

**T201X 9600 Baud GMSK Modifications**

Issue No.: AN013-02

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**PROVISIONAL
& UNTESTED****General**

This application note details the modifications required for a T201X II radio to allow it to be used for 9600 Baud GMSK data transmission and reception.

Note that these modifications will affect the radio's type approval. There is no type approval planned for T2000 radios configured as detailed in this document.

Note These modifications are for the following boards:

T201X Control Board	220-01377-03	A2000-UIT Universal Interface Telemetry V1.1
TCXO/TX Audio Board	220-01389-02	IF Board 220-01384-00

These modifications are suitable for most of the previous versions of these PCB's, but it is beyond the scope of this document to detail exact component locations for all PCB versions. For previous versions of PCB's, refer to the relevant T2000 Service manual for information on the particular version being worked on.

Parts

The parts required are as follows:

Part Number	Description	Supplier	Qty.
015-24100-08	1N Chip Cap, 0805	Tait	1
015-23330-08	330pF Chip Cap, 0805	Tait	1
276-00010-90	CFUM455DY Low Group Delay Filter	Tait	2
036-14220-00	2.2K Chip Resistor, 0805	Tait	1

Procedure

1. Remove radio top cover.
2. Remove radio internal die-cast cover.

TCXO/TX Audio Board

3. Unplug the TCXO board.
4. Change the 0805 Chip Cap C904 from a 47N to a 1N.
5. Change the 0805 Chip Cap C905 from a 4N7 to a 330pF. Changing C904 & C905 to these values alter the TX Audio low pass filter from a cut-off frequency of 3kHz to approximately 13kHz (even for normal voice audio). The proper way to do this would be to redesign the TCXO board and give the LF input a wider audio bandwidth, e.g. DC to 8kHz. These current changes do not seem to change the audio level out of the low pass filter circuit.
6. Plug the TCXO board back onto the radio board.

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IF Board

7. Unplug the IF board.
8. Change the ceramic filters #CF802 and #CF803 from CFUM455D to CFUM455DY (IPN 276-00010-90). The CFUM455DY filter is most suited for digital communications and cellular phones because of their improved group delay characteristics.
9. Change the 0805 Chip Resistor #R831 from a 47K to a 2.2K. This increases the level of the detected audio signal.
10. Plug the IF board back onto the radio board.

T201x Control Board

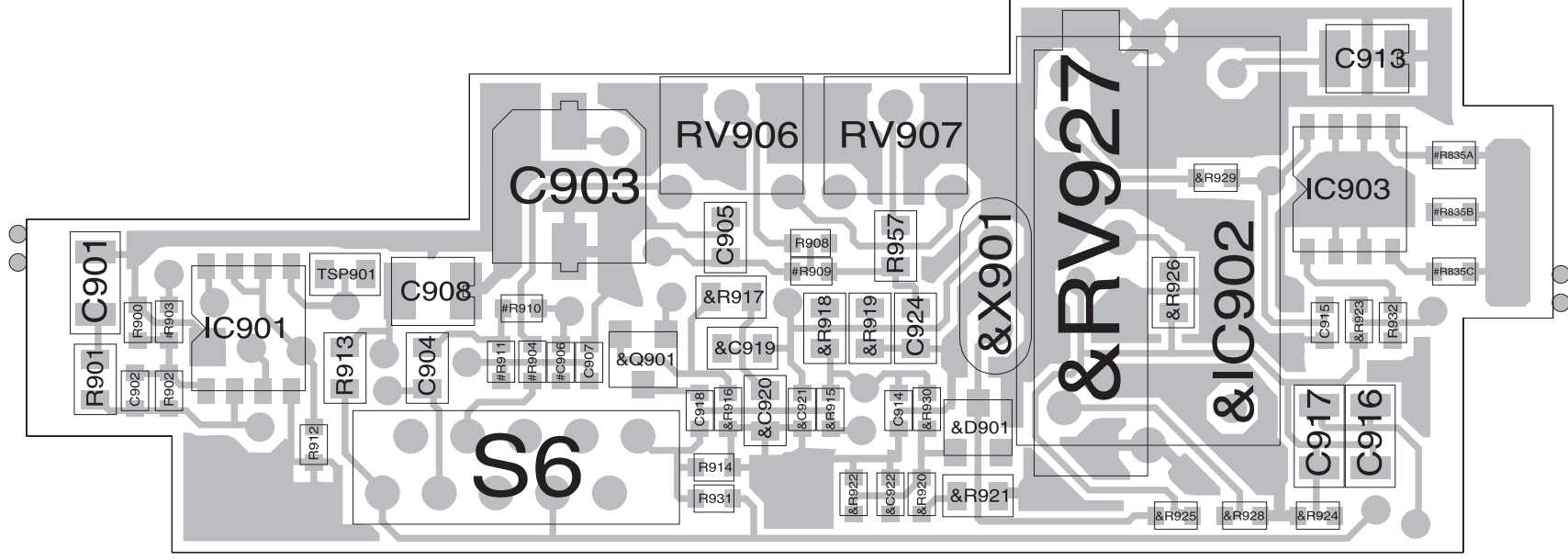
11. Place a wire link from TP601 (S1 pin 5 DET-AF) to the pad marked RX AF on the A2000-UIT board. Doing this bypasses the control boards 3kHz low pass audio filter.

