

$$h[n] = \frac{1}{2} (\delta[n] + \delta[n-1])$$

$$H(e^{j\omega}) = \sum_{n=-\infty}^{\infty} h[n] e^{-j\omega n}$$

$$H(e^{j\omega}) = \frac{1}{2} \sum_{n=-\infty}^{\infty} \delta[n] e^{-j\omega n} + \frac{1}{2} \sum_{n=-\infty}^{\infty} \delta[n-1] e^{-j\omega n}$$

$$= \frac{1}{2} \sum_{n=-\infty}^{\infty} e^{-j\omega n}$$

$$= \frac{1}{2} \sum_{n=-1}^{-\infty} (e^{j\omega})^{-n} + \frac{1}{2} \sum_{n=0}^{\infty} (e^{-j\omega})^n$$

$$= \frac{1}{2} \sum_{n=1}^{\infty} e^{j\omega n} + \frac{1}{2} \cdot \frac{1}{1 - e^{-j\omega}}$$

grows without bound