An novel means of scanning a circularly polarized reflectarray antenna. The reflectarray is an array of metallic elements arranged on a surface designed to compensate for the various path lengths of the optical rays from an illuminating feed to the reflecting surface and then to the antenna aperture. With appropriate design, the phase in the aperture can be made to vary linearly in any desired direction and also to produce a radiated beam normal to the constant phase surface. In the case of circular polarization, this path length compensation can be accomplished by rotation of the individual elements.

24 Claims, 5 Drawing Sheets
FIG. 5

ANGLE (deg.)

RELATIVE POWER (dB)

CO-POL
CROSS-POL

FIG. 6

ANGLE (deg.)

RELATIVE POWER (dB)

CO-POL
CROSS-POL

25

27

29

31
FIG. 7

MEASURED GAIN (dBIC)

EFFICIENCY (%)

FREQUENCY (GHz)

FIG. 8

MEASURED GAIN (dBIC)

EFFICIENCY (%)

FREQUENCY (GHz)