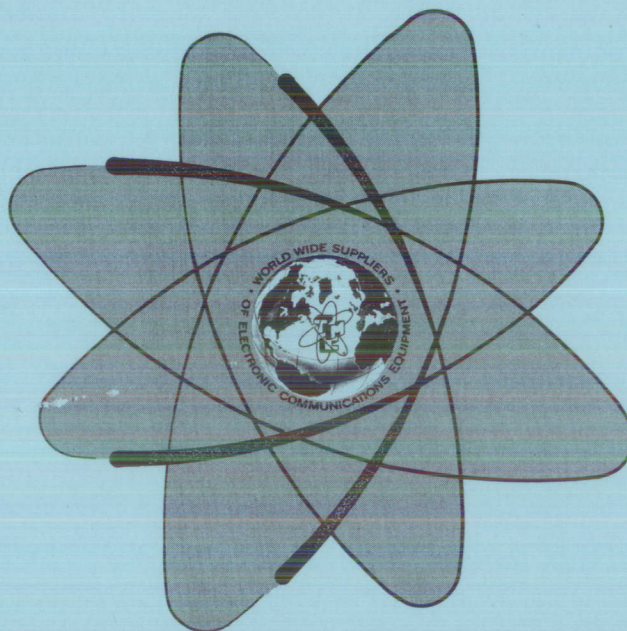


TECHNICAL MANUAL  
*for*

MASTER COPY  
DO NOT DESTROY

HIGH FREQUENCY  
RADIO TRANSMITTER  
MODEL GPT-500E6( )



THE TECHNICAL MATERIEL CORPORATION  
MAMARONECK, N.Y. OTTAWA, ONTARIO

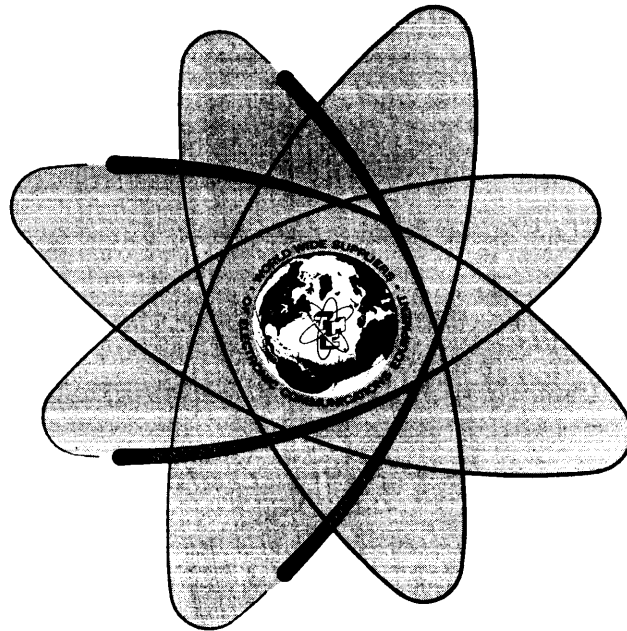
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THE TECHNICAL MATERIEL CORPORATION

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# TECHNICAL MANUAL

*for*

HIGH FREQUENCY  
RADIO TRANSMITTER  
MODEL GPT-500E6( )



THE TECHNICAL MATERIEL CORPORATION  
MAMARONECK, N.Y.

OTTAWA, ONTARIO

Printed in U.S.A.

IN-1073

ISSUE DATE: SEPTEMBER 1972



# THE TECHNICAL MATERIEL CORPORATION

C O M M U N I C A T I O N S   E N G I N E E R S

700 FENIMORE ROAD

MAMARONECK, N. Y.

## W a r r a n t y

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes, \*fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.
2. That the defect is not the result of damage incurred in shipment from or to the factory.
3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.
4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

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TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

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\*Electron tubes also include semi-conductor devices.



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## SECTION I

### GENERAL INFORMATION

#### 1-1. FUNCTIONAL DESCRIPTION

The GPT-500E6( ) shown in figure 1-1, is a Multi-Channel, Sideband, low power transmitter, designed and manufactured by The Technical Materiel Corporation, Mamaroneck, New York. The transmitter GPT-500E6( ) hereinafter referred to as the transmitter, consists of a solid state, multi-channel, exciter SME-6, used in conjunction with a high frequency linear power amplifier PAL-500. The exciter is capable of providing CW (carrier wave), AM (amplitude modulation), SSB (single sideband) including AME (amplitude modulation equivalent), ISB (independant sideband), FSK (frequency shift keying) and FAX (facsimile) modes of operation. The linear power amplifier amplifies the exciter output to provide 500 watts peak envelope power or average power throughout the frequency range of 2.0 MHz to 30 MHz.

Table 1-1 lists the major transmitter components.

Table 1-1. MAJOR COMPONENTS OF GPT-500E6( )

<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
SME-6	Multi-Channel Exciter
PAL-500	Linear Power Amplifier

#### 1-2. PHYSICAL DESCRIPTION

As shown in figure 1-1, the transmitter consists of a single equipment rack, which houses all the transmitter components. The PAL-500 portion of the transmitter consists of two individual units: (1) RFE-1 a three stage linear power amplifier, (2) PSP-500, a low voltage and high voltage power supply.

Primary power and external input connections to the transmitter are made at the power input jack (J2001) and interface panel located in the rear of the transmitter. RF power output is routed from the RFE-1 to the output connector (J10) located on the interface panel.

#### 1-3. REFERENCE DATA

Table 1-2 lists the technical characteristics of the transmitter. Table 1-3 lists the power tube complement of the transmitter; all power tubes are located in the RFE-1 unit of the PAL-500 Linear Power Amplifier.

TABLE 1-2. TECHNICAL SPECIFICATIONS

Frequency Range:	2 to 30 MHz (multi-channel fixed frequency)
Stability:	standard $\pm 50$ Hz from 0°C to +50°C, optional $\pm 10$ Hz from -30°C to +50°C.
Power Output:	500 watts peak envelope power (PEP) 300 watts key down CW or FS
Output Impedance:	unbalanced from 70 to 150 ohms unbalanced 50 ohms with a model LPF-750
Audio Input:	
Frequency Range:	300 to 7.5 KHz in AM and 300 to 3300 in sideband
Impedance:	600 ohm balanced or unbalanced
Input Level Range:	-20 dbm to +10 dbm at 600 ohms
Operating Input Voltage:	115 or 230 vac @50/60 Hz, single phase at approximately 1150 watts
Modes of Operation:	CW, AM, LSB, USB, FSK, FAX and ISB
Intermodulation Distortion:	40 db below either tone of a standard two tone test at full rated peak envelope power (PEP)

Refer to the Technical Manual of each unit for it's specific specification.

TABLE 1-3. TRANSMITTER POWER TUBE COMPLEMENT

<u>Reference Designation</u>	<u>Part Number or Type</u>	<u>Function</u>
V1201	6CL6	1st RF Amplifier
V1202	6146	2nd RF Amplifier
V1203	4CX350A	Power Amplifier
V1204	4CX350A	Power Amplifier



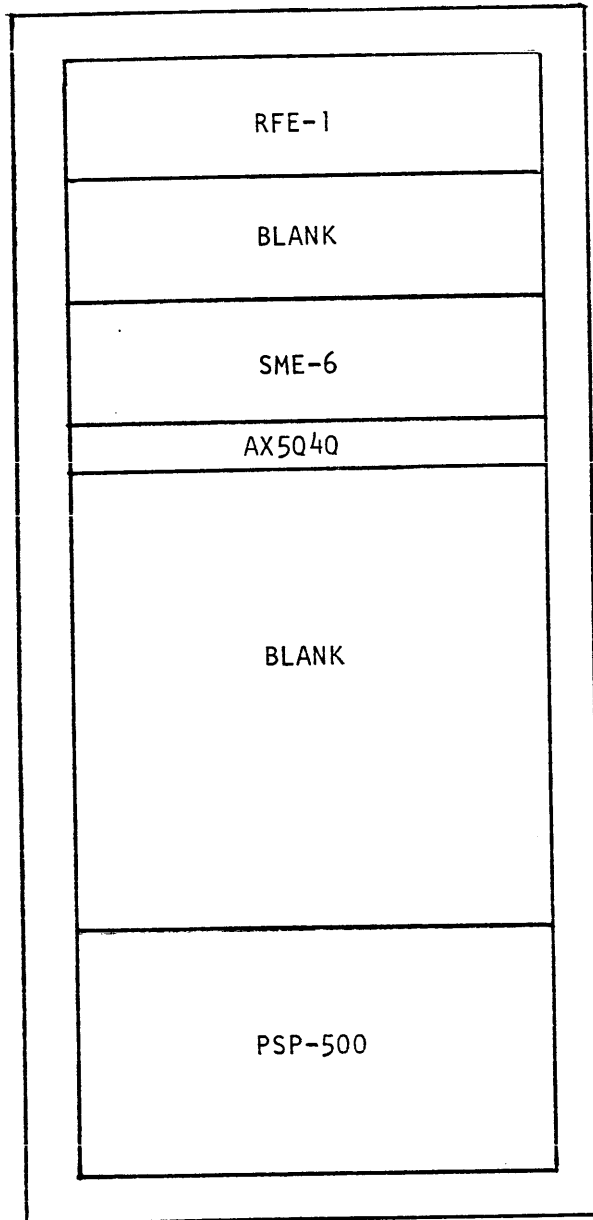


Figure 1-1. GPT-500E6( ) Component Location

SECTION 2  
INSTALLATION

2-1. INITIAL UNPACKING AND INSPECTION

The GPT-500E6( ) was assembled, calibrated and tested at the factory before shipment. Inspect all packages for possible damage during transit. With respect to damage to the equipment for which the carrier is liable, The Technical Materiel Corporation will assist in describing methods of repair and furnishing of replacement parts. Carefully unpack each crate as indicated by the packing list provided with the transmitter shipment. Inspect all packing materials for parts that may have been shipped as LOOSE ITEMS (cabinet hardware, connectors, technical manuals, etc.).

