Pages 1 to 20

THE EUROPEAN PREFERRED PARTS LIST (EPPL) AND ITS MANAGEMENT

ESCC 12300

ISSUE 1

December 2006

Document Custodian: European Space Agency - see https://spacecomponents.org

LEGAL DISCLAIMER AND COPYRIGHT

DOCUMENTATION CHANGE NOTICE

(Refer to https://spacecomponents.org for ESCC DCR content)

DCR No.	CHANGE DESCRIPTION

FOREWORD

An objective of the ESCC, as stated in the Charter, is to “implement a system for rationalising the diversity of components for space use, based on the usage of an European preferred parts list (EPPL), giving preference to European components offering competitive performance and costs”.

Making available an EPPL with this objective actively promotes the selection of parts for which there is an established body of data to support their suitability for space application. Further, an EPPL supports the component engineering disciplines of part selection and type reduction.

The EPPL is issued, and published in ESCIES, with the approval and under the authority of the SCSB. The EPPL is managed by a manager contributed to the Executive Task by an ESCC member and is subject to technical review and oversight by an EPPL Technical Authority nominated by the SCSB. The PSWG is tasked by SCSB with overall supervision of the EPPL activity.

TABLE OF CONTENTS

1. INTRODUCTION

The EPPL is made up of two parts:

– Part 1 components:
components which are fully qualified or evaluated to recognised space standards giving full confidence for space usage.

– Part 2 components:
components for which the potential capability to satisfy space application requirements has been demonstrated but which have not yet reached the level of full confidence.

By this means the objective is to direct the user towards a limited number of component types, covering all design applications. The aim is to avoid duplication, achieve type reduction and hence through increased volumes achieve cost reduction and procurement effectiveness.

2. SCOPE

This document defines the EPPL and provides the rules for establishing the list of preferred and suitable components to be used by European manufacturers of spacecraft hardware and associated equipment.

The operating rules for management, administration and maintenance of the EPPL are also defined.

This document applies to all parties involved at all levels in the realisation of Space segment hardware and its interfaces.

3. DEFINITIONS AND ABBREVIATIONS

3.1 DEFINITIONS

Nil.

3.2 ABBREVIATIONS

The following abbreviations are used in this document:

CECC	CENELEC Electronic Components Committee
Charter	Charter of the European Space Components Coordination
CF	Change form
CTB	Components Technology Board
EAF	Entry application form
ECSS	European Cooperation for Space Standardisation

EEE	Electrical, Electronic and Electro-mechanical
EPPL	European preferred parts list
ESA	European Space Agency
ESCIES	European Space Components Information Exchange System
ESCC	European Space Components Coordination
JAXA	Japan Aerospace Exploration Agency
MIL (spec)	Specification of the U.S. Department of Defense
NASA	National Aeronautics and Space Administration
NPSL	NASA parts selection list
PPL	Preferred parts list
PSWG	Policy and Standards Working Group
QML	Qualified manufacturers list
QPL	Qualified parts list
RAF	Removal application form
SCSB	Space Components Steering Board
TA	Technical Authority for the EPPL
SEE	Single event effects
SEF	Summary evaluation form
TID	Total ionising dose

4. RELATED DOCUMENTS

4.1 RELATED DOCUMENTS

4.1.1 Applicable Documents

The following documents are applicable to the extent specified herein:

ESCC 23600	Complaints and Appeals

4.1.2 Reference Documents

ESCC 00000	Charter of the European Space Components Coordination
ECSS-Q-60	Space Product Assurance Electrical, Electronic and Electromechanical (EEE) Components

5. RULES FOR SELECTION AND REMOVAL

5.1 GENERAL

The inclusion of components in the EPPL indicates that they:

– are capable of satisfying a wide range of design applications.
– are known in their technology and show potential for use in flight hardware.
– have a significant chance of being utilized for current and future programmes.
– are available from sources for which there is evidence that they are capable of providing products of the required quality.
– freely available on a commercial basis without let or hindrance to the ESCC User Industry. (This precludes the selection of a component subject to any form of selective export control.)

