

ELECTRICAL TEST REPORT

1M KU BAND ANTENNA

PREPARED FOR:

SeaTel Inc.
4030 Nelson Avenue
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Authorization PO # 21418

Report No. 0428-701

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LIST OF ILLUSTRATIONS

TABLE A - SUMMARY OF TEST DATA

RADIATION PATTERNS

FIGURE #	FREQUENCY	PLANE	SCALE	NOTES
1	10.95	E	60 DEG	
2	10.95	H	60 DEG	
3	11.85	E	60 DEG	
4	11.85	H	60 DEG	
5	12.75	E	60 DEG	
6	12.75	H	60 DEG	
7	10.95		10 DEG	CROSS POL
8	11.85		10 DEG	CROSS POL
9	12.75		10 DEG	CROSS POL
10	14.0	E	60 DEG	
11	14.0	H	60 DEG	
12	14.25	E	60 DEG	
13	14.25	H	60 DEG	
14	14.5	E	60 DEG	
15	14.5	H	60 DEG	
16	14.0		10 DEG	CROSS POL
17	14.25		10 DEG	CROSS POL
18	14.5		10 DEG	CROSS POL
19	10.95, 11.85, 12.75			GAIN
20	14.0, 14.25, 14.5			GAIN

APPENDIX A

INTELSAT IESS 601 SIDELOBE SPECIFICATIONS

INTRODUCTION

This report represents the electrical test results of a 1M Ku-Band TX/RX Antenna .

DESCRIPTION OF ANTENNA

The antenna consists of a circular aperture 1M reflector and a dual port vertex mount feed. All pattern and gain measurements were made at the WR-75 waveguide flange.

TESTS PERFORMED

The antenna was tested for far-field radiation patterns at six test frequencies: 10.95, 11.85, 12.75, 14.0, 14.25 and 14.5 GHz. Tests were performed in the elevation and azimuth planes.

Both co-polarized and cross-polarized patterns were recorded. Patterns were measured using several chart scales so as to best display the data.

Gain measurements were done by the comparison method using a standard gain horn whose gain is known.

These tests were performed between 6-22-04 and 6-23-04.

TEST PROCEDURES

The antenna was placed on a precision antenna positioner at the receiving site of a 850-foot antenna test range at Seavey Engineering, Cohasset, MA.

The source antenna was a 7-foot symmetrical reflector. The received signal was detected by a standard Scientific-Atlanta receiver. Results were recorded on rectangular charts with varying scales and attenuation settings, which were annotated accordingly.

Radiation patterns were measured at six frequencies, two planes (elevation and azimuth), and with two polarizations (co- and cross-polarized). Gain data was measured for each frequency, using a Seavey Model SGA-110 Standard Gain Horn.

Test frequencies were set using a frequency counter and attenuation settings were calibrated with precision attenuators. All equipment was in current calibration.

TEST RESULTS

Radiation patterns are shown in *Figures 1-18*.

Gain data is shown in Figures 19-20.

Table A summarizes all data.

The radiation pattern sidelobes in the transmit frequency band (14-14.5 GHz) have been examined. They have been annotated with a 29-25 log theta sidelobe mask. Appendix A is a copy of the sidelobe regulations. The sidelobe mask has also been superimposed on the radiation patterns for reference only.

TABLE A
SEATEL 1.0M Ku-BAND ANTENNA

DATA SUMMARY:

FREQUENCY (GHz)	GAIN (dBil)	CROSS-POL (dB)*		3 dB BEAMWIDTHS	
		E-PLANE	H-PLANE	E	H
10.95	39.63	30.8	30.6	1.792°	1.736°
11.85	40.1	30.0	30.0	1.792°	1.624°
12.75	40.7	29.9	29.9	1.68°	1.736°
14.0	41.08	41.0	41.5	1.652°	1.568°
14.25	41.80	46.0	49.0	1.624°	1.484°
14.5	41.73	39.0	39.2	1.596°	1.512°

* Within 1 dB co-pol beamwidth.

For sidelobe data see the radiation patterns.

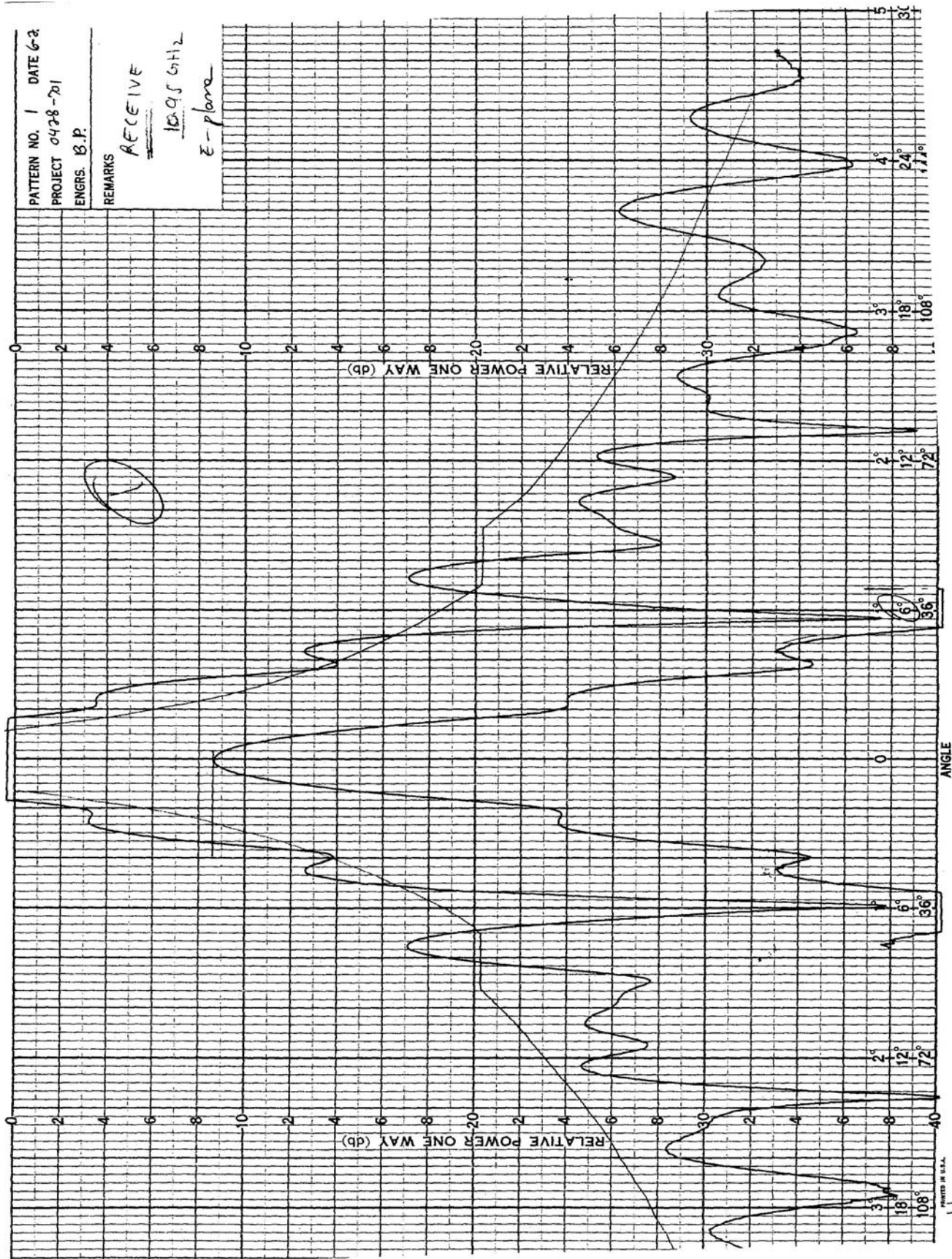
PATTERN NO. 1 DATE 6-2-
PROJECT 0428-701
ENGRS. B.P.

