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EFFECT OF AN INTRUDER ON A SECURITY SYSTEM

by

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Prepared for

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Table I  
Scattering Cross Section of Triangular  
Corner Reflectors at 8.0 GHz

Corner Reflector		Cross Section	
Number	Dimension (inches)	Theoretical ( $\sigma_T$ ) (dBm <sup>2</sup> )	Measured ( $\sigma_M$ ) (dBm <sup>2</sup> )
A1	27.0	28.19	28.4
A2	48.0	38.18	37.4
A3	48.0	38.18	37.4
A4	46.0	37.44	37.2
A5	46.0	37.44	36.4
A6	46.0	37.44	36.4
A7	46.0	37.44	36.5
A8	63.0	42.97	44.4
A9	83.5	47.80	49.4
A10	84.0	47.90	48.4

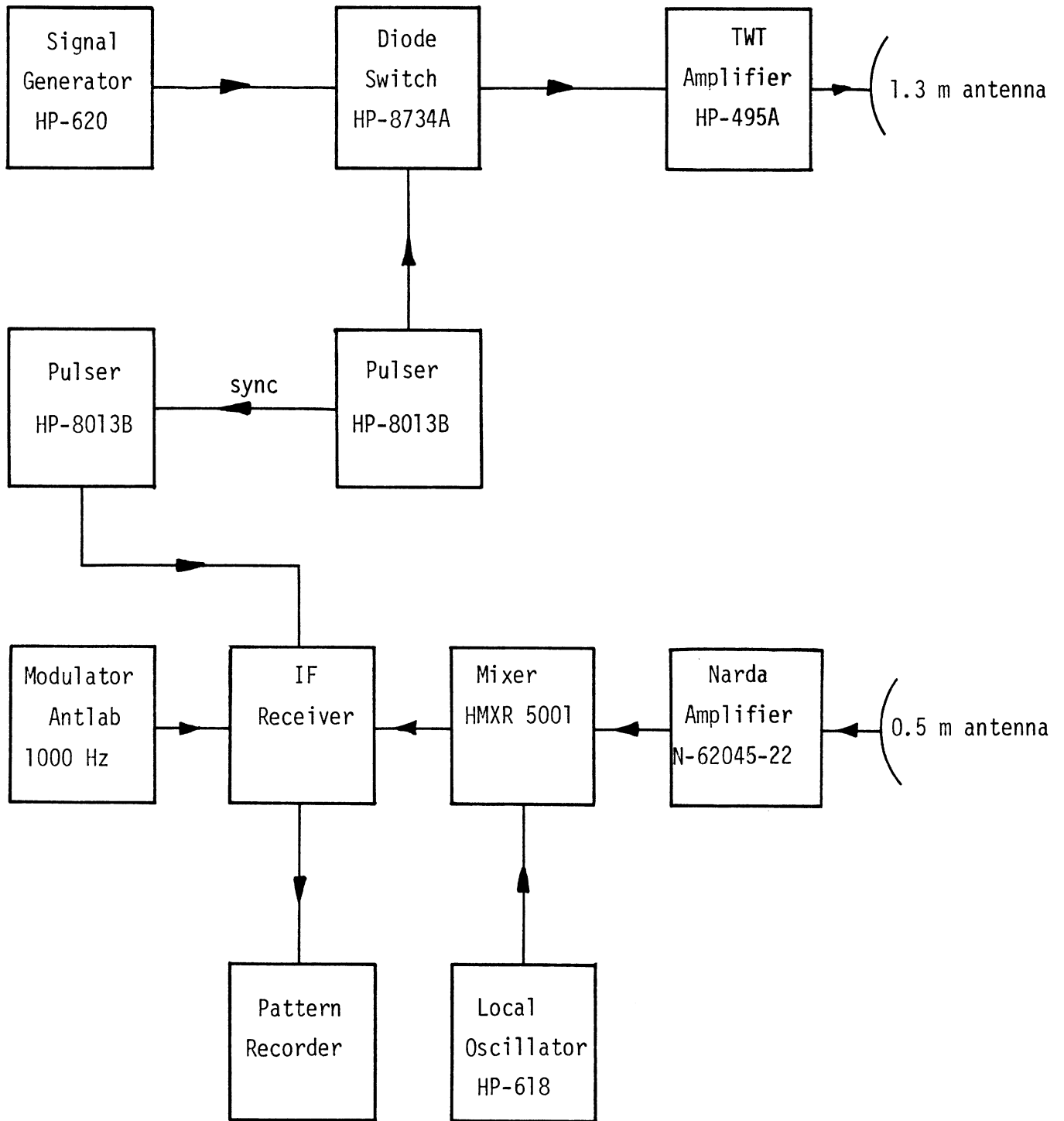


Fig. 1. The new short pulse system.

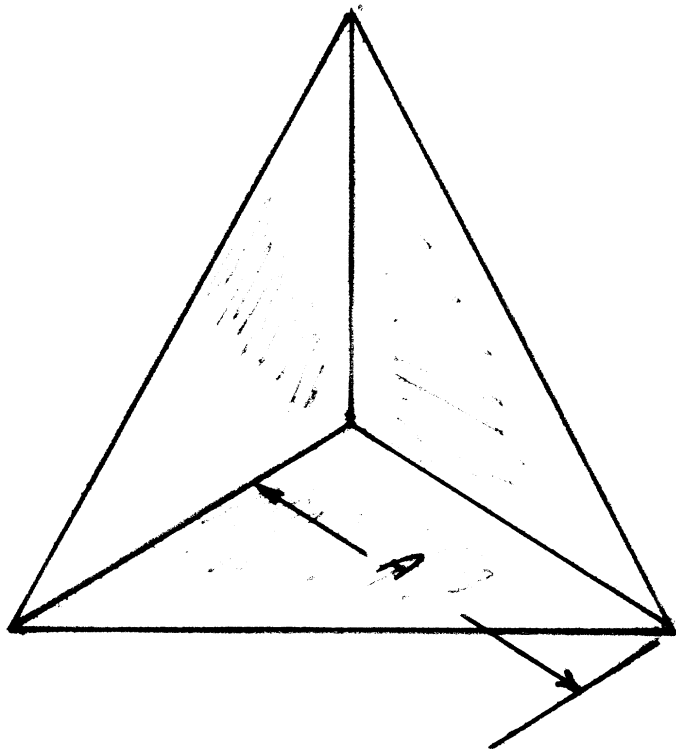


Fig. 2. Triangular corner reflector.