2-2. POWER REQUIREMENTS

The GPT-500E6( ) requires a single phase source of 115 or 230 vac, 50/60 Hz at approximately 1150 watts.

2-3. INSTALLATION

a. General

A minimum number of assemblies, subassemblies, components and hardware have been disassembled from the equipment and separately packaged, thus reducing the possibility of equipment damage in transit. The method of disassembly and separate packaging also permits realistic equipment handling.

Cables, wires, and other miscellaneous items that are disconnected during equipment disassembly are tagged and taped to the equipment. The information on a given tag indicates the designated terminal on a component to which the tagged item must be connected. Make sure all cables and wires have been connected as designated on tags and that all packing material, tags and tape have been removed before sealing-up the cabinet or section of the cabinet with a front panel drawer.

b. Component Installation

The component location for typical installation of the GPT-500E6( ) is shown in figure 2-1. The following units in the transmitter are slide mounted: all components of the PAL-500, RFE-1, PSP-500 and the SME-6. The modular units of the PAL-500 should be installed into the equipment rack by referring to the detailed installation procedural steps in the technical manual for the PAL-500. The SME-6 should be installed in the equipment rack in the same manner as the PAL-500 modular units; the front panel of the SME-6 should be fastened to the rack with four screws and four washers.

### WARNING

BEFORE MAKING EXTERNAL CONNECTIONS TO THE TRANSMITTER, INSURE THAT THE EXTERNAL PRIMARY POWER IS OFF AN TAGGED.

#### c. Electrical Interconnections

Once the modular units (PSP-500, RFE-1 and SME-6) have been mounted into the transmitter equipment cabinet, refer to figure 2-2 exciter interconnect diagram in conjunction with figure 2-3 GPT-500E6( ) wiring diagram and connect all plugs to their respective jacks. All interconnecting cables are marked with their "J" numbers and mating "P" numbers at the plug for ease of installation.

#### d. Interface Panel Connections

External input connections are made at the Interface panel located in the rear of the transmitter below the SME-6 exciter. Audio intelligence, CW, FSK, and FAX input connections are made at Interface jack J6. Mating plugs for J6 (Exciter Control), J7 (XMTR control) and J8 (XMTR readback) are supplied as loose items. Refer to figure 2-3 GPT-500E6( ) interconnect diagram and make the external connections to mating plugs prior to connecting plugs to J6, J7 and J8.

### NOTE

The GPT-500E6( ) leaves the factory wired for local operation. Mating plugs that connect to Interface Panel jacks J6, J7, and J8 are supplied as loose items and are NOT PREWIRED with connections between pins on each plug for transmitter operation. These mating plugs supplied as loose items must be wired in accordance with figure 2-3 and then connected to jacks J6, J7 and J8 on the Interface Panel.

#### e. Interface Panel Connections to Enable Transmitter Operation

Remove mating plugs supplied as loose items for Interface Jacks J6, J7 and J8 (MS3106B24-28S, MS3106B28-21P respectively) and provide connections as follows:

##### (1) On the mating plug for J7 XMTR control (MS3106B24-28P

Provide connection between pins "B" and "C" (External Interlocks).

Provide PTT Device between pins "T" and "U" (PTT).

### NOTE

The Terminals for J8 not listed in the foregoing are for interface connections between the transmitter and indicator equipment (refer to figure 2-3 for these connections).

Check all connections made and secure mating plug on Interface Panel jack J7.

#### (2) On the mating plug for J6 Exciter Control (MS3106B24-28S)

Provide shielded lines for the following:

USB (600 ohm)	Pins "A", "B", "C" and "D" (B is Center tap, D is grounded)
LSB (600 ohm)	Pins "E", "F", "G" and "H" (F is Center Tap, H is grounded)
FSK	Pin "K" (-) Pin "L" (+)
FAX	Pin "N"
FSK Contact Key	Pin "P", "Q" (Q is grounded)
CW Key	Pin "R", "S" (S is grounded)
PTT (unshielded)	Pin "T", "U" (U is grounded)

#### (3) On the mating plug for J8 XMTR Readback (MS3106B28-21P)

Provide connections for the following readback status:

Antenna Relay	Pin "p", "r"
---------------	--------------

Check all connections and secure mating plug to Interface Panel jack J8.

#### (4) RF Output connection

Connect 70 ohm transmission line to Interface Panel Jack J10. Transmission line should be terminated into 70 ohm dummy load or antenna.

This completes the external connections to the Interface Panel. Check that all connections are secure and correctly made, if necessary refer to figures 2-2 and 2-3.

#### f. Primary Power Connections

The transmitter leaves the factory wired as per customer requirements for 115 vac or 230 vac. Transmitter power requirements are as follows:

(1) 115 vac/or 230 vac (on request)

(2) Single phase AC at approximately 1150 watts, 50/60 Hz. Connect Power plug to Power Input Jack J2001 located on the bottom portion of the equipment cabinet. (Power plug supplied as loose item)

After all external connections are completed, insure that protective top and bottom covers are affixed on each modular unit and the modular units are secured in the cabinet with panel locks or mounting hardware.

Mount rear door on cabinet and secure with mounting hardware provided.

#### 2-4. PRE-OPERATIONAL CHECK

Although the transmitter has been aligned and thoroughly checked against the manufacturer's specifications prior to shipment, it is necessary to ensure correct installation and proper operation by referring to operational checks in the applicable technical manuals for the modular units. The operational check of the PAL-500 and initial check out of the SME-6 should be performed.

