AIRTEL ATN
The Data Link Company

PORTABLE TEST EQUIPMENT:

SOLUTIONS

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Introducing our Scalable Portable Test Equipment

The implementation of the Data Link is one of the key methods to significantly reduce the congestion and improve safety in the air-ground voice channel. It increases Air Traffic Control (ATC) efficiency and capacity. Airtel ATN has specialised in data communications solutions for the aviation industry since 1993.

Airtel ATN's Portable Test Data Link solutions are in use by avionics manufacturers around the world.

MTP

Hardware

The Muli Test Platform (MTP) Test and Diagnostic Station combines the Mini-VDR, a PC, power supplies, and control circuits to provide a fully portable testing and monitoring station.

The MTP is housed in a rugged carrying case. All components are mounted on a single main plate, which provides easy access for servicing and repair. It supports the hardware functionality required by the VDB Generator and PVDL software applications, among others.

The MTP is ruggedised and offers 4- or 8-hour battery life, enabling use in hangars. Airline maintenance operators use it to simulate ground Air Traffic Control Centre data, monitor signal strength, and test ACARS, ATN-CPDLC, and FANS on aircraft.

Item	Details
Computer	Lenovo X13
Mini-VDR	Mini-VDR P/N - 3101
GPS	Garmin GPS 18X
Antenna	The unit has its own antenna with the option to connect an external antenna
DC Power	MTP is powered by 14.4V Li-ion batteries. The unit has 2 battery slots enabling 4 or 8 hours operation. One or both batteries can be easily removed and stored. AC adapters are supplied for both the laptop and the MTP. The MTP has a dual internal battery charger
Case	Pelican 1500 carry-on case. Optional wheels and retractable handle.
Weight	14.5kg (approx.) excluding accessories
Dimensions	470 x 357 x176mm

MINI VDR

Hardware

The Mini-VDR is a 50mW signal generator/signal detector-decoder and is a low power realisation of an ARINC 750 VDR. It detects and generates the VHF D8PSK and MSK encoded signals in the range 118.000 to 137.000 Mhz. The Mini-VDR is integrated into the MTP platform and exchanges data via RS-232 or USB to the PVDL software application running on the MTPs integrated notebook PC. The Mini-VDR is powered by 12VDC provided by the MTP platform.

The Mini-VDR is situated on a mounting plate and is not visible during operation. For monitoring purposes there are external LEDs on the mounting plate available representing Chan Busy and Operate.

The MTP is a complete ready-to-go system. However, both the Mini-VDR and software are available separately if required.

Item	Details
Power	12V DC, 1.2A max, 600mA average
Dimensions	80 x 80 x 265 mm
Weight	1.2 kg
Frequency	118.000 to 137 MHz
Transmitter	
RF Power...	50mW (+17dBm)
Emissions	per RTCA/DO-224
RF Mask	Per RTCA/DO-224
Receiver	
Sensitivity	BER of 10-3 at -98dBm
Input Range	-107dBm to +7dBm
Adj Channel Rejection	60dB min
Interface I/O	ADS-ASIP Via USB RF: 50 ohm BNC

