8. OPERATIONAL DESCRIPTION - MODEL Axcera-835A-6

8.1 General Description

The 835A-6 is a complete 6000-watt UHF solid-state, internally diplexed television transmitter. It operates at a nominal visual output power of 6000 watts peak sync and an average aural output power of 600 watts, at an A/V ratio of 10 dB, 10% sound.

8.2 Technical Specifications

Type of Emissions:
- Visual 5M75C3F
- Aural 250KF3E

Frequency Range..... 470 MHz to 860 MHz (any 6-MHz channel)

Output Power
- Visual ..... 6000 watts peak sync
- Aural ..... 600 watts average

Maximum Power Rating
- Visual ..... 6000 watts peak visual
- Aural ..... 600 watts average aural

Power Consumption ..... 20,200 watts

8.3 Performance Specifications

Visual Performance

Operating Frequency Range ..... 470 MHz to 860 MHz

RF output - Nominal:
- Power ..... 6000 watts peak sync
- Impedance ..... 50 ohms
- Connector ..... 3 1/8" EIA

Visual Sideband Response:
- -3.58 MHz ..... -42 dB
- -1.25 MHz and below ..... -20B
- -0.5 MHz to +3.58 MHz..... ±0.5 dB
- 3.58 MHz to 4.18 MHz..... +0.5, -1.0 dB

Variation of Frequency Response with Brightness..... ±0.5 dB
Differential Phase ..... ±3°
Incidental Phase Modulation..... ±3°
Differential Gain 5%
Low Frequency Linearity 5%
Intermodulation Products ..... -52 dB or better
Output Variation (Over 1 Frame) 2%
Regulation of Output..... 3%

Signal-to-Noise Ratio ..... 55 dB

2t K-Factor 2%
Harmonic Radiation ..... -60 dB or better
Spurious (>3 MHz from channel edge) ..... -60 dB or better
Carrier Frequency Stability..... ±1 kHz

Aural Performance

RF Output – Nominal
- Power ..... 600 watts
- Impedance ..... 50 ohms
- Connector ..... 3 1/8" EIA

Frequency Deviation Capability..... ±75 kHz
Distortion 5%
FM Noise .....-60 dB
AM Noise .....-50 dB
Aural to Visual Separation .....4.5 MHz, ±100 Hz

Composite Audio Input (multi-channel sound)
Input Level .....1V peak, nominal
Input Impedance..... 75 ohms, unbalanced

Frequency Range
±0.1 dB response.....50 Hz to 50 kHz
±0.5 dB response.....30 Hz to 120 kHz

Monaural Audio Input
Input Level ..... 0 to +10 dBm
Input ..... 600 ohms, unbalanced
Frequency Range (±0.5 dB response) .....30 Hz to 15 kHz
Pre-emphasis..... 75us

Subcarrier Input
Input Level .....1V peak, nominal
Input Impedance..... 75 ohms, unbalanced
Frequency Range (±0.5 dB response) ..... 20 kHz to 120 kHz

Electrical Requirements

Power Line Voltage .....230 volts, 1 phase or 3 phase 50/60 Hz
Power Consumption .....20,200 watts

Environmental

Maximum Altitude .....8,500 feet
Operational Temperature Range .....0°C to +50°C

Mechanical

Dimensions:
- Width .....66 inches
- Depth .....34 inches
- Height.....80 inches
- Weight..... 1650 lbs

8.4. System Overview

The 835A-6 (1316-1000) is made up of the trays/assemblies listed in Table 8-1.

Table 8-1. 835A-6 Major Trays and Assemblies

MAJOR ASSEMBLY DESIGNATOR	TRAY/ASSEMBLY NAME	DRAWING NUMBER
A1	UHF Exciter	1278-1400
A4, A5	Variable Phase/Gain	1245-1200
A2, A3	Amplifier Array, 2-3 kW	1278-1300

8.4.1 UHF Exciter Tray

The (A1) Single UHF Exciter Assembly (1278-1400) is part of the 835A-6 UHF Transmitter. The Assembly contains (A1) a UHF Exciter Tray (1245-1100), (A4 & A5) two Variable Phase/Gain Trays (1245-1200), (A6) a Metering Panel (1245-1400), (A8) an Exciter AC Distribution Assembly (1245-1500) and (A9) a Remote Interface Assembly (1245-1801).

