



# RADAN<sup>®</sup> for StructureScan Mini Manual

MN70-616 Rev H

Geophysical Survey Systems, Inc.

40 Simon Street • Nashua, NH 03060-3075 USA • [www.geophysical.com](http://www.geophysical.com)



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You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the Agreement between you and GSSI which supersedes any proposal or prior Agreement, oral or written, and any other communications between us relating to the subject matter of this Agreement.

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# Chapter 1: Getting Started

Thank you for purchasing RADAN for StructureScan Mini™. The packing list included with your shipment lists all of the items in your order. The RADAN for StructureScan Mini program and example files are stored on a single USB flash drive. While the RADAN for StructureScan Mini program is pre-loaded on a standard USB drive, GSSI recommends that you not delete the USB drive after installing, in the event that you need to reinstall in the future.

## System Requirements

- A Core i3 or better processor (2.0 GHz or greater recommended).
- GSSI will only support RADAN StructureScan Mini running on Windows Vista SP2, Windows 7, 8 or Windows 10.

**Note:** While some laptops or desktops will say Vista ready, a Windows Vista Business Edition requires a minimum 1 GHz 32- or 64-bit processor; 1 GB of RAM; 128 MB of graphics memory, and 32 bits per pixel; 40 GB hard drive with 15 GB free space; DVD-ROM drive; audio output capability, and the ability to access the Internet.

- 2 GB of RAM minimum (3 GB or greater recommended).
- 160 GB hard drive with a minimum of 20 GB available space.
- 128 MB graphics chipset with OpenGL drivers (Note: We only support NVidia and Intel graphics chipsets.)

## GSSI Activation Policies

Your RADAN for StructureScan Mini license includes one license for installation on one computer.



## General Description

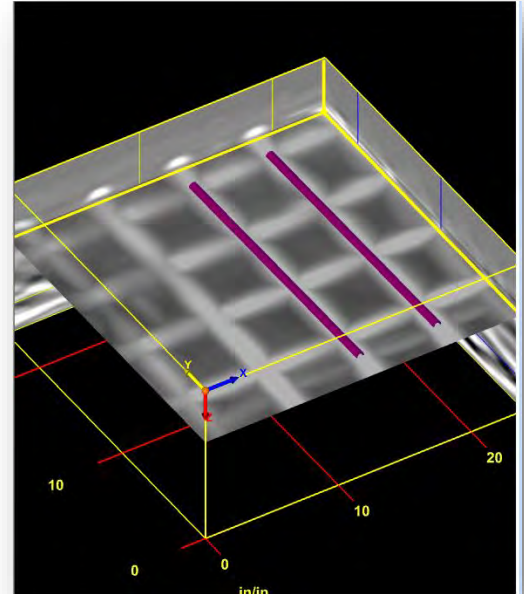
RADAN for StructureScan Mini software is designed to process, view, and document data collected with the StructureScan Mini.

RADAN for StructureScan Mini module can perform the following functions:

- Process data using Focus (Migration), Background Removal, and Gain Adjustment.
- Display 3D images and provide X, Y, and Z coordinates.
- Change colors to optimize images for documentation purposes.
- Export information to MS Excel for reports.
- Export a 3D image as a JPG file.
- Export target information to a CSV formatted file.

Included with RADAN for StructureScan Mini is RADAN Reader, which allows you to:

- View already processed 2D data as profiles and 3D data as depth slices.
- Modify the color table, color transform, and display gain.
- Show targets or picks added in one of the other displays.
- Save displayed data as .jpg images.



## How to Use This Manual

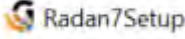
This manual is designed for both experienced and novice users of RADAN for StructureScan Mini.

We recommend that all users read the entire manual.



## Installing RADAN for StructureScan Mini

GSSI recommends that you are connected to the internet when installing the software so that activation can take place and the program can check for any updates. If you are not, you will need to contact GSSI for other installation instructions.

- 1** GSSI delivers the software via download link. Please save the delivery email as it contains your RADAN serial number and product key. Extract the software to your computer desktop.
- 2** Open the RADAN folder and double click on the RADAN setup launcher: 
- 3** Follow the onscreen instructions to install the software, accept the license, and activate your copy of RADAN.



**Important Note:** Depending upon the age of your computer and operating system (Windows Vista, Windows 7, Windows 8, or Windows 10), you may get other screens asking you to install other software. You should accept these, or if you have questions, contact your IT person or GSSI.

## Launching, Activating and Validating the RADAN for StructureScan Mini Software

### Starting the Software for the First Time

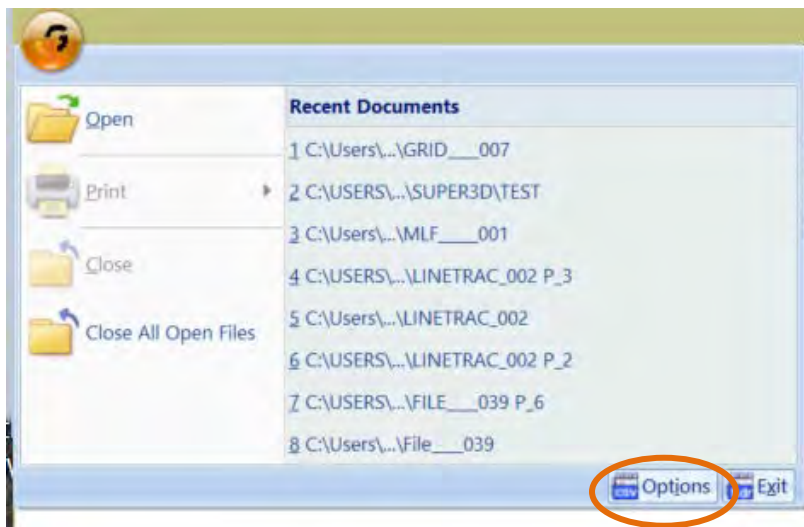
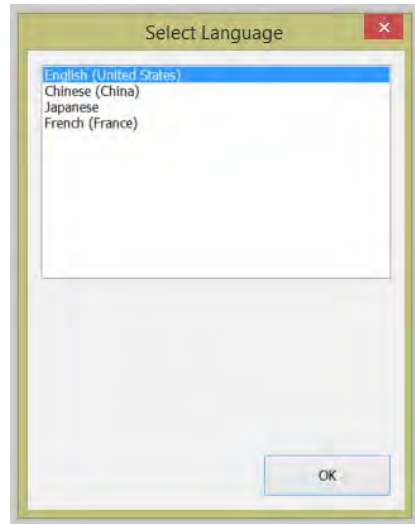
When launching the software for the first time, it will ask which language to use.

