



**Part Number: 2203ELW**

Enhanced Category 6A Nonbonded-Pair U/FTP LSZH Cable, CPR Euroclass Cca

## Product Description

Category 6A (500MHz), 4-Pair, U/FTP shielded, Premise Horizontal Cable, 23 AWG Solid Bare Copper conductors, Foam Polyolefin insulation, each pair with Beldfoil® shield, AWG 26 solid tinned copper drainwire, LSZH jacket, CPR Euroclass Cca

## Technical Specifications

### Product Overview

|                        |  |
|------------------------|--|
| Environmental Space:   | Indoor - Euroclass Cca   |
| Suitable Applications: | Horizontal and building backbone cable; Support current and future Cat. 6a and 6 applications such as: 10GBase-T (10 Gigabit Ethernet), 1000Base-T (Gigabit Ethernet), 100 Base-T, 10 Base-T, FDDI and ATM |

### Physical Characteristics (Overall)

#### Conductor

| Element                  | AWG    | Stranding | No. of Pairs |
|--------------------------|--------|-----------|--------------|
| Individual shielded pair | 23     | Solid     | 4            |
| Conductor Count:         | 8      |           |              |
| Total Number of Pairs:   | 4      |           |              |
| Conductor Size:          | 23 AWG |           |              |

#### Insulation

| Element                  | Type       | Material                  | Nominal Diameter |
|--------------------------|------------|---------------------------|------------------|
| Individual shielded pair | Dielectric | FPE - Foamed Polyethylene | 1.32 mm          |

#### Color Chart

| Number | Color          |
|--------|----------------|
| Pair 1 | White / Blue   |
| Pair 2 | White / Orange |
| Pair 3 | White / Green  |
| Pair 4 | White / Brown  |

#### Inner Shield Material

| Element                  | Type | Material             | Coverage [%] |
|--------------------------|------|----------------------|--------------|
| Individual shielded pair | Tape | Aluminum / Polyester | 100 %        |

InnerShield, Table Note: Aluminum facing outside

#### Outer Shield Material

| Material           | Drainwire Material | Drainwire AWG |
|--------------------|--------------------|---------------|
| Aluminum/Polyester | TC - Tinned Copper | 26            |

#### Outer Jacket Material

| Material    | Nominal Diameter | Diameter +/- Tolerance | Ripcord    |
|-------------|------------------|------------------------|------------|
| LSZH / FRNC | 7.9 mm           | 0.3 mm                 | Yes, Nylon |

### Construction and Dimensions

|                                       |       |
|---------------------------------------|-------|
| Min Elongation at Breakof Conductors: | 10 %  |
| Min Elongation at Breakof Insulation: | 100 % |

#### Cabling

| Description   |       |
|---|-------|
| 2 twisted insulated conductors with overall foil, 4 pairs all twisted together with AWG 26 tinned copper drain wire |       |
| Min Elongation at Breakof Jacket:   | 100 % |
| Min Tensile Strength of Jacket:   | 9 MPa |

## Electrical Characteristics

### Conductor DCR

| Max. Conductor DCR | Max DCR Unbalanced Between Pairs [%] | Max. DCR Unbalanced Within Pair [%] |
|--------------------|--------------------------------------|-------------------------------------|
| 95 Ohm/km          | 4 %                                  | 2 %                                 |

### Capacitance

| Max. Capacitance Unbalance | Max. Mutual Capacitance |
|----------------------------|-------------------------|
| 1,600 pF/m                 | 56 pF/m                 |

Shielding: U/FTP - Individual Foil

### Impedance

| Nominal Characteristic Impedance |
|----------------------------------|
| 100 Ohm                          |

