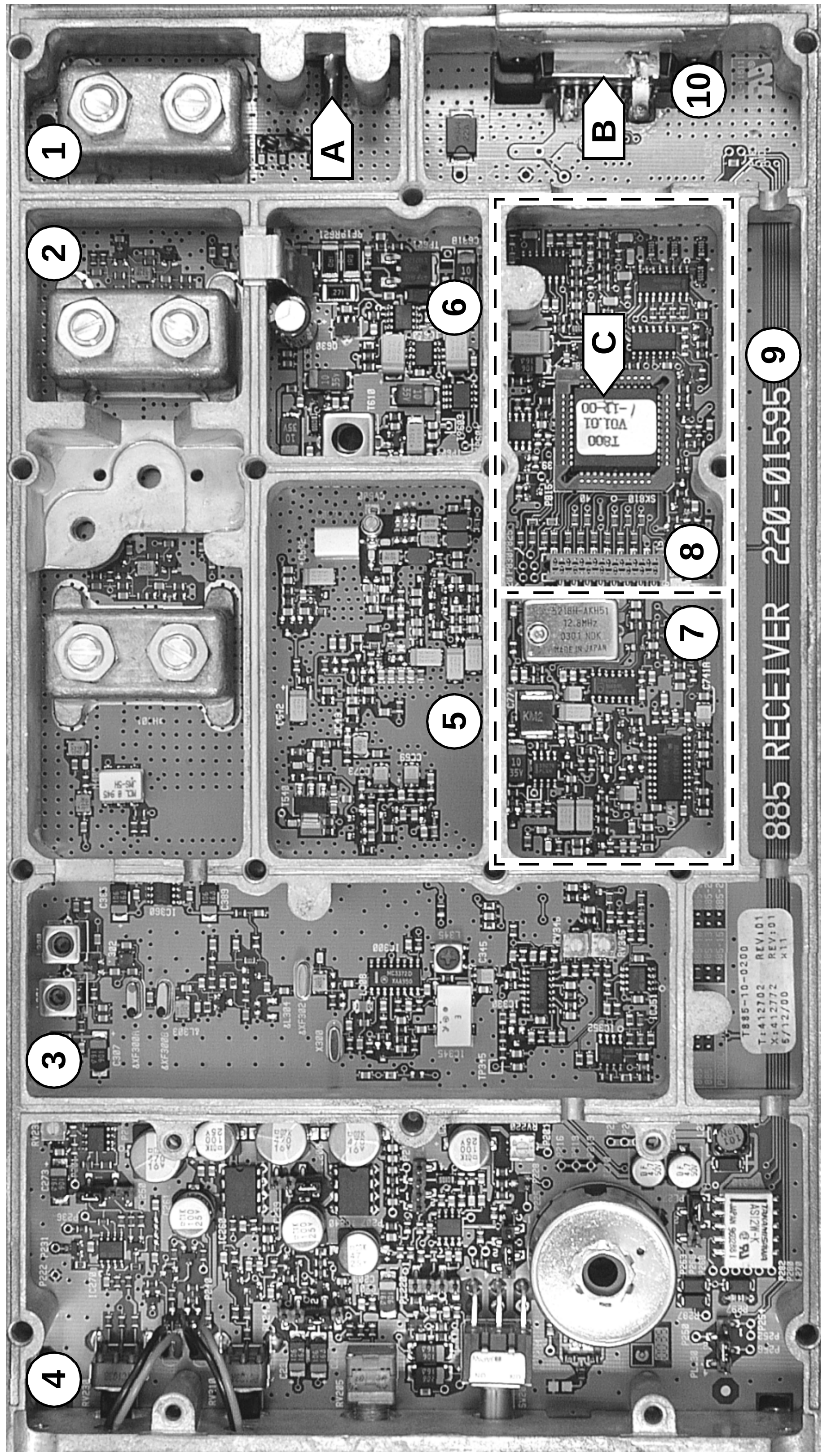
The photograph in Figure 1.1 on the next page will help you to identify the main circuit blocks in the T885.

There is a similar photograph in Figure 4.3 which shows the main tuning and adjustment controls.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

The photograph in Figure 1.2 on the next page shows the T885 front panel controls.




**Key:**

1 low pass filter
2 receiver front end
3 receiver IF
4 audio processor
5 VCO
6 regulators
7 synthesiser

8 microcontroller and CTCSS
9 duct for cabling to extra D-range (if fitted)
10 D-range

A RF input
B D-range connector ("D-range 1") incl. audio out & DC in (refer to Section 1.2 in Part F)
C microcontroller

*Figure 1.1 T885 Main Circuit Block Identification*

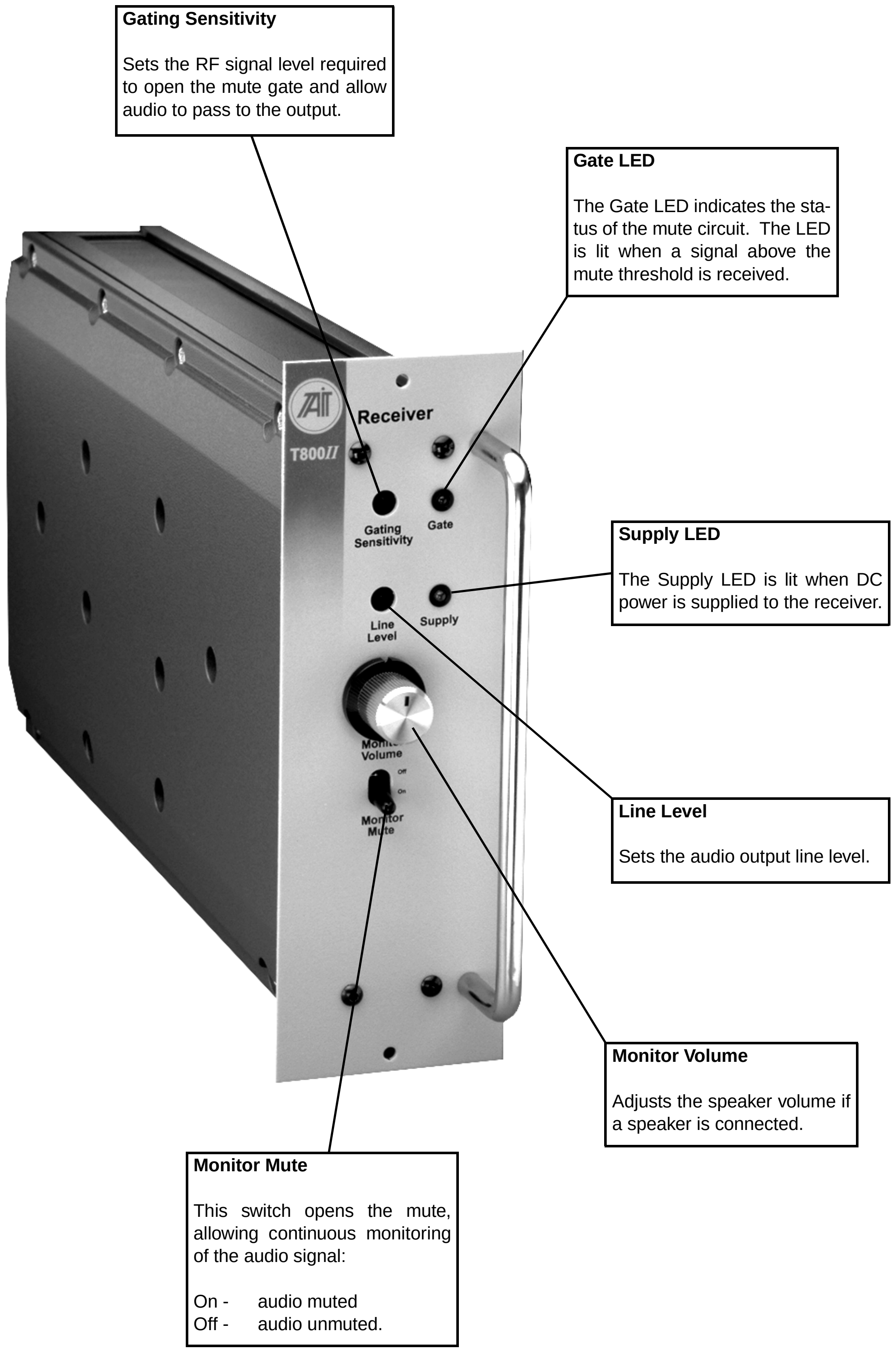



*Figure 1.2 T885 Front Panel Controls*

The photograph printed at right will help you to identify the main controls used in tuning and adjusting the T885.

There is a similar photograph in Figure 1.1 which shows the main circuit blocks.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

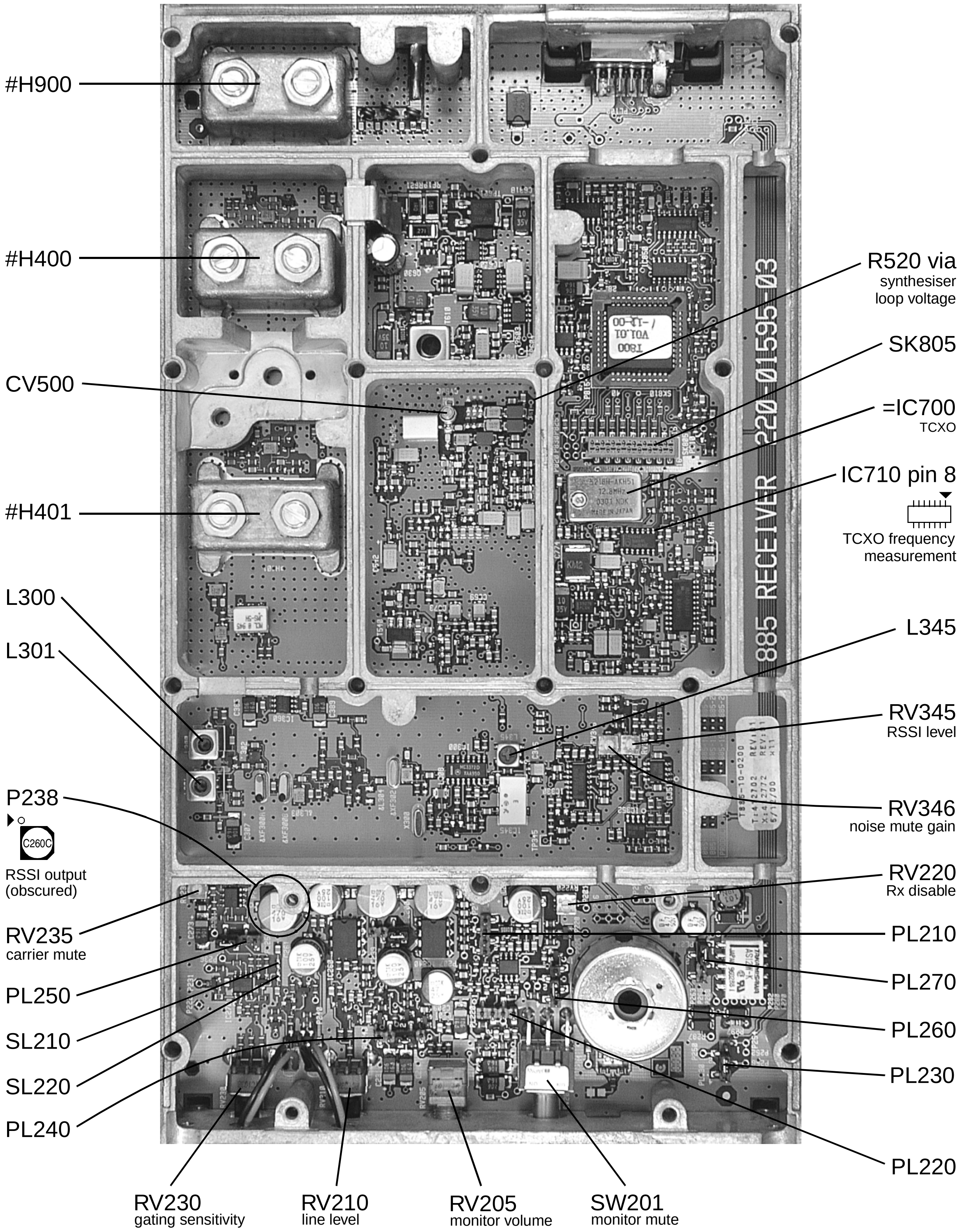
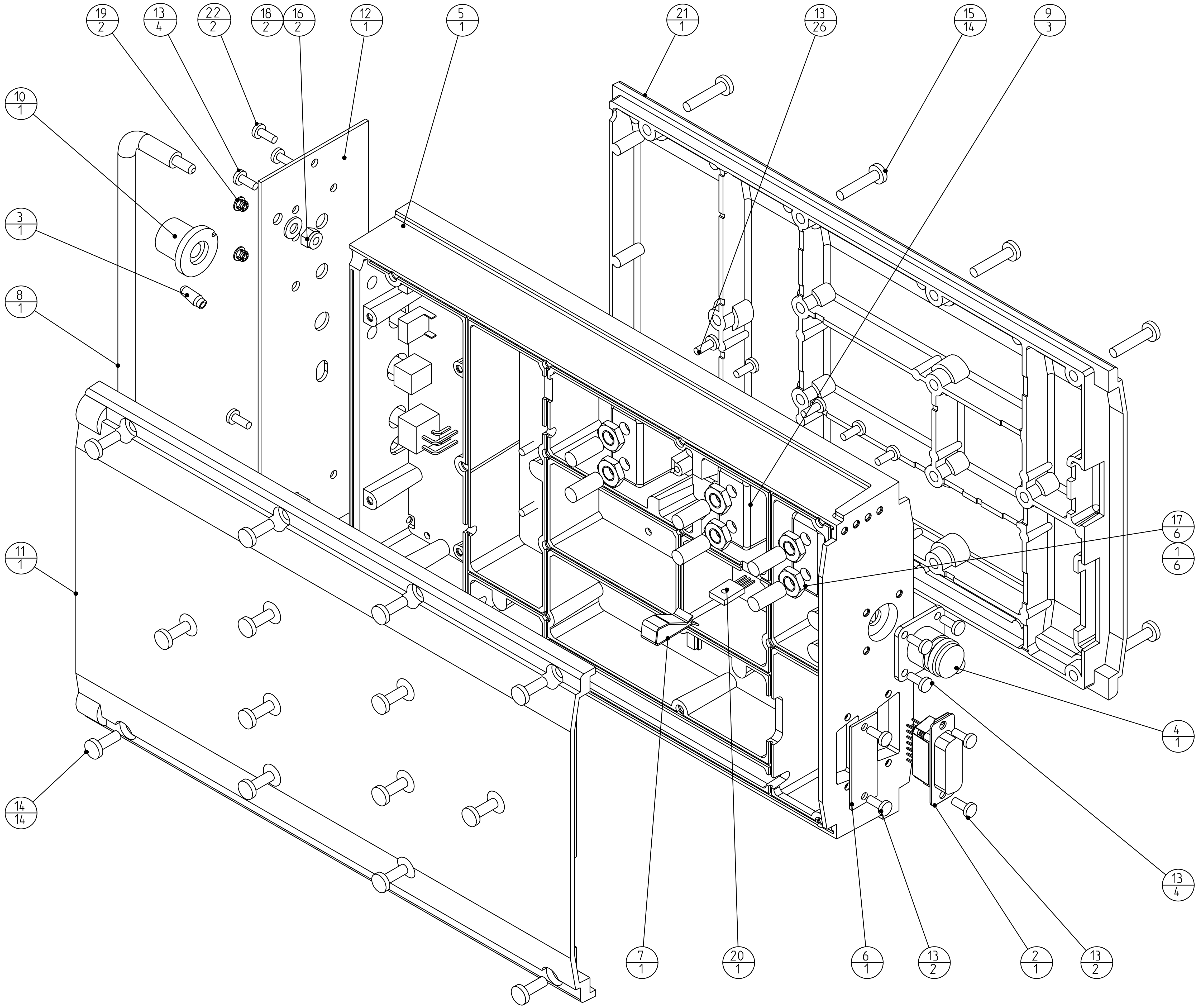



*Figure 4.3 T885 Main Tuning & Adjustment Controls*




**Key**

33/2

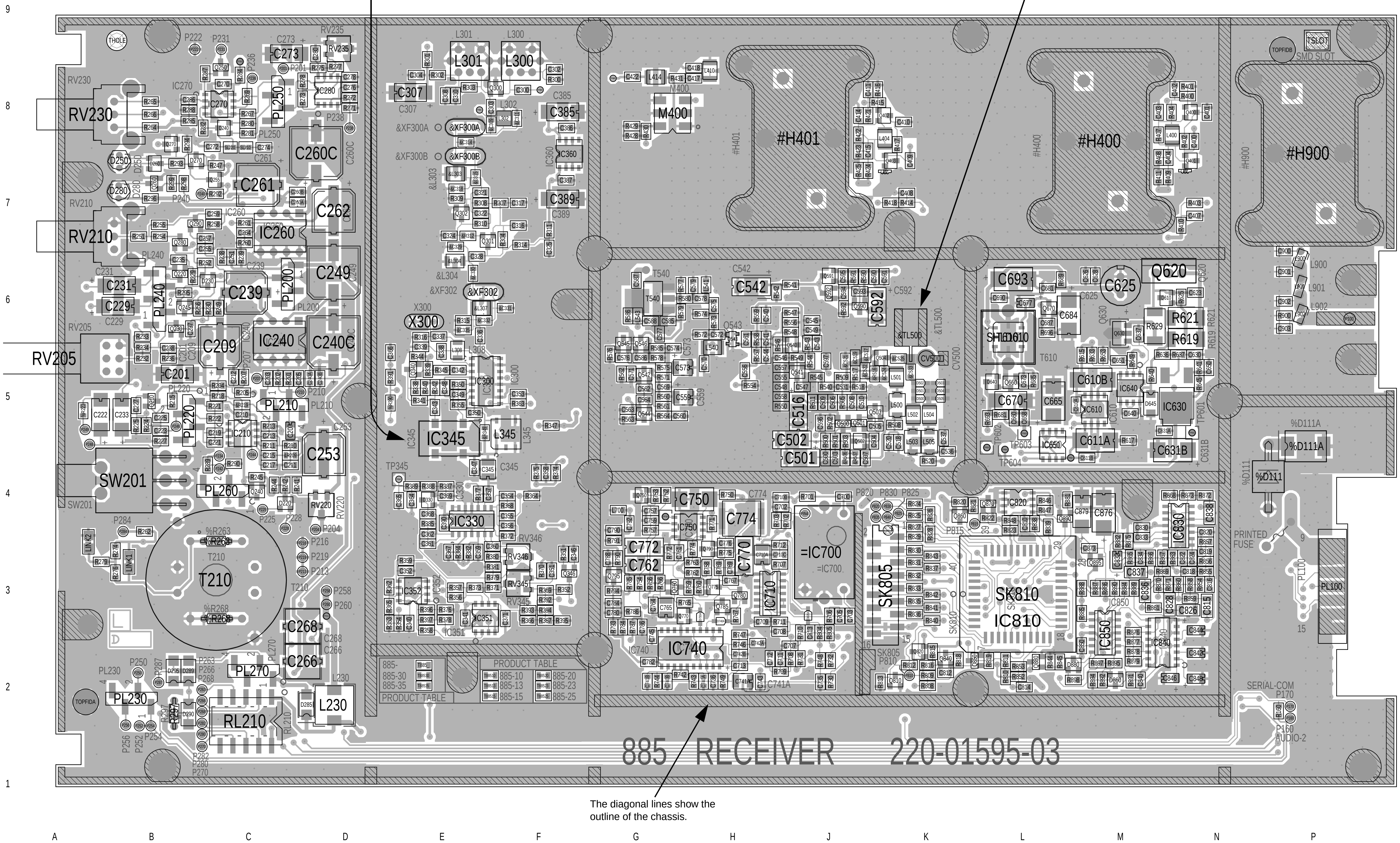
The upper number is the component identification number which appears in the "Legend" column of the Mechanical & Miscellaneous Parts on the facing page.

The lower number indicates how many of this component are used in this location or function.

***T885 Mechanical Assembly***
***220-01595-03***

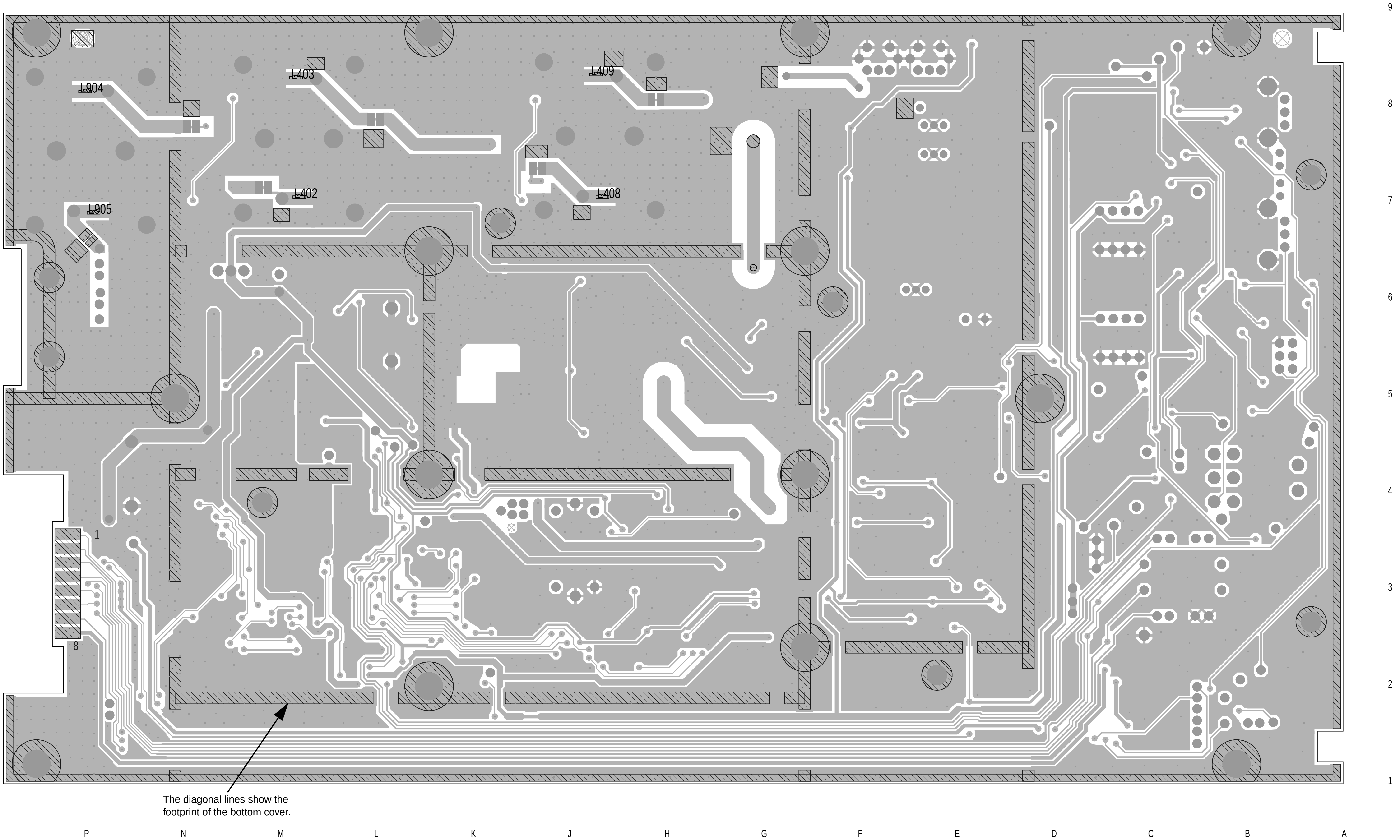
&IC345 is shown incorrectly on the PCB encoding as IC345.

#TL500 is shown incorrectly on the PCB encoding as &TL500.

