



Figure 8. Graphical representation of bit independence value against file size in logarithmic scale

5.4 Other statistical measures

As a measure of non-homogeneity measure of Central tendency in terms of median, mode and measure of Dispersion in terms of standard deviation have been performed. Table 7 shows the values of median, mode and standard deviation of source stream and encrypted stream using IRS for three different files. Using Karl Pearson's Product Moment Correlation Coefficient formula, the correlation coefficient between the source stream and cipher stream is measured. Product moment correlation coefficient of three types of source streams and the corresponding encrypted streams has been also presented in Table 7 from which it is observed that there is negligible correlation between the source stream and the cipher stream. This result indicates that IRS may provide good security.

Table 7. Median, mode, standard deviation and correlation coefficient values using IRS

Value of	Stream	S08.png	S10.dll	S17.rtf
Median (character with ASCII value)	Source	123	102	99
	Encrypted	124	102	87
Mode (character with ASCII value)	Source	0	0	92
	Encrypted	0	0	85
Standard Deviation	Source	93	2391	221568
	Encrypted	87	1658	151033
Correlation Coefficient	Source & Encrypted	0.79	0.89	0.13

6. CONCLUSION

The proposed technique IRS is simple to comprehend and easy to implement using various high-level languages. Because of high processing speed and the measure of the degree of security is at par with Triple-DES and AES the performance of IRS is quite acceptable. It is applicable in message transmission of any size and any form. Some of the salient features of IRS can be summarized as follows:

- (1) Session based key implementation
- (2) Block size independency
- (3) High degree of security

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