

ESCCON 2019

ESCC Executive Report

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Section

ESA-TECQES-HO-013229

The ESCC Standardization Products



What: European EEE Parts manufactured and qualified in Europe for unique space applications

Why: To secure the access of the European Space Industry to an independent and stable supply of reliable EEE Parts suitable for space as major building blocks for each satellite

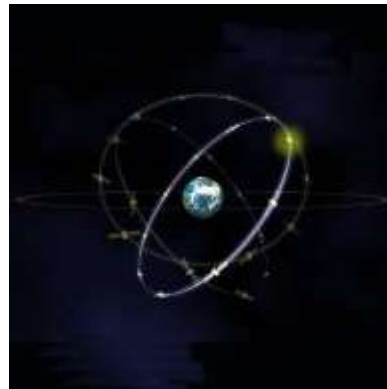
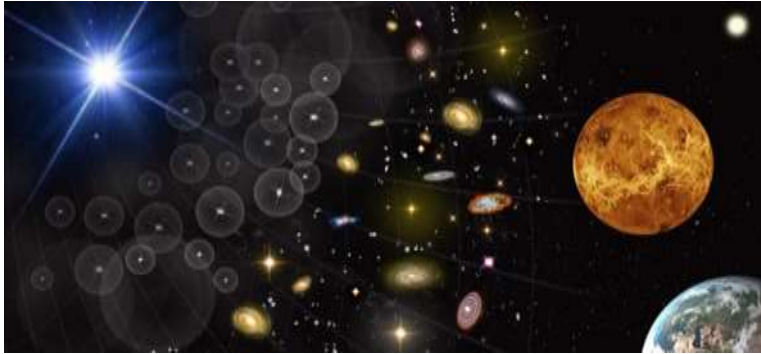
Who: ESA is the Qualifying and Certification Agency for ESCC with the support of ESCC Executive members CNES (FR), DLR (D), EI (Ir), UKSA (UK), ESA (acting also as National Space Agency for other European countries)

How: Through ESCC procurement and qualification specifications, initial qualification program, process control (PID), verification by testing every two years, QA (Audit/NC follow-up)

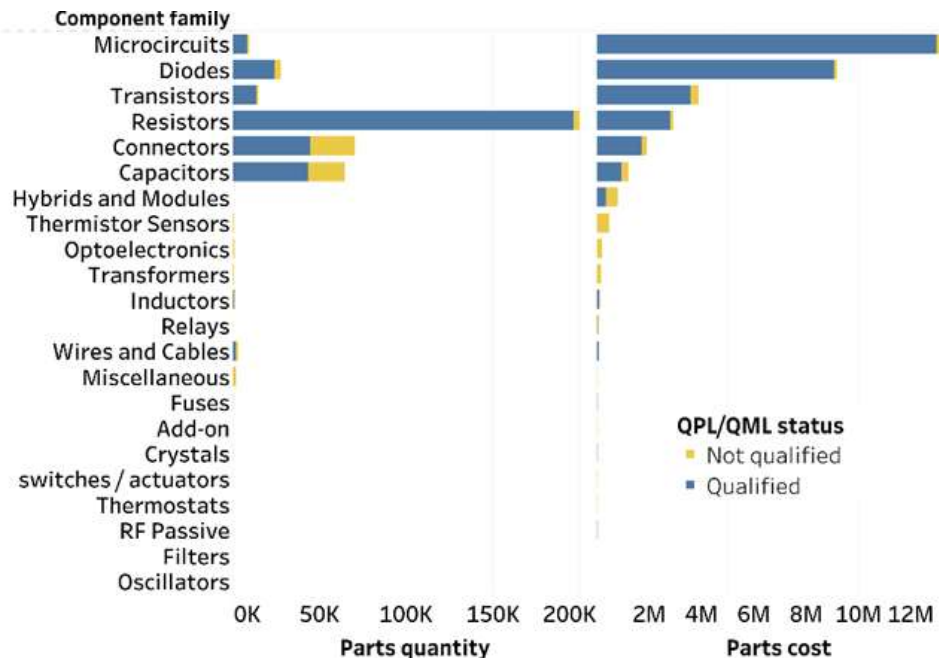
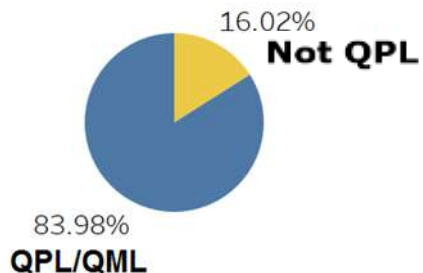
[Note 1] “European component” At least the quality operations (e.g. inspections and tests), being performed in one or more, and the delivered component originating from one, of the Member States of ESA or a state or country with a cooperation agreement with ESA. A component which may have the benefit of ESCC qualified status by virtue shall be free from any form of selective export controls



