

**TYPE OF EXHIBIT:** TUNE-UP PROCEDURE AND PARTS LIST

**FCC PART:** 2.1033 (c)(9)

**MANUFACTURER:** RITRON, INC.  
505 West Carmel Drive  
Carmel, IN 46032

**MODEL:** SST-442

**TYPE OF UNIT:** UHF-FM Handheld Transceiver

**FCC ID:** AIERIT13-442

**DATE:** May 11, 2001

Included in this exhibit is the tune-up procedure, parts list and semiconductor function list for the SST-442.

The tune-up procedure and parts list included in this exhibit are excerpts of the Maintenance and Operating Manual for RITRON Model Patriot SST-442 UHF-FM Handheld Transceiver. The complete Maintenance and Operating Manual is included with this application for Certification as a separate exhibit.

Signed:



Michael A. Pickard - Project Engineer

**WARNING!**

An authorized RF service technician must perform test and alignment of the SST-442. Do not attempt service of the SST-442 if not completely familiar with the operation of frequency synthesized radio operation. The SST-442 can operate in both Narrow Band (2.5 KHz deviation) and Wide Band (5 KHz deviation) systems.

**RECOMMENDED TEST EQUIPMENT**

- 1) 0 to +15 VDC, 2A current-limited power supply
- 2) RF Communications Test Set (to 470 MHz) with:
  - FM Deviation Meter
  - RF Wattmeter
  - Frequency Counter (to 470 MHz)
  - SINAD Measuring Device
- 3) Oscilloscope (to 20 MHz)
- 4) VTVM or DMM
- 5) RITRON PC Programming Kit
- 6) RITRON SST-SRVBD Test Module

**RADIO PREPARATION**

- 1) Make sure the radio battery is fully charged.
- 2) Install the RITRON SST-SRVBD test assembly and serial programming cable as follows:
  - a) Remove the SST-442 antenna from the radio.
  - b) Plug the SST-SRVBD into the 2.5 mm and 3.5 mm jacks on top of the radio.
  - c) Screw the SST-SRVBD antenna nut fully into the SST-442 antenna connector.
  - d) Set the jumper on the SST-SRVBD assembly to the "UHF" position.
  - e) Connect the serial programming cable from the PC computer (with the RITRON PC programming kit software installed) to the SST-SRVBD test assembly
- 3) Connect the FM communications test set to the BNC connector on the SST-SRVBD test assembly.
- 4) Turn on the radio to place it in operating mode.
- 5) From the PC Programmer on-screen menu, select "Tune Radio" to display the Alignment screen.
- 6) Set the RF Communications Test set to the Alignment Frequency indicated on the Alignment screen.

- 7) Press the appropriate "Select" button on the Alignment screen to make the following adjustments:

| <u>SELECT</u> | <u>Alignment</u>                                                                                    |
|---------------|-----------------------------------------------------------------------------------------------------|
| Frequency     | Transmit frequency                                                                                  |
| Mod Bal       | Modulation balance                                                                                  |
| Tone          | QC/DQC tone encode deviation wide and narrow band                                                   |
| Voice         | Voice deviation with no tone wide and narrow band<br>Voice deviation with tone wide and narrow band |

- 8) After you have completed alignment of the SST-442, turn the radio off. This will remove the test frequencies and return to operation on the customer's programmed frequencies.

**REFERENCE FREQUENCY**

- 1) Make sure the unit has been switched on and is at room temperature (approximately +25° C)
- 2) Select "Frequency" from the PC Programmer "Alignment" screen.
- 3) Set the RF communications test set to the Alignment Frequency on the Alignment screen.
- 4) Press the "Tune" button on the Alignment screen to activate the transmitter.
- 5) Transmitter frequency error should be less than +/- 500 Hz.
- 6) If frequency adjustment is required, press the left arrow on the tuning bar to lower the frequency or the right arrow to raise the frequency.
- 7) Press the "Save" button to store the new alignment setting or "Cancel" to leave setting unchanged.

**MODULATION BALANCE**

Transmitter modulation balance has been set at the factory and should not require adjustment.

- 1) Select "Mod Bal" from the PC Programmer "Alignment" screen.
- 2) Set the RF communications test set to the Alignment Frequency on the Alignment screen.
- 3) Press the "Tune" button on the Alignment screen to activate the transmitter.
- 4) Check the de-modulated waveform for a 20 Hz square wave.
- 5) If adjustment of the modulation balance is required, press the left arrow on the tuning bar to flatten the top of the waveform or the right arrow to reduce overshoot.
- 6) Press the "Save" button to store the new alignment setting or "Cancel" to leave setting unchanged.

**TRANSMITTER TONE DEVIATION**

Transmitter tone deviation has been set at the factory and should not require adjustment.

- 1) Select "Tone" from the PC Programmer "Alignment" screen.
- 2) Set the RF communications test set to the transmit frequency on the screen.
- 3) Select either "Wide Band" or "Narrow Band" by pressing the desired option button.
- 4) Press the "Tune" button on the Alignment screen to activate the transmitter.
- 5) If adjustment of the tone deviation is required, press the left arrow on the tuning bar to lower deviation or the right arrow to raise deviation.
- 6) Press the "Save" button to store the new alignment setting or "Cancel" to leave setting unchanged.

**TRANSMITTER VOICE DEVIATION**

Transmitter voice deviation has been set at the factory and should not require adjustment.

- 1) Select "Voice" from the PC Programmer "Alignment" screen.
- 2) Set the RF communications test set to the transmit frequency on the screen.
- 3) Select "Voice Only - Wide Band", "Voice Only - Narrow Band", "Voice & Tone - Wide Band", or "Voice & Tone - Narrow Band" by pressing the desired option button.
- 4) Press the "Tune" button on the Alignment screen to activate the transmitter.
- 5) If adjustment of the voice deviation is required, press the left arrow on the tuning bar to lower deviation or the right arrow to raise deviation.
- 6) Press the "Save" button to store the new alignment setting or "Cancel" to leave setting unchanged.

**RECEIVER SENSITIVITY AND SQUELCH**

The SST-442 receiver is factory tuned for a frequency range of 460 - 470 MHz. The SST-442 receiver is configured from the factory for Wide Band operation, with a Narrow Band Model available as an option. The SST-442 receiver bandwidth is configured on a per radio basis, it cannot be switched on a per channel basis.

The receiver may be tuned to any 10 MHz frequency band between 450-470 MHz.

- 1) Program the radio to a receive frequency in the middle of the desired 10 MHz band.
- 2) Set the RF communications test set generator to a frequency exactly 87.3 MHz below the programmed receive frequency at a RF level of approximately -40 dB. Modulate the RF signal with a 1 KHz tone at 3 KHz deviation for wide band, 1.5 KHz deviation for low band.
- 3) Connect an 8-Ohm speaker to the 3.5mm audio jack on the SST-SRVBD test assembly.
- 4) Adjust L101 for the minimum received signal at this image frequency.
- 5) Set the RF Communications Test Set's generator to the programmed receive frequency at a RF level of -120 dB. Modulate the RF signal with a 1 KHz tone at 3 KHz deviation for wide band, 1.5 KHz deviation for low band.
- 6) Adjust L103 and L104 for the best receiver SINAD as measured across the 8-Ohm speaker.
- 7) Check receiver sensitivity at the lowest and highest operating frequencies and make slight adjustment to L103 and L104 to balance between the two, if necessary.

**RECEIVER NOISE SQUELCH**

The noise squelch sensitivity is set at the factory for a 12dB SINAD signal. Using the PC Programmer, squelch sensitivity can be adjusted on a per channel basis by adjusting the "Squelch Tightener" number to between 0-7. The higher number will require a stronger received signal to open squelch.

