APPENDIX H: DDS DAUGHTERCARD UPGRADE

The following page describes several changes that should be made to your "stock" DDS Daughtercard Kit" in order for it to operate properly with the Micro908. We've upgraded the RF amplifier so the card can produce enough signal reliably throughout the frequency range of interest in the Micro908, and we've added another onboard voltage regulator so that RF amplifier's output signal level will not be dependent upon the supply voltage. These two features are significant and will produce reliable operation of the Micro908 even when battery-powered.

[ ] Make the DDS Upgrade Kit" mods to the DDS Daughtercard

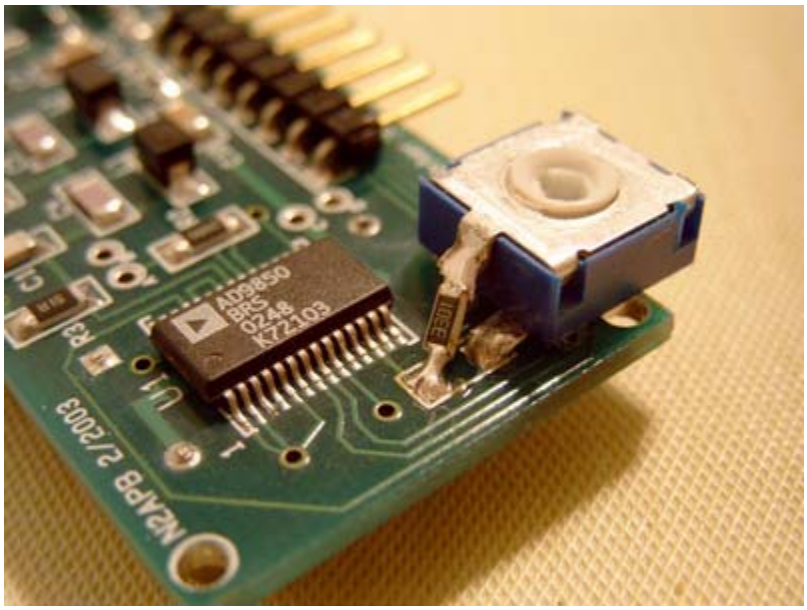
These changes are outlined on the following sheet entitled "DDS Upgrade Kit". The parts for these modifications are provided in this Micro908 Kit and they must be added in the prescribed manner to the DDS Daughtercard.

Another change is required to allow variable tweaking of the signal level provided by the DDS Daughtercard. This is a needed capabililty that was discovered toward the end of the Micro908 development effort when we discovered that some of the upgraded DDS cards were "hot", or providing a signal level greater than we expected. Thus it is necessary during the Micro908 calibration steps to adjust a trimpot on the DDS card to ensure that the signal level provided to the reflectometer circuitry is not too great. This "trimpot" addition did not make it to our standard "DDS Upgrade Kit" instructions, so we'll describe this simple step here.

[ ] Add the Trimpot to the DDS Daughtercard

Locate the trimpot supplied in the Micro908 Kit and orient as shown in the photo below. You may use Super Glue, RTV or a small daub of epoxy to hold the component in place. Be careful not to use too much adhesive, as it may leech up into the component and prevent the wiper from moving.

