**Validation Plan**

| **Paragraph** | **Task** | **Specification** | **Completed** | **Responsible Engineer** |
| --- | --- | --- | --- | --- |
| 3.2.3.1.1 Power Consumption | Max Power | Measure power for each component ensuring below power budget of 50W | Incomplete | Alejandro Torres |
| 3.2.3.1.2 Input Voltage Level | Voltage Supply | Voltage supply is 24 V | Completed | Alejandro Torres |
| 3.2.3.2.1 Output Voltages | Microcontroller Supply Voltage | Microcontroller is supplied a voltage of 3.3V/5V | Completed | Alejandro Torres |
| 3.2.3.2.1 Output Voltages | Thermionic Cathode Supply Voltage | Supplied Voltage between 3-6V | Completed | Alejandro Torres |
| 3.2.3.2.1 Output Voltages | Ionizer Chips Supply | 33V Supplied | Incomplete | Alejandro Torres |
| 3.2.3.2.1 Output Voltages | Output Voltage | Measure output voltages to be supplied for each component | Completed | Alejandro Torres |
| 3.2.3. Dimensions of Power Supply | PCB Design | width & length : <100cm  height: <20cm | Completed | Alejandro Torres |
| 3.1 Weight | PCB Design | <0.2 kg | Completed | Alejandro Torres |
| 3.2.2.2 Volume Envelope | Prototype Footprint | Footprint of our prototype fits CubeSat size regulations (10x10x10 cm) | Completed | Ian Poynter |
| 3.2.2.1 Mass | Prototype Weight | Weight of the Chassis does not exceed 200 g on its own | Completed | Ian Poynter |
| 3.2.2.3 Mounting | Electronics Mounting | Power Supply and Microcontroller PCB has space for mounting to the chassis | Completed | Ian Poynter |
| 3.2.2.3 Mounting | Accelerator Plate Mounting | Mounting for accelerator plate is available and not blocked by chassis | Completed | Ian Poynter |
| 3.2.2.2 Volume Envelope | CubeSat Regulations | The prototype chassis fits all CubeSat standards not neglected due to design restraints or to be tested in the future | Completed | Ian Poynter |
| 3.2.2.4 Accelerator Geometry and Material | Geometry (Volume) | Accelerator will have around similar volume as desired volume (10 cm x 10 cm x ~2cm) to fit inside chassis | Completed | Michael Kim |
| 3.2.2.4 Accelerator Geometry and Material | Geometry (Shape) | 3 geometries will extend retention without additional charging and protect spacecraft/ionizer from it | Completed | Michael Kim |
| 3.2.2.4 Accelerator Geometry and Material | Material | 3 materials that handle space launch, radiation stress, and electric flux from space plasma will be tested | Completed | Michael Kim |
| 3.2.2.4 Accelerator Geometry and Material | Combinations | All 9 combinations will be constructed for testing for electrostatic potential. | In Progress | Michael Kim |
| 5.3 Signal Interfaces | Fuel Valve | Verify microcontroller compares and regulates fuel pressure and flow. | - | Joshua Feldman |
| 5.3 Signal Interfaces | Microcontroller | Verify microcontroller properly activates pulse charger, ionizer, and thermionic cathode. | - | Joshua Feldman |
| 5.3 Signal Interfaces | Microcontroller | All connections to the microcontroller are properly set up. | - | Joshua Feldman |
| 6.1 Prototype Interface | Microcontroller | Microcontroller can be tested with test bench | - | Joshua Feldman |
| 6.1 Prototype Interface | Microcontroller | BIT system properly catches exceptions thrown. | - | Joshua Feldman |