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**T881 Transmitter**

**UHF FM 800-960MHz**

**(M881-00)**

**Issue A**

**TECHNICAL INFORMATION**

Any enquiries regarding this Manual or the equipment it describes should be addressed in the first instance to your nearest approved Tait Dealer or Service Centre. Further technical assistance may be obtained from the Product Support Group, Tait Electronics Ltd, at the above address.

**UPDATING EQUIPMENT AND SERVICE MANUALS**

In the interests of improving performance, reliability or servicing, Tait Electronics Ltd reserve the right to update their equipment and/or Service Manuals without prior notice.

**SCOPE OF MANUAL**

This Manual contains general, technical and servicing information on the T881 transmitter.

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**SECTION 1 GENERAL INFORMATION**

**1.1 INTRODUCTION**

The T881 is a synthesised, FM base station transmitter for single or multichannel operation in the 800 to 960MHz frequency range with a standard power output of 5W.

The RF section of the transmitter comprises a frequency synthesiser which provides 100mW of frequency modulated RF drive to the band pass pre-filter. The synthesiser frequency is programmed via an EPROM which is attached to a separate plug-in memory PCB. A DIP switch on the memory PCB allows fast single channel selection from a multichannel programmed EPROM, but for true multichannel capability the EPROM must be addressed separately via an additional D-range connector at the rear of the set.

A thermal shutdown feature is provided should operating temperatures exceed acceptable levels.

A wide selection of audio characteristics may be obtained from the audio processor. Optional circuit blocks are an audio compressor and a pre-emphasis stage. They can be bypassed or linked to one or both audio inputs, and then back into the remaining audio circuitry in almost any combination. All audio processor options are link selectable.

All components except those of the VCO and memory PCB's are mounted on a single PCB. This is secured to a die-cast chassis which is divided into compartments to individually shield each section of circuitry. Access to both sides of the main circuit board is obtained by removing each of the chassis lids. There is provision within the chassis to mount small option PCB's.

1.2 SPECIFICATIONS

1.2.1 INTRODUCTION

The performance figures given are minimum figures, unless otherwise indicated, for equipment tuned with the maximum switching band and operating at standard room temperature (+22°C to +28°C).

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA specification. However, there are several parameters for which performance according to the CEPT specification is given.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

1.2.2 GENERAL

Frequency Range	.. 800-960MHz
Modulation Type	.. direct FM
Frequency Increment	.. 12.5kHz
Switching Range	.. 8MHz
Number Of Channels:	
Standard	.. 1
Optional	.. 8
Internally Selectable	.. 128
Supply Voltage:	
Operating Voltage	.. 10.8 to 16V DC
Standard Test Voltage	.. 13.8V DC
Polarity	.. negative earth only
Polarity Protection	.. crowbar diode
Keying Supply (if required)	.. -50V DC
Supply Current:	
Transmit	.. 2A (typical)
Standby	.. 120mA
Load Impedance	.. 50 ohms
Operating Temperature Range	.. -30°C to +60°C
Dimensions:	
Height	.. 191mm
Width	.. 60mm
Length	.. 322mm
Weight	.. 2.1kg
Time-Out Timer (optional)	.. 1 to 4 minutes (adjustable)
Tail Timer	.. 5ms to 4 seconds (adjustable)





## T881 General Information

### Modulation Characteristics

Frequency Response (below limiting)	.. flat or pre-emphasised (optional)
<b>Line And Microphone Inputs:</b>	
Pre-emphasised Response- Bandwidth	.. 300Hz to 3kHz
Below Limiting Response	.. within +1, -3dB of a 6dB/octave pre-emphasis characteristic
Flat Response	.. within +1, -2dB of output at 1kHz
Above Limiting Response	.. within +1, -2dB of a flat response (ref. 1kHz)
Distortion	.. 2%
<b>Hum And Noise:</b>	
Narrow Band	.. -45dB (CEPT)
Wide Band	.. -50dB typical (300Hz to 3kHz [EIA])
<b>Compressor (optional):</b>	
Attack Time	.. 10ms
Decay Time	.. 800ms
Range	.. 50dB
<b>CTCSS Input:</b>	
Bandwidth	.. 65 to 250Hz
Response	.. within $\pm 1$ dB of a flat response (ref. 150Hz)

### 1.3 VERSIONS

Description	T881 Versions									
	10	12	14	15	17	20	22	24	25	27
800-880MHz	+	+	+	+	+					
850-960MHz						+	+	+	+	+
10kHz Deviation			+					+		
5kHz Deviation	+	+				+	+			
2.5kHz Deviation				+	+				+	+
1.5ppm TCXO	+		+	+		+		+	+	
1ppm TCXO		+			+		+			+

## SECTION 2 CIRCUIT OPERATION

### 2.1 INTRODUCTION

The individual circuit blocks which make up the T881 are: the synthesiser, VCO, audio processor, bandpass filter, power amplifier and voltage regulators. Each of these circuit blocks is set in its own shielded compartment, formed as an integral part of the main chassis.

The configuration of the circuit blocks may be seen on a functional level in Figure 1. Refer to the Circuit Diagrams for more detail.

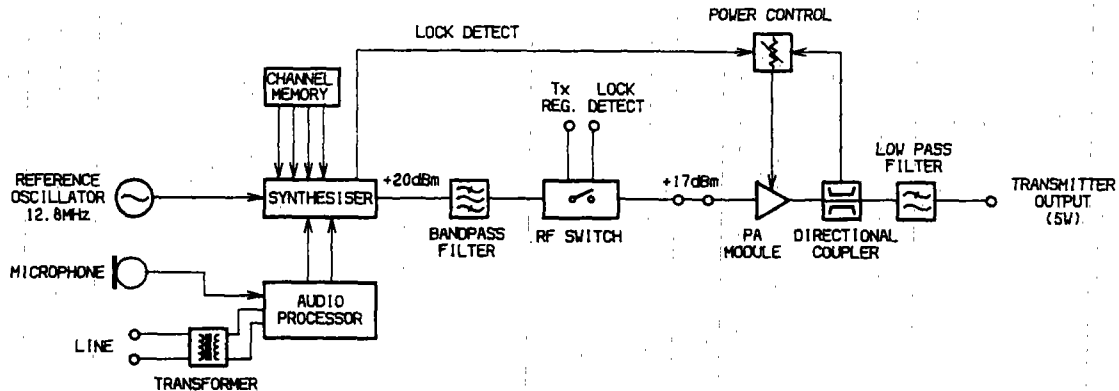


Figure 1 T881 High Level Block Diagram

### 2.2 SYNTHESISER (Refer to Figure 2.)

The synthesiser employs a phase-locked loop (PLL) to lock a voltage controlled oscillator (VCO) to a given reference frequency. A reference oscillator at 12.8MHz (=IC1) is buffered (IC7a, b & c) and divided down to 200kHz (IC4). This 200kHz square wave is then summed with the modulating audio and passed to an integrator (IC7f). This produces a ramping waveform which is centred around a DC level determined by the incoming audio. IC7e performs as a comparator, ultimately producing a phase-modulated 200kHz square wave which is divided down to 12.5kHz within the synthesiser IC (IC5).

A buffered output of the VCO is divided with a programmable divider, comprising a UHF prescaler (IC3) and a divider within IC5. This signal is compared with the phase modulated reference signal at the phase detectors in IC5. A digital phase detector (PDB) provides rapid coarse tuning of the VCO until the phase error is within the range of the high gain sample and hold detector (PDA). The phase detector outputs are passed through an active loop filter (IC6) which produces a DC voltage between 0V and 20V to tune the VCO. This VCO control line is further filtered to attenuate noise and other spurious signals. Note that the VCO frequency increases with increasing control voltage.

If the synthesiser loop loses lock, a pulsed signal appears at LD (pin 3) of IC5. This signal is filtered and buffered by IC6, producing the lock detect signal used to remove the control supply and the RF drive from the power module.

The division ratio of the programmable divider is stored within EPROM memory. Up to 128 frequencies can be stored within the EPROM and are addressed using the internal DIP switches. Three of the address lines are also available for external frequency control via an extra D-range connector at the rear of the chassis. A change of state of any of these three lines commences a programming cycle, during which time the frequency data in the EPROM is down loaded to the divider (IC5). 32 bits of data are loaded in eight 4-bit words.

Note: The three address lines must change their state decisively and simultaneously. External frequency control should therefore be achieved by use of the T800-07 multichannel memory PCB. Methods which allow the states of the three lines during transition to be undefined for indeterminate lengths of time, as with some mechanical BCD switches, are unsuitable.

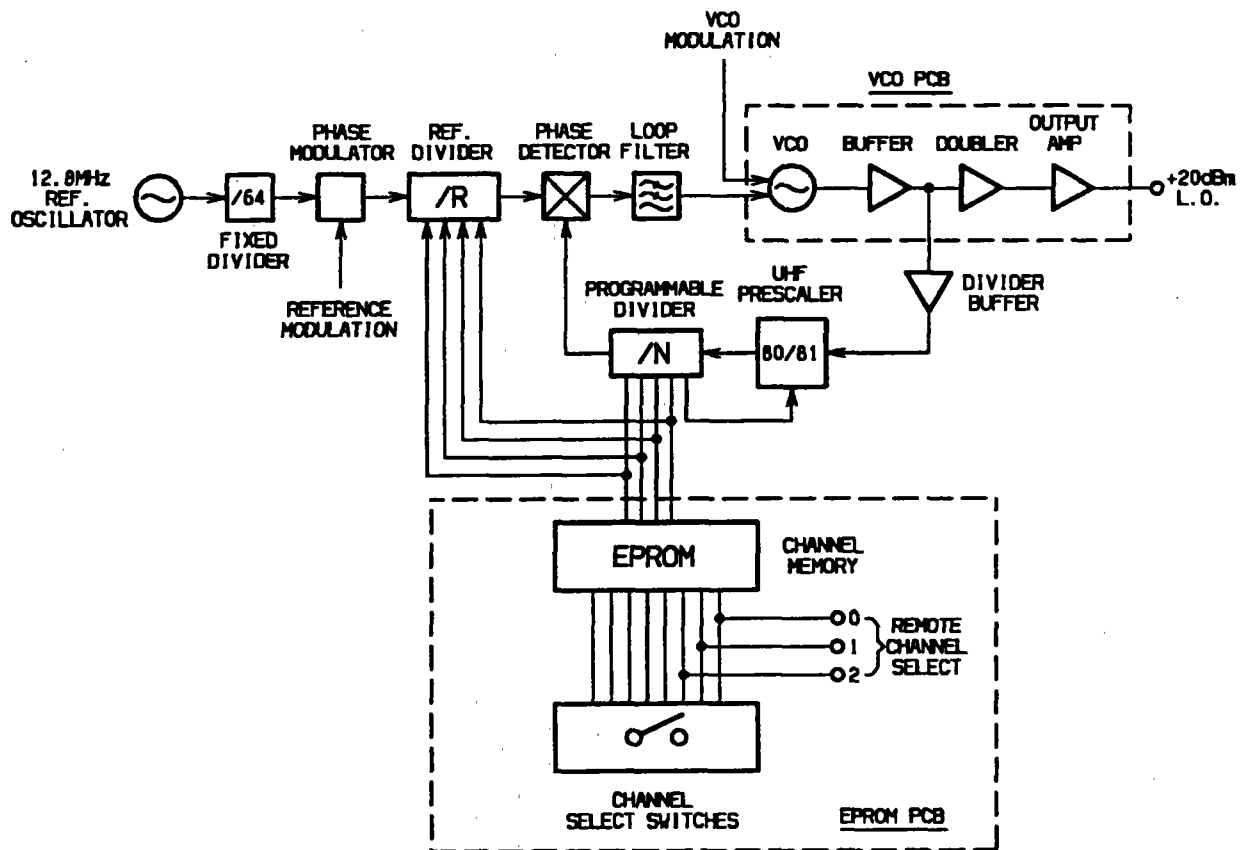


Figure 2 Synthesiser Block Diagram

### 2.3 VCO

The VCO transistor (Q1) operates in common emitter and uses a low loss transmission line resonator (&TL1). The transmission line is used in a two port configuration with varicaps positioned at one of its ends. The VCO control voltage from the loop filter (IC6) is applied to the varicaps (D1 & D2) to facilitate tuning. The output from the oscillator circuit drives a cascode amplifier stage (Q2, Q3) which drives a doubler (Q4). The final frequency is then applied to a further amplifier stage (Q5) via a 3dB pad. Q5 delivers +20dBm (typically) to a pre-power amplifier bandpass filter (#L300). The output stages Q4 & Q5 incorporate two notch filters to reduce  $\frac{1}{2}f$ .

A low level "sniff" is taken from the input to Q4 and used to drive the divider buffer for the UHF prescaler. The prescaler divides by 80/81.

The VCO is modulated by superimposing the audio signal onto the control voltage.

2.3.1 TWO-POINT MODULATION

Both the VCO and reference oscillator are modulated so that the phase detectors of IC5 see no frequency error under modulation. Thus, the synthesiser loop will not attempt to correct for modulation and the response of the transmitter remains unaffected.

2.4 AUDIO PROCESSOR (Refer to Figure 3.)

Note: IC102 and RV106 are designated "&IC102" and "&RV106" in the T881.

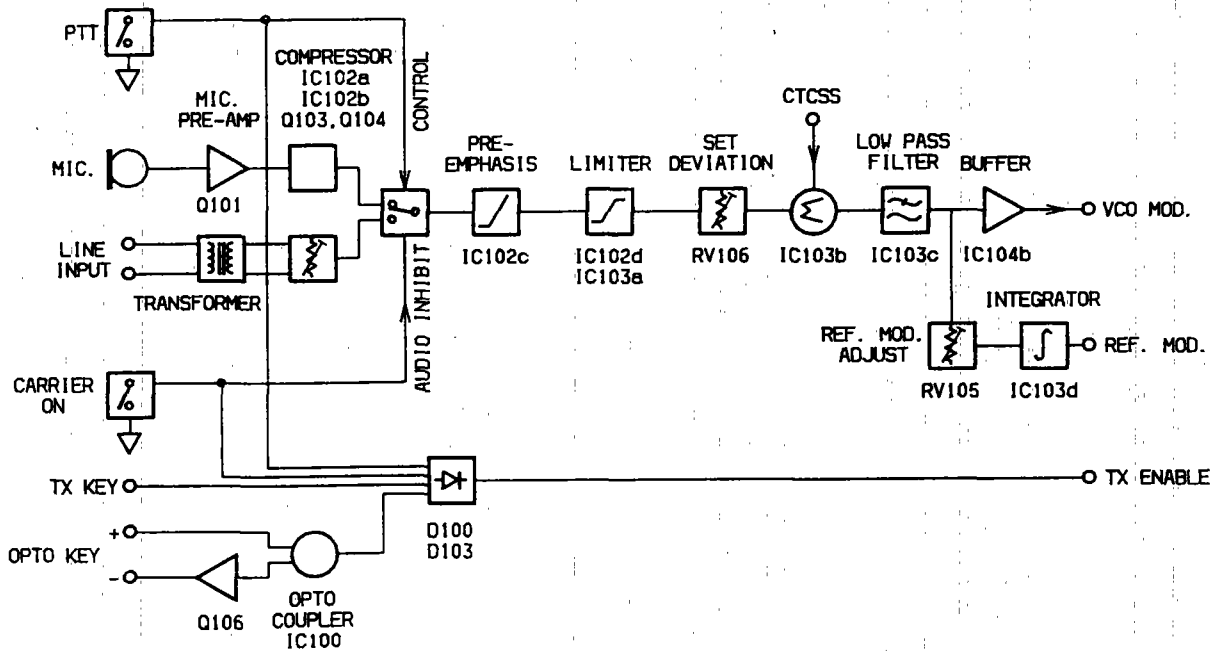


Figure 3 Audio Processor Block Diagram

2.4.1 GENERAL

The audio processor comprises several link selectable circuit blocks which may be configured in a variety of combinations to suit individual requirements. The pre-emphasis network and compressor may be linked individually or cascaded between either or both audio inputs and the limiter.

Refer to Section 4.4.1 for linking details.

2.4.2 AUDIO INPUTS

Two audio inputs are available: one from a 600 ohm balanced (or unbalanced) line, and the other from a local microphone. The microphone signal is passed first to a pre-amplifier (Q101) and ultimately to a multiplexer (IC101), but in between may pass through the compressor (depending on the linking details). The line transformer is also connected to the multiplexer and is disabled by the microphone PTT switch.

A third input for CTCSS tones is also provided.

### 2.4.3 KEYING INPUTS

There are four ways to key the exciter:

1. Pull the Tx-key line low (pin 13 on the D-range connector at the rear of the set).
2. Push the "Carrier" button on the front panel - this will inhibit all audio.
3. Use the PTT button on the local microphone, which disables audio from the line.
4. Via the opto-key inputs (pins 11 and 12 on the D-range connector) where electrical isolation is required. This features a constant current source (Q106) to ensure reliable activation of the opto-coupler (IC100) at low keying voltages.

### 2.4.4 COMPRESSOR

The input signal is fed via a current controlled attenuator (Q103, Q104) to a high gain stage (&IC102a) from which the output signal is taken. This signal is passed to a comparator (&IC102b) which toggles whenever the audio signal exceeds a DC threshold determined by RV104. Thus, the comparator produces a square wave whose mark-space ratio is determined by the amplitude of the audio signal. This square wave pumps up the reservoir capacitor (C129) which controls the attenuator (Q103, Q104), thus completing the feedback loop.

The compression level is set by adjustment of the comparator threshold (RV104).

Note: Although the high dynamic range of the compressor allows the use of very low audio signal levels, such conditions will be accompanied by a degradation of the signal to noise ratio. Very low audio input levels should therefore be avoided where possible.

### 2.4.5 OUTPUTS TO MODULATORS

The output signal from the limiter (&IC102d, IC103a) is added to any incoming CTCSS tone at a summing amplifier (IC103b). The signal is then low pass filtered (IC103c) and split to supply the two modulators.

Since the VCO modulator is a true frequency modulator, its audio is simply buffered (IC104b). The reference modulator, however, is a phase modulator and its audio must first be integrated (IC103d).

It is vital that the audio levels to the modulators are accurately set, relative to each other. Hence the inclusion of level adjustment in the reference modulator path (RV105). Once set, adjustments to absolute deviation may be made only via the deviation pot (&RV106).

## 2.5 POWER SUPPLY & REGULATOR CIRCUITS (Refer to Figure 4.)

The T881 is designed to operate from a 10.8-16V DC supply, although the standard test voltage is 13.8V. A 5.3V regulator (IC201) running directly from the 13.8V rail drives much of the synthesiser circuitry. It is also used as the reference for a DC amplifier (IC202d, Q209, Q210) which provides a medium current capability 9V supply.

## T881 Circuit Operation

A self-oscillating, switching power supply (Q208, Q212) runs from the 9V supply, producing a low current capability +20V supply. This is used to supply the synthesiser loop filter (IC6), giving a VCO control voltage range of up to 20V.

Ultimate control of the transmitter is via the Tx reg. supply, switched from 9V by Q211. This is enabled by the Tx enable signal from the audio processor, but is subject to gating by the transmit timer (IC202b). If the transmitter is keyed continuously for a time exceeding that set by RV201 and C222, the Tx timer will force the Tx reg. supply off until the transmitter is keyed again. If required, the Tx timer may be disabled by the removal of R257.

The tail timer provides a repeater tail of up to several seconds and is adjusted by RV202.

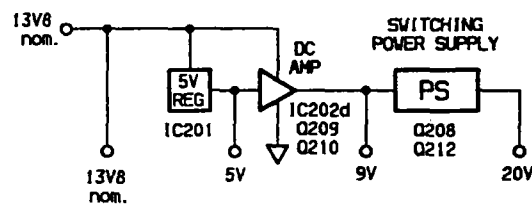
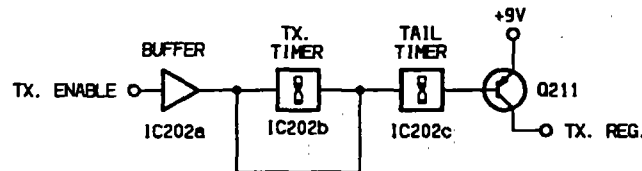


Figure 4 Power Supply & Regulator Block Diagram

### 2.6 BANDPASS PRE-FILTER & PA (Refer to Figure 1.)

A helical filter (#L300) followed by an RF switch results in a level of 17dBm for an input of +20dBm from the VCO.

The PA (#IC404) consists of a single module, followed by a directional coupler to provide power control feedback, and a low pass harmonic filter. The RF output is taken from a rear mounted "N" type connector.





## SECTION 3 INTRODUCTION TO SERVICING

### 3.1 GENERAL

#### 3.1.1 NOTES

If further information is required about the T881 or this Manual, it may be obtained from Tait Electronics Ltd or accredited agents. When requesting this information, please quote either the equipment serial number or works order number (found on a label at the back of the set). In the case of the Service Manual quote the Tait Internal Part Number (IPN) and Issue, and for Circuit Diagrams quote the 'Title' and 'Issue'.

#### CAUTION: CMOS DEVICES

This equipment contains CMOS Devices which are susceptible to damage from static charges. Care when handling these devices is essential. For correct handling procedures refer to manufacturers' data books covering CMOS devices, e.g. Philips Data Handbook Covering CMOS Devices; Motorola CMOS Data Book Section 5 (Handling Procedures), etc.

#### 3.1.2 TECHNICAL INSTRUCTIONS (TI's)

From time to time TI's are issued by Tait Electronics Engineering Division. These TI's may be used to update equipment or information, or to meet specific operational requirements.

### 3.2 MECHANICAL

#### 3.2.1 POZIDRIV RECESS HEAD SCREWS

Pozidriv recess head screws are the preferred standard on all Tait manufactured equipment. The very real advantages of this type of screw will not be realised unless the correct screwdrivers are used by servicing personnel.

### 3.3 COMPONENT REPLACEMENT

#### 3.3.1 LEADED COMPONENTS

Whenever components are removed from or fitted to the PCB, care must be taken to avoid damage to the track. The two satisfactory methods of removing components from PTH PCB's are detailed below.

Note: The first method requires the use of a desoldering station, e.g. Philips SBC 314 or Pace MBT-100E.

##### 3.3.1.1 Desoldering Iron Method

Place the tip over the lead and, as the solder starts to melt, move the tip in a circular motion.

Start the suction and continue the movement until 3 or 4 circles have been completed.

Remove the tip while continuing suction to ensure that all solder is removed from the joint, then stop the suction.

Before pulling the lead out, ensure it is not stuck to the plating.

If the lead is still not free, resolder the joint and try again.

Note: The desoldering iron does not usually have enough heat to desolder leads from the ground plane. Additional heat may be applied by holding a soldering iron on the tip of the desoldering iron (this may require some additional help).

### 3.3.1.2 Component Cutting Method

Cut the leads on the component side of the PCB.

Heat the solder joint sufficiently to allow easy removal of the lead by drawing it out from the component side: do not use undue force.

Fill the hole with solder and then clear with solderwick.

### 3.3.2 SURFACE MOUNT DEVICES

**CAUTION: Surface mount devices (SMD's) require special storage, handling, removal and replacement techniques.**

**This equipment should be serviced only by an approved Tait Dealer or Service Centre equipped with the necessary facilities.**

**Repairs attempted with incorrect equipment or by untrained personnel may result in permanent damage. If in doubt, contact Tait Electronics Ltd or your nearest Tait Branch or Subsidiary.**

### 3.3.3 POWER MODULE

When replacing the power module, every precaution must be taken to ensure that the mounting flange and leads are secured and soldered in an unstressed state.

When installing a new module, the following procedure must be followed:

Ensure that both the mounting and earth plates are clean and free from burrs, particularly around the mounting screws.

Ensure that the module flange is clean.

Apply thermal conducting compound to the module flange, using enough to fill gaps.

Secure the module to the heatsink as follows:

- tighten the screws alternately and evenly until both are finger tight;
- progressively (at least two steps) increase the torque on the screws alternately and evenly until a final torque of 0.55N.m (5in.lbs) is attained on each screw.

Solder the leads to the PCB.

Clean the area by hand - the module must not be immersed in defluxing fluids as it is not sealed.

## SECTION 4 INITIAL TUNING & ADJUSTMENT

### 4.1 INTRODUCTION

The full tuning and adjustment procedure is as follows:

- channel programming
- channel selection
- selecting required audio links
- synthesiser alignment
- PA alignment
- modulator adjustment
- limiter adjustment
- setting line level
- compressor adjustment.

These operations are described more fully in the following Sections.

### 4.2 CHANNEL PROGRAMMING

Up to 128 channel frequencies can be stored in the EPROM memory (IC1). Each channel can be addressed using the bank of 8 switches (SW1). The most significant bit of this switch is set according to the type of EPROM fitted:

ON = 27C16  
OFF = 27C64

Note: Only CMOS EPROMs may be used.

Up to 8 channels may be addressed externally when the optional extra rear D-range connector is fitted.

Programming is accomplished by using an IBM\* PC, a PROM programmer and the PGM800 software package. For a full description of the programming procedure, refer to the T800 Programming Handbook.

\*IBM is a registered trademark of International Business Machines.

### 4.3 DIP SWITCH CODES FOR CHANNEL ADDRESSES

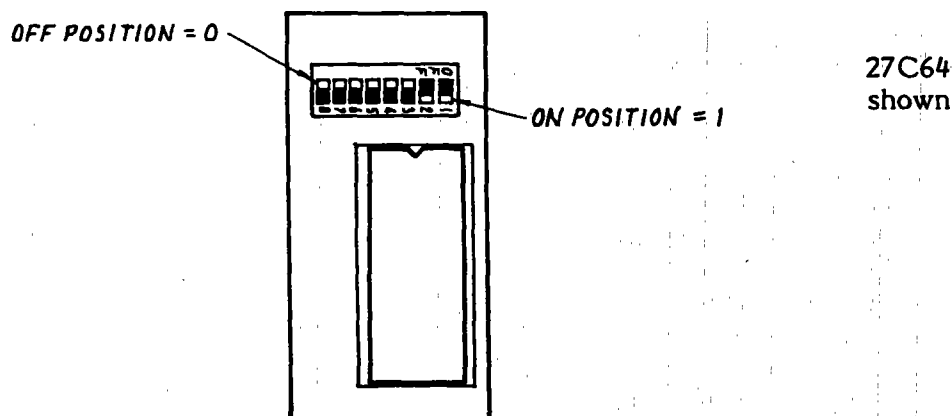


Figure 5 Channel DIP Switch Setting

The PGM800 software used to programme the EPROM will present the user with a DIP switch code for each channel address. For example, channel 124 will be assigned a switch code of X0000011, in which case the switches should be set as shown in Figure 5, i.e. 00000011.

## T881 Initial Tuning & Adjustment

**Note 1:** For remote multichannel applications using the T800-07 multichannel memory PCB, the DIP switch is not used and should have the first 3 least significant bits (1-3) in the off position. The next 4 bits (4-7) should be on, while the most significant bit (8) is selected according to the EPROM used (refer to Section 4.2). This will allow the existing CHSEL lines to be used to select up to 8 channels.

It is possible to address blocks of 8 channels throughout the 128 channel EPROM capacity by switching bits 4 to 7 on the DIP switch.

**Note 2:** Alternatively, all 128 channels may be remotely addressed on the T800-07, but bits 1-7 of the DIP switch should be in the off position. In this case it will be necessary to drill a hole to route the 7 channel select lines from the synthesiser compartment to the D-range connector.

