GCB-100

Datasheet

GCB-100 is a 100MHz ground coupled bow tie antenna and the smallest 100 MHz antenna on the market, weighing only 11.5kg(23.14 pounds).

GCB-100 is fully shielded with a very high front-to-back ratio, making it an ideal choice for noisy environments. If a survey that requires deep penetration is on the agenda, then GCB-100 is the perfect companion. It is therefore perfectly suited for deep geotechnical surveys and archeological investigations.

As with all other antennas manufactured by Geoscanners, this antenna is fully compatible with the rest of the Geoscanners products. Furthermore, GCB-100 is also compatible with GSSI control units. This gives endless possibilities and allows the user to change antennas without having to purchase complete new systems.

The high efficiency of GCB-100, together with the excellent sensitivity of the receiver electronics, allows for very deep surveys with outstanding resolution and clarity of the data. All of this is possible while still having a small and light weight antenna.

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REV: EN131125-05

Area of Application

- Deep geotechnical and environmental surveys
- Geo-hydrological and glaciological surveys
- Archeological investigations
- Embankment dam safety control
- Contamination areas mapping

Mechanical and Environmental Specifications

Dimensions LxWxD	460x460x255 mm / 18.1x18.1x10.0 inches
Weight	11.5 kg / 23.14 pounds
Fastening points LxW	210x160 mm / 8.26x6.30 inches
Ingress Protection	IP54
Operating Temperature	-25°C up to +40°C / 14°F up to 104°F

Electrical Specifications

Antenna Type	Quarter Wavelength Bow Tie
Shield Type	Top and Side Shield
Distance between the TX and RX	200 mm / 7.87 inches
Feed point impedance	394 Ohms
Transmitted Pulse Amplitude	305 Volts
Receiver Sensitivity	14 µVolts
Antenna Bandwidth	96.60% at 10dB
Antenna Center frequency	103 MHz at 10dB BW
Survey Wheel Output Voltage	5.01 Volts

Recommended Specifications

Pulse repetition Frequency, PRF	≥100 kHz
Scan Rate	100 Traces/Second
Range (depends on soil penetration)	50-350 ns
Low Pass Filter Cut-Off Frequency	200 MHz
High Pass Filter Cut-Off Frequency	50 MHz
Gain	Adjust to 75% Swing

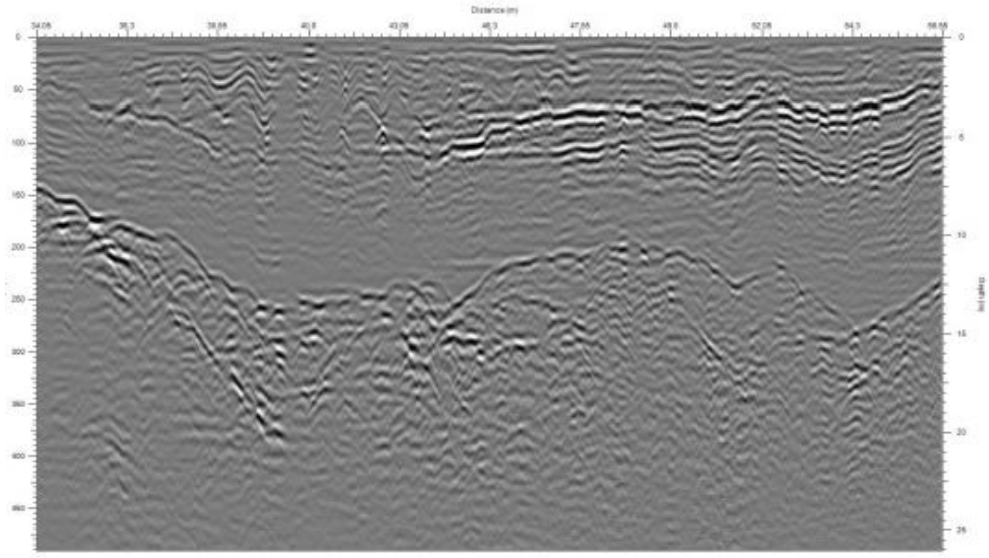
Accessories*

- Tray S1 - Antenna tray with belts
- SVC-820(4-wheel cart) with the K-1000 adapter
- GSH-491 - Rough terrain cart

*Accessories are not included

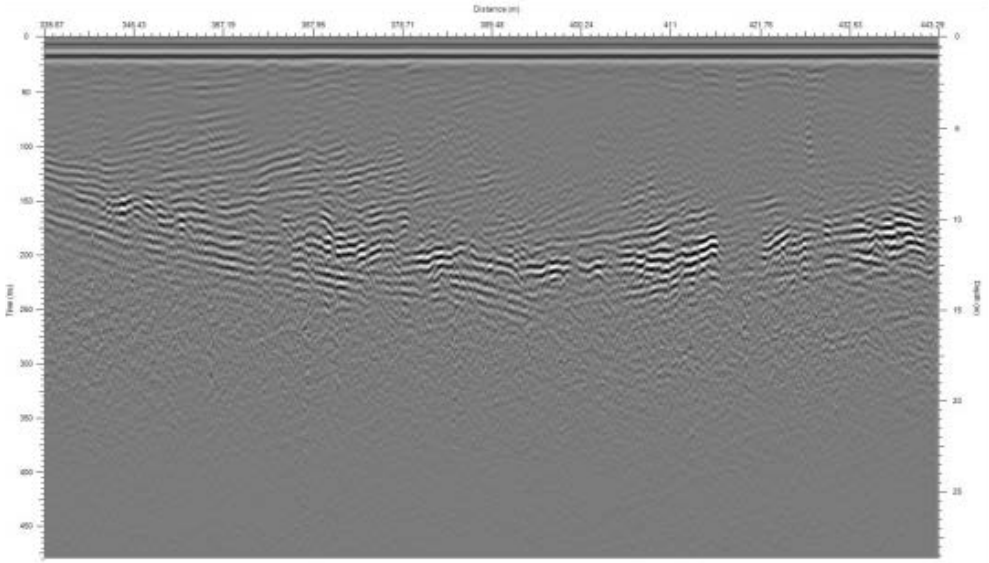
GCB-100 is perfectly suited for relatively deep utility detection. Depending on the relative dielectric permittivity (RDP) of the area under survey and its electrical conductivity properties it is possible to reach down to 15 meters penetration with this antenna.

The data shown in figure 1 shows the results obtained from surveying a sandy road in the forest outside Boden, Sweden. It shows good penetration, way beyond the 15 meters depth, and excellent resolution of the different layers. It is important to keep in mind that in areas with high conductivity values of the order of 5 mS and more, the penetration can be heavily affected. Setting in these conditions very long ranges and high gains it is not going to improve the situation in any favorable way.



1. GCB-100 operated in a favorable conditions, penetration over 20m

As shown in figure 2, the penetration of GCB-100 in an area with a soil conductivity value of 4 mS is limited to 200 ns or approximately 12 meters. It is of no use at all to set in these conditions a range of 350ns. It would be more appropriate to use 225ns range instead, and adjust the gain accordingly. In general it is much better to have 225 ns of uncompressed good data rather than 350 ns of compressed data with more than half of it being useless.



2. GCB-100 operated in a highly conductive soil, penetration only 15m

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