

WILLIAMS AV

PPA T27

Wide-Band FM Wireless Transmitter

Manual and User Guide

Transmitter Model PPA T27

Receiver Model PPA R37

Optional Receiver Model PPA R38, PPA R37-8



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System Overview

Thank you for purchasing the PPA T27 FM transmitter which operates in the 72-76 MHz frequency band.

To avoid difficulties, please read through these instructions as you begin to use the system. Save the manual for questions that arise as you continue to use your system.

If you have any problems with this Williams AV product, please call us toll-free at 1-800-843-3544.

Receiver Safety Information

HEARING SAFETY:

CAUTION!

Any receiver that is used with the T27 transmitter is designed to amplify sounds to a high volume level which could potentially cause hearing damage if used improperly.

To protect your hearing and the hearing of others:

1. Make sure the volume is turned down before putting on the earphone or headphone before adjusting the volume to a comfortable level.
2. Set the volume level at the minimum setting that you need to hear.
3. If you experience feedback (a squealing or howling sound), reduce the volume setting and move the microphone away from the earphone or headphone. Do not allow children or other unauthorized persons to have access to this product.

BATTERY SAFETY AND DISPOSAL:

CAUTION!

Any receiver that is used with the T27 transmitter may be supplied with alkaline batteries. Do not attempt to recharge alkaline batteries, which may explode, release dangerous chemicals, cause burns, or other serious harm to the user or product.

PACEMAKER SAFETY:

CAUTION!

1. Before using the receiver with a pacemaker or other medical device, consult your physician or the manufacturer of your pacemaker or other medical device.
2. If you have a pacemaker or other medical device, make sure that you are using this product in accordance with safety guidelines established by your physician or the pacemaker manufacturer.

Recycling Instructions

Help Williams AV protect the environment! Please take the time to dispose of your equipment properly.



Product Recycling

Please do NOT dispose of your Williams AV equipment in the household trash. Please take the equipment to an electronics recycling center; OR, return the product to the factory for proper disposal.



Battery Recycling

Please do NOT dispose of used batteries in the household trash. Please take the batteries to a retail or community collection point for recycling.

Figure 1: Overall System Diagram

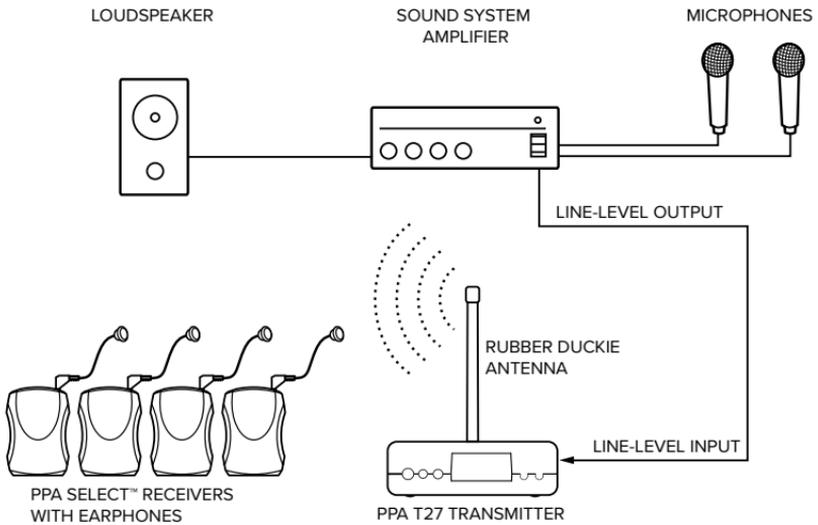
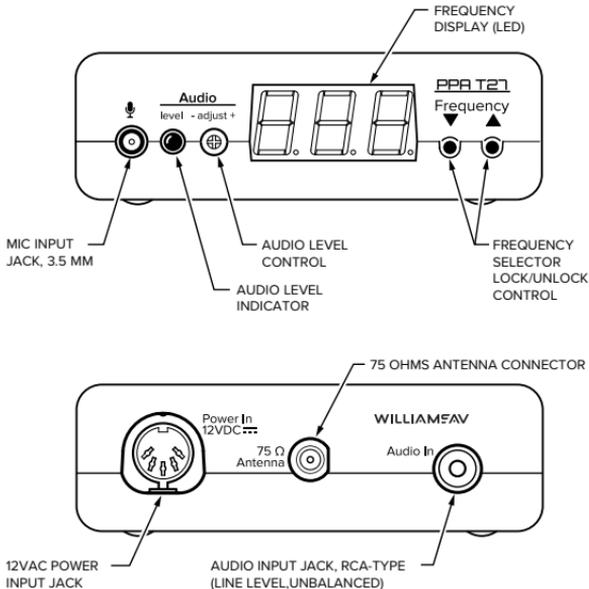


Figure 2: PPA T27 Features and Controls



Setting Up the PPA VP 37

1. **Select Location.** Position the PPA T27 transmitter near the audio source (i.e. sound system, etc.) from which it will receive audio.
2. **Install the Antenna.** Gently thread the rubber duckie antenna (ANT 021) onto the antenna connector (see Figure 2) on the transmitter.
To use a remote antenna, the antenna cap may be removed by turning it counter-clockwise with a pliers or wrench.