Later models may have an access slot between these two compartments.

### 4.4 AUDIO PROCESSOR LINKS

#### 4.4.1 LINK DETAILS

The links available for various circuit block options are listed by function as follows (refer to the Test Points & Options Diagram at the rear of this Manual):

Plug PL100	1-2 not connected 3-4 microphone pre-amp. output to compressor input 5-6 microphone pre-amp. output to multiplexer input
Plug PL101	1-2 multiplexer output to pre-emphasis input 3-4 multiplexer output to compressor input 5-6 multiplexer output to limiter input
Plug PL102	1-2 not connected 3-4 not connected 5-6 compressor output to pre-emphasis input 7-8 compressor output to limiter input 9-10 compressor output to multiplexer input
Plug PL103	1-2 pre-emphasis output to multiplexer input 3-4 pre-emphasis output to limiter input 5-6 not connected

#### 4.4.2 TYPICAL OPTIONS

	PL100	PL101	PL102	PL103
microphone pre-amp. compressed and pre-emphasised; line input pre-emphasised (standard set-up)	3-4	1-2	9-10	3-4
microphone pre-amp. compressed and pre-emphasised; line input unprocessed	3-4	5-6	5-6	1-2
line and microphone compressed and pre-emphasised	5-6	3-4	5-6	3-4
microphone pre-amp. compressed; line and microphone flat response	3-4	5-6	9-10	5-6

**4.5 TEST EQUIPMENT SET-UP**

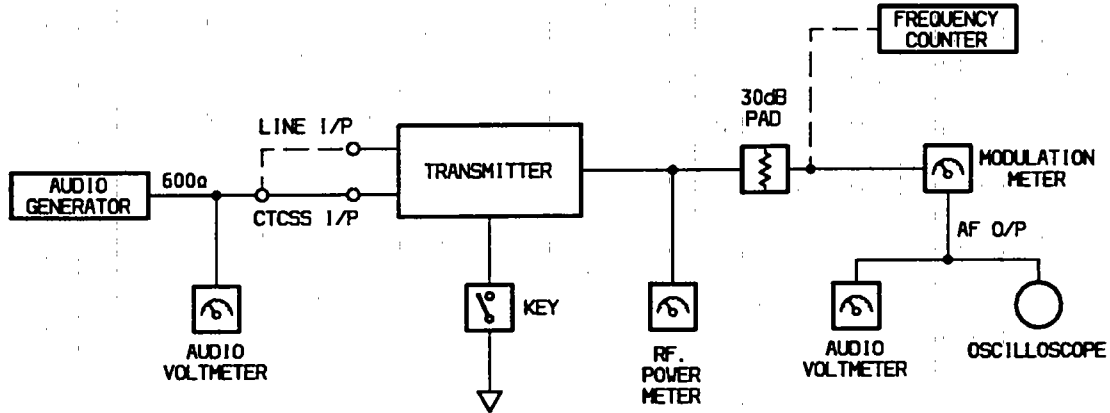


Figure 6 Test Equipment Set-Up

**4.6 SYNTHESISER ALIGNMENT**

1. Ensure that the EPROM (IC1) has been programmed with the required frequencies using PGM800 software.
2. Single Channel:  
Select a channel on the EPROM PCB DIP switch.  
Multichannel:  
Select the middle channel via the EPROM PCB DIP switch.
3. Connect a high impedance voltmeter to the long lead of L1 in the VCO (this measures the synthesiser loop voltage).
4. Earth the Tx key line.  
Single Channel:  
Tune VCO trimmer C6 for a synthesiser loop voltage of 7V.  
Multichannel:  
Tune VCO trimmer C6 for a synthesiser loop voltage of 7V on the middle channel.  
If there is no middle channel, tune C6 so that the channels are symmetrically placed around a loop voltage of 7V.  
All channels should lie within the upper and lower limits of 10V and 3V respectively.  
Do not attempt to programme channels with a greater frequency separation than the specified switching range (8MHz).
5. Measure the exciter output frequency and adjust the TCXO (=IC1) trimmer if required.

**CAUTION:** This trimmer is susceptible to physical damage. Do not exert a downward force of more than 500g (11lb) when adjusting.

#### 4.7 PA ALIGNMENT

Measure and note the voltage on L416 (this is for later adjustment of the thermal shutdown circuitry).

Connect an RF power meter to the output socket and key the transmitter.

Set power control RV356 fully clockwise.

Adjust helical #L300 for maximum output power and check that this exceeds 7W.

Adjust power control RV356 for 5W.

#### 4.8 THERMAL SHUTDOWN

Key the transmitter and set the output power to 5W as described in Section 4.7.

Short L416 to ground and key the transmitter.

Set RV355 (high temperature power set) for an output power of 1W.

Set RV351 (temperature adjust) to 0.16VL volts (measured at IC203 pin 10), where VL is the voltage measured at L416 in Section 4.7.

#### 4.9 AUDIO PROCESSOR

##### 4.9.1 TWO POINT MODULATION

The T881 utilises two point modulation to obtain a wide audio bandwidth independent of the synthesiser loop filter response. This is achieved by simultaneously frequency modulating the VCO and phase modulating the synthesiser reference frequency. The relative signal levels fed to the two modulators are quite critical and cause interaction when setting up.

Both modulating signals require readjustment when the exciter is shifted in frequency greater than the switching range (i.e.  $\Delta F > \pm 4\text{MHz}$ ).

Note: In this and following Sections deviation settings are given first for wide band sets, followed by settings in brackets for narrow band [ ] and ultra-wide band ( ) sets.

##### 4.9.2 MODULATOR ADJUSTMENT

1. Inject an audio signal of 250Hz 1.5V rms (+5dBm) into the CTCSS input (D range pin 8).  
Earth the key line.
2. Adjust the output from the audio generator to obtain  $\pm 3\text{kHz}$  [1.5kHz] (4kHz) deviation at 250Hz.
3. Change the input frequency to 100Hz and adjust RV105 (ref. mod.) to obtain  $\pm 3\text{kHz}$  [1.5kHz] (4kHz) deviation.

## T881 Initial Tuning & Adjustment

4. Change the input frequency back to 250Hz.

Repeat steps 2 and 3 above until the deviations achieved at the two input frequencies are within 0.2dB of each other. This will need to be done at least four times.

5. Sweep the audio between 50 and 300Hz for peaks.

Note: A peak between 50 and 300Hz will indicate a fault condition, i.e:

- incorrectly set-up
- or - modulation circuitry fault

The specification window is  $\pm 1$ dB relative to 150Hz from 65 to 260Hz.

### 4.9.3 LIMITER ADJUSTMENT

Set the audio processor links as appropriate for the required audio configuration (refer to Section 4.4).

Inject 1kHz at -10dBm into the line input (D range pins 1 & 4; pins 2 & 3 shorted and 6 & 7 shorted; refer to Sections 7.2 and 9.4).

Adjust RV100 (line sensitivity) fully clockwise and earth the key line.

Adjust RV106 (deviation) to set the peak deviation to  $\pm 4.7$ kHz [2.3kHz] (14kHz).

Sweep the audio frequency from 100Hz to 4kHz and ensure that the maximum deviation does not exceed 4.7kHz [2.3kHz] (14kHz). Readjust RV106 if necessary.

Note: For multichannel operation this test should be performed on the channel with the highest deviation.

### 4.9.4 LINE LEVEL WITHOUT COMPRESSOR

This Section assumes that the compressor is not used. If the compressor is required, refer to Section 4.9.5.

Adjust the line sensitivity as follows:

Set the injected signal at the line input to the required line level (typically -10 to -20dBm).

Adjust RV100 (line sensitivity) to provide  $\pm 3$ kHz [1.5kHz] (4kHz) deviation.

### 4.9.5 COMPRESSOR

The compressor may be used on the line input only, the microphone input only, or on both the line and microphone inputs. If the compressor is used, refer to one of the following Sections as appropriate.

#### 4.9.5.1 Compressor On Line Input Only

Set RV100 (line sensitivity) fully clockwise and earth the key line.

Reduce the line level to -50dBm at 1kHz and set RV104 (compression level) fully clockwise.

## T881 Initial Tuning & Adjustment

Check that 3kHz deviation [1.5kHz] (4kHz) is still available.

Slowly increase the audio input level until the demodulated waveform shows significant signs of clipping (approximately 4.5kHz [2.3kHz] deviation).

Adjust RV104 (compression level) anticlockwise until the demodulated waveform is just clipping (approximately 4kHz [2kHz] deviation).

Increase the input level to -10dBm and check that the test tone is still held just into clipping. The input line level should be typically -10 to -20dBm.

### 4.9.5.2 Compressor On Microphone Input Only

Open the key line and plug a microphone jack into the front panel socket.

Adjust RV104 (compression level) fully clockwise.

Acoustically couple the microphone to a tone box (1kHz) and close the PTT switch.

Increase the audio level until the demodulated waveform shows significant signs of clipping (approximately 4.5kHz [2.3kHz] deviation).

Adjust RV104 (compression level) anticlockwise until the demodulated waveform is just clipping (approximately 4kHz [2kHz] deviation).

Increase the audio level by 10dB and verify that the test tone is held just into clipping.

Whistle steadily into the microphone, checking that approximately 4kHz [2kHz] deviation is produced. The modulated waveform should be basically sinusoidal.

Speak into the microphone, checking that the modulation peaks reach about 5kHz [2.5kHz] deviation.

As the line is to be used without compression, set the line sensitivity (RV100) as described in Section 4.9.4.

### 4.9.5.3 Compressor On Both Line & Microphone Inputs

Set up as described in Section 4.9.5.1.



## PGM800 DIP SWITCH CODES

<u>Channel</u>	<u>DIP Code</u>	<u>Channel</u>	<u>DIP Code</u>	<u>Channel</u>	<u>DIP Code</u>
1	X1111111	51	X1001101	101	X0011011
2	X1111110	52	X1001100	102	X0011010
3	X1111101	53	X1001011	103	X0011001
4	X1111100	54	X1001010	104	X0011000
5	X1111011	55	X1001001	105	X0010111
6	X1111010	56	X1001000	106	X0010110
7	X1111001	57	X1000111	107	X0010101
8	X1111000	58	X1000110	108	X0010100
9	X1110111	59	X1000101	109	X0010011
10	X1110110	60	X1000100	110	X0010010
11	X1110101	61	X1000011	111	X0010001
12	X1110100	62	X1000010	112	X0010000
13	X1110011	63	X1000001	113	X0001111
14	X1110010	64	X1000000	114	X0001110
15	X1110001	65	X0111111	115	X0001101
16	X1110000	66	X0111110	116	X0001100
17	X1101111	67	X0111101	117	X0001011
18	X1101110	68	X0111100	118	X0001010
19	X1101101	69	X0111011	119	X0001001
20	X1101100	70	X0111010	120	X0001000
21	X1101011	71	X0111001	121	X0000111
22	X1101010	72	X0111000	122	X0000110
23	X1101001	73	X0110111	123	X0000101
24	X1101000	74	X0110110	124	X0000100
25	X1100111	75	X0110101	125	X0000011
26	X1100110	76	X0110100	126	X0000010
27	X1100101	77	X0110011	127	X0000001
28	X1100100	78	X0110010	128	X0000000
29	X1100011	79	X0110001		
30	X1100010	80	X0110000		
31	X1100001	81	X0101111		
32	X1100000	82	X0101110		
33	X1011111	83	X0101101		
34	X1011110	84	X0101100		
35	X1011101	85	X0101011		
36	X1011100	86	X0101010		
37	X1011011	87	X0101001		
38	X1011010	88	X0101000		
39	X1011001	89	X0100111		
40	X1011000	90	X0100110		
41	X1010111	91	X0100101		
42	X1010110	92	X0100100		
43	X1010101	93	X0100011		
44	X1010100	94	X0100010		
45	X1010011	95	X0100001		
46	X1010010	96	X0100000		
47	X1010001	97	X0011111		
48	X1010000	98	X0011110		
49	X1001111	99	X0011101		
50	X1001110	100	X0011100		

0 = off  
1 = on



## SECTION 5 FUNCTIONAL TESTS

The following test procedures will confirm that the T881 has been tuned and adjusted correctly and is fully operational.

Note: In this and following Sections deviation settings are given first for wide band sets, followed by settings in brackets for narrow band [ ] and ultra-wide band ( ) sets.

### 5.1 CURRENT CONSUMPTION

Connect the T881 to a 13.8V power supply.

Check that the current in the 13.8V power cable is less than 120mA.

Key the transmitter (the "Carrier On" LED should light).

Check that the current is less than 2A for 5W RF output.

### 5.2 OUTPUT POWER

Connect an RF power meter to the transmitter output socket.

Key the transmitter.

Check that the output power adjusts to 7W.

### 5.3 OUTPUT FREQUENCY

Connect the transmitter output to a frequency counter via a 30dB attenuator pad.

Measure the output frequency and, if necessary, adjust the TCXO (=IC1) to trim to the nominal frequency ( $\pm 100\text{Hz}$ ).

### 5.4 TAIL TIMER

Adjust RV202 fully anticlockwise.

Connect the key line to earth, then disconnect, and check that the transmitter remains on for at least 3 seconds.

Reset RV202 fully clockwise.

Connect the key line to earth, then disconnect, ensuring that the transmitter turns off immediately the key line is broken.

Set RV202 for the required tail time.

### 5.5 TRANSMIT TIMER

Adjust RV201 fully anticlockwise.

Earth the key line.

Check that the transmitter turns off after approximately 1 minute.

## T881 Functional Tests

Adjust RV201 fully clockwise.

Earth the key line.

Check that the transmitter turns off after approximately 3 minutes.

Set RV201 for the required transmit time.

### 5.6 FREQUENCY RESPONSE

If the transmitter has been correctly adjusted, the pre-emphasis and limiting responses should closely match those shown in Figures 7 and 8 respectively.

Note: The limits shown on these graphs should not be exceeded.

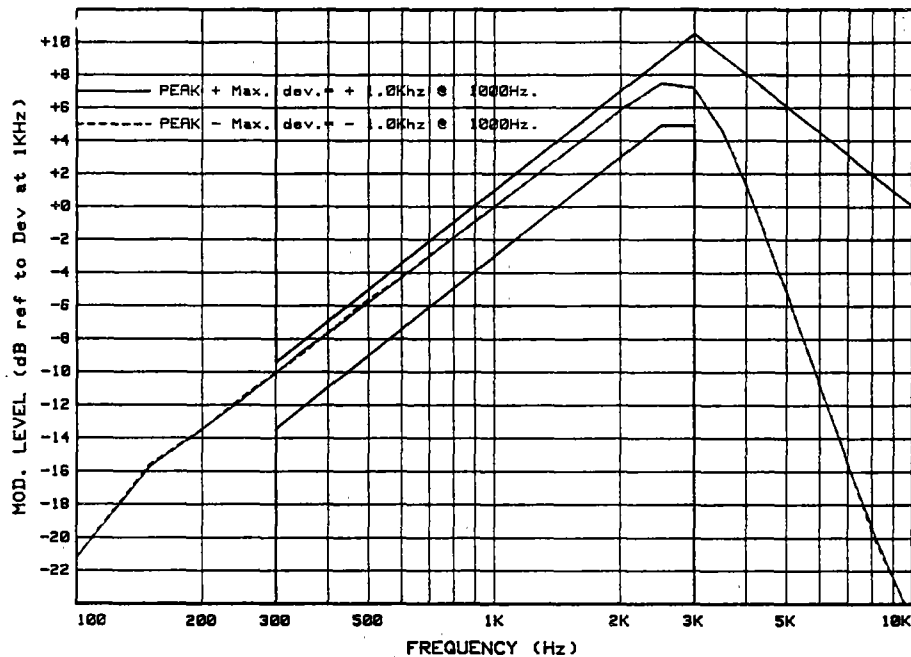


Figure 7 Pre-emphasis Response

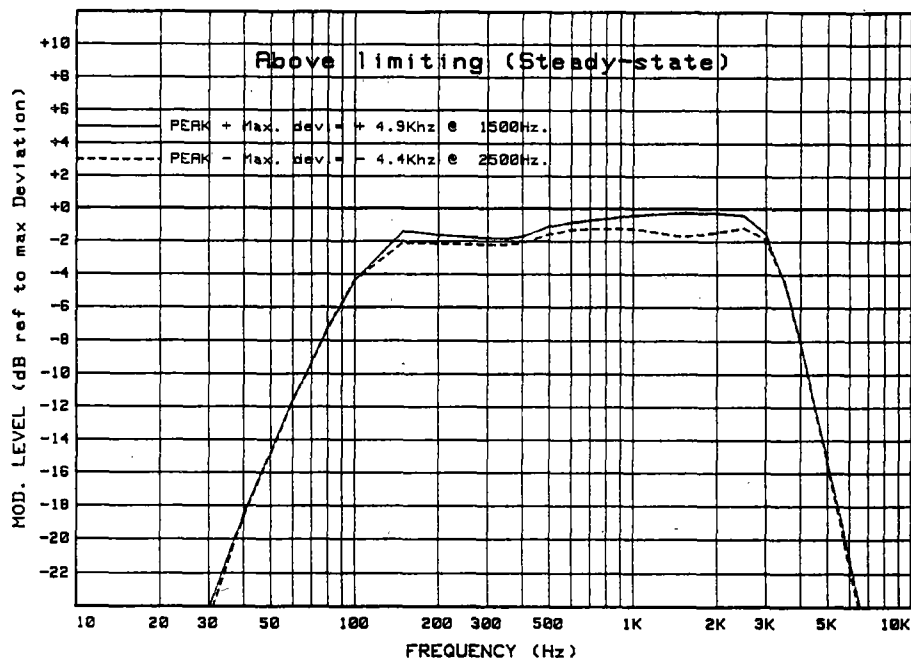


Figure 8 Limiting Response





## SECTION 6 FAULT FINDING

### 6.1 VISUAL CHECKS

Remove the covers from the T881 and inspect the PCB for damaged or broken components, paying particular attention to the surface mounted devices (SMD's).

Check for defective solder joints. If repair or replacement is considered necessary, refer to Section 3.3.

### 6.2 COMPONENT CHECKS

If a transistor is suspected of faulty operation, an indication of its performance can be assessed by measuring the forward and reverse resistance of the junctions. First make sure that the transistor is not shunted by some circuit resistance (unless the device is completely unsoldered). A 20k ohm/V or better multimeter should be used for taking the measurements, using only the medium or low resistance ranges.

The collector current drawn by multi-junction transistors is a further guide to their performance.

If an IC is suspect, the most reliable check is to measure the DC operating voltages. Due to the catastrophic nature of most IC failures, the pin voltages will usually be markedly different from the recommended values in the presence of a fault. The recommended values can be obtained from either the Circuit Diagram or the component data catalogue.

### 6.3 USING CAD CIRCUIT DIAGRAMS

Reading a CAD Circuit Diagram is similar to reading a road map, in that both have an alphanumeric border. The Circuit Diagrams in this Manual use letters to represent the horizontal axis, and numbers for the vertical axis. These Circuit Diagram "grid references" are useful in following a circuit that is spread over two or more sheets.

When a line representing part of the circuitry is discontinued, a reference will be given at the end of the line to indicate where the rest of the circuitry is located. The first digit refers to the sheet number (printed on the bottom right hand corner of the CAD diagram) and the last two characters refer to the location on that sheet of the continuation of the circuit (e.g. 1-D4).

If more than one line is represented (indicated by a double thickness line), a dot with a reference label will follow the route each individual line represents.

### 6.4 FINDING COMPONENTS ON THE MAIN PCB

To assist in locating components and labelled pads on the PCB layouts and Circuit Diagrams, a component grid reference index has been provided. This index lists the components and pads in alphabetical order, along with the appropriate alphanumeric grid references.

The first digit in the Circuit Diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

## T881 Fault Finding

The grid reference index is located between Diagrams 4 & 5.

The locations of commonly used test pads and options connectors are also shown on the Test Points & Options Diagram (Diagram 7).

### 6.5 DC CHECKS

#### 6.5.1 POWER RAILS

Refer to Diagram 7 for test point locations, and to the regulator fault finding chart (Section 6.7) for fault diagnosis.

Check the 9V (TP2) and 13.8V (TP1) power supply test points in the directional coupler compartment with a DMM.

Check the 5V (TP4) and 20V (TP3) rails at their respective test points in the synthesiser compartment.

Check that Tx-reg (TP5) comes up to 8.8V when the exciter is keyed.

Check for short circuits.

#### 6.5.2 VCO LOCKING

Key the exciter.

Using a DMM, monitor the VCO control voltage on the long lead of L1 (located near the electrolytic capacitor on the VCO PCB).

If the synthesiser is locked and the VCO aligned, the voltage at this point should be between 3 and 10V.

If the VCO is not locked, refer to the synthesiser fault finding chart (Section 6.8).

Note: When changing frequencies, only the three least significant bits of the EPROM address (e.g. DIP switch) will initiate a synthesiser programme cycle.

Changing a high order bit will therefore not result in a change of frequency unless a low order bit is also changed.

### 6.6 RF CHECKS

In circuit RF levels may be measured with an RF probe on which the earth lead has been shortened to a minimum (i.e. 13mm). Refer to the Circuit Diagrams for typical levels.

#### 6.6.1 DRIVE POWER

Ensure that the VCO locks (refer to Section 6.5.2).

Connect the drive output to a power meter and-key the transmitter.

Check that the output power is between 65 and 100mW.

Note: The lock detector (synthesiser, IC5 pin 3) will not allow the RF signal to reach the PA if the synthesiser is out of lock.



6.6.2 PA OUTPUT POWER

Reconnect the drive output to the PA input.

Connect the PA to a power meter and key the transmitter.

Check that the output power is >7W with power control RV356 adjusted fully clockwise.

6.6.3 AUDIO AND MODULATION

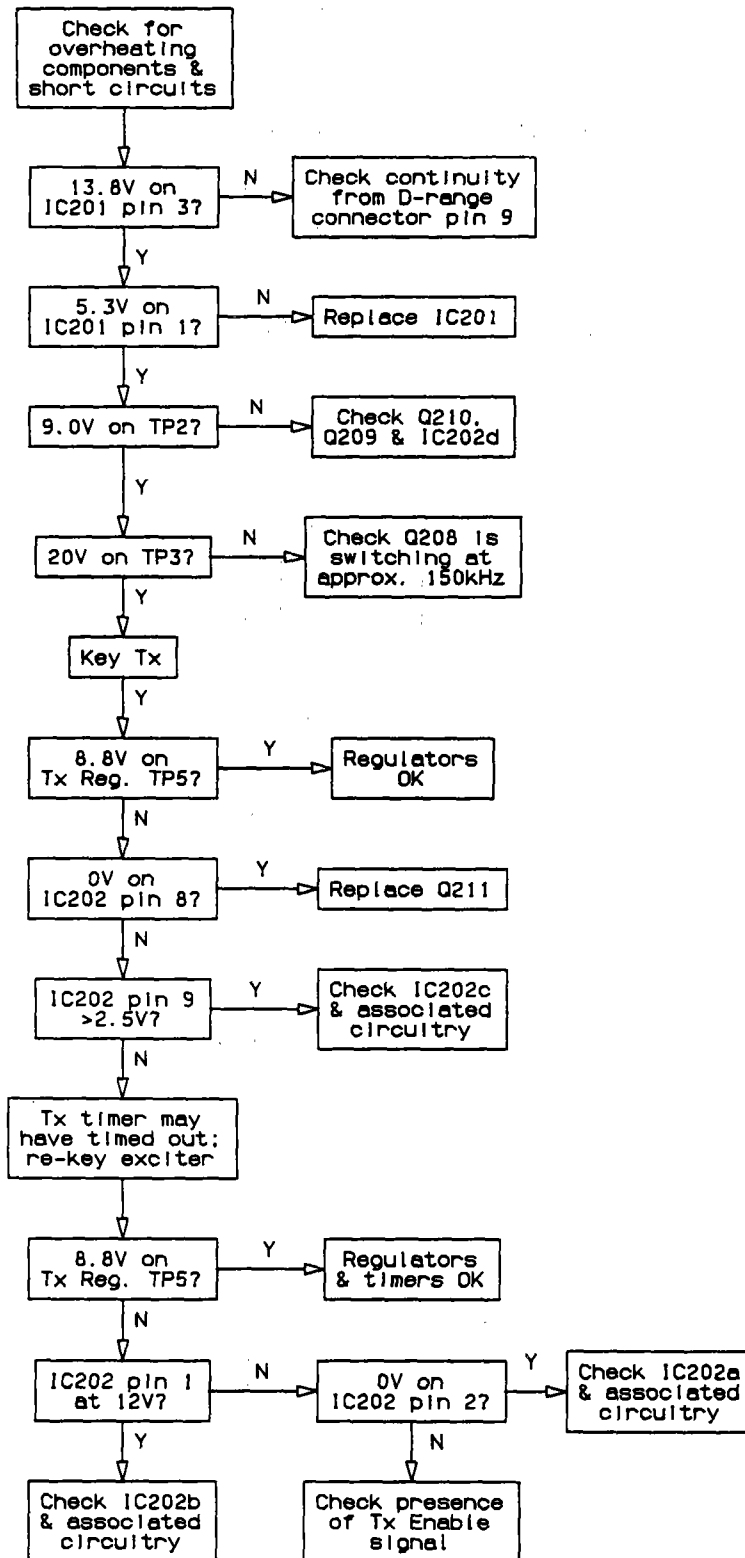
Refer to the audio processor fault finding chart (Section 6.10).

Set up the audio processor as described in Section 4.9.

Check that the demodulated RF output has the frequency response referred to in Section 5.6 with at least 5kHz [2.5kHz] (14kHz) deviation available at 1kHz modulating frequency.

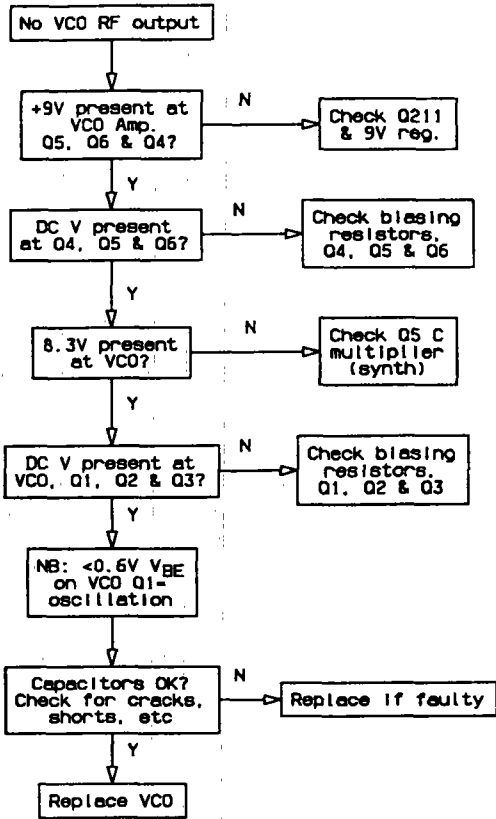
If the above result is not achieved, either the two modulators are incorrectly adjusted or a fault condition exists.

