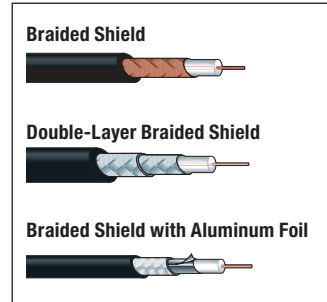


Technical Note

Many types of video coax. What're the differences and how select?

In brief, there are three of essential factors: 1) center conductor, 2) insulation, and 3) shield. Each factor has its advantage and disadvantage as described below:

- 1) Center Conductor: two types existing, "Solid" and "Stranded". Stranded conductor is more flexible and therefore the best choice for mobile and stage use.
- 2) Insulation: includes "Solid", "Foamed", and "Highly-foamed" types. Foamed and highly-foamed insulation would perform better attenuation, compared to the solid type thus they are often selected for hi-def video. However, since foamed and high-foamed insulation contain the air physically, they are weak to external pressure. You should pay attention to where and how the cables are installed.
- 3) Shield: we have "Braided" and "Braided with aluminum foil" type. Braided shields include single, double, or triple layers as well as bare copper or tinned copper. Braided with aluminum foil offers perfect screening, but they are not suitable for repeated bending and mobile applications due to the foil's lack of strength. In that case, it's better to choose "Braided".



What is Propagation Delay?

Propagation delay refers to the time required for a signal to be transmitted from one end of connection to another. In the case of cable transmission, this greatly depends on the materials and construction of the actual cable, and large differences in delay can cause transmission errors if they exceed the receiver delay tolerance.

The following table shows the differences in coaxial cable propagation delay time relative to the insulation type.

Propagation Delay Caused by Coaxial Cable Insulation (reference)

| Insulation | Propagation Delay |
|------------------|-------------------|
| Solid PE | 5.0 ns/m |
| Foamed PE | 4.2 ns/m |
| Highly-Foamed PE | 3.7 ns/m |