The (A1) UHF Exciter Tray (1245-1100), takes the Baseband Audio and Video Inputs and mixes them with internally generated 45.75 MHz and 41.25 MHz IFs. The IFs are combined and the Combined IF is upconverted to the On Channel RF by mixing it with a L.O. signal generated by the Channel Oscillator Assembly. The RF Output of the UHF Exciter at J15 connects to (A3) a Splitter which splits the RF two ways with the RF Output #1 connected to the input of the (A5) Variable Gain/Phase Tray (1245-1200) and the RF Output #2 connected to the input of the (A4) Variable Gain/Phase Tray (1245-1200). The output of the (A4) Variable Gain/Phase Tray connects to (A2) the Side A Amplifier Assembly (1278-1300). The output of the (A5) Variable Gain/Phase Tray connects to (A3) the Side B Amplifier Assembly (1278-1300).

8.4.1.1 Control and Status

The Control and Status of the Transmitter are provided by the Meter indications on the Metering Panel and the Variable Gain Phase Trays. There are also Control, Status and LED Indications located on the front panel of the UHF Exciter Tray. The switches and LED indicators, which are mounted so that the switches and LEDs are operated or viewed from the front Panel of the UHF Exciter, are part of the Transmitter Control Board (1245-1101). On the UHF Exciter Tray, switch (S1) is an Operate/Standby Switch that provides the Operate Commands (Enables), when in Operate, to each of the Amplifier Arrays. The Enable is needed to turn on the Switching Power Supplies located in each of the UHF Amplifier Trays. When the UHF Exciter is in Operate, the Green LED (DS2) is On and when in Standby the Amber LED (DS1) is On. NOTE: If the Transmitter does not switch to Operate, when S1 is switched to Operate, check that a Dummy Jumper Plug is connected to Jack J7, with a Jumper between Pins 1 & 2, located on (A9) the Remote Interface Assembly in the Single UHF Exciter Assembly. The Jumper provides the Interlock to the UHF Exciter needed for the operation of the Transmitter. If the Interlock is present, the Green LED (DS5), located on the Transmitter Control Board, should be lit.

Operation of the Transmitter is controlled by the front panel switches located on the UHF Exciter Tray. During Normal operation of the Transmitter, Switch S2 should be in

the Auto position. The front panel of the UHF Exciter also has LEDs that indicate a Video Fault (Loss), Red LED (DS9) and a VSWR Cutback, Amber LED (DS7).

8.4.1.2 Baseband Input and Remote Connections

The Baseband Video and Audio Inputs to the Transmitter, connect to the (A9) Remote Interface Panel located on the rear of the Single UHF Exciter Assembly. The Baseband Video Input connects to Jack J2 that is wired to J1 on the Exciter. The Baseband Audio Input connects to the Terminal Block TB1 for Balanced Audio or to Jack J6 that is wired to J3 on the Exciter, for Composite, Stereo, Audio.

Remote Monitoring and Operation of the Transmitter is provided through the Jacks (J8, J9 & J10) located on (A9) the Remote Interface Assembly mounted toward the rear of the Single UHF Exciter Assembly. Jack (J7) should have a dummy plug connected to it, which has a jumper connected between Pins 1 & 2, that provides the Interlock to the Exciter needed to operate the Transmitter. If the Jumper is missing, the Transmitter will not switch to Operate. If remote connections are made to the Transmitter they should be made through the plugs provided in the Installation Material as noted on the Interconnect Drawing (1278-8400) for the Single UHF Exciter.

8.4.1.3 AC Input

The Single UHF Exciter Assembly needs an AC input of 208/240 VAC at 20 Amps. The AC Input to the Single UHF Exciter Assembly connects to (A8) the AC Distribution Assembly, UHF Exciter Assembly (1245-1500) located in the right, center rear of the Cabinet. The Assembly contains the 4 Terminal Block (TB1) to which the 208/240 VAC connects. Line 1 to TB1-1, Line 2 to TB1-3 and Safety Ground to TB1-2. The AC Distribution Panel contains one Circuit Breaker that supplies the AC to the rest of the Single Exciter Assembly.

The Input AC is connected to (CB1) the Main AC Circuit Breaker (20 Amps). The output of CB1 has three MOVs, VR1, VR2 and VR3, connected to it, one connected from each leg of the Input AC to ground and one across the two legs. The AC output of CB1 connects to A1 and A2, which are IEC Outlet Strips. The (A1) Exciter 1 and the (A4) Variable Gain/Phase Tray plug into the (A1) IEC Outlet Strip. The (A5) Variable Gain/Phase Tray, the (A8) Metering Panel and the Optional (A7) Receiver Tray plug into the (A2) IEC Outlet Strip.