**6.7 REGULATOR FAULT FINDING CHART**

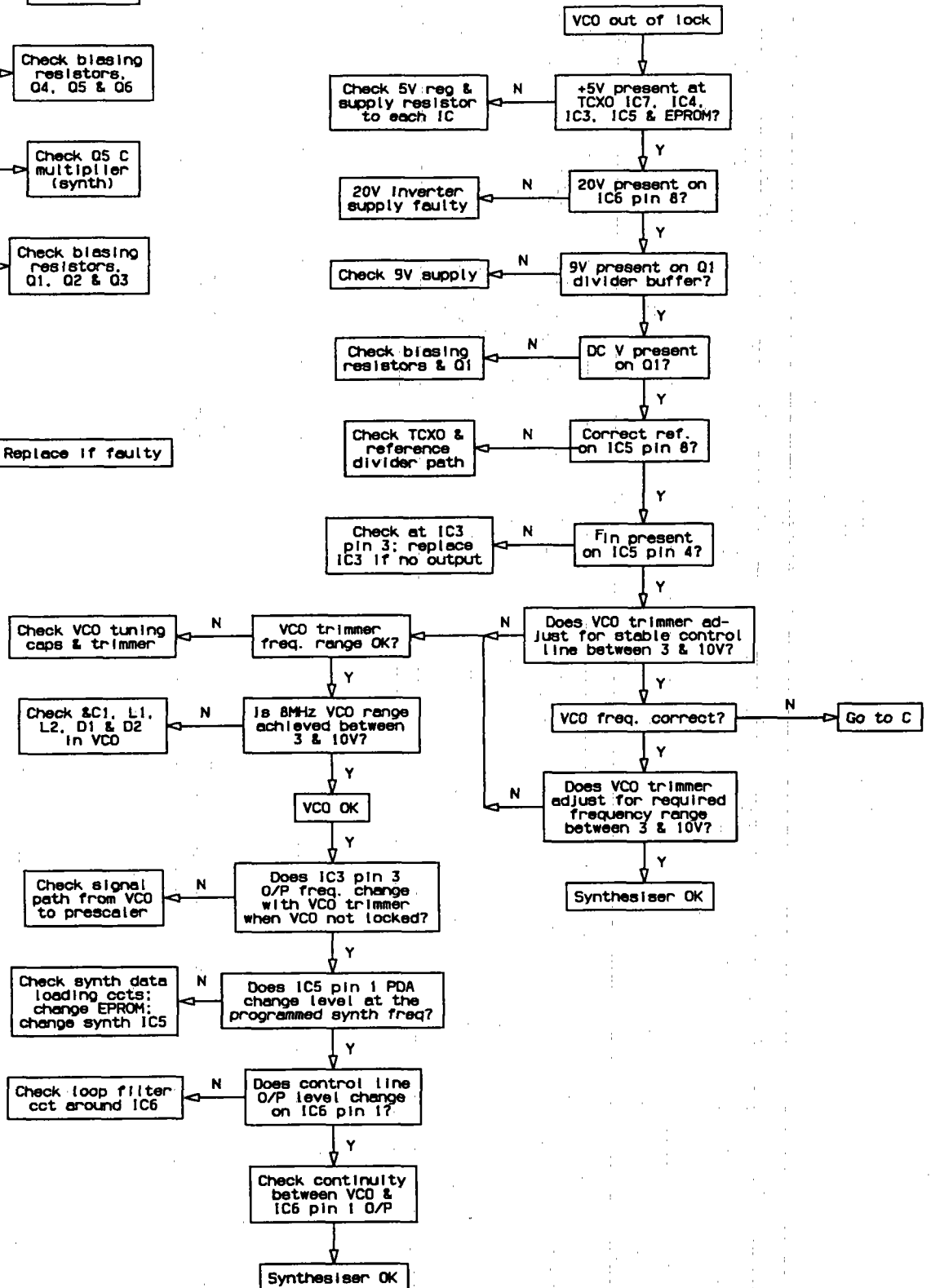


6.8 SYNTHESISER FAULT FINDING CHART

A Refer to VCO Circuit Diagram



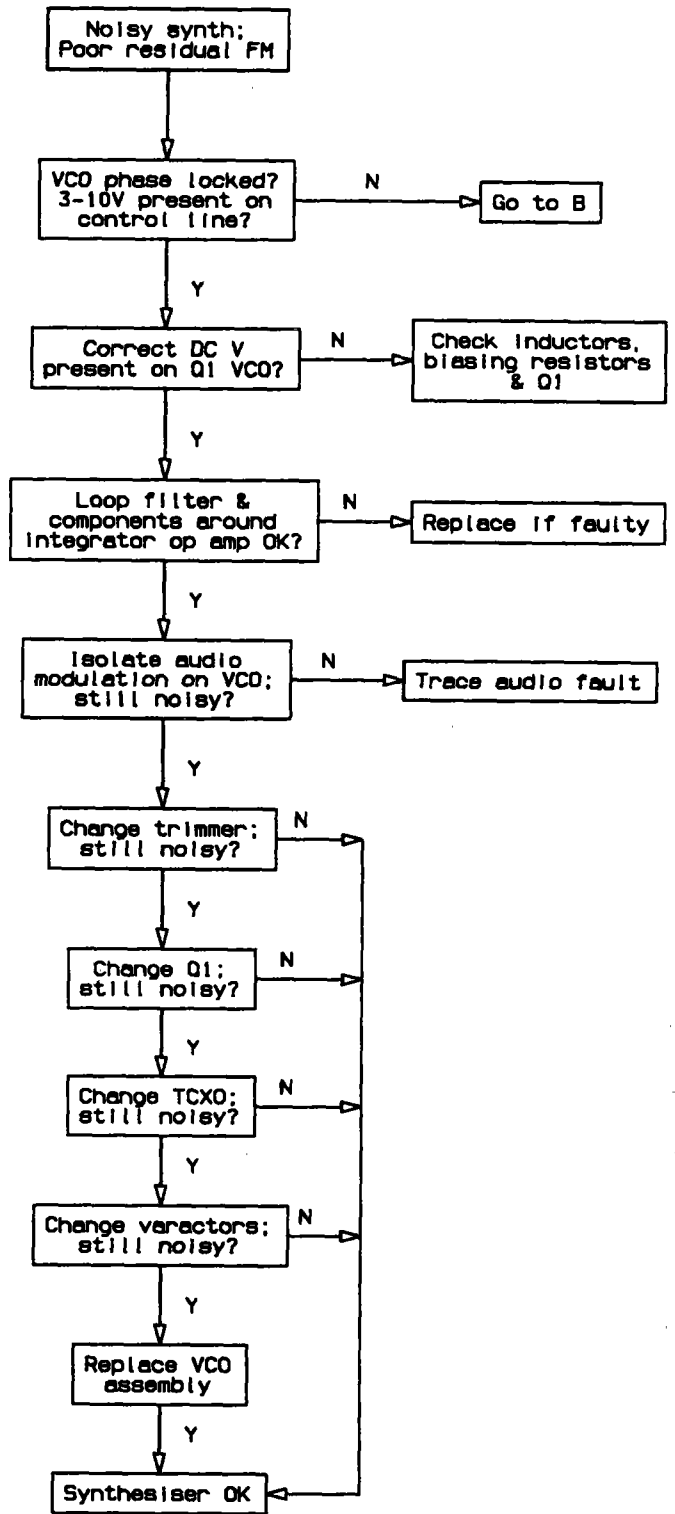
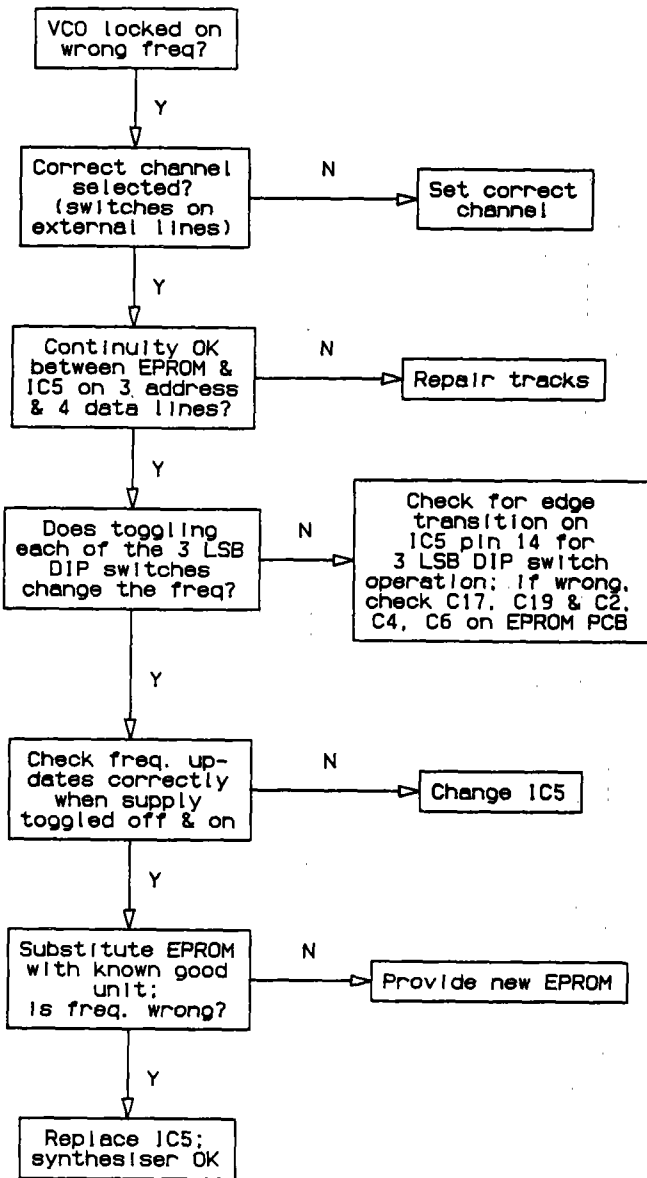
B Refer to synthesiser Circuit Diagram



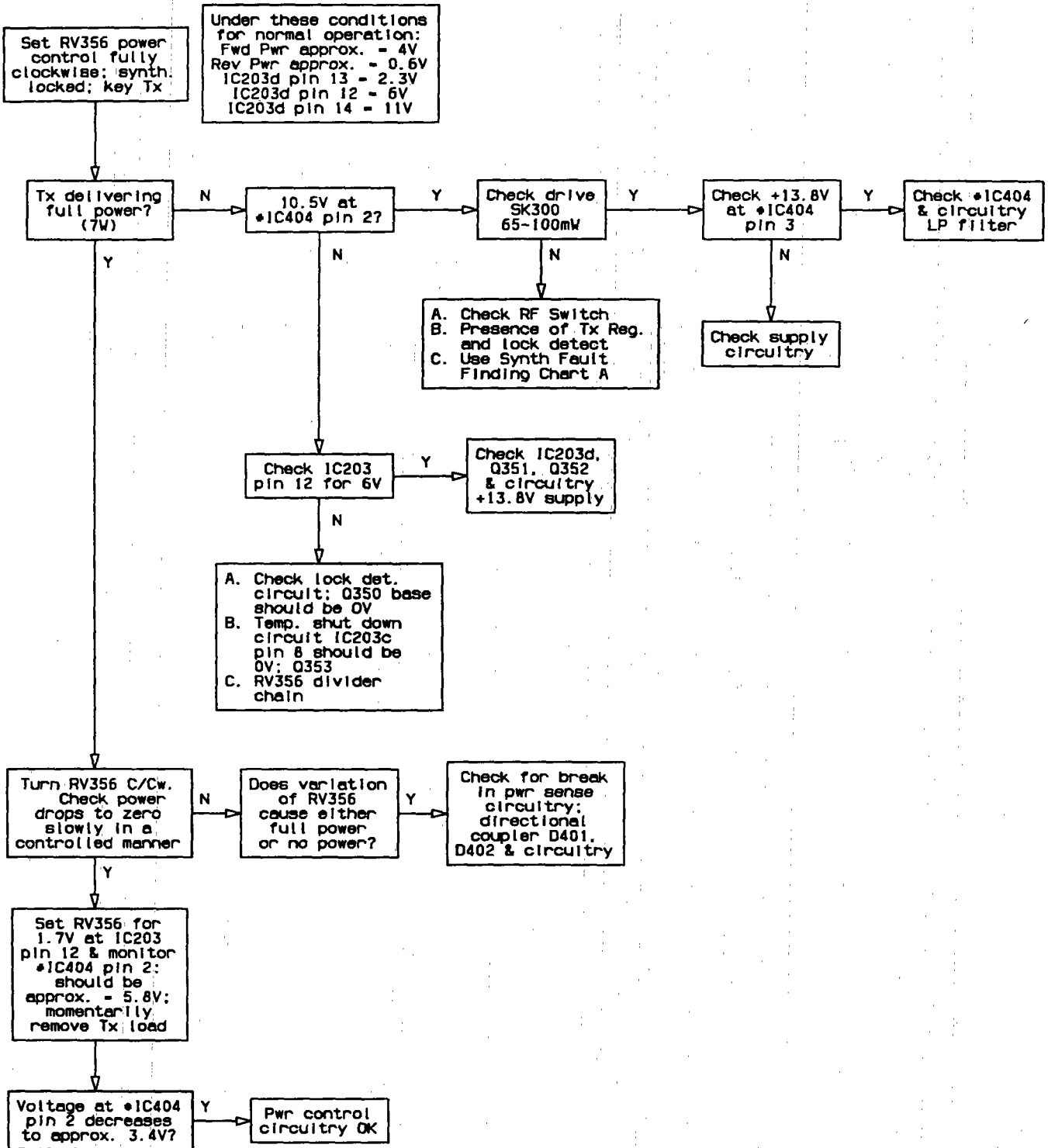
Continued on next page.

C Refer to synthesiser Circuit Diagram

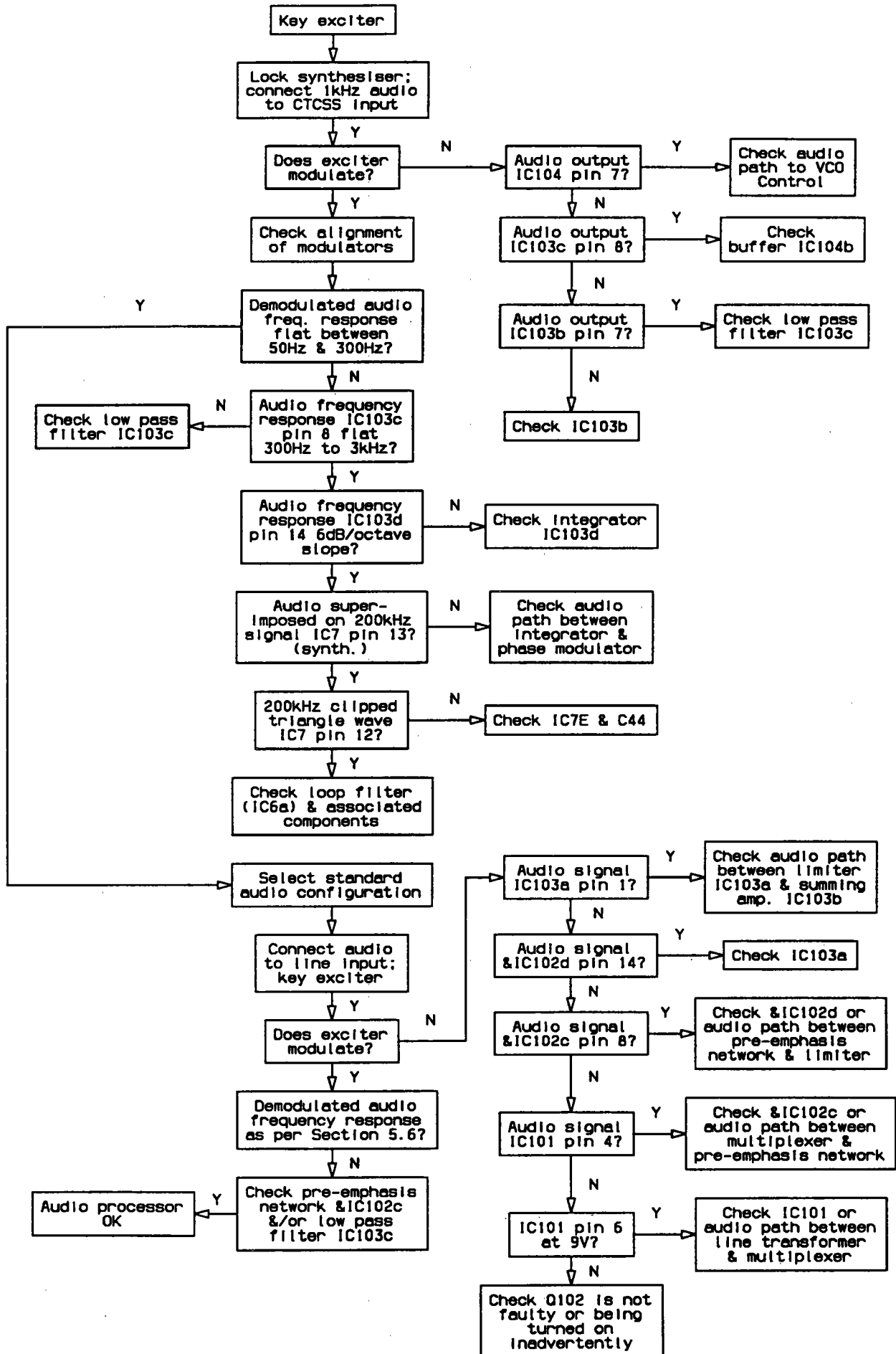
D Refer to synthesiser & VCO Circuit Diagrams



6.9 PA & POWER CONTROL FAULT FINDING CHART



6.10 AUDIO PROCESSOR FAULT FINDING CHART



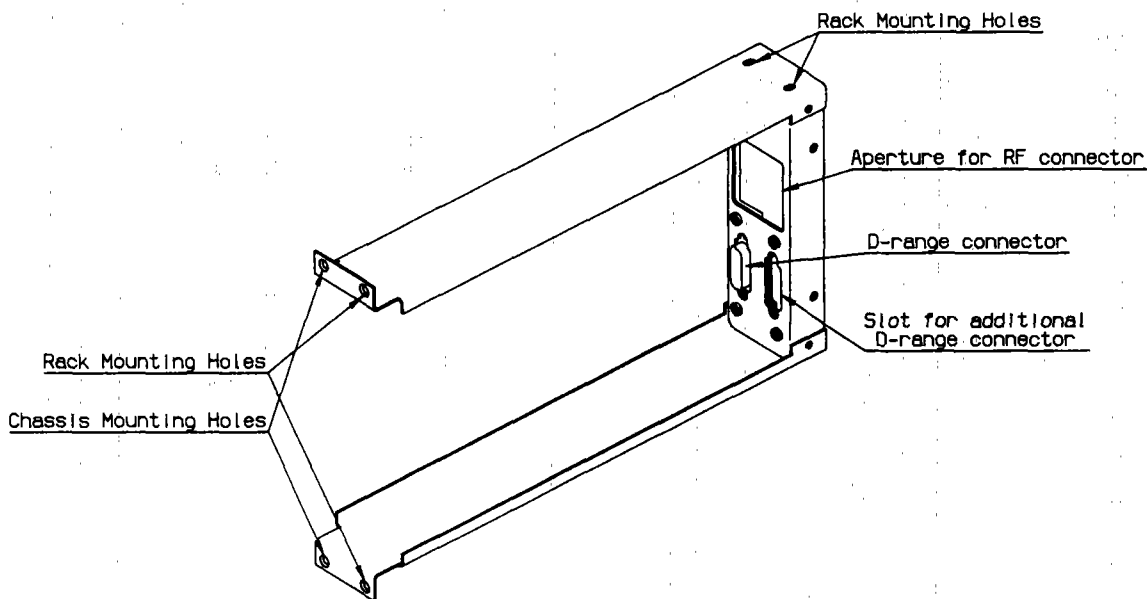
**SECTION 7 INSTALLATION**

**7.1 RACK MOUNTING**

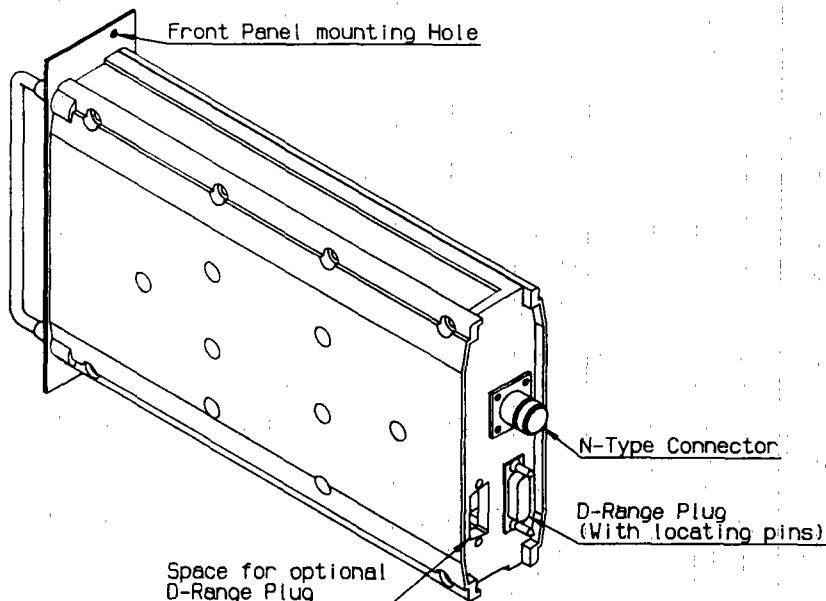
The T881 base station transmitter is designed for use in a standard 483mm rack frame using a Tait T800 Series guide which locates and mates the rear D-range connectors (refer to Figures 9 & 10).

A T800 Series guide is supplied with each T881. The guide is located in the rack frame with four screws, two at the rear and two at the front. The T881 is secured into the guide with two front panel mounting screws.

The RF output is via the rear N-type connector, while all DC, audio and control connections are via the D-range connector. An additional rear D-range connector (T800-03) is fitted when remote multichannel operation or additional control of low frequency lines is required.



**Figure 9 T800 Series Guide**



**Figure 10 T881 Chassis Connectors**

## 7.2 RACK WIRING

Wire the D-range connector according to the pin outs shown in Figure 11. Ensure that the cables are not subjected to any stresses due to tight bends or incorrect lengths.

The RF coaxial cable to the N-type connector should be free from acute bends or twists. If access to the rear of the rack frame is restricted, the cable should be long enough to permit full withdrawal of the chassis from the guide.

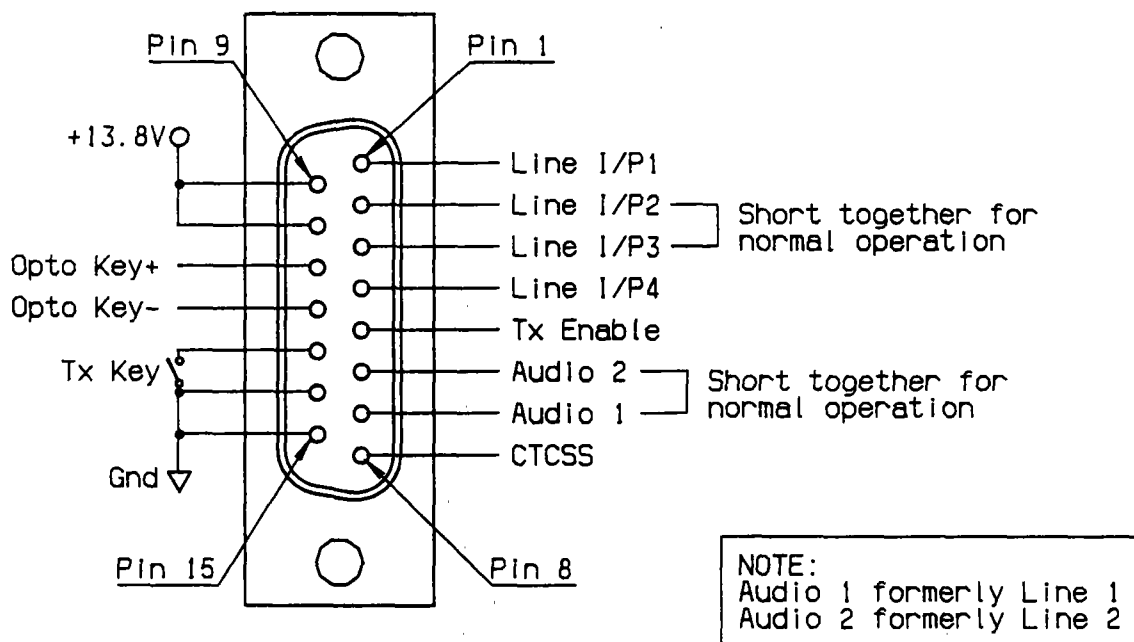


Figure 11 D-Range Wiring - Rear View

## 7.3 POWER SUPPLY

If a non-standard Tait power supply is used, ensure that it is capable of providing enough current to drive the T800 system and is also free from excessive ripple or noise.

The system should be protected by the use of appropriately rated fuses in the power supply. Where several transmitters are powered by the same supply, each unit should be individually protected with a fuse.

**Note:** It is particularly important when the prime power source is a battery that fuses be fitted in all supply lines.

## 7.4 REVERSE POLARITY PROTECTION

A shunt diode is fitted to each T881 for protection against connection to a power supply of incorrect polarity.

**Note:** A fuse must be fitted in the power supply line for the diode to provide effective protection.



## SECTION 8 SYSTEM CONFIGURATIONS

### 8.1 GENERAL

Tait Fixed Equipment transmitters and receivers may be assembled into a wide variety of fixed equipment systems, from a simple land mobile base to a complex linking system operating in hot standby mode.

### 8.2 AUDIO PROCESSOR

The T881 comes with a number of link selectable features which give added system flexibility.

Refer to Section 4.4 for further details.

### 8.3 LINE TRANSFORMER INPUTS AND OUTPUTS

The line transformer (T100) is designed to provide a balanced interface to 600 ohm lines. For normal operation the two centre connections (LINE I/P 2, LINE I/P 3) are shorted together, and the 600 ohm line is connected between LINE I/P 1 and LINE I/P 4.

The secondary winding of the transformer is connected via a 1k resistor to pin 7 of the D-range connector and may be used to monitor audio on the line. It is normally shorted at the connector socket to pin 6 to route the audio signal back into the processor. If required, the audio path may be broken at this point for use with signalling options, e.g. CTCSS (refer to Section 9).

### 8.4 OPTO KEY

The keying circuitry may be completely isolated from the rest of the system by means of the optocoupler (IC100) connected between pins 11 and 12 of the D-range connector. A constant current source (Q106) allows keying voltages between 6 and 50V.

### 8.5 RELAY DRIVER

A dedicated transistor (Q105) is provided for the purpose of switching an external (e.g. coaxial) relay. The output is open collector and is activated by the Tx-reg rail.

This output is not normally connected to the standard D-range connector, and use of the relay driver will necessitate manual wiring to an additional D-range connector, as supplied with the T800-03 kit.

### 8.6 LOCAL MICROPHONE

Use of the local microphone (via the front panel stereo socket) will disable the audio input from the line. The audio switching occurs when the PTT switch is closed.

