

IECQ PUBLICATION

IEC Quality Assessment System for Electronic Components (IECQ System)

Rules of Procedure –

Part 4: IECQ AVIONICS Scheme – Avionics Parts and Assembly Management

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IECQ PUBLICATION

IEC Quality Assessment System for Electronic Components (IECQ System)

Rules of Procedure –

Part 4: IECQ AVIONICS Scheme – Avionics Parts and Assembly Management

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Rules of Procedure –
Part 4: IECQ AVIONICS Scheme – Avionics Parts and Assembly
Management**

FOREWORD

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

Although developed for Electronic Components Management Plan (ECMP), this publication may serve as a model for other areas with similar ECMP considerations.

This third edition of IECQ 03-4 replaces the second edition. Main changes to the third edition include:

- Revise the name of the IECQ ECMP Scheme to the IECQ AVIONICS Scheme per the recommendation of WG04 and approval of IECQ MC, to ensure the Scheme is capable of supporting growing requirements of Avionics Parts and Assembly Management.
- Clarification for the requirements for OEM utilization of suppliers and subcontractors in the IECQ AVIONICS Scheme.
- Minor editorials requested from WG04.
- Review of the full document to consider the consistent use of terms like “Applicants”, “Organization” and “OEM”.
- Include a definition of Avionics Technical Experts.

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

Document	Report on MC Consultation
IECQ-WG04-031B-CA	MC/313/CA

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.

The IECQ Avionics Parts and Assembly Management Scheme requirements are designed to evaluate commercial, military and aerospace (avionics) equipment manufacturers' and related organizations' processes for compliance with IEC TS 62239-1, *Electronic Component Management Plans (ECMP)* and/or GEIA/ANSI 4899, *Standard for preparing an Electronic component Management Plan*. The avionics industry requirements allow the use of either IEC TS 62239-1 or GEIA/ANSI 4899 at the option of the OEM. Such plans are used to develop, document, and implement plan owners' processes for managing the selection and use of electronic components in avionics equipment. Concerned parties may elect not to implement all elements of IEC TS 62239-1 or GEIA/ANSI 4899, according to the justifications allowed in that document, in which situation the IECQ Assessment and Certificate of Approval will be limited to those elements actually implemented.

The assessment is to be conducted in accordance with the requirements of IEC TS 62239-1 and/or GEIA/ANSI 4899. Neither of these specifications imposes a requirement on the entity being assessed to have ISO 9001 and/or AS 9100 approval. In addition, both these Standards are specifically intended to exclude the component manufacturers from their scope. The assessment will be conducted under IECQ Basic Rules, Rules of Procedure and policies, the assessment itself will specifically address the requirements of IEC TS 62239-1 and/or GEIA/ANSI 4899 and any additional customer requirements.

Rules of Procedure – Part 4: IECQ AVIONICS Scheme – Avionics Parts and Assembly Management

1 Scope and application

This publication contains the Rules of Procedure of the Scheme of the IECQ, hereinafter referred to as the "Rules", for the Avionics Parts and Assembly Management Scheme (IECQ AVIONICS Scheme).

This IECQ AVIONICS Rules of Procedure provides the requirements specific to this Scheme and is to be used in conjunction with applicable IECQ System management Basic Rules (IECQ 01), General Rules of Procedure (IECQ 03-1) and Operating Documents as listed in Clause 2 below, as applicable.

In the event of conflict between the provisions of these Rules of Procedure and any other requirements contained in referenced documents, the requirements of these Rules of Procedure and IEC TS 62239-1 and/or GEIA/ANSI 4899 shall apply.

2 Normative references

The following publications contain provisions, which, through reference in this text, constitute provisions of these Rules. At the time of publication, the editions indicated were valid. The IECQ Management Committee shall decide the timetable for the introduction of revised editions of the publications for the IECQ publications.

The IECQ basic rules and procedures proscribed in the following documentation shall be used for the AVIONICS Assessments where applicable.

