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Pratt & Whitney
A United Technologies Company

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PTCRB Project 79234

FAST-A-010-3(4) Rev F Product Certification

Exhibit B1 – External Photos of FAST-A-010-3(4) Rev F

Product Designation:

Manufacturer: Pratt & Whitney Engine Services, Norwood
249 Vanderbilt Avenue
Norwood, MA 02062 USA

Marketing Name: FAST™ (Flight-data, Acquisition, Storage & Transmission)

HVIN- Part #/Rev:	FAST-A-010-3/F	FAST-A-010-4/F

FCC ID: 2AJ6A-FAST34F	IC_ID: 22451-FAST34F

External Photos:

The FAST Product in its aircraft installed position is mounted on an avionics tray with a ratcheting hold-down clamp as seen in Figure 1. The product, without the tray measures 3.7"H x 2.7"W x 8"L and weighs approximately 2.2Lbs.

The front of the product has two SMA (J5 & J6) and one RP-SMA (J7) connectors for attaching remote antennas for the cellular modem and the Wi-Fi modem respectively as shown in Figure 1. The SIM card is accessed on the rear of the product along with Power and Data interface as shown in Figure 4

The front of the product has a connector for technical ground support J3through which commands may be sent to the UUT to control the radios and to setup IP addresses for Ethernet connectivity through J4. This cable is supplied as a component in the installation kit for the product as a bundled accessory.

Figure 1: Isometric View of FAST product on mounting tray (as installed in aircraft)

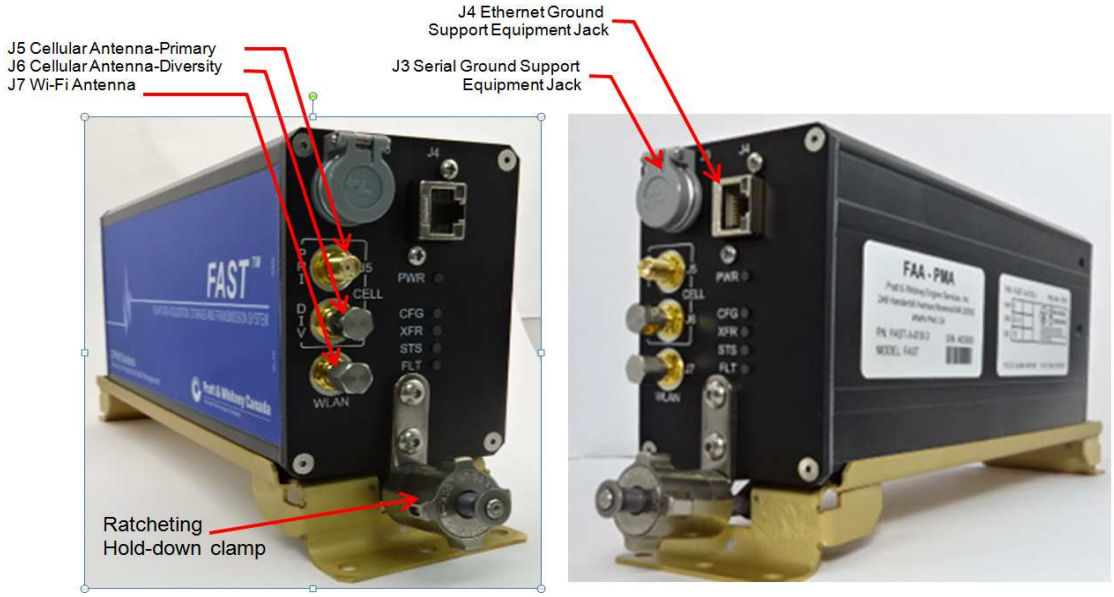


Figure 2: Left Side View

Figure 3: Front View

Figure 4: Rear View

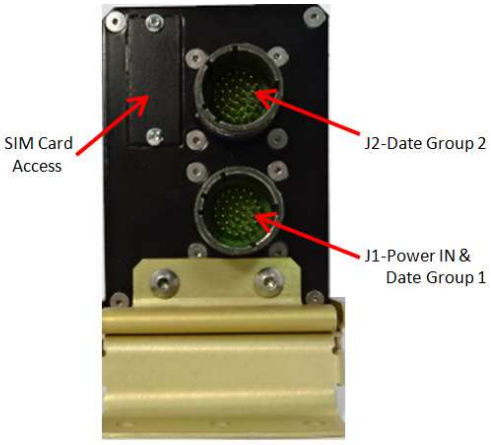


Figure 5: SIM Assess Cover & Tray

Figure 6: Right Side View

Figure 7: Bottom of Unit

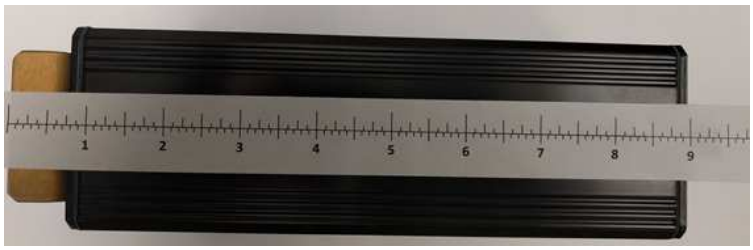


Figure 8: Top of Unit

External Support Accessories

The following external components are typically used in conjunction with FAST installations in aircraft:

