AT&T BELL LABORATORIES

Usage Report

Radio Station KE2XGF

Experimental XR-MO

Continental United States

Period of Use September 1987 to September 1989

4GHZ Cross Polarization Discrimination Tests continuing at Mendota and Norway, Illinois.

4GHz Amplitude and Delay Tests continue from Goldhead to Gainesville in Florida.

4GHz Interference studies continue at Palmetto, Georgia.

23GHz Propagation Study continues at New York City.

19GHz Propagation Study in progress at New York City.

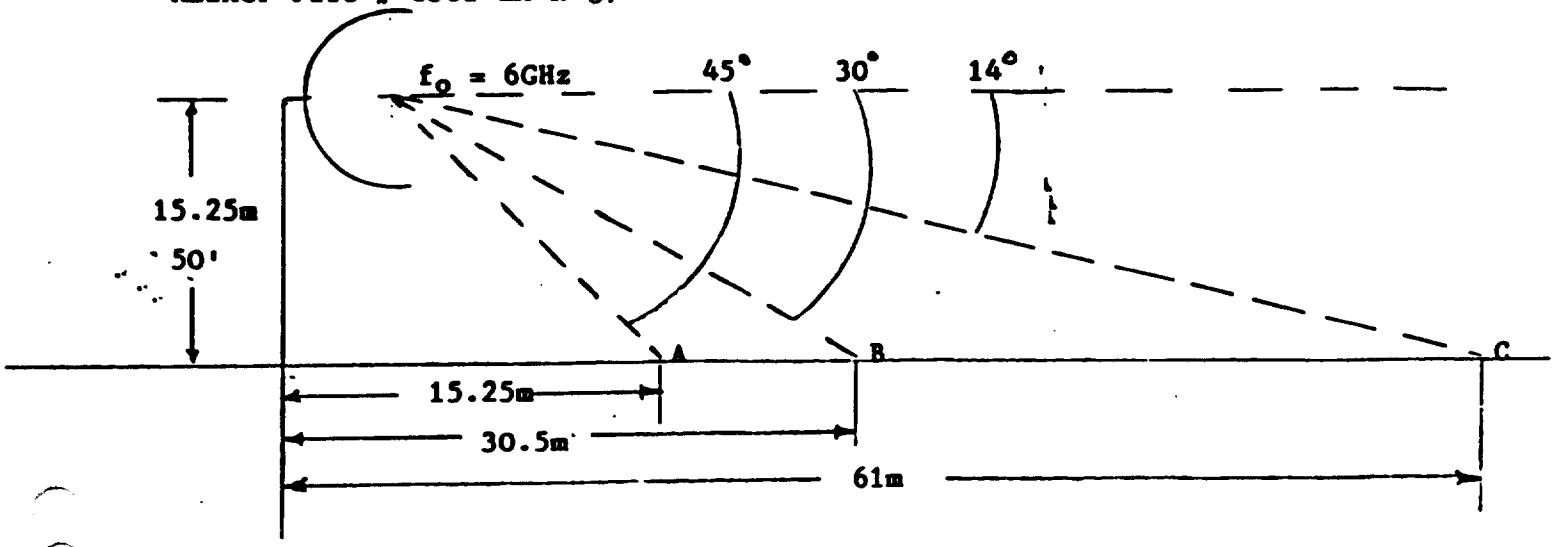
Short Haul 19GHz Experiments continue within the New York City area.

Delay Dispersion Testing continues at the Gainesville, Florida site.

Microwave Propagation to Distance Relationship experiments ongoing at at Palmetto, Georgia.

6GHz Digital Radio tests at the Lovejoy-Palmetto, Georgia radio path.

KE2XGF File # 1361-EX-R-87 EXPERIMENTAL XR MO CONTINENTAL UNITED STATES



Tower mounted Andrew UHX 10-59D antenna; 43.2db gain. Power input to antenna 10W. (+40db)

Physical environment of the transmitting site:

A six foot fence topped with barbed wire encloses the tower area; fifty foot on each side with lockable gate access. A lockable secure structure houses the electronics. The transmitter cabinets are interlocked and all accessable waveguide flanges are marked as to the possible leakage hazard. This type of installation is representative of that used by KE2XGF and the experimental space is provided by our affiliated Common Carrier. This example indicates the tower sets on flat terrain; in most locations the tower is on a high point with the terrain falling off from it which might indicate somewhat lower density readings than this worst case example.

In compliance with FCC Docket 79-144 and utilizing FCC OST Bulletin # 65; Calculation # 2, page # 8.

$S = \frac{EIRP}{4\pi R^2}$ where: EIRP = equivalent (or effective) isotropic radiated power

Point A:

Radiation angle = 45°, Antenna gain at 45° = -55db + 43.2db = -11.8db net gain,
R = Square root of $(1525cm)^2 + (1525cm)^2 = 2156.676cm$

$$S = \frac{EIRP}{4\pi R^2} = \frac{(40-11.8)db}{4\pi(2156.676cm)^2} = \frac{645mw}{58449485cm^2} = 0.00001096mw/cm^2$$

Point B:

Radiation angle = 30°, Antenna gain at 30° = -47db + 43.2db = -3.8db net gain,
R = Square root of $(1525cm)^2 + (3050cm)^2 = 3410.0cm$

$$S = \frac{EIRP}{4\pi R^2} = \frac{(40-3.8)db}{4\pi(3410.0cm)^2} = \frac{4369mw}{1.4612 \times 10^8 cm^2} = 0.000299mw/cm^2$$

Point C:

Radiation angle = 14°, Antenna gain at 14° = -40.3db + 43.2db = +2.9db net gain,
R = Square root of $(1525cm)^2 + (6100cm)^2 = 6287.74cm$

$$S = \frac{EIRP}{4\pi R^2} = \frac{(40+2.9)db}{4\pi(6287.74cm)^2} = \frac{20000mw}{4.676 \times 10^8 cm^2} = 0.00004277mw/cm^2$$

Conclusion:

KE2XGF power densitys are well below the $5mw/cm^2$ level considered as the threshold of radio frequency radiation harmful to humans in all areas considered accessable.