



DEPARTMENT OF DEFENSE
AIMS INTERNATIONAL PROGRAM OFFICE
ROBINS AIR FORCE BASE GEORGIA



07 December 2012
CL 1218501

MEMORANDUM FOR US AF F-15 Division
ASC/WWQU
2690 Loop Road West
BLDG. 556
Wright Patterson AFB, OH. 45433

FROM: DoD International AIMS Program Office
450 Third Street, Bldg. 323
Robins AFB GA 31098

SUBJECT: Mark XII Box Level Certification for the RT-1866B/APX-114 Air-to-Air Interrogator, (AAI), Part Number 4074000-0509, Software Version 603 for use with the Saudi Arabian F-15SA Platform

References: (a) DoD AIMS 03-1000A Performance/Design and Qualification Requirements Technical Standard for the ATCRBS/IFF/Mark XIIA Electronic Identification System and Military Implementation of Mode S with Changes 1, 2 and 3, dated 1 Jan 2011
(b) CL1210409 dated 15 June 2012, Mark XII Box Level Certification for AN/APX-114, RT-1866B, Air-to-Air Interrogator (AAI) (Part Number 4074000-0510, Software Version 913)

1. The United States Department of Defense International AIMS Program Office (DoD AIMS PO), Robins AFB, GA was established for the configuration control and oversight responsibility of the Mark XII and Mark XIIA IFF architecture. This includes performance/interoperability evaluation and certification of sub-systems at both the end item (box) and integrated platform level.

2. The DoD AIMS PO evaluated the subject Air-to-Air Interrogator (AAI) for compliance with the DoD AIMS 03-1000A. DoD AIMS PO engineers participated in box level AIMS certification testing performed by Raytheon Systems June-September 2012 in cooperation with the US Air Force at Raytheon Aberdeen, MD, and the F-15 SIL at St. Louis, MO. The AAI was evaluated for the following capabilities: DoD AIMS 03-1000A performance requirements for Modes 1, 2, 3/A, and 4.

3. Mode 4 performance was demonstrated using the KIV-77/TSEC Cryptographic Appliqué with DS-101 loading format protocol. Keys were loaded with the Simple Key Loader (SKL).

4. The AAI meets the performance requirements of DoD AIMS 03-1000A with the exception of the noted discrepancies DoD AIMS 03-1000A section 3.6.18 and 3.6.19. These exceptions were completely evaluated by the DoD AIMS PO and were determined as not being critical to the satisfactory performance of the AAI:

- a. DoD AIMS 03-1000A 3.6.18 - The APX-114 is not fully compliant with the SIF pulse width and pulse position discrimination for low signal levels. The performance of the APX-114 with software build 603 is improved from previous versions of the interrogator but still falls outside the requirements at the lowest end of the dynamic range.
- b. DoD AIMS 03-1000A 3.6.19 - The APX-114 is not fully compliant with the Mode 4 pulse width and pulse position discrimination for low signal levels. The performance of the APX-114 with software build 603 is improved from previous versions of the interrogator but still falls outside the requirements at the lowest end of the dynamic range.

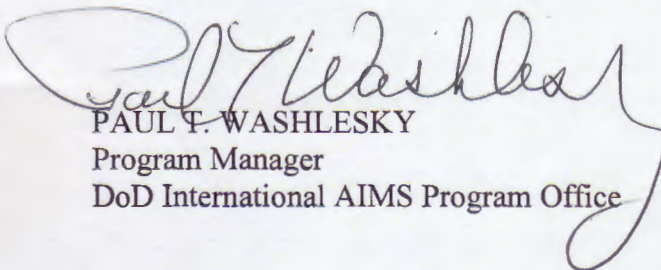
5. The interrogator has been configured for use with the Saudi Arabian F-15SA and is a variant of the RT-1866B/APX-114 Air-to-Air Interrogator (AAI), part number 4074000-0510, software version 913, (Ref. b) used in the U.S. F-15 aircraft. Software version 603 only allows for operation of Modes 1, 2, 3/A, and 4. Mode 5 capability would require software upgrades as well as platform integration controls.

6. This memo serves as the DoD AIMS PO box level certification of the Mark XII Modes 1, 2, 3/A, and 4 performance for the RT-1866B/APX-114 Air-to-Air Interrogator (AAI), part number 4074000-0509, software version 603, to DoD AIMS 03-1000A performance requirements. Any deviations or revisions to the hardware, software, or firmware of the interrogator as tested and evaluated in this configuration will require recertification by the DoD AIMS PO.

7. The DoD AIMS PO points of contact are Dominic Anello by phone (478)-926-0124, e-mail: dominic.anello.ctr@robins.af.mil, or April Griner by phone (478)-926-9859, e-mail: april.griner.ctr@robins.af.mil.




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