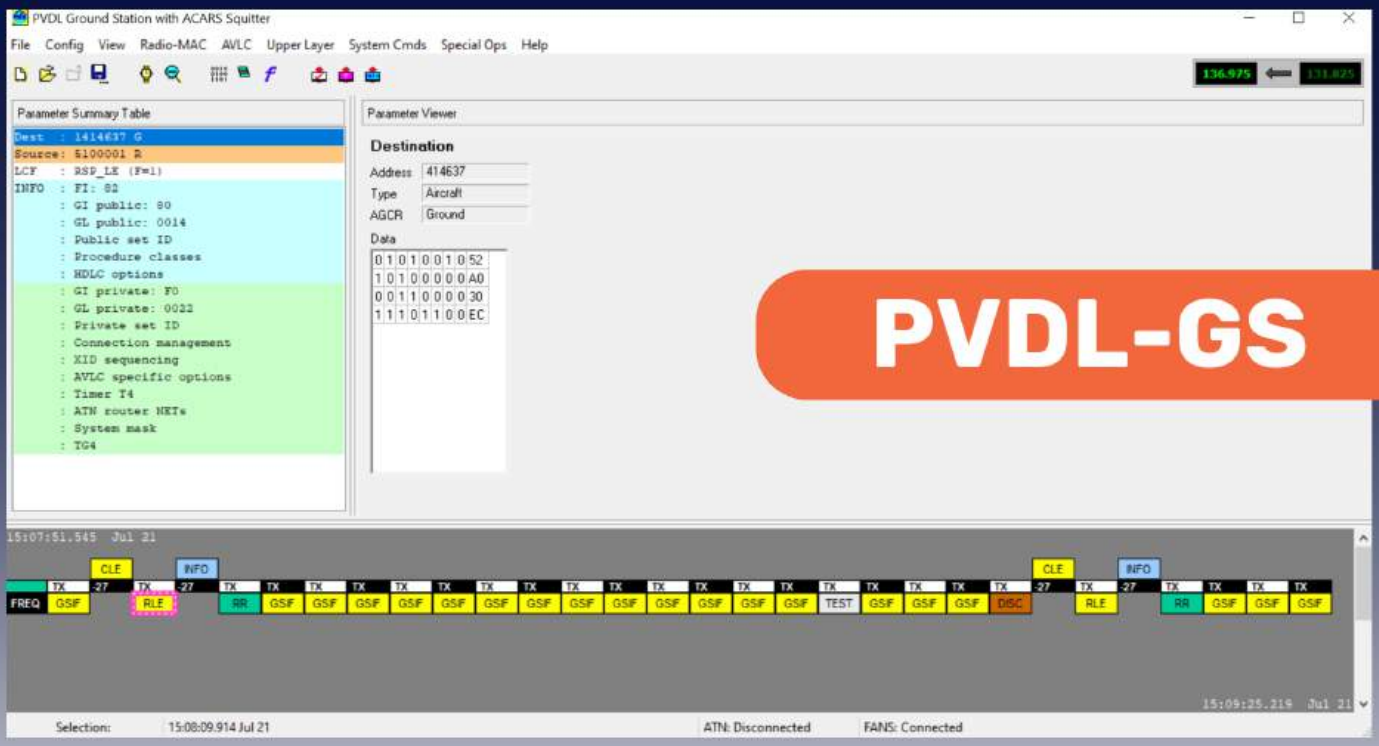
PVDL-ASA

Software

PVDL-ASA is the VDL Mode 2 aircraft station emulation software with the addition of the full ARINC 618 POA aircraft implementation. In VDLM2 it establishes links with ground stations by first receiving in Ground Station Information Frames (GSIFs), building a table of available ground stations and then initiating the link establishment procedure.

The system is then available to exchange air-ground data under the control of the VDL Mode 2 protocols as defined by the ICAO SARPS and AEEC 631.

PVDL-AS also includes the complete AOA (ACARS over AVLC) message handling and protocol conformance as defined by ARINC 618.



PVDL-GS is the software application that emulates the operation of a VDL Mode 2 ground station. It transmits GSIFs, accepts links with aircraft systems and exchanges data under the control of the VDL Mode 2 protocols as defined by the ICAO SARPS and AEEC 631. It includes a fully integrated A618 protocol engine to support AOA (ACARS-over-AVLC) message handling and protocol conformance.

The PVDL-GS software application performs AVLC frame extraction and assembly, along with Reed-Solomon manipulation.

