

Attachment 1

Section 4A

The application for an experimental license is submitted to enable the licensee to develop smart antenna systems for application to the cellular and personal communication services. It is proposed that the antenna system be mounted on building roofs, not to extend more than 6 meters above existing roofs. It is also requested that the antenna system be able to radiate in any direction in order to test the ability of the antenna system to function properly in multiple different geographical environments. Frequencies requested for use include those listed below:

806 to 849 MHz
851 to 894 MHz
896 to 902 MHz
1850 to 1910 MHz
1930 to 1990 MHz
1990 to 2200 MHz

*add 10.2897
per total delete*

Only one channel will be used at a given site or time. Non-interference will be assured by coordinating with license holders in the test area.

Sections 4B and 4C

Output Power and ERP: 1640 watts PCS
25 watts cellular

Section 4D

Peak

Section 4E

Emissions: IS 136 and/or GSM and/or AMPS and/or IS 95

Section 4F

Modulation defined by above standards

Section 4G

Bandwidth defined by and not to exceed above standards

Attachment 1 Section 4F, G

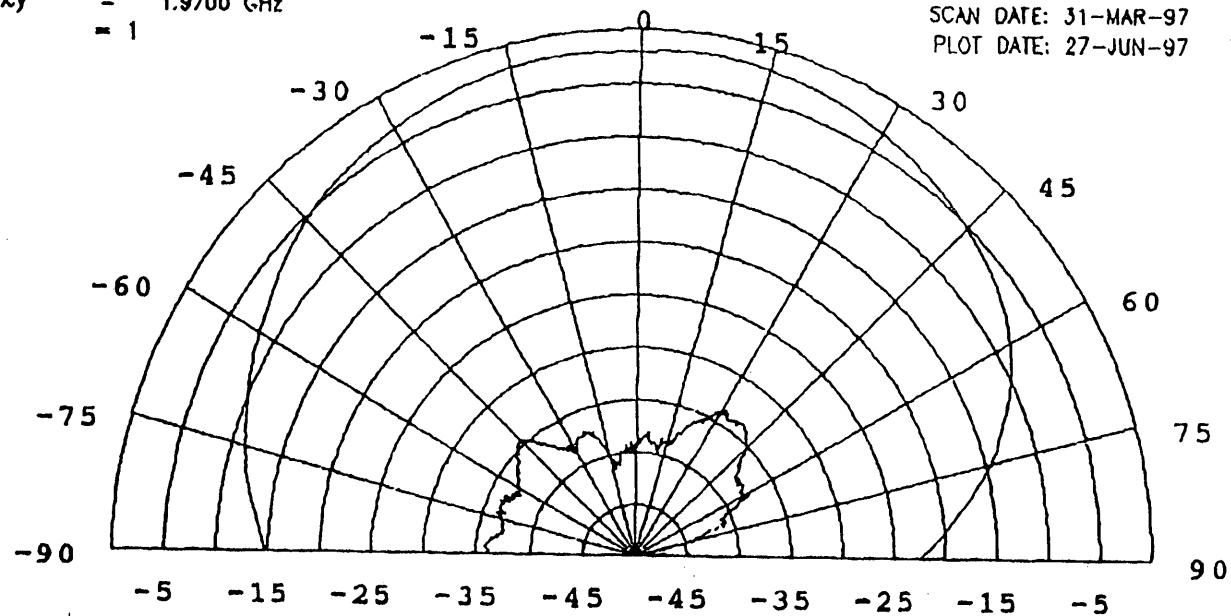
The 800 Mhz test will utilize 8 basic array column elements to form two different types of antenna arrays. One type will be a regular array using 8 uniformly, closely spaced, columns to form an 8 beam system using a Butler matrix (whose radiation pattern is provided as a portion of this attachment). The other type of array will include 8, or fewer, columns possibly irregularly spaced, used in an adaptive processing smart antenna configuration. The array's antenna pattern, when used in this configuration, will fall within the limits of the radiation pattern of the 8 column Butler matrix array.

The 1900 Mhz test will utilize a 40 element array (20 elements with horizontal polarization and 20 elements of vertical polarization). The two radiation patterns associated with the azimuth plane are similar. One embodies a 90 degree 3 dB beamwidth, the other embodies a 65 degree 3 dB beamwidth. The 90 degree beamwidth pattern is submitted in this attachment. This application requests a 200 Khz channel, one transmit and one receive pair.

