

# The ADI AR-146 Mobile Transceiver

BY LEW McCOY\*, W1ICP



The AR-146 (bottom) and the AR-446 (top). All you need is an antenna and 12+ volts of power.

A new base/mobile transceiver designated the AR-146 is being marketed by ADI/Premier Communications. This unit has many very nice features for a relatively low cost. As for the basics, the transceiver measures 5 1/2"W x 1 1/2"H x 6 1/2"D. Frequency coverage is 144 to 148 MHz, and the mode is frequency modulation (F3F-FM). The unit is capable of generating three power levels: 50 watts on HI, 10 watts on ID, and 5 watts on LOW. The AR-146 comes with a DTMF microphone, a stacking or mounting plate (for mobile), DC power cable, and spare fuses (plus a very detailed instruction manual). Power requirement is 13.8 volts DC at 11 amperes.

The front-panel display is very clear and easy to read and includes a DIM switch if you want to turn down the brightness of the display. The front-panel controls are POWER switch, TUNING control (which is used to set the desired frequencies), MHz step, memory channel, frequency step, tone frequency, and SCAN direction.

There are three switches grouped near the top left side of the panel. The VFO key is used to return to VFO operation after op-

\*Technical Editor, CQ, 1500 West Idaho St., Silver City, NM 88061  
mccoy@zianet.com

## SPECIFICATIONS OF THE AR-146/446

	AR-146 (USA)	AR-146	AR-446
<b>GENERAL</b>			
Frequency range MHz	144 to 148	144 to 146	430 to 440
Mode	F3E (FM)		
Antenna impedance	50 ohms		
Operating temperature	-20 C to +60 C (-4 F to +140 F)		
Power requirements	13.8V DC $\pm$ 15% (11.7 ~15.8V)		
Ground	Negative		
Current drain	Transmit mode	Less than 11A	Less than 10A
	Receiver mode	Less than 0.6A	
Frequency stability	Less than $\pm$ 10 ppm		
Dimensions (WxHxD) (Projections included)	140 x 40 x 166 mm (5-1/2" x 1-37/64" x 6-17/32")		
Weight (kg)	1.2 (2.65 lb.)		
<b>TRANSMITTER</b>			
Output power*	HI	50W	35W
	MID	Approx. 10W	Approx. 10W
	LOW	Approx. 5W	Approx. 5W
Modulation	Reactance modulation		
Spurious radiation	Less than -60 dB		
Maximum frequency deviation	$\pm$ 5 kHz		
Audio distortion (at 50% mod.)	Less than 3% (300 to 3000 Hz)		
Microphone impedance	600 ohms		
<b>RECEIVER</b>			
Circuitry	Double conversion superheterodyne		
Intermediate frequency (1st/2nd)	10.7 MHz/455 kHz	30.85 MHz/455 kHz	
Sensitivity (12 dB SINAD)	Less than 0.18 $\mu$ V		
Selectivity	-6 dB: More than 12 kHz -60 dB: Less than 24 kHz		
Squelch sensitivity	Less than 0.1 $\mu$ V	Less than 0.177 $\mu$ V	
Output (5% distortion)	More than 2W across 8 ohm loads		
External speaker impedance	8 ohms		

### Notes:

1. Circuit and ratings are subject to change without notice due to advancement in technology.
2. \*Recommended duty cycle: 1 minute Transmit; 3 minutes Reception

Table 1- Specification information taken from the instruction manual of the AR-146.

erating in the MEM mode or CALL channel mode. Also, pressing this key permits varying the microphone UP/ DOWN keys to increase or decrease the operating frequency. If you press and hold this key for more than one second, it initiates a VFO SCAN. In addition, there are a few other functions, such as setting a memory chan-

nel or top set and offset frequency.

The second key is the MR/M key, which is used to select Memory Recall mode from the VFO mode. The next key is the MHz lock key. This key is used to tell the microprocessor that you want to increase your frequency in 1 MHz increments.

