Functional Test Specification

for the

Eclipse Model 500

Weather Radar Testing

EAC-FTS-0036

ECLIPSE AVIATION

REVISION TABLE

Date	Revision	Author	Approved	Description of Change
6/27/2007	A	Krishna Devarasetty		Initial Release

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1 PURPOSE

The purpose of this test specification is to provide requirements for functional testing in regards of Weather Radar installation and performance.

2 APPLICABLE DOCUMENTS

- 34-108674-* ISS – Left Electrical Wiring Diagram
- 34-108675-* ISS – Right Electrical Wiring Diagram

*Use the highest current Dash # and Revision that is effective.

3 TEST EQUIPMENT

The following Test Equipments are needed for these tests:

A. Radar Checker on Tripod
B. Radar Checker Controller
C. Strut Switch Controller

- Radar Checker on Tripod.

Figure 3-1 Radar Checking Equipment

- Radar Checker Controller

Figure 3-2 Radar Checker Control Unit

- Strut Switch Controller

4 TEST REQUIREMENTS

NOTE: Adhere to all "**CAUTIONS**" and "**WARNINGS**. This will help prevent damage to the aircraft and assist in preventing bodily harm. All measured values specified in this document shall be recorded in the resulting Functional Test Procedure.

Cautions and Warnings:

Maximum Permissible Exposure Levels (MPEL)

In order to avoid the envelope in which the radiation level exceeds the U.S. Government standard of 10 mW per square centimeter, all personnel should remain beyond the distance indicated in the illustration below. (The distance to the MPEL boundary is calculated upon the basis of the antenna, rated output power of the transmitter and in the boresight position of the antenna.)

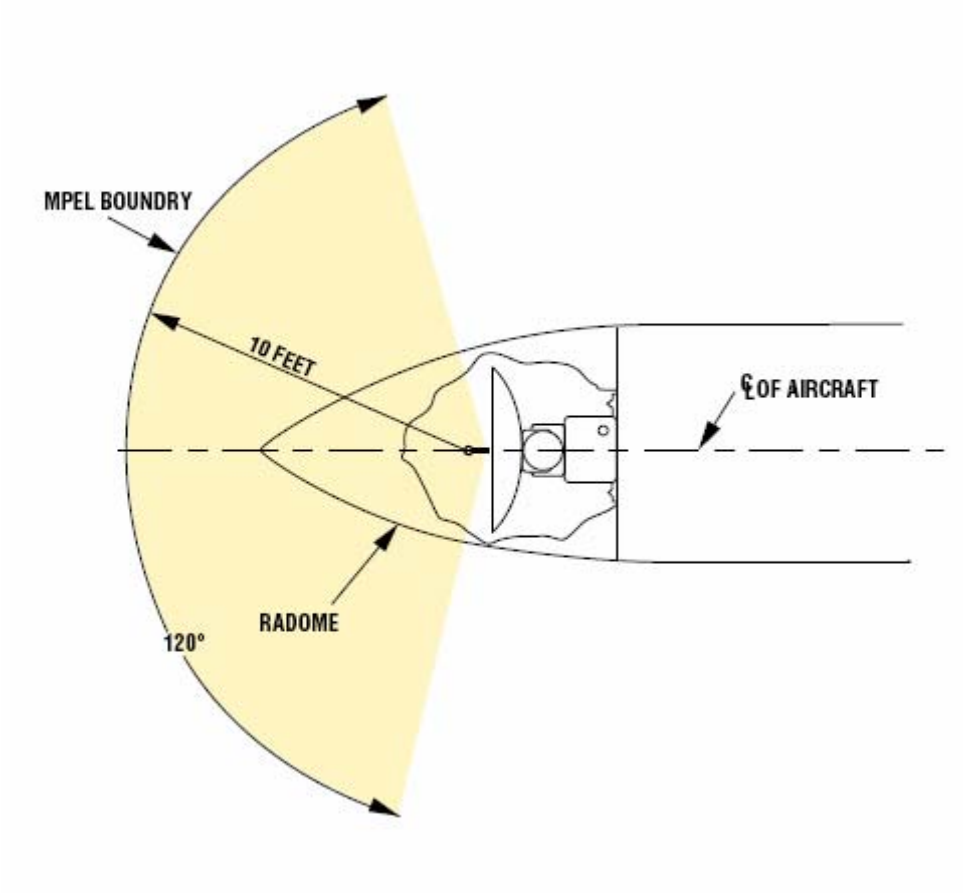


Figure 4-1 Maximum Permissible Exposure Level for the Weather Radar Antenna

Weather Radar Interfaces:

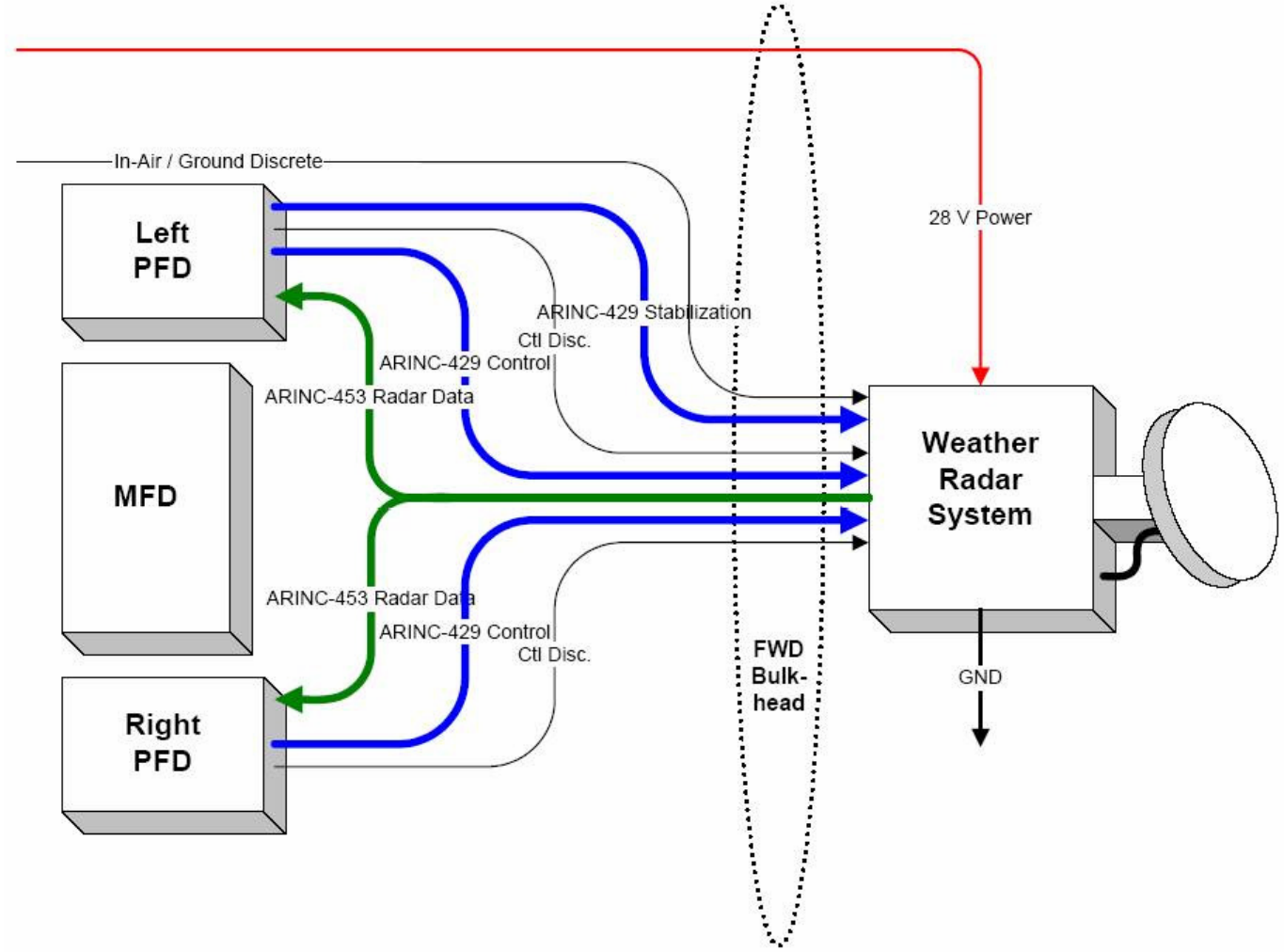


Figure 4-2 Weather Radar Interfaces

Sample Weather Radar Displays

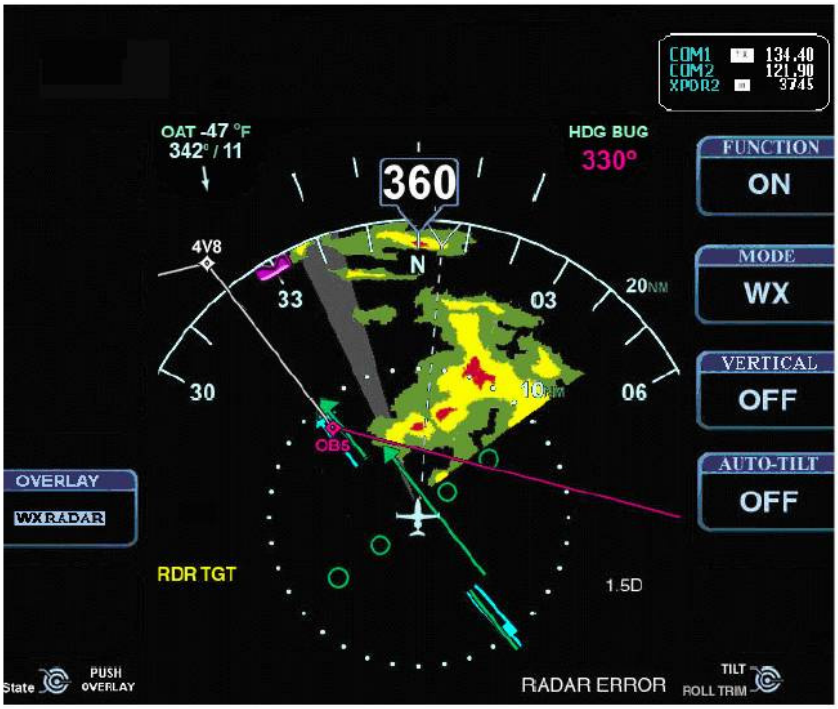


Figure 4-3 Weather Radar Display on PFD

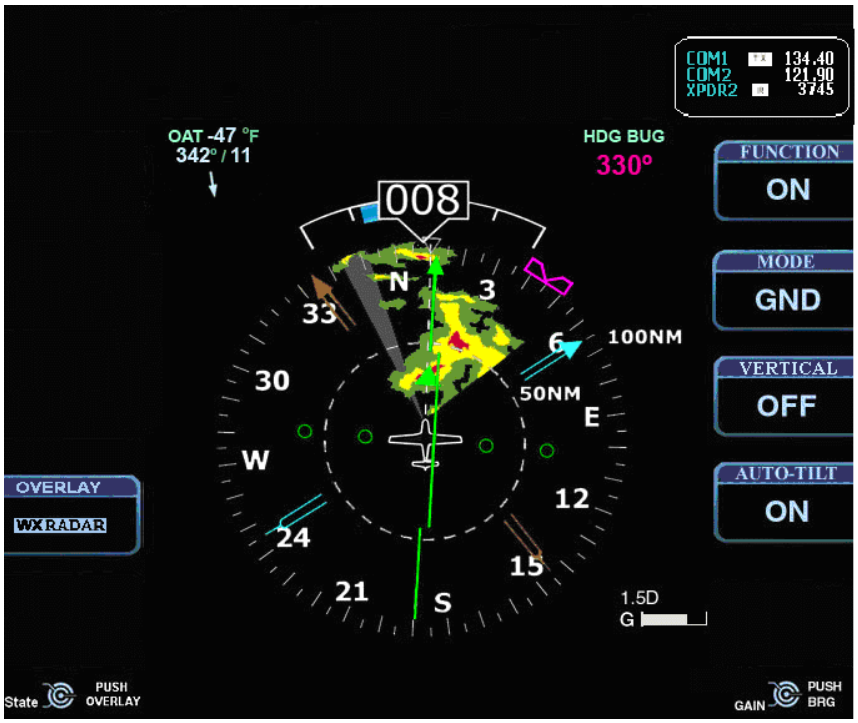


Figure 4-4 Weather Radar Display on PFD

Weather Radar Checker Sample Display

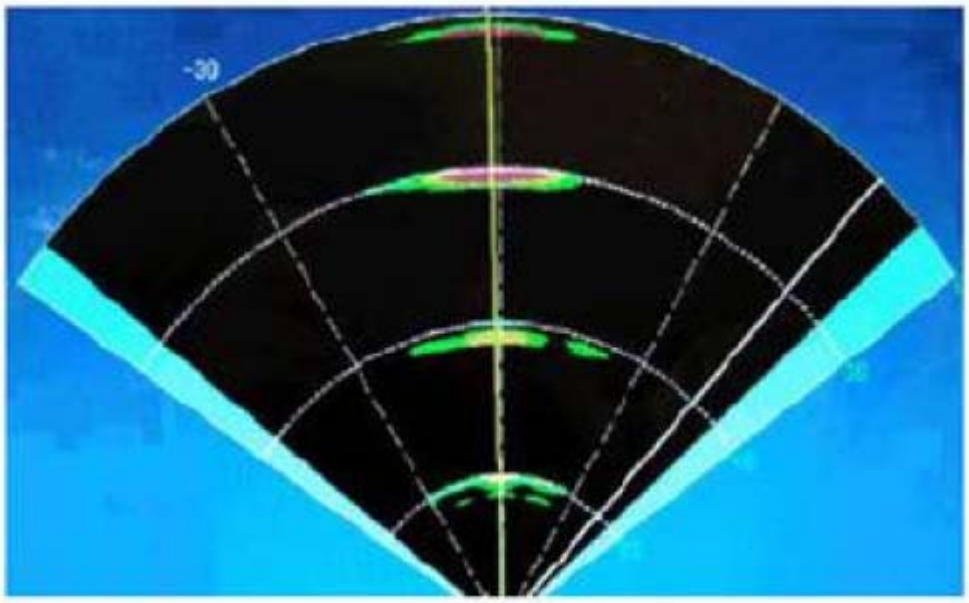


Figure 4-5 Radar Checker Pattern

4.1 Weather Radar Configuration Module Set up Procedure (Bench Test only) – (for RDR – 2000 only)

STEP	ACTION	RESULT	Pass Fail	OPERATOR
	Make sure that the 9V battery in the **KPA-900, Configuration Module Programmer Kit**, is fully charged and that the **KPA-900, Configuration Module Programmer Kit** is connected to PC parallel port (Printer Port).			
	Connect the **Configuration Module** to the **KPA-900, Configuration Module Programmer Kit**.			
	Insert the **KPA-900 Configuration Module Software floppy diskette (Self Bootup Disk)** to A drive.			
	Boot up the PC and select “MS-DOS” as the operating system. Type “**CONFIG**” to begin program.			
	When you have entered the configuration page, select “**RDR**” as desired configuration module using left or right arrow keys and press **ENTER**.			
	Once a desired configuration module is selected, the “**Enter Database Filename**” will appear.			
	Select “**RDR2000.RCF**” as desired database and press **ENTER**.			
	Once a desired database is selected, go to “**Hardware**” page and select “**Write Module**” from “**Hardware Menu**”. (Note: This puts “default” settings into the Configuration Module).			
	When the programming is completed (a confirmation message appears), go to “**Memory**” page and select “**View**” from “**Memory Menu**”			
	Select each item and configure per Table 1. Ensure a check mark appears to the left of selected item.			