**1** Highlight the language and click OK.

The language may be changed at any time by:

**2** Clicking the GSSI Button.

**3** Clicking on Options.



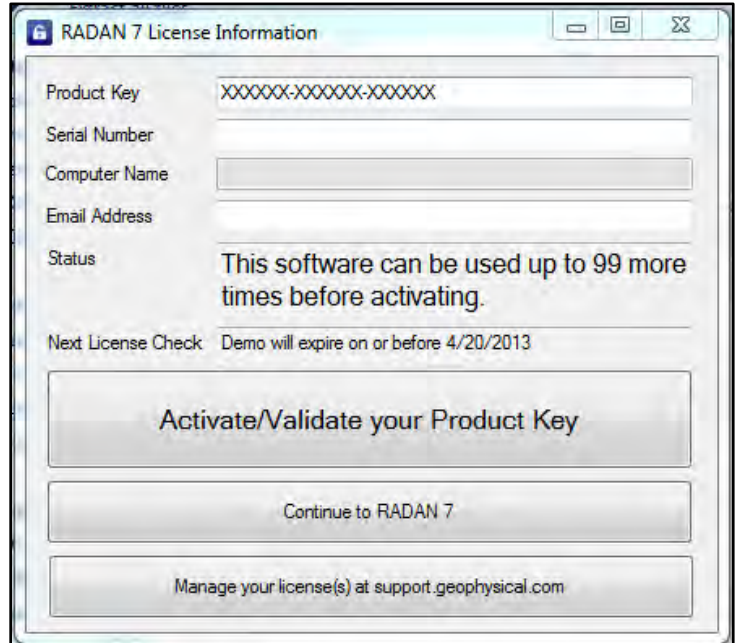
## Activating the Software

After installing the software, RADAN for StructureScan Mini will automatically start.

The first time the software is run, the user will be asked to activate it. The computer **MUST** be connected to the internet to activate the software.

- 4** Your delivery email will contain the RADAN serial number and product key.
- 5** The Computer Name is pre-filled by RADAN (this is the name of the user's computer from their computer system).
- 6** Enter a valid email address.
- 7** Click Activate/Validate your Product Key.

**Note:** If the software is not activated at this time, the adjacent screen will appear at the launching of the software until it is activated. After activating the software, an internet connection is not needed to run the software.

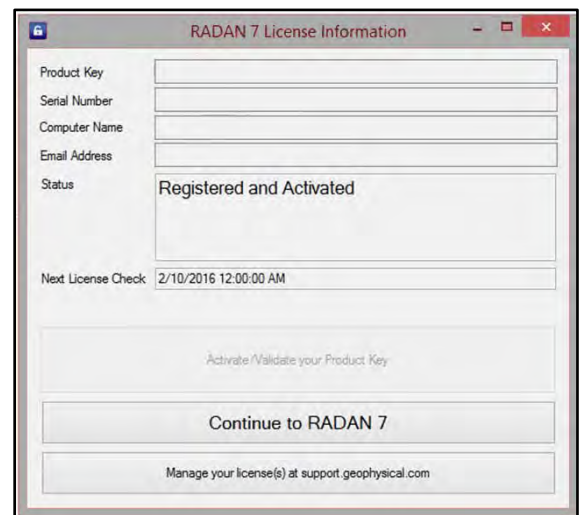
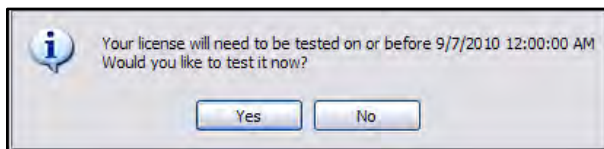


## Software Demo

If the software is not activated after installation it will run as a demo for 30 days or 32 activations (whichever comes first). If the software is not activated before the demo expires, the user will have access to a Reader version of the software with options to view data in 2D or 3D, change colors, and save the data as jpg image files.

## Validating the Software

At times, upon launching RADAN for StructureScan Mini, the software will ask to test the license. Click Yes and a pre-populated screen will appear. Simply click Continue with RADAN for UtilityScan. An internet connection is needed to test the license.

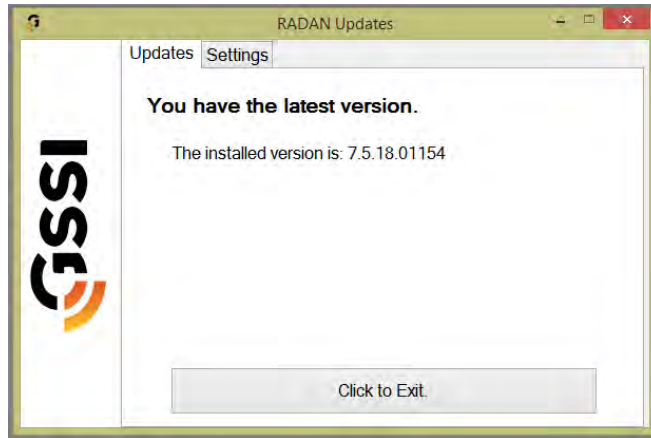


## Updating the Software

GSSI can automatically update the software if an update is available. Upon launching RADAN for StructureScan Mini AND if connected to the internet, it will ask if the user would like to download and install the update. You can check for updates by opening RADAN and selecting Help>Update. Note that you need to be connected to the internet to check for updates.

