

SPECIFICATION FOR APPROVAL

MODEL NUMBER	
PART NUMBER	HDP-ALL-0004
DESCRIPTION	International adapters (AU, EU, UK, WHITE)
CUSTOMER / PROJECT CODE	
REVISION	A0
DATE	July 6, 2018

CUSTOMER APPROVAL	DATE
SEACOMP ENGINEERING APPROVAL	DATE

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Revision History

REV	DESCRIPTION	DATE
A0	Initial Release	Jul 6, 2018

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1 Scope

This specification is for international adapters IEC Type-C, Type-G and Type-I to allow connectivity to worldwide AC receptacles.

Type-C: Europe except UK

Type-G: UK, Ireland, Malaysia, Singapore and Hong Kong

Type-I: Australia, New Zealand and Argentina

These Plugs allow connectivity into many other countries. Listing all is beyond the scope of this specification. Full list of these countries can be found in IEC website. "http://www.iec.ch/worldplugs/"

2 Quality Requirements

2.1 Product Specific Quality Requirements

2.1.1 Mechanical / Electrical Requirements

2.1.1.1 Paint and Print Test

In accordance with EN 60068-2-70

The printings have to withstand the testing procedures without any restrictions.

Test liquid	Mineral oils (example: Baby oil)
Wiping cycles	1,000
Contact pressure	1N ±0.2N

2.1.1.2 Mechanical and Electrical Reliability

All electrical contacts and mechanically moving parts have to withstand a stress test of at least 3,000 simulated connecting cycles without any damage. After the test, the device must have 100% functionality. Connectors must comply with the manufacturer's requirements or relevant standards at minimum.

2.1.1.3 Drop Test

This test requires the device to be dropped from a height of 1 meter onto a concrete floor. The drop should cover all surfaces including the 2 edges and all 4 corners. After the test, the device should have 100% functionality. There should not be any cracks, breaks or damage to any surface or have any loose internal components. Additionally, the ultrasonic weld joint should still be intact with minimum 80% coverage.

2.1.1.4 Enclosure Crush Test

This test applies a uniform distributed weight of 250 Newtons on all surfaces for 5 seconds per surface. There should be no physical damage or effect on the products performance (i.e. operating folding AC blade, easy insertion of international adapters, snug USB connector fit).

2.1.2 Climate Requirements

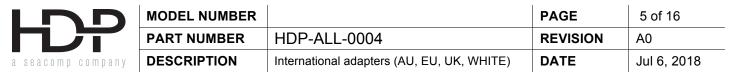
2.1.2.1 Temperature Range

Full Functionality0°C up to +50°C for AC/DC, -10°C up to +65°C for DC/DCStorage Temperature-20°C up to +85°C

2.1.2.2 Thermal Shock (operational)

Low Temperature	-10°C (DC/DC), 0°C (AC/DC)
High Temperature	+65°C (DC/DC), 50°C (AC/DC)
T/t	15°C/min
Cycle Duration	1 hour
Number of Cycles	10

