5-3386-EX-1998

ADVANCED NAVIGATION & POSITIONING CORP.

P.O. Box 838 • Hood River, Oregon 97031 •
Tel (541) 386-1747 • Fax (541) 386-2124

May 05, 1998

Federal Communications Commission
Office of Engineering - Experimental
2000 M. St. NW
Washington, DC 20554

ATTN: Carl Huie

Dear Mr. Huie:

In Cooperation with the FAA, development of the Transponder Landing System (TLS) by ANPC is close to completion. The TLS is soon to receive type certification and Hillenbrand Industries airport owners will be preparing the FCC Form 406 for site license. Due to integration procedures into the National Air Space, the TLS has not received full FAA Certification necessary for the FCC form 406 to become active at this location. We would like to request an STA for a 180 day duration to allow for final integration into the National Air Space. This STA would similar to the previously filed STA file # 4912-EX-PL-95 Call Sign KA2XEU. It would be our understanding that the STA would be superseded by the Operator License when approved.

The Following is a summary of the frequency use request:
Location of Station

Batesville, IN NL 39° 20' 56.41" WL 85° 15' 27.79"

Runway heading 36

Frequency	Power (EIRP, dBm)	Emission Designator	Signal Name
108.35	32	6K00A9W	Localizer
333.95	40	300HA1N	Glide Slope
1030.0	60	6M00M1D	Interrogation
1090.0	20	6M00M1D	AOA Calibration

Runway heading 18

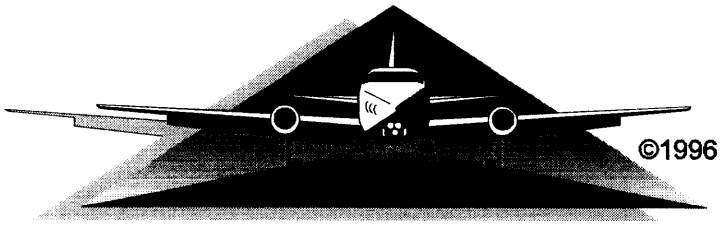
Frequency	Power (EIRP, dBm)	Emission Designator	Signal Name
XXX.XX(assigned ILS freq.)	32	6K00A9W	Localizer
YYY.YY(assigned ILS freq.)	40	300HA1N	Glide Slope
1030.0	60	6M00M1D	Interrogation
1090.0	20	6M00M1D	AOA Calibration

Attached are copies of the antenna patterns. The directions of radiation are at 360 degrees and 180 degrees. If you have any questions regarding this report, or the status of the TLS integration efforts, please contact us at (541) 386-1747. Thank you for your time and attention in this matter.

Sincerely,

Fred Conn
Director, Customer Services
ANPC-98085-FC-FEC

Transponder Landing System
Transportable Transponder Landing System



Advanced Navigation
& Positioning Corporation

SIGNAL STRENGTH

LINK BUDGET

1. GTU

The minimum field strength on the glide path and within the localizer course sector must not be less than -107 dBW/m^2. The following link budget verifies the design parameters that meet this requirement. For the Localizer transmission:

Given:

- Localizer transmit antenna gain of +7dBi on bore-site to +3dBi @ 35° off bore-site – as shown in figure 1.
- Transmit power is 24 dBm (.25 watt)

The field strength (Fs) in dBW/m^2 is given by equation 1,

$$Fs = 10\log(10^{Gta/10P})4PI*r^{2)} \qquad \text{Eq. 1}$$

Where…

G_{ta} = transmit antenna gain
r = 18nm
p = transmit power

… yields a predicted field strength of -102 dBW/m^2.