When the Circuit Breaker CB1, mounted on the AC Distribution Assembly, is switched On, +12 VDC from the Exciter, is supplied to each of the Amplifier Array Cabinets for the operation of the LED Status Indicators in each of the UHF Amplifier Trays.

8.4.2 Variable Phase/Gain Tray

The Variable Phase/Gain Tray sets the phase and gain adjustments of the RF to provide maximum output when the outputs of the two Amplifier Arrays are combined. There are two Variable Phase/Gain Trays in the 835A UHF Transmitter, each controlling the phase and gain of one of the two Amplifier Arrays.

The Tray is made up of (A4) a Variable Phase/Gain Assembly (1245-1204), which contains (A4-A1) a Variable Phase/Gain Board (1245-1201), (A5) a Metering Board (1245-1202) and (A3) a +15V/-12V Power Supply Board (1245-1203).

The RF Input signal connects to the rear panel of the Tray at J1 and is cabled to J1 on (A4-A1) the Variable Phase/Gain Board (1245-1201) that is mounted inside (A4) the Variable Phase/Gain Assembly (1245-1204) for RFI and EMI protection. The Variable Phase/Gain Board contains two main circuits, one for ALC and one for Phase adjustment of the RF signal. A front panel mounted ALC adjust Pot (A8) connects through (A5) the Metering Board (1245-1202) to J5 on the Board which controls the output level to the tray. A front panel mounted Phase adjust Pot (A7) connects through the Metering Board to J4 on the Variable Phase/Gain Board which controls the phasing of the RF output. The Phasing adjust is needed to phase the two RF outputs of the Amplifier Arrays, when they are combined, to achieve maximum output. The phase and level controlled RF signal connects to J2 of the Variable Phase/Gain Board which connects to the RF Output Jack J3 located on the rear panel of the Tray. A sample of the RF from the Variable Phase/Gain Board connects to J4 the output Sample Jack located on the front panel of the Tray.

A detected output sample level connects to the Metering Board at J7 Pins 3 & 4 which is connected to the % Power Level position on (A6) the front panel meter of the Tray. S1 is a two position front panel mounted switch that allows the operator to view the ALC Level, typically reads .6V - 1V, or the % Power, which is calibrated for 100 % is +23 dBm output.

The +15 VDC and -12 VDC needed to operate the boards in the Tray are generated on (A3) the +15 VDC/-12 VDC Power Supply Board (1245-1203). 120/240 VAC connects to the Tray at J2 on (A1) the Power Entry Module Assembly. Jumpers on the Power Entry Module are set for the desired AC Voltage Input. The assembly contains an On/Off Switch, two 4 Amp Fuses and three Varistors for AC line protection. The AC is connected to (A2) a step down Toroid that supplies an 18 VAC output to the +15VDC/-12VDC Power Supply Board. The +15VDC/-12VDC Power Supply Board supplies voltage regulated +15 VDC and -12 VDC Outputs to the rest of the Tray. The Green LED DS1 is lit if +15 VDC is present and the Green LED DS2 is lit if -12 VDC is present at the output of the +15V/-12V Power Supply Board.

8.4.3 Amplifier Array

There is one Amplifier Array Assembly in the 835A 3 kW UHF Solid State Internally Diplexed Television Transmitter. There are two Amplifier Array Assemblies in the 835A 4-6 kW UHF Solid State Internally Diplexed Television Transmitter The (A2 & A3) Amplifier Array Assemblies (1278-1300) are identical and configured according to the output power needed. Each Amplifier Array contains (A9-A1) an 8 Way Splitter (ZFSC-8-43), four to six outputs of the splitter are used, depending on output power, (A1 thru A6) UHF Amplifier Trays (1281-1100), the number used depending on the output power needed, (A7) a 4, 5 or 6 Way Combiner, depending on the output power needed, (A8) an Output Coupler (1016-1043), (A10) an AC Distribution Assembly (1278-1200) for Single Phase AC Input or (1278-1100) for Three Phase AC Input and (A11) an Interface Panel. If the Amplifier Array contains the 2.5 kW or 3 kW Output Power Kit, the Array also has (A12) a Reject Load Assembly (1278-1312). In the 2 kW configuration no Reject Load Assembly is needed.