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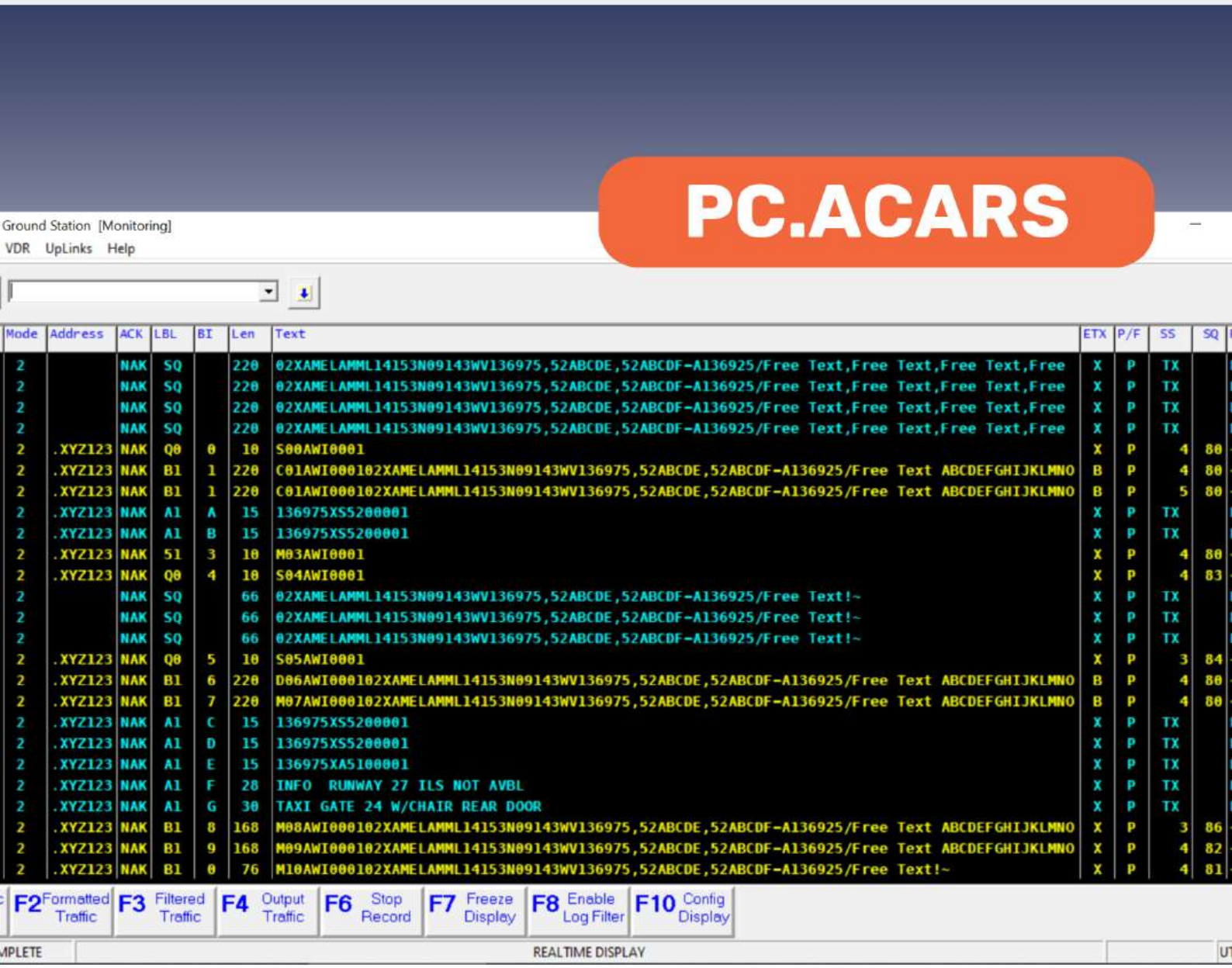
It controls all aspects of Mini-VDR behaviour including operating frequency, transmits power and MAC parameters.

PVDL is configurable to act as two individual ground stations and, in this mode conducts link handoff with the aircraft under test.

In Concurrent Mode, the PVDL ground station transmits ACARS MSK squitter uplinks- on an entirely different frequency. This option allows avionics under test to detect the presence of the VDL Mode 2 ground station based on its advertised presence in the squitter content.

PC.ACARS



POA (Plain old ACARS) is the industry standard ACARS protocol and as part of the PVDL-ASA package, runs as a separate PC.ACARS application on the MTP platform.

This is supplied as either an AEEC 618 equipped Ground Station (PC.ACARS-G) or Aircraft (PC.ACARS-A). PC.ACARS can be used actively- to participate in communications- or passively for monitoring and logging received data.

