

# UtilityScan™

## Quick Start Guide - A Fast Check List for Field Operation

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## Limited Warranty, Limitations Of Liability And Restrictions

Geophysical Survey Systems, Inc. hereinafter referred to as GSSI, warrants that for a period of 24 months from the delivery date to the original purchaser this product will be free from defects in materials and workmanship. EXCEPT FOR THE FOREGOING LIMITED WARRANTY, GSSI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. GSSI's obligation is limited to repairing or replacing parts or equipment which are returned to GSSI, transportation and insurance pre-paid, without alteration or further damage, and which in GSSI's judgment, were defective or became defective during normal use.

GSSI ASSUMES NO LIABILITY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR INJURIES CAUSED BY PROPER OR IMPROPER OPERATION OF ITS EQUIPMENT, WHETHER OR NOT DEFECTIVE.

Before returning any equipment to GSSI, a Return Material Authorization (RMA) number must be obtained. Please call the GSSI Customer Service Manager who will assign an RMA number. Be sure to have the serial number of the unit available

## Regulatory Information

Please see the GSSI website, [www.geophysical.com/regulatoryinformation.htm](http://www.geophysical.com/regulatoryinformation.htm), for current information and FCC Registration Form, including:

- FCC Notice for U.S. Customer
- Canadian Requirements for RSS-220
- Declaration of CE Conformance

## Section 1: Getting Started

Thank you for purchasing a UtilityScan from GSSI! We at GSSI have taken advantage of our decades of experience in GPR design and coupled it with the valuable advice of professional locators to re-invent the standard in locating. Please carefully check over your system and please contact GSSI at (603)893-1109 if you are missing any components.

### Tablet Functionality

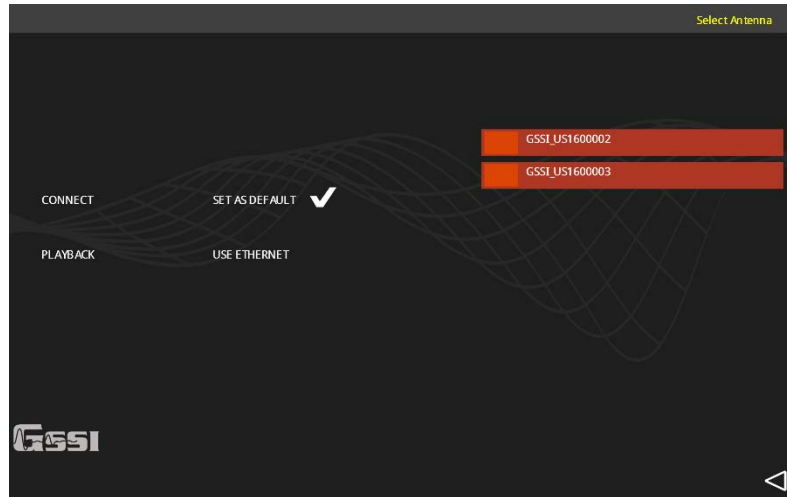
The UtilityScan is controlled by a portable table. You have your choice of wireless (WiFi) or wired connectivity with the antenna. GSSI suggests that you keep this tablet as part of a dedicated GPR collection system and avoid installing unrelated software or apps.

### Powering and Booting Up

**Important:** Insert a fully charged battery into the antenna and ensure the tablet is fully charged before continuing.

- 1** To power up the UtilityScan:
  - a)** Press the “Power” button on the top of the antenna housing. The antenna boot cycle takes approximately 20-30 seconds. The LED ring around the power button will flash blue once the antenna is booted. Wait for the ring to flash blue before starting the UtilityScan app on the tablet.
  - b)** Start the app on the tablet. You will see a WiFi network named “GSSI\_US1XXXX” where XXXX is the serial number of your antenna. You will see multiple networks if you have more than one UtilityScan antenna within range. Be sure to select the network corresponding to correct UtilityScan antenna.

- c) The LED ring around the antenna power button will stop flashing and remain blue once the tablet has connected with the antenna.

