# Features

- Intel Core i7 and i5 Processor options
  - Intel Core i7 3615QE processor, 2.3 GHz
  - Intel Core i7 3612QE, 2.1GHz
  - Intel Core i7 3555LE, 2.5GHz
  - Intel Core i7 3517UE, 1.7GHz
  - Intel Core i5 3610ME, 2.7GHz
- Mobile Intel QM77 Express chipset
- Dual–channel DDR3, up to 16GB
- Type 6 COM Express Revision 2.0
- Basic 95mm x 125mm size
- Seven PCI Express x1 ports
- One PCI Express x16 PEG port (Gen3)
- Three Digital Display Interfaces (DDI)
- Single Gigabit Ethernet
- 8 USB ports, including 4 USB 3.0 ports
- TPM and AMT support

# CEQM77

The CEQM77 combines 3rd generation quad-core performance Intel Core i7 processor and the Mobile Intel QM77 Express chipset with Radisys design expertise to provide breakthrough processing performance on a basic size Type 6 COM Express Revision 2.0 module. The basic size 95mm x 125mm module is ideal for compute intensive applications such as medical imaging, communications, military–aerospace and test and measurement applications that require high levels of processing performance. Radisys delivers the CEQM77 module in a COM Express Revision 2.0, Type 6 pin out, enabling customers to take advantage of new technology such as Digital Display Ports while boosting features and performance with up to 16GB memory, additional PCI Express lanes, and improved storage, graphics and audio. The CEQM77 module provides TPM support as well as support for Intel Advanced Management Technology (AMT) enabling remote access and diagnostics via the Radisys Embedded Software Platform (eSP).

The Radisys CE family of COM Express products enable customers to start designing at the same time as processor release, saving months of development time and resources. OEM focus can remain on core competencies such as software and application development rather than high speed circuit design. Planned feature changes, demand fluctuations and performance upgrades can be handled without product re–designs using the CE family. CE modules can reduce service repair inventories, and simplify upgrades, contributing to the success of the product over its lifetime.

## COM EXPERT DESIGN SERVICES

OEMs can depend on the Radisys COM Expert team to support their design at every stage, from schematic checks to the handling of entire custom carrier and system designs. Radisys COM Expert services include options for software utilities, custom BIOS, mechanical models, debug assistance and more to customers using Radisys CE processor modules. Design consulting and debug services are also available to support OEM product development at any stage; ask your Radisys Account Executive for more information.

# CEQM77 Specifications

| Feature | Function | Description |
|---|---|---|
| Processor | 3615QE | Core i7 3615QE 2.3GHz / 4 Core / 6MB cache / 45W |
| | 3612QE | Core i7 3612QE 2.1GHz / 4 Core / 6MB cache / 35W |
| | 3555LE | Core i7 3555LE 2.5GHz / 2 Core / 4MB cache / 25W |
| | 3517UE | Core i7 3517UE 2.7GHz / 2 Core / 4MB cache / 17W |
| | 3610ME | Core i5 3610ME 2.7GHz / 2 Core / 3MB cache / 35W |
| Memory | Type | Two 204-pin right-angle SO-DIMM sockets, 1600 MT/s and 1333MT/s |
| | Capacity | Up to 8GB per channel, for a maximum of 16GB memory |
| Flash | 16MB system flash for BIOS storage | |
| Video | Intel Gen 7.0 integrated graphics engine | LVDS supports 18 bit or 24 bit single/dual channel panel support resolutions up to 1920x1200 pixels at 60Hz |
| | | VGA with resolutions up to 2048 x 1536 pixels at 75Hz |
| | | Up to 3 Digital Display Interfaces<br>■ DDI 1 (PCH Port B) supports DisplayPort, HDMI or SDVO<br>■ DDI 2 (PCH Port C) supports DisplayPort or HDMI<br>■ DDI 3 (PCH Port C) supports DisplayPort, HDMI or eDP<br>■ DisplayPort / eDP resolution up to 2560 x 1600 pixels at 60Hz, HDMI / DVI resolution 1920 x 1200 @ 60Hz, SDVO resolution 200MP/s |
| | External | One x16 PCI Express interface for external PCIe x16 graphics device |
| Networking | Single Lan | One 10/100/1000BaseT via Intel 82579 controller |
| Audio | High Definition Audio | |
| | Speaker Out | |
| Storage | SATA | 4 SATA ports supporting both 1.5 and 3.0 Gbps operation, 2 ports supporting 6.0Gbps<br>Supports RAID 0, 1, 5 and 10 |
| PCI Express | PCI Express x1 | Seven PCI Express x1 Ports: |