Note: FCC rules allow only the use of antennas provided by Williams AV. Please call customer service 800.843.3544 if you have any questions.

3. **Connect the Power.** Plug the power supply cord (TFP 036) connector into the “Power In” jack located in the back of the T27. Plug the power supply into the AC outlet.

On power up, the number 8 will scroll across the T27 display while the system initializes. The system will then display the default system frequency (72.9 MHz), or the last selected frequency set by the user.

4. **Select the Frequency.** The T27 has 17 available channels in the 72-76 MHz band. By default, the T27 frequency is set to 72.9 MHz. To change the frequency on the T27, press and release the down or up buttons until the desired frequency is displayed. After 3 seconds, the frequency selection will be set, and the audio will begin transmitting on the new frequency.

NOTE: You can LOCK this selection to prevent others from accidentally changing the frequency. See Locking Instructions for further details.

5. **Connect the Audio Source.** On the back of the T27, an Audio In jack is available for connecting a line-level, unbalanced audio source. On the front of the T27, a Mic Input jack is available to connect a Williams AV microphone. Connect the desired audio source to the T27 transmitter.
6. **Adjusting the Audio Source.** With the audio source playing, use a small screwdriver or tuning wand to rotate the Adjust control on the front of the T27. Turn it clockwise to increase the audio level, or counterclockwise to decrease the audio level. Refer to the audio level indicator LED on the front of the T27 as you make your adjustments.

Figure 3: Audio Level Indicator LED

Never On = Audio source is TOO LOW.

Blinks occasionally = Audio source is OPTIMAL.

Always on = Audio source is TOO HIGH.

7. Listen with an FM Receiver.

IMPORTANT: The FM receiver being used with the T27 transmitter will need to be on the same frequency as the transmitter.

Install the receiver batteries, plug in the earphone, turn on the receiver and walk around the listening area. The signal should be clear and quite loud when the volume is turned up.

Locking Instructions

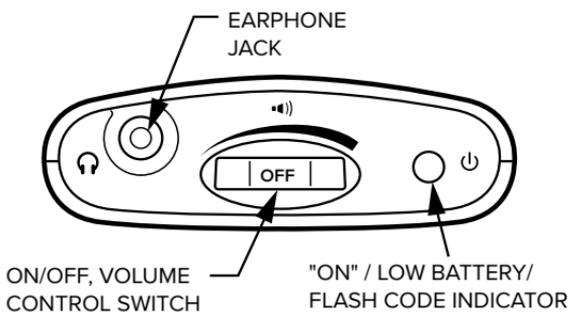
To **LOCK** the desired frequency, press and hold *both* down and up frequency selector buttons for 3 seconds until the word **Loc** appears on the display. The frequency is now locked. Should the user press the frequency selector button while in Lock mode, the word **Loc** will be displayed for 2 seconds. The transmitting channel will remain unchanged.

To **UNLOCK** the desired frequency, press and hold *both* down and up frequency selector buttons for 3 seconds until the transmitter displays **Un** then **Loc** on the display. The frequency is now unlocked and can be changed as needed.

Receiver Model PPA R37 Instructions

PPA R37 is a 17-channel receiver operating on the 72-76 MHz bandwidth.

