Uniden®

SDS200E
Owner's Manual

Home Patrol Data Base (HPDB), ZIP Code Selection, Repeater Find, Reverse,Preset Broadcast Screen, and Weather/SAME related functions can only be used within North America.

CONTENTS

ABOUT THIS MANUAL

This manual describes the functions and features of your scanner. It assumes that you know the basic structure of radio systems and how they work. Just as a car owner's manual does not teach you how to drive, this manual does not teach you about radio systems. There are many resources for learning about radio systems, including wiki articles, forum discussions, and YouTube videos. We encourage you to start at RadioReference.com's discussion forums.

IMPORTANT INFORMATION

GENERAL PRECAUTIONS

Before you use this scanner, please read and observe the following:

Earphone Warning

You can use an optional 32Ω stereo headset or earphone with your scanner. Use of an incorrect earphone or headset might be potentially hazardous to your hearing. The output of the phone jack is monaural, but you will hear it in both headphones of a stereo headset.

Set the volume to a comfortable audio level coming from the speaker before plugging in the earphone or headset. Otherwise, you might experience some discomfort or possible hearing damage if the volume suddenly becomes too loud because of the volume control or squelch control setting. This might be particularly true of the type of earphone that is placed in the ear canal.

Liquid Exposure Warning

Uniden does not represent this unit to be waterproof. This product is not warrantied against water damage

INTRODUCTION

The Uniden SDS200E is a digital base/mobile TrunkTracker communications receiver. It`s True I/Q™ receiver provides for improved digital performance in challenging RF environments. The SDS200E features a customizable, high resolution color display to allow access to the information you want to see.

WHAT YOU HEAR

Your scanner has over 10,000 police, fire, ambulance, business, utility, and other agencies set for instant access. You can also listen to weather channels and weather alerts, and you can set your scanner to monitor weather alerts.

There are some communications that the public is locked out from monitoring. Your scanner cannot receive agencies that encrypt their communications; it also cannot receive agencies on some private proprietary systems.

Because there are so many different kinds of communications going on, you can turn on specific types of agencies you want to hear (and turn off those you don't).

CREATE FAVORITES LISTS

You are not limited to using the included database. You can also create your own Favorites Lists which you can customize to your preferences.

AVOID TRANSMISSIONS

You can also select transmissions for your scanner to Avoid (ignore).

REPLAY TRANSMISSIONS

Your scanner's Replay feature will instantly replay the transmissions you've just heard. You can set how long a period Replay records for instant playback. This period can range from 30 seconds to 4 minutes.

RECORD TRANSMISSIONS

With your scanner, you can record transmissions. When you begin recording, your scanner adds the Replay recording buffer to the recording. These recording sessions are saved and can be replayed on demand. Rename and delete sessions through the Review Recordings submenu.

MAIN FEATURES

Customizable Color Display – You can set the display color for each field in the display. Additionally, for many fields you can select the information provided.

True I/Q™ Receiver – Designed to improve digital performance in even the most challenging RF environments. An I/Q receiver captures the complete signal waveform in 3 dimensions, allowing for improved digital error correction and signal recovery.

Location-Based Scanning – Allows you to set your location by GPS coordinates for instant reception. The Auto-locate feature will determine your general location if you don't know where you are.

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Favorites Scan – Allows you to organize your Systems into Favorites Lists. The scanner can scan any combination of Favorites Lists and the Full Database.

microSD card (provided - 1 GB up to 32 GB supported) – For storing Favorites Lists, Profiles, all your settings, Discovery sessions, and recording sessions.

GPS Compatible – Connect to a GPS receiver (not included) for precise system selection and continuing reselection when you travel. The scanner will automatically select what to scan based on your current location as provided by an external GPS unit.

Range Control – Lets you set how far out from your current location the scanner will search for channels in Favorites Lists and the database.

TrunkTracker X Operation – Scans APCO 25 Phase 1 and Phase 2, X2-TDMA, Motorola, EDACS, and LTR trunked systems, as well as conventional analog and P25 digital channels. Included upgrades add multiple types of NXDN and DMR trunking, as well as EDACS ProVoice decoding.

Instant Replay – Plays back up to 240 seconds (4 minutes) of the most recent transmissions.

Audio Recording – Capture transmissions for later playback.

Custom Alerts – You can program your scanner to alert when you receive a Channel or Unit ID, a Close Call hit, an ID is transmitted with an Emergency Alert, or a Tone-out hit. For each alert, you can select from 9 different tone patterns, 15 volume settings, 7 colors, and 3 flash patterns.

Multicolour LED Alert – The alert LED with 7 colors, Blue, Red, Magenta, Green, Cyan, Yellow, or White, can be used with your Custom Alerts.

Trunking Discovery – Monitors system traffic on a trunked radio system to find unknown IDs and automatically records audio from and logs new channels for later review and identification.

Conventional Discovery – Searches a range of frequencies to find unknown frequencies and automatically records audio from and logs new channels for later review and identification.

Scan by Service Types – Scan your channels by Service Type i.e. Fire, Police, Railroad, etc.

Multi-Level Display and Keypad light – Makes the display and keypad easy to see in dim light with multiple backlight levels.

Temporary or Permanent Avoid – For Systems/Sites/Departments/Channels.

System/Channel Number Tagging – Number tags allow you to quickly navigate to a specific Favorites List, System, or Channel.

Start-up Configuration – You can program each of your Favorites Lists with a Startup Key (0-9) so that when you power up the scanner and press the key number, just those Favorites Lists assigned to the key will be enabled for scan.

Close Call ® RF Capture Technology – Lets you set the scanner so it detects and provides information about nearby radio transmissions. Close Call Do-not-Disturb checks for Close Call activity in between channel reception so active channels are not interrupted.

Broadcast Screen – Allows the scanner to ignore search and Close Call hits on known broadcast frequencies including pager frequencies. You can also program up to 10 custom frequency ranges that the scanner ignores.

Fire Tone-Out Standby/Tone Search – Lets you set the scanner to alert you if a two-tone sequential page is transmitted. You can set up to 32 Tone-Outs. The scanner will also search and display unknown tones. (For USA Only)

PC Programming – Use the Sentinel software to manage your scanner's Profiles, Favorites Lists, Databases, and firmware updates.

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Priority/Priority w/DND Scan – priority channels let you keep track of activity on your most important channels while monitoring other channels for transmissions.

Priority ID Scan – Allows you to set priority to talkgroup IDs.

Intermediate Frequency Exchange – Changes the IF used for a selected channel/frequency to help avoid image and other mixer-product interference on a frequency.

Individual Channel Volume Offset – Allows you to adjust the volume offset for each channel.

Configurable Band Defaults – Allows you to set the step (5, 6.25, 7.5, 8.33, 10, 12.5,15, 20, 25, 50 or 100 kHz) and modulation (AM, FM, NFM, WFM, or FMB) for 31 different bands.

Repeater Find – Allows the scanner to try to switch to the repeater frequency if an input frequency is found.

Adjustable Scan/Search Delay/Resume – Set a delay up to 30 seconds or a forced resume up to 10 seconds for each channel or search.

Data Naming – Allows you to name each Favorites List, System, Site, Department, Channel, ID, Location, Custom Search, and SAME group, using up to 64 characters.

Duplicate Input Alert – Alerts you if you try to enter a name or frequency already stored.

Quick Keys – You can assign up to 100 Quick Keys to your Favorites Lists, Systems, Departments, and Sites.

Search Avoids – You can temporarily Avoid up to 250 frequencies and permanently Avoid up to 250 frequencies in any Search mode or Close Call mode.

10 Custom Searches – Lets you program up to 10 custom search ranges.

Search with Scan Operation – Lets you include Custom Search ranges during scan operation.

3 Search Keys – You can assign 3 of the number keys to start a Custom Search, Tone-Out Search, or Close Call Search.

Quick Search – Allows you to start searching at the displayed frequency or enter a frequency and start searching.

SAME Weather Alert/Priority – Lets your scanner alert you when a SAME alert is transmitted on a NOAA weather channel. You can also set a weather channel as a priority channel. (For USA Only)

INCLUDED WITH YOUR SCANNER

Accessories included in the box are:

- AC Adapter
- DC Adapter
- Mobile power harness
- USB Cable
- MicroSD Card (installed)
- BNC type Telescoping Antenna
- Mounting Bracket and Hardware
- Printed Material

BASIC USAGE INFORMATION

UNDERSTANDING THE MEMORY

All information contained in the scanner is stored on a microSD card supplied with the scanner. This includes Favorites Lists, all the radio settings, and the RadioReference database.

FAVOURITES LISTS

Because the memory is based on the RadioReference database, the SDS200E has a different organization unlike banks and channels in older scanners, but more like Dynamic Memory Architecture (DMA) used for the last few generations of scanners. Favorites Lists follow the RR database structure of Systems that contain Departments that hold Channels (conventional frequencies or IDs) and then Sites to hold trunking frequencies. If you are familiar with DMA scanners, think of departments as being like channel groups.

Favorites Lists let you store channels you find when you are scanning from the full database (the easiest way). They can contain channels from trunking systems and conventional systems. You can also manually add systems, departments and channels into Favorites Lists from the database as well as program new systems, departments, sites, and channels with the Sentinel software.

You can save up to 256 different Favorite Lists in the scanner (and software) and associate them with any or all of your profiles. You can monitor one or more Favorites Lists at a time and/or the database. You can also export your Favorites Lists to a file to share them. Deleting a profile does not delete the Favorites Lists associated with a profile. However, deleting a Favorites List does delete it from all profiles.

SYSTEMS

Systems hold Sites, Departments, and Channels.

TRUNKING SITES

Inside trunked systems are sites that hold the trunking frequencies for the trunking system as well as any band plan information needed. You need at least one site for each trunked system and some systems have more than one site.

DEPARTMENTS

Departments are created inside systems. Departments hold frequencies (channels) for conventional systems and Talk Group IDs (also called channels) for trunked systems.

SENTINEL SOFTWARE

MANAGE PROFILES

Profiles are "snapshots" of your scanner's set up. A profile contains all configuration settings as well as all Favorites Lists, Avoids, and System settings. Sentinel can save multiple profiles so you can restore different profiles as you need them. For example, if you regularly visit a specific location, you can create a profile for that location. You can save it to Sentinel to use whenever you visit.

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MANAGE FAVORITES LISTS

You can create Favorites Lists in Sentinel then associate them with specific profiles. Sentinel lets you create new systems or edit systems already in a Favorites List. When a profile is written to your scanner, only specified Favorites Lists are written to the scanner. Note that all Favorites Lists are shared by all Profiles. **If you delete a Favorites List, it is deleted from all profiles.** If you want to use a particular Favorites List in some Profiles and not use it in Others, use the Download and/or Monitor settings in the Profile Editor to select your preference.

MANAGE DATABASES

Uniden updates the Database used in your scanner every week. You can decide how often you want to update the databases on your scanner. When you update them through Sentinel, it checks the website for the most current database and saves it in Sentinel. When you select *Write to Scanner*, the new database is updated in the scanner. Updating the main database does not update any Favorites List. Your customizations and selections are preserved.

HOW TO INSTALL SENTINEL SOFTWARE

1. Go to the scanner's product page at http://www.uniden.co.jp/english/product/Scanners/sentinel_uehp_sds200e.html and click the link for support files.
2. Download the latest version of Sentinel.
3. Unzip the file you downloaded, then click on setup.exe and follow the on-screen instructions to install Sentinel.

UPDATING FIRMWARE

Your scanner updates its firmware through Sentinel. In that process, Sentinel connects to the internet and checks for the current firmware version to download.

From time to time, Uniden will release firmware updates to improve existing functionality, add new features, or address issues found in its operation. Updating the firmware takes just a few minutes and is easily accomplished using the Sentinel Software you installed on your PC.

Simply connect your scanner to your PC using the supplied USB cable and select *Mass Storage*. Then, in Sentinel, select *UPDATE/Update Firmware* and follow the on-screen prompts.

For information about what is included in each update, see:

*   http://info.uniden.com/UnidenMan4/SDS200FirmwareUpdates

UPDATING THE DATABASE

1. To update the scanner's database, connect it to your PC using the supplied USB cable. Select Mass Storage.
2. Next, in Sentinel, select *UPDATE/Update Master HPDB*. This updates the database in Sentinel, **but does not update the database in the scanner**.
3. Finally, write the new database to your scanner by selecting *Scanner/Write to Scanner*.

DATA NAMING

Name any Favorites List, System, Site, Department, Channel, Location, Custom Search, Recording Session, Tone-Out, or SAME group using up to 64 characters.

To Enter a Character, turn the scroll control until the character you want appears. To move the cursor to the right, press the right soft key *(>)*.

To move the cursor to the left, press the left soft key *(<)*. To clear a character, press .*NO/PRI*.

To clear all characters, press .*NO/PRI* twice. Press *E/YES/Q.SRCH* when finished to exit.

PRIORITY SCANNING

Priority Scan – When the scanner is scanning a Conventional System, it interrupts scanning, based on the Priority Interval and Max Channels settings, to check priority channels for activity. The more channels you have set to priority, the longer the interruption will be. The Favorites List(s) and System(s) containing the priority channel(s) have to be enabled (and not Avoided) or the scanner will display *Priority Scan No Channel*.