- 1) Select "Channel" from the PC Programmer "Edit" menu on the main screen.
- 2) Select the channel to be set and press "Edit" button.
- 3) Set the RF communications test set to the transmit frequency on the screen.
- 4) Enter a Squelch Tightener number between 0-7.
- 5) Press the "OK" button on the Channel Edit screen to return to the Channel List screen.
- 6) Select any other channels to be set.
- 7) Press the "OK" button on the Channel List screen to return to the Main screen.
- 8) Select "Program Radio" from the PC Programmer "Radio" menu to save all setting changes.

**SYNTHESIZER**

The synthesizer is preset at the factory for operation between 460 and 470 MHz. There is no manual adjustment to center the control voltage, with all adjustment performed by the factory selection of fixed capacitor C413. Do not attempt to adjust the synthesizer control unless a key component in the synthesizer has been replaced. Key components do not include the Y302 reference frequency TCVCXO or IC401 synthesizer IC. Synthesizer alignment errors cause poor operation at temperature extremes.

Should adjustment of the VCO control voltage be necessary, the radio must first be disassembled and powered up at 7.5 VDC. The following procedure defines testing of the VCO control voltage:

- 1) Select the channel that has the lowest receive frequency.
- 2) Connect a VTVM, DVM or oscilloscope to Test Point 1 and measure the VCO control voltage. This voltage should be no less than 1.5 VDC.
- 3) Select the channel that has the highest receive frequency and measure Test Point 1. The control voltage should be no higher than 4.5 VDC.
- 4)
  - a) If adjustment of the VCO control voltage is required, remove the synthesizer shield top.
  - b) Replace C413 with a capacitor value that allows VCO control voltages between 1.5 and 4.5 VDC for the operating frequencies desired. Decreasing the value of C413 will raise the operating frequency of the VCO while increasing the value will lower the VCO frequency.
  - c) Replace the top of the synthesizer shield.

NOTE: This parts list reflects the most current component values. If a component value given in the schematic differs from this list, the parts list should be considered the most current.

Last Update: May 11, 2001

| <u>Ref</u>        | <u>Ritron PN</u> | <u>Description</u>                       | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|-------------------|------------------|------------------------------------------|----------|----------|--------------|------------|
| <b>CAPACITORS</b> |                  |                                          |          |          |              |            |
| C101              | 151103A3         | 3.3pf NPO 0805 CHIP CAPACITOR            | 1065     | 3824     | 270          | Top        |
| C102              | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 949      | 3929     | 180          | Top        |
| C103              | 15110120         | 12PF NPO 0805 50V CHIP CAP               | 791      | 4059     | 90           | Top        |
| C104              | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 649      | 3620     | 180          | Top        |
| C105              | 151106A8         | 6.8PF NPO 0805 50V CHIP                  | 1016     | 3682     | 270          | Top        |
| C106              | 15110180         | 18PF NPO 0805 50V CHIP                   | 920      | 3790     | 180          | Top        |
| C107              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 734      | 3620     | 180          | Top        |
| C108              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 675      | 3519     | 90           | Top        |
| C109              | 151106A8         | 6.8PF NPO 0805 50V CHIP                  | 637      | 3994     | 270          | Top        |
| C110              | 151103A3         | 3.3pf NPO 0805 CHIP CAPACITOR            | 557      | 3993     | 270          | Top        |
| C111              | 151103A3         | 3.3pf NPO 0805 CHIP CAPACITOR            | 516      | 4099     | 180          | Top        |
| C112              | 151103A3         | 3.3pf NPO 0805 CHIP CAPACITOR            | 382      | 4099     | 180          | Top        |
| C113              | 15110100         | 10PF NPO 0805 50V CHIP CAP               | 476      | 3993     | 270          | Top        |
| C114              | 151108A2         | 8.2PF NPO 0805 50V CHIP                  | 275      | 4059     | 90           | Top        |
| C115              | 15110150         | 15PF 0805 NPO 50V CHIP CAP               | 380      | 3786     | 0            | Top        |
| C116              | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 276      | 3382     | 180          | Top        |
| C117              | 15110150         | 15PF 0805 NPO 50V CHIP CAP               | 199      | 3598     | 180          | Top        |
| C118              | 15110470         | 47PF NPO 0805 50V CHIP                   | 160      | 3491     | 90           | Top        |
| C119              | 15181472         | .0047uF CAPACITOR, CHIP, 0402, X7R,5/10% | 485      | 3367     | 270          | Top        |
| C120              | 151108A2         | 8.2PF NPO 0805 50V CHIP                  | 407      | 3548     | 0            | Bottom     |
| C121              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 138      | 947      | 90           | Bottom     |
| C122              | 152B6106         | 10uF 10V 3.4 X 2.8 CHIP TANTALUM         | 451      | 1669     | 0            | Bottom     |
| C123              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 450      | 946      | 90           | Bottom     |
| C124              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 319      | 904      | 90           | Bottom     |
| C125              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 350      | 1364     | 0            | Bottom     |
| C126              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 441      | 1542     | 0            | Bottom     |
| C127              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 61       | 2203     | 0            | Bottom     |
| C128              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 217      | 2114     | 270          | Bottom     |
| C129              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 392      | 1802     | 0            | Bottom     |
| C130              | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 571      | 904      | 90           | Bottom     |
| C131              | 15110330         | 33PF NPO 0805 50V CHIP                   | 38       | 1263     | 0            | Bottom     |
| C132              | 15110330         | 33PF NPO 0805 50V CHIP                   | 64       | 1156     | 270          | Bottom     |
| C133              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 61       | 2123     | 0            | Bottom     |
| C134              | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 39       | 1635     | 90           | Top        |
| C135              | 15110220         | 22PF NPO 0805 50V CHIP CAP               | 171      | 1533     | 180          | Bottom     |
| C201              | 15180330         | 33pF CAPACITOR, CHIP, 0402, COG, 5%      | 1524     | 2585     | 0            | Top        |
| C202              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 871      | 3384     | 270          | Bottom     |
| C203              | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1004     | 3248     | 90           | Bottom     |
| C204              | 151105A6         | 5.6PF NPO 0805 50V CHIP CAPACITOR        | 1466     | 2357     | 0            | Top        |
| C205              | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 1517     | 267      | 270          | Top        |
| C206              | 15110150         | 15PF 0805 NPO 50V CHIP CAP               | 1572     | 239      | 270          | Top        |
| C207              | 151108A2         | 8.2PF NPO 0805 50V CHIP                  | 1571     | 3084     | 270          | Top        |
| C208              | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1375     | 2883     | 90           | Top        |
| C209              | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 977      | 3530     | 180          | Top        |
| C210              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1277     | 3493     | 270          | Bottom     |
| C211              | 15110150         | 15PF 0805 NPO 50V CHIP CAP               | 1278     | 3267     | 90           | Top        |
| C212              | 15180330         | 33pF CAPACITOR, CHIP, 0402, COG, 5%      | 977      | 3481     | 180          | Top        |
| C213              | 151106A8         | 6.8PF NPO 0805 50V CHIP                  | 1682     | 3881     | 90           | Top        |
| C214              | 15110120         | 12PF NPO 0805 50V CHIP CAP               | 1682     | 3881     | 180          | Top        |
| C215              | 151108A2         | 8.2PF NPO 0805 50V CHIP                  | 1614     | 4120     | 180          | Top        |
| C216              |                  | Factory Select                           | 1439     | 4093     | 90           | Top        |
| C217              | 151101A8         | 1.8PF 0805 50V CHIP CAP.                 | 1035     | 4136     | 90           | Top        |
| C218              | 15110101         | 100PF NPO 0805 50V CHIP CAP              | 953      | 4136     | 90           | Top        |
| C219              | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 1682     | 3881     | 180          | Top        |
| C301              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 774      | 817      | 180          | Bottom     |
| C302              | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 275      | 522      | 270          | Top        |
| C303              | 152B4226         | 22uF 6.3V 3.4 X 2.8 CHIP TANTALUM CAP    | 199      | 647      | 180          | Top        |

