



Broadcast Electronics

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**SRPT-30 DUAL-CHANNEL RPU TRANSMITTER**



**SRPT-40A FREQUENCY AGILE RPU TRANSMITTER**

**Marti**  
**Electronics**  
**SRPT-30**  
**SRPT-40A**  
**RPU Transmitter**

566-035-1 Rev G  
July 23, 2015

## **Marti Electronics**

**SRPT-30**

**SRPT-40A**

**RPU Transmitter**

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When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have:

1) Inspected the containers for visible signs of damage and 2) Counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

### RF PRODUCT TECHNICAL ASSISTANCE, REPAIR SERVICE, PARTS -

Technical assistance is available from Broadcast Electronics by letter, prepaid telephone or E-mail. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured, and well protected. If proper shipping materials are not available, contact the RF Technical Services Department for a shipping container. Do not mail the equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact the RF Technical Services Department for a Return Authorization.

Emergency and warranty replacement parts may be ordered from the following address. Be sure to include the equipment model number, serial number, part description, and part number. Non-emergency replacement parts may be ordered directly from the Broadcast Electronics stock room at the number shown below.

### RF TECHNICAL SERVICES -

Telephone: +1 (217) 224-9617

E-Mail: [rfservice@bdcast.com](mailto:rfservice@bdcast.com)

Fax: +1 (217) 224-6258

### FACILITY CONTACTS -

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Web Site: [www.bdcast.com](http://www.bdcast.com)

### PARTS -

Telephone: +1 (217) 224-9617

E-Mail: [parts@bdcast.com](mailto:parts@bdcast.com)



## **RETURN, REPAIR, AND EXCHANGES -**

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

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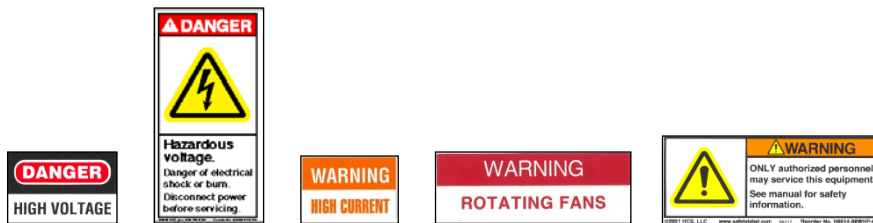




## SAFETY PRECAUTIONS

**PLEASE READ AND OBSERVE ALL SAFETY PRECAUTIONS!!**

**ALL PERSONS WHO WORK WITH OR ARE EXPOSED TO POWER TUBES, POWER TRANSISTORS, OR EQUIPMENT WHICH UTILIZES SUCH DEVICES MUST TAKE PRECAUTIONS TO PROTECT THEMSELVES AGAINST POSSIBLE SERIOUS BODILY INJURY. EXERCISE EXTREME CARE AROUND SUCH PRODUCTS. UNINFORMED OR CARELESS OPERATION OF THESE DEVICES CAN RESULT IN POOR PERFORMANCE, DAMAGE TO THE DEVICE OR PROPERTY, SERIOUS BODILY INJURY, AND POSSIBLY DEATH.**



### **DANGEROUS HAZARDS EXIST IN THE OPERATION OF POWER TUBES AND POWER TRANSISTORS -**

The operation of power tubes and power transistors involves one or more of the following hazards, any one of which, in the absence of safe operating practices and precautions, could result in serious harm to personnel.

- A. HIGH VOLTAGE** - Normal operating voltages can be deadly. Additional information follows.
- B. RF RADIATION** - Exposure to RF radiation may cause serious bodily injury possibly resulting in Blindness or death. Cardiac pacemakers may be affected. Additional information follows.
- C. HOT SURFACES** - Surfaces of air-cooled radiators and other parts of tubes can reach temperatures of several hundred degrees centigrade and cause serious burns if touched. Additional information follows.
- D. RF BURNS** - Circuit boards with RF power transistors contain high RF potentials. Do not operate an RF power module with the cover removed.

## **HIGH VOLTAGE –**

Many power circuits operate at voltages high enough to kill through electrocution. Personnel should always break the primary AC Power when accessing the inside of the transmitter.

## **RADIO FREQUENCY RADIATION -**

Exposure of personnel to RF radiation should be minimized, personnel should not be permitted in the vicinity of open energized RF generating circuits, or RF transmission systems (waveguides, cables, connectors, etc.), or energized antennas. It is generally accepted that exposure to “high levels” of radiation can result in severe bodily injury including blindness. Cardiac pacemakers may be affected.

The effect of prolonged exposure to “low level” RF radiation continues to be a subject of investigation and controversy. It is generally agreed that prolonged exposure of personnel to RF radiation should be limited to an absolute minimum. It is also generally agreed that exposure should be reduced in working areas where personnel heat load is above normal. A 10 mW/cm<sup>2</sup> per one tenth hour average level has been adopted by several U.S. Government agencies including the Occupational Safety and Health Administration (OSHA) as the standard protection guide for employee work environments. An even stricter standard is recommended by the American National Standards Institute which recommends a 1.0 mW/cm<sup>2</sup> per one tenth hour average level exposure between 30 Hz and 300 MHz as the standard employee protection guide (ANSI C95.1-1982).

RF energy must be contained properly by shielding and transmission lines. All input and output RF connections, such as cables, flanges and gaskets must be RF leak proof. Never operate a power tube without a properly matched RF energy absorbing load attached. Never look into or expose any part of the body to an antenna or open RF generating tube or circuit or RF transmission system while energized. Monitor the tube and RF system for RF radiation leakage at regular intervals and after servicing.

## **HOT SURFACES –**

The power components in the transmitter are cooled by forced-air and natural convection. When handling any components of the transmitter after it has been in operation, caution must always be taken to ensure that the component is cool enough to handle without injury.





## Table of Contents

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	APPLICATION.....	1
1.2	SPECIFICATIONS .....	3
1.3	ORDERING INFORMATION .....	5
1.4	UNPACKING & INSPECTING.....	6
<b>2</b>	<b>INSTALLATION.....</b>	<b>7</b>
2.1	Stationary Remote Broadcast Installation .....	7
2.2	Stationary Remote Installation Procedure.....	7
2.3	Mobile Installation .....	9
2.4	Transmitter Mounting .....	10
2.5	Receiver Mounting.....	10
2.6	Mobile Remote Control.....	10
2.7	Mobile Repeat .....	11
2.8	Automatic Morse Code Station Identifiers .....	11
2.9	Mobile Antenna Installation .....	11
2.10	Fixed Base Station and Repeater Installation.....	14
<b>3</b>	<b>ANTENNAS.....</b>	<b>15</b>
3.1	BASE STATION ANTENNA INSTALLATION CHECKLIST .....	15
<b>4</b>	<b>CONTROL, LED, &amp; CONNECTOR FUNCTIONS .....</b>	<b>16</b>
4.1	ACCESSORY Input Connector.....	16
4.2	AC LINE Switch, AC Receptacle & Fuse .....	18
4.3	AFC LOCK LED.....	19
4.4	ANTENNA Connector .....	19
4.5	ENCODE Switch.....	19
4.6	FREQUENCY SELECT (SRPT-40A only).....	19
4.7	F1/F2 Switch (SRPT-30 only) .....	20
4.8	AUDIO GAIN Controls.....	20
4.9	HIGH TEMP LED.....	20
4.10	HIGH VSWR LED .....	21
4.11	METER and METER SELECT Knob .....	21
4.12	MIC Input Connectors.....	21
4.13	MONITOR Jack .....	21
4.14	POWER ADJUST Pot.....	22
4.15	TRANSMIT LED .....	22
4.16	TRANSMIT/STANDBY Switch .....	22
<b>5</b>	<b>OPERATION.....</b>	<b>22</b>
5.2	Connect up Antenna.....	25
5.3	Power-Up SRPT-30/40A .....	25



5.4	Adjusting Output Power .....	26
5.5	What Frequency Will the SRPT-30/40A Power-Up on? .....	26
5.6	Inputting Audio .....	27
5.7	Changing Output Frequency Direct .....	27
5.8	What is A Valid Output Frequency? .....	28
5.9	Changing Output Frequency via Channel Select – SRPT-40A Only .....	28
5.10	Storing Output Frequencies into Channels – SRPT-40A Only .....	29
5.11	Control Switch Settings – SRPT-40A Only .....	29
<b>6</b>	<b>THEORY OF OPERATION.....</b>	<b>32</b>
6.1	CIRCUIT BOARD DESCRIPTION.....	32
6.2	RF SYSTEM & CONTROL .....	34
<b>7</b>	<b>RECOMMENDED TEST EQUIPMENT .....</b>	<b>38</b>
<b>8</b>	<b>TOOLS FOR ALIGNMENT.....</b>	<b>38</b>
<b>9</b>	<b>SRPT-30/40A TRANSMITTER FACTORY TEST REPORT .....</b>	<b>39</b>
<b>10</b>	<b>CALIBRATION AND ADJUSTMENTS .....</b>	<b>40</b>
10.1	Switching Power Supply Voltage Adjustment.....	40
10.2	B+ Adjustment When Using 15-30VDC External Supply .....	41
10.3	Frequency Measurement.....	41
10.4	Frequency Fine-Tune Adjust.....	42
10.5	Front Panel Meter Adjust – Forward Power.....	42
10.6	Front Panel Meter Adjust – Reverse Power .....	42
10.7	Front Panel Meter Adjust – PA Current.....	43
10.8	Maximum Power Adjust .....	43
10.9	Encoder Adjustments .....	43
10.10	Audio Adjustments .....	44
10.11	Modulation Adjustment.....	44
10.12	Procedure for Removing Pre-Amp Mixer Board, 800-251 .....	45
10.13	Forward Power Calibration – SRPT-40A Only .....	45
10.14	Reverse Power Calibration - SRPT-40A Only.....	48
<b>11</b>	<b>SRPT30 BILL OF MATERIAL .....</b>	<b>54</b>
<b>12</b>	<b>SPRT40A BILL OF MARTERIAL .....</b>	<b>62</b>
<b>13</b>	<b>SRPT 30 and SRPT 40A Synthesizers, PAs, and TSL Audio .....</b>	<b>70</b>
<b>14</b>	<b>RF TECHNICAL SERVICES CONTACT INFORMATION .....</b>	<b>108</b>
<b>15</b>	<b>SCHEMATICS .....</b>	<b>108</b>



# 1 INTRODUCTION

## 1.1 APPLICATION

The Marti Models SRPT-30/40A are wide-band – high power RPU Transmitters designed to operate in the Remote Pick-Up Broadcast Service as defined in Part 74, Subpart D, of the FCC Rules and Regulations. The SRPT-30 replaces the Marti RPT-30 series of RPU's. Like its predecessor, the SRPT-30 has two frequency channels and a four-input mixer for mic/line audio. Unlike the RPT-30, the SRPT-30 uses synthesizer technology (not to be confused with frequency agile) instead of the discrete crystal technology. Also the SRPT-30 is equipped with a wide-band power amplifier that has a power output up to 30 watts that can be adjusted from the front panel. This, combined with the wide- band synthesizer, benefits the operator in the following ways: (1) Frequency separation between F1 and F2 frequency can be up to 50 MHz and (2) No RF tuning required.

The SRPT-40A also uses synthesizer technology with a wide-band power amplifier and requires no tuning. It is frequency agile up to 50 MHz with a front-panel adjustable output power up to 60 watts in some models. The frequency can be "dialed in" from the front panel and will automatically tune precisely to all frequencies divisible by 5 KHz or 6.25 KHz increments. It will also tune to within  $\pm .00015\%$  tolerance of most other frequencies not divisible by 5 KHz or 6.25 KHz increments. Finally, the user may operate the SRPT-40A in channel mode where he may store and recall up to 10 frequencies.

Refer to the SPECIFICATIONS & ORDERING section for a listing of available frequency ranges and power models. These transmitters, when used with their recommended companion receiver, provide a remote broadcast link having audio quality not approached by conventional voice communication radio equipment. The SRPT-30/40A transmitters operate from 88-132 VAC or 176-264 VAC (manually switched internally), 50/60 Hz. The transmitters can also operate on 12-15 VDC or 15-30 VDC battery (or external supply) in fixed, portable, or mobile, service. Four audio input channels are provided with individual mixing gain controls. A meter and selector switch are provided for monitoring forward and reverse power, power supply voltage, PA current and audio compression.

### SRPT-30/40A Features:

- Four balanced microphone mixing inputs, one switchable to balanced line level
- No RF tuning required
- Switching Power Supply operates on any AC voltage from 88-132 VAC or 176-264 VAC (manually switched internally), 50/60 Hz
- LEDs indicate High VSWR, Over-Temperature, AFC Lock, and Transmit
- Illuminated VU Meter for displaying Forward/Reverse Power, PA current, Power Supply voltage, and Audio Compression
- Output power adjustable from front panel
- External 12-15 VDC or 15-30 VDC supply capability and external transmit control
- When operating on external 12-15 VDC supply, RPU will still remained locked for external supply voltages as low as 7 VDC (Max power will de-rate linearly below 12 VDC)

- Fully suppresses external voltage supply noise such as car alternator
- High speed imbedded  $\mu$ -controller to perform the following additional features:
  - Power held constant over frequency, temperature, and voltage change
  - High PA temp and VSWR warning indicators
  - Auto frequency re-lock due to power outage
  - Auto fold-back and recover due to high VSWR
  - Auto shutdown due to very high PA temp – auto recover after cool down
  - Auto shutdown due to open/short-output – auto recover
- Can operate as TSL (Models SRPT30-450T and SRPT40A-450T)

#### **SRPT-40A Only Features:**

- Continuous-duty output - 60 watts maximum in some models
- Frequency agile pushwheel switches allow selection of almost any frequency (100 Hz steps) in operating band up to 50 MHz
- 10 user programmable channels
- No frequency look-up table required
- Remembers and locks-on last frequency during power-up
- Frequency resolution: 5 or 6.25 KHz steps –  $\pm .00004\%$  accuracy  
-Most other frequencies (100 Hz steps) -  $\pm .00015\%$  accuracy

#### **SRPT-30 Only Features:**

- Continuous-duty output - 30 watts maximum most models
- Two frequency channels, F1 and F2, selected at time of order
- Up to 50 MHz separation between frequency channels
- Selected frequencies divisible by 5 or 6.25 KHz steps have a  $\pm .00004\%$  accuracy  
-Most other frequencies (100 Hz steps) -  $\pm .00015\%$  accuracy



## 1.2 SPECIFICATIONS

### Models SRPT-30 and SRPT-40A

### Remote Pick-Up Broadcast Transmitters

Conditions (unless specified otherwise): 1.5 VSWR, 110 VAC input with B+ = 13 Volts, 25°C ambient

Frequency Bands and Maximum Output Power:	See ORDERING INFORMATION below.
Frequency Agility and Accuracy SRPT-40A (450 models and less)	An executed "dialed-in" frequency that operates within model frequency range will have an accuracy within: (1) $\pm .00004\%$ for frequency divisible by 5 or 6.25 KHz, or
Frequency Agility and Accuracy SRPT-40A (800 models and greater)	An executed "dialed-in" frequency that operates within model frequency range will have an accuracy within: (1) $\pm .00004\%$ for frequency divisible by 10 or 12.5 KHz, or (2) $\pm .00015\%$ for MOST frequencies NOT divisible by 10 or
Frequency Selection and Accuracy SRPT-30 (450 models and less)	Two frequencies only, F1 and F2, determined at time of order, must operate within model frequency range and will have an accuracy within: (1) $\pm .00004\%$ for frequency divisible by 5 or 6.25 KHz, or (2) $\pm .00015\%$ for MOST frequencies NOT divisible by 5 or 6.25 KHz*
Frequency Selection and Accuracy SRPT-30 (800 models and greater)	Two frequencies only, F1 and F2, determined at time of order, must operate within model frequency range and will have an accuracy within: (1) $\pm .00004\%$ for frequency divisible by 10 or 12.5 KHz, or (2) $\pm .00015\%$ for MOST frequencies NOT divisible by 10 or 12.5 KHz*
Operating Temp. Range:	-10°C to +45°C
Frequency Stability (over operating temperature)	0.0001%
Deviation:	Adjustable, $\pm 20$ KHz max
Audio Bandwidth:	Standard: 7.5 KHz Available: 5 KHz, 10 KHz, specials upon request
Signal-to-Noise:	$\geq 53$ dB, 5 KHz deviation, 75 $\mu$ sec pre/de-emphasis
Frequency Response:	$\pm 1.5$ dB from 50 Hz to Audio Bandwidth, 75 $\mu$ sec pre/de-emphasis
Distortion:	$\leq 2\%$ from 50 Hz to Audio Bandwidth, 75 $\mu$ sec pre/de-emphasis
Spurious Emissions:	More than 60 dB below carrier
RF Connector:	Type N-Female
RF Output Impedance:	50 Ohms
Audio Inputs:	Four balanced microphone (150 ohms) inputs (XLR-3) with mixing controls. One input switchable to balanced line level at microphone #4 input and D connector on rear panel.
Audio Input Levels:	Microphone: -68 to -35 dBm Line: 0 to +10 dBm, 6-800 Ohms
Modulation Control:	Broadcast-quality compressor/limiter built in.
Encoding:	Sub audible 27 Hz. tone encoder built in.
Metering/Indicators:	Illuminated meter indicates forward and reverse power, PA current, B+, and audio compression. LEDs indicate TRANSMIT, AFC LOCK, HIGH

Controls:	(4) Input level controls, METER control knob, ENCODE switch, POWER ADJUST pot, TRANSMIT switch, and MONITOR jack. SRPT-40A: FREQUENCY SELECT switches and EXECUTE switch SRPT-30: F1/F2 switch
Power Requirements:	88-132 VAC or 176-264 VAC (manually switched internal linear supply), 50/60 Hz External DC operation on 12 - 15 volts or 15 - 30 volts.
Approximate PA Current Rating (at maximum power output):	SRPT-40A: 8.5 to 10.5 Amps SRPT-30: 6.5 to 7.5 Amps (The data above varies across frequency band and from model to
Accessory Connector:	15-pin D connector for DC power, remote control, encode, line level
Weight:	Net: 8.25 Lbs (3.74 Kg). Packed: 16.75 Lbs (7.60 Kg).
Dimensions:	11.5in (29.21cm) W x 3.5in (8.89cm) H x 14.3in (36.83cm) D. Packed: 19in (48.26cm) W x 22in (55.88cm) H x 9in (22.86cm) D.

\* - There are a few non-standard frequencies that will not automatically tune to within .00015% of requested frequency. For those frequencies, the operator must change to the nearest standard frequency and then manually tune the reference oscillator to desired frequency. Consult factory for frequencies not perfectly divisible by 5 KHz or 6.25 KHz. We will be able to tell you how close the output will come to desired frequency.



### 1.3 ORDERING INFORMATION

Conditions (unless specified otherwise): 1.5 VSWR, 110 VAC input with B+ = 13 Volts, 25°C ambient

MARTI PART #	Frequency Range (MHz)	Maximum RF Output Power (W)	Typical MAX RF Output Power over Frequency	Certifications
SRPT30-150	135-182	30	20W 135-140 MHz 30W 140-180 MHz 20W 180-182 MHz	FCC ID: DDE-RPU-60W-150S (FCC Part 74 Subpart D) Emission Designators: 25K0F3E, 30K0F3E
SRPT30-230	215-250	30	30W 215-250 MHz	
SRPT30-250	235-265	30	25W 235-245 MHz 30W 245-265 MHz	
SRPT30-330	300-350	30	20W 300-315 MHz 30W 315-350 MHz	
SRPT30-450 -or- SRPT30-450T (for TSL RPU)	430-480	30	30W 430-480 MHz	FCC ID: DDE-RPU-50W-450S (FCC Part 74 Subpart D) Emission Designators: 10K0F3E, 25K0F3E, 50K0F3E
SRPT30-950	935-965	20	20W 935-960 MHz 18W 960-965 MHz	
SRPT40A-150	135-182	60	50W 135-140 MHz 60W 140-175 MHz 50W 175-180 MHz 40W 180-182 MHz	FCC ID: DDE-RPU-60W-150S (FCC Part 74 Subpart D) Emission Designators: 25K0F3E, 30K0F3E
SRPT40A-230	215-250	30	30W 215-250 MHz	
SRPT40A-250	235-265	30	25W 235-245 MHz 30W 245-265 MHz	
SRPT40A-330	300-350	30	20W 300-315 MHz 30W 315-350 MHz	
SRPT40A-450 -or- SRPT40A-450T (for TSL RPU)	430-480	50	50W 430-465 MHz 45W 465-480 MHz	FCC ID: DDE-RPU-50W-450S (FCC Part 74 Subpart D) Emission Designators: 10K0F3E, 25K0F3E, 50K0F3E
SRPT40A-950	935-965	20	20W 935-960 MHz 18W 960-965 MHz	

#### Available OPTIONS for the SRPT-30/40A Transmitters

Marti No.	Description
585-141	12-15 VDC External Supply Cable
585-142	15-30 VDC External Supply Cable
585-139	12-15 VDC Mobile Repeat Cable, CR/AR-10 to SRPT-30/40A
585-140	15-30 VDC Mobile Repeat Cable, CR/AR-10 to SRPT-30/40A
585-143	Fixed Repeat Cable, CR/AR-10 to SRPT-30/40A
700-250-13	Rack mounting kit
700-252-2	Mobile mounting kit
565-006-1	Racom 1402 Automatic Morse Code Station Identifier with mounting kit
585-088	SRPT30/40A TSL to Racom Cable Assembly



## 1.4 UNPACKING & INSPECTING

This equipment was factory tested, inspected, packed, and delivered to the carrier with utmost care. Do not accept shipment from carrier which shows damage or shortage until the carrier's agent endorses a statement of the irregularity on the face of the carrier's receipt. Without documentary evidence, a claim cannot be filed.

Unpack equipment immediately upon receipt and thoroughly inspect for concealed damage. If damage is discovered, stop further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature is necessary to support claim. Check your shipment against the shipping papers for possible shortage. Do not discard any packing material until all items are accounted for. Small items are often thrown away with packing material. Packing material should be retained until equipment testing is completed. Any equipment returned to the factory should be packed in original cartons, insured, and pre-paid.





## 2 INSTALLATION

Install rack-mounted equipment in a well-ventilated, well-grounded, and shielded rack cabinet. Do not locate solid-state equipment in a rack above tube-type equipment, which produces high temperatures. It is highly recommended that if the equipment is mounted in a rack cabinet, a blower should be installed in the cabinet as well.

Problems can also be avoided by locating this unit away from other equipment which has transformers that produce strong magnetic fields. These fields can induce hum and noise into the Marti equipment thus reducing performance. Strong radio-frequency (RF) fields should be avoided where possible. Extensive shielding and filtering have been incorporated into this equipment to permit operation in moderate RF environments. All equipment racks, cabinets, etc., should be bonded together by wide copper grounding strap to ensure that all system elements are at RF ground potential.

### 2.1 Stationary Remote Broadcast Installation

The basic stationary remote installation consists of the SRPT-30/40A transmitter, a 88-132 or 176-264 VAC power source, microphones and other audio program sources, and a portable antenna. Remotes using portable antennas inside buildings have very limited range (typically less than one mile). If greater range is needed, consider locating the transmitting antenna outside the building at a height necessary to provide a line-of-sight path to the receiving antenna. This may not be practical if a great length of coaxial cable is required. Many broadcasters are using the Marti mobile relay system to do remotes from inside buildings. This system consists of the originating transmitter with its antenna inside the building which transmits to a "mobile relay" parked outside the building. The mobile relay consists of a Marti Model AR-10 receiver and Marti RPT series transmitter with mobile antennas installed in a vehicle. The AR-10 receiver picks up the encoded signal originating from the RPT series transmitter located inside the building, automatically turns on the relay transmitter (on a different frequency), which re-transmits the program to the distant receiving antenna at the radio station studio or transmitter site. (Mobile relay equipment packages are available from Marti.)

### 2.2 Stationary Remote Installation Procedure

1. The transmitter is normally located near the announcer or engineer to permit access to gain controls, microphone inputs, the monitor jack, and metering.



Personnel must not be near the antenna when radiating. Locate antenna as far as possible from people and equipment susceptible to RF radiation. Do not mount antenna directly on transmitter. Refer to ANSI C95.1 "Limits on Non-Ionizing Radiation."

2. With the SRPT-30/40A TRANSMIT/STANDBY switch in "STANDBY" position, plug the transmitter into a grounded, three-prong, 88-132 or 176-264 VAC outlet.

### **WARNING**

THE MANUAL SWITCH ON THE INTERNAL SWITCHING POWER SUPPLY IS SET AT THE FACTORY TO THE 115 POSITION IF THE ORDER WAS FOR 88-132 VAC.

THE MANUAL SWITCH ON THE INTERNAL SWITCHING POWER SUPPLY IS SET AT THE FACTORY TO THE 230 POSITION IF THE ORDER WAS FOR 176-264 VAC.

IF THE OPERATOR PLANS TO OPERATE THIS UNIT AT AN AC VOLTAGE DIFFERENT THAN WHAT IS STATED ON ORDER, IT IS THE RESPONSIBILITY OF THE PURCHASER TO SWITCH TO THE APPROPRIATE POWER SUPPLY POSITION.

### **WARNING**

DO NOT PLUG INTO AC WITHOUT FIRST KNOWING THE POSITION OF THE AC INPUT SWITCH LOCATED ON THE SIDE OF THE INTERNAL POWER SUPPLY.

SEE AC LINE INPUT SELECTION – 88-132 VAC OR 176-264 VAC SUB-SECTION IN THE CALIBRATION AND ADJUSTMENTS SECTION FOR VERIFICATION AND CHANGING.



**WARNING**

THIS EQUIPMENT MUST BE OPERATED WITH A 3-PRONG, GROUNDED, 88-132 OR  
176-264  
VOLT AC OUTLET  
RECEPTACLE!

FAILURE TO USE A PROPERLY GROUNDED OUTLET COULD RESULT IN A SAFETY  
HAZARD OR FAULTY EQUIPMENT PERFORMANCE.

IF AN EXTENSION CORD IS USED, IT MUST BE THE THREE-WIRE GROUNDING TYPE  
TO INSURE SAFETY.

**WARNING**

DO NOT CUT OFF THE GROUND PIN OF A 3-  
PRONG PLUG!

EXCESSIVELY LONG EXTENSION CORDS SHOULD BE AVOIDED SINCE THE VOLTAGE  
DROP CAN DEGRADE EQUIPMENT PERFORMANCE.

DO NOT ALLOW THE SRPT-30/40A TO  
GET WET.

DO NOT OPERATE WHERE PERSONNEL TOUCHING THE TRANSMITTER (OR ITS  
MICROPHONE, ANTENNA, OR OTHER CONNECTED EQUIPMENT) ARE STANDING ON  
WET GROUND OR CONCRETE.

3. For locations where AC power is not available, the SRPT-30/40A can be powered from a fully charged automobile battery.
4. Connect a portable antenna such as the Marti PAV/150, PAV-450, or YC-450 to the ANTENNA connector on the back of the transmitter.

## 2.3 Mobile Installation

The SRPT-30/40A transmitter can be installed in the vehicle where the TRANSMIT/STANDBY function can be operated directly, or the transmitter can be located elsewhere (in the trunk of a car or rear of a van) and controlled remotely. The choice depends upon the type of vehicle and the type of operation anticipated. The antenna(s) are usually mounted on top of the vehicle to provide maximum height.



## 2.4 Transmitter Mounting

1. Locate transmitter where vent holes on top and rear of unit are not obstructed. Leave enough space for the mic. Plug on the front panel and the accessory plug on rear of unit.
2. Hook the four mounting fasteners (in retracted position in the four slots on the sides of the transmitter. See Figure 2-1. (Fasteners are in Mobile Mounting Kit, 700-252-2).
3. Mark the location of the two mounting holes in each fastener bracket. Drill 7/64" diameter holes into the mounting surface at the marked places for #6 x 1/2" sheet metal screws.
4. Attach the mounting fasteners with the sheet metal screws provided. Secure the transmitter with the fasteners.

## 2.5 Receiver Mounting

For mobile repeat using the Marti AR-10 Mobile Repeat Receiver, mount the receiver near the transmitter using the three fasteners supplied in Mobile Mounting Kit, 700-252-2.

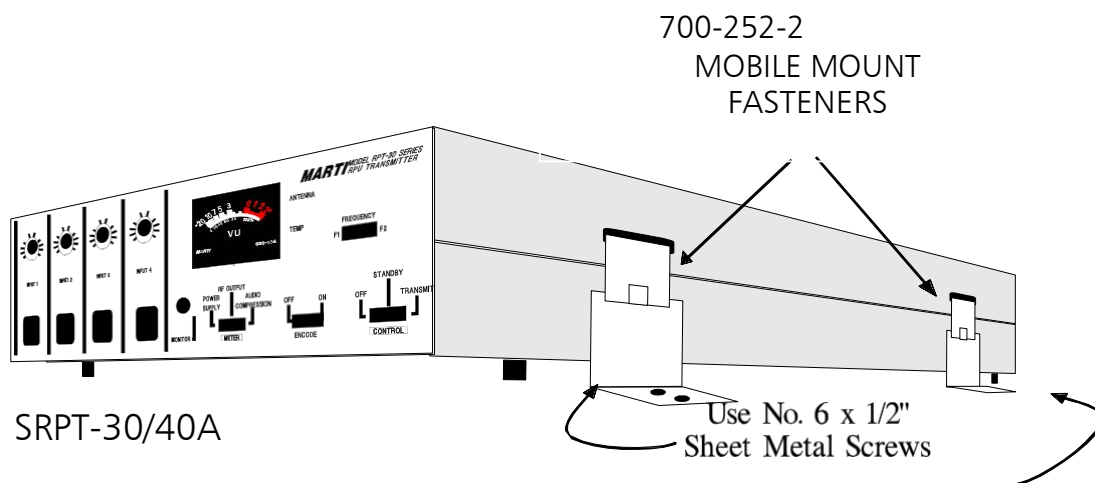


Figure 2-1. Receiver Mounting

## 2.6 Mobile Remote Control

Remote control of the SRPT-30/40A transmitter requires a switch to control primary 12-15 VDC power (or 15-30 VDC) and a second switch to control the transmit function. The primary 12-15 VDC (or 15-30 VDC) control requirement can be met by tapping the ignition switch circuitry of the vehicle. The "transmit" function can be performed by installing a switch on the vehicle.

Figure 2-2 shows the electrical circuit of a mobile installation for 12-15 VDC (585-141) and 15-30 VDC (585-142), respectively.



## 2.7 Mobile Repeat

Mobile repeat operation is covered under STATIONARY REMOTE BROADCAST INSTALLATION. Electrical connection for a 12-15 Volt supply is made through Mobile Repeat Cable No. 585-139. This cable is connected between the SRPT-30/40A transmitter and AR/CR-10 receiver. Power is obtained by connecting the fused RED wire to the 12-15 VDC battery or supply. The supply must be capable of delivering 10 Amps minimum. The electrical diagram of this cable is shown in Figure 2-3.

### NOTICE

WHEN OPERATING THROUGH A CIGARETTE LIGHTER, THERE MAY BE A ONE TO TWO VOLT DROP DUE TO THE LENGTH OF INTERNAL VEHICLE WIRING AND THE LARGE AMOUNT OF CURRENT REQUIRED TO OPERATE THE SRPT-30/40A AT HIGHER OUTPUT POWERS.

THE SRPT-30/40A WILL OPERATE WITH AN EXTERNAL INPUT VOLTAGE AS LOW AS 7 VDC. HOWEVER THE MAXIMUM RF OUTPUT POWER WILL DE-RATE LINEARLY AS THE EXTERNAL INPUT VOLTAGE DROPS BELOW 12 VDC.

Electrical connection for a 15-30 Volt supply is made through Mobile Repeat Cable No. 585-140. This cable is connected between the SRPT-30/40A transmitter and AR/CR-10 receiver. Power is obtained by connecting the fused BLUE wire to the vehicle 15-30 VDC battery or supply. The supply must be capable of delivering 10 Amps minimum. The electrical diagram of this cable is shown in Figure 2-3.

## 2.8 Automatic Morse Code Station Identifiers

The SRPT30/40A-450T TSL RPU's are used for sending data back from a transmitter site to the studio (also known as telemetry). In older FCC requirements, un-manned transmitters required an automatic remote control system to send data back to the studio for verifying that the transmitter was operating properly. Many broadcasters today are still using this system. Along with the data, a station identifier in Morse code can also be input into the TSL. Marti typically uses the RACOM MODEL 1402 Automatic Morse Code Station Identifier to accomplish this task. Marti stocks and sells the RACOM 1402 (part number 565-006-1) along with the interconnecting cable (part number 585-088). Typically, the cable is connected to the RACOM 1402 at the Marti facility. The customer can also connect up the cable as well. Refer to Drawing 702-125.

## 2.9 Mobile Antenna Installation

One or more mobile antennas are required depending upon the various receive and transmit frequencies and whether antenna duplexing is used. Antennas are specified in the various system packages listed in the Marti literature. The installer should follow the instructions supplied with the mobile antennas.



