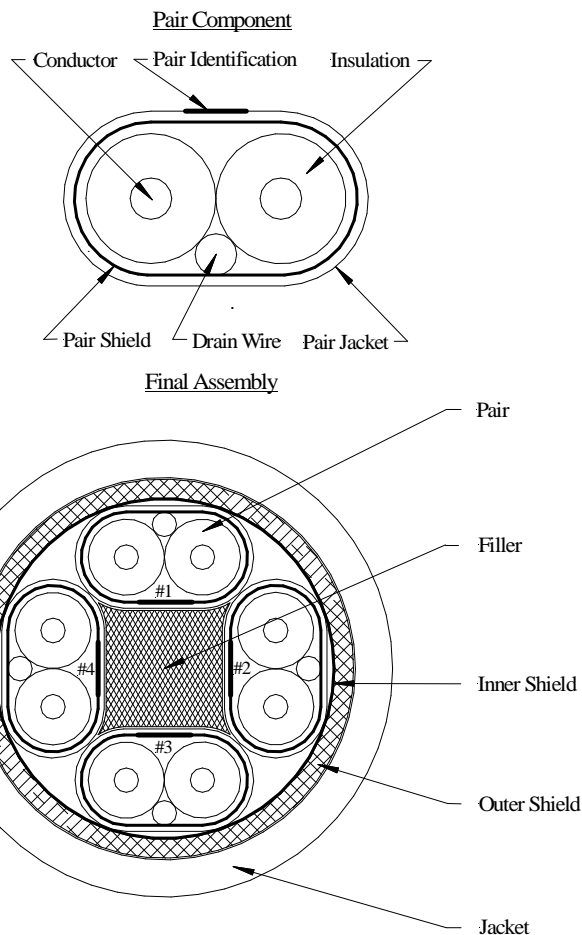


## 4 PAIR 28 AWG 25 GHZ TURBOTWIN™ CABLE

### PROPRIETARY DESIGN

THIS CONFIDENTIAL DOCUMENT HAS BEEN RELEASED WITH THE UNDERSTANDING THAT IT SHALL NOT BE SENT TO ANYONE OTHER THAN THE ORIGINAL INTENDED RECIPIENT WITHOUT PRIOR AUTHORIZATION FROM TE CONNECTIVITY / MADISON CABLE



### CONSTRUCTION

#### Pair Component

**Conductor:** 28 AWG Solid Silver Plated Copper, 0.0126 Inch [0.32 mm] Diameter  
**Insulation:** 0.0157 Inches [0.40 mm] of Polyolefin, 0.044 Inch [1.12 mm] Diameter, Color – Natural

**Pair:** 2 Singles Laid Flat and Parallel

**Drain Wire:** 28 AWG Solid Silver Plated Copper, 0.0126 Inch [0.32 mm] Diameter

**Pair Shield:** Metallic Tape

**Pair Jacket:** Polyester Tape

**Pair Minor Diameter:** 0.054 Inches [1.37 mm] Nominal

**Pair Major Diameter:** 0.097 Inches [2.46 mm] Nominal

**Pair Identification:** To be printed on entire length of pair in 1/2 Inch [13 mm] intervals, see Table 1

#### Final Assembly

**Core:** Filler

**Layer 1:** 4 Pairs (#1-4) Cabled Around Core

**Inner Shield:** Aluminum/Polyester Tape, Aluminum Side Facing Out, 25% Overlap

**Outer Shield:** 38 AWG Tin Plated Copper Braid, 85% Coverage

**Jacket:** 0.025 Inches [0.64 mm] of Flexible PVC, Color – Black

**Diameter:** 0.252 Inches [6.40 mm] Nominal

**Print Legend (White Ink):** "MADISON CABLE {Mfg. Location Code}<sup>1</sup> (UL) TYPE CL2 75°C 28 AWG C(UL) TYPE CMG 75°C TurboTwin™ 25G 104-2241 SUBSTANCE COMPLIANT 2011/65/EU {Date Code}<sup>2</sup>"

<sup>1</sup> Manufacturing location code, if applicable

<sup>2</sup> Date Code is a 4-digit code with the first two digits identifying the calendar week and the last two identifying the calendar year of manufacturing. Example – 0206 for cable manufactured in the second week of January 2006.