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0400	Temperature Duration Mode of Operation Requirement		Minimum 75% full load 100% functionality after test, w physical change	vithout any dama	ages or
2.1.2.3			-20°C +85°C 15°C/min 1 hour 10 Switched off	vithout any dama	ages or
2.1.2.4			-20°C and +85°C 96 hours at each temperature Power off 100% functionality after test, w physical change	vithout any dama	ages or
2.1.2.5			+45°C 95% 96 hours Power up no load	vithout any dama	ages or
2.1.2.6	Upper Ten Lower Ten Humidity Test Cycle Duration Number of Mode of O	perature perature cycles peration	+45°C +25°C 95% 5°C / max ramp rate 96 hours 6 Power up no load	<i>v</i> ithout any dama	ages or
			ith the possible exceptions listed	d below.	
			35°C + 1.1 / - 1.7°C 5%+/-1 Salt solution (NaCl) in 6.5 - 7.2 1m - 2 mL / hr / 80sq.cm 24 hours	Distilled or D11	93 Type IV wate
	2.1.2.5 2.1.2.6 2.1.2.7	Cycle Dura Number of Mode of O Requireme 2.1.2.4 Thermal A Temperatu Duration Mode of O Requireme 2.1.2.5 Humidity Temperatu Humidity Duration Mode of O Requireme 2.1.2.6 Humidity Upper Ten Lower Ten Humidity Test Cycle Duration Number of Mode of O Requireme 2.1.2.7 Salt Spray Follow ASTM B117 Temperatu Salt Solutio PH Fog Rate	Cycle Duration Number of Cycles Mode of Operation Requirement 2.1.2.4 Thermal Aging Temperature Duration Mode of Operation Requirement 2.1.2.5 Humidity (non-conde Temperature Humidity Duration Mode of Operation Requirement 2.1.2.6 Humidity (condensin Upper Temperature Lower Temperature Humidity Test Cycle Duration Number of cycles Mode of Operation Requirement 2.1.2.7 Salt Spray Follow ASTM B117 standard w Temperature Salt Solution PH Fog Rate	Cycle Duration 1 hour Number of Cycles 10 Mode of Operation Switched off Requirement 100% functionality after test, w physical change 2.1.2.4 Thermal Aging Temperature -20°C and +85°C Duration 96 hours at each temperature Mode of Operation Power off Requirement 100% functionality after test, w physical change 2.1.2.5 Humidity (non-condensing) Temperature +45°C Humidity 95% Duration 96 hours Mode of Operation Power up no load Requirement 100% functionality after test, w physical change 2.1.2.6 Humidity (condensing) Upper Temperature +45°C Lower Temperature +45°C Lower Temperature +45°C Humidity 95% Test Cycle 5°C / max ramp rate Duration 96 hours Number of cycles 6 Mode of Operation Power up no load Requirement 100% functionality after test, w physical change <td>Cycle Duration 1 hour Number of Cycles 10 Mode of Operation Switched off Requirement 100% functionality after test, without any dama physical change 2.1.2.4 Thermal Aging Temperature Temperature -20°C and +85°C Duration 96 hours at each temperature Mode of Operation Power off Requirement 100% functionality after test, without any dama physical change 2.1.2.5 Humidity (non-condensing) Temperature Temperature +45°C Humidity 95% Duration 96 hours Mode of Operation Power up no load Requirement 100% functionality after test, without any dama physical change 2.1.2.6 Humidity (condensing) Upper Temperature Upper Temperature +45°C Lower Temperature +45°C Humidity 95% Test Cycle 5°C / max ramp rate Duration 96 hours Number of cycles 6 Mode of Operation Power up no load Requirement 100% functionality after test, without any dama physical change</td>	Cycle Duration 1 hour Number of Cycles 10 Mode of Operation Switched off Requirement 100% functionality after test, without any dama physical change 2.1.2.4 Thermal Aging Temperature Temperature -20°C and +85°C Duration 96 hours at each temperature Mode of Operation Power off Requirement 100% functionality after test, without any dama physical change 2.1.2.5 Humidity (non-condensing) Temperature Temperature +45°C Humidity 95% Duration 96 hours Mode of Operation Power up no load Requirement 100% functionality after test, without any dama physical change 2.1.2.6 Humidity (condensing) Upper Temperature Upper Temperature +45°C Lower Temperature +45°C Humidity 95% Test Cycle 5°C / max ramp rate Duration 96 hours Number of cycles 6 Mode of Operation Power up no load Requirement 100% functionality after test, without any dama physical change



2.2 General Quality Requirements

2.2.1 Product Related Requirements

2.2.1.1 General Appearance

Follows cosmetic requirements listed in Section 4 of this specification.

2.2.1.2 Emissions

The device must not produce any nuisance or unhealthy smell. A certificate must be made available proving the use of harmless materials.

2.2.1.3 Product Safety

The product has to comply with the relevant requirements listed in IEC 60950 (ITE) and IEC 60601 (medical) whenever applicable.

Normal usage of the product must not result in any danger. In particular, any broken component parts, including electric components, may not result in any risk or danger of injury to the user. This is to be proven by a risk analysis during the product's development phase. Any potential hazard has to be indicated clearly in the user manual.

During normal use at an ambient temperature of 25°C, the housing (made of synthetic material) may warm up by 50K. Therefore, the maximum temperature of the parts could be as high as 75°C.

Individual "Hot Spots" (maximum size of 2 cm²) is acceptable if they are not located in the grip area. A warm up by 60K is acceptable in these "Hot Spots." Therefore, the maximum temperature of these parts could be 85°C.

