



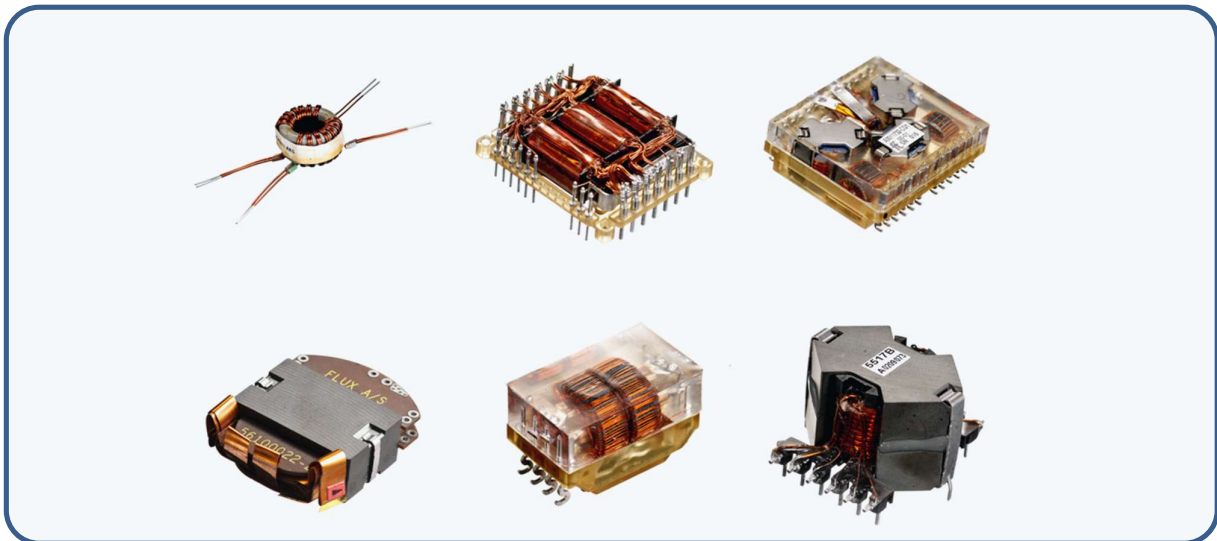
Test Report:
Qualification, Periodic Testing and LOT Validation

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Page: 1 of 54



Author


Michael D. Simpson

**Chief Operating Office
(Defence and Space)**


Lars A. Gregersen

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DOCUMENT CHANGE LOG

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1. INTRODUCTION

This document defines procedure Qualification, Periodic Testing and LOT Validation of parts parts within the Technology Domain of the Flux A/S Technology Flow Approval. Testing is performed in line with 3201/013. The components under test are defined in section 3.1

2. REFERENCE DOCUMENTS

| Ref. | Document | Title |
|------|-------------|--|
| RD1 | 3201 | Generic Specification: Coils, RF and Power, Fixed (Inductors and Transformers) |
| RD2 | 3201/13 | Detail Specification: Customised Magnetics |
| RD3 | MIL-STD-202 | Test Method Standards - Electronic and Electrical Component Parts |
| RD4 | FT08711502 | Screen Testing |
| RD5 | FT08699003 | Declared Materials List |
| RD6 | FT08699004 | Declared Processes List |
| RD7 | FT08699015 | Technology Flow |
| RD8 | FT08699016 | ESA Qualification, Verification and Periodic Testing |
| RD9 | 122-22633-1 | Vibration and Shock of Test Components |

3. SAMPLES DEFINITION

3.1 Range of component families for testing

These parts will be defined as per the individual test program:

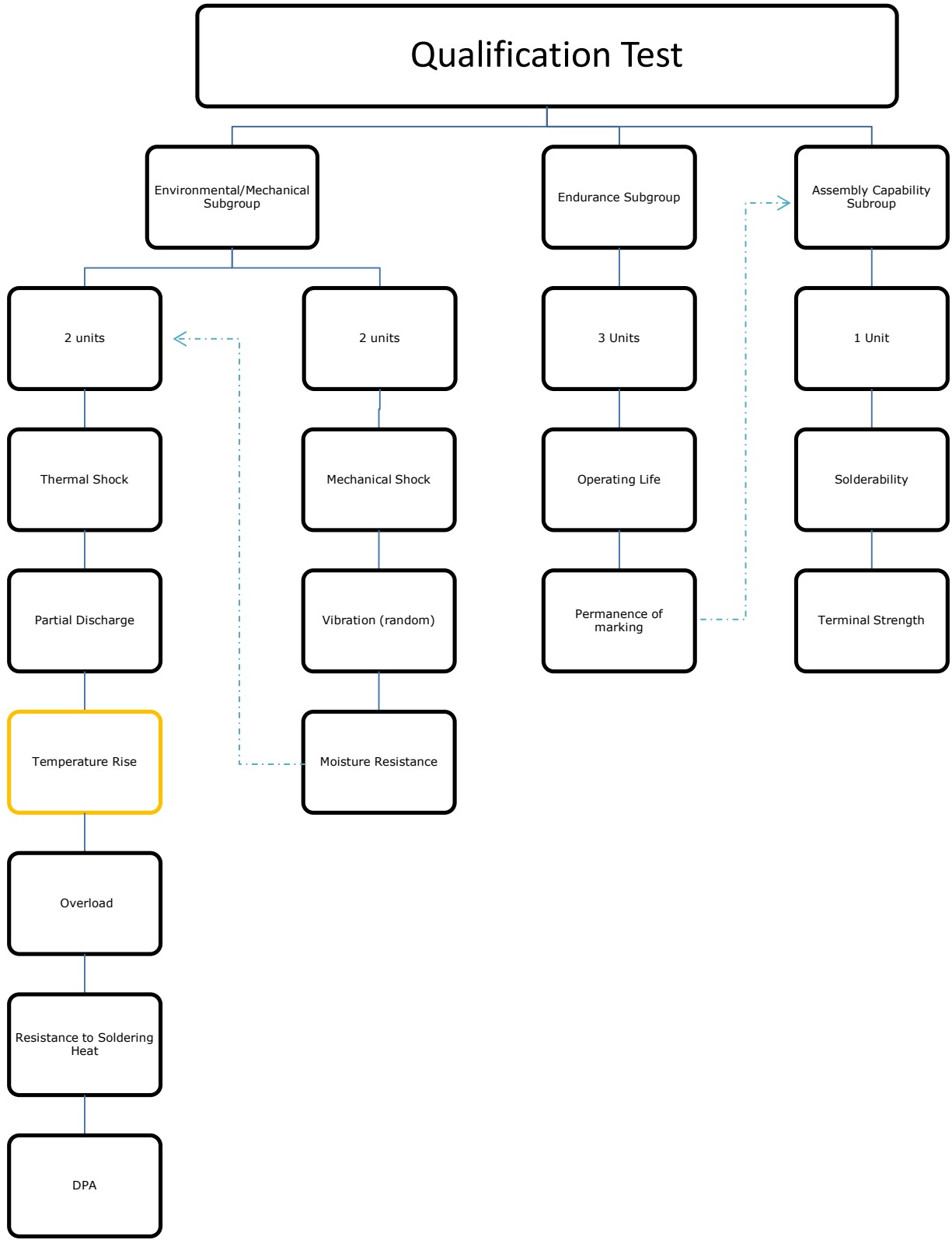
| Evaluation Sample | Flux Part No | Description | Quantity |
|-------------------|--------------|----------------------------|----------|
| Q1 | 12041036-1-C | Toroid - Flying Leads | 5 |
| Q2 | 12271019-1-C | Toroid - Flying Leads | 5 |
| Q3 | 12060006-1-C | Toroid on Carrier | 5 |
| Q4 | 12139002-1-c | Toroid on Carrier (Potted) | 5 |
| Q5 | 14110233-1-C | RM | 5 |
| Q6 | 14220168-1-C | RM | 5 |
| Q7 | 14260119-1-C | EFD | 5 |
| Q8 | 14300044-2-C | IM | 5 |
| Q9 | 14890203-1-C | SMT | 5 |
| Q10 | 14221035-1-C | Planar | 5 |
| Q11 | 12391001-2-c | Hi Power Inductor | 5 |
| Q12 | 14391002-1-C | Hi Power Transformer | 5 |
| Q13 | 14320247-1-C | 500W SMPS Transformer | 5 |
| | | | |
| | | | |

Table 3-1 Test samples



4. LOT ACCEPTANCE TESTING

4.1 Original subgroups





4.2 Modified test flow

Test performed based the requirements of ESCC 3201/013. In order to reduce the number of units and increase the stringency of the testing, the same units will be used for both columns of the Environmental/Mechanical Groups. Additionally the unit in the Assembly Capability subgroup will be selected from the Endurance subgroup. This Testing is destructive and the samples are not suitable for flight use.