| <u>Ref</u> | <u>Ritron PN</u> | <u>Description</u>                       | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|------------|------------------|------------------------------------------|----------|----------|--------------|------------|
| C304       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1261     | 4590     | 90           | Bottom     |
| C305       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1027     | 405      | 0            | Top        |
| C306       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 613      | 402      | 270          | Top        |
| C307       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 20       | 4621     | 270          | Top        |
| C309       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 582      | 1865     | 90           | Bottom     |
| C310       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 1106     | 328      | 0            | Top        |
| C311       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1229     | 2967     | 90           | Bottom     |
| C312       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 544      | 4622     | 270          | Top        |
| C313       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 169      | 3033     | 270          | Top        |
| C314       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2589     | 180          | Bottom     |
| C315       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2271     | 180          | Bottom     |
| C316       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 826      | 2291     | 180          | Top        |
| C317       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2321     | 0            | Bottom     |
| C318       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 826      | 2371     | 180          | Top        |
| C319       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2360     | 0            | Bottom     |
| C320       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2403     | 180          | Bottom     |
| C321       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2496     | 180          | Bottom     |
| C322       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1280     | 2311     | 180          | Bottom     |
| C323       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2771     | 180          | Bottom     |
| C324       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 969      | 2221     | 0            | Top        |
| C325       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1280     | 2672     | 180          | Bottom     |
| C326       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1280     | 2628     | 180          | Bottom     |
| C327       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1280     | 2350     | 180          | Bottom     |
| C328       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 655      | 2408     | 0            | Top        |
| C329       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 634      | 2471     | 270          | Bottom     |
| C330       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2612     | 0            | Bottom     |
| C331       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2690     | 0            | Bottom     |
| C332       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2729     | 0            | Bottom     |
| C333       | 152A6475         | 4.7UF 10V A-SIZE TANTALUM CHIP CAP       | 493      | 2701     | 180          | Top        |
| C334       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 82       | 2765     | 180          | Bottom     |
| C335       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 366      | 2880     | 270          | Bottom     |
| C336       | 15181332         | .0033uF CAPACITOR, CHIP, 0402, X7R,5/10% | 454      | 3156     | 90           | Bottom     |
| C337       | 152B6106         | 10uF 10V 3.4 X 2.8 CHIP TANTALUM         | 724      | 3558     | 270          | Bottom     |
| C338       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 254      | 3144     | 90           | Top        |
| C339       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 245      | 2964     | 270          | Top        |
| C340       | 15111333         | .033MFD X7R 0805 50V CHIP CAP            | 331      | 2665     | 270          | Bottom     |
| C341       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 585      | 2328     | 270          | Bottom     |
| C342       | 15110821         | 820PF NPO 0805 50V CHIP CAP              | 638      | 2982     | 180          | Bottom     |
| C343       | 15111102         | .001MF X7R 0805 50V CHIP CAP             | 637      | 3063     | 180          | Bottom     |
| C344       | 15181472         | .0047uF CAPACITOR, CHIP, 0402, X7R,5/10% | 179      | 2432     | 0            | Top        |
| C345       | 15181472         | .0047uF CAPACITOR, CHIP, 0402, X7R,5/10% | 264      | 2432     | 0            | Top        |
| C346       | 152A8105         | 1MFD 16V ~3.2 X 1.6~ CHIP TANTALUM       | 614      | 2232     | 90           | Top        |
| C347       | 15180180         | 18pF CAPACITOR, CHIP, 0402, COG, 5%      | 286      | 2500     | 90           | Top        |
| C348       | 15119473         | .047uF X7R 0805 25V CHIP CAPACITOR       | 474      | 2595     | 0            | Top        |
| C349       | 15111333         | .033MFD X7R 0805 50V CHIP CAP            | 82       | 2657     | 90           | Bottom     |
| C350       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 493      | 3156     | 90           | Bottom     |
| C351       | 15181222         | .0022uF CAPACITOR, CHIP, 0402, X7R,5/10% | 35       | 2641     | 270          | Top        |
| C352       | 15180100         | 10pF CAPACITOR, CHIP, 0402, COG, 5%      | 436      | 3228     | 90           | Top        |
| C353       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 594      | 3131     | 180          | Bottom     |
| C354       | 15181221         | 220pF CAPACITOR, CHIP, 0402, X7R, 5/10%  | 379      | 2436     | 90           | Bottom     |
| C355       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 250      | 2413     | 180          | Bottom     |
| C356       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 188      | 2434     | 90           | Bottom     |
| C357       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 125      | 2415     | 180          | Top        |
| C358       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 585      | 2498     | 90           | Bottom     |
| C359       | 15180100         | 10pF CAPACITOR, CHIP, 0402, COG, 5%      | 450      | 2573     | 270          | Bottom     |
| C360       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 464      | 2283     | 270          | Top        |
| C361       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 459      | 2139     | 90           | Bottom     |
| C362       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 981      | 752      | 270          | Bottom     |
| C363       | 152B6106         | 10uF 10V 3.4 X 2.8 CHIP TANTALUM         | 1231     | 427      | 0            | Top        |
| C364       | 152B6106         | 10uF 10V 3.4 X 2.8 CHIP TANTALUM         | 1075     | 455      | 90           | Bottom     |
| C365       | 01503212         | 220MF 10V ELT CAPACITOR, 5mm HEIGHT      | 1493     | 5509     | 0.399        | Top        |
| C366       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 1509     | 720      | 180          | Bottom     |
| C367       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 1357     | 814      | 90           | Bottom     |
| C368       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 220      | 2695     | 270          | Bottom     |



| <u>Ref</u> | <u>Ritron PN</u> | <u>Description</u>                       | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|------------|------------------|------------------------------------------|----------|----------|--------------|------------|
| C369       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 664      | 2454     | 90           | Top        |
| C370       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 297      | 2861     | 180          | Top        |
| C371       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 704      | 2651     | 0            | Bottom     |
| C372       | 15111103         | .01MF X7R 0805 50V CHIP                  | 444      | 719      | 270          | Bottom     |
| C373       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 364      | 2322     | 270          | Bottom     |
| C374       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 566      | 2583     | 90           | Bottom     |
| C401       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1566     | 1966     | 270          | Top        |
| C402       | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 1640     | 194      | 90           | Top        |
| C403       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1680     | 1828     | 90           | Top        |
| C404       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1066     | 1850     | 180          | Top        |
| C405       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1353     | 2013     | 180          | Top        |
| C406       | 151101A5         | 1.5PF NPO 0805 50V CHIP                  | 1182     | 1785     | 270          | Top        |
| C407       | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 1463     | 1604     | 0            | Top        |
| C408       | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 1572     | 1634     | 270          | Top        |
| C409       | 15119104         | .1uF X7R 0805 25V CERAMIC CHIP CAP       | 980      | 1766     | 90           | Top        |
| C410       | 151104A7         | 4.7PF 0805 50V CHIP CAP.                 | 1355     | 158      | 270          | Top        |
| C411       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1262     | 130      | 270          | Top        |
| C412       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1047     | 1788     | 90           | Top        |
| C413       | 151102A7         | 2.7pf NPO 0805 CHIP CAPACITOR            | 1462     | 1441     | 270          | Top        |
| C414       | 152B6106         | 10uF 10V 3.4 X 2.8 CHIP TANTALUM         | 722      | 1625     | 0            | Top        |
| C415       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 1535     | 969      | 270          | Top        |
| C416       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1731     | 1114     | 270          | Top        |
| C417       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1538     | 1356     | 90           | Top        |
| C418       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 677      | 1121     | 180          | Top        |
| C419       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 678      | 1213     | 180          | Top        |
| C420       | 15181102         | .001uF CAPACITOR, CHIP, 0402, X7R, 5/10% | 678      | 1260     | 180          | Top        |
| C421       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1053     | 1576     | 180          | Top        |
| C422       | 15110100         | 10PF NPO 0805 50V CHIP CAP               | 1119     | 1512     | 180          | Top        |
| C423       | 151101A0         | 1.0PF NPO 0805 50V CHIP                  | 1256     | 1400     | 0            | Top        |
| C424       | 151108A2         | 8.2PF NPO 0805 50V CHIP                  | 1187     | 1252     | 270          | Top        |
| C425       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1069     | 937      | 90           | Top        |
| C426       | 15111222         | .0022uF X7R 0805 50V CHIP CAPACITOR      | 832      | 922      | 180          | Top        |
| C427       | 152AB334         | .33MF 35V ~3.2X1.6~ CHIP TANTALUM        | 812      | 1015     | 0            | Top        |
| C428       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 855      | 1473     | 270          | Top        |
| C429       | 15111333         | .033MFD X7R 0805 50V CHIP CAP            | 1029     | 1015     | 0            | Top        |
| C430       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 971      | 1460     | 270          | Top        |
| C431       | 15182103         | .01uF CAPACITOR, CHIP, 0402,Z5U,5/10/20  | 687      | 1393     | 180          | Top        |
| C432       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 766      | 1100     | 180          | Top        |
| C433       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 932      | 1460     | 90           | Top        |
| C434       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 1101     | 1264     | 0            | Top        |
| C435       | 15180101         | 100pF CAPACITOR, CHIP, 0402, COG, 5%     | 687      | 1355     | 180          | Top        |