Antenna Coax Cable:

- Recommended coax cable: MIL-DTL-17 / 128-RG400 or eq,
- Diameter: 0.195, Impedance: 50Ω, Capacitance: 29.4pF/Ft, Max Bend Radius: 1.0", Jacket: FFP,
- Typical loss for a 10ft cable: 698-960 MHz 1.3dB, 1710-2170 MHz 2.0dB, 2400-2700 MHz 2.4dB.

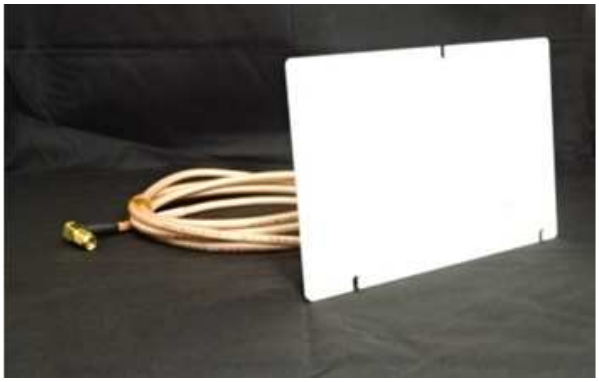
Cellular Antenna

- Laird Technologies, CFS69271-FSMAF
- P&WES P/N: DTU-D-094-1
- Manufacturer Specifications are as follows:

PARAMETER	
Frequency (MHz)	698-806, 824-960, 1710-1880, 1850-1990, 1920-2170, 2100-2500, 2500-2700
Gain (dBi)	
698-960 MHz	1.5
1710-2170 MHz	3.0
2500-2700 MHz	4.5
Average Efficiency	
698-960 MHz	80%
1710-2170 MHz	85%
2500-2700 MHz	85%
VSWR	2.1 max across all bands (Typical)
Polarization	Linear
3 dB Beamwidth (H-plane)	Omnidirectional
Nominal Impedance	50 Ohms
Max Input Power	50 Watts
Dimension	100 x 164 x 1.6 mm
Operating/Storage Temperature	-40° to 70°C

- Antenna shall be connected to SMA connector on face of FAST by means of a 10 Ft. coaxial cable consisting of:
    - Right angle SMA Plug, Amphenol-RF P/N: 901-9874
    - Straight SMA Plug, Amphenol-RF P/N: 901-9511-1
    - Coaxial Cable, RG400; 10 Ft.

Figure9: Cellular Antenna and RF Cable



Wireless LAN Antenna

- Laird Technologies, P/N: WRR-2400-RPSMA-B
- P&WES P/N: DTU-D-095-1
- Manufacturer Specifications are as follows:

PARAMETER	SPECIFICATION
Frequency	2.4-2.5 GHz
Gain	1.3 dBi (2.45 GHz)
Polarization	Vertical, Omni-directional
Nominal Impedance	50 ohms
VSWR	2:1 max
Size (Length)	10.9 cm (180°) or 8.8 cm (90°)

- Antenna shall be connected to RP-SMA connector on face of FAST by means of a 10 Ft. coaxial cable consisting of:
    - Straight SMA Plug, Amphenol-RF P/N: 901-9511-1
    - Right Angle RP-SMA connector; Amphenol-RF P/N 132194RP
    - Coaxial Cable, RG400; 10 Ft.
    - A separate Cinch “plug to plug” adapter (142-0901-801) permits the RP-SMA antenna plug to connect to the straight SMA plug of the cable assembly above.

Figure10: Wireless LAN Antenna and RF Cable

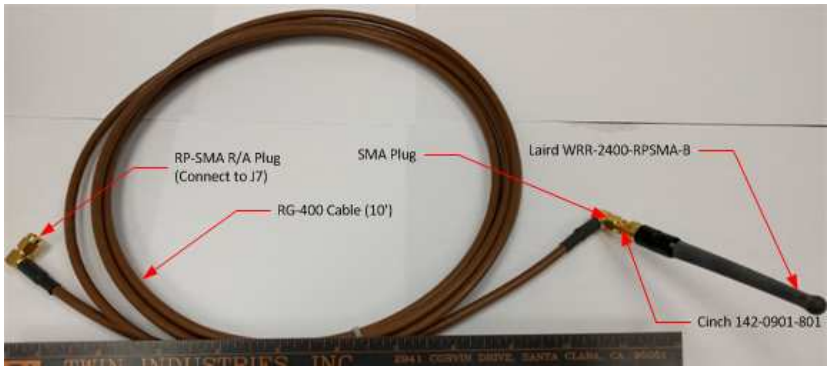


Figure 11: Antenna Configuration

Antenna Length
8.8cm with 90° position
10.9cm straight position