



**DIMENSIONAL ACCURACY OF ABS 3D  
PRINTED PART USING 3D ESPRESSO F220  
MACHINE**

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“I declared that this is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree. “

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## **ABSTRACT**

Additive manufacturing (AM) also known as 3D printing is a technology that fabricates a three dimensional (3D) product by printing the product layer by layer directly from the Computer-Aided Design (CAD) of the product. Even though FDM is popular due to its various advantages, FDM still has some limitations such as high surface roughness and hardly to produce product with curve geometry accurately. This limitation is influenced by the parameters used during the 3D printing process. One of the parameters is, layer thickness. Thus, this research conducted to study the influence of layer thickness on the dimensional accuracy of 3D printed parts and capability of 3D Espresso F220 Machine. There are two type of design for 3D printed parts that have been investigated, first type is dog bone geometry and second type is rectangular geometry. Then, data collection on the actual measurement of length, width, thickness and curve have been performed on those 3D printed parts in order to investigate their dimensional accuracy. All the collected data have been evaluated and analysed. From the analysis, the influence of layer thickness on dimensional accuracy and capability of 3D Espresso F220 Machine have been discovered. Based on those analysis, it can be conclude that 0.1 mm of layer thickness is the best for minimizing the dimensional deviation for product with curve geometry. For product without curve geometry, 0.2 mm of layer thickness is the best in minimizing the dimensional deviation.