PEER

PLATFORM FOR END-TO-END TESTING WITH REMOTE SYSTEMS

ALTYS
TECHNOLOGIES

With the growing use of digital communications technologies for safety-critical applications in the aviation industry comes the need for robust testing campaigns.
Reliable, versatile, and independent testing tools have become essential for all organizations involved in the deployment and operation of ground and airborne architectures.

PEER is a suite of powerful and fully modular data link test platforms.
PEER offers a means to significantly reduce the time and effort of associated integration, validation, certification, and maintenance activities.

A versatile suite of high-quality test systems

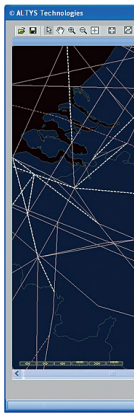
PEER emulates complex ground data link infrastructures and/or numerous aircraft operating any ATC and AOC application using ACARS, VDL2 and ATN communications.
PEER provides complete means for testing of legacy or future data link services: FANS1/A, Eurocontrol Link2000+, FAA DataComm' RTCA SC-214.

Support system certification and staff training activities

The PEER platform has been delivered to EMBRAER and DASSAULT in support of EASA's airworthiness approval of new Link2000+ CPDLC compliant aircraft installations, thus becoming the first commercial data link test facility involved in certified development processes.

The bench fully conforms to applicable standards and is fully interoperable with all airborne and ground implementations.

Use PEER to train your technical and operational staff using real cockpit and ATC displays and equipments.



	USAGES	INTERFACES
PEER Air Emulate up to hundreds of ACARS, VDL2 and ATN aircraft	• End-to-end validation of VHF ground stations, ACARS/ATN • Load, robustness and performances testsnetworking infrastructures and ATC systems • Troubleshooting activities	VHF channel ATN Routers or End-Systems (X.25/IP, SNDCF/IP) ACARS End-Systems (BATAP/MATIP)
PEER Ground Emulate ground infrastructures including: VDL2/ACARS and multi-frequency capable ground stations, ATN Routers and End-Systems, ACARS Systems	• End-to-end validation of airborne data link systems • Airworthiness certification of aircraft platforms (including flight tests) • Troubleshooting activities • RF environment simulation	VHF channel (antenna or coax) CMU (ARINC 429 avionic bus)
PEER DSP Emulate ACARS and VDL2/ATN service providers network including ground stations and routers	• End-to-end validation of aircraft through simulated networks • Validation of ATC and AOC End-Systems through simulated networks	VHF channel (antenna or coax) ATN Routers or End-Sytems (IP/SNDCF) ACARS End-Systems (BATAP/ MATIP)
PEER ES Emulate ATN/CPDLC and FANS1/A End-Systems	• End-to-end validation of airborne data link systems through operational networks • Airworthiness certification of aircraft platforms (including flight tests) • Troubleshooting, avionics qualification	ATN Routers (IP/SNDCF) ACARS Processor (BATAP/MATIP)
PEER RT Full air and ground ACARS, VDL2 and ATN software communication stacks and applications	• Development tests (step-by-step validation process, automated and non-regression tests, interactions at any infrastructure layer) • Lower interface: IP, Ethernet, X.25, IP/SNDCF • Upper interface: XTI (Transport), DSI (Dialogue), ASN Xcoder	*Lower interface*: IP Ethernet X.25 IP/SNDCF

Current users

AIRBUS

DASSAULT AVIATION

DFS

EMBRAER

FAA

HARRIS

HONDAJET

THE MITRE CORPORATION

ROCKWELL COLLINS

SELEX ES

SITA

THALES AIR SYSTEMS

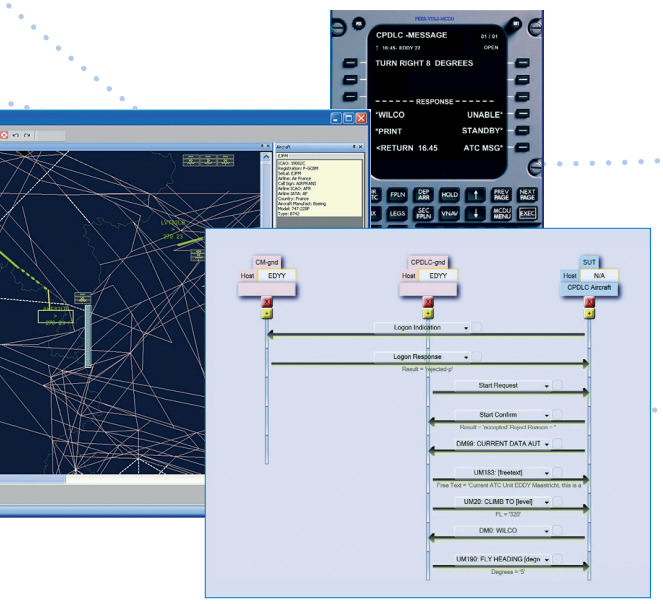
THALES ATM (USA)

THALES AVIONICS

Enhance your IV&V process

- All types of ATS and AOC messages
- Realistic air-ground delays
- Training Sessions representative of Operational Cases

PEER smoothly integrates your development environment and drastically increases your engineering teams' productivity. The platform, designed for non-experts, integrates automation capabilities and user-friendly graphical interfaces that abstract all low-level details.