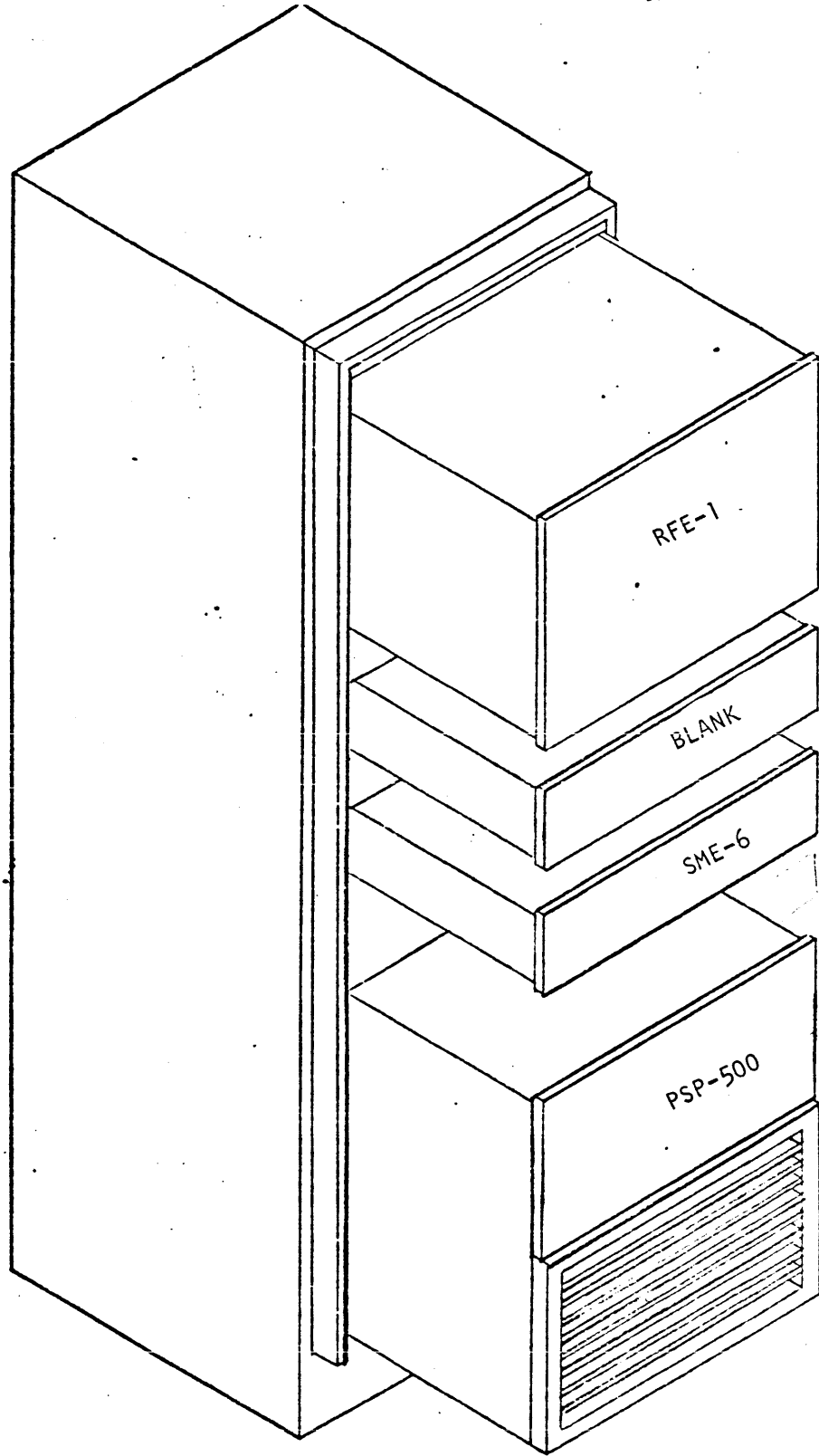
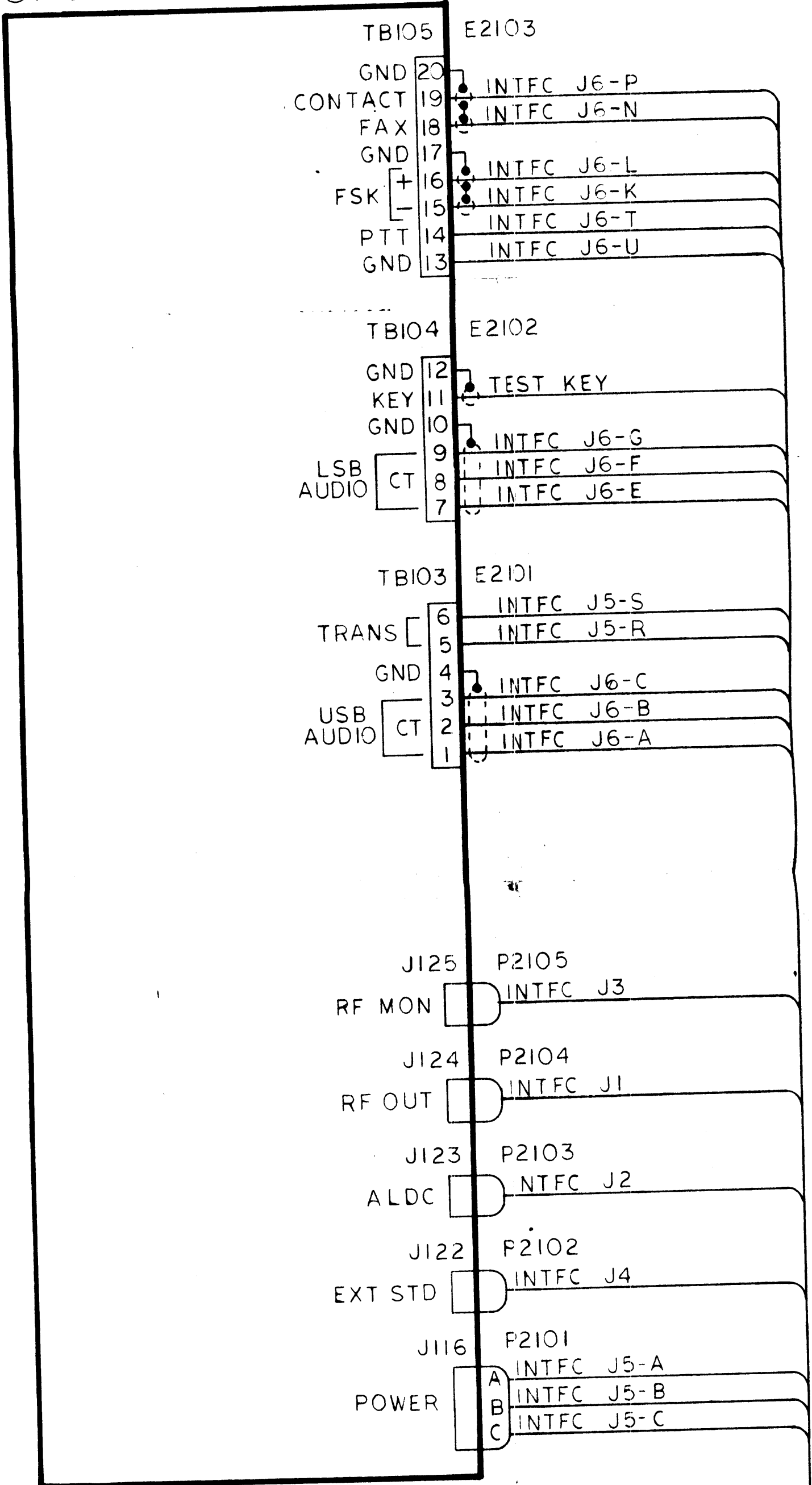


Figure 2-1

GPT-500E6( ) Typical Installation of Modular Units

# SMEM-6

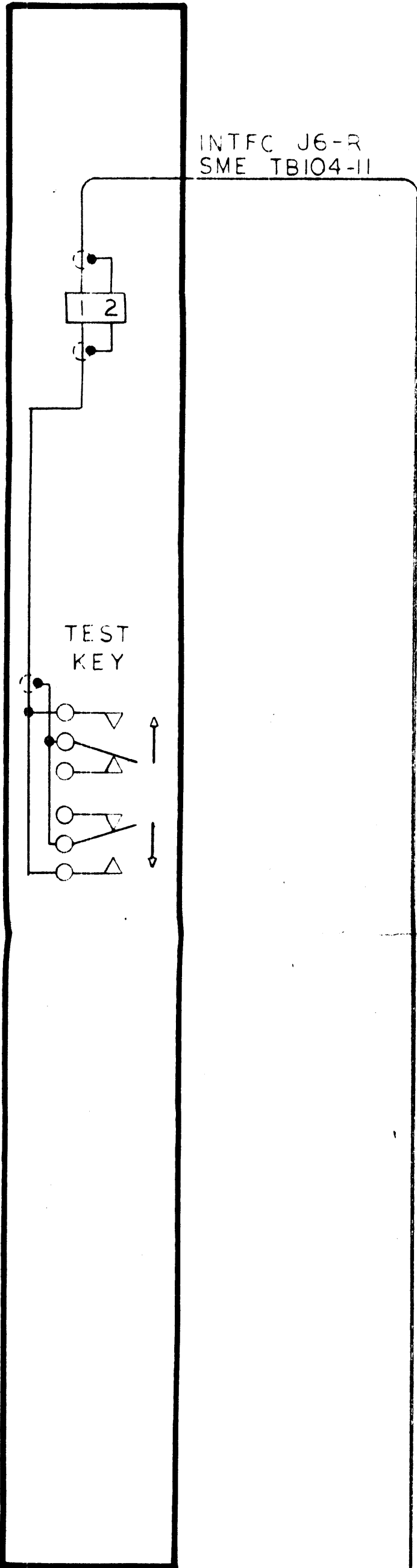


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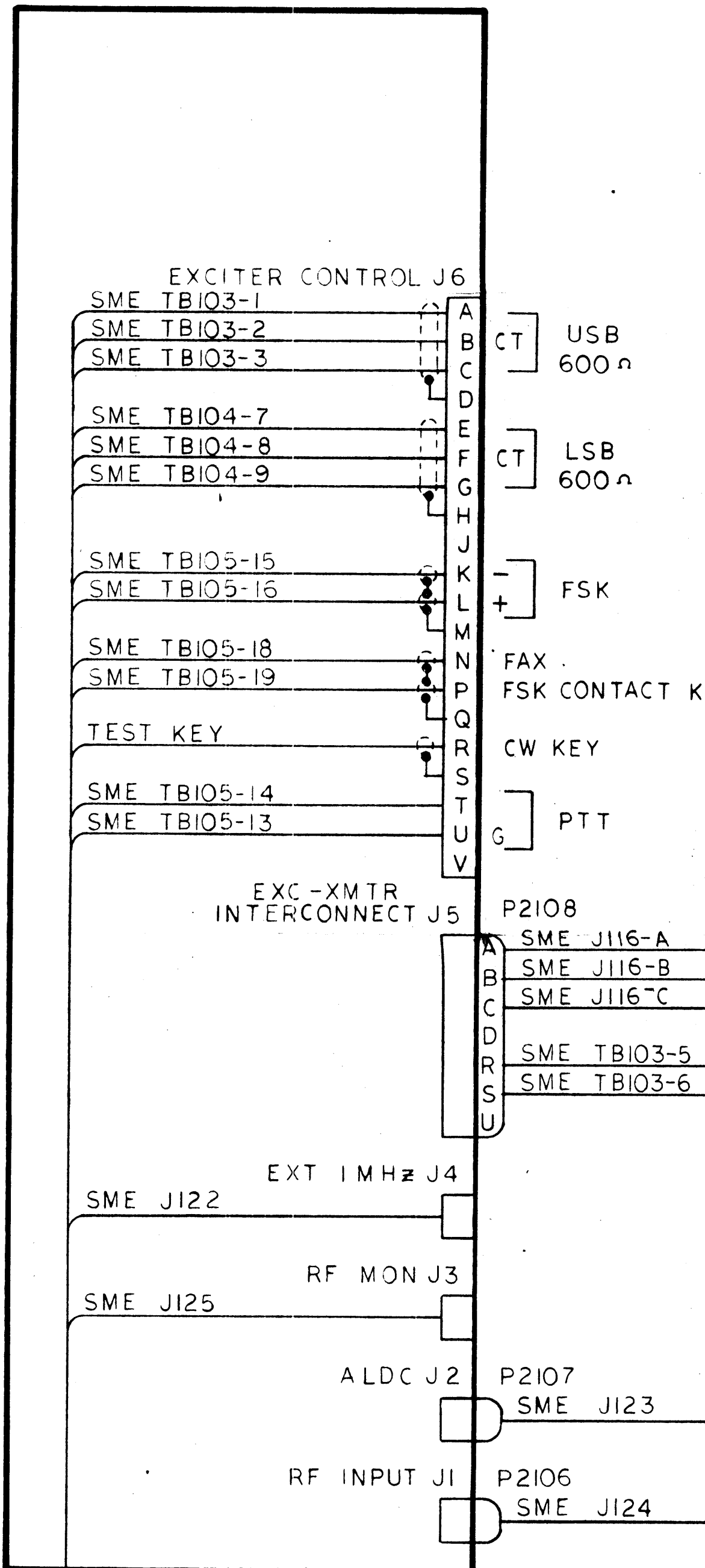
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B

