ELTA North America Request for FCC Experimental License

Modification Form 442 File Number: 0082-EX-ML-2015
Modification Form 442 Confirmation Number: EL458753
02 May 2015

Reference:

Call Sign: WH2XNE
Original Form 442 File Number: 0710-EX-PL-2014
Original Form 442 Confirmation Number: EL622900

Necessary Bandwidth Calculation

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

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

where

B_n = necessary bandwidth, MHz
t_r = pulse rise time, μs
t = pulse width, μs
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	μs
Pulse rise/fall time	10	ns
Maximum frequency deviation	5	MHz

[1] *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).