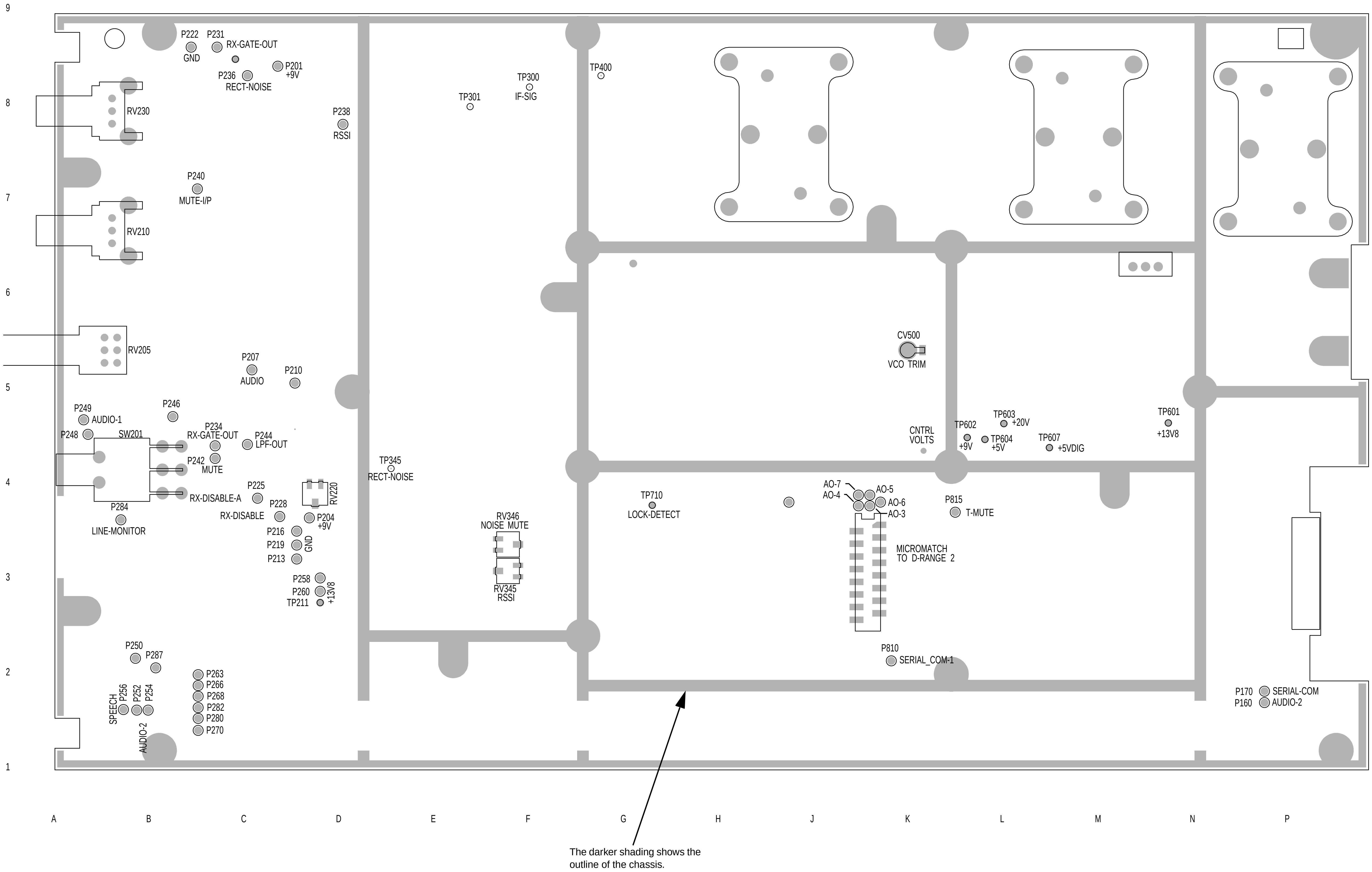



The diagonal lines show the outline of the chassis.

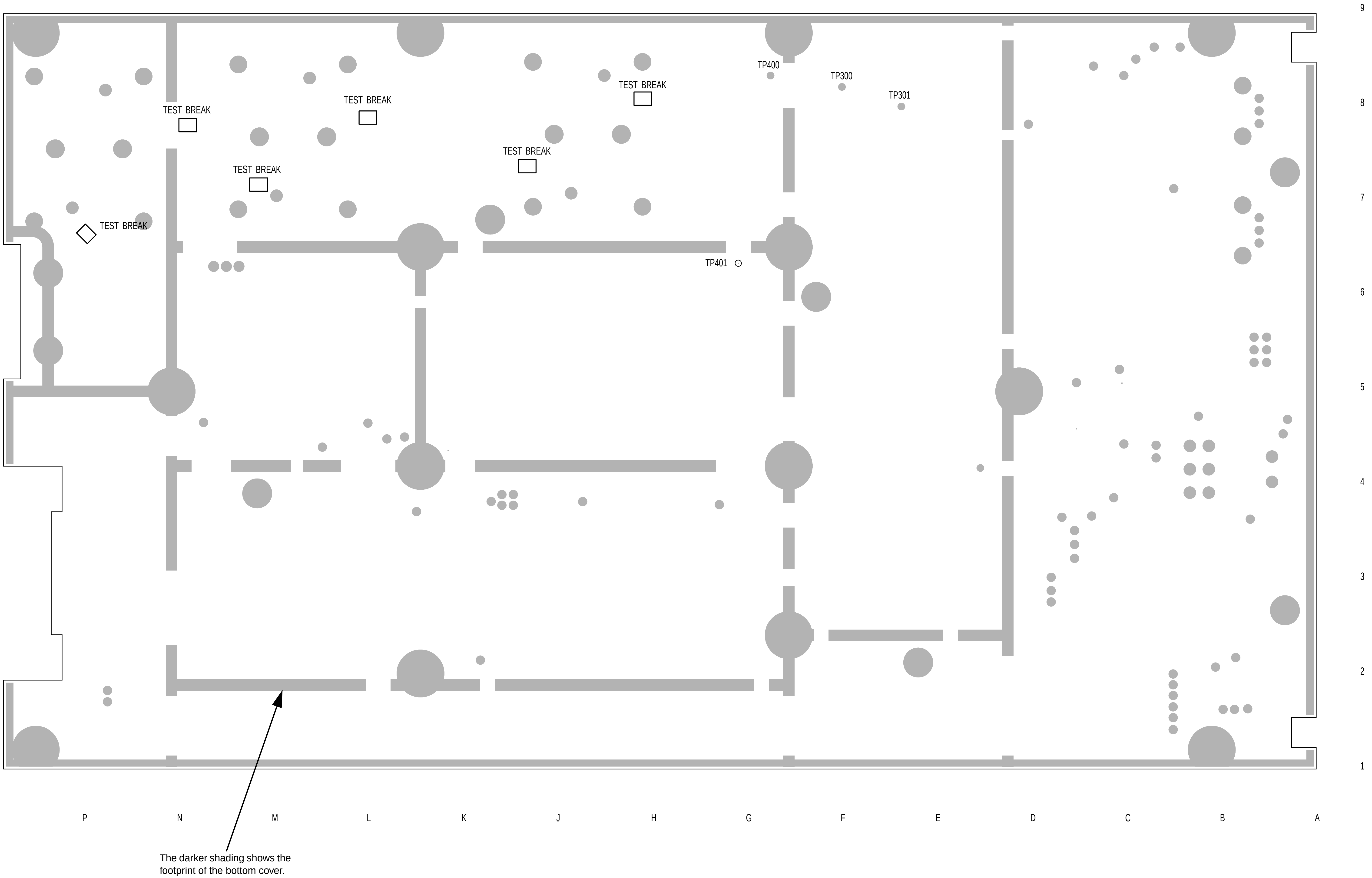
**T885 PCB Layout - Top Side**
**220-01595-03**



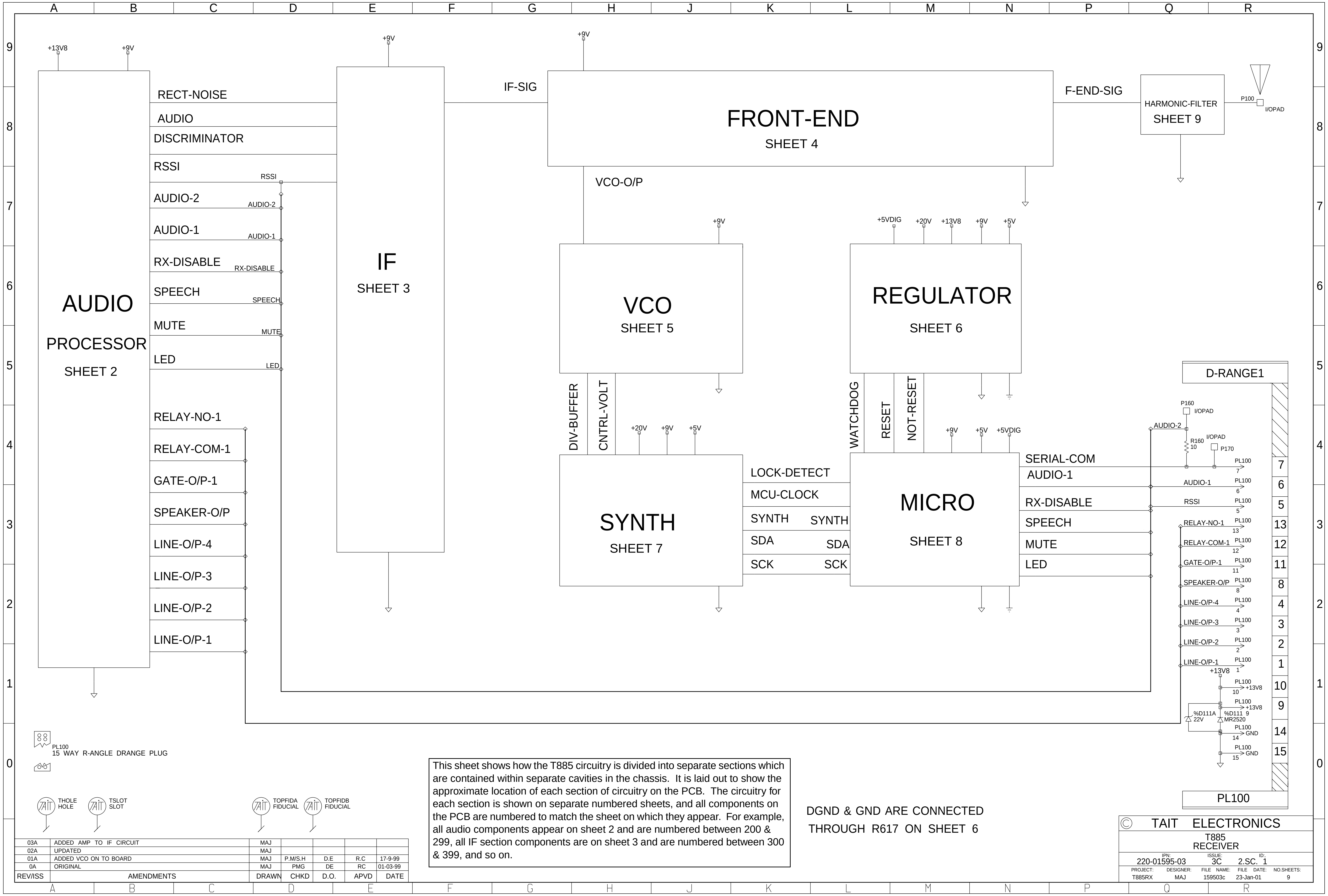

***T885 PCB Layout - Bottom Side***
***220-01595-03***



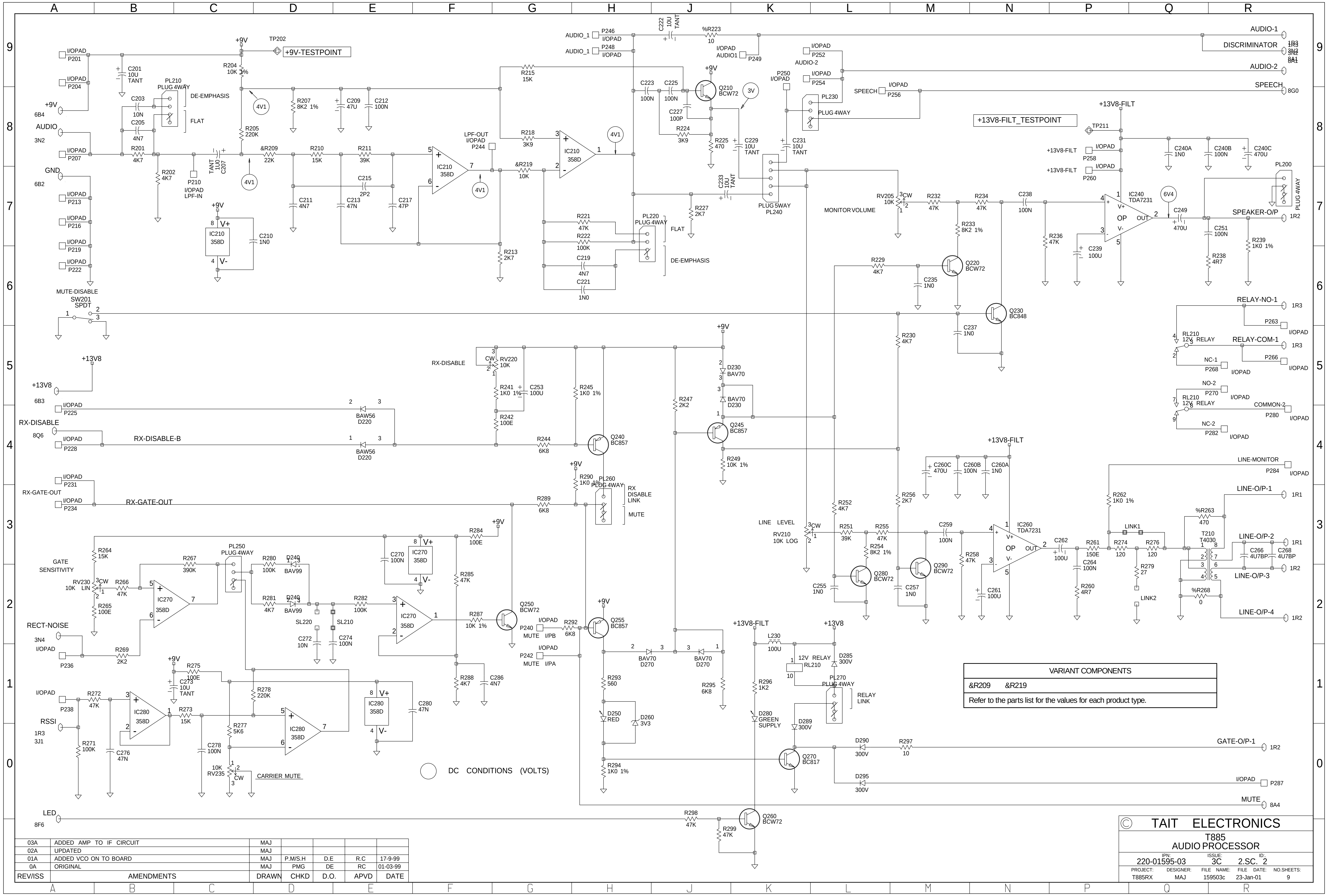

***T885 Test Points & Options Connections - Top Side***
***220-01595-03***

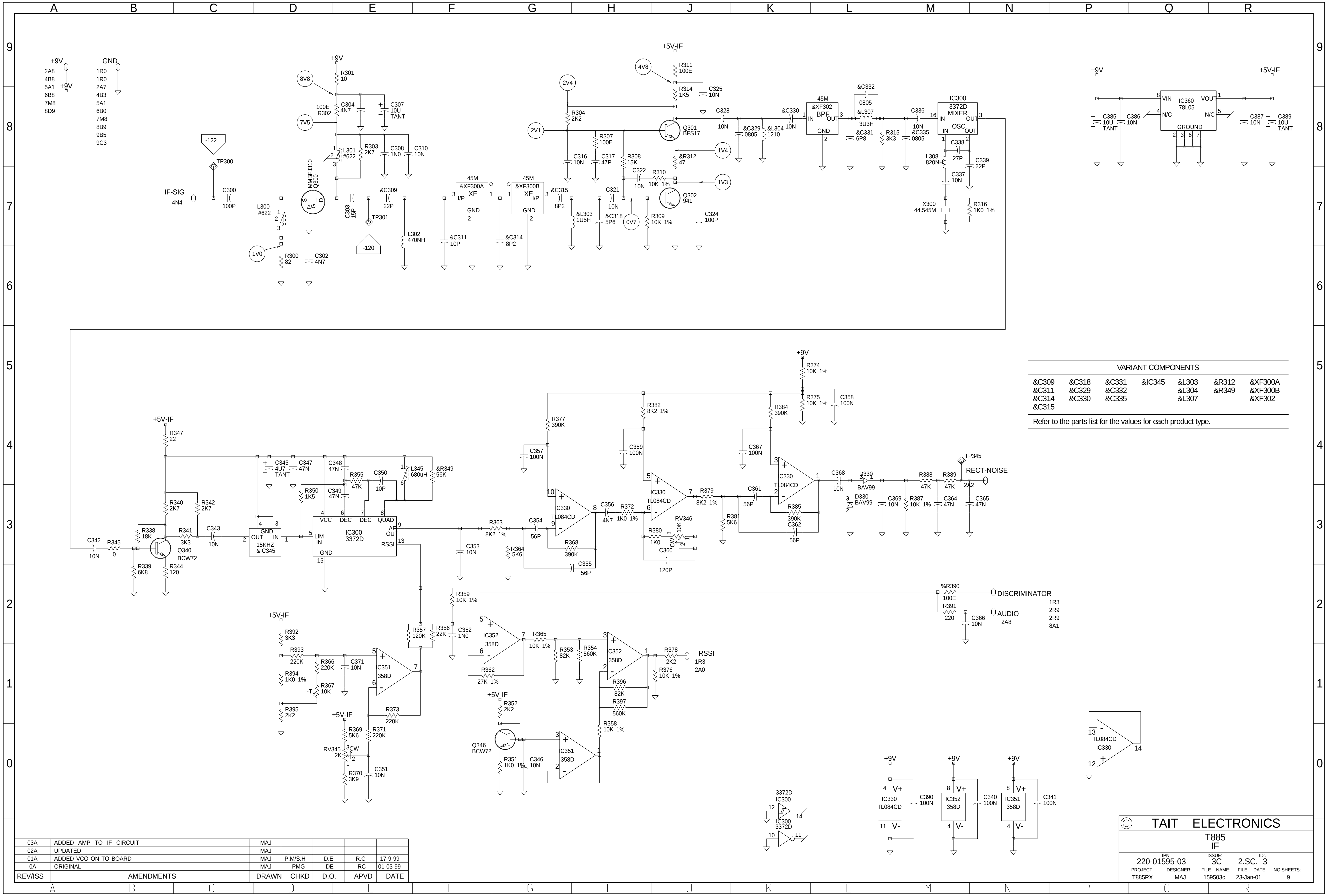



**_T885 Test Points & Options Connections - Bottom Side_**
**_220-01595-03_**




*Sheet 1 - T885 Receiver Overview*
*220-01595-03*


VARIANT COMPONENTS
&R209 &R219
Refer to the parts list for the values for each product type.
DC CONDITIONS (VOLTS)
TAIT ELECTRONICS
T885
AUDIO PROCESSOR
IPN: 220-01595-03
ISSUE: 3C
ID: 2.SC. 2
PROJECT: T885RX
DESIGNER: MAJ
FILE NAME: 159503c
FILE DATE: 23-Jan-01
NO.SHEETS: 9
03A ADDED AMP TO IF CIRCUIT MAJ
02A UPDATED MAJ
01A ADDED VCO ON TO BOARD MAJ P.M/S.H D.E R.C 17-9-99
0A ORIGINAL MAJ PMG DE RC 01-03-99
REV/ISS AMENDMENTS DRAWN CHKD D.O. APVD DATE

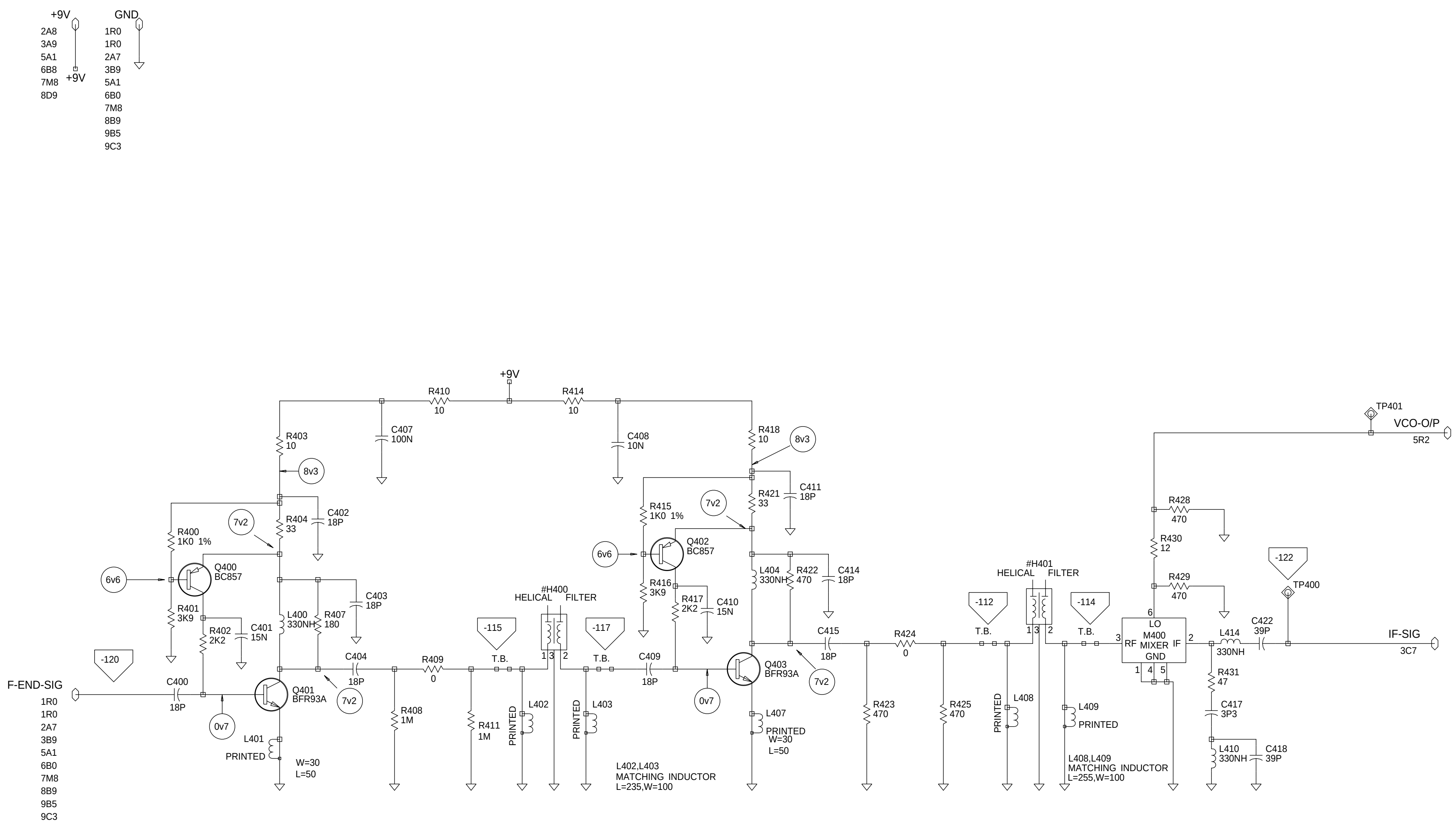



| VARIANT COMPONENTS | | | | | | |
|---|---|---|---|---|---|---|
| &C309 | &C318 | &C331 | &IC345 | &L303 | &R312 | &XF300A |
| &C311 | &C329 | &C332 | | &L304 | &R349 | &XF300B |
| &C314 | &C330 | &C335 | | &L307 | | &XF302 |
| &C315 | | | | | | |

Refer to the parts list for the values for each product type.

| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 03A | ADDED AMP TO IF CIRCUIT | MAJ | | | | |
| 02A | UPDATED | MAJ | | | | |
| 01A | ADDED VCO ON TO BOARD | MAJ | P.M/S.H | D.E | R.C | 17-9-99 |
| 0A | ORIGINAL | MAJ | PMG | DE | RC | 01-03-99 |

***Sheet 3 - T885 IF Section***
***220-01595-03***




| VARIANT COMPONENTS | |
|---|---|
| #H400 | #H401 |
| Refer to the parts list for the values for each product type. | |

| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 03A | ADDED AMP TO IF CIRCUIT | MAJ | | | | |
| 02A | UPDATED | MAJ | | | | |
| 01A | ADDED VCO ON TO BOARD | MAJ | P.M/S.H | D.E | R.C | 17-9-99 |
| 0A | ORIGINAL | MAJ | PMG | DE | RC | 01-03-99 |