# AX5040



# INTERFACE





3

2

1

					REVISIONS		
E.M.N.NO	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	0			Ø	ORIGINAL RELEASE FOR PRODUCTION	8/21/78	

USB  
600 n

LSB  
600 n

FSK

CONTACT KEY

EY

PTT

B

J116-A

J116-B

J116-C

TBIO3-5

TBIO3-6

J123

J124

D

C

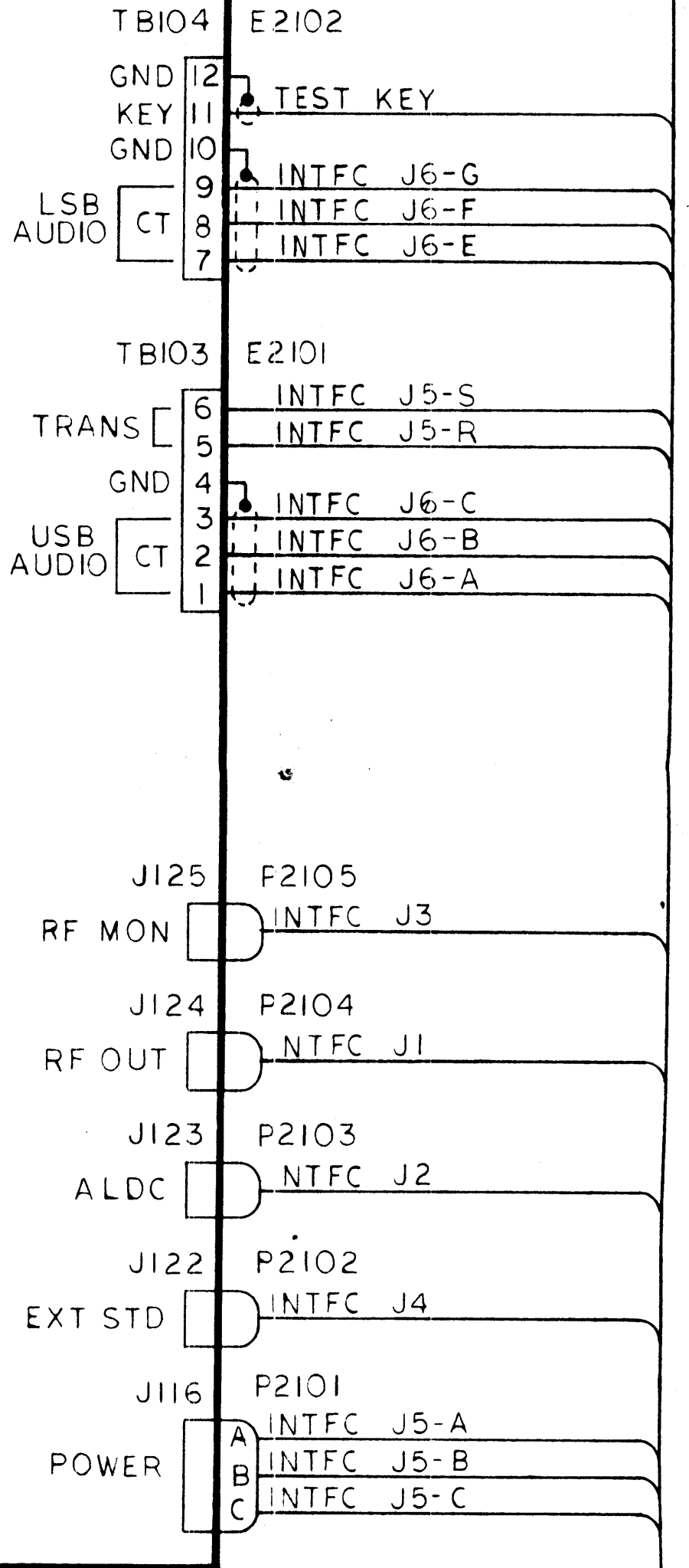


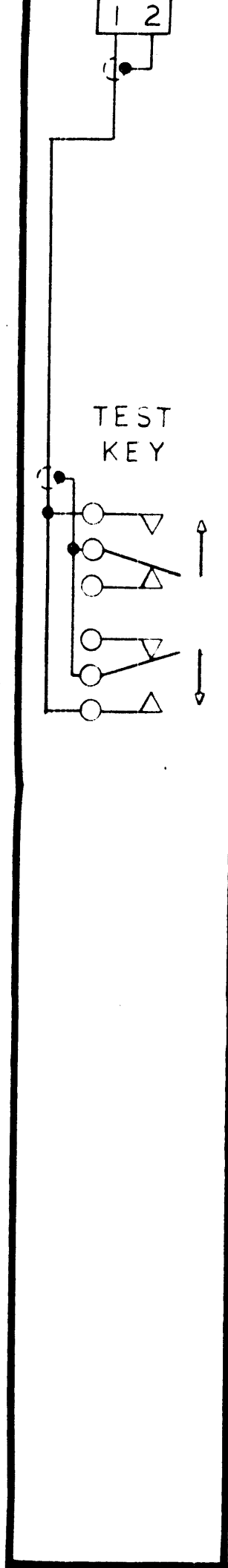
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B

