

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment
Product Category CCN:	QQGQ2, QQGQ8
Test Procedure:	Component Recognition
Product:	Building-in DC/DC converter
Model/Type Reference:	DCH010505Sxx, DCH010512Sxx, DCH010515Sxx, DCH010505Dxx, DCH010512Dxx, DCH010515Dxx; where xx is any alphanumeric or blank
Rating(s):	optional, Input: 5 VDC, 300mA, Output: see GPI
Standards:	UL 60950-1, 1st Edition, 2007-10-31 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Applicant Name and Address:	TEXAS INSTRUMENTS 27715 DIEHL RD WARRENVILLE IL 60555 UNITED STATES

This Report includes the following parts, in addition to this cover page:

1. Specific Inspection Criteria
2. Specific Technical Criteria
3. Clause Verdicts
4. Critical Components
5. Test Results
6. National Differences
7. Enclosures

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Report By:



Hong Ung
Senior Project Engineer
Underwriters Laboratories Inc.

Reviewed By:



Stephanie Henderson
Staff Engineer
Underwriters Laboratories Inc.

SPECIFIC INSPECTION CRITERIA

BA1.0	Special Instructions to UL Representative
BA1.1	A copy of the label and trademark can be found in Enclosures:Miscellaneous. Due to the size of the units, the trademark and/or company identification will be provided on the packaging of the units.


BB1.0	Supporting Documentation
BB1.1	<p>The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:</p> <p>A. Authorization - The Authorization page may include additional Factory Identification Code markings.</p> <p>B. Generic Inspection Instructions -</p> <ul style="list-style-type: none"> i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report. ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report. iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

BC1.0	Markings and instructions	
BC1.1	The following markings and instructions are provided as indicated.	
BC1.2	All clause references are from UL 60950-1, 1st Edition, 2007-10-31 (Information Technology Equipment - Safety - Part 1: General Requirements).	
Standard Clause	Clause Title	Marking or Instruction Details
Other	1.7.1 Power ratings	Optional, Ratings (dc voltage, current)
	1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
	1.7.1 Power rating - Model	Model Number

BD1.0	Production-Line Testing Requirements						
BD1.1	Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.						
	Model	Component	Removable Parts	Test probe location	Test Potential		Test Time, s
					V rms	V dc	
	N/A						
BD1.2	Earthing Continuity Test Exemptions - This test is not required for the following models:			All Models			
BD1.3	Electric Strength Test Exemptions - This test is not required for the following models:			All Models			
BD1.4	Electric Strength Test Component Exemptions - The following solid-state components may disconnected from the remainder of the circuitry during the performance of this test:						

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL					
BE1.1	Model	Component	Material	Test	Sample(s)	Test Specifics
	N/A					

SPECIFIC TECHNICAL CRITERIA

UL 60950-1, First Edition Information technology equipment - Safety- Part 1: General Requirements	
Report Reference No	E199929-A2-UL-2
Compiled by	Hong Ung
Reviewed by	Stephanie Henderson
Date of issue	2009-07-23
Standards	UL 60950-1, 1st Edition, 2007-10-31 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	Building-in DC/DC converter
Trademark	
Model and/or type reference	DCH010505Sxx, DCH010512Sxx, DCH010515Sxx, DCH010505Dxx, DCH010512Dxx, DCH010515Dxx; where xx is any alphanumeric or blank
Rating(s)	optional, Input: 5 VDC, 300mA, Output: see GPI

Particulars: test item vs. test requirements	
Equipment mobility	for building-in
Operating condition	continuous
Mains supply tolerance (%)	+6%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	-
Class of equipment	Class III
Mass of equipment (kg)	0.0015
Protection against ingress of water	IP X0

Possible test case verdicts:	
- test case does not apply to the test object	N / A
- test object does meet the requirement	Pass
- test object does not meet the requirement	Fail (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Test Report
- "(see appended table)" refers to a table appended to the Test Report
- Throughout the Test Report a point is used as the decimal separator

GENERAL PRODUCT INFORMATION:																						
CA1.0	Report Summary																					
CA1.1	N/A																					
CB1.0	Product Description																					
CB1.1	<p>Models covered in this report are component single & dual output DC-DC converters intended for use in Information Technology Equipment. The need for the additional testing and evaluations shall be determined in the end product evaluation.</p> <p>The open frame DC/DC power supply component are for building-in, Class III; Input to output - Functional Insulation.</p>																					
CC1.0	Model Differences																					
CC1.1	<p>All models are identical except model designation, output voltage/ current, maybe provided with suffix "xx" for marketing purposes.</p> <table border="1"> <thead> <tr> <th>Model</th> <th>(Output V) (V)</th> <th>Output Current (mA)</th> </tr> </thead> <tbody> <tr> <td>DCH010505</td> <td>5</td> <td>200</td> </tr> <tr> <td>DCH010512</td> <td>12</td> <td>83</td> </tr> <tr> <td>DCH010515</td> <td>15</td> <td>67</td> </tr> <tr> <td>DCH010505D</td> <td>±5</td> <td>±100</td> </tr> <tr> <td>DCH010512D</td> <td>±12</td> <td>±42</td> </tr> <tr> <td>DCH010515D</td> <td>±15</td> <td>±33</td> </tr> </tbody> </table>	Model	(Output V) (V)	Output Current (mA)	DCH010505	5	200	DCH010512	12	83	DCH010515	15	67	DCH010505D	±5	±100	DCH010512D	±12	±42	DCH010515D	±15	±33
Model	(Output V) (V)	Output Current (mA)																				
DCH010505	5	200																				
DCH010512	12	83																				
DCH010515	15	67																				
DCH010505D	±5	±100																				
DCH010512D	±12	±42																				
DCH010515D	±15	±33																				
CD1.0	Additional Information																					
CD1.1	<p>Product spacings evaluated for functional insulation. Dielectric passed 3000V per client request. Marking Plate is representative of all models. Due to the size of the model, the Trademark and Company identification will be provided on the packaging of the samples.</p> <p>This Report is a re-issue of CB Test Report Reference Number E199929-A2-CB-1 dated 2006-08-10, CB Test Certificate No. US/10692A/UL. No samples were received and laboratory testing was not considered necessary based on previous testing in this Report. Based on the previously conducted testing under the original investigation and subsequent amendments, the review of product technical documentation including photos, diagrams, and similar, it has been determined that the product continues to comply with the standard. All required tests were carried out under the original investigation.</p>																					
CE1.0	Technical Considerations																					
CE1.2	The product was submitted and evaluated for use at the maximum ambient temperature (T _{ma}) permitted by the manufacturer's specification of: 85°C																					
CF1.0	Engineering Conditions of Acceptability																					

CF1.1	For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:
CF1.5	The following secondary output circuits are SELV: All outputs
CF1.7	The following secondary output circuits are at non-hazardous energy levels: All
CF1.11	The power supply terminals and/or connectors are: Suitable for factory wiring only
CF1.13	The investigated Pollution Degree is: To be evaluated in end product.
CF1.16	An investigation of the protective bonding terminals has: Not been conducted
CF1.19	The following end-product enclosures are required: Electrical, Fire and Mechanical
CF2.0	To be determined in end product: these DC converters shall be separated from other external and internal components by either 13mm of air or a solid V-1 material

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1	GENERAL		Pass
1.5	Components		Pass
1.5.1	General		Pass
	Comply with IEC 60950 or relevant component standard	(see appended table 1.5.1)	Pass
1.5.2	Evaluation and testing of components	<p>Components certified to IEC harmonized standard and checked for correct application.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component Standard.</p> <p>Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.</p>	Pass
1.5.3	Thermal controls		N/A
1.5.4	Transformers	Transformers used are suitable for their intended use, See diagram enclosure for transformer construction details.	Pass
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors in primary circuits		N/A
1.5.7	Double insulation or reinforced insulation bridged by components		N/A
1.5.7.1	General		N/A
1.5.7.2	Bridging capacitors		N/A
1.5.7.3	Bridging resistors		N/A
1.5.7.4	Accessible parts		N/A
1.5.8	Components in equipment for IT power systems		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.6	Power interface		Pass
1.6.1	AC power distribution systems	DC Rated.	N/A
1.6.2	Input current	(see appended table 1.6.2) The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD.	Pass
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.7	Marking and instructions		Pass
1.7.1	Power rating		Pass
	Rated voltage(s) or voltage range(s) (V)	Ratings optional. Refer to the Rating information at the beginning of this Test Report.	N/A
	Symbol for nature of supply, for d.c. only	Ratings optional	N/A
	Rated frequency or rated frequency range (Hz)	DC Rated.	N/A
	Rated current (mA or A).....	Ratings optional.	N/A
	Manufacturer's name or trademark or identification mark	Refer to the Rating information at the beginning of this Test Report.	Pass
	Type/model or type reference.....	Refer to the Rating information at the beginning of this Test Report.	Pass
	Symbol for Class II equipment only		N/A
	Other symbols.....		N/A
	Certification marks	UL, c-UL.Recognition.	Pass
1.7.2	Safety instructions		N/A
1.7.3	Short duty cycles		N/A
1.7.4	Supply voltage adjustment.....		N/A
1.7.5	Power outlets on the equipment	No standard power outlets are provided.	N/A
1.7.6	Fuse identification.....		N/A
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals		N/A
1.7.7.2	Terminal for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		N/A
1.7.8.1	Identification, location and marking	None Provided.	N/A
1.7.8.2	Colours.....		N/A
1.7.8.3	Symbols according to IEC 60417	There are no switches in the equipment.	N/A
1.7.8.4	Markings using figures.....		N/A
1.7.9	Isolation of multiple power sources		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.7.10	IT power distribution systems		N/A
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language..... :	Reviewed only English markings/instructions.	-
1.7.13	Durability	Ratings optional. Unit intended for building-in. To be determined in end product.	N/A
1.7.14	Removable parts		N/A
1.7.15	Replaceable batteries		N/A
	Language..... :		-
1.7.16	Operator access with a tool :	Unit intended for building-in. To be determined in end product.	N/A
1.7.17	Equipment for restricted access locations..... :	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2	PROTECTION FROM HAZARDS		Pass
2.1	Protection from electric shock and energy hazards		N/A
2.1.1	Protection in operator access areas	Unit intended for building-in. To be determined in end product.	N/A
2.1.1.1	Access to energized parts		N/A
	Test by inspection..... :		N/A
	Test with test finger..... :		N/A
	Test with test pin..... :		N/A
	Test with test probe :		N/A
2.1.1.2	Battery compartments..... :	Product does not have a battery compartment.	N/A
2.1.1.3	Access to ELV wiring	No ELV circuits.	N/A
	Working voltage (V); minimum distance (mm) through insulation :		-
2.1.1.4	Access to hazardous voltage circuit wiring	Unit intended for building-in. To be determined in end product.	N/A
2.1.1.5	Energy hazards..... :	To be determined in the end-product.	N/A
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment	DC rated unit.	N/A
	Time-constant (s); measured voltage (V) :		-
2.1.2	Protection in service access areas	Unit intended for building-in. To be determined in end product.	N/A
2.1.3	Protection in restricted access locations		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.2	SELV circuits		Pass
2.2.1	General requirements	SELV limits are not exceeded under normal condition and after a single fault.	Pass
2.2.2	Voltages under normal conditions (V)	All accessible voltages are less than 42.4 Vp or 60 V dc and are classified as SELV. No additional evaluation required.	Pass
2.2.3	Voltages under fault conditions (V).....	Under fault conditions voltages never exceed 71V peak and 120Vdc and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.	Pass
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)		N/A
2.2.3.2	Separation by earthed screen (method 2)		N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N/A
2.2.4	Connection of SELV circuits to other circuits.....	Unit intended for building-in. To be determined in end product.	N/A

