SPECIFICATION FOR APPROVAL

CUSTOMER:

CUSTOMER PART NO:

PART NO: **210-10017-XX** REVISION: **PSA**

DESCRIPTION: USB 3.1 C TYPE CL=2.15 R/A SMT

	MANUFACTURE SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY:	Ethan	
DATE:	2020.9.28	

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Revision history

版本	日期	摘　要	核准	審查	制修訂
PSA	2020.9.28	INITIAL	Hill	Hill	Ethan

1 SCOPE

This specification covers the performance requirements of the USB 3.1 C TYPE CL=2.15 R/A SMT

2 APPLICATION DOCUMENT

This following documents form a part of this specification to this extent specified herein. In the event of conflict between the requirements of the specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

- EIA-364

3 REQUIREMENTS

3.1 DESIGN AND CONSTRUCTION

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing

3.2 MATERIAL

REF Genesis 2D drawing.
PART NUMBER
210–10017–XX

01: DIM A=1.40mm

02: DIM A=1.80mm

3.3 RATINGS

Voltage rating: 5A for collectively power supply pin(pinA1,A4,A9,A12,B1,B4,B9,B12);
1.25A for vconn pin; 0.25A for other signal pin.

3.4 STORAGE CONDITIONS

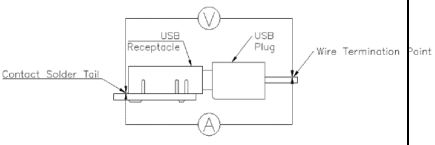
A. Operating Temperature	-40 ℃…+85 ℃
B. Operating Humidity	25%…85%

4.1 Examination of product：产品的检查

Items 项目	Requirements 要求	Test Methods 测试方法

4.1.1	Confirmation of Product 产品确认	Product shall be conforming to the requirements of applicable product drawing 产品必须满足相关文件的规定	Visually dimensions and functionally inspected per applicable product drawing. 目视尺寸及功能依照客户图面检查

4.2 Electrical Requirement 电气性能

Items 项目		Requirements 要求	Test Methods 测试方法
4.2.1	Low level Contact resistance 低电平接触阻抗	1. 40 mΩ (Max) initial for VBUS, GND and all other contacts. 2. Maximum change (delta) of +10 mΩ after environmental stresses. 1.电源 PIN、接地 PIN 及其它 PIN 脚接触阻抗均为 40mΩ 最大。 2.产品阻抗变化值不超过 10mΩ。 	The low level contact resistance measurement is made from the solder tail of the receptacle to the soldering point of the plug. when measured at 20mV Max. a circuit at 100mA. Mated test contacts must be in a connector housing. Test reference standard：EIA-364-23B 接触阻抗测量方式从母头的焊脚处至公头的焊脚处。 在开路最大电流为 100mA 电压为 20mV 情况下测试胶芯插入时端子之间接触处的阻抗值。 测试参考标准：EIA 364-23B
4.2.2	Insulation Resistance 绝缘阻抗	100 MΩ Min. 100 MΩ 最小	Test between adjacent circuits Insulation Resistance of unmated and mated connectors. Test reference standard：EIA 364-21. 测试对插的连接器两个相邻端子之间的绝缘阻抗值。 测试参考标准：EIA 364-21
4.2.3	Dielectric Strength 耐电压	No breakdown shall occur. 产品不能出现衰竭、损坏现象。	when 100 Volts AC (RMS) is applied between adjacent contacts of unmated and mated connectors. Test reference standard：EIA-364-20. 使用 100V 交流电压测试公母头插入与拔出时相邻端子之间的承受电压情况。 测试参考标准：EIA 364-20