### 8.7 KEYING WITH OPTION PCB'S

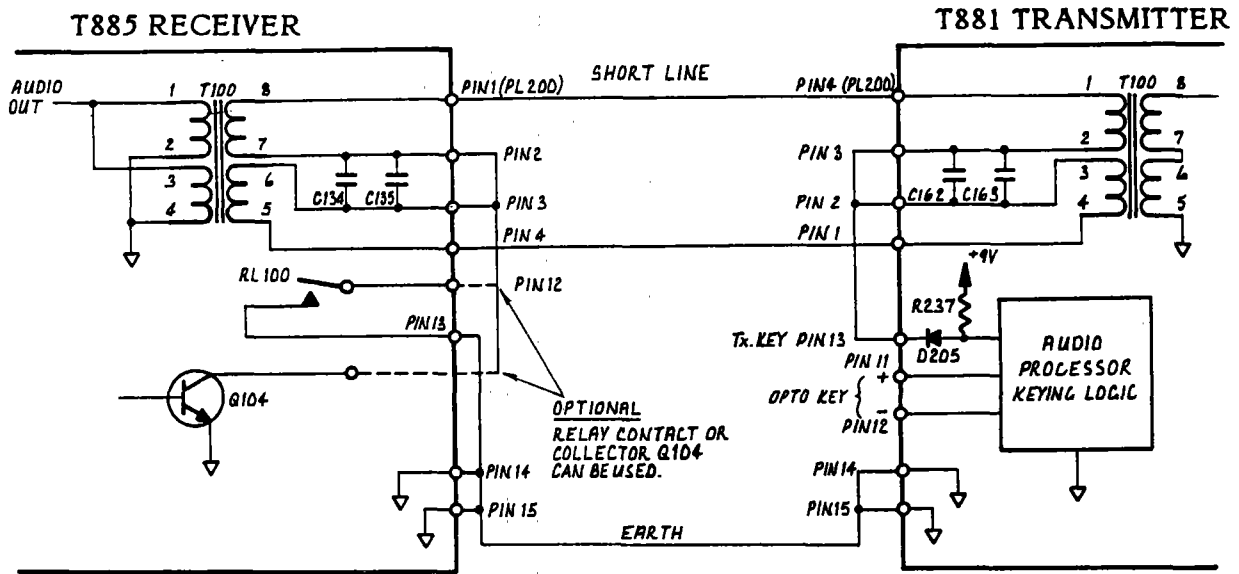
If an option PCB (e.g. CTCSS) is fitted to the exciter, keying may then be accomplished via the TX-EN-OPT pad in the audio processor. The line must be pulled low to key.

**8.8 DC LINE KEYING**

Where the transmitter and receiver are separated by only a short distance and DC isolation is not required, DC loop keying may be employed as shown in Figure 12.

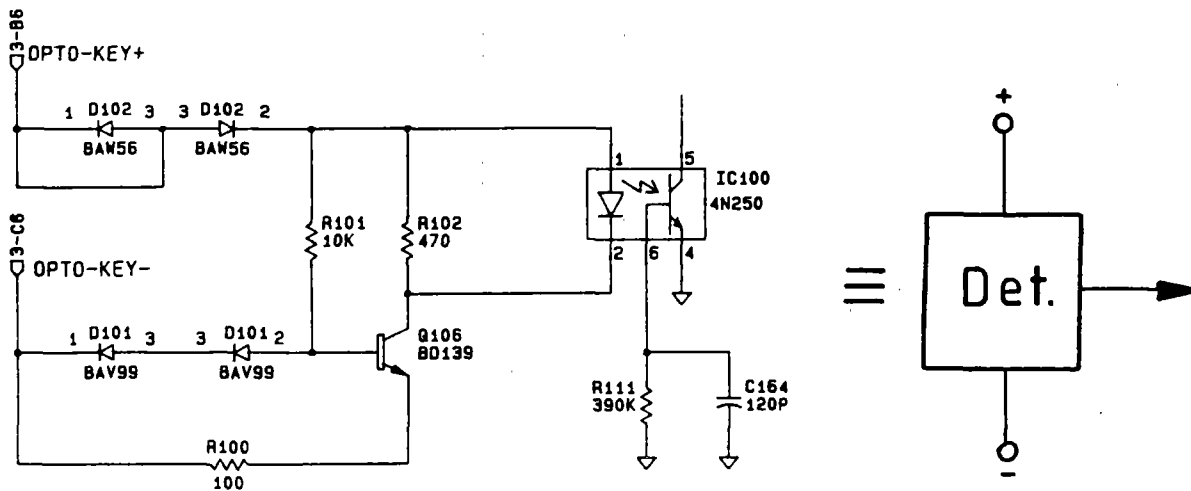
A small DC current (usually less than 10mA) can be fed via the balanced 2-wire line to provide remote control of various functions.

In a duplex system the receiver mute is used to key a transmitter, provided there is a common earth between the two units (refer to Figure 12).



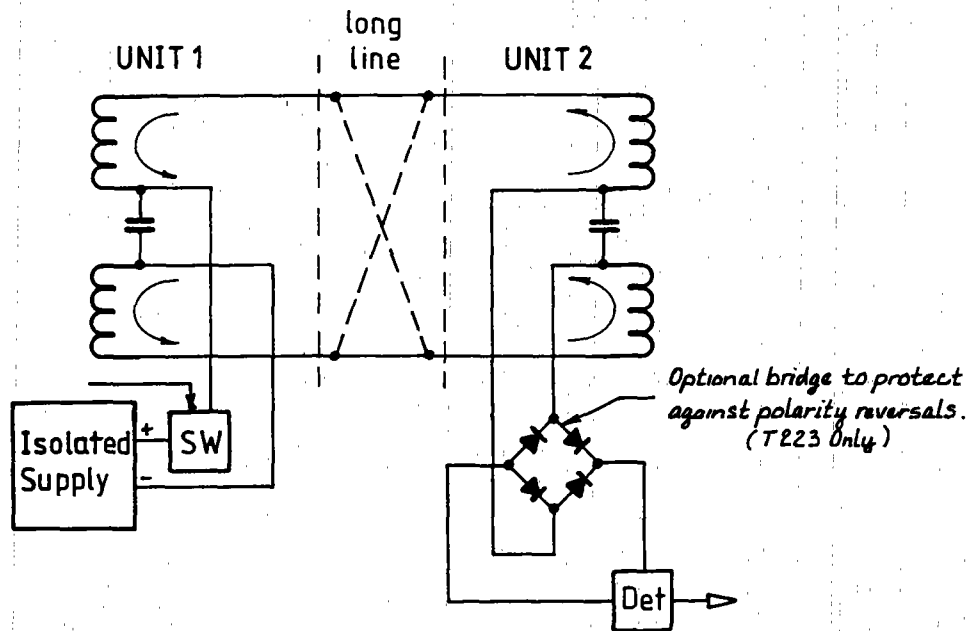
**Figure 12 DC Loop Keying With Common Earth**

Where the receiver and transmitter (or remote control) are distant, DC loop keying is provided by an isolated supply, driver and detector because an earth cannot be relied on (refer to Figures 13 & 14).



**Figure 13 Isolated Constant Current Loop Current Detector (Opto-key input on T881)**

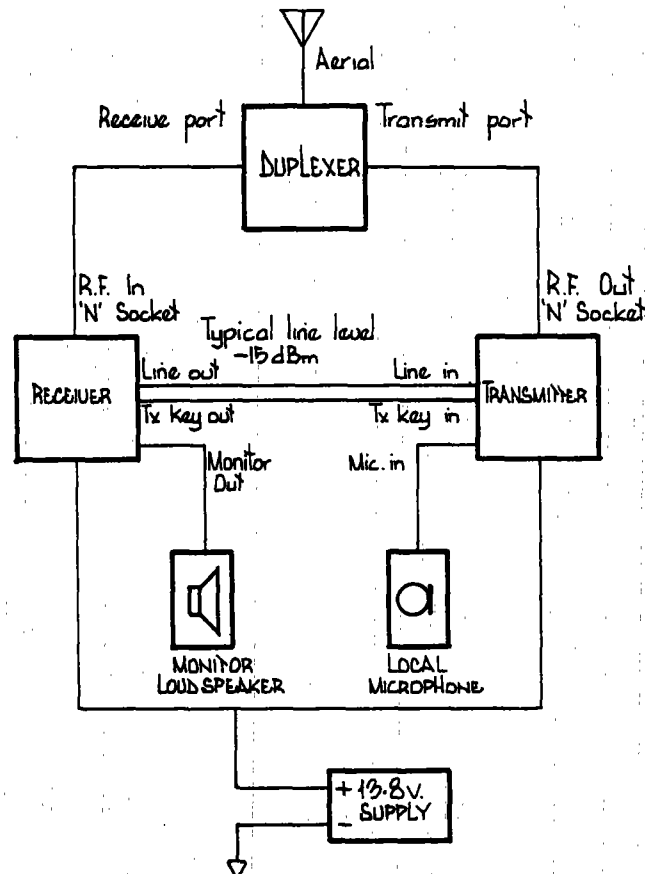
## T881 System Configurations



**Figure 14** Typical System

### 8.9 TALK THROUGH REPEATER (Refer to Figure 15)

In this configuration the receiver directly keys the transmitter when the signal is received. The demodulated audio is fed via 600 ohm lines to the transmitter to modulate the carrier. The receiver and transmitter operate simultaneously and must therefore be on different frequencies. The minimum frequency separation depends on the duplexer used.



**Figure 15** Talk Through Repeater

## 8.10 LINE CONTROLLED BASE STATION (WITHOUT TALK THROUGH)

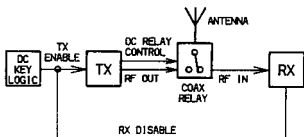


Figure 16 Basic Configuration

This installation contains a transmitter and receiver which may or may not be on the same frequency, thus simultaneous transmission and reception is not possible. When the transmitter is keyed, the coaxial relay is also energised. When the relay is in its rest position, signals from the aerial are passed to the receiver and the demodulated output is fed via 600 ohm lines to the RCU.

The receiver is disabled when the transmitter is energised to prevent the receiver mute opening from RF due to lack of isolation in the relay, direct radiation or the noise skirt of the dual frequency link.

Since the base station may be controlled via a 2-wire line and a 4-wire to 2-wire hybrid, there is a possibility of system oscillation if the receiver is not disabled during transmit. This occurs when the transmit energy enters the receiver and produces an audio response which can pass from the receive to the transmit audio part of the hybrid (impedance imbalance, etc).

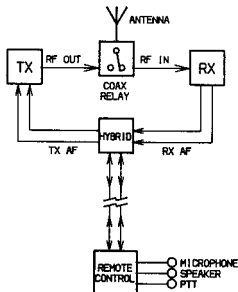


Figure 17 Remote Line Controlled Base Station

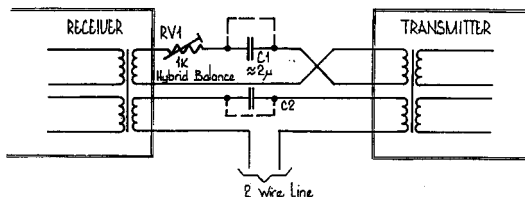


Figure 18 4-Wire to 2-Wire Converter

### 8.10.1 TRANSMITTER TAIL TIMER

If the transmitter has a tail timer fitted:

1. The receiver disable timer must be set so that  $t_{Rx/Dis} > t_{Tx/Tail}$ .

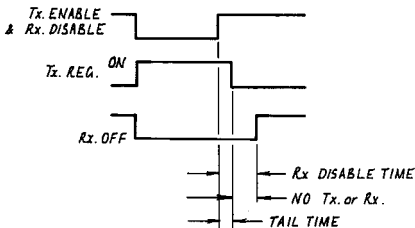


Figure 19 Receiver Disable Time vs Tail Time

2. If the system configuration also uses an aerial changeover relay as well as the tail timer, the changeover relay must be driven from the relay driver (Q105) in the audio processor rather than by Tx key or Tx enable.
3. Depending on tail time requirements, it is possible for the transmitter tail time to exceed the receiver disable time capability. In this situation the receiver disable line should also be driven from relay driver Q105.

8.11 TRANSMIT KEY TIME

1. Standard

Ensure that zero ohm resistor R78 is in circuit, and that solder links A & B in the synthesiser are not made.

The key time will be approximately 45ms.

2. Short

Remove R78 and make solder links A & B.

The key time should now be <2ms.

In this configuration the standby spurious emission should be <-65dBm.

## SECTION 9 STANDARD OPTIONS

### 9.1 GENERAL

The T881 is available with a range of standard options to suit many requirements. For further details on these or more specialised options, please contact your nearest Tait dealer or agent.

### 9.2 TCXO

A high stability TCXO is available to suit specific requirements. The stability of this and the standard TCXO is set out below:

+1ppm	0°C to +60°C
+1.5ppm	-30°C to +60°C (standard)

They are pin compatible devices and may be fitted in location =IC1 in the synthesiser compartment.

Refer to Section 1.3 for details of specific versions.

### 9.3 MULTICHANNEL

#### 9.3.1 REMOTE

For multichannel operation it is necessary to fit an additional D-range connector (T800-03) to the rear of the chassis and replace the standard plug-in EPROM PCB with the T800-07 multichannel memory PCB. Three channel select lines (CH SEL 0, 1 & 2) are brought into the D-range connector compartment and should be connected to pins 11, 12 and 13 of the extra D-range, providing 8 channel control. A control earth should be provided from pin 14 or 15 to the main PCB.

For remote operation it is necessary to disable these three lines internally by switching the 3 least significant address DIP switches (SW1:1-3) to the off position. Channel selection is achieved by pulling one or more of the channel select lines low.

If more channels are required (up to 128 are available), a hole must be drilled in the end wall of the synthesiser compartment to route the extra channel select wires. Later models may have an access slot between the synthesiser and D-range compartments.

#### 9.3.2 INTERNAL SELECTION

The EPROM can be loaded with up to 128 channel frequencies, each of which is addressable via the 8 bit DIP switch (SW1). Thus, one of 128 channel operation is possible.

### 9.4 CTCSS

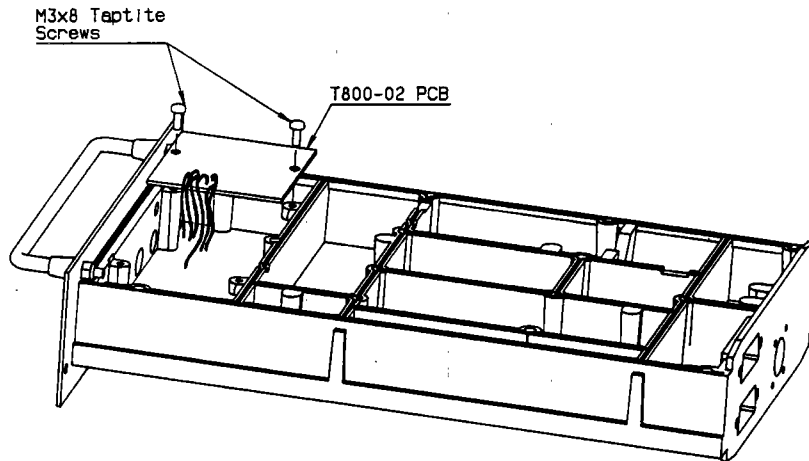
#### 9.4.1 SINGLE CHANNEL - SINGLE TONE

For single tone use, the T800-02 unit should be used. This is a retrofit PCB which is mounted on the specially provided lugs in the audio processor compartment of the transmitter (refer to Figure 20).

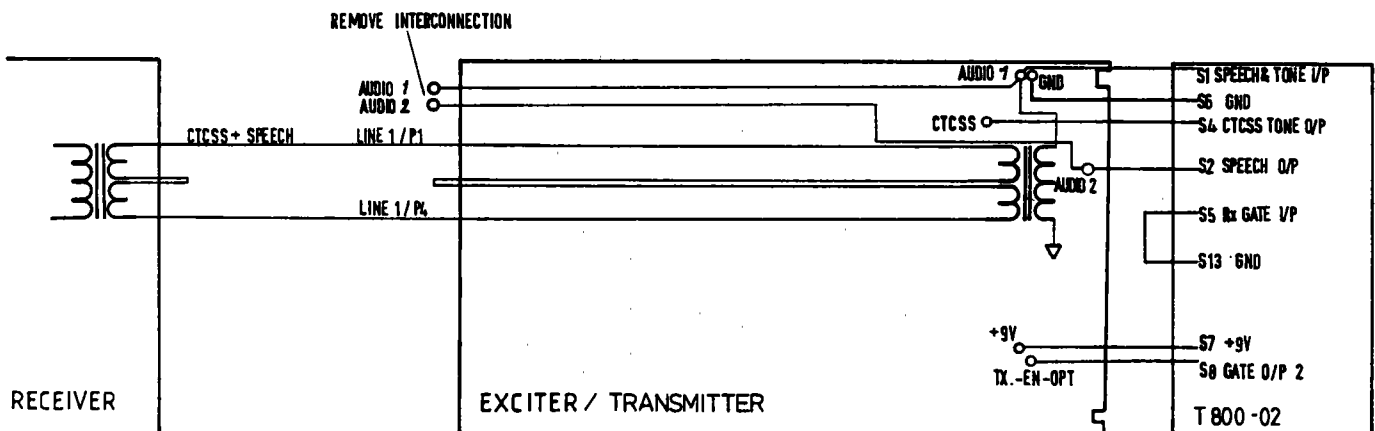
Access to all necessary audio and power supply points is provided by accessory pads in the audio processor (refer to Figures 21 & 22).

## T881 Standard Options

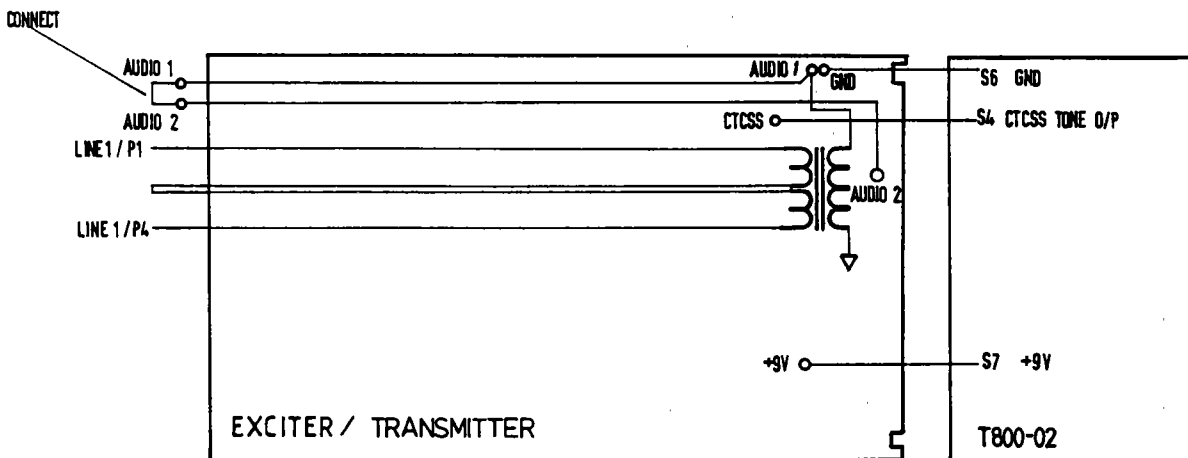
If required, the CTCSS processing can be carried out in the receiver (refer to M885-00). This can have the advantage of pre-filtering the CTCSS tone from the speech before the signal is passed to the 600 ohm line (if desired).



**Figure 20 T800-02 Mounting Details**



**Figure 21 Talk Through Repeater Wiring**



**Figure 22 Base Station Transmitter Wiring  
(Without talk through)**



9.4.2 MULTICHANNEL - SEPARATE TONES

In applications where each RF channel has a separate CTCSS tone, it is necessary to take the CTCSS tone select lines to the additional rear D-range connector. From the D-range, up to eight RF channels and any of the CTCSS tones can be selected by grounding the necessary pins.

9.4.3 SINGLE CHANNEL - MULTI-TONE

Where more than one tone is used on the same channel, some form of external encoding/decoding such as the T310-05 or T310-10 must be used. The system should be connected as shown in Figure 23.

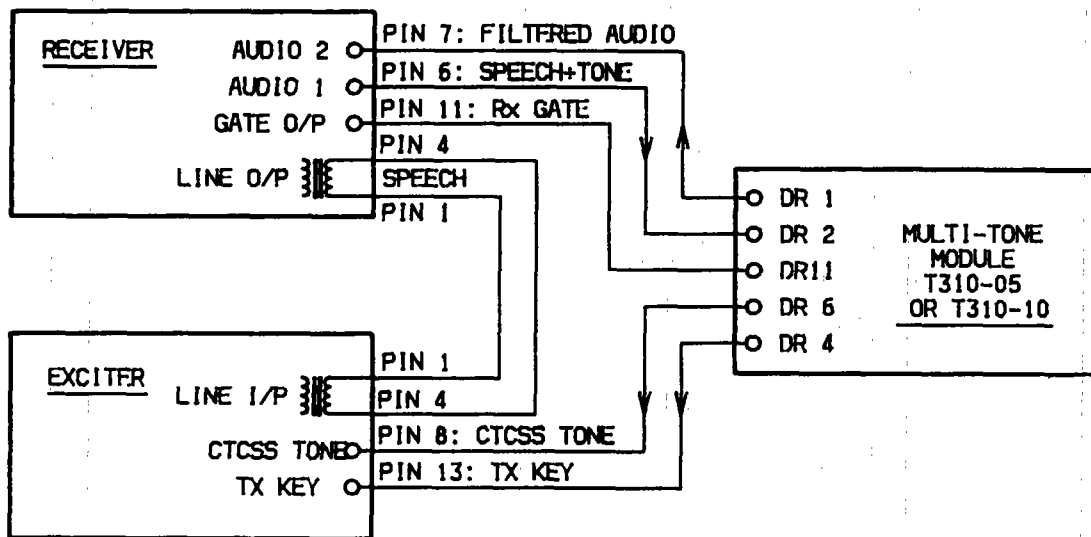


Figure 23 Multi-Tone Control with T310-05 or T310-10



**SECTION 10 PARTS LIST**

**INTRODUCTION**

The 10 digit numbers (000-00000-00) in this Parts List are "internal part numbers" (IPN's). Your spare parts orders can be handled more efficiently if you quote: equipment type, circuit reference and IPN, along with a brief description of the part.

The components listed in this Parts List are divided into two main types: those with a circuit reference (e.g. C2, D106, R121, etc) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped firstly by PCB, then by component type in numerical order. Each component entry comprises four columns: the circuit reference, variant number (if applicable), IPN and description. A number in the variant column indicates that this particular component is fitted only to that variant.

The miscellaneous and mechanical section lists the variant and common parts in IPN order.

## T881 Parts List

### INDEX

Main PCB:	Capacitors	10.3
	Diodes	10.4
	Integrated Circuits	10.4
	Links	10.4
	Coils	10.4
	Headers/Plugs	10.4
	Transistors	10.4
	Resistors	10.4
	Sockets/Switches	10.6
	Transformers	10.6
Miscellaneous & Mechanical		10.7
Memory PCB		10.8
VCO PCB		10.9

T881 MAIN PCB PARTS LIST

REF	VAR	IPN	DESCRIPTION	REF	VAR	IPN	DESCRIPTION
C1		015-06100-06	CAP CER 1206 CHIP 100N 10% X7R 50V	C149		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C2		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	C150		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM
C3		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C151	10	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C4		015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V	&C151	12	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C5		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	&C151	15	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C6		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	&C151	17	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C9		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	&C151	20	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C10		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	&C151	22	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C11		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	&C151	25	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C12		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	&C151	27	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C13		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C152		020-58100-03	CAP ELECT AI RDL 100M 16V 8X11MM
C14		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	C153		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C15		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	C154		020-58100-03	CAP ELECT AI RDL 100M 16V 8X11MM
C16		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C156		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR
C17		015-22580-01	CAP CER 0805 CHIP 58P 5% NPO 50V	&C157	10	015-21150-01	CAP CER 0805 CHIP 1P5 +/-0.25P NPO 50V
C19		015-23680-06	CAP CER 0805 CHIP 68P 10% X7R 50V	&C157	12	015-21150-01	CAP CER 0805 CHIP 1P5 +/-0.25P NPO 50V
C20		015-23470-08	CAP CER 0805 CHIP 470P 10% X7R 50V	&C157	15	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C25		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	&C157	17	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C26		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V	&C157	20	015-21150-01	CAP CER 0805 CHIP 1P5 +/-0.25P NPO 50V
C29		022-06330-03	CAP METAL POLYES 330N 10% 50V 5MM L/S	&C157	22	015-21150-01	CAP CER 0805 CHIP 1P5 +/-0.25P NPO 50V
C30		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	&C157	25	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C33		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	&C157	27	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
C34		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	C158		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C35		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	&C160	10	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C36		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C160	12	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C39		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C160	15	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C40		015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V	&C160	17	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C42		015-25150-06	CAP CER 0805 CHIP 15N 10% X7R 50V	&C160	20	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C43		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V	&C160	22	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C44		015-23220-01	CAP CER 0805 CHIP 220P 5% NPO 50V	&C160	25	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C45		015-24470-08	CAP CER 0805 CHIP 47N 10% X7R 50V	&C160	27	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C46		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C161	10	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C47		025-08100-02	CAP TANT BEAD 10M 10% 16V	&C161	12	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C48		015-22330-01	CAP CER 0805 CHIP 33P 5% NPO 50V	&C161	14	015-23220-01	CAP CER 0805 CHIP 220P 5% NPO 50V
C101		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM	&C161	15	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C102		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR	&C161	17	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C103		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR	&C161	20	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C104		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	&C161	22	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C105		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	&C161	24	015-23220-01	CAP CER 0805 CHIP 220P 5% NPO 50V
C106		015-24220-08	CAP CER 0805 CHIP 2N2 10% X7R 50V	&C161	25	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C107		020-08220-01	CAP ELECT RADL 22M 16V 5X11MM	&C161	27	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C108		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	C162		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR
C109		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	C163		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR
C110		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	C164		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C111		015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C166		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C112		020-08220-01	CAP ELECT RADL 22M 16V 5X11MM	&C167	14	015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C113		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V	&C167	24	015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C115		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C168		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C118		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C169	14	015-05220-08	CAP CER 1206 CHIP 22N 10% X7R 50V
C119		020-07470-91	CAP ELECT RADL 4M7 63V 6X11MM BI-POLAR	&C169	24	015-05220-08	CAP CER 1206 CHIP 22N 10% X7R 50V
C121		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	&C170	14	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C123		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V	&C170	24	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
&C124	10	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	&C171	14	015-23470-08	CAP CER 0805 CHIP 470P 10% X7R 50V
&C124	12	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	&C171	24	015-23470-08	CAP CER 0805 CHIP 470P 10% X7R 50V
&C124	15	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C209		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM
&C124	17	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C212		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C124	20	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C213		025-08100-02	CAP TANT BEAD 10M 10% 16V
&C124	22	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C214		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C124	25	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C215		025-08100-02	CAP TANT BEAD 10M 10% 16V
&C124	27	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	C216		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C126		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C217		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C128		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V	C218		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C129		020-58470-02	CAP ELECT AI RDL 47M 16V 6X11MM	C219		020-06470-07	CAP 470M 16V 20% ELEC VERT 8*20 3.5MM L/
&C133	10	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C220		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
&C133	12	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C221		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
&C133	15	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C222		020-58100-03	CAP ELECT AI RDL 100M 16V 8X11MM
&C133	17	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C223		020-07220-01	CAP ELECT RADL 2M2 50V 5X11MM
&C133	20	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C224		025-07330-01	CAP TANT BEAD 3M3 35V
&C133	22	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C225		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
&C133	25	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C226		020-57100-02	CAP ELECT AI RDL 1M 50V 5X11MM
&C133	27	015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V	C227		020-58100-03	CAP ELECT AI RDL 10M 50V 5X11MM
&C135	10	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C228		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
&C135	12	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C229		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
&C135	14	015-23220-01	CAP CER 0805 CHIP 220P 5% NPO 50V	C230		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
&C135	15	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C231		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
&C135	17	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C232		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C135	20	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C233		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C135	22	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C234		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C135	24	015-23220-01	CAP CER 0805 CHIP 220P 5% NPO 50V	C235		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C135	25	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C300		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C135	27	015-22470-01	CAP CER 0805 CHIP 47P 5% NPO 50V	C301		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
C137		020-08220-01	CAP ELECT RADL 22M 16V 5X11MM	C302		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
C139		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C303		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C141	10	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C310		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C141	12	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C320		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
&C141	15	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C350		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C141	17	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C351		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C141	20	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C352		025-08100-02	CAP TANT BEAD 10M 10% 16V
&C141	22	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C354		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
&C141	25	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C355		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
&C141	27	015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V	C356		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
C145		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	C357		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C146		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	C358		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C147		020-57100-02	CAP ELECT AI RDL 1M 50V 5X11MM	C359		015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V
C148		015-05220-08	CAP CER 1206 CHIP 22N 10% X7R 50V	C360		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V