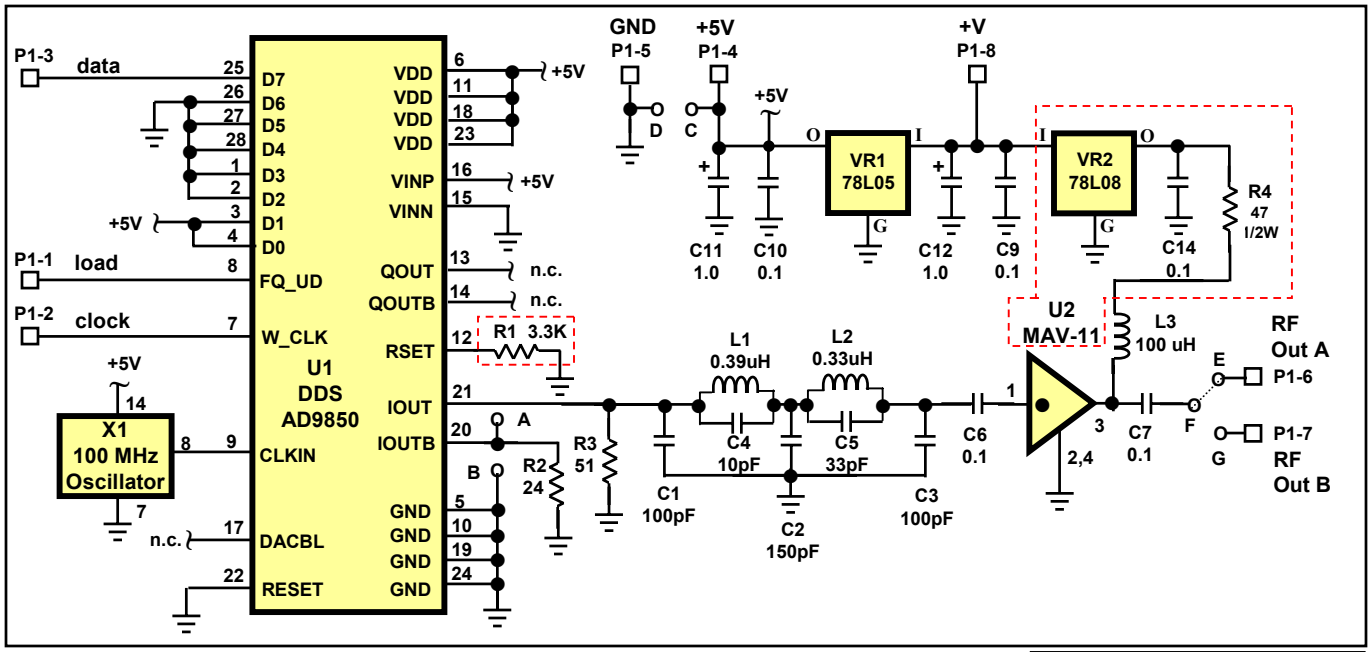
The idea is to put this 10K-ohm trimpot in series with the new value of R1 supplied. Solder one leg of the trimpot to the lower R1 pad. Solder the SMT resistor R1 between the upper ("middle" or wiper) lead of the trimpot and the other R1 pad, literally having R1 angled up in the air reaching out to the trimpot lead.



This technique has worked well in all of our betas and the trimpot can be adusted during calibration to have the DDS chip generate the required signal level to the RF amplifier.

AMERICAN QRP CLUB

DDS Daughtercard
Upgrade Kit



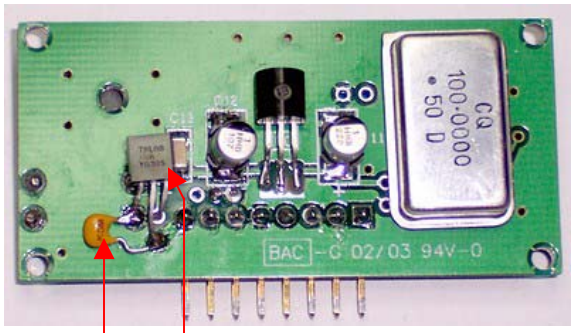
Now including: **"DDS Daughtercard Upgrade Kit"**

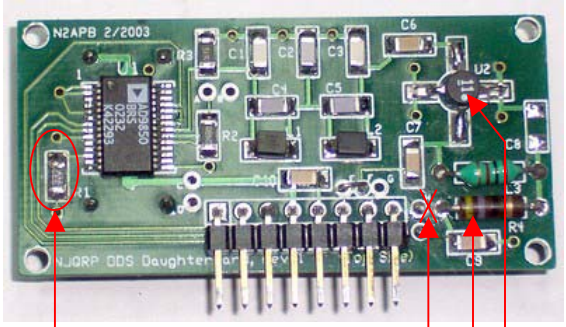
Benefits: Greater RF output – up to +7 dBm, or about 4V pp.
Output signal now unaffected by varying +V supply voltage – great for battery operation.

How?: Several new parts (shown above in dashed boxes) include …
MAV-11 used in place of the MAR-1A RF amp of the original design,
8V regulator for constant RF signal supply,
Single 47-ohm 1/2W resistor for the RF amp provides constant 60ma bias current,
New value for DDS output programming resistor R1 provides greater drive, quieter signal.

AmQRP DDS Daughtercard	
G. Heron, N2APB Rev 1.4 8/12/2004	Sheet 1/1

6 Easy Steps to Implement the Upgrade Kit …





1) Add VR2 as shown …
Input pin (right) to 'H' hole
Ground pin (middle) to ground pad
Output pin (left) to R4 pad

2) Add C14 as shown …
from R4 pad to Ground pad

3) Cut trace between hole 'H'
and the left pad of R4

4) Replace R1 with new value (3.3K)

5) Replace R4 with 47-ohm 1/2W
resistor

6) Replace U2 with MAV-11 device