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Uniden BC796D Scanner

The Uniden BC796D is a tabletop scanner which can follow conversations in conventional and several different types of digital and analog trunked systems. It is an upgraded version of the BC785D (June 2003 *MT*) and looks almost the same from the outside. An AC operated wall wart power supply is included. A fully lit keypad and mounting bracket make the BC796D well suited for mobile use, too.

The BC796D tunes a wide range of frequencies. It includes circuitry and firmware to detect APCO P-25 digital voice signals using either C4FM or CQPSK modulation schemes and tracks conversations in trunked systems with either 3600 or 9600 baud control channels.

The older BC785D doesn't support CQPSK modulation and detects C4FM modulation only when equipped with an optional BCi 25D card. It won't track trunked systems which employ 9600 baud control channels.

We recommend you download an electronic copy of the owner's manual from the Support section at **http://uniden.com** because there are more features than we have space to cover.

The BC796D's frequency coverage is the same as the earlier models: 25 - 512, 806 - 956 (minus cellular phone), and 1240 - 1300 MHz. There are frequency gaps at 512 - 806 and 956 - 1230 MHz.

The BC796D now includes a new 6.25 kHz step size. There are eight choices of step size plus an AUTO setting, the latter being determined by frequency.

Both radio-to-radio cloning and computer control are supported. A CDROM containing software is furnished with the radio, though not supplied with our early production radio. The software requires Microsoft Windows and may be downloaded from Uniden's web site if you lose the CDROM. The computer interface protocol is not documented in the owner's manual.

You can download updated firmware from the Uniden web site which you can then "flash" into the BC796D.

Memory

The BC796D's 1000 memory channels are organized into 10 banks of 100 channels each. Each conventional channel may be programmed with: a frequency and mode (AM, FM, WFM, NFM), a 16 character label, step size, rescan delay on/off, lockout, attenuator on/off, CTCSS or DCS tone squelch, beep alert, and record on/off.

An alphanumeric label may be programmed for each memory bank, too.

Trunked Systems

There are a wide variety of trunked systems in use and the BC785D is designed to track conversations in these systems: Motorola Types 1, 2 (VHF, 400, 800, and 900 MHz), hybrid, APCO 25 Phase 1 systems (3600 and 9600 baud control channels), EDACS (Wide band 9600 baud, Narrow 4800 baud, and SCAT), and LTR.

SCAT means Single Channel Autonomous Trunking and is an EDACS configuration in which a single frequency serves as both as a control and voice channel.

You can track up to 10 different trunked systems, one per bank. The BC796D offers memories for up to 100 talk groups per trunked system, in 10 subgroups of 10 IDs each. Talk group IDs may be programmed directly using the keypad or stored while receiving signals on the talk group of interest.

A descriptive label can be programmed for each talk group, as well.

As with the earlier Uniden models, EDACS and LTR frequencies must be programmed into memory channels in the proper sequence, which is not necessarily the same as frequency order.

Programming an LTR system into the BC796D requires detailed knowledge of that system ahead of time to enforce a correspondence between the system's channel numbering scheme and the radio's channel numbering. This takes a lot more work than programming an LTR system into the older Radio Shack GRE-made PRO-2067 and PRO-92.

The BC796D's digital demodulator will not decode encrypted (scrambled) transmissions, though ENC appears on the display when the radio is tuned to an APCO 25 encrypted signal.

Searching

Ten pairs of frequencies may be programmed into the BC796D for limit searching. Limit search banks may be "chained" or linked together to search multiple ranges in succession. You can hunt for signals transmitted with a specific CTCSS or DCS code. On the other hand, you can instruct the BC796D to ignore signals transmitted with a given CTCSS or DCS. Up to 200 frequencies may be skipped during a limit search.

Auto Store permits unique, active frequencies found during a limit search to be stored automatically in a selected bank.

The Service Search feature looks for active signals in these classifications: weather, public safety, news, TV broadcast, ham radio, marine, air, CB radio, FRS and GMRS, racing, and special. The "special" category consists of low power, itinerant, and interstitial frequencies.

Construction

The BC796D's liquid crystal display is a dot matrix. There are menu options for two brightness levels and off.

Like its predecessor, the BC785D's display is missing indicators for Data Skip, Tone Squelch, Attenuator, and Rescan Delay, so you cannot tell at a glance whether these options are enabled or disabled on a particular channel.

To view a channel's configuration, push and hold the Menu/Back key for a couple of seconds. You can then see the channel settings, but you must scroll through them because the screen shows only three settings at a time.

The keypad is backlit, which makes it easy to use the BC796D in a dark car.