Preference is given to those components:

– with an established radiation performance.
– available in both through hole and surface mount versions.
– suitable for both engineering model and flight hardware.
– available from a European supplier. (Where an European component is not available, a suitable non–European component is listed.)
– from suppliers whose product lines have been assessed by the ESCC Executive or by another recognised third party authority.
– for which a second source is available.

For each part type:

– due consideration is given to standardisation and, for example, reduction of type variants, values, packages, sizes, application range.
– the relevant manufacturer is listed, together with the applicable procurement specification and relevant characteristics.

5.2 SELECTION OF PART 1 COMPONENTS

Components included in Part 1of the EPPL can be used without any special provision, on the condition that they meet the application requirements.

Provided that the selection criteria in paragraph 5.1 are met, the Part 1 components shall be selected from those meeting at least one of the following criteria:

a. components included in recognized QPLs issued by:
   – ESCC

– US Defense Supply Center, Columbus - MIL (class S, ER level R)
– JAXA (class S, ER level R)

b. components included in the QML issued by ESCC.
c. components belonging to QML class V, class K, or class S in the QMLs issued by US Defense Supply Center, Columbus.
d. components included in NASA NPSL, level 1.
e. components that have been evaluated successfully according to ESCC, ECSS-Q-60 or equivalent requirements for which a recognised procurement specification is available.

5.3 SELECTION OF PART 2 COMPONENTS

Part 2 components complement Part 1 components and ensure improved coverage of future programme requirements. In general, additional effort is necessary to satisfy specific programme requirements. The selection of components is based on available data resulting from evaluation demonstrating capability to satisfy space application requirements. The components in Part 2 are not to be intended as a second source for similar types already listed in Part 1.

Provided that the selection criteria in paragraph 5.1 are met, the Part 2 components shall be selected from those meeting at least one of the following criteria:

a. components included in recognized QPLs issued by:
   - US Defense Supply Center, Columbus - MIL (level B, JANTXV, ER level P)
   - CECC Register of Approvals
   - JAXA (level B, ER level P)

b. components belonging to QML class Q, class H, class B, or JANTXV in the QMLs issued by US Defense Supply Center, Columbus.
c. components included in NASA NPSL, levels 2 and 3.
d. components that have been evaluated in a space project or in other applications, where at least minimum data are available, e.g:
   - constructional analysis
   - electrical characterisation
   - life test results
   - mechanical data (for electromechanical components only)
   - radiation test data (for sensitive components only)

   The above data can also be partially available, provided that the existing data are sufficient to cover the requirements indicated in a, b or c for the particular family of components.
e. components where manufacturer's data are available, e.g:
   - qualification data

- process (SPC) data, life test/reliability/field data and line certification

The availability of only one of the above types of data can be sufficient to consider the components compliant with the requirements for Part 2.

5.4 ENTRY CHANGES

The EPPL entry for a component type shall be changed to correct errors or when:

– a component type listed in Part 2 has been developed to a point where it meets the requirements for entry into Part 1 as indicated in paragraph 5.2.
– new variants or range of values are to be added or further type reduction leads to the removal of variants or range of values.
– new data leads to a change in the relevant characteristics to be listed.
– a new procurement specification in a preferred format is issued.
– manufacturer details change.

5.5 REMOVAL

A component type shall be removed from the EPPL when any of the following situations arise:

– the component has ceased to meet the requirements of Part 1 or Part 2 indicated in paragraphs 5.2 and 5.3.
– the component has become obsolete.
– sources are no longer available or have become subject to export restrictions.
– the type has been replaced in the EPPL by a functionally similar but improved component effectively meeting the same characteristics and quality assurance requirements.
– inherent reliability/quality problems have been experienced and not resolved.

6. USER RESPONSIBILITY

Components in the EPPL met the appropriate criteria of paragraph 5 at the time of inclusion. However, it is the responsibility of each user, who is considering using components selected from the EPPL, to satisfy himself/herself of the suitability of the component, in all respects, for the intended application.

A user who proposes a component for inclusion or removal undertakes to provide the technical information required by the appropriate criteria of paragraph 5, as reflected into the current EAF and RAF, and to respond to any resulting queries from the EPPL Manager in support of the review and decision process of the TA.

