



## 客户承认书 SPECIFICATION FOR APPROVAL

**CUSTOMER/客户:** \_\_\_\_\_

**CUSTOMER P.N./客户物料号:** \_\_\_\_\_

**MODEL NO./产品型号:** \_\_\_\_\_ **P465** \_\_\_\_\_

**PRODUCT NO./产品编号:** \_\_\_\_\_

**SAMPLE DATE/送样日期:** \_\_\_\_\_

| CUSTOMER AUTHORIZED SIGNATURE/客户承认签核 |  |  |
|--------------------------------------|--|--|
|                                      |  |  |

**Please return to us one copy of “SPECIFICATION FOR APPROVAL” with your approved signature./客户确认签字，盖章后请回传一份承认书给我司。**

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## E. C. LIST/变更履历表

[illegible]



**劲电**  
G-POWER

**佛山市劲电科技有限公司**  
Foshan G-Power Technology Co.,Ltd.

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## 1. SCOPE 适用范围

This product is a consumer product. It can be used for intelligent identification and charging of Bluetooth devices, mobile phones, tablets and other digital electronic products. It is an AC to DC converter with TYPE-C travel smart quick charger.

本产品是一款消费类产品，可为蓝牙设备，各种手机、平板电脑等数码类电子产品进行智能识别充电。是一款 **AC to DC** 转换器，输出接口为 **TYPE-C** 旅行智能快速充电器。

### 1.1. Description 描述



CHARGER 充电器



SMPS Adaptor(Desk-top) /桌面型适配器



Open Frame /开放式结构



Others /其他

“\*” is the company's production and QA dept must test items.

“\*”是公司生产及 QA 部必测项目。

## 2. Input Characteristics 输入特性

|       |                                 |                                 |
|-------|---------------------------------|---------------------------------|
| 2.1   | Input voltage range 输入电压范围      | 90Vac - 264Vac                  |
| 2.2 * | Normal voltage range 额定输入电压范围   | 100Vac - 240Vac                 |
| 2.3   | Input frequency range 频率范围      | 47Hz-63Hz                       |
| 2.4 * | Rated input frequency 额定频率      | 50Hz/60Hz                       |
| 2.5 * | Max input AC 最大输入电流             | 1.5A max at full load condition |
| 2.6   | Inrush current(cold start) 浪涌电流 | 80A max at 264Vac input         |

## 3. Output Characteristics 输出特性

| 3.1 * Test project 测试项目(Type-C ports PD fast charge mode/ PD 快充模式)67W |              |                   |              |           |
|-----------------------------------------------------------------------|--------------|-------------------|--------------|-----------|
| Port output/输出                                                        | MIN (V/A)/最小 | Standard (V/A)/标准 | MAX (V/A)/最大 | Remark/备注 |
| 5Voltage /5V 电压                                                       | 4.75         | 5.0               | 5.25         |           |
| Current /电流                                                           | 0.0          | 3.0               | 3.9          |           |
| 9Voltage /9V 电压                                                       | 8.55         | 9.0               | 9.45         |           |
| Current /电流                                                           | 0.0          | 3.0               | 3.9          |           |
| 12Voltage /12V 电压                                                     | 11.4         | 12.0              | 12.6         |           |
| Current /电流                                                           | 0.0          | 3.0               | 3.9          |           |
| 15Voltage /15V 电压                                                     | 14.25        | 15                | 15.75        |           |
| Current /电流                                                           | 0            | 3.0               | 3.9          |           |
| 20Voltage /20V 电压                                                     | 19           | 20                | 21           |           |
| Current /电流                                                           | 0            | 3.25              | 3.9          |           |



|                         |    |      |     |  |
|-------------------------|----|------|-----|--|
| 20.3Voltage/20.3V<br>电压 | 19 | 20.3 | 21  |  |
| Current /电流             | 0  | 3.3  | 4.0 |  |

