

To: Cetecom, Inc.,
Re: PTCRB Project Request 59306
Date: 06/29/2017

Exhibit A7: User Manual for the eFAST product

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U.S. Export Classification: EAR ECCN 9E991

PRODUCT DESIGNATION:

Manufacturer:	Collins Aerospace & Setrix 400 Main Street East Hartford, CT 06118
Marketing Name:	eFAST™ (Enhanced, Flight-data, Acquisition, Storage & Transmission)
Part # / Rev:	
FCC ID:	2AQWD-HMU200-4G
IC_ID:	25562-HMU2004G

PRODUCT OVERVIEW:

The Health Management Unit (HMU) is a multi-function LRU that is capable of recording full-flight data, performing aircraft/engine condition monitoring, generating reports based on recorded data and offloading the data and reports to a remote ground station. The HMU will be integrated with the aircraft's avionics systems, including the ARINC 664 network, and will be reporting maintenance related data to the Onboard Maintenance System (OMS) and aircraft condition monitoring advisory/info messages to be displayed in the Crew Alerting System.

The fundamental function of the HMU is to acquire and record parameters as outlined in the requirements section of this document. Data can be collected from the ARINC 429 and ARINC 664 input ports to be stored in resident non-volatile memory. The user can program reports that will monitor data in real time and trigger at defined conditions to capture data into recordings.

The HMU mounts in the forward Avionics Bay. The mounting mechanism is of a tray containing two ARINC 600 style ratchet latches that secure the HMU. The HMU has physical interfaces to the Primary Avionics via ARINC 664 and A429 buses, the electrical system via two DC power buses and a battery bus, the landing gear system via a hardwire discrete, and the Aircraft Network Switch (ANS) via standard Ethernet interface.

External Components / Accessories:

1. Cellular Antenna

- Laird Technologies Multi-band 3G/4G MicroSphere antenna (P/N: CFS69271-FSMAF)
- The cellular antenna shall be installed within the Cargo Bay aft of Forward Avionics Bay, 105 inches away from the Wireless LAN antenna and orientated such that it radiates into the bay.
- The cellular antenna shall be connected to SMA J4 port on front of eFAST by means of a coaxial cable with provided SMA connectors (straight SMA connectors)



2. Wireless LAN Antenna

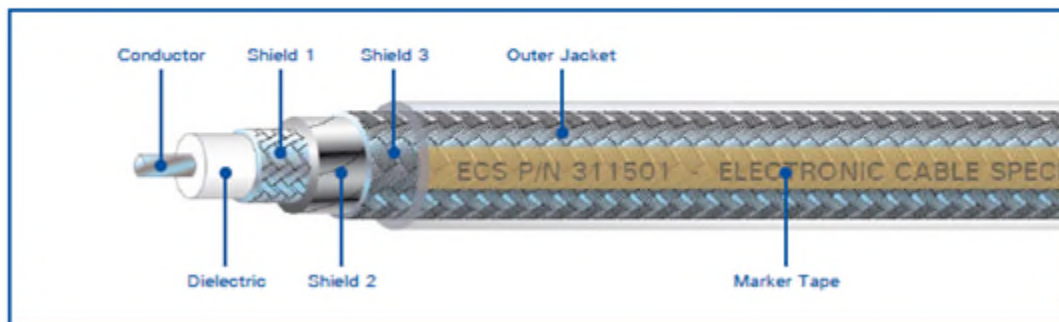
- Sensor Systems VHF/WLA S65-8280-37 Blade antenna (P/N: S65-8280-37)
- The wireless LAN antenna shall be installed below the body of the aircraft.
- The wireless LAN antenna shall be connected to SMA J5 port on front of eFAST by means of a coaxial cable and provided lightning suppressor attachment.



3. Wireless LAN Antenna Cable

- Carlisle Interconnect Technologies, P/N: 311501
- The minimum wireless LAN antenna cable length is 10 ft.

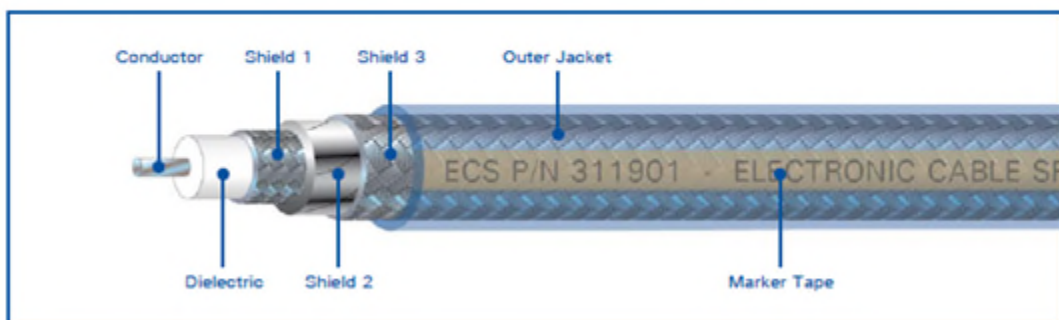
50 Ohm Coaxial Cable P/N 311501



4. Cellular Antenna Cable

- Carlisle Interconnect Technologies, P/N: 311901
- The minimum cellular antenna cable length is 10 ft.

50 Ohm Coaxial Cable P/N 311901



5. Minimum Attenuation for LAN and Cellular Antenna Cable

- The minimum antenna cable length is 10 ft.

Band Attenuation for Min Cable Len (10 ft)	dB
LTE B12	0.94 dB
GSM 850 / UMTS V	1.06 dB
LTE B4	1.62 dB
GSM 1900 / UMTS II	1.67 dB
LTE B7	1.90 dB
2.4 GHz LAN	1.07 dB

6. Optional Wireless LAN Lightning Protector

- Times Microwave Systems, Product Number: LP-WBX-NMP



FCC and ISED Cautionary Statements

- I. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

Cet appareil est conforme à la partie 15 des règles de la FCC. Son fonctionnement est soumis aux deux conditions suivantes: (1) Cet appareil ne doit pas provoquer d'interférences nuisibles, et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indésirable.

- II. Changes or modifications not expressly approved by Pratt & Whitney could void the user's authority to operate the equipment

- III. Per RSS GEN 6.8, this radio transmitter (25562-HMU2004G) has been approved by Innovation, Science, and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain / associated cable loss as indicated in the filing. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

- a. Laird Technologies Multi-band 3G/4G MicroSphere antenna
- b. Sensor Systems VHF/WLA S65-8280-37 Blade antenna

- IV. To comply with FCC rule parts 2.1091 / ISED RSS 102 RF exposure requirements for mobile transmitting devices, this device and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30 cm (~12 inches) from all persons and must not be co-located and/or operating in conjunction with any other antenna or transmitter