REMARKS

RECEIVED

10095612

$\bar{E}$ -plane



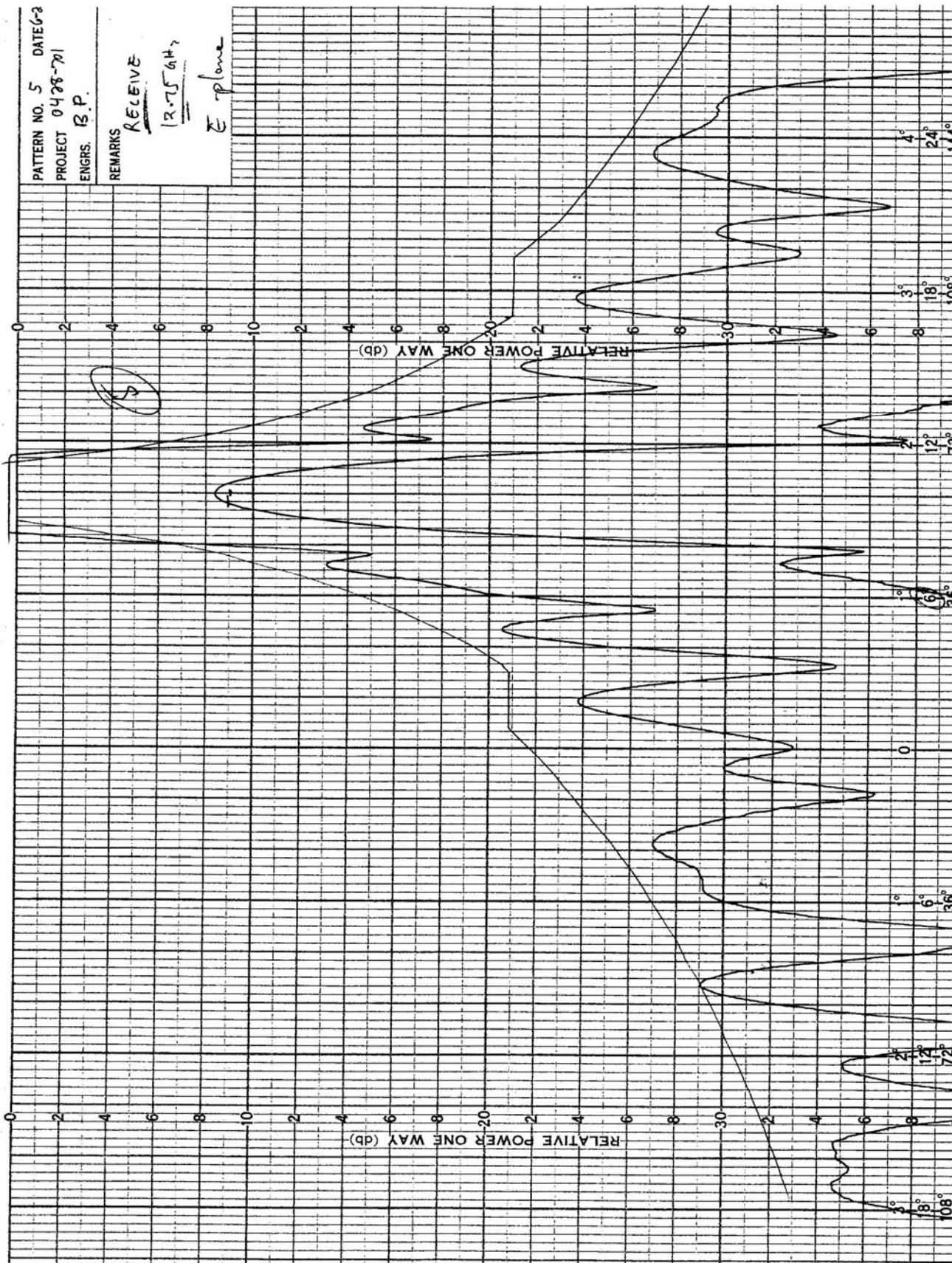
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PROJECT 0428-701
ENGRS. B.P.