— = 0°

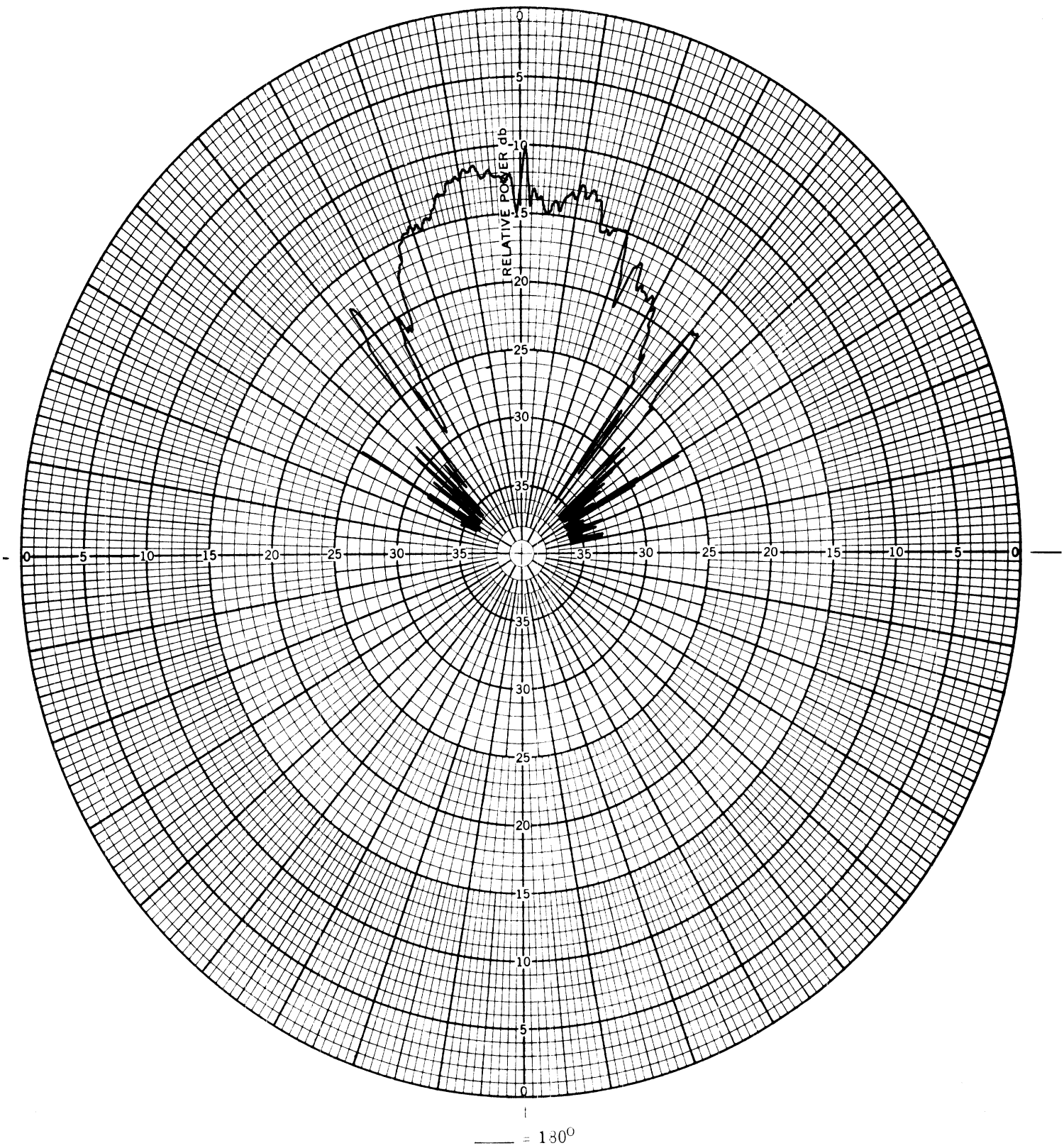


Fig. 3. Corner reflector A1; A = 27", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 28.4 \text{ dBm}^2$ .

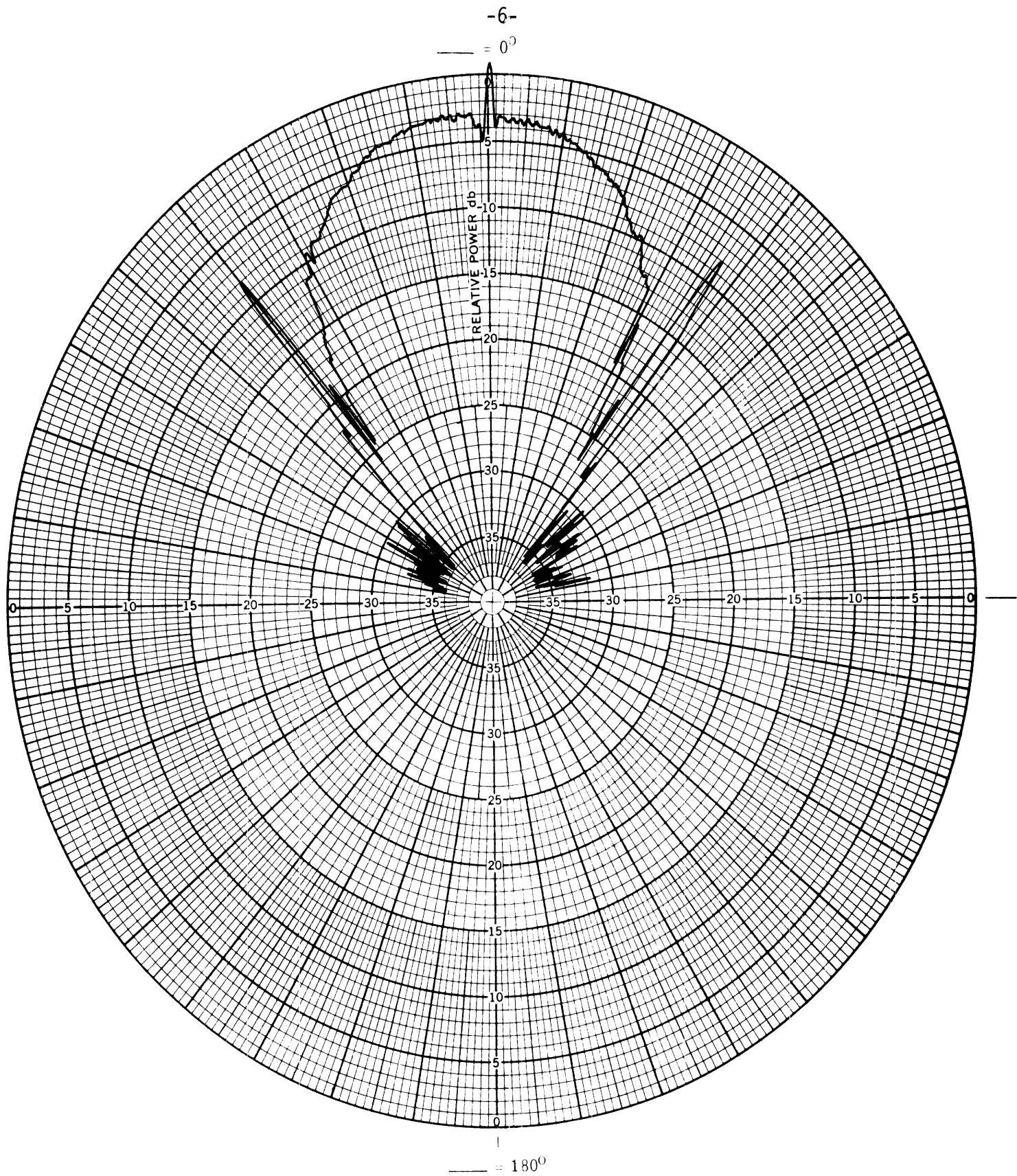


Fig. 4. Corner reflector A2; A = 48", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 37.4 \text{ dBm}^2$ .

