

# **Evaluation of Alien Crosstalk in Cat 5e and Cat 6 Installations - Supplemental**

**Trent M. Hayes, P.E.**

**Technical Manager - Electronic  
Wire and Cable Development**

**Avaya Inc.**

# **Experimental Cat 6 UTP Cable Developed with Improved Alien NEXT**

**Re-measure of Experimental Cat 6 UTP Cable  
Developed with Improved Alien NEXT**

**New Measurements are from 0.5 – 650 MHz**

**Old Measurements were from 0.5 – 500 MHz**

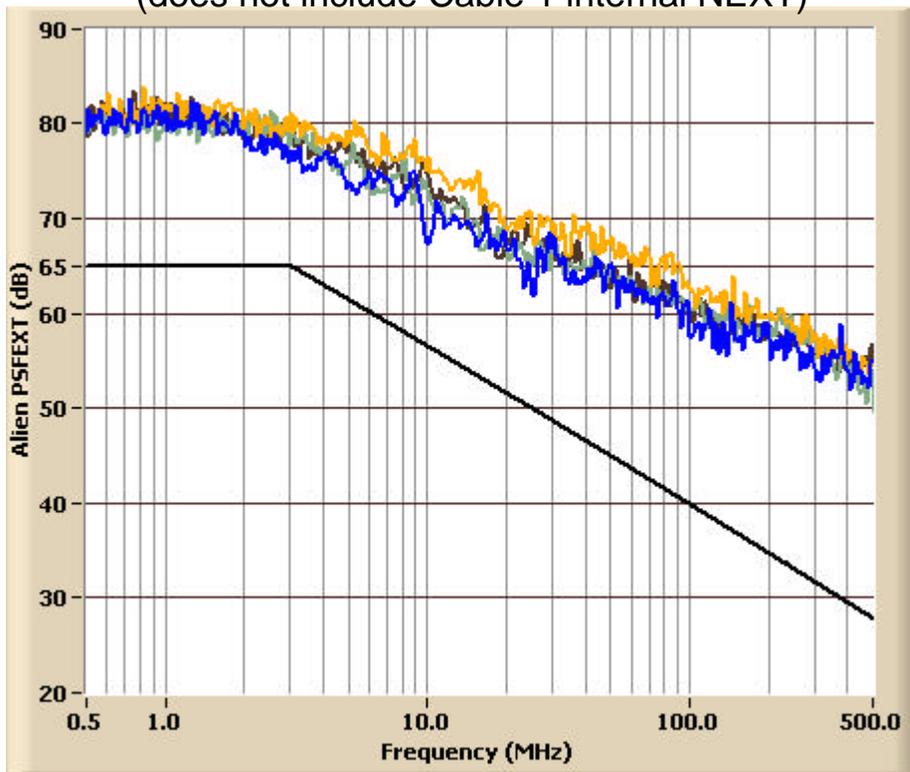
**Patch Cords used to connect to the test set were  
shortened from about 5 feet each on the old  
measurements to about 6 inches each**

# **Experimental Cat 6 UTP Cable Developed with Improved Alien NEXT**

- **Prototype Cat 6 UTP cable with improved Alien PSNEXT developed**
- **Alien NEXT Measured in permanent link configuration (2 connector channel)**
- **Cables maintain close proximity and longitudinal organization**
- **Alien PSNEXT results are compared to channel specs**

# Experimental Cat 6 UTP Cable Developed with Improved Alien NEXT – Original Data

Alien PSNEXT into Cable 1 from Cables 2-7  
(does not include Cable 1 internal NEXT)

