



# **IECQ OPERATIONAL DOCUMENT**

**IEC Quality Assessment System for Electronic Components (IECQ System)**

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**IECQ Users Forum(s) Terms of Reference and Operating Procedure**





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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**Rules of Procedure –  
Avionics Users Forum (AUF)**

## FOREWORD

This publication has been prepared by the Management Committee (MC) of the IEC Quality Assessment System for Electronic Components (IECQ).

This publication is directly related to the IECQ System management Basic Rules contained in publications (IEC CA 01 + IECQ 01-S), IEC Harmonised Basic Rules (IEC CA 01) plus the IECQ Supplement (IECQ 01-S).

Demand for Aerospace, Defense, and High Performance (ADHP) supply chain verification continues to grow along with demand for technical competence and knowledge within the highly technical industry. In understanding the demands and concerns from this industry sector with the forthcoming closure of the STACK organization (closed December 2017) and therein it's technical committee activities the IECQ Management Committee agreed to establish an Avionics user's forum at their meeting in Singapore in May 2017 to ensure the preservation of technical competence in support of the IECQ ADHP Conformity and IEC TC 107 relevant activities within this highly technical industry sector.

The IECQ 'Avionics Users Forum' (AUF) technical forum who's membership would primarily consist of Avionics OEMs and their subcontractors, although not limited to, would discuss relevant industry standards and their audit programs, with the aim of providing technical assistance, technical benchmarking activities, information on new technical issues and greater clarity to the user community and to provide comments and advice back into the relevant technical committees like the IECQ Aerospace, Defense, and High Performance (ADHP) Component Management Scheme (IECQ ADHP Scheme), IECQ Counterfeit Avoidance Programme (IECQ AP-CAP) and standards committee IEC TC107 for example.

This is the first edition of IECQ OD 0101

The text of this publication is based on the following documents:

Document	Report on MC Consultation
IECQ-MC-386A-CD	IECQ/MC/399/RM

Full information on the report of MC approval of this publication can be found in the report indicated in the above table.

## INTRODUCTION

Taking into account the object of the International Electrotechnical Commission (IEC) as given in Article 2 of the Statutes, the particular object of the IECQ System, operated in conformity with the Statutes and under the authority of the IEC, is to facilitate international trade in electronic components of assessed quality, by providing a global framework for independent assessment and certification.

The object is achieved by the implementation of quality assessment procedures in such a manner that organizations, processes, and components certified as conforming to the requirements of an applicable standard or specification, are acceptable to all participants.

The IECQ System provides manufacturers with a “Supply chain verification tool” for seeking assurance that electronic components, assemblies, processes and related materials conform to declared technical Standards and Specifications.

This Avionics Users Forum provides technical support and guidance for the IECQ 03-4 Avionics or Aerospace Defense and High Performance (ADHP) Scheme and IECQ 03-7 Counterfeit Avoidance Programme (IECQ AP-CAP) scheme which are designed to evaluate Avionics equipment manufacturers’ and related organizations’ Plans prepared in accordance with any or all of the industry standards listed under the references in clause 2.

Although this IECQ Users Forum Rules of Procedure has been developed for Avionics, this publication may serve as a model for other ADHP or general industry sectors with similar considerations and demands.

## Avionics Users Forum (AUF) - Rules of procedure

### 1 Scope and application

#### 1.1 General

This publication contains the Rules of Procedure of the Scheme of the IECQ, hereinafter referred to as the "Rules", for the Avionics User Forum.

### 2 Informative references

The following publications are relevant to discussions of the committee and its lower level Working Groups.

