DFP-1000A DF BEARING PROCESSOR USER FUNCTIONAL TEST PROCEDURE

I DESCRIPTION

This procedure provides users with the means to implement a "closed-box" functional test of the DFP-1000A DF Bearing Processor and Display to verify essential performance characteristics. It is organized to test as many features as practical in an abbreviated test with a minimum of test equipment and accessories. The procedure requires only basic familiarity with electronic test equipment and procedures, and does not require that the unit be removed from its cabinet. It is suitable both as a user acceptance test procedure as well as a means of performance verification. It is particularly recommended that this procedure be implemented prior to returning a DFP-1000A to the factory for repair, since the results will more rapidly point the factory technician to the source of trouble.

II APPLICABILITY

This procedure is applicable to all DFP-1000A DF processors with serial numbers 099 and higher. A separate procedure (doc. # fp1000_tpu_01) is required for earlier DFP-1000 DF processors with serial numbers 098 and below.

III APPLICABLE DOCUMENTS

A. RF Products DFP-1000A DF Bearing Processor/Display Operator's Manual (doc. # dfp1000a_oma_01)

B. RF Products DTI-100A DF Bearing Synthesizer Operator's Manual (doc. # dti100a_oma_01)

IV TEST EQUIPMENT REQUIRED

A. RF Products DTI-100/DTI-100A DF Bearing Synthesizer.

B. RF signal generator, 10.7 MHz and 455 kHz frequency capability, 50 ohm RF output, with internal and external AM and FM modulation capability (HP 8640B, HP 8656B, Marconi 2019A, or similar).

C. Regulated DC power supply, +13.8 VDC nominal output with 3 ampere minimum output current capacity (Astron RS-7A or similar).

D. Multi-meter, w/DC current measurement ability up to 3 amperes (Micronta 22-185A or similar).

E. IBM PC-compatible computer (486-33 MHz or better) w/available COM1 or COM2 serial port and DFDISP1 test software (required only for units having computer interface option).

F. (Optional.) Oscilloscope (Tektronix 465 or similar).

G. Miscellaneous plugs, cables, and adaptors as required.

V TEST PROCEDURE

A. PHYSICAL INSPECTION, MECHANICAL ALIGNMENT, & PRELIMINARY STEPS

1__ With the DFP-1000A disconnected from its power source, carefully inspect the unit for any signs of physical damage.

2__ Remove the fuse from the fuse-holder (located on the rear-panel) and inspect it to verify that it is a GMA-type 5 mm x 20 mm 2.5 ampere fast-blow fuse. If not, replace it with the correct type. Otherwise, reinstall it in the fuse-holder.

3__ Exercise all front-panel knobs, switches, and push-buttons to verify that all knobs rotate smoothly without binding, the toggle switches can be set to all their positions without excessive force, and the push-buttons can be depressed without sticking.

4__ Verify that the **CRT TRACE LENGTH**, **SQUELCH**, and **VOLUME** knobs audibly "click" when rotated fully counter-clockwise to their respective detented positions.

5__ Verify that the CRT bezel can be rotated in both directions without binding. Return it back to its normal detented position with its white alignment marker matching the black front-panel reference index.

6__ Verify that the white alignment marker lines of the **CRT TRACE LENGTH**, **SQUELCH**, and **VOLUME** knobs are aligned with their respective black dots when these knobs are set fully counter-clockwise to their detented positions. Use an Allen wrench as required to loosen the set screws (two per knob) and slip the knobs on the control shafts to restore mechanical alignment.

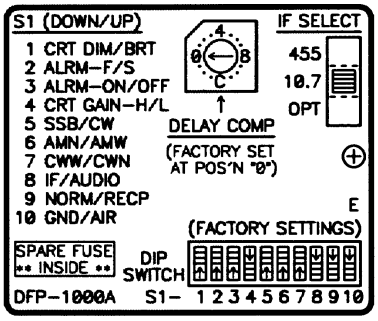
7__ Verify that the **SIGNAL STRENGTH** meter needle points to zero on the meter scale. If it is misaligned, insert a small *non-magnetic* screwdriver into the hole immediately below the meter and carefully rotate the meter adjustment screw to restore mechanical alignment. *Be sure that the DFP-1000A is set in its normal upright position on a flat horizontal surface before attempting this adjustment.*

