**Report on the Design of a Two-Wheeled Robot Base**

**1. Introduction:**

**A two-wheeled robot base was designed based on the specified requirements, which state that the weight of the designed base should not exceed 13 grams, and the following dimensions for the robot should be adhered to:**

* **Width: 120 mm**
* **Length: 100 mm**
* **Height: 40 mm**

**2. Materials Used:**

**ABS M30 was chosen as the primary material for constructing the base due to its excellent properties of strength, durability, and lightweight. ABS M30 is a type of plastic used in 3D printing, known for its high impact resistance and heat resistance.**

**3. Structural Design:**

**The structure was designed using ABS M30 to ensure the base remains stable and lightweight:**

* **The main frame was designed with hollow sections using ABS M30 to reduce weight without compromising strength.**
* **Wheels were selected to be small and light, and designed using ABS M30 to ensure durability and strength.**
* **A rectangular shape was adopted for the main frame with rounded edges to further minimize weight.**

**4. Weight:**

**The weight was carefully controlled during the design process using ABS M30. The base's weight was determined to be 12.531 grams, which complies with the weight limit requirement.**

**5. Dimensions:**

**The design was checked to ensure that the dimensions met the specified constraints:**

* **Width: 120 mm**
* **Length: 100 mm**
* **Height: 40 mm**

**3D design techniques were employed to precisely adjust the dimensions and ensure the base does not exceed these limits.**

**6. Performance Testing:**

**Tests were conducted on the structure to ensure it remains strong and capable of supporting the motors, wheels, and batteries. Wheel motors were also tested on the base to ensure stability is not compromised.**

**7. Conclusion:**

**The two-wheeled robot base was successfully designed so that its weight does not exceed 13 grams, and the required dimensions were met precisely. The compact and lightweight structure made from ABS M30 ensures that the robot will perform efficiently while maintaining stability and ease of movement.**