C369	015-22560-01	CAP CER 0805 CHIP 56P 5% NPO 50V	#L300	14	051-00564-00	COIL HELIC RES 2.625T 1.2MMSF 800-880MHZ
C370	015-22560-01	CAP CER 0805 CHIP 56P 5% NPO 50V	#L300	15	051-00564-00	COIL HELIC RES 2.625T 1.2MMSF 800-880MHZ
C371	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	#L300	17	051-00564-00	COIL HELIC RES 2.625T 1.2MMSF 800-880MHZ
C372	015-22560-01	CAP CER 0805 CHIP 56P 5% NPO 50V	#L300	20	051-00565-00	COIL HELIC RES 2.428T 1.2MMSF 880-960MHZ
C373	015-22560-01	CAP CER 0805 CHIP 56P 5% NPO 50V	#L300	22	051-00565-00	COIL HELIC RES 2.428T 1.2MMSF 880-960MHZ
C374	015-22560-01	CAP CER 0805 CHIP 56P 5% NPO 50V	#L300	24	051-00565-00	COIL HELIC RES 2.428T 1.2MMSF 880-960MHZ
C415	015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V	#L300	25	051-00565-00	COIL HELIC RES 2.428T 1.2MMSF 880-960MHZ
C416	015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V	#L300	27	051-00565-00	COIL HELIC RES 2.428T 1.2MMSF 880-960MHZ
C417	015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V	L301		052-08135-25	COIL AAW 2.5T/3.5MM NOR 0.8MM WIRE
C418	015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V	L302		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET
C419	015-01270-06	CAP CER 1210 CHIP 2P7 NPO 200V GRM42-2	L410		065-00010-04	BEAD FERRITE F8 4X2X5MM
C422	015-01470-06	CAP CER 1210 CHIP 4P7 NPO 500V GRM42-2	L411		056-00021-04	IND FXD 330NH AXIAL
C426	015-01470-06	CAP CER 1210 CHIP 4P7 NPO 500V GRM42-2	L412		056-00021-04	IND FXD 330NH AXIAL
C429	015-01270-06	CAP CER 1210 CHIP 2P7 NPO 200V GRM42-2	L413		052-08330-10	COIL AAW 1T/3.0MM SMD 0.8MM WIRE
C430	020-07100-04	CAP ELECT RADL 1M 63V 8X12MM HI TEMP	L414		052-08325-10	COIL AAW 1T/2.5MM SMD 0.8MM WIRE
C431	015-23100-01	CAP CER 0805 CHIP 100P 5% NPO 50V	L415		052-08320-10	COIL AAW 1T/2.0MM SMD 0.8MM WIRE
C432	015-06100-06	CAP CER 1206 CHIP 100N 10% X7R 50V	L416		056-00021-04	IND FXD 330NH AXIAL
C433	015-22330-01	CAP CER 0805 CHIP 33P 5% NPO 50V	L417		056-00021-04	IND FXD 330NH AXIAL
C437	020-09470-07	CAP 470M 18V 20% ELEC VERT 8*20 3.5MM L/				
C438	015-06100-06	CAP CER 1206 CHIP 100N 10% X7R 50V				
C439	015-22180-01	CAP CER 0805 CHIP 18P 5% NPO 50V				
C446	025-07100-01	CAP TANT BEAD 1M 35V				
D4	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	PL1	240-00020-57	HEADER 10 WAY 1 ROW PCB MTG	
D5	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	PL100	240-00020-67	HEADER 6WAY 2X3 PCB MTG STD	
D100	001-10000-56	DIODE SMD BAW56 DUAL SWITCH SOT-23 COMM	PL101	240-00020-67	HEADER 6WAY 2X3 PCB MTG STD	
D101	001-10000-99	DIODE SMD BAV99 DUAL SWITCH SOT-23 SINGL	PL102	240-00020-44	HEADER 10 WAY 2 ROW (S*2) PCB MTG	
D102	001-10000-56	DIODE SMD BAW56 DUAL SWITCH SOT-23 COMM	PL103	240-00020-67	HEADER 6WAY 2X3 PCB MTG STD	
D103	001-10000-56	DIODE SMD BAW56 DUAL SWITCH SOT-23 COMM	PL200	240-00010-65	PLUG 15 WAY D RANGE WIRE WRAP PINS PNL M	
D104	001-10000-99	DIODE SMD BAV99 DUAL SWITCH SOT-23 SINGL	Q1	000-10057-10	XSTR SMD MMBR571 NPN SOT-23 UHF LO PWR	
D106	001-00015-29	DIODE ZENER 33V 0.4W BZX79C33	Q5	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
D204	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q6	000-10008-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL	
D205	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q7	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
D206	001-10000-99	DIODE SMD BAV99 DUAL SWITCH SOT-23 SINGL	Q101	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
D207	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q102	000-10008-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL	
D208	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q103	000-10008-17	XSTR SMD BCX19/BC817 NPN SOT-23 AF LO PW	
D209	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q104	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
D210	001-00015-17	DIODE ZENER 9V1 0.4W BZX79CV1	Q105	000-10008-17	XSTR SMD BCX19/BC817 NPN SOT-23 AF LO PW	
D211	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM	Q106	000-00011-91	XSTR BD139 NPN TO-126 AF PWR	
D300	001-10000-18	DIODE SMD BAT18 BANDSWITCH SOT-23 SINGLE	Q209	000-10008-17	XSTR SMD BCX19/BC817 NPN SOT-23 AF LO PW	
D301	001-00015-60	DIODE ZENER 11V 0.5W LO CURRENT HZ11B	Q210	000-00011-30	XSTR BC557B PNP TO-92 AF SMALL SIG	
D302	001-10000-18	DIODE SMD BAT18 BANDSWITCH SOT-23 SINGLE	Q211	000-00012-15	XSTR BD234 PNP TO-126 AF PWR	
D303	001-10000-18	DIODE SMD BAT18 BANDSWITCH SOT-23 SINGLE	Q212	000-10008-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL	
D401	001-00013-45	DIODE SCHOTTKY 1SS97/2 (S)	Q350	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
D402	001-00013-45	DIODE SCHOTTKY 1SS97/2 (S)	Q351	000-10008-17	XSTR SMD BCX19/BC817 NPN SOT-23 AF LO PW	
D403	001-00011-60	DIODE SR2607 6A/30V	Q352	000-00012-15	XSTR BD234 PNP TO-126 AF PWR	
			Q353	000-10008-48	XSTR SMD BCW60/BC848 NPN SOT-23 AF SMALL	
			Q354	000-10008-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL	
			Q355	000-10008-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL	
=IC1	10	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R1	036-12100-00	RES M/F 0805 CHIP 10E 5%
=IC1	12	539-00010-44	TCXO 12.8MHZ +/-1PPM 0 TO +80C	R2	036-12220-00	RES M/F 0805 CHIP 22E 5%
=IC1	14	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R3	036-17100-00	RES M/F 0805 CHIP 1M 5%
=IC1	15	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R4	036-12560-00	RES M/F 0805 CHIP 56E 5%
=IC1	17	539-00010-44	TCXO 12.8MHZ +/-1PPM 0 TO +80C	R5	036-14100-00	RES M/F 0805 CHIP 1K 5%
=IC1	20	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R6	036-17100-00	RES M/F 0805 CHIP 1M 5%
=IC1	22	539-00010-44	TCXO 12.8MHZ +/-1PPM 0 TO +80C	R7	036-14330-00	RES M/F 0805 CHIP 3K3 5%
=IC1	24	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R9	036-13120-00	RES M/F 0805 CHIP 120E 5%
=IC1	25	539-00010-45	TCXO 12.8MHZ +/-1.5PPM -30 TO +70C DEG	R10	036-13390-00	RES M/F 0805 CHIP 390E 5%
=IC1	27	539-00010-44	TCXO 12.8MHZ +/-1PPM 0 TO +80C	R11	036-17100-00	RES M/F 0805 CHIP 1M 5%
IC3	002-00017-47	IC 8P8719 UHF 80/81 PRESC (S)	R13	036-12180-00	RES M/F 0805 CHIP 18E 5%	
IC4	002-74045-20	IC 74HC4520 DUAL 4BIT SYNCRO CNTR (S)	R14	036-17100-00	RES M/F 0805 CHIP 1M 5%	
IC5	002-00017-63	IC NL8820DP FREQ SYNTHESIZER (S)	R15	036-12680-00	RES M/F 0805 CHIP 68E 5%	
IC6	002-00012-47	IC MC33078 DUAL OP AMP LO NOISE (S)	R16	036-17100-00	RES M/F 0805 CHIP 1M 5%	
IC7	002-74000-04	IC 74HCL04 UNBUFF HEX INVERTER (S)	R18	036-12100-00	RES M/F 0805 CHIP 10E 5%	
IC100	002-00020-50	IC 4N25A OPTOCOUPLER (S)	R19	036-17100-00	RES M/F 0805 CHIP 1M 5%	
IC101	002-00015-30	IC 40538 2CHAN MUX/DEMUX (S)	R20	036-17100-00	RES M/F 0805 CHIP 1M 5%	
=IC102	10	002-00014-40	IC 324P QUAD OP AMP (S)	R21	036-12220-00	RES M/F 0805 CHIP 22E 5%
=IC102	12	002-00014-40	IC 324P QUAD OP AMP (S)	R24	036-12220-00	RES M/F 0805 CHIP 22E 5%
=IC102	14	002-00012-25	IC TL084 QUAD OP AMP JFET UP (S)	R25	036-15120-00	RES M/F 0805 CHIP 12K 5%
=IC102	15	002-00014-40	IC 324P QUAD OP AMP (S)	R29	036-16470-00	RES M/F 0805 CHIP 470K 5%
=IC102	17	002-00014-40	IC 324P QUAD OP AMP (S)	R30	036-13100-00	RES M/F 0805 CHIP 100E 5%
=IC102	20	002-00014-40	IC 324P QUAD OP AMP (S)	R32	036-14100-00	RES M/F 0805 CHIP 1K 5%
=IC102	22	002-00014-40	IC 324P QUAD OP AMP (S)	R35	036-15100-00	RES M/F 0805 CHIP 10K 5%
=IC102	24	002-00012-25	IC TL084 QUAD OP AMP JFET UP (S)	R36	036-16470-00	RES M/F 0805 CHIP 470K 5%
=IC102	25	002-00014-40	IC 324P QUAD OP AMP (S)	R37	036-15100-00	RES M/F 0805 CHIP 10K 5%
=IC102	27	002-00014-40	IC 324P QUAD OP AMP (S)	R38	036-15100-00	RES M/F 0805 CHIP 10K 5%
IC103	002-00012-25	IC TL084 QUAD OP AMP JFET UP (S)	R39	036-16470-00	RES M/F 0805 CHIP 470K 5%	
IC104	002-00012-40	IC 358P DUAL OP AMP (S)	R40	036-16470-00	RES M/F 0805 CHIP 470K 5%	
IC201	002-00014-62	IC 317L 100MA REG 3 TERMINAL TO-92	R42	036-14680-00	RES M/F 0805 CHIP 6K8 5%	
IC202	002-00014-40	IC 324P QUAD OP AMP (S)	R43	036-12220-00	RES M/F 0805 CHIP 22E 5%	
IC203	002-00014-40	IC 324P QUAD OP AMP (S)	R46	036-14680-00	RES M/F 0805 CHIP 6K8 5%	
IC404	10	004-00010-10	MODUL RE PWR MMH806A2			

T881 MAIN PCB PARTS LIST

REF	VAR	IPN	DESCRIPTION	REF	VAR	IPN	DESCRIPTION
R56		036-17100-00	RES M/F 0805 CHIP 1M 5%	R131		036-17100-00	RES M/F 0805 CHIP 1M 5%
R60		036-12330-00	RES M/F 0805 CHIP 33E 5%	&R136	10	036-15100-00	RES M/F 0805 CHIP 10K 5%
R64		036-15150-00	RES M/F 0805 CHIP 15K 5%	&R136	12	036-15100-00	RES M/F 0805 CHIP 10K 5%
R65		036-18100-00	RES M/F 0805 CHIP 100K 5%	&R136	15	036-15100-00	RES M/F 0805 CHIP 10K 5%
R67		036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R136	17	036-15100-00	RES M/F 0805 CHIP 10K 5%
R68		036-15560-00	RES M/F 0805 CHIP 56K 5%	&R136	20	036-15100-00	RES M/F 0805 CHIP 10K 5%
R72		036-15150-00	RES M/F 0805 CHIP 15K 5%	&R136	22	036-15100-00	RES M/F 0805 CHIP 10K 5%
R73		036-13330-00	RES M/F 0805 CHIP 330E 5%	&R136	25	036-15100-00	RES M/F 0805 CHIP 10K 5%
R74		036-12100-00	RES M/F 0805 CHIP 10E 5%	&R136	27	036-15100-00	RES M/F 0805 CHIP 10K 5%
R75		036-12100-00	RES M/F 0805 CHIP 10E 5%	R141		036-18150-00	RES M/F 0805 CHIP 150K 5%
R76		036-18100-00	RES M/F 0805 CHIP 100K 5%	R143		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R77		036-18100-00	RES M/F 0805 CHIP 100K 5%	R146		036-15220-00	RES M/F 0805 CHIP 22K 5%
R78		036-10000-00	RES M/F 0805 CHIP ZERO OHM	&R147	10	036-15470-00	RES M/F 0805 CHIP 47K 5%
R100		036-13100-00	RES M/F 0805 CHIP 100E 5%	&R147	12	036-15470-00	RES M/F 0805 CHIP 47K 5%
RV100		040-05100-21	POT 10K LIN VERT PCB MTG 15MM SLOT SHAFT	&R147	14	036-15390-00	RES M/F 0805 CHIP 39K 5%
R101		036-15100-00	RES M/F 0805 CHIP 10K 5%	&R147	15	036-15470-00	RES M/F 0805 CHIP 47K 5%
R102		036-13470-00	RES M/F 0805 CHIP 470E 5%	&R147	17	036-15470-00	RES M/F 0805 CHIP 47K 5%
R103		036-13560-00	RES M/F 0805 CHIP 560E 5%	&R147	20	036-15470-00	RES M/F 0805 CHIP 47K 5%
R104		036-13560-00	RES M/F 0805 CHIP 560E 5%	&R147	22	036-15470-00	RES M/F 0805 CHIP 47K 5%
RV104		042-05470-06	RES PRESET 47K CARBON 6MM FLAT TOP ADJ	&R147	24	036-15390-00	RES M/F 0805 CHIP 39K 5%
R105		036-15100-00	RES M/F 0805 CHIP 10K 5%	&R147	25	036-15470-00	RES M/F 0805 CHIP 47K 5%
RV105		042-08100-06	RES PRESET 100K CARBON 6MM FLAT	&R147	27	036-15470-00	RES M/F 0805 CHIP 47K 5%
R106		036-14220-00	RES M/F 0805 CHIP 2K2 5%	R148		036-18150-00	RES M/F 0805 CHIP 150K 5%
&RV106	10	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	R149		036-15470-00	RES M/F 0805 CHIP 47K 5%
&RV106	12	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	R160		036-15470-00	RES M/F 0805 CHIP 47K 5%
&RV106	14	042-05100-06	RES PRESET 10K CARBON 6MM FLAT	&R151	10	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	15	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	12	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	17	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	15	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	20	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	17	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	22	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	20	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	24	042-05100-06	RES PRESET 10K CARBON 6MM FLAT	&R151	22	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	25	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	25	036-14470-00	RES M/F 0805 CHIP 4K7 5%
&RV106	27	042-04470-06	RES PRESET 4K7 CARBON 6MM FLAT	&R151	27	036-14470-00	RES M/F 0805 CHIP 4K7 5%
R107		036-15100-00	RES M/F 0805 CHIP 10K 5%	&R152	10	036-15220-00	RES M/F 0805 CHIP 22K 5%
R108		036-14100-00	RES M/F 0805 CHIP 1K 5%	&R152	12	036-15220-00	RES M/F 0805 CHIP 22K 5%
R109		036-14390-00	RES M/F 0805 CHIP 3K9 5%	&R152	14	036-15220-00	RES M/F 0805 CHIP 22K 5%
R110		036-15100-00	RES M/F 0805 CHIP 10K 5%	&R152	15	036-15270-00	RES M/F 0805 CHIP 27K 5%
R111		036-16390-00	RES M/F 0805 CHIP 390K 5%	&R152	17	036-15270-00	RES M/F 0805 CHIP 27K 5%
R112		036-16100-00	RES M/F 0805 CHIP 100K 5%	&R152	20	036-15220-00	RES M/F 0805 CHIP 22K 5%
R113		036-18100-00	RES M/F 0805 CHIP 100K 5%	&R152	22	036-15220-00	RES M/F 0805 CHIP 22K 5%
&R115	10	036-15100-00	RES M/F 0805 CHIP 10K 5%	&R152	24	036-15220-00	RES M/F 0805 CHIP 22K 5%
&R115	12	036-15100-00	RES M/F 0805 CHIP 10K 5%	&R152	25	036-15270-00	RES M/F 0805 CHIP 27K 5%
&R115	14	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R152	27	036-15270-00	RES M/F 0805 CHIP 27K 5%
&R115	15	036-15100-00	RES M/F 0805 CHIP 10K 5%	R155		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R115	17	036-15100-00	RES M/F 0805 CHIP 10K 5%	R159		036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R115	20	036-15100-00	RES M/F 0805 CHIP 10K 5%	R162		036-13880-00	RES M/F 0805 CHIP 880E 5%
&R115	22	036-15100-00	RES M/F 0805 CHIP 10K 5%	&R163	10	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R115	24	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R163	12	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R115	25	036-15100-00	RES M/F 0805 CHIP 10K 5%	&R163	14	036-10000-00	RES M/F 0805 CHIP ZERO OHM
&R115	27	036-15100-00	RES M/F 0805 CHIP 10K 5%	&R163	15	036-14100-00	RES M/F 0805 CHIP 1K 5%
R116		036-16100-00	RES M/F 0805 CHIP 100K 5%	&R163	17	036-14100-00	RES M/F 0805 CHIP 1K 5%
R117		036-15100-00	RES M/F 0805 CHIP 10K 5%	&R163	20	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R118	10	036-13560-00	RES M/F 0805 CHIP 560E 5%	&R163	22	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R118	12	036-13560-00	RES M/F 0805 CHIP 560E 5%	&R163	24	036-10000-00	RES M/F 0805 CHIP ZERO OHM
&R118	14	036-10000-00	RES M/F 0805 CHIP ZERO OHM	&R163	25	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R118	15	036-13560-00	RES M/F 0805 CHIP 560E 5%	&R163	27	036-14100-00	RES M/F 0805 CHIP 1K 5%
&R118	17	036-13560-00	RES M/F 0805 CHIP 560E 5%	R164		036-13680-00	RES M/F 0805 CHIP 880E 5%
&R118	20	036-13560-00	RES M/F 0805 CHIP 560E 5%	R166		036-17100-00	RES M/F 0805 CHIP 1M 5%
&R118	22	036-13560-00	RES M/F 0805 CHIP 560E 5%	R167		036-14880-00	RES M/F 0805 CHIP 8K8 5%
&R118	24	036-10000-00	RES M/F 0805 CHIP ZERO OHM	R168		036-17100-00	RES M/F 0805 CHIP 1M 5%
&R118	25	036-13560-00	RES M/F 0805 CHIP 560E 5%	R169		036-18120-00	RES M/F 0805 CHIP 120K 5%
&R118	27	036-13560-00	RES M/F 0805 CHIP 560E 5%	R170		036-15100-00	RES M/F 0805 CHIP 10K 5%
R119		036-18100-00	RES M/F 0805 CHIP 100K 5%	R171		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R120		036-18100-00	RES M/F 0805 CHIP 100K 5%	R172		036-16470-00	RES M/F 0805 CHIP 470K 5%
R121		036-18100-00	RES M/F 0805 CHIP 100K 5%	R173		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R122	10	036-15120-00	RES M/F 0805 CHIP 12K 5%	R174		036-16330-00	RES M/F 0805 CHIP 330K 5%
&R122	12	036-15120-00	RES M/F 0805 CHIP 12K 5%	R175		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R122	14	036-15150-00	RES M/F 0805 CHIP 15K 5%	R176		036-18100-00	RES M/F 0805 CHIP 100K 5%
&R122	15	036-15120-00	RES M/F 0805 CHIP 12K 5%	R177		036-18100-00	RES M/F 0805 CHIP 100K 5%
&R122	17	036-15120-00	RES M/F 0805 CHIP 12K 5%	R178		036-15560-00	RES M/F 0805 CHIP 56K 5%
&R122	20	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	10	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R122	22	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	12	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R122	24	036-15150-00	RES M/F 0805 CHIP 15K 5%	&R179	14	036-17100-00	RES M/F 0805 CHIP 1M 5%
&R122	25	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	15	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R122	27	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	17	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R123	10	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	20	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R123	12	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	22	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R123	14	036-15150-00	RES M/F 0805 CHIP 15K 5%	&R179	24	036-17100-00	RES M/F 0805 CHIP 1M 5%
&R123	15	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	25	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R123	17	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R179	27	036-15560-00	RES M/F 0805 CHIP 56K 5%
&R123	20	036-15120-00	RES M/F 0805 CHIP 12K 5%	R180		036-17100-00	RES M/F 0805 CHIP 1M 5%
&R123	22	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R181	10	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R123	24	036-15150-00	RES M/F 0805 CHIP 15K 5%	&R181	12	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R123	25	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R181	15	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R123	27	036-15120-00	RES M/F 0805 CHIP 12K 5%	&R181	17	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	10	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R181	20	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	12	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R181	22	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	15	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R181	25	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	17	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R181	27	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	20	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R182	10	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	22	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R182	12	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	25	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R182	15	036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R124	27	036-14270-00	RES M/F 0805 CHIP 2K7 5%	&R182	17	036-14220-00	RES M/F 0805 CHIP 2K2 5%
R127		036-18100-00	RES M/F 0805 CHIP 100K 5%	&R182	20	036-14220-00	RES M/F 0805 CHIP 2K2 5%
R128		036-18100-00	RES M/F 0805 CHIP 100K 5%	&R182	22	036-14220-00	RES M/F 0805 CHIP 2K2 5%

