



1501 Wilson Boulevard, Suite 902, Arlington, VA 22209 • Telephone: (703) 525-1616 • FAX: (703) 525-3938

August 6, 1999

To: Federal Communications Commission
Experimental Radio Service
P.O. Box 358320
Pittsburgh, PA 15251-5320

Gentlemen/Mesdames:

This exhibit will include the NECESSARY BANDWIDTH DESCRIPTION, which consists of the calculation for the indicated frequency listed on file number 0212-EX-PL-1999.

The frequencies from the specification sheets of the devices that we will be using in our radar were used to calculate the radar's frequency, f_{xmit} , and bandwidth (BW).

$$f_{\text{stalo}} = 1440 \text{ MHz} \pm 10 \text{ MHz (tunable band)}$$

$$f_{\text{coho}} = 60 \text{ MHz} \pm 0.002 \text{ MHz (drift)}$$

$BW_{\text{effective}} = \text{instantaneous bandwidth} + \text{stalo's tunable band} + \text{coho's drift}$

$$\begin{aligned} BW_{\text{effective}} &= 1/\tau + BW_{\text{stalo}} + BW_{\text{coho}} \\ &= 100 \text{ MHz} + 20 \text{ MHz} + 0.004 \text{ MHz} \\ &= 120 \text{ MHz} = (\pm 60 \text{ MHz}) \end{aligned}$$

$$f_{\text{xmit}} = f_{\text{stalo}} + f_{\text{coho}} + BW_{\text{effective}} = 1440 \text{ MHz} + 60 \text{ MHz} \pm 60 \text{ MHz} = 1500 \text{ MHz} \pm 60 \text{ MHz}$$

f_{stalo} is the frequency for the stable oscillator that we will use, and f_{coho} is the frequency for the coherent oscillator. $\tau = 10 \text{ nsec}$ is the shortest pulsewidth. Our necessary bandwidth is 120 MHz.

Your favorable consideration of this application for an experimental license is requested. Thank you.

Sincerely,

Eddie Hughes, Technical Manager
XonTech, Inc.
1501 Wilson Blvd., Suite 902
Arlington, VA 22209