1.0 IDENTIFICATION OF APPLICANT AND EQUIPMENT

1.1 Applicant:

Information Transmission Systems Corp.
375 Valley Brook Road
McMurray, PA 15317

The above name and address is printed on a label attached to the rear panel of the equipment.

1.2 Equipment and Model Number: ITS-6455A

This information is provided on the front panel of the equipment.

1.3 ITS Corporation shall manufacture this product in quantities necessary to satisfy market demand.

2.0 TECHNICAL DESCRIPTION - MODEL ITS-6455A

2.1 Introduction

The 6455A is a multi-channel translator/linear amplifier intended to be used as a multi-channel translator in the MMDS/ITFS frequency band (2500.00 to 2690.00 MHz).

The 6455A is comprised of an ITS-716 translator tray and an ITS-5765 external broadband amplifier tray. The multi-channel super band (222.00 to 408.00 MHz) input signal enters the system at the input of the translator where it is translated to the MMDS/ITFS frequency band and amplified to a sufficient level to drive the external amplifier. The broadband amplifier tray amplifies the multi-channel signal to the rated output power of the unit. The power per channel capability of the unit varies with the number of channels according to specifications.

The 6455A incorporates automatic level control to maintain the combined output power within the limits of the output amplifiers. The 6455A utilizes GaAS FET amplifier modules for amplification of the RF signal.

The trays comprising the unit are standard 19-inch rack mount assemblies and are supplied with or without a cabinet. The unit is supplied complete with mounting hardware and cabinet slides.

Parameters and specification for operation of the 6455A are provided on the following pages, and a complete circuit description and alignment procedure are also included in this report. Refer to the overall system block diagram and the particular referenced schematics in the attached circuit description section of this report.

2.0 TECHNICAL DESCRIPTION

2.2 Technical Specifications

Type of Emissions .... TRANSLATOR (Analog)

Frequency Range...2500 to 2690 MHz

DC voltage and total current of final amplifier stage .... 10 volts DC at 32.5 amps
(Broadband Amplifier tray) (Class A - Not RF power dependent)

Total Output Power Capability .... 37.8 Watts (peak envelope)
(6.3 Watts total average max)

2.3 Performance Specifications

RF output (average):
- 4 Channels.. 1.58 W/Channel
- 8 Channel...790 mW/Channel
- 12 Channels ....525 mW/Channel
- 16 Channel ....394 mW/Channel
- 24 Channels ....263 mW/Channel
- 31 Channel ....203 mW/Channel

Nominal Input Signal Range (average power):..................... -32 to -17 dBm/Channel
- Connector...Type N
- Impeadance.. 50 ohm

Out-of-Band Power .... Per FCC Rules (21.908)
- -25 dB max (at band edges):
- -40 dB max (250.00 KHz above and 250.00 KHz below band edges):
- -50 dB max (3.00 MHz above and 3.00 MHz below band edges):
- -60 dB max (20.00 MHz above and 20.00 MHz below band edges):

Out-of-Band Power (Unoccupied Channel) .... Per FCC Rules (21.908)
- -25 dB max (at unoccupied channel edges)
- -40 dB max (250.0 KHz above and 250.0 KHz below occupied channel edges)
- -50 dB max (3.0 MHz above and 3.0 MHz below occupied channel edges)

Harmonic Products ....-60 dB max

Electrical Requirements

Power Line Voltage .... 60 VAC ±10%, 50/60 Hz

Power Consumption (System) .... 1060 Watts

Environmental

Maximum Altitude (System)... 12,000 feet (3,660m)
Ambient Temperature (system).. 0° to 50°C

Mechanical

Dimensions: (WxDxH)
- Translator Tray.................. 19" x 21" x 8.75" (48.3cm x 53.3cm x 22.2cm)
- Broadband Amplifier Tray ....19" x 30" x 10.25" (48.3cm x 76.2cm x 26.0cm)

Weight:
- Translator Tray.. 55 lbs. (24.9 kgs)
- Broadband Amplifier Tray .... 85 lbs. (38.6 kgs)