IEC CA 01, *IEC Conformity Assessment Systems – Basic Rules*

IECQ 01-S, *IECQ Supplement to Harmonized Basic Rules IEC CA 01*

IECQ 02, *General Requirements for the Acceptance of IECQ Certification Bodies into the IECQ System*

IECQ 03-1, *Rules of Procedure – Part 1: General Requirements for all IECQ Schemes*

#### Referenced Industry Standard(s)

IEC TS 62239-1, *Process Management for Avionics – Management Plan – Part 1: Preparation and maintenance of an electronic components management plan.*

SAE EIA-STD-4899, *Requirements for and Electronic Components Management Plan.*

IEC TS 62647-1, *Process management for avionics – Aerospace and defence electronic systems containing lead-free solder – Part 1: Preparation for a lead-free control plan.*

SAE GEIA-STD-0005-1, *Performance Standard for Aerospace and High Performance Electronic Systems Containing Lead-free Solder.*

SAE AS5553, *Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition.*

IEC TS 62668-1, *Process management for avionics – Counterfeit Prevention – Part 1: Avoiding the use of counterfeit, fraudulent, and recycled electronic components.*

ANSI. TechAmerica (now SAE) STD-0016, *Standard for Preparing a DMSMS Management Plan<sup>1</sup>.*

IEC 62402, *Obsolescence Management – Application guide*

SAE EIA-933, *Requirements for a COTS Assembly Management Plan.*

IEC TS 62239-2 *Process management for avionics - Management plan - Part 2: Preparation and maintenance of an electronic COTS assembly management plan*

IECQ OD3407-1, *Subcontractor assessment – assembly*

NOTE: Throughout this document, the above industry standards are referred to, individually or collectively, as the *referenced industry standard(s)*, or the *relevant referenced industry standard(s)*. It is expected that the context will allow the reader to understand which standard(s) are indicated in the remainder of this document.

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<sup>1</sup> IECQ CBs and clients should be aware that this standard contains references to GIDEP, which may not be available to clients outside the USA. In such instances, the alternative methods listed in SAE STD-0016 can be considered acceptable, if properly implemented.

### 3 Terms and definitions

The basic definitions concerning conformity assessment contained in ISO/IEC 17000 apply.

For the purpose of the IECQ ADHP Scheme the terms and definitions given in IEC CA 01, IECQ 01-S, IECQ 03-1 and the following apply.

#### 3.1

##### **IECQ Avionics or ADHP Scheme**

Scheme of the IECQ, which enables the independent conformity assessment for compliance with the referenced industry standards

Note ISO/IEC 17000 Clause 2.8 defines conformity assessment Scheme.

#### 3.2

##### **ADHP electronics**

electronic equipment, for use in aerospace, defense, and high-performance applications, containing discrete electronic components (e.g. capacitors, resistors, semiconductors, integrated circuits, printed circuit boards, etc.) and their assemblies including the final system, and including the design, test and manufacturing processes used to produce the system

#### 3.3

##### **Technical Expert (TE)**

a person who provides specific knowledge of or expertise on the subject material of the relevant referenced industry standard, preferably by being an IEC Technical Expert.

### **Acronyms**

ADHP Aerospace, Defense, and High Performance

AUF Avionics User Forum

OEM Original Equipment manufacturer

IEC International Electrotechnical Commission

IECQ International Electrotechnical Commission Quality Assessment system for electronic Components

IOM International Institute of Obsolescence Management

SAE Society of Automotive Engineers

TC Technical Committee

TE Technical Expert

### **4 Avionics Users Forum (AUF) Rules of procedure.**

This non-profit international IECQ 'Avionics Users Forum' (AUF) technical forum discusses relevant industry standards and their audit programs, with the aim of providing technical assistance, technical benchmarking activities, information on new technical issues and greater clarity to the user community and to provide comments and advice back into the relevant technical committees / working groups, for example IECQ WG for IECQ Aerospace, Defense, and High Performance (ADHP) Component Management Scheme (IECQ ADHP Scheme) and IECQ Counterfeit Avoidance Programme (IECQ AP-CAP), and standards committee IEC TC107, etc.

This Avionics User Forum does not publish any standards or audit schemes but provides the framework for information exchange between members and may make recommendations and offer standardized wording to other committees / working groups.

Members are typically, but not limited to, Avionics OEMs and their subcontractors / supply chain although regulators and air-framers can attend select Technical Forums as approved by the Avionics Users Forum.

Forum membership is international and participation from all geographical areas of the globe is actively encouraged to provide a balanced membership.