### 3.3 \* Test project 测试项目 (1Type-c ports PD)

| Rated Output<br>/额定输出 | Average efficiency under 25%,<br>50%, 75%, 100%负载下, 效率平均值 | No-load power/<br>空载功耗. | 备注 Remark                                                               |
|-----------------------|-----------------------------------------------------------|-------------------------|-------------------------------------------------------------------------|
| 5V/3.0A               | >85                                                       | ≤0.4W                   | At 115/230Vac. (Test<br>after working for<br>30minutes.<br>工作 30 分钟后测试) |
| 9V/3.0A               | >86                                                       |                         |                                                                         |
| 12V/3.0A              | >88                                                       |                         |                                                                         |
| 15V/3.0A              | >89                                                       |                         |                                                                         |
| 20V/3.25A             | >90                                                       |                         |                                                                         |
| 20.3V/3.3A            | >90                                                       |                         |                                                                         |

### 3.4 \* Test project 测试项目

|                                               |                                                                                                                                                                                                                                                                              |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Single port short circuit<br>保护<br>短路保护     | Short circuit will enter the burp protection mode, and will automatically<br>recover after the short circuit disappears.<br>短路时将会进入打嗝保护模式, 短路消失后会自动恢复                                                                                                                        |
| * Total output power<br>总输出功率                 | Total output power≤67W<br>总输出功率≤67W                                                                                                                                                                                                                                          |
| * Turn on delay time<br>启动延迟时间                | 3s max at 115Vac to 240Vac input & full load<br>满载状态下最大 3 秒                                                                                                                                                                                                                  |
| Rise time<br>上升时间                             | 20ms max at 115Vac input and max load output.<br>当输入 115Vac 和输出最大负载时, 最大上升时间为 20ms                                                                                                                                                                                           |
| Hold up time<br>保持时间                          | a. 10ms min at full load & 115Vac/60Hz input, turn off at worst case<br>在最差情况关机<br>b. 20ms min at full load & 230Vac/50Hz input, turn off at worst case<br>在最差情况关机                                                                                                           |
| Output<br>Overshoot/Undershoot<br>输出过冲/欠冲     | 10% max when power supply turn on/off<br>在电源开启或关闭的时候, 最大 10%                                                                                                                                                                                                                 |
| Output Load Transient<br>Response<br>输出负载瞬态响应 | Output voltage within ±5%, load step from 25% to 50% to 25%, 50% to<br>75% to 50%, R/S: 0.25A/uS Transient response recovery time :200uS<br>Dynamic response overshoot: ±5%<br>输出电压在±5%之间, 负载变化: 从 25%到 50%到 25%, 50%到 75%到 50%,<br>斜率: 0.25A/uS, 动态响应恢复时间: 200uS, 动态响应过冲±5% |



|                                               |                                                                                                                                                                                                                |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Over voltage protection<br>过压保护               | Product protection with output voltage exceeding 25V<br>输出电压超过 25V 保护                                                                                                                                          |
| Over temperature protection<br>过温保护           | IC requires built-in over-temperature protection. When IC temperature exceeds 135 degrees, it must stop output automatically.<br>IC 需要内置过温保护, 当 IC 温度超过 135 度时候, 要能自动停止输出                                      |
| * Total output short circuit power<br>总输出短路功率 | When there is a short circuit, the output power is less than 5W and it will not damage the product. After the short circuit disappears, it will resume automatically.<br>当输出短路时功率小于 5W, 但不会损坏产品, 短路消失后会自动恢复正常. |