| Group and Test | | Sample | | | | | Method (Para) | Requirement (Para) |
|----------------------------------|---|--------|---|---|---|---|----------------------|--------------------|
| | | 1 | 2 | 3 | 4 | 5 | | |
| Environmental/Mechanical Groups. | Electrical characteristics | ✓ | ✓ | | | | 5.7.1 | 5.7.2 |
| | Mechanical Shock | ✓ | ✓ | | | | 5.10.1 | 5.10.2 |
| | Vibration (random) | ✓ | ✓ | | | | 5.9.1 | 5.9.2 |
| | Moisture Resistance | ✓ | ✓ | | | | 5.15.1 | 5.15.2 |
| | Electrical characteristics | ✓ | ✓ | | | | 5.7.1 | 5.7.2 |
| | Thermal Shock | ✓ | ✓ | | | | 5.17.1 | 5.17.2 |
| | Partial Discharge (Hi Power Transformer only) | ✓ | ✓ | | | | 5.13.1 | 5.13.2 |
| | Temperature Rise (selected units) | ✓ | | | | | 5.18 | |
| | Overload | ✓ | ✓ | | | | 5.16.1 | 5.16.1 |
| | Induced Voltage | ✓ | ✓ | | | | 5.5.1 | 5.5.2 |
| | Dielectric Withstanding Voltage (at | ✓ | ✓ | | | | 5.6.1 | 5.6.2 |
| | Electrical characteristics | ✓ | ✓ | | | | 5.7.1 | 5.7.2 |
| | Visual Inspection | ✓ | ✓ | | | | 5.2.2.1 | 5.2.2.2 |
| | Resistance to soldering heat | ✓ | ✓ | | | | 5.3.1 | 5.3.2 |
| | DPA | ✓ | | | | | 5.14.1 | 5.14.2 |
| Endurance | Life | | | ✓ | ✓ | ✓ | 5.11.1 | 5.11.2 |
| | Permanence of Marking | | | ✓ | ✓ | ✓ | 5.8.1 | 5.8.2 |
| | Electrical characteristics | | | ✓ | ✓ | ✓ | 5.7.1 | 5.7.2 |
| | Visual Inspection | | | ✓ | ✓ | ✓ | 5.2.2.1 | 5.2.2.2 |
| Assembly | Solderability | | | | | ✓ | 5.3.1 | 5.3.2 |
| | Terminal Strength | | | | | ✓ | 5.4.1 | 5.4.2 |
| | Visual Inspection | | | | | ✓ | 5.2.2.1 | 5.2.2.2 |
| Sample Size = 5 | | | | | | | Failures Allowed = 0 | |



4.3 Test facilities

All testing will be performed at Flux's facilities in Asnaes, Denmark.

5. TEST METHODS AND REQUIREMENTS

5.1 Screening

Screening shall be performed in accordance with FT08711502, prior to the start of Qualification, Periodic and LOT Validation Testing.

5.2 Visual inspection

5.2.1 Visual inspection method

Visual inspection shall be aided by magnification appropriate to the size of inspection item, between 4x to 10x magnifications. Additional magnification shall be used to resolve suspected anomalies or defects.

5.2.2 Visual inspection requirements

5.2.2.1 External

The components shall be examined to verify that the materials, external design and construction, physical dimensions, marking and workmanship are in accordance with the requirements defined in the relevant procedures and the reference documents given in section 2 of this procedure

5.2.2.2 Post-test

No more than 10% of the surface shall have pooling, flaking, chipping, cracking, crazing or other impairment of the protective coating. There shall be no leakage of the filling material, no evidence of other physical damage, such as cracks, bursting, or bulging of the case or corrosion affecting the mechanical or electrical operation of the samples.

5.3 Solderability

Solderability shall be performed on samples with PCB terminals. Solderability is not applicable for flying leads.

5.3.1 Solderability method

Solderability shall be tested by the "Soldering iron method", specified in MIL-STD-202, method 208. By using the "Soldering iron method" no separate test for resistance to soldering heat will be performed, and the purpose of this test will be:

- a) Qualification of the component resistance to heat when soldered with a soldering iron.
- b) Qualification of the solderability of the component terminals.

Practical test method to be applied:

- Minimum two of each type of terminals shall be tested
- A standard soldering iron shall be used. Tip temperature shall be 320 °C +/- 10 °C
- Solder alloy shall be Sn63Pb37 and flux shall be type RMA.
- The solder tip shall be held on the middle of the terminal for 2 Sec +/- 0,5 sec
- Solder iron tip shall be calibrated to reach 280°C on the calibration wire in 2 sec



5.3.2 Solderability requirements

The pins shall be visually inspected. Any termination that has less than 5% of the examination area dewetted, nonwetted or with pinholes will be accepted. Inspection is in accordance with MIL-STD-202 ^(RD2), method 208.

5.4 Terminal strength

Up to a maximum of 4 identical terminals per sample are to be subjected to terminal strength testing. Terminal strength is not applicable for flying leads.

5.4.1 Terminal strength method

Terminal Strength: Unless otherwise specified in the Magnetic Sheet for the component under test, the Terminal Strength shall be tested as specified in Para. 8.17 of ESCC 3201.

5.4.2 Terminal strength requirements

There shall be no evidence of loosening or rupturing of terminals, or other mechanical damage.

5.5 Induced voltage

5.5.1 Induced voltage method

Wound toroids manufactured on a winding machine shall be subjected to a voltage sufficient to cause twice the rated voltage across any winding or 300V for wires <0.250mm and 500V for wires \geq 0.250mm whichever is greater

This test will be performed as surge test with 10 pulses.

5.5.2 Induced voltage requirements

During this test the magnetic device shall be inspected for evidence of continuous arcing, flashover, breakdown of insulation, and abrupt changes in the input current. Means shall be provided to indicate fluctuations of input current.



5.6 Dielectric withstanding voltage

5.6.1 Dielectric withstanding voltage method

The dielectric withstanding voltage test, serves to determine whether insulating materials and spacing between different parts in the magnetic component are adequate.

The test consists of the application of an AC voltage higher than rated voltage for a specific time between mutually insulated portions of a component part or between insulated portions and ground.

The test shall be applied between each winding and shield, and all of the other windings and shields connected to the core (if accessible). Alternatively the test shall be applied between each winding and shield, and each of the other windings, shields and core (if accessible).

Atmospheric pressure applies

| | |
|---------------------|--|
| <i>Voltage</i> | <i>TBD.</i> |
| <i>Max. Current</i> | <i>TBD</i> |
| <i>Ramp Time</i> | <i>Max. 1 s</i> |
| <i>Dwell Time</i> | <i>Min. 60 s for qualification Min. 5 s for validation</i> |
| <i>Frequency</i> | <i>50 Hz</i> |

5.6.2 Dielectric withstanding voltage requirements

During and post test the magnetic device shall be inspected for evidence of arcing, flashover, breakdown of insulation, and damage.

5.7 Electrical characteristics

5.7.1 Electrical charateristics test method

The applicable electrical measurements as specified in the detail specification, shall be measured in accordance with FT08711502 and as agreed in the baseline for each part.

5.7.2 Electrical charactristics requirements

The measured electrical characteristics shall fall within the limits specified in the detail specification, including any formally agreed deviation. Drift shall be calculated with reference to the first measurement after production screening

5.8 Permanence of marking

5.8.1 Permanence of marking method

Components shall be tested using the methods detailed MIL-STD-202,method 215.

The following shall reply:

- The marked portion of the components shall be brushed.
- The solvents tested shall be:
 - Demineralized water
 - 2-propanol



5.8.2 Permanence of marking requirements

There shall be no evidence of mechanical damage and the markings shall remain legible. The paint or exterior finish shall not soften, peel, or show other signs of deterioration.

5.9 Vibration

MIL-PRF-27^(RD1) states that MIL-STD-202^(RD2) method 201 or 204 be used. Flux feels that these two options form an unrealistic scenario, therefore we elected to increase the vibration testing and use method 214. The purpose of which is:

'This test is conducted for the purpose of determining the ability of the component parts to withstand the dynamic stress exerted by random vibration applied between upper and lower frequency limits to simulate the vibration experienced in various service field environments'

5.9.1 Vibration test method

The components shall be mounted on a PCB and a vibration fixture and exposed to random vibration according to MIL-STD-202^(RD2), method 214, condition H.

Test conditions are as follows: random vibration

- Vibration level: 30 g rms.
- Duration: 5 minutes per axis.
- Level applied to fixture.

| Axis | Frequency Range (Hz) | Level | G rms. Acceleration | Duration per axis |
|-------|----------------------|------------------------|---------------------|-------------------|
| X,Y,Z | 20 -100 | + 6 dB/oct | 30 | 300 sec. |
| | 100-1600 | 0.5 g ² /Hz | | |
| | 1600-2000 | - 12 dB/oct | | |

Table 5-3 Vibration test level

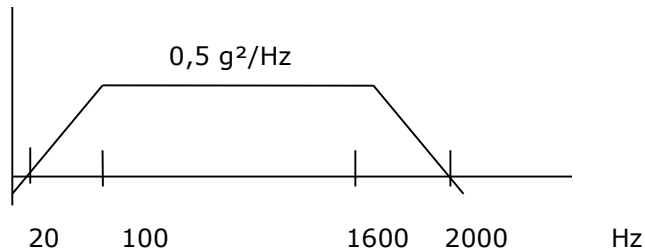


Figure 9-4 Vibration test PSD spectrum



5.9.2 Vibration test requirements

There shall be no evidence of physical damage in accordance with MIL-PRF-27^(RD1), section 4.7.16. Visual inspection shall be performed after vibration testing.

5.10 Mechanical shock

5.10.1 Mechanical shock method

The components shall be mounted on a PCB and a vibration fixture. The components shall be exposed to three shocks in each direction of the three perpendicular axes.

For Qualification Testing, and Periodic Testing for renewal of qualification after lapse: test condition: D (half sine, 500g, 1ms) shall apply.

For Periodic Testing for extension of qualification: test condition I (sawtooth, 100g, 6ms) shall apply.