TABLE 1

Pair #	Pair Identification
1	-   1   -   1   -   1   -   1
2	- -   2   - -   2   - -   2   - -   2
3	- - -   3   - - -   3   - - -   3   - - -   3
4	-   4     -   4     -   4     -   4

### ELECTRICAL CHARACTERISTICS<sup>3</sup>

#### Production Performance Testing:

**Differential Impedance:** 100 ± 5 Ohms @ TDR

**Attenuation (SDD21)<sup>4</sup>:** 15.5 db/4m Maximum @ 12.89 GHz

**Return Loss (SDD11):** ≤ -19.5 + 2√f for 0.01 GHz < f < 4.1 GHz

≤ -13.6 + 14 Log\*(f/5.5) for 4.1 GHz < f < 19 GHz

**SCD21-SDD21:**

≤ -12 for 0.01 GHz < f < 12.89 GHz

≤ -29 + (29/22)\*f for 12.89 GHz < f < 15.7 GHz

≤ -8.3 for 15.7 GHz < f < 19 GHz

**Pair-to-Pair IL Variation:** 0.5 dB @ 12.89 GHz Nominal (abs(Max IL – Min IL)) among all pairs

#### Qualification Testing:

**Mutual Capacitance<sup>5</sup>:** 12 pF/ft [39 pF/m] Nominal

**Insertion Loss Deviation:** ILD<sub>min</sub> = -0.8

ILD<sub>max</sub> = +0.8

**Differential to Common Mode Return Loss (SCD11):**

≤ -24 + (20/25.78)\*f for 0.01 GHz < f < 12.89 GHz

≤ -17 + (6/25.78)\*f for 12.89 GHz < f < 19 GHz

**NEXT:** -50 dB Maximum from 0.01 GHz to 19 GHz

**FEXT:** -50 dB Maximum from 0.01 GHz to 19 GHz

**Conductor DC Resistance<sup>5</sup>:** 0.067 Ohms/ft [220 Ohms/km] Nominal @ 20°C

<sup>3</sup> All SI measurements made @ 20°C

<sup>4</sup> Tested/Functional to 25 GHz over a 4 meter length

<sup>5</sup> Values are for informational purposes only

### PHYSICAL CHARACTERISTICS

#### Temperature Rating:

**Operating:** -10°C to +60°C

**Transport/Installation:** -25°C to +80°C



#### Madison Cable

125 Goddard Memorial Drive  
Worcester, MA 01603 USA  
(508) 752-2884 (877) MADISON

### REVISION HISTORY

1	04/11/18	JT	Initial Release
2	04/18/18	JT	Revised Pair Diameter and Drawing
3	05/15/18	BS	Revised Insulation, Pair and Jacket Diameter
4	05/16/18	BS	Revised the Print Legend
5	05/23/18	BS	Revised the Pair Minor and Jacket Diameter
6	06/14/18	BS	Revised the Print Legend & Safety Certification

**Spec Number:** 104-2241

**Part Number:** 08PD2LF007

**Customer:**

**Customer #:**

**Prepared By:** B. Strunk

**Reviewed By:** T. Grzysiewicz

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### MECHANICAL CHARACTERISTICS

**Dynamic/Static Bend Radius: (7 X OD):** 1.8 Inches [46 mm] Minimum  
**Cable Stress Test:** Per QS-505 (Exhibit A)  
**Temperature Cycle Test:** Per QS-506 (Exhibit A)  
**Humidity Cycle Test:** Per QS-507  
**Flex Cycle Test Conductor Failure:** Per QS-508  
**Flex Cycle Test – SI Dynamic Bend:** Per QS-509 (Exhibit A)  
**Bend Radius Test – Static:** Per QS-510

### INDUSTRY STANDARDS

**IEEE 802.3bj:** Physical Layer Specifications and Management Parameters for 100 Gb/s Operation Over Backplanes and Copper Cables  
**InfiniBand™ Architecture (Extended Data Rate):** 1X = 25 Gb/s  
2X = 50 Gb/s

### SAFETY CERTIFICATION

**UL Listing:** Type CL2 as specified in Article 725 of the National Electrical Code  
**C(UL) Listing:** Type CMG as specified in Article 800 of the National Electrical Code  
**RoHS II Material Compliance:** In accordance with EU Directive 2011/65/EU for the Restriction of Hazardous Substances



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