



LTX100U/VH/VL TRANSMITTERS

INSTRUCTION MANUAL

PINEAPPLE TECHNOLOGY, INC



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Section I

Safety
Notices



I ---SAFETY NOTICES

**** READ THIS SECTION BEFORE INSTALLATION ****

SEVERE ELECTRICAL SHOCK OR BURNS MAY OCCUR
IF THIS EQUIPMENT IS USED IMPROPERLY.

NEVER WORK ON THIS EQUIPMENT ALONE. ALWAYS HAVE ANOTHER PERSON PRESENT
WHILE WORKING ON ELECTRICAL CIRCUITS OR MOVING EQUIPMENT. COMMUNICATIONS
TO EMERGENCY SERVICES SHOULD BE AVAILABLE AT ALL TIMES.

BEFORE CONNECTING THIS EQUIPMENT TO ANY AC ELECTRICAL SOURCE READ THE
SECTION ON INSTALLATION. ALL ELECTRICAL WIRING FOR THIS EQUIPMENT MUST BE
PERFORMED BY QUALIFIED ELECTRICIANS. ALL WIRING MUST BE COMPLIANT WITH
LOCAL ELECTRICAL CODES.

POWER AMPLIFIERS AND SUPPLIES ARE HEAVY. TO INSTALL THIS EQUIPMENT IN RACKS
USE TWO (2) PERSONS TO AVOID POSSIBLE INJURIES.

NEVER OPEN THE CABINET ENCLOSURE OR UNPLUG CABLES OR WIRES WHILE THIS
EQUIPMENT IS OPERATING.

***ALL SERVICE WORK MUST BE PERFORMED BY QUALIFIED TECHNICIANS ONLY.
IF ONE IS NOT AVAILABLE LOCALLY, CONTACT PINEAPPLE TECHNOLOGY, INC. FOR
A LIST IN YOUR AREA.***

Section II

Transmitter Specifications



II – LTX100U/VL/VH SPECIFICATIONS

OPERATING

| | |
|----------------------------|-----------------------------------|
| Power Output | 100 Watts P-Sync 5 Watts Aural |
| RF Output Impedance..... | 50 ohms |
| Frequency Range | |
| LTX100U..... | 470 – 806 MHz |
| LTX100VL..... | CH 2 – CH 6 |
| LTX100VH..... | CH7 – CH13 |
| Frequency Stability..... | 1 PPM or better |
| Harmonic and Spurious..... | -50 db |
| Power Consumption..... | 500W maximum |
| AC Line Voltage..... | 85 – 120 VAC Single Phase |

VIDEO PERFORMANCE

| | |
|----------------------------------|---|
| Visual Frequency Response..... | +/- 1 db across the TV channel -1.25 MHz to 4.75 Mhz relative to visual carrier. |
| Differential Gain..... | < 7% |
| Low Frequency Linearity..... | < 15% |
| Group Delay..... | Meets FCC Part 73 Rule |
| Video Input Impedance..... | 75 ohms |
| Video Input Level..... | 1 volt p-p |
| Variation of Output Power..... | < 5% |
| Regulation of Output Power..... | < 5% typical |
| Video Signal to Noise Ratio..... | < 45 db un-weighted |



AUDIO PERFORMANCE

Audio Response..... Meets FCC Pre-emphasis curve

Distortion.....< 1% THD

FM Noise..... < 50 dB or better

AM Noise.....< 40 dB or better

AM Synchronous Noise.....< 40 dB typical

GENERAL

Operating Temperature..... -10 to +35 Degrees Celsius Ambient
+14 to +95 Degrees Fahrenheit Ambient

Altitude..... 5,000 ft without additional cooling

Cooling Requirement..... Built in, except where noted

Connectors..... BNC Connector Input, N Connector Output

Weight..... 100 lbs

Dimensions Overall..... 21" x 25" x 24" (W x H x D) Standard

Section III

Transmitter Installation



III -- TRANSMITTER INSTALLATION

To ensure long and reliable trouble-free service from the LTX100U/LV/LH transmitters the following steps for installation are recommended:

1. **MECHANICAL INSTALLATION:** The LTX100U/LV/LH transmitters were designed to be installed in a building protected from the weather. The building should have a hard-surface floor such as concrete with a moisture barrier. This barrier could be pressure-treated wood sub flooring which could be anchored to the concrete and to the transmitter to make the installation earthquake resistant. For ease of operation and maintenance, the transmitter cabinet will need to be securely mounted to a raised structure at some appropriate distance above the floor.

Provisions for air inlet and exhaust from the room must allow air flow with minimal obstruction. In the event that the room temperature exceeds 35° Celsius (95° F), cooling air must be provided so that the room temperature will not exceed 35 degrees Celsius under worse case conditions.

Notice: This equipment is **HEAVY** and must be handled by professional movers with proper equipment. Any damage caused by the installers is not covered under warranty. Check to ensure that installing crews have proper insurance coverage.

2. **GROUNDING:** Transmitter grounding is **VERY IMPORTANT** and must be done correctly for safety and operational reasons. A typical installation may be done as follows:

Use a heavy gauge wire such as 16 AWG stranded copper. The bonding between the transmitter and the ground rods must be good quality and protected from corrosion. The ground wires should run over the floor and be connected to the ground rods located outside the building. The wire should not go through the concrete floor but over and around it.

3. **AC WIRING:** The LTX100U/LV/HV transmitters come with a three wire 110 VAC standard plug for connection to a 110 VAC electrical outlet. It is recommended that the electrical outlet be protected with its own separate breaker and used only for the transmitter.

NOTICE: All wiring of this type, except for the actual connection to the AC plug, must be done by a QUALIFIED ELECTRICIAN and must conform to LOCAL and NATIONAL wiring CODES.

Consult with your electrician to ensure that the proper breaker size is selected for the main circuit.

4. **ANTENNA CONNECTION:** The transmitters are equipped with an N connector for output power to the transmit antenna and an F connector for connection from the receive antenna.

Section IV

Transmitter
Turn-On



IV --- TRANSMITTER TURN-ON PROCEDURE (Page 1 of 2)

See the previous section on installation before proceeding with this section. Improper installation of the transmitter can cause serious damage to the equipment or operating personnel and may void manufacturers warranty. Initial turn on and check out is very important for the broadcast engineer to learn how to setup and operate the transmitter. Following these steps will ensure long and reliable operation:

1. Check the transmitter output load or antenna for proper installation and connection to the transmitter.
2. Inspect the transmitter front and back to check for broken items or loose fitting items. These must be replaced or properly secured before turning the transmitter on. Pay special attention to all RF connectors including transmit coaxial cable and antenna.
3. Check the AC breaker and on/off switches to ensure that all are in the OFF position.
4. Verify the switch on the power strip at the back of the cabinet and the power switch on the front of the LTX Mainframe are in the OFF position. Plug in the AC power cord to a nearby 110 AC electrical connector with associated, appropriately sized, circuit breaker.
5. On the MA1000 Modulator, turn the **Output Power** potentiometer fully counter clockwise to minimum.
6. Turn-on the AC Power switch located on the power strip at the rear of the LTX100U/VL/VH cabinet.
7. Locate and turn on the front panel breaker found on the LTX Mainframe and set the **XMTR** switch to the **ON** position.

MAKE THE FOLLOWING OBSERVATIONS

| <u>METER READINGS</u> | <u>TYPICAL</u> |
|---------------------------|----------------|
| DC SUPPLY VOLTAGE | 32 VDC |
| PA1 DRIVER CURRENT | 1.7 AMPS ± 20% |
| PA2 FINAL CURRENT | 2.7 AMPS ± 20% |
| PA3 FINAL CURRENT | 1.3 AMPS ± 20% |
| RF OUTPUT POWER | 10 TO 50% |
| RFL'D POWER | < 10% |
| <u>NOTE STATUS LIGHTS</u> | |
| FAN | GREEN |
| TEMP | GREEN |
| +DC | GREEN |

THE FAN SHOULD BE MAKING SOME NOISE



IV --- TRANSMITTER TURN-ON PROCEDURE (Page 2 of 2)

Note: Allow the LTX100U/VL/VH to warm up for at least one (1) hour before making the final adjustment.