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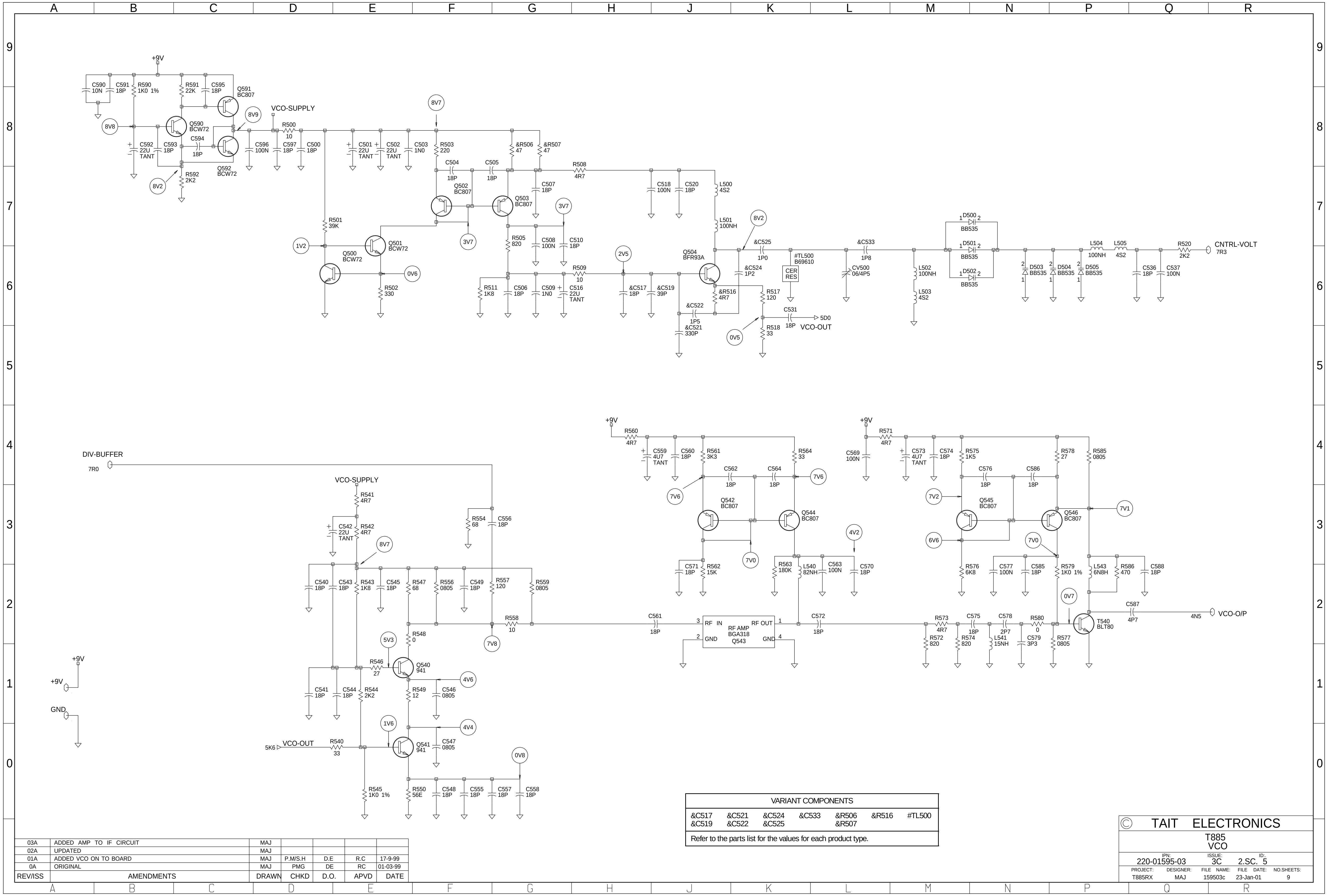
T885
FRONT END

| IPN: | ISSUE: | ID: |
|---|---|---|
| 220-01595-03 | 3C | 2.SC. 4 |

| PROJECT: | DESIGNER: | FILE NAME: | FILE DATE: | NO.SHEETS: |
|---|---|---|---|---|
| T885RX | MAJ | 159503c | 23-Jan-01 | 9 |




| VARIANT COMPONENTS | | | | | | |
|---|---|---|---|---|---|---|
| &C517<br>&C519 | &C521<br>&C522 | &C524<br>&C525 | &C533 | &R506<br>&R507 | &R516 | #TL500 |
| Refer to the parts list for the values for each product type. | | | | | | |

| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 03A | ADDED AMP TO IF CIRCUIT | MAJ | | | | |
| 02A | UPDATED | MAJ | | | | |
| 01A | ADDED VCO ON TO BOARD | MAJ | P.M/S.H | D.E | R.C | 17-9-99 |
| 0A | ORIGINAL | MAJ | PMG | DE | RC | 01-03-99 |

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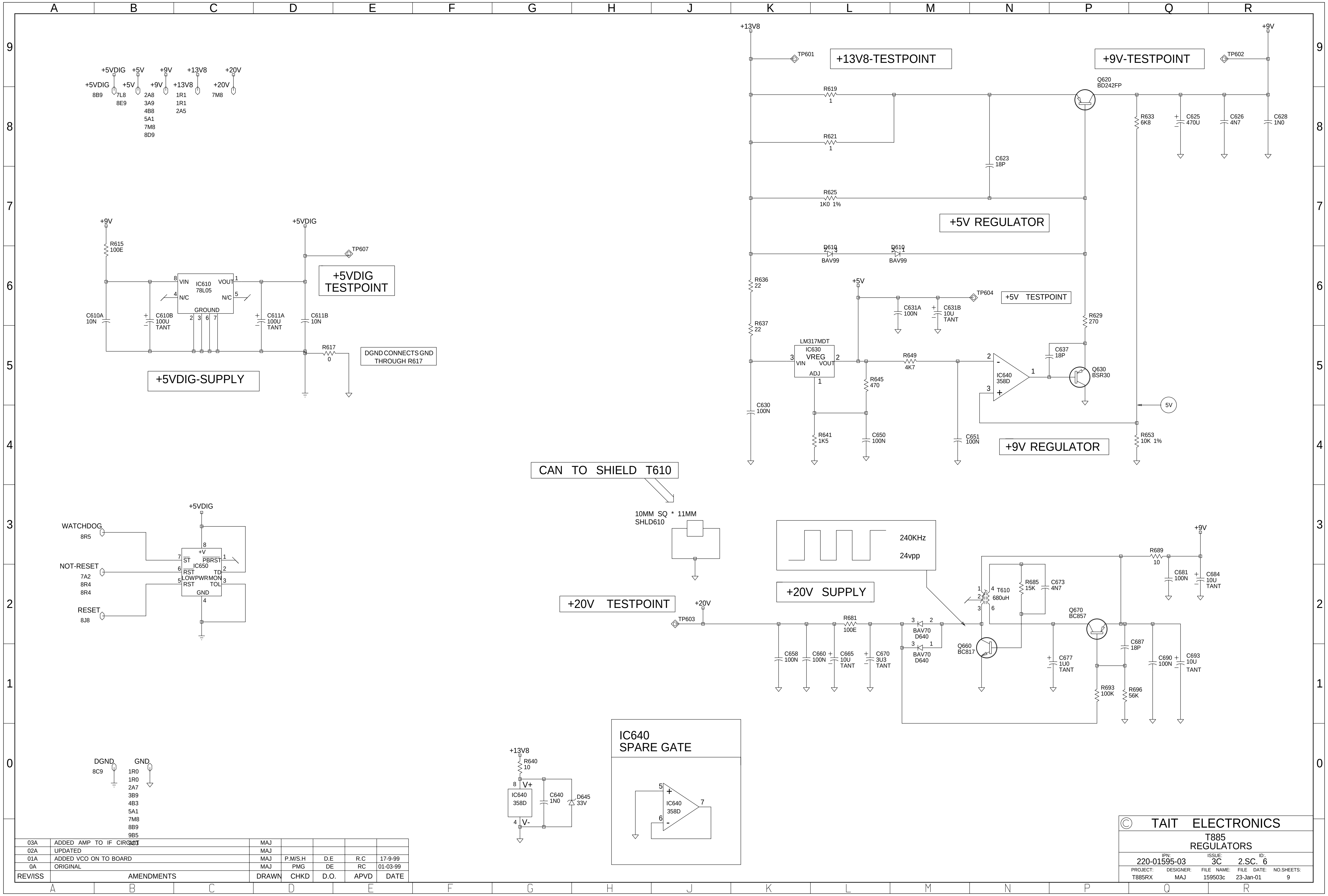
T885
VCO

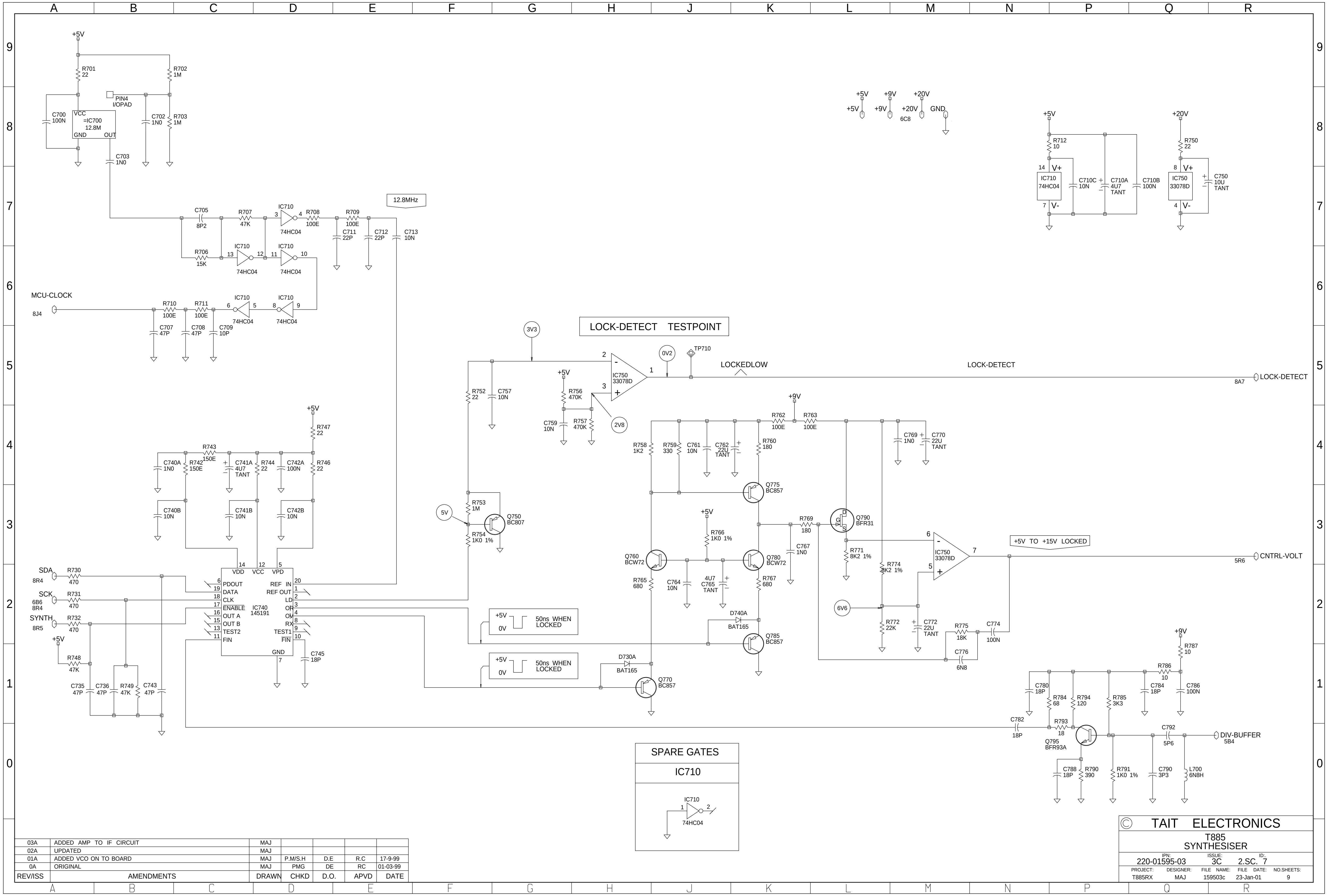
| IPN: | ISSUE: | ID: |
|---|---|---|
| 220-01595-03 | 3C | 2.SC. 5 |

| PROJECT: | DESIGNER: | FILE NAME: | FILE DATE: | NO.SHEETS: |
|---|---|---|---|---|
| T885RX | MAJ | 159503c | 23-Jan-01 | 9 |

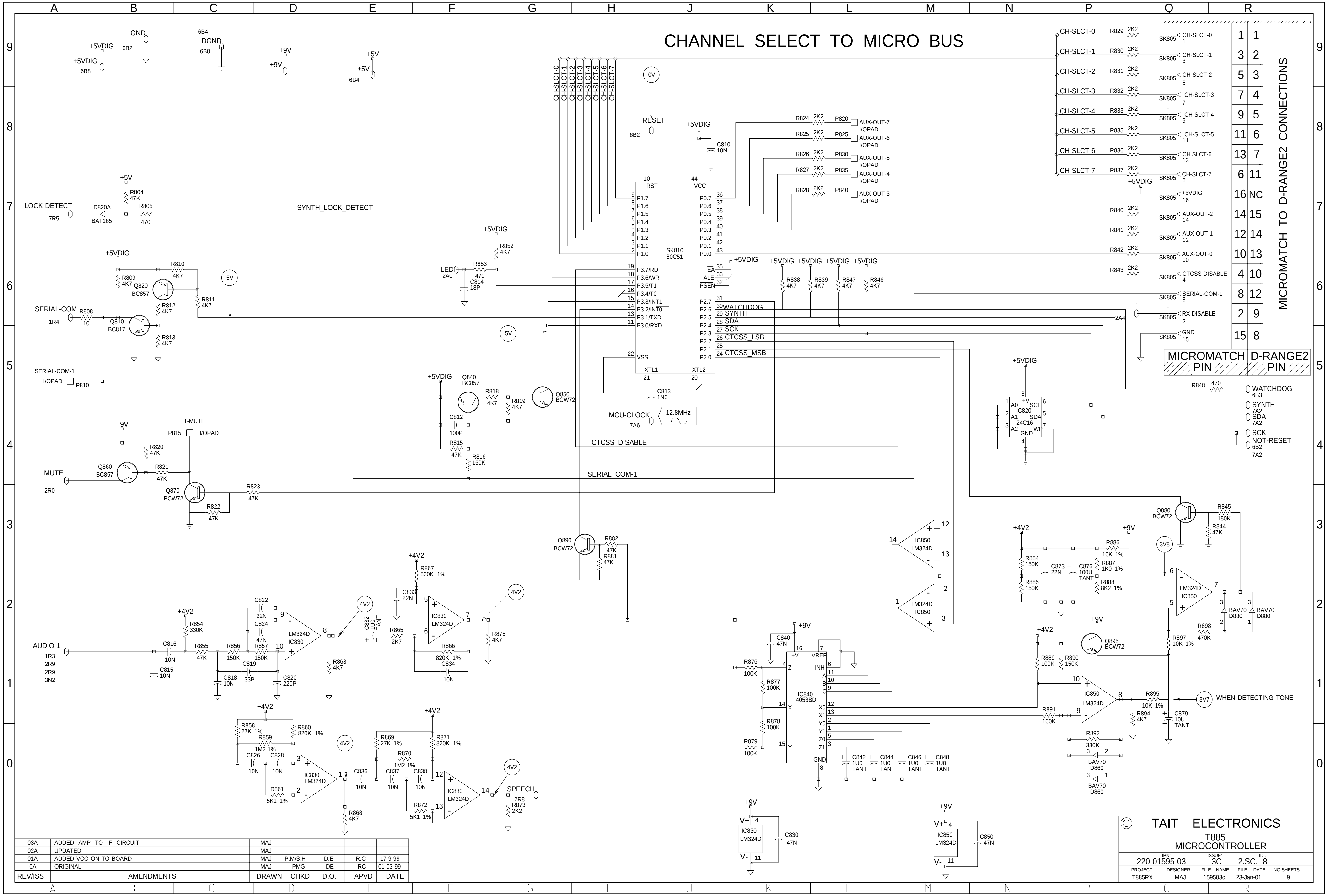
**Sheet 5 - T885 VCO**
**220-01595-03**



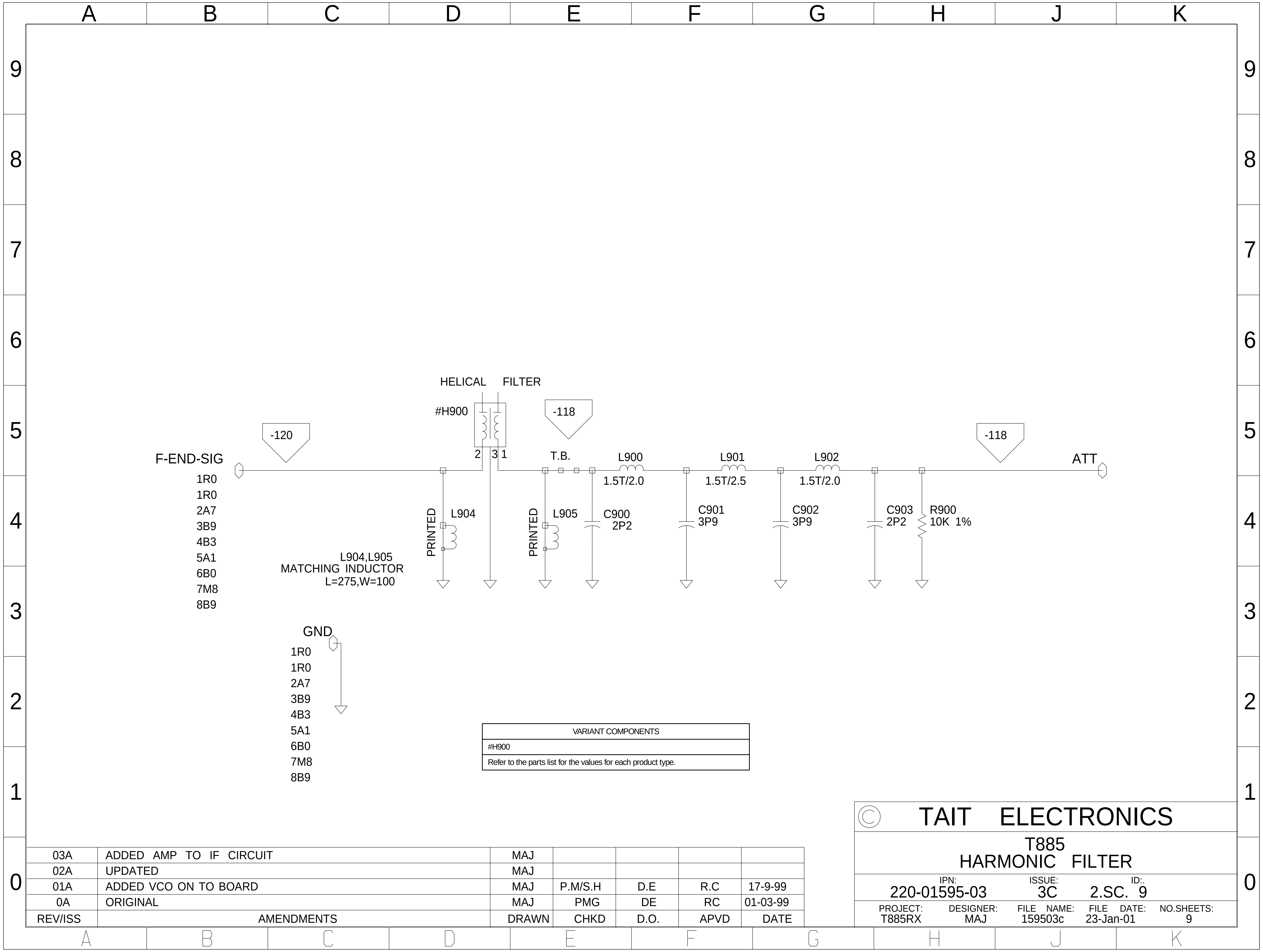

**Sheet 6 - T885 Regulators**
**220-01595-03**




*Sheet 7 - T885 Synthesiser*
*220-01595-03*




*Sheet 8 - T885 Microcontroller*
*220-01595-03*




| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 03A | ADDED AMP TO IF CIRCUIT | MAJ | | | | |
| 02A | UPDATED | MAJ | | | | |
| 01A | ADDED VCO ON TO BOARD | MAJ | P.M/S.H | D.E | R.C | 17-9-99 |
| 0A | ORIGINAL | MAJ | PMG | DE | RC | 01-03-99 |

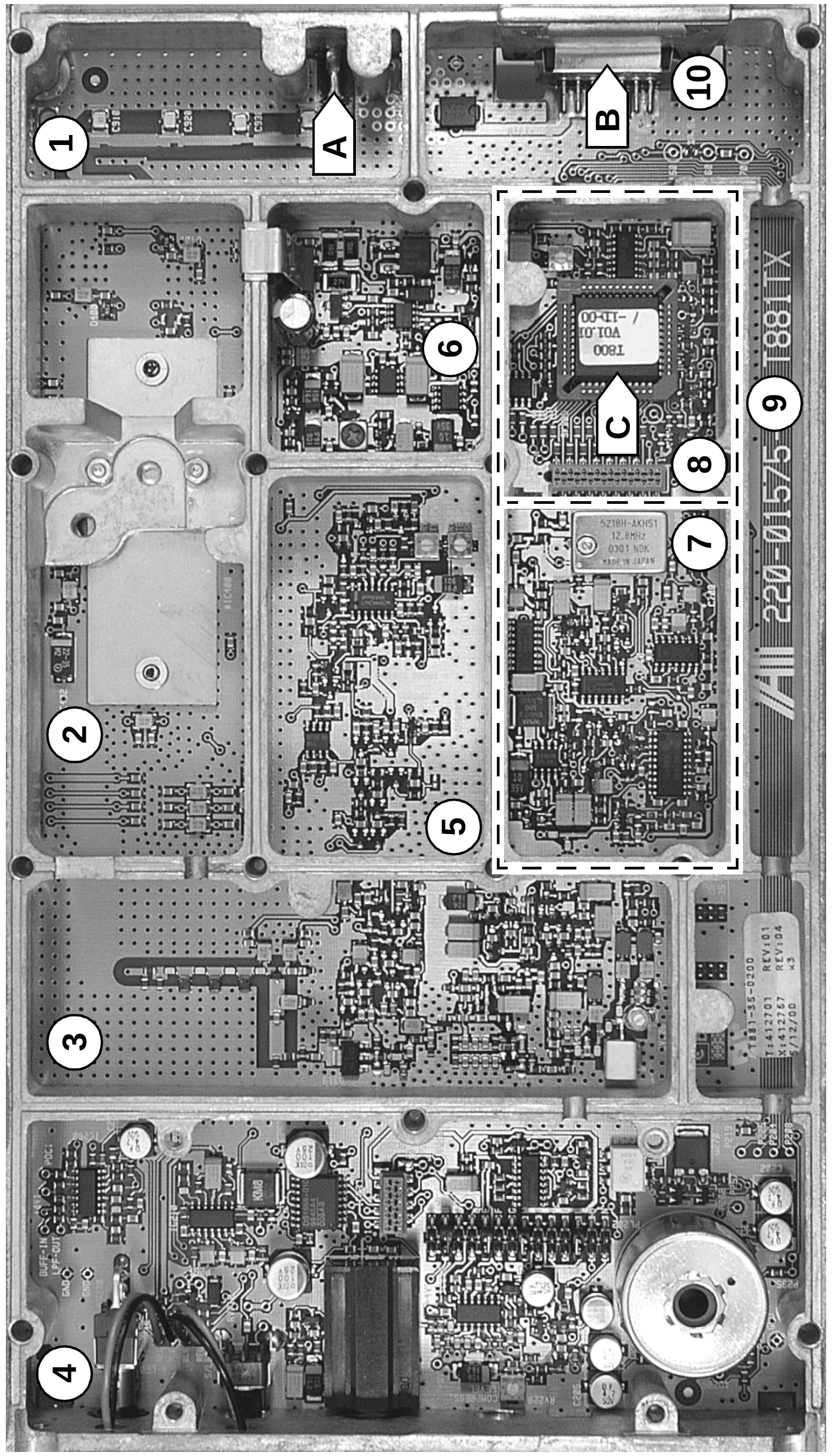
***Sheet 9 - T885 Harmonic Filter***
***220-01595-03***

The photograph in Figure 1.1 on the next page will help you to identify the main circuit blocks in the T881.

There is a similar photograph in Figure 4.4 which shows the main tuning and adjustment controls.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

The photograph in Figure 1.2 on the next page shows the T881 front panel controls.