Priority DND – The scanner checks priority channels, based on the Priority Interval and Max Channels settings, only when not receiving other conventional channels so there is no interruption in scanning with conventional systems.

Priority ID Scan – This function is similar to conventional priority although there is no interruption during the transmission. Priority is checked in between transmissions, when the scanner is receiving the control channel, and during the channel delay period. The scanner can only look for priority IDs in the trunked system it is currently scanning.

Preemptive Priority ID Scanning – For Motorola systems that have channel priority active on the system, if you flag a channel as priority and the system also has that TGID identified as a priority channel, the scanner will preempt any current transmission if the TGID becomes active.

The highest priority is for channels in System Quick Key 0. The lowest priority is for channels in System Quick Key 99. Priority for priority channels in the same channel Department follows the order in which the channels were created.

To use Priority Scan, you must first set your Priority Channels.

To use Priority ID Scan, you must also enable Priority ID Scan for each system.

To toggle Priority Modes, press *PUSH/FUNC* then .*NO/PRI*.

Priority is always on for a trunked system, if enabled in the system.

SCANNING ORDER

With previous scanners, you selected banks to scan. With this scanner, you select *Favorites Lists*, *Systems, Departments*, and *Sites* to scan by assigning Quick Keys to them.

Scanning is performed in a mixture of FLQK order and SQK order. The scanner does not scan all Systems in one Favorites List and then move to the next List.

For each Favorites List with a quick key, starting with 0, the scanner scans each 0 SQK in FLQK order and then move sto the next set of SQKs for each list.

Example:

FLQK 0, SQK 0; FLQK 1, SQK 0…. FLQK 98, SQK 99; FLQK 99, SQK, 99. Department and Site Quick Keys are scanned with each System.

Systems with the same quick key are scanned in order of creation.

The Database is scanned next. Then, Systems with no quick key (including created Quick Save Systems) are scanned and in order of creation.

Conventional Channels and Departments within Systems are also scanned in order of creation. TGIDs are not really scanned. The scanner checks for any activity in the trunking system and:

- Stops on all unavoided TGIDs when ID Search mode is set to On.
- Stops only on programmed TGIDs when ID Search mode is set to Off.

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Next, any Custom Searches (enabled for Search with Scan) are scanned in order (Close Call Hits last).

Then, the scanner scans the Close Call 'Hits with Scan' system (if Unavoided). This is a system that automatically stores the frequencies found by Close Call. If the 'Hits with Scan' system has no frequencies, the scanner does not scan the system.

The scanner scans a system for the duration you set using the System Hold Time option. For trunked systems, the scanner moves to the next system after the hold time expires, the current transmission ends, and the channel delay expires. Conventional systems operate similarly, but all (Unavoided) channels are scanned at least one time regardless of the hold time setting.

SCANNING

Scanning Checklist:

To ensure you do not get a "Nothing to Scan" message on the scanner:

1. You must enable at least one Favorites List or the Full Database in Select Lists to Monitor.

2. Favorites Lists or Systems, with Quick Keys assigned to them, must be enabled with quick keys or through Manage Quick Key Status.

3. Service Types required for channels must be set to On.

4. You must set your location to an area that has channels to scan, or set one or more Favorites Lists to not use Location Control.

Any Favorites List not assigned to a quick key, not Avoided, with channels within your current location and range and set to On in Select – to Monitor will be scanned. Any System, Department, or Site (or Quick Save System/Department) not assigned to a quick key and not Avoided, will be scanned.

REPLAY THE LAST TRANSMISSIONS

While scanning, press *REPLAY/RECORD*.

Press *CHANNEL* to pause/resume replay.

Turn the *SCROLL CONTROL* to select recordings.

Replay is not available when recording is enabled.

START/STOP RECORDING

While scanning, press *PUSH/FUNC* (the main scroll knob) then *REPLAY/RECORD*.

Resets to Off when you turn off the scanner.

Note that anything in the replay buffer is also stored with the recording session when you start recording.

AVOIDING CHANNELS, DEPARTMENTS, SITES, AND SYSTEMS

Temporary Avoids are cleared when you cycle power. You must manually clear permanent avoids.

Channel Avoid

When the Channel is in the display or in *Channel Hold* mode: To *Temporary Avoid*, press *AVOID* once. To *Permanent Avoid*, press twice when the channel is in the display or in *Channel Hold* mode.

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Department Avoid

Press **DEPT** (Soft Key **2**) then **AVOID** once to *Temporary Avoid*. Press **AVOID** twice to *Permanent Avoid*.

Site Avoid

To *Temporary Avoid*, press **F+Site** (Soft Key **2**) then quickly press **AVOID**.

To *Permanent Avoid*, press **F+Site** (Soft Key **2**) then quickly press **AVOID** twice.

To *Stop Avoiding*, press **F+Site** (Soft Key **2**) then **AVOID** once.

System Avoid

Press **SYSTEM** (**1**) then **AVOID** once to *Temporary Avoid*. Press **AVOID** twice to *Permanent Avoid*.

HOLDING A SYSTEM, DEPARTMENT, SITE, OR CHANNEL

While scanning, you can hold on a system, department, site, or channel by pressing its associated soft key.

System Hold: Soft Key 1

Department Hold: Soft Key 2

Site Hold: F+Soft Key 2

Channel Hold, Soft Key 3

Note: If you hold on a channel that is in a trunked system, all enabled sites are still scanned for that channel activity.

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INSTALLING YOUR SCANNER

The SDS200E can be placed on a convenient surface in your home as a base station, and connected to a standard outlet that supplies 100-240VAC, 50/60Hz. You must use either the supplied antenna or an electrically correct outdoor antenna, properly and safely mounted at your chosen site.

The unit can also be placed above, beneath, or in the dash of your vehicle using the supplied bracket and mounting hardware.

- If your scanner receives interference or electrical noise, move the scanner or its antenna away from the source.
- Do not use the scanner in high-moisture environments such as the kitchen or bathroom. Avoid placing the scanner in direct sunlight or near heating elements or vents.

POWER RELATED ISSUES

Important: To prevent memory from being corrupted, do not unplug the AC adapter during the time the memory is accessed for programming or auto store.

Note 1: If when you connect the AC adapter the VOLUME / ⏻ key is in the ON position, the scanner may not power on. Should this occur, simply turn the control OFF, then ON again.

Note 2: When you turn off the scanner using the power switch, the scanner remembers the last settings and mode. When you turn power back on, it resumes the previous mode.

CONNECTING AN OPTIONAL ANTENNA

The scanner's BNC connector makes it easy to connect a variety of optional antennas, including an external mobile antenna or outdoor base station antenna.

Note: Always use 50-ohm, RG-58, or RG-8, BNC terminated coaxial cable to connect an outdoor antenna. If the antenna is over 50 feet from the scanner, use RG-8 low-loss dielectric coaxial cable. Cable loss increases with higher frequency.

CONNECTING AN EXTENSION SPEAKER

In a noisy area, an optional amplified extension speaker, positioned in the right place, might provide more comfortable listening. Plug the speaker cables 1/8-inch (3.5-mm) mini-plug into your scanners back-panel Ext. Sp. Jack.

Warning! If you connect an external speaker to the scanner's Ext. SP jack or headphone jack, never connect the audio output line to a power supply and ground. This might also damage the scanner.
All audio output is Class-D amplified (PWM). Never connect Ext. SP jack or headphone jack to an external Class-D AMP.

BASE STATION

This is the simplest approach to let you get started quickly. Decide on a location that is convenient to a nearby wall outlet, has desk space to let you complete your programming worksheets, will safely allow the indoor antenna to be extended, or near a window to use an outdoor antenna.
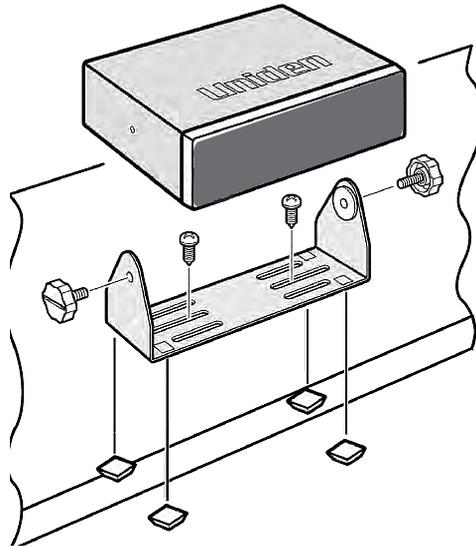
To secure the radio to a surface by means of the mounting bracket, follow the steps below:

1. Attach the four protective mounting feet to the mounting bracket when you casually use the scanner on a flat surface. Should you desire to permanently mount the scanner, remove the feet and use wood screws through the bracket as described in Steps 2 and 3.

2. Use the bracket as a template to mark positions for the two mounting screws.

3. At the marked positions, drill holes slightly smaller than the screws.

4. Align the bracket with the threaded holes on the sides of the radio case so the bracket is beneath the radio. Secure the bracket using the two threaded knobs. Never over tighten the knobs.

Once the radio is positioned, connect it to a source of AC power using the supplied 13.8V, 750 mA AC adapter. Insert the barrel of the AC adapter to the jack on the rear, upper right side of the radio marked. Insert the connector of the supplied indoor telescoping antenna to the BNC Antenna Connector and apply moderate pressure to secure it.

VEHICLE INSTALLATION

You can mount your scanner in your vehicle, using either an optional bracket or DIN-E sleeve.

If the scanner loses power (as when you turn off your car's ignition with the scanners power switch on), it can corrupt the microSD card. To ensure that does not happen, turn off the scanner before turning the car's ignition off.

Warning! AVOID AIRBAG DEPLOYMENT ZONES.
Ignoring this installation concern may result in bodily harm and the inability of the airbag to perform properly.

Mounting Using the Bracket

With the bracket removed from the radio, use the holes in the bracket as a template to initially mark the location you plan to use in your vehicle. Be absolutely certain of what might be behind the mounting surface before making any holes, be it above, or below, or in front of your dash, armrest console, or other location. If you drill carelessly, expensive damage can result. If in doubt, consult your vehicle dealer's service department or a qualified professional installer.
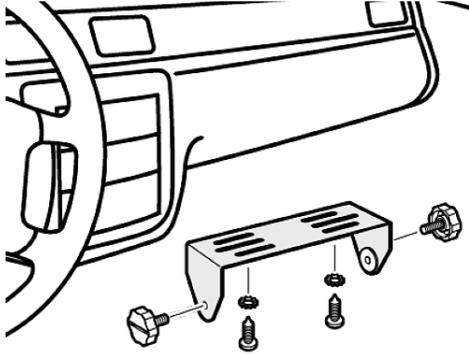
1.   Using appropriate screws or other hardware, secure the bracket.

2.   Insert the scanner and insert the bracket knobs to lock the scanner in position.

3.   Attach the Cigarette Lighter Power Cord to the rear of the scanner and plug the adapter end into a dash mounted 12V DC socket.

4.   Attach a suitable mounted mobile antenna to the antenna jack on the back of the scanner.

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Mounting Using ISO Technique

Some vehicles can take advantage of another approach to mounting a radio in a vehicle, called the ISO technique. However, this technique requires a very detailed and thorough knowledge of the technique. Therefore, we strongly suggest that if you have any doubt about your experience and abilities, please consult with a professional installer who is familiar with the ISO approach to radio installation.

To begin the process, it is first necessary to remove the scanner's outer metal sleeve from the inner chassis. Unthread the four screws in the rear of the unit. Slide the cover toward the rear and off. Once the sleeve is removed, you will see threaded, metric machine screw holes on either side of the chassis cabinet. Uniden does not supply these screws. Their diameter, length, and screw type should be chosen by a qualified installer based on the internal vehicle bracket which will be used in securing the scanner chassis.

Once the original radio is removed from the vehicle dash and the fit of the scanner is correct, be sure to connect all the power, audio, antenna, and any other cables or wires, to the scanner before the scanner is secured.

The following illustration is a typical example of the ISO technique and the general side mounting screw holes often encountered. It does not actually represent the Uniden scanner or your vehicle's mounting bracket. Only a professional installer will be able to determine the best and correct approach.
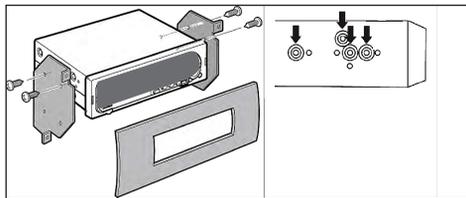
Connecting DC Cable with Orange Wire

Connect this cable to the vehicle's electric system that receives power when you turn on your headlights. Now your scanner's display will automatically dim when you turn on the headlights.

SETTING UP YOUR SCANNER

FIRST STEPS

To get your scanner ready for use, follow these quick steps:

1. Connect the scanner to a power source and plug the included cable into the scanner's microUSB port and the other end into a PC.

2. Turn on the scanner by rotating **VOLUME /** ⛛/⏻ clockwise.

3. When prompted, select *Mass Storage* mode.

4. Run Sentinel.

5. Follow the steps provided on pages 10 and 11 to update the scanner's firmware and radio database to the latest versions.