### 3.6 Charging Protocol & Intelligent Identification 充电协议与智能识别

#### C 口协议

- |                                                                          |                                                         |
|--------------------------------------------------------------------------|---------------------------------------------------------|
| <input checked="" type="checkbox"/> Support PD3.0 or PD2.0               | <input checked="" type="checkbox"/> Support QC3.0/QC2.0 |
| <input checked="" type="checkbox"/> Support AFC                          | <input checked="" type="checkbox"/> Support FCP         |
| <input checked="" type="checkbox"/> Support SCP                          | <input type="checkbox"/> Support PE2.0/PE1.1            |
| <input type="checkbox"/> Support SFCP                                    | <input checked="" type="checkbox"/> Support DCP-1.5A    |
| <input checked="" type="checkbox"/> Support PPS                          | <input checked="" type="checkbox"/> Support Apple2.4A   |
| <input type="checkbox"/> Support directly charging at low voltage 支持低压直充 |                                                         |

#### 功率分配:

C 口:(5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/3.25A, 20.3V/3.3A) MAX:67W

PPS: 3.3V-11.0V/5A

### 3.7 \* Output Ripple 输出纹波

| output voltage<br>ripple<br>输出电压纹波 | 纹波值<br>(mV) |                                                                                                                                                                                                                                                                              |
|------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5V                                 | ≤200        | Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor. (Under the condition of rated input and rated output)<br>量测时示波器选用 20MHz 带宽限制,输出端要并联一颗 0.1uF 的陶瓷电容和一颗 10uF 的电解电容. (在额定输入及输出的条件下检测) |
| 9V                                 | ≤200        |                                                                                                                                                                                                                                                                              |
| 12V                                | ≤200        |                                                                                                                                                                                                                                                                              |
| 15V                                | ≤200        |                                                                                                                                                                                                                                                                              |
| 20V                                | ≤200        |                                                                                                                                                                                                                                                                              |



|              |      |                                                                                                  |
|--------------|------|--------------------------------------------------------------------------------------------------|
| 20.3V        | ≤200 |                                                                                                  |
| REMARK<br>备注 |      | Unless otherwise specification, output load must set at <b>CR</b> mode.<br>除非另有说明输出负载必须设置在 CR 模式 |

## 4. Environment Requirements 环境要求

### 4.1. Operating Temperature and Humidity 操作温/湿度

0°C to 25°C

10%RH to 90%RH

### 4.2. Storage Temperature and Humidity 存储温/湿度

-20°C to 80°C

5%RH to 95%RH non-condensing, 2000 meters below sea level 低于海拔 2000 米

### 4.3. Vibration 振动

Sweep frequency: 10 to 300Hz, acceleration: 1.0G(breadth: 3.5mm). Vibrate for 1 hour along the X, Y, and Z perpendicular axes

扫描频率: 10 to 300Hz, 加速度: 1.0G(位移: 3.5mm), X, Y, Z 三垂直坐标轴向各振动 1 小时

### 4.4. \* Drop in 跌落

Test method: 6 surfaces, height: 100cm, once for each test, falling onto hardwood board.

Requirement: the plug can be bended, scratch can be existed, but the structure should not be damaged, and can work normally.

测试方法: 6 面, 跌落高度 100 厘米, 各 1 次, 跌落到硬木板上

判定标准: 插脚可以弯曲, 外壳可以有伤, 但外观不能有结构性损毁, 且能正常工作

## 5. Reliability Requirements/可靠性要求

### 5.1. \* Burn-in 老化

The product must undergo 100% burning-in before shipment to ensure the quality.

产品在出货前必须经过 100%的煲机, 以保证产品的品质。

### 5.2. MTBF

The MTBF shall be at least 30,000 hours at 25°C max and normal input condition

在正常输入和环境温度最高为 25 摄氏度的情况下, 平均故障间隔时间至少是 30000 小时

## 6. EMS Standards 标准

### 6-1-1 EN 61000-4-2,electrostatic discharge(ESD) requirement/静电抗扰度要求

| Discharge characteristic/静电规格 | Test level/ 测试条件 | Test criteria/ 测试标准 |
|-------------------------------|------------------|---------------------|
| Air discharge/ 空气放电           | +/-8KV           | B                   |
| Contact discharge/ 接触放电       | +/-4KV           | B                   |