4.3 Mechanical Requirement 机械性能

Items 项目	Requirements 要求	Test Methods 测试方法

4.3.1	Insertion Force 插入力	The initial connector insertion force shall be within the range from 5 N to 20 N。 连接器初始插入力需在 5N~20N 范围内。	Measure the force required to mate connector, At a maximum rate of 12.5mm per minute. Test reference standard：EIA-364-13 测试的力必须是相匹配的连接器，插入速度不超过每分钟 12.5mm。 测试参考标准：EIA 364-13
4.3.2	Extraction Force 拔出力	The initial connector Extraction force shall be within the range from 8 N to 20 N,After the durability(10000 mating cycles) test product extraction force in 6N~ 20N. 连接器初始拔出力需在 8N~20N 范围内,产品耐久测试(插拔 10000 次)后拔出力在 6N~20N 范围内。	Measure the force required to mate connector, At a maximum rate of 12.5mm per minute. Test reference standard：EIA-364-13 测试的力必须是相匹配的连接器，拔出速度不超过每分钟 12.5mm。 测试参考标准：EIA 364-13
4.3.3	Durability or Insertion/extraction Cycles 耐久或插入拔出次数	The durability rating shall be 10,000 cycles. 耐久测试 10,000 次。	The durability test shall be done at a maximum rate of 500±50 cycles per Hour And no physical damage to any part of the connector and cable assembly shall occur. Perform 2,500 plug/unplug cycles. Rotate the receptacle or plug 180º and perform 2,500 plug/unplug cycles. Rotate the receptacle or plug 180 º and perform 2,500 plug/unplug cycles. Rotate the receptacle or plug 180 º and perform 2,500 plug/unplug cycles. Cycle rate of 500 ± 50 cycles per hour . Test reference standard:EIA-364-09 耐久测试速度不超过每小时 500±50 次周期循环，且测试后的产品及线材本身任何部位不能出现损坏。执行 2500 次插拔循环测试。旋转母座或公头 180 º 并执行 2500 次插拔循环测试。旋转母座或公头 180 º 并执行 2500 次插拔循环测试旋转母座或公头 180 º 并执行 2500 次插拔循环测试 测试参考标准：EIA 364-09

4.3.4	Vibration 振动	No evidence of physical damage. No discontinuities of 1 uS or longer duration when mated connector during test. 在公母配对测试时不能有明显的物理性损坏及超过 1uS 时间断讯	The connector must be mated test. Test condition: Duration: 15 minutes in each (Total of 45minutes) X, Y, Z axis. Amplitude : 1.52mm P-P or 147m/s2 {15G} Sweep time: 50-500-50Hz in 15 minutes. Test reference standard： EIA-364-28, test condition VII 连接器需对插进行测试 测试条件： 持续时间:15 分钟/X,Y,Z 轴(共 45 分钟） 振幅:1.52mm P-P or 147m/s2 {15G} 扫描时间:50-500-50Hz 15 分钟 测试参考标准:EIA 364-28 条件VII
4.3.5	4-Axis continuity test 四轴向测试	Products in the case of 8N force to bear the same time，receptacle and plug contact discontinuity less than 1Us and no physical damage of the four orientations. 在四个方向测试时，产品在承受8N力的情况同时，公头及母座接触间断需小于1us且没有物理伤害。	The receptacle shall be mounted on the PCB board，and receptacle PCB shall initially be placed in a horizontal plane,at a distance of 15mm form the mating edge of the receptacle shell, fixed a circular probe perpendicular to The male head and downward pressure 将母座焊接在PCB板上，并将母座连同PCB板水平固定住，并且在距离母端外壳对插口15毫米距离的地方，固定一个圆形探针垂直于公头并向下施加压力。

4.4 Environmental Requirements 环境性能

Items 项目		Requirements 要求	Test Methods 测试方法
4.4.1	Cyclic temperature and Humidity 恒温恒湿	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 50 mΩ max. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min. 产品外观良好，无损坏。接触阻抗：50 mΩ最大；耐电压测试OK, 绝缘阻抗100MΩ最小。	Test condition :25 °C ±3 °C at 80 % ±3% Relative Humidity and 65 °C ±3 °C at 50 % ±3% Relative Humidity . Ramp times should be 0.5 hour and dwell times should be 1.0 hour . Duration : 72Hours, Circulate test: 24 Cycles. 测试条件：温度25C ±3 °C相对湿度80 % ±3%及65 °C ±3 °C相对湿度 50 % ±3%,温湿度变化需时间为0.5H及稳定后需保持1小时。 持续时间：72小时,循环测试:24次 测试参考标准：EIA 364-31。
4.4.2	Thermal shock 冷热冲击	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 50 mΩ max. Dielectric Strength should be OK, Insulation	Temperature range from -55°C to +85°C .Start from -55°C. After 30 min. change to +85°C, change time is no more than 5 minutes. Total 10 cycles. Test reference standard: EIA-364-32 test

