

## ELTA North America Request for FCC Experimental License

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### Necessary Bandwidth Calculation

The necessary bandwidth was determined using the equation in Annex J of the NTIA Manual<sup>1</sup> for FM-pulsed radars (see Equation 1).

$$B_n = B(-20 \text{ dB}) = \frac{1.79}{\sqrt{t_r \cdot t}} + 2B_c \quad (1)$$

where

- $B_n$  = necessary bandwidth, MHz
- $t_r$  = pulse rise time,  $\mu\text{s}$
- $t$  = pulse width,  $\mu\text{s}$
- $B_c$  = frequency deviation (chirp) bandwidth, MHz

The ELTA NA MARS-K emission characteristics are given in Table 1. Applying these parameters to Equation 1, results in a maximum necessary bandwidth of 66.6 MHz.

**Table 1 Emission Characteristics**

Pulse width	0.1	$\mu\text{s}$
Pulse rise/fall time	10	ns
Maximum frequency deviation	5	MHz

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<sup>1</sup> *Manual of Regulations and Procedures for Federal Radio Frequency Management*, Washington, DC: US Department of Commerce, National Telecommunications and Information Administration, 2008 (revision May 2011).