— = 0°

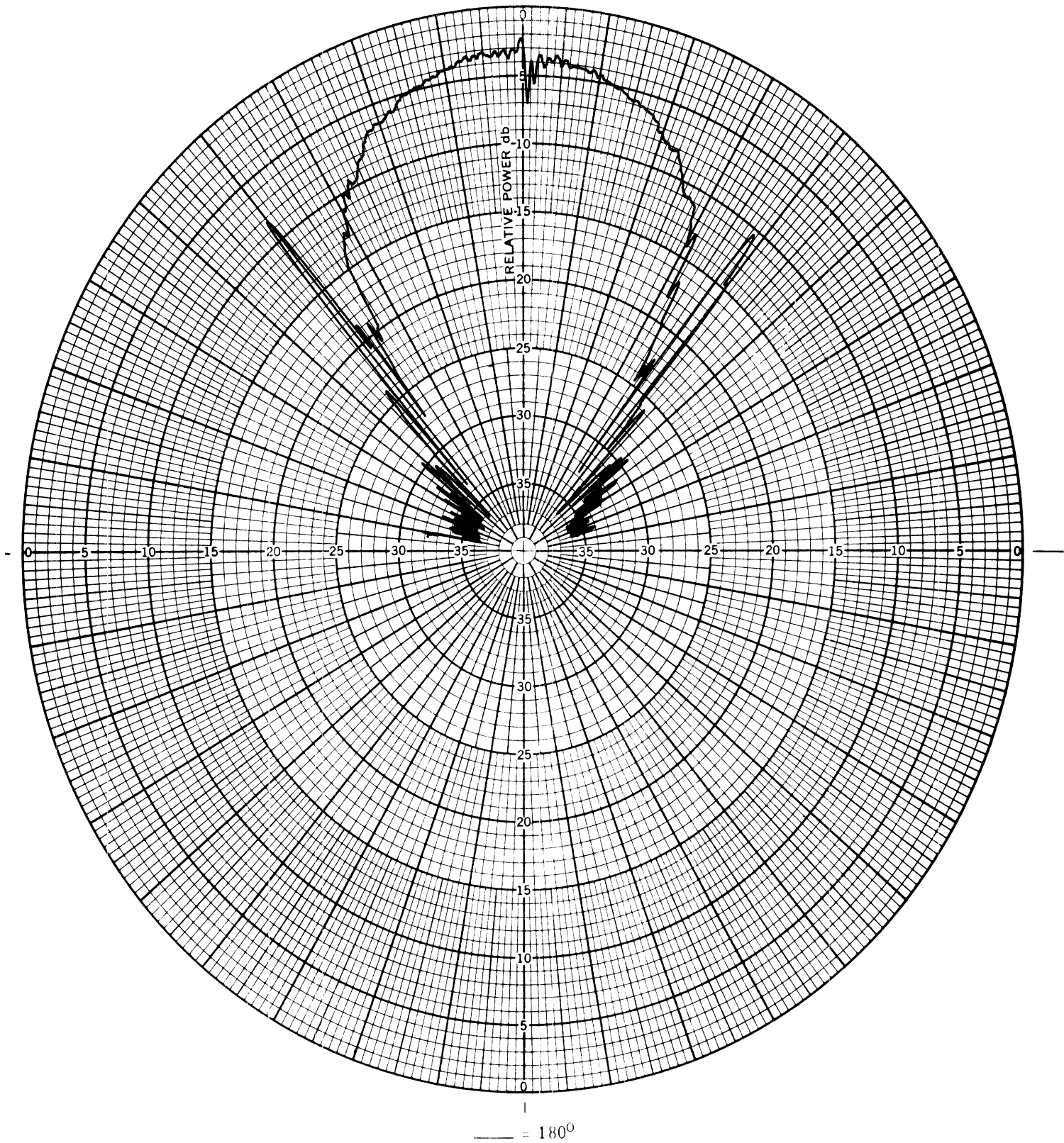


Fig. 5. Corner reflector A3; A = 48", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 37.4 \text{ dBm}^2$ .