A2000-UIT Board

12. Set the solder link LK1 to nothing. In other words, remove all solder bridges from link LK1 and leave it open.
13. Set the A2000-UIT link LK2 2-4. This sets the A2000-UIT TX Audio input into the radio to the TX-LF-SIG line. The TX-LF-SIG line is the TX audio low frequency audio signal input.

Finish

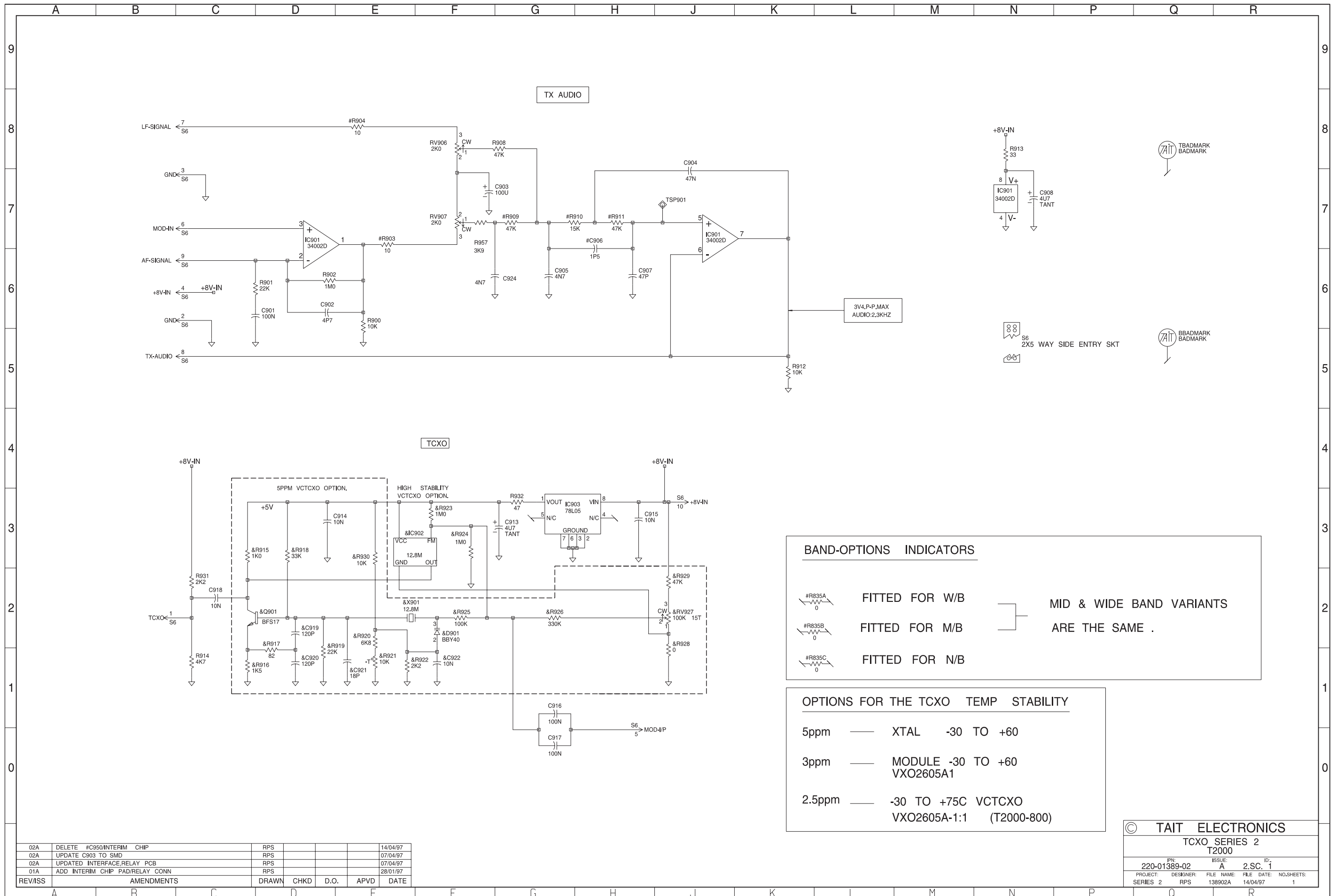
14. Refit the radio internal die-cast cover.
15. Fit the A2000-UIT V1.1 board.
16. Power up and test the radio as normal. Be sure to set up the radios Dual Point modulation adjustment correctly. This will ensure the radio has a flat frequency response.

