Vector-host contact is a key epidemiological parameter in vector transmitted parasitic infections. The interaction between vectors and hosts is influenced by both environmental and endogenous factors that regulate their diurnal activity. In this study, effects of temperature, relative humidity and lax on the activity on tsetse flies and hosts were evaluated in two allopatric populations of *G. pallidipes* to estimate vector-host contact and risk of disease transmission within the dry and wet seasons. Results showed that vector activity was majorly influenced by temperature and relative humidity and the activity pattern was sensitive to seasons. Host movement significantly influenced vector movement in both dry and wet seasons at Nguruman, but only to a limited extent during the wet season at Busia. Host movement correlated positively with vector activity at high host densities while there was no definite correlation at low host densities. Vector-host contact was independent of prevailing weather conditions and seasons but was explained largely by random variability ascribable to innate spontaneous circadian rhythm of the vectors and the hosts. This implies that management of transmission risk in these two areas would largely depend on avoidance of contact between the vectors and hosts. This would require strategic livestock grazing patterns that is out-of-phase with peak vector activity periods to minimize contact.