5.11 Life test

5.11.1 Life test method

Operating Life: Unless otherwise specified, shall be replaced by either Passive Life or Operating Life, as specified in the magnetic sheet for the component under test, as follows:

5.11.1.1 Passive life

MIL-STD-202, Method 108 with the following details:

- Mounting: the components shall be mounted on racks or on a PCB
- Duration:
 - 2000 (+48 -0) hours for Qualification Testing, and Periodic Testing for renewal of qualification after lapse.
 - 1000 (+48 -0) hours for Periodic Testing for extension of qualification Ambient test temperature: maximum operating temperature as specified in Maximum Ratings
- Operating conditions: Non-operating
- Data points: Intermediate and End-Point Electrical Measurements shall be performed as specified in the Magnetic Sheet for the component under test at 0, and 1000 hours. If drift values are specified, the drift shall always be related to the 0-hour measurement.

The components shall be stabilised at ambient room conditions for a minimum of 30 minutes after removal from the test chamber, prior to the performance of measurements.

On completion of testing, the components shall be visually examined. There shall be no evidence of any damage.

5.11.1.2 Operating life

MIL-STD-202, Method 108 with the following details:

- Mounting: the components shall be mounted on racks or on a PCB
- Duration:
 - 2000 (+48 -0) hours for Qualification Testing, and Periodic Testing for renewal of qualification after lapse.
 - 1000 (+48 -0) hours for Periodic Testing for extension of qualification.



- Operating conditions: 5 ON/OFF cycles/week as follows:
 - Cycles 1 to 4: ON for 20 hours: operating at maximum operating temperature as specified in Maximum Ratings, plus OFF for 3 hours: non-operating at $T_{amb} = +22 \pm 3^{\circ}\text{C}$

followed by:

- Cycle 5: ON for 68 hours: operating at maximum operating temperature as specified in Maximum Ratings, plus OFF for 3 hours: non-operating at $T_{amb} = +22 \pm 3^{\circ}\text{C}$

During ON periods, unless otherwise specified in the Magnetic Sheet for the component under test, the component with all normally loaded secondaries loaded with their specified impedances, shall be loaded with 100% rated power as specified in the Magnetic Sheet for the component under test.

- Data Points:
Intermediate and End-Point Electrical Measurements shall be performed as specified in the Magnetic Sheet for the component under test at 0, 1000 and 2000 hours. If drift values are specified, the drift shall always be related to the 0-hour measurement.
The components shall be stabilised at ambient room conditions for a minimum of 30 minutes after removal from the test chamber, prior to the performance of measurements.

5.11.2 Life test requirements

On completion of testing, the components shall be visually examined. There shall be no evidence of any damage.

5.12 Insulation resistance

5.12.1 Insulation resistance method

At specified voltage with insulation resistance (IR) of 7,500 megohms minimum.

5.12.2 Insulation resistance requirements

There shall not be any evidence of physical damage in accordance with MIL-PRF-27^(RD2).

5.13 Internal mechanical examination (Destructive physical analysis(DPA))

5.13.1 DPA method

Components are to be moulded into adequate material, and cut and polished. The cut planes shall include solderings if any, and the core. Multiple cutplanes may be necessary. The components are to be visually inspected, and photographed.

5.13.2 DPA requirements

There shall not be any evidence of physical damage of core, wires, coilformer, solderings, and insulation materials or impregnation material.



5.14 Partial discharge

Transformer only

5.14.1 Partial discharge Method

- a. Magnitude of test voltage: 533Vac peak
- b. Frequency: 50Hz
- c. Test duration: 10 minutes min (after ramp up / before ramp down)
- d. Background noise: <2pC
- e. Pressure: <2Pa
- f. Pass criteria: no pulse ($\geq 5\text{pC}$) during the test duration shall be observed

5.15 Moisture resistance

5.15.1 Moisture resistance method

Moisture resistance is to be performed by exposing the components to a number of temperature and humidity cycles as specified in MIL-STD-202 (RD2), method 106F. The components are not to be polarised or loaded during humidity cycles. Cycle steps 7a (-10°C conditioning) and 7b (vibration) are not applicable.

5.15.2 Moisture resistance requirements

There shall be no evidence of physical damage, or corrosion affecting the mechanical or electrical operation of the component, in accordance with MIL-PRF-27(RD1), section 4.7.20.

5.16 Overload

5.16.1 Overload method

Overload test have been performed by applying operating conditions as specified for each component, with the following exceptions:

- Power is to be at 112% of nominal power
- Temperature: Increase 1 temperature class

The operating conditions were applied for at least 48h in accordance with in accordance with MIL-PRF-27(RD1), section 6.11.

5.16.2 Overload requirements

There shall be no evidence of physical damage in accordance with MIL-PRF-27(RD1), section 3.24.

5.17 Thermal shock

5.17.1 Thermal shock method

Thermal shock shall be performed using an environmental chamber. The following test conditions shall be used; if not otherwise specified in the Order Baseline Matrix.

| Parameter | Requirement |
|---|------------------------------|
| Minimum temperature | - 55°C $\pm 3^\circ\text{C}$ |
| Maximum temperature | +120°C $\pm 3^\circ\text{C}$ |
| Transition temperature | Room Temperature |
| Dwell time at min. and max. temperature | 30 min. |



| Parameter | Requirement |
|--------------------------------------|-------------|
| Dwell time at transition temperature | 4 min. |
| Transfer time | < 5 min. |
| Number of cycles | 100 |

The first five cycles shall run continuously. After five cycles, the test may be interrupted after the completion of any full cycle, and the components allowed to return to ambient room temperature before testing is resumed.

5.17.2 Thermal shock requirement

The components shall be examined for evidence of leakage and other visible damage according to MIL-PRF-27^(RD1) section 3.24.

5.18 Temperature rise

Three designs will be subjected to Temperature Rise.

5.18.1 Temperature rise method

The temperature rise of components shall be determined by any suitable method, but preferably by the resistance-change method.

The device with all normally loaded secondaries loaded with their specified impedances, shall have their windings loaded with the rated currents and voltages at the minimum frequency specified in the Detail Specification. Forced-air circulation shall be shut off when the electrical conditions are applied.

5.18.2 Temperature rise requirement

The units shall be within the specified parameters.

6. FAILURE ANALYSIS

In case of a failure, further testing shall be stopped and report in accordance with FT 08783001^(RD7). All failed components shall be analysed. The depth of the failure analysis shall depend upon the circumstances in which the failure occurred and upon what useful information can be gained. Reverse processing shall be included as an additional test step. As a minimum the failure mode shall be determined in each case. Failed components shall be marked as failed, and marked with the test in which failure was discovered.

7. ACCEPT/REJECT CRITERIA

Lot acceptance samples where one or more sample units do not fulfil the requirements for any one or more tests are to be removed and are considered not acceptable. If, however, the cause of the failure can be identified as bad workmanship, wrong handling or similar reasons and is clearly not related to the general performance of material, process or topology, the sample can be considered as acceptable.



8. TEST RESULTS

8.1 Presentation of results

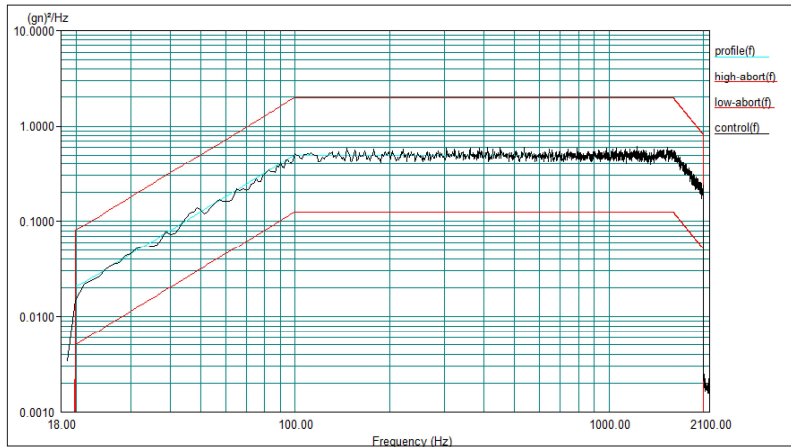
The results are presented and summarised in herein any remarks relevant to the test campaign are detailed in sections 8.5 through 8.8.

8.2 Vibration and Mechanical Shock

Vibration and Mechanical shock was performed at Force all units passed without comments

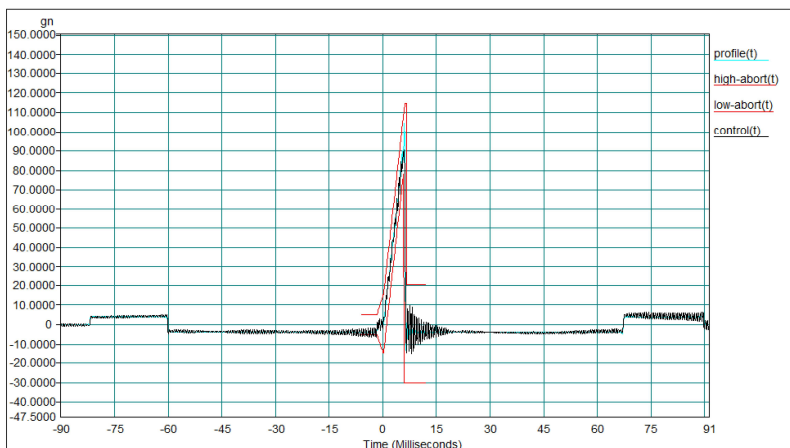
8.2.1 Random Vibration

This was performed on all units from subgroup 3



Curve 1 Exposure curve e.g., 1st run. Similar curve for all runs.