INITIAL SETTINGS (VOLUME AND SQUELCH)

1. Rotate **VOLUME /** ⛛/⏻ clockwise to turn on the scanner.

2. Adjust the volume to the desired level.

3. Set **SQUELCH** to the desired level. Usually, a setting of 2-5 works best.

CONTROLS AND INDICATORS

The following table includes the most common functions for each key. It is not, however, a comprehensive list for all functions in all modes. See specific functions in this manual to perform a particular task.

The LED indicator above the **PUSH/FUNC** knob indicates channel alerts.

KEY	OPERATION
Scroll knob/*PUSH FUNC*	• Rotate to change menu items, change scan direction, or resume scanning or searching when stopped on a transmission. • In channel or search hold mode rotate to change channel or frequency. • Press to activate the second FUNCtion of the next keypress.
VOLUME/LIGHT/ POWER *(VOLUME / ☼/⏻)*	• Rotate to the right to turn on the scanner and increase volume. • Rotate to the left to decrease volume and turn off the scanner. • Tap to turn on/off the display backlight. Note that when the display backlight is off, nothing is visible on the display.
AVOID	• Press once to temporarily avoid the current channel or frequency (in direct tune mode). • Press twice to permanently avoid the current channel or frequency. • During scan, or scan hold press the left soft key (System), then tap *AVOID* once (for temporary avoid) or twice (for permanent avoid) to avoid the currently scanned system. • During scan, or scan hold press the middle soft key (Department), then tap *AVOID* once (for temporary avoid) or twice (for permanent avoid) to avoid the currently scanned department.
ZIP/SERVICES	• Press **PUSH/FUNC** then **ZIP SERVICES** to select *Service Types* to be scanned.
SOFT KEYS	The function of these three keys change depending on the current mode. The function is indicated by the labels at the bottom of the display.
SQUELCH/MENU	• Rotate right to increase the squelch threshold. • Rotate left to decrease the squelch threshold. • Press to enter *Menu* mode. • Press to return one level in *Menu* mode. • Press **PUSH/FUNC** then **MENU** for *Search* menu in *Search* mode. • Press **PUSH/FUNC** then **MENU** for *Close Call* menu in *Close Call* mode.
REPLAY/RECORD	• Press to Replay the last transmissions. • Press **PUSH/FUNC** then **REPLAY/RECORD** to start/stop recording • Press and hold to Review Recordings.
Number keys (general) See individual key functions below for additional functions	• Press to select *Favorites List Quick Keys* in *Scan* mode. • Press *0-9* to use direct entry in a *Hold* mode. • Press *0-9* to toggle custom search bands on or off in *Custom Search* mode. • Press *0-6* to toggle *Close Call* bands on or off in *Close Call* mode.

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KEY	OPERATION
1 / SRCH1	• Press to enter the digit 1 in any numeric entry mode. • In channel hold mode, press ***PUSH/FUNC*** then ***1*** to toggle on/off the search you've assigned to SRCH1.
2 / SRCH2	• Press to enter the digit 2 in any numeric entry mode. • In channel hold mode, press ***PUSH/FUNC*** then ***2*** to toggle on/off the search you've assigned to SRCH2.
3 / SRCH3	• Press to enter the digit 3 in any numeric entry mode. • In channel hold mode, press ***PUSH/FUNC*** then ***3*** to toggle on/off the search you've assigned to SRCH3.
4 / ATT	• Press to enter the digit 4 in any numeric entry mode. • In *Channel hold* mode, press ***PUSH/FUNC*** then ***4*** to toggle attenuation on/off for the current channel • In *Channel hold* mode, press ***PUSH/FUNC*** then hold ***4*** for 3 seconds to toggle global attenuation on/off. • In *Search* mode, holding on a frequency, press ***PUSH/FUNC*** then ***4*** to toggle attenuation on/off for the current frequency.
5 / DIM	• Press to enter the digit 5 in any numeric entry mode. • In *Channel hold* mode, press ***PUSH/FUNC*** then ***5*** to set the display brightness level.
6 / WX	• Press to enter the digit 6 in any numeric entry mode. • In *Channel hold* mode, press ***PUSH/FUNC*** then ***6*** to toggle weather priority on/off. • In *Channel hold* mode, press ***PUSH/FUNC*** then hold ***6*** for 3 seconds to go to weather channel monitoring mode.
7 / IFX	• Press to enter the digit 7 in any numeric entry mode. • In *Channel hold* mode on a conventional channel, press ***PUSH/FUNC*** then ***7*** to toggle intermediate frequency exchange on/off for the current channel. • In *Search* mode, holding on a frequency, press ***PUSH/FUNC*** then ***7*** to toggle intermediate frequency exchange on/off for the current frequency.
8 / REV	• Press to enter the digit 8 in any numeric entry mode. • In *Channel hold* mode on a conventional channel, press ***PUSH/FUNC*** then ***8*** to monitor the the repeater input frequency for the current channel. • In *Search* mode, holding on a frequency, press ***PUSH/FUNC*** then ***8*** to monitor the the repeater input frequency for the current frequency.

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KEY	OPERATION
9 / DISP	• Press to enter the digit 9 in any numeric entry mode. • In *Channel hold* mode, press **PUSH/FUNC** then *9* to toggle between simple and detailed display modes. • In most modes, press **PUSH/FUNC** then hold **9** for 3 seconds to switch between Color, Black on White, and White on Black modes.
0 / LVL	• Press to enter the digit 0 in any numeric entry mode. • In *Channel hold* mode, press **PUSH/FUNC** then repeatedly press *0* to set the volume offset for the current channel.
.NO/PRI	• Press to enter a decimal point for a frequency. • Press when prompted *Yes/No* to select *No*. • Press **PUSH/FUNC** then.**NO/PRI** to toggle conventional priority scan.
E/YES/*Q. SRCH*	• Press to select a menu item or save an entry in *Menu* mode • In *Channel hold* mode, press to store a blinking CTCSS/DCS/NAC. • In *Channel hold* mode, press **PUSH/FUNC** then **E/YES/Q.SRCH** to start a Quick Search. • Press **PUSH/FUNC** then **E/YES/Q.SRCH** to toggle *ID Search* mode on/off in *Scan* mode (when scanning Trunked System in Favorites List only).

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UNDERSTANDING LOCATION, RANGE, AND SERVICES

All radio systems in your scanner's database are tagged with location information. A geotag has latitude, longitude, and range. This tag describes a circle centered at the latitude/longitude that fully encompasses the entity (i.e. city, town, state, etc.) served by the radio system. Taking a look at some of the systems in the Fort Worth, TX area, you can see that each system has its own little circle. These roughly outline each system's intended coverage.
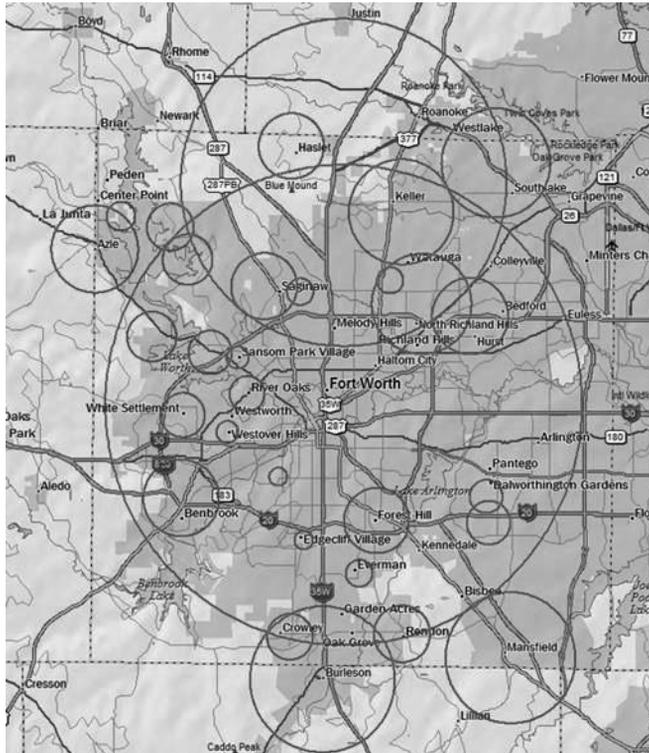
Each entry also includes all the radio system information (frequencies, descriptions, tags indicating how each channel is used, etc).

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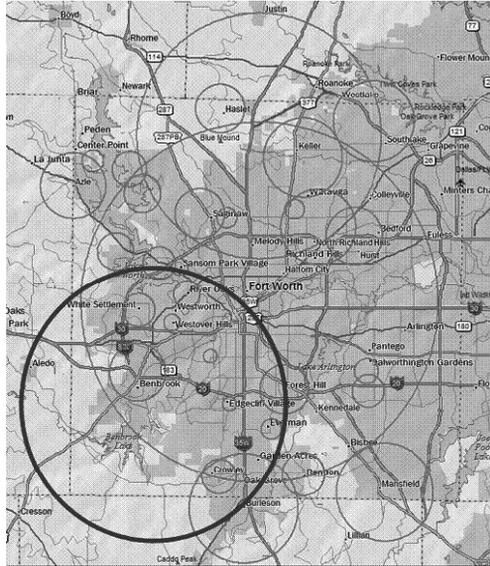
The scanner selects channels from systems that overlap the thick circle. So, the system down south that covers Burleson is included even though only part of it is covered, but Haslet, way up north, is not included.

Each location method uses a different range. In addition to the 10-mile zip code radius, the scanner uses:

- Auto Locate: 30-miles radius from the discovered radio tower.
- GPS or Manual Location: 0-miles radius.

0 miles means that your location is precisely known. For a radio system to be selected, its circle must enclose your precise position. This setting is great if you are traveling…the scanner automatically selects and deselects systems as you drive through each system's coverage zone.

You can manually change the range setting to be bigger (to include more systems) or smaller (to include fewer systems) by going to the Range menu and adjusting the range up or down.

SETTING LOCATION/RANGE

Press **MENU** then scroll to Set Your Location and Range and press **E/YES/Q.SRCH**. Scroll to through the following option and press **E/YES/Q.SRCH**.

Auto Locate

Auto Locate works by trying to monitor any Motorola or P25 system in your area that is also in the Radio Reference Database.

This sets the center of the discovered radio tower as your location (not your exact location) and a default scan range of 30 miles.

Press **E/YES/Q.SRCH** or .**NO/PRI** to accept the location. Press **MENU** to cancel.

Set Manual Location

This sets your exact location and a default scan range of 0 miles. You can then edit the location name and save the location.

1.   Using the keypad, enter your latitude.

2.   Press .*NO/PRI* to toggle *N* or *S*, and press *E/YES/Q.SRCH* Using the keypad, enter your longitude.

3.   Press .*NO/PRI* to toggle *E* or *W*, and press *E/YES/Q.SRCH*.

SET UP GPS

Location Format

DMS:DDD˚MM'SS.ss or DEG:DDD.dddddd.

Set Serial Port

•   Default is 9600 bps for a GPS device.

•   Off, 4800, 9600, 19200, 38400, 57600, or 115200 bps.

Set Range

This setting allows you override the default range setting for your current location to increase or decrease the number of Trunking Sites and Channel Departments you can receive when you are scanning from the Full Database and when you are scanning Favorites Lists with Location Control enabled. See also *Understanding Range*, 24.

Enter the range (0-50) and press *E/YES/Q.SRCH.*

EDIT LOCATION

This lets you create a location or edit a location for rapid recall. First, select *New Location* or *Edit Location*.

Edit Name

See *Data Naming*, page 7.

Use Location

This will set the location as current for scanning the Database and any Favorites List with Location Control enabled.

At *Confirm?* press *E/YES/Q.SRCH* or .*NO/PRI*.

Delete Location

You can only delete saved locations. The last location set will be retained for use when scanning the Database.

At *Confirm Delete?*, press *E/YES/Q.SRCH* or .*NO/PRI*.

Set Location Information

See *Set Manual Location*, 2.

Set Range

Enter the range (0-50) and press *E/YES/Q.SRCH*.

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Save Location

This saves the current location and the range.

SELECTING SERVICE TYPES

By default only EMS Dispatch, Fire Dispatch, Law Dispatch, Custom 1, and Multi-Dispatch are enabled.

The Appendix has a list of Service Types and their general descriptions. To change the enabled/disabled service types:

1.   Press *PUSH/FUNC* then the *ZIP/SERVICES* button.

2.   Scroll to each *Service Type* and press *E/YES/Q.SRCH* to enable or disable. Press *SYSTEM* to exit.

If a Service Type is not in any active Favorite List, the scanner will display **"---"**.

QUICK NAVIGATION CONCEPTS

ASSIGNING QUICK KEYS

Quick Keys let you quickly turn on/off favorites lists, systems within a favorites list, and departments and sites within systems. There are three levels of quick key as described below.

FAVORITES LIST QUICK KEYS

Favorites Lists Quick Keys (FLQK) quickly enable or disable entire Favorites Lists for scanning. There are 100 FLQKs (00-99). These are like the bank keys used on older scanners. You do not have to assign a FLQK to a favorites list, but doing so makes it easier to modify what you are currently scanning. Each FLQK can only be used one time (i.e. two favorites lists cannot have the same FLQK).

SYSTEM QUICK KEYS

System Quick Keys (SQK) quickly enable or disable conventional and trunked systems for scanning. There are 100 SQKs (00-99). You can use the same SQK for multiple systems.

DEPARTMENT/SITES QUICK KEYS

Department/Site Quick Keys (DQK) quickly enable or disable departments or sites. There are 100 DQKs (00-99). You can use the same DQK for multiple departments and sites.

