

7.3.4.3 Example Ka-Band Designs (Continued)

The alternatives are:

- (a) To use a pulse compression system which means disregarding the magnetron in favor of a more massive and complicated transmitter such as Klystron and TWT based subsystems with a low power transmit chain and a SAW expansion/compression system incorporated.
- (b) Reduce range and range accuracy requirements.

Table 7-11 contains a list of radar parameters and tracking accuracies for an example 35 GHz design with a magnetron transmitter and pressurized high power microwave circuitry.

Antennas may be divided into three broad categories:

- (a) arrays
- (b) Reflectors
- (c) Hybrids

Arrays have not received much attention in this study. The antenna is relatively large, measured in wavelengths and microstrip is very 'lossy' at these frequencies.

Millimeter reflector antenna technology is discussed in References [65] and [66]. The flat plate cassegrain is a mechanically steerable antenna with low inertia moving parts, wide fields of view and no moving waveguide joints. These qualities led to it being selected for the example design.

A possible disadvantage results from its polarization sensitivity if square waveguide was to be used for multipaction purposes.

An interesting millimeter hybrid concept is described in Ref. [67]. Hybrids offer the relatively simple feeding system of the reflector with the electrical scanning properties of a planar array. Such advanced concepts would need considerably more research before definitive decisions could be made on their applicability to Paksat.