



## TVS-2-TAIT-T2

Manual Revision: 04-04-01

Covers Software Revisions:  
TVS-2-TAIT-T2: 4.6

This manual & product supports the following radios:  
Tait T-201X/2020/203X/2040

### SPECIFICATIONS

Operating Voltage	5 VDC
Operating Current	8 mA
Operating Temperature	-30 - +60 C
Frequency Response	300-2600 Hz
Input Impedance	>100 kΩ
Carrier Suppression	60 dB < Peak Voice
Audio Output Impedance	1K Ω
Encryption Sequences	1 Trillion
Random Number Generator	64 bits
Sequence Length (est.)	84 billion years

### INSTALLATION OVERVIEW

1. Test the radio for functionality.
2. Program the radio per the Radio Programming Section of this manual.
3. Install the scrambler into the radio per the Hardware Installation Section of this manual.
4. Program the scrambler per the Product Programming Section of this manual.

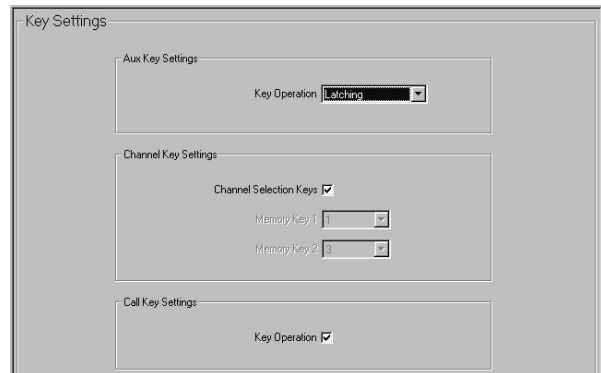
\*\*\*Midian is not responsible for any damage/loss resulting from the use of Midian's products.

### ABOUT THE TVS-2-TAIT-T2

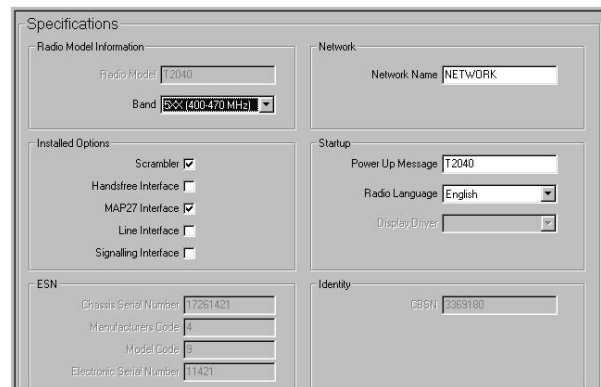
The TVS-2-TAIT-T2 is a high-level rolling code scrambler that uses hopping type rolling code encryption for higher security rather than sweeping code type. The scrambler is capable of features such as ANI, ENI, Deadbeat Disable, Spy, and more when using Midian's Kryptic Signaling format with the CAD-300 or DDU-300.

### RADIO PROGRAMMING

**Conventional Radios:** In the "Key Settings" window, set the "Key Operation" as latching.



**Trunked Radios:** In the "Specifications" window, check the "Scrambler" box under "Installed Options".



### HARDWARE INSTALLATION

Be certain to follow standard anti-static procedures when handling any of Midian's products.

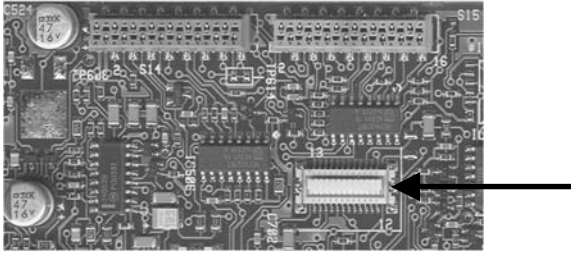
#### Disassembling the Radio:

Additional disassembly instructions are also available in Tait's Service Manual.

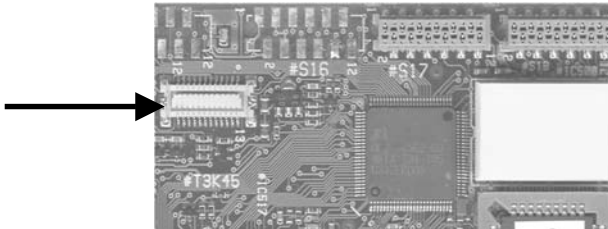
1. Power should not be connected to the radio.
2. Remove the top cover by unscrewing the four screws located on the bottom of the radio.
3. Remove the 3 screws that hold the logic PCB in place.
4. The logic PCB should flip to the right, when the radio face is to the front.