- Ports 0-3 configurable as one x4, or two x2; or one x2 and two x1; or four x1 ports
- Ports 4-6 can be configured as three x1 or one x2 and one x1 ports

| | | |
|---|---|---|
| | PCI Express x16 | One PCI Express x16 Graphics Expansion Port - Configurable as two x8 or one x8 and two x4 ports |
| USB | Eight USB ports, four configurable as USB 3.0 ports with tranfer rates up to 5Gb/s, all eight configurable as USB 2.0 | |
| LPC | One LPC interface | |
| TPM | ATMEL AT97SC3204 compliant with TPM1.2 | |
| Power | +12 power rail, primary input<br>Supports 9.0V-16.8V power supply | |
| Power Management | ACPI 4.0 supporting states S0, S3, S4, S5 G3 and C0, C1, C3, C6, C7<br>AMT support Intel ME Power States M0, M3, Moff | |
| Miscellaneous | One 100KHz SMBus from PCH | |
| | One 400KHz I$^2$C bus from MCU | |
| | Eight GPIO (four GPI and four GPO) | |
| | Watchdog timer | |
| BIOS | AMI Aptio EFI Firmware | |
| OS | Windows XP | Embedded Standard 64bit |
| | Windows 7 | 32bit and 64bit |
| | Windows Server 2008 | 64bit |
| | Ubuntu Linux 10.04 | 32bit and 64bit |

## Physical Specifications

| | | | |
|---|---|---|---|
| Physical | Dimensions | 95mm x 125mm | |
| | Compliance | PICMG COM Express R2.0 Basic Form Factor, Type 6 | |
| Environment | Cooling | Forced air | Class EAC1 as defined in the ANSI/VITA 47-2005 |
| | | Conduction | Class ECC1 as defined in the ANSI/VITA 47-2005 |
| | Temperature | Operating | Up to 2300m (7500 ft), 0 to 60C<br>Derated -1.1 C per 305 m (1000 ft) above 2300 m (7500 ft) |
| | | Non-operating | -40°C to +85°C |
| | Shock | Operating | 30G, half sine shock pulse, 11ms duration, 3 times per face |
| | | Non-Operating/Unpacked | 40G, half sine shock pulse, 11ms duration, 3 times per face (unpackaged) |
| | | Transportation/Packaged | Fixtured assembly: 50G, 17.4 ms trapezoidal pulse<br>Drop test, 10-up bulk packaging, 30in free-fall, one drop on each of six faces |
| | Vibration (random) | Operating | Random 5Hz to 2KHz, 7.7 grms, 10min in each of 3 axes<br>5Hz - 20Hz: 0.004g2/Hz ramping up to 0.04g2/Hz<br>20Hz to 1000Hz: 0.04g2/Hz<br>1000Hz to 2000Hz: 0.04g2/Hz ramping down to 0.01g2/Hz |
| | | Non-Operating/Storage | Random 5Hz to 2KHz, 9.7 grms, 10min in each of 3 axes<br>5Hz - 20Hz: 0.006g2/Hz ramping up to 0.06g2/Hz<br>20Hz to 1000Hz: 0.06g2/Hz<br>1000Hz to 2000Hz: 0.06g2/Hz ramping down to 0.02g2/Hz |
| | Humidity | Operating | 5% to 95% non-condensing. 95%RH@30C, linear derating to 25%RH@60C |
| | | Non-Operating/Storage | 5% to 95% non-condensing |
| | Altitude | Operating | To 15,000ft (4570m) |
| | | Non-Operating/Storage | To 40,000ft (12000m) |
| Regulatory | Safety | UL60950-1, EN60950-1, IEC60950-1 | |
| | | RoHS compliant | |
| | EMC | EN55024, EN55022, and FCC Part 15, Subpart B, Class B | |
| Warranty | Standard | Two years, parts only | |