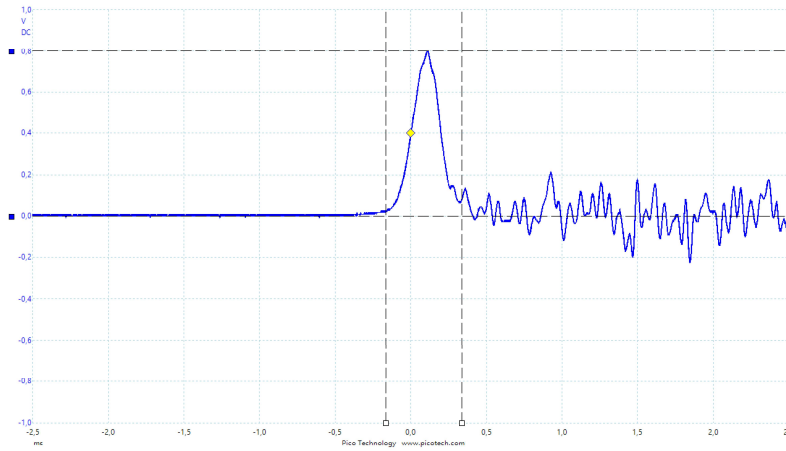
8.2.2 Mechanical Shock 100g



Curve 2 Positive shock e.g., 2nd run. Similar curves for all runs.



8.2.3 Mechanical Shock 800g

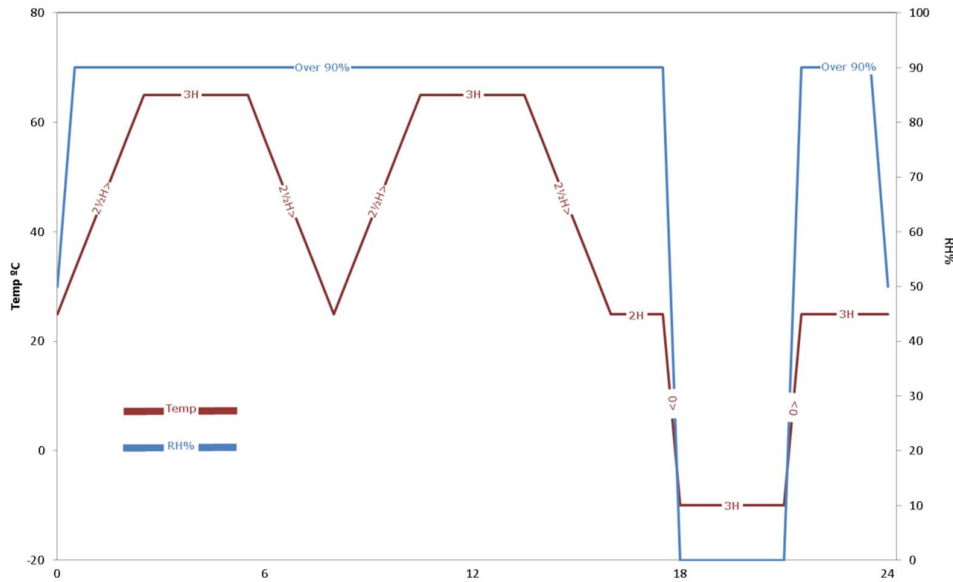


Curve 4 Negative shock in X-axis – Similar curves for all other axes and directions. Dashed horizontal and vertical lines indicates 800g and 0.5 ms.

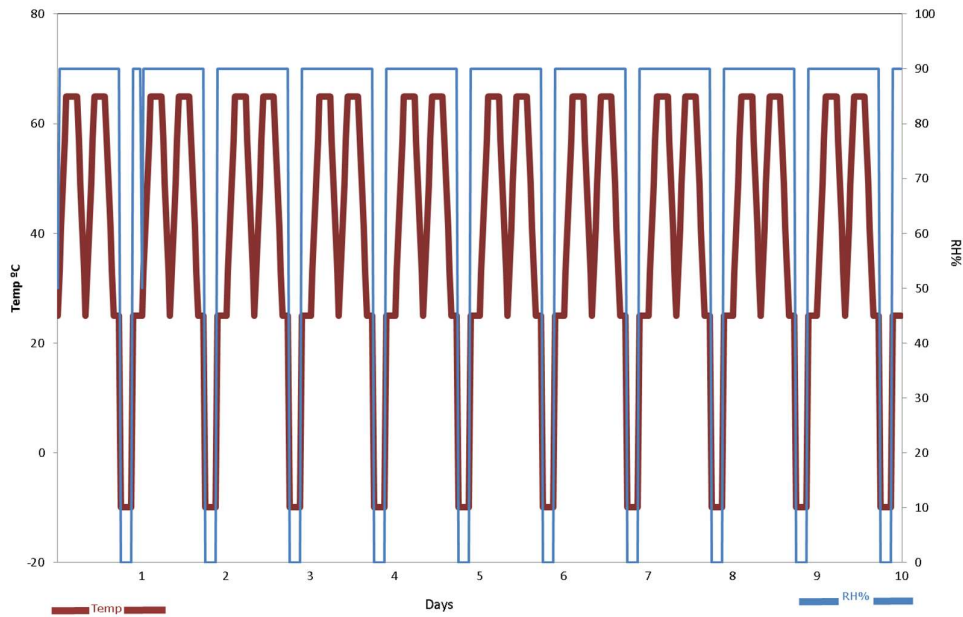


8.3 Moisture Test

8.3.1 One cycle



8.3.2 Full Test



8.4 Internal Examination (DPA)

8.4.1 Q1 - 12041036-1-C



Comments: None

8.4.2 Q2 - 12271019-1-C



Comments:

8.4.3 Q3 - 12060006-1-C



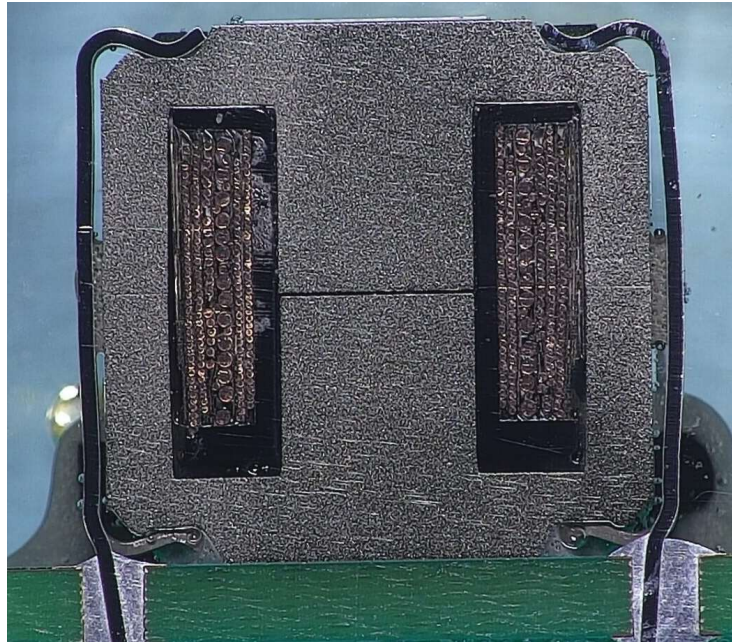
Comments: None

8.4.4 Q4 - 12139002-1-C



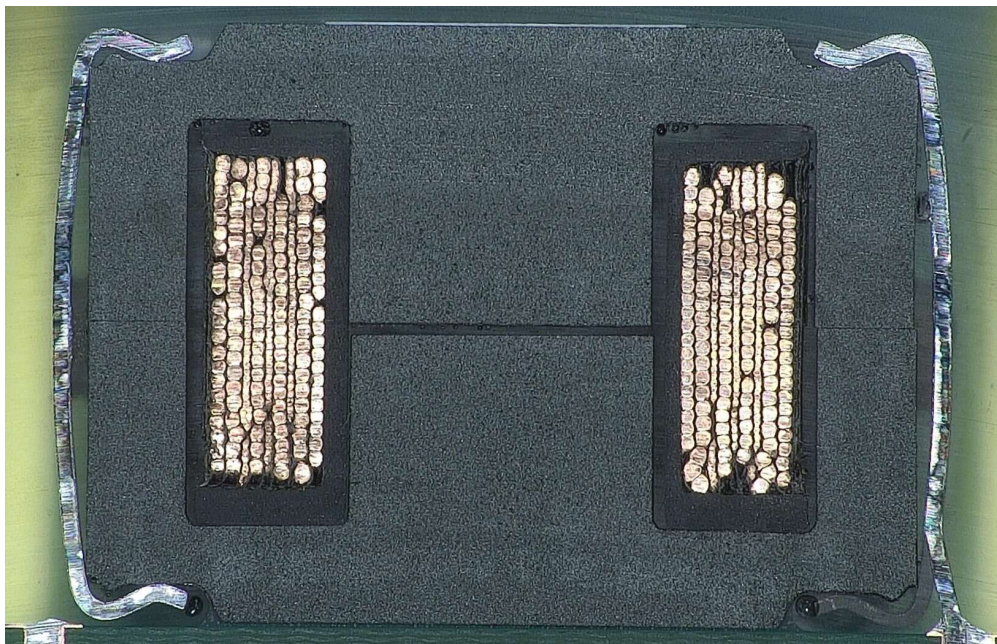
Comments: None

8.4.5 Q5 - 14110233-1-C



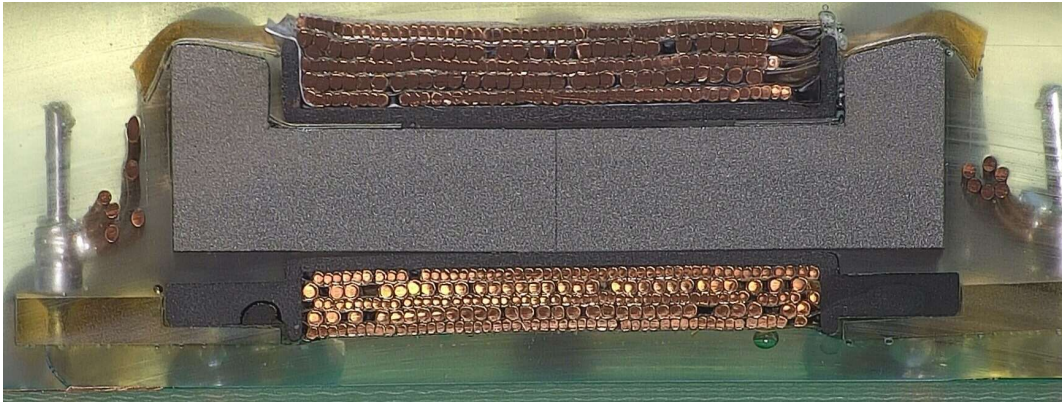
Comments: None

8.4.6 Q6 - 14220168-1-C



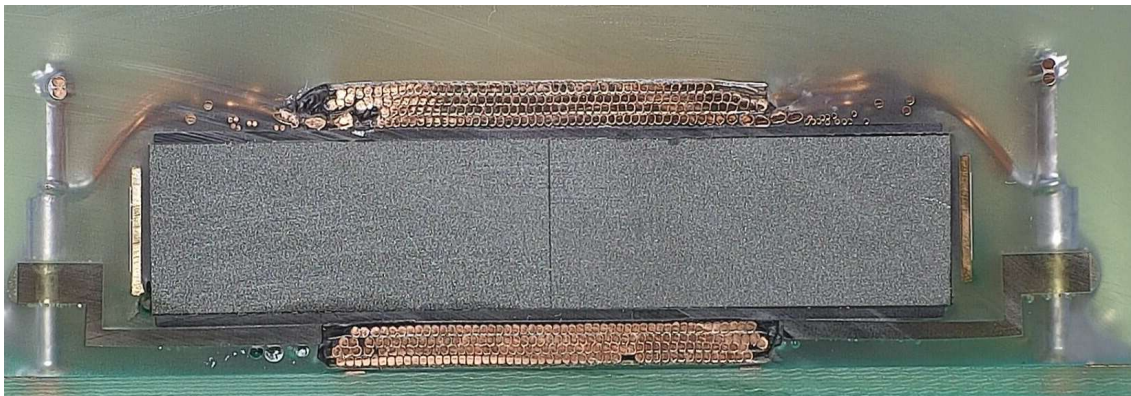
Comments: None.

8.4.7 Q7 - 14260119-1-C



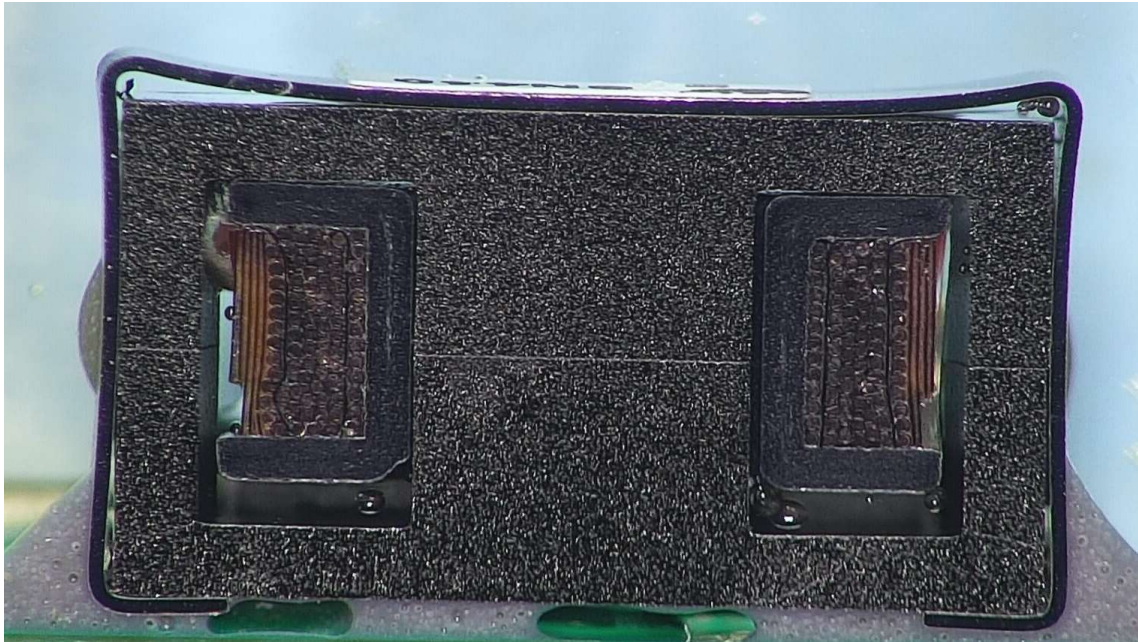
Comments: None

8.4.8 Q8 - 14300044-2-C



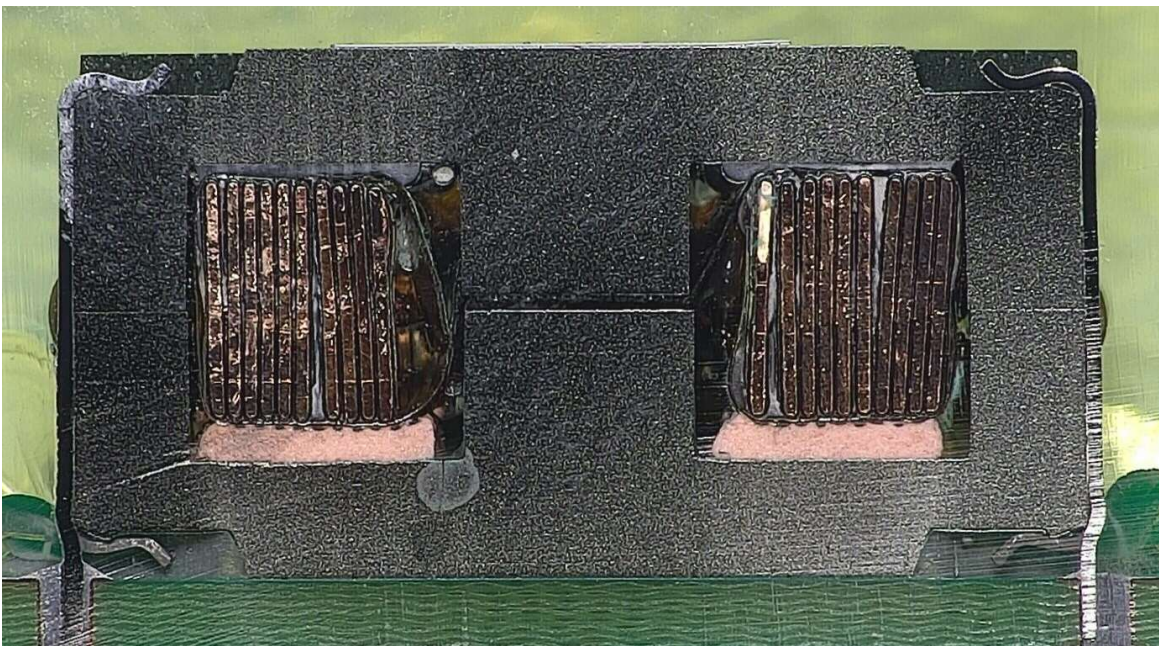
Comments:

8.4.9 Q9 – 14890203-1-C



Comments: None

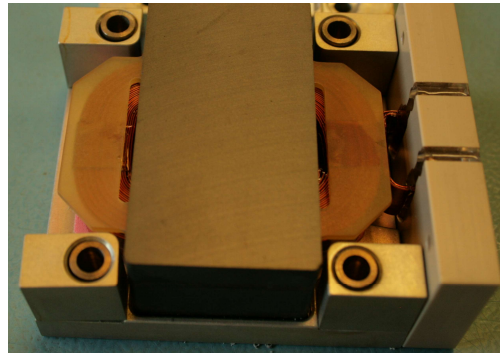
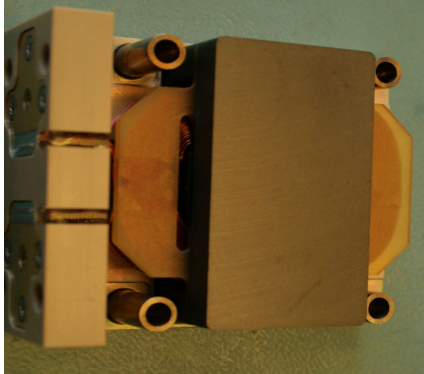
8.4.10 Q10 – 14221035-1-C