**DIODES**

|       |          |                                          |      |      |     |        |
|-------|----------|------------------------------------------|------|------|-----|--------|
| CR101 | 48D100A2 | MA4CP101A PIN DIODE, SOT-23              | 1178 | 3820 | 90  | Top    |
| CR102 | 48E1005G | MMBD-352LT1 SCHOTTKY DIODE SOT23         | 906  | 3682 | 270 | Top    |
| CR103 | 48A1005C | MMBD7000, DUAL DIODES IN SERIES, SOT-23  | 366  | 2119 | 0   | Bottom |
| CR201 | 48D100A2 | MA4CP101A PIN DIODE, SOT-23              | 1302 | 3991 | 0   | Top    |
| CR301 | 48B61012 | 1N4742A ZENER DIODE, 12V 1W DL-41 MELF   | 991  | 604  | 90  | Top    |
| CR302 | 48AA01SA | DIODE, 1A, 50V, SMT, D0214AC CASE        | 1154 | 630  | 90  | Top    |
| CR303 | 48A1005B | MMBD6100, DUAL DIODES, COM CATHODE, SOT2 | 363  | 431  | 90  | Top    |
| CR304 | 48A100A3 | MMBD2835, DUAL DIODES, COM ANODE, SOT-23 | 65   | 4089 | 0   | Top    |
| CR305 | 48A1005C | MMBD7000, DUAL DIODES IN SERIES, SOT-23  | 615  | 2821 | 0   | Bottom |
| CR306 | 48A1005C | MMBD7000, DUAL DIODES IN SERIES, SOT-23  | 462  | 2949 | 90  | Bottom |
| CR307 | 48AA01SA | DIODE, 1A, 50V, SMT, D0214AC CASE        | 1290 | 630  | 90  | Top    |
| CR401 | 48A1005C | MMBD7000, DUAL DIODES IN SERIES, SOT-23  | 695  | 1808 | 90  | Top    |
| CR402 | 48C1004E | MMBV-105G DIODE VVC, SOT-23              | 1155 | 1115 | 180 | Top    |
| CR403 | 48C1004G | MMBV-2101L DIODE VVC SOT-23              | 1119 | 1400 | 180 | Top    |
| CR404 | 48A1004D | MMBV3401 PIN/UHF DIODE SOT-23            | 1552 | 1239 | 270 | Top    |

**FUSE**

|      |          |                                  |     |     |     |        |
|------|----------|----------------------------------|-----|-----|-----|--------|
| F301 | 06000040 | WIRE; #40AWG TINNED BUS (INCHES) | 754 | 603 | 270 | Bottom |
|------|----------|----------------------------------|-----|-----|-----|--------|

| <u>Ref</u>                 | <u>Ritron PN</u> | <u>Description</u>                           | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|----------------------------|------------------|----------------------------------------------|----------|----------|--------------|------------|
| <b>INTEGRATED CIRCUITS</b> |                  |                                              |          |          |              |            |
| IC101                      | 31030003         | MC3371D SUBSYSTEM IC, SO-16                  | 314      | 1158     | 270          | Bottom     |
| IC301                      | 314G0306         | MCU, 28 PIN, SOIC, SST/JMX 4 SERIES v06      | 992      | 2546     | 0            | Bottom     |
| IC302                      | 31210005         | EEPROM, 512X8, 24C04                         | 989      | 2501     | 180          | Top        |
| IC303                      | 310K0004         | LMV324MT RAIL TO RAIL QUAD OP AMP            | 474      | 2442     | 180          | Top        |
| IC304                      | 311K0003         | SWITCH, ANALOG, TRIPLE SPDT, 4053, TSSOP-16  | 226      | 2683     | 0            | Top        |
| IC305                      | 310K0003         | LMV358MM DUAL OP AMP, GP LV R/R TSSOP        | 404      | 3120     | 0            | Top        |
| IC306                      | 310K0001         | DS1806E 6 PROG POTS 10K OHM 20-PIN TSSOP     | 242      | 2185     | 0            | Top        |
| IC307                      | 31010004         | LM386MX-1 AUDIO AMP SO-8                     | 1331     | 583      | 90           | Bottom     |
| IC308                      | 310K0002         | MAX7410 5TH ORDER SW CAP BUTTERWORTH LPF407  | 2946     | 0        | 0            | Top        |
| IC309                      | 310E0002         | REGULATOR, LDO, LP2980, 5V, W ENABLE, SOT-25 | 162      | 504      | 0            | Top        |
| IC401                      | 313K0005         | SYNTHESIZER, MC145193, TSSOP                 | 891      | 1265     | 180          | Top        |
| <b>JACKS</b>               |                  |                                              |          |          |              |            |
| J301                       | 02100001         | 2.5MM PC-MT JACK; ANT-CHGR                   | 1178     | 4668     | 0            | Top        |
| J303                       | 02100053         | 3.5MM STEREO JACK; PANEL MOUNT               | 1560     | 4646     | 0            | Top        |
| <b>INDUCTORS</b>           |                  |                                              |          |          |              |            |
| L101                       | 01850201         | 1.5T SW COIL W/5MM SHIELD & ALUM CORE        | 721      | 4291     | 90           | Top        |
| L102                       | 18110151         | CHIP INDUCTOR .15uhy                         | 629      | 3722     | 270          | Top        |
| L103                       | 01850201         | 1.5T SW COIL W/5MM SHIELD & ALUM CORE        | 484      | 4291     | 270          | Top        |
| L104                       | 01850201         | 1.5T SW COIL W/5MM SHIELD & ALUM CORE        | 204      | 4292     | 270          | Top        |
| L105                       | 18433103         | 3T AIRCOIL, SMT, 8.0nH, .120 X .145          | 332      | 3901     | 0            | Top        |
| L106                       | 18110102         | CHIP INDUCTOR 1.0uhy                         | 280      | 3474     | 0            | Top        |
| L107                       | 18433101         | 1T AIRCOIL, SMT 2.5nH, .120 X .145           | 480      | 3492     | 180          | Top        |
| L108                       | 18110681         | CHIP INDUCTOR .68uhy                         | 51       | 1658     | 180          | Bottom     |
| L201                       | 18414104         | 4.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1399     | 2474     | 180          | Top        |
| L203                       | 18414104         | 4.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1478     | 2880     | 180          | Top        |
| L204                       | 18433102         | 2T AIRCOIL SMT 5.0nH .120 X .145             | 1591     | 3250     | 90           | Top        |
| L205                       | 18110103         | CHIP INDUCTOR 10uhy                          | 1386     | 3262     | 90           | Top        |
| L206                       | 18414108         | 8.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1143     | 3523     | 180          | Top        |
| L207                       | 18433102         | 2T AIRCOIL SMT 5.0nH .120 X .145             | 1737     | 3765     | 0            | Top        |
| L208                       | 18414104         | 4.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1695     | 4001     | 90           | Top        |
| L209                       | 18414104         | 4.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1479     | 3945     | 180          | Top        |
| L210                       | 18110102         | CHIP INDUCTOR 1.0uhy                         | 1335     | 3804     | 90           | Top        |
| L211                       | 18414105         | 5.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1093     | 3979     | 90           | Top        |
| L212                       | 18433102         | 2T AIRCOIL SMT 5.0nH .120 X .145             | 932      | 4343     | 0            | Top        |
| L401                       | 18433208         | 8T AIRCOIL, SMT, 8.80 nH, .159 X .056        | 1376     | 1418     | 270          | Top        |
| L402                       | 18414109         | 9.5T AIRCOIL #24AWG .0625"ID RHH SMT         | 1352     | 118      | 0            | Top        |
| L403                       | 18110820         | INDUCTOR, CHIP 82nH                          | 1548     | 109      | 270          | Top        |
| L404                       | 18110101         | CHIP INDUCTOR 0.1uhy                         | 1205     | 966      | 270          | Top        |
| L405                       | 18110101         | CHIP INDUCTOR 0.1uhy                         | 753      | 1485     | 0            | Top        |
| <b>MICROPHONE</b>          |                  |                                              |          |          |              |            |
| M301                       | 05500037         | MICROPHONE; ELECTRET, MINIATURE              | 0        | 0        | 0            | Bottom     |
| <b>CONNECTORS</b>          |                  |                                              |          |          |              |            |
| P201                       | 25500700         | CONTACT, PCB MNT, ANTENNA, SST               | 896      | 4550     | 90           | Top        |
| P302                       | 21310021         | HEADER, 2 PIN SIDE ENTRY SHROUDED            | 754      | 737      | 0            | Top        |
| <b>TRANSISTORS</b>         |                  |                                              |          |          |              |            |
| Q101                       | 4801002A         | MMBT3906 PNP, SOT23                          | 675      | 3405     | 270          | Top        |
| Q102                       | 482100V0         | TRANSISTOR, NPN, UHF, SOT-23, PBR-941        | 734      | 3828     | 0            | Top        |
| Q103                       | 4841006U         | MMBFJ309LT1, N-CHAN, RF, SOT23               | 340      | 3639     | 270          | Top        |
| Q104                       | 4821003B         | MMBT918LT1 VHF SOT23 (3B)                    | 270      | 3548     | 0            | Bottom     |
| Q105                       | 4821003B         | MMBT918LT1 VHF SOT23 (3B)                    | 38       | 1374     | 180          | Bottom     |
| Q201                       | 480100DH         | BCW68GLT1 .8AMP PNP SOT-23                   | 908      | 3268     | 90           | Bottom     |
| Q202                       | 4801001Q         | MMBT5088, NPN, SOT-23                        | 766      | 3268     | 270          | Bottom     |
| Q203                       | 482100V0         | TRANSISTOR, NPN, UHF, SOT-23, PBR-941        | 1453     | 2248     | 270          | Top        |
| Q204                       | 48280001         | BFG135 WB SOT-223 1W TRANSISTOR              | 1699     | 291      | 50           | Top        |
| Q205                       | 04801013         | MRF-630 3 W UHF AMP TRAN. NPN                | 1469     | 3543     | 0            | Top        |