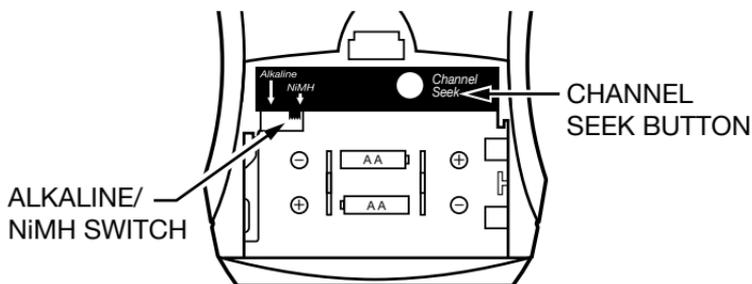
Figure 3: PPA R37 Controls



Operating the Receiver

1. Insert two (2) AA batteries, ensuring correct polarity. If rechargeable NiMH batteries are to be used, make sure the Alkaline/NiMH switch inside the battery compartment is set to NiMH before charging. See Figure 4.
2. Insert headphone, earphone or neckloop into the stereo output jack.
3. Turn receiver on by turning up the volume control. The green power LED will blink and then stay on continuously. See Table 1.
4. Set receiver frequency to match transmitter frequency. Press the Channel Seek button inside the battery compartment once to seek an active transmitter. See Figure 4. If more than one transmitter is being used, you will need to push the seek button additional times until you locate the signal you want to hear. The receiver will retain the channel setting when the unit is turned off.

Figure 4: Battery and Channel Selections



5. To lock or unlock a selected channel, turn the power off. While holding the seek button, turn the power back on. When locked, the receiver will remain on the current channel, regardless of channel seek button presses.

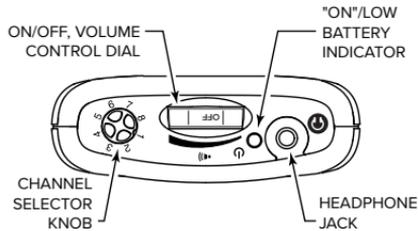
Table 1: LED Flash Codes

Light Code	Indicates	Description
1 blink	Channel locked	Seek press remains on current channel
2 blinks	Channel unlocked	Seek press tunes to next channel present
3 blinks	Channel unlocked; no other channels present	Seek press attempts to find another channel
On-Off-On-Off... (continuous)	Batteries are low	Batteries need to be replaced or recharged
Fade-on, Fade-off... (continuous)	No transmitter present on current channel	Sleep/Power Save mode (extends battery life)

Receiver Model PPA R37-8 (optional) Instructions

The PPA R37-8 is an eight channel receiver, operating on 72-76 MHz bandwidth.

Figure 5: PPA R37-8 Controls



Battery Installation

Install two (2) AA alkaline or Nickel–metal hydride (NiMH) rechargeable batteries. Open the battery compartment by lifting the tab on the back of the receiver with a finger. To remove batteries, pull up on the fabric strip.

If Alkaline (or non-rechargeable) batteries are being installed, slide the battery selection switch above the battery compartment to the **Alkaline** position. If installing NiMH (or rechargeable) batteries, slide the battery selection switch to the **NiMH** position.

Press the batteries into place over the fabric strip. Be sure to observe proper polarity (+/-). Close the battery door.

Important: Damage due to improper battery installation may void the warranty on the product.

The red LED **on** indicator on top of the unit will flash to indicate low battery. When the sound becomes weak or distorted, replace or recharge the batteries.

Connecting Earphones

Plug the earphone into the headphone jack on the top of the unit.

Williams AV can only assure optimum performance when Williams AV earphones and headphones are used.

Operating the Receiver

Turn the receiver on by rotating the volume control knob. The on indicator should illuminate red. Refer to the channel selection chart in Table 2 to choose from 8 standard frequencies.

Turn the channel selector knob to the desired channel. Make sure the receiver frequency matches the transmitter frequency.

Adjust the volume to a comfortable listening level. To turn the receiver off, rotate the Volume control knob to the left until it clicks off. The ON indicator should not be lit. To prolong the battery life of the unit, turn the receiver off when it is not in use.

The on/low battery indicator (Figure 5) is used to indicate: power, low batteries or sleep mode. Refer to flash codes in Table 3.

Table 2: Channel Selection Chart

Freq. (MHz)	Channel	R37-8 CH
72.1	A	1
72.2	K	
72.3	B	2
72.4	N	
72.5	C	
72.6	O	3
72.7	D	
72.8	P	4
72.9	E	
74.7	I	5
75.3	J	
75.4	R	6
75.5	F	
75.6	S	
75.7	G	7
75.8	T	
75.9	H	8

Table 3: PPA R37-8 LED Flash Codes

LIGHT CODE	INDICATES	REMEDY
On-Off-On-Off (continuous)	Low Batteries	Replace or recharge batteries
Fade-on, Fade-off (continuous)*	No transmitter on current channel*	After 6 min, Sleep/power save mode starts (extends battery life)*
On Steady	Unit is operating normally	n/a

*The R37-8 returns to normal operation automatically when a transmitter is re-established on the same channel.

The stereo headphone jack accepts either stereo or mono headphones or earphones.

The adjustable squelch can help reduce user fatigue by turning off the audio when the signal becomes weak. If the operator is annoyed or fatigued by noise, turn the squelch up. This will reduce the effective range of the receiver as a trade-off to listener comfort. Similarly if the operator needs more range and can tolerate the noise, turn the squelch down*.