ATN CPDLC TEST TOOLS (GMT/GAT)

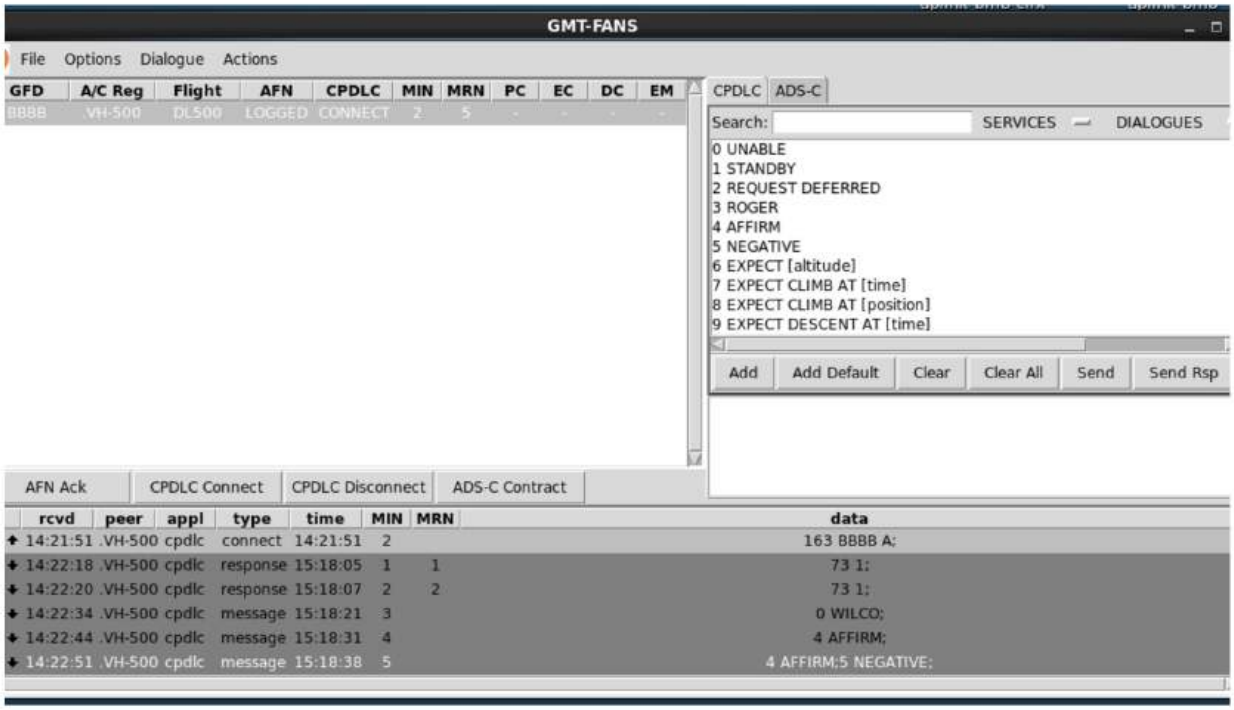
The Ground Manual Tool (GMT-ATN) provides a GUI for sending/receiving CM/CPDLC primitives. The ATC centre responds automatically to aircraft downlink messages. The automatic responses can be configured via a script.

- CM-Logon, CM-Contact, CM-Abort
- CPDLC Start, CPDLC End and CPDLC User Abort services
- Handles multiple aircraft on the ground side.
- Supports standard and protected mode CPDLC
- Supports uplink and downlink message set specified in the EUROCAE ED-110B
- Supports single and concatenated uplink and downlink messages.
- Supports Error Test Cases: Invalid message sequences, invalid message identifiers or references, missing LACK and unsupported messages.
- Automatic messages: automatic generation of messages with the possibility of configuring the transmission rate
- All uplink and downlink exchanges are logged for further analysis
- Supports ATN B2 (Version 1) and SESAR Version H

