Proposals for Consistency: Parameter Names & Figures

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Introduction

- Reference Comment # 327 (D'Ambrosia) against D2.1
- Pile on Comment # 15 (Anslow) against D2.2:

  The draft is not consistent in its use of parameter names and figures illustrating limit lines. For example "Return loss" and "Reflection response, SDD22" are used for the same parameter.

  See comment #327 against D 2.1

  For a detailed discussion of this issue see dambrosia_01_0909.pdf

Parameter names

- Draft 2.2 of 802.3ba is inconsistent in its use of parameter names.

- Examples - Return loss
  - Clause 85 and Annex 85A use “differential input return loss”
  - Clause 85 uses “differential to common mode conversion SCD11
  - Annex 83A&B use “return loss” in text, $|S_{DD22}|$ in Equations
  - Annex 86A uses “reflection response, SDD22”
  - IEEE 802.3 Sections 4 & 5 use “return loss”

- Examples - Insertion loss
  - Clause 85 uses “insertion loss”
  - Annex 83A&B use “insertion loss” in text, $|S_{DD21}|$ in Equations
  - Annex 86A uses “through response (SDD21)”
  - IEEE 802.3 Sections 4 & 5 use “insertion loss”

Naming Proposal

Name: “Z to Y” “Measurement”

“Z to Y”, add stuff for port naming:

- “***Differential***” (SDD, implies stimulus and response are differential-mode)
- “***Common-mode***” (SCC, implies stimulus and response are common-mode)
- “***Differential to Common-mode***” (SCD, differential is stimulus, common-mode is response)
- “***Common-mode to Differential***” (SDC, common-mode is stimulus, differential is response)

“Measurement”:

- “***Insertion Loss***”
- “***Input Return Loss***”
- “***Output Return Loss***”
- “***Near-End Crosstalk (NEXT) Loss***” or “***NEXT Loss***”
- “***Far-End Crosstalk (FEXT) Loss***” or “***FEXT Loss***”

Detailed Changes
(See #327 against D 2.1)

In Tables 86A-1 and 86A-3, change "Differential output reflection response, SDD22" to "Differential output return loss"

In Tables 86A-1 and 86A-3, change "Common mode output reflection response, SCC22" to "Common mode output return loss"

In Table 86A-2 and Table 86A-4, change "Differential input reflection response, SDD11" to "Differential input return loss"

In Table 86A-2 and Table 86A-4, change "Reflected differential to common mode conversion, SCD11" to "Differential to common mode input return loss"

Make equivalent changes to definitions of these parameters in Clause 86A

In 83A & B equations, replace S-parameters with names

Naming proposal example

Differential output return loss ~~reflection response, SDD22~~	–	See 86A.4.1.1	dB	
Common mode output return loss ~~reflection response, SCC22~~	–	See 86A.4.1.2	dB	
Output transition time, 20% to 80%	28	–	ps	
J2 Jitter output	–	0.18	UI	
J9 Jitter output	–	0.26	UI	
Data Dependent Pulse Width Shrinkage (DDPWS)	–	0.07	UI	
Q_{sq}	45	–	V/V	
	Specification values			
Eye mask coordinates: X1, X2 Y1, Y2	0.11, 0.31 95, 350		UI mV	Hit ratio = 5×10^{-5}

86A.4.1.1 Differential return loss ~~reflection responses SDD11~~ at TP1 and ~~SDD22 at~~ TP1a

From 10 MHz to 11.1 GHz, the magnitude in decibels of the module differential input and the host differential output return losses ~~reflection responses, SDD11~~ at TP1 and ~~SDD22 at~~ TP1a (see 86A.5.1), shall not exceed the limit given in Equation 86A–1 and illustrated in Figure 86A–1.

~~$20\log_{10}(|S_{DDii}|) \leq \begin{cases} -12 + 2\sqrt{f} & 0.01 \leq f \leq 4.11 \\ -6.3 + 13\log_{10}\left(\frac{f}{5.5}\right) & 4.11 \leq f \leq 11.1 \end{cases}$ dB~~ (86A–1)

$$\text{Return loss} \geq \begin{cases} 12 - 2\sqrt{f} & 0.01 \leq f < 4.11 \\ 6.3 - 13\log_{10}\left(\frac{f}{5.5}\right) & 4.11 \leq f \leq 11.1 \end{cases} \text{ dB} \qquad (86A–1)$$

where ~~SDD*ii* is SDD11 or SDD22 and~~ f is the frequency in gigahertz.