2.0 TECHNICAL DESCRIPTION

2.4 Circuit Description

The ITS-6455A Multi-Channel Translator can be subdivided further as follows:

Translator Tray (ITS-716):

- Superband Bandpass Filter
- VHF Generator
- Frequency Multiplication
- Automatic Level Control
- Bias Circuits
- Amplifier Modules
- Power Detectors
- Control Logic
- Status Indicators
- Power Supplies

Broadband Amplifier Tray (ITS-5765):

- RF Input
- RF Output
- Amplifier Modules
- Bias Circuits
- Feed Forward Correction
- Control Logic
- Switching Power Supplies
- DC to DC Converter
- Peak Detector
- Splitters
- Combiner
- Couplers

2.0 TECHNICAL DESCRIPTION

2.4 Circuit Description

General

The 6455A Broadband Translator is comprised of a translator tray and an external amplifier tray. The translator tray upconverts the multi-channel superband (202 to 408 MHz) input signal to the MMDS/ITFS frequency range. The translator tray includes automatic level control, LO frequency generation, power amplification stages, and control circuitry. The external amplifier tray amplifies the input signal from the translator using GaAS FET amplifier stages. The combined peak envelope output power of the amplifier tray is used to develop the automatic level control voltage.

Translator (ITS-716)

The superband multi-channel input signal is applied to the inuput of the translator (J4) and fed to the SuperBand Bandpass Filter w/ Amplifier module (1509-1107) which consist of two lumped element bandpass filters and two MAV-11 amplifiers. The ouput of this module is padded and applied to the IF input of the mixer (ZFM-15) where it is mixed with the LO signal.

The LO signal is generated on the VHF Generator Board (1500-1102). This board is comprised internally of a voltage controlled crystal oscillator circuit that is a modified Colpitts design . The crystal is mounted in an oven set at 60° C and operates at 1/24 of the local oscillator frequency. A PLL circuit on the VHF generator board divides a sample of the channel VCXO frequency and compares it to a divided down reference frequency generated by the 10 MHz Oscillator module (1519-1037) or to an external precise reference. The difference between the phase of the reference frequency and the divided down VCXO frequency sample causes the PLL IC to create an error output voltage or Automatic Frequency Control (AFC) voltage which is used to bias a variable capicitor in the VCXO circuit.

The output signal from the VHF Generator board is applied to the input of the X* Multiplier Board (1607-1109) which consist of three x2 broadband doublers ($2^3 = 8$). The output signal is applied to a X3 Multiplier board which consist of multiplier board that generates harmonics if the inut signal and a two section cavity filter tuned to select the third harmonic. The LO (2278 MHz) output signal of the X3 Multiplier is fed to the LO input of the mixer where it is mixed with the IF signal to produce the RF output signal.

The RF output of the mixer is fed to a Four Section Bandpass Filter (2140-1033) then to the Broadband Filter Module (2500-2700). The output of the filter is fed to the Amplifier Attenuator Module (1132-11509) input (J1). The input signal is AC coupled and amplified then applied to a "tee" configuration Pin Diode attenuator circuit. By controlling the gain of this attenuator, the output power can be regulated, maintaining a constant output regardless of minor changes in the input signal.

An external ALC bias voltage is generated by the Peak/Average Detector Board (1510-1105), which detects the peak envelope power of the combined output signal. This bias voltage is fed to the input (J1) of the ALC Control Board (1510-1103).

2.0 TECHNICAL DESCRIPTION

2.3 Circuit Description -continued

On this board the signal is amplified and adjusted in level by ALC potentiometer R9 and buffered to three output jacks (J2, J5, an J6). One output (J5) is fed to the input of the ALC Fault Sense Board (1132-1501). The ALC Fault Sense Board compares the ALC bias voltage to reference voltages, set by on board potentiometers, and will light front panel LED indicators should an out of range ALC condition occur.