Nothing in these rules and procedures will be considered justification for conducting any or all of an ISO 9001 or AS 9100 requirement assessment on the entity being assessed as part of an IECQ AVIONICS Assessment. In the event of conflict between the provisions of this document and any other directly or indirectly referenced provisions, the provisions of this document shall take precedence.

In the event of conflict between the provisions of this document and any other directly or indirectly referenced provisions, the provisions of this document and IEC TS 62239-1 and/or GEIA/ANSI 4899 apply.

IECQ 01, *IEC Quality Assessment System for Electronic Components (IECQ System) – Basic Rules*

IECQ 02, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of Procedure – General requirements for the acceptance of IECQ Certification Bodies into the IECQ System*

IECQ 03-1, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of Procedure – Part 1: General Requirements for all IECQ Schemes*

IECQ OD 701, *Principles for the Implementation of an ECMP Plan*

IECQ OD 702, *ECMP Assessment – Evidence of Compliance Summary and Assessment Reporting Form*

IECQ OD 703, *Assessment Procedures for Acceptance of Candidate Electronic Component Management Plan (ECMP) Subject Matter Experts (SMEs) in the IECQ ECMP Scheme*

IECQ OD 704, *Witness Assessment Checklist for Assessment of ECMP Assessors and ECMP Subject Matter Experts*

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

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

GEIA/ANSI 4899, *Standard for Preparing an Electronic Components Management Plan*

AS/EN/JISQ 9100, *Quality Management Systems – Requirements for Aviation, Space and Defense Organizations*

3 Terms and definitions

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

For the purpose of the IECQ AVIONICS Scheme the terms and definitions given in IECQ 01, IECQ 03-1 and the following apply.

3.1

IECQ AVIONICS Scheme

Scheme of the IECQ which enables the independent conformity assessment for compliance with IEC TS 62239-1, *Electronic Component Management Plans (ECMP)* and/or GEIA/ANSI 4899, *Standard for preparing an Electronic component Management Plan*

3.2

Avionics

electronic equipment, for use in commercial, military and aerospace 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

Common ECMP

an ECMP that address all requirements of IEC TS 62239-1 and/or GEIA/ANSI 4899 and is utilized by all sites (locations) of an applicant organization

3.4

Multiple site certification

a multiple site (location) IECQ AVIONICS Certification is one IECQ AVIONICS Certificate of Conformity that covers multiple sites (locations) of a single organization that uses a common ECMP

3.5

Technical Expert (TE) [Formally known as Subject Matter Expert (SME)]

a person who provides specific knowledge of or expertise on the subject material of IEC TS 62239-1 and/or GEIA/ANSI 4899 and whose qualifications are in accordance with Avionics Technical Experts Requirements, IECQ OD 703 and IECQ OD 704.

4 Principles of the IECQ AVIONICS Scheme

IECQ AVIONICS Certificate of Conformity

For the purpose of AVIONICS certification the requirements for Principles of IECQ Schemes contained in Subclause 5 of IECQ 03-1 do not apply and are replaced by the following:

4.1 The IECQ AVIONICS Scheme provides the means for organizations including equipment manufacturer, subcontractor utilized to develop and/or implement the system(s) required to obtain an IECQ AVIONICS Certificate of Conformity that is intended to provide the international market with confidence that such organizations have verified processes for managing the selection and use of electronic components in avionics equipment in accordance with the technical and quality management system requirements of the IECQ AVIONICS Scheme. This is ensured through independent conformity assessment and on-going surveillance by an IECQ CB of an organization's business and quality management systems and site assessments to confirm the development, documentation and implementation, by manufacturers and subcontractors of a plan owners' processes for managing the selection and use of electronic components in avionics equipment.

4.2 IEC TS 62239-1 and/or GEIA/ANSI 4899 form the basis of the IECQ AVIONICS Scheme requirements.

4.3 An organization capable of demonstrating that it complies with the requirements shall be entitled to an IECQ AVIONICS Certificate of Conformity in accordance with these IECQ AVIONICS Rules of Procedure and supporting IECQ Operational Documents.