**Key:**

1 low pass filter
2 PA
3 VCO
4 audio processor
5 power control
6 regulators
7 synthesiser
8 microcontroller and CTCSS
9 duct for cabling to extra D-range (if fitted)
10 D-range

A RF output
B D-range connector ("D-range 1") incl. audio in & DC in (refer to Section 2.2 in Part F)
C microcontroller

*Figure 1.1 T881 Main Circuit Block Identification*

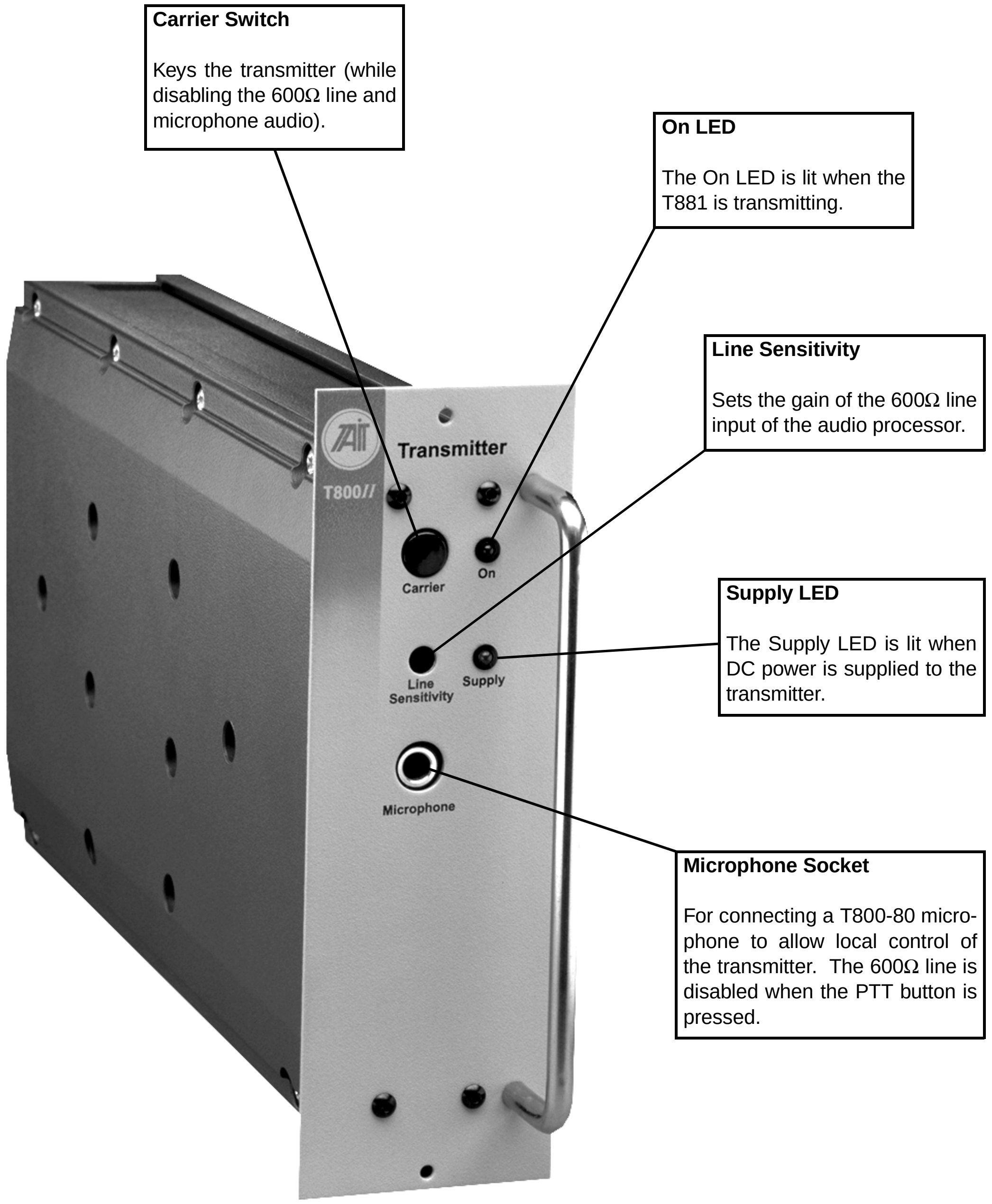



*Figure 1.2 T881 Front Panel Controls*

The photograph printed at right will help you to identify the main controls used in tuning and adjusting the T881.

There is a similar photograph in Figure 1.1 which shows the main circuit blocks.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

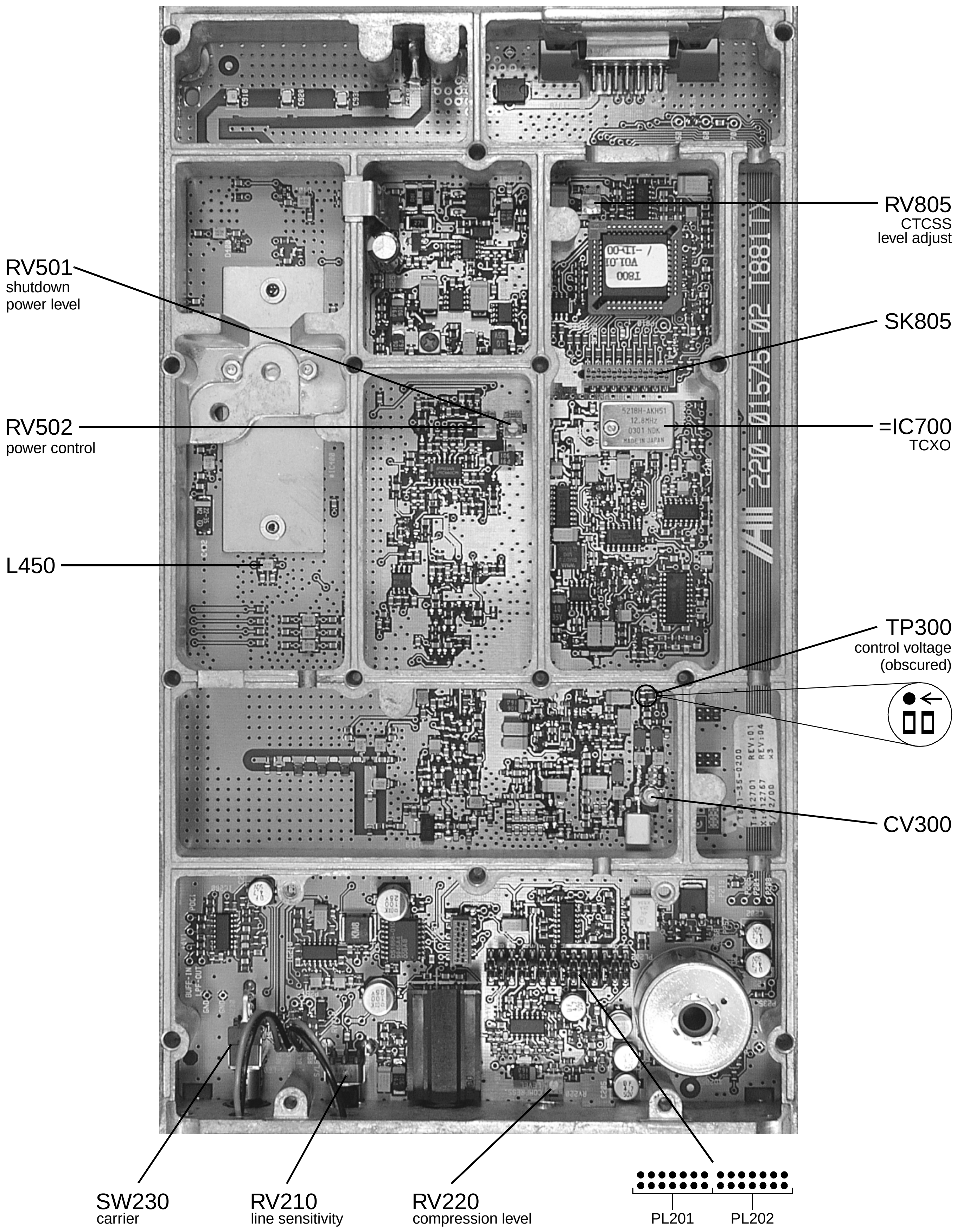
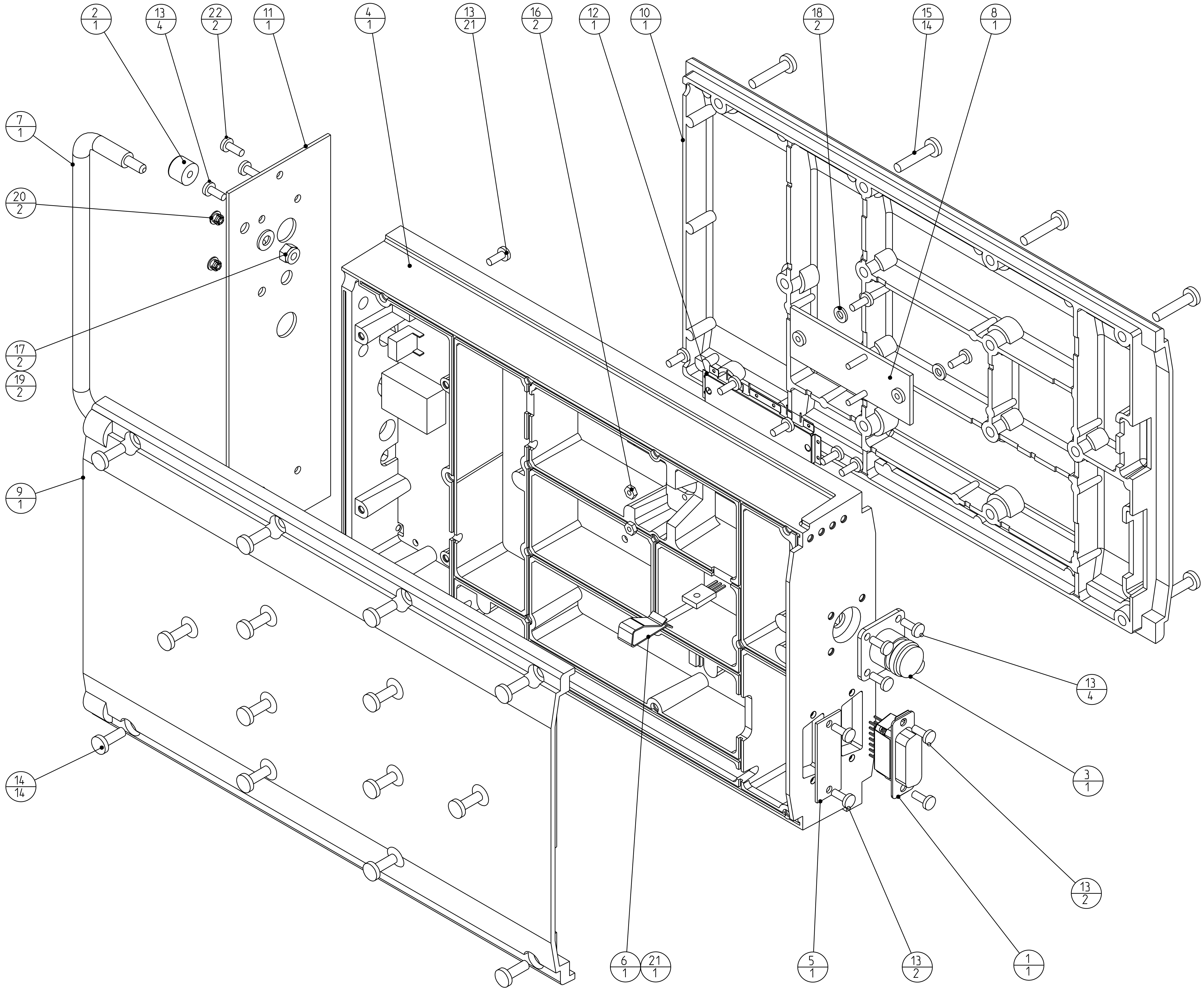



*Figure 4.4 T881 Main Tuning & Adjustment Controls*

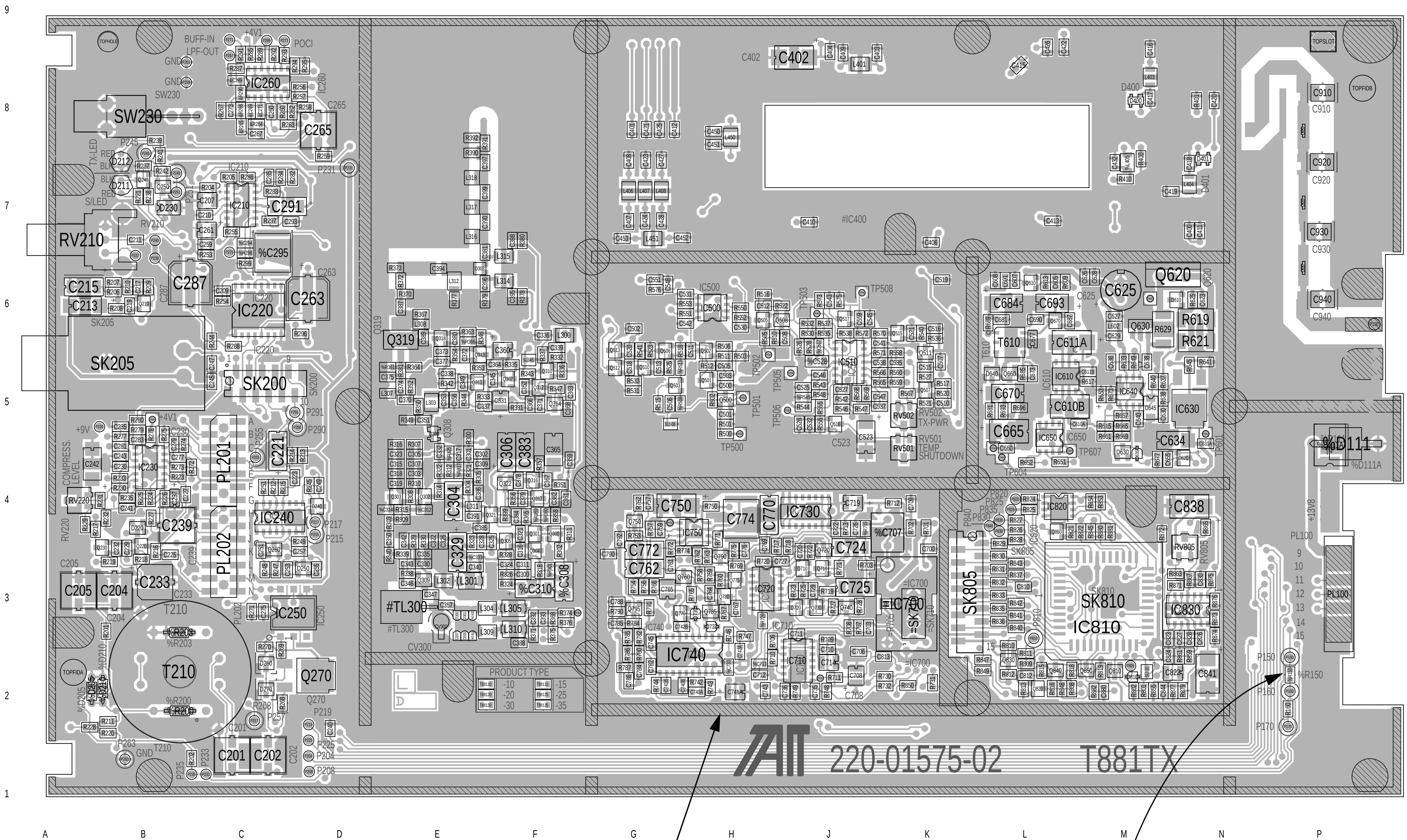



**Key**

The upper number is the component identification number which appears in the "Legend" column of the Mechanical & Miscellaneous Parts on the facing page.

The lower number indicates how many of this component are used in this location or function.

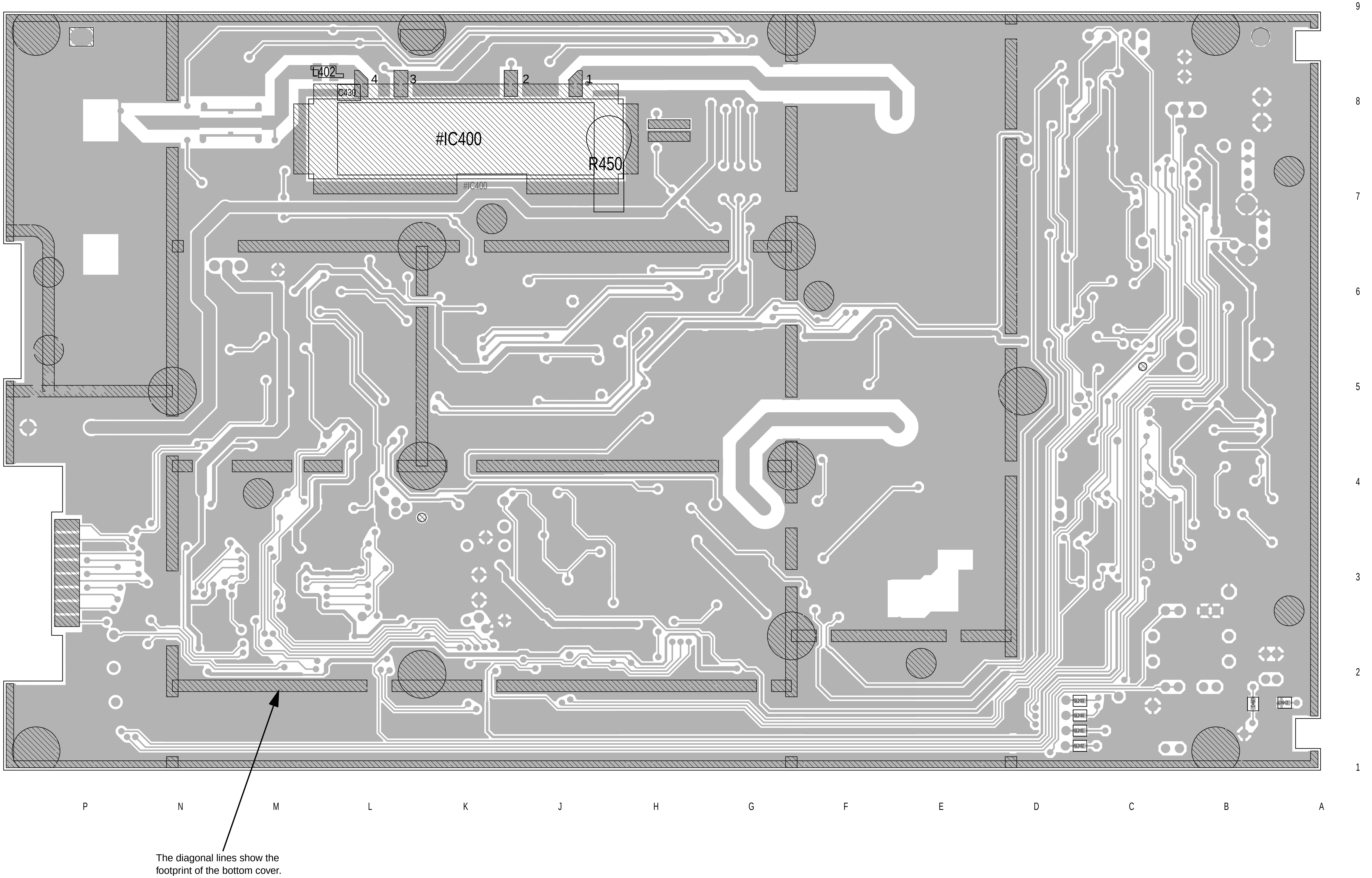
***T881 Mechanical Assembly***
***220-01575-02***



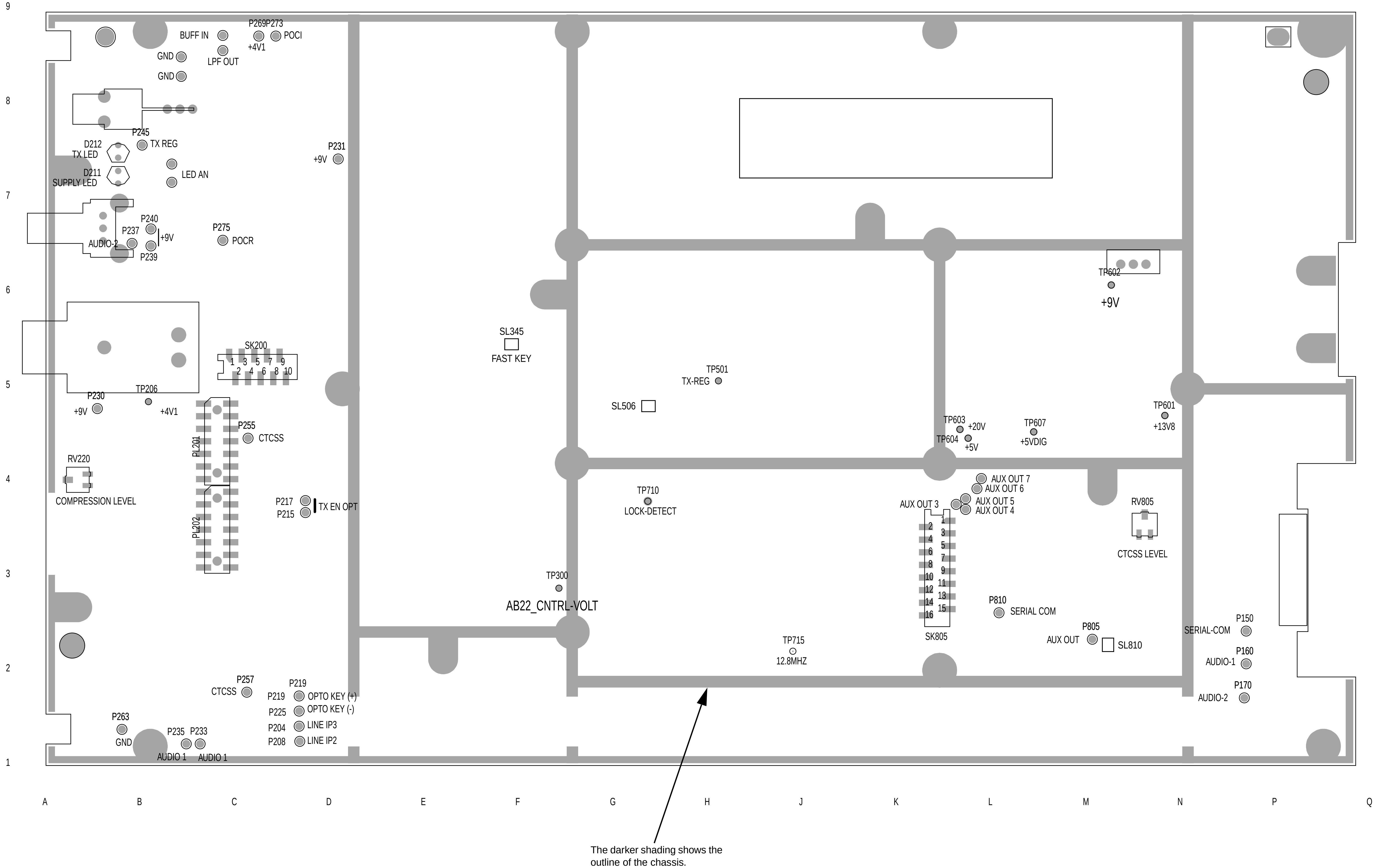

The diagonal lines show the outline of the chassis.

%R150 (10Ω) is fitted only when the T881 is used in a Series I rack frame (refer to Part I for full details).