A second output from the ALC Control Board (J6) is fed to the front panel meter providing external monitoring. The third output of the board (J2) provides the ALC bias voltage for the PIN Diode attenuator in the Amplifier/Attenuator Module (1132-1509). The ALC circuit may be bypasses by moving W1 on J8 to the manual position. When the ALC is disabled, the loss through the PIN Diode attenuator is adjusted by the Manual Gain potentiometer R12, which then directly controls the output in a manual fashion.

The output of the Amplifier/Attenuator Module is connected to the Three stage Amplifier Module (1510-1106) driver amplifier, which consist of three cascaded GaAs FET amplifiers (FLLFSX52WF driving a FLL171ME driving a NES2527-20B-3) with an overall gain of approximately 40 dB. The output of the Three Stage Amplifier Module is fed to the input of the 25 Watt Amplifier Module (1500-1164).

The signal is input to the 25 Watt Amplifier Module at J1 and amplified by GaAs FET Q101 (FLL105MK). Then the signal is split by a Wilkinson in phase coupler and amplified by two parallel GaAs FET amplifiers, Q201 and Q301 (both FLL200IB-3's). The signal is then combined by a Wilkinson in phase coupler and fed to the output of the module at jack J2.

Two 20 dB microstrip directional couplers, located within the module provide a forward and reflected power sample of the final output signal. Both samples a sent to the Peak/Average Detector Board which detects both samples and produces a forward and reflected metering voltage which drives the booster's front panel meter.

The DC bias drain to source currents of each FET within the Three Stage Amplifier Module and the 25 Watt Amplifier Module are set by adjusting the negative gate to source voltages which are adjusted by potentiometers located next to the corresponding FET.

The Four Section Bias Protection Board (1500-1114) supplies the two amplifier modules with both +10 VDC (operating voltage) and -5 VDC (bias voltage).

The Transmitter Control Board (1510-1103) provides the capability to control and monitor the operating status of the translator. The board is designed to protect the booster in the event of the following faults: overtemperature, loss or reduction in output power and loss of the -5 VDC GaAs FET bias voltage. The Transmitter Control Board also provides the capability to remotely control and monitor the translator status through remote operate/standby commands and remote forward power metering.

2.0 TECHNICAL DESCRIPTION

2.3 Circuit Description -continued

The booster may be configured to be powered by either a 115 VAC/60 Hz or 230 VAC/50 Hz source. The AC source enters the tray at jack J1 and is distributed to a terminal block (TB2). Varistors VR1, VR2, VR3 and VR4 provide transient and overvoltage protection to the booster. The rear panel circuit breaker (CB1) applies AC voltage to the input of the toriod transformer.

The Toroid transformer provides two 15 VAC secondary windings. The first winding is sent to a full wave bridge rectifier which supplies a positive 18 VDC to several positive voltage regulators located on the $\pm$12 VDC Power Supply Board (1500-1145). The second winding is supplied to a full wave bridge rectifier circuit located on the $\pm$12 VDC whose output is sent to a negative voltage regulator. One +12 VDC switching supply (SPL250-1012), rated at 21 amperes, is used to supply the GaAs FET amplifier modules with power.

Broadband Amplifier (ITS-5765)

The RF input signal from the driver transmitter enters the tray at J1 and is fed to the input of a 25W Power Amplifier Assembly (1586-3117). The 25W Power Amplifier Assembly consist of an Amplifier Module (1586-3104), 8 Section Bias Board (1586-3109), and DC to DC Converter (ITS-DC380-11).

The amplifier assembly provides both amplification and Feed Forward distortion cancellation. The module is subdivided into 5 functional sections: power amplifier section, feed forward correction signal section, correction signal preamplifier section, correction signal main amplifier section, and feed forward cancellation/RF output section.

