



SLOVENSKI STANDARD
kSIST FprEN 16602-70-18:2014
01-februar-2014

Zagotavljanje varnih proizvodov v vesoljski tehniki - Pripravljanje, sestavljanje in pritrjevanje RF koaksialnih kablov

Space product assurance - Preparation, assembly and mounting of RF coaxial cables

Raumfahrtproduktsicherung - Vorbereitung, Zusammenbau und Befestigung von RF-Koaxial-Kabeln

Assurance produit des projets spatiaux - Préparation, assemblage et montage des câbles radiofréquence coaxiaux

Ta slovenski standard je istoveten z: FprEN 16602-70-18

ICS:

49.090	Oprema in instrumenti v zračnih in vesoljskih plovilih	On-board equipment and instruments
49.140	Vesoljski sistemi in operacije	Space systems and operations

kSIST FprEN 16602-70-18:2014 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

FINAL DRAFT
FprEN 16602-70-18

October 2013

ICS 49.090; 49.140

English version

Space product assurance - Preparation, assembly and mounting of RF coaxial cables

Assurance produit des projets spatiaux - Préparation,
assemblage et montage des câbles radiofréquence
coaxiaux

Raumfahrtproduktsicherung - Vorbereitung, Zusammenbau
und Befestigung von RF-Koaxial-Kabeln

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/CLC/TC 5.

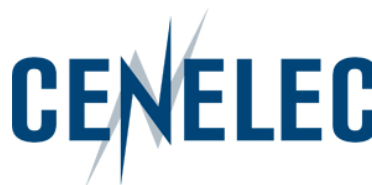
If this draft becomes a European Standard, CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN and CENELEC in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



CEN-CENELEC Management Centre:
Avenue Marnix 17, B-1000 Brussels

Table of contents

Foreword	5
Introduction	6
1 Scope	7
2 Normative references	8
3 Terms, definitions and abbreviated terms	9
3.1 Terms from other standards.....	9
3.2 Terms specific to the present standard	9
3.3 Abbreviated terms.....	9
4 Principles and prerequisites of reliable soldered or crimped cable connections	10
4.1 Principles of reliable soldered or crimped semi-rigid cable connections	10
4.2 Prerequisites for assembly and mounting of semi-rigid coaxial cables	10
4.3 Alternative coaxial cable technologies	11
5 Requirements	12
5.1 Preparatory conditions.....	12
5.1.1 Facility cleanliness	12
5.1.2 Environmental conditions	12
5.1.3 Lighting requirements.....	13
5.1.4 Equipment and tools	13
5.2 Material selection.....	15
5.2.1 Solder	15
5.2.2 Flux.....	16
5.2.3 Solvents	16
5.2.4 Cable selection	17
5.2.5 Connector selection	17
5.3 Preparation of semi-rigid cable	18
5.3.1 General	18
5.3.2 Inspection of cable	18
5.3.3 Cutting cable to initial oversize length	18

5.3.4	Cable forming and minimum bend radius	18
5.3.5	Preconditioning heat treatment.....	19
5.3.6	Trimming cable to final length	20
5.3.7	Stripping the cable ends.....	21
5.3.8	Inspection of stripped cable ends	21
5.4	Preparation for soldering assembly of semi-rigid cables	22
5.4.1	General.....	22
5.4.2	Degolding and pretinning	22
5.4.3	Solder preforms	23
5.5	Assembly of connectors to RF coaxial cables.....	24
5.5.1	Solder assembly of semi-rigid cables	24
5.5.2	Crimp assembly of semi-rigid cables and other assembly techniques	28
5.5.3	Completed assemblies.....	28
5.6	Mounting of cables.....	29
5.6.1	Semi-rigid cables with straight solder-type connectors.....	29
5.6.2	Semi-rigid cables with right-angle connectors	30
5.6.3	Other cable mounting technologies	30
5.7	Process verification.....	31
5.7.1	General.....	31
5.7.2	Temperature cycling.....	31
5.7.3	Vibration.....	31
5.8	Quality assurance.....	31
5.8.1	Data	31
5.8.2	Nonconformance.....	32
5.8.3	Calibration.....	32
5.8.4	Traceability	32
5.8.5	Workmanship standards.....	32
5.8.6	Inspection	32
5.8.7	Operator and inspector training and certification	33
Annex A	(normative) Logbook – DRD	34
A.1	DRD identification.....	34
A.1.1	Requirement identification and source document.....	34
A.1.2	Purpose and objective.....	34
A.2	Expected response.....	34
A.2.1	Scope and content	34
A.2.2	Special remarks	34
Annex B	(normative) Workmanship standards	35

FprEN 16602-70-18:2013 (E)

B.1	Overview	35
B.2	Illustrations	35
Annex C (informative) Graphical information		37
C.1	Overview	37
C.2	Typical cable cut-off fixture	37
C.3	Typical cable-forming tool	38
C.4	Approved and non-approved straight solder-type cable-end connectors.....	39
C.5	Method of producing solder performs.....	40
C.6	Centre contact assembly	40
Bibliography.....		41

Figures

Figure B-1	: Photograph showing non-captive nut and preferred solder fillet	35
Figure B-2	: Microsection through preferred solder fillet, revealing full penetration of solder path	35
Figure B-3	: Unacceptable solder fillet dimensions	36
Figure C-1	: Typical cable cut-off fixture	37
Figure C-2	: Typical cable-forming tool	38
Figure C-3	: Approved and non-approved straight solder-type cable-end connectors.....	39
Figure C-4	: Method of producing solder preforms.....	40
Figure C-5	: Centre contact assembly	40

Tables

Table 5-1	: Design rules for minimum bend radius.....	19
Table 5-2	: Preconditioning heat treatment process.....	20

Foreword

This document (FprEN 16602-70-18:2013) has been prepared by Technical Committee CEN/CLC/TC 5 "Space", the secretariat of which is held by DIN (Germany).

This document (FprEN 16602-70-18:2013) originates from ECSS-Q-ST-70-18C.

This document is currently submitted to the Unique Acceptance Procedure.

This document has been developed to cover specifically space systems and will therefore have precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

Introduction

The main part of this Standard is based on industrial experience and recommendations from European soldering technology experts. Modifications are incorporated into the text to provide for the specific requirement of low-outgassing electrical systems which are required by scientific and application satellites. Other additions were made in the light of recent technological advances and results of metallurgical test programmes. The use of processes other than solder assembly is recognized, but only certain general requirements are given in this Standard.

These requirements apply to assemblies designed to operate within the temperature limits from -45 °C to +85 °C. More extreme temperatures or other unusual environmental applications require special design measures or processing steps to provide environmental survival capability.