Comments: None

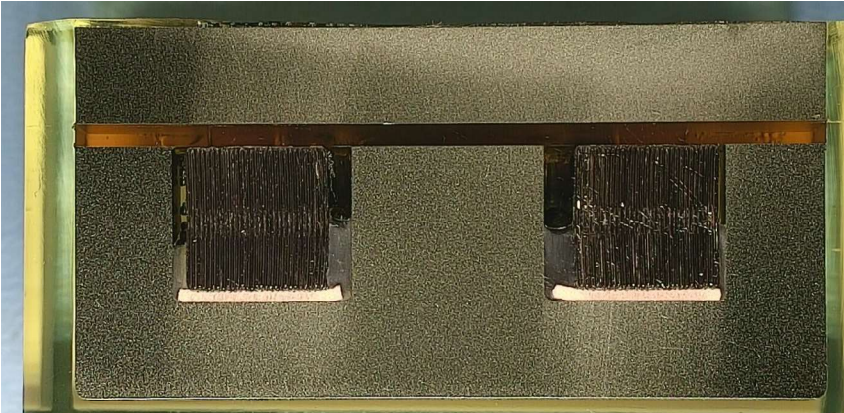
8.4.11 Q11 - 12391001-2-C

Deconstruction



Due to the size of the unit it was not possible to microsection the inductor in 1 piece. Therefore the unit was subjected to deconstruction and the core and winding was subjected to microsectioning

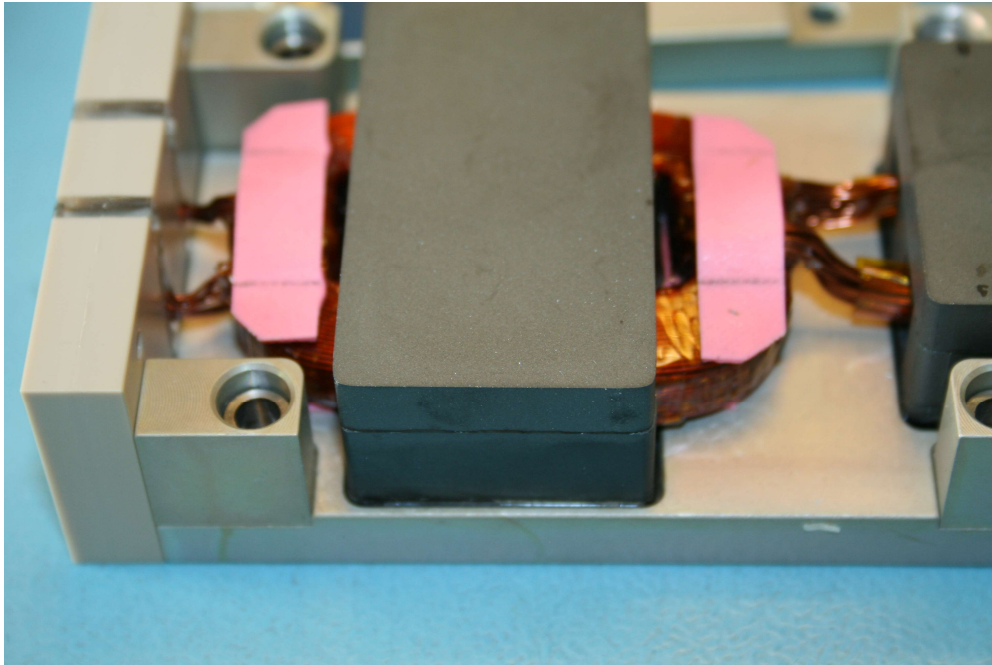
Internal Examination



Comments:

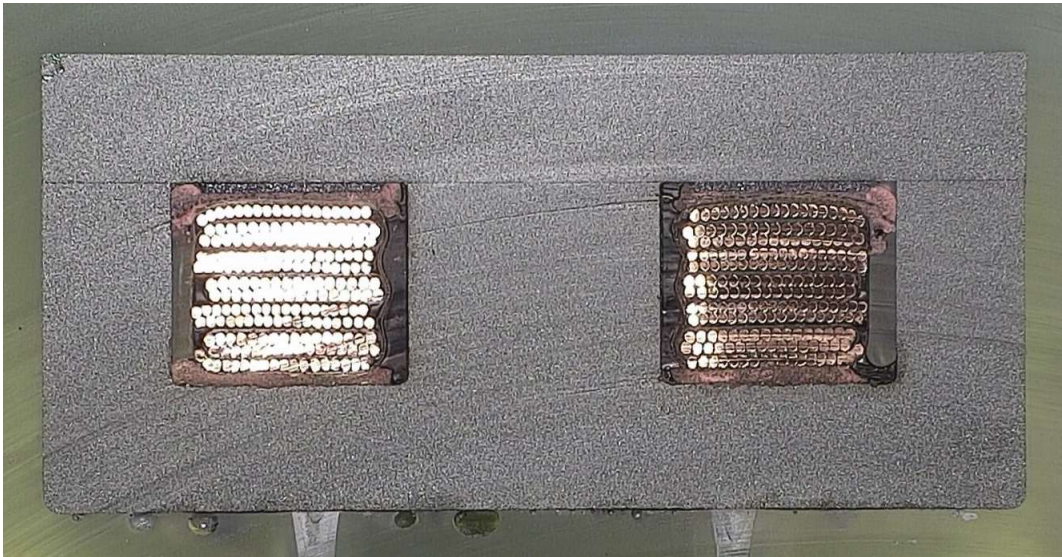
8.4.12 Q12 – 14391002-1-C

Deconstruction



Due to the size of the unit it was not possible to microsection the transformer in 1 piece. Therefore the unit was subjected to deconstruction and the core and winding was subjected to microsectioning

Internal Examination



Comments:
None



8.4.13 Q13 - 14320247-1-C



Comments: None



8.5 Observations and Observations on testing

- Life Test
 - Q12 was test with a lower ambient temperature (40°C)as specified in the magnetics sheet
- Mechanical Shock
 - Q11 & Q12 were tested with increased parameters (Method 213B condition E modified)
- Microsectioning
 - Q11 & Q12 due to the size of the units it was necessary to deconstruct the parts prior to microsectioning

8.6 Minor Nonconformances

None

8.7 Critical Failures

None

9. CONCLUSION

All units that have completed qualification are deemed to have passed as defined in FT 08699016^(RD8).



10. TEST DATA

10.1 Q1 - 12041036-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | V=500 | § 5.17 | § 5.18 |
| LIMITS | Max 4,30 | | | | | | Max 4,30 | | | |
| | Min 3,60 | 5000 | | | | | Min 3,60 | 5000 | | |
| S/N 059 | From screening | | ✓ | ✓ | ✓ | ✓ | 3,98 | ✓ | ✓ | |
| S/N 061 | | | ✓ | ✓ | ✓ | ✓ | 4,01 | ✓ | ✓ | |
| S/N 056 | | | | | | | | | | |
| S/N 057 | | | | | | | | | | |
| S/N 058 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 4,30 | | | | |
| | | | | | Min: 3,60 | 5000 | | | |
| S/N 059 | ✓ | ✓ | ✓ | ✓ | 3,81 | ✓ | ✓ | | ✓ |
| S/N 061 | ✓ | ✓ | ✓ | ✓ | 3,81 | ✓ | ✓ | | |
| S/N 056 | | | | | | | | | |
| S/N 057 | | | | | | | | | |
| S/N 058 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 4,30 | | | | | |
| | | | Min: 3,60 | 5000 | | | | |
| S/N 059 | | | | | | | | |
| S/N 061 | | | | | | | | |
| S/N 056 | ✓ | Performed on labels | 4.11 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 057 | ✓ | | 4.08 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 058 | ✓ | | 4.09 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | | | |



10.2 Q2 – 12271019-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | V=500 | § 5.17 | § 5.18 |
| LIMITS | Max 706 | | | | | | Max 706 | | | |
| | Min 350 | 5000 | | | | | Min 350 | 5000 | | |
| S/N 084 | From screening | | ✓ | ✓ | ✓ | ✓ | 401 | ✓ | ✓ | |
| S/N 085 | From screening | | ✓ | ✓ | ✓ | ✓ | 391 | ✓ | ✓ | |
| S/N 162 | | | | | | | | | | |
| S/N 165 | | | | | | | | | | |
| S/N 178 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max 706 | | | | |
| | | | | | Min 350 | 5000 | | | |
| S/N 084 | ✓ | ✓ | ✓ | ✓ | 397 | ✓ | ✓ | | ✓ |
| S/N 085 | ✓ | ✓ | ✓ | ✓ | 381 | ✓ | ✓ | | |
| S/N 162 | | | | | | | | | |
| S/N 165 | | | | | | | | | |
| S/N 178 | | | | | | | | | |

