

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION	
Section #	Page #
1.1 Manual Overview	1-1
1.2 Assembly Designators	1-1
1.3 Safety	1-1
1.4 Maintenance	1-2
1.5 Material Return Procedure	1-2
1.6 Warranty for Axcera Products – Limited One-Year Warranty	1-3
1.6 Introduction Material	1-4
CHAPTER 2 SYSTEM DESCRIPTION	
2.1 System Overview	2-1
2.1.1 UHF Exciter Assembly	2-1
2.1.2 2-3 kW Amplifier Arrays	2-2
2.1.2.1 (Optional) External Exhaust Kit	2-4
2.1.3 Transmitter Output Assemblies	2-4
2.2 Control and Status	2-5
2.2.1 UHF Exciter Tray	2-6
2.2.2 UHF Amplifier Trays, LDMOS	2-8
2.3 Input and Remote Connections	2-9
2.4 Main AC Input	2-13
CHAPTER 3 INSTALLATION AND SETUP PROCEDURES	
3.1 Site Considerations	3-1
3.2 Unpacking the Cabinets and Trays	3-4
3.3 Installing the Cabinets and Trays	3-6
3.3.1 AC Connection to the UHF Exciter Cabinet	3-6
3.3.2 AC Connection to the Amplifier Cabinets	3-6
3.3.2.1 Three Phase AC Connection to the Amplifier Cabinets	3-6
3.3.2.2 Single Phase AC Connection to the Amplifier Cabinets	3-7
3.3.3 Output Connections	3-7
3.4 Setup and Operation	3-8
CHAPTER 4 CIRCUIT DESCRIPTIONS	
4.0 UHF Exciter Assembly	4-1
4.0.1 Control and Status	4-1
4.0.2 RF, Baseband Input and Remote Connections	4-1
4.0.3 AC Input	4-2
4.1 UHF/VHF Receiver Tray	4-2
4.1.1 (A7) Filter	4-3
4.1.2 Dual Stage Amplifier Assembly	4-3
4.1.3 (A9) Channel Filter	4-3
4.1.4 Downconverter Amplifier Assembly	4-3
4.1.5 Channel Oscillator Assembly	4-3
4.1.6 (A5-A1) Multiplier Board	4-4
4.1.7 (A6) LO Filter	4-4
4.1.8 IF Filter/ALC Board	4-4

TABLE OF CONTENTS (continued)

Section #	Page #
4.1.9 (Optional) SAW Filter/Amplifier Board	4-4
4.1.10 (Optional) IF Amplifier Board.....	4-5
4.1.11 (Optional) IF Filter/Limiter Board	4-5
4.1.12 (Optional) IF PLL Board	4-5
4.1.13 (Optional) IF Carrier Oven Oscillator Board	4-5
4.1.14 +12V(3A)/-12V Power Supply Board	4-6
4.2 UHF Exciter	4-6
4.2.1 (Optional) Aural IF Synthesizer Board, 4.5 MHz.....	4-6
4.2.2 (Optional) Sync Tip Clamp/Modulator Board.....	4-8
4.2.3 (Optional) Delay Equalizer Board	4-11
4.2.4 (Optional) IF Carrier Oven Oscillator Board	4-12
4.2.5 ALC Board, NTSC.....	4-13
4.2.6 IF Phase Corrector Board.....	4-19
4.2.7 Transmitter Control Board	4-21
4.2.8 Channel Oscillator Assembly, Dual Oven.....	4-26
4.2.9 (Optional) VCXO Assembly, Dual Oven	4-26
4.2.10 (Optional) EEPROM FSK Identifier Board	4-27
4.2.11 (Optional) Composite 4.5-MHz Filter Board	4-27
4.2.12 (Optional) 4.5-MHz Bandpass Filter Board.....	4-28
4.2.13 +12V(4A)/-12V(1A) Power Supply Board	4-29
4.2.14 x8 Multiplier Enclosure	4-29
4.2.15 x8 Multiplier Board.....	4-30
4.2.16 UHF Filters.....	4-30
4.2.17 UHF Upconverter Board	4-30
4.2.18 Power Entry Module Assembly	4-32
4.3 Variable Gain/Phase Trays	4-32
4.3.1 Variable Gain/Phase Board	4-32
4.3.2 Metering Board	4-33
4.3.3 Power Entry Module Assembly	4-33
4.3.4 +15V/-12V Power Supply Board	4-33
4.4 Metering Panel	4-33
4.4.1 Splitter Board	4-34
4.4.2 Visual/Aural Metering Board.....	4-34
4.4.3 Dual Peak Detectors	4-34
4.4.4 Detector Threshold Board	4-34
4.4.5 Power Entry Module Assembly	4-35
4.4.6 $\pm 12V$ Power Supply Board	4-35
4.5 AC Distribution Assembly.....	4-36
4.6 2-3 kW Amplifier Arrays	4-36
Main AC.....	4-37
4.7 UHF Amplifier Trays, LDMOS	4-38
4.7.1 Variable Gain/Phase Board Enclosure	4-38
4.7.2 Variable Gain/Phase Board	4-39
4.7.3 1-Watt Amplifier Board Assembly	4-40