The RF input signal enters the power amplifier section of the amplifier assembly at J2 and is phase and amplitude adjusted using a microstrip delay line and resistor pad network. The signal is then applied to a 3 dB Branch Line Coupler which provides a sample of the input signal to the feed forward correction signal section later in the signal path. The main output signal from the coupler is fed to the power amplifier which consist of five GaAs FET amplifiers (MGFS45V2527-1driving four parallel MGFS45V2527-1's) with an overall gain of approximately 24 dB. A 20 dB microstrip coupler provides and uncorrected (distorted) sample of the power amplifier output signal. This sample is used in the feed forward correction signal section of the module which the generates the correction signal that will be amplified and coupled with the RF output signal to cancel the distortion created in the power amplifier.

The input signal (undistorted) sample is phase shifted 180° through a delay line and fed to the feed forward correction signal section of the assembly where it is phase and amplitude adjusted and coupled with the uncorrected signal from the output amplifier. Combining these two signals (the phase shifted (180°) input signal, and the distorted power amplifier output signal) cancels the information carrying component of the signal, leaving only the distortion of the output amplifier.

2.0 TECHNICAL DESCRIPTION

2.3 Circuit Description -continued

This correction signal is fed to the correction signal preamplifier section of the module which consist of two cascaded GaAs FET amplifiers (FLl100 driving a FLL200) with an overall gain of approximately 24 dB. The signal is then fed to the feed forward correction signal main amplifier where it is amplified to a sufficient level to cancel the distortion created by the power amplifier. The correction signal main amplifier consist of two parallel GaAs FET amplifiers (both MGFS45V2527-1) with an overall gain of approximately 12 dB.

The amplified correction signal and the phase shifted (180°) output of the power amplifier are applied to a hybrid microstrip coupler in the feed forward distortion cancellation/RF output section of the module where the signals are coupled together using a 6.5 dB Branchline Coupler, effectively canceling the distortion in the output signal. The main output signal connects to the output of the amplifier assembly at J8.

The DC biasing of the FET amplifiers in each section of the module is controlled and filtered by corresponding daughter boards which are soldered directly to the main board. The DC bias drain to source currents are set by adjusting the negative gate to source voltages which are adjusted by potentiometers on the daughter boards.

The 8 Section Bias Board distributes the -5V bias voltages and +10.4V drain voltages to the Amplifier Module as well as providing protection from an over current condition with board mounted fuses.

The -5V bias voltage is generated on board using a voltage regulator (LM377T). This bias voltage is also used as an interlock which is fed to the Power Detector/Control Board (1586-1118). If the bias voltage is lost, the control circuitry on the Power Detector/Control Board will immediately shut down the switching supply, thereby removing the drain voltages from the amplifier modules and protecting the GaAS FET devices.

Differential amplifier OP Amp circuits are used to monitor the drain currents of the FET devices. The OP Amp outputs drive LED indicators as well as an opto-isolated O/P amplifier status line.

The DC to DC converter inputs +390VDC from the Power Factor Corrected Front End Module (1586-1111) and generates two 10.8 VDC outputs using three DC to DC converter IC's (VI-B61-EU). An Enable signal from the driver transmitter is used to activate the DC to DC converter.

The output signals from the two 25 W Power Amplifier assemblies are combined into a single output signal using a 2-Way Combiner (2111-1008) module. A Reject Load Module (1586-1106) is used to absorb any reflected power. The combined signal is applied to a directional coupler (A13) which provides forward and reflective power samples to the Power Detector/Control Board.

2.0 TECHNICAL DESCRIPTION

2.3 Circuit Description -continued

The Power Detector/Control Board (1586-1118) provides the dual function of forward/reflective power detection and operating status control and monitoring capability. The board is designed to protect the amplifier in the event of one of the following faults: over temperature, loss or reduction in output power, and loss of the -5 VDC GaAs FET bias voltage. The Power Detector/Control Board also provides the capability to remotely control and monitor the amplifier status through external remote connections at J3 (25 pin D) on the rear of the tray.

The amplifier is powered through a standard 220 VAC 60 Hz source. The AC source enters the tray at jack J1, passes through a fuse protected circuit breaker, and is distributed to the Power Factor Corrected (PFC) Front End Module.