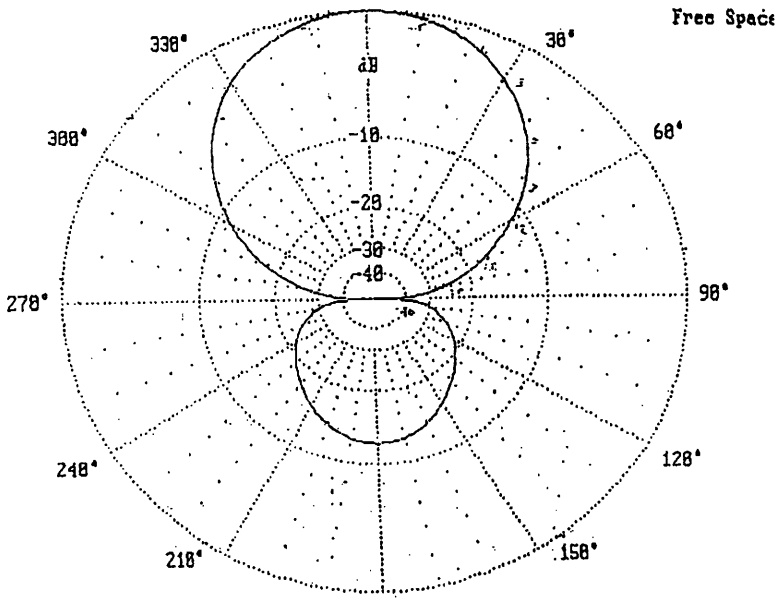


Figure 1. Localizer transmit antenna pattern

For the glide slope transmission:

Given:

- Antenna gain of +7dBi on bore-site to +4dBi @ 35° off bore-site as shown in figure 2.
- Transmit power of 34 dBm (2 watts)

With r = 10 nm, eq1 yields a glide slope field strength of -89 dBW/m^2.

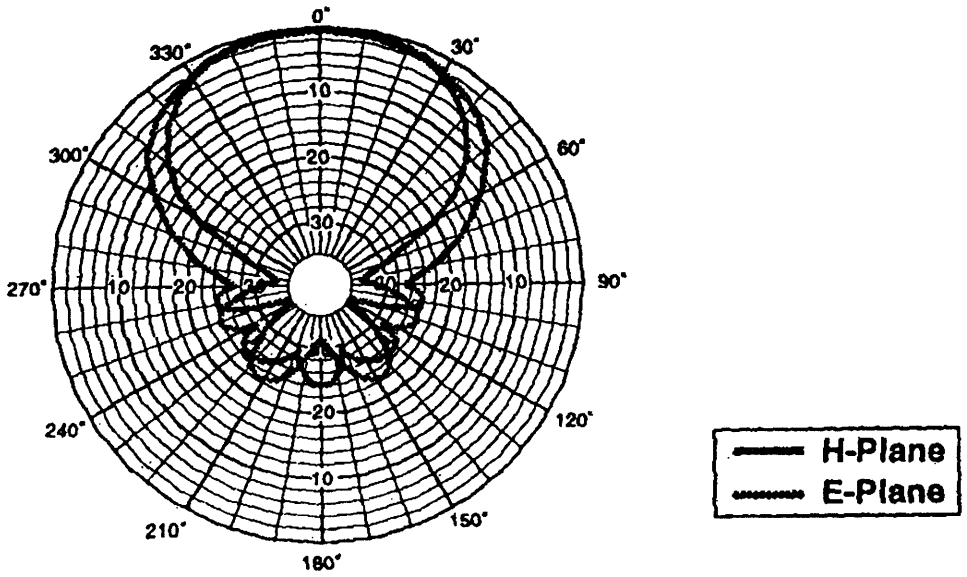


Figure 2. Glide slope transmit antenna pattern

2. Interrogator

For the interrogation signal strength, the horizontal and vertical antenna patterns are shown in figures 3 and 4 respectively and have a gain of 12 dBi. At 35° off bore-site the gain is +8 dBi.

Given that the peak transmit power is 56 dBm (400 watt), Eq 1 yields a field strength of –66 dBW/m^2 which will meet the requirement for interrogation signal greater than or equal to –86 dBW/m^2.