4.4 Single site (location) certification shall:

Have a separate IECQ AVIONICS Certificate of Conformity issued for each site (location) for which an organization submits a separate application and ECMP.

An ECMP and associated assessment is required for each location to be certified.

Under the surveillance plan for maintenance of a single site certification the IECQ CBs issuing IECQ AVIONICS Certificates of Conformity shall conduct on-site assessments of each location (site) on an annual basis.

4.5 Multiple site (location) certification shall:

Have a multiple site IECQ AVIONICS Certificate of Conformity issued to cover all nominated sites (locations) for which an organization submits an application and common ECMP for multiple sites (locations).

Employ a common ECMP across all locations to be eligible for a multiple site (location) certification. The same ECMP processes and procedures shall be utilized by all sites (locations) of the organization. Process commonality shall be verifiable by the IECQ CB.

An ECMP and associated assessment is required for each certified site (location) for which an IECQ AVIONICS Certificate of Conformity is issued.

An initial ECMP on-site assessment shall be done for each location to verify compliance with the common ECMP.

An existing ECMP single site (location) certification may be used to satisfy an initial ECMP assessment for a site (location) to be added to a multiple site (location) certification provided the IECQ CB can confirm the site utilized the multiple site certification organization's common ECMP to comply with IEC TS 62239-1 requirements in the previous site's ECMP assessment.

The IECQ CB shall conduct an on-site audit of all IEC TS 62239-1 and/or GEIA/ANSI 4899 requirements once in a three-year period for multiple site (location) certification renewals.

If one site (location) of a multiple site certification no longer complies with the IECQ AVIONICS Scheme requirements the IECQ AVIONICS Certificate of Conformity for all sites (locations) is subject to suspension or cancellation.

For sites (locations) that have not had any non-compliance's for previous audits, the scope of the surveillance audits may be reduced for sites (locations) on a multiple site (location) certification as long as the IECQ CB has verified compliance of common process execution at all sites and that all ECMP requirements are assessed annually. Over the course of a three-year certification cycle all ECMP requirements shall be assessed by the IECQ CB at each site (location).

For multiple sites served under a common ECMP plan, when all sites have successfully passed their initial assessment, it is acceptable to conduct the annual surveillance of the OEM's sites at one location with coverage of the other sites via electronic communication. The IECQ CB shall be responsible for the random selection of one or more sites (locations) at which they will perform annual surveillance. The IECQ CBs selection of sites (locations) shall be based on past performance and shall ensure that all sites (locations) are assessed equally during the three-year cycle of the IECQ AVIONICS Certification.

4.6 The IECQ AVIONICS Certificate of Conformity may be issued for a specific area of operation of an organization, as clearly defined in the scope of activity.

4.7 An organization's right to use the IECQ AVIONICS Certificate of Conformity is not transferable.

5 Organizational structure

The Organization (Client)

An organization shall have the responsibilities, specified in Subclause 7.2.3 of IECQ 03-1 and the following:

- a) the organization shall at all times comply with the requirements of the IECQ AVIONICS Scheme;
- b) when an OEM utilizes a subcontractor in accordance with Subclause 7.5 to procure and supply the components in accordance with the requirements of IEC TS 62239-1 and/or GEIA/ANSI 4899, the following special considerations shall apply:
 - 1) the subcontractor cannot assume responsibility for all Clauses in IEC TS 62239-1 and/or GEIA/ANSI 4899 because some of the requirements of IEC TS 62239-1 and/or GEIA/ANSI 4899 can only be validated at the system level;
 - 2) a clear delineation of responsibilities between the OEM and the subcontractor shall be in place and available for the IECQ AVIONICS Assessment;
 - 3) if the tasks of the subcontractor include component testing, applicable aspects of ISO/IEC 17025 shall be validated during the IECQ AVIONICS Assessment;
 - 4) if the tasks of the subcontractor include component testing, there shall be a specific component test plan and test requirements available for each component. During the initial and all surveillance assessments the IECQ TE shall validate, revalidate that the test plan and requirements are adequate and appropriate for the specified end use in the avionics equipment;
- c) if the OEM or associated subcontractor(s) has a requirement to document and maintain a quality management system in accordance with the requirements of AS 9100 and/or ISO 9001 or equivalent standard(s) then evidence of the registration of that documented quality management system shall be supplied to the IECQ CB during the initial certification and on-going surveillance assessments;
- d) the OEM, shall not significantly vary the QMS or ECMP and its related processes under which any IECQ AVIONICS Certificate of Conformity is issued during the period of the certification unless it has given the IECQ CB notice in writing of its intentions to do so, and