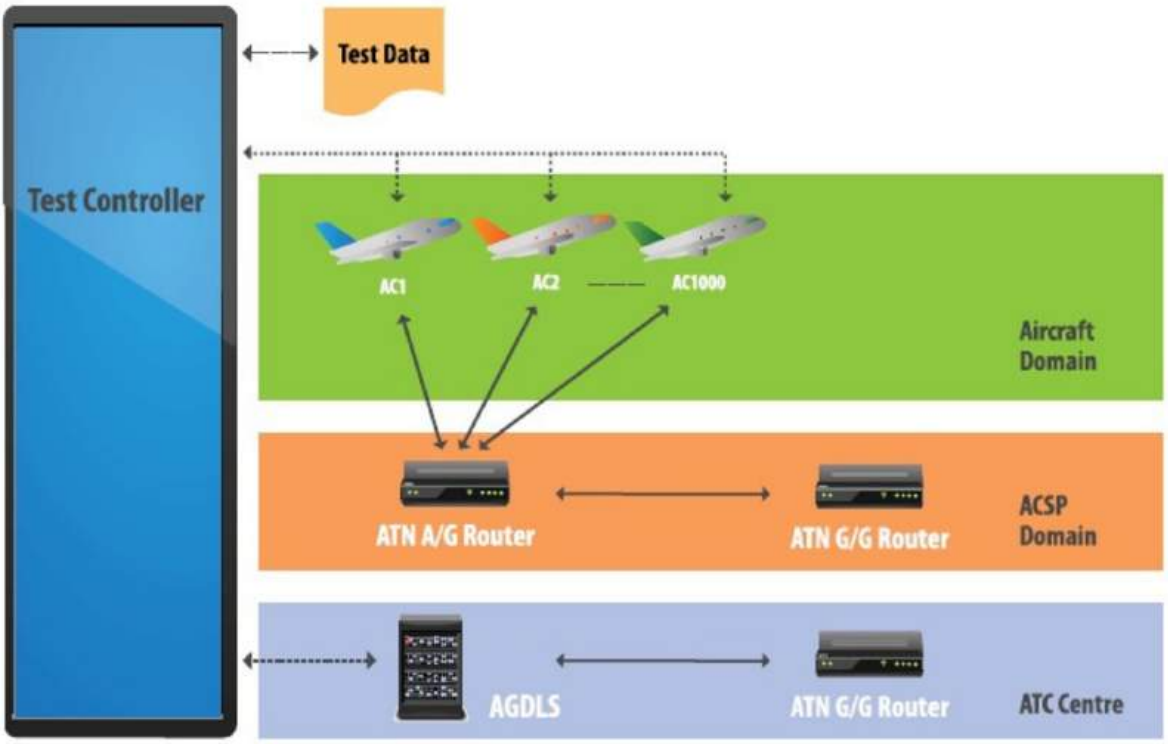
FANS CPDLC/ADS-C TEST TOOLS

The GMT-FANS provides a HMI to send/receive AFN/CPDLC/ADS-C primitives

- Automatic/manual AFN Logon Ack on reception of AFN Logon.
- Builds and sends AFN contact
- Receives AFN Response/Complete messages
- Supports single and concatenated sequence of up to 5 downlink CPDLC messages.
- Automatic/manual CPDLC connect request
- Automatic/manual selection of message identification, message reference and time stamp.
- Supports uplink and downlink message set specified in document ED-100A



CPDLC Multi - Aircraft Test Controller (GVS)



- Automation of system testing for one of several ATC systems
- Control of 1000 ATN/FANS aircraft
- Simulation of ATN/FANS network
- Emulation of a Ground ATC system independent of the System Under Test.
- Support of several aircraft groups. This allows each group to act independently.
- TCL script-driven interface

VDB/GBAS Generator

The VDB Generator is a software application that also utilises the D8PSK capability of the Mini-VDR hardware. It simulates a VDB/GBAS Ground Station by providing a versatile source of VDB messages to exercise message decoding in the aircraft VDR or MMR under test.

Depending on the test undertaken, the VDB Generator application provides the ability to construct fully compliant DO-246 data, or constructs data sequences designed to test the upper or lower level decoding.

VDB Generator facilitates DO-253 MOPS testing including: steady carrier, amplitude variation within allocated time slot, frequency, transmit power, symbol rate, corruption of CRC values.