		Resistance should be 100 MΩ min. 产品外观良好，无损坏。接触阻抗：50 mΩ 最大；耐电压测试 OK, 绝缘阻抗 100MΩ 最小。	condition I 温度变化范围：-55°C ~ +85°C，从-55°C开始，30分钟后换到+85°C；转换时间不超过5分钟；共10 个循环。 测试参考标准：EIA 364-32 测试条件 I
4.4.3	Temperature life 温度寿命	No evidence of physical damage. 无明显物理伤害	105º C without applied voltage for 72 hours. 在没有电压 105º C 情况下放置 72 小时
4.4.4	Mixed flowing gas 气体腐蚀	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 50 mΩ max. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min. 产品外观良好，无损坏。接触阻抗：50 mΩ 最大；耐电压测试 OK, 绝缘阻抗 100MΩ 最小。	The connector must be mated test. Test condition : 1.Gas concentration test condition: Cl_2 (10±3)ppd; NO_2(200±50)ppd; H_{2S} (10±3)ppd; SO_2(200±50)ppd; 2.Test the Temperature must be control 30 ±1 °C,Relative Humidity must be control 70 ±1%. 3.Test duration is 7 days(168 hours) 4.Test reference standard: EIA-364-65 Class ⅡA 连接器需对插进行测试 测试条件： 1.气体浓度实验条件： Cl_2 (10±3)ppd; NO_2(200±50)ppd; H_{2S} (10±3)ppd; SO_2(200±50)ppd; 2.测试温度需控制在30 ±1 °C，湿度需控制在70 ±1% 3.测试持续时间7天（168小时） 测试参考标准:EIA 364-65 测试ⅡA
4.4.5	Thermal disturbance 热干扰	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 50 mΩ max. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min. 产品外观良好，无损坏。接触阻抗：50 mΩ 最大；耐电压测试 OK, 绝缘阻抗 100MΩ 最小。	The connector must be mated test. Test condition :15 °C ±3 °C at 85°C ±3°C . Ramps should be a minimum of 2 °C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes)Circulate test: 10 Cycles. 连接器需对插进行测试 测试条件：温度 15C ±3 °C 至 85 °C ±3 °C,温度变化速度为 2 °C /分种，且当温度走到两种极限温度时需保持 5 分

			钟。循环测试:10 次
4.4.6	Contact current rating 温升	1.A current of 5.0 A shall be applied collectively to VBUS pins (pins A4, A9, B4, and B9) 2.1.25 A applied to the VCONN pin (B5 of the plug connector) with the return path through the corresponding GND pins (pins A1, A12, B1, and B12). 3. A minimum current of 0.25 A shall also be applied individually to all the other contacts. 1.VBUS pins 需通过电流 5.0A(pin A4, A9, B4, and B9)。 2. VCONN pin(公头B5 pin)及 GND pins需通过电流1.25A(pins A1, A12, B1, and B12)。 3.其余 pins 需通过最小电流 0.25A。	When the currents are applied to the contacts, the temperature rise shall not exceed 30 °C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25 °C. Test reference standard： EIA -364-70 method B 在相对温度为25℃，当电流通过USB C type公母头连接器时，测试连接器中端子任一点温度不超过+30℃。 测试参考标准：EIA 364-70 方法 B
4.4.7	Solderability 可焊性	The inspected area of each lead must have 95% solder coverage Minimum. 检测焊接端的锡覆盖率需大于 95%	Solder pot temperature: 250±5℃ Soldering time: 3 to 5 Seconds Test reference standard: EIA 364-52 锡炉温度:250±5°C,焊接时间:3~5秒 测试参考标准：EIA 364-52。
4.4.8	Hot air reflow or IR reflow for SMT curing process SMT 热风回流焊	More than 95% of the dipped surface shall be wet with solder 超过95%的焊接面积浸到锡。	Place subjected connector on the PCB Board and expose them to the reflow oven and apply the following condition： Room 1: preheat temperature 150℃ - 170℃ for 100 seconds. Room 2: preheat temperature 170℃– 200℃ for 100 seconds. Room 3: reflow temperature 200℃ -255 ℃ for 100 seconds. (For 255℃ ONLY 5-10 seconds) 将产品放在PCB板上,然后放入回焊炉中

			并用于以下条件： 时间段1：预热温度150℃-170℃ 100秒。时间段2：预热温度170℃ - 200℃ 100秒。时间段3：回焊炉温度200℃ - 255℃ 100秒。(255℃ 时间仅5~10S)
4.4.9	Salt Spray 盐雾测试	Shall meet visual requirements, No detrimental corrosion allowed in contact area and base metal exposed. 产品外观良好，端子及外壳金属无生锈、腐蚀及露底材不良。	Subject mated connectors to 35+/-2 ℃ and 5+/-1% salt condition for 48 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. Test reference standard:EIA-364-26B. 测试的连接器需放于温度35±2°C，盐水浓度(重量比)5±1%的容器中测试48小时。测试后的产品使用清水冲洗后放入常温下1小时。 测试参考标准：EIA 364-26。