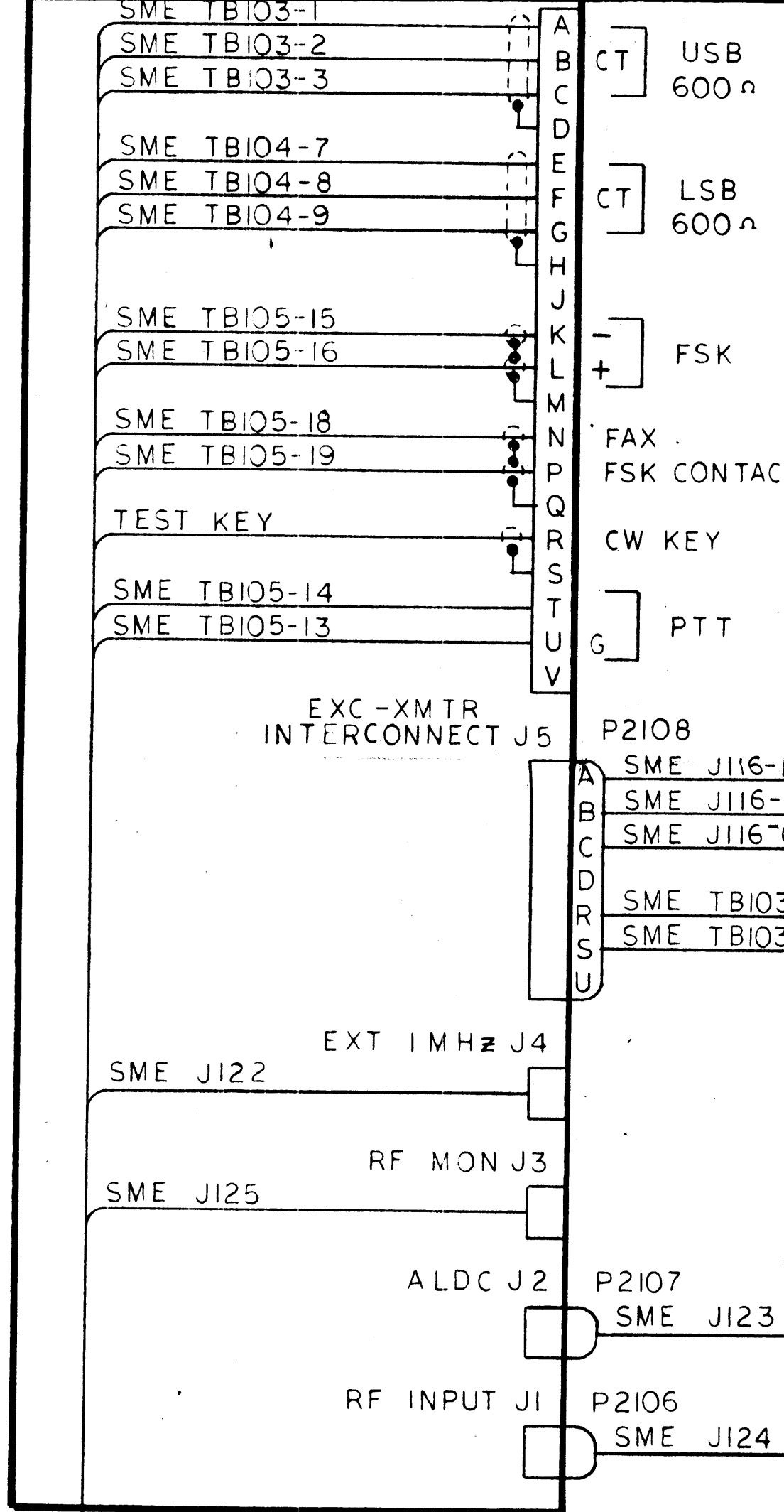
A





TEST KEY

CA1720



EXC-XMTR INTERCONNECT J5

EXT 1MHz J4

RF MON J3

ALDC J2

RF INPUT J1

CT USB 600  $\Omega$

CT LSB 600  $\Omega$

FSK

FAX FSK CONTACT

CW KEY

PTT

P2108

SME J116-

SME J116-

SME J116-

SME TBIO3

SME TBIO3

P2107

SME J123

P2106

SME J124

GPT-500E6		
HFTM-1KE6		
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	
<p style="text-align: center;"><b>NOTICE TO PERSONS RECEIVING THIS DRAWING</b></p> <p style="text-align: center;">THE TECHNICAL MATERIEL CORPORATION claims proprietary right in the material disclosed hereon. This drawing is issued in confidence for engineering information only and may not be reproduced or used to manufacture anything shown hereon without permission from THE TECHNICAL MATERIEL CORPORATION to the user. This drawing is loaned for mutual assistance and is subject to recall at any time.</p>		

5



4

UN  
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AND I

DE  
.X  
.XX  
.XXX

MATE

FINIS

USB  
00 n

LSB  
00 n

SK

CONTACT KEY

KEY

TTT

J116-A
J116-B
J116-C
TBIO3-5
TBIO3-6
J123
J124

C



B  
CK1944  
Ø

QTY. REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL
-----------	------	----------	-------------	--------

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES ON

DECIMALS	FRACTIONS
.X ± .05	± 1/64
.XX ± .01	ANGLES
.XXX ± .005	± 0° -30'

MATERIAL

FINISH

FINAL APPROVAL	DATE
<i>JMM</i>	21 AUG 72
MECH. DES.	DATE
ELECT. DES.	DATE
<i>JMM</i>	21 AUG 72
CHECKED	DATE
DRAWN	DATE
<i>JMM</i>	15 AUG 72

THE TECHNICAL MATERIEL CORP.  
MAMARONECK, NEW YORK

Figure 2-2  
Exciter Interconnect

A

3

2

1

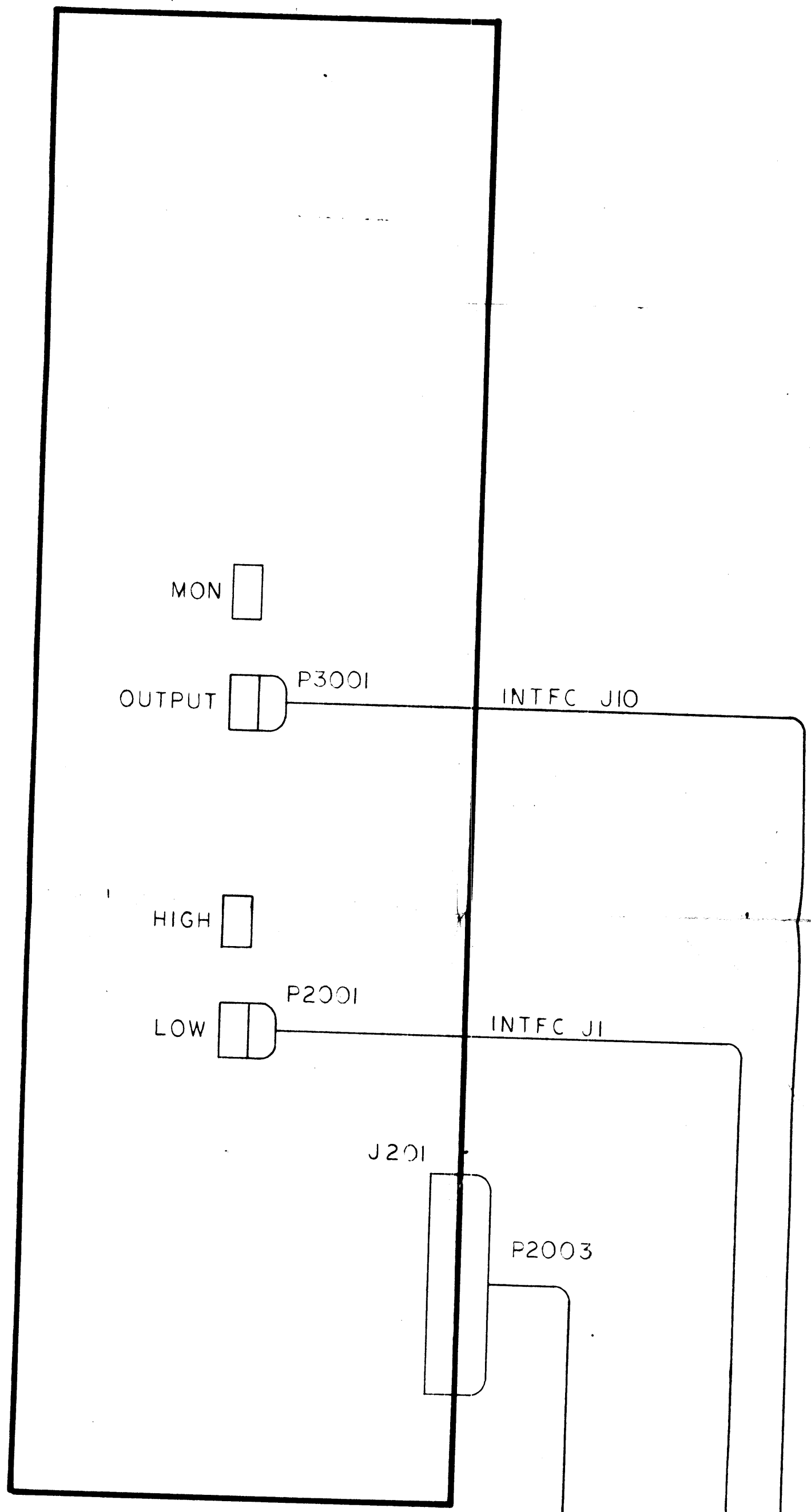
LIN AMP  
RFE-1

D

C



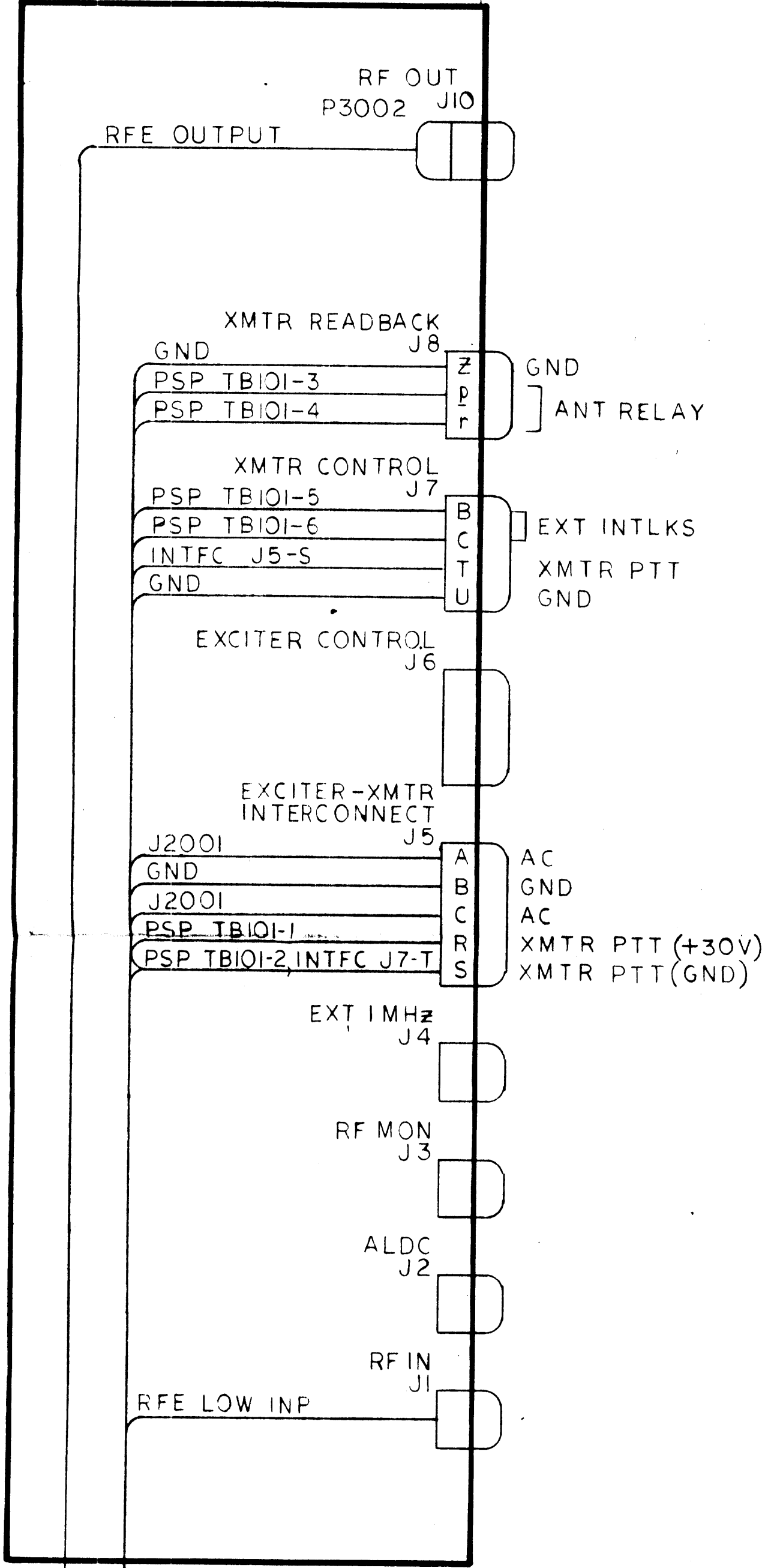
B





# INTERFACE

POWER SUPPLY  
PSP-500



IF EXTERNAL CONTROLS ARE NOT USED  
JUMP J7 PINS AS SHOWN.