VMON (VDL Monitoring System)

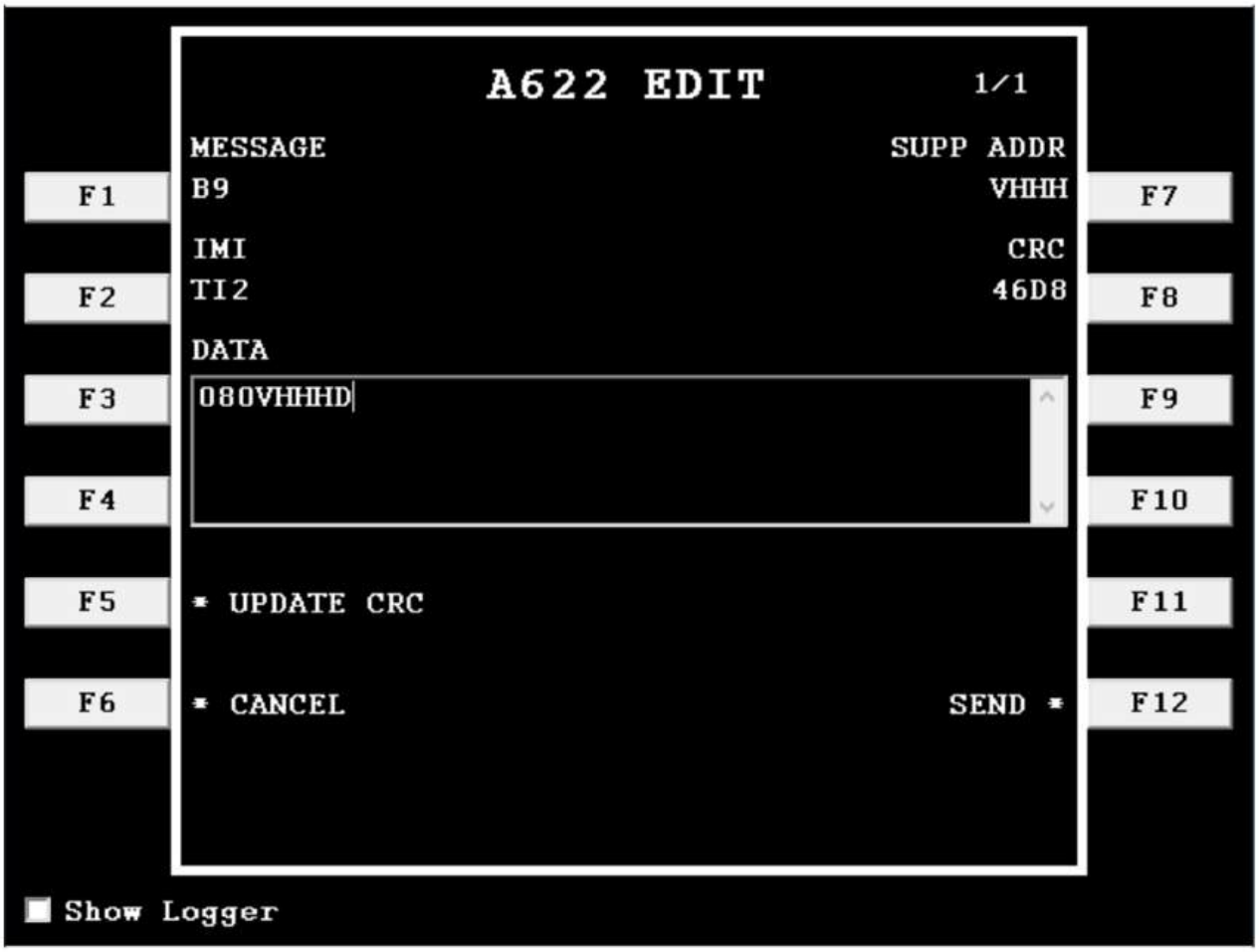
The VMON enables users monitor and log any VHF aeronautical band channel. It does this through the use of an Airtel ATN Mini-VDR. Users can observe the minimum, maximum and average signal levels as well as the type and amount of channel utilisation over a given time. The data is logged to a Comma Separated Value (CSV) file for post-analysis. A GPS module is used to track the time and position of the data collected within the log.

The VMON can also act as a Remote Monitoring Unit (RMU) and connect to the MOON Central Monitoring Server (CMS).

D-ATIS/DCL Aircraft Station CATS-A

PC.ACARS-A/ATS-A is a test and development tool that can be used to monitor and test the operation of Air Traffic Services data over ACARS by decoding and displaying data transactions between air and ground for supported message types.

It provides functionality similar to that of an aircraft for sending and receiving supported ATS messages. PC.ACARS-A/ATS-A requires an installation of PC.ACARS-A.