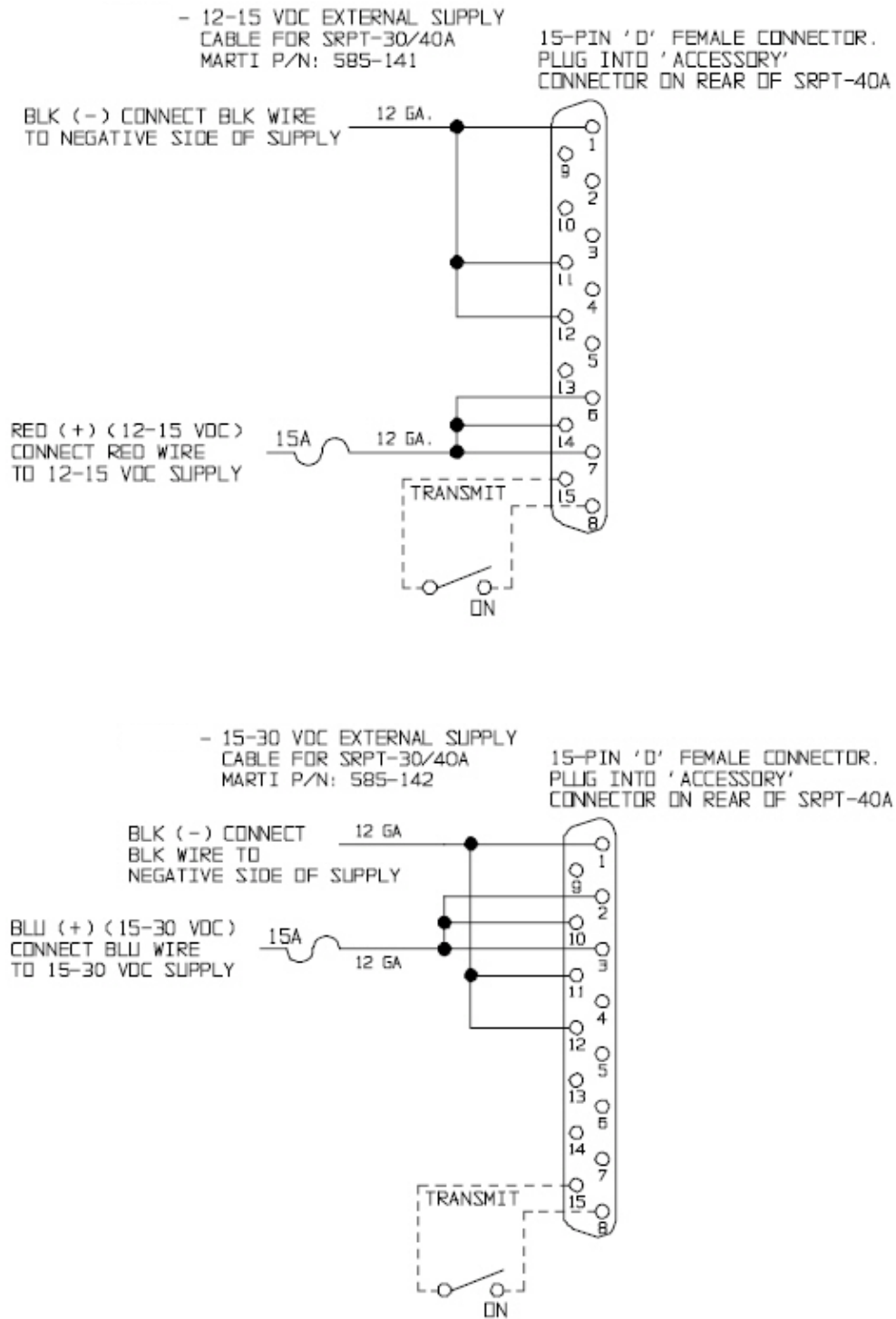


Figure 2-2. External Voltage supply connections

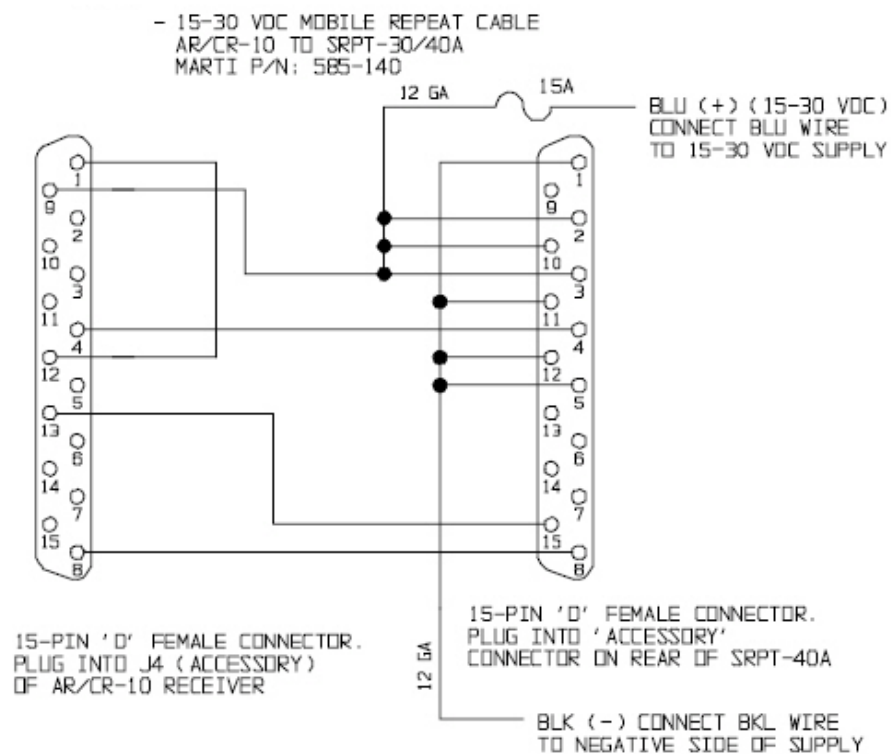
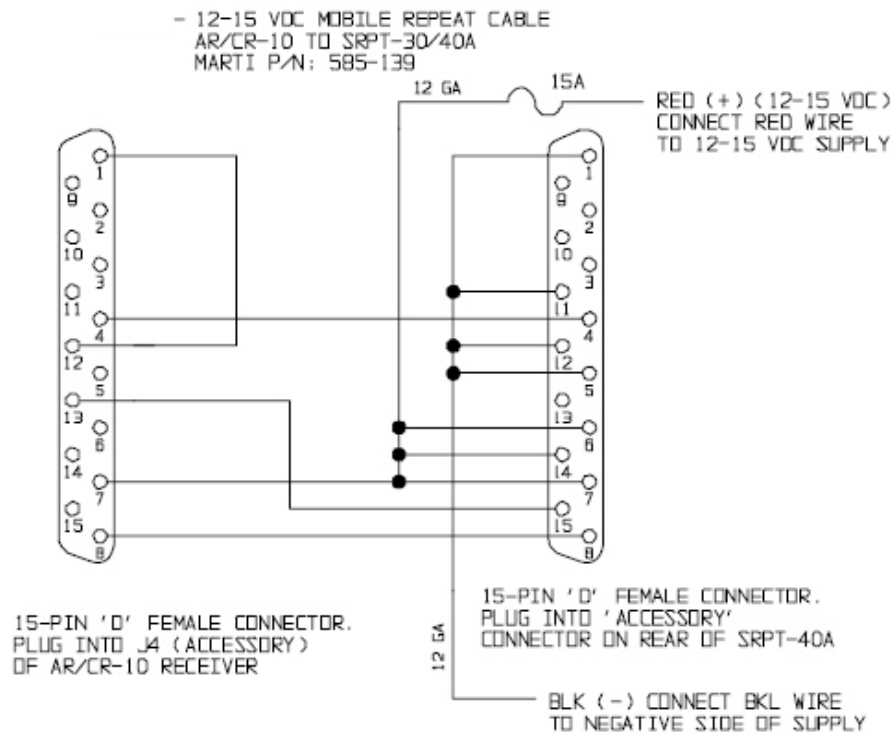


Figure 2-3. Mobile Repeat Cable

FIG4 - FIXED REPEAT CABLE  
AR/CR-10 TO SRPT-30/40A  
MARTI P/N: 585-143

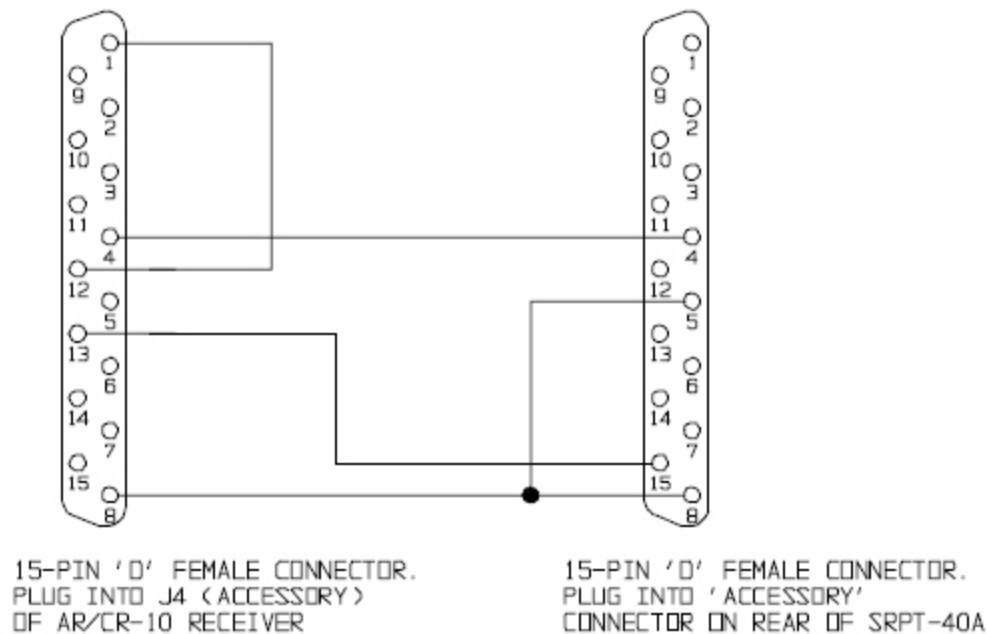


Figure 2-4. Fixed Repeat Cable.

## 2.10 Fixed Base Station and Repeater Installation

1. Install transmitter in standard rack by using Rack Mounting Kit No. 700-250-13 available from Marti.

### CAUTION

ALLOW ONE PANEL SPACE ABOVE AND BELOW TRANSMITTER FOR INLET AIR-FLOW TO INTERNAL FAN.

2. Connect transmitting antenna to ANTENNA connector on SRPT-30/40A rear panel.
3. Plug transmitter into a 3-prong, grounded 88-132 or 176-264 VAC outlet.

### WARNING

FAILURE TO USE A PROPERLY GROUNDED OUTLET COULD RESULT IN A SAFETY HAZARD OR FAULTY EQUIPMENT PERFORMANCE.

4. For fixed automatic repeater operation, connect Cable No. 585-143 (Figure 2-4) between accessory connectors of the receiver and SRPT-30/40A transmitter. Connect receiving antenna to receiver J6 and transmit antenna to SRPT- 30/40A ANTENNA connector.





## 3 ANTENNAS

### 3.1 BASE STATION ANTENNA INSTALLATION CHECKLIST

The following suggestions are offered to help those responsible for antenna installations avoid costly errors in assembly and adjustment. Marti Electronics assumes no responsibility for the installation and performance of antenna systems associated with its equipment. The following suggestions are not intended to be a complete step-by-step procedure, simply a listing of some of the most frequently reported errors in antenna system installation.

#### 3.1.1 Antenna Assembly

Follow the manufacturer's instructions carefully. If no instructions were included with the antenna, call or write the antenna manufacturer for instructions. Antennas which have phasing or stacking cables must be assembled carefully to avoid phase reversal or signal cancellation.

#### 3.1.2 Transmission Line Connector Assembly

Do not use RG-58 U or RG-8 U cable for STL station antennas! They have too much loss at VHF and UHF frequencies. Follow the instructions furnished by the manufacturer when cutting coaxial cable. Inspect the cable ends for small metal fragments which can short-circuit the line inside the connector assembly. Check the line for a short-circuit condition after each connector is installed by using an ohmmeter. Pressurized line should be checked for several days under pressure before installation on a tower to ensure that there are no leaks in the line or fittings.

#### 3.1.3 Moisture Proofing Coax Connectors and Fittings

Extreme care must be exercised with coaxial cable before and after connectors have been installed to ensure that moisture does not enter the line. Foam dielectric line can take on moisture absorption which is difficult to detect and remedy. Therefore, keep the line dry while in storage with ends tightly capped. Coaxial splices, connectors, and fittings, to be located outside should be made mechanically tight, then coated with a weather-proofing material over at least two layers of vinyl plastic electrical tape. Moisture problems in antenna systems are usually traced back to connectors which have NOT been properly taped. The Marti K-1 Grounding and Weatherproofing Kit is recommended for use in each new antenna installation.

#### 3.1.4 Location and Grounding of Coaxial Cable

Keep the RPU receiver coaxial cable as far from the broadcast transmitter and its coaxial cable as possible.

### WARNING

DO NOT STRAP RECEIVER CABLE TO THE MAIN ANTENNA CABLE AT ANY POINT.

PLACE THE RECEIVER ANTENNA COAXIAL CABLE ON THE OPPOSITE SIDE OF THE TOWER FROM THE MAIN ANTENNA CABLE.

Maintain maximum separation between these cables at all points, including the distance from tower base to transmitter building as well as inside the building.

### 3.1.5 System Grounding

It is essential that the RPU antenna system be properly grounded for safety and proper operation.

### 3.1.6 Antenna Installation and Adjustment

The polarization of the transmit and receive antennas of the RPU system must be the same! This means that if the transmitting antenna is vertical, the receiving antenna must also be vertical. Each antenna should be attached to the tower using the proper side mount or top mount hardware. If an RF wattmeter is available, each antenna and transmission line can be checked for VSWR when the transmitter is supplying power to it. The VSWR should be less than 1.5 to 1 (1.5:1).

### 3.1.7 Troubleshooting

If the antenna system fails to give the predicted signal strength level, the following items should be checked:

1. Check for correct assembly of antenna.
2. Check that antennas have same polarity.
3. Check VSWR of both transmit and receive antennas. VSWR should be less than 1.5:1.
4. Check for obstructions in the path such as trees and man-made structures. The base antenna must be high enough to provide a line-of-sight path to the remote transmitting antenna.

## CAUTION & WARNING

YOU CAN BE KILLED IF AN ANTENNA COMES IN CONTACT WITH ELECTRIC POWER LINES  
OR EXPOSED ELECTRICAL WIRING.

FOR YOUR SAFETY, USE EXTREME CAUTION WHEN IN-STALLING ANTENNAS.

KEEP AWAY FROM POWER LINES.

## 4 CONTROL, LED, & CONNECTOR FUNCTIONS

### 4.1 ACCESSORY Input Connector

#### 4.1.1 Audio Input:

When Input 4 is switched to "HI" level, audio can be fed into pins 4 and 5 of the ACCESSORY connector on the rear of the transmitter. Input level should be between 0.2 volts to 2.0 volts rms. The output impedance of the device connected to Input 4 should be 8 - 600 ohms. For unbalanced operation ground pin 5 to pin 1, 8, 11, or 12 and connect audio to pin 4. Use standard 15-pin "subminiature D" female connector with cover.

#### 4.1.2 Transmit Control:

"TRANSMIT" control can be accomplished remotely by a switch circuit connected between pin 15 and one of the available ground pins (pin 1, 8, 11, or 12).



#### **4.1.3 External DC supply:**

The SRPT-30/40A can be powered externally by either a 12-15 Volt DC supply or a 15-30 Volt supply. If powered off a 12-15 Volt supply, connect three positive leads of the supply to pins 6, 7, and 14. Connect three negative leads of the supply to three ground pins (pins 1, 11, and 12). Each of the three positive leads and each of the three negative leads should be an 18 gauge wire. You may also use one 12 gauge wire for each positive and negative leads and split the stranded ends into three at the connector end.

### **ATTENTION**

**FOR 12-15 VOLT EXTERNAL SUPPLY, THE OPTIMUM VOLTAGE IS FROM 12 TO 15 VOLTS.**

**APPLYING A VOLTAGE LOWER THAN 12 VOLTS, WILL LIMIT THE MAXIMUM RF OUTPUT POWER.**

**ALSO, THE EXTERNAL BATTERY OR POWER SUPPLY SHOULD BE CAPABLE OF HANDLING A CONSTANT 10 AMPS. THERE WILL BE A DROP IN VOLTAGE ACROSS THE POWER CABLES. THE POWER CABLES SHOULD BE AS SHORT AS POSSIBLE AND AS HEAVY GAUGE AS POSSIBLE. EXPECT A COUPLE OF VOLTS DROP WHEN OPERATING THROUGH A CIGARETTE LIGHTER.**

If powered from a 15-30 Volt supply, connect three positive leads of the supply to three 15-30VDC pins (pins 2, 3, and 10). Connect three negative leads of the supply to three ground pins (pins 1, 11, and 12). Each of the three positive leads and each of the three negative leads should be an 18 gauge wire. You may also use one 12 gauge wire for each positive and negative leads and split the stranded ends into three at the connector end.

### **ATTENTION**

**FOR 15-30 VOLT EXTERNAL SUPPLY, IF APPLYING A VOLTAGE LESS THAN 16 VDC, THE SRPT-30/40A EXTERNAL B+ ADJUST POT ON THE TWO-STAGE RF POWER AMPLIFIER BOARD SHOULD BE ADJUSTED TO ABOUT 12 VDC.**

**IF THIS IS THE CASE, THE MAXIMUM RF OUTPUT POWER COULD BE LIMITED.**

**CAUTION & WARNING**

NEVER INSTALL AND CONNECT THE 12-15 VOLT AND THE 15-30 VOLT SUPPLIES AT THE SAME TIME.

ALSO, NEVER CONNECT THE 15-30 VOLT SUPPLY TO THE 12-15 VOLT PINS AND NEVER CONNECT THE 12-15 VOLT SUPPLY TO THE 15-30 VOLT PINS.

DOING SO MAY DAMAGE THE INTERNAL SWITCHING SUPPLY OR EITHER OF THE EXTERNAL DC SUPPLIES.

**CAUTION & WARNING**

NEVER CONNECT THE SRPT-30/40A TO THE AC LINE AND EITHER OF THE EXTERNAL DC SUPPLIES AT THE SAME TIME.

DOING SO MAY DAMAGE THE INTERNAL SWITCHING SUPPLY OR THE EXTERNAL DC SUPPLY.

**4.2 AC LINE Switch, AC Receptacle & Fuse**

When the transmitter is not in use or if the SRPT-30/40A is to run off of an external supply, the AC LINE switch should be in the "OFF" position.

When ready to use the SRPT-30/40A off of the AC line voltage, plug power cord into the AC Receptacle and switch the AC LINE switch to the "ON" position.

The AC line fuse is rated at 2.5 amps.

**WARNING**

DO NOT PLUG INTO AC WITHOUT FIRST KNOWING THE POSITION OF THE AC INPUT SWITCH LOCATED ON THE SIDE OF THE INTERNAL SWITCHING POWER SUPPLY.

SEE AC LINE INPUT SELECTION – 88-132 VAC OR 176-264 VAC SUB-SECTION IN THE CALIBRATION AND ADJUSTMENTS SECTION FOR VERIFICATION AND CHANGING.



### 4.3 AFC LOCK LED

The AFC LOCK LED will either be flashing or solid green at all times, except during initial power up – and in that case it will only be off for a few seconds.

When the SYNTHESIZER is searching for a frequency to lock on to and is therefore not locked, the AFC LOCK LED will flash green. When the SYNTHESIZER finds and locks onto the frequency it was searching for, the AFC LOCK LED will stay on, solid green. Three seconds after the SYNTHESIZER becomes locked, it will then be ready and will enable the transmitter to output power.

In normal conditions, the SYNTHESIZER will not come “unlocked” unless sent a command to change to change to a new frequency. However, other conditions can cause the SYNTHESIZER to come unlocked such as an AC line surge or a sudden and very large change in VSWR. In those cases, the SYNTHESIZER will re-lock back on the assigned frequency. The AFC LOCK LED will flash green until the SYNTHESIZER is locked. Once the SYNTHESIZER is locked it will stay on, solid green.

### 4.4 ANTENNA Connector

Connection of various antenna systems is covered under INSTALLATION and ANTENNAS. It is only necessary for the operator or announcer to see that the ANTENNA connector is tight and that the antenna is clear of objects which may affect its radiation efficiency.

#### **CAUTION & WARNING**

**THE ANTENNA CONNECTOR IS A TYPE “N” FEMALE CONNECTOR AND REQUIRES A MATING TYPE “N” MALE CONNECTOR.**

**PLUGGING IN A “UHF TYPE (PL-259 OR SO-239)” INTO THE ANTENNA CONNECTOR WILL DAMAGE AND SHORT OUT THE ANTENNA CONNECTOR. THIS COULD BURN UP THE PA MODULE AND OTHER INTERNAL COMPONENTS.**

### 4.5 ENCODE Switch

The internal subaudible encoder can be switched “ON” or “OFF” by the front panel switch. Encoding is used to activate a repeater station, tape recorder, etc.

### 4.6 FREQUENCY SELECT (SRPT-40A only)

Dial in the numbers that represent a frequency, channel number, or other command using the FREQUENCY SELECT Pushwheel switches. Then press and release the EXECUTE switch to “send” the command numbers on the FREQUENCY SELECT pushwheel switches to the internal controller to be decoded and executed. See the OPERATION section for a listing and understanding of all commands.

## 4.7 F1/F2 Switch (SRPT-30 only)

Switching to the F1 position will cause the transmitter to lock onto the frequency that was configured at the factory as "F1". Switching to the F2 position will cause the transmitter to lock onto the frequency that was configured at the factory as "F2". The F1 and F2 frequencies are selected by the purchaser at the time of order.

## 4.8 AUDIO GAIN Controls

The GAIN potentiometer located above each input connector provides an independent level adjustment for that input. Each GAIN potentiometer is adjusted as follows:

1. Connect input source at normal audio level.
2. Turn GAIN potentiometer to maximum counter-clockwise ("OFF") position.
3. Place TRANSMIT/STANDBY switch in "STANDBY" position and allow METER pointer to reach 0 VU. Slowly increase gain (clockwise) until METER begins deflecting to the left on audio peaks. Maximum deflection should be -3 to -5 VU on the METER scale. This indicates 100% modulation of the transmitter. Excessive gain settings cause high compression values which result in annoying increase in background noise. A 600 ohm headset may be plugged into the MONITOR jack to aid in arriving at the proper gain adjustment. In high noise environments, close-talk the microphone and reduce MIC gain until a maximum of -2 VU gain-reduction is indicated.
4. Once the proper gain level is determined, it will not be necessary to change it for that particular microphone or tape player. The broadcast quality compressor/limited built into the unit will maintain modulation at the maximum level while preventing over-modulation.

## 4.9 HIGH TEMP LED

When the internal controller detects a PA temperature between 85 and 100 degrees C, the HIGH TEMP LED will flash red at a rate of once per second.

When the internal controller detects a PA temperature of greater than 100 degrees C, the RF output power will completely shutdown, and the HIGH TEMP LED will flash red at a rate of twice a second. The RF output power will stay shutdown until the PA temperature has dropped below 85 degrees C. When the internal controller detects that the PA temperature is below 85 degrees C, it will turn off the HIGH TEMP LED and then enable the PA to transmit power.

A HIGH TEMP alarm could be due to the fan malfunctioning, the SRPT-30/40A placed in a closed-in area with limited air circulation, or an experience of high VSWR.



## 4.10 HIGH VSWR LED

When the internal controller detects a VSWR of greater than 2 but less than 4, the HIGH VSWR LED will flash red at a rate of once per second.

When the internal controller detects a VSWR of greater than 4 but less than 6, the output power will limit to a maximum of half the rated power (that was set using the MAX PWR pot (R74) located on the synthesizer – see TUNE- UP and ADJUSTMENTS section) and the HIGH VSWR LED will flash red at a rate of twice per second. When the detected VSWR falls less than 4, the output will resume to its previous power setting, the HIGH VSWR LED will flash at a rate of once per second if VSWR greater than 2, and will turn off if VSWR is less than 2.

When the internal controller detects a VSWR of greater than 6, or detects a reverse power of greater than one-third the maximum rated output power, the output power will immediately shut off, the TRANSMIT LED will flash red, and the HIGH VSWR LED will flash rapidly. Every three seconds the controller will attempt to turn on the transmit output but will again shut down if the conditions have not changed. If this occurs, even if the operator turns off the TRANSMIT switch, the HIGH VSWR LED will still flash rapidly. The only way to stop the HIGH VSWR LED from flashing, is to repair the output (i.e., loose connection of output, wrong connector type, wrong cable, faulty antenna, short circuit cable, etc...), and then turn the TRANSMIT switch on (if it was off), and after 3 seconds if the controller does not detect a very high VSWR or high reverse power, the transmit output power will come on.

## 4.11 METER and METER SELECT Knob

When the METER SELECT Knob is either in the FORWARD POWER or REVERSE POWER position, the corresponding measurement can be read off of the top "WATTS" scale of the METER.

When the METER SELECT knob is either in the PA CURRENT or the B+ position, the corresponding measurement can be read off of the middle "VOLTS/AMPS" scale of the METER.

When the METER SELECT knob is in the AUDIO COMPRESSION position, the corresponding measurement can be read off of the bottom "VU" scale of the METER.

## 4.12 MIC Input Connectors

These balanced inputs are for a 150 ohm dynamic microphone such as the Shure BG 1.0 with standard XLR-3 or A3M connector. Microphone connections are given in INSTALLATION.

Input 4 can operate at MIC LEVEL or HIGH LEVEL by means of a SELECTOR switch inside the transmitter just behind the Input 4 pot. The unit is factory selected for "HI" (HIGH) LEVEL balanced input for use with tape machines, etc. To convert Input 4 to MIC (microphone) LEVEL, remove top cover and move switch to "MIC".

## 4.13 MONITOR Jack

The MONITOR jack is active in "STANDBY" and "TRANSMIT" positions of the TRANSMIT/STANDBY switch. A high-quality headset having 300 ohms or higher impedance can be

plugged into the MONITOR jack to make adjustments or to monitor the quality of the audio being transmitted. A miniature, single circuit, 1/8 inch, phone plug should be used with the MONITOR jack.

#### 4.14 POWER ADJUST Pot

When the SRPT-30/40A is transmitting, this pot can be adjusted to increase or decrease the output power from the MAXIMUM power setting to almost zero Watts.

#### 4.15 TRANSMIT LED

When the TRANSMIT/STANDBY switch is in the STANDBY position, the SRPT-30/40A will not transmit and the TRANSMIT LED will be off.

When the TRANSMIT/STANDBY switch is in the TRANSMIT position but the SYNTHESIZER is not ready, the SRPT-30/40A will not transmit and the TRANSMIT LED will flash red.

When the TRANSMIT/STANDBY switch is in the TRANSMIT position and the SYNTHESIZER is ready (which is always three seconds after the SYNTHESIZER becomes locked), the SRPT-30/40A will transmit and the TRANSMIT LED will be on, solid red.

#### 4.16 TRANSMIT/STANDBY Switch

This switch is placed in "STANDBY" position to shut off the output power. The synthesizer will still be locked on frequency as indicated by the solid AFC LOCK LED. The TRANSMIT/STANDBY switch is placed in the "TRANSMIT" position when transmission is desired. The output power will turn on immediately at an output power that correlates to the POWER ADJUST position. The TRANSMIT/STANDBY switch should be returned to the "STANDBY" position as soon as a transmission is completed.

## 5 OPERATION

Connect the SPRT-30/40A to the AC Line Receptacle or External DC Supply

### CAUTION & WARNING

**NEVER CONNECT THE SRPT-30/40A TO THE AC LINE AND EITHER OF THE EXTERNAL DC SUPPLIES AT THE SAME TIME.**

**DOING SO MAY DAMAGE THE INTERNAL SWITCHING SUPPLY OR THE EXTERNAL DC SUPPLY.**

#### 5.1.1 AC Line Operation

Position AC LINE switch to "OFF", then plug SRPT-30/40A into a 88-132 VAC (if internal supply switched to 115) or 176-264 VAC (if internal supply switched to 230), grounded, 3-prong receptacle.





**WARNING**

DO NOT PLUG INTO AC WITHOUT FIRST KNOWING THE POSITION OF THE AC INPUT SWITCH LOCATED ON THE SIDE OF THE INTERNAL POWER SUPPLY.

SEE AC LINE INPUT SELECTION – 88-132 VAC OR 176-264 VAC SUB-SECTION IN THE CALIBRATION AND ADJUSTMENTS SECTION FOR VERIFICATION AND CHANGING.

**WARNING**

THIS EQUIPMENT MUST BE OPERATED WITH A 3-PRONG, GROUNDED, 88-132 or 176-264 VAC RECEPTACLE!

FAILURE TO USE A PROPERLY GROUNDED OUTLET COULD RESULT IN A SAFETY HAZARD OR FAULTY EQUIPMENT PERFORMANCE.

IF AN EXTENSION CORD IS USED, IT MUST BE THE THREE-WIRE GROUNDING TYPE TO INSURE SAFETY.

DO NOT CUT OFF THE GROUND PIN OF A 3-PRONG PLUG!!

**5.1.2 External DC Supply (12-15 Volt) Operation**

Make sure that the SRPT-30/40A is not connected to an AC line. Place the front panel AC LINE switch in the ON position. This turns off External DC Supply (12-15 Volt) to the unit.

The external supply or battery must be capable of delivering 8/10 Amps if running the SRPT-30/40A at maximum output power. Connect up the unit using the Marti 585-141 12-15 VDC External Supply Cable. If you choose to build your own cable then follow the drawing on Figure 2-2A: Connect three positive leads of the supply to pins 6, 7, and 14 of a 15- pin female D connector. Connect three negative leads of the supply to three ground pins (pins 1, 11, and 12) of the 15- pin female D connector. Each of the three positive leads and each of the three negative leads should be an 18 gauge wire. You may also use one 12 gauge wire for each positive and negative leads and split the stranded ends into three at the connector end.

## **ATTENTION**

**FOR 12-15 VOLT EXTERNAL SUPPLY, THE OPTIMUM VOLTAGE IS FROM 12 TO 15 VOLTS.**

**APPLYING A VOLTAGE LOWER THAN 12 VOLTS, WILL LIMIT THE MAXIMUM RF OUTPUT POWER.**

**ALSO, THE EXTERNAL BATTERY OR POWER SUPPLY SHOULD BE CAPABLE OF HANDLING A CONSTANT 10 AMPS. THERE WILL BE A DROP IN VOLTAGE ACROSS THE POWER CABLES. THE POWER CABLES SHOULD BE AS SHORT AS POSSIBLE AND AS HEAVY GAUGE AS POSSIBLE. EXPECT A COUPLE OF VOLTS DROP WHEN OPERATING THROUGH A CIGARETTE LIGHTER.**

It is best to have an external switch between the external supply and the unit. Make sure the switch is in the open position before connecting it to external supply. Otherwise make sure that when connecting the positive lead to the external source that the 15-pin D connector is not connected to the SRPT-30/40A.

With the front panel AC LINE switch in the ON position, plug in the 15-pin D connector into the ACCESSORY connector located in the rear of the SRPT-30/40A. Turn on external supply (if have a switch). With a voltmeter, measure the voltage on the output of the external supply insuring that it is between 12 and 15 VDC. Switch the front panel AC LINE switch to the OFF position. The unit should power up.

### **5.1.3 External DC Supply (15-30 Volt) Operation**

Make sure that the SRPT-30/40A is not connected to an AC line. The front panel AC LINE switch does not control the External DC Supply (15-30 Volt) operation. Therefore it does not matter what position it is in.

The external supply or battery must be capable of delivering 8/10 Amps if running the SRPT-30/40A at maximum output power. Connect up the unit using the Marti 585-142 15-30 VDC External Supply Cable. If you choose to build your own cable then follow the drawing on Figure 2-2B: Connect three positive leads of the supply to three 15-30VDC pins (pins 2, 3, and 10). Connect three negative leads of the supply to three ground pins (pins 1, 11, and 2). Each of the three positive leads and each of the three negative leads should be an 18 gauge wire. You may also use one 12 gauge wire for each positive and negative leads and split the stranded ends into three at the connector end.

It is best to have an external switch between the external supply and the unit. Make sure the switch is in the open position before connecting it to external supply. Otherwise make sure that when connecting the positive lead to the external source that the 15-pin D connector is not connected to the SRPT-30/40A.

Plug in the 15-pin D connector into the ACCESSORY connector located in the rear of the SRPT-30/40A. Turn on external supply (if have a switch). With a voltmeter, measure the voltage on the output of the external supply insuring that it is between 12 and 15 VDC. The unit should power up.



From 16 to 20 VDC, the SRPT-30/40A will transmit up to 50 Watts RF output. From 20 to 30 VDC the SRPT-40A maximum output power will de-rate linearly down to 20 watts.

### **CAUTION & WARNING**

NEVER INSTALL AND CONNECT THE 12-15 VOLT AND THE 15-30 VOLT SUPPLIES AT THE SAME TIME.

ALSO, NEVER CONNECT THE 15-30 VOLT SUPPLY TO THE 12-15 VOLT PINS AND NEVER CONNECT THE 12-15 VOLT SUPPLY TO THE 15-30 VOLT PINS.

DOING SO MAY DAMAGE THE INTERNAL SWITCHING SUPPLY OR EITHER OF THE EXTERNAL DC SUPPLIES.

## **5.2 Connect up Antenna**

Connect antenna to the ANTENNA connector on the SRPT-30/40A rear panel. Connection of various antenna systems is covered under INSTALLATION and ANTENNAS.

### **CAUTION & WARNING**

THE ANTENNA CONNECTOR IS A TYPE "N" FEMALE CONNECTOR AND REQUIRES A MATING TYPE "N" MALE CONNECTOR.

PLUGGING IN A "UHF TYPE (PL-259 OR SO-239)" INTO THE ANTENNA CONNECTOR WILL DAMAGE AND SHORT OUT THE ANTENNA CONNECTOR. THIS COULD BURN UP THE PA MODULE AND OTHER INTERNAL COMPONENTS.

### **CAUTION**

DO NOT TURN ON AC LINE OR EXTERNAL DC POWER UNTIL ANTENNA HAS BEEN PROPERLY CONNECTED TO ANTENNA CONNECTOR!

## **5.3 Power-Up SRPT-30/40A**

If using AC line, turn on SRPT-30/40A by turning on front panel AC LINE switch. If using 12-15 Volt or 15-30 Volt external DC supply, turn on SRPT-30/40A by turning on external DC supply. Refer to the External DC Supply Operation procedure above for proper installation and operation.



The SRPT-30/40A will begin a power-up routine. The front panel meter will illuminate immediately. After about three seconds the AFC LOCK LED will begin flashing green indicating that the synthesizer is searching for the last frequency it was last locked on to.

If the TRANSMIT/STANDBY switch is in the TRANSMIT position, the TRANSMIT LED will flash red in unison with the green flashing AFC LOCK LED. Once the synthesizer has found and locked onto the frequency, the AFC LOCK LED will immediately stay on solid green and the TRANSMIT LED will continue to flash red for three additional seconds. After the three seconds, the SYNTHESIZER will be ready, will enable the power amplifier to transmit RF power, and the TRANSMIT LED will stay on solid red.

If the TRANSMIT/STANDBY switch is in the STANDBY position, the TRANSMIT LED and hence, the transmitter RF power, will be off and will stay off even after the SYNTHESIZER has locked and the AFC LOCK LED has illuminated solid green. When the TRANSMIT/STANDBY switch is placed in the TRANSMIT position (and three seconds have elapsed since the SYNTHESIZER became locked) the PA will immediately begin transmitting and the TRANSMIT LED will illuminate solid red.

## 5.4 Adjusting Output Power

Turn the METER CONTROL knob to the FORWARD POWER position and observe the forward power reading on the top scale of the METER. Using a small flat-head screwdriver, adjust the POWER ADJUST pot (located about  $\frac{3}{4}$  of an inch behind the POWER ADJUST bezel ring) to adjust the forward power to a desired output power as indicated on the METER.

