Test Case Radar_Display_1.0

for the

AWIPS

Contract

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Revision History

Revision	Date	Affected Pages	Explanation of Change(s)
1.0	5 December 07	ALL	Initial Release
2.0	14 January 08	4-9	Dry Run
3.0	17 January 08	4-7	PDT Redlines/NWS Comments
4.0	29 January 08	ALL	DT Redlines

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1.0 SCOPE

See Software Test Plan.

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2.0 APPLICABLE DOCUMENTS

2.1 Source Documents

- None

2.2 Reference Documents

- Software Test Plan for the Advanced Weather Information Processing System Project, Contract #DG133W-05-CQ-1067, 4 December 2007
- Sections 2.1.6.10 and 2.1.6.12 of the AWIPS D-2D User's Manual Build 8.1
- Existing AWIPS 1 test procedures:
    - Baseline_D2D_Reg_RADAR_1.4.1.19
    - D2D_Loc_RADAR_1.4.1.18
- The VPN connection to the Silver Spring NWS AWIPS 1 test bed
- Release OB8.1 of the Weather Event Simulator (WES)

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3.0 TEST CASE DESCRIPTION

This test case demonstrates the capability of AWIPS to display different types of radar data available from the NOAAPort data feed. Storm motion and 4-Panel capabilities will also be tested.

3.1 Assumptions, Constraints and Preconditions

- TO8 software has been installed successfully
- CAVE, EDEX and pgAdmin III are running
- Data has been ingested
- Radar Msg Handler deferred to TO11

3.2 Recommended Hardware

See Software Test Plan.

3.3 Test Inputs

Section 4.0 below contains the test procedures for this test case. Sections 2.2 – 2.9 of the Software Test Plan contain general test inputs applicable to all TO8 test cases.

3.4 Test Outputs

The images and data will be displayed in CAVE.

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4.0 TEST SCENARIO

Step	Action	Result	Pass/Fail
1.	Open CAVE. Select 'koax', 'koax 4 Bit Products', and 'koax 4bit Reflectivity'.	CAVE opens and the user drills down through the koax localization radar menu to reveal available base reflectivity data.	
2.	Select and display a radar image for 124 NM Reflectivity (Z), 0.5 Elevation and koax (localization site).	A base reflectivity radar image for tilt 0.5 displays.	
3.	Using the MB3 over the displayed image select 'Sample'.	A display of pixel values representing raw values of the reflectivity intensities displays.	
4.	Clear the main pane and repeat steps 2 and 3 for 1.5 elevation.	A base reflectivity radar image for tilt 1.5 displays.	
5.	Clear the main pane and repeat steps 2 and 3 for 2.4 elevation.	A base reflectivity radar image for tilt 2.4 displays.	
6.	Clear the main pane and repeat steps 2 and 3 for 3.4 elevation.	A base reflectivity radar image for tilt 3.4 displays.	
7.	Ensure the number of frames is set to 16. Clear the main panel and reload the 0.5 elevation imagery for 124nm base reflectivity.	The last 16 radar frames for base reflectivity, 0.5 elevation for the chosen site loads.	
8.	Using MB1 press the 'Loop' button from the tool bar.	The previous 16 radar frames for the 0.5 elevation tilt begin looping. CAVE has the ability to loop the time steps at a fixed elevation angle.	
9.	Select the 'Loop Control' button from the tool bar.	The Loop Properties window displays.	
10.	Adjust the forward speed to 10 and the backward speed to 6.	Forward and backward loop speeds change to 10 frames/second and 6 frames/second, respectively. An obvious difference in loop speed between forward and backward should be noted.	
11.	Adjust the First Frame Dwell and Last Frame Dwell to 0.0 seconds.	The loop continuously loops forward and backward. CAVE provides the capability to adjust the time step of the radar display.	
12.	Using MB1 select the 'Looping' check box.	The loop can be manually stopped and started.	
13.	Clear the main panel display and open the Classic Volume Browser.	Classic Volume Browser displays.	
Note: Steps 14 and 15 are not displayable in TO8 via the menu bar because they are accessible through the "Mosaic" feature located under "Radar" from the menu bar. Mosaic of radar images will be available in a future TO. However, for demonstration purposes, 248 nm Reflectivity (Z) can be displayed through the classic browser.			
14.	Display a radar image for 248 nm Reflectivity (Z), 0.5 for Elevation, and koax (localization site).	A 248 nm Reflectivity (Z), 0.5 elevation radar mosaic image is displayed.	
15.	Using the MB3 over the displayed image select	A display of pixel values representing raw	