If transmitter is not warmed up, the output power will require re-adjustment to proper level when it is warm.

8. Select the **FWD Power** setting on the rotary switch associated with the front panel meter on the LTX Mainframe assembly. Slowly adjust the **Output Level** setting on the MA1000 Modulator while observing the output power level on the front panel meter until the meter reading indicates 50% output power. At this point, check the reflected power indication on the LTX meter. The reading should be less than 5% if the output connection, cable and antenna have been previously verified to have a VSWR of less than 1.2:1.
9. If the output level is stable at the 50% point for 5 or 10 minutes, it is OK to increase the drive to achieve a reading of 100%. This is the output level set at the factory for your transmitter and is p-sync reading.

RECORD AND RETAIN THE FOLLOWING OBSERVATIONS FOR FUTURE REVIEW IF NECESSARY

| <u>METER READINGS</u> | <u>TYPICAL</u> |
|---------------------------|----------------|
| DC SUPPLY VOLTAGE | 32 VDC |
| PA1 DRIVER CURRENT | 1.8 AMPS ± 20% |
| PA2 FINAL CURRENT | 3.4 AMPS ± 20% |
| PA3 FINAL CURRENT | 2.8 AMPS ± 20% |
| RF OUTPUT POWER | 90 TO 100% |
| RFL'D POWER | < 10% |
| <u>NOTE STATUS LIGHTS</u> | |
| FAN | GREEN |
| TEMP | GREEN |
| +DC | GREEN |

10. Check the transmitter on-the-air signal with a monitor to ensure all is well and you're done.

Section V

Theory
of
Operation



V --- THEORY OF OPERATION (Page 1 of 2)

A. INTRODUCTION

The LTX100U/VL/VH series transmitters were designed to meet or exceed all FCC applicable specifications for TV broadcast equipment. Special attention was given to the selection of sub-assemblies and components to achieve maximum reliability and minimum down time. The construction of the LTX100U/VL/VH is BASIC and MODULAR with most components are field replaceable. Special emphasis was placed on "KEEPING IT SIMPLE" and returning to more traditional transmitter layouts and instrumentation.

Refer to the LTX100U/VL/VH block diagram for an overview of the transmitter architecture. This will give the technician basic information needed to understand the operation of the transmitter and the function of each subassembly.

SEE SECTION VI.A FOR PARTS LIST AND BLOCK DIAGRAM.

B. MA1000 Modulator/Exciter

The modulator/exciter is set up at the factory for the operating frequency (Channel) specified by the customer as shown on the appropriate FCC document including any appropriate offset.

Refer to the Cadco user manual at the end of this manual for information on the modulator.

C. LTX100() Mainframe Power Amplifier

Cabinet - The cabinet is constructed of heavy gauge steel and is very durable. This enclosure is painted black and is resistive to harsh environment. Standard 19 inch rack mounting.

The LTX100() Mainframe is the power amplifier assembly that accepts the video and audio signal from the modulator/exciter and raises it up to the required output power which will be sent to the antenna.

LTX100() Mainframe Assembly's internal sub-assemblies include the following:

1. DC Power Supply
2. RF Deck
3. Status Monitoring (1A0035)
4. Output Power Detector Board (1A0027)
5. Reflected Power Detector (1A0029) and Shutdown Switch
6. Metering and Monitoring Assembly (1A0300)



V. THEORY OF OPERATION (CONTINUED) (Page 2 of 2)

D. BAND PASS FILTERS

BPU150N - Used in the LTX100U UHF Transmitter

BPVH300N - Used in the LTX100VH High VHF Band (Ch 7 - 13) Transmitter

BPVL200N - Used in the LTC100VL High VHF Band (Ch 2 - 6) Transmitter

These Band Pass filters were designed to meet FCC Certification requirements with minimum loss of RF Power. They come tuned and tested to the operating frequency of the transmitter and should not be adjusted without proper equipment. Replacement filters are available as from Pineapple Technology, Inc. upon request.

Section VI

Schematic
and
Parts List



A. LTX100U ASSY TREE

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|----------------------------|-----------------------|
| Top | | CAT | LTX100U | LTX SERIES UHF TRANSMITTER | 100 WATTS |
| 1 | 1 | PL | LTXMAINFRAME UHF | LTX SERIES XMTR 100 W UHF | BASIC UNIT |
| 2 | 1 | CAT | MA1000 | M369 CADCO MODULATOR | MODIFIED TO PTI SPECS |
| 3 | 1 | PS | BPU150N | BP FILTER 150 W UHF | 470-862 MHz |
| 4 | 1 | PS | MFR13RU | EQUIPMENT RACK 13 RU | BLK 19 IN DEEP |



