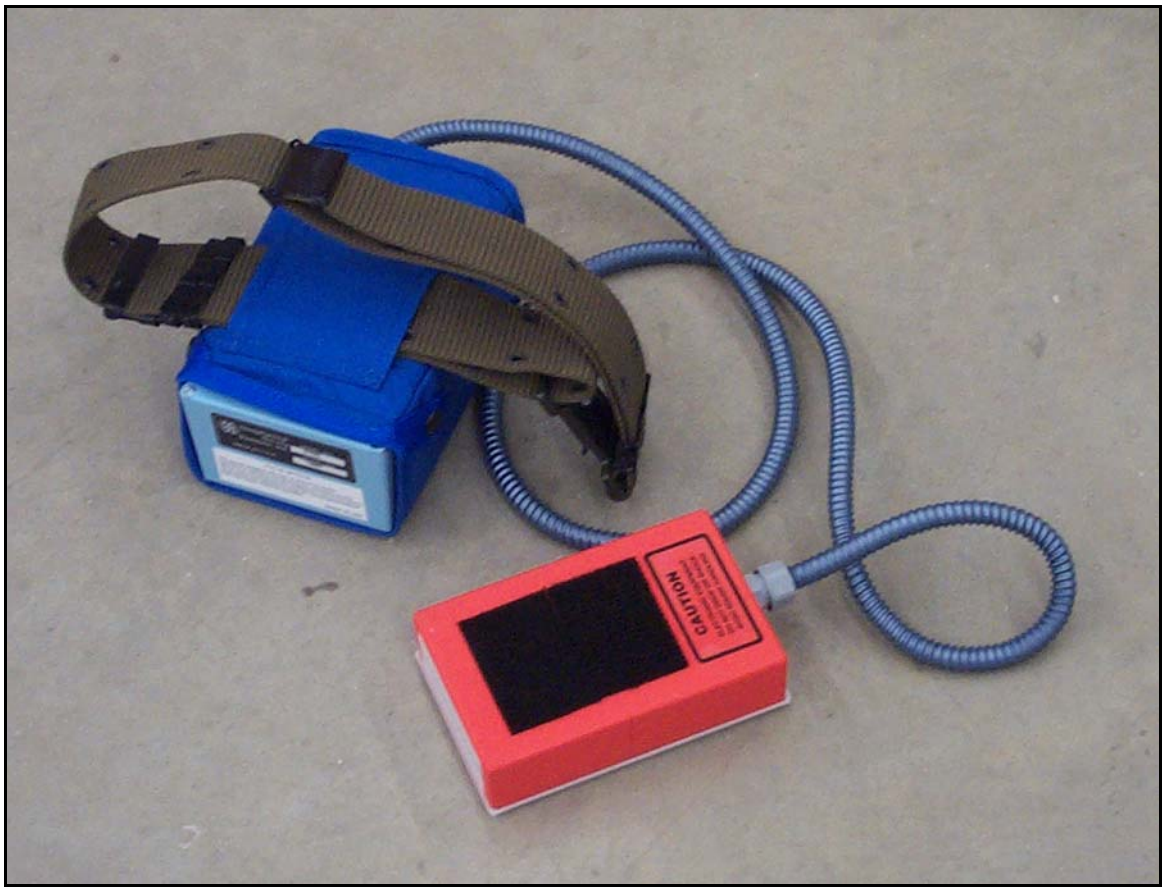
Model 5100 Antenna

System Settings and User Notes



The Difference is the Data

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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, GSSI's products 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.

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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.

GSSI does not convey any license under its patent or other intellectual property rights or the rights of others.

Note: Information in this manual is subject to change without notice. Please consult the manual updates supplied with your system and contact GSSI with any additional questions.

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FCC Notice (for U.S. Customers):

This device complies with part 15 of the FCC Rules:

Operation is subject to the following conditions:

1. This device many 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.

Operation of this device is restricted to law enforcement, fire and rescue officials, scientific research institutes, commercial mining companies, and construction companies. 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 users of UWB imaging devices shall supply detailed operational areas to the FCC Office of Engineering and Technology who shall coordinate this information with the Federal Government through the National Telecommunications and Information Administration. The information provided by the UWB operator shall include the name, address and other pertinent contact information of the user, the desired geographical area of operation, and the FCC ID number and other nomenclature of the UWB device. This material shall be submitted to the following address:

Frequency Coordination Branch., OET
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554
ATTN: UWB Coordination

(d) 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.

(e) 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.

(f) The coordination of routine UWB operations shall not take longer than 15 business days from the receipt of the coordination request by NTIA. Special temporary operations may be handled with an expedited turn-around time when circumstances warrant. The operation of UWB systems in emergency situations involving the safety of life or property may occur without coordination provided a notification procedure, similar to that contained in CFR47 Section 2.405(a)-(e), is followed by the UWB equipment user.

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

Model 5100 Antenna

The Model 5100 antenna has greatly improved performance over previous high frequency antennas. Not only is the frequency higher, but the antenna has the ability to see objects at very close distances.

System Setup - Standard Settings

Note: These setup instructions will allow you to properly use the Model 5100 antenna.