REMARKS

RECEIVED

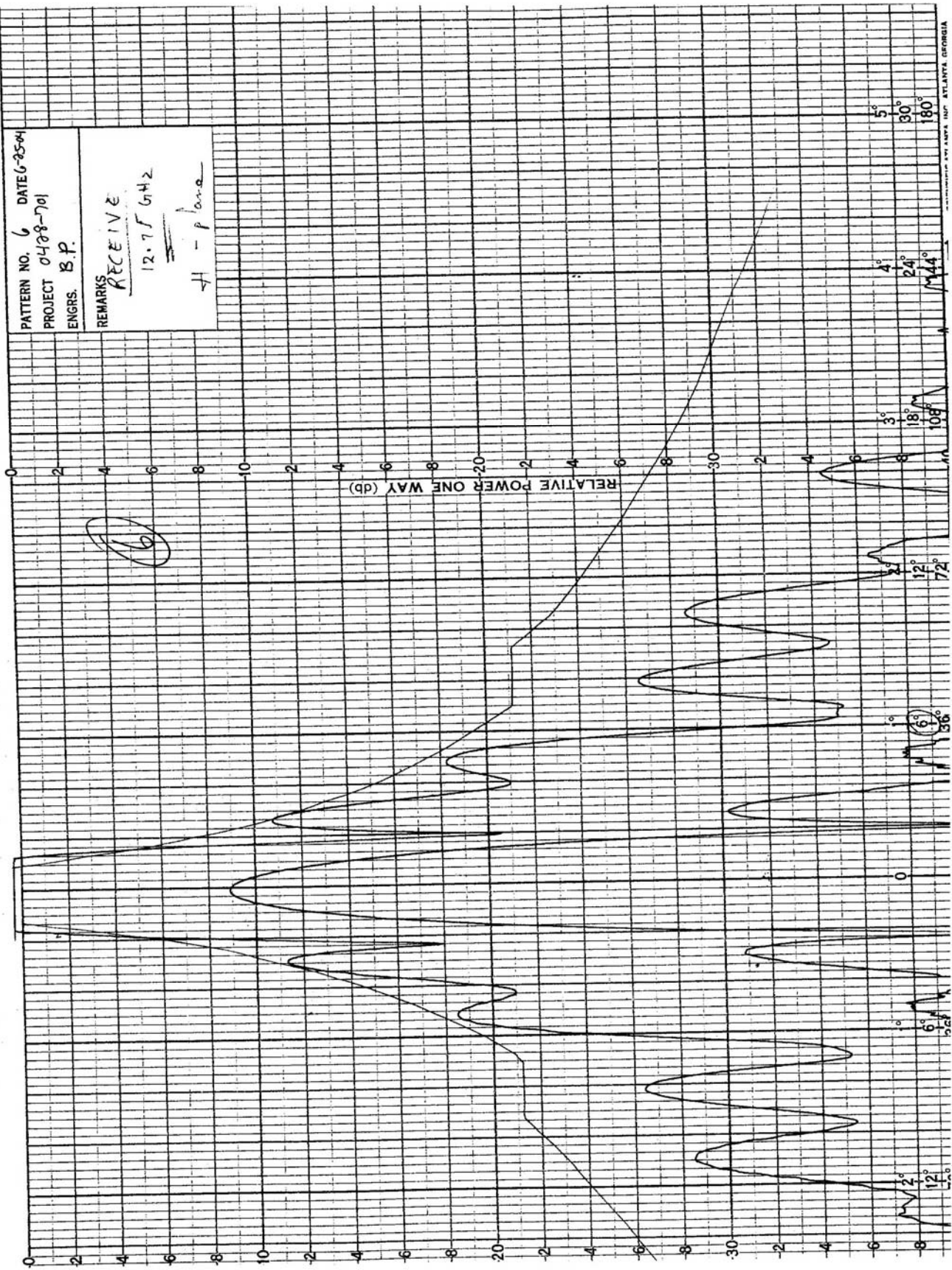
2.75 GHz

E_{plane}

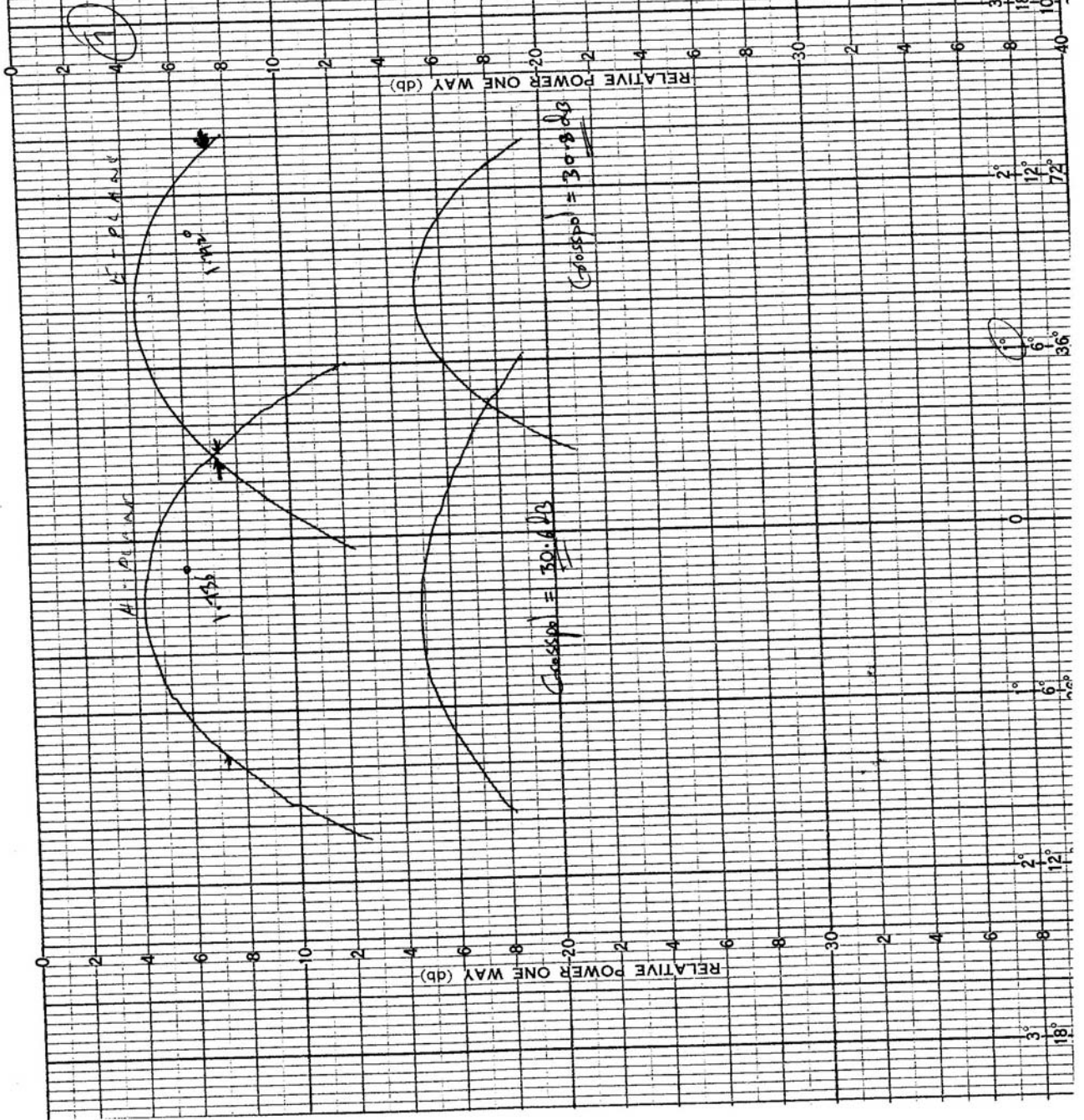


PATTERN NO. 6 DATE 6-25-04
PROJECT 0428-701
ENGRS. B.P.

