DOCUMENT CHANGE REQUEST

DCR number 886	Changes required for: General	Originator: Steve Thacker
Date: 2015/11/13	Date sent: 2014/10/29	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Generic Specification for Ferrite Microwave Components Isolators and Circulators		
Number:	3202	Issue:	1

Other documents affected:

Page:

All

Paragraph:

Total reformat/re-write of ESCC Generic Specification 3202 issue 1 implementing changes specified and agreed by ESA and the CTB Working Group on RF Passive Components, as well as part of the ongoing conversion of legacy ESA/SCC specifications to the ESCC format.
In addition the Spec is typed using alternate publishing software (was GlobalView; is now WORD2010)
For Details see attached:
- ESCC 3202 draft 2F that implements all the proposed changes
- Hand mark-up of 3202 issue 1 indicating the main proposed changes per this DCR

Original wording:

See 3202 issue 1 plus attached Hand mark-up of 3202 issue 1 indicating the main proposed changes per this DCR

Proposed wording:

The Generic Specification is proposed to be extensively amended to incorporate various policy, technical, and editorial amendments & corrections in order implement changes specified and agreed by ESA and the CTB Working Group on RF Passive Components, as well as to bring it in line with other ESCC Generic Specifications that have already been converted to the new ESCC format (e.g. ESCC 3403, 5000, 9000).

The layout, format and general structure, and editorial content of ESCC 3202 draft 2 are based closely on other ESCC Generic Specifications that have already been converted to ESCC format (e.g. ESCC 3403 since issue 3 per DCRs 50, 138, 150, 539 (all approved)).

The proposed technical content of ESCC 3202 draft 2 is based on the current content of ESCC 3202 issue 1 plus additional technical changes specified and agreed by ESA and the CTB Working Group on RF Passive Components.

This DCR summarises all the amendments to ESCC 3202 issue 1 related to the conversion to ESCC format, plus details the additional editorial & technical changes specific to ESCC 3202 issue 1.

For full details of the proposed contents of ESCC 3202 issue 2, see the attached draft Generic specification ESCC 3202 draft 2. For an indication of the technical changes proposed by this DCR, see the attached hand mark-up of ESCC3202 issue 1.

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Change Details:

A) Summary of the Main General Changes (related to conversion to ESCC format):

1) The SCC testing level B has been deleted; there is still only a single ESCC testing level, equivalent to old SCC level B, but it is not given a specific designation.

2) Qualification and Lot Acceptance Testing charts IV & V have been incorporated, with some modifications, into a single Chart F4, Qualification and Periodic Tests.
General modifications include:
- Periodic testing, as applies to Maintenance of ESCC Qualification, is mandatory for ESCC qualified components with a defined testing schedule (every 24 or 12 months).
- Lot Acceptance Testing has been deleted but an Orderer option for similar Lot Validation Testing, for procurement, has been added. Lot Validation Testing is not mandatory and will only be done if specifically stipulated by the Orderer in the PO. The requirement for LAT level 3 as a minimum for non-qualified component procurement is removed.

3) Introduction of Technology Flow Qualification per ESCC No. 25400 to the Generic spec.

4) The Generic Specification has been made applicable and fully usable for procurement of unqualified components as well as for ESCC Qualified components.

5) Introduction of ESCC 23100 (ESCC Recommendations on the use of the ESCC Specification System for the Evaluation and Procurement of Unqualified Components) to the generic spec.

6) Clarification that the term PID is specific to ESCC qualified components.

7) Para 2, all reference documents are amended as necessary to reflect the currently available & applicable document.

8) Para 4.1.5, Clarification of Customer Source inspection options for Pre-Assembly CSI & Final CSI where the Customer & Manufacturer mutually agree what is to be performed and how much notification is required.

9) Para 4.3, When using the ESCC System to procure components from an unqualified source and marking the parts with the ESCC component number, the Manufacturer should possess a manufacturing and quality assurance system that is compatible with space application. As such, the user expectation should be that parts would be compatible with passing the testing requirements of Chart F4. Accordingly the requirement placed on qualified sources to not knowingly supply components that cannot meet the Chart F4 testing is extended to unqualified sources.

10) Para 4.3.1, The maximum allowed delay for Lot failure notification (provided by the Manufacturer) is now 5 working days (was 2) by appropriate written means (was telex).

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11) Para 4.4, Marking requirements are amended to simply refer to ESCC 21700.

12) Para 4.5, Material outgassing reference document is corrected to be ESCC 22600.

13) Para 5 plus the first few tests of Chart II are replaced by Para 5 & Chart F2 in ESCC 3202 draft 2: Production Control/Special In-Process Controls.

14) The General Flow Chart I is replaced by Chart F1; It clarifies the flow of components for Procurement.