2.3	TNV circuits		N/A
2.3.1	Limits		N/A
	Type of TNV circuits		-
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed.....		-
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed.....		-
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed.....		-
2.3.5	Test for operating voltages generated externally		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.4	Limited current circuits		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz)		-
	Measured current (mA).....		-
	Measured voltage (V)		-
	Measured capacitance (mF)		-
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	Limited power sources		N/A
	Inherently limited output		N/A
	Impedance limited output		N/A
	Overcurrent protective device limited output		N/A
	Regulating network limited output under normal operating and single fault condition		N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N/A
	Output voltage (V), output current (A), apparent power (VA):.....		-
	Current rating of overcurrent protective device (A):		-

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.6	Provisions for earthing and bonding		N/A
2.6.1	Protective earthing	Unit intended for building-in. To be determined in end product.	N/A
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	General	Unit intended for building-in. To be determined in end product.	N/A
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm ²), AWG		-
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm ²), AWG		-
2.6.3.4	Resistance (Ohm) of earthing conductors and their terminations, test current (A)		N/A
2.6.3.5	Colour of insulation		N/A
2.6.4	Terminals		N/A
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type and nominal thread diameter (mm)		-
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing	To be evaluated in end product.	N/A
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth	To be evaluated in end product.	N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A

2.7	Overcurrent and earth fault protection in primary circuits		N/A
2.7.1	Basic requirements	Unit intended for building-in. To be determined in end product.	N/A
	Instructions when protection relies on building installation	To be evaluated in end product. Protective devices are integrated in the equipment.	N/A
2.7.2	Faults not covered in 5.3	Considered.	N/A
2.7.3	Short-circuit backup protection	Unit intended for building-in. To be determined in end product.	N/A
2.7.4	Number and location of protective devices..... :		N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel :		N/A

2.8	Safety interlocks		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm) :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.9	Electrical insulation		Pass
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	Pass
2.9.2	Humidity conditioning		N/A
	Humidity (%) :		-
	Temperature (°C)..... :		-
2.9.3	Grade of insulation	Functional Insulation only, Unit intended for building-in, to be determined in the End product.	Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.10	Clearances, creepage distances and distances through insulation		N/A
2.10.1	General	Unit intended for building-in. To be determined in end product.	N/A
2.10.2	Determination of working voltage		N/A
2.10.3	Clearances	Class III product - secondary circuits comply with Sub-clause 5.3.4. (see appended table 2.10.3 and 2.10.4).	N/A
2.10.3.1	General		N/A
2.10.3.2	Clearances in primary circuit		N/A
2.10.3.3	Clearances in secondary circuits	Class III product - secondary circuits comply with Sub-clause 5.3.4.	N/A
2.10.3.4	Measurement of transient voltage levels		N/A
2.10.4	Creepage distances	Class III product - secondary circuits comply with Sub-clause 5.3.4.	N/A
	CTI tests..... :	Material group IIIa/IIIb	-
2.10.5	Solid insulation		N/A
2.10.5.1	Minimum distance through insulation		N/A
2.10.5.2	Thin sheet material		N/A
	Number of layers (pcs) :		-
	Electric strength test :		-
2.10.5.3	Printed boards	PCB does not serve as insulation barrier.	N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material :		-
	Number of layers (pcs) :		N/A
2.10.5.4	Wound components		N/A
	Number of layers (pcs) :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° :	No crossing at an angle between 45 deg. and 90 deg.	N/A
2.10.6	Coated printed boards		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C) :		N/A
2.10.6.5	Electric strength test :		-
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test :		-
2.10.7	Enclosed and sealed parts :		N/A
	Temperature T1=T2 = Tma - Tamb +10K (°C)..... :		N/A
2.10.8	Spacings filled by insulating compound..... :		N/A
	Electric strength test :		-
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

3	WIRING, CONNECTIONS AND SUPPLY		N/A
3.1	General		N/A
3.1.1	Current rating and overcurrent protection	No internal wiring and interconnecting cable, other than protective bonding jumper wire, employed. Adequate cross sectional areas on internal wiring.	N/A
3.1.2	Protection against mechanical damage	Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	N/A
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	N/A
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	N/A
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections	Thread-cutting or space thread screws are not used for electrical connections.	N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors	Terminations cannot become displaced so that clearances and creepage distances can be reduced.	N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring	Sleeves can only be removed by breaking or cutting	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

3.2	Connection to an a.c. mains supply or a d.c. mains supply		N/A
3.2.1	Means of connection	DC rated unit. No direct connection to primary.	N/A
3.2.1.1	Connection to an a.c. mains supply	DC rated unit.	N/A
3.2.1.2	Connection to a d.c. mains supply	To be evaluated in end system.	N/A
3.2.2	Multiple supply connections		N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter (mm) of cable and conduits..... :		-
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type..... :		-
	Rated current (A), cross-sectional area (mm ²), AWG :		-
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) :		-
	Longitudinal displacement (mm)..... :		-
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	D (mm); test mass (g) :		-
	Radius of curvature of cord (mm) :		-
3.2.9	Supply wiring space		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	Unit intended for building-in, to be determined by the end product.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²)		-
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type and nominal thread diameter (mm)		-
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

3.4	Disconnection from the mains supply		N/A
3.4.1	General requirement	The unit is for building-in. No direct connection to primary.	N/A
3.4.2	Disconnect devices		N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Single-phase equipment and d.c. equipment		N/A
3.4.7	Three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

3.5	Interconnection of equipment		N/A
3.5.1	General requirements		N/A
3.5.2	Types of interconnection circuits	Interconnection of the power supply outputs (SELV) with other circuits is to be evaluated in the end-use product.	N/A
3.5.3	ELV circuits as interconnection circuits		N/A

4	PHYSICAL REQUIREMENTS		Pass
4.1	Stability		N/A
	Angle of 10°		N/A
	Test: force (N)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.2	Mechanical strength		Pass
4.2.1	General	No hazardous results were obtained during /after the following test.	Pass
4.2.2	Steady force test, 10 N	Unit intended for building-in. To be determined in end product.	N/A
4.2.3	Steady force test, 30 N	The unit does not have any internal enclosures.	N/A
4.2.4	Steady force test, 250 N	Unit intended for building-in. Overall enclosure to be evaluated in the end-use equipment.	N/A
4.2.5	Impact test		N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified :	No picture tube provided.	N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) :		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.3	Design and construction		N/A
4.3.1	Edges and corners	Unit intended for building-in, to be evaluated in the end-use equipment.	N/A
4.3.2	Handles and manual controls; force (N) :	Must be evaluated in end system.	N/A
4.3.3	Adjustable controls	The equipment does not have any operator accessible adjustable controls.	N/A
4.3.4	Securing of parts	The equipment does not have any supplementary or reinforced insulation.	N/A
4.3.5	Connection of plugs and sockets		N/A
4.3.6	Direct plug-in equipment		N/A
	Dimensions (mm) of mains plug for direct plug-in . :		N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) :		N/A
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids..... :		N/A
	Quantity of liquid (l)..... :		N/A
	Flash point (°C)..... :		N/A
4.3.13	Radiation; type of radiation		N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) :		-
	Measured high-voltage (kV)..... :		-
	Measured focus voltage (kV) :		-
	CRT markings..... :		-
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

	Part, property, retention after test, flammability classification		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation.....		N/A
4.3.13.5	Laser (including LEDs)		N/A
	Laser class.....		-
4.3.13.6	Other types		N/A

4.4	Protection against hazardous moving parts		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A

4.5	Thermal requirements		Pass
4.5.1	Maximum temperatures	(see appended table 4.5)	Pass
	Normal load condition per Annex L	No thermostats, temp. limiters or thermal cutouts. Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established. Permitted rises based on manufacturer's specified T _{mra} of 85°C.	Pass
4.5.2	Resistance to abnormal heat	It has been determined from examination of the physical characteristics of the materials used that the material meets the requirements of the test.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.6	Openings in enclosures		N/A
4.6.1	Top and side openings	This is a component dc/dc power supply for building-in, to be evaluated in end product.	N/A
	Dimensions (mm)..... :		-
4.6.2	Bottoms of fire enclosures	To be evaluated in end product.	N/A
	Construction of the bottom..... :		-
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C)/time (weeks) :		-