7. EPPL CONTENT

7.1 GENERAL

For each component, the following information shall be provided:

- type, group and subgroup.
- package.
- description, including preferred variants, temperature range, range of values for passives, remarks on radiation sensitivity, if available.
- detail specification (whenever possible, the specification proposed is to be from the ESCC system).
- generic specification (when necessary).
- manufacturer.
- TID information.
- remarks if any (such as restrictions, relevant or specific information).

7.2 RADIATION INFORMATION

For each component listed in the EPPL the relevant resistance to TID shall be indicated using one of the following categories:

a. for ESCC qualified components with ESCC 22900 testing results:
   - ESCC qualified and tested in accordance with ESCC 22900 to X kRad(Si)

b. for MIL qualified components with the indication of TID hardness code:
   - qualified in accordance with MIL-STD/PRF-XXXXX with TID hardness as per MIL-STD-XXX test method XXXX to X kRad(Si)

c. for components with user's or manufacturer's TID test data:
   - user/manufacturer test data available

d. for components with no TID data available:
   - no data available

e. for components considered inherently insensitive by technology:
   - insensitive

8. EPPL

The EPPL is available on the ESCIES web site at: https://escies.org/

A “what’s new” section provides details of new entries, changes and deletions in the latest issue of the EPPL.

9. MANAGEMENT OF THE EPPL

9.1 TECHNICAL AUTHORITY

The SCSB appoints a TA to manage the preparation and maintenance of the EPPL. The members elect a Chair and the Chair is proposed to, and confirmed by, the SCSB.

The TA is responsible for ensuring the EPPL is regularly updated with a target frequency of twice per year.

9.2 EPPL MANAGER

An EPPL Manager is identified within the ESCC Executive to manage the preparation and maintenance of the EPPL. The EPPL Manager provides the TA with appropriate and timely selection, change and removal data to enable the TA to review and approve the technical content of each planned issue of the EPPL. Note that the EPPL Manager may be a single individual or a small team responsive to the TA and proposers through a single point of contact, the EPPL Manager.

9.3 ESTABLISHMENT OF THE EPPL

9.3.1 Parties Involved

The parties involved in the EPPL life cycle are as follows:

– the proposer, as the person submitting a proposal for inclusion or removal of components from the EPPL.

– the TA, as the body monitoring the process, performing a technical review function and advising the SCSB on acceptance of the list.

– the EPPL Manager, as the person managing the process of inclusion or removal of components in the EPPL, facilitating the review by the TA and preparing each issue of the EPPL for publication.

– the SCSB for final approval to publish each issue of the EPPL.

– the PSWG to exercise oversight of the EPPL and advise the SCSB on its continued utility, reflection of the ESCC work plans and of any changes in policy or operation deemed necessary.

9.3.2 Management of the Document

The EPPL is published in ESCIES after formal authorisation given by the TA, through its Chair, and approval by the SCSB, through its Chair.

Proposals for inclusion or removal of components or changes to an entry, may be made by any person and addressed directly to the EPPL Manager by the means indicated in the EPPL section of ESCIES.

Any change to the list proposed by the EPPL Manager shall be reviewed and authorised by the TA and subsequently approved by the SCSB through its Chair.

9.3.3 Responsibilities

– The proposer, for the inclusion or removal of components in the EPPL, shall act as the technical interface with the EPPL manager.
– The TA is responsible for the content of the EPPL, and, on behalf of the SCSB, also for the formal authorisation, via the TA Chair, to publish the EPPL, after approval by the SCSB Chair.
– The TA shall monitor and may audit, on behalf of the SCSB, the EPPL activity performed by the EPPL manager, and, via the TA Chair, shall advise the SCSB and the EPPL manager on request.
– The TA shall maintain appropriate records of its work.
– The EPPL Manager is responsible for the preparation of the EPPL, and for providing it in a suitable form for subsequent authorisation, approval and publication in ESCIES.
– The EPPL Manager shall maintain appropriate records of his/her work.

