



# On-board Telephony and IFE Installation Solutions That Make a Difference.

With a legacy of providing complete avionics systems installation provisions since 1984, ECS uses advanced technology and the highest manufacturing standards to develop easy-to-install, cost-effective solutions for the integration of on-board mobile connectivity and next generation in-flight entertainment systems.

Our solutions conform to all industry standards while optimizing aircraft space requirements. They are simple in concept, lightweight, and combine full electrical and structural integration. In short, we offer effective, efficient system installation solutions that stand up to the rigors of in-flight and on the ground operations.





## Technologies That Offer True Plug&Play Capability.

Using creative design and efficient material specification, ECS is providing a turnkey approach to creating installation solutions that offer flexibility in addressing both on-board connectivity and next generation IFE installation needs. Our dedicated professional staff takes the time necessary to research

complex system specifications, source optimum components and purchase high quality aerospace materials. Each installation solution design is then tailored for the individual scope and requirements of the specific aircraft and system type. With extensive engineering experience in the area of cooling and filtration, ECS has the

necessary skills to optimize structures to make best use of cooling resources. We balance LRU cooling requirements with aircraft systems while taking into consideration industry standards as well as OEM and customer requirements for airflow and interface pressure. Once the design is approved, our fully equipped state-of-the-art

**A380**

**B777**

**A319/A320/A321**



Left: Fully Integrated E&E Bay IFE Installation Racks

Center: Door 1 IFE Installation Rack

**B787**

Integrated Cabin Electronic Compartment (CEC) IFE Cabinet Assembly



Above Wheel Well



### Full Compliment of In-house Capabilities:

- Design
- Engineering
- Manufacturing
- Product testing
- Quality control
- Certification and AOG support

- Latest engineering technology to ensure efficient design and approvable results.
- Lightweight composite design and fabrication.
- State-of-the-art mechanical fabrication and assembly.



- On-site product structural substantiation and life-cycle testing.
- Electrical cable design and wire-harness assembly with fiber optic integration.
- Advance cooling and air-flow distribution design that sends correct air to each LRU box and creates a seamless interface with the aircraft cooling system.
- Certification support with in-house DER, DAR, and DMIR personnel to provide approved design data packages, STCs with PMA approvals, and product conformity inspections.
- Full product testing and quality inspection to guarantee electrical and physical integrity.

Photo: In-house Static structural substantiation testing of the center equipment E&E Bay IFE installation rack for A380

### The following reports/documents are generated for ECS products as needed to substantiate and demonstrate compliance to Air Worthiness Requirements:

- |  |   |  |  |
|--|---|--|--|
| • Structural Substantiation Plans and Summary  | • Fire Penetration Test Plans and Test Reports              | • Weight Analysis/Weight Report                    | • Environmental Test Plans (RTCA/DO-160E) and Test Reports |
| • Structural Analysis (FEA or classical)   | • Smoke Containment Test Plans and Test Reports             | • Interface Loads Analysis                         | • Accelerated Life Test Plans and Test Reports             |
| • Static Test Plans and Reports  | • Qualification Plans                                       | • Fan Blade Out (FBO) or Windmilling Analysis      | • Failure Modes and Effects Analysis                       |
| • Air Flow Calibration Instructions and Reports  | • Acceptance Test Procedures and Test Reports               | • Weight and Balance                               | • Mil-Std-210 Reliability and Life Prediction Analysis     |
| • Smoke Detection Test Plans and Test Reports  | • Air Flow and Cooling Performance Analysis                 | • Power Wire Analysis                              | • Bonding, HIRF and Lightning Protection Analysis          |
| • Flammability, Smoke Density and Toxic Gas Emissions Assessment, Test Plans, and Test Reports | • Cooling and Thermal Appraisal Test Plans and Test Reports | • Data Lists / Configuration Index Documents (CID) |  |
|  | • Bonding and Grounding Analysis                            | • Service Bulletins                                |  |
|  |   | • Engineering Orders                               |  |
|  |   | • Air Flow Diagrams                                |  |



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manufacturing facility takes over to ensure not only quality fabrication, but that you will have a seamless experience from start to finish during the life-cycle of the project. ECS product solutions are rigorously tested and structurally substantiated on-site to meet ARINC, FAA, JAA, Boeing, Airbus, and other industry standards. They offer standard and custom cooling and filtration

