Conformal radiation therapy has proven to be a cost-effective treatment for various disease sites. With the emergence of dynamic conformal and intensity modulation, the multileaf collimator (MLC) is expected to play a major role in radiation treatment with improved outcome. Unfortunately, the jagged dose profiles (undulations) of MLC beam edge undermine its full capability and in some cases, negates its use. MLC leaves are optimized to provide the best coverage of the planned treatment field based on the area and not on dose distribution. Ideally, isodose lines should have minimum undulation. The effect of dosimetric undulation due to beam edge angle is investigated in this study for a double focused Siemens MLC. For a 20x20 cm^2 field, one side of the field edge was changed from 0-45 degree angles by sequentially blocking the fields. Dose profiles were measured at a depth of 5 cm using CEA film with superior dose, dose rate and energy response. Results suggest that average 50% isodose line of MLC is directly correlated to the geometrical beam edge. Maximum dose undulation (peak to valley) is noted for the 50% isodose line. The dose undulation reduces to a minimum for higher and lower isodose lines. The maximum undulation width of 8.8 mm was observed for the 45 degrees beam edge. The undulation index defined as the ratio of undulation width of 50% isodose line to beam penumbra increases linearly up to 1.2. Such characterization is necessary for an adequate coverage of target volume in MLC treatment.