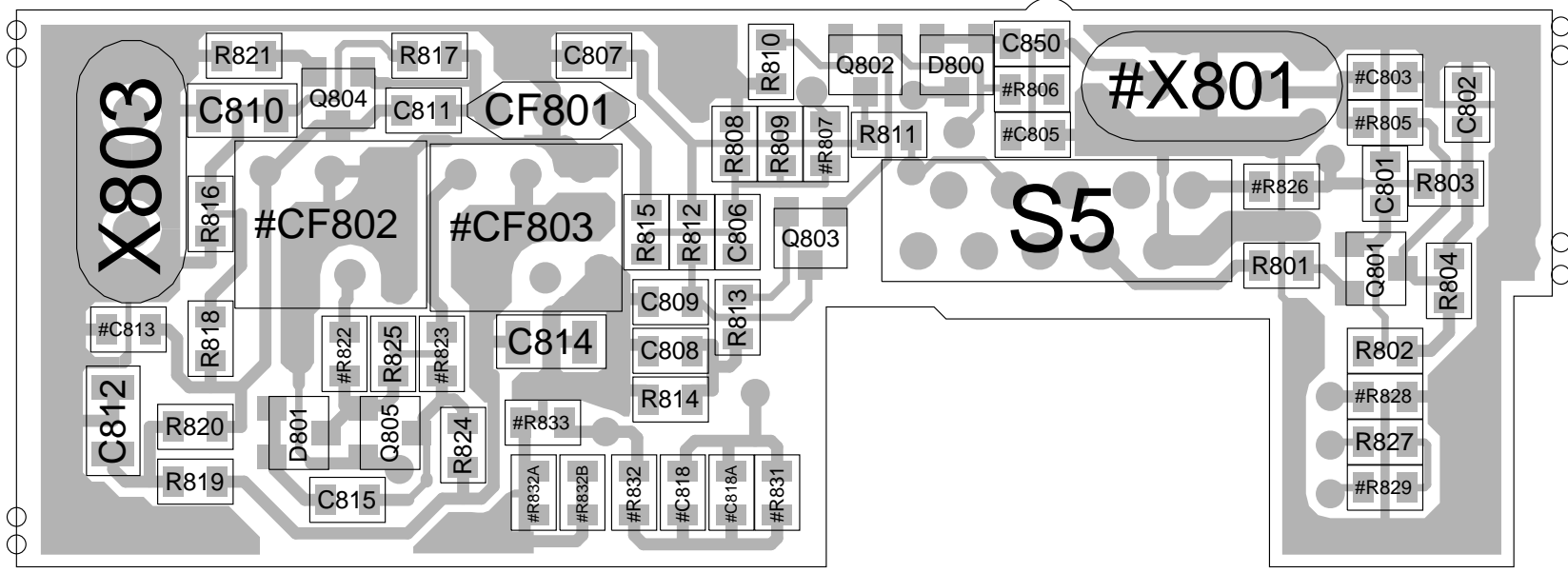


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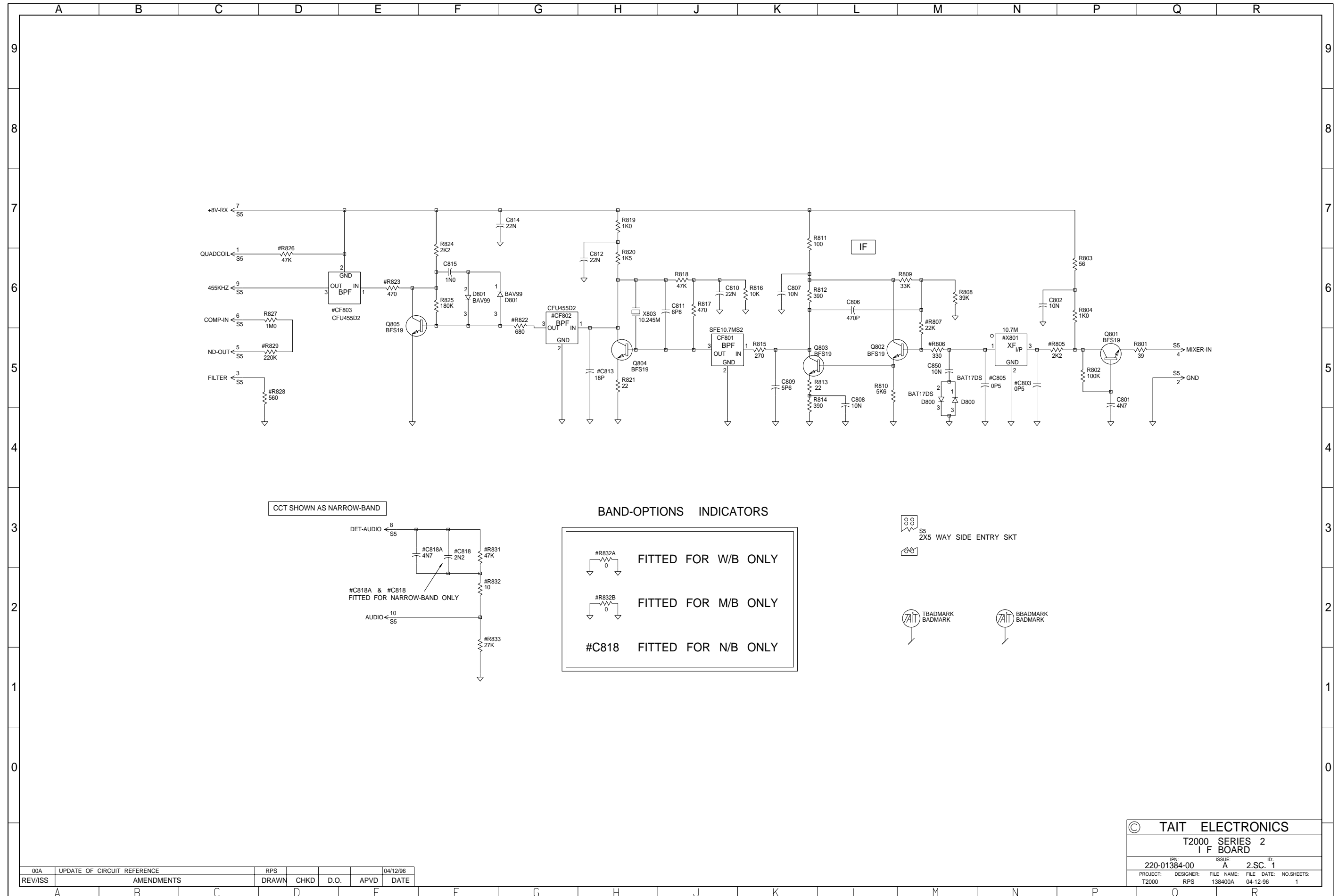
T2000 TCXO/Tx Audio PCB (IPN 220-01389-02) - Top Side





220-01384-00 ISSUE A

T2000 IF PCB (IPN 220-01384-00) - Top Side



BAND-OPTIONS INDICATORS

#R832A
FITTED FOR W/B ONLY

#R832B
FITTED FOR M/B ONLY

#C818
FITTED FOR N/B ONLY

S5
2X5 WAY SIDE ENTRY SKT

TBADMARK
BADMARK

BBADMARK
BADMARK

00A	UPDATE OF CIRCUIT REFERENCE	RPS				04/12/96
REV/ISS	AMENDMENTS	DRAWN	CHKD	D.O.	APVD	DATE

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T2000 SERIES 2			
I F BOARD			
IPN: 220-01384-00	ISSUE: A	ID: 2.SC. 1	
PROJECT: T2000	DESIGNER: RPS	FILE NAME: 138400A	FILE DATE: 04-12-96
			NO.SHEETS: 1