## 5.5 What Frequency Will the SRPT-30/40A Power-Up on?

### 5.5.1 SRPT-30 Only:

The SRPT-30 will power-up on frequency F1 or F2 depending on the position of the F1/F2 front panel switch. The frequencies corresponding to F1 and F2 were determined at the time of order and are hard coded within the synthesizer.

### 5.5.2 SRPT-40A Only:

The SRPT-40A will always power up on the last frequency it was locked onto before last power-down. If you're not sure what frequency the SRPT-40A will power up on, first make sure that the POWER ADJUST pot is at a minimum (turned fully counter-clockwise) before powering up the SRPT-40A. After the SYNTHESIZER is locked and the TRANSMIT/STANDBY switch is set in the TRANSMIT position, monitor the RF output with a frequency counter. If necessary, increase the POWER ADJUST pot (turn clockwise) slowly until the frequency counter registers a frequency reading.



## **WARNING**

**NEVER CONNECT THE FREQUENCY COUNTER DIRECTLY TO THE RF OUTPUT CONNECTOR OF THE SRPT-30 OR SRPT-40A.**

**THE FREQUENCY COUNTER SHOULD BE COUPLED OFF OF AN RF COUPLER OR A WATT METER.**

**EXCEEDING THE INPUT POWER RATING OF THE FREQUENCY COUNTER COULD DO INTERNAL DAMAGE TO IT.**

## **5.6 Inputting Audio**

Plug in microphones (Inputs 1 - 3) or tape player (Input 4 internally switched to "HI" position; See MIC Input Connections, above) and check operation by setting the METER CONTROL knob to the AUDIO COMPRESSION position and observing the compression on METER and by a headset plugged into MONITOR jack. Set AUDIO GAIN controls paragraph in the CONTROL & CONNECTOR FUNCTIONS section for how to adjust for no more than -3 VU audio compression on the METER.

## **5.7 Changing Output Frequency Direct**

### **5.7.1 SRPT-30 Only:**

Simply change the position of the F1/F2 front panel switch and the unit will change to the corresponding frequency.

### **5.7.2 SRPT-40A Only:**

To change the frequency of the SRPT-40A, the S1 dip-switches on the Front Panel Control & Meter board (800- 385A) behind the front panel (see the SRPT-40A Adjustment Locations) need to be set with switches 1 and 2 in the "ON" position and switches 3 and 4 in the "OFF" position. These positions are the normal position and are set at the factory, so there should be no need to remove the top cover.

When the S1 switches are set as described in the last paragraph, then all that is required is to enter the desired frequency from left to right into the FREQUENCY SELECT pushwheel switches and then press and release the EXECUTE pushbutton switch.

All seven digits on the front panel FREQUENCY SELECT pushwheel switches must be entered. The frequency is entered in MHz where the first three digits represent the left side of the decimal place, and the last four digits represent the right side of the decimal place. For example, the frequency 450.0125 MHz will simply be entered as 4500125.

If a valid frequency is entered and the EXECUTE pushbutton is pressed and released, then the RF output power will immediately turn off (if it was on to begin with) and the SYNTHESIZER will go through it's normal routine in searching and locking onto the requested frequency. When the frequency is found, the AFC LOCK LED will stop flashing and illuminate solid green. After three seconds the TRANSMIT LED will stop flashing and illuminate solid red (assuming the



TRANSMIT/STANDBY switch is in the TRANSMIT position) and the SRPT-40A will resume transmitting at the new frequency and at the same output power it was before leaving the previous frequency.

## 5.8 What is A Valid Output Frequency?

A valid output frequency is defined as a frequency that operates within the model bandwidth and is either a standard frequency, or is a non-standard frequency that falls within  $\pm 0.00015\%$  of the requested frequency. A standard output frequency is one that is divisible by 5 or 6.25 KHz for 450 band models and less, and divisible by 10 or 12.5 KHz for greater than 450 band models. All other frequencies are considered non-standard frequencies. The SRPT-30/40A will lock on standard output frequencies within a  $\pm 0.00004\%$  tolerance. The SRPT-30/40A will lock on about 95% of non-standard frequencies. The tolerance of these frequencies fall within  $\pm 0.00015\%$  of the requested frequency. If the synthesizer determines that the non-standard frequency will fall outside  $\pm 0.00015\%$  of the requested frequency, then this is considered an invalid frequency and it will not change to the requested frequency.

### 5.8.1 SRPT-30 Only:

There are only two frequencies to choose from, F1 and F2, as configured at the factory, and are always considered valid. However, at the time of order, if the customer requires a frequency that is not divisible by 5 or 6.25 KHz (or by 10 or 12.5 KHz for > than 450 MHz models), we can determine immediately whether or not the requested frequencies will fall within  $\pm 0.00015\%$  tolerance. If one or both frequencies do fall not within this tolerance, then the order will be considered special and must be determined by the engineering department at Broadcast Electronics if we can tune to the required frequencies.

### 5.8.2 SRPT-40A Only:

If an invalid frequency is entered in, or if the same frequency that the SRPT-40A is currently locked on to is entered in, then the SRPT-40A will remain at its current frequency, i.e., nothing will happen. If the operator desires to change to a frequency that is invalid, he must choose the closest valid frequency and then manually tune the reference oscillator on the synthesizer to get to desired frequency. However, if the operator tunes the reference oscillator to get to an invalid frequency, then when needing to change to another frequency (valid or non-valid), the operator may have to retune the reference oscillator again.

## 5.9 Changing Output Frequency via Channel Select – SRPT-40A Only

The frequency can also be changed by entering a channel number that was previously stored with a frequency. See Storing Output Frequencies into Channels for instructions on how to store frequencies. There are ten channels available for storing and recalling frequencies. These ten channels are preset with default or customer requested frequencies at the factory.

To change frequency via channel select, the S1 dip-switches behind the front panel must be set with switches 1 and 2 in the "ON" position and 3 and 4 in the "OFF" position. These are the default positions and are in the same position as when changing the frequency direct. So there's no need to remove the top cover.

Now you're ready to enter the channel. This is done by setting the six left-most digits (digits 2-7) of the FREQUENCY SELECT pushwheel switches equal to zero. Then the far right digit (digit 1) is set



to the channel of choice (channel 0 – channel 9). After entering the channel, press the EXECUTE pushbutton down and then release. The SYNTHESIZER will change to the frequency that was stored in the channel.

## **WARNING**

**THE REMAINING OPERATIONS ARE FEATURES THAT REQUIRE SETTING INTERNAL DIP- SWITCHES.**

**IN ALL CASES, WHEN PERFORMING THESE OPERATIONS, THE SRPT-40A MUST BE ON AND THE TOP COVER MUST BE REMOVED.**

**WHEN THE OPERATION IS COMPLETE, ALWAYS SET THE INTERNAL S1 DIP-SWITCHES WITH SWITCHES 1 AND 2 "ON" AND SWITCHES 3 AND 4 "OFF". THEN RE-INSTALL THE TOP COVER.**

### **5.10 Storing Output Frequencies into Channels – SRPT-40A Only**

The SRPT-40A must be locked on a frequency before storing that frequency into one of the ten available channels. It is not necessary, however, that the SRPT-40A be transmitting, hence the TRANSMIT/STANDBY switch can be in STANDBY.

First, lock on to the desired frequency either directly or via channel select. Remove the top cover of the SRPT-40A. Set the S1 dip-switches (located behind the front panel) as follows: Switches 1, 3, and 4 set to the "OFF" position and switch 2 set to the "ON" position.

Next, set the six left-most digits (digits 2-7) of the FREQUENCY SELECT pushwheel switches equal to zero. Then the far right digit (digit 1) is set to the channel of choice (channel 0 – channel 9) to be stored. After entering the channel, press the EXECUTE pushbutton down and then release. The current frequency-in-lock will be stored in the selected channel and the SRPT-40A will remain at its current frequency. If you need to store more channels, repeat the steps in this paragraph.

Finally, put the S1 dip-switches back to where they were, i.e., switches 1 and 2 in the "ON" position and switches 3 and 4 in the "OFF" position. Re-install the top cover.

It would be a good idea to test the stored channel(s) by changing the frequency to some other frequency and then recalling the stored channel(s).

### **5.11 Control Switch Settings – SRPT-40A Only**

Control Switch Settings enable or disable important controls used in the SRPT-40A. These control settings include the following:

- Power Adjust Pot
- HiHi VSWR Foldback
- Reverse Power Calibration
- Forward Power Calibration



HiHi Temperature Shutdown  
Direct Frequency Change  
Channel Frequency Change

Refer to TABLE (1) - Control Switch Settings Command for disabling or enabling the desired controls. Remove the top cover. Set the internal dip-switch S1 switches and the FREQUENCY SELECT pushwheel decimals as outlined in Table 5-1. The entries in BOLD are default settings from the factory

When all FREQUENCY SELECT pushwheel decimals have been set to their required values that correspond to the desired control switch setting, you must send the command by pressing the EXECUTE pushbutton down and then releasing. The internal controller will enable or disable the control. Set the internal dip-switch S1 back to its normal position with switch 1 and 2 "ON" and switch 3 and 4 "OFF". Re-install top cover.

Following is a description of the control settings:

- Power Adjust Pot – The default for this setting is "enabled" which allows the user to change the power from almost 0 Watts to the maximum RF output power setting via the front panel POWER ADJUST pot. Refer to the Maximum Power Setting paragraph in the CALIBRATION AND ADJUSTMENTS section of this manual for information on how to set the maximum power. If this user "disables" this setting, then the RF output power will maintain where last set and tuning of the POWER ADJUST pot will have no effect.
- HiHi VSWR Foldback – The default for this setting is "enabled". This means when a VSWR is detected greater than 4, the power will limit to one-half the maximum power setting. If VSWR foldback is "disabled", then the forward RF power will not try to foldback, even when the controller detects a VSWR of greater than 4. The HIGH VSWR LED will still flash however. For maintaining long life from the power amplifier, it is not recommended to disable VSWR Foldback.
- Reverse Power Calibration – The default setting for this setting is "disabled". This setting should only be "enabled" during calibration (see the Reverse Power Calibration paragraph in the CALIBRATION AND ADJUSTMENTS section).
- Forward Power Calibration – The default setting for this setting is "disabled". This setting should only be "enabled" during calibration (see the Forward Power Calibration paragraph in the CALIBRATION AND ADJUSTMENTS section).
- HiHi Temperature Shutdown – The default for this setting is "enabled". See High Temp LED paragraph in the CONTROL & CONNECTOR FUNCTIONS section for complete description. When enabled, the power amplifier will shut down when the PA temp reaches 100 degrees C. If "disabled", then the power amplifier will not shutdown due to HiHi temperature but the HIGH TEMP LED will still flash. Again, for maintaining long life from the power amplifier, it is not recommended to disable High Temperature Shutdown.
- Direct Frequency Change – The default for this setting is "enabled" to be able to change the output frequency direct. If "disabled", then attempting to change the output frequency will be ignored by the internal controller. This setting is useful for locking out anyone from changing frequencies, or to change frequencies via user programmed channels.





- Channel Frequency Change – The default for this setting is “enabled” to be able to change the output frequency by channel select. If “disabled”, then attempting to change the output frequency by selecting channels will be ignored by the internal controller. This setting is typically “disabled” if the Direct Frequency Change setting is also disabled. In that case, only one frequency can ever be transmitted.

**Table 5-1 - Control Switch Settings Command**

CONTROL SETTING	DIGIT #7 (far left digit)	DIGIT #6	DIGIT #5	DIGIT #4	DIGIT #3	DIGIT #2	DIGIT #1 (far right digit)
Power Adjust Pot	1	4	0	0	ENB/DIS	0	0
HiHi VSWR Foldback	1	2	0	0	ENB/DIS	0	0
Reverse Power Calibration	1	1	0	0	ENB/DIS	0	0
Forward Power Calibration	1	0	4	0	ENB/DIS	0	0
HiHi Temperature Shutdown	1	0	2	0	ENB/DIS	0	0
Direct Frequency Change	1	0	0	0	ENB/DIS	2	0
Channel Frequency Change	1	0	0	0	ENB/DIS	1	0

Notes:

Internal Dip-Switch (S1): Switch 1, 3, and 4 are “OFF”;

Switch2 is “ON” ENB (Enable) = 1, DIS (Disable) = 0

Bold selection indicates factory default setting

## 6 THEORY OF OPERATION

Refer to Block Diagram Drawing No. 702-124, 702-117, and appropriate Schematic Diagrams.

### 6.1 CIRCUIT BOARD DESCRIPTION

#### 6.1.1 PRE-AMP/MIXER Board, 800-251A

Each of the four microphone inputs is fed to a low-noise differential op-amp (half of an NE-5532). Critical resistors in the input circuits are low-noise, precision, temperature stable types to obtain maximum performance from the pre- amps. Monolithic chip capacitors are used to filter RF voltages that may be present at the microphone inputs. The four op-amp outputs are fed to gain pots then resistively mixed and routed to the COMPRESSOR BOARD.

#### 6.1.2 COMPRESSOR Board, 800-166A (SRPT30/40A-xxx: uses 800-166A40A; SRPT30/40A-450T: uses 800-166A40ATSL)

Several functions are performed on this board. Integrated Circuit IC-1 serves as a (a) pre-amp (not used on the SRPT-30/40A), (b) pre-emphasis amplifier, (c) voltage-controlled attenuator, and (d) regulator /ripple rejection. Pre- emphasized audio out of IC-1B is also fed to D2 - D3 which form an adjustable series peak-limiting circuit. This circuit is adjusted to limit only audio peaks which get past the compressor. The limiter circuit feeds a low-pass filter (L1, C23, and R46) which reduces the audio bandwidth to that specified for the operating channel of the transmitter. To this is mixed the output of the tone encoder, IC-2A, which is a low-distortion Wien bridge oscillator. This composite signal is then fed to the Modulation port (on P2) of the Transmitter Synthesizer Board, 800-375AT. This audio signal is also fed to IC-2B which amplifies it to a level suitable for a 600 ohm headphone monitor. IC-2C is a DC amplifier the input of which is connected to the AGC (automatic gain control) circuit and the output of which drives the audio compression meter.

#### 6.1.3 14.5 VOLT STEP-UP REGULATOR Board, 800-392A

The 800-392A is a DC/DC converter that powers the synthesizer, audio, and mixer boards. It allows the user to apply an external input voltage (through the 12-15 VDC accessory input pins) as low as 7 VDC and still maintain 14.5 volts to the synthesizer and 10.0 volts to the audio and mixer boards. Therefore, the synthesizer will stay locked during most power surges and excessive voltage drops. The 800-392A also suppresses any external (or internal) voltage noise such as an alternator from a running vehicle. As a result, the SRPT-30/40A still maintains a high signal-to-noise.

#### 6.1.4 TRANSMITTER SYNTHESIZER Board, 800-375AT

The fundamental purpose of this board is to accomplish two things: (1) Generate the final output frequency and (2) FM modulate the mixed audio. The circuitry to achieve this consists of a Phase-Locked Loop (PLL), which includes a Frequency Synthesizer IC, Voltage-Controlled Oscillator, a pre-scaler, a reference frequency oscillator, and a low- frequency loop filter. The Frequency Synthesizer IC is a programmable device for setting internal counters for allowing the reference frequency oscillator to be a perfect multiple of the final output frequency. The reference frequency oscillator is a 12.8 MHz TCXO. The low-frequency loop filter is a one-Hertz active type. The 64/128 pre-scaler is used to help aid in the multiplying.

The audio output from the 800-166 COMPRESSOR board is fed into the TRANSMITTER SYNTHESIZER's VCO which FM modulates the signal at the final output frequency. This modulated RF output signal is then sent to the 800-388A Two-Stage RF PA board for final amplification.



Included on the TRANSMITTER SYNTHESIZER board is a high-speed microcontroller. This controller decodes and acts on commands sent from the Front Panel Control & Meter board (800-378A). These commands include new frequency change (direct or channel select), control switch settings, calibration, etc. The controller also monitors and regulates forward power, monitors VSWR and PA temperature, performs auto foldback of power due to high VSWR and then recovers when VSWR lowers, and performs auto shutdown of power due to very high temp. It has internal EEPROM for storing important information such as frequency channels and historical info. The controller also detects synthesizer lock and unlock as well as enabling a fastlock feature for far frequency changes.

#### **6.1.5 FRONT PANEL CONTROL & METER Board, 800-389A (800-382A – some models) – SRPT-30 only**

This board does the following:

- Sends F1/F2 state to TRANSMITTER SYNTHESIZER,
- Displays LED alarm information received from the TRANSMITTER SYNTHESIZER,
- Receives and decodes digital data from TRANSMITTER SYNTHESIZER for forward and reverse power readings and converts to analog signals,
- Directs POWER ADJUST analog signal to TRANSMITTER SYNTHESIZER,
- Multiplexes all analog metering signals via METER SELECT knob for independently monitoring on METER,
- Sends state of the TRANSMIT/STANDBY switch.

#### **6.1.6 FRONT PANEL CONTROL & METER Board, 800-385A (800-378A – some models) – SRPT-40A only**

This board does the following:

- Collects and sends commands from the front panel pushwheel switches to the on-board microcontroller of the TRANSMITTER SYNTHESIZER board,
- Displays LED alarm information received from the TRANSMITTER SYNTHESIZER,
- Receives and decodes digital data from TRANSMITTER SYNTHESIZER for forward and reverse power readings and converts to analog signals,
- Directs POWER ADJUST analog signal to TRANSMITTER SYNTHESIZER,
- Multiplexes all analog metering signals via METER SELECT knob for independently monitoring on METER,
- Sends state of the TRANSMIT/STANDBY switch.

#### **6.1.7 TWO-STAGE RF POWER AMPLIFIER Board, 800-388A (800-373A – some models)**

The RF output signal (50 mW max) from the TRANSMITTER SYNTHESIZER is fed into this TWO-STAGE RF POWER AMPLIFIER board. The RF goes through two stages of RF amplification. The first stage (U2) is a 1-Watt (max) pre-driver. It has an input and output transformer (T1 and T2) for achieving optimum 50 Ohm matching between the stages. The output of T2 is fed into the final PA module (U3) for an output of up to 60 Watts max. This PA module usually has a lower RF output for SRPT-30's. The signal is then low-passed filtered through FL1 and then fed through a directional coupler for monitoring forward and reflected power. An Automatic Power Control (APC) circuit residing on the TRANSMITTER SYNTHESIZER board stabilizes and maintains an accurate output power level by comparing it to a reference power level which is set by the user via the front panel POWER ADJUST pot. The APC circuit samples the forward power via the coupled forward power on PA board.

This board also provides regulated B+ for powering the PA and the rest of the chassis when using 15-30 Volts external supply. Finally, there also exist circuitry for regulating the fan, measuring PA temperature, and monitoring PA current.

#### **6.1.8 SWITCHING POWER SUPPLY, 800-383A (800-324A – some models)**

The Switching Power Supply accepts input from 88-132 or 176-264 VAC and supplies 15 VDC and up to 10 Amperes to power the SRPT-30/40A. The power supply must be switched to the appropriate 115 or 230 positions. This is usually done at the factory.

#### **6.1.9 RPU TRANSMITTER I/O Board, 800-379AR**

This board passes and distributes external power supply input via the back-panel ACCESSORY connector. It also passes and directs the ENCODE, TX REM CNTL, and external audio signals. All signals are LC filtered.

### **6.2 RF SYSTEM & CONTROL**

Refer to Block Diagram Drawing 702-117. The fundamental RF generation of the SRPT-30/40A takes place on the TRANSMITTER SYNTHESIZER board in a circuit known as a Phased-Locked Loop (PLL). The final output frequency ( $F_{out}$ ) is generated by the Voltage Controlled Oscillator (VCO).  $F_{out}$  is determined by the Reference Frequency ( $F_r$ ) and  $N$  by the relation:  $F_{out} = F_r \times N$ .

$N$  is made up by the internal  $n$  and a counters of the Frequency Synthesizer IC and by  $P$ , the divide-by-128 prescaler. The value  $N$  is equal to:  $N = n \times P + a$ . We can now write  $F_{out}$  in the form:  $F_{out} = F_r \times (n \times P + a)$ .

Therefore, with  $P$  as a constant value of 128, the  $n$  and  $a$  counters can be programmed in such a way that the output frequency  $F_{out}$  will always be an integer multiple of the Reference Frequency,  $F_r$ . The  $a$ -counter will always be a number from 0 to 128, and the  $n$ -counter will be a number from 1 to 1023.

The Reference Frequency,  $F_r$ , is generated by the 12.8 MHz TCXO (Temperature Controlled Crystal Oscillator) and the internal  $R$ -counter of the Frequency Synthesizer IC. This relation is simply:  $F_r = F_{osc} / R$ , where  $F_{osc} = 12.8$  MHz and  $R$  is the programmable  $R$ -counter.

The desired output frequency and the Reference Frequency information is sent from the operator via the front panel to the microcontroller. The microcontroller will set the  $n$  and  $a$ -counters to yield the requested output frequency, and will set the  $R$ -counter to yield the requested Reference Frequency. The Reference Frequency is rarely changed, so typically,  $F_{ref}$  is treated as a constant and only the output frequency is changed.

The output frequency is modulated by the injected audio at the input of the VCO. The amount of modulation is determined by the Modulation setting. The VCO will alter the output frequency in deviation and rate corresponding to the amplitude and rate (frequency) of the input voltage signal (audio). This is commonly known as frequency modulation (FM). Since the loop filter has a low frequency response (1 Hz), the PLL will not track the modulated signal and as a result, only the VCO output will change.

The RF power and power control circuit is shared by the TRANSMITTER SYNTHESIZER and the TWO-STAGE RF POWER AMPLIFIER. The output of the VCO is sent to a controlled amplifier and is then sent



to the TWO-STAGE RF POWER AMPLIFIER for final amplification. To maintain a steady and constant RF output (over temperature and voltage changes), a sample of the RF output power (Forward coupling) is sent to the Automatic Power Control (APC) circuit and compared to a reference output power setting. Any delta changes are instantly compensated for in the APC circuit and an adjustment is made in the controlled amplifier. A MAX POWER setting can be user adjusted to limit the final RF output power.

The low-pass filter (LPF) following the final amplifier will filter out all spurious harmonics to a level lower than  $-60$  dB. The Reverse coupling samples any return power and is sent to the microcontroller. Since the Forward coupling is also sent to the microcontroller, the VSWR can be determined. The microcontroller will “foldback” the output power if the VSWR exceeds a value of 4. Finally, all front panel alarms and indicators are sent from the microcontroller.

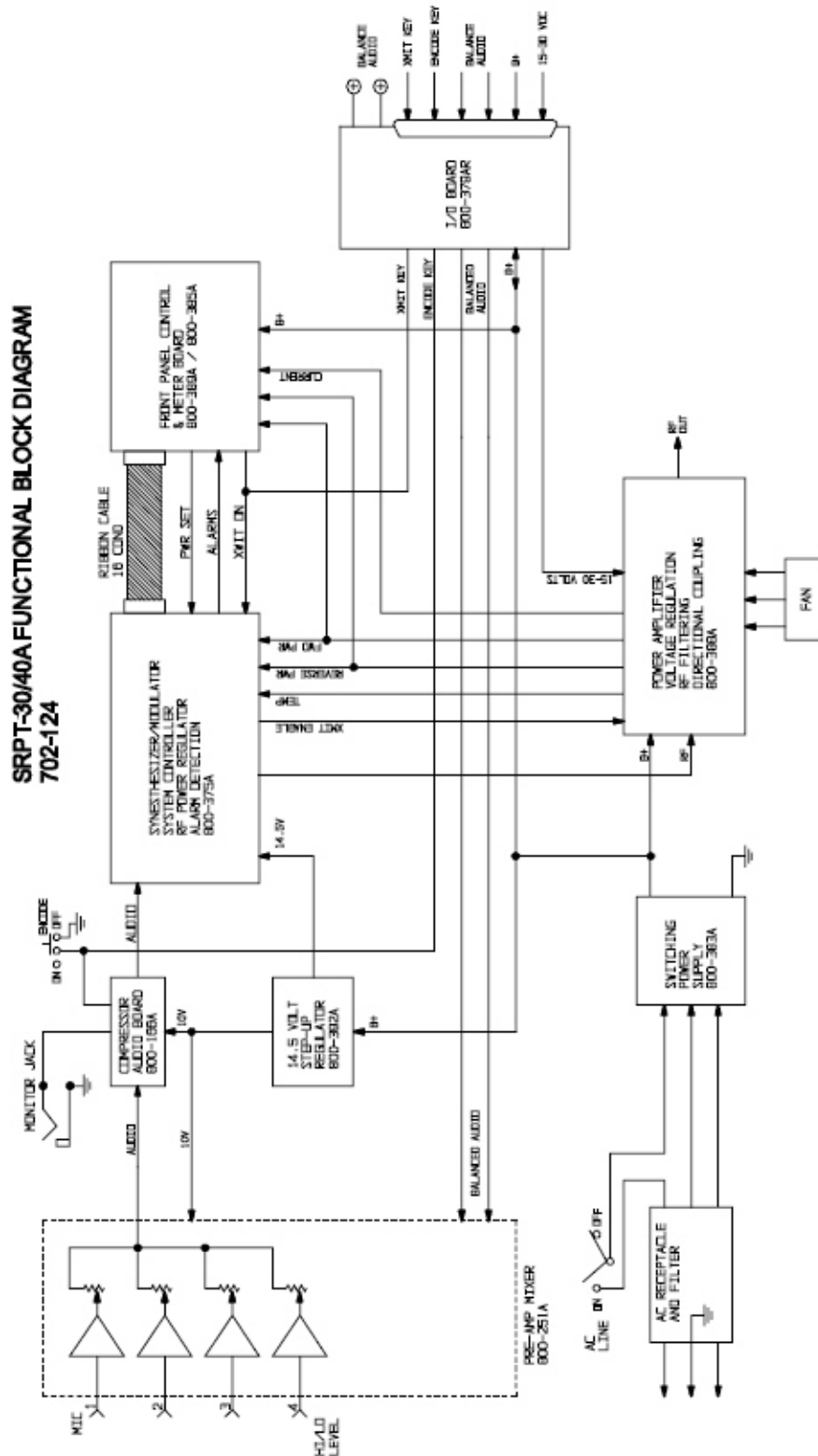


Figure 6-1. SRPT 30/40A Functional Block Diagram

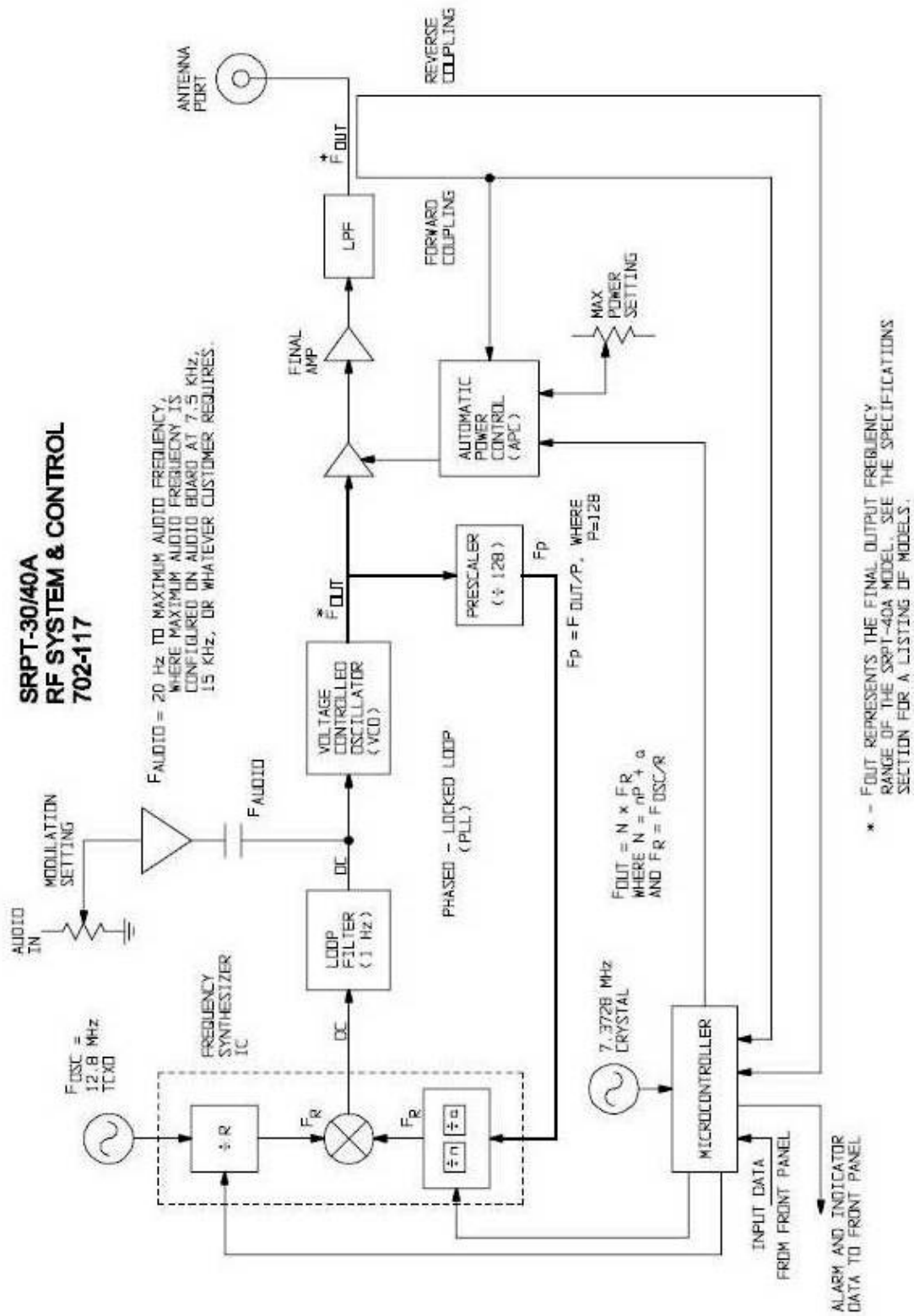


Figure 6-2. SRPT 30/40A RF System and Control

## 7 RECOMMENDED TEST EQUIPMENT

Distortion Analyzer	Krohn-Hite Model 6801
Oscillator	Krohn-Hite Model 4500
Attenuator Set	Hewlett-Packard Model 3500
Frequency Counter	Hewlett-Packard Model 5383A (option 001)
Digital Multimeter	Beckman Model 3030
Analog Multimeter	Triplett Model 630
RF Attenuator	adjustable 0-110 dB
RF Signal Generator	Marconi Model 2022C
Spectrum Analyzer	Hewlett-Packard Model 8558B
Wattmeter (50 ohms impedance)	Bird Model 43
5 or 50 watt element	100-250 MHz or 400-1000 MHz, Bird
Automatic Modulation Meter	Wavetek Model 4101
50 watt RF Load	Microwave Associates Model 44003
Stereo Monitor	Belar Model FMS-2
Stereo Generator	Aphex Model AX400
Oscilloscope	Tektronix Model 2215

## 8 TOOLS FOR ALIGNMENT

Tuning Tool	GC 9300
Tuning Tool	GC 9440
Tuning Tool	Spectrol 8T000
Tuning Tool	Sprague-Goodman
Screwdriver	Xcelite R184, 1/8" x 4"





## 9 SRPT-30/40A TRANSMITTER FACTORY TEST REPORT

Customer: \_\_\_\_\_ Address: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_

- \_\_\_\_ Set internal switching power supply = 13.0 Volts
- \_\_\_\_ Program synthesizer
- \_\_\_\_ Frequency measurement, adjust, and changing
- \_\_\_\_ Forward power calibration and metering
- \_\_\_\_ Reverse power calibration and metering
- \_\_\_\_ Current metering calibration
- \_\_\_\_ Verify B+ metering
- \_\_\_\_ Audio board limiter set
- \_\_\_\_ Audio compressor meter set to 0 VU
- \_\_\_\_ Signal to noise within specifications
- \_\_\_\_ Frequency response within specifications
- \_\_\_\_ Distortion within specifications
- \_\_\_\_ Set deviation to \_\_\_\_ kHz corresponding to 100% modulation
- \_\_\_\_ Set encode frequency to 27 Hz
- \_\_\_\_ Set encode frequency deviation to 600 Hz
- \_\_\_\_ Test 12-15 VDC external supply and low-voltage dropout
- \_\_\_\_ Calibrate internal regulator and test 15-30 VDC external supply
- \_\_\_\_ Test accessory functions

24-Hour Burn-in: Start: Date \_\_\_\_\_ Time \_\_\_\_\_  
 Stop: Date \_\_\_\_\_ Time \_\_\_\_\_

\_\_\_\_ Fine tune frequency adjust at \_\_\_\_\_ MHz  
 \_\_\_\_ Max power adjust to \_\_\_\_\_ Watts

Customer Specific Settings (if different from standard):

Encode deviation \_\_\_\_\_ Audio response \_\_\_\_\_ Max power \_\_\_\_\_

Channel settings (SRPT-40A only - upon request):

CH0: \_\_\_\_\_ MHz CH1: \_\_\_\_\_ MHz CH2: \_\_\_\_\_ MHz CH3: \_\_\_\_\_ MHz  
 CH4: \_\_\_\_\_ MHz CH5: \_\_\_\_\_ MHz CH6: \_\_\_\_\_ MHz CH7: \_\_\_\_\_ MHz  
 CH8: \_\_\_\_\_ MHz CH9: \_\_\_\_\_ MHz

\_\_\_\_ Frequency change disabled (SRPT-40A only)  
 \_\_\_\_ Channel change disabled (SRPT-40A only)

DATE: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_



## 10 CALIBRATION AND ADJUSTMENTS

Refer to Location of Adjustments Drawing No. 702-122 and appropriate schematic diagrams for each module.

This equipment was thoroughly tested and inspected at the factory prior to shipment. The actual equipment performance was recorded on the SRPT-30/40A TRANSMITTER FACTORY TEST REPORT. Adjustments should rarely be necessary in the field and should be attempted only by highly trained technicians familiar with this type of equipment. Laboratory grade test equipment is required and is listed under TEST EQUIPMENT AND TOOLS. For location of adjustments and test points in the SRPT-30/40A Transmitter refer to Adjustment Location Diagram, 702-122.

