



Test Report issued under the responsibility of:



TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment Part 1: Safety requirements

Report Number..... : CN21PGBE 001

Date of issue..... : December, 27, 2021

Total number of pages : 155

Name of Testing Laboratory : TÜV Rheinland Taiwan Ltd., Taoyuan Testing Laboratories
preparing the Report

Applicant's name : Acbel Polytech Inc.

Address..... : No. 159, Sec. 3, Danjin Rd., Tamsui Dist., New Taipei City 251,
Taiwan

Test specification:

Standard : IEC 62368-1: 2018

Test procedure : CB Scheme

Non-standard test method : N/A

TRF template used..... : IECEE OD-2020-F1:2020, Ed.1.3

Test Report Form No. : IEC62368_1E

Test Report Form(s) Originator : UL(US)

Master TRF : Dated 2021-02-04

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description..... :	Switching Power Supply
Trade Mark..... :	
Manufacturer	Same as applicant
Model/Type reference	1). FSE052, R1CA2801A, FSF037, R1CA2801B 2). FSF059, R1CA2551B, FSF065, R1CA2551C 3). FSG007, R1CH2801A 4). FSG016, R1CH2551A 5). R1CA2801A ID:P000
Ratings..... :	I/P: 1). 100-127V~, 50/60Hz, 10.0A; 200-240V~, 50/60Hz, 5.0A or 240VDC, 5A MAX. or 100-240V~, 50/60Hz, 10.0-5.0A 2). 100-127V~, 50/60Hz, 7.0A; 200-240V~, 50/60Hz, 3.5A or 240VDC, 3.5A MAX. 3). 200-240V~, 50/60Hz, 6.0A or 336Vdc, 6A MAX. 4). 200-240V~, 50/60Hz, 4.0A or 336Vdc, 4A MAX. 5). 100-240V~, 50/60Hz, 10.0-5.0A or 240VDC, 5A MAX. O/P: 1). DC +12.0V/66.7A, +12Vsb/3.0A TOTAL POWER 800W MAX. 2). DC +12.0V/45.8A, +12Vsb/3.0A TOTAL POWER 550W MAX. 3). DC +12.4V/64.7A, +12.4Vsb/2.9A TOTAL POWER 800W MAX. 4). DC +12.4V/44.4A, +12.4Vsb/2.9A TOTAL POWER 550W MAX. 5). DC +12.0V/66.7A, +12Vsb/3.0A TOTAL POWER 800W MAX.

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☐	CB Testing Laboratory:	TUV Rheinland Taiwan Ltd., Taoyuan Testing Laboratories
Testing location/ address		CTF stage 1 procedure used. For address of testing location see "Testing procedure: CTF Stage 1" below
Tested by (name, function, signature).....		
Approved by (name, function, signature) ..		
☒	Testing procedure: CTF Stage 1:	Acbel Polytech Inc. No. 18, Sec. 2, Zhongyang S. Rd., Beitou Dist., Taipei City, 112, Taiwan
Testing location/ address		See above.
Tested by (name, function, signature).....		Sandy Wang / Project Handler 
Approved by (name, function, signature) ..		Lawrence Chang / Reviewer 
☐	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature).....		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature) ..		
☐	Testing procedure: CTF Stage 3:	
☐	Testing procedure: CTF Stage 4:	
Testing location/ address		
Tested by (name, function, signature).....		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature) ..		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

- Photo documentation (12 pages)
- National Differences (37 pages)
- ATTACHMENT (included test result and transformer specifications, embedded in this report)

Total number of pages in each attachment is indicated in each individual attachment.

Summary of testing:**Tests performed (name of test and test clause):**

All applicable tests were performed. Details see appended clauses and tables.

- CTF stage 1 laboratory includes all clauses for testing of the IEC 62368-1:2018.
- Maximal ambient temperature as specified by the manufacturer: +50°C
- The manufacture specified the equipment to be operated up to 5,000m above sea level. Therefore, the required clearance is multiplied by the altitude correction factor 1.48, specified in table A.2 of IEC 60664-1: 2007.
- For models FSE052 and R1CA2801A, an internal forced air cooling min. air flow 27.6CFM (out-blowing).
- For models FSF059 and R1CA2551B, an internal forced air cooling min. air flow 20.1CFM (out-blowing).
- For models FSF037 and R1CA2801B, an internal forced air cooling min. air flow 27.6CFM (in-blowing).
- For models FSF065, R1CA2551C, an internal forced air cooling min. air flow 20.1CFM (in-blowing).
- Load conditions used during testing see appended table B.2.5 for details.
- The decision rule of conformity of this test report is following the requirements of the requested standard in this test report, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty.

Testing location:

All applicable tests were performed at the laboratory described on page 3.

Summary of compliance with National Differences (List of countries addressed):

EU Group Differences, EU Special National Conditions, US, CA, SG

Explanation of used codes: US=United States of America, CA=Canada, SG=Singapore

☒ The product fulfils the requirements of EN IEC 62368-1:2020 + A11: 2020 and BS EN IEC 62368-1: 2020 + A11: 2020

For National Differences see corresponding Attachment.

Statement concerning the uncertainty of the measurement systems used for the tests

☐ Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☒ **Statement not required by the standard used for type testing**

Copy of marking plate:

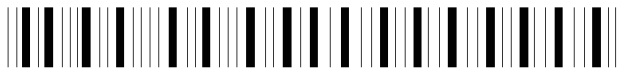
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks

	MODEL 型号(型號): FSE052 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 XU100121-16156 컴퓨터용 전원공급장치 제조원: Aclid Electronic (Hong Kong) Co., Ltd A/S 연락처 : 070-7094-0600	
	OPTION : REV. : FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz , 10.0A 200-240V~, 50/60Hz , 5.0A OR 或 (或) DC INPUT : 直流輸入(直流輸入) 240V ——— 5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V ——— 66.7A + 12Vsb ——— 3.0A TOTAL POWER 800W MAX. 最大总功率800W (最大總功率800W) MADE IN CHINA 中国制造(中國製造)			
 □□□□□ NNNNNNNXYWWSSSSSS			   	XXX

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

警告使用者:
此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。

警告:
此為A級產品,在生活環境中,該產品可能會造成無線電干擾。在這種情況下,可能需要用戶對干擾採取切实可行的措施。

	MODEL 型号(型號): FSE052 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 XU100121-16156 컴퓨터용 전원공급장치 제조원: Aclid Electronic (Hong Kong) Co., Ltd A/S 연락처 : 070-7094-0600	
	OPTION : REV. : FRU : AC INPUT : 交流輸入(交流輸入) 100-240V~, 50/60Hz , 10.0-5.0A OR 或 (或) DC INPUT : 直流輸入(直流輸入) 240V ——— 5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V ——— 66.7A + 12Vsb ——— 3.0A TOTAL POWER 800W MAX. 最大总功率800W (最大總功率800W) MADE IN CHINA 中国制造(中國製造)			
 □□□□□ NNNNNNNXYWWSSSSSS			   	XXX

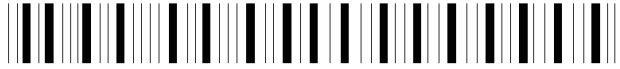
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

警告使用者:
此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。

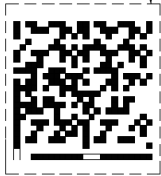
警告:
此為A級產品,在生活環境中,該產品可能會造成無線電干擾。在這種情況下,可能需要用戶對干擾採取切实可行的措施。

AcBel MODEL 型号(型號): FSF037 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV. : FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz, 10.0A 200-240V~, 50/60Hz, 5.0A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V --- 5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V --- 66.7A + 12Vsb --- 3.0A TOTAL POWER 800W MAX. 最大總功率800W (最大總功率800W) MADE IN CHINA 中國製造(中國製造)	 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	         警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。
 □□□□□□ NNNNNNNXYWWSSSSSS		

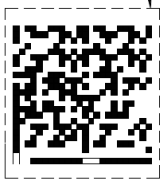
AcBel MODEL 型号(型號): FSF037 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV. : FRU : AC INPUT : 交流輸入(交流輸入) 100-240V~, 50/60Hz, 10.0-5.0A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V --- 5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V --- 66.7A + 12Vsb --- 3.0A TOTAL POWER 800W MAX. 最大總功率800W (最大總功率800W) MADE IN CHINA 中國製造(中國製造)	 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	         警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。
 □□□□□□ NNNNNNNXYWWSSSSSS		

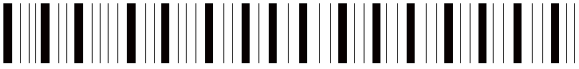
AcBel MODEL 型号(型號): R1CA2801B SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV. : FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz , 10.0A 200-240V~, 50/60Hz , 5.0A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V== 5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V == 66.7A + 12Vsb == 3.0A TOTAL POWER 800W MAX. 最大總功率800W (最大總功率800W) MADE IN CHINA 中國製造(中國製造)	 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	        警告使用者: 此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。 警告: 此為A級產品,在生活環境中,該產品可能會造成無線電干擾。在這種情況下,可能需要用戶對干擾採取切实可行的措施。
 □□□□□□ NNNNNNXYWWSSSSSS	 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	        警告使用者: 此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。 警告: 此為A級產品,在生活環境中,該產品可能會造成無線電干擾。在這種情況下,可能需要用戶對干擾採取切实可行的措施。

	MODEL 型号(型號): FSF059 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 KU100121-16157 컴퓨터용 전원공급장치 제조원: Aclal Electronic (Hong Kong) Co., Ltd A/S 연락처: 070-7094-0600	
OPTION : REV. :				 R33567 RoHS
FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz , 7.0A 200-240V~, 50/60Hz , 3.5A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V --- 3.5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V --- 45.8A + 12Vsb --- 3.0A TOTAL POWER 550W MAX. 最大总功率550W (最大總功率550W) MADE IN CHINA 中國製造(中國製造)	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.		 E131875	
 □□□□□□ NNNNNNNXYWWSSSSSS	(B)			
警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。	警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切實可行的措施。	XXX		

	MODEL 型号(型號): FSF065 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 KU100121-16157 컴퓨터용 전원공급장치 제조원: Aclal Electronic (Hong Kong) Co., Ltd A/S 연락처: 070-7094-0600	
OPTION : REV. :				 R33567 RoHS
FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz , 7.0A 200-240V~, 50/60Hz , 3.5A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V --- 3.5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V --- 45.8A + 12Vsb --- 3.0A TOTAL POWER 550W MAX. 最大总功率550W (最大總功率550W) MADE IN CHINA 中國製造(中國製造)	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.		 E131875	
 □□□□□□ NNNNNNNXYWWSSSSSS	(B)			
警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。	警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切實可行的措施。	XXX		

	MODEL 型号(型號): R1CA2551B SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 XU100121-16157 컴퓨터용 전원공급장치 제조원: Acid Electronic (Hong Kong) Co., Ltd A/S 연락처: 070-7094-0600	
OPTION : FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz, 7.0A 200-240V~, 50/60Hz, 3.5A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V === 3.5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V === 45.8A + 12Vsb === 3.0A TOTAL POWER 550W MAX. 最大總功率550W (最大總功率550W) MADE IN CHINA 中國製造(中國製造)	REV. :  This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.		 E131875  	IS 13252 (Part 1)/ IEC60950-1 R33567 RoHS R-41013579 www.bis.gov.in
 □□□□□□ NNNNNNNXYWWSSSSSS	警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。			

	MODEL 型号(型號): R1CA2551C SWITCHING POWER SUPPLY 开关电源(交換式電源供應器)		 XU100121-16157 컴퓨터용 전원공급장치 제조원: Acid Electronic (Hong Kong) Co., Ltd A/S 연락처: 070-7094-0600	
OPTION : FRU : AC INPUT : 交流輸入(交流輸入) 100-127V~, 50/60Hz, 7.0A 200-240V~, 50/60Hz, 3.5A OR 或(或) DC INPUT : 直流輸入(直流輸入) 240V === 3.5A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.0V === 45.8A + 12Vsb === 3.0A TOTAL POWER 550W MAX. 最大總功率550W (最大總功率550W) MADE IN CHINA 中國製造(中國製造)	REV. :  This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.		  E131875 	 R33567 RoHS 
 □□□□□□ NNNNNNNXYWWSSSSSS	警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。			

MODEL 型号(型號): FSG016 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV : FRU : AC INPUT :交流輸入(交流輸入) 200-240V~, 50/60Hz , 4.0A OR 或(或) DC INPUT :直流輸入(直流輸入) 336V --- 4A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.4V --- 44.4A + 12.4Vsb --- 2.9A TOTAL POWER 550W MAX. 最大总功率550W (最大總功率550W) MADE IN CHINA 中国製造(中國製造) AcBel Polytech Inc. 制造商：康舒科技股份有限公司 (製造商：康舒科技股份有限公司)  □□□□ NNNNNNXYWWSSSSS	      XXX 警告使用者： 此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。 警告： 此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对干扰采取切实可行的措施。
AcBel MODEL 型号(型號): R1CH2801A SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV : FRU : AC INPUT :交流輸入(交流輸入) 200-240V~ , 50/60Hz , 6.0A OR 或(或) DC INPUT :直流輸入(直流輸入) 336V --- 6A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.4V --- 64.7A + 12.4Vsb --- 2.9A TOTAL POWER 800W MAX. 最大总功率800W (最大總功率800W) MADE IN CHINA 中国製造(中國製造)  □□□□ NNNNNNXYWWSSSSS	      XXX 警告使用者： 此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。 警告： 此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对干扰采取切实可行的措施。

MODEL 型号(型號): R1CH2551A SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV : FRU : AC INPUT : 交流輸入(交流輸入) 200-240V~, 50/60Hz, 4.0A OR 或(或) DC INPUT : 直流輸入(直流輸入) 336V ——— 4A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.4V ——— 44.4A + 12.4Vsb ——— 2.9A TOTAL POWER 550W MAX. 最大總功率550W (最大總功率550W) MADE IN CHINA 中國製造(中國製造) AcBel Polytech Inc. 制造商: 康舒科技股份有限公司 (製造商: 康舒科技股份有限公司)	      XXX
 □□□□□ NNNNNNNXYWWSSSSSS	警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。

AcBel MODEL 型号(型號): FSG007 SWITCHING POWER SUPPLY 开关电源(交換式電源供應器) OPTION : REV : FRU : AC INPUT : 交流輸入(交流輸入) 200-240V~, 50/60Hz, 6.0A OR 或(或) DC INPUT : 直流輸入(直流輸入) 336V ——— 6A MAX DC OUTPUT : 直流輸出(直流輸出) + 12.4V ——— 64.7A + 12.4Vsb ——— 2.9A TOTAL POWER 800W MAX. 最大總功率800W (最大總功率800W) MADE IN CHINA 中國製造(中國製造)	      XXX
 □□□□□ NNNNNNNXYWWSSSSSS	(B) 警告使用者: 此為甲類資訊技術設備, 於居住環境中使用時, 可能會造成射頻擾動, 在此種情況下, 使用者會被要求採取某些適當的對策。 警告: 此為A級產品, 在生活環境中, 該產品可能會造成無線電干擾。在這種情況下, 可能需要用戶對干擾採取切实可行的措施。

AcBel MODEL 型号(型號): R1CA2801A ID : P000

SWITCHING POWER SUPPLY
开关电源(交換式電源供應器)

OPTION :
FRU :
AC INPUT : 交流輸入(交流輸入)
100-240V~, 50/60Hz, 10.0-5.0A
OR 或(或) DC INPUT : 直流輸入(直流輸入)
240V ——— 5A MAX
DC OUTPUT : 直流輸出(直流輸出)
+ 12.0V ——— 66.7A
+ 12Vsb ——— 3.0A
TOTAL POWER 800W MAX.
最大總功率800W (最大總功率800W)
MADE IN CHINA 中國製造(中國製造)
Acbel Polytech (UK) Limited
For UK only : 9 Royal Crescent Glasgow G3 7SP

80 PLUS PLATINUM

FC UK CA

IS 13252 (Part 1)/
IEC60950-1

R-41013579
www.bis.gov.in

警告使用者:
此為甲類資訊技術設備,於居住環境中使用時,可能會造成射頻擾動,在此種情況下,使用者會被要求採取某些適當的對策。

警告:
此為A級產品,在生活環境中,該產品可能會造成無線電干擾。在這種情況下,可能需要用戶對干擾採取切实可行的措施。

XXXXXX NNNNNNNXYYWWSSSSSS

Test item particulars:			
Product group	☐ end product ☒ built-in component		
Classification of use by	☒ Ordinary person ☐ Children likely present ☐ Instructed person ☐ Skilled person		
Supply connection	☒ AC mains ☐ DC mains ☐ not mains connected: ☐ ES1 ☐ ES2 ☐ ES3		
Supply tolerance	☒ +10%/-10% for AC input ☐ +20%/-15% ☒ 180Vdc – 300Vdc declared by applicant → 240VDC 190Vdc – 400Vdc declared by applicant → 336 VDC ☐ None		
Supply connection – type	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other:		
Considered current rating of protective device	☒ 16 A, 13 A (GB) or 20 A (US and Canada) Location: building ☐ equipment: ☐ N/A		
Equipment mobility	☐ movable ☐ hand-held ☐ transportable ☐ direct plug-in ☐ stationary ☒ for building-in ☐ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other:		
Overvoltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:		
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified ☐		
Special installation location	☒ N/A ☐ restricted access area ☐ outdoor location ☐		
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3		
Manufacturer's specified T_{ma}	50°C ☐ Outdoor: minimum °C		
IP protection class	☒ IPX0 ☐ IP____		
Power systems	☒ TN ☐ TT ☒ IT - 230 V _{L-L} ☐ not AC mains		
Altitude during operation (m)	☐ 2000 m or less ☒ 5000 m		
Altitude of test laboratory (m)	☒ 2000 m or less ☐ m		

Mass of equipment (kg) : Approx. 0.83kg	
Possible test case verdicts: - test case does not apply to the test object ... : N/A - test object does meet the requirement..... : P (Pass) - test object does not meet the requirement ... : F (Fail)	
Testing: (yyyy-mm-dd) Date of receipt of test item..... : 2021-11-08 Date (s) of performance of tests : 2021-11-08 to 2021-12-10	
General remarks: "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☒ Yes ☐ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	1. Acbel Polytech Inc. No. 159, Sec. 3, Danjin Rd., Tamsui Dist., New Taipei City 251, Taiwan 2. Acbel Electronic (Dong Guan) Co., Ltd. No. 17-28, Horng Yeh Road, Horng Yeh Ind. District, Tang Xia Town, Dongguan, Guangdong 523710, P.R. China 3. ACBEL ELECTRONIC (WUHAN) CO., LTD No.1, DuTai North Road, Economic Development Zone, XianTao City, HuBei Province, P.R. China 4. Acbel Polytech(Philippines) INC. No. 2 Tagaytay Ridge Drive, Carmelray Industrial Park II, Km. 54 National Highway, Calamba City, Laguna 4027, Philippines
General product information and other remarks:	

Product Description –

The equipment is switching mode power supply (building-in type) intended for general office use with Audio/video information and communication technology equipment in the scope of this standard.

Model R1CA2801A is identical to model FSE052, except for model designation.

Model FSF037 and R1CA2801B are similar to model FSE052 except for direction of DC fan.

Model R1CA2801B is identical to model FSF037 except for model designation.

Models FSF059, R1CA2551B, FSF065 and R1CA2551C are similar to original model FSE052 except for model designation and below items.

- Change Input / Output rating
- Change Bridge diode (BD1) rating
- Change Transistor (Q1, Q11, Q2, Q21) rating
- Change Transformer (T401) source
- Add one choke (L5) source
- Change Capacitor (C36) rating
- Change the direction of DC Fan (for models FSF065 and R1CA2551C only)
- Add three DC Fan sources (with lower air-flow)
- PCB1 layout slight change

Models FSF059, R1CA2551B, FSF065 and R1CA2551C are identical except for model designation and the direction of air-flow.

Models FSG007 and R1CH2801A are similar to model FSE052 except for model designation, input rating, output rating.

Models R1CH2801A ID:P000 is similar to model FSE052 except for model designation and input rating.

Models FSG016 and R1CH2551A are similar to model FSE059 except for model designation, input rating, output rating and below items.

- Mains connection type change from Inlet to primary connector
- Fuse (F1) rating and sources
- Y-Cap. (C198, C199, C5, C6) rating and sources
- X-Cap. (C4, C7) rating and source
- Thermistor (RT1) rating
- Electrolytic Capacitor (C36) rating
- Change transformer (T401) source
- Add alternative DC Fan sources

The product is a component intended for incorporation in information technology equipment, the overall compliance shall be investigated in the complete information technology equipment.

When equipment supplied by DC 240V input voltage, the input circuit is considered as Hazardous Voltage Secondary Circuit and keep Basic insulation to output circuit and Double/Reinforced insulation to Primary circuit.

The equipment incorporates 5 PCBs:

- PCB1 (on the bottom) include primary and secondary circuits
- PCB2 and PCB4 (mounted on PCB 1) include primary and secondary circuits
- PCB3 and PCB5 (mounted on PCB 1) include secondary circuits

This CB standard updated test report is based on the previous IEC 62368-1:2014 CB test report issued by NCB TÜV Rheinland Japan, details as below:

Test report number	Certification number	Testing procedure	Date of receipt of test item	Date (s) of performance of tests
50214655 001	JPTUV-094095	CTF stage 1	2018-01-08	2018-01-08 to 2018-04-12
50214655 002	JPTUV-094095-M1	CTF stage 1	2021.01.27	2021.01.27
50214655 003	JPTUV-094095-M2	CTF stage 1	2021.06.04	2021.06.04 to 2021.06.11

No technical changes have been found by construction review at the provided sample and/or other administrative modifications except for:

- Update CDF

Following additional tests and evaluations per the requirements of the new standard and/or considered necessary were conducted in this report:

Thermal burn tests in normal, abnormal and single fault conditions (Cl. 9, B.3, B.4).

Following abbreviations may be used throughout this test report:

- cl clearance
- dcr creepage distance
- dti distance through insulation
- EUT equipment under test
- ext external distance
- int internal distance
- o-c open-circuit
- o-l overload
- s-c short-circuit
- d-con disconnected
- IP Internal protection operated (list component)
- CT Constant temperatures were obtained
- CD Components damaged (list damaged components)
- NB No indication of dielectric breakdown
- NC Cheesecloth remained intact
- NT Tissue paper remained intact

Definition of variable(s):

Variable:	Range of variable:	Content:
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Additional application considerations – (Considerations used to test a component or sub-assembly) –

The power supply cord set was not evaluated together with the apparatus.

A suitable certified power supply cord set has to be added in the country where the apparatus is sold.

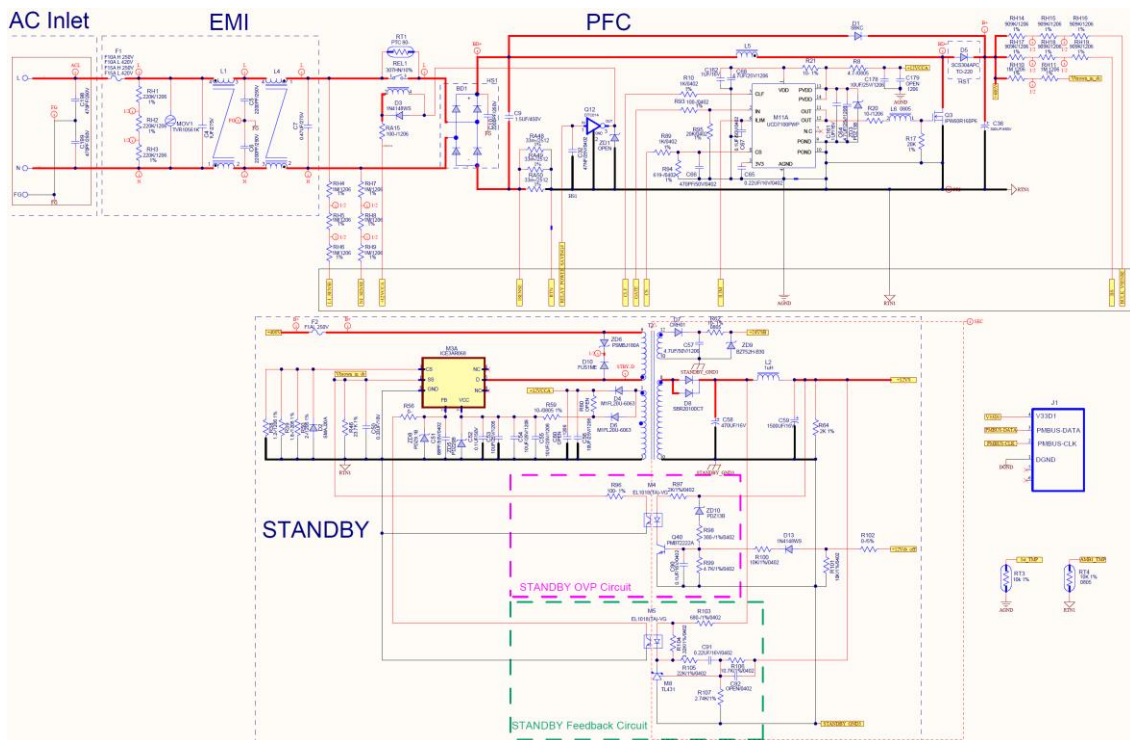
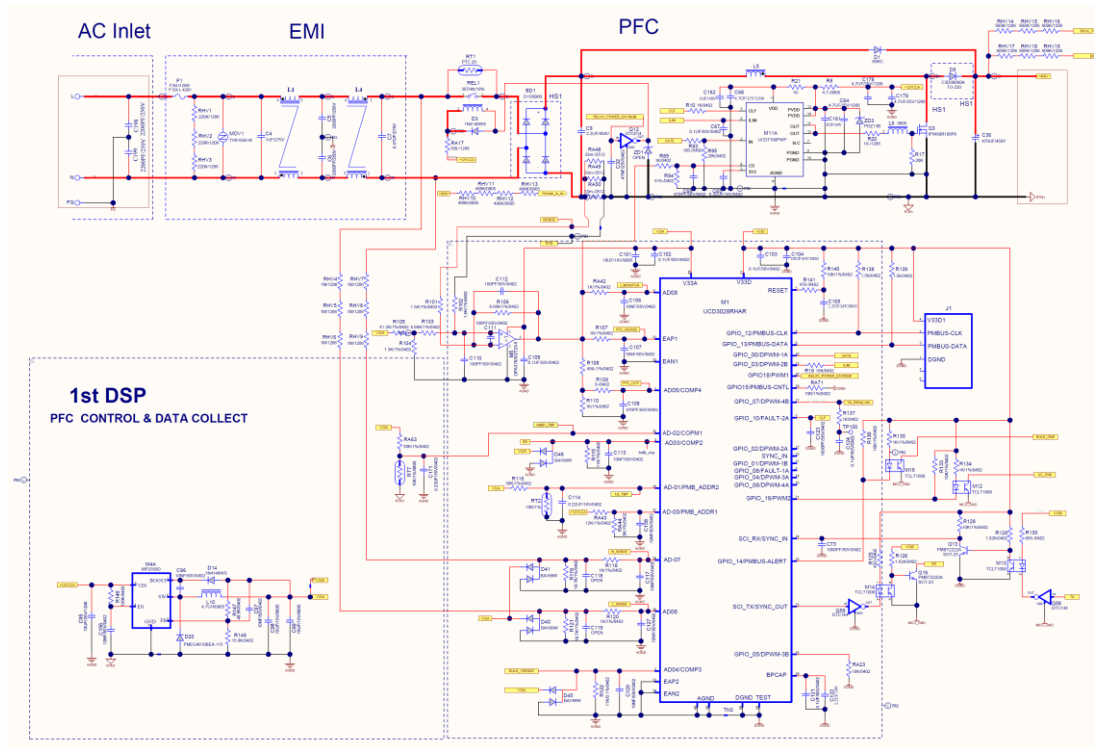
OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Accessible part of input connector	Ordinary	N/A	N/A	Discharge resistors (RHV1, RHV2, RHV3)
ES3: Primary circuits	Ordinary	N/A	N/A	Transformer (T5, T201, T401, optocouplers (M6, M8), and bridging capacitor (C17)
ES3: Secondary circuits before rectifier or resistor	Ordinary	N/A	N/A	D53, D54, R48, Q31, Q34, D7, D8
ES1: Output connector	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	S	R
PS3: > 100 Watt circuit (Primary and secondary circuits)	Combustible materials within equipment fire barrier	Equipment safeguard (no ignition occurs and no such temp. attained specified in 6.3)	Equipment safeguards (e.g. min rated V-1 PWB, fire enclosure; see 6.4.5 and 6.4.6 for details)	N/A
PS3: > 100 Watt circuit (Primary and secondary circuits)	Metal chassis	See above and 6.3 for details	Equipment safeguard (Control of fire spread)	N/A
PS3: > 100 Watt circuit (Primary circuits)	Internal wiring material	See above and 6.3 for details	Equipment safeguards (rated VW-1, see 6.5 for details)	N/A
PS3: > 100 Watt circuit (DC outputs)	Output connector and wiring material	N/A	Equipment safeguard with openings	N/A
7	Injury caused by hazardous substances			

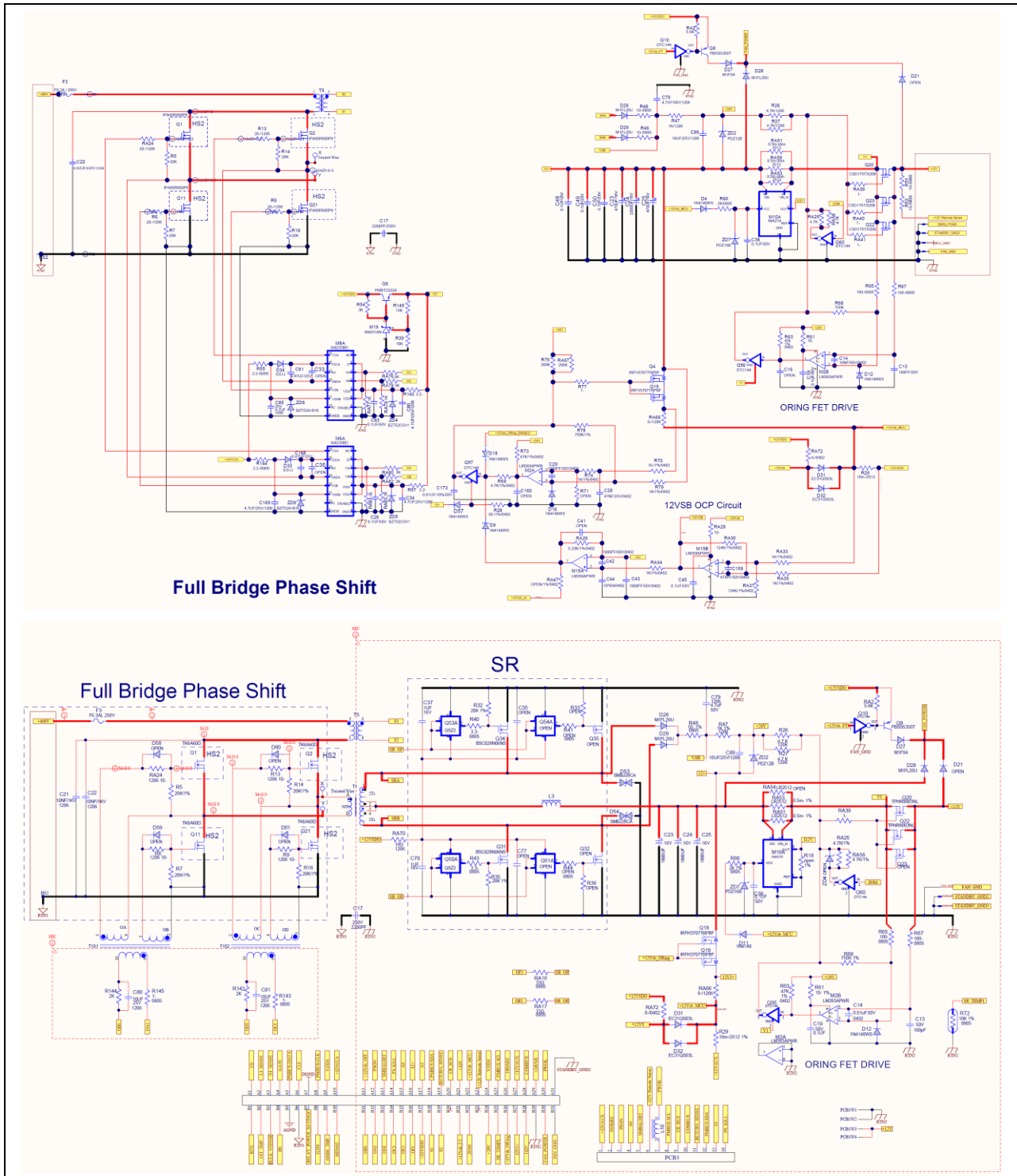
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edge and corners	Ordinary	N/A	N/A	N/A
MS1: Equipment mass – mass < 7 kg	Ordinary	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Metal chassis (the accessible surfaces of side) (< 70 °C)	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1: LED	Ordinary	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems. Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings

See “OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS” mentioned above.