Typical Transmission Distance as per SMPTE Standard

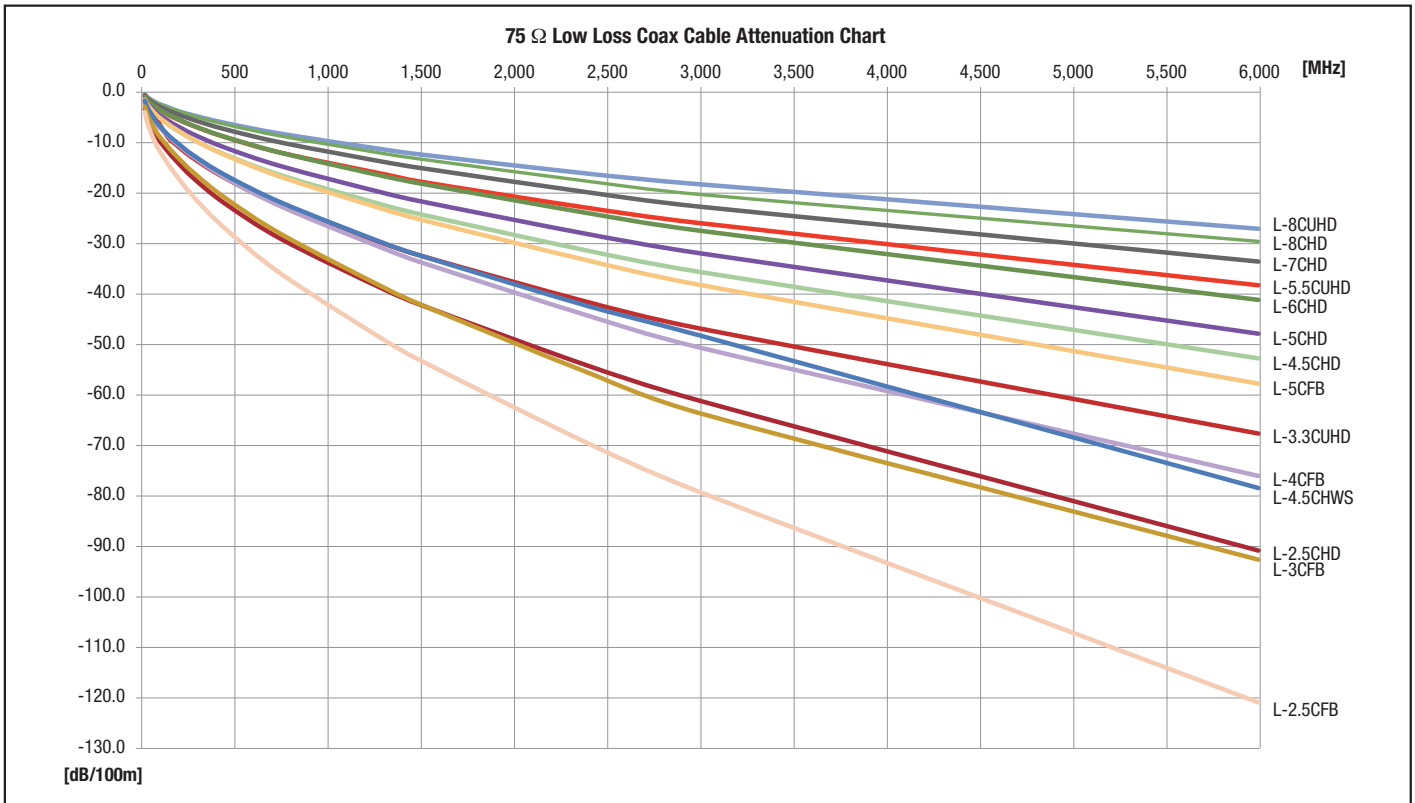
| SMPTE Designation | ST 259 SD-SDI | | | | ST 344 | ST 292 | ST 424 | ST 2082-1 |
|------------------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|
| | NTSC | PAL | 525/625 (4:3) | 525/625 (16:9) | 540 Mbps-SDI | HD-SDI | 3G-SDI | 12G-SDI |
| Video Format | | | | | | | | |
| Bit Rate | 143 Mb/s | 177 Mb/s | 270 Mb/s | 360 Mb/s | 540 Mb/s | 1.5 Gb/s | 3 Gb/s | 12 Gb/s |
| Clock | 143 MHz | 177 MHz | 270 MHz | 360 MHz | 540 MHz | 1.485 GHz | 2.97 GHz | 11.88 GHz |
| Cable Loss @ 1/2 Clock | 30 dB @ 72 MHz | 30 dB @ 88 MHz | 30 dB @ 135 MHz | 30 dB @ 180 MHz | 30 dB @ 270 MHz | 20 dB @ 750 MHz | 30 dB @ 1.5 GHz | 40 dB @ 6 GHz |
| Model | m | m | m | m | m | m | m | m |
| L-2.5CFB | 265 | 242 | 199 | 172 | 139 | 54 | 55 | 32 |
| L-2.5CHD | 314 | 287 | 237 | 206 | 168 | 66 | 69 | 43 |
| L-2.5CHLT | 314 | 287 | 237 | 206 | 168 | 66 | 69 | 43 |
| L-3CFB | 344 | 314 | 257 | 222 | 179 | 68 | 69 | 42 |
| L-3.3CUHD | 461 | 422 | 306 | 265 | 215 | 85 | 90 | 58 |
| L-4CFB | 422 | 314 | 315 | 272 | 220 | 84 | 86 | 52 |
| L-4CHD | 447 | 410 | 337 | 294 | 238 | 93 | 98 | 61 |
| L-5CFB | 563 | 513 | 420 | 364 | 294 | 112 | 114 | 68 |
| L-4.5CHD | 551 | 504 | 415 | 361 | 293 | 115 | 119 | 74 |
| L-5CHD | 614 | 562 | 464 | 403 | 327 | 128 | 133 | 82 |
| L-6CHD | 766 | 700 | 575 | 499 | 403 | 154 | 158 | 95 |
| L-5.5CUHD | 769 | 697 | 566 | 491 | 400 | 155 | 161 | 102 |
| L-7CHD | 902 | 824 | 678 | 589 | 476 | 184 | 188 | 116 |
| L-8CHD | 1034 | 937 | 769 | 681 | 545 | 208 | 212 | 131 |
| L-8CUHD | 1034 | 937 | 789 | 681 | 555 | 219 | 227 | 143 |
| L-2.5CHWS | 275 | 247 | 198 | 171 | 138 | 53 | 54 | 32 |
| V4-2.5CHW | 288 | 258 | 208 | 178 | 144 | 56 | 57 | 34 |
| L-3CFW | 319 | 288 | 230 | 197 | 158 | 60 | 60 | 35 |
| L-4.5CHWS | 447 | 405 | 322 | 280 | 225 | 87 | 90 | 50 |
| L-5CFW | 535 | 483 | 384 | 333 | 267 | 103 | 105 | 56 |

The above values are based on SMPTE standards and will vary depending on receiving equipment. Our criteria: Cable attenuation value does not exceed SMPTE cable loss at 1/2 clock frequency. See page 67 for the cable nominal attenuation.