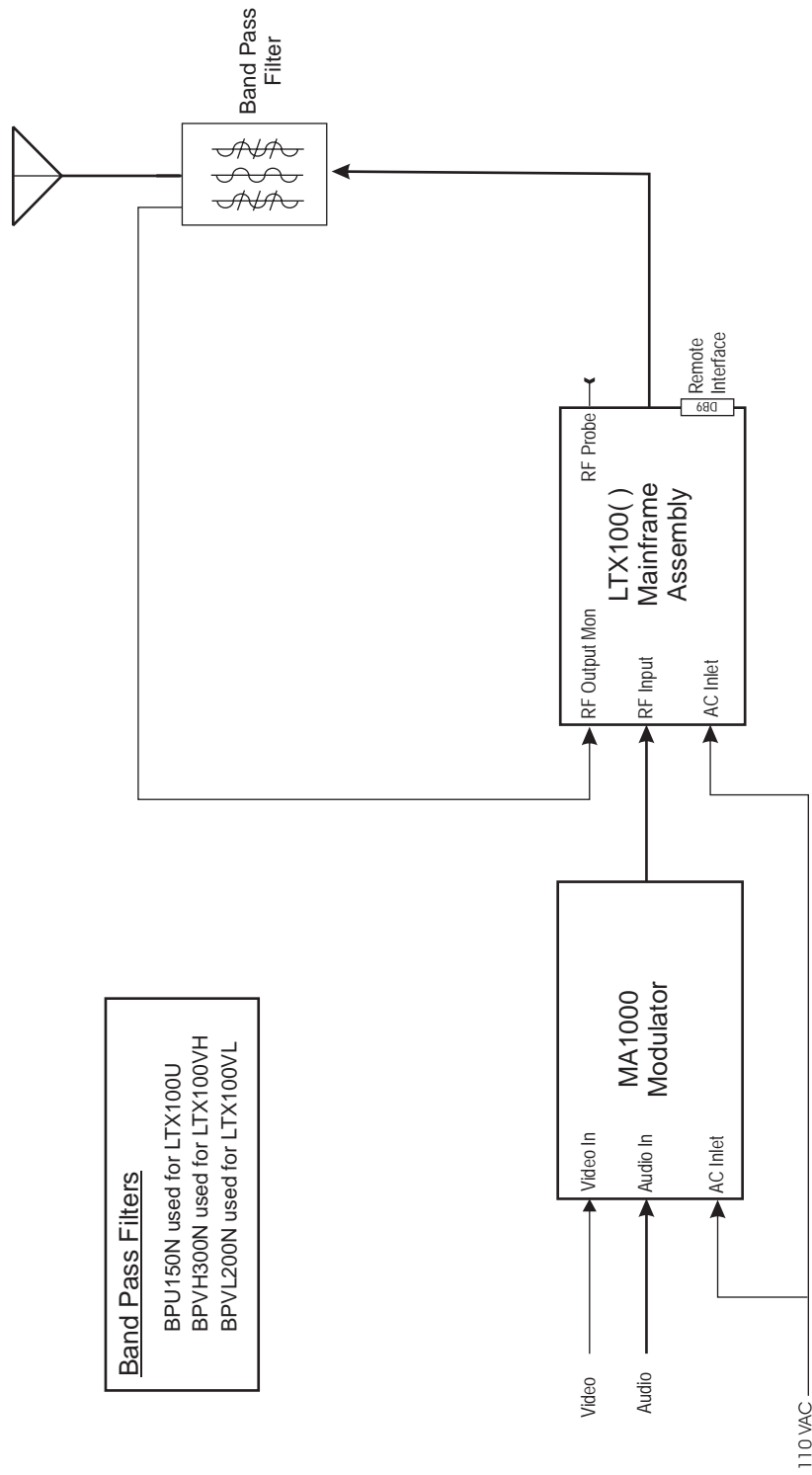
A. LTX100VL ASSY TREE

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|------------------------------|-------------------------|
| Top | | CAT | LTX100VL | LTX SERIES XMTR VHF LOW BA | 100 WATTS |
| 1 | 1 | CAT | LTXMAINFRAME VHF | LTX SERIES XMTR 100 W VHF LB | BASIC UNIT |
| 3 | 1 | CAT | MA1000 | M369 CADCO MODULATOR | MODIFIED TO PTI SPECS |
| 4 | 1 | PS | BPVL200N | BP FILTER LTX XMTR VHF LB | TYPE N CONNECTORS 200 W |
| 6 | 1 | PS | MFR13RU | EQUIPMENT RACK 13 RU | BLK 19 IN DEEP |



A. LTX100VH ASSY TREE

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|------------------------------|-----------------------|
| Top | | CAT | LTX100VH | LTX SERIES VHF HB 100 WATT X | 100 WATT |
| 1 | 1 | PL | LTXMAINFRAME VHF | LTX SERIES XMTR 100 W VHF H | BASIC UNIT |
| 3 | 1 | PS | BPVH300N | BP FILTER 300W VHF HB CL3NV | TYPE N CONNECTORS |
| 4 | 1 | PS | MFR13RU | EQUIPMENT RACK 13 RU | BLK 19 IN DEEP |
| 5 | 1 | CAT | MA1000 | M369 CADCO MODULATOR | MODIFIED TO PTI SPECS |



Band Pass Filters
 BPU150N used for LTX100U
 BPVH300N used for LTX100VH
 BPVL200N used for LTX100VL

Pineapple Technology, Inc.
 Rocklin, CA

LTX100U/H/V/L
 UHF Transmitter

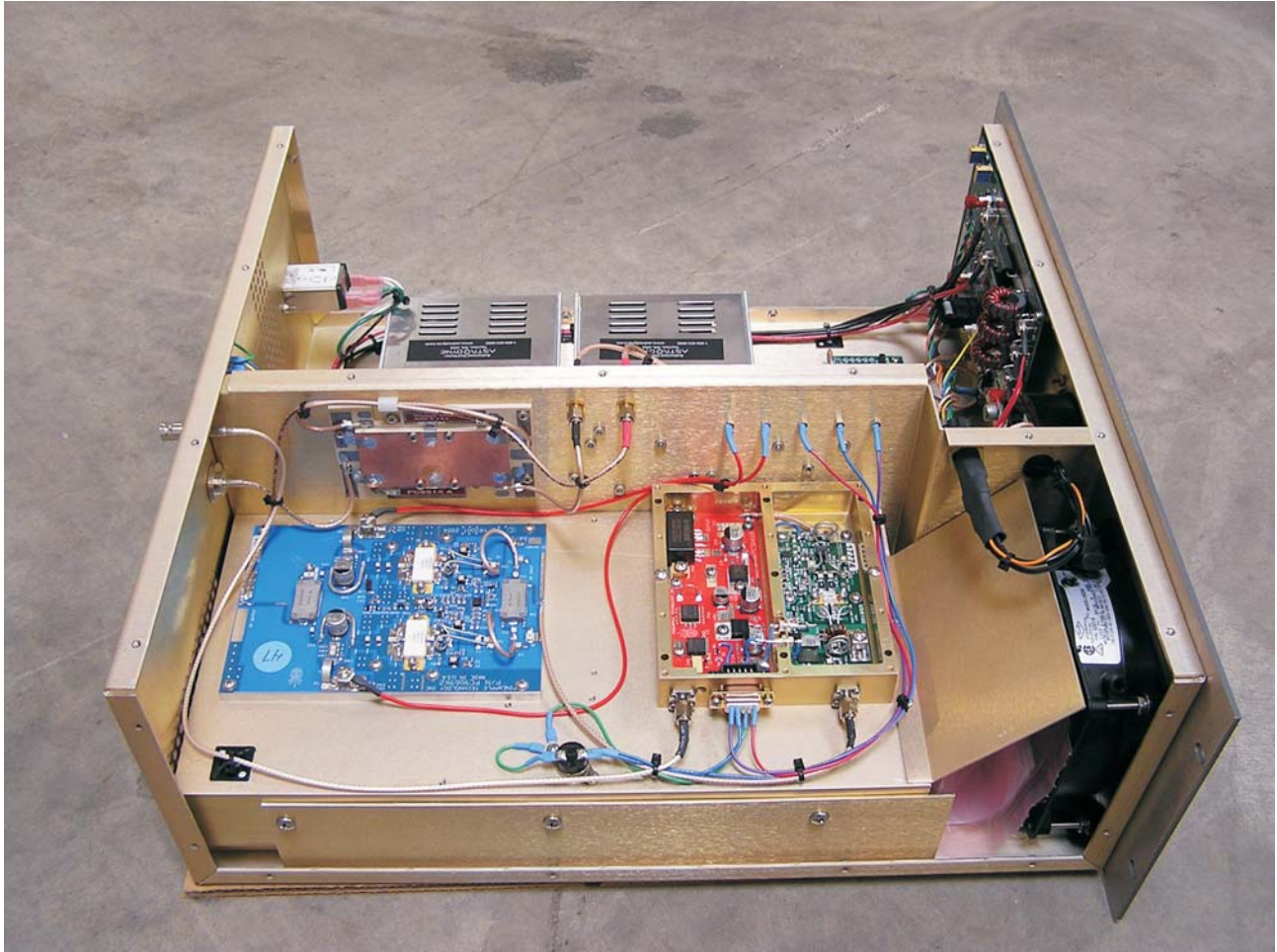
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| SIZE | A | FSM NO. | | REV | B |
| SCALE | 1:1 | DWG NO. | | SHEET | 1 |