| <u>Ref</u> | <u>Ritron PN</u> | <u>Description</u>                      | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|------------|------------------|-----------------------------------------|----------|----------|--------------|------------|
| Q301       | 48010R02         | MUN2211T1, NPN, INT 10K/10K BIAS, "8A", | 1133     | 2987     | 90           | Bottom     |
| Q302       | 4801002A         | MMBT3906 PNP, SOT23                     | 1094     | 3124     | 90           | Bottom     |
| Q303       | 4801001Q         | MMBT5088, NPN, SOT-23                   | 583      | 519      | 0            | Top        |
| Q304       | 480100DH         | BCW68GLT1 .8AMP PNP SOT-23              | 445      | 668      | 0            | Top        |
| Q306       | 480100DH         | BCW68GLT1 .8AMP PNP SOT-23              | 1222     | 2259     | 90           | Top        |
| Q307       | 4801001Q         | MMBT5088, NPN, SOT-23                   | 964      | 615      | 0            | Bottom     |
| Q308       | 480100DH         | BCW68GLT1 .8AMP PNP SOT-23              | 1162     | 669      | 0            | Bottom     |
| Q401       | 482100V0         | TRANSISTOR, NPN, UHF, SOT-23, PBR-941   | 1470     | 1919     | 270          | Top        |
| Q402       | 482100V0         | TRANSISTOR, NPN, UHF, SOT-23, PBR-941   | 1289     | 1920     | 270          | Top        |
| Q403       | 482100V0         | TRANSISTOR, NPN, UHF, SOT-23, PBR-941   | 1460     | 1714     | 270          | Top        |
| Q404       | 4801001Q         | MMBT5088, NPN, SOT-23                   | 837      | 1766     | 270          | Top        |
| Q405       | 4801006A         | MUN2111T1, PNP, INT 10K/10K BIAS, SC-59 | 1634     | 1376     | 270          | Top        |
| Q406       | 48010R02         | MUN2211T1, NPN, INT 10K/10K BIAS, "8A", | 1691     | 1234     | 0            | Top        |