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Step	Action	Result	Pass/Fail
	‘Sample’.	values of the reflectivity intensities displays.	
16.	Clear the display from the main panel.	The radar display no longer appears.	
17.	Back in CAVE, select ‘koax’, ‘koax 4 Bit Products’, and ‘koax 4bit Velocity’, ‘0.5 Vel’.	A 124 nm Velocity (V), 0.5 elevation radar image is displayed using CAVE.	
18.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the velocity intensities displays.	
19.	Clear the display from the main panel.	The radar display no longer appears.	
20.	Select and display a radar image for 124 nm Velocity (V), 1.5 for Elevation, and koax (localization site).	A 124 nm Velocity (V), 1.5 elevation radar image is displayed using CAVE.	
21.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the velocity intensities displays.	
22.	Clear the display from the main panel.	The radar display no longer appears.	
23.	Through koax localization, ‘koax 4 Bit Products’ select and display a radar image for 124 nm Composite Ref (CZ), 0.0 for Elevation, using koax (localization site), ‘Comp Ref (CZ)’.	A 124 nm Composite Ref (CZ), 0.0 elevation radar image is displayed using CAVE.	
24.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the complex reflectivity intensities displays.	
25.	Clear the display from the main panel.	The radar display no longer appears.	
26.	Select ‘koax’, ‘koax Derived’, ‘Echo Tops (ET)’.	A 124 nm Echo Tops (ET), 0.0 elevation radar image is displayed using CAVE.	
27.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the cloud top heights displays.	
28.	Clear the display from the main panel.	The radar display no longer appears.	
29.	Select and display a radar image for 124 nm Storm Relative Velocity (SRM), 0.5 for Elevation, and koax (localization site) by selecting ‘koax’, ‘koax 4 Bit Products’, and ‘0.5 SRM’.	A 124 nm Storm Relative Velocity (SRM), 0.5 elevation radar image is displayed using CAVE.	
30.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the reflectivity and storm relative velocity intensities display.	
31.	Clear the display from the main panel.	The radar display no longer appears.	
32.	Select and display a radar image for 124 nm Storm Relative Velocity (SRM), 1.5 for Elevation, and koax (localization site) using the above steps.	A 124 nm Storm Relative Velocity (SRM), 1.5 elevation radar image is displayed using CAVE.	
33.	Using the MB3 over the displayed image select ‘Sample’.	A display of pixel values representing raw values of the reflectivity and storm relative velocity intensities display.	
34.	Clear the display from the main panel.	The radar display no longer appears.	