The Avionics Users Forum also oversees and manages series of topic specific technical forums, see Figure 1. TF2, the Harmonization technical forum may create a strategy and a common set of wording for use by other external standards bodies and as such this lower level technical forum does not take ownership of the wording and waives the Intellectual Property rights to this wording.

This IECQ Avionics Users Forum Rules of Procedure provides the requirements specific to this forum and its technical forums, see Figure 1 and is to be used in conjunction with applicable IECQ System Basic Rules (IECQ CA 01 & IECQ 01-S), Rules of Procedure (IECQ 03-1) and Operating Documents as listed in Clause 2, as applicable.

#### **4.1 Avionics User's Forum (AUF):**

IECQ Avionics User's Forum and its members shall:

- Abide by the IEC code of ethics.
- Provide an annual summary of activities to the IECQ MC no later than 7 weeks prior to the annual IECQ MC meeting date,
- Provide updates of activities to the IECQ MC if needed and requested,
- Meet 4 times a year (via WEBEX and/or face to face meetings), with one meeting just prior to IECQ MC annual meeting,
- Actively seek out international membership to ensure there is international balance within all forums to ensure that the forums are not weighted by one particular regulator or air-framer,
- Supervise all of its Technical Forums, approve convenor appointments, membership and protects IEC/IECQ brand and ensure discussions are only about technical issues to ensure anti-trust status is not impacted,
- Manage the Avionics User's Forum webpage content, uploading meeting notices, agenda, reports, presentations etc.
- Provide all members with a half yearly status review of:
  - IECQ activities including new initiatives and specifically IECQ WG4 and IECQ WG6 activities
  - IEC TC107 standards and liaison reports from other IEC committees
  - SAE APMC and relevant SAE G12 activities
  - Other relevant international standards
  - Short summary of technical forum activities (prepared by the relevant convenor)
  - TF2 harmonization activities

#### **Convenorship**

- Convenor shall be selected from the Avionics OEM community or from IEC Technical Experts and preferably not be from a regulator or air-framer background and will be appointed by the IECQ MC.
- Convenor shall be appointed for 3 years and can be re-selected a maximum of twice, providing there are other candidates. Where there are no other candidates the convenor can continue in the role.

- Deputy convenor shall be selected from the Avionics OEM community or IEC Technical Experts and preferably not be from a regulator or air-framer background and be from a different organization to that of the convenor.
- Deputy convenor shall be appointed for 3 years and can be re-selected a maximum of twice, providing there are other candidates. Where there are no other candidates the deputy convenor can continue in the role.

#### **4.2 Control of data and output of this AUF and its technical forums**

- All data and written output of this forum is governed by IEC IP and copyright policies and maybe utilized by the forum members and their organizations,
- Members shall ensure that any data they submit into the forums is technical in content and can be circulated to all members and that they lose the intellectual property rights to the data to IEC / IECQ,
- All output of TF2 shall be balloted by the forum and then reviewed and approved by the AUF before being sent to the IECQ Executive for final approval prior to any external circulation to other parties for example standard bodies or other standard committees,
- Training material that technical forums create is governed by IEC IP and copyright policies and maybe utilized by forum members as they wish or be forwarded to TF2 to be harmonized for review by the AUF for circulation to the relevant IECQ Working Groups (WG04, WG06 or WGT) and or IECQ Executive for endorsement.
- Technical data shall be uploaded in to the IECQ HUB webpage (password protected)

#### **4.3 AUF management of TF2 harmonization activities**

Oversees TF2 harmonization forum and its technical forums as follows:

- Reviews New Work Item (NWI) request forms from TF2 with a presentation justifying why the topic material is required to ensure it is 'in scope' with the technical capability of members with information about the targeted external use,
- Ensures any new TF2 work item has a minimum of 4 appropriately trained ADHP Technical Experts from at least 3 continents before work can commence,
- On approval, creates new specific TF2-X forum, appoints a convenor, approves the appropriate Technical Membership, defines the voting criteria and membership voting rights and approves the schedule,
- Establishes liaisons with the targeted external users
- Collates and reviews balloted comments from the TF2-X forum to ensure relevancy and continued operation of the TF2-X forum
- Approves all TF2-X wording before being transmitted to the IECQ Executive for review and approval prior to being submitted externally (e.g. to external standards bodies).
- Terminates TF2-X forums when considered appropriate
- Accepts new requests and removal of ADHP Technical Experts to the TF2-X forums.