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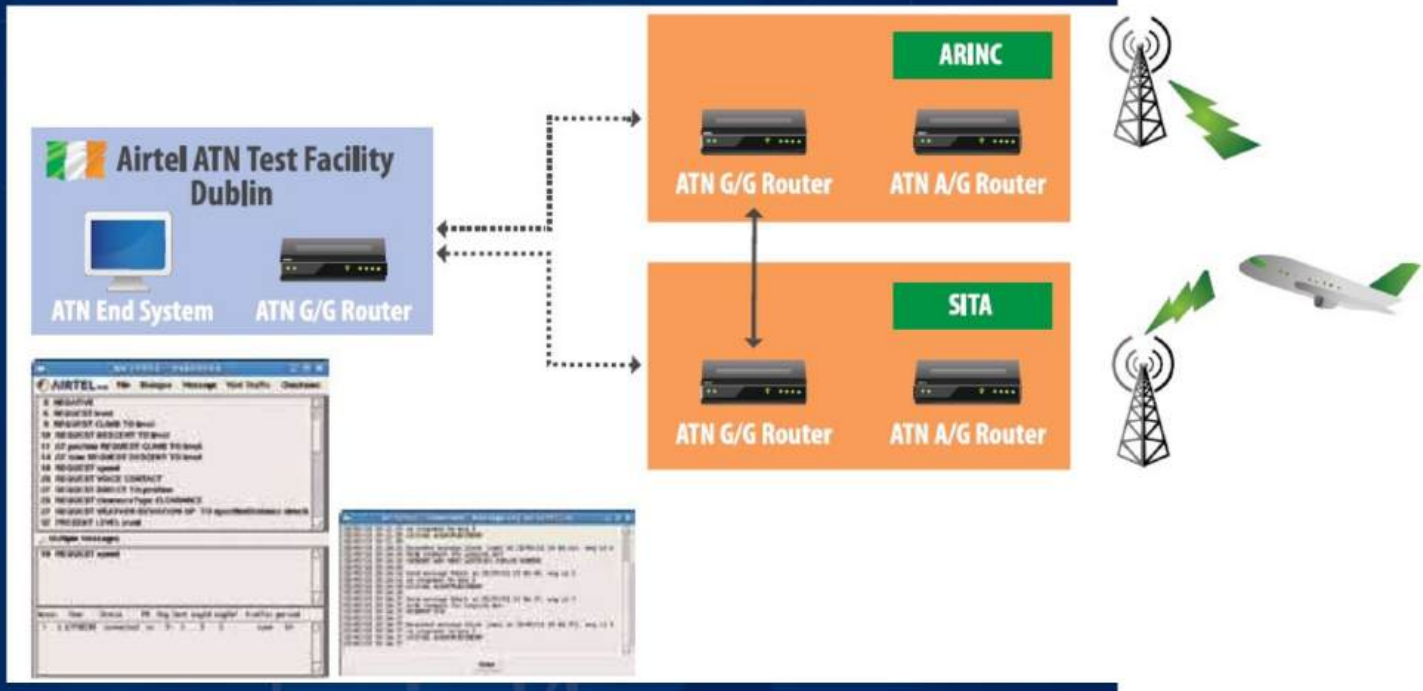
AIRTEL ATN CPDLC TEST SERVICE

Airtel ATN provides a commercial CPDLC test facility in Dublin. Airtel ATN is the first commercial company in the world to provide this testing service to aircraft operators.

The CM/CPDLC test facility simulates two Air Traffic Control centres (TESTEIAT and TESTEIAU) connected to Rockwell Collins or SITA's ATN/VDL network. Airtel ATN's Test Facility tests CM and CPDLC including CPDLC hand off between ATC centres.



About Airtel

Airtel provides Air Traffic Management telecommunication software and test equipment to make aviation safer, greener, and more efficient.

Airtel is a global leader in Data Link systems. Airtel supplies operational and test Data Link solutions to Air Navigation Service Providers (ANSPs), Avionics Manufacturers, Communications Service Providers and aircraft Maintenance Repair and Overhaul organizations worldwide.

Based in Dun Laoghaire, Ireland, Airtel began as a telecommunications company, moving to Aeronautical Telecommunications in 1998. Today, Airtel's solutions enable over 11,000 aircraft to connect to the ATC network.

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