**RESISTORS**

|      |          |                                          |      |      |      |        |
|------|----------|------------------------------------------|------|------|------|--------|
| R101 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 579  | 3344 | 90   | Top    |
| R102 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 734  | 3581 | 180  | Top    |
| R103 | 47180102 | 1K OHM RESISTOR, CHIP,0402, 1/16W,5%     | 773  | 3709 | 270  | Top    |
| R104 | 47180392 | 3.9K OHM RESISTOR, CHIP, 0402, 1/16W, 5% | 829  | 3810 | 270  | Top    |
| R105 | 47180561 | 560 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 714  | 3519 | 270  | Top    |
| R106 | 47180152 | 1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%  | 475  | 3610 | 270  | Top    |
| R107 | 47180152 | 1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%  | 388  | 3484 | 180  | Bottom |
| R108 | 47180223 | 22K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 251  | 3450 | 180  | Bottom |
| R109 | 47180101 | 100 OHM RESISTOR, CHIP, 0402,1/16W,5%    | 167  | 3450 | 180  | Bottom |
| R110 | 47180154 | 150K OHM RESISTOR, CHIP, 0402, 1/16W,5%  | 411  | 946  | 270  | Bottom |
| R111 | 47180122 | 1.2K OHM RESISTOR, CHIP, 0402, 1/16W,5%  | 529  | 904  | 270  | Bottom |
| R112 | 47180224 | 220K OHM RESISTOR, CHIP, 0402, 1/16W, 5% | 349  | 966  | 180  | Bottom |
| R113 | 47180123 | 12K OHM RESISTOR, CHIP, 0402, 1/16W,5%   | 489  | 946  | 90   | Bottom |
| R114 | 47180152 | 1.5K OHM RESISTOR, CHIP, 0402,1/16W,5%   | 551  | 966  | 0    | Bottom |
| R115 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 153  | 2174 | 270  | Bottom |
| R116 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 153  | 2089 | 90   | Bottom |
| R117 | 47180393 | 39K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 117  | 1676 | 90   | Top    |
| R118 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 49   | 1509 | 0    | Bottom |
| R119 | 47180102 | 1K OHM RESISTOR, CHIP,0402, 1/16W,5%     | 49   | 1470 | 180  | Bottom |
| R120 | 47180681 | 680 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 78   | 1635 | 90   | Top    |
| R201 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 790  | 3384 | 90   | Bottom |
| R202 | 47180471 | 470 OHM RESISTOR, CHIP, 0402, 1/6W, 5%   | 669  | 3248 | 270  | Bottom |
| R203 | 47180181 | 180 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 897  | 3151 | 90   | Bottom |
| R205 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 1357 | 2228 | 90   | Top    |
| R206 | 47180152 | 1.5K OHM RESISTOR, CHIP, 0402, 1/16W,5%  | 1318 | 2228 | 90   | Top    |
| R207 | 47100470 | 47 OHM 0805 CHIP RES.                    | 1438 | 2678 | 270  | Top    |
| R208 | 47180222 | 2.2K OHM RESISTOR, CHIP, 0402, 1/16W, 5% | 1605 | 2718 | 180  | Top    |
| R209 | 47180271 | 270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1720 | 271  | 180  | Top    |
| R210 | 47180221 | 220 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1277 | 3581 | 270  | Top    |
| R211 | 47180181 | 180 OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1217 | 3726 | 180  | Top    |
| R212 | 47180102 | 1K OHM RESISTOR, CHIP,0402, 1/16W,5%     | 879  | 4148 | 90   | Top    |
| R301 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 536  | 686  | 90   | Top    |
| R302 | 47100471 | 470 OHM 0805 CHIP RES.                   | 475  | 479  | 270  | Top    |
| R303 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 316  | 546  | 90   | Top    |
| R304 | 47180102 | 1K OHM RESISTOR, CHIP,0402, 1/16W,5%     | 623  | 639  | 270  | Top    |
| R305 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 409  | 547  | 270  | Top    |
| R306 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 621  | 1865 | 90   | Bottom |
| R307 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 995  | 3143 | 90   | Bottom |
| R308 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 1086 | 334  | 5180 | Top    |
| R309 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 1257 | 2891 | 270  | Bottom |
| R310 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 704  | 2191 | 0    | Bottom |
| R311 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 504  | 4622 | 270  | Top    |
| R312 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 704  | 2230 | 0    | Bottom |
| R313 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 1206 | 2376 | 270  | Top    |
| R314 | 47180472 | 4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5% | 1260 | 2375 | 270  | Top    |
| R315 | 47180102 | 1K OHM RESISTOR, CHIP,0402, 1/16W,5%     | 709  | 2834 | 90   | Bottom |
| R316 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 761  | 2506 | 90   | Top    |
| R317 | 47180103 | 10K OHM, RESISTOR, CHIP, 0402,1/16W,5%   | 800  | 2506 | 90   | Top    |
| R318 | 47180104 | 100K OHM, RESISTOR, CHIP, 0402,1/16W,5%  | 704  | 2520 | 180  | Bottom |

| <u>Ref</u> | <u>Ritron PN</u> | <u>Description</u>                        | <u>X</u> | <u>Y</u> | <u>Theta</u> | <u>Loc</u> |
|------------|------------------|-------------------------------------------|----------|----------|--------------|------------|
| R319       | 47180471         | 470 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 704      | 2768     | 180          | Bottom     |
| R320       | 47180471         | 470 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 638      | 2917     | 0            | Bottom     |
| R321       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 760      | 2951     | 180          | Bottom     |
| R322       | 47180393         | 39K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 274      | 3069     | 270          | Bottom     |
| R323       | 47180823         | 82K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 371      | 3070     | 270          | Bottom     |
| R324       | 47180224         | 220K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 313      | 3070     | 270          | Bottom     |
| R325       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 416      | 3156     | 90           | Bottom     |
| R326       | 47180183         | 18K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 585      | 2413     | 270          | Bottom     |
| R327       | 47180183         | 18K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 624      | 2328     | 90           | Bottom     |
| R328       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 477      | 2791     | 270          | Bottom     |
| R329       | 47180153         | 15K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 179      | 2391     | 180          | Top        |
| R330       | 47180100         | 10 OHM RESISTOR, CHIP, 0402, 1/16W 5%     | 664      | 2369     | 90           | Top        |
| R331       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 264      | 2392     | 0            | Top        |
| R332       | 47180154         | 150K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 207      | 2501     | 90           | Top        |
| R333       | 47180473         | 47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 246      | 2500     | 90           | Top        |
| R334       | 47180273         | 27K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 566      | 2588     | 90           | Top        |
| R335       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 43       | 2774     | 270          | Top        |
| R336       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 4        | 2774     | 270          | Top        |
| R337       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 532      | 3156     | 270          | Bottom     |
| R338       | 47180224         | 220K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 397      | 3228     | 90           | Top        |
| R339       | 47180394         | 390K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 468      | 2366     | 270          | Bottom     |
| R340       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 340      | 2436     | 90           | Bottom     |
| R341       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 250      | 2455     | 0            | Bottom     |
| R342       | 47180184         | 180K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 63       | 2395     | 270          | Bottom     |
| R343       | 47180564         | 560K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 741      | 3130     | 0            | Top        |
| R344       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 21       | 2428     | 270          | Bottom     |
| R345       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 125      | 2455     | 180          | Bottom     |
| R346       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 742      | 3092     | 180          | Bottom     |
| R348       | 47180473         | 47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 411      | 2573     | 270          | Bottom     |
| R349       | 47180823         | 82K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 29       | 2146     | 0            | Top        |
| R350       | 47180564         | 560K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 29       | 2198     | 0            | Top        |
| R352       | 47100225         | 2.2M 0805 CHIP RESISTOR                   | 44       | 2406     | 0            | Top        |
| R353       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 486      | 2166     | 180          | Top        |
| R354       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 847      | 653      | 180          | Bottom     |
| R355       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 912      | 772      | 90           | Bottom     |
| R356       | 47180273         | 27K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1181     | 765      | 0            | Bottom     |
| R357       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1183     | 534      | 270          | Bottom     |
| R358       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 250      | 2374     | 180          | Bottom     |
| R359       | 47180100         | 10 OHM RESISTOR, CHIP, 0402, 1/16W 5%     | 1601     | 741      | 270          | Bottom     |
| R362       | 47180100         | 10 OHM RESISTOR, CHIP, 0402, 1/16W 5%     | 507      | 2622     | 180          | Bottom     |
| R401       | 47180221         | 220 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1517     | 2006     | 90           | Top        |
| R402       | 47180101         | 100 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1640     | 1828     | 270          | Top        |
| R403       | 47180272         | 2.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1450     | 2013     | 180          | Top        |
| R404       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1452     | 1825     | 180          | Top        |
| R405       | 47180101         | 100 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1153     | 1900     | 270          | Top        |
| R406       | 47180272         | 2.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1193     | 1900     | 270          | Top        |
| R407       | 47180470         | 47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1086     | 1788     | 270          | Top        |
| R408       | 47180470         | 47 OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1067     | 1726     | 180          | Top        |
| R409       | 47180271         | 270 OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1636     | 1655     | 90           | Top        |
| R410       | 47180153         | 15K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1266     | 162      | 5180         | Top        |
| R411       | 47180153         | 15K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 1363     | 1694     | 270          | Top        |
| R412       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1271     | 1827     | 180          | Top        |
| R413       | 47180472         | 4.7K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 677      | 1903     | 0            | Top        |
| R414       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 1634     | 1531     | 270          | Top        |
| R415       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 1641     | 1068     | 90           | Top        |
| R416       | 47180104         | 100K OHM, RESISTOR, CHIP, 0402, 1/16W, 5% | 1138     | 1576     | 0            | Top        |
| R417       | 47180102         | 1K OHM RESISTOR, CHIP, 0402, 1/16W, 5%    | 938      | 937      | 90           | Top        |
| R418       | 47180473         | 47K OHM RESISTOR, CHIP, 0402, 1/16W, 5%   | 938      | 1022     | 90           | Top        |
| R419       | 47180822         | 8.2K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 718      | 906      | 0            | Top        |
| R420       | 47180103         | 10K OHM, RESISTOR, CHIP, 0402, 1/16W, 5%  | 718      | 946      | 180          | Top        |
| R421       | 47180392         | 3.9K OHM RESISTOR, CHIP, 0402, 1/16W, 5%  | 1101     | 1303     | 0            | Top        |
| R422       | 47180100         | 10 OHM RESISTOR, CHIP, 0402, 1/16W 5%     | 894      | 1461     | 90           | Top        |
| R423       | 47180474         | 470K OHM RESISTOR, 0402, 1/16W, 5%        | 850      | 1100     | 180          | Top        |