— = 0°

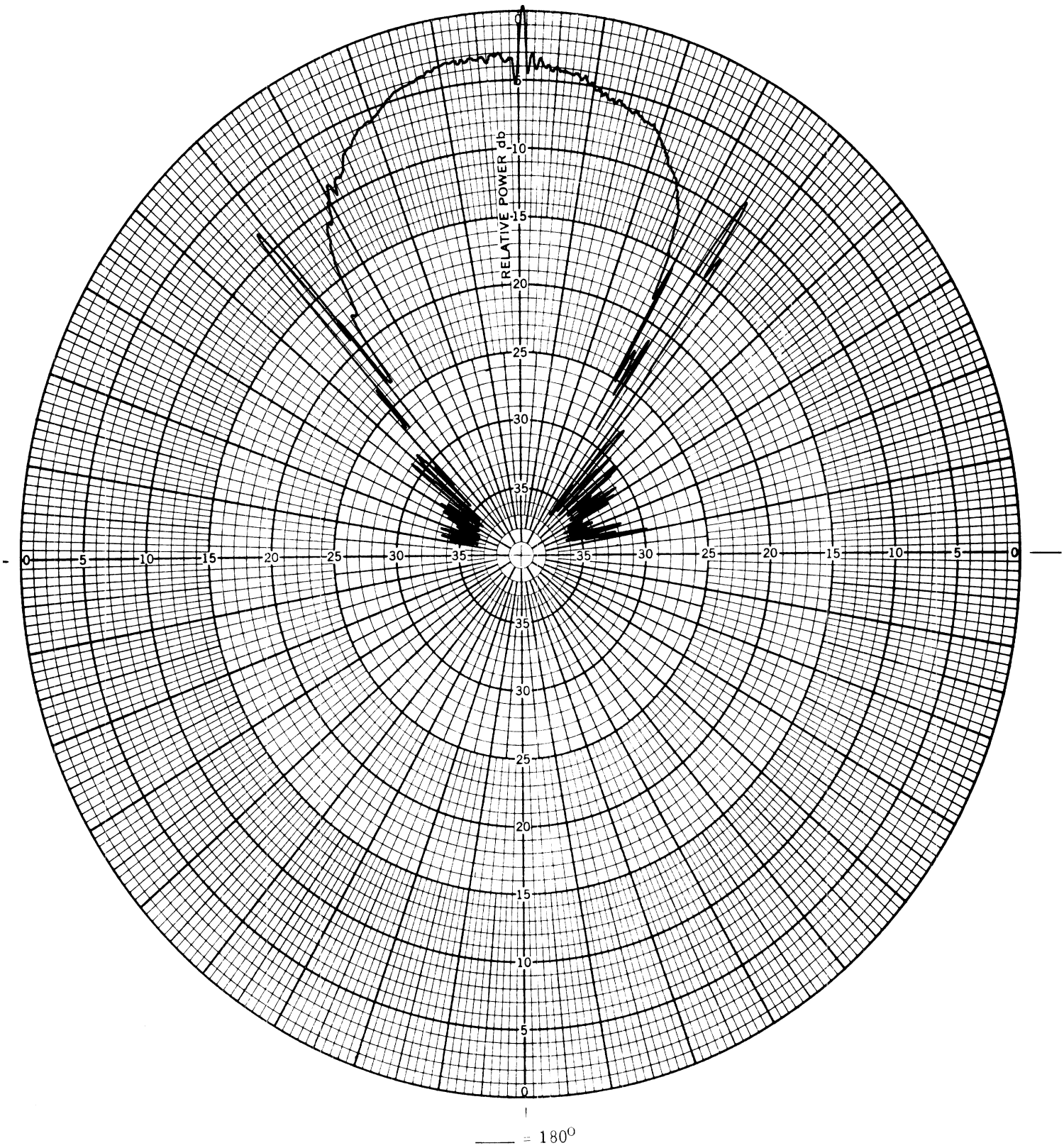


Fig. 6. Corner reflector A4; A = 46", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 37.2 \text{ dBm}^2$ .



— = 0°

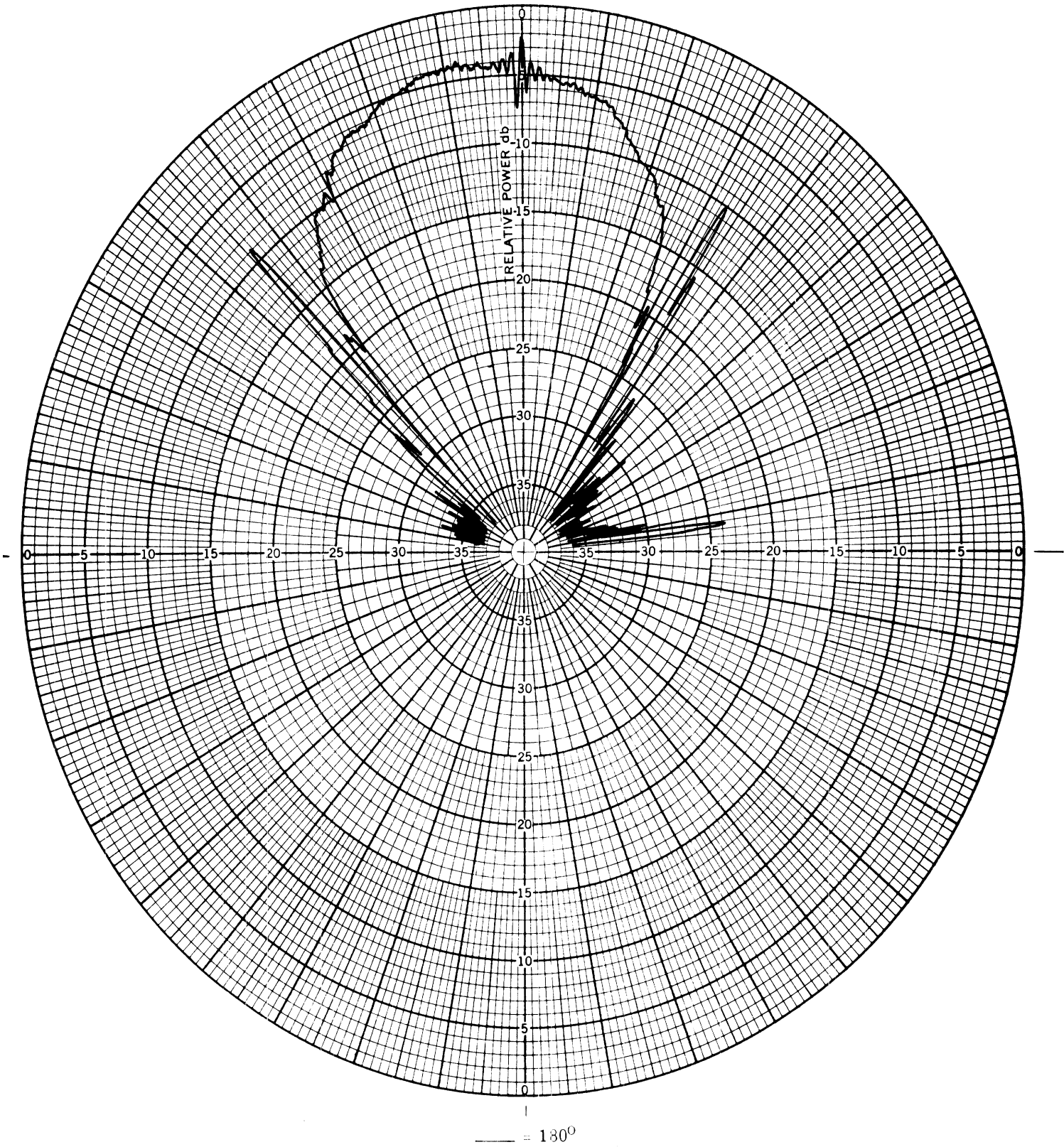
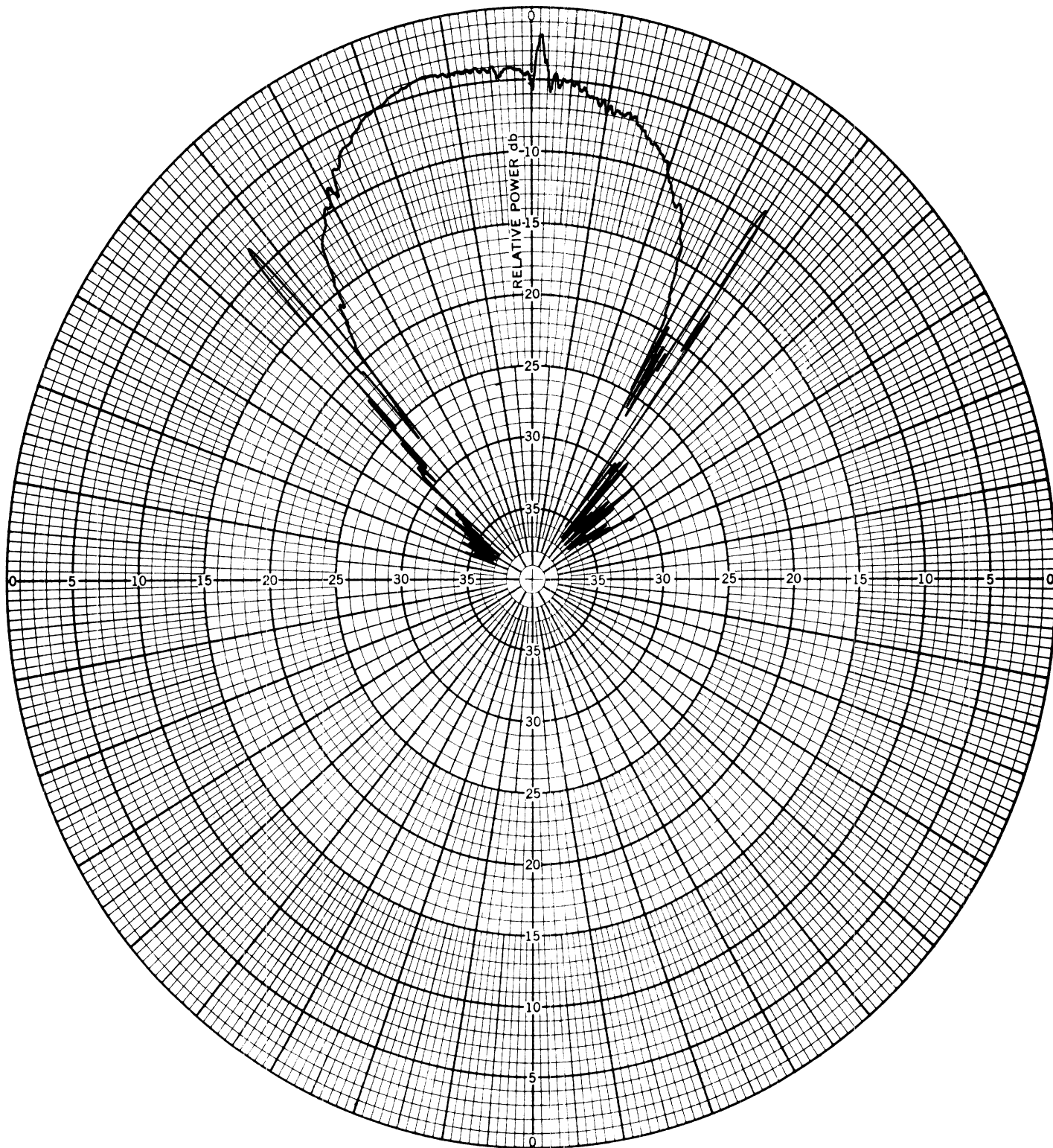