■ ES ■ PS ■ MS ■ TS ■ RS





IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended table 4.1.2)	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction	No accessible part which could cause injury. However, the equipment is a building-in type and evaluation is also to be made during the final system approval.	P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness	See below.	P
4.4.3.1	General	See below.	P
4.4.3.2	Steady force tests	See table T2, T3 and T5	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See Annex T.6)	P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	The phenolic materials used for the bobbin of transformer and choke described in subclause. For the all sources of insulation sheet material listed in appended table 4.1.2 are tested for a period of 7 hours (See Annex T.8).	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.4.3.9	Air comprising a safeguard	The equipment is a building-in type and evaluation is also to be made during the final system approval (See Annex T).	P
4.4.3.10	Accessibility, glass, safeguard effectiveness	No damaged. However, the equipment is a building-in type and evaluation is also to be made during the final system approval.	P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks		N/A
4.5	Explosion		P
4.5.1	General	No explosion occurs during normal/abnormal operation and single fault conditions.	P
4.5.2	No explosion during normal/abnormal operating condition	(See Annex B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Annex B.4)	P
4.6	Fixing of conductors	See below.	P
	Fix conductors not to defeat a safeguard	Compliance checked.	P
	Compliance is checked by test.....:	10N applied to all components. (See appended table 5.4.2 and 5.4.3).	P
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard ...:		N/A
4.7.3	Torque (Nm)		N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.10	Component requirements		P
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays		N/A
5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits	See below.	P
5.2.2.2	Steady-state voltage and current limits..... :	(See appended table 5.2)	P
5.2.2.3	Capacitance limits..... :	(See appended table 5.2)	P
5.2.2.4	Single pulse limits :		N/A
5.2.2.5	Limits for repetitive pulses :		N/A
5.2.2.6	Ringing signals		N/A
5.2.2.7	Audio signals		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	(See appended table "OVERVIEW OF EMPLOYED SAFEGUARDS")	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits	See above.	P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors	See above.	P
5.3.2.1	Accessibility to electrical energy sources and safeguards	Double or reinforced safeguard is provided between ES3 and skilled persons.	P
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements	See below.	P
	Test with test probe from Annex V	The test probe cannot access the hazardous live parts. (See Annex V)	—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :	See below.	N/A
5.3.2.2 b)	Air gap – distance (mm) :	More than 0.2 mm.	P
5.3.2.3	Compliance		P
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	The choice and application have taken into account as specified in this Clause 5 and Annex T except natural rubber, hygroscopic materials or asbestos are not used as insulation.	P
5.4.1.3	Material is non-hygroscopic	(See Clause 5.4.8)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.4	Maximum operating temperature for insulating materials..... :	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
5.4.1.5	Pollution degrees..... :	Pollution degree 2 is applied.	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage..... :	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	The bobbin material of transformer and choke is phenolic. No further test considered necessary.	P
5.4.1.10.2	Vicat test..... :		N/A
5.4.1.10.3	Ball pressure test..... :		N/A
5.4.2	Clearances	See below.	P
5.4.2.1	General requirements	See below.	P
	Clearances in circuits connected to AC Mains, Alternative method	See below.	P
5.4.2.2	Procedure 1 for determining clearance	See below.	P
	Temporary overvoltage..... :	2000 V _{peak}	—
5.4.2.3	Procedure 2 for determining clearance	See below.	P
5.4.2.3.2.2	a.c. mains transient voltage..... :	2500 V _{peak}	—
5.4.2.3.2.3	d.c. mains transient voltage..... :		—
5.4.2.3.2.4	External circuit transient voltage..... :		—
5.4.2.3.2.5	Transient voltage determined by measurement..... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test..... :	Not applicable.	N/A
5.4.2.5	Multiplication factors for clearances and test voltages..... :	The required clearance is multiplied by the required altitude correction factor in Table 16 according to specified operation altitude. (See appended table 5.4.2 and 5.4.3)	P
5.4.2.6	Clearance measurement..... :	(See appended table 5.4.2 and 5.4.3)	P
5.4.3	Creepage distances	See below.	P
5.4.3.1	General	See below.	P
5.4.3.3	Material group..... :	Material group IIIb assumed.	—

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.3.4	Creepage distances measurement..... :	(See appended table 5.4.2 and 5.4.3)	P
5.4.4	Solid insulation	See below.	P
5.4.4.1	General requirements	See below.	P
5.4.4.2	Minimum distance through insulation :	(See appended table 5.4.4.2)	P
5.4.4.3	Insulating compound forming solid insulation	Certified sources of optocouplers used.	P
5.4.4.4	Solid insulation in semiconductor devices	Certified sources of optocouplers used.	P
5.4.4.5	Insulating compound forming cemented joints	(See appended table 4.1.2)	P
5.4.4.6	Thin sheet material	See below.	P
5.4.4.6.1	General requirements	Insulation tape are used for double/reinforced insulation and not subjected to handling or abrasion during ordinary or instructed person servicing.	P
5.4.4.6.2	Separable thin sheet material	Insulating tape provided as double/reinforced insulation and passed the electric strength test for reinforced insulation.	P
	Number of layers (pcs) :	2 minimum.	P
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) :		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material..... :		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components	(See Annex G.5 and G.6)	P
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V)..... :	The solid insulations at frequencies ≥ 30 kHz was considered. (See appended table 5.4.4.9)	P
	Alternative by electric strength test, tested voltage (V), K_R :	Alternative electric strength test applied. (See appended table 5.4.9)	P
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M Ω) :		N/A
	Electric strength test :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such insulation of internal wire as part of supplementary safeguard.	N/A
5.4.7	Tests for semiconductor components and for cemented joints	Certified sources of optocouplers used.	P
5.4.8	Humidity conditioning	All sources of optocouplers and transformers were performed the test, see appended table 4.1.2 for source details. The transformer manufactured by each factory passed the test. Tested for 120 hrs.	P
	Relative humidity (%), temperature (°C), duration (h)	95 %, 40 °C, 120 h	—
5.4.9	Electric strength test	Electric strength tests (unit with or without mylar) were conducted after 5.4.8 Humidity conditioning. All sources of transformers were performed the test. The transformer manufactured by each factory passed the test. (See appended table 5.4.9)	P
5.4.9.1	Test procedure for type test of solid insulation	Compliance was checked immediately following temperature test in clause 5.4.1.4.	P
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test		N/A
5.4.10.2.3	Steady-state test		N/A
5.4.10.3	Verification for insulation breakdown for impulse test.....		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—
	Max increase due to variation ΔU_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
5.4.11.3	Test method and compliance		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid		N/A
5.4.12.3	Compatibility of an insulating liquid		N/A
5.4.12.4	Container for insulating liquid		N/A
5.5	Components as safeguards		P
5.5.1	General	See the following details.	P
5.5.2	Capacitors and RC units	X and Y capacitors are IEC/EN 60384-14 approval components. (See Annex G.11)	P
5.5.2.1	General requirement	See below.	P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector	(See appended table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See subclause 5.4 or Annex G.12)	P
5.5.5	Relays	Relay (REL1) complied with IEC 61810-1, see Annex G.2.	P
5.5.6	Resistors	Bleeder resistors were serve as safeguard and comply with Annex G.10	P
5.5.7	SPDs	The varistor across mains but not used between the mains and earth.	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)		—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors	Metal chassis will be connect to protective earth by final system.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.2.1	General requirements	No switch, current limiting devices or overcurrent protective devices provided in protective earthing conductors and protective bonding conductors.	P
5.6.2.2	Colour of insulation	Green-and yellow wire is used.	P
5.6.3	Requirement for protective earthing conductors	No power supply cord provided.	N/A
	Protective earthing conductor size (mm ²)		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors	Metal chassis will be connect to protective earth by final system.	P
5.6.4.1	Protective bonding conductors	See the following details.	P
	Protective bonding conductor size (mm ²).....	18AWG for green-and-yellow wire.	—
5.6.4.2	Protective current rating (A)	≤ 25	—
5.6.5	Terminals for protective conductors	The earthing terminal of connector is considered as the main protective earthing terminal.	P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)	Metal chassis of AC inlet.	P
	Terminal size for connecting protective bonding conductors (mm).....	Protective bonding conductor nominal thread diameter for screw type 3.5mm.	P
5.6.5.2	Corrosion	No combination above the line in Annex N is used. (See Annex N)	P
5.6.6	Resistance of the protective bonding system	See below.	P
5.6.6.1	Requirements	Compliance checked.	P
5.6.6.2	Test Method	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm ²)		N/A
	Class II with functional earthing marking		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliance inlet cl & cr (mm)		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current	Figure 4 of IEC 60990 was used in determining of the limit of ES1. Figure 5 of IEC 60990 was used in determining of the limit of ES2.	P
5.7.2.2	Measurement of voltage	(See appended table 5.2)	P
5.7.3	Equipment set-up, supply connections and earth connections	Clause 4, 5.3 and 5.4 of IEC 60990 applied.	P
5.7.4	Unearthed accessible parts.....	Concerned parts evaluated in clause 5.2.2. (See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts.....	Concerned parts evaluated in clause 5.2.2. (See appended table 5.7.5)	P
5.7.6	Requirements when touch current exceeds ES2 limits	The touch current in clause 5.2.2.2 does not exceed the ES2 limits (5 mA rms or 7.07 mA peak).	P
	Protective conductor current (mA)		N/A
	Instructional Safeguard		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA)		N/A
	b) Equipment connected to unearthed external circuits, current (mA)		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES.....		N/A
	Air gap (mm)		N/A
6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	Power source circuit classifications	PS (power source) classification determined by measuring the maximum power in Figure 34 and Figure 35 for load and power source circuits.	P
6.2.3	Classification of potential ignition sources	See the following details.	P
6.2.3.1	Arcing PIS	Except for those components in compliance with IEC or other appropriate test standard, other components located within the equipment are not considered as arcing PIS. (See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS	The available power exceeding 15 W and no further test considered necessary. (See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	No ignition and such temperature attained within the plastic fire enclosure. (See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
	Combustible materials outside fire enclosure.....		N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Method by control fire spread considered.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits	Inlet side of chassis evaluated according to reduction of the likelihood of ignition. Detail see sub-clauses 6.4.4, 6.4.5 and 6.4.6.	P
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions	For components near Inlet side openings that located at fire cone according to figure 41. See appended table B.4.	P
	Special conditions for temperature limited by fuse		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.4	Control of fire spread in PS1 circuits	LED light tested by single fault test and judged as PS1. See appended table 6.2.2.	P
6.4.5	Control of fire spread in PS2 circuits	PS3 inside.	P
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: - <u>Printed board</u>: rated min. V-1 class material. - <u>Wire insulation and tubing</u>: complying with Clause 6. - <u>All other components</u>: at least V-2 except for mounted on min. V-1 material or small parts of combustible material. - <u>Single fault conditions as specified in 6.4.3.2</u>: Not ignite during testing for the conditions of clause B.4. - DC fan: complying with G.5.4. - Components complying with the requirement of the relevant IEC standard. - <u>Isolating transformer</u>: complying with G.5.3. (See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuits	- Conductors and devices meet the requirement of 6.4.5 - Devices subject to arcing or changing contact resistance: • Material made of V-1, or • Comply with flammability requirement - Fire enclosure according to 6.4.8. However, the equipment is a building-in type and evaluation is also to be made during the final system approval. (See appended tables 4.1.2)	N/A
6.4.7	Separation of combustible materials from a PIS	See the following details.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.7.2	Separation by distance	All components and combustible materials other than small parts are either rated at least V-2 class material or mounted on PCB material with rated min. V-1 class material.	N/A
6.4.7.3	Separation by a fire barrier	See above.	N/A
6.4.8	Fire enclosures and fire barriers	Equipment metal chassis was evaluated as a fire barrier.	P
6.4.8.2	Fire enclosure and fire barrier material properties	See the following details.	P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure	The equipment is a building-in type and evaluation is to be made during the final system approval.	N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	See the following details.	P
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties	The openings located near AC inlet side was tested by single fault test.	P
	Openings dimensions (mm)		N/A
6.4.8.3.4	Bottom openings and properties	The openings located near AC inlet side was tested by single fault test.	P
	Openings dimensions (mm)		N/A
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard.....		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c).....		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating	The metal chassis is considered as a fire barrier.	P
6.4.9	Flammability of insulating liquid		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements	The material of VW-1 on internal or external wiring were considered compliance equivalent to IEC TS 60695-11-21 relevant standards.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.2	Requirements for interconnection to building wiring		N/A
6.5.3	Internal wiring size (mm ²) for socket-outlets		N/A
6.6	Safeguards against fire due to the connection to additional equipment		N/A

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		N/A
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)		—
7.6	Batteries and their protection circuits		N/A

8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards		P
	Instructional Safeguard..... :		N/A
8.4.2	Sharp edges or corners	Sharp edges and corners at inlet side classified as MS1.	P
8.5	Safeguards against moving parts		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum stopping distance from the point of activation (m)		N/A
	Space between end point and nearest fixed mechanical part (mm).....		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N)		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test.....		N/A
8.5.5.3	Glass particles dimensions (mm)		N/A
8.6	Stability of equipment		N/A
8.6.1	General		N/A
	Instructional safeguard		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test.....		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Mount means type		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N)		N/A
	Test 2, number of attachment points and test force (N)		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm)		N/A
8.8	Handles strength		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles :		—
	Force applied (N) :		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test		N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions :		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N) :		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N) :		N/A
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard..... :		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied :		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm) :		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts..... :	All accessible surfaces are classified as TS1 (See appended tables 5.4.1.4, 9.3, B.1.5, B.2.6 and B.3, B.4).	P
9.3.2	Test method and compliance		P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.5.2	Instructional safeguard		N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance		N/A

10	RADIATION		P
10.2	Radiation energy source classification		N/A
10.2.1	General classification	LED used as indicator only.	N/A
	Lasers.....		—
	Lamps and lamp systems		—
	Image projectors.....		—
	X-Ray		—
	Personal music player		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply		N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location.....		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure		N/A
10.4.3	Instructional safeguard		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons.....		N/A
10.5.3	Maximum radiation (pA/kg)		N/A
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A)		N/A
	Unweighted RMS output voltage (mV)		N/A
	Digital output signal (dBFS).....		N/A
10.6.3	Requirements for dose-based systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) :		N/A
	Warning for MEL ≥ 100 dB(A) :		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV) :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) :		N/A

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended tables 5.4.1.4, 9.3, B.1.5, B.2.6 and B.3, B.4)	P
B.2	Normal operating conditions		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :		N/A
B.2.3	Supply voltage and tolerances	See TEST ITEM PARTICULARS.	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General	(See appended table B.3, B.4)	P
B.3.2	Covering of ventilation openings	(See appended table B.3, B.4)	P
	Instructional safeguard :		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	(See appended table B.3, B.4)	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remained effectively.	P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test	(See appended table B.3, B.4)	P
B.4.4	Functional insulation	(See appended table B.3, B.4)	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.3, B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.3, B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.3, B.4)	P
B.4.6	Short circuit or disconnection of passive components	(See appended table B.3, B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions	(See appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions		N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Electrical energy source classification for audio signals		N/A
	Maximum non-clipped output power (W)		—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V)		—
	Instructional safeguard		—
E.2	Audio amplifier normal operating conditions		N/A
	Audio signal source type		—
	Audio output power (W).....		—
	Audio output voltage (V).....		—
	Rated load impedance (Ω)		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A

F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language	English. The other languages will be provided during the national approval.	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols for quantities and units are complied with IEC 60027-1.	P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010, or manufacturer specific.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment marking is located on the exterior surface and is easily visible.	P
F.3.2	Equipment identification markings	See the following details.	P
F.3.2.1	Manufacturer identification	See copy of marking plate.	P
F.3.2.2	Model identification	See copy of marking plate.	P
F.3.3	Equipment rating markings	See the following details.	P
F.3.3.1	Equipment with direct connection to mains	The equipment is connected to AC mains supply.	P
F.3.3.2	Equipment without direct connection to mains		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.3	Nature of the supply voltage	See copy of marking plate.	P
F.3.3.4	Rated voltage	See copy of marking plate.	P
F.3.3.5	Rated frequency	See copy of marking plate.	P
F.3.3.6	Rated current or rated power	See copy of marking plate.	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices	See below.	P
F.3.5.1	Mains appliance outlet and socket-outlet markings		N/A
F.3.5.2	Switch position identification marking		N/A
F.3.5.3	Replacement fuse identification and rating markings	Fuse marking on PCB adjacent to fuse: F1 F15A 250V F3 F6.3A 250Vac F201 F1A 250Vac	P
	Instructional safeguards for neutral fuse		N/A
F.3.5.4	Replacement battery identification marking		N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location	See markings specified in F.3.5.5, F.3.6.1 and F.3.6.3 not placed on removable parts such as screws.	P
F.3.6	Equipment markings related to equipment classification	See the following details.	P
F.3.6.1	Class I equipment	See the following details.	P
F.3.6.1.1	Protective earthing conductor terminal.....	The symbol which complied with IEC 60417-5019  is marked beside protective earthing conductor terminal of appliance inlet.	P
F.3.6.1.2	Protective bonding conductor terminals		N/A
F.3.6.2	Equipment class marking		N/A
F.3.6.3	Functional earthing terminal marking		N/A
F.3.7	Equipment IP rating marking	This equipment is classified as IPX0.	N/A
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking	See the following details.	P
F.3.10	Test for permanence of markings	Marking is durable and legible. The marking plate has no curling and is not able to be removed easily.	P

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Clause	Requirement + Test	Result - Remark	Verdict

F.4	Instructions		P
	a) ..Information prior to installation and initial use	The equipment is building-in type and evaluation is to be made during the final system approval.	N/A
	b) ..Equipment for use in locations where children not likely to be present		N/A
	c)... Instructions for installation and interconnection		N/A
	d) .. Equipment intended for use only in restricted access area		N/A
	e) .. Equipment intended to be fastened in place		N/A
	f) ... Instructions for audio equipment terminals		N/A
	g) .. Protective earthing used as a safeguard		N/A
	h) .. Protective conductor current exceeding ES2 limits		N/A
	i).... Graphic symbols used on equipment		N/A
	j).... Permanently connected equipment not provided with all-pole mains switch		N/A
	k)... Replaceable components or modules providing safeguard function		N/A
	l).... Equipment containing insulating liquid		N/A
	m) . Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		N/A

G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	Relays		P
G.2.1	Requirements	Complied with IEC 61810-1.	P
G.2.2	Overload test	Certified component used, see appended table 4.1.2 for relay sources.	P
G.2.3	Relay controlling connectors supplying power to other equipment	See above.	P
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices	All sources of fuse (F1, F3, F201) complied with IEC/EN 60127-1.	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4	No such component.	N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided	See above.	N/A
G.3.5.2	Single faults conditions.....:	See above.	N/A
G.4	Connectors		P
G.4.1	Spacings	The appliance inlet complied with IEC 60320-1. See appended table 4.1.2.	P
G.4.2	Mains connector configuration		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No misconnection likely.	P
G.5	Wound components		P
G.5.1	Wire insulation in wound components	(See Annex J)	P
G.5.1.2	Protection against mechanical stress	The tubing and insulation tape are provided for windings of transformer to protect against mechanical stress.	P
G.5.2	Endurance test	Certified triple insulated wire used. See appended table 4.1.2.	N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)		—
	Test temperature (°C)		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.1	Compliance method	The isolating transformer meets the requirements given in subclauses G.5.3.2 and G.5.3.3.	P
	Position.....	(See appended table 4.1.2)	P
	Method of protection.....	(See appended table B.3, B.4)	P
G.5.3.2	Insulation	Primary windings and secondary windings are isolated by double/reinforced insulation.	P
	Protection from displacement of windings	The end-turn of each winding is fixed by insulating tape.	—
G.5.3.3	Transformer overload tests	(See appended table B.3, B.4)	P
G.5.3.3.1	Test conditions	Tested in the complete equipment.	P
G.5.3.3.2	Winding temperatures	(See appended table B.3, B.4)	P
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements	Approved DC Fan used.	N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		P
G.6.1	General	The triple insulated wire used as reinforced safeguard in the isolating transformer that complied with Annex J.	P
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements		N/A
	Type.....		—
G.7.2	Cross sectional area (mm ² or AWG).....		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).....		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm)		—
	Radius of curvature after test (mm).....		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.8.1	General requirements	The varistor (MOV1) connected across the mains provided within the equipment (See appended table 4.1.2).	P
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)		—
	Manufacturers' defined drift		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	Resistors		P
G.10.1	General	Certified components used.	P
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		P
G.11.1	General requirements	The X-Capacitor and the Y-Capacitor are used as safeguard and complied with IEC/EN 60384-14. (See appended table 4.1.2).	P
G.11.2	Conditioning of capacitors and RC units	At least 21 days at 40 ± 2 °C and 93 ± 3 % RH.	P
G.11.3	Rules for selecting capacitors	The selection followed with table G.12.	P
G.12	Optocouplers		P
	Optocouplers comply with IEC 60747-5-5 with specifics	The optocouplers used in the equipment and complied with IEC/EN 60747-5-5 or the requirements of 5.4.9. (See appended table 4.1.2)	P
	Type test voltage $V_{ini,a}$		—
	Routine test voltage, $V_{ini,b}$		—
G.13	Printed boards		P
G.13.1	General requirements	See the following details.	P

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Clause	Requirement + Test	Result - Remark	Verdict
G.13.2	Uncoated printed boards	The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements.	P
G.13.3	Coated printed boards	No coated printed boards provided within the equipment.	N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces	See below.	P
	Distance through insulation.....:	Min. 0.4mm	P
	Number of insulation layers (pcs)	4	—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements		N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test		—
	Mains voltage that impulses to be superimposed on.....:		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.16.3	Capacitor discharge test		N/A
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
J.1	General		P
	Winding wire insulation.....	The triple insulated wire used as reinforced safeguard in the isolating transformer that had been evaluated with Annex J.	—
	Solid round winding wire, diameter (mm).....		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²)		N/A
J.2/J.3	Tests and Manufacturing		N/A
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

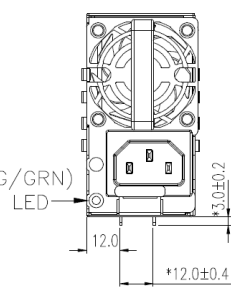
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)		N/A
	Electric strength test before and after the test of K.7.2		N/A
K.7.2	Overload test, Current (A)		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A

L	DISCONNECT DEVICES		P
L.1	General requirements	The appliance coupler is considered as disconnect device.	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized	When the equipment is disconnected from mains, no remaining parts at hazardous voltage in the equipment.	P
L.4	Single-phase equipment	The disconnect device disconnects both poles simultaneously.	P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A
	Instructional safeguard		N/A

M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		N/A
M.1	General requirements		N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards.....		N/A
M.3	Protection circuits for batteries provided within the equipment		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		N/A
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance		N/A
M.4.3	Fire enclosure.....		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h).....		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%).....		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%).....		N/A
M.7.4	Marking.....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)		—
M.8.2.3	Correction factors		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard		N/A
N	ELECTROCHEMICAL POTENTIALS		P
	Material(s) used	Complied, the combined electrochemical potential is < 0.6 V.	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm)	1 mm	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General	To be evaluated in end system.	N/A
P.2	Safeguards against entry or consequences of entry of a foreign object		N/A
P.2.1	General	The equipment is building-in type and evaluation is also to be made during the final system approval.	N/A
P.2.2	Safeguards against entry of a foreign object	The equipment is building-in type and evaluation is also to be made during the final system approval.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Location and Dimensions (mm)	Evaluated for the openings located beside the side of appliance inlet: Numerous hexagon openings, See below drawing and photo documentations for dimension details:  (no bare conductive parts of ES3 or PS3 circuits within the projected volume as depicted in Figure P.3).	—
P.2.3	Safeguards against the consequences of entry of a foreign object	No bare conductive parts of ES3 or PS3 located within 5 degree vertical projection of opening.	P
P.2.3.1	Safeguard requirements	See above.	N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts.....		N/A
P.2.3.2	Consequence of entry test		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T _c (°C)		—
	Duration (weeks)		—

Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		N/A
Q.1	Limited power sources		N/A
Q.1.1	Requirements		N/A
	a) Inherently limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance		N/A
	Current rating of overcurrent protective device (A)		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		N/A
	Current limiting method		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test		—
R.3	Test method		N/A
	Cord/cable used for test		—
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material.....		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material.....		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm)		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power exceeding 4 000 W		N/A
	Samples, material.....		—
	Wall thickness (mm)		—
	Conditioning (°C)		—

T	MECHANICAL STRENGTH TESTS		P
T.1	General		P
T.2	Steady force test, 10 N	10 N applied to all components other than the parts serving as an enclosure.	P
T.3	Steady force test, 30 N	The equipment is building-in type. However, the test applied to the metal chassis top, bottom and sides parts except for the side of inlet. The test results were passed (See appended table T.2, T.3, T.4, T.5).	P
T.4	Steady force test, 100 N		N/A
T.5	Steady force test, 250 N	The equipment is building-in type. However, the test applied to the side of inlet. After subjected 250 N, no energy or other hazards. Overall compliance shall be evaluated for the final system approval (See appended table T.2, T.3, T.4, T.5).	P
T.6	Enclosure impact test	The metal chassis was evaluated as a fire barrier. Due to the equipment is building-in type. However, the test applied to the side of inlet. No hazards as result from the steel ball impact test. Overall compliance shall be evaluated for the final system approval (See appended table T.6, T.9).	P
	Fall test	See above.	P
	Swing test	See above.	P
T.7	Drop test		N/A
T.8	Stress relief test	See appended table T.8.	P

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Clause	Requirement + Test	Result - Remark	Verdict
T.9	Glass Impact Test..... :		N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted :		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) :		N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard:		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		N/A
V.1	Accessible parts of equipment		N/A
V.1.1	General	The equipment is a building-in type component. It's shall be evaluated in end system.	N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	Accessible part criterion		N/A
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance..... :		N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by :		N/A
Y.3.2	Test apparatus		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure.....:		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods.....:		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3.....:		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test.....:		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
FSE052, R1CA2801A, FSF037, R1CA2801B							
264Vac 60Hz	+12.0V	Normal	12.0 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.0 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.0 Vdc (Vrms)	--	SS	--	
264Vac 60Hz	+12Vsb	Normal	12.0 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.0 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.0 Vdc (Vrms)	--	SS	--	
240Vdc	+12.0V	Normal	12.0 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.0 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.0 Vdc (Vrms)	--	SS	--	
240Vdc	+12Vsb	Normal	12.0 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.0 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.0 Vdc (Vrms)	--	SS	--	
FSF059, R1CA2551B, FSF065, R1CA2551C							
264Vac 60Hz	+12.0V	Normal	12.2 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.2 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.2 Vdc (Vrms)	--	SS	--	
264Vac 60Hz	+12Vsb	Normal	12.2 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.2 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.2 Vdc (Vrms)	--	SS	--	

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
240Vdc	+12.0V	Normal	12.2 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.2 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.2 Vdc (Vrms)	--	SS	--	
240Vdc	+12Vsb	Normal	12.2 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.2 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.2 Vdc (Vrms)	--	SS	--	
Model FSG007							
264Vac 60Hz	+12.4V	Normal	12.5 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.5 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.5 Vdc (Vrms)	--	SS	--	
264Vac 60Hz	+12.4Vsb	Normal	11.8 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	11.8 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	11.8 Vdc (Vrms)	--	SS	--	
240Vdc	+12.4V	Normal	12.5 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	12.5 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	12.5 Vdc (Vrms)	--	SS	--	
240Vdc	+12.4Vsb	Normal	11.8 Vdc (Vrms)	--	SS	--	ES1
		Abnormal	11.8 Vdc (Vrms)	--	SS	--	
		Single fault – SC/OC	11.8 Vdc (Vrms)	--	SS	--	
400Vdc	C4, C7	Normal	419	--	CP	1.47 μF (C4= 1μF, C7 = 0.47μF, ±20% tolerance)	ES3

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Clause	Requirement + Test			Result - Remark			Verdict
264Vac 60Hz	C4, C7	Normal	388	--	CP	1.47 μ F (C4= 1 μ F, C7 = 0.47 μ F, $\pm$ 20% tolerance)	ES3
Supplementary information: 1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc. 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc. SC = Short-circuited, OC = Open-circuited Only least favourable value recorded, if not otherwise specified.							