**SPEAKER**

|       |          |                                        |   |   |   |        |
|-------|----------|----------------------------------------|---|---|---|--------|
| SP301 | 05500045 | SPEAKER, 45MM, 1W, LOW PROFILE SST/RTX | 0 | 0 | 0 | Bottom |
|-------|----------|----------------------------------------|---|---|---|--------|

**SWITCHES**

|       |          |                                        |     |      |     |     |
|-------|----------|----------------------------------------|-----|------|-----|-----|
| SW301 | 05100042 | SWITCH SPST MOMENTARY MINI PC 260GM    | 268 | 4587 | 180 | Top |
| SW302 | 05100042 | SWITCH SPST MOMENTARY MINI PC 260GM    | 788 | 4588 | 180 | Top |
| SW303 | 05100046 | SWITCH, TACT LO PROFILE RT ANGLE 160gf | 82  | 3097 | 270 | Top |
| SW304 | 05100046 | SWITCH, TACT LO PROFILE RT ANGLE 160gf | 82  | 3948 | 270 | Top |

**TRANSFORMER**

|      |          |                             |     |      |     |     |
|------|----------|-----------------------------|-----|------|-----|-----|
| T101 | 05600018 | 455KHZ IF TRANSFORMER (5MM) | 128 | 1822 | 180 | Top |
|------|----------|-----------------------------|-----|------|-----|-----|

**CRYSTAL**

|      |          |                                          |     |     |    |     |
|------|----------|------------------------------------------|-----|-----|----|-----|
| Y302 | 23050003 | TCVCXO, 14.400 MHz, 1.5 PPM, VC=30 PPM/V | 146 | 837 | 90 | Top |
|------|----------|------------------------------------------|-----|-----|----|-----|

**FILTERS**

|       |          |                                          |     |      |    |     |
|-------|----------|------------------------------------------|-----|------|----|-----|
| YF101 | 02301403 | 43.650 MHz Crystal Filter +/-6.0KHz UM-1 | 44  | 3524 | 90 | Top |
| YF102 | 02301013 | FILTER,CERAMIC,450KHz,+/-7.5KHz,6 POLE   | 249 | 1614 | 90 | Top |

**HARDWARE**

|          |                                         |
|----------|-----------------------------------------|
| 1750270A | PCB, ML4 FR4 5UPM, .062 MIX, SST-442    |
| 25602500 | CRYSTAL SUPPORT, RUBBER PAD, SMALL/UM-1 |
| 06001010 | #24 AWG STRANDED WIRE; RED (INCHES)     |
| 06001011 | #24 AWG STRANDED WIRE; BLACK INCHES     |
| 06001023 | #28 AWG STRANDED WIRE;GREEN INCHES      |
| 06001029 | #28 AWG STRANDED WIRE; BLUE INCHES      |
| 25105500 | SHIELD, SST-PLUS SYNTHESIZER            |
| 25603000 | FOAM, MOUNTING, SPEAKER,SST             |
| 25603900 | SPACER, MIC FOAM, SST                   |
| 25605700 | MICROPHONE HOLDER, SST-PLUS             |

**ANTENNA**

|         |                                         |
|---------|-----------------------------------------|
| AFS-450 | ANTENNA UHF MOLDED, 450-470 REG LEN SST |
|---------|-----------------------------------------|

**MAIN CASE ASSEMBLY**

|          |                                       |
|----------|---------------------------------------|
| 13250000 | CASE W/INSERT, PLASTIC, SST BLACK     |
| 13578000 | DOOR, BATTERY, PLASTIC, SST 2-PC      |
| 13588000 | LATCH, BATTERY DOOR, PLASTIC SST 2-PC |
| 25106400 | BATTERY DOOR HINGE RETAINER           |
| 25201500 | RETAINER, PLASTIC, PTT, SST           |
| 25400600 | BUSHING, THREADED, PLATED, ANTENNA SS |
| 25603300 | GRILLE CLOTH, SPEAKER, SST            |
| 25603400 | DUAL JACK PLUG, RUBBER,SST            |
| 25606200 | HINGE, BATTERY DOOR, SST              |
| 25800500 | ACTUATOR, RUBBER,PTT,SST              |
| 25800600 | ACTUATOR, RUBBER, TACT, SST           |
| 02802026 | NUT; KNURLED; M4PO.5;/2.5MM JACK      |
| 02802027 | NUT; KNURLED; M6PO.5/3.5MM JACK       |
| 28112401 | SCREW 4-40 X 1/4" PHFLST              |
| 28233G03 | KNURLED NUT, ANTENNA, JMX             |

**CASE BOTTOM ASSEMBLY**

|          |                                        |
|----------|----------------------------------------|
| 13564000 | CASE, BOTTOM, PLASTIC, SST 2-PC        |
| 2142D021 | CONNECTOR, CABLE ASSEMBLY, 2-POS, SST+ |
| 25400800 | SPRING CONTACT, BATTERY, SST W/O TABSC |
| 25400900 | CONTACT BATTERY SST-PLUS (POLARIZED)   |
| 25604800 | SPACER, PCB, FOAM, SST 2-PC            |

**BELT CLIP**

|          |                               |
|----------|-------------------------------|
| 25201600 | BELT CLIP, PLASTIC, SST BLACK |
| 2811B600 | SCREW 6-32 X 1/4" PHTRST      |

| <u>Ritron PN</u> | <u>Description</u> |
|------------------|--------------------|
|------------------|--------------------|

**SST-442 MODELS ONLY****CASE LABELS**

|          |                                       |
|----------|---------------------------------------|
| 14220001 | LABEL, CONTROLS, SST                  |
| 14222029 | LABEL, NAMEPLATE, SST                 |
| 14290002 | BLANK LABEL, .75" X .25" GLOSSY WHITE |
| 14200037 | LABEL SST/JMX MFG DATE CODE           |
| 14200100 | LABEL, FCC SERIAL, SST-442            |

**BATTERY PACK AND INSULATOR**

|           |                                      |
|-----------|--------------------------------------|
| BPS-6N-SC | BATTERY, RECHG, 7.2V NiCd, BLUE, SST |
| 14230088  | LABEL, BATTERY, BPS-6N-SC, SST       |
| 25300600  | INSULATOR, BATTERY, FIBRE, SST       |
| 25606000  | FOAM SUPPORT, BATTERY JMX SERIES     |
| 25601600  | BATTERY SHIM; ASSEMBLY ~X~ SERIES    |

**PACKING MATERIALS**

|          |                                         |
|----------|-----------------------------------------|
| 14210004 | LOW BATTERY NOTICE LABEL                |
| 14312006 | SHIPPING CARTON, CARDBOARD, SST         |
| 14321002 | FOAM INSERT, PACKING, SST/MINI          |
| 14500025 | OWNER'S MANUAL, 14x/44x SERIES, JMX/SST |
| 14540006 | WARRANTY REGISTRATION CARD              |

**JMX-442 MODELS ONLY****CASE LABELS**

|          |                                       |
|----------|---------------------------------------|
| 14220002 | LABEL, CONTROLS, JMX                  |
| 14222035 | LABEL, NAMEPLATE, JMX                 |
| 14290002 | BLANK LABEL, .75" X .25" GLOSSY WHITE |
| 14200037 | LABEL SST/JMX MFG DATE CODE           |
| 14200101 | LABEL, FCC SERIAL, JMX-442            |