has received confirmation in writing from the IECQ CB that such variations do not render the Certificate invalid. It is expected that changes may be made as a result of continuous improvement practices. However, when such changes result in significant changes to the QMS or ECMP system and its related processes, the IECQ CB shall be notified;

- e) the OEM or associated subcontractor(s) shall give representatives of the IECQ CB access, during normal working hours, to the premises and/or sites in which work being performed within the scope of their certification is being carried out, for the purpose of examining systems, processes, methods of test, and records. These access rights shall include, where necessary, any agreed visits needed to verify that the procedures for the termination of certification described below have been carried out. The organization shall facilitate any arrangement allowing the IECQ CB to conduct assessment of subcontractors involved in the design, manufacturing, testing of the product.

6 IECQ AVIONICS Certification

6.1 IECQ AVIONICS Certificate of Conformity for an Organization (Client)

Subclause 8.1 of IECQ 03-1 applies except as follows:

6.1.1 Issue

An IECQ CB, on the basis of a satisfactory IECQ ECMP worksheet, ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form (IECQ OD 702) issues an IECQ AVIONICS Certificate of Conformity certifying that the organization has developed and implemented ECMP procedures and processes which conform with the applicable requirements for IECQ AVIONICS organization certification which is in accordance with the Basic Rules IECQ 01, these Rules of Procedure and with respect to IEC TS 62239-1 and/or GEIA/ANSI 4899.

6.1.2 Multiple site (location) IECQ AVIONICS Certificate of Conformity

An IECQ AVIONICS Certificate of Conformity for a multiple site (location) certification shall identify each site (location) that has been evaluated for inclusion on the certification.

- There shall be one primary site (location) listed on the certificate in the “Organization, Address and Country” fields provided.
- Each additional site (location) shall be listed by “Organization, Address and Country” in an attached schedule of scope using the official IECQ AVIONICS Schedule of Scope template.
- The associated IECQ AVIONICS Schedule of Scope shall be controlled and attached, in PDF format, to the definitive On-Line version.
- Each printed copy of an IECQ AVIONICS Certificate of Conformity for a multiple site (location) certification shall consist of the main certificate page along with the attached IECQ AVIONICS Schedule of Scope.

6.2 IECQ AVIONICS Assessment, Evidence of Compliance Summary and Assessment Reporting Form

6.2.1 Content

An IECQ ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form (IECQ OD 702) shall be prepared and issued by an IECQ CB recording the assessment of an applicant organization's implemented management system and procedures for compliance with the IECQ AVIONICS Scheme requirements. The assessment includes assessing conformity of the organization's documented management system with the requirements of the IECQ Avionics Scheme to the extent that they are required by IEC TS 62239-1 and/or GEIA/ANSI 4899 in addition to assessing the implementation of the technical processes used.

6.2.2 Layout

The Secretariat in consultation with the IECQ CAB, Technical Experts and the approval of the IECQ MC shall prepare a document detailing technical requirements for the Scheme and the layout and content of ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form (IECQ OD 702).

6.2.3 Restrictions

The IECQ ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form is a document used in the preparation of IECQ organization's Certificate of conformity and basis for on-going surveillance of the organization, they shall not be used in any form of advertising or sales promotion in a way that the information may be misrepresented.