The output of the (A4) Variable Phase/Gain Tray, located in the Exciter Assembly, connects to (A2) the Side A Amplifier Assembly (1278-1300). The output of the (A5) Variable Phase/Gain Tray connects to (A3) the Side B Amplifier Assembly (1278-1300). The RF Input from the Variable Phase/Gain Tray connects to the RF Input Jack J1 on (A11) the Interface Panel located in the Amplifier Array Assembly. The RF is

cabled to the COM Input of (A9-A1) the 8 Way Splitter, which splits it eight ways maximum. Four to Six of the RF outputs of the Splitter, depending on the output power needed, are connected to J1, the RF Input Jack on each of the up to six UHF Amplifier Trays (1281-1100). The outputs of the Splitter that are not used are terminated with 50Ω. Each of the UHF Amplifier Trays amplify the RF signals to the power needed to produce a total of 4000 - 6000 Watts Peak of Sync after combining of the two Amplifier Assemblies, with a maximum of 600 Watts Peak of Sync output per Tray. The outputs of the UHF Amplifier Trays are combined in (A7) the 4, 5 or 6 Way Combiner that provides half of the power needed to generate the output power of the Transmitter. In Amplifier Arrays which contain a 2.5 kW or 3.0 kW Amplifier Array Power Level Kit, the Reject Outputs of the Combiner are connected to (A12-A2) the Combiner Reject. Load Board (1278-1311) in (A12) the Reject Load Assembly (1278-1312). In the 2 kW Amplifier Array Power Level, the Combiner has a different Reject Load Assembly. The RF Output of the Combiner is cabled to (A8) the Output Coupler Assembly (1016-1043). The Output Coupler Assembly supplies a Forward and a Reflected Power Sample of the output from the Amplifier Assembly which connects through the SMA Connectors J2 and J3 located on the Interface Panel to the Metering Panel located in the UHF Exciter Assembly.

In each UHF Amplifier Tray, a Forward Power Sample and a Reflected Power Sample, from the 4 Way Combiner Board, are connected to the Dual Peak Detector Board, Single Supply which provides peak detected forward samples to the Amplifier Control Board that supplies the samples to the front panel meter of the UHF Amplifier Tray and also to the Interface Panel for remote monitoring. Before exiting each UHF Amplifier Tray the RF is fed through a Circulator which protects the Tray from high VSWR conditions. The Reject Port of the Circulator provides a Reject Sample to the 4 Way Combiner Board which supplies the Reflected Sample to the Dual Peak Detector Board, Single Supply located in the UHF Amplifier Tray that connects to the front panel meter. The outputs of the (A2 & A3) Amplifier Array Assemblies connect to (A4) a Hybrid Combiner (55223A) which combines the outputs into a single output.

The two Enable (Operate) Commands from the UHF Exciter Tray, located in the UHF Exciter Assembly, connect to the Terminal Block (A9-TB2) mounted in each Amplifier Array. The terminal block splits the Enables in each array and supplies them to all of the UHF Amplifier Trays. The Enable is needed to turn on the Switching Power Supply located in each UHF Amplifier Tray. If the Amplifier Array contains an External Exhaust Kit, then a Fan Enable is supplied at J4-19 with +12V at J4-20 that connect to the fan mounted on the roof which turns it on.

8.4.3.1 Main AC Input

Each Amplifier Assembly needs an AC Input of 208/240 VAC at 100 Amps Single Phase or 208/240 VAC at 55 Amps Three Phase wired to it. The 208/240 VAC Input to each Amplifier Assembly connects to (A10) the AC Distribution Assembly, Amplifier Array (1278-1200 Single Phase or 1278-1100 Three Phase) located on the right side, center rear of each Cabinet. Each AC Distribution Assembly contains the Terminal Block (TB1) to which the 208/240 VAC connects. For Single Phase operation connect Line 1 to TB1-1A, Line 2 to TB1-3A and Ground to TB1-4A and for Three Phase operation, connect Line 1 to TB1-1A, Line 2 to TB1-2A, Line 3 to TB1-3A and Ground to TB1-4A. The AC Distribution Panel contains from five to seven Circuit Breakers that supply the AC to the rest of the Amplifier Assembly. The Input AC from TB1 is connected to (CB1) the Main AC Circuit Breaker (100 Amps for Single Phase or 80 Amps for Three Phase) which distributes the 220 VAC to the other circuit breakers (CB2-CB7). The

CB6 and CB7 Circuit Breakers are used if the extra Amplifier Trays are needed. The output of CB1 has three MOVs, VR1, VR2 and VR3 for Single Phase or six MOVs VR1-VR6 for Three Phase, mounted to it, one connected from each leg of the Input AC to ground and one across the each of the legs.