Graphs are also inconsistent

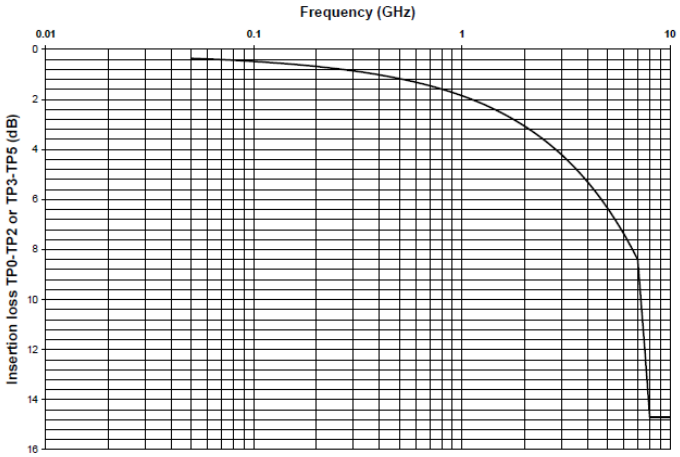

Figure 85–4—Maximum insertion loss TP0 to TP2 or TP3 to TP5

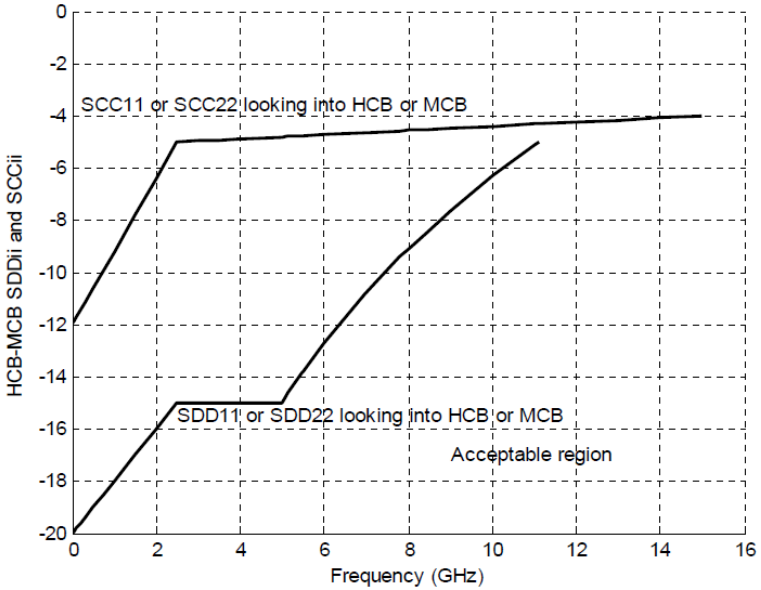

Figure 86A–4—Reflection limits of mated HCB-MCB

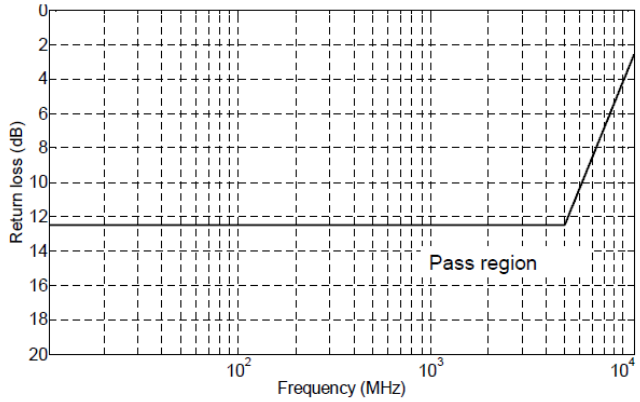

Figure 83A–14—Channel Return Loss

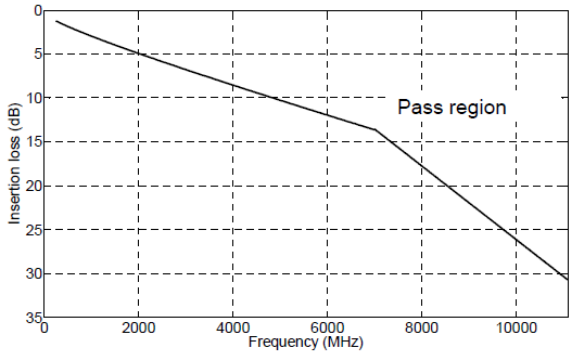

Figure 83A–13—Channel insertion loss

Proposal for consistency for graphs

- Use both linear and log frequency scales as appropriate
  - Change 85A-4 and 85A-12 to linear
- Change all graphs:
  - Gridlines to be dashed and major only for linear axes
  - X axis labels at bottom
  - Axis labels use at least 8 pt font
  - Frequency values use GHz
- Indicate compliant region (work on terminology)