5.4.1.8	TABLE: Working voltage measurement					P
Location		Peak voltage (V)	RMS voltage (V)	Frequency (kHz)	Comments	
FSE052, R1CA2801A, FSF037, R1CA2801B						
AC input						
T5 pin1	T5 pin3	438	319			
T5 pin1	T5 pin4	444	319			
T5 pin2	T5 pin3	450	320			
T5 pin2	T5 pin4	444	319			
T401 pin A	T401 pin 1	463	244			
T401 pin A	T401 pin 2	469	255			
T401 pin A	T401 pin 3	463	266			
T401 pin B	T401 pin 1	463	264			
T401 pin B	T401 pin 2	469	253			
T401 pin B	T401 pin 3	456	244			
T201 pin1	T201 pin7	388	169			
T201 pin1	T201 pin10	444	172			
T201 pin3	T201 pin7	375	171			
T201 pin3	T201 pin10	363	169			
T201 pin5	T201 pin7	669	358			
T201 pin5	T201 pin10	694	370	Highest working frequency: 113kHz		
T201 pin6	T201 pin7	513	321			
T201 pin6	T201 pin10	463	320			
M12 pin1	M12 pin3	356	168			

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
M12 pin1	M12 pin4	356	168		
M12 pin2	M12 pin3	356	169		
M12 pin2	M12 pin4	356	169		
M13 pin3	M13 pin1	356	170		
M13 pin3	M13 pin2	356	169		
M13 pin4	M13 pin1	356	170		
M13 pin4	M13 pin2	356	169		
M14 pin1	M14 pin3	356	168		
M14 pin1	M14 pin4	356	168		
M14 pin2	M14 pin3	356	167		
M14 pin2	M14 pin4	363	167		
M16 pin1	M16 pin3	356	168		
M16 pin1	M16 pin4	356	168		
M16 pin2	M16 pin3	356	169		
M16 pin2	M16 pin4	363	169		
M8 pin9	M8 pin1	381	172		
M8 pin9	M8 pin2	388	172		
M8 pin9	M8 pin4	381	171		
M8 pin9	M8 pin8	381	174		
M8 pin10	M8 pin1	375	168		
M8 pin10	M8 pin2	413	167		
M8 pin10	M8 pin4	375	166		
M8 pin10	M8 pin8	375	170		
M8 pin11	M8 pin1	356	163		
M8 pin11	M8 pin2	369	163		
M8 pin11	M8 pin4	356	162		
M8 pin11	M8 pin8	356	165		
M8 pin14	M8 pin1	450	258		
M8 pin14	M8 pin2	456	258		
M8 pin14	M8 pin4	456	259		
M8 pin14	M8 pin8	456	258		
M8 pin15	M8 pin1	594	267		
M8 pin15	M8 pin2	463	266		
M8 pin15	M8 pin4	463	268		
M8 pin15	M8 pin8	463	266		
M8 pin16	M8 pin1	475	263		

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
M8 pin16	M8 pin2	469	263		
M8 pin16	M8 pin4	469	265		
M8 pin16	M8 pin8	469	263		
M6 pin9	M6 pin1	375	172		
M6 pin9	M6 pin2	375	172		
M6 pin9	M6 pin4	369	171		
M6 pin9	M6 pin8	381	174		
M6 pin10	M6 pin1	381	168		
M6 pin10	M6 pin2	400	167		
M6 pin10	M6 pin4	375	167		
M6 pin10	M6 pin8	375	170		
M6 pin11	M6 pin1	356	163		
M6 pin11	M6 pin2	406	163		
M6 pin11	M6 pin4	356	162		
M6 pin11	M6 pin8	363	165		
M6 pin14	M6 pin1	500	256		
M6 pin14	M6 pin2	631	258		
M6 pin14	M6 pin4	450	258		
M6 pin14	M6 pin8	444	256		
M6 pin15	M6 pin1	531	264		
M6 pin15	M6 pin2	625	266		
M6 pin15	M6 pin4	469	266		
M6 pin15	M6 pin8	456	264		
M6 pin16	M6 pin1	488	262		
M6 pin16	M6 pin2	656	264		
M6 pin16	M6 pin4	463	263		
M6 pin16	M6 pin8	456	261		
M202 pin3	M202 pin1	369	179		
M202 pin3	M202 pin2	375	178		
M202 pin4	M202 pin1	369	176		
M202 pin4	M202 pin2	363	176		
M203 pin3	M203 pin1	363	176		
M203 pin3	M203 pin2	363	175		
M203 pin4	M203 pin1	369	179		
M203 pin4	M203 pin2	369	178		
DC input					

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
T5 pin1	T5 pin3	444	402		
T5 pin1	T5 pin4	431	402		
T5 pin2	T5 pin3	456	402		
T5 pin2	T5 pin4	444	402		
T401 pin A	T401 pin 1	450	268		
T401 pin A	T401 pin 2	463	277		
T401 pin A	T401 pin 3	456	287		
T401 pin B	T401 pin 1	456	286		
T401 pin B	T401 pin 2	469	276		
T401 pin B	T401 pin 3	450	267		
T201 pin1	T201 pin7	44	5.1		
T201 pin1	T201 pin10	109	30.8		
T201 pin3	T201 pin7	94	27.8		
T201 pin3	T201 pin10	25	3.3		
T201 pin5	T201 pin7	669	433		
T201 pin5	T201 pin10	681	443	Highest working frequency: 106kHz	
T201 pin6	T201 pin7	513	403		
T201 pin6	T201 pin10	456	402		
Model FSF059 with choke (L5) part no. 21Q79					
T401 pin X	T401 pin 1	469	242		
T401 pin X	T401 pin 2	475	252		
T401 pin X	T401 pin 3	456	263		
T401 pin Y	T401 pin 1	438	261		
T401 pin Y	T401 pin 2	444	250		
T401 pin Y	T401 pin 3	444	240		
Model FSF059 with choke (L5) part no. 90480-9149I3					
T401 pin X	T401 pin 1	469	242		
T401 pin X	T401 pin 2	469	252		
T401 pin X	T401 pin 3	469	262		
T401 pin Y	T401 pin 1	444	260		
T401 pin Y	T401 pin 2	444	250		
T401 pin Y	T401 pin 3	444	239		
Supplementary information: Supply voltage: 240Vac / 60 Hz or 240Vdc					

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics				N/A
Method			ISO 306 / B50		—
Object/ Part No./Material	Manufacturer/trademark		Thickness (mm)	T softening (°C)	
Supplementary information:					

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics					N/A
Allowed impression diameter (mm)..... :					≤ 2 mm	—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)		
Supplementary information:						

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							P
Clearance (cl) and creepage distance (cr) at/of/between:	U _p (V)	U _{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
Functional:								
Distance before fuse	420	250	>30	2.3 (1.5x1.48)	See below	--	2.5	See below
- L to N before fuse (F1)	See above	See above	See above	See above	4.4	--	See above	4.4
- Under Fuse	See above	See above	See above	See above	2.8	--	See above	2.8
Basic:								
Primary components (10N) to earthed parts	420	250	>30	2.3 (1.5x1.48)	See below	--	2.5	See below
- Under C5, C6	See above	See above	See above	See above	5.0	--	See above	5.0
Primary traces to earth traces	420	250	>30	2.3 (1.5x1.48)	See below	--	2.5	See below
- Inlet L/N pin to metal enclosure	See above	See above	See above	See above	4.0	--	See above	4.0
- L1 to metal enclosure	See above	See above	See above	See above	4.0	--	See above	4.0
- L5 to metal enclosure	See above	See above	See above	See above	4.0	--	See above	4.0
Reinforced:								
Primary traces to secondary traces	420	250	> 30	4.5 (3.0*1.48)	See below	--	5.0	See below

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Clause	Requirement + Test			Result - Remark			Verdict	
- Under C17	See above	See above	See above	See above	7.0	--	See above	7.0
- Under M12, M13, M14, M16	See above	See above	See above	See above	8.0	--	See above	8.0
- Under M202, M203	469	263	See append ed table 5.4.1.8	See above	7.3	--	5.4	7.3
- Under T5	450	320	See append ed table 5.4.1.8	See above	7.0	--	6.4	7.0
- Under T401	469	266	See append ed table 5.4.1.8	See above	20.0	--	5.4	20.0
- Under T201	694	370	See append ed table 5.4.1.8	See above	10.0	--	7.4	10.0
Primary component (with 10N) to secondary	420	250	> 30	4.5 (3.0*1.48)	See below	--	5.0	See below
- C36 to secondary components/trace	See above	See above	See above	See above	8.0	--	See above	8.0
- C36 to PCB3 components/trace	See above	See above	See above	See above	8.0	--	See above	8.0
- Primary trace to T401 core	See above	See above	See above	See above	6.0	--	See above	6.0
Trace sides								
(FI)								
Distance before fuse	420	250	>30	2.3 (1.5x1.48)	See below	--	2.5	See below
- L to N before fuse (F1)	See above	See above	See above	See above	4.0	--	See above	4.0
- Under Fuse	See above	See above	See above	See above	2.8	--	See above	2.8
(BI)								
Primary components (10N) to earthed parts	420	250	>30	2.3 (1.5x1.48)	See below	--	2.5	See below
- Under C5, C6	See above	See above	See above	See above	3.0	--	See above	3.0

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Clause	Requirement + Test				Result - Remark			Verdict

(RI)								
Primary to secondary traces	420	250	> 30	4.5 (3.0*1.48)	See below	--	5.0	See below
- Under C17	See above	See above	See above	See above	7.0	--	See above	7.0
- Under M12, M13, M14, M16	See above	See above	See above	See above	8.0	--	See above	8.0
- Under M202, M203	See above	See above	See above	See above	7.3	--	See above	7.3
- Under M6, M8 pin 2-16	See above	See above	See above	See above	7.2	--	See above	7.2
- Under T5	See above	See above	See above	See above	7.0	--	See above	7.0
- Under T401	See above	See above	See above	See above	20.0	--	See above	20.0
- Under T201	See above	See above	See above	See above	10.0	--	See above	10.0
Components side (DC mode)								
(BI)								
Primary trace to earth traces	336	336	> 30	0.8	See below	--	3.4	See below
- Under C5, C6	336	336	>30	See above	5.0	--	See above	5.0
Primary components to earthed components (with 10N)	336	336	> 30	0.8	See below	--	3.4	See below
- Inlet L/N pin to metal enclosure	336	336	> 30	See above	4.0	--	See above	4.0
- L1 to metal enclosure	336	336	> 30	See above	4.0	--	See above	4.0
- L5 to metal enclosure	336	336	> 30	See above	4.0	--	See above	4.0
Trace sides (DC mode)								
(BI)								
Primary trace to earth traces	336	336	> 30	0.8	See below	--	3.4	See below
- Under C5, C6	336	336	> 30	See above	5.0	--	See above	5.0
Supplementary information:								
1. Specified the equipment to be operated up to 5,000 above sea level, the required clearance is multiplied by the altitude correction factor 1.48 according to table A.2 of IEC 60664-1.								
2. Tube provided for F1, C199, C198 and MOV1.								

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Clause	Requirement + Test	Result - Remark	Verdict

3. Tube provided (min. 0.4mm thickness) for wiring for T401 primary extend wiring, DC Fan and LED.
4. AC wires are secured to PCB by solder and solder pins.
5. The Y-Cap. (C198, C199) are soldered on the AC inlet.
6. Two layers of insulation tape wrapped around whole transformers (T5 and T201) completely.
7. Two layers of insulation tape wrapped around the top side of Cap. (C36) to keep reinforce insulation to secondary components/trace.
8. One layer of insulation sheet (O shape) provided between PCB1 and metal enclosure.

Note 1: Only for frequency above 30 kHz.

Note 2: See table 5.4.2.4 if this is based on electric strength test.

Note 3: Provide Material Group.

FI: Functional insulation; BI: Basic insulation; SI: Supplementary insulation; RI: Reinforced insulation.

The transformer manufactured by each factory passed the test and the result is the same.

The transformer produced by each factory is the same material and construction. The transformer will be produced by below factories:

ACBEL ELECTRONIC (DONGGUAN) CO., LTD./ 康舒电子(东莞)有限公司
ACBEL ELECTRONIC (WUHAN) CO LTD / 康舒电子（武汉）有限公司
AcBel Polytech(Philippines) Inc.
FRIENDSHIP ELECTRONIC(DONGGUAN) CO LTD / 郡懋电子（东莞）有限公司
ZHONGTAI ELECTRONIC(HUBEI) CO LTD / 中泰电子（湖北）有限公司
JEPULS TECHNOLOGY (SHENZHEN) CO LTD / 杰普斯科技(深圳)有限公司
HAINING LIANFENG DONGJIN ELECTRONIC CO.,LTD / 海宁联丰东进电子有限公司
SHENZHEN CLICK TECHNOLOGY CO LTD / 深圳可立克科技股份有限公司
SHENZHEN JINGQUANHUA ELECTRONICS CO., LTD / 深圳市京泉华电子有限公司
FE-TRONIC MFG CO LTD / 富创力电器(深圳)有限公司 (深圳市龙岗区横岗六约利高电器厂)
IC ELECTRONICS CO.,LTD/ 东莞市慧创电子有限公司
Dongguan Janohig Electronics Technology CO.,LTD / 东莞市嘉龙海杰电子科技有限公司
Elytone Electronics Co.,Ltd. / 音律电子股份有限公司
DONG GUAN LIGHTION ELECTRONICS CO LTD / 光順電子廠
DONGGUAN YOUHE ELECTRONIC CO LTD / 东莞友禾电子有限公司
Shenzhen Boulder Electronic Co Ltd/ 深圳市博多电子有限公司
FEELUX OPTOELECTRONIC (SHANDONG) CO. ,LTD/碧陆斯光电(山东)有限公司
FEELUX OPTOELECTRONIC (SHANDONG) CO., LTD, DONGPING BRANCH /碧陆斯光电（山东）有限公司東平分公司
Shenzhen HFGC Electronic Co Ltd Dongguan Branch/深圳市宏丰光城电子有限公司东莞分公司
Readore Technology Philippines Corporation/ 立亚达科技菲律宾有限公司
Dongguan Jepuls Electronics Technology Co Ltd/ 东莞杰浦斯电子科技有限公司
Huaihua Yaxin Electronic Co., Ltd./ 怀化亚信电子有限公司

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Clause	Requirement + Test	Result - Remark	Verdict

Feelux Optoelectronic (Wuhan) Co., Ltd./ 碧陸斯光電(武漢)有限公司	
Hunan Readore Electronics Co., Ltd./ 湖南立敏達電子科技有限公司	
Huizhou Dunsheng Electronic Co., Ltd/惠州敦盛电子有限公司	
Wen Shan Top Nation Electronic Technology Co Ltd/文山市首邦电子科技有限公司	
Dong Guan Top Nation Electronic Ltd/东莞首邦电子有限公司	

5.4.4.2	TABLE: Minimum distance through insulation				P
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Optocouplers (M12, M13, M14, M16, M202, M203, M6, M8) (for all sources) (RI)	420	(RI)	0.4	¹⁾	
Insulation sheet (for all sources) (BI)	694	(BI)	¹⁾	¹⁾	
Supplementary information:					
1) For details refer to appended table 4.1.2.					
2) RI: Reinforced insulation, BI: Basic insulation					

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz						P
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)	
Insulation sheet	--	113	0.35	--	BI	694	
Supplementary information:							
- According to clause 5.4.4.9 alternative method: - required hi-pot test voltage @ BI = $1.2 \times 694 / 0.35 = 2380$ Vpeak							

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No	
Functional:				
Between the two ends of fuse while opened (for all sources)	DC	2500	No	
Line to Neutral (fuse disconnected)	DC	2500	No	
Basic/supplementary:				
Unit: primary to earth	DC	2500	No	
Insulation sheet (for all sources, 0.25mm thick)	DC	2500	No	
Reinforced:				
Unit: Inlet L/N to output connector	DC	4000	No	

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T5/T401/T201: Primary winding to Secondary winding	DC	4000	No
T5/T401: Primary winding to Core	DC	4000	No
T201: Secondary winding to Core	DC	4000	No
One layer of insulation tape used in T5, T401, T201, top side/bottom side.	DC	4000	No
Supplementary information:			
Unless otherwise specified, tests applied for all sources in Table 4.1.2.			
The transformer manufactured by each factory passed the test and the result is the same. All sources of optocouplers and transformers were performed the test, see appended table 4.1.2 for source details.			

5.5.2.2	TABLE: Stored discharge on capacitors					P
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (Vpk) (after 2 seconds)	ES Class	
264Vac	Phase to Neutral	N	Fuse in	3.1	ES1	
300Vdc	+ to -	N	Fuse in	15.6	ES1	
264Vac	Phase to Neutral	M1 pin 38 open	Fuse in	46.9	ES1	
300Vdc	+ to -	M1 pin 38 open	Fuse in	40.6	ES1	
Supplementary information:						
X-capacitors installed for testing: See appended table 4.1.2						
☒ bleeding resistor rating: See appended table 4.1.2						
☐ Additional test for ICX:N/A						
1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit						
N – Normal operating condition (e.g., normal operation, or open fuse); S – Single fault condition.						

5.6.6	TABLE: Resistance of protective conductors and terminations				P
Location	Test current (A)	Duration (min)	Voltage drop (mV)	Resistance (mΩ)	
Protective earthing conductor of appliance inlet to metal chassis near output	32	2	96	3	
Protective earthing conductor of appliance inlet to metal chassis near output	40	2	160	4	
Supplementary information:					

5.7.4	TABLE: Unearthed accessible parts	P
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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Location	Operating and fault conditions	Supply Voltage (V)	Parameters
			Voltage (V _{rms} or V _{pk}) Current (A _{rms} or A _{pk}) Freq. (Hz)
Output connector	Normal	264Vac	-- 0.01 60
ES class			
Supplementary information:			
Abbreviation: SC= short circuit; OC= open circuit.			

5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V).....:	264Vac			—
Phase(s)	[X] Single Phase; [] Three Phase: [] Delta [] Wye			
Power Distribution System	[X] TN []TT [] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Line to earth (metal chassis) Neutral to earth (metal chassis)	1 (e close, normal and reverse polarity)	Max. 0.01	See appended table 4.1.2 for Y-cap capacitance	
Line to earth (metal chassis) Neutral to earth (metal chassis)	1 (e open, normal and reverse polarity)	Max. 0.85	See appended table 4.1.2 for Y-cap capacitance	
Supplementary Information:				

5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
Supplementary information:						
Abbreviation: SC= short circuit, OC= open circuit						

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
FSE052, R1CA2801A, FSF037, R1CA2801B						
AC input						
+12.0V	66.7	12.0	80.5	936	5	PS3
+12Vsb	3.0	12.0	4.89	54.2	5	PS2
DC input						
+12.0V	66.7	12.0	81.1	942	5	PS3
+12Vsb	3.0	12.0	4.8	54.1	5	PS2
FSE052, R1CA2801A						

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
LED (DCLED) overload	--	2.01Vdc	9.55mA	19.2mW	5	PS1
LED (DCLED) (R362 short)	--	2.05Vdc	10.8mA	22.0mW	5	PS1
LED (Fault LED) overload	--	1.87Vdc	9.43mA	17.7mW	5	PS1
LED (Fault LED) (R363 short)	--	1.91Vdc	9.91mA	19.0mW	5	PS1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

6.2.3.1	TABLE: Determination of Arcing PIS				P
Location		Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
Supplementary information:					
All components located within the EUT are considered as arcing PIS.					
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.					

6.2.3.2	TABLE: Determination of resistive PIS			P
Location		Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit

All components located within the EUT are considered as resistive PIS.

A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.

If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.

A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

8.5.5	TABLE: High pressure lamp				N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No	
Supplementary information: All components located within the EUT are considered as resistive PIS. A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter. If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification. A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.					

9.6	TABLE: Temperature measurements for wireless power transmitters								N/A
Supply voltage (V)..... :									—
Max. transmit power of transmitter (W)..... :									—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Supplementary information:									

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements								P
Supply voltage (V)..... :			See below.						—
Ambient temperature during test T_{amb} (°C) :			See below.						—
Maximum measured temperature T of part/at:			T (°C)						Allowed T_{max} (°C)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

	FSE052, R1CA2801A, FSF037, R1CA2801B AC input A: 90V/50Hz (condition A) B: 90V/50Hz (condition B) C: 140V/60Hz (condition A) D: 90V/50Hz (Standby Mode) E: 180V/50Hz (condition A) F: 180V/50Hz (condition C) G: 264V/60Hz (condition A) H: 180V/50Hz (Standby Mode) DC input I: 180Vdc (condition A) J: 180Vdc (condition B) K: 180Vdc (Standby Mode) L: 240Vdc (condition A) M: 300Vdc (condition A) N: 90V/50Hz (condition A) at 25°C for FSE052 O: 90V/50Hz (condition A) at 25°C for FSF037 P: 180Vdc (condition A) at 25°C for FSE052 Q: 180Vdc (condition A) at 25°C for FSF037 Model FSF059 with choke (L5) part no. 21Q79 A: 90V/60Hz (load condition A) Model FSF059 with choke (L5) part no. 90480-9149I3 B: 90V/60Hz (load condition A) Model FSF065 with choke (L5) part no. 90480-9149I3 C: 90V/60Hz (load condition A) D: 90V/60Hz (condition A) at 25°C for FSF059 E: 90V/60Hz (condition A) at 25°C for FSF065 F: 180Vdc (condition A) at 25°C for FSF059 G: 180Vdc (condition A) at 25°C for FSF065	
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Models FSE052 and R1CA2801A								
Test condition	A	B	C	D	E	F	G	--
T201 coil	72	53	71	85	71	53	71	110
T201 core	70	52	69	81	69	52	69	110

IEC 62368-1								
Clause	Requirement + Test			Result - Remark				Verdict
T401 coil	84	89	82	54	85	88	84	110
T401 core	77	81	75	55	78	80	78	110
T5 coil	55	55	54	54	55	55	55	110
M6	67	69	65	57	67	69	67	125
M13	57	56	56	56	56	56	56	100
M202	57	52	56	65	56	52	56	100
L1 coil	64	64	55	52	53	53	52	130
L4 coil	86	83	64	57	60	58	57	130
L5 coil	99	100	76	64	73	74	69	130
L403 coil	85	93	83	53	90	94	91	105
C4 (X Cap.)	64	63	56	54	55	54	54	100
C5 (Y Cap.)	58	58	54	53	54	53	53	125
C198 (Y Cap.)	58	59	54	51	53	53	52	125
C17 (Bridging Cap.)	59	60	58	53	59	60	60	125
C36 (Bulk Cap.)	59	57	57	58	56	54	56	105
HS1 (BD1) near PCB	69	67	60	59	59	57	58	105
HS2 (Q11) near PCB	78	80	72	69	74	75	73	105
PCB under RT1	69	67	60	59	59	57	57	105
REL1 coil	76	72	66	65	64	61	62	85
MOV1	54	54	52	52	52	52	52	85
Inlet pin	60	60	54	51	53	53	52	70
Ambient	50	50	50	50	50	50	50	--
Test condition	H	I	J	K	L	M	--	--
T201 coil	86	72	54	85	72	72	--	110
T201 core	82	69	53	81	69	69	--	110
T401 coil	55	85	86	52	85	82	--	110
T401 core	55	78	75	53	78	75	--	110
T5 coil	54	55	54	52	55	54	--	110
M6	58	68	69	55	67	65	--	125
M13	56	56	57	55	56	56	--	100
M202	66	56	52	65	56	56	--	100
L1 coil	53	54	54	52	53	52	--	130
L4 coil	58	60	58	57	57	56	--	130
L5 coil	63	75	76	61	72	68	--	130

IEC 62368-1								
Clause	Requirement + Test			Result - Remark				Verdict
L403 coil	53	92	96	52	91	83	--	130
C4 (X Cap.)	55	55	55	54	54	54	--	100
C5 (Y Cap.)	54	54	52	52	53	53	--	125
C198 (Y Cap.)	52	53	52	51	53	52	--	125
C17 (Bridging Cap.)	54	60	62	52	60	58	--	125
C36 (Bulk Cap.)	59	56	54	57	56	55	--	105
HS1 (BD1) near PCB	59	59	58	57	58	57	--	105
HS2 (Q11) near PCB	70	74	76	60	73	71	--	105
PCB under RT1	60	59	58	58	58	57	--	105
REL1 coil	66	64	62	64	63	62	--	85
MOV1	52	52	52	51	52	51	--	85
Inlet pin	52	54	53	51	53	52	--	70
Ambient	50	50	50	50	50	50	--	--
Models FSF037 and R1CA2801B								
Test condition	A	B	C	D	E	F	G	--
T201 coil	86	69	77	89	74	58	73	110
T201 core	83	69	74	85	72	58	71	110
T401 coil	77	78	70	53	68	69	67	110
T401 core	72	72	65	53	63	64	62	110
T5 coil	69	69	61	54	59	59	57	110
M6	65	66	61	54	61	61	60	125
M13	59	59	56	56	55	54	54	100
M202	68	64	62	74	60	56	59	100
L1 coil	61	62	55	51	53	53	52	130
L4 coil	94	94	66	53	60	60	56	130
L5 coil	77	77	63	57	59	59	56	130
L403 coil	112	115	104	54	103	106	101	130
C4 (X Cap.)	57	57	54	51	53	53	53	100
C5 (Y Cap.)	53	53	52	50	52	51	51	125
C198 (Y Cap.)	54	54	52	50	52	52	51	125
C17 (Bridging Cap.)	71	71	61	55	60	60	58	125
C36 (Bulk Cap.)	67	67	58	54	56	56	55	105
HS1 (BD1) near PCB	63	63	56	53	54	54	53	105
HS2 (Q11) near PCB	75	76	67	53	66	67	64	105

IEC 62368-1								
Clause	Requirement + Test			Result - Remark				Verdict
PCB under RT1	65	65	57	54	56	55	54	105
REL1 coil	74	72	64	60	62	61	60	85
MOV1	55	55	53	51	52	52	52	85
Inlet pin	59	60	54	51	53	53	52	70
Ambient	51	50	50	50	50	50	50	--
Test condition	H	I	J	K	L	M	--	--
T201 coil	86	72	53	85	72	72	--	110
T201 core	82	69	52	81	69	69	--	110
T401 coil	55	85	88	52	85	82	--	110
T401 core	55	78	80	53	78	75	--	110
T5 coil	54	55	55	52	55	54	--	110
M6	58	68	69	55	67	65	--	125
M13	56	56	56	55	56	56	--	100
M202	66	56	52	65	56	56	--	100
L1 coil	53	54	53	52	53	52	--	130
L4 coil	58	60	58	57	57	56	--	130
L5 coil	63	75	75	61	72	68	--	130
L403 coil	53	92	94	52	91	83	--	130
C4 (X Cap.)	55	55	54	54	54	54	--	100
C5 (Y Cap.)	54	54	53	52	53	53	--	125
C198 (Y Cap.)	52	53	53	51	53	52	--	125
C17 (Bridging Cap.)	54	60	60	52	60	58	--	125
C36 (Bulk Cap.)	59	56	54	57	56	55	--	105
HS1 (BD1) near PCB	59	59	57	57	58	57	--	105
HS2 (Q11) near PCB	70	74	75	60	73	71	--	105
PCB under RT1	60	59	57	58	58	57	--	105
REL1 coil	66	64	61	64	63	62	--	85
MOV1	52	52	52	51	52	51	--	85
Inlet pin	52	54	54	51	53	52	--	70
Ambient	50	50	50	50	50	50	--	--
Test condition	N		O		P		Q	--
Enclosure outside near T201	30		47		32		34	--
Enclosure outside near Inlet	28		28		27		25	70
Handle	43		25		41		24	60

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Clause	Requirement + Test		Result - Remark	Verdict

Input wire(L)	31	32	28	26	105
Ambient	25	25	25	25	--
Model FSF059 with choke (L5) part no. 21Q79 A: 90V/60Hz (load condition A) Model FSF059 with choke (L5) part no. 90480-9149I3 B: 90V/60Hz (load condition A) Model FSF065 with choke (L5) part no. 90480-9149I3 C: 90V/60Hz (load condition A)					
Test condition	A	B	C	--	
T401 coil	81	82	87	110	
T401 core	70	70	73	110	
T201 coil (near C36)	58	58	74	110	
T201 coil (near D202)	57	57	75	110	
T201 core	57	57	73	110	
T5 coil	56	55	71	110	
M13	56	55	67	100	
M6	63	64	66	100	
M202	53	52	65	100	
C6 (Y Cap.)	54	54	55	125	
C4 (X Cap.)	59	58	60	100	
C7 (X Cap.)	58	60	63	100	
L1 coil	76	75	72	130	
L4 coil	66	70	79	130	
MOV1	55	55	55	85	
PCB under RT1	67	67	69	105	
REL1 coil	69	70	77	85	
C36 (Bulk)	56	56	67	105	
C17	55	54	70	125	
HS1 (BD1)	72	73	79	105	
HS2	78	80	77	105	
J1	55	54	63	--	
L403 coil	71	71	88	105	
L5 coil	84	103	80	130	
Inlet pin	54	54	57	70	
Ambient	50	50	50	--	
Test condition	D	E	F	G	--

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Clause	Requirement + Test		Result - Remark		Verdict
Enclosure outside near T401	42	39	36	37	--
Enclosure outside near Inlet	27	27	26	26	70
Handle	46	24	34	24	60
Input wire(L)	31	29	26	26	105
Ambient	25	25	25	25	--
FSG007 (AC mode) A. Condition A, 180V/ 50Hz B. Condition B, 180V/ 50Hz C. Condition A, 264V/ 60Hz D. Standby mode, 180V/ 50Hz					
Test condition	A	B	C	D	--
T5 coil	57	56	57	51	110
T201 coil	76	53	76	79	110
T201 core	73	53	74	76	110
T401 coil	88	91	99	50	110
T401 core	83	86	76	50	110
Enclosure outside	52	51	51	50	70
M6	70	71	67	52	100
M13	58	57	56	53	100
M202	61	52	60	61	100
L1 coil	59	58	55	52	130
L4 coil	66	63	60	54	105
L5 coil	79	79	72	53	130
L403 coil	87	91	85	50	105
C4 (X-cap)	56	55	54	53	100
C6 (Y-cap)	52	52	51	50	100
C198 (Y-cap)	52	51	51	50	125
C36 (Bulk-cap)	57	54	56	53	105
C17 (Bridging-cap)	59	59	57	51	125
HS1 (BD1) near PCB	74	73	67	53	105
HS2 (Q11) near PCB	88	92	85	52	105
PCB under RT1	62	59	59	55	105
REL1 coil	71	66	68	66	85
MOV1	52	52	51	51	85
Inlet	52	52	51	50	70
Ambient	50	50	50	50	--
FSG007 (DC mode) E: Condition A, 190Vdc F: Condition B, 190Vdc G: Condition A, 400Vdc H: Standby mode, 190Vdc					
Test condition	E	F	G	H	--

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict

T5 coil	56	56	56	52	110
T201 coil	76	53	76	79	110
T201 core	73	53	73	76	110
T401 coil	86	90	85	51	110
T401 core	82	86	82	51	110
Enclosure outside	52	52	51	51	70
M6	70	71	69	52	100
M13	58	56	57	54	100
M202	61	52	60	62	100
L1 coil	59	58	54	52	130
L4 coil	65	62	58	55	105
L5 coil	79	79	65	54	130
L403 coil	86	91	86	51	105
C4 (X-cap)	56	55	55	53	100
C6 (Y-cap)	52	52	52	51	100
C198 (Y-cap)	52	52	51	51	125
C36 (Bulk-cap)	56	54	55	54	105
C17 (Bridging-cap)	59	59	59	52	125
HS1 (BD1) near PCB	73	72	60	54	105
HS2 (Q11) near PCB	88	92	85	52	105
PCB under RT1	61	59	60	55	105
REL1 coil	70	65	68	66	85
MOV1	52	52	52	51	85
Inlet	52	52	51	50	70
Ambient	50	50	50	50	--

FSE052 (AC mode)
I: Condition A, 90Vac/ 50Hz
J: Condition B, 90Vac/ 50Hz
K: Condition A, 180Vac/ 50Hz
L: Condition B, 180Vac/ 50Hz
FSE052 (DC mode)
M: Condition A, 180Vdc
N: Condition B, 180Vdc

Test condition	I	J	K	L	M	N	--
T401 coil	81	82	81	82	81	82	110
T401 core	82	82	81	81	81	82	110
Ambient	50	50	50	50	50	50	--

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

FSF059 (AC mode)

O: Condition A, 90Vac/ 60Hz

P: Condition A, 180Vac/ 60Hz

Q: Condition A, 180Vdc

Test condition	O	P	Q	--
T401 coil	75	75	75	110
T401 core	73	72	72	110
Ambient	50	50	50	--

Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

Note 1: The apparatus was submitted and evaluated for maximum manufacturer's recommended ambient - refer to summary of testing.

Note 2: The temperatures were measured under the worse case normal mode defined in table B.2.5.

Note 3: Temperature limits are calculated as follows:

Winding components providing safety isolation:

Class B → T_{max} = 120 – 10 = 110°C

- The temperature values are re-calculated from T_{amb}, if T_{amb} is lower than T_{ma}.
- Load condition details: See summary of testing

B.2.5		TABLE: Input test							P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
FSE052, R1CA2801A, FSF037, R1CA2801B									
AC mode									
90	50	10.7	--	952	--	F1	10.7	Load condition A	
90	50	10.7	--	951	--	F1	10.7	Load condition B	
90	60	10.7	--	951	--	F1	10.7	Load condition A	
90	60	10.7	--	951	--	F1	10.7	Load condition B	
100	50	9.46	10.0	939	--	F1	9.46	Load condition A	
100	50	9.44	10.0	939	--	F1	9.44	Load condition B	
100	60	9.44	10.0	938	--	F1	9.44	Load condition A	
100	60	9.44	10.0	938	--	F1	9.44	Load condition B	
127	50	7.18	10.0	908	--	F1	7.18	Load condition A	
127	50	7.18	10.0	908	--	F1	7.18	Load condition B	
127	60	7.18	10.0	908	--	F1	7.18	Load condition A	

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Clause	Requirement + Test				Result - Remark			Verdict
127	60	7.18	10.0	908	--	F1	7.18	Load condition B
135	50	6.71	--	904	--	F1	6.71	Load condition A
135	50	6.71	--	903	--	F1	6.71	Load condition B
135	60	6.72	--	904	--	F1	6.72	Load condition A
135	60	6.72	--	903	--	F1	6.72	Load condition B
140	50	6.46	--	902	--	F1	6.46	Load condition A
140	50	6.46	--	902	--	F1	6.46	Load condition B
140	60	6.47	--	902	--	F1	6.47	Load condition A
140	60	6.47	--	902	--	F1	6.47	Load condition B
180	50	4.93	--	886	--	F1	4.93	Load condition A
180	50	4.93	--	885	--	F1	4.93	Load condition B
180	60	4.93	--	885	--	F1	4.93	Load condition A
180	60	4.93	--	885	--	F1	4.93	Load condition B
200	50	4.43	5.0	883	--	F1	4.43	Load condition A
200	50	4.43	5.0	883	--	F1	4.43	Load condition B
200	60	4.43	5.0	884	--	F1	4.43	Load condition A
200	60	4.43	5.0	883	--	F1	4.43	Load condition B
240	50	3.68	5.0	879	--	F1	3.68	Load condition A
240	50	3.68	5.0	878	--	F1	3.68	Load condition B
240	60	3.69	5.0	880	--	F1	3.69	Load condition A
240	60	3.69	5.0	879	--	F1	3.69	Load condition B
254	50	3.49	--	878	--	F1	3.49	Load condition A
254	50	3.49	--	877	--	F1	3.49	Load condition B
254	60	3.49	--	878	--	F1	3.49	Load condition A
254	60	3.49	--	878	--	F1	3.49	Load condition B
264	50	3.37	--	877	--	F1	3.37	Load condition A
264	50	3.37	--	877	--	F1	3.37	Load condition B
264	60	3.37	--	877	--	F1	3.37	Load condition A
264	60	3.37	--	877	--	F1	3.37	Load condition B
DC mode								
180	--	5.54	--	997	--	F1	5.54	Load condition A
180	--	5.53	--	995	--	F1	5.53	Load condition B
240	--	4.22	5.0	1013	--	F1	4.22	Load condition A
240	--	4.20	5.0	1008	--	F1	4.20	Load condition B
300	--	3.44	--	1032	--	F1	3.44	Load condition A

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
300	--	3.43	--	1003	--	F1	3.43	Load condition B
Model FSF059 with choke (L5) part no. 21Q79								
90	50	7.70	--	687	--	F1	7.70	Load condition A,
90	60	7.77	--	692	--	F1	7.77	Load condition A,
100	50	6.83	7.0	678	--	F1	6.83	Load condition A,
100	60	6.84	7.0	678	--	F1	6.84	Load condition A,
127	50	5.25	7.0	660	--	F1	5.25	Load condition A,
127	60	5.26	7.0	662	--	F1	5.26	Load condition A,
135	50	4.92	--	659	--	F1	4.92	Load condition A,
135	60	4.93	--	660	--	F1	4.93	Load condition A,
140	50	4.74	--	658	--	F1	4.74	Load condition A,
140	60	4.75	--	658	--	F1	4.75	Load condition A,
180	50	3.61	--	645	--	F1	3.61	Load condition A,
180	60	3.62	--	646	--	F1	3.62	Load condition A,
200	50	3.26	3.5	645	--	F1	3.26	Load condition A,
200	60	3.27	3.5	645	--	F1	3.27	Load condition A,
240	50	2.74	3.5	642	--	F1	2.74	Load condition A,
240	60	2.74	3.5	642	--	F1	2.74	Load condition A,
254	50	2.58	--	642	--	F1	2.58	Load condition A,
254	60	2.61	--	643	--	F1	2.61	Load condition A,
264	50	2.50	--	641	--	F1	2.50	Load condition A,
264	60	2.51	--	642	--	F1	2.51	Load condition A,
180Vdc	--	3.59	--	643	--	F1	3.59	Load condition A
240Vdc	--	2.67	3.5	639	--	F1	2.67	Load condition A
300Vdc	--	2.12	--	635	--	F1	2.12	Load condition A
Model FSF059 with choke (L5) part no. 90480-914913								
90	50	7.74	--	691	--	F1	7.74	Load condition A
90	60	7.84	--	698	--	F1	7.84	Load condition A
100	50	6.87	7.0	682	--	F1	6.87	Load condition A
100	60	6.93	7.0	685	--	F1	6.93	Load condition A
127	50	5.26	7.0	661	--	F1	5.26	Load condition A
127	60	5.27	7.0	662	--	F1	5.27	Load condition A
135	50	4.91	--	659	--	F1	4.91	Load condition A
135	60	4.92	--	659	--	F1	4.92	Load condition A
140	50	4.74	--	658	--	F1	4.74	Load condition A