ESCC Standardization Product Strategy



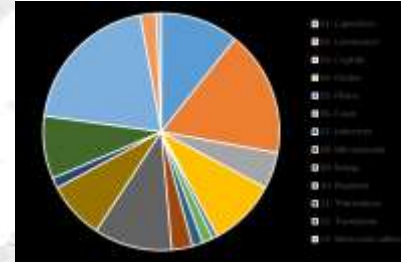
The Importance of relying on a EEE QPL



Status of ESCC Qualifications



01- Capacitors	Ceramic Fixed Ceramic Fixed Chip Fixed Film Semiconductor Tantalum, (Solid), Fixed, Electrolytic	Esselia Technologies AVV AVV/TPC Esselia Technologies AVB Esselia Technologies Esselia Technologies Cobham microwave
02- Connectors	Microminiature, Crimp Contacts Multipin, Crimp Contacts Multipin, Solder Contacts Printed Circuit Board RF Coaxial	CKR Souriau Axon C&E Deutsch Souriau C&E Souriau HyperLac Radial Rosenberger
03- Crystals	Crystals	RAICOF
04- Diodes	Power Rectifier RF/Microwave, SiCon Schottky RF/Microwave, Varactors Switching	STMicroelectronics infineon Cobham microwave AVV Electronics STMicroelectronics Esselia Technologies
05- Filters	Feedthrough SAW	Terminology Services
06- Fuses	Thin Film	SCHURTER AG
07- Inductors	Fixed, RF Power	Esselia SAS Esselia SAS
08- Microcircuits	Digital C-MOS Linear Switching Regulator	ATMEL STMicroelectronics STMicroelectronics
09- Relays	Latching, 28Vdc Contact Rating Non-Latching, 28Vdc Contact Rating	Leach-Saralbe REL 53PI Leach-Saralbe REL 53PI
10- Resistors	Chip Fixed, Film Flexible, Foil, Heaters Shunts	Vishay S.A. Shrovet Vishay Drahtec Mitsui BICA - BICA subbühntette
11- Thermistors	NTC Pt sensor	TE Connectivity JST
12- Transistors	Low Power, NPN Low Power, PNP Microwave, Gallium Arsenide MOSFET, Power, N-Channel MOSFET, Power, P-Channel RF/Microwave, MPP, Low Power, Low Noise	STMicroelectronics STMicroelectronics infineon STMicroelectronics Infotest STMicroelectronics infineon
13- Wires and cables	Coaxial, RF, Flexible Low Frequency	Axon Moerts W. L. Gees Axon Draka Fibrec Networks Linn. W. L. Gees Tec Electronics
20- Thermostats	Switches	COAREPA
30- RF Passives	Attenuator and Load Circulator and Isolator	Radial Cobham microwave
40- Hybrids and modules	Hybrid	Thales Alenia Space , 3D plus Airbus Safran Thales Alenia Space, Tecon, Thales Alenia Space
50- Cable assembly	Optical cable assemblies RF	Diamond SA Radial



Evolution of the ESCC Certificates



New ESCC QPL/QML/HPCA certificates issued in 2018



The new ESCC QPL/QML/PCA/HPCL



- Published every month in ESCIES.org
current version 190 – October 2018
- Application form for new qualification or MOQ archived (test vehicles selected, test report results, PID reference, audit report reference, reference closed NCCS...)
- Qualified parts Database
- History of certificates review
- Status of published-up-issued specifications
- Qualified Component families
- All Hybrid manufacturers who have previously achieved ECSS/PSS Capability Approval have now successfully transitioned to the ESCC Hybrid Process Capability Approval, currently listed in the ESCC QML. The corresponding PSS documents can be retired.