Effect on graph examples

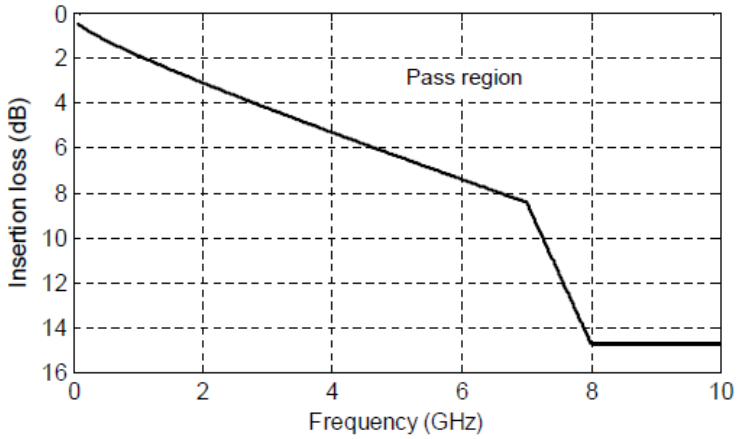

Figure 85–4—Maximum insertion loss TP0 to TP2 or TP3 to TP5

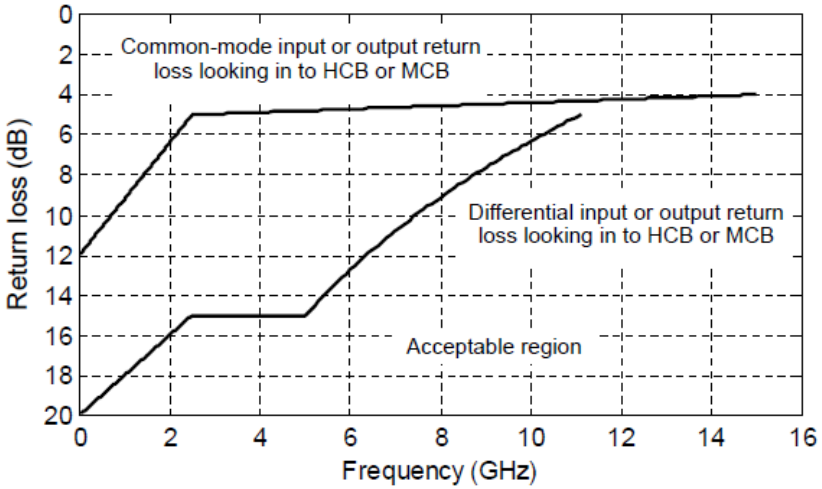

Figure 86A–4—Reflection limits of mated HCB-MCB

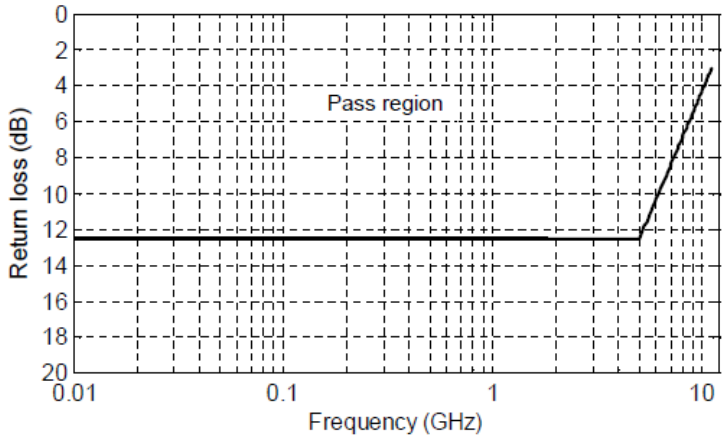

Figure 83A–14—Channel Return Loss

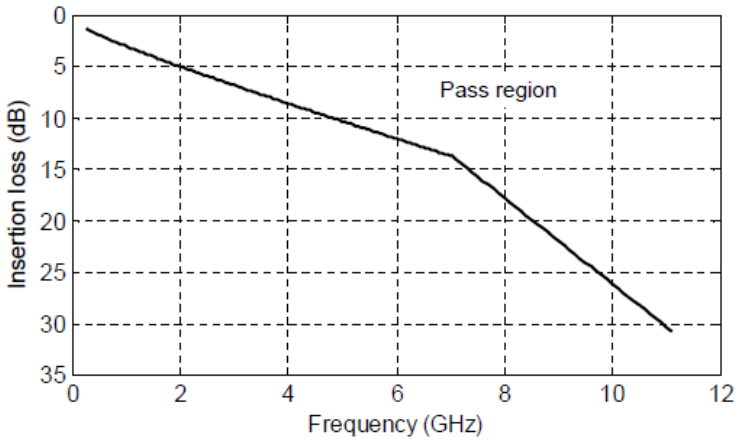

Figure 83A–13—Channel insertion loss