## Installing the Scrambler:

**Conventional Radios:** Plug the scrambler onto the options connector labeled P2 (see diagram below).



**Trunked Radios:** Plug the scrambler on the options connector labeled T3K45 (see diagram below).



**Alert Tone:** This is needed for Go-Ahead Beeps, programming beeps, and ring tones. Run a jumper wire from the ATP hole on the TVS-2-TAIT-T2 to #S13 Pin 9 on the radio.

**PTT Out:** For features such as trailing ANI, transpond, Emergency ANI, Deadbeat Disable, Spy, etc. it will be necessary to run a wire from the PTT Out hole on the TVS-2-TAIT-T2 to S10 Pin 3 located at the MIC Jack on the radio.

## Reassembling the Radio:

At this point, programming must be done. Stop here and skip to the programming section.

Additional assembly instructions are also available in Tait's Service Manual.

1. Reinstall the logic PCB with the 3 screws.
2. Reinstall the top cover with the 4 screws.

## HARDWARE ALIGNMENT

The TVS-2-TAIT-T2 does not require any hardware adjustments, however, when ordering the scrambler, the radio it will be used in must be specified.

## PRODUCT PROGRAMMING

Midian's TVS-2-TAIT-T2 series products are programmed via Midian's KL-3 programming cable. Please reference the KL-3 manual for setup instructions of the KL-3 software and hardware. From the product selection screen on the KL-3 UP software, select the TVS-2-TAIT-T2 from the list and click OK.

Set the parameters of the TVS-2-TAIT-T2 software to fit the application. If any clarifications on a feature are required, move the mouse cursor over the feature name until the question mark appears and right click, a definition of the feature will be shown.

After entering the parameters, save the file by going to File - Save As. Enter the file name in the File Name block and click Save. Saving the file will allow for quick and easy reprogramming of units.

**KL-3 Programming:** After plugging the board into the radio, but with the radio still open (see installation section), connect the black lead of the KL-3 to a common ground and the green clip lead to the Program In hole. Turn power on to the radio and click "Program Unit" in the KL-3 software. You will hear 3 beeps if programmed successfully (see Alert Tone under Installing the Scrambler).



**KL-3 Reading:** It will be necessary to connect the yellow clip lead to the Program Out hole, in addition to having the green clip lead connected to the Program In hole. Follow the same procedure to read the unit as for programming, but select "Read Unit" in the menu bar. It is necessary to cycle power after programming or reading. **Note:** When the scrambler is read, the security codes will be read out as zeroes. If another scrambler is then cloned with this information, the scramblers will be incompatible because they have different security codes.

## OPERATION

**Conventional Radios:** The auxiliary button is used as the scramble/clear (mode) select on this radio. The auxiliary button is the button with the bell figure on it. Please note that the button is latched, so only single code operation is available.

**Trunked Radios:** The function button is used as the scramble/clear (mode) select on this radio. The function button is the button with "Fn" on it. Please note that the button is latched, so only single code operation is available.

## TECHNICAL NOTES

**Radio Compatibility:** Midian has taken the utmost care to ensure the option board integrates into the radio with minimal impact to the features of the radio. However, some features may not be available in the radio when an option board is used. If a feature is not available, please contact Midian to see if the feature can be added.