The AC source is applied to a to a terminal block (TB2) within the PFC Front End Module and distributed to a 40 W switching power supply (LPS23), a 80 W switching power supply (LPS63) and a AC/DC Power Factor Corrected 2000W supply.

The 40 W switching supply supplies +12 V to the other boards within the tray. The 80 W switching supply supplies -12 V to the other boards within the tray. The 200W AC/DC supply supplies +390 VDC to the DC to DC Converters within the 25W Amplifier Module.

2.0 TECHNICAL DESCRIPTION

2.5 Alignment Procedure

In the following procedure, the complete multi-channel translator is adjusted for optimum performance. This alignment procedure is performed by adjusting each circuit for its specified performance while observing the appropriate output parameters of the board or subassembly being adjusted.

Because of the broadband nature of the amplifier stages, this is a straightforward procedure, easily accomplished is RF test equipment is available. In this procedure, the input signals are first connected and each circuit is adjusted in sequence by connecting the test equipment to the specified point.

Equipment required:

1. Spectrum Analyzer (with tracking generator)
2. Network Analyzer
3. Power Meter
4. Multi-channel test signal
5. 30 dB Coupler
6. Attenuators
7. Digital Multimeter (DMM)
8. Frequency Counter

<u>**Translator (ITS-716)**</u>

VHF Generator, X8 Multiplier, UHF Bandpass Filter, X3 Multiplier
(A28, A29-1, A30, A31) 1500-1102, 1067-1109, 1107-1101, 1003-1004

1. Connect frequency counter to 10 MHz input cable (J3) of VHF Generator Board and adjust the 10 MHz oscillator for 10 MHz $\pm$1Hz..
2. With J2 and J3 jumpers removed, adjust R19 for -3.0 volts at TP3.
3. Monitor J15 with a spectrum analyzer and J16 with a frequency counter.
4. Adjust L3, .L4, C12 and C21 to peak output signal at J15.
5. Adjust C11 for the correct frequency $\pm$20Hz.
6. Reconnect jumpers on J2 and .J3 and reconnect J15.
7. Visually monitor DS1 to verify PLL locks. If Pll remains unlocked, use oscilloscope to minimize spikes on chip U1 by adjusting R46.
8. Monitor J2 on X8 Multiplier assembly with spectrum analyzer with center frequency set to eight times the crystal frequency.

2.0 TECHNICAL DESCRIPTION

2.5 Alignment Procedure - continued

9. Maximize the eigth harmonic (10 to 13 dBm) and minimize the seventh and nineth harmonic by adjusting C4, C6, C10, C12, C18 and C20.

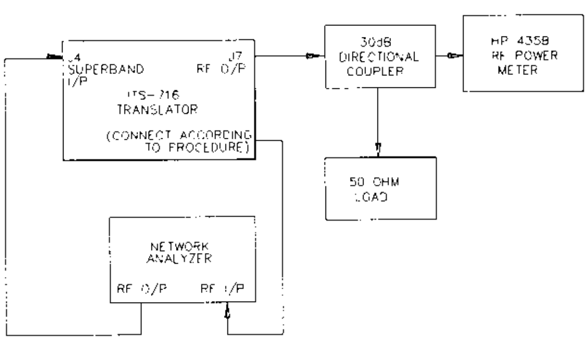
10. Reconnect J2 and connect analyzer to the output of the UHF Bandpass Filter (A30).

11. Tune filter to maximize the eighth harmonic of the crystal. Seventh and nineth harmonic should be at least 55 dB below eighth harmonic peak.

12. Monitor the output of the X3 Multiplier and tune filter to peak the LO (2278 MHz) signal.

Superband Bandpass Filter, 4 Section Bandpass Filter, 3 Section Broadband Filter (A24-A1, A26, A11) 1509-1107, 2140-1043, 2500-2700

1 . Normalize cables of the network analyzer and connect the analyzer as shown below. Set analyzer to sweep the input frequency range. Note: The andlyzer will be used to monitor various points throught the translator.