5．Test Group：测试群组

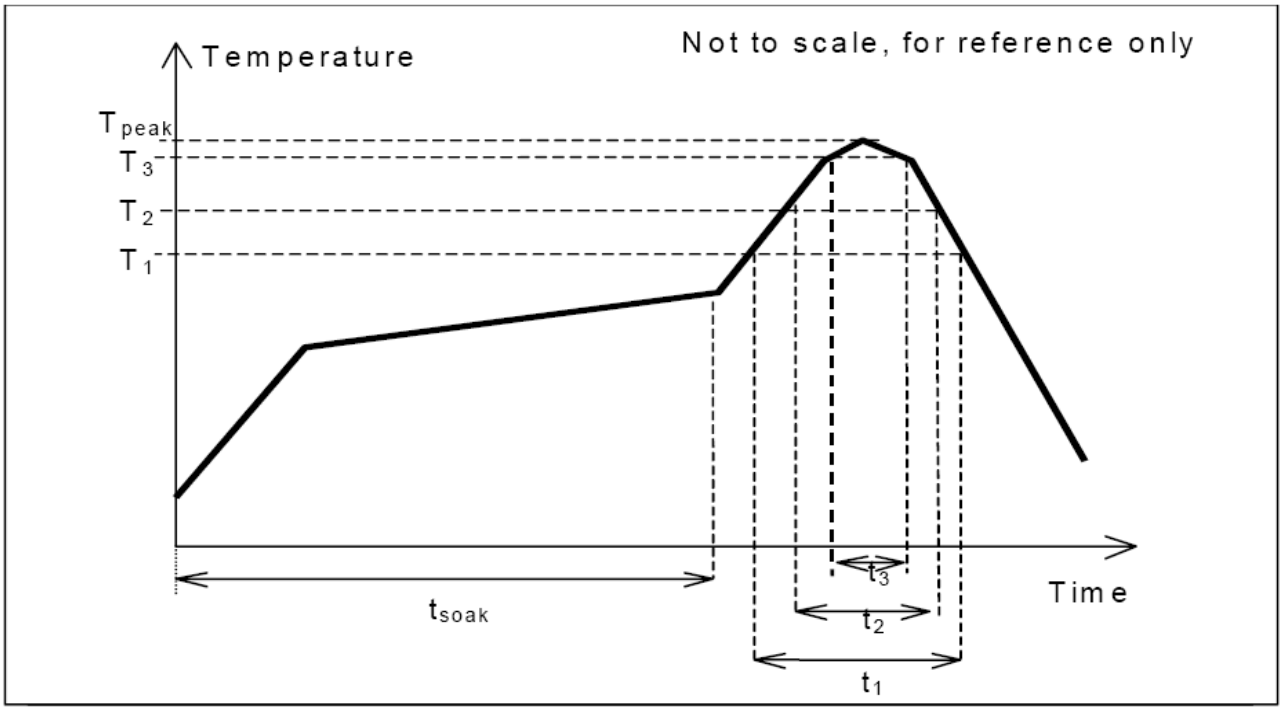
Product Qualification Test Sequence												
Test Description	***Test Group***											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Confirmation of Product 产品确认	**1,3**	**1,9**	**1,13**	**1,3**	**1,9**	**1,9**	**1,9**	**1,5**	**1,5**	**1,3**	**1,3**	**1,3**
Low level Contact resistance 低电平接触阻抗		**2,6**	**2,8**		**2,6**	**2,6**	**2,6**	**2,4**	**2,4**			
Insulation Resistance 绝缘阻抗		**3,7**	**3,9**		**3,7**	**3,7**	**3,7**					
Dielectric Strength 耐电压		**4,8**	**4,10**		**4,8**	**4,8**	**4,8**					
Contact current rating 温升	**2**											
Insertion Force 插入力			**5,11**									
Extraction Force 拔出力			**6,12**									
Durability 耐久			**7**									
Vibration 振动		**5**										

4-Axis continuity test 四轴向测试				**2**								
Cyclic temperature and humidity 恒温恒湿					**5**							
Thermal shock 冷热冲击						**5**						
Temperature life 温度寿命							**5**					
Mixed flowing gas 气体腐蚀								**3**				
Thermal disturbance 热干扰									**3**			
Solderability 可焊性										**2**		
Hot air reflow or IR reflow for SMT curing process 热风回流焊											**2**	
Salt Spray 盐雾测试												**2**
Number of Sample (单位:PCS)	5	5	5	5	5	5	5	5	5	5	5	5

6: Reflow Soldering Profile 回流焊接概要

Pb-free reflow profile requirements:

Parameter	Reference	Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	T soak	2-3 minutes
Time above 150°C	t1	100 s
Time above 170°C	t2	100 s
Time above 200°C	t3	100 s
Peak temperature in reflow 255°C	T peak	5~10 s



This profile is the minimum requirement for evaluating soldering heat resistance of components. Heat transfer method used for reflow soldering is hot air convection. The actual air temperatures used to achieve the specified profile is higher and largely dependent on the reflow equipment