The image displays several screenshots related to the ESCC (European Space Component Catalogue) system. On the left, there are two document covers: 'ESCC QUALIFIED PARTS LIST (QPL)' and 'ESCC HYBRID PROCESS CAPABILITY APPROVAL LIST (HPCL)'. Both documents feature the ESCC logo and the ESA logo. In the center, a browser window shows a tree view of the ESCC structure, including sections like '1. INTRODUCTION', '2. PROCESS RESPONSIBILITY', '3. QUALIFICATION ORGANIZATION', '4. TABLE OF QUALIFIED COMPONENTS', '5. TABLE OF COMPONENT CERTIFICATES', and '6. CERTIFIED PARTS LIST (CPL)'. On the right, a document titled 'ESCC QPL' is shown, containing a table with columns for 'Part Number', 'Manufacturer', 'Status', and 'Date of Approval'. Below the table, there is a section for 'Customer Usage' and 'Contact' information.



ESCC Specifications are enablers



New Technology Insertion

Optical Fibre Cable Assemblies based on type mini AVIM
Cable assembly

New products and variants to be qualified

Ex. THIN FILM PLATINUM SENSOR, PTC, RANGE 100 TO 2000 OHMS AT 0°C

New test methods and conditions

ESCC Guideline for Displacement Damage Testing (New ESCC Specifications in the pipeline)

Specific Application conditions

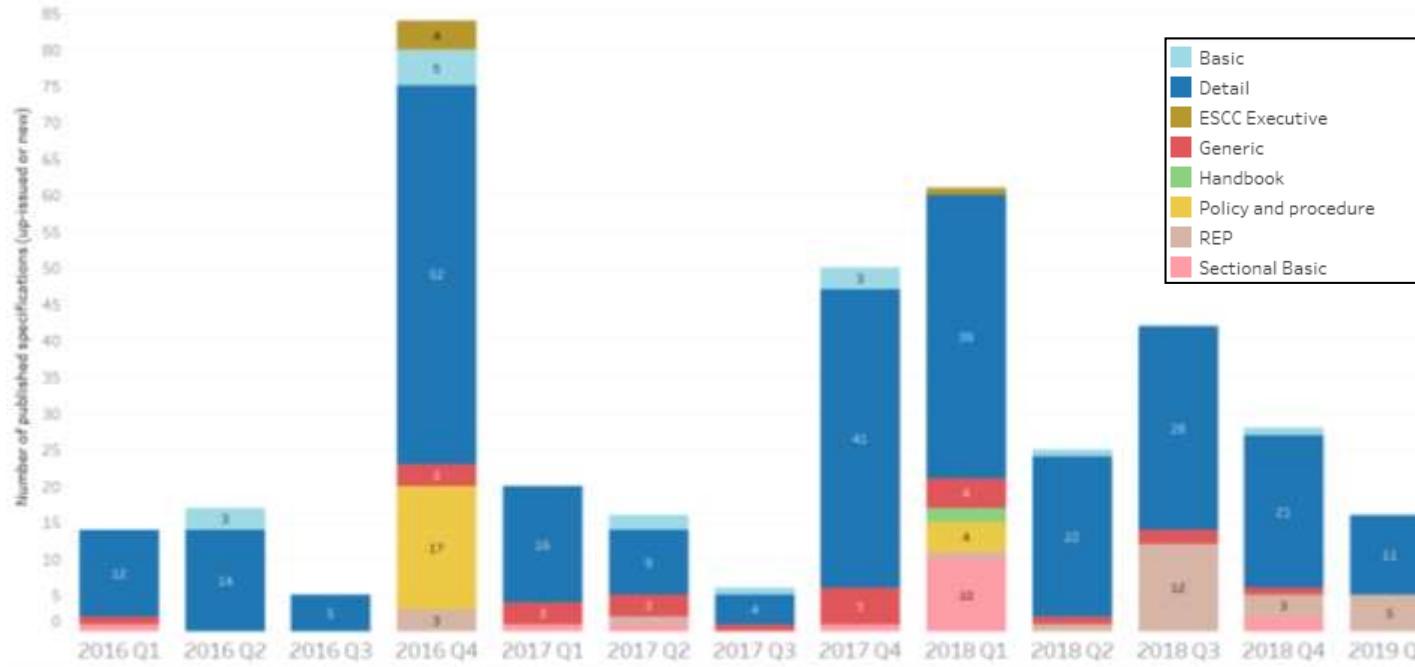
Inclusion of radiation information, storage conditions, soldering recommendations