T881 MAIN PCB PARTS LIST

REF	VAR	IPN	DESCRIPTION	REF	VAR	IPN	DESCRIPTION
&R182	25	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R255		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R182	27	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R256		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R183	10	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R257		036-10000-00	RES M/F 0805 CHIP ZERO OHM
&R183	12	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R258		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R183	14	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R259		036-14150-00	RES M/F 0805 CHIP 1K5 5%
&R183	15	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R260		036-13470-00	RES M/F 0805 CHIP 470E 5%
&R183	17	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R300		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R183	20	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R301		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R183	22	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R302		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R183	24	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R303		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R183	25	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R304		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R183	27	036-14820-00	RES M/F 0805 CHIP 8K2 5%	R305		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R184	10	036-15150-00	RES M/F 0805 CHIP 15K 5%	R306		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R184	12	036-15150-00	RES M/F 0805 CHIP 15K 5%	R307		036-17100-00	RES M/F 0805 CHIP 1M 5%
&R184	14	036-10000-00	RES M/F 0805 CHIP ZERO OHM	R308		036-15470-00	RES M/F 0805 CHIP 47K 5%
&R184	15	036-15180-00	RES M/F 0805 CHIP 18K 5%	R340		036-13220-00	RES M/F 0805 CHIP 220E 5%
&R184	17	036-15180-00	RES M/F 0805 CHIP 18K 5%	R341		036-13100-00	RES M/F 0805 CHIP 100E 5%
&R184	20	036-15150-00	RES M/F 0805 CHIP 15K 5%	R350		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R184	22	036-15150-00	RES M/F 0805 CHIP 15K 5%	RV351		042-04220-06	RES PRESET 2K2 CARBON 6MM FLAT
&R184	24	036-10000-00	RES M/F 0805 CHIP ZERO OHM	R352		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R184	25	036-15180-00	RES M/F 0805 CHIP 18K 5%	R353		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R184	27	036-15180-00	RES M/F 0805 CHIP 18K 5%	R354		036-16220-00	RES M/F 0805 CHIP 220K 5%
&R185	10	036-15470-00	RES M/F 0805 CHIP 47K 5%	R355		036-15100-00	RES M/F 0805 CHIP 10K 5%
&R185	12	036-15470-00	RES M/F 0805 CHIP 47K 5%	RV355		042-05100-06	RES PRESET 10K CARBON 6MM FLAT
&R185	14	036-15220-00	RES M/F 0805 CHIP 22K 5%	RV356		042-05100-06	RES PRESET 10K CARBON 6MM FLAT
&R185	15	036-15560-00	RES M/F 0805 CHIP 56K 5%	R357		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R185	17	036-15560-00	RES M/F 0805 CHIP 56K 5%	R358		036-14220-00	RES M/F 0805 CHIP 2K2 5%
&R185	20	036-15470-00	RES M/F 0805 CHIP 47K 5%	R359		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R185	22	036-15470-00	RES M/F 0805 CHIP 47K 5%	R360		036-13100-00	RES M/F 0805 CHIP 100E 5%
&R185	24	036-15220-00	RES M/F 0805 CHIP 22K 5%	R361		036-15150-00	RES M/F 0805 CHIP 15K 5%
&R185	25	036-15560-00	RES M/F 0805 CHIP 56K 5%	R362		036-14470-00	RES M/F 0805 CHIP 4K7 5%
&R185	27	036-15560-00	RES M/F 0805 CHIP 56K 5%	R363		036-13100-00	RES M/F 0805 CHIP 100E 5%
R186		036-15100-00	RES M/F 0805 CHIP 10K 5%	R364		036-13100-00	RES M/F 0805 CHIP 100E 5%
R187		036-15560-00	RES M/F 0805 CHIP 56K 5%	R365		036-12100-00	RES M/F 0805 CHIP 10E 5%
R188		036-17100-00	RES M/F 0805 CHIP 1M 5%	R366		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R189		036-13560-00	RES M/F 0805 CHIP 560E 5%	R370		036-12470-00	RES M/F 0805 CHIP 47E 5%
&R190	10	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R371		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R190	12	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R372		036-13390-00	RES M/F 0805 CHIP 390E 5%
&R190	15	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R373		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R190	17	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R374		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R190	20	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R375		036-13390-00	RES M/F 0805 CHIP 390E 5%
&R190	22	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R376		036-14100-00	RES M/F 0805 CHIP 1K 5%
&R190	25	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R377		036-15220-00	RES M/F 0805 CHIP 22K 5%
&R190	27	036-14220-00	RES M/F 0805 CHIP 2K2 5%	R378		036-15100-00	RES M/F 0805 CHIP 10K 5%
R192		036-14270-00	RES M/F 0805 CHIP 2K7 5%	R379		036-15220-00	RES M/F 0805 CHIP 22K 5%
R194		036-15470-00	RES M/F 0805 CHIP 47K 5%	R380		036-15100-00	RES M/F 0805 CHIP 10K 5%
R195		036-14470-00	RES M/F 0805 CHIP 4K7 5%	R406		036-13100-00	RES M/F 0805 CHIP 100E 5%
R196		036-14470-00	RES M/F 0805 CHIP 4K7 5%	R407		036-13100-00	RES M/F 0805 CHIP 100E 5%
&R197	10	036-14270-00	RES M/F 0805 CHIP 2K7 5%	R432		045-04470-01	RES NTC 4K7 20% 5MM DISC
&R197	12	036-14270-00	RES M/F 0805 CHIP 2K7 5%	R437		036-12100-00	RES M/F 0805 CHIP 10E 5%
&R197	15	036-14270-00	RES M/F 0805 CHIP 2K7 5%				
&R197	17	036-14270-00	RES M/F 0805 CHIP 2K7 5%	SUPPLY		008-00013-35	LED 3MM GREEN LO CURRENT NO MTG (S)
&R197	20	036-14270-00	RES M/F 0805 CHIP 2K7 5%	SJ2		240-04020-65	SKT JACK PIN 1.3MM PCB MTG 64 WAY SIL ST
&R197	22	036-14270-00	RES M/F 0805 CHIP 2K7 5%	SJ3		240-04020-65	SKT JACK PIN 1.3MM PCB MTG 64 WAY SIL ST
&R197	25	036-14270-00	RES M/F 0805 CHIP 2K7 5%	SJ4		240-04020-65	SKT JACK PIN 1.3MM PCB MTG 64 WAY SIL ST
&R197	27	036-14270-00	RES M/F 0805 CHIP 2K7 5%	SJ5		240-04020-65	SKT JACK PIN 1.3MM PCB MTG 64 WAY SIL ST
&R198	10	036-10000-00	RES M/F 0805 CHIP ZERO OHM	SK1		240-04020-57	SKT 10 WAY 1ROW PCB MTG TOP ENTRY
&R198	12	036-10000-00	RES M/F 0805 CHIP ZERO OHM	SK100		240-02020-05	SKT STEREO PHONE JACK PCB MTG
&R198	15	036-10000-00	RES M/F 0805 CHIP ZERO OHM	SW101		232-00010-26	SWITCH PUSH SPDT RT ANGLE PCB MTG NO BUT
&R198	17	036-10000-00	RES M/F 0805 CHIP ZERO OHM	SK300		240-02100-44	SKT COAX MINI JACK PCB MTG ANGLED
&R198	20	036-10000-00	RES M/F 0805 CHIP ZERO OHM	SK401		240-02100-44	SKT COAX MINI JACK PCB MTG ANGLED
&R198	22	036-10000-00	RES M/F 0805 CHIP ZERO OHM				
&R198	25	036-10000-00	RES M/F 0805 CHIP ZERO OHM	TX-LED		008-00013-32	LED 3MM RED LO CURRENT NO MTG (S)
&R198	27	036-10000-00	RES M/F 0805 CHIP ZERO OHM	T100		063-00010-17	XFMR T4030 LINE MATCH POTCORE
RV201		042-07100-06	RES PRESET 1M CARBON 6MM FLAT	T200		050-00016-50	COIL TAIT NO 650 455KHZ 5.6MM CAN
RV202		042-07100-06	RES PRESET 1M CARBON 6MM FLAT				
R224		036-13100-00	RES M/F 0805 CHIP 100E 5%				
R227		036-12100-00	RES M/F 0805 CHIP 10E 5%				
R228		036-12330-00	RES M/F 0805 CHIP 33E 5%				
R229		036-12330-00	RES M/F 0805 CHIP 33E 5%				
R230		036-14470-00	RES M/F 0805 CHIP 4K7 5%				
R231		036-14100-00	RES M/F 0805 CHIP 1K 5%				
R232		032-33270-00	RES M/F PWR 270E 5% 1W 12X4.5MM				
R233		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM				
R234		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM				
R235		036-14680-00	RES M/F 0805 CHIP 6K8 5%				
R236		036-15100-00	RES M/F 0805 CHIP 10K 5%				
R237		036-15100-00	RES M/F 0805 CHIP 10K 5%				
R238		036-16100-00	RES M/F 0805 CHIP 100K 5%				
R239		036-16100-00	RES M/F 0805 CHIP 100K 5%				
R240		036-15470-00	RES M/F 0805 CHIP 47K 5%				
R241		036-16470-00	RES M/F 0805 CHIP 470K 5%				
R242		036-14100-00	RES M/F 0805 CHIP 1K 5%				
R243		036-16100-00	RES M/F 0805 CHIP 100K 5%				
R244		036-16100-00	RES M/F 0805 CHIP 100K 5%				
R245		036-14150-00	RES M/F 0805 CHIP 1K5 5%				
R246		036-15470-00	RES M/F 0805 CHIP 47K 5%				
R247		036-16330-00	RES M/F 0805 CHIP 330K 5%				
R248		036-16120-00	RES M/F 0805 CHIP 120K 5%				
R249		036-16330-00	RES M/F 0805 CHIP 330K 5%				
R250		036-14100-00	RES M/F 0805 CHIP 1K 5%				
R251		036-13560-00	RES M/F 0805 CHIP 560E 5%				
R252		036-16100-00	RES M/F 0805 CHIP 100K 5%				
R253		036-15150-00	RES M/F 0805 CHIP 15K 5%				
R254		036-15560-00	RES M/F 0805 CHIP 56K 5%				



T881 MECHANICAL & MISCELLANEOUS PARTS

IPN	DESCRIPTION
012-04150-01	CAP CER F/THRU 1N5 NO LEAD C1 - C15
065-00010-13	BEAD FERRITE 7D 1.9*0.9*3.8MM STACK POLE
066-00010-20	SLUG BRASS A4M764 T196 HELIC RESNTR
201-00030-02	WIRE #1 T/C WIRE 7/0.2MM PVC RED 2X20mm LED
201-00030-10	WIRE #1 T/C WIRE 7/0.2MM PVC BLACK 2X25mm LED
206-00010-11	CABLE COAX 50 OHM RG316-U PTFE
220-01181-02	PCB T881 800-980MHZ SW TX
232-00020-26	BUTTON PUSH FOR 232-00010-26 SWITCH
240-00020-02	PLUG STEREO PHONE JACK STD 1/4 INCH
240-00100-43	PLUG COAX MINI PIN PLUG CRIMP 1.5D COAX
240-02010-54	SKT 15WAY DRANGE PNL MTG D6-15SR-BT 105
240-02100-06	SKT COAX N TYPE PNL MTG OPEN TERMN
240-04020-62	SKT 2 WAY RECEPTL SHORTING LINK FOR PL100 PL101 PL102 PL103
252-00010-12	MIC 600 OHM WITH HANGER CONN FOSTER
303-11168-00	CHASSIS HSINK PNTD CMPLT A1M2364 800 SER
303-23118-00	COVER A3M2247 D RANGE HOLE T855/7
303-50074-00	CLIP A3M2246 SPRING XSTR CLAMP T857
303-50078-00	CLIP A4M2830 0.1MM SPRING WIRE CABLE CLA
306-01010-00	FERRULE A4M848 HANDLE FXD EQUIP FOR HANDLE
308-01007-00	HANDLE A4M849 FXD EQUIP
308-01048-00	HOUSING A3M2378 DOUBLET HELIC RESNTR T85
308-13094-00	HSINK MODULE A3M2492 T881 FOR #IC404
312-01052-00	LID TOP PNTD COMPL A1M2364 800 SERIES
312-01053-00	LID BOTTOM PNTD COMPL A1M2364 800 SERIES
316-06411-00	PNL FRT COMPL T881 A3M2335/5 A3M2335/1
316-85015-01	PIN A4M775 LOCATING D RANGE
316-85099-00	PLATE FLOAT A2M2248 DUAL D RANGE SKT BOX
316-85100-00	PLATE FRT A2M2249 DUAL D RANGE SKT BOX
318-01014-00	RAIL A2M2214 FOR 800 SERIES FXD EQUIP
319-01152-00	SHIELD A3M2250 F/THRU MTG T857
319-04006-00	STRAP EARTH FOR IC MHW SERIES A3M2491 C/REF: SHLD1
345-00040-06	SCREW M3*8MM PAN POZI ST BZ SKT BOX X 2
345-00040-08	SCREW M3*12MM PAN POZI ST BZ D RANGE HOLE COVER X 2
345-00040-09	SCREW M3*6MM CSK POZI TRUNCATED HEAD ST RAIL MOUNTING
345-00040-10	SCREW M3*6MM PAN POZI ST BZ RAIL X 4; FLOAT PLATE X 4
345-00040-20	SCREW M3*8MM BUTTON SKT HD BLACK ZINC PH FRONT PANEL
345-00050-07	SCREW M4X10MM PAN POZI ST BZ #IC404 MTG
349-00020-32	SCREW TAPTITE M3X8MM PAN POZI BZ N TYPE CONNECTOR X4; MAIN BOARD MTG X8; HELICAL HOUSING X4
349-00020-43	SCREW TAPTITE M4X12MM PAN POZI BZ #IC404 MTG

IPN	DESCRIPTION
349-00020-43	SCREW TAPTITE M4X12MM PAN POZI BZ TOP COVER X 14
349-00020-45	SCREW TAPTITE M4X20MM PAN POZI BZ BOTTOM COVER X 14
352-00010-08	NUT M3 COLD FORM HEX ST BZ D RANGE COVER X 2; D RANGE MTG X 2
352-00010-10	NUT M4 COLD FORM HEX ST BZ #IC404 MTG
352-00010-29	NUT M4 NYLOC HEX FOR HANDLE
352-00010-50	NUT TRIM SCREEN 1/4 UNF SPIRE SNO 2780
353-00010-10	WASHER M3 FLAT ST BZ 6.75MM OD A4M1215 FOR FLOAT PLATE
353-00010-12	WASHER M3 SPRING BZ D RANGE COVER X 2; D RANGE MTG X 2
353-00010-20	WASHER M4 SHAKEPROOF INT BZ #IC404 MTG
360-00010-40	BUSH SNAP BLACK HEYCO SB-375-4
362-00010-23	GASKET SIL INSULATING TO-220 CLIP MTD
362-00010-33	GROMMET LED MTG 3MM LO CURRENT LEDS
365-00011-03	LABEL TEST REPORT INSIDE A4A267
365-00100-03	LABEL BLANK 10.8X30MM S/A METLSD POLYES
400-00020-05	SLEEVING 1.5MM SIL RUBBER
410-00010-42	PKG CARTON 60MM FXD EQUIP MODULE UEB 150
410-01056-00	CARTON STOCK 10 PRINTED KIWI REF 12317 5

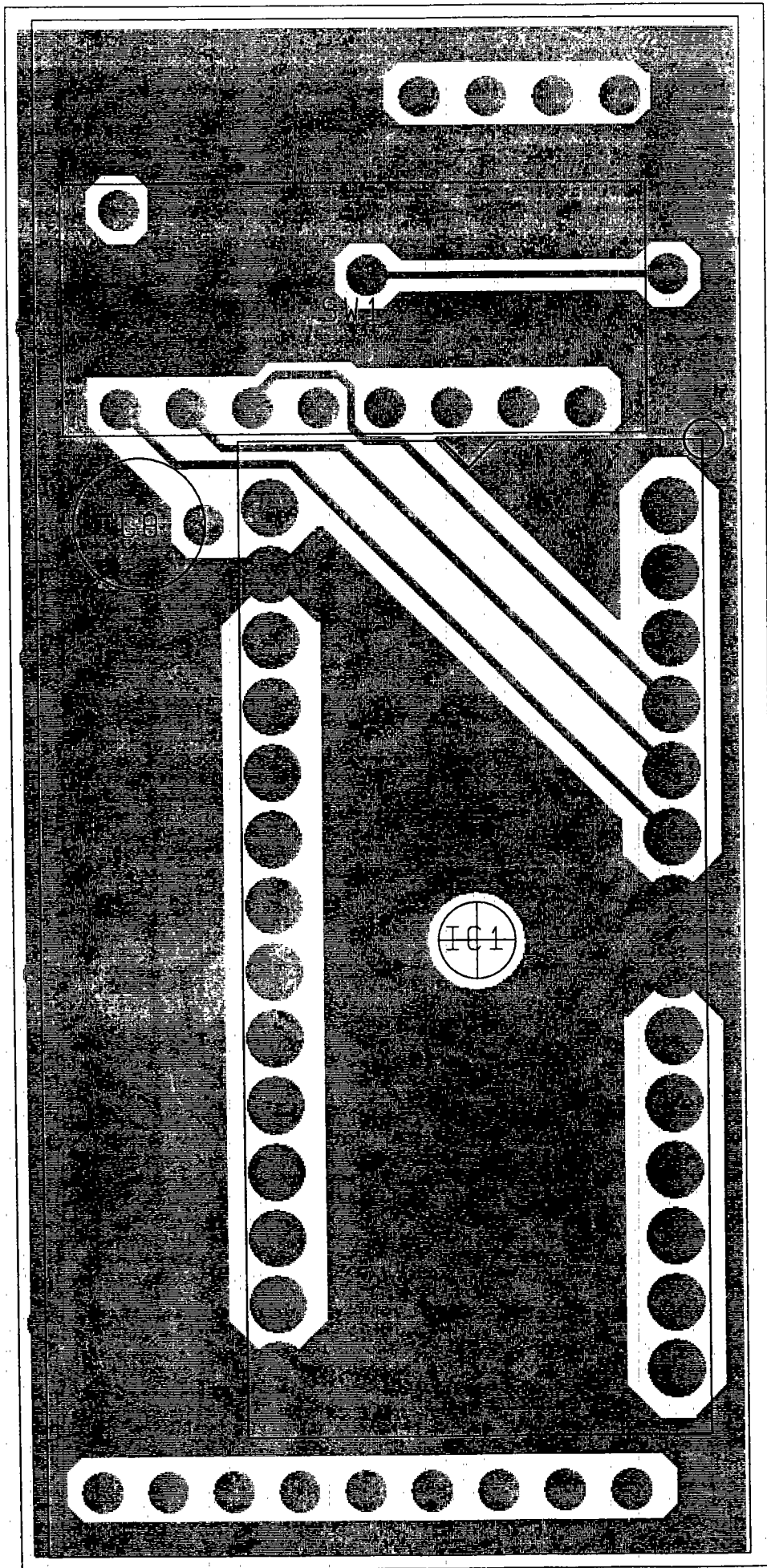
T800 EPROM PCB PARTS

REF	IPN	DESCRIPTION
C1	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C2	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C3	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C4	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C5	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C6	015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C7	015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C8	025-08100-02	CAP TANT BEAD 10M 10% 16V
D1	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM
D2	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM
D3	001-10000-70	DIODE SMD BAV70 DUAL SWITCH SOT-23 COMM
IC1	002-00018-04	IC 27C64 CMOS 8K*8 UV EPROM (S)
PL1	240-00020-57	HEADER 10 WAY 1 ROW PCB MTG
R1	036-15100-00	RES M/F 0805 CHIP 10K 5%
R2	036-15100-00	RES M/F 0805 CHIP 10K 5%
R3	036-15100-00	RES M/F 0805 CHIP 10K 5%
R4	036-15100-00	RES M/F 0805 CHIP 10K 5%
R5	036-15100-00	RES M/F 0805 CHIP 10K 5%
R6	036-15100-00	RES M/F 0805 CHIP 10K 5%
R7	036-15100-00	RES M/F 0805 CHIP 10K 5%
R8	036-15100-00	RES M/F 0805 CHIP 10K 5%
R9	036-12220-00	RES M/F 0805 CHIP 22E 5%
SW1	230-00010-19	SWITCH*8 SPST DIP PKG
SK1	240-04020-57	SKT 10 WAY 1ROW PCB MTG TOP ENTRY
	220-01144-00	PCB T855/856/857 MEM
	240-04020-35	SKT 28 PIN DIL IC LO PROF FOR IC1

T881 VCO PCB PARTS

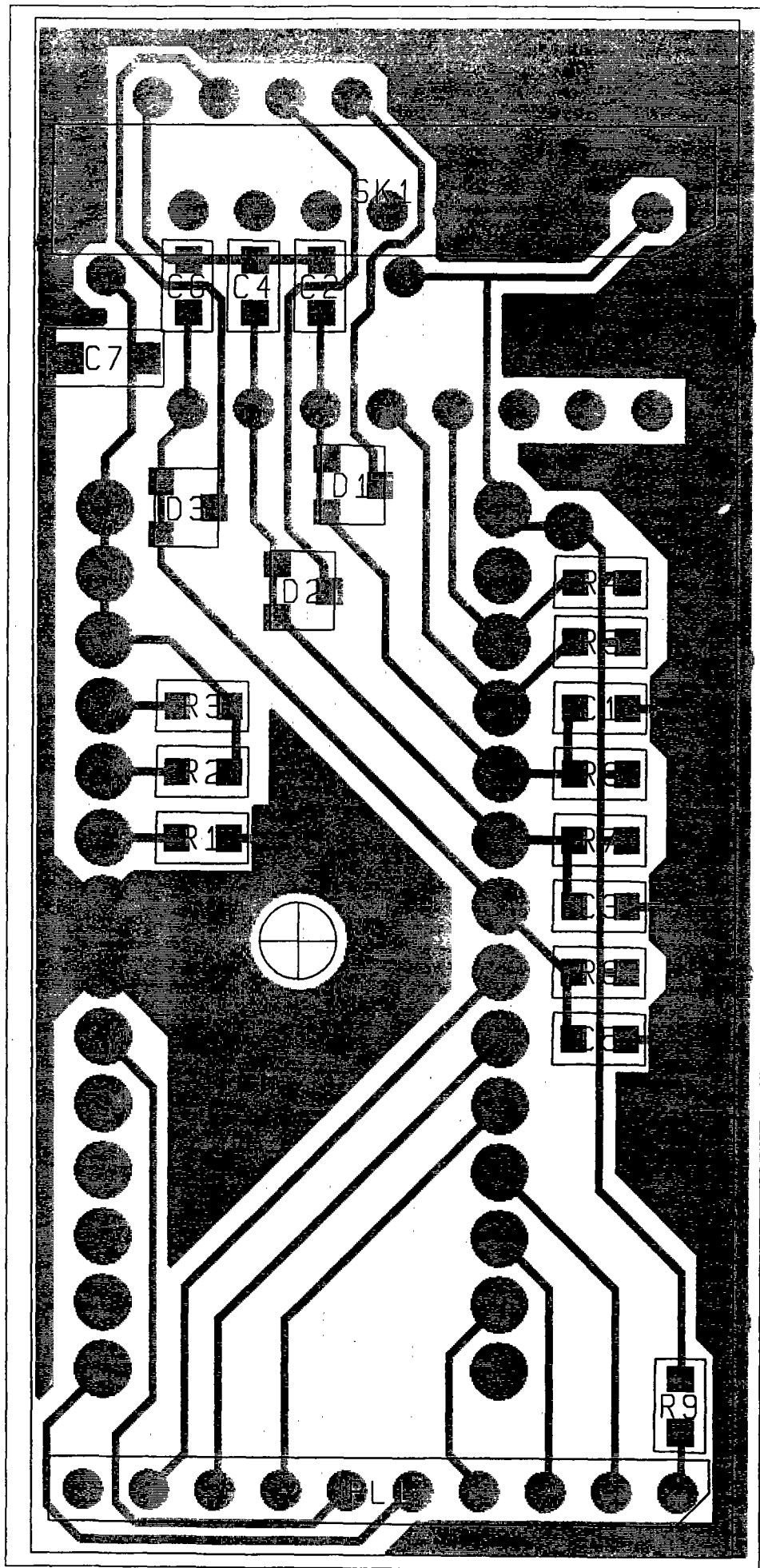
REF	VAR	IPN	DESCRIPTION	REF	VAR	IPN	DESCRIPTION
&C1	10	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R2		036-14100-00	RES M/F 0805 CHIP 1K 5%
&C1	12	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R3		036-13100-00	RES M/F 0805 CHIP 100E 5%
&C1	14	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R4		036-12220-00	RES M/F 0805 CHIP 22E 5%
&C1	15	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R5		036-12270-00	RES M/F 0805 CHIP 27E 5%
&C1	17	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R6		036-12680-00	RES M/F 0805 CHIP 68E 5%
&C1	20	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R7		036-14100-00	RES M/F 0805 CHIP 1K 5%
&C1	22	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R8		036-12220-00	RES M/F 0805 CHIP 22E 5%
&C1	24	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R9		036-14270-00	RES M/F 0805 CHIP 2K7 5%
&C1	25	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R10		036-14120-00	RES M/F 0805 CHIP 1K2 5%
&C1	27	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V	R11		036-13150-00	RES M/F 0805 CHIP 150E 5%
C2		025-08100-02	CAP TANT BEAD 10M 10% 18V	R12		036-12100-00	RES M/F 0805 CHIP 10E 5%
C3		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V	R13		036-12390-00	RES M/F 0805 CHIP 39E 5%
C4		015-21100-01	CAP CER 0805 CHIP 1P0 +/-0.25P NPO 50V	R14		036-13330-00	RES M/F 0805 CHIP 330E 5%
C5		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V	R15		036-14180-00	RES M/F 0805 CHIP 1K8 5%
C6		028-02100-08	CAP TRIM 21/0P CER 5MM TOP ADJ	R16		036-13470-00	RES M/F 0805 CHIP 470E 5%
&C7	10	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R17		036-14120-00	RES M/F 0805 CHIP 1K2 5%
&C7	12	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R18		036-12820-00	RES M/F 0805 CHIP 82E 5%
&C7	14	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R19		036-12180-00	RES M/F 0805 CHIP 18E 5%
&C7	15	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R20		036-13270-00	RES M/F 0805 CHIP 270E 5%
&C7	17	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R21		036-13270-00	RES M/F 0805 CHIP 270E 5%
&C7	20	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R22		036-14180-00	RES M/F 0805 CHIP 1K8 5%
&C7	22	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R23		036-12270-00	RES M/F 0805 CHIP 27E 5%
&C7	24	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R24		036-14680-00	RES M/F 0805 CHIP 6K8 5%
&C7	25	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R25		036-13470-00	RES M/F 0805 CHIP 470E 5%
&C7	27	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V	R26		036-14100-00	RES M/F 0805 CHIP 1K 5%
&C8	10	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	R27		036-12470-00	RES M/F 0805 CHIP 47E 5%
&C8	12	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	10	051-00005-61	COIL RESNTR 400-457.5MHZ T800'S
&C8	14	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	12	051-00005-61	COIL RESNTR 400-457.5MHZ T800'S
&C8	15	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	14	051-00005-61	COIL RESNTR 400-457.5MHZ T800'S
&C8	17	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	15	051-00005-61	COIL RESNTR 400-457.5MHZ T800'S
&C8	20	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	17	051-00005-61	COIL RESNTR 400-457.5MHZ T800'S
&C8	22	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	20	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
&C8	24	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	22	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
&C8	25	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	24	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
&C8	27	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V	ATL1	25	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
C9		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V	ATL1	27	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
C10		015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V				
C11		015-21330-01	CAP CER 0805 CHIP 3P3 +/-0.25P NPO 50V				
C12		015-22820-01	CAP CER 0805 CHIP 82P 5% NPO 50V			065-00010-13	BEAD FERRITE 7D 1.9*0.9*3.8MM STACK POLE FIT TO LEAD OF L4
C13		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V				
C14		015-23100-01	CAP CER 0805 CHIP 100P 5% NPO 50V			220-01184-01	PCB T880 VCO
C17		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V				
C18		015-22580-01	CAP CER 0805 CHIP 56P 5% NPO 50V			240-00025-36	PLUG 32WAY 1ROW PC MTG HARWIN PL1, PL2, PL3, PL4
C19		015-22580-01	CAP CER 0805 CHIP 56P 5% NPO 50V				
C20		015-23470-08	CAP CER 0805 CHIP 470P 10% X7R 50V			345-00040-10	SCREW M3*6MM PAN POZI ST BZ
&C21	10	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V			350-00016-42	SPACER 5MM HI 8MM X M3 STUD 2.5MM X M3 H
&C21	12	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V			352-00010-08	NUT M3 COLD FORM HEX ST BZ
&C21	14	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C21	15	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V			353-00010-10	WASHER M3 FLAT ST BZ 6.75MM OD A4M1215
&C21	17	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C21	20	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V			353-00010-13	WASHER M3 SHAKEPROOF INT BZ
&C21	22	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C21	24	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C21	25	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C21	27	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
C22		015-21880-01	CAP CER 0805 CHIP 8P8 +/-0.25P NPO 50V				
C23		015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V				
C24		015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V				
C26		015-22580-01	CAP CER 0805 CHIP 56P 5% NPO 50V				
C27		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V				
&C28	10	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C28	12	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C28	14	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C28	15	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C28	17	015-22100-01	CAP CER 0805 CHIP 10P +/-0.5P NPO 50V				
&C28	20	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V				
&C28	22	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V				
&C28	24	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V				
&C28	25	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V				
&C28	27	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V				
C29		015-21330-01	CAP CER 0805 CHIP 3P3 +/-0.25P NPO 50V				
C30		015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V				
D1		001-00012-63	DIODE VARICAP 8B808				
D2		001-00012-63	DIODE VARICAP 8B808				
L1		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L2		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L3		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L4		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L5		052-08130-25	COIL A/W 2.5T/3.0MM HOR 0.8MM WIRE				
L6		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L7		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM WIRE				
L8		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM WIRE				
L9		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET				
L10		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM WIRE				
Q1		000-10085-10	XSTR SMD MMBR851 NPN UHF SOT-23				
Q2		000-10057-10	XSTR SMD MMBR571 NPN SOT-23 UHF LO PWR				
Q3		000-10057-10	XSTR SMD MMBR571 NPN SOT-23 UHF LO PWR				
Q4		000-10057-10	XSTR SMD MMBR571 NPN SOT-23 UHF LO PWR				
Q5		000-00032-61	XSTR MRF571 NPN UHF 10V 10MA 1 W				
Q6		000-10006-57	XSTR SMD BCW70/BC857 PNP SOT-23 AF SMALL				
R1		036-14390-00	RES M/F 0805 CHIP 3K9 5%				





220-00011-44B

DIAGRAM 1 - EPROM PCB LAYOUT - TOP SIDE



220-00011-44B

DIAGRAM 2 - EPROM PCB LAYOUT - BOTTOM SIDE



220-01184-01 1A

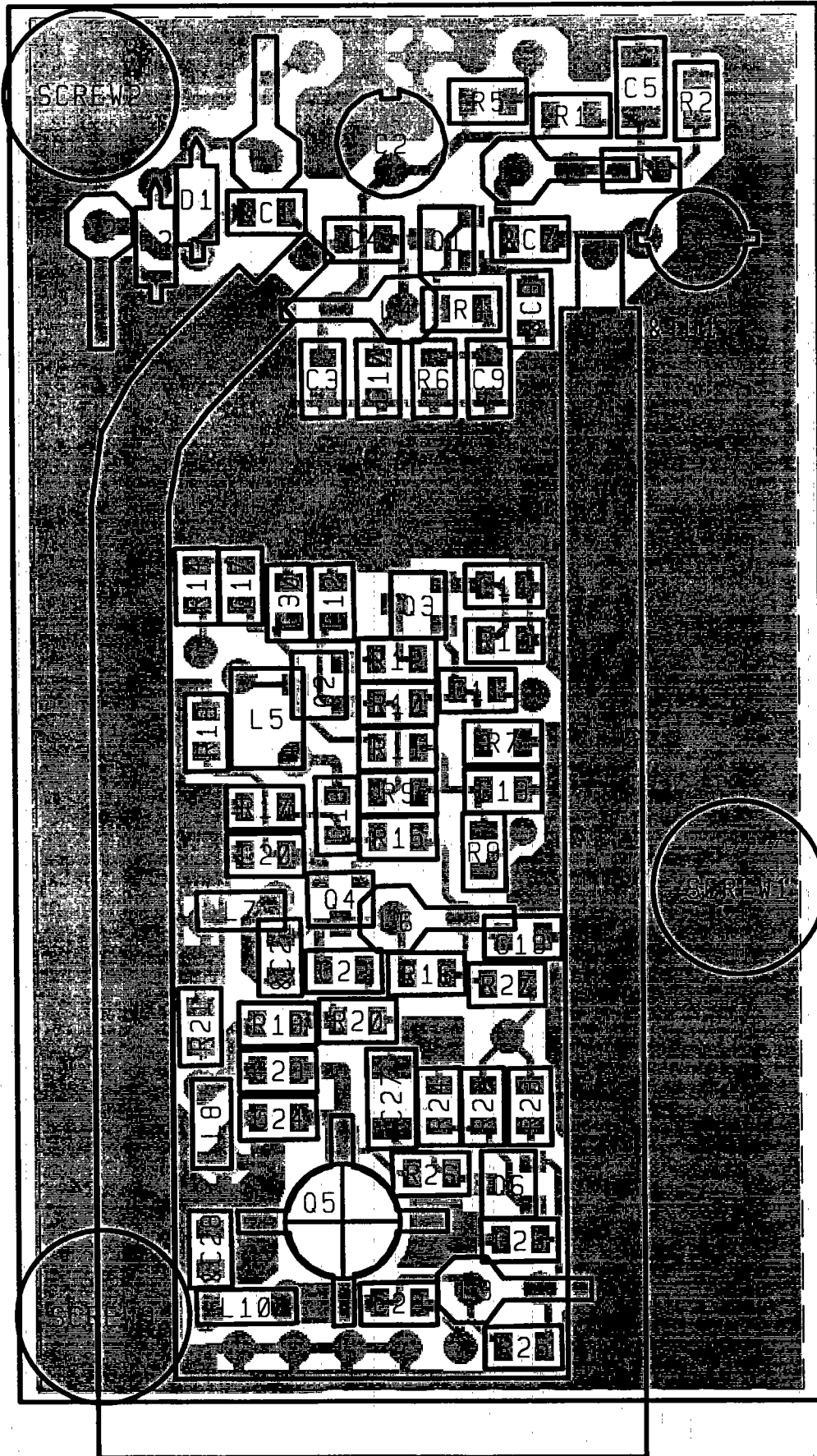


DIAGRAM 3 VCO PCB LAYOUT - TOP SIDE.

