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In a t -covering array with k rows and n columns, with each element inserted randomly from an alphabet of size q , we select any t columns and look for the minimum number of rows k that can lead to the appearance of all q^t possible words among the rows of the selected t columns. We use a probabilistic method, namely the Erdős-Lovász local lemma, in conjunction with a method to estimate complex binomial sums, to address this question and find generalized formulas for calculating upper bounds on k in arrays of different sizes. (Received September 08, 2013)