- Configure emulated topology: aircraft, ground stations, routers, end-systems
- Manage and monitor in real-time the activity of communication systems
- Edit and run MSC-based tests
- Manage complex scenarios: mix of applications, competing communications
- Analyze test results, assess system performances
- Generation of reports, archiving of associated test results

Products specifications

		PEER AIR	PEER GROUND	PEER DSP	PEER ES	PEER RT
STANDARD COMPLIANCE						
ICAO	Doc 9776 / AN970: VDL Mode 2 SARPS	■	■	■		■
	Doc 9705 / AN956: Internet Communication SARPS (Sub-Vol 5)	■	■	■	■	■
	Doc 9705 / AN956: Upper Layers SARPS (Sub-Vol 4)	■	■	■	■	■
	Doc 9705 / AN956: Air-Ground Applications SARPS (Sub-Vol 2)	■	■		*	*
	Doc 9880 / AN466: Air-Ground Applications SARPS (Part 1)	■	■		*	*
ISO	ISO/IEC 8208 (X.25), 8473 (CLNP), 9542 (ESIS), 10747(IDRP)	■	■	■	■	■
	ISO/IEC 8073 (TP4), 8327-1 (Session), 8823-1 (Presentation)	■	■		■	■
	ISO/IEC 8650-1 (ACSE), 8825 (ASN.1 PER)	■	■		*	*
EUROCAE	ED-92A / DO-224A: VDL2 MOPS / MASPS	■	■	■		
/RTCA	ED-100A / DO-258A: A622 ATS Applications Interoperability Reqs	■	■		*	*
	ED-110B / DO-258B: ATN Baseline 1 Interoperability Reqs	■	■		*	*
	ED-120 / DO-290: Continental ATS Safety & Performance Reqs	■	■		*	*
	WG78 / SC-214: ATS Safety & Interoperability Reqs (Version H)	*	*		*	*
ARINC	A429-ALL: Mark 33 Digital Info Transfer System (Avionic Bus)		*	*		
	A618- 5: ACARS Air-Ground Character Oriented Protocol	■	■	■		■
	A620- 4: ACARS Ground System Standard & Interface	■	■	■	■	
	A622-4: ATS Applications over ACARS Network	■	■		*	*
	A623-3: ACARS Character Oriented ATS Applications	■	■		*	*
	A631-5: VDL2 Multi-frequency (FSL & Autotune)	■	■	■		■
	A750-4: VHF Data Radio		*	*		
	A745-2: Automatic Dependent Surveillance (ADS)	■	■	■		
	A781-4: Mark 3 Aviation Satellite Communication Systems		*	*		
ETSI	EN 300 676: Ground-based VHF Radio Equipments	■	■	■		
	EN 301 841: VDL2 (ERM)	■	■	■		
	EN 301 489: AM-MSK (ACARS) & D8PSK (VDL2) ERM	■	■	■		
SERVICE SUPPORT						
ATS	DLIC, DCL, ACL, AMC, DSC, CAP, FLIPCY, PDC, OCL, D-ATIS, D-TAXI, etc.	■	■		*	■
AOC	OOOI, Fuel, Delay, Crew, Weather Reports, ETA, Flight Plan, Maintenance info etc.	■	■		*	■
HOST PLATFORM						
Rack System		■	■	■	*	
Industrial PC server		■	■	■	*	
VHF Receiver		■	■	■		
VHF Transmitter		■	■	■		
Integrated High-Gain VHF Antenna		■	■	■	■	■
coaxial wiring (direct output from aircraft or ground station radio)		■	■	■	■	■
ARINC 429 card			*	*		

* Optional

Hardware characteristics

HOST PLATFORM

Rack	Fixed or mobile anti-shock rack platform (6U, 8U, 12U)
PC	Quad Core Rackmount Industrial Server (Windows & Linux)

VHF TRANSCEIVER

Frequency range	118-137 MHz
Modulation	AM-MSK (ACARS) D8PSK (VDL Mode 2)
Environment conditions	
TEMPERATURE IN USE	between -20°C and +55°C
HUMIDITY	95% at +40°C
TEMPERATURE (storing)	between -40°C and +80°C
Signal In/Outputs	From integrated VHF antenna From coax: Aircraft or VGS antenna
Sensitivity	
ACARS: MFR<1% at -99 dBm (message length: 100 bytes)	
VDL Mode 2: Uncorrected BER<10-3 at -98 dBm	
Dynamic Range	100 dB

VHF RECEIVER

Sensitivity	
ACARS: MFR<1% at -99 dBm (message length: 100 bytes)	
VDL Mode 2: Uncorrected BER<10-3 at -98 dBm	
Dynamic Range	100 dB

VHF TRANSMITTER

Frequency stability	≤ 1 ppm (from 0°C to 50°C)
Output power	adjustable, maximum 5W or 10W
Harmonics	› 83 dBc
Spurious	› 101 dBc
Adjacent channel power	
	AM-MSK 25 kHz: › 70 dBc
	D8PSK - First adj. channel › 62 dBc (6 kHz)
	D8PSK - Second adj. channel › 72 dBc (25 kHz)
	D8PSK - Fourth adj. Channel › 82 dBc (25 kHz)

POWER SUPPLY

Constant Current Power Supply	90 – 240 VAC
Options	Avionic Power Supply: 10 – 23 VDC Autonomous Batteries

ALTYS TECHNOLOGIES

ALTYS Technologies is an international engineering company committed to providing dependable digital communications and business intelligence systems to industries around the globe.

Headquartered in Toulouse, France, and with a US subsidiary based in Florida, the company has a sound expertise in the aerospace sector, and is dedicated to designing airborne and ground communications systems, robust monitoring solutions, and data analytics in support to a safer, more efficient airspace use with reduced operational costs. Since 2000, ALTYS Technologies has been fully involved with all major European and U.S. data link programs, consistently delivering its solutions to major actors in the aerospace and civil aviation sectors.

7, avenue Parmentier – F-32000 Toulouse

Tel: +33 (0)9 88 77 74 00

Email: info@altys-tech.net

www.altys-tech.net