75Ω Coax Cable Nominal Attenuation

dB/100m

| Model | Frequency | | | | | | | | | | | | |
|--------------------|-----------|-------|---------|---------|--------|--------|--------|--------|---------|---------|-------|-------|--|
| | 10MHz | 30MHz | 72.0MHz | 88.0MHz | 135MHz | 180MHz | 270MHz | 750MHz | 1.36GHz | 1.56GHz | 3GHz | 6GHz | |
| L-1.5C2VS/V*-1.5C | 8.7 | 15.2 | 23.8 | 26.4 | 32.9 | 38.1 | 47.1 | 80.5 | 108.6 | 117.5 | 173.4 | — | |
| L-2.5CFB | 4.8 | 7.6 | 11.3 | 12.4 | 15.1 | 17.4 | 21.5 | 37.0 | 50.0 | 54.1 | 80.2 | 121.8 | |
| L-2.5CHD/L-2.5CHLT | 4.1 | 6.5 | 9.5 | 10.4 | 12.6 | 14.5 | 17.8 | 30.2 | 40.0 | 43.1 | 62.0 | 91.7 | |
| L-2.5CHWS | 4.0 | 7.0 | 10.9 | 12.1 | 15.1 | 17.5 | 21.7 | 37.4 | 50.5 | 54.7 | 81.0 | 121.9 | |
| V4-2.5CHW | 3.8 | 6.7 | 10.4 | 11.6 | 14.4 | 16.8 | 20.7 | 35.7 | 48.3 | 52.3 | 77.4 | 115.9 | |
| L-3C2V/L-3C2W | 4.1 | 7.2 | 11.3 | 12.5 | 15.7 | 18.3 | 22.8 | 40.0 | 54.9 | 59.7 | 90.5 | — | |
| L-3C2VS/V*-3C | 4.5 | 7.9 | 12.4 | 13.7 | 17.2 | 20.0 | 24.8 | 43.2 | 58.9 | 63.9 | 96.0 | — | |
| L-3CFB/V*-3CFB | 3.7 | 5.9 | 8.7 | 9.5 | 11.7 | 13.5 | 16.7 | 29.1 | 39.6 | 43.0 | 64.5 | 93.5 | |
| L-3CFW/V*-3CFW | 3.4 | 5.9 | 9.4 | 10.4 | 13.0 | 15.2 | 18.9 | 33.1 | 45.4 | 49.4 | 74.8 | 114.2 | |
| L-3.3CUHD | 2.8 | 4.4 | 6.5 | 7.1 | 9.8 | 11.3 | 13.9 | 23.4 | 30.9 | 33.3 | 47.7 | 68.5 | |
| L-4CFB | 3.0 | 4.8 | 7.1 | 7.8 | 9.5 | 11.0 | 13.6 | 23.6 | 31.9 | 34.6 | 51.5 | 76.9 | |
| V*-4CFB | 3.0 | 4.9 | 7.2 | 7.9 | 9.7 | 11.2 | 13.9 | 24.3 | 33.2 | 36.0 | 54.3 | 83.8 | |
| L-4CHD | 2.9 | 4.6 | 6.7 | 7.3 | 8.9 | 10.2 | 12.6 | 21.3 | 28.4 | 30.6 | 44.3 | 65.1 | |
| L-4.5CHD | 2.3 | 3.7 | 5.4 | 6.0 | 7.2 | 8.3 | 10.2 | 17.4 | 23.2 | 25.1 | 36.5 | 53.6 | |
| L-4.5CHWS | 2.5 | 4.3 | 6.7 | 7.4 | 9.3 | 10.7 | 13.3 | 22.8 | 30.8 | 33.3 | 49.1 | 79.3 | |
| L-5C2V/L-5C2W | 2.5 | 4.5 | 7.1 | 7.9 | 9.9 | 11.6 | 14.4 | 25.7 | 35.6 | 38.9 | 59.9 | 94.8 | |
| L-5C2VS/V*-5C | 2.9 | 5.1 | 8.1 | 9.0 | 11.3 | 13.2 | 16.5 | 29.3 | 40.8 | 44.4 | 68.3 | 108.0 | |
| L-5CFB/V*-5CFB | 2.2 | 3.6 | 5.3 | 5.8 | 7.1 | 8.2 | 10.2 | 17.7 | 24.1 | 26.1 | 39.1 | 58.6 | |
| L-5CFW/V*-5CFW | 2.1 | 3.6 | 5.6 | 6.2 | 7.8 | 9.0 | 11.2 | 19.4 | 26.2 | 28.4 | 42.2 | 70.5 | |
| L-5CHD | 2.1 | 3.3 | 4.9 | 5.3 | 6.5 | 7.4 | 9.1 | 15.6 | 20.8 | 22.5 | 32.8 | 48.7 | |
| L-5.5CUHD | 1.6 | 2.6 | 3.9 | 4.3 | 5.3 | 6.1 | 7.5 | 12.9 | 17.1 | 18.6 | 26.8 | 39.1 | |
| L-6CHD | 1.7 | 2.7 | 3.9 | 4.3 | 5.2 | 6.0 | 7.4 | 12.9 | 17.5 | 19.0 | 28.3 | 42.0 | |
| L-7CFB | 1.6 | 2.5 | 3.8 | 4.2 | 5.1 | 6.0 | 7.5 | 13.4 | 18.8 | 20.5 | 32.0 | 53.6 | |
| L-7CHD | 1.4 | 2.3 | 3.3 | 3.6 | 4.4 | 5.1 | 6.3 | 10.9 | 14.7 | 15.9 | 23.5 | 34.4 | |
| L-8CHD | 1.2 | 2.0 | 2.9 | 3.2 | 3.9 | 4.4 | 5.5 | 9.6 | 13.0 | 14.1 | 21.1 | 30.4 | |
| L-8CUHD | 1.2 | 2.0 | 2.9 | 3.2 | 3.8 | 4.4 | 5.4 | 9.1 | 12.2 | 13.2 | 19.1 | 27.9 | |
| LV-61S | 3.8 | 6.6 | 10.4 | 11.6 | 14.5 | 16.9 | 20.9 | 36.6 | 49.9 | 54.2 | 81.7 | 126.0 | |
| LV-77S | 2.9 | 5.2 | 8.1 | 9.0 | 11.3 | 13.1 | 16.3 | 28.6 | — | — | — | — | |



