February 16, 2005

Timing Generator Fanout (TGF) Diagnostic Signals Sent to the Filter Card

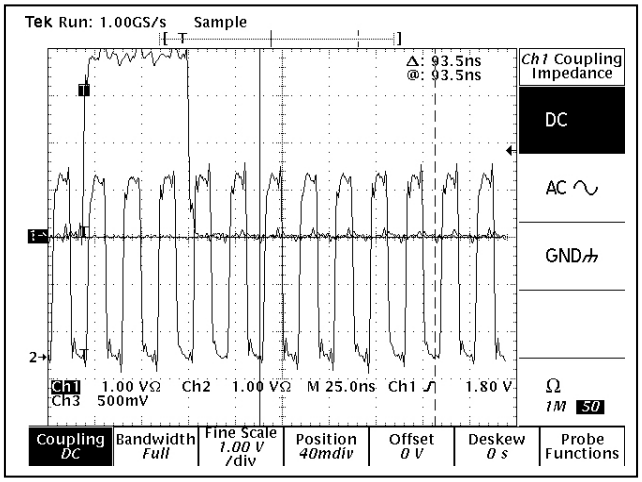
Features:

1) Capable of sending a 53Mhz clock synchronized to beam clock.

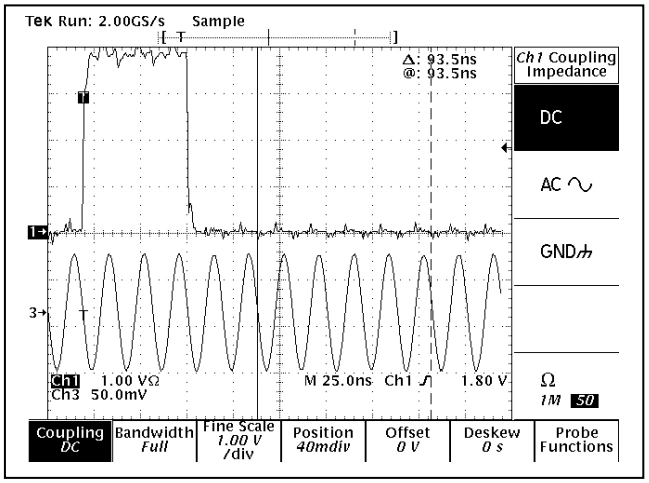
2) Capable of sending a pulse train (7 pulses) at a 53Mhz rate again synchronized to beam clock.

3) The pulse train can be adjusted anywhere within a one turn of the beam with a resolution of ½ bucket. The delay is set by adjusting the Sync(7) output delay.

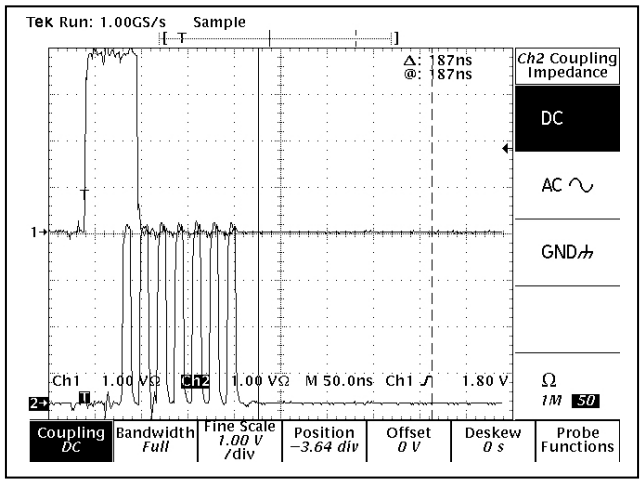
4) The above diagnostic signals can be routed to any/all channels of any/all Filter Cards to the:
   a. Echotek digitizer
   b. BPM sensor
   c. Or both the Echotek digitizer and the BPM sensor