Number of ESCC active specifications published on ESCIES: 704

Number of specifications published (up-issued or new) since last ESCCON: 355

Specifications available: 697
Up-issued in 2018: 138
New specification published in 2018: 16
New ESCC specifications published since ESCCON2016: 44



ESCCON 2016

ESCCON 2019



Recent ESCC Standardization Achievements



New Specifications:

- ESCC 2567000 Assembly and Test House (ATH) Process capability Approval certification
- ESCC 2543201 ESCC QML on Coils/Transformers (to support Microspire and Flux new Qual)
- ESCC 3409 SpaceFibre and related ESCC 3409/001 (ref to ECSS Standard on Space Fibre)
- ESCC 9000 new single ev/qual flow for ICs

ESCC Specs: Addition of Active links to ESCC specs, DCRs and MIL-STD-TM

EPPL Publications:

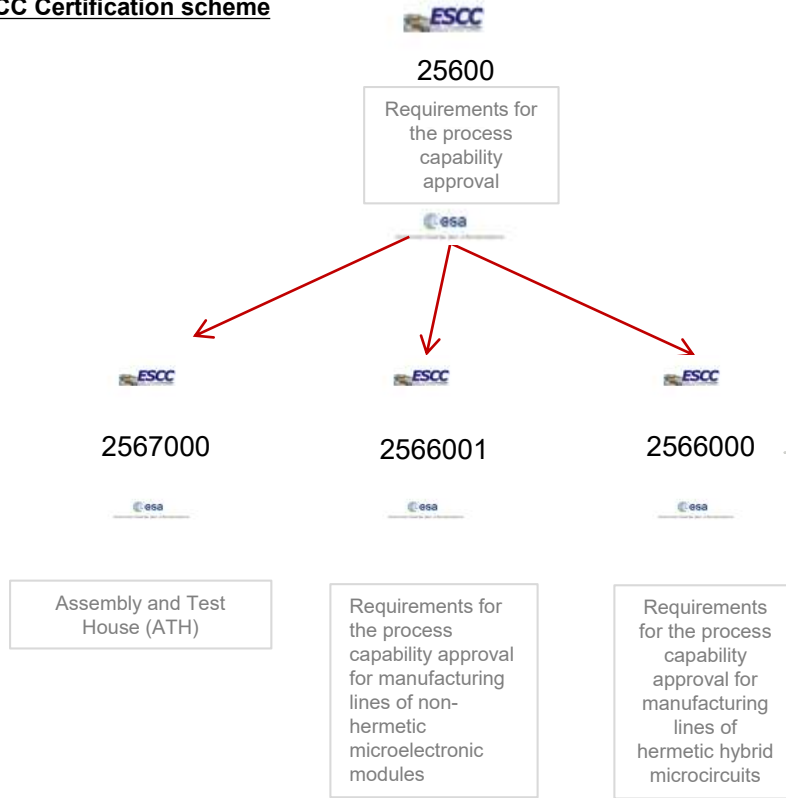
- New entries from Airbus, Axon, Cobham Gaisler, AEM Inc, AEM, IHP, AD
- All new QPL entries are added to EPPL/I by the ESCC executive
- All components affected by obsolescence have been removed: TO packages from STMicroelectronics and FPGAs (40K+280K) from Microchip