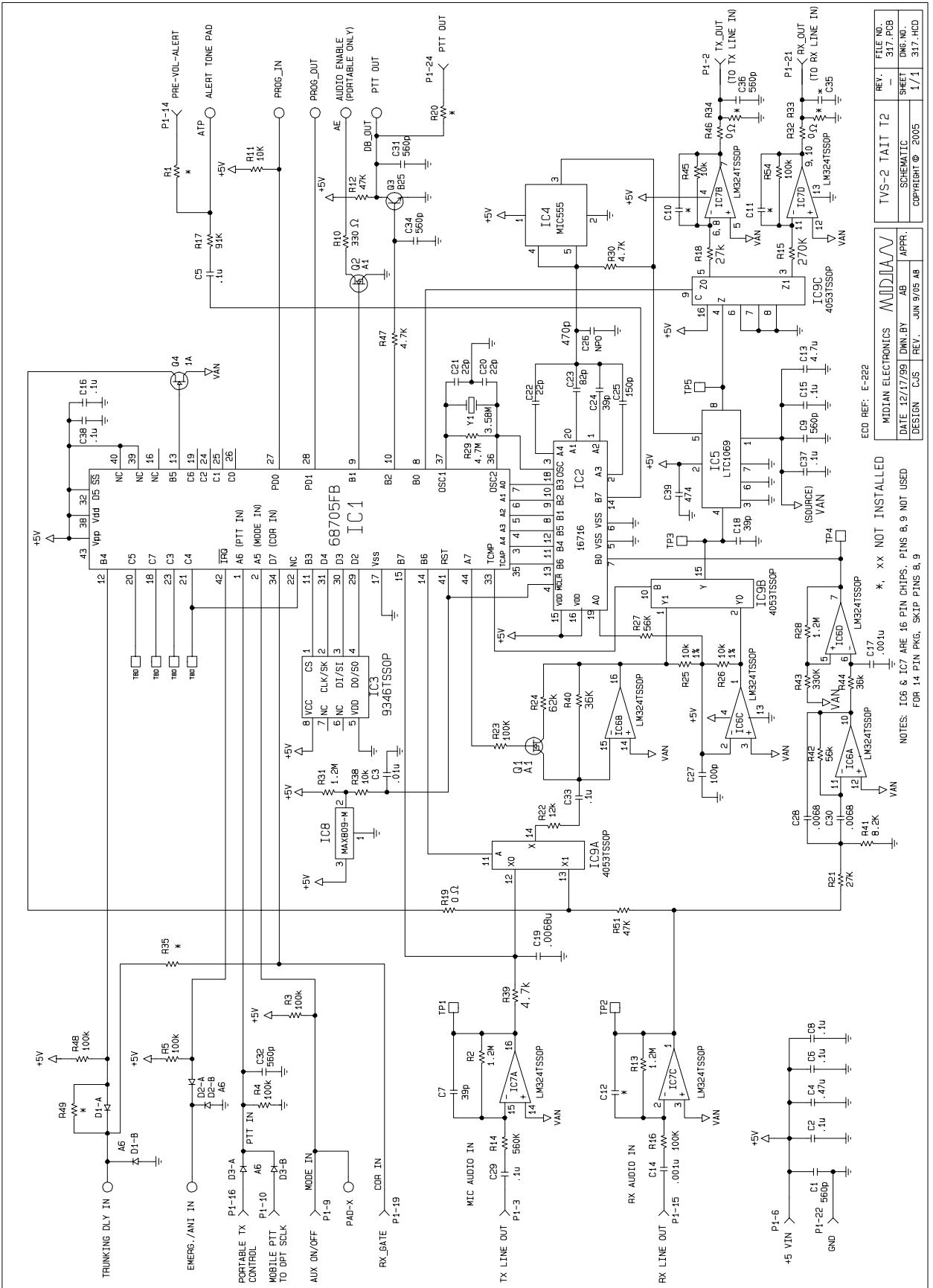
**DTMF Dialing:** DTMF Dialing may only be accomplished from the microphone when in clear mode.

## MIDIAN CONTACT INFORMATION

Midian Electronics Inc.  
2302 East 22<sup>nd</sup> Street  
Tucson, Arizona 85713 USA

Orders: 1-800-MIDIANS  
Phone: 520-884-7981  
Fax: 520-884-0422  
E-mail: [sales@midians.com](mailto:sales@midians.com)  
Web: <http://www.midians.com/>