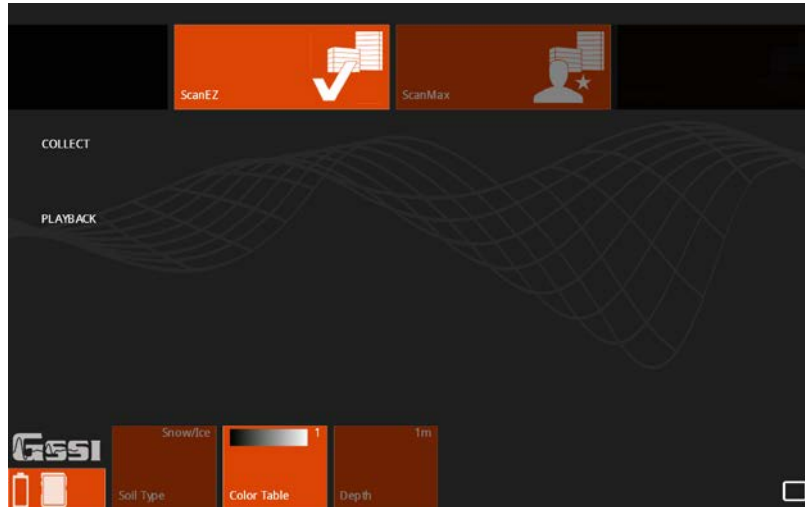


Choose the correct antenna serial number from available networks

## Powering Down

Simply push the “Power” button on the antenna to power off the system. Wait until the LED ring around the power button has gone out before removing the battery from the antenna.

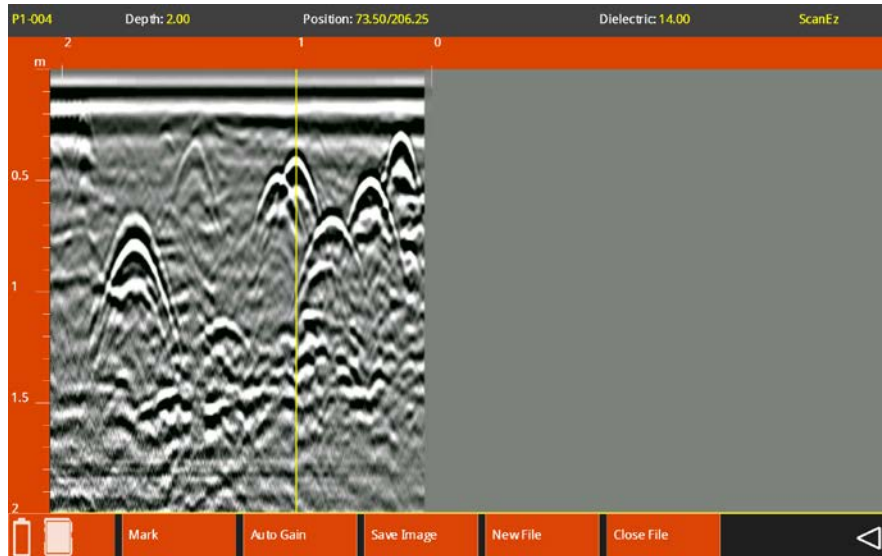
## Section 2: Setting up for Collection



**Introduction Setup Screen**

From the Introduction Screen (above), select the soil type which most closely matches the material through which you are scanning. This will set the assumed dielectric value. Next select your desired color table and depth of investigation. Click “Collect” to continue to Collect Mode.