NOTE The IECQ ECMP Assessment, Evidence of Compliance Summary and Assessment Reporting Form (IECQ OD 702) is available from the [publications/standardforms](http://www.iecq.org/publications/standardforms) area of the IECQ website <http://www.iecq.org>

7 IECQ AVIONICS Certification procedure

7.1 General

IECQ AVIONICS assessments for compliance with IEC TS 62239-1 and/or GEIA/ANSI 4899 involve a technical and detailed focus beyond that normally required for an AS 9100 and/or ISO 9001 QMS, EMS and/or ISO/IEC 17025 audit and hence initial and surveillance IECQ ECMP assessments shall not be substituted by being included as an integral assessment of an AS 9100, ISO 9001 and/or ISO 14001 and/or ISO/IEC 17025 audit. For this reason the IECQ CB shall limit non-conformance reporting to those areas where a non-conformance is directly related to a requirement of IEC TS 62239-1 and/or GEIA/ANSI 4899.

7.2 Applicant

For the purpose of IECQ AVIONICS the requirements for Applicants contained in Subclause 9.2 of IECQ 03-1 applies except for

"The organization shall have developed and implemented an AS 9100 and/or ISO 9001 quality management system (QMS) or equivalent QMS."

Organizations shall submit the most recent 3rd party QMS Certification report and a copy of the registration Certificate detailing the scope of registration, covering a complete cycle of assessments (all elements of the standard assessed) to the CB for review if requested. The IECQ CB shall determine what, if any, elements of the standard need to be assessed for the IECQ AVIONICS Certification. QMS registrations awarded by unaccredited bodies shall not be taken into account for the purposes of IECQ Certification.

Organizations not registered to AS 9100 and/or ISO 9001 or equivalent QMS requirements shall be required to demonstrate compliance with the requirements of the applicable standard prior to an IECQ AVIONICS initial assessment and all on-going surveillance assessments.

7.3 Application

The organization seeking approval shall submit or make available the following documentation (non exhaustive) for review by the assessment team in addition to that specified in IECQ 03-1:

- a) master Electronic Component Management Plan (ECMP) with applicable flow down requirements included;
- b) evidence of compliance with the requirements of IEC TS 62239-1 and/or ANSI/EAI 4899, as requested by the assessment team;

c) ECMP documented requirements.

7.4 Assessment team for IECQ AVIONICS Assessments

The assessment team for IECQ AVIONICS Assessments shall be comprised* as follows:

Assessment team members	Function	Qualifications
IECQ CB assessors	Assessment of general IECQ AVIONICS elements; and management of audit process	IECQ Lead Assessor – Quality Systems and Electronic Components and Systems. Qualified to IECQ OD 010 and IECQ OD 704
Avionics technical expert	Subject matter expert	In accordance with IECQ TE Requirements (IECQ OD 703 and IECQ OD 704)

*The presence of a TE is mandatory for both initial certification and surveillance assessments.

The number of assessors and assessment days is dependent on the size of the enterprise and the complexity of the assessment. See Subclause 7.6 Assessment of IECQ AVIONICS Organization's (Client) Site(s).

An IECQ AVIONICS qualified IECQ CB Lead Assessor shall lead the assessment with responsibility for assuring all elements of the assessment plan are covered including the IECQ requirements and applicable ECMP processes.

7.5 Suppliers and subcontractors

Where an OMEs' ECMP programme includes performing an ECMP assessment of applicable subcontractors, IECQ AVIONICS OEM shall utilize suppliers and subcontractors as follows:

7.5.1 With independent IECQ AVIONICS Certification

Where the OEMs' ECMP assumes or states that their suppliers/subcontractors will hold IECQ AVIONICS Certification the most recent IECQ AVIONICS audit of their suppliers/subcontractors shall be successfully completed prior to the OEMs' IECQ AVIONICS Certification being granted or continued.