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
140	60	4.75	--	658	--	F1	4.75	Load condition A
180	50	3.63	--	645	--	F1	3.63	Load condition A
180	60	3.63	--	645	--	F1	3.63	Load condition A
200	50	3.27	3.5	643	--	F1	3.27	Load condition A
200	60	3.28	3.5	643	--	F1	3.28	Load condition A
240	50	2.73	3.5	640	--	F1	2.73	Load condition A
240	60	2.74	3.5	641	--	F1	2.74	Load condition A
254	50	2.58	--	638	--	F1	2.58	Load condition A
254	60	2.60	--	639	--	F1	2.60	Load condition A
264	50	2.49	--	638	--	F1	2.49	Load condition A
264	60	2.50	--	638	--	F1	2.50	Load condition A
180Vdc	--	3.63	--	647	--	F1	3.63	Load condition A
240Vdc	--	2.69	3.5	640	--	F1	2.69	Load condition A
300Vdc	--	2.14	--	636	--	F1	2.14	Load condition A
Model FSG007 AC mode								
180	50	5.01	--	900	--	F1	5.01	Condition A, 50Hz
180	50	5.01	--	899	--	F1	5.01	Condition B, 50Hz
180	60	5.01	--	900	--	F1	5.01	Condition A, 60Hz
180	60	5.01	--	900	--	F1	5.01	Condition B, 60Hz
200	50	4.49	6.0	895	--	F1	4.49	Condition A, 50Hz
200	50	4.49	6.0	895	--	F1	4.49	Condition B, 50Hz
200	60	4.49	6.0	896	--	F1	4.49	Condition A, 60Hz
200	60	4.49	6.0	895	--	F1	4.49	Condition B, 60Hz
240	50	3.74	6.0	889	--	F1	3.74	Condition A, 50Hz
240	50	3.74	6.0	889	--	F1	3.74	Condition B, 50Hz
240	60	3.74	6.0	890	--	F1	3.74	Condition A, 60Hz
240	60	3.74	6.0	890	--	F1	3.74	Condition B, 60Hz
254	50	3.53	--	888	--	F1	3.53	Condition A, 50Hz
254	50	3.53	--	888	--	F1	3.53	Condition B, 50Hz
254	60	3.53	--	889	--	F1	3.53	Condition A, 60Hz
254	60	3.55	--	889	--	F1	3.55	Condition B, 60Hz
264	50	3.40	--	887	--	F1	3.40	Condition A, 50Hz
264	50	3.40	--	887	--	F1	3.40	Condition B, 50Hz
264	60	3.43	--	888	--	F1	3.43	Condition A, 60Hz
264	60	3.43	--	887	--	F1	3.43	Condition B, 60Hz

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict

Model FSG007 DC mode								
190Vdc	--	4.72	--	898	--	F1	4.72	Condition A
190Vdc	--	4.72	--	898	--	F1	4.72	Condition B
336Vdc	--	2.63	6.0	884	--	F1	2.63	Condition A
336Vdc	--	2.63	6.0	884	--	F1	2.63	Condition B
400Vdc	--	2.19	--	875	--	F1	2.19	Condition A
400Vdc	--	2.19	--	875	--	F1	2.19	Condition B
Model FSG016 AC mode								
180	50	3.41	--	612	--	F1	3.41	Condition A, 50Hz
180	50	3.41	--	612	--	F1	3.41	Condition B, 50Hz
180	60	3.41	--	611	--	F1	3.41	Condition A, 60Hz
180	60	3.41	--	611	--	F1	3.41	Condition B, 60Hz
200	50	3.08	4.0	609	--	F1	3.08	Condition A, 50Hz
200	50	3.08	4.0	610	--	F1	3.08	Condition B, 50Hz
200	60	3.08	4.0	610	--	F1	3.08	Condition A, 60Hz
200	60	3.08	4.0	610	--	F1	3.08	Condition B, 60Hz
240	50	2.58	4.0	606	--	F1	2.58	Condition A, 50Hz
240	50	2.58	4.0	606	--	F1	2.58	Condition B, 50Hz
240	60	2.60	4.0	607	--	F1	2.60	Condition A, 60Hz
240	60	2.60	4.0	607	--	F1	2.60	Condition B, 60Hz
254	50	2.44	--	606	--	F1	2.44	Condition A, 50Hz
254	50	2.44	--	606	--	F1	2.44	Condition B, 50Hz
254	60	2.41	--	606	--	F1	2.41	Condition A, 60Hz
254	60	2.41	--	606	--	F1	2.41	Condition B, 60Hz
264	50	2.35	--	605	--	F1	2.35	Condition A, 50Hz
264	50	2.35	--	605	--	F1	2.35	Condition B, 50Hz
264	60	2.37	--	606	--	F1	2.37	Condition A, 60Hz
264	60	2.37	--	605	--	F1	2.37	Condition B, 60Hz
Model FSG016 DC mode								
190Vdc	--	3.20	--	609	--	F1	3.20	Condition A
190Vdc	--	3.20	--	609	--	F1	3.20	Condition B
336Vdc	--	1.79	4.0	600	--	F1	1.79	Condition A
336Vdc	--	1.79	4.0	600	--	F1	1.79	Condition B
400Vdc	--	1.49	--	596	--	F1	1.49	Condition A
400Vdc	--	1.49	--	596	--	F1	1.49	Condition B

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:			
Supplementary information: For test condition see summary of testing.			
FSE052, R1CA2801A, FSF037, R1CA2801B			
Condition A: DC +12.0V/63.7A,+12Vsb/3.0A			
Condition B: DC +12.0V/66.7A,+12Vsb/0.1A			
Model FSF059			
Condition A: DC +12.0V/45.8A,+12Vsb/3.0A (total power exceed 550W)			
Model FSG007			
Condition A: +12.4V/61.65A, +12.4Vsb/2.9A			
Condition B: +12.4V/64.7A, +12.4Vsb/0.1A			
Condition C (Standby mode): +12.4Vsb/2.9A			
Model FSG016			
Condition A: +12.4V/41.5A,+12.4Vsb/2.9A			
Condition B: +12.4V/44.4A,+12.4Vsb/0.1A			
Condition C (Standby mode): +12.4Vsb/2.9A			

B.3, B.4		TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T _{amb} (°C)				25 °C, if not specified		—	
Power source for EUT: Manufacturer, model/type, outputrating ..				--		—	
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
FSE052, R1CA2801A							
Ventilation Opening	Blocked	264	2.9 hour	F1	0.29	+12.0V output shutdown. +12Vsb output normally operated. +12Vsb : 12.0Vdc Q402, Q404, Q408, Q410 damage no hazards. Enclosure outside near T201/Enclosure outside near Inlet = 49/59°C Handle/Input wire(L) = 39/53°C Ambient = 24°C	

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Fan	Stalled	264	3.6 hour	F1	0.28	+12.0V output shutdown. +12Vsb output normally operated. No damage, no hazards. T201 coil/T201 core = 104/98°C T401 coil/T401 core = 98/86°C T5 coil= 63°C Ambient = 26°C
+12V to +12Vsb	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
T401 pin 2 to 1,3 ; 2 to RTN2	Overload	264	10.2 hours	F1	5.36	Measured o/p: 16.1Vrms, 30.0A +12.0V output shutdown. +12Vsb output normally operated. No damage, no hazards. T201 coil/T201 core = 32/31°C T401 coil/T401 core = 76/69°C T5 coil/M6 = 34/51°C M13/M202 = 34/31°C Ambient = 26°C
T201 pin 7 to 10; After D202 (-) to RTN2	Overload	264	8.7 hours	F1	3.72	Measured o/p: 12.5Vrms, 1.65A All outputs shutdown. No damage, no hazards. T201 coil/T201 core = 46/44°C T401 coil/T401 core = 53/50°C T5 coil/M6 = 38/41°C M13/M202 = 35/40°C Ambient = 26°C

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
T5 pin 3 to 4	Short	264	2.2 hour	F1	3.83	All outputs normally operated. No damage, no hazards. T201 coil = 41°C T201 core = 38°C T401 coil = 58°C T401 core = 56°C T5 coil = 33°C M6 = 50°C M13 = 33°C M202 = 32°C Ambient = 26°C
+12.0V output	Overload	264	8.5 hours	F1	4.40	Measured o/p: 11.7Vdc, 80.4A +12.0V output shutdown. +12Vsb output normally operated. No damage, no hazards. T201 coil/T201 core = 29/29°C T401 coil/T401 core = 59/55°C T5 coil/M6 = 30/46°C M13/M202 = 32/29°C Ambient = 24°C
+12Vsb output	Overload	264	7.5 hours	F1	3.72	Measured o/p: 11.3Vdc, 4.59A All outputs shutdown. No damage, no hazards. T201 coil/T201 core = 83/74°C T401 coil/T401 core = 92/88°C T5 coil/M6 = 60/66°C M13/M202 = 54/73°C Ambient = 25°C

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
+12Vsb output (Standby Mode)	Overload	264	5.8 hours	F1	0.30	Measured o/p :11.8Vdc , 3.39A +12Vsb output shutdown. (Last step :Output Short) No damage no hazards. Enclosure outside near T201/Enclosure outside near Inlet = 52/35°C Handle/Input wire(L) = 37/38°C Ambient = 25°C
+12.0V output	Short	264	2.4 hours	F1	0.28	Measured o/p: 0Vdc, 0A +12.0V output shutdown. +12Vsb output normally operated. No damage, no hazards. T201 coil/T201 core = 32/31°C T401 coil/T401 core = 50/48°C T5 coil/M6 = 31/42°C M13/M202 = 33/31°C Ambient = 26°C
+12Vsb output	Short	264	2.9 hours	F1	0.21	Measured o/p: 0.05Vdc, 1.65A All outputs shutdown. No damage, no hazards. T201 coil/T201 core = 49/47°C T401 coil/T401 core = 53/50°C T5 coil/M6 = 38/41°C M13/M202 = 36/46°C Ambient = 26°C

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
+12Vsb output (Standby Mode)	Short	264	3.5 hours	F1	--	Measured o/p: 0.05Vdc, 1.85A All outputs shutdown. No damage, no hazards. T201 coil/T201 core = 81/76°C T401 coil/T401 core = 40/40°C T5 coil/M6 = 43/41°C M13/M202 = 45/64°C Ambient = 26°C
FSF037, R1CA2801B						
Ventilation Openings	Blocked	264	3.0 hour	F1	3.71	+12.0V output shutdown. +12Vsb output normally operated. +12Vsb : 12.0Vdc No damage no hazards. Enclosure outside near T201/Enclosure outside near Inlet = 75/47°C Handle/Input wire(L) = 29/57°C Ambient = 25°C
Models FSF059						
DC Fan	Stalled	264	3.2 hours	F1	0.28	+12.0V output shutdown. +12Vsb output normally operated. No damage, no hazards. T401 coil/T401 core = 89/89°C T201 coil (near C36)/T201 coil (near D202)= 132/132°C T201 core (near C36)/T5 coil = 124/71°C Ambient = 24°C
Ventilation Openings	Blocked	264	2.6 hour	F1	2.72	All outputs normally operated. +12.0V : 12.1Vdc +12Vsb : 12.0Vdc No damage no hazards. Enclosure outside near T401/Enclosure outside near Inlet = 62/58°C Handle/Input wire(L) = 36/50°C Ambient = 24°C

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
FSF059 T401 pin 2 to 1, 3 ; T401 pin 2 to RTN2	Overload	264	9.5 hours	F1	3.54	Measured o/p :14.0Vrms ,14.3A +12V output shutdown. +12Vsb output normally operated. +12Vsb : 12.0Vdc Q402, Q408 damage no hazards. Enclosure outside near T401/Enclosure outside near Inlet = 59/29°C Handle/Input wire(L) = 42/30°C Ambient = 25°C
Model FSF065						
Ventilation Openings	Blocked	264	3.0 hour	F1	0.27	+12V output shutdown. +12Vsb output normally operated. +12Vsb : 12.0Vdc No damage no hazards. Enclosure outside near T401/Enclosure outside near Inlet = 57/34°C Handle/Input wire(L) = 27/41°C Ambient = 25°C
FSE052, R1CA2801A						
T5 pin 1 to 2	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
T5 pin 3 to 4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
T401 pin A to B	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
T401 pin 1 to 2	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
T401 pin 2 to 3	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
T201 pin 6 to 5	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
T201 pin 1 to 3	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
T201 pin 7 to 10	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
M6 pin 1 to 2	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
M6 pin 2 to 3, 8	Short	264	Immediately	F1	--	F1, F3, Q1, Q11, Q2, Q21, D1 damage, no hazards.
M6 pin 3, 8 to 4, 5	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. R57 damage, no hazards.
M6 pin 9 to 10	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. M6, C168 damage no hazards. Test three times.
M6 pin 10 to 11	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. M6, R144 damage no hazards. Test three times.
M6 pin 14 to 15	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage no hazards.
M6 pin 15 to 16	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. M6, Q6 damage no hazards. Test three times.
M8 pin 1 to 2	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
M8 pin 2 to 3, 8	Short	264	Immediately	F1	--	F1, F2, Q1, Q11, Q2, Q21, D1 damage, no hazards.
M8 pin 3, 8 to 4, 5	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. R142 damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
M8 pin 9 to 10	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
M8 pin 10 to 11	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. M6, R55 damage no hazards. Test three times.
M8 pin 14 to 15	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
M8 pin 15 to 16	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
M12 pin 1	Open	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M12 pin 1-2	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M12 pin 3-4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M13 pin 4	Open	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M13 pin 3-4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M13 pin 1-2	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M14 pin 1	Open	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M14 pin 1-2	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.

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Clause	Requirement + Test			Result - Remark		Verdict
M14 pin 3-4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M16 pin 1	Open	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M16 pin 1-2	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M16 pin 3-4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M202 pin 4	Open	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
M202 pin 3-4	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
M202 pin 1-2	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
M203 pin 4	Open	264	15 minutes	F1	0.21	All outputs shutdown. RA17 damage, no hazards.
M203 pin 3-4	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
M203 pin 1-2	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
Q3 pin G-S (53.5A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q3 pin D-S (53.5A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin G-D (53.5A/600V)	Short	264	Immediately	F1	--	F1, Q3 damage, no hazards.
Q1 pin G-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Q1 pin D-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q1 pin G-D (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. Q1 damage, no hazards.
Q11 pin G-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. Q2 damage, no hazards.
Q11 pin D-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q11 pin G-D (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. Q11, C168, D33, M6 damage no hazards. Test three times.
Q2 pin G-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q2 pin D-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q2 pin G-D (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q21 pin G-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
Q21 pin D-S (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Q21 pin G-D (15A/600V)	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. F3, Q21, C81, D34, M8 damage no hazards. Test three times.
D2 (+,-)	Short	264	Immediately	F1	--	F1, D6 damage, no hazards.
D6 (+,-)	Short	264	Immediately	F1	--	F1, D2 damage, no hazards.
D26 (+,-)	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
D29 (+,-)	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
D401 (+,-)	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
D402 (+,-)	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
D304 (+,-)	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
D202 (+,-)	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
C36 (+,-)	Short	264	Immediately	F1	--	F1, D1, D5 damage, no hazards.
BD1(+) to ~ (near L) (25A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
BD1(-) to ~ (near N) (25A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
RHV14	Open	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
RHV14	Short	264	15 minutes	F1	7.35	All outputs normally operated. No damage, no hazards.
RHV17	Open	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
RHV17	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
RHV10	Open	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
RHV10	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
RHV4	Open	264	15 minutes	F1	7.35	All outputs normally operated. No damage, no hazards.
RHV4	Short	264	15 minutes	F1	7.35	All outputs normally operated. No damage, no hazards.
RHV7	Open	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards.
RHV7	Short	264	15 minutes	F1	7.35	All outputs normally operated. No damage, no hazards.
RA17	Open	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
RA17	Short	264	15 minutes	F1	3.65	All outputs normally operated. No damage, no hazards.
REL pin1	Open	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.
M201 pin 5-2	Short	264	15 minutes	F1	0.21	All outputs shutdown. No damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
M201 pin 5-7	Short	264	Immediately	F1	--	All outputs shutdown. F1, R8, C178, C179, M11, R55, R144, M6, M8, F201, D211, D212, M201, ZD203, C204, C205, C208, C209 damage no hazards. Test three times.
M201 pin 5-8	Short	264	Immediately	F1	--	All outputs shutdown. F1, R8, C178, C179, M11, R55, R144, M6, M8, F201, D211, M201, ZD203, C204, C205, C208, C209 damage no hazards. Test three times.
M6 pin 2 to 3, 8	Short	264	Immediately	F1	--	F1, F3, Q1, Q11, Q2, Q21, D1 damage, no hazards.
M8 pin 2 to 3, 8	Short	264	Immediately	F1	--	F1, F2, Q1, Q11, Q2, Q21, D1 damage, no hazards.
Q3 pin D-S (53.5A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin G-D (53.5A/600V)	Short	264	Immediately	F1	--	F1, Q3 damage, no hazards.
D2 (+,-)	Short	264	Immediately	F1	--	F1, D6 damage no hazards.
D6 (+,-)	Short	264	Immediately	F1	--	F1, D2 damage, no hazards.
C36 (+,-)	Short	264	Immediately	F1	--	F1, D1, D5 damage, no hazards.
BD1(+) to ~ (near L) (25A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
BD1(-) to ~ (near N) (25A/600V)	Short	264	Immediately	F1	--	F1 damage, no hazards.
M201 pin 5-7	Short	264	Immediately	F1	--	All outputs shutdown. F1, R8, C178, C179, M11, R55, R144, M6, M8, F201, D211, D212, M201, ZD203, C204, C205, C208, C209 damage no hazards. Test three times.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
M201 pin 5-8	Short	264	Immediately	F1	--	All outputs shutdown. F1, R8, C178, C179, M11, R55, R144, M6, M8, F201, D211, M201, ZD203, C204, C205, C208, C209 damage no hazards. Test three times.
Model FSF065						
T401 pin (X-Y)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
T401 pin (1-2)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
T401 pin (2-3)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
BD1 pin + to ~ (near L4 pin 1)	Short	264	Immediately	F1	--	F1 damage, no hazards.
BD1 pin - to ~ (near L4 pin 2)	Short	264	Immediately	F1	--	F1 damage, no hazards.
C36	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin (G-D)	Short	264	Immediately	F1	--	F1, Q3, M11, R20 damage, no hazards.
Q3 pin (D-S)	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin (G-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
Q1 pin (G-D)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. Q1 damage, no hazards.
Q1 pin (D-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. F3, Q11, Q21 damage, no hazards.

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Q1 pin (G-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
Q2 pin (G-D)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. Q2 damage, no hazards.
Q2 pin (D-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. F3, Q11, Q21 damage, no hazards.
Q2 pin (G-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
Q11 pin (G-D)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. Q11 damage, no hazards.
Q11 pin (D-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. Q11, Q402, Q408 damage, no hazards.
Q11 pin (G-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
Q21 pin (G-D)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. Q21 damage, no hazards.
Q21 pin (D-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
Q21 pin (G-S)	Short	264	15 minutes	F1	0.30	+12.0V output shutdown +12Vsb output normally operated. No damage, no hazards.
BD1 pin + to ~ (near L4 pin 1)	Short	264	Immediately	F1	--	F1 damage, no hazards.
BD1 pin - to ~ (near L4 pin 2)	Short	264	Immediately	F1	--	F1 damage, no hazards.

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Clause	Requirement + Test			Result - Remark		Verdict
C36	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin (G-D)	Short	264	Immediately	F1	--	F1, Q3, M11, R20 damage, no hazards.
Q3 pin (D-S)	Short	264	Immediately	F1	--	F1 damage, no hazards.
Model FSG007 AC mode						
T401 pin A to B	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards
T401 pin 1 to 2	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards
T401 pin 2 to 3	Short	264	15 minutes	F1	0.28	+12V output shutdown except +12Vsb output normally operated. No damage, no hazards
Q3 pin G-S	Short	264	Immediately	F1	0.28	All outputs shutdown. Q3, R20 damage, no hazards.
Q3 pin D-S	Short	264	Immediately	F1	--	F1 damage, no hazards.
Q3 pin G-D	Short	264	Immediately	F1	--	F1, BD1, Q3 damage no hazards.
C36 (+,-)	Short	264	Immediately	F1	--	F1, BD1 damage, no hazards.
BD1(+) to ~ (near L)	Short	264	Immediately	F1	--	F1 damage, no hazards.
BD1(-) to ~ (near N)	Short	264	Immediately	F1	--	F1 damage, no hazards.
Model FSG007 DC mode						
Q3 pin G-S	Short	336Vac	Immediately	F1	0.28	All outputs shutdown. Q3, R20 damage, no hazards.
Q3 pin D-S	Short	336Vdc	Immediately	F1	--	F1, BD1 damage, no hazards.
Q3 pin G-D	Short	336Vdc	Immediately	F1	--	F1, BD1, Q3 damage, no hazards.
C36 (+,-)	Short	336Vdc	Immediately	F1	--	F1, BD1, Q3 damage, no hazards.
BD1(+) to ~ (near L)	Short	336Vdc	15 minutes	F1	2.63	All outputs normally. No damage, no hazards

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Clause	Requirement + Test	Result - Remark	Verdict

BD1(-) to ~ (near N)	Short	336Vdc	15 minutes	F1	2.63	All outputs normally. No damage, no hazards
M201 pin 5-7	Short	336Vdc	Immedi ately	F1	--	F1, F201, M201 damage, no hazards.
M201 pin 5-8	Short	336Vdc	Immedi ately	F1	--	F1, F201, M201 damage, no hazards.
C9	Short	336Vdc	Immedi ately	F1	--	All outputs shutdown. F1 damage no hazards.
L5	Short	336Vdc	Immedi ately	F1	--	All outputs shutdown. F1, BD1 damage no hazards.
RT7	Short	336Vdc	15 minutes	F1	3.34	All outputs normally operated. +12.0V: 12.0Vdc +12Vsb: 12.0Vdc No damage no hazards.

Supplementary information:

- The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; besides, all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions.
- For fuse opened condition, carried out for all sources of fuse.
- For test results with fuse opened condition have been repeated twice (three tests total) for all sources of fuse with the same outcome.
- The test result shown no Class 1 or 2 energy source become Class 3 level during and after single fault condition.
- The overloaded condition is according to annex G.5.3.3.

M.3	TABLE: Protection circuits for batteries provided within the equipment						N/A
Is it possible to install the battery in a reverse polarity position?.....:				No		—	
Equipment Specification	Charging						
	Voltage (V)			Current (A)			
Manufacturer/type	Battery specification						
	Non-rechargeable batteries		Rechargeable batteries				
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C)							
Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:.

M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery				N/A
Maximum specified charging voltage (V)..... :					—
Maximum specified charging current (A) :					—
Highest specified charging temperature (°C) :					
Lowest specified charging temperature (°C) :					
Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
Supplementary information:					

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)						N/A
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
Supplementary Information:							

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Components	--	--	--	10	5	See appended table 5.4.2, 5.4.3
Enclosure	Metal	See appended table 4.1.2	--	30/250	5	No damage, all safeguards remain effective.
Supplementary information:						
Containing all sources during the test. For details refer to appended table 4.1.2.						

T.6, T.9	TABLE: Impact test				P
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure	Metal	See appended table 4.1.2	1300	No damage, all safeguards remain effective.	
Supplementary information:					
Containing all sources during the test. For details refer to appended table 4.1.2.					

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Clause	Requirement + Test	Result - Remark	Verdict

T.7	TABLE: Drop test				N/A
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Supplementary information:					

T.8	TABLE: Stress relief test					P
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Insulator Sheet (All sources)	Polyester film	See appended table 4.1.2	125	7	No damage, no morph.	
Supplementary information:						

X	TABLE: Alternative method for determining minimum clearances distances			N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)	
Supplementary information:				

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹	
Critical component						
Models FSE052, R1CA2801A, FSF037, R1CA2801B						
Inlet 2).	Tecx-Unions Technology Corp.	TU-301 series (- A/AP/AP- A/S/SP)	10A, 250Vac; 15A, 125Vac for UL 10A, 250Vac/15A, 125Vac for BSMI 10A, 250Vdc (TÜV)	IEC 60320-1:2015, EN 60320-1: 2015+AC:2016, UL 498, CSA C22.2 NO. 182.3, , GB17465.1-2009	UL, CSA, ENEC(15), CCC	
	Inalways Corp (International All Ways Ind Co Ltd)	0711 series	10A, 250Vac; 15A, 250Vac for UL 10A, 250Vdc (TÜV) 3.5A, 360Vdc (TÜV)	IEC 60320-1:2015, EN 60320-1: 2015+AC:2016, UL 498, CSA C22.2 NO. 182.3, GB17465.1-2009	UL, CSA, VDE, CCC, ENEC	
	Rong Feng Industrial Co Ltd	SS-120	10A, 250Vac; 15A, 250Vac for UL 10A, 250Vdc (TÜV)	IEC 60320-1:2015, EN 60320-1: 2015+AC:2016, UL 498, CSA C22.2 NO. 182.3, GB17465.1-2009	UL, CSA, VDE, CCC	
	Sheng Ming Enterprise Co., Ltd.	S14-102	15A, 125Vac for UL 10A, 250Vdc (TÜV)	UL 498, CSA C22.2 NO. 182.3, IEC 60320-1:2015, EN 60320-1: 2015+AC:2016, GB17465.1-2009	UL, CUL, VDE, CCC	
Fuse (F1)	Hollyland Co Ltd	50CF	F15A, 250V	IEC/EN 60127- 1:2006+A1:2011+A 2:2015, IEC/EN 60127-2:2014, UL 248-14, CSA C22.2 NO. 248.14	UL, CUL, VDE, CCC, CQC	
	Littelfuse Inc (Littelfuse Ltd, Suzhou Littelfuse OVS Ltd, Littelfuse B V)	487 Series	F15A, 420Vac/dc	EN 60127- 1:2006+A1:2011+A 2:2015, EN 60127- 7:2016, UL 248-14, CSA C22.2 NO. 248.14	UL, CUL, TÜV	
	Walter Electronic Co., Ltd.	FHP	F15A, 420Vac/dc	EN 60127- 1:2006+A1:2011+A 2:2015, EN 60127- 7:2016; EN 60127-7:2016, UL 248-14, CSA C22.2 NO. 248.14	UL, TUV	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Conquer Electronics Co Ltd	UBF-A	F15A, 420Vac/dc	UL 248-14, IEC/EN 60127-1:2006+A1:2011+A2:2015, IEC 60127-7:2015, EN 60127-7:2016	UL, TUV
	Hollyland Co Ltd	5HF/5HF(P)	F15A, 420Vac/dc	IEC/EN 60127-1:2006+A1:2011+A2:2015, IEC 60127-7:2015, EN 60127-7:2016, UL 248-14, CSA C22.2 NO. 248.14	UL, CUL, TUV
Fuse (F201)	Conquer Electronics Co Ltd	PBU	F1A, 250Vac	UL 248-14, CSA C22.2 NO. 248.14, IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015	UL, CUL,VDE, CCC
	Walter Electronic Co., Ltd.	FDP	F1A, 250Vac	UL 248-14, CSA C22.2 NO. 248.14, IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015	UL, CUL,VDE, CCC
	Walter Electronic Co., Ltd.	ICP	F1A, 250Vac	IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015, UL 248-14, CSA C22.2 NO. 248.14, GB/T9364.1-2015; GB/T9364.3-2018	UL, CUL,CSA,VDE, CCC
Fuse (F3)	Conquer Electronics Co Ltd	PGU	F6.3A, 250Vac	UL 248-14, CSA C22.2 NO. 248.14, IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015	UL, CUL,VDE, CQC
	Conquer Electronics Co Ltd	PBU	F6.3A, 250Vac	UL 248-14, CSA C22.2 NO. 248.14, IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015	UL, CUL,VDE, CCC
	WALTER ELECTRONIC CO LTD	FDP	F6.3A, 250Vac	UL 248-14, CSA C22.2 NO. 248.14, IEC/EN 60127-1:2006+A1+A2, IEC 60127-3:2015, EN 60127-3: 2015	UL, CUL,VDE, CCC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
X-Cap. (C4, C7) C4 max. 1 μ F, C7 max. 0.47 μ F(X1 or X2 type) (Optional)	Kemet Electronics Italia SRL for UL; Arcotronics Italia SPA for IMQ-ENEC	R.46	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CUL, IMQ- ENEC(V- 4413)
	Hua Jung Components Co Ltd	MKP	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CUL, CSA, ENEC(14), CQC
	SHENZHEN JINGHAO CAPACITOR CO LTD	CBB62B	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 60384-14, CSA C22.2 NO. 1	UL, CUL, VDE, CQC
	YIMANFENG SCIENCE AND TECHNOLOGY LTD CO	MPX/MKP	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 60384-14, CSA C22.2 NO. 1	UL, CUL, VDE, CQC
	Okaya Electric Industries Co., Ltd	XF	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CUL, SEMKO- ENEC(SE/0 142-20A)
	Strong Capacitor Co. Ltd.	Type MPX	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, VDE, VDE- ENEC, CQC
	Vishay Capacitors Belgium NV	F1778	250Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, FI, ENEC(16), CQC
	ZHUHAI SUNG HO ELECTRONICS CO LTD	CMPP	250Vac min., 105°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, UL1283, CSA C22.2 NO. 1	UL, CSA, VDE, CQC
	Okaya Electric Industries Co., Ltd	RE series	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CUL, VDE
	Okaya Electric Industries Co Ltd	LE series	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CUL, ENEC(14)
	Cheng Tung Industrial Co Ltd	CTX	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, VDE(40026 382), VDE- ENEC, CQC
	Epcos Electronic Components S.A.	B3292 series	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, CSA C22.2 NO. 1	UL, CUL, VDE

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Vishay Capacitors Belgium NV	F1772	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, VDE, ENEC(10)
	KEMET ELECTRONICS OY(Evox Rifa Group Oyj)	PHE840M	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, ENEC(14)
	Carli Electronics Co Ltd	MPX	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, CSA, VDE, CQC
	Panasonic Corporation, Panasonic Corporation of North America for UL; Panasonic Corporation for VDE	ECQUL	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CSA, VDE
	SHENZHEN SURONG CAPACITORS CO LTD	MPX/MKP	250Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 60384-14, CSA C22.2 NO. 1	UL, CUL, VDE, CQC
Y-Cap. (C198, C199, C5, C6) C198, C199= max. 2200pF C5, C6= max. 3300pF (Y1 or Y2 type) (Optional)	Murata Mfg Co Ltd	KX	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE
	TDK-EPC Corporation for VDE; TDK-EPC Corp. for UL	CD	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, CSA, VDE
	Success Electronics Co Ltd	SE	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Vishay Electronic GMBH for UL; Vishay Electronic GMBH Draloric for VDE; (Roederstein Electronics Inc)	VY1	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, VDE, ENEC(10)
	Holy Stone Enterprise Co., Ltd.	SDC series	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, TÜV
	Success Electronics Co Ltd	SB	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	YINAN DON'S ELECTRONIC COMPONENT CO LTD	CT81	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE,CQC
	NAN JING YUYUE ELECTRONICS CO LTD	CT7 for VDE and CQC, CT7, 2B/ CT7, 2E/ CT7, 2F for UL	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, VDE, CQC
	Murata Mfg Co Ltd	KH	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE
	TDK-EPC Corporation for VDE; TDK-EPC Corp. for UL	CS	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, CSA, VDE, CQC
	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AC	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, CSA, VDE