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Step	Action	Result	Pass/Fail
35.	Select and display a radar image for 124 nm Storm Relative Velocity (SRM), 2.4 for Elevation by selecting 'Radar', 'kdvn', 'kdvn 4 bit Storm Rel Vel' and 2.4. Note: Depending on the radar mode at the time of testing, 2.4 tilt may not be available for all stations. A display of any station with 2.4 tilt satisfies the requirement.	A 124 nm Storm Relative Velocity (SRM), 2.4 elevation radar image is displayed using CAVE.	
36.	Using the MB3 over the displayed image select 'Sample'.	A display of pixel values representing raw values of the storm relative velocity intensities displays.	
37.	Clear the display from the main panel.	The radar display no longer appears.	
38.	Select and display a radar image for 124 nm Storm Relative Velocity (SRM), 3.4 for Elevation by selecting 'Radar', 'kdvn', 'kdvn 4 bit Storm Rel Vel' and 3.4. Note: Depending on the radar mode at the time of testing, 3.4 tilt may not be available for all stations. A display of any station with 3.4 tilt satisfies the requirement.	A 124 nm Storm Relative Velocity (SRM), 3.4 elevation radar image is displayed using CAVE.	
39.	Using the MB3 over the displayed image select 'Sample'.	A display of pixel values representing raw values of the storm relative velocity intensities displays.	
40.	Clear the display from the main panel.	The radar display no longer appears.	
41.	Note: One Hour Precip (OHP) falls under the Mosaic display which will be delivered in a later TO. However, the OHP can be displayed using the browser classic. Under CAVE select 'Browser Classic'. Select and display a radar image for 248 nm One Hour Precip (OHP) 0.0 elevation, any available location using the browser classic.	A 248 nm One Hour Precip (OHP), 0.0 elevation radar image is displayed using CAVE.	
42.	Using the MB3 over the displayed image select 'Sample'.	A display of pixel values representing raw values for one hour precipitation amounts displays.	
43.	Clear the display from the main panel.	The radar display no longer appears.	
44.	Under 'koax', 'koax 4 Bit Products' select 'Storm Total Precip (STP)'.	A 248 nm Storm Total Precip (STP), 0.0 elevation radar image is displayed.	
45.	Using the MB3 over the displayed image select 'Sample'.	A display of pixel values representing raw values for storm total precipitation displays.	
46.	Clear the display from the main panel.	The radar display no longer appears.	
47.	Using MB1 select 'koax', 'koax 4 Bit Products', 'All Tilts Z/V', '0.5 Vel' from the menu bar.	The Omaha radar, base radial velocity and reflectivity for angles 0.5, 1.5, 2.4 and 3.4 display. The All Tilts capability can be displayed from the menu bar for the set	

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Step	Action	Result	Pass/Fail
		localization.	
48.	Using the keypad select the '.' several times. (Ensure "Num Lock" is selected).	The image changes between reflectivity and radial velocity.	DR #772
49.	Using the keypad select and hold the '+' and '-' keys one at a time.	The user can 'fade' between the base reflectivity and radial velocity images. By using these two keys, the user blends the two images.	
50.	With base reflectivity only displayed select the 'up' and 'down' arrow keys.	User can toggle between the four tilt angles of 0.5, 1.5, 2.4, and 3.4.	
51.	Next select the 'left' and 'right' arrow keys.	The reflectivity radar image for the selected tilt is manually looped frame by frame.	
52.	With radial velocity only displayed select the 'up' and 'down' arrow keys.	User can toggle between the two available tilt angles of 0.5 and 1.5.	
53.	Next select the 'left' and 'right' arrow keys.	The radial velocity radar image for the selected tilt is manually looped frame by frame.	
54.	Clear the display. From the tool bar select 'Radar', 'kdvn', 'kdvn 4 Bit Products', 'kdvn 4 bit four panel'.	A listing of available four panel radar displays appears.	
55.	Select the 0.5/1.5/2.4/3.4 Z/SRM panels.	A four panel radar display appears in the main panel. The displays are for 0.5, 1.5, 2.4, and 3.4 tilts. Note: not all panels may load if data is not available. Another station may be selected.	
56.	Move the cursor between the panels.	The cursor is geo-referenced between the four panels.	
57.	Close all tabs and clear all displays within CAVE.	CAVE returns to a blank map.	
	End of Test		

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5.0 REQUIREMENTS VERIFICATION TRACEABILITY MATRIX (RVTM)