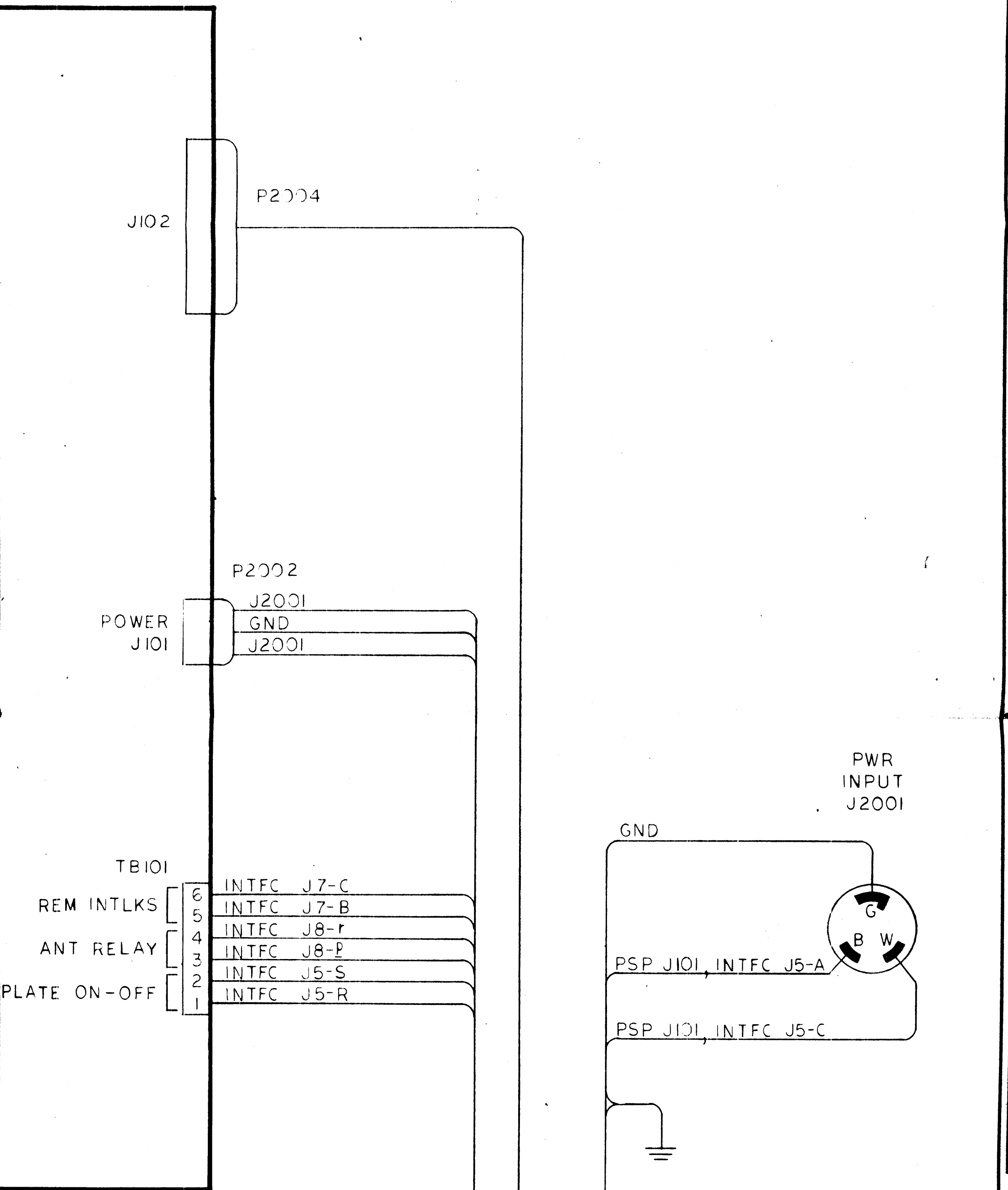
REM  
ANT  
PLATE O

					REVISIONS		
E.M.N.NO	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	0			Ø	ORIGINAL RELEASE FOR PRODUCTION	8/21/72	

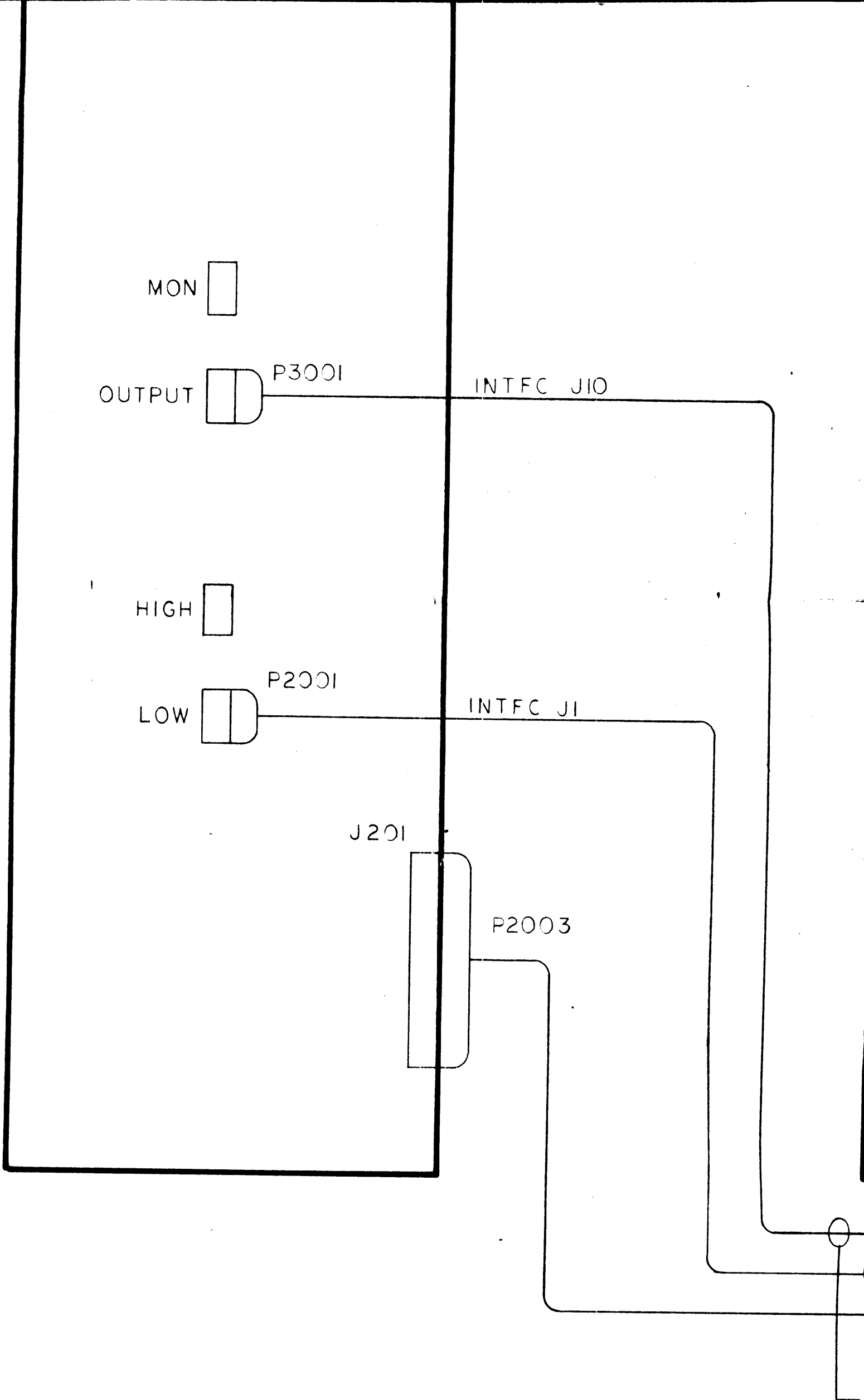
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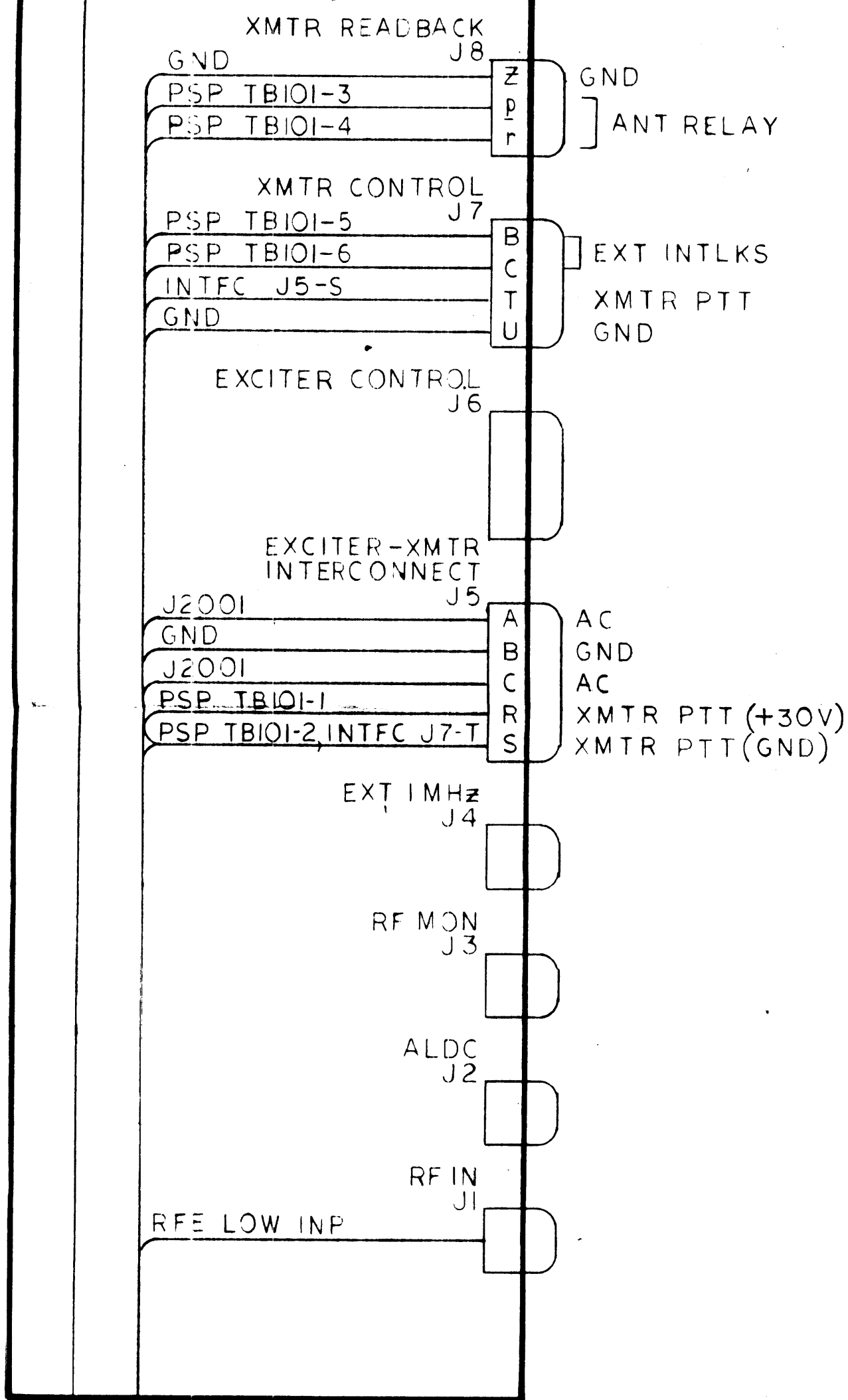
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CK1945  
Ø