To adjust the squelch: using a small screwdriver, turn the knob to the right for more squelch; left for less squelch.

*As the radio signal decreases, the noise present at the headphones increases. The squelch circuit senses the signal level and turns off the audio as the noise increases. More squelch means this trigger point occurs earlier; less squelch means it occurs later (or not at all, with no squelch). Apparent range is also affected. More squelch reduces the apparent range; less squelch increases the apparent range.

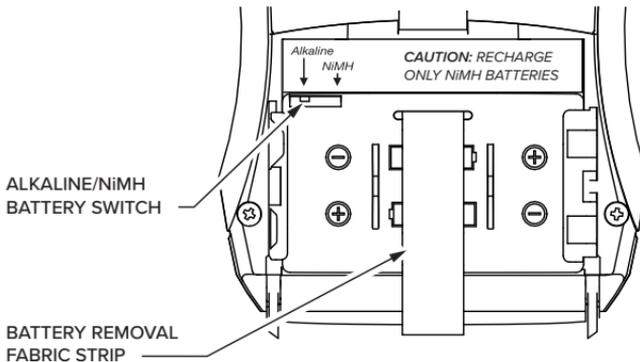
Receiver Model PPA R38 (optional) Instructions

The PPA R38 is a 17-channel receiver, operating on 72-76 MHz bandwidth.

1. Open the battery compartment. Slide the battery selection switch to the correct position for the type of batteries that will be used. Use **Alkaline** for non-rechargeable batteries. Use **NiMH** for rechargeable NiMH batteries only.

IMPORTANT: If the battery switch is not in the correct position, damage may be caused to the unit.

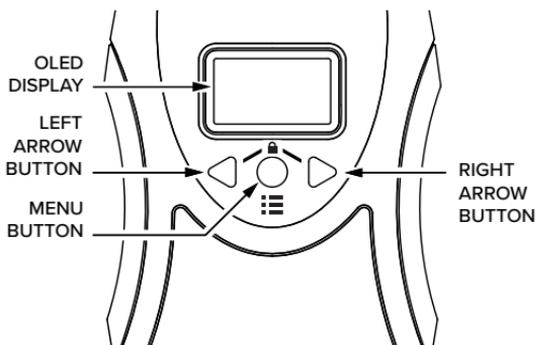
Figure 6: Battery Compartment



1. **Install the AA batteries.** Be sure to observe proper polarity (+/-). Damage due to improper battery installation may void the warranty on the product.

The power button on top of the unit will flash when the batteries are getting low; you may continue to use until the unit quits operating, then replace or recharge the batteries.

2. **Turn the unit on:** press and hold the power button for three seconds. The power button will illuminate green.
3. Select the desired operating channel/frequency on the transmitter. Up to eight transmitters can operate simultaneously on different channels (see 8 channel mode in Table 4).

Figure 7: Front of Receiver

4. Change the receiver to the channel/frequency chosen in step 3. Push the menu button once and select the channel by pushing the left or right arrow buttons. (Figure 7).

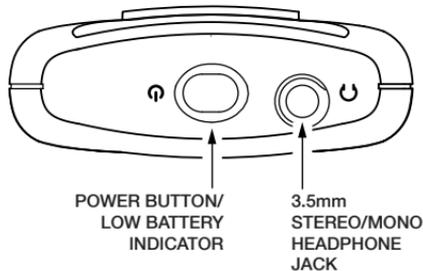
If the currently broadcasting channel is unknown, use the seek function to find it by pushing and holding the right or left arrow button. The receiver will stop when it finds an active channel. If multiple channels are active, repeat the seek function until the desired channel/frequency is found.

Table 4: Channel Selection Chart

17 Ch Mode	Letter	Freq (MHz)	8 Ch Mode
1	A	72.1	1
2	B	72.3	2
3	O	72.6	3
4	P	72.8	4
5	I	74.7	5
6	R	75.4	6
7	G	75.7	7
8	H	75.9	8
9	C	72.5	
10	K	72.2	
11	N	72.4	
12	D	72.7	
13	E	72.9	
14	J	75.3	
15	S	75.6	
16	T	75.8	
17	F	75.5	

- To access additional settings, push and hold the menu button. The receiver will display **Loading Advanced Setup**. After viewing or changing a setting, push the menu button again to access the next setting. If no buttons are pushed during the screen time-out period (adjustable in menu), the display returns to the main screen, and then shuts off to conserve battery power. The receiver remains on.