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Success Electronics Co Ltd	SF	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	Vishay Electronic GMBH for UL; Vishay Electronic GMBH Draloric for VDE; (Roederstein Electronics Inc)	VY2	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, VDE, ENEC(10)
	Murata Mfg Co Ltd	KY	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE
Bridge-Cap. (C17) C17 max. 2200pF (Y1 type) (Optional)	Murata Mfg Co Ltd	KX	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE
	TDK-EPC Corporation for VDE; TDK-EPC Corp. for UL	CD	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, CSA, VDE
	Success Electronics Co Ltd	SE	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Vishay Electronic GMBH for UL; Vishay Electronic GMBH Draloric for VDE; (Roederstein Electronics Inc)	VY1	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, VDE, ENEC(10)
	Holy Stone Enterprise Co., Ltd.	SDC series	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, TÜV
	Success Electronics Co Ltd	SB	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	YINAN DON'S ELECTRONIC COMPONENT CO LTD	CT81	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CSA, VDE, CQC
	NAN JING YUYUE ELECTRONICS CO LTD	CT7 for VDE and CQC, CT7, 2B/ CT7, 2E/ CT7, 2F for UL	250Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, ANSI/UL 60384-14, CAN/CSA-E60384-1, CAN/CSA-E60384-14	UL, CUL, VDE, CQC
	Murata Mfg Co Ltd	RA	250Vac min., 125°C (Y1)	IEC/EN 60384-14: 2013/A1:2016, UL 60384-14, CSA C22.2 NO. 1	UL,CUL,VD E,CQC
Varistor (MOV1) (Optional)	Lien Shun Electronics Co., Ltd. for VDE; Brightking (ShenZhen) Co Ltd for UL	xxDyyyK (xx: 14, 20, 25; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112, 122)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680, 750Vac; 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVR10yyy-D series (yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVR10yyy-V series (yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVRxyyyy-M series (xx: 14, 20; yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/125/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVRxyyyy series (xx: 14, 20; yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	Joyin Co. Ltd	xxSyyyK (xx: 10, 14, 20; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680Vac; 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, CSA, VDE
	Joyin Co. Ltd	xxNyyyK (xx: 10, 14, 20; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112, 182)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680, 1000Vac; 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, CSA, VDE

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Littelfuse Inc. for UL; DongGuan Littelfuse Electronics Co Ltd for VDE	CIII series / LA series VxxxLAyy series for UL (xxx:300, 320, 385, 420, 460, 480, 510, 550, 575, 625, 660, 680; yy:10, 20, 40, 50, 80, 100)	300, 320, 385, 420, 460, 480, 510, 550, 575, 625, 660, 680Vac; 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	S(NF)xxKyyy (xx: 14, 20; yyy: 300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680, 1000)	300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680, 1100Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	Q20Kyyy (yyy: 300, 320)	300, 320Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	S(NF)10KyyyE2 K1 (yyy: 300, 320, 350, 385, 420, 460, 510, 550, 625, 680)	300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, VDE
	BRIGHTKING (SHENZHEN) CO LTD	yyyKDxx (xx: 10, 14, 20; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed (coating V-0)	UL 1449, CSA C22.2 No. 1, IEC 61051-2:1991, IEC 61051-2:1991+A1: 2009, IEC 61051-1: 2007, IEC 61051-2:1991, IEC 60950-1 2nd Annex Q	UL, CUL, CSA, VDE

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Optical Isolator (M12, M13, M14, M16, M202, M203)	Everlight Electronic (China) Co., Ltd.	CNY series for UL. CNY-171 series., CNY17F1 series., EL610. ("." Can be "balnk, A-Z or numbers and denote different pin shape.)	Minimum 3000Vac, thermal cycling test passed by FIMKO, Insulation thickness =0.5mm, internal creepage=6mm , external creepage=7.7 mm; 110°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015, CQC(CQC0800102 2756)	UL, FI (27144)
	Vishay semiconductor GMBH (Vishay Infrared Components Inc)	TCLT10xx series (xx can be "00-03, 06-09"), TCLT11xx series (xx can be "01-03, 06-09"), TCLT1600 series.	Minimum 4800Vac, Thermal cycling test passed by FIMKO, external creepage=8.2 mm, 100°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,	UL, CUL, VDE, FI(17107), CQC
	RENESAS ELECTRONICS CORPORATION (NEC Electronics Corp Compound Semiconductor Device Div)	PS2381-1	Minimum 5000Vac Insulation thickness = 0.4mm, thermal cycling test passed by FIMKO, external creepage 8mm min., 115°C	UL 1577, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,, IEC 60950-1:2005, EN 60950-1:2006, IEC 60065:2001+A1, EN 60065:2002+A1	UL, CSA, VDE, Semko(911 049), CQC
	Cosmo Electronics Corporation	KT1yxx series (y can be "0-4 and 6", xx can be "CTR Rank, 00-zz")	Minimum 4800Vac, Insulation thickness = 0.7mm, thermal cycling test passed by FIMKO, external creepage=8.6 mm, 115°C	IEC 60950-1, UL 1577, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,	UL, CUL, TÜV, VDE, FI(23460), CQC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Everlight Electronic (China) Co., Ltd.	EL817 series	Minimum 3000Vac, thermal cycling test passed by NEMKO, Insulation thickness =0.5mm, internal creepage=6mm, external creepage=7.7 mm; 110°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,	UL, CUL, VDE, NEMKO(P1 1214765), CQC
	RENESAS ELECTRONICS CORPORATION (NEC Electronics Corp Compound Semiconductor Device Div)	PS2561 series	Minimum 5000Vac, Insulation thickness =0.4mm, thermal cycling test passed by FIMKO, external creepage=7mm, 100°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,	UL, CSA, VDE, FI(11898), CQC
	Cosmo Electronics Corporation	K1010 series	Minimum 5000Vac Insulation thickness =0.5mm, thermal cycling tested by FIMKO, external creepage=6.5 mm, 115°C	IEC 60950-1, UL 1577, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015,	UL, CUL, TÜV, VDE, FI(22653), CQC
	Vishay Semiconductor GMBH (Vishay Infrared Components Inc)	VOL617 series/ VOL618A series	Minimum 5000Vac Insulation thickness =0.4mm, thermal cycling tested by FIMKO, external creepage=8.0 mm, 110°C	IEC 60950-1, UL1577, CSA C22.2 NO. 1, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015, GB8898-2011	UL, CUL, VDE, FI(17107), CQC

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
	Lite-on Technology Co. (Lite-on Electronic, Inc.)	LTV-817	Minimum 5000Vac Insulation thickness =0.8mm, thermal cycling test pass, external creepage=7.8 mm, 100°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	UL, CUL, VDE, FI(21712), D, S, CQC
	EVERLIGHT ELECTRONICS CO LTD	EL101 series	Minimum 3000Vac, thermal cycling test passed by NEMKO, Insulation thickness =0.4mm, external creepage=8.1 mm; 110°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	UL, CUL, NEMKO(P1 1214766), DEMKO(D-0070), CQC
	LITE-ON TECHNOLOGY CORP	LTV-100x (x can be 0-9)	Minimum 5000Vac Insulation thickness =0.4mm, thermal cycling tested by FIMKO, external creepage=8.3 mm, 100°C	IEC 60950-1, UL 1577, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	UL, CUL, VDE, FI, D, N, CQC
Optical Isolator (M6, M8)	SILICON LABORATORIE S	Si8233BD-D	Minimum 5000Vac Insulation thickness =0.4mm, thermal cycling tested by VDE, external creepage=8.6 mm, 125°C	IEC 60950-1, CSA C22.2 NO. 1, IEC 60065, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	CUL, CSA, VDE, CQC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Texas Instruments Deutschland GmbH.(for VDE); TEXAS INSTRUMENTS INCORPORATED (forUL); Texas Instruments Inc. (for CQC)	UCC21540DW K (for VDE); UCC21540DW KR (for UL, CCC)	Minimum 5700Vac, clearance 8.0mm min., creepage 8.0mm min., 125°C	IEC 60950-1, UL 1577, CSA CA5A, 14-10, 60950-1-07, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	UL,VDE, CQC
	Analog Devices Inc	ADUM4223BR WZ	Minimum 5000Vac, clearance 8.0mm min., creepage 8.0mm min., 125°C	IEC 60950-1, UL 1577, CSA CA5A, 14-18, 60950-1-07, IEC 60747-5-5:2007+A1:2013 EN 60747-5-5:2011+A1:2015	UL,CSA,VD E, CQC
Relay (REL1) 3) (optional)	Song Chuan Precision Co Ltd	307HN-1AH-F-C	277Vac, 10A for UL; 250Vac, 10A for VDE	UL 508, CAN/CSA C22.2 NO. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020	UL, CUL, VDE
	HONGFA	HF32F series	250Vac, 10A	UL 508, CAN/CSA C22.2 NO. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020	UL, CUL, VDE, CQC
	DONGGUAN GOLDEN	GI-1A-12LHF GI series	250Vac, 10A	UL 508, CAN/CSA C22.2 NO. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020	UL,CUL,TU V, CQC
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF32F-G series; HF32FV-G series	250Vac, 10A	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020 GB/T21711.1-2008	UL,CUL,VD E, CQC

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF32FA-G series	250Vac, 10A	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020, GB/T21711.1-2008	UL,CUL,VD E, CQC
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF158F-V series	277Vac, 12A for UL, 15A for CQC 250Vac, 12A for VDE,	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020, GB/T21711.1-2008	UL,CUL,VD E, CQC
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF32F-G series; HF32FV-G series	250Vac, 10A	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020, GB/T21711.1-2008	UL,CUL,VD E, CQC
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF32FA-G series	250Vac, 10A	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020, GB/T21711.1-2008	UL,CUL,VD E, CQC
	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF158F-V series	277Vac, 12A for UL, 15A for CQC 250Vac, 12A for VDE,	ANSI/UL 60947-1, ANSI/UL 60947-4-1, CSA-C22.2 No. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020, GB/T21711.1-2008	UL,CUL,VD E, CQC
	Good Sky Electric Co. Ltd.	GQ-SH-12LM1F	250Vac, 10A for TUV 125/250Vac, 10A for UL	UL 508, CAN/CSA C22.2 NO. 14, IEC 61810-1:2015+A1:2019, EN 61810-1:2015+A1:2020	UL,CUL,TÜ V Rh
Choke (L1)	AcBel Polytech Inc.(API)	21Q84	130°C min.	--	--
Choke (L4)	AcBel Polytech Inc.(API)	21O11	130°C min.	--	--
Choke (L5)	AcBel Polytech Inc.(API)	21Q79	130°C min.	--	--

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Choke (L403)	Interchangeable	Interchangeable	130°C	Tested in the equipment	Tested in the equipment
Transformer (T5)	AcBel Polytech Inc.(API)	25P07	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
-Triple insulation wire (For T5)	Totoku Electric Co Ltd	TIW-2	Electric strength: 4000Vrms, 130 °C	UL 2353, IEC 62368-1:2018, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
	Totoku Electric Co Ltd	TIW-3	Electric strength: 4000Vrms, 155 °C	UL 2353, IEC 62368-1:2018, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
	Furukawa Electric Co Ltd	TEX-E	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2018, EN IEC 62368-1:2020+A11:2020	UL, CSA, VDE, TÜV
Transformer (T201)	AcBel Polytech Inc.(API)	25P05	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
-Triple insulation wire (For T201)	Cosmolink Co Ltd	TIW-M	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2014, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
Transformer (T401)	AcBel Polytech Inc.(API)	25P06	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
-Triple insulation wire (For T401)	Cosmolink Co Ltd	TIW-2	Electric strength: 4000Vrms, 130 °C	UL 2353, IEC 62368-1:2018, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT, WF	Electric strength: 5000V, thickness: 0.025mm	UL 510A	UL
	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350F-1, 1350-1	Electric strength: 5000V, thickness: 0.025mm	UL 510A	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Chyun Yih Tape Co. Ltd	PB 416F	Electric strength: 5000V, thickness: 0.025mm, 180 °C	UL 510A	UL
Transformer (T401) (alternate)	AcBel Polytech Inc.(API)	25P59	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
- Triple insulation wire (For T401)	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2014, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
DC Fan	ASIA VITAL COMPONENTS CO LTD	DBTD0428B2G (V) where (V) may be xxxx, where x may be A through Z, 0 through 9, "-", or blank.	12V, 1.5A, 31.16CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	Foxconn Technology Co., Ltd.	PIA040H12Q	12V, 1.7A, 30.64CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NIDEC AMERICA CORP	(a)40S12BGD5-07T08B, where (a) may be b, c, h, i, l, r~w.	12V, 1A, 27.8CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NMB Technologies Corporation/MI NEBEA CO LTD	04028DA-12S-(d)(e)G, where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J", "K", "C", "D", "N", "P", "V", "W" or 1-6	12V, 1.4A, 27.6CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
Insulation Sheet (BetweenPCB and CASE), (On L1 and L4)	Formex, Div of Illinois Tool Works Inc, Formerly	FORMEX-18	min. 0.20mm, VTM-0; min. 0.41mm, V-0	UL 94	UL, CUL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Formex, Div of Illinois Tool Works Inc, Formerly	FORMEX GK-(a)(b) (a) - One to three digit suffix indicating nominal thickness in mils. (b) - May have additional suffix letter(s) indicating color.	min. 0.05mm, VTM-0; min. 0.37mm, V-0	UL 94	UL, CUL
	SABIC INNOVATIVE PLASTICS B V/ SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	FR700/ FR60	min. 0.051mm, VTM-0 (CL); min. 0.13mm, VTM-0 (CL,BK); min. 0.23mm, V-0 (All)	UL 94	UL
	SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	FR1	Min. 0.08mm, VTM-2 (NC); min. 0.13mm, VTM-0 (NC, BK); min. 0.63mm V-0 (All)	UL 94	UL
	SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	EFR95	min. 0.25mm, VTM-0 (BK) min. 0.38mm, V-0 (BK) min. 0.43mm, V-0 (NC)	UL 94	UL
	SUN DELTA CORP	VS(f); (f) - May be replaced by any digit 000-999, except 560 and 160	min. 0.2mm, VTM-0 (NC,BK)	UL 94	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Toray Industries Inc	Lumirror (#) (#) - Followed by F60, F60C, L11, Q55 or (a)(b)(c)(d) , where; (a) can be one letter H,K,S,T or W. (b) denotes a one digit number 0 - 7. (c) may be one digit number 0 - 9 or one letter A - M. (d) may be one digit number 0-9 or one letter A,C,E,K,M,V,W or Z. <>	0.023- 0.23mm, VTM-2 (NC)	UL 94	UL
	Yi-Hsin Plastech Co. Ltd	YIMEX PP-17	0.43-0.47mm, V-0 (BK)	UL 94	UL, CUL
	Yi-Hsin Plastech Co. Ltd	HSINMEX PC - 175	min. 0.25mm, V-0 (BK)	UL 94	UL, CUL
	Shenzhen Bornsun Industrial Co Ltd	BN-ZD16	0.41-0.45mm, V-0 (BK)	UL 94	UL, CUL
	SHENZHEN BORN SUN INDUSTRIAL CO LTD	BN-FP	0.25mm, V-0	UL 94	UL, CUL
Insulation Tubing	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	FP-301VW	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224	UL
	Changyuan Electronics (Shenzeng) Co Ltd	CB-HFT	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224, CSA-C22.2 No. 198.1- 06	UL, CUL
	Hamburg Industries Co Ltd	H-2	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224, CSA-C22.2 No. 198.1- 06	UL, CUL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	SUMITOMO ELECTRIC FINE POLYMER INC (Sumitomo Electric Industries Ltd)	SUMITUBE F2 or SUMITUBE F32	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224	UL
	TYCO ELECTRONICS CORP (Raychem Corp)	VERSAFIT	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224	UL
	Kai Suh Suh Enterprise Co Ltd	K32	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224	UL
	SUMITOMO ELECTRIC FINE POLYMER INC	717 or Sumitube NHR2	0.4mm min., VW-1, 125 °C (Pink, yellow, blue, green, red, gray, and black)	ANSI/UL 224	UL
	TYCO ELECTRONICS CORP	ZH2	0.4mm min., VW-1, 125 °C (Black)	ANSI/UL 224	UL
	Shenzhen Woer Heat-shrinkable Material Co Ltd	RSFR-HPF	0.4mm min., VW-1, 125 °C (All colors except clear)	ANSI/UL 224	UL, CUL
	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CYG-ZHP	0.4mm min., VW-1, 600V, 125 °C (All except clear)	ANSI/UL 224	UL, CUL
	Changyuan Electronics (Shenzeng) Co Ltd	CB-300	0.4mm min., VW-1, 300V, 105 °C (Black)	ANSI/UL 224, CSA-C22.2 No. 198.1- 06	UL
	Develop Electric Co Ltd	DEV-300	0.4mm min., VW-1, 300V, 105 °C (All colors)	ANSI/UL 224	UL
	Qifurui Electronics Co	QFR-PVC-300	0.4mm min., VW-1, 300V, 105 °C (Black)	ANSI/UL 224, CSA-C22.2 No. 198.1- 06	UL, CUL
	Qifurui Electronics Co	QFR-PVC-600	0.4mm min., VW-1, 600V, 105 °C (Black)	ANSI/UL 224, CSA-C22.2 No. 198.1- 06	UL, CUL

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
	Kai Suh Suh Enterprise Co Ltd	NHS	0.4mm min., VW-1, 300V&600V, 105 °C (All colors)	ANSI/UL 224	UL
	Shenzhen Gaoertai Electonics Co., Ltd.	GET300	0.4mm min., VW-1, 300V, 105°C, (All colors)	ANSI/UL 224, CSA-C22.2 No. 198-1-06	UL, CUL
	Shenzhen Gaoertai Electonics Co., Ltd.	GET600	0.4mm min., VW-1, 600V, 105°C, (All colors)	ANSI/UL 224, CSA-C22.2 No. 198-1-06	UL, CUL
PCB1	PLOTECH CO LTD	4	V-0, 140 °C	ANSI/UL 796	UL
	EISO ENTERPRISE CO LTD	3/6	V-0, 130 °C	ANSI/UL 796	UL
	ELEC&ELTEK CO LTD	E3330FL	V-0, 130 °C	ANSI/UL 796	UL
	GOLD CIRCUIT ELECTRONICS LTD	D-V0A/T-V0A	V-0, 130 °C	ANSI/UL 796	UL
	GOLD CIRCUIT ELECTRONICS LTD	H	V-0, 130 °C	ANSI/UL 796	UL
	GUANG DONG ELLINGTON ELECTRONICS TECHNOLOGY CO LTD	ET856/ET866/E T566	V-0, 130 °C	ANSI/UL 796	UL
	NEW ERA ELECTRONICS CO LTD	TC/2M	V-0, 130 °C	ANSI/UL 796	UL
	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M2/M3/M5/M8	V-0, 130 °C	ANSI/UL 796	UL
	PLOTECH CO LTD	5/6	V-0, 130 °C	ANSI/UL 796	UL
	REMAPP INDUSTRIAL CO LTD	RM04TG	V-0, 130 °C	ANSI/UL 796	UL
	SHENZHEN KINWONG ELECTRONIC CO LTD	8B/8F	V-0, 130 °C	ANSI/UL 796	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	TREASURE ELECTRONIC TECHNOLOGY (SHENZHEN) LTD	T-M1	V-0, 130 °C	ANSI/UL 796	UL
	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M6	V-0, 105 °C	ANSI/UL 796	UL
	APCB Inc (Competitor Printed Circuit Board)	77	V-0, 130 °C	ANSI/UL 796	UL
	SUNTAK MULTILAYER PCB CO LTD	STM-4 STM-6	V-0, 130 °C	ANSI/UL 796	UL
	ELEC&ELTEK CO LTD	E3330RN	V-0, 130 °C	ANSI/UL 796	UL
	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M7	V-0, 130 °C	ANSI/UL 796	UL
Discharge Resistor (RHV1, RHV2, RHV3)	RALEC TECHNOLOGY (KUNSHAN) CO., LTD.	RTV05 series, RTV06 series, RTV12 series, RTV20 series, RTV25 series	1/4W, 220kΩ	IEC 62368-1(ed.3), CB scheme tested by Demko	--
	TA-I Technology Co Ltd	RH series RH10 series, RH12 series	1/4W, 220kΩ	IEC 62368-1(ed.3), IEC 60950-1(ed.2); am2 CB scheme tested by Demko	--
	Yageo Corp	RV1206 series	1/4W, 220kΩ	IEC 62368-1:2018 (CB scheme tested by Nemko)	--
	Kamaya Electric Co Ltd	RVC32 series	1/4W, 220kΩ	IEC 62368-1:2018 (CB scheme tested by Intertek, Ref. No. TP10030283-ETS)	--
	Viking Tech Corporation Kaoshiung Branch	HVR02 series, HVR03 series, HVR05 series, HVR06 series, HVR0A series, HVR12 series	1/4W, 220kΩ	IEC 62368-1(ed.3), IEC 60950-1(ed.2); am2, CB scheme tested by Demko	--
	Yageo Corporation	RV0603 series, RV0805 series, RV1206 series	1/4W, 220kΩ	IEC 62368-1(ed.3), CB scheme tested by Demko	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	RALEC TECHNOLOGY (KUNSHAN) CO., LTD.	RTV06 series	1/4W, 220kΩ	IEC 62368-1(ed.3)	DEMKO(UL)
	TA-I Technology Co Ltd	RH12 series	1/4W, 220kΩ	IEC 62368-1(ed.3), IEC 60950-1(ed.2);am2	DEMKO(UL)
	Yageo Corp	RV1206 series	1/4W, 220kΩ	IEC 62368-1(ed.3), IEC 60950-1(ed.2);am2	DEMKO(UL)
	Kamaya Electric Co Ltd	RVC32 series	1/4W, 220kΩ	IEC 62368-1(ed.3), IEC 60950-1(ed.2);am2	issued by Intertek
	WALSIN TECHNOLOGY CORPORATION	WF12N	1/4W, 220kΩ	IEC 62368-1(ed.3)	UL
Thermistor (RT1) (Optional)	Interchangeable	Interchangeable	25Ω at 25°C, 4A; 80Ω at 25°C, 2A; 80Ω at 25°C, 6A	Test in the equipment	Test in the equipment
Thermistor (RT301)	Interchangeable	Interchangeable	10kΩ at 25°C, NTC	Test in the equipment	Test in the equipment
Bridge Diode (BD1)	Interchangeable	Interchangeable	600V min., 25A min.	Test in the equipment	Test in the equipment
Electrolytic Capacitor (C36)	Interchangeable	Interchangeable	390-560μF, 105°C min., 450V min.	Test in the equipment	Test in the equipment
Transistor (Q1, Q11, Q2, Q21)	Interchangeable	Interchangeable	600V min., 13A min. for TUV 600V min., 13-15A for UL	Test in the equipment	Test in the equipment
Metal Enclosure	Interchangeable	Interchangeable	0.8mm min.	Test in the equipment	Test in the equipment
PCB2, PCB3, PCB4	Interchangeable	Interchangeable	V-1 min., 105 °C min.	ANSI/UL 796	UL
Models FSF059, R1CA2551B, FSF065 and R1CA2551C (all components are same as FSE052, R1CA2801A, FSF037, R1CA2801B except for below mention)					
Choke (L5)	MAGIC TECHNOLOGY /AcBel Polytech Inc.(API)	90480-9149I3	130°C min.	--	--
Transformer (T401)	AcBel Polytech Inc.(API)	25P27	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
-Triple insulation wire (For T401)	Cosmolink Co Ltd	TIW-2	Electric strength: 4000Vrms, 130 °C	UL 2353, IEC 62368-1:2018, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
Transformer (T401)	AcBel Polytech Inc.(API)	25P60	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
- Triple insulation wire (For T401)	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2014, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
DC Fan	Foxconn Technology Co., Ltd.	PIA040H12P	12V, 0.81A, 26.33CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NIDEC AMERICA CORP	(a)40S12BS4A5, where (a) may be b, c, h, i, l, r~w.	12V, 0.73A, 26.5CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NMB Technologies Corporation/MI NEBEA CO LTD	04028DA-12R-(d)(e)F, where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J", "K", "C", "D", "N", "P", "V", "W" or 1-6	12V, 0.52A, 20.1CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, VDE
	Potechnic Co., Ltd.	MG(a)4012U(e)-(f)28,where (a) maybe A or T; (e) maybe B,C,R,F OR S; (f) maybe A-Z or a-z or 0-100, PWM or blank)	12V, 0.55A, 23.28CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, CUL, TÜV RH
	ASIA VITAL COMPONENTS CO LTD	DB04028B12U(V) where (V) may be xxxx, where x may be A through Z, 0 through 9, "-", or blank.	12V, 0.66A, 22.92CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Bridge Diode (BD1)	Interchangeable	Interchangeable	600V min., 15A min.	Tested in the equipment	Tested in the equipment
Electrolytic Capacitor (C36)	Interchangeable	Interchangeable	470-560 μ F, 105°C min., 450V min.	Tested in the equipment	Tested in the equipment
Transistor (Q1, Q11, Q2, Q21)	Interchangeable	Interchangeable	600V min., 7A min. for TUV 600V min., 7-15A for UL	Tested in the equipment	Tested in the equipment
Models FSG007, R1CH2801A, FSG016 and R1CH2551A (all components are same as FSE052, R1CA2801A, FSF037, R1CA2801B except for below mention)					
Primary connector	Rong Feng Industrial Co Ltd	RF-203	15A, 277Vac; 15A, 435Vdc	IEC 61984:2008 EN 61984:2009	TÜV, CCC
Fuse (F1)	Littelfuse Inc (Littelfuse Ltd, Suzhou Littelfuse OVS Ltd, Littelfuse B V)	487 Series	F8A, 420Vac/dc	EN 60127-1:2006+A1:2011+A2:2015, EN 60127-7:2016, UL 248-14, CSA C22.2 NO. 248.14	UL, CUL, TÜV
	Walter Electronic Co., Ltd.	FHC, FHP	F8A, 420Vac/dc	EN 60127-1:2006+A1:2011+A2:2015, EN 60127-7:2016, IEC/EN 60127-2:2015, UL 248-14, CSA C22.2 NO. 248.14	UL, CUL, TÜV
X-Cap. (C4, C7) C4 max. 1 μ F, C7 max. 0.47 μ F (X1 or X2 type) (Optional)	Carli Electronics Co Ltd	MPX	310Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, CSA, VDE, CQC
	Strong Capacitor Co. Ltd.	Type MPX	310Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, VDE, VDE-ENEC, CQC
	ZHUHAI SUNG HO ELECTRONICS CO LTD	CMPP	310Vac min., 105°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, UL1283, CSA C22.2 NO. 1	UL, CSA, VDE, CQC
	Hua Jung Components Co Ltd	MKP	305Vac min., 110°C	IEC/ EN 60384-14: 2013+A1:2016, UL 60384-14, CSA C22.2 NO. 1	UL, CUL, CSA, ENEC(14), CQC
	Epcos Electronic Components S.A.	B3292 series	305Vac min., 100°C	IEC/ EN 60384-14: 2013+A1:2016, CSA C22.2 NO. 1	UL, CUL, VDE

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Y-Cap. (C198, C199, C5, C6) C198, C199 max. 2200pF C5, C6 max. 3300pF (Y1 or Y2 type) (Optional)	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	400Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, CSA, VDE
	Success Electronics Co Ltd	SE	500Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CSA, VDE, CQC
	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	400Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, UL 1414, CSA C22.2 NO. 1	UL, CUL, CSA, VDE
	Success Electronics Co Ltd	SE	500Vac min., 125°C	IEC/ EN 60384-14: 2013+A1:2016, UL60384-14, CSA C22.2 NO. 1	UL, CSA, VDE, CQC
Transformer (T401) (For FSG007, R1CH2801A)	AcBel Polytech Inc.(API)	25P52	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
- Triple insulation wire (For T401) (For FSG007, R1CH2801A)	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2014, EN 62368-1:2014+A11:2017	UL, CSA, VDE, TÜV
Transformer (T401) (For FSG016, R1CH2551A)	AcBel Polytech Inc.(API)	25P60	Class B	Applicable parts of IEC 62368-1 and according to IEC 60085	Accepted by TÜV Rheinland
- Triple insulation wire (For T401) (For FSG016, R1CH2551A)	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 °C	UL 2353, IEC 62368-1:2014	UL, CSA, VDE, TÜV
DC Fan	Foxconn Technology Co., Ltd.	PIA040H12P	12V, 0.81A, 26.33CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	ASIA VITAL COMPONENTS CO LTD	DB04028B12U(V) where (V) may be xxxx, where x may be A through Z, 0 through 9, "-", or blank.	12V, 0.66A, 22.92CFM	EN IEC 62368-1:2018, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NIDEC AMERICA CORP	(a)40S12BS4A5, where (a) may be b, c, h, i, l, r~w.	12V, 0.73A, 26.5CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, TÜV RH
	NMB Technologies Corporation/MI NEBEA CO LTD	04028DA-12R-(d)(e)F, where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J", "K", "C", "D", "N", "P", "V", "W" or 1-6	12V, 0.52A, 20.1CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, VDE
	Potechnic Co., Ltd.	MG(a)4012U(e)-(f)28,where (a) maybe A or T; (e) maybe B,C,R,F OR S; (f) maybe A-Z or a-z or 0-100, PWM or blank)	12V, 0.55A, 23.28CFM	EN 62368-1:2014+A11:2017, UL 507, CSA C22.2 NO. 113	UL, CUL, TÜV RH
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) Description line content is optional. Main line description needs to clearly detail the component used for testing. 3) The appliance inlet were performed test with DC rating according to IEC/EN 61984 by TÜV Rheinland. 4) In the technical data column of optocoupler, where "Dti" means distance through insulation, "Int. cr" means internal creepage distance, and "Ext. cr" means external creepage distance.					