A. LTX Mainframe UHF Assy Tree

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|---------------------------------|--------------------------------|
| 1 | 1 | PL | LTXMAINFRAME UHF | LTX SERIES XMTR 100 W UHF | BASIC UNIT |
| 1 | 1 | PS | MF9529A | LTX HEAT SINK HOLDER | AL 090 |
| 2 | 1 | PS | MF9531A | LTX FRONT PANEL | 0125 AL W/PAINT AND SILK |
| 3 | 1 | PS | MF9532A | LTX CHASSIS | 090 AL ALODYNE W/REAR SILK |
| 4 | 1 | PS | MF9533A | LTX AIR DAM DEFLECTOR | 050 AL ALODYNE |
| 5 | 1 | PS | MF9534A | LTX TOP COVER | O60 AL ALODYNE |
| 6 | 1 | PL | MF9535 | LTX100U HEAT SINK | STD HEAT SINK W/U250LD FP |
| 10 | 1 | PS | PC9515 | COUPLER GP COVER TMM3 012 | USE ON ALL -30dB COUPLERS |
| 11 | 1 | PS | PC9514 | UHF -30 dB COUPLER TMM3 012 | DUAL DIRECTIONAL |
| 14 | 1 | PS | 660104 | LTX MULTI-FUNCTION METER | HOYT MODEL 3135 ANALOG MTR |
| 15 | 1 | PS | AC3108 | CIRCUIT BREAK/ ON/OFF SWITCH | 115 VAC 10 A RESETABLE |
| 16 | 1 | PS | AC1003 | FILTER, AC LINE | 110/220 AC PLUG |
| 17 | 1 | PS | 990200 | FILTER, AIR DRY | COMAIR FILTER/GUARD ASS,Y |
| 18 | 1 | PS | 851035 | FAN AC 115 100 CFM 115 VAC | COMAIR-ROTRON MUFFIN XL AC MX2 |
| 19 | 1 | PS | CA5110 | CABLE ASSEMBLY 10 WIRE | 10 WIRE SOC TO SOC CONNECTOR |
| 20 | 4 | PS | 480300 | CON 2 PIN HEADER | AMP A23837-ND |
| 22 | 1 | PS | AC2010 | DC POWER SUPPLY 115/220 VAC | 320 WATTS 27-31 VDC |
| 23 | 6 | PS | INHOUSE_LABOR | PTI LABOR | LOADED |
| 24 | 8 | PS | INHOUSE-ENG TEST | ENG TESTING AND FIXIT | LOADED |
| 25 | 1 | PL | 1A0300 | LTX100 METERING CIRCUIT | FRONT PANEL ASSEMBLY |
| 26 | 1 | PL | 1A0027 | PWR MONITOR CK | PC9052B CBR |
| 27 | 1 | PL | 1A0035 | PA STATUS BOARD | PC9061H |
| 28 | 1 | PL | 1A0026 | VSWR/PWR DET BRD | PC9051A |
| 29 | 1 | CAT | DRV10-40 | DRIVER AMP WITH ALC CKT PO 10 W | |
| 34 | 1 | PS | 990280 | FINGER GUARD 6" | FINGER GUARD 150MM METAL |
| 35 | 1 | PS | 851030 | PATRIOT AC FAN 110 V | XL100 EXHAUSE FAN |
| 36 | 1 | PS | 481501 | AURAL FEMALE PNL CONNECTOR | XLR TYPE 3 PIN |
| 37 | 1 | PS | 481502 | AURAL MALE PLUG XLR | 3 PIN |

SECTION VI - SCHEMATIC AND PARTS LISTS
SUB-SECTION A - LTX100U/LH/LV



Internal View

Pineapple Technology, Inc.
Rocklin, CA

LTX Mainframe UHF

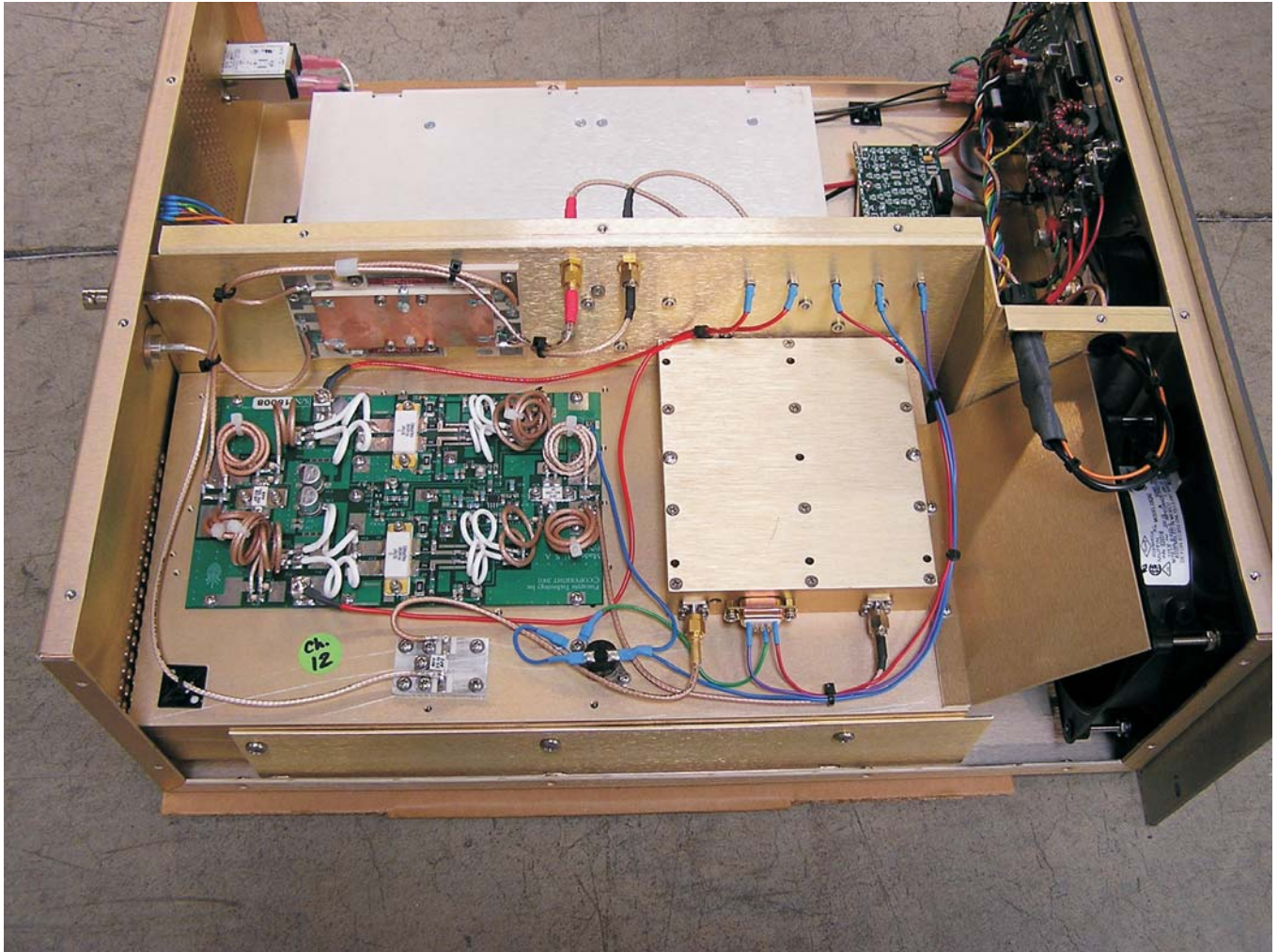
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| SIZE | ESCM NO. | DWG NO. | REV |
| SCALE | | | SHEET |



