## IBIS-FM

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong> (1)</td>
</tr>
<tr>
<td>&lt; 0.1 mm (Line of Sight displacement)</td>
</tr>
<tr>
<td><strong>Spatial Resolution</strong> (2)</td>
</tr>
<tr>
<td>Range 0.5 m, Cross Range: 4.3 mrad</td>
</tr>
<tr>
<td>@1 km, 0.5 m by 4.3 m</td>
</tr>
<tr>
<td>@2 km, 0.5 m by 8.6 m</td>
</tr>
<tr>
<td><strong>Area Coverage</strong></td>
</tr>
<tr>
<td>Extremely broad (e.g. @2 km an area around 5 km²)</td>
</tr>
<tr>
<td><strong>Operating Range</strong></td>
</tr>
<tr>
<td>10 m to 4500 m</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong> (3)</td>
</tr>
<tr>
<td>-50°C to +55°C</td>
</tr>
<tr>
<td><strong>Scan Time</strong></td>
</tr>
<tr>
<td>Less than 3 min</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
</tr>
<tr>
<td>Less than 100 W</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td>From 150 Kg to 250 kg, depending on the version</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td>IP66</td>
</tr>
<tr>
<td><strong>Certifications</strong></td>
</tr>
<tr>
<td>CE, FCC, IC</td>
</tr>
</tbody>
</table>

### OPTIONAL ITEMS

The IBIS FM basic configuration, including linear scanner, radar sensor and power supply module, can be provided with the optional tools listed below:

- **Genset**: Diesel generator controlled by IBIS Controller
- **Digital Camera**: High Resolution Digital Camera
- **Radio Link**: Wi-Fi point-to-point link for data transfer
- **Radio Link Repeater**: Radio link repeater for data transfer
- **Weather Station**: Weather station controlled by IBIS Controller

### SOFTWARE SPECIFICATIONS

**IBIS Controller**: Acquisition & system management software

- Session setup wizard
- Power supply control
- Status information
- Preliminary data processing
- Automatic data transfer
### IBIS Guardian:
Real time processing, data interpretation & early warning software

- Automatic atmospheric correction
- Alarm generation with user-defined levels
- Multiple alarm criteria based on area definition
- 3D interactive data representation
- Data export to mine planning third party software
- External Digital Terrain Model (DTM) import

### RADIO-EQUIPMENT SPECIFICATIONS

#### Transmitter specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio-frequency band</td>
<td>17.05-17.35 GHz</td>
</tr>
<tr>
<td>Maximum power at the antenna connector</td>
<td>12 dBm</td>
</tr>
<tr>
<td>Emission bandwidth</td>
<td>300 MHz</td>
</tr>
<tr>
<td>Modulation</td>
<td>Linear Frequency Modulated Continuous Wave (LFMCW)</td>
</tr>
<tr>
<td>Spurious emissions</td>
<td>&lt;-30 dBm/MHz</td>
</tr>
<tr>
<td>Standby emissions</td>
<td>&lt;-70 dBm/MHz</td>
</tr>
</tbody>
</table>

#### Receiver specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio-frequency band</td>
<td>17.05-17.35 GHz</td>
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</table>

#### Antenna specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3dB Beamwidth</td>
<td>In the horizontal plane: 50 deg</td>
</tr>
<tr>
<td></td>
<td>In the vertical plane: 20 deg</td>
</tr>
<tr>
<td>Polarization</td>
<td>Vertical</td>
</tr>
<tr>
<td>Gain</td>
<td>14 dBi</td>
</tr>
</tbody>
</table>

(1) Typical instrumental accuracy not considering environmental effect. The accuracy is measured as Line of Sight displacement standard deviation evaluated in one hour assuming a stable reference target providing a Signal to Noise Ratio (SNR) better than 20dB.

(2) Range resolution depends on the frequency bandwidth permitted by local radio regulation. As an example, in USA and Europe the bandwidth is limited to 200 MHz and the range resolution is 0.75 m.

(3) For temperature below -20° the system must be operated inside a heated container shelter

(4) The specification refers to antenna type 6. Antenna with different characteristics can be used according to the application requirements