**BATTERY PACK AND INSULATOR**

|          |                                           |
|----------|-------------------------------------------|
| BPJS-6N  | BATTERY, YELLOW, RECHG, 7.2V NiCd 700 mAh |
| BC-A     | BATTERY CHARGER, 120VAC-5.5VDC 100mA      |
| 14230088 | LABEL, BATTERY, BPS-6N-SC, SST            |
| 25300600 | INSULATOR, BATTERY, FIBRE, SST            |
| 25606000 | FOAM SUPPORT, BATTERY JMX SERIES          |
| 25601600 | BATTERY SHIM; ASSEMBLY ~X~ SERIES         |

**PACKING MATERIALS**

|          |                                         |
|----------|-----------------------------------------|
| 14210004 | LOW BATTERY NOTICE LABEL                |
| 14313012 | BOX, CHIPBOARD, SMALL, 4 COLOR, JMX     |
| 14352004 | INSERT, CORRUGATED CARDBOARD, JMX       |
| 14500025 | OWNER'S MANUAL, 14x/44x SERIES, JMX/SST |
| 14540006 | WARRANTY REGISTRATION CARD              |
| 14610006 | JOB COM BROCHURE                        |

**TYPE OF EXHIBIT:** SEMICONDUCTOR FUNCTION

**FCC PART:** 2.1033 (c) (10)

**MANUFACTURER:** RITRON, INC.  
505 West Carmel Drive  
Carmel, IN 46032

**MODEL:** SST-442

**TYPE OF UNIT:** UHF-FM Handheld Transceiver

**FCC ID:** AIERIT13-442

**DATE:** May 4, 2001

**DESCRIPTION:**

The following list specifies the manufacturer, identification and function of each semiconductor device used in the SST-442 handheld transceiver.

| <u>Schem ID</u> | <u>RITRON PN#</u> | <u>Manufacturer</u>       | <u>Manufacturer ID</u> | <u>Function</u>            |
|-----------------|-------------------|---------------------------|------------------------|----------------------------|
| CR101           | 48D100A2          | M/A Com, Inc.             | MA4CP101A              | TX/RX switching            |
| CR102           | 48E1005G          | Motorola Semiconductors   | MMBD-352LT1            | Voltage clamp              |
| CR103           | 48A1005C          | Motorola Semiconductors   | MMBD7000LT1            | Noise detection            |
| CR201           | 48D100A2          | M/A Com, Inc.             | MA4CP101A              | TX/RX switching            |
| CR301           | 48B61012          | Philips Semiconductors    | BZD27-C12              | Over voltage protection    |
| CR302           | 48AA01SA          | General Semiconductors    | ASBCS1B                | Reverse voltage protection |
| CR303           | 48A1005B          | Motorola Semiconductors   | MMBD6100LT1            | Turn-on detection          |
| CR304           | 48A100A3          | Motorola Semiconductors   | MMBD2835LT1            | PTT switching              |
| CR305           | 48A1005C          | Motorola Semiconductors   | MMBD7000LT1            | Voltage clamp              |
| CR306           | 48A1005C          | Motorola Semiconductors   | MMBD7000LT1            | Voltage clamp              |
| CR307           | 48A60001          | General Semiconductors    | ASBCS1B                | Reverse voltage protection |
| CR401           | 48A1005C          | Motorola Semiconductors   | MMBD7000LT1            | Biasing                    |
| CR402           | 48C1004E          | Motorola Semiconductors   | MMBV-105GLT!           | VCO tuning                 |
| CR403           | 48C1004G          | Motorola Semiconductors   | MMBV-2101L             | VCO modulation             |
| CR404           | 48A1004D          | Motorola Semiconductors   | MMBV3401TI             | TX/RX VCO switching        |
| IC101           | 31030003          | Motorola Semiconductors   | MC3371BD               | RX FM-IF subsystem         |
| IC301           | 314G0301          | Motorola Semiconductors   | MC68HC705P6ACDW        | Microcontroller            |
| IC302           | 31210005          | Atmel Corporation         | AT24C04AN-10SC         | EEPROM                     |
| IC303           | 310K0004          | National Semiconductors   | LMV324MT               | Audio processing           |
| IC304           | 311K0003          | Philips Components        | 74LV4053PWDH           | Audio signal switching     |
| IC305           | 310K0003          | National Semiconductors   | LMV358MM               | Audio processing           |
| IC306           | 310K0001          | Dallas Semiconductor      | DS1806E                | Audio signal level control |
| IC307           | 31010004          | National Semiconductors   | LM386MX-1              | Audio amplifier            |
| IC308           | 310K0002          | Maxim Integrated Products | MAX7410CUA             | Tone low pass filter       |
| IC309           | 310E0002          | National Semiconductors   | LP2980AIM5X-5.0        | +5 VDC voltage regulator   |
| IC401           | 313K0005          | Motorola Semiconductors   | MC145193DT             | Frequency synthesizer      |
| Q 101           | 4801002A          | Motorola Semiconductors   | MMBT3906LT1            | RX +V switching            |
| Q 102           | 482100V0          | Philips Components        | PBR941                 | RX RF amplifier            |
| Q 103           | 4841006U          | ON Semiconductors         | MMBFJ309LT1            | RX Mixer                   |
| Q 104           | 4821003B          | Motorola Semiconductors   | MMBT918LT1             | RX IF amplifier            |
| Q 105           | 4821003B          | Motorola Semiconductors   | MMBT918LT1             | RX 1st LO multiplier/amp   |
| Q 201           | 480100DH          | Motorola Semiconductors   | BCW68GLT1              | TX +V switching            |
| Q 202           | 4801001Q          | Motorola Semiconductors   | MMBT-5088LT1           | TX +V switching            |
| Q 203           | 482100V0          | Philips Components        | PBR941                 | TX RF amplifier            |
| Q 204           | 48280001          | Philips Components        | BFG-135                | TX RF driver amplifier     |
| Q 205           | 04801013          | Microsemi Semiconductors  | MRF-630                | TX RF final amplifier      |

| <b><u>Schem<br/>ID</u></b> | <b><u>RITRON<br/>PN#</u></b> | <b><u>Manufacturer</u></b> | <b><u>Manufacturer<br/>ID</u></b> | <b><u>Function</u></b>       |
|----------------------------|------------------------------|----------------------------|-----------------------------------|------------------------------|
| Q 301                      | 48010R02                     | Motorola Semiconductors    | MUN2211T1                         | PTT detection                |
| Q 302                      | 4801002A                     | Motorola Semiconductors    | MMBT3906LT1                       | PTT detection                |
| Q 303                      | 4801001Q                     | Motorola Semiconductors    | MMBT-5088LT1                      | Battery +V switching         |
| Q 304                      | 480100DH                     | Motorola Semiconductors    | BCW68GLT1                         | Battery +V switching         |
| Q 306                      | 4801002A                     | Motorola Semiconductors    | MMBT3906LT1                       | +5V switching                |
| Q 307                      | 4801001Q                     | Motorola Semiconductors    | MMBT-5088LT1                      | Audio amplifier enable       |
| Q 308                      | 480100DH                     | Motorola Semiconductors    | BCW68GLT1                         | Audio amplifier +V switching |
| Q 401                      | 482100V0                     | Philips Components         | PBR941                            | VCO buffer amplifier         |
| Q 402                      | 482100V0                     | Philips Components         | PBR941                            | VCO buffer amplifier         |
| Q 403                      | 482100V0                     | Philips Components         | PBR941                            | VCO oscillator               |
| Q 404                      | 4801001Q                     | Motorola Semiconductors    | MMBT-5088LT1                      | VCO voltage de-coupling      |
| Q 405                      | 4801006A                     | Motorola Semiconductors    | MUN2111LT1                        | TX/RX VCO switching          |
| Q 406                      | 48010R02                     | Motorola Semiconductors    | MUN2211T1                         | TX/RX VCO switching          |