A. LTX Mainframe VH Assy Tree

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|------------------------------|---------------------------------|
| Top | | CAT | LTX100VH | LTX SERIES VHF HB 100 WATT X | 100 WATT |
| 1 | 1 | PL | LTXMAINFRAME VH | LTX SERIES XMTR 100 W VHF H | BASIC UNIT |
| 1 | 1 | PS | MF9529A | LTX HEAT SINK HOLDER | AL 090 |
| 2 | 1 | PS | MF9531A | LTX FRONT PANEL | 0125 AL W/PAINT AND SILK |
| 3 | 1 | PS | MF9532A | LTX CHASSIS | 090 AL ALODYNE W/REAR SILK |
| 4 | 1 | PS | MF9533A | LTX AIR DAM DEFLECTOR | 050 AL ALODYNE |
| 5 | 1 | PS | MF9534A | LTX TOP COVER | 060 AL ALODYNE |
| 7 | 1 | PS | MF9536 | LTX100 VHF HIGH HEAT SINK | STD PTI HS MATERIAL |
| 10 | 1 | PS | PC9515 | COUPLER GP COVER TMM3 012 | USE ON ALL -30dB COUPLERS |
| 12 | 1 | PS | PC9513 | VHF HB -30 dB COUPLER TMM3 | DUAL DIRECTIONAL |
| 14 | 1 | PS | 660104 | LTX MULTI-FUNCTION METER | HOYT MODEL 3135 ANALOG MTR |
| 15 | 1 | PS | AC3108 | CIRCUIT BREAK/ ON/OFF SWITC | 115 VAC 10 A RESETABLE |
| 16 | 1 | PS | AC1003 | FILTER, AC LINE | 110/220 AC PLUG |
| 17 | 1 | PS | 990200 | FILTER, AIR DRY | COMAIR FILTER/GUARD ASS,Y |
| 18 | 1 | PS | 851035 | FAN AC 115 100 CFM 115 VAC | COMAIR-ROTRON MUFFIN XL AC MX2, |
| 19 | 1 | PS | CA5110 | CABLE ASSEMBLY 10 WIRE | 10 WIRE SOC TO SOC CONNECTOR |
| 20 | 4 | PS | 480300 | CON 2 PIN HEADER | AMP A23837-ND |
| 22 | 1 | PS | AC2010 | DC POWER SUPPLY 115/220 VA | 320 WATTS 27-31 VDC |
| 23 | 6 | PS | INHOUSE_LABOR | PTI LABOR | LOADED |
| 24 | 8 | PS | INHOUSE-ENG TEST | ENG TESTING AND FIXIT | LOADED |
| 25 | 1 | PL | 1A0300 | LTX100 METERING CIRCUIT | FRONT PANEL ASSEMBLY |
| 26 | 1 | PL | 1A0027 | PWR MONITOR CK | PC9052B CBR |
| 27 | 1 | PL | 1A0035 | PA STATUS BOARD | PC9061H |
| 28 | 1 | PL | 1A0026 | VSWR/PWR DET BRD | PC9051A |
| 29 | 1 | CAT | DRV10-40 | DRIVER AMP WITH ALC CKT PO | 10 W |
| 34 | 1 | PS | 990280 | FINGER GUARD 6" | FINGER GUARD 150MM METAL |
| 35 | 1 | PS | 851030 | PATRIOT AC FAN 110 V | XL100 EXHAUSE FAN |
| 36 | 1 | PS | 481501 | AURAL FEMALE PNL CONNECTO | XLR TYPE 3 PIN |

SECTION VI - SCHEMATIC AND PARTS LISTS
SUB-SECTION A - LTX100U/LH/LV



Internal View

Pineapple Technology, Inc.
Rocklin, CA

LTX Mainframe High VHF

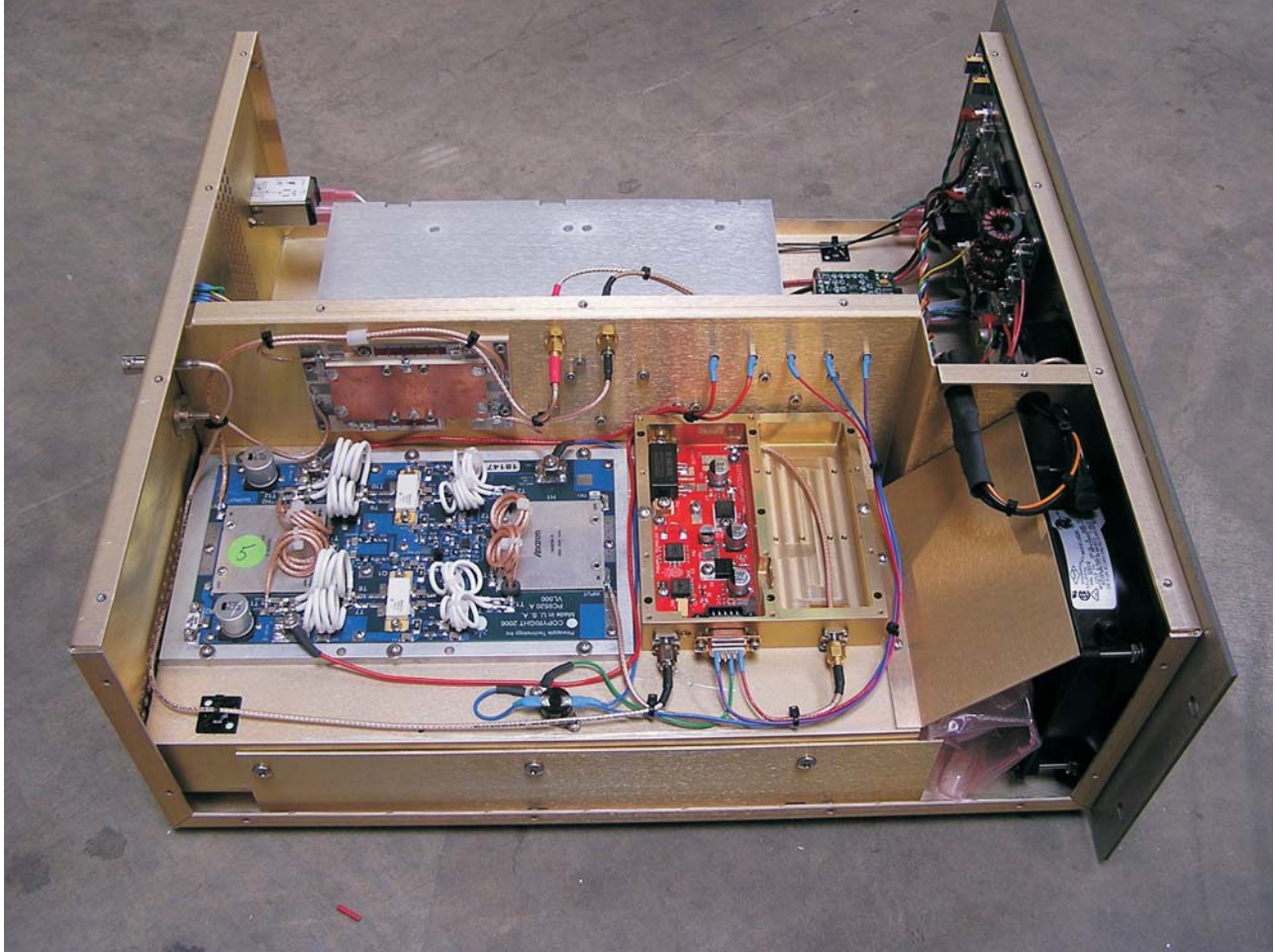
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|-------|----------|---------|-----|
| SIZE | ESCM NO. | DWG NO. | REV |
| SCALE | | SHEET | |