2. Connect the RF input of the analyzer toJ3 of the Super band Bandpass Filter (A24-A1) and tune C2, C3, C4 C10, C11 and C12 to flatten the response of the module..

3. Move the input to the analyzer to the output of the Superband Bandpass Filter (J2) and retune capacitors for flat response

4. Disconnect analyzer snd set to sweep from 2500 to 2700 MHz. Normalize cables then connect analyzer output to the input of the 4 Section Bandpass Filter (A26). Connect the analyzer input to J5 on the rear panel.

5. Tune the 4 Section Bandpass Filter to flatten response.

6. Connect the RF input of the analyzer to the output of the 3 Section Broadband Filter (A11) and tune the filter for flat response.

2.0 TECHNICAL DESCRIPTION

2.5 Alignment Procedure - continued

ALC Control Board, Amplifier Attenuator Module
(A17, A12) 151510-1103, 1132-1509

1 . Set S1 on ALC control Board to Manual Mode and adjust R12 for 1.6V at FL3 of Amplifier Attenuator Module (A12).

2. Connect the RF input to the analyzer to the output of the Amplifier Attenuator Module (J2). Place the translator into the operate mode and tune the module to flatten the response.

Three Stage Amplifier Module (A13-A1) 1510-1106

This amplifier does not contain any RF tuning adjustments. The module contains three cascaded broadband GaAsFET amplifier stages providing a nominal gain of 36 dB. The operating current for the first two stages (Q101, Q201) is controlled by a pot mounted on a bias board within the module and can be set by measuring the voltage drop across the across a resister located next to each FET. The bias for the third stage (Q301) is set by measureing the voltage drop across the 0.05 ohm resistor located on the Four Section Bias Protection Board (1500-1114).

1. With no RF signal applied and with the transator off, unsolder the drain leads located near the ferrite beads of Q201 and Q301. Connect a digital voltmeter across R104 located next to Q101. Apply AC power to the transmitter and place the transmitter into the Operate mode.

2. Adjust the bias control resistor (R102) for a reading of 5.5 mV across R104. This voltage represents a bias current of 55 mAmps on Q101.

3 . Place the translator into the standby mode and then turn the translator off. Unsolder the drain lead of Q101 and resolder the drain lead of Q201. Apply AC power to the transmitter and place the transmitter into the Operate mode. Adjust the bias control (R202) for a reading of 60 mV across R204 located next to Q201. This voltage represents a bias current of 0.6 amps on Q201.

4. Place the transmitter into the standby mode and then turn the transmitter off. Resolder the drain leads of Q101 and Q301. Apply AC power to the transmitter and place the transmitter into the Operate mode. Adjust the bias control potentiometer R303 for a reading of 100 mV across R1 on the Four Section Bias Protection Board. This represents a bias current of 2.0 amps on Q301.

The output of this amplifier is fed to the 25 Watt Amplifier Module (A13-A2).

2.0 TECHNICAL DESCRIPTION

2.5 Alignment Procedure - continued

25Watt Amplifier Module (A13-A2) 1510-1164

This amplifier does not contain any RF tuning adjustments. The module contains two cascaded broadband GaAsFET amplifier stages (one FLL105MK driving two parallel FLL200IB-3's) providing a nominal gain of ???? dB. The operating current for each device (Q101, Q201, Q301) is controlled by a pot mounted near each device within the module and can be set by measuring the voltage drop across the 0.05 ohm resistor located on the Four Section Bias Protection Board (1500-1114).

GaAS FET Transistor	Potentiometer Adjustment	Bias Protection Board Resistor	Voltage Across Bias Protection Resistor	Drain Current Calculated
Q101	R106	R2	9.0 mV	180 mA
Q201	R202	R3	240.0 mV	4.8 A
Q301	R302	R4	240.0 mV	4.8 A

The voltages needed to operate the amplifier modules are provided by the + 12V/21 A switching supplies (A6 and A8) and the ±12 VDC Power Supply board (A3) which produces the -5VDC bias voltage.

