

CTR75XWT

IP9J1W

Users Guide

Synthesized VHF Surveillance
Voice Transmitter
(Stand-Alone Mobile Device)
and
Mono Solid State Recorder
All-In-One Package

by
Tactical Technologies Inc.
&
Geonautics International Pty Ltd

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Condition of Use

The user undertakes that,

- They are a bona fide law enforcement agency with technical capabilities.
- The CTR75XWT is being used to fulfil official requirements.
- The CTR75XWT will be used with discretion.
- Precautions will be undertaken to keep details restricted to members of their organization requiring such information.

The user acknowledges that,

- The CTR75XWT is for use by law enforcement agencies.
- The CTR75XWT may not comply with government type approval.
- The users will be responsible for satisfying themselves that the CTR75XWT may be legally operated in the district where the user intends to deploy it.

Disclaimer

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Version	By	Description	Date
1.0.0	SDE	Initial Draft	August 07
1.0.1	RBS	Touch Ups	September 07
1.0.2	RBS	ADD CHARGE INFO	MARCH 08
1.0.3	RBS	ADDS, typos, charge updts	April 08

CERTIFICATION STANDARDS



This device complies with Part 90 and Part 15 (Class B digital device) of the FCC Rules.

FCCID: IP9J1W

This device is not designed for body-worn operations, if used in this manner the FCC RF exposure limits may be exceeded. The safe distance for this device was calculated to be 23.3 cm away from all persons. This distance meets the general population/uncontrolled RF exposure FCC limits.

The antenna used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter. The antenna must be installed to provide a separation distance of at least 23.3cm from all persons.

Operations is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation

INTRODUCTION

Tactical Technologies Inc. *Joey J1W* (Model numbers CTR-751WT, CTR-752WT, CTR-753WT, CTR-754WT, CTR-754X2WT) is a 1 channel, VHF-FM synthesized voice transmitter combined with a state of the art solid-state digital recorder, specifically designed for law enforcement use. The concise product description of the *J1W* would be ***TRANSCORDER***.

The unit utilizes an external antenna for the transmitter and a single microphone for both the transmitter and recorder operations. The *J1W* can be equipped with an optional scrambler for added transmitter security.

The *JoeyJ1W*, whilst utilizing an onboard hardware compander, derives unprecedented audio quality from its ability to capture sounds at user definable settings. The *J1W* uses flash memory as onboard storage, is fully configurable and allows the user to trade off between quality and recording time to suit their application.



Figure 1, The Joey1W Transcorder

The transmitter operating frequencies can be programmed through HyperTerminal or may be programmed using any of TTI's Citation series receivers or the PTX-100 programming module. The recorder parameters are programmed through a PC running the supplied proprietary *Joey* software.

This document explains how to operate the *Joey1W*, it's accessories, and the associated *Joey* software suite.

1.1 Features

Features of the *Joey1W* include;

- High quality audio recovery for both transmitter and recorder
- Externally cabled microphone
- Single channel, VHF-FM synthesized transmitter
- Transmitter has own hardware ON/OFF switch
- Program the transmitter directly from a TTI Citation Receiver or TTI PTX-100 Programmer
- Companded recorded audio for increased intelligibility
- Self powered, onboard real-time clock for increased integrity
- Outstanding concealing abilities to enhance operational usability
- Multiple recordings allowing stop / start operation
- User programmable timer record modes
- Recorder available in 64, 128, 256, 512, or 1024 MB storage capacity
- Extended record time capabilities
- High speed USB interface for faster data transfers
- Raw data download with audit trail identifiers for integrity
- Industry standard WAV compatibility for easy distribution

1.2 Packing List

At the time of printing, a *J1W* standard kit contains the following items,


J1W Kit	Description
	<i>Joey J1W</i> Transcorder Microphone (3ft cable) Antenna USB program & download cable (4½ft cable) Citation / PTX-100 Programming Cable <i>Joey</i> Software CD TTI TX Programming Software Authenticate CD Plastic Accessory Box Black Storage Box

Table 1, *Joey1W* Standard Packing List

1.3 Using the J1W Transcorder

The *J1W* is designed to be used,

- operationally in a stand alone configuration, or
- in conjunction with its USB cable and a personal computer for configuration, downloading and replay of stored audio, or
- connected to a personal computer, TTI Citation Receiver, or TTI PTX-100 for Transmitter Only Frequency Programming.