Table 1.

Configuration Option	Setting
DESIRED_ANTENNA_SWEEP	100_DEG
CONNECTORS_POS	BOTTOM
GYRO_SOURCE	429_DIGITAL
ANALOG_GYRO_TYPE	UNKNOWN
ANALOG_GYRO_COMPENSTATE	DO_NOT_COMPENSATE
MAP_GAIN	GAIN_CHANGE_ACCEPTED
EFIS_STRUT_SWITCH	OVERRIDE_ALLOWED
TARGET_ALERT	ENABLED

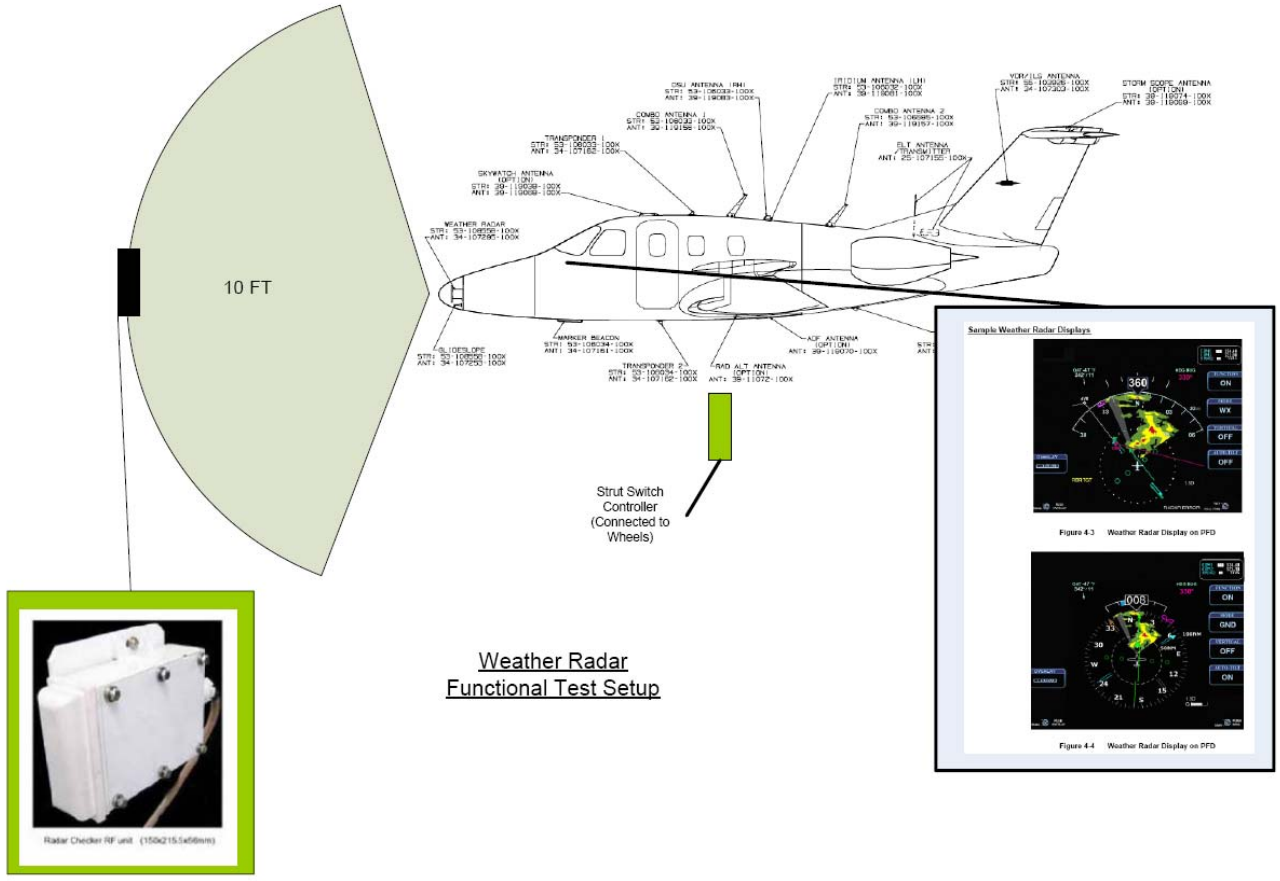
	When you have selected all items required, press "**ESC**" and go to "**Hardware**" page.			
	Select "**Write Module**" from "**Hardware Menu**".			
	When the programming is completed (a confirmation message appears), select "**EXIT**"			
	Remove **Configuration Module** from the **KPA-900, Configuration Module Programmer Kit** and install it to the aircraft.			