USING QUICK KEYS

To enable or disable a Quick Key, while scanning, enter all or part of:

FF.SS.DD then press *E*.

- FF=FQK
- SS=SQK
- DD=DQK

Examples:

- 10 E: Toggle FQK 10
- 10.03 E: Toggle SQK 03 in FQK 10
- 10.03.02 E: Toggle DQK 02 in SQK 03 in FQK 10.
- .03 E: Toggle SQK 03 in the currently scanned *Favorites List*
- ..04 E: Toggle DQK 04 in the currently scanned system.

Toggling a SQK or DQK only affects the quick key within the current hierarchy. If you have the same SQK under a different Favorites List, that SQK is unaffected.

You can assign a display area to indicate the FQK/SQK/DQK status. See Customizing the Display, on page 39.

SEARCH KEYS

You can assign any search function to *Search Keys* (1, 2, or 3) to quickly go to that search. Use the menu function *Search for… → Set Search Key* to assign the search functions. To start the search, hold on a channel, the press *F+1*, *2*, or *3*.

STARTUP KEYS

You can program each of your Favorites Lists with a Startup Key *(0-9)* so that when you power up the scanner and press the key number, just those Favorites List(s) assigned to the key will be enabled for scan. Systems are not affected. Assign a startup key when programming Favorites Lists.

To use a startup key, hold it down while powering on the scanner. Items with a matching startup key will be enabled for scanning. Items with a startup key that does not match will be disabled for scanning. Items with no startup key will not be affected.

NUMBER TAGS

Numbers tags will allow you to tag each Favorites List, System, and Channel so you can quickly go to that element. Number tags can range from 0 to 99 for Favorites Lists and Systems and 0-999 for Channels.

To use a number tag, hold on any channel, then enter the tag as FF.SS.CC and press Channel (Soft Key **3**).

CHANNEL/ID ALERTS

You can program your scanner to alert you when a Channel or Unit ID is received, you receive a Close Call hit, an ID is transmitted with an Emergency Alert or you receive a Tone-out hit. For each alert in the scanner, you can select from 9 different tone patterns, 15 volume settings, 7 colors, and 3 flash patterns.

QUICK FREQUENCY TUNING

To quickly tune to a frequency and enter quick search mode:

1.   Hold on any channel.
2.   Key in any frequency.
3.   Press *CHANNEL* (Soft Key *3*).

QUICK TALK GROUP TUNING

To quickly tune to a talk group in the trunked system you are currently scanning, while scanning that trunked system:

1.   Hold on any channel.
2.   Key in the talk group ID.
3.   Press *CHANNEL* (Soft Key *3*).

MENU REFERENCE

The scanner's menu gives you access to all the scanner's setting as well as programming. The table below provides a quick description of most of the scanner's menu tree. For procedures that need more explanation, the table will indicate where in this manual to look for that explanation.

To access the menu, press and hold **SQUELCH/MENU**. For ease of reference, this manual will refer to this button as **MENU**.

When describing menu navigation, this manual uses the following format:

MENU → *Main Menu Item* → *Sub Menu item*

For example:

MENU → *Search For…* → *Custom Search*

To go up one menu level, press **MENU**. To exit the menu entirely, press **AVOID**.

MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Set Scan Selection	*Manage Quick Key Status*	Favorites Quick Key	Scroll to desired FLQK and press **E/YES/Q.SRCH** to toggle it on/off.
		System Quick Key	Scroll to the FL the systems are in and press **E/YES/Q.SRCH**, then scroll to the system and press **E/YES/Q.SRCH** to toggle the SQK on/off.
	Set Nationwide Systems	Scroll to the desired nationwide system and press **E** to turn it on or off for scanning. Nationwide systems are similar to service searches used in older scanners.	
	Select Lists to Monitor	Scroll through the list and press **E/YES/Q.SRCH** to toggle the item on/off for scanning. Note that this does not affect the FLQK status. If the item is set to *No*, it cannot be turned on for scanning using quick keys.	
	Set All Lists Off	Sets all of the items in the above menu to Off.	
	Set All Lists On	Sets all of the items in the above menu to On.	
Manage Full Database	*Review Avoids*	Scroll to entries in this list to see all items avoided in the main database. When selected, press **E/YES/Q.SRCH** to remove the avoid status.	
	Stop All Avoiding	Removes avoid status from the entire main database.	
	Information	Displays the date the main database was last updated in the scanner.	
Manage Favorites	See *Managing Favorites Lists* on page 34		

MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Set Your Location	*Set Manual Location*	Input your Latitude and Longitude for precise radio system selection.	
	Set Up GPS	*Location Format*	Scroll to select the format for entering and displaying latitude and longitude
		Set Serial Port	Set the data rate to use with a connected GPS. The default of 4800bps is the standard data rate for most units.
	Set Range	Sets the range, in miles, the scanner should look out from the set location to determine which radio systems to scan.	
	Edit Location	Scroll to select and edit a saved location. You can then select the appropriate menu item for what you want to change: • *Edit Name* • *Use Location* (sets your scanner to the stored settings) • *Delete Location* • *Set Location Information* (change the stored latitude and longitude) • *Set Range*	
	Save Location	Saves your current location settings for quick recall. First, set the name for the location, then select the menu items to set the location: • *Edit Name* • *Use Location* (sets your scanner to the stored settings) • *Delete Location* • *Set Location Information* (change the stored latitude and longitude) • *Set Range*	
Select Service Types	The scanner displays a list of all service types. Scroll to a service type and press *E* to toggle that service type on or off. Note that if no channels in the currently scanned database or favorites list(s) include a particular service type, that service type will have --- displayed instead of on or off. You cannot set that service type.		

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MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Srch/CloCall Opt	*Freq Avoids*	*Stop All Avoiding*	Removes avoid status from all frequencies.
		Rvw Search Avoids	Scroll to view search avoids. Press **E/YES/Q. SRCH** while on an avoided frequency to unavoid that frequency.
	Broadcast Screen	*Set All Band On*	Turns on all broadcast screens
		Set All Band Off	Turns off all broadcast screens
		Set Each Band	Scroll through the list of broadcast screens and press **E/YES/Q.SRCH** to turn a particular screen on or off. When a screen is turned on, the scanner will ignore any traffic found on a matching frequency during search or Close Call operation.
		Program Band	Scroll to an entry then enter the upper and lower limits of any frequency band you want to make a custom screen for..
	Repeater Find	*On*	Automatically switch to repeater output side when input side is detected.
		Off	Do not switch to repeater output side.

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MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
	Set Delay Time	*-10* *-5* *0* *1* *2* *3* *4* *5* *.* *.* *.*	Hold on the frequency the set amount of time after the transmission ends to wait for replies. Negative value forces search resume after set time, even if transmission continues.
	Set Attenuator	*On*	Apply 20dB attenuation to all reception.
		Off	Attenuation is off.
	Digital Waiting Time	Sets how long the scanner evaluates the received signal before opening squelch.	
Search For…	*Custom Search*	Start a custom search. Use the 0-9 keys to turn on/off each search range.	
	Edit Custom	Select *Custom*, then:	
		Edit Name	Edit the name of the custom search
		Edit Srch Limit	Enter the upper and lower range frequencies.
		Set Delay Time	Set the delay after a transmission ends. See setting above for options.
		Set Modulation	Set the demodulation method to use for the range. AUTO uses default modes based on bands.
		Set Attenuator	Turn attenuation on or off for the search.
		Set Step	Set the step size for the search. AUTO uses standard steps based on the band being search.

MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
		Digital Waiting Time	Sets how long the scanner evaluates the received signal before opening squelch.
		Search with Scan	Set Avoid option lets you stop avoiding (i.e. include the search during scan), temporarily avoid, or permanently avoid.
			Set Hold Time option determines how long the scanner spend in the custom search before resuming normal scanning.
	Set Search Key	Select the search key.	Then, set the function you want the search key to control.
	Search with Scan	Set *System Avoid*	Set to Temporary or Permanent to turn off search with scan.
Close Call	Close Call Only	Turn off scanning/searching and only watch for Close Call hits	
	Hits with Scan	*Set Avoid*	Set to Stop Avoiding to include Close Call hits while scanning.
		Set *Hold Time*	Set how long to scan Close Call hits during each scan cycle.
	Set CC Mode	*Off*	Close Call is turned off
		CC DND	Scanner checks for Close Call hits only when no other voice traffic is being received.
		CC Priority	Scanner checks for Close Call hits every 2 seconds, even if voice traffic is being received.

MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
	Set CC Alert	*Set Alert Tone*	Scroll to select the alert tone to sound when there is a Close Call hit. Then, scroll to select the volume level for the alert (Auto uses the current volume setting).
		Set Alert Light	Scroll to select the color the alert indicator lights when there is a Close Call hit. Then scroll to select a blink pattern for the alert.
		Set CC Pause	Scroll to set how long the scanner displays the Close Call hit before resuming.
	Set CC Bands	Scroll to each band and press ***E/YES/Q.SRCH*** to toggle Close Call checks for that band on or off.	
Analyze	See *Using Analyze Features* on page 45		
Discovery	See *Using Discovery Mode* on page 43		
Priority Scan	*Set Priority*	*Off*	Conventional priority is turned off.
		Priority DND	Conventional priority be checked only when no other voice traffic is being received
		Priority Scan	Conventional priority will be checked on an interval, even if voice traffic is being received. Interval is set by setting, below.
	Set Interval	Select how often the scanner will check for traffic on conventional priority channels. Default is 2 seconds.	
	Max Channels / Pri Scan	Sets the maximum number of conventional priority channels to check on each interval. (1-100)	

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MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Tone-Out-For *(For USA/Canada Only)*	*Tone-Out Standby*	Select this and the scanner will go into tone-out standby mode. Scroll to select the tone-out settings to use. If multiple settings use the same RF settings but different tone settings, all matching settings are used. No other function works while the scanner is in tone-out standby mode. *(For USA/Canada Only)*	
	Tone-Out Setup	Scroll to select the tone-out settings you want to edit, then use the below menu items to change settings:	
		Edit Name	Set the alpha tag for the tone-out settings
		Set Frequency	Set the RF frequency, Modulation, and Attenuation settings.
		Set Tone	Set the values for Tone A and Tone B. For a single short tone, only set Tone A. For a single long tone, only set Tone B. To search for tones leave both settings at 0.
		Set Delay Time	Select how long the scanner waits after the carrier drops to return to tone-out standby mode.
		Set Alert	Set the tone and indicator color/pattern to use when a matching two-tone alert is received.

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MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Display Options	Backlight Options	Set Mode	Set how the display backlight behaves when squelch opens and/or when a key is pressed.
		Set Dimmer	Set the backlight brightness level (default 40%)
		Set Key Backlight	Enable: turns on/off w/ the display backlight; Disable: Always off.
		Flash w/Backlight Off	Turn on to have the alert indicator blink every 5 seconds when the display backlight is off (so you can tell the scanner is on).
		External Power	Backlight On = Always turn on backlight when external power is present.
			Backlight Off = Follow backlight settings when external power is present.
	Customize	See Customizing the Display on page 39	
	Set ID Format (P25/MOT)	Select to display Motorola/P25 Talk Group IDs in Decimal or Hex format.	
	Set ID Format (EDCS)	Select to display EDACS Talk Group IDs in Decimal or Hex format.	
	Set Scan Display Mode	Select Simple or Detailed mode.	
	Set B/W or Color Mode	Set the display color mode: Color for full color display, or Black w/White Text or White with Black text for black and white modes (which are easier to see under direct sunlight.	

MAIN MENU	SUB MENU	SETTING OR SUB-SUB MENU	SETTING
Settings	*Adjust Key Beep*	Rotate to set the key beep volume. AUTO sets the level to match the current volume setting.	
	Set Clock	Follow the menus to set the date, time and time zone.	
	Site NAC Operation	Select *Use Site NAC* or *Ignore Site NAC*.	
	Global Auto Filter	Select an RF filter suitable for environment.	
	Band Defaults	Select a frequency band then follow the menu to set the default modulation and step for each band.	
	Auto Shutoff	Select how long the scanner will operate before automatically turning off. Set to off to disable this function.	
	Set LAN Settings **Note: The scanner automatically restarts if you change any LAN settings and then exit Menus.**	*Set iP Assignments*	Select *Disable* (default), *Auto* (DHCP), or *Manual*. **Note: Set IP Addresses menu displays if Manual is selected.**
		Show IPs	Displays IP information such as LAN mode, IP address, etc.
	Replay Options	*Set Replay Duration*	Set how much audio is included in the replay buffer.
		Review Recordings	Scroll to a recording session and select to play, delete, or rename a recording session.
	Restore Options	*Clear User Data*	Delete all Favorites Lists and user settings.
		Reset User Settings	Clear user settings w/o affecting Favorites Lists.
	See Scanner Information.	*% Memory Used*	Displays the remaining capacity of the microSD card.
		Firmware Version	Displays the firmware version and Electronic Serial number of the scanner.