6-1-2 EN 61000-4-3, radiated electromagnetic field susceptibility(rs)/辐射骚扰场强

| Test level 测试条件                   | Test criteria 测试标准 |
|-----------------------------------|--------------------|
| 3V/m (r.m.s)                      | A                  |
| 80-1000MHz, 80%AM(1KHz) sine-wave |                    |

6-1-3 EN 61000-4-4, electric fast transients(burst) immunity requirement/电快速瞬变脉冲群

| Coupling/测试端口 | Test level/测试条件 | Test criteria/测试标准 |
|---------------|-----------------|--------------------|
| AC-input/交流输入 | 0.5KV           | A                  |
| AC-input/交流输入 | 1KV             | B                  |

6-1-4 EN 61000-4-5, surge capability requirement/浪涌抗扰度要求

| Surge voltage 雷击电压          | Test criteria 测试标准 |
|-----------------------------|--------------------|
| Common mode/共模 +/-1KV       | A                  |
| Differential mode/差模 +/-1KV |                    |

6-1-5 EN 61000-4-6, Induced radio frequency fields conducted disturbances immunity requirement/电源端子传导骚扰实验

| Test level 测试条件          | Test criteria 测试标准 |
|--------------------------|--------------------|
| 3V                       | A                  |
| 0.15-80 MHz, 80%AM(1KHz) |                    |

6-1-6 Assessment criteria /评估标准

| Acceptance criteria<br>可接受标准 | Performance<br>性能                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A                            | Agreed operational behavior within the specified limits<br>性能不允许变化；如果性能会发生变化，则变化的范围在产品规格书规定的范围内。                                                                                                                                  |
| B                            | Time limited functional diminishment or malfunction during the tests is permitted. The function is self-reactivated by the unit following completion of the tests.<br>设备在测试过程中,性能降低允许在产品规格书要求范围内,干扰消除后,设备能恢复正常,不允许出现复位和任何方式的人工干预。 |
| C                            | Malfunction is permitted. The function can be reactivated either by reconnection to the mains or by operator intervention.<br>在测试过程中,设备允许出现业务中断,测试完毕后允许自行恢复或者人工干预恢复(包括硬件上干预);测试中只允许初级防护器件损坏,并且更换损坏的初级防护器件后,设备能恢复正常                |



## 7. \*Safety Standards/安规标准

|     |                                           |                                                                                      |
|-----|-------------------------------------------|--------------------------------------------------------------------------------------|
| 7.1 | Dielectric Strength(Hi-pot)<br>介电耐压强度(高压) | Primary to Secondary: 3000Vac / 5mAMax / 60 second<br>初级对次级: 3000Vac / 5mAMax / 60 秒 |
| 7.2 | Leakage Current<br>漏电流                    | 0.5mAmx. at 264Vac / 50Hz                                                            |
| 7.3 | Insulation Resistance<br>绝缘阻抗             | 50MΩ min. at primary to secondary add 500Vdc test voltage<br>在初级与次级间加 500Vdc 进行测试    |