**I will update later** to update the software at a later date.

**Download and Install the latest update** to immediately update the software. The installer will then walk you through the download and update procedure.



# Chapter 2: Using RADAN for StructureScan Mini

## Setting up Your Laptop/PC and Data Transfer

Create folders on your PC/Laptop. A different folder should be created for each of your projects. To create a new folder, right-click on your Windows Desktop and select New > Folder. Give the folder a unique name. However, if you are comfortable with PCs and Windows, you can organize your folders however you wish.

## Transferring the Files

Copy the files you wish to view and/or process from the StructureScan Mini to the PC/Laptop.

- For the StructureScan Mini XT first transfer the data from the instrument to a USB drive. Instructions for data transfer can be found in the StructureScan Mini XT user's documentation.
- If you used the card to save data from the Mini or Mini LT, you may remove the card and insert the card into a card reader in your PC/Laptop. If you do not have a card reader, you will need to purchase one that will read the card. These are commonly available from any technology store.
- If you did not use the card while collecting the data on your Mini, you may use ActiveSync from the Microsoft web site. This is free to download from [www.microsoft.com](http://www.microsoft.com).

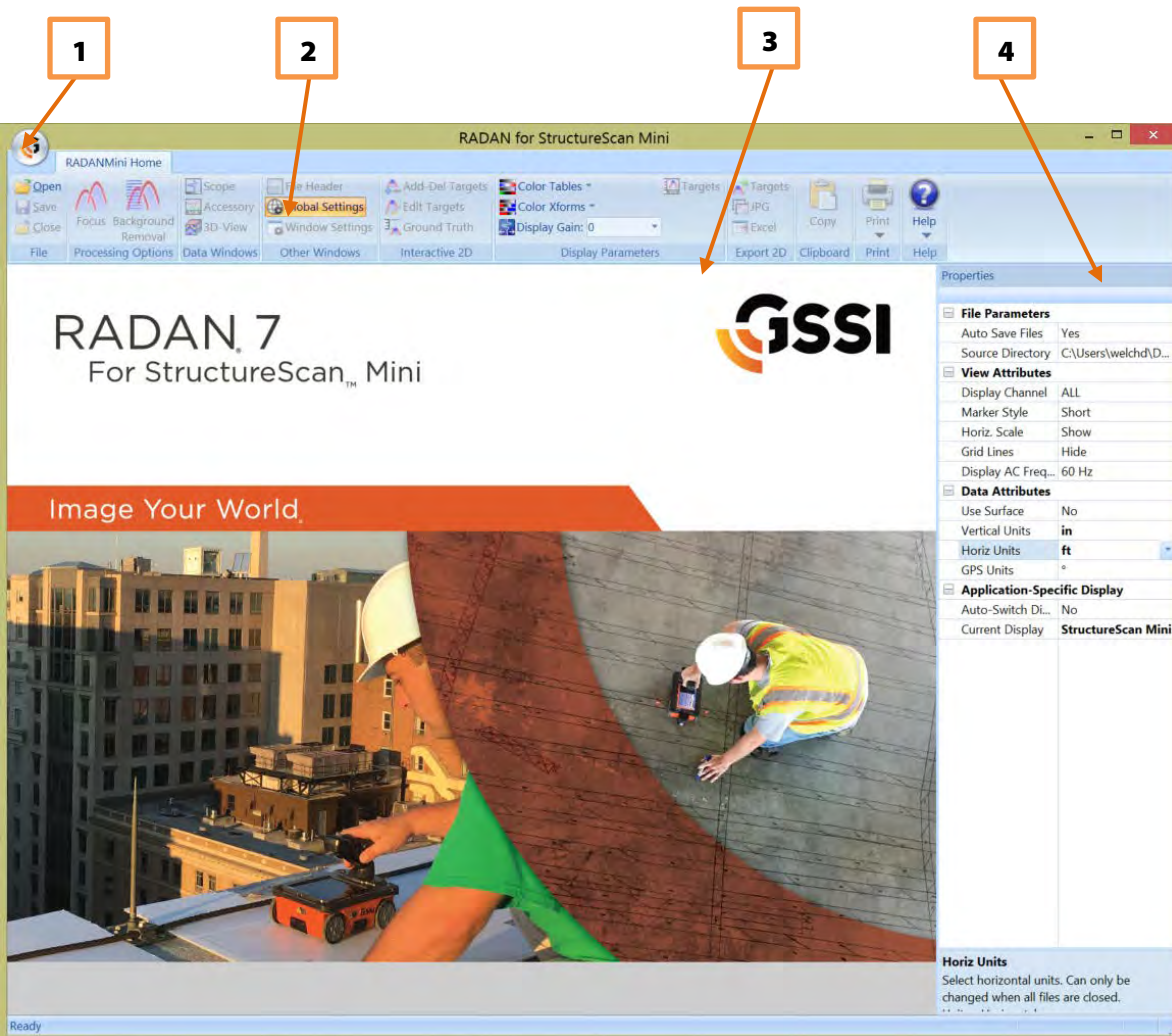
Regardless of the way you saved the data, you will need to copy the files from the StructureScan Mini/Mini XT to the folder you created previously.