Fig. 7. Corner reflector A5; A = 46", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 36.4 \text{ dBm}^2$ .

— = 0°



— = 180°

Fig. 8. Corner reflector A6; A = 46", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 36.4 \text{ dBm}^2$ .

— = 0°

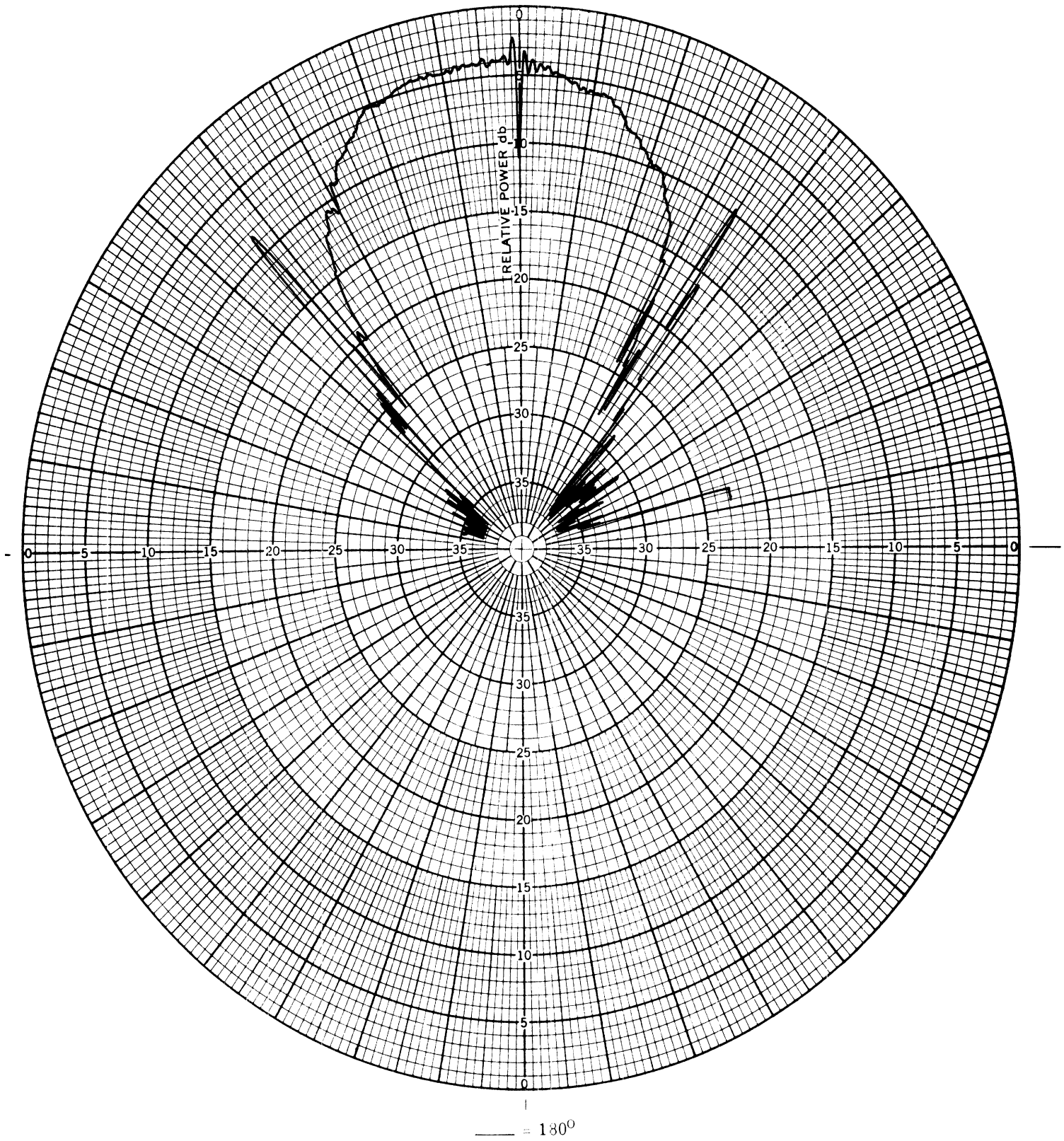


Fig. 9. Corner reflector A7; A = 46", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 36.5 \text{ dBm}^2$ .