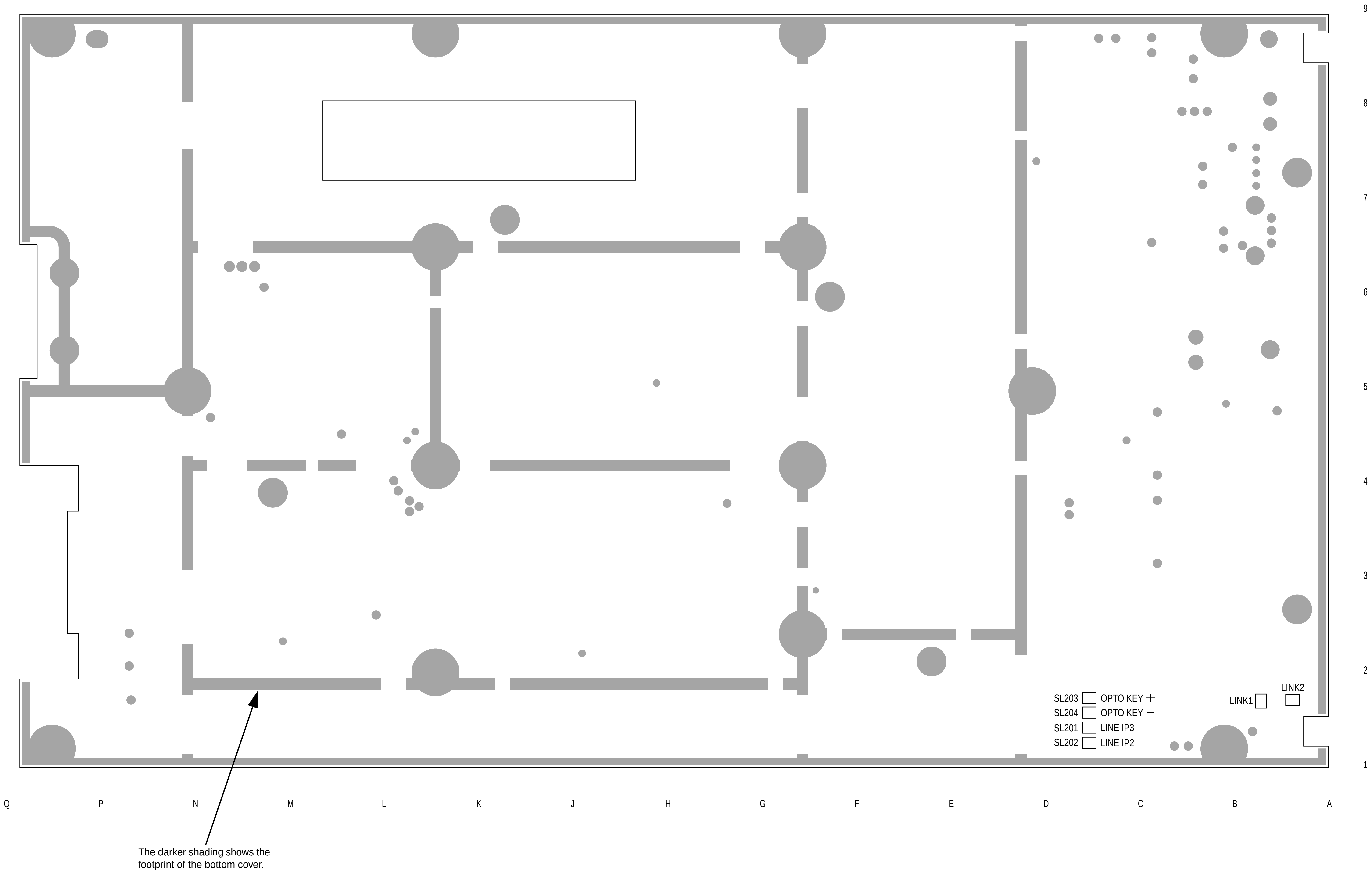
***T881 PCB Layout - Top Side***
***220-01575-02***



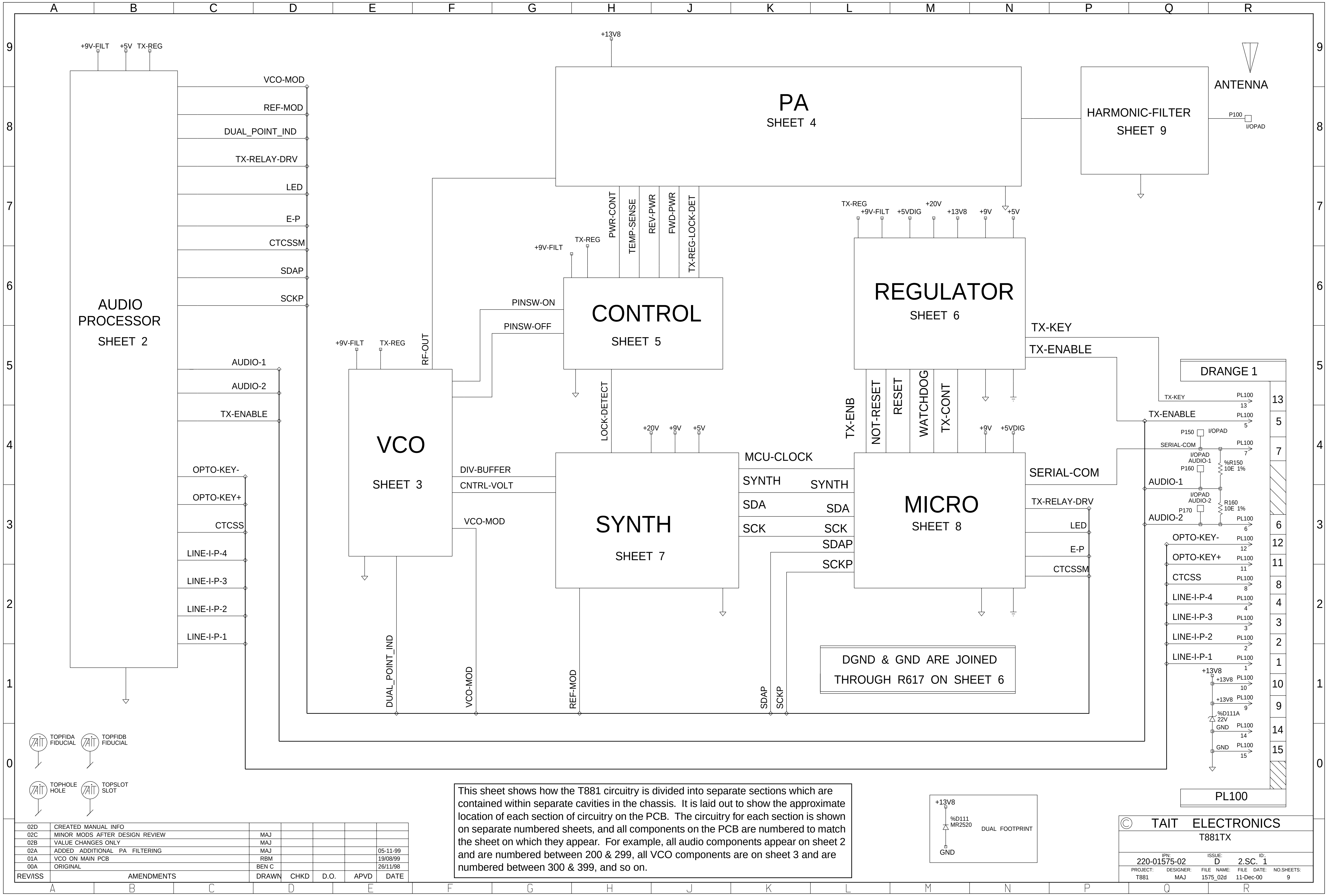

***T881 PCB Layout - Bottom Side***
***220-01575-02***



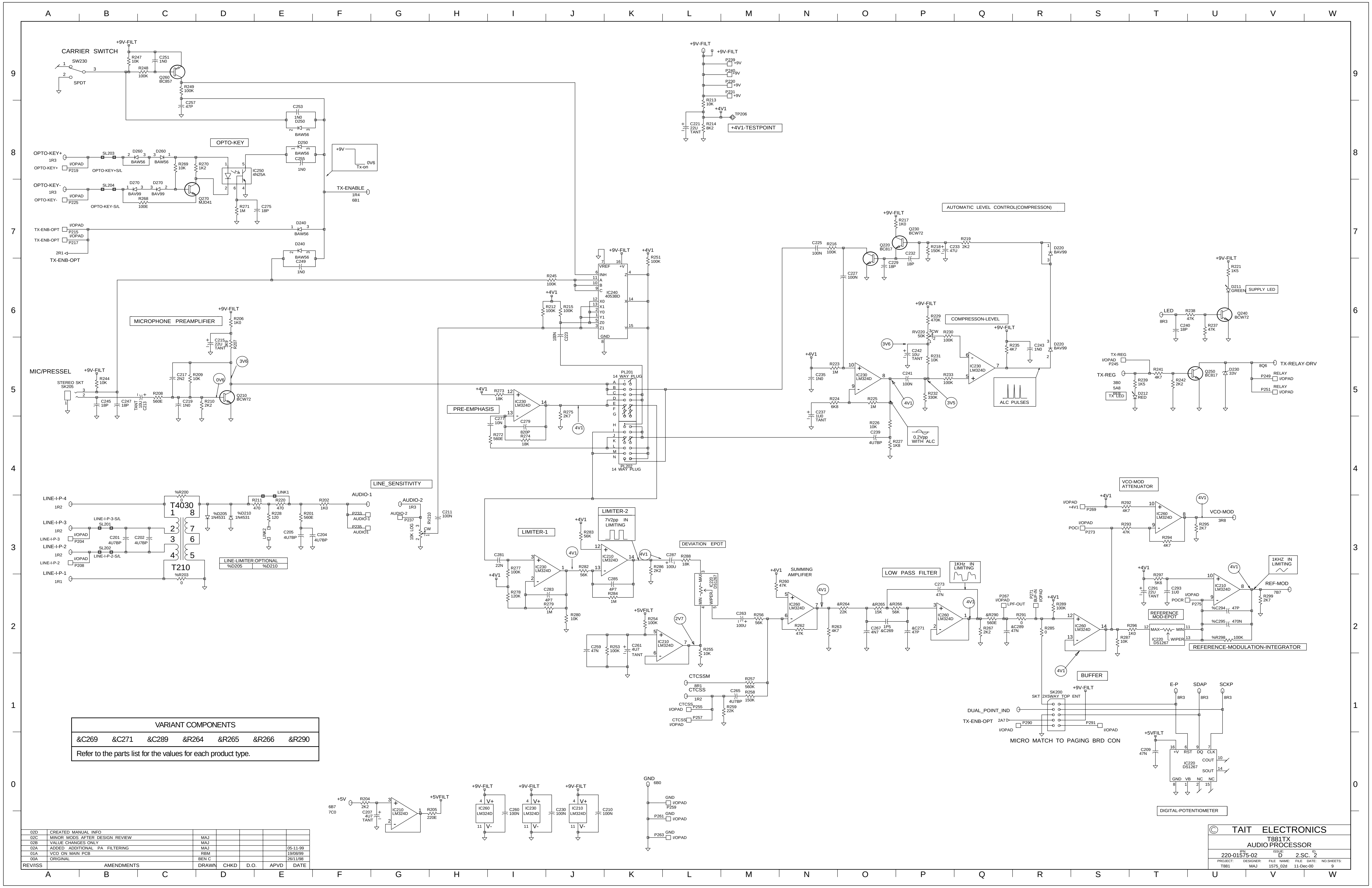

***T881 Test Points & Options Connections - Top Side***
***220-01575-02***



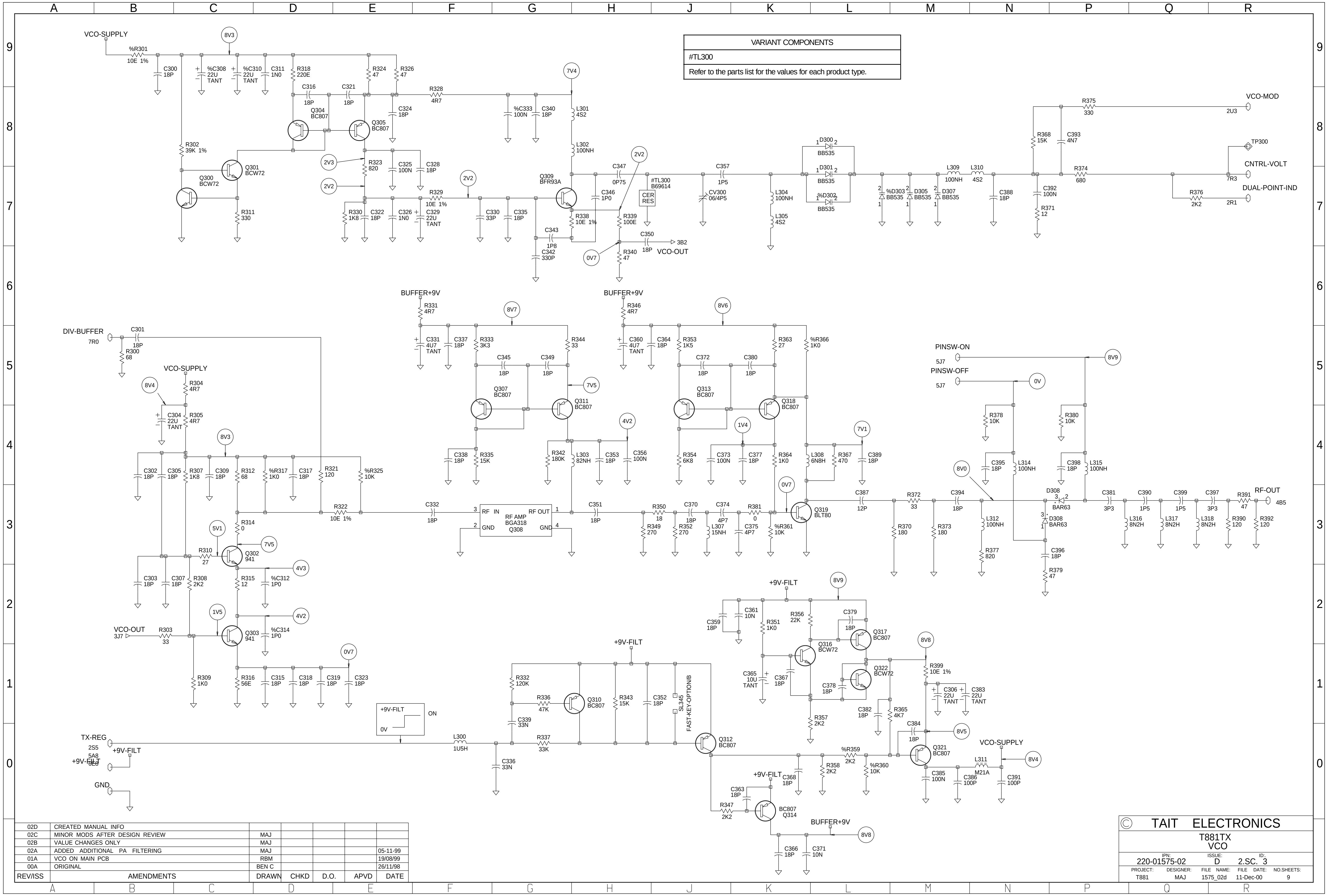

***T881 Test Points & Options Connections - Bottom Side***
***220-01575-02***




**Sheet 1 - T881 Transmitter Overview**
**220-01575-02**

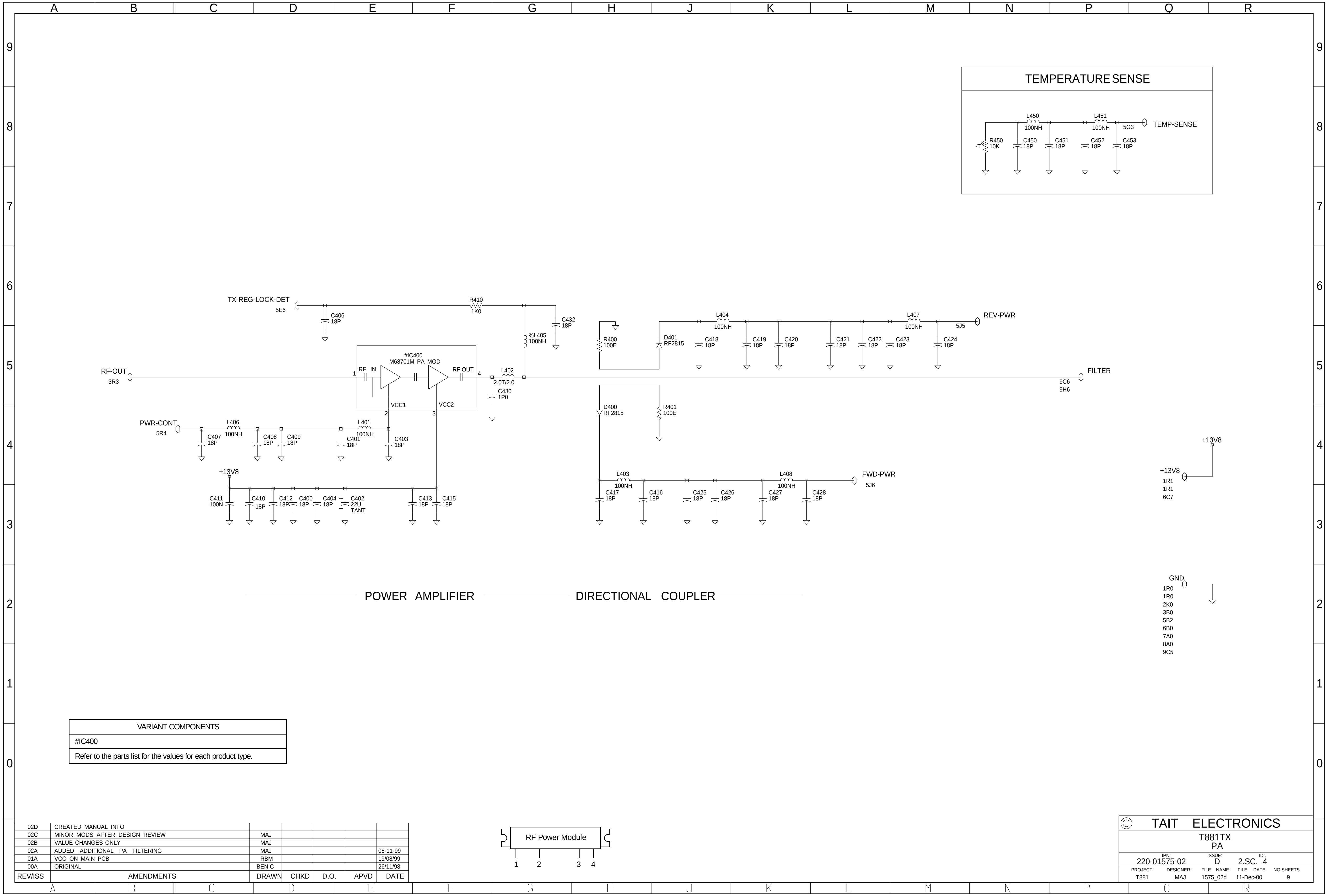



*Sheet 2 - T881 Audio Processor*
*220-01575-02*

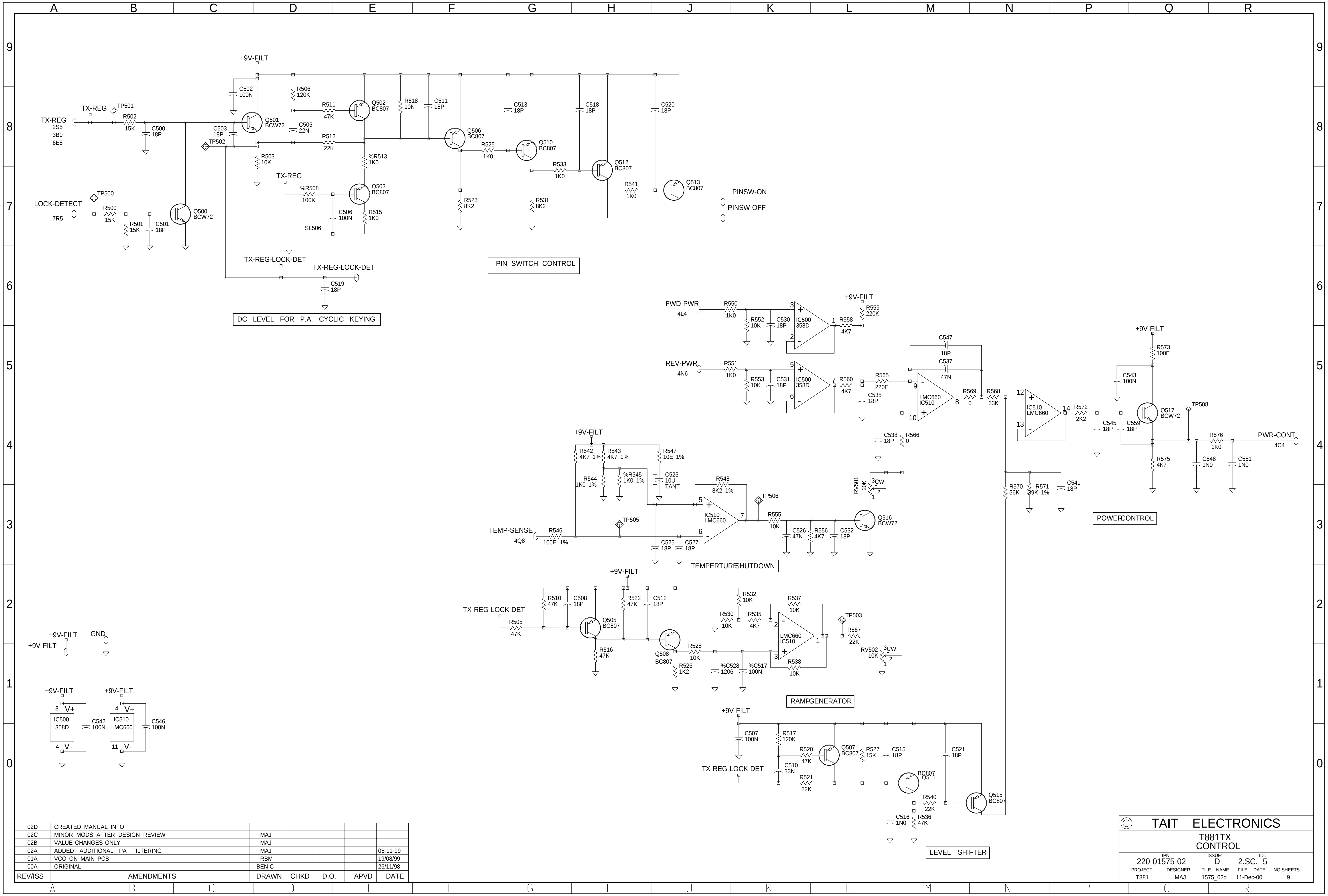



| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 02D | CREATED MANUAL INFO | | | | | |
| 02C | MINOR MODS AFTER DESIGN REVIEW | MAJ | | | | |
| 02B | VALUE CHANGES ONLY | MAJ | | | | |
| 02A | ADDED ADDITIONAL PA FILTERING | MAJ | | | | 05-11-99 |
| 01A | VCO ON MAIN PCB | RBM | | | | 19/08/99 |
| 00A | ORIGINAL | BEN C | | | | 26/11/98 |