FLUX



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max 706 | | | | | |
| | | | Min 350 | 5000 | | | | |
| S/N 084 | | | | | | | | |
| S/N 085 | | | | | | | | |
| S/N 162 | ✓ | ✓ | 510,8 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 165 | ✓ | ✓ | 483,4 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 178 | ✓ | ✓ | 472,0 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.3 Q3 – 12060006-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max 41,1 | | | | | | Max 41,1 | | | |
| | Min 33,6 | 5000 | | | | | Min 33,6 | 5000 | | |
| S/N 237 | From screening | | ✓ | ✓ | ✓ | ✓ | 39,0 | ✓ | ✓ | |
| S/N 238 | From screening | | ✓ | ✓ | ✓ | ✓ | 39,1 | ✓ | ✓ | |
| S/N 239 | | | | | | | | | | |
| S/N 240 | | | | | | | | | | |
| S/N 241 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 41,1 | | | | |
| | | | | | Min: 33,6 | 5000 | | | |
| S/N 237 | ✓ | ✓ | ✓ | ✓ | 37,3 | ✓ | ✓ | | ✓ |
| S/N 238 | ✓ | ✓ | ✓ | ✓ | 37,5 | ✓ | ✓ | | |
| S/N 239 | | | | | | | | | |
| S/N 240 | | | | | | | | | |
| S/N 241 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | 500V | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 41,1 | | | | | |
| | | | Min: 33,6 | 5000 | | | | |
| S/N 237 | | | | | | | | |
| S/N 238 | | | | | | | | |
| S/N 239 | ✓ | ✓ | 37,1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 240 | ✓ | ✓ | 39,0 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 241 | ✓ | ✓ | 35,2 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.4 Q4 – 12139002-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance | Insul MOhm | | |
| CONDITIONS | 0,200V 10kHz | | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,200V 10kHz | | § 5.17 | § 5.18 |
| LIMITS | Max 86008 | | | | | | Max 86008 | | | |
| | Min 46312 | | | | | | Min 46312 | | | |
| S/N 011 | From screening | | ✓ | ✓ | ✓ | ✓ | 64100 | | ✓ | |
| S/N 012 | From screening | | ✓ | ✓ | ✓ | ✓ | 60308 | | ✓ | |
| S/N 013 | | | | | | | | | | |
| S/N 014 | | | | | | | | | | |
| S/N 015 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,200V 10kHz | | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 86008 | | | | |
| | | | | | Min: 46312 | | | | |
| S/N 011 | ✓ | ✓ | ✓ | ✓ | 64341 | | ✓ | | ✓ |
| S/N 012 | ✓ | ✓ | ✓ | ✓ | 60302 | | ✓ | | |
| S/N 013 | | | | | | | | | |
| S/N 014 | | | | | | | | | |
| S/N 015 | | | | | | | | | |

FLUX



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,200V 10kHz | | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 86008 | | | | | |
| | | | Min: 46312 | | | | | |
| S/N 011 | | | | | | | | |
| S/N 012 | | | | | | | | |
| S/N 013 | ✓ | ✓ | 70421 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 014 | ✓ | ✓ | 79965 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 015 | ✓ | ✓ | 59057 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.5 Q5 - 14110233-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | | § 5.17 | § 5.18 |
| LIMITS | Max 3984 | | | | | | Max 3984 | | | |
| | Min 3605 | 5000 | | | | | Min 3605 | 5000 | | |
| S/N 026 | From screening | | ✓ | ✓ | ✓ | ✓ | 3737 | ✓ | ✓ | ✓ |
| S/N 027 | From screening | | ✓ | ✓ | ✓ | ✓ | 3771 | ✓ | ✓ | |
| S/N 023 | | | | | | | | | | |
| S/N 024 | | | | | | | | | | |
| S/N 025 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 3984 | | | | |
| | | | | | Min: 3605 | Min: 5000 | | | |
| S/N 026 | ✓ | ✓ | ✓ | ✓ | 3729 | ✓ | ✓ | | ✓ |
| S/N 027 | ✓ | ✓ | ✓ | ✓ | 3745 | ✓ | ✓ | | |
| S/N 023 | | | | | | | | | |
| S/N 024 | | | | | | | | | |
| S/N 025 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 3984 | | | | | |
| | | | Min: 3605 | Min: 5000 | | | | |
| S/N 026 | | | | | | | | |
| S/N 027 | | | | | | | | |
| S/N 023 | ✓ | ✓ | 3878 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 024 | ✓ | ✓ | 3845 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 025 | ✓ | ✓ | 3851 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.6 Q6 – 14220168-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max 205,8 | | | | | | Max 205,8 | | | |
| | Min 186,9 | 5000 | | | | | Min 186,9 | 5000 | | |
| S/N 044 | From screening | | ✓ | ✓ | ✓ | ✓ | 198,5 | ✓ | ✓ | ✓ |
| S/N 045 | From screening | | ✓ | ✓ | ✓ | ✓ | 198,6 | ✓ | ✓ | |
| S/N 041 | | | | | | | | | | |
| S/N 042 | | | | | | | | | | |
| S/N 043 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max 205,8 | | | | |
| | | | | | Min 186,9 | Min: 5000 | | | |
| S/N 044 | ✓ | ✓ | ✓ | ✓ | 197,2 | ✓ | ✓ | | ✓ |
| S/N 045 | ✓ | ✓ | ✓ | ✓ | 196,6 | ✓ | ✓ | | |
| S/N 041 | | | | | | | | | |
| S/N 042 | | | | | | | | | |
| S/N 043 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | 500V | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max 205,8 | | | | | |
| | | | Min 186,9 | Min: 5000 | | | | |
| S/N 044 | | | | | | | | |
| S/N 045 | | | | | | | | |
| S/N 041 | ✓ | 201,2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 042 | ✓ | 202,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 043 | ✓ | 202,6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



10.7 Q7 - 14260119-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max: 279,5 | | | | | | Max: 279,5 | | | |
| | Min: 150,5 | 5000 | | | | | Min: 150,5 | 5000 | | |
| S/N 060 | From screening | | ✓ | ✓ | ✓ | ✓ | 216,8 | ✓ | ✓ | |
| S/N 061 | From screening | | ✓ | ✓ | ✓ | ✓ | 209,3 | ✓ | ✓ | |
| S/N 056 | | | | | | | | | | |
| S/N 057 | | | | | | | | | | |
| S/N 058 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 279,5 | | | | |
| | | | | | Min: 150,5 | 5000 | | | |
| S/N 060 | ✓ | ✓ | ✓ | ✓ | 206,3 | ✓ | ✓ | | ✓ |
| S/N 061 | ✓ | ✓ | ✓ | ✓ | 203,1 | ✓ | ✓ | | |
| S/N 056 | | | | | | | | | |
| S/N 057 | | | | | | | | | |
| S/N 058 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 279,5 | | | | | |
| | | | Min: 150,5 | 5000 | | | | |
| S/N 060 | | | | | | | | |
| S/N 061 | | | | | | | | |
| S/N 056 | ✓ | ✓ | 232,4 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 057 | ✓ | ✓ | 223,8 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 058 | ✓ | ✓ | 233,0 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.8 Q8 – 14300044-2-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock |
|------------|----------------------------|------------|------------------------|---------------|------------------|
| | Inductance | Insul MOhm | | | |
| CONDITIONS | | | ECSS-Q-ST-70-08 | External Test | |
| LIMITS | | | | | |
| S/N 059 | From screening | | ✓ | ✓ | ✓ |
| S/N 060 | From screening | | ✓ | ✓ | ✓ |
| S/N 056 | | | | | |
| S/N 057 | | | | | |
| S/N 058 | | | | | |

| TEST | Moisture Resistance | Electrical Characteristics | | | | Thermal Shock | Temperature Rise | Overload | Induced Voltage | DWV |
|------------|---------------------|----------------------------|--------------------------|--------------------------|------------|---------------|------------------|----------|-----------------|------------------|
| | | Inductance LA1 - μ H | Inductance LB1 - μ H | Inductance LC1 - μ H | Insul MOhm | | | | | |
| CONDITIONS | § 5.15 | 100mV 100kHz | 300mV 100kHz | 100mV 100kHz | V=500 | § 5.17 | § 5.18 | § 5.16 | § 5.5 | V=500 AC 60 s |
| LIMITS | | Max: 64,5 Min: 58,3 | Max: 135,2 Min: 103,2 | Max: 64,5 Min: 58,3 | 5000 | | | | | |
| S/N 059 | ✓ | 60,2 | 127,4 | 60,3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 060 | ✓ | 59,9 | 126,7 | 60,1 | ✓ | ✓ | | ✓ | ✓ | ✓ |
| S/N 056 | | | | | | | | | | |
| S/N 057 | | | | | | | | | | |
| S/N 058 | | | | | | | | | | |



| TEST | Insulation Resistance | Electrical Characteristics | | | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|-----------------------|----------------------------|--------------------------|--------------------------|------------|-------------------|------------------------------|--------|
| | | Inductance LA1 - μ H | Inductance LB1 - μ H | Inductance LC1 - μ H | Insul MOhm | | | |
| CONDITIONS | Surge Test | 100mV 100kHz | 300mV 100kHz | 100mV 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | Max: 64,5 | Max: 135,2 | Max: 64,5 | | | | |
| | | Min: 58,3 | Min: 103,2 | Min: 58,3 | 5000 | | | |
| S/N 059 | ✓ | 59,67 | 127,78 | 60,19 | ✓ | ✓ | | ✓ |
| S/N 060 | ✓ | 59,63 | 127,69 | 60,12 | ✓ | ✓ | | |
| S/N 056 | | | | | | | | |
| S/N 057 | | | | | | | | |
| S/N 058 | | | | | | | | |

| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|--------------------------|--------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance LA1 - μ H | Inductance LB1 - μ H | Inductance LC1 - μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 100mV 100kHz | 300mV 100kHz | 100mV 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 64,5 | Max: 135,2 | Max: 64,5 | | | | | |
| | | | Min: 58,3 | Min: 103,2 | Min: 58,3 | 5000 | | | | |
| S/N 059 | | | | | | | | | | |
| S/N 060 | | | | | | | | | | |
| S/N 056 | ✓ | ✓ | 59,8 | 122,6 | 59,3 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 057 | ✓ | ✓ | 60,3 | 128,4 | 60,1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 058 | ✓ | ✓ | 60,1 | 127,2 | 60,4 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.9 Q9 – 14890202-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance μ H | Insul MOhm | | | | | Inductance μ H | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max 972 | | | | | | Max 972 | | | |
| | Min 583 | 5000 | | | | | Min 583 | 5000 | | |
| S/N 440 | From screening | | ✓ | ✓ | ✓ | ✓ | 653 | ✓ | ✓ | |
| S/N 441 | From screening | | ✓ | ✓ | ✓ | ✓ | 647 | ✓ | ✓ | |
| S/N 442 | | | | | | | | | | |
| S/N 443 | | | | | | | | | | |
| S/N 444 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance μ H | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 242,9 | | | | |
| | | | | | Min: 145,8 | 5000 | | | |
| S/N 440 | ✓ | ✓ | ✓ | ✓ | 654 | ✓ | ✓ | | ✓ |
| S/N 441 | ✓ | ✓ | ✓ | ✓ | 647 | ✓ | ✓ | | |
| S/N 442 | | | | | | | | | |
| S/N 443 | | | | | | | | | |
| S/N 444 | | | | | | | | | |