MANAGING FAVORITES LISTS

Favorites Lists hold all your custom Systems, Sites, Departments, and Channels. Certain system, department, and channel options are only available for specific types of systems. Each option is tagged with the type(s) it applies to as follows:

- **P** – APCO Project 25
- **M** – Motorola
- **D** – DMR
- **N** – NXDN
- **E** – EDACS
- **L** – LTR
- **C** – Conventional

NEW FAVORITES LIST/ FAVORITES LIST OPTIONS

Press **MENU** then scroll to *Manage Favorites* and press **E/YES/Q.SRCH**.

To *Create a New Favorites List*, scroll to *New Favorites List* and press **E/YES/Q.SRCH**. To *Edit a Favorites List*, scroll to the *Favorites List* and press **E/YES/Q.SRCH**.

Scroll to the options below and press **E/YES/Q.SRCH**.

Review/Edit System – See *Programming Systems*.

Set FL Quick Key – This assigns a quick key to the *Favorites List*. The default setting is. **(no quick key)**. If you don't assign a *Favorite Lists* to a quick key, it will always be scanned unless you turn it off in *Select Lists to Monitor*.

Scroll to the quick key (*0-99* or *.* for **no quick key**) and press **E/YES/Q.SRCH** to save.

Pressing the first number of a 2-digit quick key will get you closer, 1 for 10, 2 for 20, etc., then scroll to second digit.

Set FL Number Tag – Numbers a Favorites List so you can access it quickly from scan hold mode.

The default setting is no number tag.

Enter the number tag (*0-99*) and press **E/YES/Q.SRCH** to save. Enter a blank for no number tag.

Set FL Startup Key – This allows you to turn on the scanner with the *Favorites List* enabled for scan. The default settings are all keys *Off*.

Scroll to the startup key (*0-9*) and press **E/YES/Q.SRCH** to enable then **MENU** to save.

Use Location Control – This enables *Location Control* for the *Favorites List*. The default setting is *Off*.

Review Avoids – This allows you to review all *Avoids* for the *Favorites List*. *Temporary Avoids* appear reversed in the display - AVOID.

Scroll to each *Avoided channel*, *Department*, or *System*, and press **E/YES/Q.SRCH** to *Stop Avoiding*.

Stop All Avoiding – This will Stop Avoiding all Channels, Departments, and Systems in the *Favorites List*.

At *Confirm Delete?* Press **E/YES/Q.SRCH** or .**NO/PRI**.

Add Current dB Channels – This allows you to add all channels you are currently scanning to the *Favorites List*.

At *Confirm?* Press **E/YES/Q.SRCH** or .**NO/PRI**.

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Notes:

- Any Avoided Channel will not be added.
- When adding channels from the Full Database, only channels that are inside the set range, and from the selected Service Types are added.
- When adding channels from a *Favorites List* that has *Use Location Control* is set to *Yes*, only channels that are inside the set range, and from the selected service types are added.
- When adding channels from a *Favorites List* that has *Use Location Control* set to *No*, only channels that are from the selected service types are added.

Rename – This allows you to rename the *Favorites List*.

Delete – This will delete the Favorites List.

At *Confirm Delete?* Press **E/YES/Q.SRCH** or .*NO/PRI*.

Information – This will show you the file size and number of Systems in the list.

PROGRAMMING SYSTEMS

CREATING OR EDITING A SYSTEM

1. Press **MENU** then scroll to *Manage Favorites* and press **E/YES/Q.SRCH**. Scroll to the *Favorites List* you want the system to go into, then press **E/YES/Q.SRCH**.

2. Scroll to *Review/Edit System* and press **E/YES/Q.SRCH**.

3. To *Create a New System*, scroll to *New System* and press **E/YES/Q.SRCH**.

Set the type system you are creating by scrolling to P25 Trunk, P25 X2-TDMA, P25 One Frequency, Motorola, MotoTRBO Trunk, DMR One Frequency, EDACS, LTR, or Conventional and press **E/YES/Q.SRCH**. At *Confirm?* press **E/YES/Q.SRCH** or .*NO/PRI*.

To *Edit System Settings*, scroll to the *System* and press **E/YES/Q.SRCH**.

SYSTEM SETTINGS

Edit Name – Enter a name for the system then press **E/YES/Q.SRCH**.

Edit Sys Option – Refer to the following table for system options settings.

SETTING	DESCRIPTION	APPLICABLE SYSTEMS
Set System Quick Key	Sets a quick key to enable/disable the system	**PMDNELC**
Set System Number Tag	Sets a tag to quickly jump to the system.	**PMDNELC**
Set Avoid	Set the avoid status for the system	**PMDNELC**
Set Hold Time	How long to scan the system before moving to the next system. Default of 0 scans entire system once, then moves on.	**PMDNELC**
ID Search	Toggles between ID Search mode (stop on all unavoided channels) and ID Scan (stop only on programmed channels) mode.	**PMNDEL**

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SETTING	DESCRIPTION	APPLICABLE SYSTEMS
Edit Fleet Map	Sets the fleet map for the system.	M
Priority ID Scan	Sets the system to apply trunked channel priority for the system.	PMNDEL
Set Status Bit	Sets whether to ignore the talk group status bit (default is ignore).	M
Set End Code	Set whether to ignore the end code sent when a radio unkeys (default is to not ignore).	M
Emergency Alert	Sets the alert sound and alert indicator when the scanner receives an emergency status from the system.	DMNE
Set TGID Format	Sets the format used to enter/display talk group IDs.	N
Review ID Avoids	Lets you review and remove avoids from talk group IDS	PMNDEL
Clear all ID Avoids	Removes avoid status for all system talk groups.	PMNDEL
Digital Waiting Time	Sets how long the scanner monitors a channel for digital signals before opening squelch. Default is 400 mS.	C

Edit Site PMNDEL – Programs one or more site's frequencies and site options for trunked systems. Select the site or New Site for a new site, then refer to the following table for site options.

OPTION	DESCRIPTION	APPLICABLE SYSTEMS
Edit Name	Set/change the name displayed for the site.	PMNDEL
Set Site Quick Key	Set the quick key for the site.	PMNDEL
Edit Band Plan	Set the band plan to be used for the system	PM
Set Site Type	Set whether the site is Wide or Narrow type.	E
Set Frequencies	Set the frequencies used by the site. For system types that also require an LCN, the LCN is also entered here.	PMNDEL
Set Modulation	Set what modulation method is used for the site frequencies.	MNDEL
Set Attenuator	Set whether attenuation is applied for the site.	PMNDEL
Set Filter	Select an RF filter suitable for individual environment.	PMDNEL
Set Avoid	Set the avoid status for the site.	PMNDEL

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OPTION	DESCRIPTION	APPLICABLE SYSTEMS
Set Location Information	Select whether to use a circle or rectangles to define the site location, then enter the appropriate parameters to define the site location.	**PMNDEL**
Delete Site	Delete the site from the system.	**PMNDEL**
New Site	Create a new site for the system.	**PMNDEL**

Edit Department – *Create/Edit* departments which hold the channels scanned on the system. Select a department or select *New Department* and set a name for the department. Then, see the following table for department options.

SETTING	DESCRIPTION	APPLICABLE SYSTEMS
Edit Name	Edit the name displayed when the department is scanned.	**PMNDELC**
Set Department Quick Key	Set/change the quick key used for the department	**PMNDELC**
Edit Channel	Enter the TGIDs or Frequencies for the department. See Channel Options, below	**PMNDELC**
Set Filter	Select an RF filter suitable for individual environment.	**C**
Set Location Information	Select whether to use a circle or rectangles to define the department location, then enter the appropriate parameters to define the department location.	**PMNDELC**
Set Avoid	Set/change the avoid status for the department	**PMNDELC**
Delete Department	Delete the department and all its channels	**PMNDELC**
New Department	Create a new department	**PMNDELC**

Channel Options

After you enter the *Talk Group ID* (for trunked systems) or frequency (for conventional systems, the following channel options are available.

SETTING	DESCRIPTION	APPLICABLE SYSTEMS
Set Name	Assign a name that is displayed for the channel while scanning	**PMDNELC**
Edit TGID	Edit the talk group ID set for the channel	**PMDNEL**
Set TDMA Slot	Set the slot used by the channel.	**D**
Edit Frequency	Edit the frequency used by the channel.	**C**

SETTING	DESCRIPTION	APPLICABLE SYSTEMS
Set Audio Type	Set whether the channel is analog or digital.	**MC**
Set Channel Number Tag	Assign a channel number tag for quick channel navigation.	**PMDNELC**
Set Modulation	Set the modulation method used for the channel	**C**
Set Attenuation	Set whether the channel is RF attenuated	**C**
Set Service Type	Set the service tag for the channel.	**PMDNELC**
Set Delay Time	Set how long the scanner holds on the channel after a transmission stops while waiting for a reply. Default is 2 seconds.	**PMDNELC**
Set Priority	Set whether the channel is a priority channel.	**PMDNELC**
Set Alert	Set the audio/indicator alert to use when the channel becomes active.	**PMDNELC**
Set Avoid	Set whether the channel is avoided or not.	**PMDNELC**
Volume Offset	Set a volume offset for the channel.	**PMDNELC**
Delete Channel	Delete the channel.	**PMDNELC**
New Channel	Create a new channel.	**PMDNELC**

Edit Unit ID PMDNE – Unit ID must be set to *On* in the *Display Options* menu to view Unit IDs. Select a *Unit ID* or *New Unit ID*, then press **E/YES/Q.SRCH**.

If you selected *New Unit ID*, enter the Unit ID and press **E/YES/Q.SRCH**. Then, set the following options.

Edit Name – Set the name to be displayed for the Unit ID.

Edit Unit ID – Edit the Unit ID Number.

Set Alert – Set an alert that will activate when the Unit ID is received.

- **Set Alert Tone** – Alert 1-9 or Off.
- **Set Level Level** – 1-15 or Auto (the master volume level).
- **Set Alert Light** – Off, Blue, Red, Magenta, Green, Cyan, Yellow, or White.
- **Set Alert Pattern** – On, Slow Blink, or Fast Blink.

Delete Unit ID – At *Confirm Delete?*, press **E/YES/Q.SRCH** or .**NO/PRI**.

Copy System – Copying a system will copy all Sites, Departments, Channels, and settings including quick key assignments into the current *Favorites List*.

Delete System – At *Confirm Delete?*, press **E/YES/Q.SRCH** or .**NO/PRI**.

CUSTOMIZING THE DISPLAY

The SDS200E gives you considerable control over what items are shown on the display as well as what colors are used for each item.

To customize the display, select **MENU** → *Display Options* → *Customize* then select the display you want to customize:

- *Set Simple Conventional*
- *Set Simple Trunk*
- *Set Detail Conventional*
- *Set Detail Trunk*
- *Set Search/CC Mode*
- *Set Weather Mode*
- *Set Tone Out Mode*

Notes:

- During scan you can switch between Simple and Detail display modes by holding on a channel and pressing **F+DISP**.
- During most modes you can switch between color, black on white, and white on black modes by pressing **F** then holding **DISP** for 3 seconds. Black and white modes provide better visibility under direct sunlight.
- Some display modes or display fields only allow you to change the colors.
- Trunking/Conventional modes share the same display field colors, but each scan mode can display different data items.
- Every possible data item cannot fit into all the different display fields.

After selecting the display mode to customize, the scanner displays a sample display in the mode you selected. Rotate the scroll to highlight the area you want to modify, then press the appropriate soft key for the attribute you want to change:

- Item: Change the item displayed in the field.
- T-Color: Change the text color for the field.
- B-Color: Change the background color for the field

When you select one of the above, the display will switch to showing the available options. Select the option to use, then press **E** to return to the sample display.

The customizable fields are shown in the following images. Note that the areas shaded darker in these images can only have text/background color changed. The displayed item cannot be changed.

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SIMPLE DISPLAY MODE

Conventional and Trunked mode share the same color scheme, but different display items are available for each mode.

F	Option_1	Option_2	Option_3	Option_4	SIG	BAT
SP0	Option_5	Option_6	Option_7	Option_8	KEY	DIR

```
System Name (30 char x 2)
```

System Option	AVOID

```
Dept Name (30 char x 2)
```

Dept Option	AVOID

```
Channel Name (30 char x 2)
```

Channel Option	AVOID

Option A_1	Option B_1

ICON1	ICON2	ICON3	ICON4	ICON5	ICON6	ICON7	ICON8	ICON9	ICON10

Soft Key 1	SP1	Soft Key 2	SP2	Soft Key 3

DETAIL DISPLAY MODE

F	Option_1	Option_2	Option_3	Option_4	SIG	BAT
Info area 1			Option_7	Option_8	KEY	DIR
Info area 2			Option C_1			
Info area 3			Option C_2			

```
System Name
```

System Option	AVOID

```
Dept Name  (30)
```

Dept Option	AVOID

```
Channel Name (30)
```

Channel option	AVOID

Option A_1	Option B_1
Option A_2	Option B_2
Option A_3	Option B_3
Option A_4	Option B_4
Option A_5	Option B_5

ICON1	ICON2	ICON3	ICON4	ICON5	ICON6	ICON7	ICON8	ICON9	ICON10

Soft Key 1	SP1	Soft Key 2	SP2	Soft Key 3

SEARCH/TONE-OUT/WEATHER MODE

You can individually set colors for Search/Close Call mode, Weather Mode (For USA/Canada only), and Tone-Out mode (For USA/Canada only), but they share the same general layout. You can only set display option items for Search mode.