Technical Trend

Fiber-Optic Systems

Connectors

Cables

Panels & Patchbays

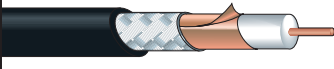



Multichannel Systems

Cable Assemblies

75Ω Coaxial Cables

Analog to digital. HD to UHD. Canare 75 ohm coaxial cable series expands the range of choices for any kind of video formats.

Ultra Coax 12G-SDI

| Type | Model | Sales units | Nom. O.D | Weight | Inner cond | | Insulation | Outer conductors | | Inner cond. resist. | Outer cond. resist. | Static capacity | Charac-teristic impedance | Attenu-ation |
|--|---|---------------------------|----------|---------|-----------------|------|------------|------------------|----------------------|---------------------|---------------------|-----------------|---------------------------|-----------------|
| | | | | | Comp. | O.D. | | O.D. | Foil | | | | | |
| | | m | mm | kg/100m | (AWG) Q'ty/mm | mm | mm | | mm/ends/carriers | Ω/km | Ω/km | pF/m | Ω | dB/100m (6 GHz) |
|  |  L-3.3CUHD | 100 200 | 5.5 | 4.1 | (21) 1/0.75A | 0.75 | 3.3 | Cu | 0.12TA/8/16 (92%) | 41.4 | 14.9 | 55 | 75 | 68.5 |
| |  L-5.5CUHD | 100 200 500 1000 | 7.7 | 7.1 | (16) 1/1.35A | 1.35 | 5.55 | Cu | 0.12TA/8/24 (91%) | 12.8 | 10.3 | 52 | 75 | 39.1 |
| |  L-8CUHD | 100 200 500 1000 | 11.1 | 14.1 | (13) 1/2.00A | 2.00 | 8.26 | Cu | 0.16TA/8/24 (90%) | 5.8 | 6.3 | 52 | 75 | 27.9 |

Jacket colors: black and others

Jacket: PVC Dielectric strength: 1000V AC/min.