9.3.4 Description of the Information Flow

a. Proposals for component inclusion in or removal from the EPPL shall be made using an Entry Application Form (EAF) or a Removal Application Form (RAF). Proposals for changes to existing entries shall be made using a Change Form (CF).
b. The submission of a proposal for inclusion, removal or change may be made at any time.
c. The EPPL Manager shall review received EAFs, RAFs and CFs, applying the inclusion or removal criteria, as defined in paragraph 5, and taking into account appropriate standardisation and type reduction considerations.
d. For each EAF, where the component type is not qualified to a recognised system, the EPPL Manager shall obtain sufficient supporting documentation (e.g. test data) to properly evaluate the acceptability of the component for inclusion in the EPPL. This documentation can be reduced to a summary test report (indicating the type of testing performed, the specifications or standards applied and, for each test, the measured electrical parameters, the applied conditions, the quantity submitted to the test, the result and the quantity passing/failing and the test reports references) provided the proposer undertakes to provide the underlying test data at the request of the EPPL Manager.
e. All new component types proposed, which are not qualified, shall be selected in line with the technological programme and general policy established by the CTB.
f. The EPPL Manager, using a suitable Summary Evaluation Form (SEF), shall generate a preliminary list of proposed inclusions, deletions and changes. This preliminary list shall be distributed to the TA members for review and approval.
g. The TA Chair shall be responsible for authorising the publication of the EPPL in ESCIES

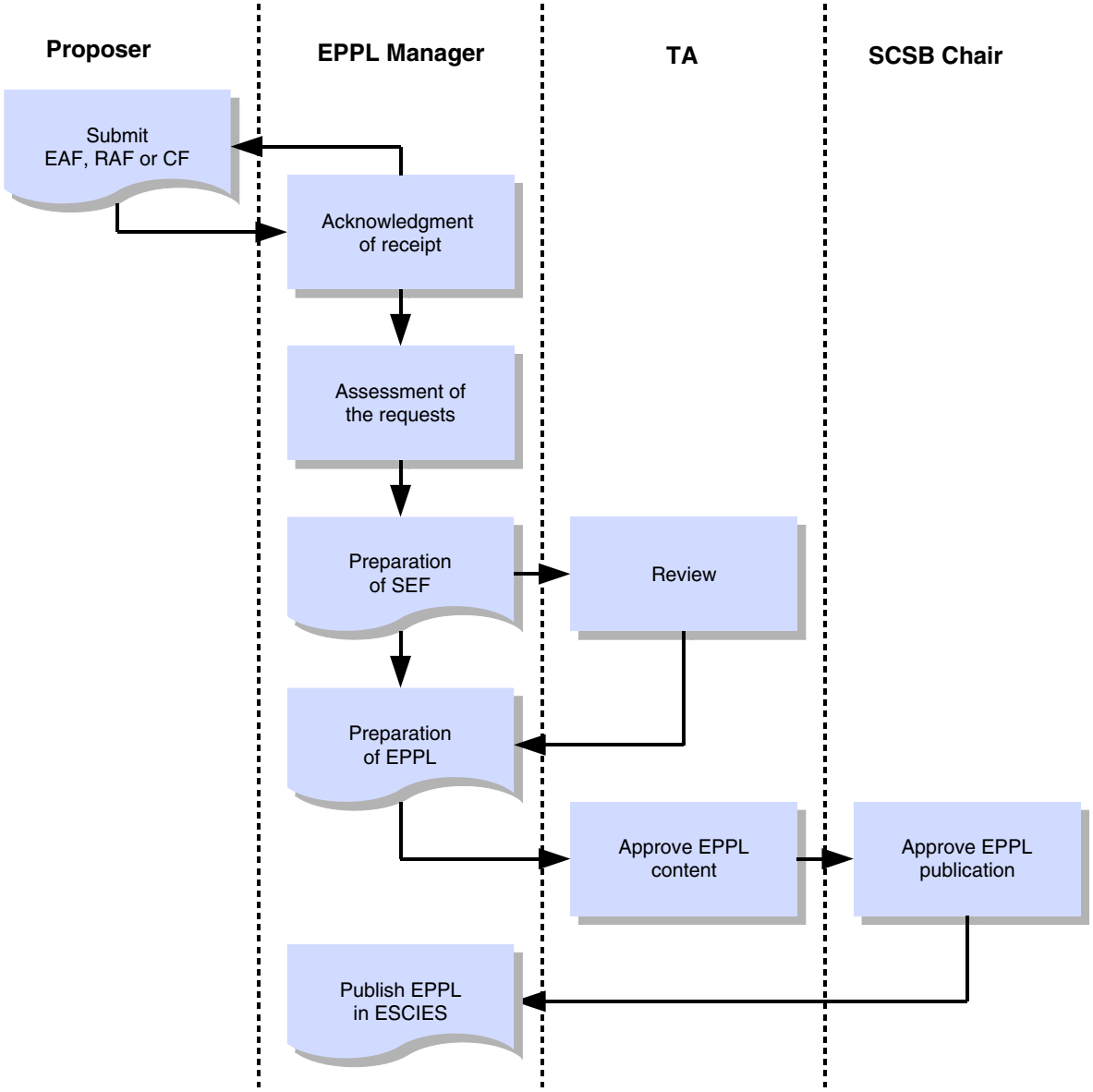
after approval by the SCSB through its Chair. (Note that the SCSB Chair shall provide such approval outside the SCSB meeting schedule with the approval being added to the agenda of the next meeting for confirmation by the Board.)

