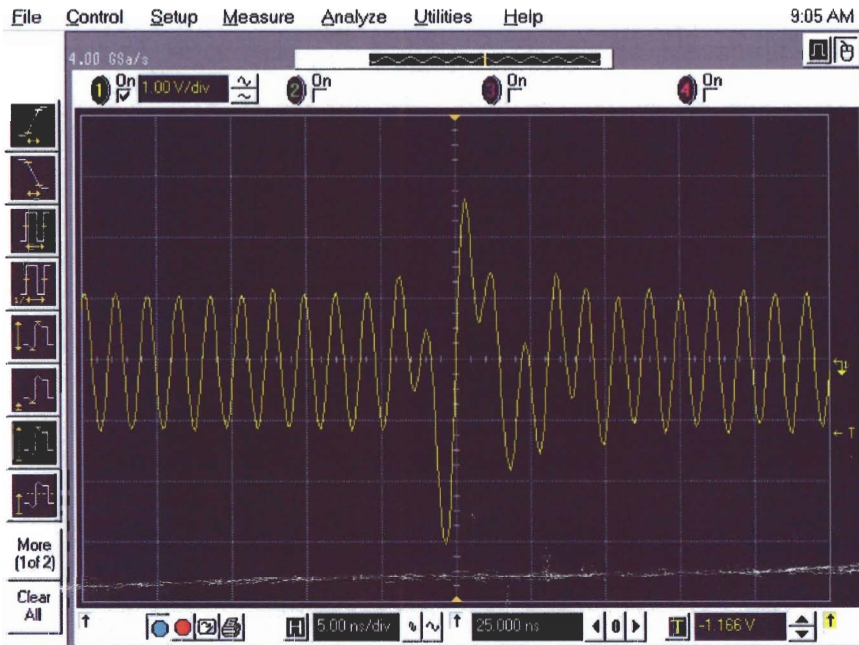
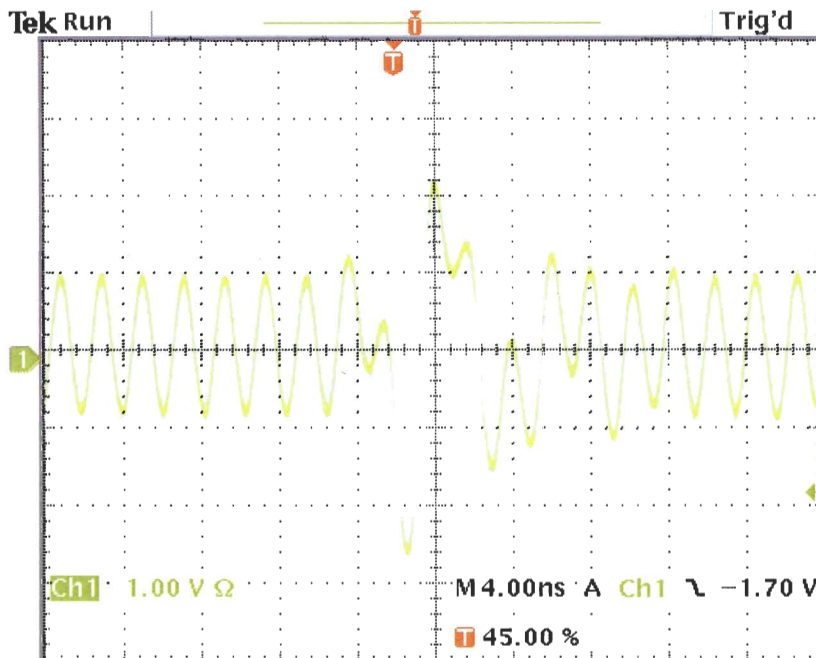


Howard: This is what was attached. ~ Bob

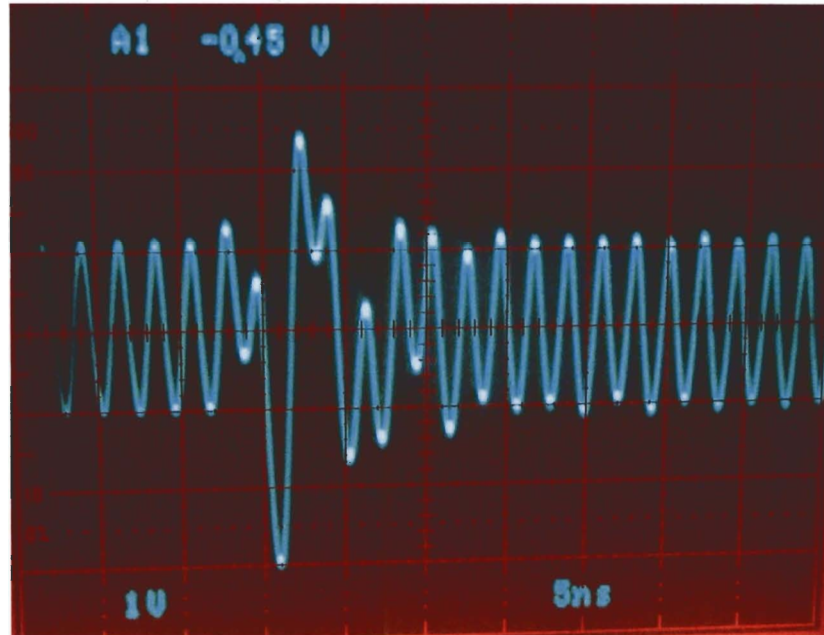
Below is a picture of the lab reference 476MHz with fiducial on an Infinium 1.5GHz digital oscilloscope (8GSa/s). The nominal level specified for the input to FIDO is 2V P-P with a fiducial of about twice the amplitude; The shop reference is slightly higher. FIDO sensitivity is set in the lab to detect this fiducial when the reference is attenuated 5dB. This is an arbitrary value based on convenience and the typical FIDOs in use. Thus all FIDOs should function with their 476 MHz input $\geq 1.2V_{P-P}$



Below is the same signal on a Tektronix 3054 500 MHz digital oscilloscope (5GSa/s).



