

## COBRA WIRELESS CBD GPR

### 3 Multi-frequency Antenna 200-400-800 MHz



The COBRA CBD WIRELESS GPR collects data from hundred thousand of pulse reflections each second to help researchers identify objects below ground.

It works in a multi frequency band from 50 to 1400 MHz, thus replacing several antennas with different frequencies used by other and older GPR systems.

The unique CBD antenna transmits pulses with triple frequencies in a blended pulse form.

The CBD antenna selects the optimal frequency needed for all layers and targets at different depths.

The CBD antenna data received can then be used for accurate velocity/RDP values for layers and targets via frequency analysis (using a proprietary formula – with linear relation between reflected frequency and velocity).

A 3-D software translates several 2D radar profiles into a 3D map, depth slice, at different depths. For full 3D, the spacing between 2D survey lines must be very close ( $\lambda/4$ ).

## APPLICATIONS

Just like X-Ray and ultrasound can image the inside of your body, the COBRA CBD WIRELESS GPR can be used to see the inside of different materials and structures in numerous applications:

- Infrastructure & utility mapping;
- Snow & Ice;
- Environmental;
- Geology & Mining;
- Agriculture & Forestry;
- Archeology & Forensics;
- Military & Security.

## ADVANTAGES

COBRA CBD GPR uses a patent pending unique triple frequency antenna design (200, 400 and 800 MHz nominal frequencies). Because the CBD-antennas emits three ultra wide band pulses (150% of nominal frequencies compared to 100% for conventional antennas), that overlap and blend together it can replace multiple antennas with nominal frequencies between 200 and 800 MHz (Frequency Spectrum @ -10 dB for CBD-MF 200/400/800 Antennas).

UNPARALLELED: with an unparalleled bandwidth of 1350 MHz the CBD ANTENNA has several advantages and features.

CUTTING EDGE: cutting edge technology and state of the art in GPR gives the ultimate GPR-system.

- Mixed/blended data with automatic optimum frequency selected through all depths in one single file;
- Near surface data with high resolution/frequency and deep targets with lower required frequencies;
- No need to set frequency filters. The smart CBD antenna filters by itself;
- No "dead zones" or blind spots in data due to blended frequencies;
- Calculate velocity directly from frequency content with proprietary formula;
- Real Time Sampling technology option;
- Air coupled operation without ringing. (Other antennas must be ground coupled to avoid ringing).

Detail from the CBD Multi Frequency antenna sample, clearly shows the high resolution capacity of our CBD Multi antenna. Raw data as collected with the antenna aircoupled, 3 cm above ground.

In the above magnified, colour scaled sample, the spacing between surface tiles (see photo), are seen already in the direct pulse. Each individual shallow 4 mm rebar is also easy detectable.

## TECHNICAL FEATURES

### GPR ANTENNA:

• Antenna:	2-channel Ground Penetrating Radar System with shielded antennae
• Antenna type:	CBD Multi-Frequency Antenna
• Nominal frequencies [MHz]:	200/400/800 MHz
• Operating bandwidth [MHz]:	50-1400
• Applied voltage [V]:	200
• Sample rate:	100.000 samples/s
• Scan rate:	1-100 scans/s per channel; 512 samples per scan
• Sample output:	16 bit digital raw data

**CONTROL UNIT:**

• Control Unit:	Cobra DAQ SP4 / Rugged Tablet PC	
	<ul style="list-style-type: none"> <li>• 6th generation Intel Core i5-6300U 2.4-3 GHz;</li> <li>• 4GB DDR3, 128GB SSD;</li> <li>• 12.3" TFT LCD HD (2736x1824);</li> <li>• Sunlight readable IPS display;</li> <li>• PROCAP multi-touch technology + digitizer pen (1024 pressure levels);</li> <li>• Dual Band WiFi – 802.11ac/802.11a/b/g/n;</li> <li>• Bluetooth (v4.0);</li> <li>• 8MP autofocus rear camera;</li> <li>• 5 MP front camera;</li> <li>• Windows 10 Pro (64-bit);</li> <li>• MIL-STD-810G drop-tested with Rugged Case in impact resistant non-slip composite material;</li> <li>• Pen tethered</li> </ul>	
• RAM Tactical Cart Mount:	Adjustable double socket arm with 1.5" balls Tough Claw and diamond sockets	
• Data format:	Standard Geophysical SEG Y Data Format (.sgy)	
• Channels:	11 or 2 with individual settings for depth, filter and gain	
• Filters:		
	Vertical: Horizontal	Off, Digital; Stacking, background removal
• Gain:	linear - 1 ~ 10	
• Gain levels [dB]:	da 0 ~ +60	
• Data storage:	Raw data storage with memory for Gain used	
• File size:	Limited only by available HDD-space	
• Survey kart:	Push and Pull non-metallic handle and support; tactical RAM-mount; crade for recommended and purchased rugged PDA; PC. 12" quick release non-inflatable wheels; High resolution SW-encoder.	
• Operative Environment:		
• Temperature [°C]:	-20 ~ +40 (Internal temperature);	
• Humidity:	96% snon-condensing;	
• Ingress protection:	connectors IP68	
• Meccanics:		

Size[cm]: Weight [kg]:	60 x 52 x 29; 15
• Platforms:	Airborne operation; high speed air-coupled operation; ground-coupled operation
• Battery:	Integrated 73 Wh Li-Ion
• Battery life [h]:	8
• Operating mode:	manual (1-100 scans/s); distance (SW-encoder) with or without GPS
• GPS positions:	GPS positions integrated with GPR-data for every scan in both time and distance mode
• Depth:	
Operational: Survey:	Adjustable - 0 ~ 2000ns 0 ~ 10m (depending on ground properties)

## ACCESSORIES

### Standard:

- 2 PRG channels integrated, with simultaneous display of both shallow and deep targets, WIFI operation;
- Cobra 200/400/800 MHz CBD DF Antenna/Electronics;
- 73 Wh Li-Ion battery integrated with 8h operation;
- Acquisition data Software DAQ, (COBRA DAQ);
- Post Processing Prism 2 with 3D export module;
- Cobra DAQ SP4/Rugged Tablet PC Control Unit;
- USB with DAQ/post processing software/manual;
- External SW-encoder/connector, (10 mm resolution);
- Cart with quick release wheels/cart Push/Pull handle;
- Rugged Ground kit: Tow Sled for use in any ground with protecting/exchangeable wearing skid Pad;
- External Power/charger, Ethernet RJ/45 connectors;
- External Mascot 2241 Battery Charger;
- Operating Manual on Cobra USB-disk.

### Optionals:

- Car kit;
- GPS Sokkia GRX2/GCX2;
- Software Reflex GPR 3D;
- Wheels 10" or 16".