

“Common Data Loading Reference Standards/Tools”

For Development Support of 787 Application Developers and Suppliers for ARINC 615A via AFDX, 615-4 and CAN Bus Protocol Data Loading



“Making data loading simple”

"Common Data Loading Reference Standards and Tools" Concept for Support of the 787 Development Community



Tech S.A.T 787 Reference Loader



Tech S.A.T 787 Reference Target

Tech S.A.T supplies 615A data loading reference tools to the 787 Application Development Community based around the Shop loader implementation of ground-load mode 615A. These reference tools also support the aircraft loading function. These reference tools, hosted on development stations provide a full 615A via AFDX and CAN Bus reference, development, media creation, inspection and test capability for 787 suppliers and application developers. Developed in cooperation with Honeywell, and stringently tested against the aircraft on=board loading protocols, these standards support all phases of supplier LRU/LRM/application data loading engine development.

- ***The result is a 615A reference standard common to all 787 suppliers that is traceable from development to the final (off-aircraft/on-aircraft) data loading function implementations.***

787 Common Reference Tool/Standards for Developers

Program Concept:

- Based on Tech S.A.T COTS 615A AFDX data loading products
- Supplies a “golden standards” based on Tech S.A.T-Honeywell agreed implementations of off-aircraft data loading tool and on-aircraft data loading function as defined by the supplier
- Shop load mode is the Tech S.A.T 787 Rev B 615A via AFDX: Aircraft mode as defined by Honeywell/Boeing (Tech S.A.T 787 Rev B 615A)
- Available for distribution throughout the 787 Development Community as COTS products by Tech S.A.T
- Supports RLT (Reference Load Tool) requirements for data loading protocol checking
- Tech S.A.T supplies full product support for tools plus developer assistance
- LRU/LRM 615A engine support provided by Tech S.A.T

“Golden Reference Standards” Program Concept:



787 Reference Target Version 1.0

- Tech S.A.T has provided to the on-aircraft load function supplier a reference target for 787 (“golden standard” 787 loadable 615A via AFDX target)
- Target standard is switchable between shop and on-aircraft modes
- Testing validates “golden standard” and locks target to the on-aircraft and off-aircraft Tech S.A.T 615A implementations
- Tech S.A.T supplies COTS versions of the Reference Target (and Loader) available to all 787 application developers and suppliers, along with training, product support and 615A consulting as required
- If development forces subtle protocol changes, the reference target is used to communicate the changes to the community to assure commonality between the on-aircraft and off-aircraft and developers

"Golden Reference Standards" Program Concept:



787 Reference Loader Version 1.0

- Tech S.A.T supplies a Reference Data Loader to match the on-aircraft and off-aircraft loading configuration
- Code in reference loader is matched to the implementation of the on-aircraft
- Tech S.A.T works with the 787 on-aircraft supplier to maintain these developer standards throughout the 787 program and beyond
- Tech S.A.T supplies COTS versions of the Reference Loader (and Target) to all 787 application developers and suppliers, along with training, product support and 615A consulting as required
- Protocol standard support is assumed by Tech S.A.T

"Golden Reference Standards" Program Benefits:

- Provides a transportable reference standard for the entire 615A development community – everyone develops against the same standards
- Standards locked to Reference LoadStation and with full compatibility with on-aircraft load tool 615A data loading protocol (“golden standard concept”)
- Changes in the data loading protocol are communicated and verified quickly throughout the development community by distribution of upgraded reference standard software by Tech S.A.T
- Fully supported by Tech S.A.T (where development tools are a core business)
- Potential for certification credit (locked and controlled development standard and tools)
- Reference Load Tool (RLT) functionality for data loading protocol checking are supported

787 Tech S.A.T. Supplier/Application Developer Support Packages

Boeing has asked Tech S.A.T to supply the 787 Developer Community with assistance in data loading implementations (615A over AFDX, CAN Bus and 615-2/-4) and software part (ARINC 665 and 615-4 formatted as ARINC 665). Tech S.A.T has developed a series of COTS products and custom services to meet Boeings request.

