

(A) Any or all frequencies in the band from 9.2 to 10.2 GHz may be selected in a predetermined sequence.

(B) 4 KW, or 36 dBW, is the RF peak power generating capability of the many individual transmitters which make up the face of the array.

(C) Mid-band antenna gain of the array is 39 dB, thus yeilding an Effective Radiated Power (ERP) of 75 dBW.

(D) The 4 kW transmittier power and the 75 dBW ERP are maximum peak power values for radar duty cycles from 5 to 40 percent. Maximum average transmitter power is therefore 1.6 kW.

(E) The transmission is a sequence of unmodulated pulses in which no information is transmitted.

(F) Waveform characteristics:

Pulse Repetition Frequency 7 to 25 and 60 to 315 kHz
 Pulsewidths 0.04 to 40 microseconds
 Duty Cycle 5 to 40 percent

Various combinations of these parameters, and the frequencies stated above, will constitute the transmission.

(G) Necessary Bandwidth: Calculated in accordance with the instructions found in **Reference Data for Engineers: Radio, Electronics, Computer, and Communications, 7th Edition, page 1-25:**

Bandwidth = $(2K)/t$, where K depends on the ratio of pulse duration to pulse rise time, and $t = (2 \times \text{range resolution})/\text{velocity of light}$. For this application range resolution is specified to be 6 meters, thus $t = 40 \text{ ns}$. K is defined to be 1.5, thus necessary bandwidth = 75 MHz.

Emission designation is 75MP0N.

This radar is to be used as part of a research program to investigate the detection and tracking capabilities of a modern technology radar. This radar, known as the Solid State Phased Array, was developed by the USAF. This is an X-band type radar designed for evaluation of solid state phased array technology as it applies to military radar systems.

The primary objective is to demonstrate the radars capability to detect and track aircraft targets of various types and flight geometries.

The radar will be operated from a location atop a permanent antenna tower at the Texas Instruments facility in McKinney Texas.