

**Complete Ground Penetrating Radar (GPR) System** along with data acquisition system, Shielded and unshielded antennae, Rugged windows based computing, processing and storage system, Data Acquisition software, Data processing software and Rugged carrying cases for Antennae and other GPR accessories as per details below:

S. No.	Specification
1	<p><b>Data Acquisition system/Control Unit</b></p> <ul style="list-style-type: none"> <li>a) The unit should have capability of connecting to antennae of low as well as high frequency.</li> <li>b) The unit should have real time data acquisition channel</li> <li>c) The unit should have mode of operation with survey wheel along with Step Mode, Time mode and Distance mode acquisition.</li> <li>d) Capable of collecting data in Line and grid mode.</li> <li>e) Should be GPS compatible.</li> <li>f) Should be suitable for Indian working conditions (temperature &amp; humidity etc.) and comply all environmental norms and applicable FCC Rules. (should be atleast IP 65 compatible)</li> <li>g) It should have suitable ports for connecting with laptop/data acquisition system/any other suitable device for data transfer or display of acquired data either through USB port or Wi-Fi or any other type ports or method (wired or unwired).</li> <li>h) Should have DC power source and the system should be able to run on battery for at least 3 hrs.</li> </ul>
2	<p><b>Antenna Specifications</b></p> <ul style="list-style-type: none"> <li>a) <b>Low frequency unshielded antennae with their electronics, communication cable &amp; necessary accessories.</b>                      The quoted antennae should be having their central frequency with in the given range as shown below. Antennae should be capable of acquiring data in step mode, distance mode along with time mode:                     <ul style="list-style-type: none"> <li>• 15-30 MHz, 25 MHz preferable</li> <li>• 40-60 MHz, 50 MHz preferable</li> <li>• 80-100 MHz, 100 MHz preferable</li> </ul> </li> <li>b) <b>High frequency antennae/shielded Antennae with their electronics, communication cable &amp; necessary accessories. (atleast IP 64 compatible or better).</b>                      Each shielded antennae quoted should be single separate antenna with its central frequency in between the given range below, with facility of acquiring data in step mode, distance mode along with time mode:                     <ul style="list-style-type: none"> <li>• Antenna with center frequency between 200 to 400 MHz (both inclusive), preferable 250 MHz</li> <li>• Antenna with center frequency between 400 to 600 MHz (both inclusive), preferable 500 MHz</li> <li>• Antenna with center frequency between 800 to 1000 MHz (both inclusive), preferable 800 MHz</li> </ul> </li> <li>c) <b>Antenna for concrete mapping with their electronics, communication cable &amp; necessary accessories (atleast IP 64 compatible or better):</b> <ul style="list-style-type: none"> <li>• Antenna with center frequency between 1.4 to 1.6 GHz, preferable 1.6 GHz.</li> <li>• Antenna with center frequency between 2.3 to 2.6 GHz, preferable 2.6 GHz.</li> </ul> </li> </ul>
3	<p><b>Data acquisition software with Manuals</b></p> <ul style="list-style-type: none"> <li>• Capable of acquiring data in both Line and Grid mode.</li> <li>• Capable of integrating with GPS.</li> <li>• Capable of application of markers during data acquisition</li> <li>• Capable of applying filters such as gain, background removal etc.</li> <li>• Capable of displaying line scan.</li> </ul> <p><b>Data processing software with manuals (Windows based compatible latest OS)</b></p> <ul style="list-style-type: none"> <li>• Capable of processing data in both 2D and 3D.</li> </ul>

	<ul style="list-style-type: none"> <li>• Capable of integrating the GPS data for topography correction.</li> <li>• Capable of applying filters such as gain, background removal, migration, , layer velocity analysis &amp; migration.</li> <li>• Capable of displaying the data as line scan as well as wiggle trace.</li> <li>• Line scan display, with zooming in/out facility.</li> </ul>
	<p><b>Other Essential Accessories:</b></p> <ul style="list-style-type: none"> <li>• Rugged Windows 10/7 based light weight (less than 1.25 kg) computing, processing and storage system with at least Intel i5 based processor (2.6 GHz to 3,5 GHz processor, 3MB cache, 4GB RAM, at least 12.1” screen with touch), battery backup of atleast 8 hrs along with spare battery and charger.</li> <li>• Transmission and receiver cables for carrying out CMP or WARR mode data acquisition and spare data cable set for connecting Shielded and Unshielded antennae with Data acquisition system.</li> <li>• Spare rechargeable DC battery for control unit may be provided along with spare charger.</li> <li>• Rechargeable DC battery – 03 set Spare battery for antennae along with 03 set spare chargers for simultaneous charging of spare battery set.</li> <li>• GPS system compatible to GPR along with connecting cables and batteries &amp; charger other necessary accessories.</li> </ul>
4	<p><b>Training, Demonstration and Warranty</b></p> <ul style="list-style-type: none"> <li>• Demonstration and Training at CSIR-CBRI premises should be provided free of the cost.</li> <li>• Comprehensive warranty for 03 years should be quoted applicable from date of commissioning/installation.</li> <li>• Assurance for availability of spares, software and other essential items for atleast five years may be provided.</li> </ul>