## Launching and Navigating the Software

### Launching the Software

Launch RADAN for StructureScan Mini by double-clicking the icon:

The following screen is displayed:



- 1** GSSI Button
- 2** Ribbon
- 3** Data Pane
- 4** Properties Pane

## Navigating Through the Main Screen

### 1. GSSI Button

Clicking on the button allows you to:

- Open a File
- Print your data
- Close a File
- Close all open Files.
- Use Options to change the language
- Exit RADAN for StructureScan Mini Software

### 2. Ribbon

This area contains all the options and processes you can do with your data. This is also where you may open, save, or close a file. This is detailed more in the Viewing and Processing the Data section.

### 3. Data Pane

This is where your data is displayed when you open a file.

### 4. Properties Pane

This area will display Global Settings for all your files in a particular project, as well as Header and Properties information about a specific file (when opened).

## Viewing and Processing the Data

### Preparing the Software

Before opening a file, you will need to set up some Global Settings located on the right side of the screen. If the Settings info (at right) is not shown, click the Global Settings button from the Other Windows section of the Home tab. Click on the following to change the parameters:

**Auto Save Files:** Click here, then click on the down arrow to select one of the following values:

- **Yes:** Automatically save a processed file. RADAN will automatically create a folder called “Proc” inside your source directory and save processed data there.
- **No:** You will be prompted to save a processed file.

**Source Directory:** Click here, then click on the three dots to browse to the source folder where you copied your source (original) data.

**Output Directory:** Click here, then click on the three dots to browse to the output folder you created from your source folder. You will not see this option if you have set your Auto Save File to Yes.

#### Marker Style:

- **Short:** Display user marks extending down a short distance from the top of the scan.
- **Long:** Display user marks extending through entire scan.
- **None:** Hide all marks.

#### Horiz. Scale:

- **Show:** Display horizontal scale.
- **Hide:** Do not display horizontal scale.

#### Grid Lines:

- **Show:** Display grid lines.
- **Hide:** Do not display grid lines.

**Vertical Units:** Units for the vertical scale.

**Horiz Units:** Units for the horizontal scale.

**GPS Units:** Different options to display GPS information, if it is available: (1) decimal degrees; (2) degrees, minutes, seconds; (3) decimal degrees and minutes; and (4) UTM.

#### Auto-Switch Display:

- **Yes:** The display will change based on the data file opened.
- **No:** Data will open in the currently selected display.

Properties	
[-] <b>File Parameters</b>	
Auto Save Files	No
Source Directory	C:\MiniData
Output Directory	C:\MiniData\Output ...
[-] <b>View Attributes</b>	
Display Channel	ALL
Marker Style	Short
Horiz. Scale	Show
Grid Lines	Hide
[-] <b>Data Attributes</b>	
Vertical Units	m
Horiz Units	m
GPS Units	°
[-] <b>Application-Specific Display</b>	
Auto-Switch Display	No
Current Display	RADAN for StructureScan Mini

**Note:** Once you open a file, you cannot change any of the Global Settings. You must close all files to make changes.



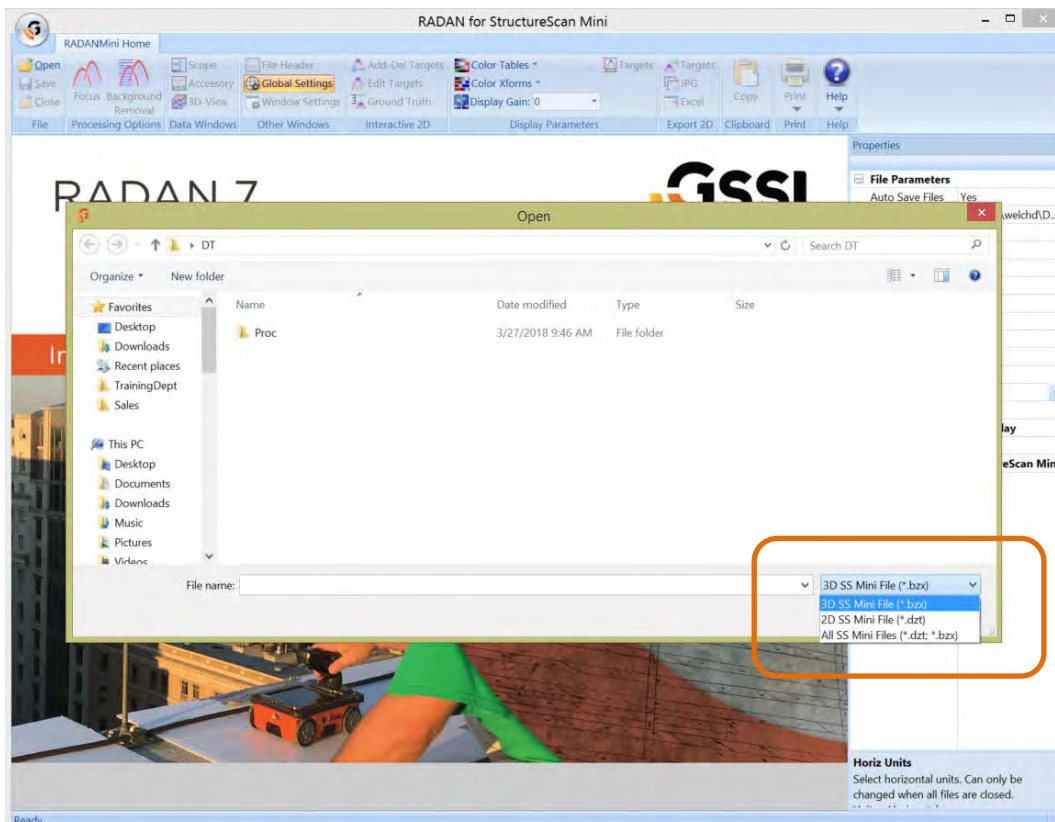
**Current Display:**

- **Reader:** Opens the RADAN Reader display, which allows you to view already processed 2D data as profiles and 3D data as depth slices. The color table, color transform, and display gain can also be modified. If targets or picks were added in one of the other displays they can be displayed as well. Displayed data can be saved as .jpg images. This display is available with any purchase of RADAN 7 and will become the only way of viewing data once the demo version of the software expires without activation.
- **RADAN for StructureScan Mini:** This is display that is designed specifically for data collected with the StructureScan Mini and includes the ability to instantly process data, do some additional processing, add interpretations, and export to a jpg or excel to quickly generate a report.