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.7	Resistance to fire		Pass
4.7.1	Reducing the risk of ignition and spread of flame		Pass
	Method 1, selection and application of components wiring and materials	Unit intended for building-in. To be determined in end product.	N/A
	Method 2, application of all of simulated fault condition tests	Unit intended for building-in. To be determined in end product.	N/A
4.7.2	Conditions for a fire enclosure	Unit intended for building-in.	N/A
4.7.2.1	Parts requiring a fire enclosure	A fire enclosure covers all parts.	N/A
4.7.2.2	Parts not requiring a fire enclosure	End product Fire enclosure covers all parts.	N/A
4.7.3	Materials		Pass
4.7.3.1	General		N/A
4.7.3.2	Materials for fire enclosures	To be evaluated in end product.	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1, 130°C or better.	Pass
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		Pass
5.1	Touch current and protective conductor current		N/A
5.1.1	General	DC input	N/A
5.1.2	Equipment under test (EUT)		N/A
5.1.3	Test circuit		N/A
5.1.4	Application of measuring instrument		N/A
5.1.5	Test procedure		N/A
5.1.6	Test measurements		N/A
	Test voltage (V)		-
	Measured touch current (mA)		-
	Max. allowed touch current (mA)		-
	Measured protective conductor current (mA)		-
	Max. allowed protective conductor current (mA) ...		-
5.1.7	Equipment with touch current exceeding 3.5 mA ..		N/A
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N/A
	Test voltage (V)		-
	Measured touch current (mA)		-
	Max. allowed touch current (mA)		-
5.1.8.2	Summation of touch currents from telecommunication networks		N/A

5.2	Electric strength		Pass
5.2.1	General	(see appended table 5.2)	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test.	Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	Abnormal operating and fault conditions		Pass
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	Pass
5.3.2	Motors		N/A
5.3.3	Transformers		Pass
5.3.4	Functional insulation	Functional insulation complies with the requirements (a), and (c).	Pass
5.3.5	Electromechanical components		N/A
5.3.6	Simulation of faults	(see appended table 5.3)	Pass
5.3.7	Unattended equipment		N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire, emission of molten metal or deformation was noted during the tests.	Pass

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Test voltage (V)		-
	Current in the test circuit (mA)		-
6.1.2.2	Exclusions.....		N/A

6.2	Protection of equipment users from overvoltages on telecommunication networks		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

6.3	Protection of the telecommunication wiring system from overheating		N/A
	Max. output current (A)		-
	Current limiting method.....		-

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.2	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.3	Insulation between primary circuits and cable distribution systems		N/A
7.3.1	General		N/A
7.3.2	Voltage surge test		N/A
7.3.3	Impulse test		N/A

A	Annex A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples		-
	Wall thickness (mm)		-
A.1.2	Conditioning of samples; temperature (°C)		N/A
A.1.3	Mounting of samples.....		N/A
A.1.4	Test flame		N/A
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s).....		-
	Sample 2 burning time (s).....		-
	Sample 3 burning time (s).....		-

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N/A
A.2.1	Samples, material		-
	Wall thickness (mm)		-
A.2.2	Conditioning of samples		N/A
A.2.3	Mounting of samples		N/A
A.2.4	Test flame		N/A
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s).....		-
	Sample 2 burning time (s).....		-
	Sample 3 burning time (s).....		-
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N/A
	Sample 1 burning time (s).....		-
	Sample 2 burning time (s).....		-
	Sample 3 burning time (s).....		-

A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

B	Annex B, MOTOR TESTS UNDER ABNORMAL CONDITIONS(see 4.7.2.2 and 5.3.2)		N/A
B.1	General requirements		N/A
	Position		-
	Manufacturer.....		-
	Type.....		-
	Rated values.....		-
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days).....		-
	Electric strength test: test voltage (V).....		-
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h).....		N/A
B.7.3	Electric strength test		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V).....		-

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

C	Annex C, TRANSFORMERS (see 1.5.4 and 5.3.3)		Pass
	Position	See diagram enclosure for transformer construction details.	-
	Manufacturer.....	Texas Instruments	-
	Type	See Table 1.5.1	-
	Rated values.....	See diagram enclosure for transformer construction details.	-
	Method of protection	N/A	-
C.1	Overload test	Transformer in SECONDARY CIRCUIT only. (see appended table 5.3)	Pass
C.2	Insulation	(see appended table 5.2)	Pass
	Protection from displacement of windings.....	Basic insulated wire used. See diagram enclosure for transformer construction details.	Pass

D	Annex D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS		N/A
D.1	Measuring instrument		N/A
D.2	Alternative measuring instrument		N/A

E	Annex E, TEMPERATURE RISE OF A WINDING		N/A
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F	Annex F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)		N/A
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

G	Annex G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
G.1	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply		N/A
G.2.2	DC mains supply		N/A
G.3	Determination of telecommunication network transient voltage (V) :..... :		N/A
G.4	Determination of required withstand voltage (V) ... :		N/A
G.5	Measurement of transient levels (V)..... :		N/A
G.6	Determination of minimum clearances :		N/A

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
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J	Annex J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
	Metal used :		-

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) :		N/A
K.3	Thermostat endurance test; operating voltage (V) :		N/A
K.4	Temperature limiter endurance; operating voltage (V) :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

L	Annex L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		Pass
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		Pass

M	Annex M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringling signal		N/A
M.3.1.1	Frequency (Hz)		-
M.3.1.2	Voltage (V)		-
M.3.1.3	Cadence; time (s), voltage (V)		-
M.3.1.4	Single fault current (mA)		-
M.3.2	Tripping device and monitoring voltage		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)		N/A

N	Annex N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

P	Annex P, NORMATIVE REFERENCES		Pass
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Q	Annex Q, BIBLIOGRAPHY		Pass
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R	Annex R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
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R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N/A
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R.2	Reduced clearances (see 2.10.3)		N/A
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S	Annex S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
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S.1	Test equipment		N/A
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S.2	Test procedure		N/A
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S.3	Examples of waveforms during impulse testing		N/A
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T	Annex T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
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U	Annex U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					Pass
Object/part No.	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
PCB	Various	Various	Rated min 130°C, V-1	ZPMV2	UL/cUL	3-01
Transformer	Texas Instruments	P/N 031-00131, 031-00132, and 031-00133 or 031-00048, 031- 00049, and 031- 00050	Open type ferrite core construction, primary and secondary wire (basic ins): MW83C, rated 180°C. Primary and secondary coil ends mechanically secured and soldered on to the PWB. See construction diagrams for details.	-	-	3-01
Transformer housing	DSM ENGINEERING PLASTICS B V	TE250F6	Rated V-0, 0.35mm thick. Measured 0.5mm (Polyamide 4/6 (PA4/6), glass reinforced, flame retardant, "Stanyl")	QMFZ2	UL/cUL	3-01
Diode D1	-	-	Min 40 Vr dc, 0.4 A.	-	-	3-01
Cap C4	-	-	Min 16 V dc, 4.7uF	-	-	3-01
Cap C501	-	-	Min 50 V dc, 2200 pF	-	-	3-01
Mosfet Q1 and Q2	-	-	Min Vce = 60 V, 1 A.	-	-	3-01
Label	Texas Instruments	Part No. TT404	Material: polyimide, Adhesive: permanent acrylic, for application to surface of PWB	--	--	
Label	Various	various	Suitable for application to the surface of the PWB	PGDQ2	UL/cUL	
Transformer Housing Cover - Optional	GE	Supec G401	Rated V-0, 170°C	QMFZ2	UR	

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: electrical data (in normal conditions)						Pass
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status	
-	--	4V dc	1.14	286.5	-	MNL	
-	300mA	5V dc	1.49	298.1	-	MNL	
-	--	6V dc	1.87	312.2	-	MNL	
supplementary information:							
Max Normal load - Unit's DC output loaded per manufacturer's rating as +5V, 200mA, max output power 1W							

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements						N/A
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)	
Functional insulation complies with the requirements (c): Transformer Pins 1 (pri) to 9 (sec)	20.4	11	-	-	-	-	
supplementary information:							

2.10.5	TABLE: distance through insulation measurements				N/A
distance through insulation di at/of:	Up (V)	test voltage (V)	required di (mm)	di (mm)	
supplementary information:					

4.5	TABLE: temperature rise measurements						Pass
test voltage (V).....	see below	see below	see below	see below	-	—	
t1 (°C).....	-	-	-	-	-	—	
t2 (°C).....	-	-	-	-	-	—	
maximum temperature T of part/at:	T (°C)					allowed Tmax (°C)	
-	Condition A (4V)	Condition D (6V dc)	Condition E (5V dc)	-	-	-	

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

	dc)					
Ambient	23.3	23.4	23.1	-	-	-
Transformer core	34.9	43.8	38.3	-	-	--
Transformer coil	35	46.1	39.5	-	-	--
PWB under Transformer	33.5	41.9	36.1	-	-	130
--	--	--	--	--	--	--
-	Condition A (4V dc) - Adjusted for Tma of 85°C	Condition D (6V dc) - Adjusted for Tma of 85°C	Condition E (5V dc) - Adjusted for Tma of 85°C	-	-	-
Transformer core	96.6	105.4	100.2	-	-	--
Transformer coil	96.7	107.7	101.4	-	-	-
PWB under Transformer	95.2	103.5	98	-	-	130
temperature T of winding:		R ₁ (Ω)	R ₂ (Ω)	T (°C)	allowed Tmax (°C)	insulation class
-		-	-	-	-	-
supplementary information:						
Temperatures were measured according to sub-clause 1.4.5 in continuous normal operation at the same time voltages for power input measurements table 1.6 which resulted in the highest temperature values. Temperature limits are calculated according to sub-clause 1.4.12 with regard to the maximum ambient operation temperature of 85°C, as specified by the manufacture. Temperatures of windings are reduced by 10 K due to the use of thermocouples. If there is no required dT, the temperatures were measured for reference only.						

4.5.2	TABLE: ball pressure test of thermoplastics			N/A
	allowed impression diameter (mm)..... :			—
part		test temperature (°C)	impression diameter (mm)	
supplementary information:				

4.7	TABLE: resistance to fire			Pass
part	manufacturer of material	type of material	thickness(mm)	flammability class
PWB	-	-	-	Min V-1

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

supplementary information:
 See Table 1.5.1 for more details. Flame tests were not considered necessary based on certified material used.

5.2	TABLE: electric strength tests, impulse tests and voltage surge tests		Pass
test voltage applied between:		test voltage (V) a.c./d.c.	breakdown Yes / No
Vin to Vout		3000 V dc	No
supplementary information:			
Product spacings evaluated for functional. Dielectric passed 3000V per client request.			