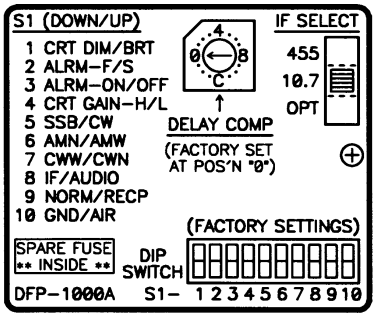
8__ Set the front-panel controls as follows:

TRACK & HOLD - **OFF**
CRT - **MED**
MODE - **CW**

CRT TRACE LENGTH - 8 o'clock
SQUELCH - 8 o'clock
VOLUME - **PWR OFF**

9__ Remove the rear-panel configuration setup cover plate (by first loosening the four captive thumbscrews) to expose the configuration setup switches. Carefully verify that all 10 dip-switches, and the **DELAY COMP** and **IF SELECT** switches are set at their standard factory settings as indicated by the direction of the arrows on the *leftmost* configuration setup label illustration below. If any of these switches are not set as per this standard configuration setup label, change these switch settings appropriately.





CAUTION

If any of the configuration setup switches need to be changed, *record the original settings now* on the blank rightmost configuration setup label above so that these switches can be restored to their user settings as called for upon completion of this procedure.

10__ (Optional.) Verify that the spare fuse is present (it is located immediately above the dip-switches and to the immediate left of the **DELAY COMP** switch). *Carefully* pry it out of its two retaining clamps and inspect it to verify that it is a GMA-type 5 mm x 20 mm 2.5 ampere fast-blow fuse (i.e., the same as that verified in step V-A-2 above). Also verify that this fuse is good, preferably using an ohmmeter. If an ohmmeter is unavailable, rely instead on visual inspection. Once verified, reinstall the fuse in its retaining clamps.

B. POWER-UP TESTS

1__ With the **VOLUME** knob still set to **OFF**, connect the DFP-1000A lower 11-16 VDC power connector to the +13.8 VDC regulated power source using the supplied power cable.

2__ Power-up the DFP-1000A by rotating the **VOLUME** knob slightly clockwise until a click is heard. Set the **VOLUME** knob at 8 o'clock.

3__ Set the CRT **INTEN** adjustment fully counter-clockwise.

4__ After a 30 second warm-up, verify with the multi-meter that the current drawn by the DFP-1000A from the +13.8 VDC supply is approximately 1.1 amperes. **Note:** While the DFP-1000A CRT is warming up, current drain can exceed 2 amperes. *Be sure*

nothing is connected to the **ANTENNA CONTROL**, **11-16 VDC** *power output, or* **REMOTE** *connectors while conducting this measurement.*

5__ Verify that the **SIGNAL STRENGTH** meter illuminates. **Note:** The **SIGNAL STRENGTH** meter backlighting may not be visible in sunlight or bright indoor lighting, so shadow the meter under such circumstances if the backlighting is not visible.

6__ Verify that the **ANTENNA BAND** indicator displays a valid digit (1, 2, 3, 4, 5, 6, 7, 8, 9, or 0).

7__ Verify that the **ANTENNA BAND** indicator increments in the proper order when the upper push-button is depressed, and that all ten digits can be obtained in succession (wrap-around occurs from 9 to 0).

8__ Verify that the **ANTENNA BAND** indicator decrements in the proper order when the lower push-button is depressed, and that all ten digits can be obtained in succession (wrap-around occurs from 0 to 9).

9__ Set the **ANTENNA BAND** to band 0 and power-down the unit. After at least 10 seconds, power-up the unit and verify that the **ANTENNA BAND** indicator still indicates band 0. Repeat this step for band 4. This confirms proper operation of the antenna band memory.

10__ With the unit still powered-up, turn it upside down and remove the rear cabinet screw (located adjacent to the rear rubber mounting foot closest to the 11-16 VDC rear-panel power connector) using a #2 Phillips screwdriver. Verify that the removal of this screw powers-down the unit (this confirms proper operation of the safety interlock mechanism), re-install the screw, and return the unit to its normal upright position.