Figure 8: Top of Receiver



- Plug in the earphones/headphones into the headphone jack (Figure 8). The earphone/headphone cord functions as the antenna.
- Adjust the volume by pushing the left or right arrow buttons (Figure 7).
- To lock or unlock all of the settings (except volume), push and hold the left and right arrow buttons. Three dashes will appear and then disappear. Keep holding the buttons until the last dash disappears, and the screen prompts to push the menu button. After pushing the menu button the receiver will display **Settings Locked (or Unlocked)**.

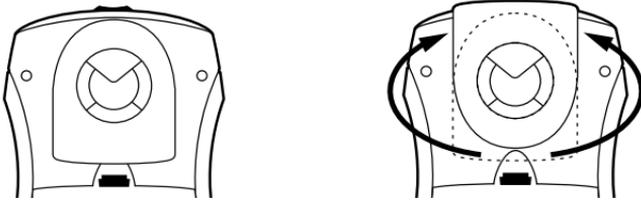
Belt Clip Installation (all Receiver models)

To Install:

Position the belt clip on the rear of the PPA R37, PPA R37-8, or PPA R38 receiver as shown in Figure 9. Turn the belt clip 180° left or right as shown in Figure 9. The belt clip is now installed and ready for use.

To Remove:

Turn the belt clip 180° so the edge points toward the top of the unit as shown in Figure 9. Gently pull the belt clip away from the unit to remove.

Figure 9: Belt Clip Installation and Removal

Using A Receiver With A Hearing Aid

Williams AV PPA R37, PPA R37-8 and PPA R38 receivers can be used with hearing aids using three different methods:

Neckloop Telecoil Coupler

Neckloops are cords which hang around the neck and couple magnetically with T-coil equipped hearing aids.

Silhouette Telecoil Coupler

These telecoil couplers are worn behind the ear, right next to telecoil-equipped hearing aids.

Direct Audio Input (DAI) Cord

Direct Audio Input cords can be used with compatible hearing aids as well as with Cochlear Implant Processors.

Receiver Management Suggestions

Different types of facilities will use different approaches for receiver management and earphone sanitation. Below are some options that customers have used successfully.

- Regular users purchase their own receiver and take care of their own batteries and earphone.
- Some facilities label the receiver and earphone with the names of regular users so each person uses the same receiver and earphone.
- Ushers issue receivers to people who request them. Earphones are sanitized after use. Foam ear cushions can be replaced or washed with a mild detergent, rinsed thoroughly and air-dried. The EAR 022 Surround Earphone can be sanitized with an alcohol pad.
- The receivers can be stored in a multiple compartment storage case with a credit card or driver's license left as collateral for the receiver.
- Regular users purchase their own earphone or headphone and bring them to use with receivers at the facility.

Earpad Cleaning for Earphones and Headphones

Do not immerse the earphone in water or other cleaning agent. Foam pads may be removed and washed with a mild laundry soap solution, rinsed thoroughly, and air dried.

You may purchase new foam pads. Call Customer Service for ordering information: 1-800-843-3544

Receiver Battery Information

Single Use Batteries

When the battery is low on the PPA R37 or PPA R37-8, the power LED on the top of the unit will blink. On the PPA R38, the battery symbol on the OLED screen will blink. With other receivers, if the sound becomes weak or distorted, the battery is low. Replace the battery. The indicator light may still be on, even with a battery that is weak. Do not leave dead batteries in the receivers. Battery corrosion is not covered by the Williams AV Limited Lifetime Warranty.

Recommended Batteries for Receivers

- BAT 001 AA non-rechargeable alkaline batteries
- BAT 026 AA rechargeable NiMH only

Battery Life

- 50 hours for BAT 001 AA non-rechargeable alkaline batteries
- 32 hours for BAT 026 AA rechargeable NiMH batteries

!! IMPORTANT WARNINGS !!

DO NOT ATTEMPT TO RECHARGE ZINC CARBON (“HEAVY DUTY”), ALKALINE, OR LITHIUM BATTERIES!

DO NOT ATTEMPT TO RECHARGE SINGLE-USE BATTERIES!

These batteries may heat up and explode, causing possible injury and damage to the equipment. Avoid shorting the plus and minus battery terminals together with metal objects. Battery damage and burns can result! Use only Williams AV supplied chargers and rechargeable batteries!

Further Suggestions

Receivers should NOT be left charging continuously when not in use. Receivers should always be turned OFF while charging.

Troubleshooting Guide

Read through the manual and user guide carefully to verify proper setup and installation of your system.

Transmitter frequency display (LED) not lit.

- Make sure the wall transformer is plugged into the transmitter.
- Make sure the electrical outlet is on.

No sound through receivers.