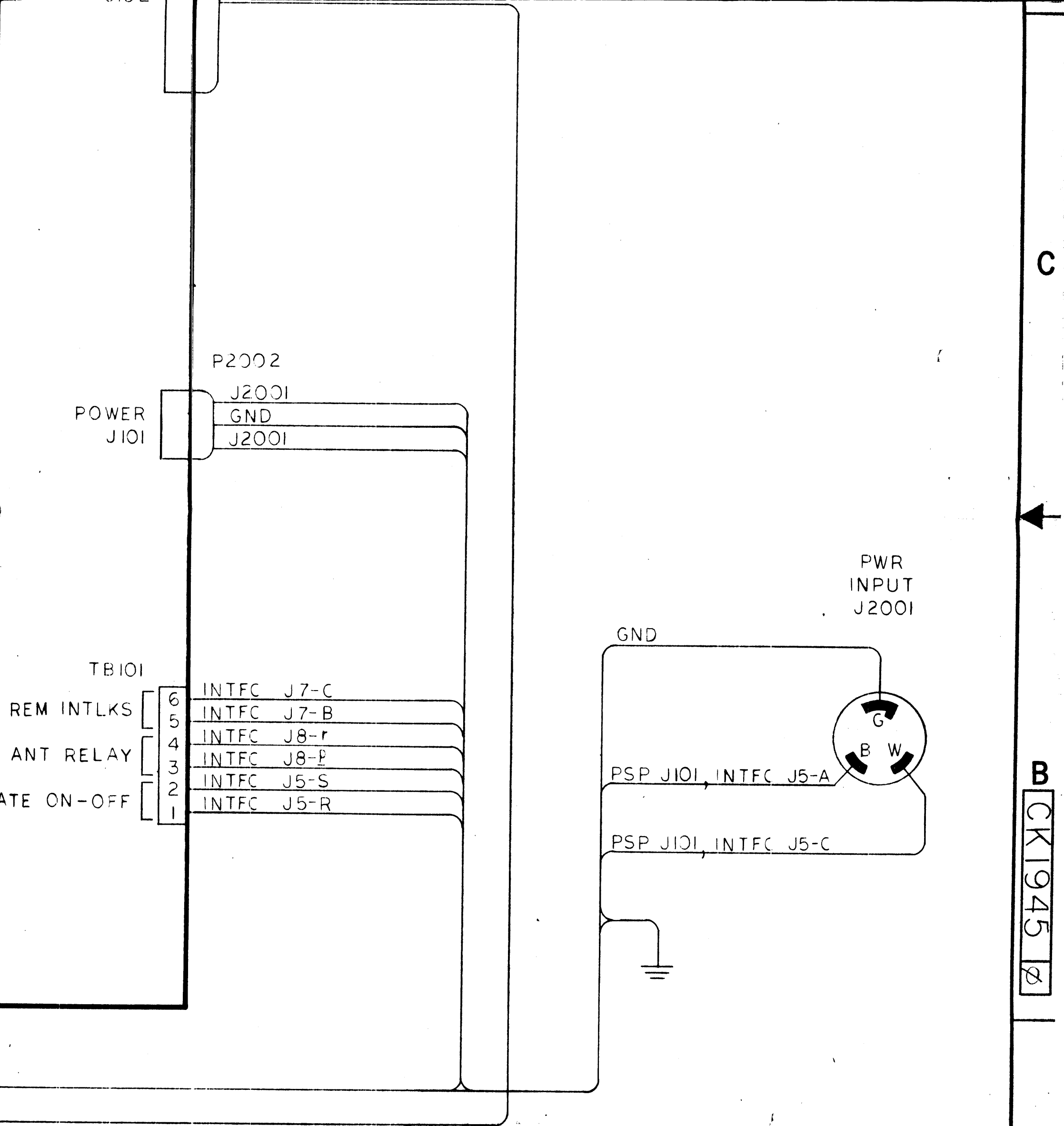


IF EXTERNAL CONTROLS ARE NOT USED  
 JUMP J7 PINS AS SHOWN.  
 XMTR PTT IS CONTROLLED BY J5-S OR J7-T.

CA10136 (CONNECTIONS ARE PIN TO PIN)  
 CA1721  
 CA480-91-XX

GPT 500 E 6		
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	
<p><b>NOTICE TO PERSONS RECEIVING THIS DRAWING</b>          THE TECHNICAL MATERIEL CORPORATION claims proprietary right in the material disclosed hereon. This drawing is issued in confidence for engineering information only and may not be reproduced or used to manufacture anything shown hereon without permission from THE TECHNICAL MATERIEL CORPORATION to the user. This drawing is loaned for mutual assistance and is subject to recall at any time.</p>		

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES AND INCLUDE TOLERANCES UNLESS OTHERWISE SPECIFIED.
TOLERANCES DECIMALS .X ± .05 .XX ± .01 .XXX ± .005
MATERIAL
FINISH



QTY. REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL
-----------	------	----------	-------------	--------

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

**TOLERANCES CN**

DECIMALS	FRACTIONS
.X ± .05	± 1/64
.XX ± .01	ANGLES
.XXX ± .005	± 0° -30'

MATERIAL

FINISH

FINAL APPROVAL	DATE
<i>J. V. C.</i>	21 AUG 72
MECH. DES.	DATE
ELECT. DES.	DATE
<i>[Signature]</i>	21 AUG 72
CHECKED	DATE
DRAWN	DATE
<i>[Signature]</i>	17 AUG 72

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MAMARONECK, NEW YORK

Figure 2-3  
Wiring Diagram

3

2

1

C

B

CK1945

A

## SECTION 3

### OPERATOR'S SECTION

#### 3-1. GENERAL

The system is capable of supplying up to 500 watts PEP to an unbalanced antenna or dummy load. The RF Output may also be safely set to any power level below 500 watts PEP. The system RF Output is controlled by the RF GAIN control on the exciter.