TYPICAL AZMUTH PATTERNS 90 DEG ANTENNA

Frequency = 1.9700 GHz
Port = 1

SCAN DATE: 31-MAR-97 TIME: 15:03
PLOT DATE: 27-JUN-97 TIME: 16:19



Upper Azimuth = 0.00
Elevation = 0.00
Lower Azimuth = 0.00

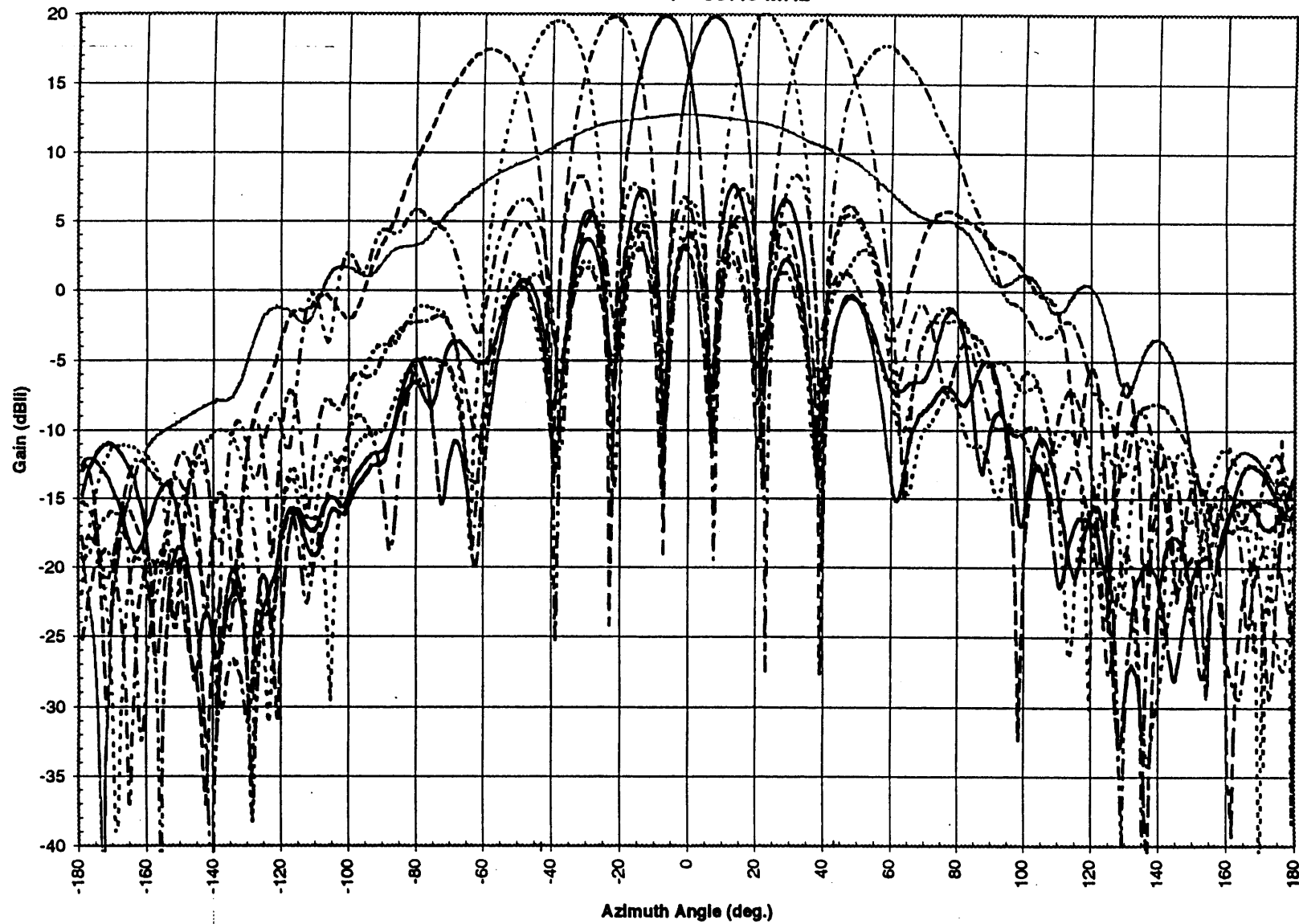
DATA FILE: USER1:[DATA.ACTIVE]T_STICK_BND2_NR_AZ_01.DAT

SAPC position = 90.00

Measured 8 Column Butler Matrix Array

$f = 837.5 \text{ MHz}$

Column
Spacing
6.8 inches



Attachment 2

Application for nationwide test. Initially testing will be done at 3 locations.

At any given location, Raytheon TI Systems will require 5 mobiles and one base station.

Initial testing locations:

1. 2501 W. University
McKinney, TX 75070

North latitude

West Longitude

33° 12' 51"

96° 39' 23"

2. 17217 Waterview Parkway
Dallas, TX 75252

North Latitude

West Longitude

32° 59' 18"

96° 45' 42"

3. 7800 Banner Drive
Dallas, TX 75251

North Latitude

West Longitude

32° 55' 28"

96° 46' 21"