11__ Remove the power cable from the lower 11-16 VDC power connector and connect it instead to the upper 11-16 VDC power connector (after first removing its tethered protective cap). Verify that the unit still powers-up.

C. LISTEN-THROUGH TESTS

1__ Verify that the DFP-1000A front-panel controls are still set as per step V-A-8 (with the exception that the **VOLUME** control should be set at 8 o'clock).

2__ With the **MODE** switch still set to **CW**, advance the **VOLUME** control to 9 o'clock and verify that a "hissing" sound is audible from the speaker (if no hissing sound is heard, rotate the **SQUELCH** control slightly counter-clockwise). Re-adjust the **VOLUME** control as required for a comfortable listening level.

3__ Verify that the hissing sound can be squelched by rotating the **SQUELCH** control clockwise. The squelch should activate at approximately 8-10 o'clock. Set the **SQUELCH** control back to just below 8 o'clock to restore the hissing sound.

4__ Set rear-panel dip-switch #7 to **CWW** (down) and verify that the hissing sound becomes higher in pitch as a result. This verifies proper operation of the wide and

narrow IF filters in **CW**. Return dip-switch #7 to **CWW** (up).

5__ Without changing the setting of the **VOLUME** control, set the **MODE** switch to **AM** and verify that the hissing sound becomes higher in pitch than it was in **CW**. Again verify that the hissing sound can be squelched with a **SQUELCH** setting of approximately 8-10 o'clock. Set the **SQUELCH** control back to just below 8 o'clock to restore the hissing sound.

6__ Set rear-panel dip-switch #6 to **AMN** (down) and verify that the hissing sound becomes lower in pitch as a result. This verifies proper operation of the wide and narrow IF filters in **AM**. Return dip-switch #6 to **AMW** (up).

7__ Without changing the setting of the **VOLUME** control, set the **MODE** switch to **FM** and verify that the hissing sound becomes much louder than it was in **AM**. Again verify that the hissing sound can be squelched with a **SQUELCH** setting of approximately 8-10 o'clock, and then set the **SQUELCH** control back to just below 8 o'clock.

8__ With the **MODE** switch still in **FM**, set up the signal generator for a -55 dBm CW signal and connect the signal generator RF output to the DFP-1000A **RF/IF** input through a 50 ohm coaxial cable (use the one that was supplied with the unit if it is available). Set the signal generator frequency to 10.700 MHz.

9__ Verify that the application of the RF signal to the DFP-1000A fully quiets the FM hissing sound and results in an approximately half-scale **SIGNAL STRENGTH** meter indication.

10__ Set the signal generator for 3 kHz deviation internal FM at a 1 kHz modulation rate. A clean-sounding 1 kHz tone should be plainly audible. Adjust the **VOLUME** control as required for a comfortable listening level.

11__ Verify that the **SIGNAL STRENGTH** meter is still at approximately half-scale.

12__ (Optional.) Monitor the **HEADSET** audio output with the oscilloscope using an appropriate interface cable with a male phone plug at one end. Partially insert the phone plug into the **HEADSET** jack so that it is sufficiently inserted to view the 1 kHz tone waveform on the oscilloscope, but not sufficiently inserted to disconnect the speaker audio. Verify that a reasonably undistorted 1 kHz sine wave is visible on the oscilloscope. Apply hearing protection (see cautionary statement below) and slowly rotate the **VOLUME** control clockwise until the waveform begins peak clipping. Clipping should occur at a waveform amplitude of roughly 10 VPP (volts peak-to-peak). Return the **VOLUME** control to a setting that results in a comfortable listening level.

CAUTION

This step results in a speaker volume level that is uncomfortably loud. Use hearing protection for safety.

13__ Fully insert a phone plug into the **HEADSET** jack and verify that this disables the speaker audio. Remove the phone plug and set it aside.

14__ Set the DFP-1000A **MODE** switch to **AM** and reconfigure the signal generator for 50% internal AM at a 1 kHz modulation rate (be sure to disable signal generator FM). A clean-sounding 1 kHz tone should again be plainly audible. Adjust the **VOLUME** control as required for a comfortable listening level.