For both normal use and "Hot Spot" instances, the housing must not exceed the maximum temperature of the applied synthetic.

Protective actions against confusing the poles of the electric connectors have to be taken for any internal parts or connectors with specific polarity.

Transportation, storage, and operation of the adapter must not create any hazard, personal injury or any material damage. This is guaranteed through the controllable quality of workmanship and material used.

It must be guaranteed that after contact with natural oils, the housing material's performance does not result in any dangerous situations to the customer.

2.2.1.4 Recycling and Environmental Compatibility

Must comply with RoHS and REACH.

Quality Level, (AQL) In accordance with DIN ISO 2859 Part 1

General test-level	II
Critical defects	AQL 0
Major defects	AQL 0.4
Minor defects	AQL 0.65

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2.2.2 Supplier Related Requirements

2.2.2.1 Demonstration of Quality

The supplier is obliged to maintain a quality assurance system which covers R&D and production specific items. This system must meet the requirements of ISO 9000-2008. A quality assurance plan (QA plan) is required for a project-specific proof of quality-assuring measures. The plan should be made available and presented upon request.

For the development phase, the QA plan needs to define milestones as proof of the reliability prognoses. The development results and the release by the customer need to also be included in this plan.

For the production phase, the QA plan has to focus on the detailed verification of all the planned QA steps from component procurement to delivery. Any acceptance or error criteria to be applied to the QA plan must meet the process capability index as defined in this specification.

2.2.2.2 Process Assurance

The quality capability has to be proven by a process capability of Cpk > 1.33 and must be documented by a continuous monitoring of the production process. Parameters relevant for this process capability will be marked separately in the product's construction documents.

2.2.2.3 Reliability

The probability of failure and the return of devices for repair must be less than 1% per year.

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3 Cosmetic

3.1 Surface Definitions

Level A is the primary surface. For example, the front face of the adapter.

Level B is a secondary surface that may be viewed periodically by the end user, but is not in direct view during normal use. For example, the Cable (AC and DC), the sides of the housing, and the back of the housing.

Level C surfaces are not visible by the end user. For example: inaccessible inside surfaces of the product.

3.2 Inspection Conditions

- 4.2.1 Inspection Method: Light source: Cool white fluorescent lamp 750 1000Lux
- 4.2.2 Viewing Distance: 30cm
- 4.2.3 Viewing Angle: 0 90 Degrees
- 4.2.4 Part Rotation Angle During Inspection:
 - Vertical Rotation Angle 180 Degrees Horizontal Rotation Angle 360 Degrees
- 4.2.5 Viewing Time:
 - 10 seconds total for all surfaces

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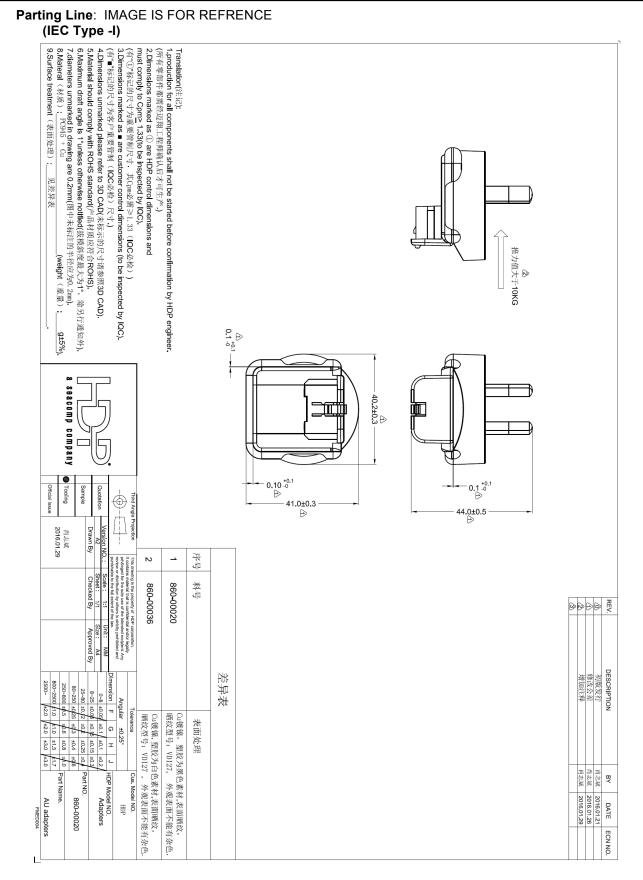
3.3 Cosmetic Defect Definitions