TABLE OF CONTENTS (continued)

Section #	Page #
4.7.4 1-Watt Amplifier Board.....	4-40
4.7.5 UHF Filter	4-40
4.7.6 40 Watt UHF Amplifier Assembly	4-40
4.7.7 Coupler Board Assembly.....	4-41
4.7.8 LDMOS Amplifier Assembly	4-41
4.7.9 4-Way Splitter Assembly	4-41
4.7.10 LDMOS Amplifier Assemblies	4-42
4.7.11 4-Way Combiner Assembly	4-42
4.7.12 Dual Peak Detector Enclosure.....	4-43
4.7.13 Dual Peak Detector Board	4-43
4.7.14 Amplifier Protection Board	4-43
4.7.15 Amplifier Control Board	4-44
4.8 (Optional) External Exhaust Kit	4-46
4.9 Translator Output Assemblies.....	4-47
 CHAPTER 5 DETAILED ALIGNMENT PROCEDURES	
5.0 UHF/VHF Receiver Tray	5-1
5.0.1 (A7) UHF Filter	5-1
5.0.2 Dual Stage Amplifier Board	5-1
5.0.3 (A9) UHF Filter	5-1
5.0.4 Channel Oscillator Assembly	5-2
5.0.5 Multiplier Board	5-2
5.0.6 (A6) UHF Filter	5-3
5.0.7 Downconverter/Amplifier Board	5-3
5.0.8 IF Filter/ALC Board	5-3
5.0.9 (Optional) SAW Filter/Amplifier Board	5-4
5.0.10 $\pm 12V$ Power Supply Board	5-4
5.0.11 (Optional) IF Carrier Oscillator Board	5-4
5.0.12 (Optional) IF Filter/Limiter Board	5-4
5.0.13 (Optional) IF PLL Board	5-4
5.0.14 (Optional) IF Amplifier Board	5-4
5.1 Exciter Tray with (Optional) Baseband Video and Audio Inputs	5-5
5.2 Exciter Tray with (Optional) 4.5-MHz Composite Input Kit	5-5
5.3 Exciter Tray with Receiver Tray, Baseband or 4.5-MHz Composite Input	5-6
5.3.1 (Optional) Delay Equalizer Board	5-6
5.3.2 (Optional) Composite 4.5-MHz Filter Board	5-7
5.3.3 (Optional) 4.5-MHz Bandpass Filter Board	5-7
5.3.4 (Optional) IF Carrier Oscillator Board	5-7
5.3.5 (Optional) Sync Tip Clamp/Modulator Board.....	5-7
5.3.6 (Optional) Aural IF Synthesizer Board, 4.5 MHz	5-9
5.3.7 ALC Board (Part 1 of 2)	5-10
5.3.8 IF Phase Corrector Board.....	5-11
5.3.9 ALC Board	5-11
5.3.10 UHF Upconverter Board	5-12
5.3.11 Channel Oscillator Board.....	5-12
5.3.12 x8 Multiplier Board.....	5-12
5.3.13 +12 VDC (4A)/-12 VDC (1A) Power Supply Board	5-13
5.3.14 Transmitter Control Board	5-13