15__ Verify that the **SIGNAL STRENGTH** meter is still at approximately half-scale.

16__ (Optional.) Repeat step V-C-12.

17__ Set the DFP-1000A **MODE** switch to **CW** and reconfigure the signal generator for a CW (unmodulated) output at 10.701 MHz

18__ An audible tone of approximately 1 kHz should be heard. This tone should sound clean and undistorted. **Note:** If a tone near 1 kHz is not heard, change the signal generator frequency slightly as required.

19__ Verify that the **SIGNAL STRENGTH** meter is still at approximately half-scale.

20__ (Optional.) Repeat step V-C-12.

21__ Restore the signal generator frequency to 10.700 MHz. Leave the test setup intact and proceed to the next Section.

D. CRT DISPLAY PRELIMINARY TESTS

1__ Verify that the **CRT TRACE LENGTH** control is still set at 8 o'clock.

2__ Rotate the **INTEN** control clockwise until a moderately bright dot appears on the CRT face and confirm that it can be sharply converged with the **FOCUS** control. **Note:** If the dot is not visible or hard to see, this may be caused by a burn spot at the center of the CRT face. To improve dot visibility in such cases, adjust either the **VERT** or **HORZ** positioning control slightly to move the dot away from the center of the CRT face.

3__ Exercise the **VERT** and **HORZ** positioning controls to verify that the dot can be moved both vertically and horizontally along the CRT face.

4__ Once proper operation of the **VERT** and **HORZ** positioning controls has been confirmed, set these controls to center the dot on the CRT face and proceed to the next Section.

E. CRT DISPLAY AND INDICATOR TESTS

1__ Verify that the DFP-1000A front-panel controls are still set as per V-A-8 (with the exception that **VOLUME** control should be set near 9 o'clock and the **CRT TRACE LENGTH** control to 9 o'clock.

2__ Verify that the signal generator is still set for a 10.700 MHz -55 dBm output.

3__ Connect the DTI-100A DF Bearing Synthesizer to the signal generator and DFP-1000A (refer to the DTI-100A Operator's Manual as required for details regarding this test setup). Set the DTI-100A **AZIMUTH** selector to 0° and the signal generator for 50% external AM (note that the DTI-100A **GAIN** control must be appropriately set in coordination with any relevant signal generator modulation gain controls to establish the required 50% modulation level).

4__ A 0° bearing should now be visible with a full-length CRT trace (be sure that the **CRT TRACE LENGTH** control is set at 9 o'clock). Verify that the green **SIGNAL PRESENT** indicator is illuminated and the yellow **DF OFF WARNING** indicator is extinguished.

5__ Set rear-panel dip-switch #1 to **DIM** (down) to enable the CRT screen-saver circuitry.

6__ Rotate the **CRT TRACE LENGTH** control fully counter-clockwise so that it clicks into its detented **DF OFF** position. The green **SIGNAL PRESENT** indicator should extinguish. The CRT dot should also disappear (or at least dim), indicating proper operation of the CRT screen-saver circuitry (allow at least 30 seconds for the screen-saver to activate).

7__ Also verify that the yellow **DF OFF WARNING** indicator slowly blinks on and off (it should illuminate once every four seconds or so).

8__ Set the **CRT TRACE LENGTH** control back to 9 o'clock. The CRT trace should immediately reappear (or at least undim). Verify that the yellow **DF OFF WARNING** indicator stops blinking and remains extinguished.

9__ Set the **TRACK & HOLD** switch to **ON** (labeled **HOLD** on some units).

10__ Disconnect the coaxial cable from the signal generator to interrupt the signal input to the DFP-1000A. The bearing displayed on the CRT should remain "frozen" for approximately 2.5 seconds before the trace collapses. **Note 1:** Since the signal must be interrupted suddenly for the track & hold to function properly, the coaxial cable should be disconnected rapidly. If the signal generator has a carrier on/off switch, this may also be used, but it is important that the activation of such a switch result in complete disabling of the signal generator RF output (with some signal generators, these switches only partially disable the RF output). **Note 2:** Some units may be customized for hold times other than 2.5 seconds.