ESCC Process Capability Approval Certificates



ESCC Certification scheme



Hybrids – New certificates published in 2018

Hermetic Hybrids Line	Thales Alenia Space PCA Hybrid Certificate 349
Thick Film, Hermetic and HTCC Hermetic, low power, single cavity, Hybrids	Safran Electronics & Defense PCA Hybrid Certificate 346
High-Frequency Hermetic Hybrids (PCA)	Thales Alenia Space PCA Hybrid Certificate 332A
MW hybrid IC (MHIC) and High Density integrated (HDI) RF SIP in LTCC	TeSAT PCA Hybrid Certificate 345A
Thick and Thin film Low frequency and LTCC microwave hybrid line	Thales Alenia Space PCA Hybrid Certificate 343
3D STACKING TECHNOLOGY MODULES	3D plus PCA Hybrid Certificate 351
Thick Film Hermetic Hybrids and HTCC Hermetic Hybrids	Airbus Defense & Space PCA Hybrid Certificate 348

Changes to ECSS Standards

Achievements and Work in Progress



ECSS-Q-ST-60-14C rev1 initial draft 'Relifing Procedure – EEE Components' has been released for public review 21 Sept. 2018. There are significant changes to the document proposed. The scope has been extended to include commercial components as per ECSS-Q-ST-60-13, relifing is extended to 15 years and three classes as per ECSS-Q-ST-60 are differentiated

ECSS-Q-ST-60-05 All Hybrid manufacturers who have previously achieved ECSS/PSS Capability Approval have now successfully transitioned to the ESCC Hybrid Process Capability Approval. They are currently listed in the ESCC HPCL. The corresponding PSS documents will be retired. However, ECSS-Q-ST-60-05 will remain applicable for Hybrid procurement

ECSS-Q-ST-60-13

Changes Proposed include Inclusion of passive parts, AEC-Q qualified parts, Lead free control plan

ECSS-Q-ST-30-11

The ECSS TA has decided to activate the a dedicated WG to disposition accumulated CRs

ESCC LESSONS LEARNED



20 ESCC NCCS raised in 2018

An initiative started to reform the Quality Assurance specs and approach to NC

A reinforcement of the ESCC audit scheme is planned in 2019

Several new certifications are expected in 2019

New players as ATH companies and manufacturers and new members of the ESCC executives

More resources are needed to maintain the needed and expected ESCC executive support

Retirement wave

ESA, NSAs and the component manufacturing industry



Old space versus new space

Use of COTs components



“Old” space, scientific missions, exploration, EO,
GEO telecom satellites

qualified, standard, recurrent parts
high quality assurance
Mitigate risk on schedule and performance
High Cost of parts?



“New Space”, Constellations

adoption of COTS technology/use-as-is feasible?

Assurance by test to be abandoned?
Testing at system/board level?
Design for reliability/margins
combination of various approaches?



Possible impact on schedule and performance?

Cost of EEE part versus cost of engineering?



ESCC challenges and way forward



Contribute to the competitiveness of the European space industry in the Old and New Space

Addressing the new needs and offers

Maintain the European independence and non-dependence on EEE parts



ESCC Executive strategy



The strategic vision for an ESCC components considering the changes in the European supply chain and relocations to non-European countries and resources issues associated

Contribute to the competitiveness of the European space industry in the Old and New Space addressing the new needs and offers

Plastic part/organic packages in ESCC: New ESCC Specs/Changes, New Qualifications/New players

New Qualification schemes for Enhanced Commercial Quality Level in ESCC

Maintain the European independence and non-dependence on EEE parts



All about ESCC on ESCIES.org



esa

ESCIES
European Space Components Information Exchange System

ESCC

Our activities Technologies Other resources Search: [input]

ESCCON
11 - 13 March 2019 | ESA-ESTEC | Noordwijk | The Netherlands

ESCCON 2019
NOW OPEN FOR REGISTRATION!!
The focus of ESCCON is set on all relevant matters to be considered for the definition of policy and strategy directions for space components. For more information, please click [HERE](#).

Start

What's new on ESCIES

- ESCC Specifications
- GPL
- QML
- EPPL
- ESCC Inertias

Rigorous Use of the Highest Quality Available EEE parts Supports the Commercial Space Business Strategy

[JLOMAN -Commercial Satellite Perspective on EEE Parts ESCCON 2016]

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