The switched Input AC is wired through a maximum of six Circuit Breakers, CB2-CB7, to the UHF Amplifier Trays in the Amplifier Array Cabinets. CB2 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A1) UHF Amplifier Tray. CB3 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A2) UHF Amplifier Tray. CB4 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A3) UHF Amplifier Tray. CB5 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A4) UHF Amplifier Tray. The CB6 and CB7 circuit breakers are part of the (Optional) 2.5 kW or 3 kW High Power Kit and may not be present. CB6 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A5) UHF Amplifier Tray. CB7 is a 20 Amp Circuit Breaker, which supplies the AC voltage to the (A6) UHF Amplifier Tray. In the (Optional) 2.5 kW and 3 kW Amplifier Array Assemblies circuit breakers CB8 and CB9 apply AC to the (A12-A3 & A12-A5) Fans located on (A12) the Reject Load Assembly.

When the Circuit Breaker CB1 on the AC Distribution Assembly in the UHF Exciter Assembly is switched On, +12 VDC from the Exciter is supplied to each of the Amplifier Array Cabinets. In the Amplifier Array, the +12 VDC is split and connected to each of the UHF Amplifier Trays in the Amplifier Assemblies for operation of the LED Status Indicators in the Tray.

8.4.4 AC Distribution Assembly

The AC Distribution Assembly, Single Phase, Amplifier Assembly (1278-1200) distributes the Main AC Input, 208/240 VAC @ 100 Amps, to the individual Trays in the Amplifier Cabinet which make up the Amplifier Array.

The 208/240 VAC Single Phase Main AC Input to the Amplifier Cabinet connects to the Terminal Block TB1, Line 1 to TB1-1A, Line 2 to TB1-3A and Safety Ground to TB1-4A.

The 208/240 VAC Main AC Input is wired from the Terminal Block TB1-1B (Line 1) to the 100 Amp Circuit Breaker CB1-1 and TB1-3B (Line 2) to the Circuit Breaker CB1-5. The switched Main AC Input is wired from the main circuit breaker to the up to six 20 Amp Circuit Breakers, CB2-CB7, that distribute the AC to the up to six UHF Amplifier Trays in the Amplifier Array and two 3A circuit breakers CB8 and CB9 which connect the AC to the Fan (A12-A3) mounted on the Reject Load Assembly. The number of 20 Amp circuit breakers is determined by the number of Amplifier Trays which is determined by the output power of the Transmitter in which the Amplifier Assemblies are used. Four circuit breakers, CB2-CB5, are needed for a 4 kW Transmitter, five circuit breakers, CB2-CB6, are needed for a 5 kW Transmitter and six circuit breakers, CB2-CB7, are needed for a 6 kW Transmitter. Three MOVs, for surge and transient protection, are connected to the AC Lines from the Circuit Breaker. VR4 and VR6 connect from the AC Lines to Ground and VR3 connects across the AC Lines.

CB2 is a 20 Amp Circuit Breaker which protects the AC connected through J1 on the AC Distribution Assembly to J4 on the (A1) UHF Amplifier Tray. CB3 is a 20 Amp Circuit Breaker which protects the AC connected through J2 on the AC Distribution Assembly to J4 on the (A2) UHF Amplifier Tray. CB4 is a 20 Amp Circuit Breaker which protects the AC connected through J3 on the AC Distribution Assembly to J4

on the (A3) UHF Amplifier Tray. CB5 is a 20 Amp Circuit Breaker which protects the AC connected through J4 on the AC Distribution Assembly to J4 on the (A4) UHF Amplifier Tray. CB6 and CB7 are 20 Amp Circuit Breakers that are added to the AC Distribution Assembly when the two extra UHF Amplifier Trays are needed for the 5 kW and 6 kW Transmitters. CB6 is a 20 Amp Circuit Breaker which protects the AC connected through J5 on the AC Distribution Assembly to J4 on the (A5) UHF Amplifier Tray. CB7 is a 20 Amp Circuit Breaker which protects the AC connected through J6 on the AC Distribution Assembly to J4 on the (A6) UHF Amplifier Tray.

8.4.5 Metering Control Panel

NOTE: This description is for a 835A Transmitter with two, Side A and Side B, Amplifier Arrays. In a 3 kW Transmitter only Side A is used therefore all references to Side B should be ignored.

The Metering Panel provides three meters, one for Combined, one for Side A Amplifier Array and one for Side B Amplifier Array Outputs. The Side A Meter (A15) displays the % Forward and the % Reflected Power samples for the Side A Amplifier Array. The Side B Meter (A17) displays the % Forward and the % Reflected Power samples for the Side B Amplifier Array. The Combined Meter (A13) displays the % Reject, % Visual, % Aural and the % Reflected Power samples for the Combined Output of the 4-6 kW Transmitter. The Metering Panel also takes the ALC Reference Inputs from the (A4 & A5) Variable Phase/Gain Trays and splits them six ways which are then connected to the UHF Amplifier Trays in the two amplifier arrays.