Number	Description	Test Step(s)
CAVE_TO8_014.1	CAVE shall display 4-bit 124 NM Reflectivity (Z)	2, 4 – 6, 7
CAVE_TO8_014.1.1	CAVE shall display 124 NM reflectivity for elevation 0.5	2, 7
CAVE_TO8_014.1.2	CAVE shall display 124 NM reflectivity for elevation 1.5	4
CAVE_TO8_014.1.3	CAVE shall display 124 NM reflectivity for elevation 2.4	5
CAVE_TO8_014.1.4	CAVE shall display 124 NM reflectivity for elevation 3.4	6
CAVE_TO8_014.2	CAVE shall display 4-bit 248 NM Reflectivity (Z)	14
CAVE_TO8_014.3	CAVE shall display 4-bit 124 NM Velocity (V)	17, 20
CAVE_TO8_014.3.1	CAVE shall display 124 NM Velocity for elevation 0.5	17
CAVE_TO8_014.3.2	CAVE shall display 124 NM Velocity for elevation 1.5	20
CAVE_TO8_014.4	CAVE shall display 4-bit 124 NM Composite Ref (CZ)	23
CAVE_TO8_014.5	CAVE shall display 4-bit 124 NM Echo Tops (ET)	26
CAVE_TO8_014.6	CAVE shall display 4-bit 124 NM Storm Relative Velocity (SRM)	29, 32, 35, 38
CAVE_TO8_014.6.1	CAVE shall display 124 NM Storm Relative Velocity for elevation 0.5	29
CAVE_TO8_014.6.2	CAVE shall display 124 NM Storm Relative Velocity for elevation 1.5	32
CAVE_TO8_014.6.3	CAVE shall display 124 NM Storm Relative Velocity for elevation 2.4	35
CAVE_TO8_014.6.4	CAVE shall display 124 NM Storm Relative Velocity for elevation 3.4	38
CAVE_TO8_014.7	CAVE shall display 4-bit 248 NM One Hour Precip	41
CAVE_TO8_014.8	CAVE shall display 4-bit 248 NM Storm Total Precip	44
CAVE_TO8_014.9	CAVE shall contain the ability to sequentially adjust the time step of the radar display	47 – 53
CAVE_TO8_014.10	CAVE shall contain the ability to sequentially adjust the tilt of the radar display	47 – 53
CAVE_TO8_014.11	CAVE shall contain the ability to loop the time steps at a fixed elevation angle	47 – 53
CAVE_TO8_014.12	CAVE shall contain the ability to loop the elevation angles of the radar display	47 – 53
CAVE_TO8_014.13	CAVE shall contain the ability to transition between reflectivity radar data and radial velocity data	47 – 53
CAVE_TO8_014.14	CAVE shall contain the ability to toggle between reflectivity radar data and radial velocity data	47 – 53
CAVE_TO8_014.15	CAVE shall provide a 4-panel display for 4-bit radar data	54-55
CAVE_TO8_014.15.1	The 4-panel display shall display one radar image of a different elevation angle in each of the four panels	55
CAVE_TO8_014.15.2	The 4-panel display shall contain a georeferenced linked cursor across	56

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	the four panels	
CAVE_TO8_014.16	CAVE shall provide a capability to display the raw data values of a displayed radar product	See requirements 014.16.1–16. 8 below
CAVE_TO8_014.16.1	CAVE shall be capable of displaying the pixel value of 4-bit 124 NM base reflectivity radar data	2-6
CAVE_TO8_014.16.2	CAVE shall be capable of displaying the pixel value of 4-bit 248 NM base reflectivity radar data	14
CAVE_TO8_014.16.3	CAVE shall be capable of displaying the pixel value of 4-bit radial velocity radar data	17, 20
CAVE_TO8_014.16.4	CAVE shall be capable of displaying the pixel value of 4-bit Composite Ref radar data	23
CAVE_TO8_014.16.5	CAVE shall be capable of displaying the pixel value of 4-bit Echo Top radar data	26
CAVE_TO8_014.16.6	CAVE shall be capable of displaying the pixel value of 4-bit Storm Relative Velocity radar data	29, 32, 35, 38
CAVE_TO8_014.16.7	CAVE shall be capable of displaying the pixel value of 4-bit One Hour Precip radar data	41
CAVE_TO8_014.16.8	CAVE shall be capable of displaying the pixel value of 4-bit Storm Total Precip radar data	44

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