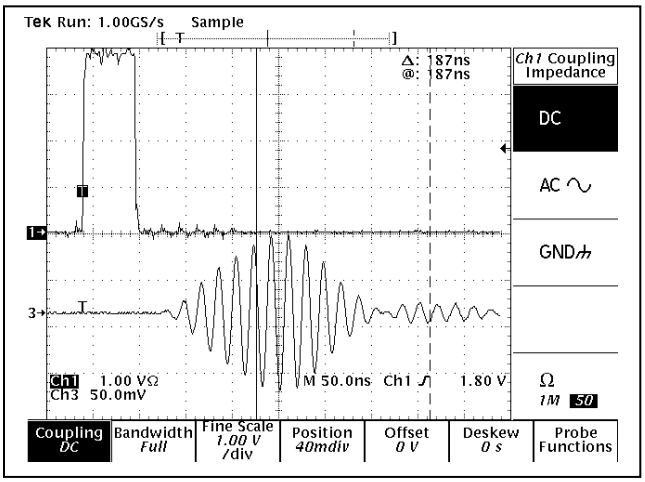
TGF Generated 53Mhz Clock



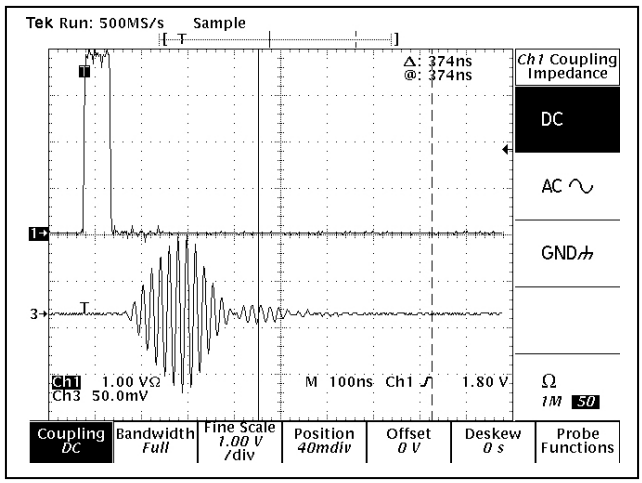
Filter Card Output to Echotek



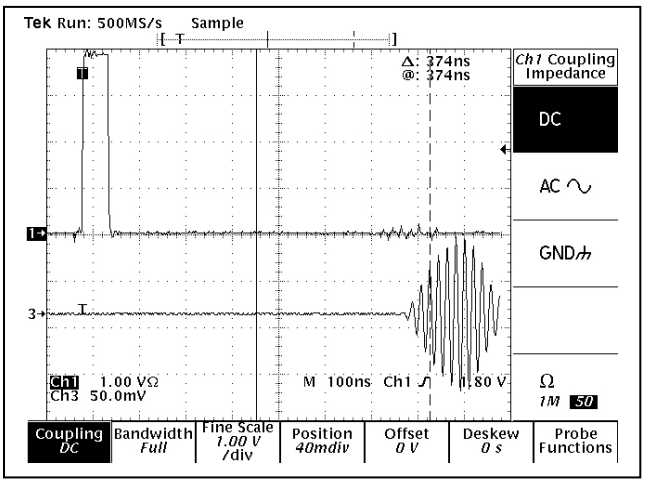
TGF Generated Pulse Train



Filter Card Output to Echotek



TGF Delay = 0



TGF Delay = 40

Table 7	**FilterCard Control Register BIT DEFINITIONS**	**I/O Address 0x100**
DATA	DESCRIPTION	
Bit-0	FilterCard Start/Done Card 0	Note 1
Bit-1	FilterCard Start/Done Card 1	Note 1
Bit-2	FilterCard Start/Done Card 2	Note 1
Bit-3	FilterCard Start/Done Card 3	Note 1
Bit-4	FilterCard Start/Done Card 4	Note 1
Bit-5	FilterCard Start/Done Card 5	Note 1
Bit-6	FilterCard Start/Done Card 6	Note 1
Bit-7	FilterCard Start/Done Card 7	Note 1
Bit-8	FilterCard R/W	Note 2
Bit-9	FilterCard Enable Diagnostic Signal	
Bit-10	Diagnostic Signal Type	Note 3
Bit-11	RelayState0	
Bit-12	RelayState1	
Bit-13	RelayState2	
Bit-14		
Bit-15	FilterCard Global Reset	

Table 8	**FilterCard Data Register** Table 8		
Ch #	**MSB Data LSB**	**Source**	**Destination**
1	xx xx xx xx xx xx xx 00	BPM	Digitizer
1	xx xx xx xx xx xx xx 01	Diagnostic	BPM
1	xx xx xx xx xx xx xx 10	Diagnostic	BPM & Digitizer
1	xx xx xx xx xx xx xx 11	Diagnostic	Digitizer
2	xx xx xx xx xx xx 00 xx	BPM	Digitizer
2	xx xx xx xx xx xx 01 xx	Diagnostic	BPM
2	xx xx xx xx xx xx 10 xx	Diagnostic	BPM & Digitizer
2	xx xx xx xx xx xx 11 xx	Diagnostic	Digitizer
3	xx xx xx xx xx 00 xx xx	BPM	Digitizer
3	xx xx xx xx xx 01 xx xx	Diagnostic	BPM
3	xx xx xx xx xx 10 xx xx	Diagnostic	BPM & Digitizer
3	xx xx xx xx xx 11 xx xx	Diagnostic	Digitizer
4	xx xx xx xx 00 xx xx xx	BPM	Digitizer
4	xx xx xx xx 01 xx xx xx	Diagnostic	BPM
4	xx xx xx xx 10 xx xx xx	Diagnostic	BPM & Digitizer
4	xx xx xx xx 11 xx xx xx	Diagnostic	Digitizer
5	xx xx xx 00 xx xx xx xx	BPM	Digitizer
5	xx xx xx 01 xx xx xx xx	Diagnostic	BPM
5	xx xx xx 10 xx xx xx xx	Diagnostic	BPM & Digitizer
5	xx xx xx 11 xx xx xx xx	Diagnostic	Digitizer
6	xx xx 00 xx xx xx xx xx	BPM	Digitizer
6	xx xx 01 xx xx xx xx xx	Diagnostic	BPM
6	xx xx 10 xx xx xx xx xx	Diagnostic	BPM & Digitizer
6	xx xx 11 xx xx xx xx xx	Diagnostic	Digitizer
7	xx 00 xx xx xx xx xx xx	BPM	Digitizer
7	xx 01 xx xx xx xx xx xx	Diagnostic	BPM
7	xx 10 xx xx xx xx xx xx	Diagnostic	BPM & Digitizer
7	xx 11 xx xx xx xx xx xx	Diagnostic	Digitizer
8	00 xx xx xx xx xx xx xx	BPM	Digitizer
8	01 xx xx xx xx xx xx xx	Diagnostic	BPM
8	10 xx xx xx xx xx xx xx	Diagnostic	BPM & Digitizer
8	11 xx xx xx xx xx xx xx	Diagnostic	Digitizer