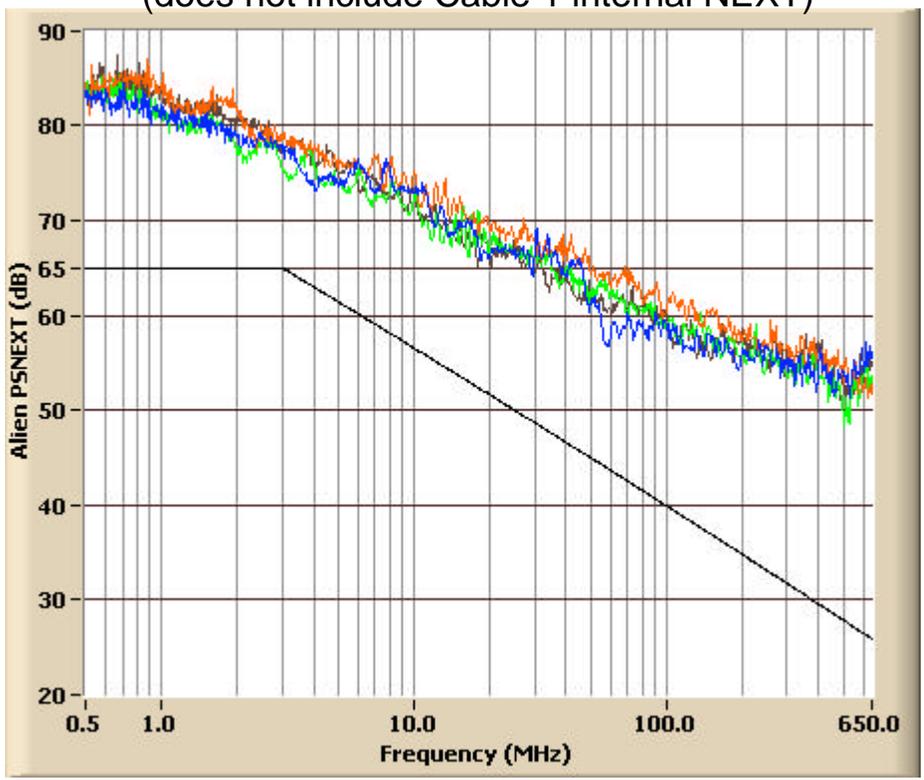


Alien PSNEXT minimum margins versus the Cat 6 channel spec:  
Computed from 1, 10, 50, 100, 250 through 500 MHz

start f	stop f	min margin	min freq	pair	pair margin	pair freq
1	500	10.73	3.37	1	10.73	3.37
				2	13.54	2.55
				3	12.56	2.98
				4	12.40	3.55
10	500	11.73	10.34	1	11.73	10.34
				2	17.05	20.11
				3	13.48	16.30
				4	13.67	18.75
50	500	16.10	53.59	1	16.10	53.59
				2	20.53	72.17
				3	18.25	67.29
				4	17.91	61.65
100	500	17.69	102.43	1	17.69	102.43
				2	21.05	106.08
				3	19.78	117.83
				4	19.49	104.24
250	500	21.45	268.30	1	21.45	268.30
				2	23.89	314.09
				3	22.22	478.12
				4	23.07	298.02

# Experimental Cat 6 UTP Cable Developed with Improved Alien NEXT – New Data

Alien PSNEXT into Cable 1 from Cables 2-7  
(does not include Cable 1 internal NEXT)



Alien PSNEXT minimum margins versus the Cat 6 channel spec:  
Computed from 1, 10, 50, 100, 250 through 650 MHz

start f	stop f	min margin	min freq	pair	pair margin	pair freq
1	650	9.63	3.16	1	10.25	4.04
				2	12.7	2.38
				3	9.63	3.16
				4	12.11	2.96
10	650	12.48	11.72	1	12.9	57.28
				2	15.17	11.61
				3	12.48	11.72
				4	12.84	17.97
50	650	12.9	57.28	1	12.9	57.28
				2	19.22	60.06
				3	16.66	51.59
				4	16.32	57.82
100	650	17.14	106.22	1	17.34	116.8
				2	20.94	120.18
				3	18.04	113.52
				4	17.14	106.22
250	650	20.46	504.55	1	21.31	282.62
				2	23.43	355
				3	20.46	504.55
				4	21.09	257

# Conclusions

- **The Alien NEXT performance was virtually unaffected by shortening the patch cords**
- **The Alien NEXT performance above 500MHz continues to have approximately 10dB/decade slope**