### NOTE

**FOR ALL ADJUSTMENTS, REMOVE THE TOP COVER FROM THE SRPT-30/40A CHASSIS.**

**REPLACE THE COVER WHEN THE ADJUSTMENT PROCEDURE IS COMPLETE.**

AC Line Input Selection - 88-132 VAC or 176-264 VAC

### WARNING

**ON FIRST TIME USAGE, WE RECOMMEND THAT THE OPERATOR VERIFIES THAT THE AC INPUT SELECTOR SWITCH IS IN THE POSITION THAT CORRESPONDS TO YOUR AC INPUT REQUIREMENTS.**

1. Remove AC line voltage from SRPT-30/40A.
2. Remove the 800-166A COMPRESSOR AUDIO board.
3. View the side of the 800-383A Switching Power Supply as shown. For 88-132 VAC applications, the switch should read "115" and positioned toward the front of the unit. For 176-264 VAC applications, the switch should read "230" and positioned toward the back of the unit.
4. If the switch position is not in your required position, take a small flat-head screwdriver and switch the AC INPUT switch to the required position.
5. Replace the 800-166A COMPRESSOR AUDIO board.

### 10.1 Switching Power Supply Voltage Adjustment

The input to the switching power supply can be from 88-132 or 176-264 VAC, 50/60 Hz. The DC B+ output, measured off of one of the red wires of the switching supply, can be slightly adjusted at B+ ADJUST. The recommended B+ reading should be 13.0 volts.



## 10.2 B+ Adjustment When Using 15-30VDC External Supply

### CAUTION

THIS ADJUSTMENT HAS BEEN SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY FURTHER ADJUSTMENTS.

1. Remove AC line voltage from SRPT-30/40A.
2. Connect up external supply to the 15-30VDC pins of the AUXILLARY connector (see the ACCESSORY Input Connector paragraph in the CONTROL & CONNECTOR FUNCTIONS section).
3. Switch the AC LINE front panel switch to the "OFF" position.
4. Turn on external supply and adjust to approximately 18 VDC.
5. Using a VOLT METER, with negative lead connected to ground (chassis), connect the positive lead to one of the red wires connected to the 800-379AR I/O board.
6. On the TWO-STAGE RF POWER AMPLIFIER board adjust EXTERNAL B+ ADJUST (pot R5) in the direction required to achieve a B+ reading of 13.0 to 13.5 Volts. This voltage should be adjusted with the TRANSMIT/STANDBY switch in "STANDBY" position.

### WARNING

IF THE 15-30 VOLT SUPPLY IS LESS THAN 16 VOLTS, THE EXTERNAL B+ ADJUST SHOULD BE SET TO 12 VOLTS.

THIS MAY LIMIT THE MAXIMUM OUTPUT POWER.

## 10.3 Frequency Measurement

The RF output frequency of this transmitter should be measured as often as necessary to insure on-frequency operation and to comply with regulations. Monitor the RF output with a frequency counter via an RF coupler or Watt meter.

### WARNING

NEVER CONNECT THE FREQUENCY COUNTER DIRECTLY TO THE RF OUTPUT CONNECTOR OF THE SRPT-30/40A.

THE FREQUENCY COUNTER SHOULD BE COUPLED OFF OF AN RF COUPLER OR A WATT METER.

EXCEEDING THE INPUT POWER RATING OF THE FREQUENCY COUNTER COULD DO INTERNAL DAMAGE TO IT.



## 10.4 Frequency Fine-Tune Adjust

### CAUTION

THIS ADJUSTMENT HAS BEEN SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY FURTHER ADJUSTMENTS.

1. Set the SRPT-30/40A on frequency while transmitting.
2. Remove the TRANSMITTER SYNTHESIZER cover.
3. On the TRANSMITTER SYNTHESIZER board tweak the FINE TUNE FREQ ADJ (U15) while viewing a frequency counter.
4. Re-install the TRANSMITTER SYNTHESIZER cover.

## 10.5 Front Panel Meter Adjust – Forward Power

### CAUTION

THIS ADJUSTMENT IS ALSO MADE DURING THE FORWARD POWER CALIBRATION ADJUSTMENT.

IT IS NOT RECOMMENDED TO PERFORM THE FORWARD POWER CALIBRATION JUST TO ADJUST THE FRONT PANEL METER - FORWARD POWER.

1. With the SRPT-30/40A powered on and transmitting, tweak the front panel POWER ADJUST pot fully clockwise for maximum power out.
2. Turn the front panel knob to FORWARD POWER.
3. On the FRONT PANEL CONTROL & METER board, tweak the FWD PWR pot (R48) to correlate the front panel METER (using WATTS scale) to the WATT METER connected to the ANTENNA connector.

## 10.6 Front Panel Meter Adjust – Reverse Power

### WARNING

THIS ADJUSTMENT SHOULD ONLY BE MADE DURING REVERSE POWER CALIBRATION.



## 10.7 Front Panel Meter Adjust – PA Current

1. With the SRPT-30/40A powered on and transmitting, tweak the front panel POWER ADJUST pot fully clockwise for maximum power out.
2. On the FRONT PANEL CONTROL & METER board measure the voltage across P6 pin 8 and P6 pin 4, with the positive lead on P6 pin 8.
3. Divide this voltage by 0.025. The result is the PA current.
4. Turn the METER SELECT knob to PA CURRENT.
5. On the FRONT PANEL CONTROL & METER board adjust the PA CURRENT pot (R50) to set the front panel METER (using the AMPS scale) to equal the calculated current.

## 10.8 Maximum Power Adjust

### CAUTION

THIS ADJUSTMENT IS ALSO MADE DURING THE FORWARD POWER CALIBRATION ADJUSTMENT.

IT IS NOT RECOMMENDED TO PERFORM THE FORWARD POWER CALIBRATION JUST TO ADJUST THE MAXIMUM POWER.

1. Remove the cover from the SYNTHESIZER.
2. On the SYNTHESIZER tweak the MAX PWR pot (R74) fully counter-clockwise.
3. With the SRPT-30/40A powered on and transmitting, tweak the front panel POWER ADJUST pot fully clockwise.
4. On the SYNTHESIZER tweak the MAX PWR pot (R74) clockwise to the desired maximum output power, but do not exceed Maximum RF Output Power as specified under ORDERING INFORMATION for your model.
5. Replace the SYNTHESIZER cover.

## 10.9 Encoder Adjustments

1. Connect dummy load with sampling attenuator to ANTENNA connector of SRPT-30/40A.
2. Connect an accurate standard FM deviation meter and frequency counter to sampling attenuator.
3. Place TRANSMIT/STANDBY switch in "TRANSMIT" position.
4. Place ENCODE switch in "ON" position and adjust encode level pot R33 on COMPRESSOR AUDIO board, 800-166 for 600 Hz deviation.
5. Connect a scope probe to the bottom leg of R32 of the 800-166 COMPRESSOR AUDIO board and connect the BNC end of the scope probe to a low-frequency counter.
6. Adjust R37 on the 800-166 COMPRESSOR AUDIO board so that the frequency counter reads 27.1 Hz.
7. Remove scope probe and return ENCODE switch to "OFF" position.

## 10.10 Audio Adjustments

1. With no audio input, switch METER to AUDIO COMPRESSION position and set ZERO VU ADJUST pot (R22) on COMPRESSOR AUDIO board, 800-166A to read 0 VU on the meter.
2. With ENCODE switch "OFF", connect a harmonic distortion analyzer to the audio output of the Marti receiver being used with the SRPT-30/40A.
3. Feed a 100 microvolt signal from the transmitter into the receiver RF input via the sampling attenuator.

### WARNING

**NEVER FEED THE OUTPUT OF THE SRPT-30/40A DIRECTLY INTO A RECEIVER!**

**THE INPUT STAGE OF THE RECEIVER WILL BE DESTROYED INSTANTLY!**

4. Modulate the transmitter with a 2500 Hz tone at 3 dB compression.
5. Turn LIMIT LEVEL pot (R26) on the COMPRESSOR AUDIO board, 800-166 to maximum counter-clockwise position. Note distortion. It should be less than 2%. Slowly turn R26 clockwise until an additional 0.1% distortion is indicated on the distortion meter.
6. With ENCODE switch "ON" and using a Marti receiver having a subaudible decoder which has been set to 27 Hz by an audio generator of at least 1% accuracy, adjust ENCODE FREQ pot (R37) for maximum indication on the "DECODE SIGNAL LEVEL" meter of the receiver.
7. Connect an audio voltmeter to the output terminals of the Marti receiver. Feed a 100 microvolt signal into the receiver from an RF attenuator/sampler connected to the output of the transmitter.
8. Using an audio signal generator connected to MIC INPUT 4 (HIGH LEVEL) of the transmitter with a level 20 dB below compression level at 2500 Hz, sweep the audio over the audio response range for the transmitter model number being aligned. Refer to the SPECIFICATIONS & ORDERING section for correct response for designator on your transmitter.
9. At the maximum specified response frequency, adjust the FREQ RESPONSE tuning slug in coil L1 on COMPRESSOR AUDIO board, 800-166 for maximum level or best response curve.

## 10.11 Modulation Adjustment

1. Connect a modulation (or deviation) meter to the output of the SRPT-30/40A.

### WARNING

**NEVER CONNECT THE MODULATION METER DIRECTLY TO THE RF OUTPUT CONNECTOR OF THE SRPT-30/40A.**

**THE MODULATION METER SHOULD BE COUPLED OFF OF AN RF COUPLER OR A WATT METER.**

**EXCEEDING THE INPUT POWER RATING OF THE MODULATION METER COULD DO INTERNAL DAMAGE TO IT.**



2. Remove the TRANSMITTER SYNTHESIZER cover.
3. Inject a tone into the transmitter at maximum audio modulation (in most cases this is 7.5 KHz) at 3 dB compression.
4. Adjust pot R63 on the TRANSMITTER SYNTHESIZER while viewing the modulation meter. Turning the pot clockwise to increase modulation and turn it counter-clockwise to decrease it.

### **WARNING**

**INCREASING THE MODULATION WILL INCREASE THE TRANSMITTER BANDWIDTH!**

5. Replace the TRANSMITTER SYNTHESIZER cover.

## **10.12 Procedure for Removing Pre-Amp Mixer Board, 800-251**

1. Remove knobs and hardware from four level control pots on front panel.
2. Notice the Neutrik mic. Connector has a small hole near the center in addition to the three pin receptacles. This hole contains a tiny locking mechanism. Using a small (0.75" wide) flat blade screwdriver, insert tool into hole and turn slowly until screwdriver engages connector lock. Use care!
3. Turn screwdriver counter-clockwise (1/8 turn) until mic. Insert releases.
4. After following the above procedure on each input, gently push the black plastic inserts out of the metal shells while simultaneously pushing the gain adjust pots inward until the board releases from the front panel.
5. Remove board from the chassis and service. To re-install board reverse the above procedure. Be careful! The locking mechanism is delicate.

## **10.13 Forward Power Calibration – SRPT-40A Only**

Note: The SRPT-30 Forward Power Calibration can only be performed at the factory.

### **CAUTION**

**THIS ADJUSTMENT HAS BEEN SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY FURTHER ADJUSTMENTS.**

### **WARNING**

**TO MAINTAIN CALIBRATION, NEVER ADJUST THE FP CAL (R20) POT ON THE TWO-STAGE RF PA BOARD, OTHERWISE THE FORWARD POWER MUST BE RECALIBRATED.**

**IF IT BECOMES NECESSARY TO RECALIBRATE, READ AND STUDY THIS SECTION CAREFULLY BEFORE PROCEEDING.**

1. Power down the SRPT-40A (i.e., turn off AC LINE switch or turn off external supply).



2. Make sure that the WATT METER is connected to the ANTENNA connector and that the WATT METER is terminated with a 50-Ohm load rated at 100 Watts minimum.
3. Remove cover from SYNTHESIZER.
4. On the SYNTHESIZER make sure that the P2 jumper is in the FP position (FP is the normal position).
5. On the TWO-STAGE POWER AMPLIFIER board, tweak the FP CAL pot (R20) fully clockwise (approximately 20 turns).
6. On the SYNTHESIZER, tweak the MAX PWR pot (R74) fully counter-clockwise (approximately 20 turns).
7. Power up SRPT-40A, but leave front panel TRANSMIT/STANDBY switch in the "STANDBY" position. Wait for SRPT-40A to become locked on frequency.
8. Referring to Table (2) – Forward and Reverse Power Calibration, find the row that lists your model. Follow this row to the CAL FREQUENCY column. This number represents the frequency your model is to be calibrated at. Change the SRPT-40A to this calibrated frequency.
9. Measure the B+ voltage. Adjust the B+ if necessary by referring to Switching Power Supply Adjustment or B+ Adjustment When Using 15-30VDC External Supply. If using a 12-15 volt external supply, adjust its voltage to 12 to 15 volts. It is recommended that the VOLT METER is monitoring B+ throughout this procedure.
10. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 3, and 4 "OFF" and switch 2 "ON".
11. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "4"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "0"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
12. Depress and release the front panel EXECUTE pushbutton switch. This command will disable the front panel POWER ADJUST pot.
13. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "2"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "0"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
14. Depress and release the front panel EXECUTE pushbutton switch. This command will disable VSWR Foldback.
15. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "0"
  - DECIMAL 5 = "4"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "1"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
16. Depress and release the front panel EXECUTE pushbutton switch. The SRPT-40A is now in the Forward Power Calibration mode.





17. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 2, and 4 "OFF" and switch 3 "ON".
18. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "any number"
  - DECIMAL 5 = "any number"
  - DECIMAL 4 = "any number"
  - DECIMAL 3 = "any number"
  - DECIMAL 2 = "any number"
  - DECIMAL 1 (far right digit) = "any number"
19. Depress and release the front panel EXECUTE pushbutton switch. This command will set the internal power control pot to maximum and the position of the POWER ADJUST pot is ignored.
20. Put the TRANSMIT/STANDBY switch in the "TRANSMIT" position. The output power (as indicated by the WATT METER) should be close to 0 Watts.

### **NOTE**

**THE HIGH VSWR LED MAY BLINK FROM TIME TO TIME, BUT SIMPLY IGNORE IT DURING THIS CALIBRATION PROCEDURE.**

21. The front panel TRANSMIT LED should be off. On the SYNTHESIZER, tweak the MAX PWR pot (R74) clockwise until the TRANSMIT LED just comes on. The output power should increase as indicated by the WATT METER.
22. Referring to Table (2) - Forward and Reverse Power Calibration, on the TWO-STAGE POWER AMPLIFIER board, tweak the FP CAL pot (R20) counter-clockwise (slowly) until the output power (as indicated by the WATT METER) reaches the FWD CAL PWR LEVEL corresponding to your model.

### **WARNING**

**THE FP CAL POT (R20) IS NOW CALIBRATED.  
DO NOT ADJUST IT ANYMORE!**

23. On the SYNTHESIZER, tweak the MAX PWR pot (R74) to the desired maximum output power, but do not exceed the Maximum RF Output Power as specified under ORDERING INFORMATION corresponding to your model. Notice that this Maximum RF Output Power is slightly less than the FWD CAL PWR LEVEL.
24. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 3, and 4 "OFF" and switch 2 "ON".
25. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "0"
  - DECIMAL 5 = "4"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "0"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"



26. Depress and release the front panel EXECUTE pushbutton switch. The SRPT-40A is now out of Forward Power Calibration mode.
27. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "2"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "1"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
28. Depress and release the front panel EXECUTE pushbutton switch. This command will enable VSWR Foldback.
29. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "4"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "1"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
30. Depress and release the front panel EXECUTE pushbutton switch. This command will enable the front panel POWER ADJUST pot.
31. Tweak the front panel POWER ADJUST pot fully clockwise to verify that the output power goes to the set maximum power. Tweak the POWER ADJUST pot counter-clockwise verifying that the output power drops as tweaking. The output power should be close to 0 Watts when the POWER ADJUST pot is fully counter-clockwise.
32. Adjust the POWER ADJUST pot to the desired output power.
33. If you are not satisfied with the maximum output power, first adjust the front panel POWER ADJUST pot fully clockwise for maximum power, then adjust the MAX PWR pot (R74) on the SYNTHESIZER to the desired maximum output power, but again, do not exceed the Maximum RF Output Power as specified in ORDERING INFORMATION corresponding to your model.
34. Replace the cover on the SYNTHESIZER.
35. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1 and 2 "ON", and 3 and 4 "OFF". This places the SRPT-40A back into normal operation.

#### 10.14 Reverse Power Calibration - SRPT-40A Only

Note: The SRPT-30 Reverse Power Calibration can only be performed at the factory.

### CAUTION

THIS ADJUSTMENT HAS BEEN SET AT THE FACTORY AND SHOULD NOT REQUIRE ANY FURTHER ADJUSTMENTS.



## WARNING

**TO MAINTAIN CALIBRATION, NEVER ADJUST THE RP CAL (R17) POT ON THE TWO-STAGE RF PA BOARD, OTHERWISE THE REVERSE POWER MUST BE RECALIBRATED.**

**IF IT BECOMES NECESSARY TO RECALIBRATE, READ AND STUDY THIS SECTION CAREFULLY BEFORE PROCEEDING.**

1. Power down the SRPT-40A (i.e., turn off AC LINE switch or turn off external supply).
2. Make sure that the WATT METER is connected to the ANTENNA connector.

## NOTE

**IT IS PRESUMED THAT A BIRD WATT METER OR EQUIVALENT IS USED.**

3. Disconnect the 50-Ohm load from the Bird WATT METER.
4. Rotate the element in the Bird Watt Meter 180 degrees counter-clockwise for measuring reverse power.
5. Remove cover from SYNTHESIZER.
6. On the SYNTHESIZER place jumper on P2 in the RP position.
7. On the TWO-STAGE POWER AMPLIFIER board, tweak the RP CAL pot (R17) fully clockwise (approximately 20 turns).
8. On the SYNTHESIZER, tweak the MAX PWR pot (R74) fully counter-clockwise (approximately 20 turns).
9. Power up SRPT-40A, but leave front panel TRANSMIT/STANDBY switch in the "STANDBY" position. Wait for SRPT-40A to become locked on frequency.
10. Referring to Table (2) – Forward and Reverse Power Calibration, find the row that lists your model. Follow this row to the CAL FREQUENCY column. This number represents the frequency your model is to be calibrated at. Change the SRPT-40A to this calibrated frequency.
11. Measure the B+ voltage. Adjust the B+ if necessary by referring to Switching Power Supply Adjustment or B+ Adjustment When Using 15-30VDC External Supply. If using a 12-15 volt external supply, adjust its voltage to 12 to 15 volts. It is recommended that the VOLT METER is monitoring B+ throughout this procedure.
12. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 3, and 4 "OFF" and switch 2 "ON".
13. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "4"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "0"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
14. Depress and release the front panel EXECUTE pushbutton switch. This command will disable the front panel POWER ADJUST pot.
15. Set the front panel FREQUENCY SELECT pushwheel switches as follows:



DECIMAL 7 (far left digit) = "1"  
 DECIMAL 6 = "2"  
 DECIMAL 5 = "0"  
 DECIMAL 4 = "0"  
 DECIMAL 3 = "0"  
 DECIMAL 2 = "0"  
 DECIMAL 1 (far right digit) = "0"

16. Depress and release the front panel EXECUTE pushbutton switch. This command will disable VSWR Foldback.
17. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
 

DECIMAL 7 (far left digit) = "1"  
 DECIMAL 6 = "1"  
 DECIMAL 5 = "0"  
 DECIMAL 4 = "0"  
 DECIMAL 3 = "1"  
 DECIMAL 2 = "0"  
 DECIMAL 1 (far right digit) = "0"
18. Depress and release the front panel EXECUTE pushbutton switch. The SRPT-40A is now in the Reverse Power Calibration mode.
19. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 2, and 4 "OFF" and switch 3 "ON".
20. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
 

DECIMAL 7 (far left digit) = "1"  
 DECIMAL 6 = "any number"  
 DECIMAL 5 = "any number"  
 DECIMAL 4 = "any number"  
 DECIMAL 3 = "any number"  
 DECIMAL 2 = "any number"  
 DECIMAL 1 (far right digit) = "any number"
21. Depress and release the front panel EXECUTE pushbutton switch. This command will set the internal power control pot to maximum and the position of the POWER ADJUST pot is ignored.
22. Put the TRANSMIT/STANDBY switch in the "TRANSMIT" position. The output "reverse" power (as indicated by the WATT METER) should be close to 0 Watts.

## NOTE

**THE HIGH VSWR LED MAY BLINK FROM TIME TO TIME, BUT SIMPLY IGNORE IT DURING THIS CALIBRATION PROCEDURE.**

23. The front panel TRANSMIT LED should be off. On the SYNTHESIZER, tweak the MAX PWR pot (R74) clockwise until the TRANSMIT LED just comes on. The output "reverse" power should increase as indicated by the WATT METER.
24. Referring to Table (2) - Forward and Reverse Power Calibration, on the TWO-STAGE POWER AMPLIFIER board, tweak the RP CAL pot (R17) counter-clockwise (slowly) until the output power (as indicated by the WATT METER) reaches the REV CAL PWR LEVEL corresponding to your model.



## WARNING

THE RP CAL POT (R17) IS NOW CALIBRATED.

DO NOT ADJUST IT ANYMORE!

25. On the SYNTHESIZER, tweak the MAX PWR pot (R74) so that the reverse output power reads 10 Watts as indicated by the Bird WATT METER.
26. Turn the front panel METER SELECT knob to REVERSE POWER.
27. On the FRONT PANEL CONTROL & METER board, tweak the REV PWR pot (R49) to correlate the front panel METER (using WATTS scale) to the WATT METER connected to the ANTENNA connector.
28. On the SYNTHESIZER, tweak the MAX PWR pot (R74) fully counter-clockwise.
29. Put the TRANSMIT/STANDBY switch in the "STANDBY" position.
30. Remove the SYNTHESIZER P2 jumper from the RP position and put the jumper in the FP position.
31. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1, 3, and 4 "OFF" and switch 2 "ON".
32. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "1"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "0"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
33. Depress and release the front panel EXECUTE pushbutton switch. The SRPT-40A is now out of Reverse Power Calibration mode.
36. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "2"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "1"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
37. Depress and release the front panel EXECUTE pushbutton switch. This command will enable VSWR Foldback.
38. Set the front panel FREQUENCY SELECT pushwheel switches as follows:
  - DECIMAL 7 (far left digit) = "1"
  - DECIMAL 6 = "4"
  - DECIMAL 5 = "0"
  - DECIMAL 4 = "0"
  - DECIMAL 3 = "1"
  - DECIMAL 2 = "0"
  - DECIMAL 1 (far right digit) = "0"
39. Depress and release the front panel EXECUTE pushbutton switch. This command will enable the front panel POWER ADJUST pot.
40. Re-connect the 50-Ohm load on the WATT METER.



41. Rotate the WATT METER element clockwise 180 degrees.
42. Put the TRANSMIT/STANDBY switch in the "TRANSMIT" position.
43. Tweak the front panel POWER ADJUST pot fully clockwise.
44. Adjust the MAX PWR pot (R74) on the SYNTHESIZER to the desired maximum output power, but again, do not exceed the Maximum RF Output Power as specified in ORDERING INFORMATION corresponding to your model.
45. Replace the cover on the SYNTHESIZER.
46. On the FRONT PANEL CONTROL & METER board, adjust S1 dip-switches with switch 1 and 2 "ON", and 3 and 4 "OFF". This places the SRPT-40A back into normal operation.

**Table 10-1 – Forward and Reverse Power Calibration**

MODEL	CAL FREQUENCY (MHz)	FWD CAL PWR LEVEL (W)	REV CAL PWR LEVEL (W)
SRPT40A-150	175.0000	64.0	32.0
SRPT30-150	175.0000	38.4	19.2
SRPT40A-230	235.0000	32.0	12.8
SRPT30-230	235.0000	32.0	12.8
SRPT40A-250	250.0000	32.0	12.8
SRPT30-250	250.0000	32.0	12.8
SRPT40A-330	330.0000	32.0	12.8
SRPT30-330	330.0000	32.0	12.8
SRPT40A-450	450.0000	56.0	25.6
SRPT30-450	450.0000	32.0	12.8
SRPT40A-950	950.0000	22.4	9.6
SRPT30-950	950.0000	22.4	9.6



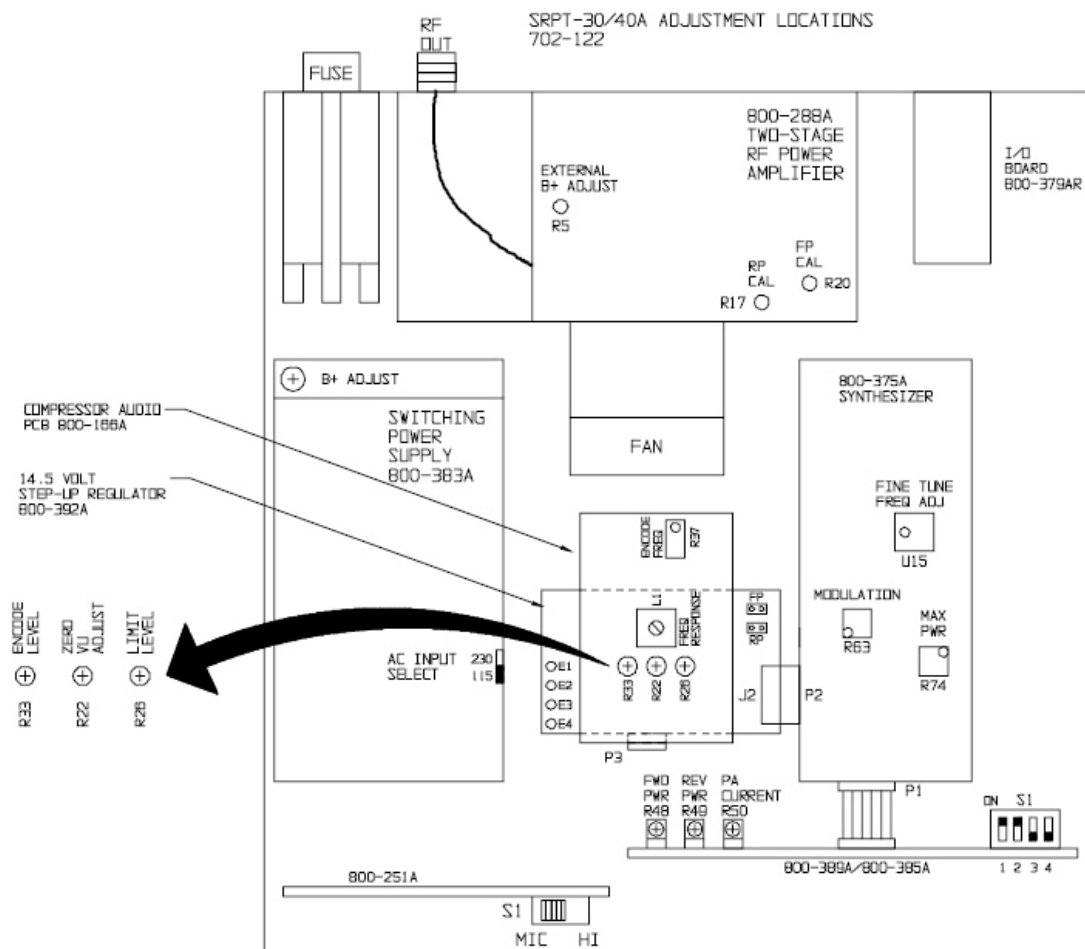


Figure 10-1. SRPT 30/40A Adjustment Locations

## 11 SRPT30 BILL OF MATERIAL

This bill of material uses an indented structure to show relationships of parts into sub assemblies.

Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
0	705-ST30-xxx	SRPT-30		
..1	217-104	CAPACITOR, .01 UF 50V GMV DISC	1	
..1	323-2124	LED INDICATOR,GRN,RECTANGULAR	1	
..1	323-7124	IND,LED,RED CMD57124A	3	
..1	339-0006	FILTER,RFI,10A 250VAC,50/60HZ	1	
..1	400-0014	GROMMET,3/8IDX5/8ODFOR7/16HOLE	1	
..1	400-0600	STRIP,QUIET SHIELD,6.00x.197	1	
..1	400-2170	GROMMET,FOR 3/8	1	
..1	420-0817	ASSY,FEMALE SCREWLOCK 205817-1	1	
..1	420-2105	SCREW,2-56X.312,S.S. PH SC	2	
..1	420-3720	SCREW,M3 X 20,PHILLIPS PAN HEAD,SS	4	
..1	420-4105	SCREW,4-40X.312,S.S. PH	2	
..1	420-4106	SCREW,4-40X.375,S.S. PH	4	
..1	420-6104	SCREW,6-32X.250,S.S. PH	5	
..1	420-6112	SCREW,6-32X.750,S.S. PH	2	
..1	421-1111	RIV,1/8X.422L .126-.187GR CLOS	8	
..1	421-4007	4-40 X .187 S.S. HEX NUT	2	
..1	421-4008	4-40 KEP NUT	3	
..1	421-6008	6-32 KEP NUT	6	
..1	421-6908	SHEET EDGE CONNECTOR 6-32	4	
..1	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	17	
..1	423-4002	#4 LOCK S.S. SPLIT	6	
..1	423-6002	#6 LOCK SPLIT	6	
..1	441-0068	STOFF,ALUM 1/4HEX X 1 1/2 6-32	4	
..1	469-0009	SHIELD,MARTI PA	1	
..1	471-5385	FILLER,REAR,SRPT-30	1	
..1	471-5386	PANEL,BACK,SRPT-30	1	
..1	471-5387	PANEL,TOP COVER,SRPT-30	1	
..1	471-5388	PANEL,BOTTOM COVER,SRPT-30	1	
..1	471-5389	PARTITION,SRPT-30	1	
..1	500-022	Screw, 6-32 x 3/8 phillips pan head M/S nickel plated"	2	
..1	500-123	Washer, Switchcraft #S1790-1	1	
..1	500-164	Flat Washer, Micro Plastics #FW250-062 nylon	1	
..1	500-186	Rivet, 1/8 x .312 semi-tubular standard finish	28	
..1	500-188	Screw, 4-40 x 3/8 phillips,flat head,black oxide"	10	
..1	500-199	Keps nut 4 x 40 zinc 4CNKEOZ	4	
..1	500-210	Screw,SEMS 4-40x1/4 Phil Pan Head MS Blk Zinc(external lock)	10	
..1	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	4	
..1	510-005	Polytube, Manhatten#AF155A-20-yel	0.233	
..1	510-072	Fuseholder, Littlefuse #342-004	1	





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	510-113	Bushing, #B-312-250 black shorty Microplastic #22MP01015	1	
..1	510-132	Handle Assy., black w/black plated steel hdwe #1879-376-370	1	
..1	510-204	FUSE, 4 AMP., 3AG	1	
..1	510-205	BUMPER, BRUCE PLASTICS 0772-0014 BLACK	8	
..1	510-212	CONTROL KNOBS, #45KNO23	1	
..1	510-215	CONTROL KNOB	4	
..1	510-231	FAN, AXIAL 12VDC 60X60X25MM	1	
..1	510-246	Flexible Grommet, (NOTE)	1.54	
..1	510-259	Shrink-Tubing, 1/8 B2 Black"	0.08	
..1	513-026	STANDOFF, 1/4HEX x 0.5"LONG, 4-40"	2	
..1	513-040	STANDOFF, 1/4HEX x 0.5"LONG, 4-40, NYLON"	4	
..1	530-001	Switch, slide DPDT Switchcraft	1	
..1	530-008	Switch, toggle SPDT Apem #5636AB16	2	
..1	530-090	SWITCH, MINI-ROCKER, DPDT, PANEL MOUNT	1	
..1	550-083	Connector, Tini-Jax Switchcraft 41	1	
..1	550-155-2	Connector Shell XLR Receptacle DH-NF-BAG-O	4	
..1	586-115	CABLE ASSEMBLY W/2 CONN.	1	
..1	586-134	Ribbon Cable 6 Digi Key #M3AAA-1606R-ND"	1	
..1	586-194	Cable Assembly, AC Connector to Fuseholder (SBCM)	1	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	2	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
..1	586-195	Cable Assembly, AC Connector to Ground (SBCM)	1	
....2	410-1416	LUG, TERM, BENT, 11/16	1	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	1	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
..1	586-211	CABLE ASSEMBLY, SRPT-30/40A MN HRNS(SBCM)	1	
....2	410-1410	LUG, TERM, 1/2	2	
....2	410-1421	LUG, QUICK DISCONNECT #18-22	3	
....2	410-1489	LUG, TERM #6 SPADE #16-22	7	
....2	417-0138	HSNG, MOD IV 4 POS 87499-7 AMP	1	
....2	417-0601	HOUSING, SKT, 6PIN, AMP MOD IV	1	J3
....2	417-0602	HOUSING, 16 PIN, DOUBLE ROW, AMP 1-87456-2	2	J2, J3
....2	417-8766	CONTACT, CRIMP, MOD-IV 87809-1	28	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	5	
....2	550-122	CONNECTOR, 10 PIN MOLEX HOUSING 09-50-8100	1	J1
....2	550-135	Connector, 6 pin Molex housing 09-50-8060	2	
....2	550-137	Connector, 8 pin Molex housing 09-50-8080	3	J1, J2, J6

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	550-327	Connector, Crimp Terminal Pin Molex 08-52-0112	39	
....2	580-040	Wire, UL1061 22/7 OTC Black	5.17	
....2	580-042	Wire, UL1061 22/7 OTC White	1.39	
....2	580-043	Wire, UL1061 22/7 OTC Red	3.88	
....2	580-044	Wire, UL1061 22/7 OTC Yellow	2.4	
....2	580-046	Wire, UL1061 22/7 OTC Green	1	
....2	580-047	Wire, UL1061 22/7 OS-1 Orange	1.37	
....2	580-048	Wire, UL1061 22/7 OTC Violet	1.37	
....2	580-049	Wire, UL1061 22/7 OTC Slate	1	
....2	580-050	Wire, UL1061 22/7 OS-1 White/Red	1.6	
....2	580-051	Wire, UL1061 22/7 OTC White/Blue	2.4	
....2	580-052	Wire, UL1061 22/7 OTC White/Orange	0.9	
....2	580-055	Wire, UL1061 22/7 OTC White/Brown	2.44	
....2	580-056	Wire, UL1061 22/7 OTC White/Slate	2.98	
....2	580-058	Wire, UL1061 22/7 OTC White/Violet	1.55	
....2	580-059	Wire, UL1061 22/7 OTC Yellow/Blue	2.37	
....2	580-060	Wire, UL1429 22/7 OS-1 Yellow/Green	1.6	
....2	580-065	Wire, UL1061 22/7 OTC Yellow/Brown w/ overall tin coating	0.9	
....2	580-089	Shielded Wire, 16-C-22-SPJ White/Orange 1 cond 22/19x34 pvc	2.44	
....2	580-090	Shielded Wire, 16-C-22-SPJ White/Yellow 1 Cond.22/19x34 pvc	1.38	
....2	580-091	Shielded Wire, 16-C-22-SPJ White/Green 1 Cond.22/19x34 pvc	2.44	
....2	580-092	Shielded Wire, 16-C-22-SPJ White/Blue 1 Cond.22/19x34 pvc	1.4	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	6.4	
....2	580-133	Wire, UL1061-18/16 #18 Red #M370-2	12.12	
....2	580-136	Wire, UL1061-18/16 #18 Blue	1.34	
....2	601-2209	WIRE,AWG22,19/34 WHT	1.15	
..1	594-0073	LABEL,WARNING ROTATING FANS	1	
..1	594-0505	LABEL, WARNING-ONLY AUTHORIZED PERSONNEL	1	
..1	700-226-61	Cover,Two Stage Power Amplifier	1	
..1	700-250-44	FRONT PANEL, SRPT-30	1	
..1	800-166A40A	SRPT-40A Audio Board	1	
....2	100-1551	RES,15K OHM,1/4W,1%	1	R46
....2	103-2744	RES,2.74K OHM,1/4W,1%,METAL	1	R43
....2	103-4741	RES,4.75K OHM,1/4W,1%,METAL	1	R48
....2	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	1	R49
....2	215-242	CAPACITOR, .0024 UF 2.5% 100V POLYPRO	1	C23
....2	800-166CM	Generic RPU Audio Board Assembly (SBCM)	1	
.....3	033-0123	CAPACITOR, .012 MFD 1% 100V POLYPRO	2	C20, C22
.....3	100-1041	RES,1K OHM,1/4W,1%	1	R1
.....3	100-1051	RES,10K OHM,1/4W,1%	1	R34
.....3	100-1531	RES,150 OHM,1/4W,1%	1	R5
.....3	101-104	Potentiometer, 100K ohm cermet Bourns 3309P-1-104	2	R26, R33