### 7.4 Regulatory Standards/安规标准

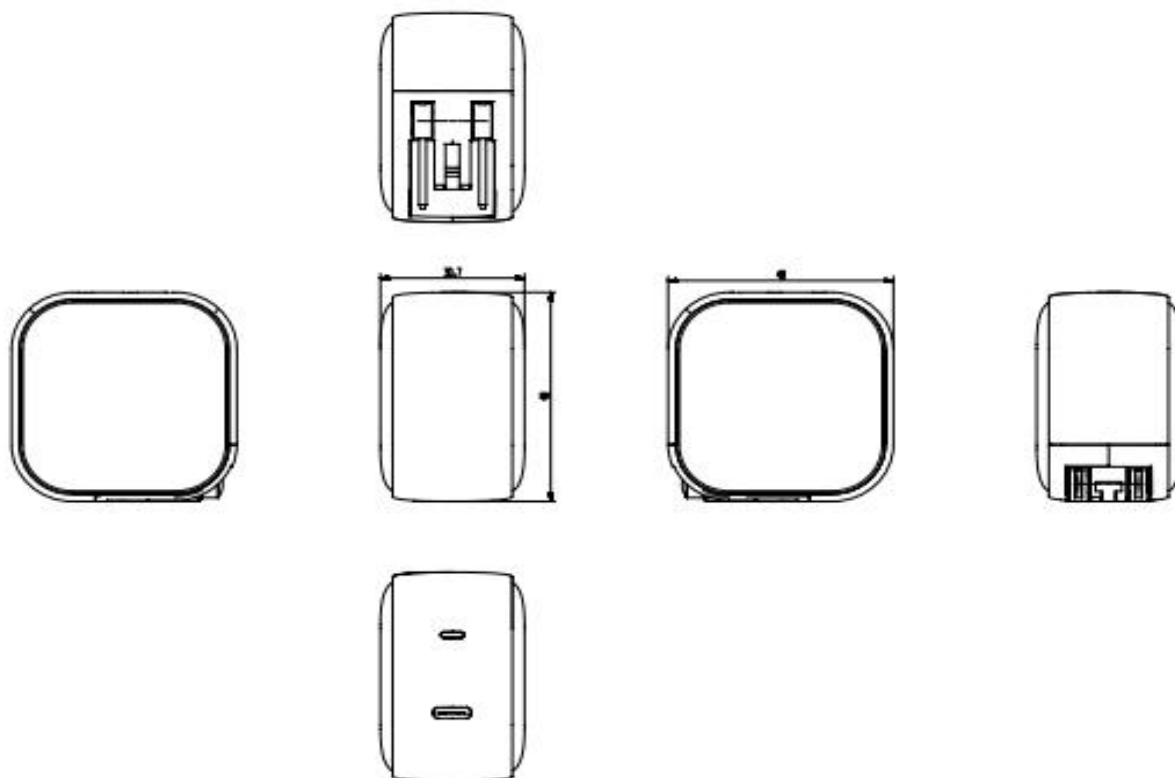
| Certificate                             | Country/国家    | Standard / 标准                                 |
|-----------------------------------------|---------------|-----------------------------------------------|
| <input checked="" type="checkbox"/> ETL | USA 美国        | <input checked="" type="checkbox"/> UL62368-1 |
| <input type="checkbox"/> CE+BS1363      | British 英国    | <input type="checkbox"/> EN60950-1+BS1363     |
| <input type="checkbox"/> CE /GS         | Europe 欧洲     | <input type="checkbox"/> EN60950-1            |
| <input type="checkbox"/> SAA            | Australia 澳洲  | <input type="checkbox"/> AS/NZS60950-1        |
| <input type="checkbox"/> PSE            | Japan 日本      | <input type="checkbox"/> J60950-1             |
| <input type="checkbox"/> S-Mark         | Argentina 阿根廷 | <input type="checkbox"/> IEC60950-1           |
| <input type="checkbox"/> CCC            | China 中国      | <input type="checkbox"/> GB4943               |
| <input type="checkbox"/> KC             | Korea 韩国      | <input type="checkbox"/> K60950-1             |
| <input type="checkbox"/> PSB            | Singapore 新加坡 | <input type="checkbox"/> IEC60950-1           |



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## 8. Outline Drawing 外观示意图



Shell material: ■PC      Temperature resistance: 120°C

Shell material: □PC+ABS      Temperature resistance: 95°C

外壳材质：■PC 耐温：120°C      □PC+ABS 耐温：95°C

Remark: PC material meets the requirement of spherical pressure test.

备注：PC 材质符合球压测试要求



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## 9. Marking Drawing 铭牌示意图

☒ Laser etching 镭雕

☐ Pad printing 丝印



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## 10. Package Drawing 包装示意图

**Sample Test Report 样品测试报告**