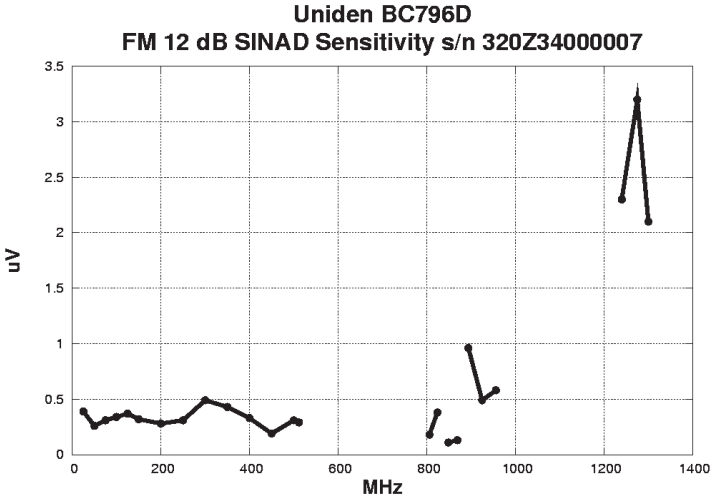
Usability

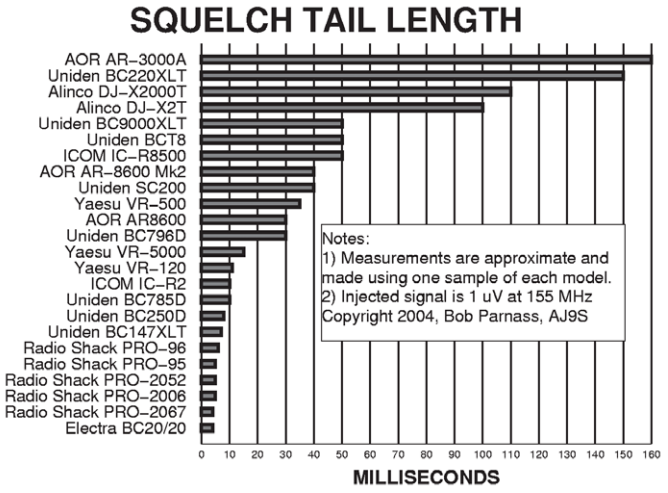
You can program conventional memory channel frequencies using one of two procedures: 1) By positioning to the desired channel, then typing in the frequency followed by pressing the E key, or 2) Navigating the menu system.

The simpler, direct method works, but only for frequencies which coincide with the default step size. For example, the default step size is 50 kHz in the 225 - 399.95 MHz military air band.

If you enter 335.525 MHz directly, the BC796D will coerce the frequency to 335.55. You can then use the menu system to "drill down" to the STEP submenu, change the step size to 25 kHz, then re-enter the 335.525 frequency. Now, the BC796D will accept the frequency without rounding.

You can program alphanumeric labels for individual memory channels, channel banks, limit banks, and talk groups. Like the handheld BC296D, the BC796D makes it easier to distinguish "new hits" from previously programmed talk groups. If a programmed talk group becomes active while searching for new talk groups, the





BC796D will display both the ID and the group label. This is an improvement over the earlier BC785D which would show the ID but not the label while searching. If the BC796D detects activity on a talk group not previously programmed, the word NEW is displayed.

The user manual is improved over the BC785D's manual and explains the BC796D's algorithm for multitracking in depth. When scanning or searching multiple trunked systems or a mixture of trunked systems and conventional frequencies, the BC796D will hunt for activity within a trunked system for up to 1 second, then proceed to the next trunked system or conventional frequency. This permits the radio to scan for traffic across more systems instead of dwelling for too long on any one system.

Measurements

Uniden BC796D Scanner, S/N 320Z34000007

Uniden America Corp.
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tel. (800) 554-3988
http://www.uniden.com

Frequency coverage (MHz):
25 - 512
806 - 823.9875
849.0125 - 868.9875
894.0125 - 956
1240 - 1300

Step sizes (kHz):
5, 6.25 7.5, 10, 12.5, 25, 50, and 100, AUTO

Modes:
AM, WFM, FM, NFM, user selectable

NFM modulation acceptance: 12 kHz

Audio output power at external speaker jack:
1.9 watts @ 10% distortion

Attenuator:
0 dB @ 40 MHz
3 dB @ 155 MHz
23 dB @ 460 MHz
22 dB @ 860 MHz

IFs (approx., in MHz):
380/242, 45/10.8, 0.450

Squelch tail near threshhold
(1 uV @ 155 MHz): 30 ms.

Practical memory scan
speed: 28 ch/sec, but varies, depending on memory contents

Performance

Our BC796D (s/n 320Z34000007) has ample audio. As expected, better fidelity may be obtained by using a good external speaker pointed at the user.

The intermod performance of our BC796D is similar to what we observed when testing a BC785D. We experienced some intermod on the VHF-high band where public safety transmissions are sometimes mixed with a 162.4 MHz NWR (National Weather Radio) transmission. The NWR transmitter interferes with many of our other scanners, except the "bulletproof" ICOM IC-R8500.

Television audio broke through on a few frequencies in the VHF-low band.

Like the BC785D, our BC796D's memory scan speed varies, depending on what's programmed in the memory channels. We programmed 25 channels with our usual variety of frequencies and (conventional) modes and measured a scan speed of about 28 ch/sec (Fig. 5). Program the memory channels within each bank in order of frequency if you want faster scanning.

Some of the earlier model Uniden scanners, e.g, BC895XLT and BC9000XLT, featured TurboScan, and sped up the scan rate by sorting the frequencies before scanning. The BC796D scans memory channels in channel number order and we didn't find a keystroke combination to scan them by frequency.

The squelch in our BC796D acts about the same as that in the BC785D we tested. The BC796D's squelch tail is shorter, though not nearly as short as the GRE-made scanners. There is a slight variation in squelch threshold with frequency and mode and the squelch exhibits more hysteresis ("play") than we like.

Overall

Uniden is the only company offering a digital trunk tracking scanner in a tabletop/mobile configuration at this time.

We termed the earlier BC785D the "scanner enthusiast's scanner" due to the multiple system trunk tracking, digital demodulation capability, military air band coverage, CTCSS and digital tone squelch, alpha labels, and a computer control interface. The BC796D has all that plus CQPSK and 9600 baud capability, a 6.25 kHz step, and better talk group searching.

The Uniden BC796D is available from Grove Enterprises for $524.95 (1-800-438-8155 or visit http://www.grove-ent.com).