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R22
.....3	103-1007	RES,1 MEG OHM,1/4W,1%,METAL	2	R38, R39
.....3	103-1062	RES,100K OHM,1/4W,1%,METAL	4	R6, R11, R12, R17
.....3	103-1823	RES,182 OHM,1/4W,1%,METAL	1	R3
.....3	103-2211	RES,22.1K OHM,1/4W,1%,METAL	1	R32
.....3	103-2216	RES,221K OHM,1/4W,1%,METAL	1	R31
.....3	103-2241	RES,2.21K OHM,1/4W,1%,METAL	1	R27
.....3	103-2744	RES,2.74K OHM,1/4W,1%,METAL	2	R24, R45
.....3	103-3323	RES,332 OHM,1/4W,1%,METAL	1	R13
.....3	103-3324	RES,3.32K OHM,1/4W,1%,METAL	2	R32
.....3	103-3325	RES,33.2K OHM,1/4W,1%,METAL	1	R16
.....3	103-3924	RES,3.92K OHM,1/4W,1%,METAL	3	R8, R10, R15
.....3	103-4731	RES,475K OHM,1/4W,1%,METAL	3	R20, R35, R36
.....3	103-4741	RES,4.75K OHM,1/4W,1%,METAL	1	R25
.....3	103-4755	RES,47.5K OHM,1/4W,1%,METAL	1	R2
.....3	103-5623	RES,562 OHM,1/4W,1%,METAL	1	R41
.....3	104-105	POTENTIOMETER, 1MEG OHM TOP ADJUST	1	R37
.....3	145-030	RESISTOR, 3.3 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R9
.....3	145-106	Resistor, 10 meg ohm 1/4 watt 5% metal film Mepco SFR25	1	R29
.....3	145-221	Resistor, 220 ohm 1/4 watt 1% metal film Mepco SFR25	1	R17
.....3	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	4	R19, R28, R40, R42
.....3	145-472	OBSOLETE REPLACE W/103-4741 (NLU-03)	0	
.....3	145-681	RESISTOR, 681 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R4
.....3	145-822	Resistor, 8.25k ohm 1/4 watt 1% metal film Mepco SFR25	2	R14, R44
.....3	145-825	Resistor, 8.2 meg ohm 1/4 watt 5% carbon film 29SJ250	1	R30
.....3	203-4148	DIODE,1N4148	5	D1, D2, D3, D4, D5
.....3	215-223	Capacitor, .022 mfd 2.5% 100v polypro Seacor PFWAC220HGUE	1	C25
.....3	215-392	Capacitor, .0039 mfd 2.5% polypro	1	C26
.....3	215-822	CAPACITOR, .0082 MFD 2.5% 100V POLYPRO	1	C11
.....3	217-103	CAP,0.1UF 250VDC 5%,POLY FILM	1	C16
.....3	217-104	CAPACITOR, .01 UF 50V GMV DISC	2	C12, C28
.....3	219-106	CAPACITOR, 10UF 50V RADIAL ELECTROLYTIC	2	C3, C18
.....3	219-220	CAPACITOR, ELECTROLYTIC 22uF RADIAL 35V	3	C4, C21, C30
.....3	219-221	CAPACITOR, ELECTROLYTIC 220uF 25V RADIAL	3	C9, C13, C14
.....3	226-274	Cap, .27 mf 100v 10% polypro CD MTC1P27K OR Bishop C21B274K	2	C7, C31
.....3	253-471	CAPACITOR, 470 PF 50V 10% Y5P DISC	3	C1, C15, C29
.....3	255-470C	CAP, 47pF 5% 200V CERAMIC DIPPED	2	C24, C27

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	256-680C	Cap., 68pF 5% 200V ceramic dipped Kemet C317C680J2G5CA	1	C10
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C32, C33, C34, C35, C36, C37, C38, C39, C40, C41
.....3	299-470	CAP, TANTALUM, 4.7 UF 16V	3	C2, C17, C19
.....3	350-032	Inductor, 387-150M 40000-150000 uH	1	L1
.....3	401-054	Integrated Circuit, SGS TDA1054M	1	IC1
.....3	403-900	IC, QUADRUPLE NORTON OP AMP	1	IC2
.....3	414-007	DIODE, RECITIFIER,1N4007	1	D6
.....3	550-123	Connector, 10 pin header (cut from 550-162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.417	
.....3	800-166B	PC Board, Audio RPT-2/15/30	1	
..1	800-251A	RPT-30/SRPT-40 Pre-Amp Mixer (SBCM)	1	
....2	100-143	POTENTIOMETER,25KOHM LINEAR TAPER PC MT	4	R7, R14, R21, R30
....2	100-1551	RES,15K OHM,1/4W,1%	4	R6, R13, R20, R29
....2	103-1062	RES,100K OHM,1/4W,1%,METAL	8	R4, R5, R11, R12, R18, R19, R27, R28
....2	103-2211	RES,22.1K OHM,1/4W,1%,METAL	2	R31, R32
....2	103-2241	RES,2.21K OHM,1/4W,1%,METAL	4	R1, R8, R15, R22
....2	145-152	RESISTOR, 1.5K OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	8	R2, R3, R9, R10, R16, R17, R25, R26
....2	145-364-1	RESISTOR, 360K OHM 1/4 WATT 1% CARBON FILM	2	R23, R24
....2	145-562	RESISTOR, 5.6K OHM 1/4 WATT 5% METAL FILM	1	R33
....2	219-200	CAPACITOR ELECTROLYTIC 22UF 25V	13	C3, C4, C8, C11, C12, C16, C19, C20, C24, C27, C28, C32, C33
....2	221-5532-001	IC,NE-5532AN	2	IC1, IC2
....2	255-100	CAPACITOR, 10 PF 5% NPO DISC	4	C7, C15, C23, C31
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	12	C1, C2, C9, C10, C17, C18, C25, C26, C34, C35, C36, C37
....2	270-270	Capacitor, monolithic chip 27 pf 50v 5% Kemet C1206C270J5GAC	8	C5, C6, C13, C14, C21, C22, C29, C30
....2	530-051	SWITCH, SIDE ACTION SLIDE DPDT	1	S1
....2	550-149	Connector, 6 pin Molex angle header (cut from 550-163)	1	P1
.....3	550-163	Connector, 24 pin break-away (angle) Molex 26-48-6246	0.25	
....2	550-155-1	Connector, XLR Receptacle Insert Nuetrik#3FD-V-I-O	4	J1, J2, J3, J4
....2	700-250-15	Grounding Strap, RPT-30 Pre-Amp	1	
....2	800-251B	PC Board, Pre-amp/Mixer RPT-30	1	
..1	800-379AR	RPU Transmitter I/O Board Assy (SBCM)	1	
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	6	C1, C2, C3, C4, C5, C6



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	270-220	Cap, monolithic chip, 22 pf 50v 5% KEMET C1206C220J5GACTR	3	C7, C8, C9
....2	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L3, L4, L5, L6, L7, L8, L9
....2	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	2	L1, L2
....2	500-162	Screw, 4-40 x 7/16 phillips pan head MS zinc plated"	2	
....2	550-170	Connector, D-Sub 15 pin angle	1	J4
....2	550-176	Connector, 8 pin Molex angle header (cut from 550-163)	1	P2
.....3	550-163	Connector, 24 pin break-away (angle) Molex 26-48-6246	0.333	
....2	550-211	Conn,2x8 pin dual row header right angle cut from 550-217	1	P3
.....3	550-217	Dual Right Angle Breakaway Header Amp #571-41033300 40x2	0.2	
....2	800-379B	PC Board, STL/RPU Transmitter I/O	1	
..1	800-383A	POWER SUPPLY, SWITCHING 15V, 10A	1	
..1	800-389A	SRPT-30 FP CONTROL & METER BRD ASSY (SBCM) (NOTE)	1	
....2	030-046M	METER, 60 WATTS, VOLTS/AMPS, VU	1	M1
....2	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R51
....2	103-502	POT,5K,SINGLE TURN,VERTICAL PCB MOUNT	3	R48, R49, R50
....2	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	1	R45
....2	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R55, R60, R61
....2	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	2	R58, R59
....2	185-182	Resistor, SMT, size 1206, 182 ohms, Dale CRCW1206-182	4	R38, R39, R40, R41
....2	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R44
....2	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R46
....2	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R47
....2	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	4	R34, R35, R36, R37
....2	185-68.1	Resistor, SMT, size 1206, 68.1 ohms, Dale CRCW1206-68.1	4	R42, R43, R52, R53
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	1	C3
....2	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACTR	1	C4
....2	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	4	C1, C2, C5, C6
....2	340-0004	SW,JUMPER PROGRAMMABLE	2	P7, P8
....2	400-0055-1	ISOLATOR, ADH BACKED 2 SIDES, .063 X .75 (note)	3	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U13
....2	401-164	IC, SMT, 8-Bit Ser In, Par Out SR Phillips 74HC164D	1	U5
....2	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U7
....2	401-374	IC, OCTAL D FLIP-FLOP W 3-ST OUT	1	U6
....2	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U12
....2	417-0003	CONN,HEADER 3 PIN	2	J7, J8
....2	417-1606	CONN,HEADER,16-PIN,PCB MOUNT	2	P1, P4
....2	420-141	Transistor, SMT, Darlington, NPN, Mototrola MMBTA14LT1	1	Q5
....2	423-3008	FLAT .750 X .312 X .030	3	
....2	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	4	Q1, Q2, Q3, Q4
....2	510-196	SUBMINIATURE LAMP, LUMEX IFL-LX2162-16T	2	B1, B2
....2	530-059	SWITCH, ROTARY	1	S2
....2	550-136	Connector, 6 pin Molex header (cut from 550-162)	1	P5
.....3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.25	
....2	550-138	Connector, 8 pin Molex header (cut from 550-162)	1	P5
.....3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
....2	550-226	Connector, 4 pin single header (cut from 550-214)	1	P2
.....3	550-214	Connector, breakaway header Molex 22-28-4361	0.111	
....2	800-389B	SRPT-30 FP CONTROL & METER BRD	1	
..1	800-392A	14.5 VOLT STEP-UP REGULATOR (SBCM)	1	
....2	070-2265-L25	CAP,TANT,22 MFD,20%,25V, E CASE,LOW ESR,SMD	2	C1, C5
....2	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	1	R2
....2	185-110K	RESISTOR, SMT, 1206, 110K OHM, 1%	1	R1
....2	185-162K	RES,162K OHM,1%,0.25W,1206	1	R4
....2	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	1	R7
....2	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
....2	185-393	Resistor, SMT, 1206, 39.2K ohm 1% Dale CWCR1206-39.2K	1	R5
....2	185-6.81K	Resistor, SMT, 1206, 6.81K Ohm, Dale CRCW1206-6.81K	1	R3
....2	270-101	Cap., monolithic chip, 100 pf 50v 5% Kemet C1206C101J5GAC	1	C4
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	2	C6, C7
....2	270-682	CAPACITOR, SMT, 1206, 6800 PF, 5%	1	C2



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	1	C8
....2	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C3
....2	340-0004	SW,JUMPER PROGRAMMABLE	1	
....2	350-103P	INDUCTOR, SMT, POWER, 10UH	1	L1
....2	350-201	INDUCTOR, SMT, 1812, 82NH	1	L2
....2	400-196	IC, SMT, 1.5A STEP-UP REGULATOR	1	U1
....2	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U2
....2	413-1597	TERM,TURRET,2 SHLDR,.219,GOLD FLASH	4	E1, E2, E3, E4
....2	417-2043	RCPT, 20 POS, 2 ROW, R-ANG, PCB	1	J2
....2	418-120	DIODE, SMT, 1A, SCHOTTKY RECTIFIER	1	D1
....2	550-191	Conn,2 dual pin header(cut from 550-316 Molex 10-89-1801)	1	P1
.....3	550-316	HEADER, BREAKAWAY 40x2, 0.1 SPACING"	0.05	
....2	550-269	Connector,Header 10 Pin RI-10-1 Unsheltered 5x2x1 (note)	1	P4
....2	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P3
.....3	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
....2	800-392B	PCB, 14.5 VOLT STEP-UP REGULATOR	1	



## 12 SPRT40A BILL OF MATERIAL

This bill of material uses an indented structure to show relationships of parts into sub assemblies.  
Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
0	705-ST40A-xxx	SRPT-40A		
..1	217-104	CAPACITOR, .01 UF 50V GMV DISC	1	
..1	323-2124	LED INDICATOR,GRN,RECTANGULAR	1	
..1	323-7124	IND,LED,RED CMD57124A	3	
..1	339-0006	FILTER,RFI,10A 250VAC,50/60HZ	1	
..1	400-0014	GROMMET,3/8IDX5/8ODFOR7/16HOLE	1	
..1	400-0600	STRIP,QUIET SHIELD,6.00x.197	1	
..1	400-2170	GROMMET,FOR 3/8	1	
..1	420-0817	ASSY,FEMALE SCREWLOCK 205817-1	1	
..1	420-2105	SCREW,2-56X.312,S.S. PH SC	2	
..1	420-3720	SCREW,M3 X 20,PHILLIPS PAN HEAD,SS	4	
..1	420-4105	SCREW,4-40X.312,S.S. PH	2	
..1	420-4106	SCREW,4-40X.375,S.S. PH	4	
..1	420-6104	SCREW,6-32X.250,S.S. PH	5	
..1	420-6112	SCREW,6-32X.750,S.S. PH	2	
..1	421-1111	RIV,1/8X.422L .126-.187GR CLOS	8	
..1	421-4007	4-40 X .187 S.S. HEX NUT	2	
..1	421-4008	4-40 KEP NUT	3	
..1	421-6008	6-32 KEP NUT	6	
..1	421-6908	SHEET EDGE CONNECTOR 6-32	4	
..1	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	17	
..1	423-4002	#4 LOCK S.S. SPLIT	6	
..1	423-6002	#6 LOCK SPLIT	6	
..1	441-0068	STOFF,ALUM 1/4HEX X 1 1/2 6-32	4	
..1	469-0009	SHIELD,MARTI PA	1	
..1	471-5385	FILLER,REAR,SRPT-30	1	
..1	471-5386	PANEL,BACK,SRPT-30	1	
..1	471-5387	PANEL,TOP COVER,SRPT-30	1	
..1	471-5388	PANEL,BOTTOM COVER,SRPT-30	1	
..1	471-5389	PARTITION,SRPT-30	1	
..1	500-022	Screw, 6-32 x 3/8 phillips pan head M/S nickel plated"	2	
..1	500-123	Washer, Switchcraft #S1790-1	1	
..1	500-164	Flat Washer, Micro Plastics #FW250-062 nylon	1	
..1	500-183	Screw, 6-32 x 1/4 phillips pan head Black Zinc"	28	
..1	500-188	Screw, 4-40 x 3/8 phillips,flat head,black oxide"	10	
..1	500-199	Keps nut 4 x 40 zinc 4CNKEOZ	4	
..1	500-210	Screw,SEMS 4-40x1/4 Phil Pan Head MS Blk Zinc(external lock)	10	
..1	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	4	
..1	510-005	Polytube, Manhatten#AF155A-20-yel	0.78	
..1	510-072	Fuseholder, Littlefuse #342-004	1	
..1	510-113	Bushing, #B-312-250 black shorty Microplastic #22MP01015	1	





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	510-132	Handle Assy., black w/black plated steel hdwe #1879-376-370	1	
..1	510-204	FUSE, 4 AMP., 3AG	1	
..1	510-205	BUMPER, BRUCE PLASTICS 0772-0014 BLACK	8	
..1	510-212	CONTROL KNOBS, #45KNO23	1	
..1	510-215	CONTROL KNOB	4	
..1	510-231	FAN, AXIAL 12VDC 60X60X25MM	1	
..1	510-246	Flexible Grommet, (NOTE)	1.54	
..1	513-026	STANDOFF, 1/4HEX x 0.5"LONG, 4-40"	2	
..1	513-040	STANDOFF, 1/4HEX x 0.5"LONG, 4-40, NYLON"	4	
..1	530-001	Switch, slide DPDT Switchcraft	1	
..1	530-008	Switch, toggle SPDT Apem #5636AB16	1	
..1	530-085	SWITCH, MOMENTARY PUSHBUTTON, SPST, PANEL MOUNT	1	
..1	530-087	SWITCH, PUSHWHEEL, BCD 10 POSITION, PCB MOUNT	7	
..1	530-088	Switch End Cap, Right Side Mouser #106-9901	1	
..1	530-089	SWITCH, END CAP, LEFT SIDE	1	
..1	530-090	SWITCH, MINI-ROCKER, DPDT, PANEL MOUNT	1	
..1	550-083	Connector, Tini-Jax Switchcraft 41	1	
..1	550-155-2	Connector Shell XLR Receptacle DH-NF-BAG-O	4	
..1	586-115	CABLE ASSEMBLY W/2 CONN.	1	
..1	586-134	Ribbon Cable 6 Digi Key #M3AAA-1606R-ND"	1	
..1	586-194	Cable Assembly, AC Connector to Fuseholder (SBCM)	1	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	2	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
..1	586-195	Cable Assembly, AC Connector to Ground (SBCM)	1	
....2	410-1416	LUG, TERM, BENT, 11/16	1	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	1	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
..1	586-211	CABLE ASSEMBLY, SRPT-30/40A MN HRNS(SBCM)	1	
....2	410-1410	LUG, TERM, 1/2	2	
....2	410-1421	LUG, QUICK DISCONNECT #18-22	3	
....2	410-1489	LUG, TERM #6 SPADE #16-22	7	
....2	417-0138	HSNG, MOD IV 4 POS 87499-7 AMP	1	
....2	417-0601	HOUSING, SKT, 6PIN, AMP MOD IV	1	J3
....2	417-0602	HOUSING, 16 PIN, DOUBLE ROW, AMP 1-87456-2	2	J2, J3
....2	417-8766	CONTACT, CRIMP, MOD-IV 87809-1	28	
....2	512-020	TERMINAL, NICHIFU TMDN #125-250-03FA TERMINAL	5	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	550-122	CONNECTOR, 10 PIN MOLEX HOUSING 09-50-8100	1	J1
....2	550-135	Connector, 6 pin Molex housing 09-50-8060	2	
....2	550-137	Connector, 8 pin Molex housing 09-50-8080	3	J1, J2, J6
....2	550-327	Connector, Crimp Terminal Pin Molex 08-52-0112	39	
....2	580-040	Wire, UL1061 22/7 OTC Black	5.17	
....2	580-042	Wire, UL1061 22/7 OTC White	1.39	
....2	580-043	Wire, UL1061 22/7 OTC Red	3.88	
....2	580-044	Wire, UL1061 22/7 OTC Yellow	2.4	
....2	580-046	Wire, UL1061 22/7 OTC Green	1	
....2	580-047	Wire, UL1061 22/7 OS-1 Orange	1.37	
....2	580-048	Wire, UL1061 22/7 OTC Violet	1.37	
....2	580-049	Wire, UL1061 22/7 OTC Slate	1	
....2	580-050	Wire, UL1061 22/7 OS-1 White/Red	1.6	
....2	580-051	Wire, UL1061 22/7 OTC White/Blue	2.4	
....2	580-052	Wire, UL1061 22/7 OTC White/Orange	0.9	
....2	580-055	Wire, UL1061 22/7 OTC White/Brown	2.44	
....2	580-056	Wire, UL1061 22/7 OTC White/Slate	2.98	
....2	580-058	Wire, UL1061 22/7 OTC White/Violet	1.55	
....2	580-059	Wire, UL1061 22/7 OTC Yellow/Blue	2.37	
....2	580-060	Wire, UL1429 22/7 OS-1 Yellow/Green	1.6	
....2	580-065	Wire, UL1061 22/7 OTC Yellow/Brown w/ overall tin coating	0.9	
....2	580-089	Shielded Wire, 16-C-22-SPJ White/Orange 1 cond 22/19x34 pvc	2.44	
....2	580-090	Shielded Wire, 16-C-22-SPJ White/Yellow 1 Cond.22/19x34 pvc	1.38	
....2	580-091	Shielded Wire, 16-C-22-SPJ White/Green 1 Cond.22/19x34 pvc	2.44	
....2	580-092	Shielded Wire, 16-C-22-SPJ White/Blue 1 Cond.22/19x34 pvc	1.4	
....2	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	6.4	
....2	580-133	Wire, UL1061-18/16 #18 Red #M370-2	12.12	
....2	580-136	Wire, UL1061-18/16 #18 Blue	1.34	
....2	601-2209	WIRE,AWG22,19/34 WHT	1.15	
..1	594-0073	LABEL,WARNING ROTATING FANS	1	
..1	594-0505	LABEL, WARNING-ONLY AUTHORIZED PERSONNEL	1	
..1	700-226-61	Cover,Two Stage Power Amplifier	1	
..1	700-250-42	Front Panel, SRPT-40A	1	
..1	800-166A40A	SRPT-40A Audio Board	1	
....2	100-1551	RES,15K OHM,1/4W,1%	1	R46
....2	103-2744	RES,2.74K OHM,1/4W,1%,METAL	1	R43
....2	103-4741	RES,4.75K OHM,1/4W,1%,METAL	1	R48
....2	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	1	R49
....2	215-242	CAPACITOR, .0024 UF 2.5% 100V POLYPRO	1	C23
....2	800-166CM	Generic RPU Audio Board Assembly (SBCM)	1	
.....3	033-0123	CAPACITOR, .012 MFD 1% 100V POLYPRO	2	C20, C22
.....3	100-1041	RES,1K OHM,1/4W,1%	1	R1



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	100-1051	RES,10K OHM,1/4W,1%	1	R34
.....3	100-1531	RES,150 OHM,1/4W,1%	1	R5
.....3	101-104	Potentiometer, 100K ohm cermet Bourns 3309P-1-104	2	R26, R33
.....3	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R22
.....3	103-1007	RES,1 MEG OHM,1/4W,1%,METAL	2	R38, R39
.....3	103-1062	RES,100K OHM,1/4W,1%,METAL	4	R6, R11, R12, R17
.....3	103-1823	RES,182 OHM,1/4W,1%,METAL	1	R3
.....3	103-2211	RES,22.1K OHM,1/4W,1%,METAL	1	R32
.....3	103-2216	RES,221K OHM,1/4W,1%,METAL	1	R31
.....3	103-2241	RES,2.21K OHM,1/4W,1%,METAL	1	R27
.....3	103-2744	RES,2.74K OHM,1/4W,1%,METAL	2	R24, R45
.....3	103-3323	RES,332 OHM,1/4W,1%,METAL	1	R13
.....3	103-3324	RES,3.32K OHM,1/4W,1%,METAL	2	R32
.....3	103-3325	RES,33.2K OHM,1/4W,1%,METAL	1	R16
.....3	103-3924	RES,3.92K OHM,1/4W,1%,METAL	3	R8, R10, R15
.....3	103-4731	RES,475K OHM,1/4W,1%,METAL	3	R20, R35, R36
.....3	103-4741	RES,4.75K OHM,1/4W,1%,METAL	1	R25
.....3	103-4755	RES,47.5K OHM,1/4W,1%,METAL	1	R2
.....3	103-5623	RES,562 OHM,1/4W,1%,METAL	1	R41
.....3	104-105	POTENTIOMETER, 1MEG OHM TOP ADJUST	1	R37
.....3	145-030	RESISTOR, 3.3 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R9
.....3	145-106	Resistor, 10 meg ohm 1/4 watt 5% metal film Mepco SFR25	1	R29
.....3	145-221	Resistor, 220 ohm 1/4 watt 1% metal film Mepco SFR25	1	R17
.....3	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	4	R19, R28, R40, R42
.....3	145-472	OBSOLETE REPLACE W/103-4741 (NLU-03)	0	
.....3	145-681	RESISTOR, 681 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R4
.....3	145-822	Resistor, 8.25k ohm 1/4 watt 1% metal film Mepco SFR25	2	R14, R44
.....3	145-825	Resistor, 8.2 meg ohm 1/4 watt 5% carbon film 29SJ250	1	R30
.....3	203-4148	DIODE,1N4148	5	D1, D2, D3, D4, D5
.....3	215-223	Capacitor, .022 mfd 2.5% 100v polypro Seacor PFWAC220HGUE	1	C25
.....3	215-392	Capacitor, .0039 mfd 2.5% polypro	1	C26
.....3	215-822	CAPACITOR, .0082 MFD 2.5% 100V POLYPRO	1	C11
.....3	217-103	CAP,0.1UF 250VDC 5%,POLY FILM	1	C16
.....3	217-104	CAPACITOR, .01 UF 50V GMV DISC	2	C12, C28
.....3	219-106	CAPACITOR, 10UF 50V RADIAL ELECTROLYTIC	2	C3, C18
.....3	219-220	CAPACITOR, ELECTROLYTIC 22uF RADIAL 35V	3	C4, C21, C30
.....3	219-221	CAPACITOR, ELECTROLYTIC 220uF 25V RADIAL	3	C9, C13, C14

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	226-274	Cap.,.27 mf 100v 10% polypro CD MTC1P27K OR Bishop C21B274K	2	C7, C31
.....3	253-471	CAPACITOR, 470 PF 50V 10% Y5P DISC	3	C1, C15, C29
.....3	255-470C	CAP, 47pF 5% 200V CERAMIC DIPPED	2	C24, C27
.....3	256-680C	Cap., 68pF 5% 200V ceramic dipped Kemet C317C680J2G5CA	1	C10
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C32, C33, C34, C35, C36, C37, C38, C39, C40, C41
.....3	299-470	CAP, TANTALUM, 4.7 UF 16V	3	C2, C17, C19
.....3	350-032	Inductor, 387-150M 40000-150000 uH	1	L1
.....3	401-054	Integrated Circuit, SGS TDA1054M	1	IC1
.....3	403-900	IC, QUADRUPLE NORTON OP AMP	1	IC2
.....3	414-007	DIODE, RECTIFIER,1N4007	1	D6
.....3	550-123	Connector, 10 pin header (cut from 550-162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.417	
.....3	800-166B	PC Board, Audio RPT-2/15/30	1	
..1	800-251A	RPT-30/SRPT-40 Pre-Amp Mixer (SBCM)	1	
....2	100-143	POTENTIOMETER,25KOHM LINEAR TAPER PC MT	4	R7, R14, R21, R30
....2	100-1551	RES,15K OHM,1/4W,1%	4	R6, R13, R20, R29
....2	103-1062	RES,100K OHM,1/4W,1%,METAL	8	R4, R5, R11, R12, R18, R19, R27, R28
....2	103-2211	RES,22.1K OHM,1/4W,1%,METAL	2	R31, R32
....2	103-2241	RES,2.21K OHM,1/4W,1%,METAL	4	R1, R8, R15, R22
....2	145-152	RESISTOR, 1.5K OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	8	R2, R3, R9, R10, R16, R17, R25, R26
....2	145-364-1	RESISTOR, 360K OHM 1/4 WATT 1% CARBON FILM	2	R23, R24
....2	145-562	RESISTOR, 5.6K OHM 1/4 WATT 5% METAL FILM	1	R33
....2	219-200	CAPACITOR ELECTROLYTIC 22UF 25V	13	C3, C4, C8, C11, C12, C16, C19, C20, C24, C27, C28, C32, C33
....2	221-5532-001	IC,NE-5532AN	2	IC1, IC2
....2	255-100	CAPACITOR, 10 PF 5% NPO DISC	4	C7, C15, C23, C31
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	12	C1, C2, C9, C10, C17, C18, C25, C26, C34, C35, C36, C37
....2	270-270	Capacitor, monolithic chip 27 pf 50v 5% Kemet C1206C270J5GAC	8	C5, C6, C13, C14, C21, C22, C29, C30
....2	530-051	SWITCH, SIDE ACTION SLIDE DPDT	1	S1
....2	550-149	Connector, 6 pin Molex angle header (cut from 550-163)	1	P1
.....3	550-163	Connector, 24 pin break-away (angle) Molex 26-48-6246	0.25	
....2	550-155-1	Connector, XLR Receptacle Insert Nuetrik#3FD-V-I-O	4	J1, J2, J3, J4
....2	700-250-15	Grounding Strap, RPT-30 Pre-Amp	1	
....2	800-251B	PC Board, Pre-amp/Mixer RPT-30	1	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-379AR	RPU Transmitter I/O Board Assy (SBCM)	1	
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	6	C1, C2, C3, C4, C5, C6
....2	270-220	Cap, monolithic chip, 22 pf 50v 5% KEMET C1206C220J5GACTR	3	C7, C8, C9
....2	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L3, L4, L5, L6, L7, L8, L9
....2	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	2	L1, L2
....2	500-162	Screw, 4-40 x 7/16 phillips pan head MS zinc plated"	2	
....2	550-170	Connector, D-Sub 15 pin angle	1	J4
....2	550-176	Connector, 8 pin Molex angle header (cut from 550-163)	1	P2
.....3	550-163	Connector, 24 pin break-away (angle) Molex 26-48-6246	0.333	
....2	550-211	Conn,2x8 pin dual row header right angle cut from 550-217	1	P3
.....3	550-217	Dual Right Angle Breakaway Header Amp #571-41033300 40x2	0.2	
....2	800-379B	PC Board, STL/RPU Transmitter I/O	1	
..1	800-383A	POWER SUPPLY, SWITCHING 15V, 10A	1	
..1	800-385A	SRPT-40A FRONT PANEL CONTROL & METER (SBCM) (NOTE)	1	
....2	030-046M	METER, 60 WATTS, VOLTS/AMPS, VU	1	M1
....2	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R51
....2	103-502	POT,5K,SINGLE TURN,VERTICAL PCB MOUNT	3	R48, R49, R50
....2	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	1	R45
....2	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	7	R33, R54, R55, R56, R57, R60, R61
....2	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	2	R58, R59
....2	185-182	Resistor, SMT, size 1206, 182 ohms, Dale CRCW1206-182	4	R38, R39, R40, R41
....2	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R44
....2	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	32	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32
....2	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R46
....2	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R47
....2	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	4	R34, R35, R36, R37

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	185-68.1	Resistor, SMT, size 1206, 68.1 ohms, Dale CRCW1206-68.1	4	R42, R43, R52, R53
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	1	C3
....2	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACTR	1	C4
....2	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	4	C1, C2, C5, C6
....2	340-0004	SW,JUMPER PROGRAMMABLE	2	P7, P8
....2	400-0055-1	ISOLATOR, ADH BACKED 2 SIDES, .063 X .75 (note)	3	
....2	400-106	IC, Inverter, Open-drain Gate	4	U8, U9, U10, U11
....2	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U13
....2	401-164	IC, SMT, 8-Bit Ser In, Par Out SR Phillips 74HC164D	1	U5
....2	401-165	IC, 8-Bit Ser/Par In, Ser Out SR Phillips 74HC165D	4	U1, U2, U3, U4
....2	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U7
....2	401-374	IC, OCTAL D FLIP-FLOP W 3-ST OUT	1	U6
....2	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U12
....2	417-0003	CONN,HEADER 3 PIN	2	J7, J8
....2	417-1606	CONN,HEADER,16-PIN,PCB MOUNT	2	P1, P4
....2	420-141	Transistor, SMT, Darlington, NPN, Mototrola MMBTA14LT1	1	Q5
....2	423-3008	FLAT .750 X .312 X .030	3	
....2	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	4	Q1, Q2, Q3, Q4
....2	510-196	SUBMINIATURE LAMP, LUMEX IFL-LX2162-16T	2	B1, B2
....2	530-059	SWITCH, ROTARY	1	S2
....2	530-086	Switch, Dip, 4 Position, Right Angle, Apem DA04T	1	S1
....2	550-136	Connector, 6 pin Molex header (cut from 550-162)	1	P5
.....3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.25	
....2	550-138	Connector, 8 pin Molex header (cut from 550-162)	1	P5
.....3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
....2	550-226	Connector, 4 pin single header (cut from 550-214)	1	P2
.....3	550-214	Connector, breakaway header Molex 22-28-4361	0.111	
....2	800-385B	PC BOARD, FRONT PANEL CONTROL AND METER, SRPT-40A	1	
..1	800-392A	14.5 VOLT STEP-UP REGULATOR (SBCM)	1	
....2	070-2265-L25	CAP,TANT,22 MFD,20%,25V, E CASE,LOW ESR,SMD	2	C1, C5