**Sheet 3 - T881 VCO**
**220-01575-02**

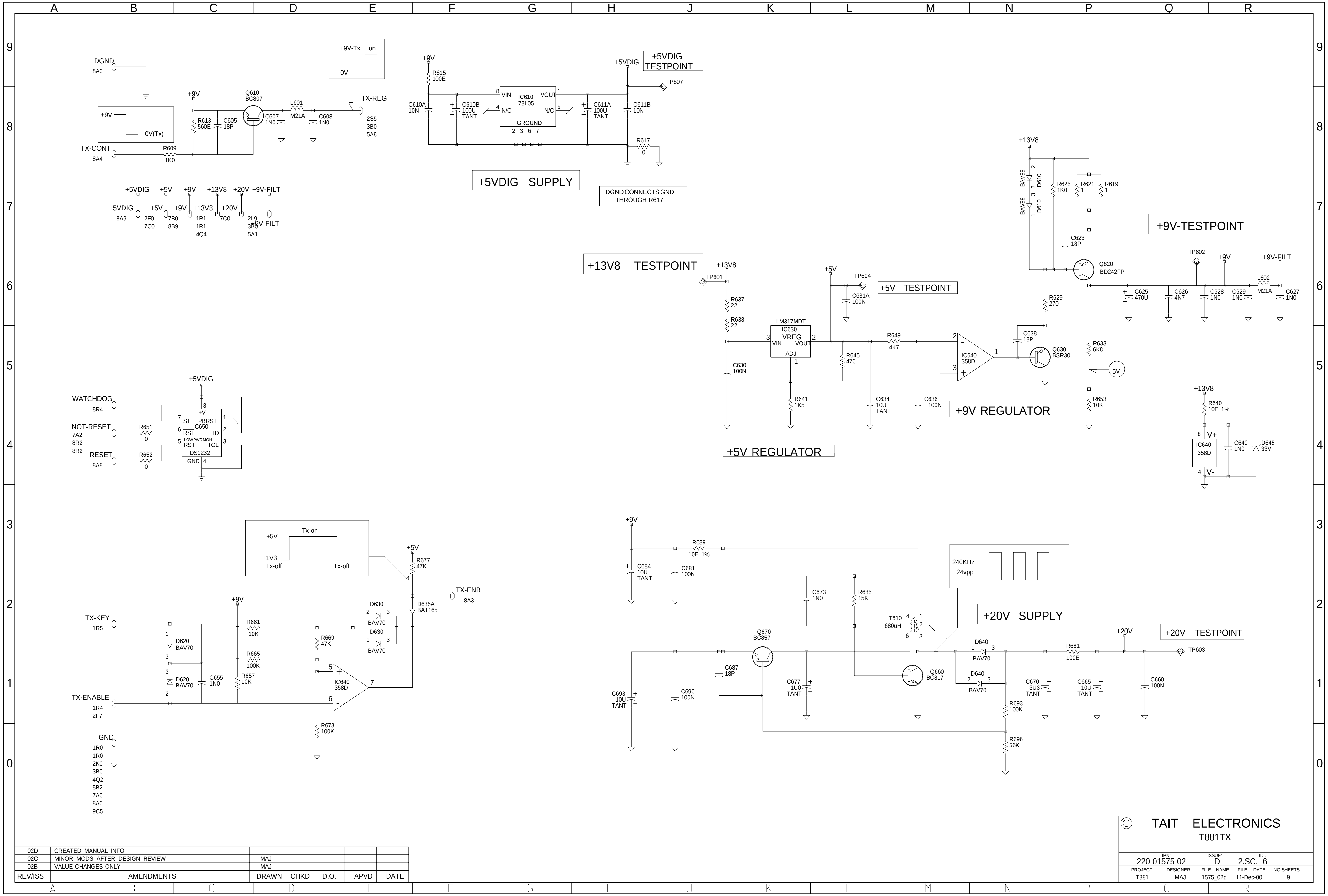


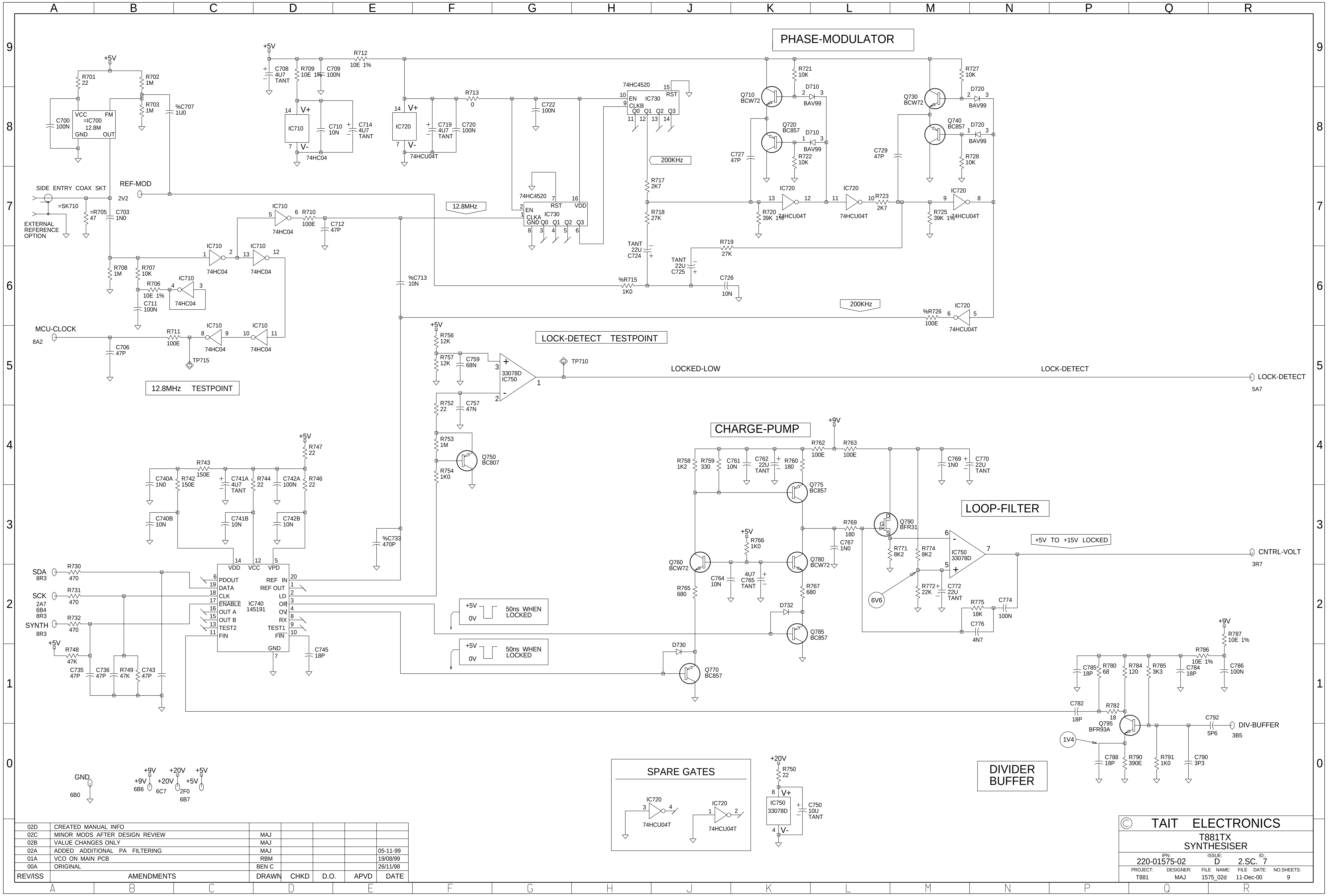

*Sheet 4 - T881 PA*
*220-01575-02*




| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 02D | CREATED MANUAL INFO | | | | | |
| 02C | MINOR MODS AFTER DESIGN REVIEW | MAJ | | | | |
| 02B | VALUE CHANGES ONLY | MAJ | | | | |
| 02A | ADDED ADDITIONAL PA FILTERING | MAJ | | | | 05-11-99 |
| 01A | VCO ON MAIN PCB | RBM | | | | 19/08/99 |
| 00A | ORIGINAL | BEN C | | | | 26/11/98 |

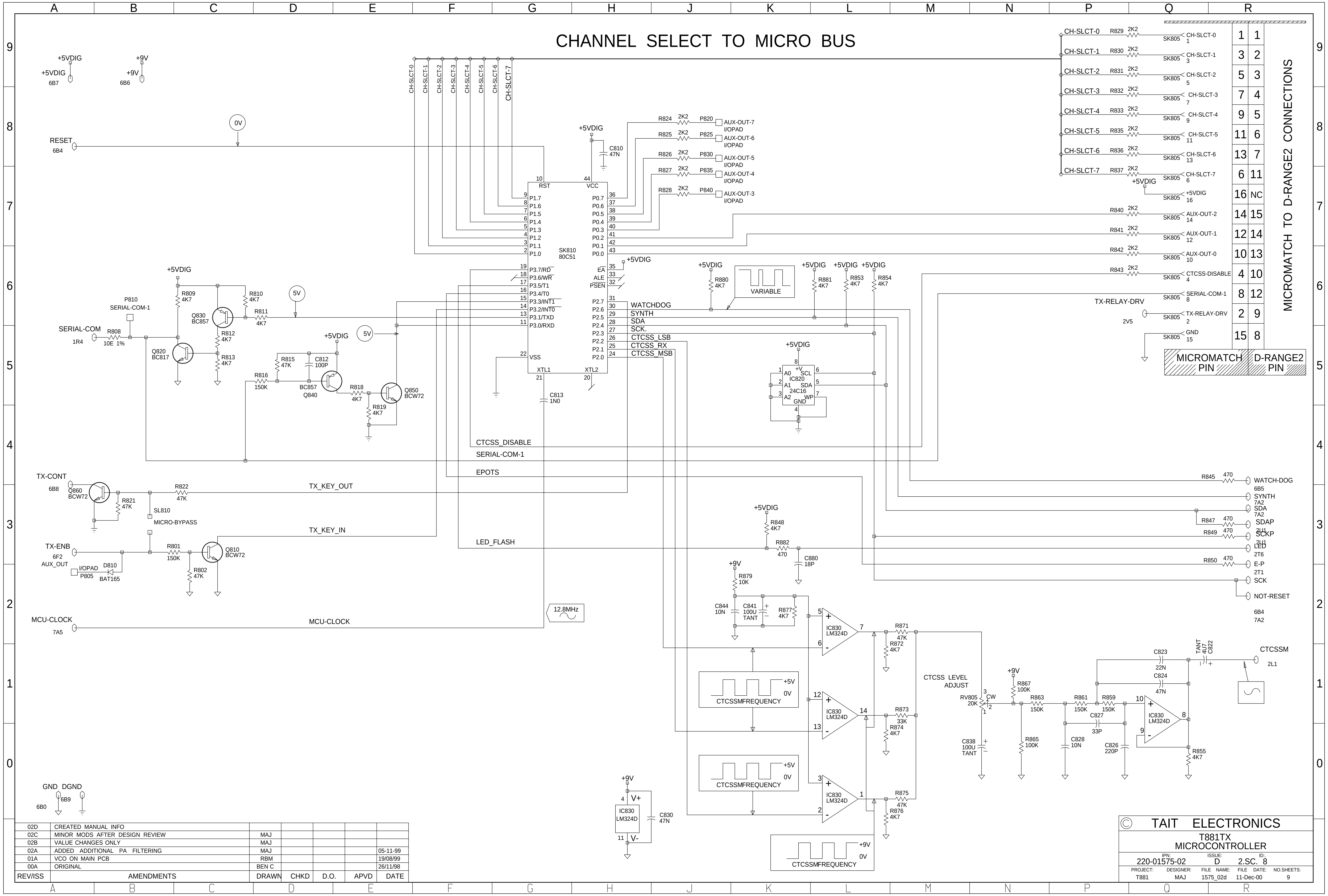
**Sheet 5 - T881 Control Section**
**220-01575-02**


+5VDIG SUPPLY
DGND CONNECTS GND THROUGH R617
+5VDIG TESTPOINT
+13V8 TESTPOINT
+5V TESTPOINT
+9V-TESTPOINT
+9V REGULATOR
+5V REGULATOR
+20V SUPPLY
+20V TESTPOINT
240KHz
24vpp
DGND
TX-CONT
TX-REG
WATCHDOG
NOT-RESET
RESET
TX-KEY
TX-ENABLE
TX-ENB
GND
IC610 78L05
IC630 LM317MDT
IC640 358D
IC650 DS1232
Q610 BC807
Q620 BD242FP
Q630 BSR30
Q660 BC817
Q670 BC857
T610 680uH
02D CREATED MANUAL INFO
02C MINOR MODS AFTER DESIGN REVIEW MAJ
02B VALUE CHANGES ONLY MAJ
REV/ISS AMENDMENTS DRAWN CHKD D.O. APVD DATE
TAIT ELECTRONICS
T881TX
220-01575-02 D 2.SC. 6
T881 MAJ 1575_02d 11-Dec-00 9

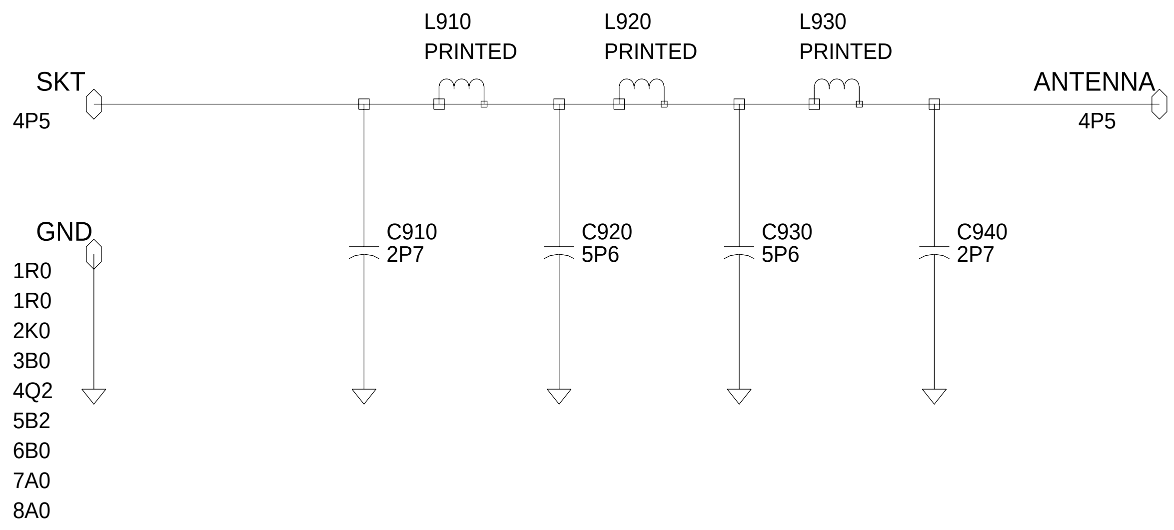



| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 02D | CREATED MANUAL INFO | | | | | |
| 02C | MINOR MODS AFTER DESIGN REVIEW | MAJ | | | | |
| 02B | VALUE CHANGES ONLY | MAJ | | | | |
| 02A | ADDED ADDITIONAL PA FILTERING | MAJ | | | | 05-11-99 |
| 01A | VCO ON MAIN PCB | RBM | | | | 19/08/99 |
| 00A | ORIGINAL | BEN C | | | | 26/11/98 |

*Sheet 7 - T881 Synthesiser*
*220-01575-02*




***Sheet 8 - T881 Microcontroller***
***220-01575-02***




| REV/ISS | AMENDMENTS | DRAWN | CHKD | D.O. | APVD | DATE |
|---|---|---|---|---|---|---|
| 02D | CREATED MANUAL INFO | | | | | |
| 02C | MINOR MODS AFTER DESIGN REVIEW | MAJ | | | | |
| 02B | VALUE CHANGES ONLY | MAJ | | | | |
| 02A | ADDED ADDITIONAL PA FILTERING | MAJ | | | | 05-11-99 |
| 01A | VCO ON MAIN PCB | RBM | | | | 19/08/99 |
| 00A | ORIGINAL | BEN C | | | | 26/11/98 |

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T881TX
HARMONIC FILTER

| IPN: | ISSUE: | ID:. |
|---|---|---|
| 220-01575-02 | D | 2.SC. 9 |

| PROJECT: | DESIGNER: | FILE NAME: | FILE DATE: | NO.SHEETS: |
|---|---|---|---|---|
| T881 | MAJ | 1575_02d | 11-Dec-00 | 9 |

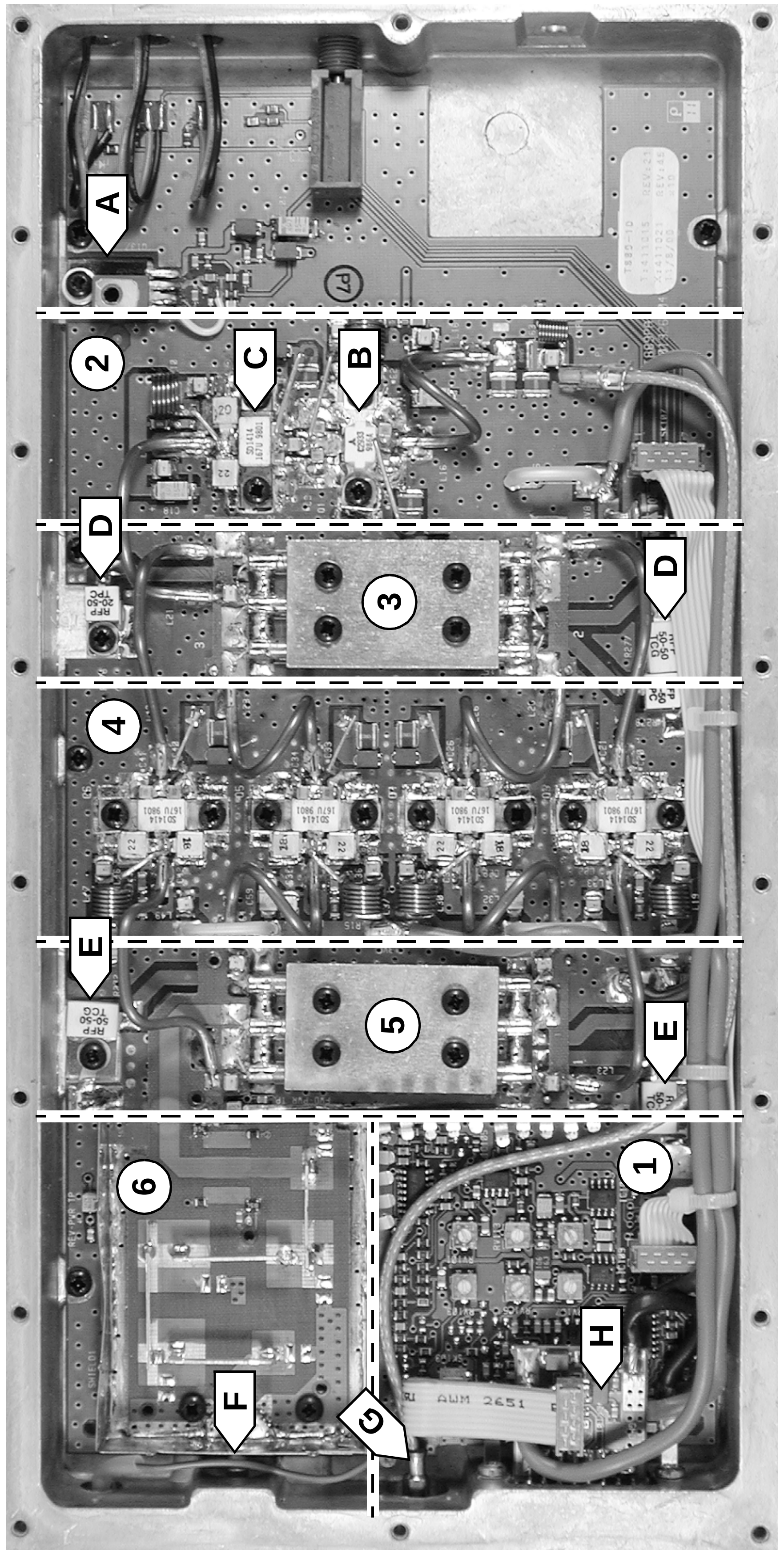
**Sheet 9 - T881 Harmonic Filter**
**220-01575-02**

The photograph in Figure 1.1 on the next page will help you to identify the main circuit blocks in the T889.

There is a similar photograph in Figure 3.2 which shows the main adjustment controls.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

The photograph in Figure 1.2 shows the T889 front panel controls.




**Key:**

1 power control & alarms circuitry
2 drive amplifier
3 input power splitter
4 final amplifier
5 output power combiner
6 low pass filter & directional coupler

A power control transistor (Q137)
B pre-driver (Q1)
C driver (Q2)
D input splitter termination (R276, R277, R278)
E output combiner termination (R272, R274, R275)
F RF output
G RF input
H D-range connector (incl. DC in, alarm & metering outputs - refer to Section 3.2 in Part F)

*Figure 1.1 T889 Main Circuit Block Identification*

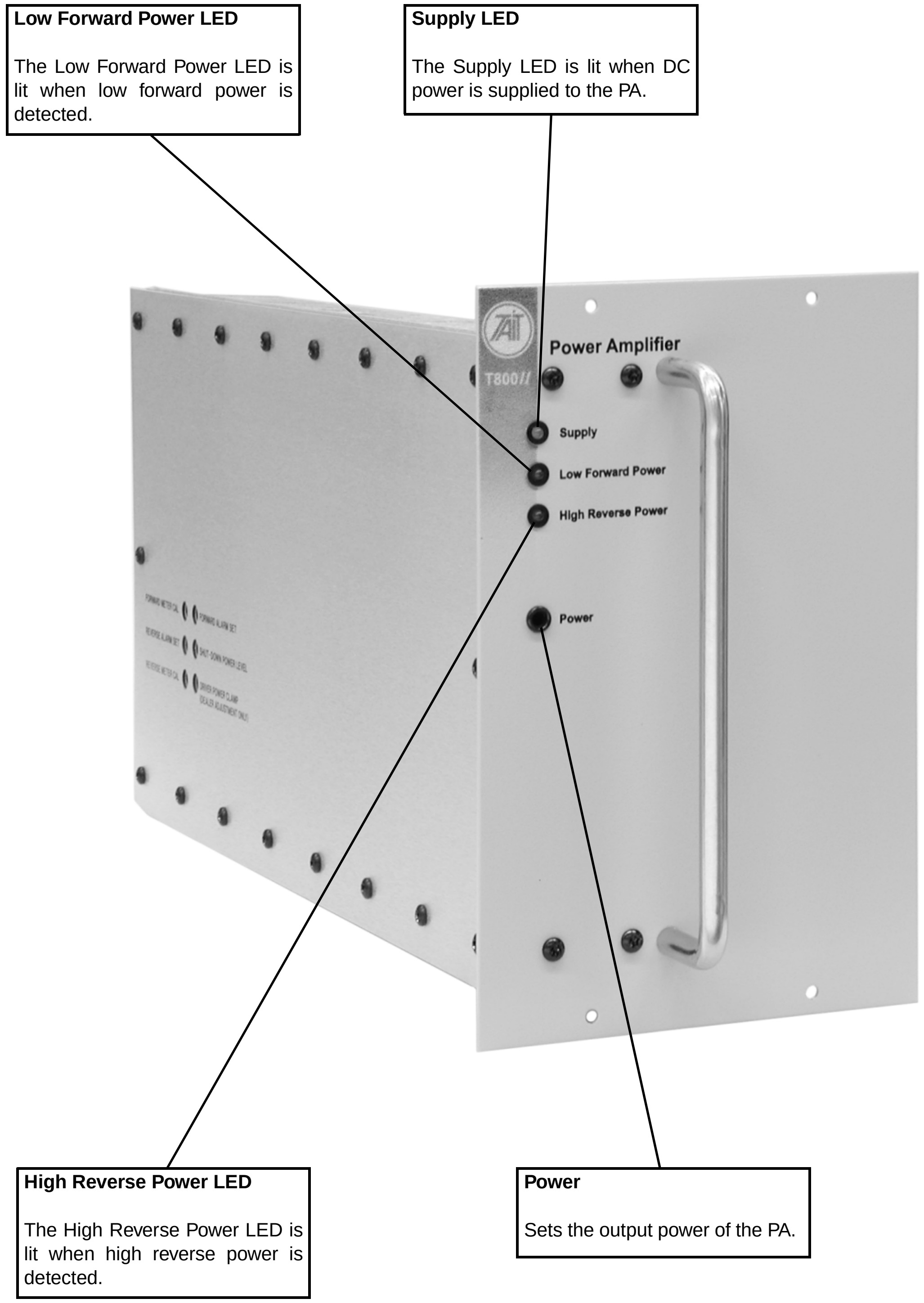



*Figure 1.2 T889 Front Panel Controls*

The photograph printed at right will help you to identify the main controls used in tuning and adjusting the T889.

There is a similar photograph in Figure 1.1 which shows the main circuit blocks.

Extending both these fold-outs will allow you to refer to both photographs while using the manual.

