CMA-5024 GPS/SBAS Sensor Unit — Specifications

**DESIGN REQUIREMENTS**

- **ARINC**
  - 7406 Characteristic
  - 75-4 Characteristic
- **RTCA**
  - DO-229D SBAS MOPS
  - DO-246A (in development)
  - DO-235C (in development)

**CERTIFICATION**

- **FAA**
  - TSO C-146 Delta-3 and TSO C-146C Delta-4
  - TSO 163a and TSO-162a (in development)
- **Software**
  - RTCA-179B Level B
- **Hardware**
  - RTCA-254B Level B

**RECEIVER**

- **Type**
  - 24 parallel Narrow Correlators® (patented) simultaneous processing channels
  - 4 SBAS channels + 20 GPS channels
- **Frequency**
  - L1, L1C/L2C MHz: GPS and SBAS CA codes
- **Signal Performance**
  - Fully compliant to RTCA-229D GPS and SBAS signal acquisition, tracking, and positioning accuracy performance under all interference conditions
- **Time to First Fix**
  - < 75 seconds maximum, 95% confidence
- **Navigation Accuracy**
  - SA OFF, RTCA-179B > 0.9999% availability
  - SA OFF, Primary Means navigation as per RTCA-229D
- **Velocity Accuracy**
  - < 0.1% error, 95%, SA OFF, velocity as per RTCA-229D Appendix F
- **Position Update**
  - Independent 1Hz and 10Hz updates
- **Approach Guidance**
  - 20Hz ARINC-710 LOC/G/S and near 10Hz guidance outputs
  - Auto-attack compliant with TSO-190
  - RTE
  - Continuous coverage, >95% fault detection
  - MTBF > 40,000 hours

**NEW INTERFACES SUPPORTING GPS APPROACH**

- **U.S. Link-90**
  - ARINC 710 Digital 500 I/O
- **DME**
  - ARINC-703
- **Cross-FM**
  - ARINC-409 for dual land and double installations
- **Linear Deviations**
  - ARINC-409

**OTHER FEATURES**

- **Power-Alignment**
  - Automatic incorporation as per RTCA-229D Appendix G
- **FDE/Predictive RAIM**
  - Fault detection and exclusion with automatic incorporation of processor alignment data as per RTCA-229D
- **Approach Capability**
  - SBAS L1/L2, UTRAN as per RTCA-229D
- **SBAS F AIS Database**
  - RTCA-229D certified, maximum worldwide database < 4MB per minute per cycle
  - Database Capacity
    - Built in 2 cycle capacity, 12MB/cycle, 240K total flight memory for SBAS F AIS database
  - Data Loader
    - RS-232 and ARINC-421-3-440, supports differential SBAS F AIS database loads
  - ADS-B Support
    - Fully compliant with FAA AC20-16A
    - RTCA-229D Appendix I
  - Maintenance Port
    - 41-pin connector
  - 150-pin connector

**PHYSICAL**

- **Size**
  - 2.8” x 6.5” x 0.5” (71 x 165 x 13 mm), Alternate form factor ARINC-7404
- **Weight**
  - 5.5 lb (2.5 kg)
- **Input Power**
  - 18 to 36 VDC
- **Consumption**
  - 20W max, 18W typical, with digital interfaces

**ENVIRONMENT**

- **Temperature**
  - DO-160E Cat. A: 0 to +70°C
- **Humidity**
  - DO-160E Cat. B
- **Vibration**
  - DO-160E, Cat. B
- **Cooling**
  - Not required
- **EMC/EMI**
  - DO-160E Cat. Y (20 Vrms)
  - MIL-S-1883B
  - Lightning
  - DO-160E Cat. A:2303

**LEGACY ARINC-743 INTERFACES**

- **Inputs**
  - 8 ARINC-429, 1 RS-232
- **Outputs**
  - 3 ARINC-429,
  - 1 RS-232
  - 1 2-wire fault output discrete
  - Three 10 Vrms rings

Specifications are subject to change without notice. Narrow Correlator® tracking technology is a registered trademark of NovAtel Inc. IntegriFlight™ is a trademark of CMC Electronics Inc.
CMA-5024 GPS/SBAS Sensor Unit — Specifications

### DESIGN REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARINC</td>
<td>7481 Characteristic</td>
</tr>
<tr>
<td></td>
<td>754-4 Characteristic</td>
</tr>
<tr>
<td>RTCA</td>
<td>DO-239D (SBAS MOPS)</td>
</tr>
<tr>
<td></td>
<td>DO-239E (in development)</td>
</tr>
<tr>
<td></td>
<td>DO-235E (in development)</td>
</tr>
</tbody>
</table>