#### **4.4 AUF management of all other technical forums:**

- Approves members and appoints convenors
- Transmittal of members comments to relevant standards bodies
- Manages anonymous surveys
- Creates non-disclosure agreements as required.
- Establishes new TFs for new topics etc.
- Establishes regional based chapters where necessary e.g. Far East
- Introduction of new technical topics, inviting external speakers as required.

#### 4.5 Membership

- Membership is free,
- Abides by the IEC code of ethics,
- All members shall complete and sign form A and submit to the Main committee for approval and passwords for access to the IECQ HUB secure webpage data.

Avionics user's Forum (AUF) membership:

- Convenor, Appointed by IECQ MC: Initial - Jo Vann for short time until committee is established,
- STACK technical directors and convenors
- IEC TC / SC convenors
- Interested IECQ System members
- SAE APMC members

Technical forums (TF) initial membership consists of:

- STACK members from the last 5 years and their subcontractors / supply chain
- IEC Technical Experts or IEC NC members
- SAE APMC members
- IECQ System members
- TF06 should establish and maintain a liaison with IIOM
- Regional chapters shall have and be able to demonstrate membership from the Avionics industry
- Subsequent membership
  - Any person with relevant technical experience who is referred by an existing member
  - Recently retired members of Avionic companies that were part of STACK
- TF2 membership is controlled by the Avionics User's Forum based on ADHP technical expert technical expertise and knowledge

TF Convenorship

- TF Convenors shall be selected from the Avionics OEM community or from IEC Technical Experts and preferably not be from a regulator or air-framer background and will be appointed by the IECQ AUF,
- TF Convenor roles are for 3 years, maximum term of office 6 years, providing there are other candidates. Where there are no other candidates, the convenor can continue in the role.
- TF Deputy convenors shall be selected from the Avionics OEM community and preferably not be from a regulator or air-framer background and be from a different organization to that of the convenor.
- TF Deputy convenors shall be appointed for 3 years and can be re-selected a maximum of twice providing there are other candidates. Where there are no other candidates the deputy convenor can continue in the role.

#### 4.6 Regional chapters

Where considered appropriate e.g. the Far East, regional chapters may be established with approval of the AUF. Membership shall be from the Avionics industry, until such time as the industry matures. Regional chapters can discuss local issues and shall provide a high-level

summary to the AUF quarterly. Regional chapter members are also all encouraged to join and participate in the Technical Forums.

#### **4.6.1 Regional chapter convenors role:**

- Abides by the IEC code of ethics
- Be neutral unbiased facilitators encouraging membership and technical discussion.
- Arrange meetings by GoToMeeting / WEBEX or face to face meetings as required throughout the year to discuss technical issues (none related to costs) as required, inviting appropriate speakers as considered necessary.
- Use password control for access to GoTo meetings where appropriate to ensure attendee membership is known and recorded in order to provide members with password access to the IECQ HUB webpages.
- Post meeting notices and agendas using the IECQ template in English or bilingual, together with supporting data on the IECQ HUB webpage.
- Prepare quarterly summary reports or presentations to Avionics User's Forum (AUF) and annual summaries - English or bilingual,
- Submit forum agreed comments to relevant specifications to the Avionics User's Forum (AUF) for approval and submittal to the relevant external user.