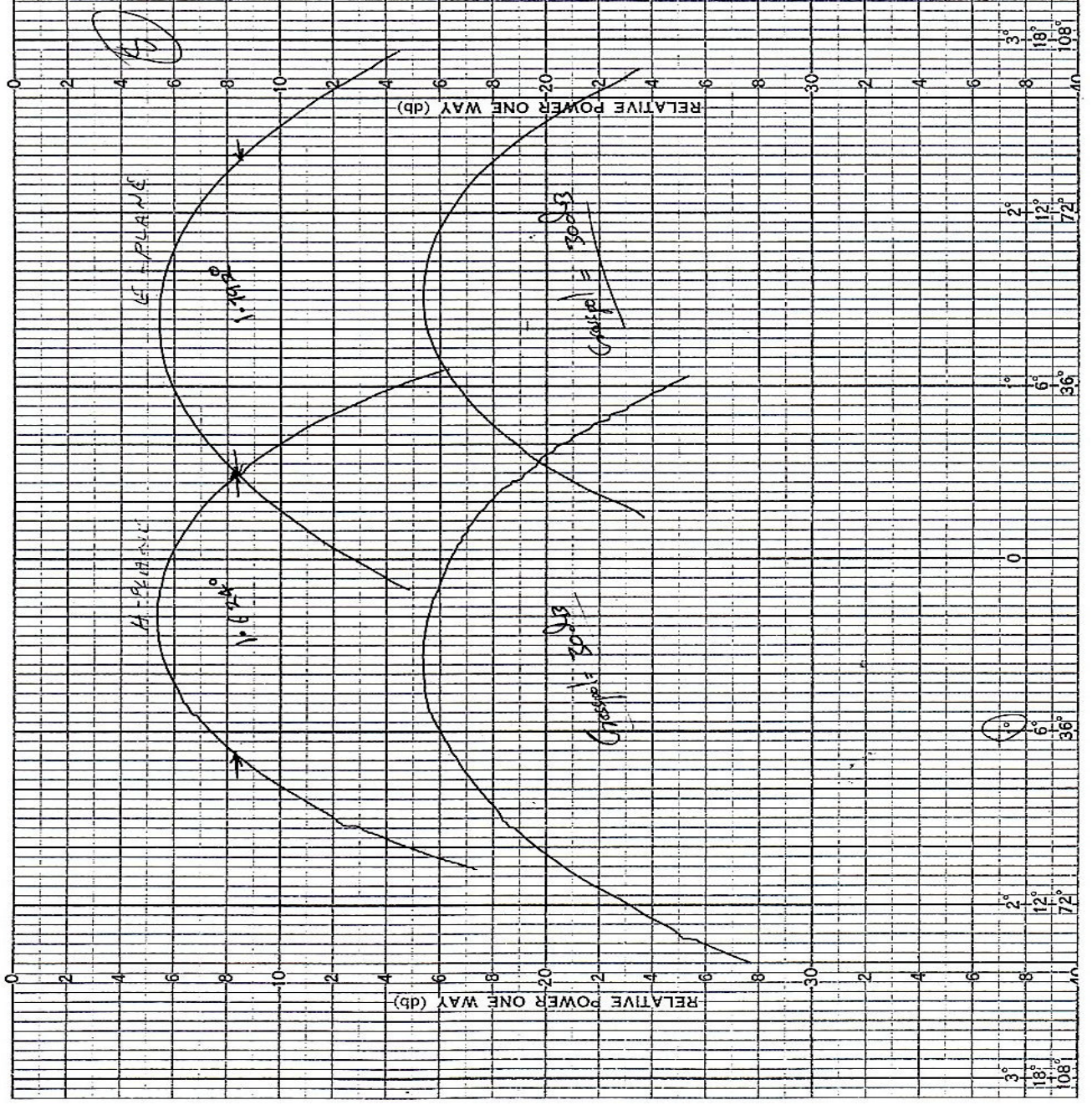
RECEIVED
12.75.642
H-plane



PATTERN NO. 7 DATE 10-9-58
 PROJECT 0428-701
 ENGRS. V. A. A. D. / M. A. A. C.
 REMARKS 10.95 GHz
 X-FL.
 RAISED
 20 dB



PATTERN NO. 8 DATE 6-23-04
 PROJECT 0428-701
 ENGRS. B.P. / M. RINK
 REMARKS 11.85 GHz
 X-POL
 11.85 GHz



PATTERN NO. 9 DATE

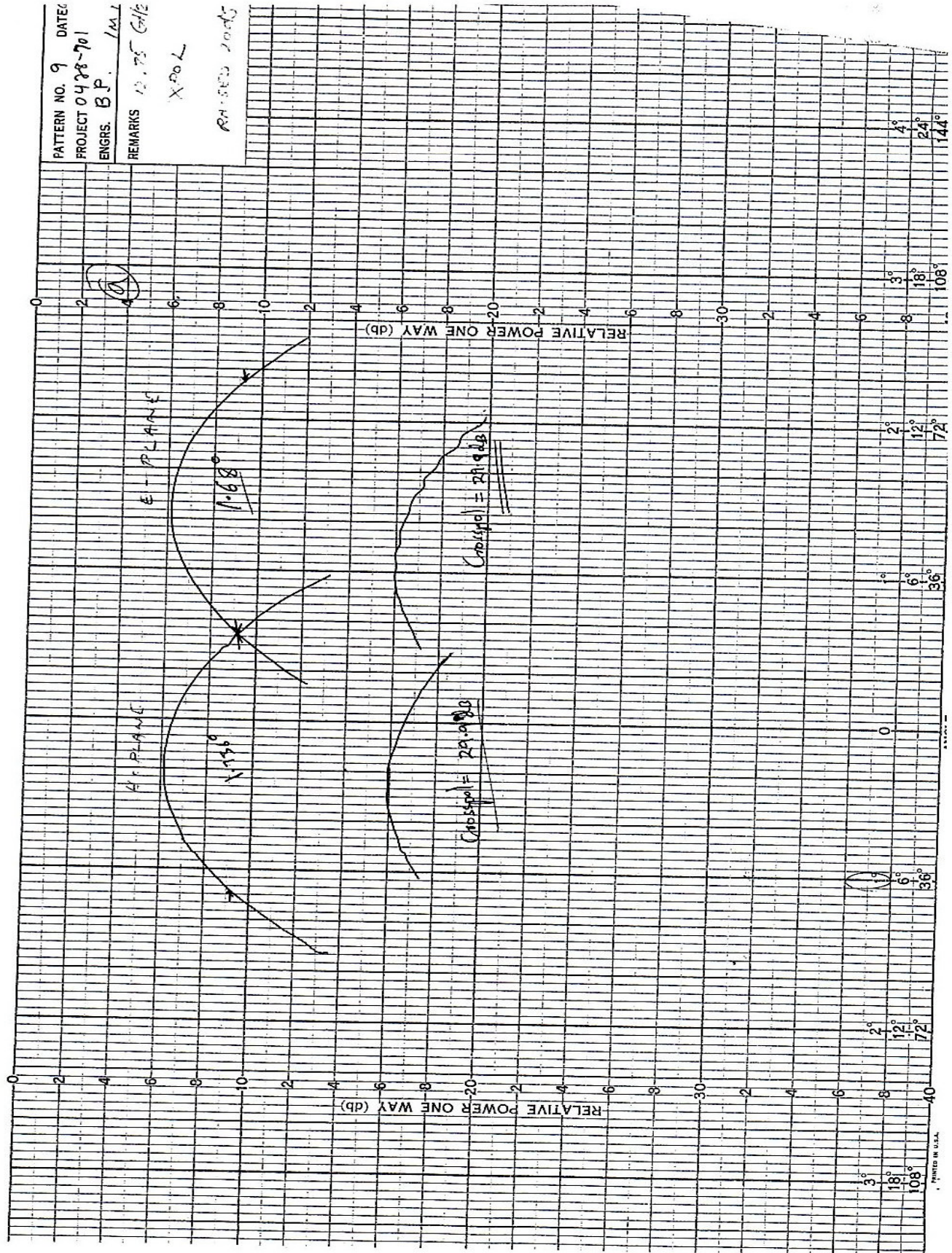
PROJECT 0428-701