Defect	Level A	Level B	Level C		
Scratches, Dents, and Burrs (see Note 1)	Single defect not exceeding total surface area 5.50 mm ²	Two defects not exceeding total surface area 11 mm ²	Accept if it does not affect fit or function		
Hairline Scratches, Gate Blush/Trim, Stress	Use 25% Contrast Standard to accept or reject for visible hairline scratches with depth of < 0.1 mm (total surface area not to exceed limits set in surface scratch below)				
Surface Scratches, Scuffs (see Note 1)	Single defect not exceeding total surface area of 5.7 mm²Two defects not exceeding total surface area 25 mm²Accept if it does fit or function		Accept if it does not affect fit or function		
Chips, Nicks, Cracks or Broken Features	Not Allowed				
Flash, Burrs, Sink Marks (see Note 2)	Not Allowed	Less than 0.5mm	Accept if it does not affect fit or function		
Discoloration	Follow color samples				
Parting Lines	See diagram				
General Stains (not permanent)	Not allowed				
Rust	Not allowed				
Printing	No missing text or mistakes allowed. All letters should be visible. Refer to approved sample.				

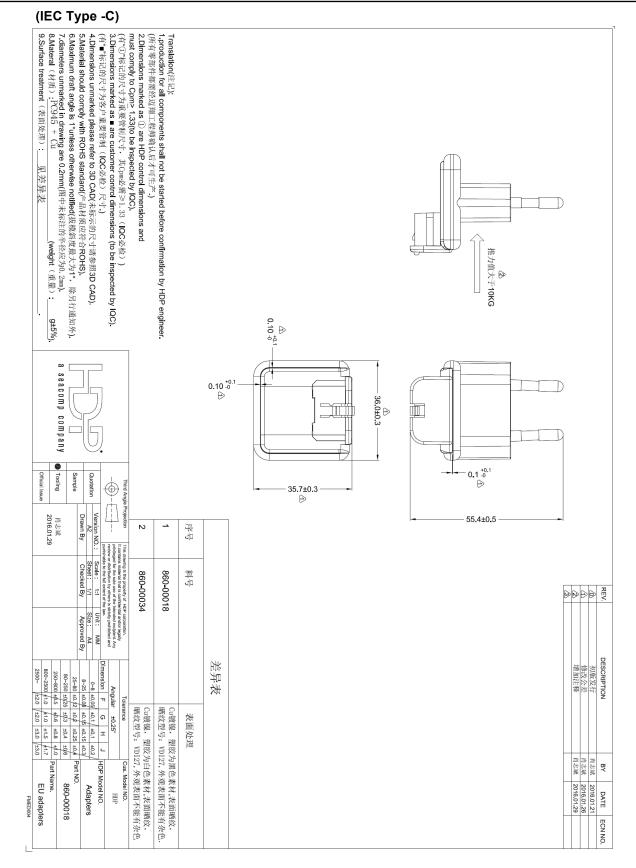
Note 1:

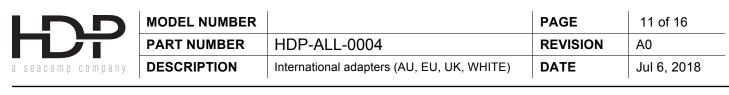
Area called out in these fields are calculated based on limit samples. The values are calculated based on average area covered by the features.