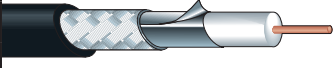




L-CUHD Series

- Specially designed for 12G-SDI
- The max. transmission distance of 4K UHD over L-5.5CUHD single link able to reach 100 m or longer*.
*Depending on receiving equipment.
- As handy as conventional coaxial cables.
- Copper foil and high-density tinned copper braided shielding.
- Highly-foamed multi-layer PE insulation

Note 1: Designed for fixed installation, please avoid repeated bending or external pressure.

Note 2: Cable strippers (TS100 series) cannot be used for L-5.5CUHD and L-8CUHD.

Super Coax

| Type | Model | Sales units | Nom. O.D | Weight | Inner cond | | Insulation | Outer conductors | | Inner cond. resist. | Outer cond. resist. | Static capacity | Charac-teristic impedance | Attenu-ation |
|---|--|-------------|----------|-----------------|-----------------|------|------------|------------------------|----------------------|---------------------|---------------------|-----------------|---------------------------|-------------------|
| | | | | | Comp. | O.D. | | O.D. | Foil | | | | | |
| | | m | mm | kg/100m | (AWG) Q'ty/mm | mm | mm | | mm/ends/carriers | Ω/km | Ω/km | pF/m | Ω | dB/100m (1.5 GHz) |
|  |  L-2.5CHD | 100 200 | 4.2 | 2.6 | (23) 1/0.59A | 0.59 | 2.59 | AL | 0.12TA/7/16 (95%) | 66.9 | 16.9 | 53 | 75 | 43.1 |
| | L-4CHD | | 6.1 | 5.2 | (20) 1/0.82A | 0.82 | 3.68 | AL | 0.14TA/8/16 (95%) | 36.4 | 11.4 | 53 | 75 | 30.6 |
| |  L-4.5CHD | | 7.0 | 6.2 | (18) 1/1.02A | 1.02 | 4.57 | AL | 0.14TA/6/24 (91%) | 23.3 | 9.9 | 53 | 75 | 25.1 |
| | L-5CHD | | 7.7 | 7.4 | (17) 1/1.20A | 1.20 | 4.9 | AL | 0.14TA/7/24 (93%) | 16.1 | 8.2 | 53 | 75 | 22.5 |
| | L-6CHD | | 8.9 | 9.0 | (16) 1/1.40A | 1.40 | 6.1 | AL | 0.14TA/8/24 (92%) | 11.8 | 7.7 | 53 | 75 | 19.0 |
| |  L-7CHD | | 10.2 | 13.0 | (14) 1/1.80A | 1.80 | 7.3 | AL | 0.16TA/8/24 (92%) | 7.1 | 6.1 | 53 | 75 | 15.9 |
| | L-8CHD | | 11.1 | 13.5 | (12) 1/2.00A | 2.00 | 8.2 | AL | 0.16TA/8/24 (89%) | 5.8 | 6.3 | 53 | 75 | 14.1 |
|  L-2.5CHLT | 100 200 | 4.2 | 1.8 | (23) 1/0.59A | 0.59 | 2.59 | AL | 0.14TCCA/6/16 (95%) | 66.9 | 21.5 | 53 | 75 | 43.1 | |

Jacket colors: black and others

Jacket colors: black and others

Jacket: PVC Dielectric strength: 1000V AC/min.

L-CHD Series

- Best suited to 3G-SDI/HD-SDI transmission.
- Highly-foamed PE insulation allows further improvement in the attenuation characteristics.
- Multi-layer insulation in which to each layer is given a different foaming ratio is used to increase strength.
- High-density tinned copper braided shield with aluminum foil brings excellent shielding.
- Solid conductor

L-2.5CHLT

- Ideal for an O.B. van installation.
- Tinned copper-clad aluminum (CCA) braided shield brings an advantage in weight-saving.
- 30% lighter than L-2.5CHD, yet the same attenuation.
- Space-saving slim design: O.D. 4.2 mm
- High-density braided shield with aluminum foil
- Highly-foamed PE insulation
- Solid conductor

Note 1: Designed for fixed installation, please avoid repeated bending or external pressure.

Note 2: L-2.5CHLT has less connection strength with the connector BCP-B25HD compared with L-2.5CHD.

Note 3: Availability for Cable Stripper TS100 Series:

OK: L-2.5CHD and L-2.5CHLT, N/A: others