ENGRS. B.P. 1M1

REMARKS 12.75 G/HZ

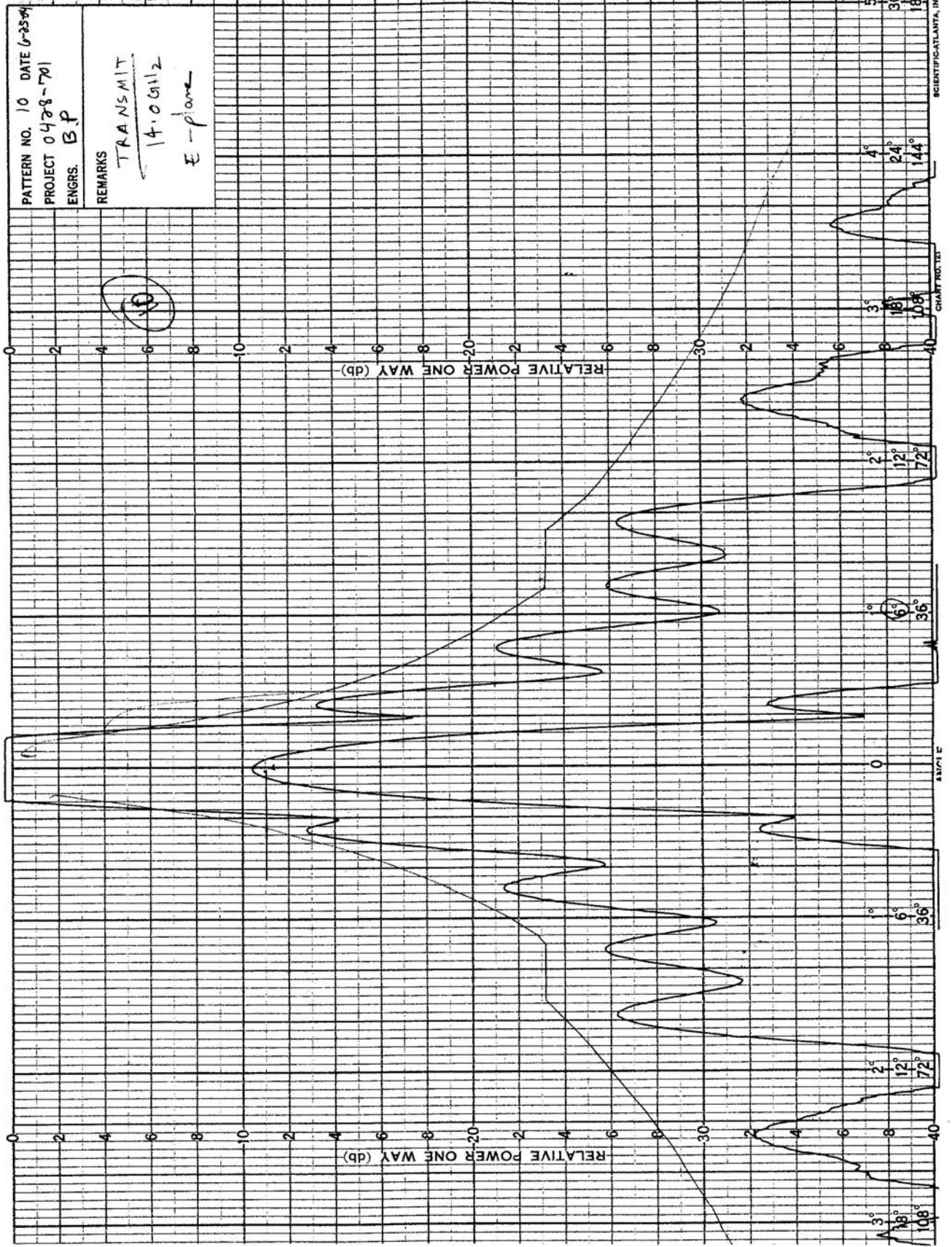
X 200 L

REVISION 2005

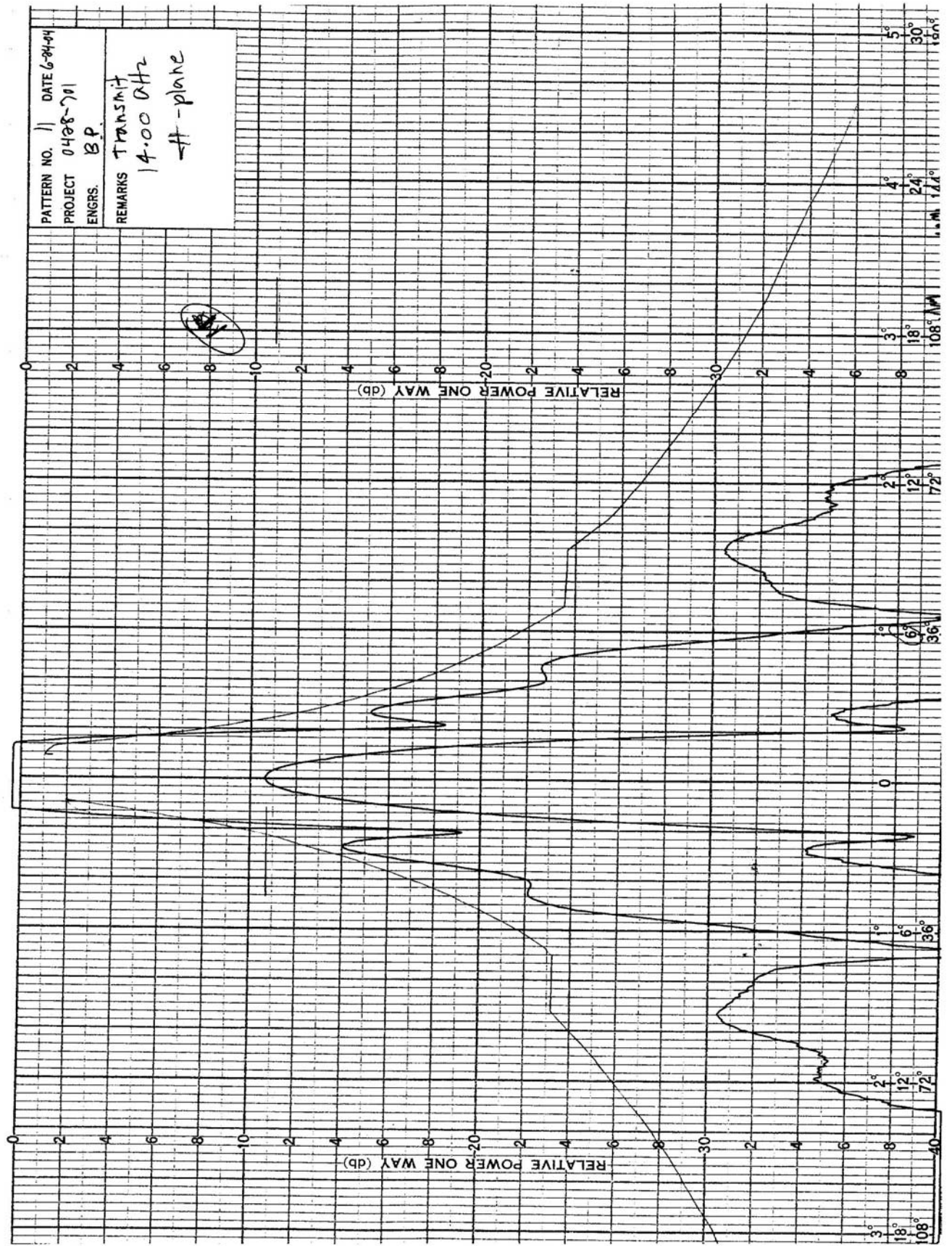


PATTERN NO. 10 DATE 6-25-69
 PROJECT 0428-701
 ENGRS. B.P.

REMARKS
 TRANSMIT
 14.0 GHz
 E-plane

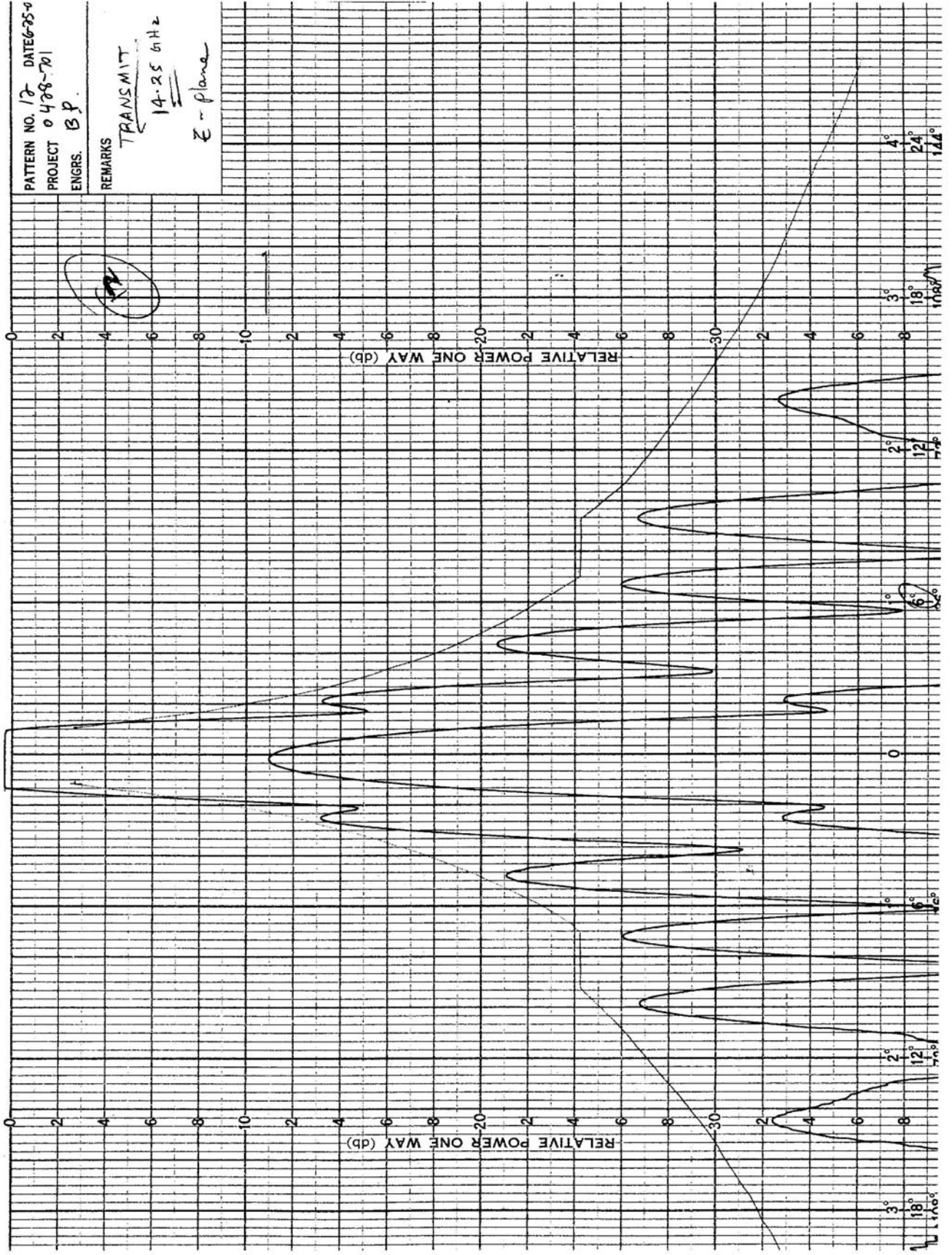


PATTERN NO. 11 DATE 6-24-44
 PROJECT 0408-701
 ENGRS. B.P.
 REMARKS Transmit
 14.00 MHz
 H-plane