— = 0°

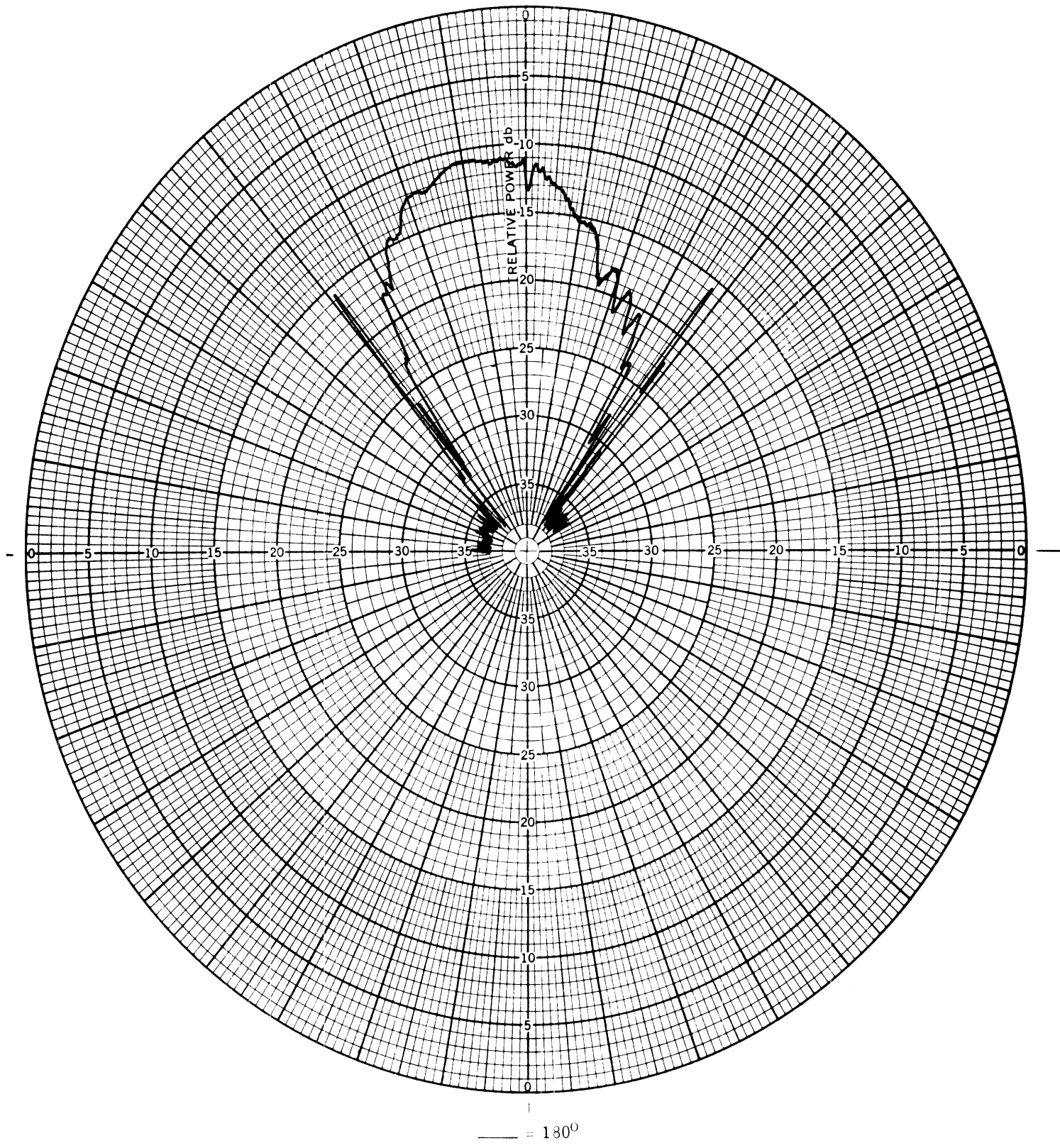


Fig. 10. Corner reflector A8; A = 63", attenuator setting = 33 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 44.4 \text{ dBm}^2$ .