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	1	R2
....2	185-110K	RESISTOR, SMT, 1206, 110K OHM, 1%	1	R1
....2	185-162K	RES,162K OHM,1%,0.25W,1206	1	R4
....2	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	1	R7
....2	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
....2	185-393	Resistor, SMT, 1206, 39.2K ohm 1% Dale CWCR1206-39.2K	1	R5
....2	185-6.81K	Resistor, SMT, 1206, 6.81K Ohm, Dale CRCW1206-6.81K	1	R3
....2	270-101	Cap., monolithic chip, 100 pf 50v 5% Kemet C1206C101J5GAC	1	C4
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	2	C6, C7
....2	270-682	CAPACITOR, SMT, 1206, 6800 PF, 5%	1	C2
....2	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	1	C8
....2	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C3
....2	340-0004	SW,JUMPER PROGRAMMABLE	1	
....2	350-103P	INDUCTOR, SMT, POWER, 10UH	1	L1
....2	350-201	INDUCTOR, SMT, 1812, 82NH	1	L2
....2	400-196	IC, SMT, 1.5A STEP-UP REGULATOR	1	U1
....2	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U2
....2	413-1597	TERM,TURRET,2 SHLDR,.219,GOLD FLASH	4	E1, E2, E3, E4
....2	417-2043	RCPT, 20 POS, 2 ROW, R-ANG, PCB	1	J2
....2	418-120	DIODE, SMT, 1A, SCHOTTKY RECTIFIER	1	D1
....2	550-191	Conn,2 dual pin header(cut from 550-316 Molex 10-89-1801)	1	P1
.....3	550-316	HEADER, BREAKAWAY 40x2, 0.1 SPACING"	0.05	
....2	550-269	Connector,Header 10 Pin RI-10-1 Unsheltered 5x2x1 (note)	1	P4
....2	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P3
.....3	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
....2	800-392B	PCB, 14.5 VOLT STEP-UP REGULATOR	1	



## 13 SRPT 30 and SRPT 40A Synthesizers, PAs, and TSL Audio

This bill of material uses an indented structure to show relationships of parts into sub assemblies. Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-166A40ATSL	SRPT 30/40A TSL AUDIO BOARD	1	
....2	100-1013	RES,1 OHM,1/4W,5%	1	R48
....2	100-1041	RES,1K OHM,1/4W,1%	1	R43
....2	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	1	R49
....2	145-822	Resistor, 8.25k ohm 1/4 watt 1% metal film Mepco SFR25	1	R46
....2	215-223	Capacitor, .022 mfd 2.5% 100v polypro Seacor PFWAC220HGUE	1	C23
....2	800-166CM	Generic RPU Audio Board Assembly (SBCM)	1	
.....3	033-0123	CAPACITOR, .012 MFD 1% 100V POLYPRO	2	C20, C22
.....3	100-1041	RES,1K OHM,1/4W,1%	1	R1
.....3	100-1051	RES,10K OHM,1/4W,1%	1	R34
.....3	100-1531	RES,150 OHM,1/4W,1%	1	R5
.....3	101-104	Potentiometer, 100K ohm cermet Bourns 3309P-1-104	2	R26, R33
.....3	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R22
.....3	103-1007	RES,1 MEG OHM,1/4W,1%,METAL	2	R38, R39
.....3	103-1062	RES,100K OHM,1/4W,1%,METAL	4	R6, R11, R12, R17
.....3	103-1823	RES,182 OHM,1/4W,1%,METAL	1	R3
.....3	103-2211	RES,22.1K OHM,1/4W,1%,METAL	1	R32
.....3	103-2216	RES,221K OHM,1/4W,1%,METAL	1	R31
.....3	103-2241	RES,2.21K OHM,1/4W,1%,METAL	1	R27
.....3	103-2744	RES,2.74K OHM,1/4W,1%,METAL	2	R24, R45
.....3	103-3323	RES,332 OHM,1/4W,1%,METAL	1	R13
.....3	103-3324	RES,3.32K OHM,1/4W,1%,METAL	2	R32
.....3	103-3325	RES,33.2K OHM,1/4W,1%,METAL	1	R16
.....3	103-3924	RES,3.92K OHM,1/4W,1%,METAL	3	R8, R10, R15
.....3	103-4731	RES,475K OHM,1/4W,1%,METAL	3	R20, R35, R36
.....3	103-4741	RES,4.75K OHM,1/4W,1%,METAL	1	R25
.....3	103-4755	RES,47.5K OHM,1/4W,1%,METAL	1	R2
.....3	103-5623	RES,562 OHM,1/4W,1%,METAL	1	R41
.....3	104-105	POTENTIOMETER, 1MEG OHM TOP ADJUST	1	R37
.....3	145-030	RESISTOR, 3.3 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R9
.....3	145-106	Resistor, 10 meg ohm 1/4 watt 5% metal film Mepco SFR25	1	R29
.....3	145-221	Resistor, 220 ohm 1/4 watt 1% metal film Mepco SFR25	1	R17
.....3	145-225	Resistor, 2.21 meg ohm 1/4 watt 1% metal film (2.21 Meg 1%)	4	R19, R28, R40, R42
.....3	145-472	OBSOLETE REPLACE W/103-4741 (NLU-03)	0	





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	145-681	RESISTOR, 681 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	1	R4
.....3	145-822	Resistor, 8.25k ohm 1/4 watt 1% metal film Mepco SFR25	2	R14, R44
.....3	145-825	Resistor, 8.2 meg ohm 1/4 watt 5% carbon film 29SJ250	1	R30
.....3	203-4148	DIODE, 1N4148	5	D1, D2, D3, D4, D5
.....3	215-223	Capacitor, .022 mfd 2.5% 100v polypro Seacor PFWAC220HGUE	1	C25
.....3	215-392	Capacitor, .0039 mfd 2.5% polypro	1	C26
.....3	215-822	CAPACITOR, .0082 MFD 2.5% 100V POLYPRO	1	C11
.....3	217-103	CAP, 0.1UF 250VDC 5%, POLY FILM	1	C16
.....3	217-104	CAPACITOR, .01 UF 50V GMV DISC	2	C12, C28
.....3	219-106	CAPACITOR, 10UF 50V RADIAL ELECTROLYTIC	2	C3, C18
.....3	219-220	CAPACITOR, ELECTROLYTIC 22uF RADIAL 35V	3	C4, C21, C30
.....3	219-221	CAPACITOR, ELECTROLYTIC 220uF 25V RADIAL	3	C9, C13, C14
.....3	226-274	Cap., .27 mf 100v 10% polypro CD MTC1P27K OR Bishop C21B274K	2	C7, C31
.....3	253-471	CAPACITOR, 470 PF 50V 10% Y5P DISC	3	C1, C15, C29
.....3	255-470C	CAP, 47pF 5% 200V CERAMIC DIPPED	2	C24, C27
.....3	256-680C	Cap., 68pF 5% 200V ceramic dipped Kemet C317C680J2G5CA	1	C10
.....3	270-102	Cap, monolithic, 1000pf 50v 5% Kemet C1206C102J5GACTR marked	10	C32, C33, C34, C35, C36, C37, C38, C39, C40, C41
.....3	299-470	CAP, TANTALUM, 4.7 UF 16V	3	C2, C17, C19
.....3	350-032	Inductor, 387-150M 40000-150000 uH	1	L1
.....3	401-054	Integrated Circuit, SGS TDA1054M	1	IC1
.....3	403-900	IC, QUADRUPLE NORTON OP AMP	1	IC2
.....3	414-007	DIODE, RECTIFIER, 1N4007	1	D6
.....3	550-123	Connector, 10 pin header (cut from 550-162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.417	
.....3	800-166B	PC Board, Audio RPT-2/15/30	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-375AT150	TRANSMITTER SYNTHESIZER ASSY 150	1	
....2	400-185	IC, VCO, 135-185 MHZ	1	
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
.....3	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	1	R74
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
.....3	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
.....3	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
.....3	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
.....3	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
.....3	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
.....3	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
.....3	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
.....3	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
.....3	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
.....3	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
.....3	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
.....3	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,
.....3	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
.....3	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
.....3	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
.....3	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
.....3	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
.....3	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
.....3	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
.....3	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
.....3	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
.....3	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
.....3	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
.....3	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
.....3	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
.....3	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
.....3	407-376	IC,SMT,Digital Pot,+/-15V,10K Ohms Analog Device AD7376AR10	1	U9
.....3	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16
.....3	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
.....3	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
.....3	420-141	Transistor, SMT, Darlington, NPN, Motorola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
.....3	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
.....3	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
.....3	800-375B	PC Board, Transmitter Synthesizer,	1	
....2	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	
..1	800-375AT150	TRANSMITTER SYNTHESIZER ASSY 150	1	
....2	400-185	IC, VCO, 135-185 MHZ	1	
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-375AT230	TRANSMITTER SYNTHESIZER ASSY 230	1	
....2	400-265	IC, VCO, 215-265 MHZ, SYNERGY	1	
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
.....3	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	1	R74
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
.....3	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
.....3	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
.....3	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
.....3	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
.....3	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
.....3	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
.....3	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
.....3	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
.....3	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
.....3	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
.....3	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
.....3	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
.....3	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
.....3	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
.....3	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
.....3	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
.....3	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
.....3	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
.....3	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
.....3	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
.....3	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
.....3	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
.....3	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
.....3	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
.....3	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
.....3	407-376	IC,SMT,Digital Pot,+/-15V,10K Ohms Analog Device AD7376AR10	1	U9
.....3	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1
.....3	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
.....3	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
.....3	420-141	Transistor, SMT, Darlington, NPN, Motorola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
.....3	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
.....3	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
.....3	800-375B	PC Board, Transmitter Synthesizer,	1	
.....2	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-375AT250	TRANSMITTER SYNTHESIZER ASSY 250	1	
....2	400-265	IC, VCO, 215-265 MHZ, SYNERGY	1	
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
.....3	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	1	R74
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
.....3	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
.....3	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
.....3	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
.....3	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
.....3	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
.....3	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
.....3	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
.....3	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
.....3	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
.....3	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
.....3	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
.....3	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
.....3	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
.....3	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
.....3	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
.....3	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
.....3	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
.....3	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
.....3	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
.....3	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
.....3	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
.....3	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
.....3	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
.....3	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
.....3	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
.....3	407-376	IC,SMT,Digital Pot,+/-15V,10K Ohms Analog Device AD7376AR10	1	U9
.....3	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1
.....3	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
.....3	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
.....3	420-141	Transistor, SMT, Darlington, NPN, Motorola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
.....3	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
.....3	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
.....3	800-375B	PC Board, Transmitter Synthesizer,	1	
....2	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-375AT330	TRANSMITTER SYNTHESIZER ASSY 330	1	
....2	400-351	IC, VCO, 300-350 MHZ	1	
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
.....3	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	1	R74
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
.....3	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
.....3	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
.....3	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
.....3	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
.....3	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
.....3	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
.....3	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
.....3	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
.....3	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
.....3	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
.....3	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
.....3	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
.....3	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
.....3	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
.....3	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
.....3	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
.....3	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
.....3	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
.....3	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
.....3	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
.....3	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
.....3	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
.....3	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
.....3	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
.....3	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
.....3	407-376	IC,SMT,Digital Pot,+/-15V,10K Ohms Analog Device AD7376AR10	1	U9
.....3	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1
.....3	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
.....3	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
.....3	420-141	Transistor, SMT, Darlington, NPN, Motorola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
.....3	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
.....3	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
.....3	800-375B	PC Board, Transmitter Synthesizer,	1	
.....2	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	800-375AT450	TRANSMITTER SYNTHESIZER ASSEMBLY 450 MHZ	1	
....2	400-480	IC, VCO, 430-480 Mhz	1	U6
....2	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	
.....3	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
.....3	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	1	R74
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
.....3	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
.....3	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
.....3	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
.....3	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
.....3	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
.....3	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
.....3	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
.....3	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
.....3	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
.....3	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
.....3	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
.....3	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,
.....3	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
.....3	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
.....3	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
.....3	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
.....3	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
.....3	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
.....3	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
.....3	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
.....3	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
.....3	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
.....3	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
.....3	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
.....3	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
.....3	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
.....3	407-376	IC,SMT,Digital Pot,+/-15V,10K Ohms Analog Device AD7376AR10	1	U9

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16
.....3	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1
.....3	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
.....3	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
.....3	420-141	Transistor, SMT, Darlington, NPN, Mototrola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
.....3	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
.....3	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....4	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
.....3	800-375B	PC Board, Transmitter Synthesizer,	1	
....2	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
0	800-375AT950	TRANSMITTER SYNTHESIZER ASSEMBLY 950 MHZ		
..1	400-965	IC, VCO 935-965 MHZ	1	U6
..1	800-375AT	Transmitter Synthesizer Board Assy Generic (SBCM)	1	PCB1
....2	011-7.3728	Crystal,SMT,7.3728 MHz, 50ppm, Epson MA-506-7.3728M-C2	1	X1
....2	012-280-1	TCXO, SMT, 12.800 MHZ, 1PPM	1	U15
....2	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E (note)	1	R74
....2	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	5	R24, R25, R38, R83, R84
....2	185-1.62K	Resistor, SMT, 1206, 1.62K Ohm, Dale CRCW1206-1.62K	1	R53
....2	185-1.82K	RESISTER, SMT, 1206, 1.82K, 1%	2	R50, R51
....2	185-100	Resistor, 10 Ohm Dale CRCW1206-10 1% Tape & Reel	3	R18, R35, R36
....2	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	2	R59, R78
....2	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	16	R3, R6, R7, R15, R17, R19, R33, R45, R67, R69, R70, R71, R72, R75, R81, R86
....2	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	7	R8, R13, R20, R52, R66, R68, R77
....2	185-104	Resistor, Dale CRCW1206-100K 100k ohm 1/8 watt 1% chip	1	R16
....2	185-133	Resistor,SMT,1206,133 ohms,1%	1	R37
....2	185-150	Resistor, 15 ohm 1/8 watt 5% chip Dale #CRCW1206150JT	1	R27
....2	185-18.2	RES,18.2 OHM,1%,0.25W,1206	3	R21, R22, R23
....2	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R73
....2	185-2.74K	Resistor, SMT, size 1206, 2.74K ohms, Dale CRCW1206-2.74K	3	R1, R30, R60
....2	185-22.1	Resistor, SMT, size 1206, 22.1 ohms, Dale CRCW1206-22.1	1	R5
....2	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	1	R76
....2	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R44
....2	185-39.2	Resistor, SMT, size 1206, 39.2 ohms, Dale CRCW1206-39.2	2	R28, R29
....2	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	9	R4, R11, R54, R56, R58, R79, R80, R82, R87
....2	185-432	Resistor, SMT, size 1206, 432 ohms, Dale CRCW1206-432	1	R14
....2	185-47.5	Resistor, SMT, size 1206, 47.5 ohms, Dale CRCW1206-47.5	1	R34
....2	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	4	R46, R47, R48, R49
....2	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	3	R55, R57, R62,

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	185-5.11K	Resistor, SMT, size 1206, 5.11K ohms, Dale CRCW1206-5.11K	4	R2, R31, R32, R61
....2	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R43
.....3	198-2024	TRMR, 2K OHMS, TOP ADJUST,10 TURN,SMD	1	R63
....2	270-100	Capacitor, monolithic chip, 10 pf 50v Kemet C1206C100J5GACTR	1	C26
....2	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	14	C6, C9, C16, C18, C27, C28, C29, C31, C44, C45, C50, C51, C52, C61
....2	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACR	7	C19, C25, C30, C33, C39, C43, C55
....2	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	4	C20, C35, C14, C15
....2	270-330	Capacitor,monolithic chip,33 pf 50v 5% Kemet C1206C330J5GAC	2	C57, C58
....2	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	1	R26
....2	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	11	C5, C8, C21, C24, C32, C34, C38, C42, C54, C56, C62
....2	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C41
....2	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	9	C1, C3, C17, C22, C23, C40, C53, C59, C60
....2	298-156	Capacitor,Tantalum,SMT,size D, 15uF,25V Kemet T491D156K025AS	2	C10, C12
....2	298-157	Capacitor,Tantalum,SMT,size X,150uF,16V Kemet T491X157K016AS	2	C11, C13
....2	298-476	Capacitor,Tantalum,SMT,size D, 47uF,16V Kemet T491D476K016AS	2	C4, C36, C7
....2	330-024	Inductor, 10uH SMT DN12103JTR-ND DELEVAN 5%	7	L1, L2, L3, L6, L7, L8, L9
....2	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS-331XKBC	2	L4, L5
....2	400-158	IC, SMT, PLL Freq Synth, Serial inp Motorola MC145158DW2	1	U5
....2	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U2
....2	400-678	IC, SMT, MMIC AMPLIFIER, 2 GHz, BROADBAND	2	U10, U11
....2	401-275	IC,SMT,OP-AMP,LOW NOISE,HIGH AUDIO BW	2	U7, U8
....2	401-317	IC, SMT, Regulator,Adjustable, 1.5 Amps,National LM317AEMP	1	U14
....2	402-054	IC,SMT,Prescaler, Dual Mod, 64/65-128/129 Motorola MC12054AD	1	U4
....2	407-376	IC,SMT,Digital Pot,15V,10K Ohms Analog Device AD7376AR10	1	U9
....2	408-402	ICSMT, Digital Pot,2 Ch,100K ohms,Analog Device AD8402AR100	1	U16



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	409-044	IC, SMT, Microcontroller Atmel AT90S4433-8AI (note)	1	U1
....2	415-840	Diode, Zener, SMT, 13V, Vishay BZX84C13TR	1	D1
....2	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D3
....2	418-451	Diode, SMT, Zener, 5.1V Motorola BZX84C5V1LT1	2	D2, D4
....2	420-141	Transistor, SMT, Darlington, NPN, Motorola MMBTA14LT1	5	Q1, Q2, Q3, Q4, Q5
....2	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	3	Q7, Q8, Q9
....2	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	J1
....2	550-325-16	Conn,16-Pin (cut from 550-325) Right Angle	1	P1
.....3	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.2	
....2	550-325-20	Conn,20-Pin (cut from 550-325) Right Angle	1	P2
.....3	550-325	CONN, RIGHT ANGLE DUAL ROW 80-PIN	0.25	
....2	700-0119	TAPE,KAPTON 1/4	0.001	
....2	700-226-63	Exterior Fencing&Cover,Synth Leader Tech88-CBSU-2.25x5.75x.8	1	
....2	800-375B	PC Board, Transmitter Synthesizer,	1	
..1	800-375ATSW2	RPU/STL XMIT SYN SW VERSION 2	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-153	PA ASSY, 150MHZ, 30W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	101-6652	RES,CHIP,66.5K,1/8W,1%,SMD	1	R11
....2	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	-1	
....2	270-180-1	CAP, SMT, 18 PF, 100V Kemet C1206C180J1GAC	3	C35, C36, C37
....2	350-200	INDUCTOR, SMT, 1812, 56NH	2	L8, L11
....2	350-201	INDUCTOR, SMT, 1812, 82NH	2	L9, L10
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-001	PA MODULE, 30W, 12.5V, 135-175 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3-.05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	2	R4, R25



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	1	R27
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R22
.....3	210-1047	DIODE,ZENER,4.7V,225MW,SMD,SOT23	1	D6
.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
.....3	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	1	L1
.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	
.....3	550-037	CONNECTOR, UG-58A/U N PANEL RECEPTICLE	1	
.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-233	PA ASSY, 230MHZ, 30W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	101-6652	RES,CHIP,66.5K,1/8W,1%,SMD	1	R11
....2	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	-1	
....2	270-120	CAP, SMT, 12PF, 100V	3	C35, C36, C37
....2	350-200	INDUCTOR, SMT, 1812, 56NH	2	L9, L10
....2	350-202	IND, SMT, 1812, 39 NH	2	L8, L11
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-003	PA MODULE, 30W, 12.5V, 210-270 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3-.05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	2	R4, R25

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	1	R27
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R22
.....3	210-1047	DIODE,ZENER,4.7V,225MW,SMD,SOT23	1	D6
.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
.....3	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	1	L1
.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	
.....3	550-037	CONNECTOR, UG-58A/U N PANEL RECEPTICLE	1	
.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-253	PA ASSY, 250MHZ, 30W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	270-100-1	CAP, SMT, 10 PF, 100V	3	C35, C36, C37
....2	350-203	IND, SMT, 1812, 33 NH	2	L8, L11
....2	350-204	IND, SMT, 1812, 47 NH	2	L9, L10
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-003	PA MODULE, 30W, 12.5V, 210-270 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3-.05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	2	R4, R25
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	1	R27



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R22
.....3	210-1047	DIODE,ZENER,4.7V,225MW,SMD,SOT23	1	D6
.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
.....3	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	1	L1
.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	
.....3	550-037	CONNECTOR, UG-58A/U N PANEL RECEPTICLE	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-333	PA ASSY, 330MHZ, 30W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	270-608-1	CAP, SMT, 6.8 PF, 100V	3	C35, C36, C37
....2	350-203	IND, SMT, 1812, 33 NH	2	L9, L10
....2	350-205	IND, SMT, 1812, 22 NH	2	L8, L11
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-004	PA MODULE, 30W, 12.5V, 330-400 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3-.05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	2	R4, R25
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	1	R27

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R22
.....3	210-1047	DIODE,ZENER,4.7V,225MW,SMD,SOT23	1	D6
.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
.....3	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	1	L1
.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	
.....3	550-037	CONNECTOR, UG-58A/U N PANEL RECEPTICLE	1	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-453	PA ASSY, 450MHZ, 30W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	270-407-1	Capacitor,SMT,size 1206,4.7pF,COG,100V Kemet C1206C479C1GAC	3	C35, C36, C37
....2	350-192	INDUCTOR, 12.5nH, SMT, 1206	2	L8, L11
....2	350-194	INDUCTOR, 18.5nH, SMT, 1206	2	L9, L10
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-006	PA MODULE, 45W, 12.5V, 440-520 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W- 1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3- .05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206- 22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206- 3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206- 4.75K	2	R4, R25
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13





BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	185-475	Resistor, SMT, Size 1206, 475 ohms, Dale CRCW1206-475	1	R27
.....3	185-51.1	Resistor, SMT, 1206, 51.1 ohm, Dale CRCW1206-51.1	1	R22
.....3	210-1047	DIODE,ZENER,4.7V,225MW,SMD,SOT23	1	D6
.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
.....3	350-196	Inductor, SMT, Power, 0.68, Coilcraft DO3316P-681HC	1	L1
.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
.....3	550-037	CONNECTOR, UG-58A/U N PANEL RECEPTICLE	1	
.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
.....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
.....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
..1	953-2140-952	PA ASSY, 950MHZ, 20W, SRPT/STL, 2ND GEN (*NOTE*)	1	
....2	270-202	Cap,monolithic chip 2.2pF 100V .25pf% Kemet C1206C229C1GACTR	3	C35, C36, C37
....2	350-198	INDUCTOR, SMT, 1206, 5NH	2	L8, L11
....2	350-199	INDUCTOR, SMT, 1206, 8nH	2	L9, L10
....2	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	3	U5, U6, U7
....2	407-0036	INSULATOR,MICA,TO-220,56-77-11	3	INS1, INS2, INS3
....2	422-6107	SCREW,SEMS 6-32 X 7/16 PAN PH.ST."	2	
....2	423-4001	#4 FLAT SS .250 X .125 X .018	3	
....2	423-6003	#6 LOCK INT TOOTH	5	
....2	441-0184	STOFF,6-32,MALE-FEMALE,3/8	5	
....2	468-0760-007	PA MODULE, 20W, 12.5V, 896-941 MHZ	1	U3
....2	500-211	Screw,SEMS 4-40x3/8 Ph Pan Head MS Black Zinc (External)	3	
....2	520-050D5	Heatsink, Drilled For SRPT-30/40A (SBCM)	1	
.....3	520-050	HEATSINK, THERMALLOY 10871 UX3.000 DEBURRED, PLAIN FINISH	1	
....2	594-0503	LABEL, DANGER-HAZARDOUS VOLTAGE	1	
....2	913-2140	RF PA BD ASSY 2ND GEN PA MODULES SRPT/STL(SBCM)	1	A1
.....3	108-502	Potentiometer, 5K ohms, SMT, Bourns 3224W-1-502E	3	R5, R17, R20
.....3	184-001	Resistor, SMT, 3 Watt, 0.1 ohm 1%, Dale WSR-3-.1-1%	3	R8, R9, R10
.....3	184-005	Resistor,SMT, 3Watt. 0.05 ohms, Dale WSR-3-.05-1%	2	R3, R18
.....3	185-000	Resistor,0 Ohm 1206 Chip Mfg# DALCRCW1206000ZT-X	1	R37
.....3	185-1.21K	Resistor, SMT, size 1206, 1.21K ohms, Dale CRCW1206-1.21K	2	R19, R28
.....3	185-101	RESISTOR, 1/8 W 100 OHM CHIP 5%	1	R7
.....3	185-102	Resistor, 1K ohm 1/8 watt 1% chip Dale CRCW1206-1K	3	R12, R14, R33
.....3	185-103	Resistor, 10K ohm 1/8 watt 1% chip Dale CRCW1206-10K	3	R21, R24, R32
.....3	185-2.21K	RES,2.21K OHM,1%,0.25W,1206	1	R34
.....3	185-22.1K	Resistor, SMT, 1206, 22.1K, Dale CRCW1206-22.1K	2	R11, R29
.....3	185-274	Resistor, SMT, 1206, 274 ohm, Dale CRCW1206-274	2	R2, R15
.....3	185-3.32K	Resistor, SMT, 1206, 3.32K, Dale CRCW1206-3.32K	1	R31
.....3	185-330-1	RESISTOR, SMT, 1206, 33.2 OHM, 1%	1	R23
.....3	185-392	Resistor, SMT, size 1206, 392 ohms, Dale CRCW1206-392	1	R6
.....3	185-4.75K	Resistor, SMT, 1206, 4.75K, Dale CRCW1206-4.75K	2	R4, R25
.....3	185-47.5K	Resistor, SMT, size 1206, 47.5K ohms, Dale CRCW1206-47.5K	1	R13

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
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.....3	216-0056	TRANS, PNP, MMBTA56, SOT-23	1	Q1
.....3	270-102	Cap,monolithic,1000pf 50v 5%KemetC1206C102J5GACTR marked	10	C19, C23, C25, C26, C27, C28, C30, C32, C33, C34
.....3	270-104	Capacitor, Monolithic Chip 100000pF 1% C1206C104J5RAC Kemet	1	C24
.....3	270-472	CAP, SMT, 1206, 4700 PF, COG, 50V (NOTE)	2	C7, C39
.....3	298-105	Cap SMT 1mF 16V Tantalum Kemet T491A105M016AS	5	C17, C18, C21, C22, C40
.....3	298-106	Cap., Tantalum, SMT, Size B, 10uF, 16V,Kemet T491B106K016AS	1	C8
.....3	298-107	Cap.,Tantalum,SMT, Size D, 100uF, 16V,Kemet T491X107K016AS	1	C31
.....3	298-336	Cap.,Tantalum,SMT,Size C, 33uF,16V,Sprague T491C336K016AS	2	C20, C29
.....3	350-191	Inductor, SMT, 1008, 330nH, Coilcraft 1008CS- 331XKBC	1	L7
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.....3	400-295	IC,OP-AMP, GENERAL PURPOSE, OP295GS	1	U8
.....3	400-495	IC, SMT, OP-AMP, QUAD, RAIL TO RAIL	1	U1
.....3	410-305	Diode, Motorola MMBD101L chip	2	D3, D4
.....3	415-222	Diode, Zener, SMT, 2.5V, Motorola MMSZ5222BT1	1	D5
.....3	418-447	Diode, SMT, Zener, 4.7V, Motorola BZX84C4V7LT1	1	D7
.....3	420-907	TRANSISTOR, GENERAL PURPOSE PNP, SMT, MMBT2907ALT1	1	Q2
.....3	439-041	TRANSISTOR, SMT, GENERAL PURPOSE, NPN	1	Q3
.....3	513-2140	PCB MACH 2ND GEN PA BD ASSY SRPT/STL	1	
.....3	550-138	Connector, 8 pin Molex header (cut from 550- 162)	1	P1
.....4	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	
.....3	550-193	CONNECTOR, S.FL2-R-SMT SURFACE MOUNT	1	P2
.....3	550-324	Connector,6-Pin Header	1	P3
.....4	550-214	Connector, breakaway header Molex 22-28- 4361	0.167	
.....3	700-0119	TAPE,KAPTON 1/4	0.001	
.....3	700-226-59	RF Shielding Fence For Power Amplifier(Interior)	1	
.....3	700-268	Leader Tech Fence # 47-CBSU-2.75 X 5.75 X .4 NO COVER	1	
....2	949-0365	CABLE, RF OUTPUT, SRPT-40A (SBCM)	1	



BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
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.....3	550-057	Connector, UG-177/U UHF hood Amphenol 83-765	1	
.....3	621-1359	CBL,COAX,RG316/U,50 OHM	0.33	
.....2	959-0321	ASSY., THERMOCOUPLE	1	
.....3	120-002	THERMISTOR, 1000 OHM @ 25C 10%	1	
.....3	512-002	Terminal, vinyl insulated C10 #10 stud #10-12 wire	1	
.....2	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	3	

## 14 RF TECHNICAL SERVICES CONTACT INFORMATION

RF Technical Services -

Telephone: **(217) 224-9617**

E-Mail: [rfservice@bdcast.com](mailto:rfservice@bdcast.com)

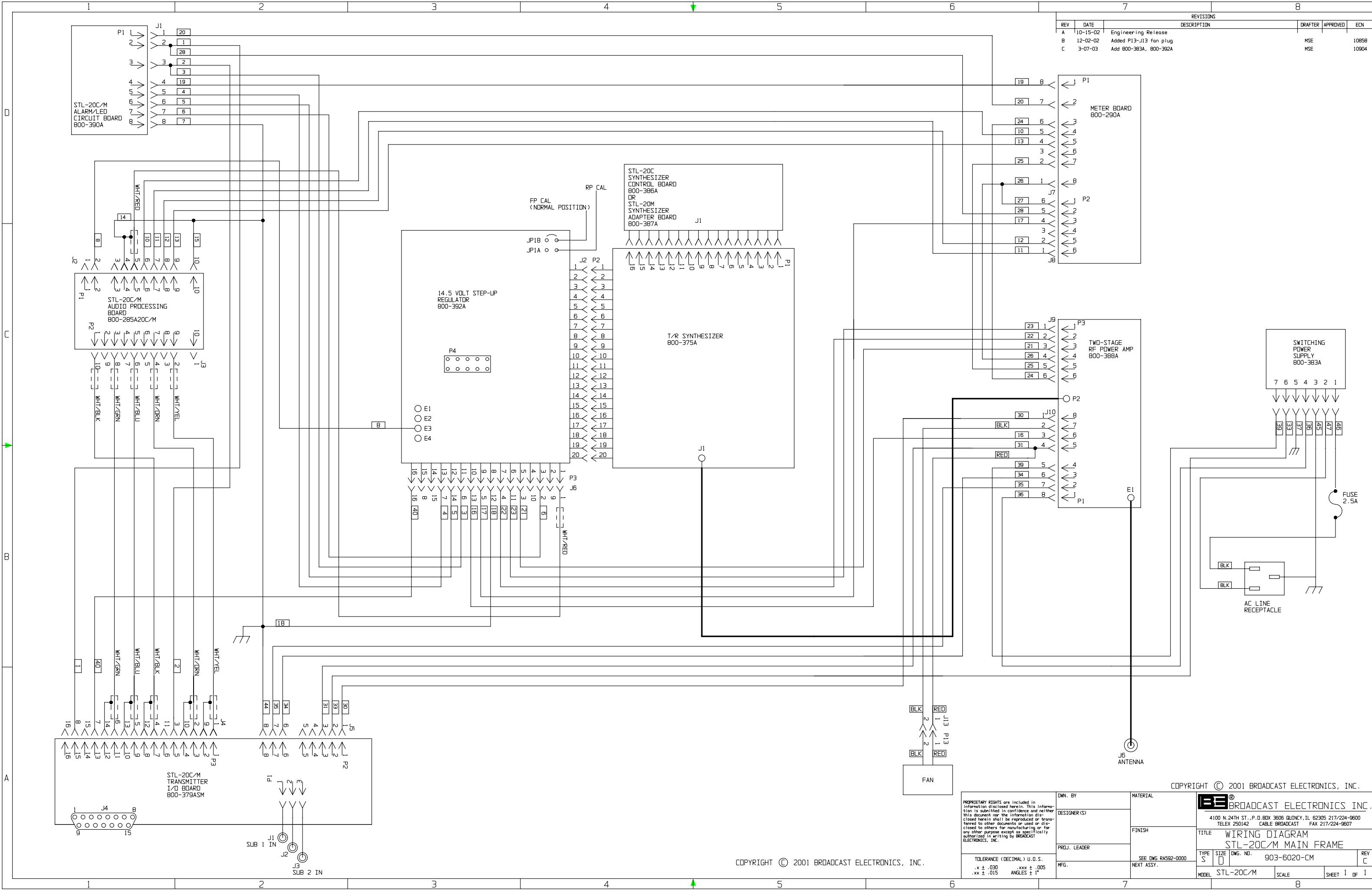
Fax: **(217) 224-6528**

web: [www.bdcast.com](http://www.bdcast.com)

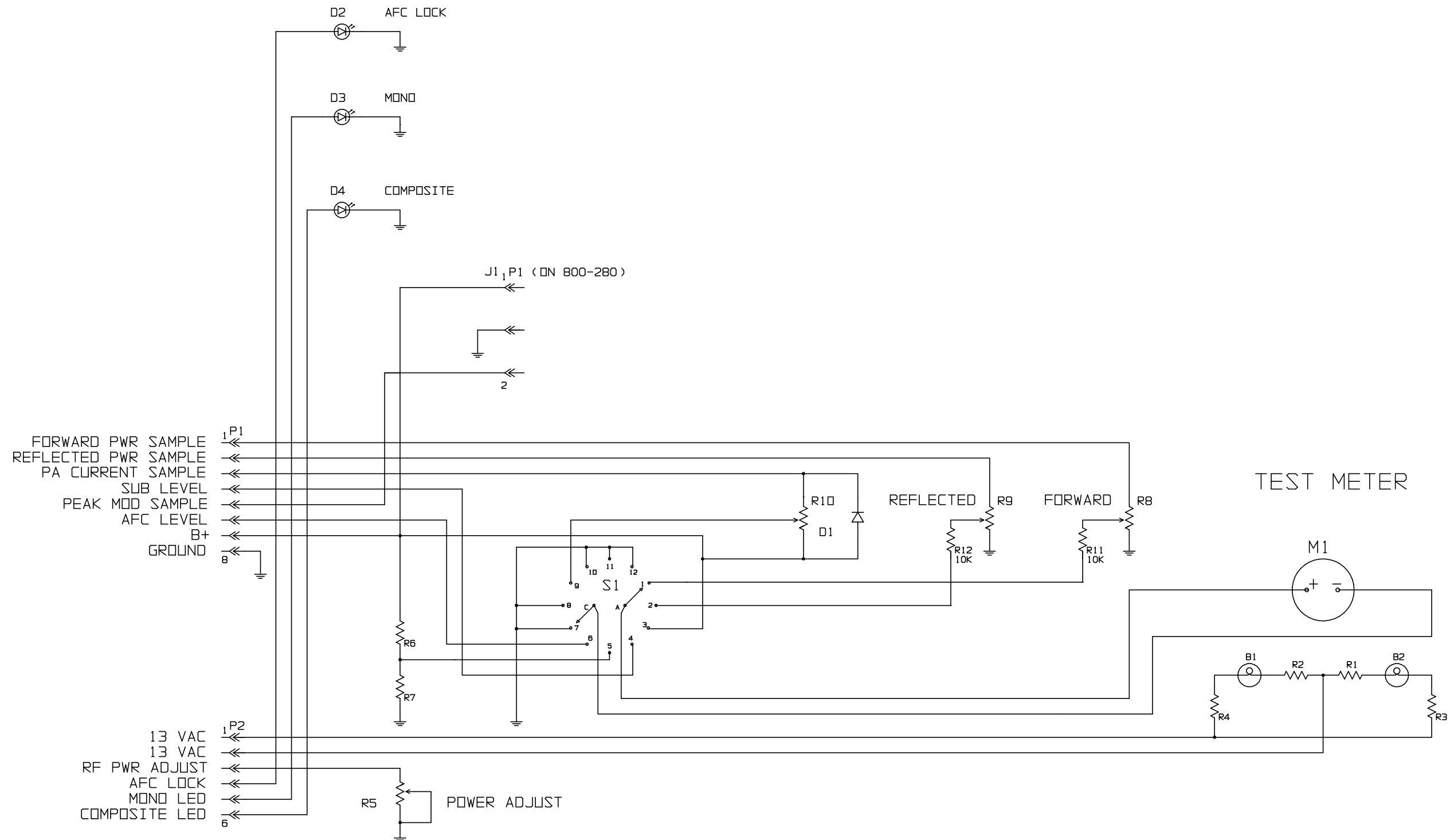
## 15 SCHEMATICS

The following pages present the SRPT-30, SRPT-40A Transmitter drawings.