#### **4.7 Technical Forum (TF) convenors role:**

IECQ Technical Forum convenors shall:

- Abides by the IEC code of ethics
- Be neutral unbiased facilitators encouraging international membership and technical discussion mindful of the fact that many members first language is not English.
- Arrange necessary meetings by GoToMeeting / WEBEX or face to face meetings as required throughout the year to discuss technical issues (none related to costs) as required inviting appropriate speakers as considered necessary
- Use password control for access to GoTo meetings, where appropriate, to ensure attendee membership is known, in order to provide members with passwords for access to the IECQ HUB webpages.
- Due to the time differences, it is likely that 2 GoToMeeting / WEBEXs or 2 meetings instead of 1 will be required to connect with all international members within a few days of one another for 2 different parts of the globe. IECQ can assist with conference calls with local telephone connections.
- Post meeting notices and agendas using the IECQ template together with supporting data on the IECQ HUB webpage.
- Prepare quarterly summary reports or presentations to Avionics User's Forum (AUF) and annual summaries
- Submit forum agreed comments to relevant specifications to the Avionics User's Forum (AUF) for approval and submittal to the relevant standards body.
- Provide liaison reports to the relevant IECQ WGs

#### **4.8 Technical Forums (TF):**

These forums discuss technical issues, the various appropriate standards, ways of implementing requirements, benchmarking, highlighting issues of confusion which require changes, new tools or services which facilitate compliance, new trends, gaps, risk analysis techniques, need for additional guidance documents, need for training, supply chain issues etc.

TF2 the Harmonization forum has additional discussions on standard strategy and considers appropriate common wording for other external committees outside IECQ.

All TFs shall liaise with their relevant IECQ WG as shown in Figure 1.

TFs can share all IEC and IECQ specifications, guides and standards (published or in draft) with the membership but must request permission from the relevant publication bodies for all other specifications so as not to infringe copyright rules. This may cause issues when copyright permission is not granted. Members will then have to acquire their own personal copies by other means for discussion during IECQ TFs and refer to the clause or paragraph or read out the wording, but not display the document during the meeting.

**Table 1 Technical Forums**

Technical Forum	Title	Liaison with
TF01	Audit program	IECQ WG4 and WG6
TF02	Harmonisation standards	None
TF04	ECMP and COTS assemblies, including uprating	IECQ WG4
TF05	Lead-free/REACH	IECQ WG5
TF06	Anti-counterfeit/Obsolescence management	IECQ WG 6
TF08	Microcircuits, diodes, transistors, passive and semiconductor wear-out	IECQ WG8
TF09	LED lighting	IECQ WG09
TF11	Atmospheric SEE radiation	IECQ WG4
TF12	Mechanical Parts	IECQ WG10

#### 4.8.1 TF1 -Audit Programs Technical Forum

To discuss any known or potential forthcoming problems with the auditing activities, new initiatives, harmonizing audit checklist concerns, training requirements and needs, new schemes etc. Topics will include discussions on for example:

- IECQ WG4
  - ECMP
  - Subcontractor ECMP
    - Assembly
    - Design
    - Joint Ventures
- IECQ WG6 Anti-counterfeit
  - SAE AS5553
  - SAE AS6081
  - Traceability IECQ OD 3407
  - IEC TS 62668-1 and -2
  - Non-franchised distributor anti-counterfeit personnel certification scheme
- Previous STACK audit programs
  - Merger with IEC Automotive scheme where the manufacturer is automotive IATF 16949 certified and uses this to manage all their factory output
  - How to manage manufacturers which are not automotive qualified

#### 4.8.2 TF2- Harmonisation standards Technical Forum

- Discusses standards strategy and advise the Avionics User Forum when there is a need for a New Work Item to create 'common' wording for other standard committees to consider or training packages for IECQ members / users.
- Specific technical forums, are established by the Avionics User Forum:
  - TF2-X – New specification harmonization technical forum
    - Produces the common wording for the Avionics User Forum to review.
    - Wording produced is free of IECQ Intellectual Property rights.
    - Membership and voting rights are controlled by the Avionics Users forum main committee:
    - Output can only be circulated outside of this technical forum when approved by Avionics User Forum & IECQ Executive.