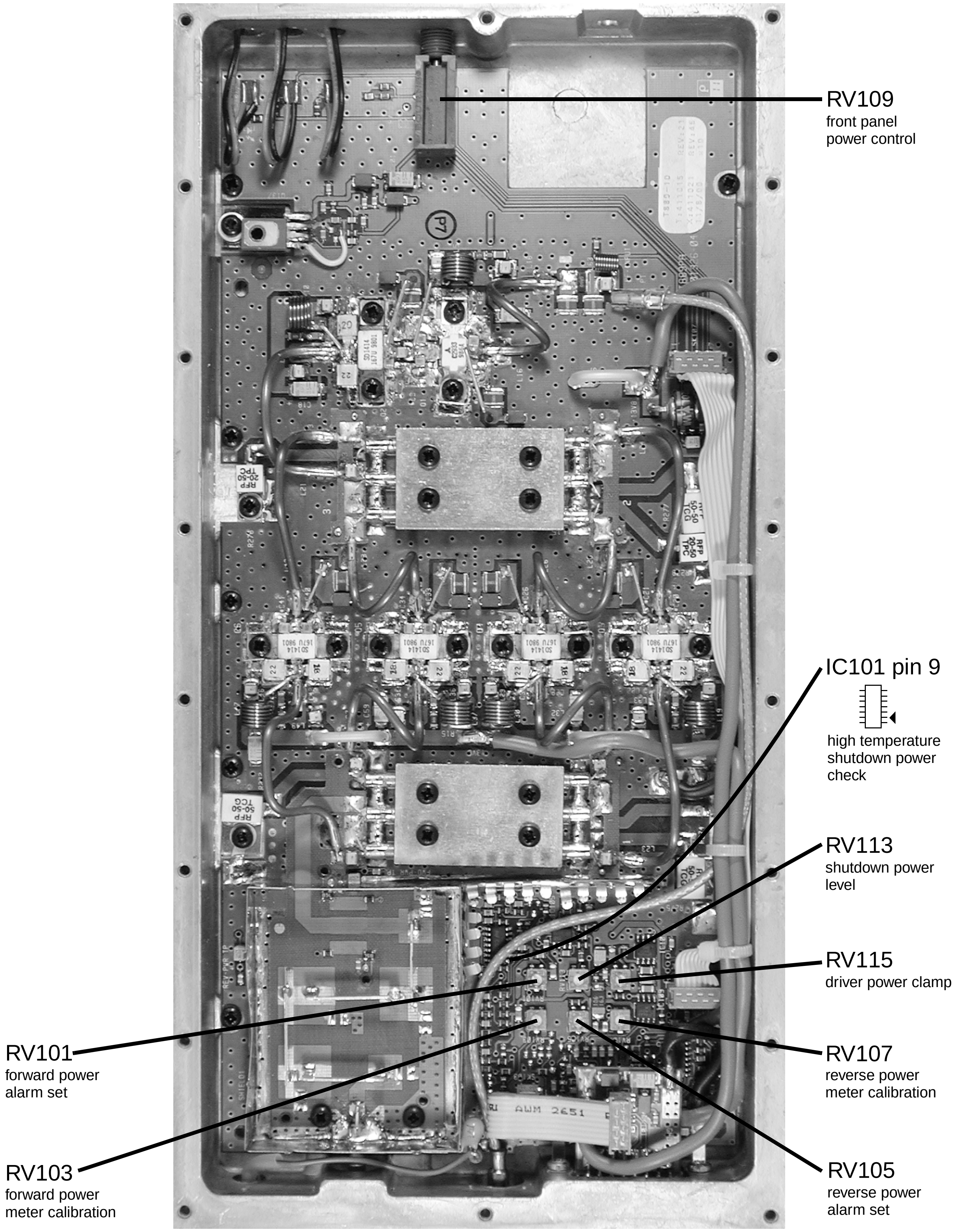



*Figure 3.2 T889 Main Adjustment Controls*

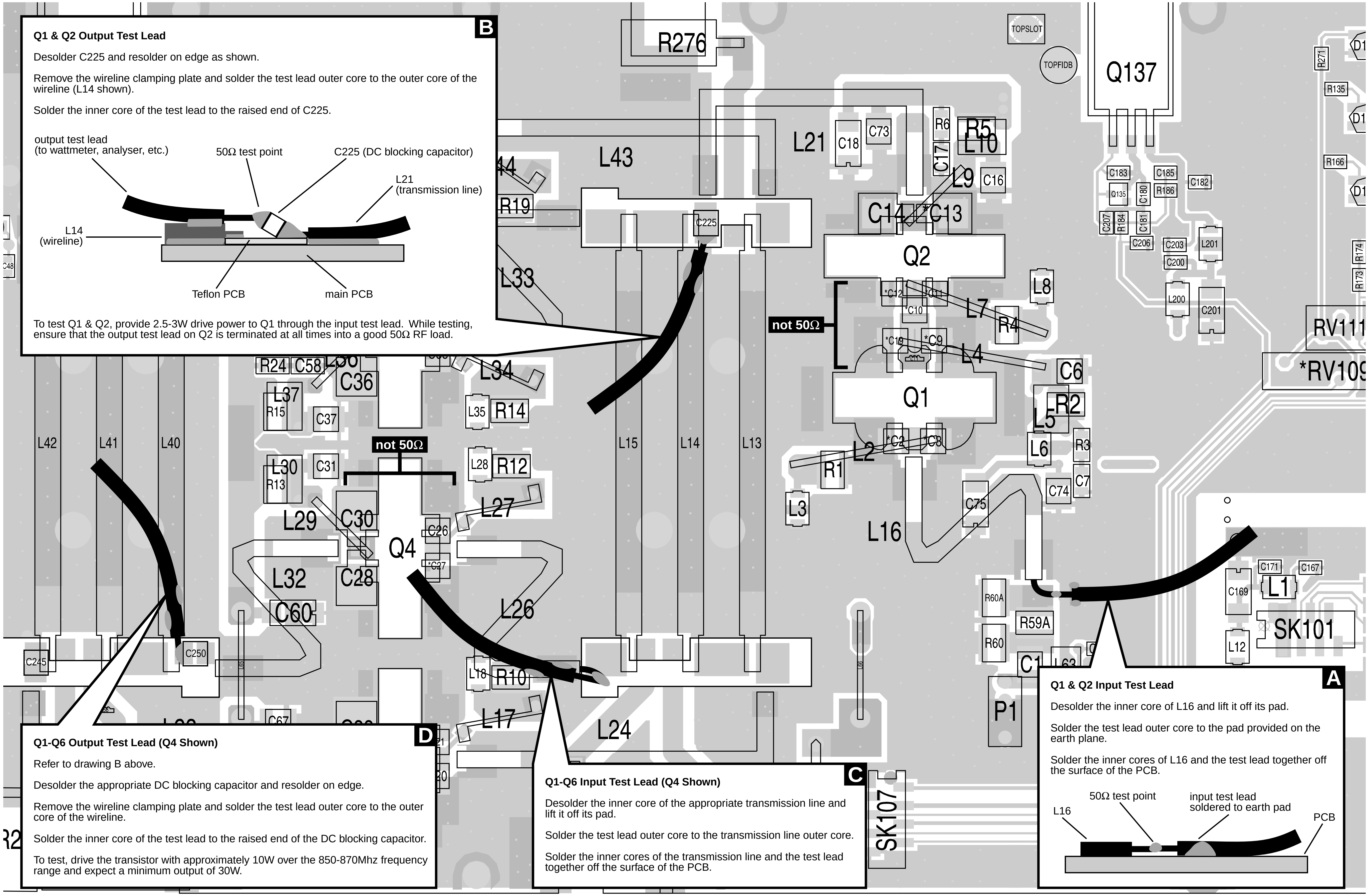


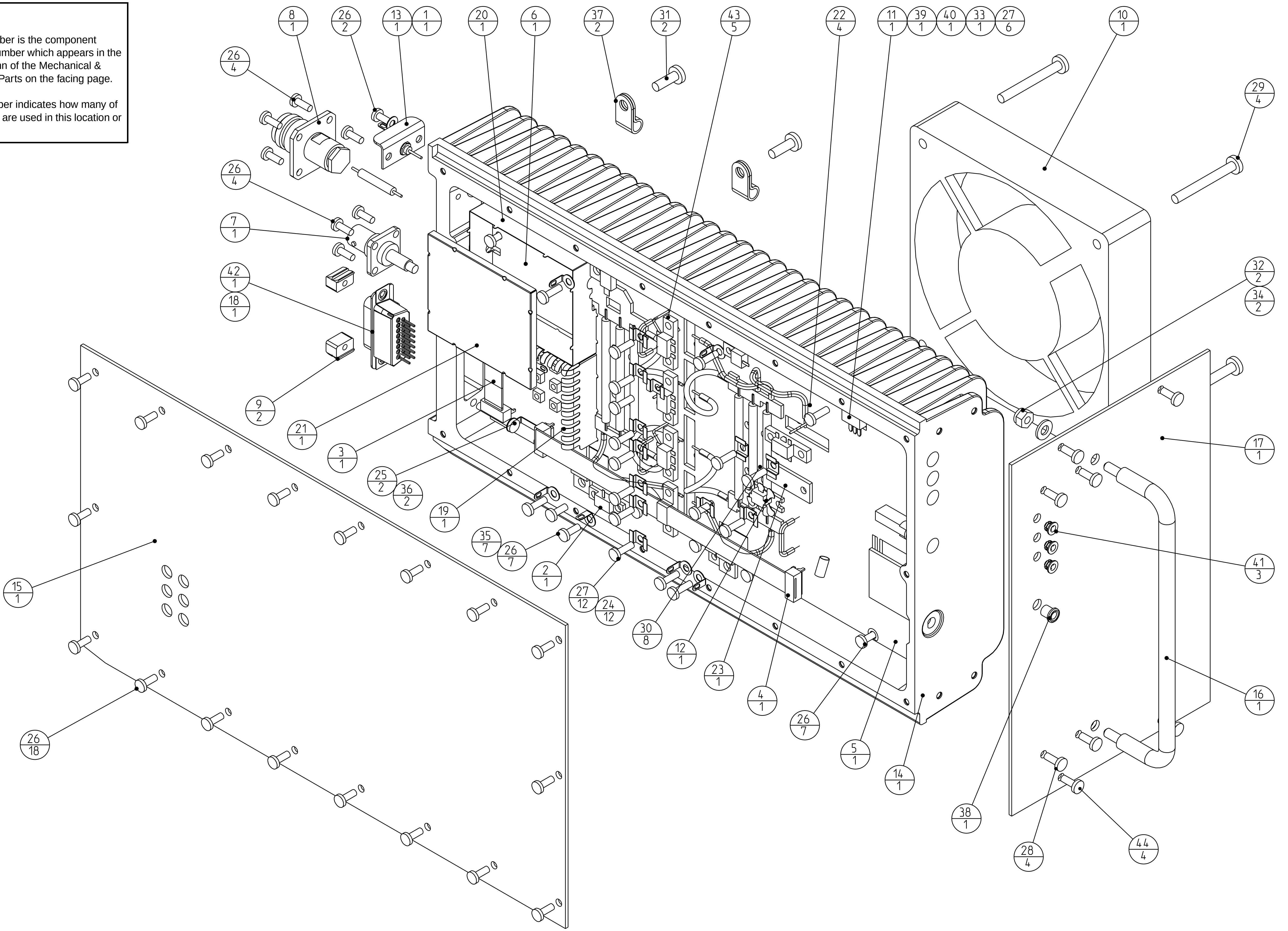

*Figure 4.1 T889 Test Break Point Location*

**Key**

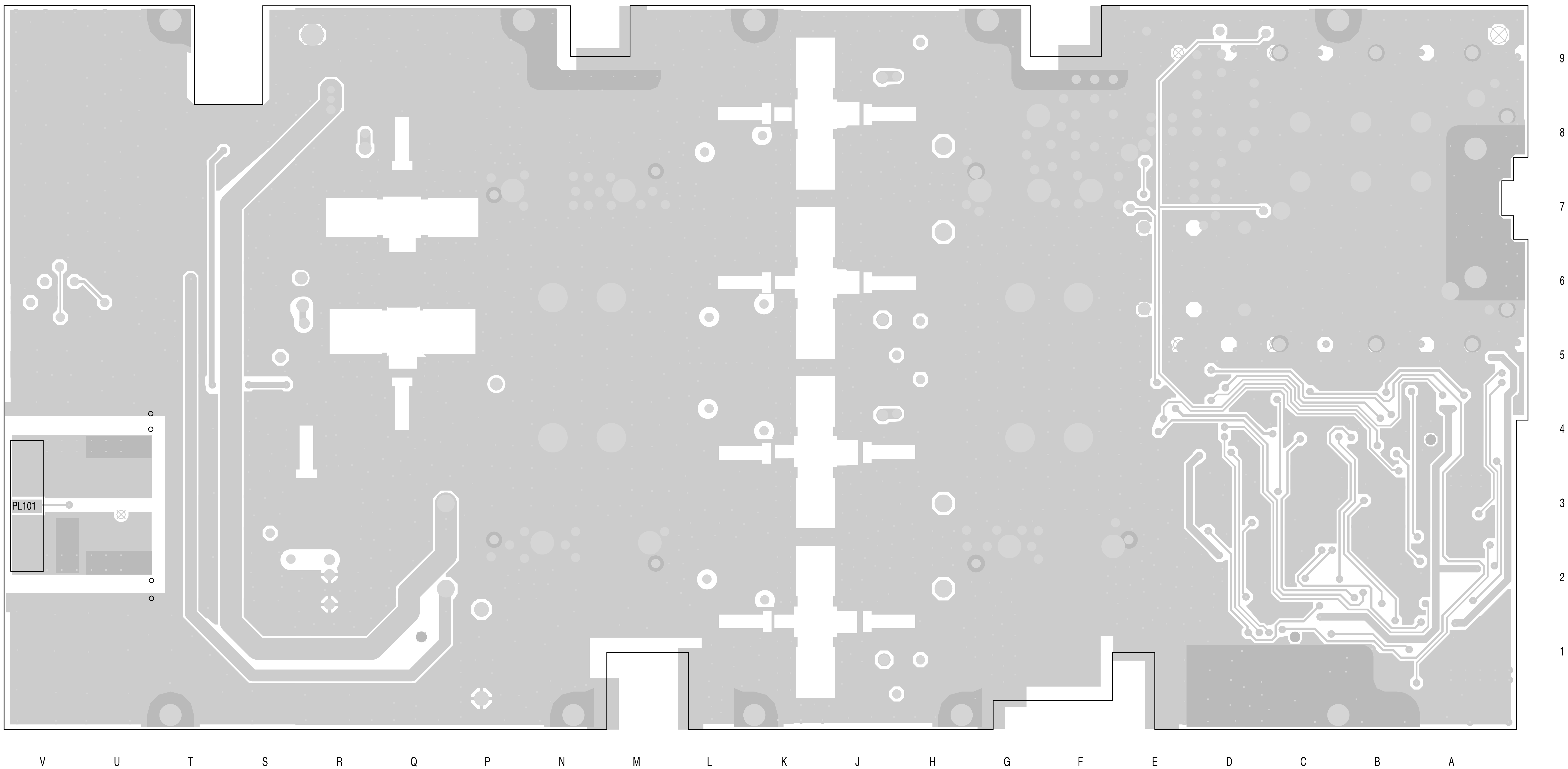
The upper number is the component identification number which appears in the "Legend" column of the Mechanical & Miscellaneous Parts on the facing page.

The lower number indicates how many of this component are used in this location or function.

33/2



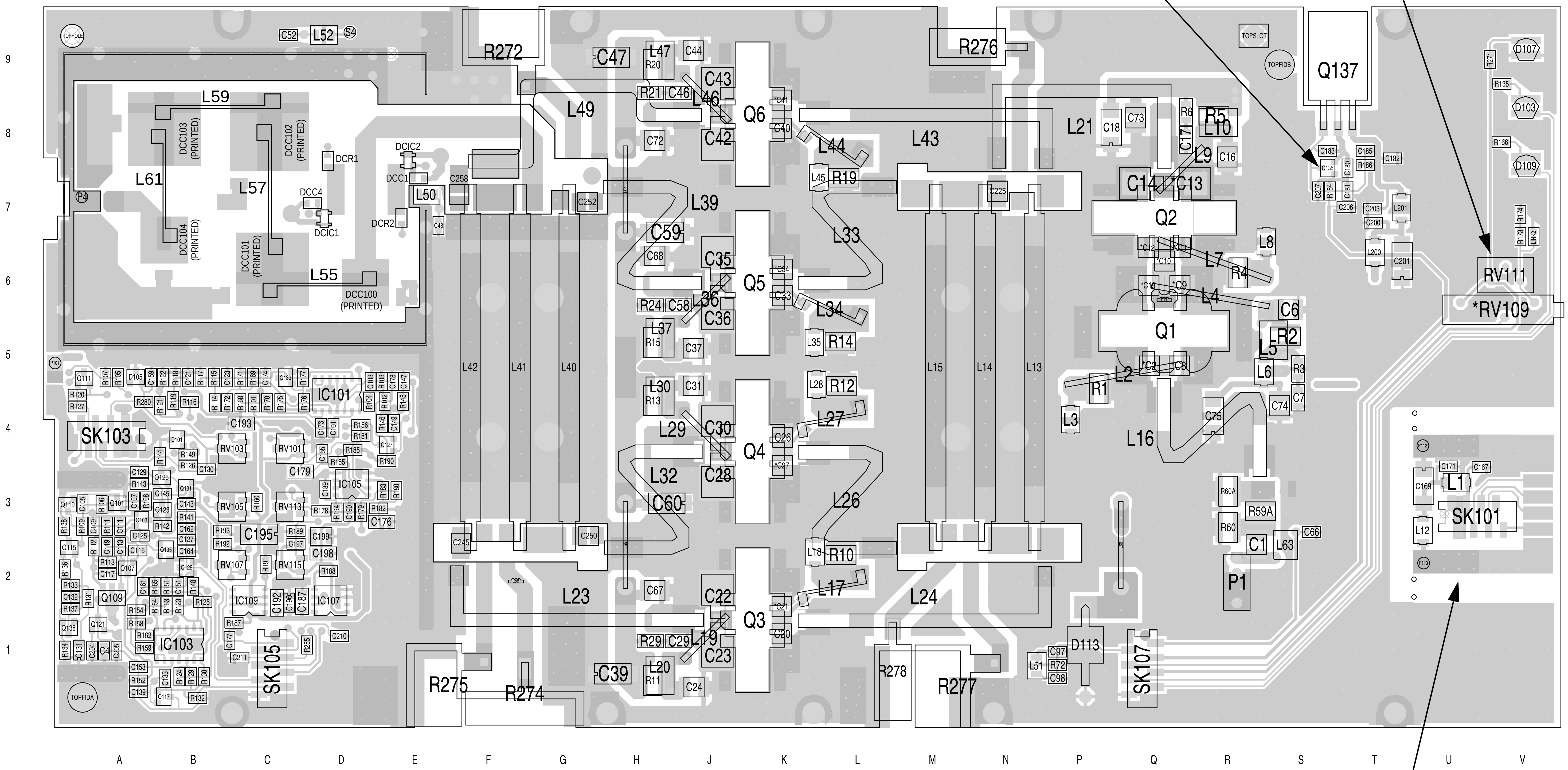

***T889 Mechanical Assembly***
***220-01326-04***




***T889 PCB Layout - Bottom Side***
***220-01326-04***

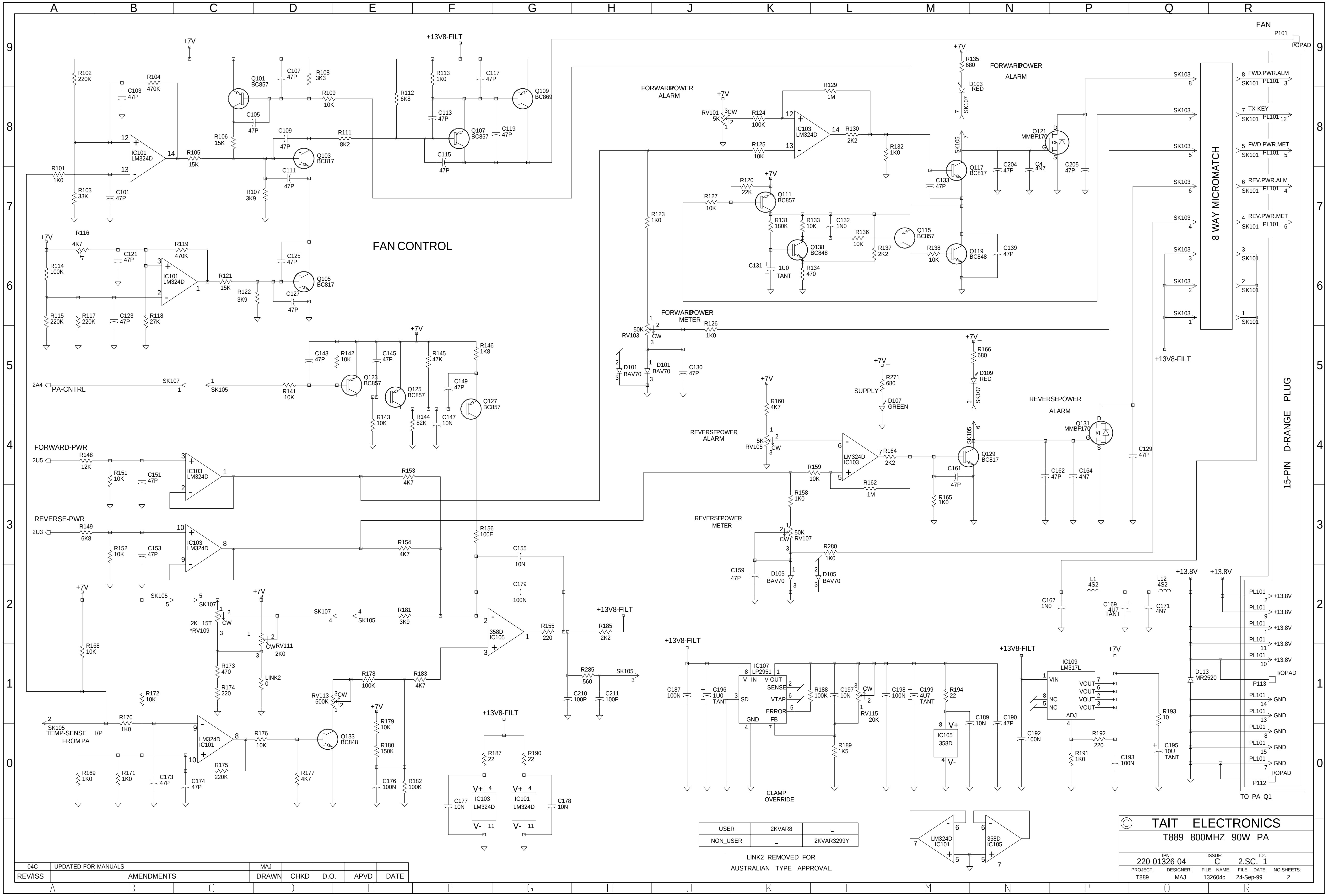
Q135 has been replaced with a leaded BD139 - refer to TN-604 for more details.

RV111 may be fitted instead of *RV109 to convert the output power adjustment to internal access only.

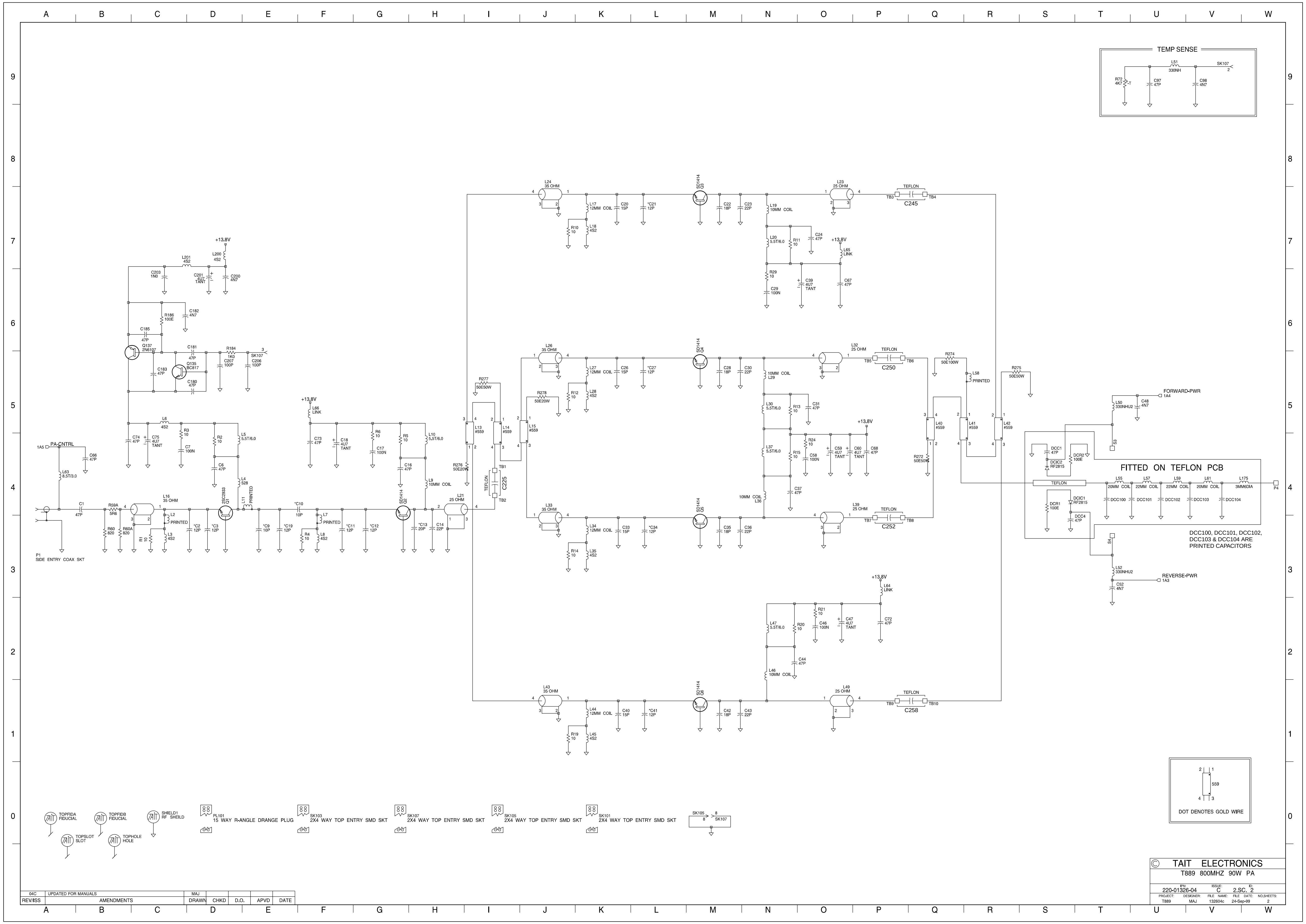


The circuitry for the break-off D-range PCB is shown on the control section circuit diagram.