A. LTX Mainframe VL Assy Tree

| Item | Qty | Type | P/N | Title | Detail |
|------|-----|------|------------------|------------------------------|---------------------------------|
| Top | | CAT | LTX100VL | LTX SERIES XMTR VHF LOW BAND | 100 WATTS |
| 1 | 1 | CAT | LTXMAINFRAME VHF | LTX SERIES XMTR 100 W VHF LB | BASIC UNIT |
| 1 | 1 | PS | MF9529A | LTX HEAT SINK HOLDER | AL 090 |
| 2 | 1 | PS | MF9531A | LTX FRONT PANEL | 0125 AL W/PAINT AND SILK |
| 3 | 1 | PS | MF9532A | LTX CHASSIS | 090 AL ALODYNE W/REAR SILK |
| 4 | 1 | PS | MF9533A | LTX AIR DAM DEFLECTOR | 050 AL ALODYNE |
| 5 | 1 | PS | MF9534A | LTX TOP COVER | 060 AL ALODYNE |
| 8 | 1 | PS | MF9537 | LTX100 VHF LOW BAND HEAT S | STD PTI HS MATERIAL |
| 10 | 1 | PS | PC9515 | COUPLER GP COVER TMM3 012 | USE ON ALL -30dB COUPLERS |
| 13 | 1 | PS | PC9512 | VHF LB -30 dB COUPLER TMM3 (| DUAL DIRECTIONAL |
| 14 | 1 | PS | 660104 | LTX MULTI-FUNCTION METER | HOYT MODEL 3135 ANALOG MTR |
| 15 | 1 | PS | AC3108 | CIRCUIT BREAK/ ON/OFF SWITC | 115 VAC 10 A RESETABLE |
| 16 | 1 | PS | AC1003 | FILTER, AC LINE | 110/220 AC PLUG |
| 17 | 1 | PS | 990200 | FILTER, AIR DRY | COMAIR FILTER/GUARD ASS,Y |
| 18 | 1 | PS | 851035 | FAN AC 115 100 CFM 115 VAC | COMAIR-ROTRON MUFFIN XL AC MX2, |
| 19 | 1 | PS | CA5110 | CABLE ASSEMBLY 10 WIRE | 10 WIRE SOC TO SOC CONNECTOR |
| 20 | 4 | PS | 480300 | CON 2 PIN HEADER | AMP A23837-ND |
| 22 | 2 | PS | AC2010 | DC POWER SUPPLY 115/220 VA | 320 WATTS 27-31 VDC |
| 23 | 6 | PS | INHOUSE_LABOR | PTI LABOR | LOADED |
| 24 | 8 | PS | INHOUSE-ENG TEST | ENG TESTING AND FIXIT | LOADED |
| 25 | 1 | PL | 1A0300 | LTX100 METERING CIRCUIT | FRONT PANEL ASSEMBLY |
| 26 | 1 | PL | 1A0027 | PWR MONITOR CK | PC9052B CBR |
| 27 | 1 | PL | 1A0035 | PA STATUS BOARD | PC9061H |
| 28 | 1 | PL | 1A0026 | VSWR/PWR DET BRD | PC9051A |
| 29 | 1 | CAT | DRV10-40 | DRIVER AMP WITH ALC CKT PO | 10 W |
| 34 | 1 | PS | 990280 | FINGER GUARD 6" | FINGER GUARD 150MM METAL |
| 35 | 1 | PS | 851030 | PATRIOT AC FAN 110 V | XL100 EXHAUSE FAN |
| 36 | 1 | PS | 481501 | AURAL FEMALE PNL CONNECTO | XLR TYPE 3 PIN |