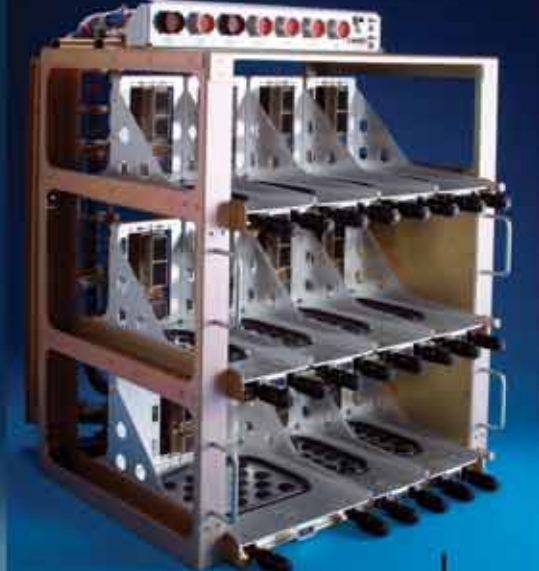
systems, and conform to the operational shock, crash safety, and vibration requirements specified in the current RTCA documents. The end result is a lightweight, cost-effective product that uses minimal labor for installation.

**A380**



Left: Fully Integrated E&E Bay IFE Installation Racks  
Center: Door 1 IFE Installation Rack

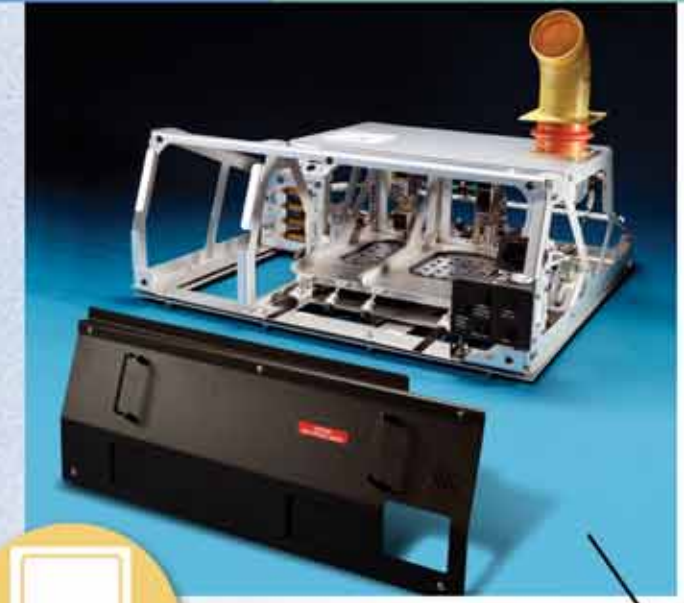
**B777**



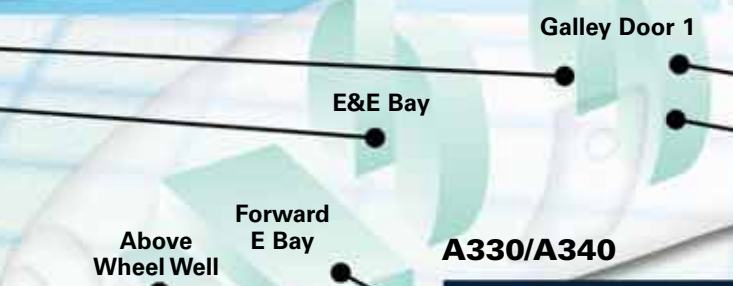
**A319/A320/A321**



Overhead Storage Compartment Video Control Center (VCC) Installation Shelf Assembly



**A318/A319/A320/A321**  
Integrated Overhead Storage Compartment GSM Installation Shelf Assembly



Forward Overhead Storage

Galley Door 1

E&E Bay

Forward E Bay

Above Wheel Well

**A330/A340**

**B747**

**A330/A340/B747/B767/B777/B787**

**B787**

Integrated Cabin Electronic Compartment (CEC) IFE Cabinet Assembly



Left: Integrated IFE Installation Rack  
Center: Wall Mounted VCP (Video Control Panel)