TABLE OF CONTENTS (continued)

Section #	Page #
5.4 UHF Amplifier Trays, LDMOS	5-13
5.4.1 Variable Gain/Phase Board	5-13
5.4.2 1-Watt UHF Amplifier Board	5-13
5.4.3 UHF Filter	5-14
5.4.4 40 Watt Amplifier Module	5-14
5.4.5 Coupler Board Assembly.....	5-14
5.4.6 LDMOS Amplifier Module	5-14
5.4.7 4-Way Splitter Assembly	5-14
5.4.8 LDMOS Amplifier Modules.....	5-14
5.4.9 4-Way Combiner Assembly	5-14
5.4.10 Circulator	5-14
5.4.11 Dual Peak Detector Board, Single Supply	5-14
5.4.12 Amplifier Protection Board	5-14
5.4.13 Amplifier Control Board	5-14
5.4.14 +32V/2000W Switching Power Supply.....	5-14
5.4.15 Calibration of Output Power and VSWR Cutback of Tray.....	5-15
5.5 Phase and Gain Adjustment of the UHF Amplifier Trays.....	5-15
5.6 Calibration of Side A & B Amplifier Arrays Forward Output Power	5-16
5.7 Calibration of Side A & B Amplifier Arrays Reflected Output Power	5-17
5.8 Phase and Gain Adjustment for the entire Amplifier Array	5-17
5.9 Calibration of the Forward Output Power of the Translator	5-18
5.10 Calibration of the Reflected Output Power of the Translator.....	5-18
5.11 Calibration of the Reject Output Power of the Translator	5-18
5.12 IF Phase Corrector Adjustment for the Translator.....	5-19
5.13 Linearity Corrector Adjustment of the Translator.....	5-20

APPENDICES

APPENDIX A SAMPLE LOG REPORT SHEET

APPENDIX B TYPICAL OPERATIONAL READINGS

APPENDIX C BLOCK DIAGRAM / INTERCONNECT DRAWINGS

APPENDIX D SUBASSEMBLY DRAWINGS

APPENDIX E 837B SYSTEM SPECIFICATIONS

LIST OF FIGURES

Figure #		Page #
3-1	1kW Minimum Ventilation Configuration	3-4
3-2	Chassis Trak Cabinet Slides	3-6
3-3	Typical Rigid coax Reconnection Drawing.....	3-8
5-1	Waveform at TP2.....	5-8

LIST OF TABLES

Table #		Page #
2-1	UHF Exciter Assembly Trays and Assemblies	2-1
2-2	Amplifier Array Trays and Assemblies.....	2-3
2-3	UHF Exciter Tray Meters	2-6
2-4	UHF Exciter Tray Switches	2-7
2-5	UHF Exciter Tray Fault Indicators.....	2-7
2-6	UHF Exciter Tray Samples	2-8
2-7	UHF Amplifier Tray Meters	2-8
2-8	UHF Amplifier Tray Status Indicators.....	2-9
2-9	UHF Amplifier Tray Control Adjustments	2-9
2-10	UHF Amplifier Tray Sample	2-9
2-11	UHF Exciter Assembly Remote Control Interface Connections to the A/V Input and Remote Interface Assembly	2-10
2-12	2-3 kW Amplifier Array Remote Control Interface Connections to the A/V Input and Remote Interface Assembly	2-12
4-1	Fuses, Idling Currents, and Voltage Settings for the Class AB Amplifier Devices	4-44