

7. PARTS LIST / TUNE-UP INFO

7.1 Parts List

The transmitter, can be subdivided as follows:

Exciter Tray:

- External Axciter Digital Modulator Tray
- Axciter Upconverter (Used only with Axciter Modulator Tray)
- Axciter Downconverter (Used only with Axciter Modulator Tray)
- Control & Monitoring / Power Supply Module
- Power Amplifier Module

- **RF Cabinets (Qty of 1) consisting of:**
- 4-Way Splitter (Qty of 2 – Top/Bottom)
- Power Amplifier Module (Qty of 8 – 4 Top/4 Bottom)
- Power Supply (Qty of 2 – Top/Bottom)
- 8-Way Combiner (Qty of 1)

7.2 Tune-up Information

7.2.1 System Preparation

This transmitter was aligned at the factory and should not require additional adjustments to achieve normal operation.

This transmitter takes the SMPTE 310 digital stream input and converts it to the desired UHF On Channel RF Output that is amplified to produce the systems output power level.

The Driver/Amplifier and the Power Amplifier Assemblies of the Innovator HX Series transmitter are of a Modular design and when a Module fails that module needs to be changed out with a replacement module. The failed module can then be sent back to Axcera for repair. Contact Axcera Customer Service Department at 724-873-8100 or fax to 724-873-8105, before sending in any module.

7.2.2 Module Replacement

Module replacement on the HX Series products is a relatively simple process. In the Exciter/Driver assembly, the individual modules plug into a blind mating connector located on the chassis. To replace a module, refer to the following procedure.

Loosen the two grip lock connectors, located on the front panel, at the top and bottom of the module, counterclockwise until the module releases. The Modulator, IF Processor, Upconverter and Controller/Power Supply can then be gently pulled from the unit. To remove the Driver/Power Amplifier Module in the exciter/amplifier chassis assembly, the two cables, Input and Output, connected to the rear of the chassis must be removed. These two cables and also a 6/32" x 1/2" shipping screw, located between the two connectors, must be removed before the module will slide out. After removal of the failed module, slide the replacement module in place and make certain it connects to the backplane board. Tighten the two grip lock connectors.

NOTE: If the replacement module is a driver/PA Module also replace the two cables to the rear of the exciter/amplifier chassis assembly. The 6/32" x 1/2" shipping screw does not need to be replaced. It is only used during shipping. If the replacement module

does not slide in easily, verify it is properly aligned in the nylon tracks, located on both the top and bottom of the module.

After removal of the failed module, slide the replacement module in place and make certain it connects to the blind mate connector. Replace the two cables on the rear of the IPA chassis assembly. If the replacement module does not slide in easily, verify it is properly aligned in the nylon tracks, located on both the top and bottom of the module.

Note: Each Module has an assigned slot and will not fit properly or operate in the incorrect slot. Do not try to place a Module in the wrong slot as this may damage the slot or the connectors on the backplane board. Each module has the name of the module on the front, bottom for identification and correct placement. The Modules are placed in the unit from left to right; (1) Axciter Downconverter, (2) Blank panel, (3) Blank Panel, (4) Axciter Upconverter, (5) Controller/Power Supply and (6) Driver Power Amplifier.

7.2.3 Initial Test Set Up

Check that the RF output at the DTV Mask Filter is terminated into a dummy load of at least the rated output of the system or connected to the antenna for your system. While performing the alignment, refer to the Test Data Sheet for the transmitter and compare the final readings from the factory with the readings on each of the modules. The readings should be very similar. If a reading is way off, the problem is likely to be in that module.

Switch On the main AC for the system and the individual circuit breakers on each cabinet. Check that AC is present to all systems.

This transmitter operates using a SMPTE 310 input that connects to J27, the MPEG Input Jack, located on the rear of each Axciter Modulator Trays in the exciter control cabinet. Check that the MPEG input is present. If used, check that the 10 MHz input from the GPS is connected to J9 on the Axciter Modulator.

The GUI screen, located at the top front of the Control/Exciter Cabinet, controls the functional operation of the transmitter and in turn the exciter.

The check of and the setup of the drive levels are completed using the LCD Display and the front panel adjustments located on the Axciter Modulator Tray. The level of the RF output which includes adjustment of the drive level of the Intermediate Power Amplifier and the adjustment of the linearity and phase pre-distortion to compensate for any nonlinear response of the Power Amplifiers are controlled within the Axciter Modulator Tray.

NOTE: Refer to the separate Axciter Instruction Manual for detailed information.

7.2.4 Setting Up the Output Power of the Transmitter

NOTE: In dual exciter systems perform the following procedures with Exciter A as the ON Air Exciter then repeat with Exciter B as the On Air Exciter.