5.3	TABLE: fault condition tests					Pass
	ambient temperature (°C)..... :				25°C	—
	model/type of power supply..... :				-	—
	manufacturer of power supply..... :				-	—
	rated markings of power supply..... :				-	—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
Power supply output short circuit/ overload test	-	-	-	-	-	CT, NC, NT, NB; no excessive temperatures
Vout	overload	5V dc	2hrs	-	0.466A	Coil temp 98.1°C, CT, NC, NT
Vout	Output Short Circuit	5V dc	~3hrs	-	0.502A	Coil temp 126.1°C, CD, NC, NT, component Q1 and Q2 damaged, cheesecloth
supplementary information:						
Comments key used in result are defined as below: IP - Internal Protection operated (list component). CT - Constant temperatures were obtained. CD - Components damaged (list damaged components). NCD - No component damaged. SD - Unit shutdown immediately and input current became zero ampere. NC - Cheesecloth remained intact. NT - Tissue paper remained intact. NB - No indication of dielectric breakdown. DM = Dead metal; B = circuit measures less than 12.5 mA; C = circuit measures 0 volts.						

Enclosure
National Differences

USA / Canada

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict

USA / Canada - Differences to IEC 60950-1:2001, First Edition			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1, and when applicable, the National Electrical Safety Code, IEEE C2.		N/A
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions.		N/A
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded.		N/A
1.1.2	Special requirements apply to equipment intended for use outdoors.		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.		N/A
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1.	<p>Components certified to IEC harmonized standard and checked for correct application.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component Standard.</p> <p>Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.</p>	Pass
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2.	(see appended table 1.5.1)	Pass
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like.		N/A
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
1.5.5	External cable assemblies that exceed 3.05 m in length to be types specified in the NEC and CEC.		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable.		N/A
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope.		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233.		N/A
1.6.1.2	Equipment intended for connection to a d.c. power (mains) distribution system is subject to special circuit classification requirements (e.g., TNV-2)		N/A
1.6.1.2	Earthing of d.c. powered equipment provided.		N/A
1.7	Lamp replacement information indicated on lampholder in operator access area.		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor.		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions.		N/A
1.7.6	Special fuse replacement marking for operator accessible fuses.		N/A
1.7.7	Identification of terminal connection of the equipment earthing conductor.		N/A
1.7.7	Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used.		N/A
1.7.7	Marking located adjacent to terminals and visible during wiring.		N/A
2.1.1	Screw shell of Edison-base lampholder tied to the neutral conductor.		N/A
2.1.1.1	Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover.		N/A
2.3.1.b	Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the maximum current limit through a 2000 Ohm or greater resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions.		N/A
2.3.1.b	Limits for measurements across 5000 ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4.		N/A
2.3.2	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and routine testing.		N/A
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts.		N/A
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable.		N/A
2.6	Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth.	Unit intended for building-in. To be determined in end product.	N/A
2.6.3.3	For Pluggable Equipment Type A, if neither a) or b) are applicable, the current rating of the circuit is taken as 20 A.		N/A
2.6.3.4	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit.		N/A
2.6.3.4	Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.0.4.		N/A
2.6.4.1	Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US and Canada.		N/A
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the equipment.		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC. and CEC. Part		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	1.		
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring.		N/A
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards.		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating.		N/A
2.10.5.4	Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.4 and Annex U.		N/A
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent and short circuit protection.		N/A
3.1.1	All interconnecting cables protected against overcurrent and short circuit.		N/A
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1.	DC rated unit. No direct connection to primary.	N/A
3.2.1	Permitted use for flexible cords and plugs.		N/A
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating.		N/A
3.2.1	Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug.		N/A
3.2.1.2	Equipment intended for connection to DC mains supply power systems complies with special wiring requirements (e.g., no permanent connection to supply by flexible cord).		N/A
3.2.1.2	Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing		N/A
3.2.1.2	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection.		N/A
3.2.1.2	Special markings and instructions for equipment with provisions to connect earthed conductor of a		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	DC supply circuit to earthing conductor at the equipment.		
3.2.1.2	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment.		N/A
3.2.1.2	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard.		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC, Part 1.		N/A
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm ²) and not less than 152 mm in length for connection of field installed wiring.		N/A
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate.		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables.		N/A
3.2.5	Length of power supply cord limited to between 1.5 and 4.5 m unless shorter length used when intended for a special installation.		N/A
3.2.5	Conductors in power supply cords sized according to NEC and CEC, Part I.		N/A
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application.		N/A
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source.		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment required to properly make the field connections.		N/A
3.2.9	Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions provided to ensure the wiring is protected from abuse.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
3.3	Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3.	Unit intended for building-in, to be determined by the end product.	N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than those specified in 3.3 if wiring is reliably separated.		N/A
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means.		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm ²) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention.		N/A
3.3.4	Terminals accept wire sizes (gauge) used in the U.S. and Canada.		N/A
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating.		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used.		N/A
3.3.6	Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor.		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads.		N/A
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V.		N/A
3.4.8	Vertically mounted disconnect devices oriented so up position of handle is "on".		N/A
3.4.11	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means.		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more.		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion.		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit.		N/A

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310 or CSA 223 mechanical assembly requirements.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complies with ANSI/NFPA 30(Table NAE.6).		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used.		N/A
4.3.13.2	Equipment that produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible.		N/A
4.3.13.5	Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370).		N/A
4.7	Automated information storage equipment intended to contain more than 0.76 m ³ of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system.		N/A
4.7.3.1	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics. Low smoke-producing characteristics evaluated according to UL 2043. Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations.		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m ² or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications.		N/A
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent.		N/A
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections.		N/A
5.1.8.3	Touch current due to ringing voltage for equipment containing telecommunication network leads.		N/A
5.3.6	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator.	(see appended table 5.3)	Pass

IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
5.3.6	Tests interrupted by opening of a component repeated two additional times.		Pass
5.3.8.1	Test interrupted by opening of wire or trace subject to certain conditions.		Pass
6	Specialized instructions provided for telephones that may be connected to a telecommunications network.		N/A
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network.		N/A
6.2.1	Special requirements for enameled wiring used as electrical separation provided between parts connected to telecommunication network and telecommunication circuitry intentionally isolated from network.		N/A
6.2.1	Digital line termination equipment (e.g., NCTE) subject to separation requirements.		N/A
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection.		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable.		N/A
6.4	Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C).		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions.		N/A
6.5	Acoustic pressure from an ear piece less than 136 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets, and 121 dBA for insert earphones, for long duration disturbances.		N/A
7	Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC.		N/A
H	Ionizing radiation measurements made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting		N/A

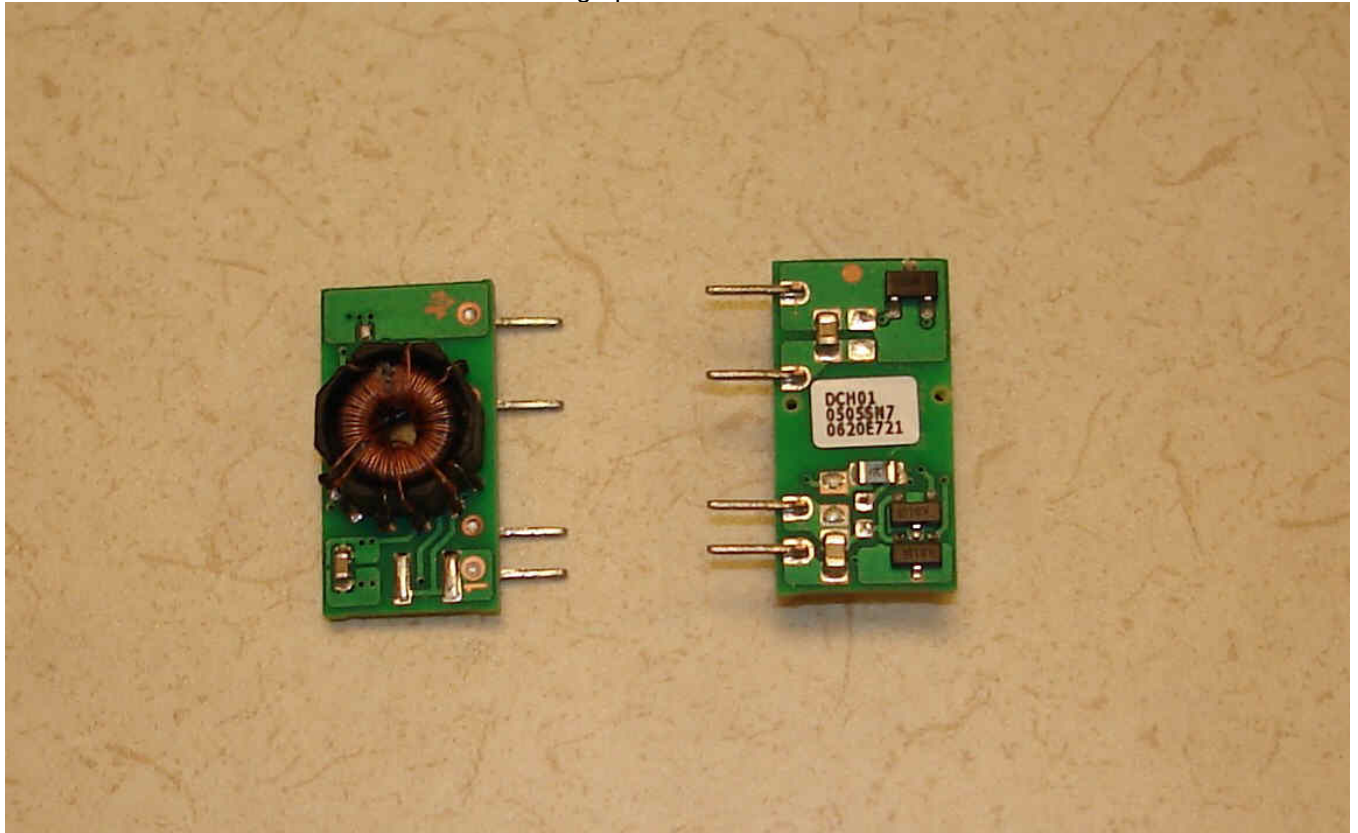
IEC 60950-1			
SubClause	Difference + Test	Result - Remark	Verdict
	Devices Act, REDR C1370.		
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations.		N/A
M.4	Special requirements for message waiting and similar telecommunications signals.		N/A
NAC	Equipment intended for use with a generic secondary protector marked with suitable instructions.		N/A
NAC	Equipment intended for use with a specific primary or secondary protector marked with suitable instructions.		N/A
NAF	Household/Home Office Document Shredders		N/A
NAF.1.7	Markings and instructions alert the user to key safety considerations related to use of shredders, including not intended to be used by children, avoid touching document feed opening, avoid clothes and hair entanglement, and avoid aerosol products.		N/A
NAF.2.8.3	Safety interlock cannot be inadvertently activated by the articulated accessibility probe (figure NAF.1).		N/A
NAF.3.4	Provided with an isolating switch complying with 3.4.2, including 3 mm contact gap, with appropriate markings associated with the switch.		N/A
NAF.4.4	Hazardous moving parts are not accessible to the user, as determined using the articulated accessibility probe (figure NAF.1) and the accessibility probe/wedge (figures NAF.2/NAF.3).		N/A