***T889 PCB Layout - Top Side***
***220-01326-04***




***Sheet 1 - T889 Control Section***
***220-01326-04***




**Sheet 2 - T889 RF Section**
**220-01326-04**

# 1 T885 Installation

## 1.1 Rack Mounting

The T885 receiver is designed for use in a standard 483mm rack frame using a Tait T800 Series II guide. The guide is securely mounted to the rack frame with front and rear retaining screws, and the T885 is secured into the guide with two front panel mounting screws. Figure 1.1 shows a standard, double module guide which can also be fitted with an optional backplane PCB to locate and mate the rear D-range connector(s). For more information on available guide kits, refer to the T800 Ancillary Equipment Service Manual or your nearest Tait Dealer or Customer Service Organisation.

A rear mounted N-type connector is used for RF input on the T885, while all DC, audio and control connections are via the rear mounted D-range connector, D-range 1 (PL100). An additional rear D-range connector (T800-03-0000) can be fitted when remote multichannel operation, or additional control or low frequency lines are required (refer to Figure 1.2).

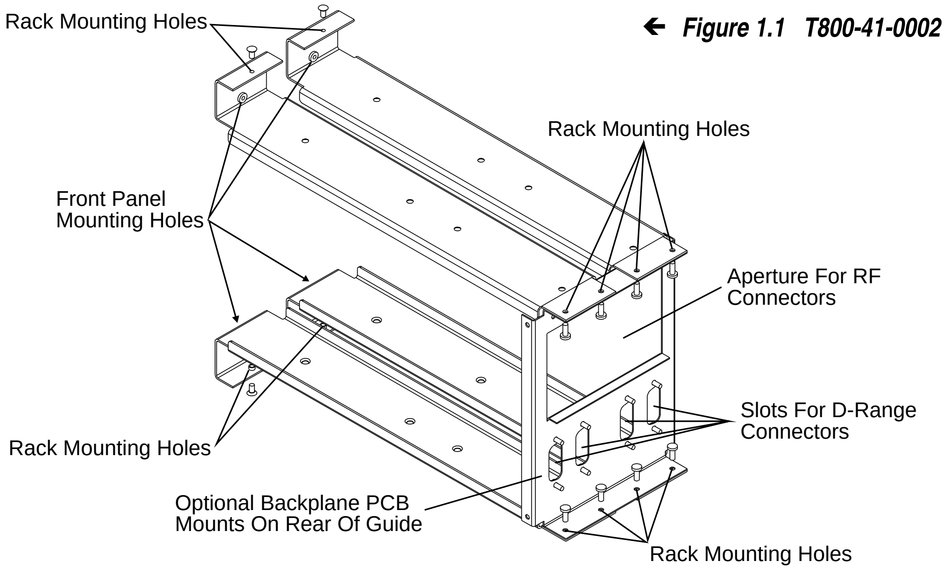



*Figure 1.1 T800-41-0002 Double Guide Kit*

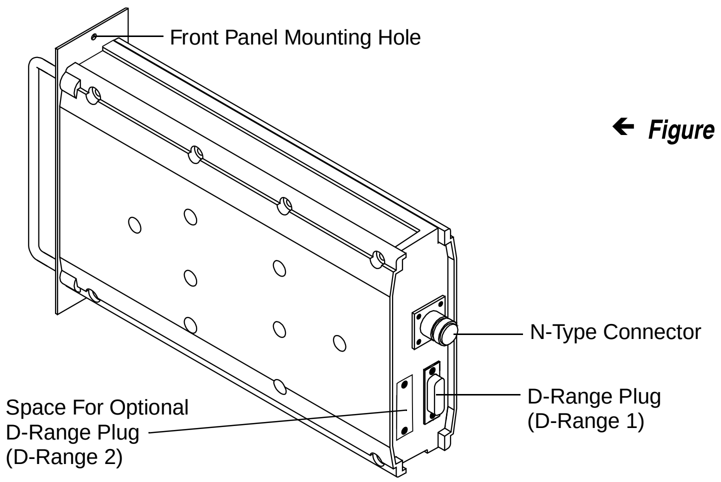



*Figure 1.2 T885 Chassis Connectors*

## 1.2 Rack Wiring

The D-range input and output connections are shown in Figure 1.3 and Figure 1.4. Ensure that the cables are not subjected to any stresses due to tight bends or incorrect lengths.

Make sure the RF coax cable to the N-type connector is free from sharp bends or twists. If access to the rear of the rack frame is restricted, the cable should be long enough to allow the chassis to be fully withdrawn from the guide.

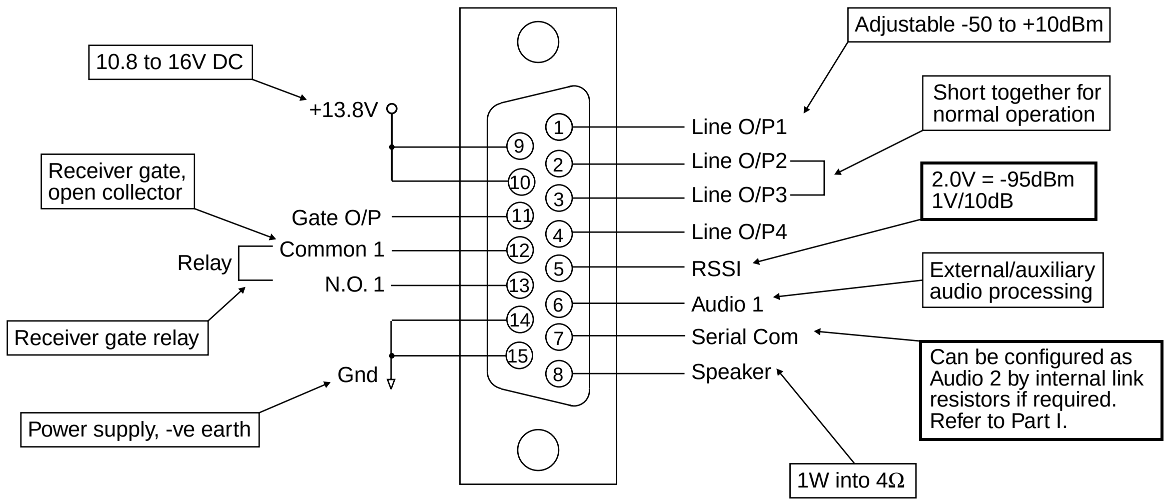



*Figure 1.3 T885 D-Range 1 Wiring - Rear View*

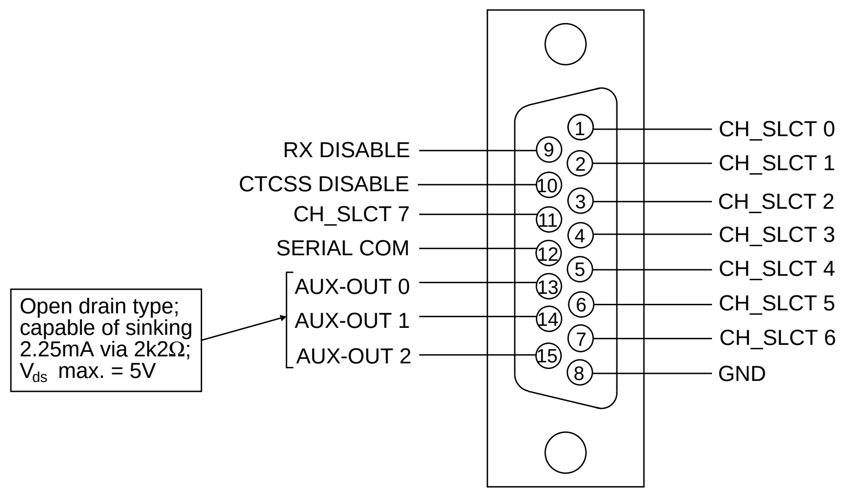



*Figure 1.4 T885 D-Range 2 Wiring - Rear View (standard T800-03-0000 kit)*

**Note:** Figure 1.4 above shows the standard pin allocations for the T800-03-0000 auxiliary D-range kit. A T800-03 auxiliary D-range kit is also available for special applications requiring custom internal wiring.

## 1.3 Power Supply

If a power supply other than an appropriate Tait model 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.

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

## 1.4 Reverse Polarity & Overvoltage Protection

A crowbar diode is fitted to all T885 receivers for protection against connection to a power supply of incorrect polarity. It also provides overvoltage protection from voltage transients caused by lightning strikes.

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

# 2 T881 Installation

## 2.1 Rack Mounting

The T881 transmitter is designed for use in a standard 483mm rack frame using a Tait T800 Series II guide. The guide is securely mounted to the rack frame with front and rear retaining screws, and the T881 is secured into the guide with two front panel mounting screws. Figure 2.1 shows a standard, double module guide which can also be fitted with an optional backplane PCB to locate and mate the rear D-range connector(s). For more information on available guide kits, refer to the T800 Ancillary Equipment Service Manual or your nearest Tait Dealer or Customer Service Organisation.

A rear mounted N-type connector is used for RF output on the T881, while all DC, audio and control connections are via the rear mounted D-range connector, D-range 1 (PL100). An additional rear D-range connector (T800-03-0000) can be fitted when remote multichannel operation, or additional control or low frequency lines are required (refer to Figure 2.2).

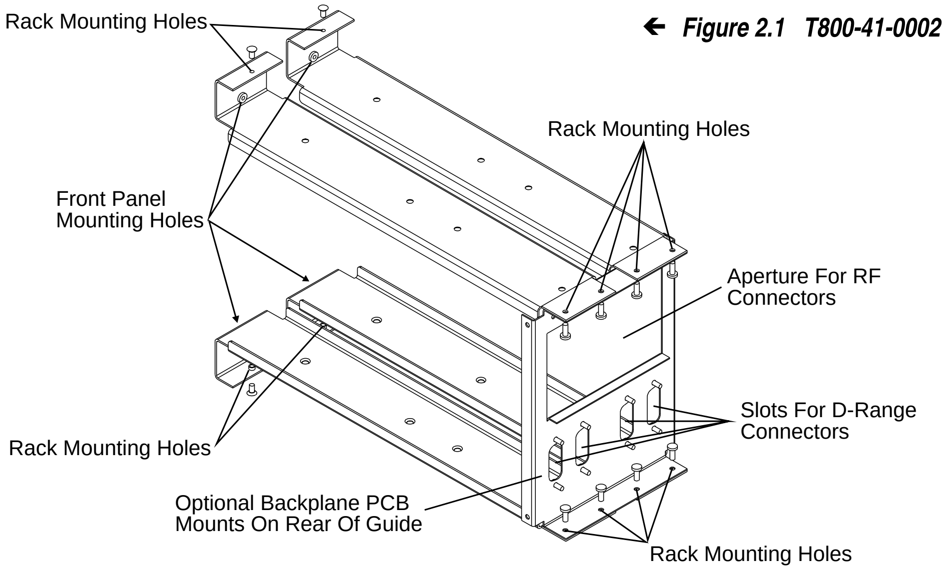



**Figure 2.1 T800-41-0002 Double Guide Kit**

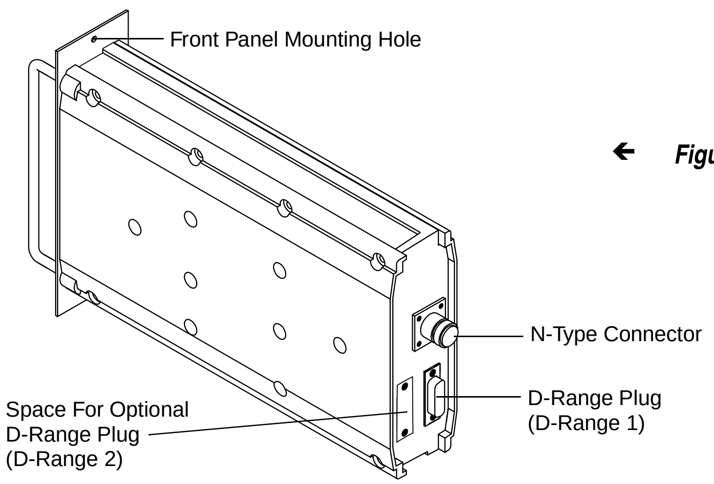



**Figure 2.2 T881 Chassis Connectors**

## 2.2 Rack Wiring

The D-range input and output connections are shown in Figure 2.3 and Figure 2.4. Ensure that the cables are not subjected to any stresses due to tight bends or incorrect lengths.

Make sure the RF coax cable to the N-type connector is free from sharp bends or twists. If access to the rear of the rack frame is restricted, the cable should be long enough to allow the chassis to be fully withdrawn from the guide.

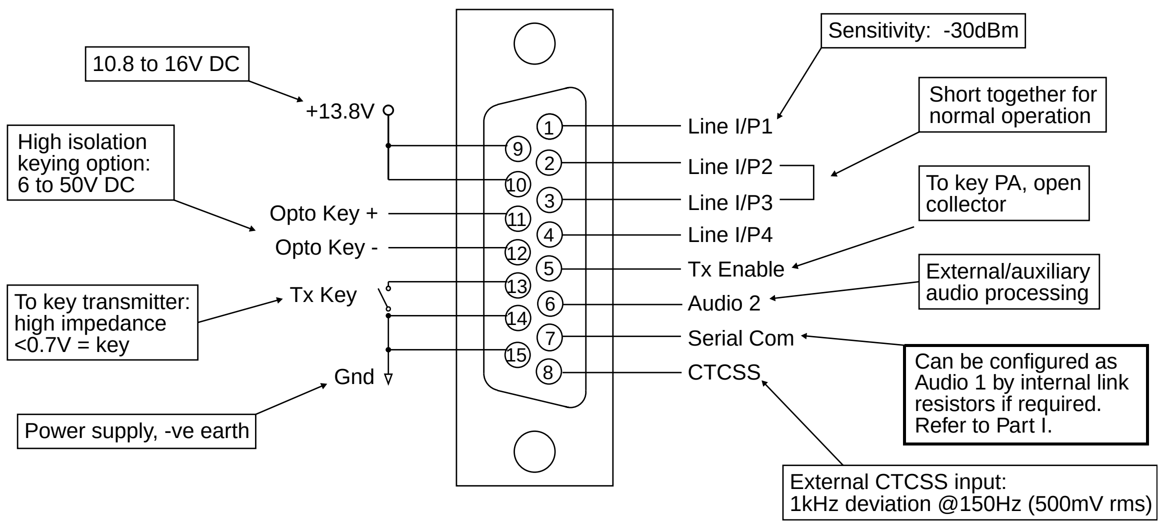



**Figure 2.3 T881 D-Range 1 Wiring - Rear View**

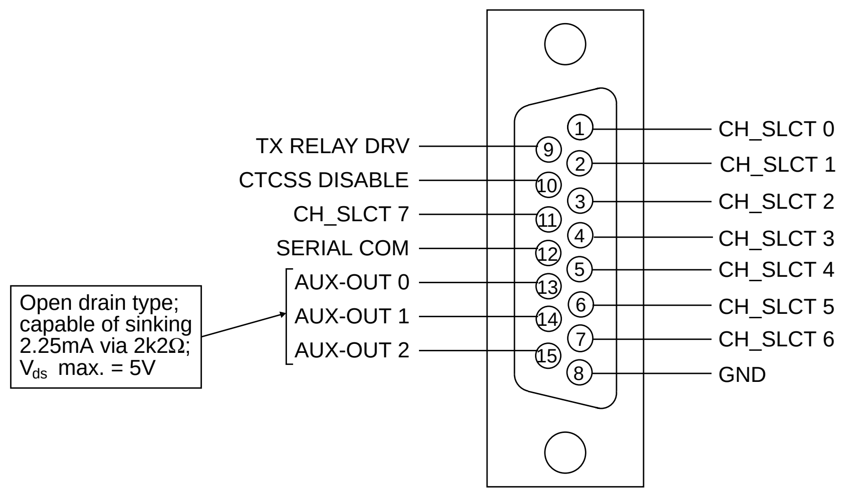



**Figure 2.4 T881 D-Range 2 Wiring - Rear View (standard T800-03-0000 kit)**

**Note:** Figure 2.4 above shows the standard pin allocations for the T800-03-0000 auxiliary D-range kit. A T800-03 auxiliary D-range kit is also available for special applications requiring custom internal wiring.

## 2.3 Power Supply

If a power supply other than an appropriate Tait model 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.

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

## 2.4 Reverse Polarity & Overvoltage Protection

A crowbar diode is fitted to all T881 transmitters for protection against connection to a power supply of incorrect polarity. It also provides overvoltage protection from voltage transients caused by lightning strikes.

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

# 3 T889 Installation

## 3.1 Rack Mounting

The T889 PA is designed for use in a standard 483mm rack frame using Tait T800 Series II guide rails. The guide rails are securely mounted to the rack frame with front and rear retaining screws, and the PA is secured into the guide with four front panel mounting screws. Figure 3.1 shows the standard, double width guide designed for use with the T889, while Figure 3.3 shows how the PA can be latched in the extended position. For more information on available guide kits, refer to the T800 Ancillary Equipment Service Manual or your nearest Tait Dealer or Customer Service Organisation.

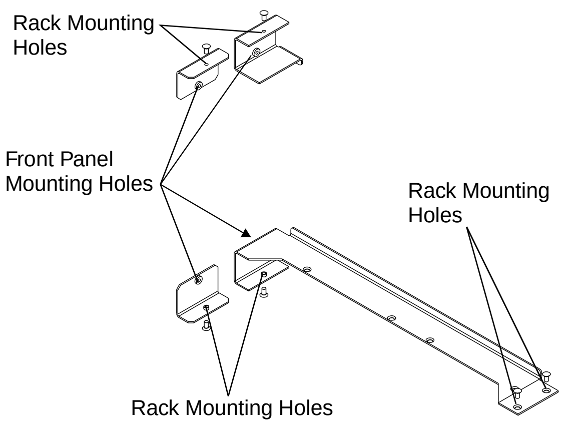



*Figure 3.1 T800-45-0001 PA Guide Kit*

The PA rear panel has three connectors: a BNC for RF input (from an adjacent T881 transmitter), an N-type for RF output and a D-range for all DC, audio and control connections (refer to Figure 3.2).

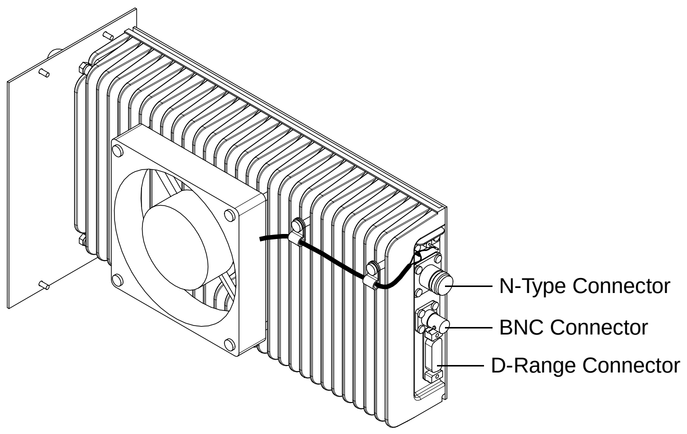



*Figure 3.2 T889 Chassis Connectors*

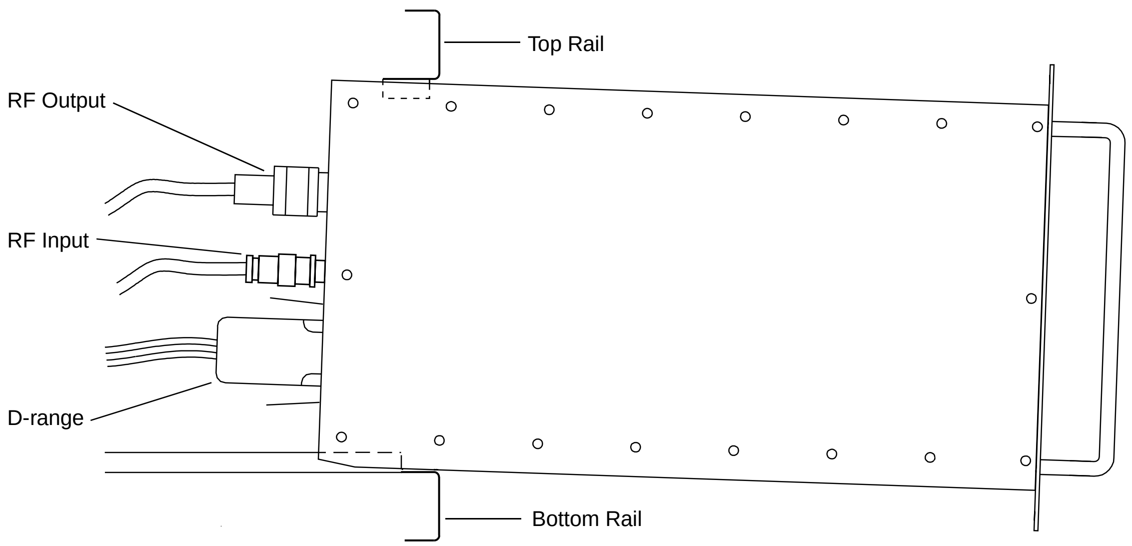



*Figure 3.3 T889 PA In Latched Position*

**Note:** You will need appropriate extension leads if you wish to carry out any adjustment procedures with the PA withdrawn from the rack in the latched position. Alternatively, disconnect and withdraw the PA and reconnect it behind the rack.

## 3.2 Rack Wiring

The D-range input and output connections are shown in Figure 3.4. Ensure that the cables are not subjected to any stresses due to tight bends or incorrect lengths.

Make sure the RF coax cables to the N-type and BNC connectors are free from sharp bends or twists. If access to the rear of the rack frame is restricted, the cables should be long enough to allow the chassis to be fully withdrawn from the guide.

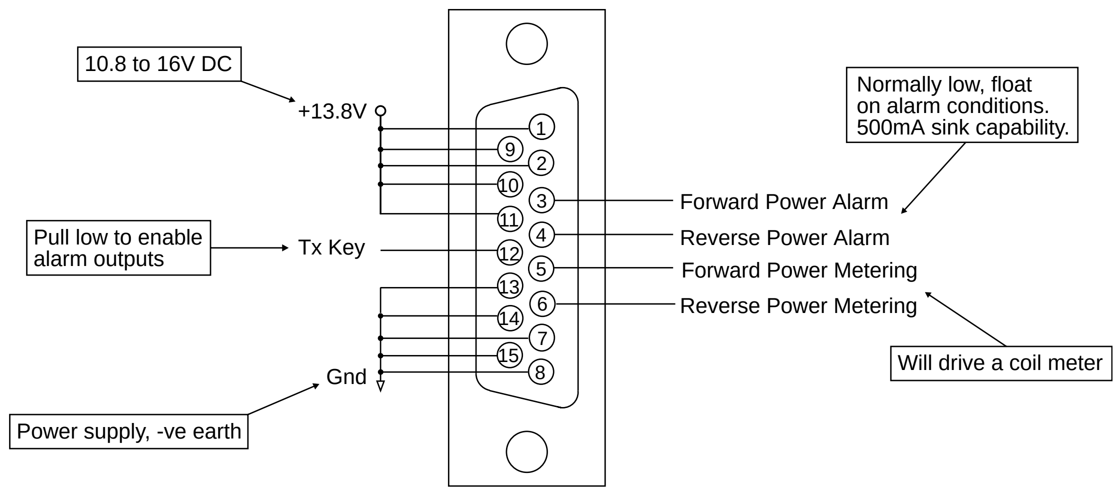



*Figure 3.4 T889 D-Range Wiring - Rear View*

## 3.3 Power Supply

If a power supply other than an appropriate Tait model 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.

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

***Caution:*** **Connect the power supply *directly* to the PA, and *not* via connector blocks. This will avoid overheating of connector blocks that are not of the correct current rating.**

## 3.4 Reverse Polarity & Overvoltage Protection

A crowbar diode is fitted to all T889 PAs for protection against connection to a power supply of incorrect polarity. It also provides overvoltage protection from voltage transients caused by lightning strikes.

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