11__ Set the **TRACK & HOLD** switch to **OFF**, restore the signal generator RF output, rotate the DTI-100A **AZIMUTH** selector to 90°, and repeat the previous two steps.

12__ Repeat the above step for a DTI-100A **AZIMUTH** selection of 45°. Observe the bearing carefully to ensure that it does not change during the 2.5 second “hold” period.

13__ Reconnect the coaxial cable to the signal generator RF output (or set the signal generator carrier on/off switch back to “on”), return the **TRACK & HOLD** switch to **OFF,** reset rear-panel dip-switch #1 to **BRT** (up), rotate the DTI-100A **AZIMUTH** selector to back to 0°, leave the test setup intact, and proceed to the next Section.

F. BEARING AND SENSITIVITY TESTS

1__ Verify that the DFP-1000A front-panel controls are still set as per V-A-8 (with the exception that the **VOLUME** and **CRT TRACE LENGTH** controls should both be set at 9 o'clock).

2__ Verify that the signal generator RF output is set to -55 dBm, the signal generator and DTI-100A are properly configured for a 0° bearing using 50% modulation, and a full-length 0° CRT trace is visible.

3__ Verify that the **CRT** switch is still in **MED** and rotate the DTI-100A **AZIMUTH** selector from 0° to 315°. The CRT bearing should correspondingly move from 0° to 315° in just over half a second.

4__ Set the **CRT** switch to **FAST** and verify that the CRT bearing is still 315° (important). Once verified, rotate the DTI-100A **AZIMUTH** selector from 315° back to 0°. The CRT bearing should correspondingly move from 315° to 0° in well under half a second (the response should be visibly much faster than that observed in step V-F-3 above with the **CRT** switch in **MED**).

5__ Set the **CRT** switch to **SLOW** and rotate the DTI-100A **AZIMUTH** selector from 0° back to 315°. The CRT bearing should correspondingly move from 0° to 315° in approximately 2 seconds (the response should be visibly much slower than that observed in step V-F-3 above with the **CRT** switch in **MED**).

6__ Set the **CRT** switch back to **MED** and confirm that the CRT bearing display is correct for all 12 DTI-100A azimuth selections. When completed, set the DTI-100A **AZIMUTH** selector to 22.5°.

7__ With the **CRT** switch still set to **MED**, and the DTI-100A **AZIMUTH** selector at 22.5° and set the **CRT TRACE LENGTH** control at 8 o'clock. Next, *slowly* rotate the **CRT TRACE LENGTH** control clockwise to maximum gain while observing the CRT bearing. Aside from some slight trace jitter when the video step-AGC activates, the bearing should remain constant (near 22.5°) regardless of the **CRT TRACE LENGTH** control setting. This step confirms proper operation of the video step-AGC.

8__ With the **CRT TRACE LENGTH** control still set fully clockwise for maximum gain, set the DTI-100A **AZIMUTH** selector back to 0°, reduce the signal generator RF output to -130 dBm, and confirm that a 0° CRT bearing is visible with a trace length approximately ¼ to ½ full-screen. Although bearing jitter will be present, the bearing should still be recognizable as being approximately 0° (to verify this, rotate the DTI-100A **AZIMUTH** selector back and forth between 0° and 22.5° - the resulting change in the CRT bearing should be clearly discernable). This step confirms DFP-1000A DF sensitivity.

9__ Repeat the above DF sensitivity test at 455 kHz after changing the signal generator frequency to 455 kHz and setting the rear-panel **IF SELECT** configuration setup switch to **455** (its uppermost position). The CRT trace length will be somewhat shorter for the 455 kHz DF sensitivity test than it was at 10.7 MHz.

10__ Leave the test setup intact and proceed to the next Section.

G. MOTION SENSOR ALARM TESTS (May Be Omitted If Use Of Motion Sensor Alarm Is Not Anticipated)

1__ Verify that the DTI-100A is still properly connected to both the DFP-1000A and signal generator. The signal generator should still be set at 455 kHz, and the DFP-1000A rear-panel **IF SELECT** configuration setup switch should still be set to **455** (its uppermost position). Also verify that dip-switch #2 is set to **ALRM SLOW** (up).

2__ Set the signal generator RF output level to -80 dBm.

