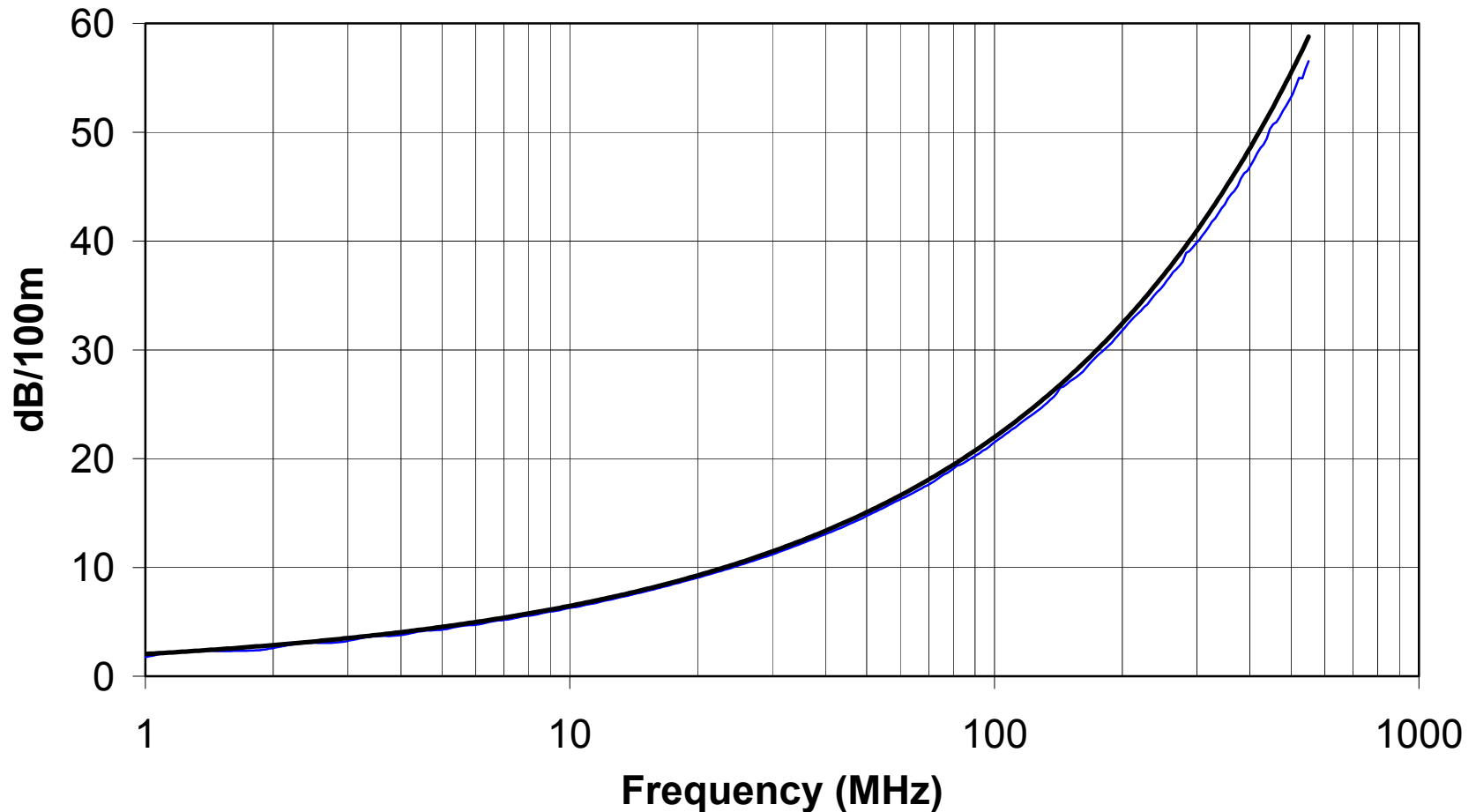




Does Cat 5e always have insertion loss margin?

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Currently available Cat 5e cable attenuation (20 deg C) Worst pair from one cable sample & extrapolated TIA spec



Freq (MHz)	1	10	12.3	50	100	200	300	400	550
Worst pair (dB/100m)	1.80	6.28	7.01	14.73	21.58	31.70	39.76	46.96	56.53
TIA Cat-5e cable spec (dB/100m)*	2.04	6.47	7.20	15.07	21.98	32.42	40.97	48.54	58.78
dB margin to TIA:	0.24	0.19	0.19	0.33	0.40	0.72	1.22	1.59	2.25
% margin to TIA:	11.9%	2.9%	2.6%	2.2%	1.8%	2.2%	3.0%	3.3%	3.8%

*Note: Cat-5e is not specified above 100 MHz. Spec values shown are extrapolated using the cable equation.



Conclusion

- Vendors have a cost incentive to run as close to the limit as they can ... some have optimized this art
- The data shown is for currently available cable from a major cable vendor that has attended 10GBASE-T meetings
- Insertion loss increases with temperature
- At high frequencies insertion loss generally increases at a higher percentage than at lower frequencies
- Feasibility assessments and distance objectives for Cat 5e should be based on worst case extrapolated insertion loss