The Metering Panel (A6) contains (A4, A5, A6 & A11) four Splitter Boards (1181-1002), (A7, A8 & A9) three Dual Peak Detector Modules (1555-1271 or 1159965), (A10) a Visual/Aural Metering Board (1265-1309 or 1265-1325) and (A3) a ±12V Power Supply Board (1062-1013). The (A13) Front Panel Meter is for Combined Output Power which is controlled by (S1) the Meter Control Switch, the (A15) Front Panel Meter is for Side A Output Power with (S2) the Meter Control Switch and the (A17) Front Panel Meter is for Side B Output Power with (S3) the Meter Control Switch.

The (A4) Splitter Board (1181-1002) takes the ALC reference from the (A4) Variable Phase/Gain Tray and splits it six ways which connect to the UHF Amplifier Trays mounted in the Side A Amplifier Array. The (A5) Splitter Board (1181-1002) takes the ALC reference from the (A5) Variable Phase/Gain Tray and splits it six ways which connect to the UHF Amplifier Trays mounted in the Side B Amplifier Array.

The (A10) Visual/Aural Metering Board has a Combined Forward Sample from the Output Coupler Assembly of the Transmitter connected to J1 on the Board where it is split. One Forward Sample connects to J2 on the board that is cabled to J9, the Transmitter Output Sample Jack, located on the front panel of the Metering Panel. The Combined Forward Sample on the Visual/Aural Metering Board is split again with one Sample used to produce a Combined Visual Sample, that connects to the front panel Meter (A13) and also to the rear panel for Remote monitoring. The other Combined Forward Sample produces a combined Aural Sample that connects to the (A11) Splitter Board. The (A11) Splitter Board (1181-1002) takes the Combined Aural Sample Input from the (A10) Visual/Aural Metering Board and splits it. One of the split Aural Samples connects to the front panel Meter and the other is used for Remote Monitoring.

The (A7) Dual Peak Detector Module takes the Combined Reflected Sample Input from the (A11) Output Coupler Module and splits it. A peak detected sample of the reflected connects to the (A6) Splitter Board. The Splitter Board takes the Combined Reflected Sample Input and splits it. One of the split Combined Samples connects to the front panel Meter, one is used for Remote Monitoring and the other two connect back to the UHF Exciters for use in the VSWR Cutback circuitry. The (A7) Dual Peak Detector Module also has a Reject Sample Input from the (A7) Reject Output Coupler Module and splits it. One of the peak detected split Reject Samples connects to the front panel Meter and the other is used for Remote Monitoring.

The (A8) Dual Peak Detector Module takes a Reflected Sample from the Side B Amplifier Array which is peak detected and connected to the (A17) front panel meter. Another input to the (A8) Dual Peak Detector Module is a Forward Sample from the Side B Amplifier Array which is peak detected and connected to the (A17) front panel meter.

The (A9) Dual Peak Detector Module receives the Reflected Sample from the Side A Amplifier Array which is peak detected and connected to the (A15) front panel meter. Another input to the (A9) Dual Peak Detector Module is the Forward Sample from the Side A Amplifier Array which is peak detected and connected to the (A15) front panel meter.

The ±12 VDC needed to operate the Boards in the Metering Panel are provided by the ±12V Power Supply. The AC Input connects to J8 on (A1) the Power Entry Module Assembly (1227-1206). The input AC connects to (A2) a step down Toroid whose outputs are wired to (A3) the ±12 VDC Power Supply Board (1062-1013). The ±12 VDC outputs of the board are connected to the rest of the boards in the Metering Panel.

8.5 Control and Status

8.5.1 UHF Exciter Tray

Table 8-3. UHF Exciter Tray samples

CONNECTOR	FUNCTION
J19 - BNC	RF Output Sample (front panel)
J17 - BNC	Oscillator Sample (front panel)

Table 8-4. UHF Exciter Tray Switches

SWITCH	FUNCTION
Translator S1 Operate/Standby	The momentary switch S1 applies a ground to K1, a latching relay on the transmitter control board. K1 will switch either to Operate or to Standby depending on which direction S1 is pushed. When switched to Operate, the low Enable Commands, are applied to the four UHF Amplifier Trays. These Enables will turn on the UHF Amplifier Trays. The opposite occurs when switched to Standby.
Mode Select S2 Auto/Manual	The momentary switch S3 applies a ground to K2, a latching relay on the transmitter control board. K2 will switch the translator to Automatic or Manual depending on which direction S3 is pushed. In Automatic, the input fault command from the ALC board will control the operation of the translator. The translator will switch to Standby, after a slight delay, if the input signal is lost and will switch back to Operate, quickly, when the signal is restored. In Manual, the translator is controlled by the operator using the front panel Operate/Standby switch or by remote control.
Power Adjust (R1)	The 5-kΩ pot sets the ALC level on the ALC board that sets the output power of the translator.