15) The majority of tests in Chart II are replaced by Chart F3 in ESCC 3202 draft 2: “Screening Tests”.

16) Para 8.4, Failed components during qualification or MoQ testing are to be held until final disposition has been agreed and certified by the ESCC Executive (was 24 months).

17) Para 9.15 & Chart II, Dimension Check is performed on 3 samples instead of 5.

18) Para 10.1.2, the minimum required delivered documentation to the customer for procurement is a Certificate of Conformity & a Cover sheet.

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B) Details of Other Editorial and/or Technical Changes (specific to ESCC3202):

19) Para 2.1 & 2.2
- Reference documents that are not actually referenced in 3202 are removed, i.e. ESCC3402, ESCC3402/xxx, PSS-01-201, PSS-01-301, PSS-01-708, IEC No. 68, IEC No.410, MIL-STD-105, IEC No.512.
- Additional ESCC references are added as necessary, i.e. ESCC20900, 22600, 23100, 25400, ESCC XXXXX (new draft No. 162)
- Obsolete and superseded IEC, PSS & MIL references are corrected.

20) Para 3, various definitions are added that specify various categories of component (e.g. high & low power; components with coaxial connectors, components with resistive load elements, etc.)

21) Para 5.2.4 Plating Thickness
This test is made applicable only if specified in the Detail specification. If the test is applicable, the Detail spec will detail the test requirements including sampling.

22) Para 5.2.5 & 5.2.9 Brazed Joints & Internal Solder Joints
These requirements are deleted from the specification (as there is no available ESCC standard for the inspection nor a clear test requirement specified. These are considered to be in-process inspections, controlled by the Manufacturer and not required to be specified in the procurement spec).

23) Para 5.2.6 Resistive Loads

DCR number 886	Changes required for: General	Originator: Steve Thacker
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Requirements for testing of resistive load elements are amended as follows:
- The requirement for a 50 sample 1000hours life test of elements is amended to be 15 samples for 2000hours.
- Burn-in of elements for low power Isolators may be done either before or after assembly into the Isolator.
- Burn-in of ESCC qualified elements for low power Isolators may be omitted.
- Burn-in of elements for high power Isolators shall be done after assembly in the Isolator.
- Life test of ESCC qualified elements for low or high power Isolators may be omitted.

24) Para 5.2.8 & 9.13, Contact Engagement and Separation Forces, The test requirements of ESCC3402 are incorporated directly into this specification (in Paras 5.2.3 & 8.3 of ESCC3202 draft 2)

25) Para 6.5.2, reference to sampling per IEC No.410 or MIL-STD-105 is removed.

26) Para 8.1.2 Distribution within the Qualification Test Lot
Specific criteria for selection of isolators and circulators are removed (as the general criteria is considered sufficient). Reference to permitting endurance testing on samples operating at alternate frequencies based on availability is removed (as this is considered too general a criteria for selection for qualification).

27) Chart II Testing
Chart II test sequence is amended (see Chart F2 & Chart F3 in the attached 3202 Draft 2 for details). The following changes apply:
- Voltage Proof (Para 9.7.1.6), Seal Test (Para 9.6), Centre Contact Retention (Para 9.10), Contact Engagement and Separation Forces (Para 9.13) are deleted.
- Weight (Para 9.3) is amended to be an actual test performed on 3 samples (or 100% if there is a failure), during special in-process controls per Chart F2.
- Vibration (Para 9.5) is replaced by Random Vibration.
- Rapid Change of Temperature (Para 9.4) is renamed Thermal Shock
- Coupling Proof Torque (Para 9.8) is made a 100% test (instead of a sample test)
- RF Leakage (Para 9.11 & Fig VI) is replace by a Radiated Emission Sniff test (per new ESCC Basic Specification; currently draft ESCC No.162); A statement that this test is not applicable to microstrip devices is added.
- Electrical Measurements at High and Low Temperature (Para 9.7.3) only applies if specified in the Detail Specification
- Dimension Check (Para 9.15) is moved to special in-process controls in Chart F2.
- Additional new tests are included in Chart F3, i.e. Thermal Stability of Insertion Loss, Connector Interface Dimension Check, Power Thermal Vacuum, Corona, Wire Bonding & Wire Bond Pull, Radiographic Inspection.