h. The EPPL Manager shall be responsible for the accuracy, schedule and availability of the list.

i. Information shall be exchanged between the parties primarily by electronic means.

j. All records, including correspondence, completed forms, draft documents and minutes of meeting generated and received in the course of the work of the EPPL Manager and that of the TA, are designated as the property of the SCSB and shall be stored by the EPPL Manager and TA Chair respectively in a way that prevents degradation and facilitates ready retrieval. They shall be accessible to the SCSB if so required and shall be passed on to successive EPPL Managers and TA Chairs in an appropriate manner.

9.3.5 EPPL Flow Chart



9.3.6 Communication

Receipt of an EAF, RAF or CF will be acknowledged by the EPPL Manager indicating the EPPL issue which will reflect the disposition of the application. A proposer who sees that his/her proposal has not been executed in the issue of the EPPL may contact the EPPL Manager (using the feedback form in the EPPL section of ESCIES) to request an explanation.

9.3.7 Complaints and Appeals

A proposer whose proposal is rejected by the TA and who disputes the TA decision may resort to the complaints and appeals process in accordance with ESCC Basic Specification No.

23600.

9.4 FORMS

The EAF, RAF and CF are provided in the EPPL section of ESCIES. The applicable form shall be completed by the proposer and submitted to the EPPL Manager following the instructions provided herein supplemented, as necessary, by instructions in ESCIES provided with the forms. The SEF is generated within the EPPL application and is internal to the review process of the TA.

Electronic delivery is the preferred means for EAF, RAF, CF and supporting data submission.

9.4.1 Entry Application Form (EAF)

The EAF requires the entry of the following information:

1. Proposer	Company name:	name of the company or organisation
	Company address:	address for communications
	Proposer:	name of the person submitting the proposal
	Responsibility:	proposer's position in the company or organisation
	Signature:	signature of the proposer (not applicable to on line submission)
2. Component	Type:	commercial designation of the component
	Group:	code (per listing in the EPPL section of ESCIES)
	Subgroup:	code (per listing in the EPPL section of ESCIES)
	Description:	description of the component function
	Package:	standard designation of the package
3. Design and application assessment	Application:	a detailed description of the application by the proposer
	Expected volume:	expected quantity of components planned to be used in the identified application
4. Manufacturer	Manufacturer:	supplier of the proposed component
	Processing:	front end manufacturing plant(s)
	Assembly:	assembly plant
	Screening:	plant where the component is screened
	Component manufactured since:	date when production started
	Present availability:	indication of availability for the chosen assurance level