### CERTIFICATION

<table>
<thead>
<tr>
<th>Agency/Standard</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAA</td>
<td>TSO C-145A Beta-3 and TSO C-146c Delta-I</td>
</tr>
<tr>
<td></td>
<td>TSO C-160a (in development)</td>
</tr>
<tr>
<td></td>
<td>FAA Part 15</td>
</tr>
<tr>
<td>Software</td>
<td>RTCAOD-1788 Level B</td>
</tr>
<tr>
<td>Hardware</td>
<td>RTCAOD-204 Level B</td>
</tr>
</tbody>
</table>

### RECEIVER

<table>
<thead>
<tr>
<th>Type</th>
<th>24 parallel Narrow Correlator® (patented) interference processing channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>4 SBAS channels + 20 GPS channels</td>
</tr>
<tr>
<td>Signal Performance</td>
<td>Fully compliant to RTCAOD-239D GPS and SBAS signal acquisition, tracking, and positioning accuracy performance under all interference conditions</td>
</tr>
<tr>
<td>Time to First Fix</td>
<td>7.5 seconds maximum, 95% confidence</td>
</tr>
<tr>
<td>Navigation Accuracy</td>
<td>SF-OFF, RNP1 &gt; 0.99999% availability with SBAS, and Primary Measures</td>
</tr>
<tr>
<td></td>
<td>Navigation as per RTCAOD-239D</td>
</tr>
<tr>
<td>Mochaity Accuracy</td>
<td>C/1000, 95%, SA-OFF, velocity as per RTCAOD-230D Appendix F</td>
</tr>
<tr>
<td>Position Update</td>
<td>Independent 1Hz and 10Hz outputs</td>
</tr>
<tr>
<td>Approach Guidance</td>
<td>20Hz ARINC-710 LOC/GS and near 10Hz orthoradial offsets</td>
</tr>
<tr>
<td>Antenna</td>
<td>Active antenna compliant with TSO C-190</td>
</tr>
<tr>
<td>RTE</td>
<td>Continuous coverage, &gt;95% fault detection</td>
</tr>
<tr>
<td>MTBF</td>
<td>&gt; 40,000 hours</td>
</tr>
</tbody>
</table>

### NEW INTERFACES SUPPORTING GPS APPROACH

<table>
<thead>
<tr>
<th>Interface Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Lin-x-air</td>
<td>ARINC-710 Digital 503 DEC</td>
</tr>
<tr>
<td>DME</td>
<td>ARINC-703</td>
</tr>
<tr>
<td>Control Head</td>
<td>ARINC-409</td>
</tr>
<tr>
<td>Cross-Feed</td>
<td>ARINC-409 for dual and triple installations</td>
</tr>
<tr>
<td>Linear Deviation</td>
<td>ARINC-409</td>
</tr>
</tbody>
</table>

### OTHER FEATURES

- **Water Pressure:** Automatic incorporation as per RTCAOD-239D Appendix G
- **FDE/Predictive RAIM:** Fault detection and isolation with automatic incorporation of pressure altimeter data as per RTCAOD-239D Appendix G
- **Approach Capability:** SBAS LPV (LP), GBAS/LRS as per RTCAOD-239D Appendix G
- **SBAS MOPS Database:** RTCAOD-230D certified, maximum worldwide database = 448 maximum per cycle
- **Database Capability:** Built-in 2 cycle capacity, 126MB cycle, 2496 total flash memory for SBAS FAS database
- **Data Loader:** RS-232 and ARINC-429/3-429, supports differential (SBAS FAS database loads)
- **ADI-8 Support:** Fully compliant with FAA-AC23.16A and RTCAOD-230D Appendix II
- **Maintenance Port:** 41-pin connector
- **15-pin connector**

### PHYSICAL

- **Size:** 2.8 x 8.5 x 9.5 (226 x 216 x 244 mm)
- **Weight:** 0.55 lb (2.5 kg)
- **Power Input:** 18 to 38 VDC
- **Consumption:** 10W max, 18W typical, digital interfaces

### ENVIRONMENT

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>DO-160E Cat A 50°C (122°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>DO-160E Cat A 50°C (122°F)</td>
</tr>
<tr>
<td>Altitude</td>
<td>DO-160E Cat A 50°C (122°F)</td>
</tr>
<tr>
<td>Cooling</td>
<td>DO-160E Cat A 50°C (122°F)</td>
</tr>
<tr>
<td>Lightning</td>
<td>DO-160E Cat A 50°C (122°F)</td>
</tr>
</tbody>
</table>

### LEGACY ARINC-743 INTERFACE

- **Inputs:** ARINC 429, 15-pin connector
- **Outputs:** ARINC 429, 15-pin connector

### Specifications

Specifications are subject to change without notice. Narrow Correlator® tracking technology is a registered trademark of NewRay Inc. Integriflight® is a trademark of CMC Electronics Inc.