## Section 3: Collecting Data

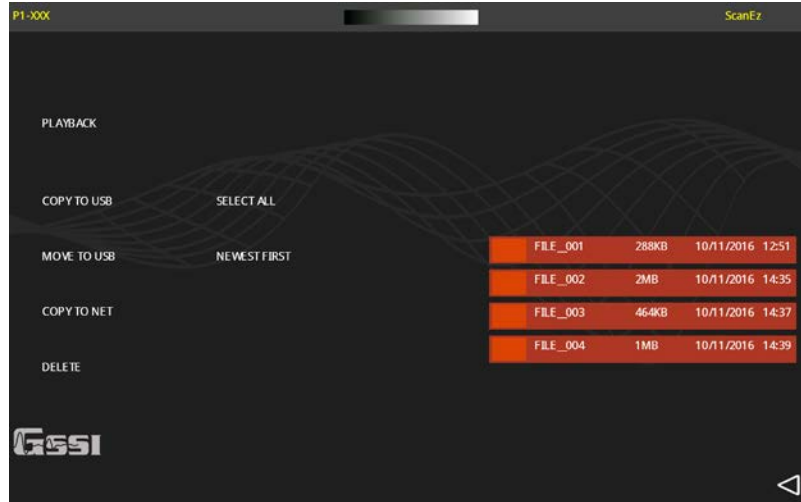


Push the cart forward to begin collection data. Data will be displayed in real time on the tablet screen. To note the location of a target, back up the cart in a straight line. You will see a vertical crosshair appear on the screen. This is the “Backup Cursor” and is tied to the cart’s survey wheel encoder. Align the backup cursor with the center of a hyperbola and mark the survey surface at the center of the cart.

You have the following additional options in this mode:

- **Mark:** Pushing this will write a red, dashed fiducial line on the data that is useful for highlighting a particular feature.
- **Auto Gain:** This will adjust the screen contrast and may aid in better visualizing the data.
- **Save Image:** Pushing this will take a screen shot and save it as a .PNG file.
- **New File:** This will close the current file and begin collecting a new one.
- **Close File:** This will close the current file and return you to the initial startup screen.

## Section 4: Data Playback and Transfer



Selecting Playback from the initial start screen will allow you to choose files for review or transfer. Select the appropriate file from the list and choose Playback, a transfer method, or delete.



## Appendix A: Dielectrics of Common Materials (Soil Conditions)

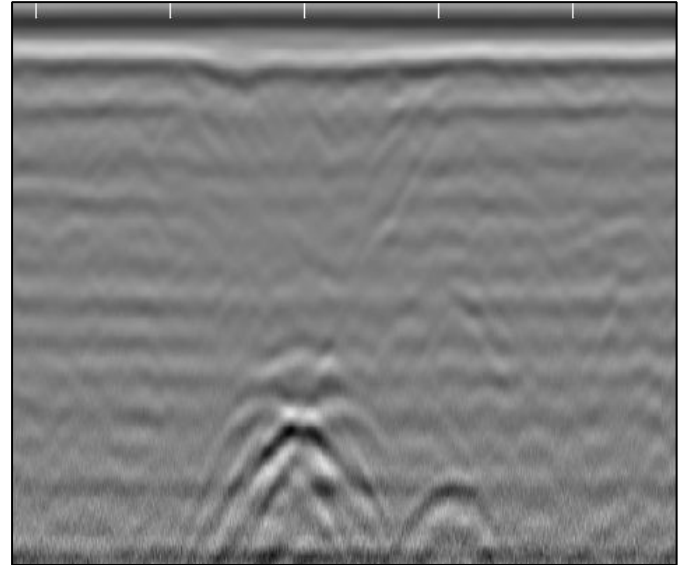
Material	Dielectric Constant	Material	Dielectric Constant
Air	1	Wet Granite	6.5
Snow Firn	1.5	Travertine	8
Dry Loamy/Clayey Soils	2.5	Wet Limestone	8
Dry Clay	4	Wet Basalt	8.5
Dry Sands	4	Tills	11
Ice	4	Wet Concrete	12.5
Coal	4.5	Volcanic Ash	13
Asphalt	5	Wet Sands	15
Dry Granite	5	Wet Sandy Soils	23.5
Frozen Sand & Gravel	5	Dry Bauxite	25
Dry Concrete	5.5	Saturated Sands	25
Dry Limestone	5.5	Wet Clay	27
Dry Sand & Gravel	5.5	Peats (saturated)	61.5
Potash Ore	5.5	Organic Soils (saturated)	64
Dry Mineral/Sandy Soils	6	Sea Water	81
Dry Salt	6	Water	81
Frozen Soil/Permafrost	6		
Syenite Porphyry	6		
Wet Sandstone	6		

## Appendix B: Examples of Some Common Objects

These examples are presented for informational use only. The images that you see on your own site conditions may vary.