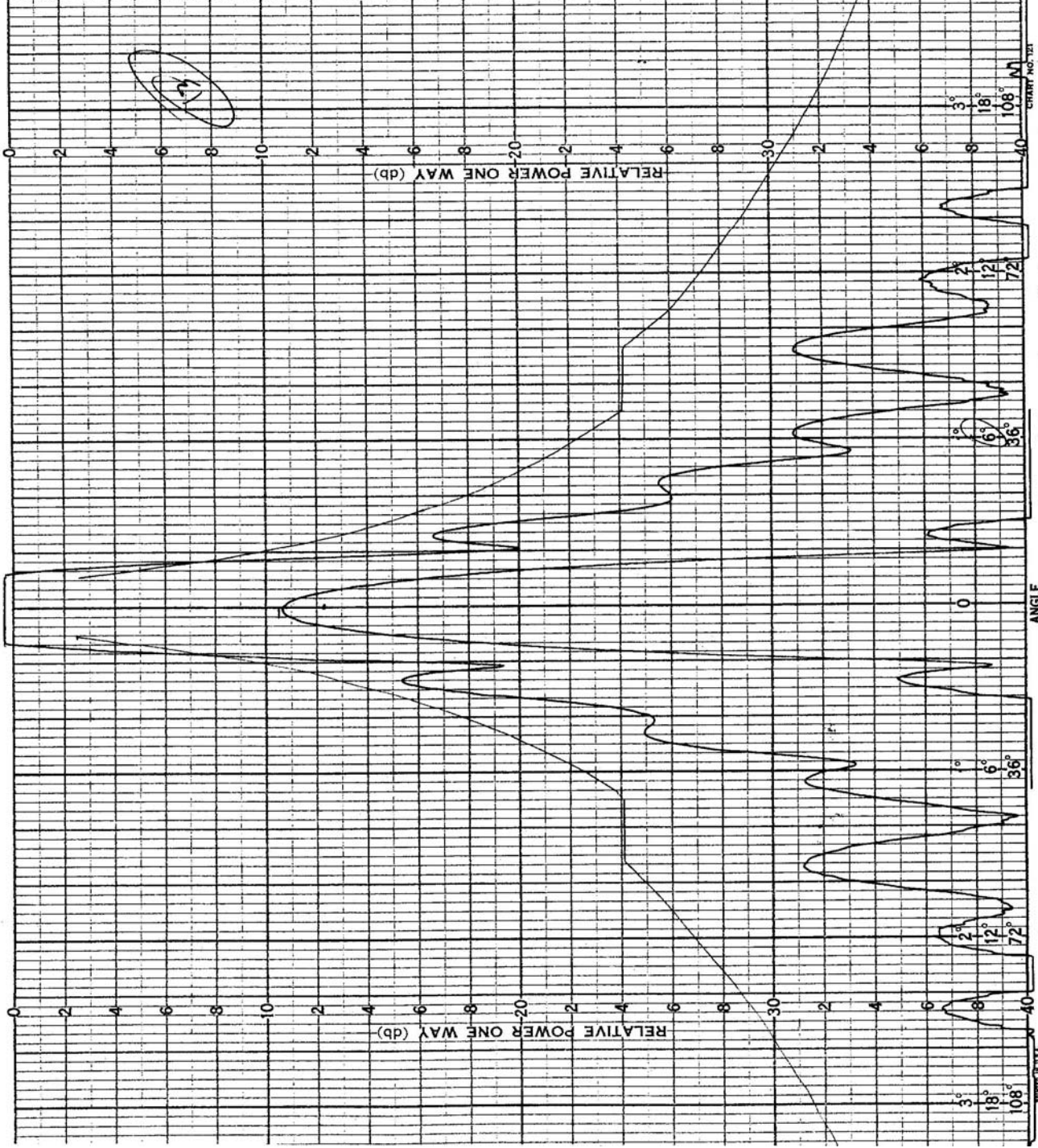


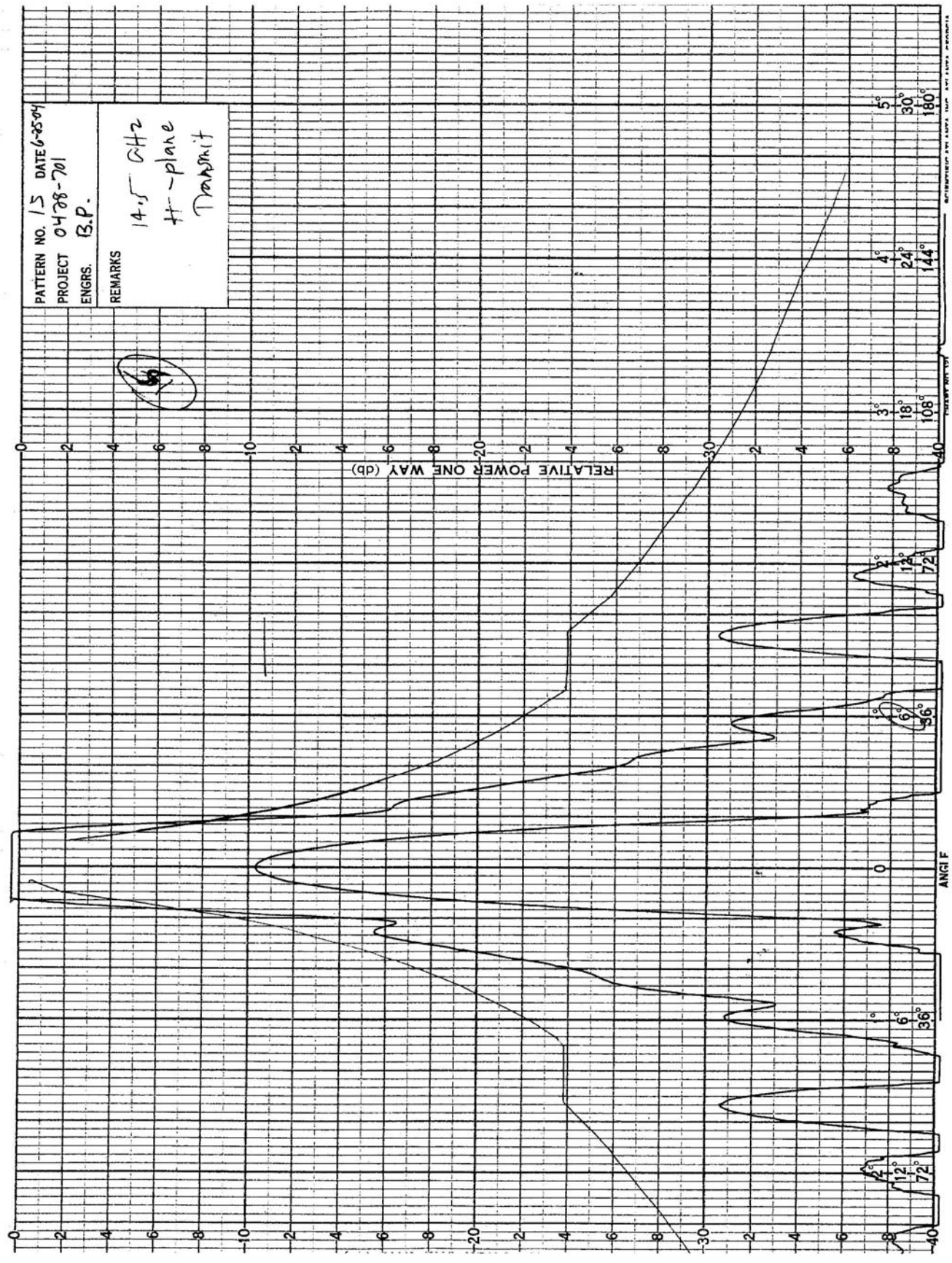
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 PROJECT 0428-701
 ENGRS. B.P.