- If some of the receivers work but others don't, check for bad batteries or earphones on the receivers that aren't working.
- Check to see that the receiver frequency matches the transmitter frequency. On the transmitter, the frequency is illuminated on the LED panel on the front of the unit. On the receiver, there may be a sticker on the inside of the battery door of the receiver. If these frequencies do not match, adjust them as needed.
- If none of the receivers work, check to see if the power is connected to the transmitter and the frequency display on the front of the transmitter is illuminated.
- Check to see if the transmitter is connected properly to the sound system.
- On the front panel of the T27 transmitter, turn the audio input level control clockwise using a screwdriver to increase the audio level. Make sure that the audio light is flashing occasionally but not continuously.
- If you are not using an input signal from a sound system, make sure the Williams AV microphone is plugged into the Mic jack on the front of the T27 transmitter.
- Make sure the antenna is installed and connected properly.

Insufficient range, good reception near transmitter, poor at a distance

- Check to see if the antenna was installed correctly. If not, correct or replace the antenna. The signal should be clearly audible at least 100 ft. within the line-of-site to the transmitter antenna.
- Check to make sure no other transmitters (or other devices) are transmitting on the same frequency or channel.

Sound through receivers is loud, but distorted. Noise (room noise or electronic noise) seems to grow after talking stops. Audio Indicator Light is continuously on.

- On the front of the T27 transmitter, use a screwdriver to turn the audio level control counter-clockwise. This will decrease the audio level. The audio indicator light should flash occasionally, but not be lit continuously.

Sound through the receivers is weak and noisy.

- On the T27 front panel, use a screwdriver to turn the audio level control clockwise. This will increase the input signal strength. The audio indicator light should flash occasionally.
- Increase the input signal level from the sound system.

Buzzing or humming noise in sound system.

- There is nothing wrong with the T27 Transmitter. One or more pieces of equipment in the sound system are being disturbed by RF (Radio Frequency) signals produced by the T27. The most likely suspects are the amplifier, mixer, or the audio source. The RF energy gets into the other equipment primarily through the power cord, speaker wires, or unshielded inputs, all of which can act as antennas. Try the following steps:
 - Move the transmitter away from the other sound equipment.
 - Make sensitive equipment more immune to Radio Frequency (RF) or Electromagnetic Interference (EMI). The manufacturers of your audio equipment may offer guidance for this purpose. Unless you have the necessary technical skills, this is best left to a qualified electronics repair technician.
 - Williams AV offers a document giving suggestions for improving RF immunity in existing audio equipment—**Technical Bulletin: Remedies For Buzz or Hum in Sound System or PPA**. This document is available on our website.

Personal PA Value Pack System Specifications

PERSONAL PA Transmitter Model T27

*DISCLAIMER: FCC RULES LIMIT USE OF THIS EQUIPMENT TO AUDITORY ASSISTANCE.

Dimensions & Weight:	4.1" W x 6.1" L x 1.3" H (104.1 mm x 154.9 mm x 33 mm) 7.8 oz. (221 g)
Color:	Black
Power (U.S./Canada):	PPA T27: 12VAC, 300mA, 3.2W Power Supply: Wall Mount Class 2 transformer Input: 105-130 VAC, 50-60 Hz; Output: 12VAC, 800mA, 5-pin DIN
Operating Frequencies:	72-76 MHz*: 72.1 (CH A), 72.2 (CH K), 72.3 (CH B), 72.4 (CH N), 72.5 (CH C), 72.6 (CH O), 72.7 (CH D), 72.8 (CH P), 72.9 (CH E), 74.7 (CH I), 75.3 (CH J), 75.4 (CH R), 75.5 (CH F), 75.6 (CH S), 75.7 (CH G), 75.8 (CH T), 75.9 (CH H)
Frequency Selector:	External switches, 17 channels (lockable)
RF Field Strength:	Does not exceed 80mV/m @ 3m
Nominal Range:	Up to 500 feet (152 m) w/standard ANT 021 "rubber duckie" antenna. Up to 1000 feet (305 m) w/optional ANT 005 coaxial antenna.
Modulation:	FM, 75 kHz deviation (wide-band) max.
Stability:	± .005% over 0-50°C
Pre-Emphasis:	75 µS
Frequency Response:	85Hz - 14kHz ±3dB
Distortion:	1% Max. THD
Signal to Noise Ratio:	65 dB with PPA R37 Receiver
Microphone Input:	3.5mm mini phone jack, supplies +DC for electret mics
Mic Input Level:	1-10 mV, nominal
Line-Level Input:	RCA Jack, Hi Z, unbal.
Line Input Level:	.1-1 Vrms, nominal
Input Attenuator:	Pot, screwdriver-adjustable
Antenna Outputs:	Thread mount for ANT 021 rubber duckie antenna or ANT 025 telescoping antenna RF connector for ANT 024 dipole or ANT 005 coaxial antenna
Approvals:	FCC, Industry Canada, RoHS, WEEE
Warranty:	Lifetime PLUS Limited Warranty, 90 Days on most accessories.