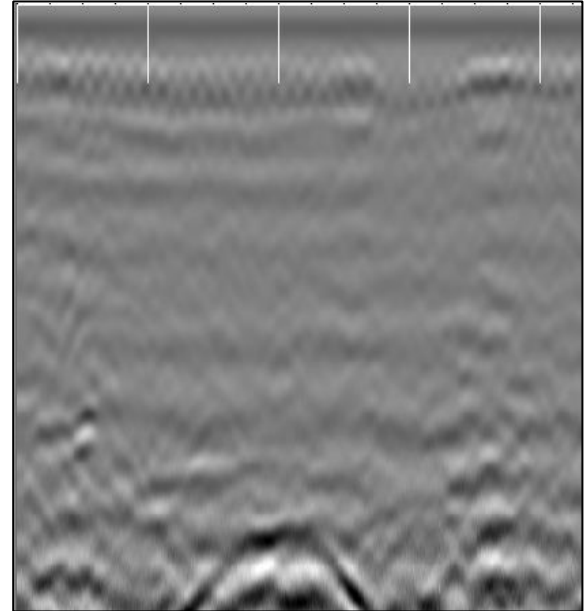
### Example 1

This piece of data shows a bank of conduits feeding into an industrial building. Note the dipping edge of a trench cut to the upper left of the conduits.



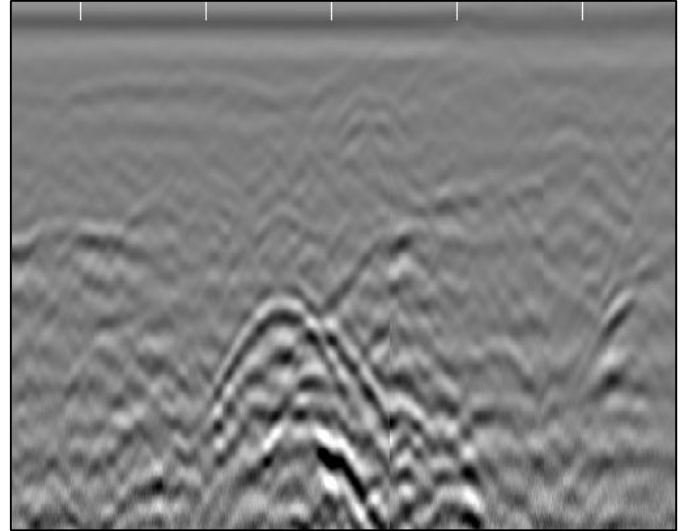
## Example 2

This image shows a drain line coming out of a restroom. Also note the mesh at the top of the screen.



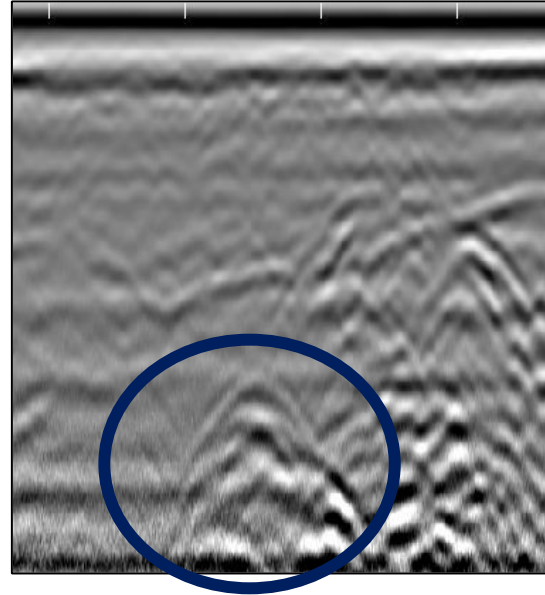
### Example 3

This image shows data collected across a driveway, and locating a conduit from the telephone pole to an industrial building.



