values		Units
	Min	Max	Min	Max	Min	Max	Min	Max	
RS-FEC symbol error ratio[a]	—	10^{-11}	—	10^{-11}	—	10^{-4}	—	10^{-4}	—
Insertion loss at 12.89 GHz[b]	—	16	30	—	—	30	35	—	dB
Coefficients of fitted insertion loss[c]									
a_0	–0.9	0.9	–0.9	0.9	–0.9	0.9	–0.9	0.9	dB
a_1	0	3.3	0	3.3	0	3.3	0	3.3	dB/GHz$^{1/2}$
a_2	0	—	0	—	0	—	0	—	dB/GHz
a_4	0	0.022	0	0.03	0	0.03	0	0.043	dB/GHz^2
RSS_DFE4	0.05	—	0.05	—	0.05	—	0.05	—	—
COM, including effects of broadband noise	—	3	—	3	—	3	—	3	dB

[a]The FEC symbol error ratio is measured in step 10 of the receiver interference tolerance method defined in 93C.2.
[b]Measured between TPt and TP5 (see Figure 93C–4).
[c]Coefficients are calculated from the insertion loss measured between TPt and TP5 (see Figure 93C–4) using the method in 93A.3 with f_{min} = 0.05 GHz, f_{max} = 25.78125 GHz, and maximum Δf = 0.01 GHz.

the definition of RSS_DFE4 from 93A.2

An additional figure of merit for the test channel is the root-sum-square of the magnitude terms n_1 to n_2 of the equalized pulse response where n_2 is less than or equal to N_b. This measure of the relative usage of the decision feedback equalizer is defined by Equation (93A–50).

$$u_b(n_1, n_2) = \frac{1}{A_s}\sqrt{\sum_{n=n_1}^{n_2} \left(h^{(0)}(n)\right)^2} \qquad \text{(93A–50)}$$

The shorthand notation RSS_DFE4 is used to represent $u_b(4, N_b)$.

Proposed modifications to 111.8.3.1

Table 111–4—25GBASE-KR interference tolerance parameters, RS-FEC mode

Parameter	Test 1 (low loss)		Test 2 (high loss)		Units
	Min	Max	Min	Max	
Insertion loss at 12.89 GHz[a]	30	30.5	35	35.5	dB
COM	—	3	—	3	dB
Test pattern	Scrambled idle encoded by RS-FEC				
RSS_DFE4[b]	0.05	—	0.05	—	
RS-FEC symbol error ratio required[c]	$< 10^{-4}$				
b_{max} used in COM calculation	1				
DER_0 used in COM calculation	10^{-5}				

[a]Measured between TPt and TP5 (see Figure 93C–4).
[b]The parameter RSS_DFE4 is a figure of merit for the test channel that is defined in 93A.2.
[c]The RS-FEC symbol error ratio is measured using the RS-FEC symbol error counter (see 108.6.9).

Table 111–5—25GBASE-KR and 25GBASE-KR-S interference tolerance parameters, BASE-R FEC mode

Parameter	Test 1 (low loss)		Test 2 (high loss)		Units
	Min	Max	Min	Max	
Insertion loss at 12.89 GHz[a]	16	16.5	30	30.5	dB
COM	—	3	—	3	dB
Test pattern	Scrambled idle encoded by BASE-R FEC				
RSS_DFE4[b]	0.05	—	0.05	—	
BASE-R FEC corrected block ratio required[c,d]	$< 2.1\times10^{-5}$				
b_{max} used in COM calculation	0.5				
DER_0 used in COM calculation	10^{-8}				

[a]Measured between TPt and TP5 (see Figure 93C–4).
[b]The parameter RSS_DFE4 is a figure of merit for the test channel that is defined in 93A.2.
[c]The BASE-R FEC corrected block ratio is measured using the FEC corrected blocks counter (see 74.8.4.1).
[d]The FEC uncorrected blocks counter (see 74.8.4.2) is required to indicate zero errors during the test unless the test duration is such that the uncorrected block ratio can be verified to be less than 4.7×10^{-10}.

Table 111–6—25GBASE-KR and 25GBASE-KR-S interference tolerance parameters, no-FEC mode

Parameter	Test 1 (low loss)		Test 2 (high loss)		Units
	Min	Max	Min	Max	
Insertion loss at 12.89 GHz[a]	16	16.5	30	30.5	dB
COM	—	3	—	3	dB
Test pattern	Scrambled idle or PRBS31				
RSS_DFE4[b]	0.05	—	0.05	—	
Bit error ratio required[c]	$< 10^{-12}$				
b_{max} used in COM calculation	0.35				
DER_0 used in COM calculation	10^{-12}				

[a]Measured between TPt and TP5 (see Figure 93C–4).
[b]The parameter RSS_DFE4 is a figure of merit for the test channel that is defined in 93A.2.
[c]The bit error ratio is measured using the PCS errored blocks counter (see 49.2.14.2) or the PMA PRBS31 error counter (see 109.4.4.4) as appropriate.