AARON SLOBODIN, The University of Victoria
2-Limited Broadcast Domination in Grid Graphs

Suppose there is a transmitter located at each vertex of a graph G. A k-limited broadcast on G is an assignment of the integers $0, 1, \ldots, k$ to the vertices of G. The integer assigned to the vertex x represents the strength of the broadcast from x, where strength 0 means the transmitter at x is not broadcasting. A broadcast of positive strength s from x is heard by all vertices at distance at most s from x. A k-limited broadcast is called dominating if every vertex assigned 0 is within distance d of a vertex whose transmitter is broadcasting with strength at least d. The k-limited broadcast domination number of G is the minimum possible value of the sum of the strengths of the broadcasts in a k-limited dominating broadcast of G. Observe that the 1-limited broadcast domination number of G equals the domination number of G.

We give tight upper and lower bounds for the 2-limited broadcast domination of Cartesian products of paths. The upper bounds are established by explicit constructions. The methods to obtain the lower bounds utilize the dual of 2-limited broadcast domination, 2-limited multipacking.