— = 0°

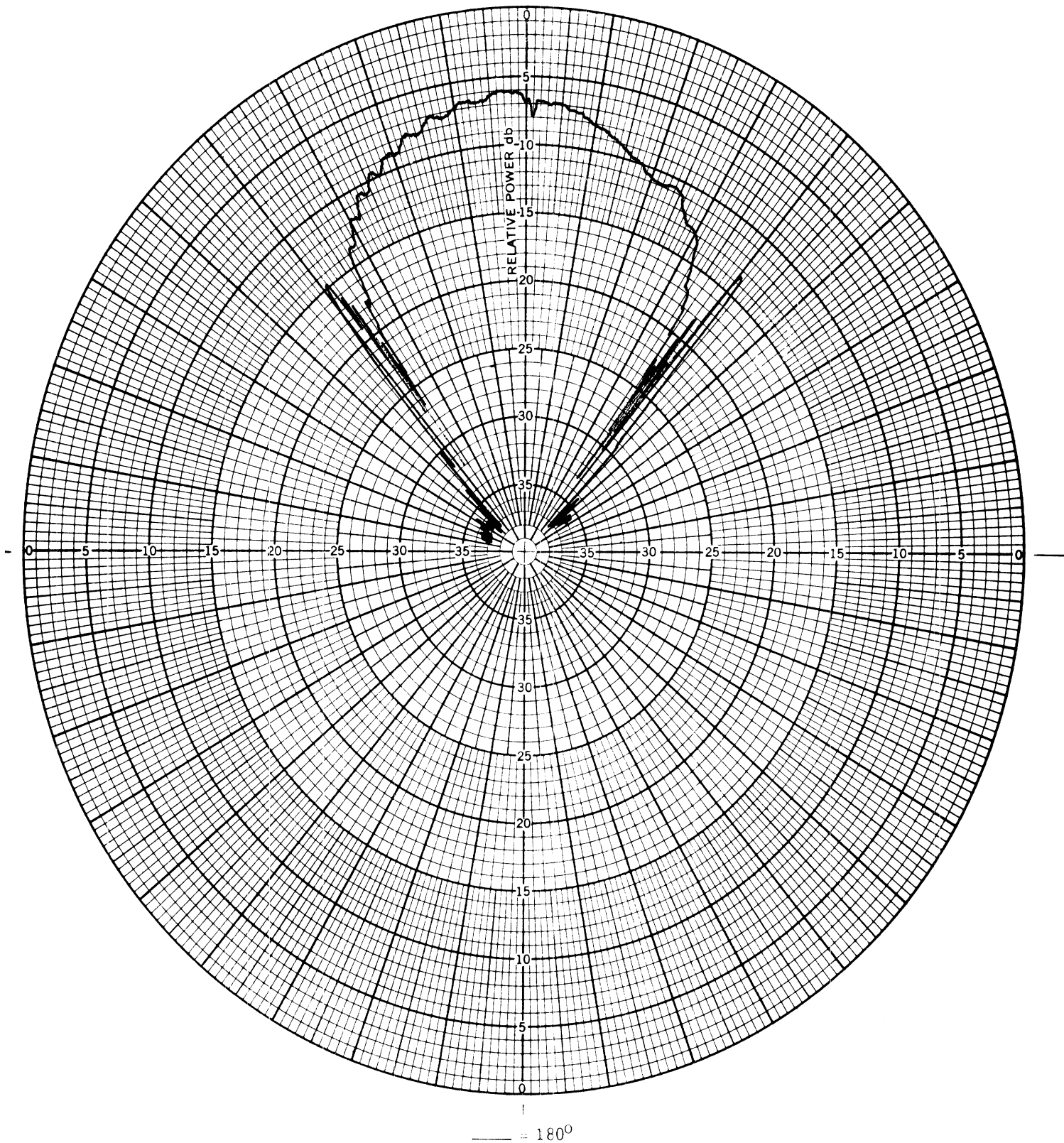


Fig. 11. Corner reflector A9; A = 83.5", attenuator setting = 33 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 49.4 \text{ dBm}^2$ .

— = 0°

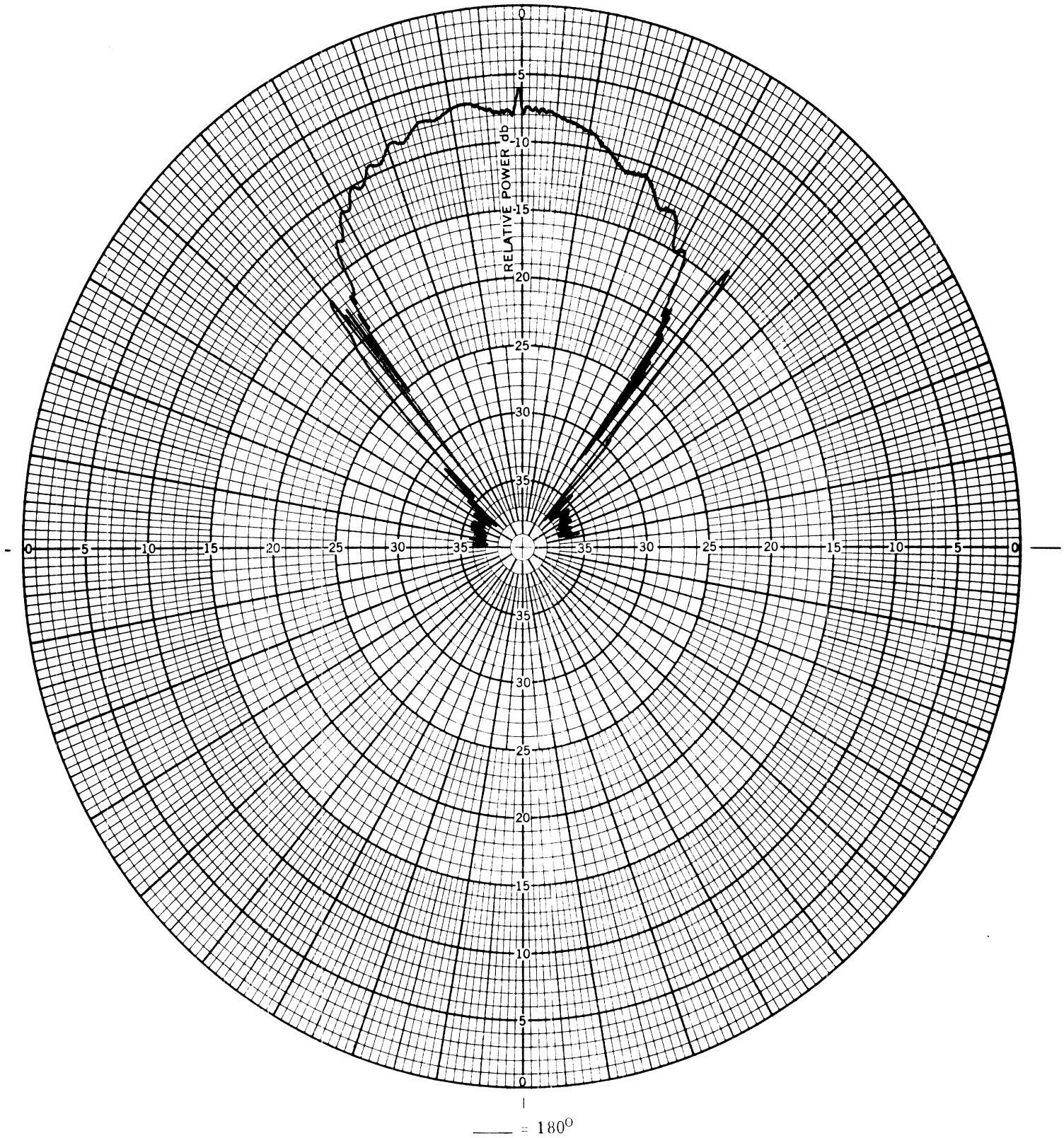


Fig. 12 Corner reflector A10; A = 84", attenuator setting = 33 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_m = 48.4 \text{ dBm}^2$ .

