Cable Requirements

Document Number SPEC_E21026

Triad RF Systems Proprietary

Revision History

REVISION	DESCRIPTION	DATE
0	INITIAL RELEASE	8/13/21
1	ECN221231	8/25/22
2	ECN231728	5/5/23

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1. Overview

This document defines the common/default requirements for cable assemblies and provides guidance on interpreting cable assembly drawing packages.

2. Referenced Documents

RoHS	Restriction of Hazardous Substances in Electrical and Electronic Equipment Directive
J-STD-001 (S)	Requirements for Soldered Electrical and Electronic Assemblies *plus* Space and Military Applications Electronic Hardware Addendum
IPC/WHMA-A-620 (IPC-A-620)	Requirements and Acceptance for Cable and Wire Harness Assemblies

3. Order of Precedence

Where a conflict may arise, the following order of precedence shall apply:

1. The cable assembly bill of material (BOM_)
2. The cable assembly drawing (AD_)
3. The cable assembly test procedure (TP_)
4. This specification (SPEC_E21026)
5. Referenced industry standards and government documents

4. Common Assembly Drawing Notes

The following notes shall apply to all cable assemblies unless otherwise specified in the assembly drawing.

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A     IMAGES ARE NOT TO SCALE AND DO NOT INDICATE CABLE FORMING.

B     DIMENSIONS INDICATE UNFORMED LENGTH BETWEEN ENDPOINTS SHOWN.

C     CABLE TIES, LABELS, AND TUBING, SHOWN WITHOUT LOCATING DIMENSIONS SHALL
      BE APPROXIMATELY CENTERED ON THE CABLE/WIRE BETWEEN NEAREST ADJACENT
      ITEMS.

D     DIMENSIONS ARE IN INCHES

E     UNUSED CONNECTOR LOCATIONS SHALL HAVE SPECIFIED INSERTS INSTALLED.

F     WIRE TWISTING SHALL BE PER IPC-A-620 UNLESS SPECIFIC MIN/MAX IS
      SHOWN AS (N1/N2); WHERE A SPECIFIC MIN/MAX IS SHOWN, TWISTING SHALL BE
      UNIFORM OVER THE SPECIFIED LENGTH.

G     FABRICATE/COMPLY TO:
      J-STD-001 CLASS 3 INCLUDING SPACE ADDENDUM
      IPC-A-620

H     REGULATORY COMPLIANCE:
      ROHS

I     DEFAULT SOLDER TYPE:
      LEAD-FREE

J     FINAL ASSEMBLY SHALL BE CLEAN OF FLUX.
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5. Parts and Materials

Parts and materials used to construct cable assemblies shall be limited to those listed on the bill of material and referenced by the assembly drawing.

5.1 Unique Parts and Materials

Parts and materials unique to a specific cable design appear with associated commercial or military part number on the BOM.

5.2 Triad Approved Cable Material List

General materials used to construct cable assemblies are listed in the Triad Approved Cable Material List (TACML). The TACML typically provides material families and/or series from which the supplier shall select a design-appropriate, specific part number.

Designation	Material #	Manufacturer	BOM Description	Notes
CT01	MS3367-4-0		CABLE TIE, BLACK	
	MS3367-5-0			
	MS3367-1-0			
SLDR01	2463377601	Kester	SOLDER, 63/37	(**) Alternate diameter and % flux are approved
	24633776**			
SLDR02	2495747631	Kester	SOLDER, K100LD LEAD-FREE	(**) Alternate diameter and % flux are approved
	24957476**			
HST01	M23053/5-301-0		HEAT SHRINK TUBING, BLACK, POLYOLEFIN	(**) Alternate diameter appropriate for application is approved
	M23053/5-3**-0			
HST02	M23053/4-301-0		HEAT SHRINK TUBING, BLACK, ADHESIVE LINED DUAL WALL POLYOLEFIN	(**) Alternate diameter appropriate for application is approved
	M23053/4-3**-0			
HSL01	M23053/5-101-9		HEAT SHRINK LABEL, WHITE, POLYOLEFIN	(**) Alternate diameter appropriate for application is approved
	M23053/5-1**-9			Minimum Printer/Marking Standards: MIL-M-81531, MIL-STD-202-215
CS01	PTN0.06BK	TECHFLEX	CABLE SLEEVING, BLACK, PET	(*.**) Alternate diameter appropriate for application is approved
	PTN*.**BK			
PTNG01	E-30CL	LOCTITE	POTTING, EPOXY, CLEAR	
PTNG02	3145 RTV, MIL-A-46146	DOW	POTTING, RTV, CLEAR	
WL01	B-427	BRADY	WRAP-AROUND LABEL, SELF-LAMINATING VINYL, MATTE WHITE, B-427	

6. Interpreting The Cable Assembly Drawing (AD_)

6.1 Assembly Drawing Subsections

The Cable assembly drawing has 5 specifying subsections:

1. NOTES (typically on the title/revisions page)
2. ASSEMBLY BLOCK
3. WIRING DIAGRAM
4. LABELING TABLE (optional)
5. LENGTH TABLE (optional)

6.1.1 NOTES

Unique or superseding requirements not identified by the common notes in section 4 of this specification are listed in the NOTES subsection of the assembly drawing.

6.1.2 ASSEMBLY BLOCK

One of three types of ASSEMBLY BLOCKS will appear on the drawing: 1) 3D model, 2) 2D model, 3) Stick figure model. The main purpose of the ASSEMBLY BLOCK is to convey mechanical features.

6.1.3 WIRING DIAGRAM

The WIRING DIAGRAM is the cable schematic. Its main purpose is to convey FROM/TO/WITH, and special treatments such as twisting.

6.1.4 LABELING TABLE (optional)

Where labels cannot be clearly shown in the ASSEMBLY BLOCK, they will be listed in the LABELING TABLE and referenced in the ASSEMBLY BLOCK.

6.1.5 LENGTH TABLE (optional)

Where dimensions cannot be clearly shown in the ASSEMBLY BLOCK, they will be listed in the LENGTH TABLE and referenced in the ASSEMBLY BLOCK.