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```
F        Option_1        Option_2        Option_3      Option_4   SIG BAT
Info area 1                              Option_7      Option_8   KEY DIR
Info area 2                          Option C_1
Info area 3                          Option C_2

Primary 1 (30 x 1)

Primary 2 (30 x 1)

Primary 3 (30 x 1)
Sub Info                         Mod          AVOID    HOLD
Detail info                         ;   ;   ;

                                    ;   ;   ;

Option A_1                              Option B_1
Option A_2                              Option B_2
Option A_3                              Option B_3
ICON1 ICON2 ICON3 ICON4 ICON5 ICON6 ICON7 ICON8 ICON9 ICON10
   Soft Key 1   SP1   Soft Key 2   SP2   Soft Key 3
```

AVAILABLE ITEMS

The below tables outline what display items are available. Note that not all items are possible for all display fields.

ITEM	SAMPLE	HUGE 22	LARGE 16/14	SHORT 5 CHAR
Favorites List Name		O	O	-
Site Name		O	O	-
Unit ID Name		O	O	-
Frequency	xxxx.xxxxMHz	O	O	-
TGID	TGID:xxxxxxxx	O	O	-
RSSI	RSSI:x.xxV	-	O	-
System type	DMR One Frequency	O	O	-
System/Network ID	Net ID : xxxx	O	O	-
	Sys ID : xxxx			
Site ID	Site ID : xxxx	O	O	-
Unit ID	UID : 12345678	O	O	-
LCN	LCN:4096		O	-
Number Tag	Tag:FF-SS-CC	O	O	-
Volume/Squelch	VOL=15 SQL=15	O	O	-
Volume	V:15	-	-	O
Squelch	S:15	-	-	O
Digital Error count	Err:xx		O	-
CTCSS/DCS/NAC	DCS021		O	
Latitude	-97.0483		O	
Longitude	104.8292		O	
Noise	282		O	

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ITEM	SAMPLE	HUGE 22	LARGE 16/14	SHORT 5 CHAR
RF Sub System (RFSS) ID	210h		O	
RSSI Graph	▓▓░░		O	
Service Type	Law Talk		O	
Attenuator	G-ATT	-	-	O
Site Name	Simulcast		O	
USB1 vbus voltage	4.982		O	
USB2 vbus voltage	5.002		O	
Volume & Squelch	V:9 S:3		O	
WACN	12		O	
P25 Status	P25-2	-	-	O
Date	mm/dd	-	-	O
Time	xx:xx	-	-	O
Modulation	NFM	-	-	O
Broadcast Screen	SCR			O
Close Call	CC (icon)			O
Digital Status	P25			O
GPS	GPS			O
IF eXchange	IFX			O
P-Channel	P			O
Priority Scan	PRI			O
REC	REC			O
Repeater Find	REP			O
TDMA Slot	0		O	O
Volume Offset	V+1			O
WX Priority	WX			O

Icon Area

Item	Sample
Priority Scan	PRI
Close Call	CC (icon)
WX Priority	WX
REC	REC
IF eXchange	IFX
GPS	GPS
Broadcast Screen	SCR
Repeater Find	REF
Volume Offset	V+x
Modulation	NFM
P-Channel	P

USING DISCOVERY MODE

Trunking Discovery mode allows you to monitor a trunked radio system, logging system activity and recording the audio for channel identification.

Conventional Discovery mode lets you monitor a range of frequencies, logging frequencies with activity and recording the audio for frequencies that are not already known to be in use in your area so that you can more easily identify the users. This includes frequencies used conventionally as well as in trunked radio systems.

In both modes, you also have the option to compare hits to the Database and log all hits or just new hits.

If you use the *Auto Store* option, Discovery will create a new Trunking System for IDs found for each Session or will create a new Conventional System for frequencies found for each Session.

You can create and save several sessions with different settings. Every time you start a session you create a Run that can later be reviewed in the scanner or the Sentinel software.

RUNNING A DISCOVERY SESSION

To start a discovery session:

Press **MENU** → *Discovery* then select either *Trunking Discovery* or *Conventional Discovery*.

Select either *New Session* or an existing session. If you select *New Session*, you will be prompted to name the session.

If you selected *Trunking Discovery* and this is a new session, you will be prompted to select the trunked system and site to perform discovery on. In order to run trunking discovery, the trunked system and site must be available for scanning (i.e. in and active *Favorites List* or within the defined location of the *Main Database*). Select the system and the site.

Refer to the following table for Discover options.

MENU ITEM	DESCRIPTION
Start Discovery	Start a discovery session using the currently set parameters.
Edit Session Name	Edit the name of the selected session.
Set Limit Frequencies	(Conventional Discovery Only) Set the upper and lower limits of the frequency range you want to run discovery on.
Set Modulation	(Conventional Discovery Only) Set the demodulation method to use. If set to AUTO (default), the scanner will use the default demodulation method for the frequency.
Set Step	(Conventional Discovery Only) Set the frequency step size for the session. If set to *AUTO* (default), the scanner uses the default frequency step for the frequency.
Set Delay	Sets how long the scanner pauses after a transmission waiting for a reply.
Set Logging	*ALL* for all hits; *NEW* for only items that are not yet discovered in this session.
Set Compare to Database	*On* compares hits to database and ignores the hit if it is already in the database. *Off* records all hits.
Set Record Duration	Sets how much audio the scanner records for each hit. Once the record duration has been met, the frequency or TGID is considered "discovered."

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MENU ITEM	DESCRIPTION
Set Time-Out Timer	Sets how long the scanner will monitor a hit before resuming scan automatically. This prevents open carriers from locking up the discovery session.
System Information	(Trunking Only) Displays the Favorites List, system and site used, as well as the type of trunking system.
Set Auto Store	When on, creates a Favorites List called Conventional Discovery or Trunking Discovery and saves all hits as channels.
Delete Session	Deletes the discovery session, including all hits.

REVIEWING A DISCOVERY SESSION

In Review Discovery mode, you can review the results of discovery mode runs, resume runs, or restart saved discovery sessions.

1.   Press **MENU** → *Discovery* → *Review Discovery*

2.   Select either *Trunk Discovery Results* or *Conventional Discovery Results*.

3.   Scroll to select the results to review.

Refer to the following table for review options:

OPTION	DESCRIPTION
Review Run Results	Select Summary to list be each frequency or talk group id; select Detail to list by each individual hit.
Restart this Run	Deletes existing log files for this session and starts a new session with the same settings.
Resume this Run	Keeps existing log files and resumes the session.
Delete this Run	Deletes the run and all log files for the run.
Run Information	Displays information about the settings used for the discovery session.

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USING ANALYZE FEATURES

The SDS200E includes some analysis features that can help you find out more information about systems you are scanning.

SYSTEM STATUS

This function displays the signal strength, decode quality, and how busy the system is in an easy-to-decipher display.

To uses this function:

MENU → *Analyze* → *System Status*

The scanner prompts for a trunked system to analyze. In order to be analyzed, the system must currently be scannable (in an active *Favorites List* or *Main Database* and within the range set for scanning).

Enter the first few letters of the system name, then press **E** to see a list of all matching systems. Scroll to the desired system, then press **E**. A list of scannable sites for the system is shown. Scroll to the desired site, then press **E**. *System Status* mode starts.

- S=Signal Strength
- Q=Decode Quality
- A=System Activity

LCN FINDER

LCN Finder helps you determine the correct LCN (Logical Channel Number) settings for those systems requiring LCN entry. You first need to create the system. Use any number as the LCN when you create the system, then run the LCN Finder by:

MENU → *Analyze* → *LCN Finder*

The scanner prompts for a trunked system. For LCN Finder to run, the system must currently be scannable (in an active Favorites List or Main Database and within the range set for scanning), and must be a type that requires LCN (EDACS, LTR, MotoTRBO, DMR TIII and NXDN).

Enter the first few letters of the system name, then press **E/YES/Q.SRCH** to see a list of all matching systems. Scroll to the desired system, then press **E**. A list of scannable sites for the system is shown. Scroll to the desired site, then press **E/YES/Q.SRCH**. LCN Finder mode starts.
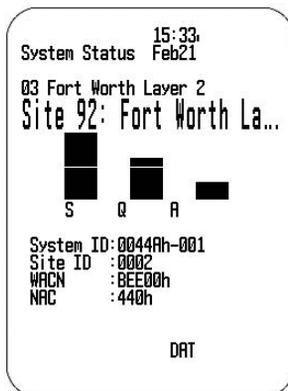
Once all LCNs are found, you can save the LCNs to the system. If you abort before all LCNs are found, you can still save the LCNs that were found up to that point.

Note that LCN finder works best on systems with moderate activity. Too much traffic or too little traffic make LCN finder take longer to complete for most systems.

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APPENDIX

TROUBLESHOOTING

PROBLEM	SOLUTION
Scan Mode, Nothing to Scan	• Make sure you Set Your Location to scan the Database. • Make sure Favorites Lists are enabled in Set Scan Selection. • Make sure Service Types are enabled for the Channels you want to hear. • Make sure you have locations programed if Use Location Control is On. • Make sure longitude and latitude are N and W (for N America). • Make sure Systems/Departments/Channels are not Avoided. • Make sure Favorites List/System/Department/Site quick key is enabled. • (Search with Scan) Make sure Search with Scan is enabled in Select Lists to Monitor and the Search for Menu and for the Custom Search.
Scanning Interrupted Every Few Seconds	• Turn off Priority Scan. • Change Priority Interval. • Turn off Close Call Priority. • Turn off Weather Priority. • Set Channel Delay longer. • Set positive Channel Delay.
All Channels Out of Range	• Increase your range. • Change your location. • Turn Location Control off for the Favorites List.

DEFAULT BAND SETTINGS

FREQUENCY RANGE		MODE	STEP (KHZ)
25.0000	29.9950	FM	5K
30.0000	53.9875	FM	12.5K
54.0000	75.9875	FM	12.5K
76.0000	79.9875	FM	12.5K
80.0000	82.9900	FM	10K
83.0000	83.9875	FM	12.5K
84.0000	87.9875	FM	12.5K
87.3000	87.9500	FMB	50K
88.0000	107.9500	FMB	50K
108.0000	136.9916	AM	8.33K
137.0000	137.9950	FM	5K

FREQUENCY RANGE		MODE	STEP (KHZ)
138.0000	143.9875	FM	12.5K
144.0000	145.9875	FM	12.5K
146.0000	155.9875	FM	12.5K
156.0000	157.9875	FM	12.5K
158.0000	160.5900	FM	10K
160.6000	162.0125	FM	12.5K