The -5 VDC supply is non-adjustable with a regulated output. To prevent damage to the GaAs FET amplifiers, the +12VDC switching supplies will not turn on until the -5VDC bias supply is present.

The +12VDC/21A switching, regulated regulated power supplies do not require any adjustment.

The output of this module is fed to the RF output jack (J7) on the rear of the tray. Connect the RF output (J7) of the translator tray to the RF input (J2) of the amplifier tray. Connect the RF output (J4) of the amplifier tray to a RF power meter through a suitable directional coupler. Connect the main output of the coupler to a suitable load.

2.0 TECHNICAL DESCRIPTION

2.5 Alignment Procedure - continued

<u>Broadband Amplifier (ITS-5765)</u>

PFC Switching Power Supply (A3, A5) VS3-73-450-0001

The 2000W Power Factor Corrected Switching Power Supply operates from a standard 220 line voltage and outputs + 390VDC which is applied to a DC to DC converter in the 25W Power Amplifier Assembly. The PFC Switching Power Supply contains no user adjustments.

40W Switching Power Supply (A6) LPS-23

The 40W Switching Power Supply supplies +12 VDC to the various boards within the tray. No user adjustments are provided..

80W Switching Power Supply (A4) LPS-63

The 80W Switching Power Supply supplies -12 VDC to the various boards within the tray. No user adjustments are provided..

25W Amplifier Assembly (A1, A2, A3, A4) 1586-1117

The 25 Watt Amplifier Assembly is a wideband GaAs FET array that is factory pre-tuned to cover the particular channel frequency.

This Amplifier module does not contain any RF tuning adjustments. The module contains GaAs FET amplifiers. The operating current for each device (Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11 and Q12), with no drive applied, is controlled by a pot mounted on a bias board within the module, next to each corresponding FET, and can be set by measuring the voltage drop across the the corresponding 0.05 Ω resistors on the bias protection board. See chart below.

GaAs FET Transistor	Potentiometer Adjustment	Bias Protection Board Resistor	Voltage Across Bias Protection Resistor	Drain Current Calculated
Q4	R802	R58	.175V	7.0A
Q5	R802	R64	.175V	7.0A
Q6	R802	R121	.175V	7.0A
Q7	R802	R67	.175V	7.0A
Q8	R802	R122	.175V	7.0A
Q9 & Q10	R802	R63	.175V	2.38A
Q11	R802	R2	.175V	7.0A
Q12	R802	R1	.175V	7.0A

2.5 Alignment Procedure--continued

8 SECTION BIAS PROTECTION BOARD (A1) 1586-1109

There is one 8 Section Bias Protection Board located in each of the two 25 Watt Power Amplifier Assemblies.

These boards provide over current fuse protection and operating status LED indication of the amplifier modules. These boards also contain bias resistors used to set the operating current of the FET amplifiers within the amplifier modules (see 25 Watt Amplifier Assembly set up above). No user adjustments are provided on the board.

POWER DETECTOR/CONTROL BOARD (A6) 1586-1118

Using a dummy load and a directional coupler with a calibrated power meter the Forward and Reflective power may be calibrated as follows:

1. To calibrate forward power on the front panel meter, first connect a suitable rated load and a calibrated power meter through a directional coupler to the RF output jack (J4) on the rear of the tray. Place the driver transmitter into manual mode operation.
2. Place the driver transmitter into the Operate mode.
3. Apply a digital IF test signal to the input of the driver transmitter and adjust the manual gain potentiometer of the driver transmitter for the full rated average output power level of the amplifier.
4. Adjust potentiometer R17 on the Power Detector/Control Board for 1V at TP2.
5. Remove the load connected to the amplifier and quickly Reflective Metering potentiometer for 1V at TP3. Note: This step must be performed quickly as to not sustain damage to the FET devices.

2.0 TECHNICAL DESCRIPTION

2.6 Block Diagrams

System Block Diagram:

The following is a system block diagram for the 6455A Multi-Channel Translator. Detailed Block Diagrams and Schematics are included in Exhibit II.