— = 0°

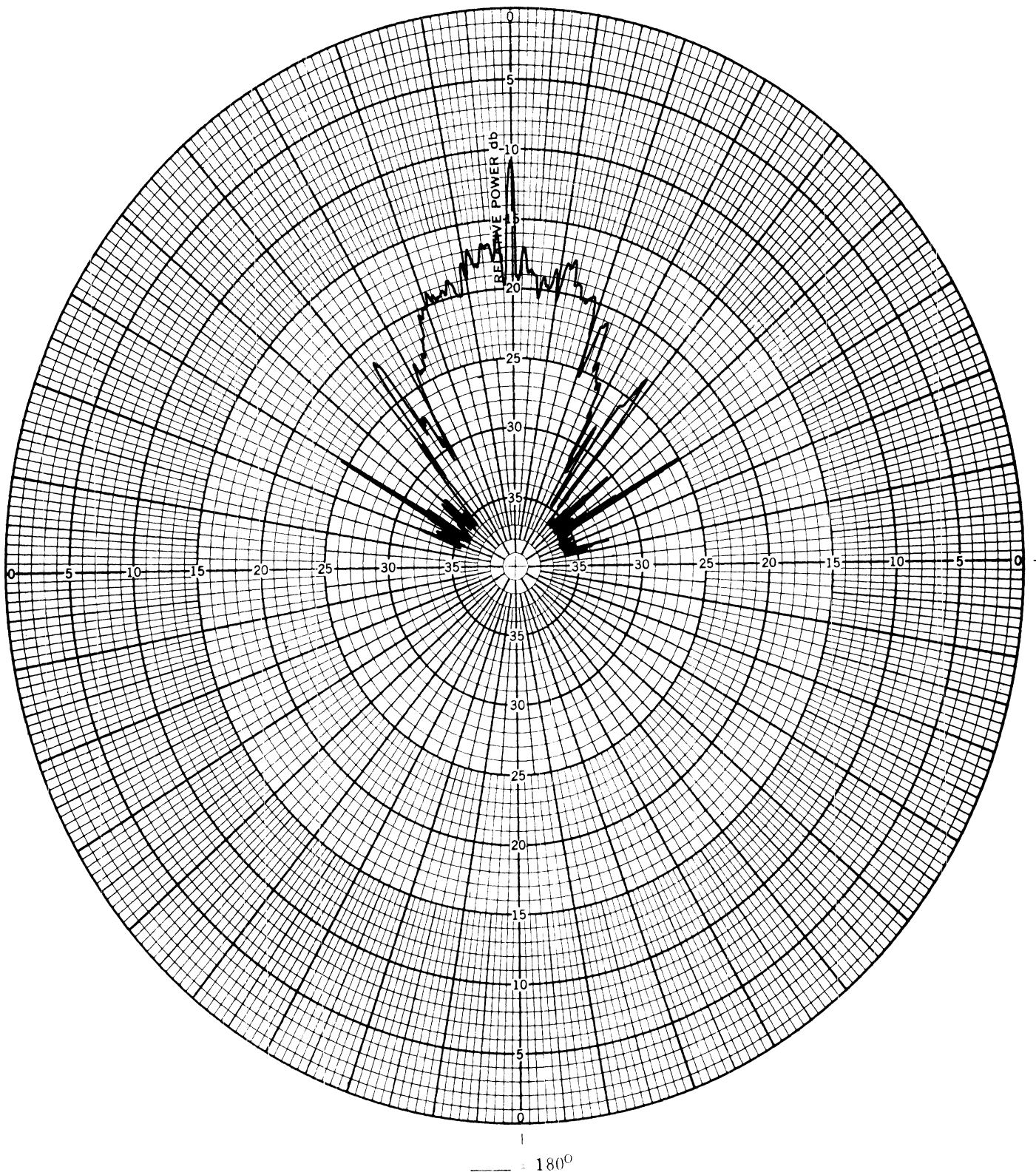
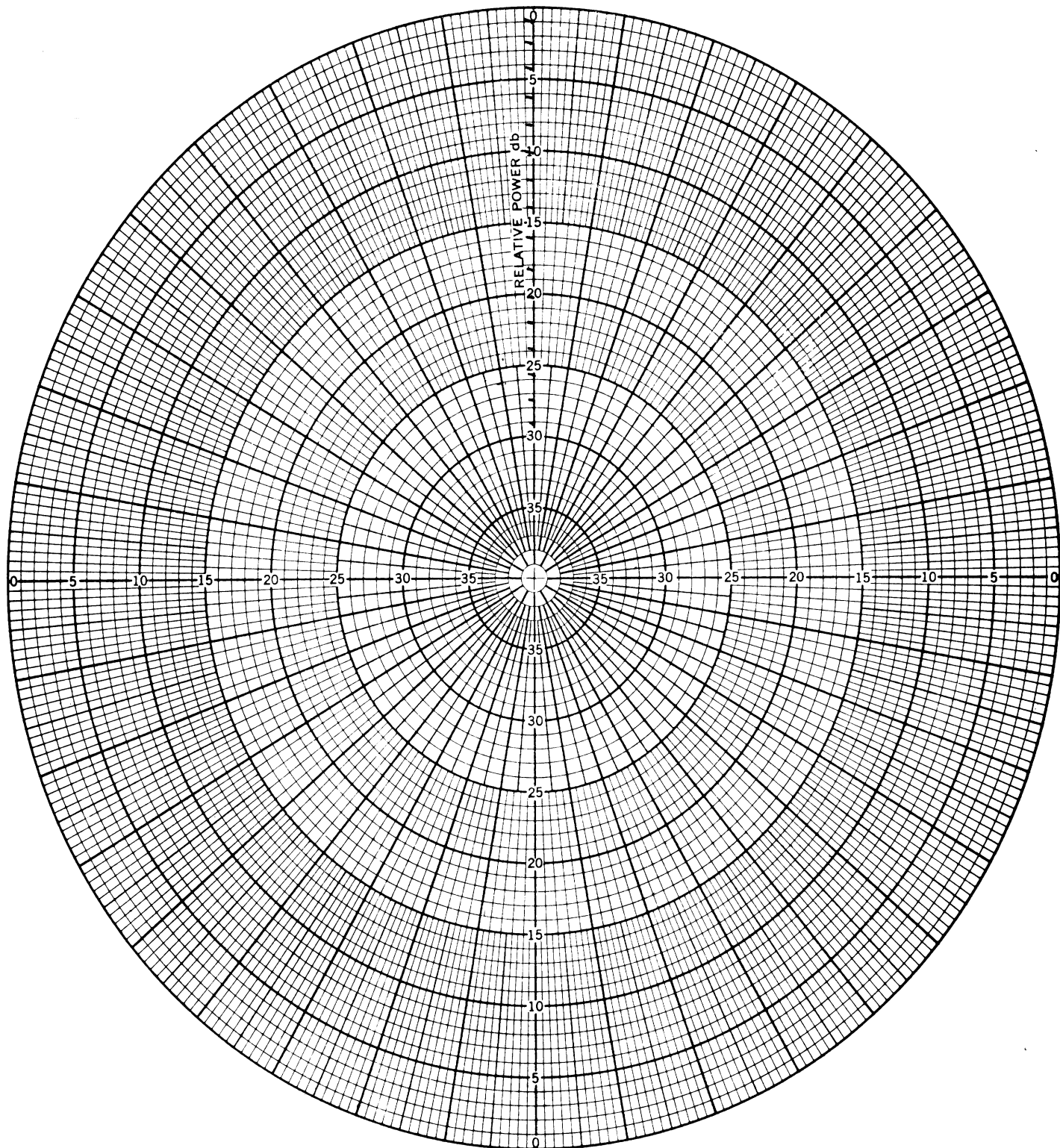


Fig. 13. Precision corner reflector; A = 20.5", attenuator setting = 18 dB, frequency = 8.0 GHz, polarization = horizontal,  $\sigma_T = 23.4 \text{ dBm}^2$ .

— = 0°



— = 180°

Fig. 14 System linearity check; 2 dB increments, frequency = 8 GHz, polarization = horizontal.