7.5.2 Without independent IECQ AVIONICS Certification

Where the OEMs' ECMP includes conducting an ECMP assessment of applicable suppliers/subcontractors, the following applies:

7.5.2.1 Has design authority

Where the supplier/subcontractor has any responsibility for design and design authority, the OEMs internal auditor shall function as a fully qualified TE in accordance with the requirements of the IECQ AVIONICS Scheme Rules of Procedure and documentation (IECQ 03-4, IECQ OD 703 and IECQ OD 704 etc.).

NOTE e.g. where the subcontractor designs layouts or circuit of the printed wiring board.

7.5.2.2 Has no design authority

Where the supplier/subcontractor has no design authority, the OEM shall have a fully documented process in place for suppliers/subcontractors control:

- a) The OEM shall identify and clearly document the specific paragraphs of IEC TS 62239-1 that have been subcontracted as part of their ECMP.

- b) The OEM shall identify and fully document which specific requirements/competence levels from IECQ OD 703 “requirements of an SME” that are applicable to their audit teams to ensure a) can be successfully audited.
- c) The OEM audit team(s) shall contain at least:
 - An OEMs internal auditor functioning as a fully qualified TE in accordance with the requirements of the IECQ AVIONICS Schemes Rules of Procedure and documentation (IECQ 03-4, IECQ OD 703 and IECQ OD 704 etc.), or
 - An OEMs internal auditor and an OEMs component design engineer (the engineers competency in IEC TS 62239-1 and the IECQ AVIONICS Schemes Rules of Procedure and documentation [IECQ 03-4, IECQ OD 703 etc.] shall be demonstrable), or
 - An OEMs internal auditor with demonstrated competency in the TE responsibilities identified in b) as documented in the IECQ TE Application Form (MC_266_Q-IECQ_TE_&_LA_Application_or_Update_data) and approved by an accepted IECQ TE appointed by the IECQ Secretariat to the scope identified in b). An approval is for a period of 12 months.

NOTE The IECQ TE Application Form (MC_266_Q-IECQ_TE_&_LA_Application_or_Update_data) is available from the [publications/standardforms](http://www.iecq.org) area of the IECQ website <http://www.iecq.org>.

7.5.3 Initial evaluation and surveillance

Initial evaluation and on-going surveillance of suppliers and subcontractors shall be a documented process and records maintained.

NOTE See AS/EN/JISQ 9100 (Purchasing) for guidance.

7.6 Assessment of IECQ AVIONICS Organization's (Client) Site(s)

Subclause 9.6 of IECQ 03-1 applies and the following.

An IECQ recognized CB Assessor shall lead the assessment with the responsibility of assuring all elements of the assessment plan are covered including applicable ECMP processes. The TE is responsible for validating ECMP procedures including any applicable component up-rating procedures and all technical issues related to compliance with IEC TS 62239-1 and/or GEIA/ANSI 4899. An IECQ CB recognized and suitably qualified TE may also lead the assessment.

While conducting the assessment, the TE's charter is to conduct the detail assessment of the process and the auditor is to support the TE at his direction/discretion and generate the evidence record and ancillary supporting documentation.

The assessment shall be conducted in accordance with the Principles for the implementation of an ECMP Plan. See IECQ OD 701 for reference. The procedures and policies as defined in the following IECQ documents, for conducting the assessment, subject to the limitations of this document and IEC TS 62239-1 and/or GEIA/ANSI 4899:

- a) IECQ 01, *IEC Quality Assessment System for Electronic Components (IECQ Scheme) – Basic Rules*
- b) IECQ 03-1, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of Procedure – Part 1: General Requirements for all IECQ Schemes*

During an IECQ AVIONICS Assessment, it is permissible for the Assessment Team and/or TE to review areas of potential non-compliance or alternate technical approaches implemented in accordance with IEC TS 62239-1 or GEIA/ANSI 4899 to demonstrate compliance with the ECMP.