REMARKS
TRANSMIT
14.25 GHz
Z-plane



PATTERN NO. 13 DATE 6-25-64
 PROJECT 0428-701
 ENGRS. B.P.
 REMARKS
 TRANSMIT
 14.25 GHz
 X-plane





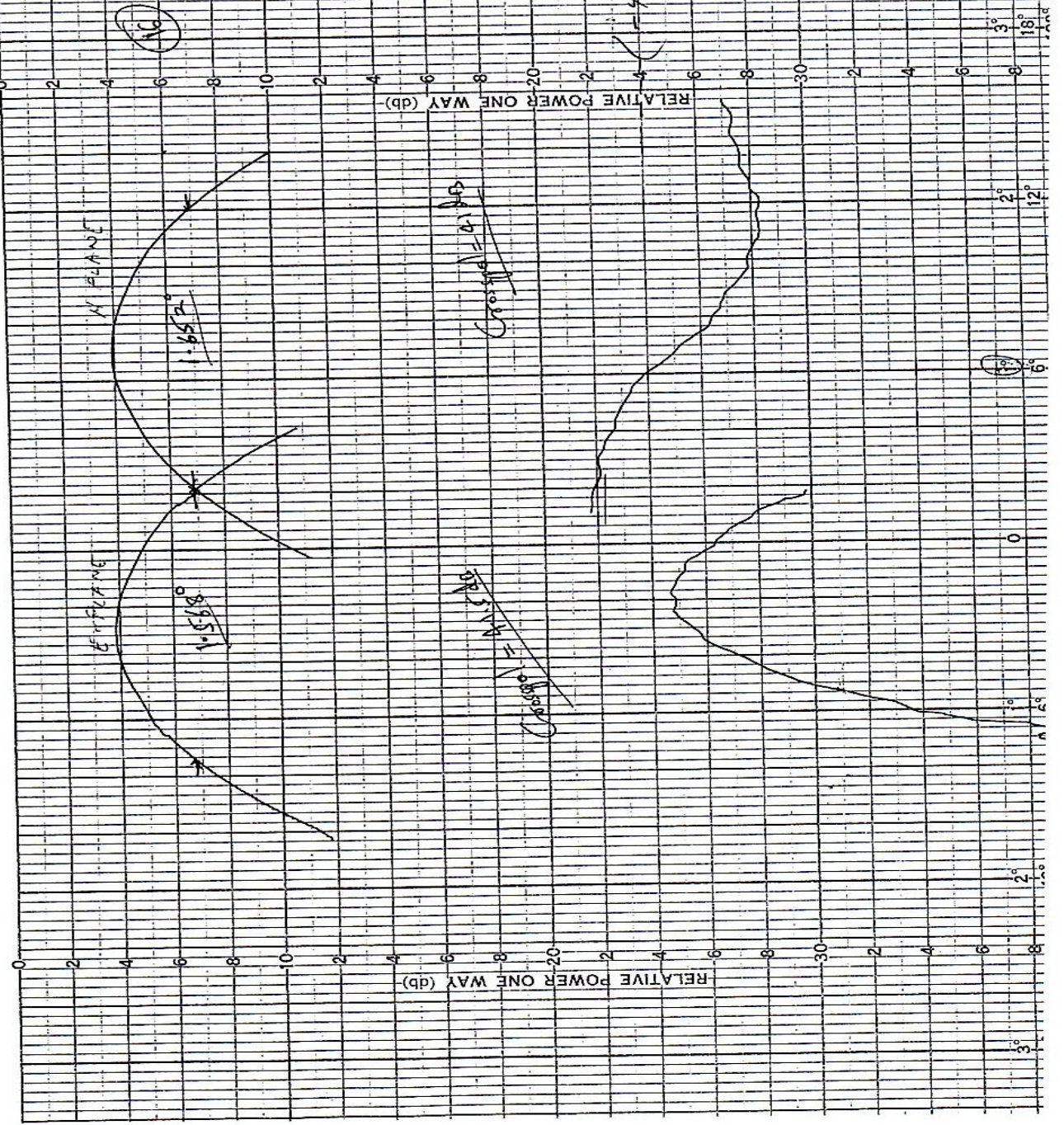
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PROJECT 0428-701
ENGRS. B.P.
REMARKS
14.5 GHz
H-plane
Transmit

ANGLE (F) 0 36 72 108 144 180

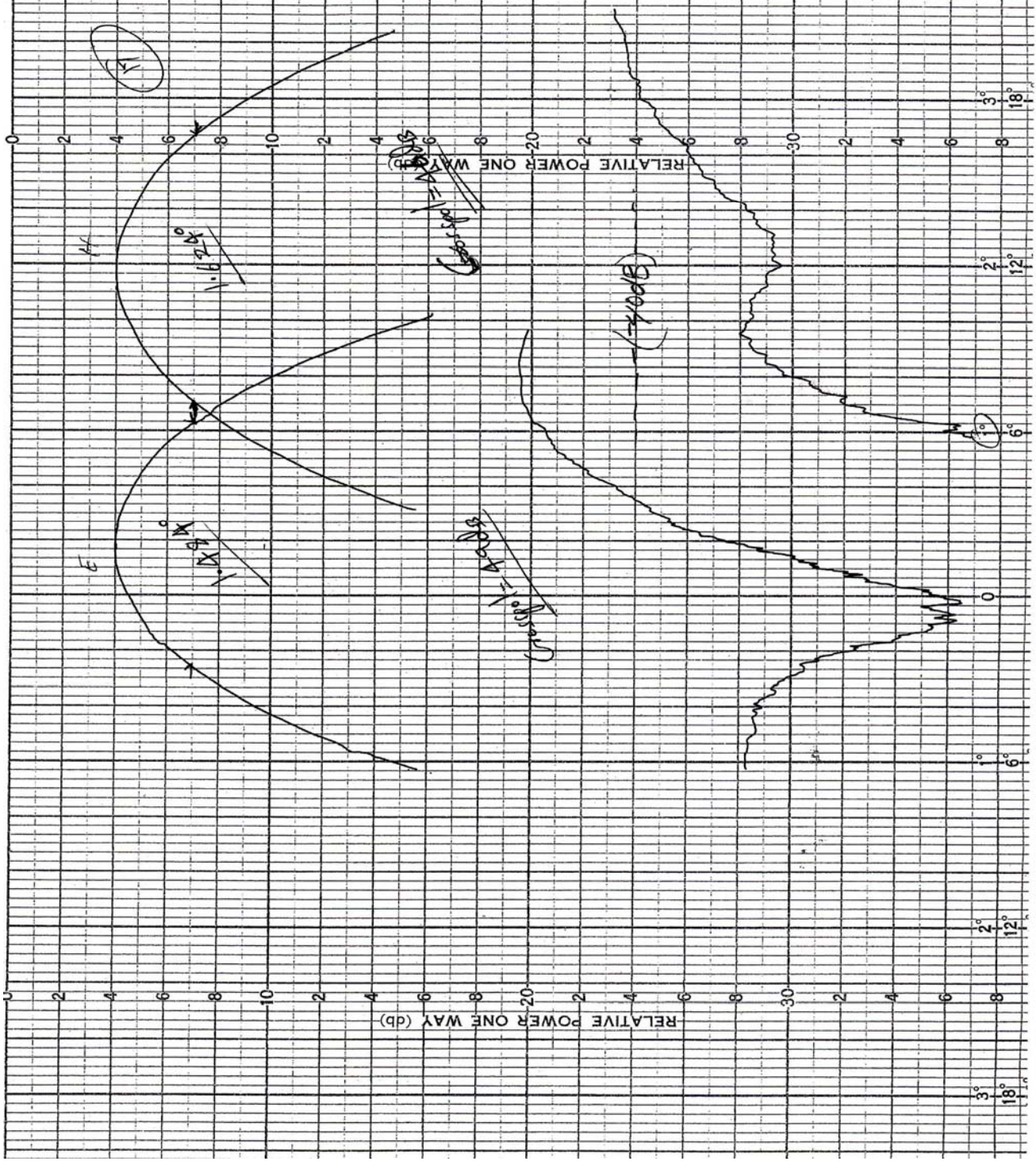
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 PROJECT 0488-701
 ENGRS. B.P.
 REMARKS 14.0 GHz

APOL.

