1. With The first sidelobe of the radiation pattern is located at a level of -13.2 dB below the main lobe level. It can be shown that the 3 dB beamwidth of a linear array with uniform tapering for large values of K equals: . Therefore, the beamwidth should be.
2. While with uniform tapering, all array factors equal to 1, with chebshev tapering, the resulting array factor is chebshev polynomial for the specified sidelobe level, in this assignment, it is -32 dB, and the sidelobes will all be equal in magnitude.

The beamwidth becomes larger than uniform tapering, since the total radiated power remain the same, decreasing the sidelobe level leads to expanding the mainlobe.

1. In order to determine the frequency of the first grating lobe, by formula

There is no real solution in this case. In the figure, we can also find that there is no grating lobe appears in the domain.