#### 3-2. CONTROLS AND INDICATORS

All controls and indicators for the system are located on the front panels of the modular units except the FSK Shift and Sense switches which are on the rear of the SME-6. For a detailed description of these controls and their functions refer to the units technical manual.

Refer to figures 1-1 and 2-1 for the modular unit location when put together as a system.

#### 3-3. OPERATING PROCEDURES

##### a. General

Detailed operating procedures for individual units may be found in the unit technical manuals. Before attempting to operate the system, the operator should become familiar with the controls and indicators of the individual units and the units capabilities.

To give the operator a sequence of system operation, a general operating procedure for CW is given in paragraph b.

##### b. Starting Procedure

- (1) Control and Indicator Settings for CW.
  - (a) Set ON/STANDBY switch to STANDBY.
  - (b) Set EXCITER switch to ON.
  - (c) Set RF OUTPUT control maximum counterclockwise.
  - (d) Rotate MODE switch to CW position.
  - (e) Set TEST KEY to up position.
  - (f) Set CHANNEL switch to desired channel.

- (g) Set H.V. LINE breaker to ON.
- (h) Place TRANSMITTER PLATES switch to STANDBY/REMOTE.
- (i) Turn PA TUNING & PA LOADING controls to 0.
- (j) Set MAIN LINE circuit breaker to ON.
- (k) Set DRIVER BAND switch to desired frequency range.
- (l) Set PA BAND switch to desired frequency range.
- (m) Set MULTIMETER switch to RF DR.
- (n) Turn RF OUTPUT control clockwise slightly.
- (o) Set the TRANSMITTER PLATES switch to ON.
- (p) Adjust DRIVER TUNING for a peak on the MULTIMETER.

NOTE

Keep peaks below 20 when tuning the DRIVER by decreasing (CCW) the RF GAIN.

- (q) Reduce exciter RF OUTPUT maximum CCW.
- (r) Insure that an antenna or dummy load is connected to the output.
- (s) Set H.V. LINE circuit breaker ON.
- (t) Turn RF OUTPUT control clockwise slowly until the PA PLATE meter indicates approximately 300 ma.
- (u) Adjust PA TUNING control for a resonant dip on the PA PLATE meter.
- (v) Adjust the PA LOADING and TUNING controls for a dip in PA PLATE current indication and until PA LOADING control causes no further increase in PA PLATE meter indication.
- (w) Increase the EXCITER RF OUTPUT until the desired power output is obtained.
- (x) Set TEST KEY to neutral position to open CW key.

CAUTION

Do not exceed 340 ma for a CW signal on PA PLATE meter and 380 ma for two tone signal.

(2) The transmitter is now initially tuned on a carrier and is ready for operation. Refer to paragraph 3-4 thru 3-8 operation and different emission modes.

#### 3-4. SINGLE SIDEBAND WITH ANY DEGREE OF CARRIER INSERTION

a. EXCITER switch should be set to ON position when using either the USB or LSB 600 ohm line inputs, or to PTT position when using MIKE input.

b. Select desired sideband with MODE switch.

c. Select desired operating frequency with CHANNEL selection switch.

d. Turn METER switch at the desired sideband position.

e. Connect a Mike to the front panel MIKE jack if used.

f. Adjust the GAIN control of sideband used to appropriate level as indicated on MONITOR.

#### NOTE

DO NOT ENTER RED REGION. When mike input is used, adjust level so as not to exceed red region with highest input from microphone.

g. Turn METER switch to CARR position. Set CARR SUPPR (DB) control to center position. Adjust DB control to the desired level as indicated on MONITOR meter.

h. Turn METER switch to RF position. Adjust RF OUTPUT control for desired level of RF output as indicated on RFE plate meter.

#### NOTE

Turn RF OUTPUT control fully CCW before selecting different modes of operation.

#### 3-5. INDEPENDENT SIDEBAND WITH ANY DEGREE OF CARRIER

a. Set ON/STANDBY switch to ON position.

b. Set EXCITER switch to ON position when using either the USB or LSB 600 ohm line inputs. Set EXCITER switch to PTT position when using MIKE input.

- d. Select ISB position on MODE switch.
- e. Select desired operating frequency with CHANNEL selection switch.
- f. Turn METER switch to LSB position. Adjust the LSB GAIN control for a MONITOR meter indication of up to but not to exceed the red region.
- g. Turn METER switch to USB position. Adjust USB GAIN control for a MONITOR METER indication of up to but not to exceed the red region.
- h. Turn METER switch to the CARR position. Set CARR SUPPR (DB) control to center position. Adjust control to full or the desired level as indicated on MONITOR meter.
- i. Turn METER switch to the RF position and adjust RF OUTPUT control for a level of RF output indicated on RFE PLATE meter.

### 3-6. CONVENTIONAL AM OPERATION

- a. Set ON/STANDBY switch to ON position.
- b. Set EXCITER switch to ON position when using either the USB or LSB 600 ohm line input. Set EXCITER switch to PTT position when using MIKE input.
- c. Set MODE switch to AM position.
- d. Select desired operating frequency with CHANNEL selection switch.
- e. Turn METER switch to AM position.
- f. Connect a mike to the front panel MIKE jack if used.
- g. Adjust the MIKE control of sideband used to appropriate level as indicated on MONITOR meter.

#### NOTE

DO NOT ENTER RED REGION. When mike input is used, adjust level so as not to exceed red region with highest input from microphone.

- h. Turn METER switch to RF position and adjust RF OUTPUT control for desired level of RF output as indicated on MONITOR meter.

### 3-7. FREQUENCY SHIFT TELEGRAPH OPERATION

- a. Set ON/STANDBY switch to ON position.

- b. Set EXCITER switch to ON position.
- c. Turn MODE switch to FSK position.
- d. Set CHANNEL switch to desired position.
- e. Select appropriate FSK operation by setting switches S110 and S111 (Shift and Sense switches located on rear of SME-6).
- f. Place SENSE switch S109 to desired sense (+) or (-).
- g. Place METER switch to the RF position. Adjust RF OUTPUT control for desired transmitter output.

### 3-8. FACSIMILE (FAX) OPERATION

- a. Set ON/STANDBY switch to ON position.
- b. Set EXCITER switch to ON position.
- c. Turn MODE switch to FAX position.
- d. Set CHANNEL switch to the desired frequency.
- e. Place METER switch to the RF position. Adjust RF OUTPUT control for desired transmitter output.

## SECTION 4

### PRINCIPLES OF OPERATION

#### 4-1. GENERAL

The GPT-500E6( ) system is a Multi-Channel Frequency Transmitter. The channel or carrier frequency is determined by the CHANNEL switch in the SME-6 exciter. The channel frequency is stamped on the front panel of the SME-6.

The Linear Amplifier section of the transmitter (model RFE-1) uses two 4CX350A tubes connected in parallel feeding a pi network. The final tubes (4CX350A) are biased to operate in class AB1.

This unit (RFE-1) will accept one of two RF inputs, a low input of 100 milliwatts or high input of 1 watt. It will require 100 milliwatts or less to produce the 500 watt peak envelope power output.

The exciter SME-6 capable of delivering up to 250 milliwatts to the power amplifier section of a transmitter.

Principles of operation are presented in detail for each modular unit in their respective unit technical manual.



SECTION 5  
MAINTENANCE

5-1. PREVENTIVE MAINTENANCE

The air filter located on the rear should be cleaned at least once a week to prevent equipment failure due to dirt, dust or other destructive elements. At periodic intervals the units should be removed from their cabinet or rack for a more thorough cleaning and inspection. All connections should be checked for tightness and good contact. PC cards should be kept clean of dirt and foreign matter of any kind. Insulation in the RFE-1 should be kept clean to avoid high voltage breakdown and arcing between components due to conductive dust. Any broken insulators should be replaced.

5-2. TROUBLESHOOTING

a. General

- Determine which unit the problem is located in first. The SME-6 may be isolated from the rest of the system to determine if it is operating properly. Once the problem is isolated to a unit, then refer to the technical manual of that unit for specific troubleshooting procedures.

Keeping records of normal meter indications and control settings will help to isolate trouble to a unit or stage.

b. SME-6 (refer to SME-6 technical manual)

- (1) Check all input connections and/or external equipment requirements for keying or generating the various emission modes.
- (2) Determine if the unit will produce 250 mw output.
- (3) Check power supply voltages.
- (4) Insure that the unit has 115/230 vac power.
- (5) Check fuses for continuity and correct rating.
- (6) Check for component damage (broken, charred or discolored).

c. PSP-500 (refer to PAL-500 technical manual)

- (1) Insure that primary 115 vac is correct (system wired for 115 vac unless otherwise specified).
- (2) Check L.V. SUPPLY fuse for continuity and correct rating.

(3) Check for a jumper between terminal 5 and 6 on TB101 if external interlocks are not used. If external interlocks are used, temporarily connect a jumper between terminals 5 and 6 and see if problem still exists.

(4) Check that the transmitter is properly grounded.

d. RFE-I (refer to PAL-500 technical manual)

(1) Check meter indication against normal indications.

(2) Insure that the antenna or dummy load is properly connected on output connector.

(3) Use MULTIMETER on VTVM to determine what stage the problem is in.

For a more detailed troubleshooting procedure refer to the individual unit technical manual.