The same signal seen on a Tektronix 2467B 400 Mhz analog oscilloscope:



Conclusion: any of these instruments are more than adequate for looking at the 476 MHz distributed to FIDO's.

At the beginning of each sector in the LINAC the 476MHz goes through an amplifier before feeding the FIDO from the Main Drive Line. This amplifier, located in Rack 1 has a 10dB monitor port with type "N" connector on the front panel. The front of Rack 1 In sector 28 is shown below with the 476 MHz Amplifier and FIDO near the top of the rack.

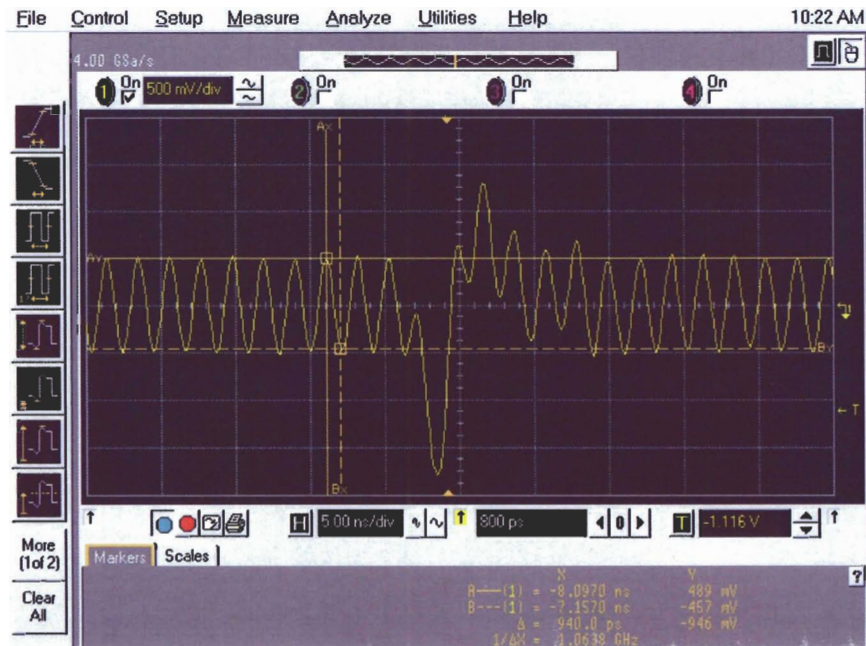


$\rightarrow 10\text{dB} = 1\text{bell} = \log_{10} P_2/P_1$
 $10^1 = 10 = P_2/P_1 \Rightarrow P_1 = \frac{P_2}{10}$; $V_1 = \frac{V_2}{\sqrt{10}} = \frac{V_2}{3.16}$

$V_2 = 2\text{VP/P}$
 $V_1 = 632\text{mV P/P}$

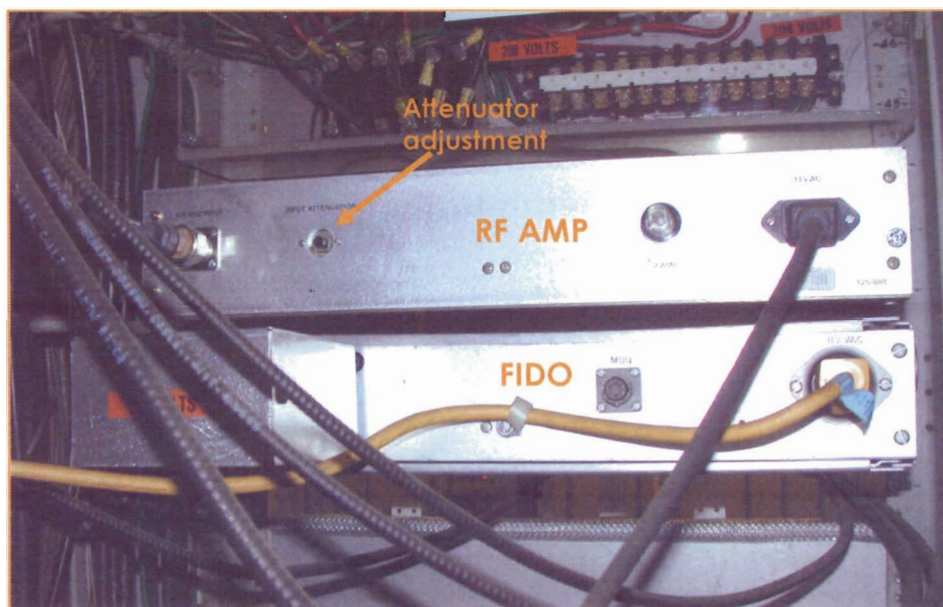
3

The 476MHz at the 10dB port on the FIDO RF Amplifier should read ideally 600mV to 800mV and in any case be at least 400mV P-P. In the field I have noted signals higher than 1V P-P measured at the RF Amplifier monitor port.



The above picture was taken using the hp Infinium scope looking at the RF monitor port at 28-1. Note the 476 MHz is nearly 1V P-P.

If all the PDUs served by a FIDO should fail to get their timing reference or intermittently report missing fiducials, the FIDO may be failing or the 476 MHz input to the FIDO may be weak. Check the level at the RF



Amplifier Monitor port. If the signal is found to be 500mV P-P or less,

adjustment can be MADE using the attenuator on the back of the RF Amplifier.