3__ Set the DTI-100A **AZIMUTH** selector to 0° (if it is not already there) and confirm that the DTI-100A and the signal generator are properly set up for 50% external AM as per step V-E-3 above.

4__ Set the DFP-1000A **CRT TRACE LENGTH** control so that the 0° bearing displayed on the CRT is approximately full-screen (but not so long that the outer tip of the trace is not visible). This should result in a **CRT TRACE LENGTH** control setting of approximately 8:30.

5__ Rotate the **SQUELCH** control fully counter-clockwise to its detented **ALARM SET** position. Wait 30 seconds and confirm that the motion sensor alarm (a continuous high-pitched tone) does not sound.

6__ Set the **SQUELCH** control to 8 o'clock.

7__ Enable the motion sensor alarm by first setting rear-panel dip-switch #3 to **ALRM ON** (down) and then again rotating the **SQUELCH** control fully counter-clockwise to its detented **ALARM SET** position. After 15-20 seconds, the motion sensor alarm should sound.

8__ When the motion sensor alarm sounds, rotate the **SQUELCH** control back to 8 o'clock and verify that the motion sensor alarm quiets.

9__ Disable the signal generator RF output and again rotate the **SQUELCH** control fully counter-clockwise to its detented **ALARM SET** position. After 15-20 seconds, the motion sensor alarm should again sound.

10__ Rotate the **SQUELCH** control back to 8 o'clock and verify that the motion sensor alarm quiets.

11__ Return the **SQUELCH** control to **ALARM SET** and manually pulse the signal generator RF output at the rate of one short pulse (less than one second in duration) every 4 to 6 seconds using a watch or clock to establish accurate timing. This simulates a vehicle beacon pulsing slowly in its "rest" mode where the motion sensor is not activated. Although this is most conveniently done with the signal generator carrier on/off switch, it can also be done (with greater difficulty) by connecting and disconnecting the coaxial cable if the signal generator does not have a carrier on/off switch. The motion sensor

alarm should not sound as long as the signal generator RF output is pulsed at the prescribed rate (once every 4-6 seconds).

12__ If the motion sensor alarm does sound because of operator error (i.e, incorrectly pulsing the signal generator), repeat the previous two steps as required until it is confirmed that the motion sensor alarm will not sound at the prescribed pulse rate. Once this has been established, increase the pulse rate to once every 2 seconds, again using a watch or clock to establish accurate timing. This simulates a vehicle beacon pulsing rapidly in its "motion" mode where the motion sensor is activated. The motion sensor alarm should then sound after a few seconds.

13__ When the motion sensor alarm sounds, quiet it by rotating the **SQUELCH** control back to 8 o'clock.

14__ Set dip-switch #2 to **ALRM FAST** (down) and repeat the above three steps. For this test, however, pulse the signal generator RF output at a rate of *one pulse every 2 to 3 seconds* (rather than 4 to 6) to simulate the "rest" mode and *once per second* (rather than once every 2 seconds) to simulate the "motion" mode.

15__ Reconnect the coaxial cable to the signal generator RF output (or set the signal generator carrier on/off switch back to "on"), return dip-switch #3 to **ALRM OFF** (up), leave the test setup intact, and proceed to the next Section.

H. VIDEO GAIN, GROUND/AIR, AND NORMAL/RECIPROCAL TESTS

1__ Verify that the DTI-100A is still properly connected to both the DFP-1000A and signal generator. The signal generator should still be set at 455 kHz, and the DFP-1000A rear-panel **IF SELECT** configuration setup switch should still be set to **455** (its uppermost postion).

2__ Set the signal generator RF output level to -80 dBm (this should already have been done if the Motion Sensor Alarm test above was conducted).

3__ Verify that the DFP-1000A **CRT TRACE LENGTH** control is still set so that the 0° bearing displayed on the CRT is approximately full-screen (but not so long that the outer tip of the trace is not visible). This should result in a **CRT TRACE LENGTH** control setting of just past 8 o'clock.

4__ Set rear-panel dip-switch #4 to **CRT GAIN - LOW** (up) and confirm that the CRT trace diminishes in length to approximately 25% of that observed in the previous step. Return dip-switch #4 to **CRT GAIN - HIGH** (down) and verify that the CRT trace returns to its full length.