Integrated Flight Attendant IFE Workstation Monument

**B737**



**A340**



Integrated Cargo Bay IFE Installation Racks



Aft Overhead Storage

Aft Cargo Bay

**ECS Plug&Play Technology Features:**

- Aircraft interface attachment points built to conform to all operational shock, crash safety, and vibration requirements.
- ARINC 600 equipment integration (ARINC 404A available if needed).
- ARINC tray assemblies with advanced plenum designs and air pressure sensors.
- Built-in air pressure test ports.
- Forced air cooling and filtration systems that balance airflow distribution and optimize the cabin air supply interface.
- Incorporation of fiberglass and other lightweight materials in cooling duct-work for ultra light and efficient shapes.
- Stand alone smoke detection systems or aircraft integrated detection systems
- Full wire harnessing with appropriate electrical termination and RF cabling as needed.
- Fiber Optic Cable Technology.
- Lightweight honeycomb composite design and fabrication and aircraft grade aluminum construction.
- Class "C" cargo enclosure designs available for smoke and fire containment.



Diagram: Fully Integrated GSM In-flight Telephony Mobile Service Installation Kit for B737, A319, A320, and A321 Aircraft.

**Diagram Key:**

- System components that cover B737, A319, A320, and A321
- System components that cover B737 only
- System components that cover A319, A320 and A321 only

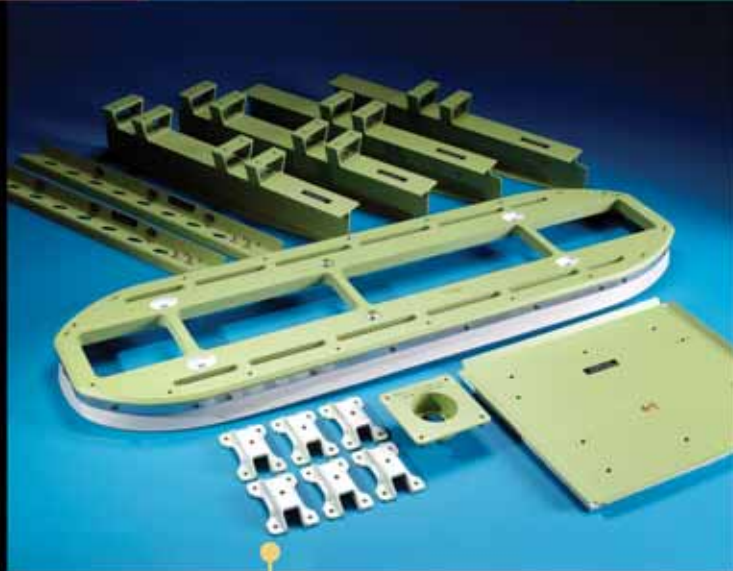
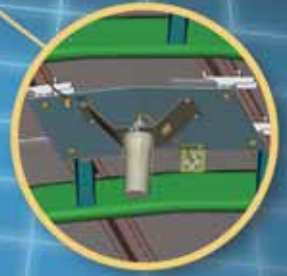
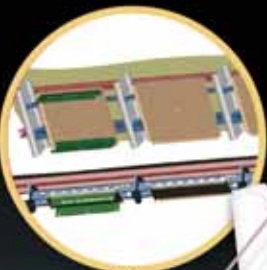
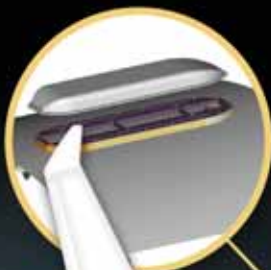


Photo: SATCOM IGA Antenna Adaptor for On-board INMARSAT Communications Antennas Offering In-flight Cabin Connectivity — FAA and EASA STC Approved.

Fully Integrated Installation Shelf Containing the CSDU, SCM, and AGS A319/A320/A321

GSM Circuit Breaker      SATCOM IGA Antenna and Adaptor      Network Control Center & Base Transceiver Station (BTS)



GSM Flight Deck Control Panel



Cabin Control



E&E Bay GSM Server B737



Cabin Phone Annunciators

Cabin Satellite Data Unit (CSDU) B737

Cabin RX Antenna

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ECS is an ISO9001 & AS9100 registered company that is dedicated to complete customer satisfaction and strongly committed to the highest standards in quality management.

