Vizing's Theorem and Kőnig's Line Coloring Theorem for graphings

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Vizing's Theorem states that if the maximum degree of a graph is d, then its edge-chromatic number is at most $d+1$. Kőnig's Line Coloring Theorem states that for bipartite graphs, the edge-chromatic number is always d. We investigate the analogous questions for measurable graphs called graphings. We show that $d+O(\sqrt{d})$ is an upper bound for graphings, and $d+1$ is the sharp upper bound for bipartite graphings. We show that a generalization of Vizing's Theorem (for finite graphs) would imply that $d+1$ is an upper bound for non-bipartite graphings, as well.