SECTION VI - SCHEMATIC AND PARTS LISTS
SUB-SECTION A - LTX100U/LH/LV

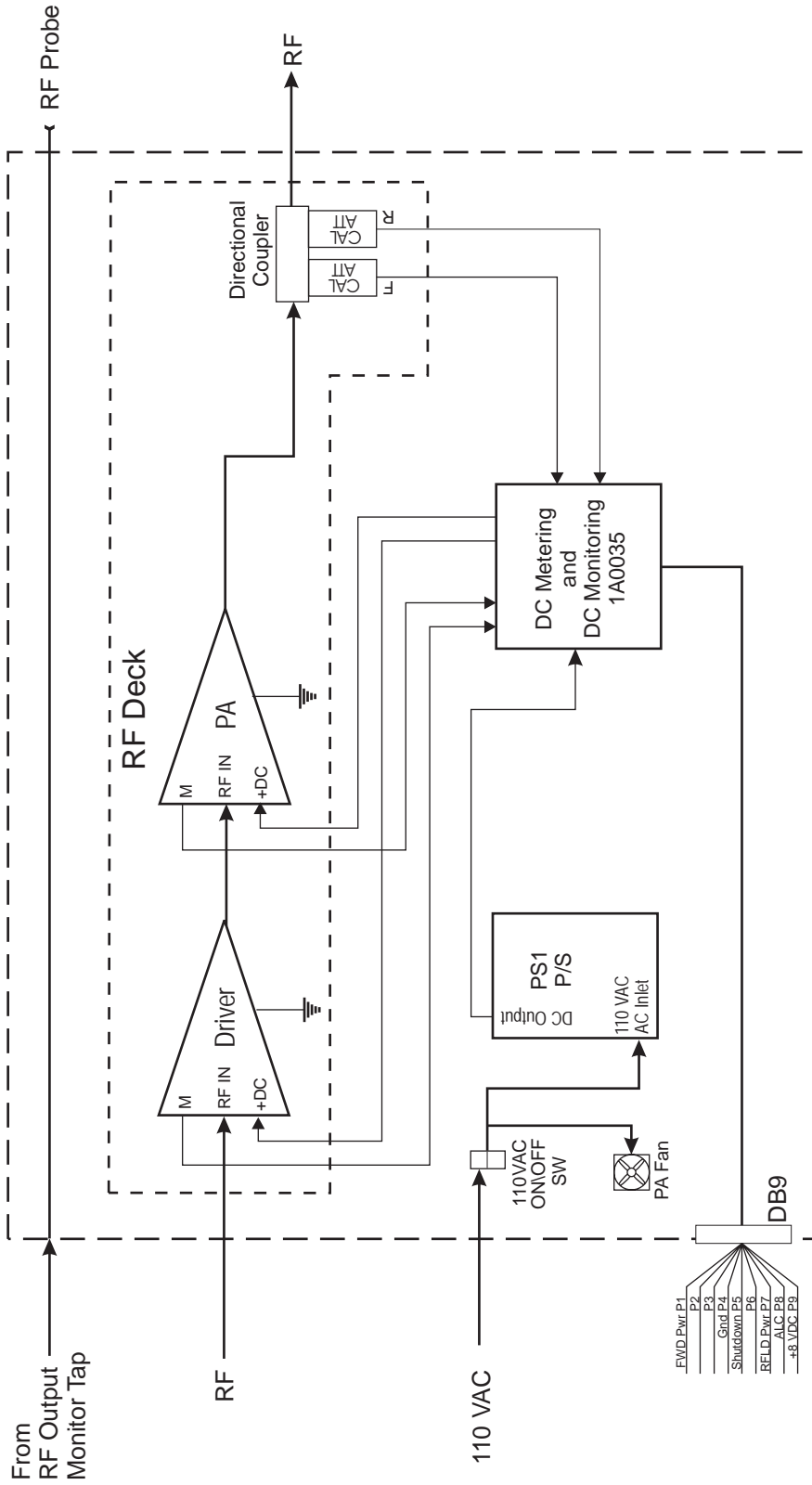


Internal View

Pineapple Technology, Inc.
Rocklin, CA

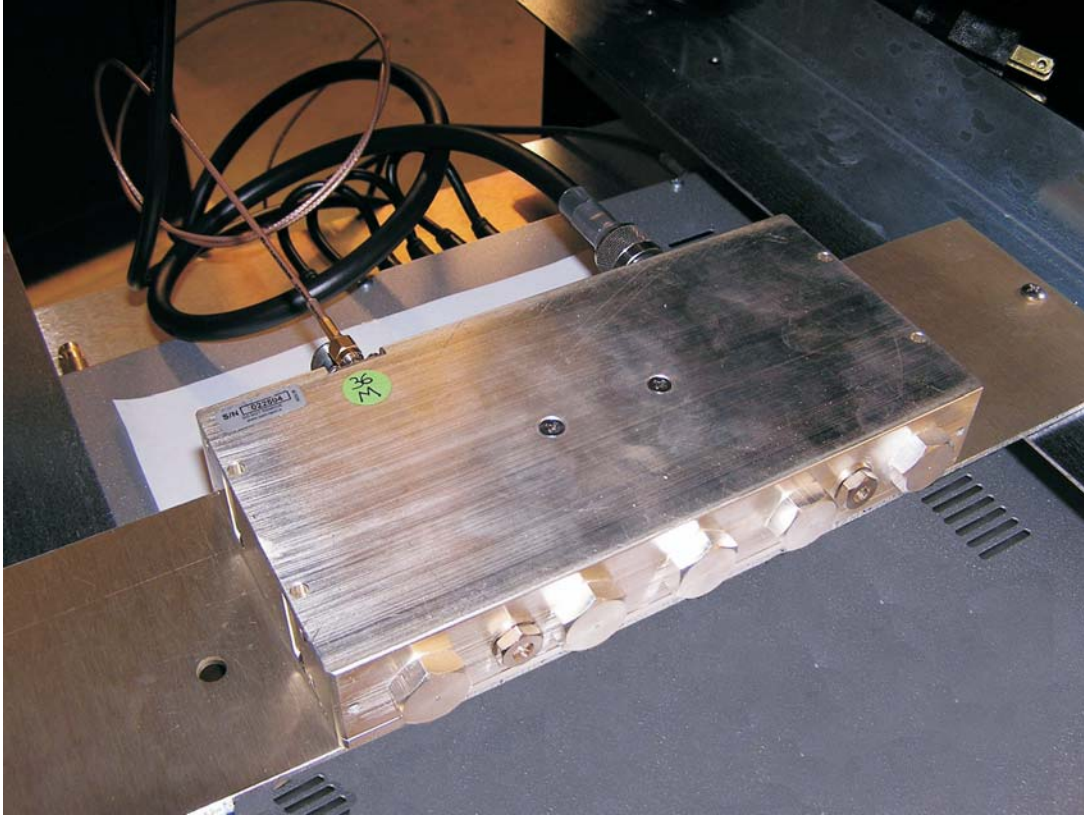
LTX Mainframe Low VHF

| | | | |
|-------|----------|---------|-------|
| SIZE | ESCM NO. | DWG NO. | REV |
| SCALE | | | SHEET |



| Channel | Driver | PA | Direct ¹ Coupler | P/S |
|----------|--------|---------|-----------------------------|-------|
| LTX100U | UDR10E | U250LD | PC9514 | Note1 |
| LTX100VL | UDR10E | VH250LD | PC9513 | Note1 |
| LTX100VH | UDR10E | VL500A | PC9512 | Note1 |

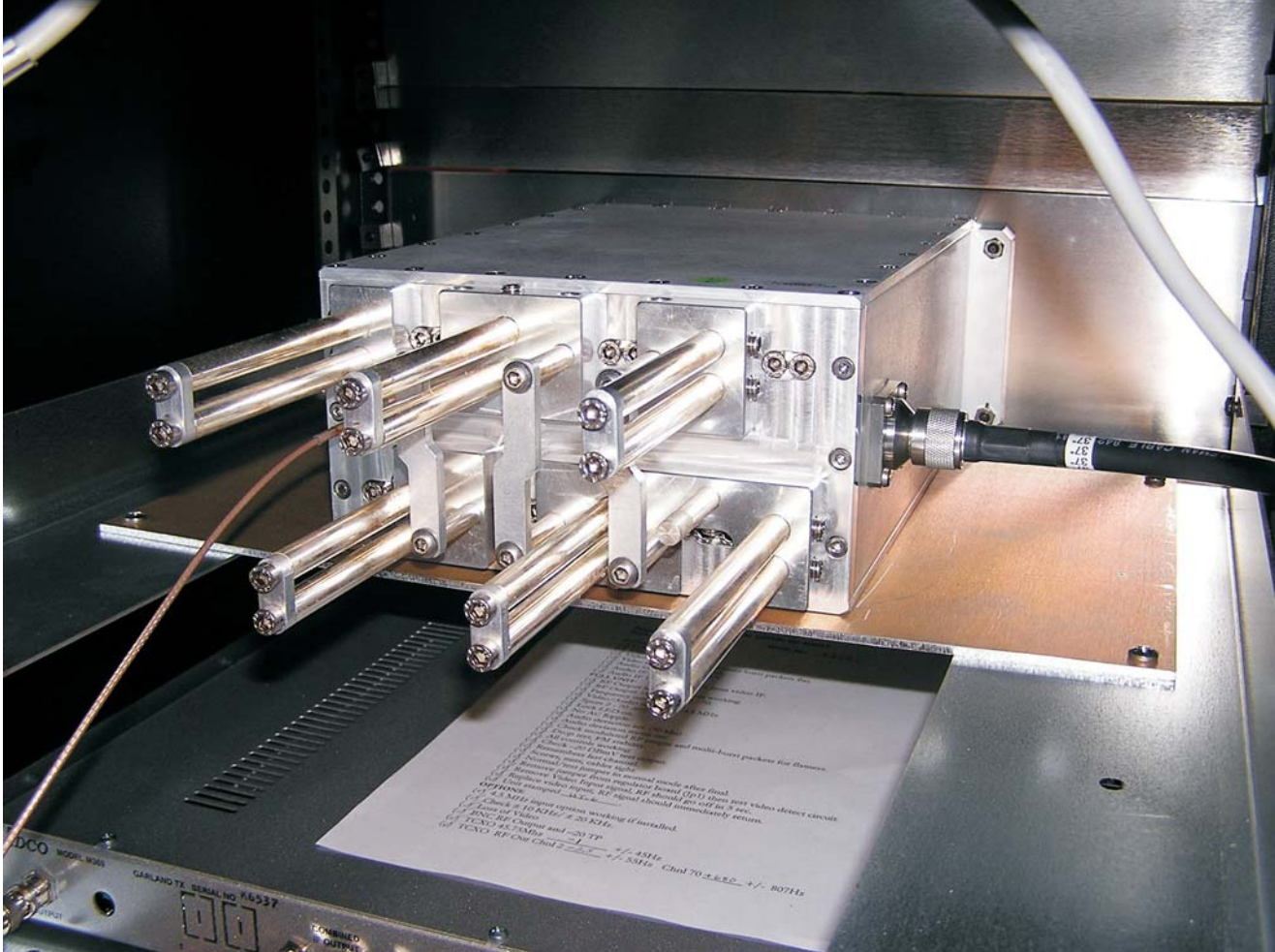
SECTION VI - SCHEMATIC AND PARTS LISTS
SUB-SECTION C - LTX100U/VH/VL



No Serviceable Parts

| | | | |
|---|----------|---------|-------|
| Pineapple Technology, Inc. Rocklin, CA | | | |
| BPU150 Band Pass Filter | | | |
| SIZE | ESCM NO. | DWG NO. | REV |
| SCALE | | | SHEET |

SECTION VI - SCHEMATIC AND PARTS LISTS
 SUB-SECTION D - LTX100U/VH/VL



No Serviceable Parts

| | | | |
|--|----------|---------|-------|
| Pineapple Technology, Inc. Rocklin, CA | | | |
| Low VHF Bandpass Filter CIRCUIT DIAGRAM | | | |
| SIZE | ESCM NO. | DWG NO. | REV |
| SCALE | | | SHEET |

Section VII

Recommended
Routine
Maintenance



VII --- ROUTINE MAINTENANCE

Routine Maintenance on the transmitter is very simple and straight forward. PTI recommends the following steps to ensure long and eliable trouble-free service.