4.2 Weather Radar Test Requirements:

1. **Check LPFD and RPFD is connected to Weather Radar for following:**
   - **A. Ctrl Disc**
   - **B. ARINC-429 Control**
   - **C. Arinc-429 Stabilization**
   - D. **ARINC-453**

2. **Check In-AIR/On Ground Disc is connected to Aircraft**
3. **Check Weather Radar Transmits RF signal and receives the echoes.**
4. **Check LPFD and RPFD Displays Weather Data.**
5. **Check the Mode, Tilt and Gain Control on LPFD and RPFDs.**

4.3 Test Setup:



Weather Radar
Functional Test Setup

4.4 Tests and Expected Results:

Checks	Test steps	Expected Results
• Check LPFD and RPFD is connected to Weather Radar for following: o Ctrl Disc o ARINC-429 Control o Arinc-429 Stabilization o ARINC-453 • Check In-AIR/On Ground Disc is connected to Aircraft • Check Weather Radar Transmits RF signal and receives the echoes. • Check LPFD and RPFD Displays Weather Data. • Check the Mode, Tilt and Gain Control on LPFD and RPFDs.	Place the Radar Checker in front of the airplane (10ft) as defined in the Radar Checker operation manual. Set the Radar Checker to Transmit the test signals. Connect Strut Switch Controller.	
	Turn LPFD OFF and RPFD ON. Turn the LAHRS and RAHRS Power ON Put the Aircraft in ON-Ground by controlling the Strut Switch. Turn the Weather Radar Power ON	• The RPFD shall be able to control Weather Radar (by changing into Test Mode and back to Standby Mode) • In Test Mode the RPFD display shall show the Test Pattern. • LPFD cannot control Weather Radar.
	By using RPFD controls select WX Mode	• The RPFD Display shall not show the display pattern similar to Figure Radar Checker pattern.
	Put the Aircraft in In-Air Mode by Controlling the Strut Switch. By using RPFD controls select Wx Mode.	• The RPFD Display shall show the display pattern similar to Figure Radar Checker pattern.
	Turn the Tilt Knob on RPFD;	• The Tilt Number should be changing on the RPFD Display.
	Put the Weather Radar in Map Mode. Turn the Gain Knob on RPFD:	• The Gain Bar should be changing on the RPFD Display.
	Turn LPFD ON and RPFD ON.	• The LPFD shall be able to control Weather Radar (by changing into Test Mode and back to Standby Mode) In Test Mode the LPFD and RPFD display shall show the test pattern.

	Put the Aircraft in In-Air Mode by Controlling the Strut Switch. **By using LPFD controls select Wx Mode.**	• **The LPFD and RPFD Display shall show the display pattern similar to Figure Radar Checker pattern.** • **No Stabilization OFF message on the LPFD display.**
	Turn the LAHRS and RAHRS Power OFF	• **The LPFD Display shall show Stabilization OFF message.**
	Turn the LAHRS and RAHRS Power ON	• **No Stabilization OFF message on the LPFD display.**
Check Tilt and Gain controls of LFPD	**Turn the Tilt Knob on LPFD;**	• **The Tilt Number should be changing on the LPFD Display**
	Put the Weather Radar in Map Mode. **Turn the Gain Knob on LPFD:**	• **The Gain Bar should be changing on the LPFD Display.**