162.0250	162.5875	FM	12.5K
162.6000	173.9900	FM	10K
174.0000	215.9500	WFM	50K
216.0000	224.9950	FM	5K
225.0000	399.9750	AM	25K
400.0000	405.9875	FM	12.5K
406.0000	439.99375	FM	6.25K
440.0000	440.9950	FM	5K
450.0000	465.9950	FM	5K
466.0000	469.9900	FM	10K
470.0000	512.0000	FM	6.25K
806.0000	893.9875	FM	12.5K
894.0000	960.0000	FM	12.5K
1240.0000	1300.0000	FM	12.5K

- When you select AUTO for a channel or modes modulation or step, the above values are used unless you've edited the Band Defaults.
- Steps can be selected from 5/6.25/7.5/8.33/10/12.5/15/20/25/50/100/AUTO (kHz).
- Although TV bands are listed, the scanner cannot decode digital TV audio.

SERVICE TYPES

SERVICE TYPE	DESCRIPTION
Aircraft	For civilian aircraft and air traffic control operations most typically in the 118-136 MHz and 225-380 MHz bands in AM mode.
Business	Most business related entities not covered by other tags.
Corrections	Jail/prison operations, corrections activities, federal prisons.
Emergency Ops	Emergency Operation Centers and similar emergency management or disaster related operations.
EMS Dispatch	Ambulance dispatch, including rescue squads.
EMS-Tac	Ambulance on-scene communications, tactical operations and secondary channels.
EMS-Talk	Ambulance talk-around, car-to-car and supervisor operations.
Federal	All federal government operations (except corrections, traditional law enforcement patrol and fire/EMS operations).
Fire Dispatch	Fire dispatch, including combined fire/ambulance dispatch.
Fire-Tac	Fireground, tactical and on-scene communications, including combined fire/ambulance operations.

SERVICE TYPE	DESCRIPTION
Fire-Talk	Fire talk-around and car-to-car operations, chiefs, supervisors, etc., including combined fire/ambulance operations.
Ham	Any amateur radio assignment.
Hospital	Ambulance-to-Hospital communications and patient reports.
Interop	Interoperability communications, cross-agency communications, mutual aid, etc.
Law Dispatch	Law enforcement dispatch.
Law-Tac	Law enforcement tactical, SWAT, on-scene, surveillance and specific sub-agency communications.
Law Talk	Law enforcement talk-around, car-to-car and supervisor operations.
Media	Newspapers, television and broadcast radio operations.
Military	Military operations, e.g., range control, air-to-air combat, etc.
Multi-Dispatch	Combined law enforcement and fire/ambulance dispatch.
Multi-Tac	Combined law enforcement and fire/ambulance tactical and on-scene communications.
Multi-Talk	Combined law enforcement and fire/ambulance tactical talk-around and car-to-car operations.
Public Works	Public agency non-public safety communications. This includes any non-public safety government services, such as trash, streets, roads, sewer, zoos, administration, maintenance, animal control, community initiatives, code compliance, etc.
Race Officials	Available for use to identify officials' frequencies for racing events.
Race Teams	Available for use to identify team frequencies for racing events.
Railroad	All common carrier railroad communications.
Schools	School-related communications (schools, school buses, football games, etc.).
Security	Non-law enforcement security operations, including private security companies, noncommissioned government agency security, school security, etc.
Transportation	Public and private bus, taxi, and public passenger rail communications.
Utilities	Private electric, water, natural gas, phone, cable TV, etc. operations.
Custom 1-8	User-defined service types.

REMOVING THE MICROSD CARD

Turn your scanner off. Carefully remove the microSD card by using a thumbnail or pencil eraser to push the card in so it will spring out. Handle with care if you are going to use it in a card reader. Gently install the microSD card the same way it was removed and to push the card in so it will spring back into place.

REFORMATTING THE MICROSD CARD

MicroSD cards should only be formatted using the special SD Card Formatter (https://www.sdcard.org/downloads/formatter_4/). Then, you need to "Clear User Data" using Sentinel to restore all files and directories to the card.

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After formatting, the card won't be automatically detected (since it is wiped clean), so you may need to uncheck "Hide empty drives" in Windows Tools>Folder Options>View before doing the "Clear User Data" step.

TYPE II SPECIAL STATUS BITS

Type II Motorola Smartnet systems use these status bits for special transmissions such as emergency, patches, DES/DVP scrambled transmissions, and multiselects. Motorola trunking radios directly interpret them for their special functions, thus no difference is noticed by the person with the radio. The scanner however interprets these special talk group status bits as different talk groups entirely. Below is the conversion chart for these special status bits.

TT ID + # USAGE	TT ID + # USAGE
ID+0 Normal Talk group	ID+8 DES/DVP Encryption talk group
ID+1 All Talk group	ID+9 DES All Talk group
ID+2 Emergency	ID+10 DES Emergency
ID+3 Talk group patch to another	ID+11 DES Talk group patch
ID+4 Emergency Patch	ID+12 DES Emergency Patch
ID+5 Emergency multi-group	ID+13 DES Emergency multi-group
ID+6 unassigned	ID+14 unassigned
ID+7 Multi-select (initiated by dispatcher)	ID+15 Multi-select DES TG

Therefore, if a user was transmitting a multi-select call on talk group 1808, the scanner would actually receive those transmissions on 1815.

Some common uses of these status bits are as follows:

- When a user hits their emergency button, all conversations on the talk group revert to the emergency status talk group (ID+2) until the dispatch clears the emergency status. Therefore, if someone hit their emergency button and their radio was on talk group 16, all communications would switch to talk group 18.
- Many Fire and EMS departments dispatch tone-outs and alarms as Multi-select communications (ID+7). Therefore, if your fire department dispatch talk group is 1616, and they do dispatch tone-outs and alarms as Multi-selects, then those communications will be on talk group 1623.

CTCSS FREQUENCIES

The scanner can detect the following 50 CTCSS frequencies.

67.0Hz	94.8Hz	131.8Hz	171.3Hz	203.5Hz
69.3Hz	97.4Hz	136.5Hz	173.8Hz	206.5Hz
71.9Hz	100.0Hz	141.3Hz	177.3Hz	210.7Hz
74.4Hz	103.5Hz	146.2Hz	179.9Hz	218.1Hz
77.0Hz	107.2Hz	151.4Hz	183.5Hz	225.7Hz
79.7Hz	110.9Hz	156.7Hz	186.2Hz	229.1Hz
82.5Hz	114.8Hz	159.8Hz	189.9Hz	233.6Hz
85.4Hz	118.8Hz	162.2Hz	192.8Hz	241.8Hz

88.5Hz	123.0Hz	165.5Hz	196.6Hz	250.3Hz
91.5Hz	127.3Hz	167.9Hz	199.5Hz	254.1Hz

DCS CODES

The scanner can detect the following 104 hexadecimal DCS codes.

006	031	054	116	145	205	245	266	332	411	452	506	612	703
007	032	065	122	152	212	246	271	343	412	454	516	624	712
015	036	071	125	155	214	251	274	346	413	455	523	627	723
017	043	072	131	156	223	252	306	351	423	462	526	631	731
021	047	073	132	162	225	255	311	356	431	464	532	632	732
023	050	074	134	165	226	261	315	364	432	465	546	654	734
025	051	114	141	172	243	263	325	365	445	466	565	662	743
026	053	115	143	174	244	265	331	371	446	503	606	664	754

REVERSE LIST

RANGE (MHZ)	OFFSET (MHZ)	RANGE (MHZ)	OFFSET (MHZ)
29.5200 - 29.5800	+ 0.1	450.0000 - 454.9875	+ 5
29.6200 - 29.6800	- 0.1	455.0000 - 459.9875	- 5
52.0100 - 52.9900	+ 1	460.0000 - 464.9875	+ 5
53.0100 - 53.9900	- 1	465.0000 - 469.9875	- 5
143.7500	+ 4.375	470.0000 - 472.9875	+ 3
143.9000	+ 4.25	473.0000 - 475.9875	- 3
144.5100 - 144.8900	+ 0.6	476.0000 - 478.9875	+ 3
145.1100 - 145.4900	- 0.6	479.0000 - 481.9875	- 3
146.0100 - 146.3850	+ 0.6	482.0000 - 484.9875	+ 3
146.4150 - 146.5050	+ 1	485.0000 - 487.9875	- 3
146.5950	+ 1	488.0000 - 490.9875	+ 3
146.6100 - 146.9850	- 0.6	491.0000 - 493.9875	- 3
147.0000 - 147.3900	+ 0.6	494.0000 - 496.9875	+ 3
147.4150 - 147.5050	- 1	497.0000 - 499.9875	- 3
147.5950	- 1	500.0000 - 502.9875	+ 3
147.6000 - 147.9900	- 0.6	503.0000 - 505.9875	- 3
148.1250	- 4.375	506.0000 - 508.9875	+ 3
148.1500	- 4.25	509.0000 - 511.9875	- 3
222.1200 - 223.3800	+ 1.6	758.0000 - 775.9937	+30
223.7200 - 224.9800	- 1.6	788.0000 - 805.9937	-30
420.0000 - 424.9875	+ 5	806.0000 - 823.9875	+ 45
425.0000 - 429.9875	- 5	851.0000 - 868.9875	- 45
440.0000 - 444.9875	+ 5	896.0000 - 901.0000	+ 39
445.0000 - 449.9875	- 5	935.0000 - 940.0000	- 39

REPEATER FREQUENCY LIST

Base Frequency (MHz)	Offset (MHz)	Base Frequency (MHz)	Offset (MHz)
455.0151 - 459.9950	- 5	497.0001 - 500.0000	- 3
465.0101 - 469.9950	- 5	503.0001 - 506.0000	- 3
473.0001 - 476.0000	- 3	509.0001 - 512.0000	- 3
479.0001 - 482.0000	- 3	758.0000 - 775.9937	+30
485.0001 - 488.0000	- 3	806.0051 - 823.9875	+45
491.0001 - 494.0000	- 3	894.0125 - 921.0000	+39

TECHNICAL SPECIFICATIONS

GENERAL

1.	Band Coverage	:	31 Bands
2.	Memory System	:	No programming required Preset Program Factory programmed to microSD card for all known radio systems in USA and Canada
3.	Step Size	:	5/ 6.25/ 7.5/ 8.33/ 10/ 12.5/ 15/ 20/ 25/ 50/ 100/ AUTO kHz (User-programmable)
4.	GPS Function	:	The formats of the GPS data, which the scanner can receive are only GGA (Global Positioning System Fix Data) and RMC (Recommended Minimum Specific GNSS Data) based on "NMEA-0183 ver.3.01". *Compatible only with Uniden SDS200E option GPS unit.
5.	Two-Tone-Sequential	:	250.0 ~ 3500.0Hz , 0.1Hz Step Programmable
6.	WX Alert	:	1050Hz Tone System NWR-SAME System (WARNING / WATCH / STATEMENT)
7.	Trunking System	:	Motorola System (Type I , II , II i, X2-TDMA) EDACS System (FM/NFM/SCAT) LTR System APCO System (ASTRO IMBE , ASTRO 25,P25 AMBE(HDQPSK)) DMR System (MotoTRBO, Tier III) NXDN System (Nexedge, IDAS)
8.	Remote Function	:	Direct PC Control
9.	Display :		3.5 inch LCD 320W*(RGB)*480H Dots
10.	LED Indications	:	ALERT (Multi Color)
11.	Backlight	:	LCD : White Color Keys : White Color

12.	External Jacks	:	ANT. Jack : BNC Type
			Phone Jack : 3.5φ(Stereo Type)
			Ext. SP Jack : 3.5φ(Monaural Type)
			DC Power Jack : 5.5φ(Center Positive)
			GPS Interface Jack : Modular Jack
			Ext. DC Power and ORG Wire Jack : 3-pin (Center Orange Wire)
			USB Jack : 5pin micro USB (Front)
			                          : 5pin Mini USB (Rear)
			                          : 4pin USB A Type(Front)
			Ethernet : RJ45 JACK
			Memory Card Slot : microSD Type

13.	Controls/Switches		Rotary Encoder with Push Switch for [FUNC] Volume Control with Power on/off Switch & Push Switch for Backlight Control Squelch Control with Push Switch for MENU Mode