If any other RADAN modules have been purchased, they will appear here as additional display options.

**Opening a File**

- 1 Click the Open icon located on the left side of the Ribbon. This will display a screen defaulted to the folder you set in the Global Parameters > Source Directory or click on the GSSI Button.
  - Select a file to view/process and click Open.
  - Or double-click on the Output Folder or Proc Folder to open a previously processed file.



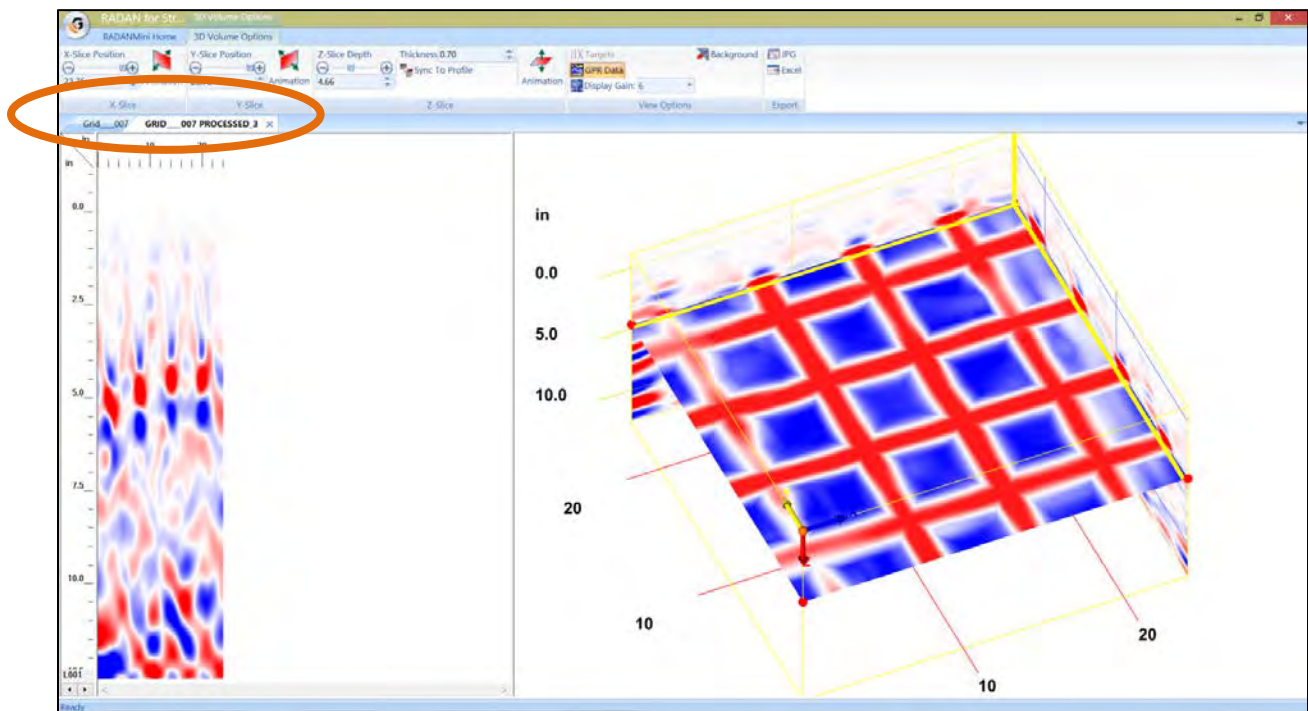
**Note:** The default file type is to open a 3D file (.bzx) collected using the StructureScan Mini. If you wish to open a 2D file, you must change the type of file you wish to open (.dzt).

## Processing the Data

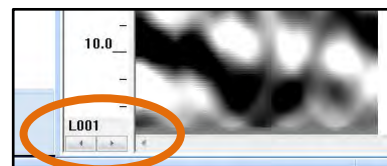
### Initial Process (automatically done by the software)

Once a file is opened, the software will automatically process the original, raw data and create a new processed file so that it is viewable. The process done was Time Zero correction, Filtering, and Focus (Migration).

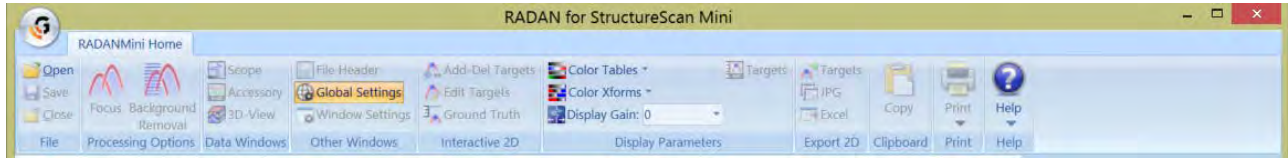
- If you have configured Auto Save File set as **Yes**, the software will process the original file, save the processed file to the Output folder, and name the new file as FileName+Processed+X, where X represents the number of times the original file was opened and processed.
- If you have configured Auto Save file set as **No**, the software will process the file, however will ask you to save the processed file.
  - You may save the file using the software’s naming style.
  - Or you may rename the file to your style and save the file.
  - In either case, the processed file will be saved to the folder you indicated as the Output Directory.
- The original file still exists in the Source folder. This file remains untouched.
- Note the tabs (orange circle), these display the name of the file being displayed.



- The Properties Screen now displays Header information, which is information about the file.
- You may click on the left and right arrows located at the bottom of the scale to toggle through the different profiles of your data.