FLUX



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 972 | | | | | |
| | | | Min: 583 | 5000 | | | | |
| S/N 440 | | | | | | | | |
| S/N 441 | | | | | | | | |
| S/N 442 | ✓ | ✓ | 668 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 443 | ✓ | ✓ | 659 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 444 | ✓ | ✓ | 662 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.10 Q10 – 14221035-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance | Insul MOhm | | | | | Inductance | Insul MOhm | | |
| CONDITIONS | 0,050V 120kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,050V 120kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max 5,30 | | | | | | Max 5,30 | | | |
| | Min 4,80 | 5000 | | | | | Min 4,80 | 5000 | | |
| S/N 027 | From screening | | ✓ | ✓ | ✓ | ✓ | 5,15 | ✓ | ✓ | |
| S/N 028 | From screening | | ✓ | ✓ | ✓ | ✓ | 5,20 | ✓ | ✓ | |
| S/N 024 | | | | | | | | | | |
| S/N 025 | | | | | | | | | | |
| S/N 026 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance µH | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,050V 120kHz | 500V | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 5,30 | | | | |
| | | | | | Min: 4,80 | Min: 5000 | | | |
| S/N 027 | ✓ | ✓ | ✓ | ✓ | 5,21 | ✓ | ✓ | | ✓ |
| S/N 028 | ✓ | ✓ | ✓ | ✓ | 5,22 | ✓ | ✓ | | |
| S/N 024 | | | | | | | | | |
| S/N 025 | | | | | | | | | |
| S/N 026 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,050V 120kHz | 500V | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 5,30 | | | | | |
| | | | Min: 4,80 | 5000 | | | | |
| S/N 027 | | | | | | | | |
| S/N 028 | | | | | | | | |
| S/N 024 | ✓ | ✓ | 5,24 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 025 | ✓ | ✓ | 5,22 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 026 | ✓ | ✓ | 5,18 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.11 Q11 – 12391001-2-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance | Insul MOhm | | | | | Inductance | Insul MOhm | | |
| CONDITIONS | | | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | V=500 | § 5.17 | § 5.18 |
| LIMITS | | | | | | | Max: 47,25 | | | |
| | | | | | | | Min: 42,75 | Min: 5000 | | |
| S/N 220 | From screening | | ✓ | ✓ | ✓ | ✓ | 45,0 | ✓ | ✓ | |
| S/N 221 | From screening | | ✓ | ✓ | ✓ | ✓ | 45,1 | ✓ | ✓ | |
| S/N 215 | | | | | | | | | | |
| S/N 228 | | | | | | | | | | |
| S/N 229 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance µH | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 47,25 | | | | |
| | | | | | Min: 42,75 | Min: 5000 | | | |
| S/N 220 | ✓ | ✓ | ✓ | ✓ | 44,8 | ✓ | ✓ | | ✓ |
| S/N 221 | ✓ | ✓ | ✓ | ✓ | 45,0 | ✓ | ✓ | | |
| S/N 215 | | | | | | | | | |
| S/N 228 | | | | | | | | | |
| S/N 229 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 47,25 | | | | | |
| | | | Min: 42,75 | Min: 5000 | | | | |
| S/N 220 | | | | | | | | |
| S/N 221 | | | | | | | | |
| S/N 215 | ✓ | ✓ | 44,9 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 228 | ✓ | ✓ | 45,1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 229 | ✓ | ✓ | 45,1 | ✓ | ✓ | ✓ | ✓ | ✓ |



10.12 Q12 – 14391002-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Partial Discharge | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|-------------------|------------------|
| | Inductance | Insul MOhm | | | | | Inductance | Insul MOhm | | | |
| CONDITIONS | | | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | V=500 | § 5.17 | | § 5.18 |
| LIMITS | | | | | | | Max: 378,0 | | | | |
| | | | | | | | Min: 180,0 | Min 10000 | | | |
| S/N 283 | From screening | | ✓ | ✓ | ✓ | ✓ | 251,5 | ✓ | ✓ | ✓ | |
| S/N 284 | From screening | | ✓ | ✓ | ✓ | ✓ | 307,5 | ✓ | ✓ | ✓ | |
| S/N 280 | | | | | | | | | | | |
| S/N 281 | | | | | | | | | | | |
| S/N 282 | | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance µH | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | V=500 | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 378,0 | | | | |
| | | | | | Min: 180,0 | Min 10000 | | | |
| S/N 283 | ✓ | ✓ | ✓ | ✓ | 252,5 | ✓ | ✓ | | ✓ |
| S/N 284 | ✓ | ✓ | ✓ | ✓ | 308,5 | ✓ | ✓ | | |
| S/N 280 | | | | | | | | | |
| S/N 281 | | | | | | | | | |
| S/N 282 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Partial Discharge | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | V=500 | § 5.2 | § 5.3 | § 5.4 | | § 5.2 |
| LIMITS | | | Max: 378,0 | | | | | | |
| | | | Min: 180,0 | Min 10000 | | | | | |
| S/N 283 | | | | | | | | | |
| S/N 284 | | | | | | | | | |
| S/N 280 | ✓ | ✓ | 289,9 | ✓ | ✓ | N/A | N/A | ✓ | ✓ |
| S/N 281 | ✓ | ✓ | 294,7 | ✓ | ✓ | N/A | N/A | ✓ | ✓ |
| S/N 282 | ✓ | ✓ | 242,9 | ✓ | ✓ | N/A | N/A | ✓ | ✓ |



10.13 Q13 – 14320247-1-C

| TEST | Electrical Characteristics | | Mount on PCB & Fixture | Vibration | Mechanical Shock | Moisture Resistance | Electrical Characteristics | | Thermal Shock | Temperature Rise |
|------------|----------------------------|------------|------------------------|---------------|------------------|---------------------|----------------------------|------------|---------------|------------------|
| | Inductance | Insul MOhm | | | | | Inductance | Insul MOhm | | |
| CONDITIONS | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | External Test | | § 5.15 | 0,250V 100kHz | 500V | § 5.17 | § 5.18 |
| LIMITS | Max: 375 | | | | | | Max: 375 | | | |
| | Min: 216 | 5000 | | | | | Min: 216 | 5000 | | |
| S/N 040 | From screening | | ✓ | ✓ | ✓ | ✓ | 264 | ✓ | ✓ | |
| S/N 041 | From screening | | ✓ | ✓ | ✓ | ✓ | 251 | ✓ | ✓ | |
| S/N 043 | | | | | | | | | | |
| S/N 044 | | | | | | | | | | |
| S/N 045 | | | | | | | | | | |

| TEST | Overload | Induced Voltage | DWV | Insulation Resistance | Electrical Characteristics | | Visual Inspection | Resistance to soldering heat | DPA |
|------------|----------|-----------------|------------------|-----------------------|----------------------------|------------|-------------------|------------------------------|--------|
| | | | | | Inductance µH | Insul MOhm | | | |
| CONDITIONS | § 5.16 | § 5.5 | V=500 AC 60 s | Surge Test | 0,250V 100kHz | 500V | ECSS-Q-ST-70-08 | § 5.3 | § 5.14 |
| LIMITS | | | | | Max: 375 | | | | |
| | | | | | Min: 216 | 5000 | | | |
| S/N 040 | ✓ | ✓ | ✓ | ✓ | 277,92 | ✓ | ✓ | | ✓ |
| S/N 041 | ✓ | ✓ | ✓ | ✓ | 246,58 | ✓ | ✓ | | ✓ |
| S/N 043 | | | | | | | | | ✓ |
| S/N 044 | | | | | | | | | |
| S/N 045 | | | | | | | | | |



| TEST | Life Test | Permanence of Marking | Electrical Characteristics | | Visual Inspection | Solderability | Terminal Strength | Visual Inspection |
|------------|-----------|-----------------------|----------------------------|------------|-------------------|---------------|-------------------|-------------------|
| | | | Inductance μ H | Insul MOhm | | | | |
| CONDITIONS | § 5.11 | § 5.8 | 0,250V 100kHz | 500V | § 5.2 | § 5.3 | § 5.4 | § 5.2 |
| LIMITS | | | Max: 375 | | | | | |
| | | | Min: 216 | 5000 | | | | |
| S/N 040 | | | | | | | | |
| S/N 041 | | | | | | | | |
| S/N 043 | ✓ | ✓ | 267,6 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 044 | ✓ | ✓ | 283,2 | ✓ | ✓ | ✓ | ✓ | ✓ |
| S/N 045 | ✓ | ✓ | 278,0 | ✓ | ✓ | ✓ | ✓ | ✓ |