28) Chart IV (& Chart V) Testing
The contents of Charts IV & V are incorporate with amendments into the 2 subgroups of tests in a single new chart F4 (see the attached 3202 Draft 2 for details). Chart V (LAT Testing) is effectively deleted. The following specific changes apply:
- Rapid Change of Temperature (Para 9.4) is renamed Thermal Shock
- Vibration (Para 9.5) is replaced by Random Vibration
- The option to perform Bump (Para 9.16.2) instead of Mechanical Shock is deleted.
- Climatic Sequence (Para 9.18), Corrosion (Para 9.19), Coupling Proof Torque (Para 9.8), Seal Test (Para 9.6), Damp Heat (Steady State)(Para 9.23) are deleted
- Additional new tests are included in Chart F4, i.e. Thermal Stability of Insertion Loss, Radiated Emission Sniff Test,

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Thermal Shock (in Endurance subgroup).
- Robustness of Terminations is renamed Terminal Strength
- Operating Life is replaced by Power Thermal Vacuum
- Note 2 allowing electrical rejects to be used for some testing is deleted.
- The sample sizes of the various subgroups used for qualification is reduced (it more closely matches the previous LAT sample sizes in Chart V).

29) Para 9.2 Final Assembly is deleted (as this is not a test).

30) Para 9.4, Rapid Change of Temperature is replaced by the equivalent MIL Thermal Shock test method (rather than IEC).
During Screening Tests, Thermal Shock shall be performed at the storage temperature extremes (rather than at operating temperature extremes).
For qualification level testing, the number of cycles is amended to be 100 & 200 for the 2 separate tests in Chart F4 (was 10)
Post Thermal Shock Room Temperature Electrical Measurements are included for the test performed during Screening Tests in Chart F3.

31) Para 9.5 Vibration
The Sine Vibration test is replaced by a Random Vibration test (per the equivalent MIL test method rather than IEC). The test conditions applied i.e. level, duration etc., are significantly amended; see Para 8.10 in the attached 3202 Draft 2 for details.
Post Vibration Room Temperature Electrical Measurements are included for the test performed during Screening Tests in Chart F3.

32) Para 9.7.1.1, Reference to the limit of mating/unmating cycles per PSS-01-301 is deleted.

33) Para 9.7.1.4. Return loss is renamed as VSWR

34) Figures I to V are deleted

35) Para 9.8 Coupling Proof Torque, The test requirements of ESCC3402 are incorporated directly into this specification.

36) Para 9.9 Mating and Unmating Forces, The test requirements of ESCC3402 are incorporated directly into this specification.

37) Para 9.12 & Fig VII, Multipaction test requirements are amended to reflect the test specified in ECSS-E-20-01.

38) Para 9.16.1 Shock, shock pulse is changed to be 1500g; 0.3ms (instead of 50g; 11ms)(per the equivalent MIL test method rather than IEC).

39) Para 9.20 Endurance, The test requirements of ESCC3402 are incorporated directly into this specification with a default number of cycles specified at 500 (previously was unspecified).

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40) Para 9.21, Solderability, IEC test method is replaced by the equivalent MIL test method.

41) Para 9.22, Robustness of Terminations, IEC test method is replaced by the equivalent Terminal Strength MIL test method.

42) Para 9.23 Damp Heat (Steady State), is deleted.

43) Para 10.5 Special In-Process Controls Data
The requirement to provide test data for Outgassing, Stress Corrosion & Braze Microsectioning is deleted.

44) Para 10.6.1 FPT (Chart II) Test Result Summary
The list of data items is amended to reflect the amended Chart F3 in ESCC3202 draft 2.

45) Para 12, requirements are amended to simply refer to ESCC 20600 (notes on special packaging, storage & transportation are deleted; considered covered by the PID and/or PO)

45) Annex I is deleted.

Justification:

All changes have been defined and included to serve the purposes of technical improvement, clarification, accuracy, completeness, simplification, harmonisation and consistency. The aim is to simplify and improve the content and interpretation of the specification and its requirements whilst maintaining an efficient and acceptable technical baseline.

All technical changes have been defined and/or agreed by ESA and the CTB Working Group on RF Passive Components.

ESCC 3202 draft 2 is written to closely follow the layout, format and content of other already converted ESCC Generic Specifications. The justifications for the related policy and editorial changes implemented into ESCC3202, which have already been agreed and applied to other ESCC Generic Specifications, also apply to this DCR.

In addition: replacement of obsolete publishing software.

Attachments:
3202_draft_2f_for_review_2014_10_22.docx, dcr_attachment_3202_iss_1_markup.pdf, 3202_draft_issue_2_(final_revision_for_publishing).docx, dcr_attachment_3202_draft_2f.pdf,
Modifications:
The following amendments apply to the original contents of this DCR886: Note: These modifications reflect the contents of the final draft revision ESCC 3202 Draft 2G as accepted by the PSWG during PSWG MoM #70. · The original DCR attachment shall be replaced by ESCC 3202 draft 2G that implements all the accepted changes. · Original DCR Item 19) Para 2.1, 8.19: ESCC No. xxxxx is finalised as ESCC 24500.
Approval signature:

Date signed:
2015-11-13