Enclosure

Photographs

Supplement Id	Description
3-01	Top View

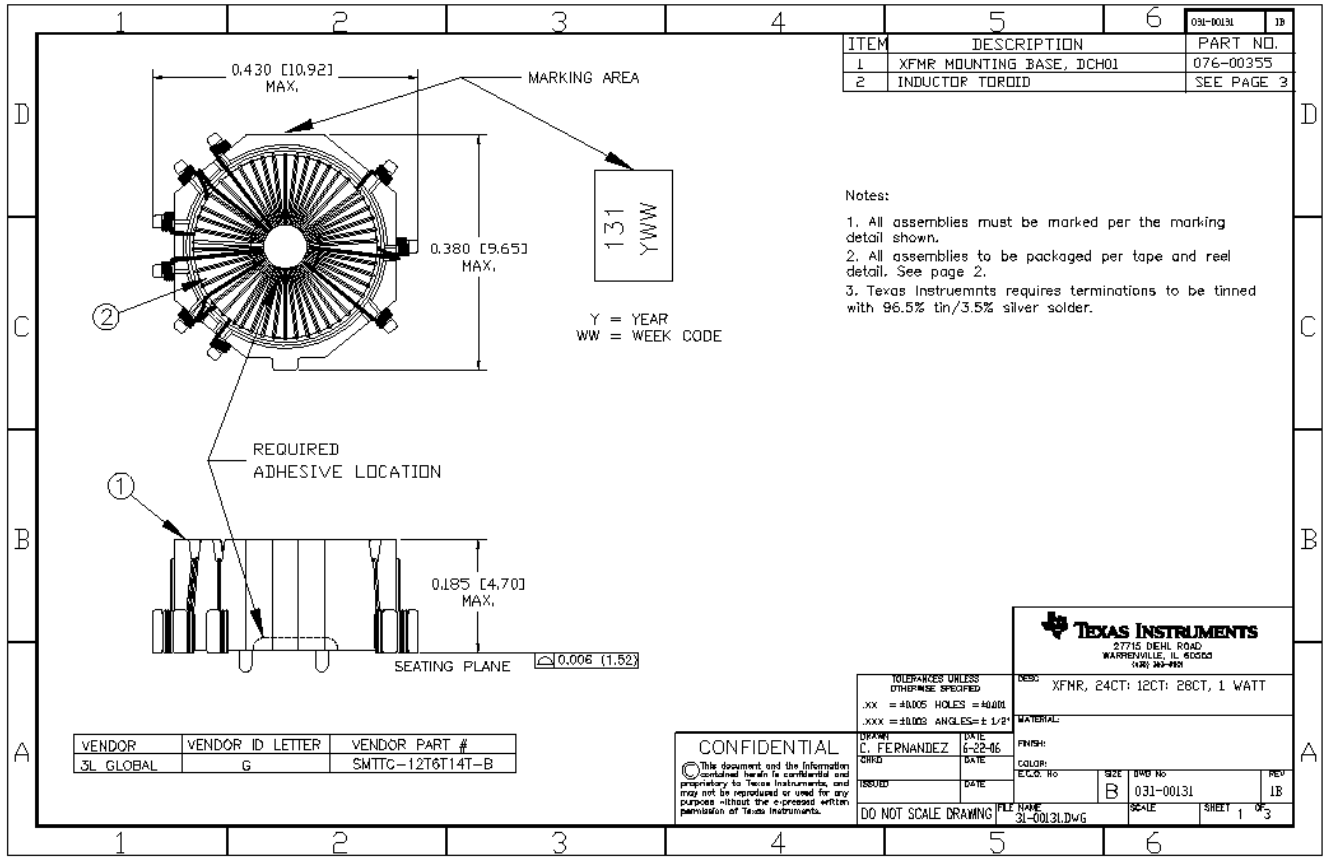
Photographs ID 3-01



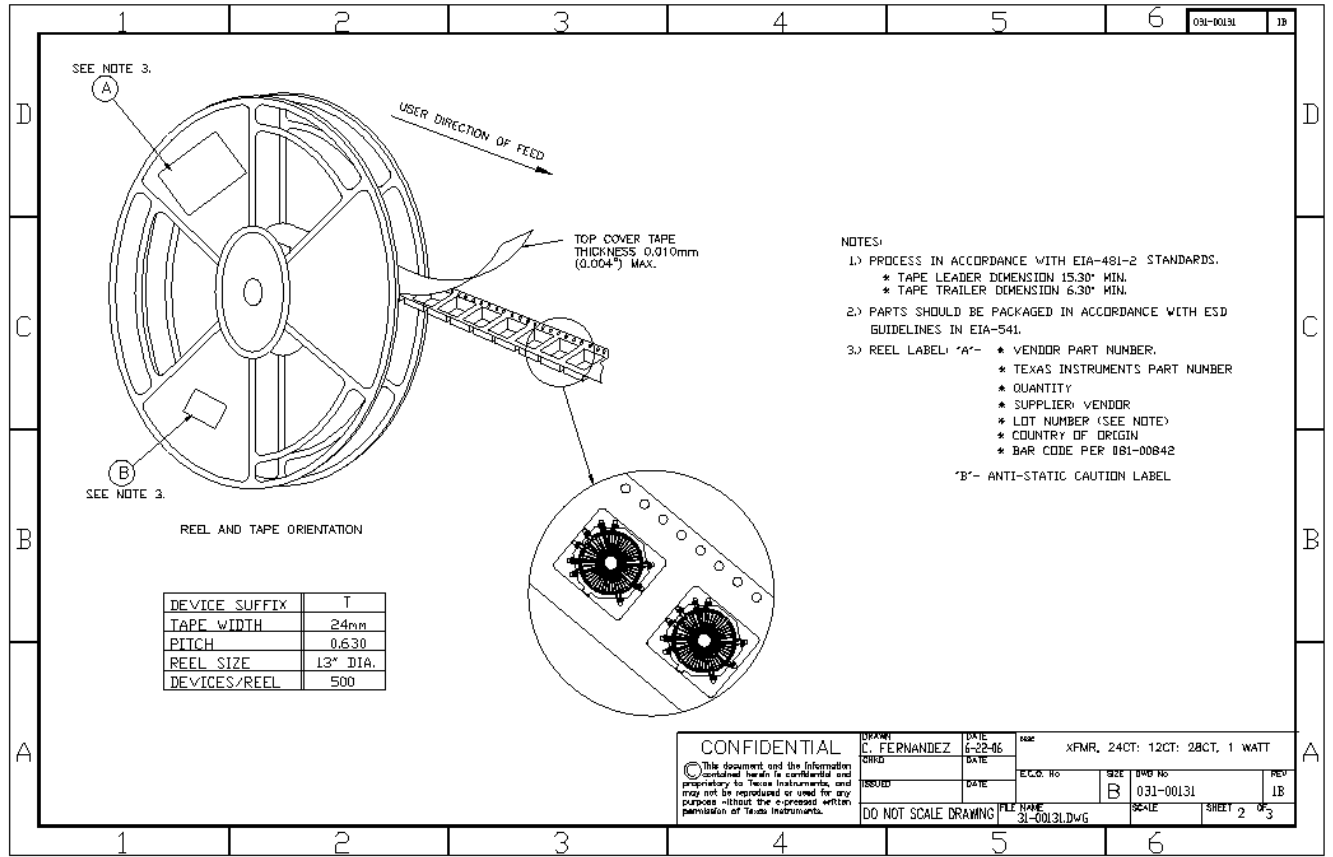
Enclosure**Diagrams**

Supplement Id	Description
4-02	Transformer construction diagram
4-03	Transformer construction diagram
4-04	Transformer construction diagram

Diagrams ID 4-02



Diagrams ID 4-02



Diagrams ID 4-02

A) CORE SPECIFICATIONS:

DIMENSIONS (UNCOATED)			
INCHES		MILLIMETERS	
DIM.	TOL.	DIM.	TOL.
A	0.230	5.84	±0.2
B	0.120	3.05	±0.15
C	0.100	2.54	±0.15

B-1) WIRE SPECIFICATIONS:

WIRE	P/N
P1	38 AWG-S38A01TX-2
P2	38 AWG-S38A01TX-2
S	38 AWG-1UEW-F

WIRE MANUFACTURER: RUBAQUE

B-2) WINDING SPECIFICATIONS:

P1 = BI-FLAR
P2 = BI-FLAR
S = BI-FLAR

C-1) ELECTRICAL SPECIFICATION:

PARAMETER	N1-3	N4-6	N7-9
TURNS ±0T	24CT	12CT	28CT
L(CH) ±50%	Ø76		
① 100 KHz, 100mV			

C-2) TURN RATIO TEST SPECIFICATION:

V₀ = 5V ± 1% @ V_I = 5V
W/DCH0105 CIRCUIT BOARD

D) HI-POT SPECIFICATION: 1) From N1-3, N4-6 to N7-9
2) 3.7 kVDC FOR 1 SEC.

Winding Detail:
Termination: Tin leads of the inductor using 98.5% tin, 3.5% silver solder only. Finish must meet solderability requirements of ANSI/J-STD-002A, CATEGORY 3. The tinned leads must not come in contact with the core.
Lead Length: Lead length, dimension D₁, can be adjusted to accommodate assembly of wound toroid into holder.