ATTACHMENT

Page 130 of 155

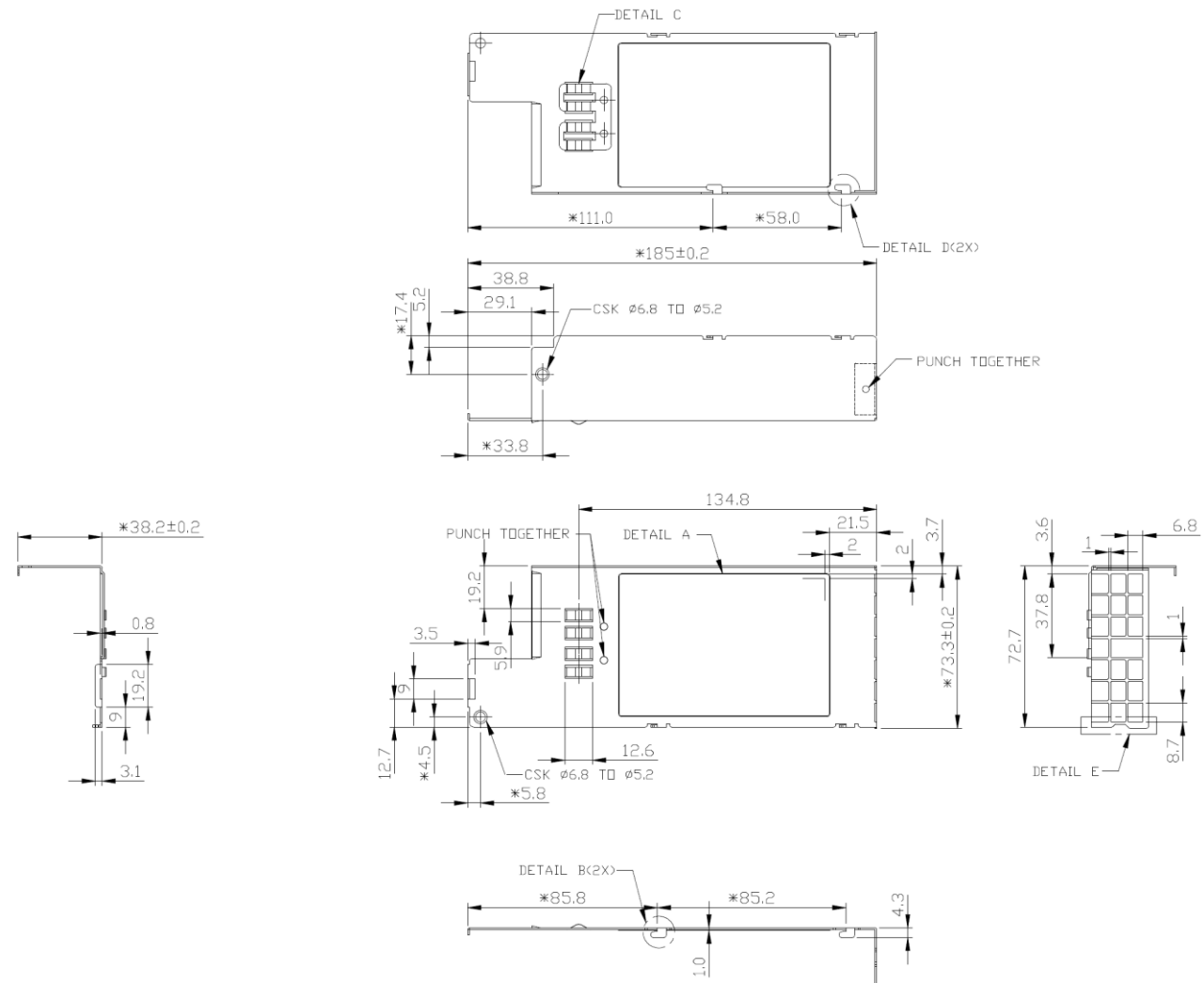
Report No. CN21PGBE 001

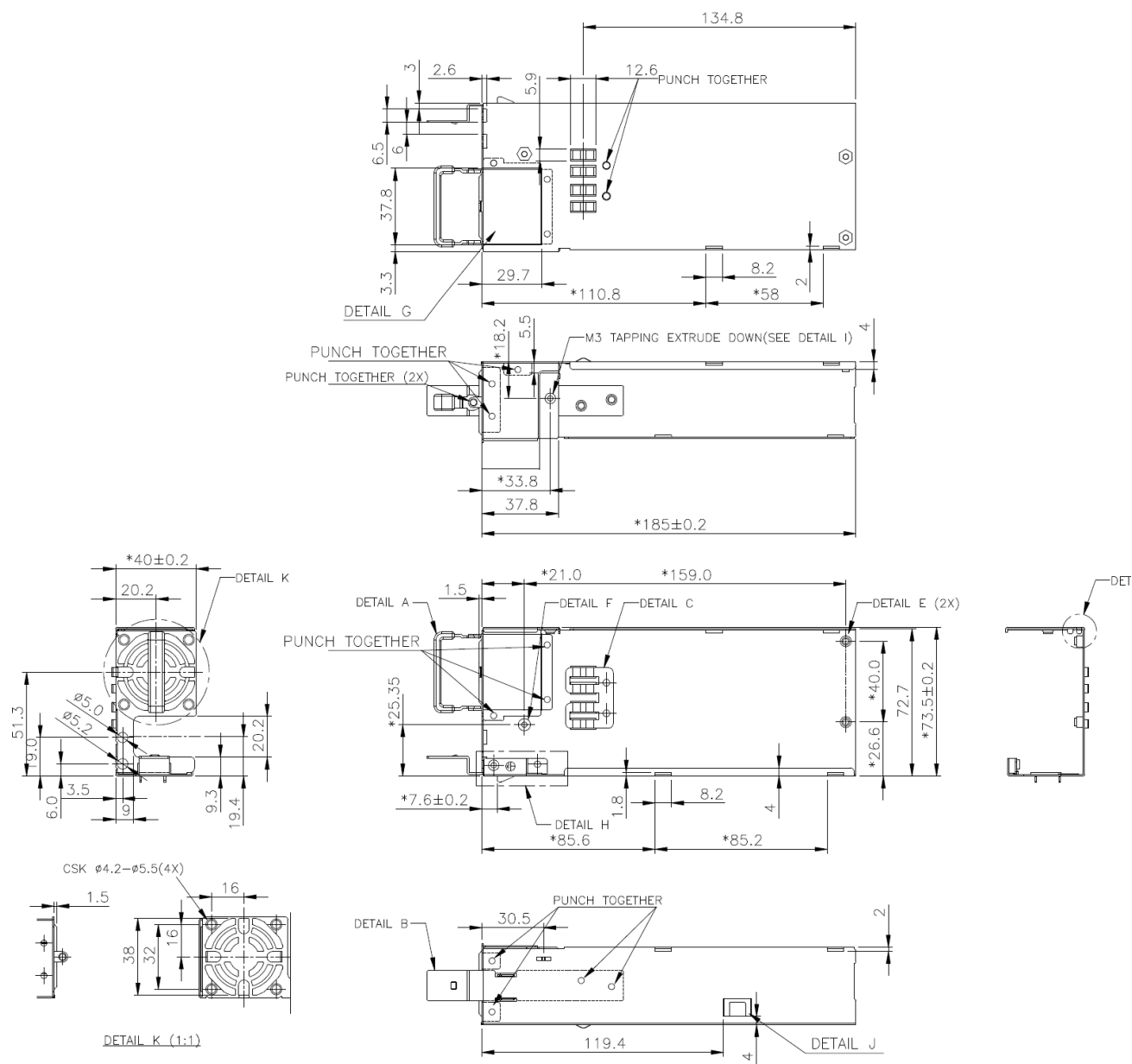
List of test equipment used:

Used for test	Code	Kind of Instrument	Manufacturer	Model Series No.	Range	Calibrated	
						Date	Until
V	34	Electrical Safety Compliance Analyzer	Extech	7440 E190162	Withstand Voltage: 5kVac/40mA, 6kVdc/10mA; Insulation: 100-1000Vdc, 9999MΩ; Grounding: 3-8Vac, 30A Time : 60S.	2021/1/21	2022/1/20
V	49	Digital Power Meter	Yokogawa	WT210 27D353265	600Vac, 20A 600Vdc, 20A	2021/6/07	2022/6/06
V	70	Digital Scope	LeCroy	LT354 01704	Auto (CH1, CH2, CH3, CH4) (CH1:ATTN1000,VDIV1 00mV,TDIV500mS; CH2:ATTN1000,VDIV10 0mV,TDIV10mS; CH3:ATTN10,VDIV1V,T DIV10uS; CH4:ATTN10,VDIV100 mA,TDIV10uS)	2021/2/2	2022/2/1
V	81	Hybrid Recorder	Yokogawa	MX100 27D839896	Type T , -200~400°C (200°C range set up)	2021/6/15	2022/6/14
V	93	AC Power Source	Extech	6150 1130126	150Vac, 42A; 300Vac, 21A; 5kVA	No measurements taken	No measurements taken
V	94	Safety Test Software	AcBel	Rev : RA03	Single Test : 13 test items Continue Test: 7 test items	2021/9/10	2024/9/9
V	110	AC Power Source	Extech	6560-33220-3 1400017	0-150Vac · 500A ; 0-300Vac · 250A ; 60kVA	No measurements taken	No measurements taken
V	123	STOPWAT CH	CASIO	HS-3 701Q04R-1	0~ 10h	2021/1/28	2022/1/27
V	149	Test Box (Discharge Fixture)	AcBel	Test box-1	For Discharge test	2021/5/31	2022/5/30
V	161	Electronic Load	Chroma	6304 630400007613 630300023017/22 965/22959/23015	0.8-64Vdc, 60A, 300W*4	2021/1/21	2022/1/20
V	167	Digital Multimeter	Fluke	8808A 1887011	1000Vdc/750Vac, 10A/10mA	2021/3/23	2022/3/22
V	173	Touch Current Tester	Extech	7630 1331698	IEC 60990, Figure 4, U2, MD1 IEC 60990, Figure 5, U3, MD2 NFPA99 , MD4	2021/9/1	2022/8/31
V	180	AC/DC Power Source	Chroma	61505 615050001005	AC range : 150Vac, 32A; 320Vac, 20A ; 4kVA DC range : 212Vdc, 16A ; 424Vdc, 8A ; 2kVA	No measurements taken	No measurements taken
V	189	Clock	QUARTZ	TG-001 190417	0~12hr	2021/8/30	2022/8/29

Used for test	Code	Kind of Instrument	Manufacturer	Model Series No.	Range	Calibrated	
						Date	Until
V	195	Discharge Probe	TECPEL	HVP-15HF 20190262	Division Ratio →1:1000 Input Resistance:→ 100MΩ+/- 0.5% 3pF+/-0.5pF 50MHz , 15kV	2021/9/2	2022/9/1

Fire barrier dimensions:





G.5.3	TABLE: transformers						P
Loc.	Tested insulation	Working voltage peak / V	Working voltage rms / V	Required electric strength	Required clearance / mm	Required creepage distance / mm	Required distance thr. insul.
FSE052, R1CA2801A, FSF037, R1CA2801B							
T5	Primary to secondary (reinforced)	450	320	DC 4000	4.5	6.4	2 layers or 0.4mm min.
T5	Primary to core (reinforced)	450	320	DC 4000	4.5	6.4	2 layers or 0.4mm min.
T401	Primary to secondary (reinforced)	469	266	DC 4000	4.5	5.4	2 layers or 0.4mm min.
T401	Primary to core (reinforced)	469	266	DC 4000	4.5	5.4	2 layers or 0.4mm min.
T201	Primary to secondary (reinforced)	694	370	DC 4000	4.5	7.4	2 layers or 0.4mm min.
T201	Secondary to core (reinforced)	694	370	DC 4000	4.5	7.4	2 layers or 0.4mm min.
Models FSF059							
T401	Primary to secondary (reinforced)	475	263	DC 4000	4.5	5.4	2 layers or 0.4mm min.
T401	Primary to core (reinforced)	475	263	DC 4000	4.5	5.4	2 layers or 0.4mm min.
Model FSG007							
T401	Primary to secondary (reinforced)	469	266	DC 4000	4.5	5.4	2 layers or 0.4mm min.
T401	Primary to core (reinforced)	469	266	DC 4000	4.5	5.4	2 layers or 0.4mm min.
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
FSE052, R1CA2801A, FSF037, R1CA2801B							

T5	Primary to secondary (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
T5	Primary to core (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
T401	Primary to secondary (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
T401	Primary to core (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
T201	Primary to secondary (reinforced)	DC 4000	Triple insulation wire used (internal) 8.0 (external)	Triple insulation wire used (internal) 8.0 (external)	See table G.5.3
T201	Secondary to core (reinforced)	DC 4000	Triple insulation wire used (internal) 8.0 (external)	Triple insulation wire used (internal) 8.0 (external)	See table G.5.3
Models FSF059					
T401	Primary to secondary (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3

T401	Primary to core (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
Model FSG007					
T401	Primary to secondary (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
T401	Primary to core (reinforced)	DC 4000	Triple insulation wire used (internal) 10.0 (external)	Triple insulation wire used (internal) 10.0 (external)	See table G.5.3
supplementary information:					

Supplementary information:

1) Transformers (T5, T401, T201) performed the electric strength test after humidity test for all transformers (T5, T401, T201) factories as below:

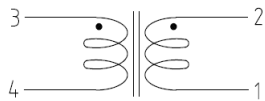
2) Transformers (T5, T401, T201) used in below factories are identical in electrical characteristics, physical construction in clearance, creepage and distance through insulation.

The transformer will be produced by below factories:

變壓器生產廠資訊	工廠代碼
ACBEL ELECTRONIC (DONGGUAN) CO., LTD./ 康舒电子(东莞)有限公司	None
ACBEL ELECTRONIC (WUHAN) CO LTD / 康舒电子（武汉）有限公司	W
AcBel Polytech(Philippines) Inc.	C
FRIENDSHIP ELECTRONIC(DONGGUAN) CO LTD / 郡懋电子（东莞）有限公司	R
ZHONGTAI ELECTRONIC(HUBEI) CO LTD / 中泰电子（湖北）有限公司	E1
JEPULS TECHNOLOGY (SHENZHEN) CO LTD / 杰普斯科技(深圳)有限公司	F1
HAINING LIANFENG DONGJIN ELECTRONIC CO.,LTD / 海宁联丰东进电子有限公司	W1
SHENZHEN CLICK TECHNOLOGY CO LTD / 深圳可立克科技股份有限公司	I
SHENZHEN JINGQUANHUA ELECTRONICS CO., LTD / 深圳市京泉华电子有限公司	A1
FE-TRONIC MFG CO LTD / 富创力电器(深圳)有限公司 (深圳市龙岗区横岗六约利高电器厂)	A
IC ELECTRONICS CO.,LTD/ 东莞市慧创电子有限公司	L1
Dongguan Janohig Electronics Technology CO.,LTD / 东莞市嘉龙海杰电子科技有限公司	J1
Elytone Electronics Co.,Ltd. / 音律电子股份有限公司	
DONG GUAN LIGHTION ELECTRONICS CO LTD / 光順電子廠	N1
DONGGUAN YOUHE ELECTRONIC CO LTD / 东莞友禾电子有限公司	Y1
Shenzhen Boulder Electronic Co Ltd/ 深圳市博多电子有限公司	B3
FEELUX OPTOELECTRONIC (SHANDONG) CO. ,LTD/碧陆斯光电(山东)有限公司	P2
FEELUX OPTOELECTRONIC (SHANDONG) CO., LTD, DONGPING BRANCH / 碧陆斯光电（山东）有限公司東平分公司	P1
Shenzhen HFGC Electronic Co Ltd Dongguan Branch/深圳市宏丰光城电子有限公司东莞分公司	Q1
DONGGUAN FEELUX ELECTRONICS CO. ,LTD/ 东莞市碧陆斯电子有限公司	P3
Readore Technology Philippines Corporation/ 立亚达科技菲律宾有限公司	R2
Dong Guan Gao Bu Gua Yao Electronic Co., Ltd./ 東莞高埗國耀電子有限公司	F
Dongguan Jepuls Electronics Technology Co Ltd/ 东莞杰浦斯电子科技有限公司	F2
Huaihua Yaxin Electronic Co., Ltd./ 怀化亚信电子有限公司	X
Magic Electronic Technology (Shenzhen) Co., Ltd/ 美桀电子科技(深圳)有限公司	3

G5.3		TABLE: transformers		P
Transformer T5				
The transformer produced by each factory is the same material and construction.				
1. MATERIALS' LIST :				
Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE: OD*ID*HT: 10.0*4.25* 3.8mm	JPH-7 T9*3-5-C AL2470±25%	A-CORE CO.	X90485-9609ID1
		A07 T9*5*3-C AL2470±25%	ACME CO.	X90485-9609IE
[2]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U & 2UEWN/U MW28-C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757	
		POLYURETHANE COATED POLYAMIDE 1UEWE & 2UEWE MW-28C 130℃	TAI-I CO. E85640	
		POLYURETHANE COATED POLYAMIDE 1UEW-NY & 2UEW-NY MW28C 130℃	PROSPERITY CO. E196072	
[3]	PCB BASE	KINGBOARD CO. E123995 FR-1 94V-0/KB-6150 130℃ T1.2*19.65*7.43-4HOLE	JIANYOUG CO.	料號待申請
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TEX-E 130℃	FURUKAWA CO. E206440	
		TIW-2 130℃ ,TIW-3 155℃	TOTOKU CO. E166483	
[5]	TUBE	TEFLON TUBE TFL TFT TFS 200℃	GREAT HOLDING CO. E156256	
		TEFLON TUBE TFE-LW TFE-TW TFE-SW 200℃	ZEUS CO. E64007	
		TEFLON TUBE CB-TT-L CB-TT-T CB-TT-S 200℃	CHANGYUAN CO. E180908	
[6]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUP I	JINGJIANG YAHUA CO. E165111	
[7]	EPOXY	3300A/B-1(透明)	EATTO CO.	
[8]	VARNISH	V1630FS 130℃	ELANTASELECTRIC AL INSULATION ELANTAS PDG INC. E87039	XT9051-9997I
		468-2FC 130℃	ELANTASELECTRIC AL INSULATION ELANTAS PDG INC. E87039	XT9051-9996I
		TVB-2180T 130℃ ADD 2% TEC9652(Catalyst)	KYOCERA CHEMICAL CO. E83702	XT9051-9991I XT9051-9894I
Insulation System: B-8 Table II (E97394) Thermal Class: B				

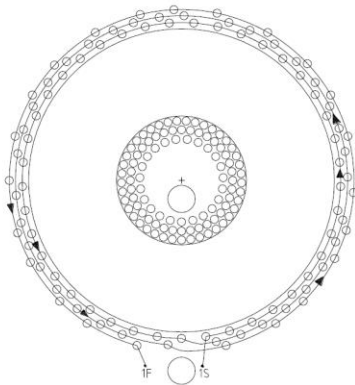
2 SCHEMATIC CIRCUIT :



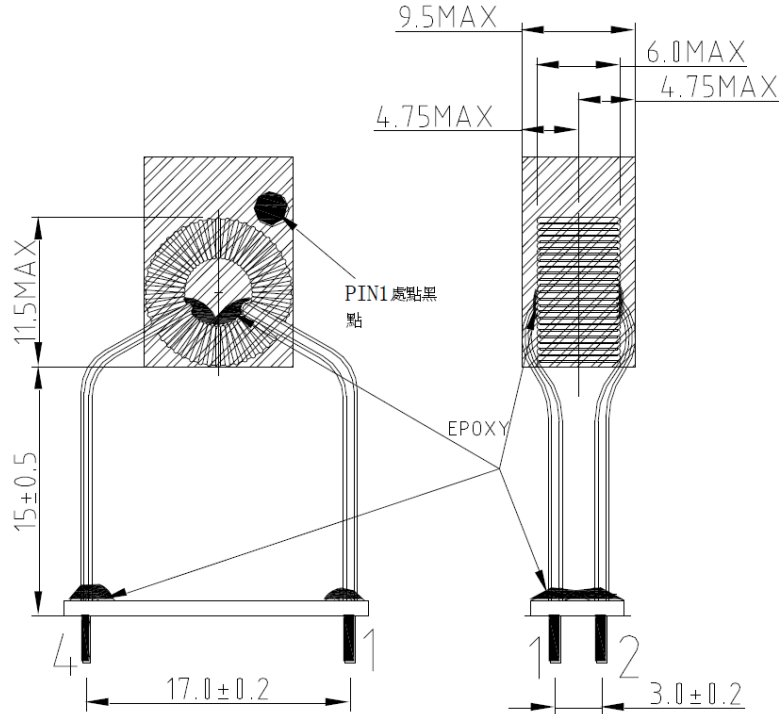
3. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	NOTES 說明
#1	3 - 4	Φ 0.25	100	[1][2]
#2	2 - 1	TRIPLE WIRE Φ 0.7	1	[3]

4. WINDING CROSS-SECTIONAL VIEW:



<SIDE VIEW>UNIT:mm



Transformer T401(FSE052, R1CA2801A, FSF037, R1CA2801B)

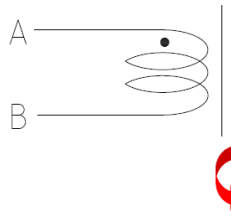
The transformer produced by each factory is the same material and construction.

1. MATERIALS' LIST :

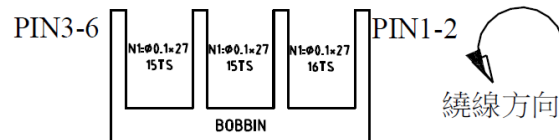
Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
[3]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-2LZ 130℃	TOTOKU CO. E166483	
[4]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111	
[5]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[6]	SHRINK TUBE	TUBE HEAT SHRINK ϕ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[7]	銅片	C-1.0*15.3*R7.23 C1100	LIANCHENH. CO	料號待申請
		1*15.3*AT7.23 C1100	MEILI CO	料號待申請
[8]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
[9]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA
[10]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[11]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		TVB-2180T 155℃ ADD 2% TEC9652(Catalyst)	KYOCERA CHEMICALCO. E83702	XT9051-9991I XT9051-9894I

Insulation System: B-8 Table II (E209189) Thermal Class: B

2. SCHEMATIC CIRCUIT :



3. WINDING CUTAWAY VIEW:



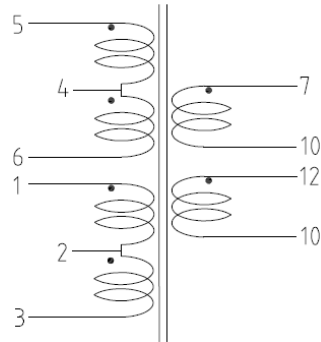
Transformer T201

The transformer produced by each factory is the same material and construction.

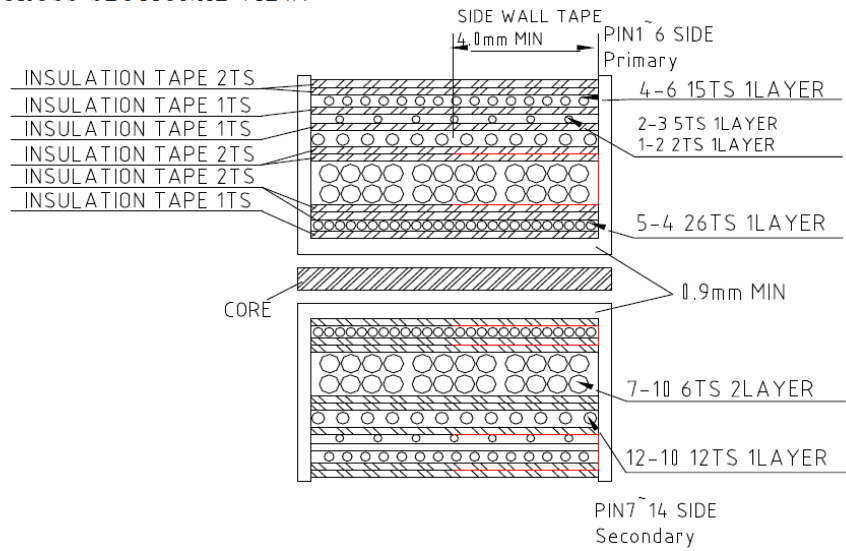
1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE: 20.5mm*16.0mm*14.0mm	PQ20/16 LP9 AL4550±25%	NEW CONDA CO.	X90485-8744IX1
		PQ20/16 DMR95 AL4300±25%	DMEGC CO.	X90485-8768IJ1
		PQ20/16 TPW33 AL4700±25%	TDG CO.	X90485-8744IE1
		PQ20/16 JPP-95 AL4380±25%	A-CORE CO.	X90485-8778ID1
[2]	BOBBIN: PQ20/16 立式 6/8PIN	SUMITIOMO BAKELITE CO. E41429 PHENOLIC PM-9820 PM-9630 150℃ CHANG CHUN CO. E59481 PHENOLIC T375J 150℃ (VP-2017)	VALOP CO.	X90486-8825IV
[3]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U & 2UEWN/U MW28-C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757	
		POLYURETHANE COATED POLYAMIDE 1UEWE & 2UEWE MW-28C 130℃	TAI-I CO. E85640	
		POLYURETHANE COATED POLYAMIDE 1UEW-NY & 2UEW-NY MW28C 130℃	PROSPERITY CO. E196072	
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-M 130℃	COSMOLINK CO. E213764	
[5]	TUBE	TEFLON TUBE TFL TFT TFS 200℃	GREAT HOLDING CO. E156256	
		TEFLON TUBE TFE-TW TFE-SW 200℃	ZEUS CO. E64007	
		TEFLON TUBE CB-TT-L CB-TT-T CB-TT-S 200℃	CHANGYUAN CO. E180908	
[6]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUP I	JINGJIANG YAHUA CO. E165111	
[7]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		AD-3B	JASDI CO.	PT9041-9935IJ
[8]	VARNISH	V1630FS 130℃	ELANTASELECTRIC AL INSULATION	XT9051-9997I
		468-2FC 130℃	ELANTAS PDG INC. E75225	
[9]	SOLDER	SACX0300 SOLDER BAR	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA
[10]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
Insulation System: CIS.04 Table III (E97394) Thermal Class: B				

2. SCHEMATIC CIRCUIT :

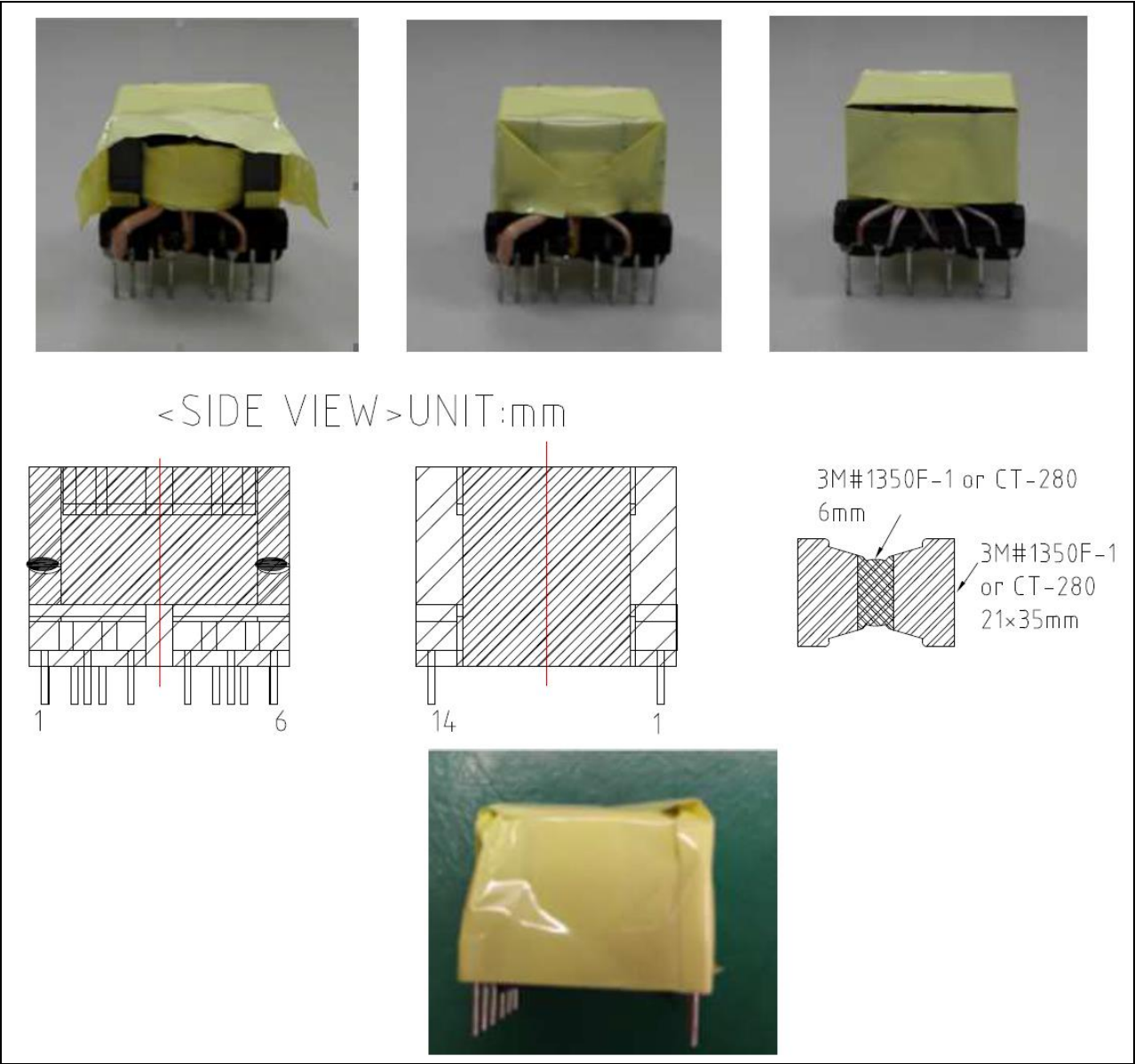


3. WINDING CROSS-SECTIONAL VIEW:



4. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開 始 - 結 束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1				1 層	[1]
#2	5 - 4	Φ 0.25	26	2 層	[2][6]
#3	7 - 10	TRIPLE WIRE Φ 0.35*4	6	2 層	[2][3][7]
#4	12 ~ 10	TRIPLE WIRE Φ 0.35*1	12	1 層	[2]
#5	1 - 2	Φ 0.2	2	1 層	[2][4][5][8]
#6	2 - 3	Φ 0.2	5		
#7	4 - 6	Φ 0.25	15	2 層	[2][8]



G5.3

TABLE: transformers

P

Transformer T401

The transformer produced by each factory is the same material and construction.

1. MATERIALS' LIST :

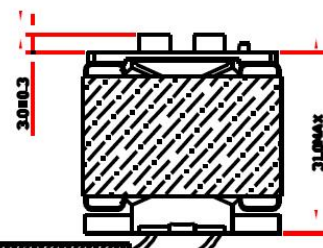
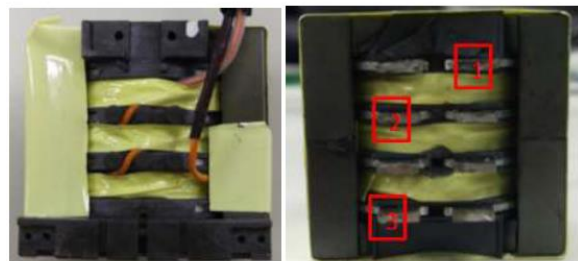
Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-2LZ 130℃	TOTOKU CO. E166483	
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111	
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[7]	SHRINK TUBE	TUBE HEAT SHRINK ϕ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[8]	銅片	C-1.0*15.8*R7.23 C1100	LIANCHENH. CO	X40D00-9999I
		1*15.8*AT7.23 C1100	MEILI CO	X40D00-9999IN
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
[10]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		TVB-2180T 155℃ ADD 2% TEC9652(Catalyst)	KYOCERA CHEMICALCO. E83702	XT9051-9991I XT9051-9894I
Insulation System: B-8 Table II (E209189) Thermal Class: B				

2. SCHEMATIC CIRCUIT :

3. WINDING CUTAWAY VIEW:

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE LITZ WIRE Φ (0.10*27)*1	52	1 層	[1]

To be wound 18 turns on the first groove. The second and third grooves each to be wound 17 turns.



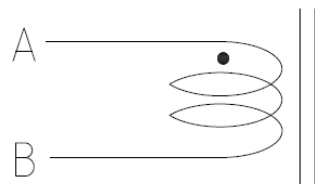
Transformer T401 (Part no. 25P59)

The transformer produced by each factory is the same material and construction.

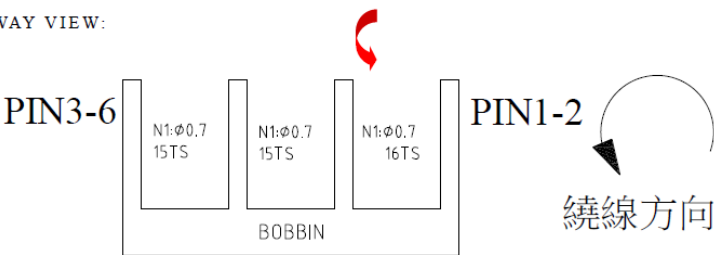
1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufacture Part No. 製造商品名規格	Manufacture name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (B-3242)	BOSCOM CO.	X90486-8578IS
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (HD-1295)	HAO DA CO.	X90486-8578IQ
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TILW-B 130℃	TA YA CO. E225803	
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111	
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[7]	SHRINK TUBE	TUBE HEAT SHRINK φ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[8]	銅片	C-1.0*15.8*R7.23 C1100	LIANCHENH. CO	X40D00-9999I
		1*15.8*AT7.23 C1100	MEILI CO	X40D00-9999IN
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
		AD-3B	JASDI CO.	PT9041-9935IJ
[10]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		V1630FS 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E87039	XT9051-9997I
		468-2FC 130℃	ELANTASELECTRI CALINSULATIONEL ANTASPDG INC. E75225	PT9051-9996I
Insulation System: TaYa 130-1 Table III (E254098) Thermal Class: B				

2. SCHEMATIC CIRCUIT :



3. WINDING CUTAWAY VIEW:

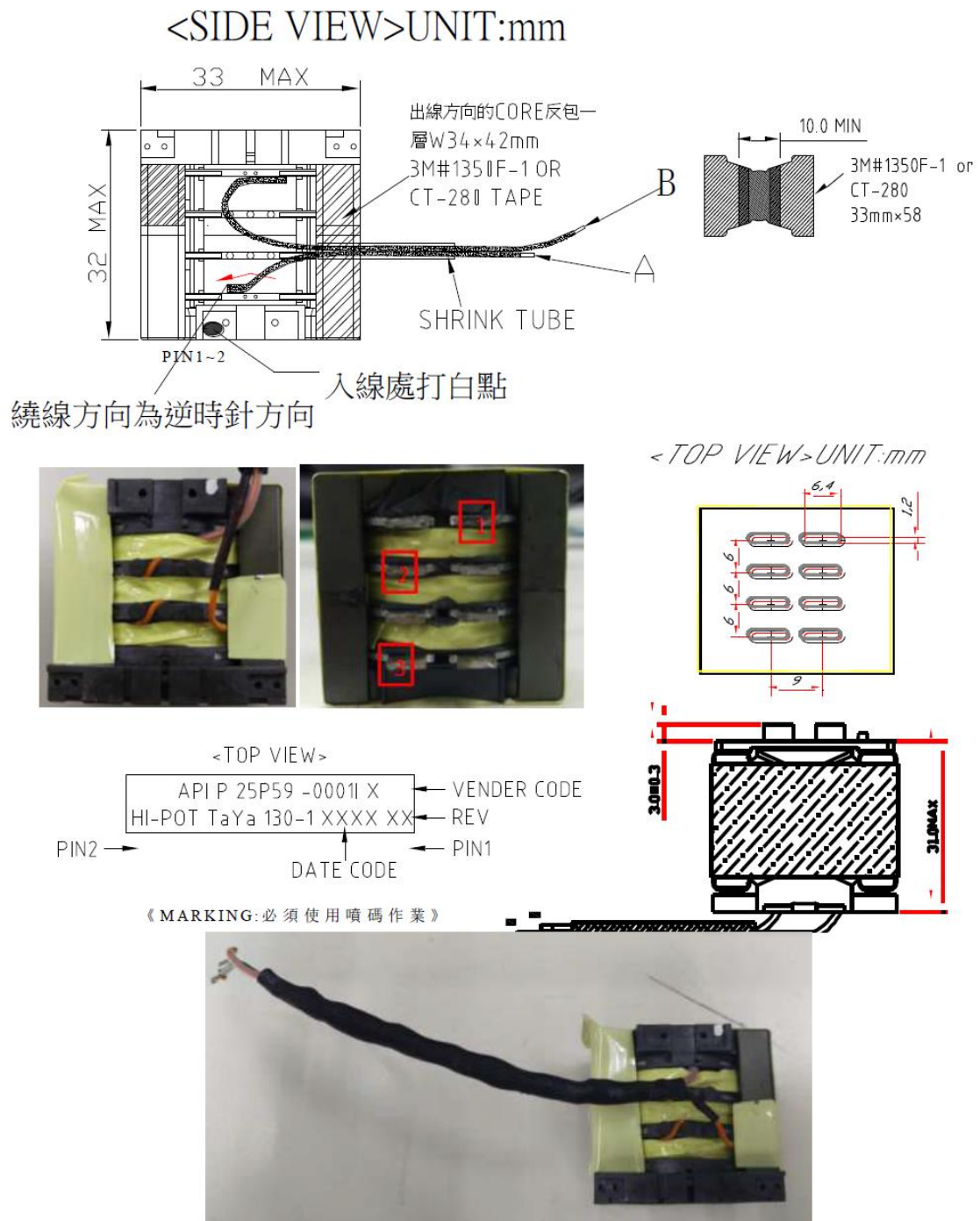


4. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開 始 - 結 束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE WIRE Φ 0.7	46	1 層	[1]

***A,B 出入線須裝 TEFLON TUBE.A 使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾錫處

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm
說明：



Transformer T401 (Part no. 25P52)

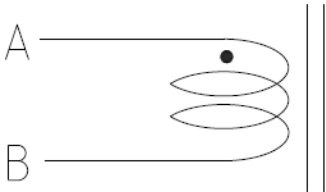
The transformer produced by each factory is the same material and construction.

