wfta128.mcd - Aug 28, 2018
An example of the 2 Factor FFT

$N1 := 16$ Outer DFT Length

$N2 := 8$ Inner DFT Length

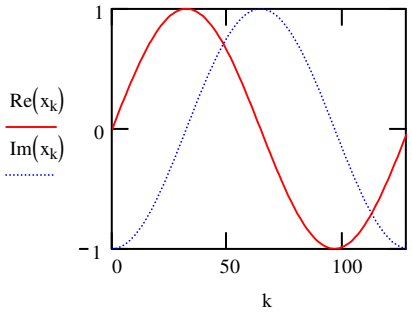
$N := N1 \cdot N2$ Total DFT Length

$k1 := 0 .. (N1 - 1)$ $k := 0 .. (N - 1)$

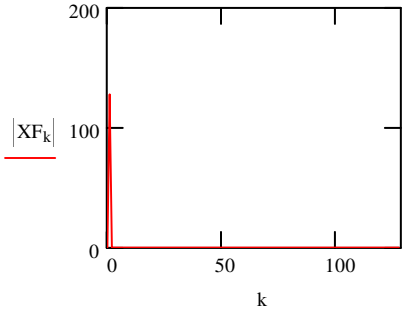
$k2 := 0 .. (N2 - 1)$ $i := \sqrt{-1}$

$W := e^{-i \cdot 2 \cdot \frac{\pi}{N}}$ $W1 := e^{-i \cdot 2 \cdot \frac{\pi}{N1}}$ $W2 := e^{-i \cdot 2 \cdot \frac{\pi}{N2}}$

$x_k := \sin\left(k \cdot 2 \cdot \frac{\pi}{N}\right) - i \cdot \cos\left(k \cdot 2 \cdot \frac{\pi}{N}\right)$ Single complex tone.



$XF_k := \sum_{m=0}^{N-1} x_m \cdot W^{m \cdot k}$ DFT for reference



$X_{N2 \cdot k1 + k2} := \sum_{m1=0}^{N1-1} W1^{m1 \cdot k1} \cdot W^{m1 \cdot k2} \cdot \sum_{m2=0}^{N2-1} x_{N1 \cdot m2 + m1} \cdot W2^{m2 \cdot k2}$

Two Factor FFT