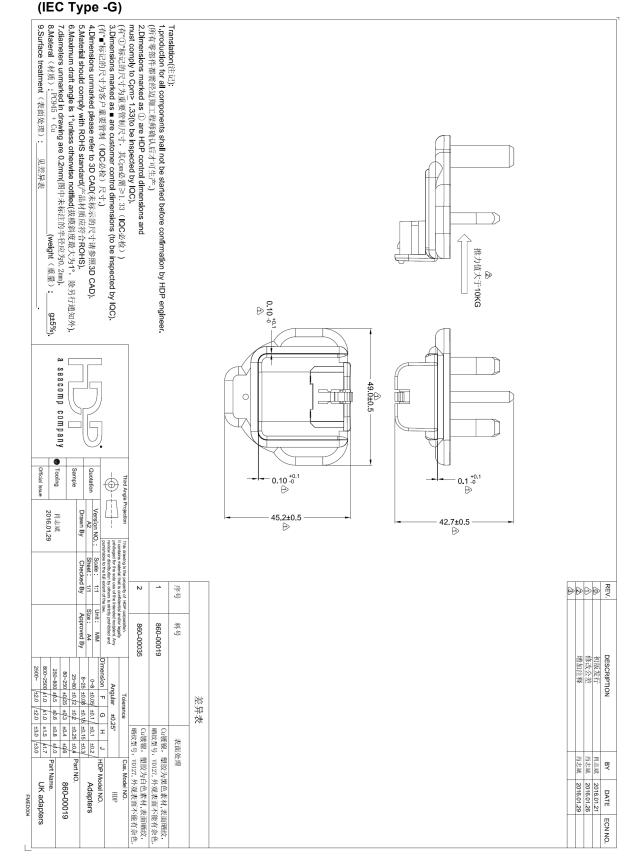
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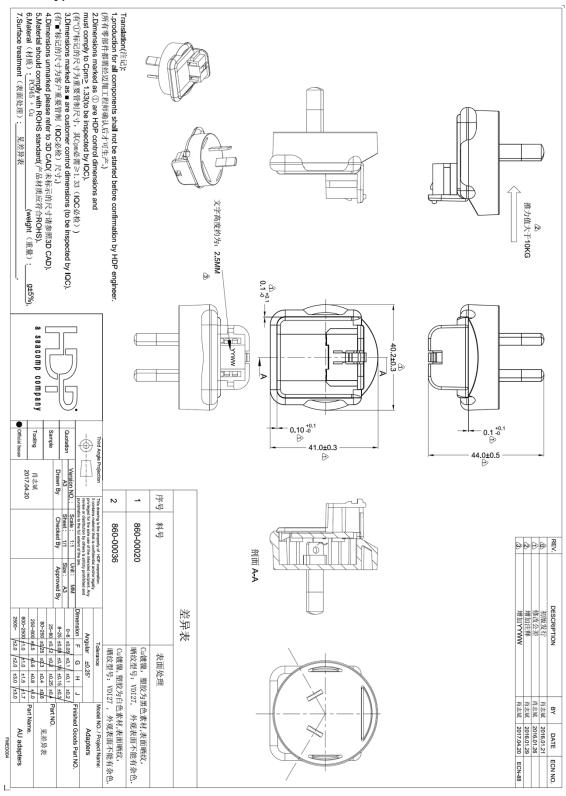






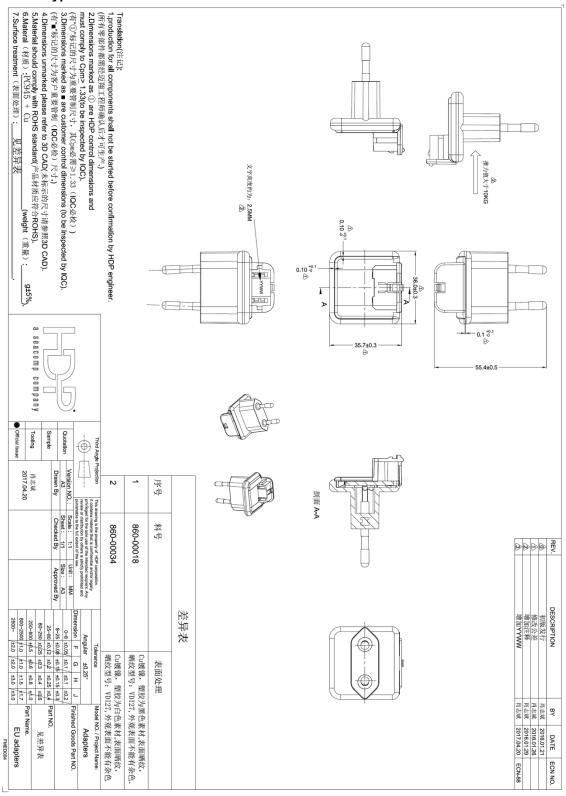
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3.4 Size / Weight IEC Type -I