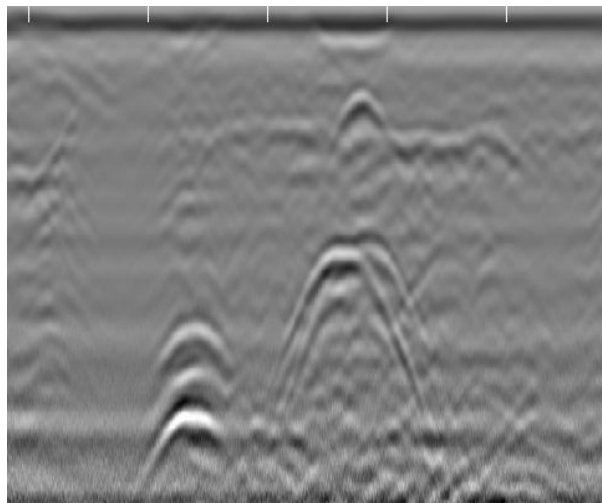
#### Example 4

This image shows data collected along a driveway next to a business. This shows a concrete culvert with a cable running through it.



### Example 5

This image shows a gas line and communication cables (Fiber Optic) going across a driveway







The following pages are additional documents included in the GSSI Manual CD that ships with each product.

## FCC Notice (for U.S. Customers):

This device complies with part 15, class F of the FCC Rules:

Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

**Warning:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Parties operating this equipment must be eligible for licensing under the provisions of part 90 of 47 CFR.

Operation of this device is restricted to law enforcement, fire and rescue officials, scientific research institutes, commercial mining companies, construction companies and private parties operating on behalf of these groups. Operation by any other party is a violation of 47 U.S.C. § 301 and could subject the operator to serious legal penalties.

### Coordination Requirements

- (a) UWB imaging systems require coordination through the FCC before the equipment may be used. The operator shall comply with any constraints on equipment usage resulting from this coordination.
- (b) The operator of an imaging system used for fixed operation shall supply a specific geographical location or address at which the equipment will be operated. This material shall be submitted to the Federal Communications Commission, 445 12th Street, SW Washington D.C. 20554. Attention UWB Coordination.
- (c) Users of authorized, coordinated UWB systems may transfer them to other qualified users and to different locations upon coordination of change of ownership or location to the FCC and coordination with existing authorized operations.
- (d) The NTIA/FCC coordination report shall include any needed constraints that apply to day-to-day operations. Such constraints could specify prohibited areas of operations or areas located near authorized radio stations for which additional coordination is required before operation of the UWB equipment. If additional local coordination is required, a local coordination contact will be provided.

**Notice:** Use of this device as a wall imaging system is prohibited by FCC regulations.

**For U.S. Customers**

## Ground Penetrating Radar Coordination Notice And Equipment Registration

**Note:** This form is only for Domestic United States users. The Federal Communications Commission (FCC) requires that all users of GPR who purchased antennas after July 15<sup>th</sup>, 2002 register their equipment and areas of operation. It is required that you fill out this form and fax or mail to the FCC. Failure to do this is a violation of Federal law.

1.     **Date:**
  
2.     **Company name:**
  
3.     **Address:**
  
4.     **Contact Information [contact name and phone number]:**
  
5.     **Area Of Operation [state(s)]:**

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## Canadian Requirements for RSS-220

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Canadian Requirements of RSS-220 for Ground Antennas

This Ground Penetrating Radar Device shall be operated only when in contact with or within 1 m of the ground.

This Ground Penetrating Radar Device shall be operated only by law enforcement agencies, scientific research institutes, commercial mining companies, construction companies, and emergency rescue or firefighting organizations.

Cet appareil de radar de sol (ou géoradar) ne doit être utilisé qu'en contact avec le sol ou à 1 m maximum au dessus du sol.

