# Quality Assurance Report

**Safety:**

We can report that the safety of this product is assessed with high quality standards in mind and an emphasis on assessing areas of importance and value to the project in terms of safety. The aim is to ensure adequate safety testing with a focus on the design and usability of the product.

The design of the product includes an auto-shutoff feature that ensures the boiling point of the kettle does not persist for an excessive amount of time. The kettle boils water up until the boiling point is reached then the auto-shutoff feature will ensure the kettle is shutoff before any human intervention is needed. This prevents a number of potential safety hazards from happening including the risk of a fire, the risk of electrocution and the risk of negligent/minor persons being burnt by the boiling water.

The next design feature is the lid air release trigger, which provides another layer of safety to the kettle. This feature allows excessively hot air to be released from the kettle when the boiling point has been achieved; this further helps to regulate the temperature of the kettle so as to avoid excessively high temperatures which can become an increased safety risk.

Positive Test Cases:

TestKettle-TC1 Test switch = “OFF” and lid air release triggered when temperature >= 110 degrees Celsius

**Function:**

The aim of this testing is to conduct quality assurance checks to establish if the kettle worked according to specification and fulfilled all requirements as stated in the specification document.

Positive Test Cases:

TestKettle-TC1 Test lid volume = water volume \* 1.5

TestKettle-TC2 Test switch = “OFF” and lid air release triggered when temperature >= 110 degrees Celsius

TestKettle-TC3 Test valve = “CLOSED” when temperature <= 95 degrees Celsius

Negative Test Cases:

TestKettle-NegTC1 Test switch = “OFF” when using invalid water height < 250 ml mark

**Efficiency:**

The efficiency of the kettle is tested by taking into consideration the overall performance, energy usage and heat loss prevention features of the product.

Due to the new functionality added to the kettle, this now meant a lot of energy could be saved which previously would have been wasted. Upon assessment the energy usage of the kettle seems to have reduced significantly, this is because the boiling point can now be achieved at a quicker speed than in the old design. The new air tight lid means that less energy is now needed to heat the kettle because energy is now conserved during heating. This results in improved efficiency as the kettle can produce energy in a higher output while using lower input energy.

Heat loss prevention is achieved by the kettle’s ability to automatically close the lid valve at 95 degrees Celsius, this means that the heat generated by the kettle can be contained for longer periods of time. This feature reduces the need for any unnecessary re-heating since the heated water can stay warmer for longer periods of time especially with the added functionality of an air tight lid. We can deduce that energy consumption is then reduced in this way. The efficiency of the kettle is then improved by these features as they result in less energy being wasted by the kettle.

Positive Test Cases:

TestKettle-TC1 Test valve = “CLOSED” when temperature <= 95 degrees Celsius

**Conclusion:**

The team can safely report that satisfactory results have been achieved after commencing with quality assurance testing on the product; the product has met all the safety, functionality and efficiency specifications as documented at the start of the project. A thorough and successful testing process means that we can now approve the product for the next phase and we can conclude testing at this level. As a recommendation additional user acceptance testing may be required to ensure a better user experience for the end user, while maintenance and updates may also be necessary to enhance the quality of the product and create a good customer experience.

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