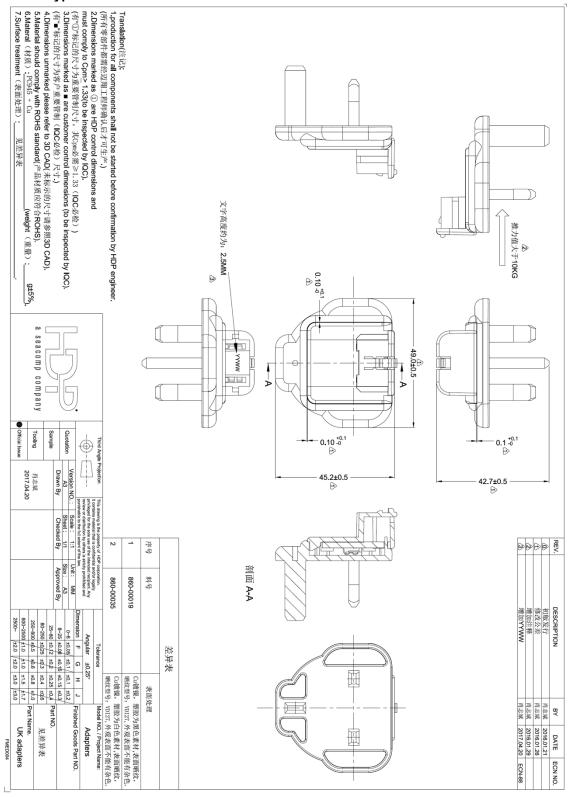
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IEC Type -C



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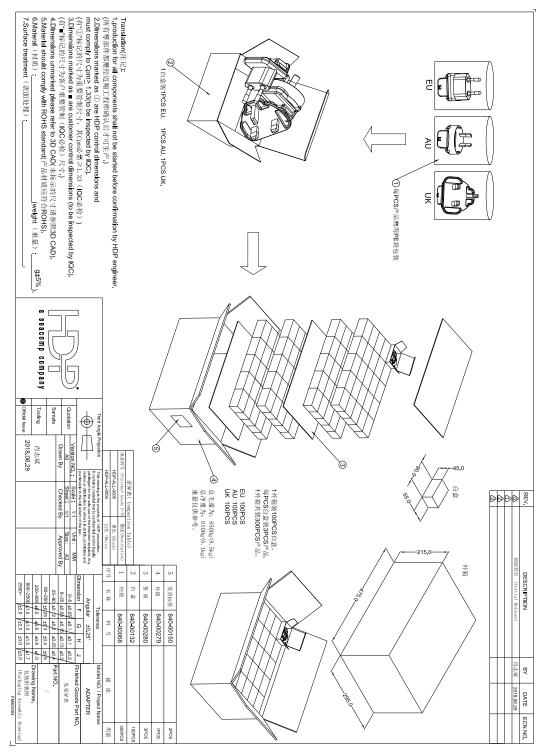
IEC Type -G



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4 Packaging

4.1 Drawing (Adapter Packaging)



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4.2 Packaging Test

1	Bulk product	 Drop package on each side for a total of 10 drops (2 opposite corners, 3 adjacent sides of bottom corner, then all 6 faces) per system on concrete floor from a height of 1.0 meter. This is an operational test. Pass/Fail Criteria: The systems shall pass Functional Test. No visible damage to product and gift box.
2	Drop test for Packaged Product (gift box, clamshell, etc.)	Drop fully packaged products (in gift box or clamshell) onto a concrete floor from height of 153cm for 10 drops on the six surfaces and four corners.
3	Sinusoidal Vibration	Test with sine wave that will sweep the frequency from 7 - 500 hertz for construction test; 5 - 70 hertz for packaging test. Displacement >3.15mm. Total test duration time shall be 30 min (10 min per axis). Test shall be performed in three mutually perpendicular axes: Z-axis (vertical), Y-axis (fore-aft), and X-axis (lateral). Pass/Fail Criteria: The UUT and packaging shall withstand the above test procedure without visible damage or performance decline during operation.

5 Warranty

One year warranty for defects arising from workmanship and materials per the SEACOMP Warranty, RMA, and Failure Analysis Policy.



ООО "ЛайфЭлектроникс"

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 3010181090000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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