Necessary Bandwidth Description

The Necessary BW is estimated based on calculation. The calculations are based on Table A in Annex J of the NTIA manual for phase coded pulsed radar (including spread spectrum)

The calculation is based whether t/t_r < 12.6 where

t is the waveform length, for our case the shortest expected pulse length of 0.2 Microsecond

t_r is the rise time of the pulse expected to be < 0.01 Microsecond

Therefore

t/t_r= .2/.01=20 > 12.6

Therefore

$B_n = B(-20dB) = 6.36/t = 6.36/.2 = 31.8$ MHz

Note some version of the NTIA manual shows the equation as 6.36/sqrt(t), let us know if we need to change to that version.

Although the system is will be frequency hopping from 9.3-9.5 GHz, note 7 mentions that necessary bandwidth is the instantaneous bandwidth of one of the channels