Cet appareil de radar de sol ne doit être utilisé que par les forces de l'ordre, les instituts de recherche scientifiques, les sociétés minières, les sociétés de construction, et les organisations de secours d'urgence ou de combat du feu.

## Canadian Requirements of RSS-220 for Hand-held Antennas

This In-wall Radar Imaging Device shall be operated where the device is directed at the wall and in contact with or within 20 cm of the wall surface.

This In-wall Radar Imaging Device shall be operated only by law enforcement agencies, scientific research institutes, commercial mining companies, construction companies, and emergency rescue or firefighting organizations.

Cet appareil de radar de structure (murs, poutres, dalles...) ne doit être utilisé qu'en contact avec la structure ou à 20 cm maximum décollé de cette structure.

Cet appareil de radar de sol ne doit être utilisé que par les forces de l'ordre, les instituts de recherche scientifiques, les sociétés minières, les sociétés de construction, et les organisations de secours d'urgence ou de combat du feu.

## Canadian Requirements of RSS-220 for Search and Rescue Antennas

This Through-wall Radar Imaging Device shall be operated only by law enforcement agencies or emergency rescue or firefighting organizations that are under a local, provincial or federal authority. The equipment is to be operated only in providing services and for necessary training operations.

Cet appareil de radar au travers des murs ne doit être utilisé que par les forces de l'ordre ou les organisations de secours d'urgence ou de combat du feu qui sont sous une autorité locale, provinciale ou fédérale. Cet équipement ne doit être utilisé que dans le cadre de services et pour les opérations d'entraînement nécessaires.



## Declaration of CE Conformance

Geophysical Survey Systems, Inc. hereby confirms that the following named products have been tested and meet the requirements of the European standards as indicated:

**Models:** 3101A, 5106A, 5100B, 5101, 52600, 62000, MINISIR, MINIHR, LL3P, 41000SA, 42000S, 50400S, 50270S, D50300/800, 350HS

**Description:** Ground Penetrating Radar Antennas

**European Standards:** ETSI EN 301 489-32 V1.1.1 (2005-09), ETSI EN 301 489-V1.6.1 (2005-09), ETSI EN 302 066-1 V1.1.1(2005-09), ETSI EN302 066-2 V1.1.1 (2005-09), ETSI EN 302 066-1 V1.2.1(2008-02), ETSI EN302 066-2 V1.2.1 (2008-02), ECC/DEC/(06)08

**Place and Date of Issue:** Intertek – ETL SEMCO 07.02.07, 03.11.09, 10.13.09, 11.18.09  
Compliance Worldwide 03.23.12 09.25.09 11.1.16

**Model:** EMP-400 Profiler

**Description:** Electromagnetic Induction System

**European Standards:** EN61326:1997 + A1:1998 + A2:2001

**Place and Date of Issue:** Intertek – ETL SEMCO 08.29.06

**Model:** FGMF20/3000

**Description:** Two channel Ground Penetrating Radar data acquisition system

**European Standards:** EN61000-6-2: 2005, EN61000-6-4:2007

**Place and Date of Issue:** Intertek – ETL SEMCO 09.17.08

**Model:** FGDC-3000/2100, Structurescan EZ System, Structurescan MINI System

**Description:** Ground Penetrating Radar Data Acquisition Systems

**European Standards:** EN61000-6-2:2005, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

**Place and Date of Issue:** Compliance Worldwide 09.29.09, 11.25.09

**Models:** SIR-30, SIR-30e

**Description:** Ground Penetrating Radar Data Acquisition System

**European Standards:** EN61000-6-4: 2007 per EN 55011:2009 + A1:2010

**Place and Date of Issue:** Compliance Worldwide 07.10.12, 07.11.12

**Models:** 350HS

**Description:** Ground Penetrating Radar Data Acquisition System

**European Standards:** EN61000-6-4: 2007 per EN 55011:2009 + A1:2010

**Place and Date of Issue:** Compliance Worldwide 10.31.16

Chris Plumlee  
02.01.16     *Name of authorized person*

Geophysical Survey Systems, Inc.