



Maximum Transmission Distance at 3Gb/s

Coaxial cables for HD use. With the increasing demand for 3Gb/s in in the broadcasting field, studios and broadcasters realized that many cables are not suitable for 3Gb/s. The practical test is a guide and tool to determine the calculated and maximum transmission distance for 3Gb/s.

The SMPTE 424M standard and the calculated transmission distance

Compared to 1.5Gb/s (SMPTE 292M), the calculation of the max. length at 3Gb/s (SMPTE 424) is similar: 20dB loss at half clock frequency (1500MHz)

Similar to SMPTE 292M, a longer transmission distance than defined in the standard is to be expected.



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Procedure to find the maximum distance at 3Gb/s
Measurement Equipment

 Tektronix TG 700 TV Generator
 Wave Form Monitor Tektronix WFM 8300 and WFM 7120

Connectors applied

 Damar & Hagen BNC 75 Ohm
 Neutrik Zürich AG, connector BNC 75 Ohm

Tested DRAKA cable types with BNC connectors (m) Matrix to determine max. transmission length

0.6/2.8 AF	30	40	50	60	70	80	80							
0.8/3.7 AF	40	50	60	70	80	90	100	110	110					
0.8L/3.7 Dz	40	50	60	70	80	90	100							
1.0/4.8 AF	50	60	70	80	90	100	110	120	130	130				
1.4/6.6 AF	80	90	100	110	120	130	140	150	160	170	180	190		
1.6/7.3 AF	100	110	120	130	140	150	160	170	180	190	200	210	220	230
HD PRO 0.6/2.8 AF	30	40	50	60	70	80	90	100						
HD PRO 0.8/3.7 AF	40	50	60	70	80	90	100	110	120	120				
HD PRO 1.0/4.8 AF	50	60	70	80	90	100	110	120	130	140	150			

Blue figures: max. transmission distance according to SMPTE 424M

Magenta figures: max. transmission distance according to practical test with Tektronix device WFM 8300

Green figures: max. transmission distance according to practical test with Tektronix device WFM 7120

Measurement results of the maximum application lengths / video cables

Draka video cables	Calculated application length [m]	3Gb/s HD 1080P Actual max. application length with Tektronix TG 700 & WFM 8300 [m]
0.6/2.8 AF	47	80
0.8/3.7 AF	64	110
0.8L/3.7 Dz	59	100
1.0/4.8 AF	72	130
1.4/6.6 AF	102	190
1.6/7.3 AF	119	230
HD PRO 0.6/2.8 AF	50	100
HD PRO 0.8/3.7 AF	66	120
HD PRO 1.0/4.8 AF	80	150

These results apply to the Tektronix WFM 8300 device and the attenuation values of the Draka video cables.

Draka video cables	Calculated application length [m]	3Gb/s HD 1080P Actual max. application length with Tektronix TG 700 & WFM 7120 [m]
0.6/2.8 AF	47	80
0.8/3.7 AF	64	110
0.8L/3.7 Dz	59	80
1.0/4.8 AF	72	130
1.4/6.6 AF	102	170
1.6/7.3 AF	119	210
HD PRO 0.6/2.8 AF	50	90
HD PRO 0.8/3.7 AF	66	120
HD PRO 1.0/4.8 AF	80	140

These results apply to the Tektronix device WFM 7120 and the attenuation values of the Draka video cables.

Conclusion: the max. transmission distance depend on the devices e.g. on the hardware (Equalizer)