Basic Developer 787 615A via AFDX Implementation Package

- 787 AFDX Reference Loader (off-aircraft and on-aircraft load support) for 615A over AFDX, 615-2/-4, CAN Bus /1
- 787 AFDX Reference Target (off-aircraft and on-aircraft load support) for 615A over AFDX, 615-2/-4, CAN Bus /1
- 787 AFDX NetStation (Network simulator, MPTT error injection function) for data loading
- ARINC 665 ToolSet (MediaCreator/MediaInspector)

Supported Features:

- Offered as a standard COTS product
- Reference Standards documentation provided
- Other optional AFDX supporting products

/1 Available as stand alone products by protocol, or with a combination of protocols

Enhanced 787 Tech S.A.T. Supplier/Application Developer Support Packages

To achieve Boeing’s desire for Tech S.A.T to supply data loading development support, the following enhanced products and services would be available to the 787 development community:

787 615A via AFDX Advanced Implementation Package

- 787 AFDX Reference Loader (off-aircraft and on-aircraft load support) for 615A over AFDX, 615-2/-4, CAN Bus /1
- 787 AFDX Reference Target (off-aircraft and on-aircraft load support) for 615A over AFDX, 615-2/-4, CAN Bus /1
- 787 AFDX NetStation (Network simulator, MPTT error injection function)
- ARINC 665 ToolSet (MediaCreator/MediaInspector)
- Offered as a standard COTS product

Supported Features:

- Reference Standards Documentation
- Standardized 787 Data Loading Engine Code Package and Documentation (data loading engine, parts manager, parts installer)
- Application Programming Interface support
- Optional Scriptable media creation and data loading products/plugin-ins for integration and test
- Other optional AFDX support products and resources

/1 Available as stand alone products by protocol, or with a combination of protocols

Custom Developer Support/Consulting

- Private consulting by Tech S.A.T data loading development engineers for adoption of existing legacy LRUs/LRMs or clean sheet of paper developments per customer requirements.

Other Data Loading Protocol Supplier/Application Developer Support Packages

787 CAN Bus Support Packages

- The implementation of CAN Bus is yet decided, but the same basic reference tools and support consulting can be provided for CAN Bus. The concept of reference loader/target and reference AFDX gateway would be used. Full support of data logging, protocol examination and error injection would be provided

787 615-3/-4 Data Loading Development Support

- Yup, believe it or not, some folks still haven't figured out 615-3. Tech S.A.T has a COTS loader and target that support data logging, protocol examination and error injection. This COTS product is easily developed into a 787 reference standard (current reference for the Dios OS now)

Other Support Products Available as Reference Standards

Tech S.A.T can supply other reference standards for other 787 requirements. Most of these products are developments of existing Tech S.A.T COTS products

- 787 AFDX test responder - (based on 787 OMS simulation/A380 COTS product)
- RDC simulation – Scriptable RDC simulation for AFDX to 615A/CAB Bus (NetGate RDC)
- AFDX Switch –AFDX switch for throughput, scriptable simulation, stimulation and error injection
- NetStation – AFDX network simulator

Why Tech S.A.T 615A for 787?

- Tech S.A.T is the industry leader in 615A, 615A over AFDX, with experience in development of aircraft code, providing data loading solutions and legacy LRU implementation consulting
- Tech S.A.T enjoys an excellent working relationship and history with the 787 on-aircraft load supplier in 615A, 615A over AFDX developments Tech S.A.T implementations of 615A support the broadest range of 615A in the avionics industry
- Tech S.A.T maintains a good working relationship with all major 787 partners: Honeywell, Smiths, Collins, Hamilton-Standard and Wind River. Many key 787 partners already use Tech S.A.T 615A products as their 615A/665 reference standards.
- Tech S.A.T has the required 787 data 615A over AFDX loading implementations; for the on-aircraft load function, a COTS product is available NOW and for Aircraft Data Loading Mode (available in short lead time)

787 “Common Reference Standards/Tools” for 787 Application Developers and Suppliers

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