SWITCH	FUNCTION
S3 - % Aural Power	Reads the % Forward Aural Output Power of the UHF Exciter tray.
S3 - % Reflected Power	Reads the % of Reflected Visual Power of the UHF Exciter tray
S3 - % Visual Power	Reads the % Forward Visual Output Power of the UHF Exciter tray.
S3 - % Exciter	Reads the % Exciter Output Power Level needed to obtain 100% Output of the translator.
S3 - ALC	Reads the ALC voltage level.

Table 8-5. UHF Exciter Tray Indicators

INDICATOR	DESCRIPTION
Input Loss (Red)	Indicates that the input signal to the translator has been lost. The fault is generated on the ALC board in the UHF Exciter tray.
VSWR Cutback (Red)	Indicates that the reflected power level of the translator has increased above 20%; this automatically cuts back the output power level to 20%. The fault is generated on the transmitter control board in the UHF Exciter tray.
Operate (Green)	Indicates that the translator is in the Operate mode.
Standby (Amber)	Indicates that the translator is in the Standby mode.
Auto (Amber)	Indicates that the translator is in the Auto mode.
Manual (Green)	Indicates that the translator is in the Manual mode.

8.5.2 UHF Amplifier Tray

Table 8-6. UHF Amplifier Tray samples

CONNECTOR	FUNCTION
J5 - BNC	Module O/P Sample (front panel)

Table 8-7. UHF Amplifier Tray Switches

SWITCH	FUNCTION
S2 - % Output Power	Reads the % Output Power of the UHF Amplifier tray, 100% = 600 watts Peak of Sync Visual + Aural.
S2 - % Reflected Power	Reads the % of Reflected Output Power of the UHF Amplifier tray, <20% with all Amplifier trays operating.
S2 - Power Supply	Reads the Power Supply Voltage, +26.5 VDC of the UHF Amplifier tray.
A10-R6 Control	Adjusts the gain of the RF output when the Amplifier Control Board is in the AGC mode.
A10-R5 Control	Adjusts the phase of the RF output, approximately 70 degrees.

Table 8-8. UHF Amplifier Tray Indicators

INDICATOR	DESCRIPTION
Enable (Green)	Indicates that Enable, Operate Command, is applied to the UHF Amplifier Tray from the UHF Exciter Tray.
Overdrive (Red)	Indicates that the level of drive is too high. The protection circuit will limit the drive to the set threshold. The fault is generated on the Amplifier Control Board.
VSWR Cutback (Red)	Indicates that the reflected power level of the tray has increased above 50%; this automatically cuts back the output power level to 20%. The fault is generated on the Amplifier Control Board.
Overtemp (Red)	Indicates that the temperature of (A5-A6-A3) & A5-A6-A4) one or both of the thermal switches mounted on the heatsink assembly for the output amplifiers is above 173 degrees F. When this fault occurs, the Enable to the switching power supply in the affected Amplifier tray is removed immediately and it will shut down.
Input Fault (Red)	Indicates that the input RF Level to the Amplifier Trays dropped below the 0 dBm range.

8.5.3 Variable Gain/Phase Tray

Table 8-9. Variable Phase/Gain Tray Samples

CONNECTOR	FUNCTION
J4 - BNC	O/P Sample (front panel)

Table 8-10. Variable Phase/Gain Tray Switches

SWITCH	FUNCTION
S1 - % Output Power	Reads the % Output Power
S1 - ALC	Reads the ALC Voltage
A7 - Phase Adjust	Adjusts the phase of the Amplifier Array
A8 - ALC Adjust	Adjusts the output level

There are no external indicators on the Variable Phase/Gain Tray

8.5.4 Metering Control Panel

Table 8-11. Metering Control Panel Samples

CONNECTOR	FUNCTION
J9 - BNC	O/P Sample (front panel)

Table 8-12. Metering Control Panel Switches

SWITCH	FUNCTION
S2 - Side A - Forward Power	Reads % of Forward Power of Amplifier Array A
S2 - Side A - Reflected Power	Reads % of Reflected Power of Amplifier Array A
S3 - Side B - Forward Power	Reads % of Forward Power of Amplifier Array B
S3 - Side B - Reflected Power	Reads % of Reflected Power of Amplifier Array B
S1 - Combined - Visual Power	Reads % of Visual Power
S1 - Combined - Reject Power	Reads % of Reject Power
S1 - Combined - Aural Power	Reads % of Aural Power
S1 - Combined - Reflected Power	Reads % of Reflected Power

8.6 Remote Interface Connections, Transmitter

The Remote Connections, as listed below, are made if the Optional (A17) A/V Input & Remote Interface Assembly (1276-1008) **is not present** in your System. Refer to the Interconnect Drawing (1276-8000) for the proper Pin Remote Connections.