Electrical Detail:
All parts are to be 100% electrically tested for inductance. The mechanical winding detail shall not be modified to meet inductance specification. Conformance to resistance must verified with a minimum sampling plan to achieve an AQL of 0.1 with zero failures.

Note: Position # 2, 5 & 8 : 2 wires, NO twist.

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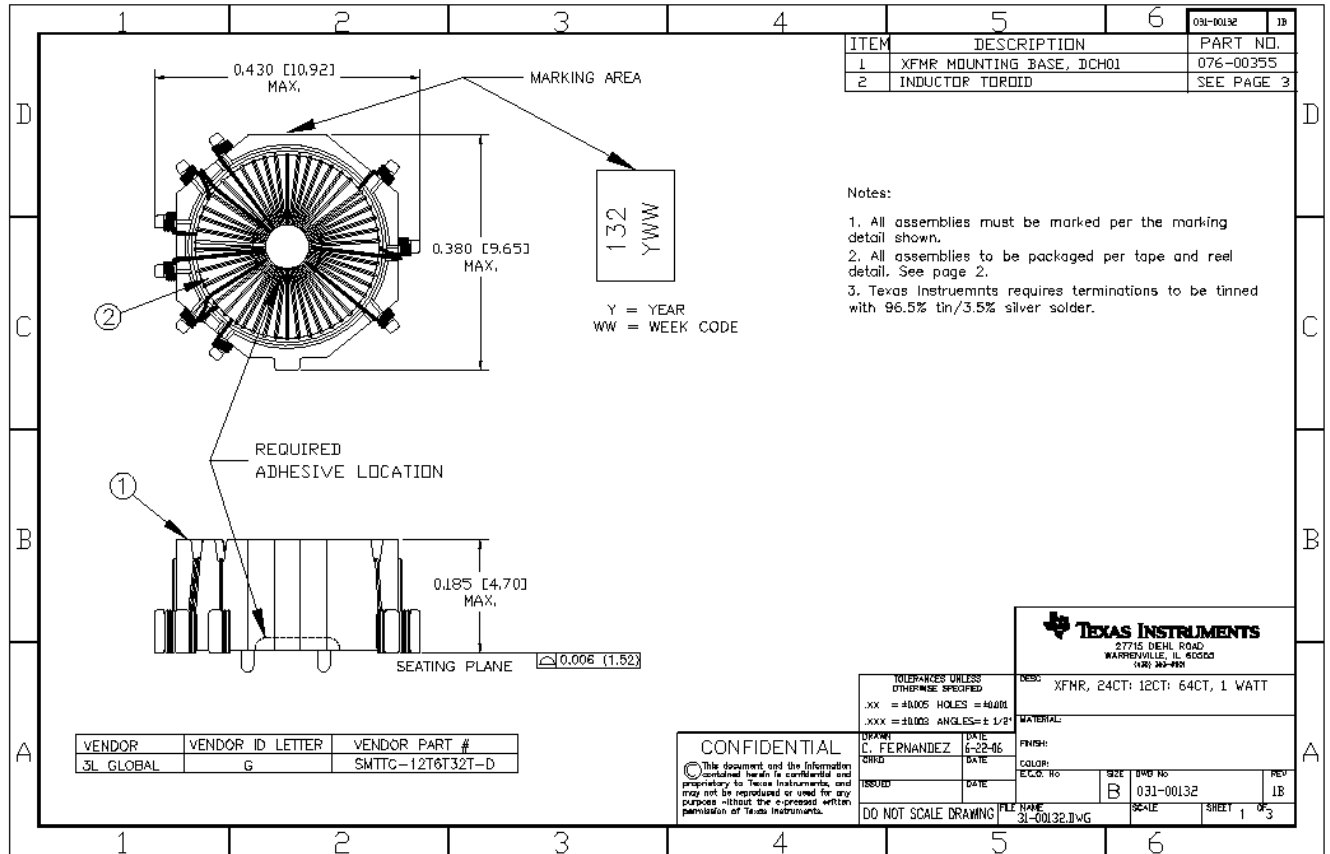
DATE	BY	REVISION
7-21-06	C. FERNANDEZ	ISSUED
3-10-13	B	SCALE

DO NOT SCALE DRAWING

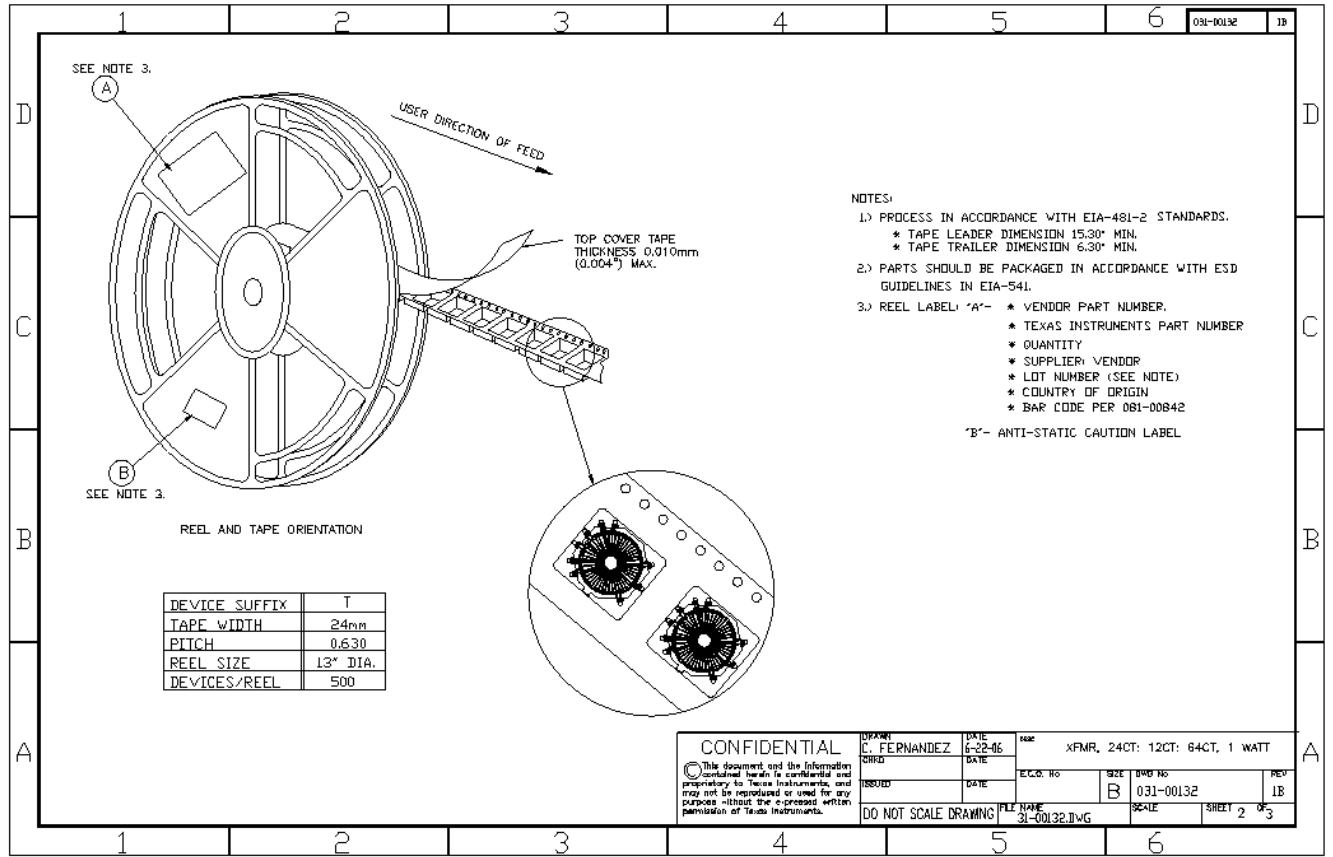
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SHEET 3 OF 3