SCHEDULE: DAILY OR WEEKLY SERVICE

1. Check output power level to ensure that the meter is reading in the GREEN. If the level has changed adjust the output level to 100% using the modulator output level adjust.
2. Check and record all meter readings in the station log.
3. Review readings and compare to history for possible variation that could indicate problems.
4. Check the air inlet filter and clean if necessary. If it looks dirty, it is dirty. Snap off the front grill and wash the filter with light detergent and dry thoroughly before reinstalling. DO NOT use oils on the filter.
5. Clear any items placed in front or in the rear of the transmitter that may restrict air flow.

SCHEDULE: MONTHLY +

All the items listed above with air filter cleaning necessary.

NOTE: REPLACEMENT FILTERS ARE AVAILABLE THRU MOST ELECTRONIC DISTRIBUTERS.
LOOK FOR COMAIR ROTRON P/N: 020172

FACILITIES

- Clean all air inlet filters and exhaust outlets to ensure that the transmitter is getting clean unobstructed airflow.
- Perform recommended service on air condition systems.
- Rodent traps or baits should be renewed to keep the facilities clear of these pests which can cause damage to the transmitter.

Section VIII

Adjustments
and
Tuning



VIII --- ADJUSTMENTS AND TUNING

The LTX100U/VH/VL is a new series of analog transmitters offered by Pineapple Technology, Inc. The latest in LDMOS device and circuit technology are employed to ensure reliable and serviceable operation for many years.

There are very few adjustments necessary to maintain full service condition. Typically the gain adjustment shown in the initial Transmitter Turn-On Procedure (Section IV) of this manual should require minimal attention. The front meter panel has been set up so that 100% indication in Forward Power is equivalent to 100W peak sync power.

The transmitter output must remain on the channel licensed by the FCC and in accordance with the supplied band pass filter and set up on the exciter/modulator.

Section IX

Problem
Solving
&
Troubleshooting



IX - PROBLEM SOLVING & TROUBLE SHOOTING (Page 1 of 2)

The LTX100U/VH/VL is a "MODULAR ASSEMBLY" where most of the sub-assemblies can be removed and or replaced as necessary as necessary to maintain full service. To service this transmitter, it is best to become familiar with the various sub-assemblies by reviewing the transmitter block diagram and it's associated subs shown in the introduction. Any work performed on a transmitter licensed by the FCC must be performed by qualified personnel.

FAILURE ANALYSIS STARTS WITH THE FOLLOWING ASSUMPTIONS:

1. The transmitter is connected to an AC source which is within the specified voltage range and has ample power to run the transmitter.
2. The antenna has been checked out and a proper match has been verified.
3. The room temperature is < +35 degrees Celsius (+95 degrees Fahrenheit)
4. There are no restrictions in the air flow in or out of the building.
5. The video and aural signals to the modulator comply with stated specifications.

CHECKING THE WARNING LIGHTS

There are several warning signals visible on the front of the transmitter that will alert the technician of possible problems. When viewed from the front, all the lights should be GREEN indicating normal operation. An alert signal is indicated by a RED light. We will focus on RED alert signals in this section.

LTX Mainframe Assembly

FAN FAULT

RED indicates that the fuse supplying AC to the fan has failed. The fuse is located just inside the front panel near the top. See Fig. 1 for location.
CHECK: FUSE AND/OR FAN

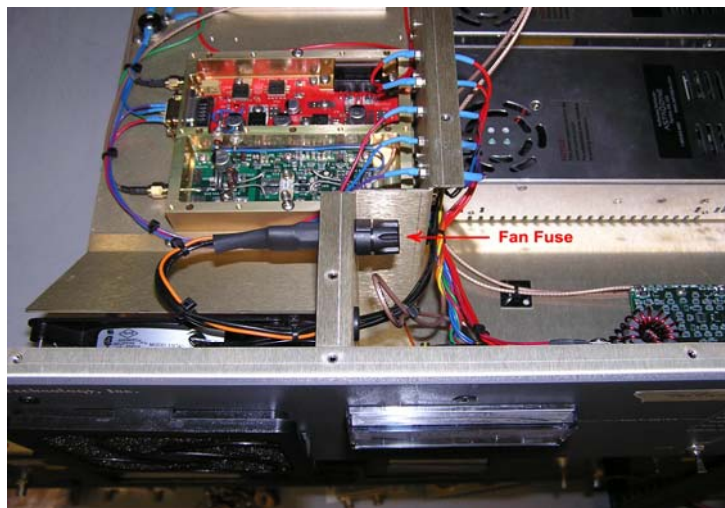


Fig. 1



IX - PROBLEM SOLVING & TROUBLE SHOOTING (Page 2 of 2)

TEMP FAULT

RED indicates over temperature of PA or High VSWR

If High VSWR, the light will cycle 10 seconds OFF and 2 seconds ON
Put transmitter in STANDBY. Investigate antenna installation and connections, check transmission lines and connections. Check that transcoder up converter is on frequency.

If High Temperature, the light will cycle OFF for several minutes then ON for several minutes.

Check: Room temperature

Check: For Blocked Air Filter

Check: For Blocked Air Flow

Check: Transcoder Drive level. Verify output power is at 100% or less.

NOTE: If the AC Power is ON and all LED's are OFF and all meter readings are Zero (0) the DC Power Supply may cycle on and off if the internal fan has failed or Hi temp has failed. The internal DC supply may have failed and needs replacing.

Section X

Warranty



X -- WARRANTY

The WARRANTY provided by Pineapple Technology, Inc. (PTI) on this transmitter is detailed below. It should be noted that some of the equipment sub-systems have warranty coverage by the original manufacture that differs from the standard warranty provided by PTI. Warranty details on equipment falling into this category may be found in the Manufacturers instruction manual provided with the transmitter. In all cases, replacement units of this equipment are normally in stock at PTI for quick turn service support to our customers during the PTI Standard Warranty period.

STANDARD WARRANTY

Seller warrants that each Product sold by it is free of defects in materials and workmanship. Seller's obligation under said warranty continues for a period of one (1) year from date of shipment. Repairs or replacement of defective parts shall be the sole and exclusive remedy under warranty, at Seller option, provided that Seller may, as an alternative, elect to refund an equitable portion of the purchase price of the product. THIS WARRANTY IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, USE, OR APPLICATION, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF THE SELLER, UNLESS SUCH OTHER WARRANTIES OBLIGATIONS OR LIABILITIES ARE EXPRESSLY AGREED TO IN WRITING BY SELLER.

WARRANTY REPLACEMENT AND REPAIRS

All claims under warranty must be made promptly after occurrence of circumstances giving rise to thereto and must be received within the applicable warranty period by seller or its authorized representatives. Such claims must be documented on a PTI* Field Failure Report with a full description of the circumstances giving rise to the claim. Before any products are returned for repair and/or adjustment, written authorization from seller or its authorized representative for the return and instructions as to how and where these products should be shipped must be obtained. This is to include a Return Authorization (RA) number provided by the seller or authorized representative, this must accompany ALL returns. Any product returned to the seller for the examination shall be sent prepaid via the means of transportation indicated as acceptable by seller. Seller reserves the right to reject any warranty claim not promptly reported and any claim on any item that has been altered, i.e. circuit modifications, components removed, or has been shipped by non acceptable means of transportation. When a product has been returned for examination and inspection, or for any other reason, customer shall be responsible for all damage resulting from improper packaging or handling, and for loss in transit, notwithstanding any defect or nonconformity in the product. In all cases the seller has sole responsibility for determining the cause and nature of the failure, and the Seller's determination with regard thereto shall be final. If it is found that Seller's Product has been returned without cause and is still serviceable, customer will be notified and the Product returned at its expense, in addition, a charge for testing and examination may, in Seller's sole discretion be made on Products so returned.

** A field Failure Report is included at the end of this manual - Additional Field Failure Reports can be obtained by calling Pineapple Technology, Inc. at (916) 652-1116 or you may download one from our website at www.ptibroadcast.com in the Warranty section.*