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

PPA Select™ Receiver (Model PPA R37)

Dimensions:	4.1" H x 2.85 W x 1.38" D (104 mm x 72 mm x 35 mm)
Weight:	4.6 oz (130 g) with batteries, 2.6 oz w/o batteries (73g)
Color:	Black
Battery Type and Life:	Two (2) AA non-rechargeable alkaline batteries (BAT 001), approx. 50 hours battery life
	Two (2) AA rechargeable NiMH batteries (BAT 026), 1500 mAh, approx 32 hours battery life
Current Consumption:	Nominal 52 mA
Operating Freq.:	17 channels: 72.1, 72.2, 72.3, 72.4, 72.5, 72.6, 72.7, 72.8, 72.9, 74.7, 75.3, 75.4, 75.5, 75.6, 75.7, 75.8 or 75.9 MHz*.
FM Deviation:	+75 kHz
De-Emphasis:	75 μ S
LED Indicator:	Power on: Bright Green. Low Battery: Flashes.
Sensitivity:	2 μ V at 12 dB Sinad with squelch defeated
Input Overload:	100 mV
Frequency Response:	200Hz to 15 kHz, \pm 3 dB
Signal-to-Noise Ratio:	65 dB at 100 μ V
Receive Antenna:	Integral with earphone/headphone cord
Audio Output:	35 mW, 16 ohm load Ω
Output Connector:	3.5 mm stereo phone jack, accepts either stereo or mono plug
Approvals:	FCC, Industry Canada, RoHS, WEEE
Warranty:	Lifetime PLUS Limited Warranty; 90 on most other accessories

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Personal PA Receiver (Model PPA R37-8)

Dimensions:	4.1" x 2.85" x 1.38" (104 x 72 x 35 mm)
Weight:	4.6 oz (130 g) with batteries. 2.6 oz (73 g) without batteries
Color:	Black
Battery Type and Life:	Two (2) AA non-rechargeable alkaline batteries (BAT 001-2), approx. 50 hours battery life Two (2) AA rechargeable NiMH batteries (BAT 026-2), 1500 mAh, approx. 32 hours battery life
Current Consumption:	42 mA nominal
Temperature Range:	- 0 to 50 °C
Channels:	8, accessed via rotary knob on top of unit
Operating Frequencies:	72.1, 72.3, 72.6, 72.8, 74.7, 75.4, 75.7, 75.9 MHz
Modulation:	FM, +/- 75 kHz peak deviation
De-Emphasis:	75 µS
LED Indicator:	Power: Green; Low Battery: Flashes Green; Sleep mode: Fade-on, Fade-off
Sensitivity:	2 µV at 12 dB Sinad with squelch defeated
Input Overload:	100 mV
Frequency Response:	200 – 15 kHz
Signal-to-Noise Ratio:	65 dB min @ 100 µV
Receive Antenna:	Integral with earphone/headphone cord
Audio Output:	35 mW max, peak into 16 Ω
Output Connector:	3.5 mm stereo/mono phone jack
Included Earphone:	Earbud-type with foam cushion, 3.5 mm plug, 32 Ω
Sleep Mode:	Enters sleep mode after approximately 6 mins of no RF signal, returns to normal operation when a transmitter is re-established on same channel
Approvals:	FCC, Industry Canada, RoHS, WEEE
Warranty:	Lifetime PLUS Limited Warranty; 90 Days on most accessories

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Personal PA Receiver (Model PPA R38)

