Exhibit 3 – Modulating Signal Description

The AN/SPN-50 antenna rotates at 36 revolutions per minute so that three scans will occur every five seconds. On two out of every three scans, a Medium PRF Doppler (MPD) waveform will be used for transmit. Calculating the -40 dB bandwidth using NTIA equation 5a for Criteria B radars yields a 21 MHz bandwidth for the worst case 10.88 µs pulse width. Therefore, the emissions designator for the MPD waveform is 21M0Q1N.

Where 21M0 represents the 21.0 MHz necessary bandwidth
Q represents a sequence of pulses with the carrier angle modulated during the period of the pulse. Angle modulation includes frequency modulation.
1 represents a single channel containing quantized or digital signals without the use of a modulating subcarrier. (This excludes time-division multiplex.)
N represents no information transmitted

Every third scan will use a simple unmodulated 320 ns pulse with a 40 ns rise time for the short pulse scan. Using NTIA equation 4a for Criteria B non-FM pulse radars yields -40 dB bandwidth results of 67.2 MHz and 200 MHz. Selecting the lower value of 67.2 MHz yields a short pulse emissions designator of 67M2P0N.

Where 67M2 represents the 67.2 MHz necessary bandwidth
P represents a sequence of unmodulated pulses
0 represents no modulating signal
N represents no information transmitted

One rotation every 30 or 60 seconds will use a 8 µs simple unmodulated pulse with a 40 ns rise time and a 1200 Hz PRF. Again using NTIA equation 4a for Criteria B non-FM pulse radars yields -40 dB bandwidth calculations of 13.4 MHz and 8.0 MHz. Selecting the lesser value of 8 MHz yields the emissions designator for the weather pulse of 8M0P0N.

Where 8M0 represents the 8.0 MHz necessary bandwidth
P represents a sequence of unmodulated pulses
0 represents no modulating signal
N represents no information transmitted