1. MATERIALS' LIST :

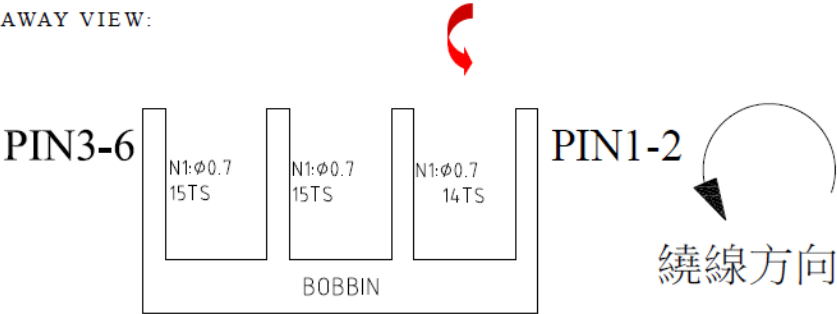
Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (B-3242)	BOSCOM CO.	X90486-8578IS
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (HD-1295)	HAO DA CO.	X90486-8578IQ
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TILW-B 130℃	TAYA CO. E225803	
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111	
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[7]	SHRINK TUBE	TUBE HEAT SHRINK ϕ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[8]	銅片	C-1.0*15.8*R7.23 C1100	LIANCHENH. CO	X40D00-9999I
		1*15.8*AT7.23 C1100	MEILI CO	X40D00-9999IN
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
		AD-3B	JASDI CO.	PT9041-9935IJ
[10]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		V1630FS 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E87039	XT9051-9997I
		468-2FC 130℃	ELANTASELECTRI CALINSULATIONEL ANTASPDG INC. E75225	PT9051-9996I

Insulation System: TaYa 130-1 Table III (E254098) Thermal Class: B

2. SCHEMATIC CIRCUIT :



3.WINDING CUTAWAY VIEW:

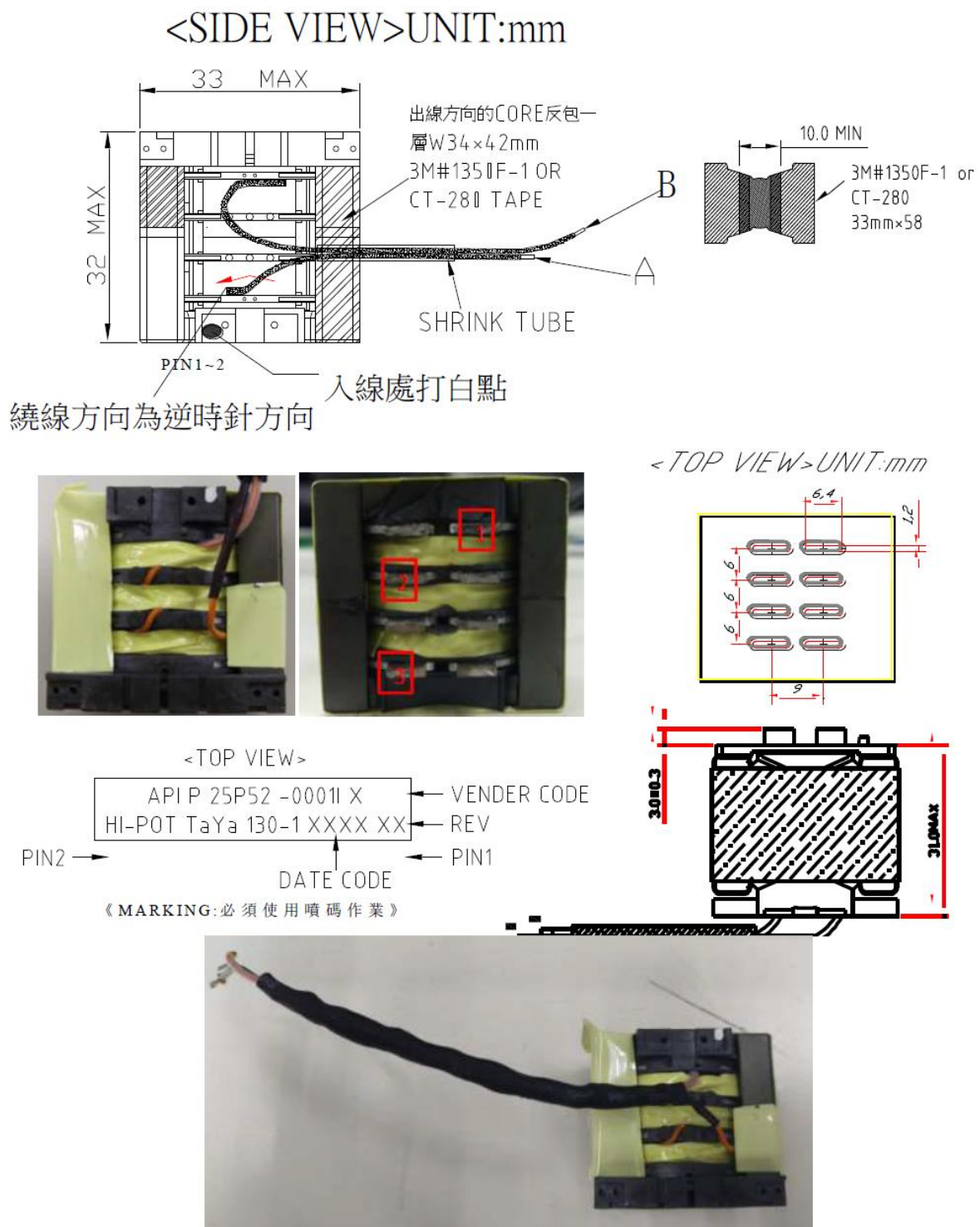


4.WINDING CONSTRUCTION :

ORDER 順 序	S - F 開 始 - 結 束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE WIRE Φ 0.7	44	1 層	[1]

***A,B 出入線須裝 TEFLON TUBE.A 使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾錫處

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm



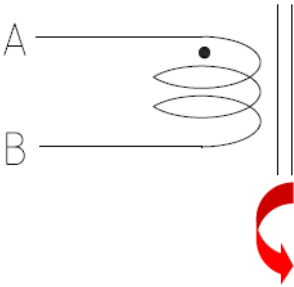
Transformer T401 (Part no. 25P60)

The transformer produced by each factory is the same material and construction.

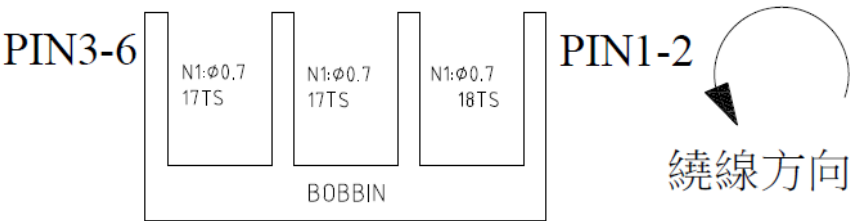
1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 制造商品名規格	Manufactory name 制造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (B-3242)	BOSCOM CO.	X90486-8578IS
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (HD-1295)	HAO DA CO.	X90486-8578IQ
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TILW-B 130℃	TA YA CO. E225803	
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111	
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[7]	SHRINK TUBE	TUBE HEAT SHRINK φ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[8]	銅片	C-1.0*15.8*R7.23 C1100	LIANCHENH. CO	X40D00-9999I
		1*15.8*AT7.23 C1100	MEILI CO	X40D00-9999IN
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
[10]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		V1630FS 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E87039	XT9051-9997I
		468-2FC 130℃	ELANTASELECTRI CALINSULATIONEL ANTASPDG INC. E75225	PT9051-9996I
Insulation System: TaYa 130-1 TableⅢ (E254098) Thermal Class: B				

2. SCHEMATIC CIRCUIT :



3.WINDING CUTAWAY VIEW:

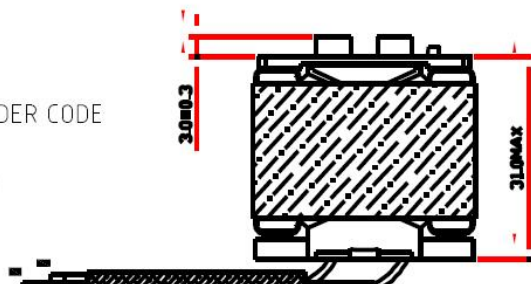
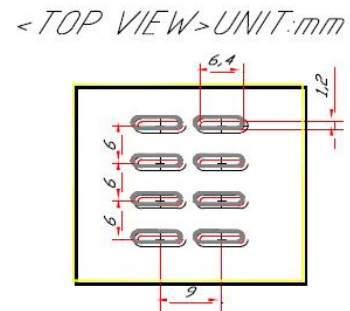
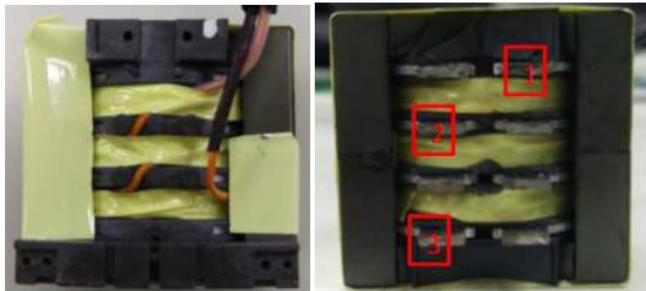
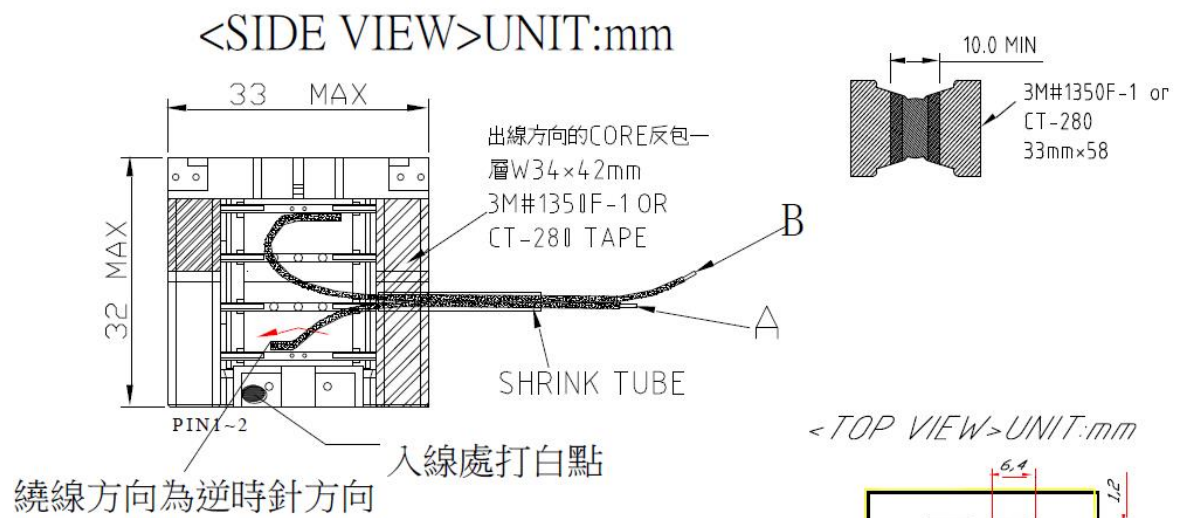


4.WINDING CONSTRUCTION :

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE WIRE Φ 0.7	52	1 層	[1]

***A,B 出入線須裝 TEFLON TUBE.A 使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾錫處.

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm



IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
Differences according to : EN IEC 62368-1:2020+A11:2020			
Attachment Form No. : EU_GD_IEC62368_1E			
Attachment Originator : UL(Demko)			
Master Attachment : 2021-02-04			
Copyright © 2020 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	Modification to Clause 3 .		
3.3.19	Sound exposure <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		N/A
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.3	sound exposure, E A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is $\text{Pa}^2 \text{s}$. $E = \int_0^T p(t)^2 dt$		N/A
3.3.19.4	sound exposure level, SEL logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: SEL is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	digital signal level relative to full scale, dBFS levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A
2	Modification to Clause 10		
10.6	Safeguards against acoustic energy sources		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	Replace 10.6 of IEC 62368-1 with the following:		
10.6.1.1	Introduction Safeguard requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier that does not allow the user to walk around while in use. For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.		
10.6.2	Classification of devices without the capacity to estimate sound dose		N/A
10.6.2.1	General This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song. NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		N/A
10.6.2.2	RS1 limits (to be superseded, see 10.6.3.2) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		
10.6.2.3	RS2 limits (to be superseded, see 10.6.3.3) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed "programme simulation noise" as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed "programme simulation noise" as described in EN 50332-1.		N/A
10.6.2.4	RS3 limits RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	Classification of devices (new)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.3.1	General Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.		N/A
10.6.3.2	RS1 limits (new) RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.3.3	RS2 limits (new) RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general		N/A

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	use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1.		
10.6.4	Requirements for maximum sound exposure		N/A
10.6.4.1	Measurement methods All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		N/A
10.6.4.2	Protection of persons Except as given below, protection requirements for parts accessible to ordinary persons, instructed persons and skilled persons are given in 4.3. NOTE 1 Volume control is not considered a safeguard . Between RS2 and an ordinary person , the basic safeguard may be replaced by an instructional safeguard in accordance with Clause F.5, except that the instructional safeguard shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the instructional safeguard may be given through the equipment display during use. The elements of the instructional safeguard shall be as follows:  – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: "High sound pressure" or equivalent wording – element 3: "Hearing damage risk" or equivalent wording		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– element 4: “Do not listen at high volume levels for long periods.” or equivalent wording An equipment safeguard shall prevent exposure of an ordinary person to an RS2 source without intentional physical action from the ordinary person and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off. A skilled person shall not be unintentionally exposed to RS3.		
10.6.5	Requirements for dose-based systems		N/A
10.6.5.1	General requirements Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.		
10.6.5.2	Dose-based warning and requirements When a dose of 100 % <i>CSD</i> is reached, and at least at every 100 % further increase of <i>CSD</i>, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % <i>CSD</i> leads to the risk of hearing damage or loss.		N/A
10.6.5.3	Exposure-based requirements With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		N/A
10.6.6.2	Corded listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.3	Cordless listening devices In cordless mode,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		
10.6.6.4	Measurement method <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>		N/A
3	Modification to the whole document		

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Clause	Requirement + Test	Result - Remark	Verdict

	Delete all the “country” notes in the reference document according to the following list:						P
	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2	
	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2	
	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3	
	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note	
	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note	
	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4	
	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2	
	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2	
	10.6.1	Note 3	F.3.3.6	Note 3	Y.4.1	Note	
	Y.4.5	Note					
4	Modification to Clause 1						
1	Add the following note: <i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i>				The equipment is an integrated circuit (IC) including a capacitor discharge function for building-in, must be considered when installed in the end product.		P
5	Modification to 4.Z1						

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Clause	Requirement + Test	Result - Remark	Verdict
4.21	Add the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
6	Modification to 5.4.2.3.2.4		
5.4.2.3.2.4	Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.		N/A
7	Modification to 10.2.1		
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.		N/A
8	Modification to 10.5.1		

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Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	Add the following after the first paragraph: For RS 1 compliance is checked by measurement under the following conditions: In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus. Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		N/A
9	Modification to G.7.1		
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
10	Modification to Bibliography		

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Clause	Requirement + Test	Result - Remark	Verdict
	Add the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		N/A
11	ADDITION OF ANNEXES		
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		P

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Clause	Requirement + Test	Result - Remark	Verdict
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"		N/A
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1 and Annex G	Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005,		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.		N/A
5.6.1	Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		
5.6.4.2.1	Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug .		N/A
5.6.4.2.1	France After the indent for pluggable equipment type A , the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.		N/A
5.6.8	Norway To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as class I equipment . See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	Denmark To the end of the subclause the following is added:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		
5.7.6.2	Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
5.7.7.1	Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”		N/A

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	NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplede utstyr – og er tilkoplede et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		
8.5.4.2.3	United Kingdom Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		N/A
B.3.1 and B.4	Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in		N/A

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	equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met		
G.4.2	Denmark To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011		N/A

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	Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a <i>Justification:</i> Heavy Current Regulations, Section 6c		
G.4.2	United Kingdom To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
G.7.1	United Kingdom To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de		N/A

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ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)		N/A	
	Type of flexible cord	Code designations		N/A
		IEC	CENELEC	
	PVC insulated cords			
	Flat twin tinsel cord	60227 IEC 41	H03VH-Y	
	Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F	
	Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F	
	Rubber insulated cords			
	Braided cord	60245 IEC 51	H03RT-F	
	Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F	
	Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F	
	Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F	
	Cords having high flexibility			
	Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H	
	Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H	
	Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H	
	Cords insulated and sheathed with halogen-free thermoplastic compounds			
	Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F	
	Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F	

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1 U.S.A. AND CANADA NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment – Part 1: Safety requirements)			
Differences according to: CSA/UL 62368-1:2019			
TRF template used:: IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No.: US_CA_ND_IEC62368_1E			
Attachment Originator: UL(US)			
Master Attachment: Dated 2021-02-04			
Copyright © 2021 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
IEC 62368-1 - US and Canadian National Differences Special National Conditions based on Regulations and Other National Differences			
1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.	The equipment is an integrated circuit (IC) including a capacitor discharge function for building-in, must be considered when installed in the end product.	P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits ($\leq 200V$ per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		N/A
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked "W."		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix "W" marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and maximum current, or maximum voltage and nominal current output for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 are required to be marked with the voltage rating and "Class 2" or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centers, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		N/A
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

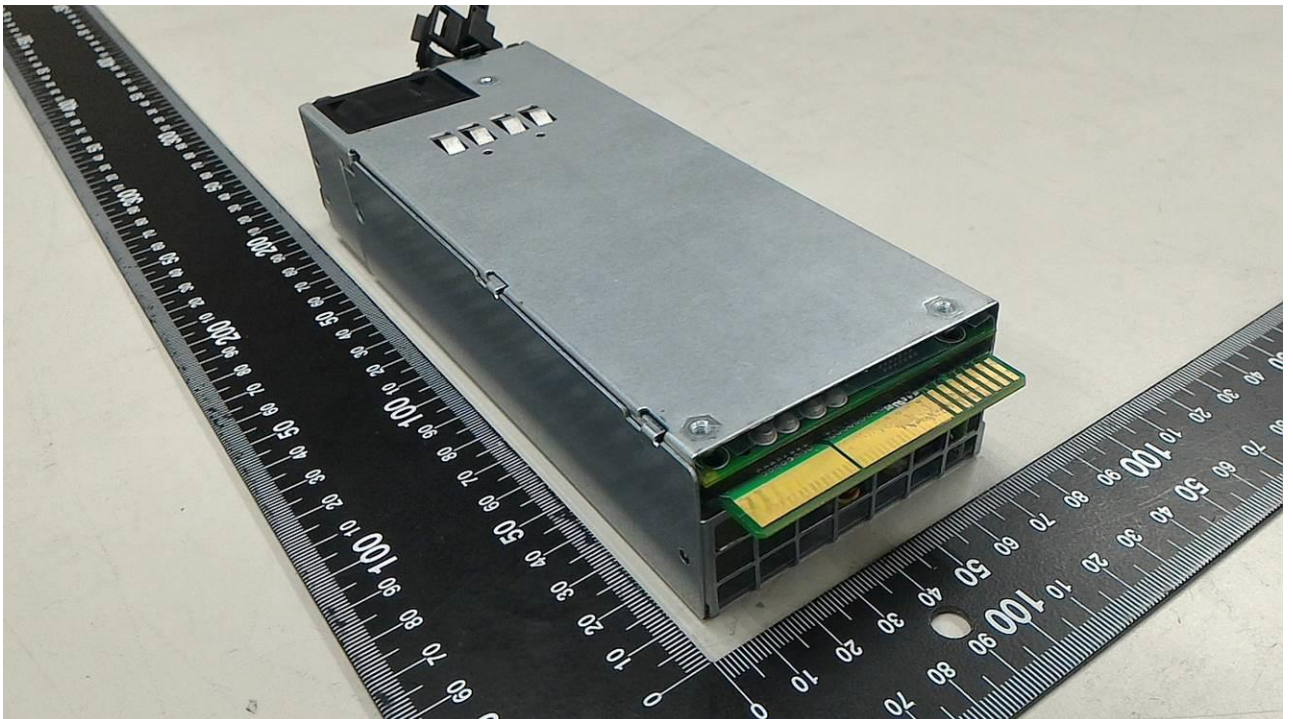
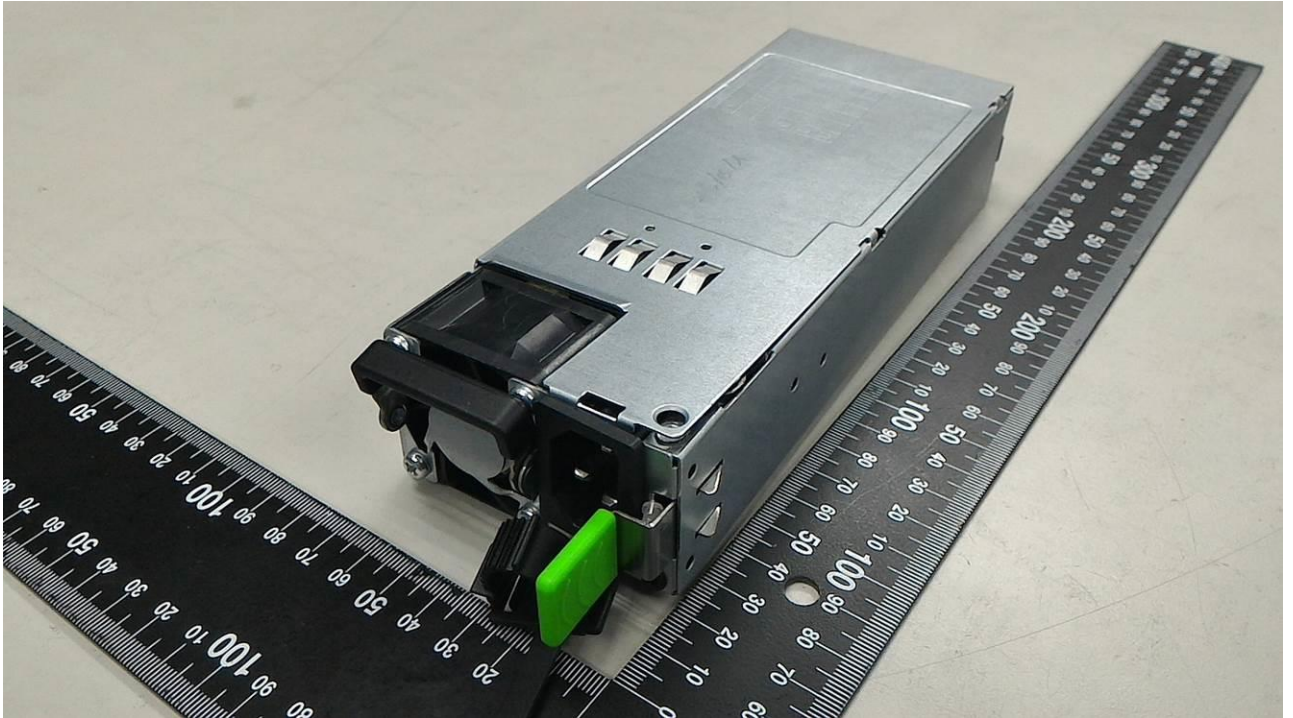
ATTACHMENT TO TEST REPORT IEC 62368-1 SINGAPORE NATIONAL DIFFERENCES Audio/video, information and communication technology equipment - Part 1: Safety requirements			
Differences according to.....: Special National Conditions			
TRF template used: IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No.....: SG_ND_IEC62368_1E			
Attachment Originator Intertek Testing Services (Singapore) Pte Ltd			
Master Attachment 2021-07-16			
Copyright © 2021 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	National Differences		N/A
	Not Applicable		N/A
Chapter 7	Special national conditions (if any) Controlled goods under Consumer Protection (Safety Requirements) Registration Scheme (CPS) are required to be tested to additional requirements stipulated by Enterprise Singapore in Chapter 7 of the CPS information booklet. The CPS information booklet is updated on an ongoing basis. At the point of testing, refer to the latest copy of the CPS information booklet for the minimum edition of standard to apply for testing of products under the CPS scheme and any new requirements. Link to CPS information booklet: https://www.consumerproductsafety.gov.sg/files/cps-info-booklet.pdf		N/A
3	All appliances must be tested to 230 VAC, 50 Hz.		N/A
4	Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5	All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards.		N/A
6	All Class I appliances (3-pin mains plug) must be fitted with 3-pin mains plugs complying with SS 145/SS 472 that are registered with the Authority.		N/A
7	a) All Class II appliances must be fitted with 2-pin mains plug complying with EN 50075. b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that comply with SS 145 and registered with the Authority.		N/A
9	Detachable power cord set must be listed in the test report critical component list.		N/A
18	AC Adaptor incorporated with 13A socket-outlet to be tested to additional tests clauses 13, 17 and 18 of SS 246 (till 25/10/2021), or clauses 12.1 & 12.3 of SS 145 Part 3: 2020.		N/A
19	Supplier who is supplying AC adaptors with detachable interchangeable plug pins must include with its products, written instructions to inform customer on the type of detachable interchangeable plug pins that are approved and suitable to use in Singapore. These instructions are to be submitted to the Conformity Assessment Body for verification when applying for Certificate of Conformity.		N/A
20	For AC Adaptors supplied together with Personal Mobility Devices: 1. Registered Supplier to declare the model of the AC adaptor that is to be used with/ bundled together with the PMDs; 2. Registered Supplier to provide valid IEC 60950-1 or IEC 62368-1 test reports for certification and registration of the declared AC adaptor under the CPS scheme; and Registered Supplier to provide the UL 2272 test report as supporting document, showing that the listed AC adaptor in the UL 2272 test report is the model declared to be used with/ bundled together with the PMDs.		N/A
21	CD/ DVD ROMs (used in personal computers) to have test certificate showing that CD/DVD ROM has complied with IEC 60825- 1.		N/A

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
22	Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level.		N/A
23	Powerline Ethernet Adaptor incorporated with 13A socket-outlet, to be tested to additional test clauses 13, 17 & 18 of SS 246 (till 25/10/2021), or clauses 13, 17 & 18 of SS 145 Part 3: 2020.		N/A
	Other additional requirements which may be included in Chapter 7 of the information booklet in ongoing basis at the time of testing.		N/A

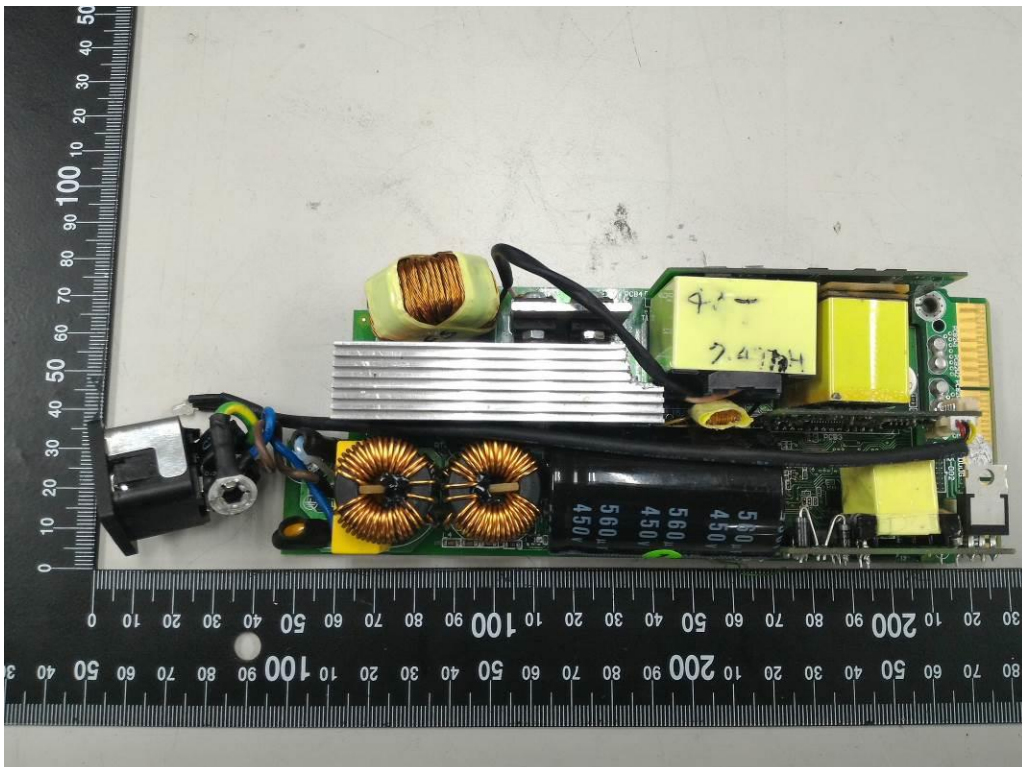
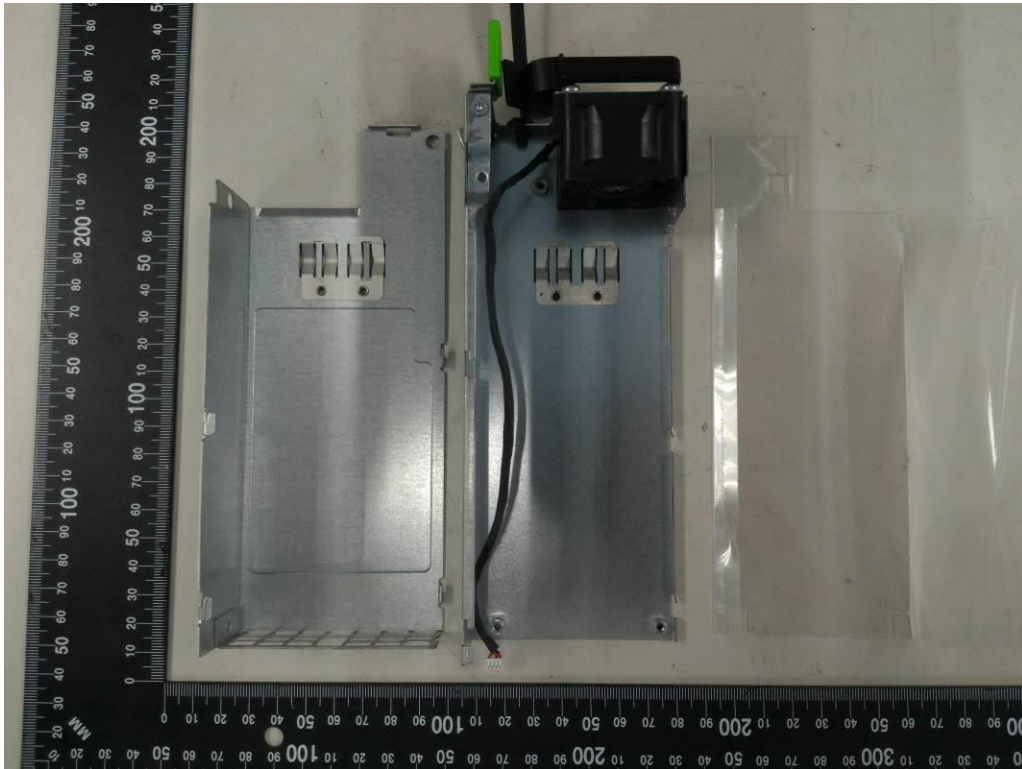
Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