## Ribbon Options



## Home Ribbon Options

### File

**Open:** Open another file. This will create another tab for that processed file. Click on the tab for the file you want displayed. That will be the current tab.

**Save:** Save the file located in the current tab.

**Close:** Close the file located in the current tab.

### Processing Options

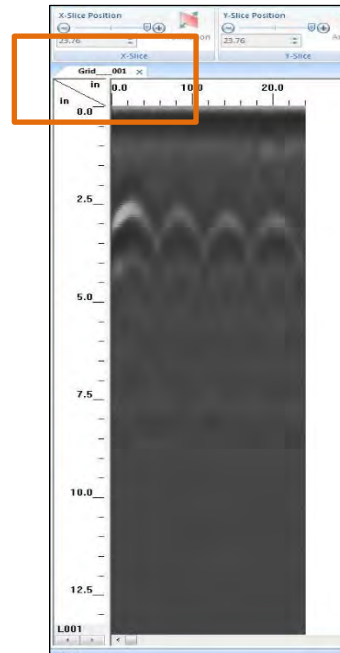
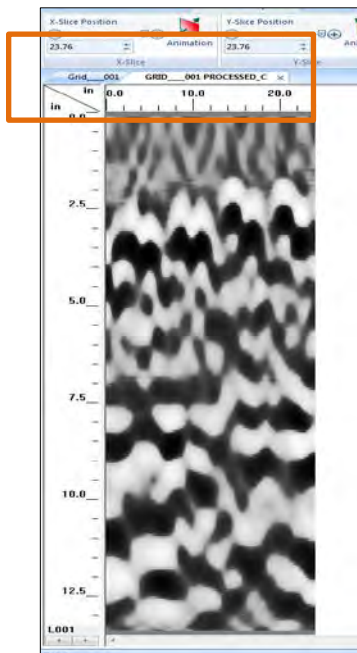
#### Focus


When the software automatically processes your data, it will use the dielectric number you configured and used when the data were collected. This value may or may not give you the optimum 3D display. The objects displayed in the 3D view may look blurred or blobby.




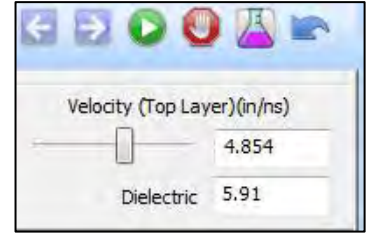
You can use the Focus option to re-adjust the dielectric for better depth accuracy and a better 3D display.

- 1 Close the 3D Tab by clicking on the X of the tab so only the original file tab remains.



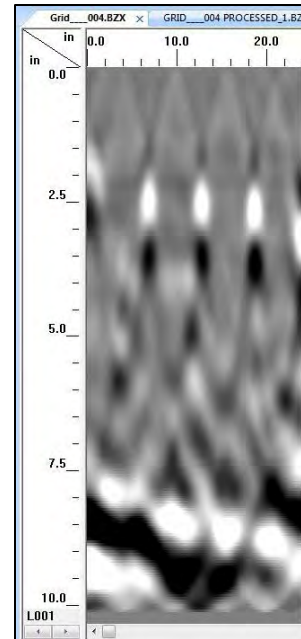
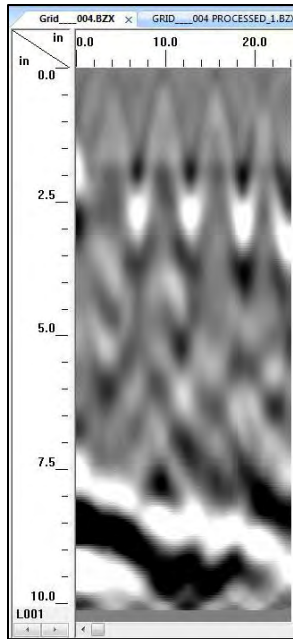
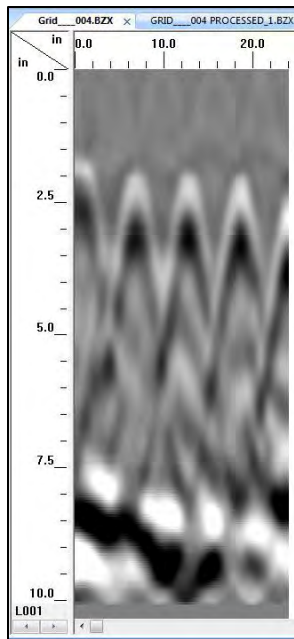
**2** Click on Focus. 

**3** Adjust the slider bar to increase or decrease the velocity (thus increase or decrease the dielectric) and click on the Test Icon. 



**4** Continue to make adjustments and press the Test Icon until the hyperbolas become dots.

- The picture on the left has hyperbolas. Increase the velocity bar by sliding it to the right. This will automatically decrease the dielectric.
- The picture in the middle has upside-down hyperbolas. Decrease the velocity by sliding it to the left. This will automatically increase the dielectric.
- The picture on the right has no hyperbolas. Dots are present.

