REGIONAL MONITORING AGENCIES COORDINATION GROUP (RMACG)

EIGHTH MEETING

Canberra, Australia, 8 to 12 April 2013

AGENDA ITEM 5: Monitoring Systems and Regional Infrastructure

Development Status of the Federal Aviation Administration Enhanced EGMU (E^2GMU)

(Presented by the United States)

SUMMARY

The E^2GMU has been under joint development by the Federal Aviation Administration (FAA) and CSSI, Inc. with anticipated commercial availability by the third quarter of 2013. This paper provides an overview on the E^2GMU functionality, enhancements and pricing information.

1. INTRODUCTION

1.1 The FAA and CSSI, Inc. are nearing completion of a joint development effort for the successor technology to the Enhanced GPS-based Monitoring Unit (EGMU) to support airborne height data collection to satisfy monitoring requirements associated with the State Reduced Vertical Separation Minimum (RVSM) approval process. The Enhanced GMU (E^2GMU) will serve as a commercially-available product to augment monitoring capability within individual Regional Monitoring Authorities (RMAs).

1.2 The E^2GMU has an anticipated commercial availability by the end of the third quarter of 2013. This next generation of portable RVSM monitoring equipment has successfully passed the prototype and testing phases and will soon enter production.

2. DISCUSSION

2.1 The FAA's current inventory of GMUs has been used to perform over 16,000 monitoring flights worldwide. In 1996, the initial GMU entered service in support of the North Atlantic (NAT) RVSM implementation. The EGMU became available in 2003 supplementing the GMU inventory. Although the GMU and EGMU remain in active service, attrition of units and unavailability of key components necessitated the development of the next-generation E^2GMU.

3. E^2GMU FUNCTIONALITY

3.1 The E^2GMU, like its predecessors, was developed specifically for on-board data collection of GPS pseudoranges to permit estimation of relevant performance parameters and with post-processing to prepare altimetry system error estimates which can be compared to corresponding RVSM requirements, on both an individual-aircraft and a system-wide basis.

3.2 The E^2GMI will permit continued and broader availability of a convenient, cost-effective and flexible solution for operators to satisfy their continued RVSM monitoring requirements. The unit does not interface with any aircraft systems and can be temporarily installed on-board aircraft and becomes operational in less than 20 minutes. The E^2GMU collects data through a GPS antenna mounted with suction cups on the inside of the aircraft using either the cabin, service door, or aft cockpit windows. The E^2GMU is powered fully by a self-contained battery system. The E^2GMU has been tested and in the process of receiving Electronic Magnetic Interference (EMI) certification.

4. E^2GMU DESIGN ENHANCEMENTS

4.1 The E^2GMU was developed using the latest technology GPS receiver. The E^2GMU includes a 20 Channel GPS receiver for enhanced satellite lock, accuracy, and faster GPS acquisition time from aircraft static position start. The E^2GMU is also designed to be upgradable when newer GPS technology becomes available.

4.2 The E^2GMU now includes an integrated Altitude Recording Device (ARD), which can capture the aircraft's Mode C data, a critical component for calculating altimetry system error (ASE). The ARD is controlled through the tablet touchscreen software using a simple interface (Figure 1) to permit entry of aircraft registration and the current aircraft transponder code.

4.3 The E^2GMU features an enhanced user control interface featuring the latest tablet touchscreen technology and touch software interface design. The tablet software provides a unified control interface for both GPS data collection and ARD Mode C data collection. The E^2GMU tablet software includes an enhanced display featuring a GPS satellite Skyplot and signal to noise charting for each satellite channel. The tablet software features current position information for latitude, longitude, altitude, speed, and heading. Current E^2GMU battery and tablet battery status are also displayed.

Figure 1. E^2GMU tablet software user interface

4.3.1 The E^2GMU tablet has considerable storage capacity and offers removable Micro SD cards that can be removed from the tablet and inserted into the included full size USB adapter for easy file transfer from tablet to a computer.

4.3.2 The E^2GMU tablet can also transfer files directly through installed applications or cloud storage service applications from the tablet to email or the cloud (such as email, Gmail, Dropbox, etc.).

5. AVAILABILITY

5.1 The E^2GMU has projected availability by the end of third quarter 2013.

6. PRICING

6.1 The estimated acquisition cost for each E^2GMU is anticipated to be approximately $19,000.00 (USD). The purchaser would incur shipping charges and any applicable customs license fees, duties and or taxes. U.S. export restrictions apply to this unit.

7. CONTACT INFORMATION

7.1 Interested parties desiring further information on the E^2GMU should contact CSSI, Inc. to discuss unit availability and final pricing. The contact information is as follows:

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8. CONCLUSION

8.1 The meeting is invited to consider the information presented in this paper.

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