**ECE 6380 – Homework 5**

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**Problem 2**

Mesh 1:

L = 2500, A = 2500

Nz = 100, Nx = 100

CFL time step: 5.8965e-08

delta: 2.5e-08

slab starts at z = 500



Mesh 2:

L = 2500, A = 2500

Nz = 150, Nx = 150

CFL time step: 4.0096e-08

delta: 2.5e-08



Mesh 3:

L = 2500, A = 2500

Nz = 200, Nx = 200

CFL time step: 3.0662e-08

delta: 2.5e-8



Mesh 4:

L = 2500, A = 2500

Nz = 300, Nx = 300

CFL time step: 1.8869e-08

delta: 1.25e-08

Grid spacing was chosen to be fine enough to not notice a significant change in plot shape or values when more points were used.

Time step was chosen to be less than CFL time step as calculated in the attached Matlab code.

Reflection and transmission coefficients were calculated using Equation 46 and 47 in Note 9.

reflection coefficient: -0.381966

transmission coefficient: 0.618034

The result has converged when adding additional points to the mesh does not significantly change the shape of the graph and its peak values.