



## Maximum Transmission Distance at 3Gb/s

Coaxial cables for HD use. With the increasing demand for 3Gb/s 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.

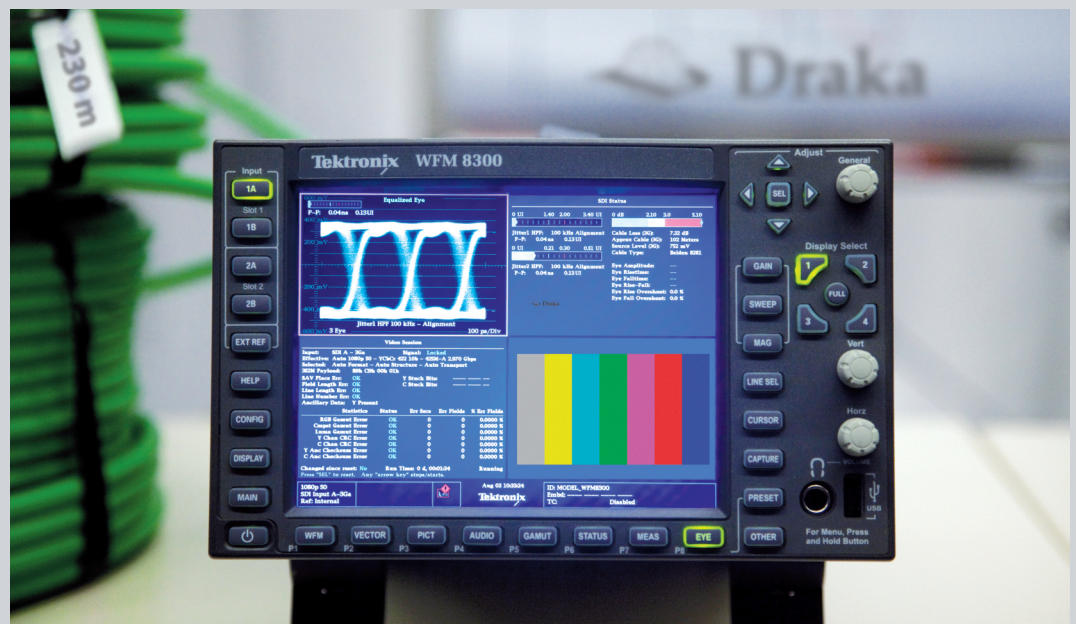
### The SMPTE 424M standard and the calculated transmission distance

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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Issue date: 11.09.2009

### 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 &amp; 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)