220-01184-01 1A

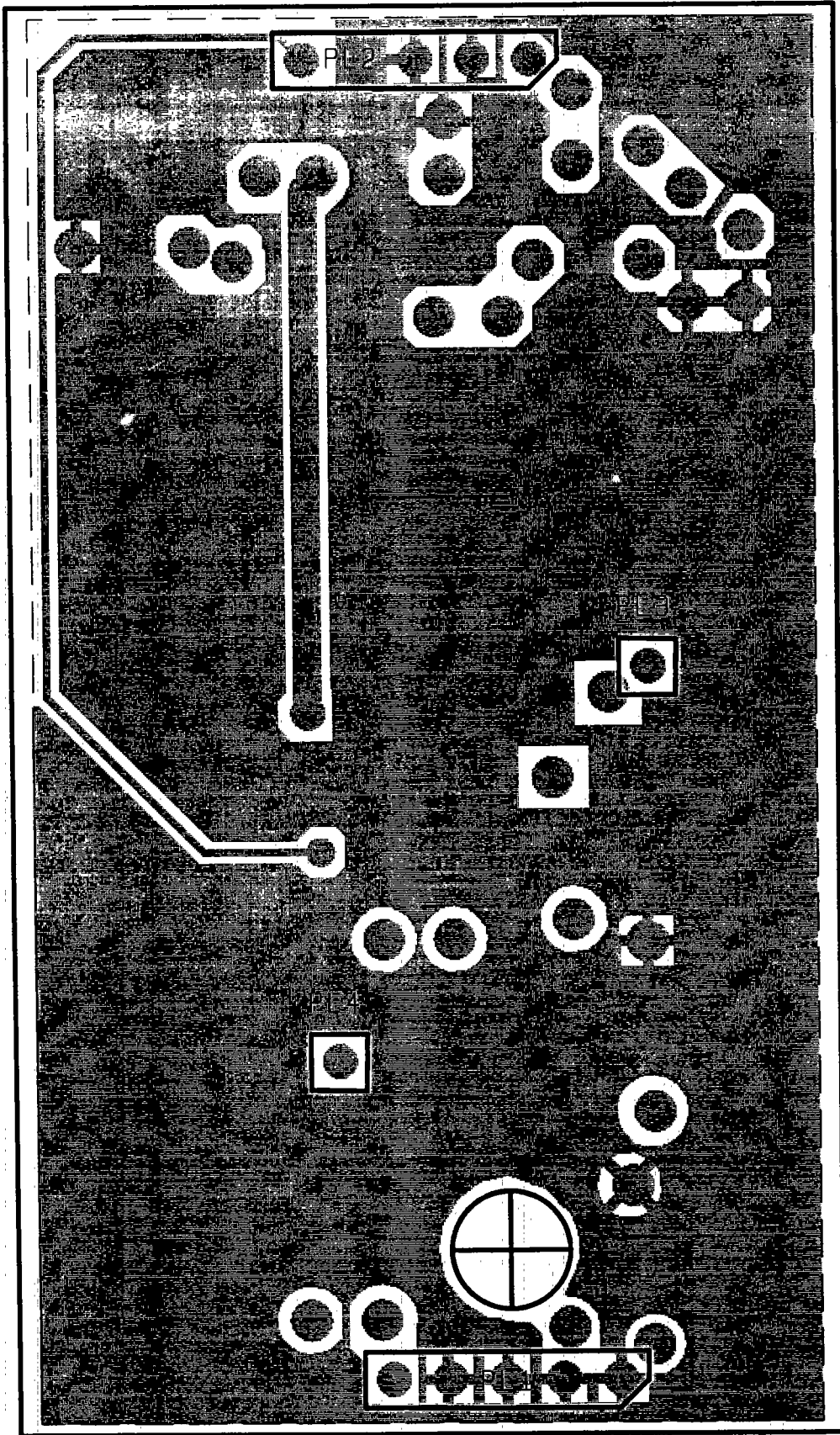


DIAGRAM 4 VCO PCB LAYOUT - BOTTOM SIDE.



# T881 Grid Reference Index

DEVICE	PCB	CIRCUIT	DEVICE	PCB	CIRCUIT	DEVICE	PCB	CIRCUIT	DEVICE	PCB	CIRCUIT
C1	2:Q6	1-A8	C221	2:T9	3-F3	D303	2:G10	4-E1			2-F3
C2	2:K6	1-B4	C222	1:S8	3-I3	D401	1:S13	4-M1	PL102	1:D11	2-F3
C3	2:L6	1-B5	C223	1:R9	3-M1	D402	1:T11	4-N2			2-G3
C4	2:K6	1-B4	C224	1:Q8	3-K6	D403	1:V6	3-D7			2-F4
C5	2:L6	1-B5	C225	2:R8	3-M6	FWD-PWR1	1:J13	4-B9			2-G4
C6	2:Q5	1-B7	C226	1:R8	3-M6	FWD-PWR2	1:T13	4-L1			2-G3
C9	2:K6	1-C4	C227	1:R10	3-O7	-IC1	1:R6	1-B8			2-G3
C10	2:L6	1-D5	C228	2:R7	3-D3	IC3	1:M5	1-E4			2-G3
C11	2:M5	1-E5	C229	2:T10	3-E4	IC4	1:T4	1-F7			2-F3
C12	2:L6	1-E4	C230	2:R9	3-N7			1-G8			2-F3
C13	2:S5	1-E8	C231	2:T9	3-P2	IC5	1:N5	1-F3			2-F3
C14	1:S5	1-F8	C232	2:R7	3-J6	IC6	1:N5	1-M4	PL103	1:C10	2-G1
C15	1:M6	1-G4	C233	2:R10	3-P7			1-K5			2-G1
C16	2:M5	1-G4	C234	2:R7	3-I6			1-K3			2-G2
C17	2:L4	1-G2	C235	2:R8	3-C2	IC7	1:S6	1-E8			2-G1
C19	2:P4	1-G2	C300	2:H11	4-B8			1-D7			2-G2
C20	2:N4	1-H3	C301	2:H11	4-C8			1-D7			2-G1
C25	1:P6	1-J5	C302	2:H12	4-B7			1-E7	PL200	1:V6	3-B7
C26	2:M6	1-J2	C303	2:H12	4-C6			1-G7			3-B7
C29	1:N5	1-K5	C310	2:G12	4-H5			1-H7			3-B8
C30	1:N6	1-N5	C320	2:G11	4-J9			1-I7			3-B7
C33	2:P9	1-L5	C350	2:G12	4-F5	IC100	1:D5	2-D1			3-B8
C34	1:T5	1-M8	C351	2:G12	4-G5	IC101	1:B11	2-E4			3-B6
C35	1:R6	1-O7	C352	1:J11	4-F7	&IC102	1:B8	2-G5			3-B5
C36	2:R6	1-P7	C354	2:G11	4-H7			2-J5			3-B9
C39	2:Q8	1-O9	C355	2:G11	4-I7			2-F1			3-B9
C40	2:Q5	1-C7	C356	2:G11	4-I7			2-H2			3-B8
C42	2:N5	1-K5	C357	2:G11	4-J8			2-G0			3-B8
C43	2:R4	1-G6	C358	2:H13	4-K8	IC103	1:D7	2-H0			3-B6
C44	2:S5	1-H7	C359	2:H13	4-K7			2-J2			3-B6
C45	2:P9	1-M6	C360	2:H13	4-L8			2-M4			3-B7
C46	2:M6	1-D5	C361	2:H13	4-M8			2-P4			3-B6
C47	1:R6	1-C9	C362	2:J12	4-K9			2-P1	P401	1:V9	4-P2
C48	2:P8	1-O9	C363	2:H10	4-J6	IC104	1:D9	2-M3	Q1	2:K5	1-C4
C101	1:C9	2-B7	C364	1:J12	4-I9			2-P2	Q5	2:T6	1-M9
C102	1:B4	2-C3	C366	2:G9	4-C0			2-M0	Q6	2:T5	1-N9
C103	1:B5	2-C3	C367	2:G9	4-C1	IC201	1:T7	3-A2	Q7	2:T5	1-N7
C104	2:D12	2-C3	C368	2:F9	4-D1	IC202	1:S7	3-C2	Q101	2:C9	2-D7
C105	2:C9	2-C6	C369	2:F10	4-F1			3-H2	Q102	2:C12	2-E3
C106	2:C9	2-C7	C370	2:G10	4-F2			3-J2	Q103	2:A7	2-H7
C107	1:D9	2-C8	C371	2:G10	4-F0			3-M1	Q104	2:B7	2-I8
C108	2:D12	2-D2	C372	2:H10	4-E2			3-G1	Q105	2:B12	2-O8
C109	2:C12	2-D3	C373	2:H10	4-E3	IC203	1:H11	4-I9	Q106	1:C5	2-C1
C110	2:C12	2-D3	C374	2:H9	4-F3			4-C8	Q208	2:Q8	3-L6
C111	2:D12	2-E2	C415	2:S13	4-M0			4-C6	Q209	1:R8	3-D2
C112	1:D8	2-E6	C416	2:T13	4-L0			4-G6	Q210	1:T10	3-E4
C113	2:D10	2-E2	C417	2:T13	4-Q2			4-J8	Q211	2:T9	3-P2
C115	2:D10	2-F6	C418	2:T11	4-N2	#IC404	2:Q12	4-K2	Q212	2:R9	3-N7
C118	2:B9	2-F7	C419	2:V12	4-N1	LKA	2:T6	1-O8	Q350	2:H10	4-I6
C119	1:D10	2-G3	C422	2:V11	4-O1	LKB	2:T5	1-N7	Q351	2:H13	4-L7
C121	2:B7	2-G7	C426	2:V10	4-O1	L1	1:K6	1-B4	Q352	1:J13	4-M8
C123	2:A7	2-H7	C429	2:V9	4-P1	#L300	1:H7	4-B1	Q353	2:G12	4-I6
&C124	2:C7	2-I1	C430	1:N13	4-L3	L301	1:F10	4-E1	Q354	2:G10	4-E2
C126	2:B7	2-H0	C431	2:M13	4-K2	L302	1:G10	4-E1	Q355	2:H9	4-E3
C128	2:B7	2-I7	C432	2:P13	4-K2	L410	1:S12	4-K3	R1	2:L6	1-B6
C129	1:A6	2-J7	C433	2:S11	4-K3	L411	1:S13	4-M1	REV-PWR1	1:H13	4-B7
&C133	2:D5	2-N4	C437	1:S13	4-J2	L412	1:T11	4-O3	R2	2:R5	1-B9
&C135	2:E6	2-O4	C438	2:N13	4-L3	L413	2:V11	4-O2	REV-PWR2	1:T13	4-O3
C137	1:D8	2-O1	C439	2:L11	4-E6	L414	2:V10	4-O2	R3	2:M4	1-B1
C139	2:D6	2-H0	C446	1:R11	4-M8	L415	2:V9	4-P2	R4	2:M9	1-A4
&C141	2:E5	2-O5	D4	2:M6	1-I3	L416	1:L11	4-E6	R5	2:K6	1-B4
C145	2:B10	2-D5	D5	2:N5	1-M3	L417	1:S11	4-N9	R6	2:M4	1-B1
C146	2:B7	2-F6				PAD1	1:C2	2-P8	R7	2:K6	1-C5
C147	1:B8	2-G4				PL1	1:P6	1-O1	R9	2:K5	1-C5
C148	2:B8	2-H2	D100	2:D12	2-C2			1-O1	R10	2:K6	1-C4
C149	2:C7	2-H5			2-D2			1-O0	R11	2:M4	1-C1
C150	1:B6	2-I6	D101	2:C5	2-B1			1-O2	R13	2:L5	1-C5
&C151	2:D7	2-K2			2-B1			1-O3	R14	2:K5	1-C1
C152	1:D7	2-K2	D102	2:D4	2-B2			1-O2	R15	2:L5	1-C5
C153	2:B5	2-K6			2-B2			1-O2	R16	2:L5	1-D1
C154	1:C5	2-L1	D103	2:C12	2-C3			1-O1	-R17	1:Q6	1-B7
C156	1:D5	2-M6			2-D3			1-O2	R18	2:M6	1-D6
&C157	2:E5	2-O4	D104	2:B6	2-L5			1-O1	R19	2:L4	1-D1
C158	2:D7	2-P0			2-K5	PAD2	1:B12	2-F9	R20	2:L4	1-D1
&C160	2:C8	2-O3	D106	1:B13	2-P8	PAD3	1:C11	2-B2	R21	2:R5	1-F8
&C161	2:C6	2-F1	%D107	1:C5	2-B4	PAD4	1:D11	2-P6	R24	2:L5	1-G5
C162	1:E3	2-A3	%D108	1:B5	2-C4	PAD5	1:E4	2-M6	R25	2:M4	1-G3
C163	1:D3	2-A3	D204	2:Q8	3-K7	PAD6	1:C2	2-F6	R29	2:N5	1-H3
C164	2:E5	2-D0			3-K6	PAD7	1:A5	2-P7	R30	2:M5	1-H3
C166	2:E7	2-O1	D205	2:U6	3-C6	PAD8	1:U4	1-P0	R32	2:M5	1-I3
&C167	2:B10	2-D5			3-O6	PAD9	1:U4	1-O1	R35	2:M6	1-I3
C168	2:C8	2-E2	D206	2:T10	3-D4	PAD10	1:U4	1-O1	R36	2:M6	1-I3
&C169	2:C8	2-H2			3-D5	PAD11	1:U5	1-O0	R37	2:P6	1-I5
&C170	2:D7	2-I2	D207	2:R8	3-H3	PAD12	1:C13	2-O8	R38	2:P6	1-J6
&C171	2:E5	2-O6			3-I2	PL100	1:D10	2-E8	R39	2:N6	1-J3
C209	1:Q7	3-J6	D208	2:S9	3-K3			2-D7	R40	2:N6	1-J2
C212	2:R9	3-O7			3-K3			2-D7	R42	2:N5	1-K5
C213	1:Q8	3-O7	D209	2:S10	3-N2			2-D7	R43	2:N6	1-M5
C214	2:T7	3-A2			3-N2			2-E7	R46	2:P9	1-L5
C215	1:S7	3-C2	D210	1:S9	3-K1			2-E7	R47	2:T6	1-M8
C216	2:S7	3-C3	D211	2:R9	3-L1	PL101	1:C11	2-E3	R48	2:T5	1-N8
C217	2:U6	3-C5			3-L1			2-E3	R49	2:T4	1-N7
C218	2:S8	3-H1	D300	2:G9	4-D1			2-E3	R50	2:T4	1-N7
C219	1:T9	3-F3	D301	1:H11	4-J9			2-F3	R51	2:T5	1-N7
C220	2:T9	3-F3	D302	2:G9	4-D1			2-F3	R52	2:L4	1-H4

## T881 Grid Reference Index

DEVICE	PCB	CIRCUIT	DEVICE	PCB	CIRCUIT	DEVICE	PCB	CIRCUIT
R54	2:R4	1-G6	R227	2:Q10	3-O7	SK300	1:F10	4-F1
R55	2:R5	1-H6	R228	2:T8	3-A3	SJ4-1	1:P9	1-P5
R56	2:R5	1-H6	R229	2:S8	3-A3	SJ4-2	1:P9	1-P9
R60	2:P9	1-L5	R230	2:R7	3-C2	SJ4-3	1:P8	1-P8
R64	2:Q5	1-C7	R231	2:T9	3-D5	SJ4-4	1:P8	1-P8
R65	2:R5	1-D7	R232	1:T10	3-D3	SJ4-5	1:P8	1-P9
R67	2:S4	1-G7	R233	1:U9	3-E5	SK401	1:M13	4-J2
R68	2:R4	1-G6	R234	1:U8	3-E5	SJ5-1	1:K9	1-P5
R72	2:P9	1-M6	R235	2:S7	3-E3	SJ5-2	1:K9	1-P4
R73	2:P9	1-M6	R236	2:S8	3-E2	SJ5-3	1:K9	1-P4
R74	2:L6	1-B5	R237	2:S7	3-G3	SJ5-4	1:K8	1-P4
R75	2:L6	1-E5	R238	2:S8	3-G3	SJ5-5	1:K8	1-P5
R76	2:Q6	1-B9	R239	2:S8	3-G2	TX-LED	1:B12	2-P9
R77	2:Q6	1-C9	R240	2:S8	3-H3	TP1	1:T11	4-O9
R78	2:U6	1-O8	R241	2:T8	3-I3	TP2	1:T11	4-E7
RV100	1:B10	2-B4	R242	2:T8	3-I3	TP3	1:N6	1-N5
R100	2:C5	2-B0	R243	2:S8	3-J3	TP4	1:R6	1-P7
R101	2:D5	2-B1	R244	2:R8	3-J2	TP5	1:J5	4-F3
R102	2:D5	2-C1	R245	2:R9	3-J1	TP6	1:F12	4-F6
R103	2:D9	2-C7	R246	2:S9	3-K3	TP12	1:M5	1-L3
RV104	1:C6	2-I6	R247	2:S10	3-M2	T100	1:C4	2-B3
R104	2:B5	2-C4	R248	2:R9	3-M1	T200	1:R9	3-L7
RV105	1:D8	2-O3	R249	2:S10	3-N2			
R105	2:C9	2-C5	R250	2:S9	3-O2			
R106	2:D9	2-C6	R251	2:T9	3-O2			
&RV106	1:D6	2-K1	R252	2:Q9	3-L5			
R107	2:D9	2-D7	R253	2:R8	3-M6			
R108	2:D9	2-D8	R254	2:Q9	3-N5			
R109	2:D9	2-D7	R255	2:S8	3-H3			
R110	2:C12	2-D5	R256	2:S9	3-K3			
R111	2:E5	2-D0	R257	2:S9	3-K2			
R112	2:C9	2-D4	R258	2:S10	3-N2			
R113	2:C12	2-D3	R259	2:T7	3-B1			
&R115	2:E9	2-D6	R260	2:T7	3-B2			
R116	2:C12	2-E3	R300	2:H11	4-B8			
R117	2:E9	2-E8	R301	2:H11	4-B8			
&R118	2:D10	2-E2	R302	2:G11	4-D8			
R119	2:C11	2-E6	R303	2:H12	4-B7			
R120	2:C10	2-E4	R304	2:H12	4-B7			
R121	2:C10	2-E6	R305	2:G11	4-D7			
&R122	2:D8	2-E2	R306	2:H11	4-G7			
&R123	2:D6	2-F1	R307	2:G11	4-H8			
&R124	2:C6	2-F1	R308	2:G11	4-I7			
R127	2:C7	2-H3	R340	2:G11	4-I8			
R128	2:B8	2-G7	R341	2:H13	4-L8			
R131	2:C8	2-I2	R350	2:G12	4-E6			
&R136	2:C8	2-I1	RV351	1:F13	4-E5			
R141	2:A6	2-J7	R352	2:F12	4-F5			
R143	2:B6	2-K7	R353	2:G12	4-F7			
R146	2:D5	2-L6	R354	2:G12	4-G5			
&R147	2:D5	2-L1	R355	2:G12	4-H6			
R148	2:D5	2-M5	RV355	1:G13	4-I6			
R149	2:D7	2-M5	RV356	1:H10	4-G7			
R150	2:D6	2-M4	R357	2:H10	4-H7			
&R151	2:D6	2-N4	R358	2:G11	4-K9			
&R152	2:D5	2-N5	R359	2:G13	4-K7			
R155	2:B12	2-O8	R360	2:H13	4-L9			
R159	2:B12	2-O8	R361	2:H10	4-J6			
R162	2:B12	2-P9	R362	2:H10	4-J6			
&R163	2:C3	2-O6	R363	2:H11	4-K9			
R164	2:B11	2-P6	R364	2:J12	4-K9			
R166	2:B7	2-G6	R365	2:H11	4-F7			
R167	2:B8	2-G4	R366	2:G12	4-H5			
R168	2:B8	2-H5	R370	2:G9	4-C0			
R169	2:D8	2-H3	R371	2:G9	4-C0			
R170	2:B8	2-H4	R372	2:G9	4-C1			
R171	2:B8	2-H4	R373	2:G10	4-D0			
R172	2:D6	2-I7	R374	2:G10	4-E1			
R173	2:C7	2-I5	R375	2:G10	4-E0			
R174	2:C7	2-I5	R376	2:H10	4-E2			
R175	2:B7	2-I8	R377	2:G10	4-E2			
R176	2:C6	2-I6	R378	2:H9	4-F3			
R177	2:C7	2-I5	R379	2:H9	4-F3			
R178	2:D7	2-J2	R380	2:H9	4-J6			
&R179	2:D7	2-J3	R406	2:S12	4-M2			
R180	2:D7	2-K1	R407	2:T12	4-N1			
&R181	2:D7	2-K1	R432	1:L11	4-E6			
&R182	2:B6	2-K5	R437	2:R11	4-M9			
&R183	2:D7	2-K2	SUPPLY	1:B11	2-P6			
&R184	2:D5	2-O6	SK1	1:K6	1-B1			
&R185	2:E5	2-O6			1-B3			
R186	2:D8	2-O2			1-B3			
R187	2:E8	2-O1			1-B3			
R188	2:E7	2-P0			1-B2			
R189	2:D6	2-O4			1-B2			
&R190	2:E6	2-P4			1-B2			
R192	2:E9	2-P2			1-B2			
R194	2:D8	2-O3			1-B1			
R195	2:D8	2-P2			1-B1			
R196	2:E8	2-O3						
&R197	2:E7	2-P0	-SK2	1:Q6	1-B8			
&R198	2:C7	2-I2	SJ2	1:M9	1-A4			
RV201	1:T8	3-I3	SJ3	1:L8	1-P8			
RV202	1:S9	3-L1	SK100	1:B9	2-A7			
R224	2:Q7	3-J6	SW101	1:C12	2-B5			

