AV-10 Calibration

Note: There are no adjustable components in the AV-10 design. The calibration is done yearly to insure that the unit is still functioning within specifications.

The following is performed during factory calibration;

Connect AV-10 output to a HP8568B (or equiv) spectrum analyzer using aprox 3 ft RG58 coax. The analyzer must have a precision frequency standard that is accurate to +/- 1x10^-7 Hz or better.

General info;
Sideband to carrier db for double sideband AM=20 LOG(%AM/200)
DDM=((Large % - Small %)/100)

ILS Localizer;
Set the HP8568B center freq to 108.1 and span to 2KHz. Select ILS localizer 108.1 and DDM=0 (CENTER) on the AV-10. Check that;
Frequency=108.1MHz (+/- 2.5PPM +/- 1PPM aging per year) and that the power is -10dbm (+/- 3db).
With the center selected check that the 90 and 150Hz sidebands are equal (+/- 1db) and -20db (+/- 1db) from carrier.
Set 1/2 right on AV-10. Side bands -18.5 (+/- 1) db and -21.9 (+/- 1) db
Set Full right on AV-10 Side bands -17.2 (+/- 1) db and -24.2 (+/- 1) db
Set 150 Hz OFF and see that sideband gone.
Set 90 Hz OFF and see that sideband gone.

ILS Glide slope;
Change the HP8568b to 334.7MHz 2Khz scan and check the AV-10 glide slope signal for frequency accuracy +/- 2.5PPM +/- aging, power=-17dbm +/- 3db, 90Hz and 150Hz AM mod sidebands -14dbm +/- 2db from carrier and +/- 1db of equal magnitude for center.
For 1/2 the sidebands should be -13.1(+/- 1) and -15(+/- 1) db down.
For FULL the sidebands should be -12.25(+/- 1) and -16.125(+/- 1) db down.
Set 150 Hz OFF and see that sideband gone.
Set 90 Hz OFF and see that sideband gone.

ILS Marker;
Check for 75MHz +/- 5ppm carrier with -15dbm +/- 3db power out. Check on/off AM mod as;
outer marker 400Hz +/- 5%
middle marker 1300Hz +/- 5%
inner marker 3000Hz +/- 5%

VOR;
Select VOR mode and 108MHz freq on AV-10. Measure the center frequency and power. 108MHz +/- 2.5PPM aging and -10dbm +/- 3dbm in 10KHz analyzer BW. Using a modulation analyzer check that the 30Hz AM and 9960Hz subcarrier provide about 30% AM and that the on/off 1024Hz tone is giving about 10% AM mod. Check the Phase between the two 30Hz signals to insure they are within +/- 1 degree of expected phase.
Check the other VOR frequencies and their power.
**DME:**

Use a 1GHz bandwidth Tek-7104 scope (or equiv). View the AV-10 output signal. The output will be pulse pairs spaced 12μS +/- .1μS for the 108.0 X mode and 36μS +/- .1μS for the 108.05 Y mode. The output power =-12dbm +/- 3db. Check the AV-10 with a known good DME for proper lock.

**ADF:**

Use the spectrum analyzer to check the ADF am signals. Freq within +/- 5ppm and output power -12dbm +/- 3db. On/off AM modulation.

**Transponder:**

Using the 1GHz bandwidth above, scope view the AV-10 output and check power for -12dbm +/- 3db. The HP8568B analyzer can be used to check the carrier frequency by selecting the AV-10 MODE-A squawk mode and using the appropriate analyzer scan rate to determine the aprox output frequency.

Finally, all the transponder modes are checked using a known good mode-a/c/s-ES transponder. If any of the above tests fail, the factory should be contacted for repair.