CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Laser Interferometer Gravitational Wave Observatory (LIGO) Project

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Delay Line Phase Shifter Test Procedure

Required equipment:

- Power supply
- RF synthesizer
- RF power meter
- RF network analyzer (~100MHz bandwidth)

Preparations:

Test Engineer	Date	Pass

Write down revision and the serial number.

Board	Revision	Serial
D050339		

Power up the board and check that the current drawn from the +15V power supply is around 0.13A. Check that the LED is on.

Power supply	Current	Nominal
+15V		0.13

Insertion Loss:

Inject a 0dBm sine wave into the input of the delay line and measure the output power.

Insertion loss	Measured [dB]	Nominal [dB]
25 MHz		<3dB
50 MHz		<3dB
100 MHz		<3.5dB

Delay:

Set the network analyzer to sweep around 50 MHz and measure the phase shift as function of switch position (ckeck both external and internal modes). Compute the delay from the phase shift.

Delay	Measured [ns]	Nominal [ns]
Switch 1		0.0625
Switch 2		0.125
Switch 3		0.25
Switches 1 to 3		0.4375
Switch 4		0.5
Switches 1 to 4		0.9375
Switch 5		1
Switches 1 to 5		1.9375
Switch 6		2
Switches 1 to 6		3.9375
Switch 7		4
Switches 1 to 8		7.9375
Switch 8		8
Switches 1 to 8		15.9375
Switch 9		16
Switches 1 to 9		31.9375