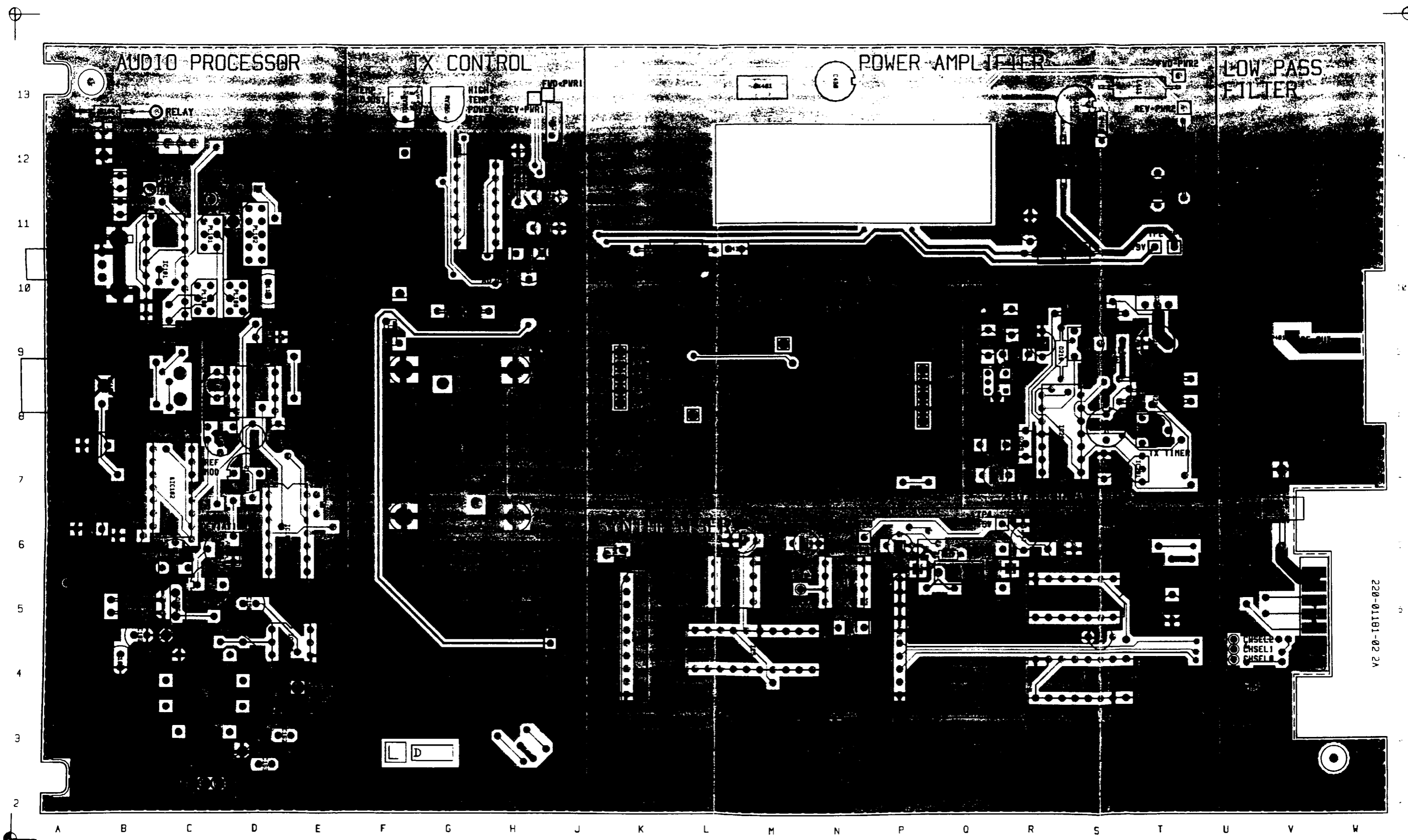
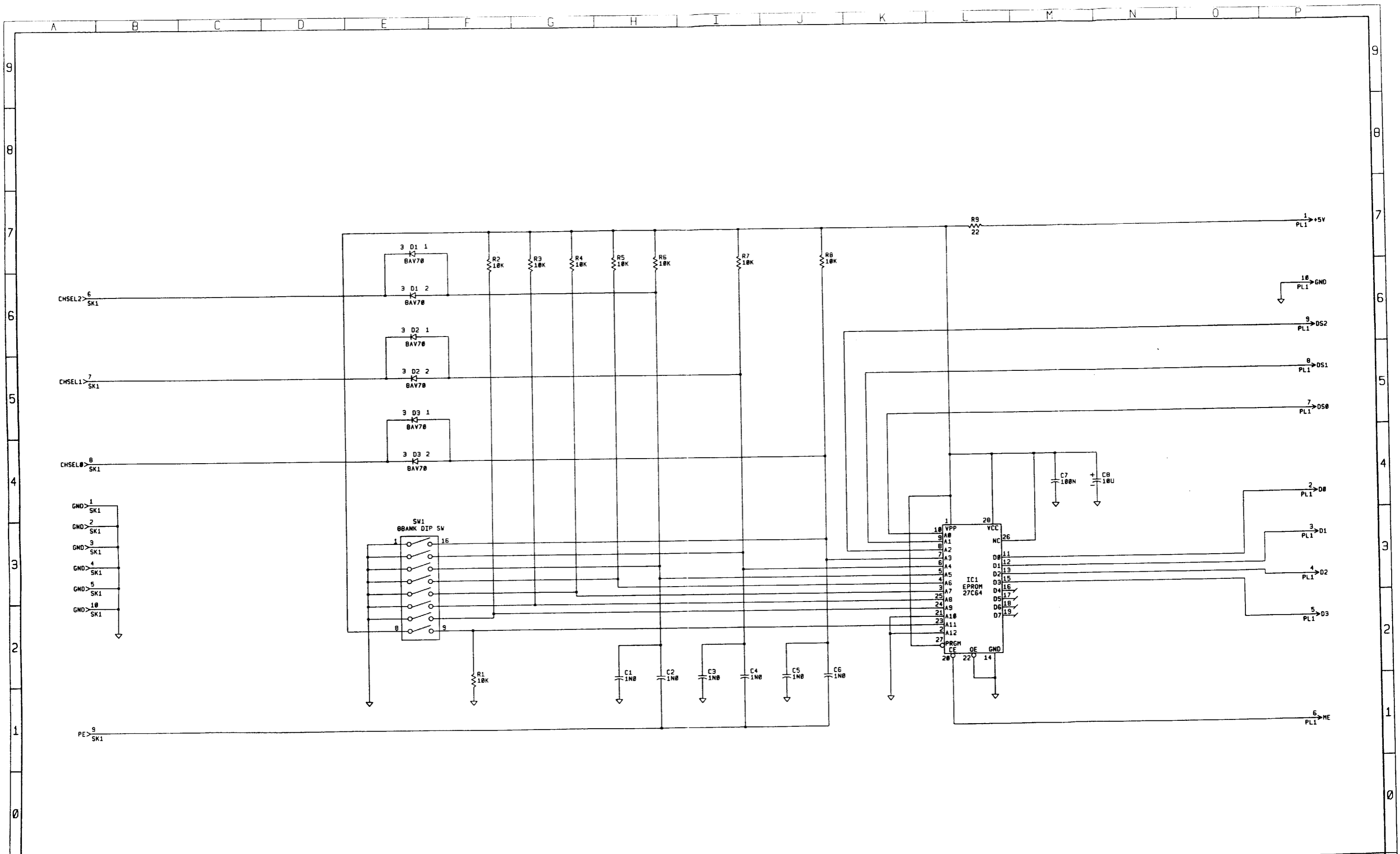


DIAGRAM 5 T881 PCB LAYOUT - TOP SIDE.





ISSUE:	AMENDMENTS:	DRAWN:	CHKD:	APVD:	DATE:

TITLE

EPROM

TAIT ELECTRONICS NEW ZEALAND

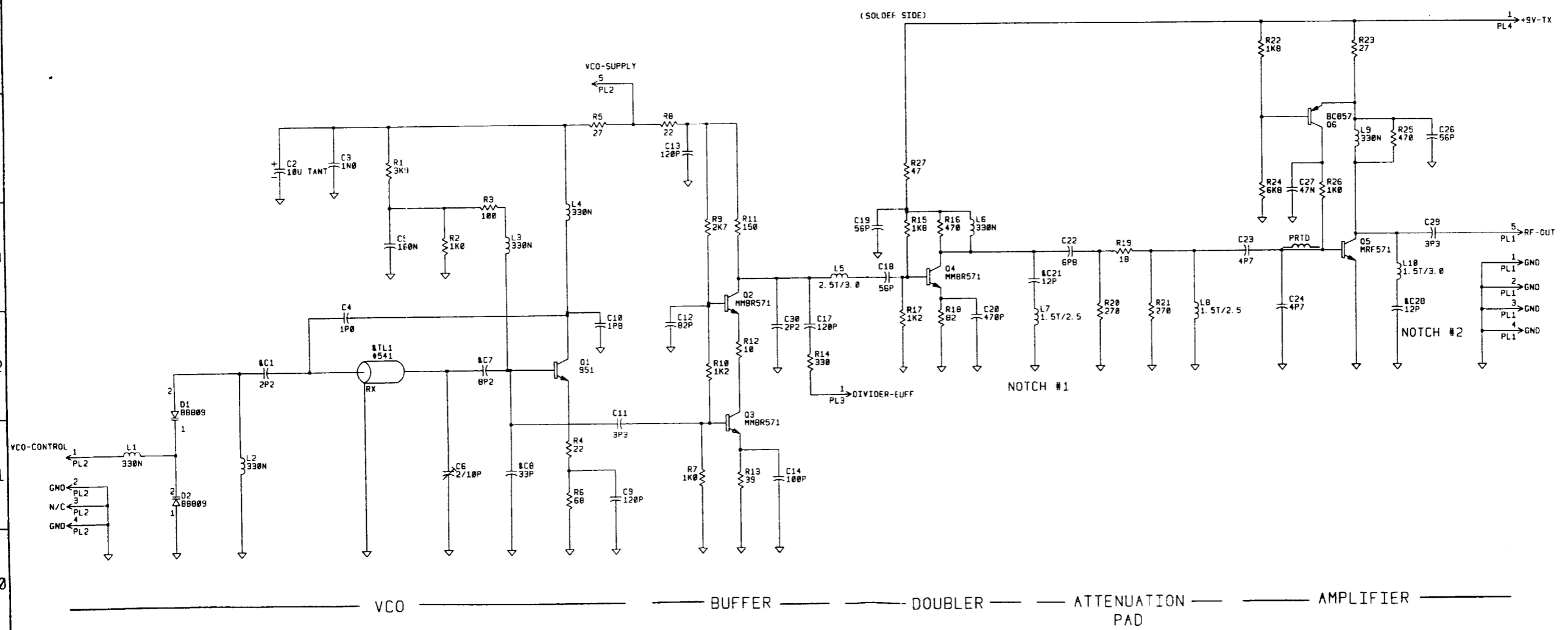
DRAWING NO: C656 SHEET 1 OF 1 ISSUE B

IPN: 220-00011-44

FILE NAME: 355EPLB FILE DATE: 02/06/89

# LAYOUT FOR RX LOW

VARIANT	OUTPUT FREQ. MHZ	&TL1	&TL1 LENGTH	COMPONENTS					
				&C1	&C7	&C8	&C21	&C28	
51	RX	755-835	051-00005-41	130MM	2P25	0P25	33PS	12PS	12PS
52	RX/TX	800-915	051-00005-61	125MM	1P85	4P75	27PS	10PS	10PS
54	TX	850-960	051-00005-42	120MM	1P85	4P75	27PS	10PS	0P25



ISSUE				AMENDMENTS:				DRAWN:				CHKD:				APVD:				DATE:				TITLE				TAIT ELECTRONICS NEW ZEALAND							
A				UPDATE FROM T99				WD				WD				WD				T88X VCO				DRAWING NO: C712				SHEET 1				ISSUE			
T99				UPDATE FROM P2				BP				BP				BP				IPN: 220-01184-01				OF 1				A							
PROT02				UPDATE FROM PROT01				BP				BP				BP				FILE NAME: 888VCLA				FILE DATE: 14/6/98											
PROT1				ORIGINAL				BP				BP				BP																			

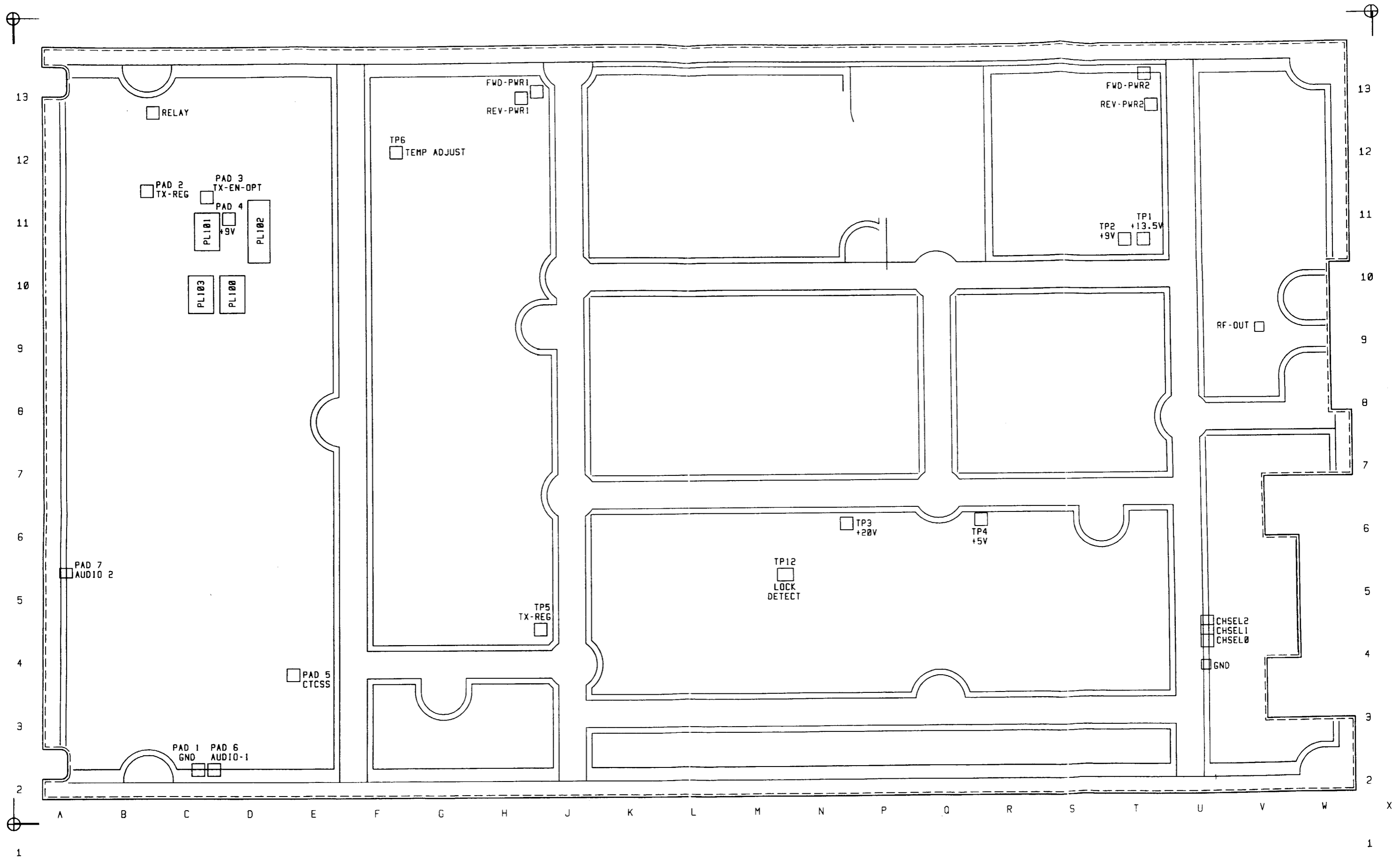
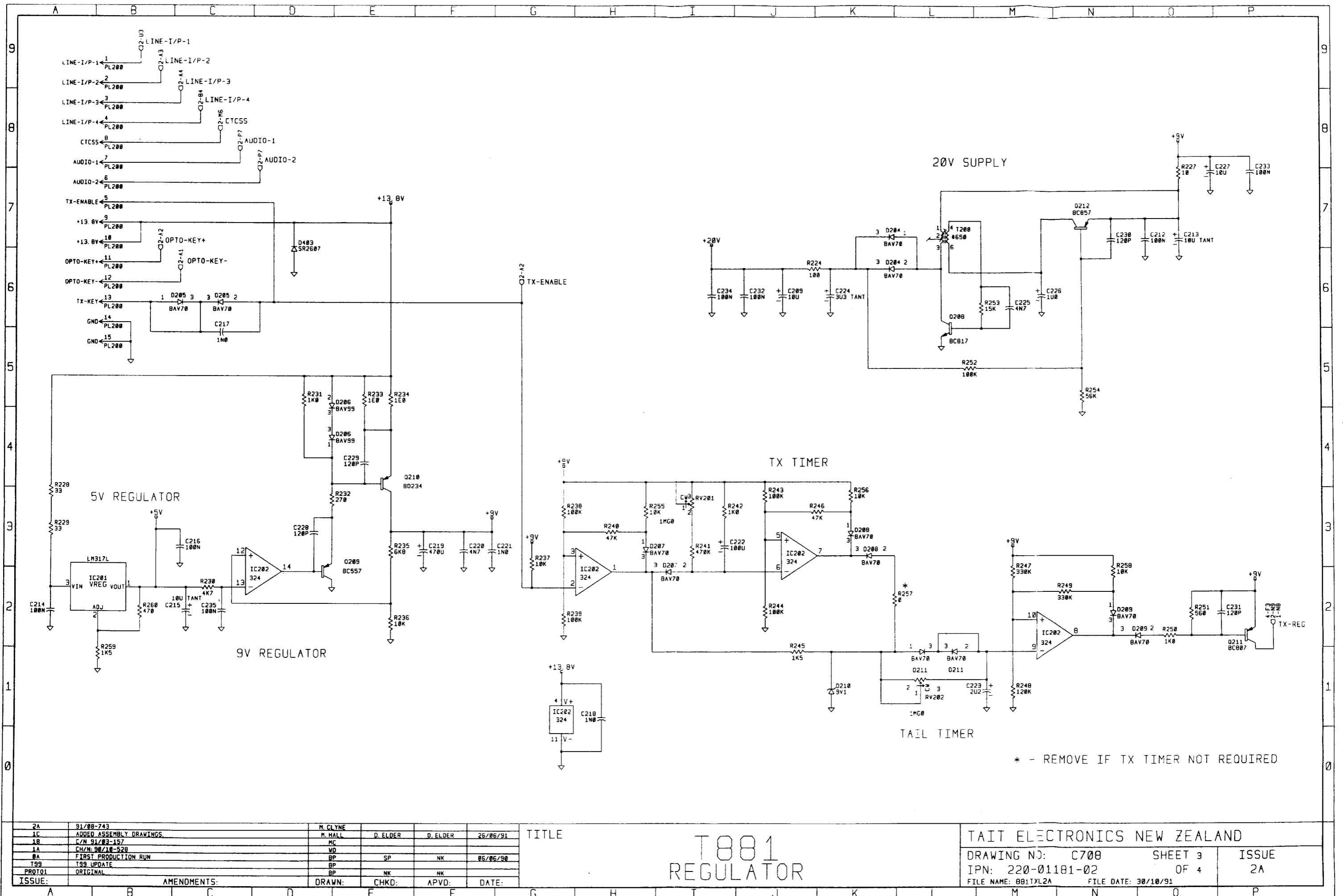


DIAGRAM 7: T881 TRANSMITTER TESTPOINT/OPTION DRAWING.



2A	91/88-743	M. CLYNE			
1C	ADDED ASSEMBLY DRAWINGS	M. HALL	D. ELDER	D. ELDER	26/06/91
1B	C/N 91/03-157	MC			
1A	CH/M 98/10-52B	MD			
0A	FIRST PRODUCTION RUN	BP	SP	NK	05/06/90
T99	T99 UPDATE	BP			
PROT01	ORIGINAL	BP	NK	NK	
ISSUE:	AMENDMENTS:	DRAWN:	CHKD:	APVD:	DATE:

TITLE

# T881 REGULATOR

TAIT ELECTRONICS NEW ZEALAND

DRAWING NO: C708 SHEET 3 OF 4 ISSUE 2A

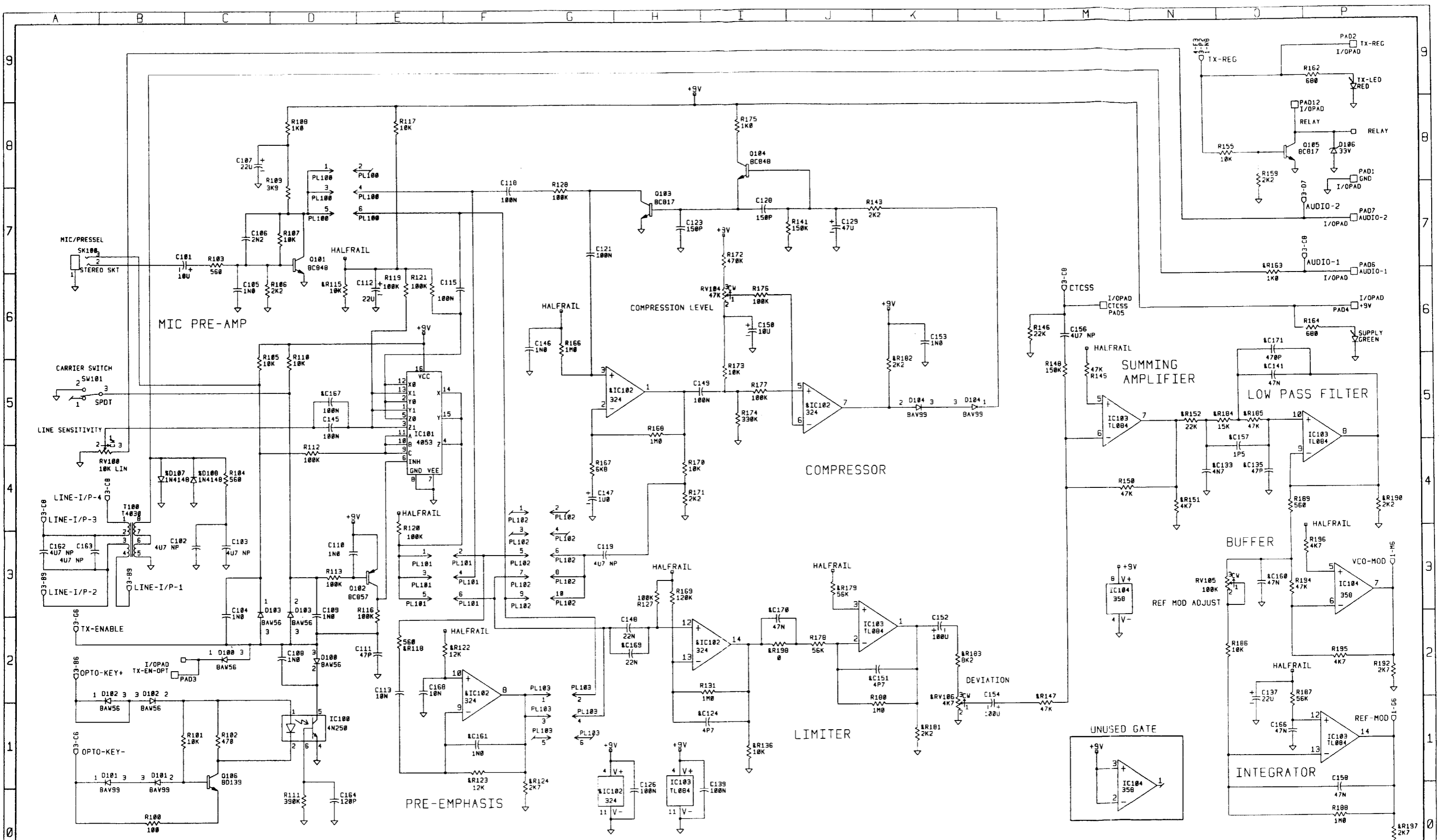
IPN: 220-01181-02

FILE NAME: 001TXL2A FILE DATE: 30/10/91

REGULATOR CIRCUIT DIAGRAM

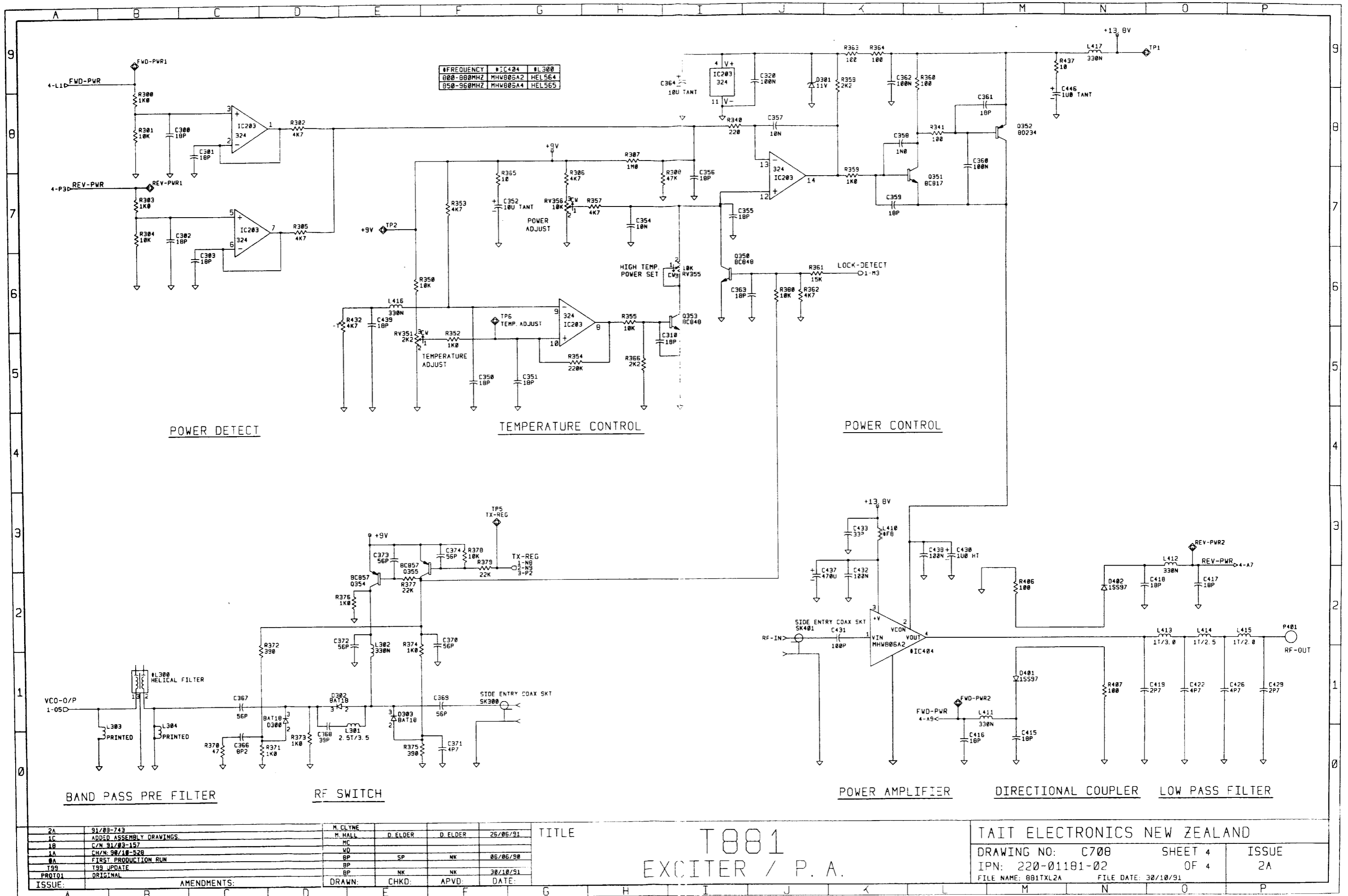






2A	91/00-743	M. CLYNE				TITLE	T881			TAIT ELECTRONICS NEW ZEALAND		
1C	ADDED ASSEMBLY DRAWINGS.	M. HALL	D. ELDER	D. ELDER	26/06/91		AUDIO PROCESSOR			DRAWING NO: C708 SHEET 2 OF 4 ISSUE 2A		
1B	C/N 91/02-157	MC								IPN: 220-01101-02 FILE DATE: 30/10/91		
1A	CH/M: 90/10-520	WD								FILE NAME: 001X12A		
0A	FIRST PRODUCTION RUN	BP	SP	NK	06/06/90							
199	ISS UPDATE	BP										
PROT01	ORIGINAL	BP	NK	NK								
ISSUE:	AMENDMENTS:	DRAWN:	CHKD:	APVD:	DATE:							

AUDIO PROCESSOR CIRCUIT DIAGRAM



EXCITER/PA CIRCUIT DIAGRAM