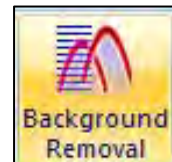


**5** Click on the Process Icon to process the data. 

**6** Save the data if prompted to do so.

### Background Removal

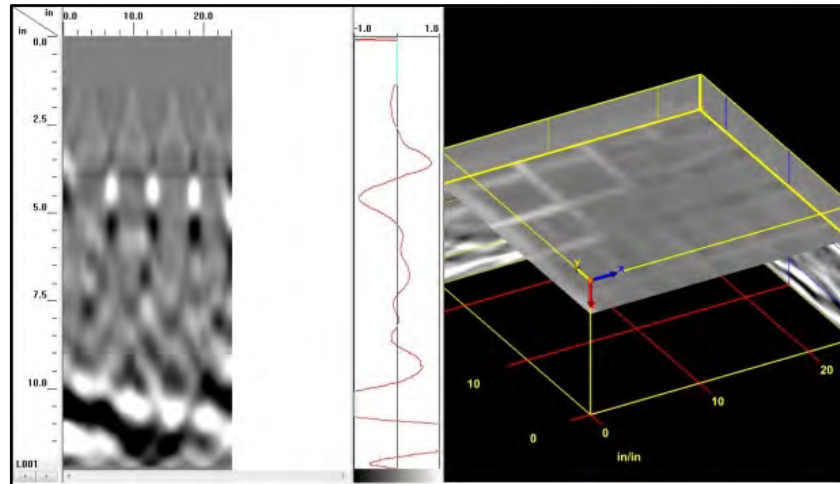
Remove any background noise your data may have. Clicking on this icon will immediately begin the process. Save the file if prompted.



## Data Windows

**Scope:** Toggle on and off to display the O-Scope RADAR signal. (You may hold the left mouse button down on the data and move the mouse to view the RADAR signal at that position.)

**3D View:** Toggle between displaying the 3D Grid view.



## Other Windows

Toggle On or Off different data property windows.

**File Header:** Header information about the displayed file.

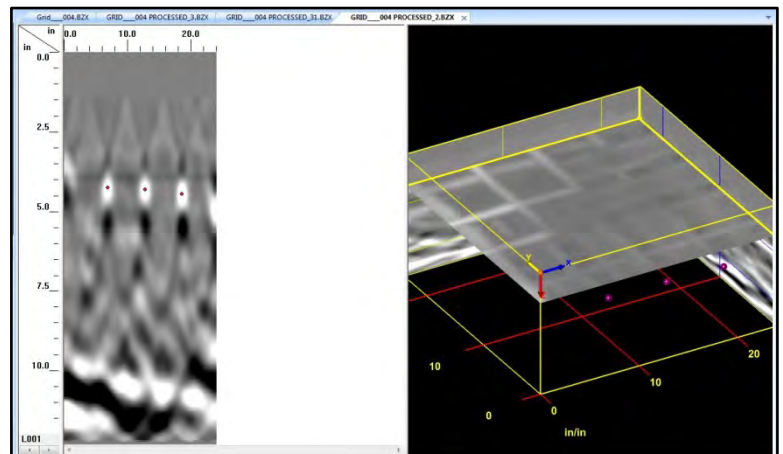
**Global Settings:** Display Global Parameters for all files prior to opening any files and allow you to switch between available Application Displays. Once a file is open, the Global Parameters cannot be changed.

**Window Settings:** The Properties Pane automatically updates with window-specific settings based on which data display, 2D or 3D is currently selected.

## Interactive 2D

Perform the following steps on the 2D profile and not on the 3D View.

- **Add/Del Targets:** This will allow you to tag targets with a dot. Simply turn this on and left-click on a target to insert a dot. Right-click on a dot to delete the dot. These dots will contain information about the target such as horizontal distance and depth. The information can be exported as a comma delimited ASCII file. Also, note that the dots will appear on the 3D Grid as well.
- **Edit Targets:** This will allow you to click on a dot to change the color and size of the dot.



- **Ground Truth:** This will allow you to click on a target and enter the KNOWN DEPTH of that target. This will adjust the scale accordingly. To use, click “Ground Truth” than use your mouse cursor to left-click on something in the data. Usually this will be an embedded object, but a layer such as back of slab works also. A box will then pop up and you will enter in the known depth to that object.

Display Options

**Color Tables:** Change the color of your data.

**Color Xforms:** Change how the colors of your chosen color table are distributed.

**Display Gain:** Change the contrast (brightness) of your data. This changes the display only; it does not change the actual data.

**Targets:** Turn the display of the targets (dots) on or off.

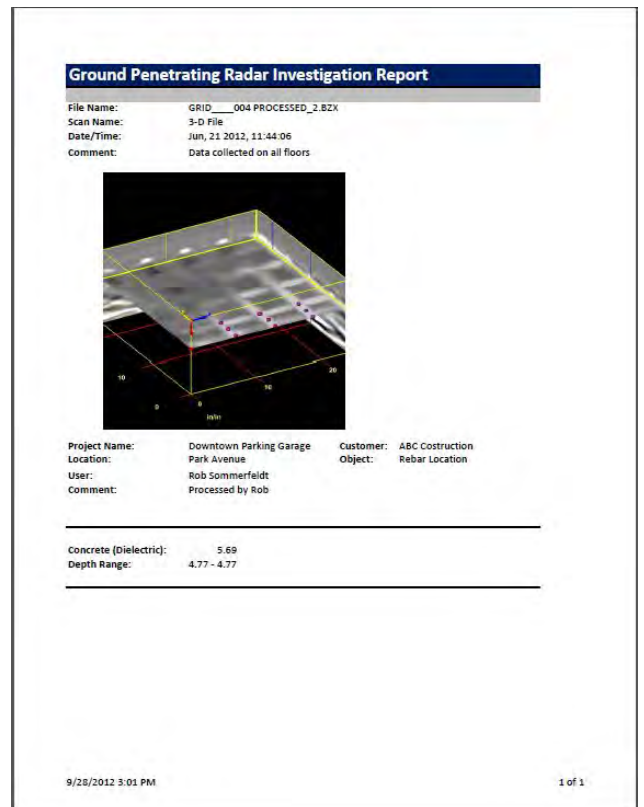
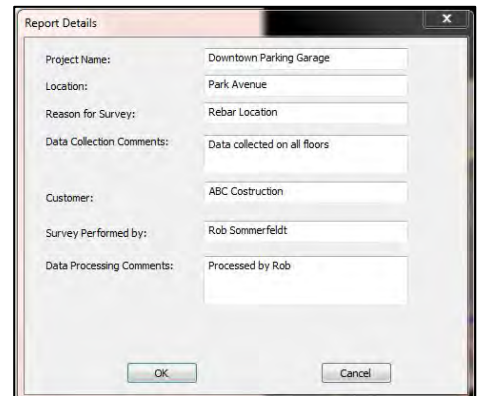
## Export 2D

**Targets:** Export targets (dots) information (distance, depth) to a comma delimited ASCII file. The name of the file is FileName+X.csv located in the output folder.