Function Type	**Connector**	**Interface**
UHF Exciter		
Translator Enable Interlock	J11-24	J11-24 & 23 must be Jumpered together for Normal Operation. (1176-1038) Jumper Jack is used.
Translator Enable Interlock Rtn.	J11-23	
Remote Control Commands:		
Translator Standby (Disable)	J11-22	Contact Closure
Translator Standby/Operate Rtn.	J11-21	
Translator Operate (Enable)	J11-20	Contact Closure
Translator Manual	J11-9	Contact Closure
Translator Auto/Manual Rtn.	J11-36	
Translator Auto	J11-8	Contact Closure
Power Level Raise (Optional)	J10-11	Contact Closure
Pwr Lvl Raise/Lower Rtn (Optional)	J10-13	
Power Level Lower (Optional)	J10-12	Contact Closure
Modulator Select (Optional)	J11-10	Contact Closure
Modulator Select Rtn (Optional)	J11-28	
Remote Status Indications:		
Translator Operate (Enable) Ind.	J10-3	50mA Max. Current Sink
Operate/Standby Ind. Return	J10-16	
Translator Standby (Disable) Ind.	J10-4	50mA Max. Current Sink
Translator Auto Indicator	J11-7	50mA Max. Current Sink
Auto/Manual Indicator Return	J11-32	
Translator Manual Indicator	J11-6	50mA Max. Current Sink
VSWR Cutback Indicator	J11-37	50mA Max. Current Sink
VSWR Cutback Indicator Return	J11-35	
Video Loss (Fault) Indicator	J11-25	50mA Max. Current Sink
Video Loss (Fault) Ind. Rtn.	J11-31	
Receiver Fault Indicator	J11-12	50mA Max. Current Sink
Visual Output Power	J11-26	1V full scale at 1kW
Visual Output Power Rtn	J11-29	source resistance
Aural Output Power	J11-27	1V full scale at 1kW
Aural Output Power Rtn	J11-30	source resistance

Remote Metering:

Reflected Power	J10-5	1V full scale at 1kW
Reflected Power Rtn	J10-17	source resistance
Exciter Output Power	J10-10	1V full scale at 1kW
Exciter Output Power Rtn	J10-22	source resistance

UHF Amplifier Trays

Remote Metering:

Forward Output Power (A6) UHF Amp	J3-3	1V full scale at 1kΩ
Forward Output Power (A6) Rtn	J3-4	source resistance
Reflected O/P Power (A6) UHF Amp	J3-5	1V full scale at 1kΩ
Reflected O/P Power (A6) Rtn	J3-6	source resistance
Forward Output Power (A7) UHF Amp	J3-3	1V full scale at 1kΩ
Forward Output Power (A7) Rtn	J3-4	source resistance
Reflected O/P Power (A7) UHF Amp	J3-5	1V full scale at 1kΩ
Reflected O/P Power (A7) Rtn	J3-6	source resistance
Forward Output Power (A8) UHF Amp	J3-3	1V full scale at 1kΩ
Forward Output Power (A8) Rtn	J3-4	source resistance
Reflected O/P Power (A8) UHF Amp	J3-5	1V full scale at 1kΩ
Reflected O/P Power (A8) Rtn	J3-6	source resistance
Forward Output Power (A9) UHF Amp	J3-3	1V full scale at 1kΩ
Forward Output Power (A9) Rtn	J3-4	source resistance
Reflected O/P Power (A9) UHF Amp	J3-5	1V full scale at 1kΩ
Reflected O/P Power (A9) Rtn	J3-6	source resistance

The above connections are made to Jack (J11), the 37 Position "D" Connector and to J10, the 25 Position "D" Connector, located on rear of the (A4) UHF Exciter or to Jack (J3), the 25 Position "D" Connector, located on the rear of the (A6, A7, A8 & A9) UHF Amplifier Trays. Refer to the Interconnect Drawing (1276-8000) for the proper Pin Remote Connections.