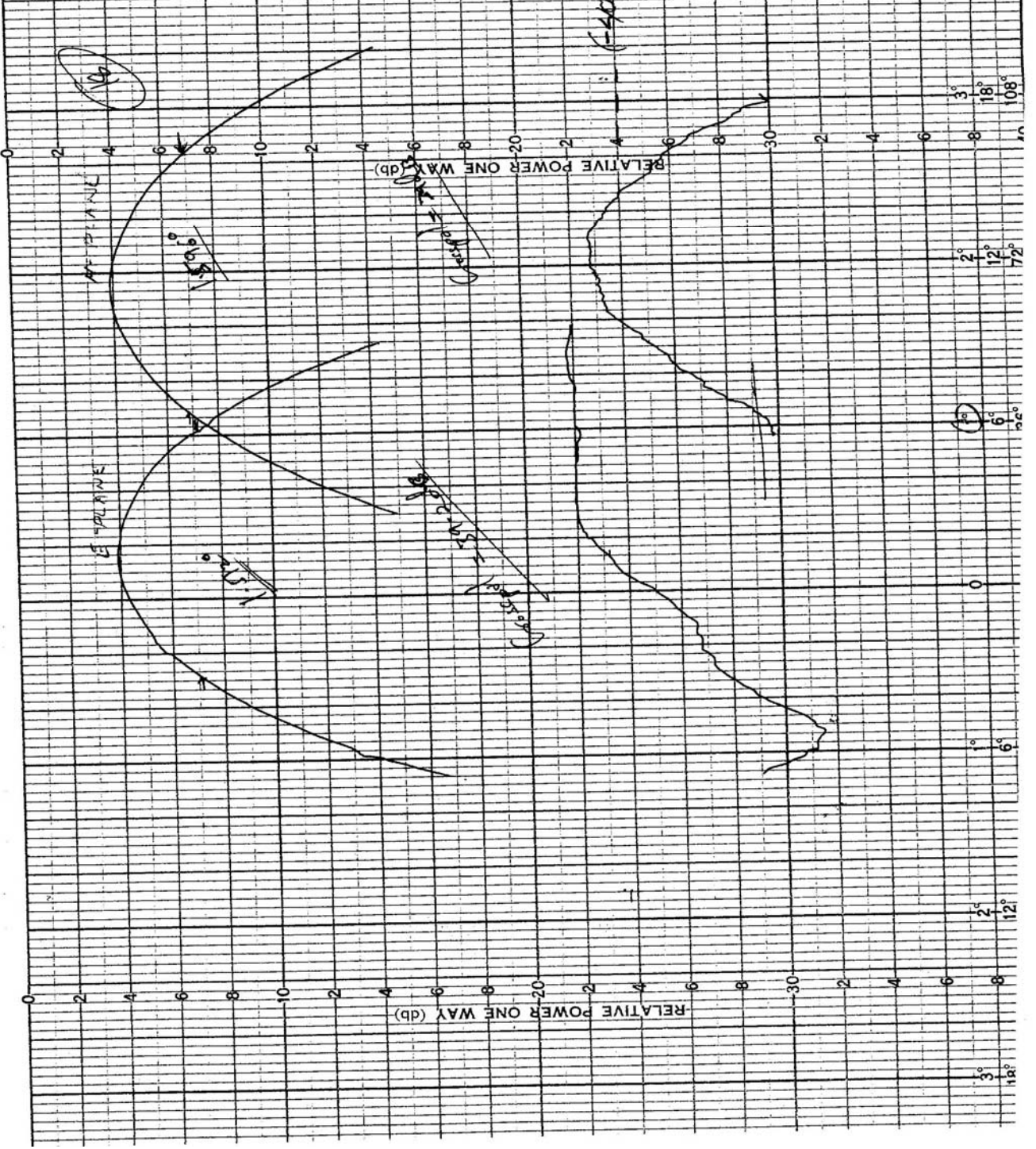
PAISED 2011



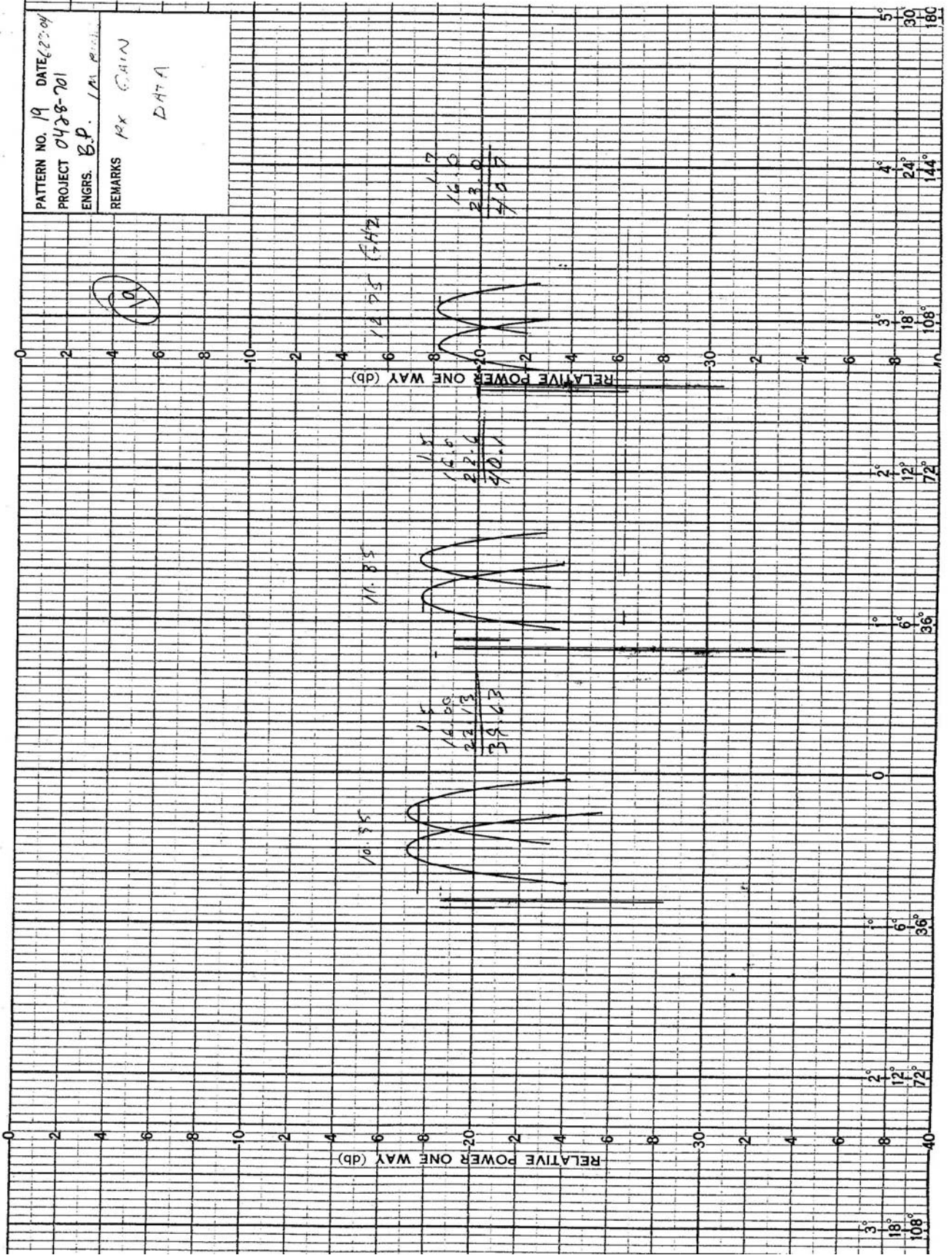
PATTERN NO. 17 DATE: 04-28-70
 PROJECT: ENGRS. B.P. 1M AIA
 REMARKS: 14.25 GA
 XPOL.
 RAISED 20dB



PATTERN NO. 18 DATE 6-22-04
 PROJECT 0428-701
 ENGRS. J. M. K. / M. K. K.
 REMARKS 14.5 GdB
 X POL.
 RAISED 2013



PATTERN NO. 19 DATE 12-04
 PROJECT 0428-701
 ENGRS. B.P. LA RUIZ
 REMARKS RX GAIN DATA



PATTERN NO. 20 DATE 6-22-09
 PROJECT 0428-701
 ENGRS. B.P. J.M. S.M.C.
 REMARKS TX GAIN DATA

