

**10/100 Ethernet Quad**

**Source Control Drawing**

**Document No: MA-WI0008**

**Panasonic Avionics Corporation**

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CAGE CODE 0FF57

**REVISION HISTORY**

Rev	Date	Reason For Revision	Prepared By	Checked By	Approved By	QA
NEW	8/9/04	Original Release	P. Kudla	D. Wilson	B. Collins	N/A
A	10/14/04	Revised Section 3 - Cable Characteristics Revised Section 5 - Part Marking Requirements Revised Table 6 Revised Table 7-1	B. Collins	Lorna Ennor	Gregg Hirata	N/A
B	2/7/05	Revised Section 3 Revised Section 4 Revised Table 6 Added QA block in Revision History	D. Tamashiro	B. Collins	G. Hirata	B. Duncan
C	2/15/05	Table 7-1 Part Number Correction Revised Section 3 Conductor Resistance Revised Section 4 Attenuation Values	B. Collins	D. Tamashiro	G. Hirata	B. Duncan
D	2/23/05	Revised Table 6	B. Collins	D. Tamashiro	G. Hirata	B. Duncan
E	4/26/05	Revised Section 3 and 4; changed jacket color information Revised Table 7-1 to add -003 and -004.	B. Collins	D. Tamashiro	G. Hirata	B. Duncan
F	11/28/07	Revised Section 4, Conductor Construction from 19X36 to 19X38 to correct typo. Renumbered Sections 4 and on due to Section 4 numbered twice.	D. Tamashiro	B. Collins	G. Hirata	J. Evans
G	12/14/07	Revised Section 3 and 4: Changed shields from silver coated copper to tin coated copper.  Table 8-1: Revised to add new part numbers and obsolescence notes.	B. Collins	<i>D. Tamashiro</i> 12/17/07	<i>B. Collins</i> 12-19-07	<i>J. Evans</i> 12-19-07

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**1 SCOPE**

This specification establishes the manufacturing requirements for 10/100 shielded quadrx cable. It shall be used when specified on engineering drawings or other engineering authorities.

Items described in this drawing shall meet or exceed requirements approved for use in the application(s) specified herein. A substitute item shall not be used without prior approval by the qualifying activity.

**2 APPLICABLE DOCUMENTS**

- EN3042                    Aerospace Series – Quality Assurance EN Aerospace- Qualification Procedure.
- EN3475                    Aerospace Series – Cable, Electrical, for Digital Data Transmission.
- ABD0031                    Fireworthiness Requirements - Pressurized Section of Fuselage
- Panasonic Avionics Corporation    BL-QOP-13-01 Operating Procedure, Control of Non-conforming Product
- MIL-STD-1916            DOD preferred methods for Acceptance of Product
- CFR 14 part 25            Airworthiness Standards: Transport Category Airplanes

NOTE: This document shall take precedence if/when there is a conflict between it and any of the above referenced documents.

**3 24 AWG QUAD GENERAL REQUIREMENTS**

**Conductor:**

- Material:** Silver-coated copper alloy.
- Size:** AWG 24.
- Construction:** 19 X 36 AWG.
- Conductor Resistance (max):** 28.4-ohm/100 ft.

**Cable:** Four (4) of the above insulated conductors are cabled together around one (1) filler.  
**Color:** Pair #1: Red/Blue, Pair #2: Yellow/Green

**Binder Material:** PTFE Tape

**Shield Material:** Tin-coated Round Copper Braid with 90% minimum coverage.

**Outer Cable Jacket:**

- Material:** See table 6. Must meet requirements of ABD0031 and FAR 25.853
- Jacket OD:** .165" (max)
- Color:** See Table 8-1
- Bend Radius:** Refer to EDP10009, "Seat Harness Wiring Installation Requirements"

**Cable Characteristics:**

**Impedance:** 100±10 ohms.  
**Capacitance (nom):** 13 pF/ft.  
**Velocity of Propagation (nom):** 79%.  
**Attenuation (max) at 25°C:** 3.0 dB/100m @ 1 MHZ.  
9.0 dB/100m @ 10 MHZ  
30.1 dB/100m @ 100 MHZ.

**Weight:** 26.0 lbs/1000 ft max.

- 3.1 All cable produced shall be free of visual defects; non conforming products shall be handled per Panasonic Avionics Corporation BL-QOP-13-01.

**4 26 AWG QUAD GENERAL REQUIREMENTS**

**Conductor:**

**Material:** Silver-coated copper alloy.  
**Size:** AWG 26.  
**Construction:** 19 X 38 AWG.  
**Conductor Resistance (max):** 43.0-ohm/100 ft.

**Cable:** Four (4) of the above insulated conductors are cabled together around one (1) filler.  
**Color:** Pair #1: Red/Blue, Pair #2: Yellow/Green

**Binder Material:** PTFE Tape

**Shield Material:** Tin-coated Round Copper Braid with 90% minimum coverage (Except -004, silver-coated round copper braid with 90% minimum coverage).

**Outer Cable Jacket:**

**Material:** See table 6. Must meet requirements of ABD0031 and FAR 25.853  
**Jaket OD:** .138" (nom), .148" (max)  
**Color:** See Table 8-1  
**Bend Radius:** Refer to EDP10009, "Seat Harness Wiring Installation Requirements"

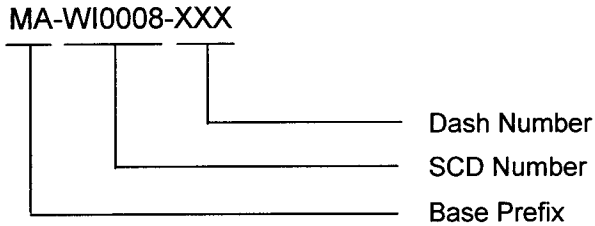
**Cable Characteristics:**

**Impedance:** 100±10 ohms.  
**Capacitance (nom):** 13 pF/ft.  
**Velocity of Propagation (nom):** 79%.  
**Attenuation (max) at 25°C:** 4.0 dB/100m @ 1 MHZ.  
10.5 dB/100m @ 10 MHZ  
36.0 dB/100m @ 100 MHZ.