Before using the *J1W* in an operational environment, it should first be run in *PC Mode* and the recorder configured using the accompanying *Joey* software. The Transmitter operating frequency must be programmed separately.

NOTE: Transmitter must be switched OFF while operating in *PC Mode*.

1.4 PC Mode – Recorder Operation

Install the *Joey* software and USB device drivers.

Using the USB cable supplied, connect the *J1W* to the computer and configure the unit to the desired operational parameters by running the *Joey* software. Make sure the Transmitter ON/OFF switch is in the OFF position.

To connect the USB cable to the *Joey1W*, align the *arrow and yellow dot* on the USB Cable 6 pin connector with the *yellow dot* 6 pin connector of the *J1W* unit. If you attempt to install the cable upside down, you will damage the *Joey1W*.

Make sure that the connector makes contact head on with the *J1W*, ensuring no twist in the connection which may result in connector damage. Removal of cables also requires the connectors to come off without much twist, so that damage does not occur to the unit.

When using the USB cable, the *Joey1W's* recorder draws power directly from the computer through the cable.

After you are finished configuring the *Joey1W*, disconnect the recorder from the USB cable. The recorder will remember it's configuration parameters and will operate according to those parameters the next time power is applied.

1.5 Stand Alone Mode

Once the recorder is configured using the *Joey* program and transmitter frequency has been programmed using a Citation Receiver, Personal Computer, or PTX-100 programmer. The transmitter and recorder will remember and use the current configuration each and every time power is applied to the unit.

1.5.1 Making the Connections

For an operation, you must decide how you want to configure your *J1R*.

1. No matter what, you **must** connect the antenna.
2. External tethered or internal microphone?
3. Is there a need for the optional, tethered remote ON/OFF switch?

See the diagram below for connector placement on the *J1W*.



Figure 2, J1W Connections

- A: External Microphone Connector
- B: Transmitter ON/OFF Switch
- C: Antenna Connector
- D: MASTER On/Off Switch
- E: 6 Pin connector for recorder programming, or external remote on/off switch.

Antenna

Connect the external antenna to the *J1W* by inserting the male end of the SMC type antenna connector on the device to the female connector end on the wire antenna. Twist the connector clockwise to tighten, **HAND TIGHT ONLY!**

Microphone

Determine which of the two microphone configurations are best for your application: the long tethered remote microphone or the internal microphone.

If you choose the internal microphone, you do not need to do anything. If you choose the external microphone, connect the external microphone by inserting the plug male end of the mini connector on the microphone cable into the female jack found on the *J1W*. Push the connectors firmly together. Twist the plug clockwise slightly to lock the connector in place. **HAND TIGHT ONLY!** Switching between the internal and external microphones is automatic and accomplished when the external microphone plug is inserted into (or removed from) the microphone jack on the *J1W*.

Power

*IMPORTANT: Before applying power to the *J1W* ensure that:*

- a) The Transmitter On/Off Switch is OFF, or*
- b) An antenna is connected to the *J1W*.*

***Never** apply power to the *J1W* without an antenna connected.*

The *J1W* is powered by two 9 volt batteries which will operate both the transmitter and the recorder for up to 3 hours.

1.5.2 Microphone and Antenna Placement

As a general rule the external microphone should be as close as possible to mouth level. Sound waves travel in straight lines and the placement should reduce obvious obstructions. If a microphone is to be placed behind a surface, which is not porous, a small pin hole should be placed in the surface opposite the microphones diaphragm.

Ensure that any material will not rub against the surface of the microphone.

For maximum efficiency, the *JIW* antenna should be kept vertical whenever possible. Placing the antenna on a metal object may result in quite poor performance of the *JIW*'s transmitter. The antenna should not be wrapped around the *JIW*, nor should it be coiled or bunched in a ball. The antenna used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter. The antenna must be installed to provide a separation distance of at least 20 cm from all persons.