*- This page intentionally left blank -*

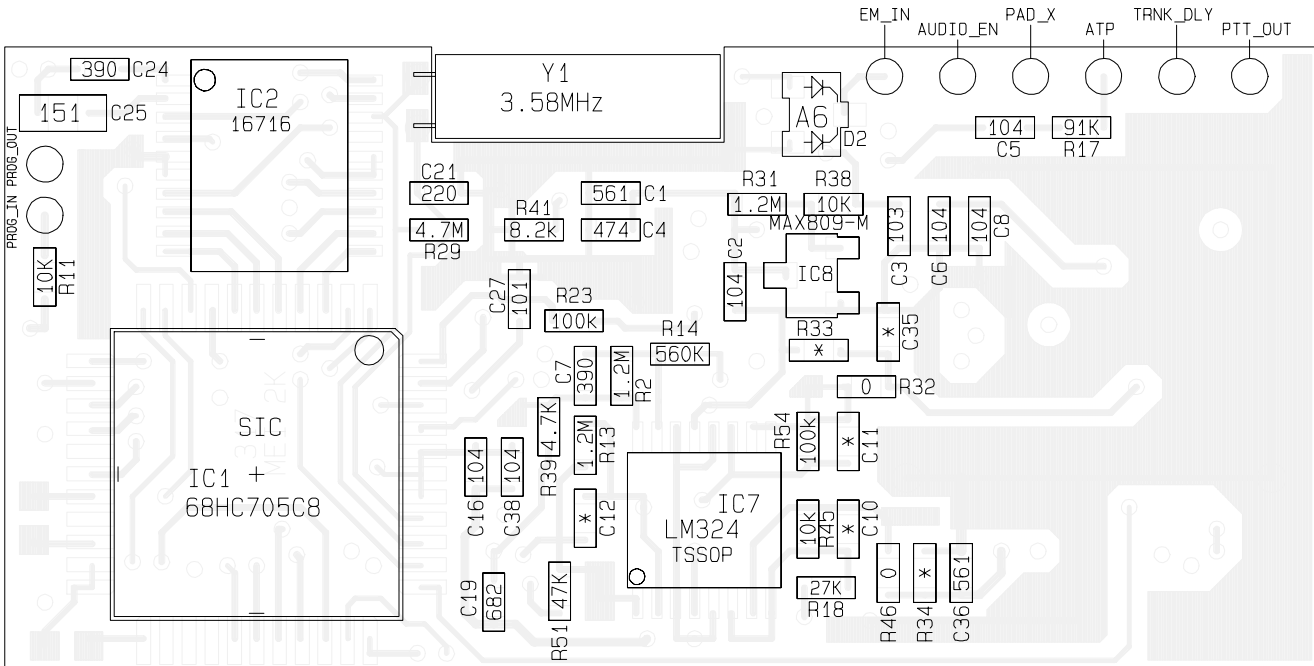


ECO REF: E-222

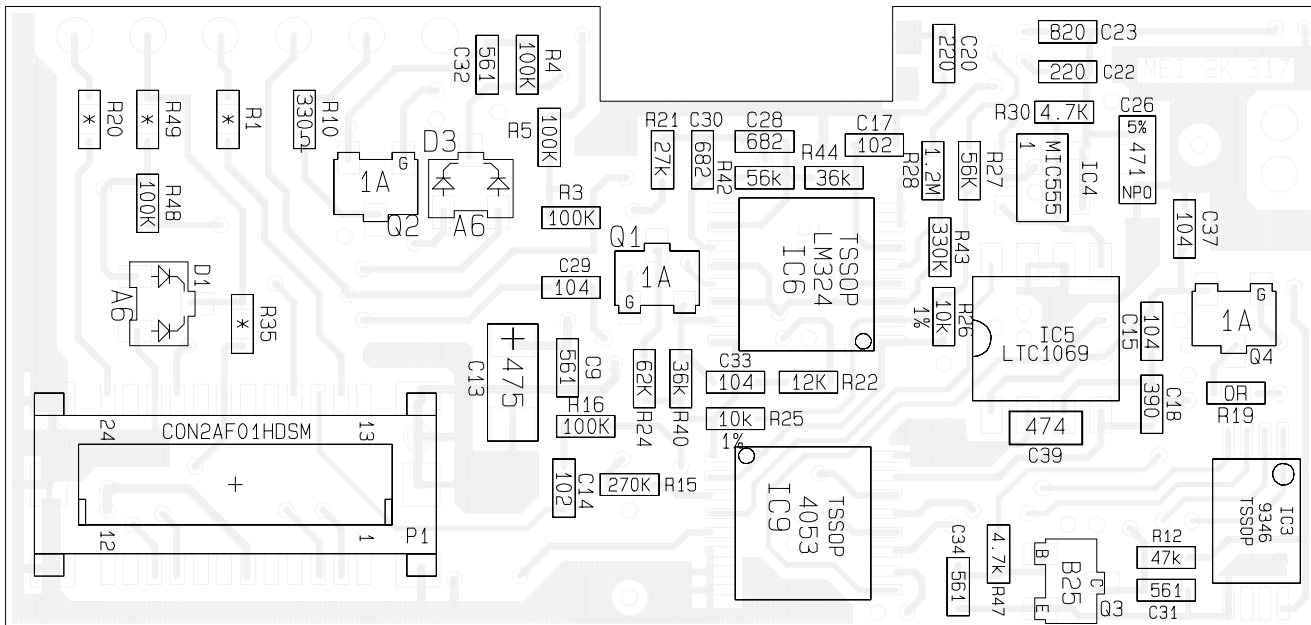
FILE NO.	317-PCB
DWG. NO.	317-HCD
REV.	1/1
T2	TAIT
T1	TAIT
REV.	2005
COPYRIGHT	© 2005
DESIGN	CJS
REV.	1/1
APPR.	AB
DATE	12/17/99
BY	DWN
DESIGNED BY	MIDDIAN ELECTRONICS
DATE	JUN 9/05
REV.	AB

NOTES: IC6 & IC7 ARE 16 PIN CHIPS. PINS 8,9 NOT USED FOR 14 PIN PKG, SKIP PINS 8, 9

xx NOT INSTALLED



JUNE 9/05 AB 317.PCB \*, xx NOT INSTALLED



\*, xx NOT INSTALLED

MIDIAN ELECTRONICS		MIDIAN		REV.	FILE NO.
DATE	JAN 00	DWN.BY	AB	APPR.	317.PCB
DESIGN	CJS	REV.	JUNE 9/05 AB	SHEET	DWG. NO.
					317-HCP
				TVS-2 TAIT T2	
				PICTORIAL	
				COPYRIGHT © 2005	