	Engineering model availability:	indication of the availability of the engineering model equivalent component
	Future availability:	future availability of the required assurance level
	Export license:	any limitation for exportation and any license required (See Para. 5.1)
5. Technology	Process:	detail description of the baseline process
	Available packages:	all available packages shall be listed
	Available lead finishing:	all the available lead finishes shall be listed.
	Die size (if applicable):	dimension of the die
	Metallisation (if applicable):	type of metallisation
	Die–attach method (if applicable)	die–attach method(s)
	Bonding method (if applicable):	wire bonding method(s)
	Bond wires (if applicable):	material and relevant dimension of the bond wires
	Other information:	additional pertinent information defining the technology used
6. Qualification status	QPL/PPL listing:	indication of inclusion in the recognized QPLs/ PPLs
	Line qualification:	indication of any available manufacturer or user line qualification related to the component
	Device qualification:	indication of any available manufacturer or user device qualification
	Similarity:	indication of any part qualification reached by similarity with an equivalent device
Evaluation/ qualification testing	In progress:	indication of start date and due date for completion
Evaluation/ qualification testing	Planned:	indication of any planned evaluation or qualification testing and the relevant schedule
Maximum assurance level available	Present:	maximum screening level available at the time of the request
Maximum assurance level available	Future:	maximum screening level that may be available in the future
	Previous space usage:	identification of the space programmes on which the EPPL candidate has been previously used

7. Quality and reliability data	Maximum rated temperature during operation:	maximum operating temperature
	Maximum rated temperature for environmental tests:	maximum temperature(s) to be used during tests
	Test data availability:	all report references relevant to electrical tests, mechanical tests, environmental tests, life test, constructional analysis
8. Radiation Data	Radiation test data availability:	all report references relevant to TID and SEE tests
9. Existing procurement specification	Generic:	ESCC Generic specification or other equivalent applicable specification
	Detail:	ESCC Detail specification or other equivalent applicable specification
	Other:	any other available specification (e.g. manufacturer's specification)
10. Second source		In the case that a second source is available, the required information shall be provided as per the proposed manufacturer
11. Additional data and remarks		Any additional information, considered by the users as being pertinent to the selection of the component for inclusion in the EPPL.

9.4.2 Removal Application Form (RAF)

The RAF requires the entry of the following information:

1. Proposer	Company name:	name of the company or organisation
	Company address:	address for communications
	Proposer:	name of the person submitting the proposal
	Responsibility:	proposer's position in the company or organisation
	Signature:	signature of the proposer (not applicable to on line submission)
2. Component	Type:	commercial designation of the component
	Manufacturer:	supplier of the EPPL component to be removed
	Group:	code (per the component entry in the EPPL)
	Subgroup:	code (per the component entry in the EPPL)

	Description:	description of the component function
	Package:	standard designation of the package
	Detail specification:	detail specification (per the component entry in the EPPL)
3. Reason for removal		description and justification for removal of the component
4. Additional data and remarks		any additional information, considered by the proposer as being pertinent to the decision process for removal of the component from the EPPL.

9.4.3 Change Form (CF)

The CF requires the entry of the following information:

1. Proposer	Company name:	name of the company or organisation
	Company address:	address for communications
	Proposer:	name of the person submitting the proposal
	Responsibility:	proposer's position in the company or organisation
	Signature:	signature of the proposer (not applicable to on line submission)
2. Change		description of the proposed change
3. Justification		justification for the proposed change
4. Additional data and remarks		any additional information, considered by the proposer as being pertinent to the decision process for the change.

9.4.4 Summary Evaluation Form (SEF)

The EPPL Manager shall periodically, as agreed with the TA, summarise all received EAFs, RAFs and CFs into the SEF as a means for review by the TA. Disposition of the line items recorded on the SEF provides the basis for the subsequent issue of the EPPL. The SEF shall include the following data fields:

– a reference number per line item
– component type
– group
– subgroup
– detail specification
– package

- manufacturer
- qualification status
- evaluation status
- previous space usage
- assurance level
- availability of data:
  - test
  - reliability
  - radiation (TID)
  - radiation (SEE)
- radiation category (TID)
- remarks
- recommendation to the TA (accept/reject the proposal to include/remove/change the component)