### High Frequency (Nominal/Typical)

| Frequency [MHz] | Nom. Insertion Loss | Nom. ACR [dB] | Nom. ACRF (ELFEXT) [dB] | Nom. Return Loss (RL) | Nom. PSANEXT | Nom. PSAACRF | Nom. TCL | Nom. ELTCTL |
|-----------------|---------------------|---------------|-------------------------|-----------------------|--------------|--------------|----------|-------------|
| 1 MHz           | 2.1 dB/100m         | 73.2 dB       | 68 dB                   |                       | 67 dB        | 67 dB        | 40 dB    | 35 dB       |
| 4 MHz           | 3.8 dB/100m         | 62.5 dB       | 56 dB                   | 23 dB                 | 67 dB        | 66.2 dB      | 34 dB    | 23 dB       |
| 10 MHz          | 5.9 dB/100m         | 54.4 dB       | 48 dB                   | 25 dB                 | 67 dB        | 58.2 dB      | 30 dB    | 15 dB       |
| 16 MHz          | 7.5 dB/100m         | 49.8 dB       | 43.9 dB                 | 25 dB                 | 67 dB        | 54.1 dB      | 28 dB    | 10.9 dB     |
| 31.2 MHz        | 10.5 dB/100m        | 42.4 dB       | 38.1 dB                 | 23.6 dB               | 67 dB        | 48.3 dB      | 25.1 dB  | 5.1 dB      |
| 62.5 MHz        | 15 dB/100m          | 33.4 dB       | 32.1 dB                 | 21.5 dB               | 65.6 dB      | 42.3 dB      | 22 dB    |             |
| 100 MHz         | 19.1 dB/100m        | 26.2 dB       | 28 dB                   | 20.1 dB               | 62.5 dB      | 38.2 dB      | 20 dB    |             |
| 125 MHz         | 21.5 dB/100m        | 22.3 dB       | 26.1 dB                 | 19.4 dB               | 61 dB        | 36.3 dB      | 19 dB    |             |
| 200 MHz         | 27.6 dB/100m        | 13.2 dB       | 22 dB                   | 18 dB                 | 58 dB        | 32.2 dB      | 17 dB    |             |
| 250 MHz         | 31.1 dB/100m        | 8.3 dB        | 20 dB                   | 17.3 dB               | 56.5 dB      | 30.2 dB      | 16 dB    |             |
| 300 MHz         | 34.3 dB/100m        | 3.9 dB        | 18.5 dB                 | 17.3 dB               | 55.3 dB      | 28.7 dB      |          |             |
| 500 MHz         | 45.3 dB/100m        | -10.4 dB      | 14 dB                   | 17.3 dB               | 52 dB        | 24.2 dB      |          |             |
| 500 MHz         |                     |               |                         |                       |              |              |          |             |

### Delay

| Max. Delay Skew | Nominal Velocity of Propagation (VP) [%] |
|-----------------|--|
| 45 ns/100m      | 77 %                                     |

### High Freq

| Frequency [MHz] | Max. Insertion Loss (Attenuation) | Min. NEXT [dB] | Min. PSNEXT [dB] | Min. ACR [dB] | Min. PSACR [dB] | Min. ACRF (ELFEXT) [dB] | Min. PSACRF (PSELFEXT) [dB] | Min. RL (Return Loss) [dB] | Min. PSANEXT | Min. PSAACRF | Min. TCL [dB] | Min. ELTCTL [dB] |
|-----------------|-----------------------------------|----------------|------------------|---------------|-----------------|-------------------------|-----------------------------|----------------------------|--------------|--------------|---------------|------------------|
| 1 MHz           | 2.1 dB/100m                       | 75.3 dB        | 72.3 dB          | 73.2 dB       | 70.2 dB         | 68 dB                   | 65 dB                       | 20 dB                      | 67 dB        | 67 dB        | 40 dB         | 35 dB            |
| 4 MHz           | 3.8 dB/100m                       | 66.3 dB        | 63.3 dB          | 62.5 dB       | 59.5 dB         | 56 dB                   | 53 dB                       | 23 dB                      | 67 dB        | 66.2 dB      | 34 dB         | 23 dB            |
| 10 MHz          | 5.9 dB/100m                       | 60.3 dB        | 57.3 dB          | 54.4 dB       | 51.4 dB         | 48 dB                   | 45 dB                       | 25 dB                      | 67 dB        | 58.2 dB      | 30 dB         | 15 dB            |
| 16 MHz          | 7.5 dB/100m                       | 57.2 dB        | 54.2 dB          | 49.8 dB       | 46.8 dB         | 43.9 dB                 | 40.9 dB                     | 25 dB                      | 67 dB        | 54.1 dB      | 28 dB         | 10.9 dB          |
| 31.2 MHz        | 10.5 dB/100m                      | 52.9 dB        | 49.9 dB          | 42.4 dB       | 39.4 dB         | 38.1 dB                 | 35.1 dB                     | 23.6 dB                    | 67 dB        | 48.3 dB      | 25.1 dB       | 5.1 dB           |
| 62.5 MHz        | 15 dB/100m                        | 48.4 dB        | 45.4 dB          | 33.4 dB       | 30.4 dB         | 32.1 dB                 | 29.1 dB                     | 21.5 dB                    | 65.6 dB      | 42.3 dB      | 22 dB         |                  |
| 100 MHz         | 19.1 dB/100m                      | 45.3 dB        | 42.3 dB          | 26.2 dB       | 23.2 dB         | 28 dB                   | 25 dB                       | 20.1 dB                    | 62.5 dB      | 38.2 dB      | 20 dB         |                  |
| 125 MHz         | 21.5 dB/100m                      | 43.8 dB        | 40.8 dB          | 22.3 dB       | 19.3 dB         | 26.1 dB                 | 23.1 dB                     | 19.4 dB                    | 61 dB        | 36.3 dB      | 19 dB         |                  |
| 200 MHz         | 27.6 dB/100m                      | 40.8 dB        | 37.8 dB          | 13.2 dB       | 10.2 dB         | 22 dB                   | 19 dB                       | 18 dB                      | 58 dB        | 32.2 dB      | 17 dB         |                  |
| 250 MHz         | 31.1 dB/100m                      | 39.3 dB        | 36.3 dB          | 8.3 dB        | 5.3 dB          | 20 dB                   | 17 dB                       | 17.3 dB                    | 56.5 dB      | 30.2 dB      | 16 dB         |                  |
| 300 MHz         | 34.3 dB/100m                      | 38.1 dB        | 35.1 dB          | 3.9 dB        | 0.9 dB          | 18.5 dB                 | 15.5 dB                     | 17.3 dB                    | 55.3 dB      | 28.7 dB      |               |                  |
| 500 MHz         | 45.3 dB/100m                      | 34.8 dB        | 31.8 dB          | -10.4 dB      | -13.4 dB        | 14 dB                   | 11 dB                       | 17.3 dB                    | 52 dB        | 24.2 dB      |               |                  |