**JPEG:** Save the current file as a JPEG file (Picture File). This file will be named FileName+X.jpg located in the output folder.

**Excel:** Create a report in MSExcel with user entered information, data information and a picture of the 3D Grid.

- Enter information if needed. Click on OK when done.
- Open the Excel by clicking at the bottom of the screen if it did not automatically open.
- In Excel move the picture and adjust the size of the picture as needed.
- Print the report.



## Clipboard

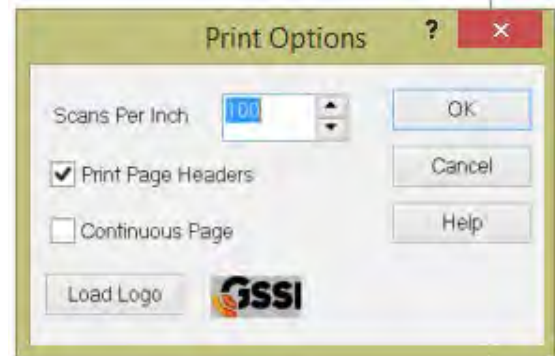
**Copy:** Click this to copy the current window display to the clipboard. This image then can be pasted to any other 3<sup>rd</sup> party software (PowerPoint, Word, etc.).

## Print

**Quick Print:** Print the file as it is displayed in the linescan window.

**Setup:** Configure the printout.

- a) **Scan Per Inch:** Number of scans per inch. Setting this number higher will allow longer profiles to fit on a single page, but there will be a loss of resolution.
- b) **Print Page Headers:** Print Header information.
- c) **Continuous Page:** If data takes more than one page, print data on multiple pages or one page
- d) **Load Logo:** Load and print your own logo, or GSSI logo.



**Print Preview:** Preview the printout on screen before actually printing the data.

## Help

**Index:** Opens the RADAN for StructureScan Mini Manual.

**About:** Display the current version of the software.

**Update Notes:** Retrieves notes related to the most recent available version of the software. An internet connection is required.

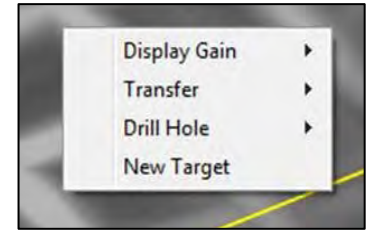
**Update:** Update the software to the latest version. You MUST be connected to the internet to do this.

## Mouse Functions

Before we begin with the 3D Volume Options Ribbon, there are mouse functions that can be helpful while displaying the 3D Grid.

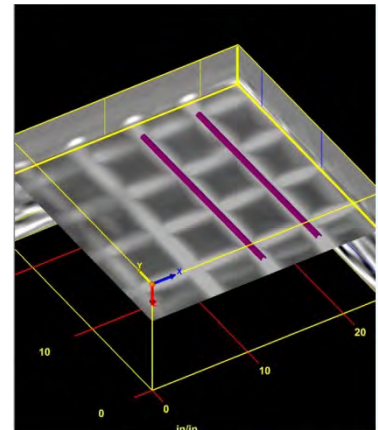
**1** Right-click on the data area of the 3D Grid to:

- a) Display Gain:** Adjust the contrast of the screen display.
- b) Transfer:**
  - **None:** Display normally.
  - **Absolute:** Change all to positive.
  - **Negate:** Change negative to positive and positive to negative.
- c) Drill Hole:** Enter a tube to represent a hole or core.
- d) New Target:** Click here to add targets to your 3D Grid.
  - Click on New Target.
  - Double click on one end of a target.
  - Double click on the other end of a target.
  - Repeat process for more targets.



**2** Right-click on a Target to:

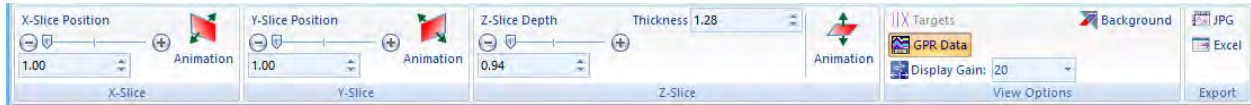
- a) Delete:** Delete the target.
- b) Target Properties:** Name the target, change the color and/or the size of the target.



**3** Point the mouse to the surface or any one of the walls, hold down the CTRL key and the left mouse button and move the mouse to move the surface or walls.



## 3D Volume Options Ribbon



### X-Slice, Y-Slice, Z-Slice

Drag the slide bar or press the - +to move the slices of the 3D Grid according. You may also animate the slices individually by clicking on the Animation icon. This icon will turn animation on and off.

**Thickness (Z-Slice):** Adjust the thickness of the Z-Slice.

### View Options

**Targets:** Toggle between displaying the targets.

**GPR Data:** Toggle between displaying the data of the 3D Grid.

**Display Gain:** Adjust the display gain (contrast).

**Background:** Toggle between a black background and white background.

### Export

**JPG:** Export the 3D grid as a JPG file.

**Excel:** Create a report in MSEXcel with user entered information, data information and a picture of the 3D Grid.

- a) Enter information if needed. Click on OK when done.
- b) Open the Excel by clicking at the bottom of the screen if it did not automatically open.
- c) In Excel move the picture and adjust the size of the picture as needed.
- d) Print the report.

