Introduction:
Motorola's newest GPS antenna is a high performance, compact size designed to accommodate a wide variety of OEM, system integrator and end user applications. The 24 dB (including 6 Meter coax cable) active patch, Antenna97 operates from 5 VDC at just 20 mA supplied by the ONCORE GPS receiver or an external source depending on the specific application. All Antenna97 configurations feature molded-in coaxial cable and offer a choice of coaxial connectors and two cable lengths. The antenna design reflects Motorola's high standard for performance when operating in foliage/urban canyon environments and in the presence of electromagnetic interference.

The small footprint, low profile package and the shielded LNA (low noise amplifier) offers significantly enhanced performance while operating in a variety of GPS environments. Magnetic and direct mount options make the antenna suitable for a number of different installation configurations. The OEM or system integrator can count on signal gain and noise figure performance over an ambient operating temperature range which leads the industry.

For configuration assistance, order placement and technical support call:

SYNERGY SYSTEMS, LLC
P.O. Box 262250 • San Diego, CA 92196
Phone: (619) 566-0666 • Fax: (619) 566-0768
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ONCORE™ GPS Antenna Technical Characteristics

**Introduction:** Motorola GPS antennas with model designations beginning with "ANT" are based on a 2 inch, 24 dB active patch design which may be powered by 5 VDC at 25 mA from a Motorola ONCORE GPS receiver or a separate power source depending on the application. Since 1992 this antenna design has proven extremely reliable and has performed successfully in a wide range of uses including automobile, truck and bus tracking, timing, GIS and airborne applications. The antenna module is supplied with one of four different types of mounting shrouds, depending on customer needs, but may be used alone for integration into custom designs. The new, smaller Motorola Antenna97 (available in September, 1997) provides the same general performance characteristics at a lower cost. See Tech-Note #491-1 and #491-2 for details.

<table>
<thead>
<tr>
<th>General Characteristics</th>
<th>Performance Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antenna Description</strong></td>
<td>- Low Profile Active Microstrip Patch Antenna encapsulated in a molded plastic housing</td>
</tr>
<tr>
<td><strong>Operating Frequency</strong></td>
<td>- L1 (1575.42 MHz)</td>
</tr>
<tr>
<td><strong>Input Impedance</strong></td>
<td>- 50 Ohm</td>
</tr>
<tr>
<td><strong>VSWR</strong></td>
<td>- 2:1 (typical) @ 1575.42 MHz</td>
</tr>
<tr>
<td><strong>Bandwidth</strong></td>
<td>- 60 MHz (typical)</td>
</tr>
<tr>
<td><strong>Polarization</strong></td>
<td>- Right hand circular</td>
</tr>
<tr>
<td><strong>Azimuth Coverage</strong></td>
<td>- 360 degrees</td>
</tr>
<tr>
<td><strong>Elevation Coverage</strong></td>
<td>- 0 degrees to 90 degrees</td>
</tr>
<tr>
<td><strong>Gain Characteristics</strong></td>
<td>- +3 dBic minimum at zenith</td>
</tr>
<tr>
<td></td>
<td>- 0 dBic minimum at 30 degrees elevation</td>
</tr>
<tr>
<td></td>
<td>- 6 dBic minimum at 0 degrees elevation</td>
</tr>
<tr>
<td><strong>Filtering</strong></td>
<td>- -30 dB @ 1625 MHz</td>
</tr>
<tr>
<td></td>
<td>- -30 dB @ 1475 MHz</td>
</tr>
<tr>
<td><strong>LNA Gain</strong></td>
<td>- 22 dB minimum</td>
</tr>
<tr>
<td><strong>Noise Figure</strong></td>
<td>- 2.5 dB maximum</td>
</tr>
<tr>
<td><strong>Burnout Protection</strong></td>
<td>- Protected from damage by RF signals when the power receive by the antenna is no greater than +17 dBm absolute maximum</td>
</tr>
</tbody>
</table>

**Dynamics**
- Vibration: 7.7G per Military Standard 810E Method 514.4
- Shock: 30 g (16 ms sawtooth) Military Standard 810E Method 514.4

**Power Requirements**
- 5 ± 0.25 Vdc 50 mA p-p ripple (maximum)

**Power Consumption**
- 22 mA typical @ 5 Vdc (50 mA maximum)

**Dimensions**
- 4.01 (dia.) x 0.89 in. (102 mm dia x 22.6 mm)
- 33.3 L x 29.8 W x 8.8 H mm (Substrate with shield)

**Weight**
- 4.8 oz. (136.3 g)

**Connectors**
- 90 degree OSX (subminiature snap-on)

**Antenna to Receiver Interconnection**
- Single coaxial cable (-12 dB maximum loss at L1:1575.42 MHz for Motorola GPS receivers)

**Operating Temp.**
- -40°C to +100°C

**Storage Temp.**
- -40°C to +65°C

**Humidity**
- 95% noncondensing +30°C to +60°C

**UV Radiation**
- 1000 hrs. @ +60°C as per ASTM G53-88

**Salt Spray Test**
- 96 hrs at 35°C

**Optional Features**
- Four mounting options: direct, post, lip, magnetic
- 6 & 3 meters of RG-58 cable asy: subminiature to subminiature or subminiature to BNC or SMB (offer TNC & SMA, model numbers not available)

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