High Freq Table Note: Limits below 4MHz and at 625MHz are for information only.

Coupling Attenuation Class: Type II

### Transfer Impedance

| Frequency [MHz] | Description | Transfer Impedance |
|-----------------|-------------|--------------------|
| 1 Mhz           | Grade 2     | Max.50 mOhm/m      |
| 10 Mhz          |             | Max. 100 mOhm/m    |

|         |                  |
|---------|------------------|
| 30 Mhz  | Max. 200 mOhm/m  |
| 100 Mhz | Max. 1000 mOhm/m |

|                           |         |
|---------------------------|---------|
| Transfer Impedance Class: | Grade 2 |
|---------------------------|---------|

#### Current

|                                     |
|-------------------------------------|
| <b>Max. Recommended Current [A]</b> |
| 1.5 A                               |

#### Voltage

|                           |
|---------------------------|
| <b>Voltage Rating [V]</b> |
| Max. 72 V DC              |

#### Temperature Range

|                          |                |
|--------------------------|----------------|
| Installation Temp Range: | 0°C To +50°C   |
| Operating Temp Range:    | -30°C To +60°C |

#### Mechanical Characteristics

|                                      |          |
|--------------------------------------|----------|
| Bulk Cable Weight:                   | 66 kg/km |
| Max Recommended Pulling Tension:     | 79 N     |
| Min Bend Radius During Installation: | 57       |
| Min Bend Radius During Operation:    | 29       |

#### Standards

|                     |  |
|---------------------|--|
| ISO/IEC Compliance: | ISO/IEC 11801 Ed. 2.2:2002/A2:2010/C1:2011 |
| CPR Euroclass:      | Cca-s1a,d1,a1                              |
| CENELEC Compliance: | EN 50173-1 Ed. 3:2011                      |
| Data Category:      | Category 6A                                |
| ANSI Compliance:    | ANSI/TIA/EIA 568-B.2-10 (2009)             |

#### Applicable Environmental and Other Programs

|                                       |            |
|---------------------------------------|------------|
| EU RoHS Compliance Date (yyyy-mm-dd): | 2018-01-04 |
|---------------------------------------|------------|

#### Flammability, LS0H, Toxicity Testing

|  |             |
|--|-------------|
| ISO/IEC Flammability:                              | IEC 60332-1 |
| Burning Load:                                      | 790 kJ/m    |
| Amount of Halogen acc. to IEC 60754-1 & EN50267-1: | Zero        |

#### Part Number

|         |   |
|---------|---|
| Patent: | <a href="https://www.belden.com/resources/patents">https://www.belden.com/resources/patents</a> |
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#### History

|                  |   |
|------------------|---|
| Revision Number: | 1 |
|------------------|---|

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