#### 4.8.3 TF4 – ECMP / COTS assemblies Technical Forum

For example, discussions concerning the following standards:

- IEC TS 62239-1
- SAE AS4899
- IEC TR 62240-1
- Subcontractor assembly
- IECQ OD 340
- IAQG Work transfer checklists
- Subcontractor design
- Presentations by COTS assemblers and ways of completing gap analyses
  - IEC TS 62239-2
  - SAE EIA-STD-4899
  - Awareness training

#### 4.8.4 TF5 - Lead-free / REACH Technical Forum

For example, discussions concerning the following standards:

- IEC 62647-X
- Lead-free solder research
- Tin whisker research
- Conformal coating research
- BGA re-balling

#### 4.8.5 TF6 - Anti-counterfeit / Obsolescence Technical Forum

For example, discussions concerning the following standards for anti-counterfeit:

- Electronic IEC 62668-1 and -2,
- SAE AS5553
- Material SAE AS6174
- Traceability audit
- SAE AS6081

- SAE AS6171
- Test labs
- Supply chain
- Seminars

And for Obsolescence

- Prediction tool review: IHS, Silicon Expert, etc.
- Risk assessment techniques
- IEC 62402
- SAE STD-0016
- IIOM
- Training

#### **4.8.6 TF08- Microcircuits, diodes and transistors / Passive / Semi-conductor wear-out Forum Technical Forum**

For example, discussions concerning the following standards:

- Enhanced Plastic IEC TS 62564-1
- IEC TS 62686-1 Standard COTS (previously STACK S/0001)
- AEC-Q100 and PPAP checklists
- AEC-Q101 and PPAP checklists
- IEC TR 62240-1 for temperature uprating
- How the automotive components world is moving towards the Avionics world for safety due to the driverless car initiatives.
- IEC TS 62686-2 (for Passives)
- AEC-Q200 (for Passives)

Presentations by IC manufacturers on how they manage wear-out etc.

- IEC TR 62240-2
- SAE ARP 6496

#### **4.8.7 TF09 – Light Emitting Diode (LED) Technical Forum**

Discussion of LEDs and LED assemblies, in particular related to the IECQ WG09 scheme.

#### **4.8.8 TF11- Atmospheric SEE radiation Technical Forum**

Discussion of atmospheric radiation effects, component susceptibility, immune components or techniques, test facilities, review of test data etc. for example, discussions concerning the following standards:

- IEC 62396-X
- Review of technical papers and data to improve the IEC 62396-X series
- Awareness training
- Aircrew monitoring of radiation exposure etc. and trends
- Space weather and impact on Avionics
- Test facilities

- Consolidated testing
- Availability of test facilities
- Baselineing of test data
- Laser testing techniques
- Proton test labs
- Access to beam time

#### **4.8.9 TF12– Mechanical parts plan Technical Forum**

Discussions for example:

- SAE AS6174 material anti-counterfeit test methods
- SAE AS6347 material management plan
- Wire and cable standards
- Appropriate material substitutions needed to manage REACH material restrictions etc.
- Standards for mechanical fasteners, nuts bolts, screws, washers
- Manufacturer mergers and acquisitions and associated problems

### **5 Bibliography**

IECQ OD 010, *Qualification Criteria for Assessors and Lead Assessors according to IECQ (third-party assessment) – General for all Schemes*

IECQ OD 3401, *Principles for the Development, Implementation, and Assessment of Aerospace, Defence, and High Performance (ADHP) Component Plans*

IECQ OD 3402, *Process for Building Check Lists for Assessment, Evidence of Compliance Summaries, and Assessment Reporting Forms for Aerospace, Defense, and High Performance (ADHP) Electronics Control Plans*

IECQ OD 3402-1, *ECMP Assessment – Evidence of Compliance Summary and Assessment Reporting Form*

IECQ OD 3403, *Assessment Procedures for Acceptance of Candidate ADHP Plan Technical Experts (TE) in the IECQ ADHP Electronics Scheme*

IECQ OD 3404, *Witness Assessment Checklist for Assessment of ADHP Assessors and ADHP Technical Experts*

IECQ OD 3405, *Procedures for the Issuing of IECQ Certificates of Conformity for Aerospace, Defense, and High Performance Electronics Control Plans*