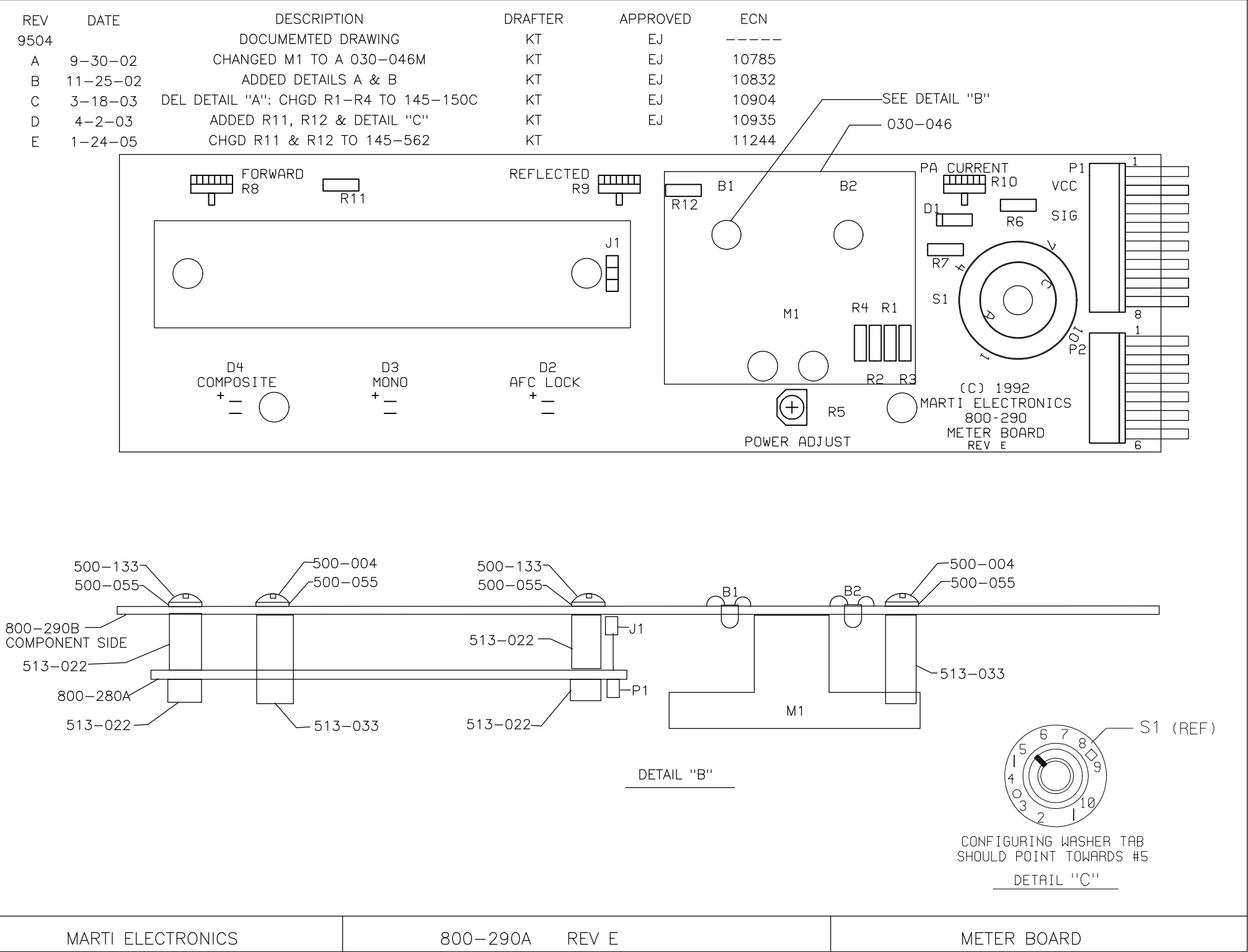


## FRONT PANEL LED INDICATORS



TITLE
STL METER BOARD



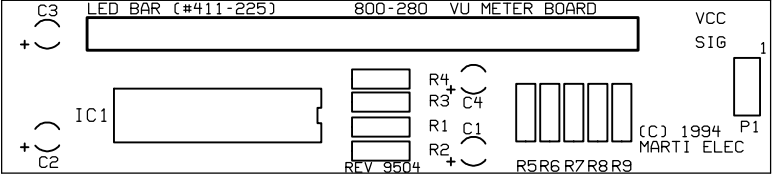


MARTI ELECTRONICS

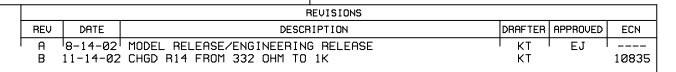
800-290A REV E


METER BOARD



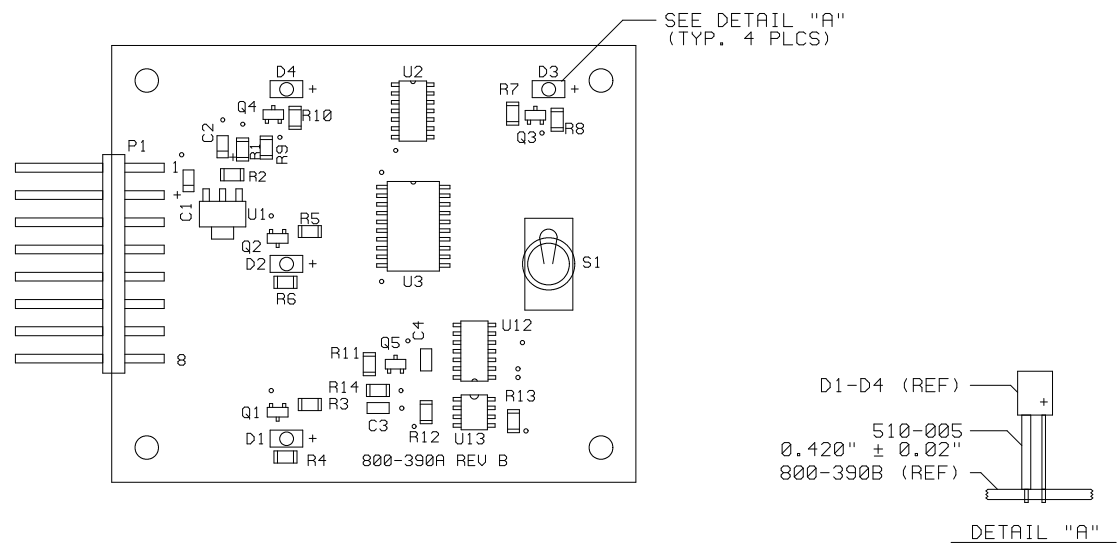


MARTI ELECTRONICS  
METER BOARD  
800-280 REV 9504




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TOLERANCE (DECIMAL) U.O.S. .x x .630 .xxx x .805 .x x .015 ANGLES x 1		PROJ. LEADER		FINISH		TITLE <b>ALARM/LED BOARD</b>	
MFG.		NEXT ASSY.		TYPE S <b>D</b>		Dwg. NO. <b>800-390A</b>	
				MODEL STD-28C/M		SCALE <b>1 OF 1</b>	

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	8-14-02	MODEL RELEASE/ENGINEERING RELEASE	KT	EJ	-----
B	11-14-02	CHGD R14 FROM 185-332 TO 185-102	KT		10835

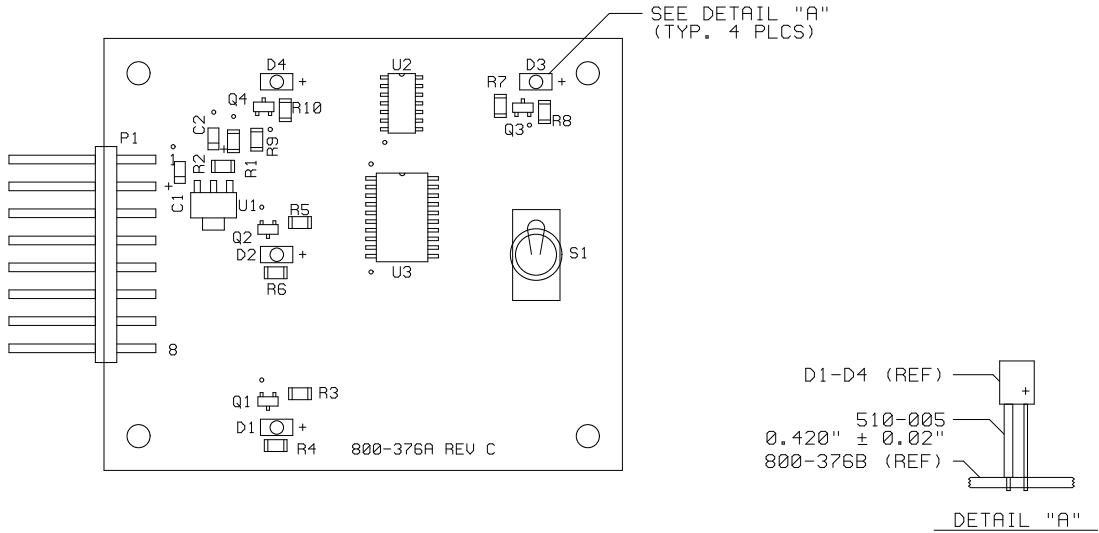


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	DESIGNER(S)	FINISH			
	PROJ. LEADER	NEXT ASSY.	TITLE ALARM/LED BOARD		
	MFG.		TYPE A	SIZE B	DWG No. 800-390A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°			REV B		
		MODEL STL-20C/M	SCALE 1/1	SHEET 1 OF 1	

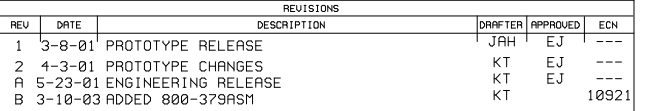


REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-2-00	PROTOTYPE RELEASE	KT		-----
A	8-2-01	ADDED FIDUCIALS, MOVED D1 AREA, MODEL RELEASE	KT		-----
B	9-4-01	ADDED POLARITY MARKS FOR C1 & C2	KT		10537
C	12-11-01	CLEARED SOLDERMASK FROM FIDUCIALS	KT	EJ	10588




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	DESIGNER(S)	FINISH			
	PROJ. LEADER	NEXT ASSY.	TITLE ALARM CONTROL BOARD		
	MFG.		TYPE A	SIZE B	DWG No. 800-376A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°				REV C	
			MODEL NNNN	SCALE 1/1	SHEET 1 OF 1



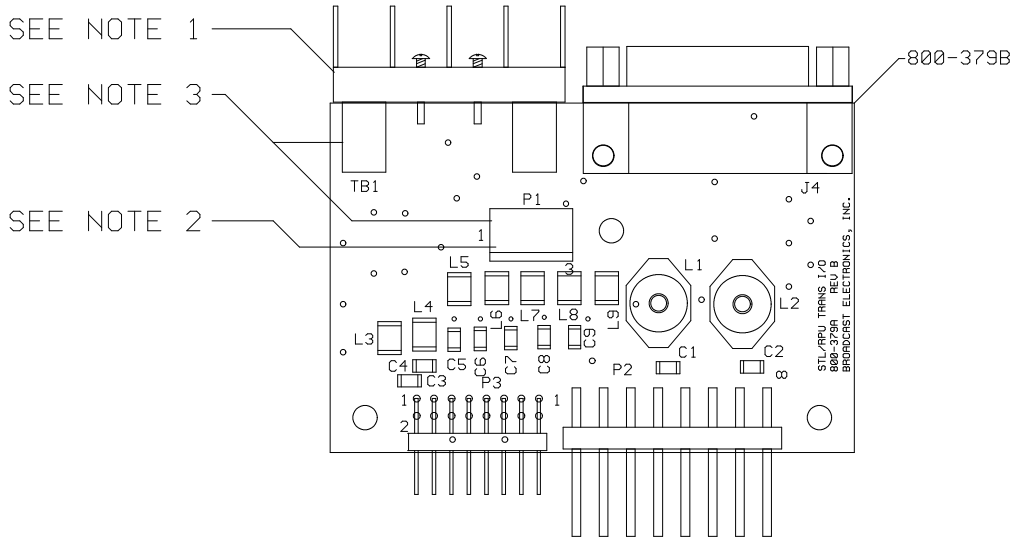
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TOLERANCE (DECIMAL) U.O.S. .x x .030 .xxx x .005 .x x .015 ANGLES 1°		PROJ. LEADER <b>ERIC JACKSON</b>		FINISH  TITLE <b>PCB SCH STL/RPU TRANS I/O BD</b>		TYPE SIZE Dwg. NO. <b>S D 800-379A R/S/SM</b>	
TYPG.		NEXT ASSY. <b>SEE NOTE 4</b>		MODEL ---		SCALE NONE SHEET 1 OF 1	




REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	3-13-01	PROTOTYPE RELEASE	JAH	EJ	---
2	4-4-01	PROTOTYPE CHANGES	KT	EJ	---
A	5-23-01	ENGINEERING RELEASE	KT	EJ	---
B	3-10-03	ADDED NOTES & 800-379ASM	KT		10921

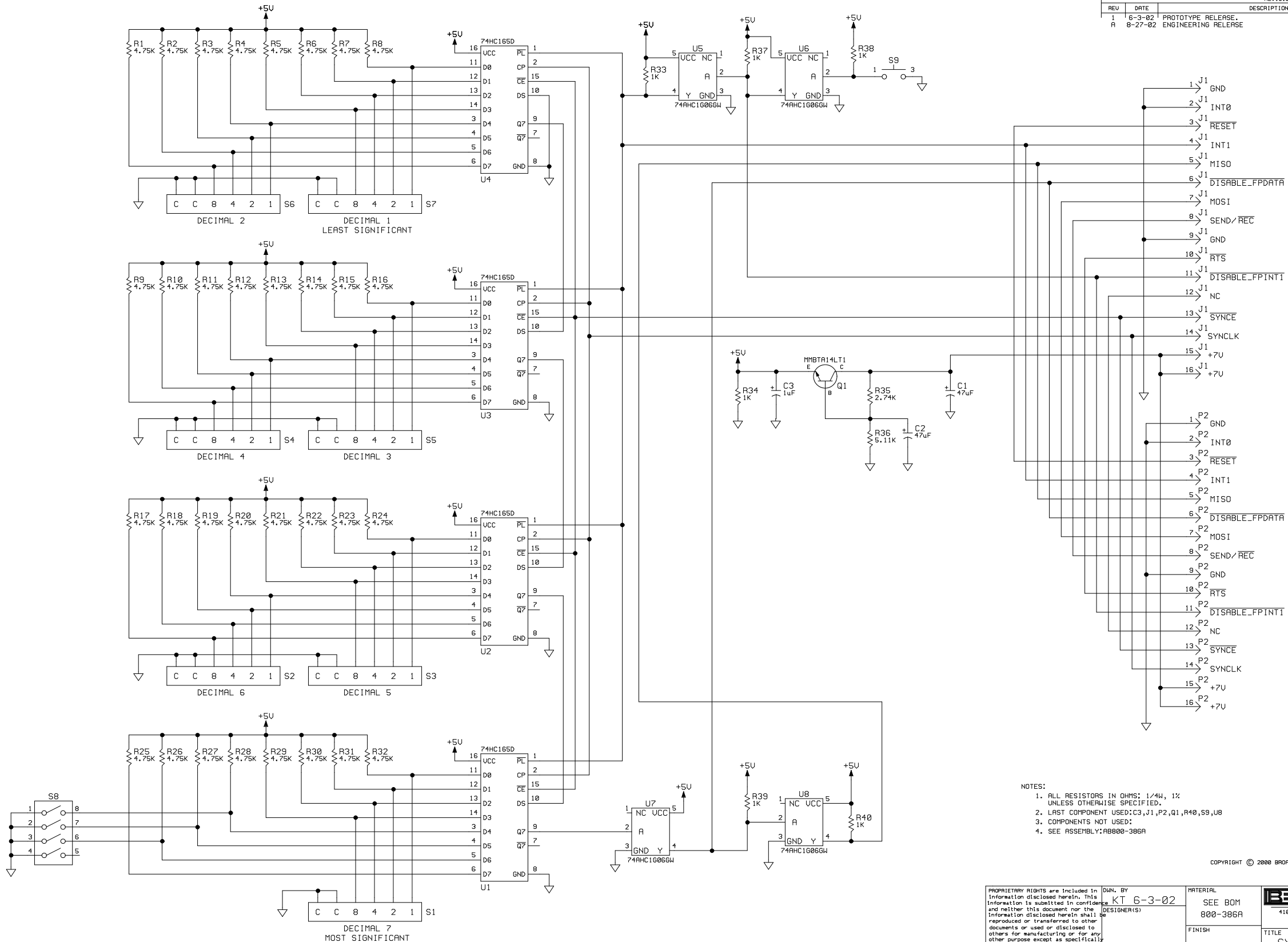


- NOTES:
- 1) TB1 USED ON 800-379AS ONLY.
  - 2) P1 USED ON 800-379AS\ASM ONLY.
  - 3) TB1 & P1 NOT USED ON 800-379AR.

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	DESIGNER(S) ERIC JACKSON				
	PROJ. LEADER ERIC JACKSON	FINISH	TITLE PCB ASSY STL/RPU TRANS I/O BD		
	MFG.	NEXT ASSY.	TYPE A	SIZE B	DWG No. 800-379A(R/S/SM) <div>REV B</div>
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°	MODEL NNNN		SCALE 1/1	SHEET 1 OF 1	

REVISIONS						
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN	
1	6-3-02	PROTOTYPE RELEASE				
A	8-27-02	ENGINEERING RELEASE	KT		10758	

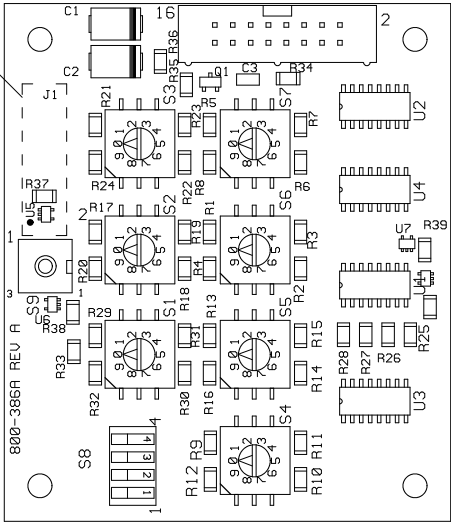


- NOTES:
1. ALL RESISTORS IN OHMS: 1/4W, 1% UNLESS OTHERWISE SPECIFIED.
  2. LAST COMPONENT USED: C3, J1, P2, Q1, R40, S9, U8
  3. COMPONENTS NOT USED:
  4. SEE ASSEMBLY: AB800-386A

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	KT 6-3-02	SEE BOM 800-386A	
DESIGNER(S)	FINISH	TITLE	
le		SYNTHESIZER CONTROL BOARD	
PROJ. LEADER		TYPE SIZE DWS. NO.	REV
		S D 800-386A	A
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°	TFG.	NEXT ASSY.	
		MODEL SCALE SHEET 1 OF 1	

J1 PLACED ON SOLDER SIDE

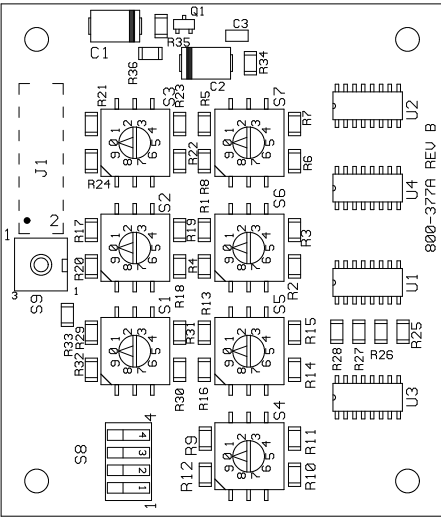


REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	6-4-02	PROTOTYPE RELEASE	KT		-----
A	8-27-02	ENGINEERING RELEASE	KT		10758

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	DESIGNER(S) ERIC JACKSON				
	PROJ. LEADER ERIC JACKSON	FINISH	TITLE SYNTHESIZER CONTROL BOARD		
	MFG.	NEXT ASSY.	TYPE A	SIZE B	DWG No. 800-386A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°		MODEL NNNN		SCALE 1/1	SHEET 1 OF 1



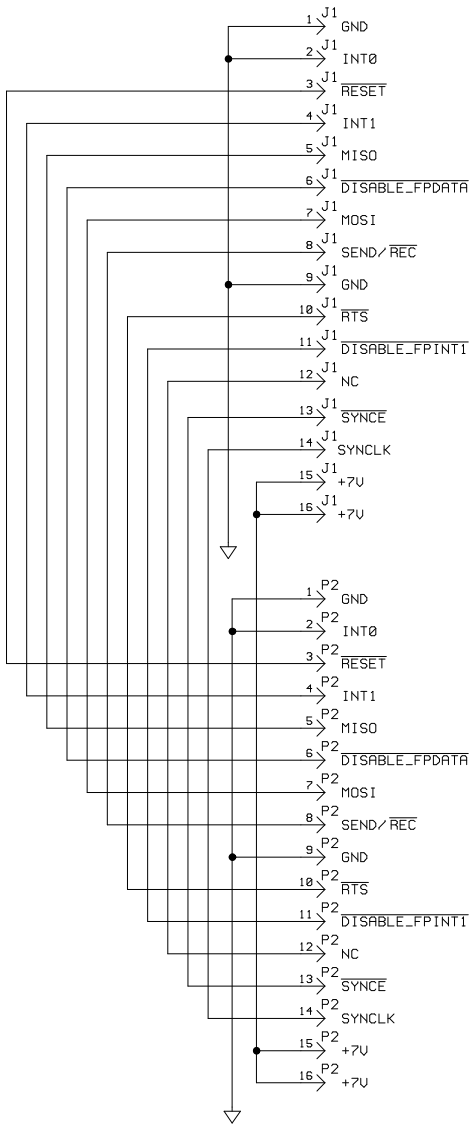


REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-1-00	PROTOTYPE RELEASE	KT		-----
2	1-5-01	CHGD S1, S2 & S3 TO SURFACE MOUNT	KT		-----
A	8-3-01	MADE BOARD BIGGER, RELAID OUT; MODEL RELEASE	KT	EJ	-----
B	12-6-01	RELAID OUT BOARD	KT		10586

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	DESIGNER(S) ERIC JACKSON		FINISH	TITLE SYNTHESIZER CONTROL BOARD		
	PROJ. LEADER ERIC JACKSON	TYPE		SIZE	DWG No.	REV
	TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°	MFG.	NEXT ASSY.	A	B	800-377A
			MODEL NNNN		SCALE 1/1	SHEET 1 OF 1

REVISIONS							
REV	DATE	DESCRIPTION			DRAFTER	APPROVED	ECN
1	6-25-02	PROTOTYPE RELEASE.			KT		----
A	9-25-02	ENGINEERING RELEASE WITHOUT CHANGE			KT		----

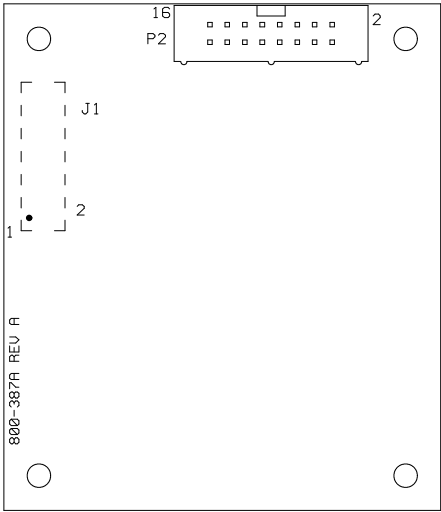


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	DESIGNER(S)	FINISH	
	PROJ. LEADER	TITLE SYNTHESIZER ADAPTER BOARD	
	NFG.	NEXT ASSY.	
	TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°		
		TYPE SIZE Dwg. NO.	REV
		S D 800-387A	A
		MODEL STL-20M SCALE	SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	6-25-02	PROTOTYPE RELEASE	KT		-----
A	9-25-02	ENGINEERING RELEASE WITHOUT CHANGE	KT		-----

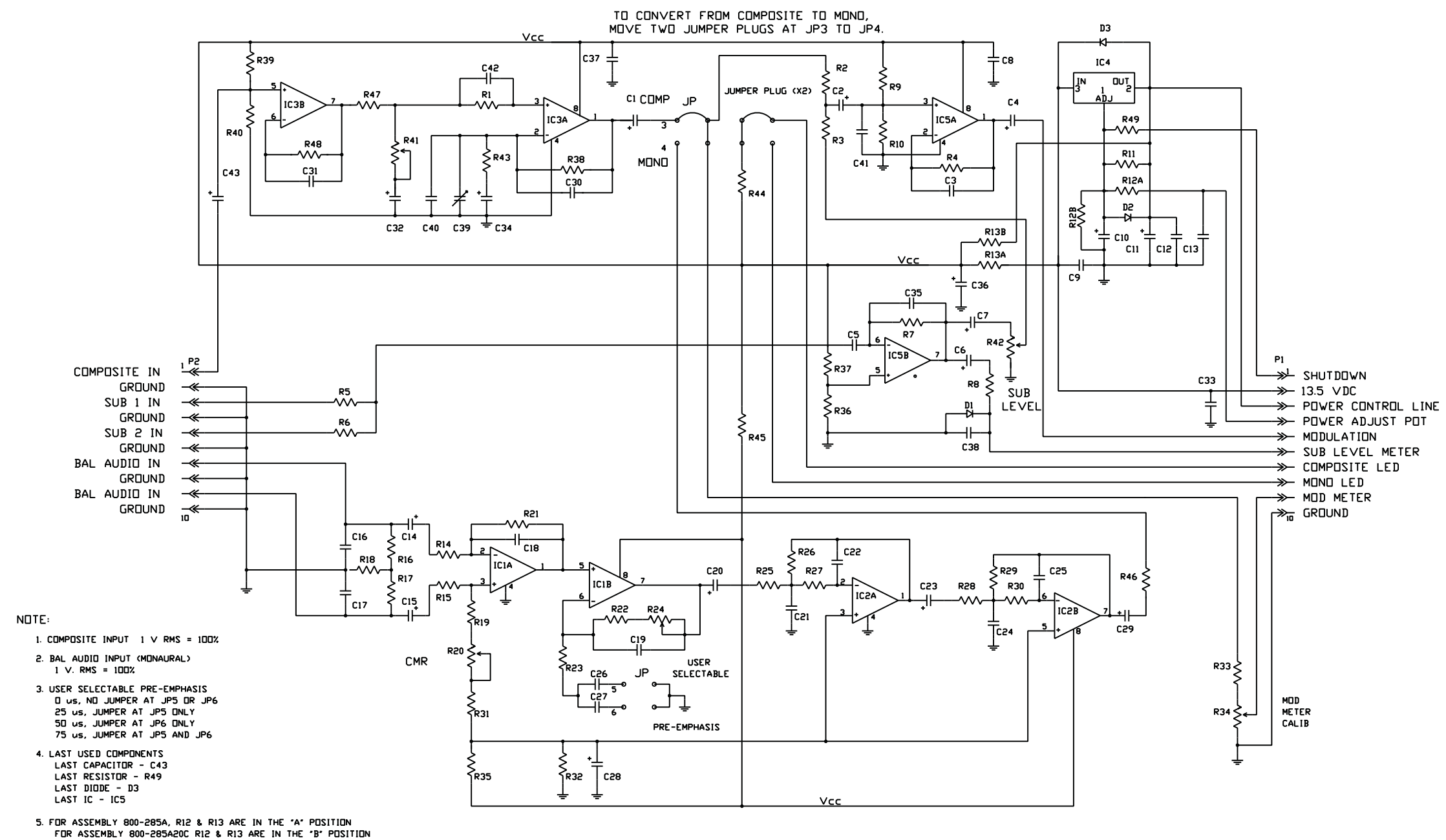


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	DESIGNER(S) ERIC JACKSON				
	PROJ. LEADER ERIC JACKSON	FINISH	TITLE SYNTHESIZER ADAPTER BOARD		
	MFG.	NEXT ASSY.	TYPE A	SIZE B	DWG No. 800-387A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°				REV A	
			MODEL STL-20M	SCALE 1/1	SHEET 1 OF 1

REV	DATE	DESCRIPTION
A	12-4-01	CHGD R12 TO R12A & R12B, CHGD R13 TO R13A & R13B
B	1-30-06	CHG'D C26 (215-102) C27 (215-202) R21,R31

DRAFTER	APPROVED	ECN
KT		10571
JTB		11391



MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT <DATE> 800-285 REV B	TITLE STL-15C/20C AUDIO PROCESSING BOARD
--	--	---

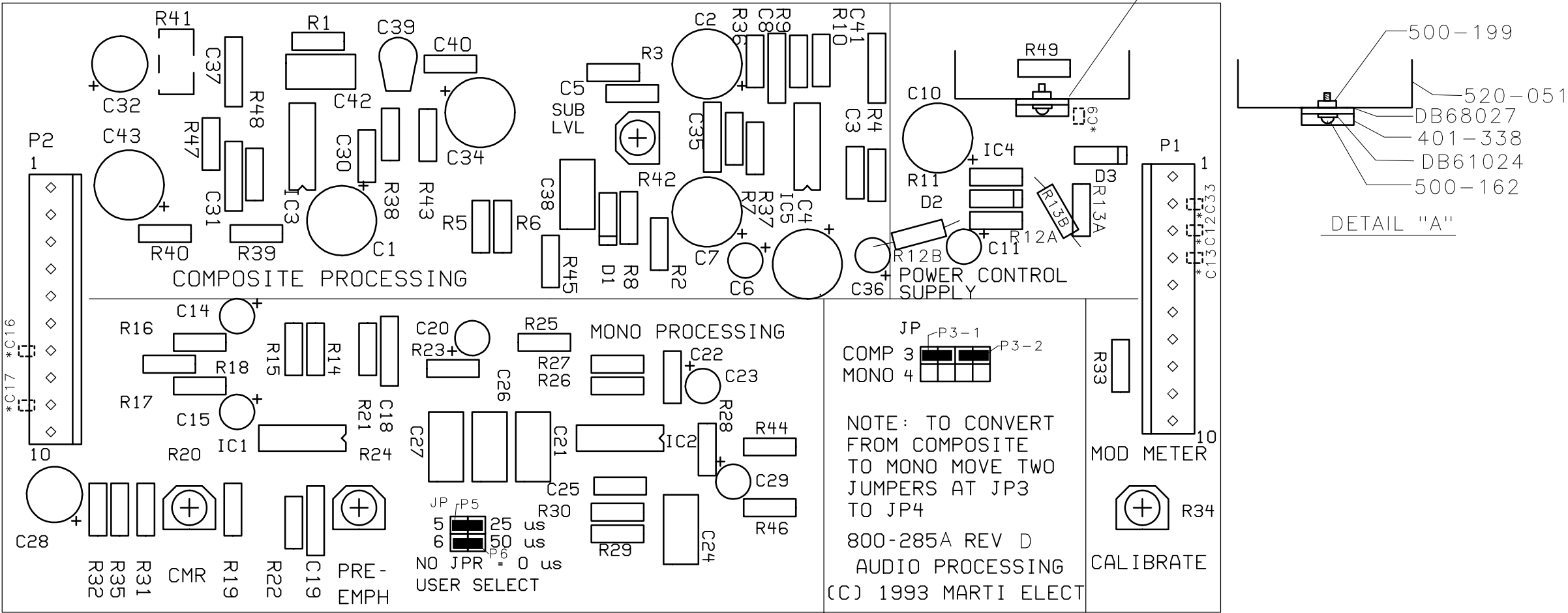


REV A 12-4-01 ADDED A20C; CHGD R12 TO R12A & R12B, R13 TO R13A & R13B KT 10571

REV B 8-23-02 ADDED BOARD NUMBER KT 10711

REV C 9-6-02 ADDED DETAIL "A" AND SHOWED CAPS ON BOTTOM KT 10750

REV D 1-30-06 CHG C26,C27,R21,R31 (VALUE CHG;S) JTB 11391

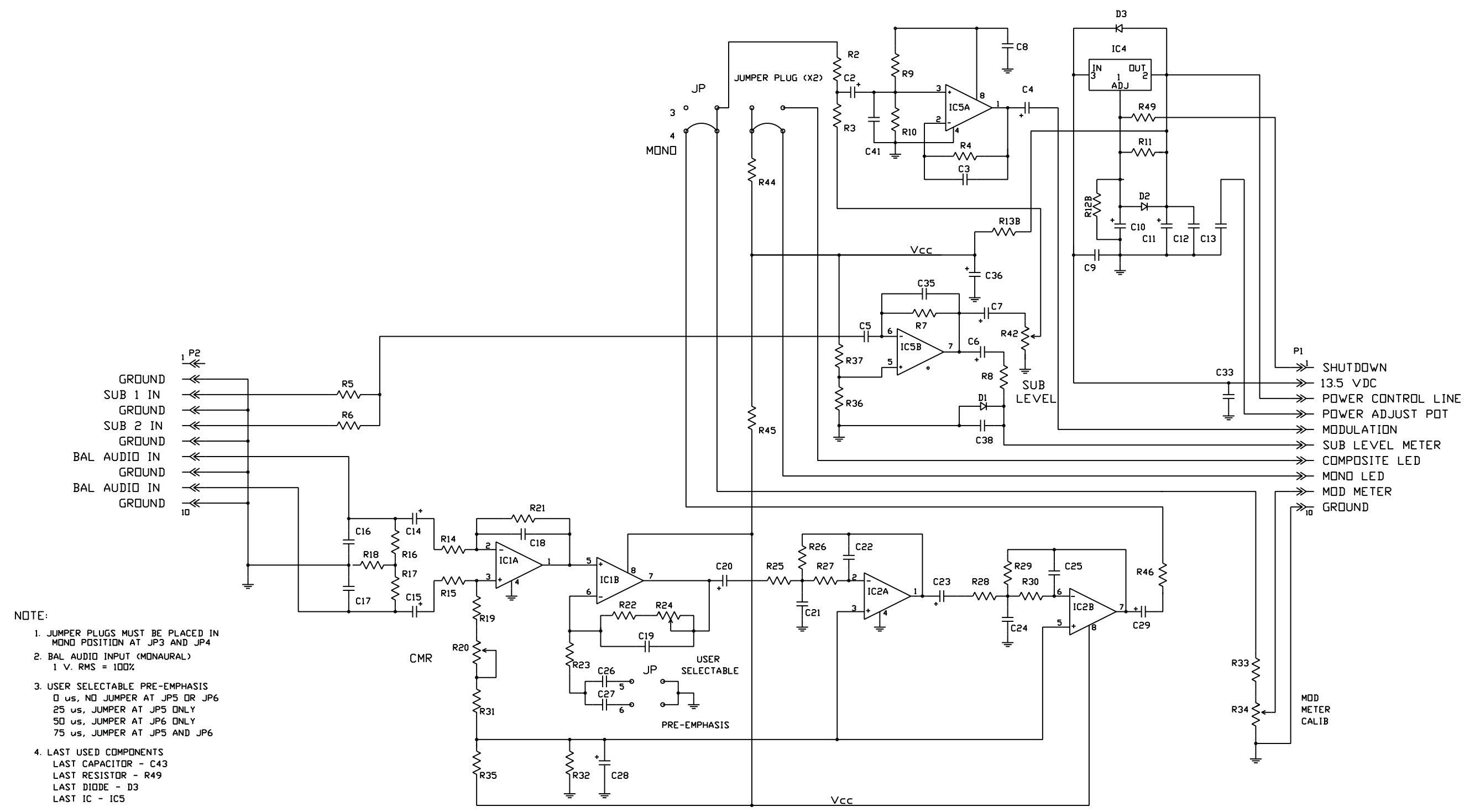


NOTES:

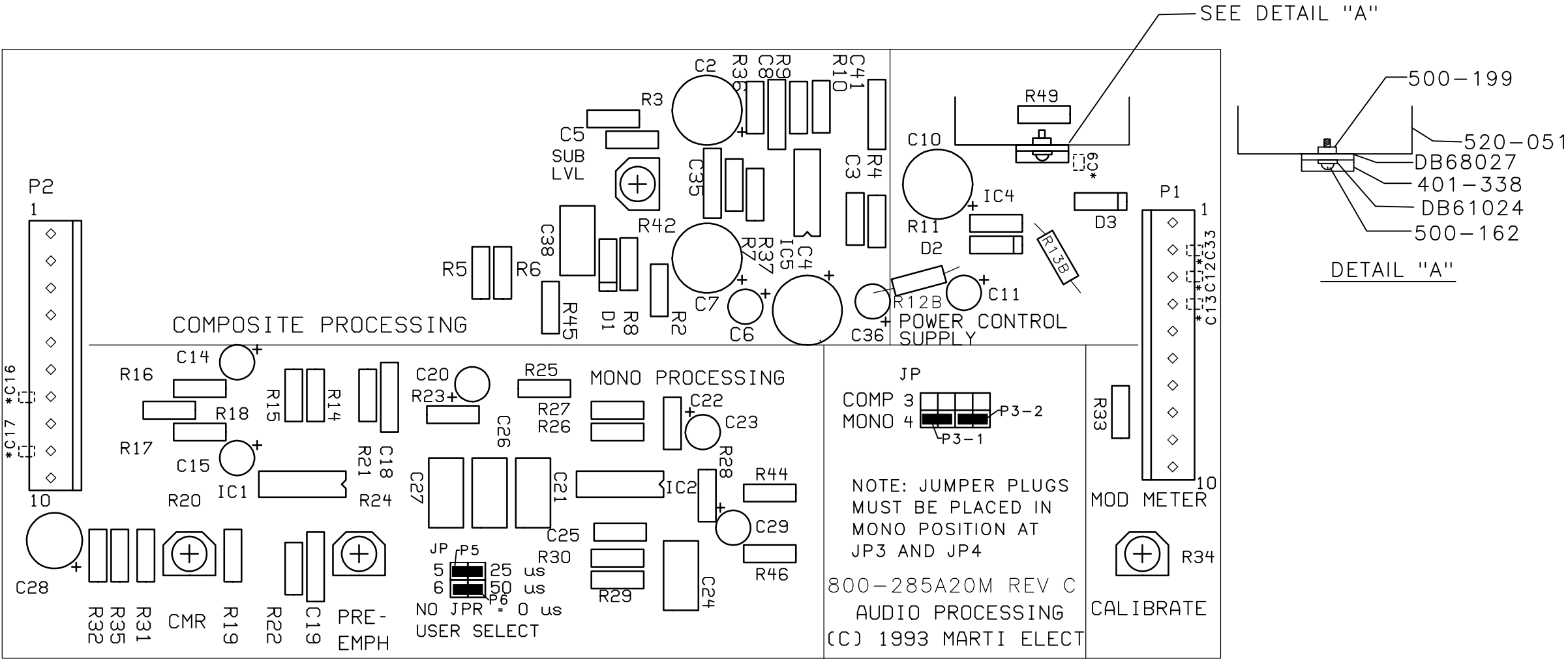
- 1) FOR ASSEMBLY 800-285A USE R12A & R13A.  
FOR ASSEMBLY 800-285A20C USE R12B & R12B.
- 2) \* INDICATES COMPONENTS STUFFED ON SOLDER SIDE  
OF PCB (C9,C12,C13,C16,C17,C33)

REV	DATE	DESCRIPTION
A	9-26-02	CREATED DRAWING
B	1-27-06	CHG'D R14, R15 TO 121k
C	1-30-06	CHG'D C26,C27,R21,R31 (VALUE CHG'S)

DRAFTER	APPROVED	ECN
KT	EJ	----
JTB		11387
JTB		11391



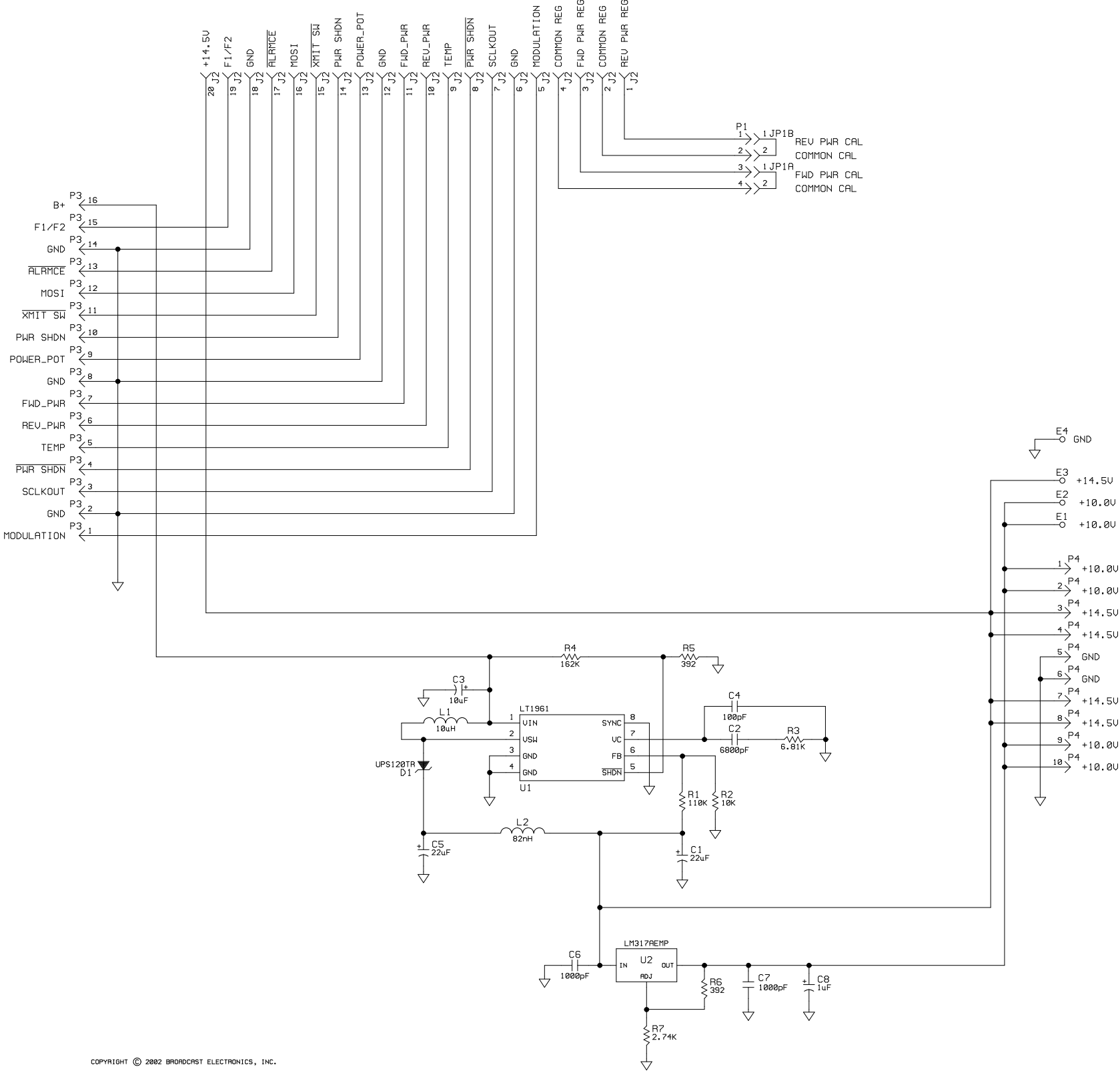
MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO.	800-285A20M	TITLE STL-20M AUDIO PROCESSING BOARD
	COPYRIGHT <DATE>	REV C	



NOTES:


1) \* INDICATES COMPONENTS STUFFED ON SOLDER SIDE OF PCB (C9,C12,C13,C16,C17,C33)

REVISIONS				
REV	DATE	DESCRIPTION	DRAFTER	APPROVED
1	11-20-02	PROTOTYPE RELEASE	KT	-----
A	12-10-02	CHGD R7 TO 2.74K; ENGINEERING RELEASE	KT	EJ
B	12-13-02	CHGD E1-E4	KT	EJ
C	5-30-03	CHGD C1 & C5 FROM 100uF, 16V TO 22uF, 25V	KT	EJ

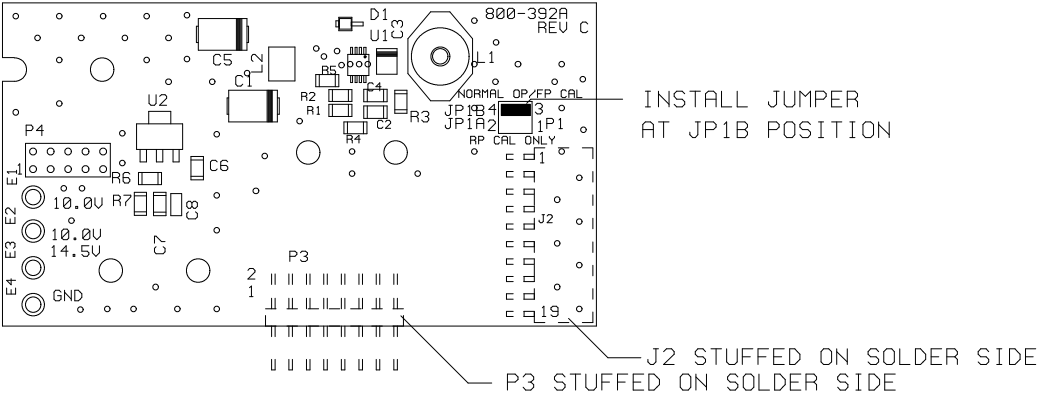


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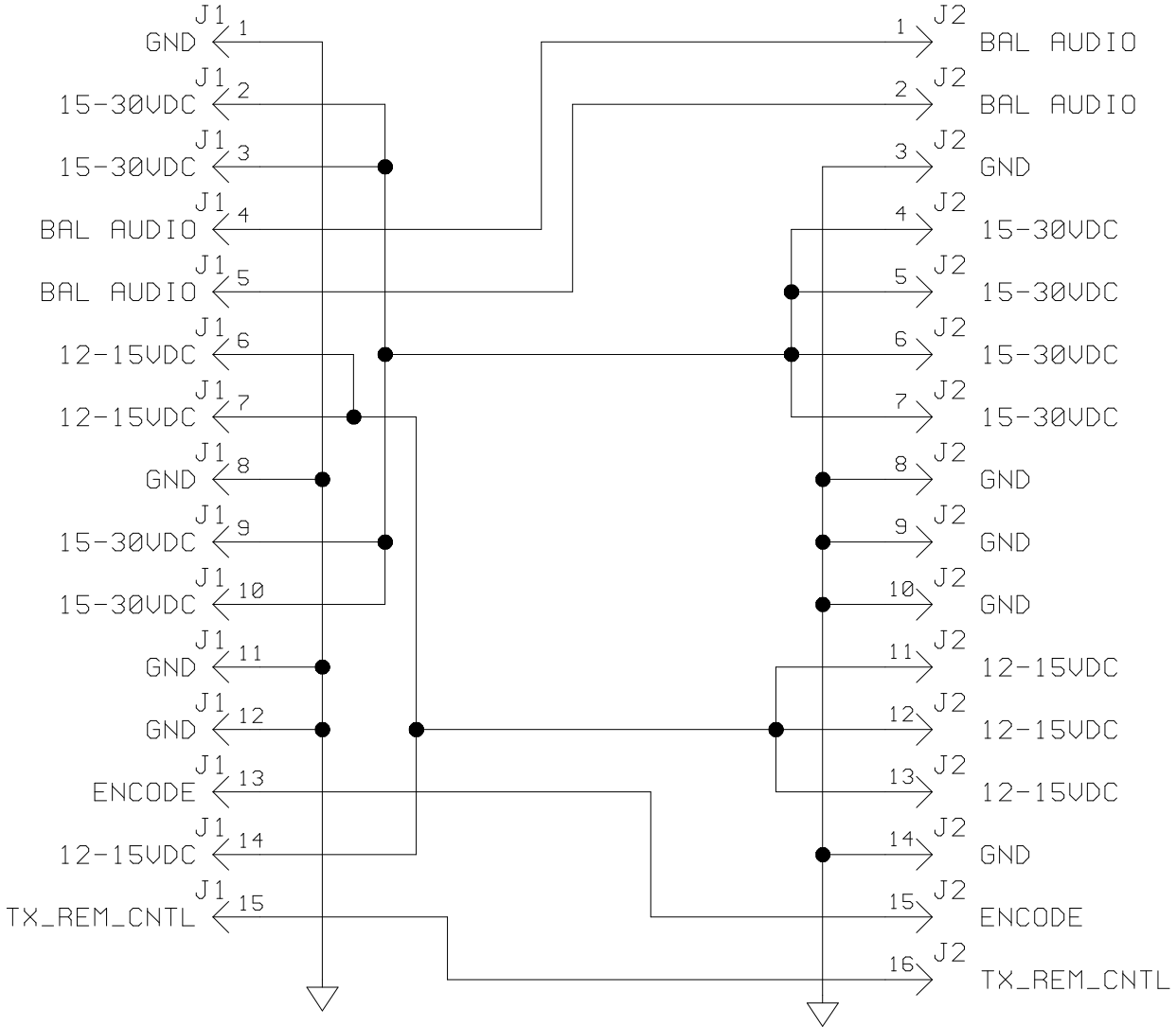
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	DESIGNER(S) ERIC JACKSON	FINISH	TITLE 14.5 VOLT STEP-UP REGULATOR		
	PROJ. LEADER ERIC JACKSON	TYPE SIZE DWS. NO. S D 800-392A	REV C		
	MFG.	NEXT ASSY.	MODEL SCALE SHEET 1 OF 1		

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-21-02	PROTOTYPE RELEASE	KT		----
A	12-10-02	CHGD R7; ENGINEERING RELEASE	KT	EJ	----
B	12-13-02	CHGD E1-E4 & FOOTPRINT FOR L2	KT	EJ	10860
C	5-30-03	CHGD C1 & C5 FROM 298-107-1 TO 070-2265-L25	KT		10986




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	DESIGNER(S) ERIC JACKSON	FINISH			
	PROJ. LEADER ERIC JACKSON	NEXT ASSY.	TITLE 14.5 VOLT STEP-UP REGULATOR		
	MFG.		TYPE A	SIZE B	DWG No. 800-392A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°			REV C		
			MODEL NNNN	SCALE 1/1	SHEET 1 OF 1



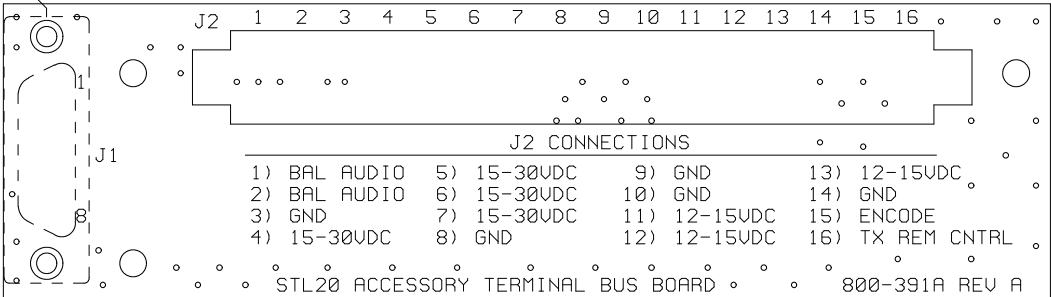
REVISIONS				
REV	DATE	DESCRIPTION	DRAFTER	APPROVED
1	11-5-02	PROTOTYPE RELEASE	KT	EJ
A	2-9-04	PRODUCTION RELEASE	KT	

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	DESIGNER(S)				
	PROJ. LEADER	FINISH	TITLE STL20 ACCESSORY TERMINAL BUS BOARD		
	MFG.	NEXT ASSY.	TYPE S	SIZE B	DWG. NO. 800-391A
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°		MODEL NNN		SCALE NNN	SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-8-02	PROTOTYPE RELEASE	KT	EJ	-----
A	2-9-04	PRODUCTION RELEASE WITHOUT CHANGE	KT		-----

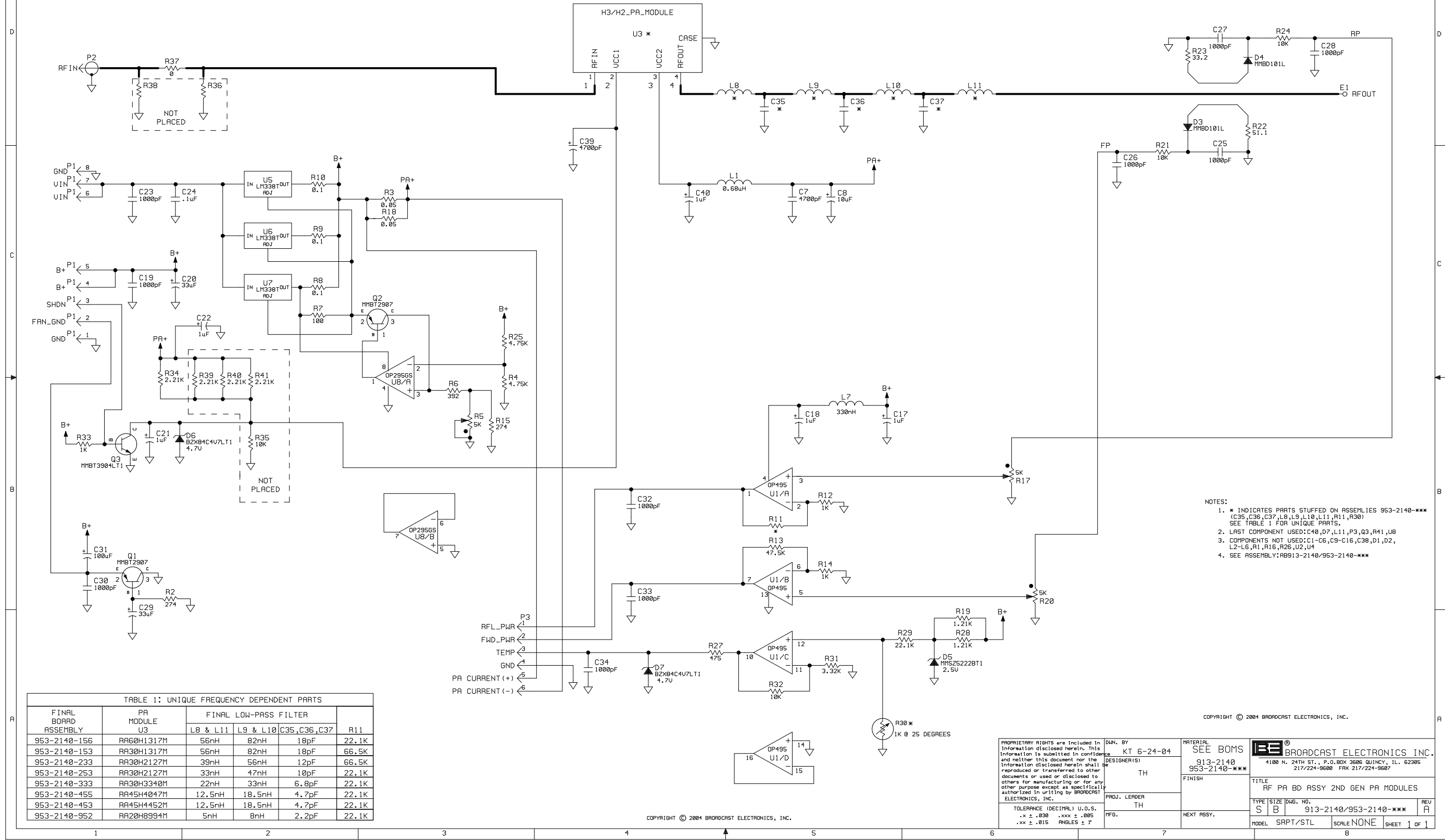
INSTALL J1 ON SOLDER SIDE



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	DESIGNER(S)	FINISH			
	PROJ. LEADER	NEXT ASSY.	TITLE STL20 ACCESSORY TERMINAL BUS BOARD		
	MFG.		TYPE A	SIZE B	DWG No. 800-391A
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°		MODEL NNNN		SCALE 1/1	SHEET 1 OF 1
				REV A	

REVISIONS				
REV	DATE	DESCRIPTION	DRAWN	APPROVED
A	6-24-04	ENGINEERING RELEASE	KT	----



- NOTES:
- \* INDICATES PARTS STUFFED ON ASSEMBLIES 953-2140-\*\*\* (C35, C36, C37, L8, L9, L10, L11, R11, R30) SEE TABLE 1 FOR UNIQUE PARTS.
  - LAST COMPONENT USED: C40, D7, L11, P3, Q3, R41, U8
  - COMPONENTS NOT USED: C1-C6, C9-C16, C38, D1, D2, L2-L6, R1, R16, R26, U2, U4
  - SEE ASSEMBLY: AB913-2140/953-2140-\*\*\*

TABLE 1: UNIQUE FREQUENCY DEPENDENT PARTS					
FINAL BOARD ASSEMBLY	PA MODULE U3	FINAL LOW-PASS FILTER			R11
		L8 & L11	L9 & L10	C35, C36, C37	
953-2140-156	RA60H1317M	56nH	82nH	18pF	22.1K
953-2140-153	RA30H1317M	56nH	82nH	18pF	66.5K
953-2140-233	RA30H2127M	39nH	56nH	12pF	66.5K
953-2140-253	RA30H2127M	33nH	47nH	10pF	22.1K
953-2140-333	RA30H3340M	22nH	33nH	6.8pF	22.1K
953-2140-455	RA45H4047M	12.5nH	18.5nH	4.7pF	22.1K
953-2140-453	RA45H4452M	12.5nH	18.5nH	4.7pF	22.1K
953-2140-952	RA20H8994M	5nH	8nH	2.2pF	22.1K

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TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°		SHEET 1 OF 1		



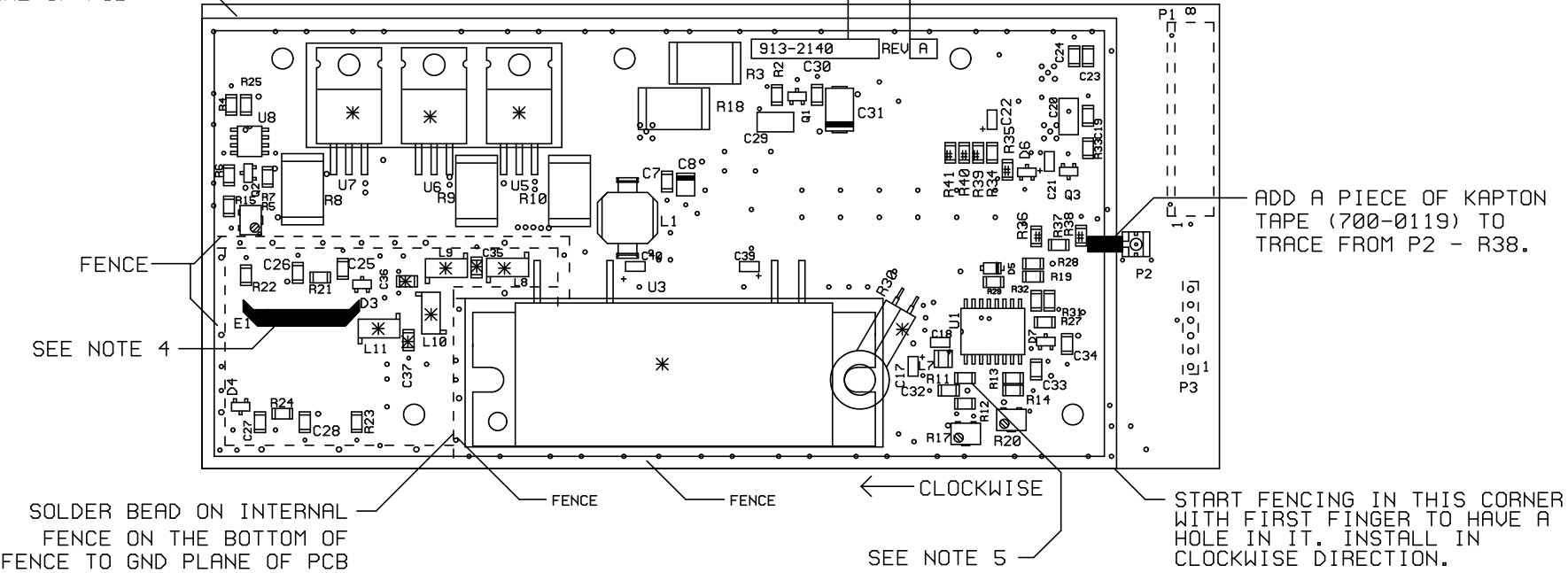
TABLE 1: UNIQUE FREQUENCY DEPENDENT PARTS				
FINAL BOARD ASSEMBLY	PA MODULE U3	FINAL LOW-PASS FILTER		
		L8 & L11	L9 & L10	C35,C36,C37
953-2140-156	468-760-002	350-200	350-201	270-180-1
953-2140-153	468-760-001	350-200	350-201	270-180-1
953-2140-233	468-760-003	350-202	350-200	270-120
953-2140-253	468-760-003	350-203	350-204	270-100-1
953-2140-333	468-760-004	350-205	350-203	270-608-1
953-2140-455	468-760-005	350-192	350-194	270-407-1
953-2140-453	468-760-006	350-192	350-194	270-407-1
953-2140-952	468-760-007	350-198	350-199	270-202

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	6-25-04	ENGINEERING RELEASE	KWT		----

SOLDER BEAD AROUND OUTSIDE  
OF FENCE TO GROUND PLANE OF PCB

PLACE STICKER WITH FINAL ASSEMBLY  
NUMBER IN BOX


WRITE REV LEVEL IN BOX



NOTES:

- 1) SEE SCHEMATIC: SB913-2140/953-2140-\*\*\*
- 2) \* INDICATES PARTS STUFFED DURING 953-2140-\*\*\* ASSEMBLIES (C35,C36,C37, L8-L11,R30,U3,U5-U7) SEE TABLE 1 FOR UNIQUE PARTS
- 3) # INDICATES PARTS NOT PLACED (R35,R36,R38-R41)
- 4) SOLDER TRACE CORNER TO CORNER ON ASSEMBLIES: 953-2140-153/156/233/253/333. REMOVE TRACE ON ASSEMBLIES: 953-2140-453, 953-2140-455/952.
- 5) REPLACE R11 WITH A 66.5K (101-6652) ON FINAL ASSEMBLIES 953-2140-153 & 953-2140-233.

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	DESIGNER(S)		TITLE RF PA BD ASSY, 2ND GEN PA MODULES			
	PROJ. LEADER TH	FINISH				
	TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°	MFG.	NEXT ASSY.	TYPE A	SIZE B	DWG No. 913-2140/953-2140-***
			MODEL SRPT/STL		SCALE 1/1	SHEET 1 OF 1

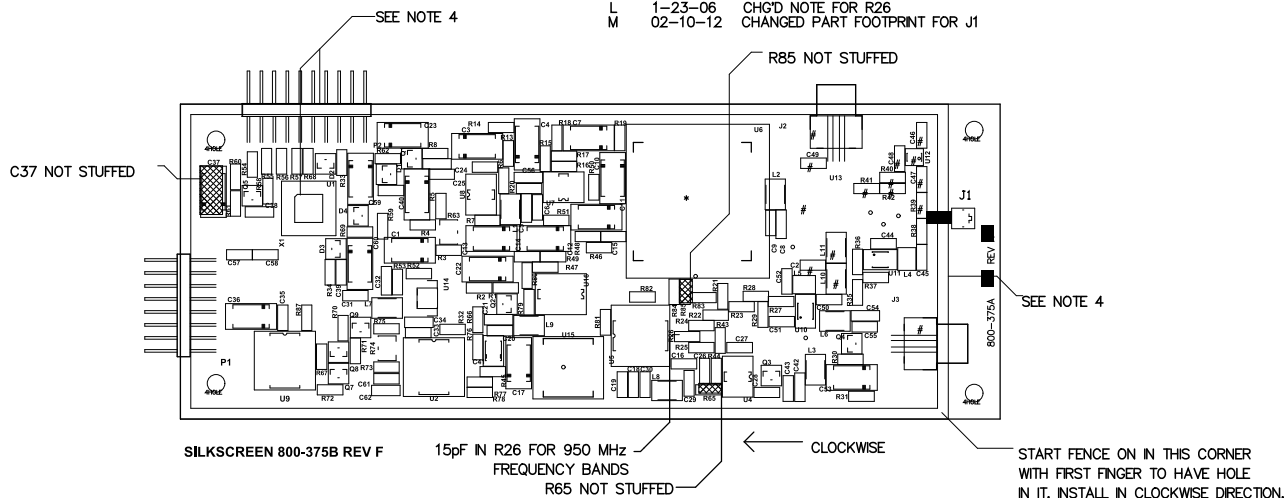
[illegible]



FINAL BOARD ASSEMBLY	U6	SOFTWARE	VER
800-375AT150	400-185	800-375ATSW2	2.0
800-375AT230	400-265	800-375ATSW2	2.0
800-375AT250	400-265	800-375ATSW2	2.0
800-375AT330	400-351	800-375ATSW2	2.0
800-375AT450	400-480	800-375ATSW2	2.0
800-375AT950	400-965	800-375ATSW2	2.0


TABLE 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	2-23-00	PROTOTYPE RELEASE.	KT		
2	10-23-00	CHANGED LAYOUT	KT		
3	3-20-01	CHANGED LAYOUT	KT		
A	5-23-01	ENGINEERING RELEASE	KT		
B	8-29-01	MATCHED ASSEMBLY TO BOM: CHGD R24-R26	KT	EJ	10522
C	9-5-01	MOVED C7 & R19 TO SECOND LEVEL ASSEMBLIES	KT	EJ	10573
D	2-1-02	ADDED FENCE & KAPTON TAPE NOTES	KT	EJ	10620
E	4-3-02	ADDED SOFTWARE TABLE	KT	EJ	10668
F	9-5-02	CHGD R54,R56,R58,R79,R80,R82,R87 FROM 475 TO 4.75K	KT	EJ	10744
G	9-9-02	ADD NOTE INDICATING C37 IS NOT STUFFED	KT	EJ	10756
H	9-30-02	CHGD U15 TO A 012-280-1	KT	EJ	10790
J	10-23-02	CHGD SOFTWARE, C14,C15,R13,R14,R19,R24-R26,	KT	EJ	10803
K	1-10-03	R46-R51,R83,R84: CHGD NOTES & TABLE	KT	EJ	10865
L	1-23-06	DEL JP1	JTB	EJ	11374
M	02-10-12	CHGD NOTE FOR R26	DLR		11876
		CHANGED PART FOOTPRINT FOR J1			



NOTES:

- 1) P1 AND P2 ARE MOUNTED ON THE SOLDER SIDE OF PCB.
- 2) \* INDICATES U6 IS STUFFED DURING FINAL BOARD ASSEMBLY
- 3) # INDICATES PARTS USED ON 800-375AR ASSEMBLY ONLY (C46-C49,C2,J2,J3, L10,L11,R39-R42,U12,U13)
- 4) INSTALL SOFTWARE DURING FINAL TEST PER TABLE 1. PUT A LABEL ON U1 & ON EXTERIOR OF FENCE ABOVE TO P2 INDICATING U1-V2.

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		DESIGNER(S) ERIC JACKSON			
TOLERANCE (DECIMAL) U.O.S. .X + .030 .XXX + .005 .XX + .015 ANGLES + 1		PROJ. LEADER ERIC JACKSON	FINISH	TITLE <b>T/R SYNTHESIZER</b>	
		MFG.	NEXT ASSY.		
		MODEL SRPT-40		SCALE 1/1	SHEET 1 OF 1