The following adjustments are completed using the LCD screen located on the front panel of the Axciter Modulator Tray. On the Axciter Main Screen, push the button next to the Upconverter tab on the right side of the screen. This will open the Upconverter Main Screen. Set the AGC to Manual by selecting 3 on the keyboard entry. The screen will now indicate AGC Manual. Set the transmitter to full power using the Driver/Amplifier LCD display while viewing the Power Control Screen in the Set Up Menu.

7.2.5 Setting up of AGC 1

To set up the AGC, first the AGC must be activated. Locate the 8-position DIP switch SW1 mounted on the Control Board in the Axciter Upconverter Sled, mounted in the HX Driver/Amplifier Assembly. The Upconverter DIP Switch Position 6 must be switched ON which allows the user to modify the AGC 1 and AGC 2 gain through the Axciter Modulator.

See Figure 5-1 for an example of the Axciter Upconverter Main Screen. On the Axciter Upconverter Screen set AGC 1 to 1.5 Volts, by selecting 4 on the keyboard entry. This will cause a detail screen to appear prompting you to enter a number value. Monitor the AGC 1 Gain Value on the screen and increase or decrease the value of the number entered until the monitored reading is 1.5 Volts.



7.2.6 Setting up of AGC 2

On the Axciter Upconverter Screen set AGC 2 to 1.7 Volts, by selecting 5 on the keyboard entry. This will cause a detail screen to appear prompting you to enter a number value. Monitor the AGC 2 Gain Value on the screen and increase or decrease the value of the number entered until the monitored reading is 1.7 Volts.

After the setting up of the AGC, the AGC must be de-activated to prevent accidental changes. The Upconverter DIP Switch SW1 Position 6 must be switched OFF which locks

the AGC 1 and AGC 2 gain.

7.2.7 Setting up of Overdrive Threshold

On the Axciter Upconverter Screen set the Overdrive Threshold to 1.6 Volts, by selecting 7 on the key board entry. This will cause a detail screen to appear. Increase or decrease the voltage as needed until the monitored reading is 1.6 Volts.

Place the Transmitter into AGC by pushing the 3 of the key board entry on the Axciter Upconverter Screen. This will place the Transmitter AGC into Auto.

7.2.8 Axciter Relay Sample Values

RF samples to the Axciter Relay:

These levels are to be measured with a power meter before connecting them. Your installation may require RF attenuators to be placed in line with the samples to get them within the desired range.

J1 connection to the FWD power sample of the coupler before the mask filter (Non-Linear Distortion).

Level into Relay at J1 should be 0 dBm to -10 dBm. -5 dBm typical

J2 connection to the forward power sample after the mask filter (Linear Distortion).

Level into Relay at J2 should be 0 dBm to -10 dBm. -5 dBm typical, but within .5 dB of the J1 sample.

7.2.9 Upconverter Down Converter Adjustment

On the Axciter Modulator, activate the Upconverter Main screen by selecting Upconverter using the button next to it on the right side of the Axciter Main Screen. Activate the Downconverter Output Gain by pushing 2 on the key board entry. Monitor the DTVision Linear Display by pushing the button next to the DTVision Linear display on the right side of the Axciter Main Screen. At the bottom of the DTVision linear screen, locate the reading next to RMS. If this reading is between -10 dBm & 0 dBm no adjustment is needed. If it is not, adjust the "Downconverter Gain", then view the RMS value until it is within the -10 dBm to 0 dBm range.

7.2.10 System Calibration of Forward and Reflected Powers Using the HX Driver / Amplifier

7.2.10.1 Forward Power Calibration

Check that transmitter is at 100% output power, as shown on the LCD display on the (A3) HX Driver/Amplifier in the Set Up menus.

Measure with a VOM, TP31-14, Red, and TP31-12, Black, at the terminal block TP31 located on the rear chassis of the (A3) HX Series Driver/Amplifier Chassis Assembly. Adjust R9, Forward Calibration Adjustment, on the (A4) Dual Peak Detector Board (1159965) for a reading of .8VDC on the VOM. Locate the Forward Power Adjust screen on the HX Driver/Amplifier LCD display in the Set Up menus and adjust the up or down arrow as needed to achieve 100 % output power.

This completes the forward power set up.

7.2.10.2 Reflected Power Calibration

Switch the transmitter to Standby. Remove the connector that is on Jack J2, on the (A4) Dual Peak Detector Board (1159965), and replace with the connector now on J1, also inserting a 10 dB pad in series. Switch the transmitter to operate. Monitor the LCD display on the (A3) HX Driver/Amplifier in the Set Up menus, reflected power screen. Adjust R10, Reflected Calibration Adjustment, on the (A4) Dual Peak Detector Board (1159965) for a reading of 10% on the display. Switch the transmitter to Standby. Move the connector back to J1 while removing the 10 dB pad. Replace the original connector onto J2.

NOTE: In a dual exciter system, repeat the above procedure with Exciter B selected as the On Air Exciter.

This completes the set up and adjustment of the transmitter.