IECQ OD 3406, *Procedures for the Issuing of IECQ Certificates of Implementation for Aerospace, Defense, and High Performance Electronics Control Plans*

IECQ OD 3407-1, *Subcontractor assessment assembly.*

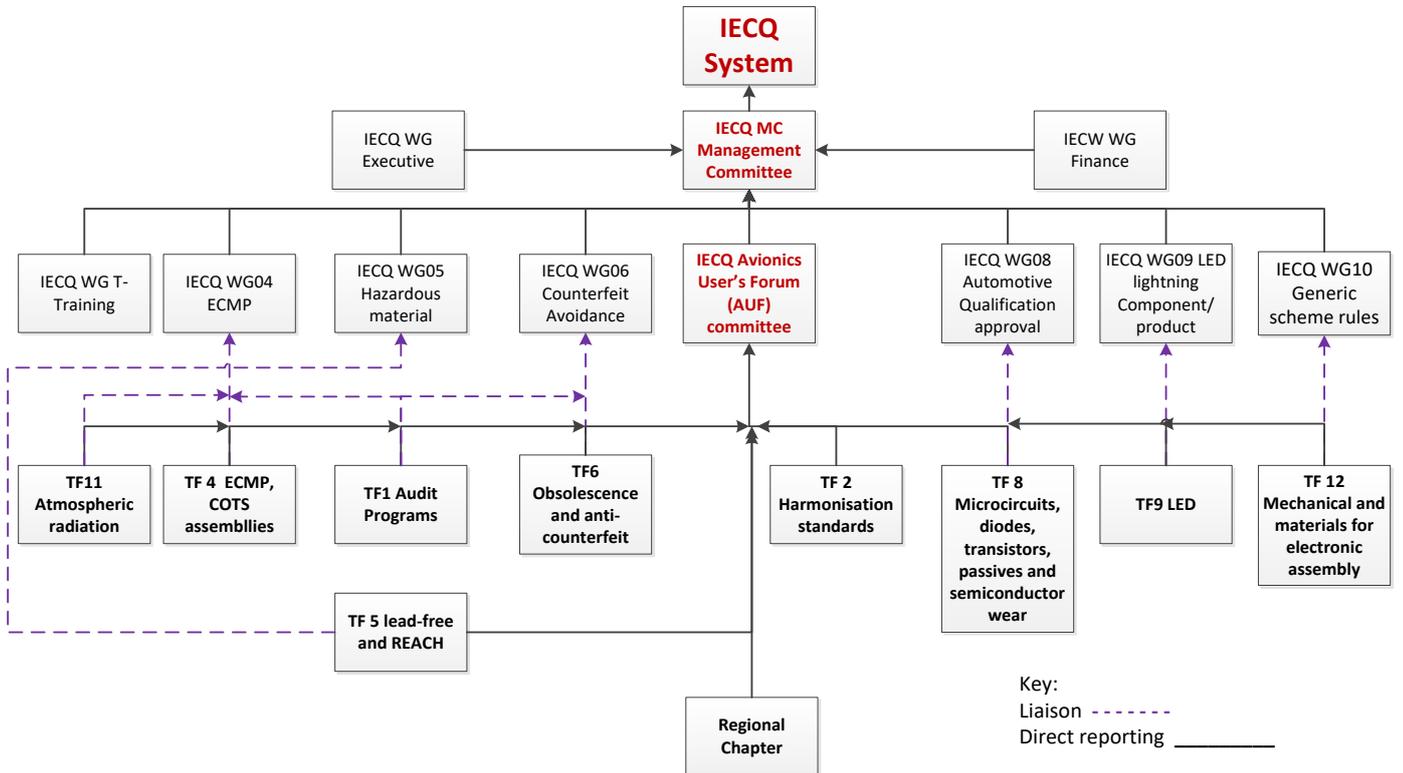
ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 9001, *Quality management systems – Requirements*

ISO/IEC 17021, *Conformity Assessment – Requirements for bodies providing audit and certification of management systems*

ISO/IEC 17000, *Conformity assessment – Vocabulary and general principles*

Figure 1 Avionics Users Forum structure





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