5__ After verifying that the **CRT** switch is still set to **MED,** set the DTI-100A **AZIMUTH** selector to 45° and confirm a resulting 45° bearing display on the DFP-1000A CRT.

6__ Set the **CRT** switch to **FAST** and verify that the displayed CRT bearing does not significantly change (for both length and azimuth). Once done, return the **CRT** switch to **MED**.

7__ Set rear-panel dip-switch #9 to **RECP** (up) and confirm that the displayed bearing shifts from 45° to 225° as a result. Return dip-switch #9 to **NORM** (down) and verify that the displayed bearing returns to 45°.

8__ Set rear-panel dip-switch #10 to **AIR** (up) and confirm that the displayed bearing shifts from 45° to 315° as a result. Return dip-switch #10 to **GND** (down) and verify that the displayed bearing returns to 45°.

9__ Return the rear-panel **IF SELECT** configuration setup switch to **10.7** (its center position).

I. ANTENNA BANDSWITCHING TESTS

1__ Exercise the DFP-1000A **ANTENNA BAND** push-buttons appropriately to select in succession bands 1, 2, 3, 4, and 5 on the **ANTENNA BAND** indicator. The DTI-100A yellow **HI/LO BAND** indicator should remain extinguished for these five antenna bands. This confirms that the DFP-1000A is sending the appropriate low-band antenna bandswitch code.

2__ Exercise the **ANTENNA BAND** push-buttons appropriately to select in succession channels 6, 7, 8, 9, and 0 on the **ANTENNA BAND** indicator. The DTI-100A yellow **HI/LO BAND** indicator should illuminate for these five antenna bands. This confirms that the DFP-1000A is sending the appropriate high-band antenna bandswitch code.

3__ **Note:** If an older DTI-100 or DFA-400 DF bearing synthesizer is used in lieu of the DTI-100A, the above steps cannot be directly implemented as a consequence of the fact that these earlier units do not have the **HI/LO BAND** indicator. In such a case, the antenna bandswitch line can be verified by directly monitoring the **HI/LO** band pin on the DFP-1000A rear-panel **ANTENNA CONTROL** connector (pin 7, the center pin) with a voltmeter or oscilloscope. A 0 VDC output corresponds to low-band and a 5 VDC output corresponds to high-band.

*** CAUTION ***

When probing pin 7, *be careful not to short-circuit adjacent pins.*

4__ The DFP-1000A is capable of controlling RF Products DF antennas having up to eight bands. Although the above **HI/LO BAND** test confirms that the DFP-1000A can satisfactorily accommodate dual-band DF antennas, it does not verify its ability to control DF antennas having more than two bands. If it is necessary to confirm that the DFP-1000A is sending correct antenna bandswitch codes for such antennas, refer to Appendix H of the DFP-1000A Operator's Manual.

J. MISCELLANEOUS

1__ If the DFP-1000A is equipped with a computer interface, appropriately exercise this

feature to confirm proper operation. **Note:** To obtain the specified 0.5° RMS bearing accuracy, set the **CRT** switch to **SLOW**.

2__ Disconnect all test equipment and *restore all the DFP-1000A rear-panel configuration setup switches to their original positions* (recorded in step V-A-9). If it is believed that some of these original switch settings are in error, resolve this matter first. Once these switches have been properly set, re-install the rear-panel configuration setup cover plate using the four captive thumbscrews. Re-install the tethered protective cap to the upper 11-16 VDC power connector if this has not already been done.

VI RETURNING EQUIPMENT TO FACTORY FOR REPAIR

When returning equipment to the factory for repair, it is very important that the equipment be accompanied by a detailed report listing all symptoms, along with any background information regarding the circumstances that may have led to the failure. If a problem occurs intermittently or only in specific modes of operation, this should be noted as well. If the above user functional test procedure has been performed, the specific test(s) the unit failed should be listed. Before returning any equipment, please contact RF Products at (619) 583-2024 (Tel/Fax) or via e-mail at rfprodsdc@juno.com to obtain return authorization.

****

Rev B04/09-99/dfp1000a_tpu_01

Original Writing: November, 1996