Setup Mode: Manual

System Run Mode: Distance/Survey Wheel (recommended) or Continuous

Range: 6-20 ns

Number of Gain Points: 3-5

Vertical Low Pass Filter: 3000 MHz

Vertical High Pass Filter: 250 MHz

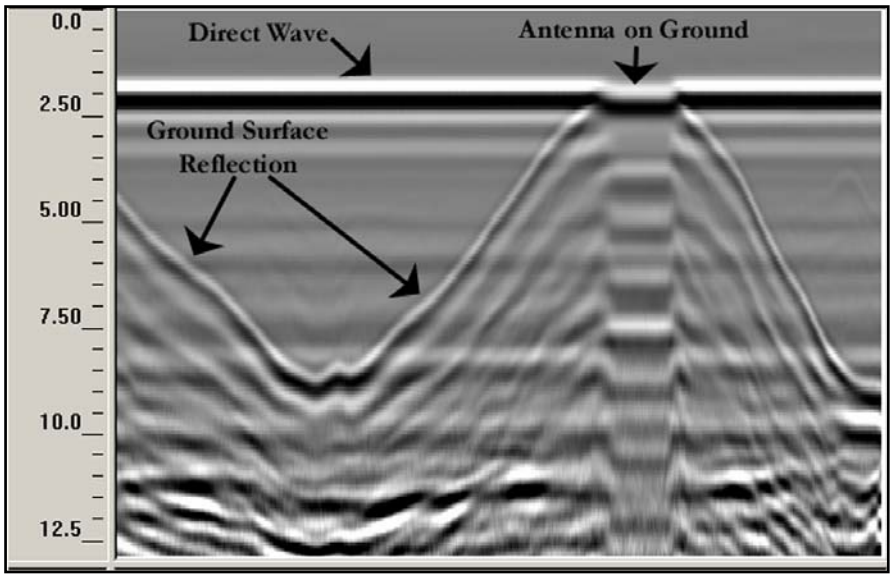
Vertical High Pass (IIR): 10 MHz

Samples per Scan: 512

Bits per Sample: 16

Scans per Second: Set to the maximum scan rate allowed by the SIR System used

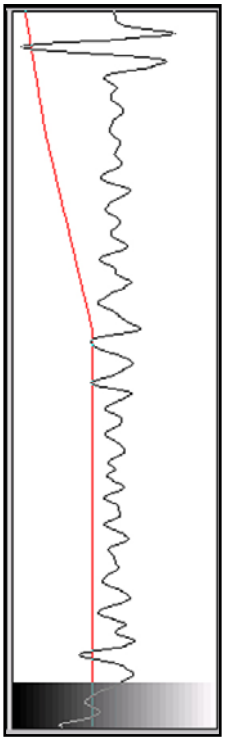
Signal Position



Place the antenna on the concrete floor and use the Automatic Signal Position selection. You may need to try this 2 to 3 times to get the system to lock on to the surface pulse. If after 3 tries, the surface pulse is not in the signal window, point the antenna into the air and again try the Automatic Position.

To test that you have the correct position, raise the antenna off the ground and you will observe on your system that the antenna transmit pulse will separate from the reflection from the ground. The higher that you raise the antenna, the further apart will be the two pulses.

Gain Check



The surface pulse should be about 2/3 the width of the screen. If it is greater, reduce the Gains manually. If the signal appears too small, you can manually increase the Gains, but the first gain point should never exceed 10dB.

Minicart

Your Model 5100 is designed to fit into the Model 615 minicart. Using the antenna with the minicart allows you to take advantage of distance-based data collection which is possible with a survey wheel. A survey wheel (rear-axle of the cart) tracks the distance traveled and allows consistent scan spacing. The minicart is available as a separate purchase and is also compatible with the Model 5101 antenna. Please contact your GSSI sales representative for details.

Note: The Model 5100 is not intended for use as a wall or ceiling imaging device.

Data Collection

Collecting Data Using The Survey Wheel With The Standard Settings

System Run Mode: Survey Wheel

Number of Scans per Meter: 80 (24 scans per foot) or higher. GSSI StructureScan concrete imaging systems collect 60 scans/foot or higher.

Remote Operation

This may differ depending on your control unit. See your control unit's user manual for details.

- Pressing the thumb marker switch on the 615 cart for less than one second will place a marker in the data.
- To put the system into Standby mode during data acquisition, press the button for more than two seconds, but less than six seconds, then release the button.
- Pressing the button for longer than 6 seconds will close any open files and turn off the transmitter. To resume, the data acquisition sequence must be repeated.

Special Settings Used For Collecting Data On Bridge Decks

Setup Mode: Manual

System Run Mode: Survey Wheel

Range: 6 ns (unpaved), 10 ns (paved)

Number of Gain Points: 1

Vertical Low Pass Filter: 3000 MHz

Vertical High Pass Filter: 250 MHz

No Horizontal Filters

Samples per Scan: 512

Bits per Sample: 16

Scans per Second: Set to the maximum scan rate allowed by the SIR System used

Signal Positioning: Use the same procedure as in standard setup

Set the Scans per Meter parameter to 80 scans per meter (24 scans per foot)

Calibrate the survey wheel before collecting data

Note: See Bridge Assessment Manual before proceeding.

Specifications

Center frequency: 1600 MHz

Pulse duration: 0.7 ns

Size of sensor: 1.5 x 4 x 6.5 inches (3.8 x 10 x 16.5 cm)
Depth of penetration: 0-18“ depending on type of concrete

Model 615 Survey Cart: 1229 ticks/foot
4030 ticks/meter