1.5.3 Operational Mode

When power is applied to the *JIW* via the master power switch, the unit will wait for approximately three seconds, and then start to record using its current configuration.

*Note: The exception to this is if the unit has been previously configured for timer mode. (See **Error! Reference source not found. Error! Reference source not found.**)*

Once the unit is recording, the transmitter will come on instantly when the Transmitter Power Switch is turned ON (towards the red dot).

Removing power stops the recording and the RF transmissions. Subsequent recordings and resumption of transmissions may be made by re-applying power to the recorder. This is repeatable up until the unit becomes full and cannot record any more audio. The transmitter will still operate, even if the recorder is full.

When the operation is completed or the recorder becomes full, it should be downloaded using the *Joey* program. The recorder does not require power to retain its recordings and downloading can happen at any time subsequent to a recording being made.

Noteworthy Operational Considerations

Before ANY use of the *Joey1W*:

1. Verify the TRANSMITTER is functioning correctly by checking its transmission with a good quality receiver programmed to the correct frequency.
2. Verify the RECORDER portion by operating the *J1W* in PC Mode and making a test recording.
3. ALWAYS use a fully charged battery at the start of any operation.
4. PRACTICE with this piece of equipment prior to official use.

1.6 Timer Mode

When configured to timer mode, the *J1W*'s recorder will sleep until the next preset start time has been reached. After all timers have expired, the *J1W*'s recorder remains in sleep mode until a power reset returns it to normal operation. If all start times have expired prior to power being applied, the *J1W*'s recorder operates as if no timers had been set.

1.7 Recording Quality

The *Joey1W*'s audio front end and data storage algorithms are designed to provide the user with a range of quality options ranging from direct storage of the 8 bit samples (Linear Pulse Code Modulation, LPCM) to Adaptive Differential Pulse Code Modulation (ADPCM) for the 4 bit modes.

Sampling Speed (kHz)	Typical Bandwidth (Hz)
8	3200
11	4700

Table 2, Typical Joey1W Recorder Audio Bandwidths

1.8 Recording Times

The *Joey1W* will yield the following recording times based on its recording profile,

Quality	Bits	64 MB	128 MB	256 MB	512 MB
11 kHz Mono	8 bit – LPCM	1.7 hrs	3.3 hrs	6.6 hrs	13.2 hrs
	4 bit – ADPCM	3.3 hrs	6.6 hrs	13.2 hrs	26.4 hrs
8 kHz Mono	8 bit – LPCM	2.3 hrs	4.6 hrs	9.1 hrs	18.2 hrs
	4 bit – ADPCM	4.6 hrs	9.1 hrs	18.2 hrs	36.4 hrs

Table 3, Recording Times

The new 1024 MB J1W will double the times found in the chart for the 512 MB unit.

The total recording time is not diminished if more than one recording is made on the *Joey1W* to make up the total.

1.9 Power Considerations

The J1W will operate continuously with two new 9volt batteries and both the recorder operating and the transmitter operating for up to 3 hours.



The following table is indicative of the typical recording times available using some standard battery configurations.

Battery	Cell Type	Operation	mAHrs	Timer Correction	Hrs
1 x 9v	9 VDC Alkaline	Recorder only	565	4 hrs per day	60
1 x 9v	9 VDC Alkaline	Transmit and Record	565	0.5 hrs per day	3

Table 4, Battery Life

When the *J1W* recorder is used in timer mode), the expected operating hours must be reduced.

1.10 Concealment and Tactical Issues

Concealment and tactical issues surrounding the use of the *Joey1W* are beyond the scope of this guide.

1.10.1 Range of the J1W Transmitter

It is impossible to state absolutes about how far an RF transmitter like the *J1W* will transmit. Many variables affect the range of a device including buildings, trees, weather, construction materials, installation, etc.

All things being perfect (meaning transmissions are outdoors over flat terrain with no obstructions), a *Joey1W* should be able to easily transmit over a mile. You should expect less distance than that however, in a real world operation.

One of the most important variables, and one that the operator can actually control, is the placement of the receiver and the receiving antenna. A good rule to follow is the higher the antenna placement, the better chance you have of quality reception. This alone will increase your operating range. Just having the *JIW* in an ideal location is not enough.