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14. Keys (Program   Total 18 Keys
    Operation)   [1]   : Numeric "1"
                                              Set Quick Select "SRCH 1" (Function Mode)

14. Keys (Program & Operation)	Total 18 Keys
	[1] : Numeric "1"
	Set Quick Select "SRCH 1" (Function Mode)
	[2] : Numeric "2"
	Set Quick Select "SRCH 2" (Function Mode)
	[3] : Numeric "3"
	Set Quick Select "SRCH 3" (Function Mode)
	[4] : Numeric "4"
	Set Attenuator Function on/off Mode (Function Mode)
	Cursor left
	[5] : Numeric "5"
	[6] : Numeric "6"
	SET WX Mode (Function Mode)
	Cursor right
	[7] : Numeric "7"
	SET IFX Mode (Function Mode)
	[8] : Numeric "8"
	Set REV Mode (Function Mode)
	[9] : Numeric "9"
	Set DISP Mode (Function Mode)
	[0] : Numeric "0"
	Set Volume offset Level Mode (Function Mode)
	[./No] : Decimal Key
	Set Pri Scan Mode (Function Mode)
	NO (Menu Mode)
	[E/Yes] : Enter
	SET Q.SRCH Mode (Menu Mode)
	YES (Menu Mode)
	[AVOID] : AVOID
	SET Close Call Mode (Function Mode)
	[REPLAY] : REPLAY / RECORD (Function Mode)
	[ZIP] : ZIP / SERVICE (Function Mode)
	[SOFT 1 KEY] : SYSTEM or other
	[SOFT 2 KEY] : DEPT or other
	[SOFT 3 KEY] : CHAN or other
15. Internal Speaker	: 8 ohm, 5 W Max.(77φ)
16. Power Requirements	: DC 11.0V ~ 16.6V (Ext. DC Power Jack or DC Power Jack)
17. Orange Wire Operation	: DC 3V ~ 16.6V , Less than 10mA
18. Batt.Low Indication	: Beep Tone with 15 seconds interval & display on LCD
19. Operating Temp.	: -10℃ ~ +60℃
20. Storage Temp.	: -20℃ ~ +70℃
21. Clock Backup Time	: 1 week MIN (+25℃ / After over 50 hours of charge.)
22. Size (mm)	: 180(W) x 130(D)x 75(H)
23. Weight	: 1400g

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24. Accessories : AC Adaptor (13.8V , 700mA DC Out)
 Telescopic Antenna (BNC)
 Cigarette Lighter Cord
 DC Cord with Orange Wire
 Mounting Bracket with Screw and Foot
 MICRO SD CARD (SDHC)
 USB CABLE (USBA-USBmicro)

25. Heterodyne System

1st Heterodyne
25.000 ~ 319.995 MHz : Upper Heterodyne 1st IF 265.55 MHz or 380.75 MHz
320.000 ~ 511.995 MHz : Upper Heterodyne 1st IF 265.55 MHz or 380.75 MHz
806.000 ~ 1300.000 MHz : Lower Heterodyne 1st IF 265.55 MHz or 380.75 MHz

2nd Heterodyne
25.000 ~ 319.995 MHz : Lower Heterodyne 2nd IF 2.4 MHz or 2.22MHz
320.000 ~ 805.995 MHz : Upper Heterodyne 2nd IF 2.4 MHz or 2.22MHz
806.000 ~ 1300.000 MHz : Lower Heterodyne 2nd IF 2.4 MHz or 2.22MHz

26. Filter : 380.75MHz : SAW Filter 1st IF
 265.55MHz : SAW Filter 1st IF

MEASUREMENT CONDITIONS

Power Source : 13.8V DC

Antenna Impedance : 50 ohm

Test Temperature : +25 ±5℃

Modulation Frequency : 1kHz

Deviation : FM ±3kHz Dev. (CTCSS/DCS : 0.5 kHz Dev.)
 NFM ±1.5kHz Dev. (CTCSS/DCS : 0.35kHz Dev.)
 AM 60% Modulation
 FMB±45.0kHz Dev.
 WFM ±22.5kHz Dev.

Mean Signal Input Level : 1mV

Audio Output Load : 32 Ω Resistive Load at Phone Jack
 8 Ω Resistive Load at Internal Speaker (B.T.L)

Standard Ref. Audio Output : VOL 20

1. SENSITIVITY (12DB SINAD)

ITEM			UNIT	NOMINAL	LIMIT
VHF Low 1 Band	(AM)	25.005 MHz	µV	0.7	1.6 Max
	(NFM)	40.840 MHz	µV	0.35	1.2 Max
	(NFM)	53.980 MHz	µV	0.3	1.2 Max
VHF Low 2 Band	(WFM)	54.050 MHz	µV	0.5	3.0 Max
	(FM)	72.515 MHz	µV	0.25	0.8 Max
	(FMB)	107.500 MHz	µV	0.8	2.0 Max
Aircraft Band	(AM)	118.800 MHz	µV	0.7	1.6 Max
	(AM)	127.175 MHz	µV	0.7	1.6 Max
	(AM)	135.500 MHz	µV	0.6	1.6 Max
VHF High 1 Band	(NFM)	138.150 MHz	µV	0.6	1.2 Max
	(NFM)	161.985 MHz	µV	0.35	1.2 Max
	(NFM)	173.225 MHz	µV	0.35	1.2 Max
	(WFM)	197.450 MHz	µV	0.6	3.0 Max
	(NFM)	216.020 MHz	µV	0.35	1.2 Max
VHF High 2 Band	(AM)	225.050 MHz	µV	0.7	1.6 Max
	(AM)	272.950 MHz	µV	0.7	1.6 Max
	(AM)	315.050 MHz	µV	0.7	1.6 Max
UHF Band	(AM)	325.050 MHz	µV	0.5	1.6 Max
	(NFM)	406.875 MHz	µV	0.35	1.2 Max
	(NFM)	511.9125MHz	µV	0.35	1.2 Max
Public Svc	(NFM)	806.100 MHz	µV	0.45	1.6 Max
	(NFM)	857.150 MHz	µV	0.4	1.6 Max
	(NFM)	954.9125MHz	µV	0.5	1.6 Max
1200MHz Band	(NFM)	1299.925 MHz	µV	1.0	2.0 Max

2. THRESHOLD SQUELCH (MANUAL)

ITEM			UNIT	NOMINAL	LIMIT
VHF Low 1 Band	(AM)	25.005 MHz	µV	0.3	1.6 Max
	(NFM)	40.840 MHz	µV	0.2	1.2 Max
VHF Low 2 Band	(WFM)	54.050 MHz	µV	0.8	2.0 Max
	(FM)	72.515 MHz	µV	0.2	0.8 Max
	(FMB)	107.500 MHz	µV	0.8	2.0 Max
Aircraft Band	(AM)	127.175 MHz	µV	0.3	1.6 Max

VHF High 1 Band	(NFM)	161.985 MHz	µV	0.2	1.2 Max
	(NFM)	173.225 MHz	µV	0.2	1.2 Max
	(WFM)	197.450 MHz	µV	0.8	2.0 Max
VHF High 2 Band	(AM)	272.950 MHz	µV	0.3	1.6 Max
UHF Band	(AM)	325.050 MHz	µV	0.3	1.6 Max
	(NFM)	406.875 MHz	µV	0.2	1.6 Max
Public Svc	(NFM)	857.150 MHz	µV	0.3	1.6 Max
1200MHz Band	(NFM)	1299.925 MHz	µV	0.3	2.0 Max

3. Tight Squelch (Manual) (S+N)/N

ITEM			UNIT	NOMINAL	LIMIT
VHF Low 1 Band	(AM)	25.005 MHz	dB	8	5 Min
	(NFM)	40.840 MHz	dB	8	4 Min
VHF Low 2 Band	(WFM)	54.050 MHz	dB	42	8 Min
	(FM)	72.515 MHz	dB	15	8 Min
	(FMB)	107.500 MHz	dB	48	15 Min
Aircraft Band	(AM)	127.175 MHz	dB	8	5 Min
VHF High 1 Band	(NFM)	161.985 MHz	dB	8	4 min
	(NFM)	173.225 MHz	dB	8	4 Min
	(WFM)	197.450 MHz	dB	42	15 Min
VHF High 2 Band	(AM)	272.950 MHz	dB	8	5 Min
UHF Band	(AM)	325.050 MHz	dB	8	5 Min
	(NFM)	406.875 MHz	dB	8	4 Min
Public Svc	(NFM)	857.150 MHz	dB	8	4 Min
1200MHz Band	(NFM)	1299.925 MHz	dB	8	4 Min

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4. Hum & Noise

ITEM			UNIT	NOMINAL	LIMIT
VHF Low 1 Band	(AM)	25.005 MHz	dB	49	40 Min
	(NFM)	40.840 MHz	dB	43	33 Min
VHF Low 2 Band	(WFM)	54.050 MHz	dB	53	45 Min
	(FM)	72.515 MHz	dB	47	40 Min
	(FMB)	107.500 MHz	dB	60	50 Min
Aircraft Band	(AM)	127.175 MHz	dB	50	40 Min
VHF High 1 Band	(NFM)	161.985 MHz	dB	41	33 min
	(NFM)	173.225 MHz	dB	42	33 Min
	(WFM)	197.450 MHz	dB	52	45 Min
VHF High 2 Band	(AM)	272.950 MHz	dB	50	40 Min
UHF Band	(AM)	325.050 MHz	dB	50	40 Min
	(NFM)	406.875 MHz	dB	41	33 Min
Public Svc	(NFM)	857.150 MHz	dB	42	33 Min
1200MHz Band	(NFM)	1299.925 MHz	dB	41	30 Min

5. Audio Output Power

ITEM		UNIT	NOMINAL	LIMIT
(FM)	72.515 MHz Max Output Power			
	at 8Ω/Ext. SP Jack	W	3.0	2.0 Min
	at 32Ω/Stereo Phone Jack	mW	12	3 ~ 60
(FMB)	107.500 MHz Max Output Power			
	at 8Ω/Ext. SP Jack	W	3.0	2.0 Min
	at 32Ω/Stereo Phone Jack	mW	12	3 ~ 60
(AM)	127.175 MHz			
	at 8Ω/Ext. SP Jack	W	3.0	2.0 Min
	at 32Ω/Stereo Phone Jack	mW	12	3 ~ 60
(NFM)	161.985 MHz			
	at 8Ω/Ext. SP Jack	W	3.0	2.0 Min
	at 32Ω/Stereo Phone Jack	mW	12	3 ~ 60
(WFM)	197.450 MHz			
	at 8Ω/Ext. SP Jack	W	3.0	2.0 Min
	at 32Ω/Stereo Phone Jack	mW	12	3 ~ 60

6. Distortion

ITEM		UNIT	NOMINAL	LIMIT
(FM)	72.515 MHz	%	1.8	6 Max
(FMB)	107.500 MHz	%	0.7	6 Max
(AM)	127.175 MHz	%	0.7	10 Max
(NFM)	161.985 MHz	%	1.2	10 Max
(WFM)	197.450 MHz	%	0.3	6 Max

7. Power Consumption @161.985 MHz , Manual Mode, 8Ω/Int.Speaker

ITEM	UNIT	NOMINAL	LIMIT
at Squelched(Light : White High)	mA DC	353	450 Max
at full output(Light : Off)	mA DC	680	750 Max
at full output(Light : White High)	mA DC	680	800 Max

8. Residual Noise @ Vol:Max. SQ:Close

ITEM		UNIT	NOMINAL	LIMIT
(FM)	72.515 MHz	mV	1.3	2 Max

9. Scan Rate at Test Frequency

ITEM	UNIT	NOMINAL	LIMIT
Scan Rate at Test Frequency	CH/Sec	70	60 Min

10.Search Rate at Test Frequency

ITEM	UNIT	NOMINAL	LIMIT
5kHz Step	Step/Sec	195	150 Min
12.5kHz Step	Step/Sec	65	50 Min

11. Scan Delay (@Select 2 sec)

ITEM	UNIT	NOMINAL	LIMIT
Scan Delay (@Select 2 sec)	Sec	2	1 ~ 3

12. Acceptable Radio Frequency Displacement (EIA RS-204-D)

ITEM		UNIT	NOMINAL	LIMIT
(FM)	72.515 MHz	kHz	±2.5	±1.5 Min

13. IF Rejection

ITEM		UNIT	NOMINAL	LIMIT
(NFM)	161.985 MHz (IF=380.75 MHz)	dB	84	40 Min

14. Attenuator

ITEM		UNIT	NOMINAL	LIMIT
(NFM)	40.840 MHz	dB	33	10 Min
(FM)	72.515 MHz	dB	33	10 Min
(AM)	127.175 MHz	dB	33	10 Min
(NFM)	161.985 MHz	dB	31	10 Min
(AM)	272.950 MHz	dB	27	10 Min
(NFM)	406.875 MHz	dB	24	10 Min
(NFM)	857.150 MHz	dB	22	10 Min

15. Trunking Data Deviation Sensitivity

ITEM	UNIT	NOMINAL	LIMIT
Motorola System @851.0125MHz(NFM)			
Control CH Data	kHz	±0.10	±1.5 Min
Voice CH Data	kHz	±0.02	±1.0 Max
EDACS System (Wide) @851.0125MHz(FM)			
Control CH Data	kHz	±0.2	2.0 Min
Voice CH Data	kHz	±0.2	3 ~ 60
EDACS System (Narrow) @894.0125MHz(NFM)			
Control CH Data	kHz	±0.10	2.0 Min
Voice CH Data	kHz	±0.10	3 ~ 60
LTR System @851.0125MHz(NFM)			
Data	kHz	±0.04	±1.0 Max

16. APCO25 Digital Sensitivity

ITEM	UNIT	NOMINAL	LIMIT
RF Input Level of Vocoder Muting, (FM:±1.8kHz Dev.) C4FM / CQPSK / LSM			
161.985 MHz	µV	0.2	1.2 Max
406.875 MHz	µV	0.2	1.2 Max
857.150 MHzz	µV	0.2	1.2 Max

17. WX Alert Tone Sensitivity (@ 1050Hz)

ITEM		UNIT	NOMINAL	LIMIT
(FM)	162.400 MHz	±kHz	2.5	2.0 Min

18. CTCSS Sensitivity @ SQ Open , 2 Tone

ITEM		UNIT	NOMINAL	LIMIT
(NFM)	162.400 MHz 167.9 Hz	µV	0.2	1.2 Max

19. DCS Sensitivity @ SQ Open , Tone & Data

ITEM		UNIT	NOMINAL	LIMIT
(NFM)	162.400 MHz Code 172	µV	0.25	1.2 Max

20. SAME DATA Sensitivity

ITEM		UNIT	NOMINAL	LIMIT
(FM)	162.400 MHz	±kHz	0.1	1.2 Min

21. TWO TONE Sensitivity

ITEM		UNIT	NOMINAL	LIMIT
DATA ±1.5kHz Dev. 1st 300Hz 500ms, 2nd 3kHz 500ms, 0ms Interval				
(NFM)	162.400 MHz	µV	0.2	1.2 Max

22. Close Call Sensitivity (No Modulation)

ITEM		UNIT	NOMINAL	LIMIT
(NFM)	40.840 MHz	dBm	-53	-30 Max
(FM)	72.515 MHz	dBm	-54	-30 Max
(AM)	127.175 MHz	dBm	-54	-30 Max
(NFM)	161.985 MHz	dBm	-54	-30 Max
(AM)	272.950 MHz	dBm	-54	-30 Max
(NFM)	406.875 MHz	dBm	-52	-30 Max
(NFM)	857.150 MHz	dBm	-52	-30 Max
(NFM)	1299.925 MHz	dBm	-57	-30 Max

23. S-Meter Sensitivity

ITEM		UNIT	NOMINAL	LIMIT
RF Input : 1mV (No Modulation)				
(NFM)	40.840 MHz	Digit	5	4 Min
(NFM)	161.985 MHz	Digit	5	4 Min
(AM)	272.950 MHz	Digit	5	4 Min
(NFM)	406.875 MHz	Digit	5	4 Min
(NFM)	857.150 MHz	Digit	5	4 Min
(NFM)	1299.925 MHz	Digit	5	4 Min
RF Input : OFF				
(NFM)	40.840 MHz	Digit	0	1 Max
(NFM)	161.985 MHz	Digit	0	1 Max
(AM)	272.950 MHz	Digit	0	1 Max
(NFM)	406.875 MHz	Digit	0	1 Max
(NFM)	857.150 MHz	Digit	0	1 Max
(NFM)	1299.925 MHz	Digit	0	1 Max

SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, Uniden Holdings Corporation declares that the radio equipment type Uniden
True I/Q Base/Mobile Scanner SDS200E is in compliance with the Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:

www.avera.eu//downloads

Manufactured by:

Uniden Japan Corporation
2-12-7 Hatchobori, Chuo-ku,
Tokyo, 104-8512
JAPAN
ues@uniden.co.jp
www.uniden.co.jp

Imported into the EU by:

Avera-Distributing
Hazeldonk 6259
4836 LG BREDA
THE NETHERLANDS
info@avera.eu
www.avera.eu

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