There are several keys along the bot-



tom of the panel. The first is the F, or function, key. One of the functions it serves is to activate the DUAL function when this key is pressed with the TONE/DUAL. This permits you to watch and listen to two different frequencies. I found this to be a very handy feature. For example, you can listen to the dial frequency and either the memory frequency under M1, or one of the memory channels, or memory channels under scanning.

The next switch activates the CALL channel. The SHIFT key shifts the repeater transmit/receive frequencies. The TONE switch when pressed activates the tone selection (the unit comes with built-in tone functions). Last is the DTMF key, which operates PAG, CSQ, and DTMF if the optional DTMF board is installed. I didn't have one in the unit tested, so I didn't test this function.

As I mentioned, the LCD panel is clear and very easy to read. Its many indicators include TOT, which is on when the time-out timer function has been activated; SCAN, which is on when the VFO/MR SCAN function is activated; B, which is on when the BUSY SCAN flag is active; PAG, which is on when the DTMF PAGING function is on; and C.SQ, which is on when the code squelch is active. The rest of the indicators include HML (indicates power output being used); BUSY (squelch open); TX, on during transmit; F, on whenever the F key is depressed; LOCK, on when the function has been activated; MN 88, indicating the active Memory channel; T.SQ, on when the Tone Decode and Encode functions have been activated; REV, on when the Reverse function is used; - or + showing the transmitter offset being used (a handy feature, right?); APO (not what you think), indicating Automatic POWER off function being activated; and DUAL, showing when the dual watch function is activated.

The microphone (included) has seven switches. The two switches on top of the mic are used as UP and DOWN controls; they increase or decrease the VFO frequency, the memory channel, or the tone frequency. The Push-To-Talk switch is on the side of the microphone, and there are four switches on the back of the microphone. The first of the four switches is a CALL key, which has the same functions as the one on the panel. Next are the VFO, MR, and MHz keys, all of which have the same functions as those on the front panel. Below these four switches are the typical 16 touch-tone switches for phone or other access dialing.

My on-the-air test elicited many positive remarks from those I worked. They all said the unit had clean, crisp transmitted audio quality. The receiver is a very good performer. I made my usual intermodulation field tests, taking the unit to Phoenix and up near South Mountain, where there are


zillions of transmitters operating. I experienced no overload worth noting. Sensitivity of the unit is rated at 0.18  $\mu$ V (12 dB SINAD), and it checked out to be at least that good.

The transceiver comes with a one-year limited warranty, which means—and I read the fine print—that in the unlikely event of any failure due to defect in material or workmanship occurring within one year of purchase, this product will be repaired or replaced at the discretion of the manufacturer.


One thing I particularly liked about the

ADI AR-146 transceiver is the brightness of the display. Here in New Mexico we are accustomed to bright, sunny days, and some of the units I have tested are hard to read in bright light. That's not the case with this unit.

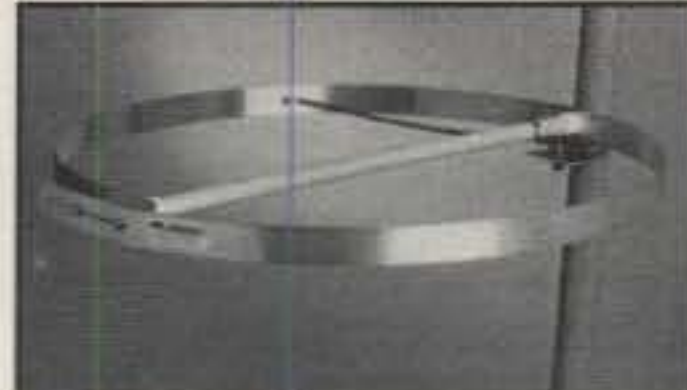
The manual that comes with the base station is exceptionally well detailed and clear, plus easy to read and follow. The book is 45 pages and is well illustrated. The AR-146 is in the \$250 price class and is manufactured by ADI/Premier Communications, 20277 Valley Blvd. #J, Walnut, CA 91789 (909-869-5711). ■




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