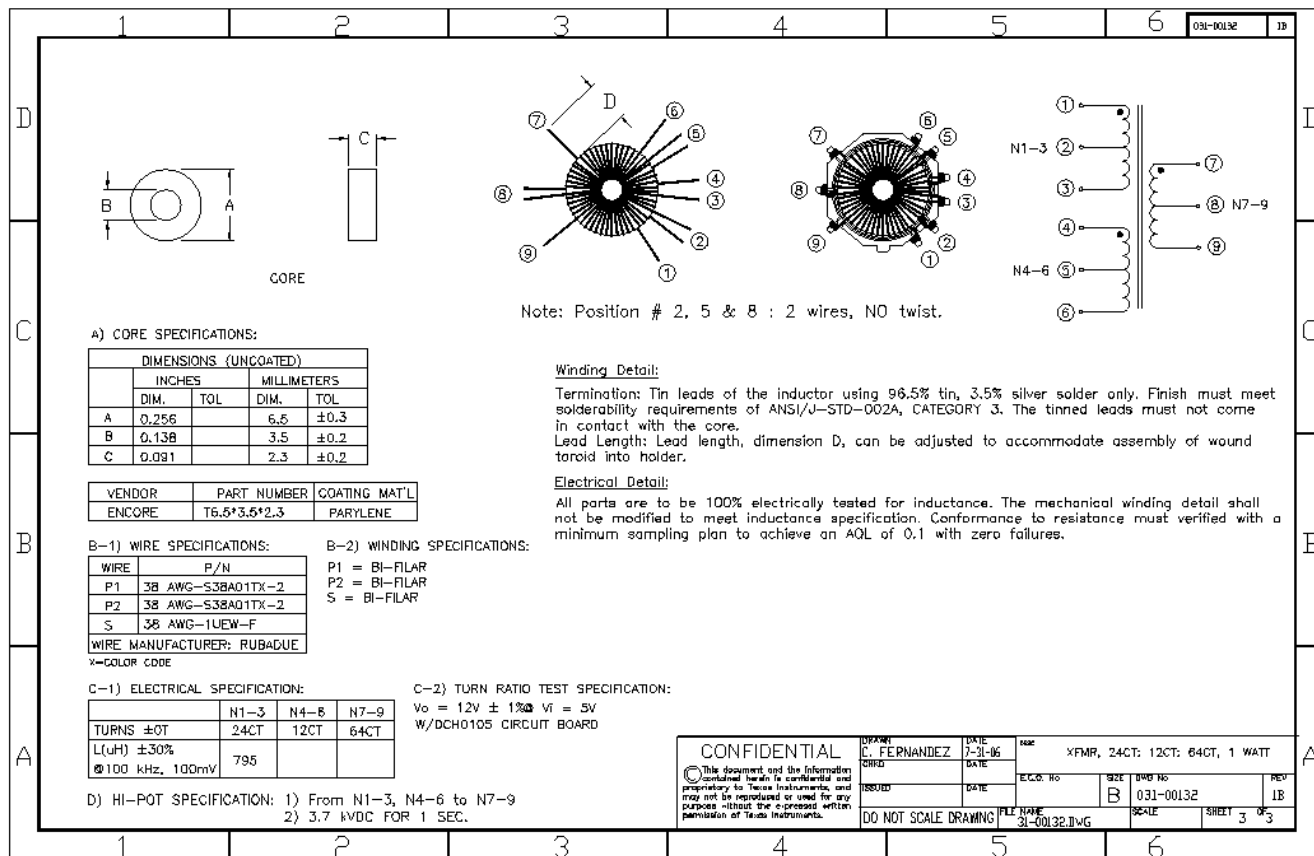
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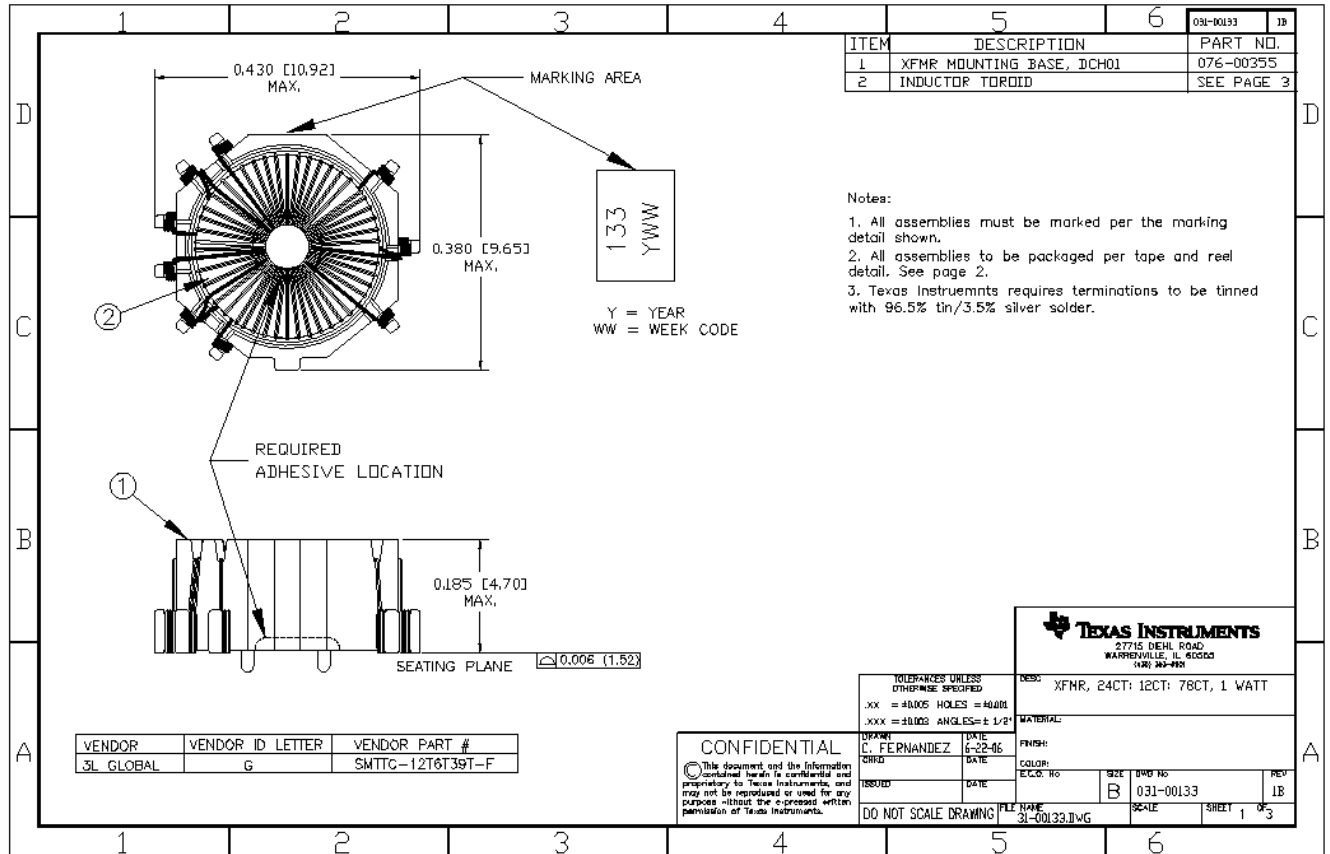
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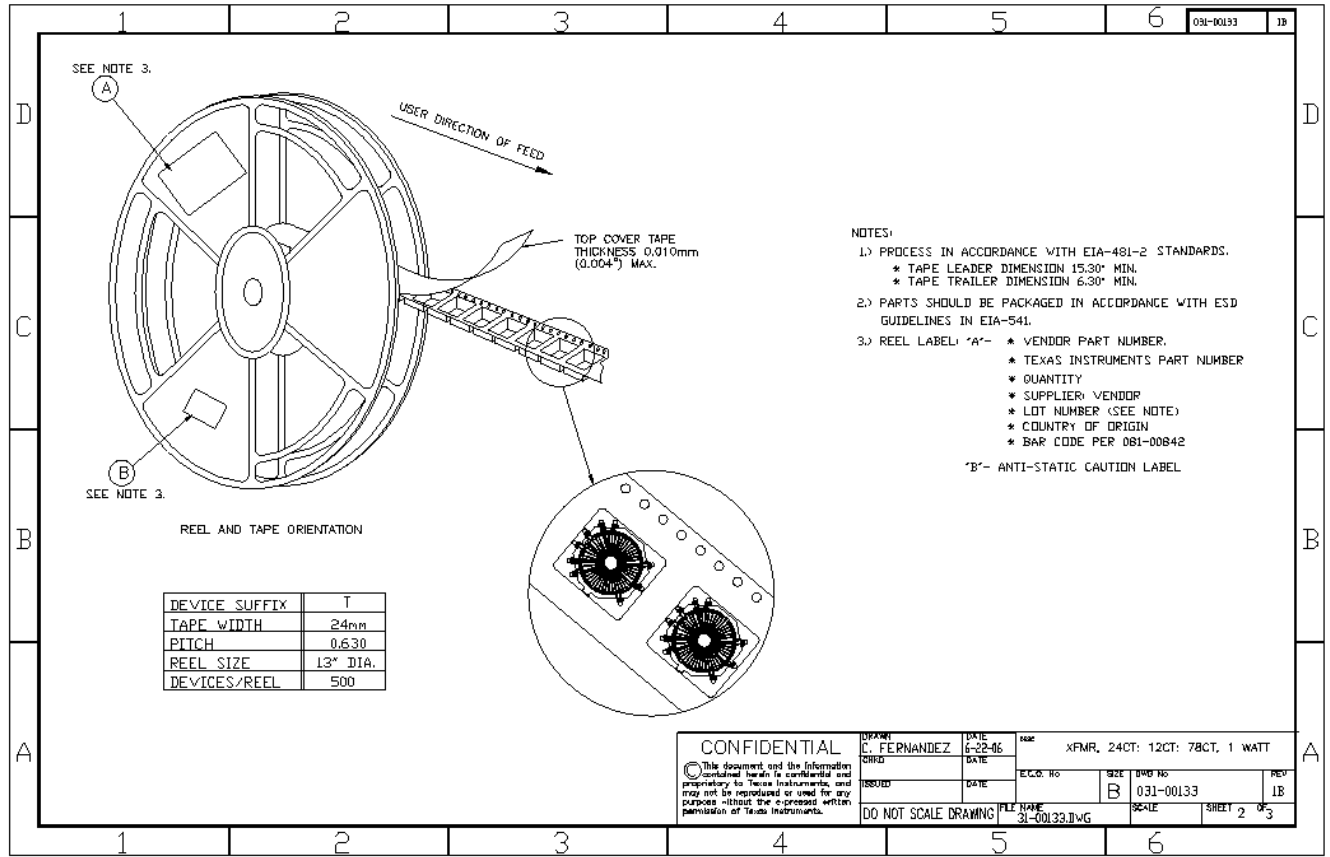
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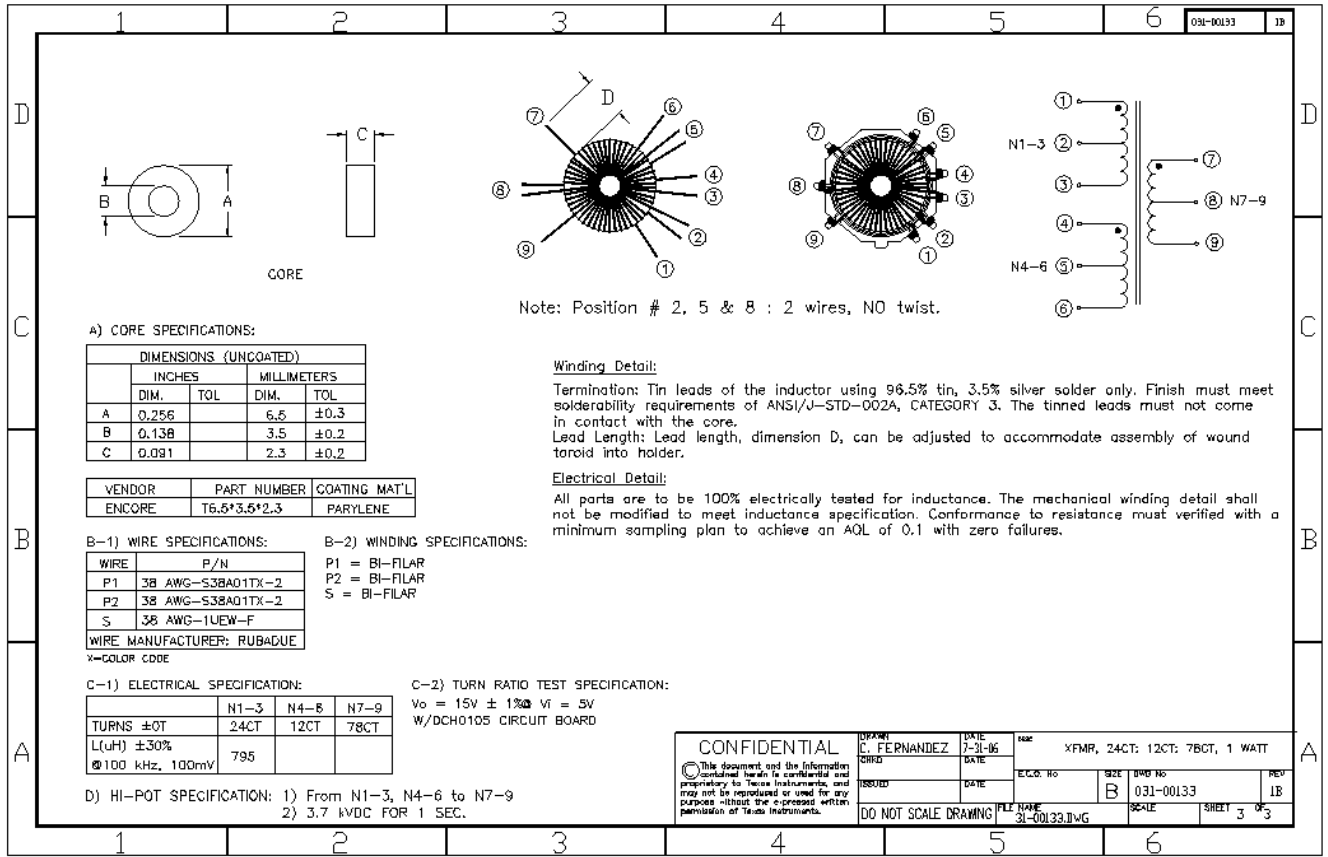
Diagrams ID 4-04



