This file is to be added onto as we go to make sure what we are doing is correct:

Basic Parameters:

fc = 24e9 (24GHz)

c = 3e8 (Speed of light)

λ = c/fc = 0.0125

d = 0.5λ (Half wavelength spacing optimal for beam-forming)

For 5 angles from

Angle Values:

-0.872664625997165 -0.698131700797732 -0.523598775598299 -0.349065850398866 -0.174532925199433 0.00000000000 0.174532925199433 0.349065850398866 0.523598775598299 0.698131700797732 0.872664625997165

Which maps to: -50, -40, -30, -20, -10, 0, 10, 20, and so on degrees. 11 frames required.

Check:

ΔФ = 2\*pi\*d\*sin(ϴ)/λ

ΔФ = pi\*sin(ϴ) → for d= 0.5λ

-2.4066 = pi\*sin(-0.872664625997165)

-2.0194 = pi\*sin(-0.698131700797732)

-1.5708 = pi\*sin(-0.523598775598299)

…

Which matches array of phi values for phase change.

For 5ns clock rate, to achieve a sine wave with reasonable accuracy

(Explain what the max frequency is for a generated wave, also explain why the chirp period is being extended to 100us instead of 10.)