Dimensions:	4.1" x 2.85" x 1.38" (104 x 72 x 35 mm)
Weight:	4.6 oz (130 g) with batteries. 2.6 oz (73 g) without batteries
Color:	Black/Silver. Black ABS Plastic case with Aluminum faceplate.
Battery Type and Life:	Two (2) AA non-rechargeable alkaline batteries (BAT 001-2), approx. 50 hours battery life
	Two (2) AA rechargeable NiMH batteries (BAT 026-2), 1500 mAh, approx. 32 hours battery life
Current Consumption:	47 mA nominal at 2.4 VDC
Operating Temp. Range:	32° – 122° F (0° to 50° C)
Channels:	17 Wideband, accessed via menu
Operating Frequencies:	72.1, 72.2, 72.3, 72.4, 72.5, 72.6, 72.7, 72.8, 72.9, 74.7, 75.3, 75.4, 75.5, 75.6, 75.7, 75.8, 75.9 MHz*
FM Deviation:	75 kHz
De-Emphasis:	75 μ S
Display Screen:	1" OLED
Power Indication:	Power button, backlit green. Good battery strength - glows solid. Low battery - slow flashes. Error - fast flashes with 1 sec delay.
Sensitivity:	2 μ V at 12 dB Sinad with squelch defeated
Input Overload:	100 mV
Frequency Response:	200 Hz – 15 kHz, \pm 3 dB
Modulation:	FM, +/- 75 kHz peak deviation
Signal-to-Noise Ratio:	Minimum 65 dB @ 1.0 V
Receive Antenna:	Integral with earphone/headphone cord
Audio Output:	35 mW max at 16 Ω
Headphone Connector:	3.5 mm stereo jack, mono output for stereo or mono earphones, headphones, or neckloops
Power Save - Display Off/Sleep Mode/Auto-Off:	Display Off: 5, 30, or 60 seconds of no button pushes (adjustable in menu) Sleep Mode: 6 mins of no RF signal or button pushes; wakes up with RF Signal or any button push Auto Off: 2 hours of no RF signal or button pushes
Soft Audio Turn-On:	Upon Power ON or Channel Change, mutes audio, then ramps up 1 numeric step per 1/10th second until set volume is reached
Approvals:	FCC, Industry Canada, RoHS, WEEE
Warranty:	Lifetime PLUS Limited Warranty; 90 Days on most accessories.

NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Lifetime Limited Warranty

Williams AV products are engineered, designed, and manufactured under carefully controlled conditions to provide you with many years of reliable service.

Williams AV warrants the Personal PA® FM Listening transmitters and receivers against defects in materials and workmanship under normal use and conditions for the useful lifetime of the product from date of purchase.

This warranty is available to the original end purchaser of the product and **CAN BE transferred to subsequent purchasers of the product.**

Microphones, earphones, headphones, batteries, chargers, cables, carry cases, and most other accessory products carry a 90-day warranty.

Williams AV has no control over the conditions under which this product is used. Williams AV, therefore, disclaims all warranties not set forth above, both express and implied, with respect to the Personal PA® FM Listening System, including but not limited to, any implied warranty of merchantability or fitness of use of such equipment including, without limitation, any warranty that the use of such equipment for any purpose will comply with applicable laws and regulations. Williams AV shall not be liable to any person or entity for any medical expenses or any direct, incidental or consequential damages caused by any use, defect, failure or malfunctioning of the product, whether a claim for such damages is based upon warranty, contract, tort or otherwise, the sole remedy for any defect, failure or malfunction of the products is replacement of the product. No person has any authority to bind Williams AV to any representation or warranty with respect to the Personal PA® FM Listening System. Unauthorized repairs or modifications will void the warranty. This warranty is void if damage occurred because of misuse, or if the product has been repaired or modified by anyone other than a factory authorized service technician. Warranty does not cover normal wear and tear on the product or any other physical damage unless the damage was the result of a manufacturing defect. Williams AV is not liable for consequential damages due to any failure of equipment to perform as intended. Williams AV shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it.

This warranty does not cover reimbursement for your costs of removing and transporting the product for warranty service evaluation or installation of any replacement product provided under this warranty.

The exclusions and limitations set out above are not intended to, and should not be construed so as to contravene mandatory provisions of applicable law. If any part or term of this Disclaimer of Warranty is held to be illegal, unenforceable, or in conflict with applicable law by a court of competent jurisdiction, the validity of the remaining portions of this Disclaimer of Warranty shall not be affected, and all rights and obligations shall be construed and enforced as if this Limited Warranty did not contain the particular part or term held to be invalid. The terms of the warranty are governed by the laws of the State of Minnesota.

Prices and the specifications of the products are subject to change without notice.

Repair Services

If you experience difficulty with your system, call Toll-Free for customer assistance:

1-800-843-3544 (U.S.A.) or 1-952-943-2252 (World)

If it is necessary to return the system for service, your Customer Service Representative will give you a Return Authorization Number (RA) and shipping instruction.

Pack the system carefully and send it to:

Williams AV

Attn: Repair Dept.

10300 Valley View Rd

Eden Prairie, MN 55344 USA

Your warranty becomes effective the date you purchase your system. You may register your product online:

<https://williamsav.com/support/warranty-product-registration/>

This information will help us serve you better in the future. Thank you!

WILLIAMS AV

info@williamsav.com / www.williamsav.com

800-843-3544 / INTL: +1-952-943-2252