

Comment 184

EH in 120G-Table 120-G10 reduction from 10mv to 8mv (2dB) impacts on VEC

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Empirical data behind comment 184 and EH/VEC

D3.0 results (Target EH : 10mV, Target VEC: 12..12.5 dB)

	EH	VEC
Max	11.5	13.3
Min	9.35	11.5
Median	10.7	12.2
Range	2.15	1.8
Std Dev	0.363509	0.299849

D3.1 results (Target EH : 8mV, Target VEC: 12..12.5 dB)

	EH	VEC
Max	9.65	13.4
Min	8	11.7
Median	8.7	12.7
Range	1.65	1.7
Std Dev	0.325095	0.326488

Cl	SC	P	L	#
120G	120G.3.1	258	19	1-184
Dawe, Piers J G		NVIDIA		
Comment Type	TR	Comment Status	A	HO EH
<p>Eye height measurements are inaccurate, receivers can cope with much smaller eye height than this as they do for CR; VEC is much more important. C2M drivers are traditionally 900/1200 as strong as CR/KR drivers, and receiver noise is already in the measurement, and . So a small EH is acceptable.</p>				
SuggestedRemedy				
Reduce the eye height by 2 dB, from 10 mV to 8 mV.				
Response	Response Status			C
ACCEPT.				

Arguments to reject changes associated with comment 184 (reducing EH by 2mV)

- Ability to calibrate a conformant TP1a stressed signal is greatly diminished with the incorporation of comment 184.
 - The ability to target 12-12.5dB VEC values has diminished statistically by 48% (reduced from 88% to 40%) with the incorporation of this comment and is extremely hard to achieve a three consecutive VEC median of 12.5dB or less under these new conditions. Being 2dB closer to the noise floor has consequences and this is one of them.
- The reduction of 2dB of allowable Eye Height (EH), translates to a corresponding **increase of Vertical Eye Closure (VEC) by .5dB.**

Backup noise math

Eta_0 of $4.1E-8V^2/GHz$ Translates to an RMS noise floor of 1.13mV

The reduction of EH, from 10mV to 8mV takes our SNR from

$SNR = 20\text{Log}(V_{\text{signal}} / V_{\text{noise}}) = 18.9\text{dB}$ (at 10mV) to 17dB (at 8mV) a loss 2dB of SNR has a direct impact on consecutive run median VEC values on the order of a .5dB increase. (Very similar: FFE, CTLE and DFE settings)

This .5dB increase in VEC was not discussed as a consequence of this EH reduction.