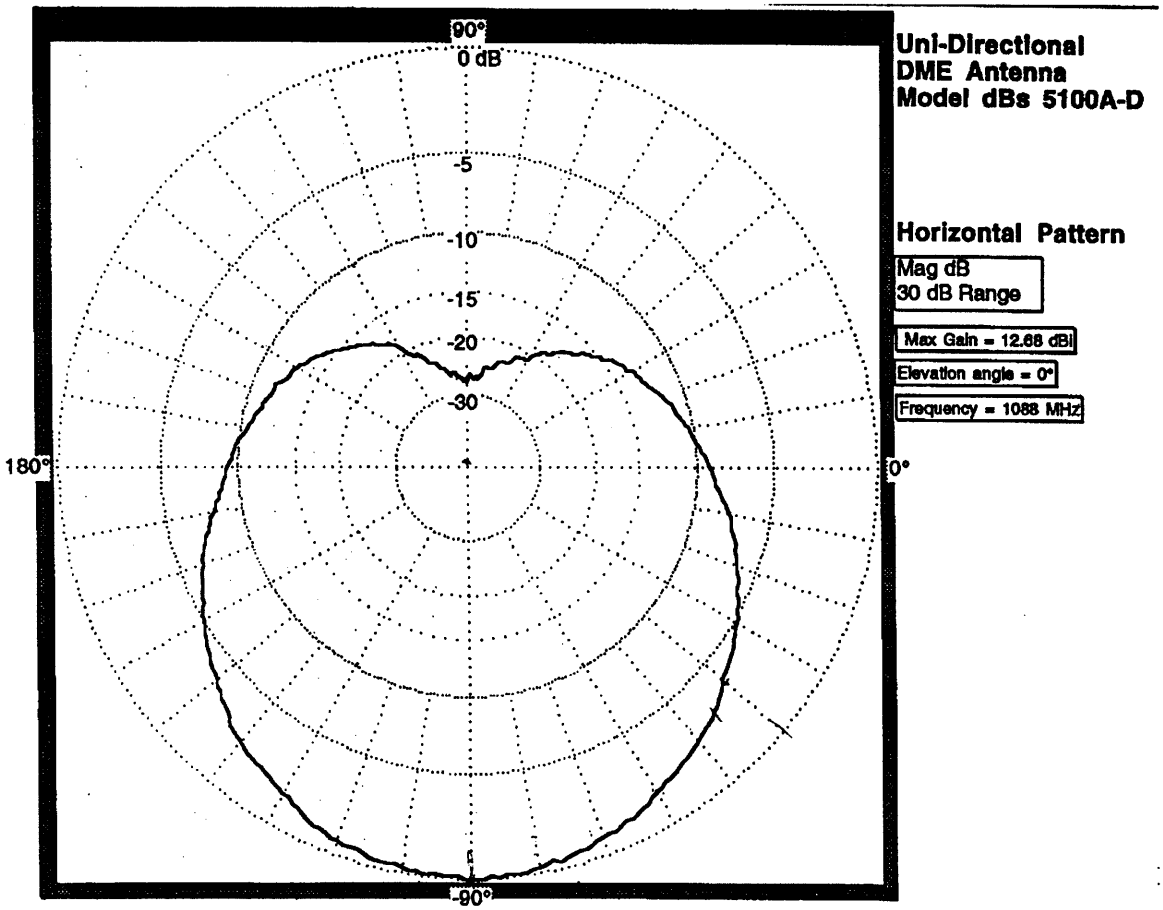


Figure 3. Horizontal interrogation antenna pattern.

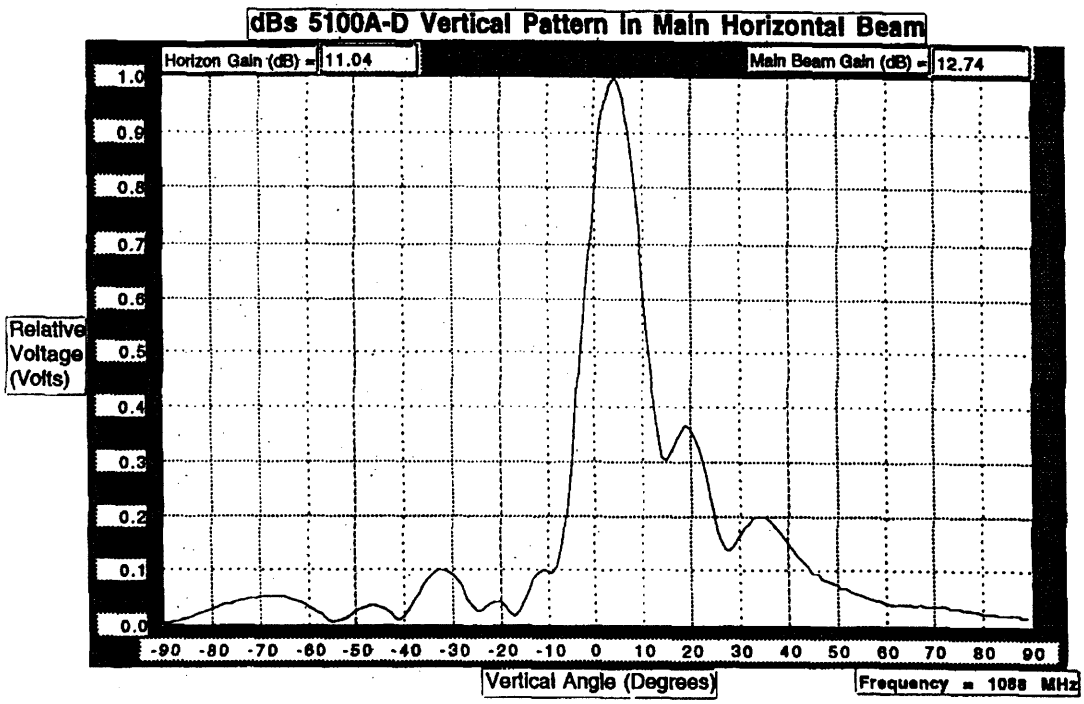


Figure 4. Vertical interrogation antenna pattern.