**Weight:** 20.0 lbs/1000 ft max.

## 5 PART NUMBER EXPLANATION

- 5.1 The following is an explanation of the part numbering structure. All approved parts shall be identified per the following part numbering convention:



## 6 PART MARKING REQUIREMENTS

- 6.1 The cable shall be identified with Panasonic Avionics Corporation's part number and cage code. Additionally, the cable shall be identified with Manufacturers' name, part number and cage code clearly and permanently marked on an internal marker tape. Markings shall be placed at sufficient intervals to view information; at least every 1' of cable and with a distinguishing space between Panasonic Avionics Corporation's and Manufacturers' data.

Example:

Panasonic Avionics Corporation Part #  
Panasonic Avionics Corporation Cage Code (0FF57)  
Mfg Name  
Mfg Part #  
Mfg Cage Code

**7 TEST REQUIREMENTS**

Testing shall be conducted per procedures indicated in Table 6.

**TABLE 6  
TEST PROCEDURES**

TEST	ACCEPTABLE VALUES FOR DATA COMPONENTS	ACCEPTABLE VALUES FOR CABLE JACKET	EN3475 (Airbus)
Operating Temp	-55°C to +125°C	-30°C to +105°C	N/A
Voltage Proof	DC: 1kV (1min) or 2.5kV (2s) AC: 700V (1min) or 1.7kV (2s)	N/A	302
Scrape Abrasion	N/A	F=1daN T=23°C	503
Cable-to-Cable Abrasion	N/A	N/A	511
Dry Arc Tracking			604
Wet Short Circuit			605
Flammability	Burn Length <76mm After Flame Time < 30s AFT of drips < 3s	Burn Length <76mm After Flame Time < 30s AFT of drips < 3s	AITM Test 2.0005
Smoke Density	T=4min Dm ≤ 200	T=4min Dm ≤ 200	AITM Test 2.0008B
Toxicity	T=4min	T=4min	AITM Test 3.0005

- 7.1 **All products supplied under this specification shall be tested and pass all the requirements specified herein. Following approval, the properties and methods of manufacturing shall not be changed without written approval from Panasonic Avionics Corporation.**
- 7.2 The supplier is responsible for the performance of all testing and inspection requirements as specified herein. Panasonic Avionics Corporation reserves the right to perform tests or inspections to verify that the product complies with the requirements of this specification.
- 7.3 For sampling purposes, a lot shall consist of a quantity of the product, defined within this specification, of each size and type produced in one manufacturing cycle, under substantially identical conditions.
- 7.4 The product(s) shall be sampled in accordance with MIL-STD-1916.
- 7.5 Qualification Tests are those tests required by Panasonic Avionics Corporation to validate that the product meets or exceeds all requirements stated by this specification and is acceptable for addition to the Approved Sources of Supply.
- 7.6 Production Tests are those tests that shall be conducted by the manufacturer to assure conformity to the requirements of this specification and enable the manufacturer to certify the quality of its product and present to Panasonic Avionics Corporation.
- 7.7 The supplier shall submit Production and Qualification Test Procedures for Panasonic Avionics Corporation approval prior to any acceptance or qualification testing. Procedures shall include drawings or photographs of test setups, a list of equipment used and data sheets that include certifications for test equipment calibration.
- 7.8 Supplier shall submit test reports with quantitative results of production tests and inspections performed for each shipment. The test report shall identify the lot tested and the corresponding purchase order. Test records shall be retained for a minimum of one year and shall be made available to Panasonic Avionics Corporation upon request.
- 7.9 Panasonic Avionics Corporation may require the supplier to furnish flammability, smoke density, and toxicity tests. Tests shall be witnessed by an FAA Certified Flammability DER. Panasonic Avionics Corporation will recommend a Certified DER if required. A report of flammability, smoke density, and toxicity test results shall be provided for approval by Panasonic Avionics Corporation.

## **8 PROCUREMENT**

- 8.1 Procurement of this product shall be per the current revision of this document and the Approved Sources of Supply.
- 8.2 Identification of the approved source(s) of supply herein is not to be construed as a guarantee of present or continued availability of a source of supply for the item described on the drawing.

Table 8-1

APPROVED SOURCES OF SUPPLY						
Dash Number	Vendor	Cage Code	Vendor Part Number	Item Identification	Wire AWG	Jacket Color
-001	Tensolite	92607	NFX24EQ100* NFX24EQ100-150	MA-WI0008-001	24	Black
	Thermax	12814	956-4XE* 956-4ZXE			
-002	Tensolite	92607	NFX26EQ100* NFX26EQ100-150	MA-WI0008-002	26	
	Thermax	12814	956-426XE* 956-426ZXE			
-003	Tensolite	92607	NFX24EQ100(WHT)* NFX24EQ100-150(WHT)	MA-WI0008-003	24	White
	Thermax	12814	956-4XE(WHT)* 956-4ZXE(WHT)			
-004	Tensolite	92607	NFX26EQ100(WHT)	MA-WI0008-004	26	
	Thermax	12814	956-426XE(WHT)			

\* - Part obsolete, current WIP at cable manufacturer and at wire vendor may be used until material depleted.