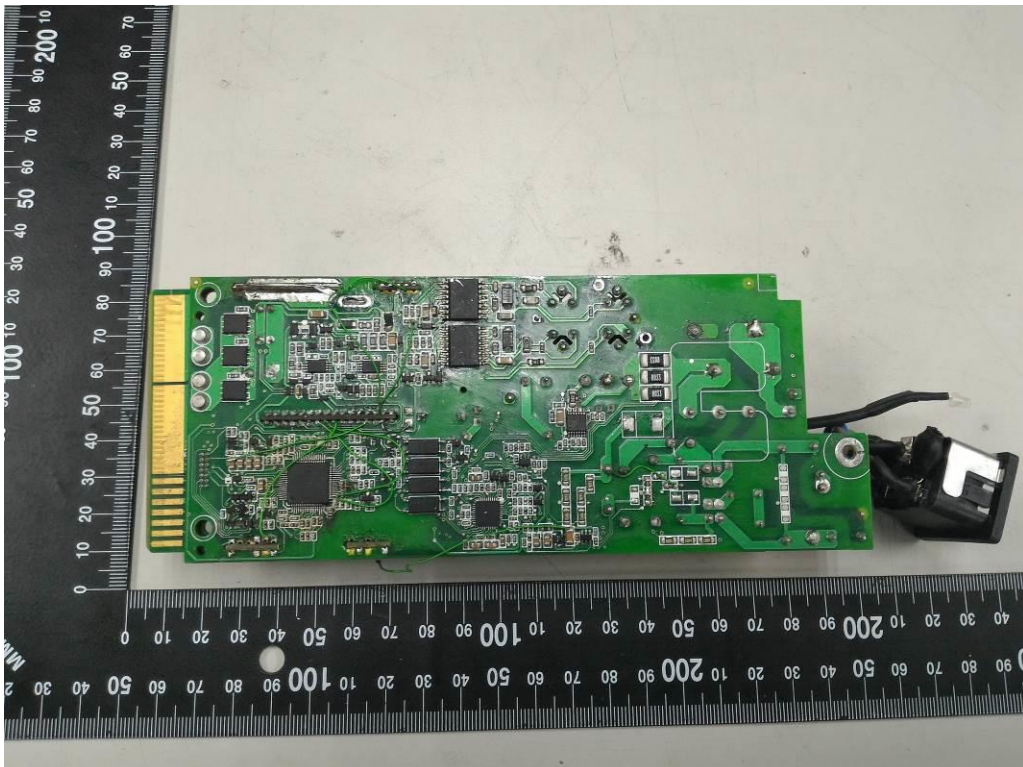
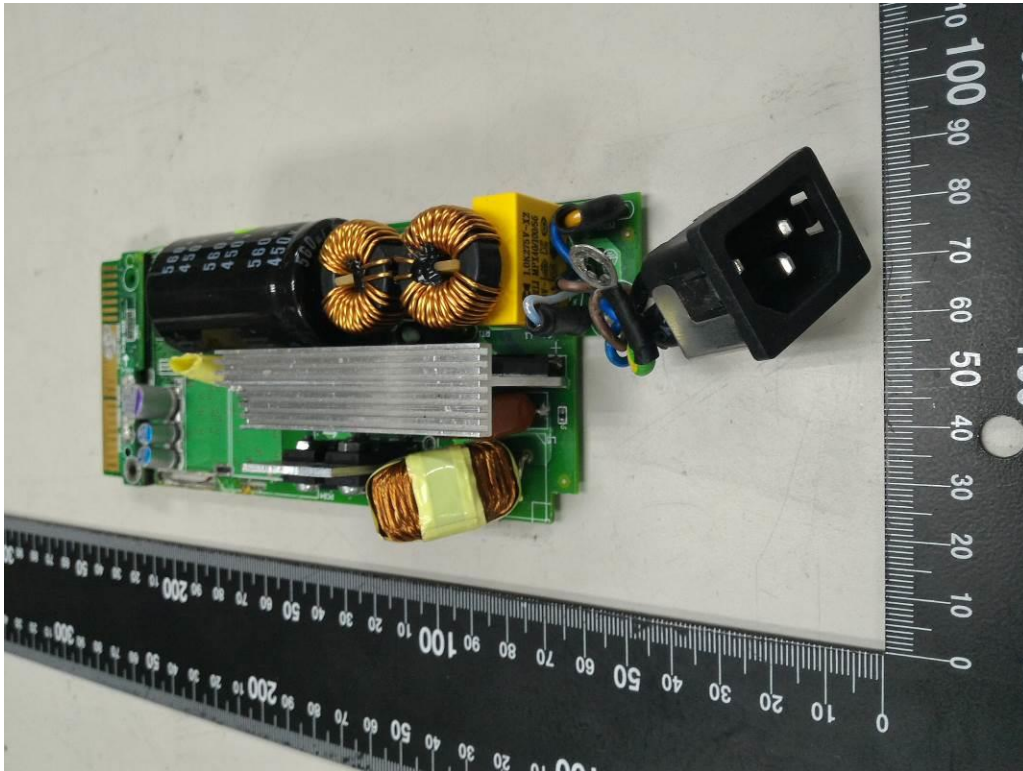
Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



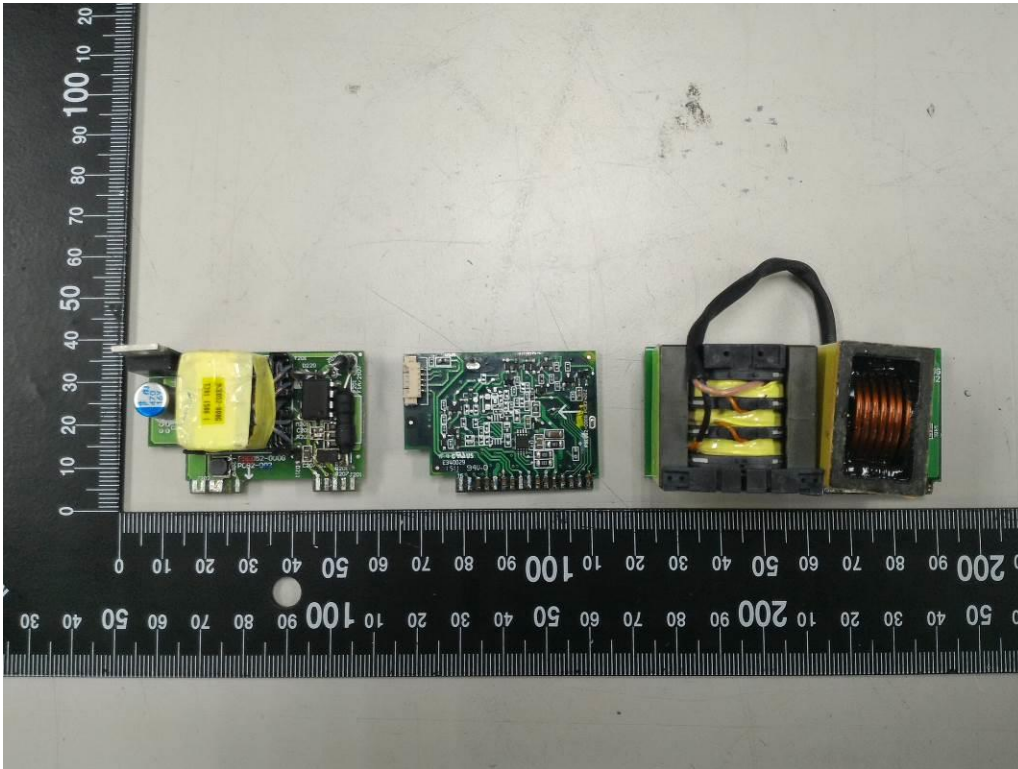
Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



Product: Switching Power Supply

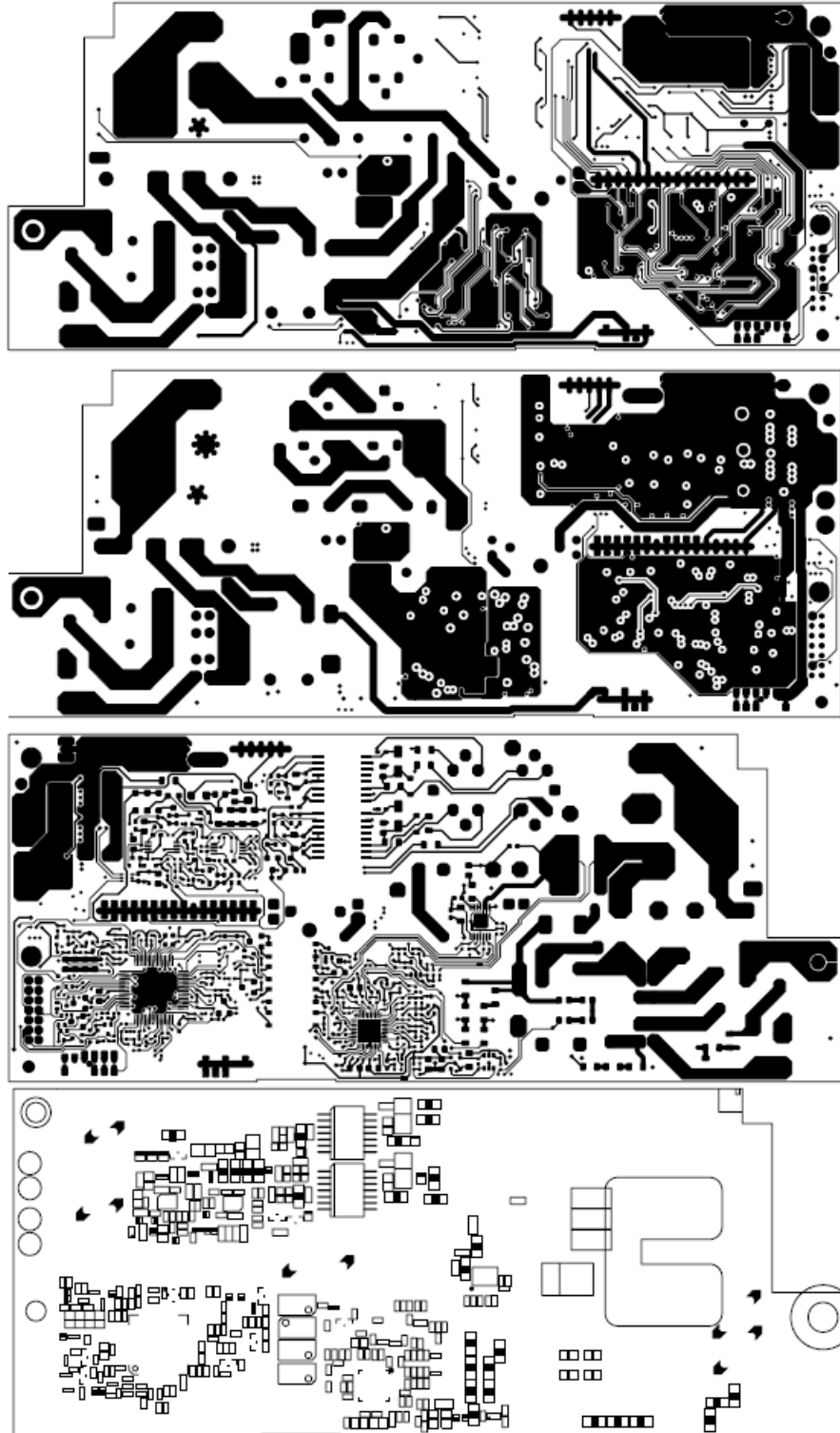
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2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000

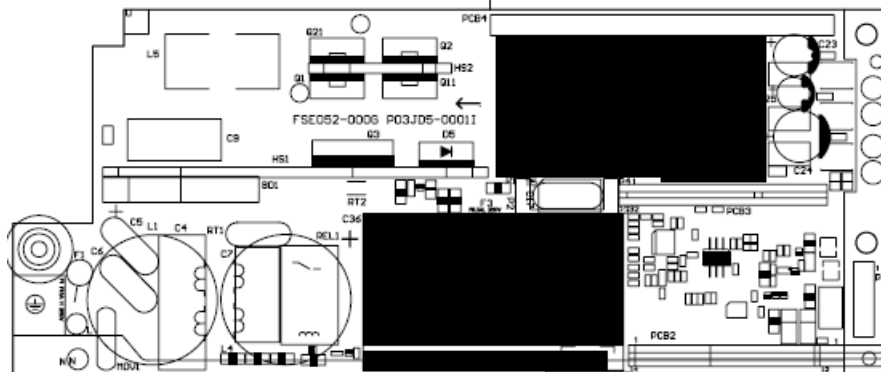
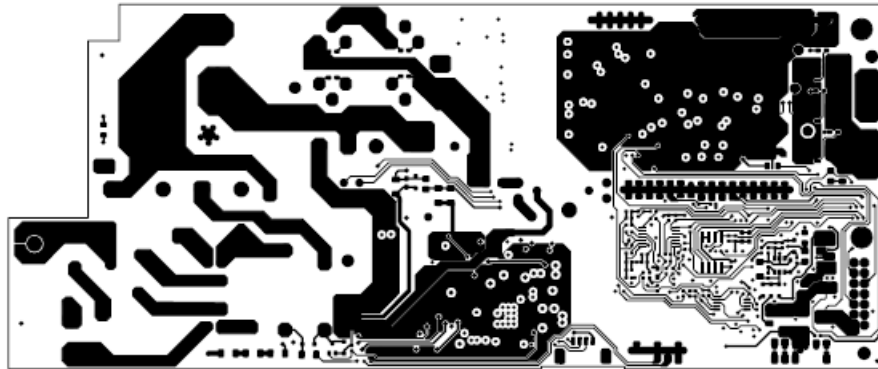
PCB1



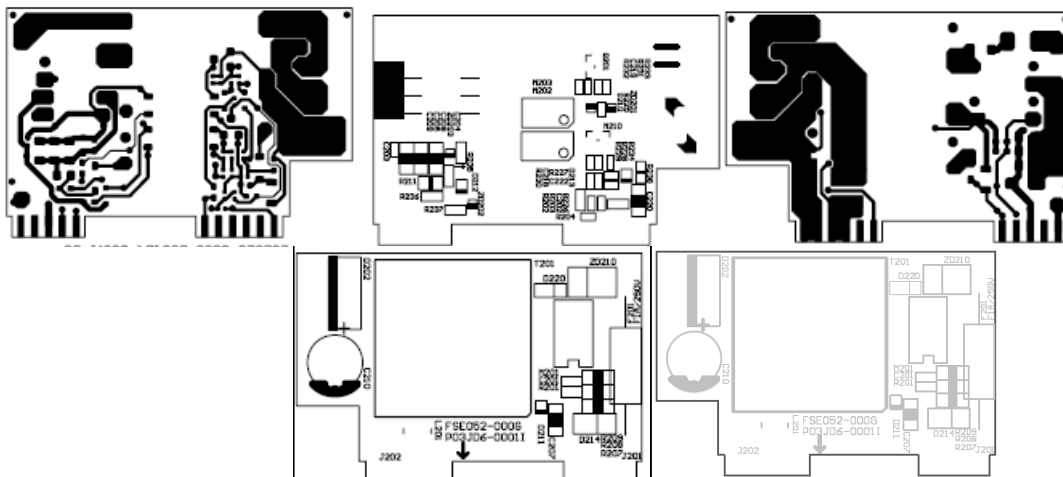
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Type Designation:

- 1). FSE052, R1CA2801A, FSF037, R1CA2801B
- 2). FSF059, R1CA2551B, FSF065, R1CA2551C
- 3). FSG007, R1CH2801A
- 4). FSG016, R1CH2551A
- 5). R1CA2801A ID:P000



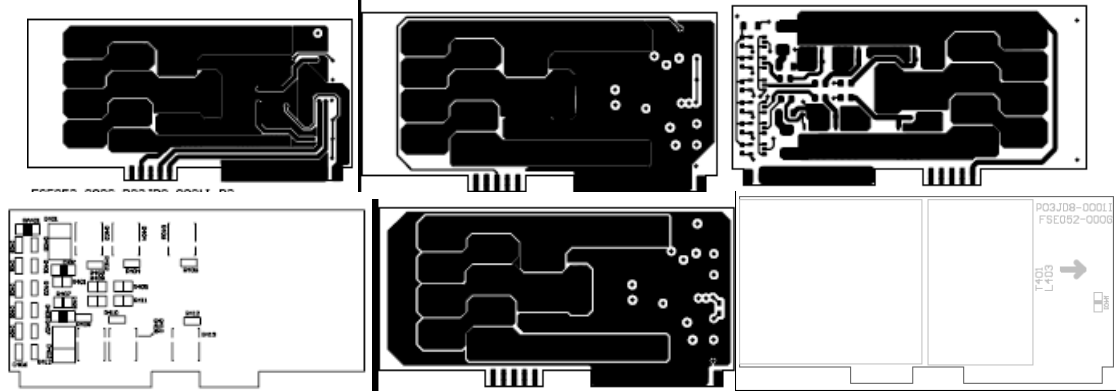
PCB2



Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000

PCB4



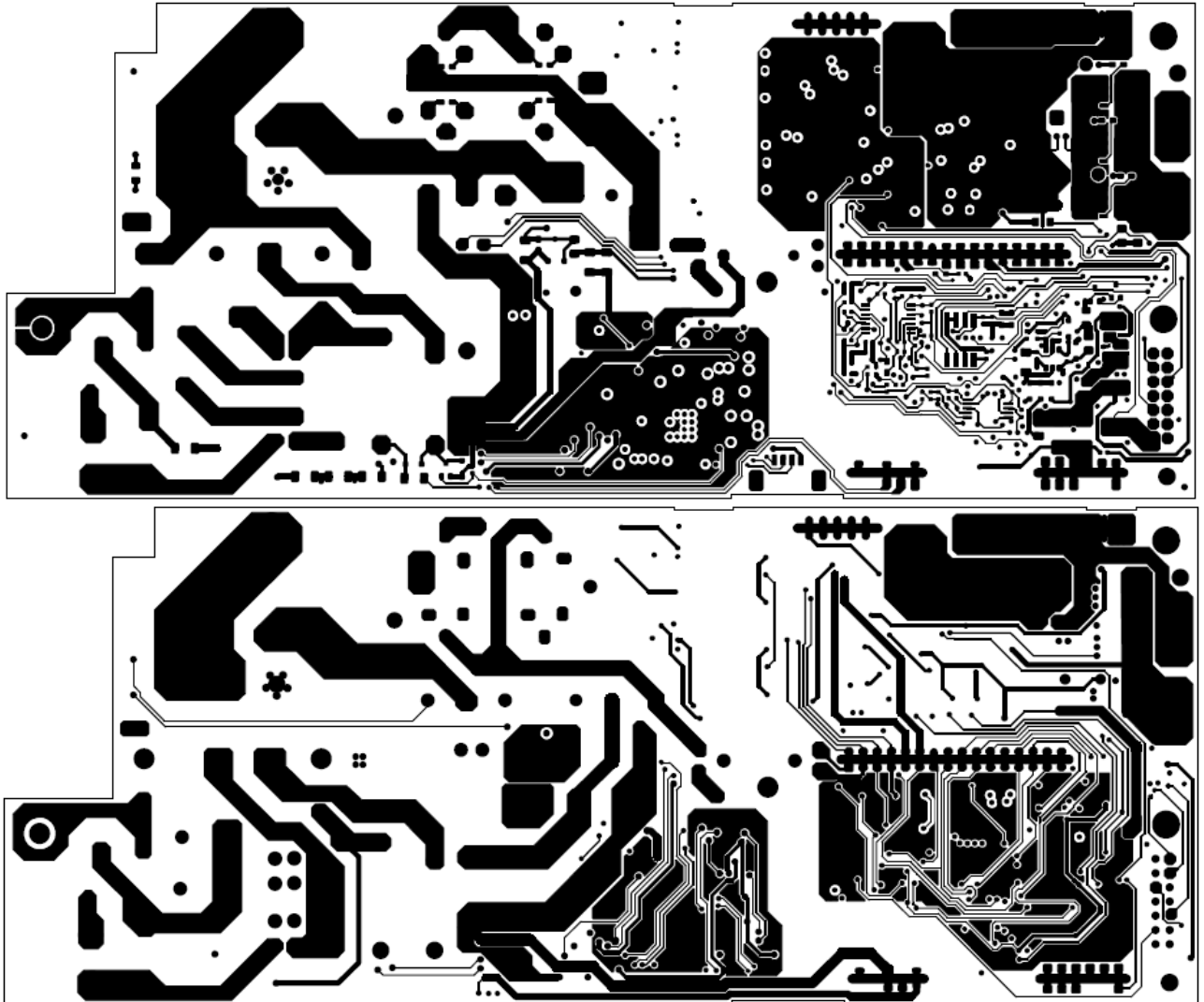
Fan Guard



Product: Switching Power Supply

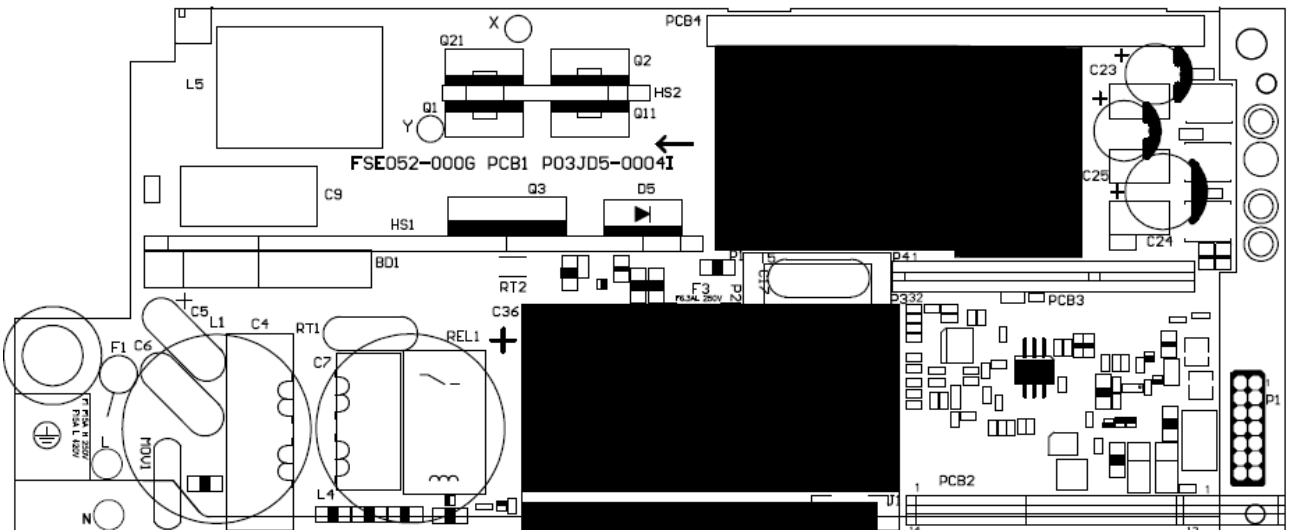
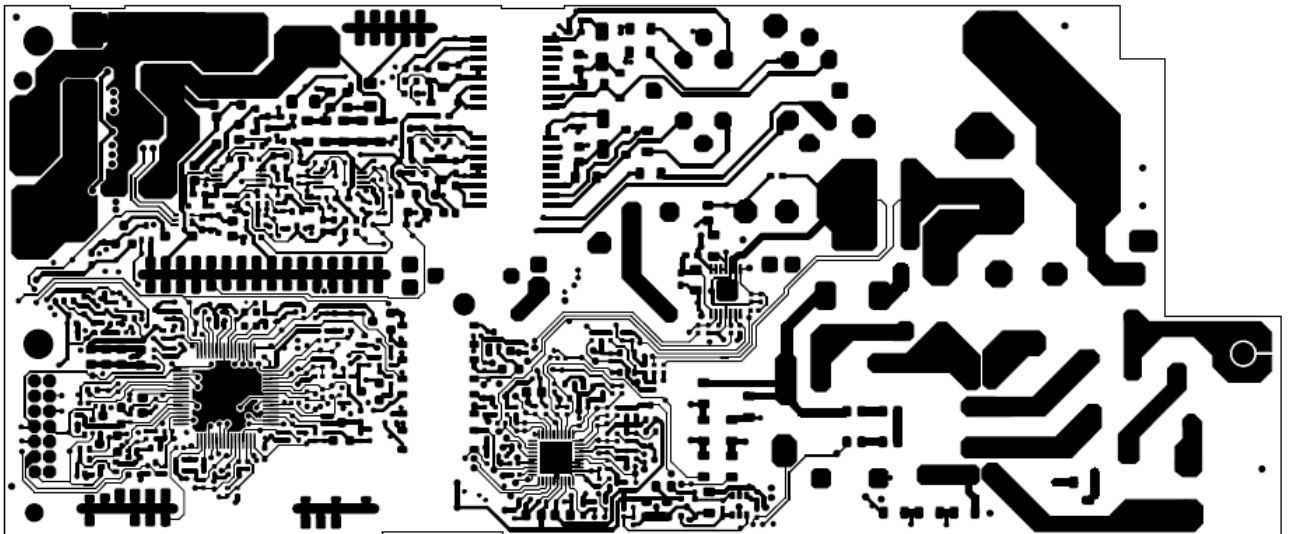
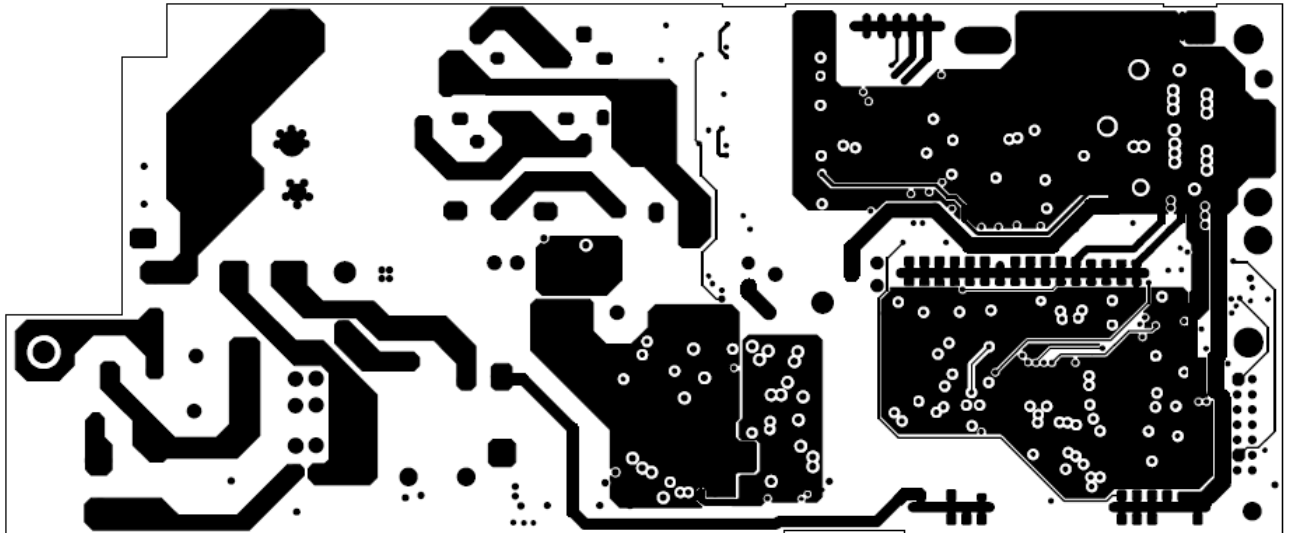
Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000

Models FSF059, R1CA2551B, FSF065, R1CA2551C PCB1



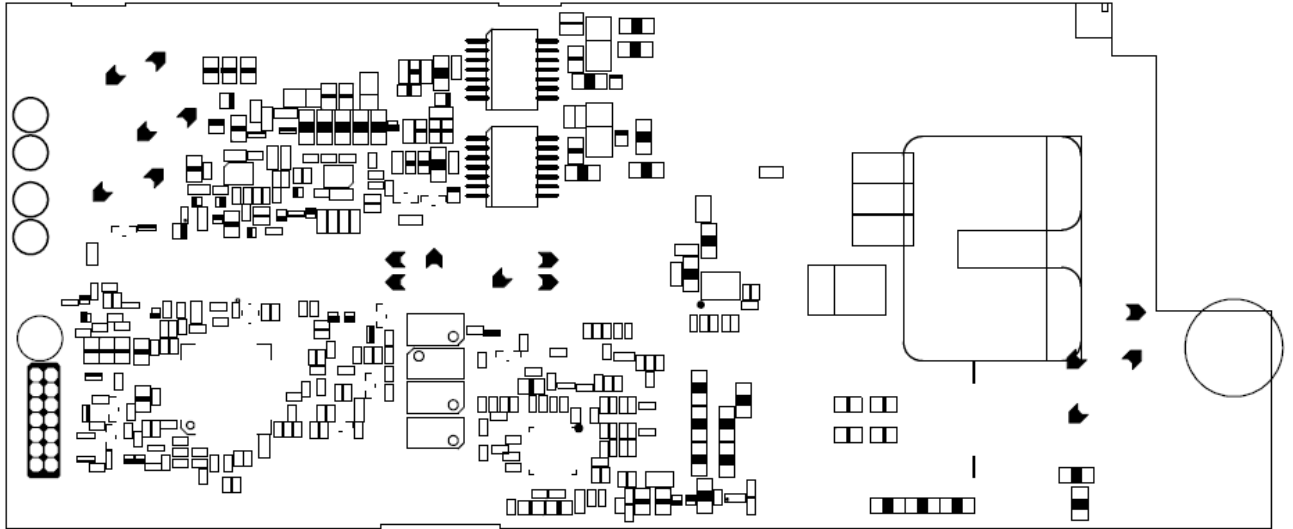
Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



Product: Switching Power Supply

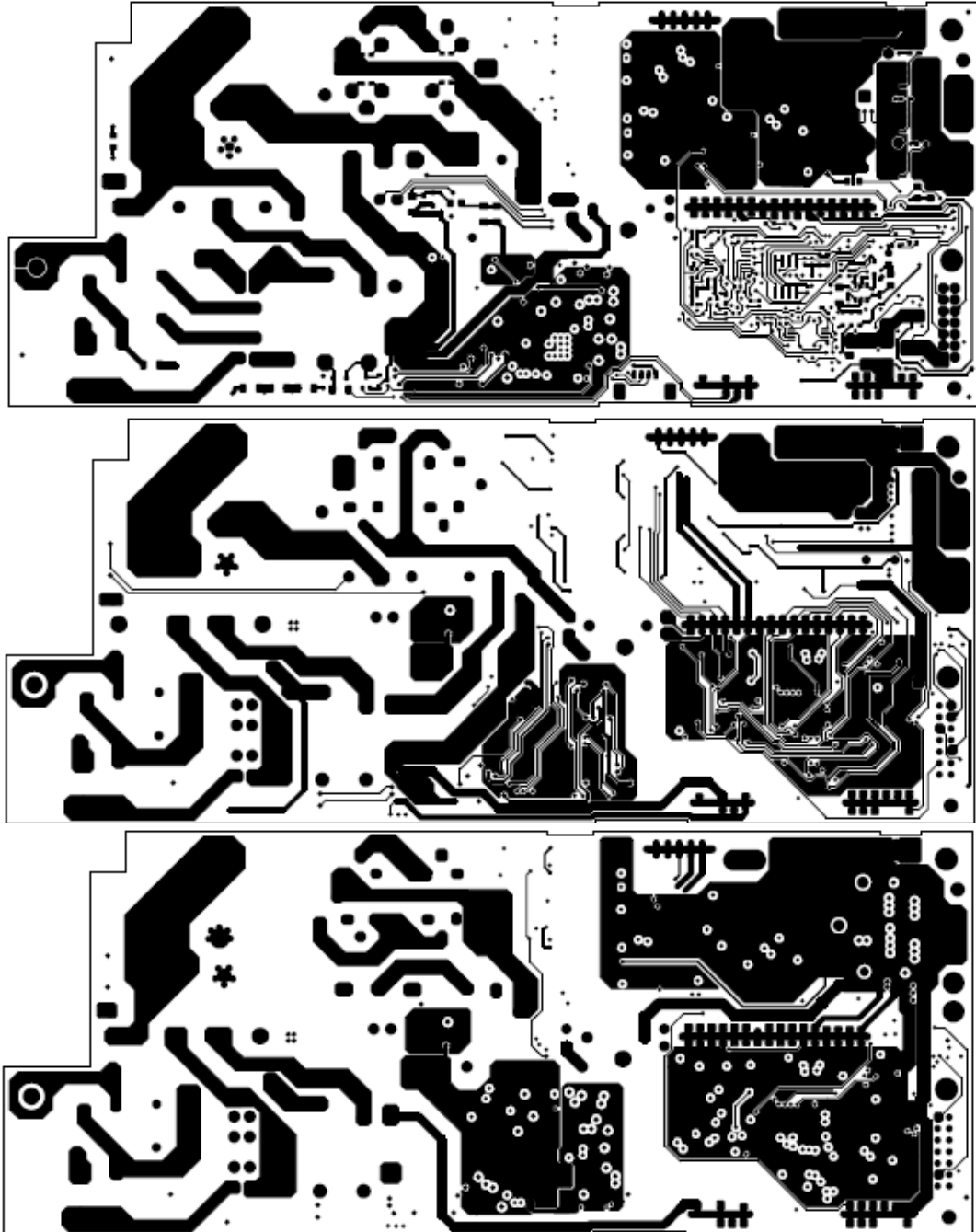
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3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000



Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000

Models FSG007, R1CH2801A, FSG016, R1CH2551A PCB1



Product: Switching Power Supply

Type Designation: 1). FSE052, R1CA2801A, FSF037, R1CA2801B
2). FSF059, R1CA2551B, FSF065, R1CA2551C
3). FSG007, R1CH2801A
4). FSG016, R1CH2551A
5). R1CA2801A ID:P000