3. Sensor

Given:

- Transponder transmit power of 1.3 watts (and assuming no transmit antenna gain).
- GAOA antenna pattern shown in figures 3 and 4
- LAOA antenna pattern shown in figures 5 and 6
- That the closest position of a transponder to a sensor would be 50 m.

Equation 1 yields a dynamic range from –22 to –77 dBm.

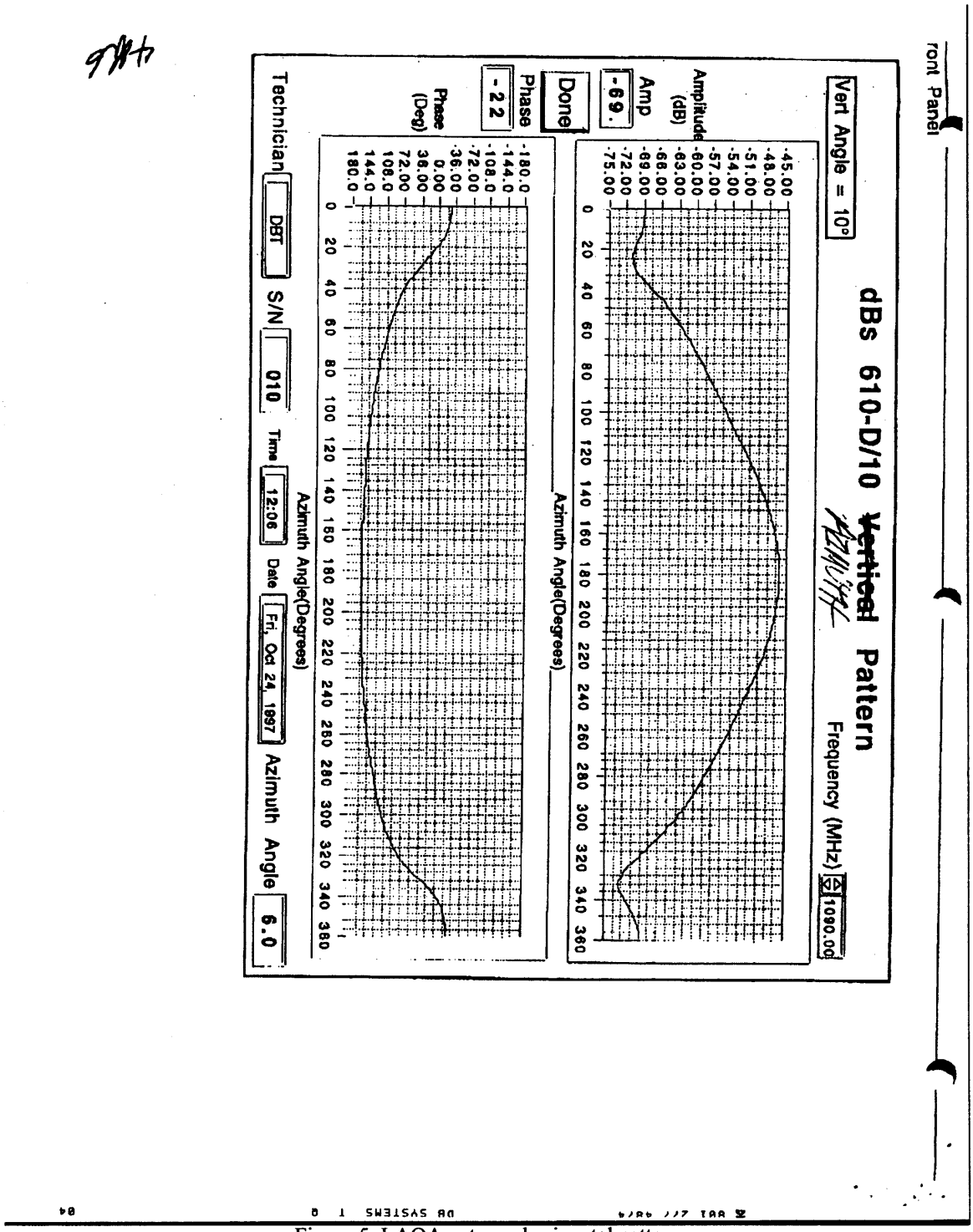


Figure 5. LAOA antenna horizontal pattern

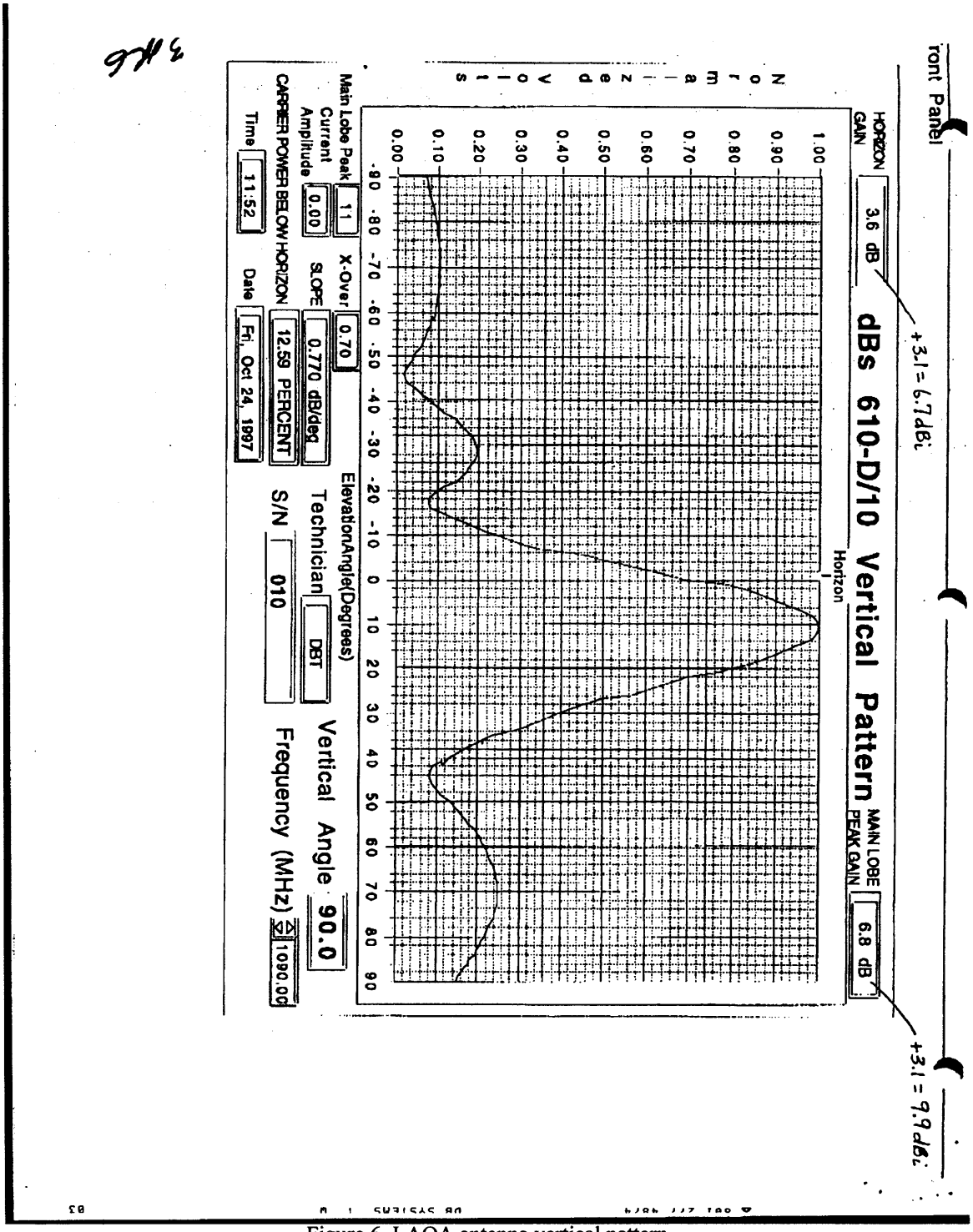


Figure 6. LAOA antenna vertical pattern