Diagrams ID 4-04



Diagrams ID 4-04

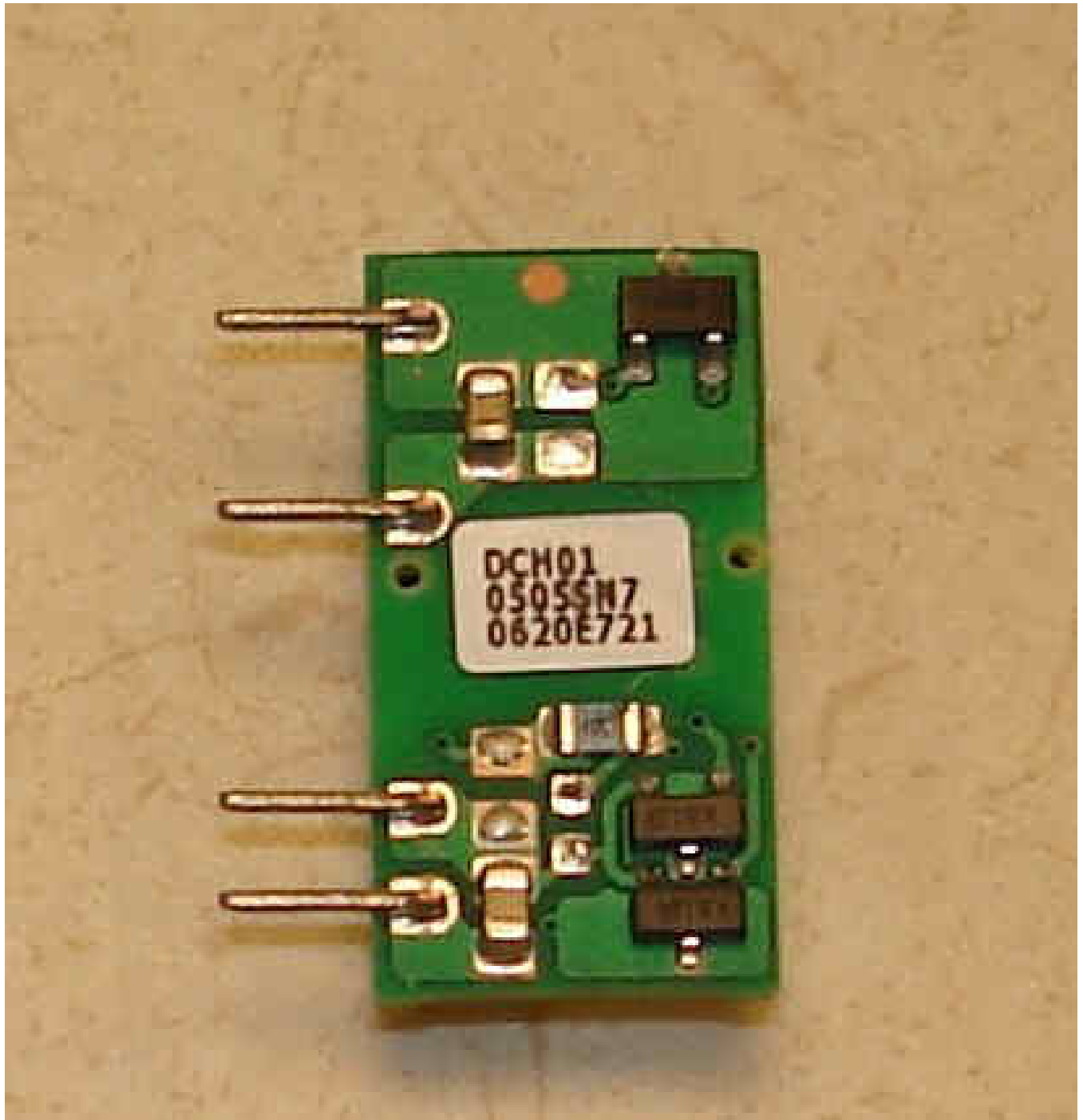


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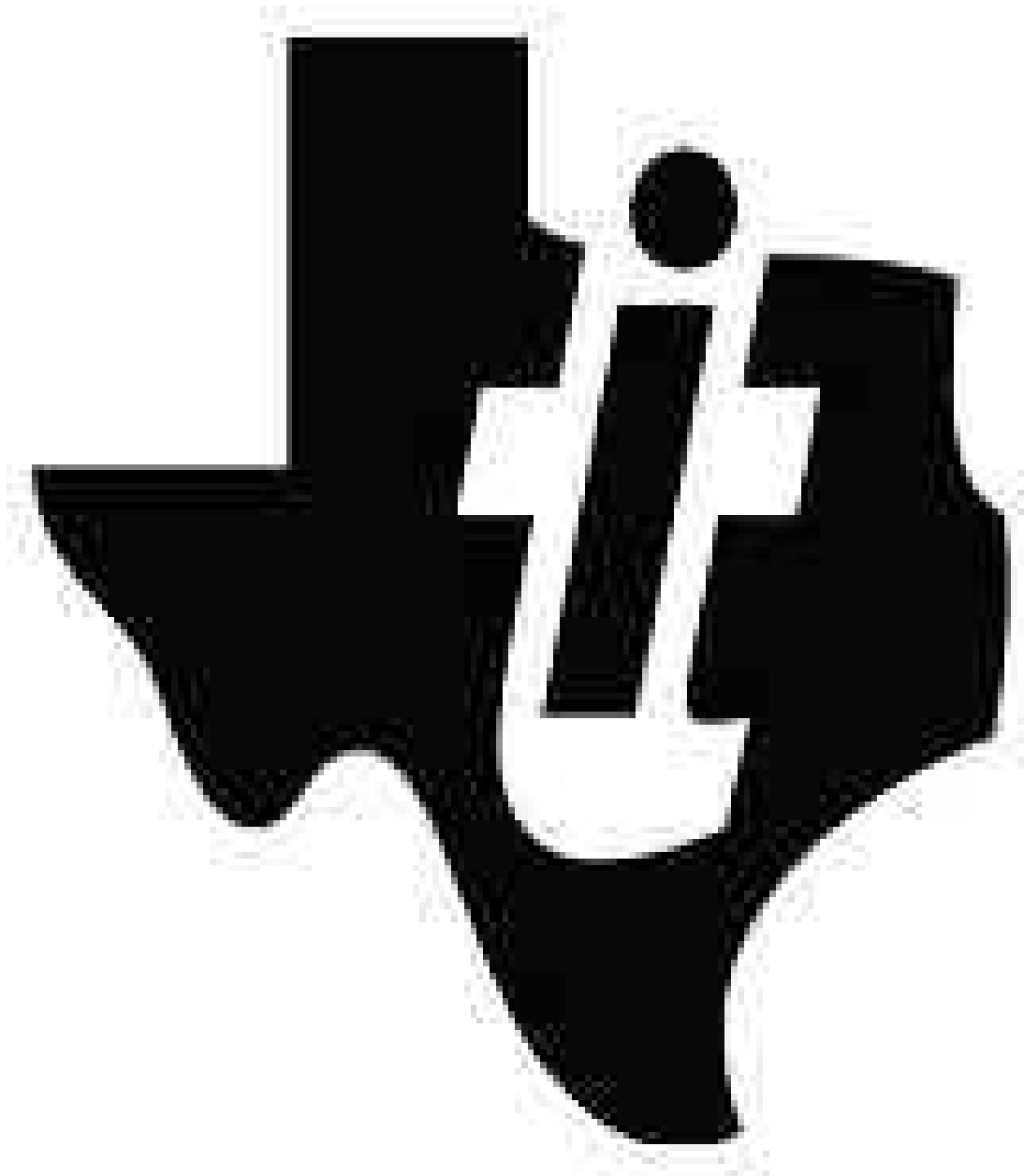
Miscellaneous

Supplement Id	Description
7-04	Model designation
7-05	Trademark

Misc ID 7-04



Misc ID 7-05



Enclosure

Test Record

Description
Test Record 1
CRD

Test Record No. 1

This Report is a re-issue. No samples were received and laboratory testing was not considered necessary based on previous testing in this Report. All required tests were carried out under the original investigation.